WASHINGTON
UTc
UTILITIES AND TRANSPORTATION
COMMISSION

BNSF Rwy. Co.)	**REVISED**
)	DOCKET NO. TR-151862-P
Petitioner,)	
)	PETITION TO CONSTRUCT OR
)	RECONSTRUCT A HIGHWAY-RAIL
vs.)	GRADE CROSSING AND INSTALL
)	AN INTER-TIE BETWEEN A
)	HIGHWAY SIGNAL AND A
Respondent)	RAILROAD CROSSING SIGNAL
)	SYSTEM
City of Auburn, WA)	
)	
	USDOT CROSSING NO.: 085652E

Prior to submitting a Petition to **Construct** a highway-rail grade crossing and install an inter-tie between a Highway Signal and a Railroad Crossing Signal System to the Washington Utilities and Transportation Commission (UTC), State Environmental Protection Act (SEPA) requirements must be met. Washington Administrative Code (WAC) 197-11-865 (2) requires:

> **All actions of the utilities and transportation commission under statutes administered as of December 12, 1975, are exempted, except the following:**
>
> **(2) Authorization of the openings or closing of any highway/railroad grade crossing, or the direction of physical connection of the line of one railroad with that of another;**

Please attach sufficient documentation to demonstrate that the SEPA requirement has been fulfilled. For additional information on SEPA requirements contact the Department of Ecology.

The Petitioner asks the Washington Utilities and Transportation Commission to approve construction or reconstruction of a highway-rail grade crossing and inter-tie the highway signal with the railroad crossing signal system.

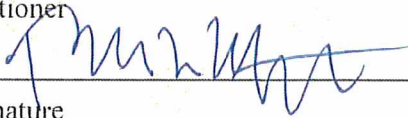☐ **Construction**   X **Reconstruction**

1

Section 1 – Petitioner's Information

BNSF Rwy. Co.
_____
Petitioner

_____
Signature
2454 Occidental Ave. S.
_____
Street Address
Seattle, WA. 98134
_____
City, State and Zip Code

_____
Mailing Address, if different than the street address
Richard Wagner
_____
Contact Person Name
206-625-6152, Richard.Wagner@bnsf.com
_____
Contact Phone Number and E-mail Address

Section 2 – Respondent's Information

City of Auburn
_____
Respondent
25 W. Main St.
_____
Street Address
Auburn, WA. 98001
_____
City, State and Zip Code

_____
Mailing Address, if different than the street address
Pablo Para
_____
Contact Person Name
253-876-1958,ppara@auburnwa.gov
_____
Contact Phone Number and E-mail Address

Section 3 – Proposed or Existing Crossing Location

1. Existing highway/roadway _____3rd St Northwest_____

2. Existing railroad _____BNSF Railway_____

3. Location of proposed crossing:
   Located in the_____ 1/4 of the _____1/4 of Sec. __13_, Twp. _21N_, Range __4E___W.M.

4. GPS location, if known ___47deg 18'30"N, 122deg 13'56"W_____

5. Railroad mile post (nearest tenth) _____21.23X_____

6. City _____Auburn_____   County _King_____

Section 4 – Proposed or Existing Crossing Information

1. Railroad company _____BNSF Railway_____

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

   ☐ Passenger   ☐ Excursion

3. Type of tracks at crossing   **X** Main Line   ☐ Siding or Spur

4. Number of tracks at crossing ____2_____

5. Average daily train traffic, freight _____24_____

   Authorized freight train speed ___60_____   Operated freight train speed __60 ·_____

6. Average daily train traffic, passenger __23___

   Authorized passenger train speed ____79____   Operated passenger train speed ___79_____

