METROLINX

GO Transit Signals & Communications - Signal Sighting Standard

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Revision: 02
May 2024

Signal Sighting Standard
RC-0506-03SIG-04

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Preface

This is the third edition of the Signal Sighting Standard. This edition has updates for additional installation requirements and includes references to the signal sighting committee in addition to minor wording and formatting changes based on stakeholder feedback.

The purpose of the GO Transit Signals and Communications Standards is to ensure that Metrolinx owned and operated signal and communication systems are constructed and maintained utilizing safe, cost-effective and efficient methods to meet project delivery timelines, and meet on-time operational performance goals. Furthermore, a consistent approach in the application of Metrolinx owned signal and communication standards shall reduce disputes during the design and construction phases of a project, enhance the long-term safety and reliability, and extend the useful service life of the signal and communication systems.

This document was developed by the Signals & Communications Office, Engineering and Asset Management Division, Metrolinx.

Suggestions for revision or improvements can be sent to the Metrolinx Signals and Communications Engineering office, Attention: Director of Signals and Communications Engineering who shall introduce the proposed changes to the Metrolinx Signals and Communications Engineering office. The Director of the Signals and Communications Engineering office ultimately authorizes the changes. Be sure to include a description of the proposed change, background of the application and any other useful rationale or justification. Be sure to include your name, company affiliation (if applicable), e-mail address, and phone number.

May 2024

Revision	Date (DD/MM/YYYY)	Comments
00	08/04/2020	Initial release
01	02/01/2021	Minor wording changes, updates to section 6.1 adding more installation general requirements, and updates to sections 4 and 5 based on typical 6 ft spacing between signal heads
02	09/01/2024	Format update, added additional installation requirements, added reference to sighting committee

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1. Introduction

1.1 Purpose

1.1.1 The Signal Sighting Distance Design Standard includes the requirements to define and verify the locations of bridge and cantilever signals, high mast signals and low mast signals. This standard will ensure the appropriate advance sighting distance for the locomotive engineer to detect, understand and react appropriately to the oncoming signals.

1.1.2 The Signal Sighting Distance Design Standard ensures signal locations and sighting are consistent and adequate throughout the Metrolinx signalling system.

1.2 Scope

1.2.1 This standard applies to all signals located on Metrolinx-owned tracks.

2. General Requirements

2.1 General

2.1.1 Placement of signals in the field shall be undertaken with the goal of providing as much sighting distance as possible.

2.1.2 The Signal Sighting Report shall be a pre-requisite to any portion of the Metrolinx signal system being commissioned and accepted intoservice.

2.1.3 Each signal, sign or indicator shall be recorded on a Signal Sighting Form. The form template is defined in section 7.

2.1.4 Sighting considerations shall be regarded as paramount, and where no other solution is available, the design shall be altered such that the signals are positioned in accordance with this standard.

3. Arrangement and Positioning of Signals

3.1 General

3.1.1 Signal Plan

1) Signals shall be positioned in accordance with the signal plans, which shall ensure adequate approach sighting and clearances.

3.1.2 Positioning of Signals

1) Signals shall, where reasonably practical, be positioned to the right of the track as seen in the travel direction to which they apply.

2) If a signal is proposed to be positioned to the left of the track to which it applies, the full consideration shall be given to the likelihood that the locomotive engineer will view the signal as not being applicable to their track (or that a locomotive engineer on an adjacent track will view the signal as being applicable to them). The likelihood of such misreading shall be considered, and risks shall be mitigated before the proposal is agreed to by the Metrolinx Signal Sighting Committee.

3) In all cases, and particularly when signals are mounted on bridges, or cantilevers, or to the left of the track, care must be taken to ensure that confusion does not arise as to which track a signal applies to.

4) Care shall be taken to ensure that confusion cannot arise from inconsistencies in signal position along the route.

5) Metrolinx Signal Sighting Committee agreement must be obtained for any proposed changes to signal locations to achieve the sighting standards.

3.2 Signal Sighting Hazards

3.2.1 The following signal sighting hazards (not an exhaustive list) may increase the risk of locomotive engineer's error and of a signal being misread or passed at a stop and shall be mitigated. All hazards and mitigation are to be recorded on the Signal Sighting Form provided in section 7 at the end of the document.

3.2.2 Signals on Parallel Tracks

1) Signals on parallel tracks that do not appear to be parallel may confuse and mislead a locomotive engineer. In particular, the "crossover" effect in which relative positions of signals appear to change during the approach may occur. If signals appear in the wrong order as a result of the "crossover" effect, a significant risk of misread and confusion can be introduced.

