Queens Quay East Revitalization

Issues Identification

July 22nd, 2020

Policy Context

Central Waterfront Secondary Plan

A) REMOVING BARRIERS/MAKING CONNECTIONS

If waterfront renewal is to be truly successful, the waterfront will have to feel like and function as part of the city fabric. The first principle of the Plan is to **remove barriers and reconnect the city with Lake Ontario** and the lake with the city. This is the key to unlocking the unrealized potential of Toronto's waterfront. The **new connections will be north/south and east/west**. They are functional, thematic and symbolic in nature. The following **"Big Moves"** will support the removal of barriers and the creation of new connections across the Central Waterfront:

A2_A NEW WATERFRONT TRANSIT NETWORK

Public transit will be a top priority for connecting people and places to and within the renewed waterfront. An extended Waterfront Light Rapid Transit line will stretch across the Central Waterfront from Exhibition Place to the Poit Lands with excellent connections into the city as generally illustrated on Map B. Expanding GO Transit rail services and upgrading Union Station will be critical elements of the new waterfront transit plan.

A4 QUEENS QUAY, TORONTO'S WATER VIEW DRIVE

Queens Quay will become a **scenic water view drive** and an important component of the Toronto street network from Bathurst Street to Cherry Street **providing ready access to the public activities on the waterfront and pedestrian connections to the water's edge.** It will be designed to meet the diverse needs of motorists, transit users, cyclists and pedestrians as well as providing opportunities for vistas to the harbour and lake.

Existing Site Context

Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification

Transit Planning Update

Phasing Study

Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification

The purpose of this study is to evaluate alternative Phase 1 options for the phased funding and implementation of the Waterfront Transit Network.

The study analyzes the phase 1 delivery options for 2 separate sections:

1. **Area 1** – Union Station Phasing
2. **Area 2** – Surface Network Phasing

Key explorations:

- How many new platforms are needed at Union Station in Phase 1?
- Use update ridership demand model to determine what is required to satisfy demand at the Union Loop in terms of vehicle headways and passenger flow
- What is the ideal phase 1 terminus in the east?
- What is the most strategic phase 1 implementation of the network in terms of construction phasing and value for money
- Is an interim bus-based solution a possibility?

Transit Planning Update

Portal Selection Study

Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification

Outcomes of the 2010 EA

- The Portal west of Yonge had significant impacts on adjacent commercial properties
- The Portal east of Yonge was selected as the preferred location

Subsequent Design and Costing

- The Combined Sewer Overflow (CSO) at the foot of Yonge Street would need to be relocated at significantly higher costs than originally anticipated
- Updated option west of Yonge, with a Yonge Street slip fill underwent further conceptual design

This Study

- Update design to reflect new findings and to mitigate issues
- Update costing to reflect changes
- Re-evaluate the updated designs and select a preferred alternative

EA Portal Location – West of Freeland Street

Alternative Portal Location – West of Yonge Street

Transit Planning Update

Portal Selection Study

Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification

Criteria	Option Q1A (2020) – portal west of Yonge		Option Q2A (2020) – portal east of Yonge	
Planning Policies	No decision relevant factors			
Urban Design	Opportunity for additional open space at base of Yonge Street Removes unsignalized driveways on MGT, improving trail conditions	✓	Maintains existing unsignalized driveways and loading zones conflicting with MGT	×
Transportation	Takes bus and taxi loading off street, which was conflicting with the Martin Goodman Trail	=	Avoids a signalized intersection for transit at Yonge/Queens Quay. A t-intersection is maintained.	=
Socio-Economic	Relocation of vehicular entrance to a driveway that is not along the building frontage	×	Minimal impact	✓
Natural and Cultural	No decision relevant factors			
Cost and Constructability	$40-50 Million ($2020) less in project cost	✓	Requires relocation of CSO Less operating/maintenance cost (approx. $10 Million NPV over 30 years)	×
Overall:	Technically Preferred	✓		

Transit Planning Update

Changes since the EA

Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification

- A Union Station Streetcar Loop
- B Queen's Quay Station
- C Streetcar Portal Location
- D Yonge Street Slip Lake Fill
- E Temporary Turnaround Loop (At Parliament Street)
- F Parliament Street Alignment (Lakeshore Blvd. to Queen's Quay)
- G Queen's Quay Blvd. Alignment (Small St. to Silo St.)
- H Parliament Street Lakefill
- Waterfront Transit Network (East Bayfront Transit EA, 2010)
- Waterfront Transit Network (Lower Don Lands Master Plan EA, 2014)

Project Description & Background

Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification

Background

- Update of previous 2012 design for Queens Quay East to current best practices and to integrate lessons learned from Queens Quay West
- 30% Preliminary Design and Engineering and Costing to inform business case for Waterfront Transit implementation funding

Description/ Scope of Work

- 30% design for transit , road, and public realm for Queens Quay East from Bay to Cherry St. including a transit connection to Distillery Loop is the full scope.
- This team is responsible for area 2A from Bay St. to future Silo St. inclusive of slip fill at Yonge and Parliament slips to facilitate transit extension.
- Transit Portal & Phasing Studies

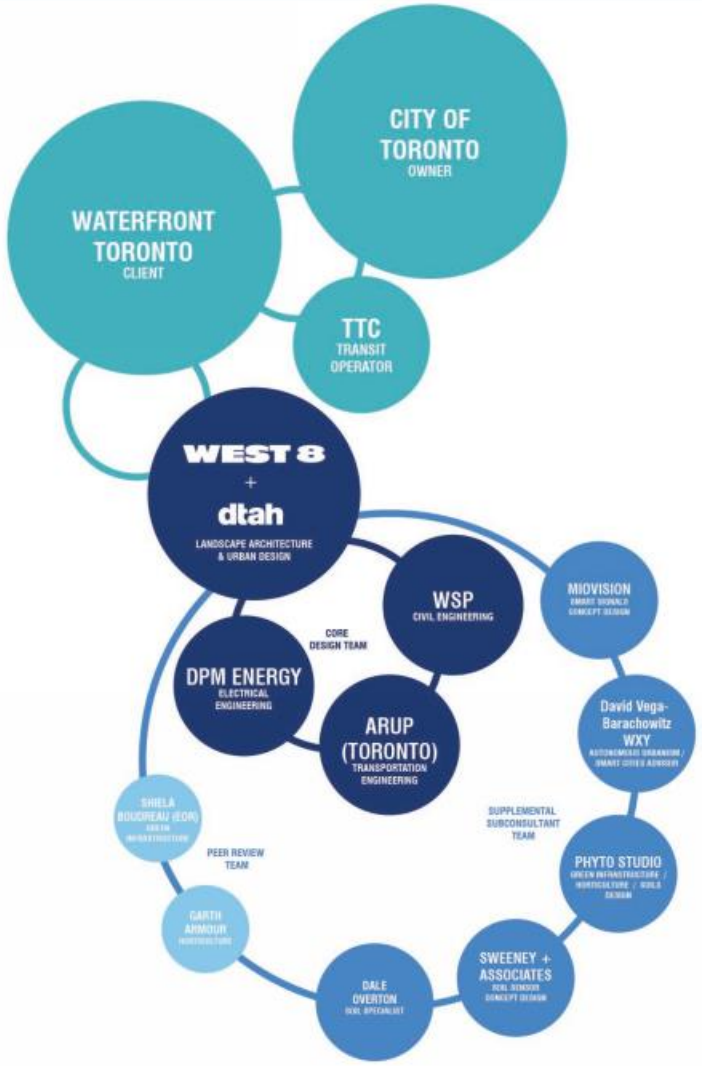
Anticipated Timeline

- 30% design for Area 2A by Dec. 2020
- Full program 30% design by Dec. 2021
- Future phases of design and implementation subject to funding

Project Team

Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification



<u>Core Team:</u>

West 8 + DTAH – *Landscape Architecture & Urban Design*

ARUP (Toronto) – *Transportation Engineering*

WSP – *Civil Engineering*

DPM Energy – *Electrical Engineering*

<u>Supplementary Consultant team:</u>

- Dale Overton – *Soil Specialist*
- Swneeney + Associates – *Soil sensor concept design*
- Phyto Studio – *Green infrastructure, horticulture, soils design*
- David Vaga-Barachoviz WXY – *Autonomous urbanism / smart cities adviser*
- Miovision - *Smart signals concept design*

<u>Peer Review Team</u>:

- Sheila Boudreau – *Green Infrastructure*
- Garth Armour - *Horticulture*

Continuous Identity with the West with Optimizations

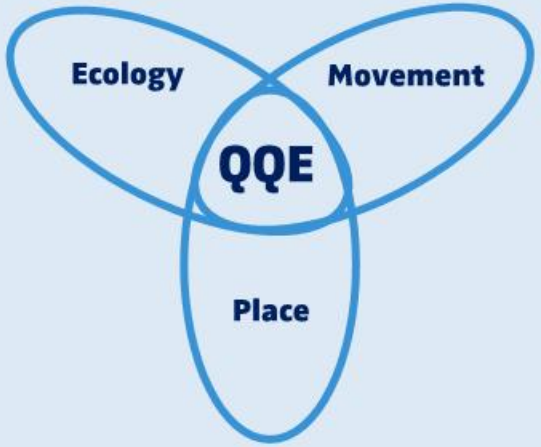
Design Brief

Vision

Queens Quay is Toronto's **primary lakefront boulevard** connecting its existing and emerging precincts, parks and public spaces and **establishing a strong cohesive character across the waterfront**. Building on the successful revitalization of the western section, Queens Quay East will further integrate urban ecology, active transportation, and place-making to create a street that is resilient to future change.

Objectives:

1. Integrating with Urban Ecology
2. Moving People
3. Building a Destination



Design Considerations

1/ Integrating with Urban Ecology: Design for ecological performance

- Expanded **tree canopy and planting**
- Stormwater management and **improved water quality through green infrastructure**
- More **permeable ground surface**
- Enhanced **user comfort**
- Habitat and eco-corridors to support **biodiversity and pollinator species**
- **Resilient species selection** for waterfront **microclimate**
- Customized planting and drainage details to address **variable lake levels**
- **Low-maintenance** landscape that relies **on natural processes**
- Provisions for **monitoring and adaptive management** of ecological systems

Design Considerations

2/ Moving People: Design for safety, convenience and flexibility

- Guide user behavior and **improve clarity between modes** at intersections
- Improve **pedestrian crossings**
- Convenient and **safe intermodal interactions**
- More **convenient cycling environment** for all users
- Accommodate **new forms of micro-mobility**
- **Flexibility** to accommodate new trends and to optimize road space and operations
- Ongoing performance review and **adaptive management**

Design Considerations

3/ Building a Destination: Design for character and experience

- Continuity of **palette of materials** and **design language** with Queens Quay West
- Greater **coherence of paving materials** across street section
- **Durable materials and craftsmanship** of pavement and markings
- Design **slips and intersections as destinations**
- Design for **flexibility** to close down parts of the street for festivals
- **Consistent palette** of street furniture, lighting, details
- **Integrated infrastructure for programming** – temporary art, pop ups, markets etc.
- **Arrangement** of street furniture and planting to encourage **exchange and social interaction**

