

Appendix C

Transportation Technical Report

Transportation Technical Report

South Tacoma Station Access Improvements Project AE 0145-17 02.02 STSAI

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Acronyms and Abbreviations

ADA	Americans with Disabilities Act
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	level of service
LPI	leading pedestrian interval
LU	land use
MPH	miles per hour
N/A	not applicable
PHB	pedestrian hybrid beacon
PROWAG	public rights-of-way guidelines
SEPA	State Environmental Policy Act
SERA	South End Recreation & Adventure
ROW	right-of-way
RRFB	rectangular rapid flashing beacon
TWSC	two-way stop control
v/c	volume-to-capacity
WSDOT	Washington State Department of Transportation

1 INTRODUCTION

This South Tacoma Station Access Improvements Project Transportation Technical Report summarizes the transportation analysis performed to support documentation of the impacts of the South Tacoma Station Access Improvements Project (the project), as described in the project's State Environmental Policy Act (SEPA) Environmental Checklist.

2 PROJECT BACKGROUND

The improvements included in the Build Alternative for the project are a result of the alternatives analysis conducted in Phase 1 of the South Tacoma Station Access Improvements Project and are documented in the Phase 1 South Tacoma Station Access Improvements Report (Sound Transit 2021) (Phase 1 Report). The Phase 1 analysis identified two tiers of projects identified as Potential Improvements (herein titled Priority 1) and Possible Alternates (herein titled Priority 2).

The alternatives analysis prioritized projects based on a set of criteria documented in the Phase 1 Report. Three key criteria were used to identify Priority 1 and Priority 2 projects. These criteria were:

- Improves connections for underserved communities.
- Addresses a substantial travel barrier.
- Is located within proximity of the station.

For the purposes of the environmental analysis, all Priority 1 and Priority 2 projects are included in the Build Alternative.

3 TRANSPORTATION STUDY AREA

This Transportation Technical Report includes a summary of the transportation facilities that serve the South Tacoma Station as well as transportation facilities that are in or cross the project vicinity.

The improvements associated with the project are located throughout the greater South Tacoma area, as shown in Figure 3-1 and described below. The study area boundaries incorporate all of the project improvements.

The majority of project improvements would provide sidewalks and bicycle lanes and improve access between the South Tacoma Station and local destinations (including residences, businesses, and schools). The improvements also would improve the connectivity between the South Tacoma Station and the Pierce Transit bus stops. The improvements would not use any water or air transportation services.

A limited number of the project improvements have the potential to change traffic volume or travel delay in the study area, as follows:

- Increased parking capacity at South End Recreation & Adventure (SERA) shared parking lot adjacent to the South Tacoma Station.

- New signal at South Tacoma Way/S 60th Street to facilitate the movement of bicycles and pedestrians across South Tacoma Way.
- Turn restrictions at South Tacoma Way/S 60th Street, S Puget Sound Avenue/S 60th Street, and S 56th Street/S Fife Street.
- Protected bicycle lanes on S Tyler Street between S 74th Street and S Wright Avenue including removing through or turn lanes.
- Protected bicycle lanes on S Pine Street between Center Street and S 47th Street including removing through or turn lanes.

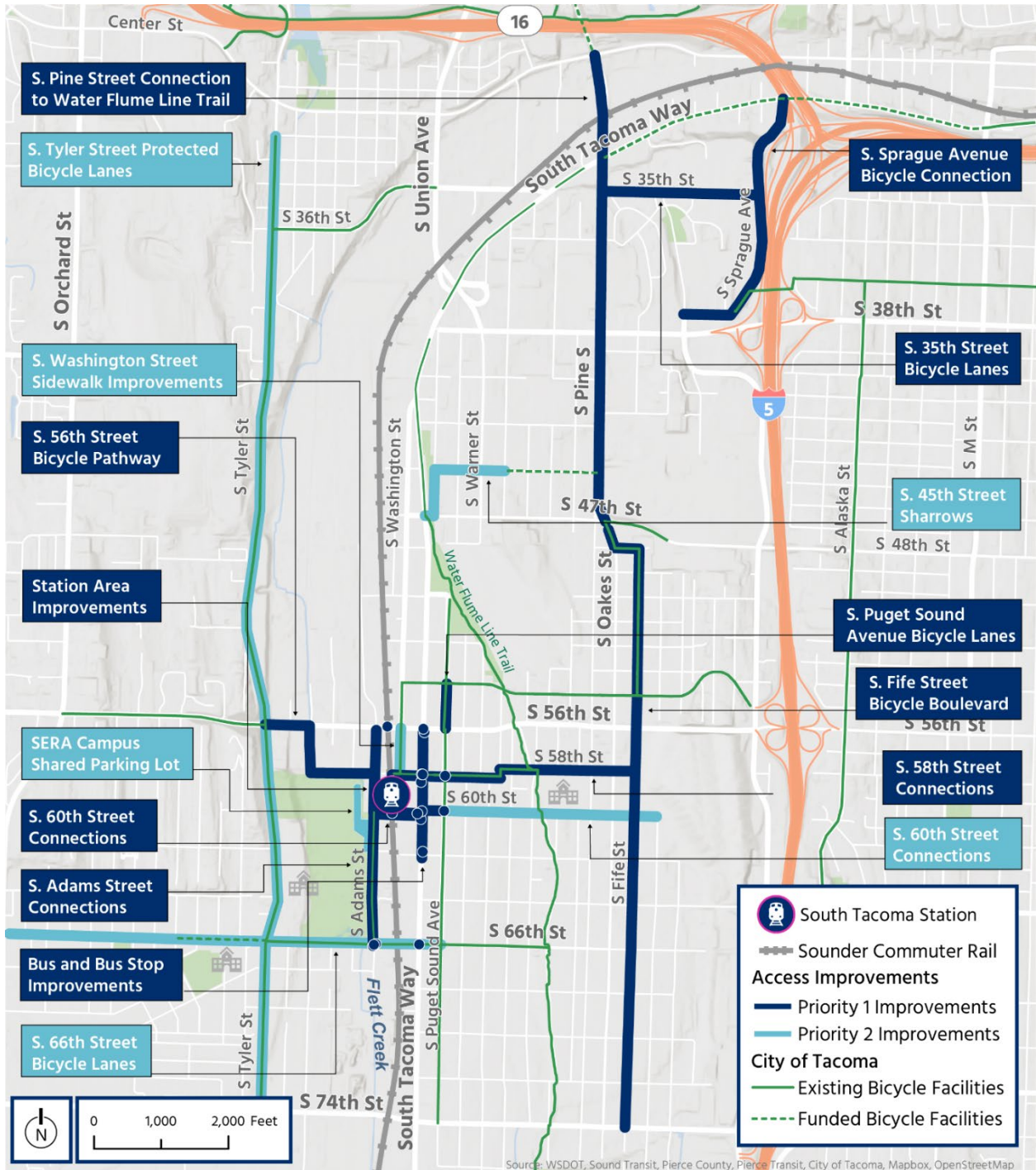


Figure 3-1 Study area

3.1 Build Alternative project improvements

S 58th Street and S 60th Street Connections (Priority 1)

S 58th Street Connections:

- Add sidewalk (south side) on S 58th Street from the station to South Tacoma Way, and upgrade curb ramps and mark crosswalks.
- Add protected bicycle lanes on S 58th Street from the station to South Tacoma Way including bicycle and pedestrian priority at the signal on South Tacoma Way.
- Improve bicycle and pedestrian crossings at S 58th Street/S Puget Sound Avenue intersection with striping or other priority treatments. Includes curb bulb-outs and a pedestrian-activated signal.
- Improve the sidewalks and curb ramps between S Puget Sound Avenue and S Lawrence Street to meet Americans with Disabilities Act (ADA) standards. Add sidewalk, curb ramps, and bicycle boulevard improvements on S 58th Street from S Lawrence Street to S Fife Street.
- Add bicycle lanes on S Puget Sound Avenue between S 54th Street and S 56th Street; include bicycle detection at intersection of S 56th Street and S Puget Sound Avenue.

S 60th Street Connections:

- Add a two-way bicycle path (north side) on S 60th Street from S Adams Street to South Tacoma Way, transitioning to a bicycle boulevard between South Tacoma Way and S Puget Sound Avenue.
- Add a signal at S 60th Street/South Tacoma Way and move northbound bus stop at S 62nd Street to S 60th Street (located far-side). Improve bicycle and pedestrian crossings at S 60th Street/S Puget Sound Avenue with striping or other priority treatments including a pedestrian-activated signal. Restrict the east leg to right-in/right-out at the intersections of S 60th Street with South Tacoma Way and S 60th Street with S Puget Sound Avenue.
- Add sidewalk (on north side), curb ramps, gutter, and lighting on S 60th Street between S Adams Street and South Tacoma Way; include a striped pedestrian and bicycle crossing at the SERA Campus entrance at S Adams Street and S 60th Street.

S 56th Street Bicycle Path (Priority 1)

- Provide an 8-foot-wide shared sidewalk facility on S 56th Street between S Tyler Street and S Madison Street and a shared use path on S Madison Street between S 56th Street and northern boundary of the SERA Campus to S Adams Street.

Station Area Improvements (Priority 1)

- Provide station area curb ramp retrofits, retrofits to provide overhead shelter at the mini-high, public address system, security cameras at the station and parking lot, and station area accessibility for sight impaired and non-English-speaking persons; construct or improve select sidewalks within 0.5 mile of the station; improve wayfinding to the station.
- Improve non-motorized crossings at both at-grade crossings of S 56th Street and S 60th Street with sidewalk crossing arms and 4-quadrant crossing arms, additional warning signage, and other accessibility improvements.

S Adams Street Connections (Priority 1)

- Complete the sidewalks on the east side of S Adams Street from S 66th Street to S 56th Street. Complete the sidewalks on the west side of S Adams Street from S 60th Street to S 56th Street.
- Between S 66th Street and the southern SERA Campus parking lot, remove parking on one side of S Adams Street and add a two-way bicycle path in the street. North of the southern SERA Campus parking lot, transition to a shared use path utilizing both City of Tacoma and Metro Parks right-of-way (ROW).
- Add pedestrian signal at S Adams Street/S 66th Street and upgrade ADA ramps.
- Add shelter, pedestrian-scale lighting, and bench at S 66th Street/S Adams Street bus stops.

S Pine Street Connection to Water Flume Line Trail (Priority 1)

- Construct protected bicycle lanes on S Pine Street from S Center Street to S 47th Street by reducing through or turn lanes. The bicycle lanes would be constructed between the bus stops and the sidewalks (creating a floating bus stop) and further protecting bicyclists from traffic. Add a pedestrian-activated signal at S Pine Street/S 42nd Street.

S Fife Street Bicycle Boulevard (Priority 1)

- Add bicycle boulevard on S Fife Street from S 74th Street to S 48th Street, on S 48th Street to S Oakes Street, and on S Oakes Street, from S 48th Street to S 47th Street. Includes a pedestrian signal and turn restrictions at S 56th Street/S Fife Street. The turn restrictions limit access at S 56th Street to right-in/right-out only.

Bus and Bus Stop Improvements (Priority 1)

- Add shelter, bench, and pedestrian-scale lighting at South Tacoma Way intersections with S 56th, S 58th, and S 62nd streets.
- Implement transit signal priority at intersections along South Tacoma Way (S 56th Street, S 58th Street, and S 66th Street).

Other Bicycle Connections (Priority 1)

- Add bicycle lanes on S 37th Street/S Sprague Avenue from South Tacoma Way to S Steele Street.
- Add bicycle lanes on S 35th Street between S Pine Street and S Sprague Avenue.

Other Potential Improvements (Priority 1)

- Install street lighting on priority roadways within 0.25 mile of the station.
- Upgrade signals to include leading pedestrian interval (LPI) within 0.25 mile of the station at select locations; include accessible pedestrian signals and no right turn on red (static or actuated signage).
- Upgrade signals to include bicycle detection at select intersections along existing bicycle facilities within 0.25 mile of station.

S Tyler Street Protected Bicycle Lanes (Priority 2)

- Add protection to existing bicycle lanes from S 74th Street to S Wright Avenue by removing turn or through lanes, and on-street parking.

S 60th Street East of S Puget Sound Avenue (Priority 2)

- Add sidewalks and bicycle boulevard treatments on S 60th Street between S Puget Sound Avenue and S Prospect Street.

S Washington Street Sidewalk Improvements (Priority 2)

- Provide sidewalk improvements on the west side of S Washington Street between S 56th Street and S 58th Street.

S 45th Street Sharrows (Priority 2)

- Add bicycle sharrows to S 45th Street from S Union Avenue to S Lawrence Street, and to extend along S Union Avenue to connect to the Water Flume Line Trail/S 47th Street/South Tacoma Way. Sharrows are painted markings on the roadway that show two V-shapes and a bicycle. The markings indicate that the roadway is shared by motorists and bicyclists.

SERA Shared Parking Lot (Priority 2)

- Develop a shared parking facility within the SERA Campus adjacent to existing parking.

S 66th Street Bicycle Corridor (Priority 2)

- Add protected bicycle lanes and upgrade existing bicycle lanes to protected bicycle lanes on S 66th Street from S Orchard Street to S Puget Sound Avenue.