2) To avoid the issue of wrongly identified signals on parallel tracks, signals for each track where tracks run parallel shall be mounted alongside each other laterally.

3.2.3 Trains on Adjacent Tracks

1) Trains, either moving or stationary on adjacent tracks, can become visual obstructions for an approaching train. This is especially the case when approaching low mast signals, and the approach includes a curve.

3.2.4 Background Interference and Distraction

1) These issues shall be taken into consideration as they may compromise the sighting of signals by a locomotive engineer;
2) The background (street or station lighting, traffic signals adjacent to the track, TV-type advertising boards, etc.) shall be evaluated for their possible effects on the approach view of signals;
3) A new or relocated signal may interfere with the viewing of other signals and may thus be misinterpreted; and
4) Wayside signs adjacent to or mounted on signal structures can be distracting to locomotive engineers.

3.2.5 Structural Clearances

1) Signals must be positioned to afford at least the minimum structural clearance between all parts of the signal, its associated structure and adjacent lines using the kinematic envelope as a guide.

3.2.6 Physical Obstructions

1) Fixed obstructions shall be taken into consideration (i.e., bridges, station walls and canopies, retaining walls, building development, vegetation, SCDs, etc.) when positioning and aligning new or relocated signals, as they may compromise optimal signal sighting.
2) Signal sighting distance of existing signal affected by the new fixed obstructions, such as OCS, shall be evaluated in accordance with this standard as the new fixed obstructions may compromise optimal signal sighting.

3.2.7 Driving Cab Sightlines

1) Signals shall be positioned to fall within the cab sightlines of all rolling stock currently authorized to use the route. This requirement extends to trains stationary at their stopping positions in stations or approaching signals on the main line.

3.2.8 Read Through

1) A "read-through" occurs when a locomotive engineer approaching a signal is able to see and be misled by the next signal in the route, or another signal ahead being approached. This is especially a problem when the aspect on the next signal is less restrictive than that on the signal being approached;
2) Cases will arise whereby an area signalling system lit by LED-type signals may visually interfere with signals using incandescent lamps. Such a change in ambient brightness shall be considered when viewing the approach to a signal controlling entry into such an area and whereby the first incandescent signal may be missed on account of the brilliance of the LED types ahead; and

3) On new and retrofitted locations, LED-type signals shall not be installed on the same mast as incandescent light units (either searchlight or colour light type). This requirement shall include signal masts in proximity since there is a risk the LED signal may overpower the incandescent signal for an adjacent track. The Signal Design Engineer shall ensure this signal layout requirement is met when considering upgrades or retrofitting incandescent light units with LED-type signals.

3.2.9 Phantom Aspects

1) Signal aspects facing into bright sunlight (i.e., early morning or in the evening) may be corrupted to show incorrect colours or "phantom aspects." The phantom aspect is the presence of a colour that is not produced by the signal head itself but induced by sunlight or reflections. Signals that may suffer from such issues shall be fitted with longer hoods where appropriate.

3.2.10 Aspect Blending

1) When using three-aspect low mast type main signals, there is a known issue of "aspect blending," during which the actual aspect can be misread. The likelihood of such an event can be mitigated by the use of medium-range LED modules rather than the long-range variety typically used in main signals.

3.2.11 At Night Effects

1) During the hours of darkness, there may be a risk of misreading a white light as a yellow aspect. Any lights that may be considered as a problem to the train operator shall be screened wherever possible.

3.2.12 Overhead Contact System

1) On tracks equipped with OCS, signals and signal structures must be positioned such that at least the minimum clearances exist between the signal or structure (including its protective structures) and any part of the electrification fixed equipment or the pantograph of passing trains;

2) The positioning of stop signal locations shall consider future neutral sections and shall be positioned sufficiently far from them to ensure that a train is not brought to a rest position with its pantograph in the neutral section or that a train starting from a rest position will not be likely to stall in a neutral section;

3) Special consideration shall be given to the siting booster transformers, sectioning switches and track sectioning cabins not fitted with neutral sections in the vicinity of signals; and

4) Screens to protect maintenance staff shall be fitted to signal structures and ladders where a risk of electrocution exists. When sighting signals, these additional clearance requirements shall be considered.

