

BEFORE THE OFFICE OF THE COMMISSIONER OF RAILROADS

STATE OF WISCONSIN

On the Commissioner's Own Motion for a Determination of the Adequacy of Warning Devices at the Grade Crossings of the Union Pacific Railroad Co. Tracks with Five Highways in the Town of Caledonia and the Village of Mt. Pleasant, Racine County

9040-RX-1206

FINDINGS OF FACT AND ORDER

On March 16, 2005, the Commissioner of Railroads directed the staff of the Office of the Commissioner of Railroads (OCR) to investigate the adequacy of warning devices under §195.28, Stats., at the grade crossing of the Union Pacific Railroad Co. (UP) tracks with five highways in the Town of Caledonia and the Village of Mt. Pleasant, Racine County. The crossings are on the railroad's New Line.

<b>Highway</b>	<b>Municipality</b>	<b>Crossing Number</b>
CTH 'K'	Caledonia	176 865S / MP 64.55
CTH 'C'	Mt. Pleasant	176 869U / MP 63.30
Frontage Road	Mt. Pleasant	176 873J / MP 61.90
Braun Road	Mt. Pleasant	176 881B / MP 59.39
CTH 'KR'	Mt. Pleasant	176 883P / MP 58.39

An OCR investigator inspected the crossings in June 2005. No hearing was held.

Findings of Fact

THE COMMISSIONER FINDS:

The UP operates 14 through train movements per day over each crossing at a timetable speed of 50 mph. The railroad also operates 4 switch movements each day. Each crossing consists of one mainline track.

**CTH 'K'                      Caledonia                      176 865S**

CTH 'K' is 24' wide in the vicinity of the crossing and intersects the railroad tracks at an angle of 90°. The roadway approaches to the crossing are nearly level. CTH 'K' carried an average daily traffic (ADT) of 6900 according to 2002 DOT records at a legal speed limit of 45 mph.

At all crossings, except those with gates, a driver stopped 15' short of the near rail must be able to see far enough down the track, in both directions, to determine if sufficient time exists for moving their vehicle safely across the tracks to a point 15' past the far rail, prior to the arrival of a train. Required clearing sight distance along both directions of the track, from the stopped position of the vehicle, is dependent upon the maximum train speed and the acceleration characteristics of the "design" vehicle. The necessary clearing sight distance at the CTH 'K' crossing is 1120'. The available clearing sight distance is more than 1120'.

The exposure factor at this crossing is about 124,000. The exposure factor equals the product of the number of trains per day and the number of highway vehicles per day, which yields a numerical value for the potential conflicts each day at the crossing.

Four train-vehicle accidents have occurred at this crossing since 1973. The accidents occurred in 1976, 1978, 1986, and 1996..

Accidents that do occur here will likely be quite serious if a through train is involved due to their 50 mph speed. Train speed is strongly correlated with fatalities in train/vehicle accidents. More specifically, crossings with train speeds of 40 mph and over have a disproportionate number of fatalities. According to Federal Railroad Administration (FRA) statistics, nationally, in 1994 71% of fatalities occurred at crossings with train speeds of 40 mph+, even though only 26% of all crossings had train speeds of 40 mph+.

The Wisconsin Department of Transportation has produced a benefit-cost analysis for all at-grade crossings in the state. Installing new automatic flashing lights with gates and constant warning time circuitry at the CTH 'K' crossing has a net benefit of about \$1,240,000. The benefit-cost ratio is about 8.17 meaning that the public will receive \$8.17 in safety benefits for each dollar expended.

The crossing is presently protected with 12" automatic flashing lights. The existing warning devices are inadequate. The existing warning devices will be adequate until such time as the new warning devices are installed. In order to adequately protect public safety 12" LED automatic flashing lights with gates and constant warning time circuitry are needed because of the exposure factor, train volume, train speed, and net benefit.

