Washington State Department of Transportation
Paula J. Hammond, P.E.
Secretary of Transportation

Transportation Building
310 Maple Park Avenue S.E.
P.O. Box 47300
Olympia, WA 98504-7300

360-705-7000
TTY: 1-800-833-6388
www.wsdot.wa.gov

January 15, 2010

Washington Utilities and Transportation Commission
C/O Kathy Hunter
PO Box 47250
Olympia, WA 98504-7250

RE: Pt. Defiance (Rail) Bypass – Petitions for modifications to Clover Creek Drive SW, North Thorne Lane SW, Berkeley Street SW, 41st Division Drive, and Barkesdale Street highway-rail grade crossings

Dear Ms. Hunter,

Enclosed are five petitions to the Washington Utilities and Transportation Commission (WUTC) requesting approval to modify the highway-rail grade crossings at Clover Creek Drive SW, North Thorne Lane SW, Berkeley Street SW, 41st Division Drive, and Barkesdale Street. The Washington State Department of Transportation (WSDOT) has prepared and is filing the petitions in support of the Pt. Defiance (Rail) Bypass Project. These include the improvements discussed at our diagnostic site visits in 2008.

The petitions will be sent to the United States Army (Fort Lewis) and to the cities of Lakewood and DuPont by the 20th of January to encourage them to sign the Waiver of Hearing. They have been asked to send their responses to you.

In the case of the three crossings in the city of Lakewood, we are not confident that the city will be signing the waivers. I request that you give them official notice as soon as you can administratively.

If you would like to discuss the details of the petitions in detail, I can be reached at 360-705-7982, or jefferk@wsdot.wa.gov.

Sincerely,

Kevin M. Jeffers

Enclosures (5)

KMJ

CC w/o enclosures: Jodi Mitchell, Sound Transit

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Washington State Department of Transportation Petitioner, vs. **Central Puget Sound Regional Transportation Authority and the City of Lakewood** Respondent	)	DOCKET NO. TR- 100129 PETITION TO MODIFY A HIGHWAY-RAIL GRADE CROSSING **North Thorne Lane SW** USDOT CROSSING # **085828M** UTC CROSSING #

2010 JAN 19 AM 8:25

The Petitioner asks the Washington Utilities and Transportation Commission to approve modification of a highway-rail grade crossing.

Section 1 – Petitioner's Information

Washington State Department of Transportation

Petitioner

310 North Maple Park Ave SE

Street Address

Olympia, WA 98504

City, State and Zip Code

PO Box 47307, Olympia, WA 98504-7407

Mailing Address, if different than the street address

Kevin Jeffers

Contact Person Name

360-705-7982; JefferK@wsdot.wa.gov

Contact Phone Number and E-mail Address

Section 2 – Respondent's Information

Central Puget Sound Regional Transportation Authority ("Sound Transit")

Respondent

401 South Jackson Street

Street Address

Seattle, WA 98104-2826

City, State and Zip Code

Mailing Address, if different than the street address

Jodi Mitchell

Contact Person Name

206-398-5080; Jodi.Mitchell@SoundTransit.org

Contact Phone Number and E-mail Address

City of Lakewood

Respondent

6000 Main Street

Street Address

Lakewood, WA 98499-5027

City, State and Zip Code

Mailing Address, if different than the street address

Desirée Winkler

Contact Person Name

(253) 983-7818; dwinkler@CityofLakewood.us

Contact Phone Number and E-mail Address

Section 3 – Current Crossing Information

1. Railroad company(ies) _____
   - Tracks owned by: **Sound Transit**
   - Operating railroad: **Tacoma Rail, BNSF, Amtrak**

2. Type of railroad at crossing ☑ Common Carrier ☐ Logging ☐ Industrial

   ☐ Passenger ☐ Excursion

3. Type of tracks at crossing ☑ Main Line, number of tracks **1**
   ☐ Siding or Spur, number of tracks ____

4. Average daily train traffic, freight **2 per day (trains typically operate 4-5 days/week)**

   Authorized freight train speed **10 mph** Operated freight train speed **10 mph**

5. Average daily train traffic, passenger **0**

   Authorized passenger train speed **N/A** Operated passenger train speed **N/A**

6. Describe current crossing configuration including type of train detection, active warning devices, preemption, etc.:

This is currently a single track crossing with cantilever-mounted flashing lights (no gates).

The existing detection circuitry is either a "C Style" or "Ring 10" relay-based track circuit.

There are no existing medians or crossing gates.