4. Signal Sighting Requirement

4.1 View of Signal

4.1.1 Signal Sighting Distance

1) Minimum sighting distances must be verified by the Signal Design Engineer to ensure signal locations are sufficient to provide minimum sighting distance;

2) In the design, the location of signals shall be verified by the use of mapping applications where these distances are measured and provided;

3) Any overhead structures which would obstruct viewing, such as OCS or overpass bridges, shall not be within the minimum sightline distance;

4) Signals shall not be placed at locations where obstructions, including vegetation that is not removable on or near Metrolinx property, would impede sighting within the minimum sightline distance;

5) Signals shall be placed to provide 15 seconds of Standard Sighting Time (SST) with a minimum of 10 seconds of Minimum Sighting Time (MST) within the Union Station Railway Corridor (USRC). Table 4-1 identifies the Standard Sighting Distance (SSD) and Minimum Sighting Distance (MSD) based on track speed within the USRC, which shall be the highest timetable train speed approaching the signal; and

6) Signals shall be placed to provide 20 seconds of Standard Sighting Time (SST) with a minimum of 15 seconds of Minimum Sighting Time (MST) outside of the Union Station Railway Corridor (USRC). Table 4-2 identifies the minimum Standard Sighting Distance (SSD) and Minimum Sighting Distance (MSD) based on track speed outside of the USRC, which shall be the highest timetable train speed approaching the signal.

4.1.2 The MSD shall not be less than 500 feet. In some special applications, the MSD can be reduced below 500 feet if the train is starting from a layover location. For example, in a layover yard train sets are parked in a specific location. If these tracks have exit signals at the end of the yard, then a reduction of the MSD below 500 feet may be acceptable, provided close viewing distance is adequate, and all configurations of train sets are considered. These circumstances shall be identified on the Signal Sighting Form for approval by the Metrolinx Signal Sighting Committee.

Table 4-1: Minimum sighting distance per track speed within the USRC

Speed (MPH)	MSD -10s (feet)	SSD - 15s (feet)	Speed (MPH)	MSD - 10s (feet)	SSD - 15s (feet)
10	500	500	**65**	954	1430
15	500	500	**70**	1027	1540
20	500	500	**75**	1100	1650
25	500	550	**80**	1174	1760
30	500	660	**85**	1247	1870
35	514	770	**90**	1320	1980
40	587	880	**95**	1394	2090
45	660	990	**100**	1467	2200
50	734	1100	**105**	1540	2310
55	807	1210	**110**	1614	2420
60	880	1320			

Table 4-2: Minimum sighting distance per track speed outside of the USRC

Speed (MPH)	MSD - 15s (feet)	SSD - 20s (feet)	Speed (MPH)	MSD - 15s (feet)	SSD - 20s (feet)
10	500	500	**65**	1430	1907
15	500	500	**70**	1540	2054
20	500	587	**75**	1650	2200
25	550	734	**80**	1760	2347
30	660	880	**85**	1870	2494
35	770	1027	**90**	1980	2640
40	880	1174	**95**	2090	2787
45	990	1320	**100**	2200	2934
50	1100	1467	**105**	2310	3080
55	1210	1614	**110**	2420	3227
60	1320	1760			

4.1.3 If these sighting times and distances cannot be achieved and there is no adequate view at a lesser distance, the Signals Design Engineer shall consider the relocation of the signal.

Note: Short-duration interruptions of the view caused by OCS or other similar obstructions may be disregarded when determining the uninterrupted sighting distance. The OCS crossbeams of any cross-section that may interfere with the sighting of elevated bridge and cantilever signals must be fully considered as these may interfere with sighting.

4.1.4 Range of Signal View

1) When approaching a signal, the locomotive engineer must, from the MSD, have a clear and unobstructed view of the aspects. This must be the case until the train passes the point at which the signal aspect is no longer fully visible at the Close Viewing point. There are two scenarios that shall be considered, based on the type of signal structure:
   i. The Close Viewing point is the point where the top aspect of a bridge signal/cantilever or high mast signal is no longer visible; and
   ii. The Close Viewing point is the point where the bottom aspect of a low mast signal is no longer visible.

4.1.5 Close Viewing

1) For trains stopping at a signal, there comes a point at which the locomotive engineer of a stopped train can no longer see the higher aspects of signals mounted on bridges or cantilevers. Similarly, the loss of view of low mast signals also occurs at a certain close distance. The close viewing distance for both elevated and low mast signals shall be considered fully due to cab view constraints;
2) High mast signals at trackside may not suffer such problems, and thus, the stopping distance may be reduced in such cases to the point at which the locomotive engineer can still satisfactorily read and interpret the aspect dependent upon the horizontal viewing angles available; and
3) For signals mounted on bridges or cantilevers, the close-range viewing distance may extend farther back from the signal. The preliminary signal sighting shall consider this, and the Signals Design Engineer shall further assess signal position with regard to the standage to the rear of the stopped train in terms of throughput restriction of such a stopped train locking a junction to the rear.

