

NOTICE OF PUBLIC HEARING – MAY 15, 2023

BYLAW 2467: White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 OXFORD STREET) Bylaw, 2023, No. 2467

CIVIC ADDRESS: 1454 Oxford Street

PURPOSE: The two building multi-family development at 1454 Oxford Street was approved by Council in 2017. As this development has been previously approved this application specifically proposes to amend the White Rock Zoning Bylaw to allow for an increase in the number of permitted units in Building B only (from 43 to 125 units). The increase in units of Building B would be accomplished by a reconfiguration of floor plans to create smaller units. No change in building height or floor area is proposed.

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Documents:

Author	Document	Item #
Director of Planning and Development Services	Corporate report from the Director of Planning and Development Services dated April 17, 2023	R-1
Corporate Administration Department	Minutes – Various Extracts	R-2

THE CORPORATION OF THE
CITY OF WHITE ROCK

15322 BUENA VISTA AVENUE, WHITE ROCK, B.C. V4B 1Y6

NOTICE OF PUBLIC HEARING
MONDAY, MAY 15, 2023

NOTICE is hereby given that the Council of the City of White Rock will hold an opportunity for public participation for a Public Hearing on **MONDAY, MAY 15, 2023**, at **4:00 P.M.** in accordance with the *Local Government Act* and the *Planning Procedures Bylaw*. All persons who deem their interest in property is affected by the proposed bylaw / application shall be afforded an opportunity to be heard **in person or by forwarding written submissions** reflecting matters contained in the proposed bylaw / application that is the subject of the Public Hearing. At the Public Hearing, Council will hear and receive submissions from the interested persons in regard to the bylaw / application listed below:

BYLAW 2467: White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 OXFORD STREET) Bylaw, 2023, No. 2467

CIVIC ADDRESS: 1454 Oxford Street (See Site Map)

PURPOSE: The two building multi-family development at 1454 Oxford Street was approved by Council in 2017. As this development has been previously approved this application specifically proposes to amend the White Rock Zoning Bylaw to allow for an increase in the number of permitted units in Building B only (from 43 to 125 units). The increase in units of Building B would be accomplished by a reconfiguration of floor plans to create smaller units. No change in building height or floor area is proposed.

The proposed application and associated reports can be viewed online on the agenda and minutes page of the City website, www.whiterockcity.ca, under Council Agendas from May 2, 2023 until May 15, 2023. If you are unable to access the information online, please contact the Corporate Administration department at 604-541-2278, between the hours of 8:30 a.m. and 4:30 p.m., or leave a voicemail and staff will ensure you have the information made available to you.

ADDITIONAL INFORMATION

Further details regarding the subject of the Public Hearing may be found online: whiterockcity.ca/agendas

Contact the Planning and Development Services Department for any questions regarding this application: 604-541-2136 | planning@whiterockcity.ca

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VIEW THE PLANNING REPORT, BYLAWS AND RELATED DOCUMENTS

Online at whiterockcity.ca/agendas

SUBMIT YOUR COMMENTS

- **Email:** clerksoffice@whiterockcity.ca with “Bylaw 2467” noted in the subject line
- **Mail:** City Hall at 15322 Buena Vista Avenue, White Rock, BC, V4B 1Y6

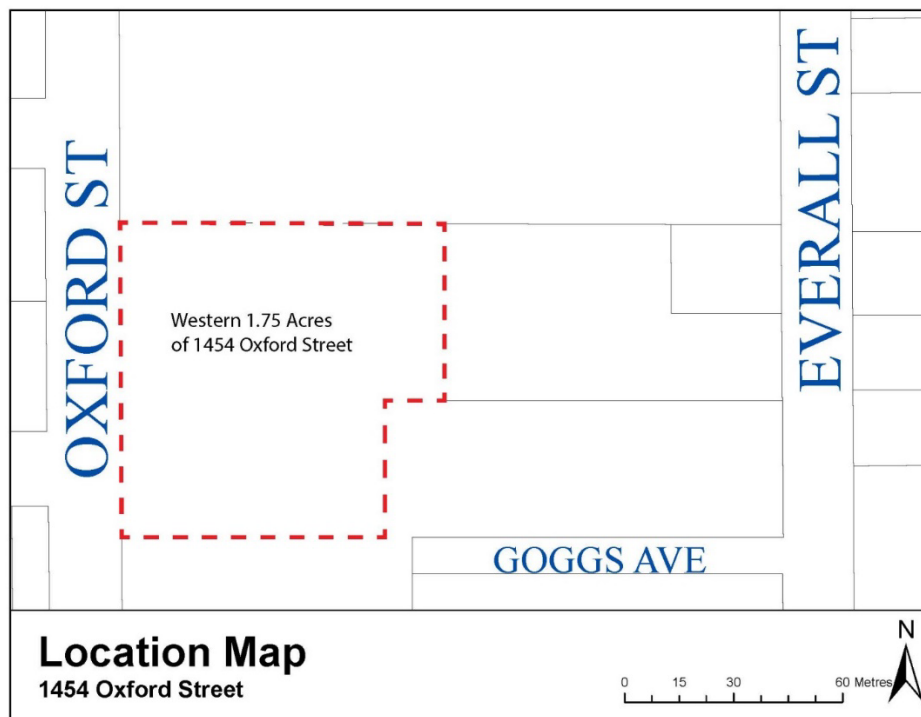
All submitted comments will be distributed to Council and must be received by 12:00 p.m. noon on the day of the public hearing.

- **In Person:** Attend in person at City Hall Council Chambers (15322 Buena Vista Ave.)

WATCH THE PUBLIC HEARING

Live online or view the video the following day at whiterockcity.ca/agendas

SITE MAP: 1454 Oxford Street



May 2, 2023
Tracey Arthur, Director of Corporate Administration

WHITE ROCK
My City by the Sea!

www.whiterockcity.ca

**The Corporation of the
CITY OF WHITE ROCK
BYLAW 2467**



A Bylaw to amend the
"White Rock Zoning Bylaw, 2012, No. 2000" as amended

The CITY COUNCIL of the Corporation of the City of White Rock, in open meeting assembled, ENACTS as follows:

1. Schedule "C" of the "White Rock Zoning Bylaw, 2012, No. 2000" as amended is further amended by rezoning the western approximately 1.75 acres of the following lands:

Lot 1 Section 10 Township 1 New Westminster District Plan EPP25563
PID: 029-076-234
(1454 Oxford Street)

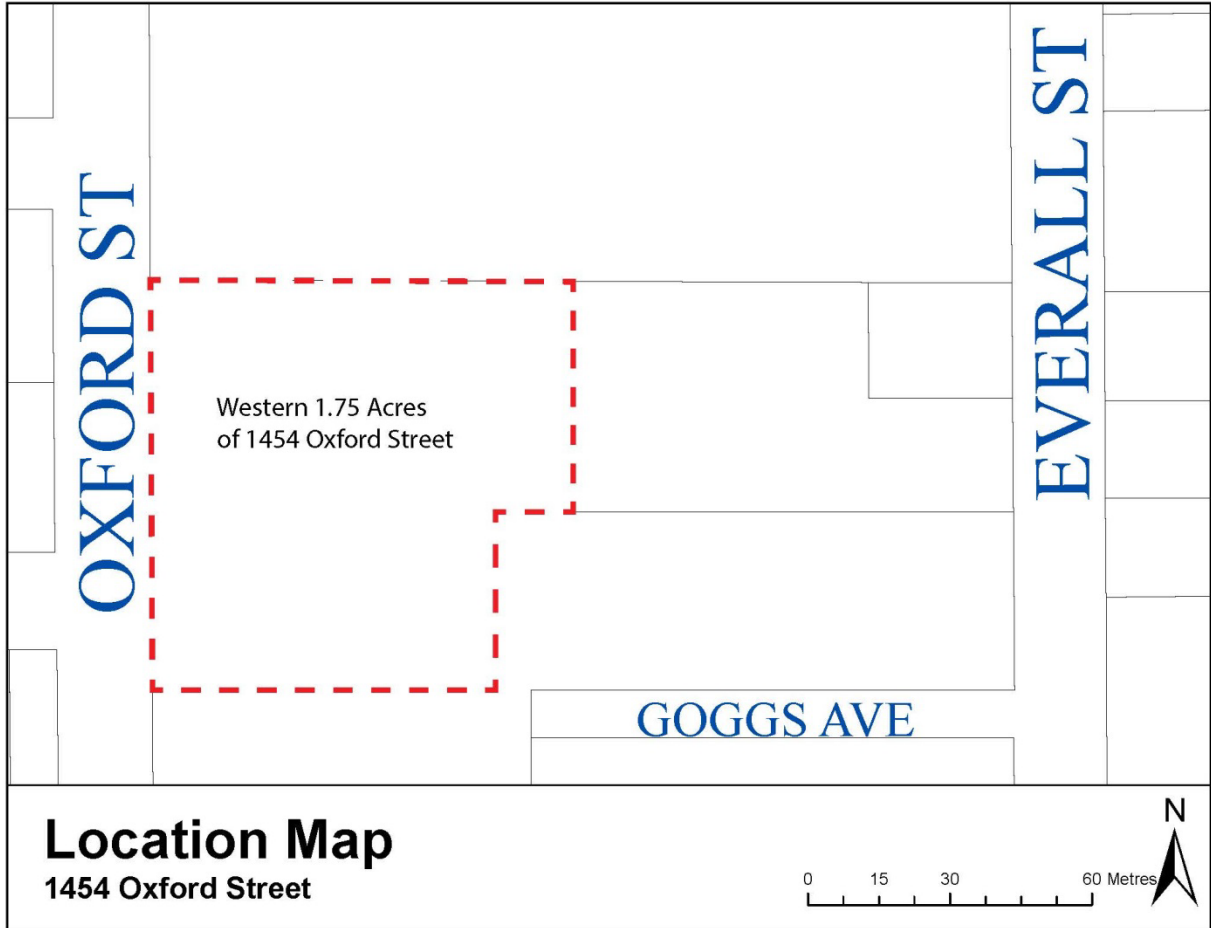
as shown on Schedule "1" attached hereto, from the 'P-1 Civic/Institutional Use Zone' to the 'CD-46 Comprehensive Development Zone'.
2. The "White Rock Zoning Bylaw, 2012, No. 2000" as amended is further amended:
 - (1) by adding to the Table of Contents for 'Schedule "B" (Comprehensive Development Zones)', Section '7.46 CD-46 Comprehensive Development Zone (1454 Oxford Street)'; and
 - (2) by adding the attached Schedule "2" to 'Schedule B (Comprehensive Development Zones)' as Section '7.46 CD-46 Comprehensive Development Zone'.
3. This Bylaw may be cited for all purposes as the "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2023, No. 2467".

PUBLIC INFORMATION MEETING on the	day of
RECEIVED FIRST READING on the	day of
RECEIVED SECOND READING on the	day of
PUBLIC HEARING held on the	day of
RECEIVED THIRD READING on the	day of
RECONSIDERED AND FINALLY ADOPTED on the	day of

Mayor

City Clerk

SCHEDULE "1"



SCHEDULE “2”

7.46 CD-46 COMPREHENSIVE DEVELOPMENT ZONE

INTENT

The intent of this zone is to accommodate a 121-unit residential development on a site of approximately 7,090 square metres (1.75 acres) in area.

1. Permitted Uses:
 - (a) *multi-unit residential use*
 - (b) *accessory home occupation* use in accordance with the provisions of 5.3 and that does not involve clients directly accessing the *building*
2. Lot Coverage:
 - (a) Maximum *lot coverage* shall not exceed 36%
3. Density:
 - (a) Maximum *gross floor area* shall not exceed 32,522 square metres (350,060ft²)
 - (b) Maximum *residential floor area* shall not exceed 27,607 square metres (297,156ft²)
 - (c) Maximum number of *dwelling units* shall not exceed 203
4. Building Height:
 - (a) Tower A (shown on attached Plans) shall not exceed a *height* of 159.5 metres geodetic
 - (b) Tower B (shown on attached Plans) shall not exceed a *height* of 170.5 metres geodetic
 - (c) Section 4.13.4 does not apply to the CD-46 Zone
5. Siting Requirements:
 - (a) Minimum setbacks are as follows:

(i) Setback for buildings from front (west) lot line	= 14.8 metres
(ii) Setback for balconies from front (west) lot line	= 11.8 metres
(iii) Setback for buildings from rear (east) lot line	= 19.5 metres
(iv) Setback for buildings from north interior side lot line	= 6.1 metres
(v) Setback for slab extensions from north interior side lot line	= 3.9 metres
(vi) Setback for buildings from south interior side lot line	= 4.3 metres
(vii) Setback for balconies from south interior side lot line	= 1.2 metres
(viii) Setback for buildings from other interior side lot lines	= 3.0 metres
(ix) Setback for slab extensions from other interior side lot lines	= 0.3 metres
 - (b) Stair accesses to the underground parking shall be sited as shown on the attached Plans
6. Parking:

Parking shall be provided in accordance with Section 4.14, with a total minimum of four hundred (400) parking spaces to be provided as follows:

 - (a) A minimum of forty (40) visitor spaces are to be provided and marked as ‘visitor parking’
 - (b) A minimum of three hundred and sixty (360) spaces shall be provided to serve the residential units
 - (c) A minimum of six (6) spaces shall be provided for disabled persons parking and shall be clearly marked as per BC Building Code requirements
7. Loading:
 - (a) Two (2) loading zones shall be provided in accordance with Section 4.15

8. Bicycle Parking:
 - (a) A minimum of one hundred and twenty-two (122) Class I bicycle parking spaces shall be provided, in accordance with Section 4.16
 - (b) A minimum of twenty-five (25) Class II bicycle parking spaces shall be provided, in accordance with Section 4.16

9. General:
 - (a) Development in this zone shall substantially conform to the Plans prepared by Chris Dikeakos Architects Inc. and dated October 27, 2015, that are attached hereto and on file at the City of White Rock

RUSSELL AVENUE

18
PLAN 1320

19
PLAN 1320

1545 OXFORD ST.
(PHASE 1 & 2)

GOGGS AVENUE

OXFORD ST.



NAUTILUS
CHRIS DIMAKOS ARCHITECTS INC.
1454 Oxford Street, White Rock, BC

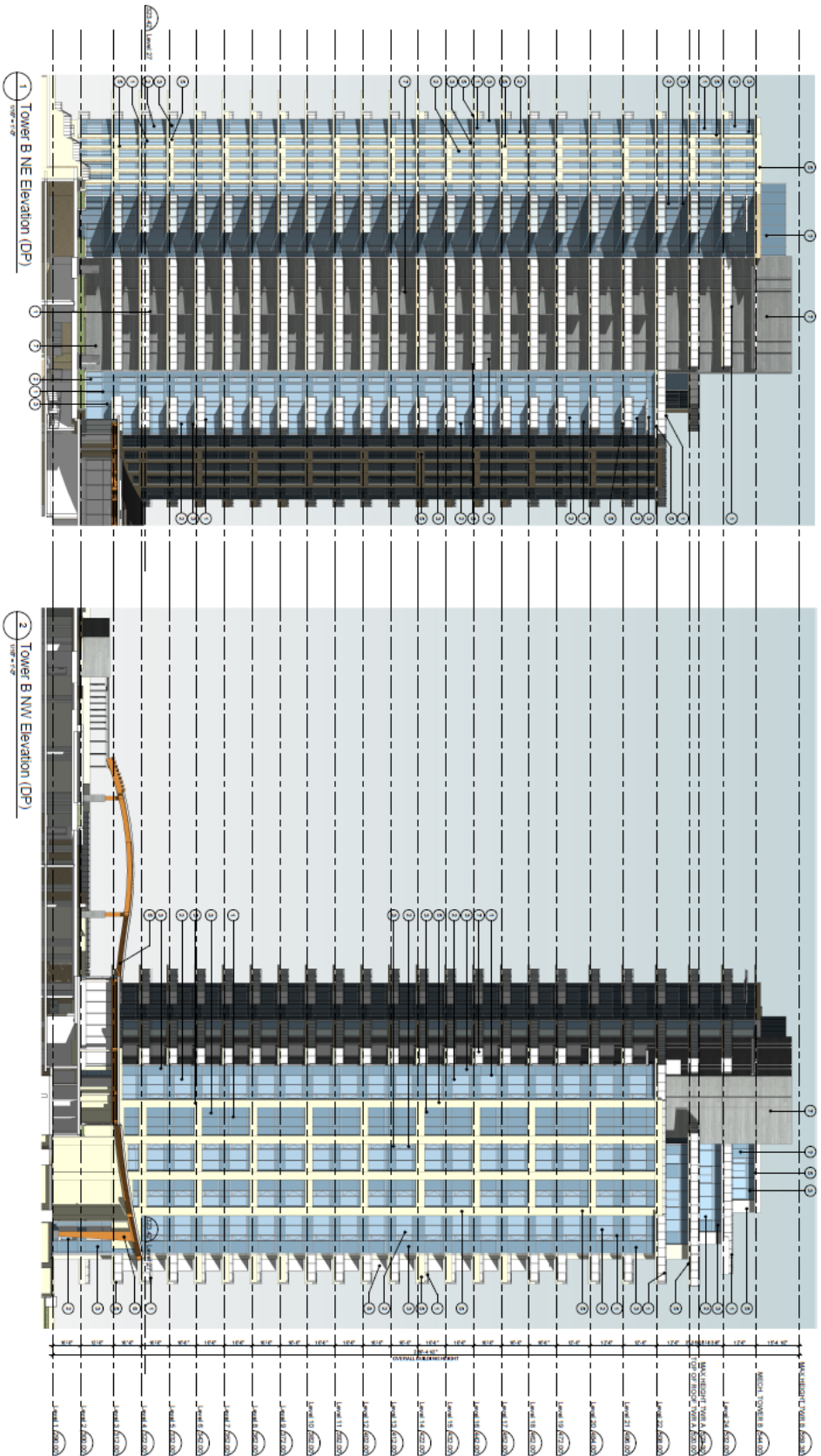
SITE PLAN
SCALE: 1" = 20'-0"

RE-ISSUED FOR OCP, REZONING & DP
SEPTEMBER 20, 2022

IOM
Isle of Miami
Property Group
A-100



REVISIONS	
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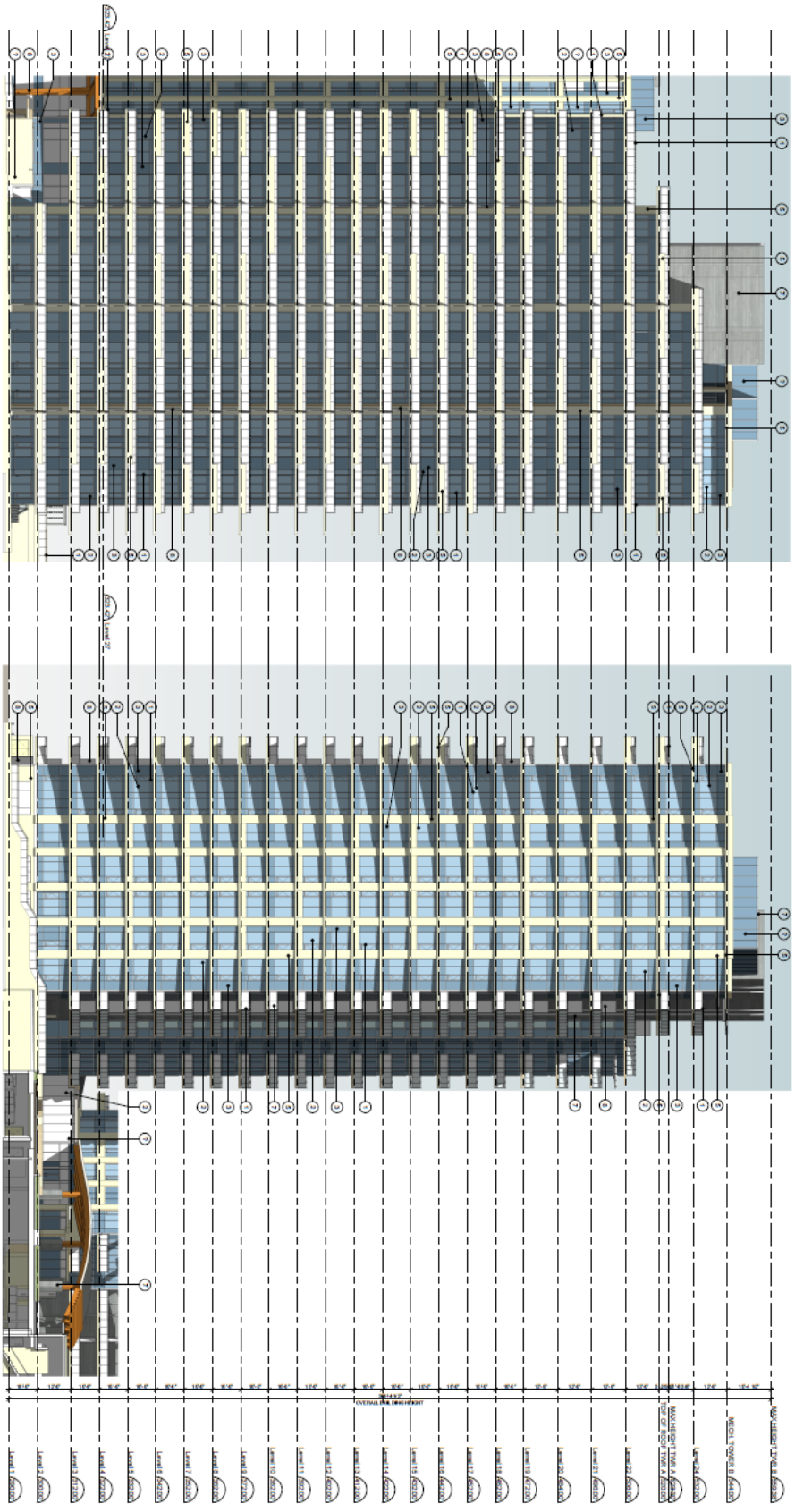
NAUTILUS
 CHRIS DIKEAKOS
 ARCHITECTS INC.
 1454 Oxford Street, White Rock, BC

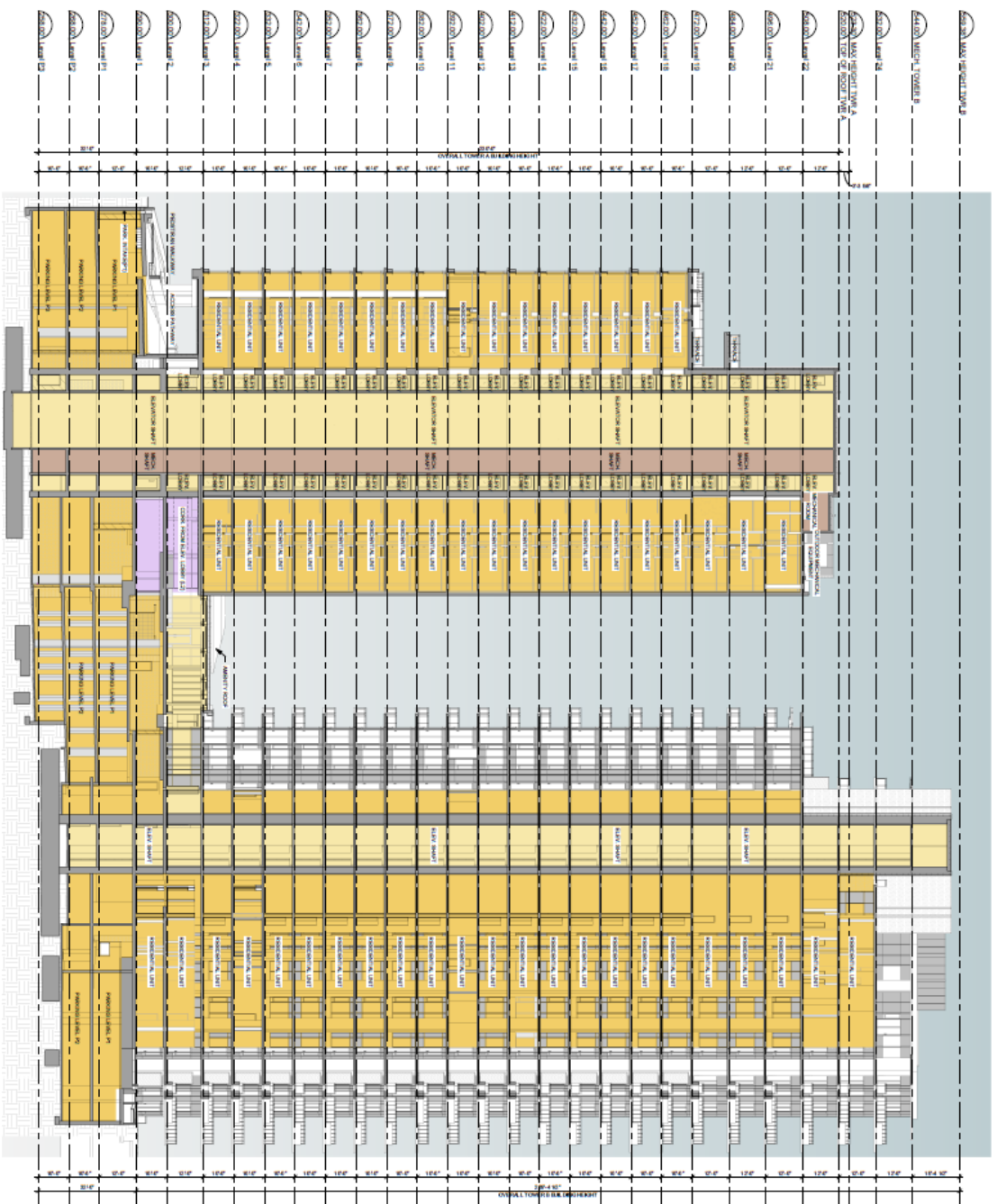
NE & N-W ELEV. (BUILDING B)
 SCALE: 1/16" = 1'-0"

RE-ISSUED FOR OCP, REZONING & DP
 SEPTEMBER 20, 2022

IOM
 Isle of Man
 Property Group
 A-302

MATERIAL LEGEND			
1	ALUMINUM CURTAIN WALL SYSTEM WITH TINTED GLASS	2	ALUMINUM CURTAIN WALL SYSTEM WITH TINTED GLASS
3	ALUMINUM CURTAIN WALL SYSTEM WITH TINTED GLASS	4	ALUMINUM CURTAIN WALL SYSTEM WITH TINTED GLASS
5	ALUMINUM CURTAIN WALL SYSTEM WITH TINTED GLASS	6	ALUMINUM CURTAIN WALL SYSTEM WITH TINTED GLASS
7	ALUMINUM CURTAIN WALL SYSTEM WITH TINTED GLASS	8	ALUMINUM CURTAIN WALL SYSTEM WITH TINTED GLASS







Project Name: Nautlius
 Date: 10/15/2024

Client: [Name]
 Address: 148 OXFORD STREET
 City: [City]
 State: [State]
 Zip: [Zip]

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

eta Landscape Architecture
 1000 [Address]
 [City, State, Zip]

Project Name: Nautlius
 Address: 148 OXFORD STREET
 City: [City]
 State: [State]
 Zip: [Zip]

Client Name: [Name]
 Project Name: Nautlius
 Address: 148 OXFORD STREET
 City: [City]
 State: [State]
 Zip: [Zip]

NO.	DATE	DESCRIPTION
1	10/15/2024	Initial Site Plan
2	10/20/2024	Revised Site Plan
3	11/05/2024	Final Site Plan

PH 2 - 10.2
 17

THE CORPORATION OF THE
CITY OF WHITE ROCK
 CORPORATE REPORT



DATE: April 17, 2023

TO: Mayor and Council

FROM: Anne Berry, Director, Planning and Development Services

SUBJECT: Initial Review of 1454 Oxford Street – Building B Unit Count Change

RECOMMENDATIONS

THAT Council:

1. Receive for information the corporate report dated April 17, 2023, from the Director of Planning and Development Services, titled "Initial Review of 1454 Oxford Street – Building B Unit Count Change";
 2. Recommend Council give First and Second Reading to Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2023, No. 2467" as presented;
 3. Recommend that Council direct staff to resolve the following issues before final adoption if Bylaw No. 2351 is given Third Reading after the Public Hearing;
 - a) Ensure that all engineering requirements and issues, to the satisfaction of the Director of Engineering and Municipal Operations;
 - b) Council acknowledges and accepts the negotiated community amenity contribution concerning the change in units in Building B, 43 units to 125 units at 1454 Oxford Street, in the amount of \$2,320,661.46 million.
 4. Direct staff to schedule the public hearing for "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2023, No. 2467,".
-

EXECUTIVE SUMMARY

In 2014, the city received applications for an Official Community Plan (OCP) amendment, a Zoning Bylaw Amendment and a Major Development Permit (DP) at 1454 Oxford Street. The proposal was for a 121-unit multi-family development including two residential towers (i.e., 21 and 24 storeys) on a shared two-storey podium. In addition, the development would include 409 underground parking spaces. The noted OCP and zoning amendment bylaws were adopted by Council in 2017 following two public hearings, presentations to the Advisory Design Panel, and a technical review by city staff. As part of the approvals process, Council also entered into a Phased Development Agreement (PDA) with the proponent and adopted a PDA Bylaw. The PDA secured a community amenity contribution of \$3.6M and the dedication of a 0.92-acre parcel of wooded lands. Tower A is currently going through the building permit process, and this tower is 24 storeys and 78 units.

The Applicant would like to request a change in the number of units in Building B from 43 units to 125 units. They intend to reconfigure the floor plans to create smaller units. There is no change in height.

PREVIOUS COUNCIL DIRECTION

Motion # & Meeting Date	Motion Details**
<p>2015-426 & 2015-427 November 23, 2015</p>	<p>THAT the Land Use and Planning Committee:</p> <p>It was MOVED and SECONDED THAT Council gives first and second readings to "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD46 – 1454 Oxford Street) Bylaw, 2015, No. 2056."</p> <p style="text-align: right;">CARRIED</p> <p>It was MOVED and SECONDED THAT Council authorizes staff to schedule the public hearings for "Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford Everall), 2015, No. 2123." and "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD46 – 1454 Oxford Street) Bylaw, 2015, No. 2056." for December 7, 2015</p> <p style="text-align: right;">CARRIED</p>
<p>2015-436, 2015-437, Subsequent Motion 2015-438 & 2015-439 December 14, 2015</p>	<p>THAT Council gives third Reading to "Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Everall), 2015, No. 2123."</p> <p style="text-align: right;">CARRIED</p> <p>THAT Council acknowledges and accepts the negotiated community amenity contribution in relation to the development at 1444 & 1454 Oxford Street and 1487 Everall Street, in the amount of \$3.4 million plus the dedication of approximately .96 acres.</p> <p style="text-align: right;">CARRIED</p> <p>It was MOVED and SECONDED THAT Council defers consideration of "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056" until the regular Council meeting of December 14, 2015.</p> <p style="text-align: right;">CARRIED</p> <p>THAT Council gives third Reading to "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056."</p> <p style="text-align: right;">CARRIED</p>
<p>2016-440, 2016-444, 2016-445, & 2016-446 September 19, 2016</p>	<p>THAT the Land Use and Planning Committee:</p> <ol style="list-style-type: none"> 1. Receive for information the corporate report dated September 19, 2016, from the Acting Director of Planning and Development Services, titled "Phased Development Agreement (Elegant) – 1454 Oxford Street (OCP/ZON/PDA 14-009);" 2. Recommend that Council rescind first, second and third readings for "Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123" and "White Rock

	<p>Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056;"</p> <p>3. Recommend Council give first and second Reading to "Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123" and "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056" as presented;</p> <p>4. Recommend that Council give first and second readings to "Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158," and</p> <p>5. Direct staff to schedule the public hearing for:</p> <ul style="list-style-type: none"> • "Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123," • "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056," and • "Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158." <p style="text-align: right;">CARRIED</p>
<p>2016-523, 2016-524 & 2016-525 December 5, 2016</p>	<p>THAT Council give third Reading to "Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Everall), 2015, No. 2123."</p> <p style="text-align: right;">CARRIED</p> <p>THAT Council give third Reading to "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056."</p> <p style="text-align: right;">CARRIED</p> <p>THAT Council give third Reading to "Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158."</p> <p style="text-align: right;">CARRIED</p>
<p>2017-274 June 12, 2017</p>	<p>THAT Council gives final Reading to "Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford/Everall), 2015, No. 2123"</p> <p style="text-align: right;">CARRIED</p>
<p>2017-274 June 12, 2017</p>	<p>THAT Council gives final Reading to "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056".</p> <p style="text-align: right;">CARRIED</p>
<p>2017-274 June 12, 2017</p>	<p>THAT Council gives final Reading to "Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158".</p> <p style="text-align: right;">CARRIED</p>
<p>2021-LU/P-073 June 28, 2021</p>	<p>It was MOVED and SECONDED THAT The Land Use and Planning Committee defer consideration regarding Development Permit No. 400 for 1454 Oxford Street pending the City obtaining a legal opinion.</p> <p style="text-align: right;">CARRIED</p>

2021-LU/P-077 July 26, 2021	THAT the Land Use and Planning Committee recommend that Council authorize the issuance of Development Permit No. 400 for 1454 Oxford Street. <p style="text-align: right;">CARRIED</p>
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**The above motions are related to a separate application process and are not under consideration. They are only given for contextual information.

INTRODUCTION/BACKGROUND

Original Application

In 2014, the City of White Rock received concurrent applications for an official community plan (OCP) amendment, a zoning bylaw amendment and a major development permit tied to 1454 Oxford Street (see Figure 1).



Figure 1: Rendering of Multi-Family Development at 1454 Oxford Street

In 2017 Mayor and Council Approved an OCP amendment and Rezoning application for this site. In 2021, Mayor and Council approved the development permit at 1454 Oxford Street (see Figure 1). The application consisted of two buildings of 21 and 24 storeys, a 409-stall shared

underground parkade with a maximum residential floor area of 297,156 ft², and 121 dwelling units.

A through a registered phased development agreement (signed May 4, 2017), the Applicant transferred an approximately 0.92-acre public space to the City of White Rock and an amenity payment of \$3.6M.

On August 3, 2021, IOM Nautilus Views Ltd. submitted a Building Permit Application for Phase 1 (complete underground and Tower A). The Applicant is working on a Shoring Agreement for building permit release with staff.

Requested Change to Unit Count

The Applicant has submitted a zoning amendment to change the number of units in tower B. CD zone 46 states that a maximum number of dwelling units shall not exceed 121. The Applicant wishes to increase the overall unit count by 78, bringing the total unit count between Tower A & B to 203 (see table below). This will require changing the CD zone because it specifies a unit count. This change is not exceeding the allowable FAR permitted through this CD zone.

Summary Table of Changes

Current	Proposed
Building A Unit Counts (Current): 78	None
Building B Unit Counts (Current): 43	125
Building B Unit Type (Current): <ul style="list-style-type: none"> • 43 Suites - 3 Bed + Den 	Building B Unit Type (Proposed): <ul style="list-style-type: none"> • 19 Suites - 2 Bed • 101 Suites - 2 Bed + Den • 4 Suites - 3 Bed + Den
Parking Summary	Proposed
Required Visitor (0.3/Unit): 61 Stalls Required Residential (1.2/Unit): 244 Stalls Total Required Stalls: 305 Stalls	Total Available Stalls: 409 Stalls

The Applicant and staff will work together on updating the works and services agreement to ensure it reflects the requested changes if approved by Council.

Official Community Plan – Policy Framework

The former OCP 2008 Bylaw No. 1837 land use designation of the property was "Multi-Unit Residential (High Density)." This designation supported multi-unit buildings typically being more than four storeys in height and having a density of between 51 and 120 units per acre.

Previously under OCP Bylaw No. 2220, adopted in 2017, this property was designated "Town Centre Transition." Within this designation, the OCP (before amendment by Bylaw No. 2387) allows multi-unit residential uses ranging from low-rise to high-rise buildings. In the context of the Overall Neighbourhood:

Policy 8.2.5 - Allow height increases to accommodate allowable densities while protecting mature, healthy, high-value trees in the area bounded by North Bluff Road, Thrift Avenue, Oxford Street, and Vidal Street.

This policy was removed by Amendment Bylaw No. 2387 when Council directed staff to undergo a review of the heights and density of the 2017 version of OCP Bylaw No. 2220.

OCP Height and Density – Before Amendment by OCP Amendment Bylaw No. 2387

In OCP Bylaw No. 2200, the maximum density, now measured on a "gross floor area ratio" (FAR), and conceptual height are recognized in Figures 9 and 10 of the Plan. The property is a yellow star on both figures.



Figure 9 Maximum FAR in the Town Centre, Town Centre Transition, and Lower Town Centre Areas (* indicates 2.0 FAR)



Figure 10 Conceptual Height Transitions in the Town Centre, Town Centre Transition, and Lower Town Centre Areas

Before potential amendment by Bylaw No. 2387 (public hearing held June 21, 2021), the maximum density tied to the property was set at 2.0 times the area of the lot (2.0 FAR), plus a 40% increase (up to 2.8 FAR) if market rental housing is provided. The FAR density approved by the existing CD-46 Zone for this property is approximately 4.5 FAR. The heights in Figure 10, applied to the lands on the east side of Oxford Street, range from 12 storeys along North Bluff Road down to four storeys at Thrift Avenue.

Considering the potential for policy changes over time, Policy 8.13.1 of the current OCP provides that the maximum density established in previously approved developments, where the zoning allows for FAR beyond the maximums outlined in the Plan, will be recognized. The OCP also provides that exceeding the conceptual height guidelines in the OCP will not necessitate OCP amendment.

The height proposed in this project includes one 21-storey tower and one 24-storey tower, which was already approved in the CD-46 zone.

OCP Height and Density – Following Amendment by OCP Amendment Bylaw No. 2387
OCP Amendment Bylaw No. 2387 changed the OCP heights in Figure 10 to "maximums" instead of "conceptual height guidelines." However, these maximum heights would only apply when a new rezoning proposal is received.

Under the new OCP provisions as amended by Bylaw No. 2387 (public hearing held June 21, 2021), the maximum height and density of buildings would be four storeys and 1.5 FAR, or six storeys and 2.5 FAR with an affordable housing component. In the context of the Everall Neighbourhood, Policy 8.2.5 of the Plan that would support increased height has been removed as no longer applicable in the new height policy approach.

In both versions of the OCP (pre- and post-Bylaw No. 2387), the existing CD-46 zoning allows greater height and density than allowed by the OCP if a new rezoning application were received. The existing CD-46 zoning of the property continues to determine the uses and scale of development that can be built on the property.

OCP bylaw No. 2387 also includes an additional policy (8.13.7) that notes, for clarification, "to the extent that existing site-specific (Comprehensive Development) zoning on a property inhibits the ability of buildings to achieve Development Permit Area guidelines in Section 22 fully, the guidelines shall not prevent the issuance or amendment of a Development Permit in that zone."

Current Proposal

Through market research, the developer has identified that the ideal home for this project would be dwelling units ranging from 1,000 ft² to 1,500 ft². The target demographic for these units is the downsizer market. People selling their larger homes are looking for a living situation that allows them to age in place.



Figure 2: Site context - Surrounding buildings.

The Applicant now wishes to reformat Tower B to accommodate the demand for these units (See Appendix D). The proposal outlines a plan to redesign the majority of Tower B to units ranging from 1014 ft² (smallest unit) to 1496 ft² (largest unit) from floors 3 through 21. There will be minor changes to units on floors 1 and 2 and no changes on floors 22 to 24. There is no change in square footage or building height. The unit change impact will be limited, and there will be no changes to the currently accepted massing of the project.

Per the parking requirement set out by the City of White Rock Zoning Bylaw No. 2000 4.14.1, a standard of 1.5 parking spaces is required per dwelling unit (see table above). The new density of

203 units from 121 would require the project to supply 305 parking spaces. However, the project supplies 409 parking spaces, a surplus of 104 spaces. Therefore, the requested change in units meets the zoning bylaw requirements for parking.

In preparation for this report to Council for consideration, the staff asked the application to revise the traffic impact study (Appendix F). On August 23, 2022, the Applicant retained Bunt & Associates Transportation Planners and Engineers to update a traffic impact study commissioned by the City of White Rock in 2014. The updated report aimed to study the impact an additional 78 units would have on the local infrastructure. Per the updated report provided to staff, it was determined that "additional traffic generation is not anticipated to have a significant impact on the roadway network, and the operational analyses provided in the 2014 traffic impact analysis are anticipated to continue to be applicable.

The developer has offered to pay \$2,320,661.46 in a community amenity contribution (CAC). The developer has requested that this amount be payable upon building permit issuance of Tower B. Staff are recommending that this condition be a condition of rezoning because that is the mechanism that allows the additional density.

Also, per the City of White Rock Density Bonus/Amenity Contribution Policy Council-511, an Amenity Zoning Bylaw is triggered for an application exceeding 1.5 FAR. Therefore, this application does not request any additional FAR, which would not trigger an Amenity Zoning Bylaw. However, the Applicant is voluntarily offering an amenity contribution for the application in the amount of \$2,320,661.46. The rationale for the CACs is based on a prorated per dwelling unit rate based on the \$3.6M previously paid for an application of 121 dwelling units between towers A & B ($\$29,752.07 \times 78 \text{ additional dwelling units} = \$2,320,661.46$)

The Applicant has provided staff with a memorandum of understanding (Appendix E) outlining their intention to sell presales in the project to only City of White Rock residents for the first sixty days of its presale period.

FINANCIAL IMPLICATIONS

The Applicant has voluntarily contributed \$2,320,661.46 pending Council approval of the amendment.

COMMUNICATION AND COMMUNITY ENGAGEMENT IMPLICATIONS

A public hearing will be held for this project as per the *Local Government Act*. The past OCP amendment and a zoning bylaw amendment followed the procedural and legislative requirements established by the City's Planning Procedures Bylaw and the *Local Government Act*, respectively. A Public Information Meeting (PIM) was held on April 9, 2014, at the First United Church; 133 people signed into the PIM. Further, statutory public hearings were held on December 7, 2015, and November 22, 2016. The development permit review process does not include a formal presentation of the project to the public, as the basis for the review is limited to evaluating the form and character of the proposal against applicable zoning standards and, more specifically, applicable DPA guidelines, as set out in the Official Community Plan.

As the overall scale, and form and character of the building will not change staff is recommending that this application does not need to be reviewed by the ADP or proceed to a developer information meeting.

CLIMATE CHANGE IMPLICATIONS

As noted in the Applicant's past submission, the buildings have been designed to meet high sustainability standards and the 2010 ASHRAE energy performance requirements. In addition, the transfer of the wooded lands to the City will enable the long-term retention of a mature stand of Douglas Fir trees which will help sequester carbon dioxide, a known contributor to climate change. Finally, more intensive use of urban, serviced lands lessens the need for sprawl into the periphery and lessens the need for private automobile use.

ALIGNMENT WITH STRATEGIC PRIORITIES

1. Community – We foster a livable city with connected residents enjoying distinctive places and activities.
2. Housing & Land Use – We advocate for diversity in housing and practice balanced land-use planning.
3. Infrastructure (Built and Natural Environment) – We plan, build, and maintain infrastructure to enhance the quality of life and civic service delivery while mitigating and adapting to environmental impacts.
4. Local Economy – We facilitate diversified economic growth and leverage partnerships

OPTIONS / RISKS / ALTERNATIVES

Alternatives to the staff recommendations include:

1. Council may direct the application to proceed to the next stage in the process and give additional direction to the Applicant and staff;
2. Council may direct staff to obtain additional project-specific information before deciding whether to advance or deny the application;
3. Council may deny the applications.

CONCLUSION

The city considered the subject development proposal upon receipt of OCP and zoning amendment applications in 2014. In addition to a Phased Development Agreement, the city approved these applications in 2017. The current application pertains to increasing the unit count in building B from 43 units to 125 units. There is no change to height, allowable FAR and minimal changes to the form and character of the building. Given the site-specific (CD-46) zoning bylaw provisions that apply to the property and largely dictate the form of the building, city staff are recommending this application for approval.

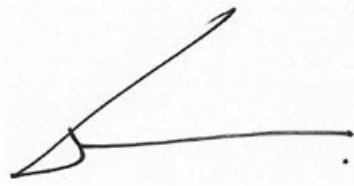
Respectfully submitted,



Anne Berry
Director, Planning and Development Services

Comments from the Chief Administrative Officer

I concur with the recommendations of this corporate report.

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke, positioned above the name and title.

Guillermo Ferrero
Chief Administrative Officer

- Appendix A: Staff Report - November 23, 2015 - 1454 Oxford Street – Rezoning and OCP Amendment
- Appendix B: Staff Report - September 19, 2016 - 1454 Oxford Street - LUPC (OCP & ZON & PDA & MJP 14-009)
- Appendix C: Staff Report - June 28, 2021, LUPC - 1454 Oxford Street - Major Development Permit (14-009)
- Appendix D: Nautilus Tower B Applicant Memo
- Appendix E: MOU Nautilus Tower B
- Appendix F: Updated CD- 46 - 1454 Oxford Street
- Appendix F: Updated Traffic Impact Analysis

**THE CORPORATION OF THE
CITY OF WHITE ROCK
CORPORATE REPORT**



DATE: November 23, 2015

TO: Land Use and Planning Committee

FROM: Karen Cooper, Director of Planning and Development Services

SUBJECT: OCP and Zoning Amendments (Elegant) – 1454 Oxford Street (OCP/ZON 14-009)

RECOMMENDATIONS

THAT the Land Use and Planning Committee:

1. Receive for information the corporate report dated November 23, 2015, from the Director of Planning and Development Services, titled “OCP and Zoning Amendments (Elegant) – 1454 Oxford Street (OCP/ZON 14-009);”
 2. Recommend that Council defer consideration of “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123” and “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056” pending revisions as indicated in this corporate report or otherwise identified by Council; and
 3. Recommend that should Council choose to give the official community plan amendment and zoning bylaw amendments first and second readings and direct staff to schedule a public hearing on December 7, 2015 for “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123” and “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056” that this corporate report provide guidance to Council on consideration of the applications.
-

INTRODUCTION

The City of White Rock has received an application to construct a 121-unit residential development in two towers (24 and 21 storeys) at 1454 Oxford Street that would require an official community plan amendment, rezoning approval and a comprehensive development permit approval to proceed. Location and ortho photo maps of the property are included in Appendix A. Draft copies of OCP Amendment Bylaw No. 2123 and Zoning Amendment Bylaw No. 2056 are attached as Appendices B and C respectively.

PAST PRACTICE / POLICY/LEGISLATION

The OCP designation of the property is currently ‘Multi-Unit Residential (Low Density),’ which allows multi-unit residential developments at a maximum density of 24 units per acre. The property is within the ‘Everall Neighbourhood Area,’ ‘Development Permit Area 3 – Apartment Area,’ and the ‘Significant Stand of Trees’ Environmental Development Permit Area.

The property is currently zoned ‘P-1 Civic-Institutional Use Zone’ in the City’s Zoning Bylaw, and is within a ‘Tree Management Area’ under the Tree Management Bylaw. The application is subject to Council Policy 511 for community amenity contributions.

An amendment to the current OCP designation and a rezoning would be required to allow the proposed development. A development permit would be required to regulate the form and character and to address any environmental issues associated with the proposed development, and a tree management permit and community amenity contribution would also be required.

ANALYSIS

The property, located at 1454 Oxford Street in the Overall Neighbourhood, is approximately 2.7 acres in area and is currently undeveloped. The proposed development consists of two towers (24 and 21 storeys), with 121 residential units, on the western portion of the property which is largely untreed. The eastern portion of the site is proposed to be given to the City as parkland to retain the existing mature trees.

Site Context

The Evergreen Baptist Campus of Care is located immediately north of the subject property. The complex care facility is made up of several buildings of varying sizes, including an existing eight-storey building with an additional eight-storey building under construction. The City owns a small vacant site at the northeast corner of the property. There is a 12-storey condo building (The Belaire) and three three-storey multi-unit buildings just north of the Evergreen Baptist Camps of Care fronting along North Bluff Road. A newly completed five-storey residential development (The Royce) is located to the southeast of the subject property. A 13-storey building (The Beverley) is under construction on Vidal Street to the east of the property.

The City’s recently purchased water utility land is located on the property immediately to the south of the subject property. The remainder of the surrounding area to the northeast, east, and southeast includes a mix of low and medium density apartments and townhouses. Development to the west and further to the south consists of single-detached dwellings.

The City has active applications for two 13-storey residential developments at the corner of the Oxford Street and along Thrift Avenue.

History of the Property

The property has been under the ownership of local water utility operators since before the incorporation of the City of White Rock. A concrete reservoir was constructed on the western portion of the site in the early 1950s, in the location where the new development is proposed. The reservoir was later decommissioned sometime around 1970.

The old concrete reservoir was filled in the late 1980s, using soil excavated from local development sites and utility corridors. Environmental Site Assessments completed by Stantec between 2004 and 2013 have identified contamination associated with the soil that was used to fill the reservoir. As a result, the applicants have submitted a Site Profile in November 2015 that has been forwarded to the Site Registrar. The applicants would be required to commit to a remediation plan through the Ministry of Environment as a condition of any development of the property. The Ministry would need to provide ‘Approvals in Principle’ of the remediation plan, and ultimately a ‘Certificate of Compliance’ once the required remediation has been completed.

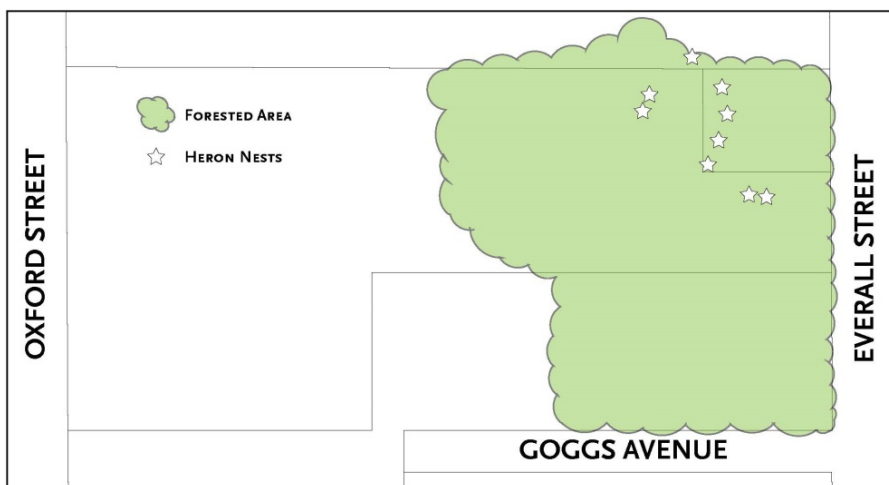
As part of a rate application in 1992 the Comptroller of Water Rights in his decision required that the Utility to stop expensing property taxes on the land at 1454 Oxford Street as not all of the 3.67 acres was being used for utility operational purposes. The portion of that property that was being used for Utility purposes was to be determined at a later date. The Utility was required

to identifying that portion that was being use for its operations and make an application to have that land removed. After reviewing an application by EPCOR White Rock Water Inc. the Deputy Comptroller of Water Rights issued Order No. 2332 in July of 2012 approving the removal of 2.67 acres from the 3.67 acre parcel as not being required for utility operations. EPCOR identified 1.0 acre of the parcel as the portion of this property as being used or required for future use for Utility operation and maintenance. Therefore the 2.67 acre portion of the land at 1454 Oxford Street was not included in the City’s recent purchase of the water utility assets as it was determined by the Deputy Comptroller that these lands were not required by the Utility for operation and maintenance purposes.

Mature Stand of Trees

The absence of development at 1454 Oxford Street has allowed a significant stand of mature trees, largely Douglas Firs, to grow and thrive on the eastern portion of the property. The trees are upwards of 120 years old, and some reach up to 40 metres in height. Nine heron nests have been identified within this stand, although no activity has been witnessed since 2011. This stand of trees acts as a valuable natural area within the neighbourhood and City, but also provides valuable habitat for wildlife. Figure 1 shows the locations of the heron nests within the stand of trees.

Figure 1: Heron Nest Locations



The City is currently developing an Urban Forest Management Plan, and a draft of the final Plan is currently under review. The Plan notes that although most natural areas in White Rock exist in fragmented, altered states, they have significant value to the City, residents, and wildlife. Opportunities to preserve mature stands of trees such as this are uncommon, and the protection of these trees should be a key component of any redevelopment of the subject property.

The Proposal

The applicants have proposed a 121-unit residential development in two towers (24 and 21 storeys) over three levels of underground parking. The ‘Development Site’ would be limited to approximately 1.7 acres on the western portion of the lot, and the remaining approximately 1.0 acre would remain as a ‘Treed Area.’ Specific details of the proposal are as follows:

Land Area.....	2.7 acres (116,584ft ²)
Development Site.....	1.7 acres (74,692ft ²)
Treed Area	1.0 acre (41,892ft ²)
Total Number of Units	121
Residential Floor Area	27,606.7m ² (297,156ft ²)
Gross Floor Area.....	32,521.6m ² (350,060ft ²)
Floor Area Ratio (Residential/Gross)	2.56/3.00
Lot Coverage (of entire property)	23%
Lot Coverage (of Development Site).....	36%
Height (Tower A).....	71.1 metres (233.2 feet)

Height (Tower B).....	82.0 metres (269.2 feet)
Parking Spaces.....	414 (40 of which are for visitors)
Bike Storage Spaces.....	147 (25 of which are for visitors)
Loading Spaces.....	2

The proposed development includes a mixture of two bedroom, two bedroom and den, three bedroom, and three bedroom and den units ranging from 1,162 to 3,106 square feet in area. Common areas include shared amenity space, such as a swimming pool, fitness room, and lounge/media room.

Four hundred and fourteen (414) parking spaces are proposed – 374 resident spaces and 40 visitor spaces. The Zoning Bylaw would require 145 resident spaces and 36 visitor spaces. The underground parking area also includes 147 bike storage spaces (25 of which are for visitors), as well as private storage lockers and a garbage area. Two loading spaces are proposed, as per the requirements of the Zoning Bylaw.

A twenty-foot wide statutory right-of-way is proposed along the north property line, to accommodate a pathway that would allow public access from Oxford Street to the treed area on the eastern portion of the lot. The applicant has also proposed pathways through the treed area that would effectively connect Everall Street to Oxford Street, through the treed area and beside the proposed development. These pathways would act as a link in a future east-west pedestrian route between the Town Centre to the east and Centennial Park to the west.

A site plan, floor plans, elevations, landscape plans, and renderings of the project are included in Appendix D. Figure 2 shows the proposed location of the buildings, the delineation between the Development Site and the Treed Area, the proposed statutory right-of-way, and the location of the proposed pathways. Figure 3 shows renderings of the proposed development.

Figure 2: Site Plan

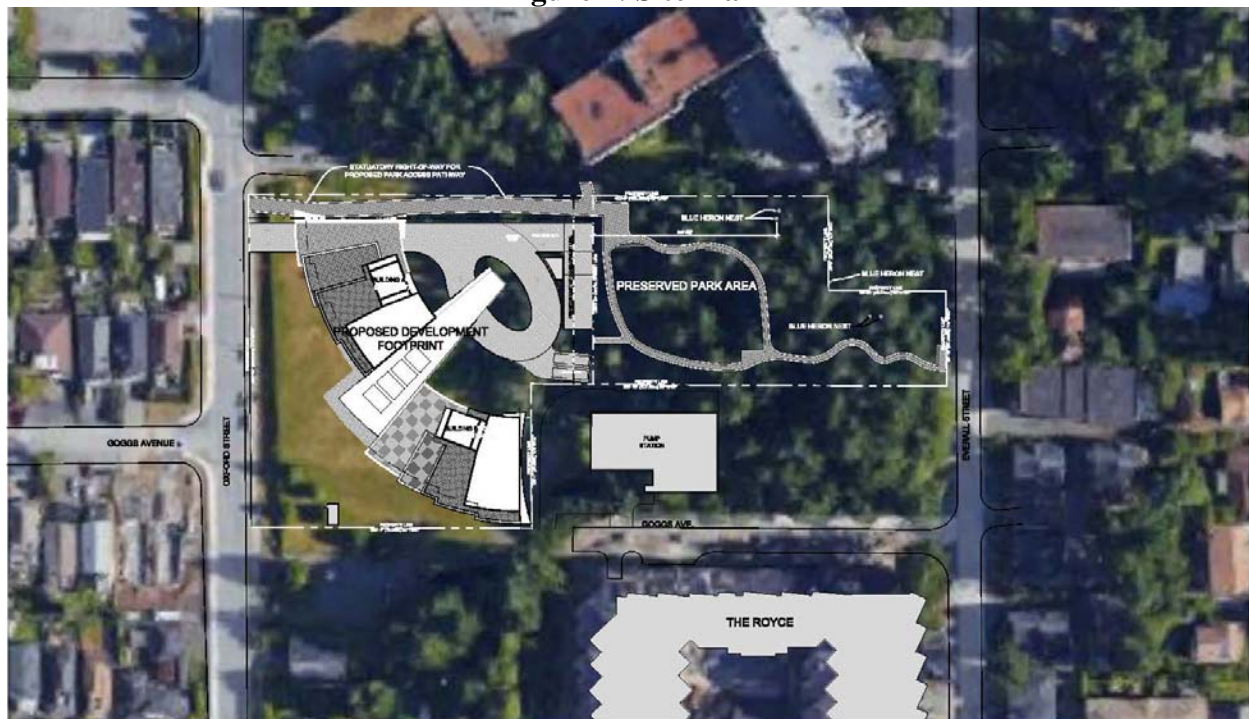


Figure 3: Rendering



Public Feedback

The applicants held a public information meeting on April 9, 2014, at the First United Church at 15385 Semiahmoo Avenue. One hundred and seventy-nine letters were delivered to property owners and occupants within 100 metres of the subject property, and the meeting was advertised in the Peace Arch News on March 27 and April 3, 2014. One hundred and thirty-nine people signed the attendance sheet at the meeting. City staff received 172 written comments on the application, of which 116 expressed support of the application and 56 expressed opposition to the application. Copies of the attendance sheets and all written feedback received by staff are included in Appendix E.

The preservation of the mature stand of trees and the high quality of the design were the most common reasons given for supporting the project. People in support of the project also stated that the new residents would provide additional tax revenue and help support business in the community, and that the new buildings would help increase property values in the area. Some people also felt that larger concrete units would provide a housing option that is not currently available in the City and that the amenities being offered in the buildings were attractive. A summary of the most common reasons given for supporting the project is included in Table 1.

Table 1: Summary of Reasons Given for Supporting the Application

Reason for Support	% of Respondents Mentioning
Preservation of the Mature Trees	~79%
Quality of Design	~72%
Increased Tax Revenue	~47%
Increased Property Values	~34%
Increased Opportunities for Business Community	~26%

Changing the OCP and the overall scale and form (i.e. height, density, high-rise) of the proposal were the most common reasons given for opposing the project. Concerns about increased traffic and a lack of infrastructure (e.g. hospital, schools) to support growth were also identified, and many stated that the proposal would be more appropriate in the Town Centre. A summary of the most common reasons given for opposing the project is included in Table 2.

Table 2: Summary of Reasons Given for Opposing the Application

Reason for Opposition	% of Respondents Mentioning
Not Consistent with OCP	~64%
Neighbourhood Character - Scale and Form (Height, Density, High-Rise)	~60%
Increased Traffic	~45%
Should be in the Town Centre	~36%
Lack of Infrastructure to Support Growth	~31%

In addition to the common concerns outlined above, a number of other potential issues were identified including:

- Loss of open space (should remain undeveloped as a park)
- Impact on street parking in the area
- Consequence of building on top of the City’s aquifer/water supply
- Loss of neighbourhood character
- Impact on slope stability
- Loss of views
- Impact on the herons in the stand of trees
- Increase in noise and air pollution during construction
- Loss of privacy
- Decrease in property values in the area
- Loss of light/increase in shadowing
- Impact on affordability in the City
- Increase in crime in the area

The applicants also held various information meetings apart from the meeting required by the City’s Planning Procedures Bylaw. Staff did not participate in these additional meetings. Feedback from these meetings was provided to staff.

The City has received various petitions both in support of (~100 people) and opposed to (~2,000 people) the application. Comments included in these petitions covered the same issues identified

in the written feedback summarized above. Copies of the petitions are available for review by the public at City Hall, and a pamphlet that was provided for information with the petition against the proposal is attached as Appendix F.

Response to the public feedback is addressed in the ‘Staff Review’ section of this corporate report.

Environmental Advisory Committee

The application was reviewed by the Environmental Advisory Committee at their meeting on April 15, 2014. The discussion focused on the mature stand of trees on the eastern portion of the site and the heron nests within the stand. The Committee cautioned that the development could reduce the likelihood of the herons returning to their nests, that the trees could be damaged by increased pedestrian traffic, and that the development could impact the stand of trees through changes to wind patterns and underground water flow.

Advisory Design Panel (ADP)

The Advisory Design Panel reviewed the application on July 21, 2015, along with the two other active applications in this block at the corner of Oxford Street and along Thrift Avenue. The Panel provided general comments for the block, noting that the surrounding neighbourhood context should be considered. The Panel noted concerns regarding the relationship between the developments in terms of their design and of conflicts with vehicular accesses to the sites. Regarding the subject application, the Panel recognized the design quality of the proposal and recommended that the application return for further review after considering the following comments:

- Exploration of ground level design improvements
- Connection to the street and neighbourhood needs improvement
- Location of buildings relative to one another (e.g. spacing the buildings further apart)
- Exploration of other built forms (e.g. three smaller buildings)
- Retention of treed area and overall density
- Location of pool and hot tub (i.e. indoor vs. outdoor)
- Scale and massing to minimize visual impacts (i.e. reduce massiveness of buildings)
- Accessibility in approach to building
- Provision of accessible units and accessibility to amenities
- Justification of higher density to maintain green space
- Positioning of the project relative to street access and in context with the other proposals

Following revisions, the application was again reviewed by the Advisory Design Panel on October 6, 2015. Table 3 provides a summary of the responses to the Panel’s comments.

Table 3: Summary of Applicants’ Response to Comments from the ADP

ADP Comment	Response from Applicant
Exploration of ground level design improvements	Outdoor patio/kitchen area Bocce court and play area Indoor/outdoor fitness centre
Improvement of connection to street and neighbourhood	Public pathway widened to 20ft
Location of buildings relative to one another (e.g. spacing the buildings further apart)	Towers shifted south Building separation increased
Exploration of alternative built forms/massing options (e.g. three smaller buildings)	Was not pursued – stated alternative forms would impact park space and view potential
Retention of Treed Area and overall density	Density allows treed area to be retained in public ownership
Location of pool and hot tub (i.e. indoor vs. outdoor)	Pool and hot tub moved indoors
Scale and massing to minimize visual impacts (i.e. reduce massiveness of buildings)	Building orientation revised but massiveness maintained
Accessibility in approach to building	Ramps proposed along pathway
Provision of accessible units and accessibility to amenities	5% of units will be accessible Amenity spaces now accessible
Positioning of the project relative to street access and in context with the other proposals	Majority of views southwest Vehicular access at the north

The Panel commented that the applicants should consider the possibility of relocating the children’s play area to allow for improved surveillance, and the provision of public art. The Panel recommended that the application proceed to Council for consideration with these comments in mind.

Community Amenity Contribution

Council Policy No. 511 requires community amenity contributions for any residential proposal outside of the Town Centre with a Floor Area Ratio¹ in excess of 1.1. The amount of the contribution is dependent on the uplift of land value that could be expected if a proposal is approved, with the amount of the uplift to be shared between the applicant and the City. Potential amenities can be provided on-site (e.g. parkland) or provided as cash-in-lieu to pay for an amenity elsewhere in the area.

Council Policy No. 511 requires for every rezoning outside of the Town Centre that the amenity contribution required be calculated on a project by project basis, based on the advice and recommendations of a qualified market research consultant. Proponents are required to submit the market research report at the time of application submission and the City reserves the right to commission a second report from an alternate consultant to establish the amenity contribution requirement for the project.

As indicated earlier in the report the applicants are proposing to transfer ownership of the approximately 1.0 acre treed portion of the property to the City, to provide a statutory right-of-way along the north portion of the property and to provide a pathway system in the treed area, as a portion of their community amenity contribution.

The applicants submitted a report from Richard Wozny Site Economics, a qualified market research consultant, on approximately September 28, 2015. City staff requested consideration of

¹ Floor Area Ratio is floor area divided by lot area

several comments on the report and a revised report was submitted on October 30, 2015. The City is currently having the applicant’s report reviewed by an outside qualified market research consultant. Once this review is complete, the City will be in a position to negotiate an appropriate amenity contribution if the proposal is to be approved.

As the applicant’s consultant noted that while the property is outside of the Town Centre, it is very close by and would have the significant density and function as if it were an extension of the urban core. Council may wish to consider requiring Town Centre Community Amenity Calculations in the development of the official plan amendment for this proposal should Council wish the project to proceed. Table 4 illustrates the impact of the two means of calculating community amenity contributions inside and outside the Town Center.

Table 4: Community Amenity Calculation Comparison

Methodology	Town Center	Outside Town Center
Proposed gross Floor Area with an FAR of 3.0	32,521.6 square meters 350,060 square feet	350,060 square feet
Subtract gross Floor area with an FAR of 1.75	18,954.3 square meters 204,022 square feet	n/a
Floor Area subject to Community Amenity Contribution	13,567.4 square meters 146,038 square feet	n/a
Town Centre Calculation	\$323 per square meter	n/a
Calculate land value with proposed project based on market research	n/a	\$20,013,799
Calculate current land value based on market research (Assessed value)	n/a	\$13,734,374
Uplift in land value	n/a	\$6,279,425*
Total Community Benefit due to City	\$4,381,140	\$3,139,712.50*

*subject to negotiation

Staff Review

The City received the initial application for this proposal on January 27, 2014 and it proceeded to a Public Information Meeting in April 2014. The applicants subsequently put the application on hold and revived the application by submitting revised plans to the City in May of 2015.

Official Community Plan

The application proposes a change in the ‘Multi-Unit (Low Density)’ OCP designation for the property which currently contemplates a maximum density of 24 units per acre. Considering the area of the total property, the proposed density is approximately 45 units per acre which is within the ‘Multi-Unit Residential (Medium Density)’ designation (25-50 units per acre). The applicants have proposed transferring the density potential from the treed area to the western portion of the property, which would result in an effective density of approximately 73 units per acre. This is consistent with the ‘Multi-Unit Residential (High Density)’ designation.

If the application was to be approved with the current unit count, it is recommended that the development portion of the property be re-designated to ‘Multi-Unit Residential (High Density)’ and the treed area re-designated to ‘Open Space or Recreation Areas.’ This would effectively

transfer the density from the treed area to the development site, moving a medium density development (45 units per acre) onto a smaller portion of land in order to retain the mature stand of large, healthy trees.

Aspects of the proposal meet a number of the policies in the OCP. Siting the development and focusing density on the western portion of the property ensures the retention of mature trees (Policies 3.4.8, 4.2.22, and 5.2.13). Providing access to the Treed Area with a statutory right-of-way contributes to an interconnected open space network (Policy 8.2.19) and an east-west connection to the Town Centre (Policy 8.2.20). The use of a comprehensive development zone to address the specific site conditions is consistent with Policy 5.2.13 for the Everall Neighbourhood Area. Policy 6.2.3 encourages a mixture of high quality residential options in the City, and the proposed large units in a concrete building provide a unit type that is not currently available in White Rock.

Despite meeting a number of policies in the OCP, the size of the project is significantly larger than surrounding developments. The massing of the project does not allow for a smooth transition to the single-family homes to the west, as encouraged by Policy 5.2.1, although the towers are set well back from Oxford.

Mature Trees and Proposed Pathways

The mature stand of Douglas Firs on the eastern portion of the site, reaching upwards of 120 years in age and 40 metres in height, is the last such stand on private property within an existing neighbourhood in the City. In addition to the OCP policies discussed above, several other City plans support the retention of the trees and development of pathways between Oxford Street and Everall Street.

Goals of the Parks Master Plan (Section 2.2) include increasing the overall supply of parkland, providing a range of different types of parks including natural areas, and developing a connected system of walkways. Recommendations in Section 4.7 include seeking opportunities to acquire undeveloped land as natural parks. Section 4.2 of the Town Centre Urban Design Plan proposes a ‘green spine’ that extends from the Town Centre to Centennial Park, which would be facilitated by the acquisition of the Treed Area and a statutory ROW connecting the Treed Area to Oxford Street. Section 4.2(D) of the Strategic Transportation Plan identifies the enhancement of walkways and stairways as a medium priority for the City.

There is a possibility that herons could return to the site to nest in the future, but the Environmental Advisory Committee (EAC) expressed concerns that the development could reduce the likelihood of a potential return. A setback of 60 metres from heron nests in urban areas is recommended by the Ministry of Environment, and the proposed towers meet this setback. The edge of the excavation for the parkade is approximately 47.5 metres from the closest nest, which is still significantly further from the nests than two of the buildings on the Evergreen property to the north. Limiting work in this area to outside the heron nesting season (September 1 to February 15), as recommended by the Ministry of Environment, would lessen any potential impacts.

The EAC also noted that the development could impact the stand of trees through changes to wind patterns and underground water flow. No such impacts have been observed as a result of the six- and eight-storey buildings on the Evergreen property just to the north of the stand, and these buildings are much closer to the trees than the proposed buildings.

Increased pedestrian activity was identified by the EAC as a potential damage source to the trees. However, developing formal pathways would encourage people to avoid walking through other areas of the stand and therefore lessen impacts to many of the trees. Appropriate construction

techniques would be required to avoid any significant impacts that could result from the actual development of the pathways.

Thirteen protected trees are proposed to be removed to accommodate the development. All of these trees are located to the west of the main stand, and eleven of them are red alders, cottonwoods, or broad-leaved maples. The applicants have not proposed the removal of any of the significant trees in the main stand, and have proposed planting 72 replacement trees on the Development Site.

While the provision of the pathways to connect Oxford Street and Everall Street would provide a benefit to City residents, the right-of-way as currently proposed is only 20 feet wide, and part of the building projects over the right-of-way by up to seven feet. A tall building immediately adjacent to the pathway could be perceived as uninviting. A further widening of the right-of-way would allow for the development of a more inviting and enjoyable linear park for the public.

Neighbourhood Character and Scale of the Proposal

The subject property is surrounded by a unique mixture of uses and forms. A complex care facility is immediately to the north, land used for the water utility is just to the south, various forms of multi-unit development is found to the north, east, and south, and single-family development is across Oxford Street to the west. Building forms range from 12- to 13-storey towers (Belaire, Beverley), to five- to eight- storey mid-rises (Royce, Evergreen Baptist Campus of Care), to three-storey townhomes and single-family development.

Residential Floor Area Ratio is a zoning control that is used to limit the overall mass of a residential development. The applicants have proposed an FAR of 2.56 for the project, which is significantly higher than other development in the area. This equals 297,156 square feet of residential floor space.

The highest FAR that has been approved within the block is the Belaire at 1.89, with the recently completed Royce at 1.11. The application at the corner of Thrift Avenue and Oxford Street proposes a Ratio of 2.05, with the application just to the west of the Royce at 2.79. Figure 4 shows the residential Floor Area Ratios for proposed and existing projects within the block.

Protecting the treed area on the eastern portion of the property would help preserve the character of the block and ensure the retention of a valuable natural space for residents. Allowing extra height and density on the western portion of the property in order to save the trees is consistent with policies in the OCP, and the proposal will essentially have a buffer of large trees and/or open space to the north, east, and south. A lack of future development on the eastern portion of the subject property and the City's water utility property to the south will soften the impact of the height and scale of the proposed development. However, the proposal is still a significant increase from what has previously been contemplated for the area.

Portions of the buildings are within 13 feet of the north property line and one foot of the City's water utility property to the southeast. The development would be the tallest in the City, and almost twice as high as buildings proposed in the immediate area. The general massing is considered to be too great. A reduction in floor area by revising the towers to be more slender would allow for a development that is more appropriate for the neighbourhood. Increasing setbacks would allow for a more functional and inviting linear park/connection to the treed area along the northern boundary of the site, as well as a buffer between the proposed development and the pump station on the City's water utility property.

Some respondents voiced concerns over view impacts that would result from the approval of the proposed development, and Staff and the ADP requested that the applicant consider reduced heights in 3 or 4 lower buildings instead of the two towers. The project architect provided some

basic plans to illustrate these concepts but the applicants do not wish to pursue these options. They have stated that they have located and designed the buildings to minimize the impact on views from the Belaire and to maximize their exposure to views. This has resulted in towers that are wedge shaped and appear quite massive.

As indicated in Figure 4, the density of recent developments within the block has ranged from 44 units per acre at the Royce to 73 beds/units per acre at the Evergreen Baptist Campus of Care. The Belaire has a density of 62 units per acre, and the current application at the corner of Thrift Avenue and Oxford Street proposes a density of 34 units per acre. Factoring in secondary suites, the RS-2 zoning to the west of Oxford Street would allow a density of approximately 22 units per acre. Figure 4 shows how the proposed density in terms of units per acre fits into the density of the neighbourhood as it decreases towards the south and west to the corner of Thrift Avenue and Oxford Street. Figure 5 shows how the proposed development relates to other proposed and existing developments on Oxford Street.

Figure 4: Density and Scale of Development

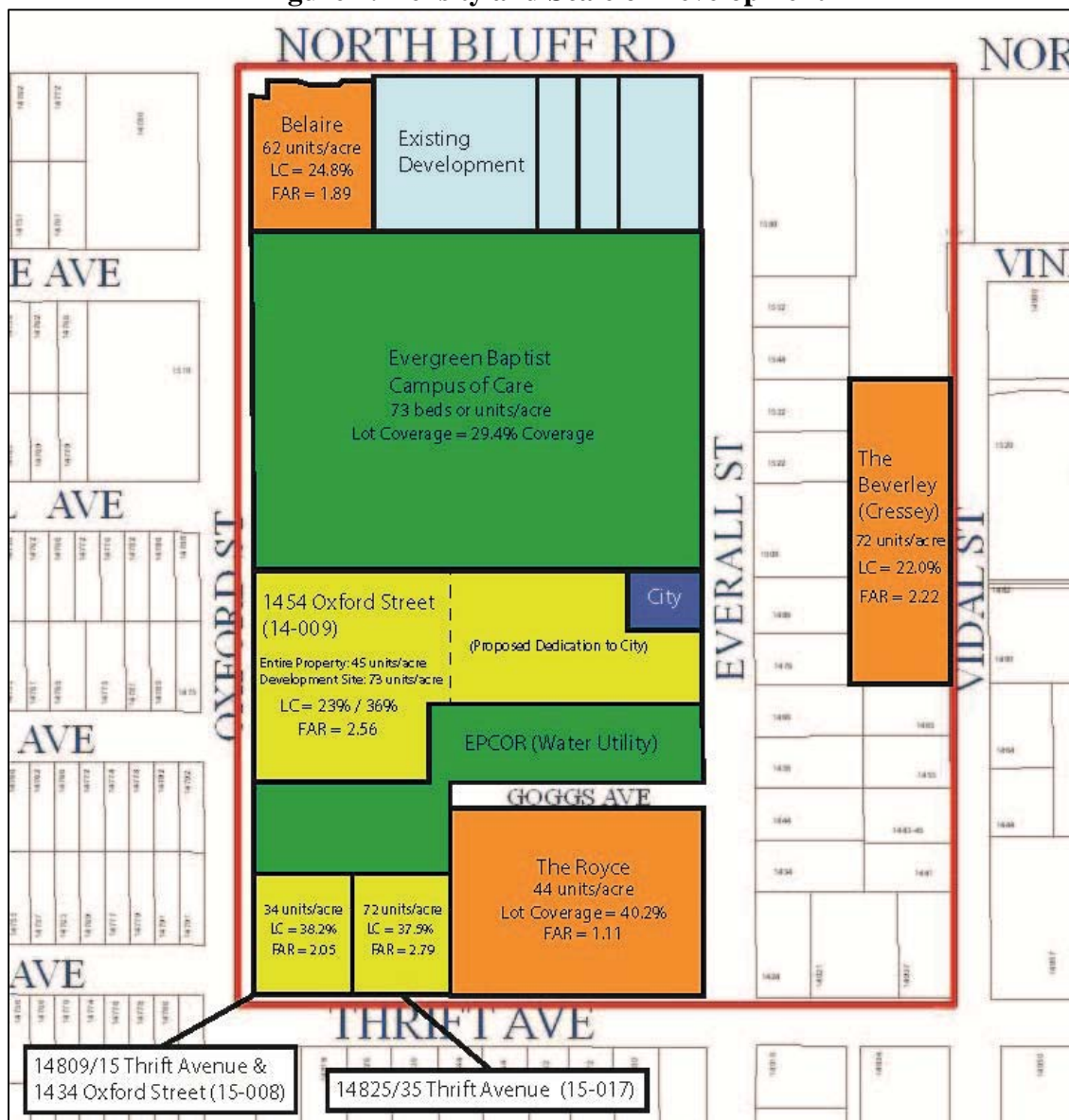


Figure 5: Street Profile on Oxford Street



Views

A few of the units on the upper floors in the Belaire would be able to see the upper floors of the proposed development, but views would not be affected for the majority of the units. Large trees already block views for most of the units that look south, and the Belaire was designed specifically to take advantage of views to the southwest because of this. A reduction in the scale of the proposed development would reduce these impacts.

There were concerns that the original view analysis submitted by the applicants was not accurate. The applicants have since submitted a revised analysis to address these concerns. Figure 6 highlights the impact on views that would be expected from the 12th floor of the Belaire.

Figure 6: View Analysis



Traffic and Parking

Almost half of those who provided feedback on the application identified potential increases to traffic in the area as a concern. The applicants provided a traffic study showing that any potential impacts would be minimal, but this study looked at the proposed development in isolation and

did not consider other additional growth in the area. The City commissioned a traffic study that considered the current development applications in the area bounded by North Bluff Road, Thrift Avenue, Oxford Street, and Blackwood Street. The study considers a 2% annual increase in traffic in addition to the increases that could be expected if all the active applications in the area were approved.

The preliminary findings show that by 2025 all the intersections within the study area are expected to continue to function at satisfactory levels without any physical improvements. Traffic is only expected to increase by 4-10% by 2025 during weekday peak hours at the Thrift and Oxford and North Bluff and Oxford intersections. Given these preliminary findings, traffic impacts in the area are expected to be minimal.

Parking in the study area was also reviewed as a part of the City's traffic study. The consultants noted that the total number of spaces proposed with the active applications in the area were all in excess of the minimum requirements in the City's Zoning Bylaw. A review of street parking in the area showed that there is currently significant availability during the hours that would be expected to be the busiest (weekday evening hours and Sunday afternoons). The proposed application is not expected to have any significant impact on street parking in the area.

Town Centre

Various residents stated that the proposed development would be more appropriate in the Town Centre, where the OCP anticipates the highest densities in the City to be accommodated. Zoning in the Town Centre (CR-1) allows heights of up to 80.7 metres (265 feet) or approximately 25-storeys, and a gross Floor Area Ratio of 5.4. The form of the buildings as currently proposed, particularly height and massing, is consistent with what has been contemplated in the Town Centre. Should the proposal go forward Council may wish to consider an amenity contribution similar to what is required in the Town Centre, recognizing the impact of the form of development.

Servicing and Infrastructure

The Engineering Department noted that the storm sewers on Oxford Street are undersized and will need to be replaced. The applicants will be required to evaluate the condition of the storm sewers on Everall Street and complete an analysis of the stormwater system in the area (based on the City's drainage model) to determine the extent of upgrades that will be necessary. The applicants will be required to accommodate all stormwater on-site, but any upgrades that are required to accommodate the proposal will be the responsibility of the applicants.

The applicants are responsible for completing an analysis of the sanitary sewer system in the area (based on the City's sewer model) to determine the extent of upgrades that will be necessary. The provision of sanitary sewer to the development will be the responsibility of the applicants.

Although the proposal was referred to EPCOR for comments following receipt of the original application, the City did not receive a response. As the new owner and operator of the water utility, the City will require the submission of detailed water system design. Any necessary upgrades to the system will be the responsibility of the applicants.

Sidewalks were widened in front of the Royce to create a more pedestrian-friendly, functional space. Wider sidewalks would also be required in front of the subject application, as well as the other applications in the area, to further improve the pedestrian experience and the overall character of the neighbourhood.

The applicants would also be required to move the utility lines underground in front of the site, as outlined in OCP policy 7.2.3.

A substantial number of respondents cited a lack of infrastructure as a reason to oppose the approval of the proposed development, referring to capacity at the Peace Arch Hospital and local schools. The Peace Arch Hospital has a Master Concept Plan to accommodate future growth in the area including land in Surrey. Given the size of its catchment area that the Peace Arch Hospital serves, a development with 121 units should not have any substantial impact on the operation of the Hospital. The target market of the development is an older population and it is not expected that many households will have young children, although a children’s playground is proposed.

Geotechnical Concerns and Building on the City’s Aquifer

Concerns over slope stability were raised by several residents in the written feedback received by City staff. The applicants provided a preliminary geotechnical assessment, prepared by Stantec and dated July 16, 2012. While no issues were identified, the preliminary assessment only considered a low-to medium-rise development. Based on the information contained in the preliminary assessment no geotechnical concerns are expected, however an updated report reflecting the applicant’s proposal would be required before any construction could take place.

Some residents noted that the applicants should not be able to build on top of the City’s water supply. There is a common misconception that the City’s water supply is located directly below the property, when in reality all of White Rock and a large portion of Surrey sit above the aquifer from which we draw our water. The depth of the shallowest well on the adjacent property (1444 Oxford Street) is approximately 99 metres, which is well below the excavation that would be required for any new development in the City, so no impacts to the City’s water supply would occur if the proposal was approved.

Fire Safety

The Fire Department has reviewed the proposed plans and set a list of conditions that must be met by the applicants. All balconies are to be protected by frost-free or dry sprinkler heads, and the applicants are required to install a video system that will allow the Fire Department to view common areas from the lobby in the event of a fire. The applicants will be responsible for ensuring radio coverage and reception is available throughout the building, and for providing firefighting equipment and equipment rooms on every 6th or 7th floor. All fire and life safety items are to be reviewed and approved by the Fire Chief.

Additional Comments from the Public

The most common comments raised regarding the application have been addressed above. Table 5 includes a list of comments that were noted less frequently, as well as the staff response for each.

Table 5: Response to Additional Comments from the Public

Potential Issue	Staff Response
Noise and air pollution during construction	Construction impacts are expected
Shadows/loss of sunlight/loss of privacy	Some modest impacts will occur
Impact on affordability	No affordable units are proposed
Increase in crime	No impact expected
Decrease in surrounding property values	No negative impact expected
The property should remain a park/ City should have purchased the property	The property was not available to the City to purchase as part of the water utility purchase because it was surplus to water utility needs. Centennial Park is close by.

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The property should remain a park/ City should have purchased the property	The property was not available to the City to purchase as part of the water utility purchase because it was surplus to water utility needs. Centennial Park is close by.

Additional Approval Requirements

If Council chooses to refer the application to public hearing additional information will be required. Staff recommend that the following be required as a condition of final approval:

- Analysis of storm sewer system (take video of pipes, run City’s drainage model) to determine extent of required upgrades
- Updated Storm Water Control Plan from the site’s drainage catchment to the nearest outfall
- Analysis of sanitary sewer system (take video of pipes, run City’s sanitary model) to determine extent of required upgrades
- Analysis of water system and detailed design of required upgrades
- ‘Approvals in Principle’ of the proposed remediation plan from the Ministry of Environment
- Geotechnical Assessment for the proposed development that includes a review of any potential impacts on the adjacent water utility property including existing wells
- Approval from BC Hydro to reroute the utility wires underground
- Summary of how best management practices from the Ministry of Environment regarding the heron nests are to be followed
- Servicing Agreement that addresses all required upgrades related to the project (i.e. storm sewer upgrades including upgrades on Oxford Street as identified in the City’s Drainage Master Plan, new sanitary sewer along Oxford Street that connects to the City system, water system, widened sidewalks, street lighting, undergrounding of utility wires, location of and upgrades to bus shelters, street trees, seating areas, road upgrades, intersection upgrades including traffic control, cycling infrastructure, road markings and signage, public pathway)
- Approval of a lot line adjustment to separate the Development Site and the Treed Area
- Determination of final community amenity contribution amount
- Registration of a Section 219 Covenant to ensure the future registration of the statutory right-of-way for public access along the northern twenty feet of the Development Site and for seating areas on Oxford Street, and the payment of the required community amenity contribution

If the proposed development moves forward, additional permits will then be necessary. A major development permit and a tree management permit will be required before a building permit could be issued. The development permit would regulate the form and character of the development and address any potential environmental issues, whereas the tree management permit would deal specifically with tree protection, removal, and replacement.

BUDGET IMPLICATIONS

Approval of the proposed multi-unit residential development would result in the payment of \$485,376.98 in municipal development cost charges, based on a charge of \$4,011.38 per unit. A Community Amenity Contribution will be negotiated between Council and the applicant. The applicants have suggested transferring ownership of the approximately 1.0 acre treed portion of

the lot to the City, and to ensure public access to it with a statutory right-of-way and a pathway system, as a portion of their community amenity contribution.

OPTIONS

The Land Use and Planning Committee can recommend that Council:

1. Give first and second readings to “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Overall), 2015, No. 2123” and “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056” as presented and schedule a public hearing for December 7, 2015; or
2. Defer consideration of “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Overall), 2015, No. 2123” and “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056” pending revisions as indicated in this corporate report or otherwise identified by Council; or
3. Reject “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Overall), 2015, No. 2123” and “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056.”

Staff recommends Option 2 which is incorporated into the recommendations at the beginning of this corporate report.

CONCLUSION

Staff recognizes that the block within which the application is located is unique. The block needs to be considered in total as to its opportunity to contribute to the future of White Rock and its impact on adjacent neighbourhoods. The undeveloped portions of the block provide for wonderful views of the ocean and Mount Baker. The existing development within it contains higher density forms and higher density forms of development are appropriate for this block. The opportunity to bring into public ownership the approximately one acre of mature Douglas Fir forested lands to augment the small City owned site achieves many City objectives.

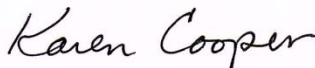
The quality of design of the proposal has been recognized by the ADP and by members of the public who support and who oppose the project. The proposed towers are wedge shaped to minimize impact on views from the Belaire and to maximize views to the ocean, but this has created a significant wall effect in the massing of the building. The massing is considered to be too great. A reduction in floor area by revising the towers to be more slender would allow for a development that is more appropriate for the neighbourhood. Increasing setbacks would allow for a more functional and inviting linear park/connection to the treed area along the northern boundary of the site, as well as a buffer between the proposed development and the pump station on the City’s water utility property.

Staff recommend deferral of the application for the 121-unit residential development pending revisions to reduce the scale of the proposal. However, should Council wish to move the application forward at this time to a public hearing, staff have outlined approval requirements in this report for Council’s consideration. Draft copies of the OCP and Zoning Bylaw amendments are attached to this corporate report. The draft Zoning Bylaw amendment is specific to the development proposed by the applicant.

The draft OCP amendment applies to the entire block, and contains a revised Section 3.4.4 that addresses community amenity contributions and the following land use designation changes:

- 1454 Oxford Street (Western Portion) from ‘Multi-Unit (Low Density)’ to ‘Multi-Unit (High Density)’
- 1454 Oxford Street (Eastern Portion) from ‘Multi-Unit (Low Density)’ to ‘Open Space and Recreation Areas’
- 1487 Everall Street (City Site) from ‘Institutional and Utility’ to ‘Open Space and Recreation Areas’
- 14809 Thrift Avenue, 14815 Thrift Avenue, and 1434 Oxford Street from ‘Multi-Unit (Low Density)’ to ‘Multi-Unit (Medium Density)’
- 14825 and 14835 Thrift Avenue from ‘Multi-Unit (Low Density)’ to ‘Multi-Unit (High Density)’
- 1444 Oxford Street (the City’s water utility property) from ‘Multi-Unit (Low Density)’ to ‘Institutional and Utility.’

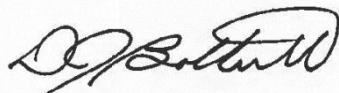
Respectfully submitted,



Karen Cooper, MCIP, RPP
Director of Planning and Development Services

Comments from the Chief Administrative Officer:

I concur with the recommendations of this corporate report.



Dan Bottrill
Chief Administrative Officer

- Appendix A: Location and Ortho Photo Maps
- Appendix B: Draft OCP Amendment Bylaw No. 2123
- Appendix C: Draft Zoning Amendment Bylaw No. 2056
- Appendix D: Site Plan, Floor Plans, Elevations, Landscape Plans, and Renderings
- Appendix E: Public Information Meeting Attendance Sheets and Public Feedback
- Appendix F: Pamphlet Provided with Petition Opposed to Application

Note:

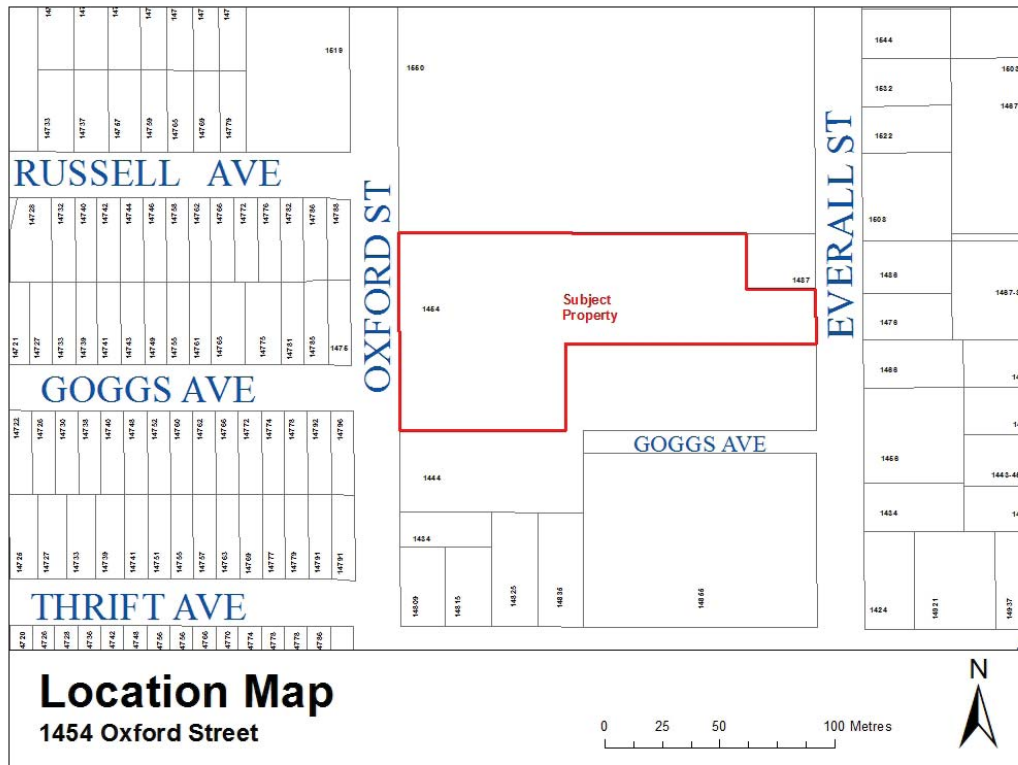
The Corporate Report has been included for reference purposes only.

