



# Waverley Underpass - Detailed Design

## Open House, October 6, 2016

**WE WANT TO HEAR FROM YOU!**

*Ask questions, give us your thoughts & ideas, fill out an exit survey, and tell us what you think!*

The purpose of today's open house is to provide project information and obtain your feedback and input regarding the Waverley Underpass Detailed Design.

Representatives from the project team are here to answer your questions and address any concerns you might have.

We want to hear from you. Ask questions, give us your thoughts and ideas, fill out an exit survey, and tell us what you think!

Large scale versions of the drawings can be found on the central tables.

All open house materials and the exit survey will be posted to the project website.

[www.winnipeg.ca/waverleyunderpass](http://www.winnipeg.ca/waverleyunderpass)

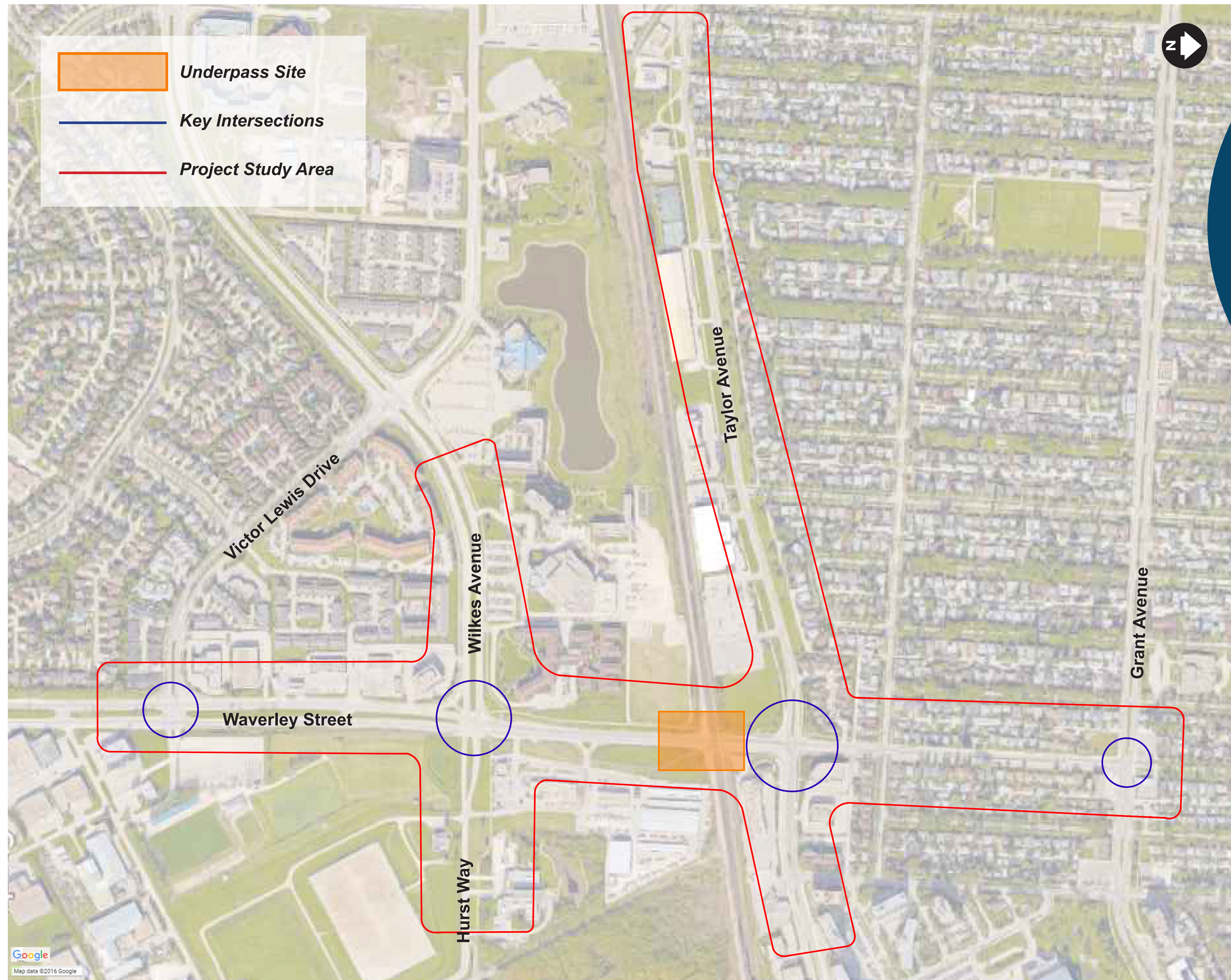


Waverley Underpass - Detailed Design

# WELCOME







**BENEFITS**

*A major piece of regional infrastructure will have differing benefits for different groups. Some of the major benefits are as follows:*

- Relieve traffic congestion in the area;
- Improve safety for drivers, pedestrians, and cyclists;
- Discourage cut-through traffic in existing neighbourhoods.
- Reduce variability in travel times due to train crossing events.

The project team has been tasked with developing a Detailed Design for construction of a grade separation of Waverley Street and the CN Mainline (Rivers Subdivision).

The design also includes intersection improvements, and bicycle & pedestrian pathway improvements in the project area.

The project does not include changes to the width of Waverley north of Taylor, or changes to streets outside of the Project Area.

**As a complex infrastructure project, the Detailed Design includes several interrelated components, including:**

- Land surveys and geotechnical investigations;
- Environmental assessments;
- Transportation studies, including pedestrians and cyclists, traffic, transit, and access management;
- Railway alignment and detour designs;
- Drainage studies and hydraulic analysis;
- Road and bridge detailed design;
- Public consultation and stakeholder engagement;
- Detailed construction drawings and phasing;
- Noise, safety, and risk assessments.

**In early 2016, the City of Winnipeg initiated the design for the Waverley Underpass and associated road works.**

The Waverley Street crossing of the CN mainline (Rivers Subdivision) has approximately 30,000 vehicles, and an average of 40 train movements passing through daily. This causes significant traffic disruption. The primary objective of this project is to provide a grade separated crossing and the CN Mainline (Rivers Subdivision), and improve the transportation network in the vicinity of the project area.

Detailed design will take place throughout 2016, and construction will begin in January 2017. Construction will be complete by December 2019, with some minor works such as landscaping completed in Summer 2020.



Waverley Underpass - Detailed Design  
**PUBLIC ENGAGEMENT PROCESS**

**PRELIMINARY DESIGN**



20 Stakeholder and Resident meetings

16 Stakeholder and Resident meetings

300+ Participants

- Here are some of the stakeholders we've met with so far:
- Residents within the Study Area
    - Area Councillor
    - CN
  - Winnipeg Humane Society
  - Waverley and Rosewood Retirement Residence
    - Reh-Fit Centre
    - Piazza De Nardi
  - Winnipeg Rapid Transit Coalition
    - Bike Winnipeg
  - City of Winnipeg (various departments)
  - Grant Memorial Church – Linden Christian School
    - River Run Condos
  - Pembina Trails School Division / Winnipeg School Division
  - Parker Wetlands Conservation Committee
  - Nearby Businesses and Property Managers
    - Area Employers

**DETAILED DESIGN**



Tri-level Funding

- 12 Stakeholder meetings
- GOALS**
- Inform & communicate project details
  - Receive input on potential impacts & mitigation options
  - Receive input on construction and detour plans
- OUTCOMES**
- Analyzed feedback
  - Worked with design team to address issues and concerns
  - Refine detailed design

**WE ARE HERE**

October 6, 2016 Open House Stakeholder meetings

**GOALS**

- Inform & communicate project details
- Receive input on detailed design
- Receive input on construction and detour plans

**OUTCOMES**

- Analyze feedback
- Refine detailed design

Ongoing communications via project website & newsletters

As a part of the project, the team has designed a comprehensive public engagement program. From June 2014 until now, the team has met with various stakeholders in multiple rounds of consultations.

The purpose of the engagement strategy has been to deliver information to stakeholders in a timely manner, while receiving input on potential project impacts and design options. The public engagement team works directly with the design team to help address stakeholder concerns, identify alternatives, and mitigate potential impacts where possible.





**An environmental investigation was undertaken during the preliminary design.**

There are no environmental impacts of note that would result from this project. Soil sampling within the proposed underpass area indicates no issues of concern, and is consistent with Manitoba Conservation regulations. The project will also involve reconstruction of the existing rail bed and replacement of the rail tracks in the study area with seamless rail, which may decrease vibration and noise from rail activities.



**A noise study was completed as part of the project.**

The project will ensure that upon completion noise impacts on the surrounding area are either improved, or at the very least, stay consistent with the current situation. The noise study concluded that there would be no meaningful increase in noise levels.

The project will also involve reconstruction of the existing rail embankment and new joint free rail for the CN mainline (Rivers Subdivision). Experience has indicated that this may result in reductions in vibration and noise from rail operations.



**There are several challenges that the project team must deal with regarding drainage:**

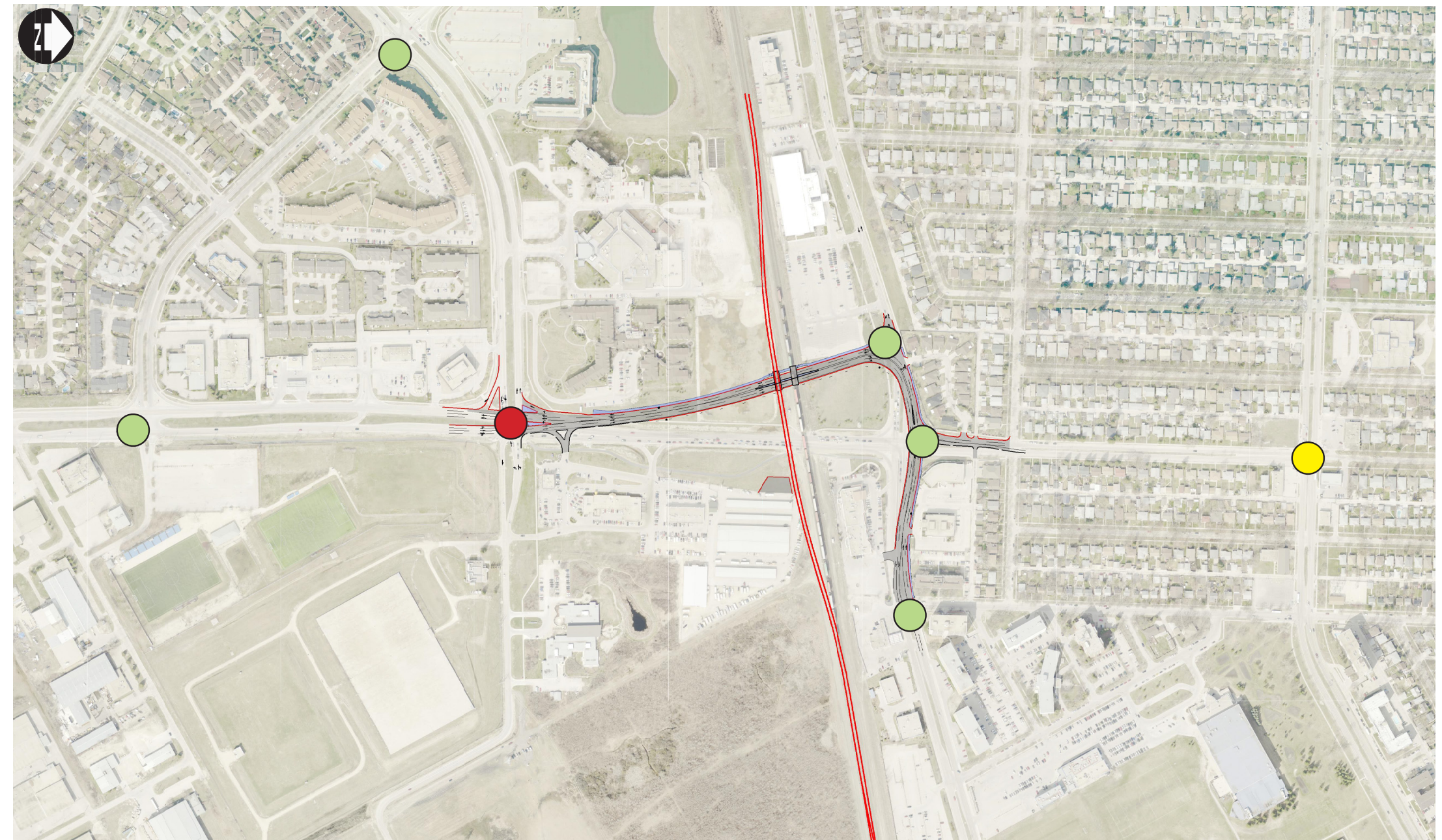
- Poor land drainage in the area;
- Drainage systems in the area that are at or near capacity;
- The project area intersects three different land drainage districts; and,
- Two of those drainage districts are combined sewer districts.

The underpass will require a pump station to drain the project area, and drainage improvements in the road rights of way. The drainage improvements for this project will ensure that existing drainage challenges are not exacerbated, and in some cases actually improved.