7. Will the proposed crossing eliminate the need for one or more existing crossings?
   Yes _____   No __X__

8. If so, state the distance and direction from the proposed crossing.

   _____

9. Does the petitioner propose to close any existing crossings?

      Yes _____   No __X__

Section 5 – Temporary Crossing

1. Is the crossing proposed to be temporary?   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 _____

Approximate date of removal   _____

Section 6 – Current Highway Traffic Information

1. Name of roadway/highway   3rd St Northwest

2. Roadway classification   City Street

3. Road authority   City of Auburn

4. Average annual daily traffic (AADT)   7,000

5. Number of lanes   2

6. Roadway speed   30

7. Is the crossing part of an established truck route?   Yes _____   No __X__

8. If so, trucks are what percent of total daily traffic?   _____

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? __14__

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

Section 7 – Alternatives to the Proposal

1. Does a safer location for a crossing exist within a reasonable distance of the proposed location?
     Yes _____   No _____

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 _____   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.

     _____

     _____

     _____

     _____

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 _____

6. If an over-crossing or under-crossing is not feasible, explain why.

     _____

     _____

     _____

     _____

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

Yes _____ No _____

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.

_____

_____

_____

_____

_____

_____

_____

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

Yes _____ No _____

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.

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

Direction of sight (left or right)	Number of feet from proposed crossing	Provides an unobstructed view for how many feet
Right	300	135
Right	200	245
Right	100	375
Right	50	Unobstructed
Right	25	Unobstructed
Left	300	55
Left	200	70
Left	100	195
Left	50	810
Left	25	Unobstructed

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

Direction of sight (left or right)	Number of feet from proposed crossing	Provides an unobstructed view for how many feet
Right	300	25
Right	200	28
Right	100	40
Right	50	220
Right	25	3250
Left	300	45
Left	200	50
Left	100	60
Left	50	200
Left	25	Unobstructed

2. Will the new 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. __30ft East, 14ft West_____

4. Will the new crossing provide an approach grade of not more than five percent prior to the level grade?
        Yes _X_   No ____

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

_____

_____

_____

_____

Section 9 – Illustration of Proposed Crossing Configuration

Attach a detailed diagram, drawing, map or other illustration showing the following:
- ♦ The vicinity of the proposed 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.

Section 10 – Sidewalks

1. Provide the following information:
    a. Provide a description of the type of sidewalks proposed.
    b. Describe who will maintain the sidewalks.
    c. Attach a proposed diagram or design of the crossing including the sidewalks.

_____

There will be no change to existing sidewalks.

_____

_____

_____

_____

_____

_____

_____
_____
_____
_____
_____
_____
_____
_____
_____

Section 11 – Proposed Warning Signals or Devices

1. Explain in detail the number and type of automatic signals or other warning devices planned at the proposed crossing, including a cost estimate for each. If requesting pre-emption include the type of train detection circuitry, sequencing and advanced preemption time, justification for the changes and its effects on current warning devices and warning times for drivers.

    Existing crossing warning devices will be relocated to accommodate new 3rd main line.

    BNSF will pay for relocation.

    Existing simultaneous pre-emption will be replaced with advanced pre-emption.
    City of Auburn is responsible for any traffic signal upgrades required due to BNSF's

    advanced pre-emptions upgrades.

2. Provide an estimate for maintaining the signals for 12 months. _____

3. Is the petitioner prepared to pay to the respondent railroad company its share of installing the warning devices as provided by law?
        Yes ____   No ____

Section 12 – Traffic Signal Preemption

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

1. Specify simultaneous or advance preemption requested.
  Advance

If advance preemption, what is the preemption time.
  31 seconds

Section 13 – Additional Information

Provide any additional information supporting the proposal, including information such as the public benefits that would be derived from constructing a new crossing as proposed or modifying an existing crossing. Provide project specific information.

  BNSF is constructing the third main line in this area to expedite train movement through

  the City of Auburn. The addition of the third main line will allow commuter trains to access the passenger platforms, just south of W. Main St, while other trains will be able

  to continue to move down the third track.

Section 14 – Waiver of Hearing by Respondent

Waiver of Hearing

The undersigned represents the Respondent in the petition to construct or reconstruct a highway-railroad grade crossing and inter-tie the highway signal with the railroad crossing signal system.