Included in this package is:

- Appendix A and D only.
 - For the full report please see the November 23, 2015 Land Use and Planning Agenda Package.
- If you have questions, please contact the Clerks' Office at clerksoffice@whiterockcity.ca

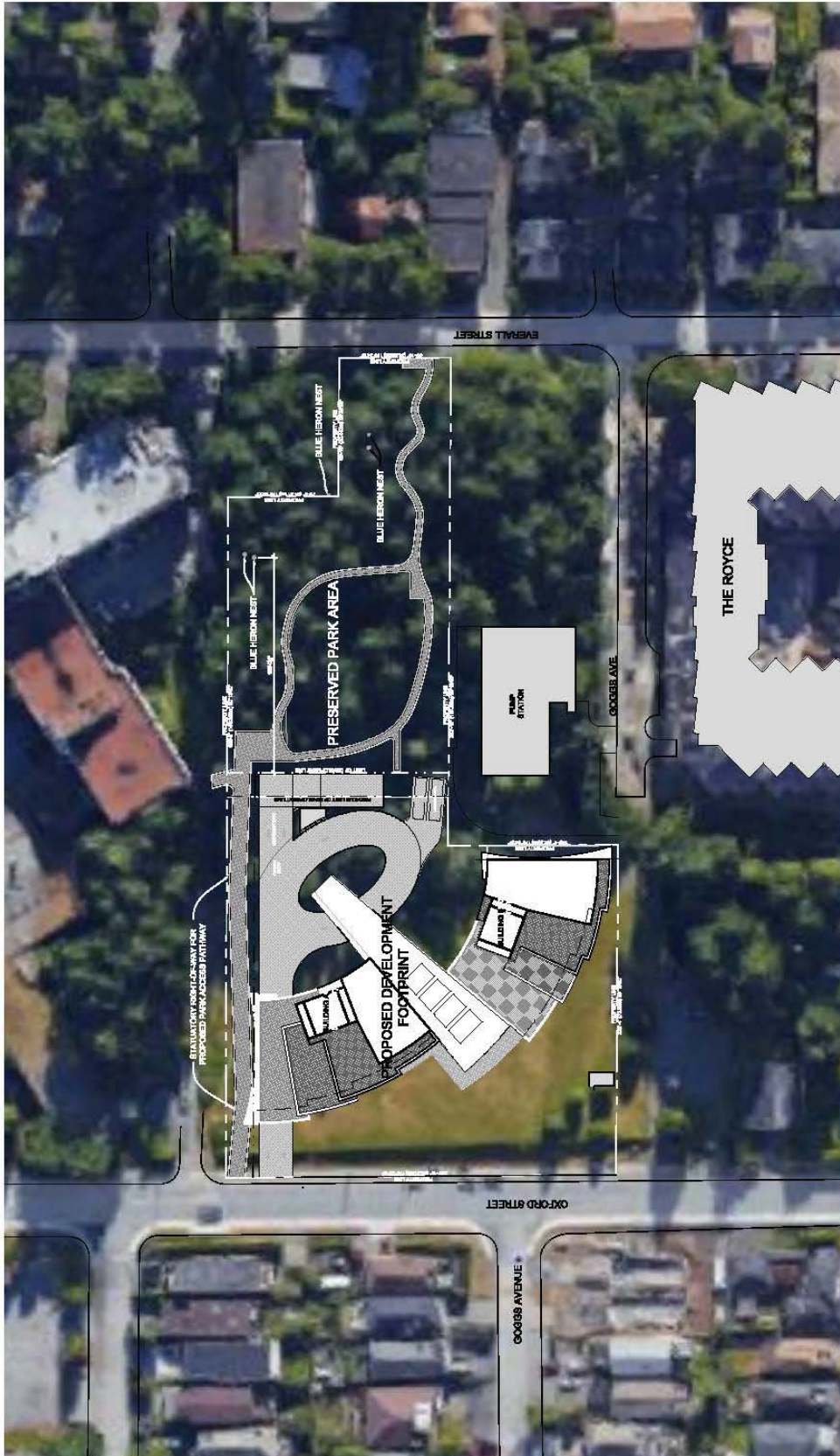
APPENDIX A

Location and Ortho Photo Maps



APPENDIX D

Site Plan, Floor Plans, Elevations, Landscape Plans, and Renderings

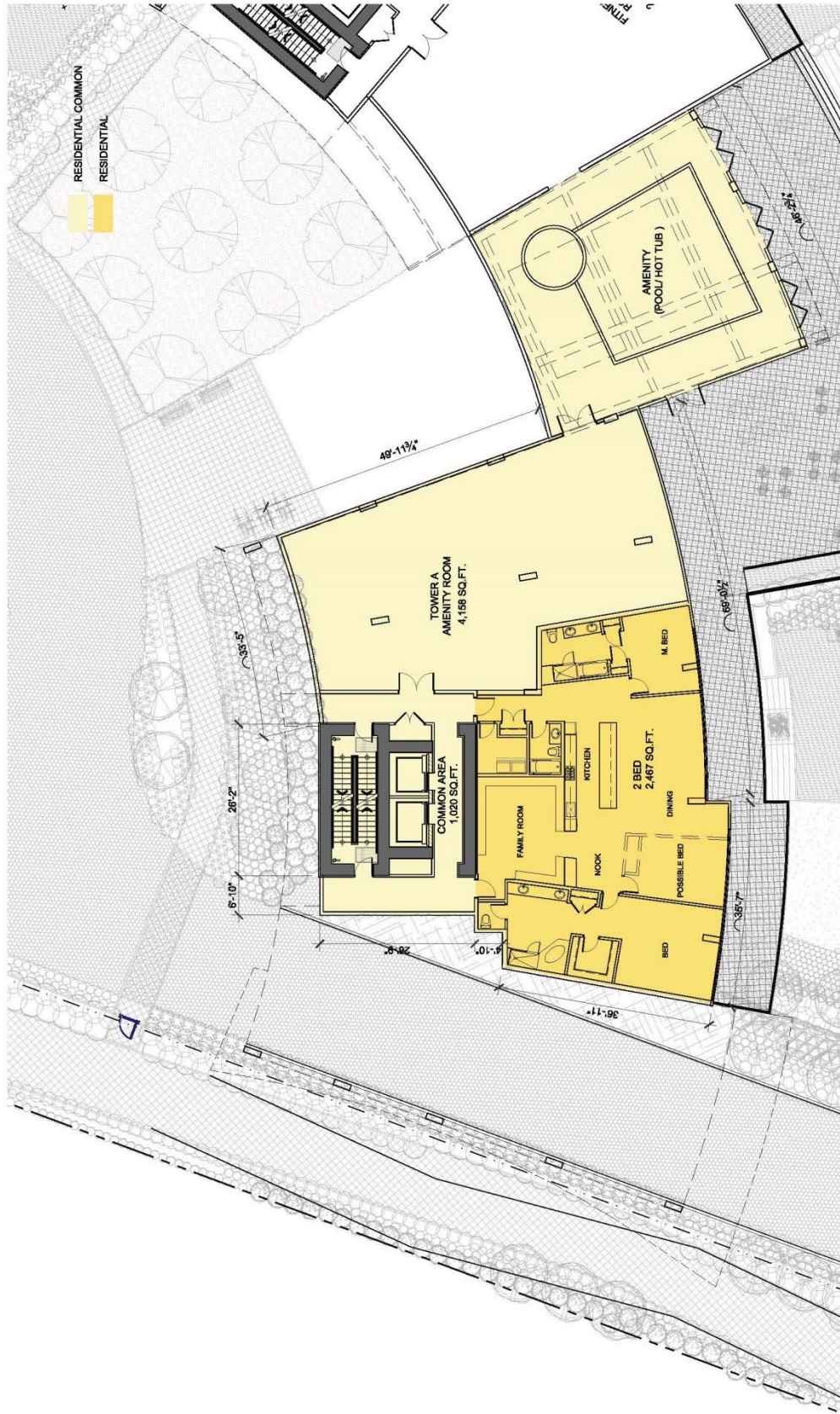


Rezoning Re-submission
October 27, 2015

SITE CONTEXT PLAN
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1500 Oxford Street, White Rock, BC





The Oxford
1500 Oxford Street, White Rock, BC

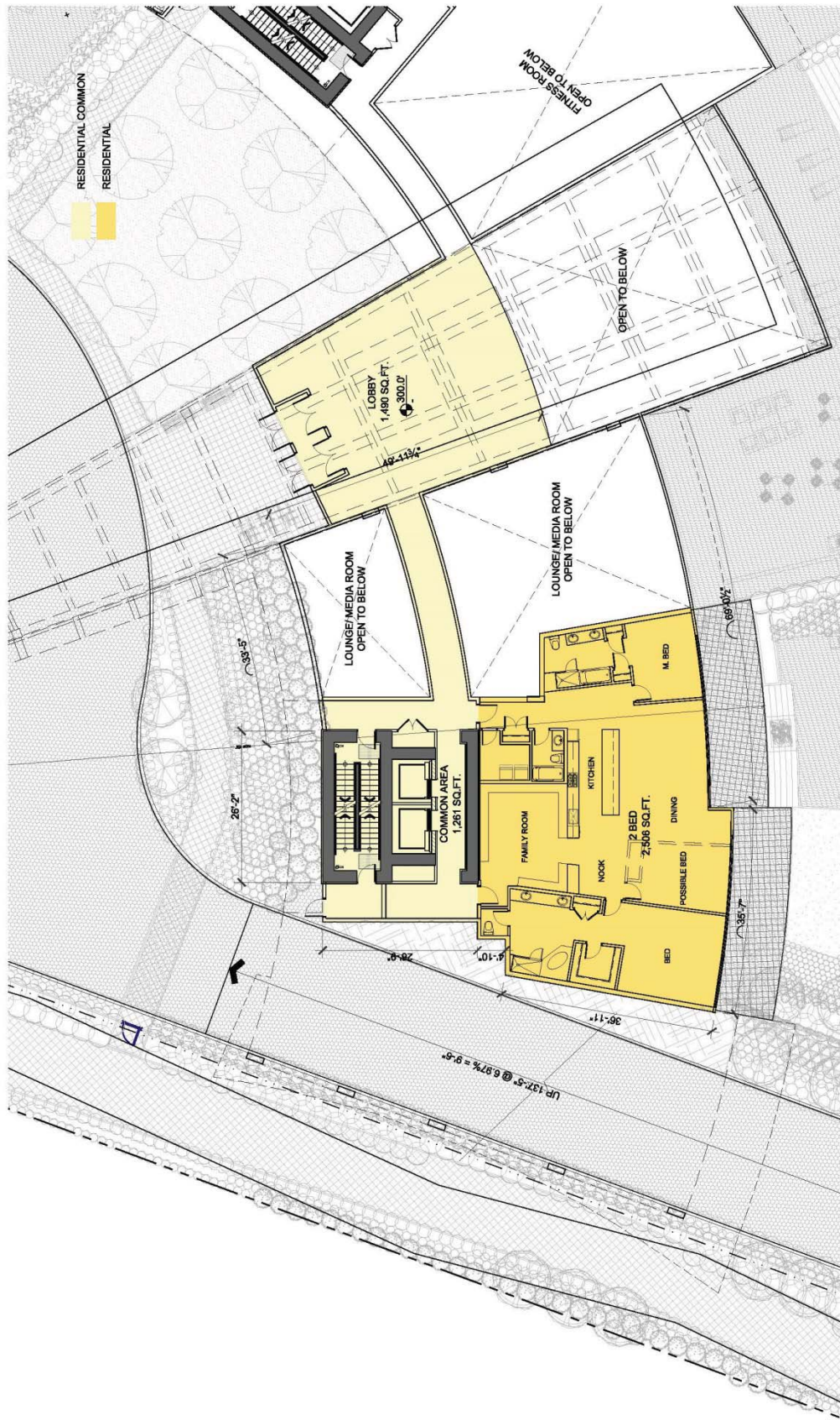
CHRIS DIKEAKOS ARCHITECTS INC.

L1 FLOOR PLAN - TOWER A
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Rezoning Re-submission
October 27, 2015

elegant DEVELOPMENT INC.

A2.04

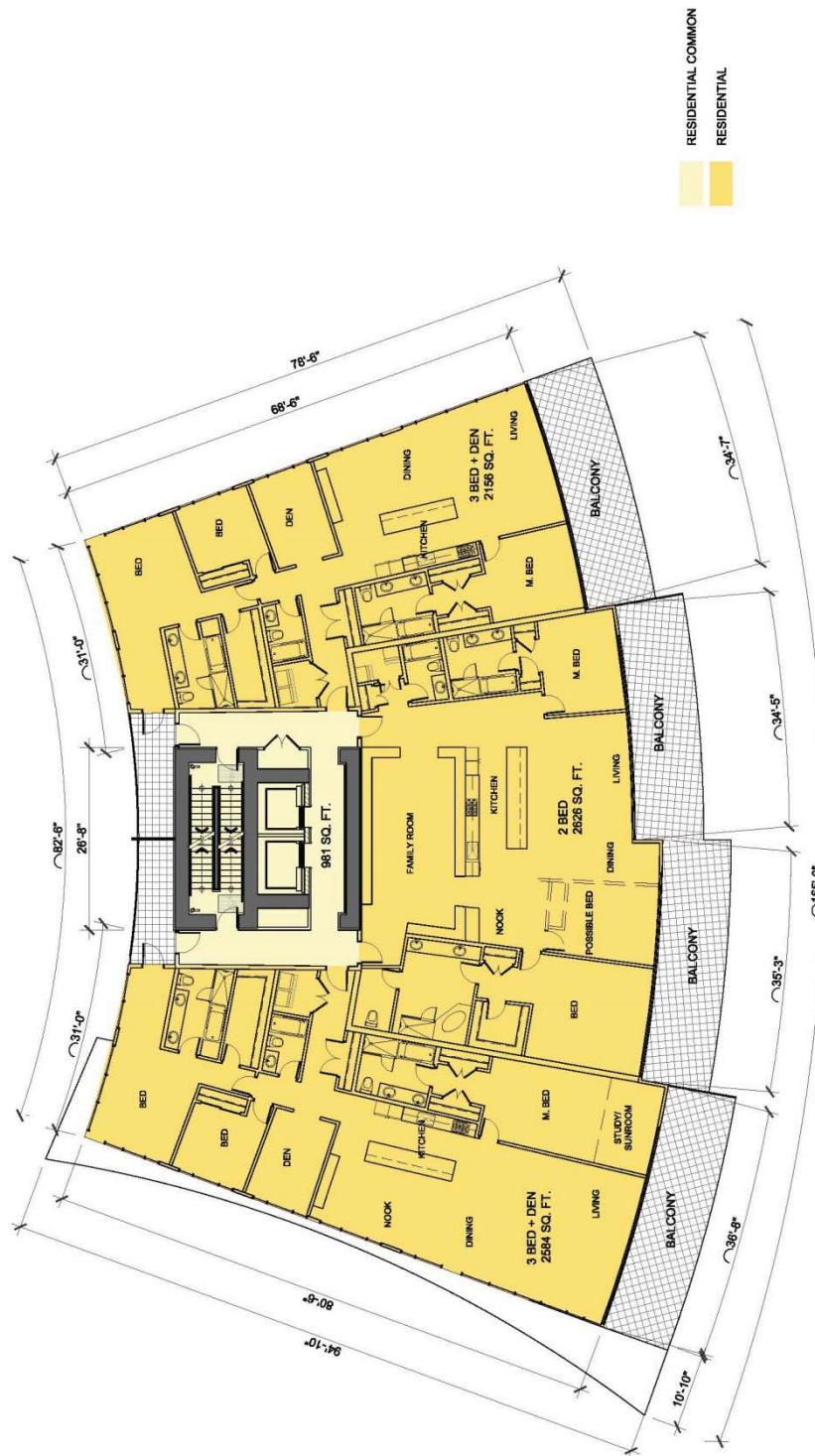


The Oxford
1500 Oxford Street, White Rock, BC

L2 FLOOR PLAN - TOWER A
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Rezoning Re-submission
October 27, 2015

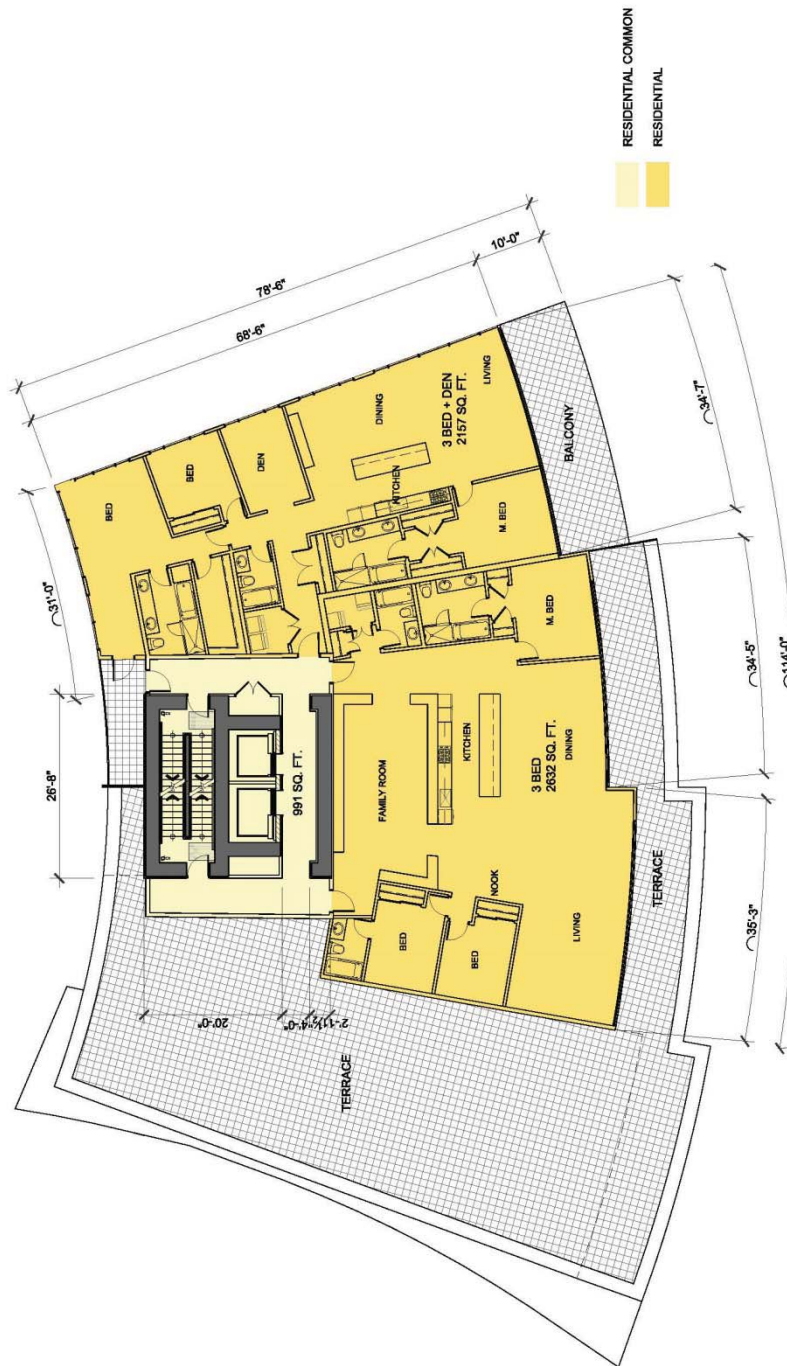




FLOOR PLAN L6 TO L18 - TOWER A Rezoning Re-submission
 Scale: 1/16" = 1'-0"
 October 27, 2015

The Oxford
 1500 Oxford Street, White Rock, BC





The Oxford
1500 Oxford Street, White Rock, BC

L19 FLOOR PLAN - TOWER A
Scale: 1/16" = 1'-0"

Rezoning Re-submission
October 27, 2015





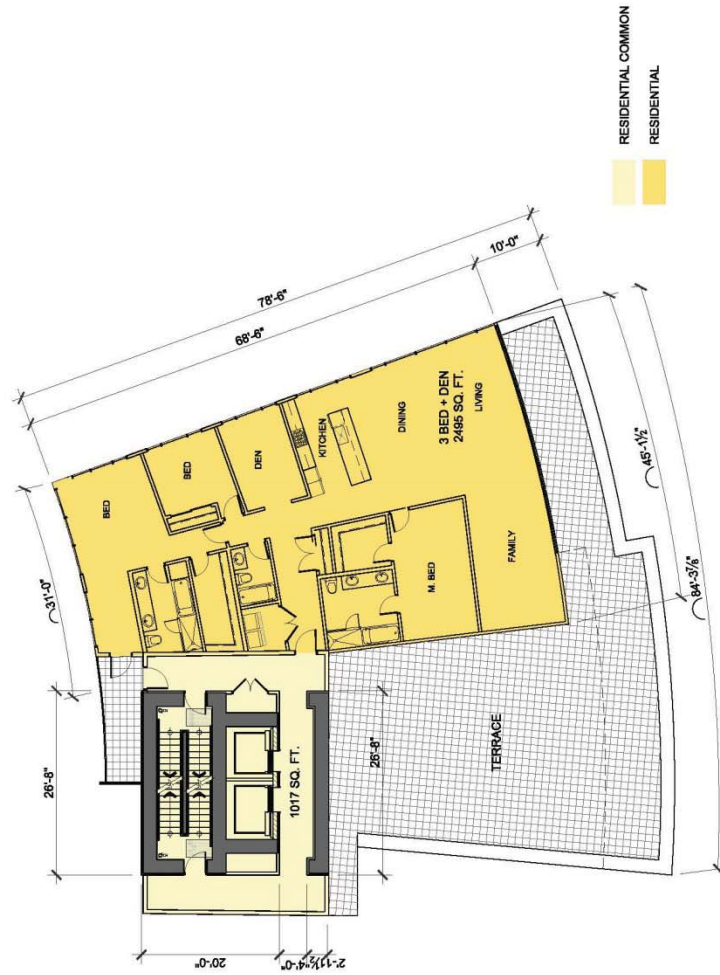
Rezoning Re-submission
October 27, 2015

L20 FLOOR PLAN - TOWER A
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The Oxford
1500 Oxford Street, White Rock, BC



A2.09



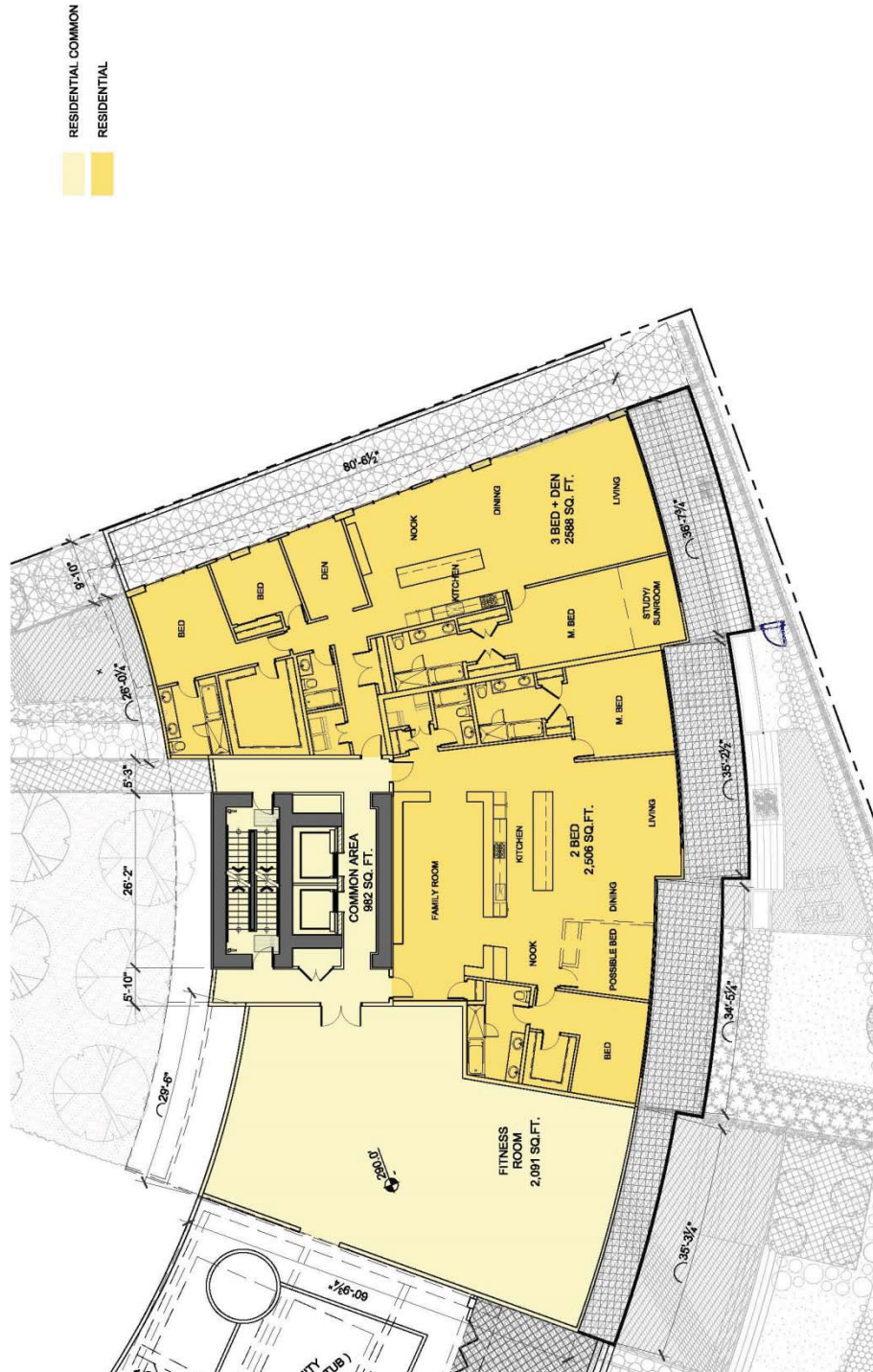
The Oxford
1500 Oxford Street, White Rock, BC

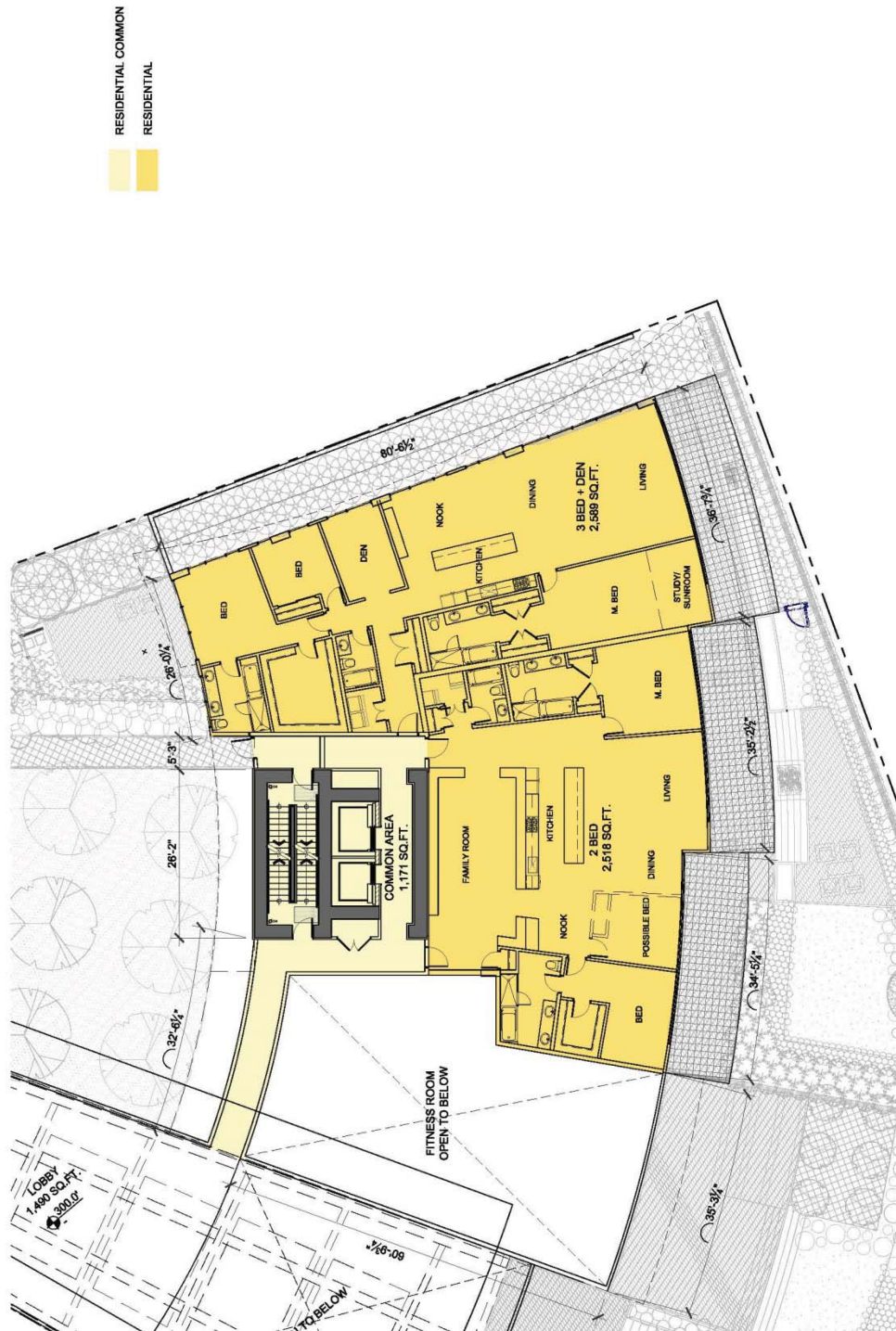
L21 FLOOR PLAN - TOWER A
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Rezoning Re-submission
October 27, 2015



A2.10





The Oxford
1500 Oxford Street, White Rock, BC



CHRIS DIKEAKOS
ARCHITECTS INC.

L2 FLOOR PLAN - TOWER B

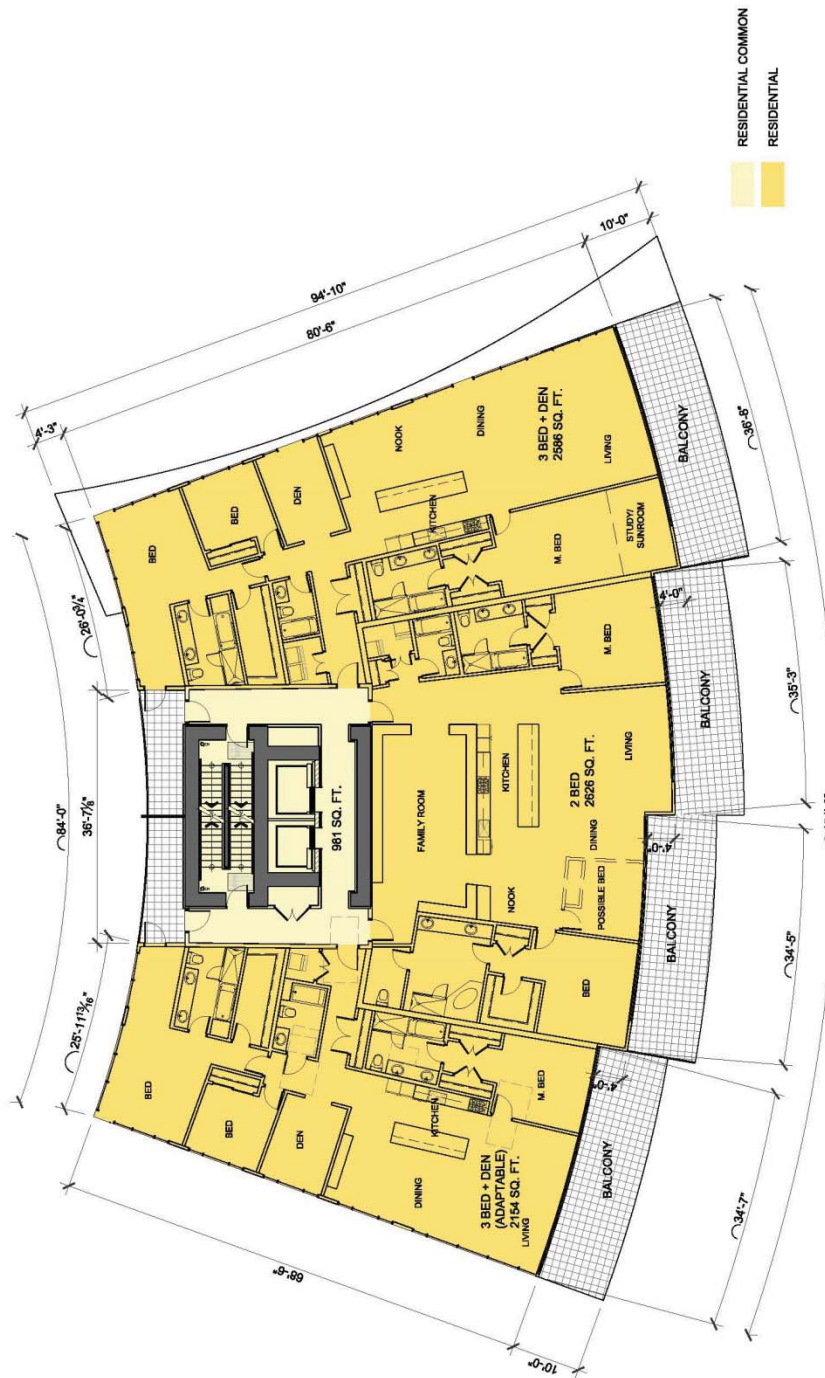
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Rezoning Re-submission

October 27, 2015



A2.12



FLOOR PLAN L3 TO L6 - TOWER B
Rezoning Re-submission
October 27, 2015

A2.13

The Oxford
1500 Oxford Street, White Rock, BC





RESIDENTIAL COMMON
RESIDENTIAL

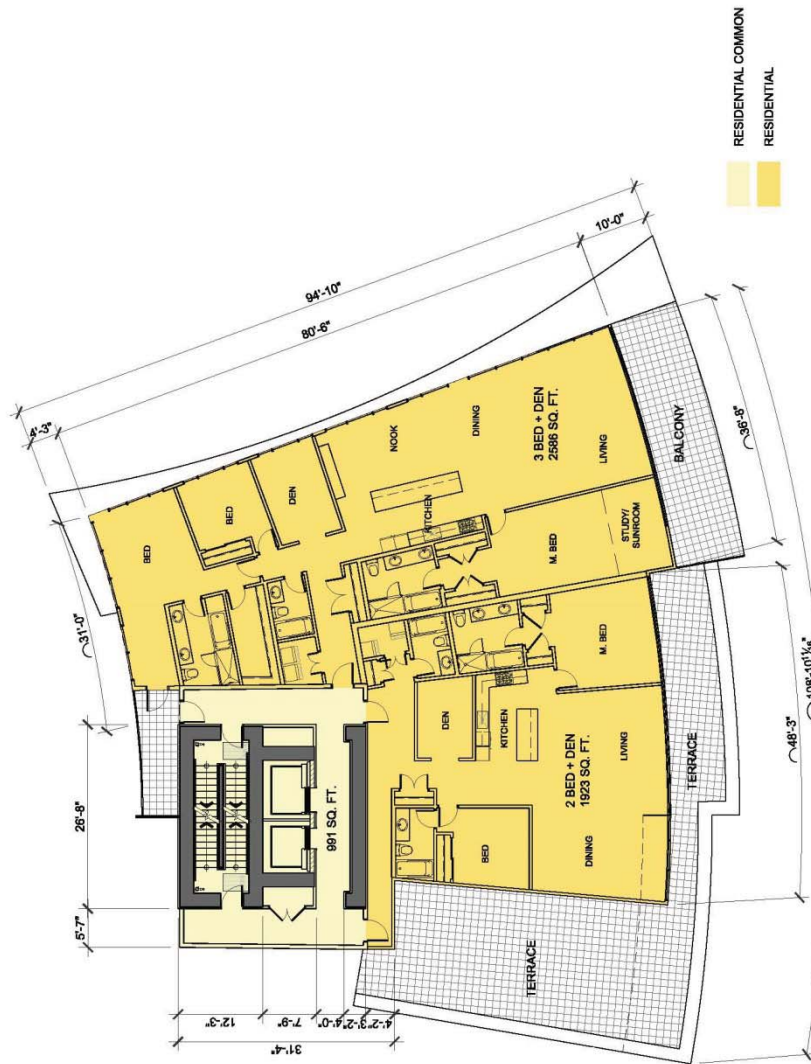
The Oxford
1500 Oxford Street, White Rock, BC

CHRIS DIKEAKOS ARCHITECTS INC.

L22 FLOOR PLAN - TOWER B
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Rezoning Re-submission
October 27, 2015

elegant DEVELOPMENT INC. | **A2.15**



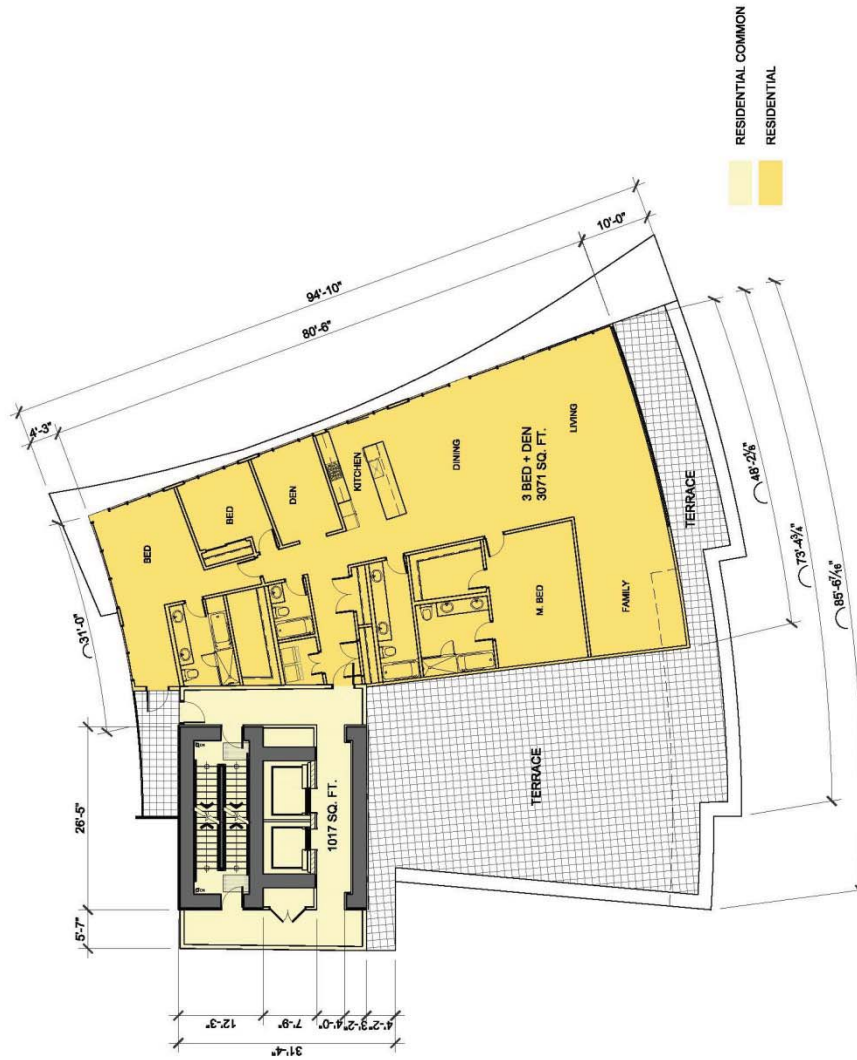
elegant | A2.16
DEVELOPMENT INC.

Rezoning Re-submission
October 27, 2015

L23 FLOOR PLAN - TOWER B
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The Oxford
1500 Oxford Street, White Rock, BC





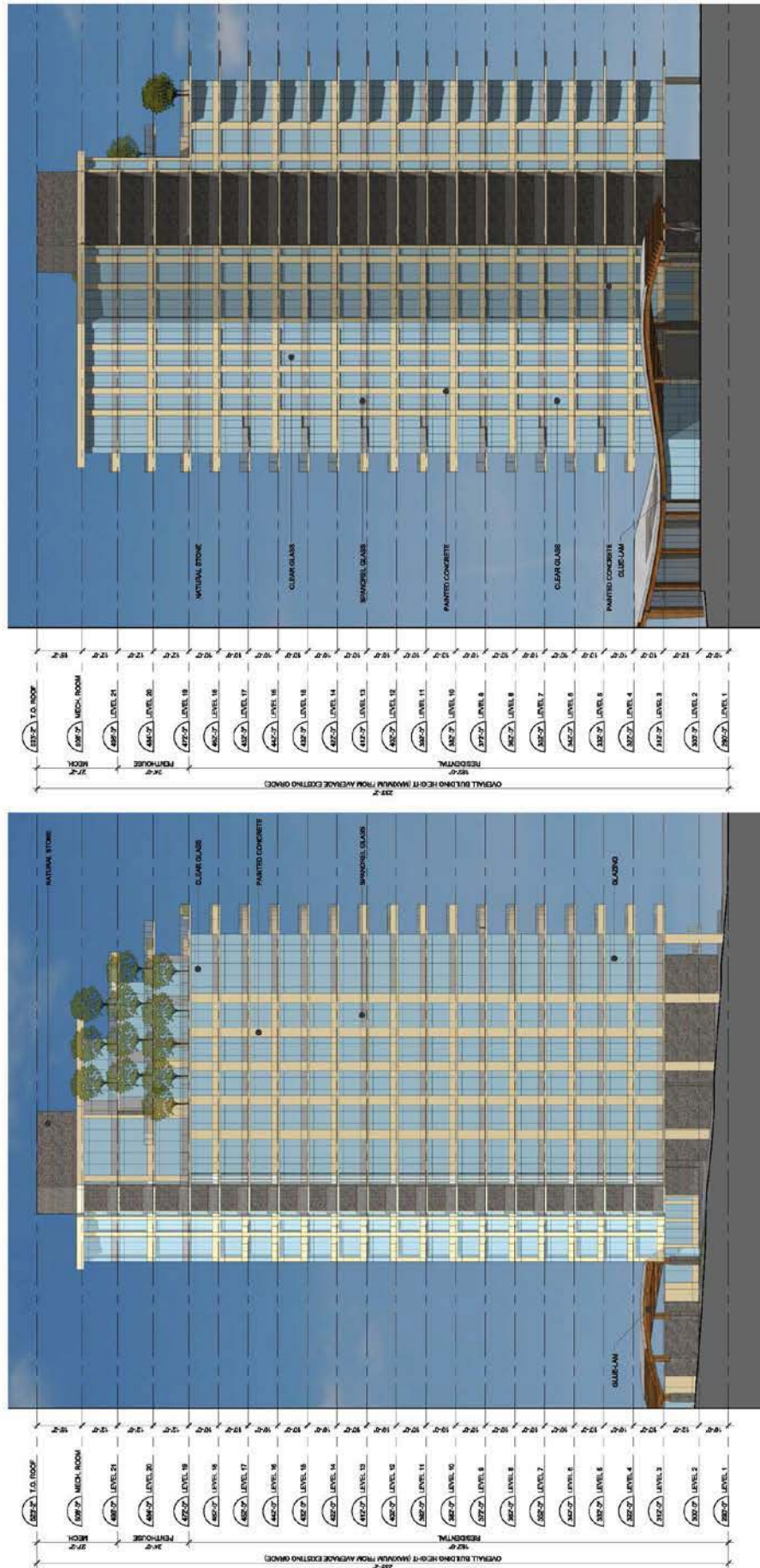
The Oxford
1500 Oxford Street, White Rock, BC

CDM
CHRIS DIKEAKOS
ARCHITECTS INC.

L24 FLOOR PLAN - TOWER B
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Rezoning Re-submission
October 27, 2015

elegant DEVELOPMENT INC. | **A2.17**



EAST ELEVATION

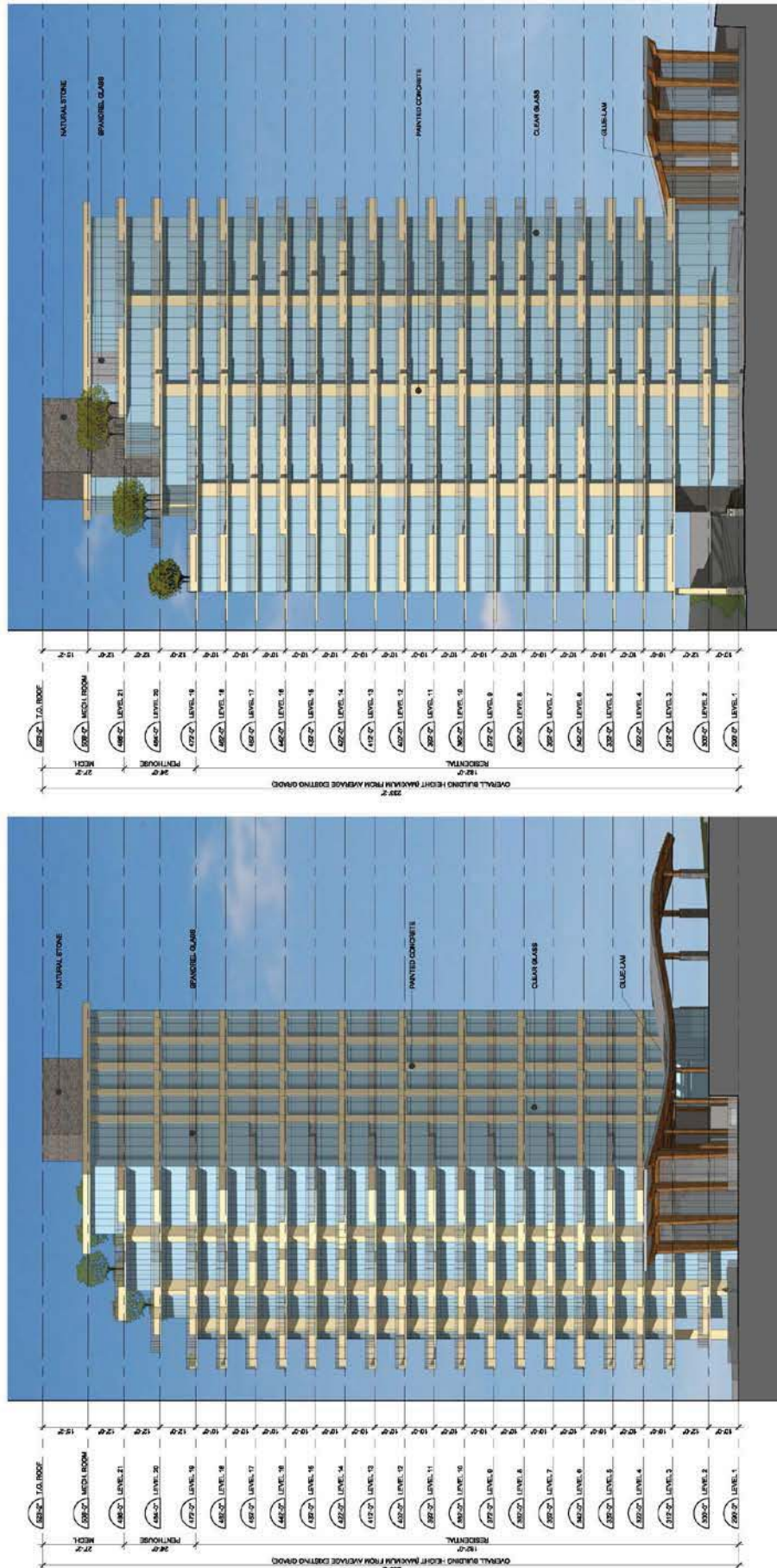
NORTH ELEVATION


The Oxford
 1500 Oxford Street, White Rock, BC
 CHRIS DIKAKOS ARCHITECTS INC.

NORTH & EAST ELEV. - TOWER A
 Scale: 1/32" = 1'-0"

Rezoning Re-submission
 October 27, 2015


A3.00



WEST ELEVATION

SOUTH ELEVATION

elegant | A3.01
DEVELOPMENT INC.

Rezoning Re-submission

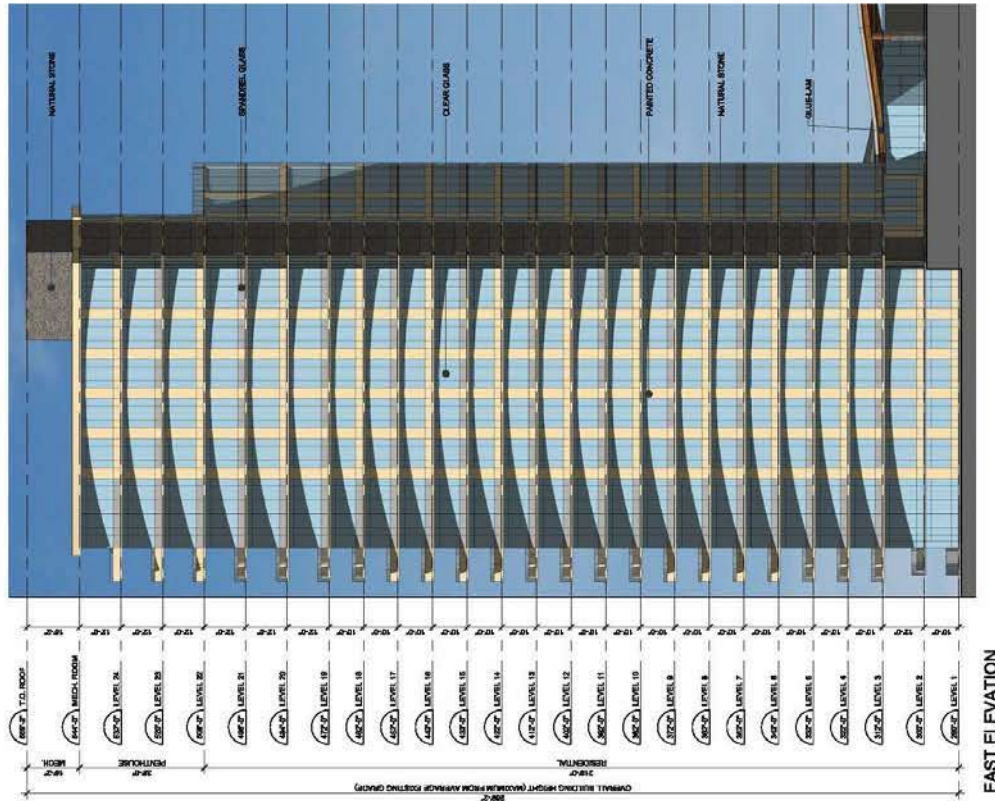
October 27, 2015

SOUTH & WEST ELEV. - TOWER A

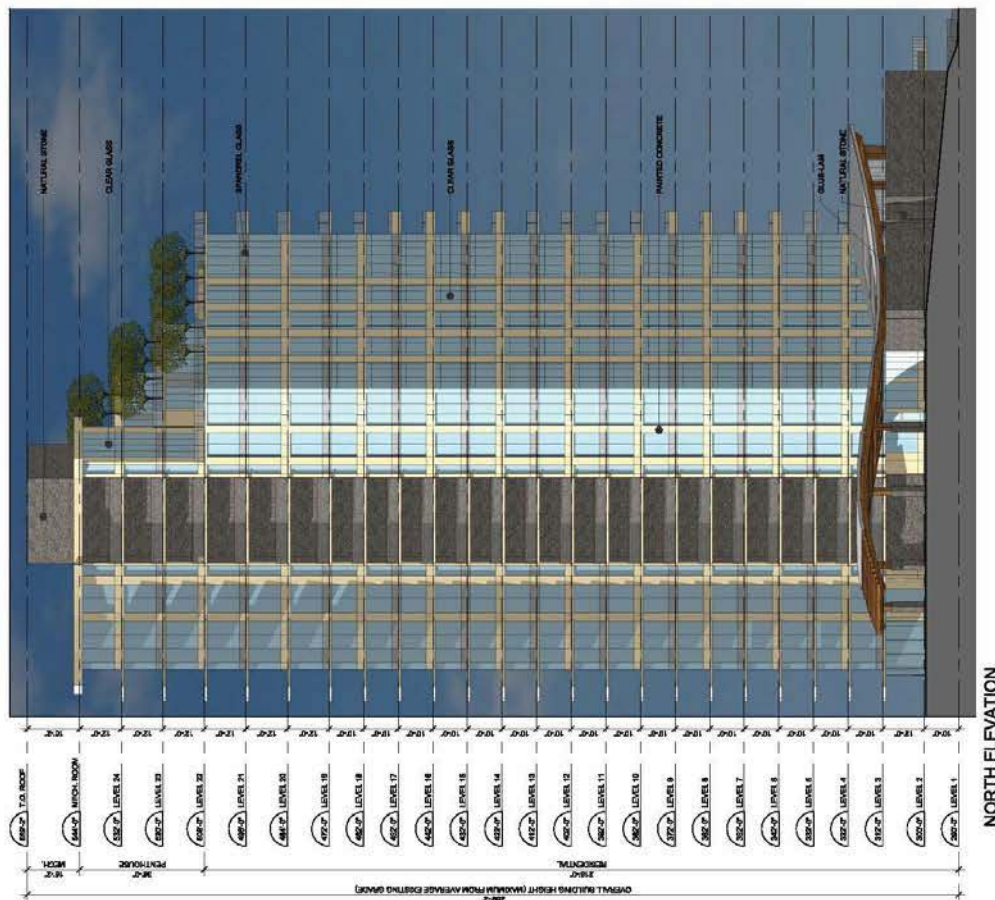
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The Oxford
 1500 Oxford Street, White Rock, BC

CHRIS DIKAKOS
 ARCHITECTS INC.



EAST ELEVATION



NORTH ELEVATION

elegant DEVELOPMENT INC. | A3.02

Rezoning Re-submission

October 27, 2015

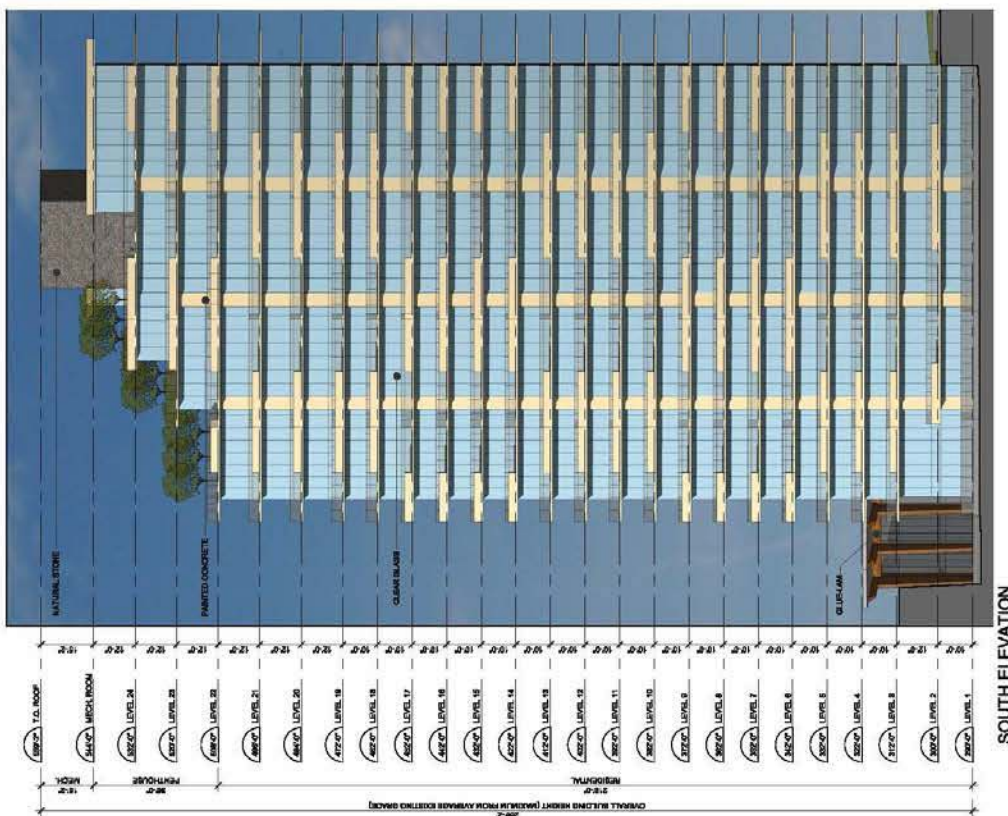
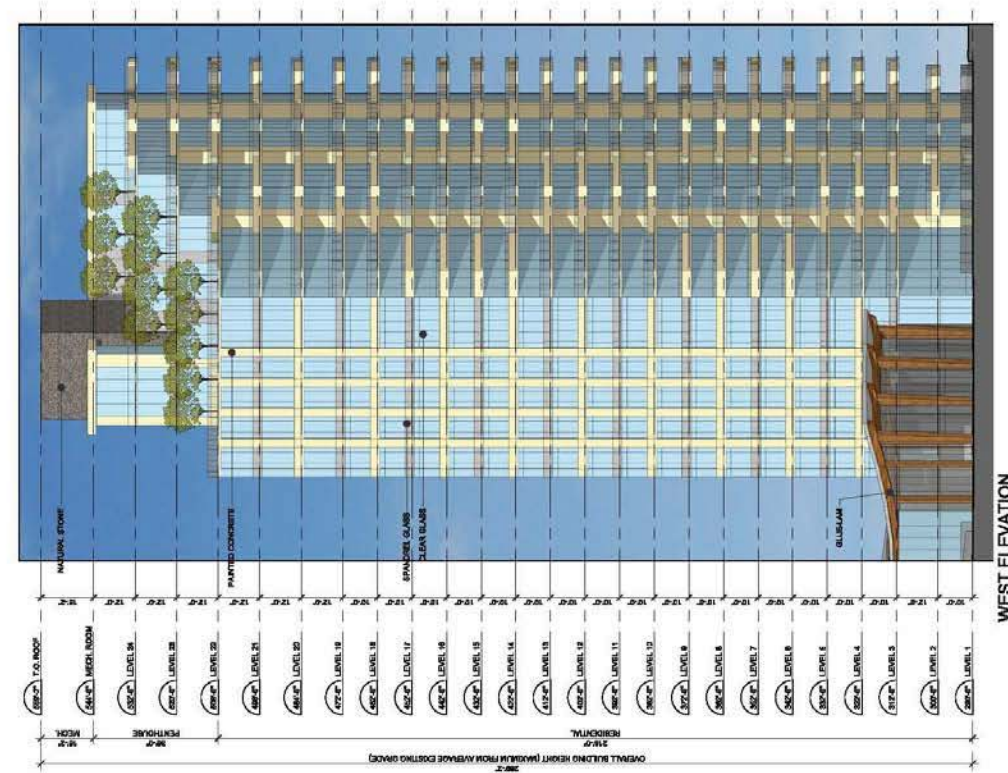
NORTH & EAST ELEV. - TOWER B

Scale: 1/32" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC



CHRIS DIKEAKOS
ARCHITECTS INC.



WEST ELEVATION

SOUTH ELEVATION

elegant DEVELOPMENT INC. | A3.03

Rezoning Re-submission

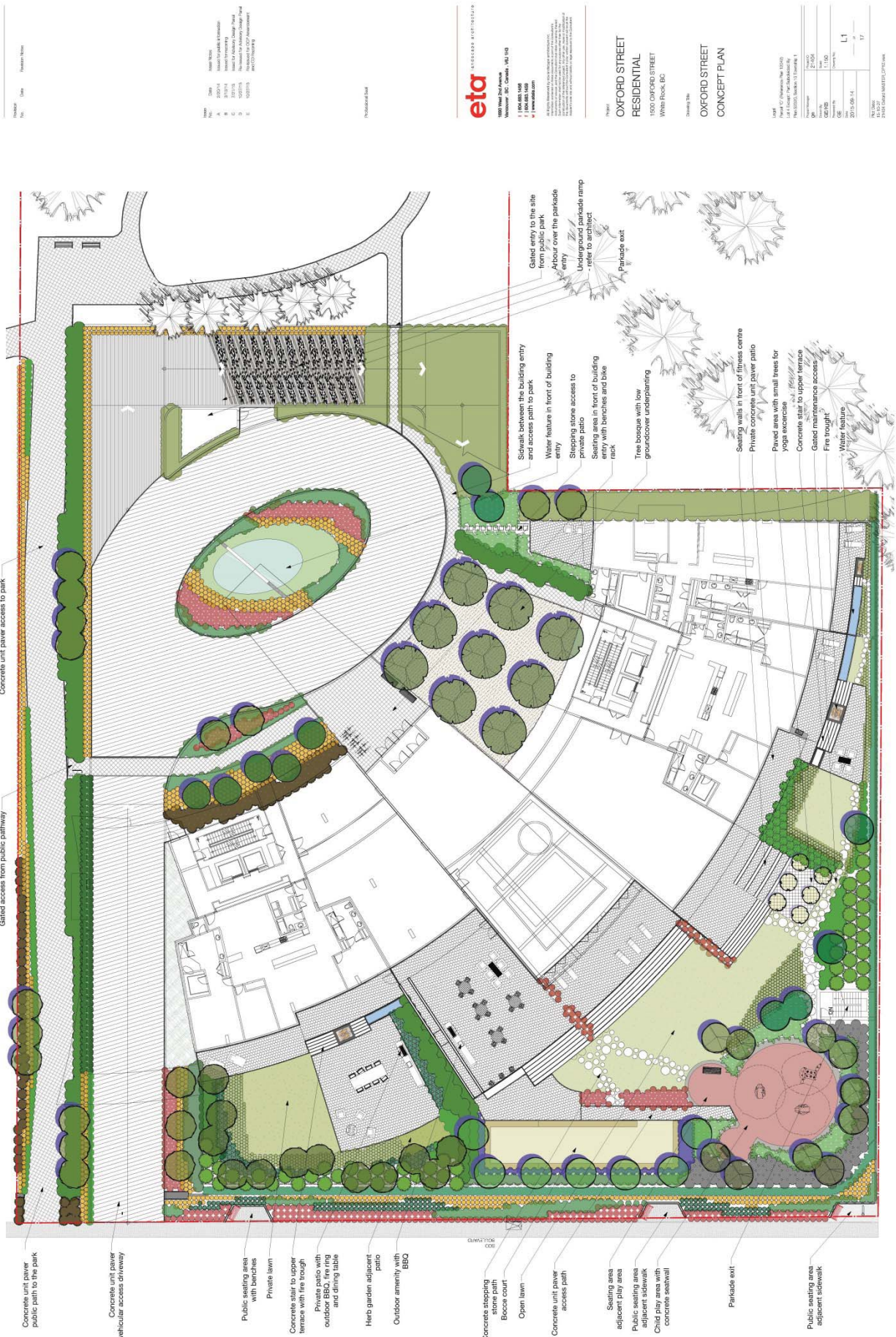
October 27, 2015

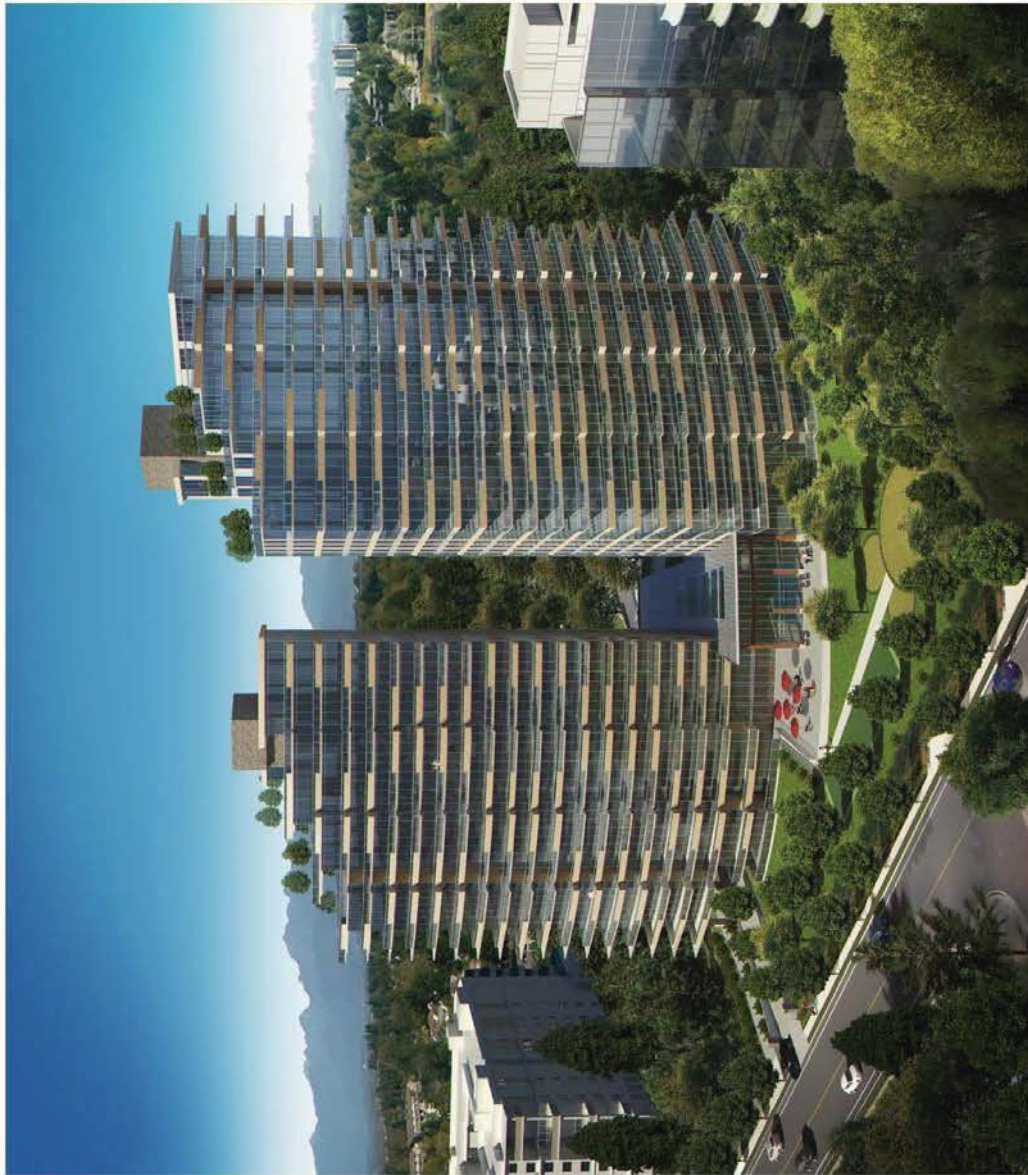
SOUTH & WEST ELEV. - TOWER B

Scale: 1/32" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC



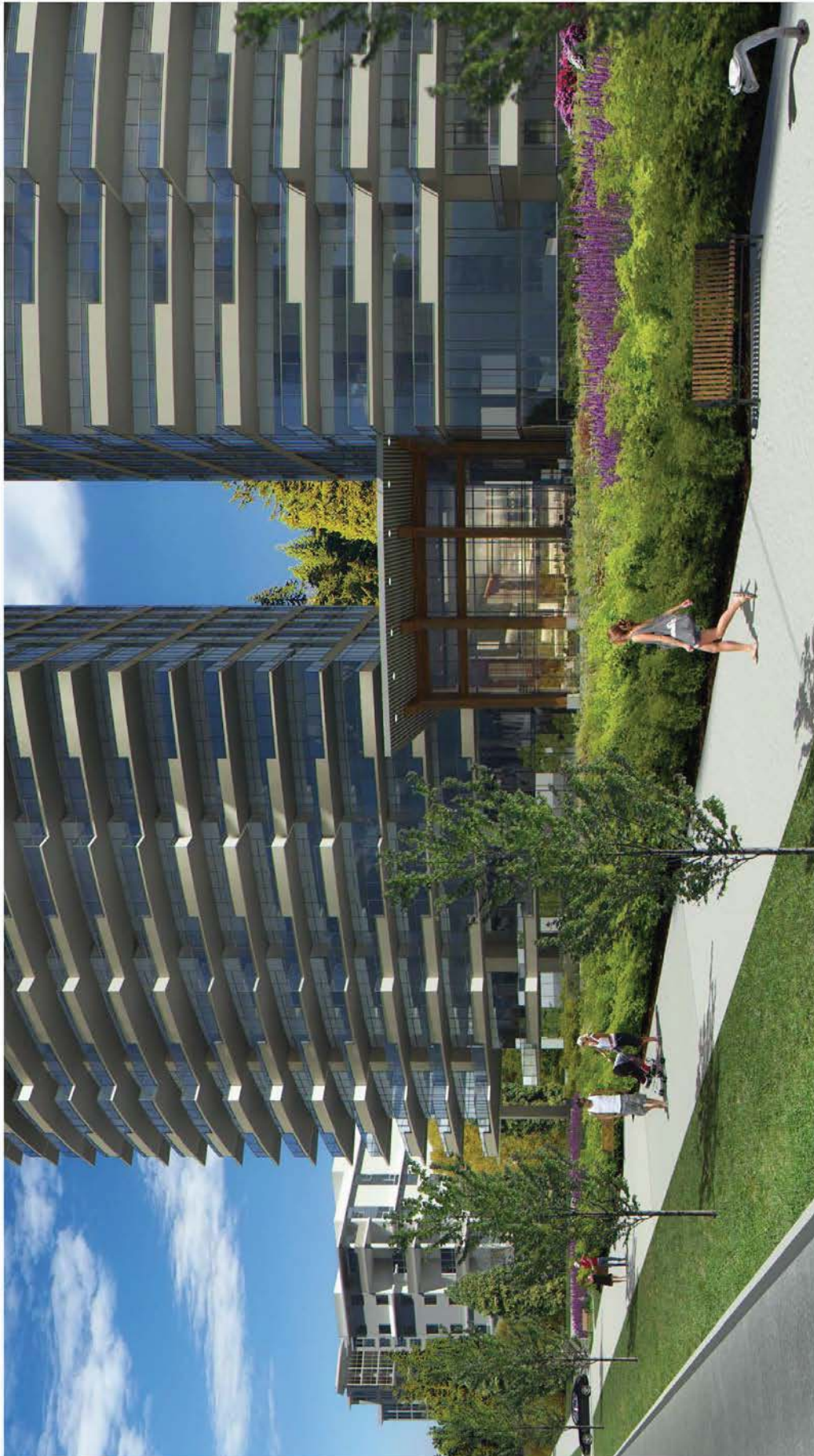




The Oxford
1500 Oxford Street, White Rock, BC

AERIAL VIEW LOOKING NORTHEAST Rezoning Re-submission
Scale: N.T.S.
October 27, 2015

elegant DEVELOPMENT INC. | A5.00

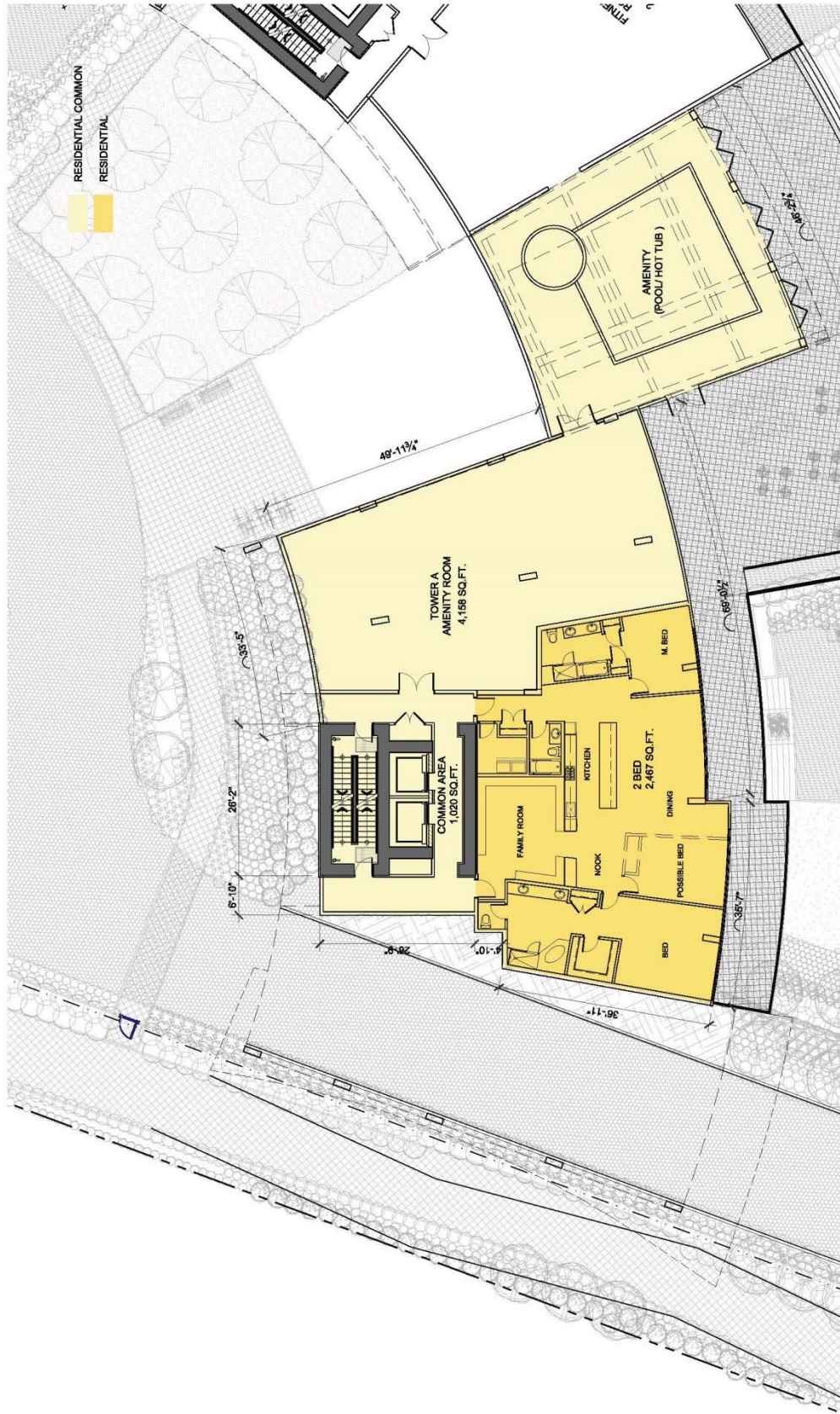


The Oxford
1500 Oxford Street, White Rock, BC

**STREETVIEW ALONG OXFORD ST.
LOOKING NORTH**
Scale: N.T.S.

Rezoning Re-submission
October 27, 2015

elegant
DEVELOPMENT INC. | **A5.01**



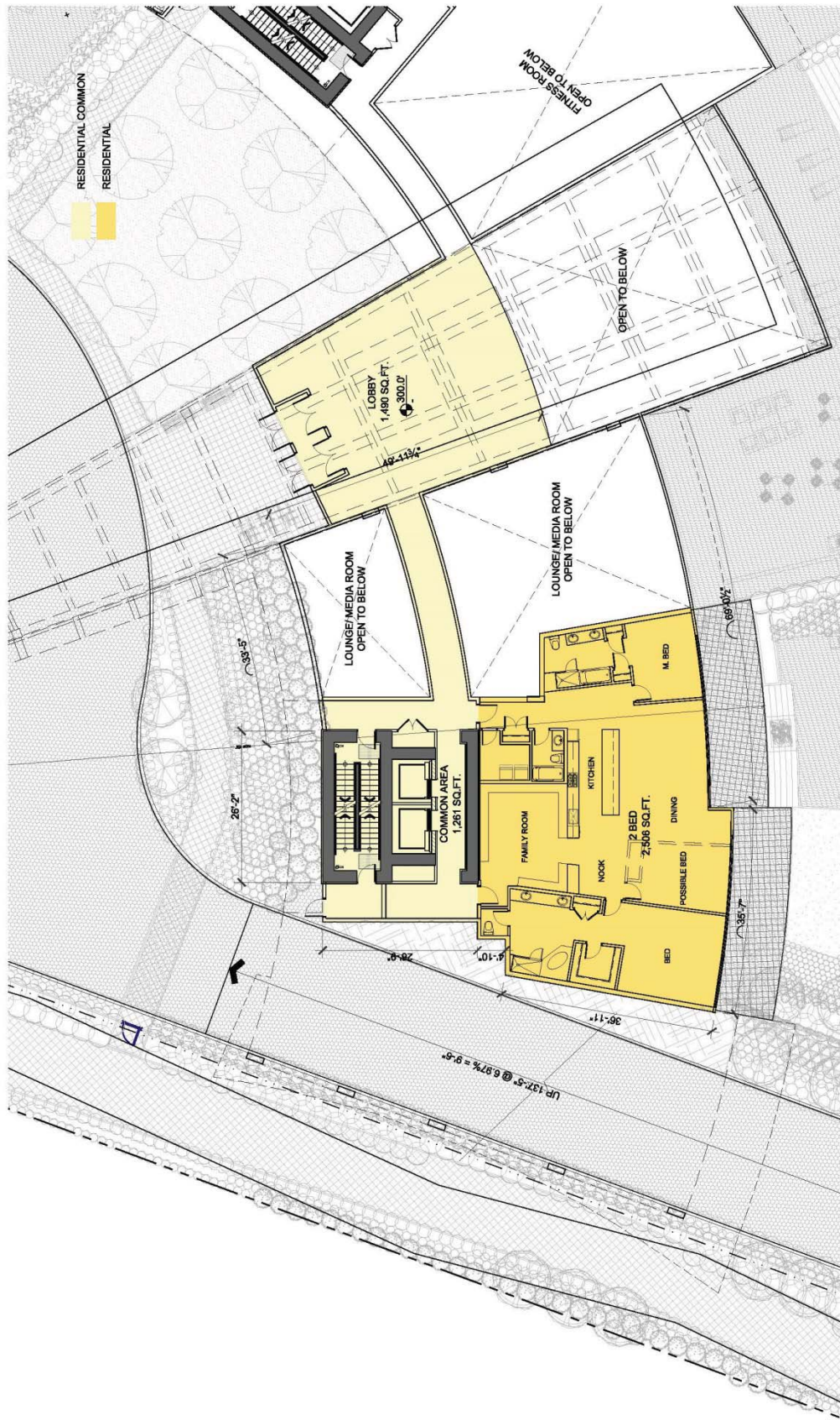
The Oxford
1500 Oxford Street, White Rock, BC

CHRIS DIKEAKOS ARCHITECTS INC.

L1 FLOOR PLAN - TOWER A
Scale: 1/16" = 1'-0"

Rezoning Re-submission
October 27, 2015

elegant DEVELOPMENT INC. | **A2.04**



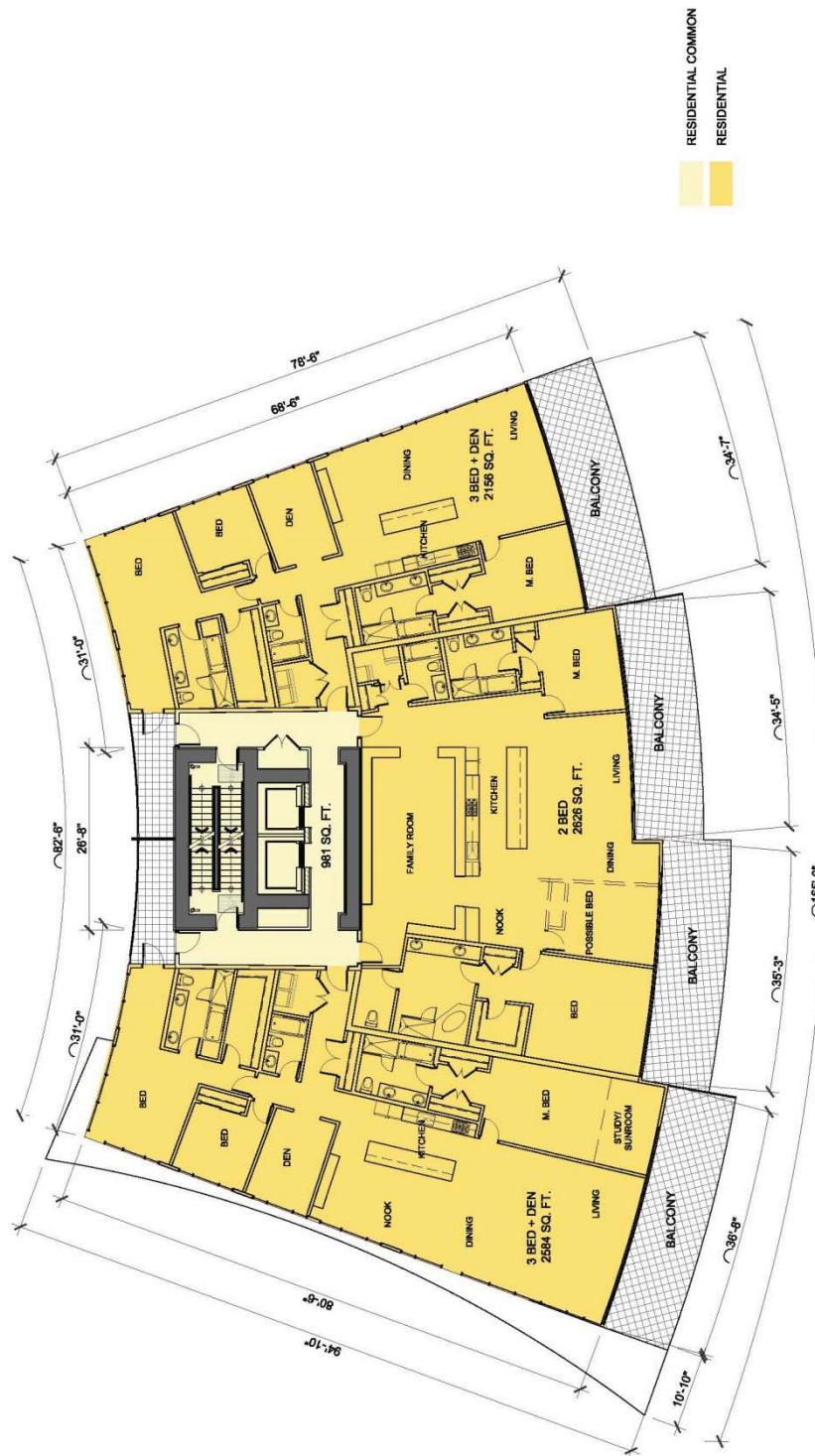
The Oxford
 1500 Oxford Street, White Rock, BC

L2 FLOOR PLAN - TOWER A
 Scale: 1/16" = 1'-0"

Rezoning Re-submission
 October 27, 2015



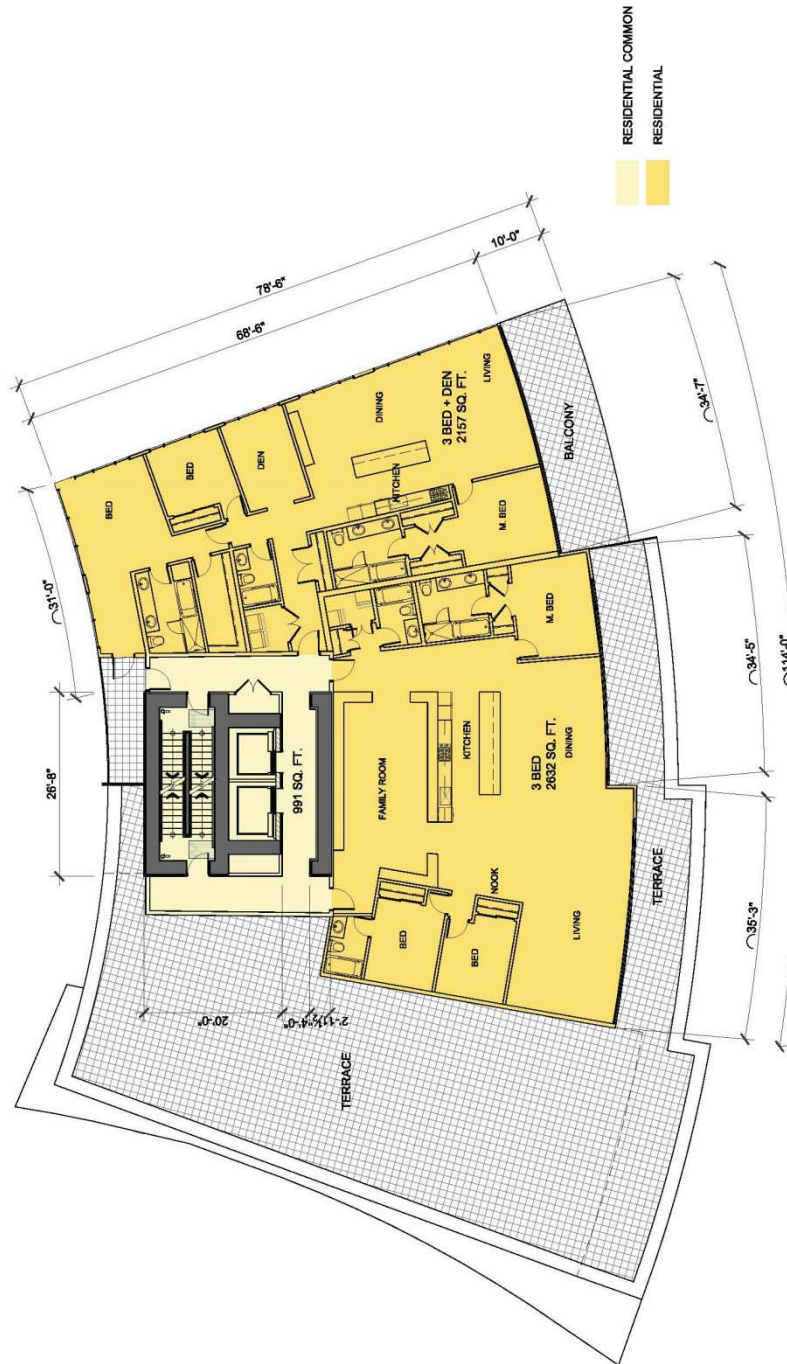
A2.05



FLOOR PLAN L6 TO L18 - TOWER A Rezoning Re-submission
 Scale: 1/16" = 1'-0"
 October 27, 2015

The Oxford
 1500 Oxford Street, White Rock, BC





The Oxford
1500 Oxford Street, White Rock, BC
CHRIS DIKEAKOS
ARCHITECTS INC.

L19 FLOOR PLAN - TOWER A
Scale: 1/16" = 1'-0"

Rezoning Re-submission
October 27, 2015

elegant DEVELOPMENT INC. **A2.08**



Rezoning Re-submission

October 27, 2015

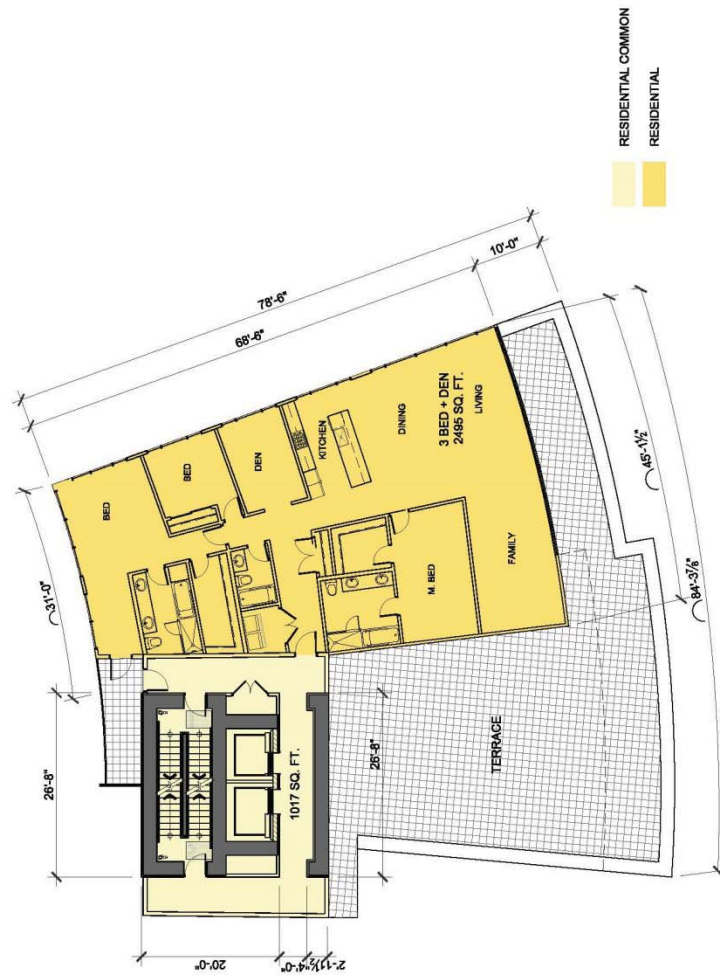
L20 FLOOR PLAN - TOWER A

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

The Oxford
1500 Oxford Street, White Rock, BC



A2.09



RESIDENTIAL COMMON
RESIDENTIAL



The Oxford
1500 Oxford Street, White Rock, BC

L21 FLOOR PLAN - TOWER A

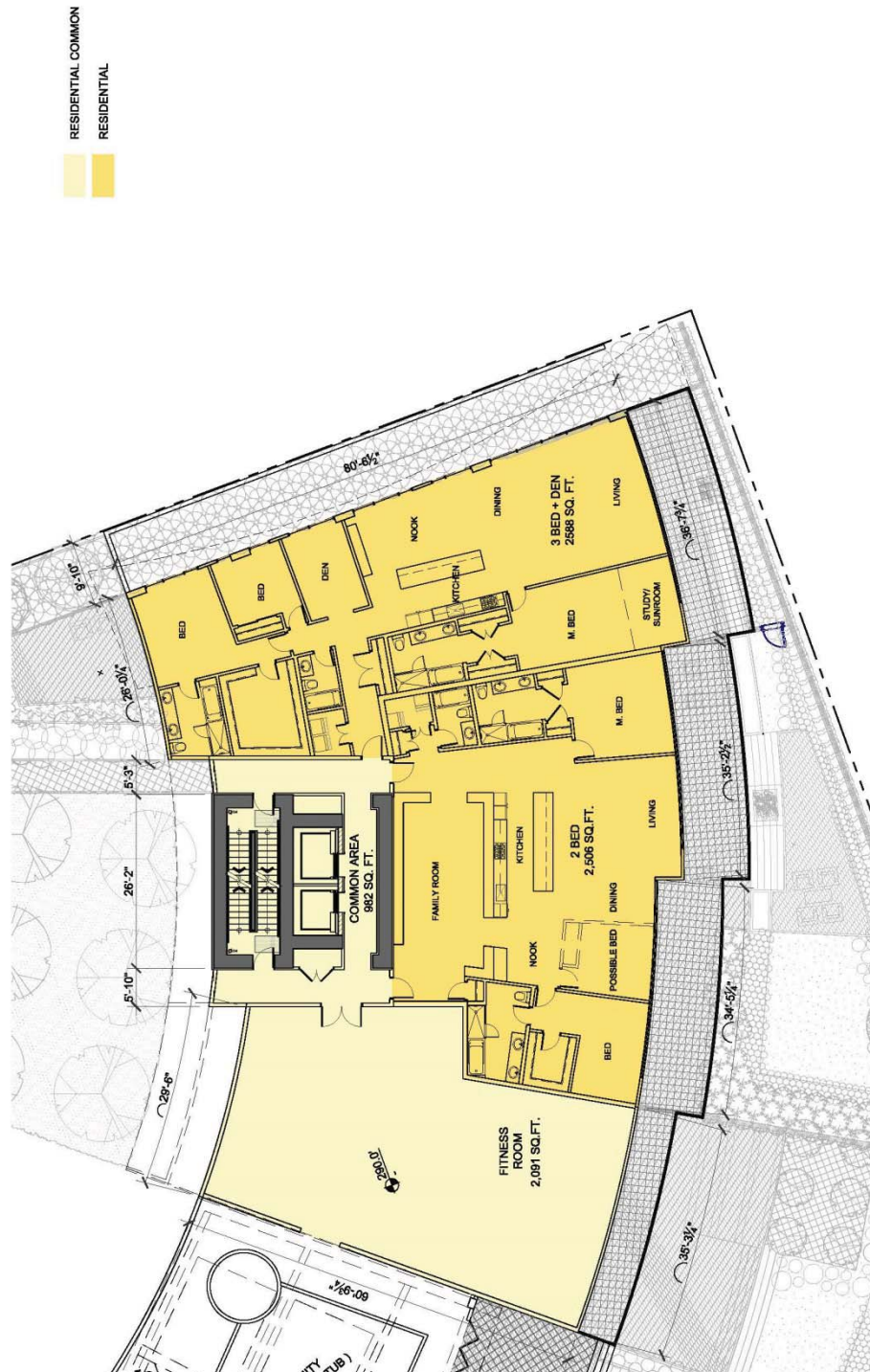
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Rezoning Re-submission

October 27, 2015



A2.10



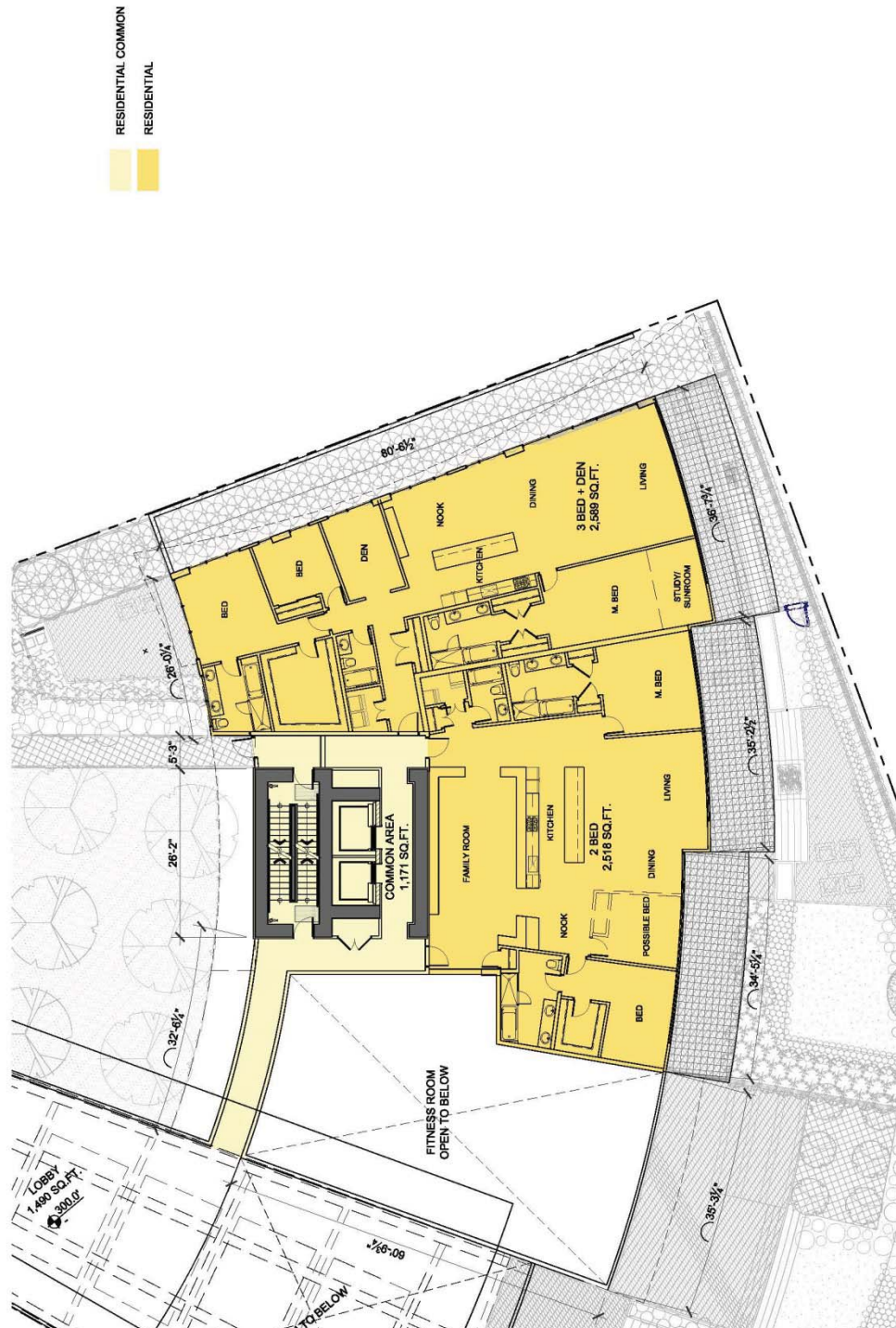
elegant DEVELOPMENT INC.

Rezoning Re-submission
October 27, 2015

L1 FLOOR PLAN - TOWER B
Scale: 1/16" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC

CDN
CHRIS DIKEAKOS
ARCHITECTS INC.



