Schedule 1 to the Minutes of the Development Permit Panel meeting held on Wednesday, July 10, 2019.

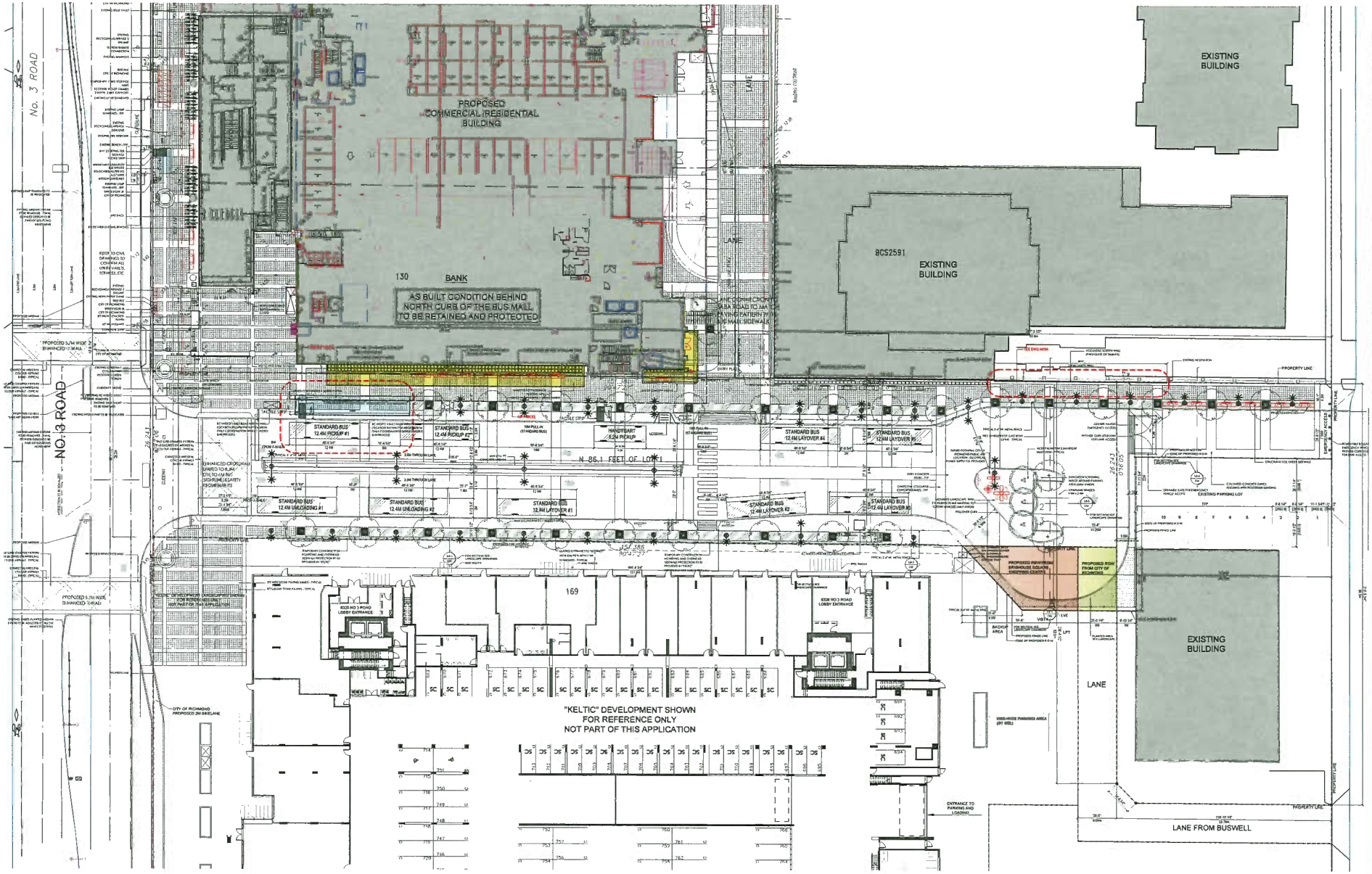
RICHMOND-BRIGHOUSE BUS MALL

6302 No 3 Road, Richmond

DEVELOPMENT PANEL MEETING

JULY 10, 2019

Westminster Hwy
Westminster Hwy
Westminster Hwy
Minoru Blvd
No 3 Rd
No 3 Rd
No 3 Rd
Cambie Rd
Cambie Rd
Sexsmith Rd
Garden City Rd
Garden City Rd
Gilbert Rd
Gilbert Rd
Lansdowne Rd
Lansdowne Rd
Alderbridge Way
Alderbridge Way
Capstan Way
Capstan Way
Sexsmith Rd
Sexsmith Rd
Cedar Dr
Cedar Dr
Cedar Dr
Cedar Dr
Park Rd
Park Rd
Park Rd



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TRANSLINK

BUS MALL LAYOUT

SCALE: 3/64"=1'-0"

6302 No 3 ROAD, RICHMOND
DEVELOPMENT PERMIT RE-SUBMISSION
July 10, 2019

A0004

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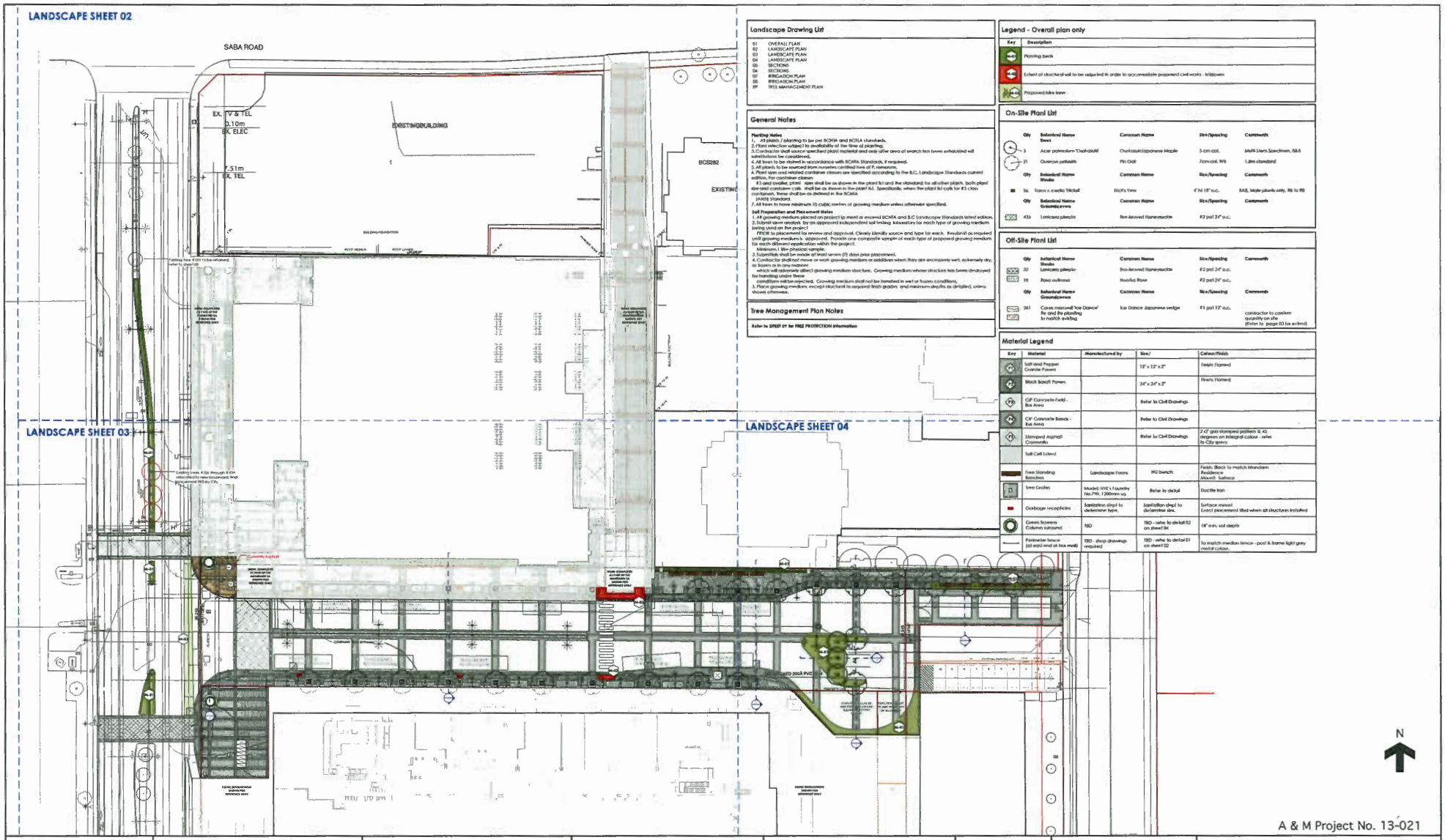
BUS MALL

6302 No 3 ROAD, RICHMOND
DEVELOPMENT PERMIT RE-SUBMISSION
June 03, 2019



Landscape Drawing List

01	OVERALL PLAN
02	LANDSCAPE PLAN
03	LANDSCAPE PLAN
04	LANDSCAPE PLAN
05	SECTIONS
06	SECTIONS
07	IRRIGATION PLAN
08	IRRIGATION PLAN
09	TREE MANAGEMENT PLAN

General Notes

Planting Notes

1. All plant / planting to be per BCNA and BCSLA standards.
2. Plant selection subject to availability at the time of planting.
3. Contractor shall source specified plant material and only offer area of search has been exhausted will substitutions be considered.
4. All trees to be staked in accordance with BCNA Standards, if required.
5. All plants to be sourced from nurseries certified free of P. ramorum.
6. Plant sizes and related container classes are specified according to the B.C. Landscape Standards current edition. For container classes

#3 and smaller, plant sizes shall be as shown in the plant list and the standard; for all other plants, both plant size and container code shall be as shown in the plant list. Specifically, when the plant list calls for #3 class containers, these shall be as defined in the BCNA (2002) Standard.

7. All trees to have minimum 10 cubic metres of growing medium unless otherwise specified.

Soil Preparation and Placement Notes

1. All growing medium placed on project to meet or exceed BCNA and B.C Landscape Standards latest edition.
2. Submit sieve analysis by an approved independent soil testing laboratory for each type of growing medium being used on the project

PRIOR to placement for review and approval. Clearly identify source and type for each. Resubmit as required until growing medium is approved. Provide one composite sample of each type of proposed growing medium for each different application within the project.

Minimum 1 litre physical sample.

3. Submittals shall be made at least seven (7) days prior placement.
4. Contractor shall not move or work growing medium or additives when they are excessively wet, extremely dry, or frozen or in any manner

which will adversely affect growing medium structure. Growing medium whose structure has been destroyed by handling under these

conditions will be rejected. Growing medium shall not be handled in wet or frozen conditions.

5. Place growing medium, except structural to required finish grades and minimum depths as detailed, unless shown otherwise.

Tree Management Plan Notes

Refer to SHEET 09 for TREE PROTECTION information

Legend - Overall plan only

Key	Description
	Planting beds
	Extent of structural soil to be adjusted in order to accomodate proposed civil works - linkdown
	Proposed bike lane

On-Site Plant List

Qty	Botanical Name Trees	Common Name	Size/Spacing	Comments
3	Acer palmatum 'Osakazuki'	Osakazuki Japanese Maple	5 cm cal.	Multi-Stem Specimen, B&B
21	Quercus palustris	Pin Oak	7cm cal. WB	1.8m standard
Qty	**Botanical Name Shrubs**	**Common Name**	**Size/Spacing**	**Comments**
56	Ilex x meserva 'Blue Prince'	Blue Prince Holly	4' ht/ 18" o.c.	B&B, Male plants only, fill to fill
Qty	**Botanical Name Groundcovers**	**Common Name**	**Size/Spacing**	**Comments**
433	Lonicera pileata	Box-leaved Honeysuckle	#2 pot 24" o.c.	

Off-Site Plant List

Qty	Botanical Name Shrubs	Common Name	Size/Spacing	Comments
32	Lonicera pileata	Box-leaved Honeysuckle	#2 pot 24" o.c.	
18	Rosa nutkana	Nootka Rose	#2 pot 24" o.c.	
Qty	**Botanical Name Groundcovers**	**Common Name**	**Size/Spacing**	**Comments**
261	Carex morrowii 'Ice Dance' fte and fte planting to match existing	Ice Dance Japanese sedge	#1 pot 12" o.c.	contractor to confirm quantity on site (Refer to page 03 for extent)

Material Legend

Key	Material	Manufactured by	Size /	Colour/Finish
	Salt and Pepper Granite Pavers		12" x 12" x 2"	Finish: Flamed
	Black Basalt Pavers		24" x 24" x 2"	Finish: Flamed
	CIP Concrete Field - Bus Area		Refer to Civil Drawings	
	CIP Concrete Bands - Bus Area		Refer to Civil Drawings	
	Stamped Asphalt Crosswalks		Refer to Civil Drawings	2'x2' grid stamped pattern @ 45 degrees on integral colour - refer to City specs
	Soft Cell Edging			
	Free Standing Benches	Landscape Forms	M2 bench	Finish: Black to match Mondiam Residence Mount: Surface
	Tree Grates	Model: 1916 Foundry No.798, 1200mm sq.	Refer to detail	Ductile iron
	Garbage receptacles	Sanitation dept to determine type.	Sanitation dept to determine size.	Surface mount Exact placement TBD when all structures installed
	Green Screens Column surround	TBD	TBD - refer to detail 02 on sheet 06	18" min. soil depth
	Perimeter fence (at east end at bus mall)	TBD - shop drawings required	TBD - refer to detail 01 on sheet 02	To match median fence - post & frame light grey metal colour.

A & M Project No. 13-021

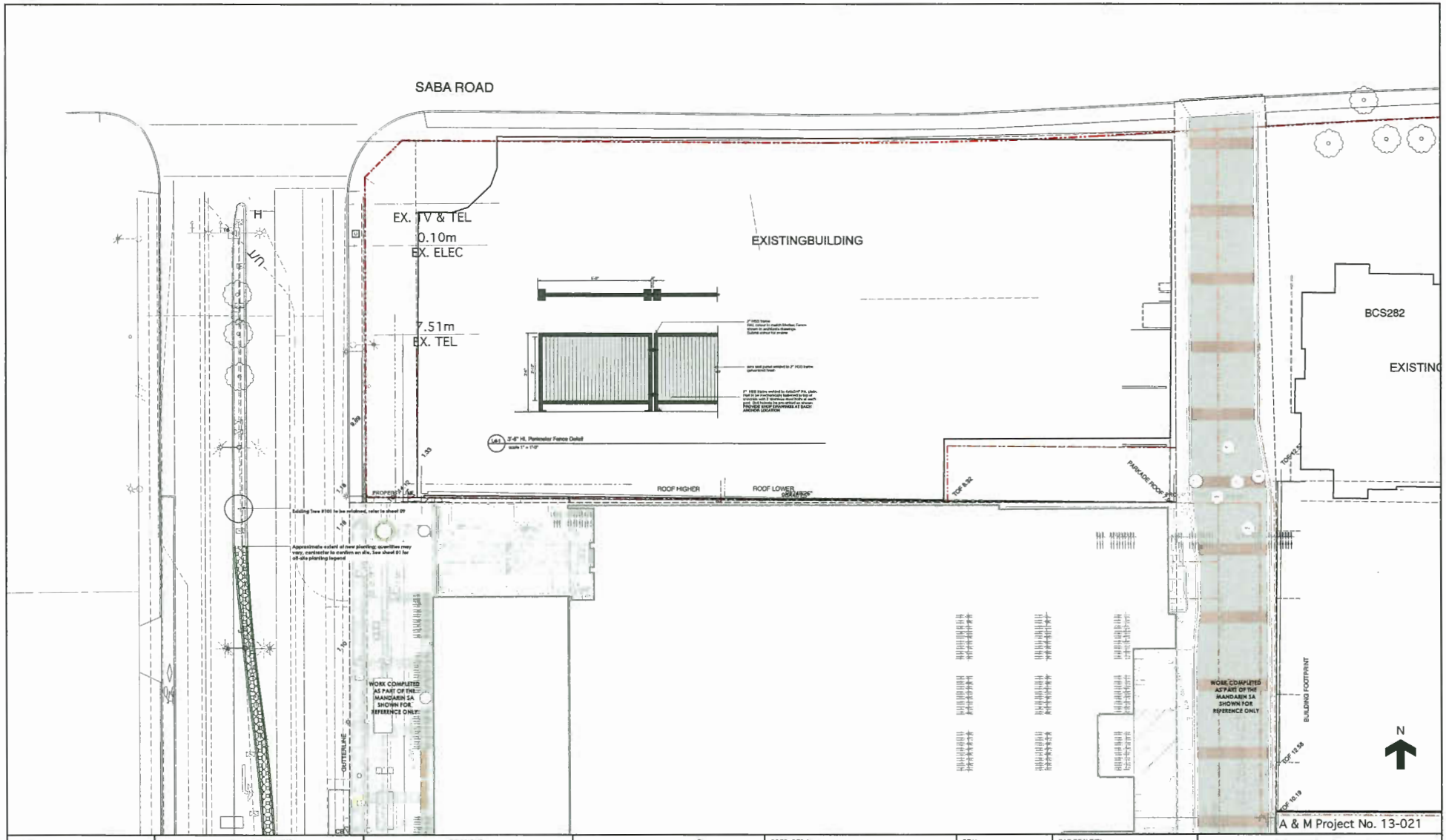
DESIGNED	JK		DATE
DRAWN	MTB		DATE
CHECKED	PK		DATE
APPROVED			DATE

REFERENCE DRAWING

No	DWG No	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION	REV
MAR 01, 2019	AB	RE-ISSUE FOR DP	04
MAY 07, 2019	AB	RE-ISSUE FOR DP	05
JUNE 03, 2019	AB	RE-ISSUE FOR DP	06