USDOT Crossing No.: _____085652E_____

We have investigated the conditions at the proposed or existing crossing site. We are satisfied the conditions are the same as described by the Petitioner in this docket. We agree that a crossing be installed or reconstructed and the highway signals inter-tied with the railroad crossing signal system and consent to a decision by the commission without a hearing.

Dated at _____ , Washington, on the _____ day of

_____ , 20 ____ .

Nancy Backus
_____
Printed name of Respondent

Nancy Backus
_____
Signature of Respondent's Representative

Mayor
_____
Title

City of Auburn
_____
Name of Company

253-931-3041, nbackus@auburnwa.gov
_____
Phone number and e-mail address

25 W. Main St.
_____

Auburn, WA 98001
_____
Mailing address

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

City Auburn

County King

District

Date 08/25/15

Completed by Scott Nutter

District Approval

Show North Arrow

Crossing Street

Traffic Signal

Parallel Street

Railroad

Track Phase

Warning Device
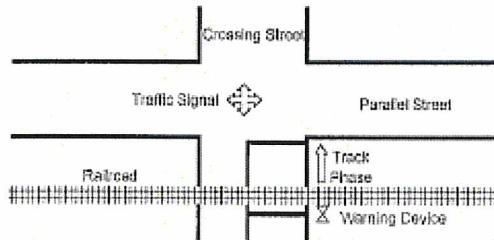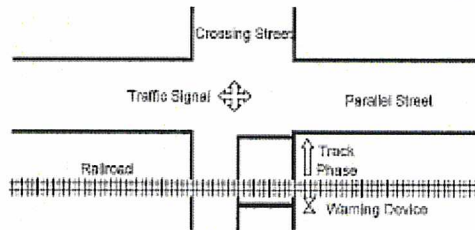
Parallel Street Name
C Street NW

Crossing Street Name
3rd Street Nw

Railroad BNSF

Crossing DOT# 085652E

Railroad Contact Richard Wagner

Phone (206) 625-6152

SECTION 1: RIGHT-OF-WAY TRANSFER TIME CALCULATION

Preempt verification and response time

Remarks

1. Preempt delay time (seconds) .... 1. [ ]

2. Controller response time to preempt (seconds) .... 2. [ ]

Controller type: ASC 2

3. Preempt verification and response time (seconds): add lines 1 and 2 .... 3. [0.0]

Worst-case conflicting vehicle time

4. Worst-case conflicting vehicle phase number .... 4. [8]

Remarks

5. Minimum green time during right-of-way transfer (seconds) .... 5. [5.00]

6. Other green time during right-of-way transfer (seconds) .... 6. [ ]

7. Yellow change time (seconds) .... 7. [4.00]

8. Red clearance time (seconds) .... 8. [1.00]

9. Worst-case conflicting vehicle time (seconds): add lines 5 through 8 .... 9. [10.0]

Worst-case conflicting pedestrian time

10. Worst-case conflicting pedestrian phase number .... 10. [8]

Remarks

11. Minimum walk time during right-of-way transfer (seconds) .... 11. [0.0]

12. Pedestrian clearance time during right-of-way transfer (seconds) .... 12. [13.0]

13. Vehicle yellow change time, if not included on line 12 (seconds) .... 13. [4.0]

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. [18.0]

Worst-case conflicting vehicle or pedestrian time

16. Worst-case conflicting vehicle or pedestrian time (seconds): maximum of lines 9 and 15 .... 16. [18.0]

17. Right-of-way transfer time (seconds): add lines 3 and 16 .... 17. [18.0]

SECTION 2: QUEUE CLEARANCE TIME CALCULATION

CSD = Clear storage distance
MTCD = Minimum track clearance distance
DVL = Design vehicle length
L = Queue start up distance, also stop line distance
DVCD = Design vehicle clearance distance