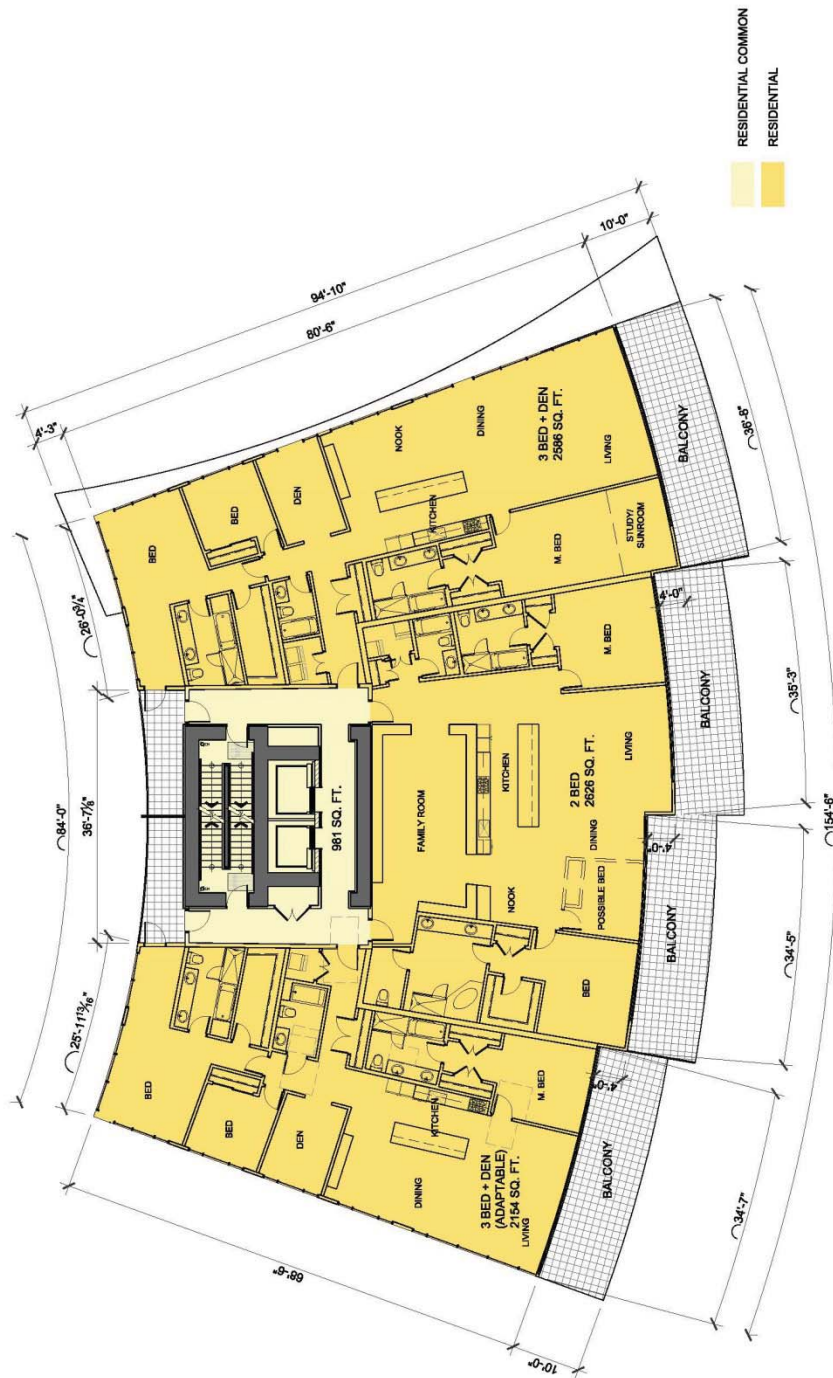
The Oxford
1500 Oxford Street, White Rock, BC

L2 FLOOR PLAN - TOWER B
Scale: 1/16" = 1'-0"

Rezoning Re-submission
October 27, 2015



A2.12



FLOOR PLAN L3 TO L6 - TOWER B
 Rezoning Re-submission
 October 27, 2015

A2.13

The Oxford
 1500 Oxford Street, White Rock, BC





RESIDENTIAL COMMON
RESIDENTIAL



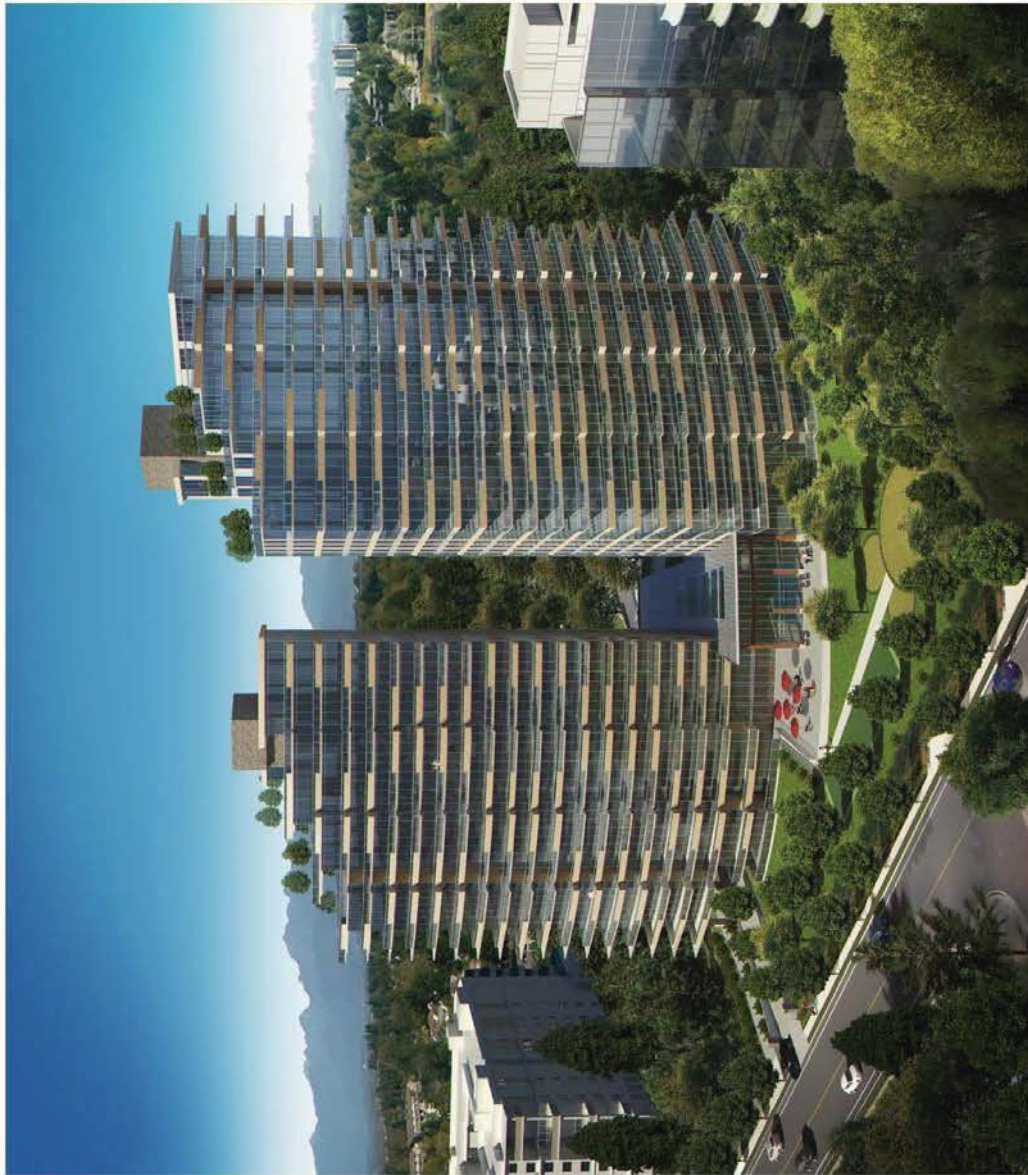
The Oxford
1500 Oxford Street, White Rock, BC



A2.15
DEVELOPMENT INC.

Rezoning Re-submission
October 27, 2015

L22 FLOOR PLAN - TOWER B
Scale: 1/16" = 1'-0"



The Oxford
1500 Oxford Street, White Rock, BC

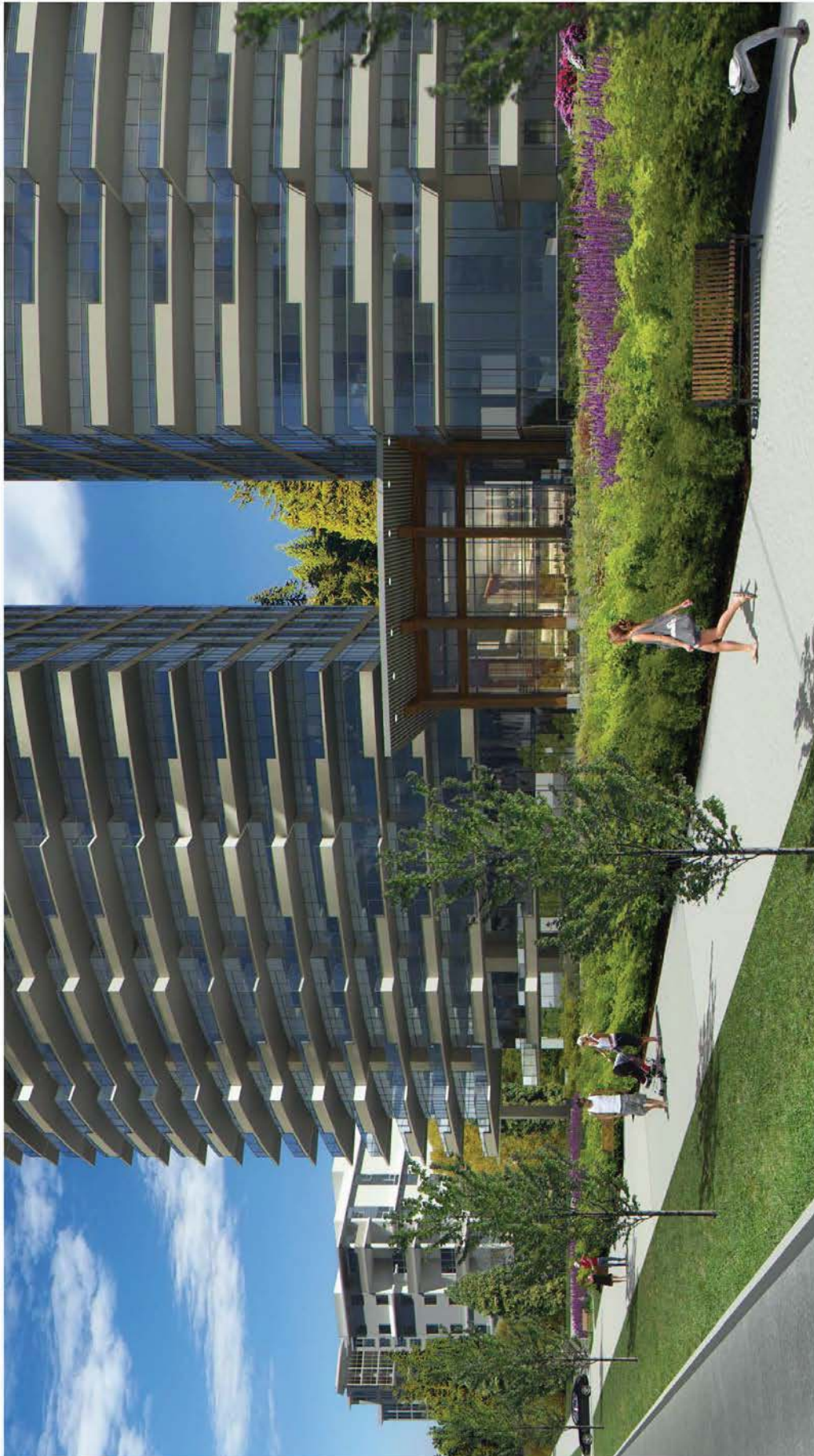
AERIAL VIEW LOOKING NORTHEAST Rezoning Re-submission

Scale: N.T.S.

October 27, 2015



A5.00



 **CDN**
CHRIS DIKEAKOS
ARCHITECTS INC.

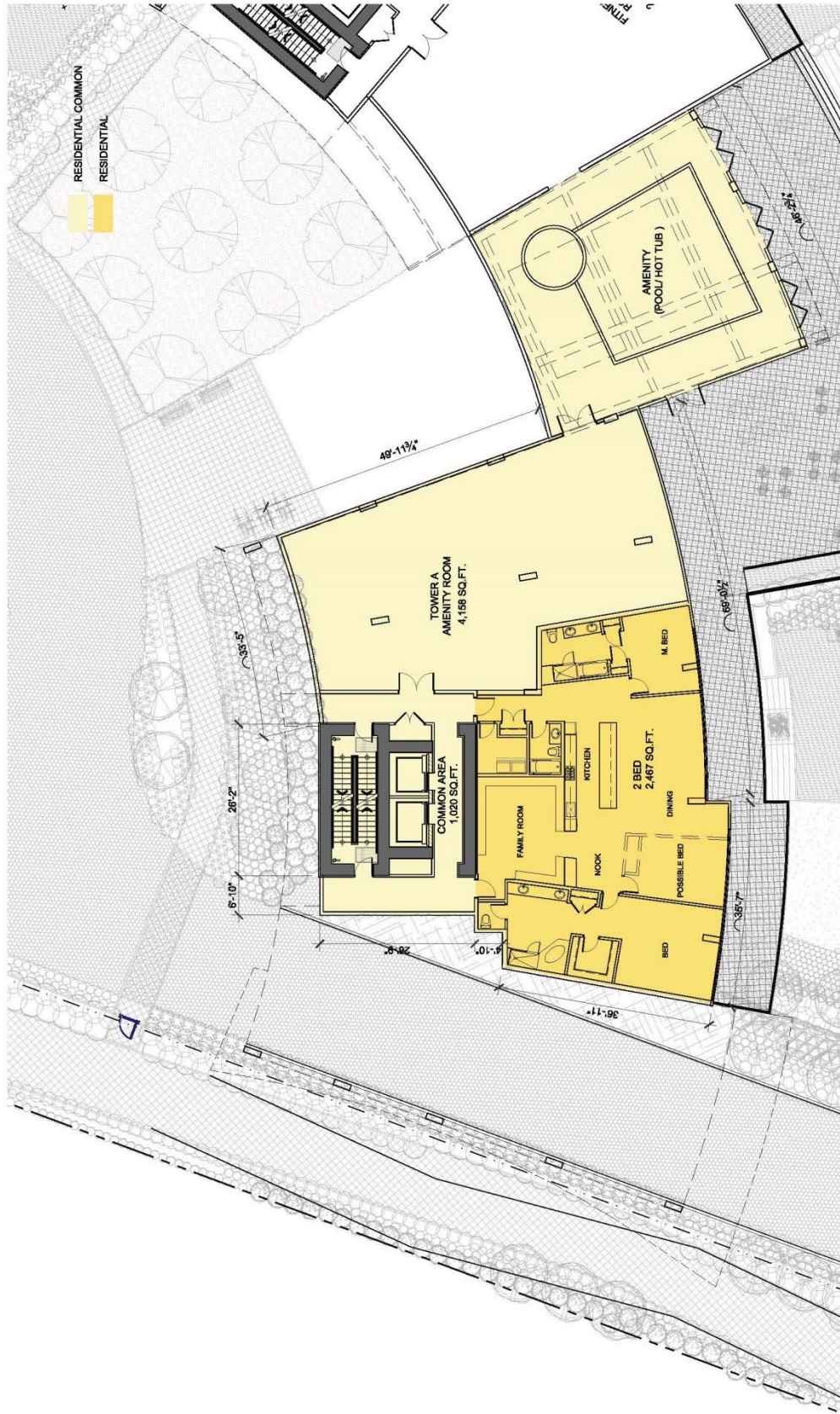
The Oxford
1500 Oxford Street, White Rock, BC

**STREETVIEW ALONG OXFORD ST.
LOOKING NORTH**
Scale: N.T.S.

elegant DEVELOPMENT INC.

A5.01

Rezoning Re-submission
October 27, 2015



The Oxford
1500 Oxford Street, White Rock, BC

CHRIS DIKEAKOS
ARCHITECTS INC.

L1 FLOOR PLAN - TOWER A
Scale: 1/16" = 1'-0"

Rezoning Re-submission
October 27, 2015

elegant
DEVELOPMENT INC.

A2.04

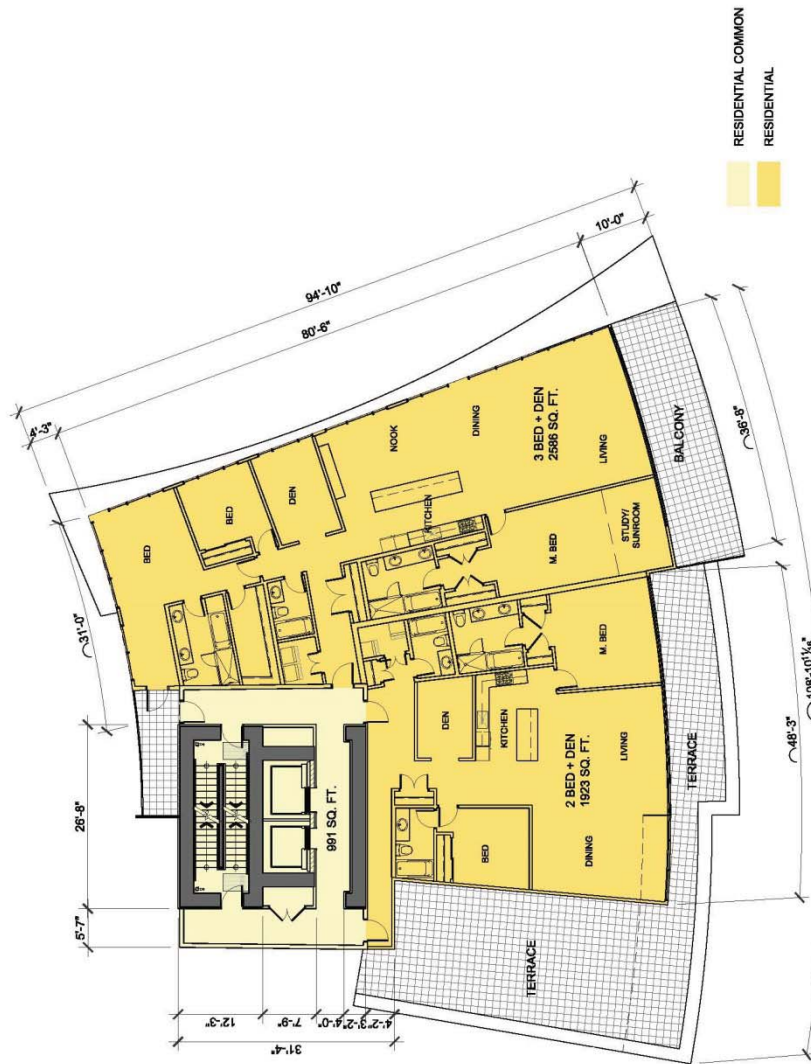


Rezoning Re-submission
October 27, 2015

L22 FLOOR PLAN - TOWER B
Scale: 1/16" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC





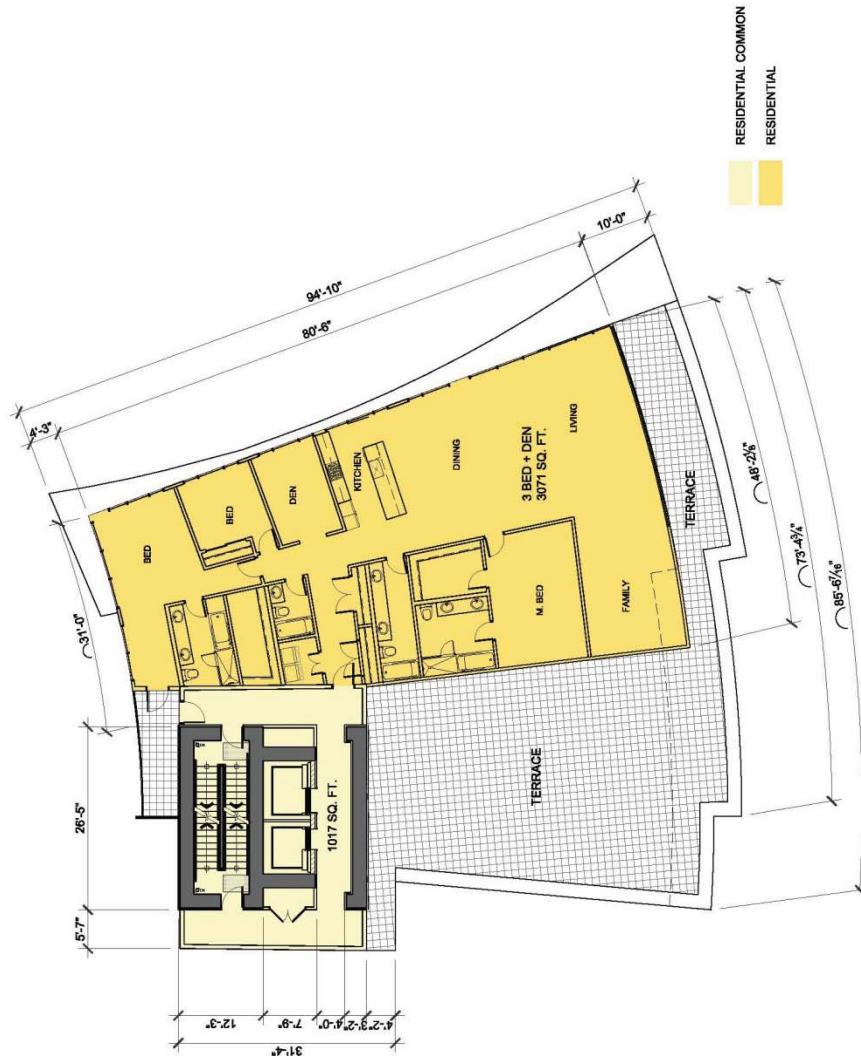
Rezoning Re-submission
October 27, 2015

L23 FLOOR PLAN - TOWER B
Scale: 1/16" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC



A2.16



Rezoning Re-submission

October 27, 2015

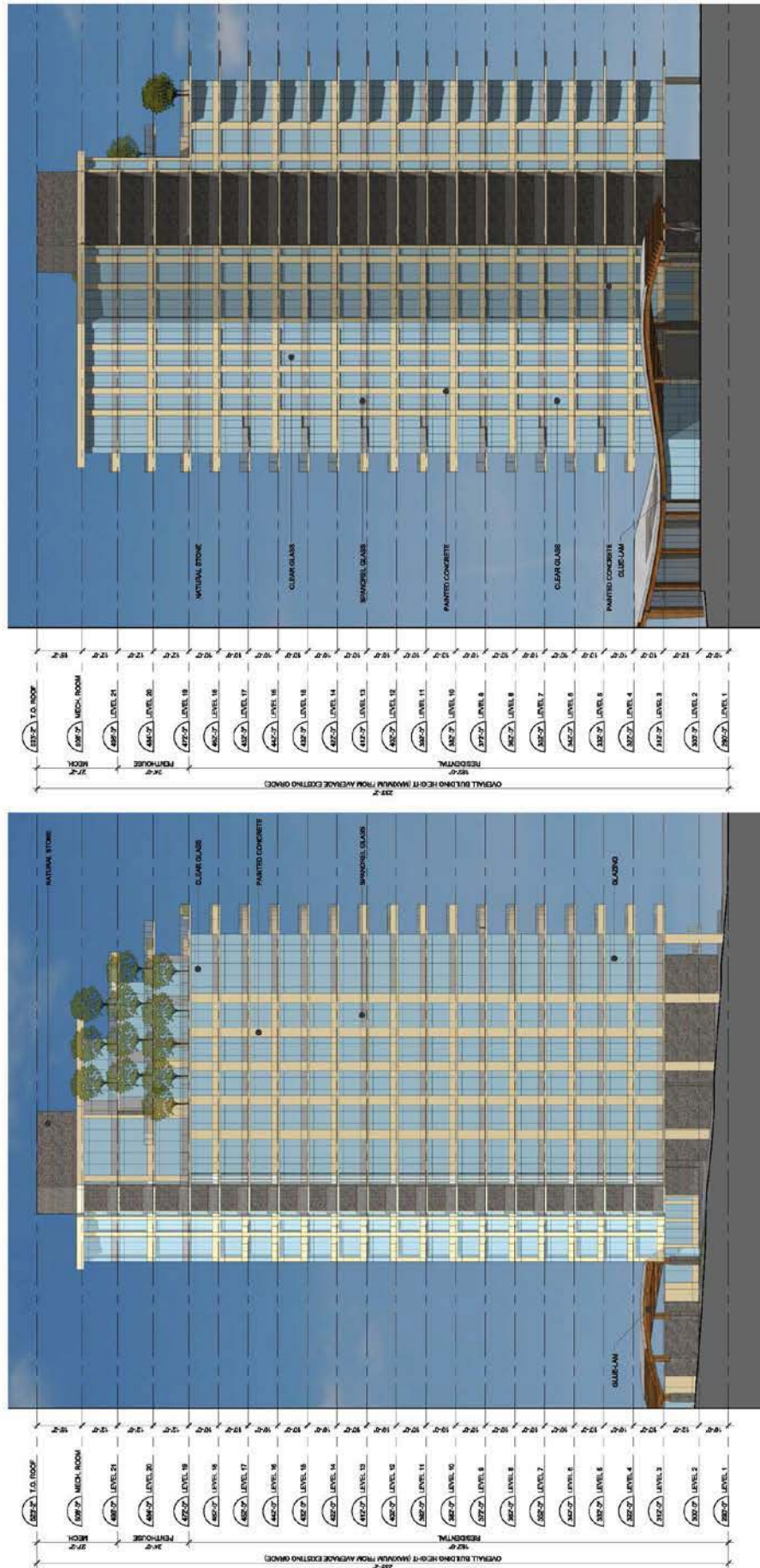
L24 FLOOR PLAN - TOWER B

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

The Oxford
1500 Oxford Street, White Rock, BC



A2.17



EAST ELEVATION

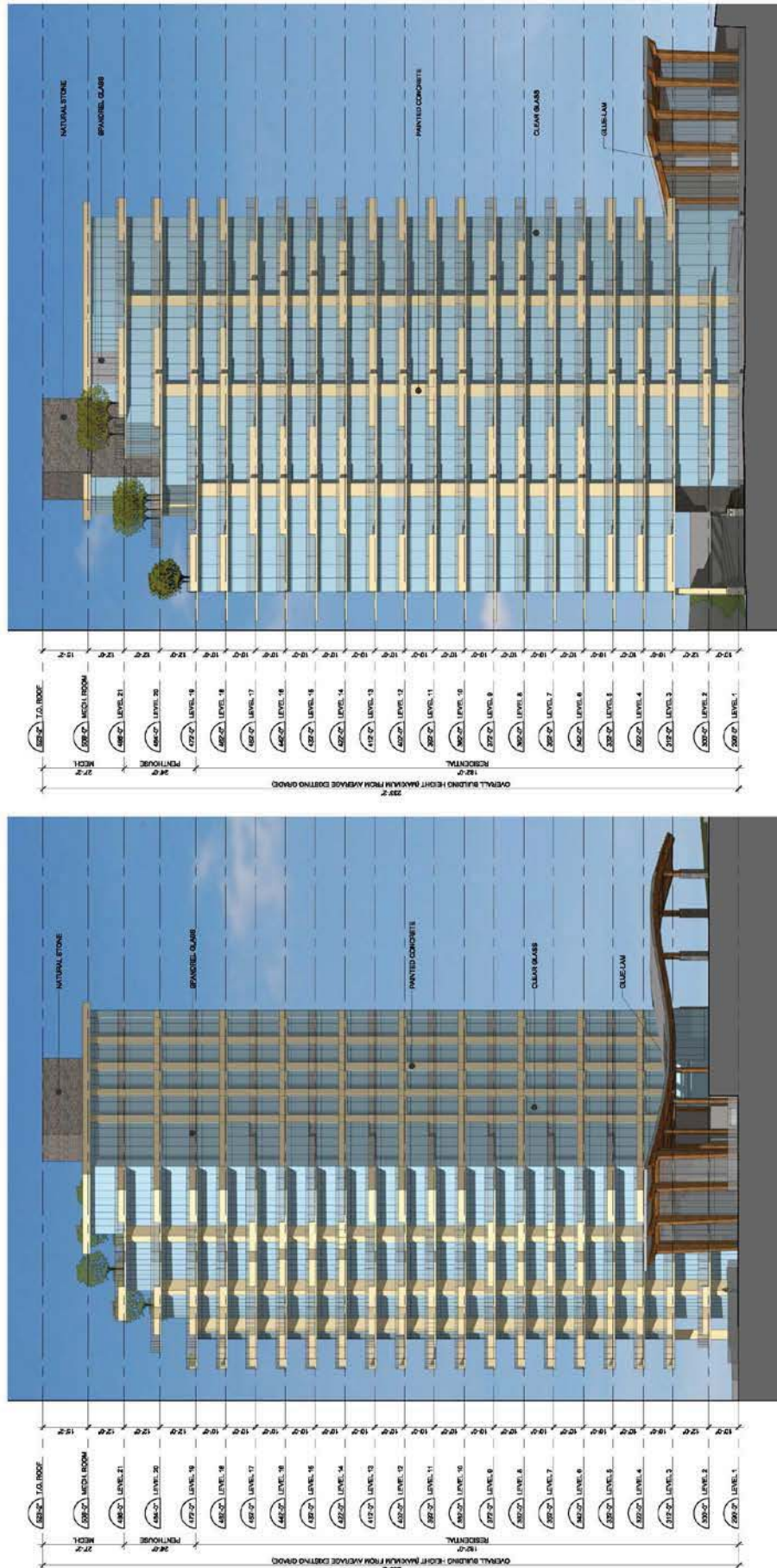
NORTH ELEVATION

The Oxford
 1500 Oxford Street, White Rock, BC
 CHRIS DIKEAKOS ARCHITECTS INC.

NORTH & EAST ELEV. - TOWER A
 Scale: 1/32" = 1'-0"

Rezoning Re-submission
 October 27, 2015

elegant DEVELOPMENT INC. | **A3.00**



WEST ELEVATION

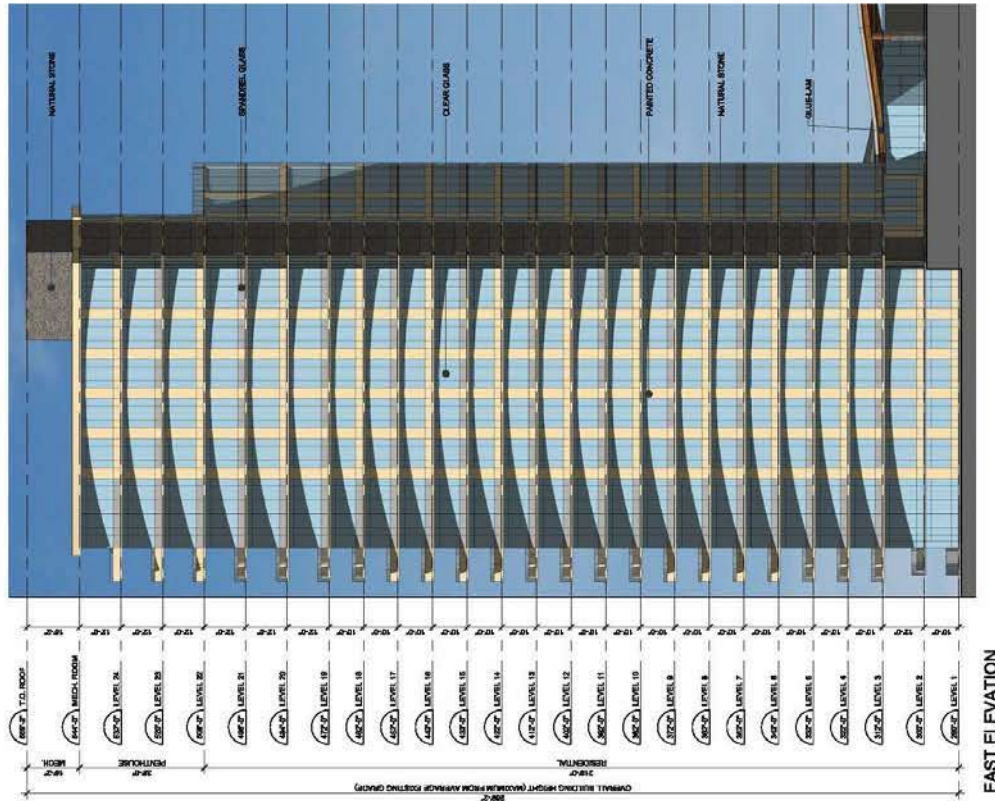
SOUTH ELEVATION

The Oxford
1500 Oxford Street, White Rock, BC
CHRIS DIKEAKOS ARCHITECTS INC.

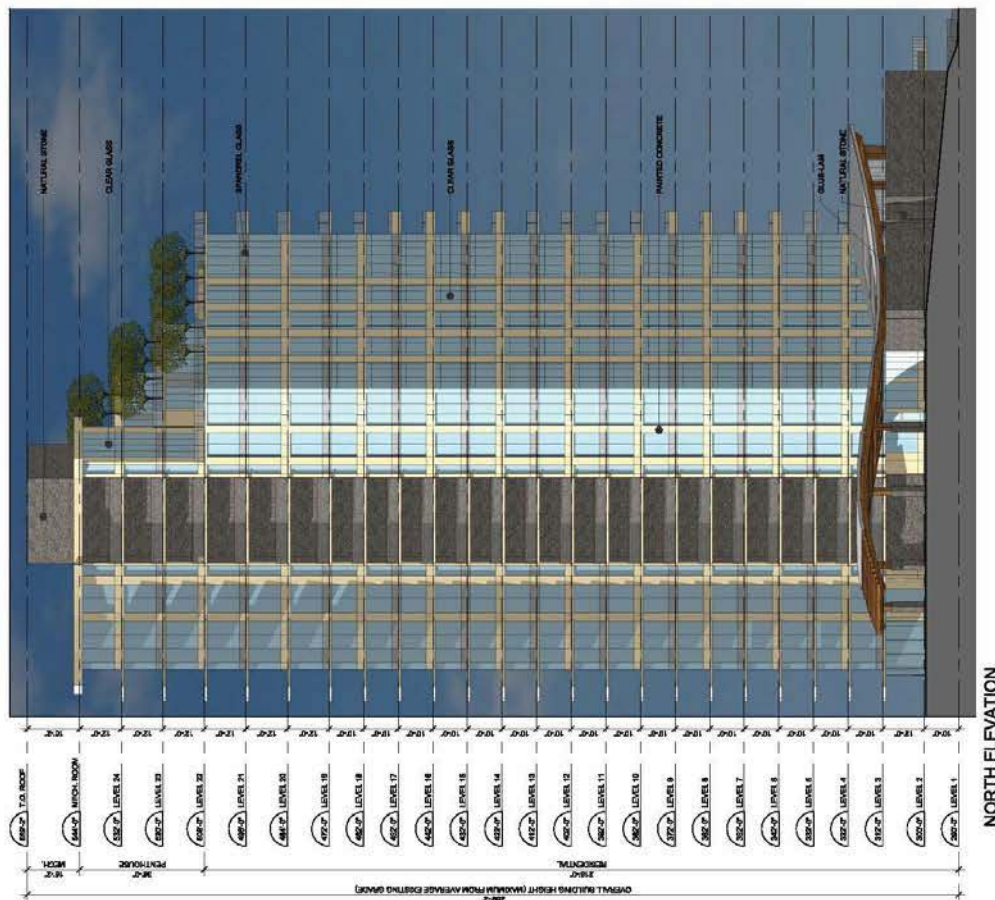
SOUTH & WEST ELEV. - TOWER A
Scale: 1/32" = 1'-0"

Rezoning Re-submission
October 27, 2015

elegant | A3.01
DEVELOPMENT INC.



EAST ELEVATION



NORTH ELEVATION

elegant DEVELOPMENT INC. | A3.02

Rezoning Re-submission

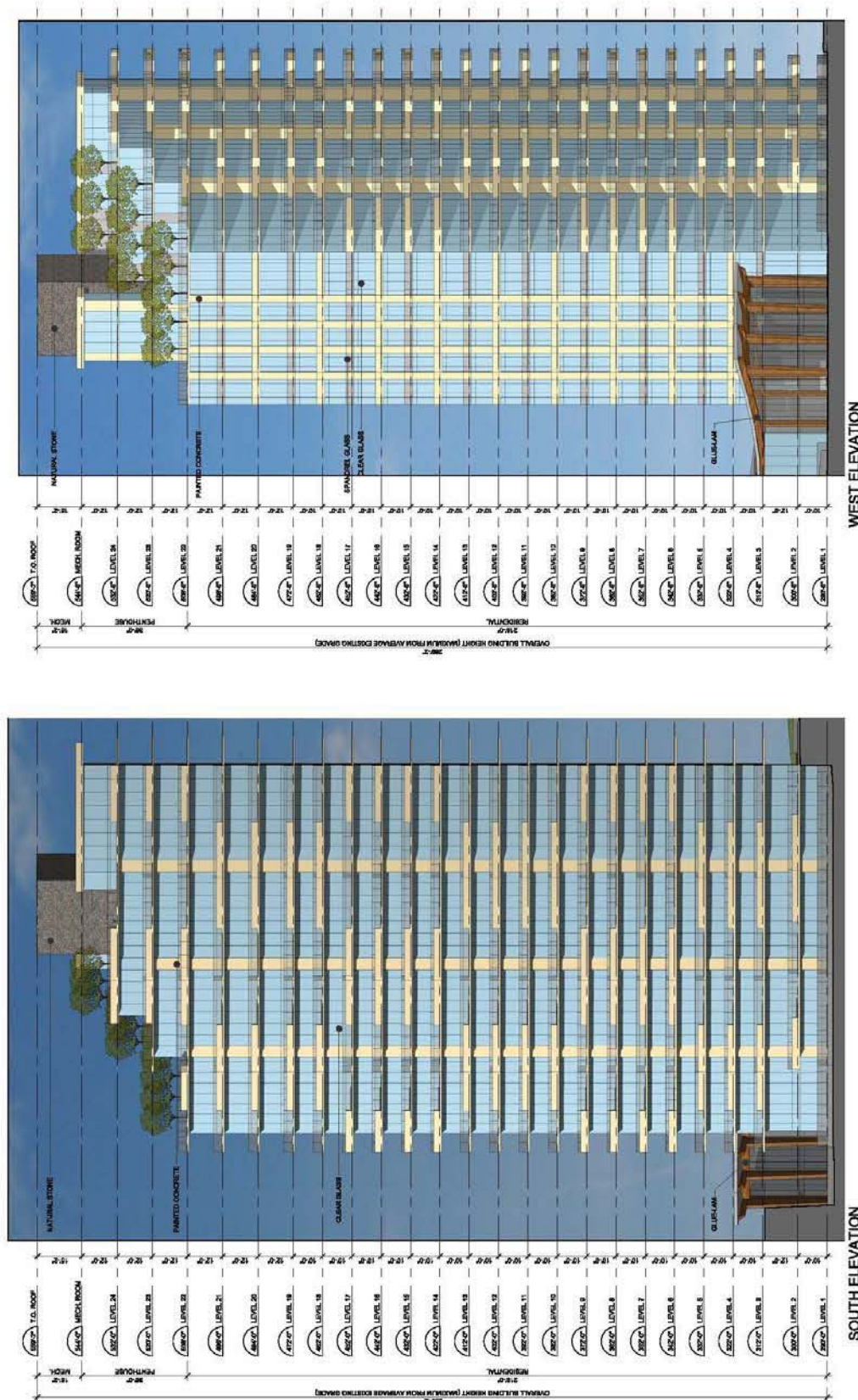
October 27, 2015

NORTH & EAST ELEV. - TOWER B

Scale: 1/32" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC

CDN
CHRIS DIKEAKOS
ARCHITECTS INC.



WEST ELEVATION

SOUTH ELEVATION

elegant DEVELOPMENT INC. | A3.03

Rezoning Re-submission

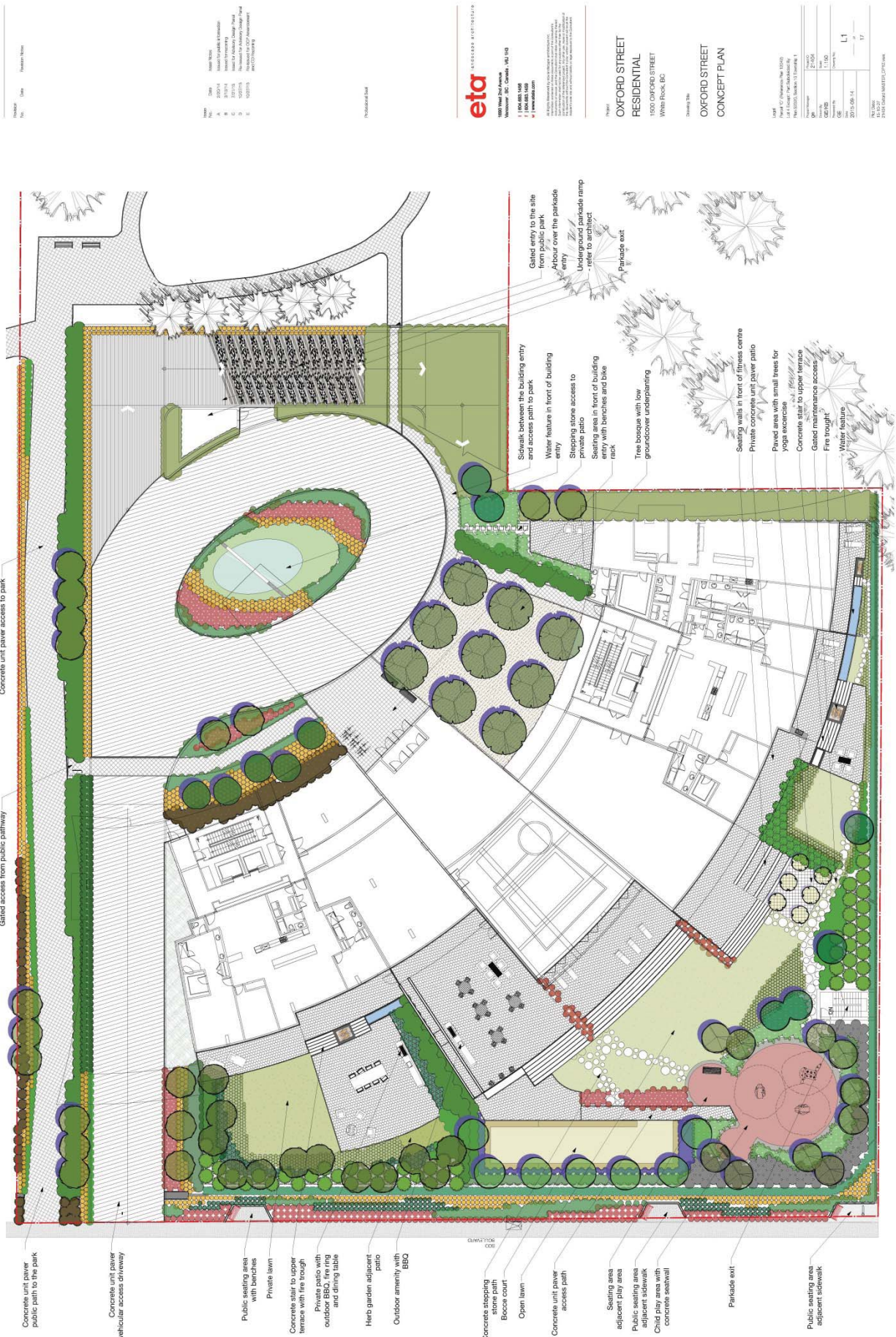
October 27, 2015

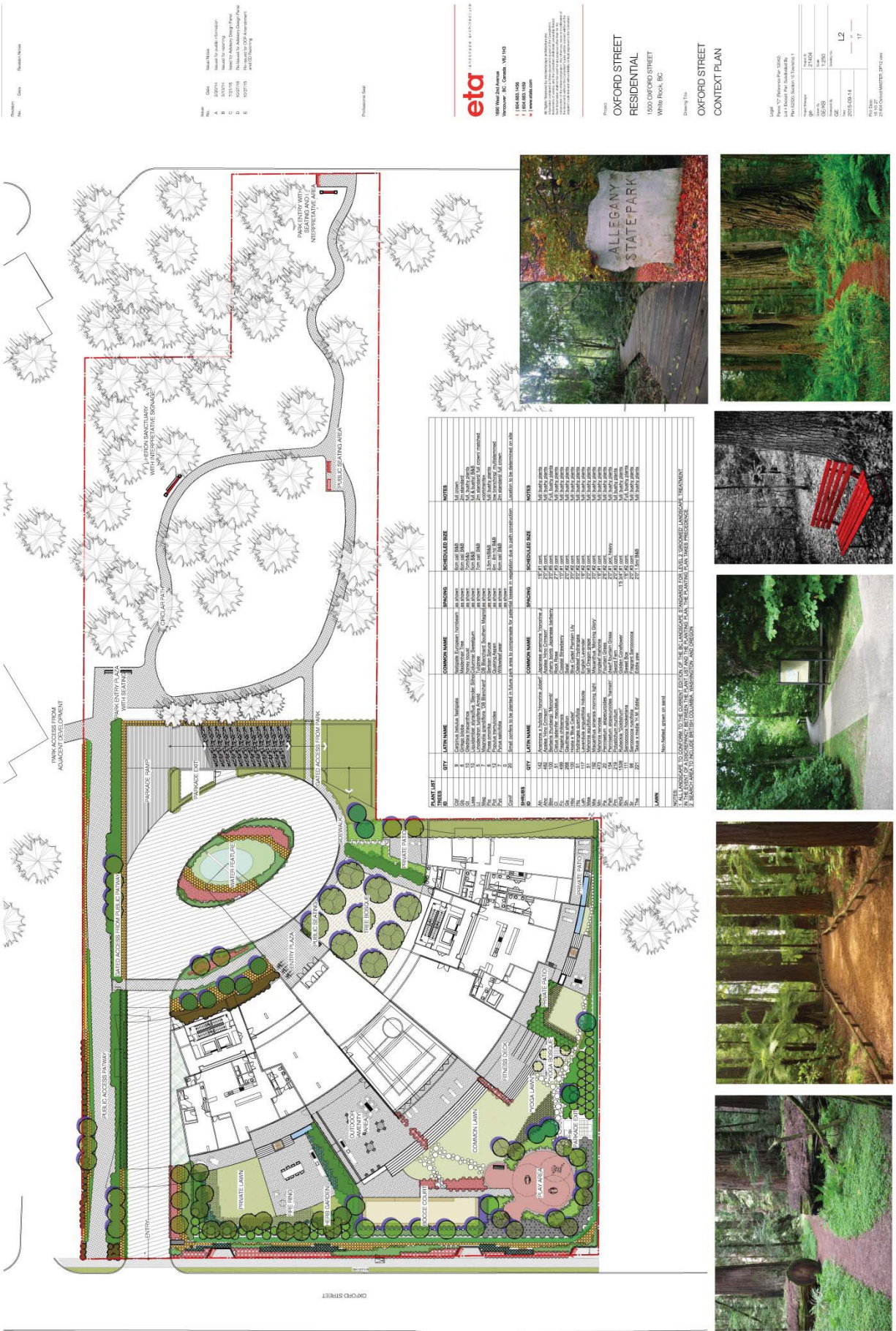
SOUTH & WEST ELEV. - TOWER B

Scale: 1/32" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC







PLANT LIST	QTY	LATIN NAME	COMMON NAME	SPACING	SCHEDULED SIZE	NOTES
01	1	Quercus macrocarpa	White Oak	10' x 10'	18" x 18"	18" x 18" container
02	1	Quercus prinus	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
03	1	Quercus rubra	Red Oak	10' x 10'	18" x 18"	18" x 18" container
04	1	Quercus sp.	White Oak	10' x 10'	18" x 18"	18" x 18" container
05	1	Quercus sp.	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
06	1	Quercus sp.	Red Oak	10' x 10'	18" x 18"	18" x 18" container
07	1	Quercus sp.	White Oak	10' x 10'	18" x 18"	18" x 18" container
08	1	Quercus sp.	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
09	1	Quercus sp.	Red Oak	10' x 10'	18" x 18"	18" x 18" container
10	1	Quercus sp.	White Oak	10' x 10'	18" x 18"	18" x 18" container
11	1	Quercus sp.	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
12	1	Quercus sp.	Red Oak	10' x 10'	18" x 18"	18" x 18" container
13	1	Quercus sp.	White Oak	10' x 10'	18" x 18"	18" x 18" container
14	1	Quercus sp.	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
15	1	Quercus sp.	Red Oak	10' x 10'	18" x 18"	18" x 18" container
16	1	Quercus sp.	White Oak	10' x 10'	18" x 18"	18" x 18" container
17	1	Quercus sp.	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
18	1	Quercus sp.	Red Oak	10' x 10'	18" x 18"	18" x 18" container
19	1	Quercus sp.	White Oak	10' x 10'	18" x 18"	18" x 18" container
20	1	Quercus sp.	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
21	1	Quercus sp.	Red Oak	10' x 10'	18" x 18"	18" x 18" container
22	1	Quercus sp.	White Oak	10' x 10'	18" x 18"	18" x 18" container
23	1	Quercus sp.	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
24	1	Quercus sp.	Red Oak	10' x 10'	18" x 18"	18" x 18" container
25	1	Quercus sp.	White Oak	10' x 10'	18" x 18"	18" x 18" container
26	1	Quercus sp.	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
27	1	Quercus sp.	Red Oak	10' x 10'	18" x 18"	18" x 18" container
28	1	Quercus sp.	White Oak	10' x 10'	18" x 18"	18" x 18" container
29	1	Quercus sp.	Pin Oak	10' x 10'	18" x 18"	18" x 18" container
30	1	Quercus sp.	Red Oak	10' x 10'	18" x 18"	18" x 18" container



THE CORPORATION OF THE
CITY OF WHITE ROCK
 CORPORATE REPORT



DATE: September 19, 2016

TO: Land Use and Planning Committee

FROM: Kurt Alberts, Acting Director of Planning and Development Services

SUBJECT: Phased Development Agreement (Elegant) – 1454 Oxford Street
 (OCP/ZON/PDA 14-009)

RECOMMENDATIONS

THAT the Land Use and Planning Committee:

1. Receive for information the corporate report dated September 19, 2016, from the Acting Director of Planning and Development Services, titled “Phased Development Agreement (Elegant) – 1454 Oxford Street (OCP/ZON/PDA 14-009);”
 2. Recommend that Council rescind first, second and third readings for “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123” and “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056;”
 3. Recommend Council give first and second reading to “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123” and “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056” as presented;
 4. Recommend that Council give first and second readings to “Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158,” and
 5. Direct staff to schedule the public hearing for:
 - “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123,”
 - “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056,” and
 - “Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158.”
-

EXECUTIVE SUMMARY

On December 7, 2015 Council gave third reading to the Official Community Plan (OCP) and Zoning Amendment Bylaws (2123 and 2056) for a 121-unit residential development in two towers (24 and 21 storeys) at 1454 Oxford Street. Third reading was given subject to servicing requirements, the granting of the treed area as parkland, and the contribution of community

amenities. As part of the review to adequately secure the amenity contributions, the City's legal counsel has recommended a Phased Development Agreement approach, consistent with Section 516 of the *Local Government Act*. Subsequently, the applicant submitted a request for a Phased Development Agreement which requires a Bylaw and a Public Hearing. As well as securing the amenity contributions of \$3.6 million, the Phased Development Agreement Bylaw sets out project construction phasing and servicing requirements.

After the Public Hearing, Council may not receive further submissions related to the proposal. The Phased Development Agreement Bylaw is new information which was not available at the time of the original Public Hearing. Accordingly a new Public Hearing should be held on the original bylaws (OCP and Zoning Amendments) concurrent with the required Public Hearing for the Phased Development Agreement Bylaw. Since Public Hearings must be held prior to third Reading, it will be necessary to rescind third reading for the subject OCP and Zoning Amendment Bylaws.

PAST PRACTICE / POLICY/LEGISLATION

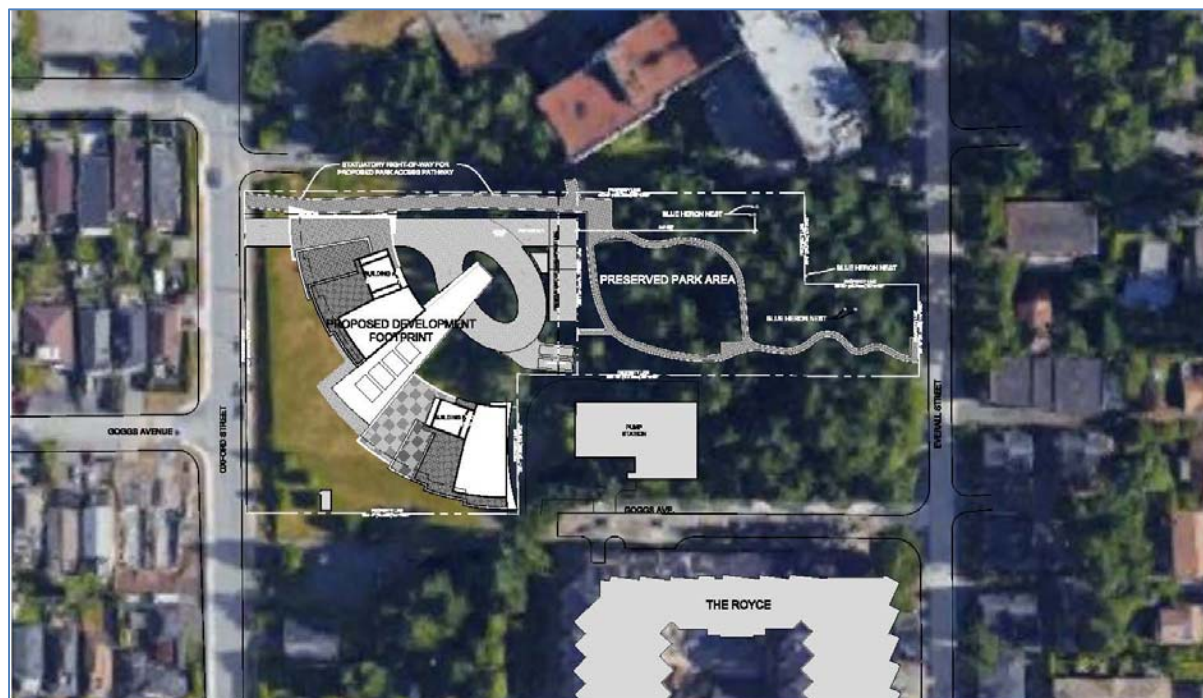
Council granted third reading to the Official Community Plan and Zoning Amendment Bylaws (2123 and 2056) on December 7, 2015, following a Public Hearing. No new information may be submitted by interested parties to Council after the close of the Hearing. Use of a Phased Development Agreement Bylaw has been deemed to be the most appropriate approach, consistent with Section 516 of the *Local Government Act*, to secure the community amenity contributions and to regulate the phasing of the project and servicing requirements. Prior to third reading a Public Hearing must be held on the Bylaw. Since the Phased Development Agreement was not part of the information available for the Hearing on the OCP and Zoning Bylaws, a new Public Hearing should be held after rescinding third readings. The Public Hearing on the Phased Development Agreement Bylaw should be held concurrently with the new Public Hearing on the OCP and Zoning Bylaws. In this way submissions can be heard on the Phased Development Agreement as it relates to the bylaws.

ANALYSIS

The property, located at 1454 Oxford Street in the Overall Neighbourhood, is approximately 2.7 acres in area and is currently undeveloped. The proposed development consists of two towers (24 and 21 storeys), with 121 residential units, on the western portion of the property. The eastern portion of the site is proposed to be dedicated to the City as parkland to retain the existing mature trees.

Location and ortho photo maps of the property are included in Appendix A. OCP Amendment Bylaw No. 2123, Zoning Amendment Bylaw No. 2056, and Phased Development Agreement Bylaw No. 2158 are attached as Appendices B, C, and D respectively.

The site plan in Figure 1 illustrates the location of the development and dedicated park area, as well as a potential layout for the public pathway.

Figure 1: Site Plan

The Official Community Plan and Zoning Amendment Bylaws for the proposed development were originally reviewed by the Land Use and Planning Committee (LUPC) on November 23, 2015. The bylaws were then given first and second readings by Council, and a Public Hearing was held on December 7, 2015. Following the Public Hearing, both bylaws were given third reading.

Third reading was subject to the satisfaction of servicing requirements, the provision of the community amenity contribution in the amount of \$3.4 million, and the dedication of the treed area as parkland. The applicants have since applied for a Phased Development Agreement to address these conditions as well as the phasing of the construction for the project.

Both the OCP and Zoning Amendment Bylaws require a minor change to reflect a correction to the description of the area breakdown between the development site and the proposed parkland. While the areas are correctly delineated on the drawings, the site and parkland areas were incorrectly labeled as 1.71 ac and 0.96 ac respectively, instead of the actual sizes of 1.75 ac and 0.92 ac. Even though the delineated areas have not changed, the applicant has offered to increase the community amenity contribution from \$3.4 million to \$3.6 million to account for the 0.02 ac (1,630 sqft) perceived reduction as a result of their labelling error. This increase in amenity contribution is reflected in the Phased Development Agreement. The area description references have been corrected in the amended subject bylaws, which are attached as Appendices B, C, and D.

The Phased Development Agreement regulates phasing for the project. The first phase includes the construction of the entire underground parkade and a 21-storey tower with 55 units, as well as the landscaping for this phase. The parkland must be dedicated to the City before a building permit can be issued. The public pathway along the north property line connecting Oxford Street and Everall Street through the parkland, will be constructed as part of phase one. Phase two will

include the second tower (24-storeys, 66 units) and the final landscaping. A copy of the phasing plan is attached hereto as Appendix E.

The Phased Development Agreement includes the following conditions:

- Dedication of the parkland
- Provision of the \$3,600,000 community amenity contribution
- Installation of one electric vehicle charging plug-in for every ten parking spaces
- Rerouting of all overhead utility wires underground on the property and on any public land adjacent to the Lands
- Submission of geotechnical and hydrogeological assessments for the proposed development, including a review of any potential impacts on the adjacent water utility property and existing wells
- Approval in Principle for a remediation plan from the Ministry of Environment and a Certificate of Compliance prior to occupancy
- Provision of an Indemnity Agreement protecting the City from any and all liability or damages arising out of or related to the presence of contaminated soil on the property
- Provision of required servicing for the development, including upgrades to the storm and sanitary sewer systems, the water system, roads and intersections, cycling infrastructure, sidewalk widening, street lighting, landscaping on the City boulevard, street trees and seating areas, and bus shelters
- Construction of the pathway along the north property line between Oxford and Overall Streets, and registration of a statutory right-of-way to ensure public access to the pathway
- Provision of fire protection measures

If the proposed bylaws move forward additional permits will then be necessary. A major development permit and a tree management permit would be required before a building permit could be issued. The development permit would regulate the form and character of the development and ensure compliance with the development permit guidelines for Significant Stands of Trees, whereas the tree management permit would deal specifically with tree protection, removal, and replacement.

BUDGET IMPLICATIONS

Approval of the proposed multi-unit residential development would result in the payment of \$485,376.98 in municipal development cost charges, based on a charge of \$4,011.38 per unit for 121 units (both phases). As the zoning amendment application was made prior to the adoption of the updated Development Cost Charges Bylaw on July 25, 2016 (with rates of \$11,253.30 per unit for a multi-unit residential use), the applicant would have until July 25, 2017 to obtain a building permit for either or both phases of the proposal, or would be subject to the updated rate.

A community amenity contribution of \$3.6 million has been proposed by the applicant. Ownership of the treed portion of the lot will be transferred to the City as parkland. A statutory right-of-way will ensure public access over the proposed pathway system.

OPTIONS

The Land Use and Planning Committee can recommend that Council:

1. Rescind, first, second and third readings of “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123,” “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056,” and “Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158;” / Give first and second readings to “Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158,” and Bylaws 2123 and 2056, and direct staff to schedule the required public hearing.
2. Defer consideration of “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123,” “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056,” and “Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158” pending revisions as identified by Council; or
3. Reject “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Thrift / Everall), 2015, No. 2123,” “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056,” and “Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158.”

Staff recommends Option 1 which is incorporated into the recommendations at the beginning of this corporate report.

CONCLUSION

Staff support the Phased Development Agreement Bylaw approach as the best method to secure the community amenity contributions. Since the Phased Development Agreement was not part of the information available at the Public Hearing on the OCP and Zoning Amendment Bylaws, a new Public Hearing on those bylaws should be scheduled concurrent with the required hearing on the Phased Development Agreement Bylaw.

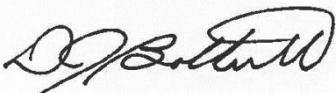
Respectfully submitted,



Kurt Alberts, MCIP, RPP
Acting Director of Planning and Development Services

Comments from the Chief Administrative Officer:

I concur with the recommendations of this corporate report.



Dan Bottrill
Chief Administrative Officer

- Appendix A: Location and Ortho Photo Maps
- Appendix B: Draft OCP Amendment Bylaw No. 2123
- Appendix C: Draft Zoning Amendment Bylaw No. 2056
- Appendix D: Draft Phased Development Agreement Bylaw No. 2158





**THE CORPORATION OF THE
CITY OF WHITE ROCK
BYLAW 2123**

A Bylaw to amend “The Corporation of The City of White Rock Official Community Plan Bylaw No. 1837, 2008”

WHEREAS pursuant to Part 26, Division 2 of the *Local Government Act* in relation to Official Community Plans, the Council of the City of White Rock is empowered to establish objectives and policies to guide decisions on planning and land use management;

AND WHEREAS a Public hearing was held in accordance with the *Local Government Act*, and notice of such Hearing has been given as required;

NOW THEREFORE the Council of the City of White Rock, in open meeting assembled, enacts as follows:

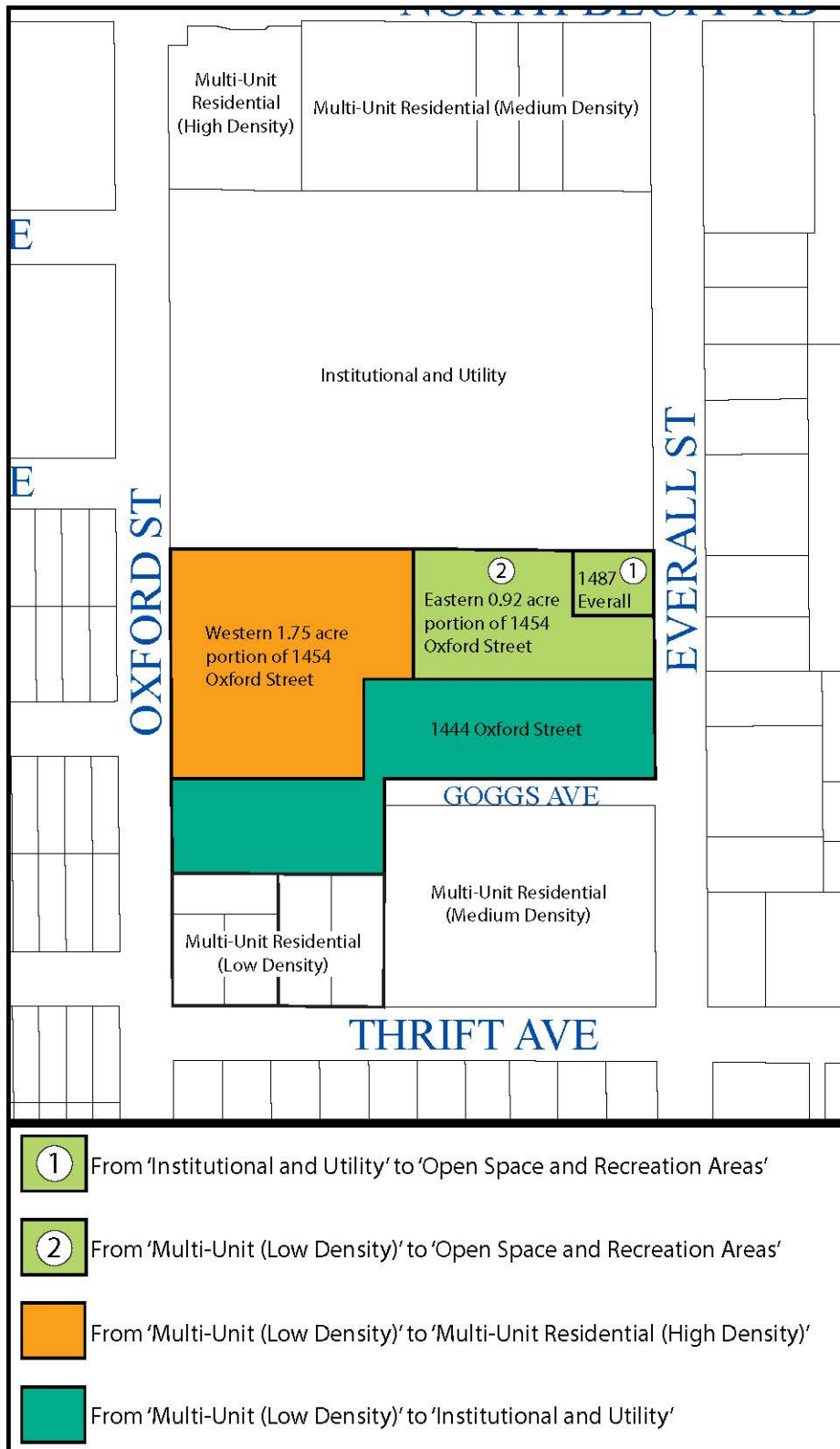
1. This Bylaw may be cited for all purposes as “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford / Everall), 2015, No. 2123”.
2. That Schedule A – Land Use Plan be amended to re-designate 1487 Everall Street to the “Open Space and Recreation Areas” designation, as shown on Schedule 1 attached herein and forming part of this Bylaw.
3. That Schedule A – Land Use Plan be amended to re-designate 1444 Oxford Street to the “Institutional and Utility” designation, as shown on Schedule 1 attached herein and forming part of this Bylaw.
4. That Schedule A – Land Use Plan be amended to re-designate the western 1.75 acre (approximate) portion of 1454 Oxford Street to the “Multi-Unit Residential (High Density)” designation, and the eastern 0.92 acre (approximate) portion of 1454 Oxford Street to the “Open Space and Recreation Areas” designation, as shown on Schedule 1 attached herein and forming part of this Bylaw.

RECEIVED 1 st and 2 nd READINGS on the	23 rd	day of	November	, 2015
A PUBLIC HEARING was held on the		day of		, 20__
RECEIVED 3 rd READING on the		day of		, 20__
RECONSIDERED AND FINALLY ADOPTED on the		day of		, 20__

MAYOR

CITY CLERK

Schedule 1



**THE CORPORATION OF THE
CITY OF WHITE ROCK
BYLAW 2056**



A Bylaw to amend the
"White Rock Zoning Bylaw, 2012, No. 2000" as amended

The CITY COUNCIL of the Corporation of the City of White Rock, in open meeting assembled, ENACTS as follows:

1. Schedule "C" of the "White Rock Zoning Bylaw, 2012, No. 2000" as amended is further amended by rezoning the western approximately 1.75 acres of the following lands:

Lot 1 Section 10 Township 1 New Westminster District Plan EPP25563
PID: 029-076-234
(1454 Oxford Street)

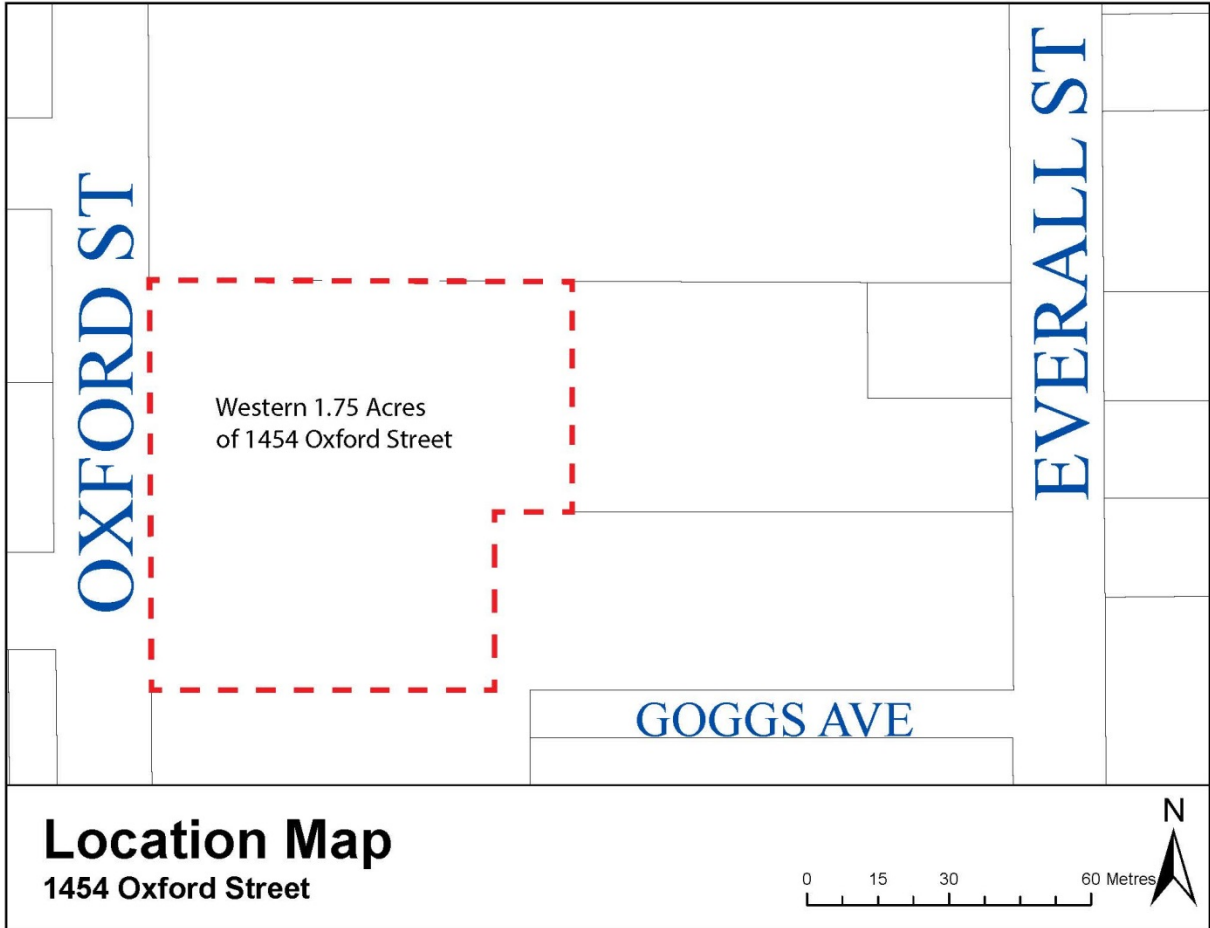
as shown on Schedule "1" attached hereto, from the 'P-1 Civic/Institutional Use Zone' to the 'CD-46 Comprehensive Development Zone'.
2. The "White Rock Zoning Bylaw, 2012, No. 2000" as amended is further amended:
 - (1) by adding to the Table of Contents for 'Schedule "B" (Comprehensive Development Zones)', Section '7.46 CD-46 Comprehensive Development Zone (1454 Oxford Street)'; and
 - (2) by adding the attached Schedule "2" to 'Schedule B (Comprehensive Development Zones)' as Section '7.46 CD-46 Comprehensive Development Zone'.
3. This Bylaw may be cited for all purposes as the "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056".

PUBLIC INFORMATION MEETING on the	9 th day of	April, 2014
RECEIVED FIRST READING on the	23 rd day of	November, 2015
RECEIVED SECOND READING on the	23 rd day of	November, 2015
PUBLIC HEARING held on the	day of	
RECEIVED THIRD READING on the	day of	
RECONSIDERED AND FINALLY ADOPTED on the	day of	

MAYOR

CITY CLERK

SCHEDULE "1"



Location Map
1454 Oxford Street

SCHEDULE “2”

7.46 CD-46 COMPREHENSIVE DEVELOPMENT ZONE

INTENT

The intent of this zone is to accommodate a 121-unit residential development on a site of approximately 7,090 square metres (1.75 acres) in area.

1. Permitted Uses:
 - (a) *multi-unit residential use*
 - (b) *accessory home occupation* use in accordance with the provisions of 5.3 and that does not involve clients directly accessing the *building*
2. Lot Coverage:
 - (a) Maximum *lot coverage* shall not exceed 36%
3. Density:
 - (a) Maximum *gross floor area* shall not exceed 32,522 square metres (350,060ft²)
 - (b) Maximum *residential floor area* shall not exceed 27,607 square metres (297,156ft²)
 - (c) Maximum number of *dwelling units* shall not exceed 121
4. Building Height:
 - (a) Tower A (shown on attached Plans) shall not exceed a *height* of 159.5 metres geodetic
 - (b) Tower B (shown on attached Plans) shall not exceed a *height* of 170.5 metres geodetic
 - (c) Section 4.13.4 does not apply to the CD-46 Zone
5. Siting Requirements:
 - (a) Minimum setbacks are as follows:

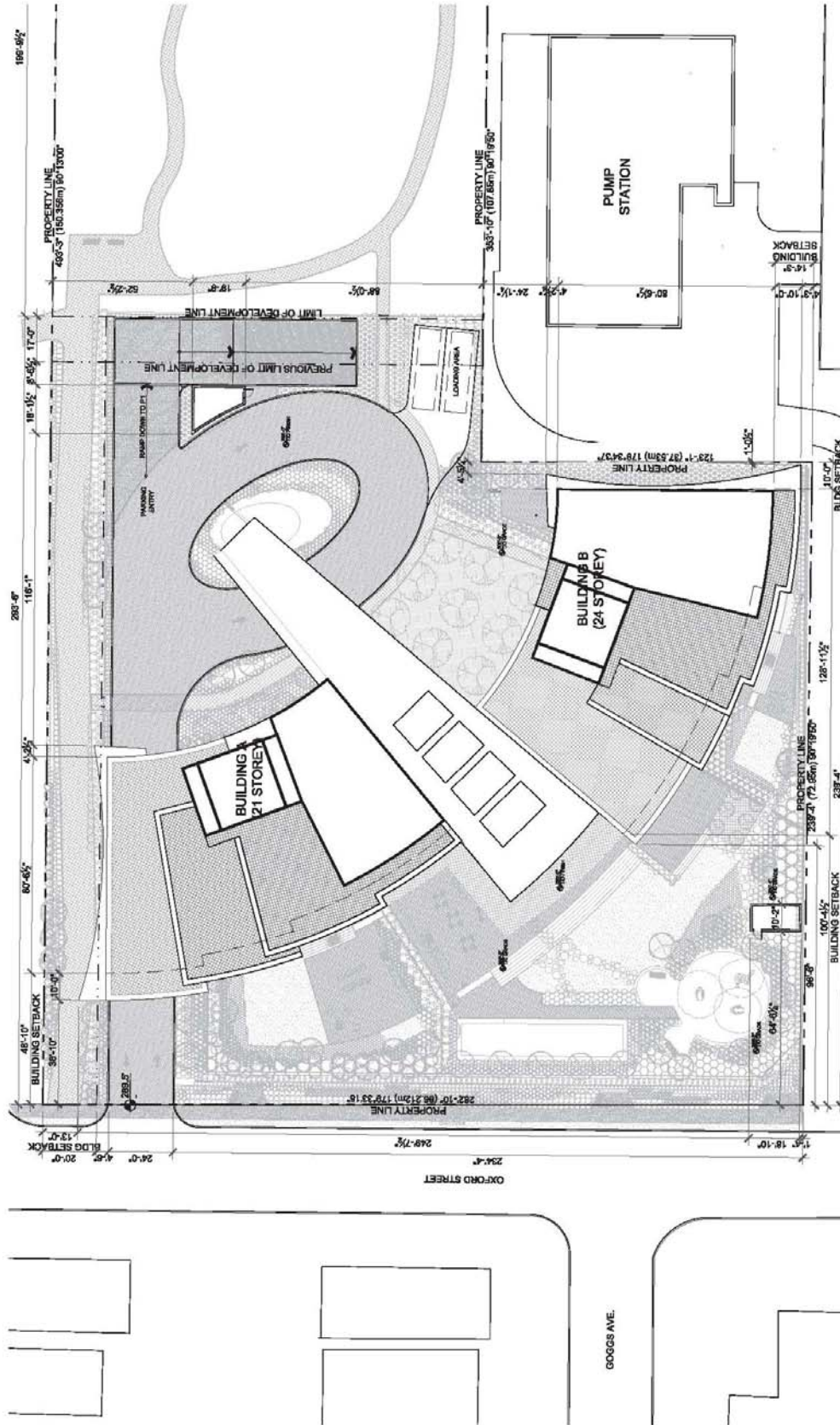
(i) Setback for buildings from front (west) lot line	= 14.8 metres
(ii) Setback for balconies from front (west) lot line	= 11.8 metres
(iii) Setback for buildings from rear (east) lot line	= 19.5 metres
(iv) Setback for buildings from north interior side lot line	= 6.1 metres
(v) Setback for slab extensions from north interior side lot line	= 3.9 metres
(vi) Setback for buildings from south interior side lot line	= 4.3 metres
(vii) Setback for balconies from south interior side lot line	= 1.2 metres
(viii) Setback for buildings from other interior side lot lines	= 3.0 metres
(ix) Setback for slab extensions from other interior side lot lines	= 0.3 metres
 - (b) Stair accesses to the underground parking shall be sited as shown on the attached Plans
6. Parking:

Parking shall be provided in accordance with Section 4.14, with a total minimum of four hundred (400) parking spaces to be provided as follows:

 - (a) A minimum of forty (40) visitor spaces are to be provided and marked as ‘visitor parking’
 - (b) A minimum of three hundred and sixty (360) spaces shall be provided to serve the residential units
 - (c) A minimum of six (6) spaces shall be provided for disabled persons parking and shall be clearly marked as per BC Building Code requirements
7. Loading:
 - (a) Two (2) loading zones shall be provided in accordance with Section 4.15

8. Bicycle Parking:
 - (a) A minimum of one hundred and twenty-two (122) Class I bicycle parking spaces shall be provided, in accordance with Section 4.16
 - (b) A minimum of twenty-five (25) Class II bicycle parking spaces shall be provided, in accordance with Section 4.16

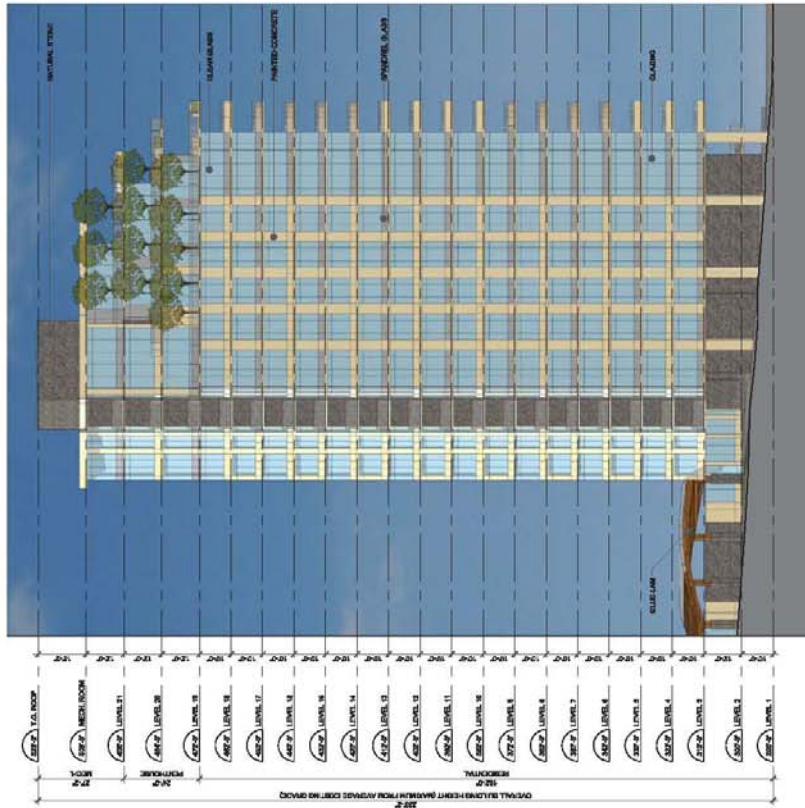
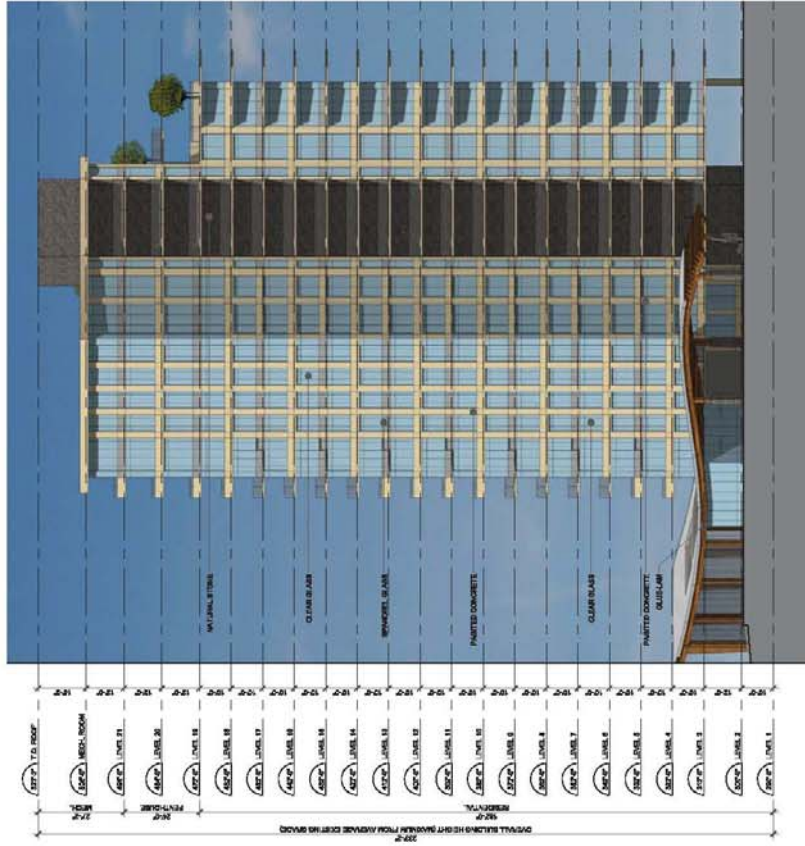
9. General:
 - (a) Development in this zone shall substantially conform to the Plans prepared by Chris Dikeakos Architects Inc. and dated October 27, 2015, that are attached hereto and on file at the City of White Rock



Rezoning Re-submission
October 27, 2015

SITE PLAN
Scale: 1/32" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC
CHRIS DIKEAKOS ARCHITECTS INC.



NORTH ELEVATION

EAST ELEVATION

elegant
REDEVELOPMENT INC.

Rezoning Re-submission

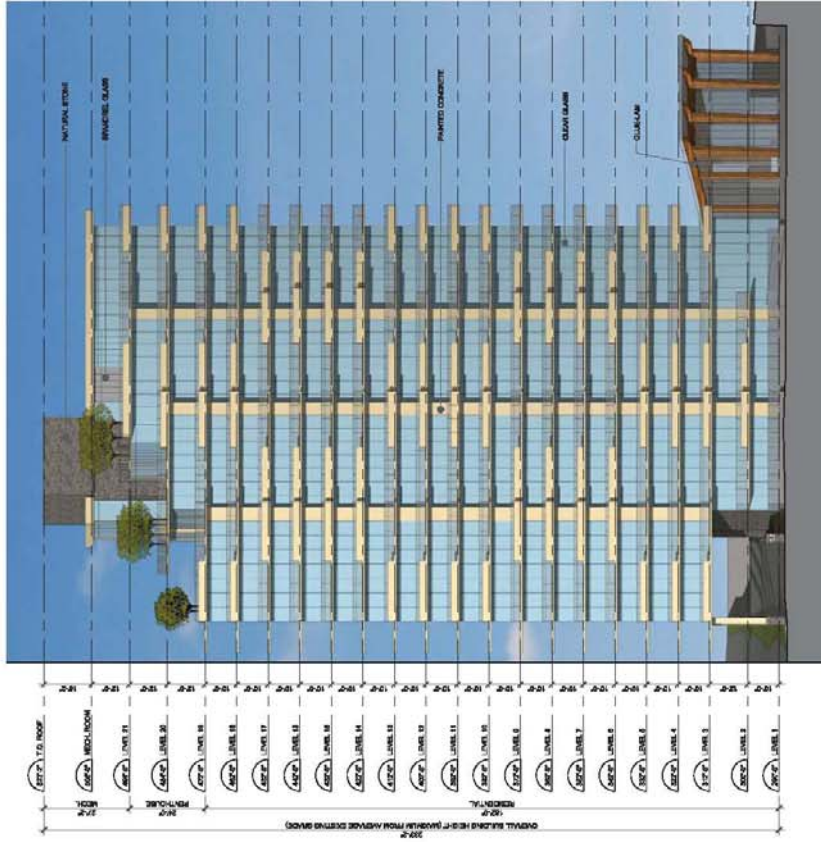
October 27, 2015

NORTH & EAST ELEV. - TOWER A

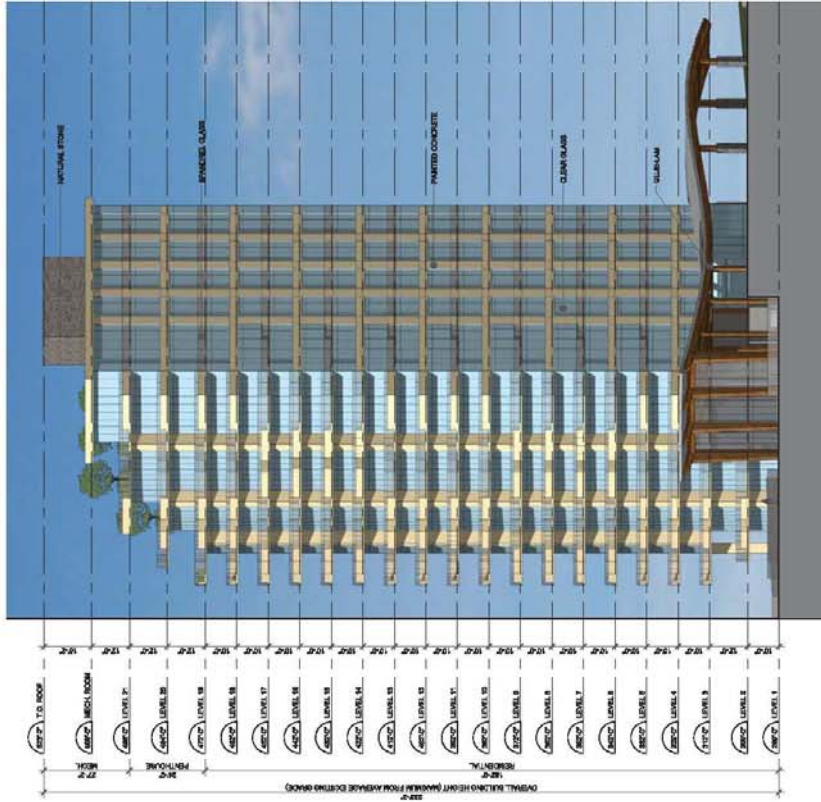
Scale: 1/32" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC

CDM
CHRIS DREAMOS
ARCHITECTS INC.



WEST ELEVATION



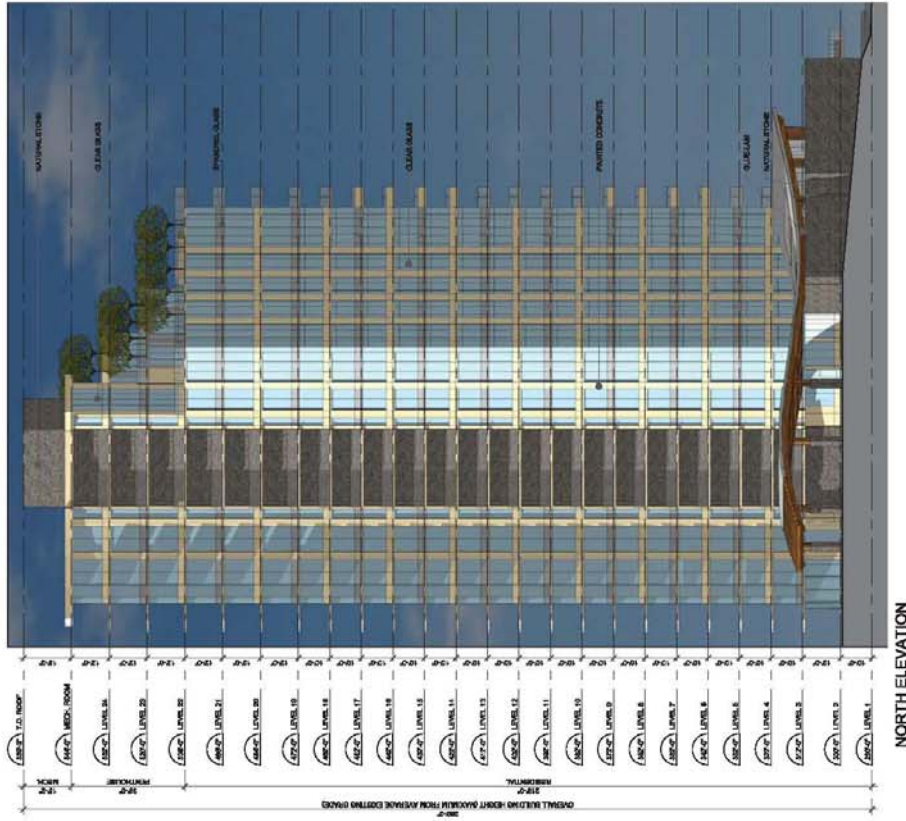
SOUTH ELEVATION

elegant DEVELOPMENT INC. | A3.01

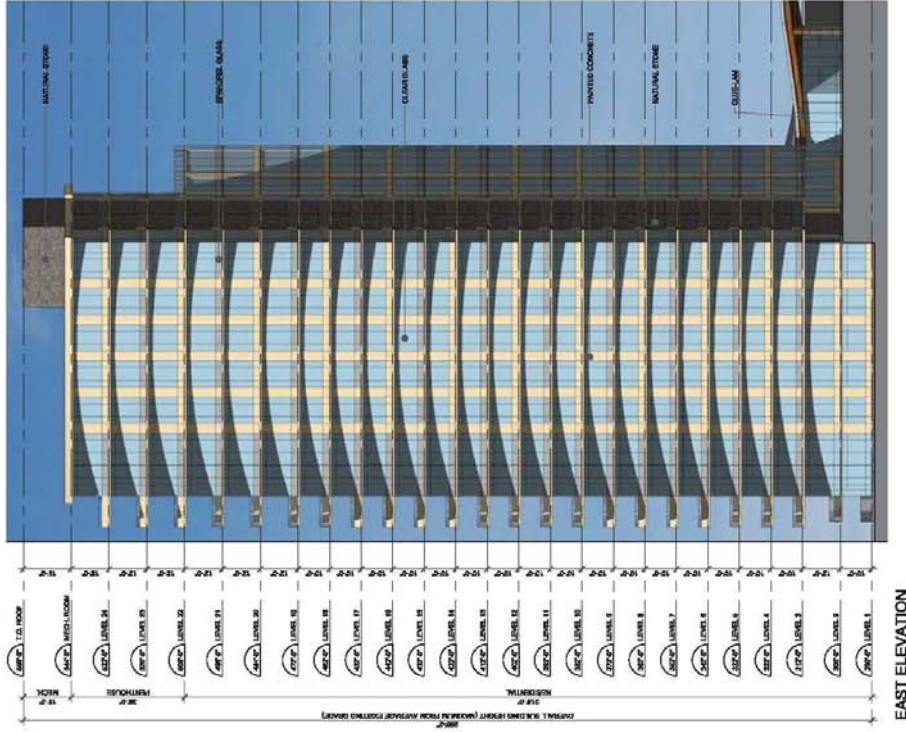
Rezoning Re-submission
October 27, 2015

SOUTH & WEST ELEV. - TOWER A
Scale: 1/32" = 1'-0"

The Oxford
1500 Oxford Street, White Rock, BC
CHRIS DIRMAKOS
ARCHITECTS INC.



NORTH ELEVATION



EAST ELEVATION



The Oxford
1500 Oxford Street, White Rock, BC
CHRIS DIMEAS
ARCHITECTS INC.