4.1.6 Mitigations

1) Table 4-3 below offers a selection of possible mitigations, and their possible consequences, to improve sighting conditions.
2) Where the ASD is initially found to be less than the MSD, mitigating measures shall be considered to increase the available sighting distance (desirable) or to reduce trainspeeds on the approach to the signal (not desirable); and
3) In the application of mitigation measure four ([M4]), the Signal Sighting Committee shall approve the use of this mitigation. The amount of physical movement by the operating crew to see the aspect shall be calculated and noted on the Signal Sighting Form. This mitigation measure is only applicable if all other mitigation measures have been exhausted and the physical relocation of the signal is constrained by other factors.

Table 4-3: List of potential possible mitigations to improve sighting conditions

I.D.	Mitigating Measure	Positive Factors	Negative Factors
[M1]	Relocate Signal	If the ASD is only slightly below the MSD, then a small relocation of the signal may increase the ASD.	The solution will result in a need to rework the block design and to re-calculate the braking distances affected by the relocation.
[M2]	Application of a Permanent Speed Restriction	This is an effective measure to solve problems of inadequate sighting time.	Often is undesirable due to a negative impact on throughput.
[M3]	Block Layout Redesign	If the signal design engineer finds that many signals have substandard sighting times, then a general re-spacing may be required.	Likely to result in a less-than-optimal layout, affecting headways and throughput.
[M4]	Application for Reducing Close Sighting Spacing at Station Platforms	This is an effective measure to solve inadequate Close Viewing caused by limitations of signal location.	Operating crew may need to adjust their position in the cab to view the entire aspect prior to departure.

4.2 Vehicle Viewing Sightlines

4.2.1 When considering the positioning of signals, it is essential to take into account the ability of the locomotive engineer (male or female) to see sufficiently far ahead of the train to satisfy the calculated sighting distances. Given that the worst signal sighting possibilities are those concerning low mast and bridge signal or cantilever viewing from short range, these have been included in Table 4-4 for typical GO Transit vehicles to provide an indication of the vehicle viewing sightlines.

Table 4-4: List of potential possible mitigations to improve sighting conditions

Vehicle Type	Cab to Top of Rail		Cab to Bridge Signal / Cantilever - Top Aspect		Left / Right Viewing Angle (Average)	
	Male 95 percentile	Female 5 percentile	Male 95 percentile	Female 5 percentile	Male 95 percentile	Female 5 percentile
Nippon Sharyo J2- 243 / 244 Driver 8.3ft ARL	17.5°	16.2°	22.64°	26.29°	14.7° L 19.7° R	15.55° L 21.37° R
Nippon Sharyo J2- 44 Smart Driver 8.3ft ARL	15.9°	15.3°	22.9°	27.1°	28.3° L 28.3° R	29.8° L 29.8° R
Nippon Sharyo J2- 144 MX Driver 8.3ft ARL	15.9°	15.3°	22.9°	27.1°	28.3° L 28.3° R	29.8° L 29.8° R
Motive Power MP40PH-3C Driver 11.8ft ARL	12°	12°	10°	10°	5° L 20° R	5° L 20° R
Bombardier Ex. Bi-Level Driver 8ft ARL	18°	18°	34°	34°	21° L 21° R	21° L 21° R
Bi-Level EP Driver 8ft ARL	19.2°	19.2°	12.0°	12°	49° L 5° R	49° L 5° R

4.2.2 Close Sighting Calculations

1) Signal placement for high mast and signal bridge shall be calculated using the most restrictive case, which would be using the MP40 locomotive field of vision angles in the vertical and Bi-Level EP for horizontal right viewing of signals. Calculations shall be performed by the Signal Design Engineer using trigonometry properties.

2) Signal placement for low mast signals shall be calculated using similar calculations performed by the Signal Design Engineer using trigonometry properties.

