City of Richmond

Minutes

Development Permit Panel
Wednesday, July 10, 2019

Time:	3:30 p.m.
Place:	Council Chambers Richmond City Hall
Present:	John Irving, Chair Cecilia Achiam, General Manager, Community Safety Peter Russell, Director, Sustainability and District Energy

The meeting was called to order at 3:30 p.m.

Minutes

It was moved and seconded
That the minutes of the meeting of the Development Permit Panel held on June 26, 2019 be adopted.

CARRIED

1. DEVELOPMENT PERMIT 11-593871
(REDMS No. 6204334 v. 2)

APPLICANT:	IBI Architects (Canada) Inc. on behalf of South Coast British Columbia Transportation Authority (TransLink)
PROPERTY LOCATION:	6302 No. 3 Road and 6411 Buswell Street

INTENT OF PERMIT:

1. Permit the construction of a Bus Mall at 6302 No. 3 Road and 6411 Buswell Street on a site zoned "Downtown Commercial (CDT1)"; and
2. Vary the provisions of Richmond Zoning Bylaw 8500 to reduce the number of parking spaces for the existing office building on 6411 Buswell Street from 44 to 25 spaces.

Applicant's Comments

Salim Narayanan, IBI Group Architects, with the aid of a visual presentation (attached to and forming part of these Minutes as Schedule 1) briefed the Panel regarding the features of the proposed acoustic screen adjacent to the townhouses within the Emporio Building located on the northeast of the proposed Bus Mall and highlighted the following:

- the proposed acoustic screen will be 12 feet high and approximately 90 feet long;
- noise within the line of sight to buses in the Bus Mall through the proposed acoustic barrier would be reduced by 5 to 10 decibels (dB); and
- the expected noise level of the fourth floor rooftop patios of townhouses within the Emporio Building will be from 55db to 60db which is similar to the typical noise levels for a townhouse facing the street.

Engineer Aaron Peterson, Brown Strachan Associates, noted that the estimated noise level of the fourth floor rooftop patios is 55dB and will not be reduced by the proposed acoustic screen; however, the existing balustrade around the rooftop patios provides a noise buffer.

Mr. Peterson further noted that the City's Official Community Plan (OCP) requirements for interior noise level for the Emporio townhouses could be met without the proposed acoustical screen which provides an additional noise buffer for interior spaces beyond the City's requirements.

Staff Comments

Wayne Craig, Director, Development, noted that (i) staff have verified the acoustical measures for the Emporio Building, and (ii) staff support the use of the subject site for the construction of a Bus Mall which is consistent with the City Centre Area Plan (CCAP).

Panel Discussion

In reply to queries from the Panel regarding the provision of washroom facilities for the proposed Bus Mall, Mr. Craig advised that (i) temporary washroom facilities for transit operators are provided within the Mandarin development directly to the north of the Bus Mall, (ii) permanent washroom facilities for transit operators and the public are planned to be incorporated into the future redevelopment of the Translink-owned property at 6411 Buswell Street, located directly to the east of the Bus Mall, (iii) the existing employee washroom at the Canada Line Brighouse Station is made available to the public upon request to Translink employees, and (iii) Translink is currently reviewing how public washrooms could be integrated into all major transit facilities.

In reply to a query from the Panel, Mr. Craig noted that there is no clear timeline for the redevelopment of the Translink-owned property at 6411 Buswell Street.

In reply to a query from the Panel, Mr. Narayanan confirmed that the temporary washroom facilities within the Mandarin development are exclusively for the use Translink employees and additional washroom facilities will be provided in the future redevelopment of 6411 Buswell Street.

As a result of the discussion, staff were directed to discuss the timeline for the future redevelopment of 6411 Buswell Street with Translink staff.

In reply to a query from the Panel regarding the determination of Bus Mall noise levels, Mr. Peterson confirmed that their acoustical study referenced the interior design criteria of the Canada Home Mortgage Corporation (CHMC) and that actual bus noise measurements were conducted in a Translink bus exchange in North Vancouver. In addition, Mr. Peterson noted that the determination of the expected bus noise level in the proposed Bus Mall was based on a worst case scenario with all diesel buses.

In reply to further queries from the Panel, Mr. Peterson noted that (i) the proposed acoustic screen was intended to provide an acoustic buffer to possible Bus Mall noise, e.g. noise from bus tires and diesel engines, for the lower levels of the Emporio townhouses directly facing the Bus Mall and not for the townhouses' rooftop patios, and (ii) the original design of the Emporio Building was intended to achieve the City's interior design criteria.

In reply to a query from the Panel, Mr. Narayanan acknowledged that further improvements to the design of the proposed acoustic screen, e.g., adding another layer for the acoustic screen, could be considered by Translink should the expected noise reduction not be achieved by the current design of the acoustic screen.

In reply to queries from the Panel, Chit Vyas, Translink, confirmed that mechanisms are currently in place, such as the conduct of regular inspections by Translink supervisors, to ensure bus operators' compliance with Translink's vehicle idling policy that limits vehicle idling for three minutes. In addition, Mr. Vyas acknowledged that complaints from the public are fully attended to by Translink, and Translink would address the design of the acoustic screen if it did not perform to the acoustic standards outlined by the acoustic engineer.

In reply to a query from the Panel regarding Translink's initiatives to address noise concerns of Emporio Building residents, Mr. Vyas confirmed that (i) Translink organized a meeting with the Strata Council of Emporio Building prior to the June 26, 2019 meeting of the Development Permit Panel; however, some residents were not able to attend, (ii) Translink offered to organize another meeting but was deemed not necessary by the Strata Council, and (iii) Translink directly contacted Mr. Jett Tung, an Emporio Building resident, and exchanged email messages with him to address his concerns regarding possible Bus Mall noise impacts on townhouses.

Gallery Comments

None.

Correspondence

Jett Tung, 6351 Buswell Street, including email responses from Drew Ferrari and Chit Vyas, Translink, and Aaron Peterson, Brown Strachan Associates (Schedule 2)

Mr. Craig advised that staff circulated the subject correspondence to the City Clerk's Office to form part of the record of the July 10, 2019 meeting of the Panel.

In reply to a query from the Panel, Mr. Craig acknowledged that Mr. Tung's concerns were responded to by the applicant.

Panel Discussion

The Panel expressed support for the project and appreciated the applicant's provision of additional information regarding the proposed acoustical measures to mitigate noise in the Bus Mall, willingness to introduce additional noise mitigation measures if necessary, and efforts to address neighbouring residents' concerns identified at the Panel's previous meeting.

Panel Decision

It was moved and seconded

That a Development Permit be issued which would:

1. ***permit the construction of a Bus Mall at 6302 No. 3 Road and 6411 Buswell Street on a site zoned "Downtown Commercial (CDT1)"; and***
2. ***vary the provisions of Richmond Zoning Bylaw 8500 to reduce the number of parking spaces for the existing office building on 6411 Buswell Street from 44 to 25 spaces.***

CARRIED

2. Date of Next Meeting: July 24, 2019

3. Adjournment

It was moved and seconded
That the meeting be adjourned at 3:55 p.m.

CARRIED

Certified a true and correct copy of the Minutes of the meeting of the Development Permit Panel of the Council of the City of Richmond held on Wednesday, July 10, 2019.

John Irving
Chair

Rustico Agawin
Committee Clerk

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

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(Formerly IBI/HB ARCHITECTS)
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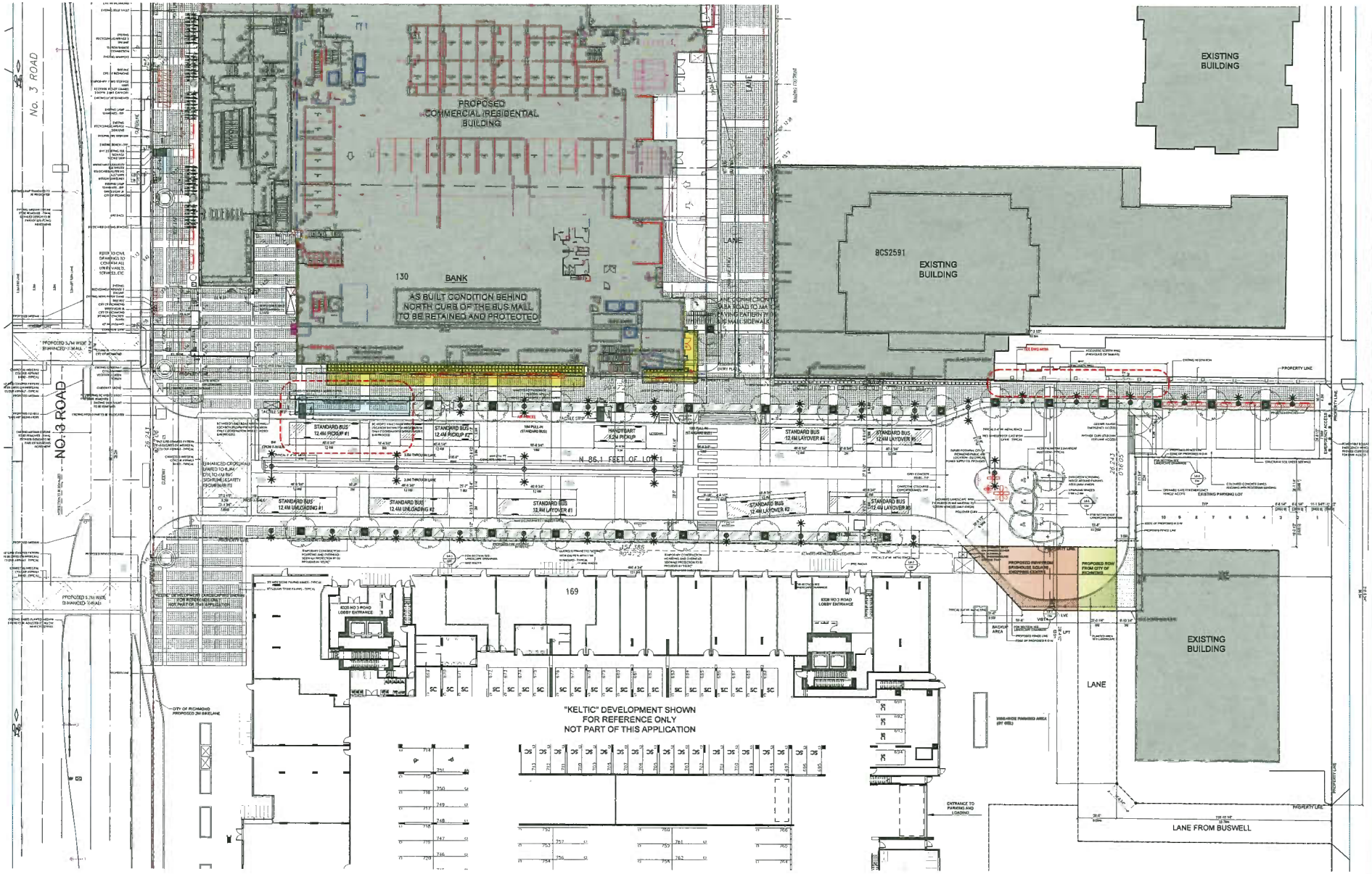
TRANSLINK

N

SITE LOCATION

6302 No 3 ROAD, RICHMOND
REISSUED FOR DEVELOPMENT PERMIT
June 3, 2019

A0001



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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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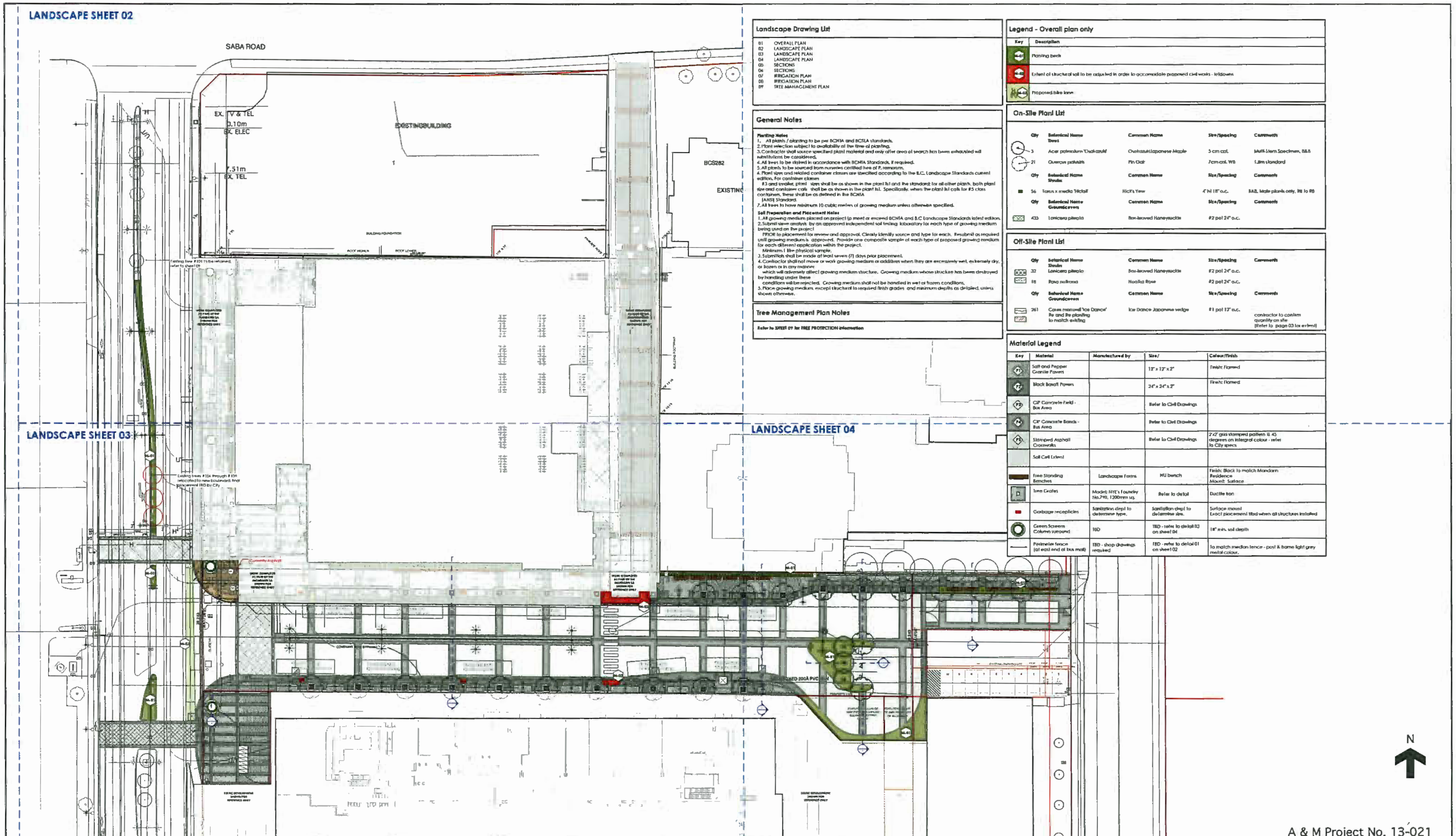
TRANSLINK

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 plants / planting to be per BCNTA and BCSLA standards.
2. Plant selection subject to availability at the time of planting.
3. Contractor shall source specified plant material and only after area of search has been exhausted will substitutions be considered.
4. All trees to be staked in accordance with BCNTA 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 calls shall be as shown in the plant list. Specifically, when the plant list calls for #5 class containers, these shall be as defined in the BCNTA (ANSI) Standard.
7. All trees to have minimum 10 cubic meters of growing medium unless otherwise specified.