Remarks

18. Clear storage distance (CSD, feet) ....18. | 139 | _____

19. Minimum track clearance distance (MTCD, feet) ....19. | 53 | _____

20. Design vehicle length (DVL, feet) ....20. | 75 | Design vehicle type: _____

21. Queue start-up distance, L (feet): add lines 18 and 19 ....21. | 192 |

Remarks

22. Time required for design vehicle to start moving (seconds): calculate as 2+(L+20) ....22. | 11.6 | _____

23. Design vehicle clearance distance, DVCD (feet): add lines 19 and 20 ....23. | 128 |

24. Time for design vehicle to accelerate through the DVCD (seconds) ....24. | 15.4 | Read from Figure 2 in Instructions.

25. Queue clearance time (seconds): add lines 22 and 24 ....25. | 27.0 |

SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

Remarks

26. Right-of-way transfer time (seconds): line 17 ....26. | 18.0 | _____

27. Queue clearance time (seconds): line 25 ....27. | 27.0 | _____

28. Desired minimum separation time (seconds) ....28. | 4.0 | _____

29. Maximum preemption time (seconds): add lines 26 through 28 ....29. | 49.0 |

SECTION 4: SUFFICIENT WARNING TIME CHECK

Remarks

30. Required minimum time, MT (seconds): per regulations ....30. | 20.0 | _____

31. Clearance time, CT (seconds): get from railroad ....31. | 2.0 |

32. Minimum warning time, MWT (seconds): add lines ....32. | 22.0 | Excludes buffer time (BT)

33. Advance preemption time, APT, if provided (seconds): get from railroad .....33. | 0.0 | _____

34. Warning time provided by the railroad (seconds): add lines 32 and 33 ....34. | 22.0 |

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. | 27 |

> 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: _____

_____

_____

13

SECTION 5: TRACK CLEARANCE GREEN TIME CALCULATION (OPTIONAL)

Preempt Trap Check

36. Advance preemption time (APT) provided (seconds): .... 36. | 27.0 | Line 33 only valid if line 35 is zero.

37. Multiplier for maximum APT due to train handling .... 37. | 1.60 | See Instructions for details.

38. Maximum APT (seconds): multiply line 36 and 37 .... 38. | 43.2 | **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. | 58.2

41. Preempt verification and response time (seconds): line 3 .... 41. | 0.0 | **Remarks**

42. Best-case conflicting vehicle or pedestrian time (seconds): usually 0 .... 42. | 0.0

43. Minimum right-of-way transfer time (seconds): add lines 41 and 42 .... 43. | 0.0

44. Minimum track clearance green time (seconds): subtract line 43 from line 40 .... 44. | 58.2

Clearing of Clear Storage Distance

45. Time required for design vehicle to start moving (seconds), line 22 .... 45. | 11.6

46. Design vehicle clearance distance (DVCD, feet), line 23 ...... 46. | 128 | **Remarks**

47. Portion of CSD to clear during track clearance phase (feet) .. 47. | 139 | CSD* in Figure 3 in Instructions.

48. Design vehicle relocation distance (DVRD, feet): add lines 46 and 47 ...... 48. | 267

49. Time required for design vehicle to accelerate through DVRD (seconds) .... 49. | 22.8 | Read from Figure 2 in Instructions.

50. Time to clear portion of clear storage distance (seconds): add lines 45 and 49 .... 50. | 34.4

51. Track clearance green interval (seconds): maximum of lines 44 and 50, round up to nearest full second ..... 51. | 59

SECTION 6: VEHICLE-GATE INTERACTION CHECK (OPTIONAL)

52. Right-of-way transfer time (seconds): line 17 .... 52. | 18.0

53. Time required for design vehicle to start moving (seconds), line 22 .... 53. | 11.6

54. Time required for design vehicle to accelerate through DVL (on line 20, seconds) ...... 54. | 10.0 | Read from Table 3 in Instructions.