**CTH 'C'                      Mt. Pleasant                      176 869U**

CTH 'C' is 24' wide in the vicinity of the crossing and intersects the railroad tracks at an angle of 90°. The roadway approaches to the crossing are nearly level. CTH 'C' carried an ADT of 11,900 according to 2002 DOT records at a legal speed limit of 55 mph.

The necessary clearing sight distance at the CTH 'K' crossing is 1120'. The available clearing sight distance is more than 1120'.

The exposure factor at this crossing is about 214,000.

Four train-vehicle accidents have occurred at this crossing since 1973. The accidents occurred in 1979, 1980, 1989, and 1994.

Accidents that do occur here will likely be quite serious if a through train is involved due to their 50 mph speed.

Installing new automatic flashing lights with gates and constant warning time circuitry at the CTH 'C' crossing has a net benefit of about \$1,091,000. The benefit-cost ratio is about 7.31 meaning that the public will receive \$7.31 in safety benefits for each dollar expended.

The crossing is presently protected with 12" automatic flashing lights. The existing warning devices are inadequate. The existing warning devices will be adequate until such time as the new warning devices are installed. In order to adequately protect public safety 12" LED automatic flashing lights with gates and constant warning time circuitry are needed because of the exposure factor, train volume, train speed, and net benefit.

**Frontage Road            Mt. Pleasant            176 873J**

Frontage Road is about 22' wide in the vicinity of the crossing and intersects the railroad tracks at an angle of 90°. The roadway approaches to the crossing are nearly level. Frontage Road carried an ADT of 1250 according to 2000 DOT records at a legal speed limit of 35 mph.

The necessary clearing sight distance at the CTH 'K' crossing is 1120'. The available clearing sight distance is more than 1120'.

The exposure factor at this crossing is about 23,000.

Two train-vehicle accidents have occurred at this crossing since 1973. The accidents occurred in 1977 and 1995.

Accidents that do occur here will likely be quite serious if a through train is involved due to their 50 mph speed.

Installing new automatic flashing lights with gates and constant warning time circuitry at the Frontage Road crossing has a net benefit of about \$354,000. The benefit-cost ratio is about 3.05 meaning that the public will receive \$3.05 in safety benefits for each dollar expended.

The crossing is presently protected with 8" automatic flashing lights. The existing warning devices are inadequate. The existing warning devices will be adequate until such time as the new warning devices are installed. In order to adequately protect public safety 12" LED automatic flashing lights with gates and constant warning time circuitry are needed because of the exposure factor, train volume, train speed, and net benefit.

The UP and We Energies are currently constructing tracks to serve a coal plant in Oak Creek. As part of that project, new 12" LED automatic flashing lights with gates and constant warning time circuitry are being temporarily installed at the 6 Mile Road crossing of the UP tracks in the Town of Caledonia, Racine County (crossing no. 176 734N). Once a grade-separated crossing is completed (now scheduled for 2006), then the signals can be relocated to the Frontage Road crossing.

**Braun Road                      Mt. Pleasant                      176 881B**

Braun Road is about 23' wide in the vicinity of the crossing and intersects the railroad tracks at an angle of 90°. The roadway approaches to the crossing are nearly level. Braun Road carried an ADT of 1250 according to 2000 DOT records at a legal speed limit of 45 mph.

The necessary clearing sight distance at the CTH 'K' crossing is 1120'. The available clearing sight distance is more than 1120'.

The exposure factor at this crossing is about 23,000.

One train-vehicle accident has occurred at this crossing since 1973. The accident occurred in 2000.

Accidents that do occur here will likely be quite serious if a through train is involved due to their 50 mph speed.

Installing new automatic flashing lights with gates and constant warning time circuitry at the Braun Road crossing has a net benefit of about \$354,000. The benefit-cost ratio is about 3.05 meaning that the public will receive \$3.05 in safety benefits for each dollar expended.

