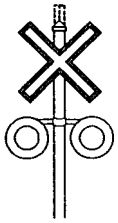
Appendix C2: FIELD DATA FORMS



Active Crossings

Date of Assessment:

Assessment Team Members & Affiliations:

Reason for Assessment:

___ periodic assessment	___ significant change in infrastructure	___ significant change in road or rail volumes
___ cessation of whistling	___ significant change in train operations	___ significant change in road or rail speeds
___ change in vehicle types	___ 2+ fatal collisions in 5yr. period	___ other collision experience (see below)

Railway Authority:

Crossing Location:

Location Number:

Municipality:

Railway: **Mile:**

Sub-division: **Spur:**

Type of Grade Crossing: [SRCS, FLB, FLBG]

Track Type: [mainline, etc.]

Road Authority:

Road Name / Number:

Province:

Location Reference (control section, etc.):

Road Classification
(freeway/expressway arterial, collector, local, etc.):

Collision History (5-year period):

Property Damage collisions: _____

+ Personal Injury collisions: _____ **Number of Persons Injured:** _____

+ Fatal Injury Collisions: _____ **Number of Persons Killed:** _____

= Total Collisions in last 5 year period: _____

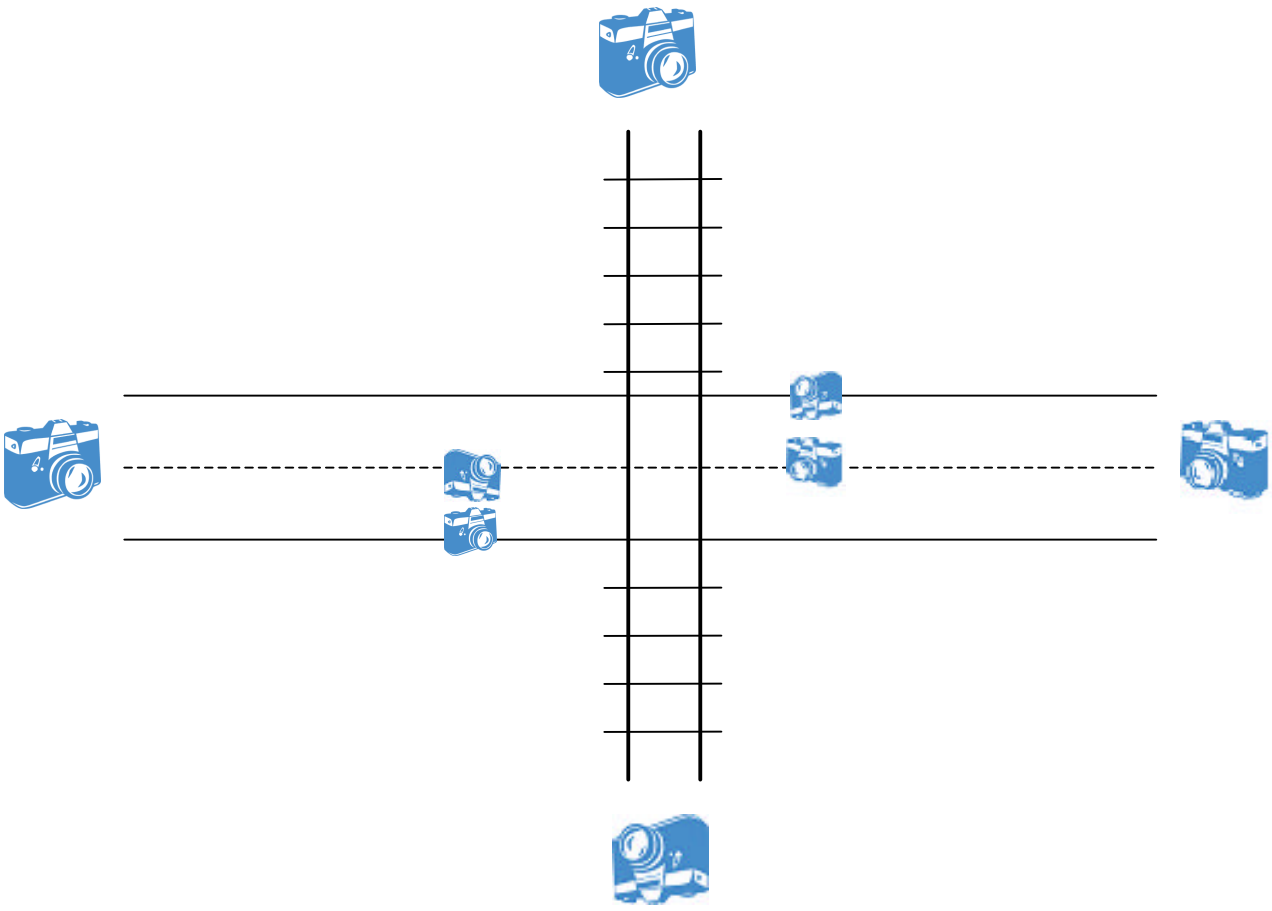
Provide Details of the Collisions if available:

- identify main contributing factors -attach collision diagrams if available

SCENE PHOTOGRAPHS

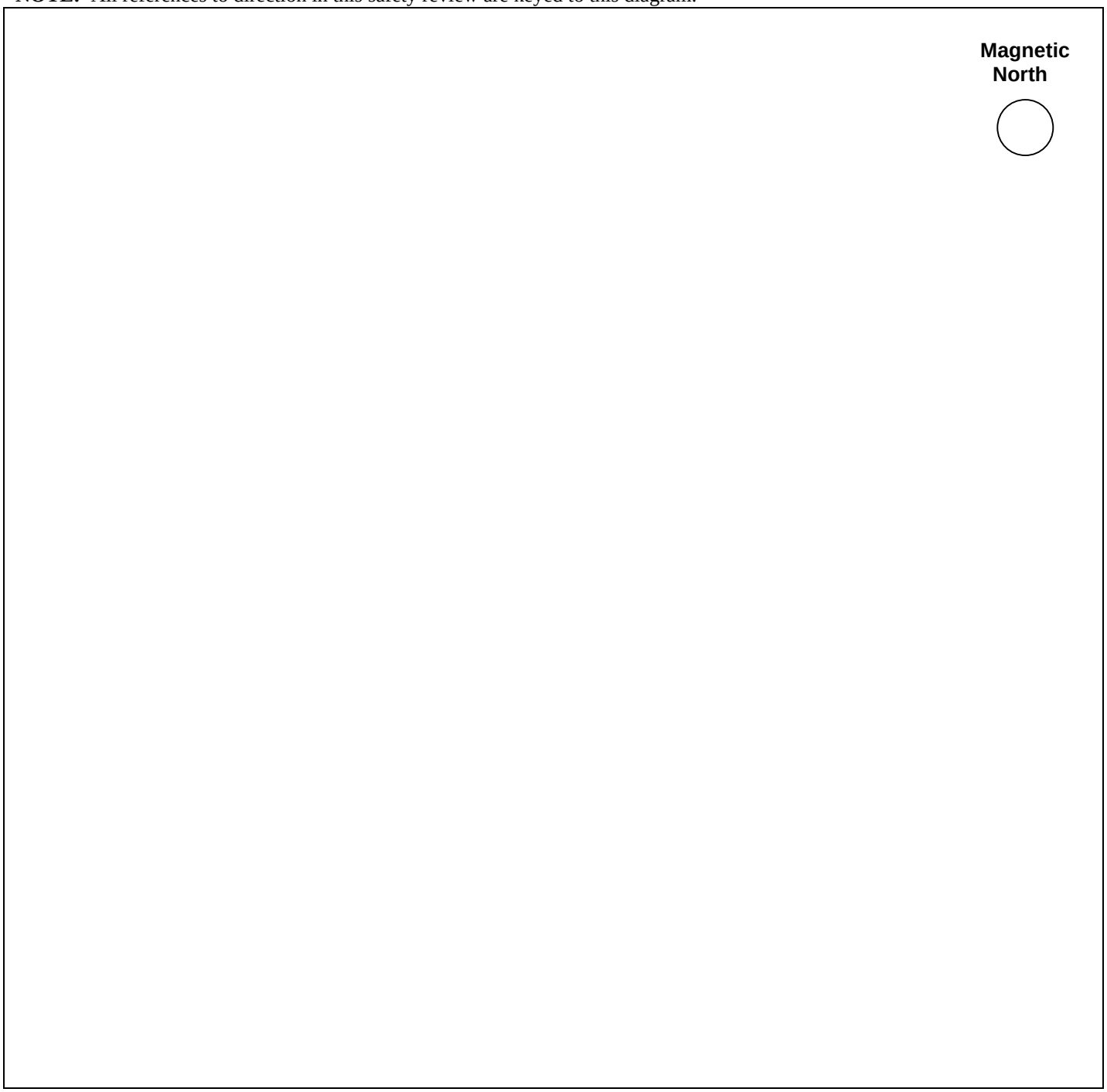
- as a minimum, take pictures all road/rail approaches and toward each quadrant

- key the orientation of pictures to the scene sketch (Sheet 2a)



Sheet 2 **SCENE SKETCH**

NOTE: All references to direction in this safety review are keyed to this diagram.