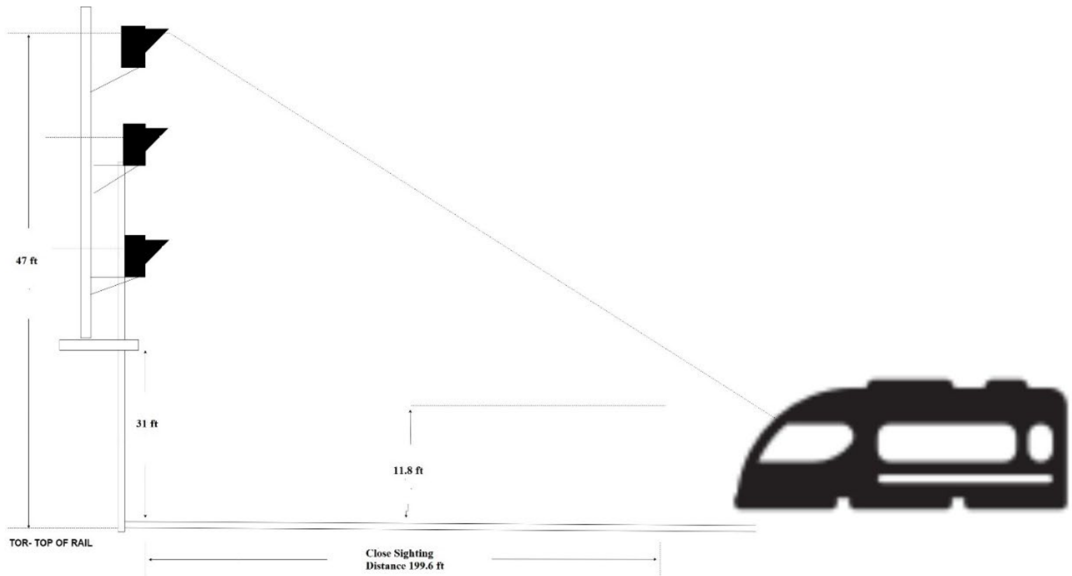
3) Sample Calculation:

Tan (FOV °) = ((Height of top aspect – Locomotive Engineer ARL) / Minimum distance for close sighting)

Tan (10°) = ((47ft-11.8ft) / Close sighting distance)

Therefore, Close sighting distance = 35.2ft/TAN (10°) = 199.6 ft

Figure 4-1: Close sighting distance calculation example



5. Signal Sighting Procedure

5.1 General

5.1.1 The purpose of this section is to define the Signal Sighting Procedure.

5.1.2 The detailed procedure below provides information as to how actual signal sighting activities shall be organized, performed, recorded and reported.

5.2 Preliminary Signal Sighting Exercise

5.2.1 In order to gain an initial understanding of the sighting of signals and to check the basic requirement for signal sighting by the locomotive engineer, it is essential that the following desk exercise be undertaken:

1) Firstly, a Signal Sighting Form is produced for each signal following the design requirements outlined in section 7 below;

2) Secondly, a calculation is made for the close viewing, as required, for each signal and this data is added to the requisite Signal Sighting Form; and

3) Thirdly, a review is undertaken of the signal lighting planning to date. This should be based upon a sightline review of signal position on a scaled signal plan, civil drawings or mapping applications during which each signal is directly linked to its SSD point to ascertain that the basic tenets relating to Signal Sighting are upheld (i.e., curvature, obstruction, building property lines, etc.).

5.2.2 Where a sightline from the SSD provides poor sighting, a second sightline is drawn from the MSD in the same way, and a decision is made against the basic parameters. The exercise must also take into account the lateral clearances of high mast signals placed between tracks, and the additional touch or flashover risk associated with such close clearances.

5.2.3 Any outstanding issues (i.e., a signal with inadequate sighting distance) shall be discussed with the design group prior to going to the field such that the issue can be addressed beforehand. The issue must be noted on the memorandum attached to the signal file pending a decision and subsequent field review.

5.3 Initial Signal Visibility Assessment

5.3.1 At this point, and after the signal plans have been deemed adequate and the signal sighting problem areas identified and noted, an assessment must be made in the field as to the physical viability of the selected locations.

5.3.2 In order to achieve this and, based upon the fact if the new signal is not present yet, a target shall be used to simulate the position of the selected signal (Figure 5-1 through 5-3). As there are signals of differing heights, an adjustable target will be required. If an adjustable, pole-mounted target is not available, a target may be affixed to the side of a man-lift attached to a Hi-Rail boom truck or similar. The target would then be lifted into position and assessed. The downside to this method is that the work can only be carried out under much more stringent track possessions than the "pole" method.

