WASHINGTON
UTC
UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

City of Auburn Petitioner,	)	DOCKET NO. TR-080105F PETITION TO MODIFY HIGHWAY-RAIL GRADE CROSSING ACTIVE WARNING DEVICES
vs. Union Pacific Railroad	)	USDOT CROSSING #
Respondent	)	UTC CROSSING #

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

Section 1 – Petitioner's Information

City of Auburn
Petitioner

25 West Main Street
Street Address

Auburn, WA 98001-4998
City, State and Zip Code

Mailing Address, if different than the street address

Scott Nutter snutter@AuburnWA.Gov 253-804-5068
Contact Person Name

Joseph M. Welsh Jwelsh@AuburnWA.Gov
Contact Phone Number and E-mail Address
253-804-5050

Section 2 – Respondent's Information

UPRR Railroad
Respondent

5424 SE McLoughlin Road
Street Address

Portland, OR 97202
City, State and Zip Code

Mailing Address, if different than the street address

John Flynn
Contact Person Name

503-872-1809 JCFlynn@UP.com
Contact Phone Number and E-mail Address

Section 3 – Crossing Location

1. Existing highway/roadway 15th Street SW

2. Existing railroad Union Pacific Railroad

3. USDOT Crossing No. N/A UTC Crossing No. _____

4. Located in the NE 1/4 of the SE 1/4 of Sec. 24 , Twp. 21 , Range 04 W.M.

5. GPS location, if known _____

6. Railroad mile post (nearest tenth) 160.99

7. City Auburn County King

Section 4 – Current Highway Traffic Information

1. Name of highway 15th Street SW

2. Road authority City of Auburn

3. Average annual daily traffic (AADT) 18,400

4. Number of lanes 6

5. Roadway speed 40 mph posted speed, 50 mph design speed

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

7. If so, trucks are what percent of total daily traffic? 2.4%

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

9. If so, how many school buses travel over the crossing each day? 35

10. Describe any changes to the information in 1 through 7, above, expected within ten years:

Traffic AADT is expected to increase to approximately 24,000

Section 5 – Current Crossing Information

1. Railroad company Union Pacific Railroad

2. Type of railroad at crossing □ Common Carrier □ Logging x Industrial

□ Passenger □ Excursion

3. Type of tracks at crossing □ Main Line x Siding or Spur

4. Number of tracks at crossing 1

5. Average daily train traffic, freight 1 train/month

Authorized freight train speed 10 Operated freight train speed 10

6. Average daily train traffic, passenger 0

Authorized passenger train speed - Operated passenger train speed -

7. Describe any changes to the information in 1 through 4, above, expected within ten years:

Train traffic will increase from 1 train/month to five 8-car trains per week

8. What is the available sight distance from the stop bar (or 25 feet from the tracks if no stop bar) on both approaches to the crossing?

Sight distance available is several hundred feet in either direction.

9. If the sight distance is less than 400 feet, describe the structures, roadway or track curvature, visual obstacles or other characteristics that limit sight distance.

Eastbound on 15th Street SW, there is a line of shrubs, 8-10' tall, located 80-100' from the edge of the road that runs parallel with 15th Street SW. The track curves northerly, away from the shrubbery, then curves back south around the building. They are used mainly as a screen for the parking area behind them. The clear site distance from the crossing is over 200' with obstruction (shrubbery) as you approach the crossing. (See photos 5,6,7,8 and 10).

Westbound on 15th Street SW 150-200' clear site distance. There is a coniferous tree 120' from the edge of the road. Also a 6' fence running along the roadway (See photos 1, 2, 9 and 11).

Section 5 – Current Warning Devices

1. Provide a complete description of the warning devices currently located at the crossing, including signs, gates, lights, train detection circuitry and any other warning devices.

Crossbucks

Highway Rail Grade Crossing Pavement Markings

Also see DKS memorandum dated May 30, 2008

Section 6 – Description of Proposed Changes

1. Describe in detail the proposed changes to the crossing. Include the funding source for the proposed installation, if applicable.

This is a privately funded installation. See DKS memorandum dated May 30, 2008

Section 7 – Illustration of Proposed Warning Devices

Attach a detailed diagram, drawing, map or other illustration showing the proposed warning devices.

See attached plans for warning devices and grade crossing improvements.

Coversheet dated May 27, 2008	**1 sheet**
Erosion Control dated May 27, 2008	**1 sheet**
Transpo Signal Plans Revision dated May 19, 2008	**2 sheets**
DEA Plans dated May 22, 2008	**4 sheets**
UPRR Signal Plans dated February 25, 2008	**2 sheets**

Section 8 – Waiver of Hearing by Respondent

Waiver of Hearing

The undersigned represents the Respondent in the petition to modify highway-rail grade crossing warning signals at the following crossing.

USDOT Crossing No. _____ UTC Crossing No. _____

We have investigated the conditions at the crossing. We are satisfied the conditions are the same as described by the Petitioner in this docket. We agree the warning signals should be installed 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

WASHINGTON
UTC
UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

City of Auburn Petitioner,	)	DOCKET NO. TR- PETITION TO INSTALL AN INTER-TIE BETWEEN A HIGHWAY SIGNAL AND A RAILROAD CROSSING SIGNAL SYSTEM
vs.	)	
Union Pacific Railroad Respondent	)	USDOT CROSSING # UTC CROSSING #

The Petitioner asks the Washington Utilities and Transportation Commission to approve installation of an inter-tie between a highway signal and a railroad crossing signal system.

Section 1 – Petitioner's Information

City of Auburn
Petitioner

25 West Main Street
Street Address

Auburn, WA 98001-4998
City, State and Zip Code

Mailing Address, if different than the street address

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UPRR Railroad
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2. Existing railroad Union Pacific Railroad

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4. Located in the NE 1/4 of the SE 1/4 of Sec. 24 , Twp. 21 , Range 04 W.M.

5. GPS location, if known _____

6. Railroad mile post (nearest tenth) 160.99

7. City Auburn County King

Section 4 – Vehicle Traffic

1. Type of public road at the crossing □ State □ County x City

□ Port □ State Park □ Other _____

2. Name of public road 15th Street SW

3. Road authority City of Auburn

4. Average daily vehicle traffic over the crossing _____ Vehicle speed limit 40mph

5. Number of lanes each way 6

6. Trucks (commercial vehicles) are what percent of average daily traffic 2.4%

7. Number of school buses over the crossing each day 35

Section 5 – Railroad Traffic

1. Name of railroad(s) operating at crossing

Union Pacific Railroad

9. Type of railroad at crossing □ Common Carrier □ Logging X Industrial

□ Passenger □ Excursion

10. Type of tracks at crossing □ Main Line X Siding or Spur

11. Number of tracks at crossing 1

12. Average daily train traffic, freight 1 train/month

Authorized freight train speed 10 Operated freight train speed 10

13. Average daily train traffic, passenger -

Authorized passenger train speed - Operated passenger train speed -

Section 6 – Current Warning Devices

1. Provide a complete description of the warning devices currently located at the crossing, including signs, gates, lights, train detection circuitry and any other warning devices.

See DKS memorandum dated May 30, 2008

Section 7 – Description of Proposed Changes

1. Describe in detail the proposed changes, including train detection circuitry, sequencing and advanced preemption time, justification for the changes and its effects on current warning devices and warning times for drivers.

See DKS memorandum dated May 30, 2008

Section 8 – Illustration of Current and Proposed Layout

Attach a detailed diagram, drawing, map or other illustration showing the current and proposed layout of the road, crossing surface and railway in the vicinity of the crossing, including shoulders, sidewalks, lanes of travel, bike lanes, warning devices and any other applicable crossing conditions.

Section 9 – Traffic Signal Preemption

Complete the attached Guide for Determining Time Requirements for Traffic Signal Preemption at Highway-Rail Grade Crossings.

1. Specify simultaneous or advance preemption requested.

See DKS memorandum dated May 30, 2008

If advance preemption, what is the preemption time.

See DKS memorandum dated May 30, 2008

Section 10 – Waiver of Hearing by Respondent

Waiver of Hearing

The undersigned represents the Respondent in the petition to install an inter-tie between the highway signal and the railroad crossing signal system at the following crossing.

USDOT Crossing No. _____ UTC Crossing No. _____

We have investigated the conditions at the crossing. We are satisfied the conditions are the same as described by the Petitioner in this docket. We agree the inter-tire should be installed 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

DKS *Associates*
TRANSPORTATION SOLUTIONS

MEMORANDUM

DATE: May 30, 2008

TO: Scott Nutter, City of Auburn

FROM: Chris Long, PE, PTOE and Dave Mitchell

SUBJECT: **15th Street SW/Perimeter Road:** ***Union Pacific Railroad & Spur Track Preempt Improvements***

The purpose of this memorandum is to provide a brief description of the existing railroad crossing conditions on 15th St SW near Perimeter Rd and how future changes to train traffic will need to be mitigated through the addition of new preempt routines and train control devices.

Background

Traffic signals, through a long accepted practice, have provided a preemption process that safely clears and manages vehicle movement at railroad grade crossings. Standard methodology is for railroad equipment to provide an electric contact transfer preempt input to the traffic signal controller as a train approaches an intersection just prior to the railroad's process of closing the track crossing. The contact remains transferred until such time as the train is safely clear of the roadway. The contact then reverts to its rest state and the signal resumes normal operation.

There is a traffic signal at the intersection of 15th St SW and Perimeter Rd that currently has a contact transfer connection to the existing crossing control equipment for the Union Pacific Railroad (UPRR) mainline tracks just west of Perimeter Road. The mainline tracks are controlled by gates that block eastbound and westbound traffic and standard railroad flashers. There is also a private spur east of Perimeter Rd that is controlled by a flagger every time a train needs to cross 15th St SW. New development in the area will be increasing train traffic on the spur track, which has led to the need to preempt the 15th St SW/Perimeter Rd traffic signal.

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Suite 1250
Seattle, WA 98104-1728
(206) 382-9800
(206) 587-0692 fax
www.dksassociates.com

UPRR has proposed to control the spur track crossing through the use of manual pushbuttons located on either side of 15th St SW for activating the preempt of the traffic signal and wayside track signals (dwarf signal) to let the train crew know when the traffic signal has reached a safe dwell state and the train can enter the roadway.

Preemption

Having two RR crossings so close to each other presents some challenges for signal preemption, particularly with the condition of the spur track operations always being subordinate to the UPRR mainline. The UPRR mainline track will always have the ability to seize control of the intersection, whereas the spur traffic operator must request control. There is also the possibility a mainline preempt event could occur while the spur track crossing is occupied by a train. Concurrent train preempts on separate track segments creates the need for special preemption operating rules that are not typical at most railroad crossings. An Econolite ASC3 controller will be installed in the intersection to provide the preemption capabilities required for this unique operation.

The mainline track will continue to use a typical upstream track circuit to place a preempt call through the railroad crossing equipment to the traffic signal. The track circuit will be moving further away from 15th St SW to provide more advanced warning for the approaching train. The spur track cannot use the same track circuit technology because there are not consistent speeds approaching 15th St SW or enough track to provide an advanced warning. In addition, the City has requested the ability for the traffic signal controller to dictate when the spur track is allowed to start a preempt routine. This control is required to assure a spur track preempt event does not start while a mainline preempt event is active.

The spur track will use manual pushbuttons mounted near the track on each side of 15th St SW to place the preempt request. A momentary contact from a pushbutton cannot provide enough information to the traffic signal for it to know when a train is clear of the roadway. A steady state contact transfer is required for a traffic signal to do a preemption sequence. UPRR has assured that a steady state contact transfer would be provided for spur track preemptions. The preemption for both the mainline and spur track will be sent over a 12-pair cable installed by the traffic signal contractor. This 12-pair cable will include the following contact transfers in addition to the typical "8-wire" preempt safety requirement connections:

- Input 1: Input 1 is the replacement of the existing connection from the UPRR mainline track.
- Input 2: Input 2 is a connection from the spur track control, which is activated by UPRR following the pushbutton operation. This input would provide a steady state contact closure during the course of crossing and clearing the roadway.
- Output 1: Output 1 is a connection that provides a contact transfer from the traffic signal to UPRR so that UPRR has a trigger to illuminate the "go" indication on the wayside signal. The timing of this output will be set so the wayside signal will not turn on until the traffic signal has cleared traffic and has reached a preempted condition. When the preempt ends, the contact transfer will return to its rest state, which would indicate to the train control system that the signal should be changed back to the "stop" indication.

The traffic signal will maintain the mainline track as the highest priority preemption.

Providing for two separate preempts on tracks that are both close to a signalized intersection presented two significant challenges:

1. If a mainline preempt request comes in while a spur track preempt is active, the controller must be able to maintain both preempts simultaneously without restarting the clearance routine.
2. To prepare the intersection for the possibility of two concurrent preempts, the traffic signal controller must be able to clear conflicting phases (eastbound through and the westbound through and protected left). Most preempt conditions only require clearance of one phase pair.

These two issues were resolved with the assistance of Econolite, the manufacturer of the traffic signal controller used by the City of Auburn. With Econolite's help, a preemption routine was devised for the ASC3 controller that provides the desired preemption operations. This routine uses advanced features in the controller to create linked preempt sequences, which allows a series of clearance phases to be programmed rather than just one phase. This routine also provides for logical operations, which allow changes to be made to controller operations that are outside of the default controller software. Logic operation was required to allow both preempts to run simultaneously.

Preemption Sequence Summary

The following is a summary of the proposed preempt operations.

Mainline Preempt

The UPRR mainline contact transfer will be wired to Preempt 2 in the traffic signal controller. A preempt on the mainline tracks will go through the following steps from the initial train detection to the train clearing the crossing:

1. Advanced railroad detector triggered by the approaching train.
2. Traffic signal controller runs the eastbound traffic during track clearance. Simultaneously Overlap A[1] is cleared and set to red.
3. After a fixed time into the eastbound clearance, the east and westbound railroad gates near the mainline tracks will drop.
4. Once clearance is complete, the traffic signal will dwell in the westbound left turn (Phase 5) for the duration of the preempt.
5. Train triggers clearance detector on the far side of the street, railroad gates rise, followed by release of the traffic signal to normal operation.

A spur track preempt during a mainline preempt will not be allowed.

Spur Track Preempt

The spur track contact transfer will be wired to Preempt 4 in the traffic signal controller. A preempt on the spur track will go through the following steps from the initial train pushbutton entry to the train clearing the crossing:

1. Train operator presses track button (WX) to start signal preemption.
2. Traffic signal controller runs the eastbound and westbound through movements (Phases 6 and 2 respectively) during track clearance. Simultaneously Overlap A is cleared and set to red.

---

[1] Overlap A will replace "Phase 3" from the original signal design. Overlap A will be for phases (2+4+5+6). This signal will always be green unless there is a preempt.

3. After a fixed time into clearance, the eastbound and westbound gates near the mainline tracks will drop.
4. After Phases 2 and 6 are clear, the controller will sequences to Preempt 3 to run clearance for the westbound left turn traffic (Phase 5).
5. Once the traffic signal has completed clearance and is in the dwell state, a contact transfer would be initiated with the railroad system, to light the "go" indication of the dwarf signal.
6. The signal is in all red and will remain that way until the end of preemption.
7. Train triggers clearance detector on the far side of the street, railroad gates rise, followed by release of the traffic signal to normal operation.

Spur Track + Mainline Preempt

If a mainline preemption starts while the spur track is in preempt, a series of logic operations is performed which make the controller move to Preempt 1, the highest priority preempt. This also keeps the signal in all red and the area between the mainline and spur tracks clear of traffic. The logic is set to keep the controller locked into Preempt 1 until the mainline preempt is over.

Note: UPRR intends to create operating rules that would prevent a mainline preempt to occur during a spur track preempt event, but the system will be designed to accommodate this scenario to reinforce safe operations at the crossing.

See Attachment A for a more detailed description of the preempt programming and Attachment B for a graphical representation of the preempt operation.

ATTACHMENT A

Auburn UPRR & Spur Crossing 15th Ave SW & Perimeter Rd.
Preemption Plan

Meeting with: Jeremy Hoog (Auburn), Jeff Wolf (Econolite), Dave Mitchell 5/23/08

Purpose: To develop a railroad preemption program for the ASC3 controller for the mainline UPRR track and the adjoining industrial spur track at 15th Ave SW & Perimeter Ave.

ASC3 controller RR preempt programming composed on version 2.4.0.0
Plans phase 3 changed to OLA = Ph (2 + 4 + 5 + 6)

Glossary:
PE Active - Drives No Right Turn sign (NRT)
PE Active Dwell - Contact closure to RR for spur dwarf light control.

