

SkyTrain Limits of Approach

Safety Requirements for Work Near Automated Trains and Infrastructure

SkyTrain Risk Profile

Overview

SkyTrain is an automated rail transit system carrying over 350,000 passengers per day on fairly quiet trains traveling at speeds of up to 90 KPH. With potentially 400 people on board each train, colliding with an object or a person could lead to catastrophic events.

Potentially Hazardous Work

Work activities occurring close to SkyTrain can increase short and long-term risk to safe train operations, track integrity, public and worker safety. Of particular concern are activities that might:

- Result in a collision with SkyTrain's buildings, guideway (columns or beams) and especially trains;
- Involve heavy equipment working within 10 metres of the guideway (i.e. cranes or excavation equipment);
- Involve the storage of flammable products such as gasoline or combustible materials such as wood;
- Lead to persons entering Automatic Train Control (ATC) territory either inadvertently or purposefully;
- Cause seismic activity or undercut footings, involve excavation or drilling in close proximity to tunnel walls, or potentially alter ground stability or ground water flows.

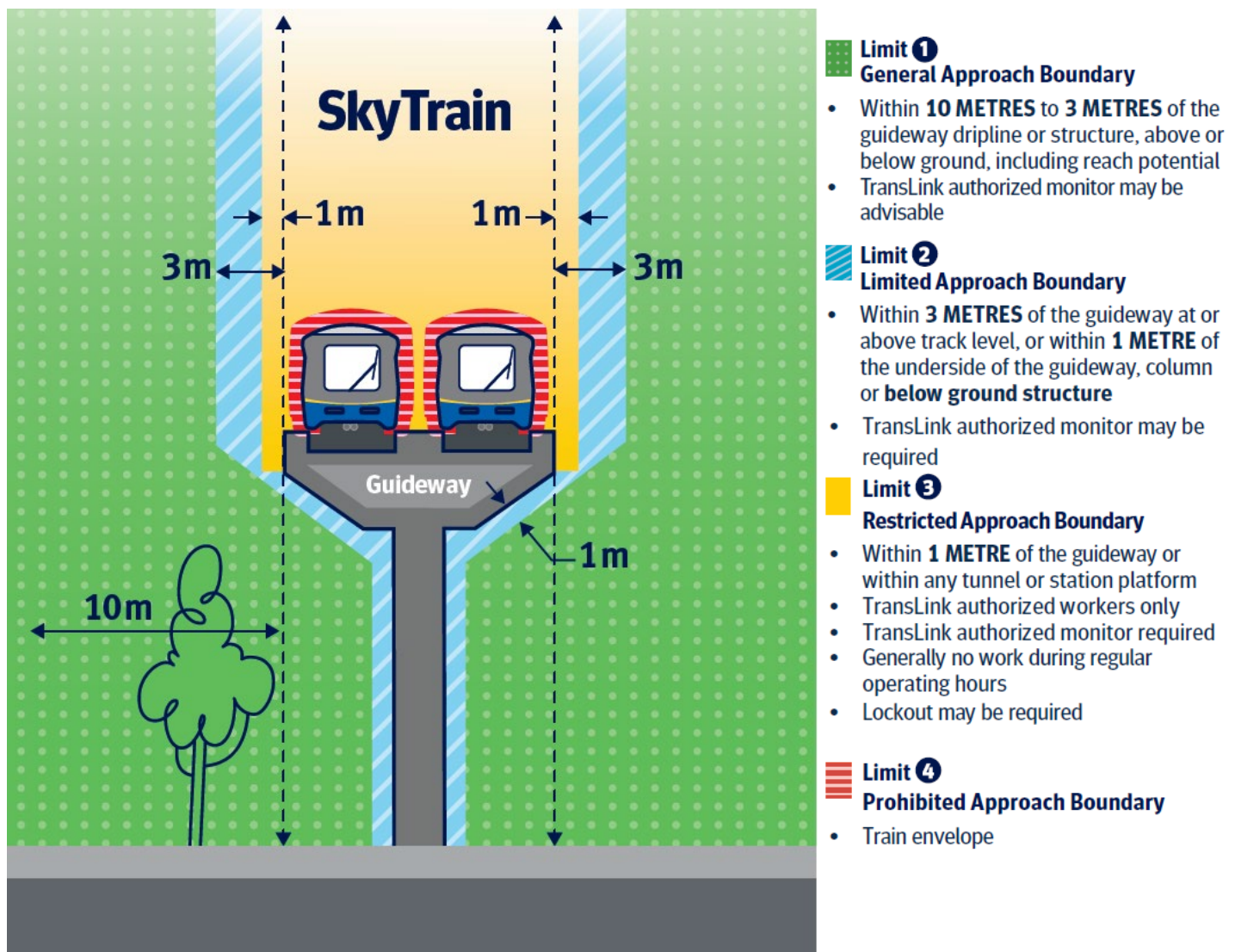
Examples Include:

- Scaffolding erected adjacent to station or tracks;
- Tall equipment next to the guideway such as cranes or bucket trucks;
- A new building that provides easy access or results in material(s) falling onto the guideway;
- Painting of stations or buildings adjacent to the guideway;
- Cranes working above ATC territory while transporting materials;
- Work that blocks emergency escape routes;
- Any work creating smoke, fumes, or other airborne hazards which could enter the station(s);
- Underground drilling near a tunnel or station.