DRP Stream 2: Public land – Site Plan Approval

Project Approval Stage

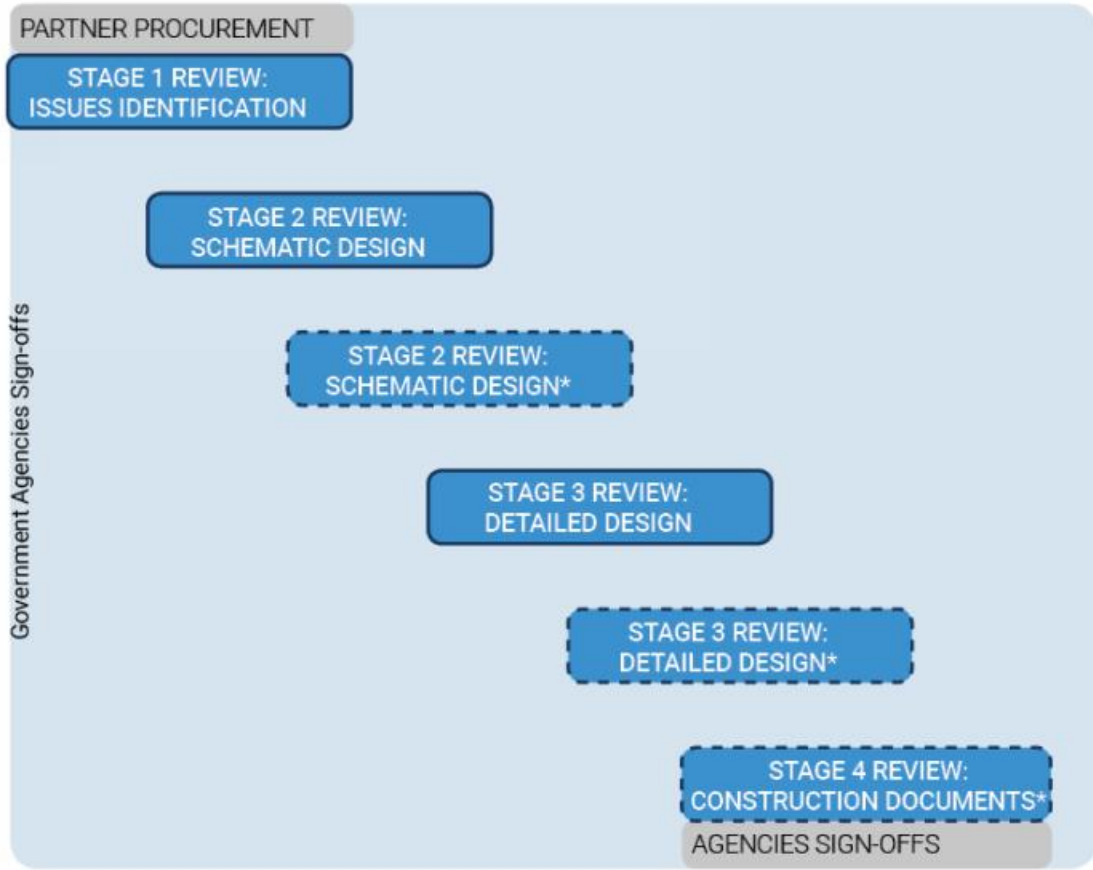
Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification

November 2012
Stage One review

Vote: Full Support

July 2020 →



Recap from Nov. 2012

Stage One Consensus Comments

Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification

- Encourage consistency and continuity with Central Waterfront Queens Quay designs.
- Would like the design to come back to panel to present an update on the agreed transit solution and how it integrates into the design.
- Encourage more diversity in the street tree mix.
- Review TTC shelter and the signage/wayfinding designs and provide an update at the next presentation.

Areas for Panel Consideration

Waterfront Toronto

Queens Quay East Revitalization

Proponent: Waterfront Toronto
Design Team: West8, DTAH
Review Stage: Issues Identification

- Approach to continuous identity with optimizations
- Design brief priority areas
- Intersection concepts and arrival experience
- Stormwater management and planting approach
- Accessibility improvements and material choices
- Future-proofing mobility concepts

Queens Quay East 30% PDE Design Review Panel Issues identification

July 22, 2020

WEST 8 + utah

Agenda

Where We Are Coming From

1. Queens Quay West: 2007 - 2012

- The Waterfront Welcome:
  Queens Quay, The Secondary Waterfront
- Design Background:
  Achievements of Queens Quay West

2. Learning from Queens Quay West: 2012 - 2020

- Opportunities for Innovation

3. Queens Quay East: 2012 - present

- Adjacent Development, Transportation and Planning Frameworks
- Design Criteria and Assumptions
- Best Practice Development
- Pioneering the Toronto Cycling Network
- COVID-19

Where We Are Going

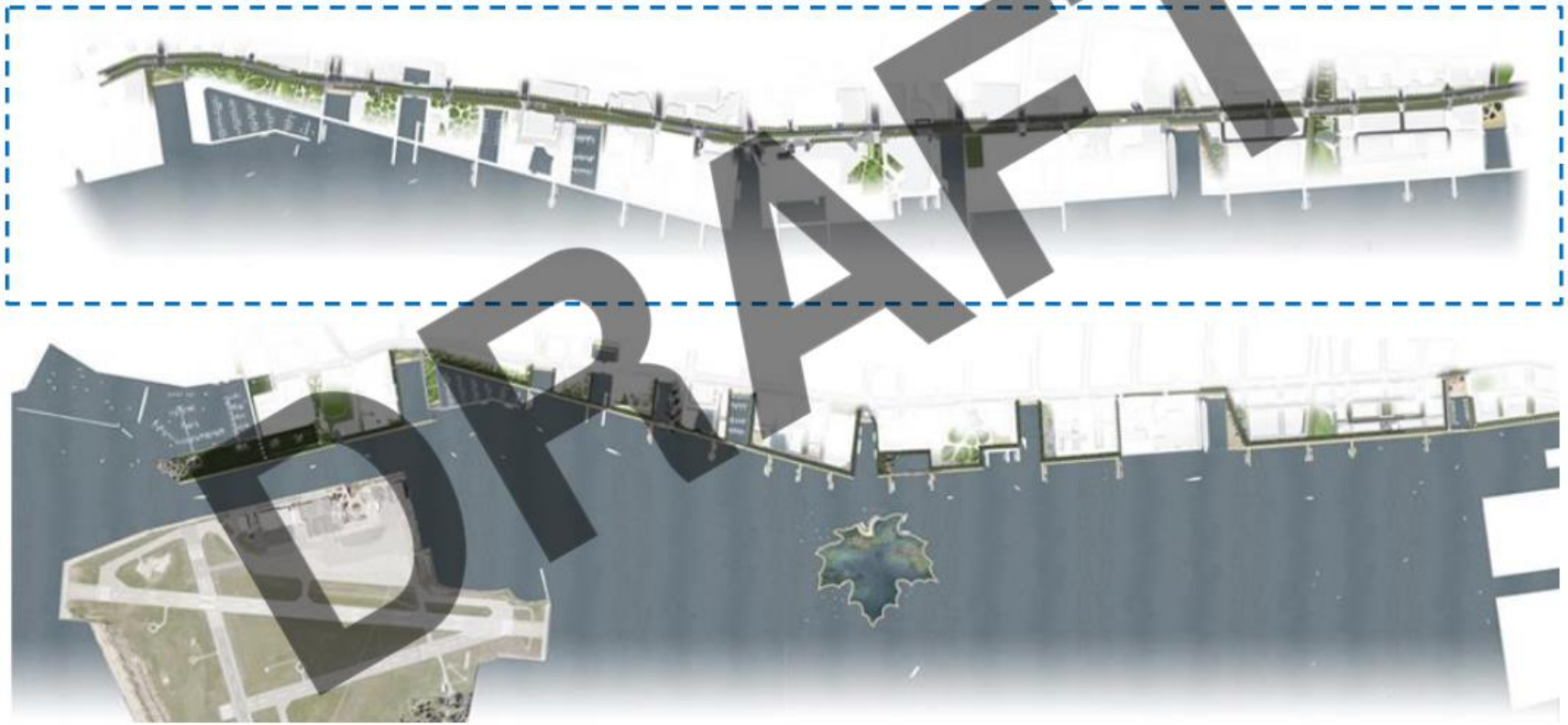
3. Six Design Principles

- Maintain a Continuous Identity
- Improve the Arrival Experience
- Balance the Martin Goodman Trail and South Boulevard
- Create a New Urban Forest
- Manage Stormwater Appropriately
- Future Proof the Public Realm

4. Questions for Design Review Panel Feedback

1. Queens Quay West
2007 - 2012

The Waterfront Welcome: Queens Quay, the Secondary Waterfront



Successful, High Demand for Access to the Waterfront

Queens Quay West Post-Revitalization, 2017

Queens Quay West Design Background

Windswept Traffic Canyon
Before

Shared Space, Civic Boulevard
After

Balanced Space for All User Groups

Not Enough Sidewalk, Program, or Protection - Vulnerable Users at Risk

Before

Typical Toronto Street Profile:

- 50% Vehicles
- 31% Pedestrian
- 19% Streetcar
- 0% Dedicated Bicycles

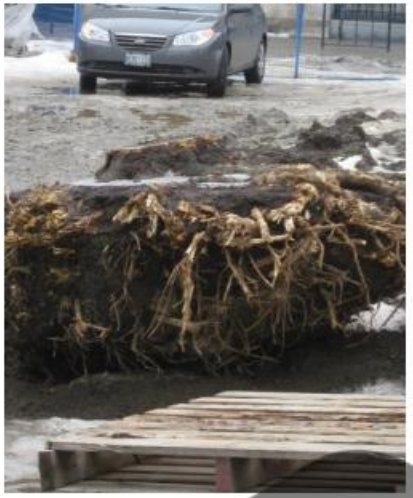
4x Width Sidewalks, Shade, Placemaking, and Health

After

Queens Quay Street Profile:

- 29% Vehicles (42% decrease)
- 39% Pedestrian (26% increase)
- 22% Streetcar (20% increase)
- 9% Dedicated Bicycles (6000 per weekday) (900% increase)

Technological Innovation in Green Infrastructure



Corrupted Root Balls, Limited Species

Before

- Windswept urban canyon with no shade
- 147 secondary trees Norway Maples, Black Locusts
- 10 cubic meters of soil per tree (estimate)
- No Stormwater Reuse or Capture, all went into pipes

Healthy Urban Treescape

After

- Green boulevard with good microclimate
- 232 Street Trees (21 retained)
- 30 cubic meters of soil per tree (south side)
- 47% of Stormwater Captured in Soil Cells through Passive Irrigation

Material Continuity for a Bold Streetscape Experience

Concrete Jungle
Before

- No sense of arrival or place

Innovative Transformation
After

- Proud and engaged urban plinth

Added Public Space and Ecological Function at Slip Heads

Simcoe Wavedeck

Ageing Dock Walls

Before

- No sense of arrival or place

Interactive Public Space x Fish Habitat

After

- 1707 square meters of public space added through WaveDecks at Simcoe, Rees, and Spadina heads of slips

Interim Martin Goodman Trail Connection in the East

Cyclist Alongside Roadway
Before

Designated Safe Space
After Interim Transformation

2. Learning from Queens Quay West 2012 - 2020

Opportunities for Innovation:

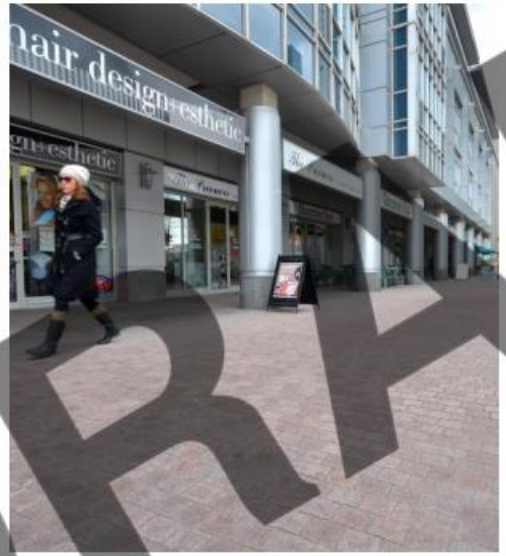
Cycle and Pedestrian Movement at Intersections

Challenge: Balance mobility and waterfront "welcome" while improving navigation and legibility of space for different user groups

- E-W moving cyclists with green light interacting with northbound pedestrians who are unaware of the MGT
- Visitors accessing and departing from transit platforms, as well as waiting space to cross the street
- Design for busy summer days and weekends

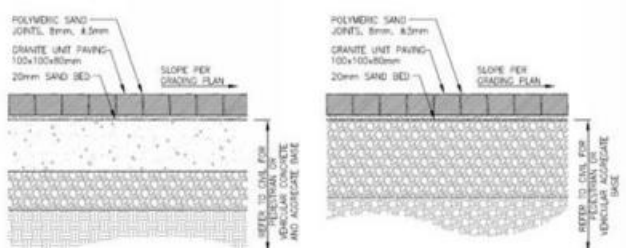
Opportunities for Innovation:

Paver Detail for Accessibility and Maintenance



Challenge: Design an accessible waterfront while maintaining character of place

- Universal Design 101: allow people to "access, understand, and use to the greatest extent possible by **everyone regardless of their age, size, ability or disability"**
- Concerns from wheeled users with chronic pain on Queens Quay to be checked with global best practices
- Balance with WT's commitment to maple leaf pattern and use of granite throughout
- Consider localized maintenance concerns and differential settlement

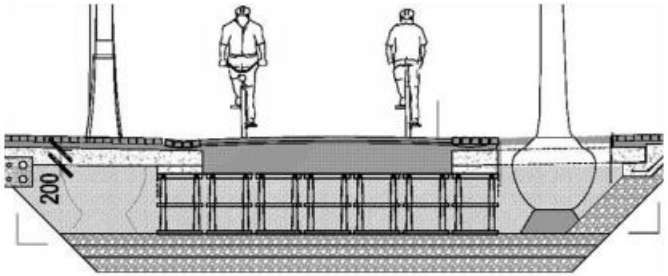


Opportunities for Innovation:

A Green Street

Challenge: Introduce visible indicators of sustainability in action while not taking away from available public space

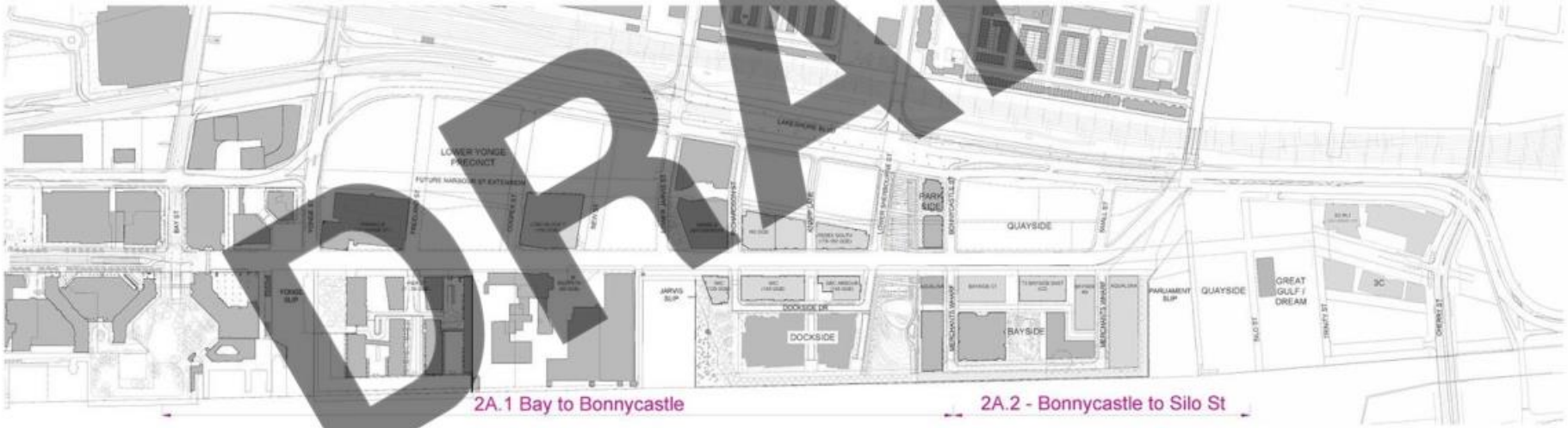
- Increase biodiversity and health of the planting
- Crushed granite sometimes finds its way into MGT
- Increase visibility of stormwater management on site, as teachable moment



3. Queens Quay East
2012 - present

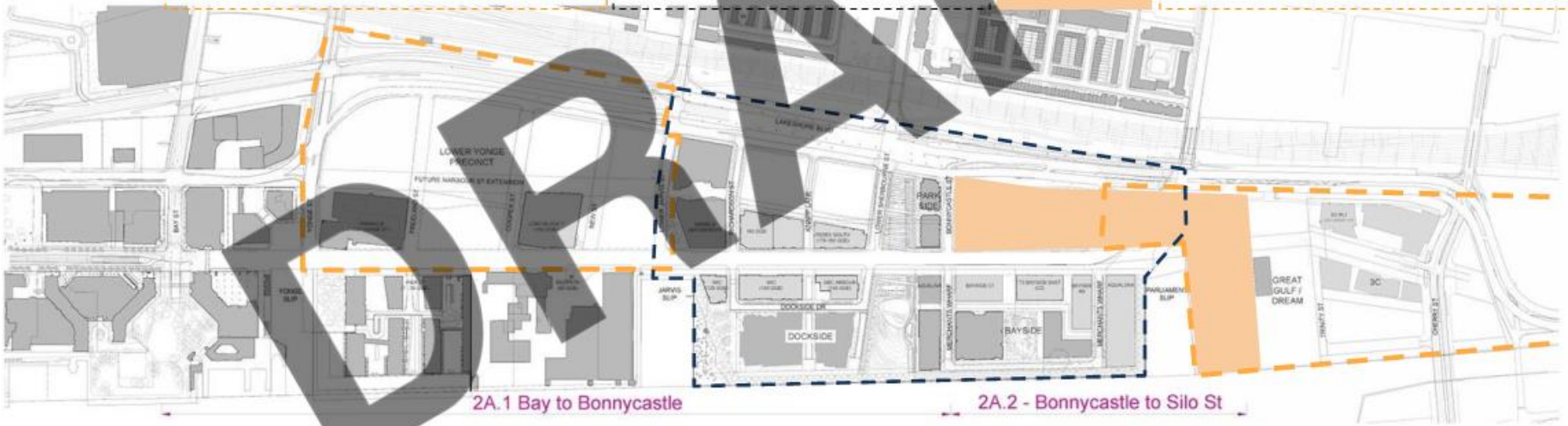
Adjacent Development and Planning Frameworks

	11 Bay St	1-7 Yonge/ Pinnacle	Pier 27	LCBO	Daniels Artscape	Dockside/ WIC / GBC Arbour	162,178, 180 QQE	Parkside/ Monde	Bayside
Development Status	Pre-pre-application	Under Construction	Under Construction	Under Construction	Complete	Under Construction / SPA	SPA	Complete	Under Construction



Adjacent Development and Planning Frameworks

	Lower Yonge Precinct	East Bayfront Precinct	Quayside	Keating Channel Precinct
Planning Framework	Urban Design Report	Urban Design Guidelines for East Bayfront	None	Keating Channel Precinct Plan
Development Status	**Pinnacle** - Under Construction / SPA **LCBO** - Under Construction / SPA	**Dockside** - Under Construction **Bayside** - Under Construction **Parkside** - Under Construction	Pending developer	**Great Gulf / Dream** - Pre-application **3C** - SPA



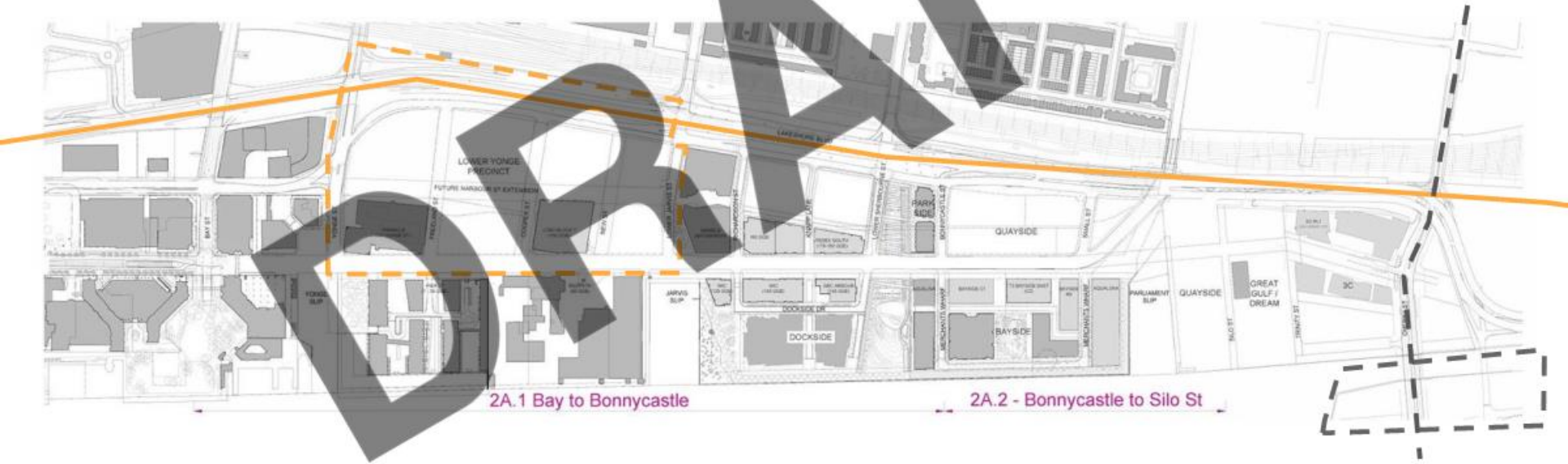
Adjacent Transportation Frameworks

Transportation Framework

Lower Yonge Precinct
Transportation Master Plan

Lake Shore Boulevard E
Gardiner EA

Portlands
Portlands Transportation Servicing Master Plan
Cherry Street Alignment

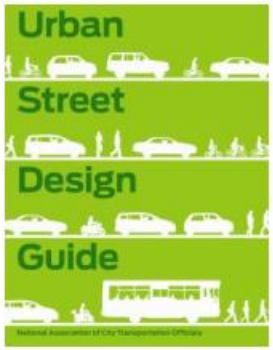


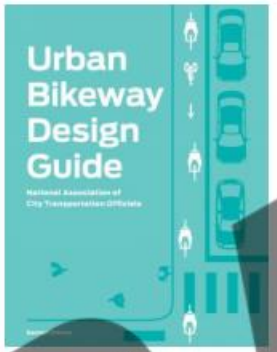
Design Criteria and Assumptions

Design Element	Design Criteria	Proposed for QQE Extension	Data Source	Published Date
General	Right of Way	38m	Transit Class EA	March, 2010
Roadway - Queens Quay	TAC Road Classification	UAD - Urban Arterial Undivided	TAC Geometric Design Guide	June, 2017
	Design/Posted Speed	50/40kph	Match QQW	N/A
	Dedicated Turn Lane Width	3.0m	CoT 2.0 Lane Widths Guideline Version 2.0.1	May, 2018
	Through Lane Width	3.3m	CoT 2.0 Lane Widths Guideline Version 2.0.1	May, 2018
	Parking/Layby Width	2.4m	CoT 2.0 Lane Widths Guideline Version 2.0.1	May, 2018
	Separated Bicycle Lane	3.6m to 4.0m (bi-direction)	OTM Book 18	December, 2013
	Pedestrian Clearway	min of 2.1m	CoT T-310.010-10	September, 2018
	Max. Vertical Gradient	6%	TAC Geometric Design Guide (Table 3.3.1)	June, 2017