A & M Project No. 13-021

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DRAWN	MTB	DATE
CHECKED	RE	DATE
APPROVED		DATE

REFERENCE DRAWING

No	DWG No	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION	REV
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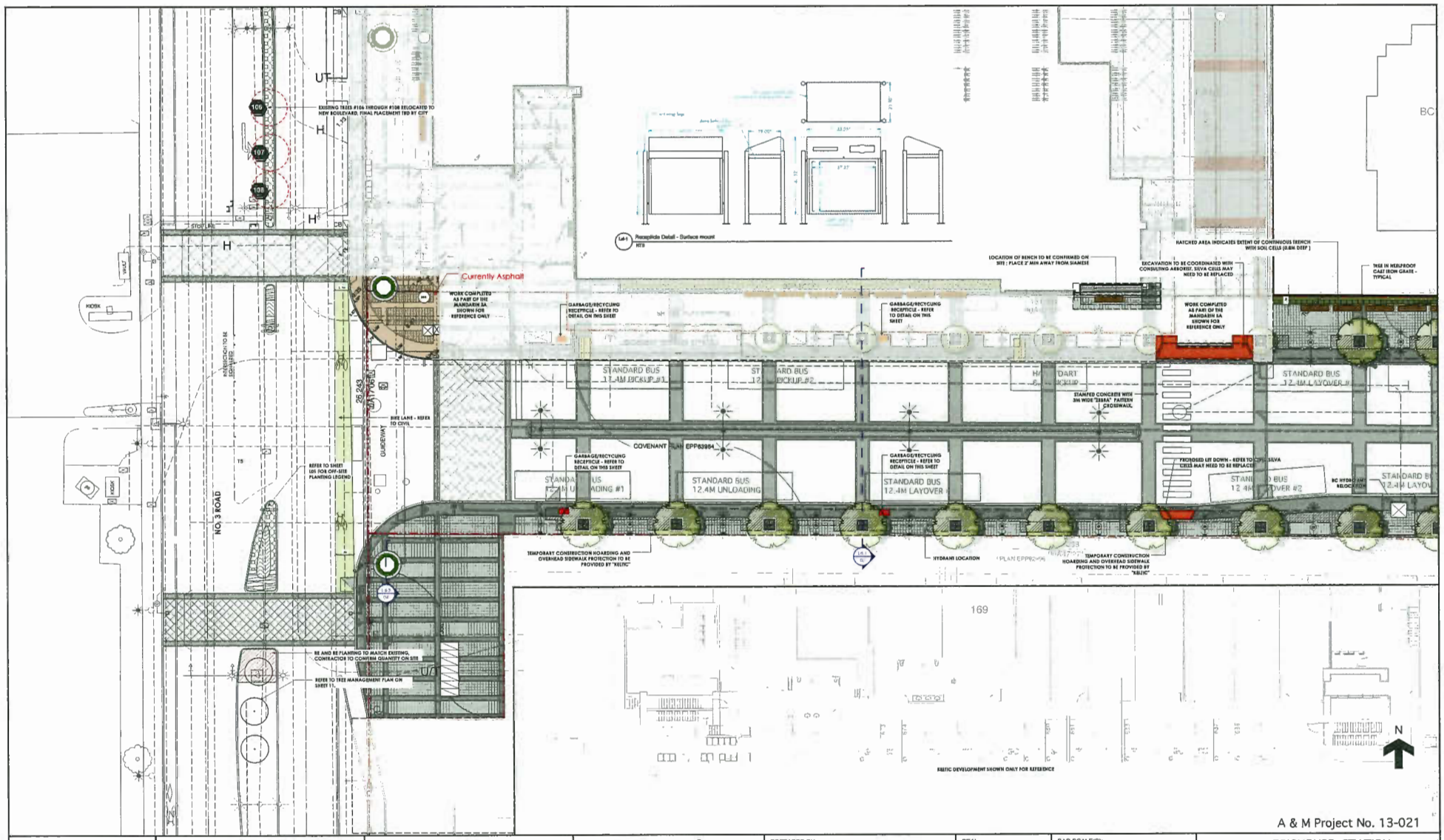
MAY 07, 2016	AB	RE-ISSUE FOR DP	05
JUNE 03, 2016	AB	RE-ISSUE FOR DP	06



A & M Project No. 13-021

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DRAWN	MTB	DATE
CHECKED	PK	DATE
APPROVED		DATE

REFERENCE DRAWING

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MAY 07, 2019	AB	RE-ISSUE FOR DP	05
JUNE 03, 2019	AB	RE-ISSUE FOR DP	06
DD/MM/YR			

TRANSLINK

PREPARED BY:

durante kreuk

Durante Kreuk Ltd.
102 - 1637 West 5th Ave.
Vancouver BC V6J 1N5
t: 604 684 4611
f: 604 684 0577
www.dkl.bc.ca

SEAL

BAR SCALE(S):

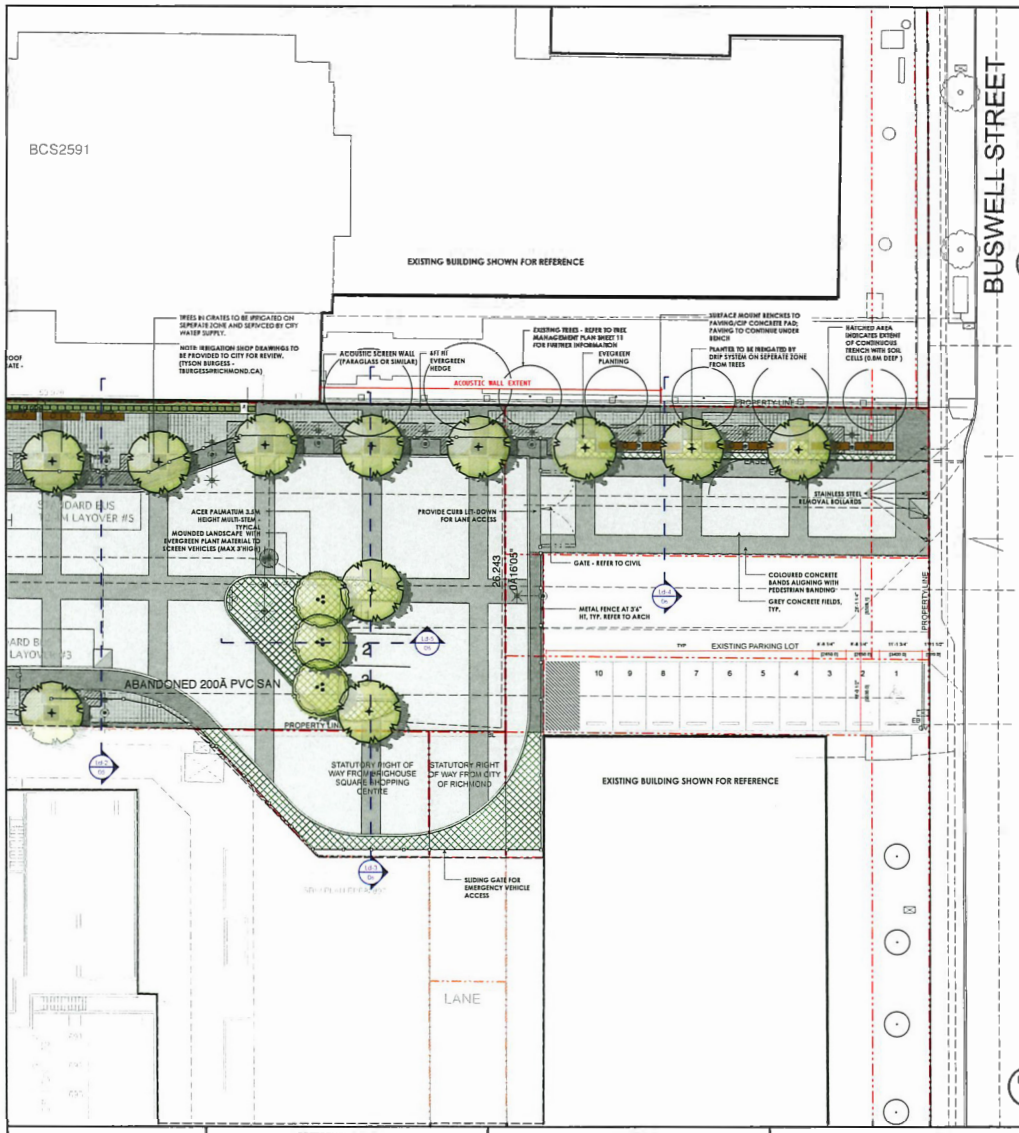
0 10 20 30

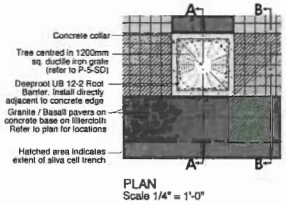
1/8" = 1'-0"

BRIGHOUSE STATION
BUS MALL
LANDSCAPE PLAN

SCALE 1/8" = 1'-0"	DKL PROJECT #	CITY PROJECT #	LANDSCAPE DRAWING #
DATE JULY - 2013	13032	842676-18-10	03 of 09

SUPERSEDES PRINTS OF THIS NUMBER WITH LETTERS PREVIOUS TO →

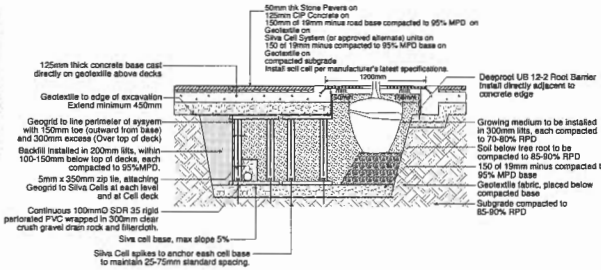




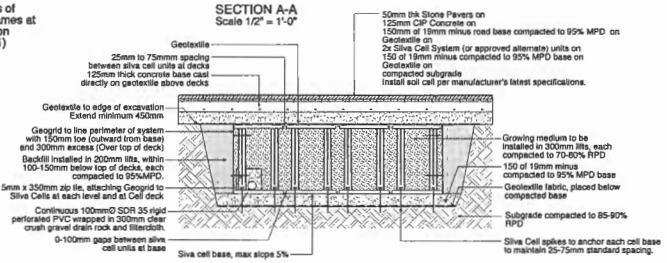
PLAN
Scale 1/4" = 1'-0"

Ld-1 Soil Cell Details
Scale As Shown

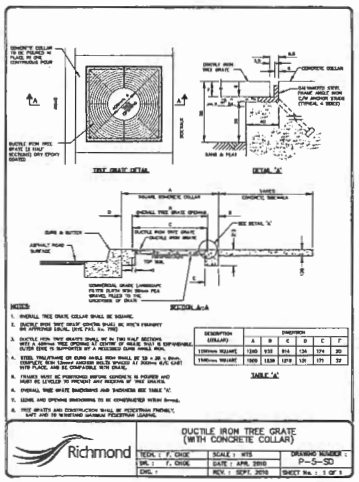
NOTE:
1. Contractor to provide shop drawings of proposed silva cell layout to Michael James at Deeproot for approval prior to installation (mjames@deeproot.com/604-220-9521)
2. Soil Cells to be installed per manufacturer's specifications.



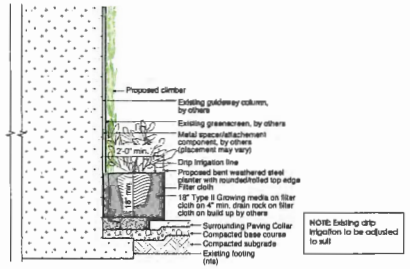
SECTION A-A
Scale 1/2" = 1'-0"



SECTION B-B
Scale 1/2" = 1'-0"



Ld-2 City of Richmond Tree Details
NTS



Ld-3 Canada Line Guideway Column Greenscreen Planter Concept Sketch - not for construction
Scale 1" = 1'-0"

N

A & M Project No. 13-021

DESIGNED	AL	DATE
DRAWN	MTR	DATE
CHECKED	PK	DATE
APPROVED		DATE

REFERENCE DRAWING

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BUS MALL

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DEVELOPMENT PERMIT RE-SUBMISSION
June 03, 2019

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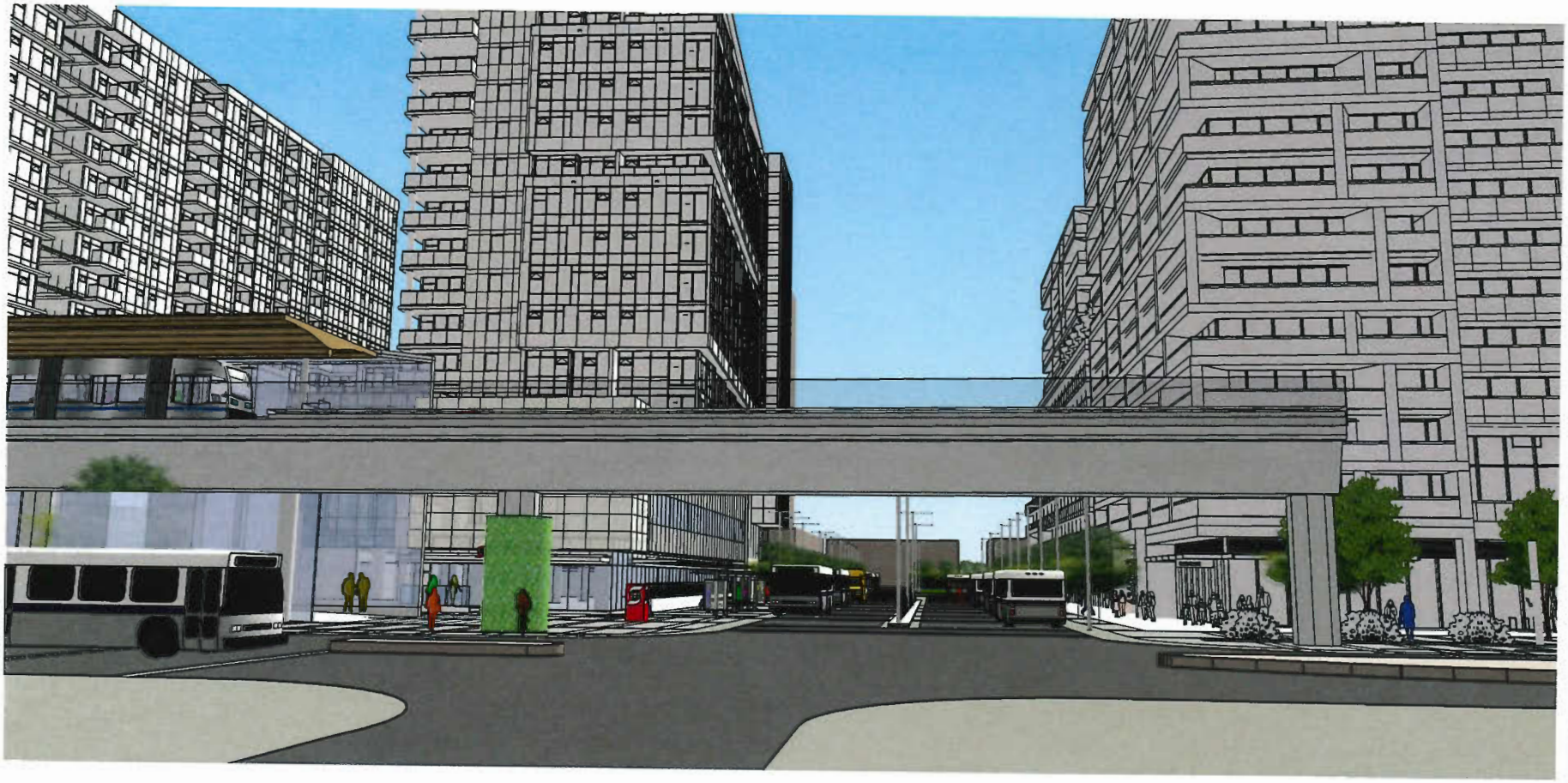