Include:

-directions to nearby municipalities for both road & rail approaches (use arrows)

-adjacent intersections	-landmarks	-geographical features
-relevant road signs/signals	-crosswalks/paths	-bus stops, etc.
-signal warning systems hardware		

Sheet 3 **GENERAL INFORMATION**

Source	Item	Reference
Rail	Maximum Railway Operating Speed, V_T = (mph)	Sect. 2.1
Rail	Daily Train Volume: = (freight trains/day) = (passenger trains/day)	
Rail	Switching during daytime? Y/N nighttime? Y/N	
Road	Avg. Annual Daily Traffic, AADT = (vpd) Year of count:___	
Road	High seasonal fluctuation in volumes?	
Road	Pedestrian Volumes = (ped./day)	
Road ✓	Is crossing on a School Bus route?	
Road ✓	Do Dangerous Goods trucks use this roadway?	
Road	Cyclist Volumes = (cyclists/day)	
Road ✓	Regular use of crossing by persons with Assistive Devices ?	
Road ✓	Other special road users? type_____ daily volume_____	
Road	Forecasted AADT[2] = (vpd) Forecast Year: _____	
Road ✓	Design Speed: _____km/h Posted Speed: _____ km/h Maximum Operating Speed: _____ km/h note: provide details if all approaches are not the same	Sect. 2.1
Road ✓	Road Surface Type (asphalt, concrete, gravel, etc.):	
observe	Surrounding Land Use: Urban / rural?	
observe	Any schools, retirement homes, etc. nearby ?	

Notes:
✓ indicates information should be confirmed by field observation
1. Road Authority should provide plans if available.
2. Forecast AADT until next assessment if significant developments are expected or if a planned bypass may reduce volumes.

Figure 4-1: Clearance Distance for Grade Crossings

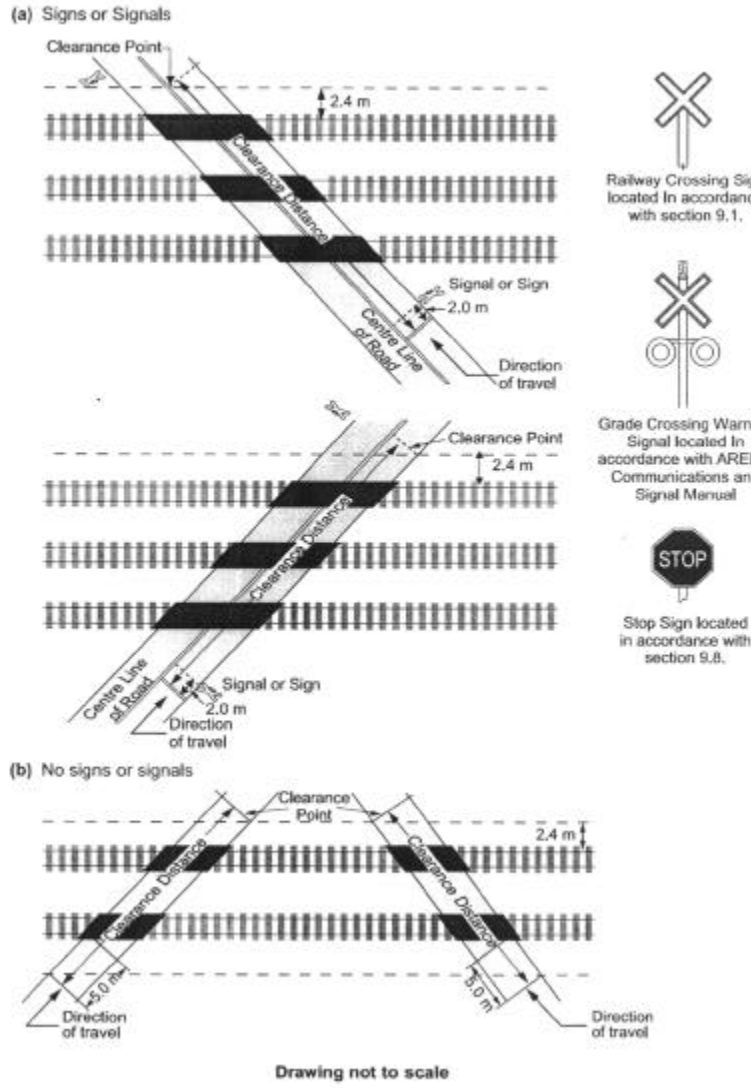


Figure 4-2 Assumed Acceleration Curves - General Design Vehicles
(Geometric Design Guide)

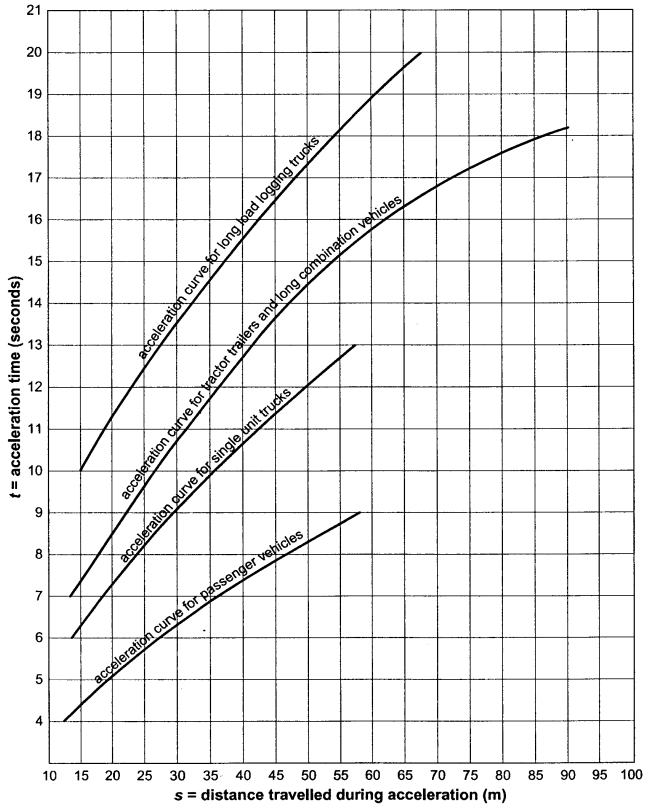


Table 4-6: Ratios of Acceleration Times on Grades

	Road Grade %				
Design Vehicle	***-4***	***-2***	***0***	***+2***	***+4***
Passenger Car	0.7	0.9	1.0	1.1	1.3
Single Unit Truck and Buses	0.8	0.9	1.0	1.1	1.3
Tractor- Semitrailer	0.8	0.9	1.0	1.2	1.7

Source	Item	Reference
	Design Vehicle	
Road	Type:	T 4-1
look-up	Length, **L** = m	T 4-1
look-up	**Stopping Sight Distance, SSD** = m (required)	T 4-5
measure	**Clearance Distance, cd** = m	Fig 4-1
calculate	**Vehicle Travel Distance:** **S** = L+cd = m	Sect. 4.6
look-up	**Vehicle Departure Time, t** = sec	Fig 4-2
	Road Grade Effect:	
Road ✓	maximum approach grade within 'S': = ∀ %	
look-up	grade adjustment factor =	T4-6
calculate	**T**= t x adjustment factor = sec	
calculate	**Design Vehicle Departure Time, Td** = J + T + K	
	where J = 2 sec perception & reaction	Sect. 4.7
	where K = additional time due to crossing conditions	
calculate	**Td** = = sec	
observe	Do field acceleration times exceed Td?	
look-up	**Pedestrian, cyclist & Assistive Devices Departure Time** **Tp** = sec	T 4-7

✓ indicates information should be confirmed by field observation

Table 4-1: General Vehicles

Class	*General Vehicle Descriptions*	*Length (m)*
Passenger Car	1. Passenger Cars, Vans, and Pickups (P)	5.6
Trucks		
Single-Unit Trucks	2. Light Single-Unit Trucks	6.4
	3. Medium Single-Unit Trucks	10.0
	4. Heavy Single-Unit Trucks	11.5
Tractor Trailers	5. WB-19 Tractor-Semitrailers	20.7
	6. WB-20 Tractor-Semitrailers	22.7
Combination Vehicles	7. A-Train Doubles (ATD)	24.5
	8. B-Train Doubles (BTD)	25.0
Buses		
	9. Standard Single-Unit Buses (B-12)	12.2
	10. Articulated Buses (A-BUS)	18.3
	11. Intercity Buses (I-BUS)	14.0