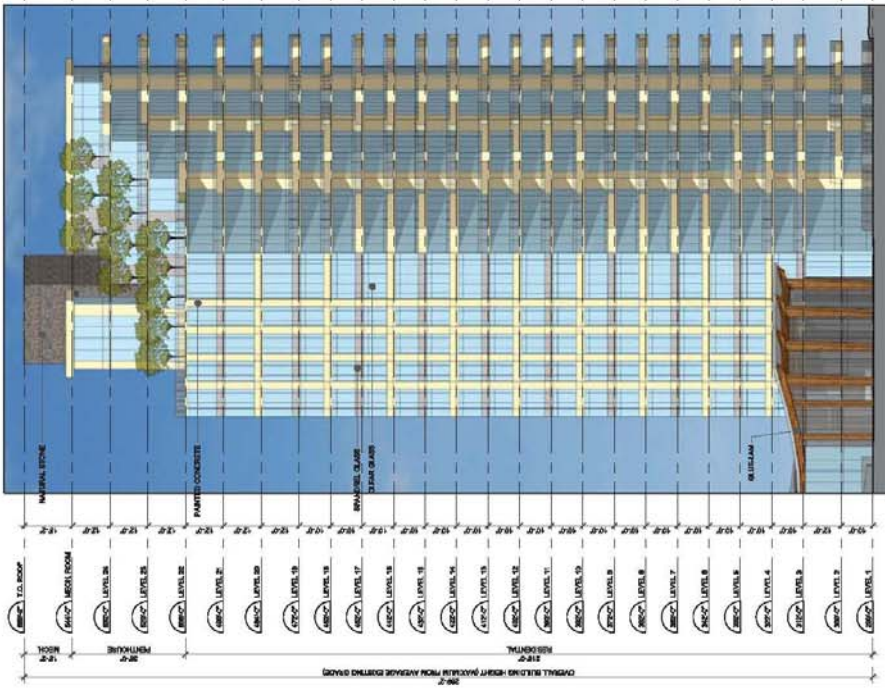
NORTH & EAST ELEV. - TOWER B

Scale: 1/32" = 1'-0"

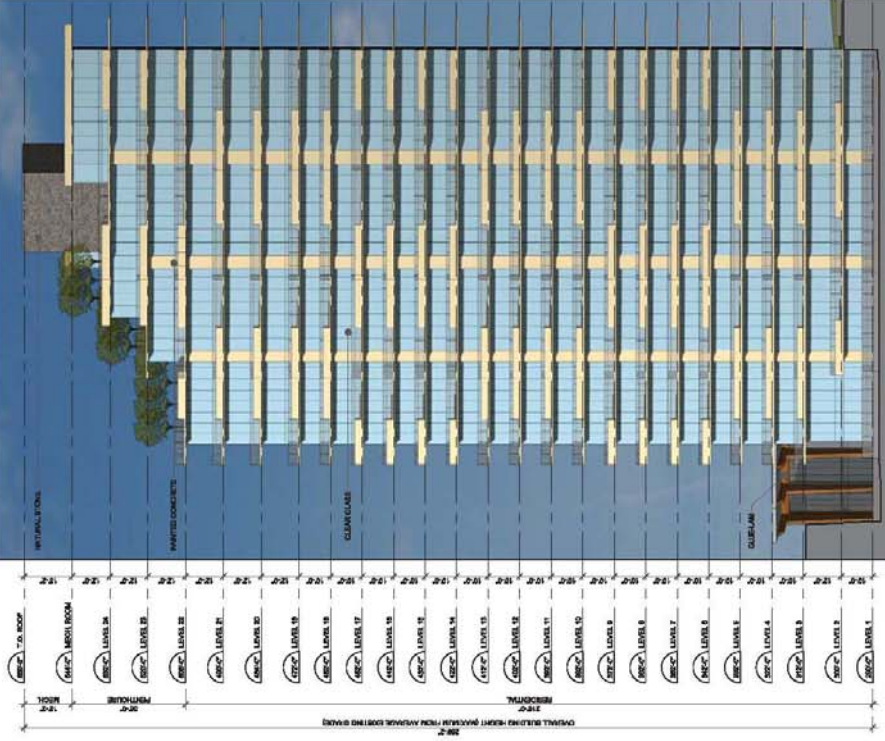
Rezoning Re-submission

October 27, 2015

elegant
REDEVELOPMENT INC. | A3.02



WEST ELEVATION



SOUTH ELEVATION

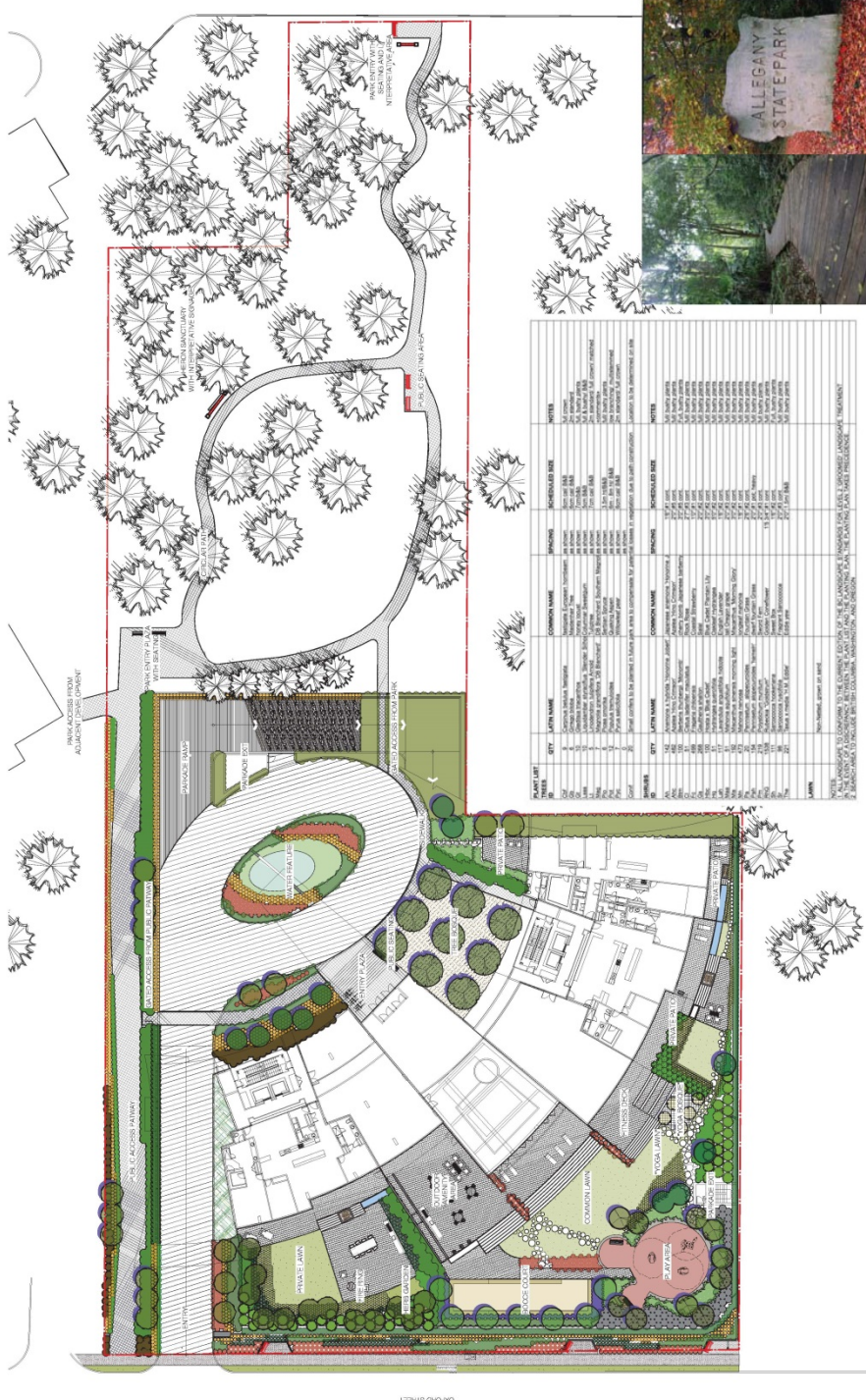
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 11/15/2018

Project: OXFORD STREET RESIDENTIAL

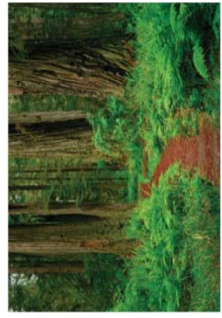
eta
 1800 West 2nd Avenue
 Vancouver, BC, Canada V6J 1H8
 Tel: 604.683.1000
 Fax: 604.683.1001
 Email: info@eta.ca

Project: OXFORD STREET RESIDENTIAL
 1800 OXFORD STREET
 White Rock, BC
 Drawing Title: OXFORD STREET CONTEXT PLAN

Scale: 1/8" = 1'-0"	Sheet: L2
Drawn: J. Smith	Checked: J. Smith
Date: 11/15/2018	Project: OXFORD STREET
Client: OXFORD STREET	Revision: 1
Drawn: J. Smith	Checked: J. Smith
Date: 11/15/2018	Project: OXFORD STREET
Client: OXFORD STREET	Revision: 1



PLANT LIST	QTY	LFYR NAME	COMMON NAME	FUNCTIONS	SCHEDULED DATE	METERS
1	1	PLANT 1
2	1	PLANT 2
3	1	PLANT 3
4	1	PLANT 4
5	1	PLANT 5
6	1	PLANT 6
7	1	PLANT 7
8	1	PLANT 8
9	1	PLANT 9
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100	1	PLANT 100



**The Corporation of the
CITY OF WHITE ROCK
Bylaw 2016, No. 2158**



A Bylaw to enter into a Phased Development Agreement between
the City of White Rock and Elegant Oxford Project Corp., Inc. No. BC1051252 and
1055731 B.C. Ltd., Inc. No. BC1055731

WHEREAS under the *Local Government Act* Council may by bylaw enter into a phased development agreement with a developer; and

WHEREAS Council published notices of its intention to enter into a phased development agreement with Elegant Oxford Project Corp., Inc. No. BC1051252 and 1055731 B.C. Ltd., Inc. No. BC1055731 and held a public hearing in respect of this bylaw in accordance with the *Local Government Act*;

NOW THEREFORE, the Council of the City of White Rock enacts as follows:

1. This Bylaw may be cited as “Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158.”
2. Attached to this bylaw as Schedule "A" and forming part of this bylaw is a copy of a Phased Development Agreement between the City of White Rock and Elegant Oxford Project Corp., Inc. No. BC1051252 and 1055731 B.C. Ltd., Inc. No. BC1055731 (the "PDA").
3. The Mayor and Clerk are authorized to execute the PDA on behalf of the City of White Rock and to execute and deliver such transfers, deeds of land, plans and other documents as are required to give effect to the PDA.

RECEIVED FIRST READING on the	day of
RECEIVED SECOND READING on the	day of
PUBLIC HEARING held on the	day of
RECEIVED THIRD READING on the	day of
RECONSIDERED AND FINALLY ADOPTED on the	day of

Mayor

City Clerk

PHASED DEVELOPMENT AGREEMENT

THIS AGREEMENT dated for reference _____, 2016

BETWEEN:

Elegant Oxford Project Corp.
Inc. No. BC1051252
110-13571 Commerce Parkway
Richmond, BC
V6V 2R2

and

1055731 B.C. Ltd., Inc. No. BC1055731
2535-3700 No. 3 Road
Richmond, BC
V6X 3X2

(the “**Developer**”)

AND

City of White Rock
15322 Buena Vista Avenue
White Rock, BC
V4B 1Y6

(the “**City**”)

GIVEN THAT:

A. The Developer is the owner of the real property legally described as:

Parcel Identifier: 029-076-234
Lot 1 Section 10 Township 1 New Westminster District Plan EPP25563

(the “Lands”);

B. The Developer has applied to the City for an amendment to the City's Zoning Bylaw by way of ‘White Rock Zoning Bylaw 2012, 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2016, No. 2056’ (the “Zoning Amendment Bylaw”) to permit the development on the Lands as generally depicted in Schedule A;

- C. The Developer has undertaken to provide certain Amenities, works and services and other things in conjunction with the development of the Lands and the parties wish to ensure that the provisions of the Zoning Amendment Bylaw continue to apply to the Lands for the period more particularly set out in this Agreement, that the Lands are developed in the phases and in the sequence identified herein, and that the Amenities and additional works and services are provided in conjunction with the development of the Lands and in the sequence provided for in this Agreement; and
- D. The Council of White Rock has, by bylaw, authorized the making of this Agreement.

NOW THEREFORE THIS AGREEMENT WITNESSES THAT, under section 516 of the Local Government Act, and in consideration of the mutual promises set out in this Agreement, the Developer and White Rock agree as follows:

PART 1 - DEFINITIONS

1.1 In this Agreement

“**Amenities**” includes the community benefits to be provided under Part 3 [Amenities and Other Terms and Conditions];

“**Approving Officer**” means the Approving Officer having jurisdiction for subdivision approval under the *Land Title Act* and *Strata Property Act*;

“**Assumption Agreement**” means an assumption agreement under Sections 10.7 through 10.11;

“**Fire Chief**” means the Fire Chief of White Rock Fire Rescue;

“**Lands**” means the parcel of land legally described in paragraph A of the preamble;

“**PDA Bylaw**” means the bylaw authorizing the entering into of this Agreement, being the ‘Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158;’

“**Phase 1**” means that Phase of the development of the Lands numbered as Phase 1 on the Phasing Plans, including a residential tower, the Public Pathway, and the underground parkade for the entire Development.

“**Phase 2**” means that Phase of the development of the Lands numbered as Phase 2 on the Phasing Plans, including a residential tower and final landscaping.

“**Phasing Plans**” means the plans attached as Schedule C that depicts the Development Phases, being Phase 1 and Phase 2.

“**Public Pathway**” means the shared pathway located along the northern twenty feet of the Development Site that is to be secured through a statutory right-of-way with a width of 6.096 metres (20 feet) in favour of the City and registered in the Land Title Office under section 218 of the *Land Title Act*, that ensures access for the public.

“**Release**” means a release or discharge sufficient to remove a charge or other interest registered against the title to land at the Land Title Office;

“**Section 219 Covenant**” means a covenant that precludes construction of a building on the Lands, other than for servicing infrastructure, until the conditions of use of buildings or land are satisfied in accordance with the covenant, which Section 219 Covenant by its terms will be released when the City has certified in writing that the conditions have been satisfied;

“**Specified Bylaw Provisions**” means any and all provisions of the Zoning Bylaw and Subdivision Bylaw that are applicable to the Lands as of the date of this Agreement, that regulate the use, density, siting, size, dimensions or location of buildings, structures or land, or the shape, dimensions and area of parcels that may be created by subdivision, and conditions that will entitle the Developer to different density regulations, as well as the subdivision and development standards set out in the Subdivision Bylaw as of the reference date of this Agreement.

“**Subdivision Bylaw**” means ‘White Rock Subdivision By-law, 1966, No. 777’ as it stands on the date of this Agreement, a copy of which is certified by the City Clerk and delivered to each of the Parties as of the reference date of this Agreement;

“**Term**” means ten (10) years from the date of adoption of the PDA Bylaw;

“**Treed Area**” means the easternmost 3,740 square metres (40,257 square feet) of the Lands so designated on Schedule B; and

“**Zoning Bylaw**” means ‘White Rock Zoning Bylaw No. 2000, 2012’ as it stands on the date of this Agreement, a copy of which is certified by the City Clerk and delivered to each of the Parties as the reference date of this Agreement.

PART 2 - PHASES

- 2.1 The phasing of the development of the Lands may proceed in two phases, in accordance with the phasing plans set out in Schedule C.
- 2.2 The works and services required under Section 3.8 shall all be completed in Phase 1.

PART 3 - AMENITIES AND OTHER TERMS AND CONDITIONS

- 3.1 The Developer agrees that it will, prior to the issuance of a development permit for a building on the Lands, dedicate the Treed Area to the City subject to the approval by the Approving Officer of a plan registrable in the Land Title Office to effect a parcel line adjustment to separate the Treed Area as a distinct parcel from the remainder of the Lands.
- 3.2 The Developer shall provide new/improve existing publicly accessible open space and/or pedestrian routes, provide outdoor public art subject to the review and advice of the City’s Public Art Advisory Committee, provide waterfront development, arts, culture, recreation or other civic facilities, streetscape enhancement, foreshore restoration, or

acquire land for the purposes of public enjoyment, as Amenities in the City for the benefit of the City residents, to a maximum value of \$3,600,000. These Amenities will be determined in the sole discretion of the City and located at sites stipulated by the City in accordance with specifications and standards stipulated by the City. The Developer agrees that the Developer has elected, in lieu of directly providing Amenities, to pay the City the sum of \$3,600,000 prior to the issuance of a development permit to allow new development on the Lands, on the understanding that the City will use the monies solely for one or more of the Amenities and in its sole discretion determine the Amenities to be provided, the location in the City, and the specifications and standards.

- 3.3 The Developer shall install at least one electric vehicle charging plug-in for every ten parking spaces.
- 3.4 The Developer shall reroute all overhead utility wires underground on the Lands and on any public land adjacent to the Lands.
- 3.5 The Developer shall complete and submit to the City, geotechnical and hydrogeological assessments for the proposed development on the Lands including a review of any potential impacts on the adjacent water utility property and existing wells, prior to issuance of a building permit on the Lands.
- 3.6 The Developer shall obtain an Approval in Principle of a remediation plan from the Ministry of Environment prior to the issuance of a building permit in respect of the Lands, and a Certificate of Compliance in respect of the Lands prior to receiving occupancy for the first phase of the project.
- 3.7 The Developer shall execute and deliver to the City an Indemnity Agreement protecting the City from any and all liability or damages arising out of or related to the presence of contaminated soil on the Lands, prior to the adoption of the PDA Bylaw.
- 3.8 The Developer shall enter and grant to the City the Servicing Covenant attached hereto as Schedule D that addresses the following required upgrades related to the project:
 - (a) analysis of storm sewer system (run City's drainage model) to determine the extent of the required upgrades;
 - (b) updated Storm Water Control Plan from the site's drainage catchment to the nearest outfall;
 - (c) storm sewer upgrades including, but not limited to, upgrades on Oxford Street as identified in the City's current Drainage Master Plan;
 - (d) interim Storm Water Control Plan to ensure there is no net increase in storm water leaving the Lands between the completion of Phase 1 and issuance of a building permit for Phase 2;
 - (e) analysis of sanitary sewer system (run City's sanitary model) to determine the extent of the required upgrades;
 - (f) new sanitary sewer along Oxford Street that connects to the City system;

- (g) analysis of water system (run City's water model) to determine the extent of the required upgrades;
- (h) upgrades to the existing water system that are necessary as a result of the development on the Lands;
- (i) road upgrades;
- (j) widened sidewalks;
- (k) landscaping on City boulevard;
- (l) street lighting;
- (m) undergrounding of all utility wires;
- (n) location of and upgrades to bus shelters;
- (o) street trees and seating areas;
- (p) intersection upgrades including traffic control;
- (q) cycling infrastructure;
- (r) road markings and signage;
- (s) statutory right-of-way to accommodate the Public Pathway, and construction of the Public Pathway, prior to receiving occupancy for the first phase of the project;
- (t) fencing between the Lands and the City's water utility property; and
- (u) other works and services required under the Subdivision Bylaw or to the satisfaction of the Director of Engineering and Municipal Operations.

3.9 The Developer shall provide the following fire protection measures within the new buildings on the Lands:

- (a) open or enclosed decks and balconies to be protected by frost-free or dry sprinkler heads;
- (b) video system to be installed that allows fire crews to view all common corridors and parking areas from a monitor in the lobby adjacent to the fire alarm control panel;
- (c) equipment to quantitatively test and confirm that Fire Department radio coverage and reception is acceptable within and from the interior to the exterior for all areas of the buildings, to be confirmed by a quantitative test provided by the Developer; and
- (d) firefighting equipment rooms on every 6th floor of the buildings for use by the Fire Department, along with equipment for each room to be approved by the Fire Chief prior to the issuance of a building permit.

PART 4 - BYLAW CHANGES

- 4.1 Changes to the definition of the Specified Bylaw Provisions can only be made by amending this Agreement.
- 4.2 Changes made during the Term to provisions of the Zoning Bylaw that fall within the definition of the Specified Bylaw Provisions will not apply to the development of the Lands, including any parcels created therefrom, unless:
- (a) the changes fall within the limits established by Section 516 of the *Local Government Act*, being:
 - (i) changes to enable the City to comply with an enactment of British Columbia or of Canada;
 - (ii) changes to comply with the order of a Court or arbitrator or another direction in respect of which the City has a legal requirement to obey;
 - (iii) changes that, in the opinion of the City, are necessary to address a hazardous condition of which the City was unaware at the time it entered into this Agreement; and
 - (iv) other changes that may be made as a result of an amendment to the Local Government Act;
 - (b) this Agreement has been terminated pursuant to Sections 7.1 or 7.2; or
 - (c) the Developer has agreed in writing that the changes apply, in accordance with Sections 4.5 through 4.7.
- 4.3 Changes made during the Term to provisions of the Subdivision Bylaw that fall within the definition of the Specified Bylaw Provisions will not apply to the development of the Lands, including any parcels created therefrom, unless:
- (a) the change is a change to standards for water, sanitary sewer, or storm sewer that are of general application across the City;
 - (b) the changes fall within the limits established by Section 516 of the Local Government Act, being:
 - (i) changes to enable the City to comply with an enactment of British Columbia or of Canada;
 - (ii) changes to comply with the order of a Court or arbitrator or another direction in respect of which the City has a legal requirement to obey;
 - (iii) changes that, in the opinion of the City, are necessary to address a hazardous condition of which the City was unaware at the time it entered into this Agreement; and
 - (iv) other changes that may be made as a result of an amendment to the Local

Government Act;

- (c) this Agreement has been terminated pursuant to Sections 7.1 or 7.2; or
 - (d) the Developer has agreed in writing that the changes apply, in accordance with Sections 4.5 through 4.7.
- 4.4 In the event of the repeal by the City of the Zoning Bylaw or the Subdivision Bylaw in its entirety, including where that bylaw is replaced by one or more bylaws under the Local Government Act, the Developer and the City agree that the Specified Bylaw Provisions continue to apply to the Lands for the balance of the term of this Agreement, despite such repeal.
- 4.5 The agreement of the Developer that changes to provisions of the Zoning Bylaw and the Subdivision Bylaw that fall within the definition of the Specified Bylaw Provisions will apply to the Lands will only be effective if it is in writing and includes the terms set out in Schedule E.
- 4.6 Following execution of the agreement that includes the terms set out at Schedule E, Sections 4.2 and 4.3 of this Agreement will continue to apply, and further or subsequent changes made by the City to its Zoning Bylaw and Subdivision Bylaw that fall within the definition of the Specified Bylaw Provisions will not apply to the development of the Lands unless the Developer agrees in writing that they apply, by way of a further agreement that includes the terms set out at Schedule E.
- 4.7 In the event of the transfer of title to a portion of the Lands, the right of consent of the transferee under Section 516 of the *Local Government Act* is limited to the lands acquired by the transferee, and the transferee shall not have any right of consent as regards lands that it has not acquired.
- 4.8 Changes made to the provisions of the Zoning Bylaw and Subdivision Bylaw that do not fall within the definition of the Specified Bylaw Provisions will apply to the development of the Lands, including any parcels created therefrom. For certainty, the interpretation of whether a Section in the Zoning Bylaw and Subdivision Bylaw is one of the Specified Bylaw Provisions is not impacted by the headings used in the Zoning Bylaw and Subdivision Bylaw.

PART 5 - AMENDMENT

- 5.1 No amendment to this Agreement shall be effective unless it is made in writing and is duly executed by the Developer and the City.
- 5.2 The City, by resolution without a new public hearing, and the Developer, may agree to “minor amendments” to this Agreement. For the purposes of this Agreement, a “minor amendment” is any amendment other than one that proposes the renewal or extension of this Agreement or changes to any of the following provisions of this Agreement:
- (a) the Lands;

- (b) the definition of the Specified Bylaw Provisions;
 - (c) the Term of this Agreement;
 - (d) the provision of this Agreement regarding what cannot constitute a minor amendment; or
 - (e) the provisions of this Agreement regarding transfer.
- 5.3 Nothing in Section 5.2 prevents the City from deciding to hold a public hearing in advance of a minor amendment to this Agreement if it so chooses.
- 5.4 A public hearing is required as a precondition to an amendment to this Agreement that is not a minor amendment.

PART 6 - TERM

- 6.1 The Term of this Agreement is ten (10) years from the date of the adoption of the PDA Bylaw, unless otherwise terminated in accordance with the provisions hereof.

PART 7 - TERMINATION

- 7.1 The parties may terminate this Agreement by mutual written agreement at any time before the transfer of a subdivided parcel within the Lands to a third party.
- 7.2 The City may, but is not obliged to, terminate this Agreement before the expiry of the Term if the Developer does not, at the time it applies for a building permit for Phase 1, also register the Servicing Covenant against the title to the Lands.
- 7.3 Sections 17.1 and 19.1 through 19.3 shall survive the termination of this Agreement.
- 7.4 The Developer and the City agree that neither party may terminate this Agreement before the expiry of the Term, except as provided in Sections 7.1 and 7.2.

PART 8 - ENFORCEMENT

- 8.1 The Developer and the City agree that the following enforcement procedures and remedies will be available if the other does not comply with any other Section hereof when required:
- (a) apart from disputes related to such matters that are referred to in Section 9.1 through 9.3, either party may commence proceedings for a declaration or to otherwise enforce against any breach, and, if successful, will be entitled to recover costs from the other on a solicitor and his own client basis;
 - (b) either party may commence proceedings for injunctive relief in connection with a breach, and, if successful, will be entitled to receive costs from the other on a solicitor and his own client basis; and
 - (c) the Developer or the City, as the case may be, will be responsible to the other for the cost, losses and damages that flow from any breach of the terms of the

Agreement by the other;

provided however that, in the event of a default in performance of any such Sections, each will give the other written notice within thirty days after it becomes aware that any default has occurred, and the other will have thirty days from the date of the written notice to correct the default.

- 8.2 The Developer covenants and agrees that expiry of the Agreement and any termination in accordance with Section 7.1 or 7.2 or otherwise, does not entitle the Developer to recover any portion of the Amenities or to seek restitution in relation thereto or in relation to any other obligation of as performed (and specifically agrees that the Specified Zoning Bylaw Provisions of this Agreement for the period prior to expiry or termination provides sufficient consideration for the Amenities) and the release and indemnity provisions under Sections 19.1 through 19.3 apply in this regard.
- 8.3 The Developer covenants and agrees it will not commence or advance a legal proceeding of any kind to seek to quash, set aside, hold invalid this Agreement, or the Zoning Amendment Bylaw, or to recover any portion of the Amenities or payment for the Amenities provided under this Agreement, or seek restitution in relation to any of the Amenities or payment for the Amenities provided under this Agreement, and if it does any of the foregoing, the City may provide this Agreement to the Court as a full and complete answer.
- 8.4 Without limitation, Sections 8.2 and 8.3 apply whether or not the Developer proceeds with any development on the Lands.
- 8.5 The Developer shall execute, deliver and register in the Land Title Office a Covenant under Section 219 of the *Land Title Act*, in the form and with the content of Schedule F, concurrently with and conditional upon the adoption of the PDA Bylaw, with the intention that this covenant shall be registered against title to the Lands in order to secure the obligations of the owner of the Lands to use and develop the Lands in accordance with the provisions of this Agreement.
- 8.6 Following termination of this Agreement development of the Lands shall continue to be governed by the Section 219 Covenants attached as Schedule D and F.

PART 9 - ARBITRATION

- 9.1 In the event of any dispute related to matters under the provisions of Part 1 [Definitions], Part 3 [Amenities and Other Terms and Conditions], Sections 10.7 through 10.10, and Schedules C and E, and any failure to reach agreement on any matter related thereto, such dispute or disagreement may be submitted by either party to and be finally settled by a single arbitrator pursuant to the *Arbitration Act* (British Columbia), provided that it is understood and agreed that:
 - (a) the Developer's ability to proceed with construction is not to be delayed while any arbitration related to any of the above matters other than Assumption Agreement terms occurs, but rather the Developer may proceed on the basis of the position it

takes on any such matter, provided it first provides security to the City by way of a clean irrevocable letter of credit securing the reasonable difference in cost of satisfying the matter according to the Developer's position and the costs of satisfying the matter according to the City's position; and

- (b) this Part 9 [Arbitration] is not intended to, nor is to be construed as, preventing the parties hereto, or either of them, from seeking relief from the courts to establish appropriate terms on which the Developer may proceed with construction pending an arbitration (i.e. regarding the scope of the dedication, obligation, Assumption Agreement terms, etc.).
- 9.2 If the parties cannot agree to a single arbitrator, then such arbitrator shall be chosen by reference to a Judge of the Supreme Court of British Columbia.
- 9.3 The parties shall share equally in the costs of:
- (a) referring the choice of an arbitrator to a Judge of the Supreme Court of British Columbia; and
 - (b) any arbitration.
- 9.4 The determination made by a single arbitrator will be final and binding upon the Developer and the City.
- 9.5 The provisions of Part 9 [Arbitration] will be deemed to be a submission to arbitration within the provisions of the *Arbitration Act* (British Columbia), except on the question of arbitrator remuneration.

PART 10 - RIGHTS AND OBLIGATIONS

- 10.1 Nothing in the Agreement in any way limits the right of the Developer to sell all, or any portion of, the Lands.
- 10.2 In the event of a sale, the "class of persons" by whom the rights set out in this Agreement may be exercised without further consent by the City, as contemplated by Section 516 of the *Local Government Act*, is any company, partnership, individual or other entity to whom the Developer transfers the Lands, or individual parcels subdivided therefrom, other than companies, partnerships, individuals or entities that are in receivership or bankruptcy. By signing this Agreement, the City gives its consent to the assignment of such rights to any party within such 'class of persons' consent, with such rights being as more particularly set out in Sections 10.4 through 10.10 inclusive of this Section 10.2.
- 10.3 A company, partnership, individual or entity that is in receivership or bankruptcy may only exercise the rights set out in this Agreement if it first obtains the consent of the City to the assignment of such rights.
- 10.4 Further to Sections 503 and 516 of the *Local Government Act*, the terms of this Agreement are binding on all persons who acquire an interest in the land affected by this Agreement, with such obligations being as more particularly set out in Sections 10.5 through 10.10 inclusive of this Part 10.

- 10.5 In the event of a transfer of the whole of the Lands to a party within the “class of persons” referenced in Section 10.2, then:
- (a) this Agreement is, effective immediately upon such transfer, assigned to the transferee such as to be a Phased Development Agreement between the City of the transferee, and enforceable as between the City and the transferee;
 - (b) the obligations of the Developer to the City under this Agreement (as compared to the obligations of the transferee to the City) will cease if, but only if, the Developer provides the City with an acknowledgement signed by the transferee that the transferee assumes the obligations of the Developer under this Agreement; and
 - (c) notwithstanding Subsection 10.5(b), the Developer will not be released as regards any breach of this Agreement that occurred while the Developer was the owner of or had an interest in the Lands, unless the City provides the Developer with a release to that effect.
- 10.6 In the event of a transfer of any subdivided portion of the Lands:
- (a) the transferee shall have all right, title, benefit, interest, privilege and advantage of the Developer further to Part 4 [Bylaw Changes] of this Agreement in respect of the portion of the Lands transferred to the transferee, but only in respect of that portion of the Lands transferred; and
 - (b) for greater certainty, the agreement of the transferee is not and will not be required under Part 4 [Bylaw Changes] of this Agreement on the issue of whether a change made to the Specified Bylaw Provisions is applicable to the development of lands other than the portion of the Lands transferred to the transferee;
 - (c) subject to Section 10.8, the transferee:
 - (i) shall not have any rights under any provision of this Agreement other than those in Part 4 [Bylaw Changes], as against either the Developer or the City; and
 - (ii) notwithstanding Subsection 10.6(c)(i), the transferee shall have no rights, or remedies against either the Developer or the City, in the event of the termination of this Agreement further to the provisions hereof.
- 10.7 Unless an Assumption Agreement is entered into between the City, the Developer and the transferee, a transfer of a subdivided portion of the Lands does not in any way affect:
- (a) the rights and obligations of the City as against the Developer (as compared to the transferee) under this Agreement;
 - (b) the rights and obligations of the Developer (as compared to the transferee) as against the City under this Agreement; or
 - (c) the City’s right to terminate this Agreement (and by doing so terminate the rights of the transferee) under Section 7.2 of this Agreement.

- 10.8 An Assumption Agreement under Section 10.7, entered into between the City, the Developer and the transferee, can provide that some or all of the rights and obligations of the Developer to the City under this Agreement are transferred to the transferee and cease to be rights or obligations of the Developer, as set out in the Assumption Agreement.
- 10.9 Unless otherwise provided for in an Assumption Agreement under Sections 10.7 and 10.8, the obligation of the transferee in respect of a subdivided portion of the Lands includes an obligation to:
- (a) cooperate fully and promptly execute all documentation that the Developer may require; and
 - (b) provide all authorizations, access and information that the Developer may require to facilitate or enable the performance and discharge by the Developer of its rights and obligations under this Agreement.
- 10.10 In the event that a transferee transfers all or any part of the transferee's land to a subsequent transferee, the respective rights and obligations of the transferee and the subsequent transferee in respect of such part of the transferee's land, will, insofar as the matters dealt with in Sections 10.6 through 10.9 are concerned, be on the basis as set out in those Sections.
- 10.11 The City will not act unreasonably in deciding whether to enter into an Assumption Agreement, including considering whether its interests are prejudiced in a substantial practical way.

PART 11 - BINDING EFFECT AND STATUTORY APPROVAL

- 11.1 This Agreement shall, subject to Part 10 [Rights and Obligations], enure to the benefit of and be binding upon the parties hereto, and their respective successors and permitted assigns.
- 11.2 This Agreement does not restrict any discretion of the City's Council or officials under its or their statutory powers, apart from the restrictions expressly provided for herein and as provided for at Section 516 of the *Local Government Act*.
- 11.3 All obligations of the Developer hereunder are subject to the Developer being able to obtain all bylaw and statutorily required approvals therefor.

PART 12 - FURTHER ACTS

- 12.1 The Developer and the City shall do all further acts as may be necessary for carrying out this Agreement, including without limitation execution of all required documentation and alterations required to achieve registration at the Land Title Office.

PART 13 - NO OTHER AGREEMENTS

- 13.1 This Agreement is the entire agreement between the parties regarding its subject. It is

mutually understood, acknowledged and agreed by the parties that the City has made no representations, covenants, warranties, guarantees, promises or agreements (oral or otherwise) with the Developer other than those contained in this Agreement. For certainty, the parties also acknowledge and agree that they have also entered into covenant agreements and statutory right of way agreements.

PART 14 - TIME OF THE ESSENCE

14.1 Time is of the essence of this Agreement

PART 15 - FORCE MAJEURE

15.1 All obligations of the parties shall be suspended so long as the performance of such obligation is prevented, in whole or in part, by reason of labour dispute, fire, act of God, unusual delay by common carriers, earthquake, act of the elements, riot, civil commotion or inability to obtain necessary materials on the open market, and the period in which any party is required to perform any such obligation is extended for the period of such suspension. The impact of the Developer's financial circumstances upon the Developer's ability to perform this Agreement does not suspend the Developer's obligations under this Agreement. This provision does not extend the Term.

PART 16 - NO WAIVER

16.1 No provision of this Agreement is to be considered to have been waived by a party unless the waiver is expressed in writing by the party. The waiver by a party of any breach by another party of any provision is not to be construed as to constitute a waiver of any further or other breach.

PART 17 - SEVERABILITY

17.1 If any part of this Agreement other than Part 4 [Bylaw Changes] is held to be invalid, illegal or unenforceable by a Court having the jurisdiction to do so, that part is to be considered to have been severed from the rest of this Agreement and the rest of this Agreement remains in force unaffected by that holding or by the severance of that part. In the event that Part E is held to be invalid, illegal or unenforceable by a Court having jurisdiction to do so, such a holding shall not limit such nonconforming use protection as has accrued to the Developer or transferee under Section 528 of the *Local Government Act* in connection with the subdivision and development of the Lands in keeping with the Zoning Amendment Bylaw, including by way of the doctrine of "commitment to use", nor the application of the law related to unjust enrichment.

PART 18 - INTERPRETATION

18.1 In this Agreement:

- (a) the word "including" when following any general term or statement is not to be construed as limiting the general term or statement to the specific items or matters set forth or to similar terms or matters but rather as permitting it to refer to other items or matters that could reasonably fall within its scope;

- (b) a reference to currency means Canadian currency;
- (c) a reference to a statute includes every regulation made pursuant thereto, all amendments to the statute or to any such regulation in force from time to time and any statute or regulation that supplements or supersedes such statute or any such regulation;
- (d) a reference to time or date is to the local time or date in White Rock, British Columbia;
- (e) a word importing the masculine gender includes the feminine or neuter, and a word importing the singular includes the plural and vice versa;
- (f) a reference to approval, authorization, consent, designation, waiver or notice means written approval, authorization, consent, designation, waiver or notice;
- (g) a reference to a Part or Section means a Part or Section of this Agreement, unless a specific reference is provided to a statute; and
- (h) the headings and captions are for convenience only and do not form part of this Agreement and will not be used to interpret, define or limit the scope, extent or intent of this Agreement or any of its provisions.

18.2 This Agreement is to be construed in accordance with and governed by the laws applicable in the Province of British Columbia.

PART 19 - INDEMNITY AND RELEASE

- 19.1 The Developer shall indemnify and keep indemnified the City from any and all claims, causes of action, suits, demands, fines, penalties, costs, deprivation, expenses or legal fees whatsoever, whether based in law or equity, whether known or unknown, which anyone has or may have against the City or which the City incurs as a result of any loss, damage or injury, including economic loss or deprivation, arising out of or connected with or any breach by the Developer of this Agreement.
- 19.2 The Developer hereby releases, saves harmless and forever discharges the City of and from any claims, causes of action, suits, demands, fines, penalties, costs, deprivation, expenses or legal fees whatsoever which the Developer can or may have against the City, whether based in law or equity, whether known or unknown, for any loss, damage or injury, including economic loss or deprivation, that the Developer may sustain or suffer arising out of or connected with this Agreement, including the restrictions and requirements of this Agreement, the provisions of the Amenities and the development of the Lands as contemplated under this Agreement, or any breach by the Developer of any covenant in this Agreement, save and except as a result of any breach by the City of this Agreement.
- 19.3 The indemnity and release provisions of Part 19 [Indemnity and Release] shall survive the expiry or termination of this Agreement.

PART 20 - NOTICE

20.1 A notice, demand, statement, request or other evidence required or permitted to be given hereunder must be written and will be sufficiently given if delivered in person or transmitted by facsimile addressed as follows:

(a) if to the Developer:

Elegant Oxford Project Corp.
Inc. No. BC1051252
110-13571 Commerce Parkway
Richmond, BC V6V 2R2

Attention: Jay Minhas

With a copy to:

Pryke Lambert Leathley Russell LLP
Suite 500 – North Tower, 5811 Cooney Road
Richmond, BC V6X 3M1

Attention: Thomas Russell

AND

1055731 BC Ltd.
2535-3700 No. 3 Road
Richmond, BC V6X 3X2

Attention: Jie (Stephanie) Hua

With a copy to:

Gowling WLG (Canada) LLP
550 Burrard Street, Suite 2300, Bentall 5
Vancouver, BC V6C 2B5

Attention: Jack M. Yong

(b) if to the City:

City of White Rock
15322 Buena Vista Avenue
White Rock, BC V4B 1Y6

Attention: Dan Bottrill

With a copy to:

Lidstone & Company
128 West Pender Street, Suite 1300
Vancouver, BC V6B 1R8

Attention: Don Lidstone, Q.C.

and a party at any time may give notice to the others of a change of address after which the address so specified will be considered to be the address of the party who gave the notice. Any notice, demand, statement, request or other evidence delivered in person will be considered to have been given at the time of personal delivery and any notice, demand, statement, request or other evidence transmitted by facsimile will be considered to have been given to the party to whom it is addressed on the next business day following the date of such transmission.

PART 21 - EXECUTION

21.1 This agreement may be executed in counterparts, and such counterparts together shall constitute a single instrument.

PART 22 - COSTS

22.1 Every obligation of the Developer under this Agreement must be satisfied by the Developer at its sole cost.

PART 23 - SCHEDULES

23.1 The following schedules are annexed to and form part of this Agreement:

- Schedule A – CD-46 Zone
- Schedule B – Treed Area
- Schedule C – Phasing Plan
- Schedule D – Development Servicing Covenant
- Schedule E – Form for Agreement to Bylaw Changes
- Schedule F – Enforcement Covenant

IN WITNESS WHEREOF the Parties have executed this Agreement as of the date first written above.

ELEGANT OXFORD PROJECT CORP.

CITY OF WHITE ROCK

Per: _____
Authorized Signatory

Per: _____

Per: _____
Authorized Signatory

Per: _____

1055731 B.C. LTD.

Per: _____
Authorized Signatory

Per: _____
Authorized Signatory

SCHEDULE A CD-46 ZONE

7.46 CD-46 COMPREHENSIVE DEVELOPMENT ZONE

INTENT

The intent of this zone is to accommodate a 121-unit residential development on a site of approximately 7,090 square metres (1.75 acres) in area.

1. Permitted Uses:
 - (a) *multi-unit residential use*
 - (b) *accessory home occupation* use in accordance with the provisions of 5.3 and that does not involve clients directly accessing the *building*
2. Lot Coverage:
 - (a) Maximum *lot coverage* shall not exceed 36%
3. Density:
 - (a) Maximum *gross floor area* shall not exceed 32,522 square metres (350,060ft²)
 - (b) Maximum *residential floor area* shall not exceed 27,607 square metres (297,156ft²)
 - (c) Maximum number of *dwelling units* shall not exceed 121
4. Building Height:
 - (a) Tower A (shown on attached Plans) shall not exceed a *height* of 159.5 metres geodetic
 - (b) Tower B (shown on attached Plans) shall not exceed a *height* of 170.5 metres geodetic
 - (c) Section 4.13.4 does not apply to the CD-46 Zone
5. Siting Requirements:
 - (a) Minimum setbacks are as follows:

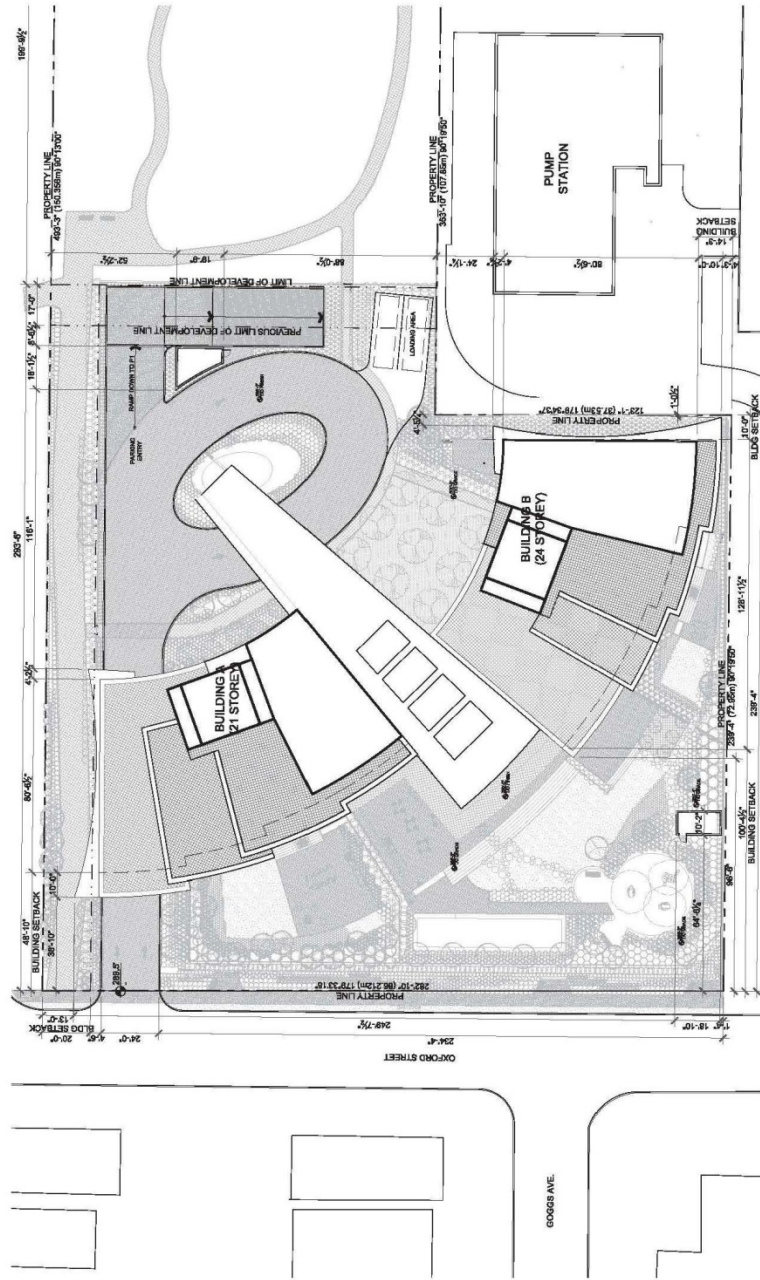
(i) Setback for buildings from front (west) lot line	= 14.8 metres
(ii) Setback for balconies from front (west) lot line	= 11.8 metres
(iii) Setback for buildings from rear (east) lot line	= 19.5 metres
(iv) Setback for buildings from north interior side lot line	= 6.1 metres
(v) Setback for slab extensions from north interior side lot line	= 3.9 metres
(vi) Setback for buildings from south interior side lot line	= 4.3 metres
(vii) Setback for balconies from south interior side lot line	= 1.2 metres
(viii) Setback for buildings from other interior side lot lines	= 3.0 metres
(ix) Setback for slab extensions from other interior side lot lines	= 0.3 metres
 - (b) Stair accesses to the underground parking shall be sited as shown on the attached Plans
6. Parking:

Parking shall be provided in accordance with Section 4.14, with a total minimum of four hundred (400) parking spaces to be provided as follows:

 - (a) A minimum of forty (40) visitor spaces are to be provided and marked as 'visitor parking'
 - (b) A minimum of three hundred and sixty (360) spaces shall be provided to serve the residential units
 - (c) A minimum of six (6) spaces shall be provided for disabled persons parking and shall be clearly marked as per BC Building Code requirements
7. Loading:
 - (a) Two (2) loading zones shall be provided in accordance with Section 4.15

8. Bicycle Parking:
 - (a) A minimum of one hundred and twenty-two (122) Class I bicycle parking spaces shall be provided, in accordance with Section 4.16
 - (b) A minimum of twenty-five (25) Class II bicycle parking spaces shall be provided, in accordance with Section 4.16

9. General:
 - (a) Development in this zone shall substantially conform to the Plans prepared by Chris Dikeakos Architects Inc. and dated October 27, 2015, that are attached hereto and on file at the City of White Rock

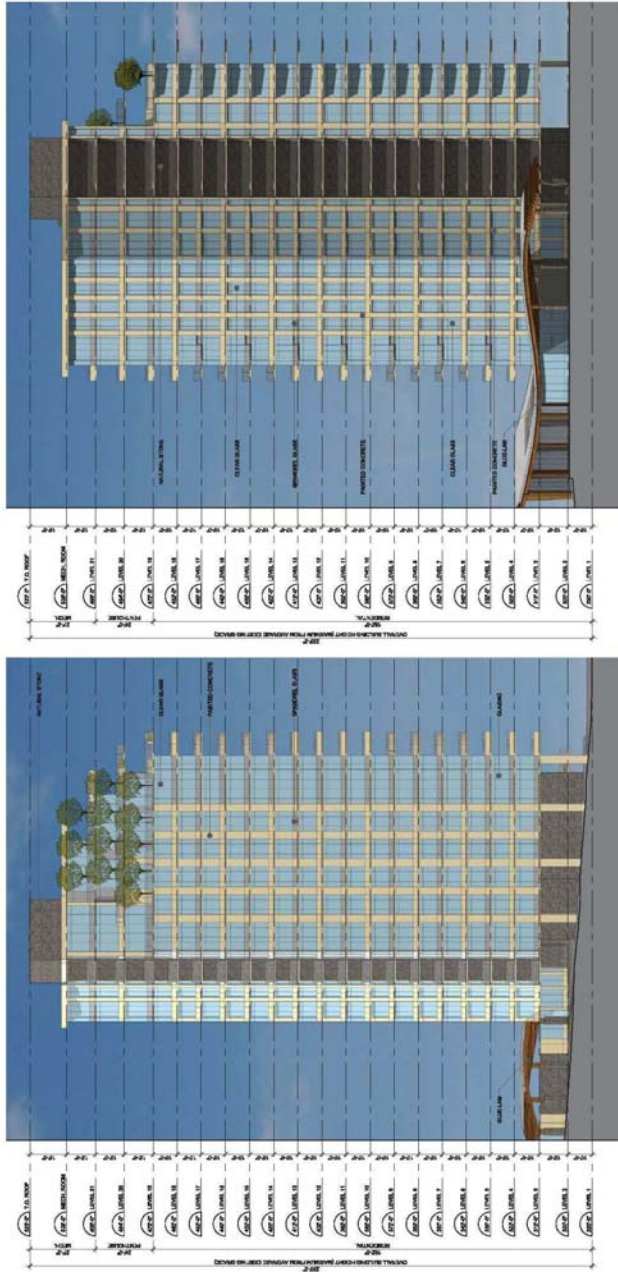



The Oxford
 1500 Oxford Street, White Rock, BC
 CURIA REYNOLDS ARCHITECTS INC.

SITE PLAN
 Scale: 1/32" = 1'-0"

Rezoning Re-submission
 October 27, 2015


elegant | A1.03
 DEVELOPMENT INC.



EAST ELEVATION

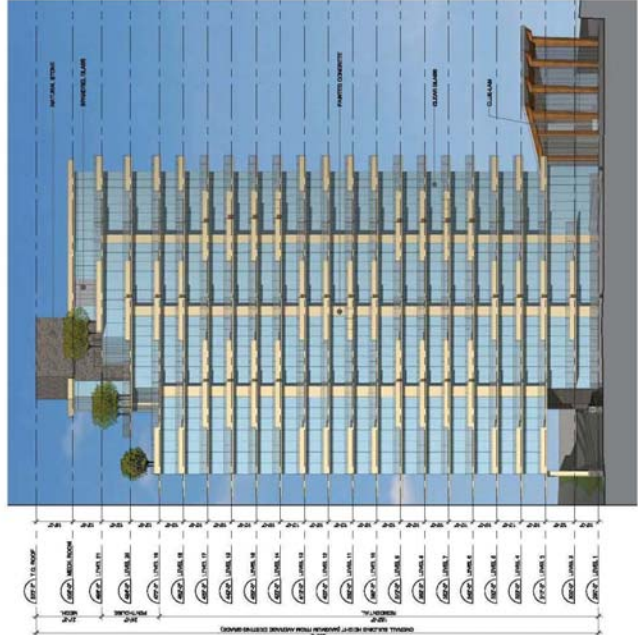
NORTH ELEVATION


The Oxford
 1500 Oxford Street, White Rock, BC
 ARCHITECTS INC.

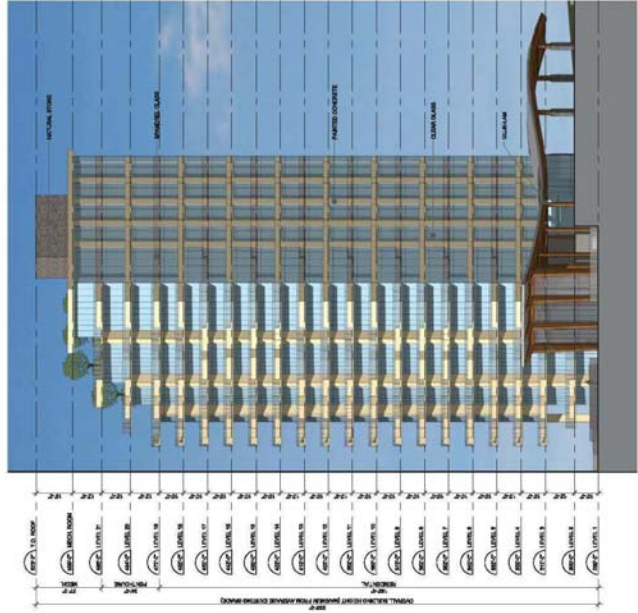
NORTH & EAST ELEV. - TOWER A
 Scale: 1/32" = 1'-0"

Rezoning Re-submission
 October 27, 2015


A3.00



WEST ELEVATION



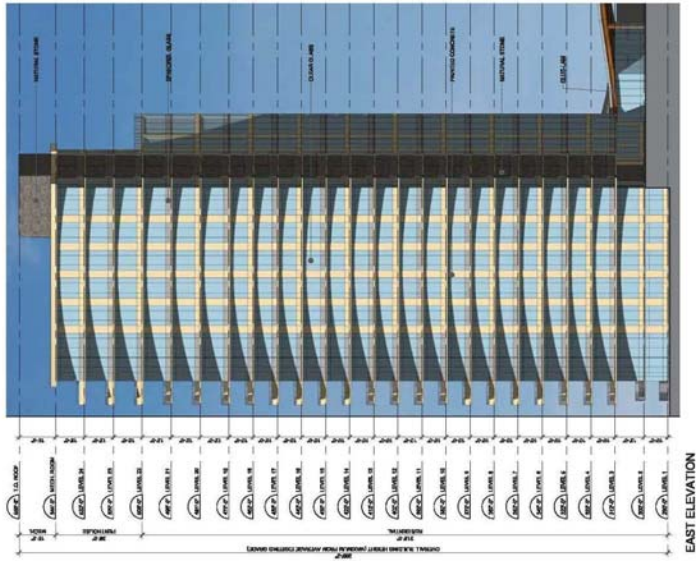
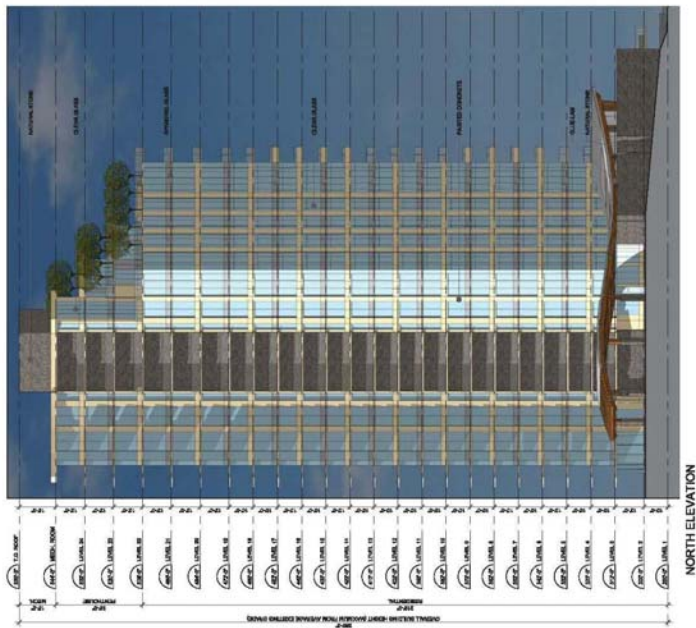
SOUTH ELEVATION


The Oxford
 1500 Oxford Street, White Rock, BC
 ARCHITECTS INC.

SOUTH & WEST ELEV. - TOWER A
 Scale: 1/32" = 1'-0"

Resoning Re-submission
 October 27, 2015

elegant DEVELOPMENT INC. | **A3.01**





The Oxford
Group Inc.
Architects Inc.

1500 Oxford Street, White Rock, BC

NORTH & EAST ELEV. - TOWER B

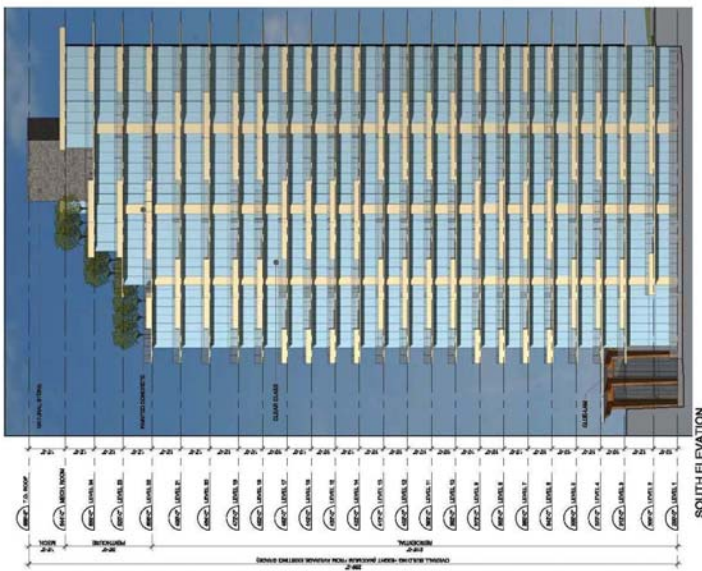
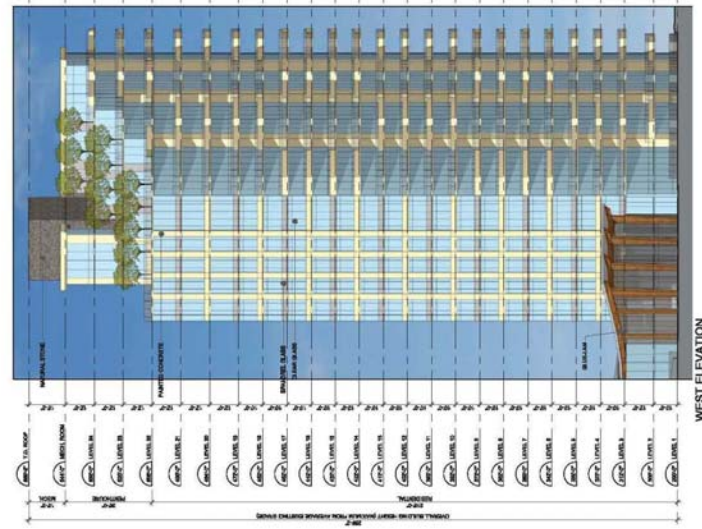
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Res zoning Re-submission

October 27, 2015



A3.02




The Oxford
 ARCHITECTURE INC.
 1500 Oxford Street, White Rock, BC

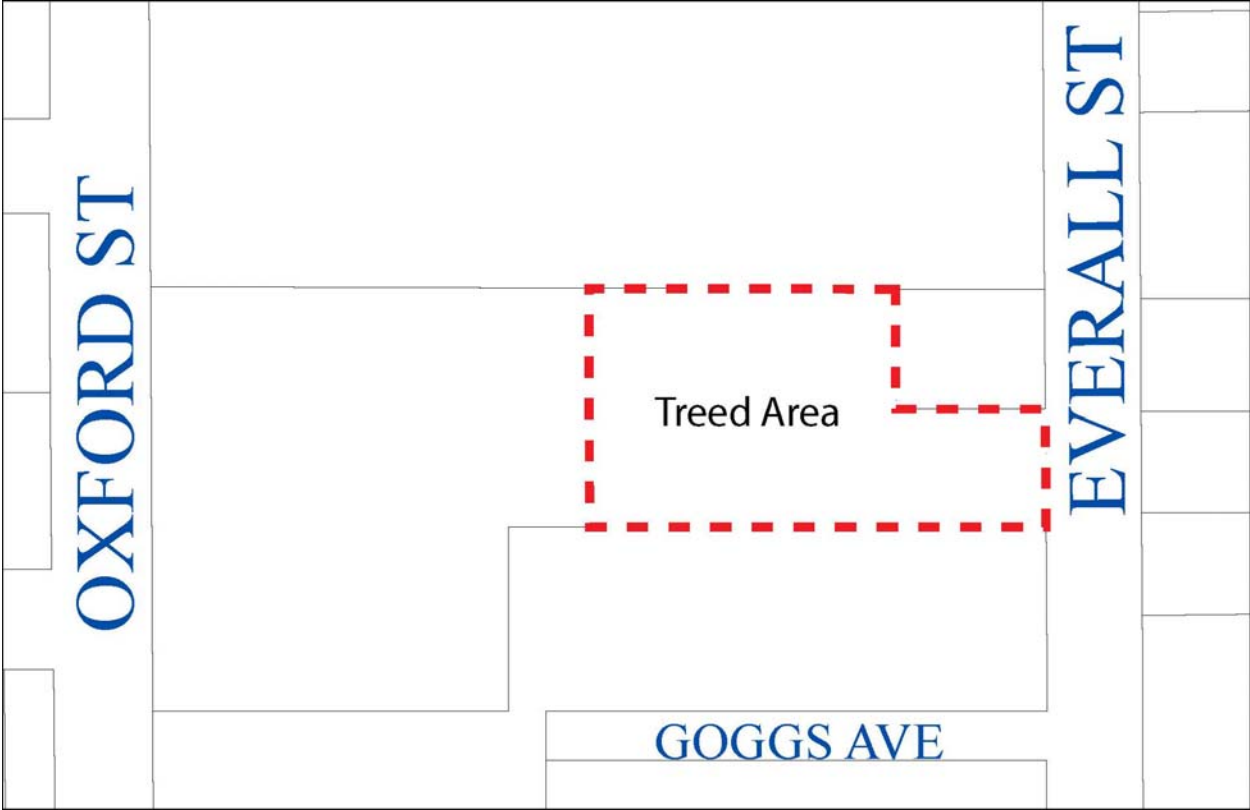
SOUTH & WEST ELEV. - TOWER B
 Scale: 1/32" = 1'-0"

Rezoning Re-submission
 October 27, 2015


elegant | **A3.03**

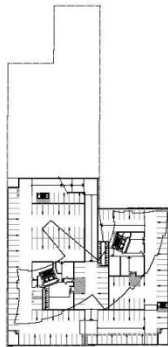


**SCHEDULE B
TREED AREA**



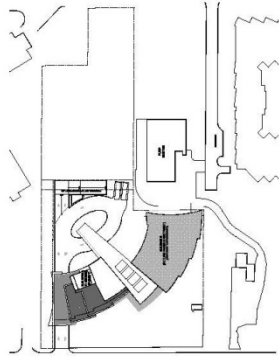
SCHEDULE C PHASING PLANS

PHASE 1



PHASE 1: BELOW GRADE

DURING THE CONSTRUCTION OF PHASE 1, THE ENTIRE BELOW GRADE PARKING STRUCTURE WILL BE BUILT UP TO GRADE. THIS INCLUDES CORE AND STRUCTURE FOR BOTH BUILDINGS. THE BELOW-GRADE PORTION OF BUILDING B WILL ALSO BE BUILT UP TO GRADE. THE PORTION OF BUILDING B THAT IS TEMPORARILY TURFED UNTIL THE CONSTRUCTION OF PHASE 2 COMMENCES.



PHASE 1: ABOVE GRADE

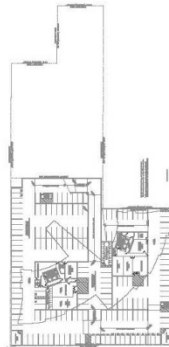
THE ENTIRE BUILDING A WILL BE BUILT DURING PHASE ONE INCLUDING THE SURROUNDING LANDSCAPING, ROAD & PARKADE ENTRY. THE BUILDING FOOTPRINT OF BUILDING B WILL BE TEMPORARILY TURFED UNTIL THE COMMENCEMENT OF THE CONSTRUCTION OF PHASE 2.



TOWER A

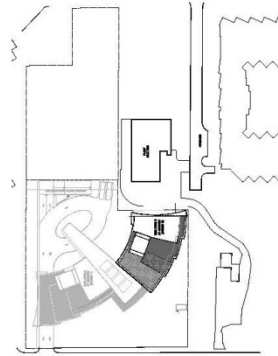
FUTURE PHASE 2
- TOWER B

PHASE 2



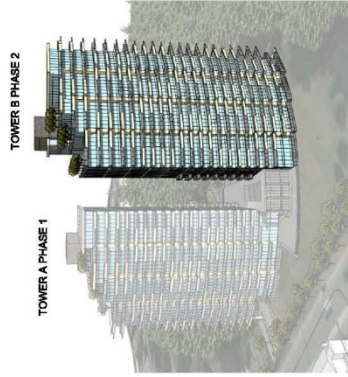
PHASE 2: BELOW GRADE

THERE WILL BE NO PORTION OF BELOW GRADE ASSOCIATED WITH PHASE 2. ALL BELOW-GRADE CONSTRUCTION WILL OCCUR WITH PHASE 1.



PHASE 2: ABOVE GRADE

THE CONSTRUCTION OF PHASE 2 WILL ONLY INVOLVE THE CONSTRUCTION OF BUILDING B STARTING FROM GROUND LEVEL. THE TURF THAT WAS IN THIS LOCATION WILL BE REMOVED.



TOWER B PHASE 2

TOWER A PHASE 1



The Oxford
CHRIS DIKEAKOS
ARCHITECTS INC.

1500 Oxford Street, White Rock, BC

PROJECT PHASING
Scale: N.T.S.

June 3, 2016



A1.03C

**SCHEDULE D
DEVELOPMENT SERVICING COVENANT**

This COVENANT dated for reference the ____ day of _____, 2016.

BETWEEN:

Elegant Oxford Project Corp.
Inc. No. BC1051252
110-13571 Commerce Parkway
Richmond, BC
V6V 2R2

and

1055731 B.C. Ltd., Inc. No. BC1055731
2535-3700 No. 3 Road
Richmond, BC
V6X 3X2

(collectively the “**Developer**”)

AND

City of White Rock
15322 Buena Vista Avenue
White Rock, BC
V4B 1Y6

(the “**City**”)

GIVEN THAT:

A. The Developer is the owner of land legally described as:

Parcel Identifier: 029-076-234

Lot 1 Section 10 Township 1 New Westminster District Plan EPP25563 (the “Lands”);
and

B. The Developer has undertaken to provide certain infrastructure and services in conjunction with the development of the Lands.

NOW THEREFORE this agreement witnesses that pursuant to Section 219 of the *Land Title Act*, and in consideration of the promises hereby contained, the parties agree as follows:

1 DEFINITIONS

1.1 In this Agreement:

“**Lands**” means the “Lands” as defined in the Phased Development Agreement, and as legally described in paragraph A of the preamble of this Covenant;

“**Phased Development Agreement**” means that certain Phased Development Agreement, entered into between the parties and having a reference date of _____, 2016;

“**Release**” means a release or discharge sufficient to remove a charge or other interest registered against the title to land at the Land Title Office; and

“**Required Infrastructure**” means works and services as provided for in Section 3.8 of the Phased Development Agreement.

2 SECTION 219 COVENANT

2.1 Pursuant to Section 219 of the *Land Title Act*, the Developer covenants and agrees with the City that the Developer shall not build on any portion of the Lands except in compliance herewith.

2.2 The City is not obliged to issue any building permit in respect of the Lands (or any parcel created therefrom) until the Required Infrastructure has been provided by the Developer, or the City holds security from the Developer adequate to fund the provision of the Required Infrastructure.

2.3 Notwithstanding Section 2.2, the Developer, subject to the Phased Development Agreement, shall be entitled to build on or use the Lands for the purposes of constructing the Required Infrastructure or any other infrastructure related to a subdivision that has been approved by the Approving Officer.

3 RELEASE OF SUBDIVISION SERVICING COVENANT

3.1 The City will forthwith provide the Developer with an executed Release of this Section 219 Covenant as regards one or more parcels of land within the Lands, when the Required Infrastructure:

- (a) has been provided by the Developer; or
- (b) the City holds security from the Developer adequate to fund the provision of the Required Infrastructure.

3.2 The City will provide the Developer with an executed Release of this Section 219 Covenant:

- (a) as against any portion of the Lands that the City or any other government authority seeks to acquire by way of expropriation; and
- (b) in its entirety, if the Zoning Bylaw, the Subdivision Bylaw, the Phased

Development Agreement Authorization Bylaw, or the Phased Development Agreement is quashed or set aside or declared unlawful by a Court of competent jurisdiction.

4 IMPACT ON MARKET VALUE

- 4.1 If the City or any other government authority seek to acquire any or all of the land that is subject to this Section 219 Covenant, other than by way of a required dedication or transfer under Section 509 of the *Local Government Act*, the price of acquisition and market value of the land will be determined as if this Section 219 Covenant was not registered against it.

5 RUN WITH LANDS

- 5.1 This Covenant is granted voluntarily by the Developer to the City pursuant to Section 219 of the *Land Title Act* of the Province of British Columbia and shall run with the lands.

6 BINDING EFFECT

- 6.1 This Covenant shall enure to the benefit of and be binding upon the parties hereto, their respective successors and permitted assigns, provided however that the enforcement of this Covenant shall be entirely within the discretion of the City and the execution and registration of this Covenant against title to the Lands shall not be interpreted as creating any duty on the part of the City to the Developer or to any other person to enforce any provision of the breach of any provision of this Covenant.

7 FURTHER ACTS

- 7.1 The Developer and the City shall do all further acts as may be necessary for carrying out this Covenant, including without limitation execution of all required documents and alterations required to achieve registration at the Land Title Office. The Developer agrees to do everything reasonably necessary, at the Developer's expense, to ensure that this Agreement is registered against title to the Lands with priority over all financial charges, liens and encumbrances registered, or the registration of which is pending, at the time of application for registration of this Agreement.

8 SEVERABILITY

- 8.1 If any part of this Agreement is held to be invalid, illegal or unenforceable by a court having the jurisdiction to do so, that part is to be considered to have been severed from the rest of this Agreement and the rest of this Agreement remains in force unaffected by that holding or by the severance of that part.

9 INDEMNITY, RELEASE AND LIABILITY

- 9.1 The Developer releases, and must indemnify and save harmless, the City, its elected and appointed officials and employees, from and against all liability, actions, causes of action, claims, damages, expenses, costs, debts, demands or losses suffered or incurred by the

Developer, or anyone else, arising from the granting or existence of this Agreement, or any default of the Developer under or in respect of this Agreement. The parties agree that this Agreement creates obligations arising out of the nature of this document as a Section 219 covenant only. The parties agree that no tort obligations or liabilities of any kind exist between the parties in connection with the performance of, or any default under or in respect of, this Agreement. The intent of this Section is to exclude tort liability of any kind and to limit the parties to their rights and remedies under the law pertaining to Section 219 covenants.

10 INTERPRETATION

10.1 In this Covenant:

- (a) the headings and captions are for convenience only and do not form a part of this Covenant and will not be used to interpret, define or limit the scope, extent or intent of this Covenant or any of its provisions;
- (b) the word “including” when following any general term or statement is not to be construed as limiting the general term or statement to the specific item or matters set forth or to similar terms or matters but rather as permitting it to refer to other items or matters that could reasonably fall within its scope;
- (c) a reference to a statute includes every regulation made pursuant thereto, all amendments to the statute or to any such regulation in force from time to time and any statute or regulation that supplements or supersedes such statute or any such regulation;
- (d) a word importing the masculine gender includes the feminine or neuter, and a word importing the singular includes the plural and vice versa;
- (e) every reference to each party hereto shall be deemed to include the officers, employees, elected officials, agents, servants, successors and assigns of that party; and
- (f) definitions in the Phased Development Agreement apply to this Agreement.

IN WITNESS WHEREOF the Developer and the City have duly executed this Covenant as of the day, month and year first above written by executing the Form C attached hereto.

SCHEDULE E
FORM FOR AGREEMENT TO BYLAW CHANGES

THIS AGREEMENT dated for reference _____, 2016

BETWEEN:

Elegant Oxford Project Corp.
Inc. No. BC1051252
110-13571 Commerce Parkway
Richmond, BC
V6V 2R2

and

1055731 B.C. Ltd., Inc. No. BC1055731
2535-3700 No. 3 Road
Richmond, BC
V6X 3X2

(collectively the “**Developer**”)

AND

City of White Rock
15322 Buena Vista Avenue
White Rock, BC
V4B 1Y6

(the “**City**”)

WHEREAS:

- A. The City has entered into a Phased Development Agreement authorized by Bylaw No. 2158 dated the ___ day of _____, _____ (the “**PDA**”);
- B. The Developer is the registered owner of the lands described below, being all or part of the lands that are the subject of the PDA:

Parcel Identifier: 029-076-234
Lot 1 Section 10 Township 1 New Westminster District Plan EPP25563 (the “**Lands**”);
- C. The City has, pursuant to Bylaw No. _____ amended the provisions of its Zoning Bylaw or Subdivision Bylaw as set out below:

[list amendments the City and the Developer agree apply] (the “**Amended Provisions**”)
- D. The Developer and the City agree that the Amended Provisions apply to the Lands;

NOW THEREFORE this agreement witnesses that:

1. The Developer and the City hereby agree, further to Section 516(5) of the *Local Government Act*, that the Amended Provisions apply to the development of the Lands.
2. Apart from the amendment of the Amended Provisions, the agreement of the City and the Developer hereunder is not intended to, and does not, in any way:
 - (a) limit or otherwise alter the rights and responsibilities of the Developer and the City under the PDA, which shall continue in full force and effect, and be enforceable by both parties, notwithstanding Section 1; or
 - (b) impact lands that may be the subject of the PDA other than the Lands.
3. Without limiting the generality of Section 1, the City and the Developer, noting that neither the definition of Specified Bylaw Provisions in the PDA, nor the provisions of the PDA relating to the Specified Bylaw Provisions, have been amended, agree and confirm that:
 - (a) the foregoing agreement in respect of the Amended Provisions does not imply, and shall not be construed as implying, that the Developer has waived the protection that the PDA provides to it in respect of the Specified Bylaw Provisions, apart from the application of the Amended Provisions; and
 - (b) any further or subsequent changes to the City's Zoning Bylaw or Subdivision Bylaw made by the City that fall within the definition of Specified Bylaw Provisions in the PDA, other than the Amended Provisions, shall not apply to the development of the Lands unless the Developer agrees in writing that they apply on the basis set out at Sections 2 and 3 of this Agreement.

IN WITNESS WHEREOF the Parties have executed this Agreement as of the date first written above.

THE DEVELOPER by its authorized signatory

Per: Authorized Signatory

THE CITY OF WHITE ROCK by its authorized signatories

Per: Authorized Signatory

Per: Authorized Signatory

**SCHEDULE F
ENFORCEMENT COVENANT**

TERMS OF INSTRUMENT - PART 2

WHEREAS:

A. The Grantor is the registered owner in fee simple of:

Parcel Identifier: 029-076-234

Lot 1 Section 10 Township 1 New Westminster District Plan EPP25563

(the "**Lands**");

B. The Grantee is the City of White Rock;

C. The Grantor has agreed to develop the Lands in accordance with a Phased Development Agreement dated for reference the ____ day of _____, 2016 and made between the Grantor and the Grantee (the "**Phased Development Agreement**").

NOW THEREFORE, in consideration of the payment of the sum of \$10.00 by the Grantee to the Grantor and the premises and the covenants herein contained and for other valuable consideration, receipt and sufficiency of which is hereby acknowledged by the parties, each of the parties hereto covenants and agrees with the other as follows:

1. In this Covenant the following terms have the following meanings:

(a) "**Development**" means the Development of the Lands contemplated by the Phased Development Agreement and includes an activity that alters the Lands or any vegetation on the Lands in preparation for or in connection with the installation on the Lands of buildings, improvements, works or services, including without limitation, a highway;

(b) "**Grantor**" means Elegant Oxford Development Corp. and 1055731 B.C. Ltd.

(c) "**Grantee**" means the City of White Rock.

2. The Grantor covenants with the Grantee that it will construct and cause to be constructed any building or structure on the Lands in accordance with the Phased Development Agreement and the Development Permit No. 400 issued in respect the Lands.
3. If the Grantor is in breach of an obligation under the Phased Development Agreement, or the Grantee terminates the Phased Development Agreement as a result of a breach of the Phased Development Agreement by the Grantor, the Grantor covenants that it will not further subdivide the Lands, under the *Land Title Act (British Columbia)* or the *Strata Property Act (British Columbia)* or Regulations under those Acts without the consent of the City.
4. The restrictions and covenants herein contained shall be covenants running with the Lands and shall be perpetual, and shall continue to bind all of the Lands when subdivided, and shall be registered in the Land Title Office pursuant to Section 219 of the *Land Title Act*. Notwithstanding the foregoing, the Grantee agrees to discharge this Agreement from title to the Lands (or the applicable portion thereof) forthwith upon the issuance by the City of an occupancy permit in respect of any building constructed on the Lands (or the applicable portion thereof).
5. The Grantor and the Grantee agree that the enforcement of this Agreement shall be entirely within the discretion of the Grantee and that the execution and registration of this covenant against the title to the Lands shall not be interpreted as creating any duty on the part of the Grantee to the Grantor or to any other person to enforce any provision or the breach of any provision of this Agreement.
6. Nothing contained or implied herein shall prejudice or affect the rights and powers of the Grantee in the exercise of its functions under any public or private statutes, bylaws, orders and regulations, all of which may be fully and effectively exercised in relation to the Lands as if the Agreement had not been executed and delivered by the Grantor.
7. The Grantor hereby releases and forever discharges the Grantee, its officers, employees and agents, of and from any claim, cause of action, suit, demand, expenses, costs and expenses, and legal fees whatsoever which the Grantor can or may have against the said Grantee for any loss or damage or injury, including economic loss, that the Grantor may sustain or suffer arising out of the breach of this Agreement by the Grantor or a party for whom the Grantor is at responsible at law.
8. The Grantor covenants and agrees to indemnify and save harmless the Grantee, its officers, employees and agents, from any and all claims, causes of action, suits, demands, expenses, costs and expenses, and legal fees whatsoever that anyone might have as

owner, occupier or user of the Lands, or by a person who has an interest in or comes onto the Lands, or by anyone who suffers loss of life or injury, including economic loss, to his person or property, that arises out of the breach of this Agreement by the Grantor or a party for whom the Grantor is at responsible at law.

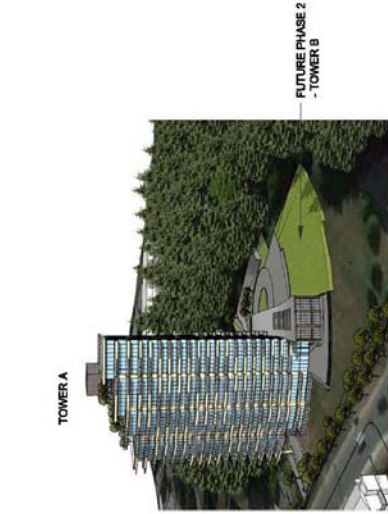
9. It is mutually understood, acknowledged and agreed by the parties hereto that the Grantee has made no representations, covenants, warranties, guarantees, promises or agreements (oral or otherwise) with the Grantor other than those contained in this Agreement.
10. This Agreement shall be registered as a first charge against the Lands and the Grantor agrees to execute and deliver all other documents and provide all other assurances necessary to give effect to the covenants contained in this Agreement.
11. The Grantor shall pay the legal fees of the Grantee in connection with the preparation and registration of this Agreement. This is a personal covenant between the parties.
12. The Grantor covenants and agrees for itself, its heirs, executors, successors and assigns, that it will at all times perform and observe the requirements and restrictions hereinbefore set out. Notwithstanding the foregoing, it is understood and agreed by the Grantee that this Agreement shall only be binding upon the Grantor as personal covenants during the period of its ownership of the Lands.
13. This Agreement shall enure to the benefit of the Grantee and shall be binding upon the parties hereto and their respective heirs, executors, successors and assigns.
14. Wherever the expressions "Grantor" and "Grantee" are used herein, they shall be construed as meaning the plural, feminine or body corporate or politic where the context or the parties so require.
15. The Grantor agrees to execute all other documents and provide all other assurances necessary to give effect to the covenants contained in this Agreement.
16. Time is of the essence of this Agreement.
17. If any part of this Agreement is found to be illegal or unenforceable, that part will be considered separate and severable and the remaining parts will not be affected thereby and will be enforceable to the fullest extent permitted by law.

PRIORITY AGREEMENT

[Chargeholder Information], the registered holder of a charge by way of XXXX against the within described property which said charge is registered in the Land Title Office under number ####, for and in consideration of the sum of One (\$1.00) Dollar paid by the Grantee to the said Chargeholder (the receipt whereof is hereby acknowledged), agrees with the Grantee, its successors and assigns, that the within Section 219 Covenant shall be an encumbrance upon the within described property in priority to the said charge in the same manner and to the same effect as if it had been dated and registered prior to the said charge.

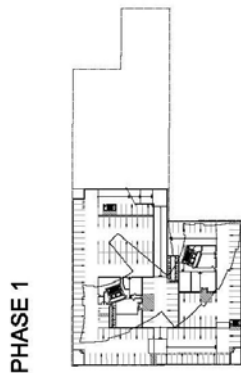
IN WITNESS WHEREOF the parties hereto hereby acknowledge that this Agreement has been duly executed and delivered by the parties executing Form C (pages 1 and 2) attached hereto.

APPENDIX E Phasing Plan



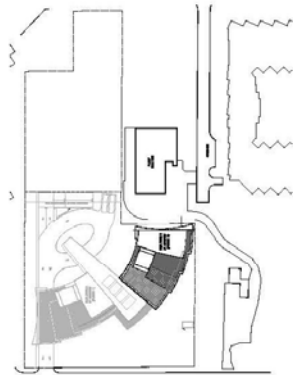
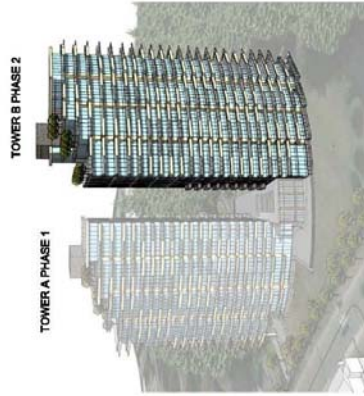
PHASE 1: ABOVE GRADE

THE ENTIRE BUILDING A WILL BE BUILT DURING PHASE ONE INCLUDING THE SURROUNDING LANDSCAPING, ROAD & PARKADE ENTRY. THE BUILDING FOOTPRINT OF BUILDING B WILL BE REMOVED UNTIL THE COMMENCEMENT OF THE CONSTRUCTION OF PHASE 2.



PHASE 1: BELOW GRADE

DURING THE CONSTRUCTION OF PHASE 1 THE ENTIRE BELOW GRADE PARKING STRUCTURE WILL BE BUILT UP TO GRADE. THIS INCLUDES CORE AND STRUCTURE FOR BOTH BUILDINGS. THE SURROUNDING TURFS WILL BE BUILT UP TO GRADE AND WILL BE COVERED AND TEMPORARILY TURRED UNTIL THE CONSTRUCTION OF PHASE 2 COMMENCES.



PHASE 2: ABOVE GRADE

THE CONSTRUCTION OF PHASE 2 WILL ONLY INVOLVE THE CONSTRUCTION OF BUILDING B STARTING FROM GROUND LEVEL. THE TURF THAT WAS IN THIS LOCATION WILL BE REMOVED.



PHASE 2: BELOW GRADE

THERE WILL BE NO PORTION OF BELOW GRADE ASSOCIATED WITH PHASE 2. ALL BELOW-GRADE CONSTRUCTION WILL OCCUR WITH PHASE 1



The Oxford
1500 Oxford Street, White Rock, BC
CHRIS DIKEAKOS
ARCHITECTS INC.

PROJECT PHASING
Scale: N.T.S.

June 3, 2016



elegant DEVELOPMENT INC.
A1.03C

THE CORPORATION OF THE
CITY OF WHITE ROCK
CORPORATE REPORT



DATE: June 28, 2021

TO: Land Use and Planning Committee

FROM: Carl Isaak, Director of Planning and Development Services

SUBJECT: Major Development Permit Application - 1454 Oxford Street (14-009)

RECOMMENDATION

THAT the Land Use and Planning Committee recommend that Council authorize the issuance of Development Permit No. 400 for 1454 Oxford Street.

EXECUTIVE SUMMARY

In 2014, the City received concurrent applications for an official community plan (OCP) amendment, a zoning bylaw amendment and a major development permit (DP) tied to a proposal at 1454 Oxford Street. The proposal was for a 121 unit multi-family development including two residential towers (i.e., 21 and 24 storeys) and a shared two-storey podium. The development would include 409 underground parking spaces. The noted OCP and zoning amendment bylaws were adopted by Council in 2017 following two public hearings, presentations to the Advisory Design Panel, and a technical review by City staff. As part of the approvals process, Council also entered into a Phased Development Agreement (PDA) with the proponent and adopted a PDA Bylaw. The PDA was used to secure a community amenity contribution of \$3.6M and the dedication of a 0.92 acre parcel of wooded lands, which were required before the consideration of issuance of a DP; both contributions have now been provided to the City. This PDA also prevents future changes to the zoning or subdivision bylaw from impacting the development for a period of ten years after the date of the adoption of the PDA Bylaw (June 12, 2017).

Now that the required contributions have been provided, the DP is being brought forward for consideration of issuance. It is important to note that the approved, property-specific zoning, requires that development substantially conform to the architectural designs as referenced in the CD-46 Zone. Staff have undertaken a comprehensive review of the project and have concluded that the designs are compliant with the CD-46 Zone provisions. Further, staff believe that the DPA guidelines applicable to the project have been satisfied. As such, staff are recommending that Council authorize the issuance of Development Permit No. 400, following which, applications for building permits could be made to the City.

PREVIOUS COUNCIL DIRECTION

Motion # & Meeting Date	Motion Details
Motion 2017-274 June 12, 2017	THAT Council gives final reading to “Official Community Plan Bylaw 1837, 2008, Amendment No. 23 (Oxford/Overall), 2015, No. 2123” [CARRIED]
Motion 2017-275 June 12, 2017	THAT Council gives final reading to “White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056”. [CARRIED]
Motion 2017-275 June 12, 2017	THAT Council gives final reading to “Phased Development Agreement (1454 Oxford Street) Bylaw, 2016, No. 2158”. [CARRIED]

INTRODUCTION/BACKGROUND

Previous Council Consideration

In 2014, the City of White Rock received concurrent applications for an official community plan (OCP) amendment, a zoning bylaw amendment and a major development permit tied to 1454 Oxford Street (see Location and Orthographic Maps in Appendix A). The project proposes a 121 unit multi-family development including two residential towers (i.e., 21 and 24 storeys) with a shared two-storey podium. The development would include 409 parking spaces (i.e., 49 visitor and 360 resident) designed within a three-storey below ground parkade (see Figure 1 below).



Figure 1: Rendering of Multi-Family Development at 1454 Oxford Street

Bylaws related to the official community plan amendment and the zoning bylaw amendment received first and second reading in November 2015, following which there was a statutory public hearing, held December 7, 2015. Subsequent to the hearing, Council gave third reading to the bylaws and accepted a negotiated community amenity contribution of \$3.4M plus the transfer of approximately 0.96 acres of land to the City; it was later clarified by the Applicant that the area to be conveyed to the City was 0.92 acres therefore an adjustment to the amenity contribution, to \$3.6M, was made.

On September 19, 2016 Council rescinded the readings given to the OCP amendment bylaw and the zoning amendment bylaw so that a Phased Development Agreement (PDA) could be created to secure the amenity and land contributions while setting out the project construction phasing and servicing requirements. The PDA was given first and second reading on September 19, 2016 along with renewed readings given to the zoning and OCP amendment bylaws. A second public hearing was held on November 22, 2016 to receive feedback on the three bylaws for which third readings were given on December 5, 2016. On June 12, 2017 Council gave final readings to the OCP and zoning amendment bylaws and the PDA bylaw thereby establishing the principles of development for the project. The community amenity contribution of \$3.6M and the dedication of 0.92 acres of land have been received by the City as stipulated in the executed PDA.

Scope of Current Application

At this time, the Applicants are seeking the issuance of a major development permit (DP), now that the contributions required by the PDA have been provided to the City. Generally, such applications would be reviewed primarily against applicable development permit area (DPA) guidelines for the form and character for the building, found in the OCP. In this case, the property has been rezoned to a property-specific Comprehensive Development No. 46 (CD-46) Zone. The CD-46 Zone, attached as Appendix B, provides site-specific regulations for permitted use, lot coverage, density, building height, building siting (setbacks), resident and visitor parking, loading, and bicycle parking. The CD-46 Zone further dictates the form of the building in detail by requiring that development “substantially conform to the Plans prepared by Chris Dikeakos Architects Inc. and dated October 27, 2015, that are attached hereto and on file at the City of White Rock”. The incorporation of these designs into the property-specific zoning is important as it relates to the City’s application of DPA guidelines to the project.

The *Local Government Act*, in Section 516 (7), provides that when a zoning bylaw is “frozen” via a Phased Development Agreement, a development permit which would vary the siting, size or dimensions of building, structures, or uses in the zoning bylaw does not apply to the development unless the developer agrees in writing. This limits the ability of the development permit to adjust the form of the building from that which is specified in the zoning bylaw.

Staff have undertaken a comprehensive review of the project and have concluded that the designs are compliant with the CD-46 Zone provisions, including the referenced architectural and landscape designs. Further, staff believe that the DPA guidelines applicable to the project, being those that do not present a conflict with the approved zoning of the property, have been satisfied. As such, staff are recommending that Council authorize the issuance of DP No. 400, attached to this report as Appendix C.

ANALYSIS

Site Context

The subject property is vacant and approximately 0.709 hectares (1.75 acres) in area. As noted, the former easternmost portion of the property, referred to in the Phased Development Agreement as the “Treed Area”, has now been dedicated to the City by adjusting the lot line with the City-owned parcel at 1487 Everall Street. The mature stand of trees within these lands are considered a defining characteristic of the “Everall Neighbourhood” recognized in Policy 8.2.5 of the OCP as the area bounded by North Bluff Road, Thrift Avenue, Oxford Street, and Vidal Street.

Figure 2 identifies the subject property in addition to recent developments within 200 metres of the site. As illustrated, the Evergreen Baptist Campus of Care, immediately north of the property, is a multi-building facility within which assisted living and care facility services are offered in buildings ranging in height from two (2) to eight (8) storeys. The lands south of the property are owned by the City of White Rock and house the Oxford Water Utility Station and Treatment Plant. Recent developments in the area include the Fantom (10 storeys), the Royce (5 storeys), and the Beverley (12 storeys) projects. Lands opposite Oxford Street fall within the City’s “Mature Neighbourhood” designation, as set out in the OCP, and are largely comprised of single family dwellings being two to three storeys in height; a similarly low density use of land can be seen south of Thrift Avenue.



Figure 2: Context image showing composition of subject property, dedicated lands and Everall Neighbourhood

Official Community Plan – Policy Framework

The former OCP land use designation of the property (prior to adoption of the current OCP in 2017), was “Multi-Unit Residential (High Density)”. This designation supported multi-unit

buildings typically being more than four storeys in height and having a density of between 51 and 120 units per acre.

The current designation of the property, under OCP Bylaw No. 2220, adopted in 2017, is “Town Centre Transition”. Within this designation the OCP (prior to amendment by Bylaw No. 2387) contemplates multi-unit residential uses ranging from low-rise to high-rise buildings. In the context of the Everall Neighbourhood, Policy 8.2.5 of the Plan recognizes potential increases in height where doing so would respect allowable densities while enabling greater tree retention.

OCP Height and Density – Prior to Amendment by OCP Amendment Bylaw No. 2387

In OCP Bylaw No. 2200, the maximum density, now measured on a “gross floor area ratio” (FAR), and conceptual height are recognized in Figures 9 and 10 of the Plan, respectively.

Prior to potential amendment by Bylaw No. 2387 (public hearing held June 21, 2021) the maximum density tied to the property was set at 2.0 times the area of the lot (2.0 FAR), plus 40% increase (up to 2.8 FAR) if market rental housing is provided. The FAR density already approved by the CD-46 Zone for this property is approximately 4.5 FAR. The heights contemplated in Figure 10, as they apply to the lands on the east side of Oxford Street, range from 12 storeys along North Bluff Road down to four storeys at Thrift Avenue. As noted, the height proposed in this project includes one 21 storey tower and one 24 storey tower, which was already approved in the CD-46 zone.

In light of the potential for policy changes over time, the OCP recognizes the need “to ensure that development applications are reviewed and processed in a consistent manner”. To this end, Policy 8.13.1 of the OCP provides that the maximum density established in previously approved developments, where the zoning allows for FAR beyond the maximums outlined in the Plan, will be recognized. The OCP also provides that exceeding the conceptual height guidelines in the OCP will not necessitate OCP amendment.

OCP Height and Density – Following Amendment by OCP Amendment Bylaw No. 2387

OCP Amendment Bylaw No. 2387 would change the OCP heights in Figure 10 to “maximums” instead of “conceptual height guidelines”, however these maximum heights would still only be applied when a new rezoning proposal is received.

Under the new OCP provisions as amended by Bylaw No. 2387 (public hearing held June 21, 2021), the maximum height and density of buildings would be four storeys and 1.5 FAR, or six storeys and 2.5 FAR with an affordable housing component. In the context of the Everall Neighbourhood, Policy 8.2.5 of the Plan that would support increased height has been removed as no longer applicable in the new height policy approach.

In both versions of the OCP (pre- and post-Bylaw No. 2387), the existing CD-46 zoning allows greater height and density than allowed by the OCP if a new rezoning application were received. The existing CD-46 zoning of the property continues to determine the uses and scale of development can be built on the property.

Bylaw No. 2387 also includes an additional policy (8.13.7) that notes, for clarification, “to the extent that existing site-specific (Comprehensive Development) zoning on a property inhibits the ability of buildings to fully achieve Development Permit Area guidelines in Section 22, the guidelines shall not prevent the issuance or amendment of a Development Permit in that zone.”

Zoning Bylaw – Comprehensive Development Zone No. 46

As noted, the property-specific CD-46 Zone establishes standards related to permitted use, lot coverage, density, building height, building siting (setbacks), resident and visitor parking, loading, and bicycle parking (see Appendix B). The CD-46 Zone permits a multi-unit residential use with a maximum gross floor area (GFA) of 32,522 square metres and a maximum residential floor area of 27,607 square metres; the differences between the two reflects the area of the common spaces such as circulation, storage, and amenity spaces. The CD-46 Zone establishes a maximum number of dwelling units at 121 units. The composition of units as presented in the architectural designs, incorporated into draft DP No. 400, are as follows:

Table 1: Breakdown of dwelling units by size (no. of bedrooms)

	2 Bedroom + Den	3 Bedroom	3 Bedroom + Den	Total
North Tower (Phase 1)	48 (62%)	1 (<1%)	29 (37%)	78 (100%)
South Tower (Phase 2)	0 (0%)	0 (0%)	43 (100%)	43 (100%)
Total	48 (40%)	1 (<1%)	72 (60%)	121 (100%)

It is noted that Policy 11.1.1 of the City’s Official Community Plan encourages “family-friendly” housing within multi-unit residential developments by seeking a minimum of 10 percent of the units as three bedroom units and a minimum of 35 percent of the units as either two or three bedroom units. The subject proposal would uphold this policy objective by providing 100 percent of the units as a mix of two (40%) and three (60%) bedroom units.

As it relates to parking, the CD-46 Zone requires a minimum of 400 spaces with 360 of these being dedicated for residents and 40 spaces made available for visitors. This supply works out to a rate of approximately three (3.0) spaces per dwelling unit for residents and 0.33 spaces per unit for visitors, whereas the general standards of the zoning bylaw would require 1.2 spaces per apartment unit (for residents) and 0.3 per unit for visitors. Applying the standard parking rates to the project would have necessitated 182 parking spaces (total). The Phased Development Agreement stipulates that ten (10) percent of all parking spaces must be equipped with a Level 2 electric vehicle charging station, which is with the same requirement for electric vehicle charging in Section 4.17.1 of the zoning bylaw. All parking will be provided within a three-level underground parkade. The parkade will also include space for bicycle parking (minimum 122 spaces), storage, and garbage/recycling. 26 Class II (outdoor) bicycle parking stalls have been incorporated into the design of the project and are included in front of the main (east) entrance to the building as well as in spaces along Oxford Street and in front of the ramp to the parkade.

The property-specific CD zoning also establishes a minimum requirement of six (6) accessible parking spaces, whereas the newly-introduced rates for accessible parking would have necessitated a supply of two van-accessible spaces and two standard accessible spaces. City staff have confirmed with the Applicant that two-van accessible stalls can be incorporated into the parkade without changes to the zoning and the dimensioning of the standard accessible stalls, including the provision of a 1.5 metre access aisle, will be satisfied as required by the zoning. The van-accessible spaces are provided by the Applicant but would not have been mandatory, as the van-accessible parking provisions in the zoning bylaw came into effect after the Phased Development Agreement “froze” the zoning for the property.

Two loading spaces have been provided within the central, off-street, access (round-about). This design is considered advantageous as it will lessen the potential for disturbance to the flow of

vehicle traffic along Oxford Street. The loading spaces are situated outside of the parkade, allowing for improved maneuverability / access. A porte-cochere is also incorporated into the design to provide some refuge from the elements when accessing the central foyer serving both of the residential towers (see Figure 3).



Figure 3: Porte-Cochere on the eastern side of the development; public pathway illustrated in foreground

Development Permit Area Guidelines & Advisory Design Panel (ADP) Review

The subject property falls within the “Multi-Family Development Permit Area” as illustrated in Schedule B to the Official Community Plan. Guidelines pertaining to the form and character of development within this DPA are set out in Section 22.6 of the Plan. The Applicant has submitted a summary of the project’s adherence to the Multi-Family Development Permit Area Guidelines (see Appendix D). Staff consider the submitted response to be in conformance with the applicable DPA Guidelines and the related design requirements established in the CD-46 Zone.

The development maximizes open space and preserves natural habitat that is emblematic of the Everall Neighbourhood area, namely, the existing stand of mature Douglas Firs on the eastern portion of the site. The provision of substantial landscaping improvements and outdoor amenity areas across the southwestern portion of the development softens its interface with the public

realm along Oxford Street, improving the transitional relationship with the single-family residential neighbourhoods to the west (see Figure 4).



