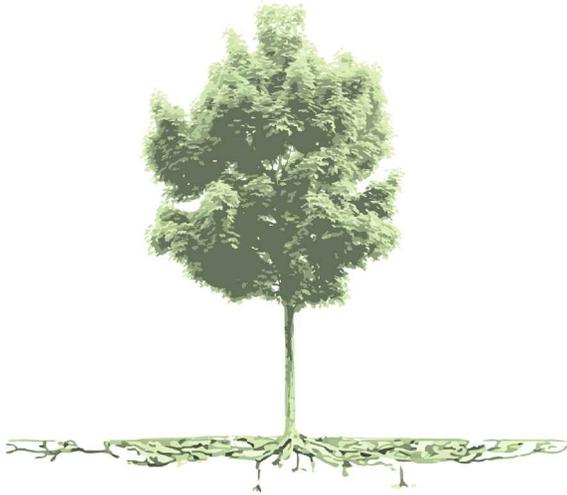


Tree Planting Solutions in Hard Boulevard Surfaces Best Practices Manual

Project # A21065
Date February 8, 2013

Recipient
City of Toronto

Submitted by
DTAH, Lead Consultant
ARUP, Engineering
James Urban, Urban Trees + Soils
Urban Forest Innovations, Arborist



dtah | ARUP | James Urban - Urban Trees + Soils | Urban Forest Innovations Inc.

SHEET LIST

T-1A: CAST-IN-PLACE STRUCTURAL CONCRETE PANELS OVER CONTINUOUS GROWING MEDIUM TRENCH

- .1 LAYOUT & MATERIALS PLAN
- .2 LAYOUT & MATERIALS PLAN WITH SOIL CELLS
- .3 TYPICAL SECTIONS
- .4 TYPICAL SECTION THROUGH PANEL 'B' @ TREE OPENING
- .5 TYPICAL SECTIONS WITH SOIL CELLS

T-1B: PRECAST STRUCTURAL CONCRETE PANELS & UNIT PAVING OVER CONTINUOUS GROWING MEDIUM TRENCH

- .1 LAYOUT & MATERIALS PLAN
- .2 LAYOUT & MATERIALS PLAN WITH SOIL CELLS
- .3 TYPICAL SECTIONS
- .4 TYPICAL SECTION THROUGH PANEL 'B' @ TREE OPENING
- .5 TYPICAL SECTIONS WITH SOIL CELLS

T-2: SOIL CELLS IN CONTINUOUS GROWING MEDIUM TRENCH

- .1 LAYOUT & MATERIALS PLAN WHERE LATERAL LINES RUN UNDER SIDEWALK
- .2 LAYOUT & MATERIALS PLAN WHERE MAIN LINES RUN UNDER SIDEWALK
- .3 TYPICAL SECTIONS @ MIDBLOCK
- .4 TYPICAL SECTIONS @ TREE OPENING

T-3: OPEN PLANTER

- .1 LAYOUT & MATERIALS PLANS
- .2 LAYOUT & MATERIALS PLANS WITH SOIL CELLS
- .3 TYPICAL SECTIONS
- .4 TYPICAL SECTIONS WITH SOIL CELLS

TC: TYPICAL COMPONENTS

- 1 RAINWATER DISTRIBUTION SYSTEM DETAILS
- 2 RAINWATER DISTRIBUTION SYSTEM DETAILS
- 3 METAL PAVER EDGE DETAILS
- 4 ROOT ZONE ID & SOIL INSPECTION PORT DETAILS
- 5 CURB WITH DECORATIVE BAND OPTION DETAILS

S: STRUCTURAL DESIGN

- 1 TYPE-1A: CAST-IN-PLACE STRUCTURAL CONCRETE PANEL
- 2 TYPE-1B: PRECAST STRUCTURAL CONCRETE PANEL
- 3 LIMITATIONS FOR CORING/SLEEVEING & NOTCHING/BOX-OUTS

PL: PLANTING DETAILS

- 1 TREE PLANTING DETAIL
- 2 GROWING MEDIUM DETAILS

GENERAL NOTES

1. WHERE REQUIRED, 8.0m O.C. IS THE ABSOLUTE MINIMUM RECOMMENDED TREE SPACING.
2. RECOMMENDED MINIMUM TREE OPENING SIZE IS 1.5m. USE ALTERNATIVE OPENING SIZE OF 1.2m IF CITY MINIMUM PEDESTRIAN CLEARWAY OF 1.7m CANNOT BE MAINTAINED.
3. ABSOLUTE MINIMUM DEPTH OF GROWING MEDIUM BED IS THE DEPTH OF THE TREE'S ROOT BALL. ADEQUATE DEPTH RANGES FROM 1m TO 1.2m. WHERE TREES ARE SHARING A BED, ENSURE 20m³ MIN. OF GROWING MEDIUM PER TREE IS PROVIDED. WHERE THERE IS 1 TREE PER BED, ENSURE 30m³ MIN. OF GROWING MEDIUM PER TREE.
4. INSTALL ONE ROOT ZONE ID PER TREE.
5. FOR TREE OPENING MATERIAL, SEE PL-1.
6. FOR NURSERY STOCK QUALITY & ACCEPTABLE TREE CONDITIONS, REFER TO BEST PRACTICES MANUAL SECTION 6.1.
7. FOR TREE INSTALLATION INSTRUCTIONS, REFER TO DRAWING PL-1.
8. FOR RAIN WATER DISTRIBUTION COMPONENTS (DRAIN COVER, PIPES, INLETS) SEE SPECIFICATION.
9. FOR GEOTEXTILE, SEE SPECIFICATION.
10. FOR GEOGRID, SEE SOIL CELL SPECIFICATION.
11. FOR UTILITY BREAKS IN SOIL CELLS, SEE MANUFACTURER'S DETAILS.
12. PRIOR TO COMMENCEMENT OF WORK, GEOTECHNICAL ENGINEER TO CONFIRM THAT SITE CONDITIONS ARE SUITABLE FOR SPECIFIED DESIGN.