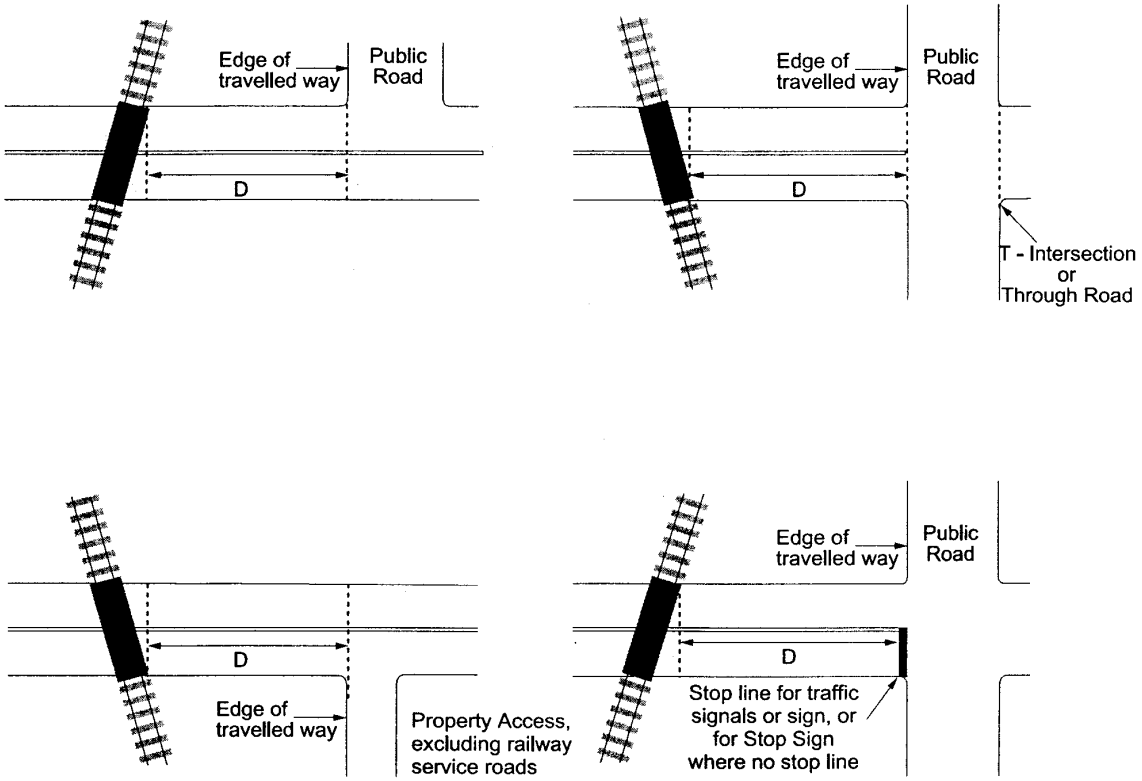
***Table 4-5: Stopping Sight Distances** (level grade, on wet pavement and gravel surfaces)*

Stopping Sight Distances (SSD)		
Maximum Road Operating Speed (km/h)	*Passenger Car Class (m)*	*Truck Class (m)*
40	45	70
50	65	110
60	85	130
70	110	180
80	140	210
90	170	265
100	210	330
110	250	360

Table 4-7: Departure Time - Pedestrians, Cyclists, Persons Using Assistive Devices

Clearance Distance (m)	*Departure Time (s)*
9	7.4
14	12
18	15
22	18
26	22
30	25

Figure 5-1: Restrictions on the Proximity of Intersections and Entranceways to Unrestricted Grade Crossing



Drawing not to scale

NOTE:

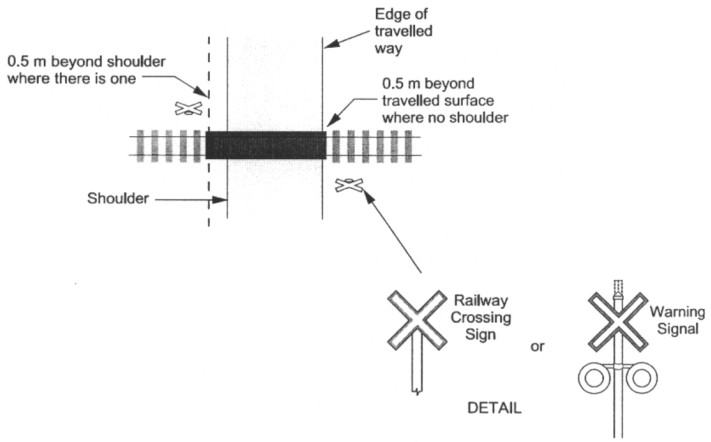
D not less than 30 m where the maximum railway operating speed exceeds 15 mph.

Source	Item	Reference
observe	"**D**" should not be less than 30m for either approach if the train speed exceeds 15 mph.	Fig 5-1
observe	Are there pedestrian crossings on either road approach that could cause vehicles to queue back to the tracks?	
observe	Is "D" insufficient such that road vehicles might queue onto the rail tracks? Is "D" insufficient such that road vehicles turning from a side street might not see warning devices for the crossing? -comment below	

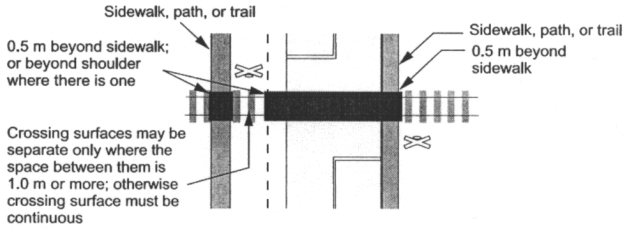
Comments Following Site Visit:

Figure 6-1: Grade Crossing Surface - Plan View

a) ROAD, INCLUDING A PATH OR TRAIL

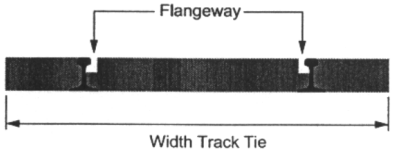


b) SIDEWALK, PATH, OR TRAIL ALONGSIDE A ROAD



Drawing not to scale

Figure 6-2: Grade Crossing Surface - Cross Section



a) Flangeway:		
Width:	Installation all grade crossings	65-76 mm
	Maximum wear limit Grade crossings regularly used by a person using an assistive device	76 mm
	All other grade crossings	100 mm
Depth:	Minimum	50 mm
	Maximum: Urban areas and any other grade crossing regularly used by a person using an assistive device	76 mm
	All other grade crossings	none
b) Space for Field Side Rail Grinding: A space is permitted on the outer side of the rail at locations where there is frequent rail grinding, except for grade crossings regularly used by a person using an assistive device.		
	Maximum width:	50 mm
	Minimum depth:	38 mm
c) Elevation of Top of Rail with respect to the Crossing Surface: The top of rail shall be installed as close as possible to the crossing surface, with the exception of a grade crossing regularly used by a person using an assistive device, where the top of rail may be installed above the crossing surface within the wear limit.		
Wear limits:	Any route identified for regular use by a person using an assistive device	
	Maximum distance above crossing surface	+13 mm
	Minimum distance below crossing surface	-7 mm
	Unrestricted grade crossings for vehicle use, and other grade crossings if used regularly by passenger cars, trucks other than off-road trucks, and recreational vehicles.	± 25 mm
	All other grade crossings	± 50 mm

Source	Item	Reference
observe	**Is the crossing smooth enough to allow road vehicles, pedestrians, cyclists, and other road users to cross at their normal speed without consequence? -comments below**	
observe	**Grade Crossing Surface Material**: (e.g., asphalt, wood, concrete, rubber, etc.)	
observe	Approach Road Surface Type: Approach Road Surface Condition: Roadway Illumination?:	
measure	**Road Surface crossing width** = m (note: min. = 8m) note: measured at right angle to roadway centre line	Fig 6-1
measure	**Road Surface extension beyond travel lanes** (note: min. = 0.5m) = _____ m N / E approach = _____ m S / W approach	Fig 6-1
measure	**Sidewalk/Path/Trail crossing width** = m (note: min. = 1.5m)	Fig 6-1
measure	Sidewalk/Path/Trail extension beyond sidewalk (note: min. = 0.5m) = _____ m N / E approach = _____ m S / W approach	Fig 6-1
measure	Distance Between Travel Lane and Sidewalk = m	
	Cross-Section:	
measure	Flangeway width = mm (note: max. = 76 or 100mm)	Fig 6-2
measure	Flangeway depth = mm (note: min. = 50mm/ max.=76mm or none)	Fig 6-2
measure	Side Grinding width = mm (note: max. = 50mm or 0[1])	Fig 6-2
measure	Side Grinding depth = mm (note: min.= 38mm)	Fig 6-2
measure	Elevation of Top Rail above road surface = mm (note: max. = 13mm[1], 25mm, or 50mm)	Fig 6-2
measure	Elevation of Top Rail below road surface = mm (note: min. = -7mm[1], -25mm, or –50mm)	Fig 6-2

1. if frequent use by persons using assistive devices

Comments Following Site Visit:

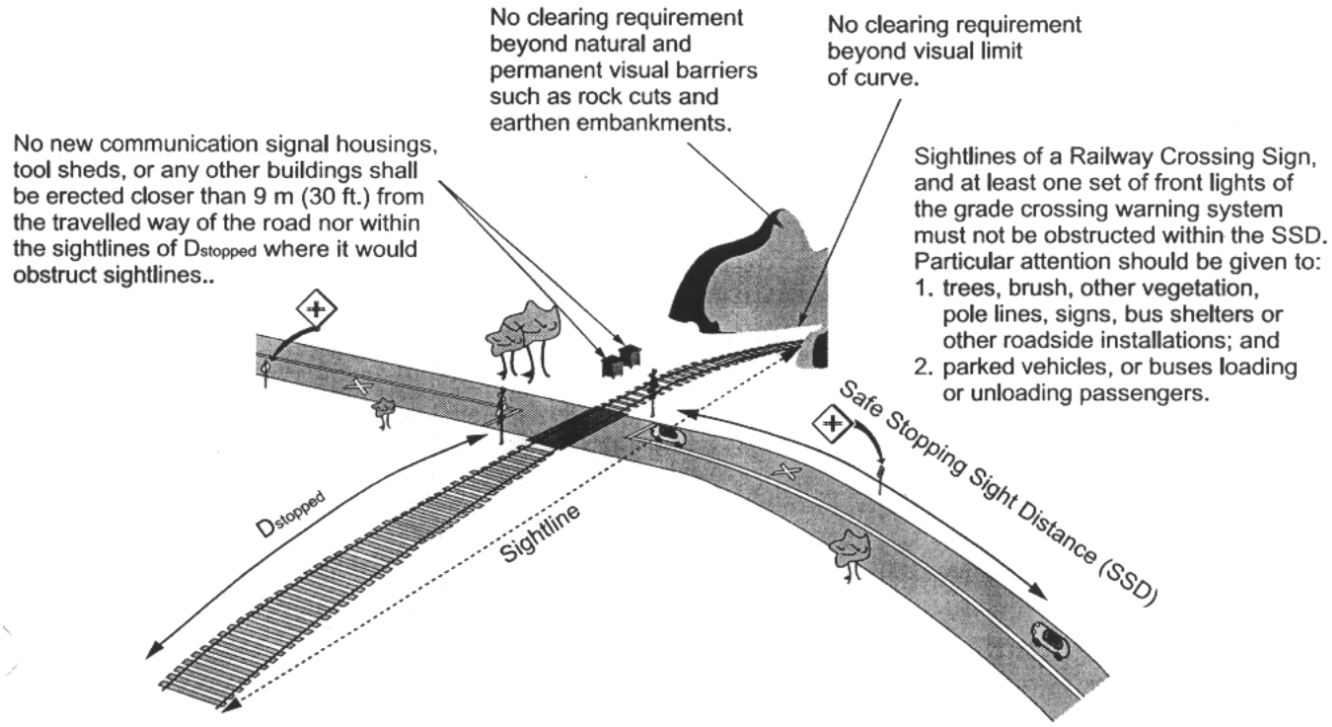
-rough crossing surface, loose timbers, etc. -surface distress of roadway approaches -photos

Source	Item	Reference
observe	Are horizontal and vertical alignments smooth and continuous throughout SSD? N / E Approach: S / W Approach:	Sect. 7-1
observe	Is horizontal alignment straight beyond rails for a distance ≥ design vehicle length, L (see form 4)? N / E Approach: S / W Approach:	Sect. 7-1
observe	Are the road lanes at least the same width on the crossing as on the road approaches? N / E Approach: S / W Approach:	Sect. 7-5
	Grades	
measure	Slope within 8m of nearest rail = % (on N / E approach) (max. = 2%)	Sect. 7-1
measure	Slope within 8m of nearest rail = % (on S / W approach) (max. = 2%)	Sect. 7-1
measure	Slope between 8m & 18m of nearest rail = % (on N / E approach) (max. = 5 or 10%)	Sect. 7-1
measure	Slope between 8m & 18m of nearest rail = % (on S / W approach) (max. = 5 or 10%)	Sect.7-1
measure	If crossing is only for pedestrians, cyclists, or persons using assistive devices: slope within 5m of nearest rail = % (max. = 1 or 2%)	Sect. 7-1
Road ✓	General approach grade = % N / E (max. = ± 5%) = % S / W (max. = ± 5%)	Sect.7-1
Rail ✓	Are rail tracks super-elevated? Y / N Rate of s-e: _____ m/m	Sect. 7.4
Road ✓	If train speeds exceed 15mph: - what is the angle between the crossing and the roadway? =_____degrees (70° minimum w/o warning system; 45° minimum with warning system)	Sect.7.6
observe	**Condition of Road Approaches:** (e.g., anything that might affect stopping or acceleration)	
observe	Is there any evidence that "low bed" trucks have difficulty negotiating the crossing (i.e., might they bottom-out or get stuck)? 	

✓ indicates information should be confirmed by field observation

Comments Following Site Visit:

Figure 8-2: Minimum Sightlines - Grade Crossings with a Grade Crossing Warning System



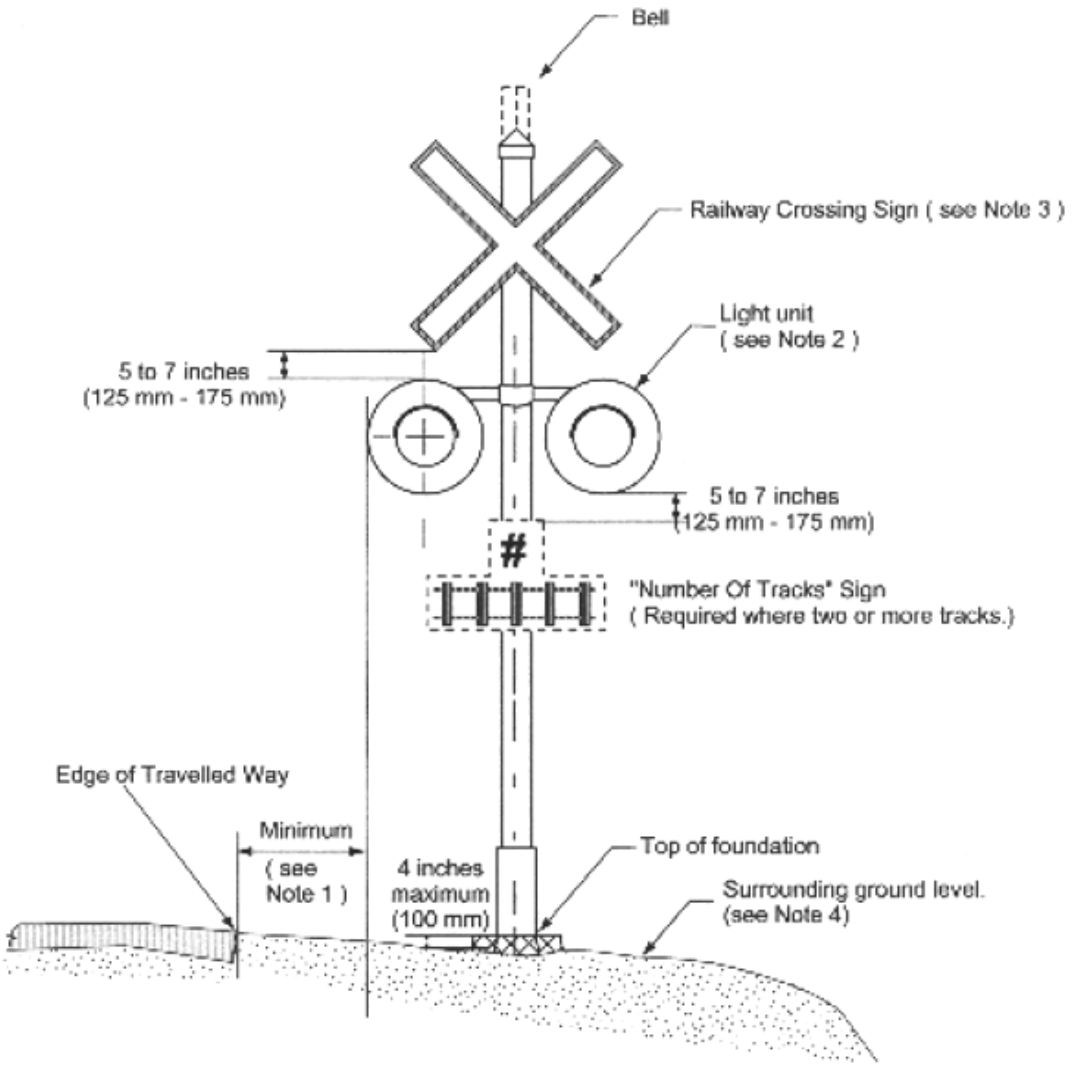
Driver Eye Height	=	1.05m	passenger vehicles, pedestrians, cyclists & assistive devices
	=	1.80m	buses & straight trucks
	=	2.10m	large trucks & tractor-trailers
Target Height	=	1.20m above rails	

Source	Item	Reference
observe	Are sightlines within the rail R.O.W. clear of bushes/vegetation; 15 m on each side of the track and, 30 m along the track, on each side of the crossing? -if no, detail the location	Sect. 8-1
observe	Are sightlines on the road R.O.W. within 15m of the rail crossing clear of bushes/vegetation? -if no, detail the location	Sect.8-1
look up	**SSD** minimum = m (from sheet #4)	
measure	**SSD actual: N / E approach = m S / W approach = m**	Sect. 8.5
Warning: some formulae are based on Imperial units while others are Metric		
calculate	**$D_{STOPPED}$** minimum (ft) **= 1.47Vt x Td** with Td from sheet #4	Sect. 8.5
	$D_{STOPPED}$ minimum = ft. m (calculate or use Table 8-1)	T 8-1
measure	**$D_{STOPPED}$** actual: N / E approach = m (to driver's left); = m (to driver's right) S / W approach = m (to driver's left); = m (to driver's right)	Fig 8-2
look up	**Ped./Cyclist $D_{STOPPED}$** (m) using Table 8-1 and Tp (from sheet #4)	T 8-1
measure	**Ped./Cyclist $D_{STOPPED}$ Actual:** N / E approach = m (to cyclist's left); = m (to cyclist's right) S / W approach = m (to cyclist's left); = m (to cyclist's right) note: measured from a point 2m in advance of sign/signals see Section 4.8)	Fig 8-1
observe	**Are there any obstacles within the sight triangles (Figure 8-2) other than traffic signs/utility poles that might affect visibility?**	Fig 8-2
	Consideration should be given to also utilizing the newer methodologies for determining sight distances and clearance times developed by M. Gou, 2003 http://www.tc.gc.ca/tdc/summary/14100/14172e.htm	[TP14172E]

Comments Following Site Visit:

-visibility along the track impaired due to the angle of crossing?
-special considerations for large trucks?
-can sightlines be maintained on an ongoing basis? (snow)
-check visibility at all pedestrian crossing points
-special design vehicle?
-photos

Figure 18-1: Warning Signal Assemblies



Drawing not to scale

NOTES:

1. Minimum of 625 mm (2 ft) from the face of a curb; minimum of 625 mm (2 ft) from the outer edge of a shoulder and a minimum of 1.875 m (6ft) from the edge of the travelled way.
2. Additional light units on the warning signal may be required in accordance with sections 13 and 19.
3. The Railway Crossing Sign must be clearly visible to all approaching drivers.
4. The top of the warning signal foundation shall be not more than 100 mm (4 inches) above the level of the surrounding ground. The slope away from the foundation of the surrounding ground towards the travelled portion of the road and the road shoulders shall not exceed the ratio of 4:1.