To determine pedestrian and bicycle crossing improvement needs, or to address potential changes in traffic volume or travel delay resulting from these improvements, the study intersections shown in Figure 3-2 were analyzed, and the potential project impacts to those intersections are documented in this report. These study intersections are:

- South Tacoma Way/S 56th Street.
- South Tacoma Way/S 58th Street.
- S Puget Sound Avenue/S 58th Street.
- S Oakes Street/S 58th Street.
- South Tacoma Way/S 60th Street.
- S Puget Sound Avenue/S 60th Street.
- S Adams Street/S 60th Street.
- S Adams Street/S 66th Street.
- S Pine Street/Center Street.
- S Pine Street/South Tacoma Way.
- S Pine Street/S 35th Street.
- S Pine Street/S 36th Street.

- S Pine Street/S 38th Street.
- S Pine Street/S 42nd Street.
- S Pine Street/S 45th Street.
- S Oakes Street/S 47th Street.
- S Oakes Street/S 56th Street.
- S Fife Street/S 56th Street.
- South Tacoma Way/S 66th Street.
- S Tyler Street/S 56th Street.
- S Tyler Street/S 74th Street.

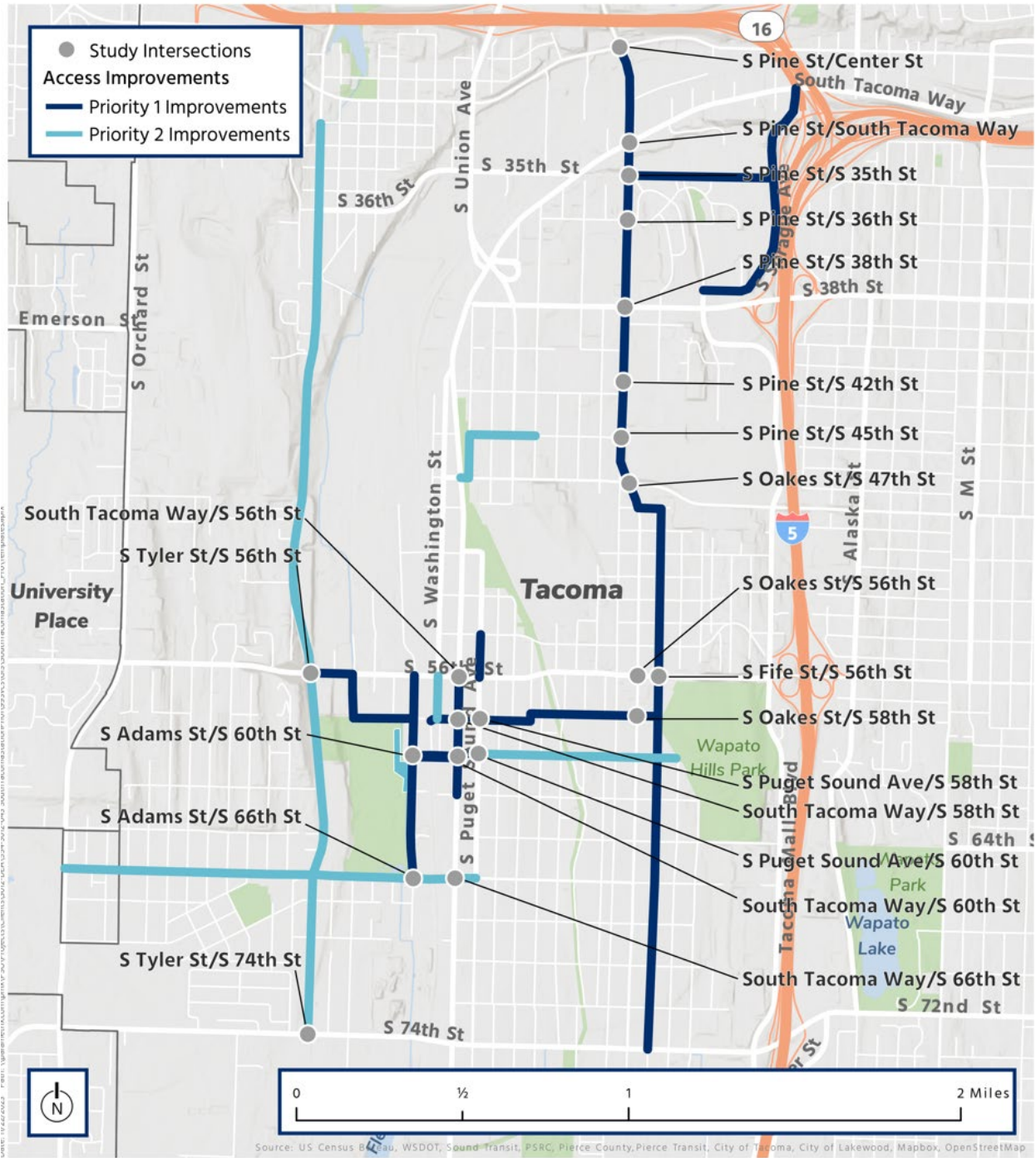


Figure 3-2 Transportation study intersections

4 EXISTING CONDITIONS

This chapter summarizes the transportation network serving the South Tacoma Station area, including:

- Pedestrian facilities (sidewalks and shared use paths).
- Bicycle facilities (bicycle lanes, sharrows, and shared use paths).
- Transit services and facilities (bus stops and South Tacoma Station).
- Roadways/vehicle access.
- Parking.

4.1 Station area mode of access

Sound Transit’s 2019 System Access Strategic Plan Passenger Access Survey Report (Sound Transit 2019a) and March 2020 South Tacoma Station Profile (Sound Transit 2020) each present figures for how Sounder passengers access South Tacoma Station, broken down by mode of transportation. Table 4-1 summarizes these figures, which demonstrate that the station is primarily accessed by auto. As is described in subsequent sections of this report, accessing the South Tacoma Station via other modes (walk, bicycle, and local transit) is difficult due to barriers or lack of direct travel routes.

Table 4-1 South Tacoma Station mode of access summary

Mode of Transportation	2019 System Access Strategic Plan Passenger Access Survey Report	March 2020 South Tacoma Station Profile (pre-Covid)
Walk/wheelchair	13%	8%
Bicycle	2%	0%
Transit transfer	0%	0%
Auto	84%	92%
<i>Drop-off</i>	13%	6%
<i>Parked (drove alone/carpool/vanpool)</i>	71%	86%
Other ¹	1%	Not measured

Sources:

Sound Transit 2019a; Sound Transit 2020.

Note:

¹ The source documents do not define “Other.”

4.2 Non-motorized network

The following describes the existing pedestrian and bicycle network in the South Tacoma Station area.

4.2.1 Pedestrian network

Today, pedestrian access to the South Tacoma Station is provided on the station's eastern frontage along S Washington Street, to the north from S 56th Street via a pedestrian path, and to the south along S 60th Street. Connections to the west of the station are provided through two at-grade crossings of the railroad tracks, at S 56th Street and S 60th Street. The sidewalks along S 60th Street connect the station platform to its surface parking lot to the west of the tracks.

Although sidewalks along the north side of S 60th Street provide direct access across the railroad track, there is limited pedestrian access between the station and neighborhoods farther west of S Adams Street due to the location of the SERA Campus. Currently, pedestrians must either travel west along S 56th Street and then south along S Tyler Street or travel south along S Adams Street to S 66th Street to access areas to the west of the station and the SERA Campus. S Adams Street has intermittent sidewalk gaps on both sides between S 56th Street and S 66th Street, while S 60th Street has sidewalk gaps along its south side in the immediate vicinity of the South Tacoma Station.

As Figure 4-1 shows, many sidewalk gaps are present in neighborhoods west and southwest of the SERA Campus, the neighborhoods east of the Water Flume Line Trail, and the area between the Tacoma Cemetery and Tacoma Mall. In addition, a uniform street grid is not present to the northwest of S 56th Street and South Tacoma Way.

Within the 1-mile pedestrian travel shed, sidewalks are present along most arterial and collector roadways, with the following exceptions:

- South Tacoma Way – west side between S 47th Street and S 48th Street.
- S Washington Street – both sides between South Tacoma Way and S 45th Street; east side between S 48th Street and S 52nd Street; portions of west side between S 50th Street and S 52nd Street; portions of east side between S 52nd Street and S 56th Street; both sides between S 56th Street and S 58th Street.
- S 58th Street – portions of south side between S Washington Street and South Tacoma Way.
- S Puget Sound Avenue – both sides between S 72nd Street and S 74th Street.
- S Warner Street – portions of both sides between S 43rd Street and S 47th Street.
- S Tyler Street – east side north of S 49th Street.
- S Orchard Street – portions of west side south of S 53rd Street W.
- S 47th Street – north side between S Washington Street and South Tacoma Way; portions of south side between S Union Avenue and S Warner Street; portions of north side between S Lawrence Street and S Alder Street.
- S 66th Street – north side between S Alder Street and S Clement Avenue; portions of both sides between S Clement Avenue and S Junett Street; south side between S Junett Street and S Pine Street; both sides between S Pine Street and S Oakes Street.

The presence and condition of curb ramps within the 1-mile pedestrian travel shed vary. Some intersections are missing curb ramps and others have curb ramps that are noncompliant with current ADA standards. Pedestrian push buttons at intersections in the 1-mile pedestrian travel shed may also be noncompliant with ADA standards. Signal timing at signalized intersections in

the station area does not typically include LPIs, the use of which enhances the visibility of pedestrians in the intersection and reinforces their ROW over turning vehicles.

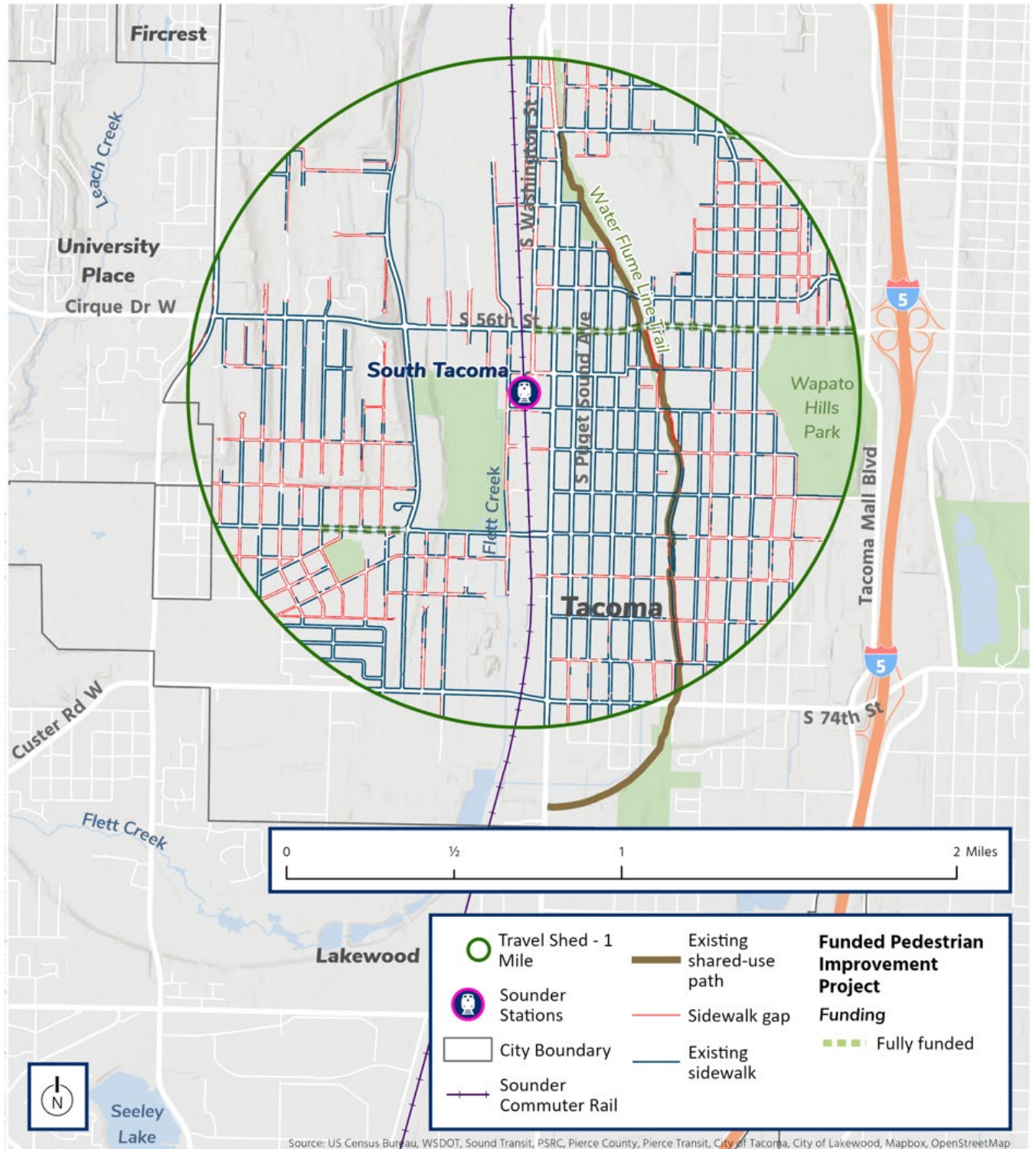


Figure 4-1 Pedestrian facilities

4.2.2 Bicycle network

A combination of a shared use path, bicycle lanes, and shared-lane markings on S 58th Street provides direct access between the South Tacoma Station and the Water Flume Line Trail. The Water Flume Line Trail, part of the regional shared use path network, continues northward as a shared use path from S 58th Street to S 47th Street, where it transitions to bicycle lanes along South Tacoma Way to S Pine Street; however, there are intermittent gaps in the continuity of the bicycle facilities in this section. After an existing gap between S Pine Street and S M Street, the trail resumes as a shared use path along South Tacoma Way and S C Street to downtown Tacoma and the Dome District. To the south of S 58th Street, the Water Flume Line Trail continues as a shared use path to the intersection of South Tacoma Way and S 80th Street at the border of Tacoma and Lakewood.