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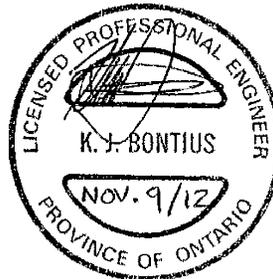
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TREE PLANTING SOLUTIONS
IN HARD BOULEVARD
SURFACES

COVER SHEET

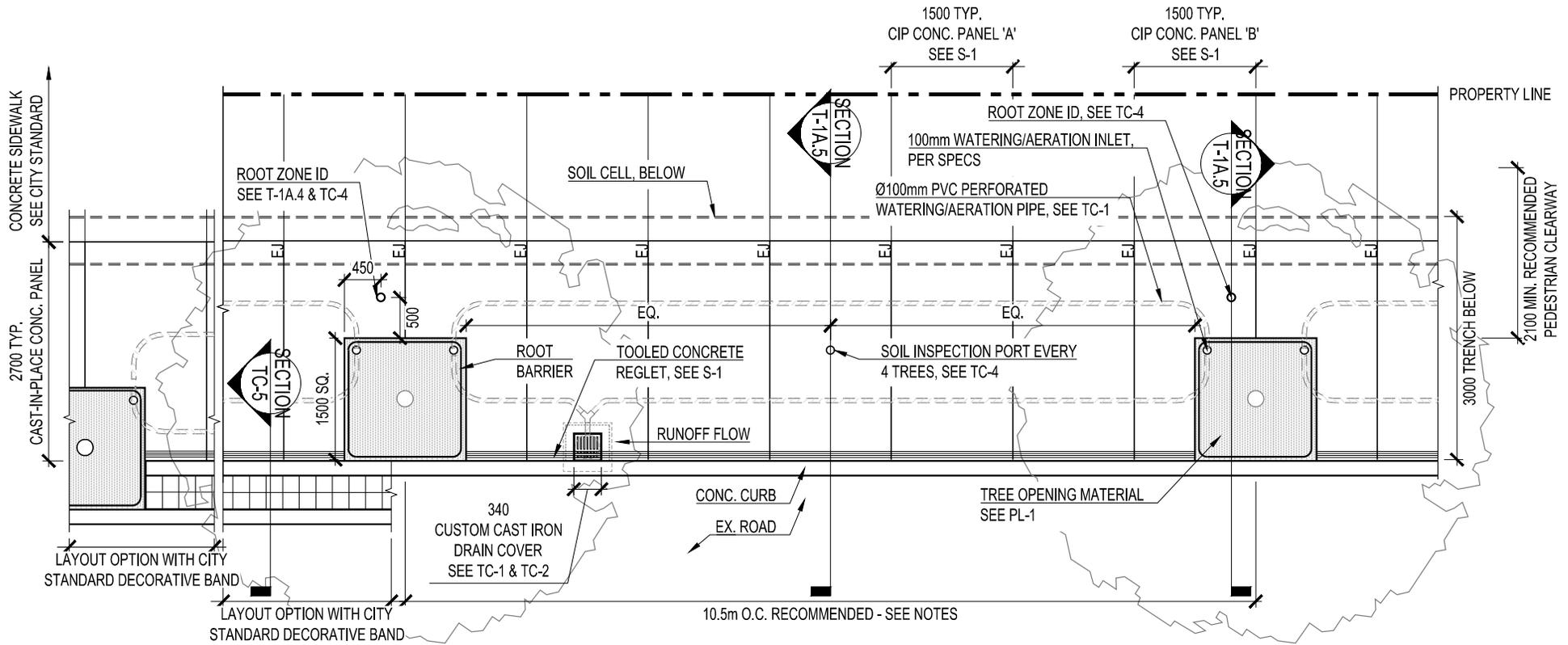
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SHEET LIST & GENERAL NOTES

T-0

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2	2012-07-31	Best Practices Manual - 100% Submission
1	2012-02-29	Issued for City Review - 90% Submission

SCALE: NTS



LAYOUT & MATERIALS PLAN: CAST-IN-PLACE STRUCTURAL CONCRETE PANELS OVER CONTINUOUS GROWING MEDIUM TRENCH & SOIL CELLS



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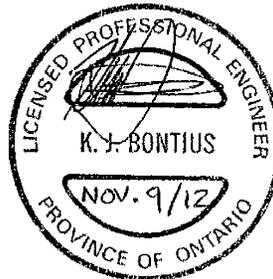
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TREE PLANTING SOLUTIONS
IN HARD BOULEVARD
SURFACES