*** Additional Requirement that was not part of Queens Quay West:**
TTC Track designed to accommodate bus service

International and Local Best Practices



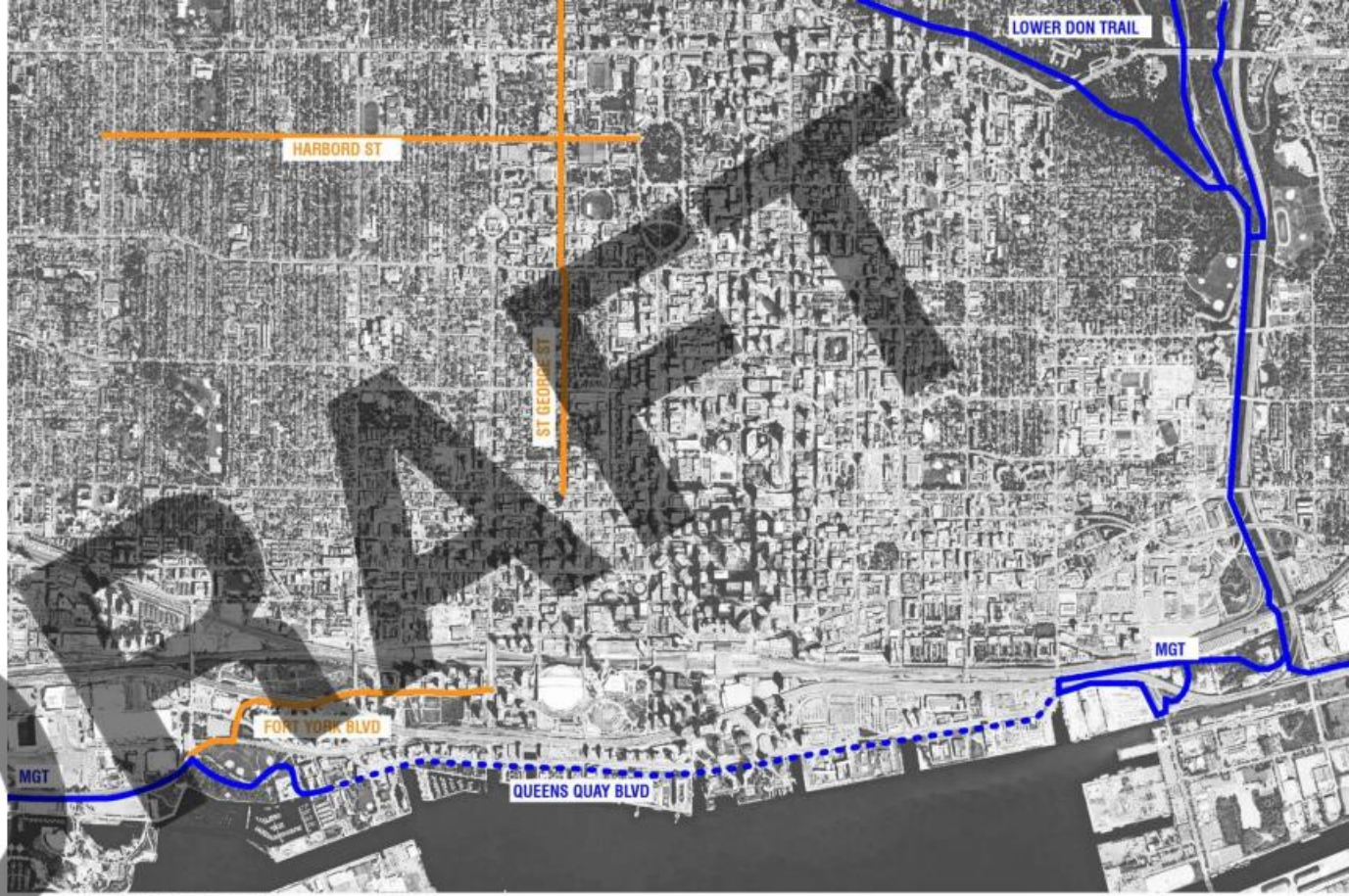


Coming Soon:
Toronto
Green
Infrastructure
Design
Standards

Coming Soon:
OTM
Book 18
Cycling
Infrastructure

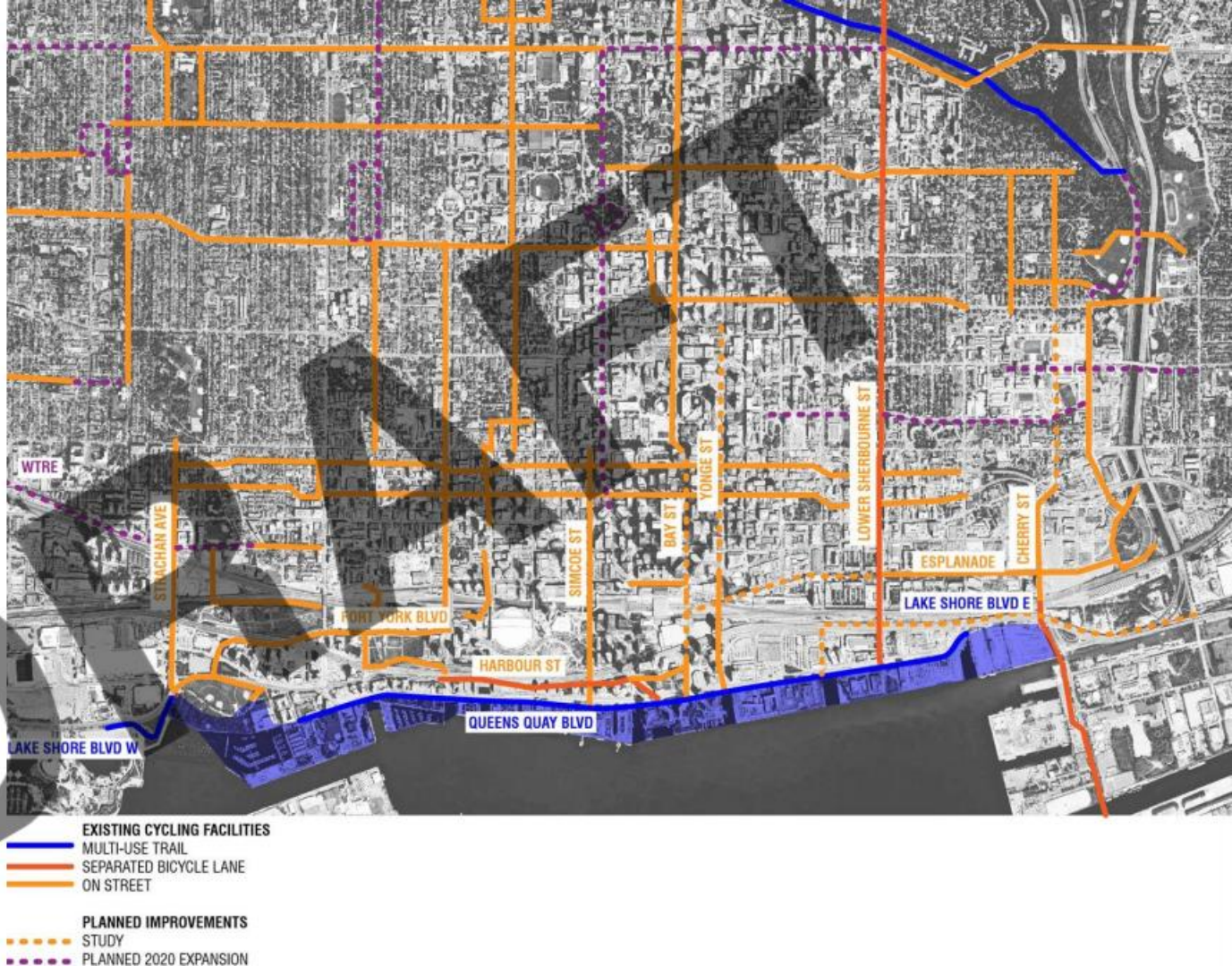
2010: Queens Quay Pioneered Connected Cycling Network in Toronto

A Connected Martin Goodman Trail E-W

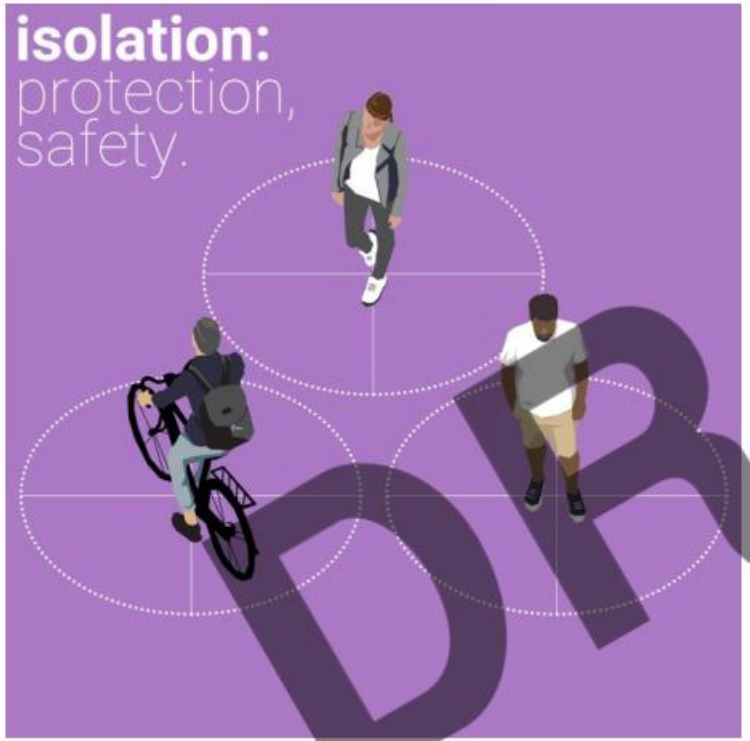


2020: Welcome to the Toronto Waterfront: Queens Quay a Scenic Multi-Use Waterfront Trail

Current Network has Fine Grain Tissue, Hierarchy



COVID-19: Designing for Health and Equity in Public Space

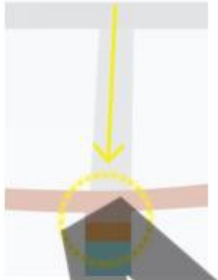


Illustrations by West 8 for the Urban Design Forum's "City Life after Coronavirus" initiative