Figure 4: Rendered view looking northeast from Oxford Street

The slight terracing, southeasterly orientation, and curved massing of the development also reduces view impacts to the Belaire and the Evergreen Baptist Campus of Care complex to the north. Through its extensive use of high-performance glazing, strong horizontality, natural materials (e.g. wood, stone veneer, etc.) and its warm colour palette, the form and character of the development reflects a west coast contemporary design. The emphasis placed upon multiple bedroom dwelling units, along with the ample provision of private (i.e., open balconies) and shared amenity spaces (i.e., indoor and outdoor amenity areas, swimming pool, fitness room, lounge/media room, outdoor patios, and a children’s play area) promotes family-friendly living. The location of utility and mechanical areas, including vehicular access and loading space, are adequately screened from public view through the design and landscaping regime.

The proposal further promotes green development within the community. The use of large sunken balconies promotes low-angle wintertime sunlight solar exposure, while providing shade for residents in the summer. By minimizing the amount of lot coverage (i.e., 36%), the project is able to promote an ecologically-friendly approach to stormwater management. The dedication of the wooded area east of the development further contributes to the opportunity for the long term conservation of these naturalized lands.

Finally, the project offers a unique opportunity to contribute to the City’s ongoing efforts to establish an ‘east-west green spine’ identified in OCP Policy 15.2.2 as a means of connecting the Town Centre to Centennial Park. To this end, the PDA requires the installation of a 6.096 metre (20 foot) public pathway along the northern boundary of the property. This pathway will connect Oxford Street to the recently-enlarged public lands abutting Everall Street, enabling pedestrian

access through the block. A statutory right-of-way has been provided along the northern property line to secure the public’s access across the pathway. A diagram of this trail is included below, with the portion applicable to this project noted as section 6.



Advisory Design Panel Review

The Advisory Design Panel first reviewed the application on July 21, 2015 and requested a subsequent review pending the receipt of a response to the items summarized in Table 2 below; the table includes the Applicant’s response to the items raised by the Panel. The Application returned to the ADP on October 6, 2015, at which time the Panel approval of the project proceeding to Council.

Table 2: Summary of Applicants’ Response to ADP Comments

ADP Comment	Applicant Response
Exploration of ground level design improvements	Introduction of: - Outdoor patio/kitchen area - Bocce court and play area - Indoor/outdoor fitness areas
Improving the project’s connection to the street and to the neighbourhood	Public Pathway (SROW) widened to 20 feet
Addressing the location of the buildings relative to one another (e.g. further spacing)	Towers shifted further south Building separation increased
Exploration of other built forms (e.g. three smaller buildings)	Not pursued, as alternative configurations would impact park space and view potential
Retention of treed area and overall density	Density allows the ‘treed area’ to be retain in public ownership
Location of pool and hot tub (indoor vs. outdoor)	Pool and hot tub moved indoors
Addressing scale and massing to minimize visual impacts (e.g. reduce massiveness of buildings)	The building orientation was revised, but the original scale and massing maintained

Improving accessibility in approach to the building	Ramps proposed along the pathway
Need for accessible units and accessibility to amenities	5% of units will not be accessible Amenity spaces now accessible
Positioning of the project relative to street access and in context with other proposals	Majority of the views are southwest Vehicular access is located near the north

Environmental (Ravine Lands and Significant Trees) DPA Guidelines

In addition to being subject to the Multi-Family Development Permit Area guidelines, which apply to the form and character of development, the Application is also subject to the “Environmental (Ravine Lands and Significant Trees)” DPA guidelines set out in Section 23.4 of the OCP. The purpose of this DPA is to ensure the protection of healthy, mature stands of trees which are recognized for the important function they serve for the local ecosystem.

The previous approval of the OCP amendment and rezoning applications for this project enabled the City to require the execution of a Phased Development Agreement and the transfer of a 0.92 acre “Treed Area” to the municipality. This “Treed Area” is comprised of a mature stand of Douglas Firs, some of which are upwards of 120 years old and 40 metres (131 feet) in height. This ecological asset can now be managed, and maintained, by the City for the benefit of current and future generations.

Phasing of Development & Construction Management

Per the terms of the Phased Development Agreement, Phase 1 will involve the construction of the entire underground parking structure, including the core and structure for both towers within the underground building structure. Phase 1 will also include the construction of ‘Tower A’ (the 21-storey building located on the northwest portion of the site), which will include a mixture of 78 dwelling units that vary in bedroom composition from two bedroom to three bedroom and den units. These units will range in size from approximately 119.4 square metres (1,290 square feet) to approximately 360.9 square metres (3,885 square feet) in area.

Phase 2 of the development will involve the construction of ‘Tower B’, the 24-storey building located on the southwest corner of the site. This building will be entirely composed of 43 three bedroom and den dwelling units, ranging from approximately 275 square metres (2,960 square feet) to 485.9 square metres (5,230 square feet) in size.

The Applicant is aware that a Construction Management Plan is required and must ensure that appropriate construction parking areas are identified and secured, and that staging must have a minimal impact on public roads. A finalized construction management plan will be completed and submitted as part of the Phase 1 and 2 Building Permit applications. The Applicant has indicated they will seek to use leased parking spaces in the Town Centre and permit spaces at Centennial Area, as well as the underground on-site parkade once completed.

FINANCIAL IMPLICATIONS

The Phased Development Agreement was used by the City to require the payment of a \$3.6M community amenity contribution (CAC) prior to the issuance of a development permit. The value of this CAC contribution was determined in accordance with Council’s Density Bonus / Amenity Contribution Policy, No. 511. The \$3.6M CAC contribution has now been received by the City.

Table 3 below summarizes the Development Cost Charges (DCCs) and related fees to be provided to the City prior to the issuance of a building permit for the development. These fees are directed towards the incremental costs of supporting infrastructure improvements necessary to support growth attributed to residential development. Payment of DCCs would be phased in accordance with the phasing of construction.

Table 3: Development Cost Charge (DCC) Summary

	Fee (per Unit)	Units Subject to Fee	Sub-Total
City of White Rock DCCs	\$11,253.30	121	\$1,361,649.30
TransLink DCCs (<i>rate effective Jan 1, 2021</i>)	\$1,545	121	\$186,945
Metro Vancouver (Regional) DCCs	\$3,530	121	\$427,130
Surrey School District SSACs (<i>“medium high” rate</i>)	\$700	121	\$84,700
		Total	\$2,060,424.30

LEGAL IMPLICATIONS

Not applicable.

COMMUNICATION AND COMMUNITY ENGAGEMENT IMPLICATIONS

As outlined in the Previous Council Direction section of this report, now-approved applications for an OCP amendment and a zoning bylaw amendment followed the procedural and legislative requirements established by the City’s Planning Procedures Bylaw and the *Local Government Act*, respectively. A Public Information Meeting (PIM) was held on April 9, 2014 at the First United Church; 133 people signed into the PIM. Further, statutory public hearings were held on December 7, 2015 and November 22, 2016. The development permit review process does not include a formal presentation of the project to the public, as the basis for the review is limited to evaluating the form and character of the proposal against applicable zoning standards and, more specifically, applicable DPA guidelines, as set out in the Official Community Plan.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS

The development permit application was circulated internally to several City departments. Minor adjustments to the site plan, specifically including the introduction of a walkway along the southern perimeter of the property and a small ancillary building / enclosure adjacent to the southern parkade stairwell, were made to support the needs of the City’s Fire Department. Additional details (e.g., identification of barrier free parking spaces, bicycle parking spaces, garbage/refuse storage areas, etc.) were added to the site plan to demonstrate compliance with the requirements of the CD-46 Zone and applicable general provisions of the Zoning Bylaw.

CLIMATE CHANGE IMPLICATIONS

As noted in the Applicant’s submission, the buildings have been designed to meet high sustainability standards as well as the 2010 ASHRAE energy performance requirements. The transfer of the wooded lands to the City will enable the long term retention of a mature stand of Douglas Fir trees which will help with the sequestering of carbon dioxide, a known contributor to climate change. Finally, more intensive use of urban, serviced, lands lessens the need for sprawl into the periphery while also lessening the need for private automobile use.

ALIGNMENT WITH STRATEGIC PRIORITIES

Not applicable.

OPTIONS / RISKS / ALTERNATIVES

The Land Use and Planning Committee can recommend that Council:

1. Consider authorizing issuance of Development Permit No. 400;
2. Reject Development Permit No. 400, and provide the Applicant with guidance on what revisions, unrelated to the zoning bylaw regulations for the property, would be necessary to support the issuance of a development permit; or
3. Defer consideration of Development Permit No. 400 and refer it back to staff with specific direction from Council on additional required information or revisions.

Staff recommends Option 1, under the recommendations of this corporate report.

CONCLUSION

The subject development proposal was considered by the City upon receipt of OCP and zoning amendment applications in 2014. These applications, in addition to a Phased Development Agreement, were approved by the City in 2017. The current development permit application pertains to the appropriateness of the form and character of the development as considered against applicable DPA guidelines. Further, there is an environmental development permit tied to the project as it relates to the potential impact of development on significant trees; a large area of the most heavily-wooded lands has now been dedicated to the City of White Rock allowing for the long term conservation of this natural resource. Given the site-specific (CD-46) zoning bylaw provisions that apply to the property and largely dictate the form of the building, City staff believe the application satisfies the applicable DPA Guidelines as set out in the Official Community Plan and recommends that DP No. 400 be approved.

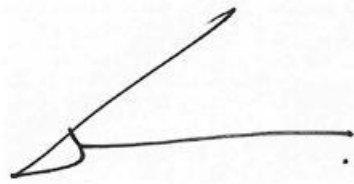
Respectfully submitted,



Carl Isaak, RPP, MCIP
Director of Planning and Development Services

Comments from the Chief Administrative Officer

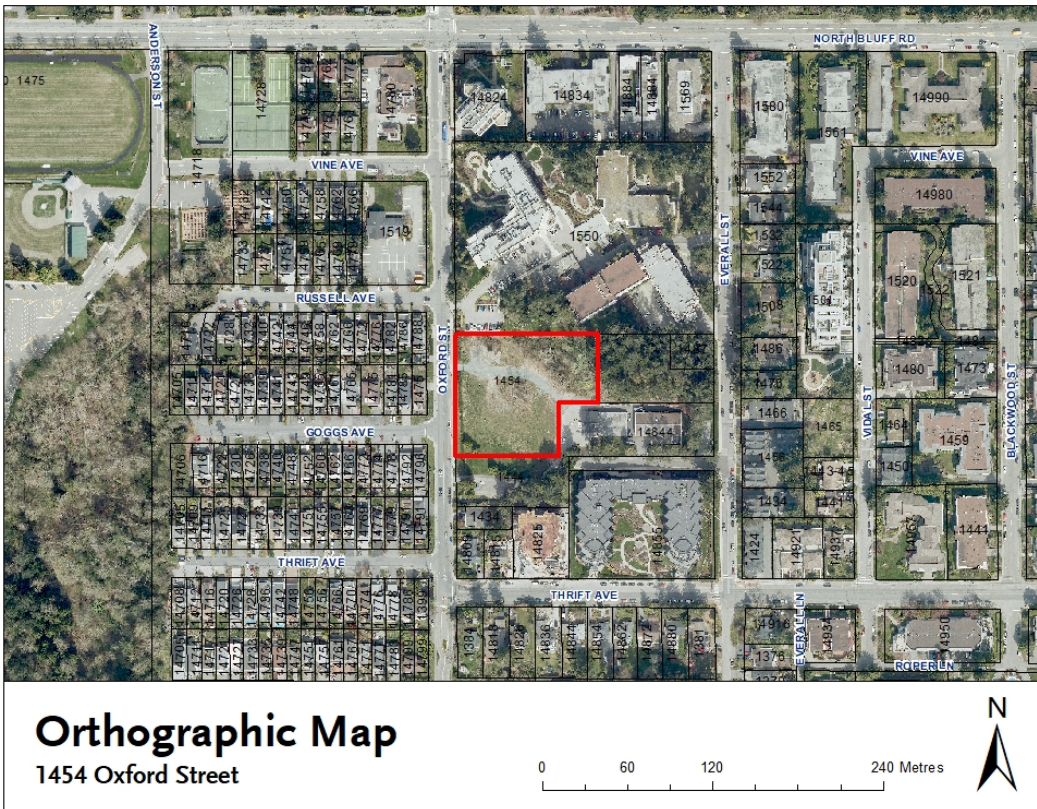
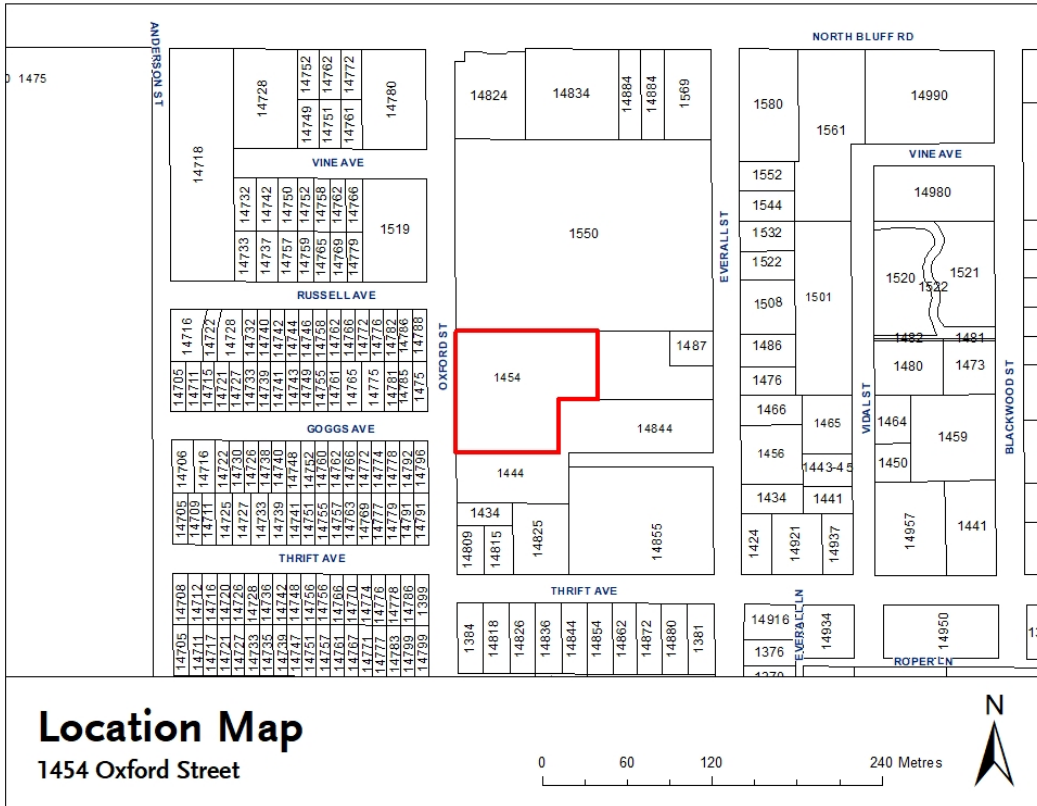
I concur with the recommendation of this corporate report.

A handwritten signature in black ink, consisting of a stylized 'G' followed by a horizontal line and a small flourish at the end.

Guillermo Ferrero
Chief Administrative Officer

- Appendix A: Location and Orthophoto Maps
- Appendix B: Comprehensive Development Zone No. 46 (CD-46)
- Appendix C: Draft Development Permit No. 400
- Appendix D: Multi-Family Development Permit Area Guidelines – Response Table

Appendix A: Location and Orthographic Maps



**THE CORPORATION OF THE
CITY OF WHITE ROCK
BYLAW 2056**



A Bylaw to amend the
"White Rock Zoning Bylaw, 2012, No. 2000" as amended

The CITY COUNCIL of the Corporation of the City of White Rock, in open meeting assembled, ENACTS as follows:

1. Schedule "C" of the "White Rock Zoning Bylaw, 2012, No. 2000" as amended is further amended by rezoning the western approximately 1.75 acres of the following lands:

Lot 1 Section 10 Township 1 New Westminster District Plan EPP25563
PID: 029-076-234
(1454 Oxford Street)

as shown on Schedule "1" attached hereto, from the 'P-1 Civic/Institutional Use Zone' to the 'CD-46 Comprehensive Development Zone'.
2. The "White Rock Zoning Bylaw, 2012, No. 2000" as amended is further amended:
 - (1) by adding to the Table of Contents for 'Schedule "B" (Comprehensive Development Zones)', Section '7.46 CD-46 Comprehensive Development Zone (1454 Oxford Street)'; and
 - (2) by adding the attached Schedule "2" to 'Schedule B (Comprehensive Development Zones)' as Section '7.46 CD-46 Comprehensive Development Zone'.
3. This Bylaw may be cited for all purposes as the "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2056".

PUBLIC INFORMATION MEETING on the	9 th day of	April, 2014
RECEIVED FIRST READING on the	23 rd day of	November, 2015
RECEIVED SECOND READING on the	23 rd day of	November, 2015
PUBLIC HEARING held on the	7 th day of	December, 2015
RESCINDED FIRST READING on the	19 th day of	September, 2016
RESCINDED SECOND READING on the	19 th day of	September, 2016

RECEIVED NEW FIRST READING on the 19th day of September, 2016
RECEIVED NEW SECOND READING on the 19th day of September, 2016
PUBLIC HEARING held on the 22nd day of November, 2016
RECEIVED THIRD READING on the 5th day of December, 2016
RECONSIDERED AND FINALLY ADOPTED on the 12th day of June, 2017

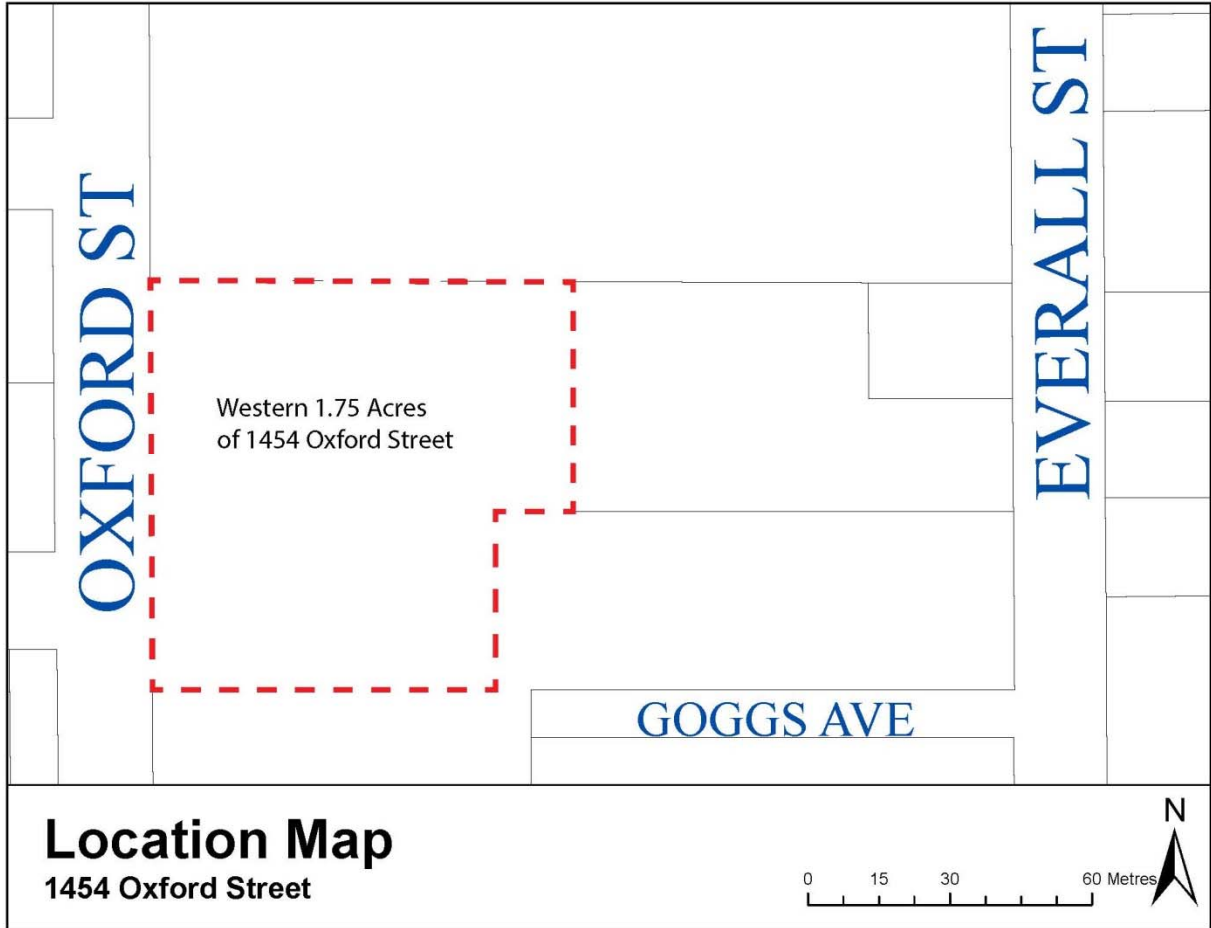


MAYOR



CITY CLERK

SCHEDULE "1"



SCHEDULE “2”

7.46 CD-46 COMPREHENSIVE DEVELOPMENT ZONE

INTENT

The intent of this zone is to accommodate a 121-unit residential development on a site of approximately 7,090 square metres (1.75 acres) in area.

1. Permitted Uses:
 - (a) *multi-unit residential use*
 - (b) *accessory home occupation* use in accordance with the provisions of 5.3 and that does not involve clients directly accessing the *building*
2. Lot Coverage:
 - (a) Maximum *lot coverage* shall not exceed 36%
3. Density:
 - (a) Maximum *gross floor area* shall not exceed 32,522 square metres (350,060ft²)
 - (b) Maximum *residential floor area* shall not exceed 27,607 square metres (297,156ft²)
 - (c) Maximum number of *dwelling units* shall not exceed 121
4. Building Height:
 - (a) Tower A (shown on attached Plans) shall not exceed a *height* of 159.5 metres geodetic
 - (b) Tower B (shown on attached Plans) shall not exceed a *height* of 170.5 metres geodetic
 - (c) Section 4.13.4 does not apply to the CD-46 Zone
5. Siting Requirements:
 - (a) Minimum setbacks are as follows:

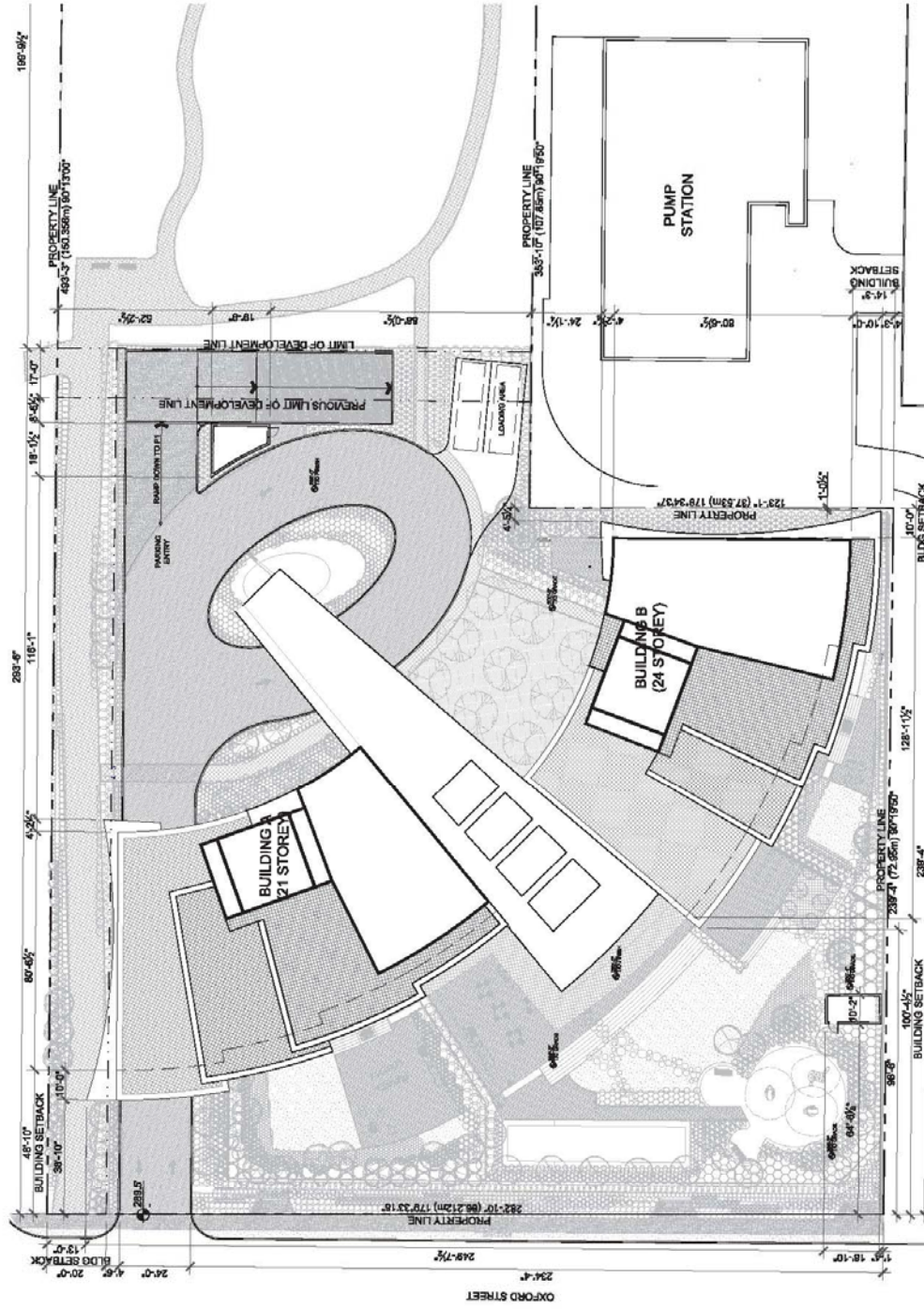
(i) Setback for buildings from front (west) lot line	= 14.8 metres
(ii) Setback for balconies from front (west) lot line	= 11.8 metres
(iii) Setback for buildings from rear (east) lot line	= 19.5 metres
(iv) Setback for buildings from north interior side lot line	= 6.1 metres
(v) Setback for slab extensions from north interior side lot line	= 3.9 metres
(vi) Setback for buildings from south interior side lot line	= 4.3 metres
(vii) Setback for balconies from south interior side lot line	= 1.2 metres
(viii) Setback for buildings from other interior side lot lines	= 3.0 metres
(ix) Setback for slab extensions from other interior side lot lines	= 0.3 metres
 - (b) Stair accesses to the underground parking shall be sited as shown on the attached Plans
6. Parking:

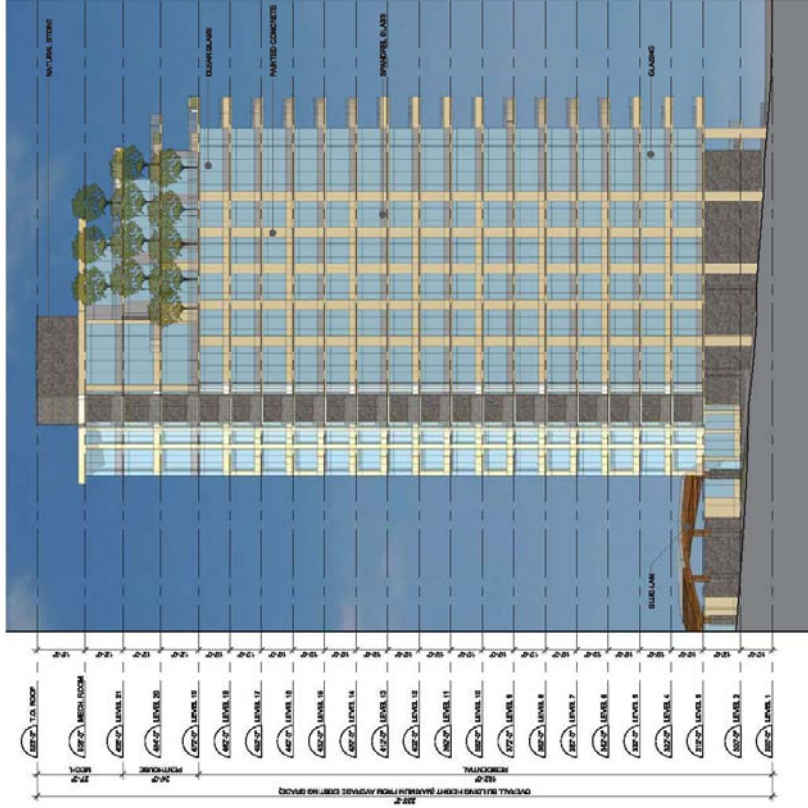
Parking shall be provided in accordance with Section 4.14, with a total minimum of four hundred (400) parking spaces to be provided as follows:

 - (a) A minimum of forty (40) visitor spaces are to be provided and marked as ‘visitor parking’
 - (b) A minimum of three hundred and sixty (360) spaces shall be provided to serve the residential units
 - (c) A minimum of six (6) spaces shall be provided for disabled persons parking and shall be clearly marked as per BC Building Code requirements
7. Loading:
 - (a) Two (2) loading zones shall be provided in accordance with Section 4.15

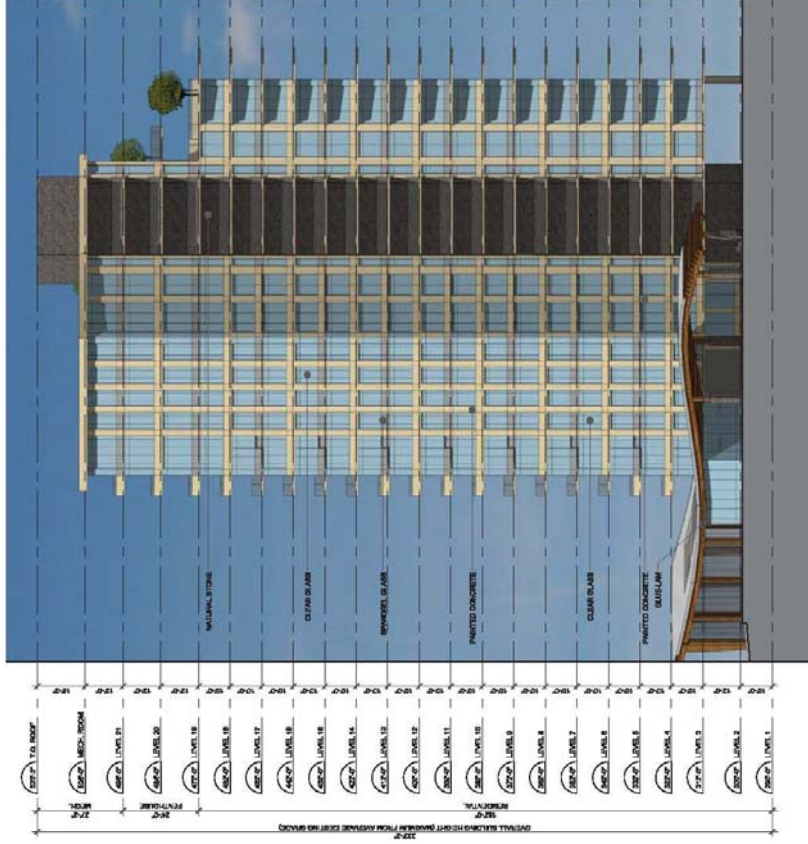
8. Bicycle Parking:
 - (a) A minimum of one hundred and twenty-two (122) Class I bicycle parking spaces shall be provided, in accordance with Section 4.16
 - (b) A minimum of twenty-five (25) Class II bicycle parking spaces shall be provided, in accordance with Section 4.16

9. General:
 - (a) Development in this zone shall substantially conform to the Plans prepared by Chris Dikeakos Architects Inc. and dated October 27, 2015, that are attached hereto and on file at the City of White Rock





NORTH ELEVATION



EAST ELEVATION

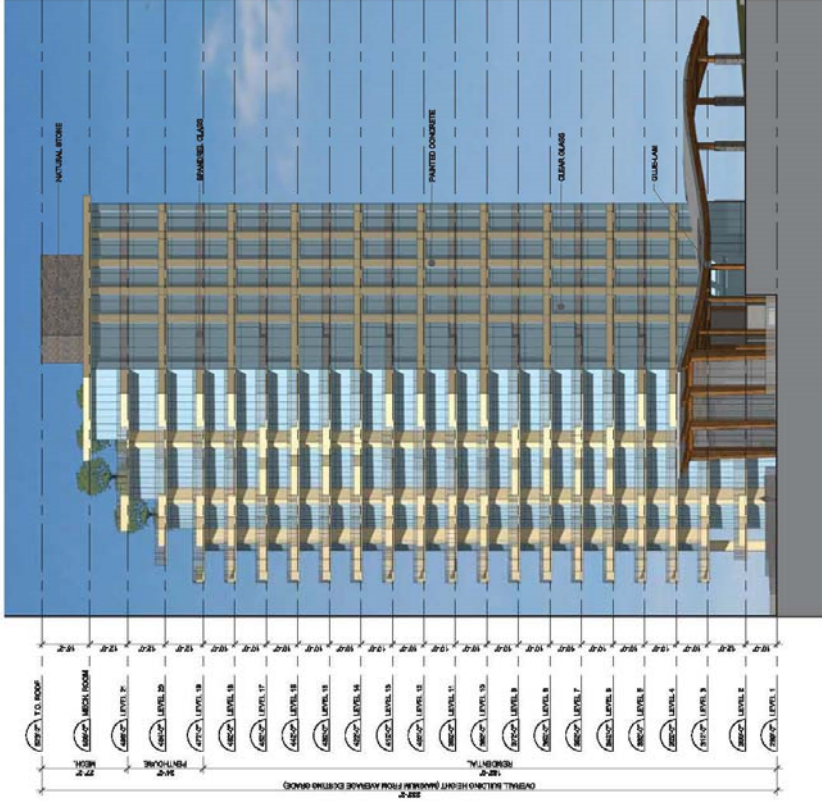


The Oxford
1500 Oxford Street, White Rock, BC

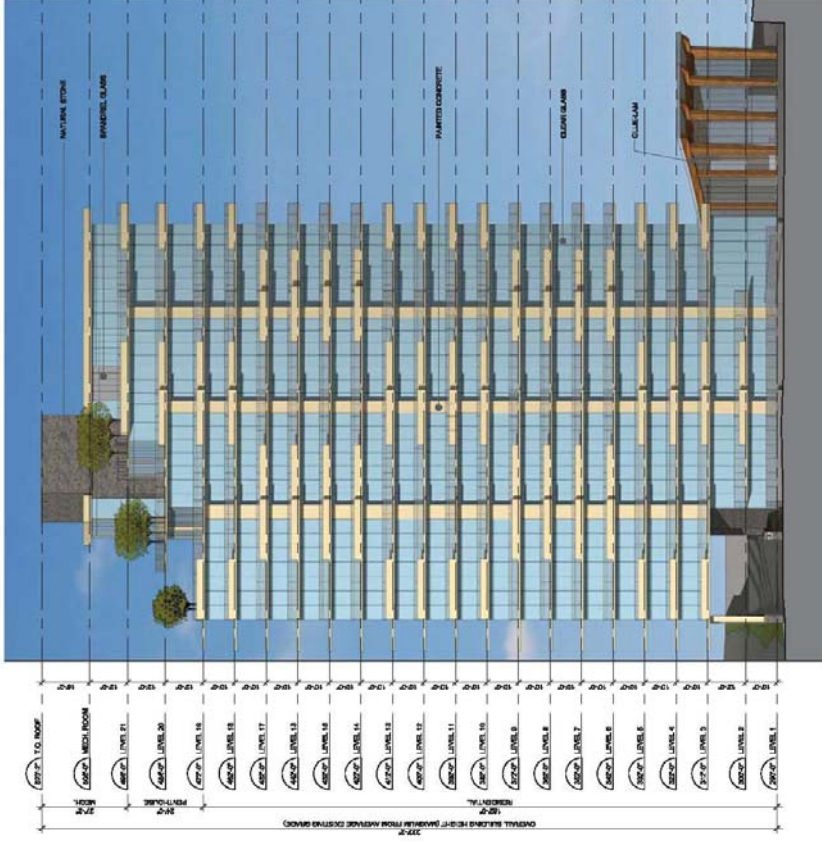
NORTH & EAST ELEV. - TOWER A
Scale: 1/32" = 1'-0"

Rezoning Re-submission
October 27, 2015

elegant DEVELOPMENT INC. | **A3.00**



SOUTH ELEVATION



WEST ELEVATION



The Oxford
1500 Oxford Street, White Rock, BC
CHRIS DINEAMUS
ARCHITECTS INC.

SOUTH & WEST ELEV. - TOWER A

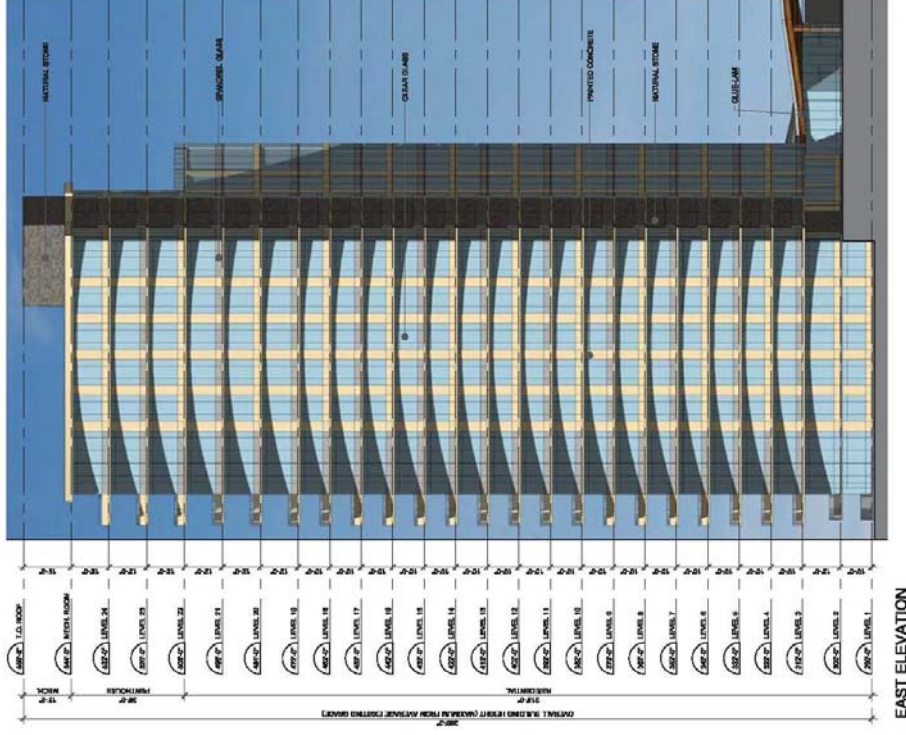
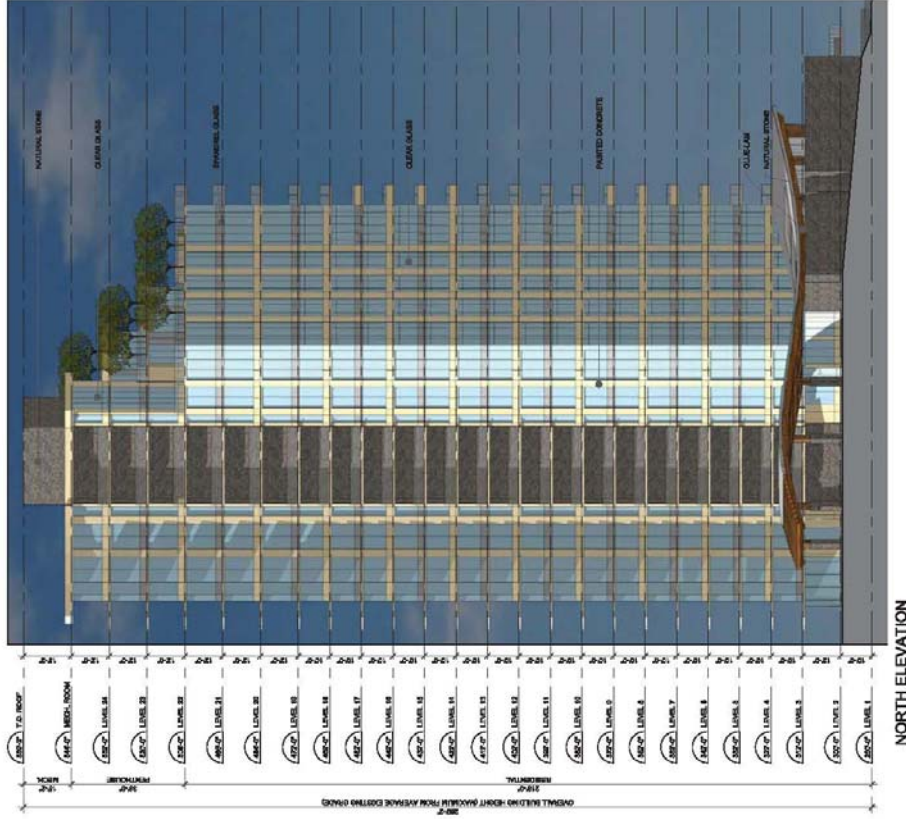
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Rezoning Re-submission

October 27, 2015

elegant
MANAGEMENT INC.

A3.01

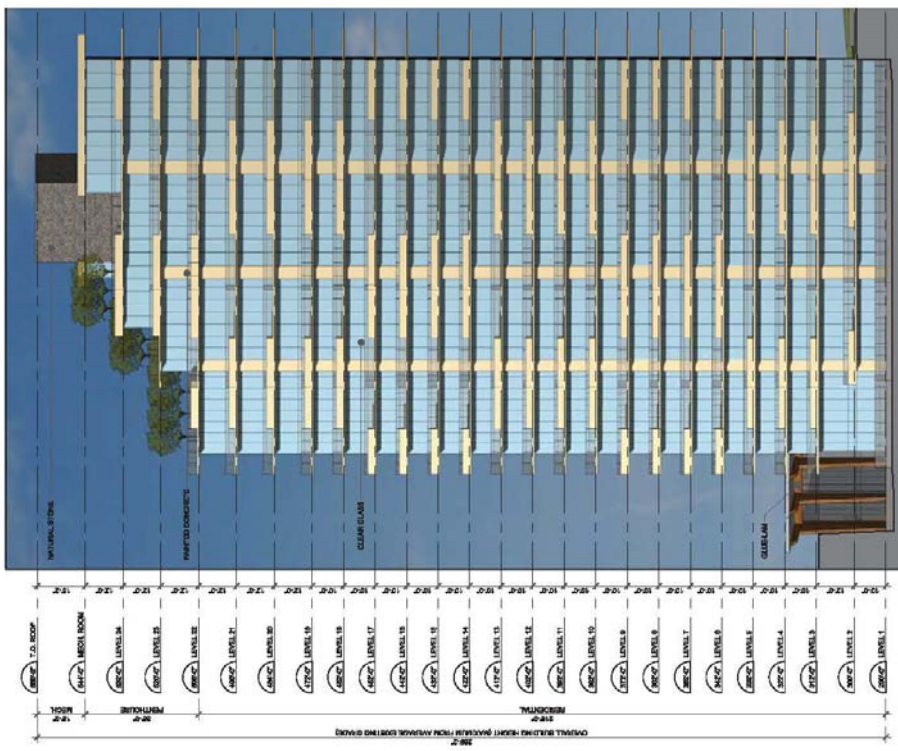
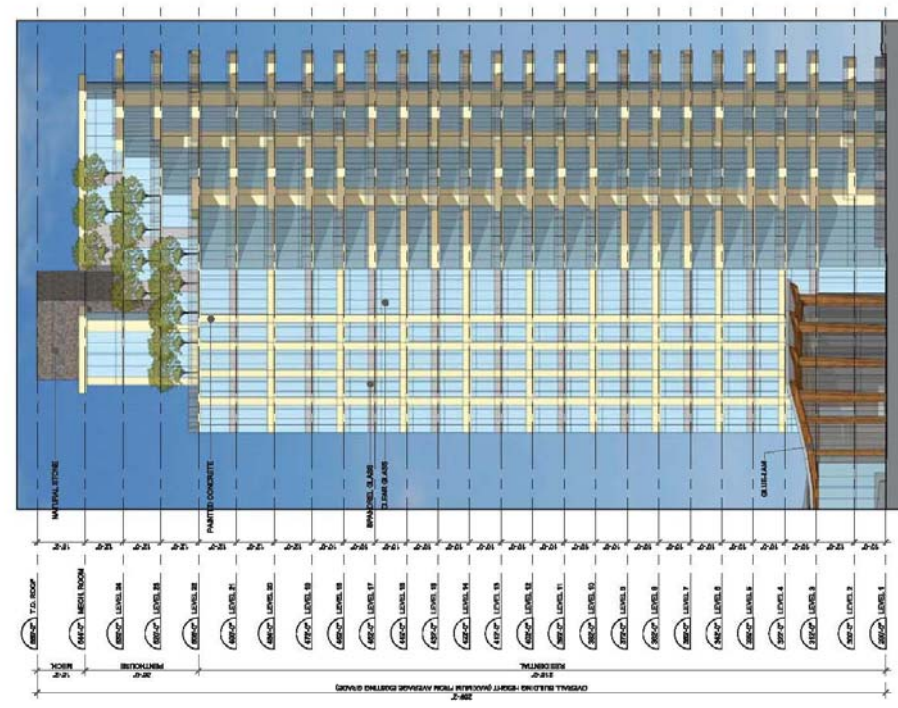


The Oxford
1500 Oxford Street, White Rock, BC

NORTH & EAST ELEV. - TOWER B
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Rezoning Re-submission
October 27, 2015

elegant DEVELOPMENT INC. | **A3.02**



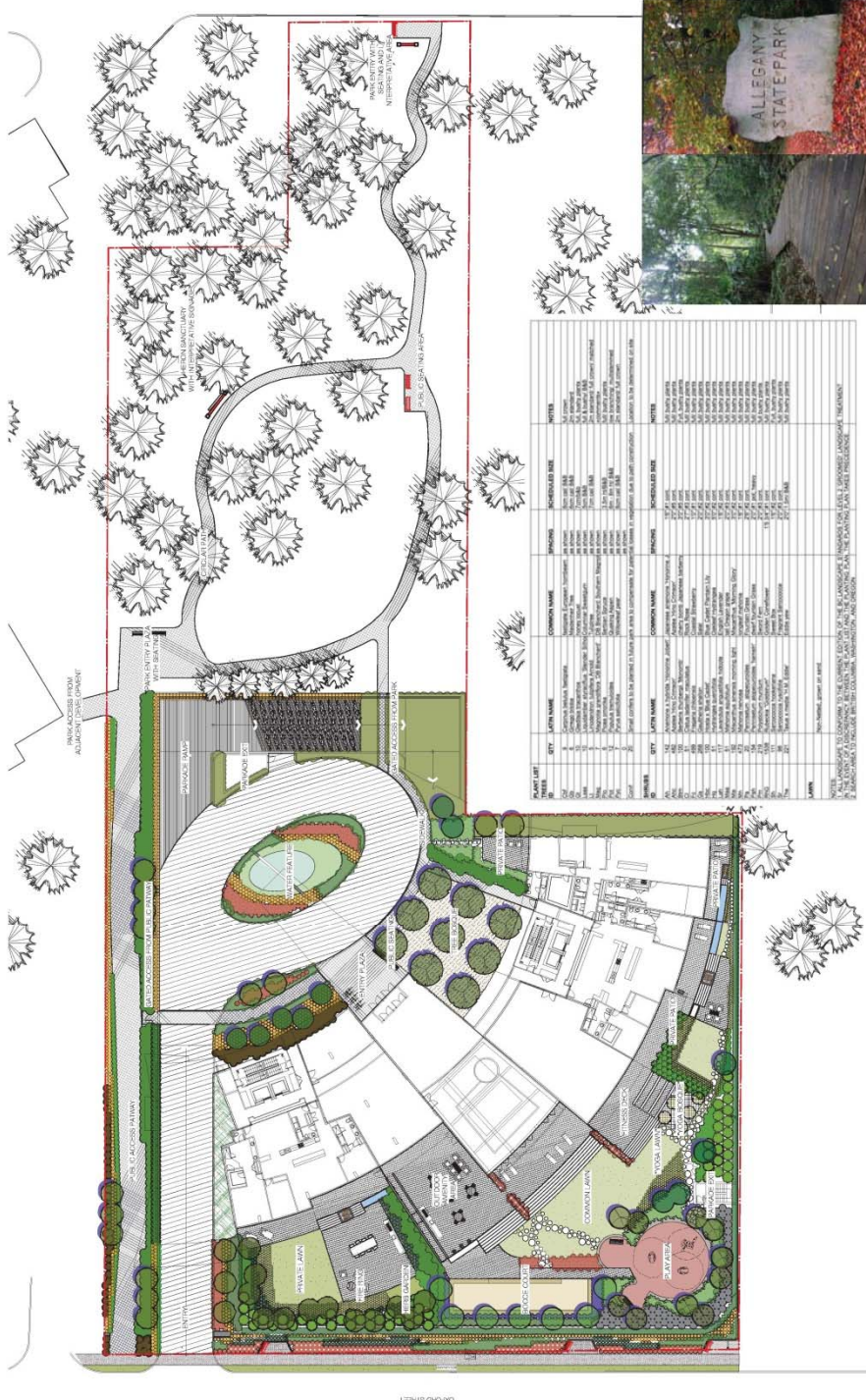
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Project Name: OXFORD STREET RESIDENTIAL



Project: OXFORD STREET RESIDENTIAL
 1800 OXFORD STREET
 White Rock, BC
 Drawing No: OXFORD STREET CONTEXT PLAN

Scale: 1/4" = 1'-0"	Sheet: L2
Author: J. Smith	Checked: J. Smith
Drawn: J. Smith	Reviewed: J. Smith
Date: 10/15/2018	Project: OXFORD STREET
Client: [Redacted]	Sheet: L2
Project: OXFORD STREET	Scale: 1/4" = 1'-0"



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THE CORPORATION OF THE
CITY OF WHITE ROCK



DEVELOPMENT PERMIT NO. 400

1. This Development Permit No. 400 is issued to **IOM Nautilus Views Ltd., Inc. No. BC1288361** as the owner and shall apply only to ALL AND SINGULAR those certain parcels or tracts of land and premises situate, lying and being in the City of White Rock, in the Province of British Columbia, and more particularly known and described as:

Legal Description:

Lot A Section 10 Township 1 New Westminster District Plan EPP63510
PID: 031-395-805

Civic Address:

1454 Oxford Street

The property subject to this Development Permit No. 400, described legally above, is indicated on Schedule A (“the Lands”).

2. This Development Permit No. 400 is issued pursuant to the authority of Sections 490 and 491 of the *Local Government Act, R.S.B.C. 2015, Chapter 1* as amended, the “White Rock Official Community Plan Bylaw, 2017, No. 2220” as amended, and in conformity with the procedures prescribed by “City of White Rock Planning Procedures Bylaw, 2017, No. 2234” as amended.
3. The terms, conditions and guidelines as set out in “White Rock Official Community Plan Bylaw, 2017, No. 2220” as amended, that relate to the “Multi-family Development Permit Area” and the “Environmental (Ravine Lands and Significant Trees) Development Permit Area” shall apply to the Lands.

4. Permitted Uses of Land, Buildings and Structures

Land, buildings, and structures on the Lands shall only be used in accordance with the provisions of the “CD-46 Comprehensive Development Zone” as established in Schedule “B” to “City of White Rock Zoning Bylaw, 2012, No. 2000” as amended.

5. Terms and Conditions:

- a) All buildings, structures, and landscape features to be constructed, repaired, renovated, or sited on the Lands, in addition to pedestrian connections and a Public Access Pathway, shall be in substantial compliance with the architectural designs prepared by Chris Dikeakos Architects, dated June 9, 2021, attached hereto as Schedule B, in accordance with the provisions of Section 491 of the *Local Government Act*.

- b) All site landscaping on the Lands, including hard and soft landscape features, irrigation controls, site furnishing and other materials shall be in substantial compliance with the landscape designs prepared by ETA Landscape Architecture, dated September 14, 2015 (Issue No. “S”, dated June 8, 2021), attached hereto as Schedule C in accordance with the provisions of Section 491 of the *Local Government Act*.
 - a. The permittee must submit to the City a cost estimate and related securities for the above-described landscape works prior to the issuance of a building permit. At the time of preparing this Development Permit the estimated costs of landscaping works was \$1,053,147.38, being 150 percent of the cost of landscaping works.
 - b. The release of all or a portion of these securities can be requested no sooner than 12 months following the receipt of a letter from the landscape architect or other qualified person confirming that the landscaping works tied to the securities have been installed in accordance with the landscape designs included as Schedule C.
- c) Sediment and erosion controls within the Lands shall be implemented and maintained throughout construction in substantial compliance with the Erosion and Sediment Control Plan prepared by GeoPacific, dated March 12, 2021, attached hereto as Schedule D in accordance with the provisions of Section 491 of the *Local Government Act*.
 - a. The permittee must submit to the City a cost estimate and related securities for the above-described controls prior to the issuance of a building permit. At the time of preparing this Development Permit the estimated costs of these controls was \$173,250, being 150 percent of the cost of landscaping works.
 - b. The release of all or a portion of these securities can be requested following the receipt of final building permit approval.
- d) Rooftop mechanical equipment shall be screened from view to the acceptance of the Director of Planning and Development Services;
- e) The hydro kiosk is to be located on site to the acceptance of the Director of Planning and Development Services;
- f) The owner is advised that in 2012 nine vacant Great Blue Heron (‘heron’) nests were observed within the wooded area immediately east of the Lands. These nests are protected under Section 34 of the *BC Wildlife Act*. Any activities that have the potential to disturb active heron nesting sites, shall be evaluated alongside the implementation of mitigative controls as recommended by a Qualified Environmental Professional (QEP).
- g) The applicant shall provide an updated Arborist Report and obtain a Tree Management Permit from the City as required by the “White Rock Tree Management Bylaw, 2008, No. 1831,” as amended.
- h) The applicant will be required to provide a detailed geotechnical assessment, prepared by a Registered Geotechnical Engineer, in support of a building permit application tied to the architectural designs included as Schedule B to this permit. Note that the City may require the registration of a covenant, pursuant to Section 219 of the Land Titles Act, as a means of implementing the recommendations of the assessment.

6. In the interpretation of the Development Permit all definitions of words and phrases contained in Sections 490 and 491 of the *Local Government Act, R.S.B.C. 2015, Chapter 1* as amended, and the “White Rock Official Community Plan Bylaw, 2017, No. 2220”, as amended, shall apply to this Development Permit and attachments.
7. Where the holder of this Permit does not obtain the required building permits and commence construction of the development as outlined in this Development Permit within two years after the date this Permit was authorized by Council, the Permit shall lapse, unless the Council, prior to the date the Permit is scheduled to lapse, has authorized further time extension of the Permit.
8. This permit does not constitute a subdivision approval, a tree management permit, a demolition permit, or a building permit.

Authorizing Resolution passed by the Council for the City of White Rock on the _____ day of _____, 20__.

This development permit has been executed at White Rock, British Columbia on the _____ day of _____ 20__.

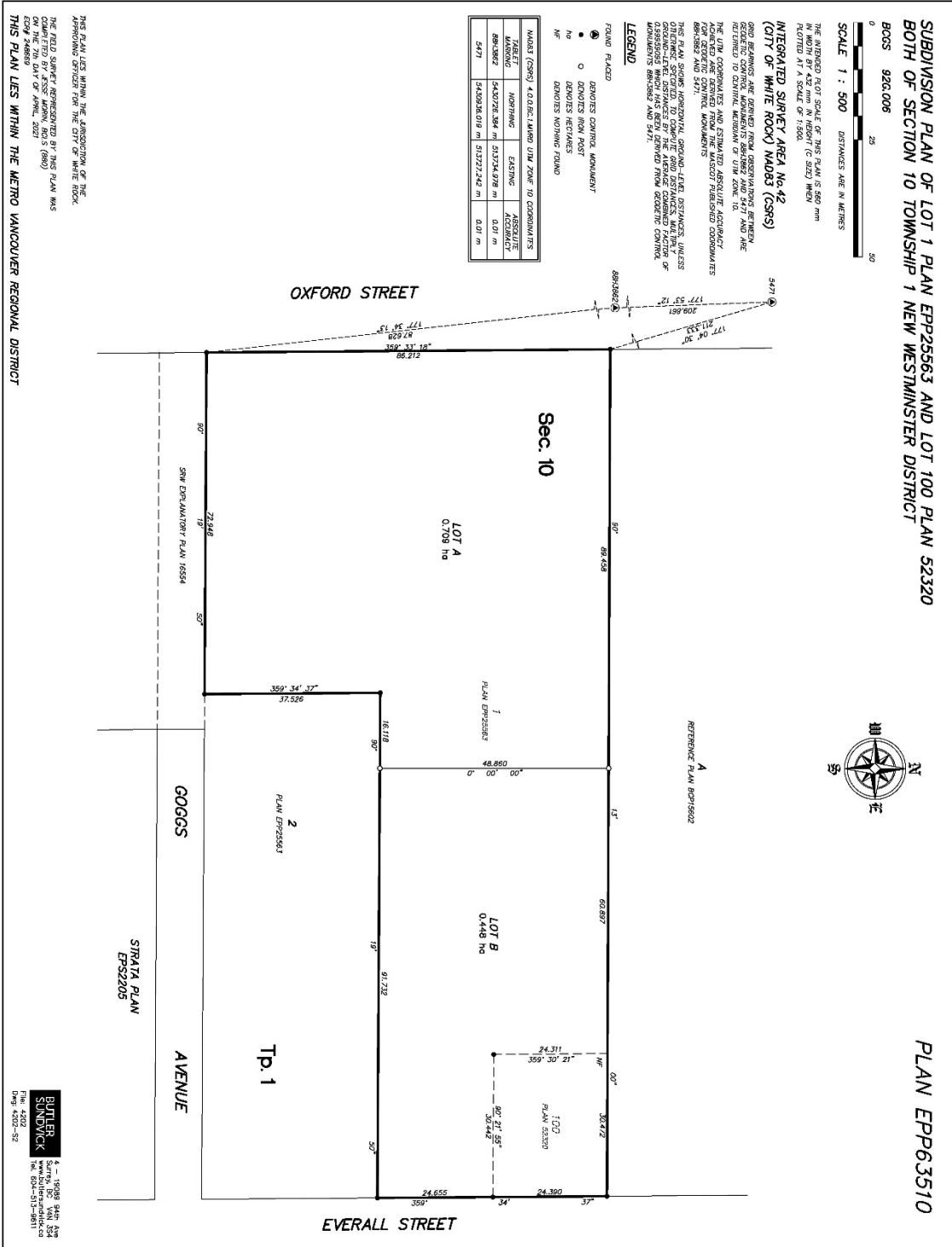
The Corporate Seal of THE CORPORATION
OF THE CITY OF WHITE ROCK was hereunto
affixed in the presence of:

Mayor - Authorized Signatory

Director of Corporate Administration - Authorized Signatory

Schedule A – Subject Property

Filed NW EPP63510 EPP63510 161-799-5561 RCVD:2021-05-10 RQST:2021-05-21 03:06 White Rock, The Corporation of the City of



Schedule B – Architectural Designs

[attached separately]

Schedule C – Landscape Plans

[attached separately]

Schedule D – Erosion and Sediment Control (ESC) Plans

[attached separately]



1 ARCHITECTURAL PAINTED CONCRETE
BENJAMIN MOORE - CREAM YELLOW 2155-60



2 GLUE-LAMINATED WOOD



4 GLASS WINDOW WALL
SPANDREL GLASS - #3-1373 BLACKTHORN
OPACI-COAT ON 6MM PILKINGTON CLEAR



6 GREY STONE VENEER



5 PAINTED MULLION
AKZO NOBEL INTERPON POWDER COATING - STANDARD SILVER

MATERIAL LEGEND:

1 ARCHITECTURAL PAINTED CONCRETE
BENJAMIN MOORE - CREAM YELLOW 2155-60

2 GLUE-LAMINATED WOOD

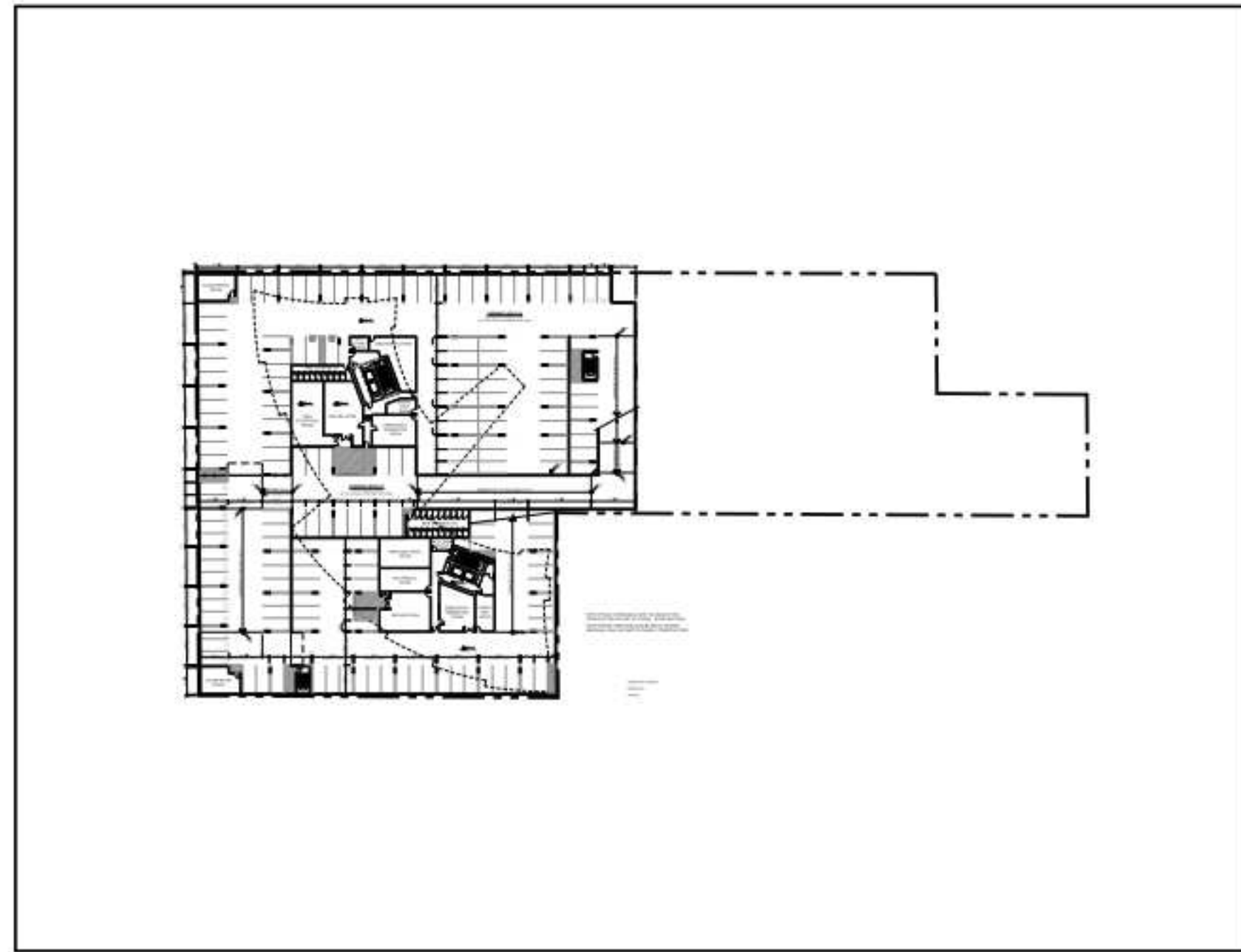
3 GLASS WINDOW WALL
CLEAR VISION GLASS - SOLARBAN 60 (2) STARPHIRE

4 GLASS WINDOW WALL
SPANDREL GLASS - #3-1373 BLACKTHORN
OPACI-COAT ON 6MM PILKINGTON CLEAR

5 PAINTED MULLION
AKZO NOBEL INTERPON POWDER COATING - STANDARD SILVER

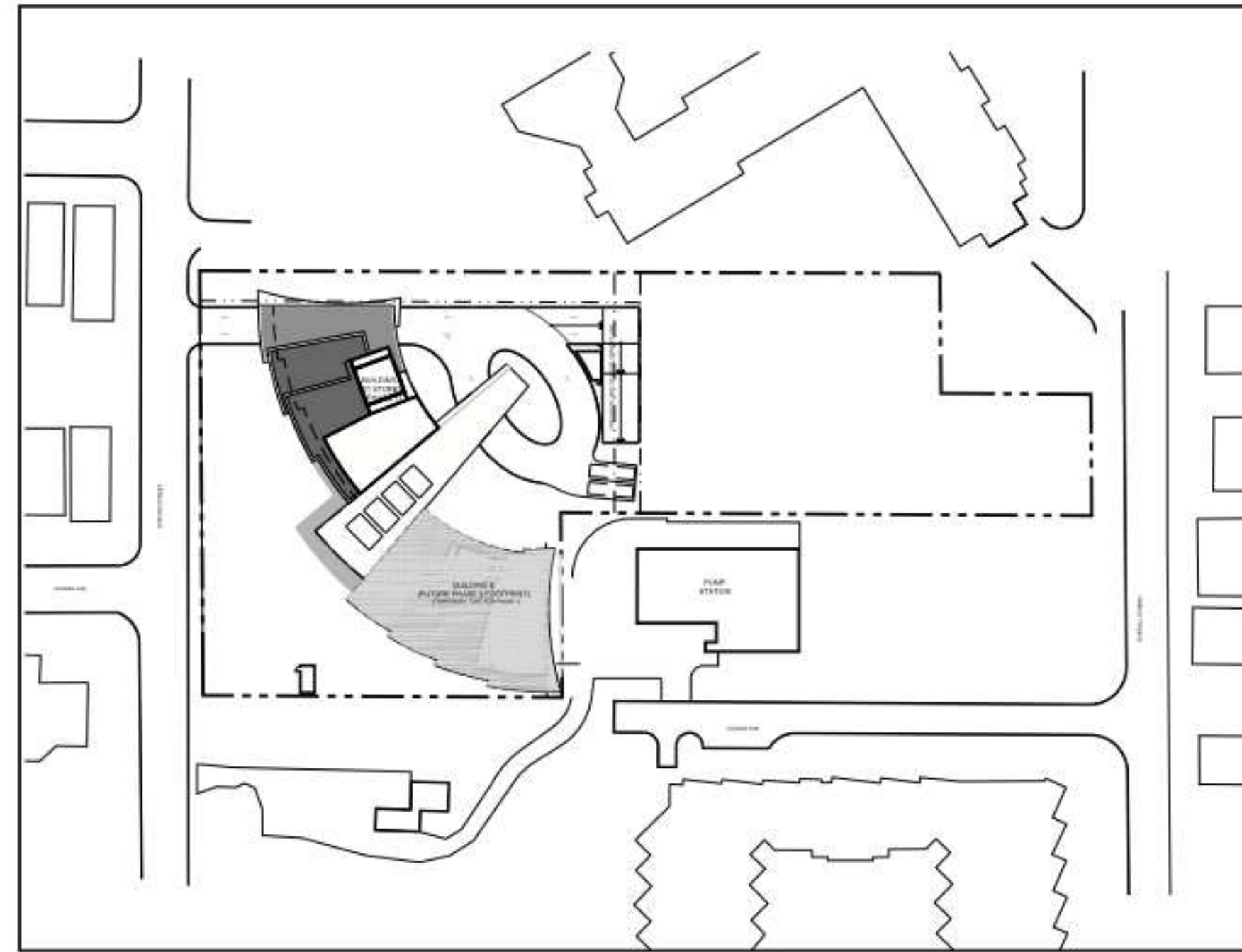
6 GREY STONE VENEER

PHASE 1



PHASE 1: BELOW GRADE

DURING THE CONSTRUCTION OF PHASE 1 THE ENTIRE BELOW GRADE PARKING STRUCTURE WILL BE BUILT UP TO GRADE. THIS INCLUDES CORE AND STRUCTURE FOR BOTH BUILDINGS. THE BELOW-GRADE PORTION OF BUILDING B WILL ALSO BE BUILT UP TO GRADE AND WILL BE COVERED AND TEMPORARILY TURFED UNTIL THE CONSTRUCTION OF PHASE 2 COMMENCES.



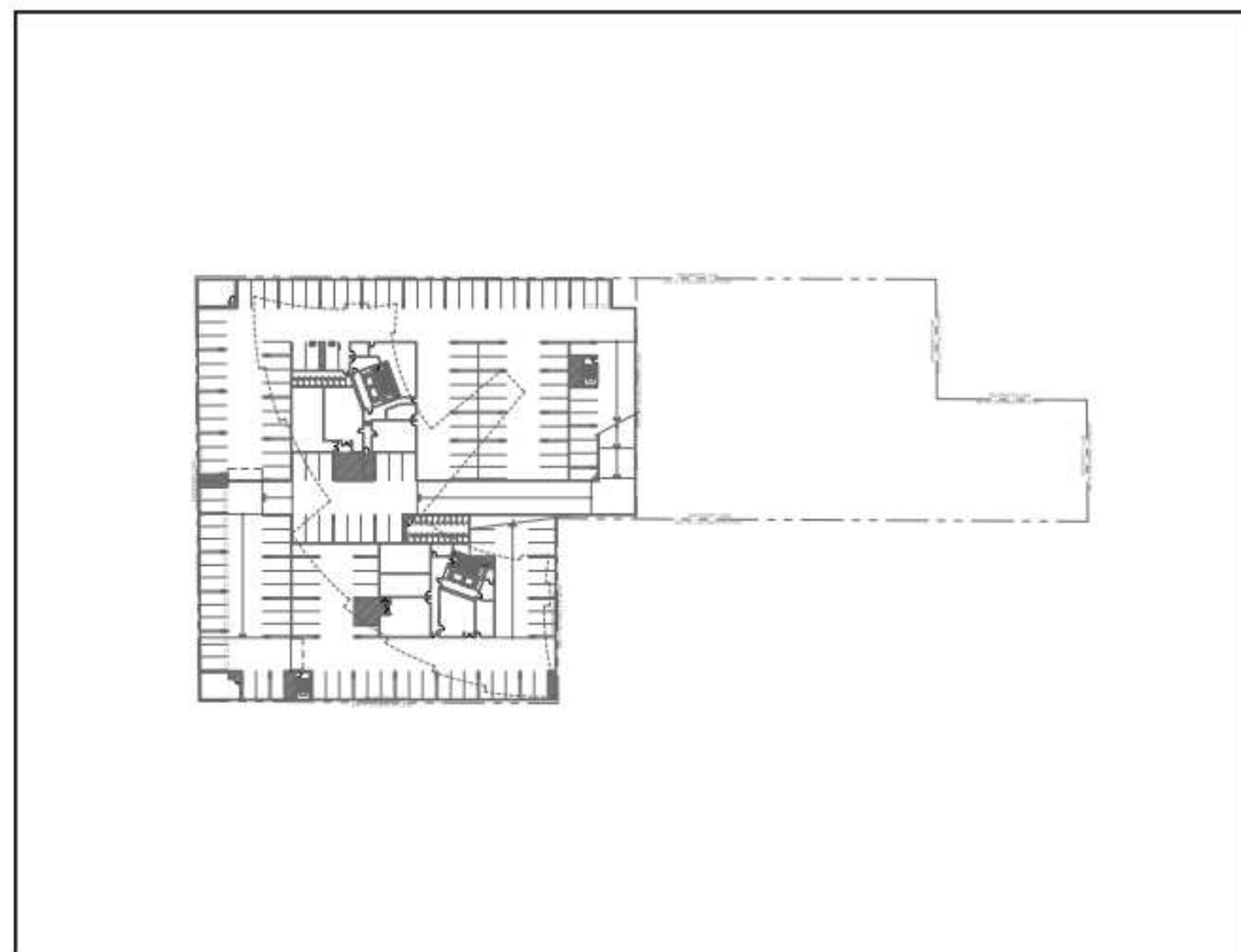
PHASE 1: ABOVE GRADE

THE ENTIRE BUILDING A WILL BE BUILT DURING PHASE ONE INCLUDING THE SURROUNDING LANDSCAPING, ROAD & PARKADE ENTRY. THE BUILDING FOOTPRINT OF BUILDING B WILL BE TEMPORARILY TURFED UNTIL THE COMMENCEMENT OF THE CONSTRUCTION OF PHASE 2.



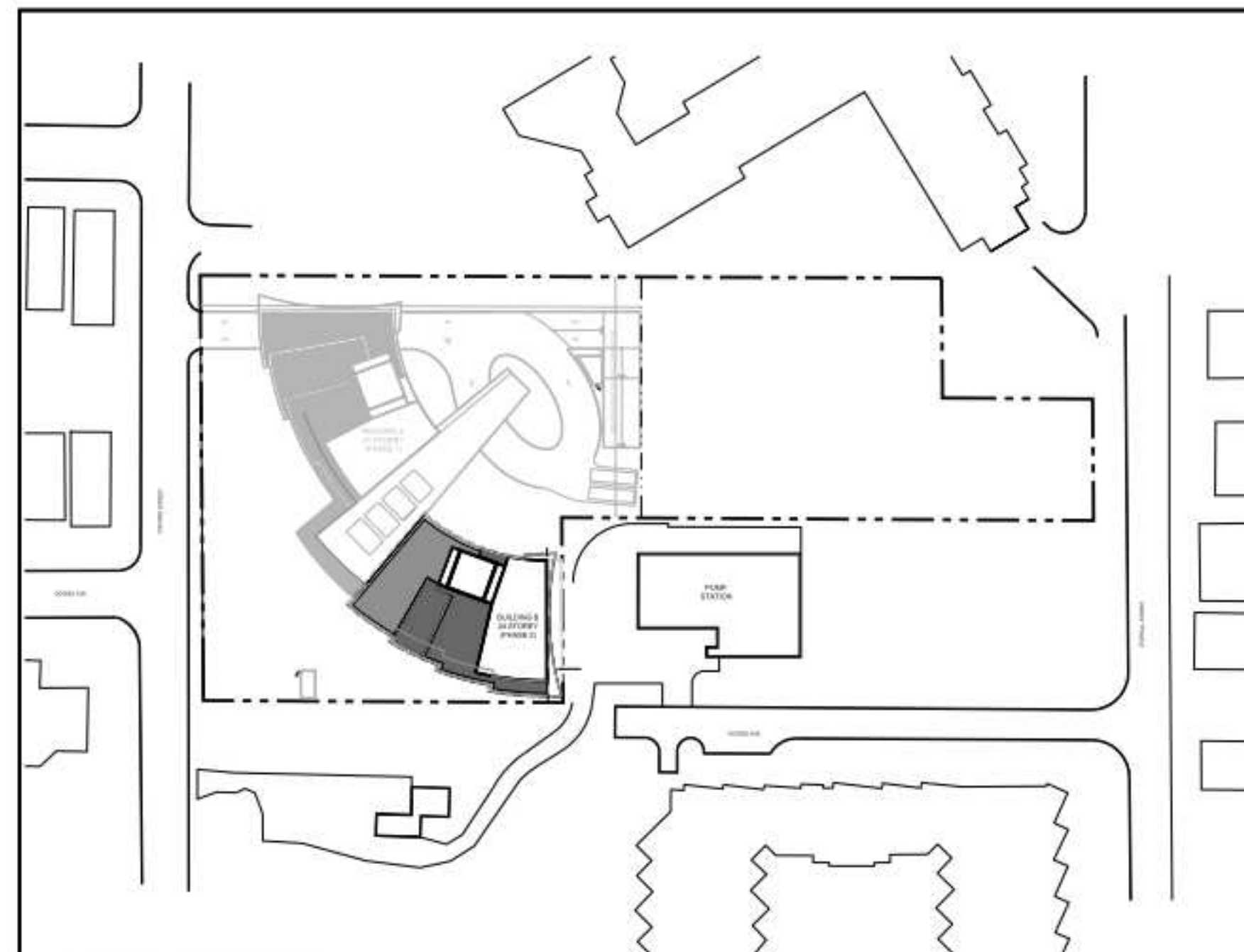
FUTURE PHASE 2 - BUILDING B

PHASE 2



PHASE 2: BELOW GRADE

THERE WILL BE NO PORTION OF BELOW GRADE ASSOCIATED WITH PHASE 2. ALL BELOW-GRADE CONSTRUCTION WILL OCCUR WITH PHASE 1

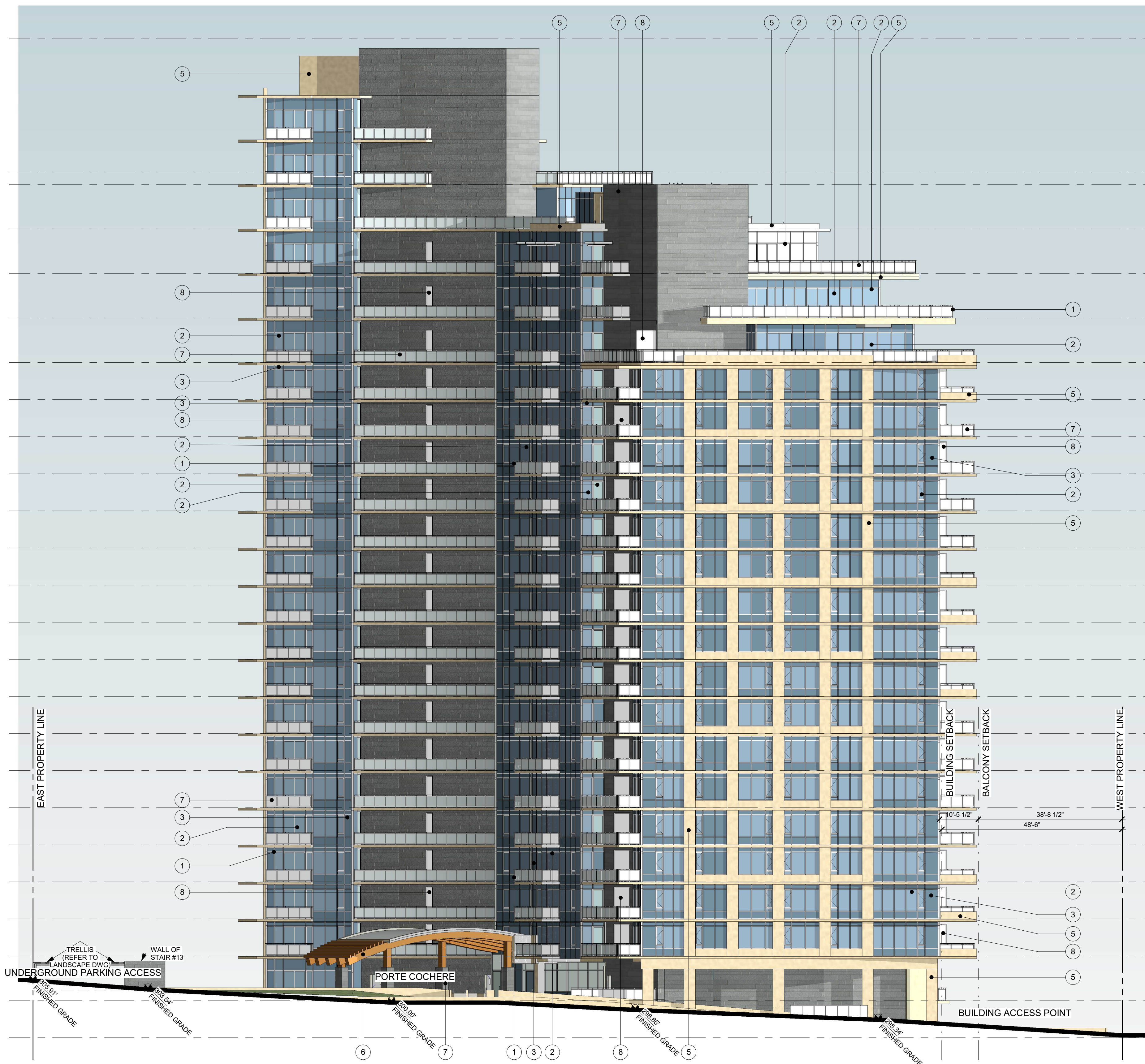


PHASE 2: ABOVE GRADE

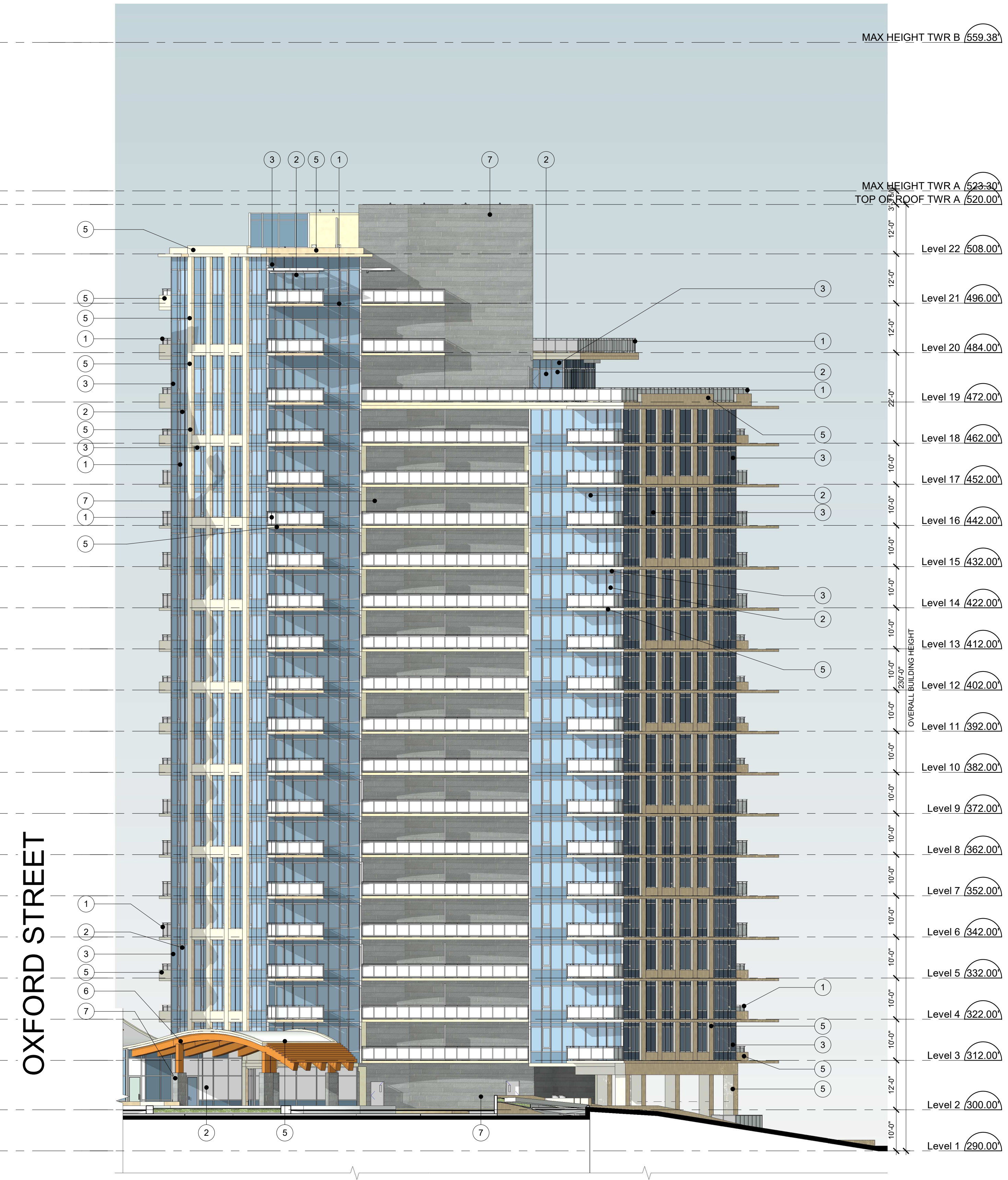
THE CONSTRUCTION OF PHASE 2 WILL ONLY INVOLVE THE CONSTRUCTION OF BUILDING B STARTING FROM GROUND LEVEL. THE TURF THAT WAS IN THIS LOCATION WILL BE REMOVED.