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CONCRETE PANELS OVER
CONTINUOUS GROWING MEDIUM
TRENCH

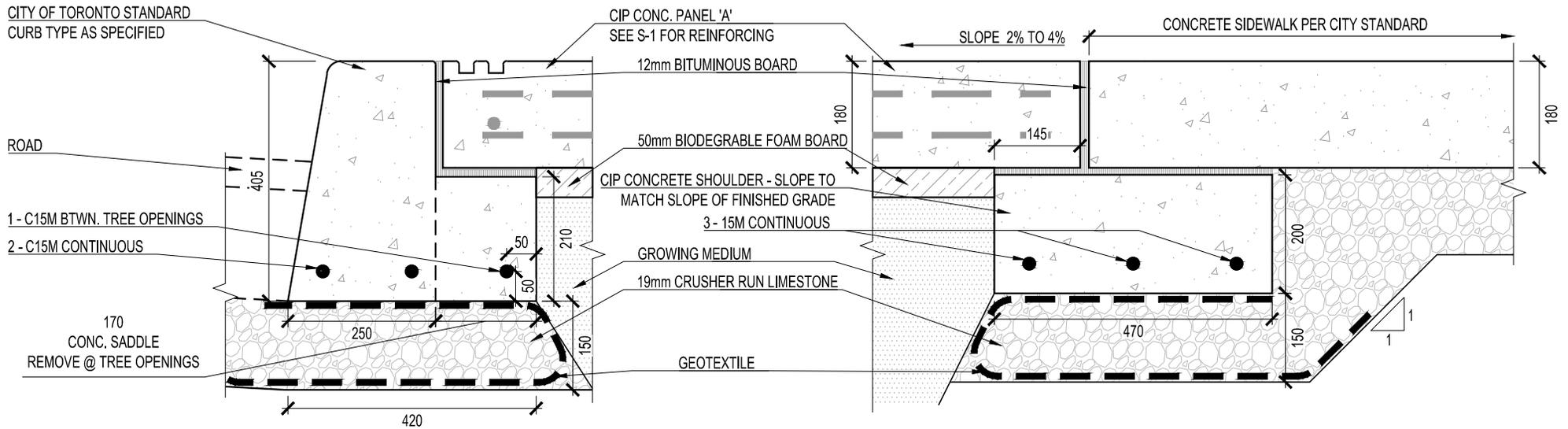
LAYOUT & MATERIALS PLAN
WITH SOIL CELLS

SCALE: NTS

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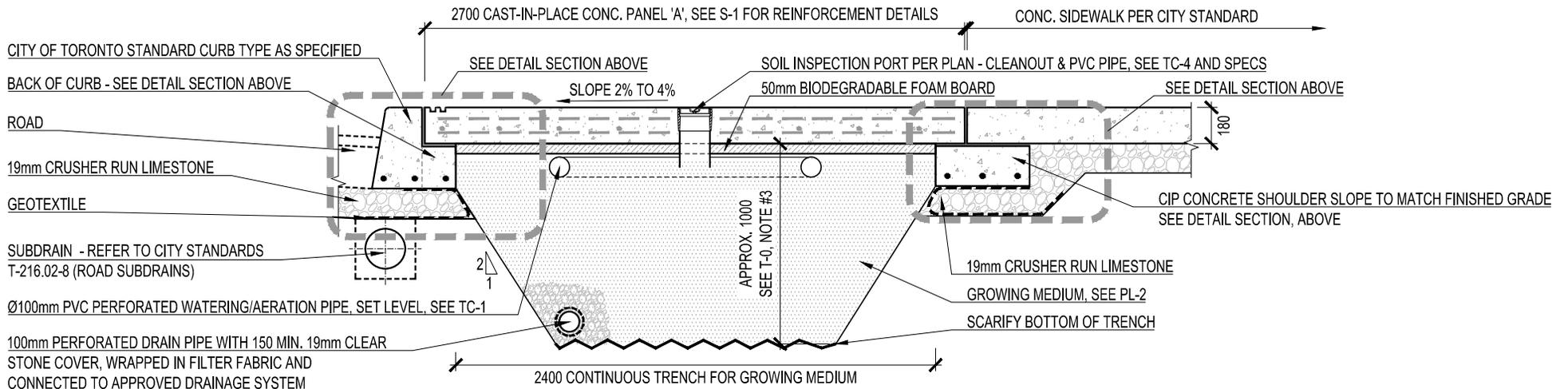
T-1A.2

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DETAIL SECTION: CAST-IN-PLACE CONCRETE PANEL 'A' @ CURB - SCALE 1:10

DETAIL SECTION: CAST-IN-PLACE CONCRETE PANEL 'A' & 'B' @ CONCRETE SHOULDER - SCALE 1:10



TYPICAL SECTION THROUGH CAST-IN-PLACE CONCRETE PANEL 'A' & TRENCH - SCALE 1:30



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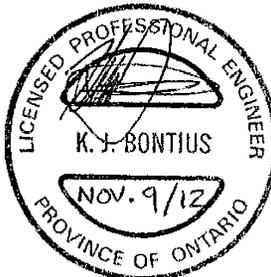
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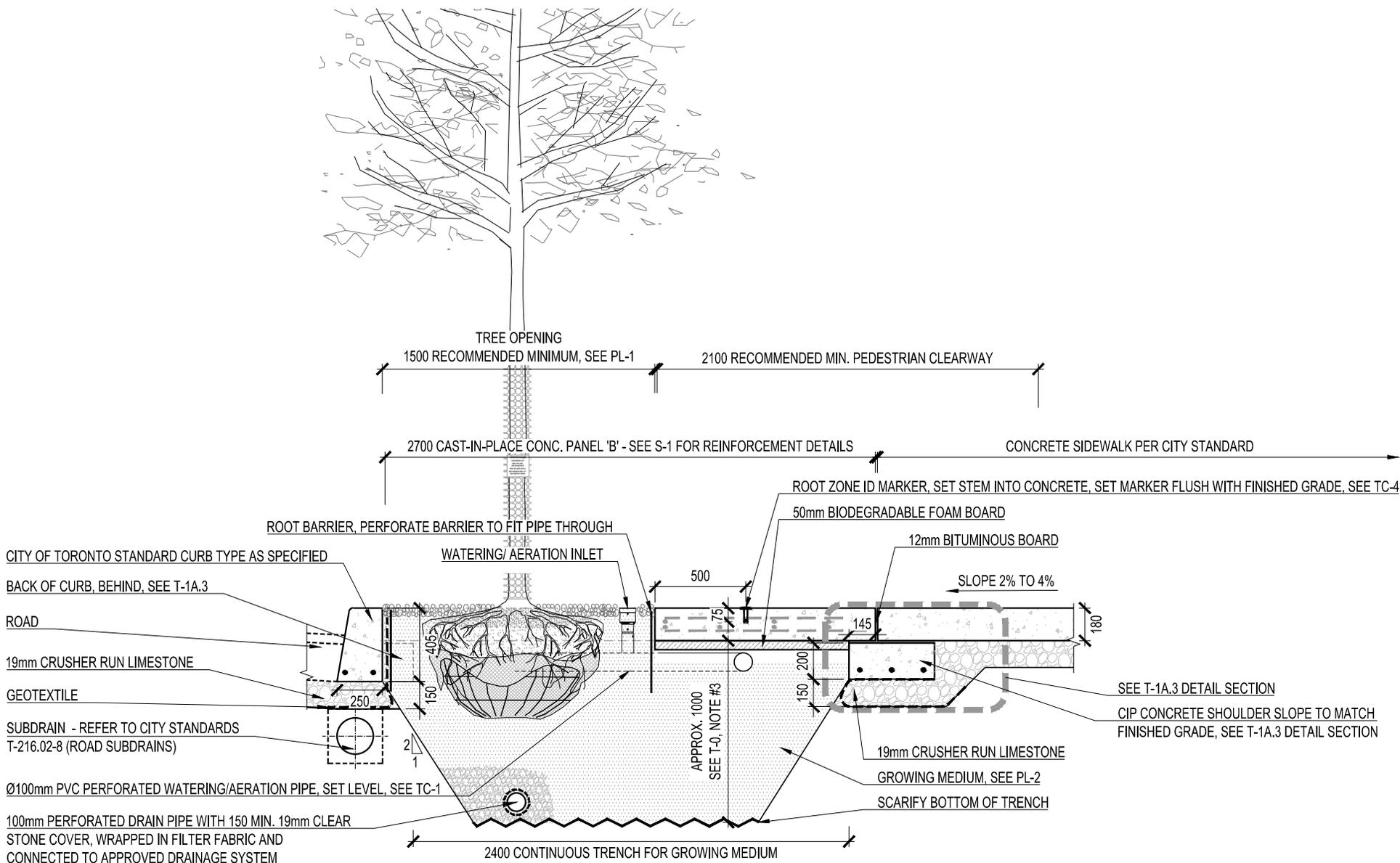
TYPICAL SECTIONS