3. Queens Quay East
Six Design Principles

Six Design Principles for Queens Quay East Refresh

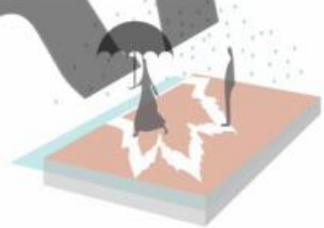
Maintain a Continuous Identity



Improve the Arrival Experience

Balance the Martin Goodman Trail and South Boulevard

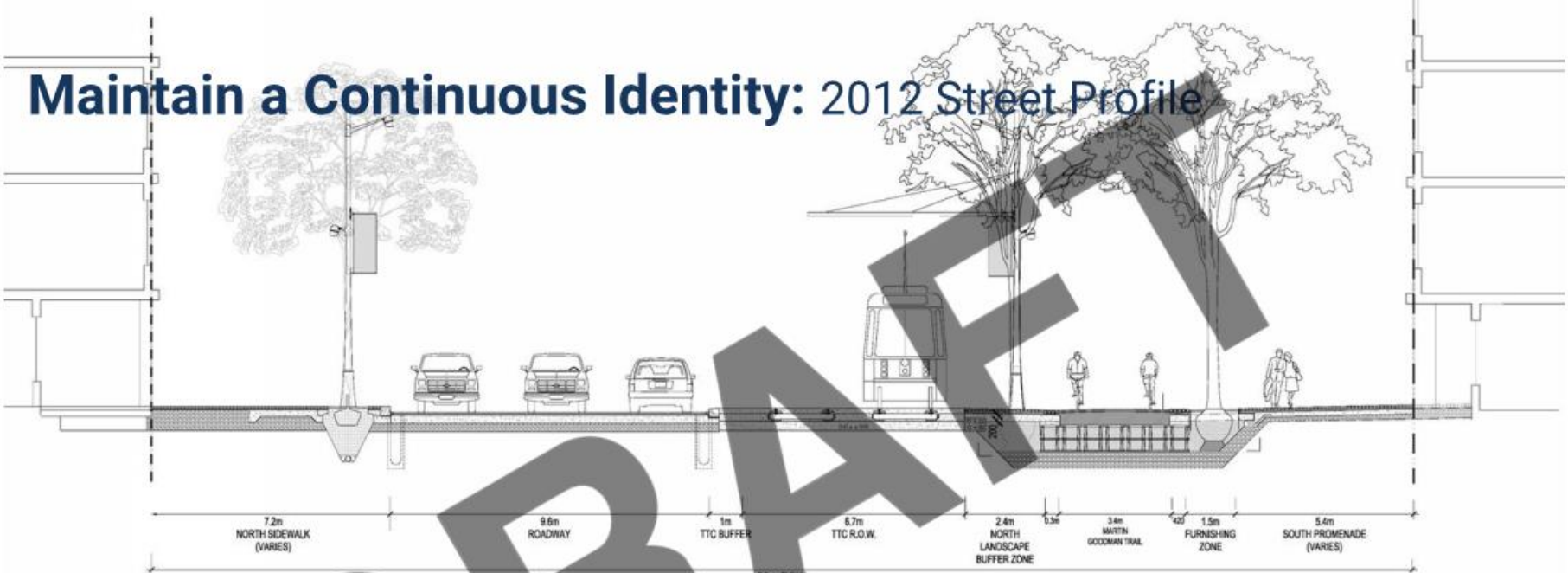
Create a New Urban Forest

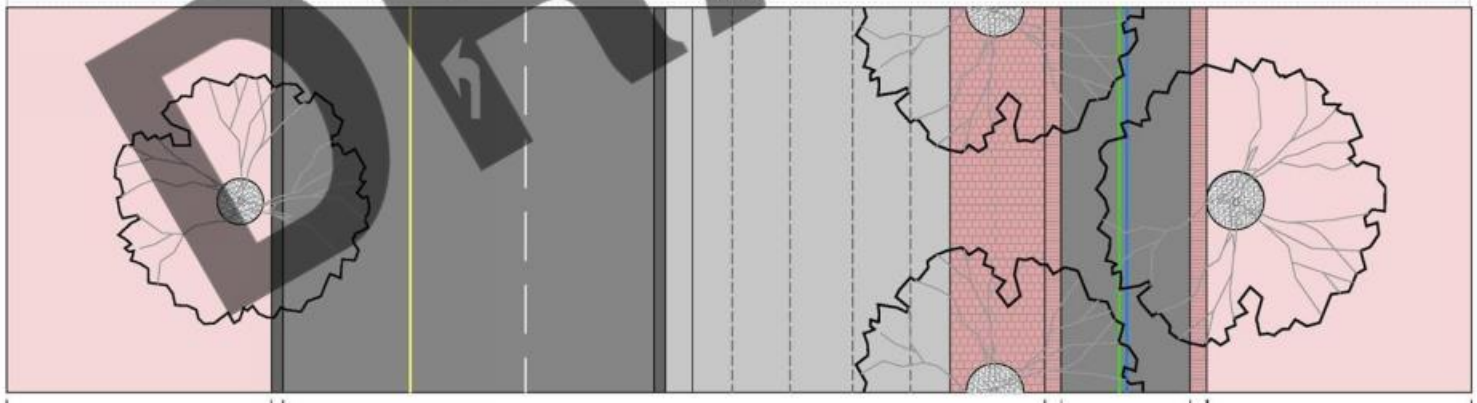


Manage Stormwater Appropriately

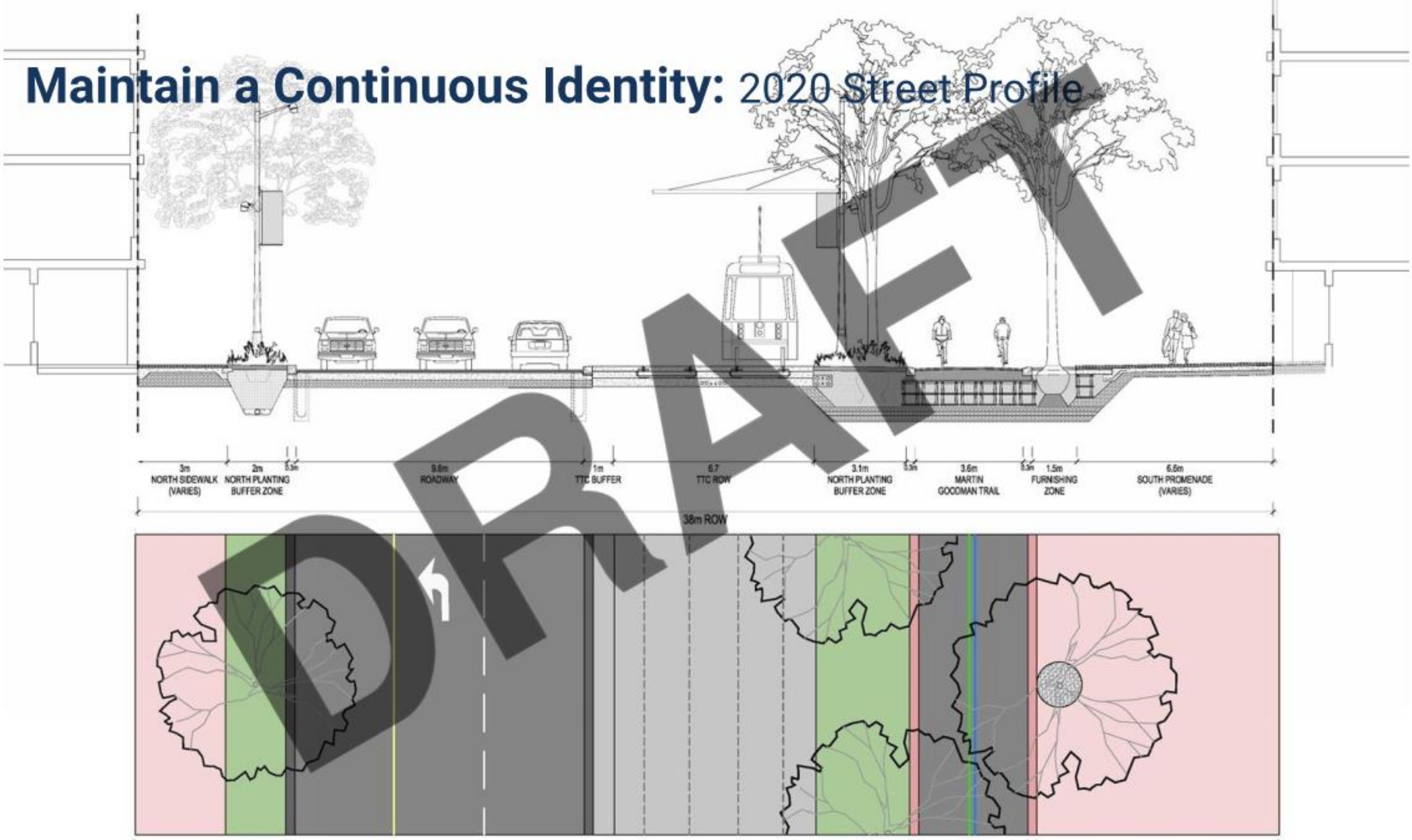
Future Proof the Public Realm

Maintain a Continuous Identity: 2012 Street Profile





Maintain a Continuous Identity: 2020 Street Profile



Maintain a Continuous Identity: Retained Design Elements

Allee of Trees on either side of MGT

Canadian Granite Cobblestone Paving With Maple Leaf Pattern

Double sided wooden benches

Asphalt MGT

Maintain a Continuous Identity: Details for Optimization in E

Species selection and grouping within allee

Confirm best practice for accessibility and maintenance

Non-tropical wood product

Explore wider MGT, grade separation from south boulevard

Light Pole

Explore alternative paving materials in TTC Track

Transform zone between TTC and MGT into open planted area

Maintain a Continuous Identity: Retained Design Features

Single row of street trees

TTC Stop Design

Canadian Granite Cobblestone Paving

Granite Curbstones

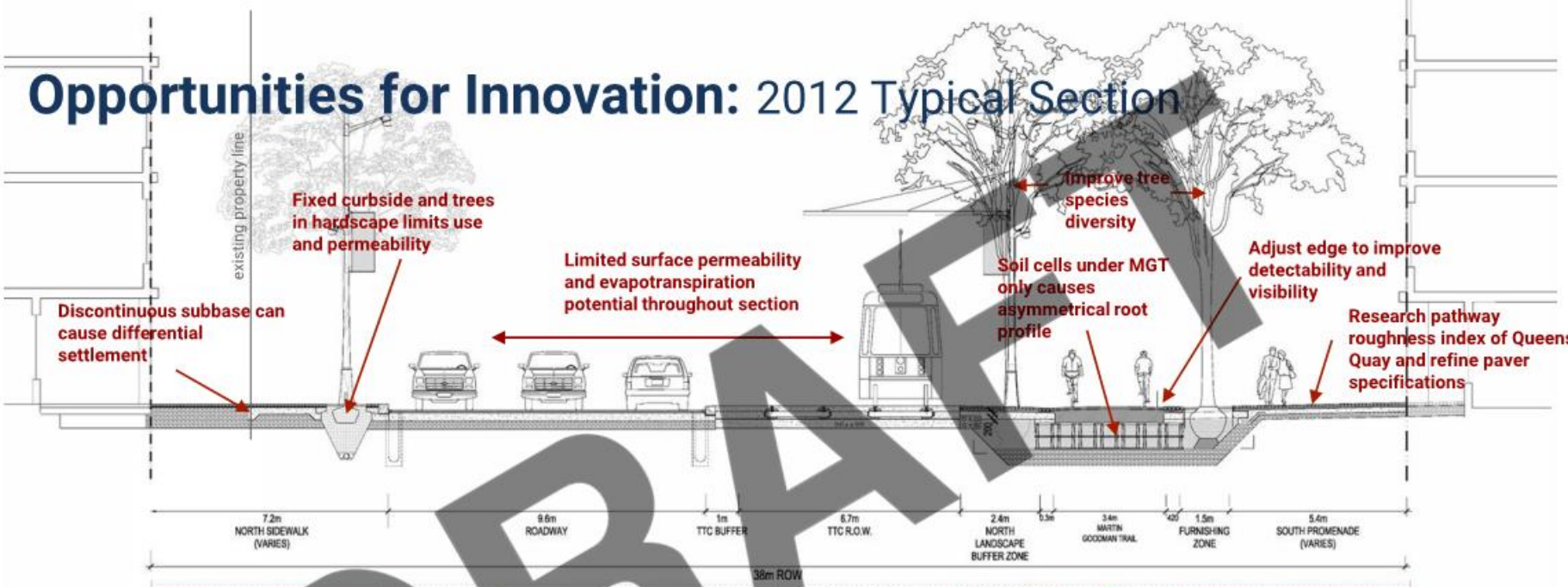
Maintain a Continuous Identity: Details for Optimization in E

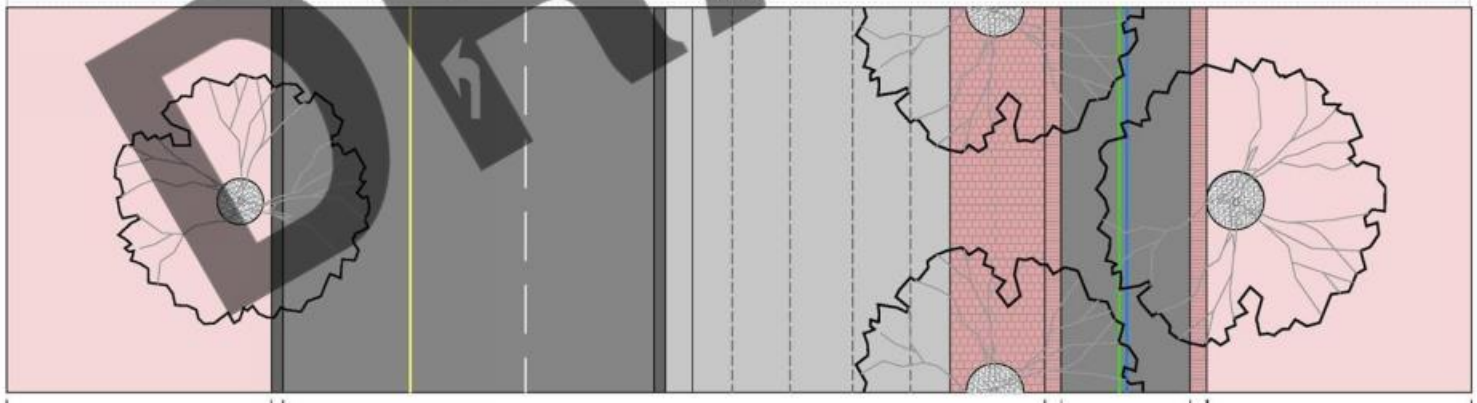
Open planting bed where space allows

Confirm best practice for accessibility and maintenance - differential settlement often occurs at property line