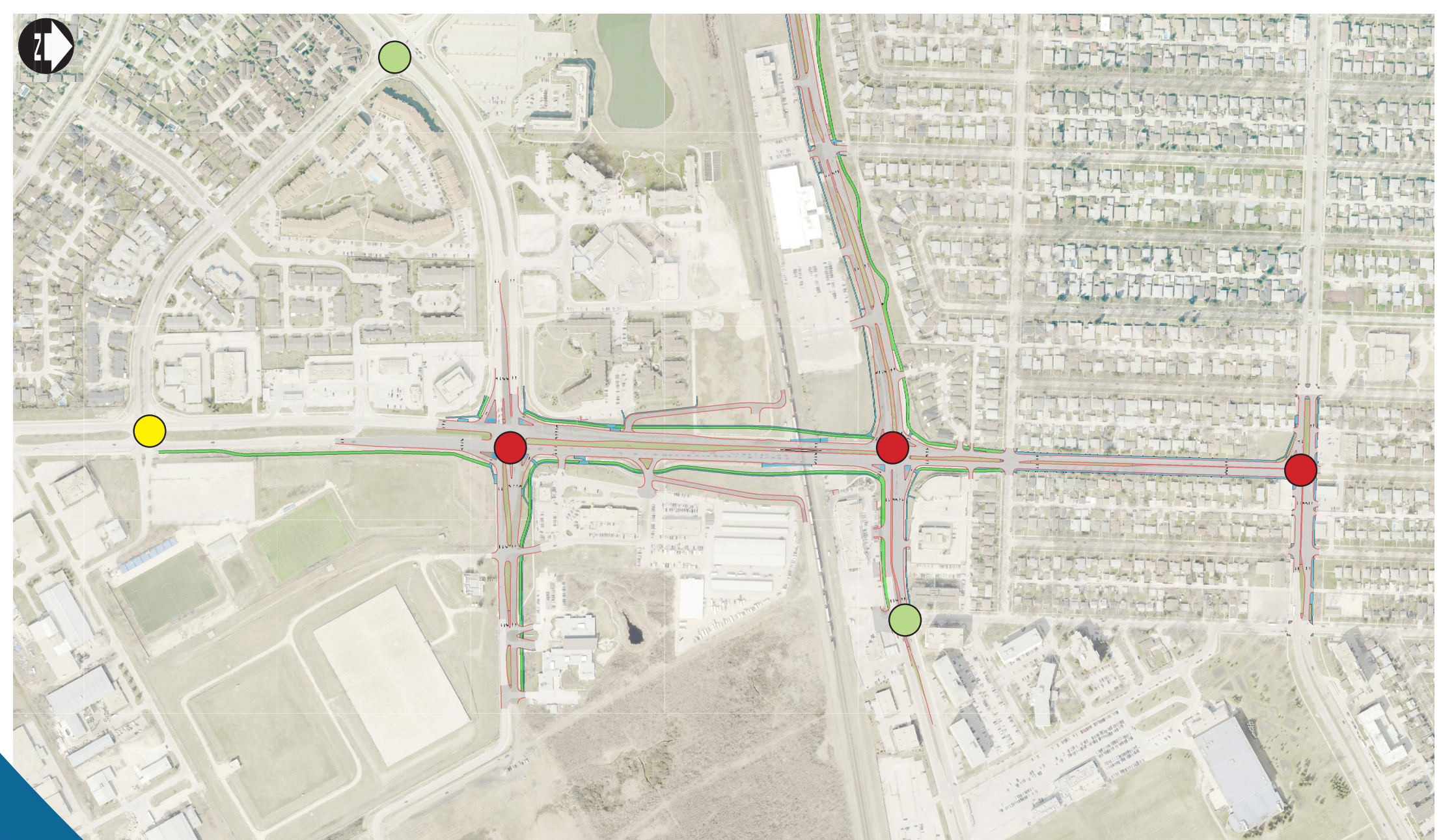




2014 AM Intersection Capacity Utilization



Detour AM Intersection Capacity Utilization



2037 AM Intersection Capacity Utilization

- ICU 0-75% *Little to moderate congestion*
- ICU 75-85% *Moderate congestion*
- ICU 85%-100% *Typical rush hour congestion*
- ICU 100%+ *Over capacity, significant traffic delays*

**Intersection Capacity Utilization (ICU)**  
*is a measure of the amount of traffic flowing through an intersection versus its maximum capacity.*  
*These maps show the ICU during morning (AM) periods for three time periods; existing (2014), during detour (2017), and future road improvements (2037).*

In order to design turning lane lengths, signal timing, and intersection improvements, the project team undertook a comprehensive transportation study as part of the preliminary design.

The study included traffic counts, pedestrian/cyclist counts, volume projections, and a pedestrian and cycling facility review. The team used traffic software modeling for short, medium, and long-term timelines, taking into account population growth, development, and commuting patterns in the city's southwest quadrant.

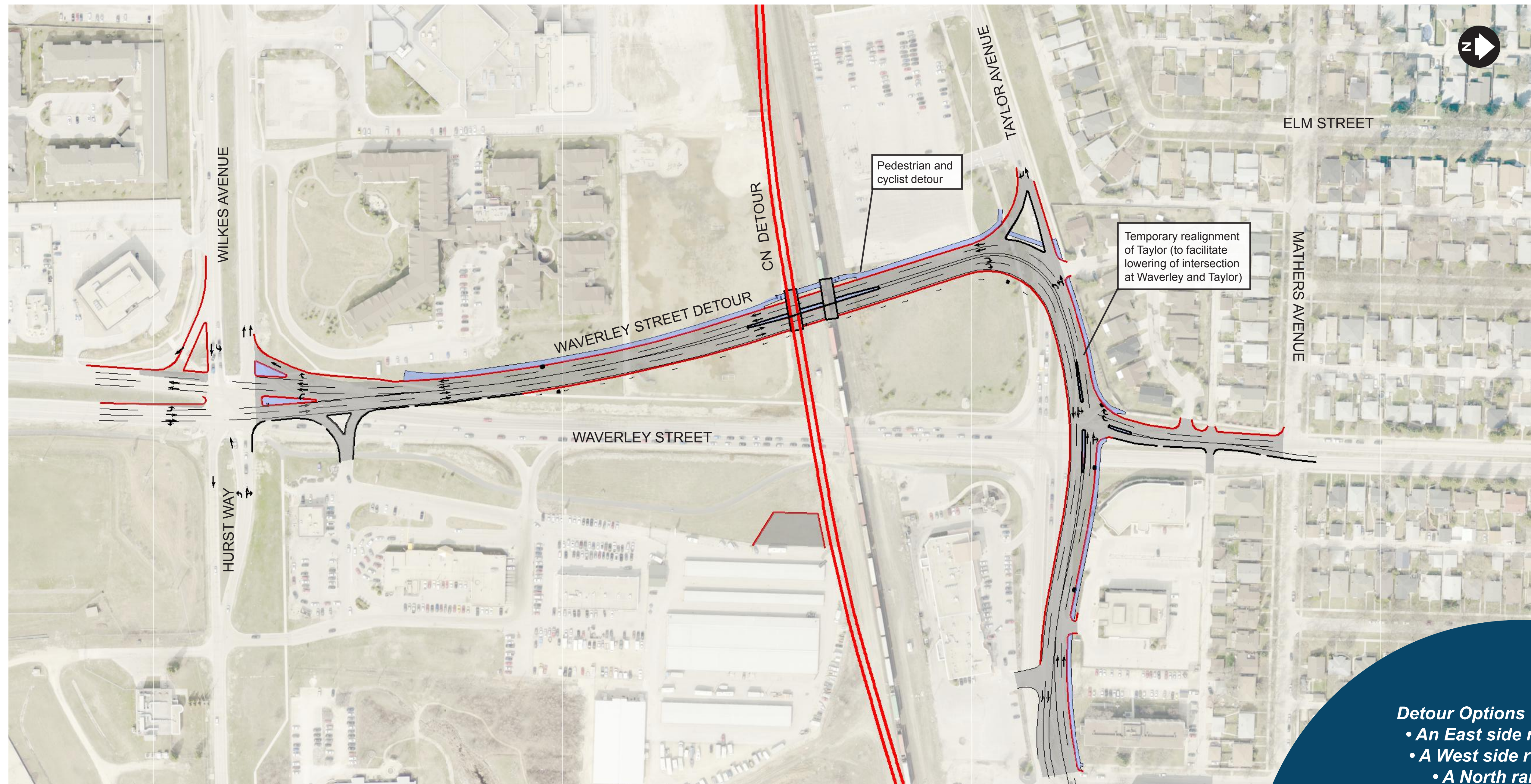
The study also accounts for potential traffic changes due to upcoming construction work on the Pembina Highway underpass at Jubilee, and other projects identified in the City's capital budget.

**The traffic study's key findings include:**

- Predominant turning movements at Waverley and Taylor are northbound to eastbound during the AM peak (right turn during morning rush hour) and westbound to southbound during the PM peak (left turn during evening rush hour).
- The Waverley and Taylor intersection is currently over capacity and the Waverley and Wilkes intersection is approaching maximum capacity during rush hour. As a result, improvements to key intersections were designed. See Board 11.
- During detour operation, the elimination of certain low-volume vehicular movements will maximize traffic flow during construction. See Board 6.
- In 2037, the furthest date to which traffic projections are made, the intersection will operate near capacity with the intersection improvements. See Board 11.



# TEMPORARY DETOURS



**For the CN mainline (Rivers Subdivision) to maintain continuous rail operations throughout the duration of construction, a rail detour (shoofly) must be constructed prior to the construction of the underpass.**

Due to several constraints, including infrastructure, land, building, and phasing, a southern rail detour was deemed most feasible.

**In order for Waverley's traffic volumes to continue to flow through the area during construction, a road detour maintaining four lanes of vehicular traffic was required.**

The design team had to consider rail operations and crossing safety, property constraints, infrastructure, soil conditions, safety concerns, turning radii and road geometry, among other factors, when deciding where to place the detour. A western road detour was identified as the preferred route during preliminary design.

**The pedestrian and cycling routes must also detour during construction, and ensure active transportation users and pedestrians are located safely away from the construction zone.**

- Detour Options Considered:**
- An East side road detour
  - A West side road detour
    - A North rail detour
    - A South rail detour
  - A North/South one track couplet detour

- Key Findings:**
- Detour routes open Fall 2017 - Fall 2019
  - The selected South rail and West road detours result in the lowest overall impact to the surrounding land;
    - Other detour options would have significant permanent impacts;
    - Some vehicular movements at the Waverley and Taylor intersections must be eliminated for the detour to operate safely and efficiently.

A pedestrian and cyclist detour route will be provided on the west side of the Waverley detour, and link to a similar facility on the north side of Taylor.



### Waverley Avenue

- Waverley Underpass and associated pump station
- Widening of Waverley to 3 lanes north bound between Wilkes and Taylor
- Widening of Hurst Way to 4 lanes
- Pedestrian and cycling infrastructure improvements
- Intersection upgrades at Grant, Taylor, and Wilkes/Hurst Way
- Double left turn at:
  - westbound Grant to south bound Waverley
  - westbound Taylor to south bound Waverley
  - eastbound Wilkes to north bound Waverley
- Potential future connection to Southwest Transitway via Hurst Way



Waverley Underpass - Detailed Design  
**FINAL DESIGN**



	Roads		Cross sections
	CN Rail Bridge		Transit stops
	Pedestrian and cycling paths		

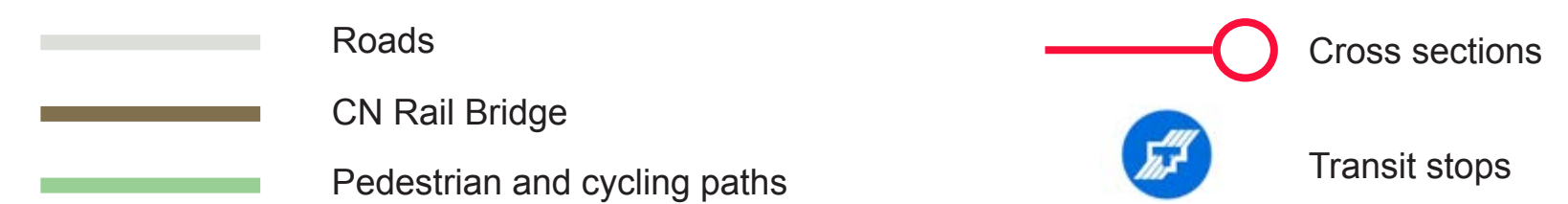


### Taylor Avenue

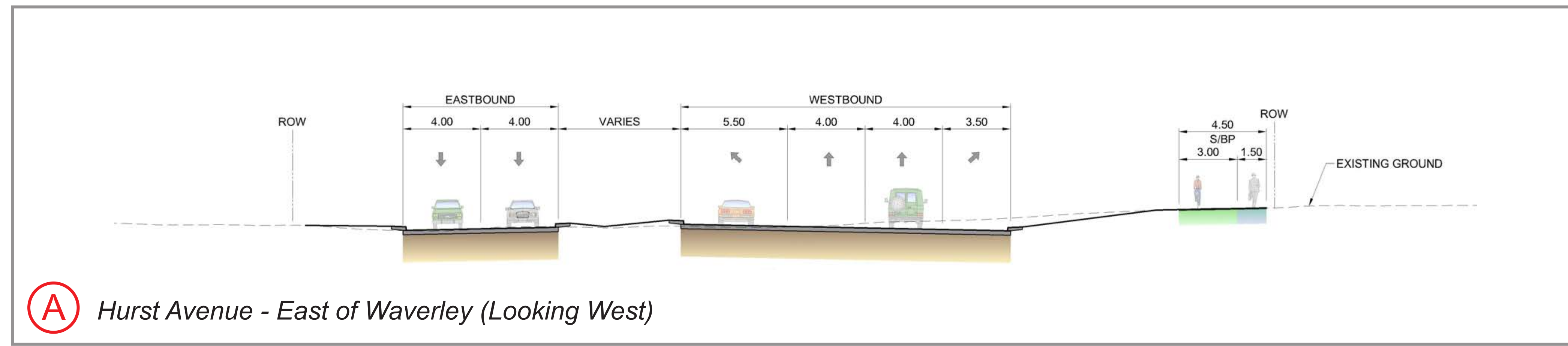
- South side widening of Taylor Avenue to 4 lanes
- Intersection improvements at Waverley, Ash, Brock, Campbell, Borebank, and Cambridge
- Pedestrian and cycling infrastructure improvements
- Installation of new independent land drainage sewer on Taylor