Prior to any work commencing in the vicinity of SkyTrain, the responsible parties preparing to commence work must contact TransLink to identify the risks and determine the appropriate precautions, based on the following information.

Limits of Approach

The closer the planned work is to take place near SkyTrain's Automatic Train Control territory (ATC), the greater the potential risk. There are four limits of approach as shown in the following diagram. Each limit warrants slightly different precautions and authorization requirements to undertake work or activities within them. These limits also apply to underground parts of the SkyTrain system, such as tunnels and underground stations.



Note: The drip-line is a line which extends from the edge of the guideway (or walkway) to the ground below. The area of SkyTrain's concern extends from below ground up to and beyond the guideway due to the dangers of falling objects into the track from above or to underground structures such as footings, caissons, or tunnels.

Limit 1

You are within Limit 1 when you are within 10 metres of a SkyTrain station or the drip-line of the guideway and not closer than Limit 2, above or below ground. It also includes the space below the guideway and between columns except as defined for Limit 2.

Precautions

- ✓ Ensure TransLink is aware of your work at the planning phase and prior to commencement. Visit the TransLink Real Estate – Adjacent & Integrated Development (AID) webpage for more guidance and information: translink.ca/realestate
- ✓ In most cases, a detailed work plan describing the hazards, risks and mitigations specific to the tasks involved in the work must be submitted for acceptance by TransLink.
- ✓ Ensure that all employees are made aware of SkyTrain's "Limits of Approach". Additional training may be required by TransLink or SkyTrain.
- ✓ Equipment within Limit 1 should be arranged so that an equipment failure would not lead to an accidental entry into the track (i.e. crane collapse).

In case of an emergency or unexpected imminent hazard, call SkyTrain Control:

- ***Expo/Millennium Lines, including Evergreen Extension*** **604.520.5555**
- ***Canada Line*** **604.247.5703**

Limit 2

In addition to the precautions for working in Limit 1, the following apply when you are within Limit 2:

- Within 3 metres of the guideway dripline or walkway, but not closer than 1 metre (if beside or above tracks, including underground infrastructure);
- When you are within 1 metre of the guideway beams or columns but you remain below the guideway (below track level); or
- If the activity is presenting an undue risk to SkyTrain patrons entering or exiting a station. Check with TransLink if you are unsure.

Precautions

- ✓ Whenever work is being done within an area defined as Limit 2, a qualified SkyTrain employee may be required to monitor the work.
- ✓ The SkyTrain employee must have radio contact with SkyTrain control and be able to request trains be stopped or power removed.
- ✓ Workers must be trained by TransLink in the Limits of Approach.

Limit 3

In addition to the precautions for work in Limits 1 and 2, the following applies to work in Limit 3:

- Work activities are within 1 metre of the guideway dripline or walkway (beside or beside and above track level);
- Work physically affects the SkyTrain structure (i.e. column, footing, caisson or tunnel)
- Work is being performed over the tracks (including materials being lifted or moved directly over the ATC territory), or beside (underground) such as drilling or excavating.

Precautions

- ✓ Operating Company Safety Department must be involved in the assessment (generally coordinated through TransLink).
- ✓ As this work may impede regular train operations, likely to be authorized only during non-Revenue Service hours.
- Passenger trains are not operating during non-Revenue Service hours. However, test trains and other rolling stock may be operational.
- ✓ A qualified SkyTrain employee may be required be in attendance to monitor the work while the work is being done.
- ✓ The SkyTrain employee must have radio contact with SkyTrain control and be able to request trains be stopped or power removed.
- ✓ Workers must successfully complete the operating company's contractor training.

Note: Entry into Automatic Train Control (ATC) territory is not permitted. Accidental entry must be reported and documented. It is an Offence under the TransLink Rules & Regulations to interfere with the operation of a vehicle, or to damage equipment or transit property (SCBCTA Act).

Limit 4

In addition to the precautions for Limits 1, 2 and 3, the following applies to work in Limit 4:

Precautions

- ✓ No person or equipment may enter the ATC territory without authorization from the SkyTrain monitor, or SkyTrain Control if no monitor is required by the Operating Company.
- ✓ ATC protection including (but not limited to) occupancy permit and power rail lockout must be implemented.