PE 1 - UPRR Mainline (linked from PE 3)
Conditions: OLA - Remains red, NRT sign – On, PE Override- Active, Keep Dwarf light on
Link - in from logic statement control, Priority belongs to mainline, No clearance phase, Dwell in All Red (no hold phase)

PE 2 - UPRR Mainline - RR hardwire activated
Conditions: NRT sign – Off, PE override – Off, If there is a call to Spur (PE4), stay in PE 2

Sequence: Initiate Mainline PE & exit active phases, Clear Ph 6 & OLA and set to red, Dwell in Ph 5

PE 3 - Spur (linked from PE4)
Conditions: OLA – Red, NRT sign – On, PE override - Off

Sequence: Clear Ph 5 and set to red, Dwell is all red (no hold phase), PE Active Dwell - On (Dwarf light on)

IF MAINLINE PE OCCURS WHILE IN SPUR PE: Goto logic statements

Logic statements:

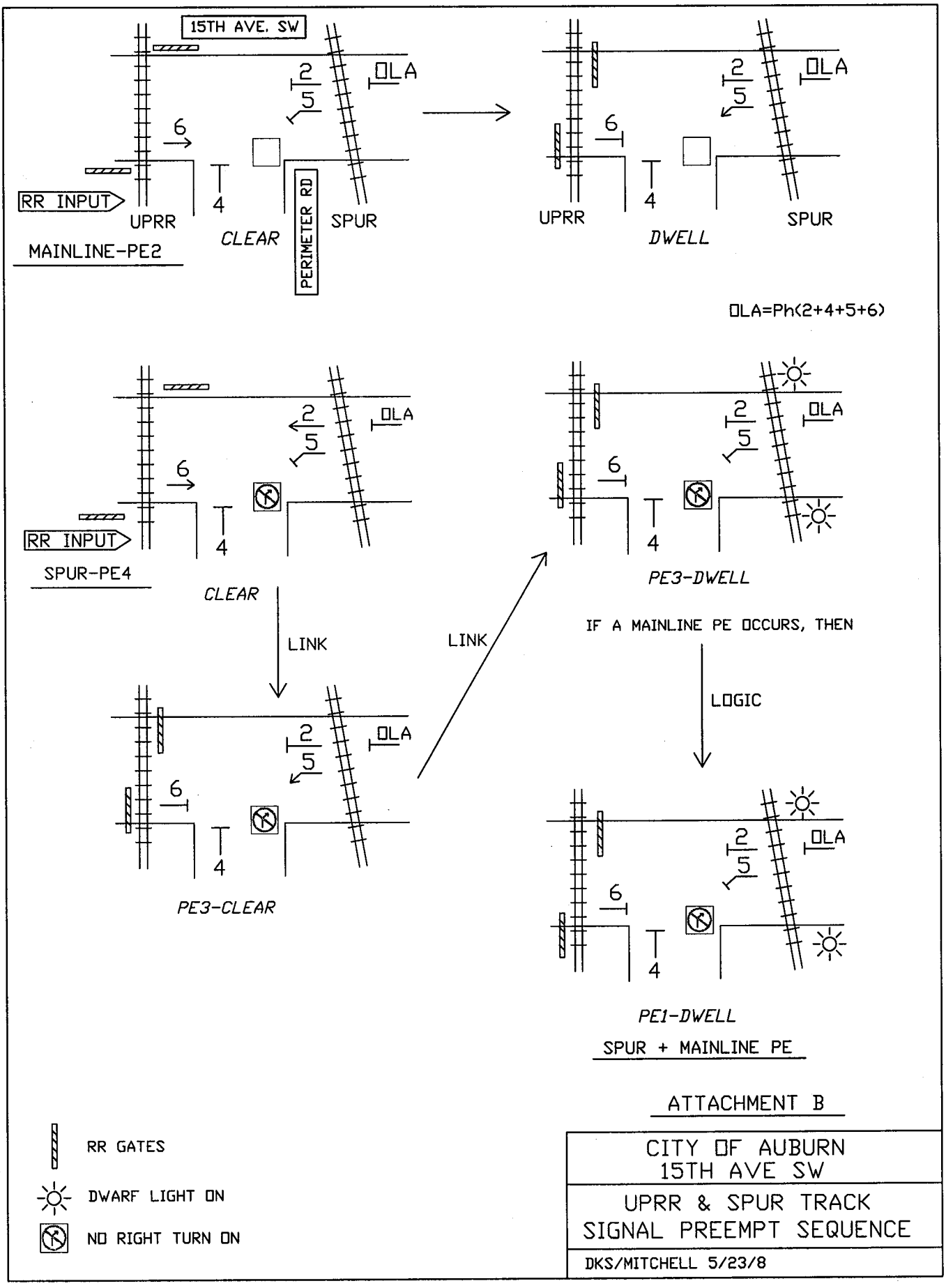
```
IF    PREEMPT ACTIVE 3 IS ON
AND   PMPT 2 INPUT IS ON
THEN  CALL PREEMPT SEQ 1

IF     PREEMPT 1 IS ACTIVE
AND    PMPT 2 INPUT IS ON
THEN   CALL PREEMPT SEQ 1
```

Goto PE1

PE 4 Spur - RR hardwire activated
Conditions: NRT Sign - On

Sequence: Initiate spur PE & exit active phases, Clear Ph 2 & 6, OLA and set to red, Link to PE 3 (go to PE3)

Notes:
1. NRT sign is logic programmed to be on only while spur preempt input is active.
2. Contact transfer to rail system to activate dwarf signals is logic programmed to be on only during spur PE dwell interval.
3. Emergency vehicle PE inputs to be assigned to logical PE inputs 7 - 10, by means of remapping/reassigning unused cabinet connections.



ATTACHMENT B

CITY OF AUBURN 15TH AVE SW
UPRR & SPUR TRACK SIGNAL PREEMPT SEQUENCE
DKS/MITCHELL 5/23/8

Ø5 Spur Preempt

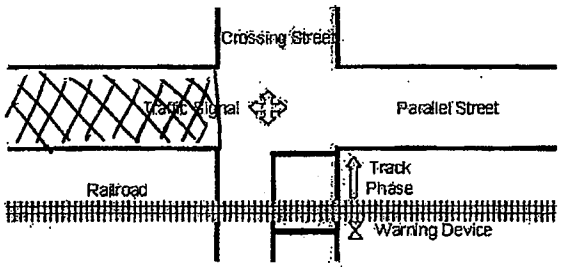
Texas Department of Transportation

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

City Auburn
County King
District

Date 5/22/2008
Completed by Jeremy Hess
District Approval

Show North Arrow



Parallel Street Name: Perimeter Road
Crossing Street Name: 15th St. SW

Railroad: U.P.
Crossing DOT#: N/a

Railroad Contact: John Flynn
Phone: 503 872-1809

SECTION 1: RIGHT-OF-WAY TRANSFER TIME CALCULATION

Preempt verification and response time

			Remarks
1. Preempt delay time (seconds)	1.	Ø	
2. Controller response time to preempt (seconds) (Field equipment)	2.	Ø	Controller type: ASC/3
3. Preempt verification and response time (seconds): add lines 1 and 2	3.	Ø	

Worst-case conflicting vehicle time

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

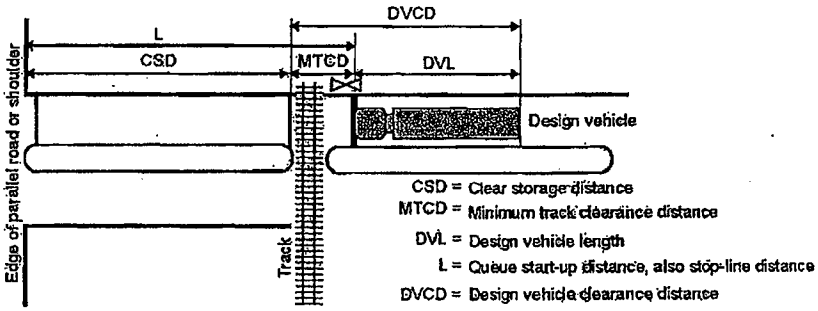
Worst-case conflicting pedestrian time

			Remarks
10. Worst-case conflicting pedestrian phase number	10.	4	
11. Minimum walk time during right-of-way transfer (seconds)	11.	Ø	
12. Pedestrian clearance time during right-of-way transfer (seconds)	12.	5	
13. Vehicle yellow change time, if not included on line 12 (seconds)	13.	4	
14. Vehicle red clearance time, if not included on line 12 (seconds)	14.	1	
15. Worst-case conflicting pedestrian time (seconds): add lines 11 through 14	15.	10	

Worst-case conflicting vehicle or pedestrian time

16. Worst-case conflicting vehicle or pedestrian time (seconds): maximum of lines 9 and 15	16.	10
17. Right-of-way transfer time (seconds): add lines 3 and 16	17.	10

SECTION 2: QUEUE CLEARANCE TIME CALCULATION



			Remarks
18. Clear storage distance (CSD, feet)	18.	Ø	
19. Minimum track clearance distance (MTCD, feet)	19.	180	
20. Design vehicle length (DVL, feet)	20.	75	Design vehicle type:
21. Queue start-up distance, L (feet): add lines 18 and 19	21.	180	
22. Time required for design vehicle to start moving (seconds): calculate as 2+(L÷20)	22.	11	Remarks
23. Design vehicle clearance distance, DVCD (feet): add lines 19 and 20	23.	255	
24. Time for design vehicle to accelerate through the DVCD (seconds)	24.	23	Read from Figure 2 in Instructions.
25. Queue clearance time (seconds): add lines 22 and 24	25.	34	

SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

			Remarks
26. Right-of-way transfer time (seconds): line 17	26.	10	
27. Queue clearance time (seconds): line 25	27.	34	
28. Desired minimum separation time (seconds)	28.	4	
29. Maximum preemption time (seconds): add lines 26 through 28	29.	48	

SECTION 4: SUFFICIENT WARNING TIME CHECK

			Remarks
30. Required minimum time, MT (seconds): per regulations	30.		
31. Clearance time, CT (seconds): get from railroad	31.		over 35 ft
32. Minimum warning time, MWT (seconds): add lines 30 and 31	32.		Excludes buffer time (BT)
33. Advance preemption time, APT, if provided (seconds): get from railroad	33.		Check everything
34. Warning time provided by the railroad (seconds): add lines 32 and 33	34.		
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.		

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: _____

SECTION 5: TRACK CLEARANCE GREEN TIME CALCULATION (OPTIONAL)

Preempt Trap Check

36. Advance preemption time (APT) provided (seconds):	36.	Ø	Line 33 only valid if line 35 is zero.	
37. Multiplier for maximum APT due to train handling	37.	1.25	See Instructions for details.	1.25 - 1.6 Train variance
38. Maximum APT (seconds): multiply line 35 and 37	38.	Ø	Remarks	
39. Minimum duration for the track clearance green interval (seconds)	39.	15.0	For zero advance preemption time	
40. Gates down after start of preemption (seconds): add lines 38 and 39	40.	15	to create Down	
41. Preempt verification and response time (seconds): line 3	41.	Ø	Remarks	
42. Best-case conflicting vehicle or pedestrian time (seconds): usually 0	42.	Ø		
43. Minimum right-of-way transfer time (seconds): add lines 41 and 42	43.	Ø		
44. Minimum track clearance green time (seconds): subtract line 43 from line 40	44.	15		

Clearing of Clear Storage Distance

45. Time required for design vehicle to start moving (seconds), line 22	45.	11		
46. Design vehicle clearance distance (DVCD, feet), line 23	46.	255	Remarks	
47. Portion of CSD to clear during track clearance phase (feet)	47.	0	CSD* in Figure 3 in Instructions.	
48. Design vehicle relocation distance (DVRD, feet): add lines 46 and 47	48.	255		
49. Time required for design vehicle to accelerate through DVRD (seconds)	49.	23	Read from Figure 2 in Instructions.	
50. Time to clear portion of clear storage distance (seconds): add lines 45 and 49	50.	34		
51. **Track clearance green interval (seconds): maximum of lines 44 and 50, round up to nearest full second**	51.	34 (Ø5)		

SECTION 6: VEHICLE-GATE INTERACTION CHECK (OPTIONAL)

52. Right-of-way transfer time (seconds): line 17	52.			
53. Time required for design vehicle to start moving (seconds), line 22	53.			
54. Time required for design vehicle to accelerate through DVL (on line 20, seconds)	54.		Figure 2 Read from Table 3 in Instructions.	
55. Time required for design vehicle to clear descending gate (seconds): add lines 52 though 54	55.		Remarks	
56. Duration of flashing lights before gate descent start (seconds): get from railroad	56.		Remarks	
57. Full gate descent time (seconds): get from railroad	57.	12		
58. Proportion of non-interaction gate descent time	58.		Read from Figure 5 in Instructions.	
59. Non-interaction gate descent time (seconds): multiply lines 57 and 58	59.			
60. Time available for design vehicle to clear descending gate (seconds): add lines 56 and 59	60.			
61. **Advance preemption time (APT) required to avoid design vehicle-gate interaction (seconds): subtract line 60 from line 55, round up to nearest full second, enter 0 if less than 0**	61.			

Ø6 Mainline Preempt

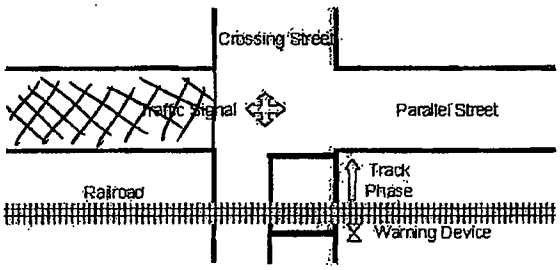
Texas Department of Transportation

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

City Auburn
County King
District

Date 5/22/2008
Completed by Jeremy Hoog
District Approval

Show North Arrow



Parallel Street Name: Perimeter Road
Crossing Street Name: 15th St. SW

Railroad U.P.
Crossing DOT# 396 593N

Railroad Contact John Flynn
Phone 503-872-1809

SECTION 1: RIGHT-OF-WAY TRANSFER TIME CALCULATION

Preempt verification and response time

			Remarks
1. Preempt delay time (seconds)	1.	Ø	
2. Controller response time to preempt (seconds) (field equipment)	2.	Ø	Controller type ASC/3
3. Preempt verification and response time (seconds): add lines 1 and 2	3.	Ø	

Worst-case conflicting vehicle time

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

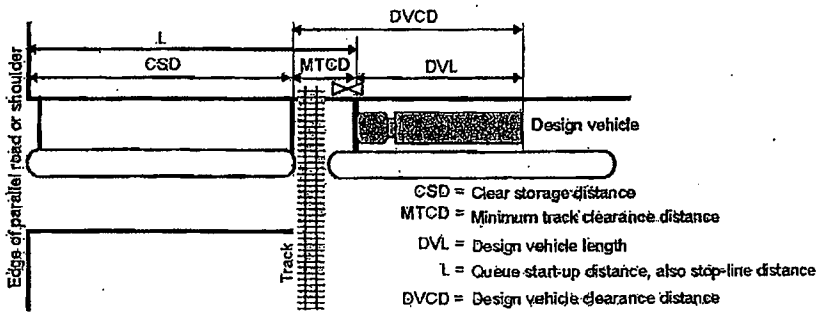
Worst-case conflicting pedestrian time

			Remarks
10. Worst-case conflicting pedestrian phase number	10.	4	
11. Minimum walk time during right-of-way transfer (seconds)	11.	Ø	
12. Pedestrian clearance time during right-of-way transfer (seconds)	12.	5	
13. Vehicle yellow change time, if not included on line 12 (seconds)	13.	4	
14. Vehicle red clearance time, if not included on line 12 (seconds)	14.	1	
15. Worst-case conflicting pedestrian time (seconds): add lines 11 through 14	16.	10	

Worst-case conflicting vehicle or pedestrian time

16. Worst-case conflicting vehicle or pedestrian time (seconds): maximum of lines 9 and 15	16.	10
17. Right-of-way transfer time (seconds): add lines 3 and 16	17.	10

SECTION 2: QUEUE CLEARANCE TIME CALCULATION



			Remarks
18. Clear storage distance (CSD, feet)	18.	130	
19. Minimum track clearance distance (MTCD, feet)	19.	46	
20. Design vehicle length (DVL, feet)	20.	75	Design vehicle type: Double Trailer
21. Queue start-up distance, L (feet): add lines 18 and 19	21.	176	
22. Time required for design vehicle to start moving (seconds): calculate as 2+(L÷20)	22.	11	Remarks
23. Design vehicle clearance distance, DVCD (feet): add lines 19 and 20	23.	121	
24. Time for design vehicle to accelerate through the DVCD (seconds)	24.	15	Read from Figure 2 in Instructions.
25. Queue clearance time (seconds): add lines 22 and 24	**25.**	26	

SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

			Remarks
26. Right-of-way transfer time (seconds): line 17	26.	10	
27. Queue clearance time (seconds): line 25	27.	26	
28. Desired minimum separation time (seconds)	28.	4	
29. Maximum preemption time (seconds): add lines 26 through 28	**29.**	40	

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.	1	over 35 ft
32. Minimum warning time, MWT (seconds): add lines 30 and 31	32.	21	Excludes buffer time (BT)
33. Advance preemption time, APT, if provided (seconds): get from railroad	33.	Ø	Check everything
34. Warning time provided by the railroad (seconds): add lines 32 and 33	34.	21	
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.**	19	Advance Warning P.E. Time

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:

SECTION 5: TRACK CLEARANCE GREEN TIME CALCULATION (OPTIONAL)

Preempt Trap Check

36.	Advance preemption time (APT) provided (seconds):	36.	19	Line 33 only valid if line 35 is zero.
37.	Multiplier for maximum APT due to train handling	37.	1.25	See Instructions for details. 1.25 - 1.6 Train Variance
38.	Maximum APT (seconds): multiply line 36 and 37	38.	24	Remarks
39.	Minimum duration for the track clearance green interval (seconds)	39.	15.0	For zero advance preemption time
40.	Gates down after start of preemption (seconds): add lines 38 and 39	40.	24	to create Down
41.	Preempt verification and response time (seconds): line 3	41.	Ø	Remarks
42.	Best-case conflicting vehicle or pedestrian time (seconds): usually 0	42.	Ø	
43.	Minimum right-of-way transfer time (seconds): add lines 41 and 42	43.	Ø	
44.	Minimum track clearance green time (seconds): subtract line 43 from line 40	44.	24	

Clearing of Clear Storage Distance

45.	Time required for design vehicle to start moving (seconds), line 22	45.	11	
46.	Design vehicle clearance distance (DVCD, feet), line 23	46.	121	Remarks
47.	Portion of CSD to clear during track clearance phase (feet)	47.	130	CSD* in Figure 3 in Instructions.
48.	Design vehicle relocation distance (DVRD, feet): add lines 46 and 47	48.	251	
49.	Time required for design vehicle to accelerate through DVRD (seconds)	49.	22	Read from Figure 2 in Instructions.
50.	Time to clear portion of clear storage distance (seconds): add lines 45 and 49	50.	33	
51.	**Track clearance green interval (seconds): maximum of lines 44 and 50, round up to nearest full second**	51.	33	Ø6

SECTION 6: VEHICLE-GATE INTERACTION CHECK (OPTIONAL)

52.	Right-of-way transfer time (seconds): line 17	52.		
53.	Time required for design vehicle to start moving (seconds), line 22	53.		Figure 2
54.	Time required for design vehicle to accelerate through DVL (on line 20, seconds)	54.		Read from Table 3 in Instructions.
55.	Time required for design vehicle to clear descending gate (seconds): add lines 52 though 54	55.		Remarks
56.	Duration of flashing lights before gate descent start (seconds): get from railroad	56.		Remarks
57.	Full gate descent time (seconds): get from railroad	57.	12	
58.	Proportion of non-interaction gate descent time	58.		Read from Figure 5 in Instructions.
59.	Non-interaction gate descent time (seconds): multiply lines 57 and 58	59.		
60.	Time available for design vehicle to clear descending gate (seconds): add lines 56 and 59	60.		
61.	**Advance preemption time (APT) required to avoid design vehicle-gate interaction (seconds): subtract line 60 from line 55, round up to nearest full second, enter 0 if less than 0**	61.		