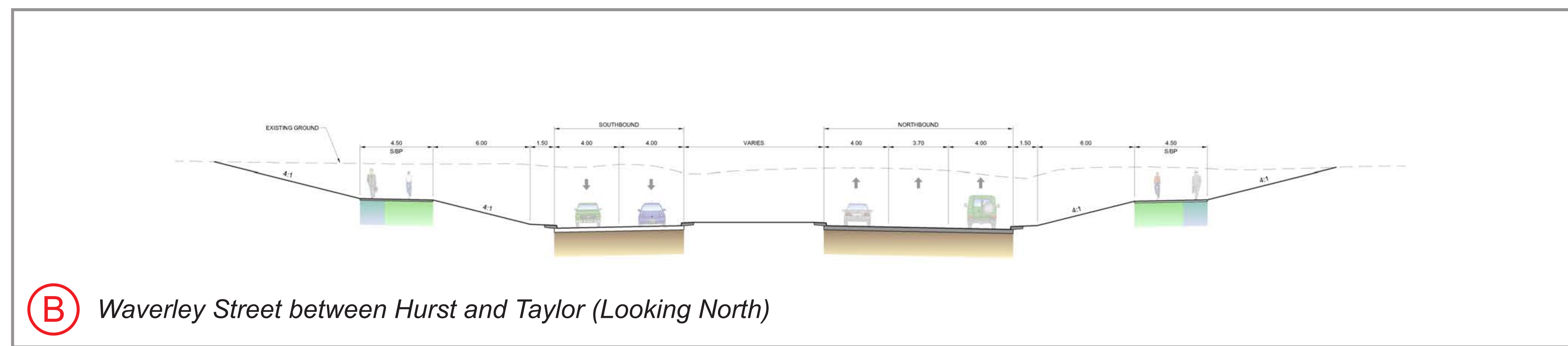
Waverley Underpass - Detailed Design  
**FINAL DESIGN**



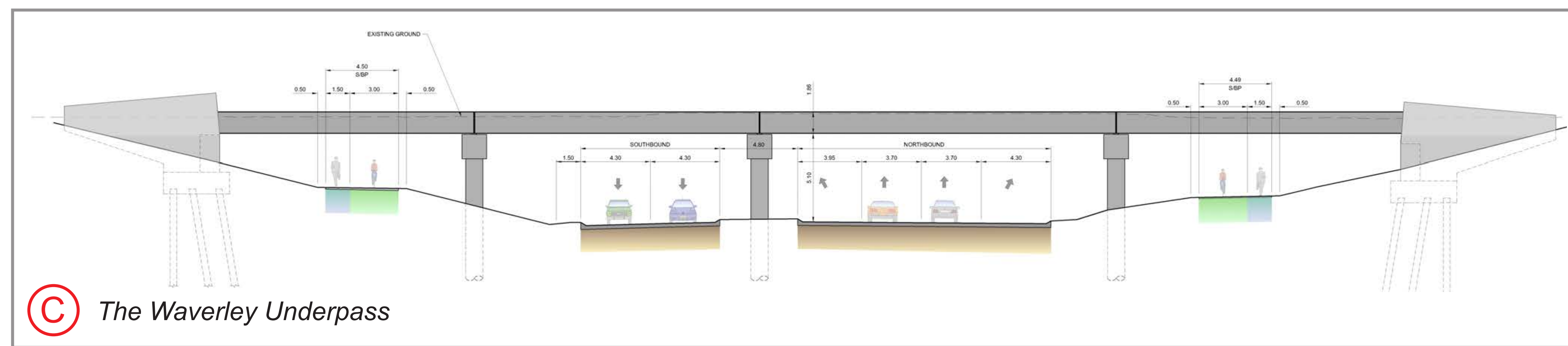




**(A)** Hurst Avenue - East of Waverley (Looking West)



**(B)** Waverley Street between Hurst and Taylor (Looking North)



**(C)** The Waverley Underpass

- Multi-use path
- Sidewalk/Bike Path
- Sidewalk
- Road

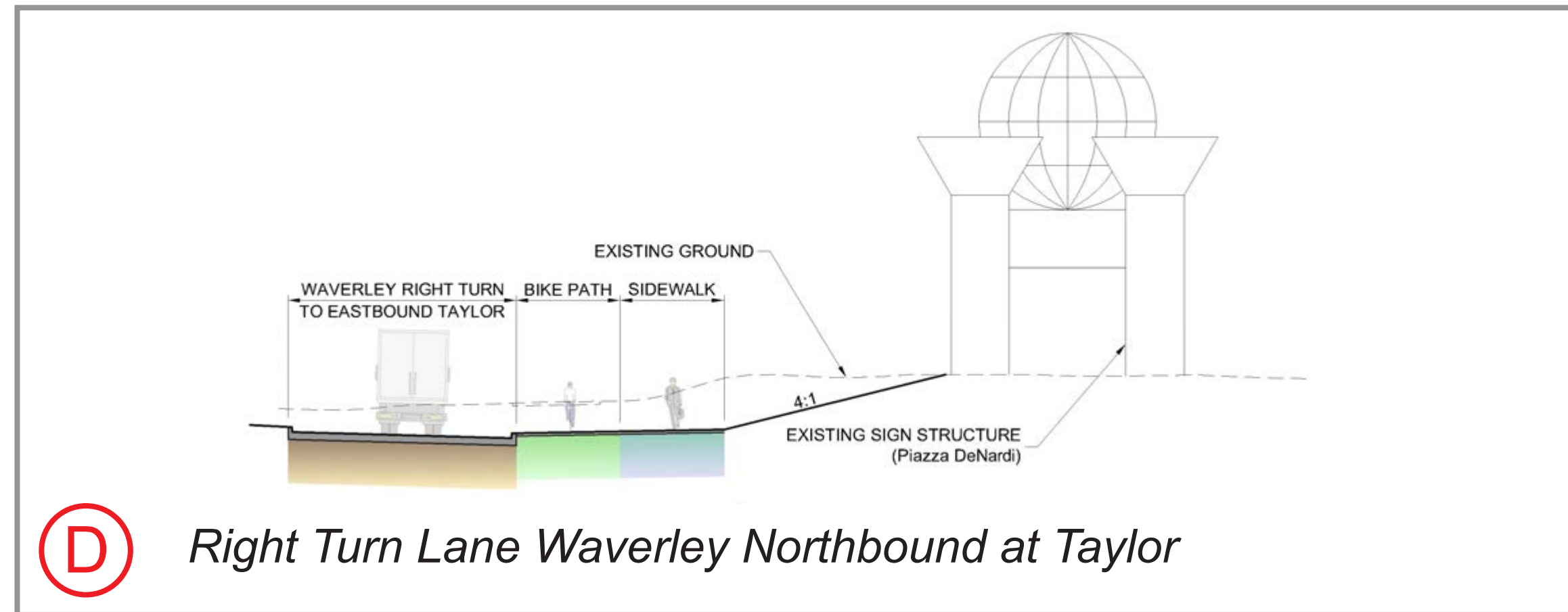
**These cross sections illustrate the changes to the roadways and active transportation networks.**

In the sections above, the blue marks pedestrian sidewalks, the green marks active transportation pathways (for both cyclists and pedestrians), and the brown marks roadways.

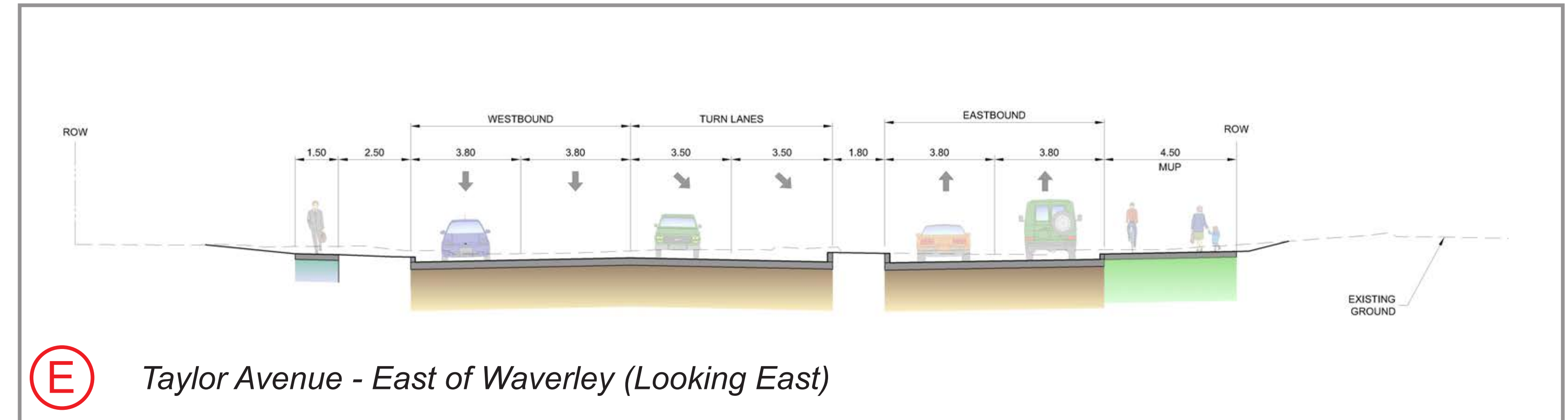
**The design of the underpass is shown in C.**

The tracks are raised by approximately 1 foot. The preferred option for the rail bridge is a cast-in-place two track ballast deck girder bridge. The bridge has been designed to meet minimum vehicle clearance requirements, with 5.1 metres from the road surface to the bottom of the bridge structure.