5.3.3 The viewer for the target is ideally an observer with a portable periscope or equivalent tools capable of extension to at least 12 feet above rail level such that the actual driver's eye level may be gained. Failing this, a railway locomotive or train will be required to carry the observer and a good pair of binoculars (as the target may be more difficult to see than an actual signal). Once the methodology has been decided and safety protection organized and implemented, the steps below are to be followed.

1) The observer (by foot or on board a test train) is positioned at the calculated SSD location of the signal under review. If on foot, the observer will stand straddling the right-hand rail facing the target and raise the periscope to the prescribed height of 12 feet;

2) The target is elevated to the correct height and location of the signal under review;

3) Looking through the periscope, the observer should be able to see the target and thus determine if the SSD prescribed for the signal is available;

4) If the answer is yes, then this position becomes the ASD, the distance marked in the Signal Sighting Form (SSF) and SST entered for the Actual Sighting Time (AST);

5) If the answer is no, the observer will travel towards the target all the time measuring the distance travelled, until the target becomes visible. This distance is compared to the originally calculated MSD. If the distance is greater than the MSD, then this position becomes the actual ASD and is entered into the form. The resulting AST shall be calculated accordingly and entered in the form;

6) If the distance is less than the MSD, this is an indication that there is less than Metrolinx accepted sighting time for the signal. Such a situation must be noted and brought to resolution by the Signal Design Engineer;

7) The observer shall then travel towards the signal location whilst all the time noting any physical obstructions or possible distractions that may interfere with the viewing of the signal (intermittent obstructions, such as electrification stanchions, are not considered as obstructions). Should any major distraction or obstruction be noted, this shall be entered into the SSF memorandum, and a remedy will be discussed with the Signal Design Engineer, as uninterrupted viewing is required;

8) In all situations, the restrictions placed on viewing angles from certain vehicle cabs must be considered; and

9) In all cases where questions of visibility arise, especially relating to the use of special lenses or "hot spots," these comments and solutions shall be entered into the memorandum section of each SSF.

5.3.4 Following the field review, the Signal Design Engineer will review any deficient sighting results and attempt to apply mitigating measures as proposed in Table 4-3 or by other means.

5.3.5 Consideration shall be given to possible hazards introduced by the use of a mitigating measure. Where the hazard is deemed to import greater risk than the improved sighting provides, the mitigating measure must be dropped and other options developed.

5.3.6 The final Signal Sighting Form shall be submitted to Metrolinx for approval by the Metrolinx Signal Sighting Committee.