55. Time required for design vehicle to clear descending gate (seconds): add lines 52 though 54 ..... 55. | 39.6

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. |

58. Proportion of non-interaction gate descent time .... 58. | 0.44 | Read from Figure 5 in Instructions.

59. Non-interaction gate descent time (seconds): multiply lines 57 and 58 .... 59. | 0.0

60. Time available for design vehicle to clear descending gate (seconds): add lines 56 and 59 .... 60. | 0.0

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. | 40

14

City	Auburn		Date	08/26/15
County	King		Completed by	Scott Nutter
District			District Approval	

Show North Arrow

Crossing Street

Traffic Signal

Parallel Street

Railroad

Track Phase

Warning Device

Parallel Street Name
A Street NW

Crossing Street Name
3rd Street NW

| Railroad | BNSF | | Railroad Contact | Richard Wagner |
| Crossing DOT# | 0B6652E | | Phone | (206) 625-6152 |

SECTION 1: RIGHT-OF-WAY TRANSFER TIME CALCULATION

Preempt verification and response time   Remarks

1. Preempt delay time (seconds) ....1. [   ]

2. Controller response time to preempt (seconds) ....2. [   ]   Controller type: ASC 3

3. Preempt verification and response time (seconds): add lines 1 and 2 ....3. [0.0]

Worst-case conflicting vehicle time

4. Worst-case conflicting vehicle phase number ....4. [4]   Remarks

5. Minimum green time during right-of-way transfer (seconds) ....5. [5.00]

6. Other green time during right-of-way transfer (seconds) ....6. [   ]

7. Yellow change time (seconds) ....7. [4.00]

8. Red clearance time (seconds) ....8. [1.00]

9. Worst-case conflicting vehicle time (seconds): add lines 5 through 8 ....9. [10.0]

Worst-case conflicting pedestrian time

10. Worst-case conflicting pedestrian phase number.................10. [4]   Remarks
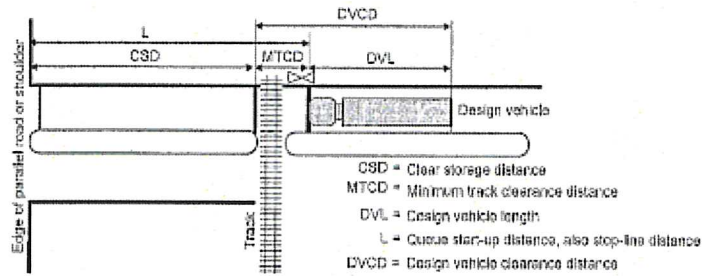
11. Minimum walk time during right-of-way transfer (seconds) ....11. [0.0]

12. Pedestrian clearance time during right-of-way transfer (seconds) ....12. [10.0]

13. Vehicle yellow change time, if not included on line 12 (seconds) ....13. [4.0]

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. [15.0]

Worst-case conflicting vehicle or pedestrian time

16. Worst-case conflicting vehicle or pedestrian time (seconds): maximum of lines 9 and 15..............16. [15.0]

17. Right-of-way transfer time (seconds): add lines 3 and 16 ....17. [15.0]

SECTION 2: QUEUE CLEARANCE TIME CALCULATION

CSD = Clear storage distance
MTCD = Minimum track clearance distance
DVL = Design vehicle length
L = Queue start-up distance, also stop-line distance
DVCD = Design vehicle clearance distance

Remarks

18. Clear storage distance (CSD, feet) ....18. | 270 | _____

19. Minimum track clearance distance (MTCD, feet) ....19. | 53 | _____

20. Design vehicle length (DVL, feet) ....20. | 75 | Design vehicle type: WB 53' trailer

21. Queue start-up distance, L (feet): add lines 18 and 19 ....21. | 323 |

Remarks

22. Time required for design vehicle to start moving (seconds): calculate as $2+(L \div 20)$ ....22. | 18.2 | _____

23. Design vehicle clearance distance, DVCD (feet): add lines 19 and 20 ....23. | 128 |

24. Time for design vehicle to accelerate through the DVCD (seconds) ....24. | 15.4 | Read from Figure 2 in instructions.

25. Queue clearance time (seconds): add lines 22 and 24 ....25. | 33.6 |

SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

Remarks

26. Right-of-way transfer time (seconds): line 17 ....26. | 15.0 | _____

27. Queue clearance time (seconds): line 25 ....27. | 33.6 | _____

28. Desired minimum separation time (seconds) ....28. | 4.0 | _____

29. Maximum preemption time (seconds): add lines 26 through 28 ....29. | 52.6 |

SECTION 4: SUFFICIENT WARNING TIME CHECK

Remarks

30. Required minimum time, MT (seconds): per regulations ....30. | 20.0 | _____

31. Clearance time, CT (seconds): get from railroad ....31. | 2.0 |

32. Minimum warning time, MWT (seconds): add lines ....32. | 22.0 | Excludes buffer time (BT)

33. Advance preemption time, APT, if provided (seconds): get from railroad .....33. | 0.0 | _____

34. Warning time provided by the railroad (seconds): add lines 32 and 33 ....34. | 22.0 |

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. | 31 |

> 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: _____

_____

_____

16

SECTION 5: TRACK CLEARANCE GREEN TIME CALCULATION (OPTIONAL)

Preempt Trap Check

36. Advance preemption time (APT) provided (seconds): .... **36.** | 31.0 | Line 33 only valid if line 35 is zero.

37. Multiplier for maximum APT due to train handling .... **37.** | 1.60 | See instructions for details

38. Maximum APT (seconds): multiply line 36 and 37 .... **38.** | 49.6 | 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.** | 64.6

41. Preempt verification and response time (seconds): line 3 .... **41.** | 0.0 | Remarks

42. Best-case conflicting vehicle or pedestrian time (seconds): usually 0........ **42.** | 0.0

43. Minimum right-of-way transfer time (seconds): add lines 41 and 42 .... **43.** | 0.0

44. Minimum track clearance green time (seconds): subtract line 43 from line 40 .... **44.** | 64.6

Clearing of Clear Storage Distance

45. Time required for design vehicle to start moving (seconds), line 22 .... **45.** | 18.2

46. Design vehicle clearance distance (DVCD, feet), line 23 ...... **46.** | 128 | Remarks

47. Portion of CSD to clear during track clearance phase (feet) ... **47.** | 150 | CSD* in Figure 3 in Instructions

48. Design vehicle relocation distance (DVRD, feet): add lines 46 and 47 ...... **48.** | 278

49. Time required for design vehicle to accelerate through DVRD (seconds) .... **49.** | 23.0 | Read from Figure 2 in Instructions.

50. Time to clear portion of clear storage distance (seconds): add lines 45 and 49 .... **50.** | 41.2

51. **Track clearance green interval (seconds): maximum of lines 44 and 50, round up to nearest full second ..... 51.** | 65

SECTION 6: VEHICLE-GATE INTERACTION CHECK (OPTIONAL)

52. Right-of-way transfer time (seconds): line 17 .... **52.** | 15.0

53. Time required for design vehicle to start moving (seconds), line 22 ... . **53.** | 18.2

54. Time required for design vehicle to accelerate through DVL (on line 20, seconds) ..... **54.** | 10.0 | Read from Table 3 in Instructions.

55. Time required for design vehicle to clear descending gate (seconds): add lines 52 though 54 .... **55.** | 43.2

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.** | |

58. Proportion of non-interaction gate descent time ... . **58.** | 0.46 | Read from Figure 5 in Instructions.

59. Non-interaction gate descent time (seconds): multiply lines 57 and 58 .... **59.** | 0.0

60. Time available for design vehicle to clear descending gate (seconds): add lines 58 and 59 .... **60.** | 0.0

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.** | 44