Source	Item	Reference
	Railway Crossing Sign 	Sect. A2.2.4 MUTCD
	--comment on the following in the field:	
observe	location:	Fig 9-2/9-3
observe	height:	Fig 9-3
measure	retroreflectivity readings: N / E approach: sign = cd/lux/m^2 S / W approach: sign = cd/lux/m^2	Fig 9-1
observe	Number of Tracks sign?	Fig 9-3

Comments Following Site Visit:

-general condition -clear sightlines to the sign -posts -photos

Source	Item	Reference
	DO NOT STOP ON TRACK 	US MUTCD
Road ✓	Does queued traffic routinely encroach closer than 5m from the crossing surface?	Sect. 9.5
observe	Are these signs present on either approach?	Sect. 9.5

✓ indicates information should be confirmed by field observation

Comments Following Site Visit:

-general condition -posts -photos

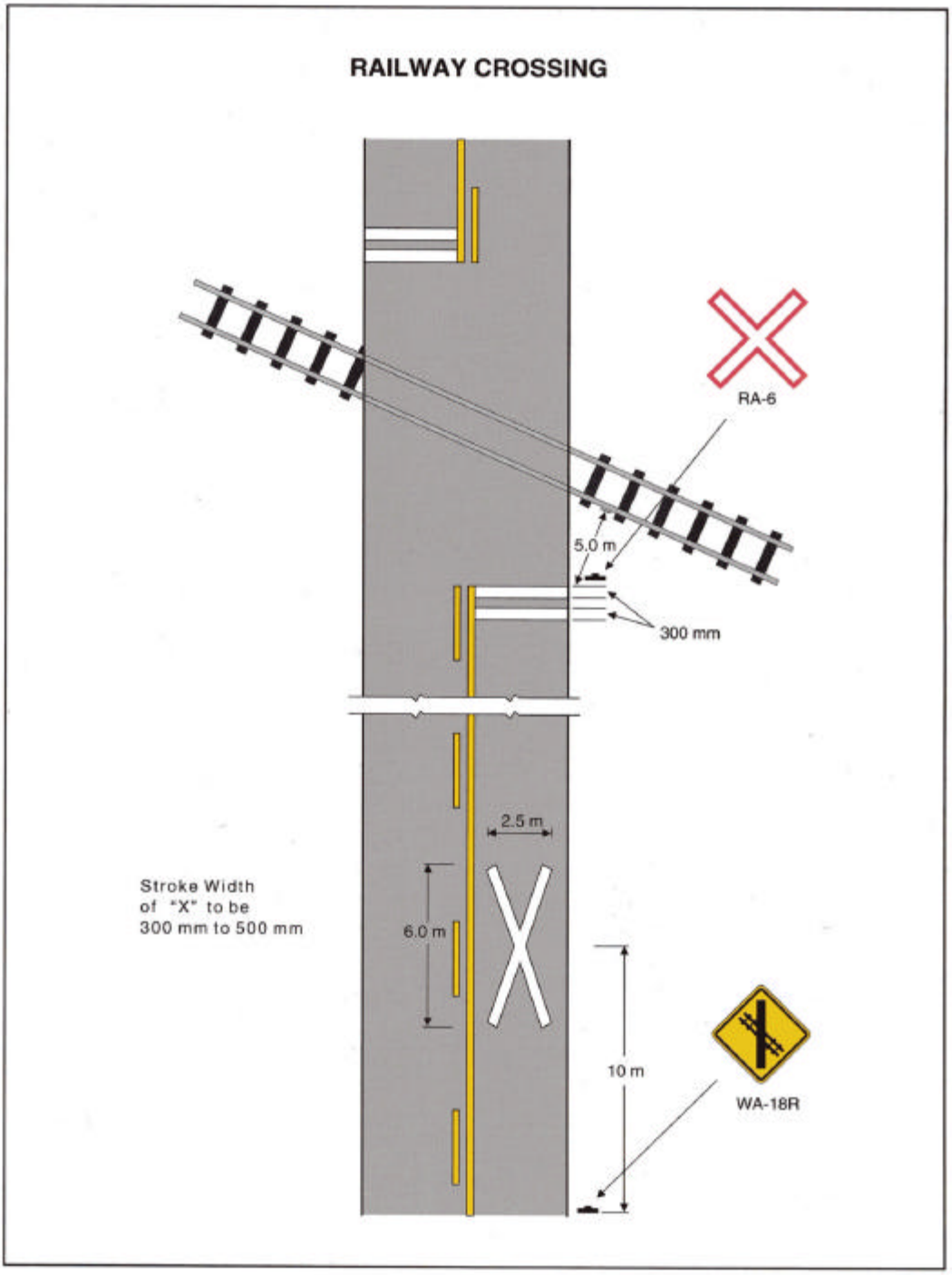


FIGURE C1-5

JUNE 2001

Source	Item	Reference
	Railway Crossing Ahead Sign (WA18-20) 	Sect. 3.4.2 MUTCD
look-up	Is AADT > 100? (see sheet #3)	
observe	Is area urban such that WA18-20 is not required?	Sect. 9.3b
measure	Distance from nearest rail to sign = m N / E approach = m S/ W approach	Fig C1-5
	--comment on the following in the field:	
observe	location:	Fig C1-5
observe	height:	
observe	appropriate orientation of symbol	Fig C1-5

Comments Following Site Visit:

-general condition -clear sightlines to the sign -posts -aligned to the driver -photos

Source	Item	Reference
	ADVISORY SPEED SIGN  **normally used in conjunction with WA18-20 signs if reduced speeds are necessary to provide adequate sight distance.**	Sect. A3.2.5 MUTCD
observe	Are they present on both approaches? Posted speed limit?	
look-up	Are they required on either approach?	check SSD (sheet 8)

Comments Following Site Visit:

-general condition -posts -photos

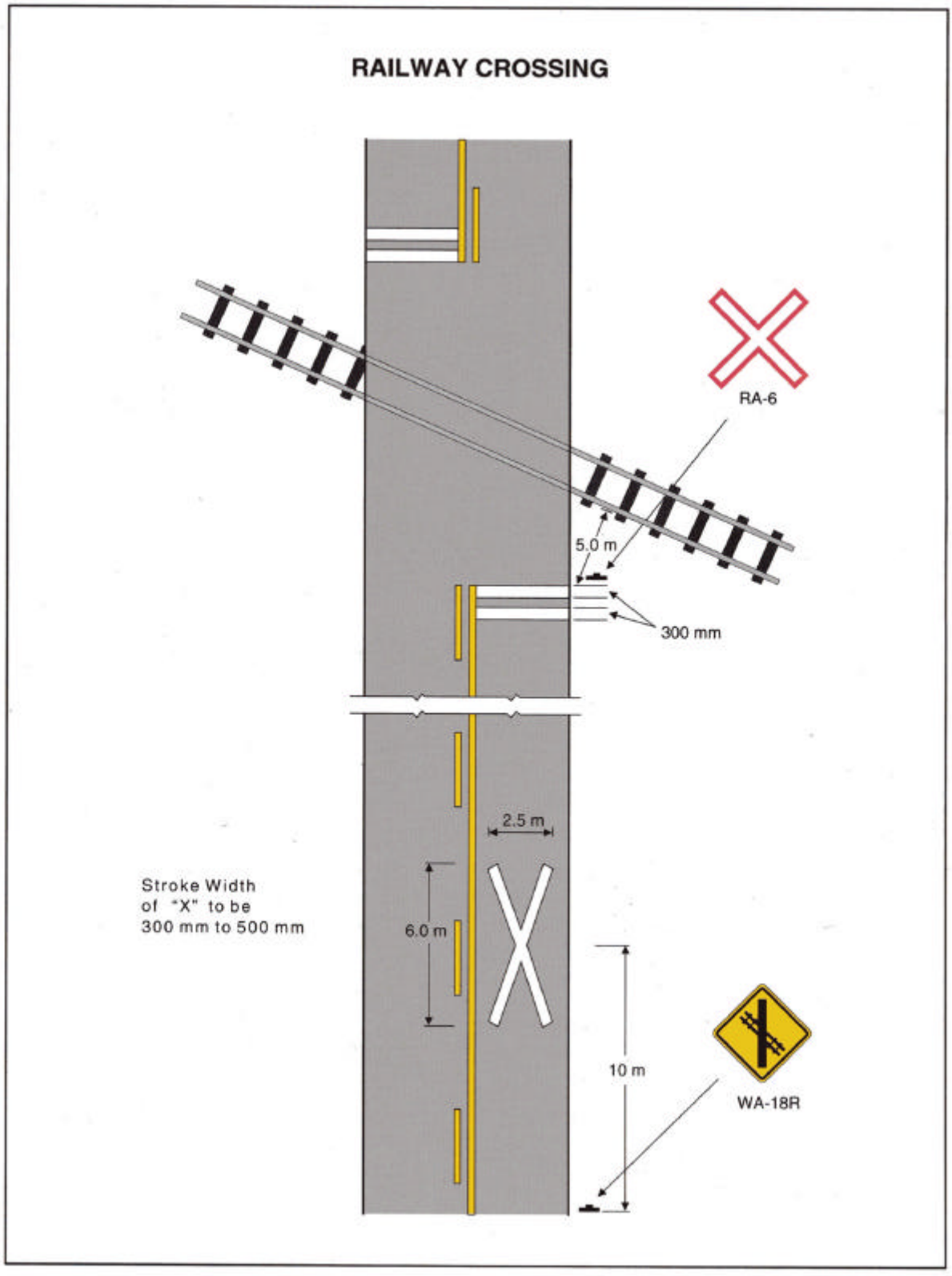

RAILWAY CROSSING
RA-6
5.0 m
300 mm
2.5 m
Stroke Width
of "X" to be
300 mm to 500 mm
6.0 m
10 m
WA-18R

FIGURE C1-5

Source	Item	Reference
	PAVEMENT MARKINGS	
observe	Are pavement markings consistent with those from the MUTCD Manual?	Fig C1-5 MUTCD
observe	Are there lines to delineate sidewalks/paths?	Sect. 9.7

Comments Following Site Visit:

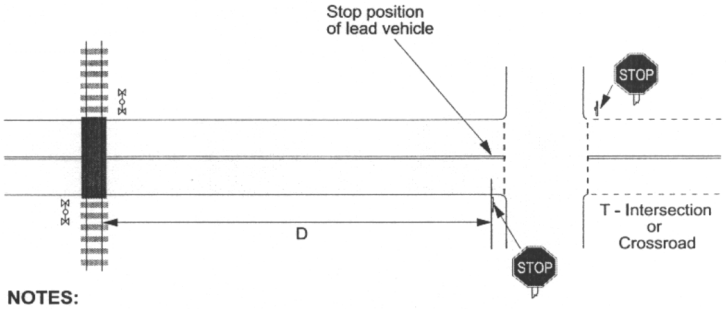
-general condition of markings -are centerlines or stop lines present? -width of markings? -provincial practice not to use *X* ?

General Comments Regarding Signs & Pavement Markings:

-special sign required? -missing signs -visual clutter -obscured view / sightlines -retroreflectivty levels at night

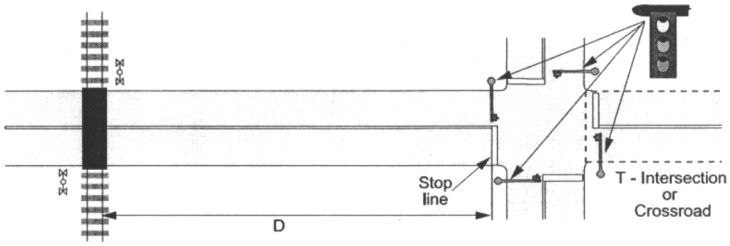
Figure 11-1: Proximity of Grade Crossing Warning Systems to Stop Signs and Traffic Signals

a) NEAR STOP SIGNS



NOTES:
Where the maximum railway operating speed exceeds 15 mph:
- if D is less than 30 m, a grade crossing warning system including gates is required;
- if D is 30 m or greater, a grade crossing warning system including gates is required unless a traffic study indicates that traffic will not normally queue to within 2.4 m of the rail nearest the road intersection. For grade crossings or road intersections nearby an existing grade crossing, where the maximum railway operating speed exceeds 15 mph:

b) NEAR TRAFFIC SIGNALS



NOTES:
For grade crossings or road intersections nearby an existing grade crossing, where the maximum railway operating speed exceeds 15 mph:
- if D is less than 60 m, a grade crossing warning system including gates is required;
- if D is 60 m or greater, a grade crossing warning system including gates is required unless a traffic study shows that traffic will not queue to within 2.4 m of the rail nearest the road intersection.

Figure 18-1: Warning Signal Assemblies

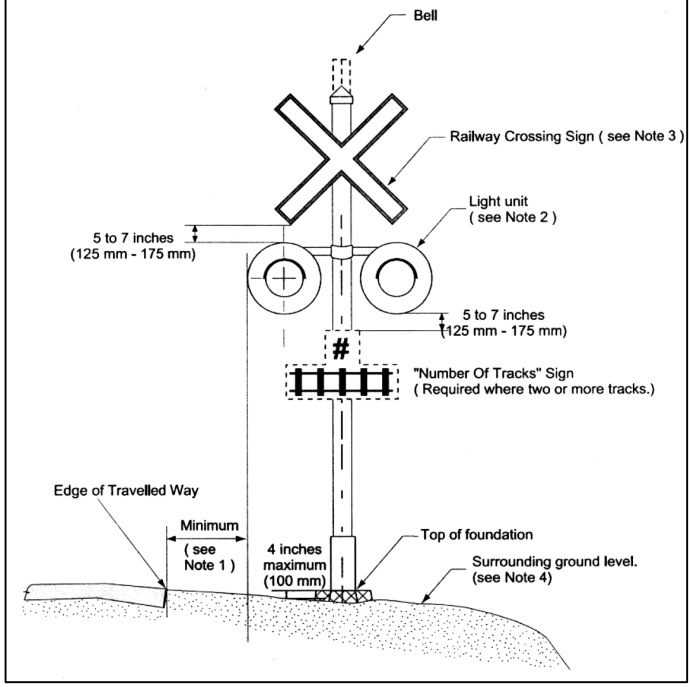
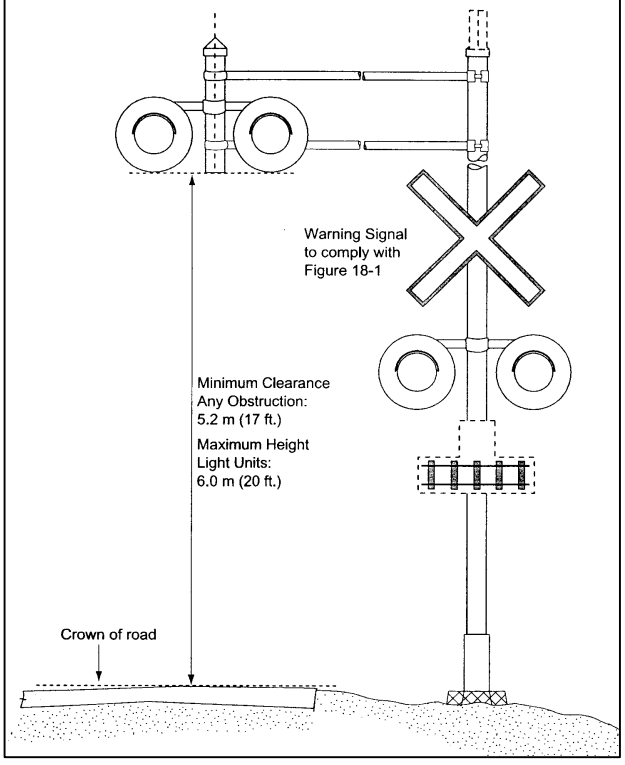