Two blocks to the east of the station, bicycle lanes along S Puget Sound Avenue provide a north-south alternative to South Tacoma Way between S 56th Street and S 74th Street.

To the south of the station, bicycle facilities are present along S 66th Street as bicycle lanes west of South Tacoma Way and shared-lane markings east of South Tacoma Way connecting to bicycle lanes on S Tyler Street and the Water Flume Line Trail. Additionally, the S 66th Street bicycle lanes connect to shared-lane markings on S Adams Street, ending directly to the west of South Tacoma Station.

West of the SERA Campus, bicycle lanes along S Tyler Street connect S 74th Street to the south and S Wright Avenue to the north. The S Tyler Street bicycle lanes also connect to bicycle lanes along S 56th Street, which extend west to the Tacoma border and beyond, into University Place. The bicycle lanes on S Tyler Street are separated from vehicular traffic with paint lines. A horizontal buffer and a vertical barrier from vehicular traffic are not provided with these bicycle lanes.

As Figure 4-2 shows, few east-west bicycle connections are located within 1 mile of South Tacoma Station, and there are few connections to areas to the east and west outside of the immediate station vicinity. North-south bicycle lanes are present along S Alaska Street directly to the east of Interstate 5. There are also no bicycle facilities that provide access across State Route 16 to the north of the South Tacoma Station. No bicycle facilities that traverse I-5 are present within 1 mile of the station. A bicycle and pedestrian bridge at S 37th Street provides the closest bicycle facility connection across I-5, connecting the Tacoma Mall regional growth center and neighborhoods to the east of I-5. However, no bicycle connections currently exist between the South Tacoma Station and the Tacoma Mall area. Signalized intersections near the South Tacoma Station also lack bicycle detection.

4.3 Transit services and facilities

Sound Transit operates Sounder S Line rail service between Lakewood and Seattle, with South Tacoma Station serving as the current route’s second-to-last station in the southbound direction. During the weekday morning period, Seattle-bound northbound trains operate every 20 to 30 minutes between 4:30 a.m. and 7 a.m. One additional northbound trip departs Lakewood around 10 a.m., and one southbound trip from Seattle to Lakewood operates around 8 a.m. During the evening period, Lakewood-bound trains in the southbound direction operate every 20 to 45 minutes, arriving at South Tacoma Station between 4:50 p.m. and 7:45 p.m. (Sound Transit 2023). Thirteen trains operate northbound and southbound each between Lakewood and Seattle each day, for a total of 26 daily trips.

In addition to the Sound Transit Sounder S Line rail service between Lakewood and Seattle, Pierce Transit provides bus transit service within 1 mile of the station. Table 4-2 summarizes the existing bus transit routes and weekday schedule frequency (average headways) serving stops within 1 mile of South Tacoma Station.

Table 4-2 Bus transit routes serving stops within 1 mile of South Tacoma Station (2023)

Route # and Description, Major Destination Served	Service Span	Headways (Weekday) in Minutes		Nearest Transfer Point to South Tacoma Station
		Northbound / Eastbound	Southbound / Westbound	
		6 a.m. to 9 a.m. 3 p.m. to 6 p.m. All Day	6 a.m. to 9 a.m. 3 p.m. to 6 p.m. All Day	
Route 3 - Lakewood – Tacoma: Lakewood Transit Center SR 512 park-and-ride Tacoma Mall Transit Center 10th & Commerce Transit Center	16.5 hours	30 30 30 – 60	30 30 30 – 60	South Tacoma Way and S 58th Street (450 feet)
Route 41 – S 56th Street – Salishan: Tacoma Mall Transit Center Tacoma Dome Station 10th & Commerce Transit Center	16.5 hours	30 30 30 – 60	30 30 30 – 60	S 56th Street and S Fife Street (0.8 mile)
Route 52 - Fircrest – Tacoma Community College ¹ Tacoma Mall Transit Center Tacoma Community College Transit Center	16 hours	30 30 30 – 60	30 30 30 – 60	S Warner Street and S 47th Street (0.9 mile)
Route 53 – University Place² Tacoma Mall Transit Center Tacoma Community College Transit Center	17 hours	30 30 30 – 60	30 30 (until 5:50 p.m.) 30 – 60	S 66th Street and S Adams Street (0.4 mile)
Route 202 - 72nd Street: Lakewood Transit Center 72nd Street Transit Center	15.5 hours	30 – 60 30 30 – 60	30 – 60 30 – 75 30 – 60	S 74th Street and South Tacoma Way/S Puget Sound Avenue (1 mile)

Sources: Pierce Transit 2023 and Sound Transit 2023.

Notes:

¹ Route 52 travels northbound/westbound in one direction and southbound/eastbound in the other direction. Headways reported are for the trips departing the Tacoma Mall Transit Center in the northbound/eastbound column and trips departing Tacoma Community College in the southbound/westbound column.

² Route 53 travels north, west, south, and east for each trip. Headways reported are for the trips departing the Tacoma Mall Transit Center in the northbound/eastbound column and trips departing Tacoma Community College in the southbound/westbound column.

The Tacoma Mall Transit Center is located just beyond 1 mile to the northeast of South Tacoma Station and is served by Pierce Transit routes 3, 41, 52, 53, 54, 55, and 57.

Sound Transit provides regional express bus service in the vicinity of the South Tacoma Station, but regional express bus service does not directly serve it. Five routes, most of which provide a.m. and p.m. peak service only, connect regional destinations including Tacoma, Sea-Tac Airport, downtown Seattle, and the University of Washington campus in Seattle. Figure 4-3 displays Pierce Transit local bus routes and facilities within the 1-mile pedestrian travel shed, while Figure 4-4 presents Sound Transit regional transit routes within the 5-mile transit rider/driver access travel shed.

Pierce Transit's Route 3 operates on South Tacoma Way and has southbound bus stops at S 56th Street and S 60th Street. Northbound bus stops are located at S 62nd Street and S 56th Street.

The nearest transfer opportunity from Sounder service to an east-west bus transit route is approximately 0.4 mile from South Tacoma Station. Pierce Transit Route 53 currently operates along S 66th Street to the south of the South Tacoma Station, with the nearest stops at the intersection of S Adams Street. Other east-west bus transit routes serve stops nearly 1 mile to the north, east, or south of the South Tacoma Station. Sounder riders with destinations to the east or west of the station must walk or roll longer distances to reach a bus stop or must transfer between multiple bus routes, resulting in out-of-direction travel to reach their destination.

Bus routes do not currently serve stops directly at the station. S Washington Street, which is adjacent to the South Tacoma Station, is narrow (approximately 20 feet wide) and cannot accommodate bus transit operations.

Many bus stops located near the station have minimal passenger amenities (shelters, benches, trash cans) and include only flags at the stops. Stops along South Tacoma Way at S 48th Street, S 50th Street, S 54th Street, S 68th Street, and S 72nd Street, which are served by Pierce Transit Route 3, were identified as having potential access issues in the March 2020 South Tacoma Station Profile (Sound Transit 2020). The following factors were considered when identifying transit stops with potential access issues:

- Lack of a complete, ADA-accessible route to the transit stop or station.
- Lack of a paved, unobstructed landing pad at the stop or station.
- Presence of a shelter with obstructions at the transit stop or station.