MATERIAL LEGEND			
1	ALUMINUM WINDOW WALL FRAME, GUARDRAIL: AZKO NOBEL INTERPON POWDER COATING- STANDARD SILVER	5	ARCH. PAINTED CONCRETE: BENJAMINE MOORE - CREAM YELLOW 2155-60
2	TOWER VISION GLASS - TINTED SEALED UNIT: CLEAR VISION GLASS - SOLARBAN 60 (2) STARPHIRE	6	GLUE-LAMINATED WOOD
3	SPANDREL GLASS - OPACI-COAT 300 #3-1373 BLACKTHORN OPACI-COAT ON 6MM PILKINGTON CLEAR	7	GREY STONE VENEER
4	METAL PANEL: BENJAMINE MOORE - CREAM YELLOW 2155-60	8	PRIVACY SCREEN



1 TOWER A NORTH ELEVATION (DP)
1/16" = 1'-0"

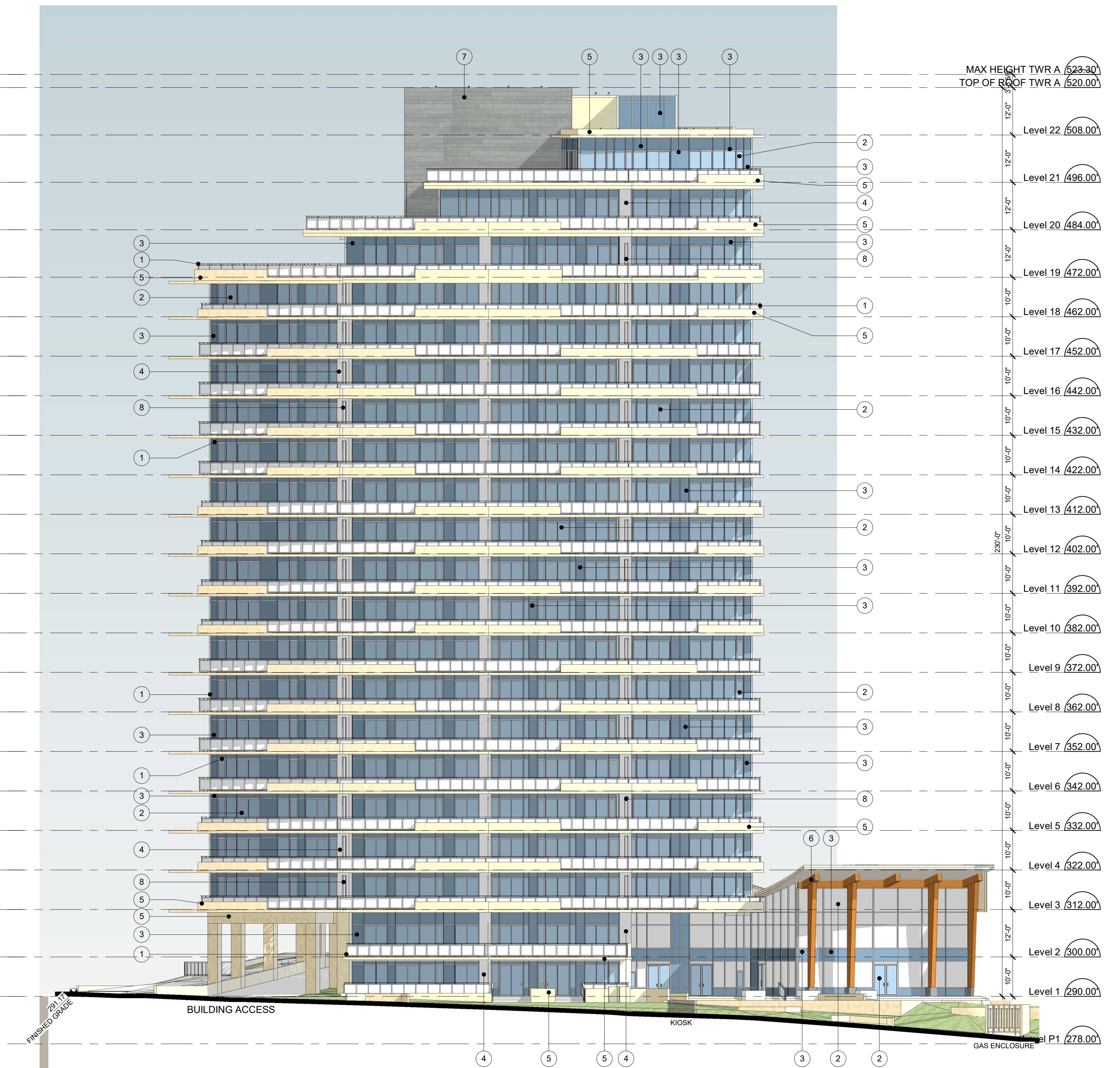


2 TOWER A NORTH EAST ELEVATION (DP)
1/16" = 1'-0"

MATERIAL LEGEND			
1	ALUMINUM WINDOW WALL FRAME, GUARDRAIL: AZKO NOBEL INTERPON POWDER COATING- STANDARD SILVER	5	ARCH. PAINTED CONCRETE: BENJAMINE MOORE - CREAM YELLOW 2155-60
2	TOWER VISION GLASS - TINTED SEALED UNIT: CLEAR VISION GLASS - SOLARBAN 60 (2) STARPHIRE	6	GLUE-LAMINATED WOOD
3	SPANDREL GLASS - OPACI-COAT 300 #3-1373 BLACKTHORN OPACI-COAT ON 6MM PILKINGTON CLEAR	7	GREY STONE VENEER
4	METAL PANEL: BENJAMINE MOORE - CREAM YELLOW 2155-60	8	PRIVACY SCREEN



1 TOWER A SOUTH EAST ELEVATION
1/16" = 1'-0"



2 TOWER A SOUTH WEST ELEVATION
1/16" = 1'-0"

MATERIAL LEGEND			
1	ALUMINUM WINDOW WALL FRAME, GUARDRAIL: AZKO NOBEL INTERPON POWDER COATING- STANDARD SILVER	5	ARCH. PAINTED CONCRETE: BENJAMINE MOORE - CREAM YELLOW 2155-60
2	TOWER VISION GLASS - TINTED SEALED UNIT: CLEAR VISION GLASS - SOLARBAN 60 (2) STARPHIRE	6	GLUE-LAMINATED WOOD
3	SPANDREL GLASS - OPACI-COAT 300 #3-1373 BLACKTHORN OPACI-COAT ON 6MM PILKINGTON CLEAR	7	GREY STONE VENEER
4	METAL PANEL: BENJAMINE MOORE - CREAM YELLOW 2155-60	8	PRIVACY SCREEN



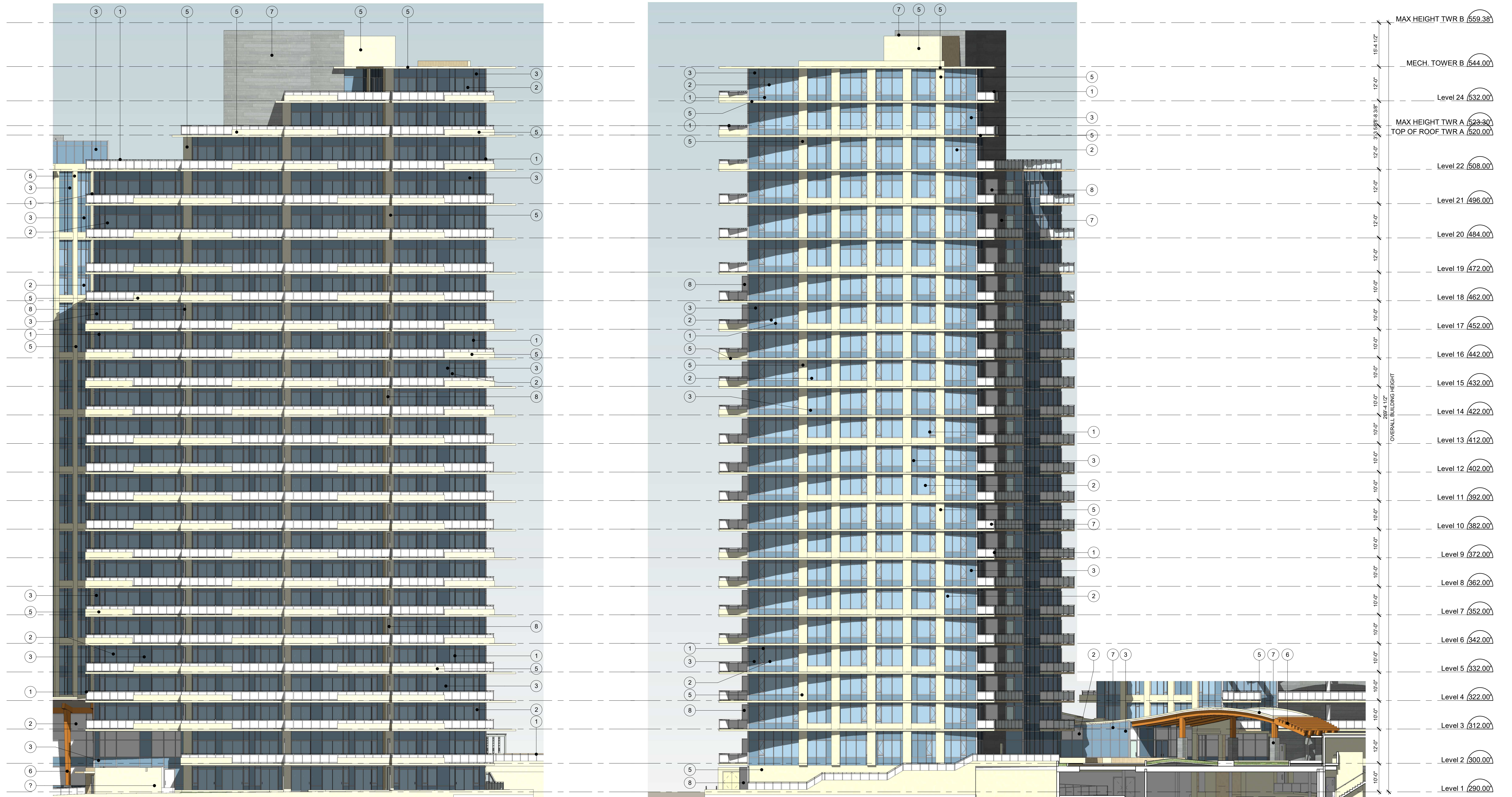
1 Tower B NE Elevation (DP)
1/16" = 1'-0"



2 Tower B NW Elevation (DP)
1/16" = 1'-0"

- MAX HEIGHT TWR B (559.38)
- MECH. TOWER B (544.00)
- Level 24 (532.00)
- MAX HEIGHT TWR A (523.30)
- TOP OF ROOF TWR A (520.00)
- Level 22 (508.00)
- Level 21 (496.00)
- Level 20 (484.00)
- Level 19 (472.00)
- Level 18 (462.00)
- Level 17 (452.00)
- Level 16 (442.00)
- Level 15 (432.00)
- Level 14 (422.00)
- Level 13 (412.00)
- Level 12 (402.00)
- Level 11 (392.00)
- Level 10 (382.00)
- Level 9 (372.00)
- Level 8 (362.00)
- Level 7 (352.00)
- Level 6 (342.00)
- Level 5 (332.00)
- Level 4 (322.00)
- Level 3 (312.00)
- Level 2 (300.00)
- Level 1 (290.00)

MATERIAL LEGEND			
1	ALUMINUM WINDOW WALL FRAME, GUARDRAIL: AZKO NOBEL INTERPON POWDER COATING- STANDARD SILVER	5	ARCH. PAINTED CONCRETE: BENJAMINE MOORE - CREAM YELLOW 2155-60
2	TOWER VISION GLASS - TINTED SEALED UNIT: CLEAR VISION GLASS - SOLARBAN 60 (2) STARPHIRE	6	GLUE-LAMINATED WOOD
3	SPANDREL GLASS - OPACI-COAT 300 #3-1373 BLACKTHORN OPACI-COAT ON 6MM PILKINGTON CLEAR	7	GREY STONE VENEER
4	METAL PANEL: BENJAMINE MOORE - CREAM YELLOW 2155-60	8	PRIVACY SCREEN



1 Tower B SW Elevation (DP)
1/16" = 1'-0"

2 Tower B E Elevation (DP)
A502 1/16" = 1'-0"









Revision No.	Date	Revision Notes
R	2021-06-06	Re-Issued for DP
S	2021-06-09	Re-Issued for DP

Issue No.	Date	Issue Notes
R	2021-06-06	Re-Issued for DP
S	2021-06-09	Re-Issued for DP

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Vancouver, BC, Canada V6J 1H3

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Project
OXFORD STREET RESIDENTIAL
1500 OXFORD STREET
White Rock, BC

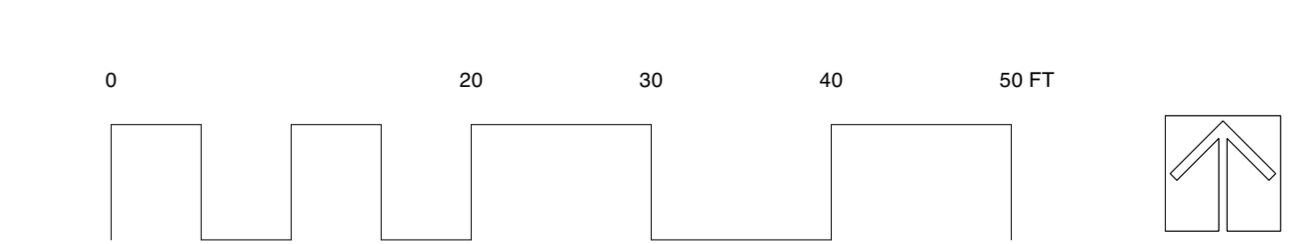
Drawing Title
Landscape Plan

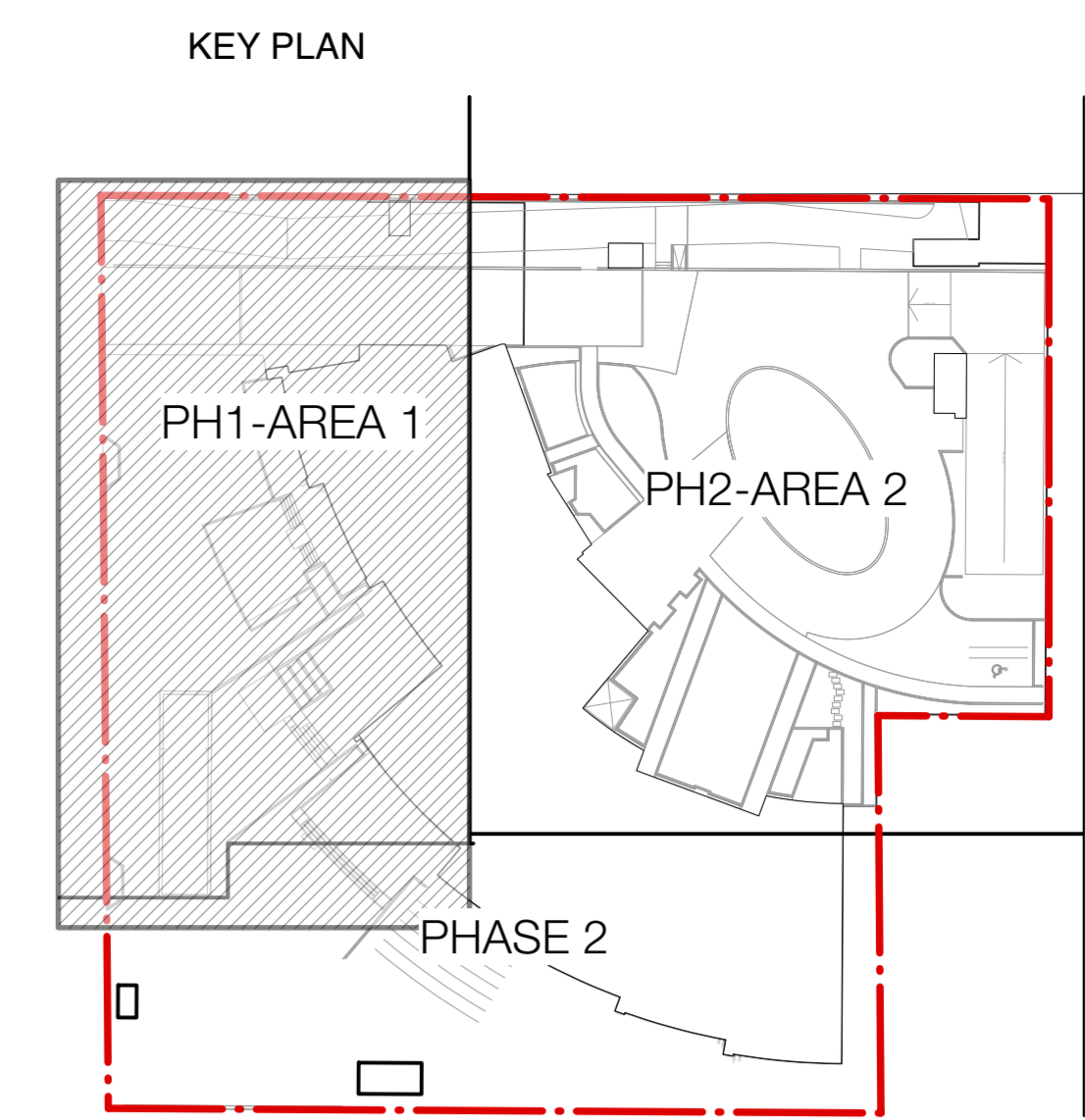
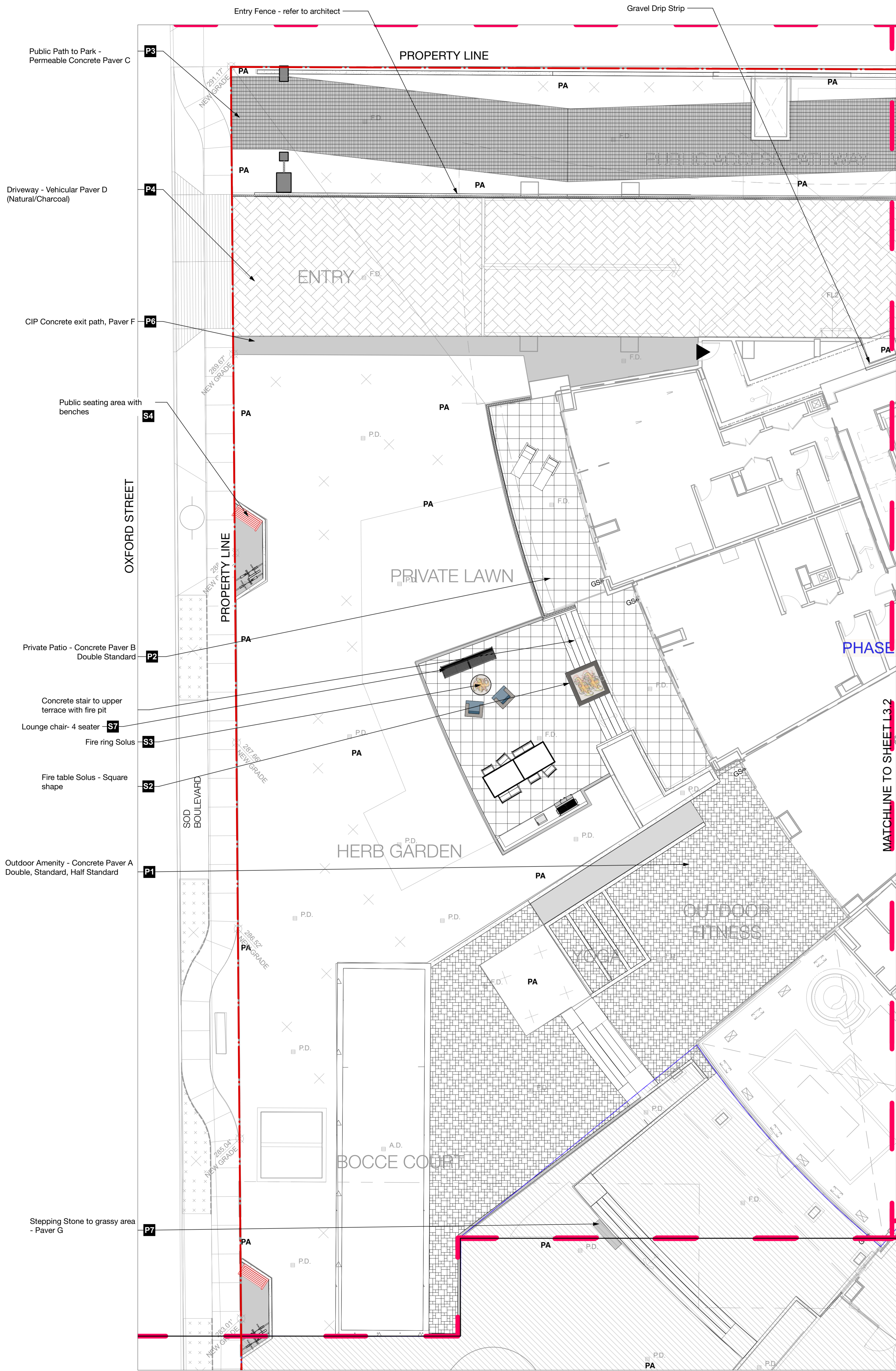
Legal
Parcel "C" (Reference Plan 12042)
Lot 4 Except Part Subdivided By
Plan 52320, Section 10 Township 1

Project Manager GE	Project ID 21752
Drawn By GE/KB	Scale AS SHOWN
Reviewed By GE	
Date 2015-09-14	
	L0.2 of 36

Plot Date:
21-6-9
21752 Oxford St Residential_BP100

1 Landscape Plan
Scale: 3/32" = 1'-0"





LEGEND:

- P1** Concrete Paver A, Model: Pacific Slate, Manufacturer: Abbotsford Concrete, Size: Standard, Double & Half Standard, Color: Granite Blend
- P2** Concrete Paver B, Model: Pacific Slate, Manufacturer: Abbotsford Concrete, Size: Double Standard, Color: Granite Blend
- P3** Concrete Paver C, Model: AquaForm Old Country Stone, Manufacturer: Abbotsford Concrete, Size: Standard, Color: Tan Brown Blend
- P4** Concrete Paver D, Model: VS-5 Exoprete, Manufacturer: Belgard, Size: 6"x12", Color: Natural/Charcoal
- P5** Concrete Paver E, Model: Decomposed Granite, Manufacturer: Custom, Size: 6"x12", Color: Charcoal
- P6** Concrete sidePath Paver F, Color: Grey concrete
- P7** Stepping Stone Paver G, Model: Texas, Manufacturer: Abbotsford Concrete, Size: 12"x24", Color: Charcoal
- 6" Concrete Retaining Curb
- Raised CIP Concrete Planter Wall
- Drip Strip with Timber Edger
- Metal Fence - refer to architect
- Timber edger for Bocce Court
- CIP Stairs
- S1** Firetable Solus, Rectangle shape
- S2** Firetable Solus, Square shape
- S3** FireRing Solus
- S4** Bench - Public Realm Maglin MLB970-W Silvertop
- S5** Bench Maglin MLB1050-W Matte Finish - Core-Ten Powder Coat/pe
- S6** Chaise Lounge Equiper EP 1974 Ipe/Colour co-ord with ID
- S7** Lounge Sofa Hauser Left Sofa CHS6203 WT Colour Co-ord with ID
- S8** Club chair Hauser Left CHS6201 WT Colour co-ord with ID
- S9** Outdoor Coffee table Equiper EP 1051 Ipe/Colour co-ord with ID
- S10** Outdoor Umbrella
- S11** 2 No. Dining Table + 2 No. 2 seater chair + 4 No. 1 seater chair
- S12** Bistro table & Chairs Maglin Kontour RAL 2009
- S13** Public drinking Fountain w/Dog Bowl HAWES
- S14** Bike Rack Equiper EP 5990 Embedded Concrete pad below pavers
- S15** Amenity area with BBQ
- Tree trunk
- PA Planted area
- Limit of Work

Revision No.	Date	Revision Notes
D	2015-10-27	Re-issued for ADP
E	2015-10-27	Re-issue for OCP Amendment & CD RZ
F	2015-11-17	Re-issue for OCP Amendment & CD RZ
H	2/20/14	Issued for public information
I	3/13/14	Issued for rezoning
J	7/2/15	Issued for Advisory Design Panel
K	2018-06-11	Issue for DP
L	2020-03-02	Re-issue for DP
N	2021-03-10	Issued for BP
O	2021-05-07	Issued for Pricing
S	2021-06-09	Re-issued for DP

ISSUE

No.	Date	Issue Notes
D	2015-10-27	Re-issued for ADP
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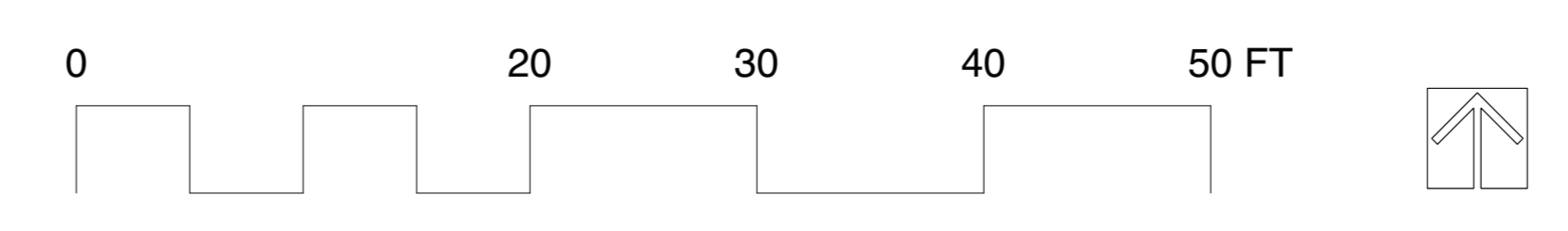
Project
OXFORD STREET RESIDENTIAL
1500 OXFORD STREET
White Rock, BC

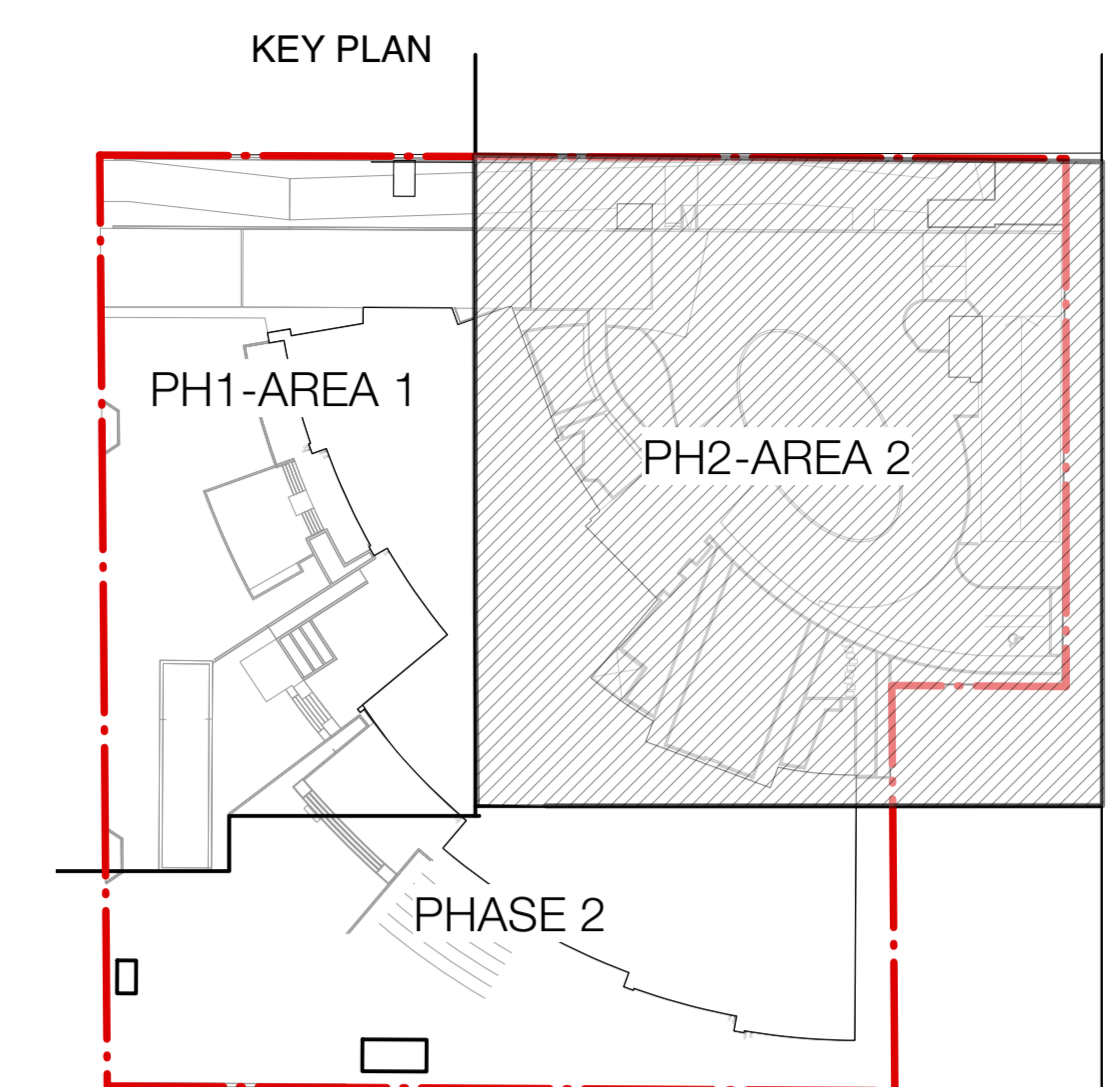
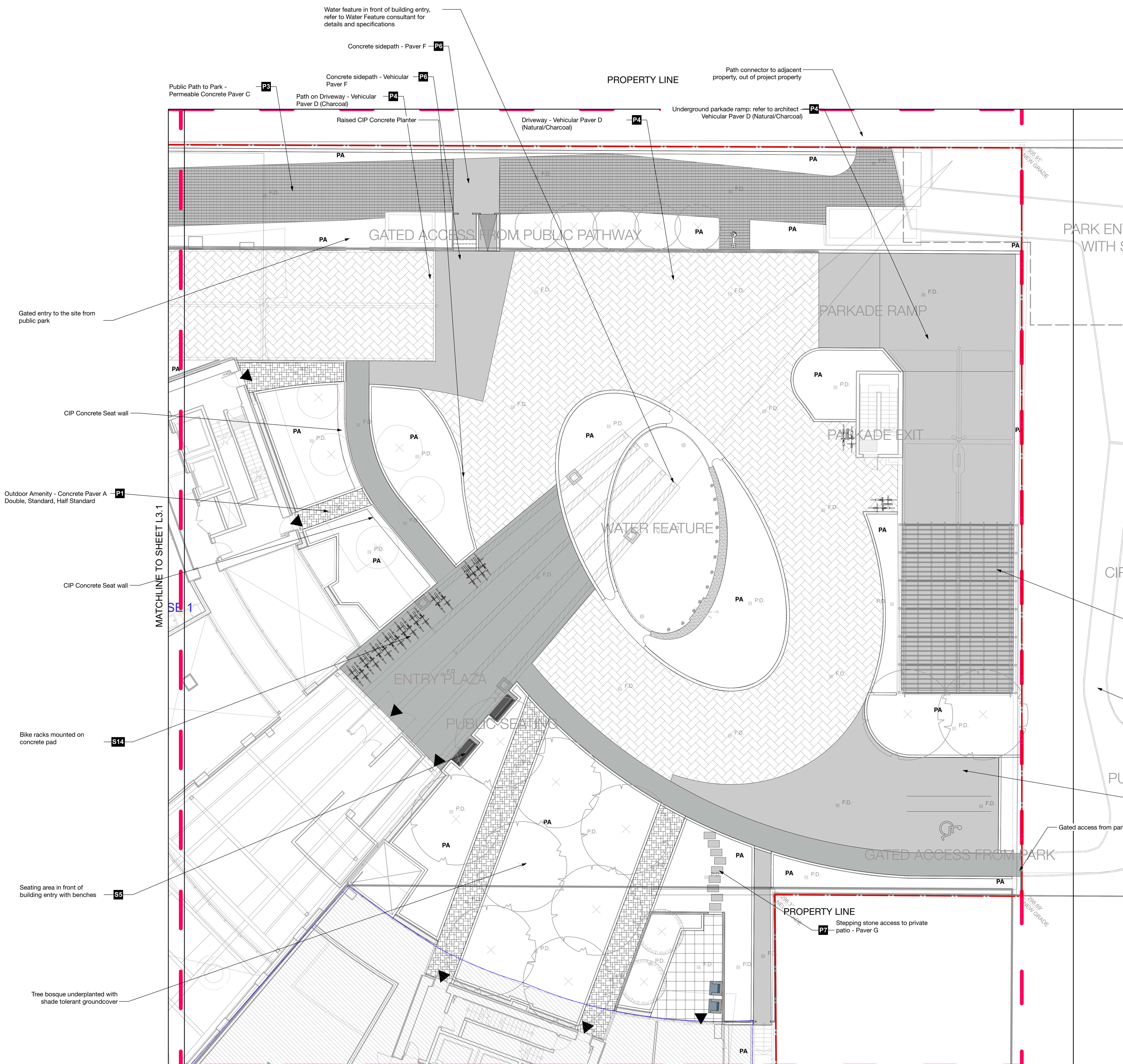
Drawing Title
Materials - AREA 1

Project Manager GE	Project ID 21752
Drawn By GE/KB	Scale AS SHOWN
Reviewed By GE	Drawing No. L3.1
Date 2015-09-14	

Plot Date:
21-6-9
21752 Oxford St Residential_BPxxx

1 Area 1: Hardscape Materials Plan
Scale: 1/8" = 1'-0"





LEGEND:

- PA** Concrete Paver A, Model: Pacific Stone, Manufacturer: Abbotsford Concrete, Size: Standard, Double & Half Standard, Color: Granite Blend
- P1** Concrete Paver B, Model: Pacific Stone, Manufacturer: Abbotsford Concrete, Size: Double Standard, Color: Granite Blend
- P2** Concrete Paver C, Model: Aquaflex Old Country Stone, Manufacturer: Abbotsford Concrete, Size: Standard, Color: Tan Brown Blend
- P3** Concrete Paver D, Model: VS-8 Exconcrete, Manufacturer: Belgard, Size: 6"x12", Color: Natural/Charcoal
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- P10** Metal Fence - refer to architect
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- S3** FireRing Solus
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- S5** Bench Magnin MLB1050-W Matte Finish - Core-Ten Powder Coating
- S6** Chaise Lounge Equigaro EP 1974 Ipe/Colour co-ord with ID
- S7** Lounge Sofa Hauser Loft Sofa CHS652 WT Colour Co-ord with ID
- S8** Club chair Hauser Loft CHS652 WT Colour co-ord with ID
- S9** Outdoor Coffee table Equigaro EP 1061 Ipe/Colour co-ord with ID
- S10** Outdoor Umbrella
- S11** 2 No. Dining Table + 2 No. 2 seater chair + 4 No. 1 seater chair
- S12** Bistro table & Chairs Magnin Kontour RAL 2009
- S13** Public drinking Fountain w/Dog Bowl
- S14** Bike Rack Equigaro EP 990 Embedded Concrete pad below pavers
- S15** Amenity area with BBQ
- PA** Planted area
- Limit of Work

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L	2020.03.02	Re-issue for DP
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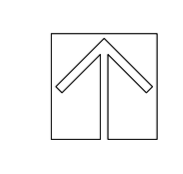
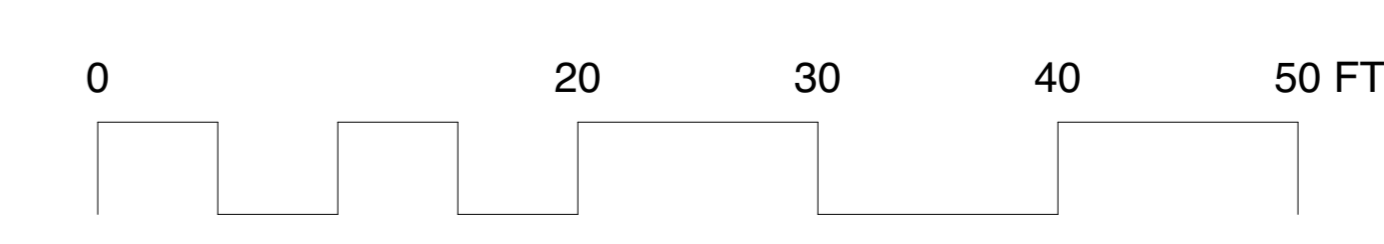
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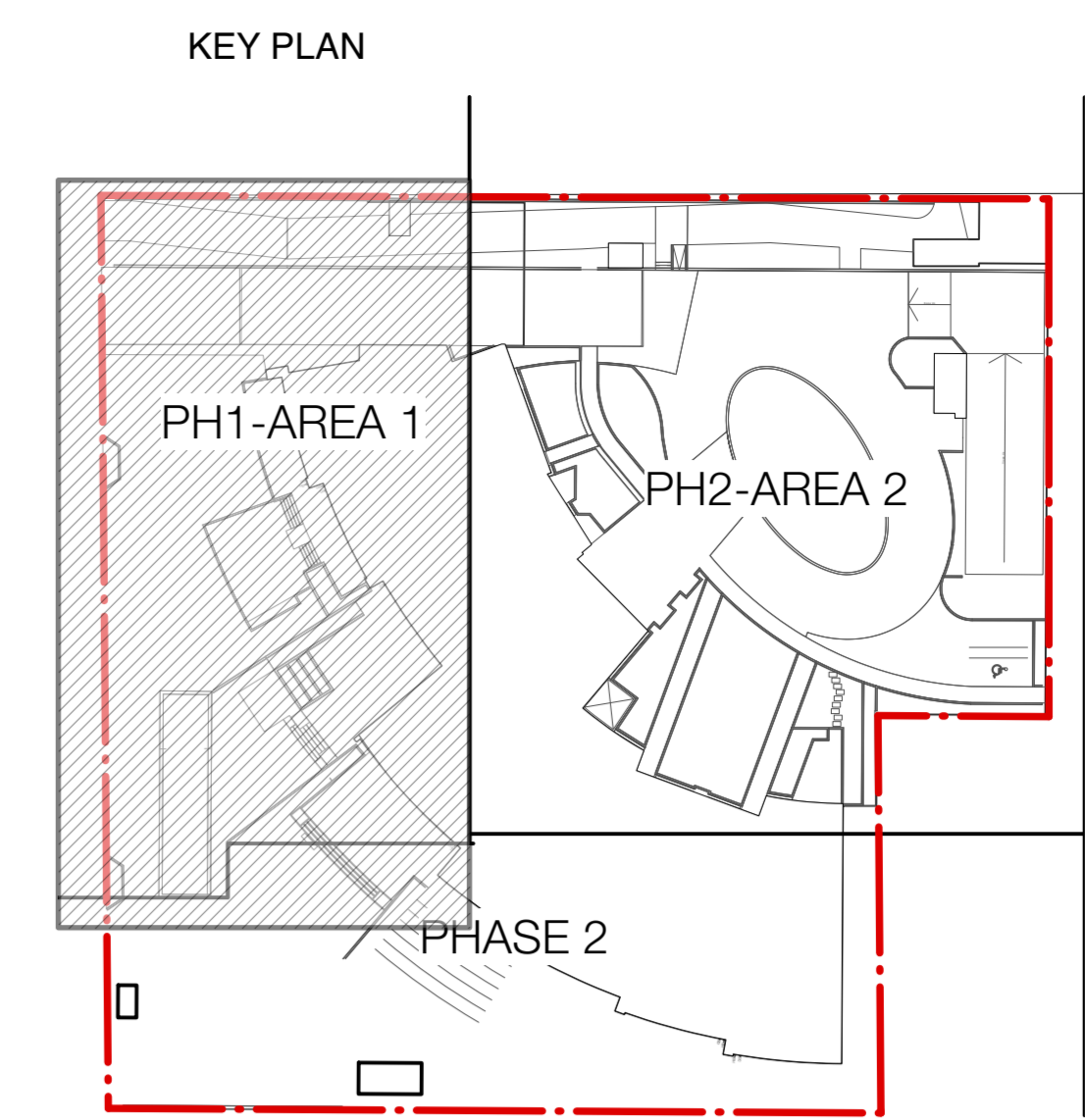
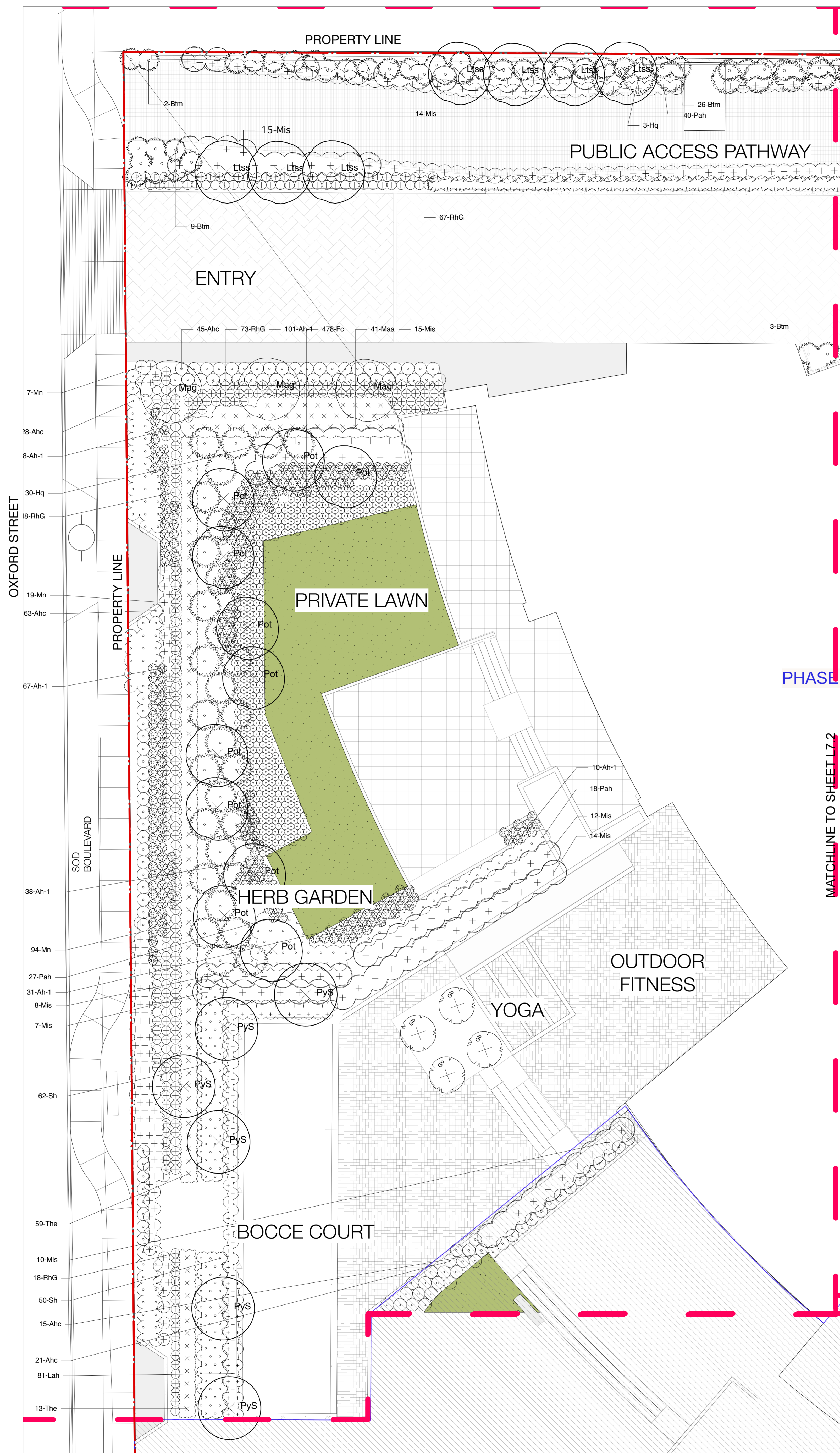
Project
OXFORD STREET RESIDENTIAL
1500 OXFORD STREET
White Rock, BC

Drawing Title
Materials - AREA 2

Legal
Parcel "C" (Reference Plan 12042)
Lot 4 Except: Part Subdivided by
Plan S2320, Section 10 Township 1

Project Manager GE	Project ID 21752
Drawn By GE/KB	Scale AS SHOWN
Reviewed By GE	Drawing No. L3.2
Date 2015-09-14	Page 36





Revision		
No.	Date	Revision Notes
D	2015-10-27	Re-issued for ADP
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Project
OXFORD STREET RESIDENTIAL
1500 OXFORD STREET
White Rock, BC

Drawing Title
Planting AREA 1

LEGEND:

Note:
For Plant species, refer to plant list schedule on L0.1

Trees

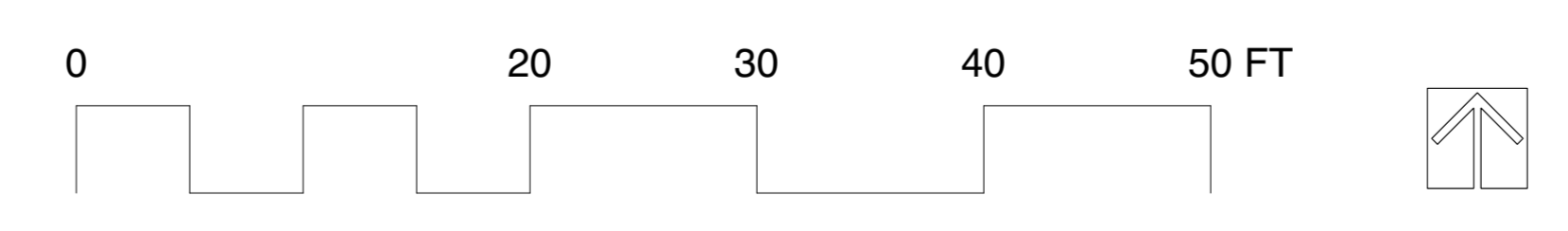
Tree ID

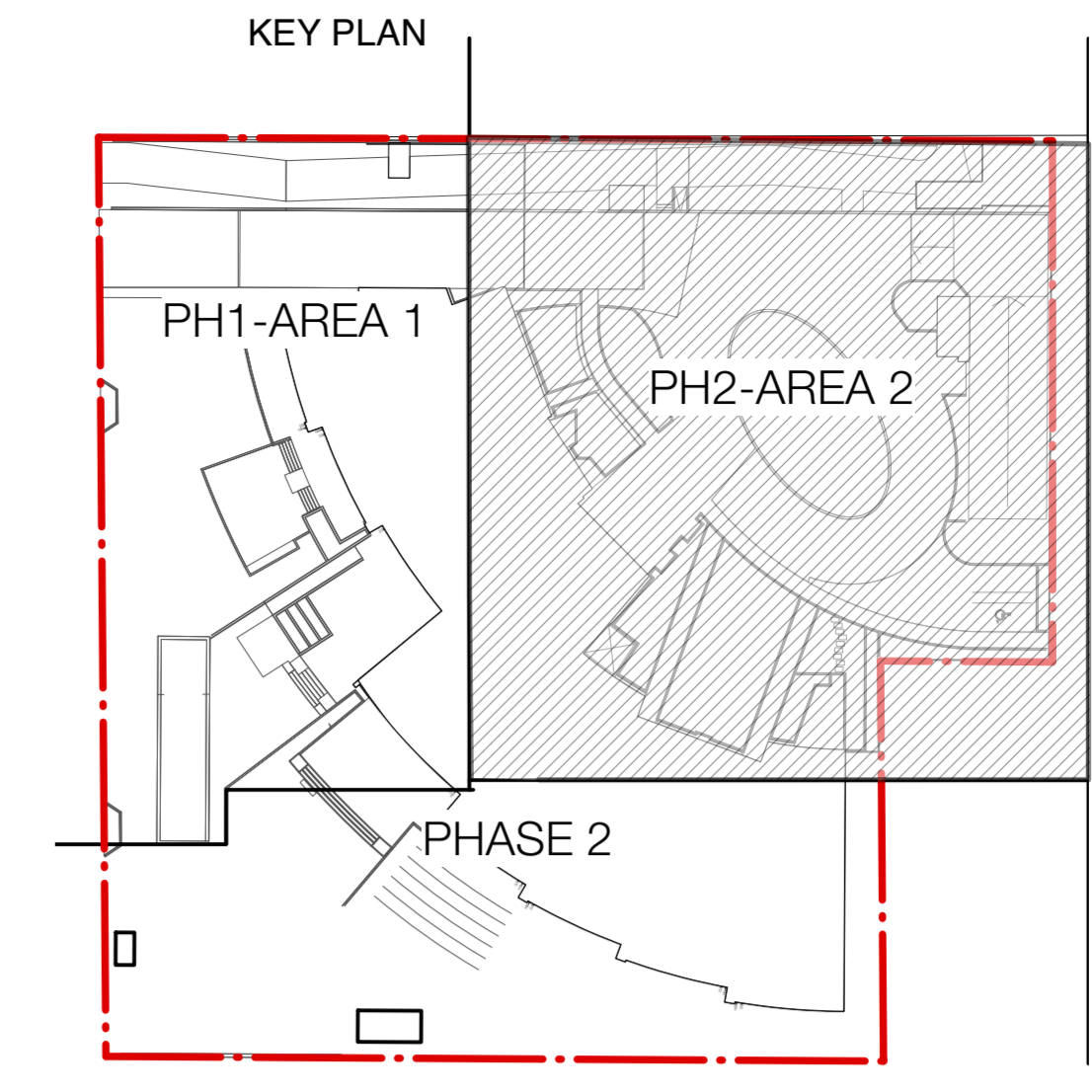
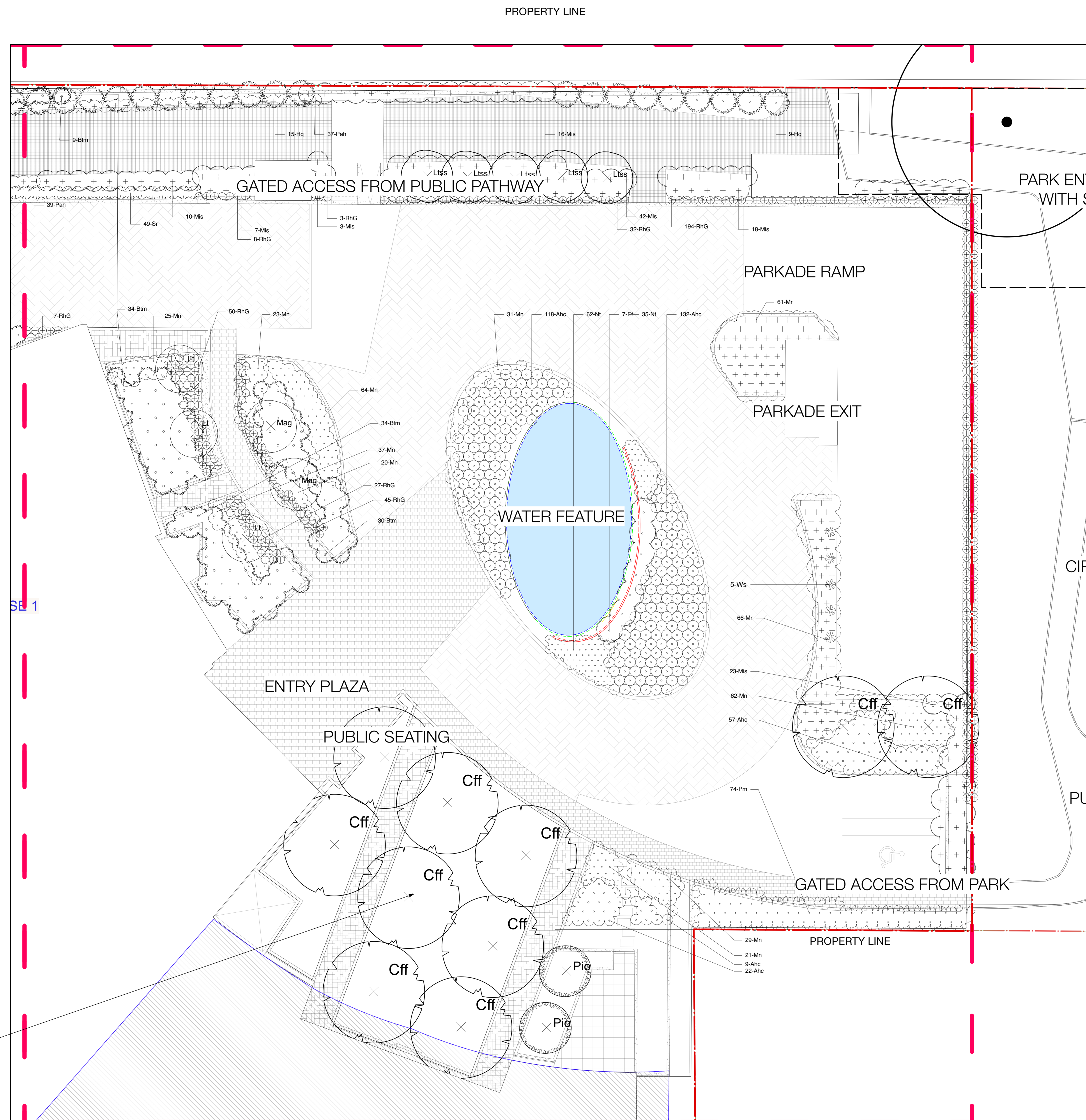
00-Xxx
Planting callouts for shrubs and ground covers including number of plants per area and plant ID

Legal
Parcel "C" (Reference Plan 12042)
Lot 4 Except Part Subdivided By
Plan 52320, Section 10 Township 1

Project Manager	Project ID
GE	21752
Drawn By	Scale
GE/NT	AS SHOWN
Reviewed By	Drawing No.
GE	L7.2
Date	36
2015-09-14	

Plot Date:
21-6-9
21752 Oxford St Residential_BP1vw





Revision No.	Date	Revision Notes
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E	2015-10-27	Re-issue for OCP Amendment & CD FZ
F	2015-11-17	Re-issue for OCP Amendment & CD FZ
H	2/20/14	Issued for public information
I	3/13/14	Issued for rezoning
J	7/21/15	Issued for Advisory Design Panel
K	2016-06-11	Issue for DP
L	2020-03-02	Re-issue for DP
N	2021-03-10	Issued for BP
O	2021-05-07	Issued for Picking
S	2021-06-09	Re-issued for DP

Issue No.	Date	Issue Notes
D	2015-10-27	Re-issued for ADP
E	2015-10-27	Re-issue for OCP Amendment & CD FZ
F	2015-11-17	Re-issue for OCP Amendment & CD FZ
H	2/20/14	Issued for public information
I	3/13/14	Issued for rezoning
J	7/21/15	Issued for Advisory Design Panel
K	2016-06-11	Issue for DP
L	2020-03-02	Re-issue for DP
N	2021-03-10	Issued for BP
O	2021-05-07	Issued for Picking
S	2021-06-09	Re-issued for DP

Professional Seal

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Project
OXFORD STREET RESIDENTIAL
 1500 OXFORD STREET
 White Rock, BC

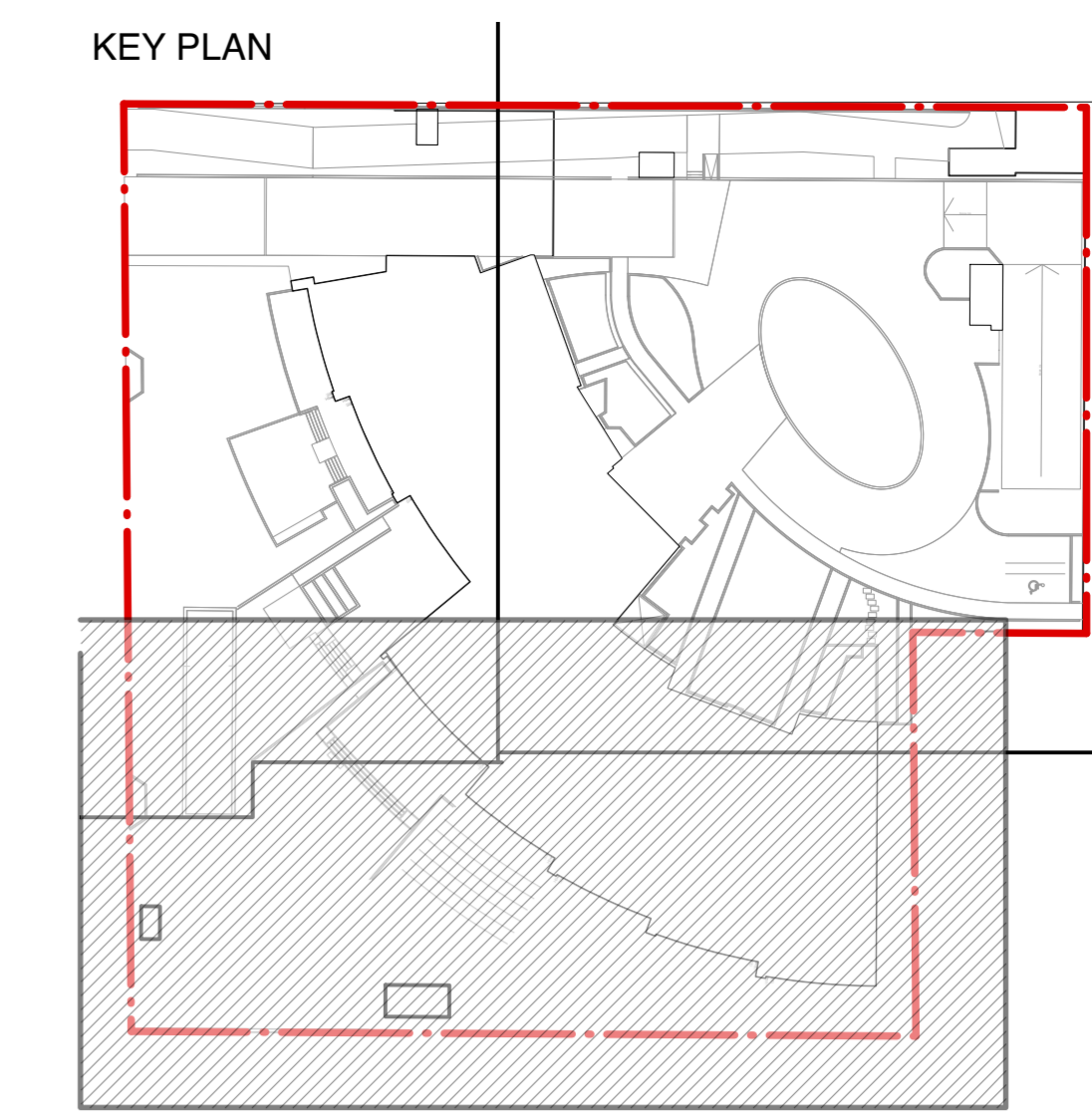
Drawing Title
Planting Plan AREA 2

Legal
 Parcel "C" (Reference Plan 12042)
 Lot 4 Except: Part Subdivided By
 Plan S2320, Section 10 Township 1

Project Manager GE	Project ID 21752
Drawn By GE/NT	Scale AS SHOWN
Reviewed By GE	Drawing No. L7.2
Date 2015-09-14	of 36

LEGEND:
 Note:
 For Plant species, refer to plant list schedule on L0.1





Revision No.	Date	Revision Notes

Issue No.	Date	Issue Notes
D	2015-10-27	Re-issued for ADP
E	2015-10-27	Re-issue for OCP Amendment & CD RZ
F	2015-11-17	Re-issue for OCP Amendment & CD RZ
H	2/20/14	Issued for public information
I	3/13/14	Issued for rezoning
J	7/2/15	Issued for Advisory Design Panel
K	2019-06-11	Issue for DP
L	2020-03-02	Re-issue for DP
T	2021-06-15	Phase 2- Issued for DP

Professional Seal



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Project
OXFORD STREET RESIDENTIAL
 1500 OXFORD STREET
 White Rock, BC

Drawing Title
Planting Plan

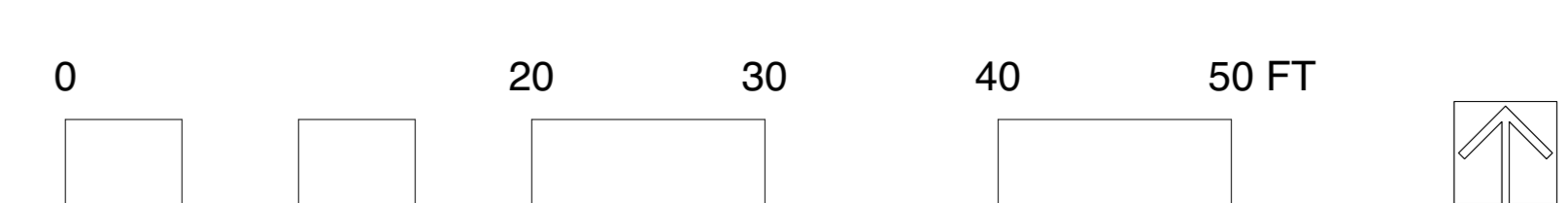
Legal
 Parcel "C" (Reference Plan 12042)
 Lot 4 Except Part Subdivided By
 Plan 52320, Section 10 Township 1

Project Manager	Project ID
GE	21752
Drawn By	Scale
GE/NT	AS SHOWN
Reviewed By	Drawing No.
GE	PH 2 - L7.1
Date	
2015-09-14	18

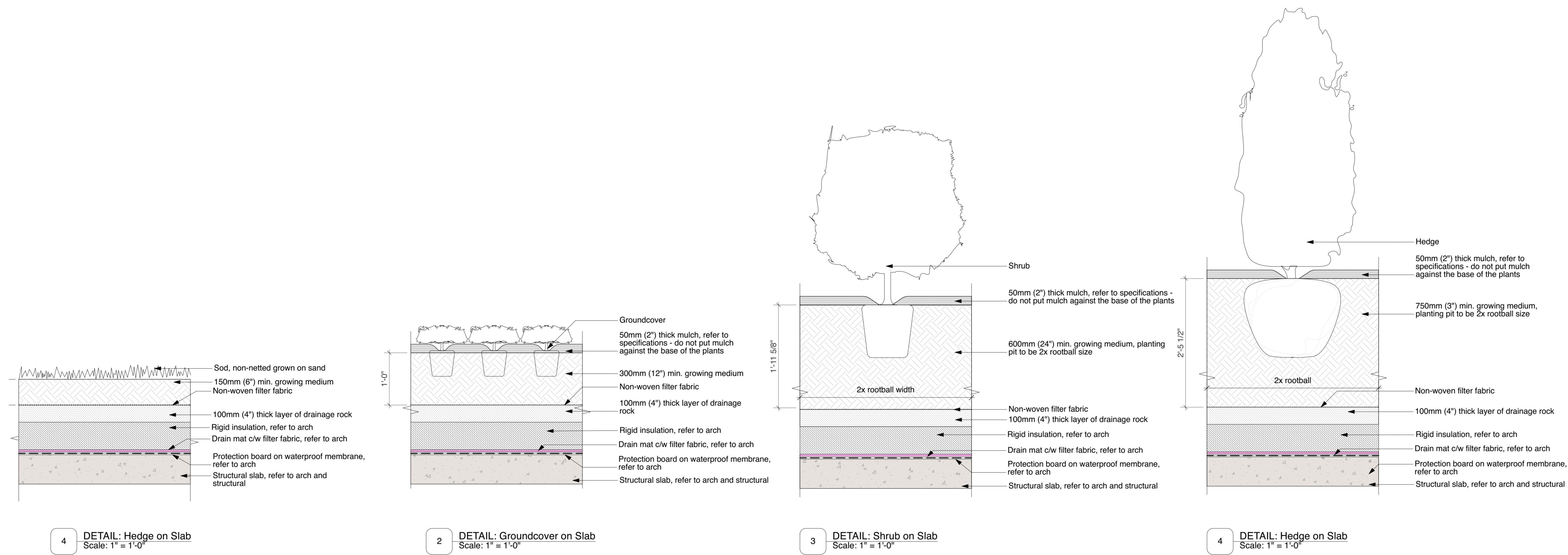
Plot Date:
 21-6-15
 21752 Oxford St Residential_BP.rvt



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

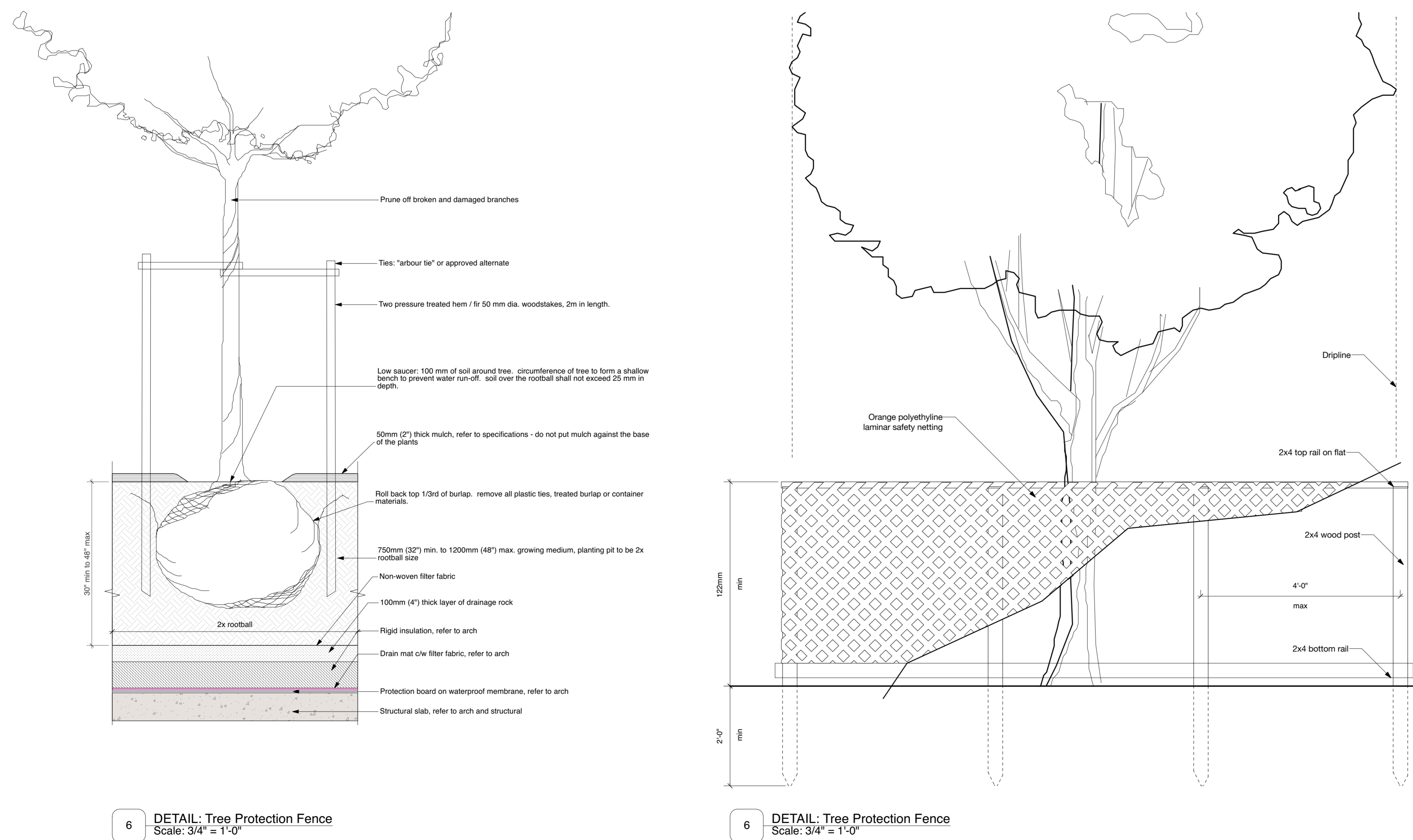


Revision No.	Date	Revision Notes
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Issue No.	Date	Issue Notes
D	2015-10-27	Re-issued for ADP
E	2015-10-27	Re-issue for OCP Amendment & CD RZ
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I	3/13/14	Issued for rezoning
J	7/21/15	Issued for Advisory Design Panel
K	2019-06-11	Issue for DP
L	2020-03-02	Re-issue for DP
N	2021-03-10	Issued for BP
O	2021-05-07	Issued for Pricing
S	2021-06-09	Re-issued for DP

Professional Seal



Project
OXFORD STREET RESIDENTIAL
1500 OXFORD STREET
White Rock, BC

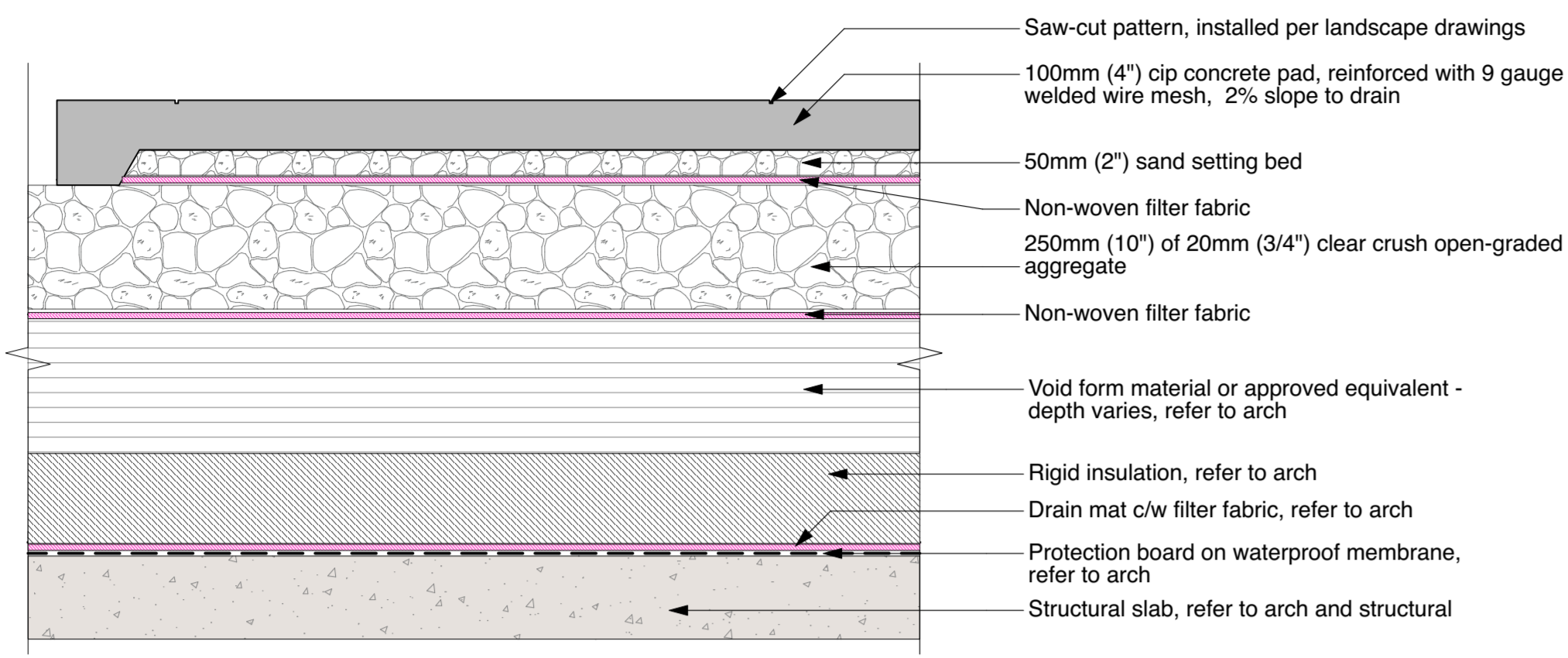
Drawing Title
Landscape Details - Soft

Legal
Parcel "C" (Reference Plan 12042)
Lot 4 Except Part Subdivided By
Plan 52320, Section 10 Township 1

Project Manager GE	Project ID 21752
Drawn By GE/KB	Scale AS SHOWN
Reviewed By GE	Drawing No. L11.0
Date 2015-09-14	36

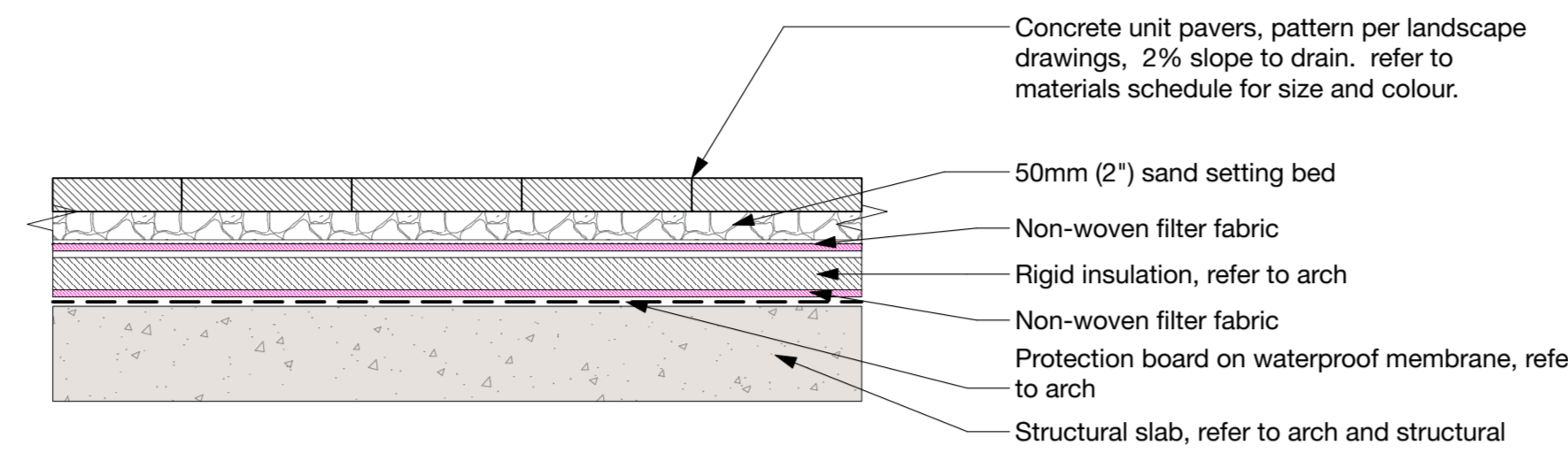
Plot Data:
21-6-9
21752 Oxford St Residential_BP1.wxd

Issue No.	Date	Issue Notes
D	2015-10-27	Re-issued for ADP
E	2015-10-27	Re-issue for OCP Amendment & CD RZ
F	2015-11-17	Re-issue for OCP Amendment & CD RZ
H	2/20/14	Issued for public information
I	3/13/14	Issued for rezoning
J	7/21/15	Issued for Advisory Design Panel
K	2018-06-11	Issue for DP
L	2020-03-02	Re-issue for DP
N	2021-03-10	Issued for BP
O	2021-05-07	Issued for Pricing
S	2021-06-09	Re-issued for DP

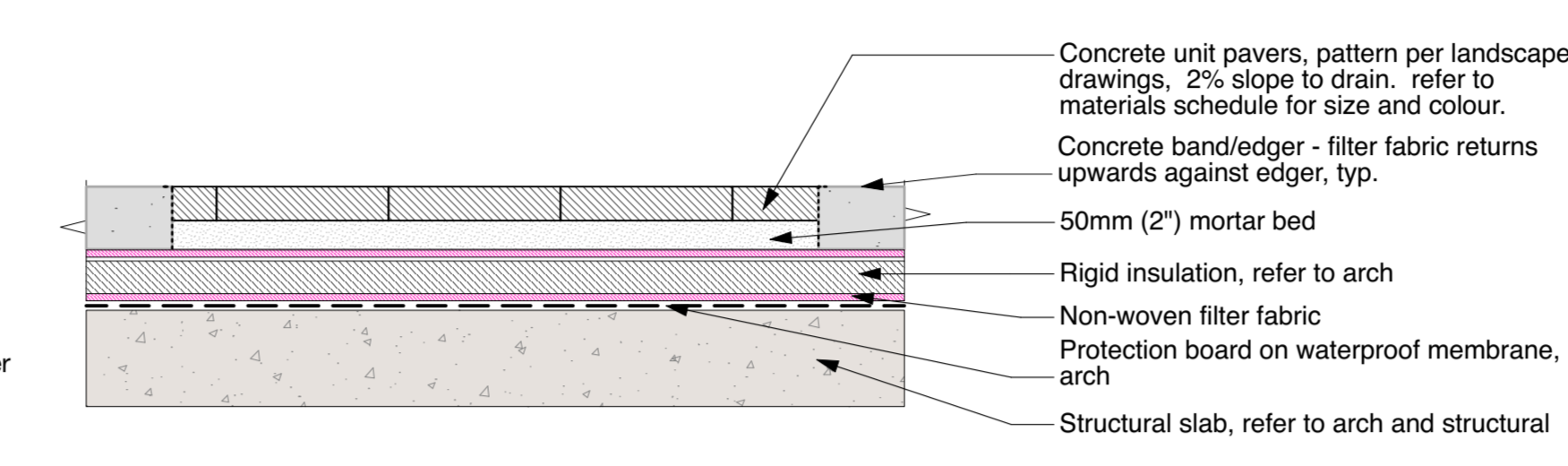


NOTE:
 - Saw-cuts to be installed per layout plan
 - Saw-cut control joints to be 1/4" slab depth
 - To be completed within 24hrs of pouring the slab

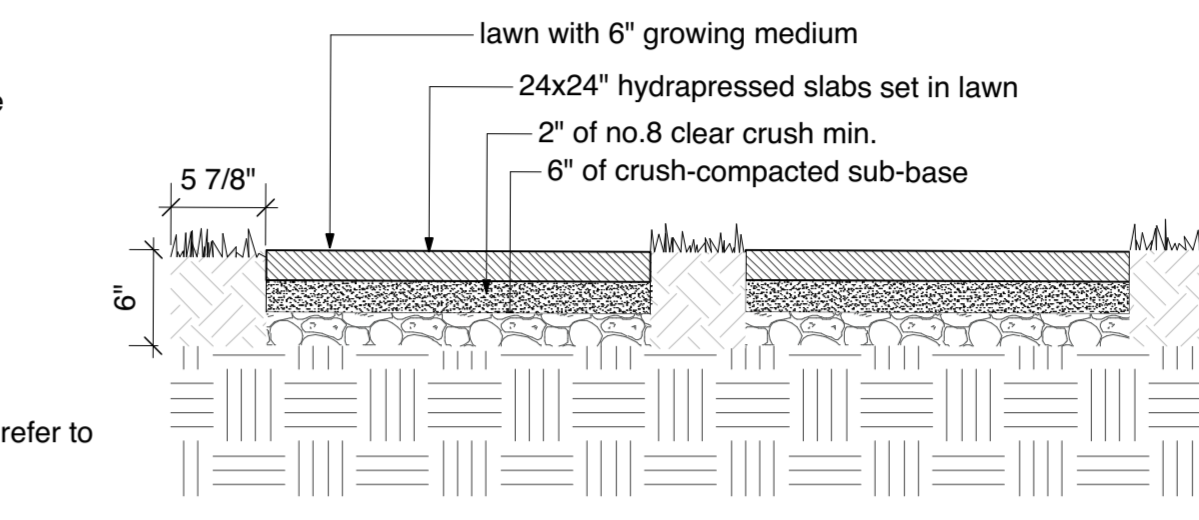
4 DETAIL: Texada Stepping Stones
 Scale: 1" = 1'-0" **P6**



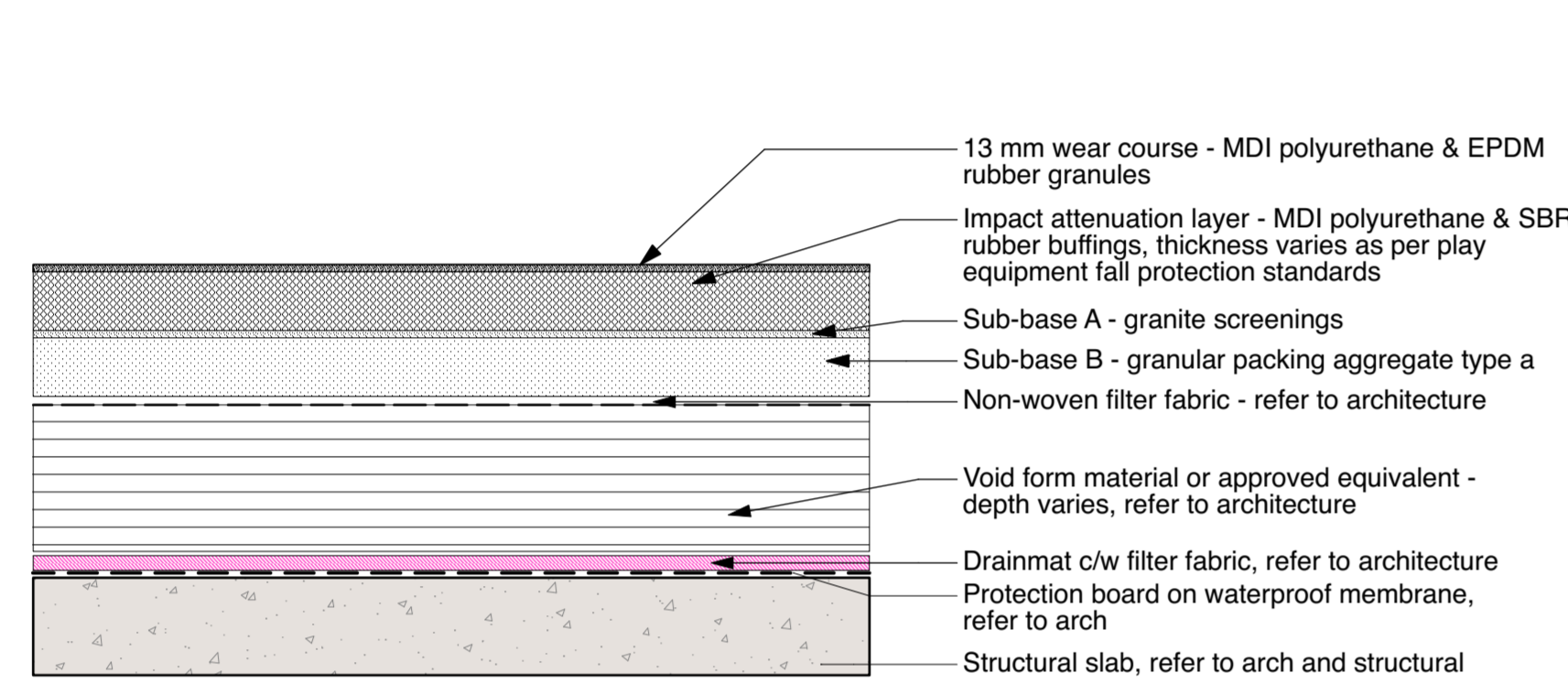
2 DETAIL: Pedestrian Concrete Unit Pavers on Insulation on Slab
 Scale: 1" = 1'-0" **P1 P2 P3 P5**



3 DETAIL: Vehicular Concrete Pavers on Insulation on Slab
 Scale: 1" = 1'-0" **P4**

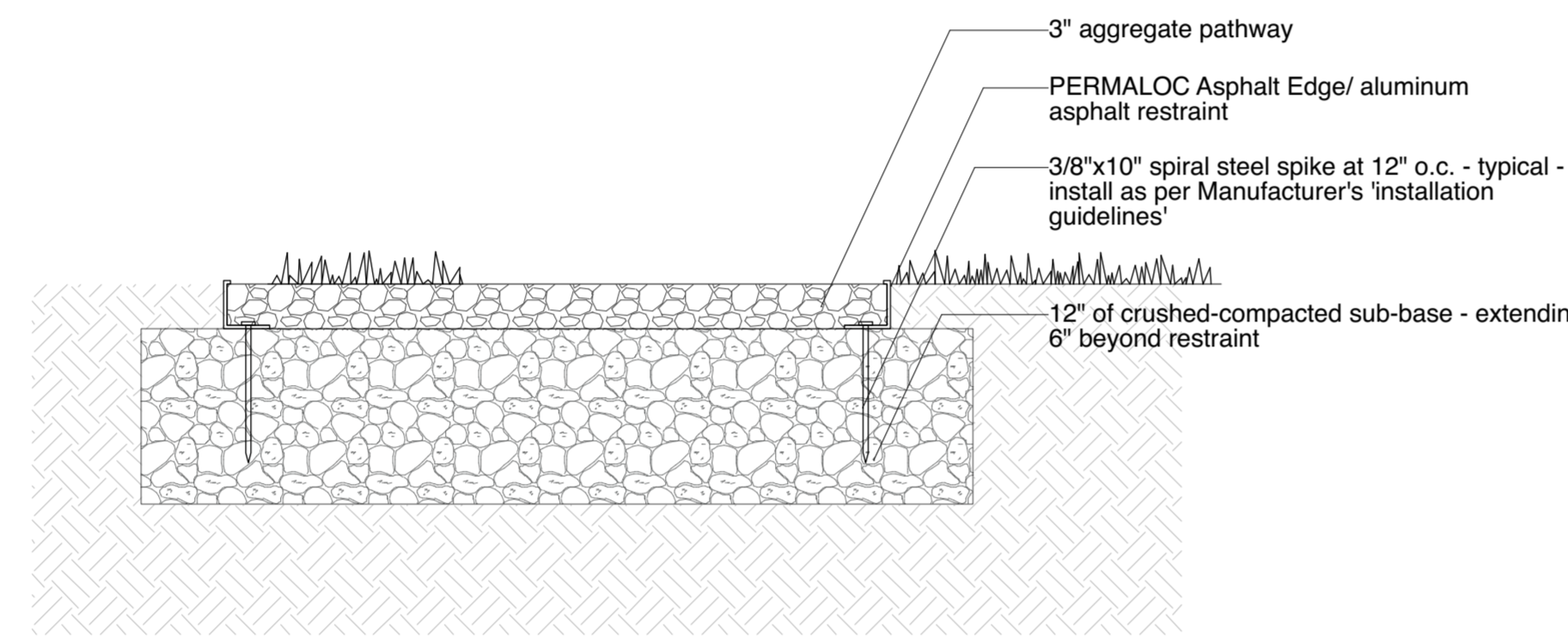


4 DETAIL: Texada Stepping Stones
 Scale: 1" = 1'-0" **P7**

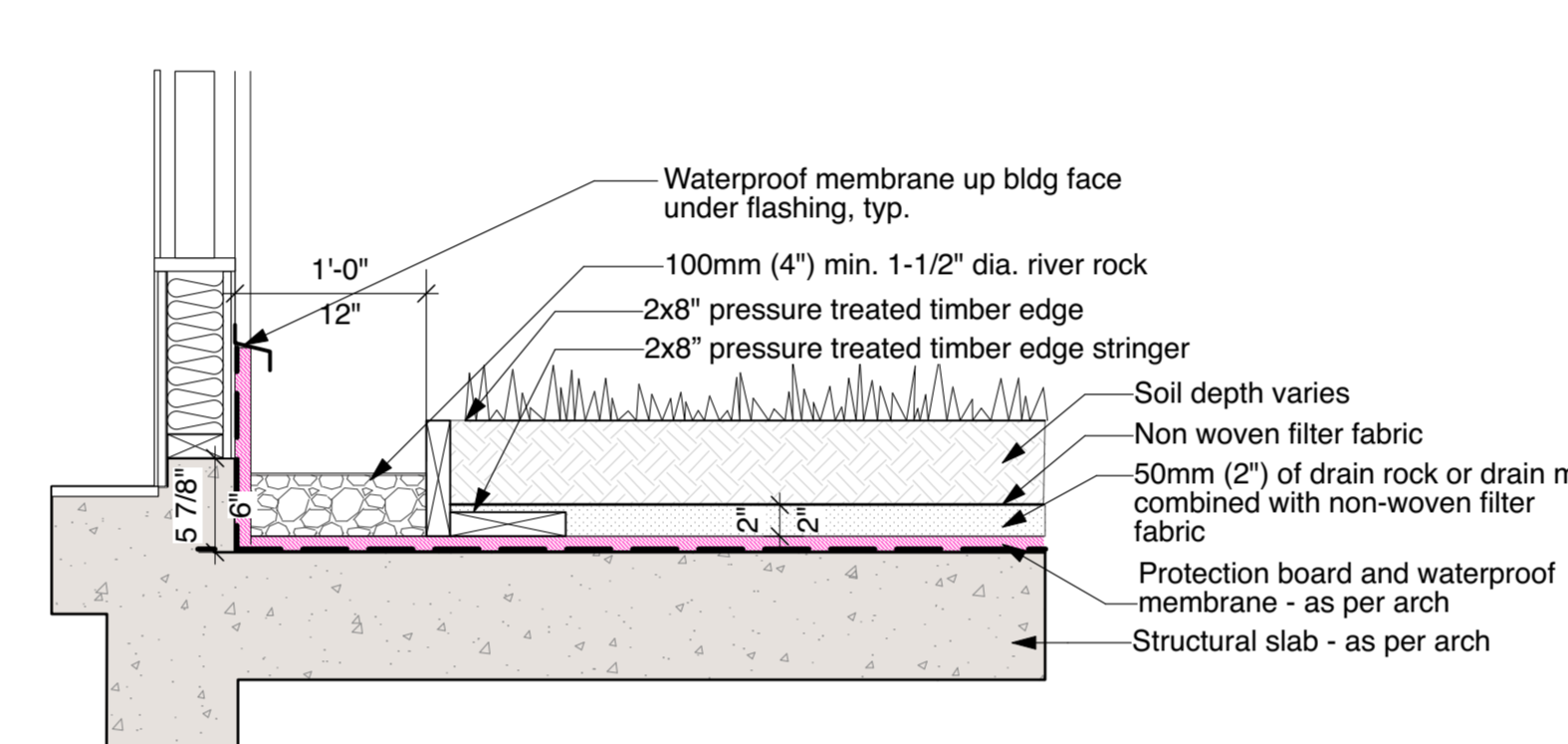


NOTE:
 Install as per manufacturer's specifications.
 Depth of material dependent on fall heights of play equipment.

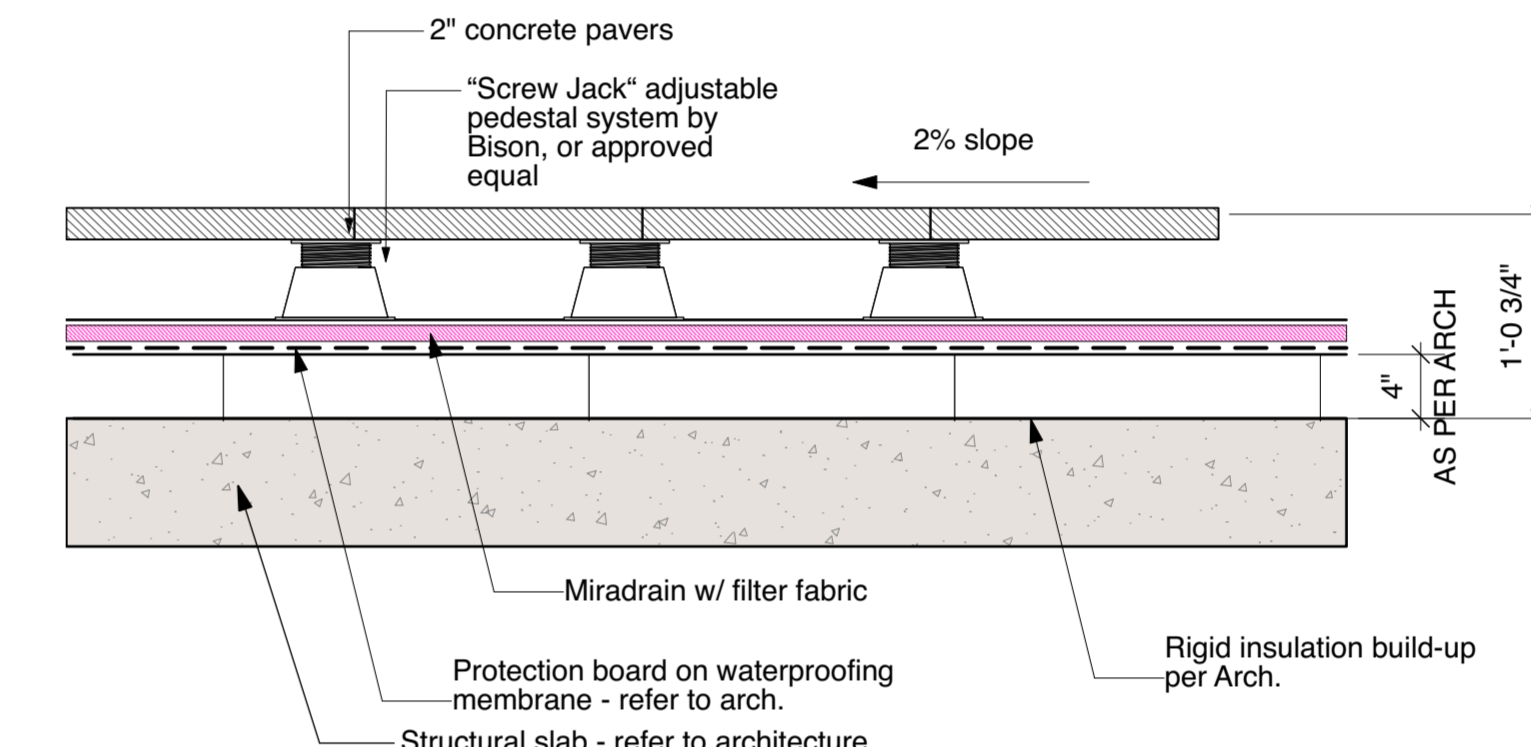
7 DETAIL: Drip Strip on Slab
 Scale: 1" = 1'-0" **H4 H5 H6**



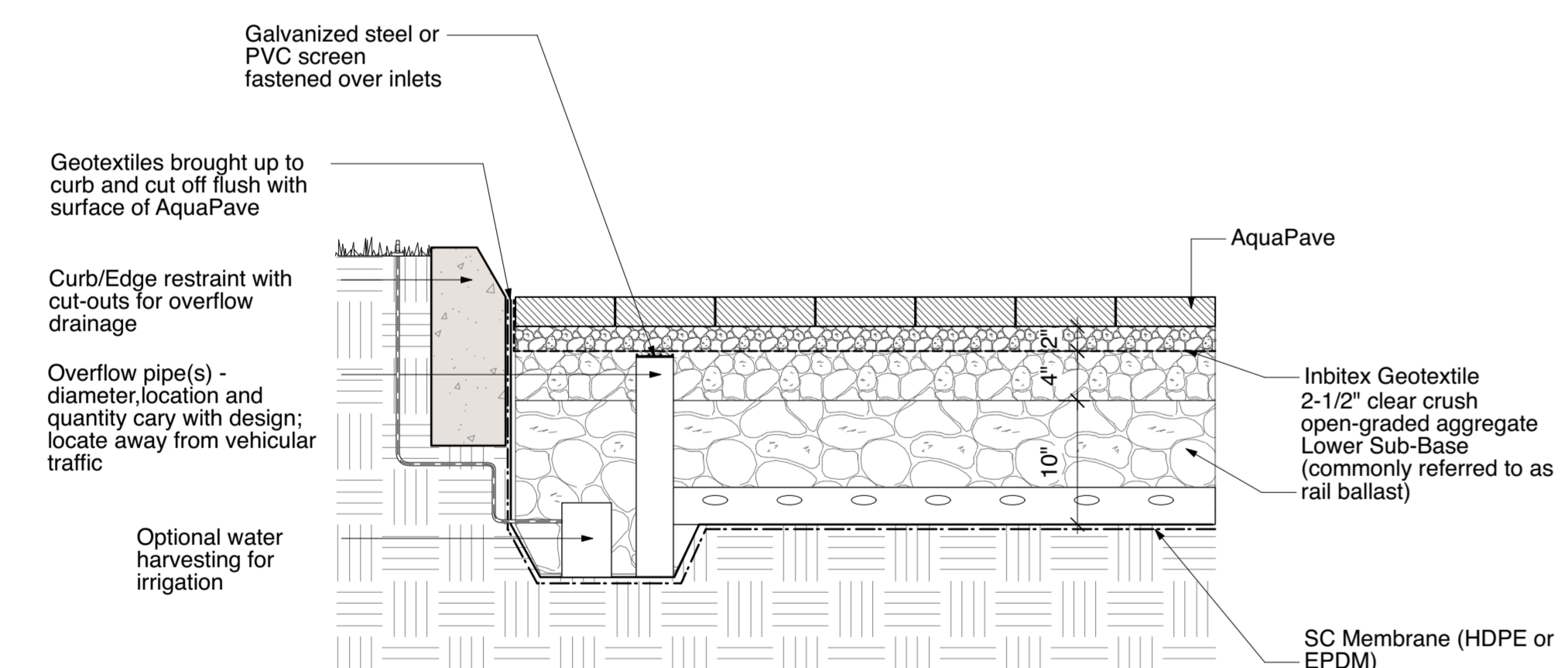
6 DETAIL: Decomposed Granite Path on Grade
 Scale: 1" = 1'-0" **H7**



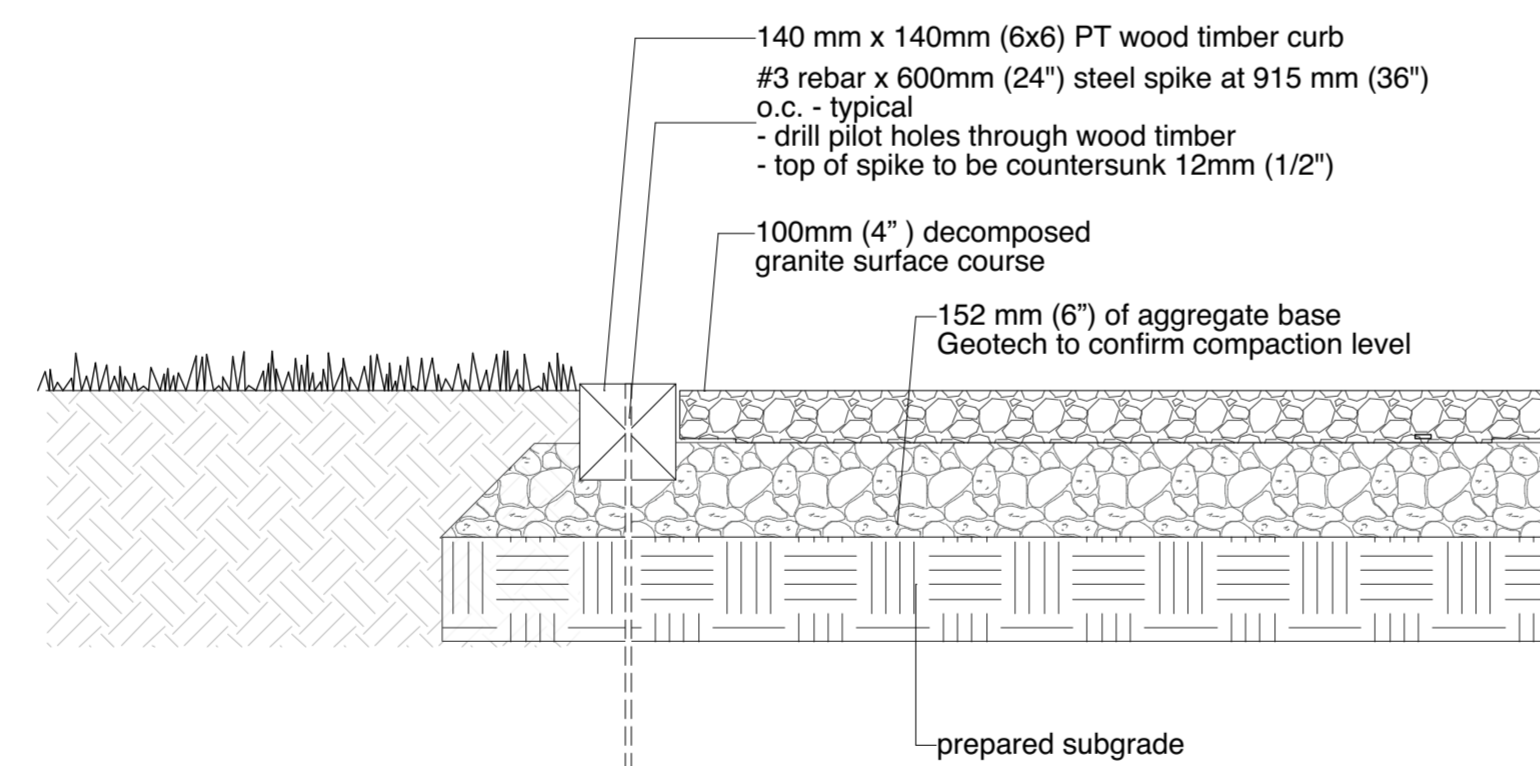
7 DETAIL: Drip Strip on Slab
 Scale: 1" = 1'-0" **H7**



8 DETAIL: Concrete Pavers on Pedestal
 Scale: 1" = 1'-0" **P8**



10 DETAIL: Timber Edger on Bocce Court
 Scale: 1" = 1'-0" **H8**



10 DETAIL: Timber Edger on Bocce Court
 Scale: 1" = 1'-0" **H8**

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Project

**OXFORD STREET
 RESIDENTIAL**

1500 OXFORD STREET
 White Rock, BC

Drawing Title

Landscape Details - Hard

Legal
 Parcel "C" (Reference Plan 12042)
 Lot 4 Except: Part Subdivided By
 Plan 52320, Section 10 Township 1

Project Manager GE	Project ID 21752
Drawn By GE/KB	Scale AS SHOWN
Reviewed By GE	Drawing No. L12.1
Date 2015-09-14	36

Plot Date:
 21-6-9
 21752 Oxford St Residential_BP1vxx

Revision No.	Date	Revision Notes

Issue No.	Date	Issue Notes
D	2015-10-27	Re-issued for ADP
E	2015-10-27	Re-issue for OCP Amendment & CD RZ
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L	2020-03-02	Re-issue for DP
N	2021-03-10	Issued for BP
O	2021-05-07	Issued for Pricing
S	2021-06-09	Re-issued for DP

Professional Seal



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Project

**OXFORD STREET
 RESIDENTIAL**

1500 OXFORD STREET
 White Rock, BC

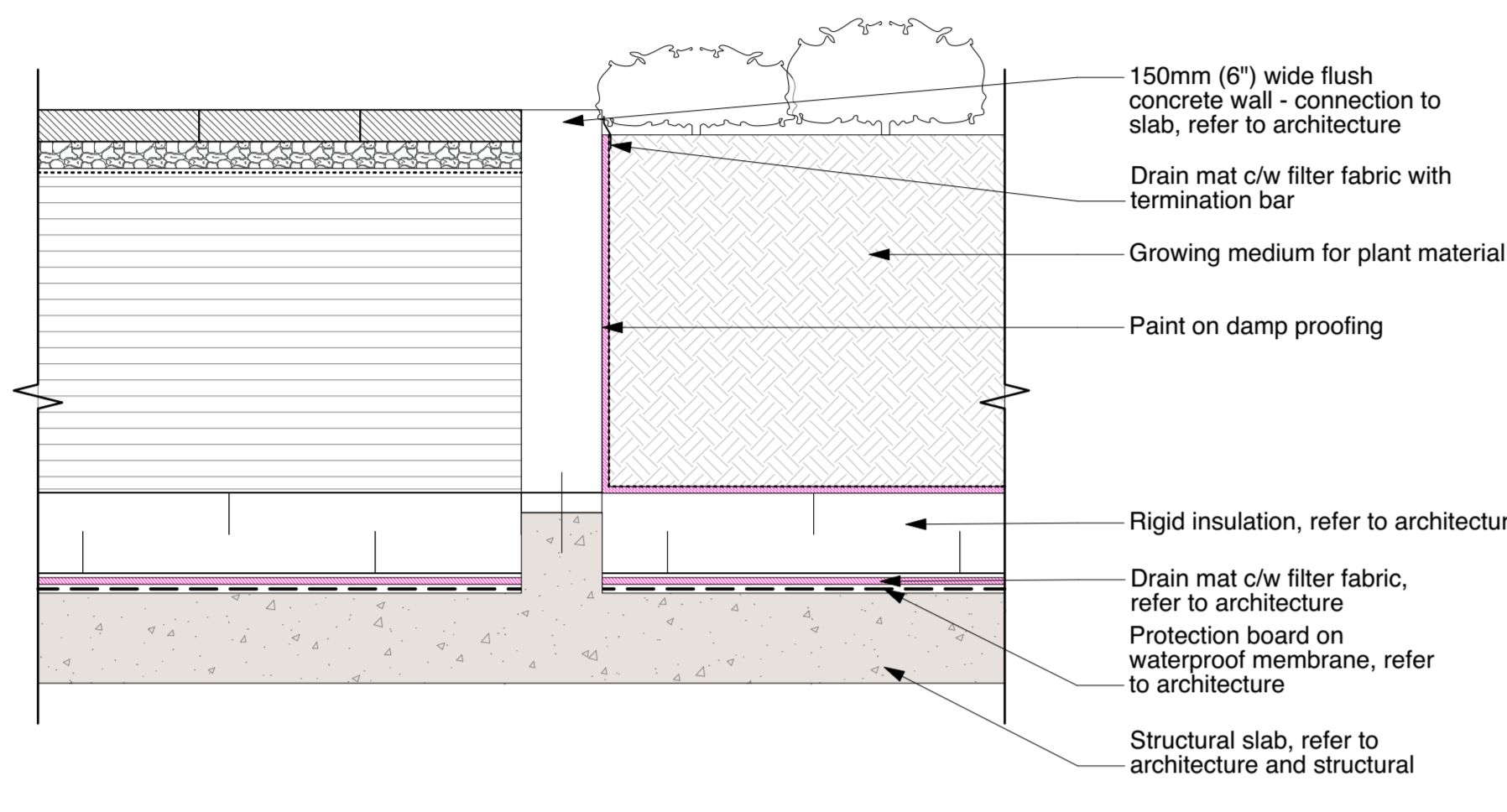
Drawing Title

Landscape Details - Hard

Legal
 Parcel "C" (Reference Plan 12042)
 Lot 4 Except, Part Subdivided By
 Plan 52320, Section 10 Township 1