Figure 18-3: Cantilevers

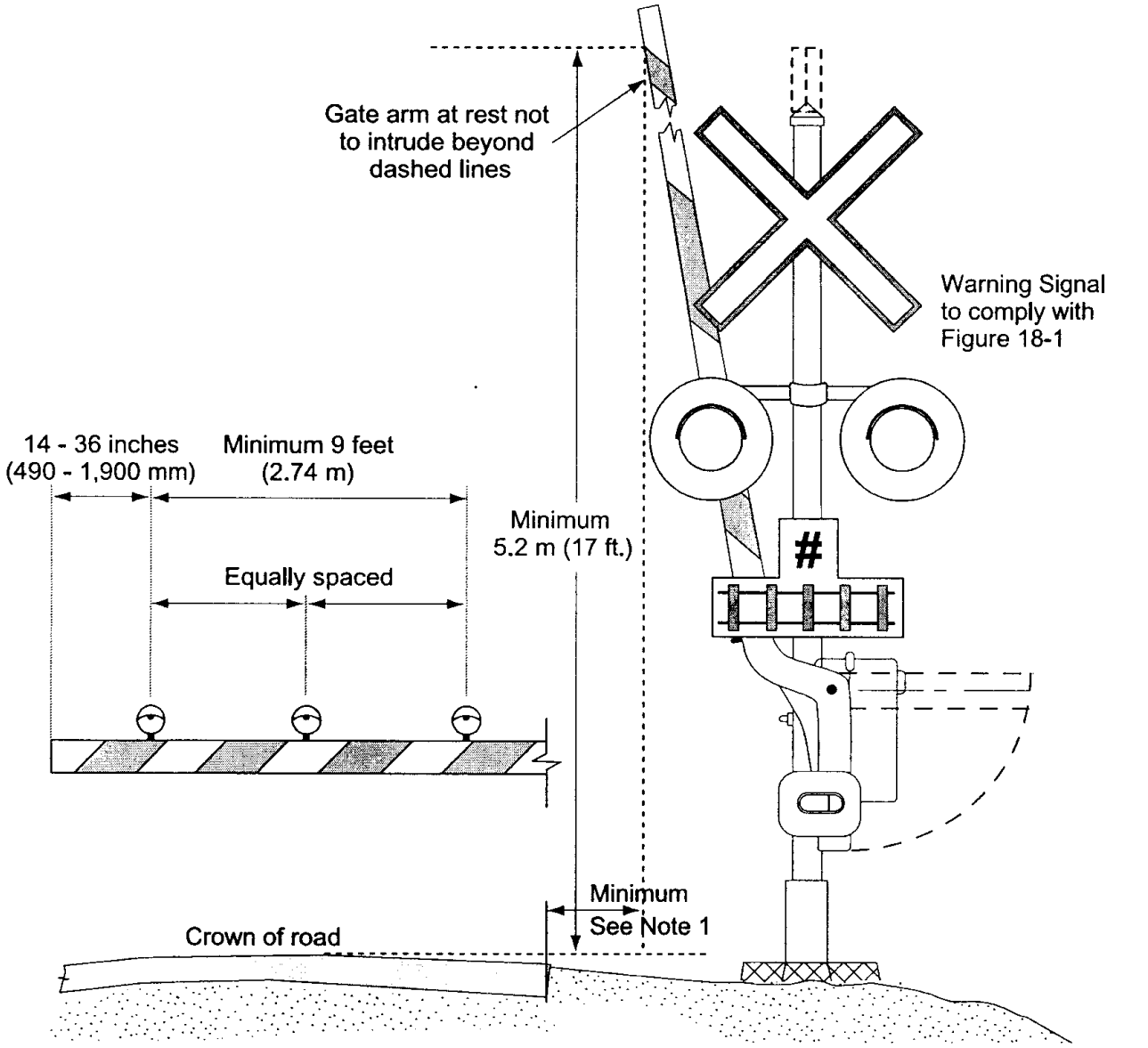


Source	Item	Reference
	Warning System Warrants -if any of A through E below are met, then a warning system is warranted	Sect. 11.1 & 11.2
look-up	Existing AADT = Forecast AADT = (if available)	sheet 3
look-up	Daily Train Volume =	sheet 3
	A. Cross-Product = _____ (1,000 min.)	Sect. 11.1
look-up	**B. Maximum Rail Operating Speed =** _____mph (max = 80mph or 60 mph with crosswalk)	sheet 3
Rail	**C. Number of Tracks =** _____ ……..if ≥ 2, can trains pass one another?	Sect. 11.1
look up	**D. Are Sightlines Obscured?** (see form 8)	Sect. 8.3
observe	**E. Are any of the proximity conditions met?**	Fig. 11-1
	Field Visit:	
observe	Light Units, Y / N condition / alignment:	Sect. 19.3
observe	Bells, Y / N condition:	Sect. 19.1
observe	Gates, Y / N condition:	Sect. 19.2
observe	Cantilever Lights, Y / N condition:	
observe	Check that warning signal assemblies and cantilevers are in accordance with Figures 18-1 and 18-3	Fig 18-1 Fig 18-3
observe	Is warning system housing at least 9m from traveled way of the road and 8m from the nearest rail?	Sect. 18.2
observe	If there is a sidewalk, is a bell on the adjacent assembly?	Sect. 19-1
Rail ✓	Have all light units been aligned? Date?_____	Sect. 19.5-9
Rail	Design Approach Warning Time: N / E approach _____sec S / W approach _____ sec	Sect. 20.1
observe	Is warning time less than 35 sec (without gates) or 55 sec (with gates)	Sect. 20.4

Comments Following Site Visit:

-extraordinary conditions why warning system should be installed -is warning system present but <u>not</u> warranted?

Figure 18-2: Gates



Source	Item	Reference
	Warning System Warrants -if any of A through E below are met, then a warning system with gates is warranted.	
look-up	**A. Cross-Product =** _____ (50,000 min.)	Sect. 12.1
look-up	**B. Maximum Rail Operating Speed =** _____mph (max = 50mph)	sheet 3
Rail ✓	**C. Number of Tracks =** _____ ……..if ∃ 2, can trains pass one another?	Sect. 12.1
look-up	**D. Is $D_{STOPPED}$ insufficient?** (see form 8)	Sect. 8.3
observe	**E. Are any of the proximity conditions met?**	Fig. 11-1 Sec.12-1e
calculate	Gate arm clearance times: _____ sec	Sect. 4.9
look-up	Gate arm delay time: _____ sec	T4-8
calculate	effect of grade = sec	T4-8
measure	Measure gate arm delay and compare with above:	
observe	**Do gates conform to standards depicted in Figure 18-2?**	Fig 18-2
observe	**Check gate descent (10 to 15 sec) and ascent (6 to 12 sec)**	sec. 19.2

T indicates information should be confirmed by field observation

Comments Following Sight Visit:

-extraordinary conditions why gates should be installed -are gates present but <u>not</u> warranted?

Figure 13-1: Horizontal Cone of Vision

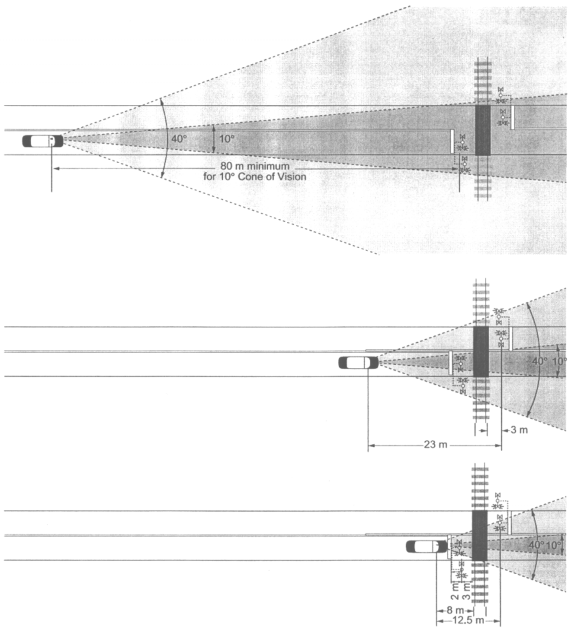


Figure 13-3: Typical Light Unit Arrangement for an Adjacent Intersection

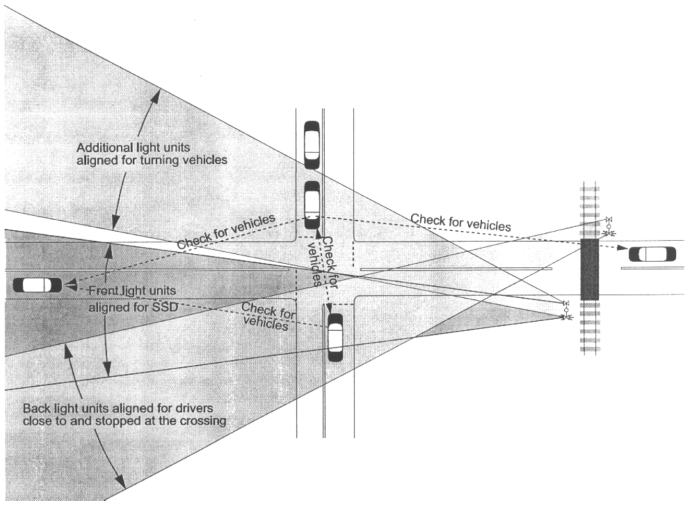
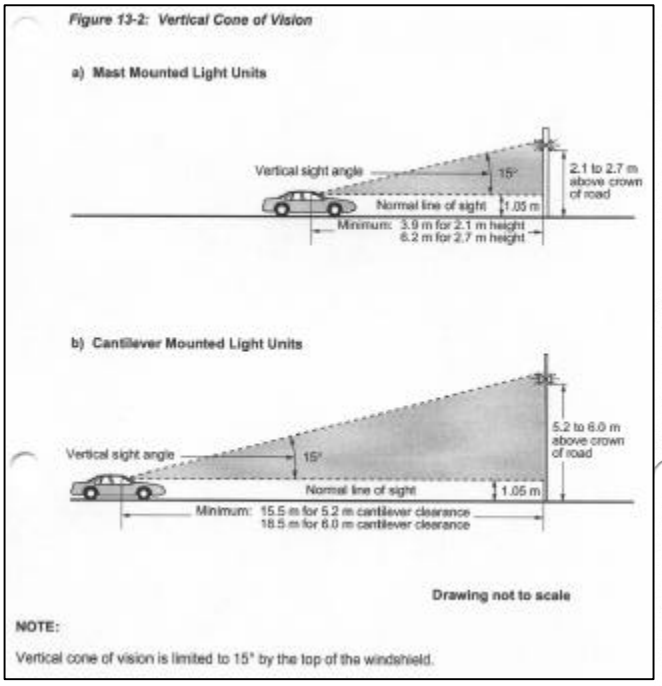