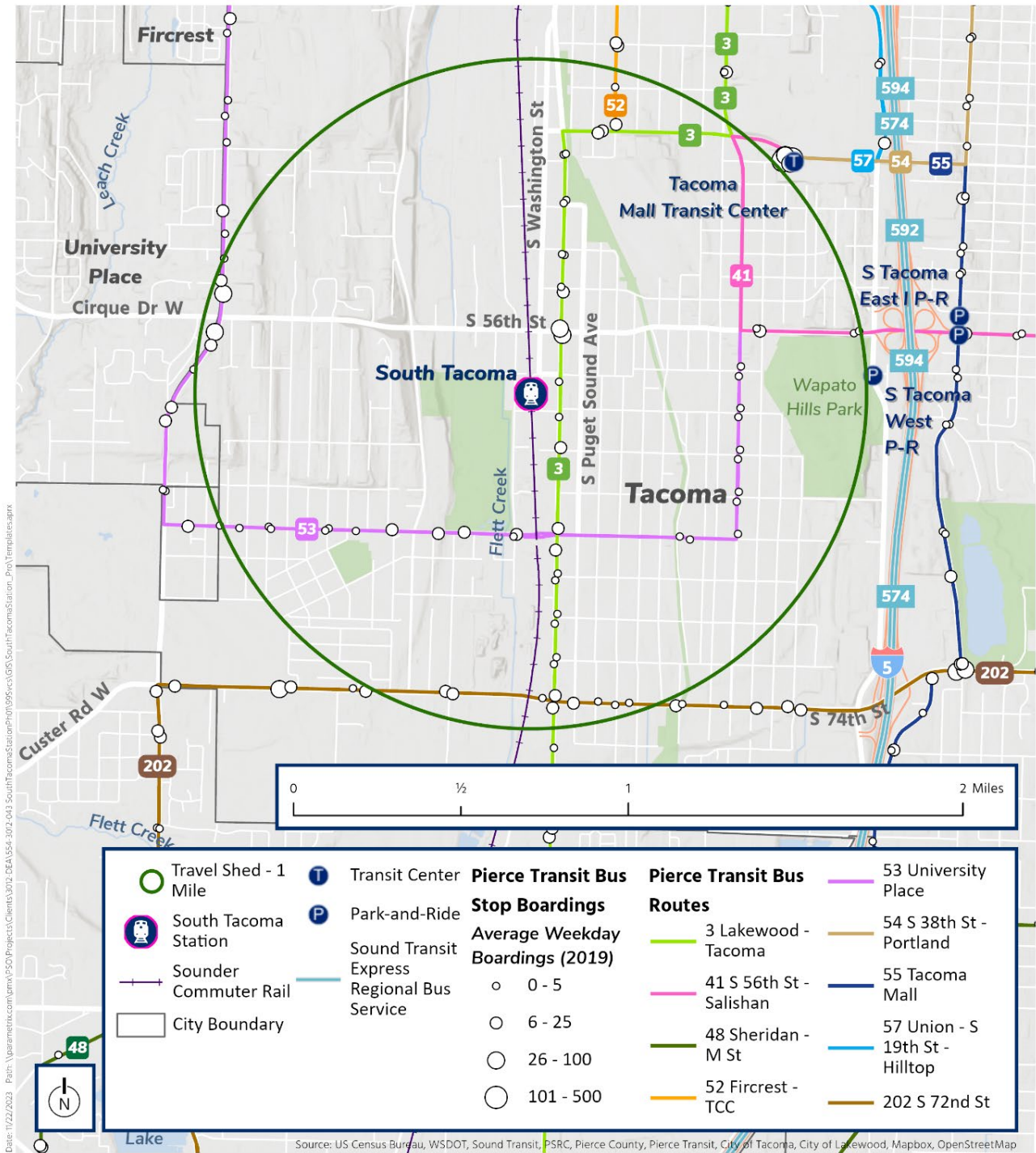


Figure 4-3 Local transit routes

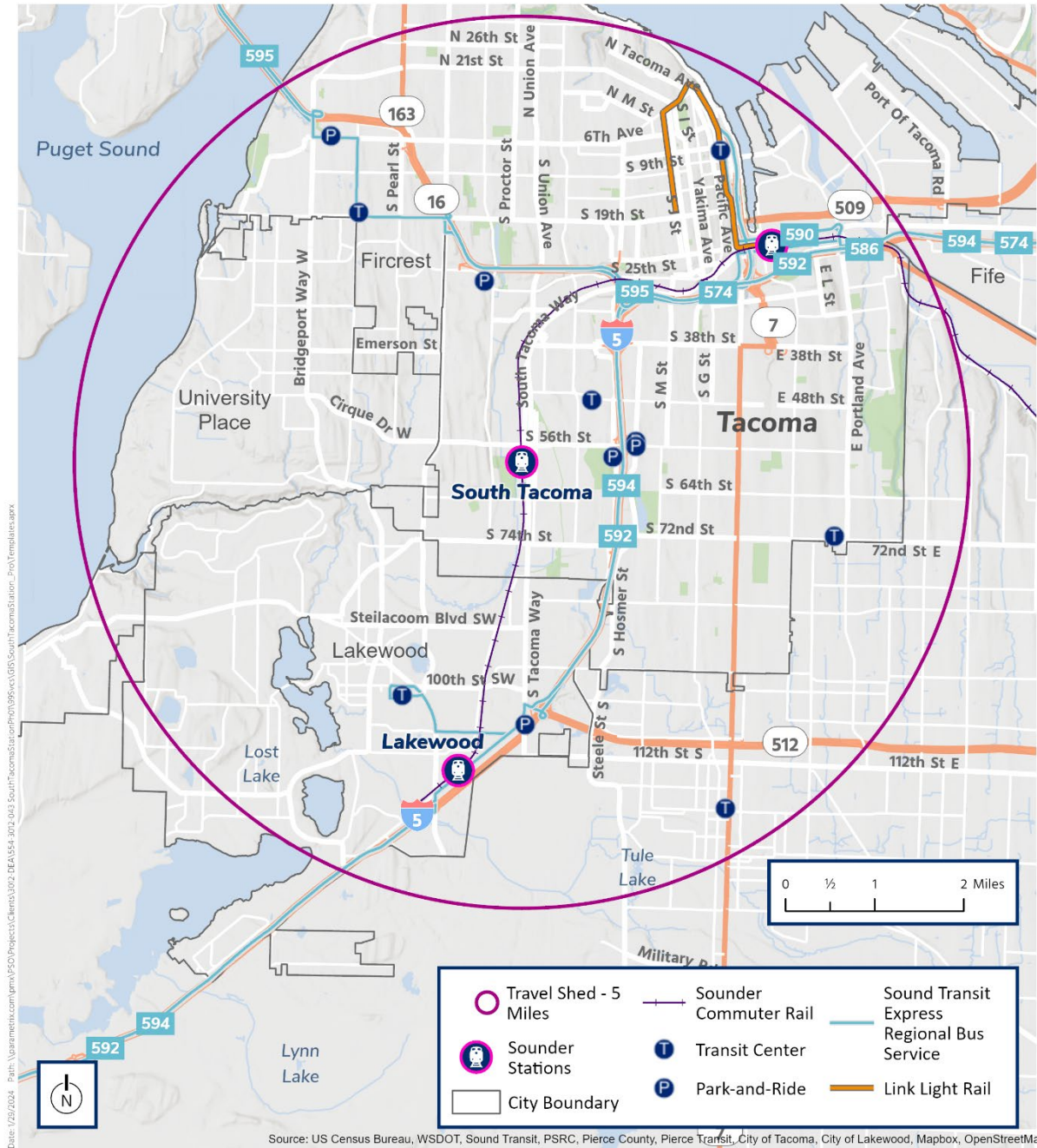


Figure 4-4 Sound Transit regional transit routes

4.4 Roadways/vehicle access

The South Tacoma Station is located adjacent to the South Tacoma Way arterial and west of a residential arterial grid system. The primary arterials providing access to the station are South Tacoma Way (principal arterial), S 56th Street (principal arterial), S 66th Street (minor arterial), and S 74th Street (principal arterial). Vehicular access to the South Tacoma Station is provided adjacent to the platform along S Washington Street between S 58th Street and S 60th Street. As a one-way southbound street between S 58th Street and S 60th Street, S Washington Street acts as a continuation of S 58th Street, running adjacent to the eastern station frontage. Vehicular access to the station's surface parking lot is provided through ingress/egress points along S Adams Street and S 60th Street to the west and south of the station, respectively. The primary access to the station for pedestrians and passenger pickup and drop-off is S Washington Street. Figure 4-5 shows the access points to the station.

South Tacoma Way, a north-south principal arterial one block to the east of the station, connects S 58th Street and S 60th Street to Tacoma's broader roadway network, reaching downtown Tacoma in the north and Lakewood in the south. S 56th Street, an east-west principal arterial, connects S Washington Street and S Adams Street to University Place in the west and I-5 and southeast Tacoma neighborhoods to the east.

Located just more than 1 mile east of the South Tacoma Station, the I-5/S 56th Street and I-5/S 72nd Street interchanges provide access to the state freeway network, connecting the station area to the regional transportation system. I-5 is the primary north-south limited access corridor for local, regional, interstate, and international travel, and has interchanges with SR 16 approximately 1.6 miles north of the S 56th Street interchange, and with SR 512 approximately 3.2 miles to the south. SR 16 and SR 512 provide further regional connections to the Kitsap Peninsula and Puyallup, respectively. Figure 4-6 displays the roadway network within the 1-mile, 3-mile, and 5-mile travel sheds, and Figure 4-7 shows the roadway network and roadway classification near the station.

Several partially or fully funded roadway projects included in city and county transportation improvement programs are located within the 5-mile vehicle travel shed. Table 4-3 lists these projects.



Figure 4-5 Station access

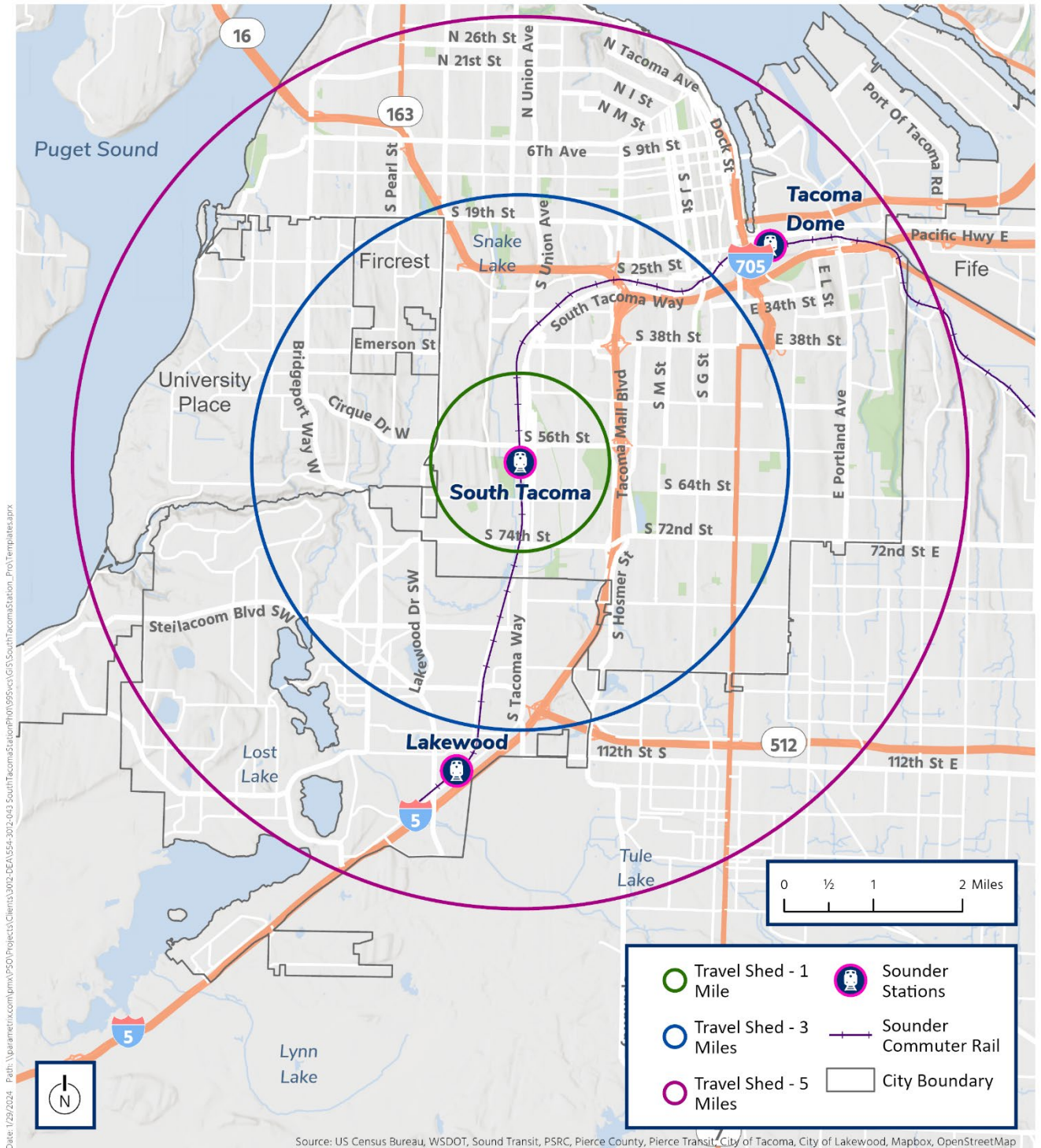


Figure 4-6 Regional roadway network

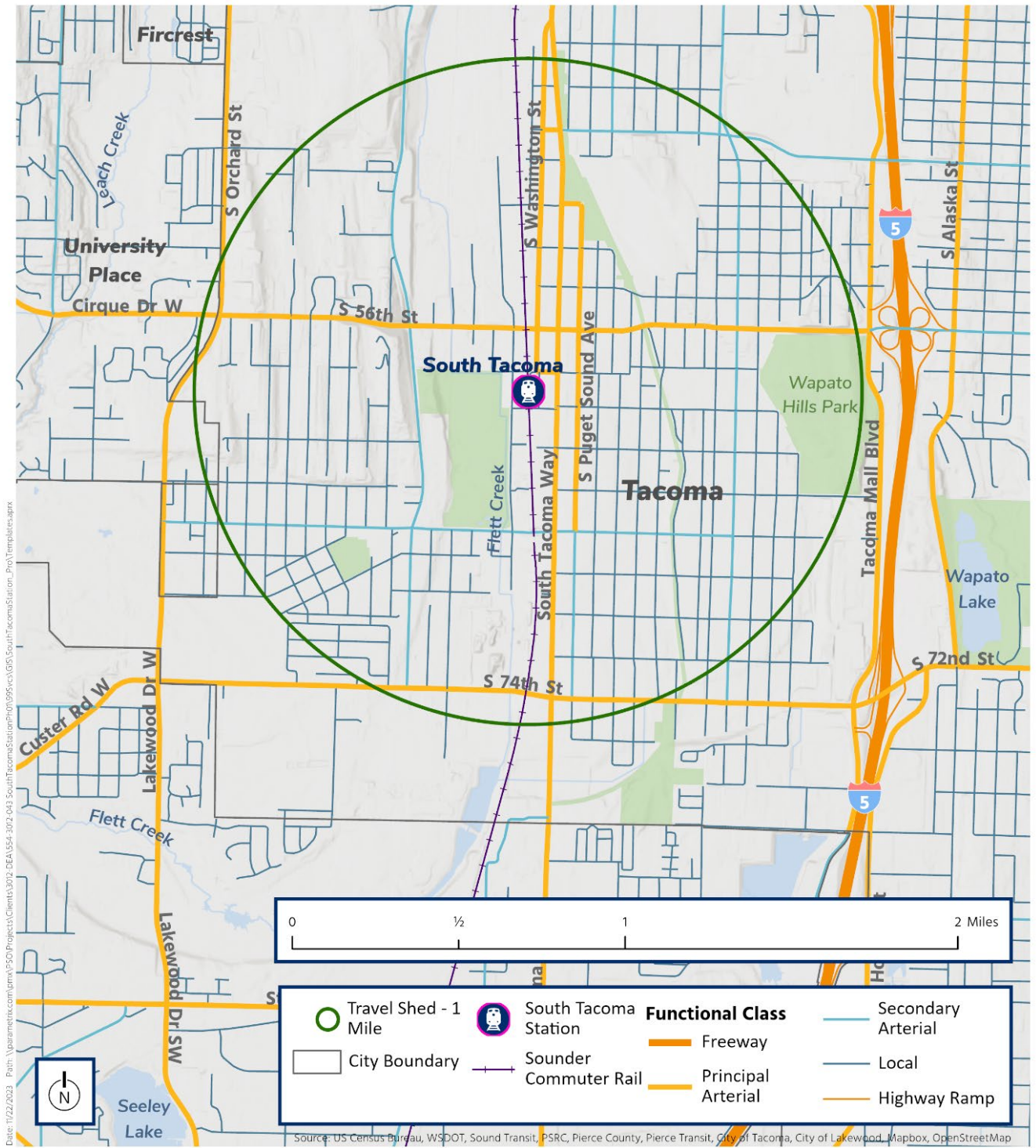


Figure 4-7 Local roadway network and street classification

Table 4-3 Partially or fully funded roadway improvement projects within the 5-mile travel shed

Type	Project Name	Source/Agency	Funding
Bike/Ped, Street Repair	Steilacoom Boulevard SW	City of Lakewood Six-Year Comprehensive Transportation Improvement Program 2024-2029	Full
Bike/Ped, Street Repair	South Tacoma Way	City of Lakewood Six-Year Comprehensive Transportation Improvement Program 2024-2029	Partial
Bike/Ped, Street Repair	Washington Boulevard SW/North Gate Road SW/Edgewood Avenue SW	City of Lakewood Six-Year Comprehensive Transportation Improvement Program 2024-2029	Full
Bike/Ped, Street Repair	Steilacoom Boulevard SW/88th Street SW	City of Lakewood Six-Year Comprehensive Transportation Improvement Program 2024-2029	Full
Bike/Ped, Street Repair	121st Street S (C Street S to Pacific Avenue S)	Pierce County 2021-2026 Transportation Improvement Program	Full
Bike/Ped	J Street Bike Boulevard	City of Tacoma Comprehensive Transportation Improvement Program Amended 2023 and 2024-2029	Full
Bike/Ped	South Sheridan Ave: 56th to 84th Complete streets	City of Tacoma Comprehensive Transportation Improvement Program Amended 2023 and 2024-2029	Partial
Street Repair	108th Street Roadway Patching and Overlay	City of Lakewood	Full

Sources: City of Lakewood 2023; City of Tacoma 2023.

Traffic operations are often measured by an approach called intersection level of service (LOS). LOS is a scale ranging from A to F in which rankings are based on the delay at a given intersection. LOS A represents the best conditions with minimal amount of delay, and LOS F represents the worst conditions with severe congestion and delay. The City of Tacoma’s comprehensive plan (One Tacoma: Comprehensive Plan) (City of Tacoma 2015) establishes the city’s LOS policy, which is based on automobile delay alone but seeks to provide priority treatment to transit and high-occupancy vehicles on arterial corridors by allowing for a lower LOS for vehicular traffic within identified corridors. The City of Tacoma’s traffic operations standards state that intersections along an arterial should operate at LOS E or better and have a volume-to-capacity (v/c) ratio of 0.99 or below. Intersections separate from an arterial corridor should operate at LOS D and have a v/c ratio of 0.89 or below.