Ø2 : Ø6 Spur Preempt

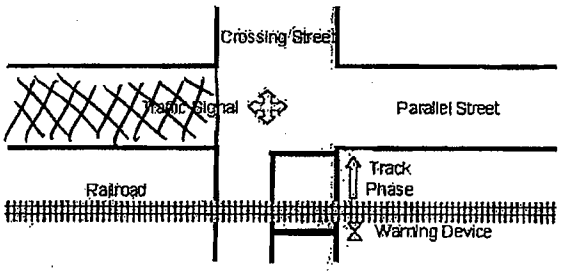
Texas Department of Transportation

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

City Auburn
County King
District

Date 5/22/2008
Completed by Jeremy Hoog
District Approval

Show North Arrow



Parallel Street Name: Perimeter Road
Crossing Street Name: 15th St. SW

Railroad: U.P.
Railroad Contact
Crossing DOT#
Phone

SECTION 1: RIGHT-OF-WAY TRANSFER TIME CALCULATION

Preempt verification and response time

			Remarks
1. Preempt delay time (seconds)	1.	Ø	
2. Controller response time to preempt (seconds) (Field equipment)	2.	Ø	Controller type: ASC/3
3. Preempt verification and response time (seconds): add lines 1 and 2	3.	Ø	

Worst-case conflicting vehicle time

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

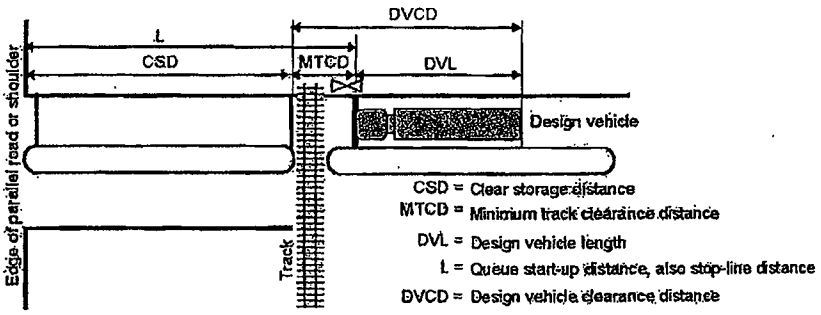
Worst-case conflicting pedestrian time

			Remarks
10. Worst-case conflicting pedestrian phase number	10.	4	
11. Minimum walk time during right-of-way transfer (seconds)	11.	Ø	
12. Pedestrian clearance time during right-of-way transfer (seconds)	12.	5	
13. Vehicle yellow change time, if not included on line 12 (seconds)	13.	4	
14. Vehicle red clearance time, if not included on line 12 (seconds)	14.	1	
15. Worst-case conflicting pedestrian time (seconds): add lines 11 through 14	15.	10	

Worst-case conflicting vehicle or pedestrian time

16. Worst-case conflicting vehicle or pedestrian time (seconds): maximum of lines 9 and 15	16.	10
17. Right-of-way transfer time (seconds): add lines 3 and 16	17.	10

SECTION 2: QUEUE CLEARANCE TIME CALCULATION



			Remarks
18. Clear storage distance (CSD, feet)	18.	0	
19. Minimum track clearance distance (MTCD, feet)	19.	420	
20. Design vehicle length (DVL, feet)	20.	75	Design vehicle type:
21. Queue start-up distance, L (feet): add lines 18 and 19	21.	420	
22. Time required for design vehicle to start moving (seconds): calculate as 2+(L÷20)	22.	23	Remarks
23. Design vehicle clearance distance, DVCD (feet): add lines 19 and 20	23.	495	
24. Time for design vehicle to accelerate through the DVCD (seconds)	24.	3.3	Read from Figure 2 in Instructions.
25. Queue clearance time (seconds): add lines 22 and 24	**25.**	56	

SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

			Remarks
26. Right-of-way transfer time (seconds): line 17	26.	10	
27. Queue clearance time (seconds): line 25	27.	56	
28. Desired minimum separation time (seconds)	28.	4	
29. Maximum preemption time (seconds): add lines 26 through 28	**29.**	70	

SECTION 4: SUFFICIENT WARNING TIME CHECK

			Remarks
30. Required minimum time, MT (seconds): per regulations	30.		
31. Clearance time, CT (seconds): get from railroad	31.	over 35 ft	
32. Minimum warning time, MWT (seconds): add lines 30 and 31	32.		Excludes buffer time (BT)
33. Advance preemption time, APT, if provided (seconds): get from railroad	33.		Check everything
34. Warning time provided by the railroad (seconds): add lines 32 and 33	34.		
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.**		

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:

SECTION 5: TRACK CLEARANCE GREEN TIME CALCULATION (OPTIONAL)

Preempt Trap Check

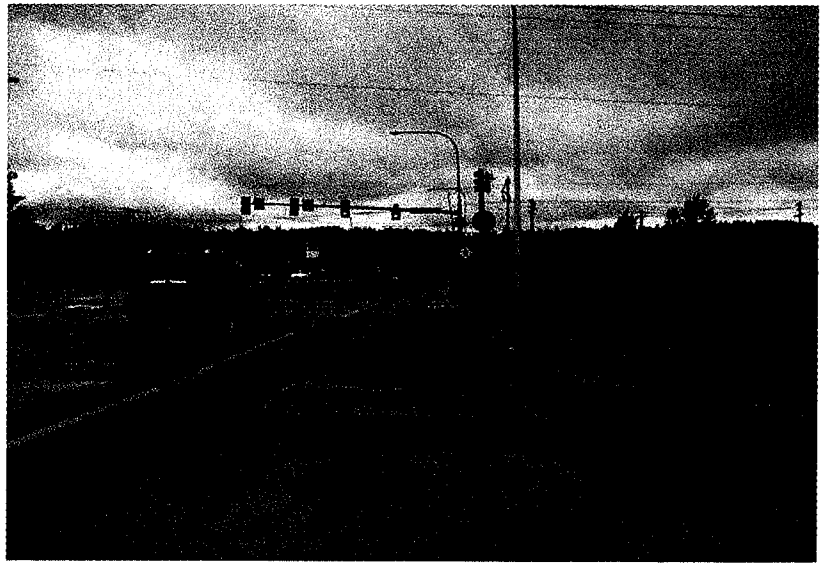
36. Advance preemption time (APT) provided (seconds):	36.	Ø	Line 33 only valid if line 35 is zero.	
37. Multiplier for maximum APT due to train handling	37.	1.25	See instructions for details.	1.25 – 1.6 Tmin Variation
38. Maximum APT (seconds): multiply line 36 and 37	38.	Ø	Remarks	
39. Minimum duration for the track clearance green interval (seconds)	39.	15.0	For zero advance preemption time	
40. Gates down after start of preemption (seconds): add lines 38 and 39	40.	15	to create Down	
41. Preempt verification and response time (seconds): line 3	41.	Ø	Remarks	
42. Best-case conflicting vehicle or pedestrian time (seconds): usually 0	42.	Ø		
43. Minimum right-of-way transfer time (seconds): add lines 41 and 42	43.	Ø		
44. Minimum track clearance green time (seconds): subtract line 43 from line 40	44.	15		

Clearing of Clear Storage Distance

45. Time required for design vehicle to start moving (seconds), line 22	45.	23		
46. Design vehicle clearance distance (DVCD, feet), line 23	46.	495	Remarks	
47. Portion of CSD to clear during track clearance phase (feet)	47.	0	CSD* in Figure 3 in Instructions.	
48. Design vehicle relocation distance (DVRD, feet): add lines 46 and 47	48.	495		
49. Time required for design vehicle to accelerate through DVRD (seconds)	49.	33	Read from Figure 2 in Instructions.	
50. Time to clear portion of clear storage distance (seconds): add lines 45 and 49	50.	56		
51. **Track clearance green interval (seconds): maximum of lines 44 and 50, round up to nearest full second**	51.	56		Ø2

SECTION 6: VEHICLE-GATE INTERACTION CHECK (OPTIONAL)

52. Right-of-way transfer time (seconds): line 17	52.			
53. Time required for design vehicle to start moving (seconds), line 22	53.			
54. Time required for design vehicle to accelerate through DVL (on line 20, seconds)	54.		Read from ~~Table~~ Figure 2 in Instructions.	
55. Time required for design vehicle to clear descending gate (seconds): add lines 52 though 54	55.			
56. Duration of flashing lights before gate descent start (seconds): get from railroad	56.		Remarks	
57. Full gate descent time (seconds): get from railroad	57.	12	Remarks	
58. Proportion of non-interaction gate descent time	58.		Read from Figure 5 in Instructions.	
59. Non-interaction gate descent time (seconds): multiply lines 57 and 58	59.			
60. Time available for design vehicle to clear descending gate (seconds): add lines 56 and 59	60.			
61. **Advance preemption time (APT) required to avoid design vehicle-gate interaction (seconds): subtract line 60 from line 55, round up to nearest full second, enter 0 if less than 0**	61.			



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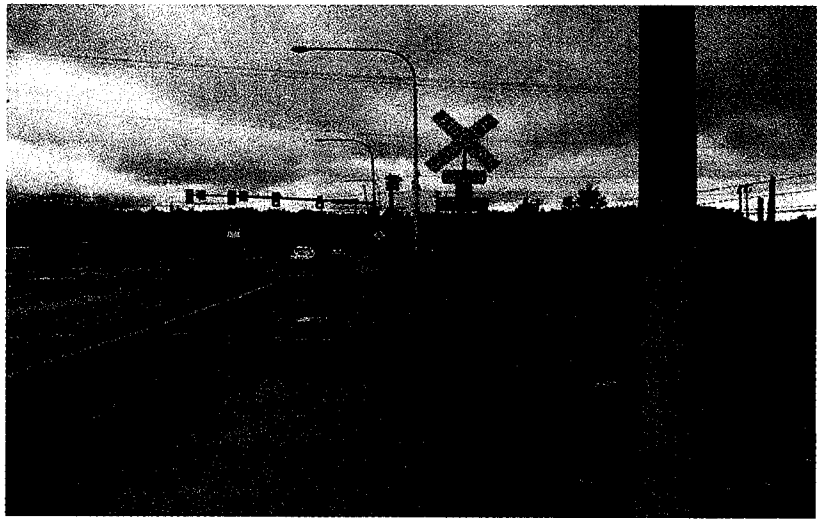

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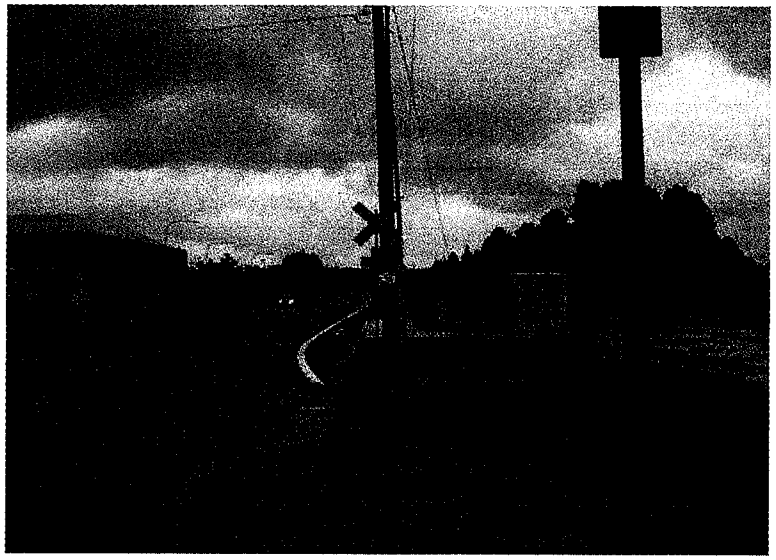

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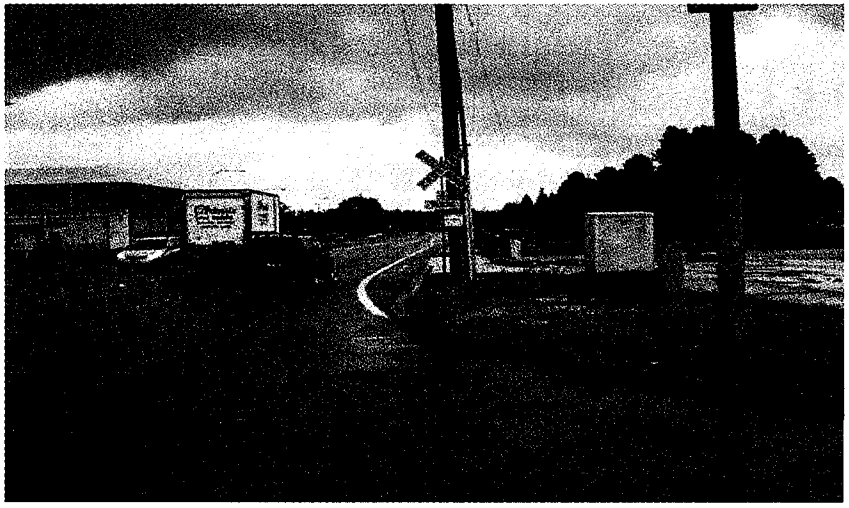

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COVER SHEET
FOR RAIL TRACK AND SIGNAL IMPROVEMENTS
AMB VALLEY DISTRIBUTION CENTER

PORTIONS OF SECTIONS 24 TOWNSHIP 21 NORTH,
RANGE 4 EAST, W.M. KING COUNTY, WASHINGTON

LEGAL DESCRIPTION :

LOT 8, CITY OF AUBURN NO. LLA-05-0017 AS RECORDED KING COUNTY AUDITORS FILE RECORDING NO. 20051213002289
PORTION SECTION 24, TOWNSHIP 21N, RANGE 4 EAST

PROJECT/SURVEY INFORMATION:

1. PROPERTY AREA: 1,734,677 ± SQUARE FEET (39.823 ± ACRES)
2. TAX PARCEL NUMBER OF THE SUBJECT PROPERTY IS: 242104-9090 (LOT 8)
3. ZONING: M2 (HEAVY INDUSTRIAL), AUBURN, WA
4. HORIZONTAL DATUM IS NAD 1983/91 PER INFORMATION FURNISHED BY THE CITY OF AUBURN. WE HELD CITY OF AUBURN GPS PT. NO. 129 FOR POSITION AND THE INVERSED BEARING (S01°18'38"W) TOWARD CITY OF AUBURN GPS PT. NO. 142.
5. VERTICAL DATUM IS NAVD 1988 PER INFORMATION FURNISHED BY THE CITY OF AUBURN. BENCHMARK IS CITY OF AUBURN BENCHMARK NO. 31-C; TOP OF BRASS MONUMENT AT 41ST STREET SE AND "A" STREET SE. ELEVATION = 91.81 FEET.
6. FLOOD ZONE DESIGNATION = X, AREA DETERMINED TO BE OUTSIDE OF 500-YEAR FLOOD PLAIN, ACCORDING TO FLOOD INSURANCE RATE MAP, ("FIRM") NOS. 53033C1261 F AND 53033C1263 F, COMMUNITY NO. 530073, (CITY OF AUBURN), PANEL NOS. 1261 AND 1263, SUFFIX F, EFFECTIVE MAY 16, 1995, KING COUNTY, WASHINGTON, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY ("FEMA").
7. UTILITIES OTHER THAN THOSE SHOWN MAY EXIST ON THIS SITE. ONLY THOSE UTILITIES WITH EVIDENCE OF THEIR INSTALLATION VISIBLE AT GROUND SURFACE OR SHOWN ON RECORD DRAWING PROVIDED BY OTHERS ARE SHOWN HEREON. UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. UNDERGROUND CONNECTIONS ARE SHOWN AS STRAIGHT LINES BETWEEN SURFACE UTILITY LOCATIONS BUT MAY CONTAIN BENDS OR CURVES NOT SHOWN. SOME UNDERGROUND LOCATIONS SHOWN HEREON MAY HAVE BEEN TAKEN FROM PUBLIC RECORDS. BARGHAUSEN CONSULTING ENGINEERS, INC. ASSUMES NO LIABILITY FOR THE ACCURACY OF PUBLIC RECORDS OR RECORDS OF OTHERS.
8. TOPOGRAPHIC PORTIONS OF THIS SURVEY WERE PRODUCED BY PHOTOGRAMMETRIC METHODS FROM PHOTOS DATED SEPTEMBER 7, 1997; THE MAPPING PREPARED BY WALKER AND ASSOCIATES UNDER JOB NO. 502-0107 AND DATED JANUARY 24, 2001. TOPOGRAPHY HAS BEEN SUPPLEMENTED BY FIELD SURVEY OF NEWER CONSTRUCTION.

