STATE OF WASHINGTON
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION
1300 S. Evergreen Park Dr. S.W., P.O. Box 47250 • Olympia, Washington 98504-7250
(360) 664-1160 • TTY (360) 586-8203

February 2, 2010

Jodi Mitchell
Sound Transit
401 South Jackson Street
Seattle, WA 98104-2826

Desiree Winkler
City of Lakewood
6000 Main Street Southwest
Lakewood, WA 98499-5027

Dale King, Superintendent
Tacoma Rail
2601 SR 509
North Frontage Road
Tacoma, WA 98421

RE: TR-100128 - Petition from the Washington State Department of Transportation to Modify the Berkeley Street SW Highway-Rail Grade Crossing

Dear Ms. Mitchell, Ms. Winkler and Mr. King:

On January 19, 2010, the Washington State Department of Transportation filed a petition with the Washington Utilities and Transportation Commission (Commission), seeking approval to modify an at-grade railroad crossing at Berkeley Street Southwest in the City of Lakewood, Washington. The petition also seeks to interconnect the railroad warning devices with the nearby traffic light and install wayside horns at the crossing. The Commission assigned Docket No. TR-100128 to this petition.

Please review the attached petition and respond by February 22, 2010. Your response options include:

- Support the petition – Complete the Respondent's Waiver of Hearing form, which serves as your consent for the Commission to issue an order without further notice or hearing.

- Do not support the petition – Reply with your position and include whether you feel a hearing is necessary to resolve the issues or suggest other courses of action, such as further discussion prior to going to hearing.

If you do not respond within 20 days of the date of this letter, we will assume you do not support the petition and will set the matter for hearing. You will be required to attend the hearing and respond to the Commission.

If you have any questions, please contact Kathy Hunter at (360) 664-1257 or khunter@utc.wa.gov.

Sincerely,

David Pratt

David Pratt
Assistant Director, Transportation Safety

Enclosure

cc: Kevin Jeffers, WSDOT (without attachment)

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David Pratt

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Assistant Director, Transportation Safety

Enclosure

cc: Kevin Jeffers, WSDOT (without attachment)

WASHINGTON UTC
UTILITIES AND TRANSPORTATION COMMISSION

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- 100128 PETITION TO MODIFY A HIGHWAY-RAIL GRADE CROSSING **Berkeley Street SW** USDOT CROSSING # **085829U** UTC CROSSING #

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, max.)**

   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 is simultaneous pre-emption. When activated, the traffic lights go into an "all-way-flashing red" mode.

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 **Berkeley Street SW**

2. Roadway classification **Arterial**

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

4. Average annual daily traffic (AADT) **8340 (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 light assembly encroaches on the roadway.**

6. Roadway speed **25mph**

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

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? **16**

11. Describe any changes to the information in 1 through 7, above, expected within ten years: **AADT estimated to grow to 11,490 (in year 2020); as part of the project, a new 1' wide median will be installed on the north side of crossing, and 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 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 Berkeley Street SW. At the crossing itself, there will be a single Northbound lane (striped as 14' wide, but with wider pavement at the crossing to facilitate truck turning movements) which splits into two NB lanes at the Union Ave intersection. The southbound lanes of Berkeley Street SW will also be widened to provide an 11.5' wide center lane and a 12' wide curb lane. Currently, the curb lane is extremely narrow.

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 business in the Northeast quadrant, and by trees and fencing around a military installation in the Northwest quadrant.

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 businesses, Interstate 5, and a military installation. Constructing an overcrossing or undercrossing would require elimination or relocation of some or all of these facilities. In addition, the frontage road (Union Avenue), which is lined with businesses and residences, would also require raising or lowering in order to match the approach grades for the railroad grade separation.

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 X No ____

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 does pass over a low fill (approximately 5' high) in the vicinity of the Berkeley Street crossing; however, to relocate the roadway under the railroad in this urban area would place the roadway at the same elevation as Interstate 5, which would thus also require relocating (either raising or lowering) Interstate 5. This would require reconstruction of not only Berkeley Street, but also Union Avenue, and Interstate 5, too. The cost, including property acquisition, would likely be in the range of $50-$100 million.

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** (North, South, East, West), the current approach provides an unobstructed view as follows:

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	**490**
Right	50	**425**
Right	25	**425**
Left	300	**0 (obscured by bridge railing)**
Left	200	**25(obscured by bridge railing)**
Left	100	**360**
Left	50	**320**
Left	25	**320**

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

Direction of sight (left or right)	Number of feet from proposed crossing	Provides an unobstructed view for how many feet
Right	300	**20 (obscured by trees)**
Right	200	**40 (obscured by trees)**
Right	100	**70 (obscured by trees, fence)**
Right	50	**140**
Right	25	**270**
Left	300	**100 (obscured by structures)**
Left	200	**125 (obscured by structures)**
Left	100	**220**
Left	50	**300**
Left	25	**310**

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 3.6%. The slope begins approximately 2' from the edge of the crossing panels and gets gradually steeper. The roadway grade to the South of the crossing slopes upward away from the crossing at 2.5% for approximately 6', then matches the existing ground, which is sloping upward from the crossing at a grade of approximately 2%.

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.

An activated blank-out sign with the message or symbol "No Right Turn" is proposed at the intersection of Berkeley Street 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 Berkeley Street SW and Militia Drive (the street that exits from Camp Murray). These signs will illuminate when advance pre-emption becomes effective and thus help deter vehicles from making movements toward the tracks.

A "green extension" will be used at the signals on either side of the crossing to discourage motorists from queuing on the tracks. 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 Berkeley Street 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. In conjunction with the blank-out sign, these measures are intended to deter traffic queues from forming over 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.

The military checkpoints at Fort Lewis and Camp Murray have the potential to impact traffic in the vicinity of the crossing. At high national security alert levels, vehicle movement times through the checkpoint queues may lengthen significantly, with potential impacts on the overall traffic operations, and potentially prevent the "track clearance" features of the traffic signal phasing from operating as intended.

The approximate cost for railroad crossing signal improvements at Berkeley Street SW is $500,000.

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 Berkeley Street SW will be widened to accommodate truck turning movements. New sidewalks will be added to the (railroad) South side of the crossing. (Please see section 7 for additional information).

Section 13 – Waiver of Hearing by Respondent TR - 100128

Waiver of Hearing - Sound Transit

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

Section 13 – Waiver of Hearing by Respondent TR-100128

Waiver of Hearing – City of Lakewood

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

Section 13 – Waiver of Hearing by Respondent TR - 100128

Waiver of Hearing – Tacoma Rail

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 Tacoma, Washington, on the 12th day of February, 20 10.

Tacoma Rail

Printed name of Respondent

Dale W. King

Signature of Respondent's Representative

Superintendent

Title

(253) 396-3327 dale.king@cityoftacoma.org

Phone number and e-mail address

2601 SR 509 N. Frontage Road

Tacoma, WA 98421

Mailing address

2010 FEB 16 AM 8:09

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

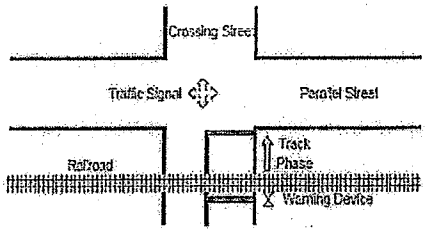
GUIDE FOR DETERMINING TIME REQUIREMENTS FOR
TRAFFIC SIGNAL PREEMPTION AT HIGHWAY-RAIL GRADE CROSSINGS

WASHINGTON UTC UTILITIES AND TRANSPORTATION COMMISSION

City Lakewood
County Pierce
District

Date 6/3/2008
Completed by Tony Wang
District Approval

Show North Arrow



Parallel Street Name: Union Ave SW / I-5 ramp
Crossing Street Name: Berkeley St SW

Railroad: Sound Transit
Crossing DOT#: 085 829 V

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	
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 is applicable to Tray-3B

Worst-case conflicting vehicle time

			Remarks
4. Worst-case conflicting vehicle phase number	4.	5	
5. Minimum green time during right-of-way transfer (seconds)	5.	6.0	
6. Other green time during right-of-way transfer (seconds)	6.	0	
7. Yellow change time (seconds)	7.	3.6	
8. Red clearance time (seconds)	8.	1	
9. Worst-case conflicting vehicle time (seconds): add lines 5 through 8	9.	10.6	

Worst-case conflicting pedestrian time

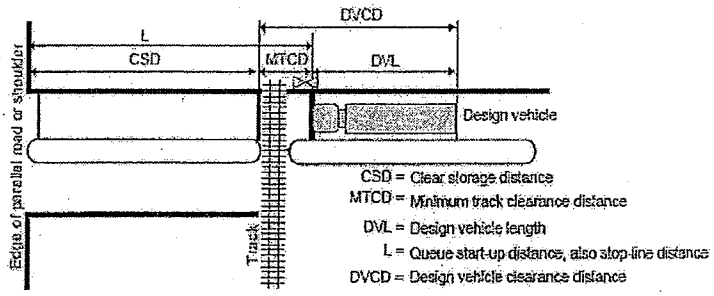
			Remarks
10. Worst-case conflicting pedestrian phase number	10.	5	
11. Minimum walk time during right-of-way transfer (seconds)	11.	0	omitted
12. Pedestrian clearance time during right-of-way transfer (seconds)	12.	0	
13. Vehicle yellow change time, if not included on line 12 (seconds)	13.	3.6	
14. Vehicle 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.	4.6	

Worst-case conflicting vehicle or pedestrian time

16. Worst-case conflicting vehicle or pedestrian time (seconds): maximum of lines 9 and 15	16.	10.6
17. Right-of-way transfer time (seconds): add lines 3 and 16	17.	10.6

Page 1

SECTION 2: QUEUE CLEARANCE TIME CALCULATION



			Remarks
18. Clear storage distance (CSD, feet)	18.	130	
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.	160	
22. Time required for design vehicle to start moving (seconds): calculate as 2÷(L÷20)	22.	10	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.	23.5	

SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

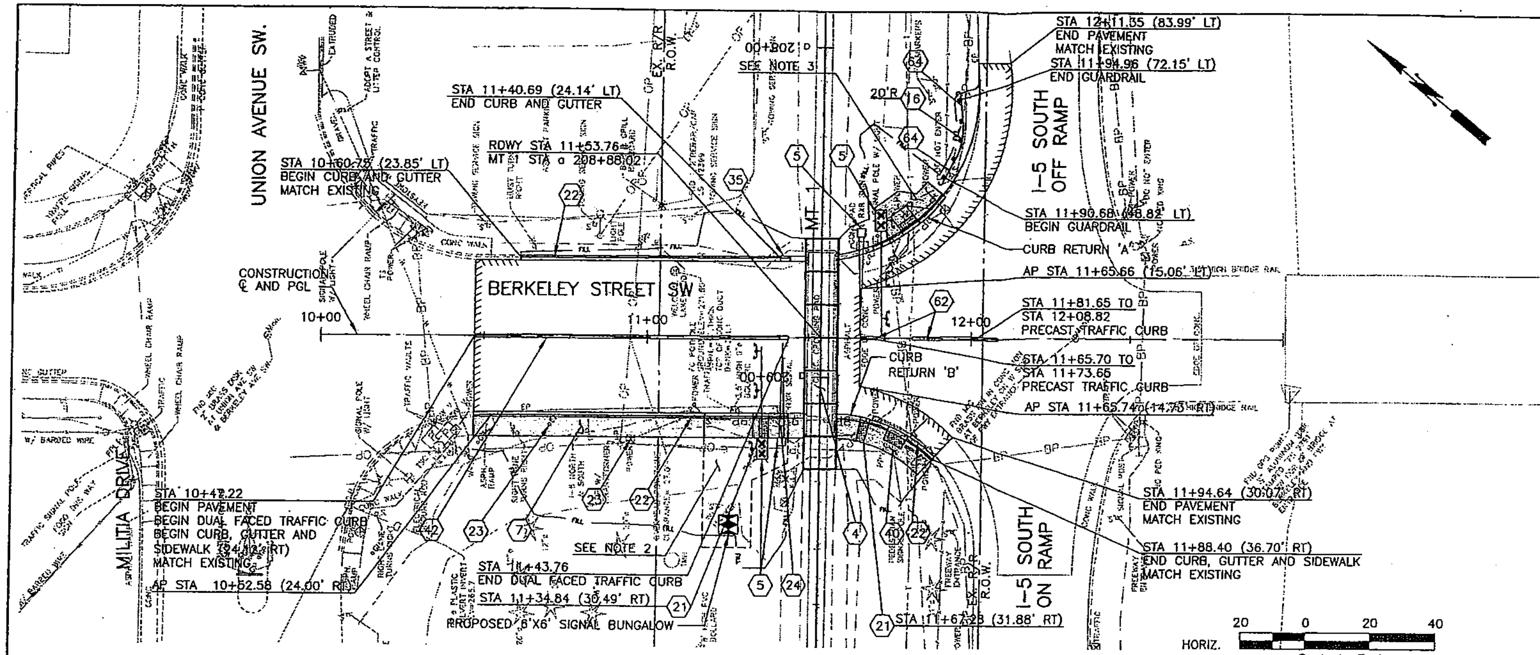
			Remarks
26. Right-of-way transfer time (seconds): line 17	26.	10.6	
27. Queue clearance time (seconds): line 25	27.	23.5	
28. Desired minimum separation time (seconds)	28.	4.0	
29. Maximum preemption time (seconds): add lines 26 through 28	29.	38.1	

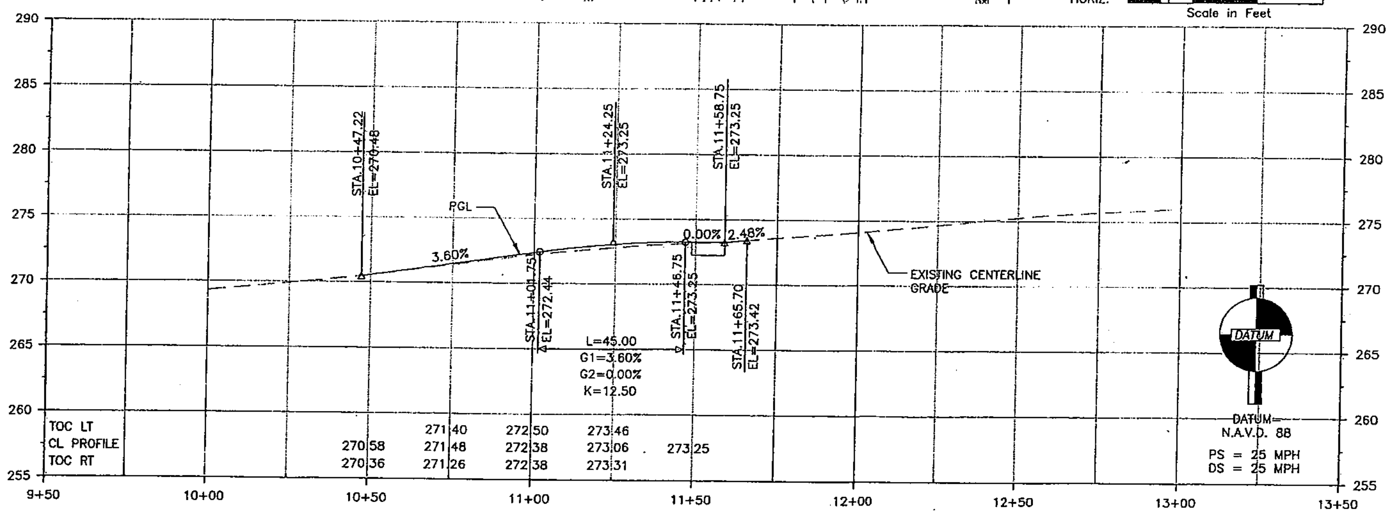
SECTION 4: SUFFICIENT WARNING TIME CHECK

			Remarks
30. Required minimum time, MT (seconds): per regulations	30.	20	
31. Clearance time, CT (seconds): get from railroad	31.	0.0	w/ 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.	18.1	
34. Warning time provided by the railroad (seconds): add lines 32 and 33	34.	38.1	
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.

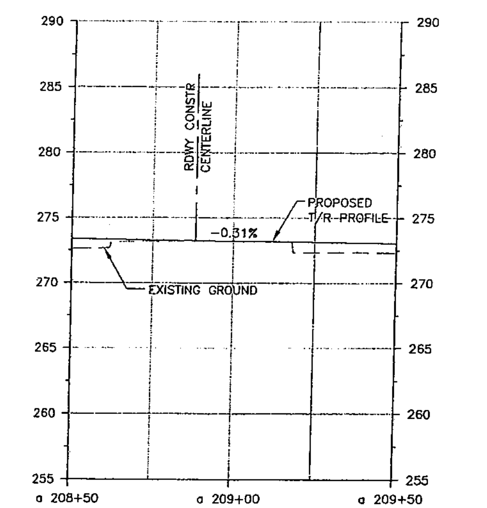
Remarks: _____





BERKELEY STREET SW

SCALE (FULL SIZE): 1" = 20' HORIZ.
1" = 5' VERT.



MT 1 TRACK PROFILE

SCALE (FULL SIZE): 1" = 20' HORIZ.
1" = 5' VERT.

GENERAL NOTES:

1. SEE DRAWING RDCN FOR CONSTRUCTION NOTES AND ADDITIONAL GENERAL NOTES.
2. SEE DETAILS ON DRAWING RD132 FOR ACCESS PAD, MODIFIED CEMENT CONC. DRIVEWAY ENTRANCE, AND MOUNTABLE CEMENT CONCRETE TRAFFIC CURB AND GUTTER.
3. SEE DETAILS ON DRAWING RD132 FOR SIDEWALK AND CURB, GUTTER, SIDEWALK RAMP.
4. SEE GUARDRAIL DETAIL ON DRAWING RDDET19.

CURB RETURN 'A'

FLOWLINE ELEVATIONS		
BEG.	STA 11+58.68 (24.74' LT)	273.33
LOW PT.	STA 11+65.63 (26.32' LT)	272.90
1/4	STA 11+75.88 (30.72' LT)	273.14
1/2	STA 11+89.81 (42.45' LT)	273.47
3/4	STA 11+98.60 (58.39' LT)	273.81*
END	STA 12+01.11 (76.43' LT)	274.14*

*EDGE OF PAVEMENT

Δ= 83°55'14.91"
R= 50.00'
T= 44.96'
L= 73.23'

CURB RETURN 'B'

FLOWLINE ELEVATIONS		
BEG.	STA 11+58.83 (24.03' RT)	273.18
LOW PT.	STA 11+65.77 (24.85' RT)	272.94
1/4	STA 11+66.97 (25.10' RT)	272.98
1/2	STA 11+74.78 (27.63' RT)	273.06
3/4	STA 11+82.01 (31.54' RT)	273.14
END	STA 11+88.40 (36.70' RT)	273.22

Δ= 41°53'24.67"
R= 45.00'
T= 17.22'
L= 32.90'

FILE NAME	PD_RD128.dwg
TIME	11:52am
DATE	Jan 07, 2009
PLOTTED BY	eberger
DESIGNED BY	RDH
ENTERED BY	ETP
CHECKED BY	CR
PROJ. ENGR.	BB
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REVISION | DATE | BY

REGION NO. 10 | STATE WASH
JOB NUMBER 43088
CONTRACT NO. RTA/CP 16-06

SOUNDTRANSIT

HDR ENGINEERING INC.

Washington State Department of Transportation

SOUNDER COMMUTER RAIL, M STREET TO LAKEWOOD TRACK AND SIGNAL IMPROVEMENTS

BERKELEY STREET SW

ROADWAY PLAN AND PROFILE

RD128

SHEET OF SHEETS

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⟨X⟩ ROADWAY CONSTRUCTION NOTES

1. CEMENT CONCRETE TRAFFIC CURB AND GUTTER PER C.O.T. STD. PLAN NO. SU-03.
2. MODIFIED WSDOT CEMENT CONC. SIDEWALK FOR MEDIAN (PER DETAIL DRAWING RDDET113).
3. CEMENT CONCRETE SIDEWALK (PER C.O.T. STD. PLAN SU-04).
4. CONCRETE CROSSING PANELS WITH ELASTOMERIC FLANGE FILLER. SEE TRACK PLAN AND PROFILE DRAWINGS.
5. CROSSING SIGNAL EQUIPMENT. SEE GRADE CROSSING SIGNAL PLANS.
6. CEMENT CONCRETE TRAFFIC BARRIER CURB PER CITY OF LAKEWOOD STD. PLAN S-2F.
7. CEMENT CONCRETE SIDEWALK (PER CITY OF LAKEWOOD STD. PLAN S-2A).
8. TYPE D MOUNTABLE CEMENT CONCRETE CURB AND GUTTER PER C.O.T. STD. PLAN NO. SU-03. (NOT USED)
9. CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 2 PER C.O.T. STD. PLAN SU-08 MODIFIED WITH CURB AT BACK OF S/W. (SEE TYPICAL SECTIONS.)
10. CRUSHED SURFACING BASE COURSE (ACCESS PAD TO RAILROAD SIGNAL EQUIPMENT: 6" CSBC COMPACTED DEPTH OVER GRAVEL BORROW SUBGRADE).
11. 8" REINFORCED HEAVY DUTY SIDEWALK AND / OR DRIVEWAY PER DRAWING NO. RDDET01. (NOT USED)
12. REPLACE EXISTING CROSSING WITH 115# WOOD TIES. (NOT USED)
13. TYPE C PRECAST TRAFFIC CURB (PER WSDOT STD. PLAN F-2).
14. CEMENT CONCRETE TRAFFIC CURB PER C.O.T. STD. PLAN NO. SU-03.
15. CHAINLINK FENCE TYPE 3 (PER WSDOT STD. PLAN L-20.10-00). (NOT USED)
16. BEAM GUARDRAIL TYPE 1 PER WSDOT STD. PLAN NO. C-1.
17. (NOT USED)
18. (NOT USED)
19. (NOT USED)
20. CEMENT CONC. DRIVEWAY ENTRANCE-MODIFIED (PER DETAIL DRAWING RDDET114).
21. STATION/OFFSET LOCATION FOR DETECTABLE WARNING PATTERN. SEE DRAWINGS RDDET110 AND RDDET111.
22. CEMENT CONCRETE TRAFFIC CURB AND GUTTER PER CITY OF LAKEWOOD STD. PLAN S-2F.
23. ADJUST UTILITY TO GRADE.
24. TYPICAL CURB AND GUTTER/SIDEWALK TRANSITION AT RAIL CROSSING (PER DETAIL DRAWING RDDET110).
25. CONSTRUCT A 3' WIDE DETECTABLE WARNING STRIP WITH TRUNCATED DOMES PER C.O.T. DEPT. OF PUBLIC WORKS STANDARD PLAN SU-05A. SEE DRAWING NO. RDDET01. (NOT USED)
26. CONSTRUCT SIDEWALK RAMP TYPE 2 PER C.O.T. STD. PLAN SU-05. (NOT USED)
27. CEMENT CONC. TRAFFIC CURB AND GUTTER PER WSDOT STD. PLAN F-10.12-00.
28. CEMENT CONC. SIDEWALK (PER WSDOT STD. PLAN F-30.10-00).
29. (NOT USED)
30. RECONSTRUCT DRIVEWAY IN KIND AS NOTED TO MATCH EXISTING. (NOT USED)
31. CEMENT CONC. SIDEWALK (PER CITY OF LAKEWOOD STD. PLAN S-2B).
32. CEMENT CONC. SIDEWALK RAMP TYPE 5 PER WSDOT STD. PLAN F-42.10-00.
33. (NOT USED)
34. (NOT USED)
35. TYPICAL CURB AND GUTTER TRANSITION AT RAIL CROSSING (PER DETAIL DRAWING RDDET110).
36. (NOT USED)
37. (NOT USED)
38. TYPICAL CURB AND GUTTER/PLANTER/SIDEWALK TRANSITION AT RAIL CROSSING (PER DETAIL DRAWING RDDET111).
39. REPLACE CONCENTRIC CONE WITH ECCENTRIC CONE, ADJUST TO GRADE AND ORIENT LID AWAY FROM CURB. (NOT USED)
40. TYPICAL DEPRESSED SIDEWALK AT RAIL CROSSING (PER DETAIL DRAWING RDDET111).
41. CONCRETE PAD FOR BUS STOP (PER DETAIL DRAWING RDDET112).

⟨X⟩ ROADWAY CONSTRUCTION NOTES (CONT.)

42. DUAL FACED CEMENT CONC. TRAFFIC CURB (PER WSDOT STD. PLAN F-10.12-00).
43. (NOT USED)
44. (NOT USED)
45. (NOT USED)
46. HMA CURB (PER DETAIL DRAWING RDDET113).
47. (NOT USED)
48. SIDEWALK RAMP TYPE 2 PER CITY OF LAKEWOOD STD. PLAN S-3B.
49. (NOT USED)
50. HMA SIDEWALK RAMP (PER DETAIL DRAWING RDDET113).
51. CURB AND GUTTER TRANSITION TO HMA CURB (PER DETAIL DRAWING RDDET113).
52. CEMENT CONCRETE SIDEWALK RAMP TYPE 2 MODIFIED (PER DETAIL DRAWING RDDET110).
53. (NOT USED)
54. MOUNTABLE CEMENT CONCRETE TRAFFIC CURB AND GUTTER (PER DETAIL DRAWING RDDET114).
55. (NOT USED)
56. CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 1 (PER C.O.T. STD. PLAN NO. SU-07).
57. (NOT USED)
58. CEMENT CONC. SIDEWALK RAMP TYPE 3B PER WSDOT STD. PLAN F-40.15-00.
59. STORMWATER CURB BREAK (PER DETAIL DRAWING RDDET112).
60. (NOT USED)
61. CEMENT CONC. TRAFFIC CURB (PER WSDOT STD. PLAN F-10.12-00).
62. PRECAST DUAL FACED SLOPED MOUNTABLE CURB (PER WSDOT STD. PLAN F-10.64-01).
63. (NOT USED)
64. BEAM GUARDRAIL ANCHOR TYPE 1 (PER WSDOT STD. PLAN C-6 WITH END SECTION DESIGN C PER WSDOT STD. PLAN C-7).
65. CHAIN LINK FENCE TYPE 4 (PER WSDOT STD. PLAN L-20.10-00) WITH VINYL COATING.

GENERAL NOTES – ROADWAY CONSTRUCTION

1. SEE UTILITY RELOCATION AND PROTECTION PLANS FOR STORM DRAINAGE, MISC. CONDUIT AND CASING INSTALLATION.
2. SEE SHEETS RDAL121-RDAL125 FOR ROADWAY MEDIAN DETAILS.
3. SEE SHEETS RDTS110-RDTS128 FOR PAVEMENT SECTIONS.
4. CURB AND CURB AND GUTTER DEFINED BY FACE OF CURB UNLESS OTHERWISE NOTED. ALL ELEVATIONS ARE PROVIDED AT TOP OF CURB UNLESS OTHERWISE NOTED AND DO NOT RELECT CURB CUTS OR SIDEWALK RAMPS.
5. ALL CURB RETURN ELEVATIONS ARE TO TOP OF CURB UNLESS OTHERWISE NOTED. AT CURB CUT RAMPS, CURB RETURN ELEVATIONS ARE INDICATED AT A POINT 6" ABOVE GUTTER FLOWLINE UNLESS OTHER WISE NOTED.
6. ALL UNITS ARE IN FEET UNLESS OTHERWISE SPECIFIED.
7. DRIVEWAYS ARE STATIONED AT CENTERLINE OF DRIVEWAY.
8. STORMWATER CURB BREAKS ARE STATIONED AT CENTERLINE OF STORMWATER CURB BREAK.

FILE NAME	PD_RDCN.dwg			REGION NO.	STATE
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DATE	Jan 07, 2009			JOB NUMBER	
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DESIGNED BY	RDH			CONTRACT NO.	
ENTERED BY	RDH			RTA/CP 10-08	
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REGIONAL ADM.		REVISION	DATE	BY	

SOUNDTRANSIT

EUGENE S. MILDER, STATE OF WASHINGTON, 42243, REGISTERED PROFESSIONAL ENGINEER, EXPIRES 11/06/

HDR ENGINEERING INC.

Washington State Department of Transportation

SOUNDER COMMUTER RAIL, M STREET TO LAKEWOOD TRACK AND SIGNAL IMPROVEMENTS

ROADWAY CONSTSTRUCTION NOTES

ROADWAY CONSTRUCTION NOTES

RDCN

SHEET OF SHEETS

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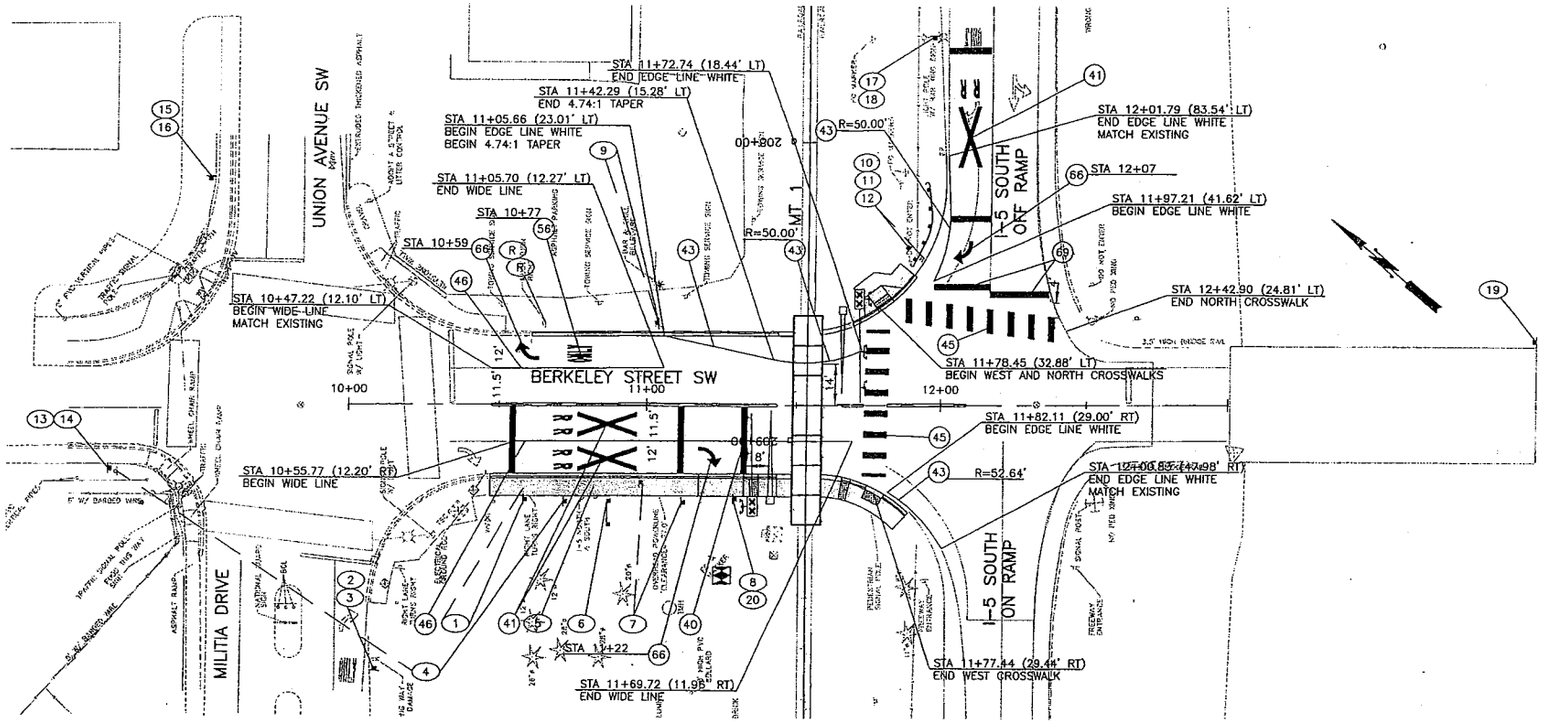
GENERAL NOTES:

1. SEE DRAWING RDCHCN FOR CHANNELIZATION NOTES AND ADDITIONAL GENERAL NOTES.
2. SEE DRAWING RDS114 FOR SIGN SCHEDULE AND RDS110A FOR NOTES.
3. COORDINATE SIGN LOCATIONS IN FIELD TO AVOID OBSCURING RAILROAD WARNING LIGHTS FROM MOTORISTS' VIEW.



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DATE	Jan 07, 2009				JOB NUMBER		
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CHECKED BY	CR						
PROJ. ENGR.	BB						
REGIONAL ADM.		REVISION	DATE	BY			

SOUNDTRANSIT

EUGENE MILES FRASER — STATE OF WASHINGTON — 43263 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 11/09/

HDR ENGINEERING INC.

Washington State Department of Transportation

SOUNDER COMMUTER RAIL, M STREET TO LAKEWOOD
TRACK AND SIGNAL IMPROVEMENTS

BERKELEY STREET SW

CHANNELIZATION AND SIGNING PLAN

RDCH116

SHEET OF SHEETS

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(X) ROADWAY CHANNELIZATION NOTES

14. PAINTED TWO WAY LEFT TURN STRIP WITH RAISED PAVEMENT MARKERS PER C.O.T. CHANNELIZATION DETAILS, RAISED PAVEMENT MARKERS AND PAINT STRIPING STD. PLAN.
15. PAINTED 4" LANE STRIPE WITH RAISED PAVEMENT MARKERS PER C.O.T. CHANNELIZATION DETAILS, RAISED PAVEMENT MARKERS AND PAVEMENT STRIPING STD. PLAN.
21. PLASTIC PAVEMENT "ONLY" PER C.O.T. PLASTIC PAVEMENT "ONLY" STD. PLAN.
22. THERMOPLASTIC TRAFFIC ARROW PER C.O.T. TYPICAL THERMOPLASTIC TRAFFIC ARROW STD. PLAN.
40. PLASTIC TYPE D STOP BAR PER WSDOT STD. PLAN M-11.10-01.
41. PLASTIC TYPE D RAILROAD CROSSING SYMBOL PER WSDOT STD. PLAN M-11.10-01, WITH EXCEPTIONS TO STANDARD LAYOUT DIMENSIONS AS NOTED IN PLAN VIEW.
42. PLASTIC TYPE D EDGE LINE YELLOW PER WSDOT STD. SPECIFICATIONS.
43. PLASTIC TYPE D EDGE LINE WHITE PER WSDOT STD. SPECIFICATIONS.
44. CITY OF LAKEWOOD DURABLE MARKING TRAFFIC ARROW TYPE 2SR PER WSDOT STD. PLAN M-24.40-01.
45. PLASTIC TYPE D CROSSWALK LINE PER WSDOT STD. PLAN M-15.10-01.
46. PLASTIC TYPE D WIDE LINE PER WSDOT STD. SPECIFICATIONS.
47. PLASTIC TYPE D DOUBLE YELLOW CENTER LINE PER WSDOT STD. SPECIFICATIONS.
48. PLASTIC TYPE D LANE LINE PER WSDOT STD. SPECIFICATIONS.
49. CITY OF LAKEWOOD DURABLE MARKING RAILROAD CROSSING SYMBOL PER WSDOT STD. PLAN M-11.10-01, WITH EXCEPTIONS TO STANDARD LAYOUT DIMENSIONS AS NOTED IN PLAN VIEW.
50. CITY OF LAKEWOOD DURABLE MARKING STOP BAR PER WSDOT STD. PLAN M-11.10-01.
51. CITY OF LAKEWOOD DURABLE MARKING TRAFFIC ARROW TYPE 2SL PER WSDOT STD. PLAN M-24.40-01.
52. CITY OF LAKEWOOD DURABLE MARKING TRAFFIC LETTTERS "ONLY", DIMENSIONS PER WSDOT STD. SPECIFICATIONS.
53. CITY OF LAKEWOOD DURABLE MARKING EDGE LINE YELLOW, DIMENSIONS PER WSDOT STD. SPECIFICATIONS.
54. CITY OF LAKEWOOD DURABLE MARKING 24" STOP BAR PER CITY OF LAKEWOOD STD. PLAN CH-1.
55. (NOT USED)
56. PLASTIC TYPE D TRAFFIC LETTERS "ONLY" PER WSDOT STD. SPECIFICATIONS.
57. CITY OF LAKEWOOD DURABLE MARKING BICYCLE LANE SYMBOL PER WSDOT STD. PLAN M-9.50-01.
58. CITY OF LAKEWOOD DURABLE MARKING EDGE LINE WHITE, DIMENSIONS PER WSDOT STD. SPECIFICATIONS.
59. CITY OF LAKEWOOD DURABLE MARKING WIDE LINE, DIMENSIONS PER WSDOT STD. SPECIFICATIONS.
60. CITY OF LAKEWOOD DURABLE MARKING DOUBLE YELLOW CENTER LINE, DIMENSIONS PER WSDOT STD. SPECIFICATIONS.
61. (NOT USED)
62. RAISED PAVEMENT MARKER TYPE 1Y DOUBLE YELLOW CENTER LINE PER WSDOT STD. PLAN M-20.50-01.
63. RAISED PAVEMENT MARKER TYPE 1W AND LANE LINE PER DETAIL SHEET RDDET112.
64. RAISED PAVEMENT MARKER TYPE 1Y AND TWO WAY LEFT TURN LINE PER DETAIL SHEET RDDET112.
65. PLASTIC TYPE D TRAFFIC ARROW TYPE 6SL. DIMENSIONS PER WSDOT STD. PLAN M-24.40.01.
66. PLASTIC TYPE D TRAFFIC ARROW TYPE 2SR PER WSDOT STD. PLAN M-24.40-01.
67. CITY OF LAKEWOOD DURABLE MARKING CROSSWALK PER CITY OF LAKEWOOD STD. PLAN CH-1.
68. CITY OF LAKEWOOD DURABLE MARKING LANE LINE PER SPECIFICATION SECTION 01900, REVISIONS TO WSDOT STD. SPECIFICATION 8-22 AND 9-34. DIMENSIONS PER WSDOT STD. SPECIFICATIONS.
69. PLASTIC TYPE D STOP LINE PER WSDOT STD. PLAN M-15.10-01.
70. PAINT TOP AND EXPOSED SIDES CURB YELLOW, WITH GLASS BEADS, PER SPECIFICATION SECTION 01900.
71. PAINTED ACCESS PARKING SPACE SYMBOL PER WSDOT STD. SPECIFICATIONS.
72. PAINT LINE EDGE LINE WHITE PER WSDOT STD. SPECIFICATIONS.
73. WHEEL STOP (PER WSDOT STD. PLAN M-17.10-00).

GENERAL NOTES - ROADWAY CHANNELIZATION

1. ALL UNITS ARE IN FEET UNLESS OTHERWISE SPECIFIED.

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SOUNDTRANSIT

EXPIRES 11/09/

HDR ENGINEERING INC.

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SOUNDER COMMUTER RAIL, M STREET TO LAKEWOOD TRACK AND SIGNAL IMPROVEMENTS

ROADWAY CHANNELIZATION NOTES

RDCHCN

SHEET OF SHEETS

ROADWAY CHANNELIZATION NOTES