Historical p.m. peak hour traffic counts were collected as available from the City of Tacoma to support intersection operations analysis for locations that may be affected by the Build Alternative. Additional traffic counts were conducted in February 2023 at two intersections during the a.m. peak period and at five intersections during the p.m. peak period to supplement the historical traffic data. Traffic operations analysis was conducted at 16 study intersections for the p.m. peak hour and at 2 study intersections for the a.m. peak hour where signals exist today. Traffic operations analysis utilized the Synchro tool (version 11) to determine the intersection LOS. LOS is based on the Highway Capacity Manual (HCM) 2000 report and delay (in seconds per vehicle). The Synchro model was developed consistent with the Washington State Department of Transportation (WSDOT) Synchro modeling protocol (2018). The WSDOT protocol recommends using the HCM 6th edition reporting method. However, because the analysis conducted for this study includes pedestrian signals that are not supported by the HCM 6th edition methodology, the analysis defaulted to HCM 2000 reports.

The study intersections currently operate with v/c ratios under the City of Tacoma’s threshold of 0.99 (for arterial intersections) and within the city’s threshold of LOS E or better. Table 4-4 summarizes the existing conditions operations analysis for the study intersections.

Table 4-4 Existing conditions intersection operations analysis

Intersection	Intersection Control Type	Approach	A.M. Peak Hour LOS, Delay, ¹ V/C Ratio ²	P.M. Peak Hour LOS, Delay, V/C Ratio
South Tacoma Way/S 56th Street	Signal	Overall	Not applicable (N/A)	D, 44, 0.52
South Tacoma Way/S 58th Street	Signal	Overall	N/A	A, 5, 0.38
South Tacoma Way/S 60th Street	TWSC ³	Northbound Southbound Eastbound Westbound	Free-flow, no delay Free-flow, no delay B, 14, 0.07 C, 15, 0.06	Free-flow, no delay Free-flow, no delay C, 20, 0.20 C, 24, 0.07
S Adams Street/S 60th Street	TWSC	Northbound Southbound Eastbound Westbound	Free-flow, no delay Free-flow, no delay A, 9, 0.00 B, 10, 0.03	Free-flow, no delay Free-flow, no delay A, 9, 0.01 B, 10, 0.07
S Adams Street/S 66th Street	TWSC	Northbound Southbound Eastbound Westbound	N/A	C, 15, 0.11 C, 15, 0.32 Free-flow, no delay Free-flow, no delay
S Pine Street/Center Street	Signal	Overall	N/A	D, 40, 0.84
S Pine Street/South Tacoma Way	Signal	Overall	N/A	C, 24, 0.50
S Pine Street/S 35th Street	Signal	Overall	N/A	B, 16, 0.40
S Pine Street/S 36th Street	Signal	Overall	N/A	A, 6, 0.38
S Pine Street/S 38th Street	Signal	Overall	N/A	E, 68, 0.77
S Pine Street/S 45th Street	Signal	Overall	N/A	B, 16, 0.47
S Oakes Street/S 47th Street	Signal	Overall	N/A	D, 45, 0.63
S Oakes Street/S 56th Street	Signal	Overall	N/A	C, 24, 0.55
South Tacoma Way/S 66th Street	Signal	Overall	N/A	B, 12, 0.56
S Tyler Street/S 56th Street	Signal	Overall	N/A	D, 49, 0.77

Intersection	Intersection Control Type	Approach	A.M. Peak Hour LOS, Delay, ¹ V/C Ratio ²	P.M. Peak Hour LOS, Delay, V/C Ratio
S Tyler Street/S 74th Street	Signal	Overall	N/A	C, 34, 0.50
Do the study intersections operate within the City of Tacoma’s thresholds (LOS E and v/c ratio of 0.99 or better)?			Yes	Yes

Notes:

¹ Delay is reported in seconds per vehicle.

² V/C Ratio = volume-to-capacity ratio.

³ TWSC = two way stop control.

4.5 Parking

Parking at South Tacoma Station is provided by Sound Transit in a 220-stall surface lot located directly adjacent to the western edge of the Sounder railroad ROW, positioned along S Adams Street. From the parking lot, passengers traverse the railroad tracks at grade via a sidewalk along the north side of S 60th Street, reaching the southern edge of the station platform just east of the tracks. Four ADA-accessible parking stalls are located along S Washington Street near its intersection with S 58th Street. Bicycle parking is provided at South Tacoma Station at 16 bicycle spaces and four bicycle lockers (which hold up to two bicycles per locker). Five additional public bicycle parking locations are available within two blocks of the station. The March 2020 South Tacoma Station Profile (Sound Transit 2020) reports that bicycle parking utilization at the station was 25% for the period 2018 to 2019.

The Sound Transit Parking Utilization Report (2019b) indicates that the surface parking lot at South Tacoma Station was between 85% and 97% occupied during a Tuesday-through-Thursday data collection period in January 2019. A license plate survey conducted for South Tacoma Station in 2016 reported that, of the parked vehicles observed to be registered in Washington, 94% were registered in a jurisdiction within the Sound Transit District, 81% were registered within a jurisdiction within 5 miles of the station, and 35% were registered within the City of Tacoma (Sound Transit 2016a). Parking management policies, such as permit parking, are not currently in use at South Tacoma Station.

Beginning in spring of 2020, travel patterns changed due to the COVID-19 pandemic, affecting the demand for parking in some areas. In May 2023, parking utilization at the South Tacoma Station during a Tuesday-through-Thursday data collection period ranged from 13% to 21%.

In addition to the 220-space surface parking lot at South Tacoma Station, the South Tacoma Park-and-Ride operated by Pierce Transit provides 155 parking stalls at the I-5/S 56th Street interchange, just outside of the 1-mile travel shed. Split into three separate surface lots located at the northeast, southeast, and southwest quadrants of the interchange, the South Tacoma Park-and-Ride is served by Pierce Transit Route 41 and Route 55. The equivalent of approximately 3,700 on-street parking spaces are located along City of Tacoma streets within a 0.5-mile radius of the station.

As discussed above, the vehicle parking at the South Tacoma Station is not fully utilized. In addition, there is currently no indication that Sounder riders are overflow parking along City of Tacoma streets in neighborhoods adjacent to the South Tacoma Station. Bicycle parking at the station is also underutilized. There are no identified parking access gaps.

5 YEAR 2030 CONDITIONS

5.1 No Build Alternative

Conditions within the study area between now and year 2030 are not anticipated to change substantially in terms of the roadway, bicycle, and pedestrian networks or the transit route service in the vicinity of the project improvements.

The City of Tacoma is planning to construct the following bicycle and pedestrian improvements in the next few years:

- Add protected bicycle lanes on S 66th Street between S Cheyenne Street and S Tyler Street.
- Add a shared use path on S 45th Street from S Lawrence Street to S Pine Street.

To estimate traffic for the future year 2030 No Build condition, existing traffic volumes were grown by a 1% annual growth rate. The City of Tacoma provided this traffic volume growth rate based on the city's comprehensive planning and Tacoma Mall area planning.

Traffic operations analysis was conducted at the 16 study intersections that are currently signalized to establish baseline conditions from which to quantitatively assess changes between the No Build Alternative and the Build Alternative. As described in the existing conditions analysis in Section 4, the Synchro model was used to determine intersection LOS, delay, and v/c ratios. Consistent with WSDOT Synchro protocol (WSDOT 2018), the peak hour factors for year 2030 conditions were set to 1.0. Similar to the existing conditions, in the year 2030, the study intersections are anticipated to operate within the City of Tacoma's thresholds of LOS E and a v/c ratio of 0.99 (see Table 5-1).

Table 5-1 Year 2030 No Build Alternative study intersections operations analysis

Intersection	Intersection Control Type	Approach	A.M. Peak Hour LOS, Delay¹, V/C Ratio²	P.M. Peak Hour LOS, Delay, V/C Ratio
South Tacoma Way/S 56th Street	Signal	Overall	N/A	D, 44, 0.54
South Tacoma Way/S 58th Street	Signal	Overall	N/A	A, 5, 0.39
South Tacoma Way/S 60th Street	TWSC3	Northbound Southbound Eastbound Westbound	Free-flow, no delay Free-flow, no delay B, 13, 0.05 B, 14, 0.05	Free-flow, no delay Free-flow, no delay C, 21, 0.20 C, 25, 0.08
S Adams Street/S 60th Street	TWSC	Northbound Southbound Eastbound Westbound	Free-flow, no delay Free-flow, no delay A, 9, 0.00 B, 10, 0.02	Free-flow, no delay Free-flow, no delay A, 9, 0.01 B, 10, 0.06
S Adams Street/S 66th Street	TWSC	Northbound Southbound Eastbound Westbound	N/A	C, 16, 0.11 C, 16, 0.36 Free-flow, no delay Free-flow, no delay
S Pine Street/Center Street	Signal	Overall	N/A	D, 39, 0.81
S Pine Street/South Tacoma Way	Signal	Overall	N/A	C, 24, 0.50
S Pine Street/S 35th Street	Signal	Overall	N/A	B, 16, 0.39
S Pine Street/S 36th Street	Signal	Overall	N/A	A, 6, 0.38
S Pine Street/S 38th Street	Signal	Overall	N/A	E, 67, 0.76
S Pine Street/S 45th Street	Signal	Overall	N/A	B, 16, 0.46
S Oakes Street/S 47th Street	Signal	Overall	N/A	D, 44, 0.62
S Oakes Street/S 56th Street	Signal	Overall	N/A	C, 24, 0.54
South Tacoma Way/S 66th Street	Signal	Overall	N/A	B, 12, 0.57

Intersection	Intersection Control Type	Approach	A.M. Peak Hour LOS, Delay ¹ , V/C Ratio ²	P.M. Peak Hour LOS, Delay, V/C Ratio
S Tyler Street/S 56th Street	Signal	Overall	N/A	D, 44, 0.54
S Tyler Street/S 74th Street	Signal	Overall	N/A	C, 34, 0.49
Do the study intersections operate within the City of Tacoma’s thresholds (LOS E and v/c ratio of 0.99 or better)?			Yes	Yes

Notes:

¹ Delay is reported in seconds per vehicle.

² V/C Ratio = volume-to-capacity ratio.

³ TWSC = two way stop control.

5.2 Build Alternative

The Build Alternative includes all Priority 1 and Priority 2 project improvements. The analysis in this section describes the anticipated changes to the transportation network, by mode, and the anticipated impacts of the project. Table 5-2 identifies the type of analysis that was performed for each transportation mode.

Table 5-2 Scope of Build Alternative transportation analysis

Element	Type of Analysis for Build Alternative
Active transportation network	Qualitative description of newly created connections and removed barriers, including connectivity to existing network, funded City of Tacoma projects, and transit.
Transit stops and routes	Qualitative description of the changes to stop locations and transit routes.
Vehicle access/traffic operations	Where the number of travel lanes is reduced or traffic volumes increase by 5% or more at the study intersections, or a full pedestrian signal is added, conduct intersection analysis to determine the change in LOS, v/c ratio, or delay. At locations where LPIs are recommended, report the resulting reduction in overall green-time (in seconds and percentage of the cycle length) available for vehicle movements.
Parking changes	Identify locations where parking capacity is reduced within the City of Tacoma ROW. Quantified increase in parking capacity for the project, which will add a surface lot near the station.

Figure 3-1 and Table 5-3 summarize the improvements that are part of the Build Alternative, including their classification as Priority 1 or Priority 2. Table 5-3 also identifies which modes or facilities would be affected by the Build Alternative improvements. The following sections further describe how the projects modify and impact the active transportation network, transit facilities and access, vehicle access/traffic operations, and parking capacity.

Table 5-3 Summary of Build Alternative project improvement effects

Project Improvement and Description	Mode or Facility Potentially Affected by Improvement			
	Active Transportation	Transit Services or Facilities	Vehicle Access/Traffic	Parking
S 58th Street and S 60th Street Connections (Priority 1)				
S 58th Street Connections				
Add sidewalk (south side) on S 58th Street from the station to South Tacoma Way, and upgrade curb ramps and mark crosswalks.	Yes	No	No	Yes
Add protected bicycle lanes on S 58th Street from the station to South Tacoma Way including bicycle and pedestrian priority at the signal on South Tacoma Way.	Yes	No	No	Yes
Improve bicycle and pedestrian crossings at S 58th Street/S Puget Sound Avenue intersection with striping or other priority treatments. Includes curb bulb-outs and a pedestrian-activated signal.	Yes	No	No	No
Improve the sidewalks and curb ramps between S Puget Sound Avenue and S Lawrence Street to meet ADA standards. Add sidewalk, curb ramps, and bicycle boulevard improvements on S 58th Street from S Lawrence Street to S Fife Street.	Yes	No	No	No
Add bicycle lanes on S Puget Sound Avenue between S 54th Street and S 56th Street; include bicycle detection at intersection of S 56th Street and S Puget Sound Avenue.	Yes	No	No	Yes
S 60th Street Connections				
Add a two-way bicycle path (north side) on S 60th Street from S Adams Street to South Tacoma Way, transitioning to a bicycle boulevard between South Tacoma Way and S Puget Sound Avenue.	Yes	No	No	Yes
Add a pedestrian signal at S 60th Street/South Tacoma Way and move northbound bus stop at S 62nd Street to S 60th Street (located far-side). Improve bicycle and pedestrian crossings at S 60th Street/S Puget Sound Avenue with striping or other priority treatments including a pedestrian-activated signal. Restrict the east leg to right in/right out at the intersections of S 60th Street with South Tacoma Way and S 60th Street with S Puget Sound Avenue.	Yes	Yes	Yes	No
Add sidewalk (on north side), curb ramps, gutter, and lighting on S 60th Street between S Adams Street and South Tacoma Way; include a striped pedestrian and bicycle crossing at the SERA Campus entrance at S Adams Street and S 60th Street.	Yes	No	No	No
S 56th Street Bicycle Pathway (Priority 1)				
Provide a 8-foot-wide shared sidewalk facility on S 56th Street between S Tyler Street and S Madison Street, and a shared use path on S Madison Street between S 56th Street and northern boundary of the SERA Campus to S Adams Street.	Yes	No	No	No

Project Improvement and Description	Mode or Facility Potentially Affected by Improvement			
	Active Transportation	Transit Services or Facilities	Vehicle Access/Traffic	Parking
Station Area Improvements (Priority 1)				
Provide station area curb ramp retrofits, retrofits to provide overhead shelter at the mini-high, public address system, security cameras at the station and parking lot, and station area accessibility for sight impaired and non-English-speaking persons; construct or improve select sidewalks within 0.5 mile of the station; improve wayfinding to the station.	Yes	Yes	No	No
Improve non-motorized crossings at both at-grade crossings of S 56th Street and S 60th Street with sidewalk crossing arms and 4-quadrant crossing arms, additional warning signage, and other accessibility improvements.	Yes	No	No	No
S Adams Street Connections (Priority 1)				
Complete the sidewalks on the east side of S Adams Street from S 66th Street to S 56th Street. Complete the sidewalks on the west side of S Adams Street from S 60th Street to S 56th Street. Between S 66th Street and the southern SERA Campus parking lot, remove parking on one side of S Adams Street, and add a two-way bicycle path in the street. North of the southern SERA Campus parking lot, transition to a shared use path utilizing both City of Tacoma and Metro Parks ROW.	Yes	No	No	Yes
Add pedestrian signal at S Adams Street/S 66th Street and upgrade ADA ramps.	Yes	No	Yes	No
Add shelter, pedestrian-scale lighting, and bench at S 66th Street/ S Adams Street bus stops.	No	Yes	No	No
S Pine Street Connection to Water Flume Line Trail (Priority 1)				
Construct protected bicycle lanes on S Pine Street from S Center Street to S 47th Street by reducing through or turn lanes.	Yes	No	Yes	No
S Fife Street Bicycle Boulevard (Priority 1)				
Add bicycle boulevard on S Fife Street from S 74th Street to S 48th Street, on S 48th Street to S Oakes Street, and S Oakes Street, from S 48th Street to S 47th Street. Includes a pedestrian signal and turn restrictions at S 56th Street/S Fife Street.	Yes	No	Yes	No
Bus and Bus Stop Improvements (Priority 1)				
Add shelter, bench, and pedestrian-scale lighting at South Tacoma Way intersections with S 56th, S 58th, and S 62nd streets.	No	Yes	No	No
Implement transit signal priority at intersections along South Tacoma Way (S 56th Street, S 58th Street, and S 66th Street).	No	Yes	Yes	No

Project Improvement and Description	Mode or Facility Potentially Affected by Improvement			
	Active Transportation	Transit Services or Facilities	Vehicle Access/Traffic	Parking
Other Bicycle Connections (Priority 1)				
Add bicycle lanes on S 35th Street between S Pine Street and S Sprague Avenue.	Yes	No	No	No
Other Potential Improvements (Priority 1)				
Install street lighting on priority roadways within 0.25 mile of the station.	No	No	No	No
Upgrade signals to include leading pedestrian interval (LPI) within 0.25 mile of the station at select locations; include accessible pedestrian signals and no right turn on red (static or actuated signage).	Yes	No	Yes	No
Upgrade signals to include bicycle detection at select intersections along existing bicycle routes within 0.25 mile of station.	Yes	No	No	No
S Tyler Street Protected Bicycle Lanes (Priority 2)				
Add protection to existing bicycle lanes from S 74th Street to S Wright Avenue by removing turn or through lanes.	Yes	No	Yes	Yes
S 60th Street East of S Puget Sound Avenue (Priority 2)				
Add sidewalks and bicycle boulevard treatments on S 60th Street between S Puget Sound Avenue and S Prospect Street.	Yes	No	No	No
S Washington Street Sidewalk Improvements (Priority 2)				
Provide sidewalk improvements on west side of S Washington Street between S 56th Street and S 58th Street.	Yes	No	No	No
S 45th Street Bicycle Sharrows (Priority 2)				
Add bicycle sharrows to S 45th Street from S Union Avenue to S Lawrence Street, and extend along S Union Avenue to connect to the Water Flume Line Trail/S 47th Street/South Tacoma Way.	Yes	No	No	No
SERA Campus Shared Parking Lot (Priority 2)				
Develop a shared parking facility within the SERA Campus adjacent to existing parking.	No	No	Yes	Yes
S 66th Street Bicycle Corridor (Priority 2)				
Add protected bicycle lanes and upgrade existing bicycle lanes to protected bicycle lanes on S 66th Street from S Orchard Street to S Puget Sound Avenue.	Yes	No	Yes	Yes

5.3 Changes to the active transportation network

The project improvements associated with the Build Alternative would complete portions of the city's planned bicycle and pedestrian network and improve access directly to the South Tacoma Station and to Pierce Transit Route 3, which serves the South Tacoma Station vicinity.

- S 58th Street and S 60th Street connections (Priority 1)

The improvements proposed within the S 58th Street and S 60th Street corridors would facilitate crossing South Tacoma Way (a principal arterial) and connect the station to neighborhoods to the east, the Water Flume Line Trail, Edison Elementary School, and Wapato Hills Park.

- S 56th Street bicycle pathway (Priority 1)

A bicycle and pedestrian travel way would be constructed between S Tyler Street and the station to provide the ability for bicyclists and pedestrians to travel to the west and avoid S 56th Street between the station and S Madison Street. This path would tie into improvements on S 60th Street connecting S Adams Street and the station.

- Station area improvements (Priority 1)

South Tacoma Station area improvements would enhance conditions for sight impaired, non-English-speaking, and disabled persons, as well support non-motorized access. These improvements include ADA-compliant curb ramps and tactile pavers at the station. ADA-compliant curb ramps would be retrofitted/upgraded at up to 35 sidewalk locations within 0.5 mile of the station that are not already defined within corridors in that area. Station area sidewalks would be constructed and improved within 0.5 mile of the station.

Key improvements for bicyclists and pedestrians include replacing and upgrading the at-grade crossing arms and signage at S 56th Street and S 60th Street.

- S Adams Street connections (Priority 1)

Sidewalk, bicycle facilities, and crossing improvements would be constructed on S Adams Street between S 56th Street and S 66th Street. These improvements would connect the station to several destinations and corridors, including bicycle lanes on S Tyler Street, transit on S 66th Street, the SERA Campus, and schools and residences to the west.

- S Pine Street bicycle lanes (Priority 1)

S Pine Street provides a north-south connection between the station area and the employment center near the Tacoma Mall area. This project improvement would construct bicycle lanes on S Pine Street from S Center Street to S 47th Street by removing through or turn lanes. These bicycle lanes would tie into the S Fife Street improvement described below, providing a complete north-south bicycle corridor from north of South Tacoma Way to S 74th Street.

The bicycle lanes would be located between the bus stops and the sidewalks. This would provide additional protection for bicyclists by reducing conflicts between the bicycle lane and bus movements.

- S Fife Street bicycle connections (Priority 1)

This improvement would include a bicycle boulevard on S Fife Street from S 48th Street to S 74th Street. At the north end, the corridor turns onto S 48th Street to S Oakes Street and on S Oakes Street between S 48th Street and S 47th Street, thus tying into the S Pine Street bicycle lanes.

The S Fife Street bicycle boulevard would include a pedestrian signal at S 56th Street and vehicle turn restrictions to safely support movement of bicyclists and pedestrians across the S 56th Street arterial. The corridor is also a candidate for traffic calming, such as installing speed humps.

This project improvement, in conjunction with the S Pine Street improvements, would create a north-south connection for South Tacoma Station users traveling to or from areas northeast and southeast of the station.

- Other bicycle connections (Priority 1)

This project improvement would construct bicycle lanes on S 37th Street/S Sprague Avenue from South Tacoma Way to S Steele Street and on S 35th Street between S Pine Street and S Sprague Avenue. These two improvements would provide a connection to the non-motorized crossing of I-5 at S 37th Street and tie into the improvements along S Pine Street and S Fife Street. The nearest I-5 crossings for bicycles and pedestrians are 0.5 mile to the north or south, and those crossings do not provide separation for bicyclists and pedestrians from vehicles.

- Other potential improvements (Priority 1)

To improve bicycle visibility and comfort, the project includes upgrading signals to include LPs and bicycle detection within 0.25 mile of the station at select locations.

A signal with LPs will turn on the walk signal for pedestrians for 3 to 7 seconds while holding vehicles at a red light, allowing pedestrians to enter the crosswalk and increasing their visibility before vehicles receive a green light.

Providing bicycle detection at signalized intersections has the following benefits:

- Bicyclists can remain in the bicycle or travel lane to trigger the signal rather than needing to mount the sidewalk and use the pedestrian call button.
- Bicyclists are more likely to comply with signal indications.

In addition, some bicycle detection systems can:

- Call exclusive bicycle phases only when actuated, minimizing unnecessary delay to other users.
- Detect an approaching bicyclist in advance of the intersection and extend phase timing the bicyclist arrives, in order to minimize bicyclist delay (similar to how vehicle detection or transit signal priority can work).
- Extend the minimum green and clearance intervals to allow a bicyclist to safely clear an intersection.
- Include a beacon to warn motorists that a bicycle is present.

- S Tyler Street bicycle lanes (Priority 2)

This project would add protection (including a horizontal buffer and vertical protection) to 2.75 miles of existing bicycle lanes, thus improving safety and comfort for bicyclists. S Tyler Street serves as a primary north-south route for bicycles adjacent to the station, to the north.

- S 60th Street east of S Puget Sound Avenue (Priority 2)

The area east of S Puget Sound Avenue and bounded by S 56th Street, S Wapato Street, and S 66th Street includes approximately 0.5 square mile of residences and includes Edison Elementary School, Wapato Hills Park, and the Water Flume Line Trail. This improvement would add sidewalks and bicycle boulevard treatments on S 60th Street between S Puget Sound Avenue and S Prospect Street, providing for a connection for this area to and from the South Tacoma Station.

- S Washington Street sidewalks (Priority 2)

The section of S Washington Street connecting the station to the north does not include sidewalks. This project improvement would construct sidewalks on the western side of the street between S 56th Street and S 58th Street, facilitating the movement of pedestrians between the station and the area north of the station.

- S 45th Street bicycle sharrows (Priority 2)

Sharrows would be added to S 45th Street between S Union Avenue and S Lawrence Street. The east end of the improvement would connect with the city's constructed shared use path on S 45th Street (which then ties into S Pine Street improvements). The west end would wrap around S Union Avenue to connect to the Water Flume Line Trail in the vicinity of the intersection of S 47th Street and South Tacoma Way. This project would tie existing and future improvements into the Water Flume Line Trail, thus allowing bicyclists another route to travel between the station and the area to the north.

- S 66th Street bicycle lanes (Priority 2)

The S 66th Street route is a key east-west bicycle corridor connecting residents to the west to major arterials to the east. This project improvement would add protected bicycle lanes from just west of S Orchard Street (at the city limits) to S Cheyenne Street. The City of Tacoma would construct the section from S Cheyenne Street to S Tyler Street as a part of the Safe Routes to School project, a funded project. From S Tyler Street to South Tacoma Way, protection (vertical and horizontal separation from the vehicle travel lanes) would be added to the existing bicycle lanes, improving comfort and safety for bicyclists.

5.4 Changes to transit services and facilities

The improvements associated with the Build Alternative would include localized changes in bus stop locations and amenities, as follows:

- S 58th Street and S 60th Street connections (Priority 1)

A pedestrian or full signal would be installed at the intersection of South Tacoma Way and S 60th Street, thus improving the crossing for both bicycles and pedestrians. With

these improvements, the existing northbound Pierce Transit Route 3 bus stop located at the intersection of South Tacoma Way and S 62nd Street would be moved to this location for a more direct transfer between the bus and the South Tacoma Station. The bus stop would include a bench and possibly a shelter, depending on ridership.

- Station area improvements (Priority 1)

Several improvements would occur at the South Tacoma Station to improve passenger safety, accessibility, and comfort. These improvements include an overhead shelter at the mini-high. Currently passengers that use the mini-high have the option to wait uncovered and exposed to the elements or wait at the other covered areas (nearest is 60 feet from the mini-high), requiring them to move quickly to the mini-high when the train arrives. Other improvements at the station include curb ramp retrofits, improved accessibility for sight impaired passengers, such as installing additional tactile pavers, and modifications of signage for non-English-speaking persons. These changes would improve the circulation throughout the station for persons with mobility devices. They would also improve access for non-English speakers.