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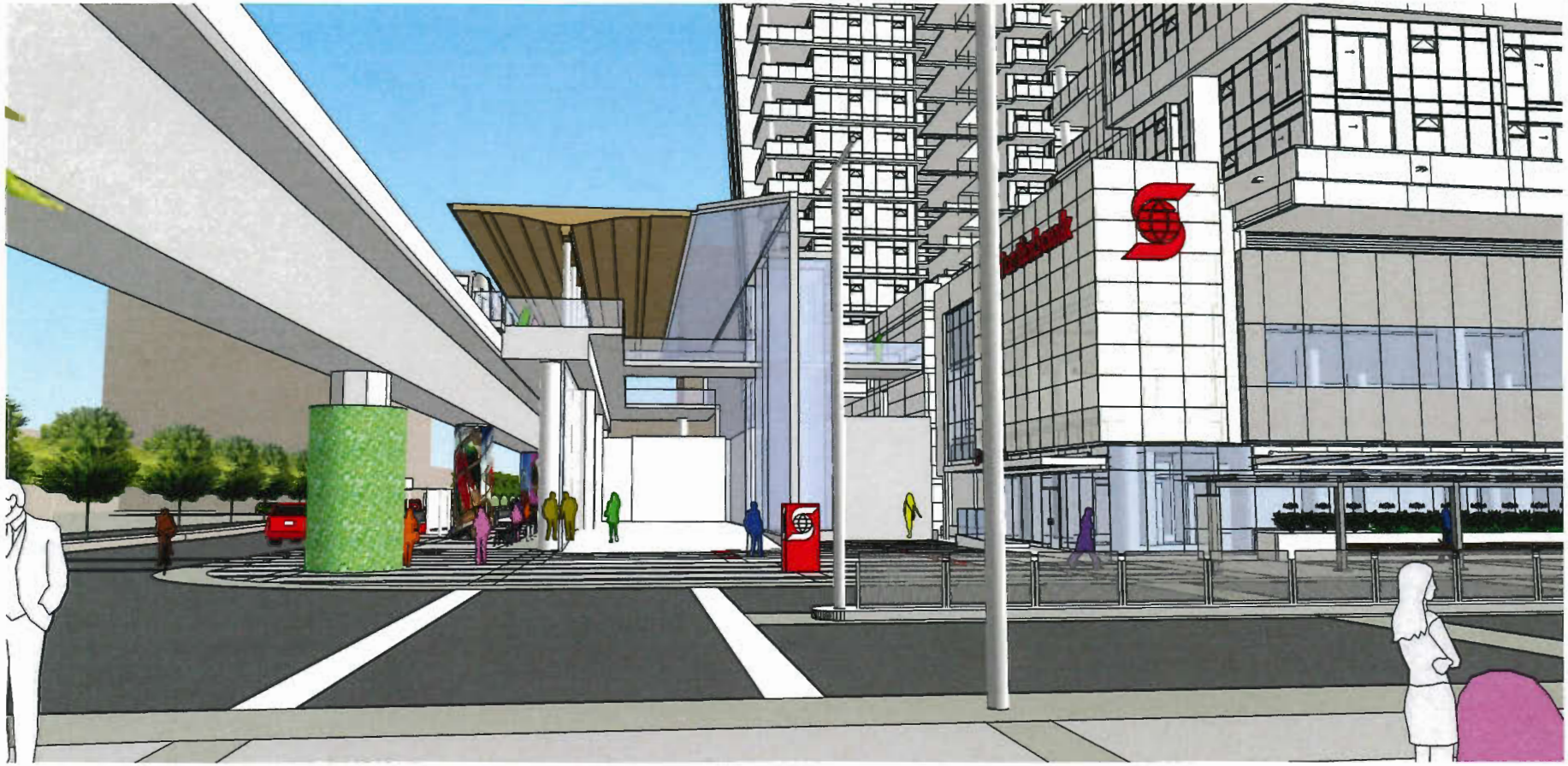

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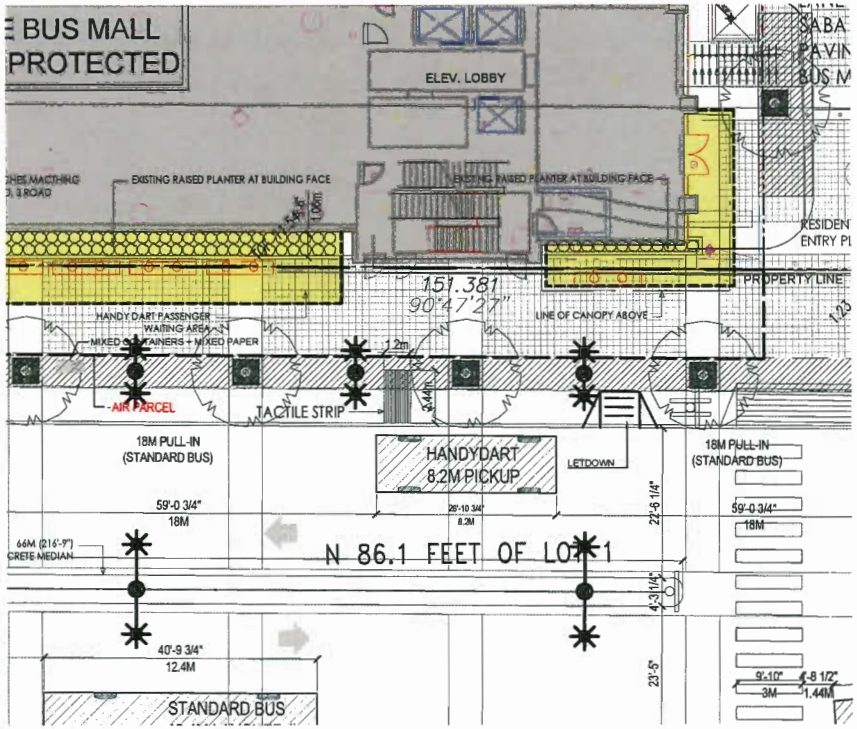
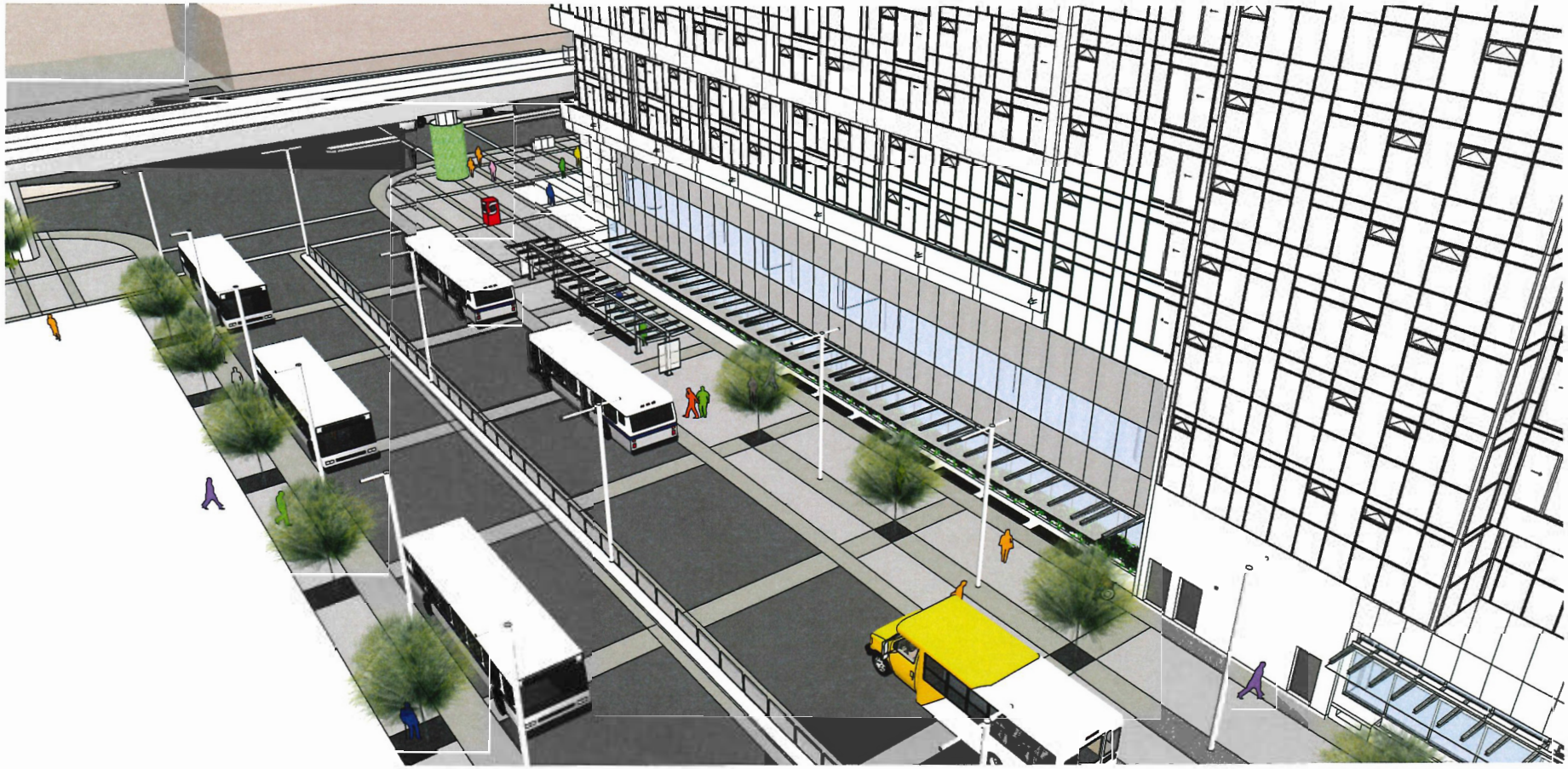


HANDYDART BUS LOCATION AND PASSENGER AREA



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July 10, 2019

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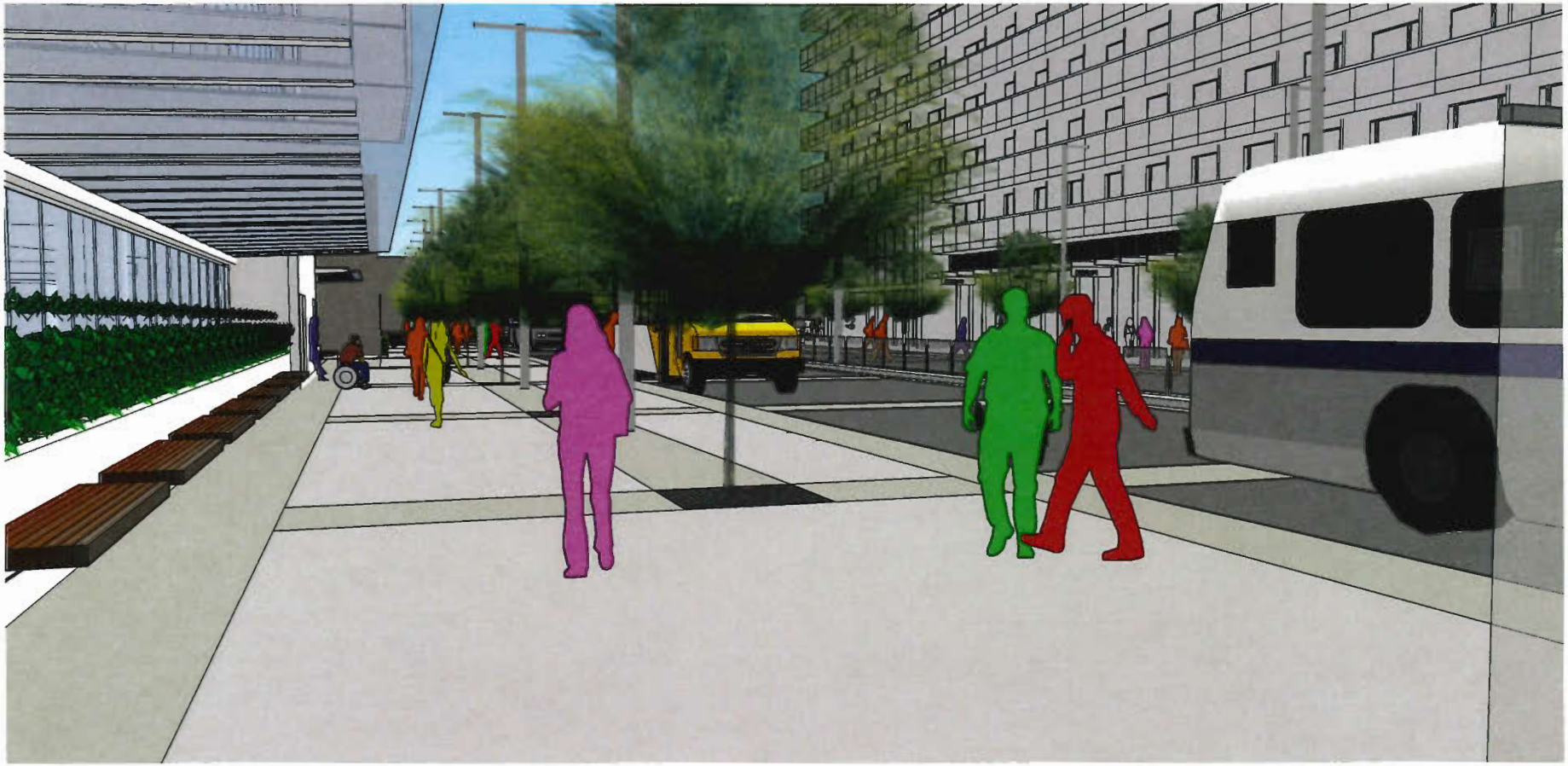
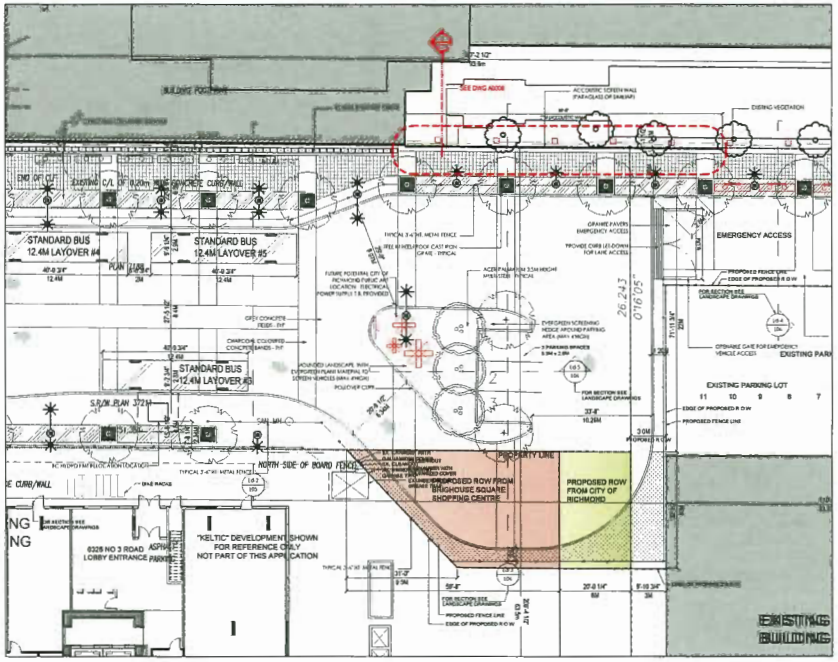
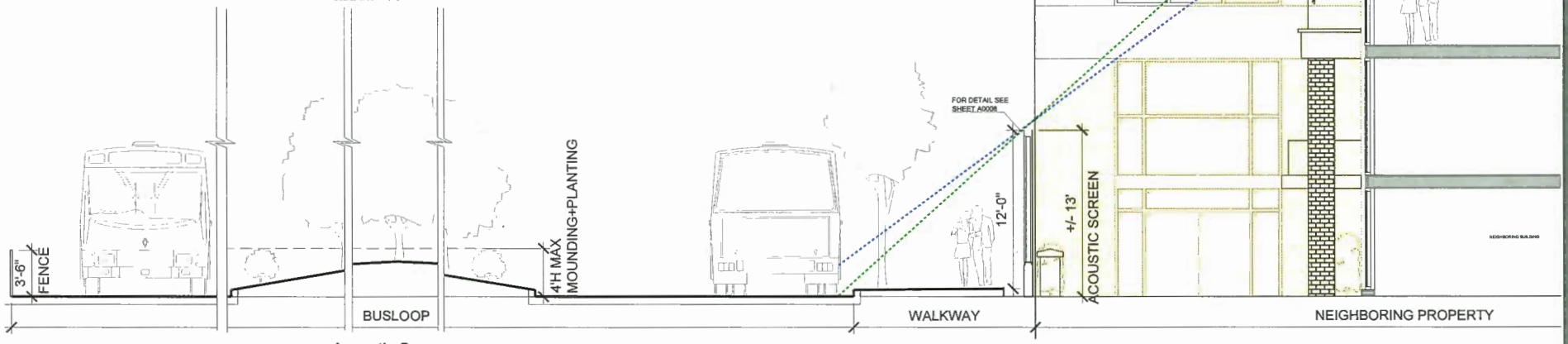