SCALE: AS SHOWN

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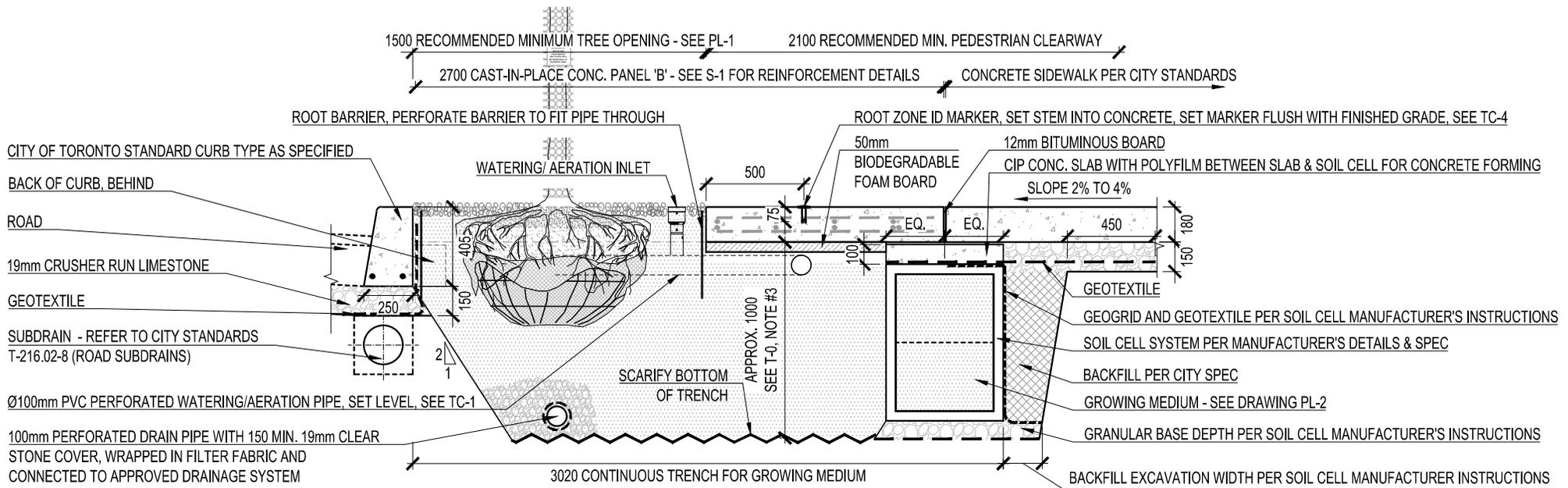
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TREE PLANTING SOLUTIONS
IN HARD BOULEVARD
SURFACES

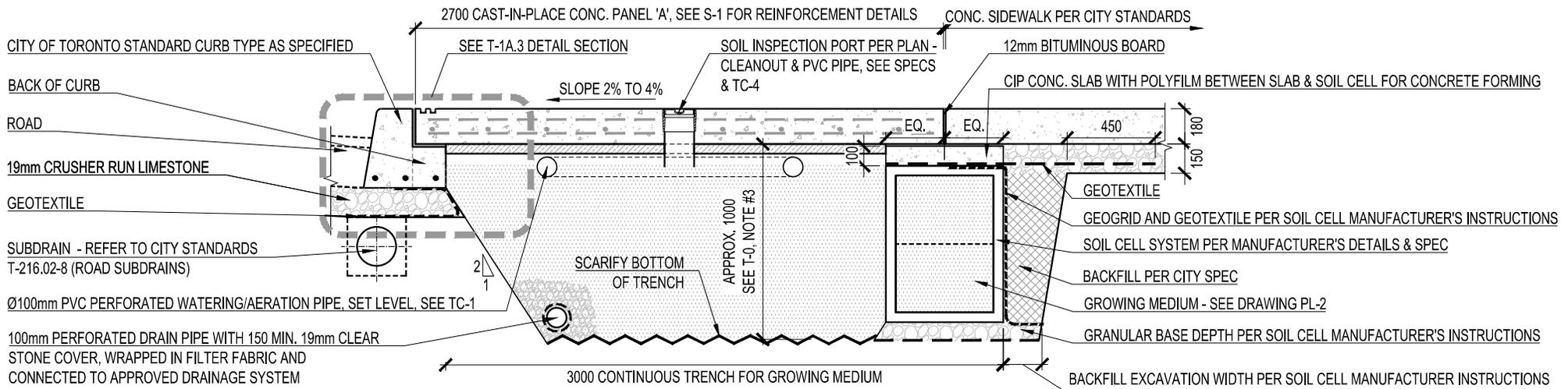


TYPICAL SECTION THROUGH CAST-IN-PLACE CONCRETE PANEL 'B' @ TREE OPENING

	<p>50 Park Road Toronto, ON M4W 2N5 t: 416.968.9479</p>					TYPE-1A: CAST-IN-PLACE STRUCTURAL CONCRETE PANELS OVER CONTINUOUS GROWING MEDIUM TRENCH	All dimensions are in millimetres unless otherwise noted.
	<p>Suite 2400 - 2 Bloor St. W. Toronto, ON M4W 1A8 t: 416.515.0915</p>						
TREE PLANTING SOLUTIONS IN HARD BOULEVARD SURFACES	<p>915 Creek Drive Annapolis, MD 21403 t: 410.263.4838</p>		3	2013-02-08	Best Practices Manual-100% Submission-R1	TYPICAL SECTION THROUGH PANEL 'B' @ TREE OPENING	T-1A.4
	<p>1248 Minnewaska Trail Mississauga, ON L5G 3S5 t: 905.274.1022</p>		2	2012-07-31	Best Practices Manual - 100% Submission		
			1	2012-02-29	Issued for City Review - 90% Submission		
			No.	DATE	REVISIONS		SCALE: 1:30