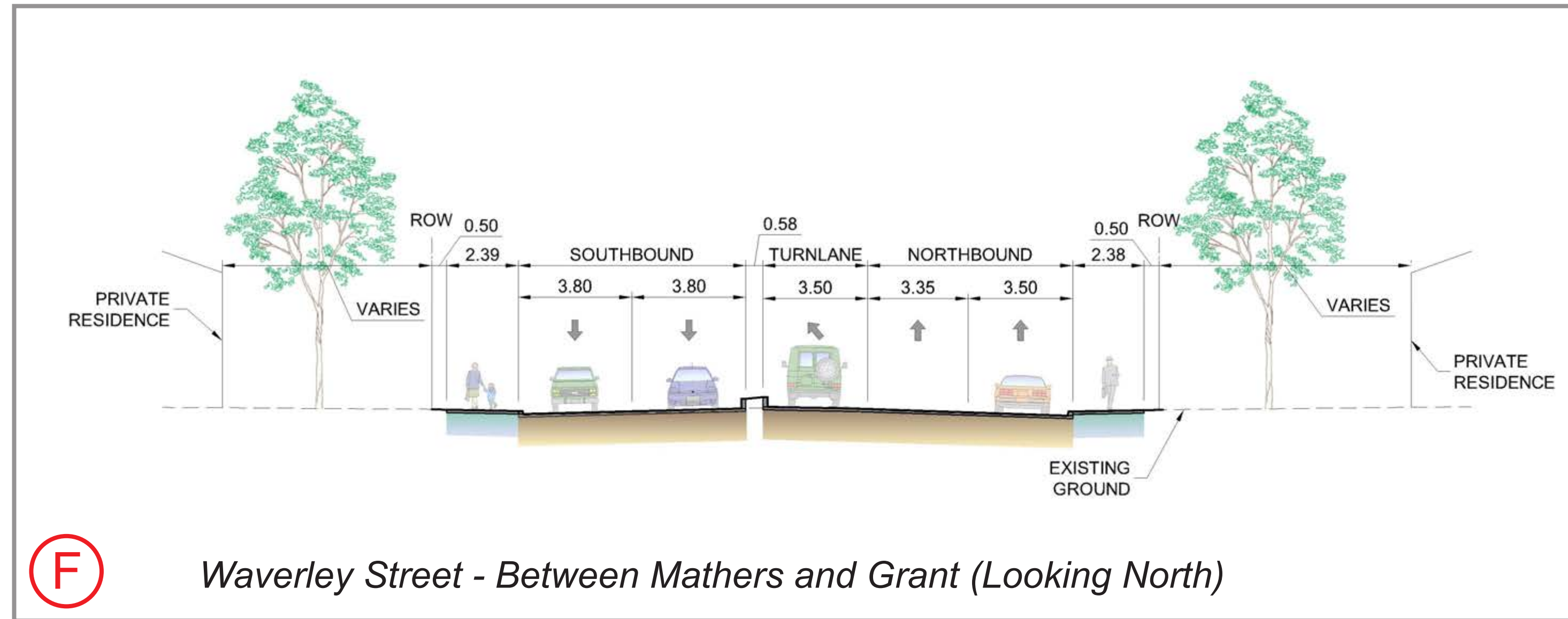




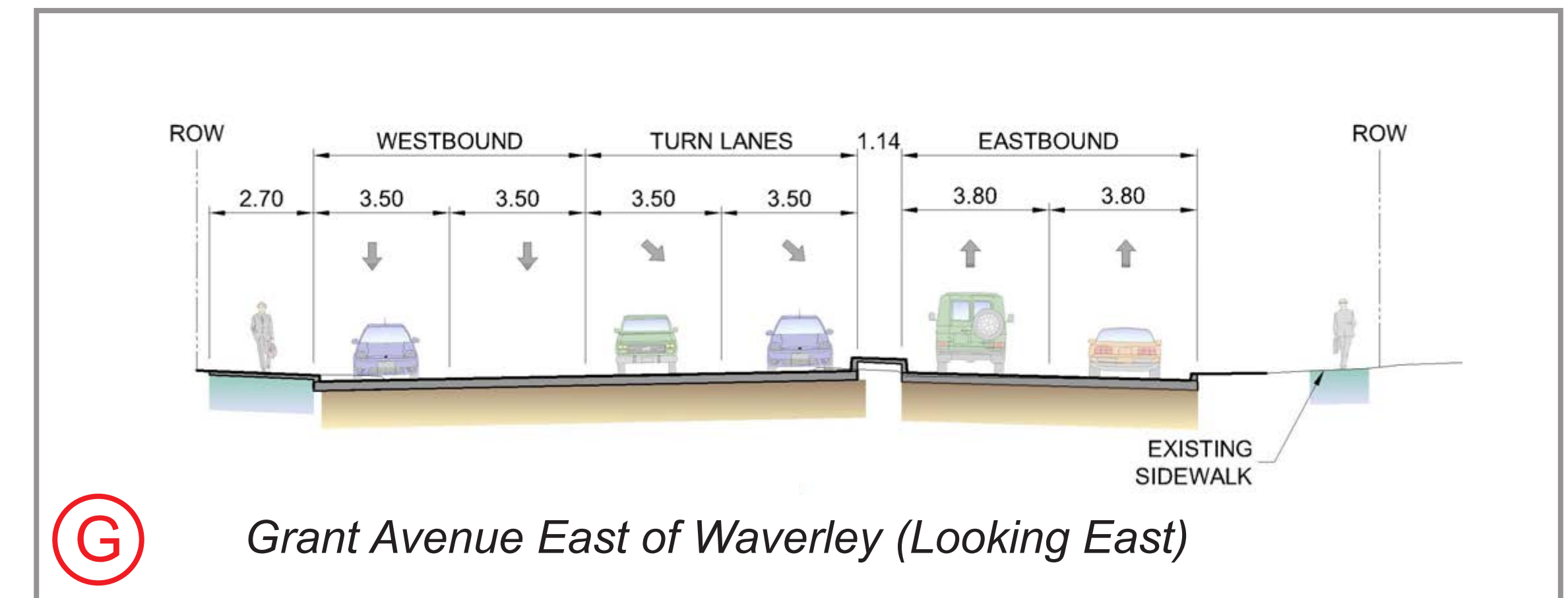
**D** Right Turn Lane Waverley Northbound at Taylor



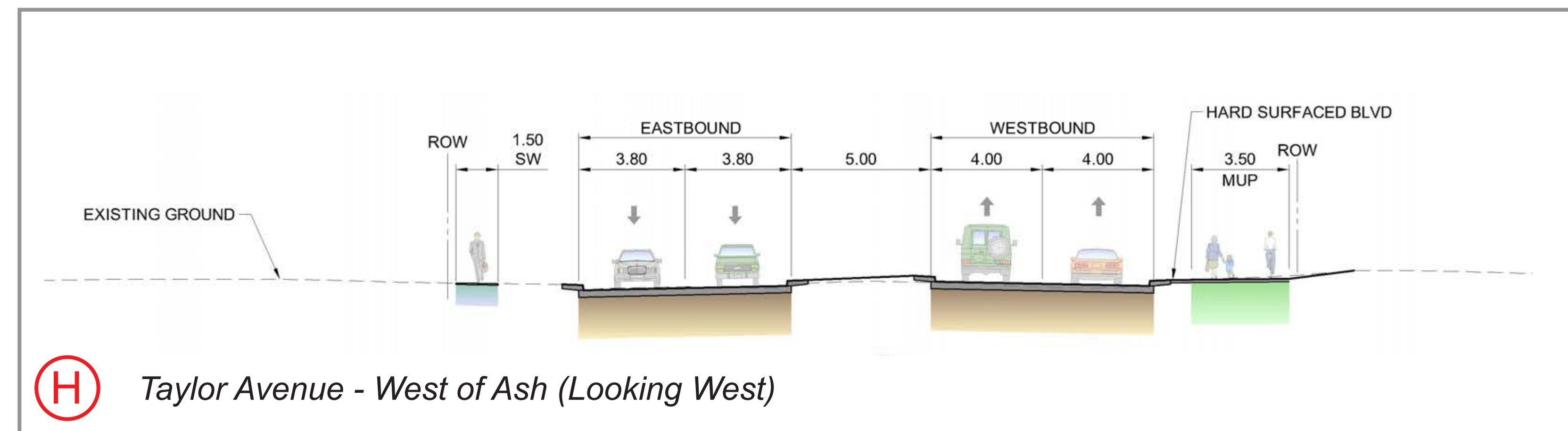
**E** Taylor Avenue - East of Waverley (Looking East)



**F** Waverley Street - Between Mathers and Grant (Looking North)



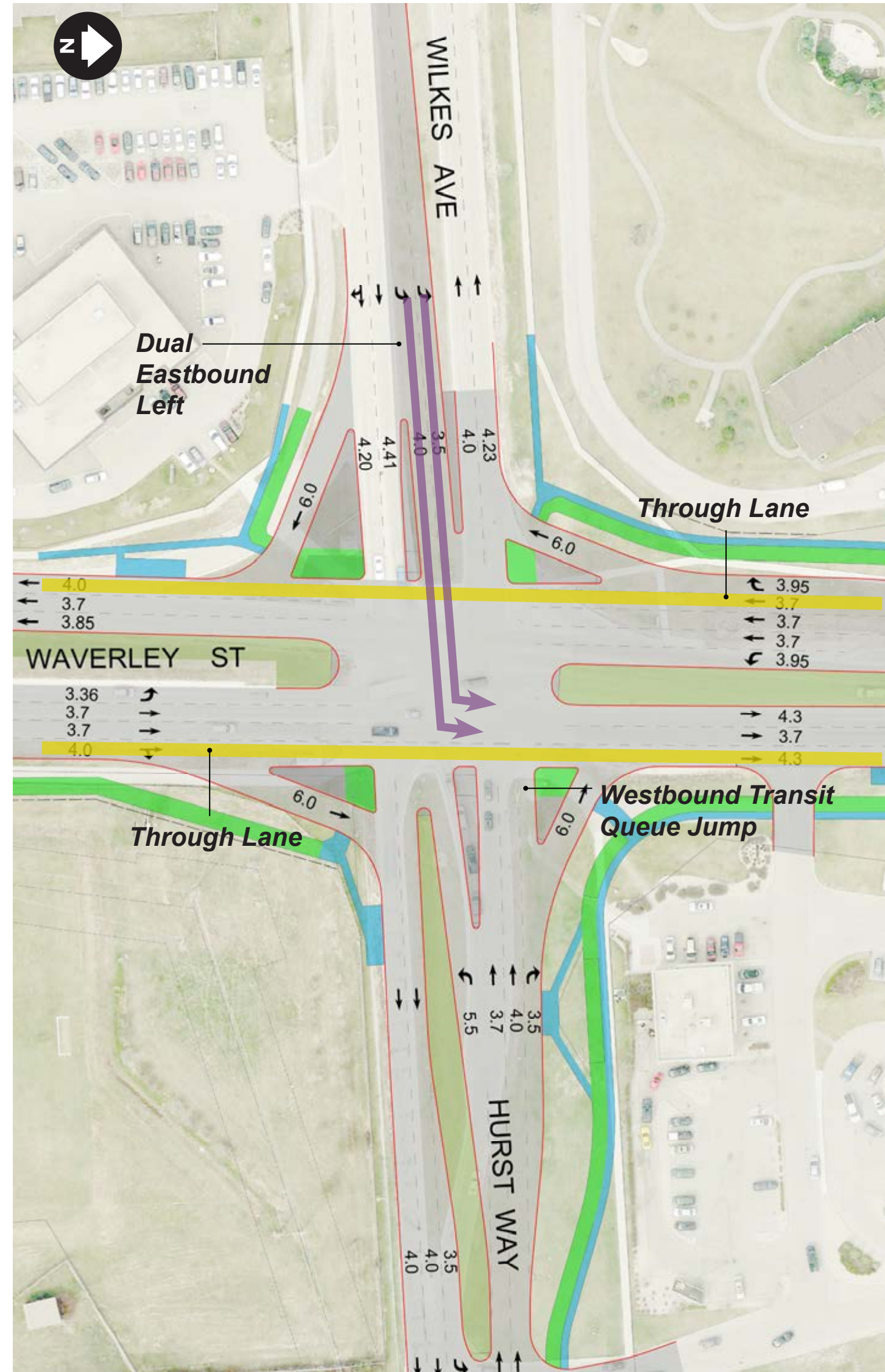
**G** Grant Avenue East of Waverley (Looking East)