Image 1: North Neighbour
FACING EAST ELEVATION

Image 2: North Neighbour
FACING SOUTH-EAST ELEVATION



Key Plan
Scale: 1/16" = 1'-0"



Acoustic Screen
Scale: 1/4" = 1'-0"

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TRANSLATE N

ACOUSTIC SCREEN

SCALE: 1/12"=1'-0"

6302 No 3 ROAD, RICHMOND
DEVELOPMENT PERMIT RE-SUBMISSION
June 03, 2019

A0005

Brown Strachan Associates
Consulting Engineers in Acoustics

Project: 125.111

December 9, 2015

IBI Group Architects
700 - 1285 West Pender Street
Vancouver, BC V6E 4B1

Attn: Mr. Salim Narayanan

Dear Mr. Narayanan:

Re: Brighouse Bus Loop - Emporio Townhouses Acoustical Screen

Further to our telephone discussion of 8 December 2015, the following confirms our advice with respect to the acoustical screen proposed for the townhouses at Emporio, 6351 Buswell, facing south towards the bus loop turn around (appended).

Our original work on the Emporio was to evaluate the proposed design and to recommend facade details considering possible future bus loop noise. In the City of Richmond, the relevant reference for transportation noise design is the Official Community Plan (OCP), Section 14.4.7. Richmond's OCP criteria are based on CMHC's Road and Rail Noise: Effects on Housing, the recognised Canadian standard developed by the National Research Council, published in 1986.

Our design evaluation considered traffic, the Canada Line, two possible bus loop scenarios and YVR aircraft. The bus loop evaluation was based on a future volume of 2,000 bus movements per day with 90% diesel and 10% community shuttle buses.

Based on the bus volume and other sources, the exterior design level for the facade facing the bus loop was 65 dB, i.e. the 24 hour average level as specified in the OCP (BSA Report 708.051, 24 March 2006). The OCP interior design criterion is 35 dB for bedrooms. To meet the OCP criterion, the recommended facade was 6-13-3 thermal glazing, designed to reduce the noise by 30 decibels. Our records indicate 6-13-3 glazing was specified by the architects.

The proposed acoustical screen represents an additional noise reduction measure beyond Richmond's normal OCP requirements. We understand the intent is to provide additional noise reduction for lower level townhouses closest to the moving buses. We understand the screen material will be glass, which meets acoustical requirements.

.../2

Yaletown Square #2-1220 Homer St. Vancouver Canada V6B 2Y5 Tel: 604 669 0514 Fax: 604 669 2768 bsa@brownstrachan.com

Mr. Salim Narayanan December 9, 2015

Discussion

CMHC describes quiet interior levels as ranging from 25 to 35 dB. For reference, 0 dB is the threshold of perception for a young person with good hearing. With respect to subjective impressions, bus noise cannot be accurately compared to any other source such as construction, office noise, etc. The bus loop will sound like buses, inside or outside the townhouses.

As discussed above, the design level for the facade facing the bus loop was 65 dB. Subjectively, a reduction of 30 decibels through the townhouse facade is equivalent to about a 90% reduction in the outside level. By comparison, the design level for traffic on Buswell was 60 dB. The same 6-13-3 glazing was specified for the Buswell facade as access details to the bus loop were uncertain during the original design.

Most noise heard behind a screen is transmitted over the top and the expected noise reduction from a typical screen is 5-10 decibels. Subjectively, a 5 decibel reduction is noticeable and a 10 decibel reduction is about half as loud. Behind a barrier, buses would sound as though they are 2-3 times as far away. The barrier reduction would also apply to the residual noise transmitted through the facade of the lower townhouses.

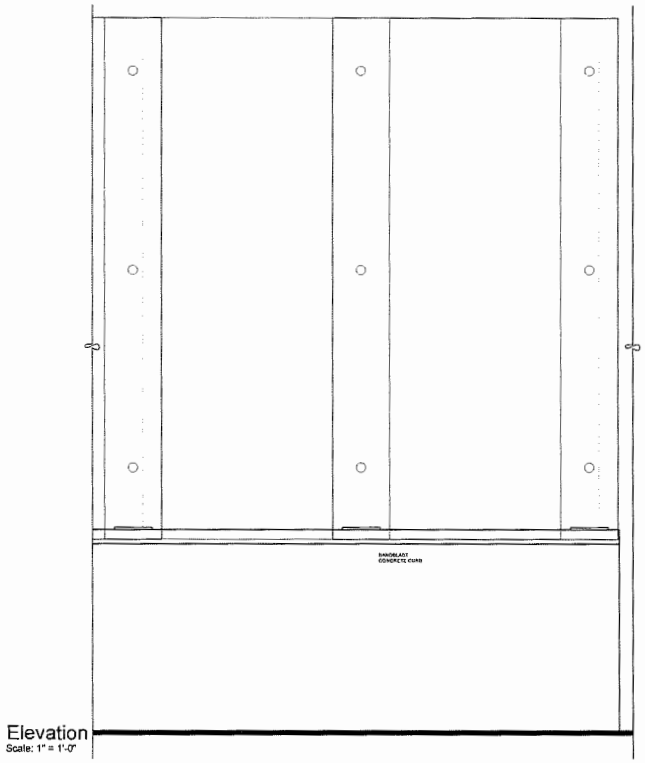
Please call if you have any questions.

Yours very truly,

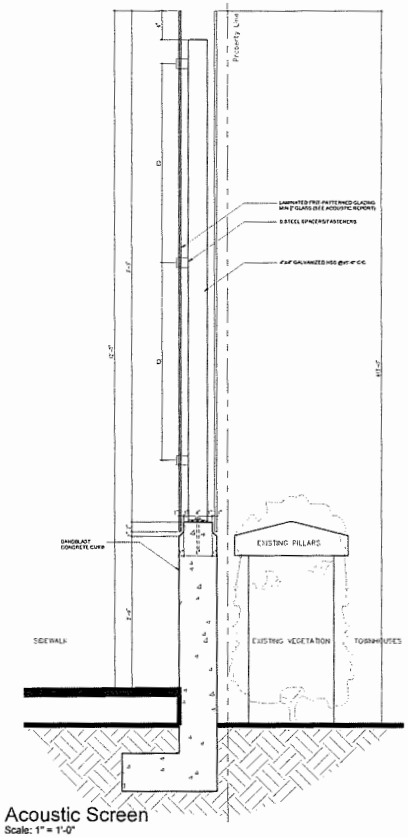
BROWN STRACHAN ASSOCIATES

David W. Brown, P.Eng.

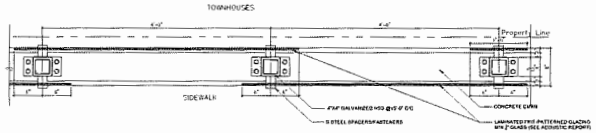
Incl. DWB/ll/15Dec/IBIBrighouse.let



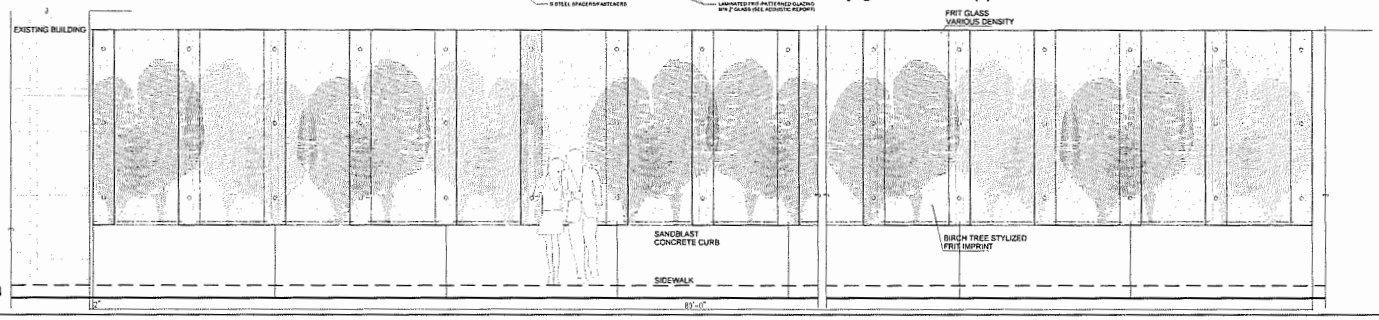
Elevation
Scale: 1" = 1'-0"



Acoustic Screen
Scale: 1" = 1'-0"
Complete glass and securing to be engineered by glass wall supplier / installer



Plan
Scale: 1" = 1'-0"



Proposed Elevation
Scale: NTS

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TRANSLINK

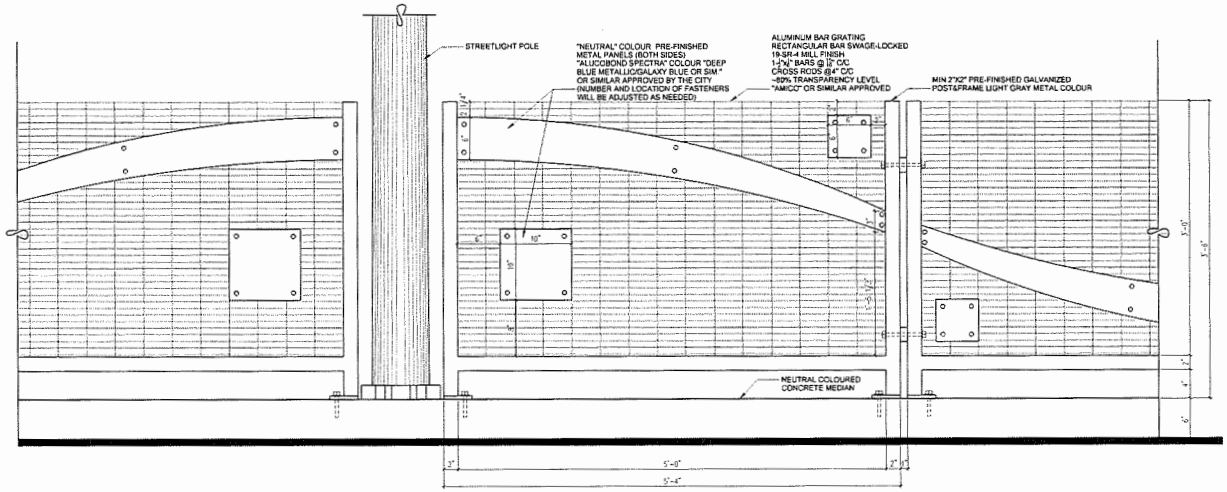
N

ACOUSTIC SCREEN

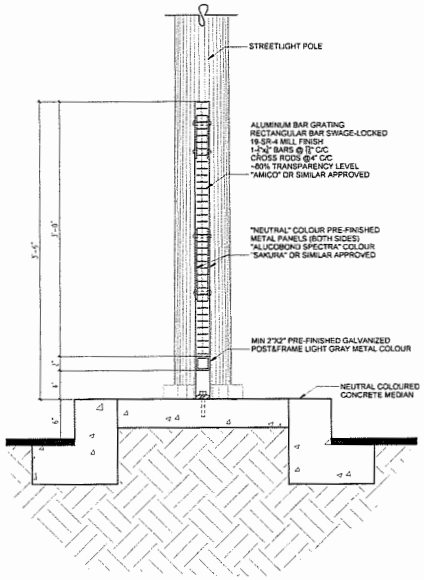
SCALE: 1 1/2"=1'-0"

6302 No 3 ROAD, RICHMOND
DEVELOPMENT PERMIT RE-SUBMISSION
June 03, 2019

A0006



Elevation
Scale: 1 1/2" = 1'-0"



Section
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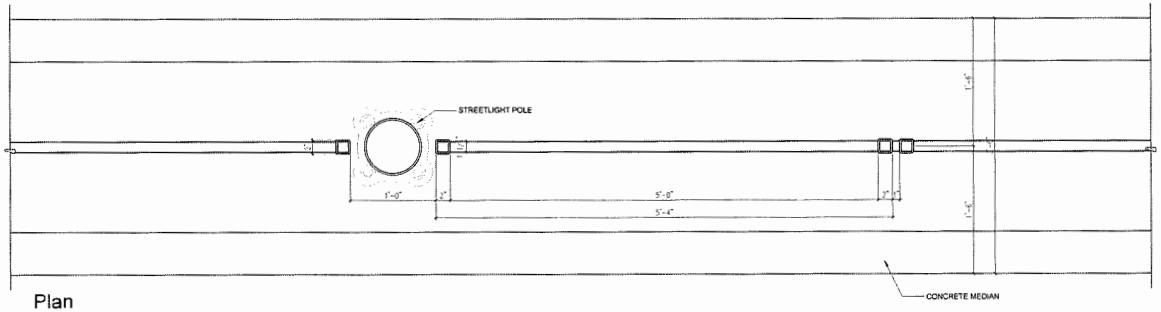
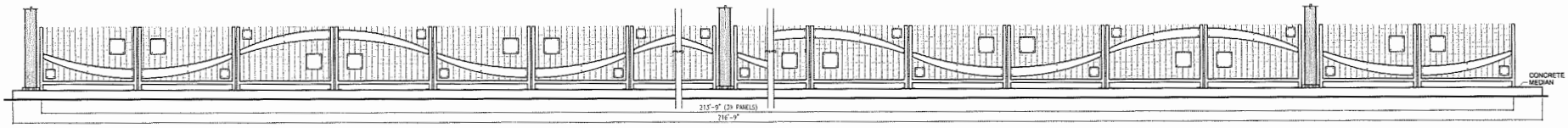


Plan
Scale: 1 1/2" = 1'-0"



Elevation
Scale: NTS

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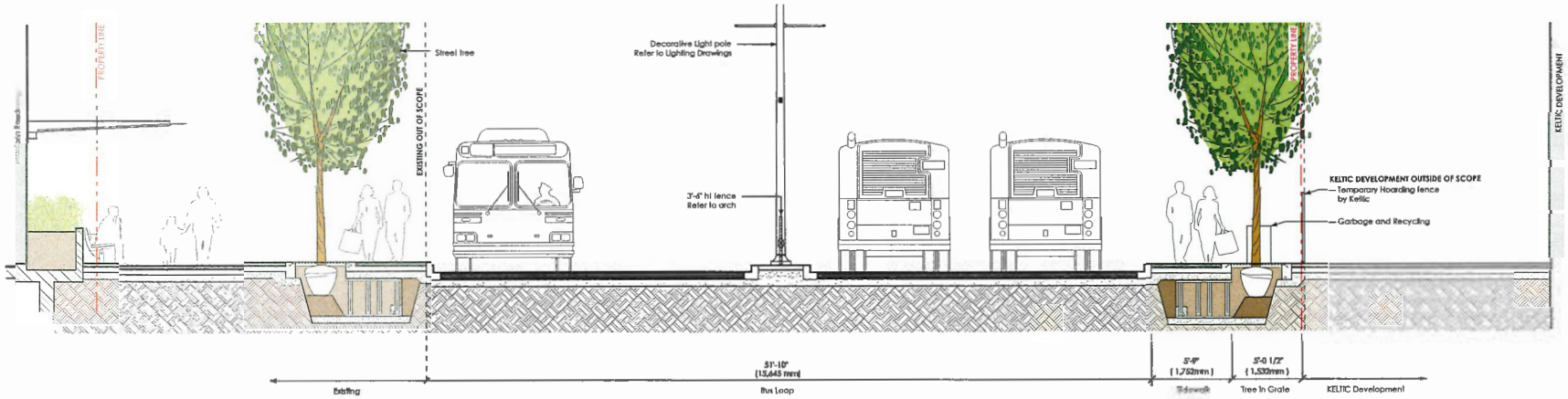
MEDIAN FENCE

SCALE: 1 1/2"=1'-0"

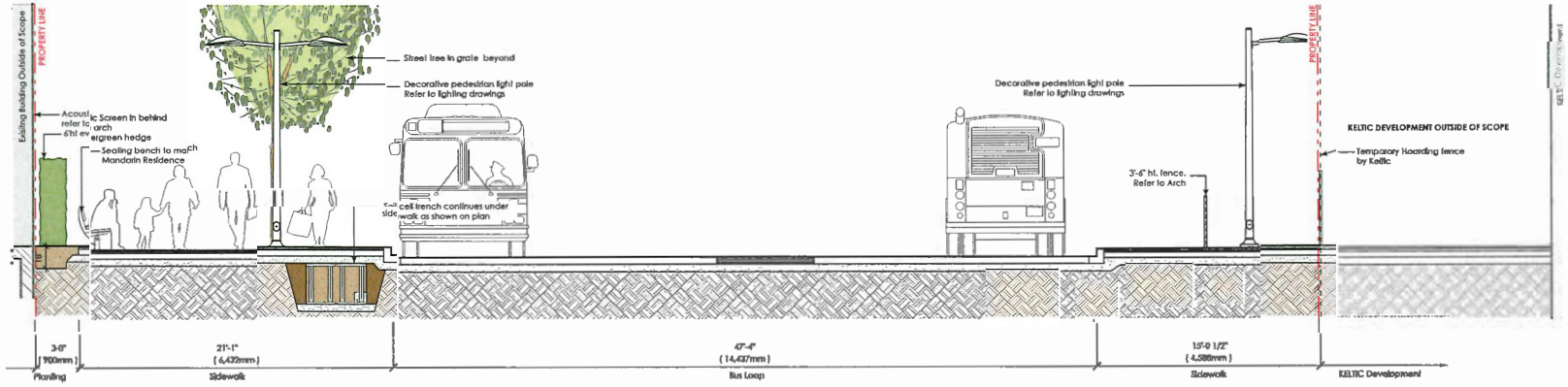
6302 No 3 ROAD, RICHMOND
DEVELOPMENT PERMIT RE-SUBMISSION
June 03, 2019

A0012



Ld-1 **Section through bus loop - A**

scale 1/4" = 1'-0"



Ld-2 **Section through bus loop - B**

scale 1/4" = 1'-0"

A & M Project No. 13-021

DESIGNED	AL	DATE
DRAWN	MTB	DATE
CHECKED	PN	DATE
APPROVED		DATE

REFERENCE DRAWING

No	DWG No	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION	REV
MAR.01, 2019	AB	RE-ISSUE FOR DP	04
MAY 07, 2019	AB	RE-ISSUE FOR DP	05
JUNE 03, 2019	AB	RE-ISSUE FOR DP	06
DRAWN			

TRANSLINK

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Vancouver BC V6J 1N5
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f: 604 684 0577
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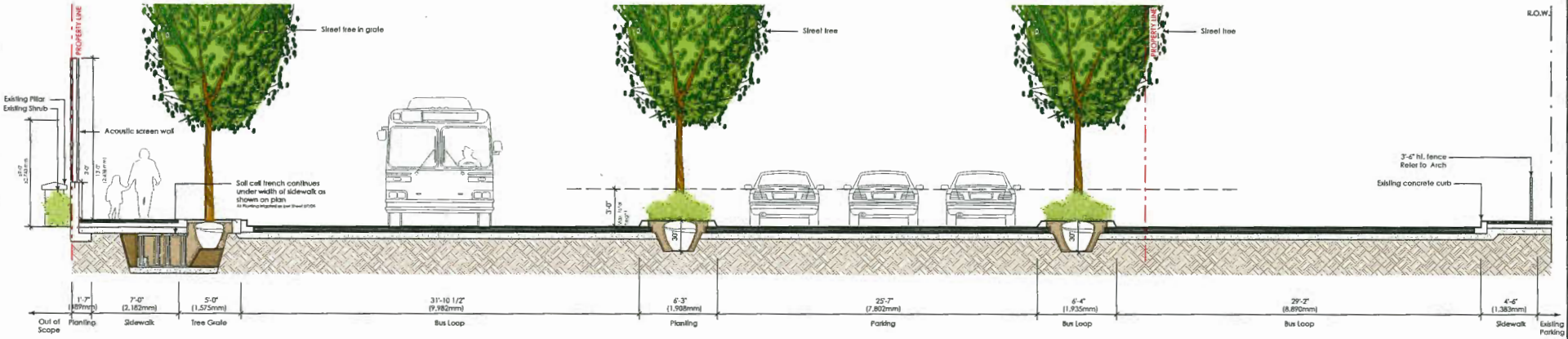
SEAL

BAR SCALE(S): SCALE AS SHOWN

BRIGHOUSE STATION
BUS MALL
LANDSCAPE SECTIONS

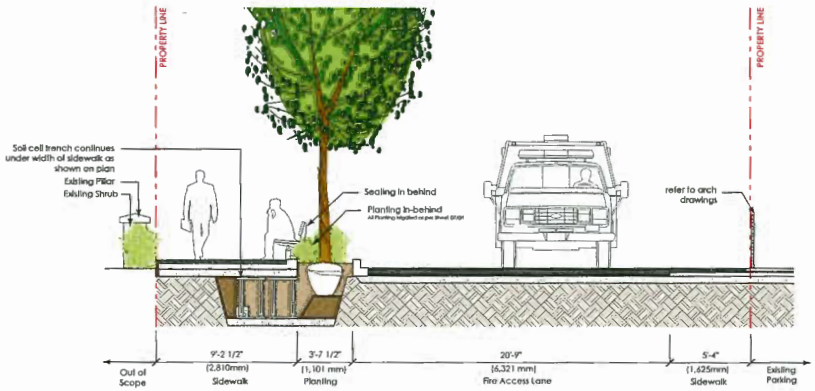
SCALE AS SHOWN	DKL PROJECT #	CITY PROJECT #	LANDSCAPE DRAWING #
DATE JULY - 2013	13032	842675-18-10	05 of 09

SUPERSEDES PRINTS OF THIS NUMBER WITH LETTERS PREVIOUS TO →



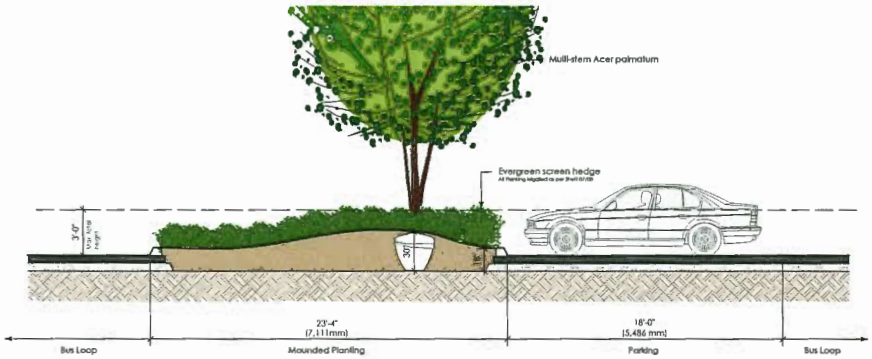
Ld-3 Section through bus loop - C

scale 1/4" = 1'-0"



Ld-4 Section through Emergency Vehicle Lane

scale 1/4" = 1'-0"



Ld-5 Section through bus loop - D

scale 1/4" = 1'-0"

A & M Project No. 13-021

DESIGNED	AL	DATE
DRAWN	MTN	DATE
CHECKED	PK	DATE
APPROVED		DATE

REFERENCE DRAWING

No	DWG No.	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION	REV
MAR 01, 2019	AB	RE-ISSUE FOR DP	04
MAY 07, 2019	AB	RE-ISSUE FOR DP	05
JUNE 03, 2019	AB	RE-ISSUE FOR DP	06
DY/MM/YR			

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durante kreuk ltd.
102 - 1637 West 5th Ave.
Vancouver BC V6J 1N5
t: 604 684 4611
f: 604 684 0577
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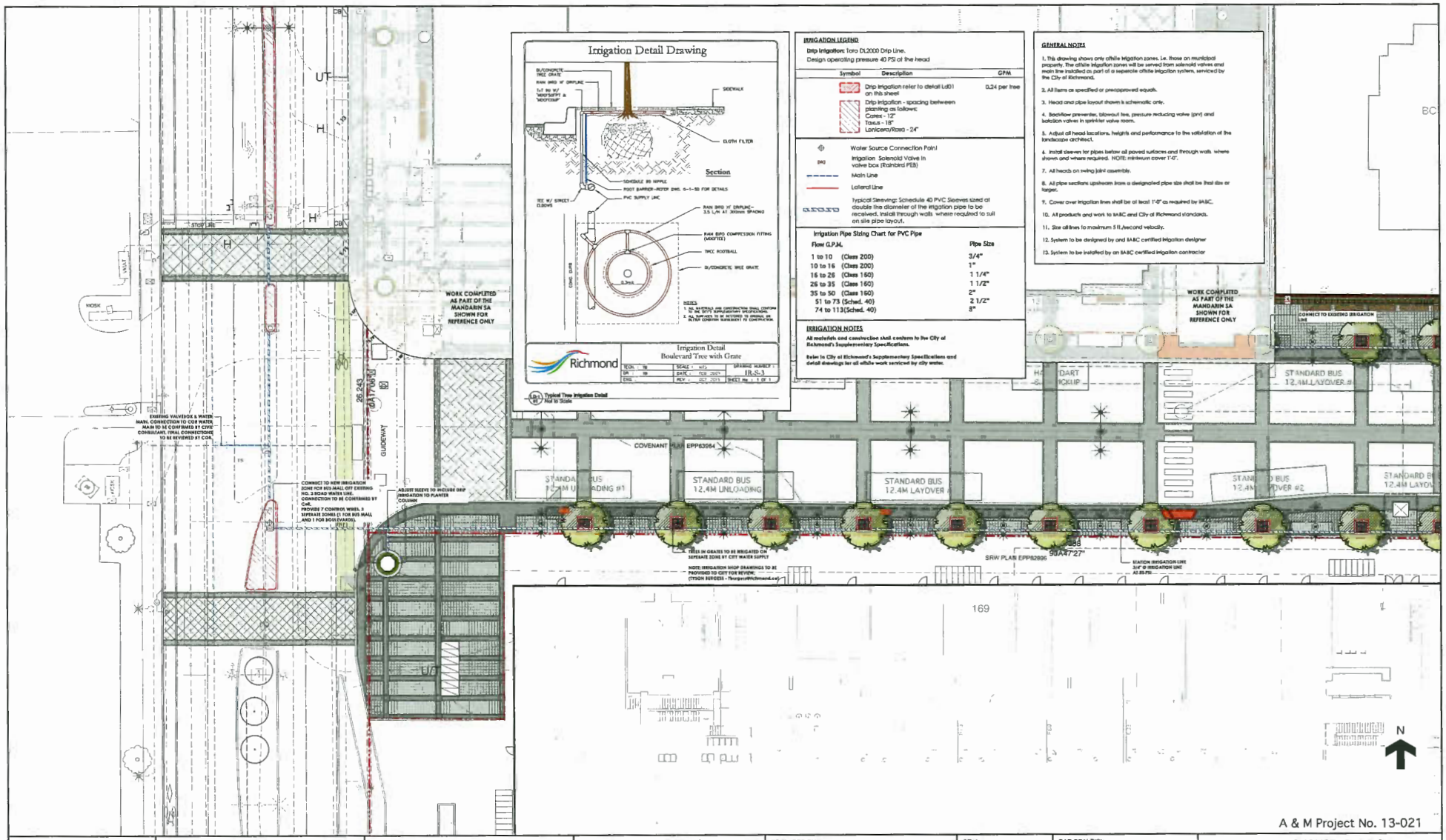
SEAL

BAR SCALE(S): SCALE AS SHOWN

BRIGHOUSE STATION
BUS MALL
LANDSCAPE SECTIONS

SCALE AS SHOWN	DKL PROJECT #	CITY PROJECT #	LANDSCAPE DRAWING #
DATE JULY - 2013	13032	642676-18-10	06 of 09

SUPERSEDES PRINTS OF THIS NUMBER WITH LETTERS PREVIOUS TO →



IRRIGATION LEGEND

Drip Irrigation: Toro DL2000 Drip Line.
Design operating pressure 40 PSI at the head

Symbol	Description	GPM
	Drip irrigation refer to detail LdD1 on this sheet	0.24 per tree
	Drip irrigation - spacing between planting as follows: Carex - 12" Taxus - 18" Lonicera/Rosa - 24"	
	Water Source Connection Point	
	Irrigation Solenoid Valve in valve box (Rainbird PEB)	
	Main Line	
	Lateral Line	
	Typical Sleeving: Schedule 40 PVC Sleeves sized at double the diameter of the irrigation pipe to be received. Install through walls where required to suit on site pipe layout.	

Irrigation Pipe Sizing Chart for PVC Pipe

Flow G.P.M.		Pipe Size
1 to 10	(Class 200)	3/4"
10 to 16	(Class 200)	1"
16 to 26	(Class 160)	1 1/4"
26 to 35	(Class 160)	1 1/2"
35 to 50	(Class 160)	2"
51 to 73	(Sched. 40)	2 1/2"
74 to 113	(Sched. 40)	3"

IRRIGATION NOTES

All materials and construction shall conform to the City of Richmond's Supplementary Specifications.

Refer to City of Richmond's Supplementary Specifications and detail drawings for all offsite work serviced by city water.

GENERAL NOTES

1. This drawing shows only offsite irrigation zones. i.e. those on municipal property. The offsite irrigation zones will be served from solenoid valves and main line installed as part of a separate offsite irrigation system, serviced by the City of Richmond.
2. All items as specified or preapproved equals.
3. Head and pipe layout shown is schematic only.
4. Backflow preventer, blowout tee, pressure reducing valve (prv) and isolation valves in sprinkler valve room.
5. Adjust all head locations, heights and performance to the satisfaction of the landscape architect.
6. Install sleeves for pipes below all paved surfaces and through walls where shown and where required. NOTE: minimum cover 1'-6".
7. All heads on swing joint assembly.
8. All pipe sections upstream from a designated pipe size shall be that size or larger.
9. Cover over irrigation lines shall be at least 1'-6" as required by BABC.
10. All products and work to BABC and City of Richmond standards.
11. Size all lines to maximum 5 ft./second velocity.
12. System to be designed by and BABC certified irrigation designer
13. System to be installed by an BABC certified irrigation contractor

A & M Project No. 13-021

DESIGNED	AL		DATE
DRAWN	MTR		DATE
CHECKED	PK		DATE
APPROVED			DATE

REFERENCE DRAWING

No	DWG No	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION	REV
MAR 04, 2016	AB	RE-ISSUE FOR DP	04
MAY 07, 2019	AB	RE-ISSUE FOR DP	05
JUNE 03, 2019	AB	RE-ISSUE FOR DP	06
DRAWN			

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102 - 1637 West 5th Ave.
Vancouver BC V6J 1N5
t: 604 684 4611
f: 604 684 0577
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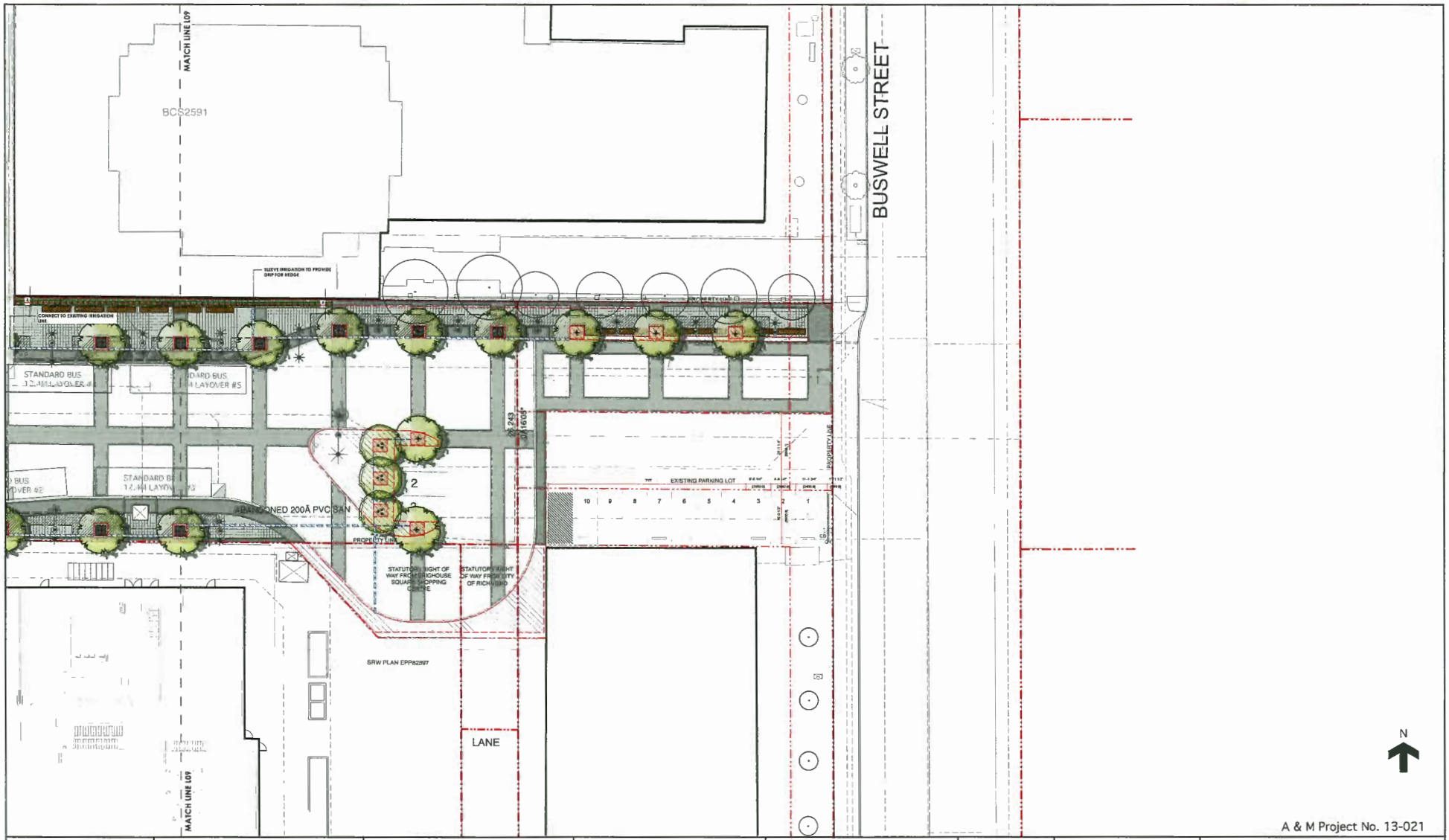
SEAL

BAR SCALE(S):
1/8" = 1'-0"

BRIGHOUSE STATION
BUS MALL
IRRIGATION PLAN

SCALE 1/8" = 1'-0"	DKL PROJECT #	CITY PROJECT #	LANDSCAPE DRAWING #
DATE JULY - 2013	13032	842676-18-10	07 of 09

SUPERSEDES PRINTS OF THIS NUMBER WITH LETTERS PREVIOUS TO →



A & M Project No. 13-021

DESIGNED	AA	DATE
DRAWN	MTR	DATE
CHECKED	PK	DATE
APPROVED		DATE

REFERENCE DRAWING

No	DWG No	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION	REV
MAR 01, 2019	AB	RE-ISSUE FOR DP	04
MAY 07, 2019	AB	RE-ISSUE FOR DP	05
JUNE 03, 2019	AB	RE-ISSUE FOR DP	06
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102 - 1637 West 5th Ave.
Vancouver BC V6J 1N5
t: 604 684 4611
f: 604 684 0577
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SEAL

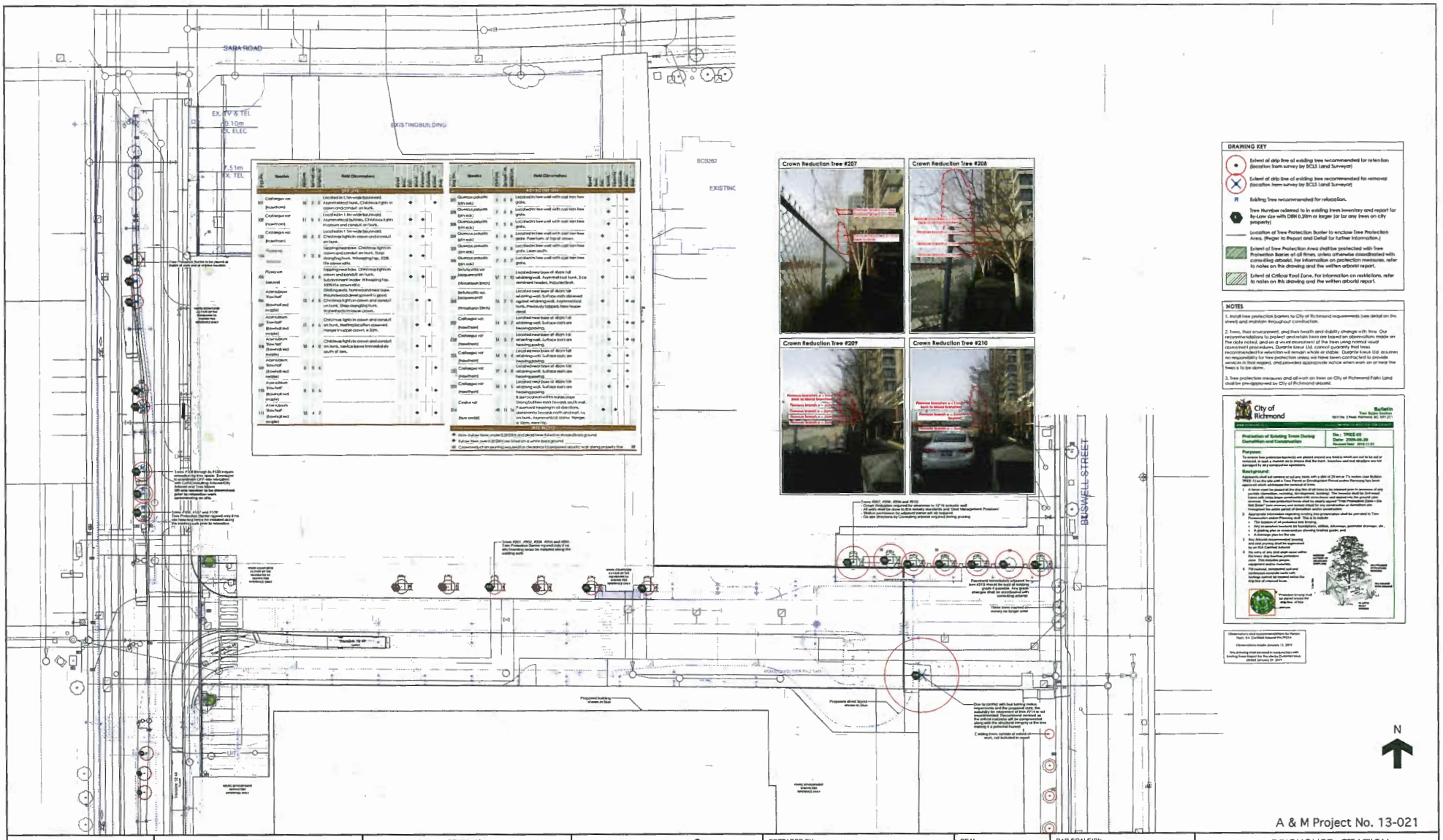
BAR SCALE(S):

1/8" = 1'-0"

BRIGHOUSE STATION
BUS MALL
IRRIGATION PLAN

SCALE 1/8" = 1'-0"	DKL PROJECT #	CITY PROJECT #	LANDSCAPE DRAWING #
DATE JULY - 2013	13032	842676-18-10	08 of 09

SUPERSEDES PRINTS OF THIS NUMBER WITH LETTERS PREVIOUS TO →



Crown Reduction Tree #207

Crown Reduction Tree #208

Crown Reduction Tree #209

Crown Reduction Tree #210

DRAWING KEY

- Extent of drip line of existing tree recommended for retention (location from survey by BCLS Land Surveyor)
- Extent of drip line of existing tree recommended for removal (location from survey by BCLS Land Surveyor)
- R — Existing Tree recommended for relocation.
- Tree Number referred to in existing trees inventory and report for By-Law size with DBH 0.30m or larger (or for any trees on city property)
- Location of Tree Protection Barrier to enclose Tree Protection Area. (Refer to Report and Detail for further information.)
- Extent of Tree Protection Area shall be protected with tree Protection Barrier at all times, unless otherwise coordinated with consulting arborist. For information on protection measures, refer to notes on this drawing and the written arborist report.
- Extent of Critical Root Zone. For information on restrictions, refer to notes on this drawing and the written arborist report.

NOTES

1. Install tree protection barriers to City of Richmond requirements (see detail on the sheet) and maintain throughout construction.

2. Trees, their environment, and their health and stability change with time. Our recommendations to protect and retain trees are based on observations made on the date noted, and on a visual assessment of the trees using normal visual assessment procedures. Durante Kreuk Ltd. cannot guaranty that trees recommended for retention will remain whole or stable. Durante Kreuk Ltd. assumes no responsibility for tree protection unless we have been contracted to provide services in that regard, and provided appropriate notice when work on or near the trees is to be done.

3. Tree protection measures and all work on trees on City of Richmond Parks Land shall be pre-approved by City of Richmond arborist.

City of Richmond — Bulletin — Tree Bylaw Section

Protection of Existing Trees During Demolition and Construction

No.: TREE-03
Date: 2009-06-29
Revised Date: 2010-11-01

Purpose:

To ensure tree protection barrier(s) are placed around any trees(s) which are not to be cut or removed, in such a manner as to ensure that the trunk, branches and root structure are not damaged by any construction operations.

Background:

1. Prior to any cut removal or cut any trees with a dbh of 20 cm or 7½ inches (see Bulletin TREE-1) on the site with a Tree Permit or Development Permit and/or Rezoning has been approved which authorizes the removal of trees.
2. A fence must be placed at the drip line of all trees to be retained prior to commence of any permits (demolition, excavating, development, building). The fence(s) shall be 2x4 wood posts and rails with a minimum of two rails and a minimum height of 1.5 metres (see Bulletin TREE-1) on the site with a Tree Permit or Development Permit and/or Rezoning has been approved which authorizes the removal of trees.
   The tree protection fence shall be clearly signed "Tree Protection Zone – Do Not Enter" (see reverse) and remain intact for any construction or demolition site throughout the entire period of demolition and/or construction.
3. Appropriate information regarding existing tree preservation shall be provided to Tree Bylaw Section in accordance with Tree Bylaw Bulletin TREE-1 and include:
   - The location of all protective tree fencing
   - Any excavation locations for foundations, utilities, driveways, perimeter drainage, etc.
   - A grading plan or cross-section showing finished grade; and
   - A drainage plan for the site
4. Any detailed recommended pruning and root pruning shall be approved by the City of Richmond Arborist.
5. No entry of any and what cross within the trees' drip line/tree protection zone. This includes people, equipment and/or materials.
6. Any excavation, trenching and underground connection work in such buildings cannot be located within the drip line of retained trees.

Observations made by Certified Arborist Mr. Patrick Nash, BA Certified Arborist PN-0214

Observations made January 11, 2011

This drawing shall be read in conjunction with Existing Trees Report for the site by Durante Kreuk, dated January 24, 2011

A & M Project No. 13-021

DESIGNED	AL	DATE
DRAWN	MTB	DATE
CHECKED	RK	DATE
APPROVED		DATE

REFERENCE DRAWING

No	DWG No	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION	REV
JAN 30, 2009	FF	TREE MANAGEMENT PLAN	01
MAR 01, 2010	AB	RE-ISSUE FOR DP	04
MAY 07, 2010	AB	RE-ISSUE FOR DP	05
JUNE 03, 2010	AB	RE-ISSUE FOR DP	06
DYAMYR			

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102 - 1637 West 5th Ave.
Vancouver BC V6J 1N5
t: 604 684 4611
f: 604 684 0577
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SEAL

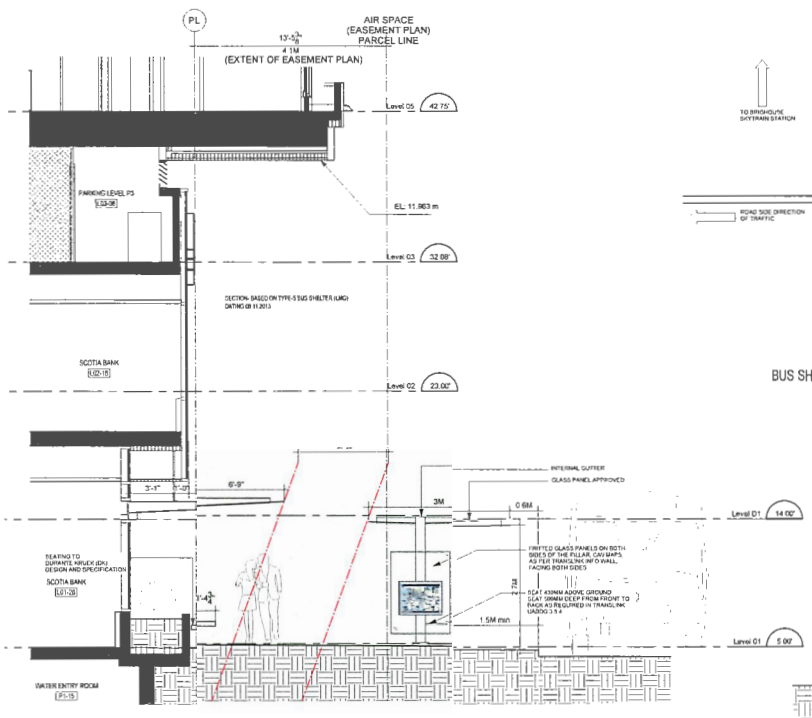
BAR SCALE(S): 1/8" = 1'-0"

BRIGHOUSE STATION BUS MALL

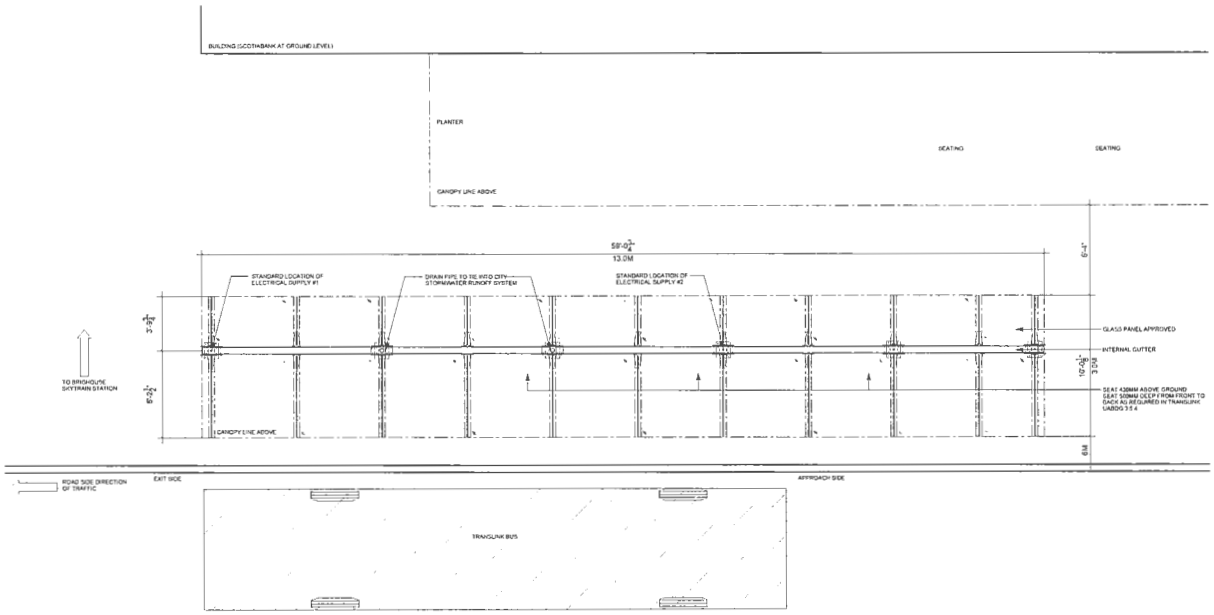
EXISTING TREES MANAGEMENT PLAN

SCALE 1/8" = 1'-0"	DKL PROJECT #	CITY PROJECT #	LANDSCAPE DRAWING #
DATE JAN 18 - 2010	13032	842675-18-10	09 of 09

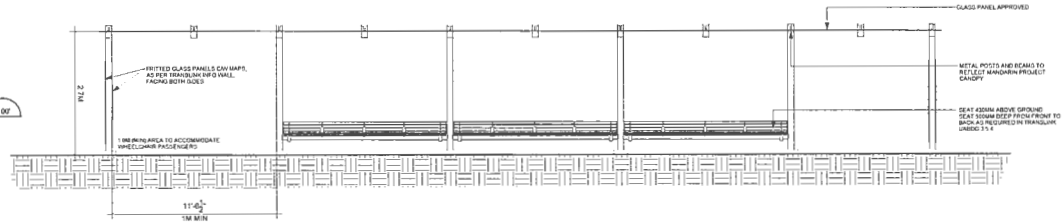
SUPERSEDES PRINTS OF THIS NUMBER WITH LETTERS PREVIOUS TO →



WEST ELEVATION



BUS SHELTER PLAN



SOUTH ELEVATION

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TRANSLINK

BUS SHELTER

SCALE: 1/24"=1'-0"

6302 No 3 ROAD, RICHMOND
DEVELOPMENT PERMIT RE-SUBMISSION
June 03, 2019

4.5.5.5 Poster Case – Double-Sided Info Wall

Product Codes
PCe.nh, 2PCe.iw

Relevant Sign Types
E3, T7

Lines
All

Description
Free standing twin ANSI E double sided poster case, displaying paper based information (4 posters). Two levels of header panel

Materials and construction
External frame Translink Two Part Extrusion to main body top and bottom with aluminum capping plates on sides.

Proprietary hinged extruded aluminum framing system supporting a glass door panel with SkyTrain cam locks, combined header panels to be fabricated, welded and dressed using low carbon steel for Vitreous Enamel finish.

Main structure supported by 101.6mm (4") aluminum posts with 76.2 (3") tapping rail and spun aluminum feet to finish at grade level.

Colours (See Common Parts and Finishes)
- Colour A
- Colour B
- Colour E
- Colour F
- Colour N

Finishes
All external trim and support structure finished with suitable grade of architectural quality polyester powdercoat or other paint finish appropriate to environment. Powder coat colour Supermel P4100-919G Sparkle Silver.

Shadow gap detailing between main post supports and main structure together with tapping rail connection saddles powdercoated RAL 5003.

Header Panels: Vitreous Enamel on low carbon steel.

Marie-Louise poster border (applied to inside face of glass) 3M Vinyl Pearl Gray Series 7725-11 or Series 7125_11.

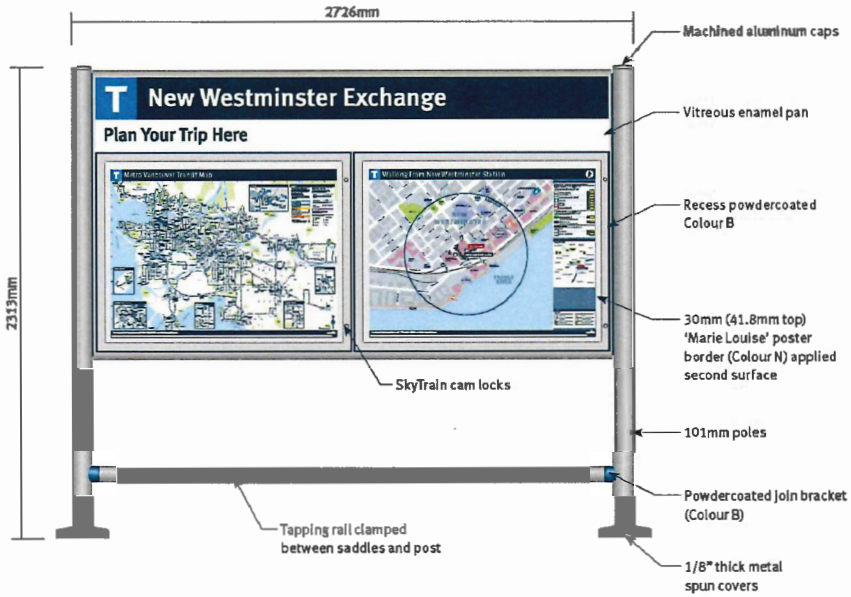
5mm thick clear tempered glass.

Installation
Surface fixed at grade with chemical fixings or cast in studs to concrete base or sidewalk.

Overall dimensions
These are approximate dimensions. See production drawings for exact sizes.

- 2PCe.iw
  Outside dimensions: 2313mm X 2726mm X 249mm

Production drawings reference section
5.2.4.2



Sign Type: E3–Journey Planning
Product Code: 2PCe.iw

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TRANSLINK

TRANSLINK INFO WALL

6302 No 3 ROAD, RICHMOND
DEVELOPMENT PERMIT RE-SUBMISSION
June 03, 2019

A0011

Brown Strachan Associates
Consulting Engineers in Acoustics

Project: 125.111

December 9, 2015

COPY

IBI Group Architects
700 - 1285 West Pender Street
Vancouver, BC V6E 4B1

Attn: Mr. Salim Narayanan

Dear Mr. Narayanan:

Re: Brighouse Bus Loop - Emporio Townhouses Acoustical Screen

Further to our telephone discussion of 8 December 2015, the following confirms our advice with respect to the acoustical screen proposed for the townhouses at Emporio, 6351 Buswell, facing south towards the bus loop turn around (appended).

Our original work on the Emporio was to evaluate the proposed design and to recommend facade details considering possible future bus loop noise. In the City of Richmond, the relevant reference for transportation noise design is the Official Community Plan (OCP), Section 14.4.7. Richmond's OCP criteria are based on CMHC's Road and Rail Noise: Effects on Housing, the recognised Canadian standard developed by the National Research Council, published in 1986.

Our design evaluation considered traffic, the Canada Line, two possible bus loop scenarios and YVR aircraft. The bus loop evaluation was based on a future volume of 2,000 bus movements per day with 90% diesel and 10% community shuttle buses.

Based on the bus volume and other sources, the exterior design level for the facade facing the bus loop was 65 dB, i.e. the 24 hour average level as specified in the OCP (BSA Report 998.551, 24 March 2006). The OCP interior design criteria is 35 dB for bedrooms. To meet the OCP criterion, the recommended facade was 6-13-3 thermal glazing, designed to reduce the noise by 30 decibels. Our records indicate 6-13-3 glazing was specified by the architects.

The proposed acoustical screen represents an additional noise reduction measure beyond Richmond's normal OCP requirements. We understand the intent is to provide additional noise reduction for lower level townhouses closest to the moving buses. We understand the screen material will be glass, which meets acoustical requirements.

../2

Telstream Square #5-1200 Hunter St. Vancouver Canada V6B 2T5 Tel 604 688 0514 Fax 604 689 2733 bsa@brownstrachan.com

-2-

Mr. Salim Narayanan December 9, 2015

Discussion

CMHC describes quiet interior levels as ranging from 25 to 35 dB. For reference, 0 dB is the threshold of perception for a young person with good hearing. With respect to subjective impressions, bus noise cannot be accurately compared to any other source such as construction, office noise, etc. The bus loop will sound like buses, inside or outside the townhouses.

As discussed above, the design level for the facade facing the bus loop was 65 dB. Subjectively, a reduction of 30 decibels through the townhouse facade is equivalent to about a 90% reduction in the outside level. By comparison, the design level for traffic on Buswell was 60 dB. The same 6-13-3 glazing was specified for the Buswell facade as access details to the bus loop were uncertain during the original design.

Most noise board behind a screen is transmitted over the top and the expected noise reduction from a typical screen is 5-10 decibels. Subjectively, a 5 decibel reduction is noticeable and a 10 decibel reduction is about half as loud. Behind a barrier, buses would sound as though they are 2-3 times as far away. The barrier reduction would also apply to the residual noise transmitted through the facade of the lower townhouses.

Please call if you have any questions.

Yours very truly,

BROWN STRACHAN ASSOCIATES

David W. Brown, P.Eng.

Encl. DWB/jl/15Dec/IBIBrighouse.let

Brown Strachan Associates
Consulting Engineers in Acoustics

Project: 125.111

June 22, 2017

IBI Group Architects
700 - 1285 West Pender Street
Vancouver, BC V6E 4B1

COPY

Attn: Mr. Roman Binenbaum

Dear Mr. Binenbaum:

Re: Brighouse Bus Loop - Acoustical Screen

Further to your email of 21 June 2017, the proposed 8 ft screen height at the bus loop is considered a reasonable design to reduce noise at the townhouses. Our original estimate of the effect of the screen was 5 - 10 decibels. A 12 ft screen would not change this estimate.

Our evaluation of noise from the buses is based on CMHC's Road and Rail Noise: Effects on Housing, the recognised Canadian standard. For heavy vehicles at low speeds, CMHC recommends a design source height of 2m. This design height considers noise radiated directly from the engine together with exhaust noise.

While a CMHC evaluation indicates increasing the screen height to 12 ft would further reduce direct noise transmitted over the screen for buses in close proximity to the townhouses, on-site factors limit the overall noise reduction such as reduced barrier effect for more remote buses, reflections behind the barrier, reflections from nearby buildings, etc.

Please call if you have any questions.

Yours very truly,

BROWN STRACHAN ASSOCIATES

David W. Brown, P.Eng.

Encl. DWB/jl/17Jun/IBIBrighouse.let

Telstream Square #5-1200 Hunter St. Vancouver Canada V6B 2T5 Tel 604 688 0514 Fax 604 689 2733 bsa@brownstrachan.com

Brown Strachan Associates
Consulting Engineers in Acoustics

Project: 125.111

July 4, 2019

IBI Group
700 - 1285 West Pender Street
Vancouver, BC V6E 4B1

Attention: Mr. Salim Narayanan, Studio Principal

Dear Mr. Narayanan:

Re: Brighouse Station Bus Mall, Richmond

The following is in response to the email of 27 June 2019 from Mark McMullen at the City of Richmond. For reference, appended are copies of our letters dated 9 December 2015 and 22 June 2017.

At the ground and fourth floor levels of the Emporio townhouses, and at all lower levels, the outside design sound level was 65 dB from bus movements. Upgraded glazing was originally specified to satisfy the City's interior design criteria, e.g. 35 dB for bedrooms. Where the line of sight to buses is through the proposed barrier, sound levels are predicted to be about 5-10 decibels lower. The difference between an 8ft or 12ft barrier height is minimal acoustically. The CMHC recommended criterion for outside recreation areas is 55 dB and is likely satisfied for individuals seated behind the glazed ballustrade on the fourth floor rooftop patios.

At 6380 Buswell, we estimate sound levels from bus movements to be similar to traffic on Buswell Street, or about 60 dB. Standard thermal glazing would normally satisfy the City's interior design criteria for facade design.

Offices at 6411 Buswell have a similar exposure to bus movements as the Emporio development. Inside levels could be higher than at Emporio but will likely satisfy office speech intelligibility criteria, i.e. space requiring face to face communication across a desk, telephone use, etc.

Please call if you have any questions.

Yours very truly,

BROWN STRACHAN ASSOCIATES

Aaron Peterson, P.Eng. Encl. AP/dw/19JUL10.let

130 - 1020 Mainland Street Vancouver Canada V6B 2T5 604 688 0514 bsa@brownstrachan.com

ACOUSTIC ASSESSMENT LETTERS

ATTN: Mr. Jeff Tung

Good afternoon Mr. Tung,
I understand that you attended yesterday's City of Richmond Development Permit Panel, and spoke regarding your concerns about the acoustic treatment proposed for the Richmond Brighouse Bus Exchange.

On April 25th, we provided a presentation to your strata council, but I wanted to reach out to you directly to see if there is additional information that we may provide on the plans for the bus exchange.

I specifically wanted to share the report of the acoustical consultant on the design of the proposed acoustic wall adjacent to Emporio Strata. The report describes the design noise standard of 65 decibels (dB) at the face of your building facing the bus exchange, and the ability of the acoustic wall to achieve a reduction of 30 decibels. The acoustic consultant confirms that the proposed noise wall material and height will provide noise reduction for lower level townhouses closest to the moving buses, to a level additional to the normal requirements of Richmond's Official Community Plan (OCP).

I also attach details of the acoustic wall itself. You will notice on the cross-section drawing, lines which emanate from the bottom of the wheels of the bus. The point of contact where the wheels meet the pavement is typically the primary source of noise. The height of the acoustic fence is such that it shields the lower 4 floors of Emporio from this direct noise.

While we move hundreds of thousands of people each day, TransLink always strives to be good neighbours. We would be pleased to meet with you and take you through all of the measures taken to minimize any impacts to your residence as a result of the arrival of the bus exchange next to Emporio.

If you'd like additional information, speak on the phone, or to meet in person please do not hesitate to contact me.

Best regards,
Drew Ferrari

DREW FERRARI, [illegible]
Senior Advisor, Public Affairs
Government & Public Affairs
T 778-375-6716 | C 604-362-1624 | [illegible]

TransLink
400-287 Nelson's Court, New Westminster, BC, V3L 0E7, Canada

Together all the way

This e-mail and any attachments may contain confidential and privileged information. If you are not the intended recipient, please notify the sender immediately by return e-mail, delete this e-mail and destroy any copies. Any dissemination or use of this information by a person other than the intended recipient is unauthorized and may be illegal.

2

Roman Binenbaum

From: Vyas, Chit <chit.vyas@translink.ca>
Sent: Wednesday, July 3, 2019 3:11 PM
To: Roman Binenbaum
Subject: FW: Richmond Brighouse Bus Exchange

Roman,

This is for the follow up with the Townhouse owner.

Chit

From: Ferrari, Drew
Sent: Wednesday, July 3, 2019 2:56 PM
To: 'dtung001@gmail.com' <dtung001@gmail.com>
Cc: Vyas, Chit <chit.vyas@translink.ca>; 'McMullen, Mark' <MMcMullen@richmond.ca>
Subject: RE: Richmond Brighouse Bus Exchange

Good afternoon Mr. Tung, I wanted to follow up with you regarding my e-mail last week about the proposed Richmond-Brighouse Bus Exchange.

I had provided you with additional background information, but wanted to reiterate that we would also be pleased to meet with you in person and take you through all of the measures taken to minimize any impacts to your residence as a result of the arrival of the bus exchange next to Emporio.

If you'd like additional information, speak on the phone, or to meet in person please do not hesitate to contact me.

Best regards,
Drew Ferrari

DREW FERRARI, [illegible]
Senior Advisor, Public Affairs
Government & Public Affairs
T 778-375-6716 | C 604-362-1624 | [illegible]

TransLink
400-287 Nelson's Court, New Westminster, BC, V3L 0E7, Canada

Together all the way

From: Ferrari, Drew
Sent: June 27, 2019 1:39 PM
To: 'dtung001@gmail.com' <dtung001@gmail.com>
Cc: Vyas, Chit <chit.vyas@translink.ca>; 'McMullen, Mark' <MMcMullen@richmond.ca>
Subject: Richmond Brighouse Bus Exchange

RE: Richmond Brighouse Bus Exchange

1

Roman Binenbaum

From: Vyas, Chit <chit.vyas@translink.ca>
Sent: Tuesday, July 9, 2019 12:26 PM
To: dtung001@gmail.com
Cc: Ferrari, Drew; McMullen, Mark; Roman Binenbaum
Subject: Richmond Brighouse Bus Exchange

Dear Mr. Tung,

I am sending this e-mail on behalf of my colleague Drew Ferrari.

The e-mail below has been received by our Acoustic Engineer at Brown Strachan Associates, which includes an item wise response to your e-mail of July 4th.

With this, we believe that all your concerns have been addressed.

In case of any additional concerns, please feel free to contact Drew Ferrari (included in this e-mail).