TYPICAL SECTION THROUGH CAST-IN-PLACE CONCRETE PANEL 'B', TRENCH & SOIL CELLS



TYPICAL SECTION THROUGH CAST-IN-PLACE CONCRETE PANEL 'A', TRENCH & SOIL CELLS



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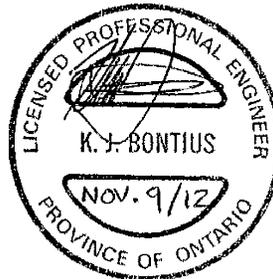
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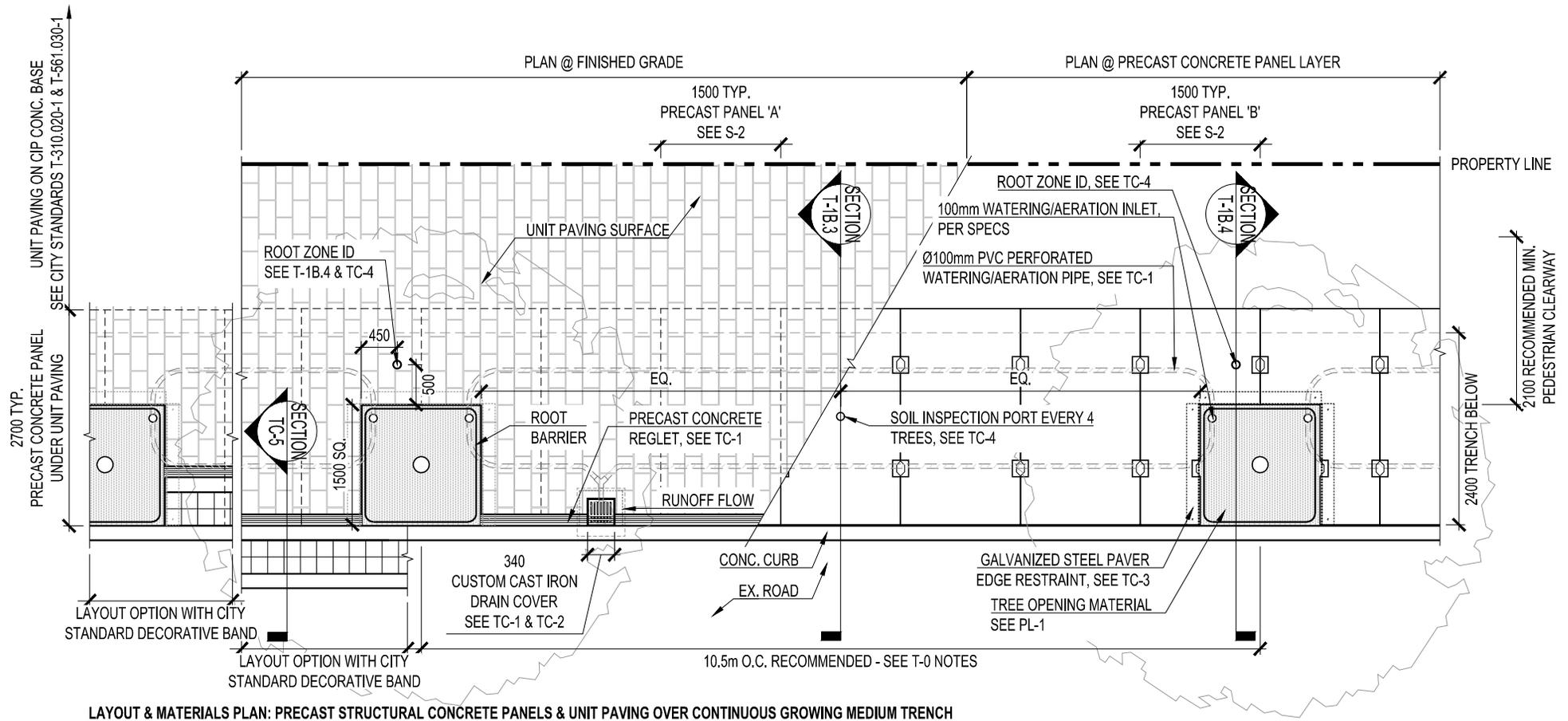
TYPICAL SECTIONS
WITH SOIL CELLS

SCALE: 1:30

All dimensions are in
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T-1A.5

TREE PLANTING SOLUTIONS
IN HARD BOULEVARD
SURFACES



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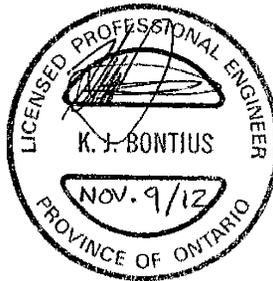
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TYPE-1B:
PRECAST STRUCTURAL
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MEDIUM TRENCH