**H** Taylor Avenue - West of Ash (Looking West)

- Multi-use path
- Sidewalk/Bike Path
- Sidewalk
- Road

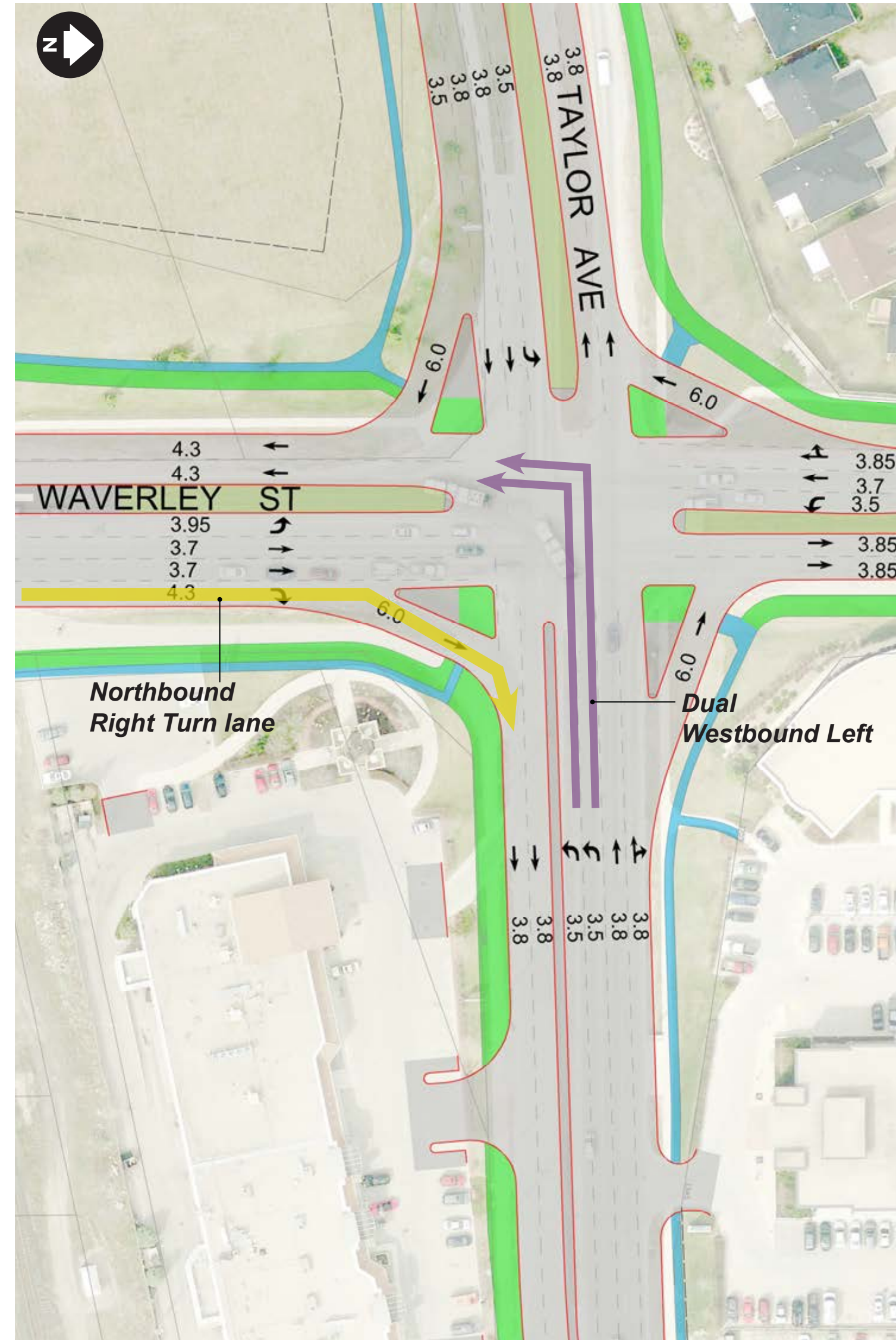




*Waverley & Wilkes/Hurst Improvements*

**Waverley & Wilkes/Hurst Improvements**

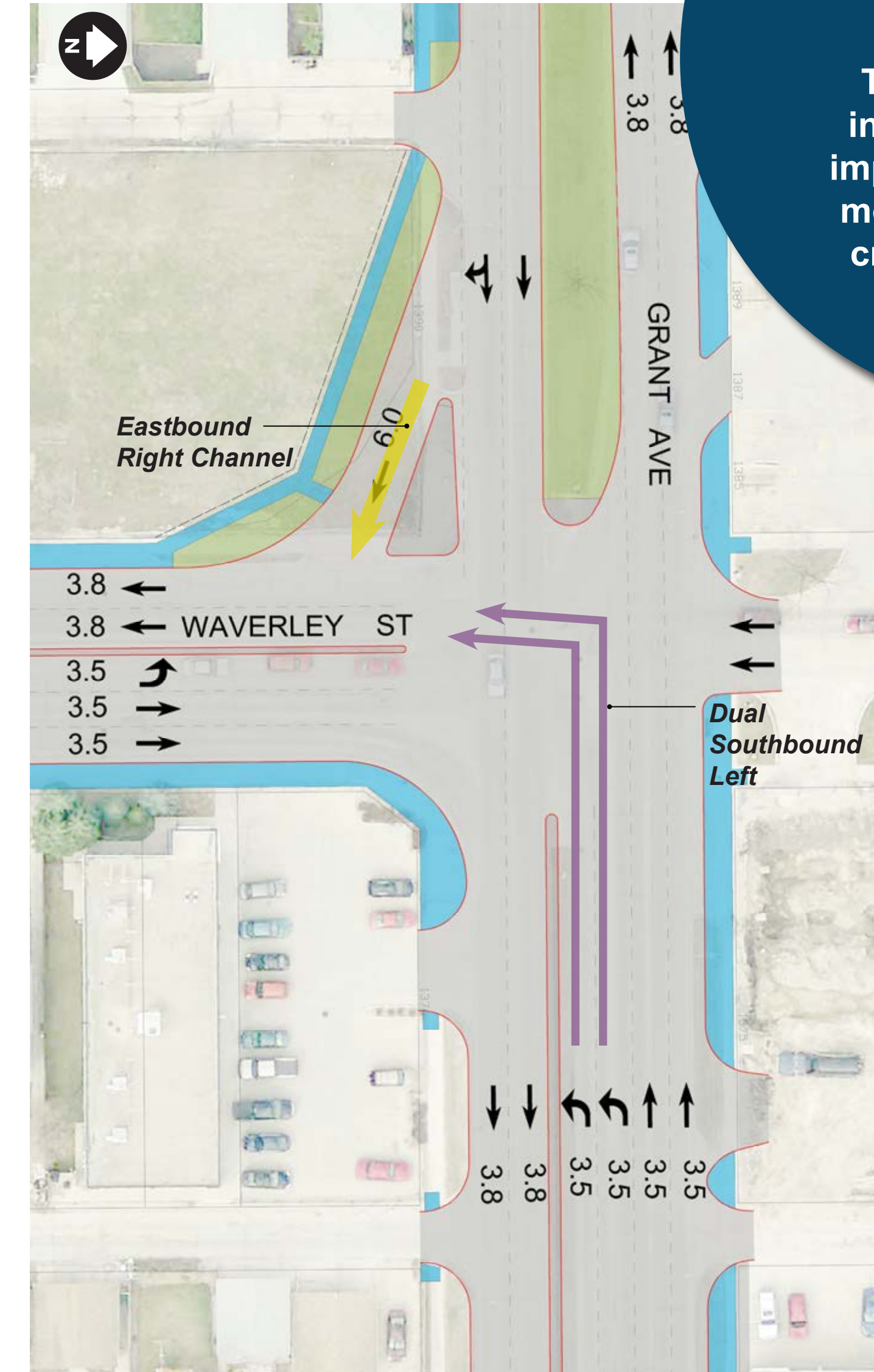
- Widen Waverley Street to three lanes in each direction through the Wilkes intersection to improve capacity;
- Add a second left turning lane from eastbound Wilkes Avenue to northbound Waverley.



*Waverley & Taylor Improvements*

**Waverley & Taylor Improvements**

- Twin Taylor Avenue (make it 4 lanes) for its entire length between Waverley Street and Lindsay Street;
- Add a second left turn lane from westbound Taylor Avenue to southbound Waverley Street, and increase the storage distance;
- Add a third lane northbound from Wilkes to Taylor as a dedicated right turn lane onto eastbound Taylor;
- The intersection of Waverley and Taylor will be lowered by approximately 900mm (3 feet) to maintain clearance under the underpass.



*Waverley & Grant Improvements*

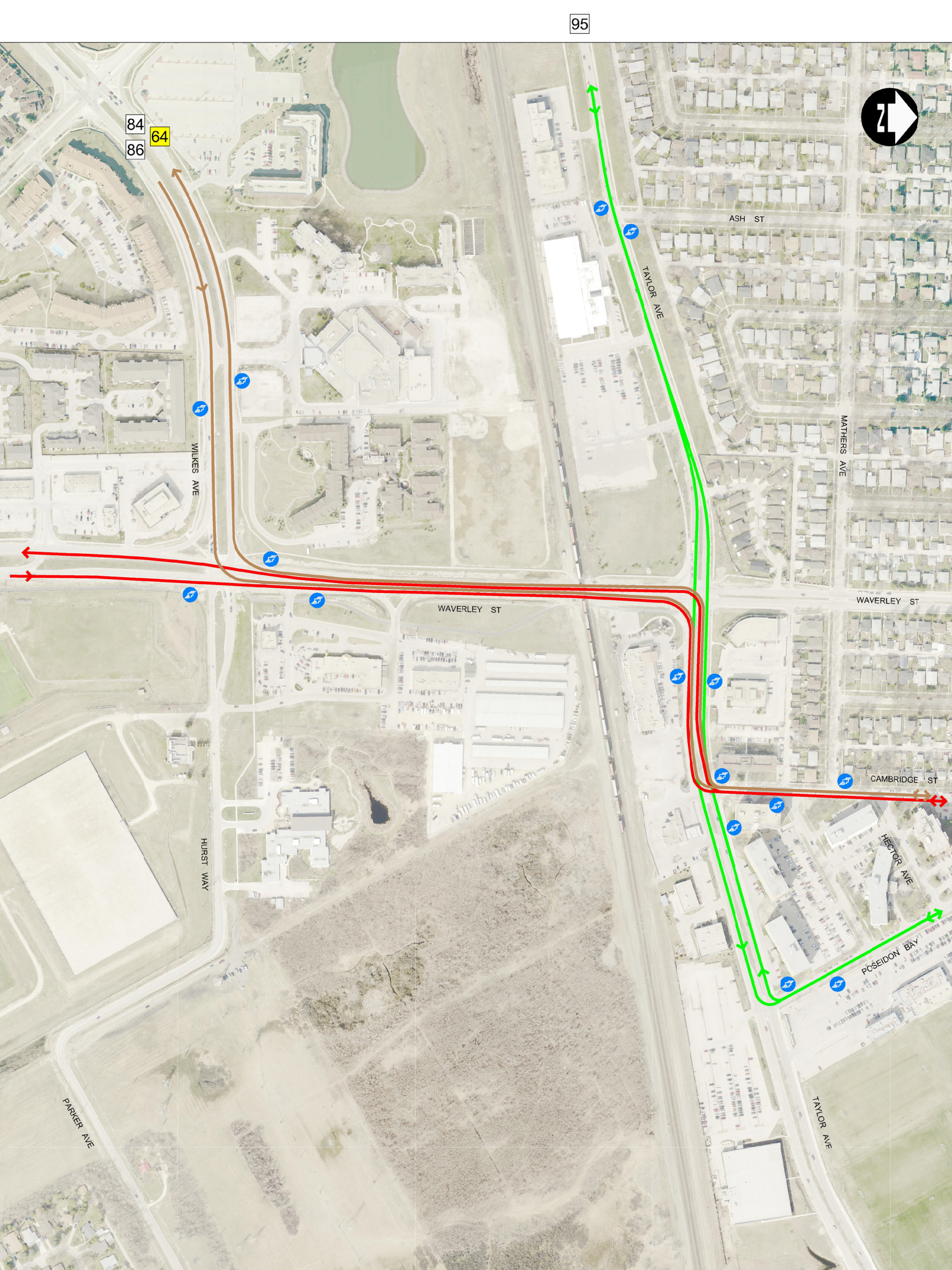
**Waverley & Grant Improvements**

- Add a second left turn lane from westbound Grant Avenue to southbound Waverley Street;
- No changes to one-way southbound traffic on Waverley north of Grant.

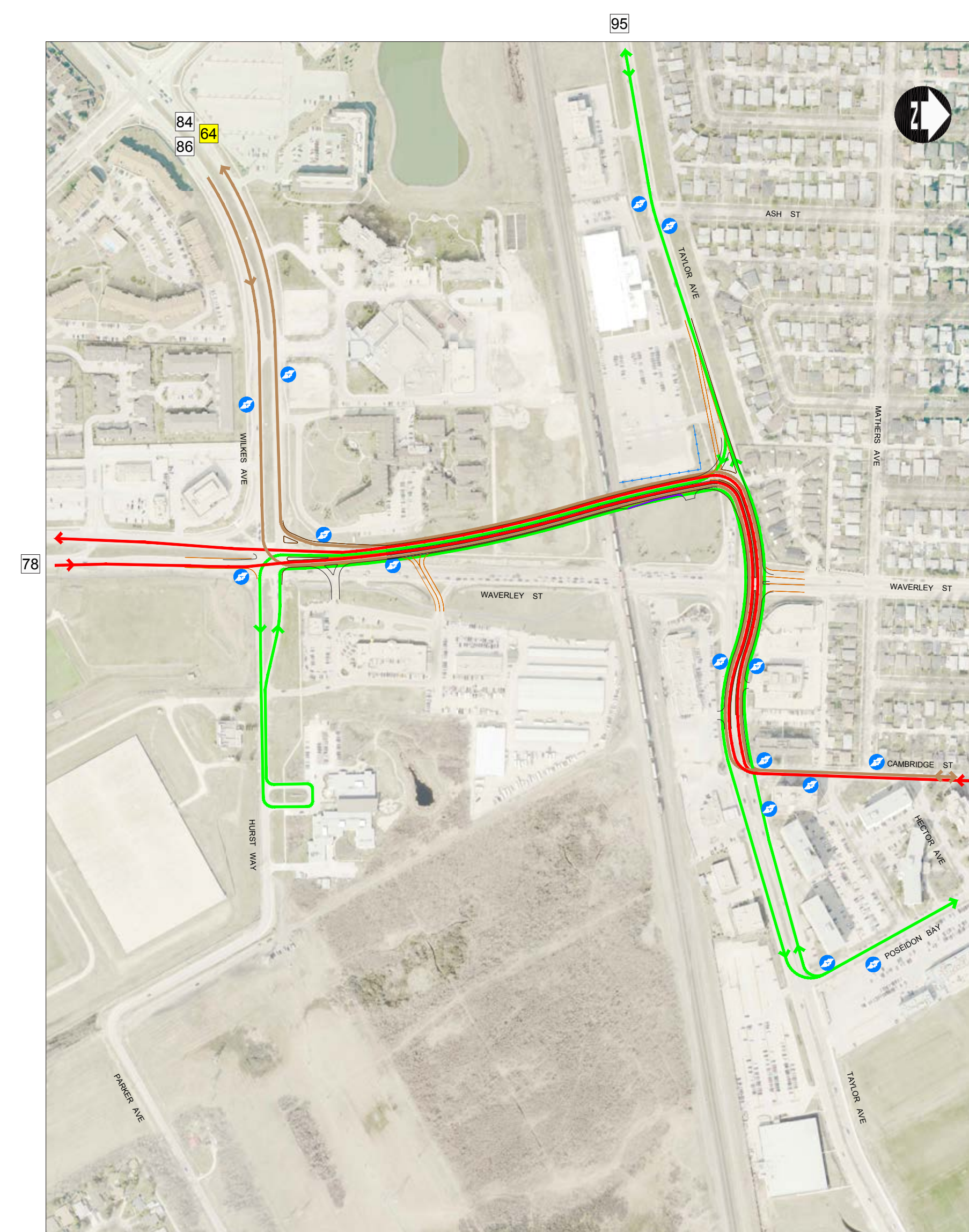
Major intersection improvements based on the traffic study are shown here.

The project team has included various other improvements to turning movements, pedestrian crossings, and private approaches.

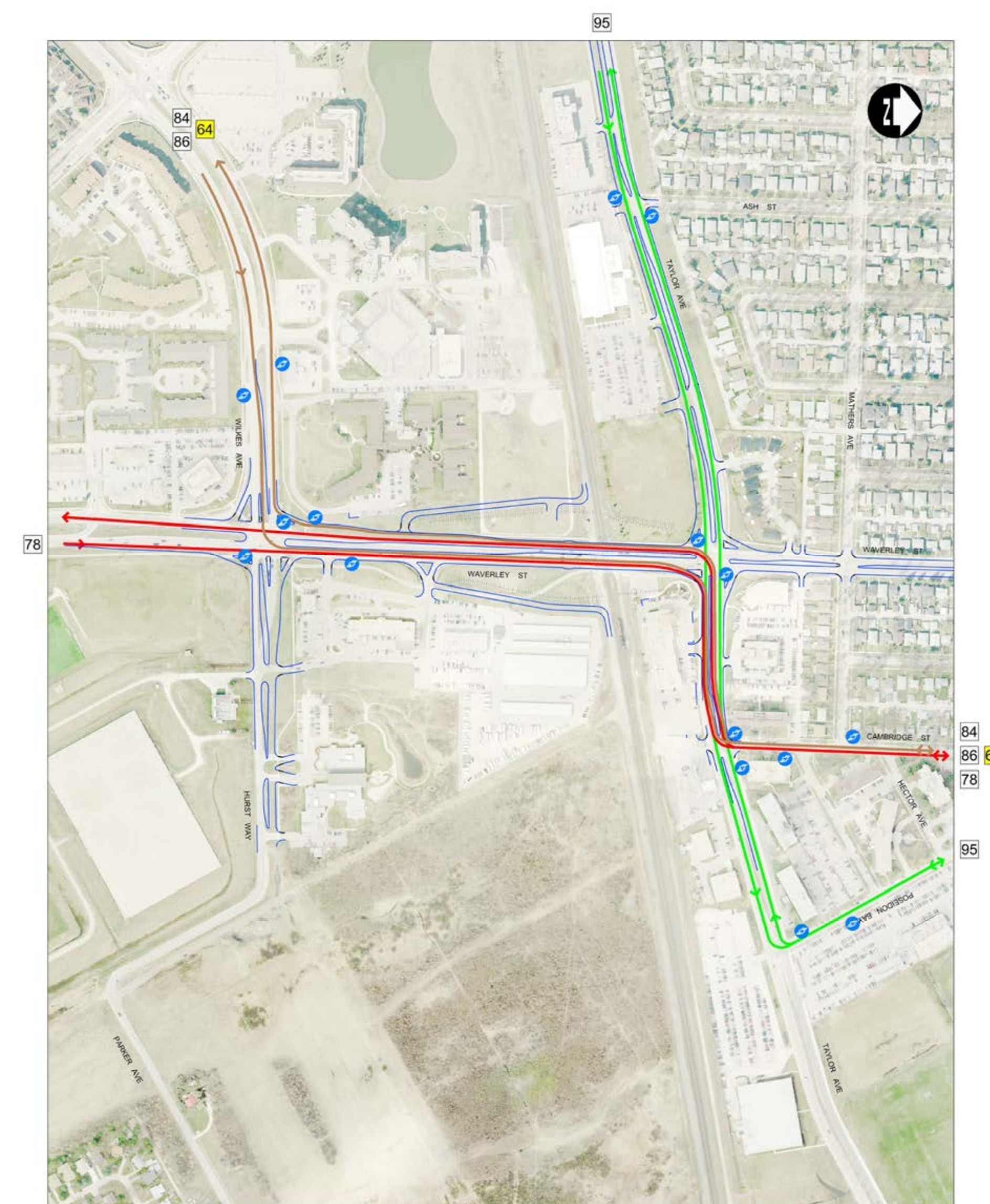




Winnipeg Transit Routes and Stops - Existing



Winnipeg Transit Routes and Stops - During Construction



Winnipeg Transit Routes and Stops - After

**Winnipeg Transit will need to alter some of their routes and relocate a handful of bus stops in order to maintain transit operations during construction.**

The maps above show where routes and stops are located currently, as well as where they will be located after construction.