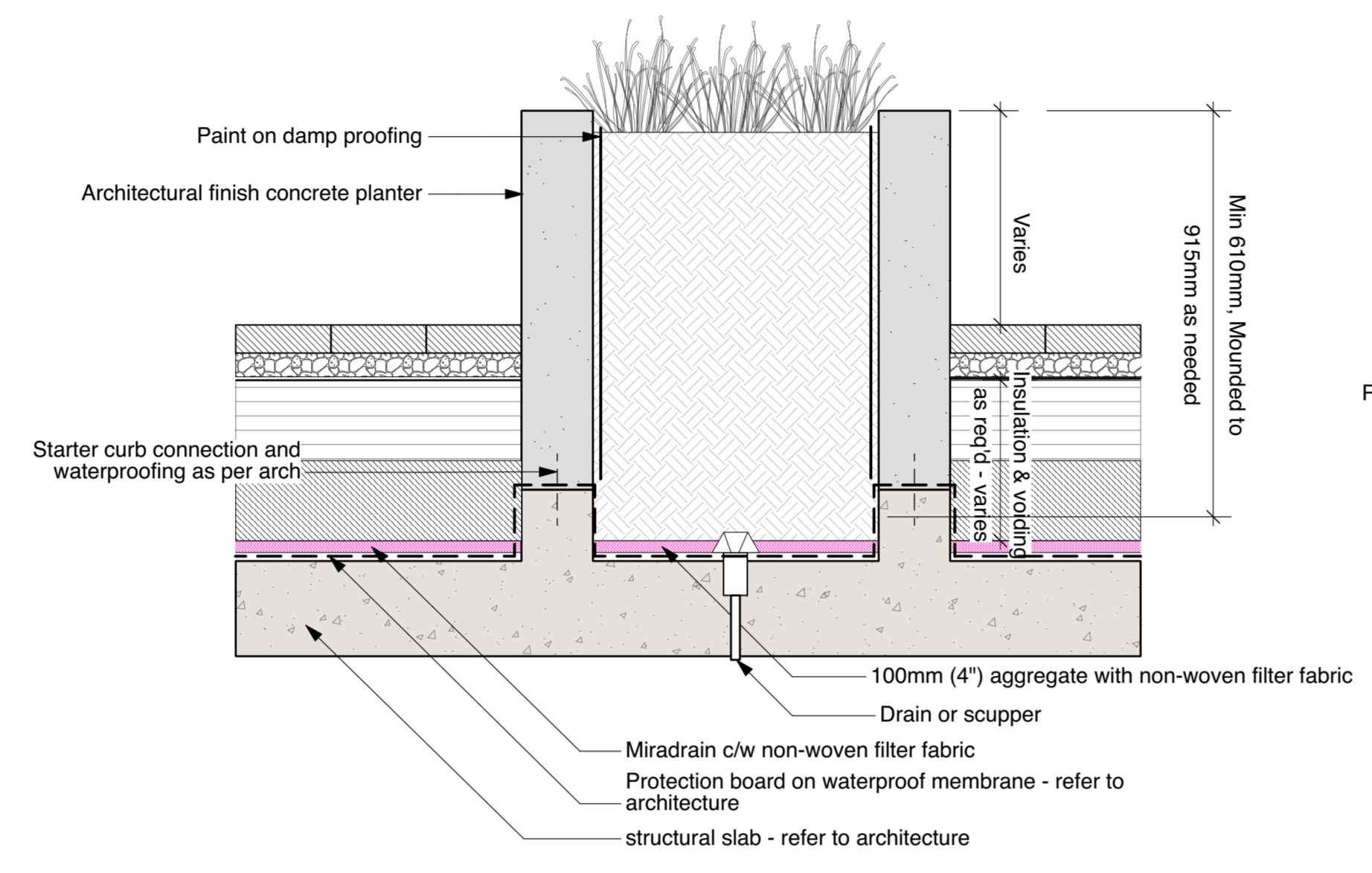
Project Manager GE	Project ID 21752
Drawn By GE/KB	Scale AS SHOWN
Reviewed By GE	Drawing No. L12.2
Date 2015-09-14	36

Plot Date:
 21-6-9
 21752 Oxford St Residential_BP-vws



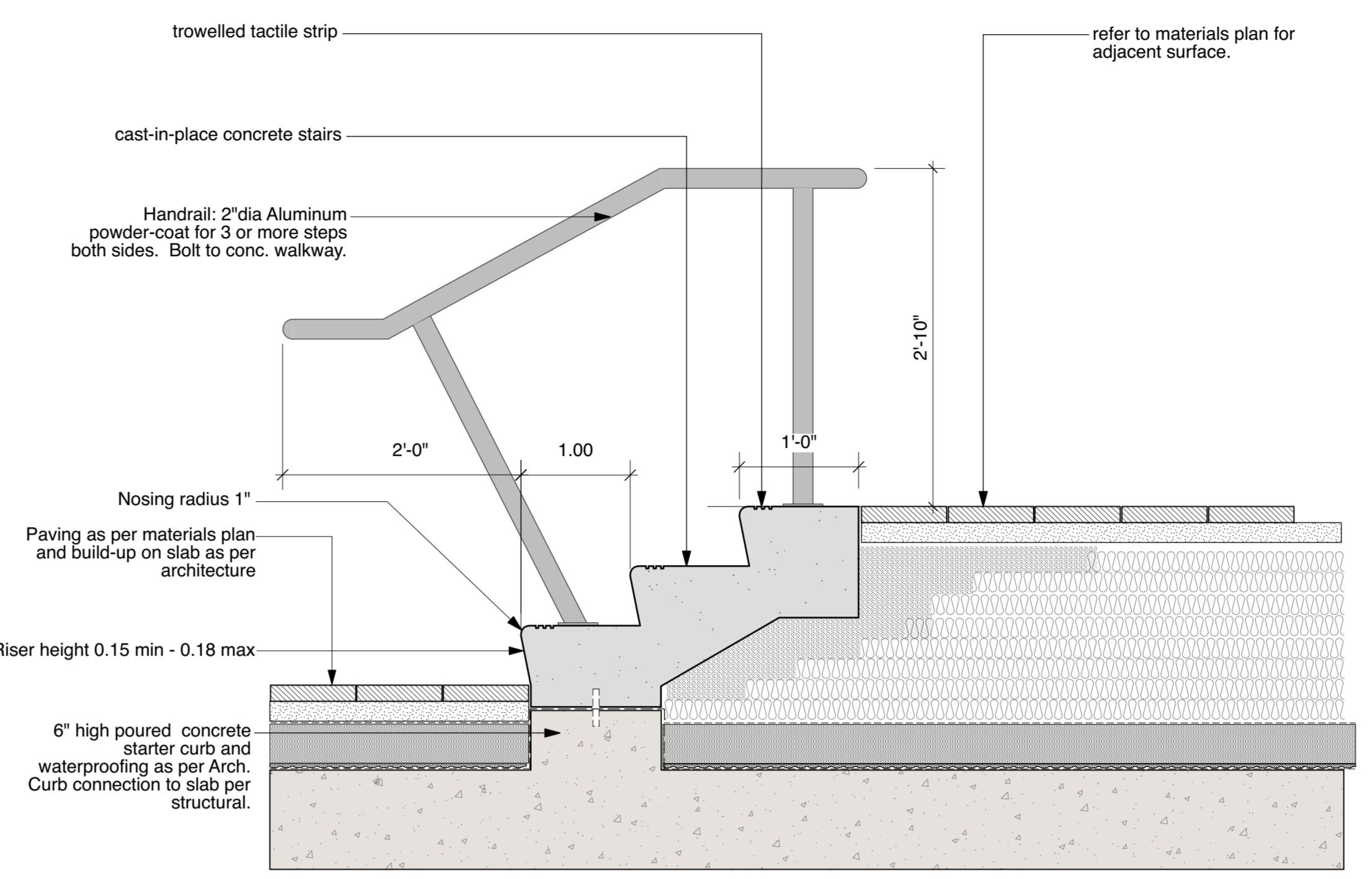
3 DETAIL: Concrete Unit Pavers with Flush Curb Planter
 Scale: 1" = 1'-0"

H3



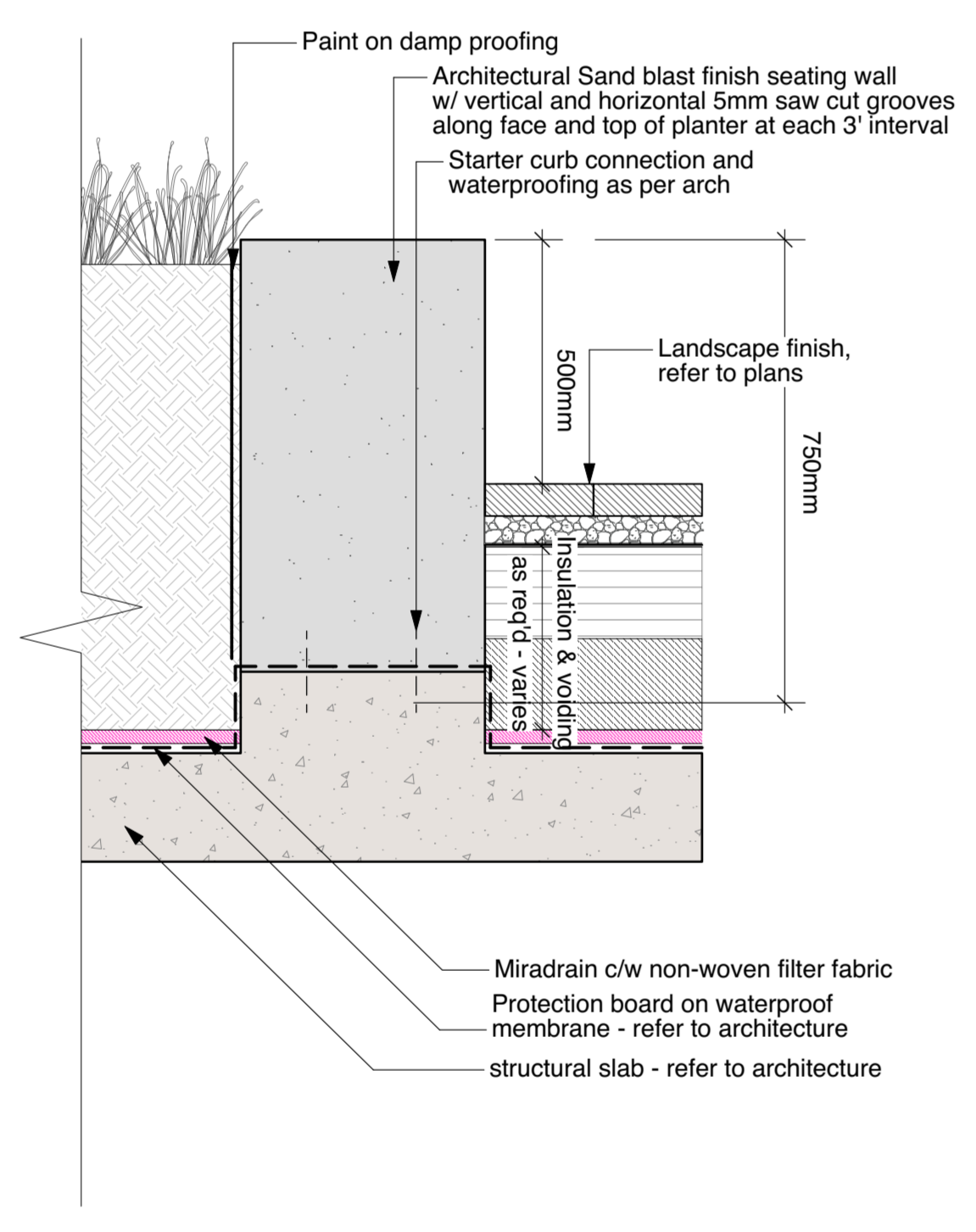
2 DETAIL: CIP Concrete Steps
 Scale: 1" = 1'-0"

H1



3 DETAIL: Concrete Unit Pavers with Flush Curb Planter
 Scale: 1" = 1'-0"


H2



4 DETAIL: CIP Concrete seating wall
 Scale: 1" = 1'-0"

1050 SERIES

MLB1050-W

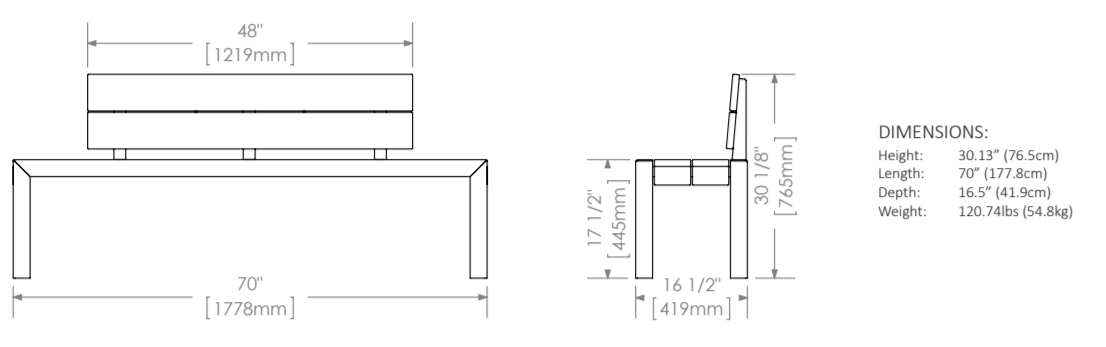


MATERIALS: The bench frame is constructed from formed steel and the top is made of 100% wood.

FINISH: All steel components are protected with E-Coat anti-rusting. The Maglin Powdercoat System provides a durable finish on all metal surfaces. Wood slats are treated with penetrating sealers.

INSTALLATION: The bench is delivered pre-assembled. The legs have 1/2" holes for anchoring.

TO SPECIFY: Select MLB1050-W
 Preferred Color
 Center Arms
 Package
 Stack Denial




DIMENSIONS:
 Height: 33.1" (843mm)
 Depth: 22.2" (564mm)
 Width: 61.8" (1570mm)
 Seat Height: 18.1" (457mm)
 Seat Depth: 16.1" (409mm)

MAGLIN

970 SERIES

MLB970-W

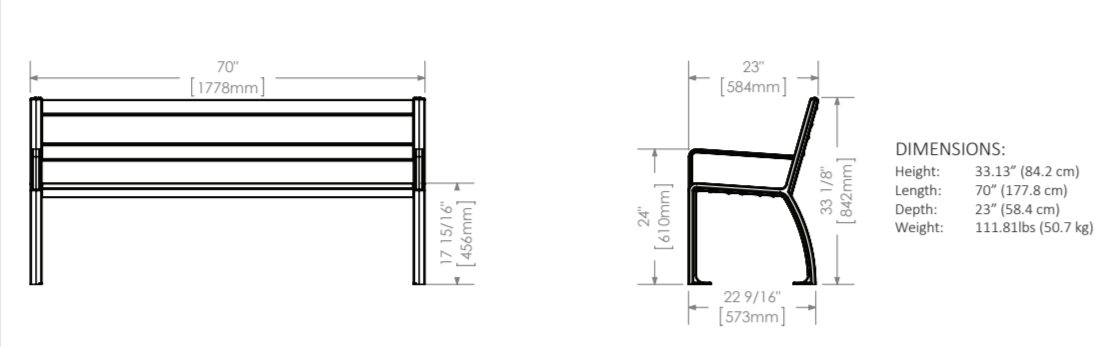


MATERIALS: Bench ends are made from solid cast aluminum. The seat is made of 100% wood.

FINISH: The Maglin Powdercoat System provides a durable finish on all metal surfaces. Wood slats are treated with penetrating sealers.

INSTALLATION: The bench is delivered pre-assembled. The legs have 1/2" holes for anchoring.

TO SPECIFY: Select MLB970-W
 Preferred Color
 Center Arms
 Package
 Stack Denial




DIMENSIONS:
 Height: 33.1" (843mm)
 Depth: 22.2" (564mm)
 Width: 57.1" (1450mm)
 Seat Height: 18.1" (457mm)
 Seat Depth: 16.1" (409mm)

MAGLIN

720 SERIES

MCL720-W

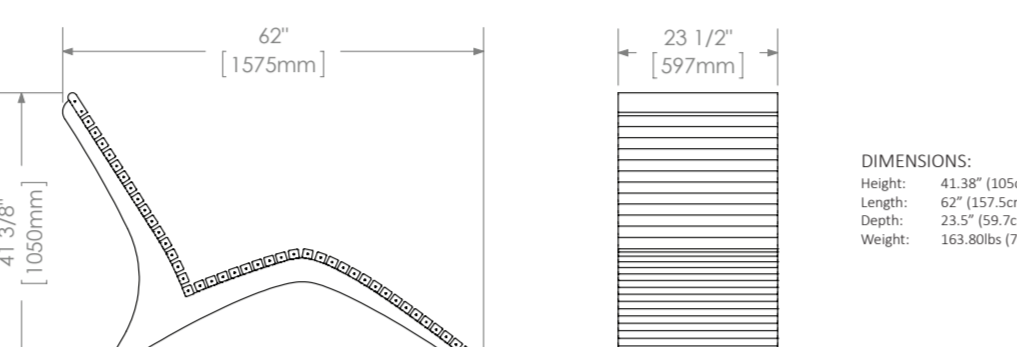


MATERIALS: The Chair lounge frame is constructed of open cut and formed steel. The seat is made of 100% wood.

FINISH: All steel components are protected with E-Coat anti-rusting. The Maglin Powdercoat System provides a durable finish on all metal surfaces. Wood slats are treated with penetrating sealers.

INSTALLATION: The chair is delivered pre-assembled. The legs have 1/2" holes for anchoring.

TO SPECIFY: Select MCL720-W
 Preferred Color




DIMENSIONS:
 Height: 33.1" (843mm)
 Depth: 22.2" (564mm)
 Width: 41.3" (1050mm)
 Seat Height: 18.1" (457mm)
 Seat Depth: 16.1" (409mm)

MAGLIN

Loft Club Chair
 CHS6201-WT - Loft Club Chair

The Loft Club Chair features an all-welded aluminum, powdercoated frame (weighted for commercial use). It is available in any Hauser/OTE powdercoat finish, with upholstery in any standard fabric or acrylic fabric, or COM. Shown here with our "Power" powdercoat finish, and "Spectrum Dye" acrylic fabric.

Width: 33.1" (843mm)
 Depth: 32.2" (818mm)
 Height: 32.2" (818mm)
 Seat Height: 18.1" (457mm)
 Arm Height: 25.2" (640mm)
 Weight: 33.1 lbs (15.0 kg)
 Custom: Reversible



HAUSER
 SITE FURNITURE

sales@hausersite.com
 800-268-7328
 hausersite.com

solus

Fire Features

ELECTRICAL START NS & LP
 Fire is beautiful and also dangerous. If not handled properly, please have a qualified gas fitter install and test the product according to local codes.

The product has been tested and certified by Intertek Certification Inc. as being safe, as long as clearances to adjacent materials are maintained.

FOR OUTDOOR USE ONLY

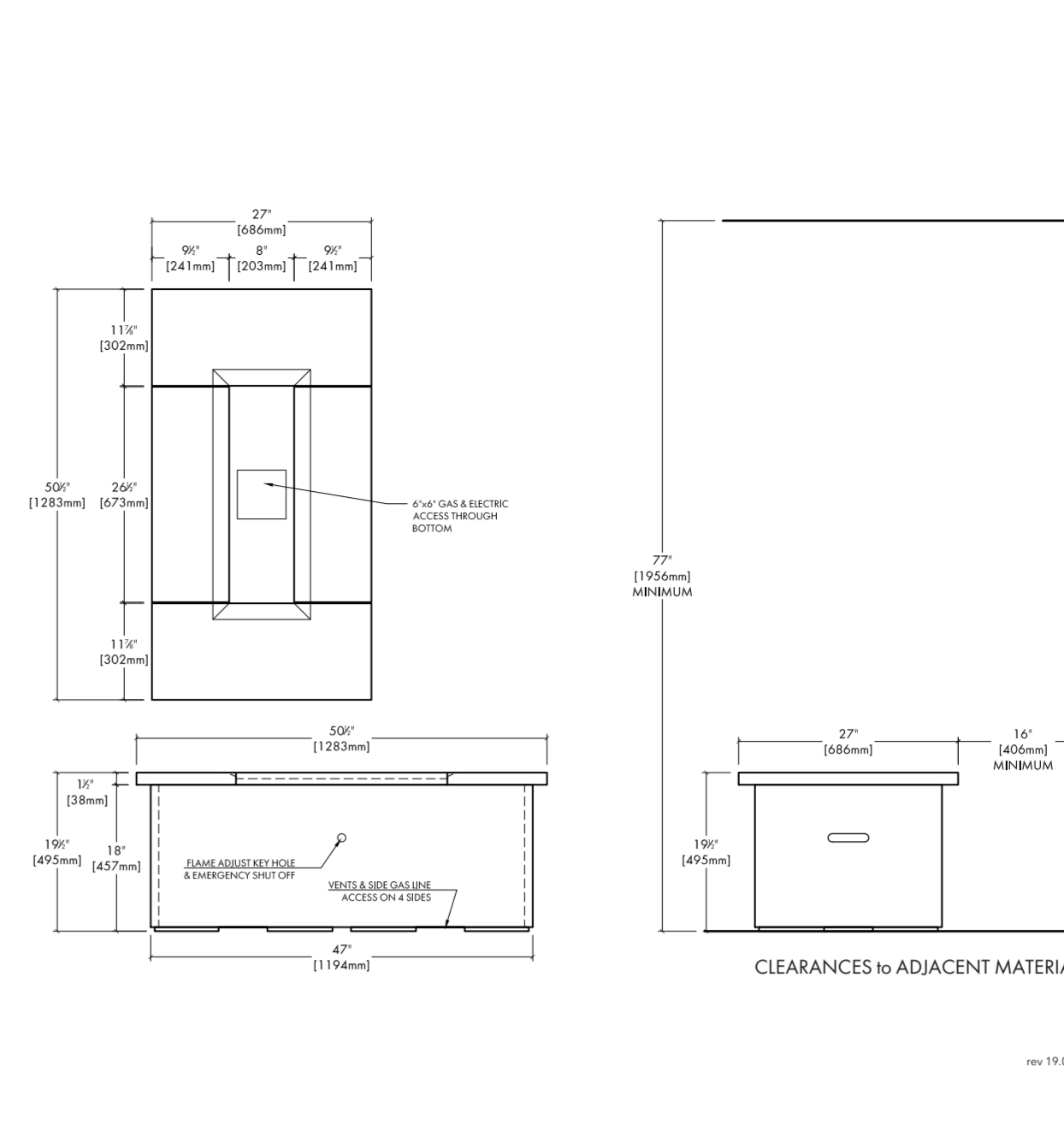
NORTH AMERICA SPECIFICATIONS
 Gas Type: Natural Gas, Propane
 Gas Pressure: 3.5" W.C. (100 mm H₂O), 11.0" W.C. (305 mm H₂O)
 Electrical: 1.5A, 60 Hz, 120V AC, 1.5A, 60 Hz, 240V AC

UK EUROPEAN SPECIFICATIONS
 Gas Type: Natural Gas, Propane
 Gas Pressure: 20 mbar (0.29 bar), 30 mbar (0.43 bar)
 Electrical: 1.5A, 50 Hz, 230V AC, 1.5A, 50 Hz, 230V AC

CE

CONCRETE SPECS
 Strength: 10,000 psi (compressive)
 Weight: 475 lbs (215 kg)

JOB / ORDER
 Name or Number:
 Signature & Date:



5 SPEC SHEET: Fire Pit - Solus
 NTS

S1 S2

1 SPEC SHEET: Onsite Bench - Maglin
 NTS

S5

2 SPEC SHEET: Public Bench - Maglin
 NTS

S4

3 SPEC SHEET: Lounge Chair - Maglin
 NTS

S6

4 SPEC SHEET: Ipe Outdoor Armchair - Equiparc
 NTS

S8

solus

Fire Features

ELECTRICAL START NS & LP
 Fire is beautiful and also dangerous. If not handled properly, please have a qualified gas fitter install and test the product according to local codes.

The product has been tested and certified by Intertek Certification Inc. as being safe, as long as clearances to adjacent materials are maintained.

FOR OUTDOOR USE ONLY

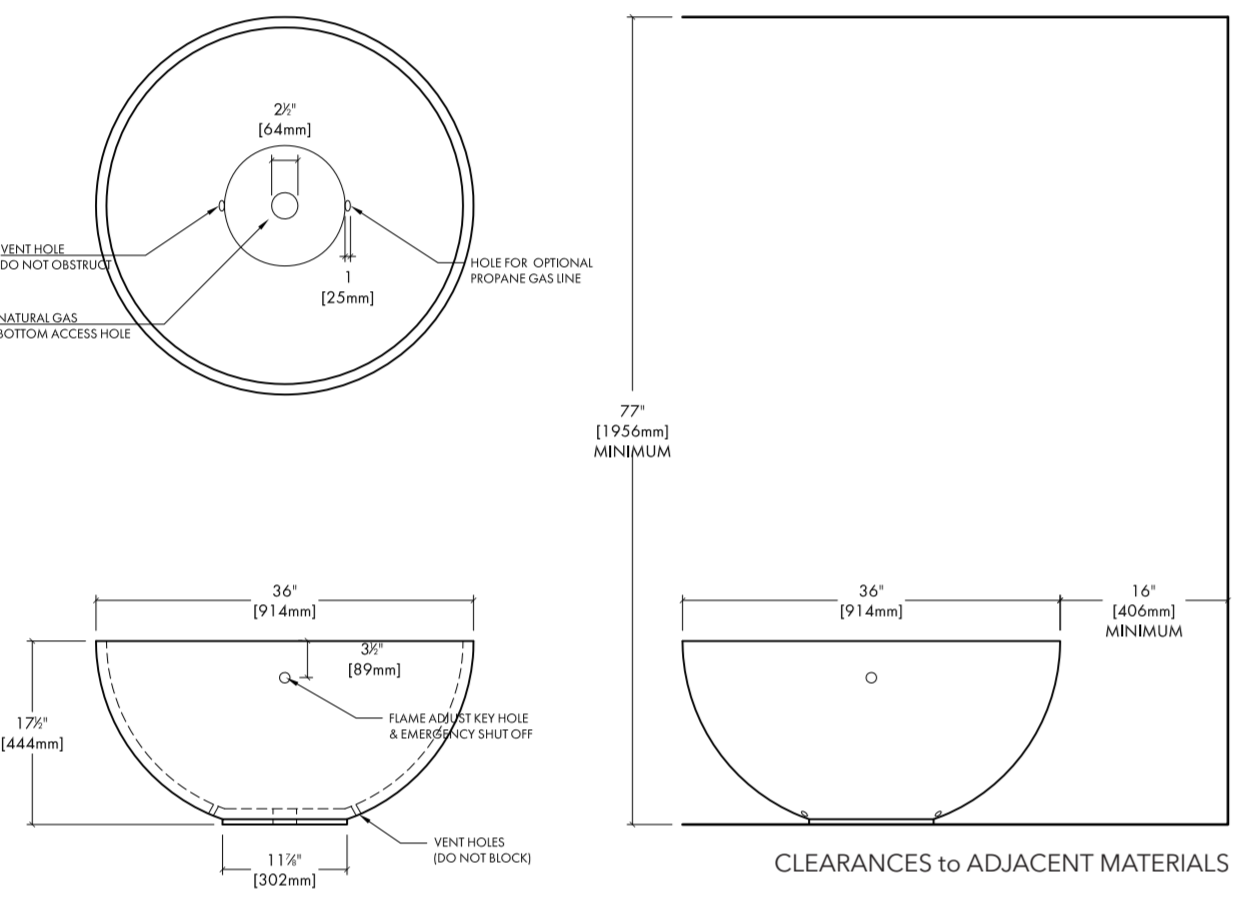
NORTH AMERICA SPECIFICATIONS
 Gas Type: Natural Gas, Propane
 Gas Pressure: 3.5" W.C. (100 mm H₂O), 11.0" W.C. (305 mm H₂O)
 Electrical: 1.5A, 60 Hz, 120V AC, 1.5A, 60 Hz, 240V AC

UK EUROPEAN SPECIFICATIONS
 Gas Type: Natural Gas, Propane
 Gas Pressure: 20 mbar (0.29 bar), 30 mbar (0.43 bar)
 Electrical: 1.5A, 50 Hz, 230V AC, 1.5A, 50 Hz, 230V AC

CE

CONCRETE SPECS
 Strength: 10,000 psi (compressive)
 Weight: 475 lbs (215 kg)

JOB / ORDER
 Name or Number:
 Signature & Date:

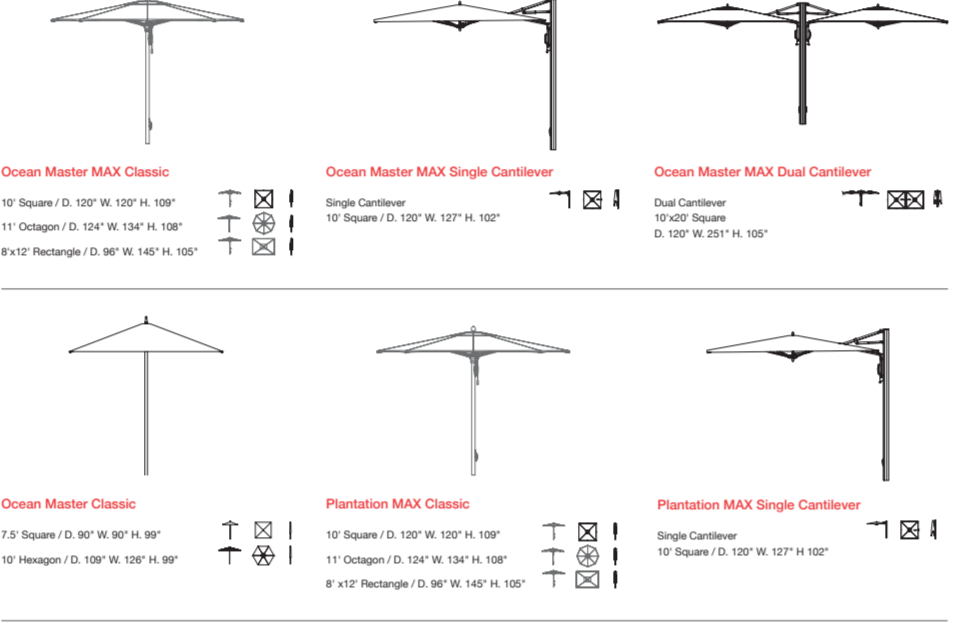


3 SPEC SHEET: Fire Ring - Solus
 NTS

S3

7 SPEC SHEET: Outdoor Umbrella - Landscape Forms
 NTS

S10



landscape forms

Equiparc

EP 5990 Bike rack

SPECIFICATIONS
 Frame: Aluminum components
 Finish: Polyester powder coated
 Foot Support (UG): Hot dipped galvanized steel flat

AVAILABLE
 5990-AG Surface mount
 5990-UG In-ground mount

Depth: 300mm (11.34") Length: 200mm (7.78") Height: 825mm (32.12") Weight: 20 kg (45 lb)

This bike rack must be anchored.
 Our warranty applies when our product is properly assembled and anchored.

CONCRETE SLABS AND ANCHORS
 7005 1 slab 610mm x 610mm x 152mm (24" x 24" x 6")
 7016 1 slab 610mm x 203mm (24" x 8")
 GS 4 stainless steel lead bolts
 GAV 4 drop-in anchors with stainless steel threaded bolts

CONCRETE SLABS AND ANCHORS
 GS 12 stainless steel lead bolts

DESIGN DURABILITY EXPERTISE

8 SPEC SHEET: Bike Rack - Equiparc
 NTS

PLAN:

SIDE ELEVATION:

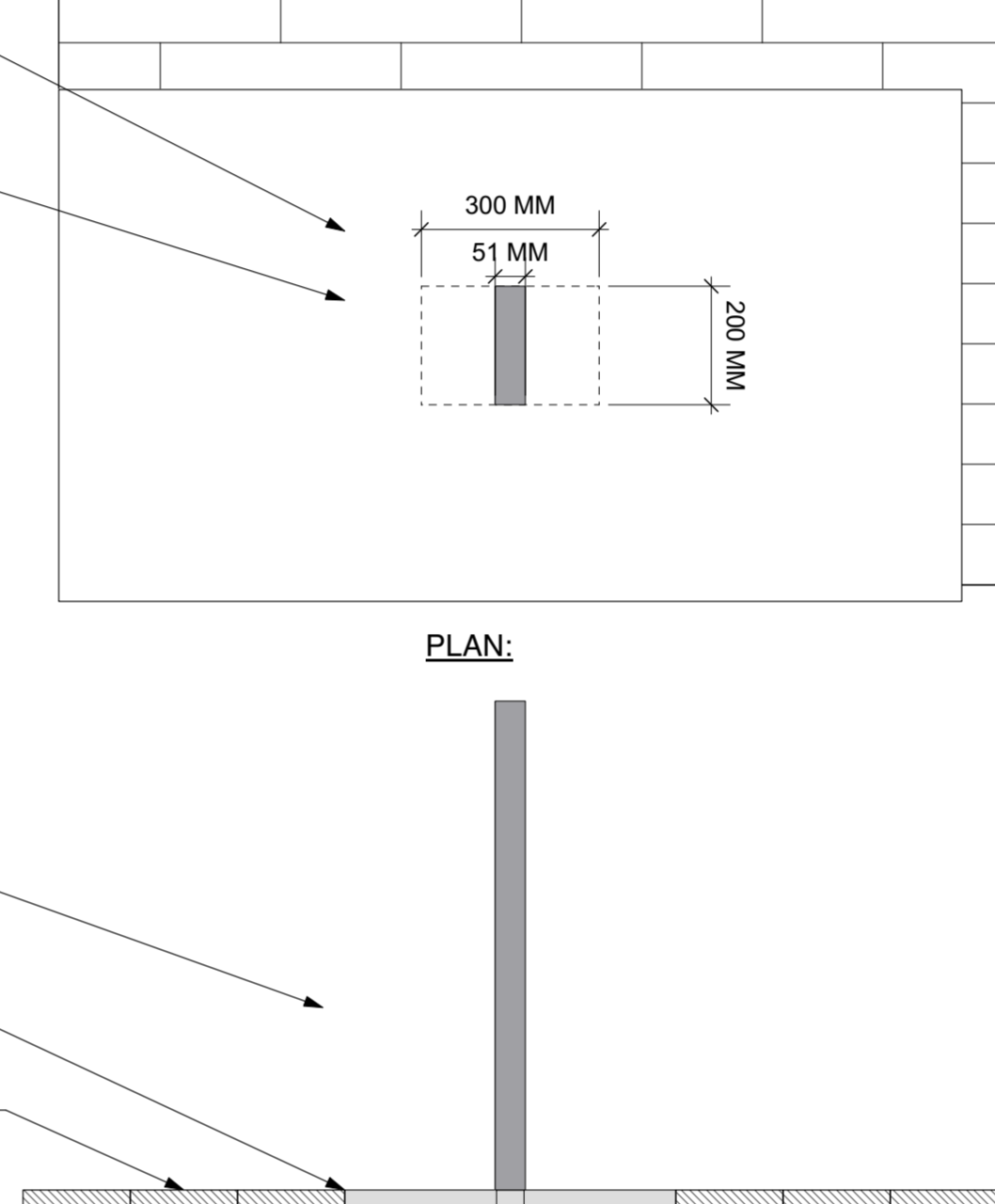
Install as per manufacturer

Conc. footing extending below pavers

Conc. footing flush with pavers

Pavers installed as per per. detail

Conc. footing extending below pavers



3380FR/3380GFR WITH 6518FR

PLAN:

SIDE ELEVATION:

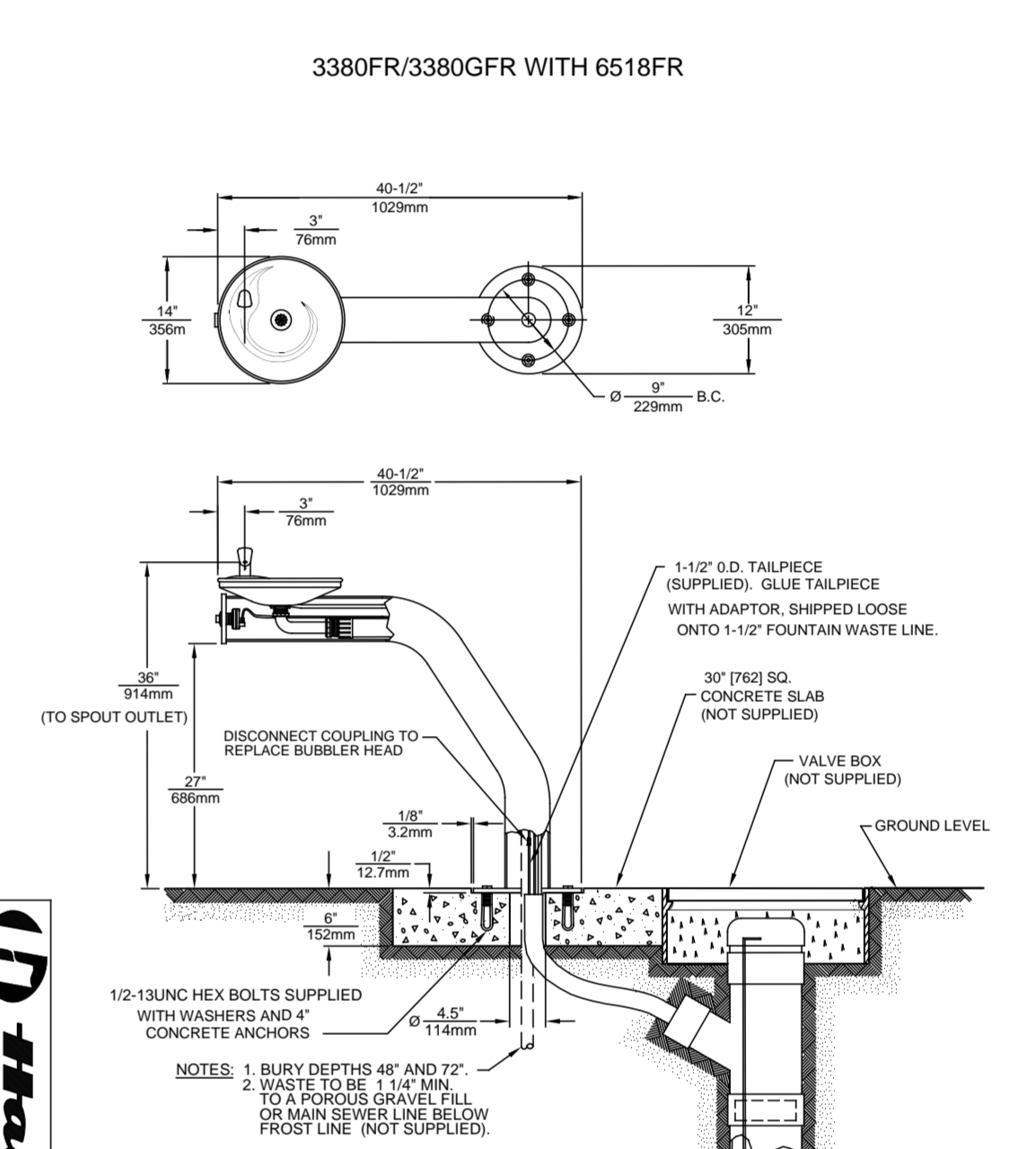
Install as per manufacturer

Conc. footing extending below pavers

Conc. footing flush with pavers

Pavers installed as per per. detail

Conc. footing extending below pavers



9 SPEC SHEET: Water Fountain - Haws
 NTS

S14

Professional Seal

eta landscape architecture

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Loft Sofa
 CHS6203-WT - Loft Sofa

The Loft Sofa features an all-welded aluminum, powdercoated frame (weighted for commercial use). It is available in any Hauser/OTE powdercoat finish, with upholstery in any standard fabric or acrylic fabric, or COM. Shown here with our "Titanium" powdercoat finish, and "Cash Horizon" acrylic fabric.

Width: 81" (2057mm)
 Depth: 32.2" (818mm)
 Height: 32.2" (818mm)
 Seat Height: 18.1" (457mm)
 Arm Height: 25.2" (640mm)
 Weight: 33.1 lbs (15.0 kg)
 Custom: Reversible



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 800-268-7328
 hausersite.com

10 SPEC SHEET: Lounge Sofa - Hauser
 NTS

S7

Equiparc

EP 1051 Seat


SPECIFICATIONS
 Frame: 10mm (3/8") aluminum components
 Finish: Polyester powder coated
 Slats: 51mm x 152mm (2" x 6")
 Fasteners: Stainless steel

COVERINGS
 DPF Select Douglas fir
 JAT Jaxota
 IPE Ipe
 HWA Select hardwood

Depth: 567mm (22.14") Length: 692mm (27.14") Height: 450mm (17.34") Weight: 44 kg (97 lbs)
A: 920mm (36.14") B: 466mm (18.17") C: 610mm (23.34") D: 576mm (22.54")

This bench must be anchored. Make sure there is a 10mm (3/8") gap between each piece of furniture.
 Our warranty applies when our product is properly assembled and anchored.

CONCRETE SLABS AND ANCHORS
 7005 1 slab 610mm x 610mm x 152mm (24" x 24" x 6")
 GS 4 stainless steel lead bolts
 GAV 4 drop-in anchors with stainless steel threaded bolts



CONCRETE SLABS AND ANCHORS
 GS 12 stainless steel lead bolts

DESIGN DURABILITY EXPERTISE

11 SPEC SHEET: Lounge Table - Equiparc
 NTS

S9

Equiparc

EP 2300 Table and seats

SPECIFICATIONS
 Support: Steel tubes and feet
 Finish: Hot dipped galvanized
 Slats: 51mm x 76mm (2" x 3") and 51mm x 152mm (2" x 6")
 Fasteners: Stainless steel
 ADA Compliant: The table top ends are already ADA compliant (813 x 724mm / 32" x 28 1/2")

COVERINGS
 DPF Grey plastic
 SPP Select Douglas fir
 JAT Jaxota
 IPE Ipe
 HWA Select hardwood

OPTIONS
 GP Galvanized and painted frame
 HAND Table top extended to 99 1/2" for wheelchair access
 PARASOL Modified for parasol

EP 2300 (Set of one EP 2300-T and two EP 2300-LB)
 Depth: 1784mm (70.14") Length: 1800mm (71") Height: 812mm (32") Weight: 234 kg (515 lb)

EP 2300 - SB (Small bench only)
 Depth: 345mm (13 1/2") Length: 500mm (19 5/8") Height: 462mm (18 3/16") Weight: 24 kg (53 lb)

EP 2300 - T (Table only)
 Depth: 914mm (36") Length: 1800mm (71") Height: 812mm (32") Weight: 130 kg (285 lb)

EP 2300 - LB (Long bench only)
 Depth: 345mm (13 1/2") Length: 1498mm (59") Height: 462mm (18 3/16") Weight: 62 kg (116 lb)

This table must be anchored.
 Our warranty applies when our product is properly assembled and anchored.

CONCRETE SLABS AND ANCHORS
 GS 12 stainless steel lead bolts

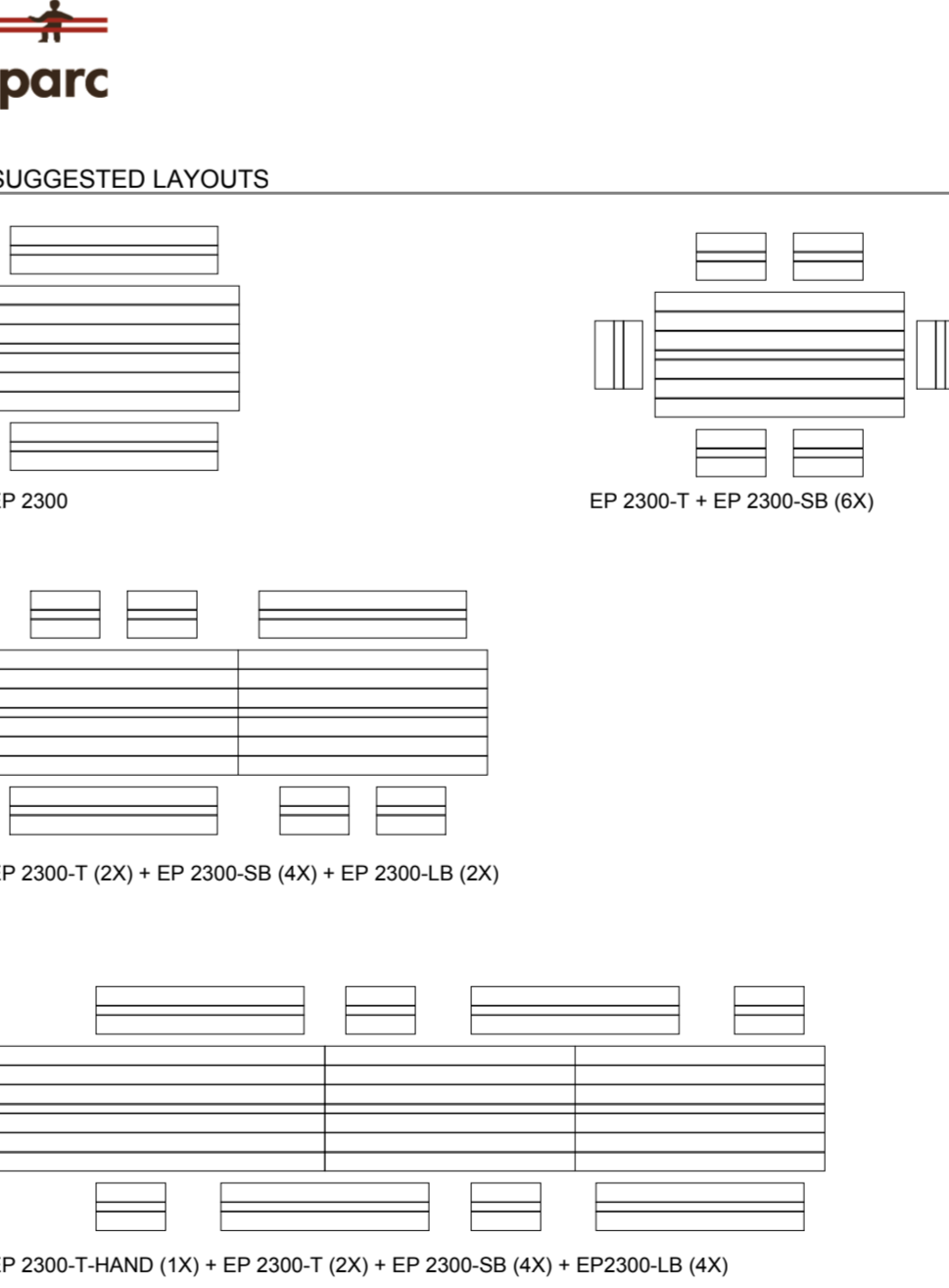
DESIGN DURABILITY EXPERTISE

12 SPEC SHEET: Dining Table + chairs arrangement
 NTS

S11

Equiparc

SUGGESTED LAYOUTS



EP 2300-T (X) + EP 2300-SB (4X) + EP 2300-LB (2X)

EP 2300-T (1X) + EP 2300-T (2X) + EP 2300-SB (4X) + EP 2300-LB (4X)

CONCRETE SLABS AND ANCHORS
 GS 12 stainless steel lead bolts

DESIGN DURABILITY EXPERTISE

Note:
 For all Landscape site furniture, refer to manufacturer / supplier's recommendations for installation process and item details, cut sheets and specifications.

11

Project
OXFORD STREET RESIDENTIAL

1500 OXFORD STREET
 White Rock, BC

Drawing Title
Landscape Details - Site Furnishings

Legal
 Parcel "C"; (Reference Plan 12042)
 Lot 4 Except: Part Subdivided by Plan 52320, Section 10 Township 11

Project Manager
 GE 21752

Drawn By
 GE/NT AS SHOWN

Reviewed By
 GE

Date
 2015-09-14

L13.1

36

Plot Date:
 21-9-9
 21752 Oxford St Residential_BF.pwd

Note:

For all Landscape site furniture, refer to manufacturer / supplier's recommendations for installation process and item details, cut sheets and specifications.

Coordinate with Structure and Architecture Engineers for fixation & construction details

Revision
No. Date Revision Notes

Issue No.	Date	Issue Notes
D	2015-10-27	Re-issued for ADP
E	2015-10-27	Re-issue for OCP Amendment & CD RZ
F	2015-11-17	Re-issue for OCP Amendment & CD RZ
H	2/20/14	Issued for public information
I	3/13/14	Issued for rezoning
J	7/2/15	Issued for Advisory Design Panel
K	2018-06-11	Issue for DP
L	2020-03-02	Re-issue for DP
N	2021-03-10	Issued for BP
O	2021-05-07	Issued for Pricing
S	2021-06-09	Re-issued for DP

Professional Seal

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Project

**OXFORD STREET
RESIDENTIAL**

1500 OXFORD STREET
White Rock, BC

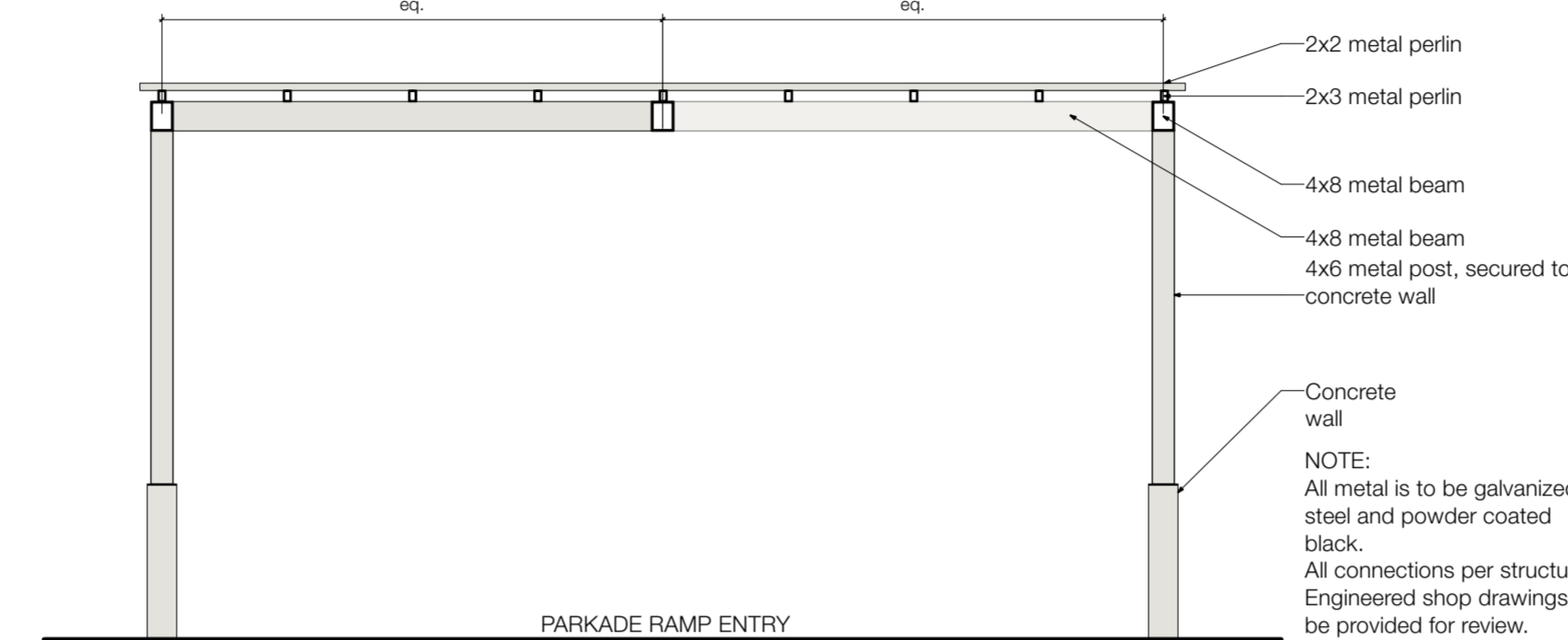
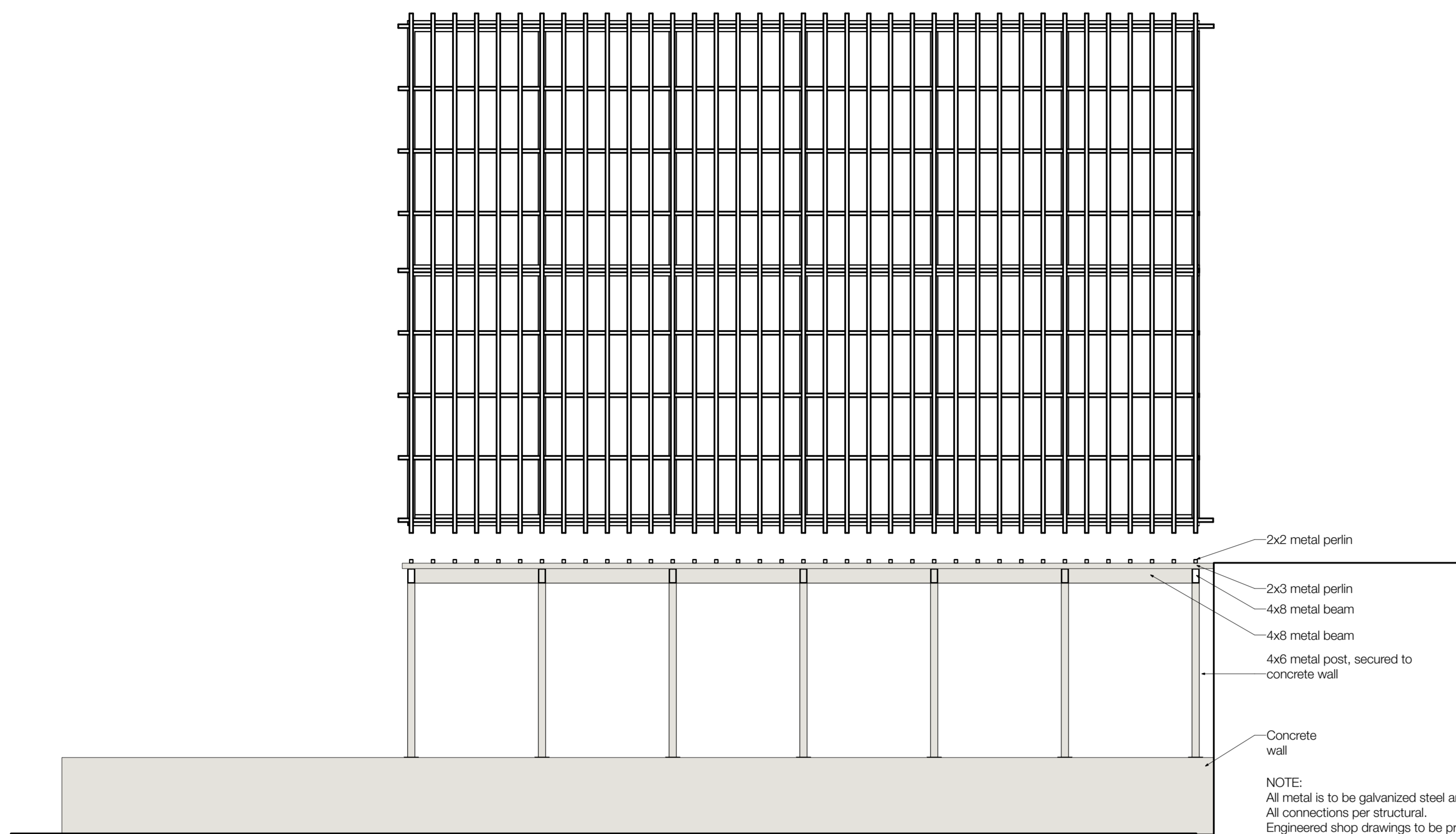
Drawing Title

**Landscape Details
- Site Furnishings**

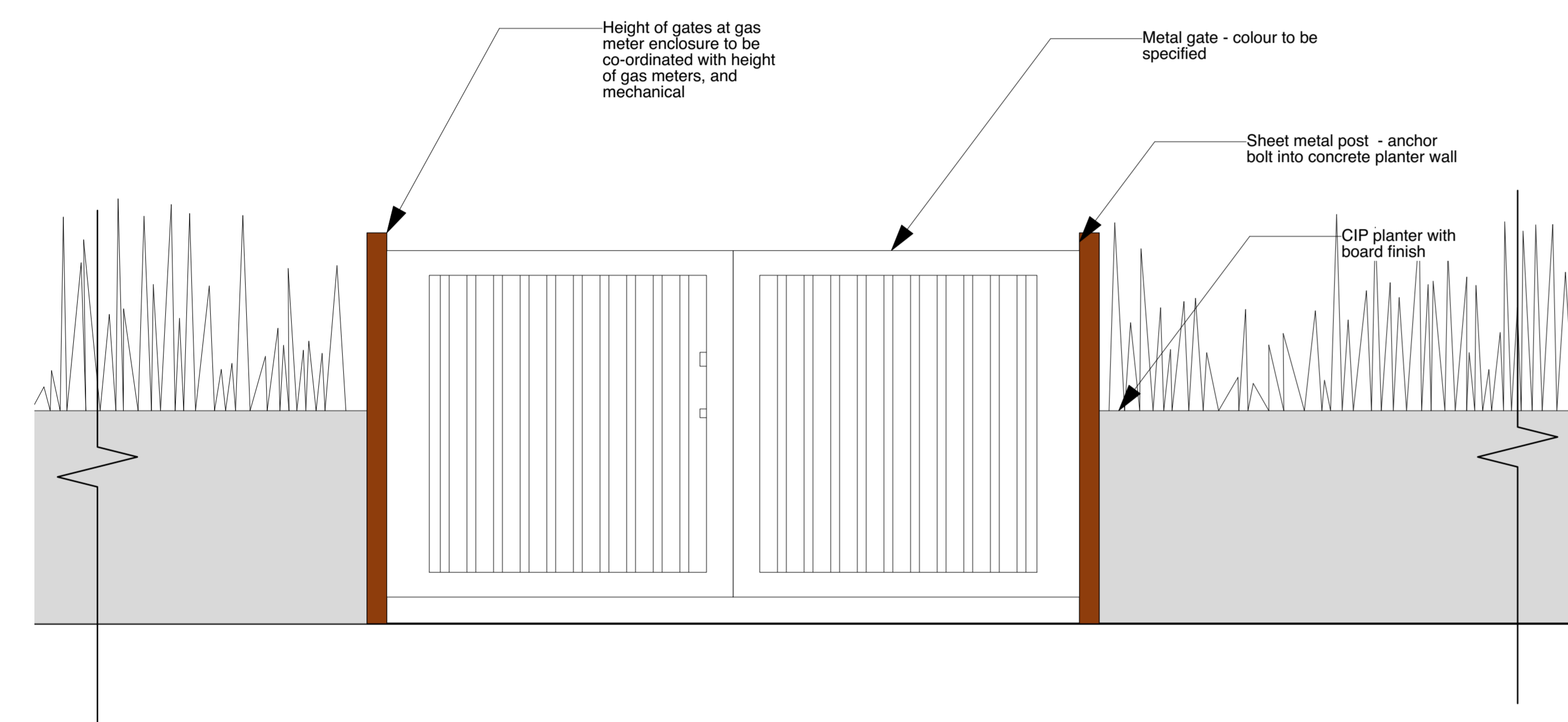
Legal
Parcel "C" (Reference Plan 12042)
Lot 4 Except: Part Subdivided by
Plan S2320, Section 10 Township 1

Project Manager GE	Project ID 21752
Drawn By GE/NT	Scale AS SHOWN
Reviewed By GE	Drawing No. L13.2
Date 2015-09-14	of 36

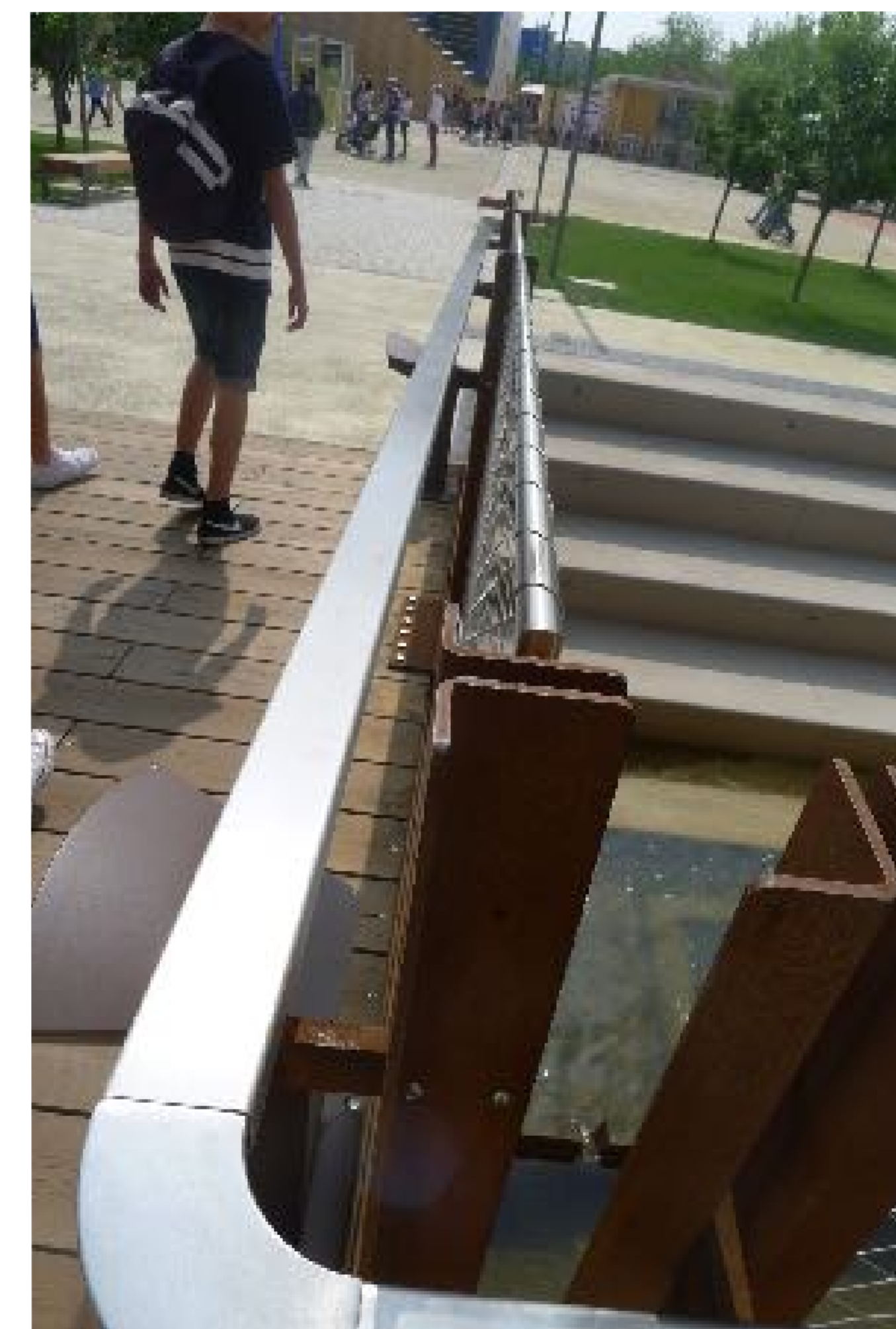
Plot Date:
21-9-9
21752 Oxford St Residential_BP.rvt



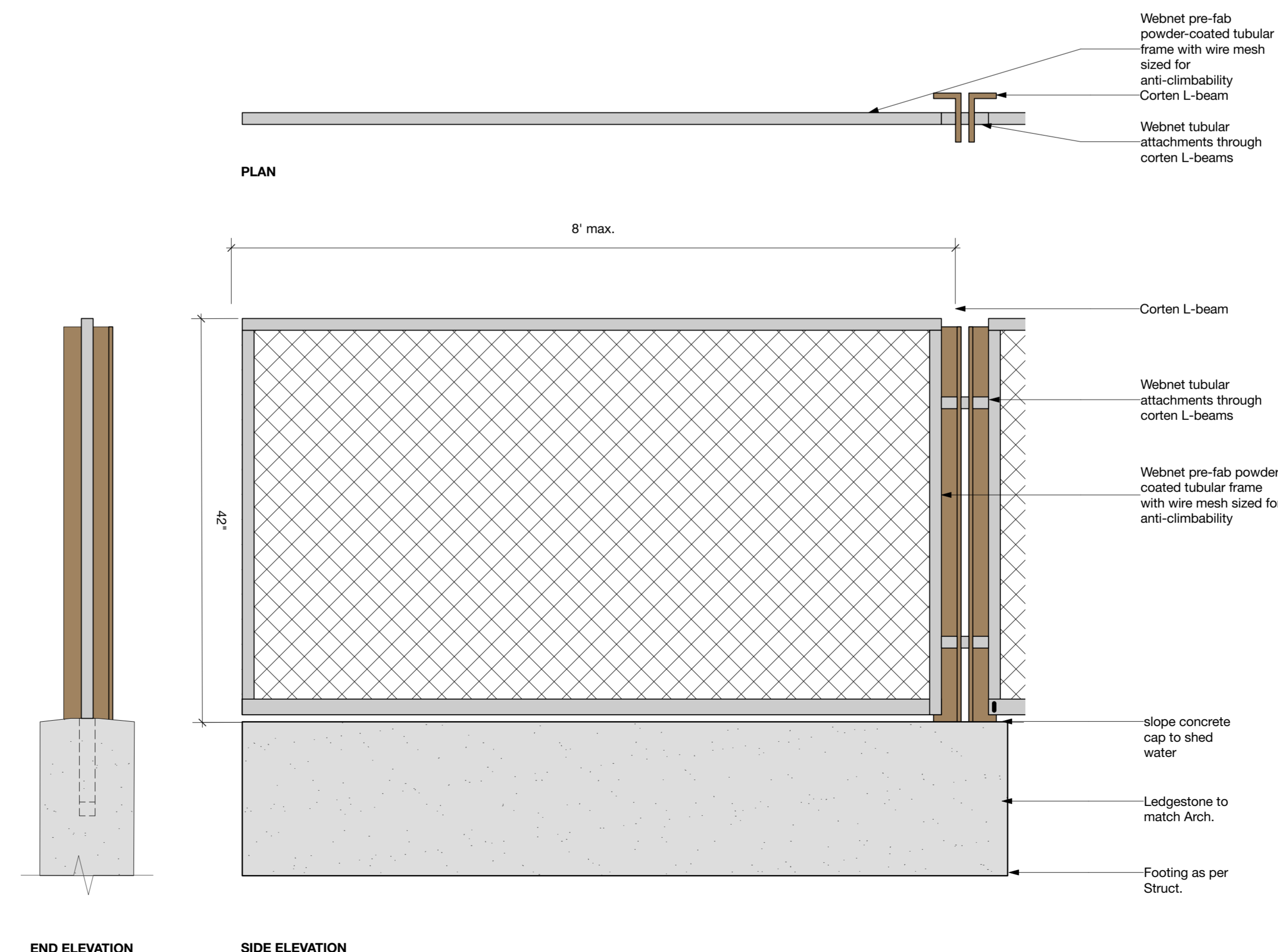
1 DETAIL: Metal Arbour over Parkade Entrance - Custom
Scale: 1/4" = 1'-0"



2 DETAIL: Gas Meter Enclosure Fence
Scale: 1" = 1'-0"



3 PERSPECTIVE: Corten Steel Web Mesh Fence - Custom
NTS



3.1 DETAIL: Corten Steel Web Mesh Fence - Custom
Scale: 1" = 1'-0"

MAGLIN Site Furniture

PRODUCTS | COLLECTIONS | COMPANY INFO | PORTFOLIO | QUICK QUOTE | RESOURCES

KNT2000-MO KONTUR TABLE

KNT2000-MO FS Table, Free Standing

KONTUR TABLE SERIES | COLOR CHART

The Kontur Collection - inspired by Scandinavian design, is simple yet refined, durable and strong. The frame is welded steel. The chair and stool utilize a formed steel seat for added comfort. The table features a rolled edge, umbrella hole and 3 leg design. The closed form shapes resemble a combined profile.

MATERIALS

The Kontur Table top is laser cut with a spun metal edge. The legs are constructed from 5/8" diameter solid steel.

DIMENSIONS & WEIGHT

KNT2000-MO-FS Free Standing Height: 30" (76.2cm) Diameter: 30" (76.2cm) Weight: 55lbs (25kg)	KNT2000-MO-SM Surface Mount Height: 28 1/4" (71.8cm) Diameter: 30" (76.2cm) Weight: 55lbs (25kg)
--	--

FINISHES

All steel components are protected with E-Coat rust proofing. The Maglin Powdercoat System provides a durable finish on all metal surfaces.

INSTALLATION

The table is delivered pre-assembled. Free Standing - Each leg has a glide to protect point surface; Surface Mount - Holes are provided in each foot plate for anchoring.

ORDER

Contact your Maglin representative for specifications and pricing.

©2019 Maglin Site Furniture. All Rights Reserved. Privacy Policy Tel: 604.683.1456 | Fax: 604.683.1459

4 SPEC SHEET: Bistro Table + chairs arrangement
NTS

MAGLIN Site Furniture

PRODUCTS | COLLECTIONS | COMPANY INFO | PORTFOLIO | QUICK QUOTE | RESOURCES

KNCH2000-MO KONTUR CHAIR

KONTUR CHAIR SERIES | COLOR CHART

The Kontur Chair frame is constructed of solid steel and employs a formed steel seat.

MATERIALS

The Kontur Chair frame is constructed of solid steel and employs a formed steel seat.

DIMENSIONS & WEIGHT

KNCH2000-MO Total Height: 30" (76.2cm) Seat Height: 18" (45.7cm) Width: 18 1/2" (46.7cm) Weight: 24.8lbs (11.2kg)

FINISHES

All steel components are protected with E-Coat rust proofing. The Maglin Powdercoat System provides a durable finish on all metal surfaces.

INSTALLATION

The chair is delivered pre-assembled and can be stacked and stored if desired.

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S12

GHOST

Lighting fixture for use in recessed lighting in ceiling applications. The fixture consists of a series of parallel lighting beams arranged in a linear array to the wall and ceiling. The fixture is designed to provide a soft, ambient glow. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

Technical Specifications:

- Power Input: 40W to 120W
- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

CONTINUOUS LINE

Recessed ceiling light fixture for linear applications. The fixture consists of a series of parallel lighting beams arranged in a linear array to the wall and ceiling. The fixture is designed to provide a soft, ambient glow. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

Technical Specifications:

- Power Input: 20W to 120W
- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

CONTINUOUS LINE

Recessed ceiling light fixture for linear applications. The fixture consists of a series of parallel lighting beams arranged in a linear array to the wall and ceiling. The fixture is designed to provide a soft, ambient glow. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

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- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

Note:

- For all Landscape site furniture, refer to manufacturer / supplier's recommendations for installation process and item details, cut sheets and specifications.
- For Lighting fixtures types, cut sheets & specifications, refer to Electrical Drawings and specifications

Revision No.	Date	Revision Notes

2 SPEC SHEET: Strip Light - Sistemalux NTS

2 SPEC SHEET: Strip Light - Sistemalux NTS

MICROKUBE

Collection of fixtures for commercial and institutional applications. The MICROKUBE is an ideal of modern design for use in ceiling and wall applications. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

Technical Specifications:

- Power Input: 10W to 120W
- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

MICROKUBE

Collection of fixtures for commercial and institutional applications. The MICROKUBE is an ideal of modern design for use in ceiling and wall applications. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

Technical Specifications:

- Power Input: 10W to 120W
- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

MOVIT

Recessed ceiling light fixture for linear applications. The fixture consists of a series of parallel lighting beams arranged in a linear array to the wall and ceiling. The fixture is designed to provide a soft, ambient glow. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

Technical Specifications:

- Power Input: 20W to 120W
- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

4 DETAIL: Spot Light - Sistemalux NTS

4 DETAIL: Spot Light - Sistemalux NTS

Function

The LED007 ROBW Slab Hanger Compact LED Light fixture is a compact package, a perfect choice for use in recessed lighting in ceiling applications. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

Specifications

- Power Input: 10W to 120W
- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

Wiring Diagram: LED007001

Wiring diagram for the LED007 ROBW Slab Hanger Compact LED Light fixture. The diagram shows the connection between the fixture and the power source. The fixture is connected to a 120VAC power source. The wiring is shown in a clear and concise manner, making it easy to understand and install.

Aura Illuminated Wooden Ring Pendant

The Aura Ring - Direct Lighting fixture is a modern and stylish lighting fixture. The fixture consists of a series of parallel lighting beams arranged in a linear array to the wall and ceiling. The fixture is designed to provide a soft, ambient glow. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

Technical Specifications:

- Power Input: 20W to 120W
- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

Aura Ring - Direct Lighting

The Aura Ring - Direct Lighting fixture is a modern and stylish lighting fixture. The fixture consists of a series of parallel lighting beams arranged in a linear array to the wall and ceiling. The fixture is designed to provide a soft, ambient glow. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

Technical Specifications:

- Power Input: 20W to 120W
- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

L06

The L06 InGround Light fixture is a modern and stylish lighting fixture. The fixture consists of a series of parallel lighting beams arranged in a linear array to the wall and ceiling. The fixture is designed to provide a soft, ambient glow. The fixture is available in three different lengths: 1.5m, 2.1m and 2.7m. The fixture is available in three different finishes: White, Black and Bronze. The fixture is available in three different beam patterns: Linear, Zigzag and Random.

Technical Specifications:

- Power Input: 20W to 120W
- Lighting Output: 1000lm (10000K, 10000K)
- Lighting Efficiency: 100lm/W
- Beam Angle: 120°
- Beam Spacing: 100mm
- Beam Length: 1.5m, 2.1m, 2.7m
- Beam Pattern: Linear, Zigzag, Random
- Finish: White, Black, Bronze
- Material: Aluminum
- Mounting: Recessed
- Height: 1.5m, 2.1m, 2.7m
- Weight: 1.5kg, 2.1kg, 2.7kg
- Rating: IP65, IK08
- Certification: CE, RoHS

PHOTOMETRIC DATA

Photometric data for the L06 InGround Light fixture. The data shows the beam spread, beam diameter, and beam length of the fixture. The data is presented in a clear and concise manner, making it easy to understand and use.

1 SPEC SHEET: Catenary Light - Structura NTS

5 SPEC SHEET: InGround Light - Mp Lighting NTS

Issue No.	Date	Issue Notes
D	2015-10-27	Re-issued for ADP
E	2015-10-27	Re-issue for OCP Amendment & CD RZ
F	2015-11-17	Re-issue for OCP Amendment & CD RZ
H	2/20/14	Issued for public information
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J	7/21/15	Issued for Advisory Design Panel
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L	2020-03-02	Re-issue for DP
N	2021-03-10	Issued for BP
O	2021-05-07	Issued for Pricing
S	2021-06-09	Re-issued for DP

Professional Seal

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Project

OXFORD STREET RESIDENTIAL

1500 OXFORD STREET
White Rock, BC

Drawing Title

Landscape Details - Site Furnishings

Legal

Parcel "C" (Reference Plan 12042)
Lot 4 Except: Part Subdivided By Plan S2220, Section 10 Township 1

Project Manager: GE
Project ID: 21752

Drawn By: GE/NT
Scale: AS SHOWN

Reviewed By: GE
Drawing No.: 2015-09-14

Plot Date: 21-4-9
21752 Oxford St Residential_BP.rvt

L14.0
of 36

NOTES:

1. WATER TREATMENT SYSTEM, CATCH BASIN PROTECTION, ACCESS STABILIZATION, AND OTHER ESC MEASURES SHALL BE INSTALLED PRIOR TO THE BEGINNING OF BULK EXCAVATION.
2. GEOPACIFIC SHALL BE CONTACTED BY THE CONTRACTOR TO INSPECT THE INSTALLATION OF THE ESC SYSTEM PRIOR TO THE COMMENCEMENT OF ANY STRIPPING, EXCAVATION OR OTHER CONSTRUCTION.
3. MONITORING OF THE ESC SYSTEM AND DISCHARGE WATER TO OCCUR AS PER MUNICIPAL MONITORING AND REPORTING REQUIREMENTS. MONITORING MUST BE PERFORMED BY A QUALIFIED PERSON AS DEFINED IN THE MUNICIPAL BYLAW(S).
4. NO WATER MAY BE DISCHARGED FROM THE SITE THAT BYPASSES THE SEDIMENT CONTROL SYSTEM.
5. ALL CONCRETE TRUCKS SHALL UTILIZE A SELF-CONTAINED WASH SYSTEM. ALL WATER TO BE COLLECTED IN SELF-CONTAINED WASH SYSTEM. NO WASH WATER TO ENTER STORM DRAINS.
6. ALL CONCRETE TRUCKS SHALL UTILIZE LEAK-PROOF CONTAINMENT BERMS TO ENSURE NO CONCRETE OR WASH WATER IS DEPOSITED ON ROADWAYS OR ENTERS THE STORM DRAINS. PLACEMENT OF PLYWOOD UNDER CONCRETE PUMPS AND BUCKETS IS NOT AN ADEQUATE METHOD OF SPILL PROTECTION.
7. NO EXCESS CONCRETE SHALL BE DUMPED ON SITE, EXCEPT IN DESIGNATED CONCRETE WASTE BINS. CONCRETE WASTE BINS MUST BE LINED WITH POLY SHEETING AND SECURED TO PREVENT CONCRETE LEAKAGE ONTO ROADWAYS.
8. ALL WASHOUT ACTIVITIES MUST BE PERFORMED OFF-SITE OR IN DESIGNATED AREAS ONLY. LOCATE DESIGNATED WASHOUT AREAS AS FAR AWAY FROM STORM DRAINS AS POSSIBLE.
9. THE CONTRACTOR IS RESPONSIBLE FOR ALL MAINTENANCE OF THE EROSION AND SEDIMENT CONTROL SYSTEM.
10. ALL BEST MANAGEMENT PRACTICES ARE DESIGNED WITH REFERENCE TO THE "STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON" VOLUME II.
11. BELOW IS THE GENERAL EXPECTED ONSITE SOIL STRATIGRAPHY. FOR DETAILED SOIL DESCRIPTIONS, REFER TO GEOPACIFIC'S GEOTECHNICAL REPORT DATED FEBRUARY 8, 2018.



ONSITE SOIL STRATIGRAPHY

N.T.S.

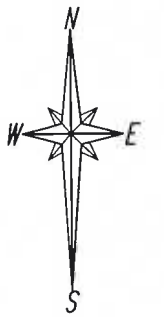
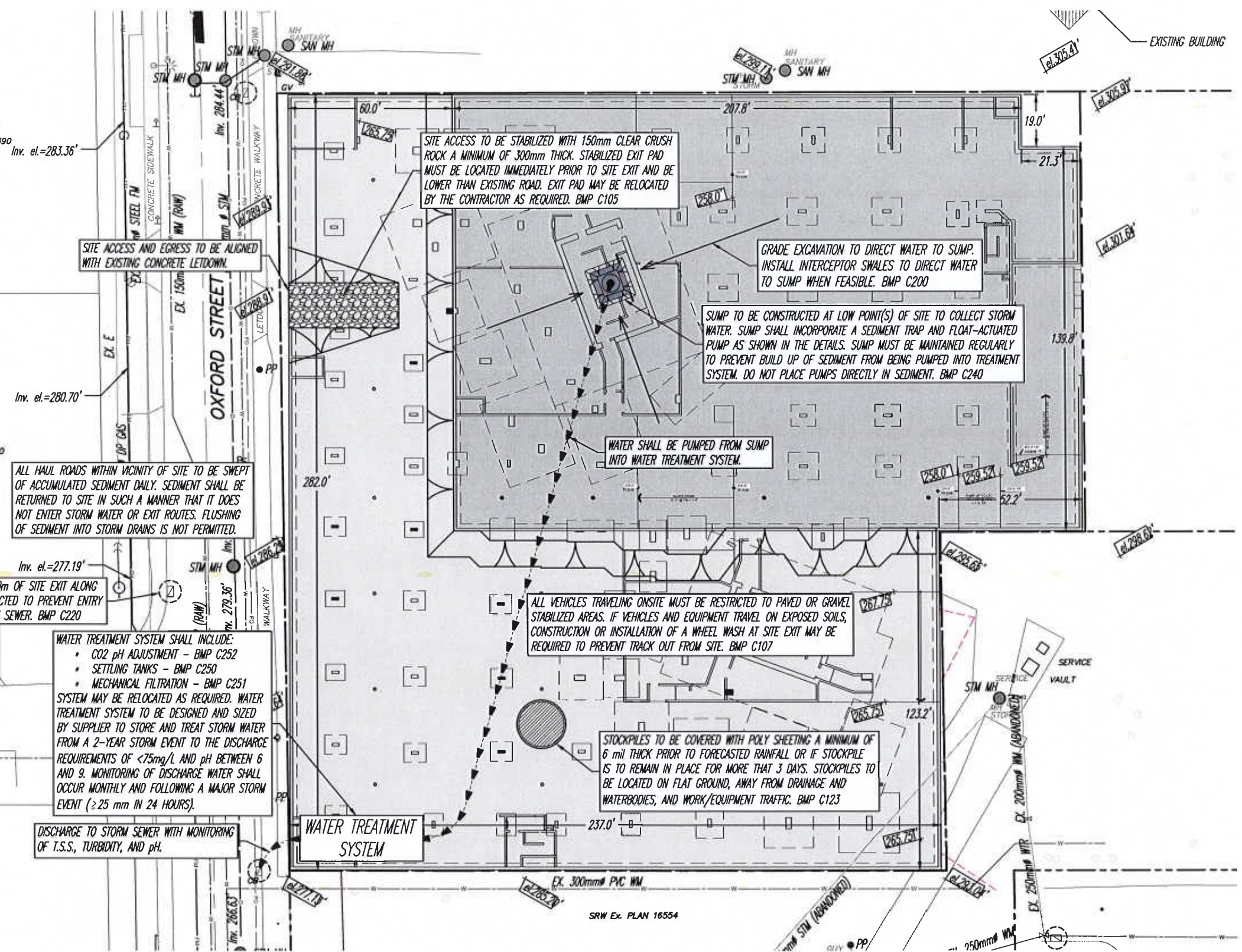
STORM WATER TREATMENT SYSTEM

SYSTEM TO BE SIZED BASED ON THE FOLLOWING FLOW RATE:
RATIONAL METHOD: $Q = CA$

WHERE: Q = PEAK DISCHARGE FLOW RATE

C = RUNOFF COEFFICIENT $C = 0.75$
 i = RAINFALL INTENSITY $i = 17\text{mm/HR}$
 A = SITE CATCHMENT AREA $A = 6941.2\text{m}^2$

DESIGN PERIOD: 2-YEAR STORM EVENT
 $Q = 24.6 \text{ L/SEC}$ PEAK DISCHARGE FLOW RATE @ $T_c = 30 \text{ MIN}$
 $Q = 3.0 \text{ L/SEC}$ 24HR DISCHARGE RATE
 IDF CURVE FOR WHITE ROCK (ENVIRONMENT CANADA)



SITE PLAN

1:100

LEGEND:

	- GRADE DIRECTION
	- CATCH BASIN PROTECTION
	- STOCKPILE
	- SUMP

NO.	DATE	BY	REVISION



DESIGNED BY: A.Ge.
 DRAWN BY: N.K.
 APPROVED BY: R.A.
 REVIEWED BY: M.T.L.
 SCALE: AS SHOWN

PROPOSED RESIDENTIAL DEVELOPMENT

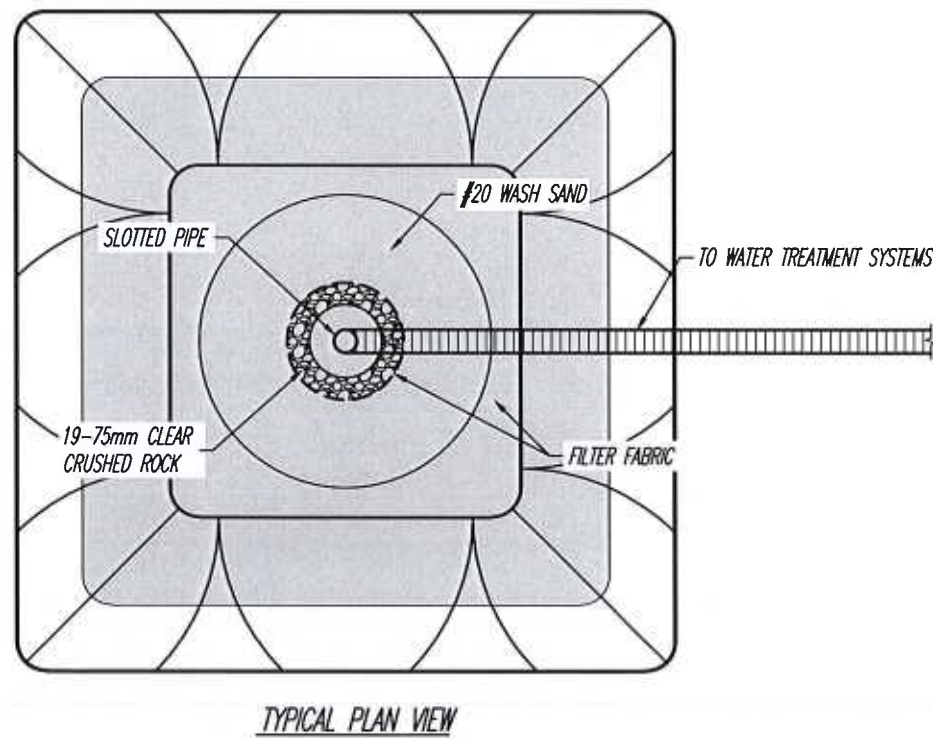
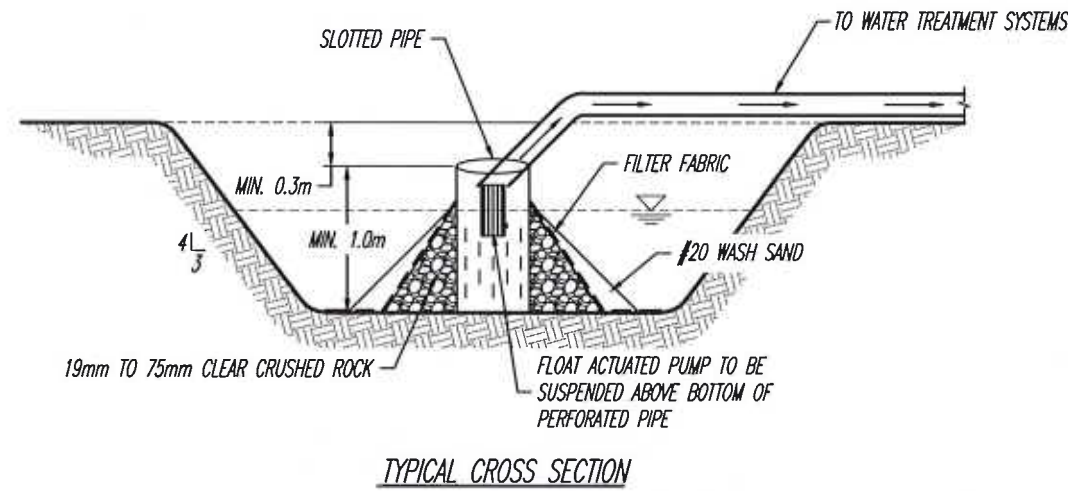
1500 OXFORD STREET, WHITE ROCK, B.C.

EROSION & SEDIMENT CONTROL PLAN

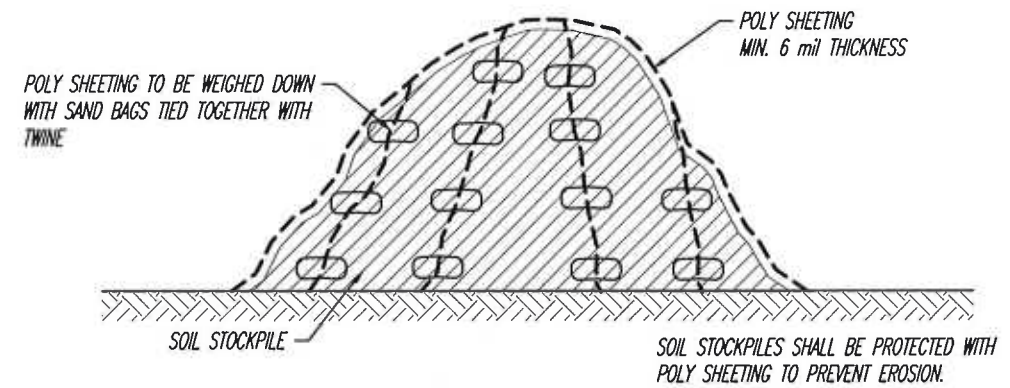
FILE NO: 15792
 DRAWING NO: G-ESC1
 DATE: MARCH 12, 2021



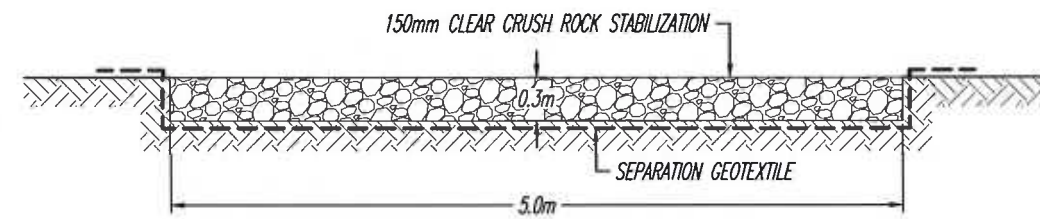
ORIGINAL PAPER SIZE 11"x17"



SUMP WITH SEDIMENT TRAP DETAIL - BMP C240
1:50



PLASTIC SHEETING - BMP C123
N.T.S.



GEOTEXTILE SEPARATION SPECS

GRAB TENSILE STRENGTH (ASTM D4751)	200psi MIN.
GRAB TENSILE ELONGATION (ASTM D4632)	30% MAX.
MULLEN BURST STRENGTH (ASTM D3786 - 80A)	400psi MIN.
AVERAGE OPENING SIZE (ASTM D4751)	20 - 45 (U.S. STANDARD SIZE)

STABILIZED CONSTRUCTION ACCESS DETAIL - BMP C105
1:50

LEGEND:

NO.	DATE	BY	REVISION



1779 W. 76th Avenue
Vancouver, B.C. V6P 6P2
P 604.459.0922
F 604.439.989

DESIGNED BY:
A.Ge.
DRAWN BY:
N.K.
APPROVED BY:
R.A.
REVIEWED BY:
M.T.L.
SCALE:
AS SHOWN

PROPOSED RESIDENTIAL DEVELOPMENT

1500 OXFORD STREET, WHITE ROCK, B.C.

EROSION & SEDIMENT CONTROL DETAILS (1 OF 2)

FILE NO:

15792

DRAWING NO:

G-ESC2A

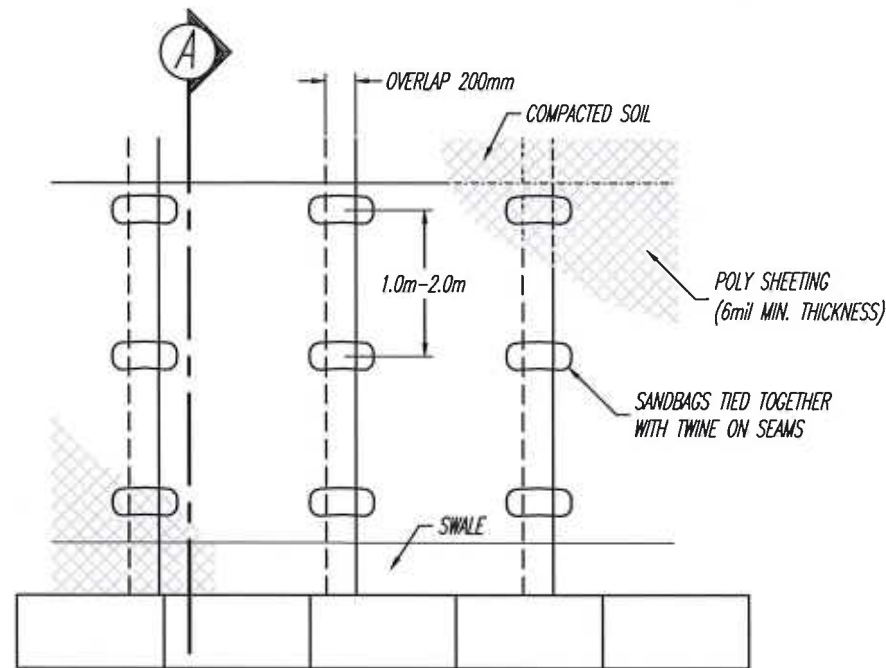
DATE:

MARCH 12, 2021

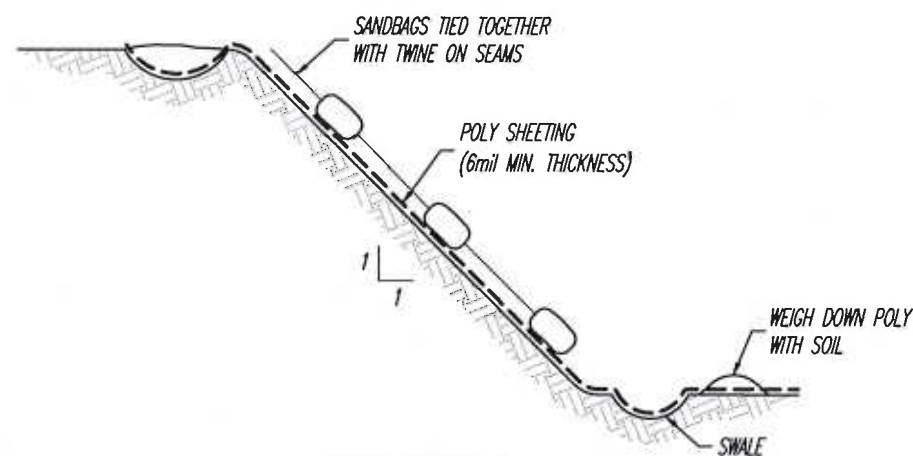
SEAL:



ORIGINAL PAPER SIZE 11" X 17"



SLOPE PLAN VIEW



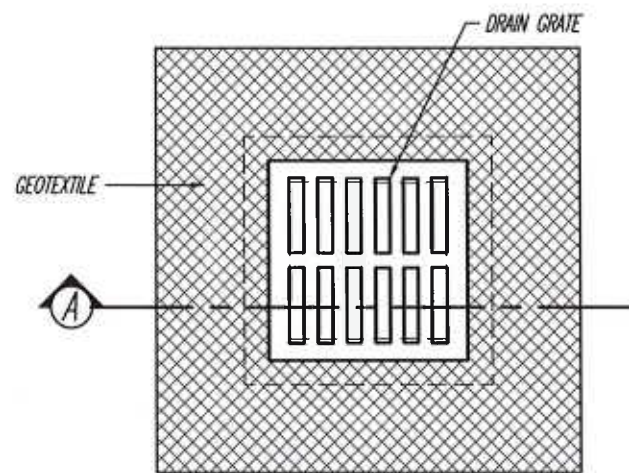
SLOPE SECTION A

PLASTIC COVERING - BMP C123

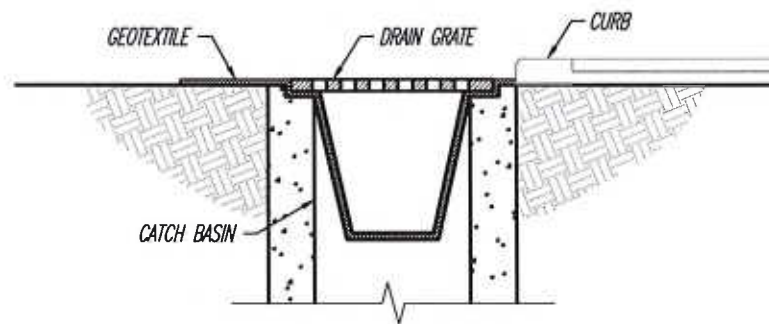
N.T.S.