Thanks and regards

Chit

Chit Vyas, [illegible]
Corporate Project Manager
Engineering Project Delivery
T 778-375-7395 | C 778-[illegible] | www.translink.ca
TransLink
400-287 Nelson's Court, New Westminster, BC, V3L 0E7, Canada

Together all the way

From: Brown Strachan Associates [bsaaltonas@brownstrachan.com]
Sent: Tuesday, July 9, 2019 11:06 AM
To: Roman Binenbaum <roman.binenbaum@ibigroup.com>
Cc: Salim Narayanan <Salim.narayanan@ibigroup.com>
Subject: RE: Richmond Brighouse Bus Exchange

Roman

As requested, the following is in response to resident Jeff Tung's email of 4 July 2019

1.) Townhouses at the east end will have a partial view to buses past the end of the barrier. Our evaluation indicates bus noise should be less than 60 dB at these townhouses, based on the reduced angle of view and increased distance from the source.

2.) CMHC recommends 55 dB for outdoor recreation areas, which "permits conversation at close range or in a slightly raised voice" and is not a design requirement for patios, balconies, etc. For reference, traffic noise normally exceeds 55 dB on balconies in proximity to arterial roads.

On the Level 4 townhouse rooftop patios the estimated level is 55 dB, based on the outside design level of 65 dB from bus movements and a nominal 10 decibel reduction for an individual seated behind the glazed balustrade. No reduction from the proposed barrier has been considered.

3a.) The barrier will provide a nominal 5-10 decibel reduction at locations where the line of sight to buses is through the barrier. A 12ft high barrier would provide slightly more shielding than a 8ft barrier.

3b.) See item 2, above.

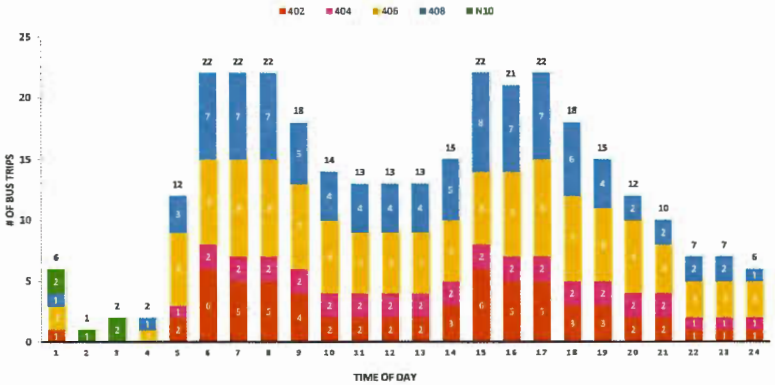
Regards,

Aaron Peterson
Brown Strachan Associates
604-688-0514

WE'VE MOVED!
New office address: Suite 130 – 1020 Mainland Street, Vancouver BC V6B 2T5

RESIDENT OUTREACH LETTER

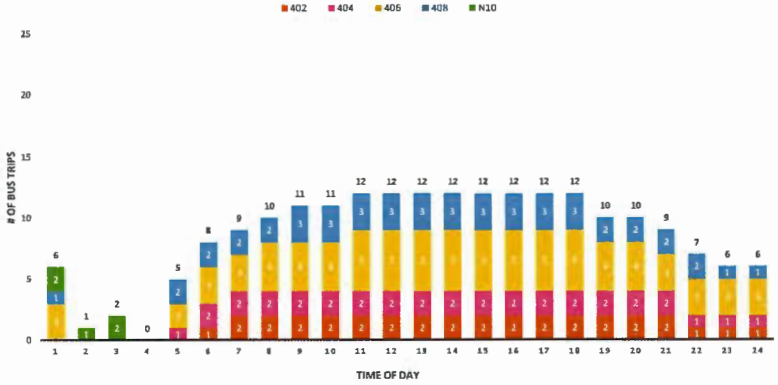
WEEKDAY HOURLY BUS TRIPS



Trips per Hour - Future Brighouse Bus Mall Routes - April 2019

Weekdays	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
402	1				2	6	5	5	4	2	2	2	2	3	6	5	5	3	3	2	2	1	1	1	63
404					1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	36
406	2			1	6	7	8	8	7	6	5	5	5	5	6	7	8	7	6	6	4	3	3	3	118
408	1			1	3	7	7	7	5	4	4	4	4	5	8	7	7	6	4	2	2	2	2	1	93
N10	2	1	2																						5
Total	6	1	2	2	12	[illegible]	[illegible]	[illegible]	15	14	13	13	13	15	[illegible]	[illegible]	[illegible]	15	12	10	7	7	6		315

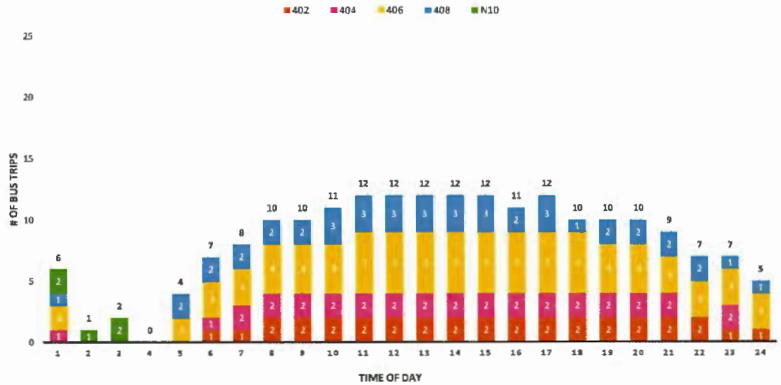
SATURDAY HOURLY BUS TRIPS



Trips per Hour - Future Brighouse Bus Mall Routes - April 2019

Saturday	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
402						1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	34
404					1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	36
406	3				2	3	3	4	4	4	5	5	5	5	5	5	5	5	4	4	4	3	3	3	83
408	1				2	2	2	2	3	3	3	3	3	3	3	3	3	3	2	2	2	2	1	1	49
N10	2	1	2																						5
Total	6	1	2	0	5	8	9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	6	6	207

SUNDAY HOURLY BUS TRIPS



Trips per Hour - Future Brighouse Bus Mall Routes - April 2019

Sunday	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
402						1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1		34
404	1					1	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2			34
406	2				2	3	3	4	4	4	5	5	5	5	5	5	5	5	4	4	3	3	3	3	82
408	1				2	2	2	2	2	3	3	3	3	3	3	2	3	1	2	2	2	2	1	1	45
N10	2	1	2																						5
Total	6	1	2	0	4	7	8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	7	5	200

Summary of Air Quality [AQ] Testing on:

Lonsdale Quay Bus Loop

In attendance:

- Liz Johnson (CMBC Corporate Safety officer)

Route(s):

- N/A Readings taken from mid-point of bus loop at Quay

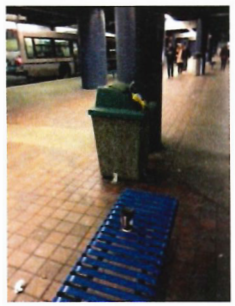
Additional Information:

- Weather: Mild, cloudy.

Additional Information:

Readings were observed from the midpoint of Lonsdale Quay at approximate breathing zone. Testing was conducted for 4 hours

Observations:



- Total test period time = 4 hours

- No visual on VRAE multi-gas monitor at.
- **PEAK** data values found in trip duration:

  NO2 0.2 ppm
  CO 0.0 ppm
  SO2 0.0 ppm

- AQ testing Passed

This event's summaries and graphs downloaded from the VRAE monitor can be found at the bottom of this document.

Thank you,
Liz Johnson

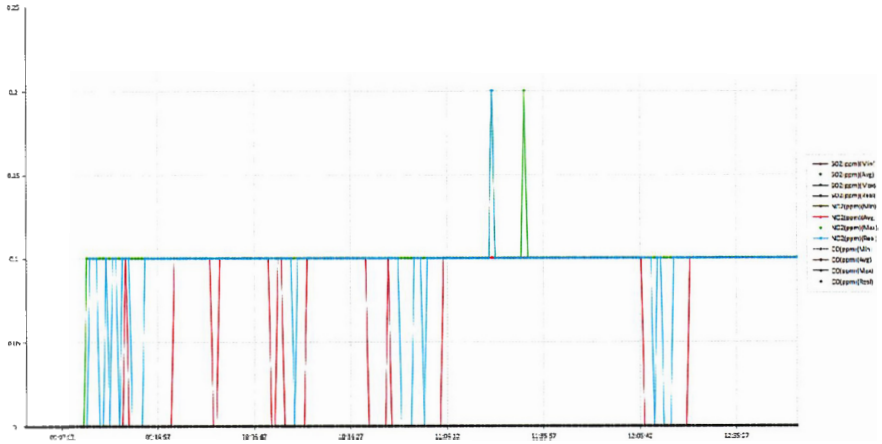
DATALOG SUMMARY:

Summary

Unit Name	MultiRAE(PGM-6228)
Unit SN	MB032013V3
Unit Firmware Ver	V1.40C
Running Mode	Hygiene Mode
Datalog Mode	Auto
Diagnostic Mode	No
Stop Reason	Power Down
Site ID	PE500000
User ID	PE500000
Begin	17/01/2018 08:55:09
End	17/01/2018 12:55:05
Sample Period(s)	60
Number of Records	239

Sensor	SO2(ppm)	NO2(ppm)	CO(ppm)
Sensor SN	SO3AF017789	SC0375004455	SC0306006001
Measure Type	Min; Avg; Max; Real	Min; Avg; Max; Real	Min; Avg; Max; Real
Span	5.0	5.0	50
Span 2	N/A	N/A	N/A
Low Alarm	2.0	1.0	35
High Alarm	10.0	10.0	200
Over Alarm	20.0	20.0	500
STEL Alarm	5.0	1.0	100
TWA Alarm	2.0	1.0	35
Measurement Gas(CF)	N/A	N/A	N/A
Calibration Time	16/01/2018 10:38	16/01/2018 10:32	16/01/2018 10:28
Peak	0.0	0.2	0
Min	0.0	0.0	0
Average	0.0	0.1	0

EVENT GRAPH:



REFERENCE SUMMARY OF AIR QUALITY AT LONSDALE QUAY

Coast Mountain Bus Company
An operating subsidiary of TransLink

VEHICLE IDLING
- COAST MOUNTAIN BUS COMPANY POLICY -

ISSUE DATE:	January 2010
LATEST REVISION:	May 2010
SPONSORED BY:	Executive Director, Corporate Service
BUSINESS OWNER:	Director, Safety, Environment, and Emergency Management
WORKING CONTACT:	Manager, Environmental Sustainability

1. PURPOSE

Coast Mountain Bus Company (CMBC) will reduce vehicle idling to the greatest extent possible in an effort to avoid unnecessary air emissions, wasting fuel, increasing engine wear, and to comply with municipal bylaws regarding anti-idling. This policy applies to all CMBC operated vehicles and all vehicles operated on CMBC properties.

2. POLICY

Employees operating CMBC vehicles and all vehicles operating on CMBC property will:

- minimize idling of buses and non-revenue vehicles.
- comply with applicable municipal anti-idling bylaws.

3. APPLICATION

When an operator expects to idle at a bus stop or in a lane for more than three (3) minutes, the operator will turn off the bus.

Circumstances that reasonably require idling of the engine include periods when it is necessary to operate defrosting, heating, or cooling equipment to ensure the health or safety of the operator or passengers. When the circumstances have been corrected, the engine will be turned off until they exist again or the bus/vessel is ready to move.

Buses in service should not be left idling unattended under any circumstances.

Idling within CMBC's garages and yards is to be limited to idling that is required as part of a repair, pre-trip inspection or for training purposes.

Operators to only start buses they are pre tripping or otherwise required to start.

Page 1 of 2

Seabus vessels will use shore power at all times while docked at the maintenance and fueling bays with the exception of periods where maintenance, diagnostic or pre voyage checks are required.

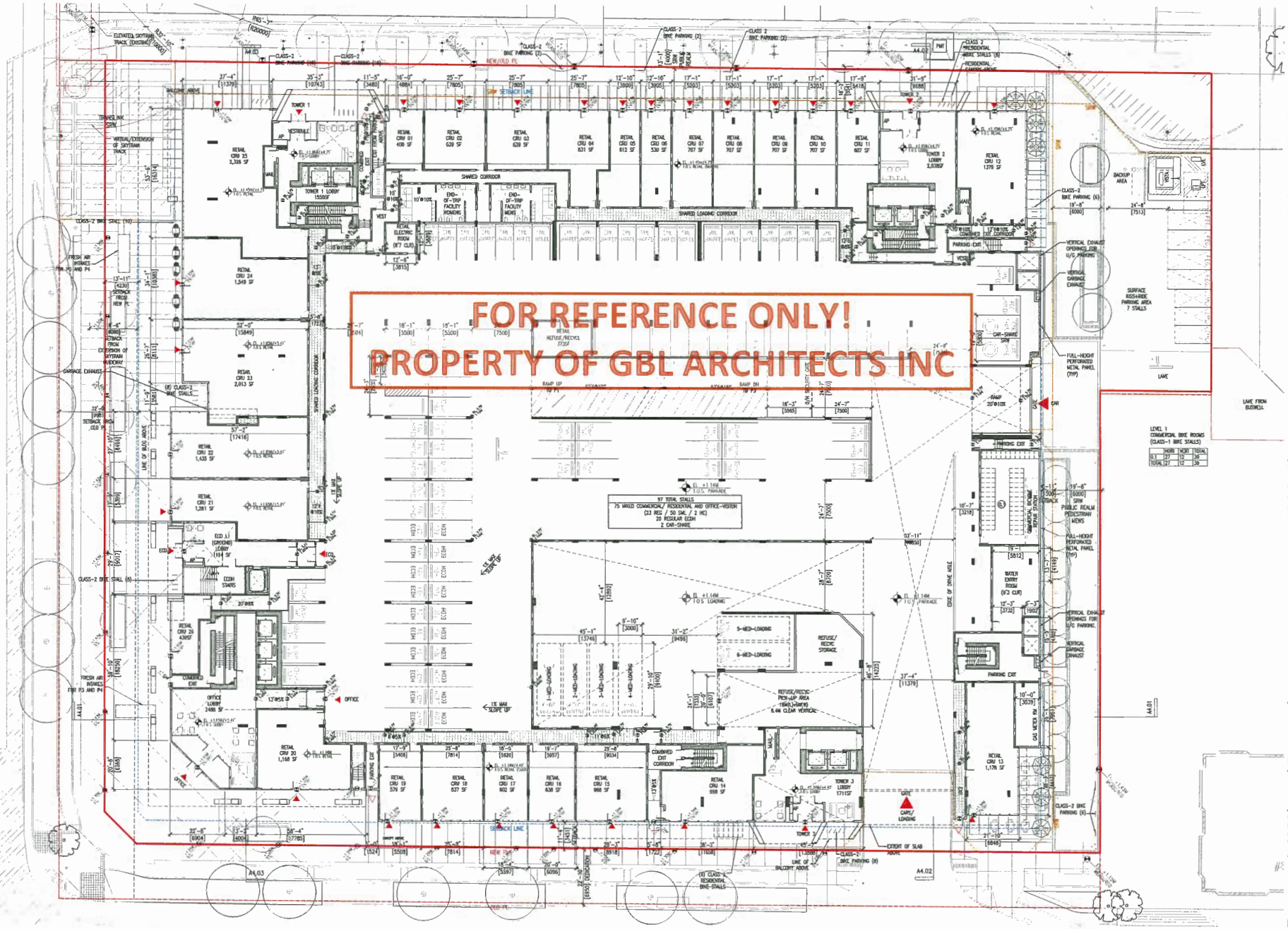
4. DEFINITIONS

"[term]"

5. REFERENCES

Page 2 of 2

CBMC VEHICLE IDLING POLICY



gbl

GBL ARCHITECTS
179 EAST 8TH AVENUE
VANCOUVER, CANADA V5T 1R8
T 604 736 1136 F 604 731 5279
GBLARCHITECTS.COM

PLOT INFO.

NOTES

No	DESCRIPTION

REVISIONS

NO.	DATE	REMARKS
01	18.05.31	ISSUED FOR DP
02	18.06.20	REVISION ISSUED FOR DP
03	18.07.25	DPP DRAFT
04	18.08.10	ISSUED FOR COORDINATION
05	18.08.24	ISSUED FOR DPP
06	18.09.07	REVISED DPP SUBMISSION

TRUE NORTH

6340 NO 3 RD
RICHMOND, BC

MIXED-USE

LEVEL1 PLAN
P2 PARKING PLAN

DATE	
DRAWN BY	TCL
CHECKED BY	-
SCALE	1:250
JOB NUMBER	1646

A2.03