Soil Preparation and Placement Notes

1. All growing medium placed on project to meet or exceed BCNTA 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
M-01	Planting beds
M-02	Extent of structural soil to be adjusted in order to accomodate proposed civil works - letdowns
M-03	Proposed bike lane

On-Site Plant List

Qty	Botanical Name	Common Name	Size/Spacing	Comments
	Trees			
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
	Shrubs			
56	Taxus x media 'Hicksii'	Hick's Yew	4' ht 18" o.c.	B&B, Male plants only, #8 to #8
	Groundcovers			
435	Lonicera pileata	Box-leaved Honeysuckle	#2 pot 24" o.c.	

Off-Site Plant List

Qty	Botanical Name	Common Name	Size/Spacing	Comments
	Shrubs			
32	Lonicera pileata	Box-leaved Honeysuckle	#2 pot 24" o.c.	
18	Rosa nutkana	Nootka Rose	#2 pot 24" o.c.	
	Groundcovers			
261	Carex morrowii 'Ice Dance' Re and Re 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
F1	Salt and Pepper Granite Pavers		12" x 12" x 2"	Finish: Flamed
F2	Black Basalt Pavers		24" x 24" x 2"	Finish: Flamed
F3	CIP Concrete Field - Bus Area		Refer to Civil Drawings	
F4	CIP Concrete Bands - Bus Area		Refer to Civil Drawings	
F5	Stamped Asphalt Crosswalks		Refer to Civil Drawings	2'x2' grid stamped pattern @ 45 degrees on integral colour - refer to City specs
	Soil Cell Extent			
	Free Standing Benches	Landscape Forms	MJ bench	Finish: Black to match Mandarin Residence Mount: Surface
	Tree Grates	Model: NYE's Foundry No.790, 1200mm sq.	Refer to detail	Ductile Iron
	Garbage recepticles	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 03 on sheet 04	18" min. soil depth
	Perimeter fence (at east end of 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	AL	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

DY/M/YR

TRANSLINK

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SEAL

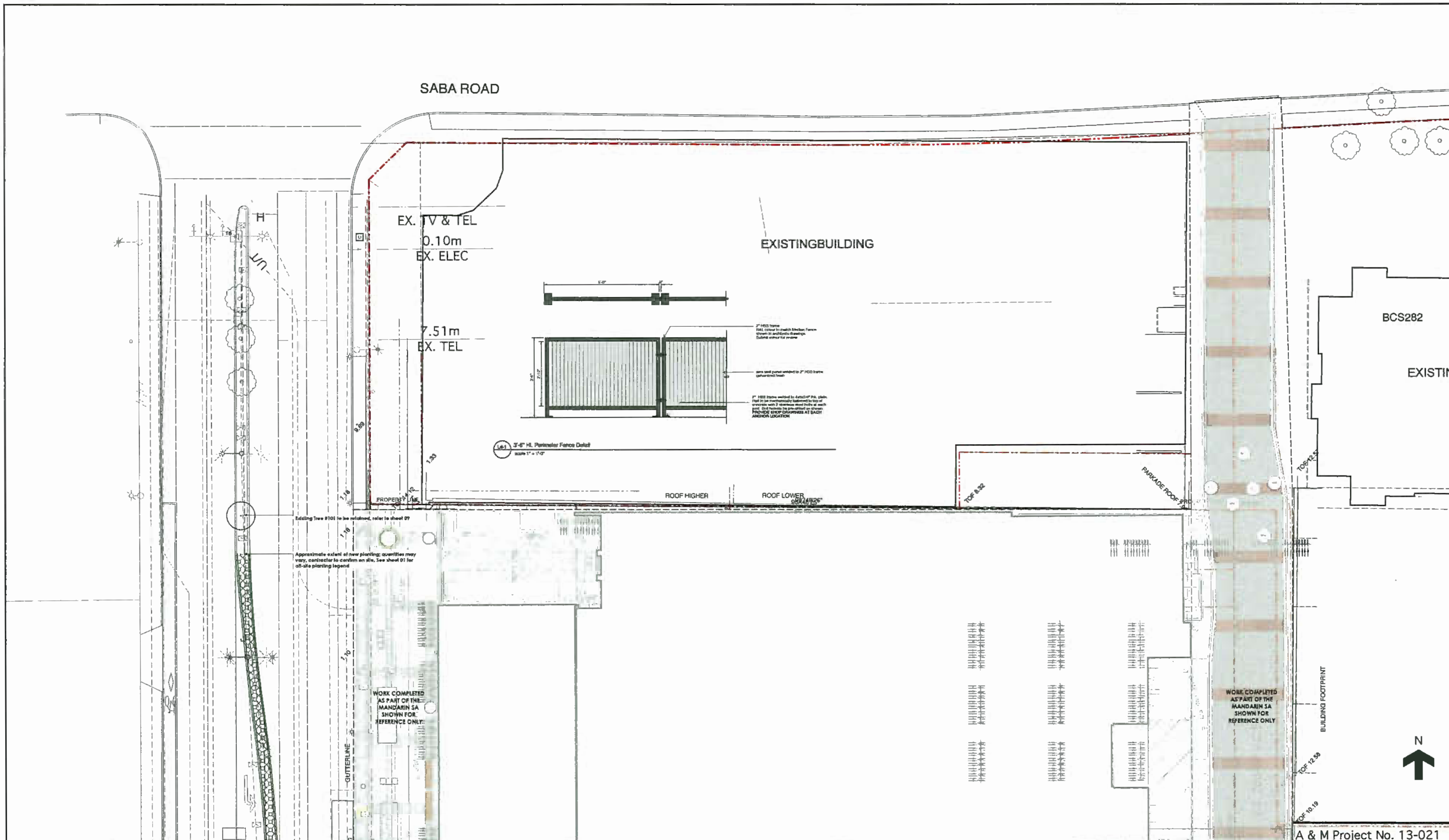
BAR SCALE(S):

1/8" = 1'-0"

BRIGHOUSE STATION
BUS MALL
OVERALL PLAN

SCALE 1/8" = 1'-0" DATE JULY 2013	DKL PROJECT # 13032	CITY PROJECT # 842676-18-10	LANDSCAPE DRAWING # 01 of 09

SUPERSEDES PRINTS OF THIS NUMBER WITH LETTERS PREVIOUS TO



A & M Project No. 13-021

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CHECKED	PK	DATE
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BRIGHOUSE STATION
BUS MALL
LANDSCAPE PLAN

SCALE 1/8" = 1'-0"	DKL PROJECT # 13032	CITY PROJECT # 842676-18-10	LANDSCAPE DRAWING # 02 of 09
DATE JULY - 2013			

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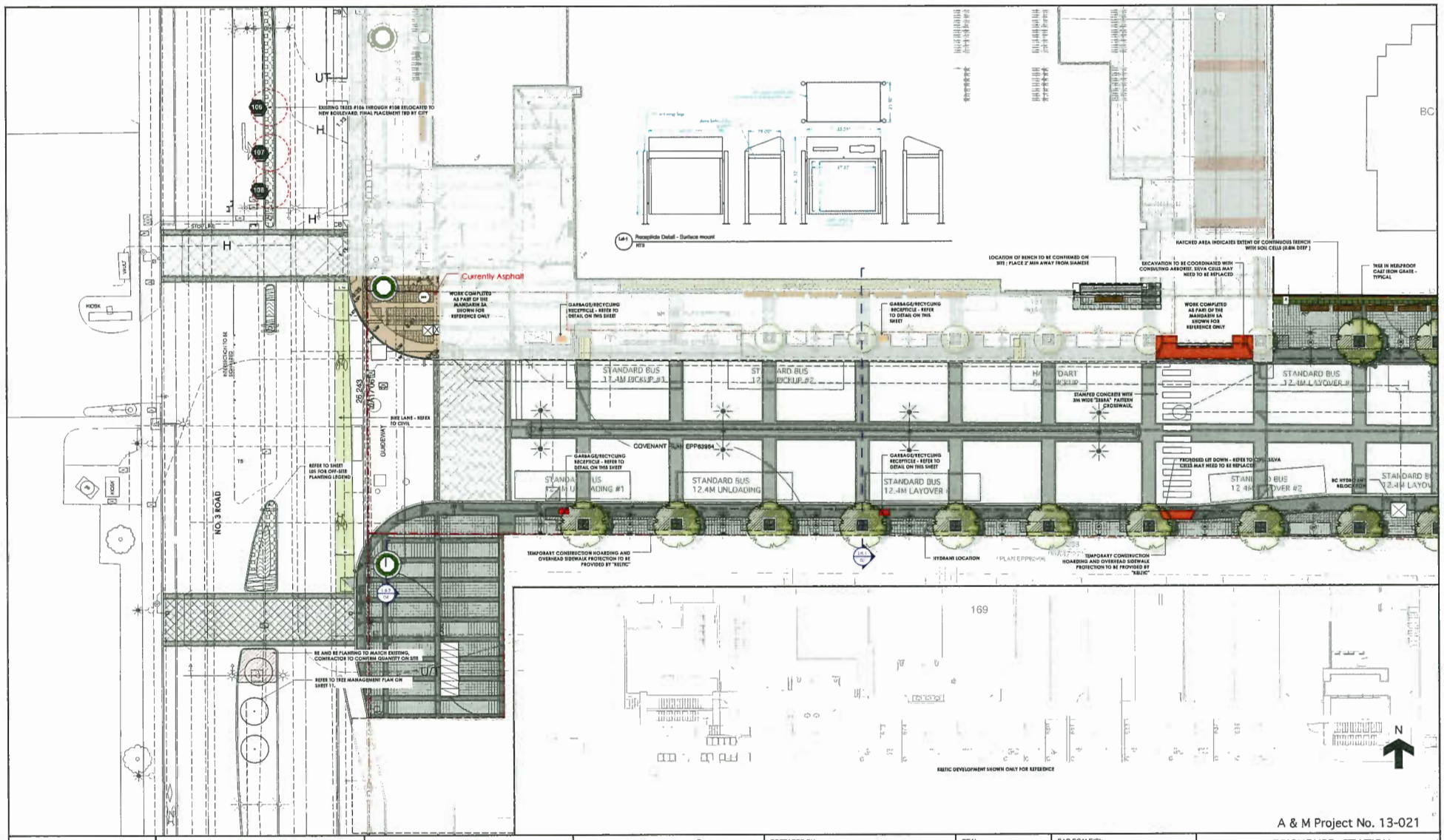

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DD/MM/YR			

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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

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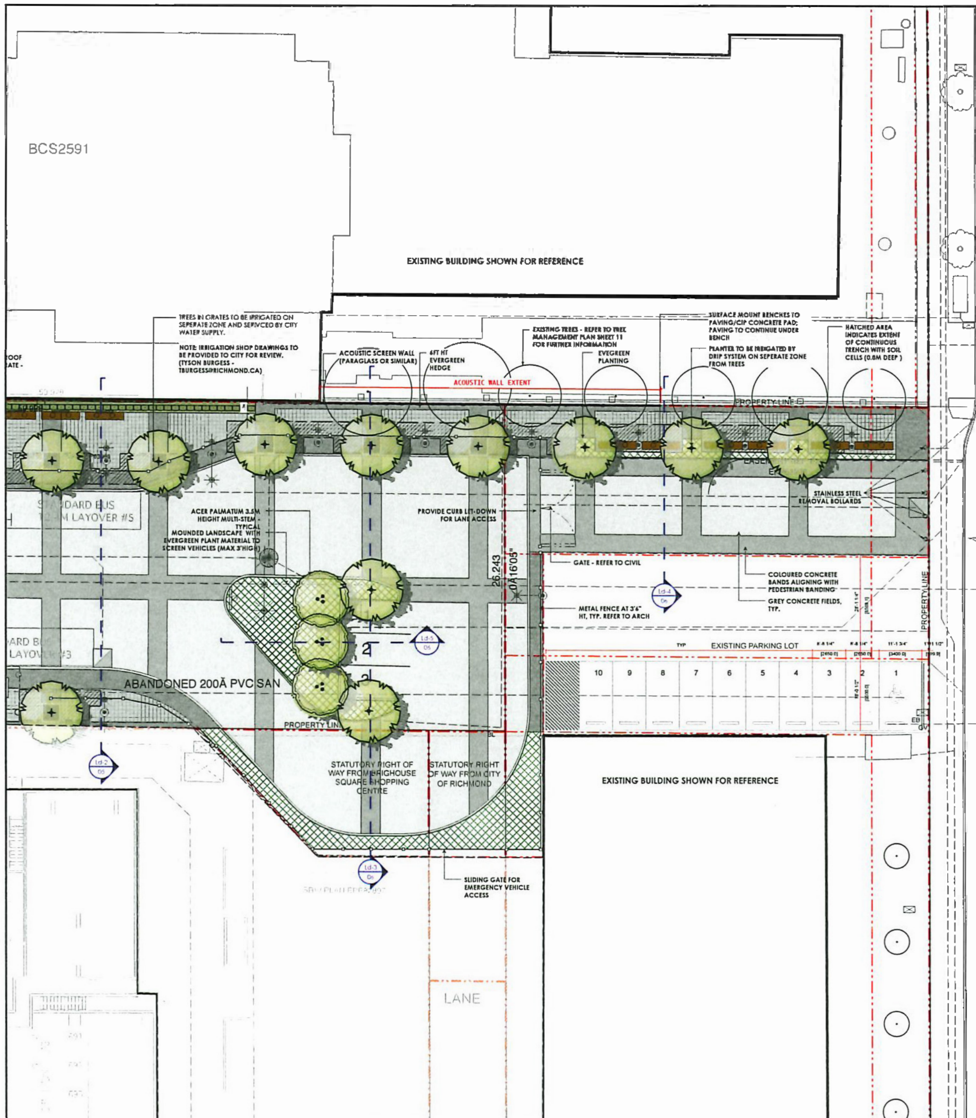
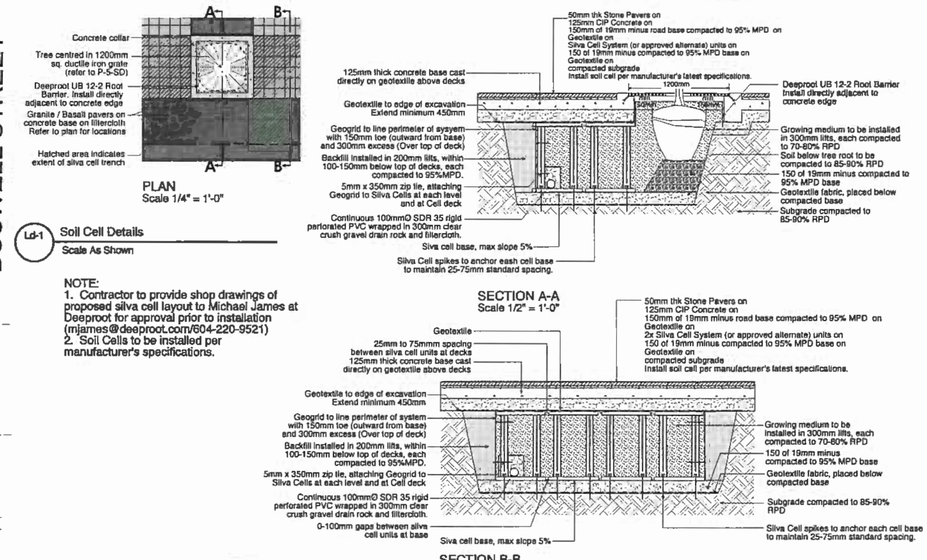
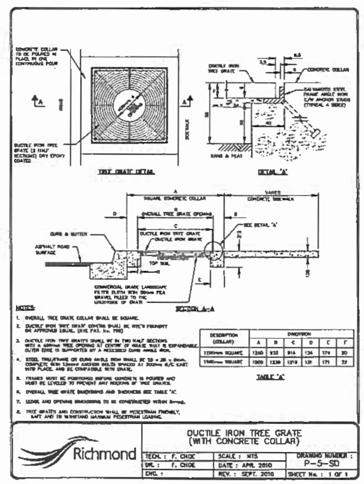


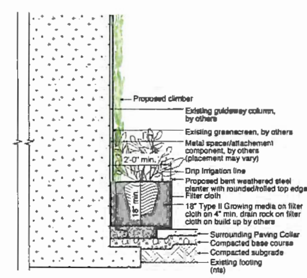


Ld-1 Soil Cell Details
Scale As Shown

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.