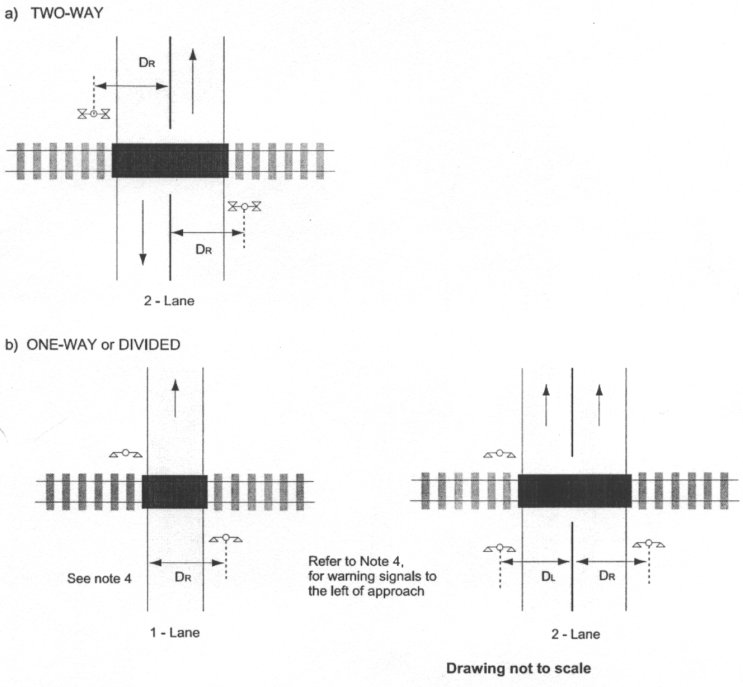
Figure 13-2: Vertical Cone of Vision



NOTE:

Vertical cone of vision is limited to 15° by the top of the windshield.

Figure 13-4: Warning Signal Offsets Requiring Cantilevered Light Units



Note: Driver's cone of vision is ± 5° horizontally; limited by top of windshield vertically.

Source	Item	Reference
	Number and Location	
look-up	Minimum Distance for Primary Light Units = m	T19-1
look-up	Recommended Distance for Primary Light Units = m	T19-1
observe	Are flashing light units located within 5° horizontally of the centerline of the road (throughout the approach distance above)? Does horizontal / vertical curvature necessitate supplemental units?	
observe	Can back lights be seen by all stopped drivers?	Fig 13-1
observe	Are lights obscured by vehicles stopped on adjacent intersections?	Fig 13-3
observe	Are additional light units required for drivers as they begin to turn onto an approach road from an intersecting road/lane/parking lot, etc.	Fig 13-3
	Cantilevered Light Units	
measure	Does D_R exceed 7.7m?	Fig 13-4
measure	Does D_L exceed 8.7m?	Fig 13-4
	Multiple Lanes	
observe	Can front light units be seen by drivers in all lanes (….would T/T obscure?)?	
observe	Can back light units be seen by all stopped drivers in all lanes?	
	Sidewalks, paths, trails, etc.	
measure	Distance from path centerline to signal to signal mast = m (max.= 3.6m)	Sect 13.8a
observe	Are separate light units required?	Fig 13-5

Comments Following Site Visit:

Table 19-1: Alignment - Front Light Units

Maximum Road Operating Speed (km/h)	Recommended Distance Primary Set of Light Units (m)	Minimum Distance Primary Set of Light Units for Passenger Cars and Light Trucks (m)	Minimum Distance Primary Set of Light Units for Heavy Trucks (m)	Add for % Downgrade (m)		Subtract for % Upgrade (m)	
				5%	10%	5%	10%
40	100	65	70	3	6	3	5
50	125	85	110	5	9	3	6
60	160	110	130	7	16	5	9
70	195	135	180	11	23	8	13
80	235	165	210	15	37	11	20
90	295	195	265	* For speeds exceeding 80 km/h, distance shall be adjusted for gradient in accordance with section 4.			
100	360	235	330				
110	390	275	360				

Note: reference MUTCD section A3.6.6, sign # WB-6

Source	Item	Reference
observe	Are signs present? North / East approach South / West approach	
look-up	Minimum Distance for Primary Light Units _____ m (see sheet 13)	T19-1
look-up	Recommended distance for Primary Light Units _____ m (see sheet 13)	T19-1
	Warrants	
observe	Are all front light units obscured within minimum distance above?	Sect. 14.1
look-up	Is the facility designated a "freeway" or "expressway"? (see sheet 3)	Sect. 14.1
observe	Do environmental conditions frequently obscure signal visibility?	Sect. 14.1
	Considering maximum prevailing speeds, geometry, and traffic composition, check the following:	
observe	Does sign flash during operation of grade crossing warning system?	
measure	Distance from the sign to 2.4m beyond the furthest rail = m	
observe	Does the sign flash before the actuation of the crossing warning system by the time required to travel from the sign to clear the crossing?	Sect. 14.2 b
measure	Distance from the sign to the closest gate = m	
observe	Does the flashing sign precede the actuation of the descent of the gate arms by the time required to travel from the sign to clear the closest gate?	Sect. 14.2 b
measure	Time required for all queued vehicles to resume to maximum road operating speed = sec	Sect. 14.2 c

Comments Following Site Visit:

-general condition -placement / orientation of signs -functions as intended

Source	Item	Reference
Road ✓ **Rail** ✓	Are adjacent traffic signals preempted by a grade crossing warning system? note: provide timing plan if preemption.	
Road **Rail**	Date of last preemption check? _____	
	Warrants	
measure	Less than 60m between stop line at traffic signal and nearest rail?	Sect. 15.1
observe	Do vehicles queued for traffic signal regularly encroach closer than 2.4m to the nearest rail?	Sect. 15.1
	Field Checks:	
observe	Does preemption provide adequate time to clear traffic from grade crossing before train's arrival?	Sect. 15.3
observe	Does preemption prohibit road traffic from moving from the street intersection toward the grade crossing?	Sect. 15.3
observe	Any known queuing problems on the tracks?	
observe	Are pedestrians accommodated during preemption?	
	Have longer/slower vehicles been considered?	
observe	Are supplemental signs needed for motorists (no right turn on red light, etc)?	

✓ indicates information should be confirmed by field observation

Comments Following Site Visit:

-functions as intended

Table 16-1: Requirements for Public Grade Crossings Within an Area Without Train Whistling

Maximum Railway Operating Speed	Grade Crossings for Vehicle Use		Grade Crossings Exclusively for Pedestrians, Cyclists or Assistive Devices; and Sidewalks, Paths, or Trails with the centreline no closer than 3.6 m (12 ft) to a warning signal for vehicles (Refer to Figure 13-5)	
	No. of Tracks		No. of Tracks	
	1	2 or more	1	2 or more
Stop & proceed	Manual protection or FLB	Manual protection or FLB	----------	----------
Up to 15 mph	FLB	FLB or FLB & G (Note 1)	'Z' barriers & guide fencing (Note 3)	'Z' barriers & guide fencing (Note 3)
16 - 49 mph	FLB or FLB & G (Note 2)	FLB & G	FLB, 'Z' barriers & guide fencing (Note 3)	FLB & G
50 mph or more	FLB & G	FLB & G	FLB & G	FLB & G

Where:

Manual protection is by a member of the train crew in accordance with the Canadian Rail Operating Rules.

FLB is a grade crossing warning system consisting of flashing lights and a bell.

FLB & G is a grade crossing warning system consisting of flashing lights, gates, and a bell.

Source	Item	Reference
Rail	**Is train whistling prohibited at this crossing? 24 hours?**	sec 16.1
observe	Is there evidence of routine unauthorized access (trespassing) on the rail line in the area of the crossing?	sec 16.7
observe	Are the requirements of Table 16-1 met?	sec 16.2

Comments Following Site Visit:

Additional Prompt Lists

Human Factors:

° Control device visibility / background visual clutter.
° Driver workload through this area (i.e., are there numerous factors that simultaneously require the driver's attention such as traffic lights, pedestrian activity, merging/entering traffic, commercial signing, etc.).
° Driver expectancy of the environment (i.e., are the control measures in keeping with the design levels of the road system and adjacent environment).
° Need for positive guidance.
° Conflicts between road and railway signs and signals.

Environmental Factors:

° Extreme weather conditions.
° Lighting issues (night, dawn/dusk, tunnels, adjacent facilities, headlight or sunlight glare, etc.)
° Landscaping or vegetation.
° Integration w/ surrounding land use (e.g., parked vehicles blocking sightlines, merging traffic lanes, etc.)

All Road Users:

° Have needs of the following been met:
-pedestrians (including strollers, baby carriages, and blind persons)
-children / elderly
-assistive devices (wheelchairs, scooters, walkers, etc)
-bicyclists
-motorcyclists
-over-sized trucks
-buses
-recreational vehicles
-golfcarts
-hazardous materials

° Significant volume of pedestrians requiring special safety measures:
(maze barriers/guide fencing, additional pedestrian bell, pedestrian gates, sign indicating potential presence of 2nd train at a multi track crossing, etc)

Other:

° Should closure of the crossing be considered due to inactivity, presence of nearby adjacent crossings, etc.

Comments Following Site Visit: