MEMORANDUM

To: Florendo Cabudol, City Engineer
From: Brenton Cook, Engineering Manager
Date: 12/27/2023
Re: City Works Request 7027
Neighborhood Safety Program – Phase I Traffic Calming Study

Summary of Issue:

On October 3, 2022, the City received a traffic calming petition from a resident who resides on South 148th Street between 24th Avenue South and Military Road South. The petition specifically requested speed humps to be installed by the City to reduce excessive speeding along South 148th Street.

Field Observations:

Since speed humps are considered a Phase II traffic calming measure, City engineering staff reviewed this segment of roadway to assess functionality of existing Phase I traffic calming devices. Phase I devices include speed limit signage, pavement markings, and/or speed feedback signage using radar.

After making a site visit in November 2022, engineering staff noted that speed limit placards were deficient. Accordingly, new 25 mile-per-hour (mph) speed limit placards were installed for both eastbound and westbound directions. Just prior to installing these placards, staff collected traffic volume and speed data for a seven (7) day period in both the eastbound and westbound directions to assess the extent of the speeding issue. A map is attached to this memo showing the locations of the new speed placard installations and where tubes counters were installed to collect traffic data.

Upon review of the traffic data, it was noted that this roadway services an average daily traffic (ADT) volume of 690 vehicles per day. It was also noted that 27 percent of overall traffic exceeded the 25 mph posted speed limit by 10 mph or more. The data corroborated that speeding along South 148th Street is currently an issue.

In early August 2023, engineering staff proceeded to install digital flashing speed signs where new speed limit placards and posts had been installed. The digital flashing speed signage utilized radar sensors to flash real-time vehicle speeds to drivers with the intent of changing driver behavior. To assess the effectiveness of the digital speed feedback signs, engineering staff again collected traffic volume and speed data for a 7 day period in both the eastbound and westbound directions while the speed feedback signs were operational.

Upon review of this recent traffic data, it was noted that ADT had increased slightly to 784 vehicles per day. It was also noted that 21 percent of overall traffic now exceeded the 25 mph posted speed limit by 10 mph or more.

Engineering Recommendations:

The 7 day traffic data collected in November 2022 and August 2023 are attached to this memo. The primary takeaway from this data is that the digital speed feedback signage was effective at reducing

overall vehicle speeds along South 148th Street. Specifically, speeds exceeding the posted speed limit in excess of 10 mph were reduced from 27 percent to 21 percent – a 6 percent decrease. This is generally consistent with observations in other published studies on flashing speed signs. However, even with this observable traffic calming effect, the quantity of vehicles exceeding the posted speed limit by 10 mph or more is still considered problematic. Per the City's Neighborhood Safety Program, if traffic volumes exceeding the posted speed limit by 10 mph of more is measured to meet or exceed 15 percent, a Phase II traffic calming study would be appropriate.

Since a Phase II traffic calming petition requesting speed humps had already been filed, engineering staff conducted a Phase II traffic calming study for South 148th Street between 24th Avenue South and Military Road South. The results of this study are attached to this memo. It is staff's opinion that speed humps would be an appropriate and effective Phase II traffic calming measure on South 148th Street. Pros and cons of speed humps are as follows:

Pros:

- Compared to chicanes, traffic circles, and curb extensions, speed humps are relatively cost effective and quick to install.
- Speed humps are known to be the most effective measure to reduce vehicle speeds.
- School buses can more easily negotiate speed humps compared to alternative Phase II measures.
- Speed humps can be installed across full roadway width to prevent vehicles from driving along shoulder to avoid.
- Roadway drainage will not be affected by the speed hump installations.

Cons:

- Response times for emergency vehicles will be slightly increased.
- Speed humps will make snow plow operations more difficult. Accordingly, it will take City maintenance staff longer to plow this street after a major snowfall event.
- Residences near speed hump installations will experience repetitive noise resulting from traversing vehicles.
- Not aesthetically attractive.

Staff has developed conceptual plans for paved speed hump installations on South 148th Street which can also be found attached to this memo. At total of three (3) speed humps are proposed that are spaced approximately 900 feet on-center. Speed humps would be accompanied by signage conforming to Manual on Uniform Traffic Control Devices (MUTCD) guidelines.

Next Steps:

In order to implement the paved speed humps per the attached conceptual plans, the following needs to happen first:

1) Present Phase I and Phase II traffic study data and conceptual traffic calming measures to resident who filed original petition per City Works Request 7027.
2) Receive feedback from Fire Department and Maintenance Department on conceptual plans.
3) If feedback in steps 1 and 2 is supportive of proposed speed hump improvements, at least 60 percent of residents that are directly impacted by the proposed measures will need to sign the petition authorizing the City to implement. Staff recommends developing flyers with a link to a City webpage to educate residents on the proposed measures and the inherent benefits and negatives.

4) Once the threshold amount of signatures are obtained on the petition, City staff will proceed with either initiating a work order with King County Roads or advertising this work via the small works rosters to have these improvements constructed.

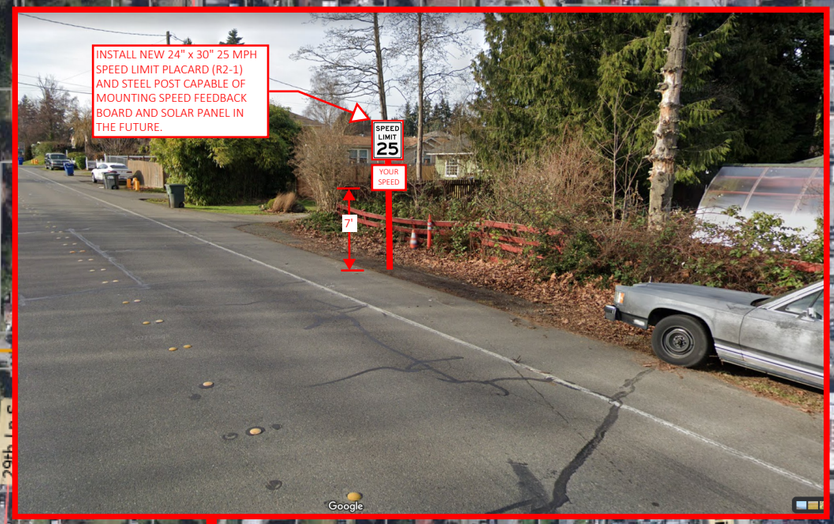
Attachments:

- Phase I Traffic Calming Study
- Phase II Traffic Calming Study

PHASE I TRAFFIC CALMING STUDY

Vicinity Map

City of SeaTac, Washington



This dataset has been prepared and distributed by the City of SeaTac, Washington, based on data products collected by GeoTerra. | This

Legend

Map Description

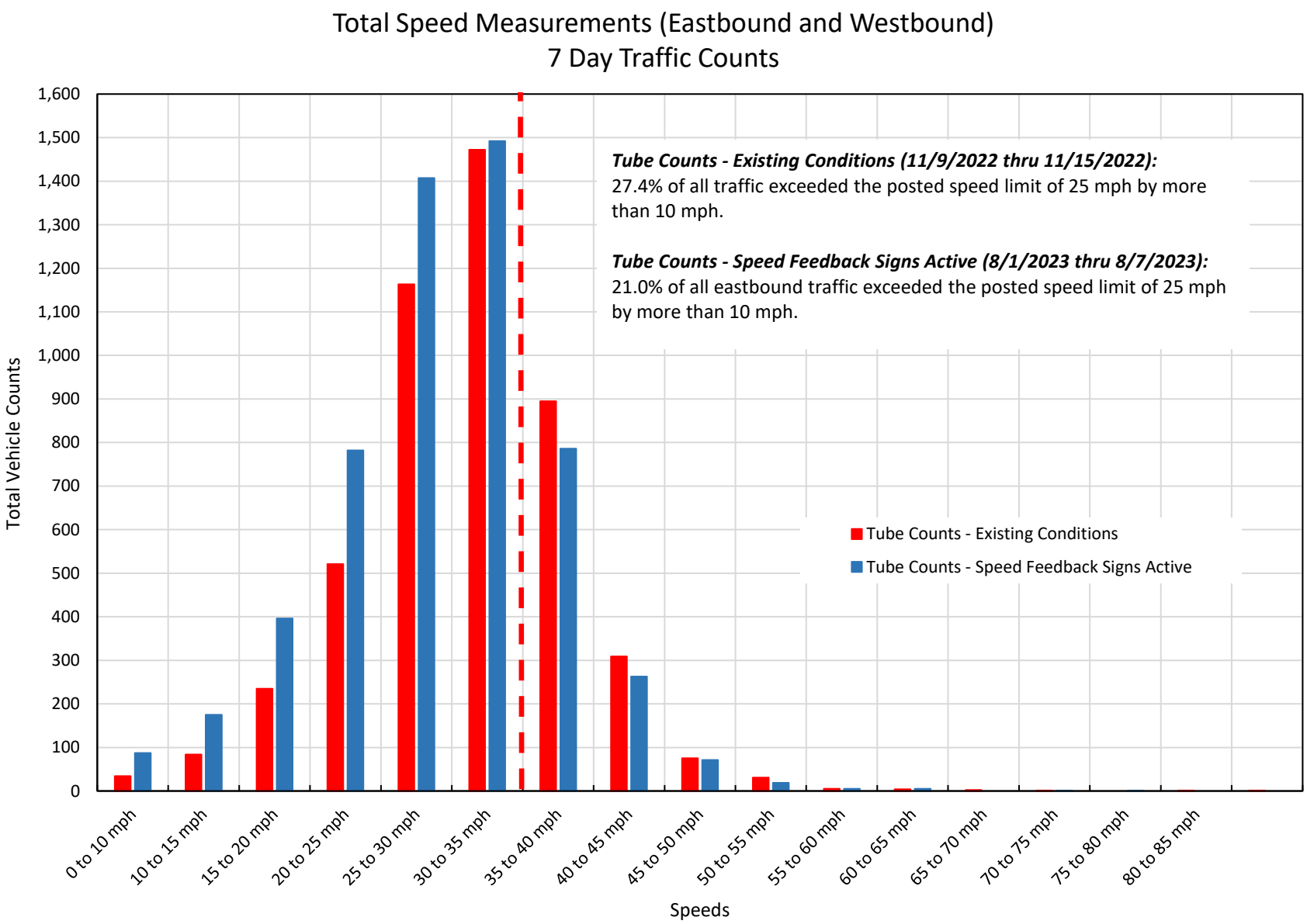
There is no description provided for this map.

UNOFFICIAL

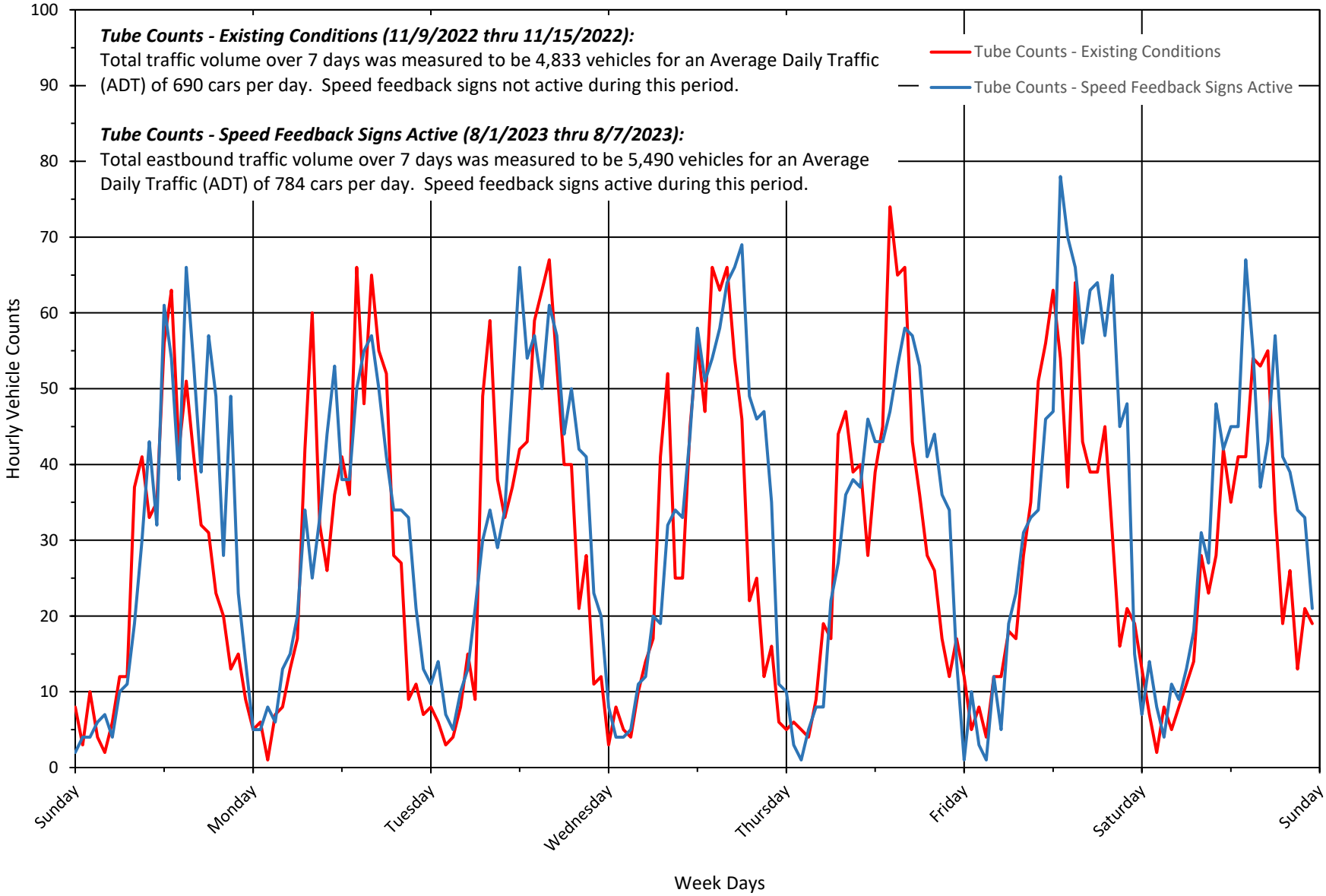
Map Author: Unknown

Map Generated: Friday, October 7, 2022

This document has been designed for use at 11 x 17 (Landscape) and is not intended for use at another size.


Total Speed Measurements (Eastbound and Westbound)
7 Day Traffic Counts
Total Vehicle Counts
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
Tube Counts - Existing Conditions (11/9/2022 thru 11/15/2022):
27.4% of all traffic exceeded the posted speed limit of 25 mph by more than 10 mph.
Tube Counts - Speed Feedback Signs Active (8/1/2023 thru 8/7/2023):
21.0% of all eastbound traffic exceeded the posted speed limit of 25 mph by more than 10 mph.
Tube Counts - Existing Conditions
Tube Counts - Speed Feedback Signs Active
0 to 10 mph
10 to 15 mph
15 to 20 mph
20 to 25 mph
25 to 30 mph
30 to 35 mph
35 to 40 mph
40 to 45 mph
45 to 50 mph
50 to 55 mph
55 to 60 mph
60 to 65 mph
65 to 70 mph
70 to 75 mph
75 to 80 mph
80 to 85 mph
Speeds

Total Traffic Volume Measurements (Eastbound and Westbound)
7 Day Counts



PHASE II TRAFFIC CALMING STUDY

CITY OF SEATAC
DEPARTMENT OF PUBLIC WORKS
4800 SOUTH 188TH STREET
SEATAC, WA 98188-8605

NEIGHBORHOOD TRAFFIC SAFETY PROGRAM
PHASE II TRAFFIC CALMING MEASURES
ENGINEERING STUDY

MINIMUM CRITERIA TO INVOKE PHASE II IMPROVEMENTS

		Criteria Met? Yes	No
What is the measured Average Daily Traffic (ADT)? Must meet or exceed 200 vehicles daily.	690	X	
Percent of vehicles measured to exceed the posted speed limit by at least 10 miles per hour? Must meet or exceed 15%.	27.4%	X	
Percent of residents residing on subject roadway between specified cross streets and within one block where traffic calming device is proposed have signed petition? Must meet or exceed 60%.	16.0%		X
Is the subject roadway classified as 'Local'? Phase II traffic calming devices are not permitted on arterial roadways per the SeaTac Comprehensive Transportation Plan.	Yes	X	
What is the steepest roadway grade? Phase II traffic calming devices are not permitted on roadway grades exceeding 10%.	10.0%	X	

Have all minimum criteria been met to warrant proceeding with Phase II traffic calming measures?

No. As of the date of this study, not all minimum criteria have been met. Phase II improvements may not proceed.

OTHER ENGINEERING CONSIDERATIONS

Is road considered a principal emergency access thoroughfare for police, fire department, and other emergency responders?	No	
Does Metro have a route on this road?	No	
Is this road utilized by any school bus routes?	Yes	Phase II devices not advised on school bus routes. If necessary, buses must be able to negotiate the devices.
Does the roadway have curbs and gutters?	Other	Where unimproved shoulders exist, drivers may utilize roadway shoulder to avoid devices.
Does existing roadway have more than one lane in each direction?	No	
Will existing roadway drainage be affected by ptotential Phase II calming measures?	Maybe	Design of Phase II devices to ensure adequate drainage and avoid ponding of surface water.
What is the current Pavement Condition Index (PCI) for this roadway?	56	If PCI is lower than 70, the roadway is eligible for an asphalt overlay. Can improvements be integrated into an upcoming overlay project?
Per the Transportation Master Plan (TMP), is this roadway mapped for bicycle facilities?	No	
Could Phase II traffic calming devices on this roadway displace traffic to another neighborhood?	Maybe	Phase II devices shall not displace traffic volumes from one neighborhood to another.
Could Phase II traffic calming devices inhibit snow plow operations?	Maybe	Residents to be notified if calming devices will prevent snow plowing on subject street.

Other engineering comments:

The majority of the south side of the roadway has sidewalk and curbing in some form. The north side of the road can generally be described as having unimproved shoulder. The eastbound lane is quite wide, 19 feet, to accommodate street parking and is likely contributing to speeding. The easternmost 300 feet of roadway has a maximum grade of 10%, but the majority of this roadway is relatively flat.

8/10/2023

LEGEND:

NEW PAVED SPEED HUMP

NEW SIGN

10 0 10 20 FT

SCALE: 1"=10'

N

CHANNELIZATION NOTES:

1. REFER TO SPEED HUMP DETAIL ON SHEET CH5.
2. REFER TO RAISED CROSSWALK DETAIL ON SHEET CH6.

REV.	DATE	DRWN	CHKD	DESCRIPTION

DRAFT

NOT FOR CONSTRUCTION

DESIGNED BY:	B. COOK
DRAWN BY:	B. COOK
CHECKED BY:	F. CABUDOL
DATE:	9/18/2023
SEATAC CIP NO.:	N/A

Public Works Department

William Appleton, PE, Public Works Director
Florendo Cabudol, PE, City Engineer

4800 South 188th Street, SeaTac, WA 98188-8605
Telephone: (206) 973-4720, Engineering Division

SOUTH 148TH STREET
PHASE II TRAFFIC CALMING PETITION

PHASE II TRAFFIC CALMING
SITE PLAN (1 OF 4)

REV: 00

SHEET NO.:

CH1

1 OF 4

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LEGEND:

NEW PAVED SPEED HUMP

NEW SIGN

10 0 10 20 FT
SCALE: 1"=10'

N

CHANNELIZATION NOTES:

1. REFER TO SPEED HUMP DETAIL ON SHEET CH5.
2. REFER TO RAISED CROSSWALK DETAIL ON SHEET CH6.

REV.	DATE	DRWN	CHKD	DESCRIPTION

DRAFT

DESIGNED BY: B. COOK
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DATE: ??
SEATAC CIP NO.: N/A

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SOUTH 148TH STREET
PHASE II TRAFFIC CALMING PETITION

TRAFFIC CALMING
SITE PLAN (2 OF 4)

REV: 00

SHEET NO.:
CH2
2 OF 4

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LEGEND:

NEW PAVED SPEED HUMP

NEW SIGN

10 0 10 20 FT

SCALE: 1"=10'

N

CHANNELIZATION NOTES:

1. REFER TO SPEED HUMP DETAIL ON SHEET CH5.
2. REFER TO RAISED CROSSWALK DETAIL ON SHEET CH6.

REV.	DATE	DRWN	CHKD	DESCRIPTION

DRAFT

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SOUTH 148TH STREET
PHASE II TRAFFIC CALMING PETITION

TRAFFIC CALMING
SITE PLAN (3 OF 4)

REV: ----

SHEET NO.:

CH3

3 OF 4

LEGEND:

NEW PAVED SPEED HUMP

NEW SIGN

10 0 10 20 FT

SCALE: 1"=10'

N

CHANNELIZATION NOTES:

1. REFER TO SPEED HUMP DETAIL ON SHEET CH5.
2. REFER TO RAISED CROSSWALK DETAIL ON SHEET CH6.

REV.	DATE	DRWN	CHKD	DESCRIPTION

DRAFT

DESIGNED BY:	B. COOK
DRAWN BY:	B. COOK
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DATE:	11/22/2022
SEATAC CIP NO.:	N/A

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SOUTH 148TH STREET
PHASE II TRAFFIC CALMING PETITION

TRAFFIC CALMING
SITE PLAN (4 OF 4)

REV: ----

SHEET NO.:

CH4

4 OF 4

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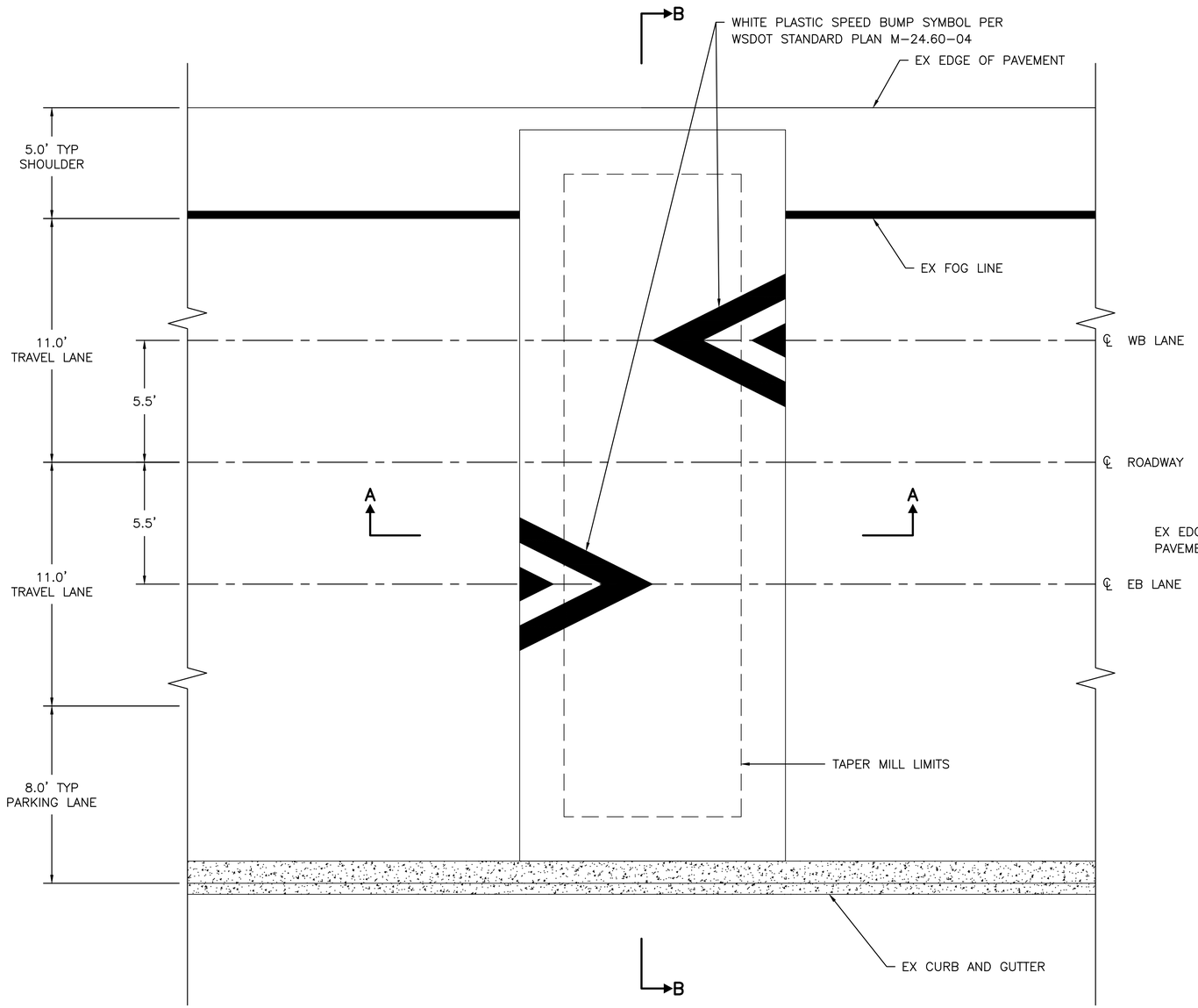

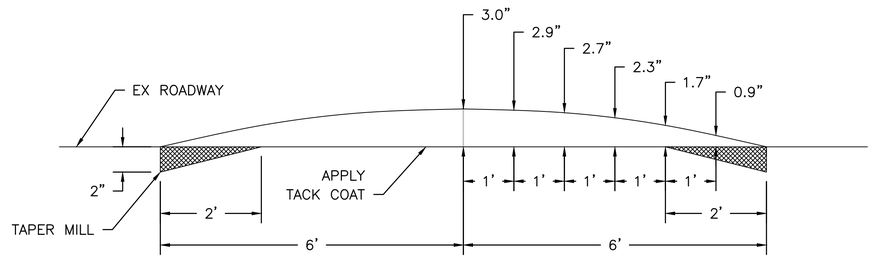

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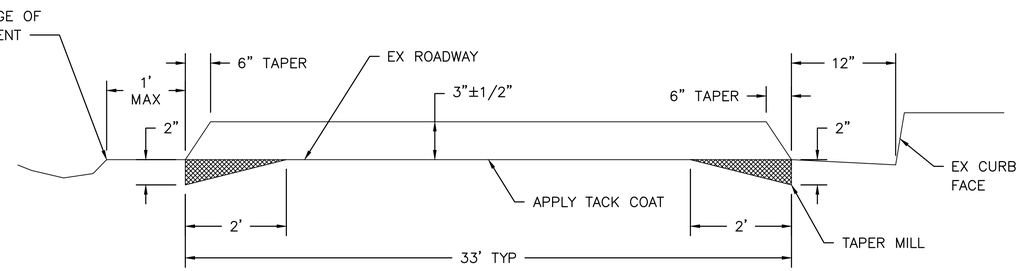

SECTION B–B
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REV.	DATE	DRWN	CHKD	DESCRIPTION

DRAFT

DESIGNED BY:	B. COOK
DRAWN BY:	B. COOK
CHECKED BY:	F. CABUDOL
DATE:	11/22/2022
SEATAC CIP NO.:	N/A

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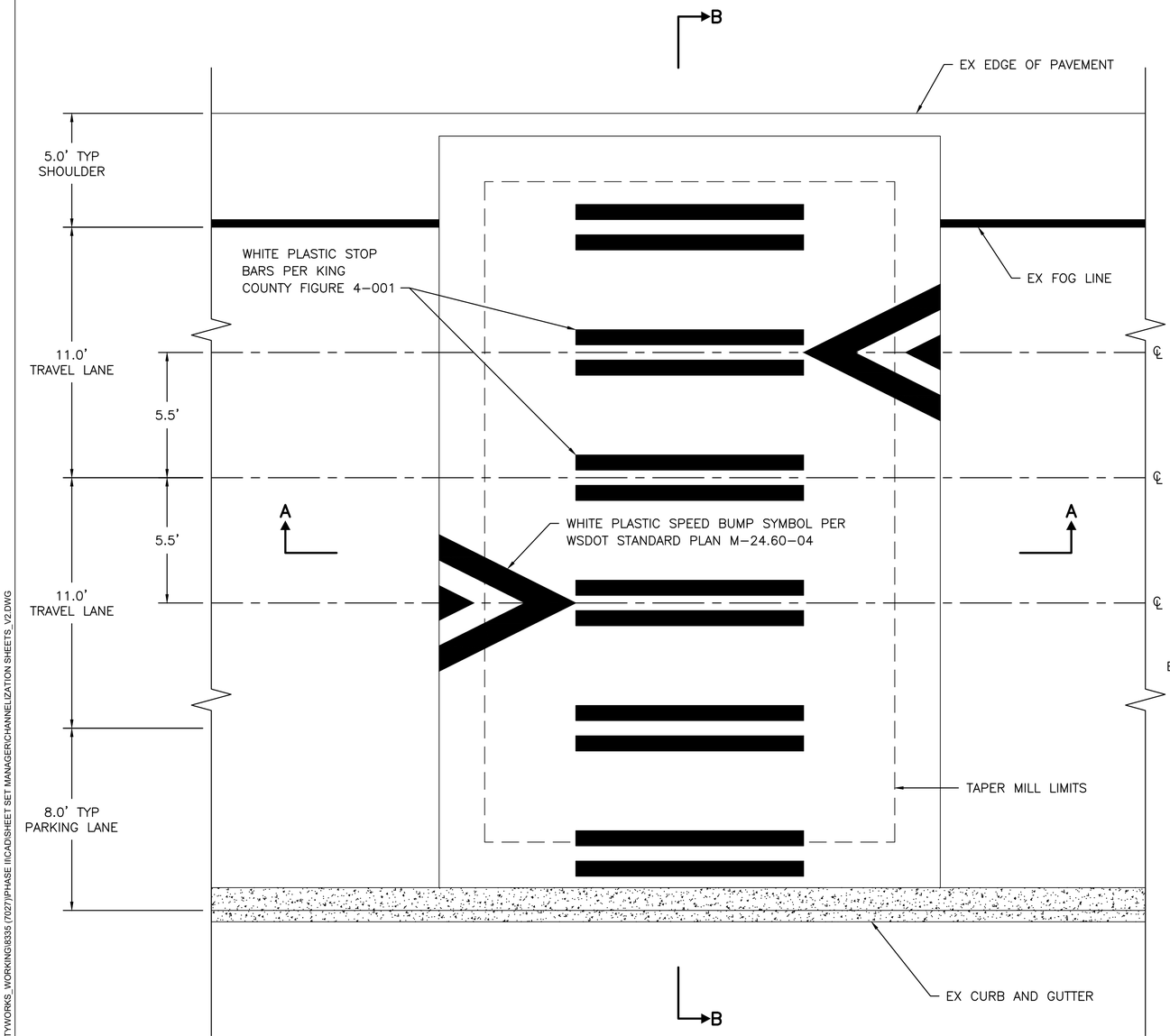
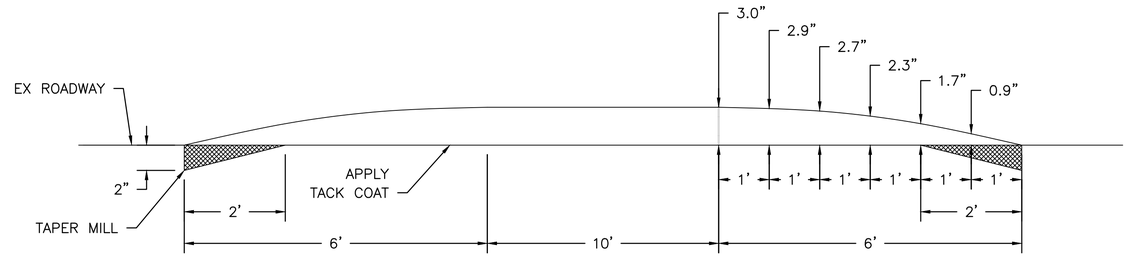
SOUTH 148TH STREET
PHASE II TRAFFIC CALMING PETITION

SPEED HUMP DETAIL

REV: ----

SHEET NO.:
CH6
5 OF 6





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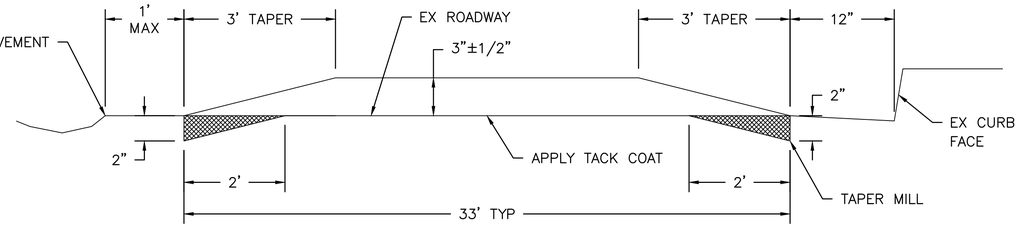

SECTION B–B
SCALE: NTS

REV.	DATE	DRWN	CHKD	DESCRIPTION

DRAFT

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SOUTH 148TH STREET
PHASE II TRAFFIC CALMING PETITION

RAISED CROSSWALK DETAIL

REV: ----

SHEET NO.:
CH6
6 OF 6