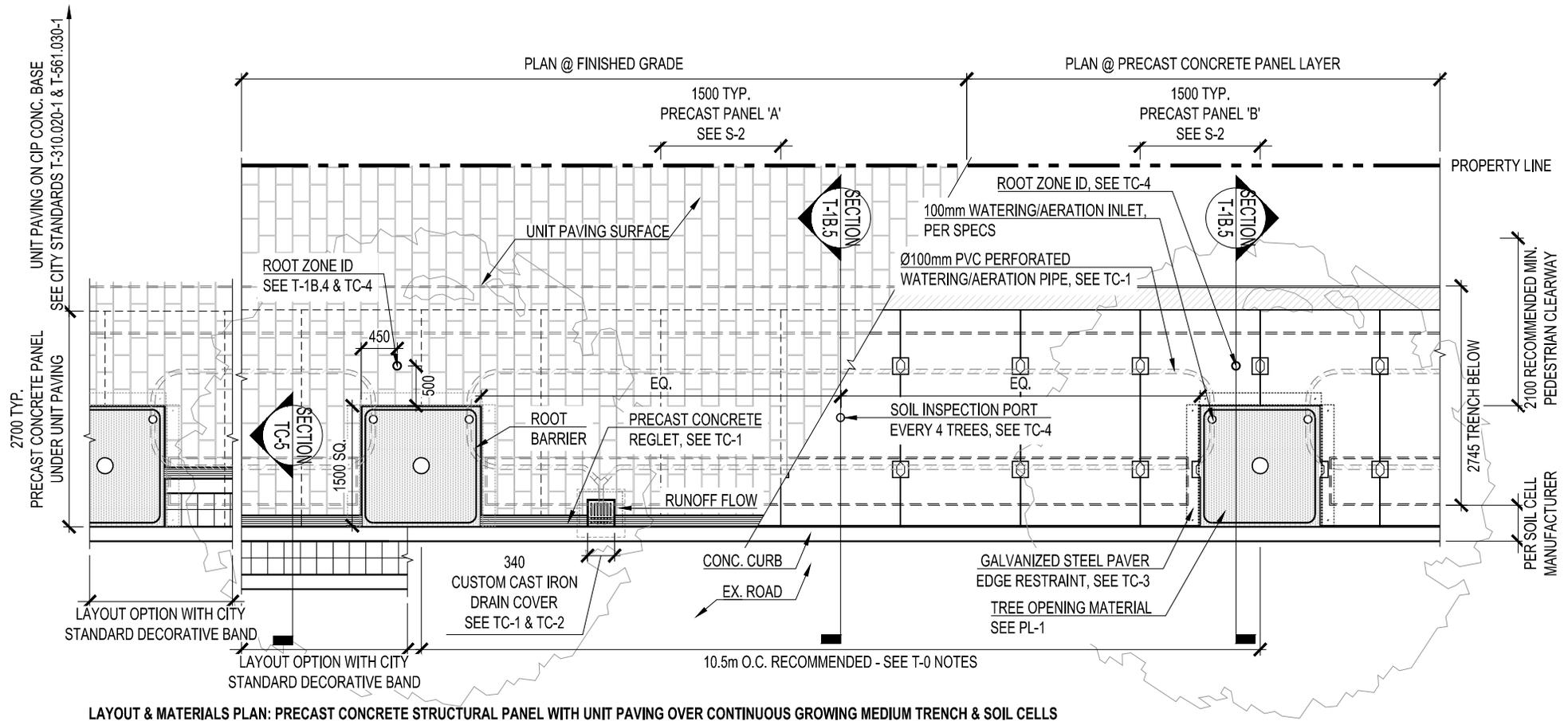
LAYOUT & MATERIALS PLAN

SCALE: NTS

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T-1B.1

TREE PLANTING SOLUTIONS
IN HARD BOULEVARD
SURFACES



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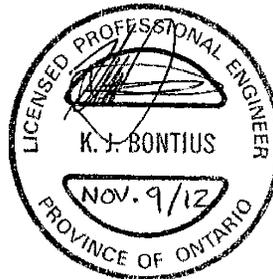
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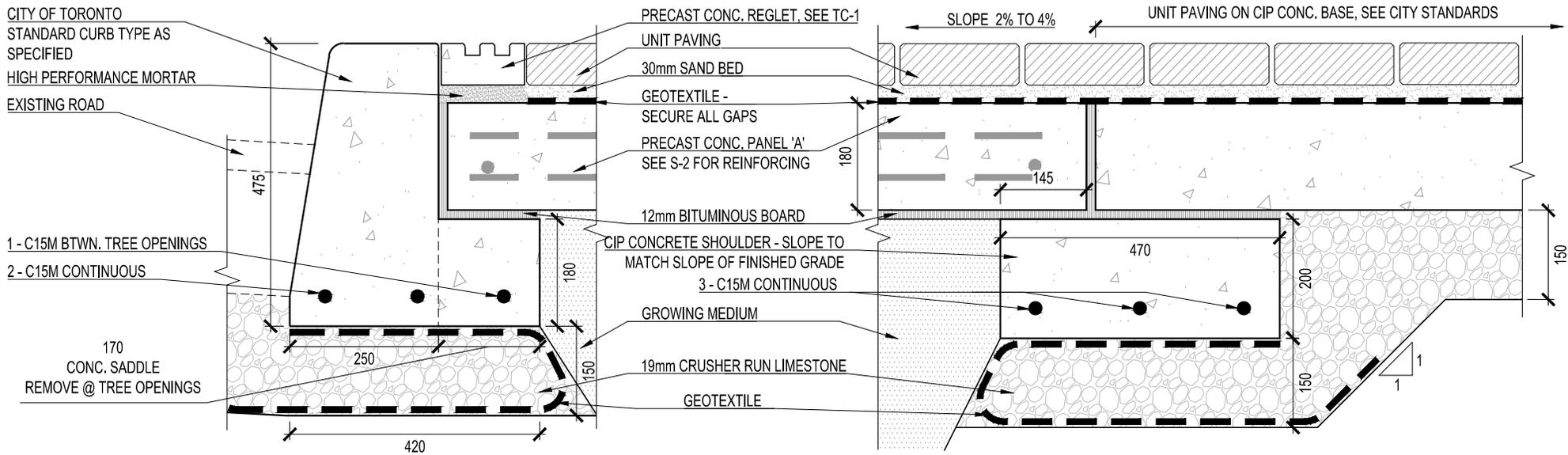
LAYOUT & MATERIALS
PLAN WITH SOIL CELLS