**The design will allow for a future connection of the transit network to Phase 2 of the Southwest Transitway.**

In the future, transit priority measures may be implemented along Hurst Way and Wilkes Avenue to provide improved service to southwest Winnipeg and better integration with Rapid Transit.

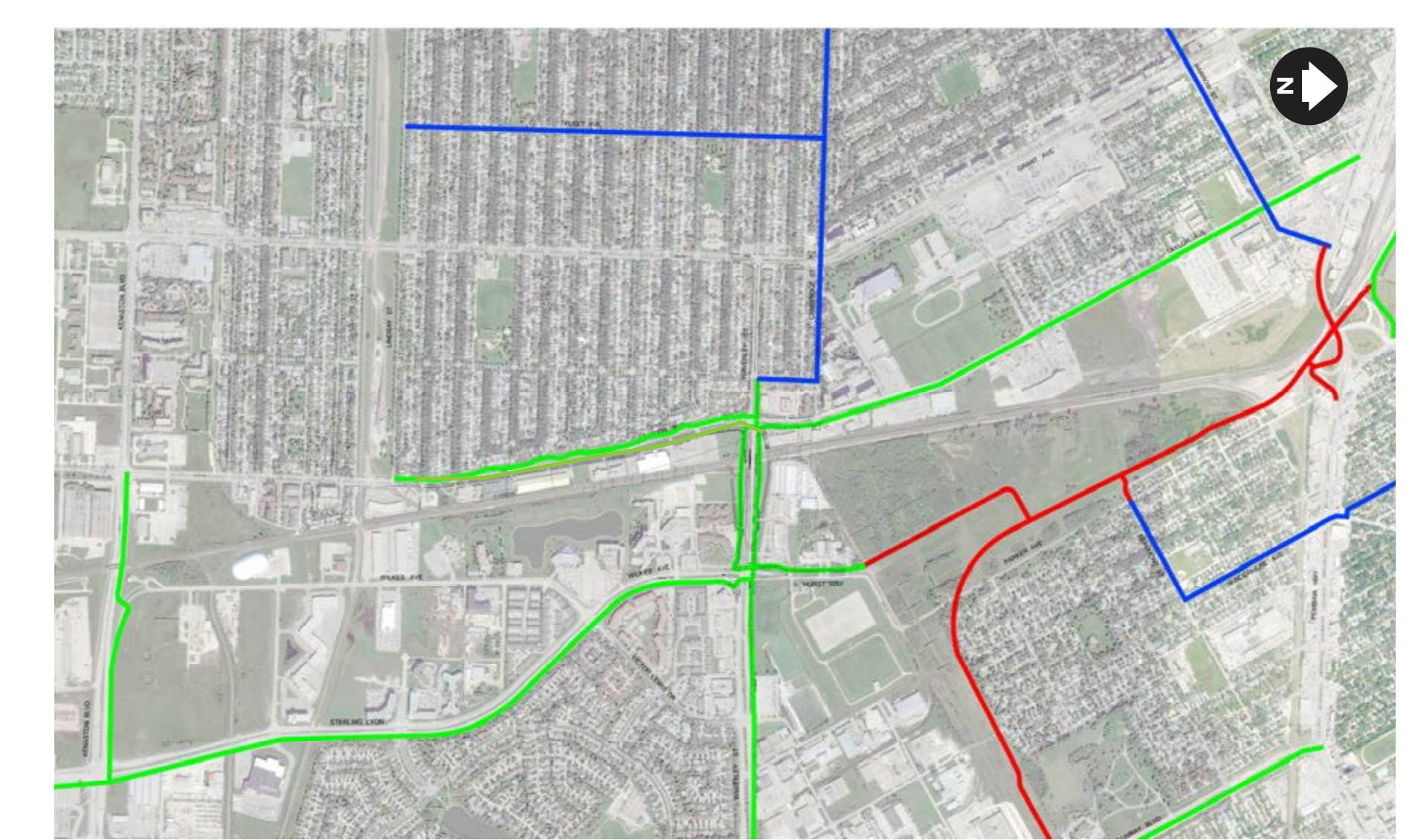


# PEDESTRIAN AND BIKE NETWORK



Pedestrian and cycling network before construction

- Off Street Path
- On Street Route/Facility



Proposed pedestrian and cycling network after construction

- Off Street Path
- On Street Route/Facility
- Future Southwest Transitway Path

**It is important that this project incorporate pedestrian and cycling facilities that are safe, direct, and up to current standards.**

As with vehicles, the pedestrian and cycling network between Wilkes and Taylor is the 'pinch point' across the railway, and handles the most users in the area. A high order facility that provides a separation of cyclists and pedestrians is best able to handle future growth. A separated sidewalk/bike path (S/BP) will be on both sides of Waverley.

**Following a facility review, the project has developed an overall design that utilizes:**

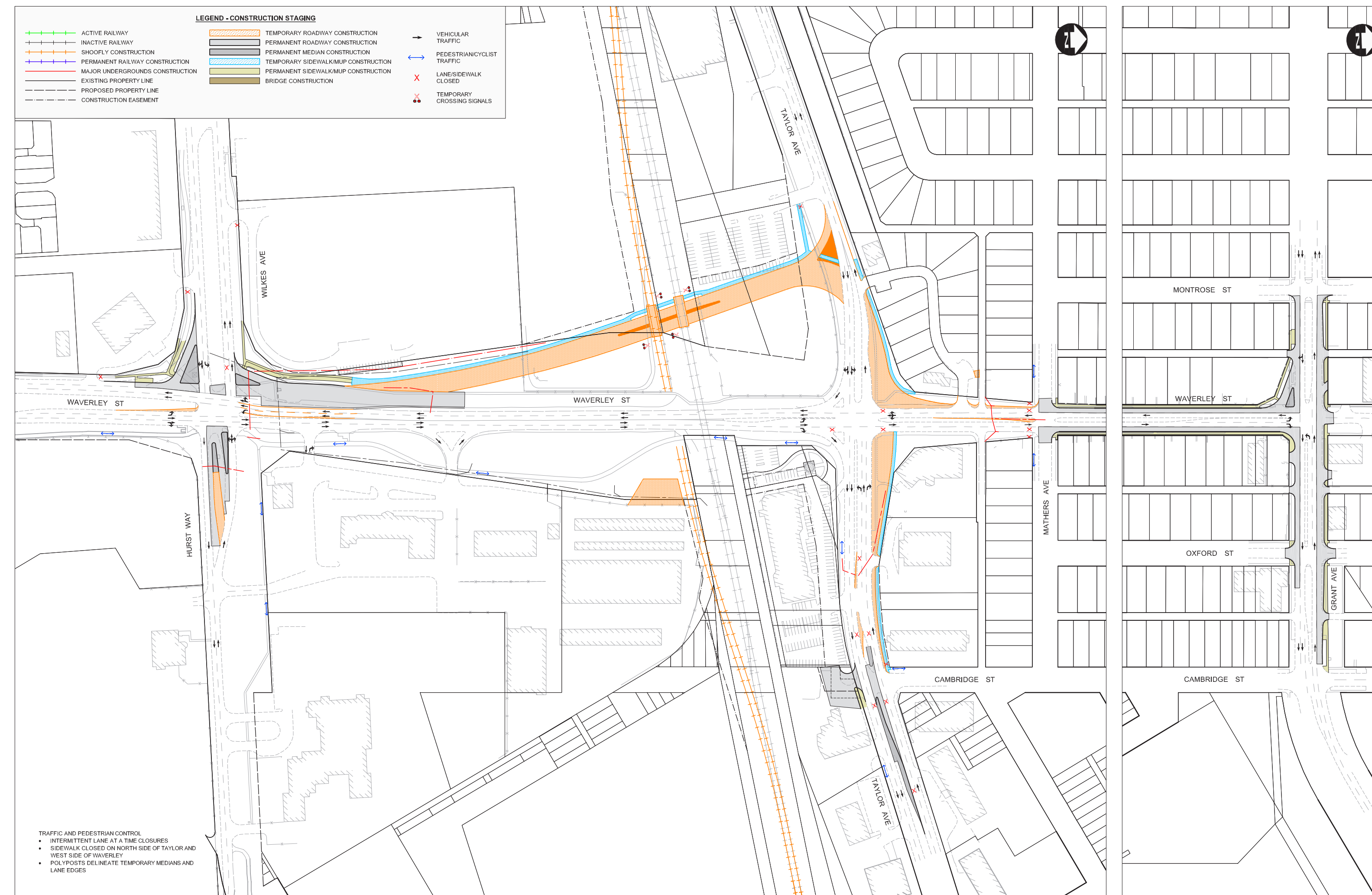
- separated sidewalks and bike paths (S/BP) with 1.5 metres for pedestrian sidewalks and 3.0 metres for bike paths
- multi-use paths (MUP) that are a total of 3.5 metres wide and are shared between cyclists and pedestrians.

The paths will be linked to the existing pedestrian and cycling network and to the corridor adjacent to the Southwest Transitway.

Due to the open design of the underpass, there will be plenty of natural light. Underpass lighting will be added to increase safety.