- S Adams Street connections (Priority 1)

In conjunction with the sidewalk improvements to provide better access to and from the Route 53 bus stops (described in Section 5.3), this project improvement would add bus stop benches consistent with Pierce Transit standards. Benches are a basic amenity and are constructed at all bus stops.

- Bus and bus stop improvements (Priority 1)

This project improvement would add bus stop benches at locations other than the S Adams Street connections, consistent with Pierce Transit standards. Benches are a basic amenity and are constructed at all stops. For bus stops that have 10 riders or more per day, shelters are also provided. The westbound stop at the intersection of S 66th Street at S Adams Street does not currently have a shelter and is just under the 10 daily rider threshold; however, it may warrant a shelter in the future. Benches and shelters would improve rider comfort.

Transit signal priority may be installed along South Tacoma Way at S 56th Street, S 58th Street, and S 66th Street. The South Tacoma Way corridor was identified as a candidate for future transit signal priority; the corridor is being studied by Pierce Transit as a future bus rapid transit route. Installing transit signal priority would adjust signal timings to shift to a green phase in the northbound or southbound direction as a bus approaches. Installation of this transit signal priority would reduce delay for buses and could improve bus speed and reliability.

5.5 Changes to vehicle access/traffic operations

An operations analysis was performed to assess the impacts of a subset of improvements on vehicular traffic volumes, travel patterns, or operations. The improvements identified that would generate trips, affect travel patterns, or modify stop control are discussed below. Mitigation is not required for these potential impacts, because the study intersections would operate within the city-established LOS and v/c ratio thresholds. The project improvements also would not interfere with, affect, or be affected by the movement of agricultural and forest products on roads and streets in the area.

To support the movement of bicyclists and pedestrians across arterials, the project would include adding pedestrian- and bicycle-activated signals, rectangular rapid flashing beacons (RRFBs), or pedestrian hybrid beacons (PHBs). The City of Tacoma Right-of-Way Design Manual Chapter 7 (City of Tacoma 2018) was referenced in determining the traffic control treatment at these crossings. Three types of traffic controls were considered:

- RRFB
- PHB
- Full pedestrian-activated signal or vehicle signal

Of the traffic control treatments considered, an RRFB is the lowest level of treatment and is activated to alert vehicles that the crosswalk is in use. A PHB provides a greater level of traffic control by requiring all vehicles to stop, and then proceed if the crosswalk is clear, when a pedestrian or bicycle is in the vicinity of the crosswalk. A full pedestrian-activated signal or vehicle signal provides the greatest level of traffic control of the three types because vehicles are required to stop for the duration of time a pedestrian or bicycle is in the crosswalk (until the pedestrian or bicycle clears the roadway completely). The following paragraphs describe the operations of the three types of traffic control devices.

When a pedestrian or bicyclist is present, an RRFB flashes yellow lights and is a warning for vehicles to alert them of the presence of pedestrians or bicyclists who are about to enter or are in the crosswalk. The signal is activated by bicyclists or pedestrians with a push button. When pedestrians or bicyclists are present in the crosswalk, motorists must stop and yield. When the lights are not activated by pedestrians or bicyclists, they appear black to vehicles.

A PHB operates with a yellow/red/flashing red sequence. The signal is activated by bicyclists or pedestrians with a push button. A yellow light is then activated to alert vehicles that there is a bicycle or pedestrian about to enter the roadway. The next signal phase is a solid red light, which requires all vehicles to stop. After a period of solid red, the light switches to a flashing red. At that point, vehicles must stop and check for pedestrians or bicycles in the travel way, and then can continue. When not activated, the signal is not lit and appears black to vehicles. A PHB can be coordinated with adjacent signals, including, for the project, the signal at S 58th Street or S 56th Street.

The City of Tacoma Right-of-Way Design Manual Chapter 7 includes guidance on whether an intersection is a candidate for a marked crosswalk or additional treatment based on average daily traffic, roadway speed limit, and number of vehicle travel lanes. Table 5-4 summarizes this City of Tacoma guidance on crosswalk treatment.

Table 5-4 City of Tacoma guidance on crosswalk treatment

City of Tacoma Right-of-Way Design Manual, Table 7-1												
Roadway Traffic	Average Daily Traffic (2-way total)											
	<9,000			9,000 to 12,000			12,000 to 15,000			>15,000		
Speed limit (in miles per hour [MPH])	<30	35	40	<30	35	40	<30	35	40	<30	35	40
Number of lanes:												
Two	C	C	P	C	C	P	C	C	N	C	P	N
Three	C	C	P	C	P	P	P	P	N	P	N	N

City of Tacoma Right-of-Way Design Manual, Table 7-1												
Roadway Traffic	Average Daily Traffic (2-way total)											
	<9,000			9,000 to 12,000			12,000 to 15,000			>15,000		
Four or more (with raised median)	C	C	P	C	P	N	P	P	N	N	N	N
Four or more (without raised median)	C	P	N	P	P	N	N	N	N	N	N	N

Key

C = Candidate sites for marked crosswalks (assuming ADA and public rights-of-way guidelines (PROWAG) requirements are met).

P = Possible increase in pedestrian crash risk may occur if crosswalks are added without other pedestrian facility enhancements.

N = Needs more treatment beyond just marking the crosswalk because pedestrian crash risk may be increased by providing marked crosswalks alone.

5.5.1 S 58th Street and S 60th Street connections (Priority 1)

The S 58th Street and S 60th Street corridor improvements would cross arterial intersections at South Tacoma Way, S Puget Sound Avenue, and S Oakes Street. In accordance with City of Tacoma guidance, additional treatment beyond a crosswalk has been considered.

To determine the appropriate treatment at each intersection, the average daily traffic for the cross street, speed limit, and total number of lanes were compared to the City of Tacoma’s Right-of-Way Design Manual, Table 7-1 (see Table 5-4), and results are shown in Table 5-5.

Table 5-5 S 58th Street and S 60th Street connections crosswalk treatment

Location	Average Daily Traffic	Speed Limit (in MPH)	Total Lanes	Treatment (City of Tacoma Right-of-Way Design Manual, Table 7-1)
S Puget Sound Avenue/S 58th Street	4,430	25	2	C – Candidate for marked crosswalk
S Oakes Street/S 58th Street	9,145	30	2	C – Candidate for marked crosswalk
South Tacoma Way/S 60th Street	18,290	35	4	N – Needs more treatment beyond just a marked crosswalk
S Puget Sound Avenue/S 60th Street	4,430	25	2	C – Candidate for marked crosswalk

The City of Tacoma guidance indicates that the intersections of S Puget Sound Avenue/S 58th Street, S Oakes Street/S 58th Street, and S Puget Sound Avenue/S 60th Street are candidates for marked crosswalks. However, a higher level of treatment could be provided to improve the pedestrian and bicycle environment by installing an RRFB or a PHB at these locations.

However, the intersection of S 60th Street at South Tacoma Way far exceeds the thresholds shown in the city’s guidance. With the complexities of the east-west roadway offset at this intersection, it is recommended that a full vehicle signal be considered. The analysis assumes all legs of the intersection are controlled by the signal, and due to their offsets, the eastbound

and westbound movements operate on separate phases. Pedestrians and bicyclists would activate a separate pedestrian/bicycle-only phase.

Due to the proximity of the signal to the railroad crossing and to confirm that operations would not negatively impact the railroad crossing, traffic analyses were conducted for a vehicle signal (most conservative scenario regarding delays imposed on vehicles) for the South Tacoma Way/S 60th Street intersection (see Table 5-6). The a.m. peak hour and p.m. peak hour were analyzed to determine whether a queue could spill back to the nearby rail crossing. The analysis indicates that the intersection would operate within the City of Tacoma’s LOS and v/c ratio thresholds. The eastbound queue from a vehicle signal is not anticipated to extend back to the rail crossing. The northbound and southbound queues resulting from a vehicle signal are also not anticipated to extend back to S 58th Street or S 62nd Street.

As a result of further design, the following changes could occur that would result in less delay to vehicles:

- Instead of a full vehicle signal, install a pedestrian- and bicycle-activated signal. When no bicycle or pedestrian is present, the intersection would operate similar to existing conditions, with northbound and southbound operating with free-flow conditions, and eastbound and westbound having stop sign control.
- Operate the westbound-to-northbound movement as stop sign control only. With right-in/right-out restrictions, this operation would eliminate the westbound signal timing phase and reduce delay for other movements.

Table 5-6 Year 2030 No Build and Build intersection operations, South Tacoma Way/S 60th Street

Scenario	Intersection Control Type	Approach	LOS, Delay, V/C Ratio	Eastbound Queue (350 feet storage between South Tacoma Way and tracks)
A.M. Peak Hour				
No Build Alternative	TWSC	Northbound	Free-flow, no delay	Free-flow, no queue Free-flow, no queue 25 feet 25 feet
		Southbound	Free-flow, no delay	
		Eastbound	B, 13, 0.05	
		Westbound	B, 14, 0.05	
Build Alternative	Vehicle signal	Overall	A, 9, 0.26	95th percentile queue < 25 feet Queue contained in available storage and not forecasted to spill over onto tracks.
		Northbound	A, 9, 0.34	
		Southbound	A, 8, 0.21	
		Eastbound	C, 28, 0.01	
		Westbound	C, 28, 0.01	
P.M. Peak Hour				
No Build Alternative	TWSC	Northbound	Free-flow, no delay	Free-flow, no queue Free-flow, no queue 25 feet 25 feet
		Southbound	Free-flow, no delay	
		Eastbound	C, 21, 0.20	
		Westbound	C, 25, 0.08	

Scenario	Intersection Control Type	Approach	LOS, Delay, V/C Ratio	Eastbound Queue (350 feet storage between South Tacoma Way and tracks)
Build Alternative	Vehicle signal	Overall	B, 10, 0.33	95th percentile queue < 25 feet Queue contained in available storage and not forecasted to spill over onto tracks.
		Northbound	A, 9, 0.37	
		Southbound	A, 9, 0.42	
		Eastbound	C, 29, 0.03	
		Westbound	C, 31, 0.01	
Do the study intersections operate within the City of Tacoma’s thresholds (LOS E and v/c ratio of 0.99 or better)?			Yes	

Restricting the east legs of the intersections of South Tacoma Way and S Puget Sound Avenue with S 60th Street to right in/right out would result in other localized changes in travel patterns:

- Traffic heading westbound on S 60th Street would not be able to turn left onto S Puget Sound Avenue and South Tacoma Way, and likely would use the South Tacoma Way/ S 58th Street signal to head southbound on South Tacoma Way.
- Likewise, traffic heading southbound on South Tacoma Way or S Puget Sound Avenue would not be able to turn left onto S 60th Street and likely would turn left from southbound South Tacoma Way or S Puget Sound Avenue onto eastbound S 58th Street.
- The two right-in/right-out restrictions would affect left turn and through movements that carry less than 20 vehicles per hour each. Thus, the travel diversion would be insignificant and well within the daily variation.

5.5.2 S Adams Street connections (Priority 1)

Similar to the analysis described above, analysis was conducted for the intersection of S Adams Street at S 66th Street to determine the appropriate level of intersection control to implement at the pedestrian crossing (see Table 5-7).

Table 5-7 S Adams Street connections crosswalk treatment

Location	Average Daily Traffic	Speed Limit (in MPH)	Total Lanes	Treatment (City of Tacoma Right-of-Way Design Manual, Table 7-1)
S Adams Street/S 66th Street	9,375	30	2	C – Candidate for marked crosswalk

Based on the city guidance, the crossing is a candidate for a marked crosswalk. While the traffic volumes at this crossing are lower than the thresholds for additional treatments, it is appropriate to consider an RRFB or a PHB to address geometric and operating conditions. These conditions include the presence of bicycle lanes and transit, and to the east, the eastbound and westbound travel lanes diverge or separate to clear bridge supports.

5.5.3 S Pine Street bicycle lanes (Priority 1)

The Build Alternative improvements would include providing protected bicycle lanes along S Pine Street from Center Street to S 47th Street. To accommodate the width to build these lanes, one northbound and one southbound through lane would be removed along this segment.

Based on the analysis conducted at the seven signalized intersections in this segment, it is expected that all study intersections would operate within the City of Tacoma’s traffic operations standards. Table 5-8 shows the forecasted traffic operations at the seven signalized intersections for the Build Alternative and the No Build alternative conditions in 2030.

The analysis assumed optimized signal timing splits at the intersection of S Pine Street and Center Street under the Build Alternative, which increased the green time for the northbound left-turn, southbound left-turn, and westbound left-turn movements and decreased the green time for the northbound through, southbound through, and westbound through movements, but maintained the same 140-second cycle length as the No Build Alternative.

Table 5-8 Year 2030 No Build and Build intersection operations with S Pine Street protected bicycle lanes

Intersection	Intersection Control Type	Capacity Change with Build Alternative	P.M. Peak Hour LOS, Delay ¹ , V/C ² Ratio	
			No Build Alternative	Build Alternative
S Pine Street/Center Street	Signal	Remove northbound and southbound through lane; add southbound right-turn pocket	D, 39, 0.81	E, 60, 0.99
S Pine Street/South Tacoma Way	Signal	Remove northbound and southbound through lane	C, 24, 0.50	C, 28, 0.73
S Pine Street/S 35th Street	Signal	Remove northbound and southbound through lane	B, 16, 0.39	B, 20, 0.63
S Pine Street/S 36th Street	Signal	Remove northbound and southbound through lane	A, 6, 0.38	A, 8, 0.66
S Pine Street/S 38th Street	Signal	Remove northbound and southbound through lane; add northbound right-turn pocket	E, 67, 0.76	E, 71, 0.90
S Pine Street/S 45th Street	Signal	Remove northbound and southbound through lane; add northbound right-turn pocket	B, 16, 0.46	B, 17, 0.61
S Oakes Street/S 47th Street	Signal	Remove northbound through lane	D, 44, 0.62	D, 44, 0.62
Do the study intersections operate within the City of Tacoma’s thresholds (LOS E and v/c ratio of 0.99 or better)?			Yes	Yes

Notes:

¹ Delay is reported in seconds per vehicle.