SCALE: NTS

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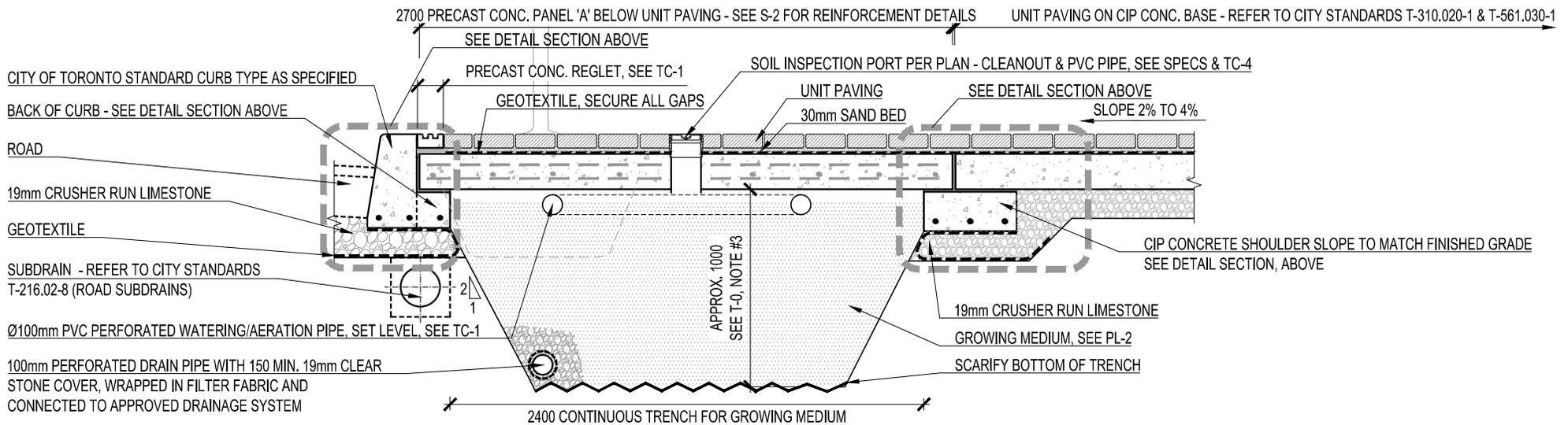
T-1B.2

TREE PLANTING SOLUTIONS
IN HARD BOULEVARD
SURFACES



DETAIL SECTION: PRECAST CONCRETE PANEL 'A' @ CURB & REGLET - SCALE 1:10

DETAIL SECTION: PRECAST CONCRETE PANEL 'A' & 'B' @ CONCRETE SHOULDER - SCALE 1:10



TYPICAL SECTION THROUGH PRECAST CONCRETE PANEL 'A' & TRENCH - SCALE 1:30



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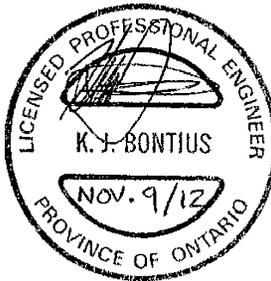
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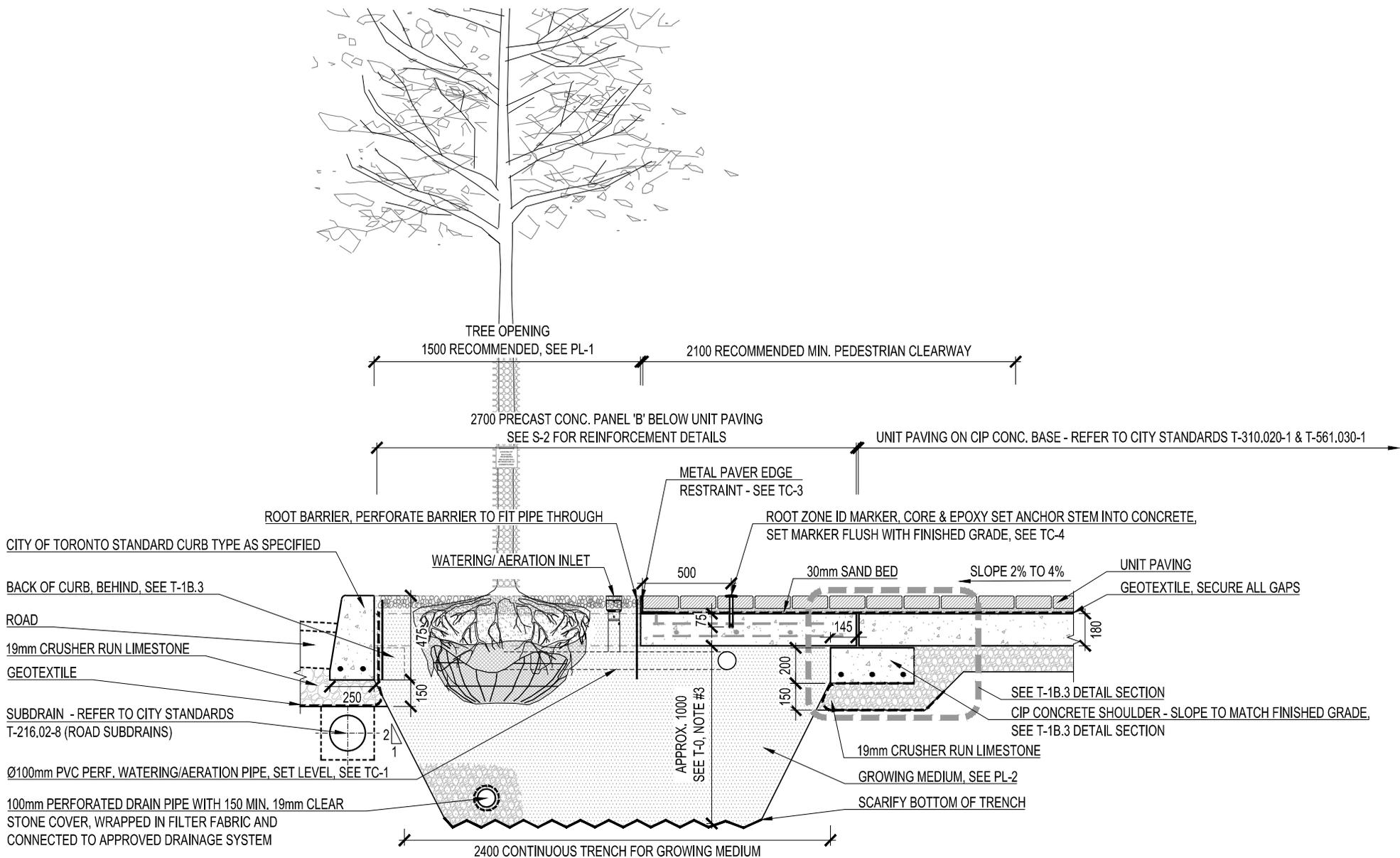
TYPICAL SECTIONS

SCALE: AS SHOWN

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T-1B.3

TREE PLANTING SOLUTIONS
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SURFACES



TYPICAL SECTION THROUGH PRECAST CONCRETE PANEL 'B' @ TREE OPENING



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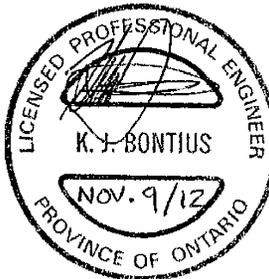
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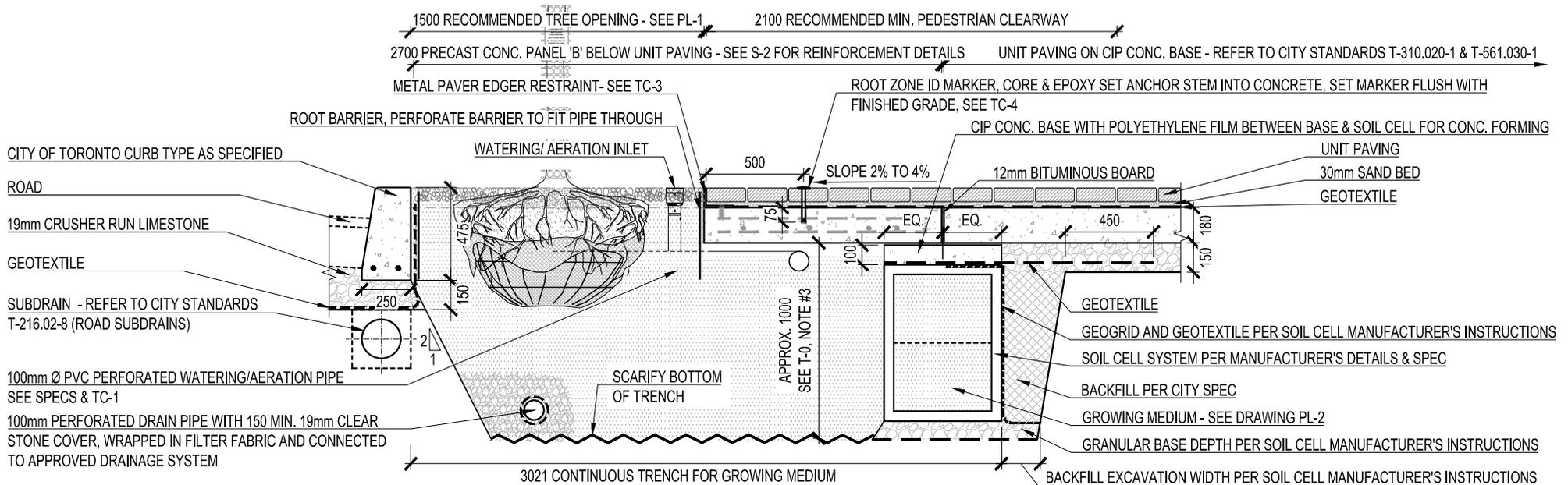
TYPICAL SECTION
THROUGH PANEL 'B'
@ TREE OPENING

SCALE: 1:30

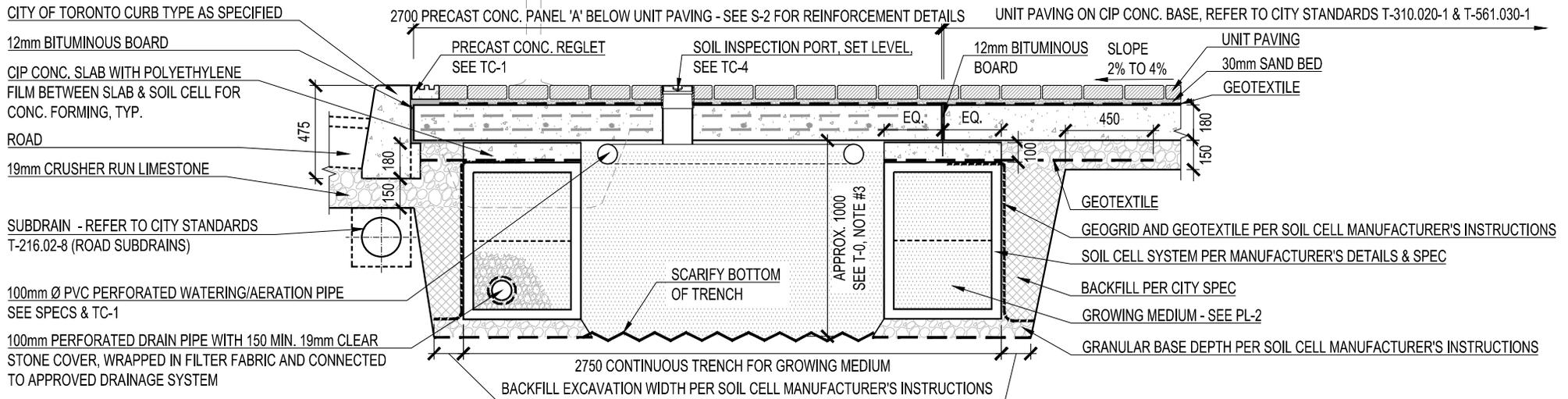
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T-1B.4

TREE PLANTING SOLUTIONS
IN HARD BOULEVARD
SURFACES



TYPICAL SECTION THROUGH PRECAST CONCRETE PANEL 'B', TRENCH & SOIL CELLS



TYPICAL SECTION THROUGH PRECAST CONCRETE PANEL 'A', TRENCH & SOIL CELLS



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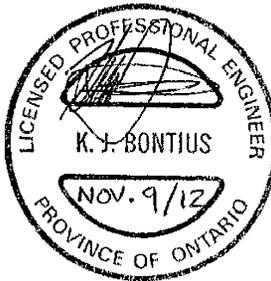
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TYPICAL SECTIONS
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T-1B.5

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