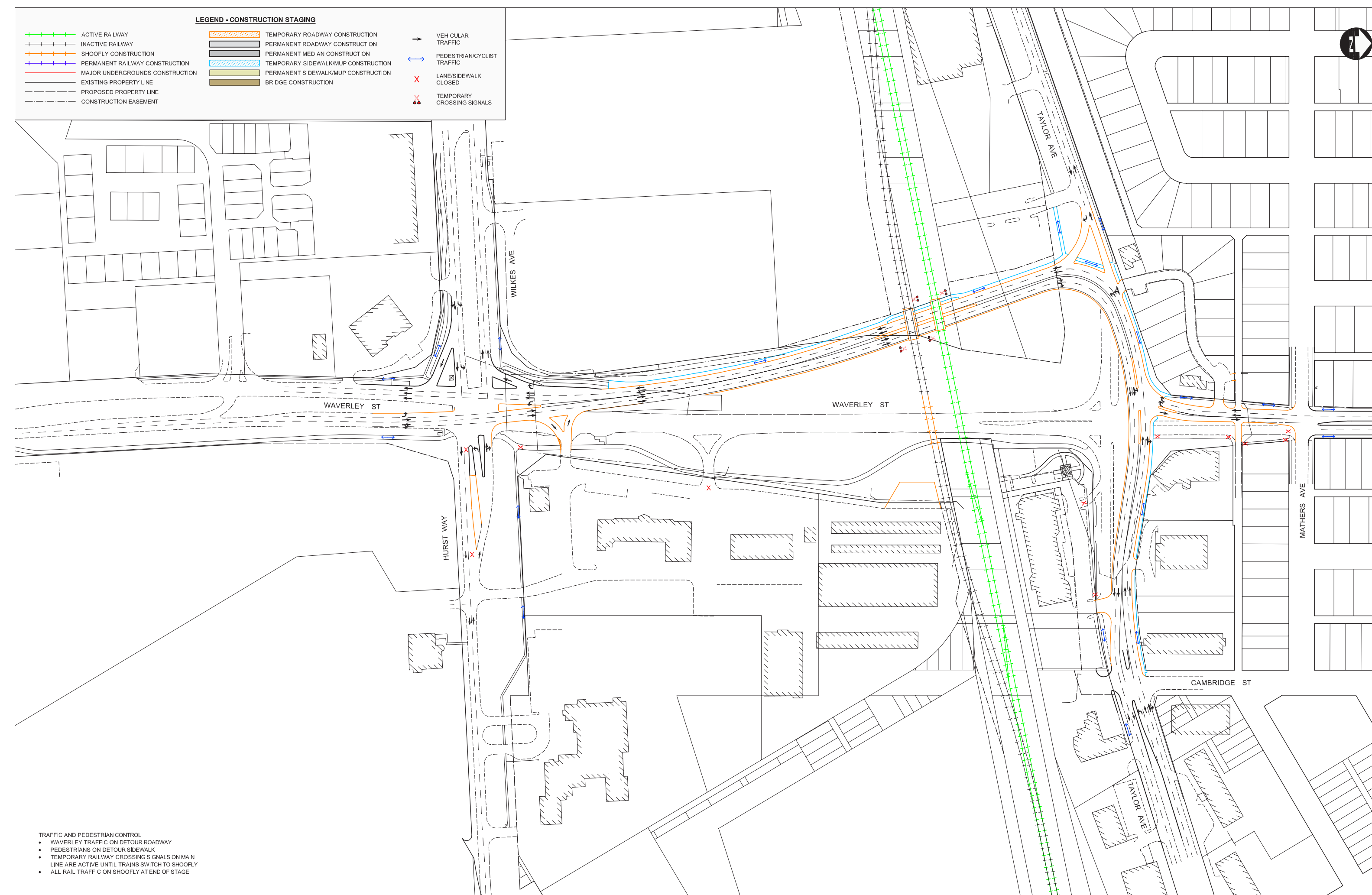


Waverley Underpass - Detailed Design  
**CONSTRUCTION PHASING**



Winter - Fall 2017  
 Detour and Road  
 Construction

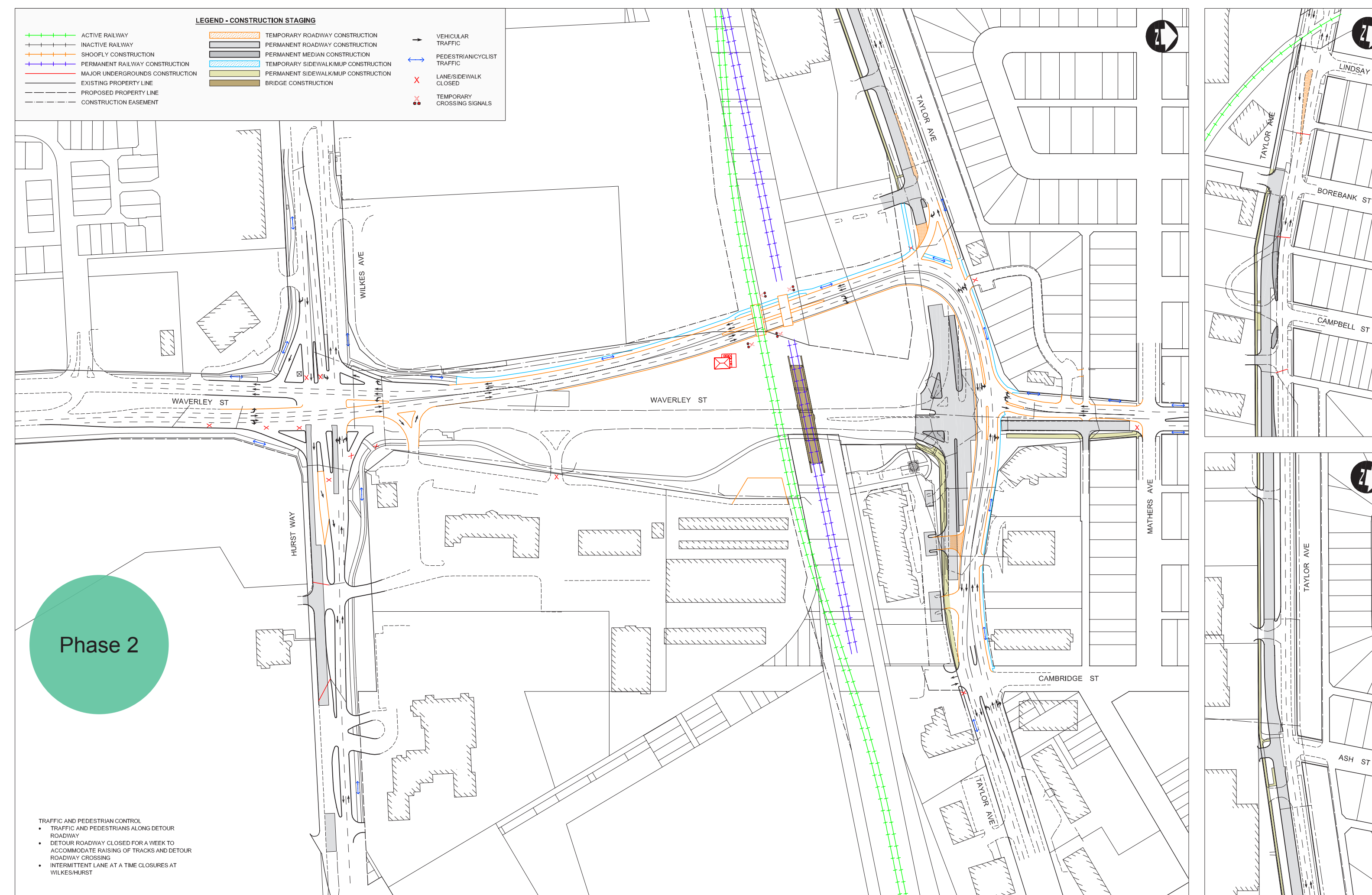
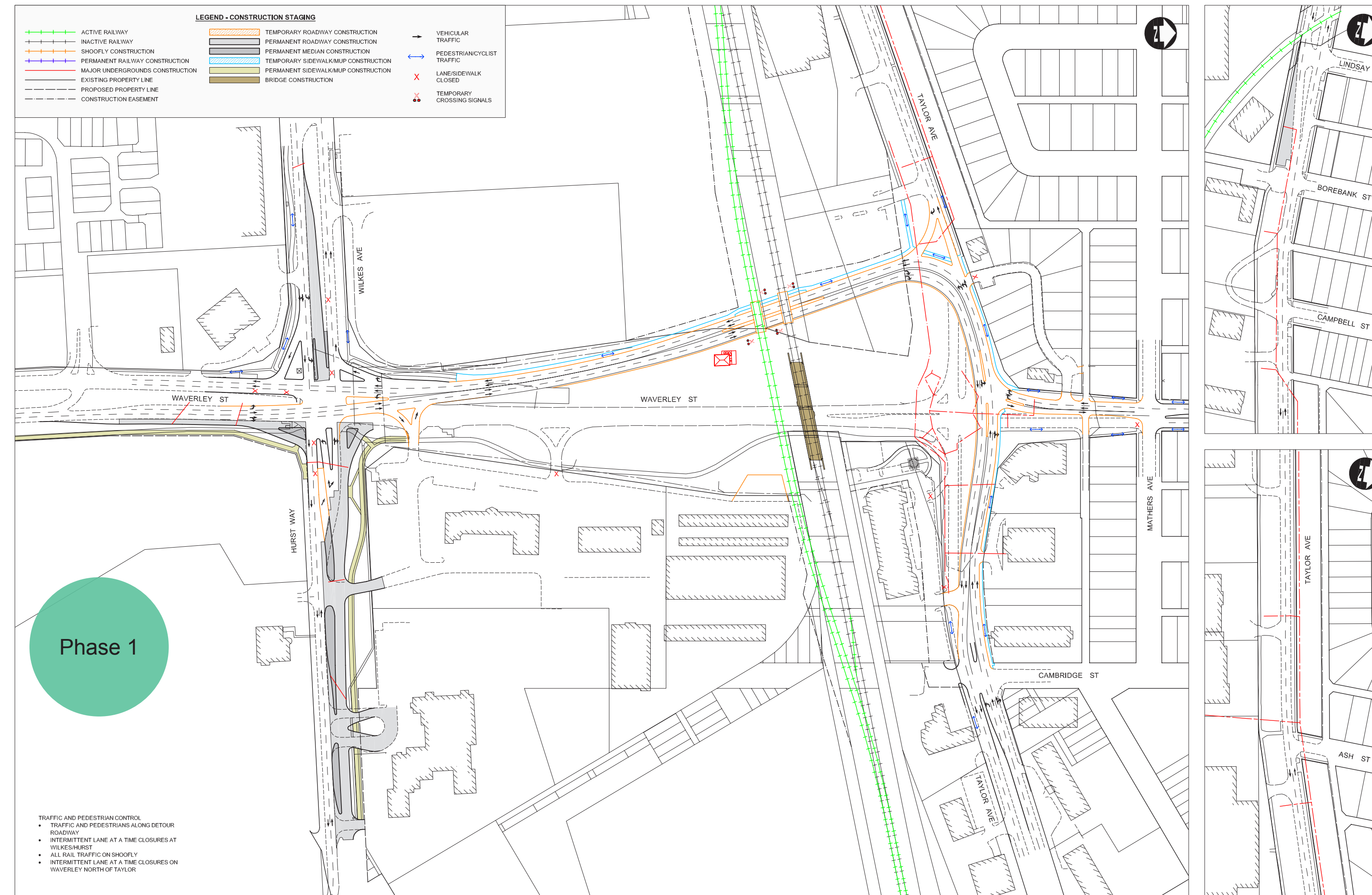
- Road & rail detours
- Grant/Waverley intersection improvements
- Waverley rehab



Fall 2017  
 Detour OPEN



Waverley Underpass - Detailed Design  
**CONSTRUCTION PHASING**

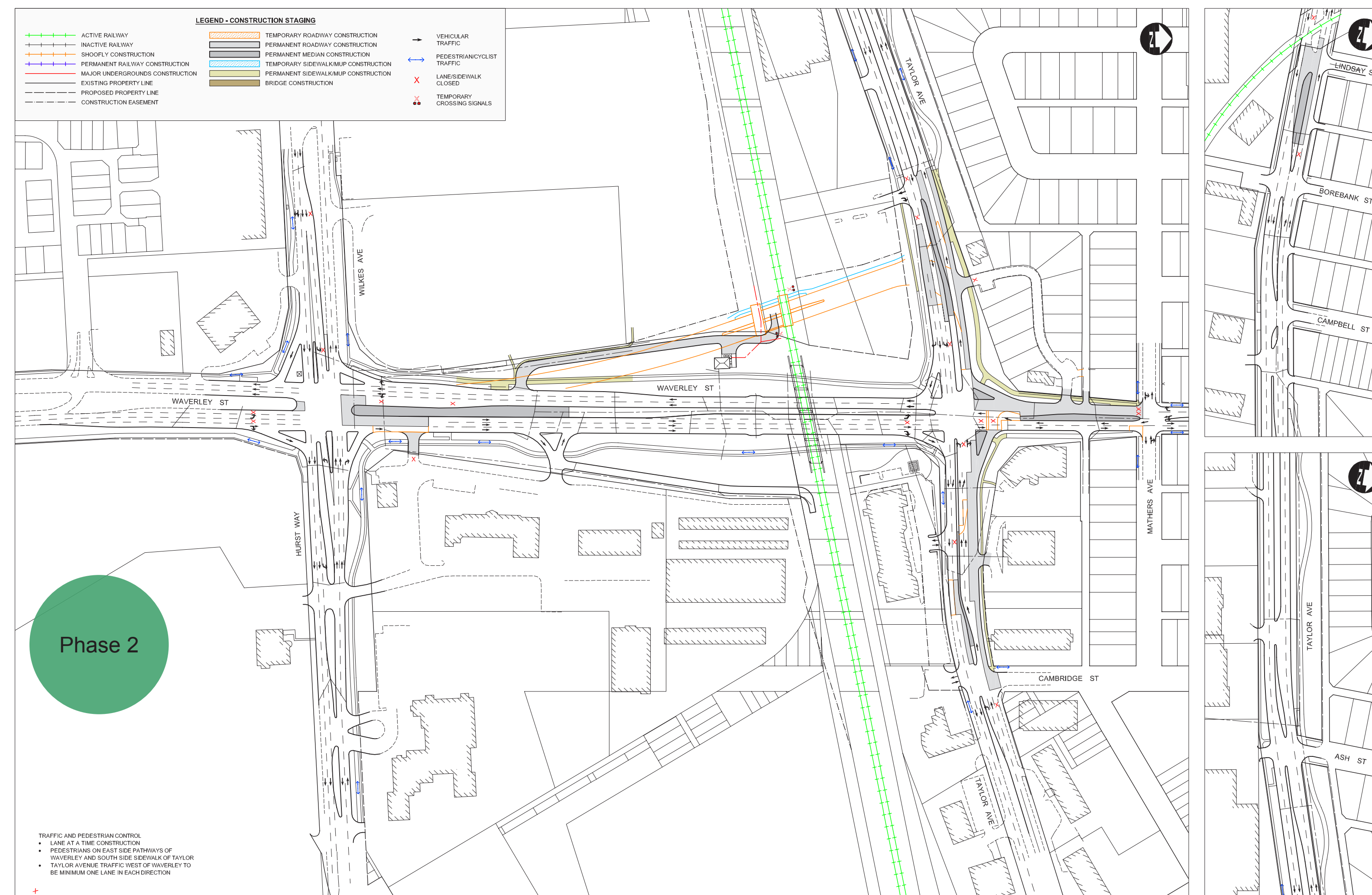
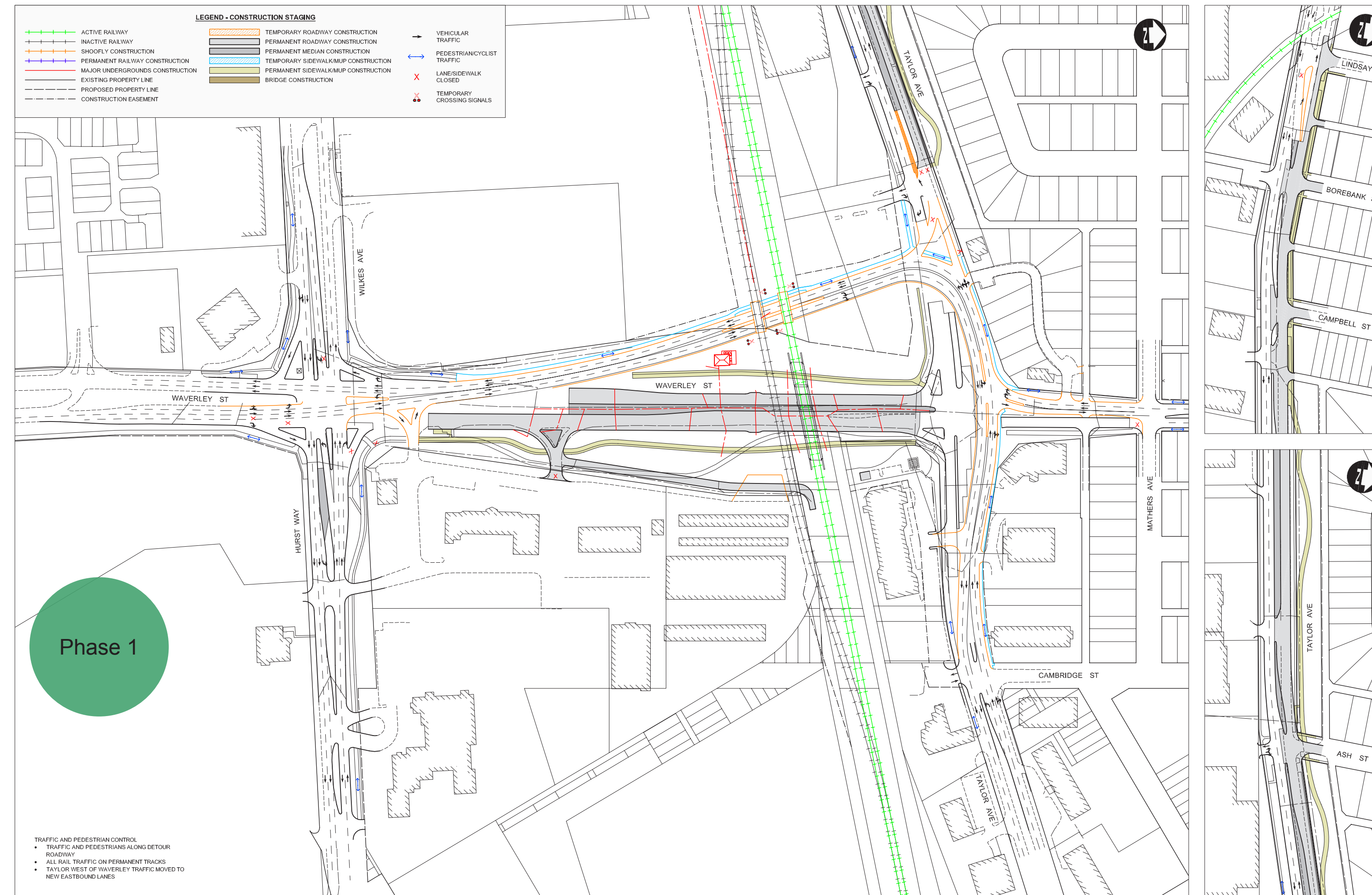