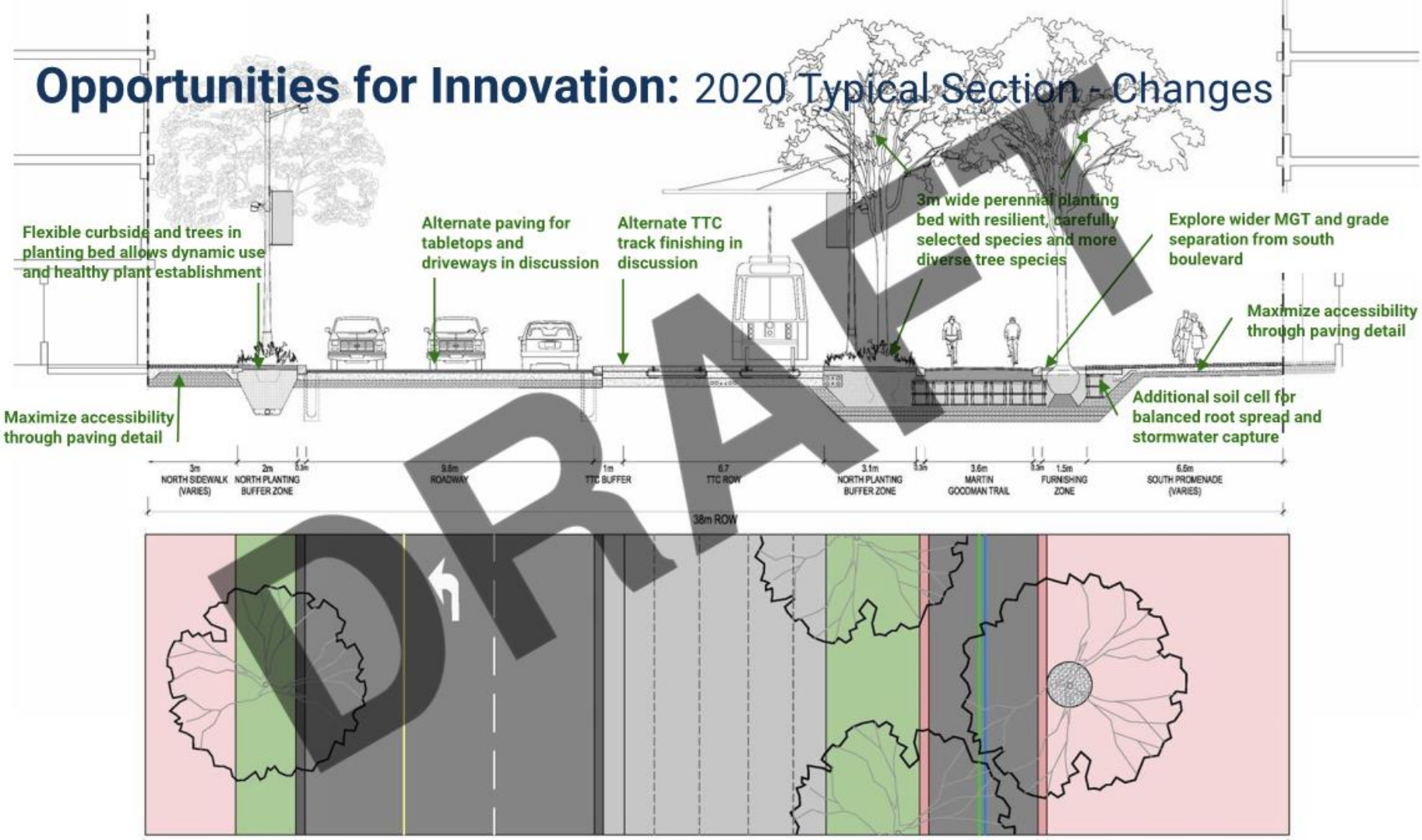
Flexible Layby Design

Opportunities for Innovation: 2012 Typical Section



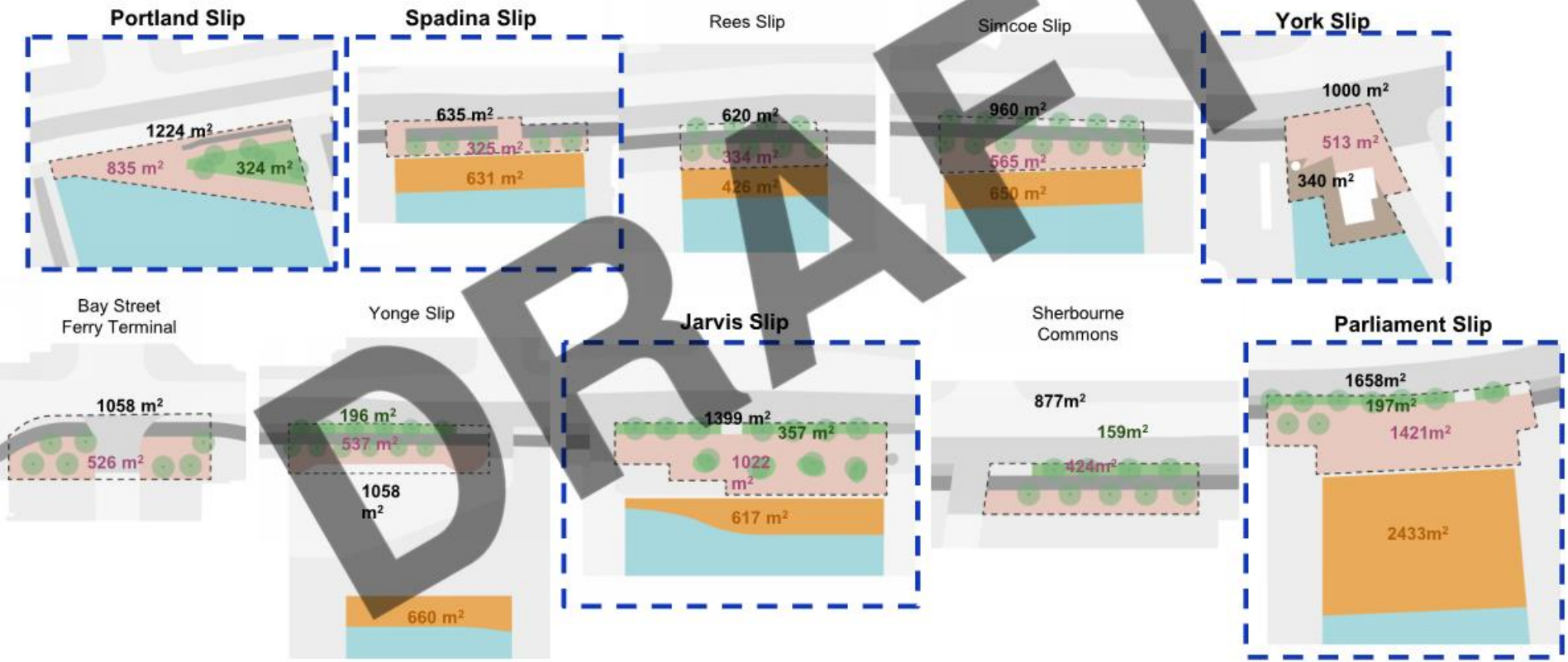


Opportunities for Innovation: 2020 Typical Section - Changes

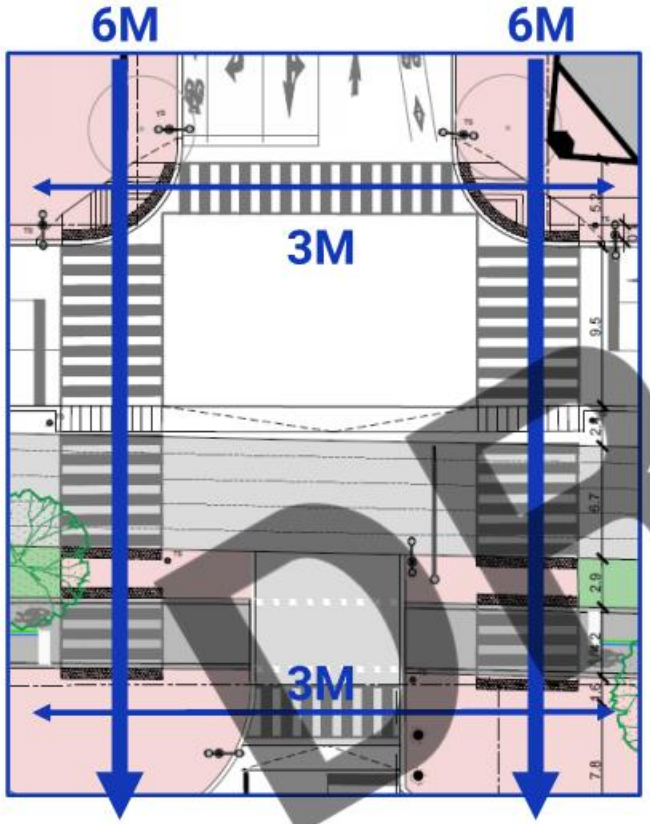


Improve the Arrival Experience: Connect Toronto with Queens Quay

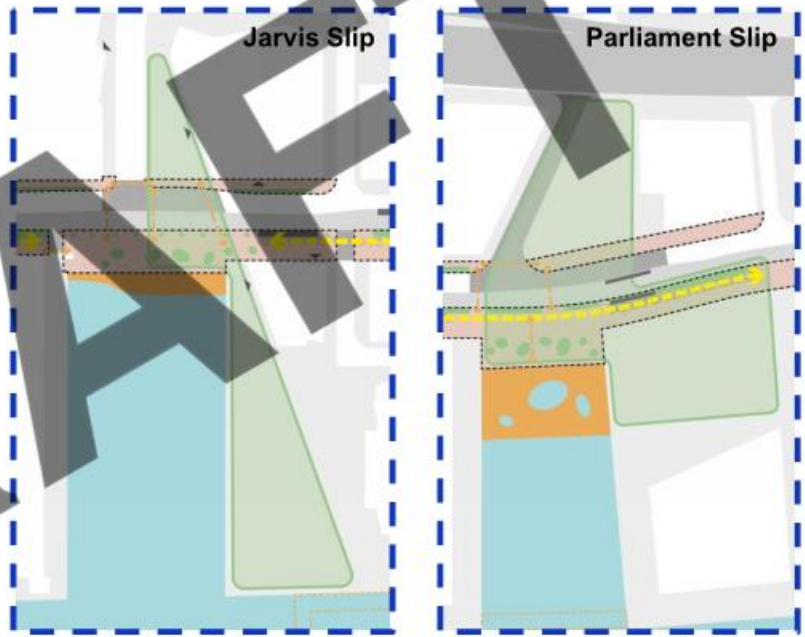
Improve the Arrival Experience: Heads of Slips + new wavedecks



Improve the Arrival Experience: Increase N-S Connectivity



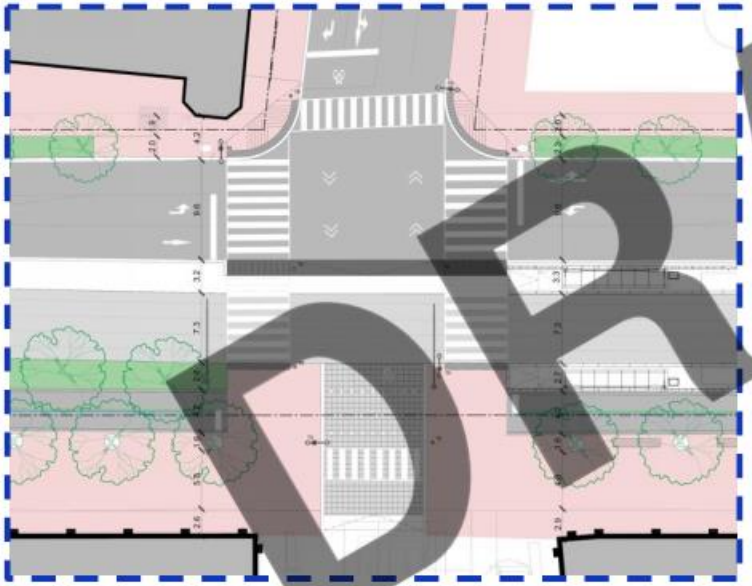
Double width of N-S crosswalks



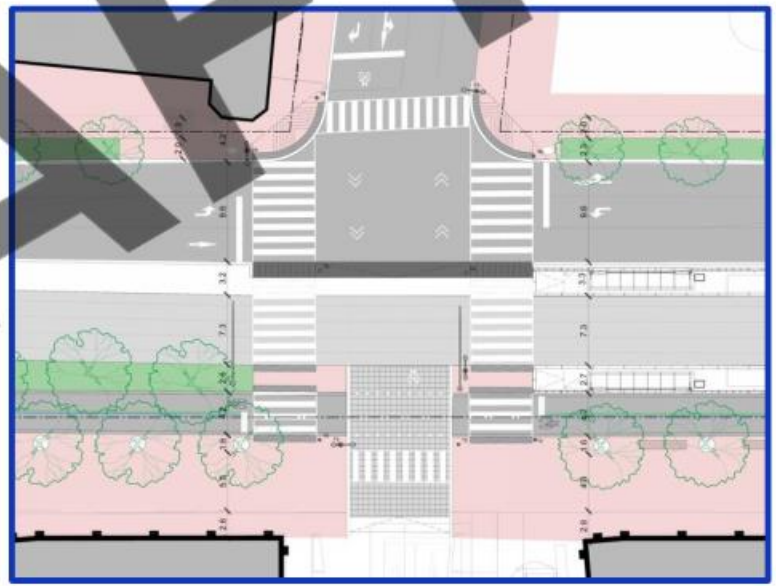
Study Jarvis and Parliament as Waterfront Welcome Plazas, with potential table top street conditions and shared space