Figure 5-1: Sighting distance process – bridge and cantilever signal

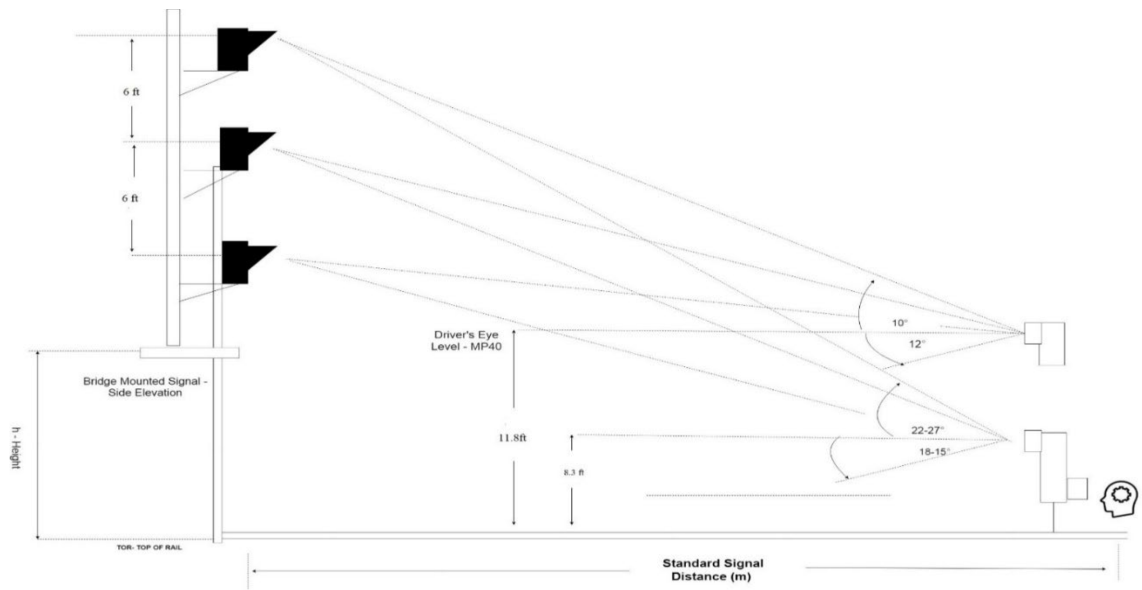


Figure 5-2: Sighting distance process – high mast signal

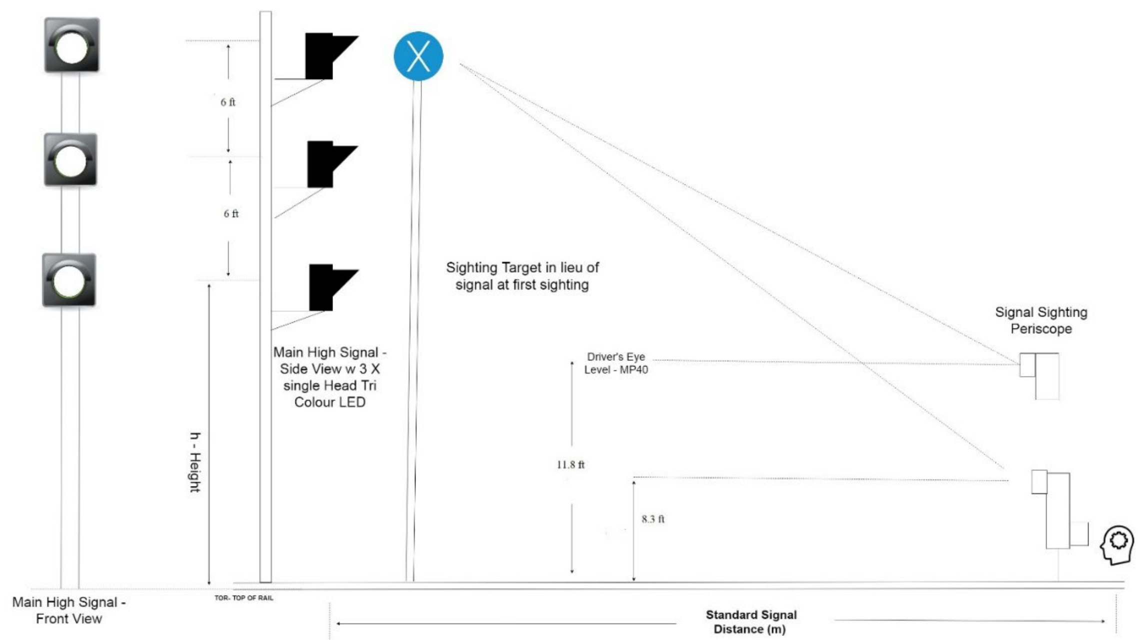
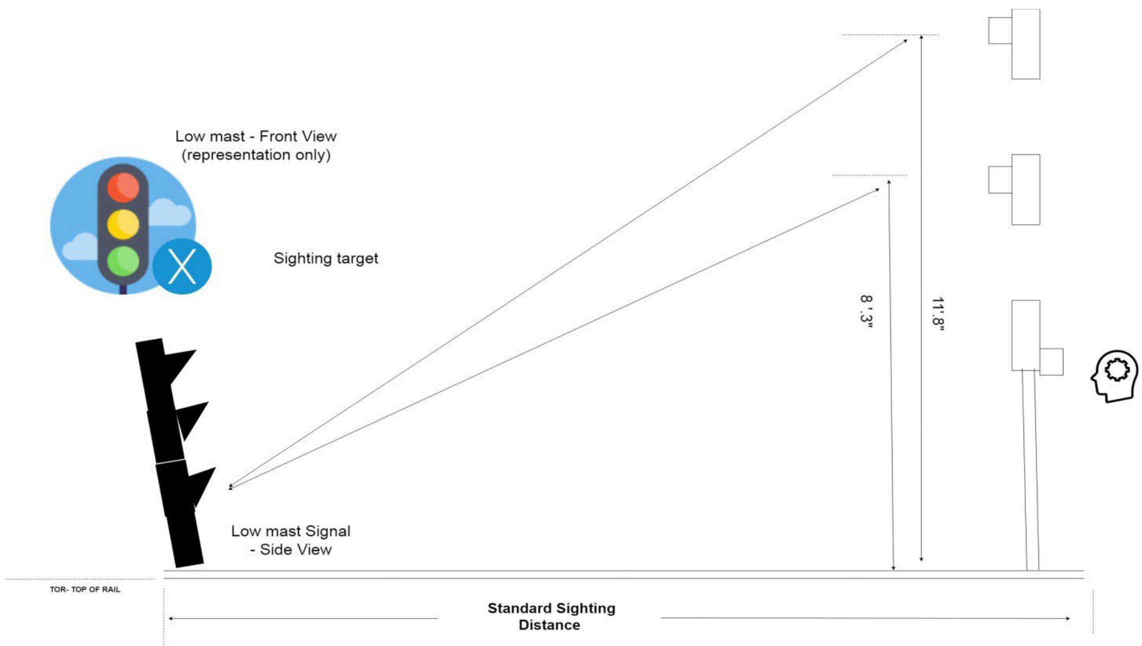