The crossing is presently protected with 8" automatic flashing lights. The existing warning devices are inadequate. The existing warning devices will be adequate until such time as the new warning devices are installed. In order to adequately protect public safety 12" LED automatic flashing lights with gates and constant warning time circuitry are needed because of the exposure factor, train volume, train speed, and net benefit.

**CTH 'KR'                      Mt. Pleasant                      176 883P**

CTH 'KR' is 24' wide in the vicinity of the crossing and intersects the railroad tracks at an angle of 90°. The roadway approaches to the crossing are nearly level. CTH 'KR' carried an ADT of 6000 according to 2002 DOT records at a legal speed limit of 45 mph.

The necessary clearing sight distance at the CTH 'K' crossing is 1120'. The available clearing sight distance is more than 1120'.

The exposure factor at this crossing is about 108,000.

One train-vehicle accident has occurred at this crossing since 1973. The accident occurred in 1989.

Accidents that do occur here will likely be quite serious if a through train is involved due to their 50 mph speed.

Installing new automatic flashing lights with gates and constant warning time circuitry at the CTH 'KR' crossing has a net benefit of about \$1,146,000. The benefit-cost ratio is about 7.63 meaning that the public will receive \$7.63 in safety benefits for each dollar expended.

The crossing is presently protected with 12" automatic flashing lights. The existing warning devices are inadequate. The existing warning devices will be adequate until such time as the new warning devices are installed. In order to adequately protect public safety 12" LED automatic flashing lights with gates and constant warning time circuitry are needed because of the exposure factor, train volume, train speed, and net benefit.

*Constant warning time circuitry* adjusts for train speed and causes the crossing signals to always operate for the same amount of time before the train reaches the crossing, regardless of train speed. A motion detector simply detects the train operation, but does not adjust for train speed so that the amount of warning time varies based on train speed.

*Light emitting diodes (LED)* lamps replace incandescent bulbs. LEDs have higher conspicuity, a wider cone of vision, and longer life than incandescent lights. LEDs are especially useful on east-west roadways where the rising and setting sun may make the signals difficult to see.

**Source of funding:** The signal materials and installation shall be split as follows: The OCR will use state and federal safety funds to pay 80% of the cost (up to a **maximum contribution of \$120,000**) and the Union Pacific Railroad Co. shall pay the remaining 20% of the cost, except at **Frontage Road**. As noted above, the new signals from the 6 Mile Road crossing shall be moved to the Frontage Road crossing once they are no longer needed at that crossing. The UP and WE Energies are providing the signal materials. The OCR will fund the labor to install the signals up to \$50,000.

#### Conclusion on the Issue

##### THE COMMISSIONER CONCLUDES:

1. That in order to adequately protect and promote public safety, it is necessary to install and maintain 12" LED automatic flashing lights with gates and constant warning time circuitry at the crossing of the tracks of the Union Pacific Railroad Co. with CTH 'K' in the Town of Caledonia, Racine County.

2. That in order to adequately protect and promote public safety, it is necessary to install and maintain 12" LED automatic flashing lights with gates and constant warning time circuitry at the crossings of the tracks of the Union Pacific Railroad Co. with CTH 'C', Frontage Road, Braun Road, and CTH 'KR' in the Village of Mt. Pleasant, Racine County.

#### Conclusion of Law

##### THE COMMISSIONER CONCLUDES:

That the jurisdiction of the Office of the Commissioner of Railroads under §195.28 , Stats., extends to this matter. Accordingly, the Office enters an order consistent with the findings of fact.

Order

THE COMMISSIONER ORDERS:

1. That the **Union Pacific Railroad Co.** shall install and maintain 12" LED automatic flashing lights with gates, constant warning time circuitry and other appropriate appurtenances in accordance with such plans as are filed with and approved by the Office of the Commissioner of Railroads at the crossing of its tracks with **CTH 'K'** in the Town of Caledonia, Racine County by **December 31, 2008** (Crossing No. 176 865S / MP 64.55).