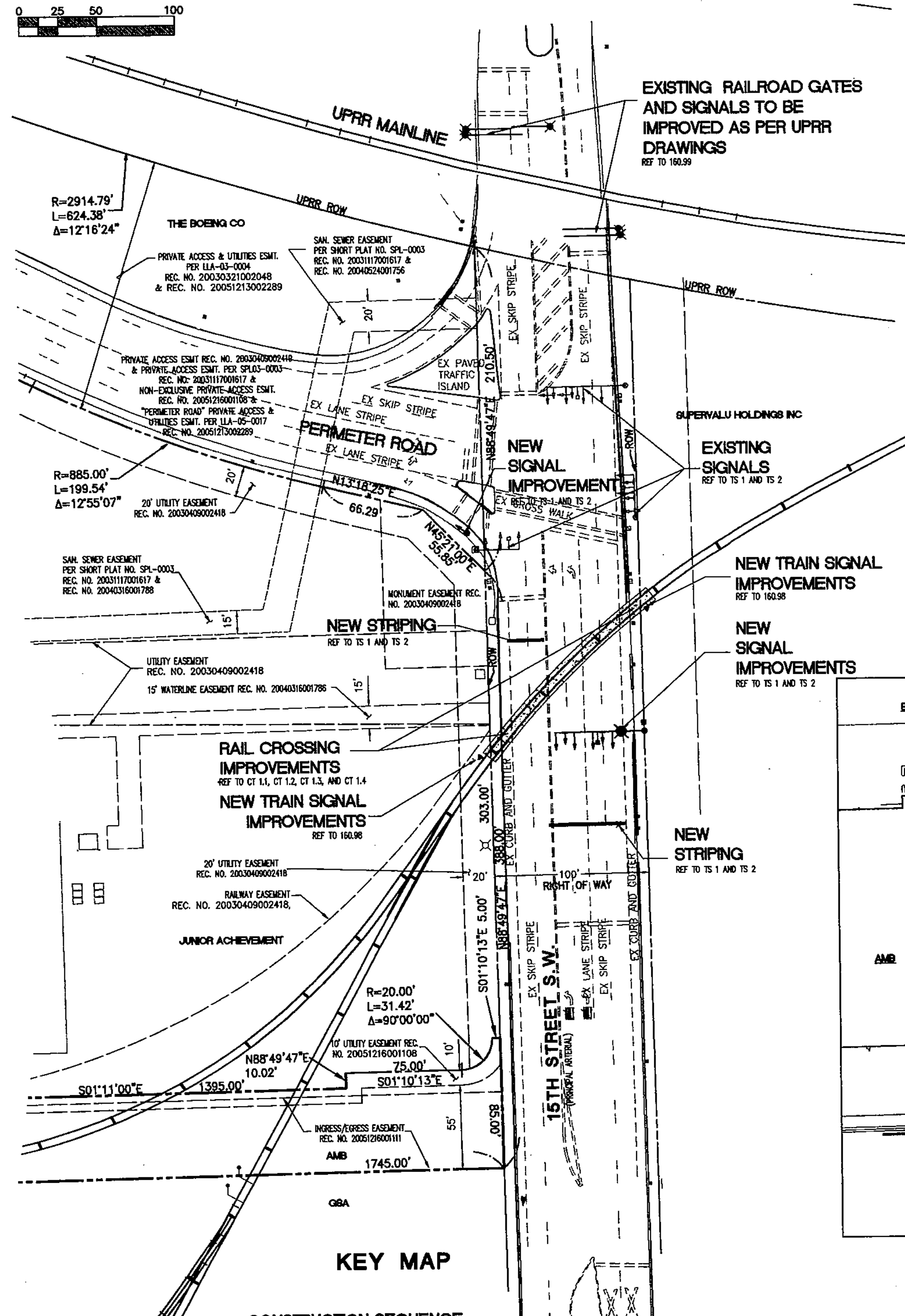
CITY OF AUBURN GENERAL NOTES

1. THIS DEVELOPMENT PROJECT SHALL CONFORM TO THE CITY OF AUBURN'S REQUIREMENTS AND BE IN ACCORDANCE WITH THE APPROVED PLANS. ANY CHANGES FROM THE APPROVED PLAN WILL REQUIRE APPROVAL FROM THE OWNER, ENGINEER AND THE CITY.
2. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE "WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT) STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION" (2002 EDITION), EXCEPT WHERE SUPPLEMENTED OR MODIFIED BY THE CITY'S PROJECT SPECIFICATIONS MANUAL, AND THE CITY'S STANDARD CONSTRUCTION DETAILS MANUAL. COPIES OF THE ABOVE DOCUMENTS SHALL BE AVAILABLE AT THE JOB SITE DURING CONSTRUCTION.
3. A PRE-CONSTRUCTION MEETING SHALL BE REQUIRED PRIOR TO THE START OF ALL CONSTRUCTION. CONTACT THE PUBLIC WORKS DEPARTMENT AT 253-931-3010 TO SCHEDULE A MEETING.
4. LOCATIONS SHOWN FOR EXISTING UTILITIES ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT OVERHEAD UTILITY LINES MAY NOT BE SHOWN ON THE DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE TRUE ELEVATIONS AND LOCATIONS OF ALL UNDERGROUND UTILITIES AND THE EXTEND OF ANY HAZARD CREATED BY OVERHEAD UTILITY LINES. IDENTIFICATION, LOCATION MARKING AND RESPONSIBILITY FOR UNDERGROUND FACILITIES OR UTILITIES, IS GOVERNED BY THE PROVISIONS OF CHAPTER 19.122 REVISED CODE OF WASHINGTON (RCW). PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL CALL ONE-CALL (1-800-424-5555) FOR UTILITY LOCATIONS (WATER, SANITARY SEWER, STORM SEWER, GAS, POWER, TELEPHONE AND TELEVISION).
5. PRIOR TO THE START OF CONSTRUCTION, A PROPOSED ROUTE AND SCHEDULE FOR HAULING MATERIAL TO THE SITE SHALL BE SUBMITTED TO THE CITY FOR APPROVAL. IF THE CITY BELIEVES THAT THE PROPOSED HAUL ROUTE WILL ADVERSELY IMPACT THE STREET NETWORK, HAULING MAY BE LIMITED TO APPROPRIATE OFF-PEAK HOURS OR ALTERNATE ROUTES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PUBLIC SAFETY ON AND AROUND THIS PROJECT. PRIOR THE THE START OF WORK, ALL METHODS AND EQUIPMENT USED FOR TRAFFIC CONTROL AND STREET MAINTENANCE SHALL BE SUBMITTED TO THE CITY FOR APPROVAL. CONTRACTORS AND THEIR SURETY SHALL BE LIABLE FOR INJURIES AND DAMAGES TO PERSONS AND PROPERTY SUFFERED BECAUSE OF CONTRACTORS OPERATIONS OR NEGLIGENCE CONNECTED WITH THEM.
7. ALL CONSTRUCTION SURVEYING FOR EXTENSIONS OF PUBLIC FACILITIES SHALL BE DONE UNDER THE DIRECTION OF A WASHINGTON LICENSED LAND SURVEYOR OR A WASHINGTON LICENSED PROFESSIONAL CIVIL ENGINEER.
8. CERTIFIED DRAWINGS ARE REQUIRED PRIOR TO PROJECT ACCEPTANCE. REFER TO THE CITY'S "RECORD CONSTRUCTION DOCUMENT" HANDOUT.

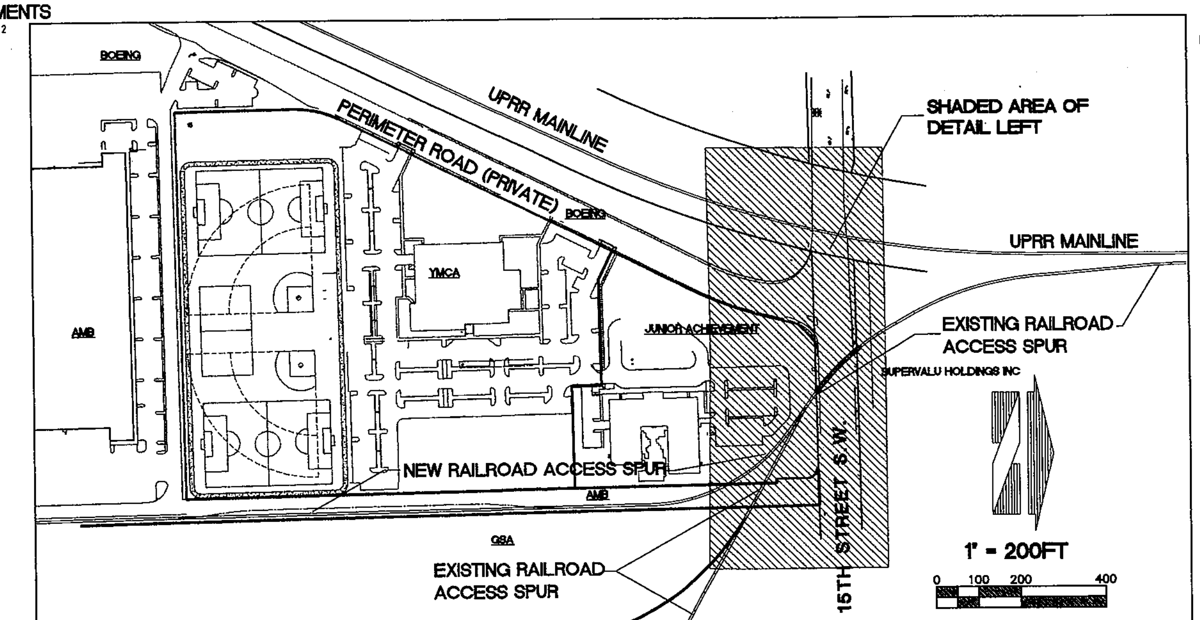
LEGEND:

PROPOSED CONCRETE	
PROPOSED TRAFFIC SIGNAL WITH ILLUMINAIRE	
RAILROAD SIGNAL GATE	
RAILROAD	

CALL BEFORE YOU DIG:
1-800-424-5555



KEY MAP



OVERVIEW AREA MAP

CONSTRUCTION SEQUENCE:

1. SCHEDULE AND ATTEND PRE-CONSTRUCTION MEETING WITH CITY OF AUBURN OFFICIALS.
2. INSTALL TEMPORARY CATCH BASIN PROTECTION AT EXISTING CATCH BASINS PER COA STD. EROSION-04. AMEND EROSION CONTROL FEATURES AS NECESSARY. DEMOLISH PAVEMENT AND DISPOSE OF OFFSITE AT AN APPROVED LOCATION.
3. FINAL GRADE AND PREPARE SUBBASE FOR PAVING
4. INSTALL NEW RAILS AND PAVE
5. CLEAN STORM SYSTEM AND STREET.
6. REMOVE EROSION AND SEDIMENTATION CONTROL MEASURES UPON FINAL SITE STABILIZATION AND APPROVAL FROM CITY INSPECTOR.
7. COMPLETE INSPECTION/ PUNCHLIST

UTILITY CONFLICT NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ 1-800-424-5555 AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

RECORD DRAWING CERTIFICATION

THESE DRAWINGS CONFORM TO THE CONTRACTOR'S CONSTRUCTION RECORDS.

BY ______ *DATE* ______
TITLE/POSITION ______
CONFIRMED BY CITY: ______ *DATE* ______

PROJECT REF: FAC08-000X

THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S ENGINEERING DIVISION REQUIREMENTS.

APPROVED BY: ______
DATE APPROVED: ______

OWNER:

AMB PROPERTY LP
CONTACT: DAN LETTER
ADDRESS: AMB PROPERTY LP
ONE O'HARE CENTRE
6250 NORTH RIVER ROAD,
SUITE 1100
ROSEMONT IL 60018
PHONE: (847) 696-4600

ENGINEER:

BARGHAUSEN CONSULTING ENGINEERS, INC.
CONTACT: JAY S. GRUBB, P.E.
ADDRESS: 18215 72ND AVENUE SOUTH
KENT, WA 98032
PHONE: (425) 251-6222

SURVEYOR:

BARGHAUSEN CONSULTING ENGINEERS, INC.
CONTACT: DENNIS J. SALTYS, P.L.S.
ADDRESS: 18215 72ND AVENUE SOUTH
KENT, WA 98032
PHONE: (425) 251-6222

TRAFFIC SIGNAL ENGINEER:

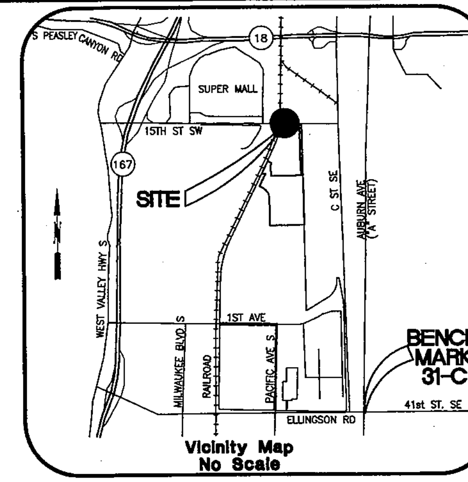
THE TRANSPO GROUP, INC.
CONTACT: KEVIN COLLINS
ADDRESS: 11730 118TH AVENUE
NE, SUITE 600
KIRKLAND, WA 98034
OFFICE: 425.821.3665
MOBILE: 425.466.4347

GEOTECHNICAL ENGINEER:

GEOENGINEERS
CONTACT: DEBRA OVERBAY
ADDRESS: 2924 COLBY AVE
EVERETT, WA 98201
OFFICE: 425.252.4565
MOBILE: (206) 930-6481

RAIL SPUR ENGINEER:

DAVID EVANS AND ASSOCIATES, INC.
CONTACT: CHARLES BURNHAM
ADDRESS: 3700 PACIFIC HAY EAST SUITE 311
TACOMA WA 98424
OFFICE: 253.922.9780
DIRECT: 253.250.0656



SITE ADDRESS:

2202 PERIMETER ROAD (SEC. 15th STREET SW AND PERIMETER ROAD

ESTIMATED EARTHWORK QUANTITIES:

CUT = 170 C.Y. ; FILL = 70 C.Y.
(QUANITIES ARE INCIDENTAL TO RECONCSTRUCTION OF RAIL CROSSING, SIGNAL POLE AND UTILITY EXCAVATION, PROVIDED FOR PERMIT PURPOSES ONLY)

SHEET INDEX

CO	COVER SHEET
E1	TEMPORARY EROSION AND SEDIMENTATION PLAN
TS 1	AMB WAREHOUSE RAIL SPUR SIGNAL 15TH STREET SW/PERIMETER ROAD
TS 2	AMB WAREHOUSE RAIL SPUR SIGNAL 15TH STREET SW/PERIMETER ROAD
CT 1.1	AMB RAIL CROSSING- 15TH STREET SW TRACK PLAN AND PROFILE
CT 1.2	AMB RAIL CROSSING- 15TH STREET SW CONCRETE CROSSING
CT 1.3	AMB RAIL CROSSING- 15TH STREET SW TRACK DETAILS
CT 1.4	AMB RAIL CROSSING- 15TH STREET SW TRACK DETAILS
160.98	UNION PACIFIC RAILROAD- AUBURN, WASHINGTON HIGHWAY CROSSING SIGNALS CONTROL CIRCUITS
160.99	UNION PACIFIC RAILROAD- SEATTLE, WASHINGTON TO PENINSULA JCT., OREGON C.T.C. CIRCUITS

FAC08-00XX

No.	Date	By	Ckd.	Appr.	Revision

JAY S. GRUBB — STATE OF WASHINGTON — 28527 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 01-07-

Job Number	12088
Sheet	CO of 10

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX
CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

Designed CFB · Drawn CFB · Checked JSG · Approved JSG · Date 04/18/08
Scale: Horizontal VARIES · Vertical N/A

For: AMB PROPERTY LP
ONE O'HARE CENTRE
6250 NORTH RIVER ROAD, SUITE 1100
ROSEMONT IL 60018

Title: COVER SHEET
RAIL TRACK AND SIGNAL IMPROVEMENTS
15TH STREET SW AND PERMETER ROAD
AMB VALLEY DISTRIBUTION CENTER
AUBURN, KING COUNTY, WASHINGTON

File:P:\12000s\12088\engineering\12088-02.dwg Date/Time:5/21/2008 4:24 PM Scale:1"-0" = 1'-0" CBULL Xref: , z12088ta.dwg, z12088s.dwg, z12088a.dwg, z12088tDEA.dwg, jay.dwg

TEMPORARY EROSION AND SEDIMENTATION PLAN

GRADING AND EROSION CONTROL NOTES:

1. WITHIN THE CITY OF AUBURN, ALL REQUIRED SEDIMENTATION AND EROSION CONTROL FACILITIES INDICATED ON THE PLANS MUST BE CONSTRUCTED AND IN OPERATION, PRIOR TO LAND CLEARING AND/OR OTHER CONSTRUCTION ACTIVITIES. THESE FACILITIES SHALL BE MAINTAINED, AND UPGRADED IF NECESSARY TO INSURE THAT SEDIMENT LADEN WATER AND STORM DRAINAGE RUNOFF DOES NOT IMPACT THE ADJACENT PROPERTIES, NATURAL DRAINAGE WAYS OR THE EXISTING CITY STORM DRAINAGE SYSTEM.
2. THE SOURCE FOR ALL MATERIAL IMPORTED TO THE SITE SHALL BE APPROVED BY THE CITY.
3. THE DETENTION (RETENTION IF INFILTRATION SYSTEM IS USED), SEDIMENTATION AND EROSION CONTROL FACILITIES DEPICTED ON THE APPROVED DRAWINGS ARE INTENDED TO BE MINIMUM REQUIREMENTS TO MEET ANTICIPATED SITE CONDITIONS. ADDITIONAL DRAINAGE AND EROSION CONTROL FACILITIES MAY BE REQUIRED AS SITUATIONS WARRANT DURING CONSTRUCTION. THE IMPLEMENTATION, MAINTENANCE, REPLACEMENT, AND ADDITIONS TO THESE CONTROL SYSTEMS SHALL BE THE RESPONSIBILITY OF THE PERMITTEE.
4. THE TEMPORARY EROSION CONTROL FACILITIES, INCLUDING ALL PERIMETER CONTROLS, AND THE DETENTION (RETENTION IF INFILTRATION SYSTEM IS USED) CONTROL PONDS SHALL REMAIN IN PLACE UNTIL FINAL SITE CONSTRUCTION IS COMPLETED AND APPROVAL HAS BEEN RECEIVED FROM THE CITY OF AUBURN.
5. THE CONTRACTOR WILL BE REQUIRED TO WATER THE SITE, AS NECESSARY, TO REDUCE DUST EMISSIONS AS A RESULT OF CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL ALSO SWEEP ALL AFFECTED PUBLIC ROADS, AS NECESSARY, TO REMOVE MUD DEPOSITED AS A RESULT OF PROJECT CONSTRUCTION ACTIVITY.
6. ALL AREAS OF ACTIVE EARTHWORK WHICH HAVE THE POTENTIAL FOR EROSION AND SEDIMENTATION IMPACTS ON ADJACENT PROPERTY, NATURAL DRAINAGE WAYS. OR THE EXISTING STORM DRAINAGE SYSTEM MUST BE STABILIZED ACCORDING TO THE FOLLOWING SCHEDULE:

   FROM APRIL 1 TO SEPTEMBER 30, AREAS AT FINAL GRADE AND THOSE WHICH ARE SCHEDULED TO REMAIN UNWORKED FOR MORE THAN 30 DAYS, SHALL BE STABILIZED WITHIN 10 DAYS.

   FROM OCTOBER 1 TO MARCH 31, EARTHWORK ACTIVITIES SHALL BE CONDUCTED IN STAGES IN ORDER TO MINIMIZE SOIL EXPOSURE. EXPOSED SOILS WITH AN AREA GREATER THAN 5,000 SQUARE FEET THAT ARE SCHEDULED TO REMAIN UNWORKED FOR MORE THAN 24 HOURS AND EXPOSED AREAS OF LESS THAN 5,000 SQUARE FEET THAT WILL REMAIN UNWORKED FOR MORE THAN 7 DAYS SHALL BE STABILIZED IMMEDIATELY.