Fall 2017 - Fall 2018  
 Bridge and Road  
 Construction

- Rail bridge
- Wilkes/Waverley intersection improvements
- Hurst Way widening
- Taylor Avenue widening (South lanes)
- Taylor/Waverley intersection
- Pump house



Waverley Underpass - Detailed Design  
**CONSTRUCTION PHASING**



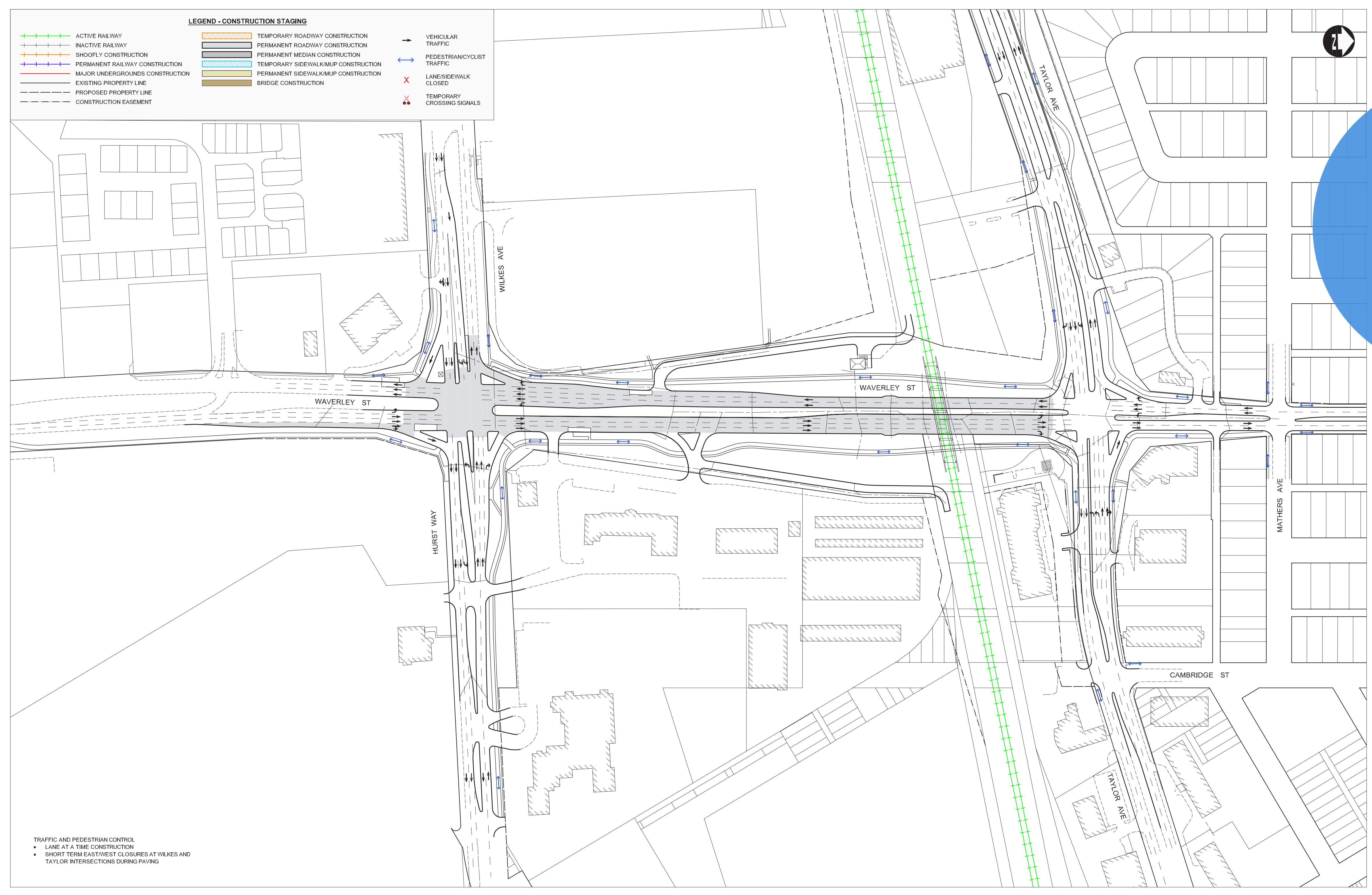
Fall 2018 - Fall 2019  
 Underpass & Road  
 Construction

- Waverley underpass
- Taylor Avenue widening (North lanes rehab)
- Pedestrian & cycling paths



Waverley Underpass - Detailed Design  
**CONSTRUCTION PHASING**

Public Open House  
 6 October 2016  
 Board 17



Fall 2019  
 Waverley  
 Underpass  
 Open

Fall 2019 -  
 Summer 2020  
 Detour Removal &  
 Landscaping

- Road & rail detour removal
- Landscaping
- Minor works

Summer 2020  
 Construction  
 Complete



### When will this be built?

Detailed design will take place throughout 2016 and construction will begin around January 2017. Construction will be complete by December 2019 with some minor work such as landscaping continuing into 2020.

### Will I still be able to use Waverley and Taylor?

Both Waverley Street and Taylor Avenue are expected to remain open to traffic during construction via a detour. Please see the detour map for details about how traffic will flow during construction. During construction, eastbound traffic on Taylor Avenue will be required to turn southbound on Waverley Street. Eastbound Taylor Avenue traffic is encouraged to use Grant Avenue as an alternate route. Additionally, southbound traffic on Waverley will be required to turn westbound on Taylor Avenue to access the detour – eastbound (left) turns at Taylor Avenue will not be permitted during construction.

### How much is this going to cost?

Total project cost is approximately \$155 million.

### How will the project be paid for?

The project will be funded by the City of Winnipeg, the Province of Manitoba and the Government of Canada, as well as contributions by CN who has a financial obligation for a portion of the rail crossing under an existing agreement with the City of Winnipeg.

### Can the rail line be moved out of the city?

Relocating rail lines is a long term concept that would require consensus from a multitude of stakeholders. Building the underpass will not prevent discussions in regards to rail relocation. The public service is working in close collaboration with its partners at the Province of Manitoba and Economic Development Winnipeg to perform a comprehensive rail study.

The City needs a proactive plan now to accommodate the rapid growth in the southwest quadrant of the City and to alleviate the increasing traffic congestion in this area due to heavy train operations.

### Will properties be required, either during construction or post-construction?

The vast majority of the project can be built on City owned land and right-of-way. However, construction easements or small parcels of land will be needed for the construction of this project. The project team has been in contact with affected landowners throughout the design process.

### How will transit be affected?

Bus routes and bus stops will be relocated or rerouted during construction. Please see Board 12 for the proposed temporary and permanent locations of transit routes and stops before, during, and after construction.

### How will pedestrian and cycling facilities be affected?

A temporary pathway will be provided on the west side of the roadway detour to accommodate pedestrians and cyclists during construction. The final configuration of pathways is shown on the overall detailed design, and features pathways on both sides of Waverley Street, as well as a new pathway on the north side of Taylor Avenue.

### Was an overpass considered?

An overpass was considered early on in the preliminary design process. However, due to heights, clearance requirements, property impacts, and other engineering constraints, this option was deemed not feasible.

### What are the environmental impacts?

There are no environmental impacts of note that would result from this project. Soil sampling within the proposed underpass area indicates no issues of concern, and is consistent with Manitoba Conservation regulations. The project will also involve reconstruction of the existing rail bed and replacement of the rail tracks in the study area with seamless rail, which may decrease vibration and noise from rail activities.

### Will traffic increase as a result of this project?

The results of the transportation study and traffic modeling indicate that traffic as a whole may increase due to overall growth in the southwest quadrant of the city. However, traffic is expected to flow much better due to the elimination of the congestion caused by trains, resulting in an improvement to traffic in the area overall.

### Will the project involve changes to street function and design in River Heights, such as the current one-way designation on Waverley north of Grant?

No changes are proposed for the existing street functions and patterns in River Heights.

### Is a Sterling Lyon connection to Taylor or Pembina still being considered?

No, this option was examined by the City of Winnipeg, and is no longer being considered. The Waverley location continues to be the preferred rail crossing location, and has been identified as a potential crossing location since at least the early 1970s. The right-of way and property required for the Waverley Underpass is largely assembled, and would have minimal property impacts. In addition, there is an existing agreement in place with CN Rail for a grade separated rail crossing at Waverley, which obligates the railway to pay for a portion of the crossing.

### Will the four-way stop at the intersection of Taylor Avenue and Borebank Street remain in effect after construction?

Yes, the existing four-way stop at the intersection of Taylor Avenue and Borebank Street will remain in effect once the twinning of Taylor Avenue between Lindsay Street and Waverley Street is complete.

### Will Lindsay Street be widened or modified as part of this project?

No, there are no plans to do any work on Lindsay Street as part of the Waverley Underpass project.



Spring 2014 - Winter 2015  
Preliminary Design & Public Consultation

Winter - Summer 2016  
Develop Detailed Design

**WE ARE HERE**  
Summer - Fall 2016  
Refine Detailed Design

Winter 2017  
Detailed Design Complete

Winter - Fall 2017  
Detour and Road Construction

Fall 2017  
Detour OPEN

Fall 2017 - Fall 2018  
Bridge and Road Construction

Fall 2018 - Fall 2019  
Underpass & Road Construction

Fall 2019  
Waverley Underpass Open

Fall 2019 - Summer 2020  
Detour Removal & Landscaping

Summer 2020  
Construction Complete

The feedback collected today will be analyzed and further utilized by the design team, as they refine the detailed design. We will continue to communicate with stakeholders in meetings, and through the City of Winnipeg's Major Projects webpage until the end of construction.

Thank you for attending! We want to hear from you. Please take a moment to complete and submit the exit survey.

All open house materials and the exit survey are posted on the project website.

[www.winnipeg.ca/waverleyunderpass](http://www.winnipeg.ca/waverleyunderpass)



- Road & rail detours
- Grant/Waverley intersection improvements
- Waverley rehab

- Rail bridge
- Wilkes/Waverley intersection improvements
- Hurst Way widening
- Taylor Avenue widening (South lanes)
- Taylor/Waverley intersection
- Pump house

- Waverley underpass
- Taylor Avenue widening (North lanes rehab)
- Pedestrian & cycling paths

- Road & rail detour removal
- Landscaping
- Minor works

If you have any further questions, please don't hesitate to contact the public consultation team:

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Email: [aprokopanko@dillon.ca](mailto:aprokopanko@dillon.ca)

**David Marsh**  
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