Figure 5-2: Sighting distance process – low mast signal



5.3.7 Notes:

1) Signal sighting shall aim at the top aspect of a high mast signal while at the bottom aspect of a low mast signal.

2) Bridge and cantilever signals shall be sighted using the center head with an offset to decide general sighting.

3) Bridge and cantilever signals with requirements for close viewing shall be sighted at both bottom and top heads from both 8 feet and 12 feet ARL for the locomotive engineer, the worst cases for close viewing. Due to the extreme height, the entire signal "envelope" will require general sighting, and the Signal Design Engineer will consider any obstructions that could occur above the target.

4) Signals shall also be sighted from both 8 feet and 12 feet ARL due to major differences between driving cabs.

5.4 Braking Analysis

5.4.1 All newly designed signals placements shall require a new braking analysis to be performed. Any signals relocated by more than 0.01 Mi (53 feet) require an assessment using the current braking analysis, or a new analysis shall be performed. Acceptable sightlines are considered in the placement of the signals to ensure trains can brake in the allotted distance.

5.4.2 If the block design is not acceptable based on the braking analysis, the signal placements will be redefined as per sections 5.2 and 5.3 above.

5.5 Signal Sighting Report

5.5.1 Once all signal sighting activities have been completed, a Signal Sighting Report shall be submitted to Metrolinx. This document will contain the entire library of updated and completed signal sighting forms, together with photographs and data pertaining to each signal.

5.5.2 The data will be transmitted electronically, with all data organized by each individual location. Any original notes shall be scanned and submitted.

6. Installation

6.1 General

6.1.1 Refer to Manufacturer's Instructions for equipment installation and alignment procedures.

6.1.2 Refer to GO Transit Signals and Communications Standards – Codes of Practice SCP-12, Wayside Signal Alignment Procedures.

6.1.3 The initial assessment should confirm 100% of signal positions. Any obstructions or issues found during the desk exercise should have been resolved prior to the commencement of site works.

6.1.4 The signals and structures should now be installed and aligned in accordance with this document.

6.1.5 A second sighting assessment shall be now carried out to both reaffirm the initial findings and to check the factors on the sighting form that could not previously be performed.

6.1.6 This second assessment will be looking at a real signal and not at a target. The observer will again use a periscope or train cab to view each signal from the ASD point and close-up point determined in the first assessment. The initial findings will either be confirmed, or a note made of anything that may have changed and affected the proper viewing of the signal.

7. Signal Sighting Form

Signal Sighting Form			METROLINX
Metrolinx Corridor		**Mileage**	
Signal Number		**Track Controlled (Name)**	
Structure Type	(High / Low / Bridge or Cantilever)	**Position of Signal in Relation to Track**	(L / R)
Closest Rail to Mast Center	(ft)	**Mitigations Required**	(Y / N)
Rail to Bottom Aspect	(ft)	**Mitigation Description**	
Track Speed	(MPH)	**Signal Profile:**	
Close Viewing	(ft)		
AST	(s)		
ASD	(ft)		
MSD	(ft)		
SSD	(ft)		
MST/MSD Achievable	(Y / N)		
SST/SSD Achievable	(Y / N)		
Crossover Effects	(Y / N)		
Trains on Adjacent Tracks	(Y / N)		
Background Effects	(Y / N)		
Read-through Effects	(Y / N)		
Phantom Aspects	(Y / N)		
Night Effects	(Y / N)		
Physical Obstructions	(Y / N)		
Overhead Contact System	(Y / N)		
Other Signal Interference	(Y / N)		
Distracting Features	(Y / N)		
Sunlight Effects (Phantom Aspect)	(Y / N)		
At Night Effect	(Y / N)		

Signal Sighting Form	METROLINX
Comments and Requirements:	
Desk Exercise:	
Field Verification:	