SPECIAL CONDITIONS NOTES:

1. DENUDED AREAS AND SOIL STOCKPILES MUST BE STABILIZED ACCORDING TO THE FOLLOWING SCHEDULE OR EXCEPTED IN THE FIELD WHEN IN THE JUDGMENT OF THE BUILDING OFFICIAL, SUCH SCHEDULE IS NOT WARRANTED:
   FROM APRIL 1 TO SEPTEMBER 30, ALL DENUDED AREAS AT FINAL GRADE AND ALL EXPOSED AREAS THAT ARE SCHEDULED TO REMAIN UNWORKED FOR MORE THAN 30 DAYS SHALL BE STABILIZED WITHIN 10 DAYS.
   FROM OCTOBER 1 TO MARCH 31, ALL EXPOSED SOILS AT FINAL GRADE SHALL BE STABILIZED IMMEDIATELY USING PERMANENT OR TEMPORARY MEASURES. EXPOSED SOILS WITH AN AREA GREATER THAN 5,000 SQUARE FEET THAT ARE SCHEDULED TO REMAIN UNWORKED FOR MORE THAN 24 HOURS AND EXPOSED AREAS OF LESS THAN 5,000 SQUARE FEET THAT WILL REMAIN UNWORKED FOR MORE THAN SEVEN DAYS SHALL BE STABILIZED IMMEDIATELY.
2. THE CONTRACTOR WILL BE REQUIRED TO WATER THE SITE, AS NECESSARY, TO REDUCE DUST EMISSIONS AS A RESULT OF CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL ALSO SWEEP ALL AFFECTED PUBLIC ROADS, AS NECESSARY, TO REMOVE MUD DEPOSITED AS A RESULT OF PROJECT CONSTRUCTION ACTIVITY. THESE ACTIONS WILL BE GOVERNED AND DIRECTED BY THE BUILDING OFFICIAL.
3. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDING ON SITE CONDITION. THIS ACTION WILL BE GOVERNED AND DIRECTED BY THE CITY OFFICIAL.
4. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER 48 HOURS IN ADVANCE OF THE TIME WORK WILL BE PERFORMED ON SATURDAYS, SUNDAYS, HOLIDAYS, OR OTHER THAN NORMAL WORKING HOURS.
5. ALL DENUDED AREAS OF THE ENTIRE SITE SHALL BE HYDROSEEDED AND MULCHED IMMEDIATELY, AS DIRECTED BY THE CITY IN ACCORDANCE WITH THE FOLLOWING CRITERIA:

   A. FOR SLOPES WITH A STEEPNESS LESS THAN OR EQUAL TO ONE UNIT VERTICAL TO ONE UNIT HORIZONTAL (1/1) PROVIDE HYDROSEEDING AND STRAW MULCHING IN THE MINIMUM AMOUNT OF 2 TONS PER ACRE (APPROXIMATELY 2 INCHES THICK). (REFER TO CONSTRUCTION SEQUENCE FOR PERIMETER BERM STABILIZATION CRITERIA).
6. CONTRACTOR SHALL MINIMIZE THE TRACKING OF SILTS AND SEDIMENT ONTO ROADWAY SURFACES.
7. CONTRACTOR SHALL UTILIZE BEST MANAGEMENT PRACTICES INCLUDING DAILY STREET SWEEPING.

SOILS REPORT NOTES

1. THE FOLLOWING SOILS REPORT AND MAY 19, 2008 ADDENDUM FOR THE SITE SHALL BE CONSIDERED PART OF THESE CONSTRUCTION DOCUMENTS:

   SOIL INVESTIGATION
   AS PERFORMED BY: GEO ENGINEERS
   2924 COLBY AVENUE
   EVERETT, WASHINGTON 98201
   PH. 425 252-4565
   FILE No. 8455-002-01, 8455-002-06
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL PROVISIONS OF THE SOILS REPORT FOR THE SITE BE OBSERVED AND COMPLIED WITH DURING ALL PHASES OF THE SITE PREPARATION, GRADING OPERATIONS, PRELOAD AND SUBGRADE CONSTRUCTION.
3. ANY PROVISIONS OF THE SOILS REPORT WHICH CONFLICT WITH INFORMATION SHOWN ELSEWHERE ON THESE DRAWINGS, OR WHICH REQUIRE FURTHER CLARIFICATION, SHALL BE BROUGHT TO THE ATTENTION OF BARGHAUSEN ENGINEERS.
4. A REPRESENTATIVE FOR THE SOILS ENGINEER SHALL BE AVAILABLE TO OBSERVE AND APPROVE THE EARTHWORK OPERATIONS AND TO VERIFY FIELD CONDITIONS AS WORK PROCEEDS. THE SOILS ENGINEER SHALL SUBMIT FIELD REPORTS CERTIFYING THAT THE METHODS AND MATERIALS OF THE EARTHWORK OPERATIONS WERE IN ACCORDANCE WITH THE RECOMMENDATION OF THE SOILS INVESTIGATION AND THAT THE WORK WAS PERFORMED TO THE SATISFACTION OF THE ENGINEER.

   THE CONTRACTOR SHALL MAKE ALL PROVISIONS FOR SOILS INSPECTIONS AS RECOMMENDED WITHIN SOILS REPORT. AS A MINIMUM, THIS INCLUDES THE OBSERVATION OF THE FOLLOWING BY A SOILS ENGINEER:

   A. EXCAVATION FOR DEWATERING AND/OR EXCAVATION RECOMMENDATIONS
   B. PLACEMENT OF STRUCTURAL FILL OR BALLAST MATERIAL BENEATH PAVEMENT AND RAIL
   C. SUBGRADE PREPARATION
5. THE CONTRACTOR SHALL QUALIFY ANY LIMITATIONS INCLUDING SOILS INSPECTIONS AND MONITORING WITHIN BID PROPOSAL.

GENERAL NOTES

1. ALL EXISTING UTILITIES SHALL REMAIN IN SERVICE UNLESS OTHERWISE NOTED
2. ALL EXISTING UTILITIES WITHIN PROJECT LIMITS SHALL BE ADJUSTED TO GRADE OR RELOCATED AS NOTED.
3. ALL UTILITY LIDS, COVER, ETC. LOCATED IN THE ROADWAY SHALL BE ADJUSTED TO GRADE AFTER ASPHALT WORK IS COMPLETE. UTILITY LIDS, COVERS, ETC. LOCATED BEHIND THE CURB OR IN THE SIDEWALK SHALL BE ADJUSTED TO GRADE PRIOR TO CURB, GUTTER AND SIDEWALK INSTALLATION.
4. CAUTION – EXTREME HAZARD – OVERHEAD AND UNDERGROUND ELECTRICAL SERVICE LINES ARE GENERALLY NOT SHOWN ON THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXTENT OF ANY HAZARD CREATED BY OVERHEAD OR UNDERGROUND ELECTRICAL POWER IN ALL AREAS AND SHALL FOLLOW PROCEDURES DURING CONSTRUCTION AS REQUIRED BY LAW AND REGULATION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL MEET WITH UTILITY OWNERS AND DETERMINE THE EXTENT OF HAZARD AND REMEDIAL MEASURES AND SHALL TAKE WHATEVER PRECAUTIONS THAT MAY BE REQUIRED.
5. IDENTIFICATION, LOCATION, MARKING AND RESPONSIBILITY FOR UNDERGROUND FACILITIES OR UTILITIES IS GOVERNED BY THE PROVISIONS OF CHAPTER 19.122, REVISED CODE OF WASHINGTON.
6. THE CONTRACTOR SHALL CALL 1-800-424-5555 TO VERIFY UTILITY LOCATIONS BEFORE BEGINNING EXCAVATION.
7. ALL EDGES OF EXISTING ASPHALT PAVEMENT SHALL BE SAW-CUT FOR A SMOOTH JOINT PRIOR TO FINAL PAVING.
8. THE CONTRACTOR SHALL OBTAIN AND HAVE AVAILABLE COPIES OF THE APPLICABLE GOVERNING AGENCY STANDARDS AT THE JOB SITE DURING THE RELATED CONSTRUCTION OPERATIONS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION WHETHER SHOWN ON THESE PLANS OR NOT. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE BEST RECORDS AVAILABLE AND ARE SUBJECT TO A DEGREE OF UNKNOWN VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT BARGHAUSEN CONSULTING ENGINEERS, INC., TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.
10. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE APPROPRIATE UTILITIES INVOLVED PRIOR TO CONSTRUCTION.
11. TWO (2) COPIES OF THESE APPROVED PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS; ONE (1) SET SHALL BE SUBMITTED TO BARGHAUSEN CONSULTING ENGINEERS., INC., WITH RECORDS OF AS-BUILT INFORMATION AT COMPLETION OF PROJECT.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL EXISTING UTILITIES WITHIN THE CONSTRUCTION AREA WHETHER SHOWN OR NOT SHOWN ON THE PLANS.
13. ALL UTILITY LINE EXCAVATION BEDDING AND BACKFILL MATERIALS, AND COMPACT ION SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS ENGINEER'S RECOMMENDATIONS AND THE GOVERNING AGENCY REQUIREMENTS. UTILITY LINES INCLUDE STORM DRAIN, WATER, SEWER, IRRIGATION, ELECTRICAL, TELEPHONE, GAS, AND LANDSCAPE IRRIGATION LINES.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING AND/OR EXPORTING ALL MATERIAL AS REQUIRED TO PROPERLY GRADE THIS SITE TO THE FINISHED ELEVATIONS SHOWN HEREON IN ACCORDANCE WITH THE APPROVED PLANS, SPECIFICATIONS, AND THE SOILS ENGINEER'S RECOMMENDATIONS.
15. IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, THEY SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE OWNER'S ENGINEER PRIOR TO PROCEEDING.
16. PROTECTIVE MEASURES SHALL BE TAKEN BY THE CONTRACTOR TO PROTECT ADJACENT PROPERTIES, PUBLIC AND PRIVATE, AT ALL TIMES DURING CONSTRUCTION.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION TRAFFIC CONTROL PLANS AS REQUIRED BY THE CITY PRIOR TO THE PRE CONSTRUCTION CONFERENCE (SEE SHEET CO, NOTE 6 CITY OF AUBURN GENERAL NOTES.)
18. DEMOLISHED PAVEMENT SHALL BE EITHER GROUND AND REUSED AS BASE IF ACCEPTABLE BY THE GEOTECHNICAL ENGINEER AND CITY OR DISPOSED OF AT AN APPROVED LOCATION. ALL UNSUITABLE EXCAVATED MATERIALS SHALL BE DISPOSED OF AT AN APPROVED LOCATION.

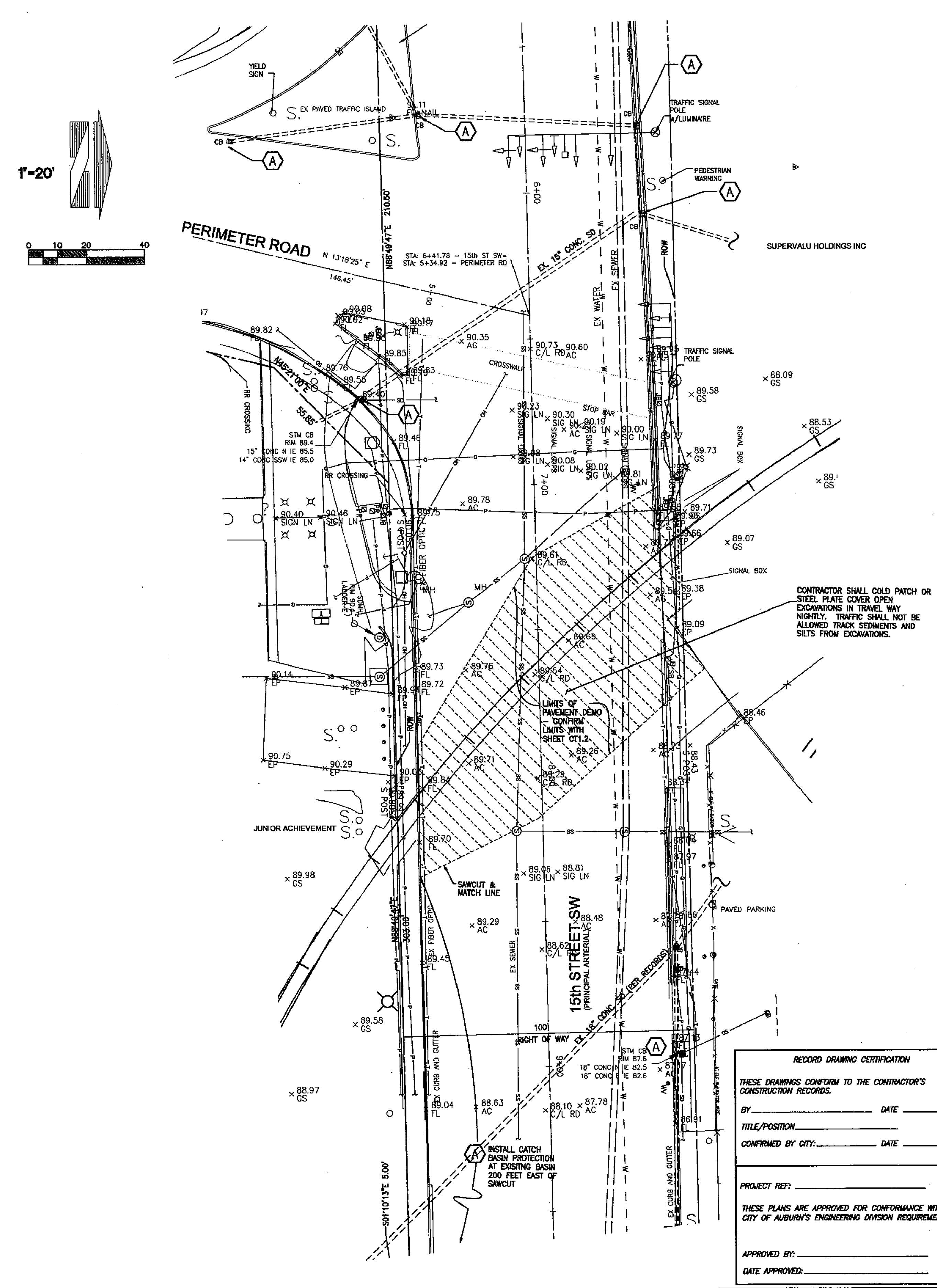
CONSTRUCTION KEYNOTE:

(A) INSTALL TEMPORARY CATCH BASIN PROTECTION AT EXISTING CATCH BASINS PER COA STD. EROSION-04. AMEND EROSION CONTROL FEATURES AS NECESSARY.

LEGEND

POWER VAULT	ASPHALT
LUMINAIRE (LUM.)	CONCRETE
YARD LIGHT	POWER OVERHEAD
POWER METER	CHAIN LINK FENCE
POWER POLE	SIGNAL BOX (SB)
JUNCTION BOX (JBOX)	PEDESTRIAN SIGNAL
CATCH BASIN (CB)	RR CROSSING ARM
STORM MANHOLE (SDMH)	SIGNAL LOOP
SANITARY SEWER MANHOLE (SSMH)	CONTROL CABINET (CC)
SANITARY SEWER CLEANOUT (SSCO)	WATER VAULT
GAS METER	TELEPHONE VAULT(TV)
GAS VALVE	TELEPHONE MANHOLE (TMH)
WATER VALVE (WV)	RAILROAD TRACKS
FIRE HYDRANT (FH)	C&G CURB AND GUTTER
WATER METER	EC EXTRUDED CURB
SIGN (AS NOTED)	
DIRECTION OF VEHICLE TRAVEL	
TRAFFIC SYMBOL	

1"=20'



RECORD DRAWING CERTIFICATION

THESE DRAWINGS CONFORM TO THE CONTRACTOR'S CONSTRUCTION RECORDS.

BY ______ *DATE* ______

TITLE/POSITION ______

CONFIRMED BY CITY: ______ *DATE* ______

PROJECT REF: ______

THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S ENGINEERING DIVISION REQUIREMENTS.

APPROVED BY: ______

DATE APPROVED: ______

No.	Date	By	Ckd.	Appr.	Revision

Title: TEMPORARY EROSION AND SEDIMENTATION PLAN
15th STREET SW IMPROVEMENTS
AMB VALLEY DISTRIBUTION CENTER
AUBURN, KING COUNTY, WASHINGTON

For: AMB PROPERTY LP
ONE O'HARE CENTRE
6250 NORTH RIVER RD, SUITE 1100
ROSEMONT IL 60018

JAY S. GRUBB, STATE OF WASHINGTON, 28527, REGISTERED PROFESSIONAL ENGINEER, EXPIRES 01-07-09

Designed CB | Drawn SGW | Checked JSG | Approved JSG | Date 04/15/08
Scale: Horizontal | Vertical

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX
CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

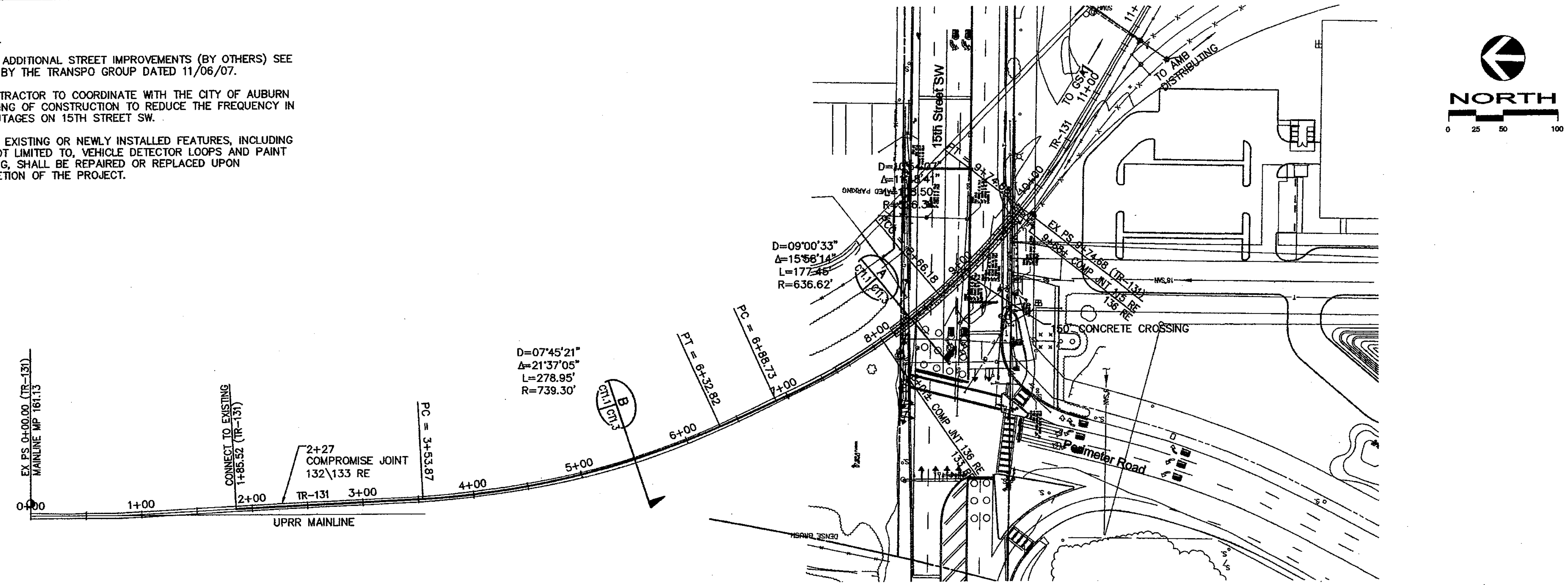
Job Number 12088
Sheet E1 of 10

NOTES:

1. FOR ADDITIONAL STREET IMPROVEMENTS (BY OTHERS) SEE PLANS BY THE TRANSPO GROUP DATED 11/06/07.

2. CONTRACTOR TO COORDINATE WITH THE CITY OF AUBURN ON TIMING OF CONSTRUCTION TO REDUCE THE FREQUENCY IN THE OUTAGES ON 15TH STREET SW.