Ld-2 City of Richmond Tree Details
NTS



NOTE: Existing drip irrigation to be adjusted to suit

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	MTB	DATE
CHECKED	PK	DATE
APPROVED		DATE

REFERENCE DRAWING

No	DWG No	DESCRIPTION

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D/M/Y/R

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SEAL

BAR SCALE(S):
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	04 of 09

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TRANSLINK

BUS MALL

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

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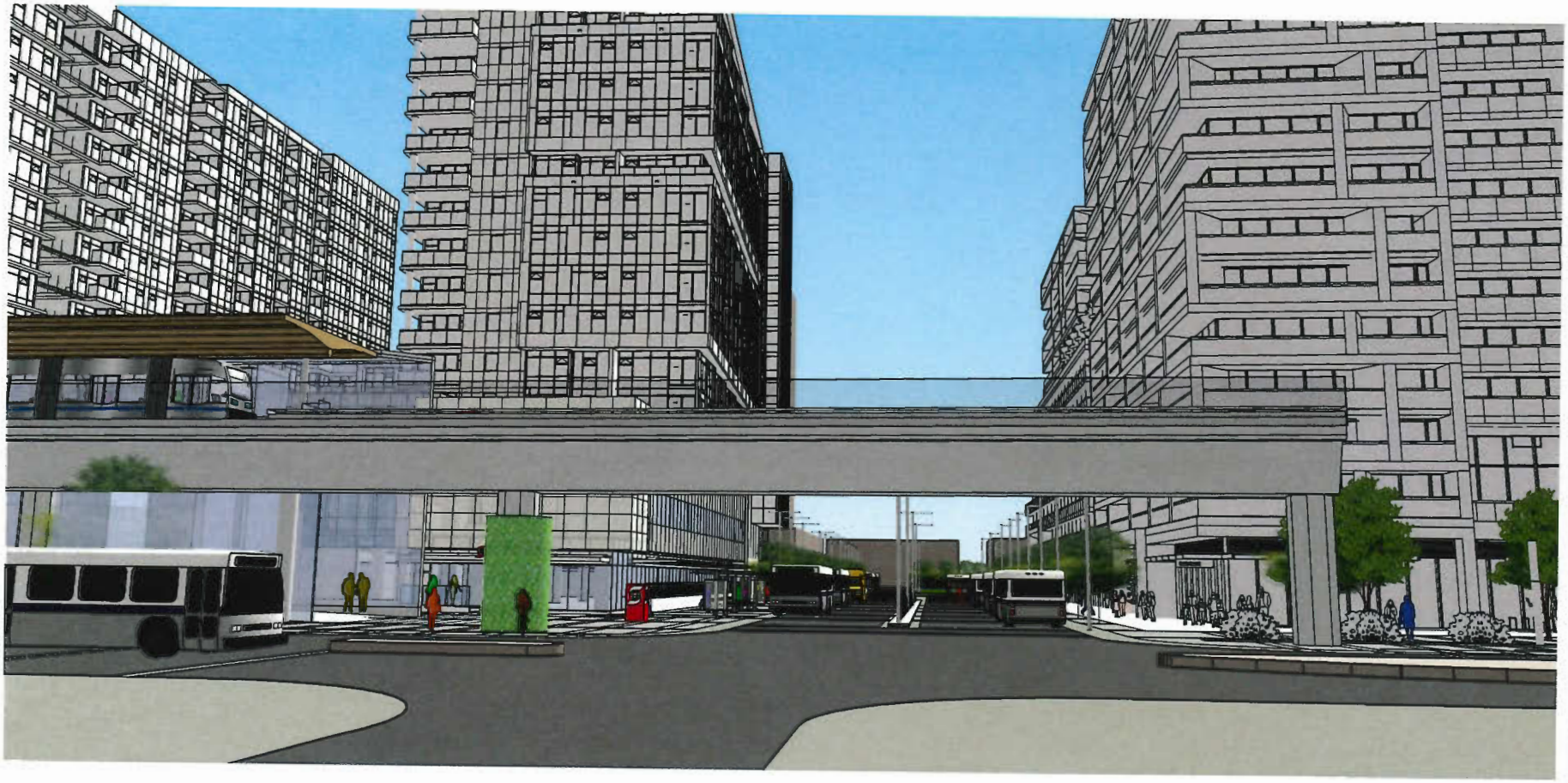

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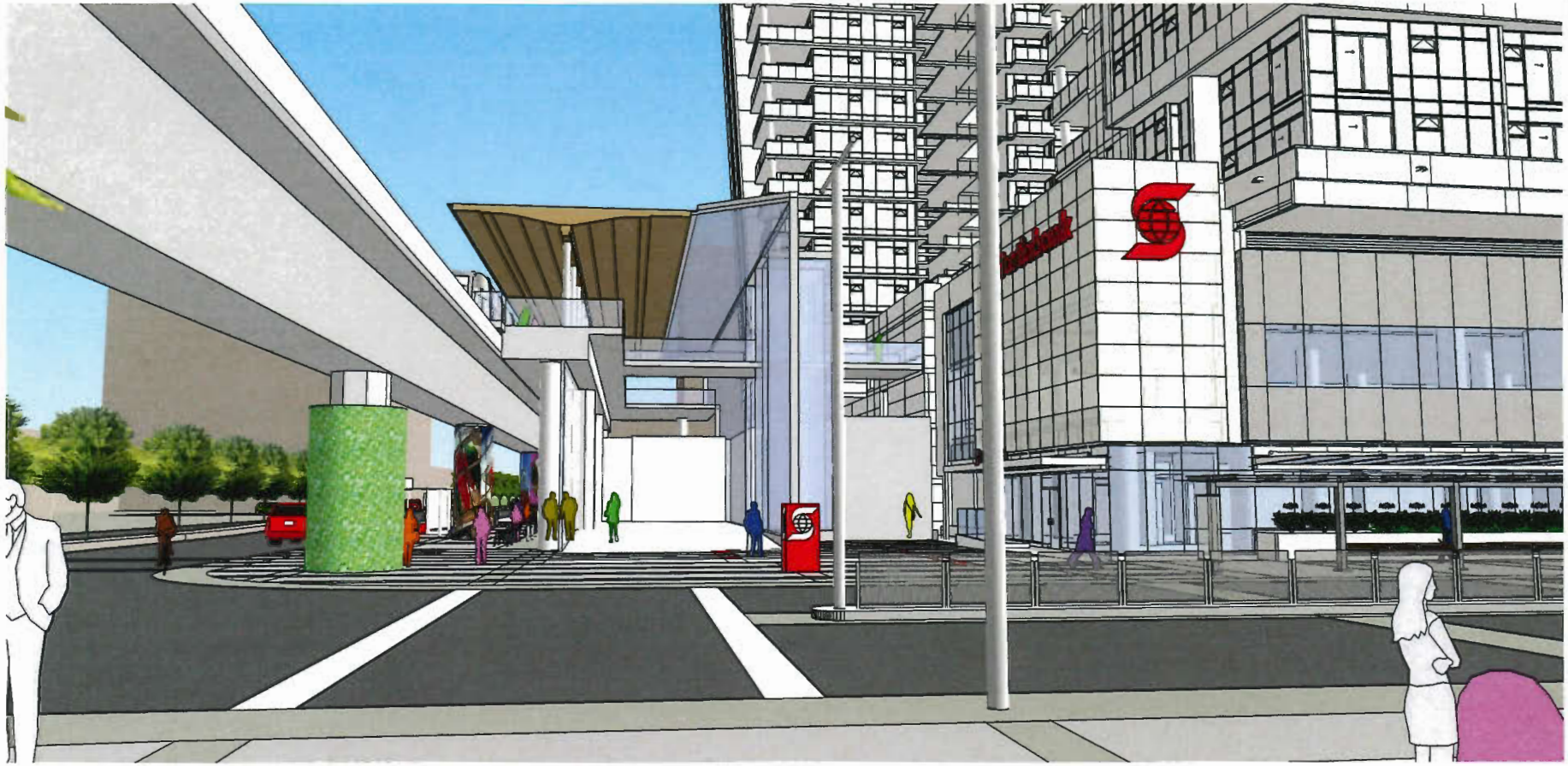

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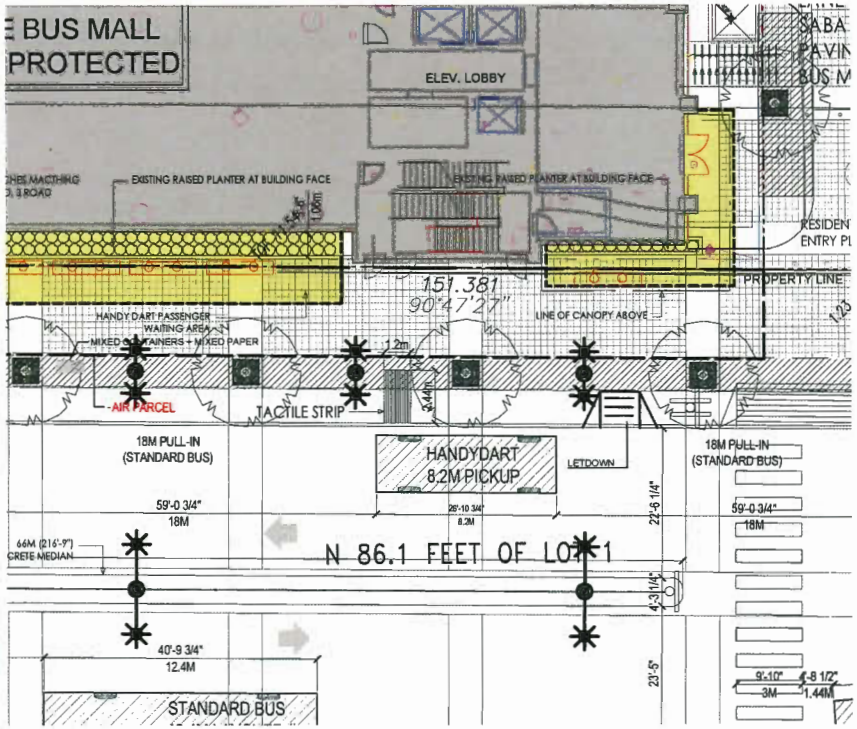
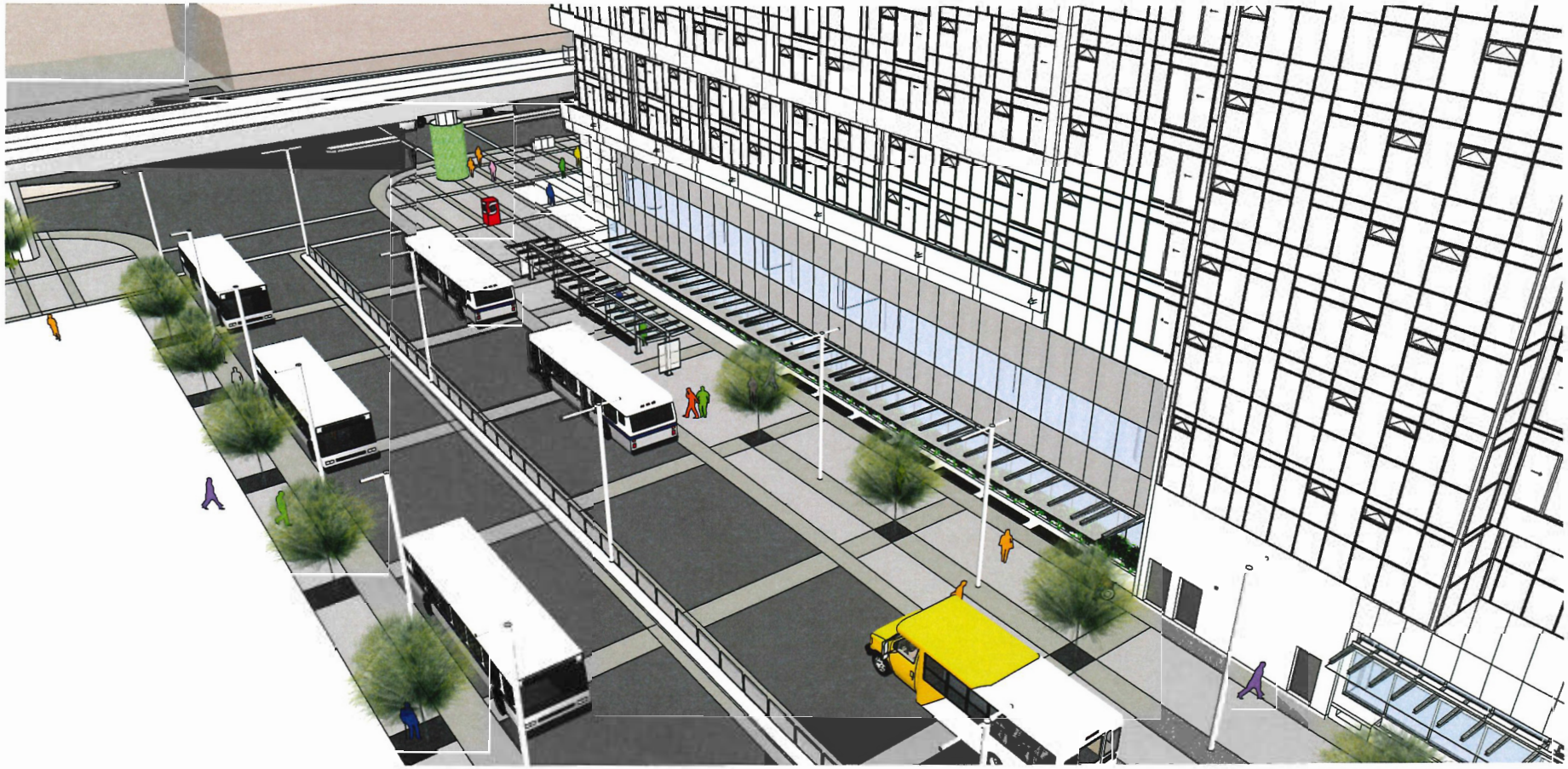


HANDYDART BUS LOCATION AND PASSENGER AREA



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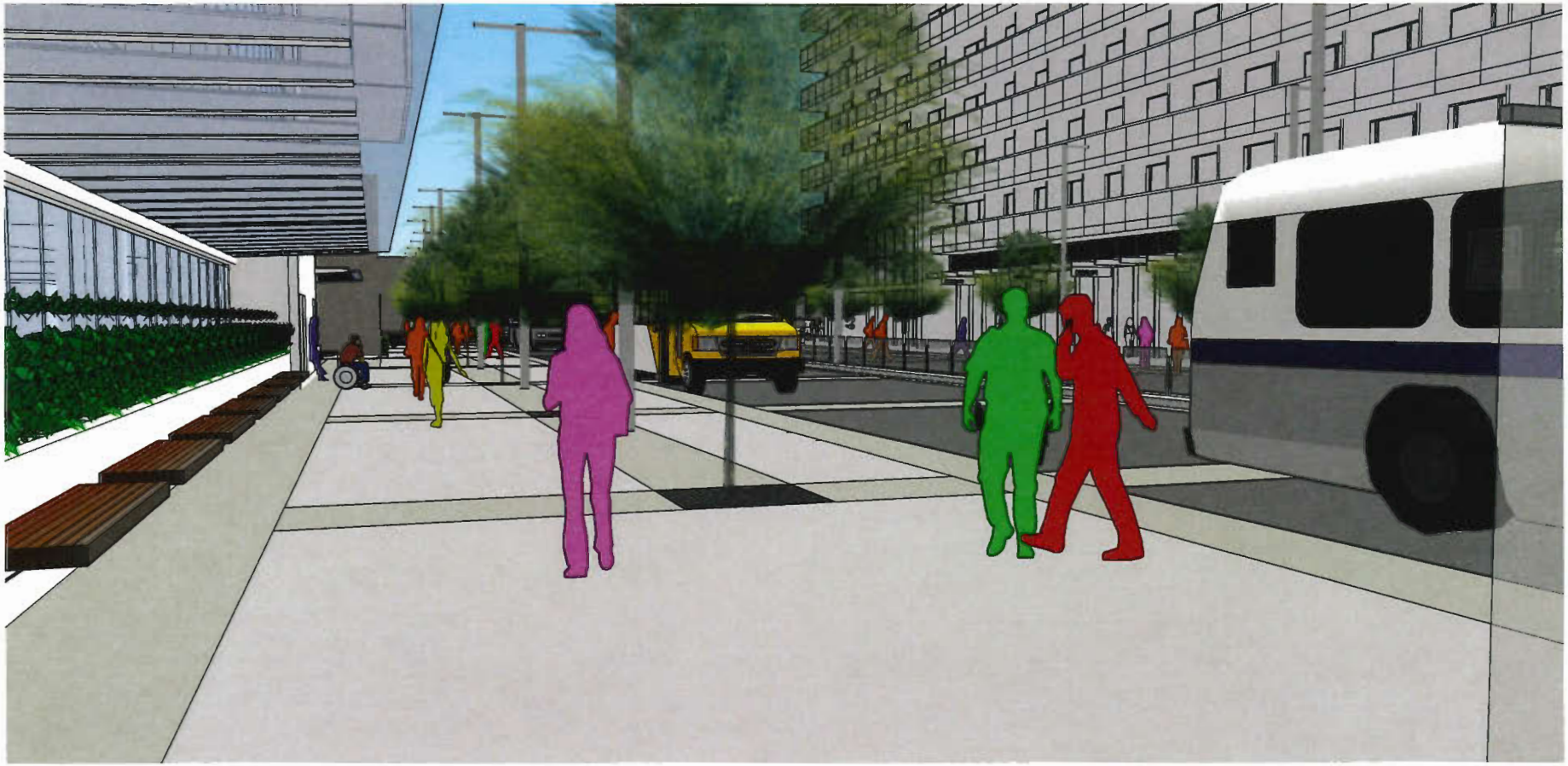
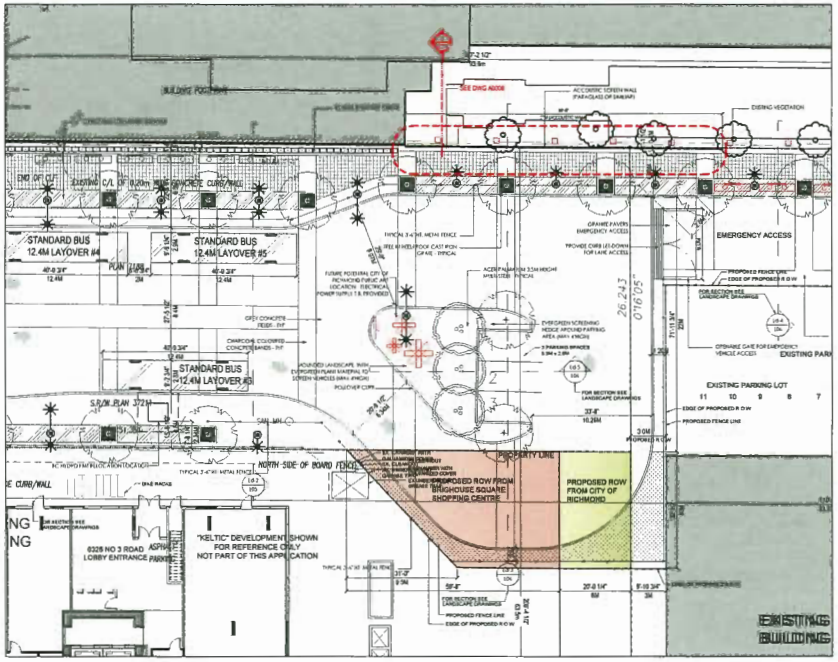
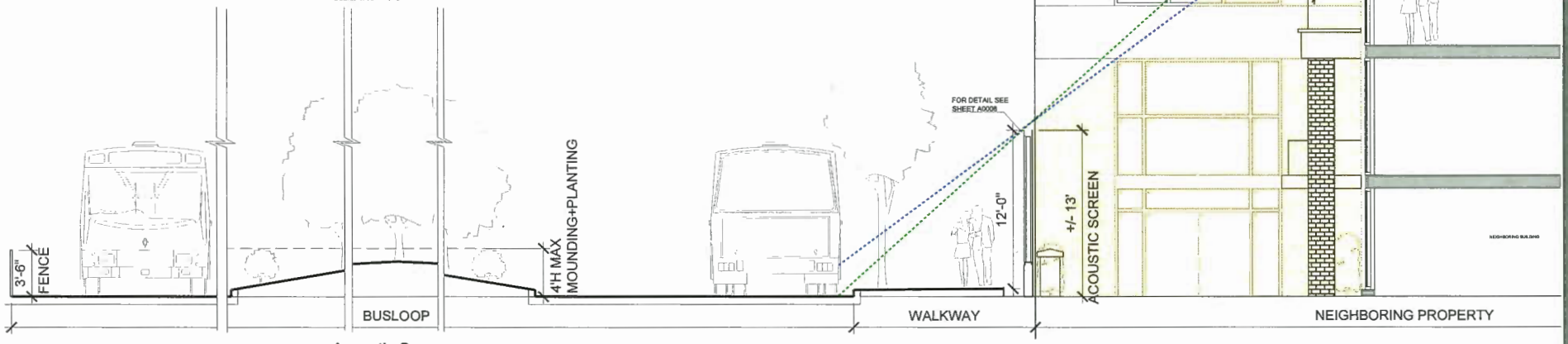


Image 1: North Neighbour
FACING EAST ELEVATION

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.

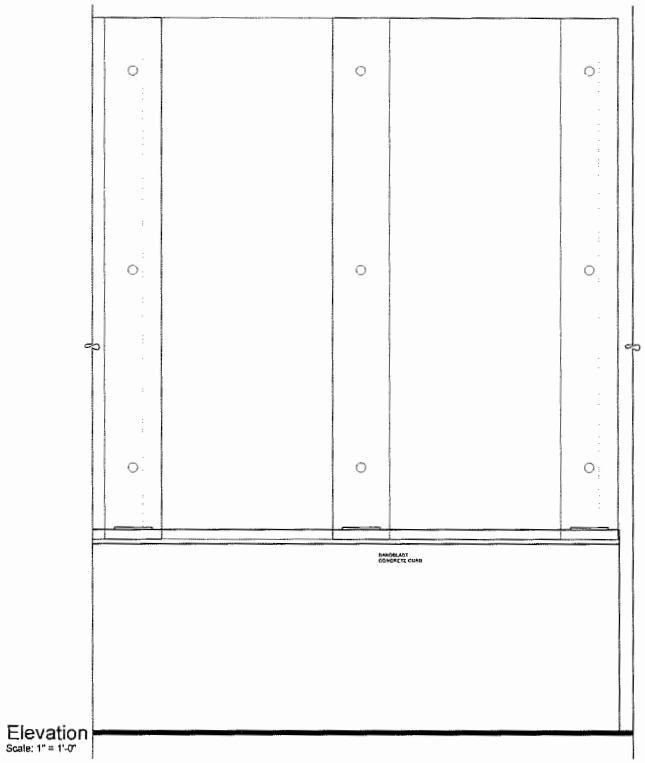
Please call if you have any questions.

Yours very truly,

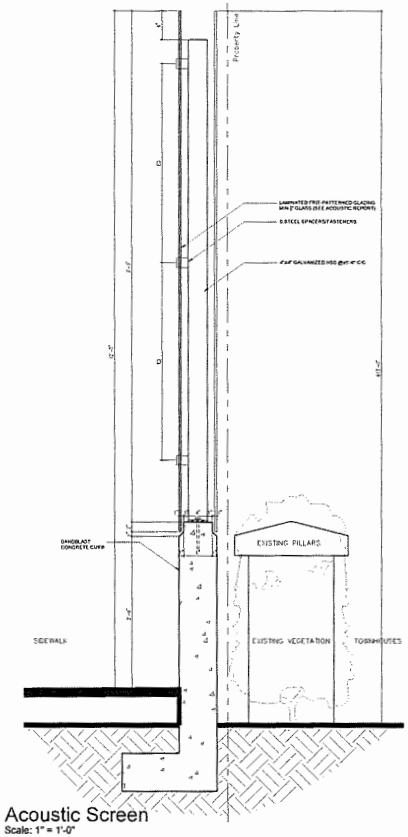
BROWN STRACHAN ASSOCIATES

David W. Brown, P.Eng.

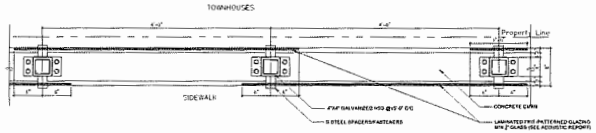
Incl. DWB/ll/15Dec/IBIBrighouse.let



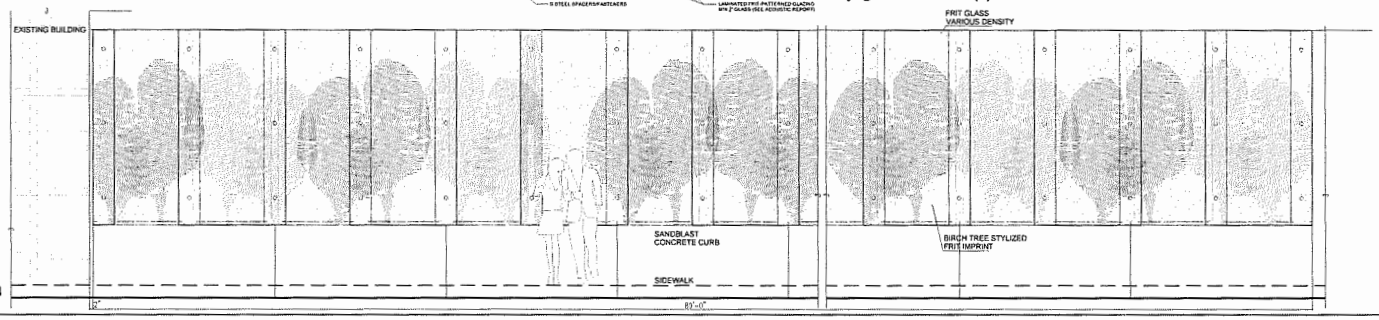
Elevation
Scale: 1" = 1'-0"



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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N

ACOUSTIC SCREEN

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

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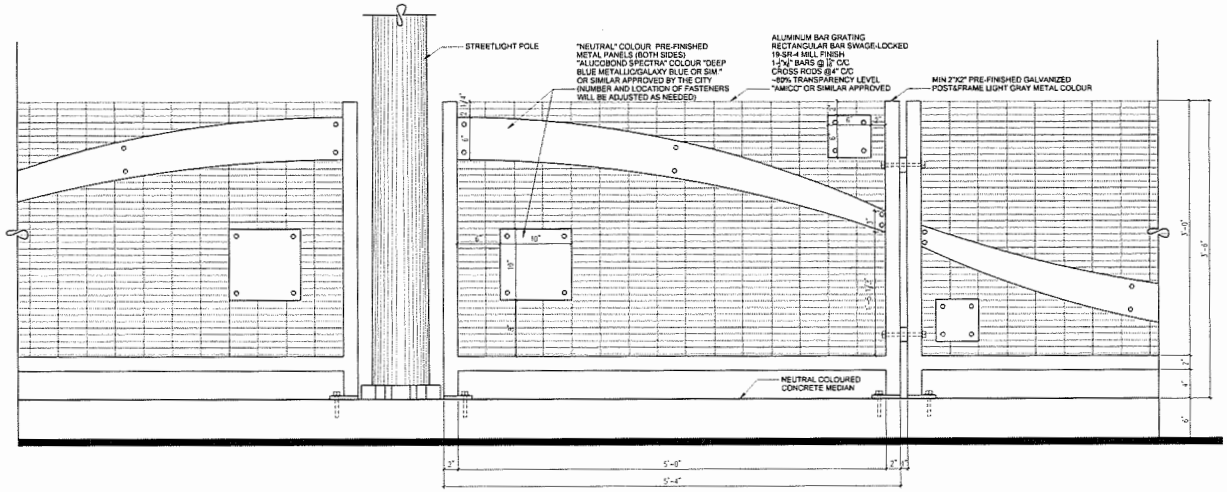
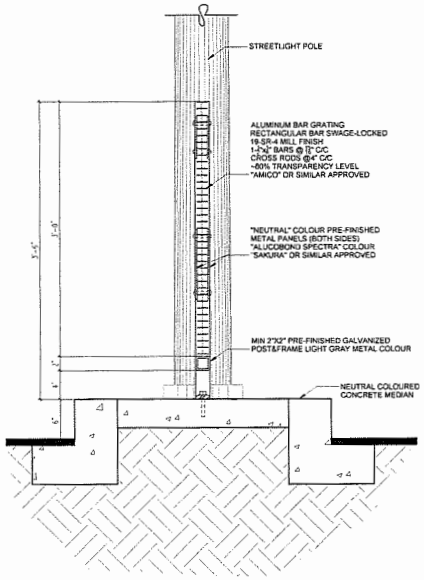
DEVELOPMENT PERMIT RE-SUBMISSION
June 03, 2019

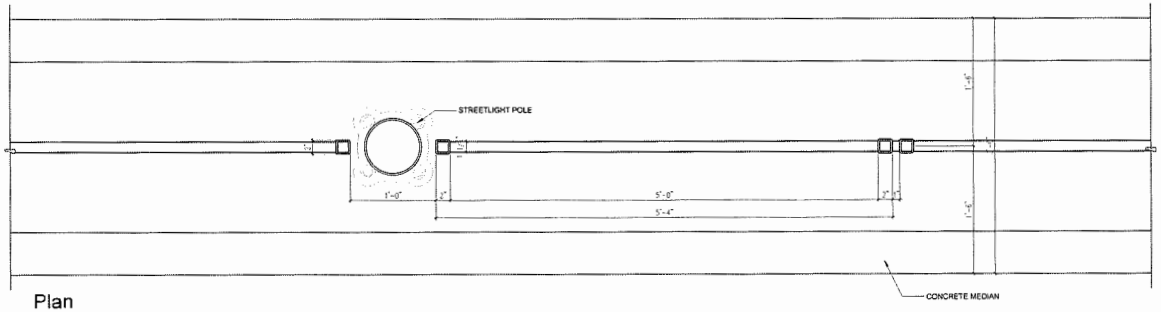
A0006



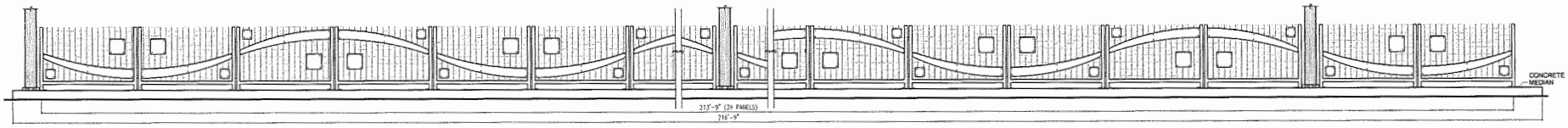
Elevation
Scale: 1 1/2" = 1'-0"



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



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



Elevation
Scale: NTS

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TRANSLINK

MEDIAN FENCE

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

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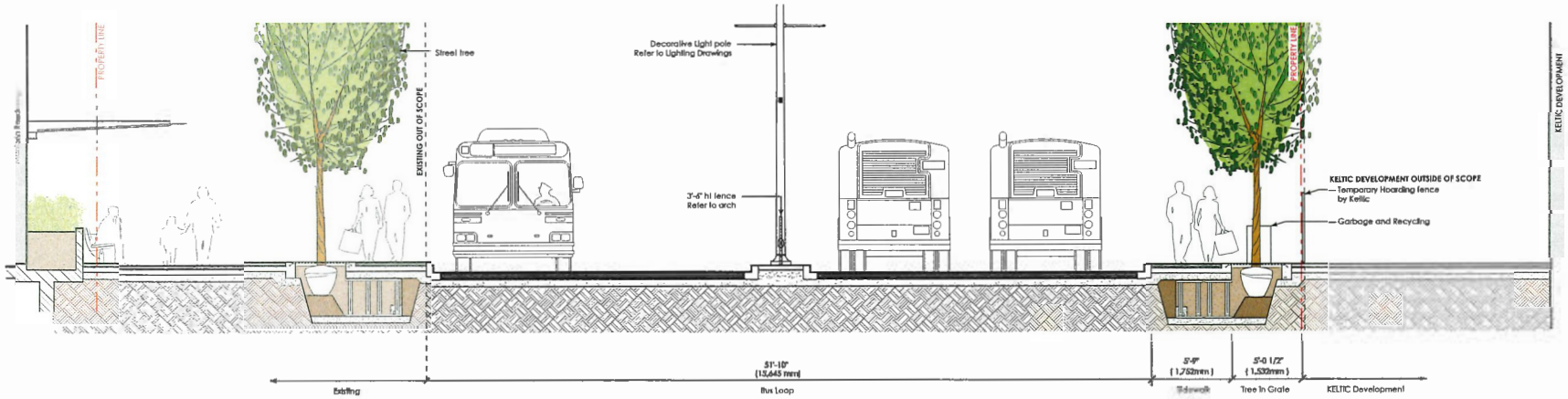
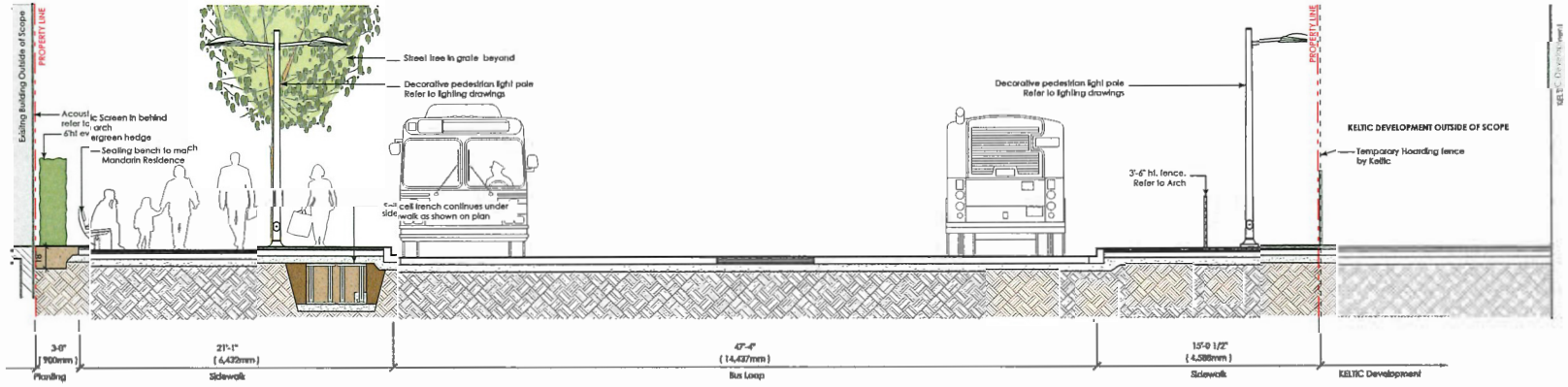
DEVELOPMENT PERMIT RE-SUBMISSION
June 03, 2019

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			

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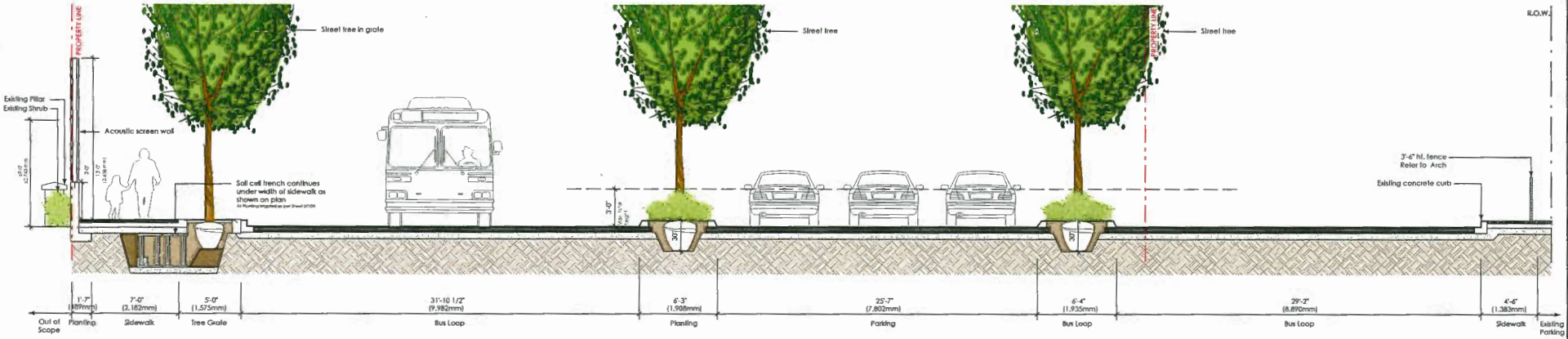
SEAL

BAR SCALE(S): SCALE AS SHOWN

BRIGHOUSE STATION
BUS MALL
LANDSCAPE SECTIONS

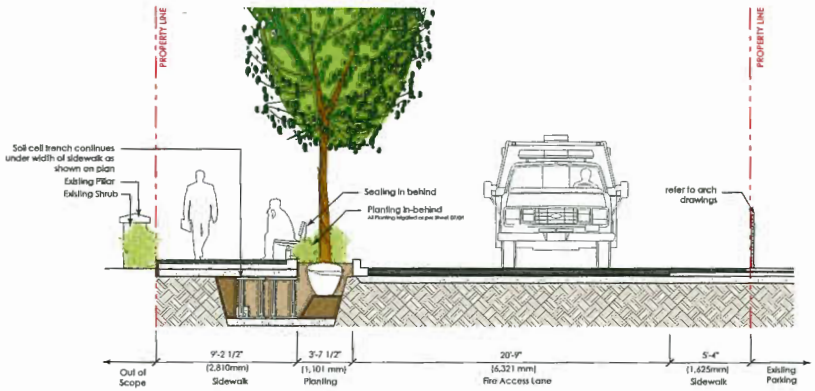
SCALE AS SHOWN	DKL PROJECT #	CITY PROJECT #	LANDSCAPE DRAWING #
DATE JULY - 2013	13032	842675-18-10	05 of 09

SUPERSEDES PRINTS OF THIS NUMBER WITH LETTERS PREVIOUS TO →



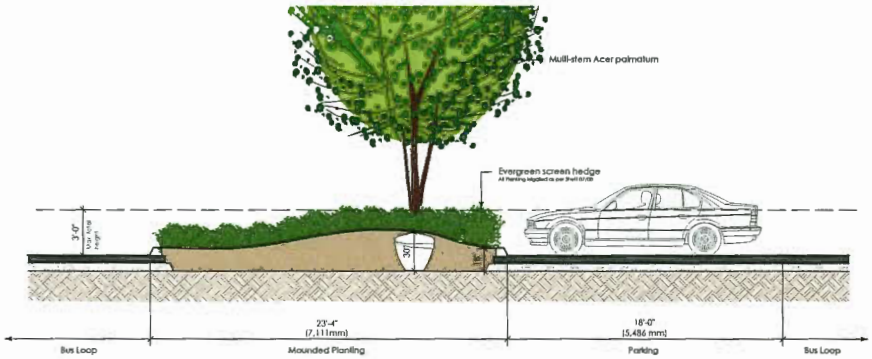
Ld-3 Section through bus loop - C

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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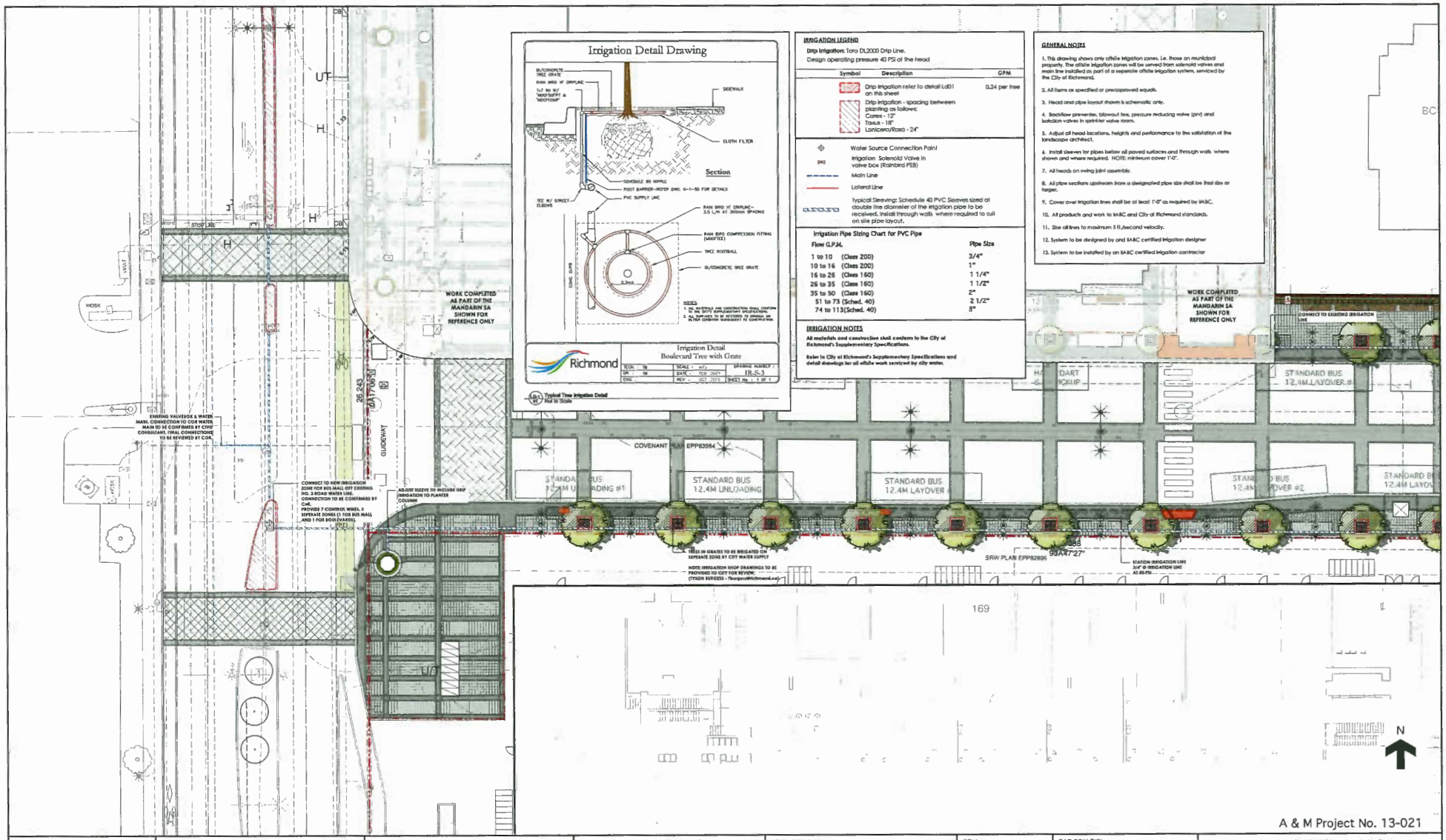
SEAL

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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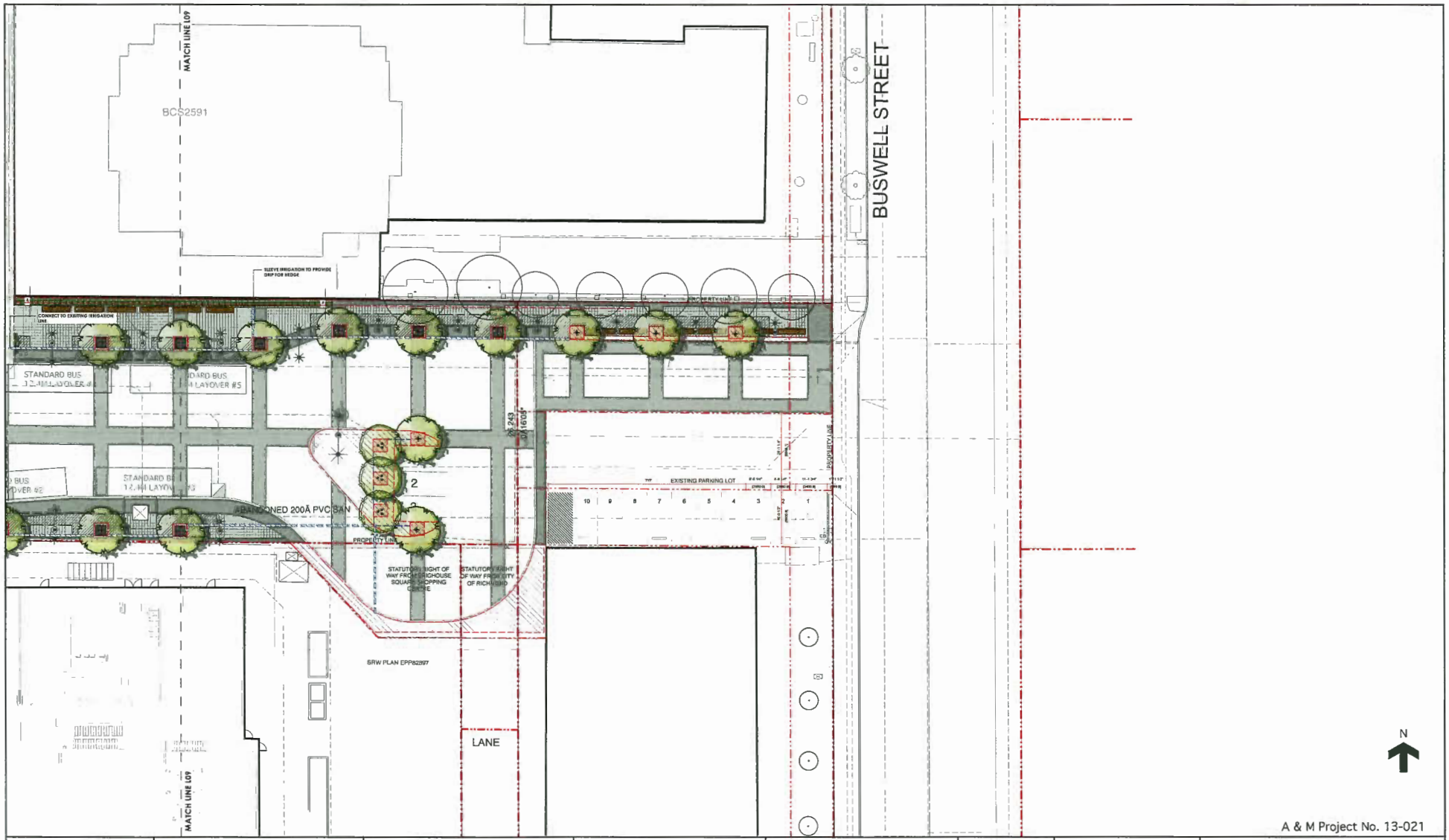
SEAL

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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SEAL

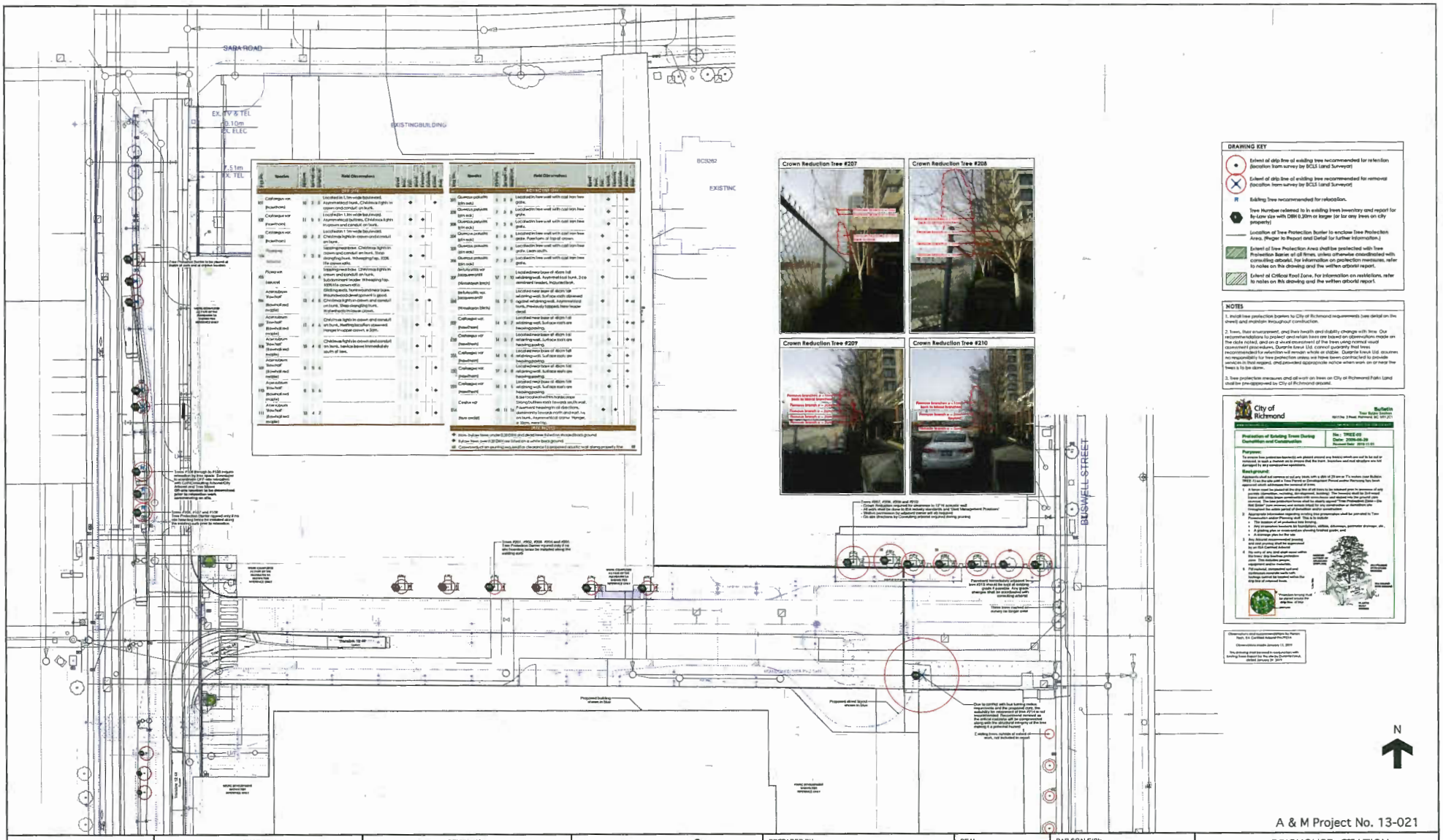
BAR SCALE(S):

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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SEAL

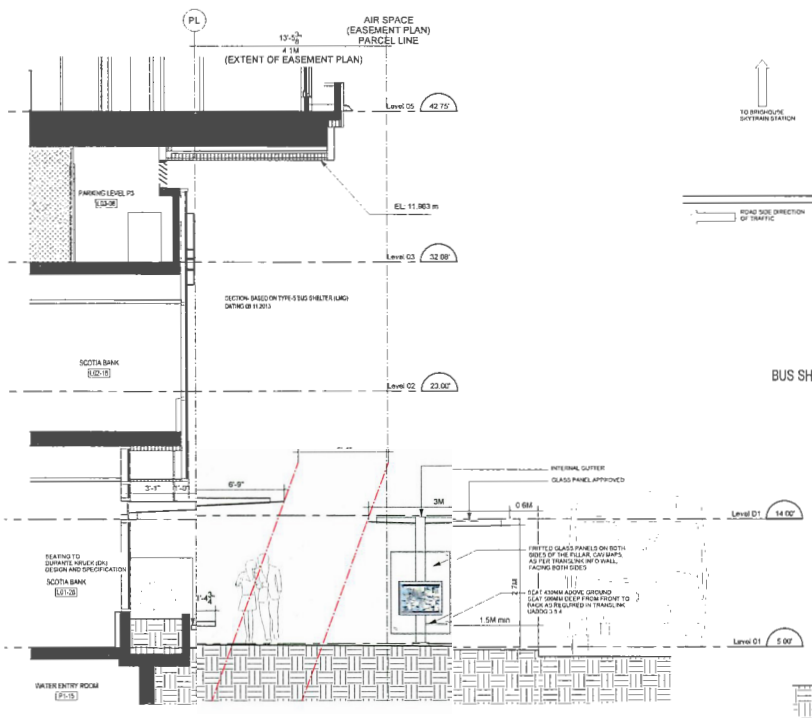
BAR SCALE(S): 1/8" = 1'-0"

BRIGHOUSE STATION BUS MALL

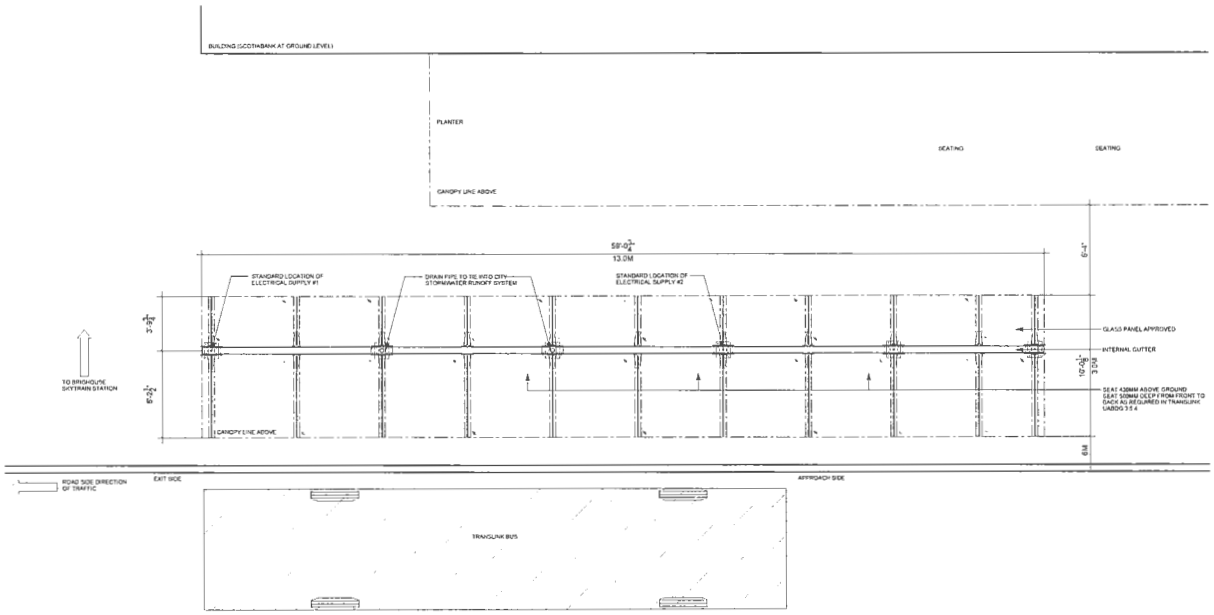
EXISTING TREES MANAGEMENT PLAN

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

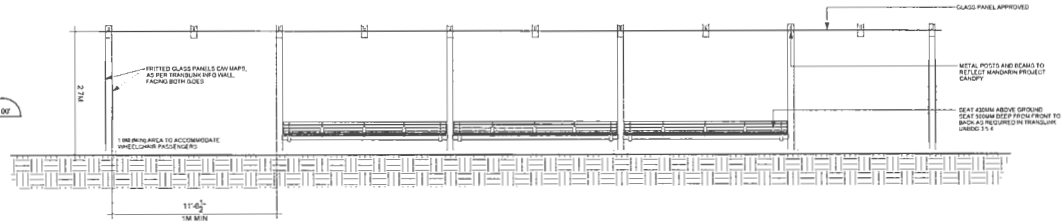
SUPERSEDES PRINTS OF THIS NUMBER WITH LETTERS PREVIOUS TO →



WEST ELEVATION



BUS SHELTER PLAN



SOUTH ELEVATION

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(Formerly IBI/HB ARCHITECTS)
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Tel 604 683 8797 fax 604 683 0492
ibigroup.com

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.

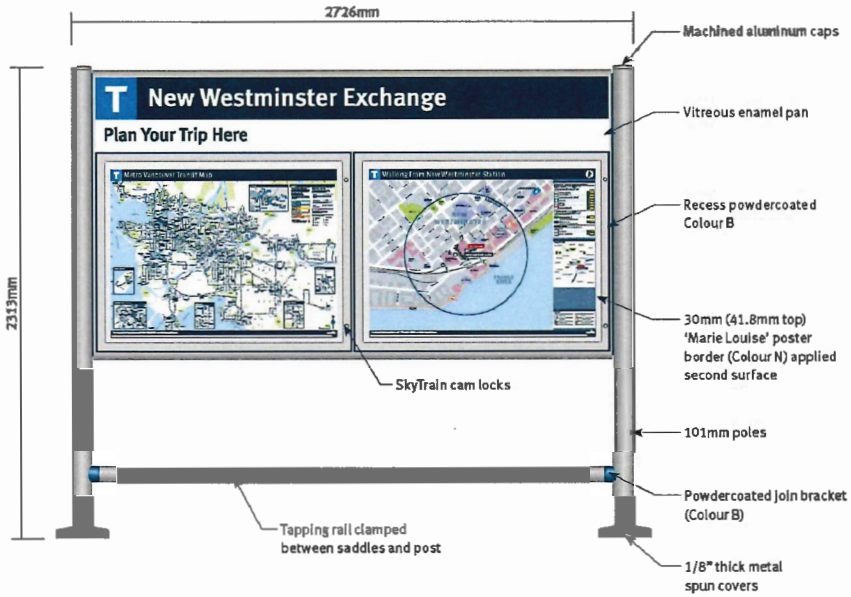
5mm thick clear tempered glass.

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

IBI GROUP ARCHITECTS (Formerly IBI/RB ARCHITECTS) 700 – 1285 West Pender Street Vancouver BC V6E 4B1 Canada tel 604 683 8797 fax 604 683 0492 ibigroup.com

TRANSLINK

TRANSLINK INFO WALL

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

A0011

Brown Strachan Associates
Consulting Engineers in Acoustics

COPY

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 798.051, 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

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.

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

Brown Strachan Associates
Consulting Engineers in Acoustics

COPY

Project: 125.111

June 22, 2017

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

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/II/17Jun/IBIBrighouse.let

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 tower 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 balustrade 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/ab/19Jul/IBI2.let

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, Arch Tech, CET (Arch), MRAC, MPC
Senior Advisor, Public Affairs
Government & Public Affairs
T 778-375-6766 | C 604-760-1824 | translink.ca

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: 'ctung001@gmail.com' <ctung001@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, Arch Tech, CET (Arch), MRAC, MPC
Senior Advisor, Public Affairs
Government & Public Affairs
T 778-375-6766 | C 604-362-1824 | translink.ca

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: 'ctung001@gmail.com' <ctung001@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: ctung001@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, P.Eng., PMP, LEED AP
Contractor Project Manager
Engineering Project Delivery
T 778-375-7755 | C 778-229-0154 | translink.ca
TransLink
400-287 Nelson's Court, New Westminster, BC, V3L 0E7, Canada

Together all the way

From: Brown Strachan Associates [mailto:bsa@brownstrachan.com]
Sent: Tuesday, July 9, 2019 11:06 AM
To: Roman Binenbaum <roman.binenbaum@ibigroup.com>
Cc: Salim Narayanan <SNarayanan@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 9ft barrier.

3b.) See item 2. above.

Regards,

Aaron Peterson
Brown Strachan Associates
604-689-0514

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

1

RESIDENT OUTREACH LETTER

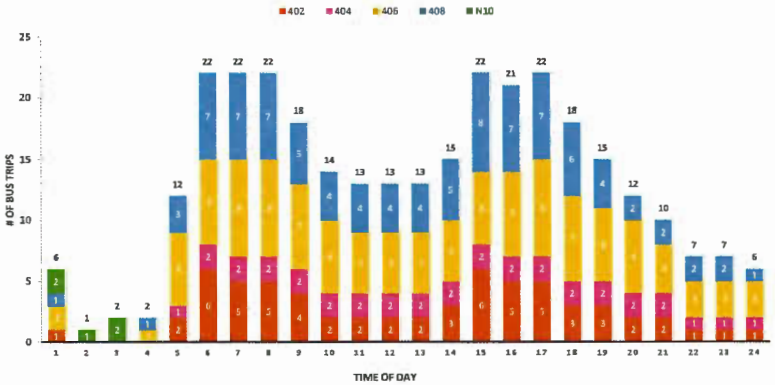
IBI GROUP ARCHITECTS
(Formerly IBI/HB ARCHITECTS)
700 – 1285 West Pender Street
Vancouver BC V6E 4B1 Canada
tel 604 683 8797 fax 604 683 0492
ibigroup.com

TRANSLINK

BUS MALL

6302 No 3 ROAD, RICHMOND
DEVELOPMENT PERMIT PANEL
July 10, 2019

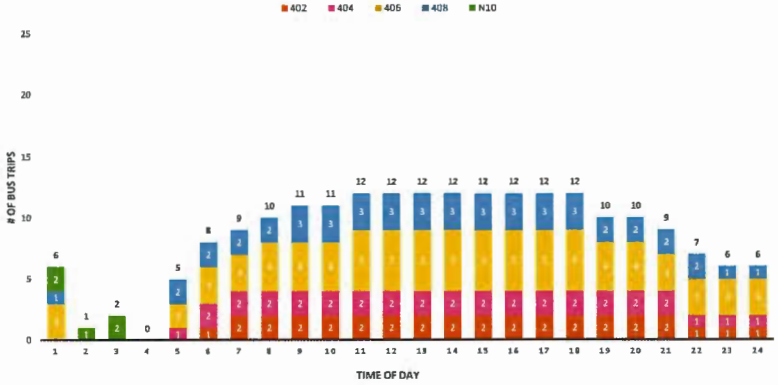
WEEKDAY HOURLY BUS TRIPS



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

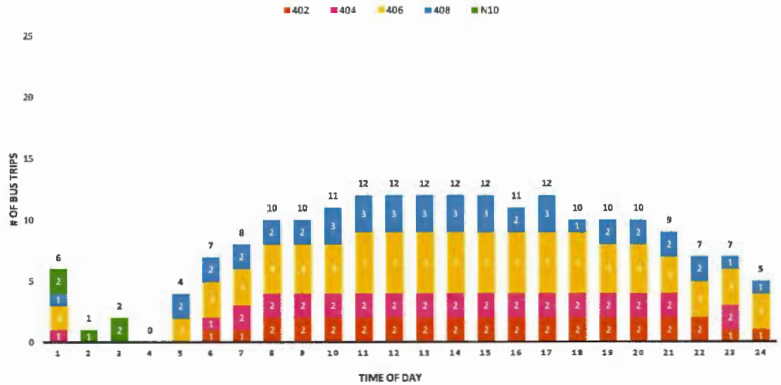
SATURDAY HOURLY BUS TRIPS



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

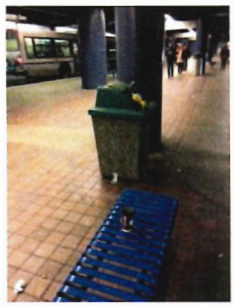
Additional Information:

- 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

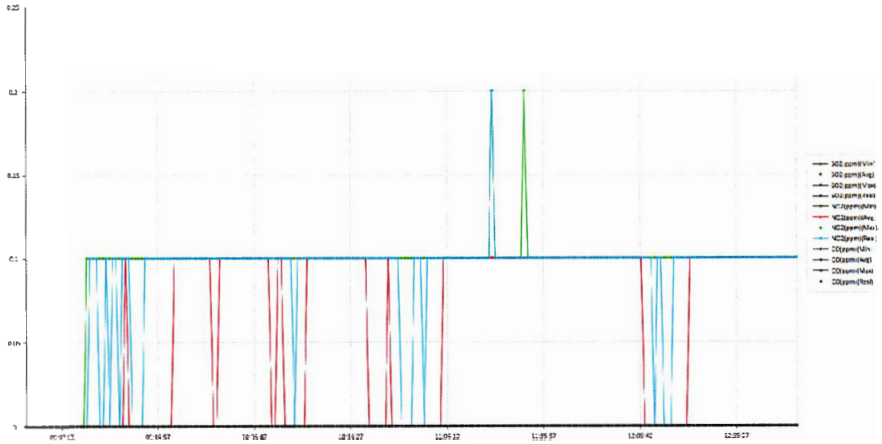
DATALOG SUMMARY:

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.

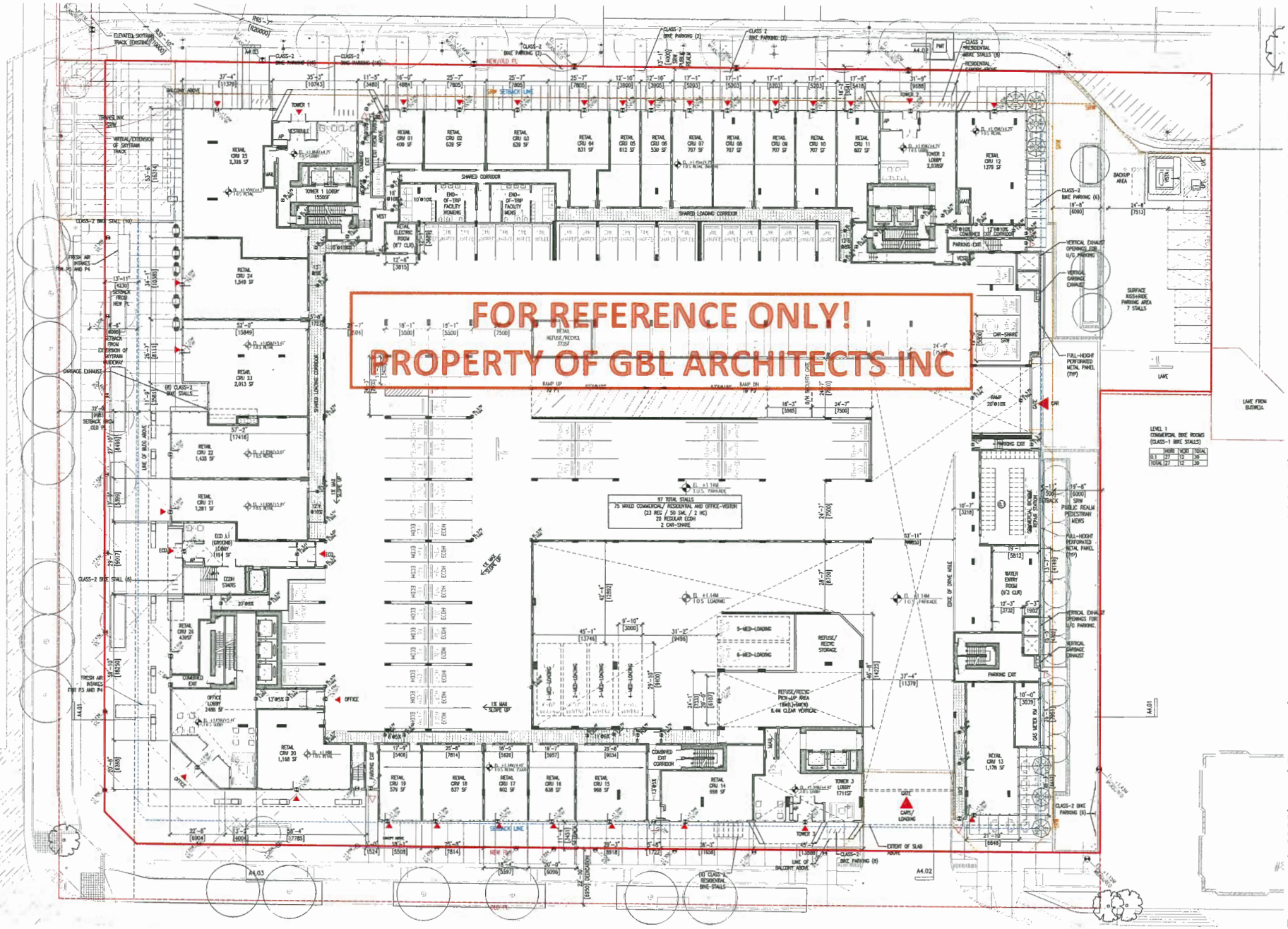
4. DEFINITIONS

"[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

Schedule 2 to the Minutes of the Development Permit Panel meeting held on Wednesday, July 10, 2019.

McMullen, Mark

From: Vyas, Chit <chit.vyas@translink.ca>
Sent: Tuesday, 9 July 2019 12:26
To: ctung001@gmail.com
Cc: Ferrari, Drew; McMullen, Mark; Roman Binenbaum
Subject: Richmond Brighouse Bus Exchange

To Development Permit Panel
Date: July 10, 2019
Item # 1
Re: DP 11-593871

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, P.Eng., PMP, LEED AP
Contractor Project Manager
Engineering Project Delivery
T: 778-375-7755 | C: 778-229-0156| translink.ca
TransLink
400-287 Nelson's Court, New Westminster, BC, V3L 0E7, Canada

Together all the way

CITY OF RICHMOND DATE JUL 0 9 2019 RECEIVED CITY CLERK'S OFFICE

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

Roman:

As requested, the following is in response to resident Jett 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 9ft barrier.

3b.) See item 2. above.

Regards,

Aaron Peterson
Brown Strachan Associates
604-689-0514

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

From: Jett Tung <ctung001@gmail.com>
Sent: Thursday, July 4, 2019 4:37 PM
To: Ferrari, Drew <Drew.Ferrari@Translink.ca>
Cc: Vyas, Chit <chit.vyas@translink.ca>; McMullen, Mark <MMcMullen@richmond.ca>
Subject: Re: Richmond Brighouse Bus Exchange

Dear Mr. Ferrari,

Thank you for the information. I have a couple of follow-up questions regarding the expected noise levels for the townhouses:

1) According to Key Plan on Document A0005, the proposed acoustic wall only covers the first three townhouse units from the left. Is this enough to protect the entire row of townhouses along the proposed bus mall?

2) The requirement for outdoor living spaces is 55db or lower according to CMHC. According to the caustic engineer's estimate, the exterior noise level is 65dB and the acoustic wall is predicted to reduce this by 5-10dB. Wouldn't this would bring the noise level to between 55dB to 60dB, which is still above the acceptable noise level?

3) In the earlier letter from the acoustic engineer that you have kindly sent me (dated December 9, 2015), the acoustic wall was proposed to be 9 feet tall. The currently proposed wall is 12 feet tall.
3a) What are the differences?
3b) Is 12 feet tall wall enough to provide protection on the top floor patio (exterior of the 4th floor, as opposed to the interior portion)?

Sincerely,
Jett

On Jul 4, 2019, at 1:28 PM, Ferrari, Drew <Drew.Ferrari@translink.ca> wrote:

Good afternoon Mr. Tung. I wanted to share with you some additional information that we have received regarding an sound study completed by a professional acoustical engineer.

The engineer's model identifies an outside design sound level of 65 decibels (dB) generated by bus movement. The design of the glazed acoustic barrier between the bus loop and Emporio townhouses is expected to achieve reductions of 5-10 dB, satisfying both the City's interior design criteria as well as CMHC recommended criteria.

Again, 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, Arch Tech, BES (Arch), MRAIC, IAP2
Senior Advisor, Public Affairs
Government & Public Affairs
T: 778-375-6766 | C: 604-362-1824| translink.ca

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

Together all the way

From: Ferrari, Drew
Sent: July 3, 2019 2:56 PM
To: 'ctung001@gmail.com' <ctung001@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, Arch Tech, BES (Arch), MRAIC, IAP2
Senior Advisor, Public Affairs
Government & Public Affairs
T: 778-375-6766 | C: 604-362-1824| translink.ca

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

Attachment to July 3, 2019 email

Brown Strachan Associates
Consulting Engineers in Acoustics

Project: 125.111

July 3, 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.

At the ground and fourth floor levels of the Emporio townhouses, the outside design sound level was 65 dB from bus movements (BSA letter of 9 December 2019). Upgraded glazing was recommended 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 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

DRAFT

Aaron Peterson, P.Eng.

Encl. AP/sb/19Jul/IBI.let

Together all the way

From: Ferrari, Drew
Sent: June 27, 2019 1:39 PM
To: 'ctung001@gmail.com' <ctung001@gmail.com>
Cc: Vyas, Chit <chit.vyas@translink.ca>; 'McMullen, Mark' <MMcMullen@richmond.ca>
Subject: Richmond Brighouse Bus Exchange

RE: Richmond Brighouse Bus Exchange
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, Arch Tech, BES (Arch), MRAIC, IAP2
Senior Advisor, Public Affairs
Government & Public Affairs
T: 778-375-6766 | C: 604-362-1824| translink.ca

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

Together all the way

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<IBI 3Jul let - draft.pdf>

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Attachment to June 27, 2019 email

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 798.051, 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 #2-1290 Homer St. Vancouver Canada V6B 2Y5 Tel: 604 689 0514 Fax: 604 689 2703 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.

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

ACRYLITE® Soundstop Noise Barrier (formerly PARAGLAS SOUNDSTOP®)

ACRYLITE® Soundstop Noise Barrier panels have been successfully used to construct transparent noise barriers along roads and railroads around the world for almost 30 years. ACRYLITE® Soundstop is extremely resistant to weathering, their sound walls with PARAGLAS SOUNDSTOP® retain clarity and strength throughout years of harsh outdoor use. ACRYLITE® Soundstop noise barriers / soundwalls are lightweight and ideal for blocking highway noise while preserving visibility and light.

Patent - US 5,830,577 - Traffic Noise Barrier System
Patent - US 5,830,578 - Traffic Noise Barrier System
Patent Pending - US Patent Application 20080066127 - Panel assembly for traffic noise barrier wall

Image 1: North Neighbour
FACING EAST ELEVATION

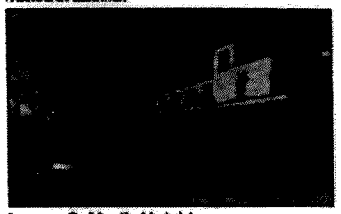
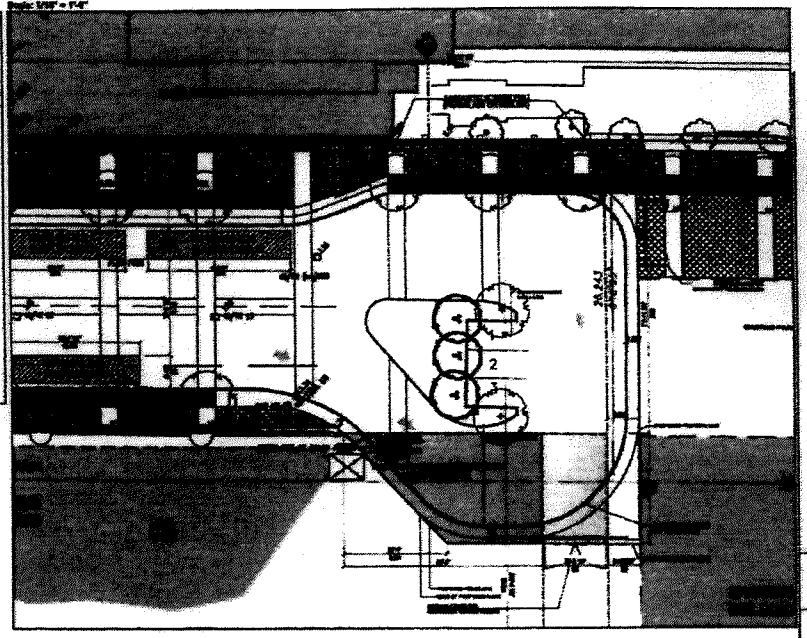
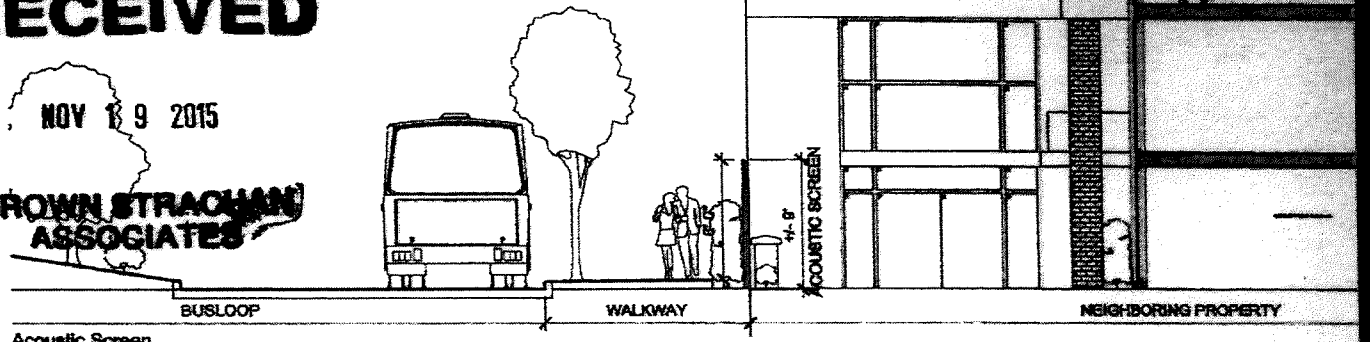


Image 2: North Neighbour
FACING SOUTH-EAST ELEVATION

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





Acoustic Screen
Scale: 1/8" = 1'-0"

RECEIVED
NOV 19 2015
BROWN STRACHAN ASSOCIATES

IBI

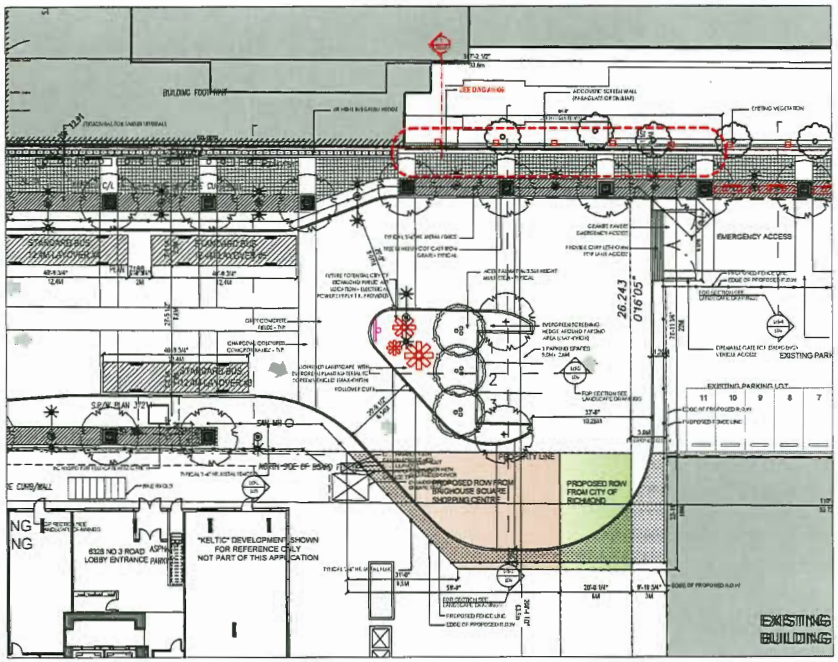
TRANSLINK

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

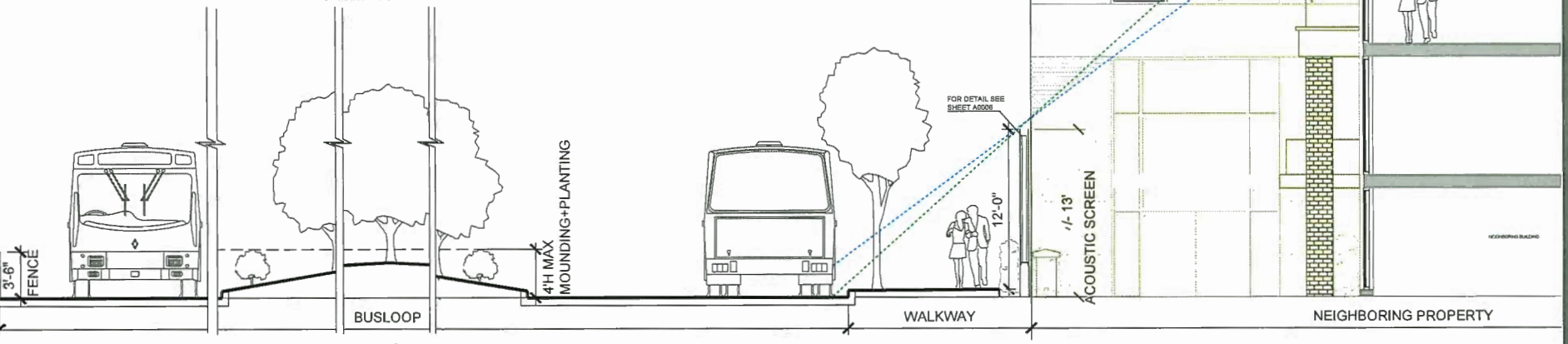
BRIGHOUSE STATION, RICHMOND
DEVELOPMENT PERMIT SUBMISSION
NOVEMBER 18, 2015

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"

IBI GROUP ARCHITECTS (Formerly IBI/HB ARCHITECTS)
700 – 1285 West Pender Street
Vancouver BC V6E 4B1 Canada
tel 604 683 5757 fax 604 683 0483
ibigroup.com

TRANSLINK

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

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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 40-1200 Homer St. Vancouver Canada V6B 2Y5 Tel 604 669 2814 Fax 604 669 2703 bsa@brownstrachan.com

-2-

Mr. Salim Narayanan December 9, 2015

Discussion

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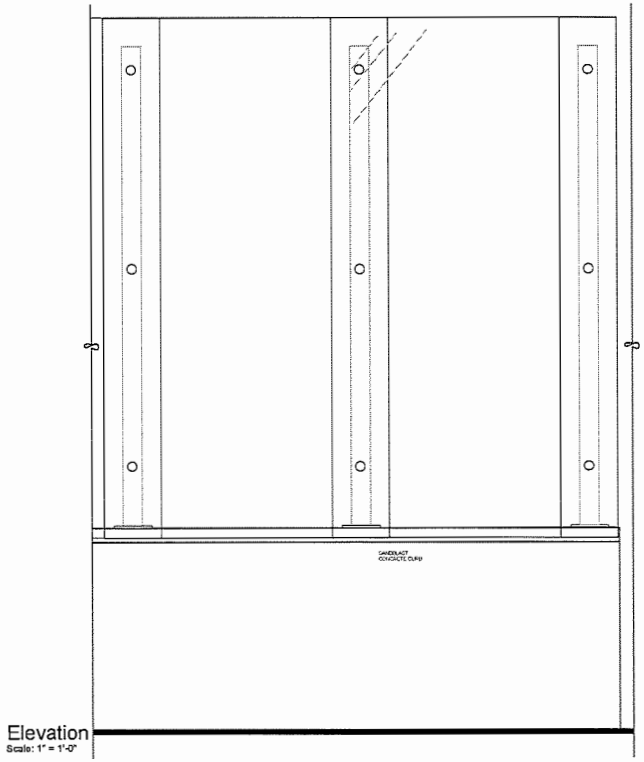
Please call if you have any questions.

Yours very truly,

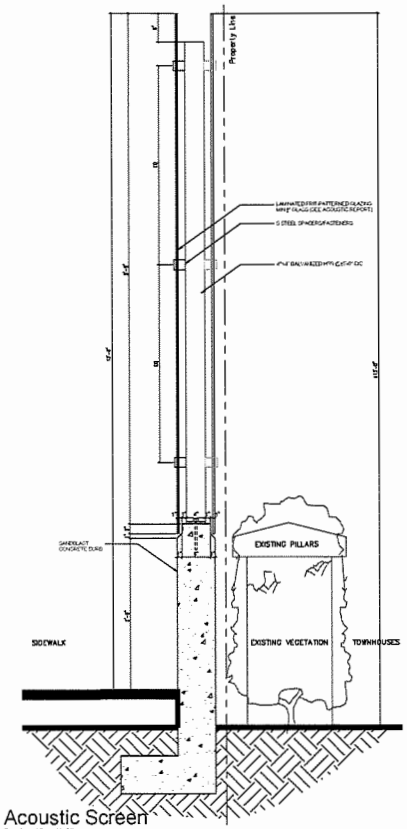
BROWN STRACHAN ASSOCIATES

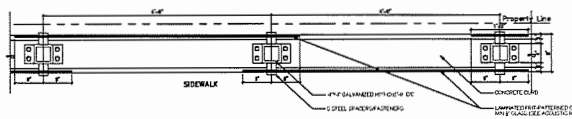
David W. Brown, P.Eng.

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



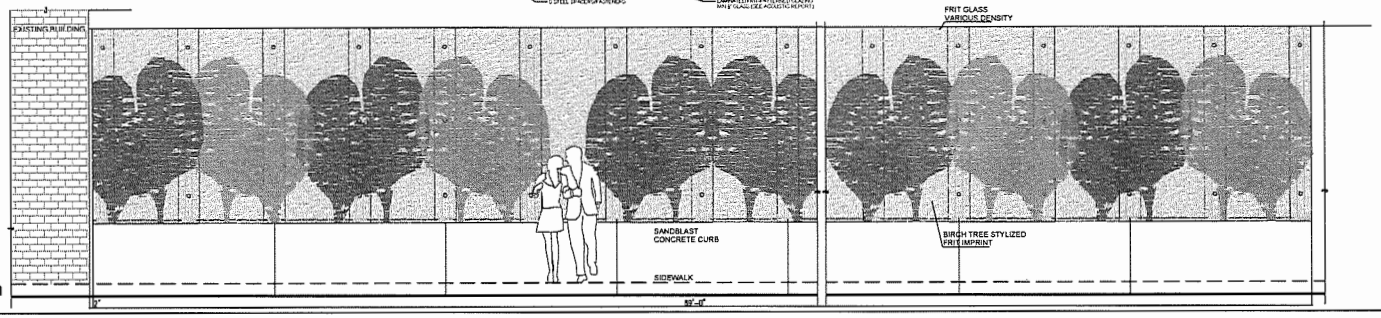
Elevation
Scale: 1" = 1'-0"





Plan
Scale: 1" = 1'-0"

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



Proposed Elevation
Scale: NTS

IBI GROUP ARCHITECTS (Formerly IBI/HB ARCHITECTS)
700 – 1285 West Pender Street
Vancouver BC V6E 4B1 Canada
tel 604 683 6797 fax 604 683 0492
ibigroup.com

TRANSLINK

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

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

A0006