Grade Separations

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Info Sheet: 5

Metrolinx is increasing its services as part of the GO Expansion program, which will increase train frequency and the number of trains on the GO rail network. To increase traffic flow and transit capacity, Metrolinx has identified the need to build a number of grade separations.

This Info Sheet describes:

- What is a grade separation?
- Why are grade separations needed? What are the benefits?
- What is involved in designing a grade separation?
- What is involved in building a grade separation?
- How will Metrolinx design, build, and address effects of grade separation?
- Why doesn't Metrolinx move tracks instead of the road?

What are the benefits of grade separations?

- Improved traffic flow and elimination of the potential for conflicts between trains and vehicles;
- Increased on-time performance and operational reliability;
- Better connections and crossings for pedestrians and cyclists;
- Reduced noise from level crossing signals and train whistles; and
- Air quality benefits from reduced car idling;
- Opportunities to bring roads up to new standards, such as wider lanes and wider walks, separated bike lands, or improved lighting.

Rendering of a road underpass

What is a grade separation?

A grade separation is a tunnel or a bridge that allows a road or rail line to travel over or under the other, without the need for vehicles travelling on the road to stop. If the road is lowered below the rail line, it is called **rail over road**, while if it is raised above the rail line, it is called **road over rail**.

Why are grade separations needed?

Although each rail line is different, trains may run as little as one or two times per hour on some Metrolinx corridors. This means that each road crossing may need to be temporarily closed about once or twice an hour to let the trains pass.

With GO Expansion, all-day 15-minute service could mean that a train will pass every 7.5 minutes – greatly increasing the number of interruptions at each road crossing.

By grade separating crossings, Metrolinx can safely increase travel speed and capacity on our roads and rail lines. Grade separations allow trains to freely pass over or under roads without the need for the road traffic to stop.

What is involved in designing a grade separation?

Road overpasses require a new structure to raise the road above ground level. The structure could be held up by piers or retaining walls. Depending on the width of the road, the rail line would pass under the new structure through a tunnel or under a bridge.

Road underpasses usually involve excavating a trench for the road, that is held by retaining walls on each side. Depending on the crossing, a new rail bridge is usually built to cross the underpass at the lowest point.

In designing grade separations, Metrolinx is guided by a variety of objectives, including:

- maintaining and/or improving connectivity and access to properties and businesses;
- minimizing noise and negative visual impacts;
- minimizing construction and maintenance costs; and
- minimizing the project footprint, including acquiring properties and removing vegetation and trees only when necessary.

What is involved in building a grade separation?

Grade separations are large construction projects, and Metrolinx is committed to managing construction to minimize their effects on communities.

Temporary construction effects are similar to most construction projects, and may include:

- Traffic disruptions, including possible detours or closures around construction areas;
- Nuisance effects such as noise and dust;
- Removal of vegetation or temporary property impacts near construction zones; and
- Possible service disruptions to utilities from relocations.

Photo of a road overpass held up by piers

As part of the GO Expansion program, Metrolinx is planning the following grade separations (*also see the Discussion Guide*):

1. Denison St, Road Underpass
2. Kennedy Rd, Road Underpass
3. Passmore Ave, Road Underpass
4. McNicoll Ave Road Underpass
5. Huntingwood Dr, Road Underpass
6. Progress Ave, Road Overpass
7. Danforth Rd, Road Overpass
8. Wellington St, Road Underpass
9. McNaughton Rd, Road Overpass

As GO Expansion continues along with population growth in our urban centres, Metrolinx will work with local municipalities to consider the need for more such crossings.

How will Metrolinx design, build, and address the effects of grade separations?

Metrolinx will work closely with local municipalities, stakeholders, and residents to identify and manage the potential effects of grade separations. This process will include:

- Completion of relevant environmental assessment studies to identify effects and appropriate mitigation measures, including specific studies to address key community concerns, such as traffic, tree removal, and effects on adjacent land uses;
- Community consultation related to project design and mitigation;
- Working groups with municipalities and utilities to address conflicts and look for opportunities to coordinate construction work;
- Early engagement with potentially affected property owners to discuss compensation options; and
- Construction management plans to minimize construction effects related to noise, dust, traffic, and other environmental impacts (e.g. keeping two lanes open for local traffic in construction zones).

To learn more about Metrolinx's new approach to construction management, please read Info Sheet #6.

Why doesn't Metrolinx move the tracks instead of the road?

Although it may seem simple, even small changes to a rail line can have big challenges, including:

- **Stricter standards for trains** – trains have stricter standards for curves and slopes to operate safely, meaning that raising or lowering a rail line similar to a road could require up to six times as much space.
- **Higher costs** – Because of the design and engineering challenges, redesigning and reconstructing a rail line is more expensive than road work.
- **Limited options for detours** – The ability to detour a rail line is very limited because of the size of the corridor and can affect service along the entire route. Roads on the other hand can be addressed by limiting lanes, building detours, or using adjacent streets.
- **Safety risks** – Construction within a rail corridor presents safety concerns, so limiting the amount of work next to active trains is always preferred.

This Info Sheet is part of a package of Info Sheets and a Discussion Guide provided by Metrolinx to share updates on system-wide studies and policies. The current set of Info Sheets cover a number of different topics, including: GO Expansion benefits, heritage conservation, vegetation removal and compensation program, electromagnetic fields and electromagnetic interference, and new approach to construction management.

For more information

For more information about GO Expansion and to download other materials, check out our website: MetrolinxEngage.com