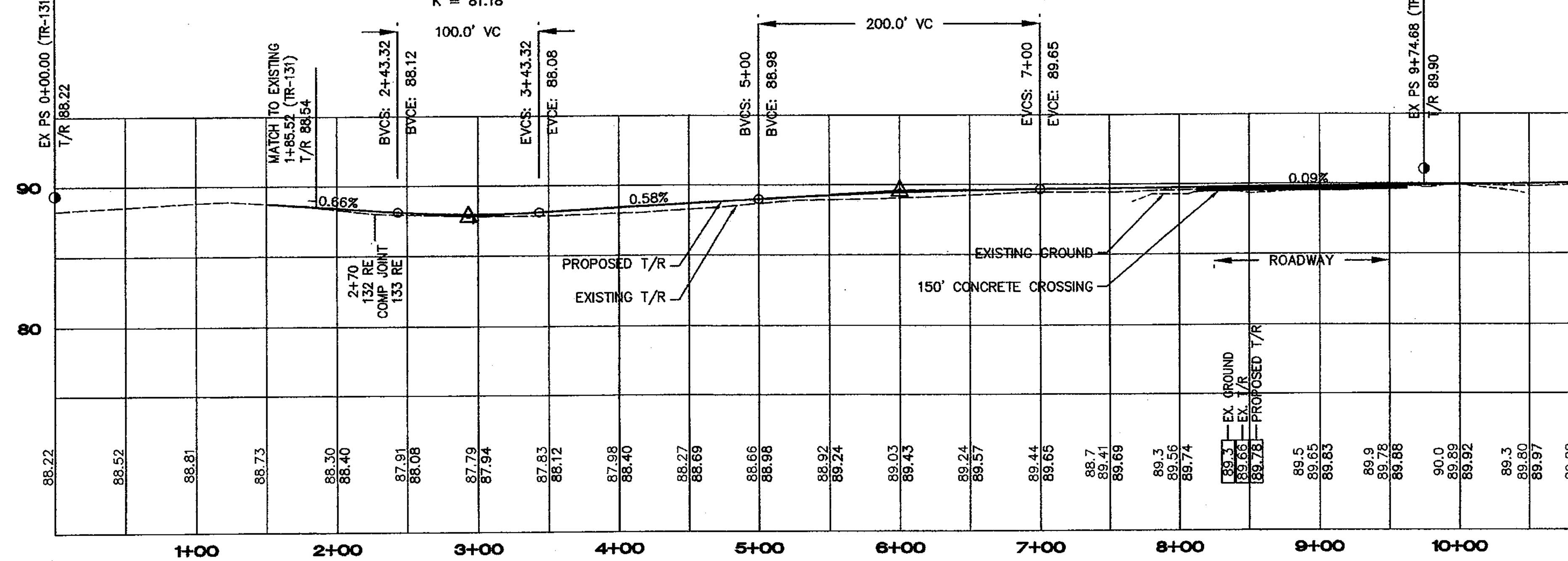
3. ANY EXISTING OR NEWLY INSTALLED FEATURES, INCLUDING BUT NOT LIMITED TO, VEHICLE DETECTOR LOOPS AND PAINT STRIPING, SHALL BE REPAIRED OR REPLACED UPON COMPLETION OF THE PROJECT.



PLAN

LOW POINT ELEV = 87.94
LOW POINT STA = 2+96.63
PVI STA = 2+93.32
PVI ELEV = 87.79
A.D. = 1.23
K = 81.18

PVI STA = 6+00
PVI ELEV = 89.55
A.D. = -0.48
K = 414.18



PROFILE

SCOPE OF WORK:

UPRR: INSTALL CONDUIT FOR SIGNAL CONNECTIONS.

CONTRACTOR:
REMOVE EXISTING CROSSING.
INSTALL 150' CONCRETE CROSSING (136RE RAIL)
REMOVE 575' OF #85–#90 EXISTING RAIL NORTH OF CROSSING.
INSTALL 575' OF 133RE RAIL INCLUDING NEW TIE PLATES, SPIKES AND COMPROMISE JOINTS NORTH OF CROSSING.
SURFACE AND LINE TO MATCH EXISTING TOP/RAIL AT OR NEAR STATION 1+85.
CONNECT TO EXISTING PS SOUTH OF THE CROSSING AT STATION 9+74.68 (115RE)
ALL TRACKS AND GRADE CROSSING WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH UPRR INDUSTRIAL STANDARDS DATED 10/27/03

RECORD DRAWING CERTIFICATION

THESE DRAWINGS CONFORM TO THE CONTRACTOR'S CONSTRUCTION RECORDS.

BY: ________ DATE ________

TITLE/POSITION ________

CONFIRMED BY CITY: ________ DATE ________

PROJECT REF: FAC08-0GXX

THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S ENGINEERING DIVISION REQUIREMENTS.

APPROVED BY: ________

DATE APPROVED: ________

AMB Rail Crossing - 15th Street SW

TRACK PLAN AND PROFILE

Coast Rail
Auburn, Washington

DAVID EVANS AND ASSOCIATES INC.
3700 Pacific Hwy. East, Suite 311
Tacoma Washington 98424
Phone: 253.922.9780

EXPIRES 1/22/09
5/22/08

REVISIONS: APPD.

DATE: May 22, 2008
DESIGN: CEB, STSH
DRAWN: BLP
CHECKED:
REVISION NUMBER:
SCALE: 1"=50'
PROJECT NUMBER: CTRL00000023
DRAWING FILE: rrpp01-ctrl00023.dwg
SHEET NO.
CT1.1
SHEET 1 OF 4

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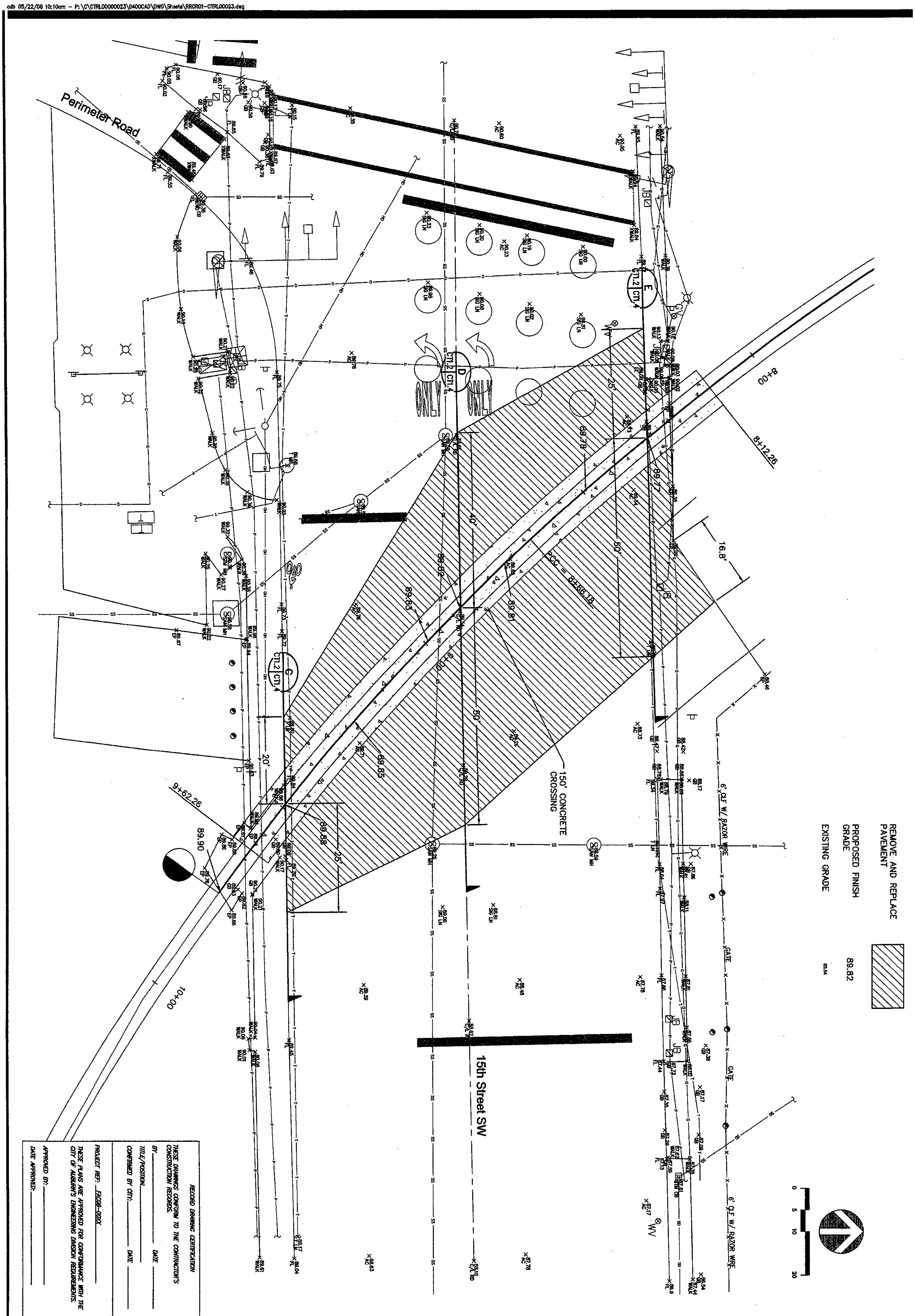


RECORD DRAWING CERTIFICATION

THESE DRAWINGS CONFORM TO THE CONTRACTOR'S CONSTRUCTION RECORDS.

BY: ________ DATE ________

TITLE/POSITION: ________

CONFIRMED BY CITY: ________ DATE ________

PROJECT REF: FAC08-00XX

THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S ENGINEERING DIVISION REQUIREMENTS.

APPROVED BY: ________

DATE APPROVED: ________

SHEET NO.

CT1.2

SHEET 2 OF 4

DATE: May 22, 2008
DESIGN: CEB, STSH
DRAWN: BLP
CHECKED:
REVISION NUMBER:
SCALE: 1"=10'
PROJECT NUMBER: CTRL00000023
DRAWING FILE: rrcr01-ctrl00023.dwg

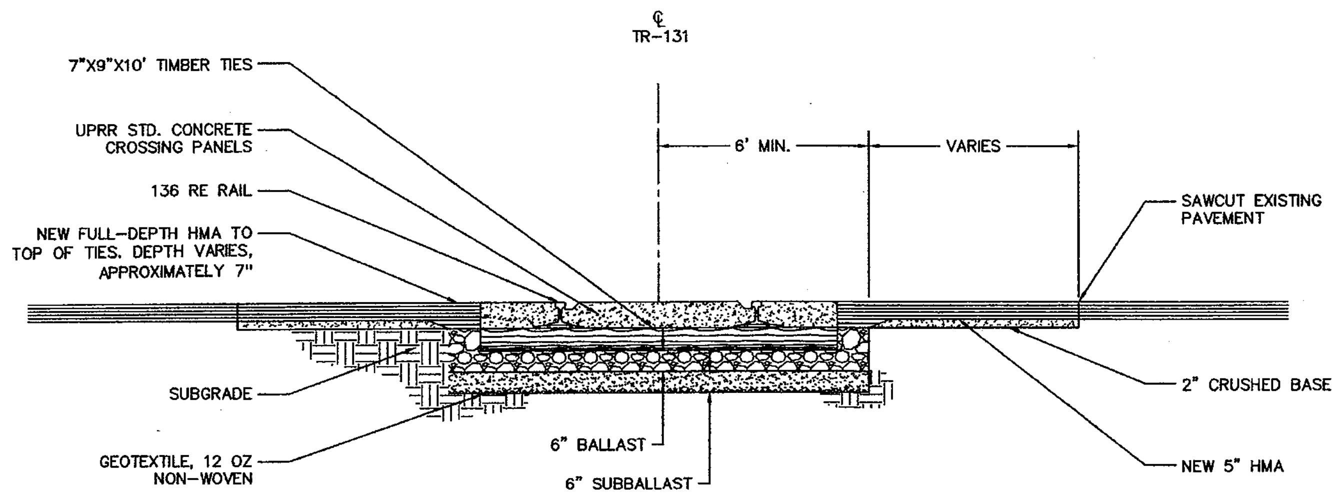
REVISIONS: | APPD.

DAVID EVANS AND ASSOCIATES INC.
3700 Pacific Hwy. East, Suite 311
Tacoma Washington 98424
Phone 253.922.9780

AMB Rail Crossing - 15th Street SW

CONCRETE CROSSING

Coast Rail
Auburn, Washington



FOR CONCRETE CROSSING TYPE 10W, SEE UPRR STANDARD DWG No. 200100

A (CT1.1 | CT1.3) **CONCRETE CROSSING SECTION**
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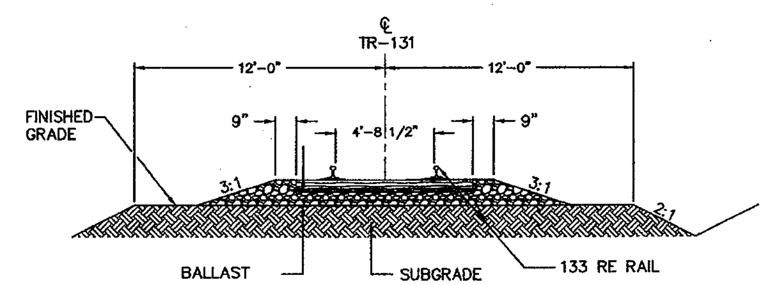
STA 8+12.73 TO STA 9+62.73



B (CT1.1 | CT1.3) **BALLAST SECTION FOR SINGLE TANGENT TRACK**
NOT TO SCALE
STA 0+00.00 TO STA 8+12.73
STA 9+62.73 TO 9+74.68

RECORD DRAWING CERTIFICATION

THESE DRAWINGS CONFORM TO THE CONTRACTOR'S CONSTRUCTION RECORDS.

BY ________ DATE ________

TITLE/POSITION ________

CONFIRMED BY CITY: ________ DATE ________

PROJECT REF: FAC08-00XX

THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S ENGINEERING DIVISION REQUIREMENTS.

APPROVED BY: ________

DATE APPROVED: ________

AMB Rail Crossing - 15th Street SW

TRACK DETAILS

Coast Rail
Auburn, Washington

DAVID EVANS AND ASSOCIATES INC.
3700 Pacific Hwy. East, Suite 311
Tacoma Washington 98424
Phone: 253.922.9780

CHARLES E. BURNHAM — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER
5/22/08
EXPIRES 1/22/09

REVISIONS: APPD.

DATE: May 22, 2008
DESIGN: CEB, STSH
DRAWN: BLP
CHECKED:
REVISION NUMBER:

SCALE: NTS

PROJECT NUMBER:
CTRL00000023

DRAWING FILE:
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SHEET NO.
CT1.3
SHEET 3 OF 4

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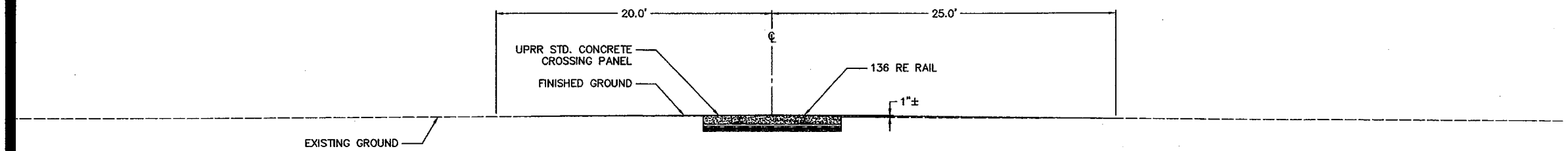

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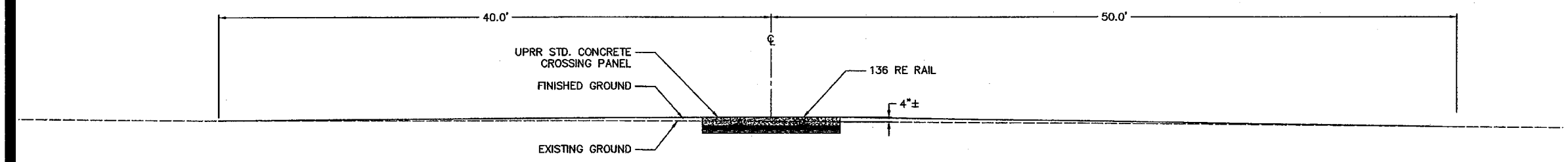

D CT1.1 CT1.3 **CONCRETE CROSSING SECTION CENTERLINE**
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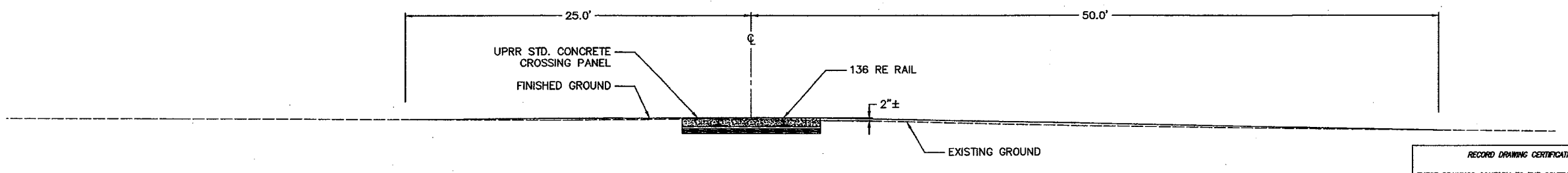
STA 8+88.57



E CT1.1 CT1.3 **CONCRETE CROSSING SECTION**
NOT TO SCALE
STA 8+12.26

RECORD DRAWING CERTIFICATION

THESE DRAWINGS CONFORM TO THE CONTRACTOR'S CONSTRUCTION RECORDS.

BY: _____ *DATE* _____

TITLE/POSITION: _____

CONFIRMED BY CITY: _____ *DATE* _____

PROJECT REF: FAC08-00XX

THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S ENGINEERING DIVISION REQUIREMENTS.

APPROVED BY: _____

DATE APPROVED: _____

AMB Rail Crossing - 15th Street SW

TRACK DETAILS

Coast Rail
Auburn, Washington

DAVID EVANS AND ASSOCIATES INC.
3700 Pacific Hwy. East, Suite 311
Tacoma, Washington 98424
Phone: 253.922.5790

CHARLES E. BERGEM — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER
5/22/08
EXPIRES 1/24/09

REVISIONS: **APPD.**

DATE: May 22, 2008
DESIGN: CEB, STSH
DRAWN: BLP
CHECKED:
REVISION NUMBER:

SCALE: NTS

PROJECT NUMBER:
CTRL00000023

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SHEET NO.
CT1.4
SHEET 4 OF 4

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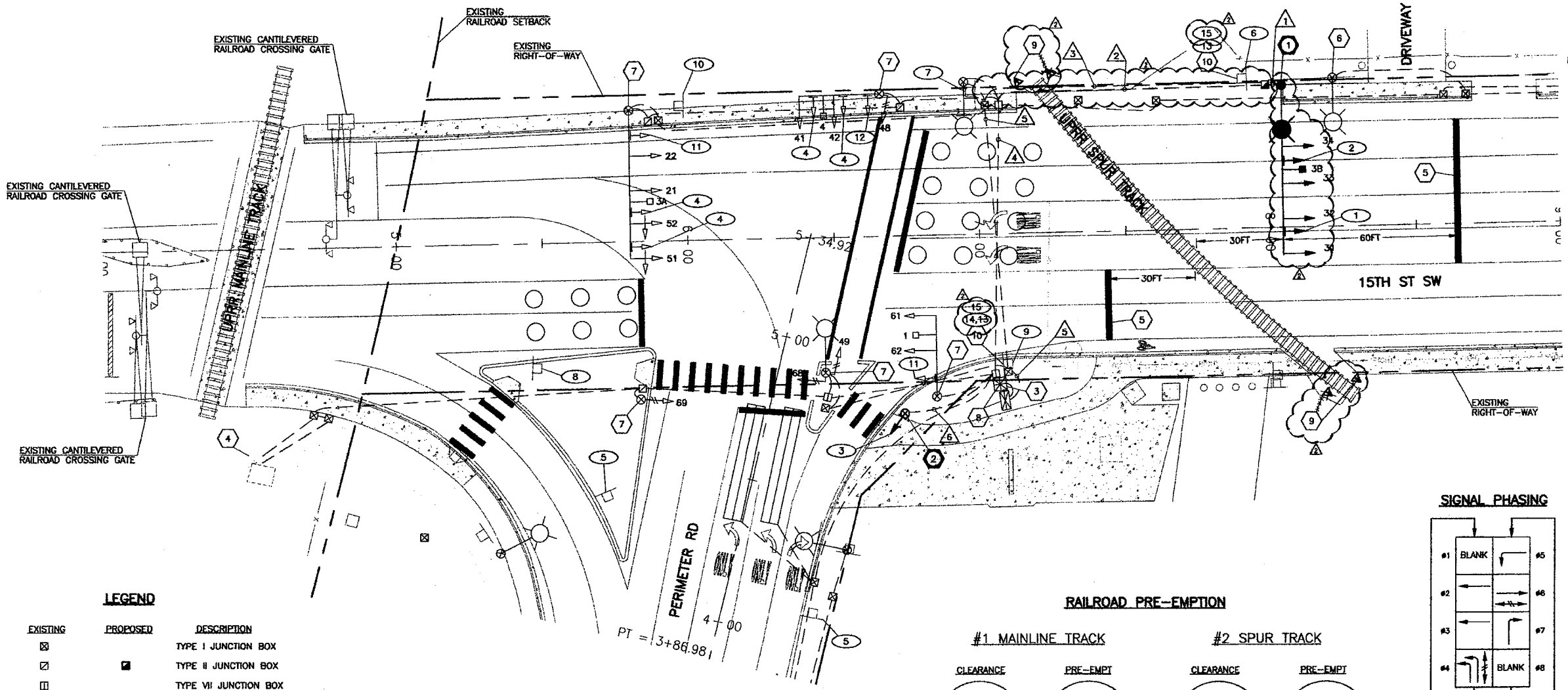
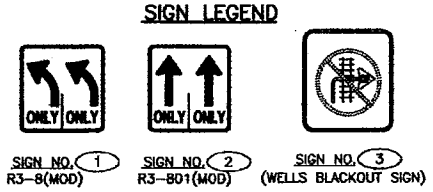
SEC.24 T.21N R.4E W.M.



SIGN LEGEND



LEGEND

EXISTING	PROPOSED	DESCRIPTION
⊠		TYPE I JUNCTION BOX
⊡	■	TYPE II JUNCTION BOX
⊟		TYPE VII JUNCTION BOX
▨		CONTROLLER CABINET
▨		ELECTRICAL SERVICE CABINET
—□	—■	EMERGENCY VEHICLE PRE-EMPTION DETECTOR
—▷	—▶	VEHICLE SIGNAL HEAD
—▷	—▶	PEDESTRIAN SIGNAL HEAD
⊢▷	⊢▶	MASTARM/POLE MOUNTED SIGN
⊥		POST MOUNTED SIGN
⊗—	⊗—	SIGNAL POLE WITH MASTARM
		LUMINAIRE
		DWARF SIGNAL
— — —	— — —	CONDUIT/CONDUCTOR
⚠		POLE NOTE
#		CONSTRUCTION NOTE
#		WIRE NOTE
#		SIGN NOTE

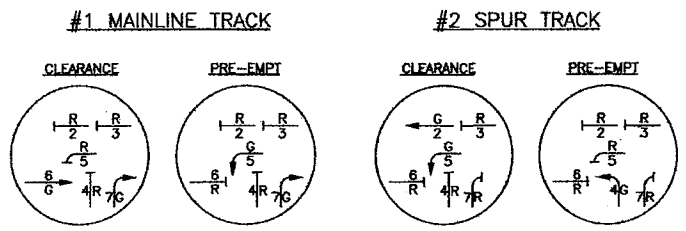
N

0 10 20 40 60

CONSTRUCTION/POLE NOTES

1. INSTALL TYPE III SIGNAL POLE WITH 58FT MAST ARM. INSTALL FOUR VEHICLE SIGNAL HEADS, TWO LANE USE SIGNS, AND ONE OPTICOM TYPE M-711 PRE-EMPTION DETECTOR ON THE MAST ARM FOR WESTBOUND TRAFFIC. INSTALL ONE TERMINAL CABINET AND ONE 40FT HIGH FLAT LENS COBRA HEAD MEDIUM-CUTOFF-TYPE III DISTRIBUTION LUMINAIRE WITH 400W HPS LAMP AND 12FT DAVIT ARM ON THE POLE.
2. INSTALL TYPE I PS SIGNAL POLE. INSTALL "NO RIGHT TURN, TRAIN" BLACKOUT (INTERNALLY ILLUMINATED) SIGN ON THE POLE (ACTIVATED ONLY DURING PHASE 7 WHEN A TRAIN OCCUPIES THE SPUR TRACK).
3. REPLACE EXISTING CONTROLLER WITH NEW CONTROLLER (TYPE TO BE DETERMINED BY THE CITY OF AUBURN).
4. EXISTING RAILROAD CONTROLLER TO BE REPLACED BY OTHERS.
5. INSTALL STOP BAR PER CITY OF AUBURN STANDARD DETAIL TRAFFIC-37.
6. REMOVE EXISTING LUMINAIRE AND POLE. REMOVE EXISTING FOUNDATION TO 2FT BELOW GRADE. REMOVE EXISTING ILLUMINATION CONDUCTORS TO NEAREST SPLICE POINT. CAP AND ABANDON UNUSED CONDUITS.
7. EXISTING SIGNAL POLE AND APPURTENANCES TO REMAIN.
8. EXISTING ELECTRICAL SERVICE AND CONTROLLER CABINETS TO REMAIN.
9. RAILROAD DWARF SIGNAL TO BE INSTALLED BY OTHERS.
10. REMOVE EXISTING "3" AND "TRACKS" SIGNS AND INSTALL NEW TYPE R15-2, "1 TRACK," SIGN.
11. REMOVE EXISTING "4 TRACKS" SIGN AND INSTALL NEW TYPE R15-2, "1 TRACK," SIGN.

RAILROAD PRE-EMPTION



NOTE: PHASE 7 IS AN INTERNALLY ILLUMINATED BLACKOUT SIGN.

SIGNAL PHASING

WIRING SCHEDULE

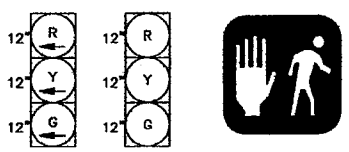
NO	RACEWAY CONDUIT SIZE*	E/V DETECT 3C(SH)	VEH HEAD 5C	ILLUM #8	SIGN POWER
1	2"SCH40	1	2		
	2"SCH40			2	
2	2"SCH40	1	2		
3	2"SCH40			2	
4	EX	1	2		
5	EX			2	
6	2"SCH40				2

*ALL CONDUIT SHALL BE PVC AND SHALL CONTAIN A NO. 8 GROUND WIRE, UNLESS OTHERWISE NOTED.

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH CITY OF AUBURN STANDARDS AND SPECIFICATIONS.
2. UTILITY LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY SIGNAL WORK.
3. VEHICLE SIGNAL HEADS SHALL HAVE 12 INCH RED, YELLOW, AND GREEN LED LENSES, BACKPLATES, AND TUNNEL VISORS. VEHICLE SIGNAL HEADS SHALL BE INSTALLED ON MASTARM USING TYPE M MOUNTS, PER WSDOT STANDARD PLAN J-6g.
4. JUNCTION BOXES SHALL BE PER WSDOT STANDARD PLANS J-11g AND J-11c.
5. DESIGN, INSTALLATION, AND MAINTENANCE OF RAILROAD IMPROVEMENTS TO BE COMPLETED BY OTHERS.
6. CONTRACTOR SHALL REPLACE VEHICLE IINDUCTION LOOPS DAMAGED AS PART OF RAILROAD SPUR TRACK CONSTRUCTION.

SIGNAL HEAD ASSIGNMENT



*ADD LOUVERS TO EXISTING SIGNAL HEADS.

RECORD DRAWING CERTIFICATION

THESE DRAWINGS CONFORM TO THE CONTRACTOR'S CONSTRUCTION RECORDS.

BY _____ DATE _____

TITLE/POSITION _____

CONFIRMED BY CITY: _____ DATE _____

PROJECT REF: FA208-000X

THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S ENGINEERING DIVISION REQUIREMENTS.

APPROVED BY: _____

DATE APPROVED: _____

KEVIN R. COX — STATE OF WASHINGTON — 40362 — REGISTERED PROFESSIONAL ENGINEER — 5/19/08 — EXPIRES 04/14/ 10

	DATE	NO.	REVISION	BY	DATE
DESIGNED BY JLB	10/23/07	⚠	TYPE 1 POLE CHANGED TO TYPE PS POLE	JLB	11/06/07
DRAWN BY JLB	10/23/07	⚠	MOVED POLE 1, ADDED NOTES, MODIFIED SIGNS	KRC	05/19/08
REVIEWED BY KRC	10/23/07				

The Transpo Group
11730 118TH AVENUE NE
SUITE 600
KIRKLAND, WASHINGTON 98034
(TEL) 425 821-3665
(FAX) 425 825-8434

AMB WAREHOUSE RAIL SPUR SIGNAL
15TH STREET SW/PERIMETER ROAD
CITY OF AUBURN, WASHINGTON
TRAFFIC SIGNAL PLAN

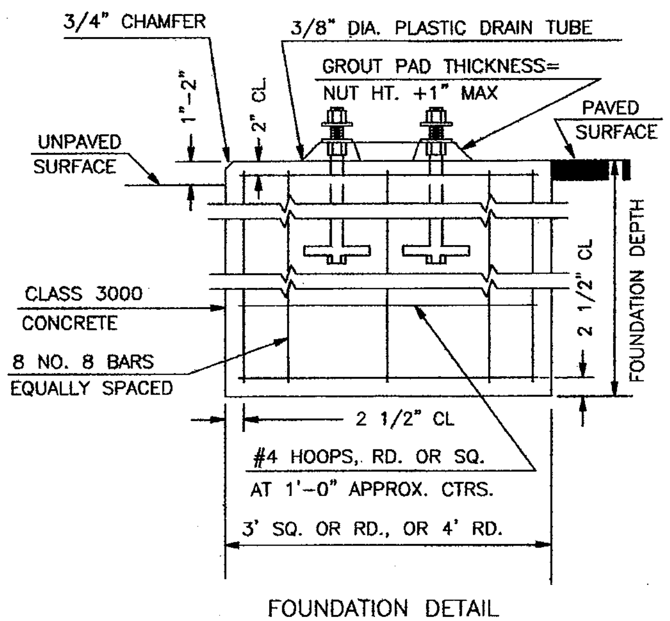
TS1

1 OF 2

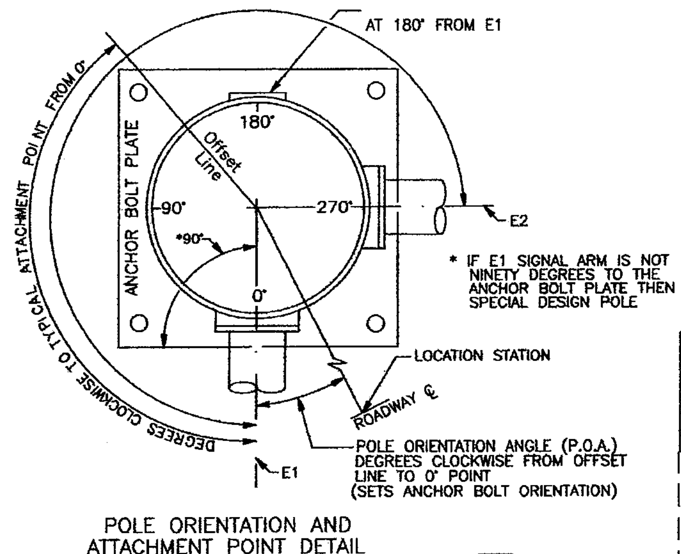
C:\Documents and Settings\brooks\Local Settings\Temp\AcPublish_5804\Master_Signal.dwg <TS1> Brooks Wheatley 5/19/2008 4:25 PM

FOUNDATION DEPTH TABLE							
ALLOWABLE LATERAL BEARING PRESSURE (psf)	FOUNDATION TYPE	XYZ (CUBIC FEET) TYPE II,III AND SD MAST ARM STANDARDS					
		600	900	1,200	1,500	1,900	2,300
1,000	3' ROUND	10'	10'	11'	11'	13'	15'
	3' SQUARE	8'	8'	9'	9'	10'	11'
	4' ROUND	8'	8'	9'	9'	10'	11'
1,500	3' ROUND	8'	8'	9'	11'	13'	15'
	3' SQUARE	7'	7'	7'	8'	8'	9'
	4' ROUND	7'	7'	7'	8'	8'	9'
2,500	3' ROUND	6'	6'	7'	11'	13'	15'
	3' SQUARE	6'	6'	6'	6'	7'	7'
	4' ROUND	8'	6'	6'	6'	7'	7'

THIS TABLE BASED ON A ∅ VALUE OF 26°. FOR DOUBLE MAST ARM STANDARDS WITH 90° BETWEEN ARMS, USE THE LARGER XYZ VALUE FOR FOUNDATION DEPTH SELECTION. A SPECIAL FOUNDATION DESIGN IS REQUIRED FOR DOUBLE ARM STANDARDS IF THE ANGLE IS NOT 90°.