The existing interconnection with the traffic signal at the Interstate 5 off-ramp is simultaneous pre-emption. When activated, the traffic lights go into an "all-way-flashing red" mode.

There is currently no traffic signal at the intersection of North Thorne Lane and Union Avenue.

Section 4 – Expected Crossing Characteristics After Modification

1. Type of railroad operations at crossing ☑ Common Carrier ☐ Logging ☐ Industrial

☑Passenger ☐ Excursion

2. Type of tracks at crossing ☑ Main Line, number of tracks **1**
☐ Siding or Spur, number of tracks _____

3. Average daily train traffic, freight **2**

Authorized freight train speed **40 mph** Operated freight train speed **40 mph**

4. Average daily train traffic, passenger **16**

Authorized passenger train speed **79 mph** Operated passenger train speed **79 mph**

5. Will the modified crossing eliminate the need for one or more existing crossings?
Yes ____ No **X**

6. If so, state the distance and direction from the modified crossing.

_____

_____

_____

7. Does the petitioner propose to close any existing crossings and if yes, which crossings?
Yes ____ No **X**

_____

Section 5 – Proposed Temporary Crossing

1. Will a temporary crossing be installed? Yes ____ No __X__

2. If so, describe the purpose of the crossing and the estimated time it will be needed

_____

_____

_____

3. Will the petitioner remove the crossing at completion of the activity requiring the temporary crossing? Yes ____ No ____ **N/A**

Approximate date of removal _____

Section 6 – Current Highway Traffic Information

1. Name of roadway/highway **North Thorne Lane SW**

2. Roadway classification **Arterial**

3. Road authority **City of Lakewood / WSDOT**

4. Average annual daily traffic (AADT) **7420 (in year 2006)**

5. Number of lanes **1 NB lane, 2 SB lanes. Note that one of the existing SB lanes is 8' or less in width where the existing flashing lights encroach on the roadway.**

6. Roadway speed **35mph**

7. Is the crossing part of an established truck route? Yes ____ No **X**

8. If so, trucks are what percent of total daily traffic? **3% (PM peak)**

9. Is the crossing part of an established school bus route? Yes **X** No ____

10. If so, how many school buses travel over the crossing each day? **39**

11. Describe any changes to the information in 1 through 7, above, expected within ten years:
AADT estimated to grow to 13,950 (in year 2020); as part of the project, a new 1' wide median will be installed on the north side of crossing, a short section of C-curb may be installed on the south side of crossing (though this would place the C-curb in the intersection of the Interstate 5 Ramps). The median on the north side of the crossing will help discourage motorists from evading the crossing gates.

In addition, the roadway is being widened to accommodate truck turning movements from

the I-5 off ramp onto northbound North Thorne Lane. The southbound lanes of North Thorne Lane SW will also be widened to provide an 11' wide center lane and a 12' wide curb lane. Currently, the curb lane is extremely narrow, with the railroad flashing light assemblies encroaching into the lane, leaving an effective lane width of approximately 8'. A new traffic signal, intended to help regulate the flow of traffic toward the crossing, will be installed at the intersection of North Thorne Lane SW and Union Avenue SW.

Section 7 – Alternatives to the Proposed Modifications

1. Does a safer location for a crossing exist within a reasonable distance of the current or proposed location? Yes ____ No **X**

2. If a safer location exists, explain why the crossing should not be located at that site.

3. Are there any hillsides, embankments, buildings, trees, railroad loading platforms or other barriers in the vicinity which may obstruct a motorist's view of the crossing?
Yes **X** No ____

4. If a barrier exists, describe:
- ♦ Whether petitioner can relocate the crossing to avoid the obstruction and if not, why not.
- ♦ How the barrier can be removed.
- ♦ How the petitioner or another party can mitigate the hazard caused by the barrier.

Views are obstructed a line of trees on an adjacent golf course in the Northeast quadrant, and by trees growing in a wetland area in the Northwest quadrant. However, both areas of trees are approximately 50' away from the track.

5. Is it feasible to construct an over-crossing or under-crossing at the proposed location as an alternative to an at-grade crossing?
Yes ____ No **X**

6. If an over-crossing or under-crossing is not feasible, explain why.
The existing site is surrounded by a golf course and a wetland. WSDOT has investigated an overpass in the area, but these investigations determined that an overpass would require significant R/W takes and reconfiguration of the roadway network as far east as Gravelly Lake Drive SW.

7. Does the railway line, at any point in the vicinity of the modified crossing, pass over a fill area or trestle or through a cut where it is feasible to construct an over-crossing or an under-crossing, even though it may be necessary to relocate a portion of the roadway to reach that point?

Yes ____ No **X**

8. If such a location exists, state:
   - ♦ The distance and direction from the proposed crossing.
   - ♦ The approximate cost of construction.
   - ♦ Any reasons that exist to prevent locating the crossing at this site.

The railroad is at the same elevation as the roadway. Constructing an over/undercrossing would require reconfiguring the entire roadway network in this area. An adjacent fill on the railroad crosses a small stream, however the depression for that stream is not large enough to accommodate a roadway and its approaches and, if a roadway were placed in the depression, it would also have to be located below Interstate 5.

9. Is there an existing public or private crossing in the vicinity of the proposed modified crossing?

Yes ____ No **X**

10. If a crossing exists, state:
    - ♦ The distance and direction from the proposed crossing.
    - ♦ Whether it is feasible to divert traffic from the proposed to the existing crossing.

Section 8 – Sight Distance

1. Complete the following table, describing the sight distance for motorists when approaching the tracks from either direction after modification. "**Number of feet from proposed crossing" is measured from the crossing gate along the centerline of the "outside" lane. Sight distance is measured from the edge of traveled way (edge of fog line or curb line) along the CL of track at the crossing. NOTE - for "Left" sight distances, the edge of traveled way is on the *opposite* side of the roadway.**

Note that sight distances from the I-5 Southbound Off Ramp are NOT reflected in the tables below. The I-5 Off Ramp is both parallel and very close to the tracks. Motorists on the Off-Ramp may have their forward visibility along the track, at certain angles, obstructed somewhat by the railroad crossing cantilever mast and gate mechanism. Since the tracks also extend behind motorists on the Off-Ramp, rearward visibility, though unlimited by obstacles, is likely to be zero, based on motorists' tendency to not look behind them.

a. Approaching the crossing from **SOUTH** , the current approach provides an unobstructed view as follows: (North, South, East, West)

Direction of sight (left or right)	Number of feet from proposed crossing	Provides an unobstructed view for how many feet
Right	300	**0 (obscured by bridge railing)**
Right	200	**5 (obscured by bridge railing)**
Right	100	**370**
Right	50	**545**
Right	25	**585**
Left	300	**0 (obscured by bridge railing)**
Left	200	**5 (obscured by bridge railing)**
Left	100	**300**
Left	50	**570**
Left	25	**570**

b. Approaching the crossing from **NORTH** , the current approach provides an unobstructed view as follows: (Opposite direction-North, South, East, West)

Direction of sight (left or right)	Number of feet from proposed crossing	Provides an unobstructed view for how many feet
Right	300	**10 (obscured by trees)**
Right	200	**15 (obscured by trees)**
Right	100	**15 (obscured by trees)**
Right	50	**320**
Right	25	**570**
Left	300	**30 (obscured by trees)**
Left	200	**40 (obscured by trees)**
Left	100	**300**
Left	50	**585**
Left	25	**585**

2. Will the modified crossing provide a level approach measuring 25 feet from the center of the railway on both approaches to the crossing?

Yes ____ No **X**

3. If not, state in feet the length of level grade from the center of the railway on both approaches to the crossing.

At the North side of the crossing, the roadway slopes down from the crossing at approximately 1%. The 1% slope begins approximately 4' from the edge of the crossing panels. The roadway grade to the South of the crossing slopes upward away from the crossing at 0.66% for approximately 15', then matches the existing roadway, which is sloping upward from the crossing at a grade in excess of 1%.

4. Will the modified crossing provide an approach grade of not more than five percent prior to the level grade?

Yes **X** No ____

3. If not, state the percentage of grade prior to the level grade and explain why the grade exceeds five percent.

_____

_____

_____

_____

Section 9 – Illustration of Modified Crossing Configuration

Attach a detailed diagram, drawing, map or other illustration showing the following:

- ♦ The vicinity of the modified crossing.
- ♦ Layout of the railway and highway 500 feet adjacent to the crossing in all directions.
- ♦ Percent of grade.
- ♦ Obstructions of view as described in Section 7 or identified in Section 8.
- ♦ Traffic control layout showing the location of the existing and proposed signage.

Existing features (buildings, trees, etc) that are obstructions are shown on the accompanying plan in "screened" or "grayscale" lines.

Section 10 – Proposed Warning Signals or Devices

1. Explain in detail the number and type of proposed automatic signals or other warning devices planned at the crossing, including a cost estimate for each. If the proposed medications include adding or modifying preemption, contact UTC for the additional worksheets.
Modifications to the existing warning devices include replacement of the existing cantilevers with new "walk-out" style cantilevers and flashing lights, placed in new locations to accommodate the roadway widening. New crossing gates will also be provided.

The control equipment for the railroad warning devices will be upgraded to modern constant warning time units, replacing the existing case and hardware. The new circuitry will allow for additional advanced pre-emption time. The interconnection between the grade crossing control equipment and the roadway signal traffic controller will be upgraded to a 6-wire supervisory configuration. The roadway authority can use 2 or 6 of these wires, depending upon their interconnection wiring preferences.

A new traffic signal would be installed at the intersection of North Thorne Lane SW and Union Avenue SW. This new signal would be timed in conjunction with reconstructed traffic signals at the Interstate 5 off-ramp in a manner that discourages motorists from queuing on the tracks. Effectively, the downstream signal (in either direction of travel) would have a "green extension."

An activated blank-out sign with the message or symbol "No Right Turn" is proposed at the intersection of North Thorne Lane SW and the Southbound Off-Ramp from Interstate 5. Another activated blank-out sign with the message or symbol "No Right Turn" is proposed at the intersection of North Thorne Lane SW and Union Avenue SW. These signs will illuminate when advance pre-emption becomes effective and thus help deter vehicles from making movements toward the tracks.

Pedestrian movements conflicting with the pre-emption call would be terminated immediately, with the walk symbol immediately changing to "Don't Walk" or going blank, depending upon the roadway authority's preference.

When a train approaches, after the railroad advance pre-emption is in effect, and after the crossing gates have had sufficient time to descend, the green phase on North/Southbound North Thorne Lane SW will end at both the Interstate 5 Ramp terminal intersection and at the Union Avenue SW intersection. Movements which do not conflict with the railroad tracks will be permitted.

The approximate cost for railroad crossing signal improvements at North Thorne Lane SW is $550,000.

Section 11 – Justification of Installation of Wayside Horn (if applicable)

1. Describe in detail why this crossing should have a wayside horn installed. Also include a description of where the wayside horns and indicator lights will be installed at the crossing.

With higher speed operations, wayside horns are being installed to help avoid creating noise for residents adjacent to the track. With higher speed trains, the train horn would begin sounding farther from the crossing, near residential areas. The indicator lights will be installed on separate masts, mounted high so that engineers can see them from a distance. The mast for the wayside horns will be installed in the southwest quadrant of the crossing.

Section 12 – Additional Information

Provide any additional information supporting the proposal, including information such as the public benefits that would be derived from modifying the crossing as proposed.

New concrete crossing panel crossing surfaces will be installed, and the roadway repaved to match the elevation of the panels.

The lane for Southbound traffic turning right off the SB Interstate 5 off-ramp onto Northbound North Thorne Lane SW will be widened to accommodate truck turning movements. New sidewalks will be added to the (railroad) North side of the crossing. (Please see section 7 for additional information).

Section 13 – Waiver of Hearing by Respondent

Waiver of Hearing

The undersigned represents the Respondent in the petition to modify a highway-railroad grade crossing.

We have investigated the conditions at the crossing proposed for modification. We are satisfied the conditions are the same as described by the Petitioner in this docket. We agree the crossing be modified and consent to a decision by the commission without a hearing.

Dated at _____ , Washington, on the _____ day of

_____, 20 ____.

_____

Printed name of Respondent

_____

Signature of Respondent's Representative

_____

Title

_____

Phone number and e-mail address

_____

_____

Mailing address

GUIDE FOR DETERMINING TIME REQUIREMENTS FOR TRAFFIC SIGNAL PREEMPTION AT HIGHWAY-RAIL GRADE CROSSINGS

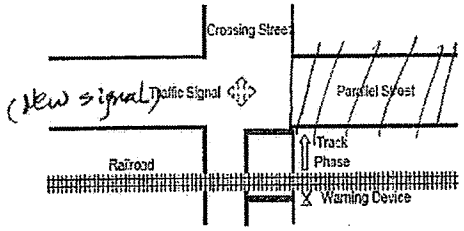
GUIDE FOR DETERMINING TIME REQUIREMENTS FOR
TRAFFIC SIGNAL PREEMPTION AT HIGHWAY-RAIL GRADE CROSSINGS

WASHINGTON UTC UTILITIES AND TRANSPORTATION COMMISSION

City Lakewood
County Pierce
District

Date 6/3/2018
Completed by Tony Wang
District Approval

Show North Arrow



Parallel Street Name: Union Ave SW / I-5 Ramp
Crossing Street Name: N Thorne Ln SW