2. That the **Union Pacific Railroad Co.** shall install and maintain 12" LED automatic flashing lights with gates, constant warning time circuitry and other appropriate appurtenances in accordance with such plans as are filed with and approved by the Office of the Commissioner of Railroads at the crossing of its tracks with **CTH 'C'** in the Village of Mt. Pleasant, Racine County by **December 31, 2008** (Crossing No. 176 869U / MP 63.30).

3. That the **Union Pacific Railroad Co.** shall install and maintain 12" LED automatic flashing lights with gates, constant warning time circuitry and other appropriate appurtenances in accordance with such plans as are filed with and approved by the Office of the Commissioner of Railroads at the crossing of its tracks with **Frontage Road** in the Village of Mt. Pleasant, Racine County by **August 30, 2006 or no later than 60 days after the opening of the bridge at the 6 Mile Road crossing** (Frontage Road Crossing No. 176 873J / MP 61.90). The **Union Pacific Railroad Co.** shall reuse the signal equipment from the **6 Mile Road** crossing of the Union Pacific Railroad Co. tracks in the Town of Caledonia, Racine County (Crossing no. 176 734N).

4. That the **Union Pacific Railroad Co.** shall install and maintain 12" LED automatic flashing lights with gates, constant warning time circuitry and other appropriate appurtenances in accordance with such plans as are filed with and approved by the Office of the Commissioner of Railroads at the crossing of its tracks with **Braun Road** in the Village of Mt. Pleasant, Racine County by **December 31, 2008** (Crossing No. 176 881B / MP 59.39).

5. That the **Union Pacific Railroad Co.** shall install and maintain 12" LED automatic flashing lights with gates, constant warning time circuitry and other appropriate appurtenances in accordance with such plans as are filed with and approved by the Office of the Commissioner of Railroads at the crossing of its tracks with **CTH 'KR'** in the Village of Mt. Pleasant, Racine County by **December 31, 2007** (Crossing No. 176 883P / MP 58.39).

6. That the **Union Pacific Railroad Co.** shall submit to the Office of the Commissioner of Railroads signal and circuit plans with the cost estimate of its proposed installation and upon completion of the signal project, a detailed statement of the actual cost to the Office and to the Wisconsin Department of Transportation.

7. That the signal installation work herein ordered shall not begin until the district office of the Wisconsin Department of Transportation informs the railroad that they may start such work and such start notice will not be issued until appropriate federal aid or other funding arrangements have been assured. The cost of the new project initiated before the start notice will not be reimbursed with public funds and shall be the responsibility of the railroad.

8. That to the extent feasible the **Union Pacific Railroad Co.** shall re-use the existing signal equipment.

9. That with respect to the **CTH 'K', CTH 'C', Braun Road, and CTH 'KR'** crossings, the **State of Wisconsin** shall pay 80% of the cost (up to a **maximum contribution of \$120,000**) and the **Union Pacific Railroad Co.** shall bear 20% of the cost of the crossing signal materials and labor. In addition, the **Union Pacific Railroad Co.** shall pay any cost assessed to the railroad pursuant to §195.60, Stats., for the investigation of this matter by the Office. The railroad shall not pass on those assessment costs either directly or indirectly.

10. That the **Union Pacific Railroad Co.** shall be reimbursed by the **State of Wisconsin** for the cost to install the **Frontage Road** warning devices **up to a maximum of \$50,000**. In addition, the **Union Pacific Railroad Co.** shall pay any cost assessed to the railroad pursuant to §195.60, Stats., for the investigation of this matter by the Office. The railroad shall not pass on those assessment costs either directly or indirectly.

11. That if the petitioner, railroad or any interested party objects to this order and requests a hearing within 20 days of the date of this order in writing, the Office will hold a public hearing.

12. That jurisdiction is retained.

Dated at Madison, Wisconsin, (December 2, 2005).

By the Office of the Commissioner of Railroads.

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Rodney W. Kreunen  
Commissioner of Railroads

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