Improve the Arrival Experience: Two Types of Intersections

Shared Space, Waterfront Welcome - similar to QQW

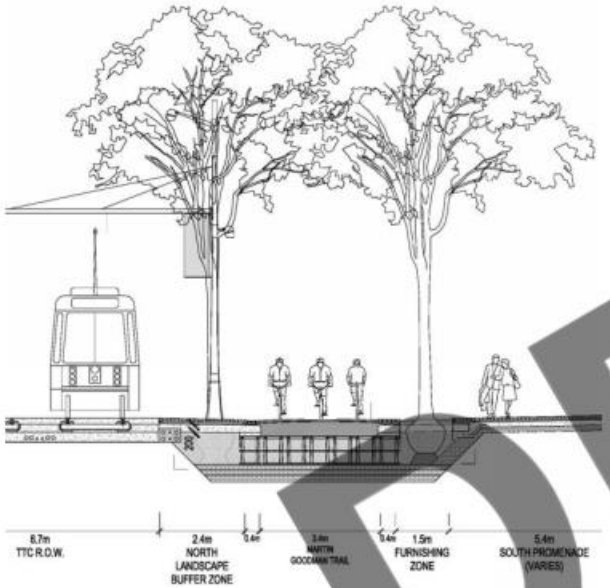


Delineated, Movement Oriented



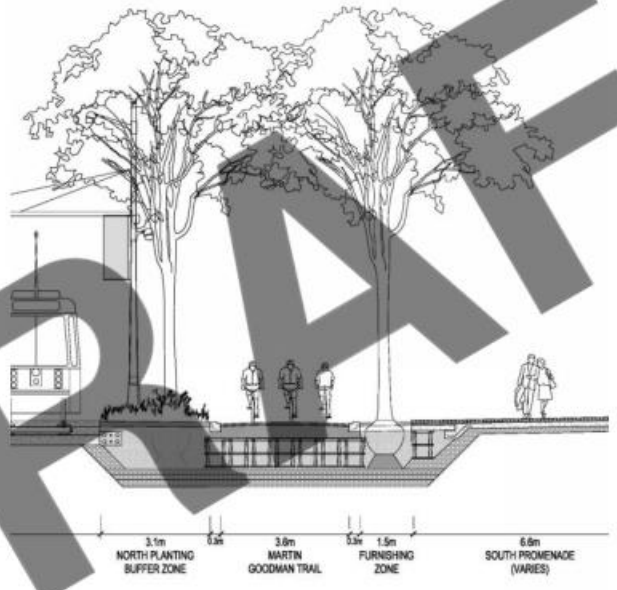
Balance the MGT and South Boulevard:

Wider MGT with 5cm Grade Difference



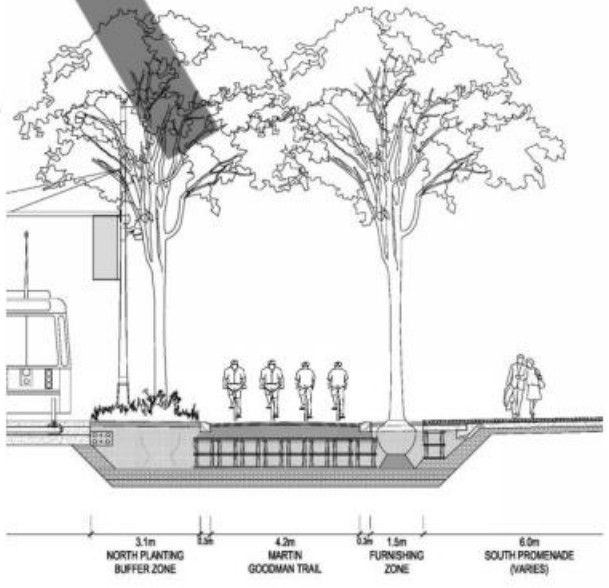
2012

3.4m asphalt, **no** grade change



2020 option 1

3.6m asphalt, **5cm** grade change



2020 option 2

4.2 m asphalt, **5cm** grade change

Balance the MGT and South Boulevard: Longevity of Materials

Balance the MGT and South Boulevard:
Accessibility of Materials

Paver Research: 2001-2018 Findings
US Access Board, Segmental Paving Industry, University of Pittsburgh

Joint spacing, edge detail, and level difference are key inputs to determine roughness and vibration on surfaces.

Smaller units have multiple benefits and fare the same or better than monolithic slabs:

- Potentially less whole body vibration
- Smaller incremental level change between units over distance
- Easier to set and repair
- Lower maintenance cost
- Better load transfer, less cracking
- Easier access to below grade

Balance the MGT and South Boulevard:
Accessibility of Materials

Measures
Impact of Vibration on Human Comfort:
Wheelchair Pathway Roughness Index (WPRI)

Standard: ASTM E3028
Standard Practice for Computing Wheelchair Pathway Roughness Index as Related to Comfort, Passability and Whole Body Vibrations from Longitudinal Profile Measurements

Means to Measure
PathMet Device. Eric Sinagra, PathVu

Balance the MGT and South Boulevard:

Accessibility of Materials, Innovation Opportunity

To deliver the "Most Accessible Waterfront" we need to go further than current Ontario and Toronto policies for accessibility.

Apply leading edge standards and techniques for measuring pathway roughness to reduce vibration and increase comfort and equity for people using wheeled mobility devices.

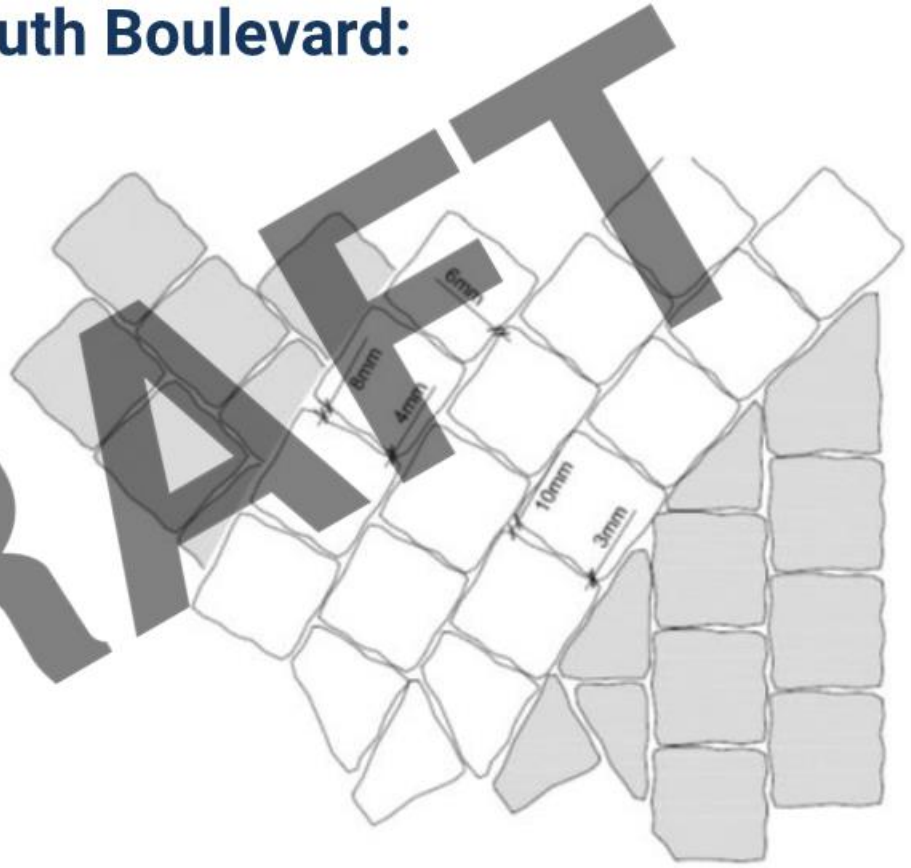
Contribute to research related to stone pavements, which have not been tested to date.

Balance the MGT and South Boulevard:

Accessibility of Materials

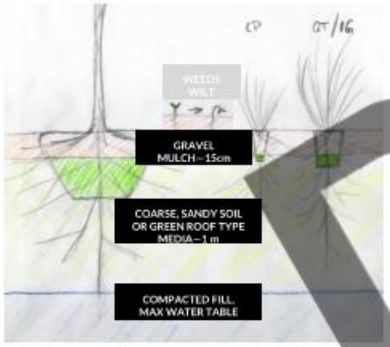
Revised Paving Details

- smooth finish granite cobble
- 3-6mm joint spacing with tolerance
  TBC by Wheelchair Pathway Roughness Index Study
- 20mm sand bed
- concrete base for stability of pavers
- lay in complete sections by same crew, not partial
- Regular maintenance required

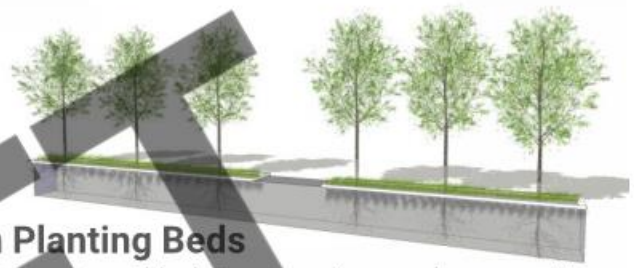


D - width of the joints 8mm with the tolerance of +/- 5mm

Create a New Urban Forest



Reference Images: Phyto Studio



Widen and Open Planting Beds

- Edge conditions most likely to experience damage. Deep beds create healthier soil, more layered plantings.

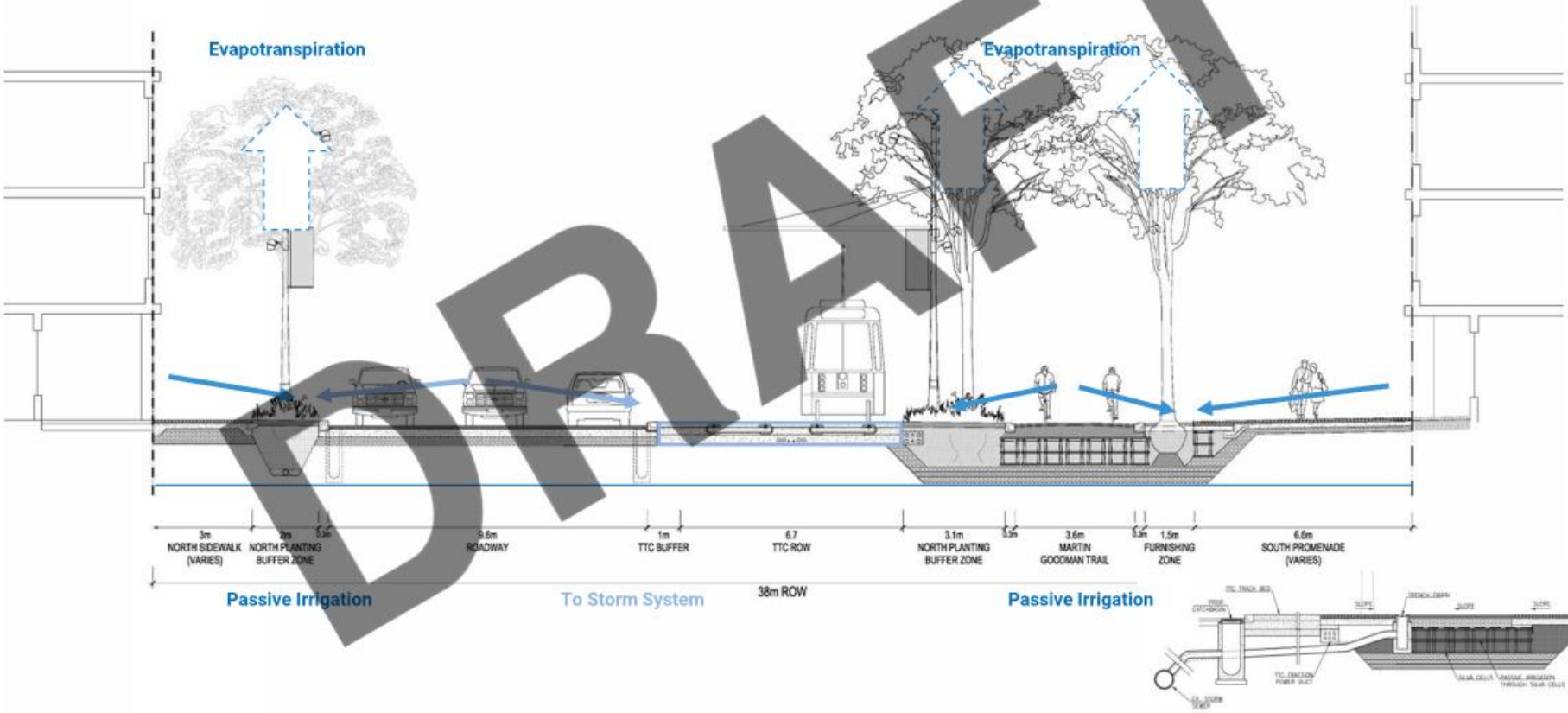
Maximize Horizontal Root Space

- Water table is high, give roots space to grow horizontally. Avoid lopsided root sections.

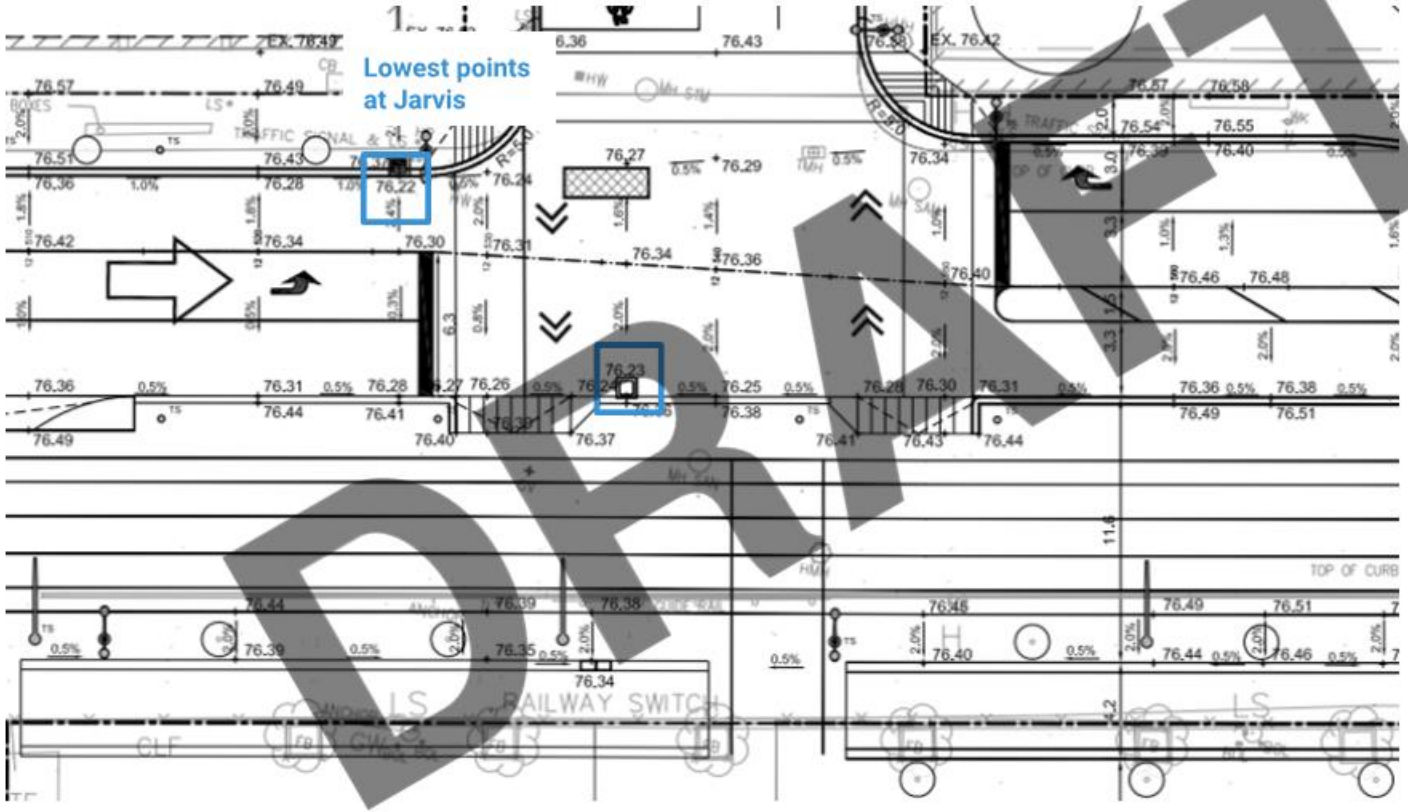
Create Stressful Conditions for Weeds

- **Top layer**: Washed gravel free of fines (15-25mm dia) as a mulch layer. This diameter prevents seed germination. Critical issue is having gravel free of fines (dust, soil) which hold water and allow weed colonization.
- Most weeds germinate but don't survive in gravel layer.
- Use plant sizes where bottom of root balls touch planting soil.

Manage Stormwater Appropriately: Collection from MGT and sidewalks flow into planting. Road and TTC collection flow into treatment.



Manage Stormwater Appropriately: High Lake Level 76.08



New High Water Level

RECORD HIGH WATER LEVEL (2019)	76.08
LONG TERM SUMMER AVG. (2010)	75.04
LONG TERM WINTER AVG. (2010)	74.54

Manage Stormwater Appropriately: Overland Flow, 2012

Surface runoff is directed to the existing storm sewer system with Combined Sewer Outfalls (CSOs) that flow directly into the lake.

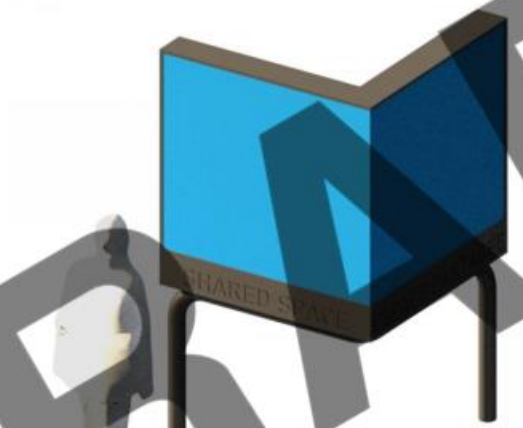
Larger storm events rely on overland flow to low points at Yonge, Jarvis and Parliament head of slip, over the dockwall and into the lake.

Across the EBF district there are no sanitary connections to the storm system, so input into the CSO within the district is stormwater only.

Future Proof the Public Realm:

Allocate Space for New Forms of Mobility

Future Proof the Public Realm: Dynamic Flexible Signage



Bicycle Signage

- Communicates cycle count, other user count, and other info

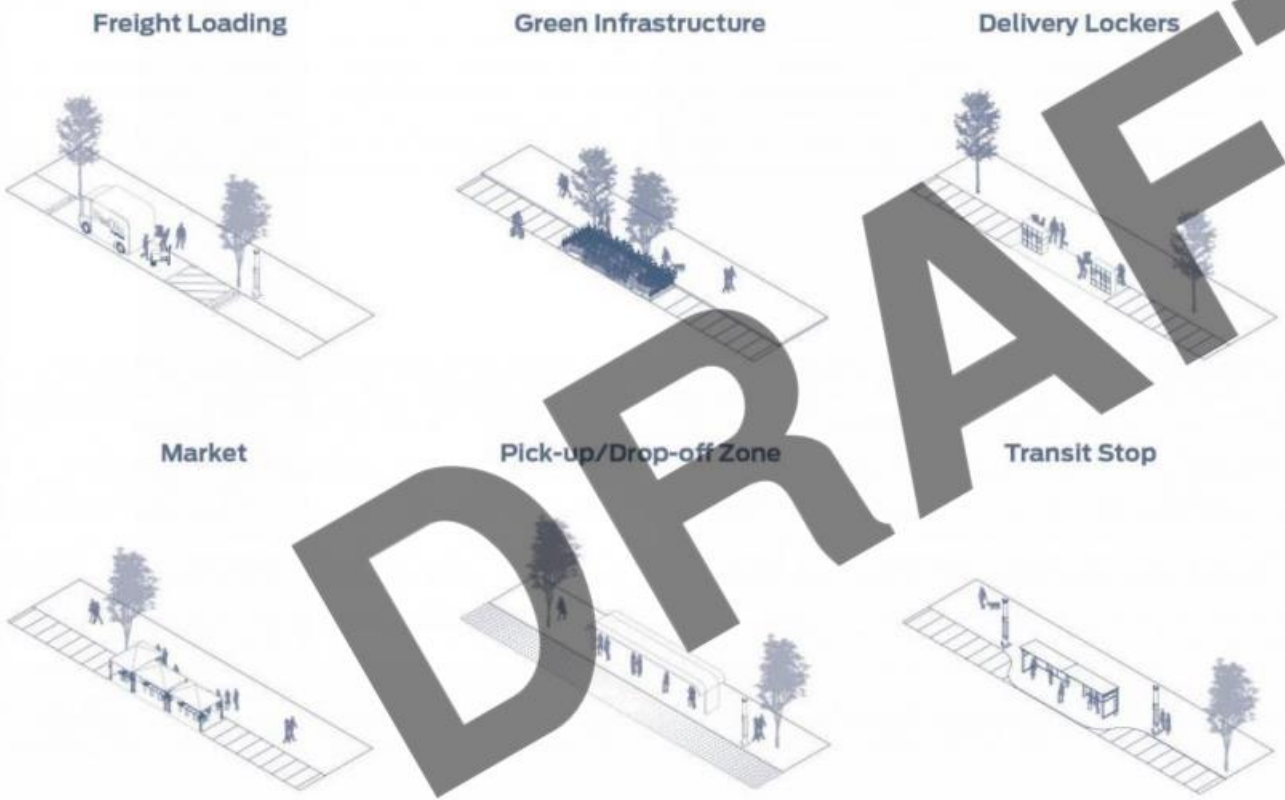
Shared Space Signage

- Communicates the new concept of shared space, and how it can be used

Curbside Signage

- Parking availability detection
- Wifi, charging, cameras and CNIB

Future Proof the Public Realm: Flexible Curbside



Reference: NACTO's Blueprint for Autonomous Urbanism

Market Street - Summer

Market Street - Winter

Queens Quay East
Questions for Feedback

Questions for Design Review Panel Feedback

Does the DRP support the following elements be maintained from Queens Quay West for continuation into Queens Quay East:

- Granite cobblestone paving with maple leaf pattern
- Asphalt MGT
- Double Sided Wood Benches
- Granite Curbs
- Allee of trees on both sides of MGT

Does the DRP support the proposed design approaches for innovation and optimization in Queens Quay East:

- Space dedication in typical section
- Improved arrival and waterfront welcome
- Delineated intersections
- MGT widening and grade separation
- Paving accessibility
- Planting design
- Stormwater design
- Future proofing