Railroad: Sound Transit (owner)
Crossing DOT#: 085828 M

Railroad Contact: Jodi Mitchell
Phone: 206-398-5000

SECTION 1: RIGHT-OF-WAY TRANSFER TIME CALCULATION

Preempt verification and response time

			Remarks
1. Preempt delay time (seconds)	1.	0	to be installed
2. Controller response time to preempt (seconds)	2.	0	Controller type: 2070 - New controller
3. Preempt verification and response time (seconds): add lines 1 and 2	3.	0	This calculation also is applicable to TMP390

Worst-case conflicting vehicle time

			Remarks
4. Worst-case conflicting vehicle phase number	4.	3	
5. Minimum green time during right-of-way transfer (seconds)	5.	60	
6. Other green time during right-of-way transfer (seconds)	6.	0	
7. Yellow change time (seconds)	7.	3.5	
8. Red clearance time (seconds)	8.	1	
9. Worst-case conflicting vehicle time (seconds): add lines 5 through 8	9.	10.5	

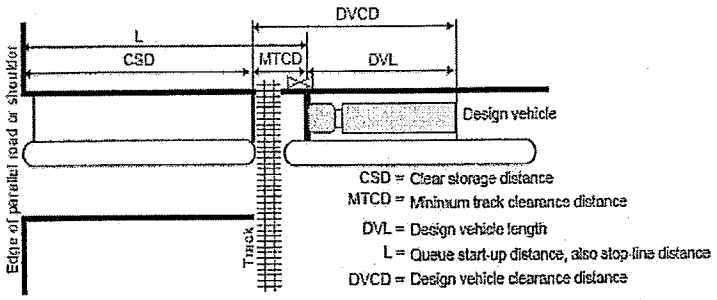
Worst-case conflicting pedestrian time

			Remarks
10. Worst-case conflicting pedestrian phase number	10.	3	
11. Minimum walk time during right-of-way transfer (seconds)	11.	0	omitted
12. Pedestrian clearance time during right-of-way transfer (seconds)	12.	0	
13. Vehicle yellow change time, if not included on line 12 (seconds)	13.	3.5	
14. Vehicle red clearance time, if not included on line 12 (seconds)	14.	1.0	
15. Worst-case conflicting pedestrian time (seconds): add lines 11 through 14	15.	4.5	

Worst-case conflicting vehicle or pedestrian time

16. Worst-case conflicting vehicle or pedestrian time (seconds): maximum of lines 9 and 15	16.	10.5
17. Right-of-way transfer time (seconds): add lines 3 and 16	17.	10.5

SECTION 2: QUEUE CLEARANCE TIME CALCULATION



			Remarks
18. Clear storage distance (CSD, feet)	18.	140	
19. Minimum track clearance distance (MTCD, feet)	19.	30	
20. Design vehicle length (DVL, feet)	20.	67	Design vehicle type:
21. Queue start-up distance, L (feet): add lines 18 and 19	21.	170	
22. Time required for design vehicle to start moving (seconds): calculate as 2+(L÷20)	22.	10.5	Remarks
23. Design vehicle clearance distance, DVCD (feet): add lines 19 and 20	23.	97	
24. Time for design vehicle to accelerate through the DVCD (seconds)	24.	13.5	Read from Figure 2 in Instructions.
25. Queue clearance time (seconds): add lines 22 and 24	25.	24	

SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

			Remarks
26. Right-of-way transfer time (seconds): line 17	26.	10.5	
27. Queue clearance time (seconds): line 25	27.	24	
28. Desired minimum separation time (seconds)	28.	4.0	
29. Maximum preemption time (seconds): add lines 26 through 28	29.	38.5	

SECTION 4: SUFFICIENT WARNING TIME CHECK

				Remarks
30. Required minimum time, MT (seconds): per regulations	30.	20		
31. Clearance time, CT (seconds): get from railroad	31.	0.0		rail signal design
32. Minimum warning time, MWT (seconds): add lines 30 and 31	32.		20.0	Excludes buffer time (BT)
33. Advance preemption time, APT, if provided (seconds): get from railroad	33.		18.5	
34. Warning time provided by the railroad (seconds): add lines 32 and 33	34.	38.5		
35. Additional warning time required from railroad (seconds): subtract line 34 from line 29, round up to nearest full second, enter 0 if less than 0	35.	0		

If the additional warning time required (line 35) is greater than zero, additional warning time has to be requested from the railroad. Alternatively, the maximum preemption time (line 29) may be decreased after performing an engineering study to investigate the possibility of reducing the values on lines 1, 5, 6, 7, 8, 11, 12, 13 and 14.

Remarks: _____