² V/C Ratio = volume-to-capacity ratio.

Based on the city guidance, the crossing is a candidate for additional treatment beyond a marked crosswalk (see Table 5-9). For this location, an RRFB or a PHB is recommended due to the width of the roadway and complexities with the multiple modes using this corridor (transit, bicycle lanes, and vehicles).

Table 5-9 S Pine Street crosswalk treatment

Location	Average Daily Traffic	Speed Limit (in MPH)	Total Lanes	Treatment (City of Tacoma Right-of-Way Design Manual, Table 7-1)
S Pine Street/S 42nd Street	17,655	30	4	N – Needs more treatment beyond just a marked crosswalk

5.5.4 S Fife Street bicycle boulevard (Priority 1)

The project would include a bicycle boulevard on S Fife Street, which crosses S 56th Street (a principal arterial). To improve the condition of this movement for both bicyclists and pedestrians, a PHB would be installed, and left turns between S 56th Street and S Fife Street would be removed (less than 50 vehicles per hour). These turns can be accommodated at the signal at S 56th Street and S Oakes Street (adds less than 2% to the total entering traffic, which is well within the daily variation).

Analysis for the intersection of S 56th Street at S Fife Street was conducted to determine the appropriate level of intersection control to implement for pedestrian and bicycle crossing. Based on the city guidance, the crossing is a candidate for additional treatment beyond a marked crosswalk (see Table 5-10). For this location, a PHB is recommended due to the high volume of traffic on S 56th Street and the roadway width. The city’s guidance (see Table 5-4 above) calls for the top category of treatment for an average daily traffic volume of greater than 15,000. S 56th Street carries nearly twice that volume of traffic.

Table 5-10 S Fife Street bicycle boulevard crosswalk treatment

Location	Average Daily Traffic	Speed Limit (in MPH)	Total Lanes	Treatment (City of Tacoma Right-of-Way Design Manual, Table 7-1)
S Fife Street/S 56th Street	27,075	30	4	N – Needs more treatment beyond just a marked crosswalk

5.5.5 Bus and bus stop improvements (Priority 1)

Pierce Transit is studying the South Tacoma Way corridor as a future bus rapid transit route. To improve speed and reliability for transit, this corridor was identified as a possible location for transit signal priority. Transit signal priority adjusts the phasing within a signal cycle to benefit transit. This adjustment allocates green time to the bus movement as a bus arrives and results in less green time for other movements.

The net result, if the transit signal priority is timed properly, is less delay for the average person traveling through the intersection because buses typically carry more persons than a regular passenger car. A variety of signal timing scenarios could be implemented as part of transit signal priority, and typically signal timing is balanced such that the city's operational thresholds for the overall intersection are still met while providing speed and reliability improvements to transit.

5.5.6 Other potential improvements (Priority 1)

The Build Alternative improvements include upgrades to signals, such as LPIs within 0.25 mile of the station at select locations. These signal upgrades could also include accessible pedestrian signal upgrades and no right turn on red to minimize pedestrian and vehicle conflicts.

A signal with LPIs illuminates the walk signal for pedestrians for 3 to 7 seconds while holding vehicles at a red light, allowing pedestrians to enter the crosswalk and increasing their visibility before vehicles receive a green light. At a signal without LPIs, on the other hand, the signal light turns green at the same time as the walk sign is illuminated. The effect of LPIs is that there is "lost green time" for vehicles compared to a signal without LPIs.

For intersections that operate well within the City of Tacoma's thresholds, implementing LPIs likely would not result in significant changes in vehicle delays. At intersections where the operations are nearing the city's thresholds (LOS E and v/c ratio approaching 0.99), other treatments or further adjustments to signal timings may be required to balance the vehicle delays and pedestrian safety. These intersections include:

- S Pine Street/S Center Street would operate with a LOS E and v/c ratio of 0.99 with the S Pine Street protected bicycle lanes that are part of the Build Alternative. The signal cycle length would be 140 seconds. LPIs on all four crosswalks would reduce the green time for vehicles by 5% to 12% when pedestrians are present.
- S Pine Street/S 38th Street would operate with a LOS E and v/c of 0.90 with the S Pine Street protected bicycle lanes that are part of the Build Alternative. The signal cycle length would be 210 seconds. LPIs on all four crosswalks would reduce the green time for vehicles during any cycle by 3% to 7% when pedestrians are present.

5.5.7 S Tyler Street bicycle lanes (Priority 2)

The Build Alternative improvements would include upgrading the existing bicycle lanes along S Tyler Street to protected bicycle facilities from S 74th Street to S Wright Avenue. To implement the protected bicycle facilities, the center turn lane and southbound through lanes would be removed at certain locations in this segment. The existing center pedestrian islands would be maintained.

Based on the analysis conducted at the two signalized intersections in this segment, it is expected that the study intersections would operate similar to the No Build Alternative, and all study intersections would operate within the City of Tacoma's traffic operations standards (see Table 5-11).

Table 5-11 Year 2030 No Build and Build intersection operations with S Tyler Street protected bicycle lanes

Intersection	Intersection Control Type	Project Change	P.M. Peak Hour LOS, Delay ¹ , V/C Ratio ²	
			No Build Alternative	Build Alternative
S Tyler Street/S 56th Street	Signal	Remove one southbound through lane; add southbound right-turn pocket	D, 44, 0.54	D, 52, 0.80
S Tyler Street/S 74th Street	Signal	Remove southbound left-turn lane	C, 34, 0.49	D, 36, 0.60
Do the study intersections operate within the City of Tacoma's thresholds (LOS E and v/c ratio of 0.99 or better)?			Yes	Yes

Notes:

¹ Delay is reported in seconds per vehicle.

² V/C Ratio = volume-to-capacity ratio.

5.5.8 Surface lot at SERA Campus

The Build Alternative improvements would include expanding the existing SERA parking lot, located west of the South Tacoma Station, by an additional 60 parking stalls. Parking demand and the associated project trips for the surface parking lot were estimated using methodologies established in the Institute of Transportation Engineers (ITE) Parking Generation Manual, 5th edition (ITE 2019). The ITE Parking Generation Manual also provides guidance on the time-of-day distribution for parking demand. Based on the additional 60 parking stalls and the most applicable or related ITE code for the land use (LU) (LU code #090 – Park-and-Ride Lot with Bus or Light Rail), it is estimated that 38 additional stalls would be occupied daily during peak traffic hours. About 19 additional trips, or about 50% of the parking trips, would enter the surface parking lot during the a.m. peak hour, and about 11 additional trips, or about 28% of the parking trips, would leave the surface parking lot during the p.m. peak hour with the Build Alternative. This increase in trips is within the daily variation and is considered nominal.

For the Build Alternative analysis, the 19 generated a.m. peak hour trips and the 11 generated p.m. peak hour trips were distributed throughout the study intersections based on the intersection turning movement counts. Table 5-12 compares the study intersection LOS, delay, and v/c ratio for the No Build Alternative to those for the Build Alternative for the study intersections in the vicinity of the surface lot at the SERA Campus.

Based on the forecasted trips generated, it is expected that the study intersections with the Build Alternative would operate similar to the No Build Alternative, and all study intersections would meet the City of Tacoma's traffic operations standards.

Table 5-12 Year 2030 No Build and Build intersection operations with surface lot at SERA Campus

Intersection	Intersection Control Type	Approach	LOS, Delay, V/C Ratio		Added Trips with Build Alternative
			No Build Alternative	Build Alternative	
A.M. Peak Hour					
S Adams Street/S 60th Street	TWSC	Northbound	Free-flow, no delay	Free-flow, no delay	+ 19 vehicles per hour, or about 9% of total vehicles entering intersection
		Southbound	Free-flow, no delay	Free-flow, no delay	
		Eastbound	A, 9, 0.00	A, 9, 0.01	
		Westbound	B, 10, 0.02	B, 10, 0.04	
South Tacoma Way/S 60th Street	TWSC	Northbound	Free-flow, no delay	Free-flow, no delay	+ 8 vehicles per hour, or <1% of total vehicles entering intersection
		Southbound	Free-flow, no delay	Free-flow, no delay	
		Eastbound	B, 13, 0.05	B, 13, 0.05	
		Westbound	B, 14, 0.05	B, 14, 0.05	
P.M. Peak Hour					
South Tacoma Way/S 56th Street	Signal	Overall	D, 44, 0.54	D, 44, 0.54	+ <5 vehicles per hour, or <1% of total vehicles entering intersection
S Adams Street/S 60th Street	TWSC	Northbound	Free-flow, no delay	Free-flow, no delay	+ 11 vehicles per hour, or about 4% total vehicles entering intersection
		Southbound	Free-flow, no delay	Free-flow, no delay	
		Eastbound	A, 9, 0.01	B, 10, 0.02	
		Westbound	B, 10, 0.06	B, 10, 0.06	
South Tacoma Way/S 60th Street	TWSC	Northbound	Free-flow, no delay	Free-flow, no delay	+ <5 vehicles per hour, or <1% of entering vehicles
		Southbound	Free-flow, no delay	Free-flow, no delay	
		Eastbound	C, 21, 0.20	C, 18, 0.17	
		Westbound	C, 25, 0.08	C, 22, 0.06	
S Adams Street/S 66th Street	TWSC	Northbound	C, 16, 0.11	C, 16, 0.04	+ 6 vehicles per hour, or <1% of entering vehicles
		Southbound	C, 16, 0.36	C, 17, 0.37	
		Eastbound	Free-flow, no delay	Free-flow, no delay	
		Westbound	Free-flow, no delay	Free-flow, no delay	
Do the study intersections operate within the City of Tacoma's thresholds (LOS E and v/c ratio of 0.99 or better)?			Yes	Yes	

5.5.9 S 66th Street bicycle lanes (Priority 2)

To accommodate protected bicycle lanes on S 66th Street, the Build Alternative includes removing the westbound left-turn lane at South Tacoma Way/S 66th Street. The existing traffic volume on this movement is less than 50 vehicles per hour. With this project improvement, the vehicles making a westbound left turn would be combined in the through lane, resulting in a shared westbound left-turn through lane (similar to the eastbound approach). The traffic operations of the intersection with the combined low volume westbound left-turn lane traffic and the through lane would be similar to those of the No Build Alternative (see Table 5-13).

Table 5-13 Year 2030 No Build and Build intersection operations S 66th Street bicycle lanes

Intersection	Intersection Control Type	Approach	P.M. Peak Hour LOS, Delay, V/C Ratio	
			No Build Alternative	Build Alternative
South Tacoma Way/S 66th Street	Signal	Overall	B, 12, 0.57	B, 14, 0.57
Do the study intersections operate within the City of Tacoma’s thresholds (LOS E and v/c ratio of 0.99 or better)?			Yes	Yes

5.6 Changes to parking

The following describes the changes in off-street parking (with the SERA Campus shared parking lot project improvements) and designated on-street parking to accommodate bicycle or pedestrian improvements. No impacts to private parking would occur with the project improvements.

5.6.1 SERA Campus Shared Parking Lot (Priority 2)

This project improvement would provide additional parking at the SERA Campus parking lot located west of the station in the vicinity of the existing South Tacoma Station surface lot. Table 5-14 lists the existing capacity of the South Tacoma Station surface lot, utilization in 2019 and 2023, and the future potential capacity with the additional surface lot.

In 2019, the station was near capacity for some periods. However, beginning in spring of 2020, travel patterns changed significantly due to the Covid-19 pandemic. This affected the demand for parking in some areas. In May 2023, parking utilization at the South Tacoma station during a Tuesday through Thursday data collection period ranged from 13% to 21%. The existing vehicle parking at the South Tacoma Station is not fully utilized. Additionally, there is currently no indication that Sounder riders are overflow parking along City of Tacoma streets in neighborhoods adjacent to the South Tacoma Station.

Table 5-14 Existing and Build Alternative parking capacity at the South Tacoma Station

Project	Capacity	Utilization
Existing South Tacoma Station surface lot	220 stalls	85% – 97% in 2019 13% – 21% in 2023
Future Build Alternative surface lot (SERA Campus Shared Parking Lot)	Up to 60 stalls	Not applicable

5.6.2 Other changes to on-street parking within city ROW

Several of the corridors within the study area currently include designated or legal paved on-street parking. To add bicycle lanes or provide protection to existing bicycle lanes with the Build Alternative, some parking would be removed on the following corridors. These changes are consistent with the City of Tacoma’s use of the public ROW and do not require mitigation.

- S 58th Street between S Washington Street and South Tacoma Way.
- S Puget Sound Avenue southbound approaching S 56th Street.
- S 60th Street between S Washington Street and South Tacoma Way.
- S Adams Street between S 66th Street to the southern SERA Campus parking lot.
- S Tyler Street (east side of roadway) between S 74th Street and S 64th Street.
- S 66th Street between S Orchard Street and S Cheyenne Street.

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