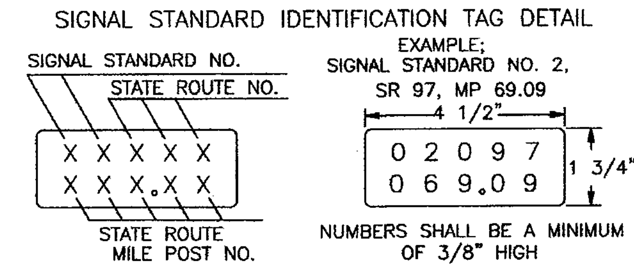


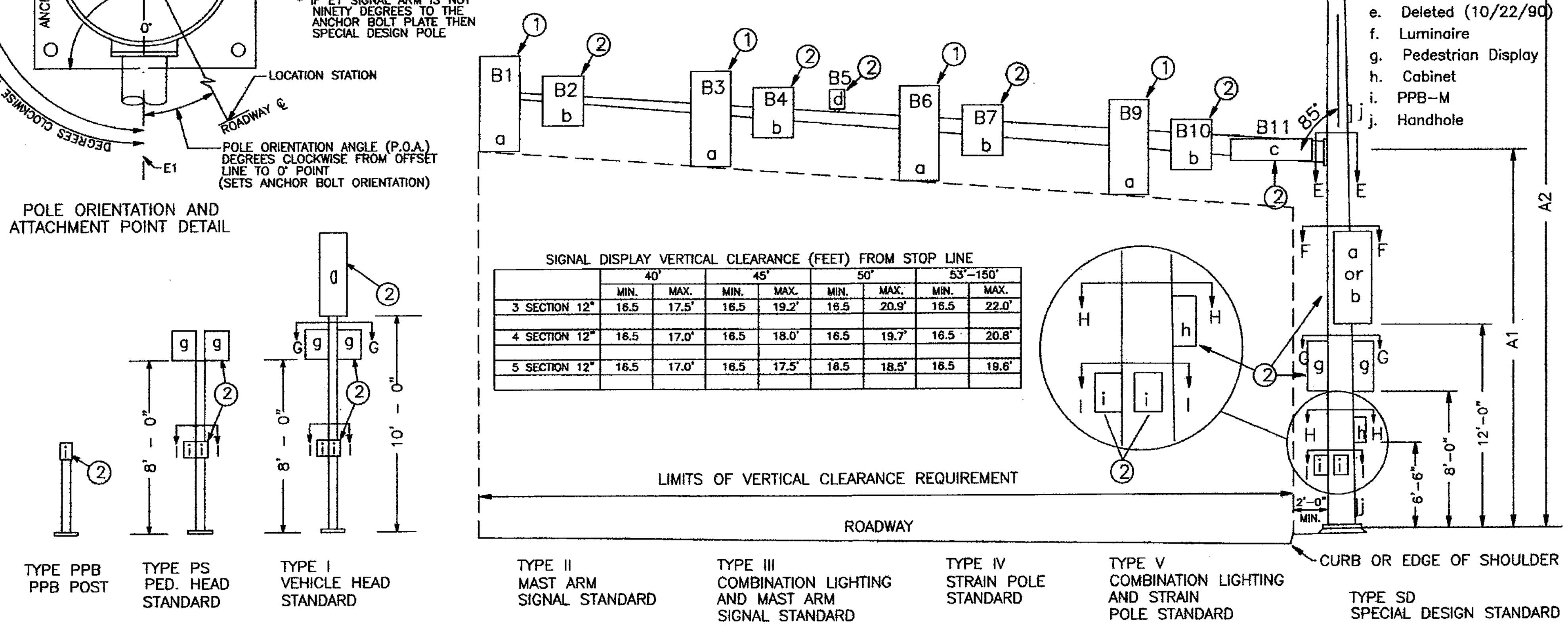
FOUNDATION DETAIL



POLE ORIENTATION AND ATTACHMENT POINT DETAIL

SIGNAL STANDARD IDENTIFICATION TAG DETAIL





SIGNAL DISPLAY VERTICAL CLEARANCE (FEET) FROM STOP LINE								
	40'		45'		50'		53'-150'	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
3 SECTION 12"	16.5	17.5'	16.5	19.2'	16.5	20.9'	16.5	22.0'
4 SECTION 12"	16.5	17.0'	16.5	18.0'	16.5	19.7'	16.5	20.8'
5 SECTION 12"	16.5	17.0'	16.5	17.5'	16.5	18.5'	16.5	19.6'

SIGNAL STANDARD DETAIL CHART

STANDARD NO.	FIELD LOCATION: 15TH ST SW STATION	OFFSET	LT	RT	P.O.A.	TYPE	MOUNTING HEIGHT(FT) A1	A2	OFFSET DISTANCES (FT) (Z) (POLE ℄ TO ATTACHMENT POINT) B1	B2	B3	B4	B5	B6	B9	B11	B12
1	8+04.5	48.5 ~~50.0~~	X		0	III	18	40	57.5	51.5	45.5	27.5	30.5	33.5	21.0	–	–
2	6+73.5	60.5		X	0	~~I~~ PS	–	–	–	–	–	–	–	–	–	–	–

STANDARD NO.	WINDLOAD AREAS (FT)² (X)(Y) B1	B2	B3	B4	B5	B6	B9	B11	B12	(X)(Y)(Z) TOTAL(FT)³	LUM. ARM (FT) C	POLE ATTACHMENT POINT ANGLES (deg) D	E1	F	G1	G2	H	I1	I2	FOUNDATION DEPTH(FT) 3' RD	3' SQ	4' RD	REMARKS
1	9.2	9.0	9.2	9.0	–	9.2	9.2	–	–	2160	12	–	–	–	–	–	135	–	–	15	11	11	BASED ON AN ALLOWABLE LATERAL BEARING PRESSURE OF 1,000 PSF
2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	FOUNDATION PER WSDOT STANDARD PLAN J-7a

(SIGNAL MAST ARM DATA)

NOTES

1. MOUNTING COUPLING INSTALLED AT OFFSET DISTANCE INDICATED IN CHART.

ALTERNATE NOTE 1
FOR TYPE N MOUNT ONLY
DRILL 1" HOLE IN MAST ARM AND INSTALL PLASTIC SPLIT BUSHING FOR CABLE ENTRANCE.

2. FIELD INSTALLED.

RECORD DRAWING CERTIFICATION
THESE DRAWINGS CONFORM TO THE CONTRACTOR'S CONSTRUCTION RECORDS.
BY__________ DATE __________
TITLE/POSITION__________
CONFIRMED BY CITY:__________ DATE __________

PROJECT REF: FAC08-00XX
THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S ENGINEERING DIVISION REQUIREMENTS.
APPROVED BY:__________
DATE APPROVED:__________

KEVIN R. COLLINS, STATE OF WASHINGTON, 40362, REGISTERED PROFESSIONAL ENGINEER, 5/19/08, EXPIRES 04/14/10

	DATE	NO.	REVISION	BY	DATE
DESIGNED BY JLB	10/23/07	1	TYPE 1 POLE CHANGED TO TYPE PS POLE	JLB	11/06/07
DRAWN BY JLB	10/23/07	2	MOVED POLE 1	KRC	05/19/08
REVIEWED BY KRC	10/23/07				

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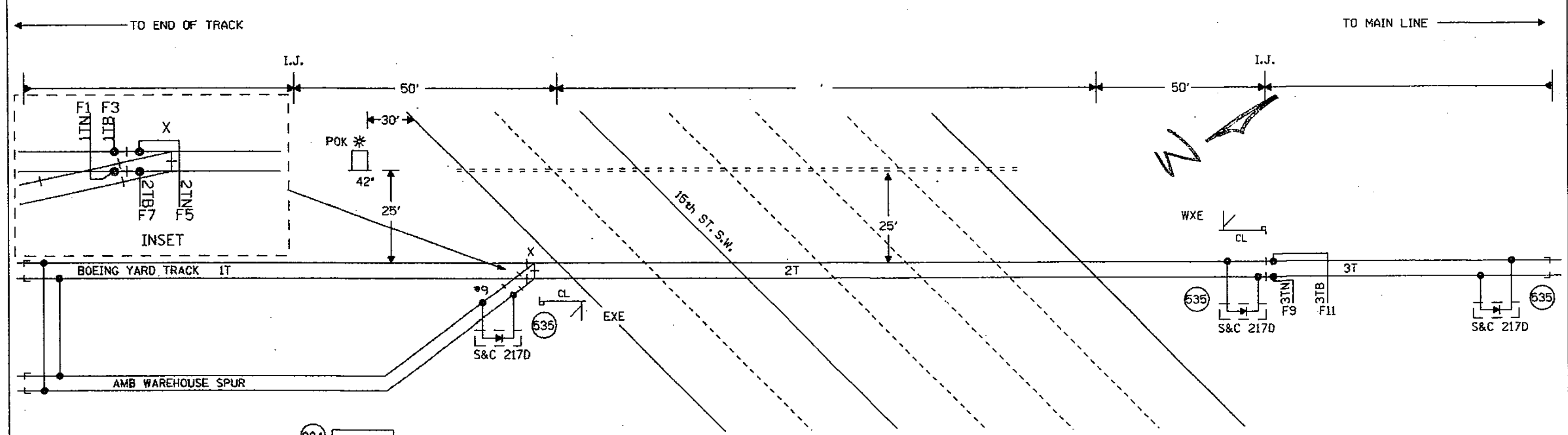
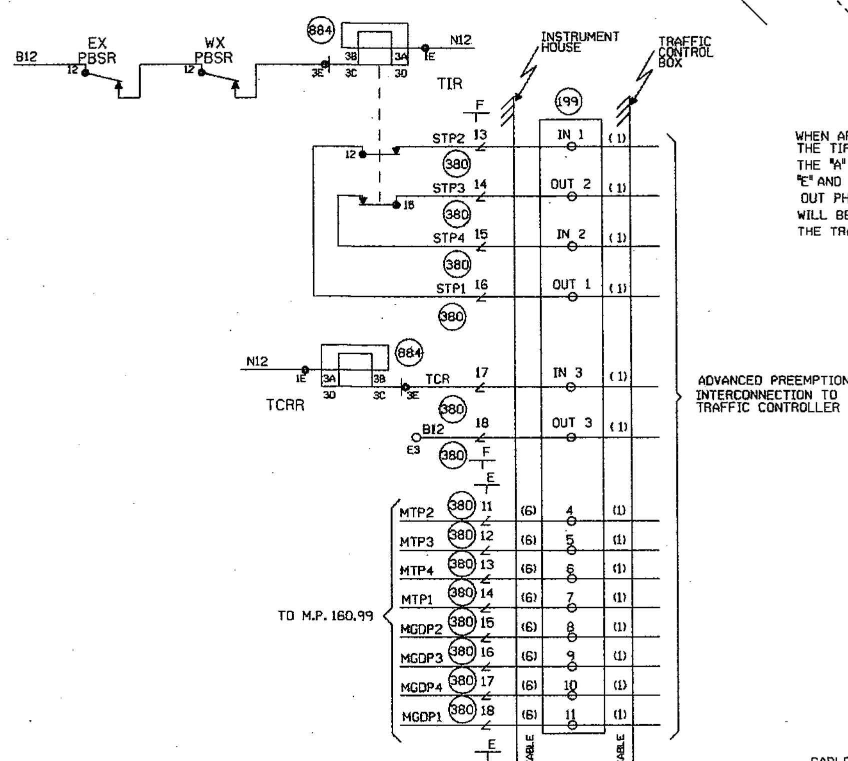
AMB WAREHOUSE RAIL SPUR SIGNAL
15TH STREET SW/PERIMETER ROAD
CITY OF AUBURN, WASHINGTON
TRAFFIC SIGNAL PLAN

TS2





CROSSING OPERATION

WHEN APPROPRIATE SIGNAL PUSHBUTTON HAS BEEN DEPRESSED, THE TIR WILL DROP AND START THE TRAFFIC CLEAR OUT PHASE. THE "A" AND "C" GATES WILL DROP. THE FRONT LIGHTS OF CANTILEVER "E" AND THE BACK LIGHTS OF CANTILEVER "D" WILL LIGHT. WHEN CLEAR OUT PHASE IS COMPLETED, TRAFFIC LIGHTS WILL BE RED, THE TCRR WILL BE ENERGIZE FROM THE TRAFFIC CONTROLLER, WHICH WILL PROVIDE THE TRAIN WITH A CLEAR SIGNAL TO PROCEED THOUGH THE CROSSING.

NOTES:

TWISTED WIRES = ⊗
ALL TRACK WIRES 2C. *6 INSULATED 1 TWIST PER FT.
TRANSMITTER AND RECEIVER LEADS TO BE SEPARATED BY AT LEAST 12" IN TRENCH. LENGTHS SHOULD NOT EXCEED MANUFACTURES RECOMMENDATION.

TOP OF FOUNDATION TO BE AT SAME ELEVATION AS THE SURFACE OF THE TRAVELED WAY & NO MORE THAN 4" ABOVE THE SURFACE OF THE GROUND.

ALL BUNGALOW WIRING TO BE *16 AWG FLEX UNLESS OTHERWISE SPECIFIED EXCEPT ALL GROUND WIRE TO BE *6 AWG FLEX OR LARGER

REFER TO UP STANDARD DWG. FOR BUNGALOW GROUNDING.

CONSTRUCTION NOTES

1. FIELD VERIFY ALL DIMENSIONS

ALL LIGHTS TO BE 12" ROUNDELS.

4" X 150' CONDUIT = = = = = = = =

LED LIGHTS LIGHTS:

xx = BELL

W(S) ←—o—→ E(N)

CABLE DISTRIBUTION

CABLE NO. 1 U.G.B.T. HOUSE TO TRAFFIC CONTROLLER
CABLE NO. 6 12C *14 TO M.P. 160.99

CONNECTS TO DRAWING 161.10

NEW SHEET

AUBURN, WASHINGTON
15th STREET S.W.
M.P. 160.98
SEATTLE SUBDIVISION
D.O.T.*396 593N

1.1 2-26-08 INSTALL ADVANCED PREEMPTION W/ PUSH BUTTON SIGNALING M.P. 160.99 GRK/MWK JTB/JJP	MODIFICATION LEVEL		
	O.A. LAST LEVEL CHECKED	DO	
	LAST LEVEL MOD THIS TYPICAL	DO	
	LAST LEVEL BY DESIGNER	DO	
	CHANGED FROM TYPICAL?	Y	

UNION PACIFIC — QUALITY · PRODUCTIVITY · SAFETY — SIGNAL DESIGN

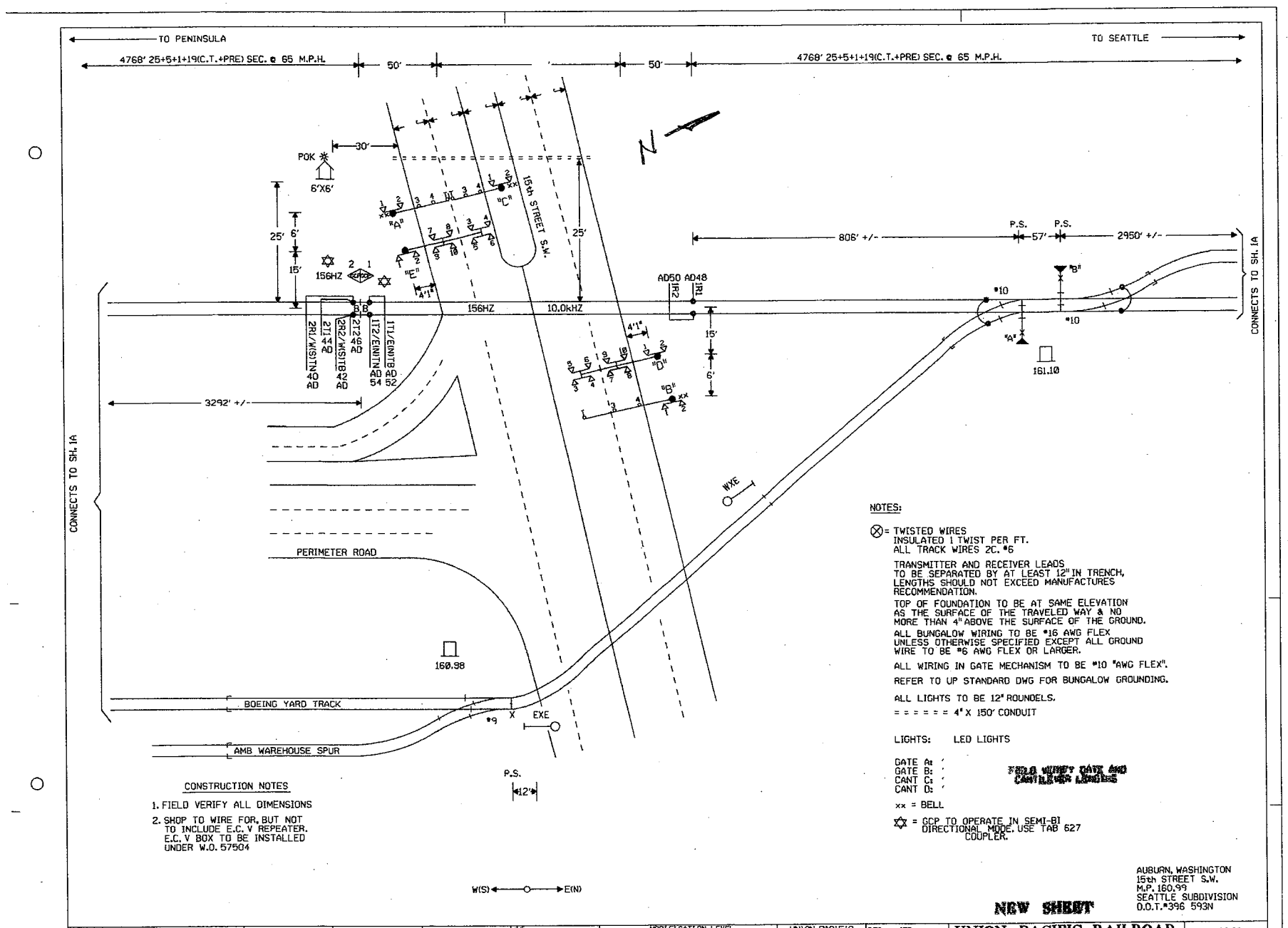
DES: JTB
DIG: JTB
CHK: GRK/MWK
A.F.E.
ID= 507416098.1X

UNION PACIFIC RAILROAD

AUBURN, WASHINGTON
HIGHWAY CROSSING SIGNALS
CONTROL CIRCUITS

Office of AVP Engineering - Design — Omaha, Nebraska

DATE 2-25-08
SHEET 1
DWG 160.98
B-5074



CONSTRUCTION NOTES

1. FIELD VERIFY ALL DIMENSIONS
2. SHOP TO WIRE FOR, BUT NOT TO INCLUDE E.C.V REPEATER. E.C.V BOX TO BE INSTALLED UNDER W.O. 57504

NOTES:

⊗ = TWISTED WIRES
INSULATED 1 TWIST PER FT.
ALL TRACK WIRES 2C. #6

TRANSMITTER AND RECEIVER LEADS TO BE SEPARATED BY AT LEAST 12" IN TRENCH, LENGTHS SHOULD NOT EXCEED MANUFACTURES RECOMMENDATION.

TOP OF FOUNDATION TO BE AT SAME ELEVATION AS THE SURFACE OF THE TRAVELED WAY & NO MORE THAN 4" ABOVE THE SURFACE OF THE GROUND.

ALL BUNGALOW WIRING TO BE #16 AWG FLEX UNLESS OTHERWISE SPECIFIED EXCEPT ALL GROUND WIRE TO BE #6 AWG FLEX OR LARGER.

ALL WIRING IN GATE MECHANISM TO BE #10 #AWG FLEX".

REFER TO UP STANDARD DWG FOR BUNGALOW GROUNDING.

ALL LIGHTS TO BE 12" ROUNDELS.

= = = = = = = 4" X 150' CONDUIT

LIGHTS: LED LIGHTS

GATE A: '
GATE B: '
CANT C: '
CANT D: '

FIELD WIRE GATE AND CANTILEVER LENGTHS

xx = BELL

✡ = GCP TO OPERATE IN SEMI-BI DIRECTIONAL MODE, USE TAB 627 COUPLER.

AUBURN, WASHINGTON
15th STREET S.W.
M.P. 160.99
SEATTLE SUBDIVISION
D.O.T.#396 593N

NEW SHEET

MODIFICATION LEVEL	
D. A. LAST LEVEL CHECKED	00
LAST LEVEL MOD THIS TYPICAL	00
LAST LEVEL BY DESIGNER	00
CHANGED FROM TYPICAL?	Y

UNION PACIFIC SAFETY SIGNAL DESIGN

DES: JTB
DIG: JTB
CHK: GRK/HWK
A.F.E.
ID= 507416099.1X

UNION PACIFIC RAILROAD
SEATTLE, WASHINGTON TO PENINSULA JCT. OREGON
C.T.C. CIRCUITS
Division of AVP Engineering - Design, Omaha, Nebraska

DATE 2-25-08
SHEET 1
DWG 160.99
B-5074