NOTE:

1. POLYETHYLENE SHEETING WITH A MINIMUM THICKNESS OF 6mil TO BE USED.
2. SHEETING TO BE PLACED PARALLEL TO THE SLOPE WITH A MINIMUM 200mm OVERLAP BETWEEN SHEETS.
3. TRENCH TO BE EXCAVATED AT THE HEAD OF THE SLOPE TO ALLOW SHEETING TO BE SECURED UNDER COMPACTED SOIL.
4. TRENCH TO BE EXCAVATED AT THE TOE OF THE SLOPE, TO A DEPTH OF 300mm, WHICH WILL ACT AS A SWALE.
5. BURLAP OR GEOTEXTILE BAGS FILLED WITH SAND TO BE PLACED AT 1.0m TO 2.0m INTERVALS ALONG SEAMS. BAGS TO BE TIED TOGETHER WITH TWINE TO HOLD IN PLACE.
6. REGULAR INSPECTION OF THE SHEETING IS REQUIRED. TORN SHEETS MUST BE REPLACED AND OPEN SEAMS MUST BE SEALED.



PLAN VIEW

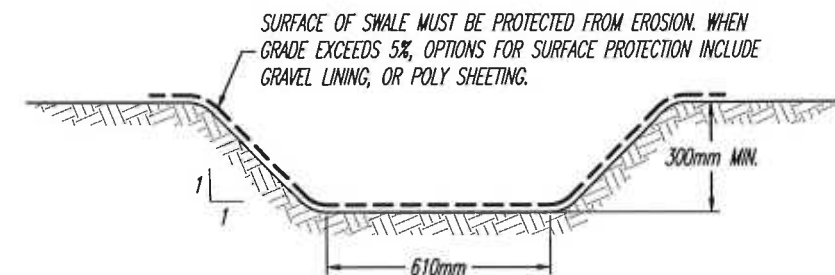


SECTION A

- STORE SPARE CATCH BASIN PROTECTION ONSITE AT ALL TIMES.
- INSPECT CATCH BASIN PROTECTION WEEKLY, AND DAILY DURING STORM EVENTS. CLEAN OR REPLACE WHEN 1/3 FULL, CLOGGED, OR SIGNS OF WEAR OCCUR.
- CATCH BASIN PROTECTION TO BE USED ON ALL CATCH BASINS WITHIN 150m OF SITE EXIT ALONG HAUL ROUTE.

CATCH BASIN SEDIMENT SACK DETAIL - BMP C220

N.T.S.



INTERCEPTOR SWALE DETAIL - BMP C200

1:20

SPACING OF CHECK DAMS BASED ON SLOPE OF SWALES

SLOPE	SPACING OF CHECK DAMS
0.5%	EVERY 50m
1.0%	EVERY 35m
1.5%	EVERY 20m
2.0%	EVERY 15m
2.5%	EVERY 12m
3.0%	EVERY 10m

NOTES:

- DRAINAGE SWALE TO BE CONSTRUCTED WITH MIN. SLOPE TO FACILITATE FLOW.
- SMALL SWALES SHALL DIRECT WATER INTO DRAINAGE SWALE.

- DURING ARID PERIODS OR DURING TIMES OF HIGH TRAFFIC OVER EXPOSED SOILS USE NATURAL OR ARTIFICIAL WIND BREAKS OR SCREEN.
- SPRINKLE WATER ON SITE UNTIL SURFACE SOILS ARE WETTED.
- SPRAY EXPOSED SOIL WITH DUST PALLIATIVE FOLLOWING MANUFACTURER'S INSTRUCTION.

DUST CONTROL - BMP C140

LEGEND:

NO.	DATE	BY	REVISION



1779 W. 75th Avenue
Vancouver, B.C. V6P 6P2
P 604.439.0922
F 604.439.9189

DESIGNED BY:
A.Ge.
DRAWN BY:
N.K.
APPROVED BY:
R.A.
REVIEWED BY:
M.T.L.
SCALE:
AS SHOWN

PROPOSED RESIDENTIAL DEVELOPMENT

1500 OXFORD STREET, WHITE ROCK, B.C.

EROSION & SEDIMENT CONTROL DETAILS (2 OF 2)

FILE NO:

15792

DRAWING NO:

G-ESC2B

DATE:

MARCH 12, 2021



MAR 15 2021

ORIGINAL PAPER SIZE 11" X 17"

GENERAL NOTES

1. UNDER THIS PLAN, ALL PERSONS INCLUDING BUT NOT LIMITED TO THE DEVELOPER, OWNER OF THE LAND, THE ENGINEER OF RECORD, ESC MONITOR, CIVIL CONTRACTOR, CIVIL SUBCONTRACTOR, BUILDER AND BUILDING SUB-TRADES; ENGAGED ONSITE SHALL COMPLY WITH THE REQUIREMENTS OF ALL REGULATORY AUTHORITIES, FEDERAL, PROVINCIAL AND MUNICIPAL GOVERNMENT DEPARTMENTS PERTAINING TO ONSITE MANAGEMENT AND DISCHARGE ASSOCIATED WITH EROSION AND SEDIMENT CONTROL REGULATIONS.
2. THE DEVELOPER/PERSONS RESPONSIBLE SHALL ENSURE THAT CONSTRUCTION ACTIVITIES ARE UNDERTAKEN IN A MANNER THAT ENSURES BEST MANAGEMENT PRACTICES ARE IMPLEMENTED TO CONTAIN ONSITE, SILT LADEN RUNOFF THAT EXCEEDS FEDERAL, PROVINCIAL, AND MUNICIPAL REQUIREMENTS, AND PREVENT ITS ENTERING DOWNSTREAM DRAINAGE INFRASTRUCTURE AND AQUATIC SYSTEMS.
3. THE DEVELOPER/OWNER/PERSONS RESPONSIBLE MUST COMPLY WITH THE ESC PLAN WITHIN THE SPECIFIED TIMEFRAME, AND COMPLY WITH ALL INSTRUCTIONS ISSUED BY THE ESC MONITOR TO RECTIFY DEFICIENCIES THAT RESULT IN NON-COMPLIANCE.
4. NO PERSON SHALL OBSTRUCT OR IMPEDE THE FLOW OF THE DRAINAGE SYSTEM. NO PERSON SHALL STORE, TRANSPORT OR DISPOSE OF ANY WASTE OR DELETERIOUS SUBSTANCES IN SUCH A MANNER SO AS TO PERMIT THE LIKELY ESCAPE OF THE MATERIALS INTO THE DRAINAGE SYSTEM, OR RELEASE DIRECTLY OR INDIRECTLY DELETERIOUS SUBSTANCES INTO THE DRAINAGE SYSTEM.
5. NO PERSON SHALL CAUSE OR PERMIT TO BE RELEASED INTO THE DRAINAGE SYSTEM, DIRECTLY OR INDIRECTLY, ANY SEDIMENT, EARTH, CONSTRUCTION OR EXCAVATION WASTES, CEMENT, CONCRETE OR OTHER SUBSTANCES WHICH WHEN MIXED WITH WATER WILL RESULT IN A PH AND/OR TURBIDITY VALUE OUTSIDE OF FEDERAL, PROVINCIAL, AND MUNICIPAL DISCHARGE REQUIREMENTS.
6. THE EROSION AND SEDIMENT CONTROL WORKS SHALL REMAIN IN PLACE AND SHALL BE MAINTAINED UNTIL THE SITE NO LONGER POSES A THREAT TO THE DRAINAGE SYSTEM AND APPROVAL TO REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL FACILITIES HAS BEEN OBTAINED FROM THE ESC MONITOR.

MAINTENANCE

1. UPON INSTRUCTION/NOTIFICATION BY ENGINEER OF RECORD OR ESC MONITOR, PERSONS RESPONSIBLE ARE REQUIRED TO UNDERTAKE MAINTENANCE ACTIVITIES TO MODIFY OR MAINTAIN ESC FACILITIES.
2. SHOULD ANY PART OF THE SEDIMENT CONTROL FACILITIES BECOME DAMAGED, BLOCKED OR IN ANY WAY NOT FUNCTION PROPERLY, THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO REPAIR AND/OR REMOVE SUCH DAMAGE, BLOCKAGE OR CAUSE OF MALFUNCTION.
3. ACCUMULATED SEDIMENT REMOVED DURING MAINTENANCE OF THE SEDIMENT CONTROL FACILITIES SHALL BE DISPOSED OF IN SUCH A MANNER AS TO PREVENT ITS ENTRY INTO THE SITE DRAINAGE SYSTEM, AND/OR INTO ANY STORM SEWER OR WATERCOURSE.
4. STREETS ARE TO BE INSPECTED DAILY AT MINIMUM AND SWEEPED TO ENSURE THAT NO SEDIMENT OR DEBRIS ENTERS THE STORM SYSTEM. FLUSHING IS NOT PERMITTED.
5. PAVED ROAD SURFACES ARE TO BE CLEANED OF ANY ACCUMULATED SEDIMENT AT THE END OF EACH DAY AS REQUIRED. NO MATERIAL WITH HIGH SEDIMENT CONTENT IS TO BE DEPOSITED OR PILED NEAR CATCH BASINS, LAWN BASINS OR OUTSIDE OF PROPERTY BOUNDARIES.

6. CATCH BASINS ARE TO BE INSPECTED DAILY AND FOLLOWING STORM EVENTS. SEDIMENT SACKS ARE TO BE REMOVED AND CLEANED WHEN THEY REACH APPROXIMATELY ONE THIRD CAPACITY.
7. SOIL DISTURBING CONSTRUCTION TO BE AVOIDED DURING PERIODS OF HEAVY OR PERSISTENT RAINFALL WHERE POSSIBLE.
8. STOCKPILED MATERIAL AND ALL EXPOSED SLOPES TO BE COVERED WITH 6 MIL THICK POLYETHYLENE SHEETING ANCHORED WITH WEIGHTS.
9. SILT FENCES AND BARRIERS ARE TO BE INSPECTED AND REPAIRED PRIOR TO FORECASTED RAIN EVENTS, AND FOLLOWING SIGNIFICANT RAINFALL EVENTS OR PERIODS OF EXTENDED RAIN. SEDIMENT TO BE REMOVED WHEN IT HAS REACHED APPROXIMATELY ONE THIRD THE HEIGHT OF THE FENCE.
10. SITE ACCESS PADS TO BE INSPECTED DAILY TO ENSURE FUNCTIONALITY AND ADDITIONAL ROCK IS TO BE ADDED AS REQUIRED.
11. NO CONCRETE WASH WATER IS TO BE DIRECTED INTO THE SEDIMENT CONTROL SYSTEM OR THE STORM SEWERS. ALL CONCRETE TRUCKS ARE TO BE EQUIPPED WITH A RECIRCULATORY WASH SYSTEM. NO DISCHARGE FROM CONCRETE TRUCKS IS PERMITTED ON THE STREET OR TO ENTER THE ONSITE DRAINAGE SYSTEM.
12. AN ADDITIONAL SUPPLY OF MATERIALS SHALL BE STORED ONSITE TO ENABLE A SUITABLE RESPONSE TO ANY MAINTENANCE ACTIONS REQUIRED.
13. WET WEATHER SHUT DOWN PROCEDURES TO INCLUDE SUSPENDING ANY HAULING OR MAJOR EARTHWORK ACTIVITIES USING UNPAVED ROAD SURFACES PRIOR TO FORECASTED RAIN EVENTS EXCEEDING 25mm IN 24 HOURS. ALL ERODIBLE SURFACES MUST BE STABILIZED, OR COVERED WITH POLY SHEETING, PRIOR TO SIGNIFICANT RAINFALL EVENT. ANY WATER POOLING ONSITE MUST BE DIRECTED TO SUMP AND TREATED BY WATER TREATMENT SYSTEM PRIOR TO DISCHARGE. NO UNTREATED WATER IS TO ENTER THE STORM SYSTEM.

MONITORING, SAMPLING AND TESTING PROGRAM

1. ALL DISCHARGE TO MUST MEET THE PH RANGE REQUIREMENT OF 6.0-9.0.
2. THE TOTAL SUSPENDED SOLIDS OF ALL DISCHARGE MUST NOT EXCEED 75 mg/L.
3. WHERE ANY WASTE, DELETERIOUS SUBSTANCE, OR WATER RELEASED DIRECTLY OR INDIRECTLY INTO THE DRAINAGE SYSTEM EXCEEDS THE ALLOWABLE PH, TURBIDITY AND/OR TOTAL SUSPENDED SOLIDS LEVELS, ALL DISCHARGE IS TO BE CEASED AND CORRECTIVE MEASURES ARE TO BE IMPLEMENTED IMMEDIATELY.
4. A LOGBOOK OF ALL INSPECTIONS SHALL BE MAINTAINED ONSITE AND BE MADE AVAILABLE TO THE CITY UPON REQUEST.
5. WATER QUALITY MONITORING AND ESC FACILITIES INSPECTIONS BY THE ESC MONITOR SHOULD BE CONDUCTED AT THE MIN. FREQUENCY NOTED BELOW.

	<u>MIN. MONITORING FREQUENCY</u>	<u>MIN. REPORTING FREQUENCY</u>
YEAR ROUND	MONTHLY	WITHIN 7 DAYS OF INSPECTION

6. INSPECTION REPORTS SHALL BE SUBMITTED TO THE DEVELOPER AND CONTRACTORS.

DECOMMISSIONING

1. BUILDING CONSTRUCTION MUST BE AT STREET LEVEL OR HIGHER WITH ALL EXPOSED SURFACES STABILIZED PRIOR TO BEGINNING THE PROCESS OF DECOMMISSIONING ANY ESC FACILITIES.
2. APPROVAL TO ALTER AND/OR REMOVE ANY COMPONENT OF THE WATER TREATMENT SYSTEM MUST BE OBTAINED FROM THE ESC MONITOR.
3. PRIOR TO RECEIVING FOR APPROVAL TO REMOVE COMPONENTS OF THE WATER TREATMENT SYSTEM, WATER QUALITY TESTING OF THE UNTREATED WATER IN THE BUILDING SUMP WILL BE CONDUCTED TO ENSURE ALLOWABLE TURBIDITY AND/OR PH LEVELS CAN BE MAINTAINED WITHOUT ADDITIONAL TREATMENT. THE PH TREATMENT COMPONENT OF THE SYSTEM MUST REMAIN ONSITE UNTIL ALL MAJOR CONCRETE POURS HAVE BEEN COMPLETED AT MINIMUM.
4. THE DECOMMISSIONING OF ANY ESC FACILITIES WITHOUT PRIOR APPROVAL MAY RESULT IN FINES AND/OR A STOP WORK ORDER.

ENFORCEMENT

1. FAILURE TO IMPLEMENT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR TO COMPLY WITH MUNICIPAL REGULATIONS MAY RESULT IN FINES AND/OR A STOP WORK ORDER.
2. FEDERAL ENVIRONMENTAL OFFENCES ARE STRICT LIABILITY OFFENCES AND CAN RESULT IN FINES AND/OR INCARCERATION.

LEGEND:

NO.	DATE	BY	REVISION



1779 W. 70th Avenue
Vancouver, B.C. V6P 6P2
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DESIGNED BY:
A.Ge.
DRAWN BY:
N.K.
APPROVED BY:
R.A.
REVIEWED BY:
M.T.L.
SCALE:
AS SHOWN

PROPOSED RESIDENTIAL DEVELOPMENT

1500 OXFORD STREET, WHITE ROCK, B.C.

EROSION & SEDIMENT CONTROL SPECIFICATIONS

FILE NO:
15792
DRAWING NO:
G-ESC3
DATE:
MARCH 12, 2021



ORIGINAL PAPER SIZE 11"x17"

The objectives of the **Multi-Family Development Permit Area** are to:

- Establish an attractive, comfortable, well-connected, pedestrian-oriented environment that fosters vibrant public life
- Ensure the compatibility of new development with adjacent existing buildings
- Enhance quality of life
- Conserve energy, conserve water, and reduce GHGs
- Enhance the character of the built environment and public realm in the City of White Rock

Please provide a summary of how your proposal achieves the objectives and policies of the Multi-Family DPA below:

NOTE 1: All 'Applicant Response' sections must be filled out by the applicant.

NOTE 2: If your proposal cannot adequately address one of the below-listed DPA guidelines, provide a rationale (and alternative resolution) above, and in the applicable response section.

Section 22.6.1 - Buildings

Multi-Family DPA Guideline 22.6.1 (a)

Ensure buildings are compatible with or complementary to adjacent developments in terms of height, density, and design, with height transitions as outlined in Figure 9 in applicable areas. Vary heights, rooflines, and massing to minimize impacts to views and solar exposure enjoyed by adjacent buildings and open spaces.

Applicant Response

Multi-Family DPA Guideline 22.6.1 (b)

Set buildings back from the property line at least 3 metres to provide enough space for gardens and shade trees in the front yard. Include a further step back above the fourth floor and consider an additional step back above the seventh floor. Tower portions of all buildings should be slim and be set back a minimum of 6 metres from the edge of the podium level to minimize view impacts and shading and to facilitate a minimum tower separation of 30 metres.

Applicant Response

Multi-Family DPA Guideline 22.6.1 (c)	
<p>Create visual interest and comfort for pedestrians along all elevations with architectural details. Incorporate windows, doors, bay windows, porches, setbacks, and vary colours, massing, and materials. Townhouse developments are encouraged to provide for individuality from site to site and unit to unit, and to vary the front set-back between units. Non-street facing elevations shall be treated with the same architectural details as the street facing elevations.</p>	
Applicant Response	
Multi-Family DPA Guideline 22.6.1 (d)	
<p>Ensure the main entrances of residential apartment buildings are level with the sidewalk to create a barrier free environment for aging in place. Townhouses may have elevated patios and entrances. Entrances shall be clearly identifiable, and weather protection with overhangs and awnings shall be provided over all entrances. Residential units on the ground floor should be ground-oriented.</p>	
Applicant Response	

Multi-Family DPA Guideline 22.6.1 (e)	
Address all street edges on properties fronting multiple streets or public walkways. Orient buildings toward intersections or design independent frontages along both intersecting streets, and incorporate windows, doorways, landscaping, and architectural detailing along all street frontages and walkways.	
Applicant Response	
Multi-Family DPA Guideline 22.6.1 (f)	
Provide articulation to break up building mass and to establish a rhythm along the street front in commercial areas. Ground-level commercial spaces should reflect traditional patterns of diverse, small-scale retail with storefronts of approximately ten metres wide. Include no more than six contiguous units fronting a given street without incorporating architectural elements.	
Applicant Response	

Multi-Family DPA Guideline 22.6.1 (g)

Provide shared outdoor amenity spaces for residents in mixed-use and residential buildings. Shared roof decks with gardens are encouraged where appropriate. Incorporate dining and seating areas with outdoor cooking facilities, play areas for children, areas for air-drying laundry, communal vegetable gardens, and appropriate landscaping.

Provide each residential unit with a private outdoor space where possible. Incorporating green-roofs to manage stormwater, reduce urban heat island effect, and contribute to biodiversity is encouraged.

Applicant Response

Multi-Family DPA Guideline 22.6.1 (h)

Follow passive solar design principles and orient and site buildings to maximize views to the waterfront. Design roofs to maximize opportunities for solar collection in winter and control solar gain on south-facing facades by blocking high-angle sun in summer. Alternatively, provide operable shading devices or window overhangs to control summer solar gain. Maximize passive ventilation and passive cooling through building orientation.

Applicant Response

Multi-Family DPA Guideline 22.6.1 (i)	
Incorporate west coast design elements with the use of natural materials, including brick, stone, concrete, exposed heavy timber, and/or steel. Vinyl siding and stucco will not be considered for cladding. Use rich natural tones which reflect the natural landscape and seascape as the dominant colours, with brighter colours used only as accents.	
Applicant Response	
Multi-Family DPA Guideline 22.6.1 (j)	
Integrate commercial signage with the building and/or landscaping. Signage shall have a pedestrian scale and be coordinated throughout each development and compatible with signage on adjacent properties to establish a unified and attractive commercial area. The use of natural materials and projecting signs is encouraged.	
Applicant Response	

Multi-Family DPA Guideline 22.6.1 (k)	
Blocks of side-by-side townhouses are limited to a maximum of eight contiguous units. Lot consolidation to allow for street-fronting townhouse developments are encouraged.	
Applicant Response	

Section 22.6.2 – Public Realm and Landscape

Multi-Family DPA Guideline 22.6.2 (a)

Improve the public realm with widened sidewalks (minimum 1.8 metres). Plant street trees and design curb let-downs to accommodate wheelchairs and scooters.

**Applicant
Response**

Multi-Family DPA Guideline 22.6.2 (b)

Provide consistency with street trees, plant materials, street furniture, and other aspects of the public realm to create cohesive streetscapes. Incorporate public art in both the public and private realm that is reflective of the local landscape and heritage.

**Applicant
Response**

Multi-Family DPA Guideline 22.6.2 (c)

Site buildings to create through-block walking connections. These will create opportunities for a variety of pedestrian-oriented activities and a finer-grained street grid. Special attention should be paid to establishing a linear park connection between the Town Centre and Centennial Park. Enhance these public spaces with public art and opportunities for programmed uses.

Applicant Response

Multi-Family DPA Guideline 22.6.2 (d)

Use light coloured reflective paving materials such as white asphalt or concrete for paths, driveways, and parking areas to reduce heat absorption and urban heat island effect. Ensure all areas not covered by buildings, structures, roads, and parking areas are landscaped. Use landscaping to establish transitions from public, to semi-public, to private areas.

Applicant Response

Multi-Family DPA Guideline 22.6.2 (e)	
Increase the quantity, density, and diversity of trees planted. Ensure all trees are planted with sufficient soil volume, using soil cells where appropriate, and incorporate diverse native shrub layers below trees to intercept stormwater. Projects should be designed to allow for the retention of large, mature, healthy trees, and landscape design should employ CPTED safety principles.	
Applicant Response	
Multi-Family DPA Guideline 22.6.2 (f)	
Select trees that will maximize passive solar gain, natural ventilation, and natural cooling, and increase the entry of natural light into buildings. Maximize the use of drought tolerant species that can withstand the seaside setting and require minimal irrigation. Avoid planting invasive species. The planting of hedges directly adjacent to sidewalks is discouraged, unless they are screening a garbage/recycling area.	
Applicant Response	

Multi-Family DPA Guideline 22.6.1 (g)

Incorporate Low Impact Development Techniques for stormwater management, where appropriate and in accordance with the City’s ISWMP. This includes but is not limited to bio-swales, cisterns, and permeable paving. Narrower lanes/access roads and the use of porous asphalt are encouraged.

**Applicant
Response**

Multi-Family DPA Guideline 22.6.2 (h)

Provide sufficient on-site illumination for pedestrian/vehicle safety and good exposure for retail uses. Light facades and highlight building entrances, and avoid “light spill” onto adjacent properties. The use of lighting systems that are powered by renewable energy, such as solar-power, are encouraged.

**Applicant
Response**

Section 22.6.3 – Parking and Functional Elements

Multi-Family DPA Guideline 22.6.3 (a)

Locate parkade entrances at the rear or side of buildings where possible and separate from pedestrian entrances. Vehicular access from North Bluff Road will only be considered when alternative access is not available. If a parkade entrance faces a street, it shall be subordinate to the pedestrian entrance in terms of size, prominence on the streetscape, location, and design emphasis. The use of landscaping to screen and soften the appearance of the parkade entrance is encouraged. Access ramps must be designed with appropriate sight lines and incorporate security features.

Applicant Response

Multi-Family DPA Guideline 22.6.3 (b)

Use a single internal vehicular access for townhouse developments where possible, with a shared parkade or individual garages. Provide landscaped areas between garages in townhouse developments that have multiple direct vehicular accesses from the street.

Applicant Response

Multi-Family DPA Guideline 22.6.3 (c)

Provide all off-street parking below grade or enclosed within a building, with the exception of some visitor parking spaces and short-term commercial parking spaces. Bicycle and scooter parking shall be provided for residents within parkades, with temporary bicycle parking available near building entrances. Ensure buildings are accessible from parkades for those with mobility impairments.

**Applicant
Response**

Multi-Family DPA Guideline 22.6.3 (d)

Provide sufficient space for garbage, recycling, and composting within parkades. These areas are to be located so that they are convenient for users and accessible for waste/recycling/ compost collection and removal. Loading areas must also be incorporated within buildings wherever possible.

**Applicant
Response**

Multi-Family DPA Guideline 22.6.3 (e)	
Locate mechanical equipment to minimize exposure to the street and nearby buildings. Screening of rooftop mechanical equipment must be integrated into the overall architectural form of the building, and be designed to dampen noise where required.	
Applicant Response	



Memorandum

To: Anne Berry: Director, Planning & Development Services
Alex Wallace: Planning Manager

From: Rick Mann: Director, Development

CC: Guillermo Ferrero: Chief Administrative Officer

Date: March 22, 2023

RE: Nautilus – Tower B – 1454 Oxford Street, White Rock

IOM Property Group acts as the authorized agent on behalf of IOM Nautilus Views Ltd. (the applicant) which is the registered owner on title for 1454 Oxford Street.

On July 26th, 2021, Mayor and Council approved the development permit at 1454 Oxford Street. The application consisted of two buildings of 21 and 24 storeys, a 409-stall shared underground parkade, with a maximum residential floor area of 297,156 ft², and 121 dwelling units. Per the registered phased development agreement (signed May 4th, 2017), the applicant has since delivered both an approximately 1.1-acre public space to the City of White Rock and an amenity payment of \$3,600,000.00. The applicant has also satisfied the other requirements as outlined in the phased development agreement.

On August the 3rd, 2021, IOM Nautilus Views Ltd. submitted a Building Permit Application for Phase 1 (complete underground and Tower A). The applicant is currently working with staff for building permit release.

Through working with local brokers and getting to know the community, we have identified that the ideal home for this project would be dwelling units ranging from 1000 ft² to 1500 ft². Units of these sizes allow the target down-sizer market ample space and could be priced where sufficient equity could be available to fund investment, travel, wealth transfer, and other needs as necessary.

Our initial offering to the market through a friends & family campaign reinforced the above business plan. Units in that range were quickly and decisively purchased by local buyers who wished to make White Rock their home. This project was, is, and will be marketed to owner-occupiers.

The applicant now wishes to reformat Tower B to accommodate the demand for these units. The proposal outlines a plan to redesign the majority of Tower B to units ranging from 1014 ft² (smallest unit) to 1496 ft² (largest unit) from floors 3 through 21. There will be minor changes to units on floors 1 and 2, and no changes to units on floors 22 to 24.

The new application is not applying for additional square footage or height. The redesign will be limited to additional units within the current accepted massing of the entire project.

On August 23rd, 2022, the applicant retained Bunt & Associates Transportation Planners and Engineers to update a traffic impact study that was commissioned by the City of White Rock in 2014. The purpose of the updated report was to study the impact an additional 78 units would have on the local infrastructure. Per the updated report that was provided to staff, it was determined that “additional traffic generation is not anticipated to have a significant impact on the roadway network, and the operational analyses provided in the 2014 TIA are anticipated to continue to be applicable.”

Per the parking requirement set out by City of White Rock Zoning Bylaw No. 2000 4.14.1 a standard of 1.5 parking spaces are required per dwelling unit (1.2 per DU + 0.3 per DU for visitors). The new density of 203 units from 121 would require the project to supply 305 parking spaces. The project is supplying 409 parking spaces, a surplus of 104 spaces.

Also, per the City of White Rock Density Bonus/Amenity Contribution Policy Council-511, an Amenity Zoning Bylaw is triggered for an application exceeding 1.5 FAR. This application does not request any additional FAR, therefore would not trigger an Amenity Zoning Bylaw. However, the applicant is voluntarily offering an amenity contribution for the application in the amount of \$2,320,661.46. payable upon Building Permit issuance of Tower B. The rationale would be based on a prorated per DU rate based on the \$3,600,000.00 previously paid for an application of 121 DU ($\$29,752.07 \times 78 \text{ additional DU} = \$2,320,661.46$).

Lastly, the applicant would like to have the initial sales opportunity for the second tower to be available for residents of White Rock only for a period of 60 days from sales launch. During this time, only purchasers with an

existing White Rock residency will be given the opportunity to enter into a contract of purchase and sale with the applicant. The applicant will make all reasonable attempt to market the offering to White Rock residents and will also hold pricing during this time (i.e. no price increases during this presale phase for White Rock residents). The applicant is prepared to acknowledge this agreement with the residents by way of MOU attached to this application.

We hope that the above has comprehensively addressed the main points of the application. Should you or anyone need more information, please do not hesitate to reach out to me.

Regards



Rick Mann
Director, Development.

<END OF MEMORANDUM>

Memorandum of Understanding

This Memorandum of Understanding (“**MOU**”) is dated the _____ day of _____, 2023.

Between:

IOM NAUTILUS VIEWS LTD., a company incorporated under the laws of British Columbia and having its registered and records office located at 401-15336 31st Avenue, Surrey, British Columbia V3Z 0X2

(“**Nautilus**”)

And:

CITY OF WHITE ROCK, 15322 Buena Vista Avenue, White Rock, V4B 1Y6

(the “**City**”)

Whereas:

A. Nautilus is the owner of the following lands situated in the City of White Rock:

1454 Oxford Street

PID: 031-395-805

Legal Description: LOT A SECTION 10 TOWNSHIP 1 NEW WESTMINSTER
DISTRICT PLAN EPP63510

(the “**Lands**”).

B. Nautilus’ intention with respect to the Lands is to develop a two tower strata high rise development (the “**Project**”); and

C. Nautilus wishes to enter into this Memorandum of Understanding (“**MOU**”) in order to convey its intention to sell presales in the Project to only residents of the City of White Rock for the first sixty days of its presale period (the “**White Rock Presale Period**”) when Nautilus commences its presales program (the “**Presales Program**”) moving forward from the date hereof.

THEREFORE in consideration of the mutual covenants and agreements herein and \$1.00, and other good and valuable consideration (the receipt and sufficiency of which are acknowledged), the parties agree as follows:

1. Upon commencement of the Presales Program and for term of the White Rock Presale Period, Nautilus shall only sell units in the Project to residents of the City of White Rock.
2. Time is of the essence in this MOU.
3. The foregoing correctly sets out the mutual understanding of the parties.
4. The contents of this MOU will only be deemed to have been agreed upon when executed by authorized signatories for all parties.
5. The parties represent and warrant that they and their representative(s) signing below have the full power and authority to enter into this MOU.
6. This MOU may be executed electronically and in as many counterparts as may be necessary, and each such counterpart agreement or electronically transmitted copy so executed will be deemed to be an original and such counterparts and electronically submitted copies together will constitute one and the same instrument.
7. This MOU will be construed in accordance with the laws of the Province of British Columbia and the federal laws of Canada applicable therein.

IN WITNESS WHEREOF the parties have executed this MOU as of the day and year first mentioned above.

IOM NAUTILUS VIEWS LTD.
by its authorized signatory:

CITY OF WHITE ROCK
by its authorized signatory:

**The Corporation of the
CITY OF WHITE ROCK
BYLAW 2467**



A Bylaw to amend the
"White Rock Zoning Bylaw, 2012, No. 2000" as amended

The CITY COUNCIL of the Corporation of the City of White Rock, in open meeting assembled, ENACTS as follows:

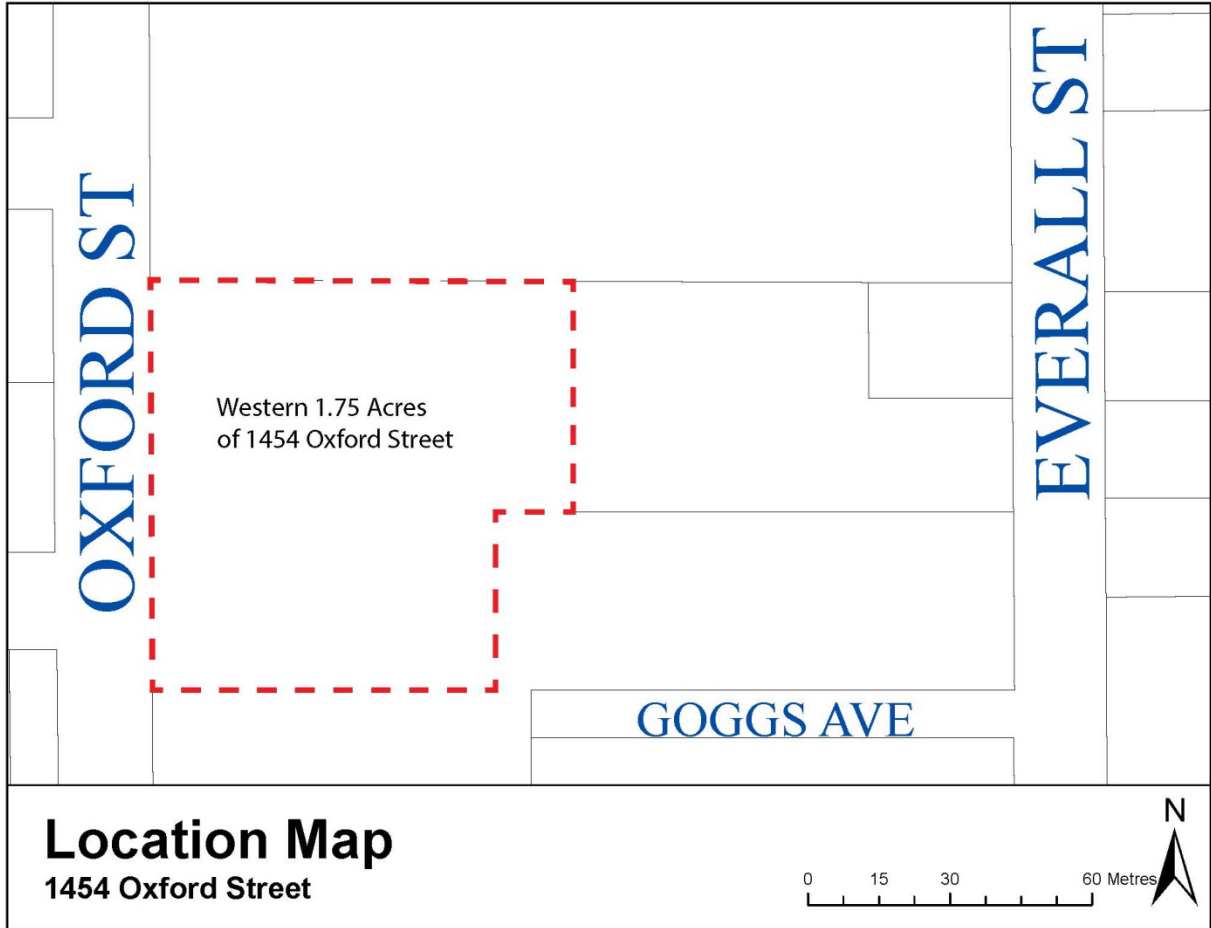
1. Schedule "C" of the "White Rock Zoning Bylaw, 2012, No. 2000" as amended is further amended by rezoning the western approximately 1.75 acres of the following lands:
 - Lot 1 Section 10 Township 1 New Westminster District Plan EPP25563
PID: 029-076-234
(1454 Oxford Street)
 as shown on Schedule "1" attached hereto, from the 'P-1 Civic/Institutional Use Zone' to the 'CD-46 Comprehensive Development Zone'.
2. The "White Rock Zoning Bylaw, 2012, No. 2000" as amended is further amended:
 - (1) by adding to the Table of Contents for 'Schedule "B" (Comprehensive Development Zones)', Section '7.46 CD-46 Comprehensive Development Zone (1454 Oxford Street)'; and
 - (2) by adding the attached Schedule "2" to 'Schedule B (Comprehensive Development Zones)' as Section '7.46 CD-46 Comprehensive Development Zone'.
3. This Bylaw may be cited for all purposes as the "White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2015, No. 2467".

PUBLIC INFORMATION MEETING on the	day of
RECEIVED FIRST READING on the	day of
RECEIVED SECOND READING on the	day of
PUBLIC HEARING held on the	day of
RECEIVED THIRD READING on the	day of
RECONSIDERED AND FINALLY ADOPTED on the	day of

Mayor

City Clerk

SCHEDULE "1"



SCHEDULE “2”

7.46 CD-46 COMPREHENSIVE DEVELOPMENT ZONE

INTENT

The intent of this zone is to accommodate a 121-unit residential development on a site of approximately 7,090 square metres (1.75 acres) in area.

1. Permitted Uses:
 - (a) *multi-unit residential use*
 - (b) *accessory home occupation* use in accordance with the provisions of 5.3 and that does not involve clients directly accessing the *building*
2. Lot Coverage:
 - (a) Maximum *lot coverage* shall not exceed 36%
3. Density:
 - (a) Maximum *gross floor area* shall not exceed 32,522 square metres (350,060ft²)
 - (b) Maximum *residential floor area* shall not exceed 27,607 square metres (297,156ft²)
 - (c) Maximum number of *dwelling units* shall not exceed 203
4. Building Height:
 - (a) Tower A (shown on attached Plans) shall not exceed a *height* of 159.5 metres geodetic
 - (b) Tower B (shown on attached Plans) shall not exceed a *height* of 170.5 metres geodetic
 - (c) Section 4.13.4 does not apply to the CD-46 Zone
5. Siting Requirements:
 - (a) Minimum setbacks are as follows:

(i) Setback for buildings from front (west) lot line	= 14.8 metres
(ii) Setback for balconies from front (west) lot line	= 11.8 metres
(iii) Setback for buildings from rear (east) lot line	= 19.5 metres
(iv) Setback for buildings from north interior side lot line	= 6.1 metres
(v) Setback for slab extensions from north interior side lot line	= 3.9 metres
(vi) Setback for buildings from south interior side lot line	= 4.3 metres
(vii) Setback for balconies from south interior side lot line	= 1.2 metres
(viii) Setback for buildings from other interior side lot lines	= 3.0 metres
(ix) Setback for slab extensions from other interior side lot lines	= 0.3 metres
 - (b) Stair accesses to the underground parking shall be sited as shown on the attached Plans
6. Parking:

Parking shall be provided in accordance with Section 4.14, with a total minimum of four hundred (400) parking spaces to be provided as follows:

 - (a) A minimum of forty (40) visitor spaces are to be provided and marked as ‘visitor parking’
 - (b) A minimum of three hundred and sixty (360) spaces shall be provided to serve the residential units
 - (c) A minimum of six (6) spaces shall be provided for disabled persons parking and shall be clearly marked as per BC Building Code requirements
7. Loading:
 - (a) Two (2) loading zones shall be provided in accordance with Section 4.15

8. Bicycle Parking:
 - (a) A minimum of one hundred and twenty-two (122) Class I bicycle parking spaces shall be provided, in accordance with Section 4.16
 - (b) A minimum of twenty-five (25) Class II bicycle parking spaces shall be provided, in accordance with Section 4.16

9. General:
 - (a) Development in this zone shall substantially conform to the Plans prepared by Chris Dikeakos Architects Inc. and dated October 27, 2015, that are attached hereto and on file at the City of White Rock

RUSSELL AVENUE

18
PLAN 1320

19
PLAN 1320

1545 OXFORD ST.
(PHASE 1 & 2)

GOGGS AVENUE

OXFORD ST.



NAUTILUS
CHRIS DIMAKOS ARCHITECTS INC.
1454 Oxford Street, White Rock, BC

SITE PLAN
SCALE: 1" = 20'-0"

RE-ISSUED FOR OCP, REZONING & DP
SEPTEMBER 20, 2022

IOM
Isle of Miami Property Group
A-100

GOGGS AVENUE

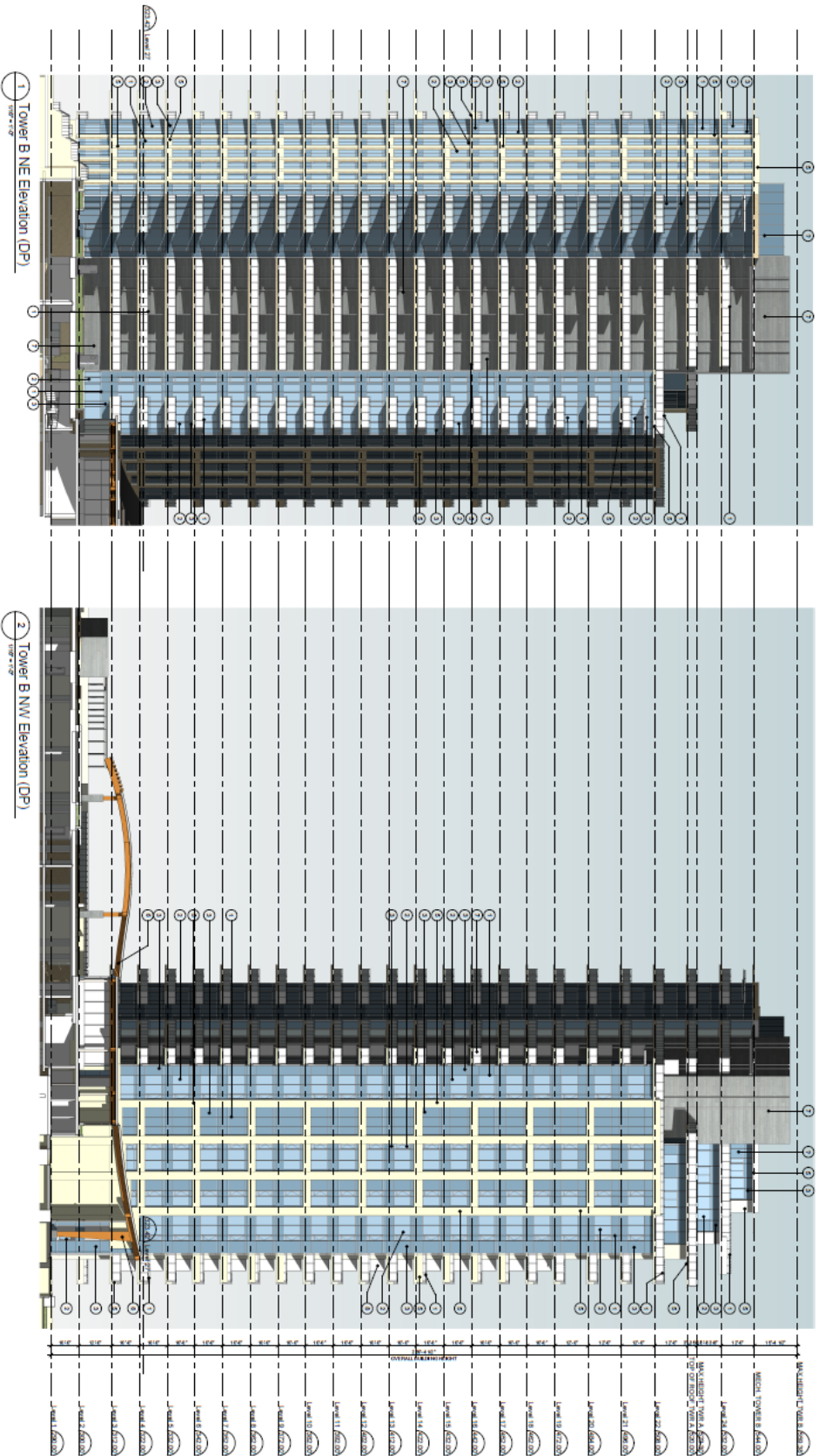
CONCRETE SIDEWALK

2
PLAN 1320S
1444 OXFORD STREET
01847M

PRESERVED PARK LAND
(CITY DEDICATION)

100
PLAN 1320S

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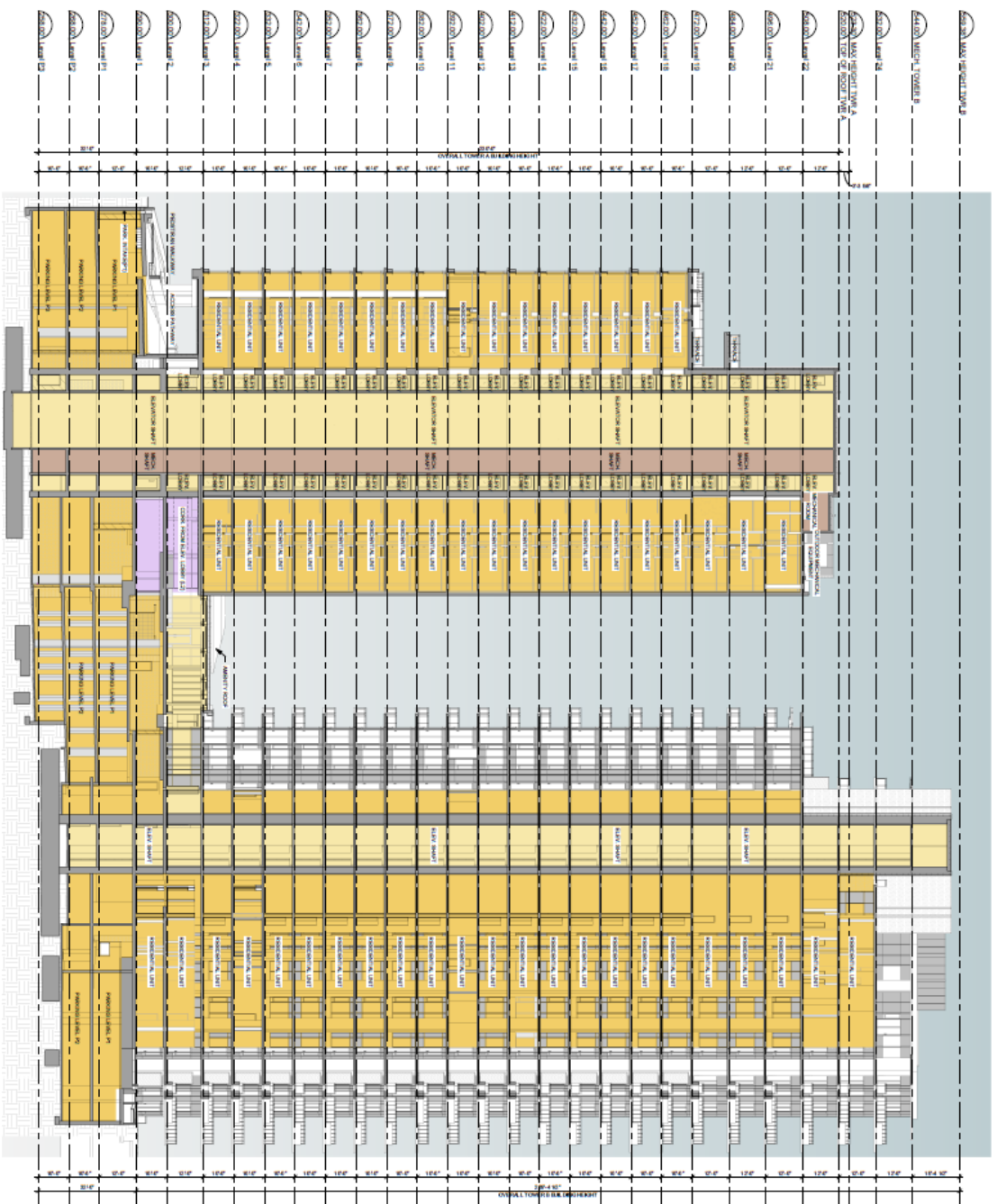


NAUTILUS
 CHRIS DIKEAKOS
 ARCHITECTS INC.
 1454 Oxford Street, White Rock, BC

NE & N-W ELEV. (BUILDING B)
 SCALE: 1/16" = 1'-0"

RE-ISSUED FOR OCP, REZONING & DP
 SEPTEMBER 20, 2022

IOM
 Isle of Man
 Property Group
 A-302





Project Name: Nautlius
 Date: 10/10/2023

Client: Nautlius
 Address: 148 OXFORD STREET
 WIMBORNE, Dorset, DT9 8JH
 Project Number: 2023-001

Scale: 1:50

eta Landscape Architecture
 100 High Street
 WIMBORNE, Dorset, DT9 8JH
 Tel: 01305 261111
 Email: info@eta-landscapes.co.uk

NAUTILIUS

148 OXFORD STREET
 WIMBORNE, Dorset

Landscape Plan

Client	Nautlius
Address	148 OXFORD STREET, WIMBORNE, Dorset
Project Name	NAUTILIUS
Project Number	2023-001
Scale	1:50
Date	10/10/2023
Author	[Name]
Check	[Name]
Drawn	[Name]
Scale	1:50
Sheet	17



1454 Oxford Street

Transportation Impact Assessment

Version 1

Prepared for
Isle of Mann Property Group

Date
August 29, 2022

Project No.
04-22-0175

CORPORATE AUTHORIZATION

Prepared By: Janelle Willis, P.Eng.
Brian Thi, E.I.T.

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Canada

Reviewed By: Daniel Fung, M.Sc., P.Eng.
Principal

Telephone: +1 604 685 6427
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Date: 2022-08-29
Project No. 04-22-0175

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1. INTRODUCTION

1.1 Study Purpose & Objectives

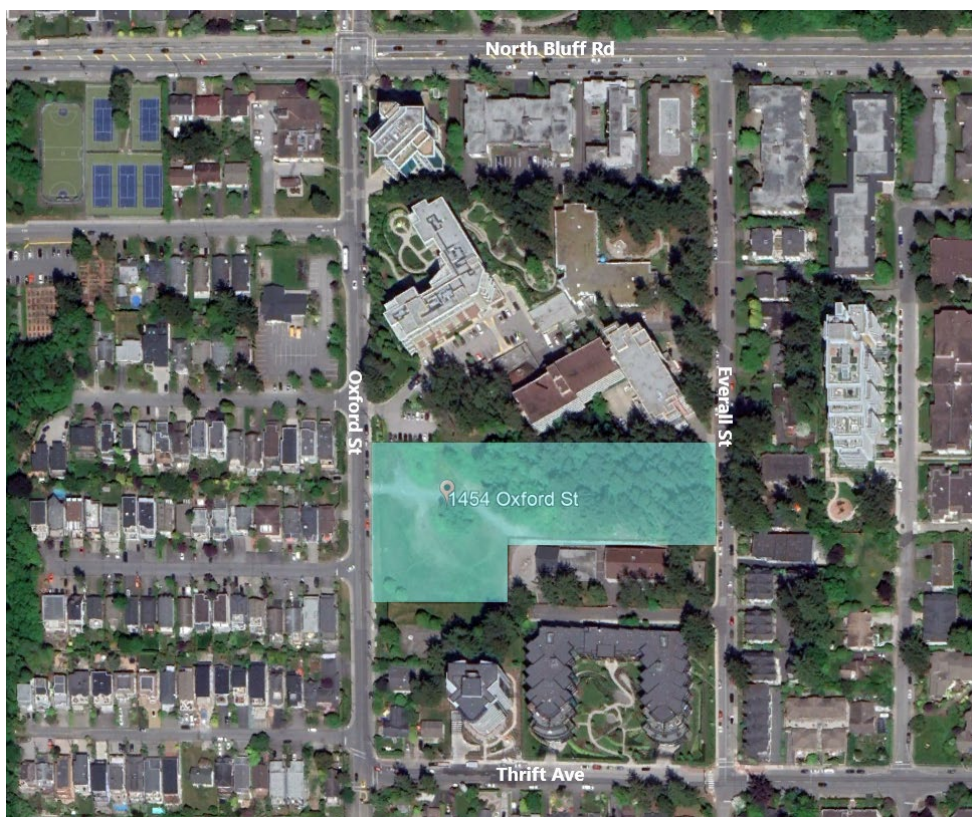
Bunt & Associates prepared the previous 1454 Oxford Street Transportation Impact Assessment (TIA), Final Report in March 2014 to support the development of two residential towers with up to 124 high-end residential units. A copy of the 2014 TIA is included in **Appendix A** for reference. Since completion of the 2014 TIA, ownership of the property has changed, and the Isle of Mann Property Group (IOM) is interested in amending the development to increase the total number of residential units to 203.

A TIA update was requested to assess the impact of the proposed development on the transportation network and determine appropriate mitigation measures, if any, to support the development.

1.2 Study Area and Scope

The proposed site is located at 1454 Oxford Street in White Rock, BC as illustrated in **Figure 1.1**.

Figure 1.1: Site Location



This study builds upon the 2014 TIA and includes the following tasks:

- Trip generation update and comparison to the 2014 TIA.
- Confirmation of the Zoning Bylaw supply requirements for vehicle parking, bicycle parking, and loading.

1.3 Organization of Report

The report is organized into the following sections:

- Section 2 – Future Traffic Conditions
- Section 3 – Parking & Loading Supply
- Section 4 – Conclusions

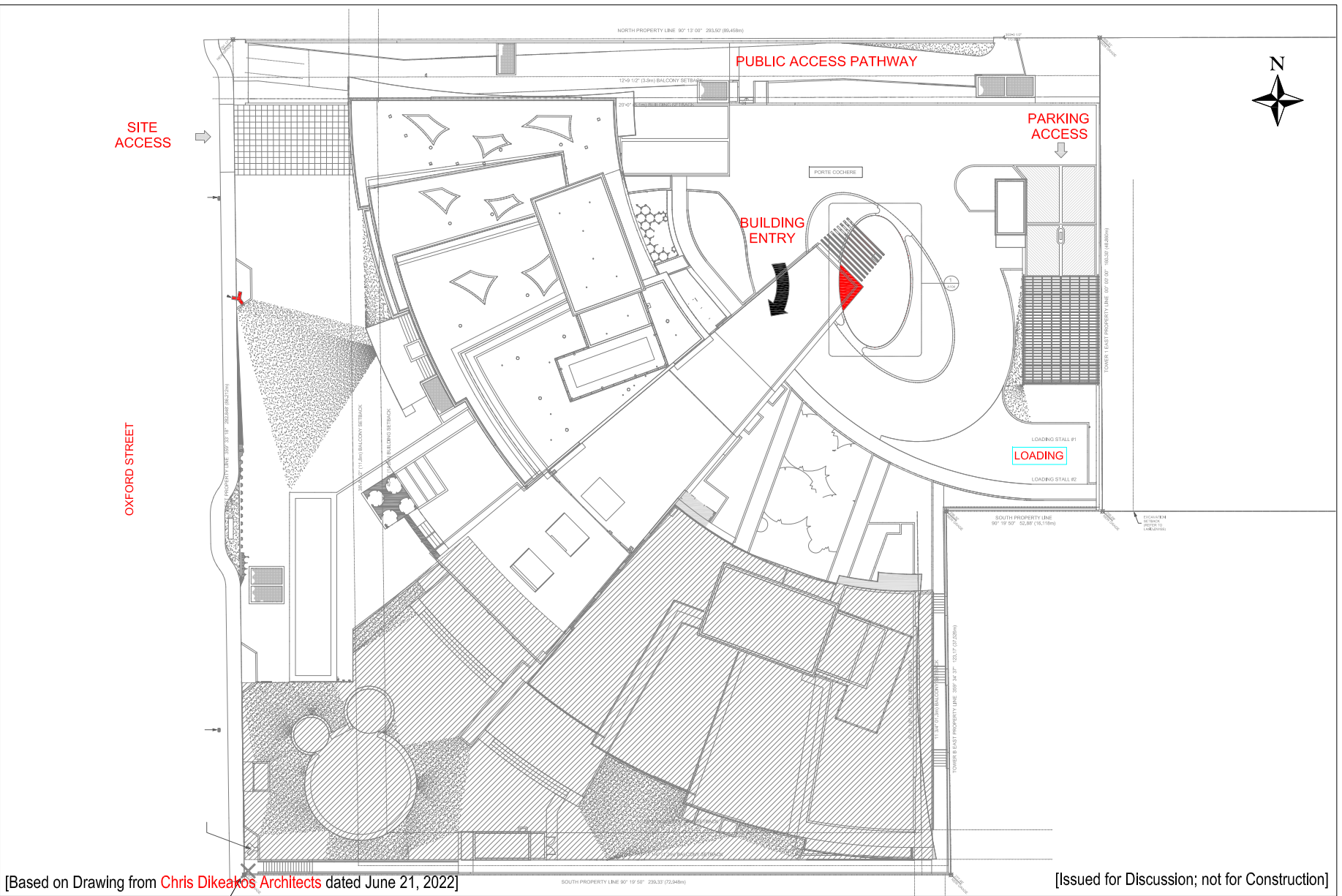
1.4 Proposed Development

The development is proposed to include two residential towers (Tower A and Tower B) accommodating 203 high-end units. Tower A is proposed as a 21-storey building accommodating 78 residential units, and Tower B is proposed as a 24-storey building accommodating 125 residential units.

The site is proposed to be accessed via a single access to Oxford Street between Goggs Avenue and Russell Avenue. Vehicles will enter the site via Oxford Street and will travel east to the rear of the building to access the port cochere for drop-off/pick-up activity or to access the underground parking access. The site is proposed to provide 409 parking stalls for residents and visitors.

Exhibit 1.1 illustrates the proposed site plan.

M:\Operations\Dept BC\Projects\2022\04-22-0175\1454 Oxford TIA Update\4.0 Analysis & Design\CAD\Swept Path\220805 Site Plan.dwg
2022/08/23 1:3:00, Plotted by Janelle Willis



[Based on Drawing from Chris Dikeakos Architects dated June 21, 2022]

[Issued for Discussion; not for Construction]

Exhibit 1.1 Site Plan

04-22-0175 July 2022

Oxford TIA Update
Scale NTS on Letter Prepared by BT



2. FUTURE TRAFFIC CONDITIONS

2.1 Trip Generation Comparison

The 2014 TIA used trip generation rates derived from empirical data measured at 3315 Cypress Place in West Vancouver due to its similar residential structure with relatively large units (see Appendix A, p.11). The empirical data is anticipated to provide a slightly more conservative estimate of trips as compared to the use of Land Use Code 222 – Multifamily Housing (High-Rise) from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, as shown in **Table 2.1**. Therefore, to be conservative and consistent with the 2014 TIA, the empirical rates were used in the assessment.

Table 2.1: Trip Generation Rates

LAND USE	AM PEAK HOUR	PM PEAK HOUR
ITE (222) High-rise Apartment	0.27 trips/du (34% in/66% out)	0.32 trips/du (56% in/44% out)
Empirical Data Counts	0.38 trips/du (28% in/72% out)	0.38 trips/du (49% in/51% out)

Table 2.2 summarizes the gross AM and PM peak hour vehicle trips assumed in the 2014 TIA and the trip estimates based on the proposed amendment.

Table 2.2: Gross Trip Generation Estimates

LAND USE	UNITS	AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
2014 TIA Total	124	13	34	47	23	24	47
Proposed Total	203	21	56	77	38	39	77
DIFFERENCE PROPOSED - 2014 TIA	79	8	22	30	15	15	30

As shown in Table 2.2, the proposed development is projected to result in an increase of about 30 two-way trips during the AM and PM peak hours as compared to the 2014 TIA. This magnitude of traffic is not anticipated to have a significant impact on the roadway network, and the results of the operational analysis provided in the 2014 TIA are anticipated to continue to be applicable.

As per the 2014 TIA, the North Bluff Road/Oxford Street and Thrift Avenue/Oxford Street intersections have adequate capacity to accommodate existing and future traffic volumes at satisfactory levels. No changes to the existing geometry or traffic control are required to accommodate the proposed development.

3. PARKING & LOADING SUPPLY

3.1 Vehicle Parking

Table 3.1 summarizes the vehicle parking requirements based on *Section 4.14 – Off-Street Parking Requirements* of Zoning Bylaw 2000 for ‘Apartment’.

Table 3.1: Vehicle Parking Supply Requirement & Provision

LAND USE	DENSITY	BYLAW RATE	BYLAW SUPPLY REQUIREMENT	PROVIDED	DIFFERENCE
Apartment – Resident	203 du	1.2 stalls per du	244	360	116
Apartment – Visitor	203 du	0.3 stalls per du	61	49	-12
TOTAL			305	409	104

As shown in Table 3.1, a minimum parking supply of 305 stalls (244 resident & 61 visitor) is required based on Bylaw. With the provision of 360 resident parking spaces, a 116-stall surplus is projected based on Bylaw. Visitor parking is proposed to be provided at a rate of 0.24 stalls per du, resulting in the provision of 49 visitor stalls. This represents a 12-stall deficiency as compared to the Bylaw requirement.

A reduced visitor parking ratio is in line with studies completed in the Metropolitan Vancouver area. Visitor parking ratios are found to be in the order of 0.10 stalls/du as noted within the *Metro Vancouver Apartment Parking Study*. With this information and Bunt’s in-house experience, best practices for provision of visitor parking would be in the order of 0.10 stalls/du. A provision of 0.24 stalls/du far exceeds the best practices rate. Along with a good provision of residential stalls, the overall parking provision is anticipated to adequately serve the development. A TDM plan is not anticipated to be required to justify the parking variance.

3.2 Bicycle Parking

Table 3.2 summarizes the bicycle parking requirements based on *Section 4.16.1 – Bicycle Parking* of Zoning Bylaw 2000. Class I spaces are long-term secured bicycle parking spaces and are typically provided for residents, while Class II spaces are short-term bicycle parking spaces typically provided for visitors.

Table 3.2: Bicycle Parking Supply Requirement & Provision

LAND USE	DENSITY	BYLAW RATE	BYLAW SUPPLY REQUIREMENT	PROVIDED	DIFFERENCE
Apartment – Class I	203 du	1 space per du	203	357*	154
Apartment – Class II	203 du	0.2 spaces per du	41	26	-15
TOTAL			244	383	139

*Note: Includes 28 visitor and 329 residential spaces

As noted in Table 3.2, 357 Class I bicycle parking spaces are proposed, which represents a surplus of 154 spaces based on Bylaw. Of the 357 Class I spaces, 28 are proposed to be provided for visitors within a bike room on Level 1, with the remaining 329 provided for residents within bike rooms on Levels P1, P2, and P3. The provision of 28 Class I visitor bicycle spaces represents an enhancement to typical visitor bicycle parking. Although the site is proposed to be deficient by 15 Class II bicycle spaces, the overall visitor supply is 54 spaces (28 Class I & 26 Class II); therefore, the Class II deficiency is made up for with the provision of 28 Class I visitor spaces.

The Class II bicycle parking should be provided in a publicly accessible area near the principal building entrances in a well lit and highly visible area.

3.3 Off-Street Loading

Based on *Section 4.15 – Off-Street Loading Requirements of Zoning Bylaw 2000*, a minimum of one off-street loading space shall be provided for every apartment complex containing more than 10 dwelling units. Where the apartment complex is provided in more than one principal building with separate elevators for each building, one off-street loading space shall be provided for each principal building containing more than 10 dwelling units. Based on Bylaw, the loading spaces shall have a minimum width of 3.0m, a minimum length of 9.0m, and a minimum clearance height of 3.7m.

The proposed development consists of two residential towers containing more than 10 dwelling units; therefore, two off-street loading spaces are required. Based on the current site plan, two loading spaces are provided off the port cochere.

4. CONCLUSIONS

The proposed development includes two residential towers accommodating 203 high-end units located on the east side of Oxford Street, south of North Bluff Road in the City of White Rock, BC. The proposal represents a 79-unit increase as compared to the previously approved plan.

The development is projected to generate a total of 77 two-way trips during the AM peak hour and 77 two-way trips during the PM peak hour. Overall, this represents an increase of about 30 two-way trips as compared to the 2014 TIA. This magnitude of traffic is not anticipated to have a significant impact on the roadway network, and the operational analyses provided in the 2014 TIA are anticipated to continue to be applicable. As per the 2014 TIA, the North Bluff Road/Oxford Street and Thrift Avenue/Oxford Street intersections have adequate capacity to accommodate existing and future traffic volumes at satisfactory levels. No changes to the existing geometry or traffic control are required to accommodate the proposed development.

All vehicle access for the site will be taken from a single driveway to Oxford Street. Vehicles will enter the site via Oxford Street and will travel east to the rear of the building to access the port cochere for drop-off/pick-up activity or to access the underground parking access. The site is proposed to provide 409 parking stalls for residents and visitors.

A minimum vehicle parking supply of 305 stalls (244 resident & 61 visitor) is required based on Bylaw. With the provision of 360 resident parking spaces, a 116-stall surplus is projected based on Bylaw. Visitor parking is proposed to be provided at a rate of 0.24 stalls per du, resulting in the provision of 49 visitor stalls. This represents a 12-stall deficiency as compared to the Bylaw requirement. A reduced visitor parking ratio is in line with studies completed in the Metropolitan Vancouver area, and the proposed visitor parking supply of 49 stalls is projected to adequately accommodate visitor parking demands.

A minimum bicycle parking supply of 203 Class I and 31 Class II stalls is required based on Bylaw. 357 Class I and 26 Class II bicycle parking spaces are proposed. The provision of 357 Class I stalls represents a surplus of 154 spaces based on Bylaw. Of the 357 Class I spaces, 28 are proposed to be provided for visitors and 329 are proposed to be provided for residents. The provision of 28 Class I visitor bicycle spaces represents an enhancement to typical visitor bicycle parking. Although the site is proposed to be deficient by 15 Class II bicycle spaces, the overall visitor supply is 54 spaces (28 Class I & 26 Class II); therefore, the Class II deficiency is made up for with the provision of 28 Class I visitor spaces.

Two off-street loading spaces are required based on Bylaw. Based on the current site plan, two loading spaces are provided off the port cochere, which meets the minimum Bylaw requirement.

APPENDIX A

2014 TIA



1454 Oxford Street Transportation Impact Assessment Final Report

Prepared for
Elegant Development Inc.

Date
March 28, 2014

Prepared by
Bunt & Associates

Project No.
4862.03

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EXECUTIVE SUMMARY

Proposed Development

Elegant Development Inc. is planning to develop a 116, 584 ft² site located at 1454 Oxford Street in White Rock, BC, into two residential towers. The proposed development will include a total of 124 high-end residential units with a mix of 2-bedroom, 2-bedroom and den and 3-bedroom and den condominiums. The construction is planned for completion by 2016. The proposed development will have a single access point via Oxford Street between Goggs and Russell Avenues. Oxford Street intersections with North Bluff Road and Thrift Avenue were analyzed as a part of this transportation impact analysis.

Traffic Operations Analysis and Results

The proposed development will generate 47 and 47 vehicles per hour during the AM and PM peak hours, respectively. These figures were obtained by conducting empirical data collection for a similar high-end condominium complex located at 3315 Cypress Place in West Vancouver, BC. The nature of the planned units, size and the single access point configuration provided reasonable similarities for the level of this study. The anticipated site traffic volumes were compared to those driven from the ITE-Trip Generation Manual (*ITE-9th Edition*) which resulted in 37 and 43 vehicles per hour for the AM and PM peak hours. The more conservative empirical rates were used for this study. The Future Background (2026) conditions assumed a continuous annual growth rate of 2% for the general traffic. The Total Future (2026) included the anticipated traffic generated to/from the proposed development as well as the Future Background demand.

The traffic analysis showed that the existing street network configuration will handle all future time horizons' traffic volumes (Existing Conditions (2014), Opening Day (2016), Future Background (2026) and Total Future (2026) without any major issues. All laning groups provide adequate capacity for the future traffic volumes.

Parking Review

The proposed development will provide 286 off-street parking spaces. It exceeds the 187 total spaces required by the City of White Rock's By-law.

Recommendations

The above analysis and its conclusions are based on available information for the proposed development project. During the detailed design stage, the parking plans may be reviewed to ensure efficient circulation and that they do not conflict with the structural elements.

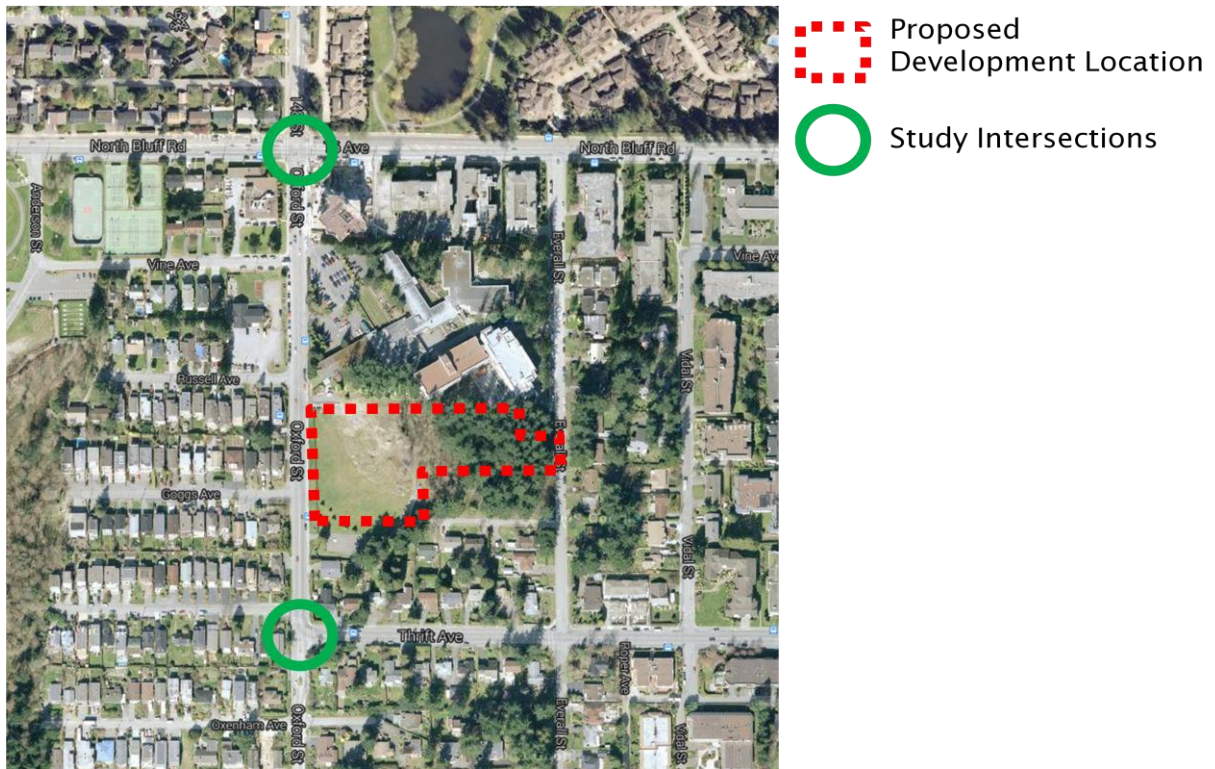
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1. INTRODUCTION

1.1 Background

Elegant Development Inc. is planning to develop a 116, 584 sq-foot site into two residential towers, which will include a total of 124 high-end residential units with a mix of 2-bedroom, 2-bedroom and den and 3-bedroom condominiums. The proposed site is located at 1454 Oxford Street in White Rock, BC. **Figure 1.1** shows the location of the proposed development.

Figure 1.1: Proposed Development Location



The City of White Rock (City) requires a transportation impact assessment study to be conducted for the proposed development. This study is an integral part of the upcoming rezoning application. The main objective of the study is to determine the impact of the additional traffic volume generated to/from the proposed development on the surrounding road network. Bunt & Associates was retained by Elegant Development Inc. to perform the study and recommend any mitigation(s) that might be necessary to accommodate the estimated traffic increase.

1.2 Study Area Context

At present, the site is located in the P1 (Civic / Institutional) zone in White Rock¹. The study area is bounded by Oxford Street to the west, Overall Street to the east, single-family detached housing units to the south and Evergreen Baptist Care Home to the north. The site's single access point will be via Oxford Street between Goggs and Russell Avenues. Major vehicular traffic routes close to the site include Marine Drive to the south and King George Boulevard to the east. Future site traffic can access Marine Drive and King George Boulevard via Oxford Street and 16th Avenue (North Bluff Road), respectively. The adjacent network elements are discussed in more detail later in this document.

1.3 Methodology

In order to effectively conduct the study, Bunt planned and conducted the following tasks.

Task 1: Project Start-Up and Data Collection

- Reviewed current site plans;
- Reviewed applicable policies from the City of White Rock including the Zoning Bylaw 2000;
- Identified a similar development with similar traffic patterns to document trip generation rates that reflected the high-end nature of the proposed development. Once the study team identified the similar building, the data collection team conducted traffic counts for weekday AM and PM peak hour periods; and,
- Conducted traffic counts at two intersections shown in **Figure 1.1** at a weekday AM and PM peak hour periods. **Appendix A** includes the summarized traffic data collection sheets.

Task 2: Site Plan Review

- Reviewed the proposed development site plan and provided input to the project design team on the transportation elements including driveway access, internal traffic circulation, parking layout, and loading access.

Task 3: Transportation Assessment

- Evaluated the observed traffic data to document existing conditions;
- Identified the future base network assumptions, background growth methodology, and study horizon years for future conditions, for i.e. Opening Day and Opening Day+10 Years;

¹ Zoning Bylaw No. 2000, Schedule "C" – Zone Maps (*City of White Rock, April 2013*)

- Estimated the anticipated peak hour trip generation and distribution patterns for the proposed development;
- Prepared Synchro traffic models for each time period and horizon year, both with and without the site redeveloped;
- Determined the potential traffic impacts of the proposed new development on the adjacent network intersections; and,
- Identified what, if any, improvements may be required on the area road network elements to mitigate the traffic impact of the proposed new development.

1.4 Traffic Analysis Preamble

The traffic impact analysis was carried out using Synchro Software version 8 and the HCM 2000 methodology, and the results are summarized in the tables later in this report.

The summary tables report the calculated Measures of Effectiveness (MoE) including Volume to Capacity (V/C) ratios and a corresponding delay-based traffic Level of Service (LOS) indicator. LOS indicators range from the ideal LOS A with minimal delay through to LOS E 'near capacity' conditions and LOS F 'over-saturated' conditions when drivers may have to wait through several cycles to proceed through the intersection. The 95th percentile queue length for each lane group is presented in metres.

Summary tables have assumed the following performance thresholds:

- V/C = 0.90 or greater for the overall intersection operations and individual movements;
- Levels of Service at E or worse;
- 95th percentile queue lengths longer than the available storage length.

All situations where these performance thresholds were exceeded have been identified by **bold** text in the summary tables.

The Oxford Street intersection with Thrift Avenue was modeled as a normal four-legged intersection.

Details of all results can be found at **Appendix B**, which contains Synchro report printouts.

1.5 Report Structure

This report is set out in 5 sections. A summary for each section is provided below.

Section 1 – Introduction

Section 1 provides an overview of the site location, proposed development and the study area.

Section 2 – Existing Conditions

Section 2 provides a summary of the existing road network, traffic operations, and existing transit services.

Section 3 – Proposed Development

Section 3 includes an overview of the development plan and the site's anticipated future trip generation.

Section 4 – Future Traffic Operations

Section 4 presents an overview of the background traffic, and total future traffic, and potential impacts that they may have on the adjacent intersections.

Section 5 – Conclusions and Recommendations

Section 5 summarizes the study's conclusions and recommendations.

Exhibits are included at the end of each section.

2. EXISTING CONDITIONS

2.1 Existing Road Network

The study area road network, including road classification, laning for the major intersections and traffic control devices are shown in **Exhibit 2.1**. The key streets included in the study area include Oxford Street, North Bluff Road and Thrift Avenue.

Oxford Street

Oxford Street is currently classified as an arterial with a two-lane/two-way cross-section. It provides sidewalks on the east side, while the west side is currently under construction. Oxford Street is extended in the north-south directions, and provides access to area's residential sites as well as some of the institutional traffic generators including Treehouse Child Development Centre and White Rock Come Share Centre to the west and Evergreen Baptist Care Home to the east. Oxford Street connects the Marine Drive corridor (south White Rock) to 148th Street corridor in Surrey (north). Adjacent to the proposed development, it does not have a posted speed, and therefore is assumed to be 50 km/hr. Oxford Street forms a signalized intersection with the North Bluff Road and provides exclusive left-turn bays on both approaches. There are no parking lanes on either side.

North Bluff Road (16th Avenue)

North Bluff Road functions as an east-west arterial road, extending from Ocean Park Road to the west and ending at King George Boulevard to the east. North Bluff Road transitions into 16 Avenue and continues towards Langley east of King George Boulevard. It provides access to residential homes and local and collector roads. North Bluff Road has a four-lane cross section with sidewalks on both sides, and exclusive left-turn bays at its signalized intersection with Oxford Street. It is also a planned cycling route and provides some parking spaces on the south side.

Thrift Avenue

Thrift Avenue is an east-west two-lane arterial, providing access to adjacent residential areas, and forming a stop sign controlled intersection with the Oxford Street. Thrift Avenue has parking lanes on both sides, and is assumed to have a 50 km/hr posted speed. It is also a planned cycling route.

2.2 Existing Traffic Volumes

Bunt's data collection team conducted a traffic count on Monday February 24 at AM and PM peak hour(s). Due to the unexpected weather conditions as well as Monday's typically lower traffic demand, the traffic counts were increased by 5% to compensate for these factors. **Exhibit 2.2** presents the existing traffic volumes.

2.3 Existing Traffic Operations

The study team modeled the existing road network configurations and populated them with the existing traffic volume shown in **Exhibit 2.2**. The network was modeled using the Synchro 8 software package, with the existing signal timing phasing plan(s). **Table 2.1** summarizes the existing conditions measures of effectiveness (MoEs).

Table 2.1: Existing Conditions Traffic Conditions

Intersection/Movement	AM Peak Hour			PM Peak Hour		
	V/C	LOS	95 th Queue (m)	V/C	LOS	95 th Queue (m)
Signalized Intersections						
Oxford Street / North Bluff Road	0.28	B	-	0.29	B	-
EBL	0.25	B	13	0.33	C	13
EB TR	0.58	C	37	0.58	C	36
WBL	0.14	B	7	0.15	B	7
WBTR	0.29	B	19	0.55	C	3
NBL	0.06	A	6	0.11	A	9
NBTR	0.09	A	10	0.10	A	10
SBL	0.17	A	14	0.19	A	15
SBTR	0.12	A	11	0.16	A	14
Unsignalized Intersections						
Oxford Street / Thrift Avenue N	-	A	-	-	A	-
Oxford Street / Thrift Avenue S	-	A	-	-	A	-

Key Findings:

All approaches and laning groups have adequate capacity to accommodate the existing traffic volume (AM and PM peak hour) at satisfactory levels.

2.4 Existing Transit Services

Table 2.2 summarizes the existing transit routes within walking distance to the proposed development.

Table 2.2: Existing Transit Routes

Route		Weekday Service Headways at Stop (minutes)			
No.	Name	AM Period	Mid-day Period	PM Period	Evening Period
321	Surrey Central Station / White Rock	15	15	15	60
345	King George Station / White Rock Centre	20	30	30	30
351	Crescent Beach / Bridgeport Station	7-15	15	15	30
354	White Rock Centre / Bridgeport Station	15	-	20	-
855 ¹	Elgin Park School Special	-	-	-	-
C50	Ocean park / Peace Arch Hospital	30	30	30	-

¹This bus service runs for Elgin Park School, for pick-up and drop-off prior to school start and after school

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Exhibit 2.1
The Study Area Street Network

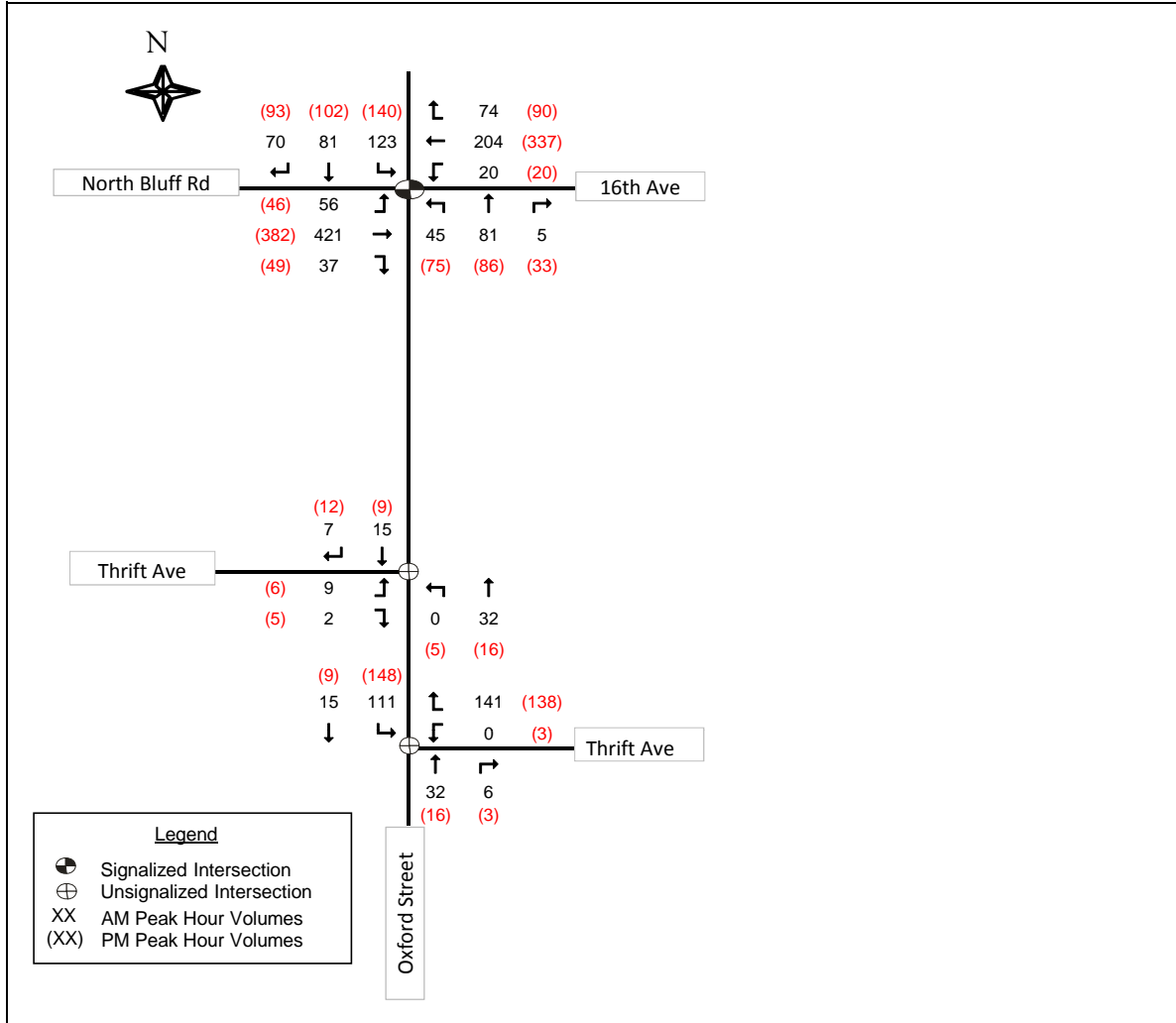


Exhibit 2.2

Existing Traffic Volumes

1454 Oxford Street Transportation Impact Assessment - White Rock, BC
 4862.03 March 2014

NTS



3. PROPOSED DEVELOPMENT

This section provides information about the proposed development.

3.1 Development Plan

Exhibit 2.1 presents the proposed development location at 1454 Oxford Street in White Rock, BC. The site has a single access point along Oxford Street between Goggs and Russell Avenues. The proposed site will consist of two residential towers of 24 (Tower A) and 21 stories (Tower B). The proposed statistics are summarized in **Table 3.1**.

Table 3.1: Proposed Development Statistics

Site	2 Bed	2 Bed + Den	3 Bed + Den	Size (sq ft)
Residential Units				
Tower A	22	2	43	196,042
Tower B	19	1	37	166,520
<i>Sub-Total</i>	<i>41</i>	<i>3</i>	<i>80</i>	
Level 1 Shared Common Area	-	-	-	1,233
Level 1 Shared Amenity	-	-	-	1,175
Total	124 Units			364,970

3.2 Site Trip Generation

The proposed development will consist of high-end condominiums including mostly two bedroom and three bedroom plus den units. Therefore, it is anticipated that it will generate traffic volume at a higher rate than a typical high-rises. In order to conservatively capture a realistic trip generation rate, the study team identified a building with similar condominium plans.

Stonecliff residential complex at 3315 Cypress Place in West Vancouver, BC, has similar residential structure with relatively large units. It consists of three buildings totaling 111 residential units of two and three bedrooms. The data collection team conducted traffic counts during a weekday AM and PM peak hour. The trip generation rate derived from this empirical data was used to calculate the anticipated traffic volume for the proposed development. In addition, the anticipate site traffic volume was also calculated using the Institute of Transportation Engineers Trip Generation Manual (*ITE-9th Edition*). **Table 3.2** summarizes the results of the two calculation methods.

Table 3.2: Proposed Development's Trip Generation

Trip Generation Rate Source	AM			PM		
	In	Out	Total	In	Out	Total
ITE (222) High-rise Apartment	9	28	37	26	17	43
Empirical Data Counts	13	34	47	23	24	47

While the two numbers are close, for the purposes of this study and in order to take a conservative approach, the empirical data count was used. The anticipated site traffic volume was distributed using the existing directional splits on the adjacent street network. **Exhibit 3.1** shows the site traffic volumes.

3.3 Parking Review

The City of White Rock By-law requires a total of 187 spaces to be provided. The proposed development will provide 286 off-street parking spaces which will exceed the minimum requirements of the Bylaw.

Table 3.3 summarizes the parking calculations.

Table 3.3: Parking Requirement Review

Parking	Residential Visitor Parking			Residential Market Units			Total
	Gross	H/C	Small	Gross	H/C	Small	
City of White Rock By-law Parking Requirements¹							
	38	0	15	148	3	60	187
Proposed Parking Spaces							
	38	0	0	248	4	0	286

¹ Based on 1.2 per dwelling unit, plus 0.3 per dwelling unit for visitor parking for a total of 1.5 spaces per dwelling unit. Zoning Bylaw No. 2000, Section 4.15 Off-street Parking Requirements (*City of White Rock, April 2015*)

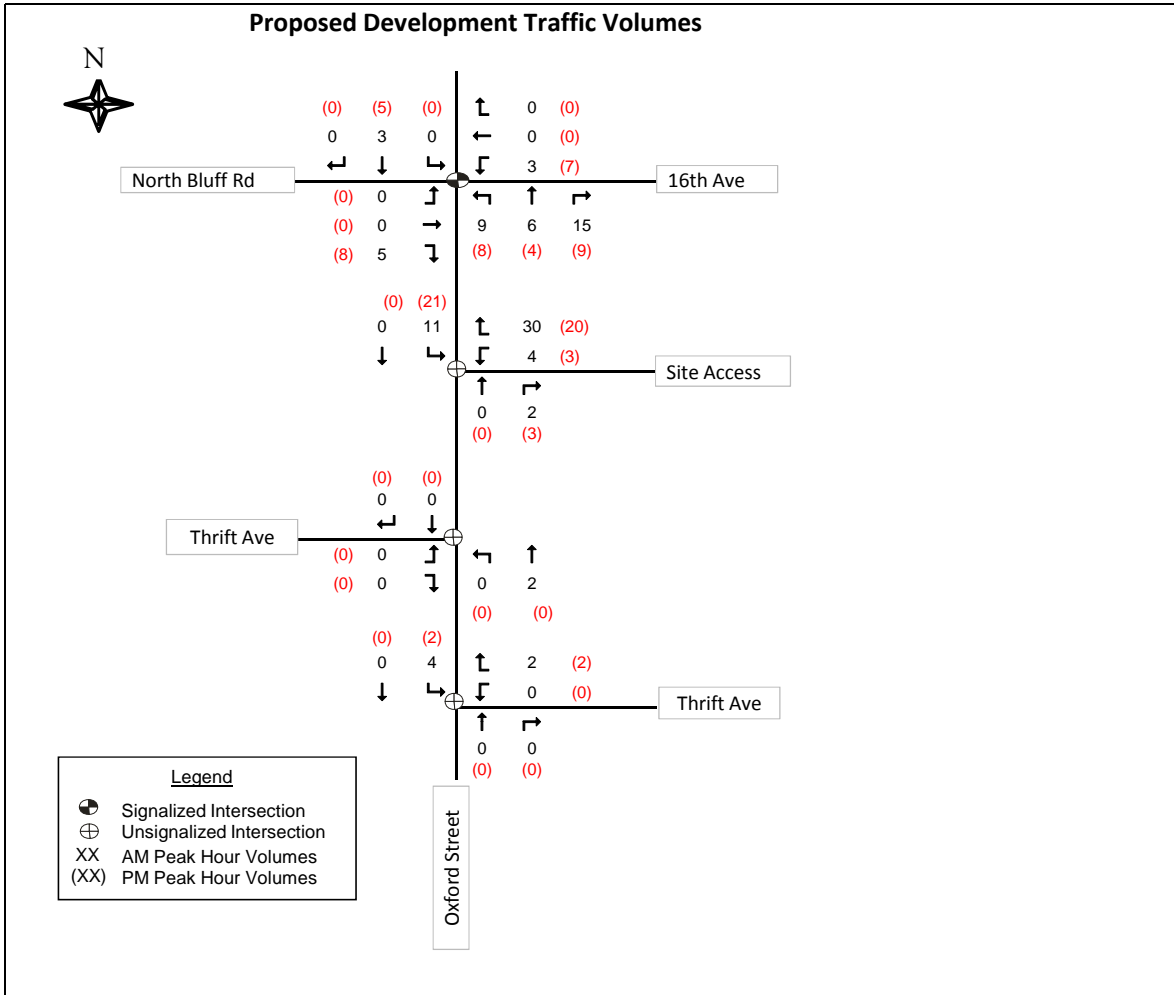


Exhibit 3.1

Proposed Development Traffic Volumes Opening Day

1454 Oxford Street Transportation Impact Assessment - White Rock, BC
 4862.03 March 2014 NTS



4. FUTURE TRAFFIC OPERATIONS

This section analyzes the future conditions. The time horizons for the future scenarios include Opening Day (2016), Total Background (2026) and Total Future (2026).

4.1 Opening Day (2016) Traffic Volumes & Traffic Operations

The proposed development will be completed by 2016 and in one phase and the background traffic is assumed to increase at an annual rate of 2%. The Opening Day traffic volumes are calculated by adding the anticipated traffic generated from the site to the background traffic of 2016. The site's traffic is distributed using the existing splits on the adjacent street network. **Exhibit 4.1** shows the Opening Day traffic volumes.

Table 4.1 summarizes the traffic operational analysis results for the Opening Day (2016).

Table 4.1: Opening Day (2016) Traffic Conditions

Intersection/Movement	AM Peak Hour			PM Peak Hour		
	V/C	LOS	95 th Q	V/C	LOS	95 th Q
Signalized Intersections						
Oxford Street / North Bluff Road	0.29	B	-	0.30	B	-
EBL	0.25	B	14	0.34	C	14
EB TR	0.59	C	38	0.59	C	38
WBL	0.17	B	7	0.21	C	9
WBTR	0.30	B	19	0.55	C	36
NBL	0.08	A	8	0.12	A	11
NBTR	0.10	A	11	0.12	A	12
SBL	0.18	A	15	0.20	A	17
SBTR	0.14	A	13	0.18	A	16
Unsignalized Intersections						
Oxford Street / Thrift Avenue N	-	A	-	-	A	-
Oxford Street / Thrift Avenue S	-	A	-	-	A	-
Oxford Street Access	-	A	-	-	A	-

Key Findings:

All approaches and laning groups have adequate capacity to accommodate the Opening Day (2016) traffic volumes (AM and PM peak hour) at satisfactory levels.

4.2 Future Background (2026) Traffic Volumes & Traffic Operations

The Future Background (2026) traffic volumes were developed based on the assumption that the general area traffic will increase continuously at annual rate of 2%, and the proposed development will not be built. **Exhibit 4.2** shows the traffic volumes for the Future Background (2026). **Table 4.2** summarizes the traffic conditions for the Future Background (2026).

Table 4.2: Future Background (2026) Traffic Conditions

Intersection/Movement	AM Peak Hour			PM Peak Hour		
	V/C	LOS	95 th Queue (m)	V/C	LOS	95 th Queue (m)
Signalized Intersections						
Oxford Street / North Bluff Road	0.36	B	-	0.35	B	-
EBL	0.31	B	17	0.31	B	17
EB TR	0.63	C	48	0.63	C	48
WBL	0.19	B	8	0.19	B	8
WBTR	0.34	B	24	0.34	B	24
NBL	0.11	A	11	0.09	A	9
NBTR	0.15	A	18	0.11	A	14
SBL	0.23	A	22	0.22	A	22
SBTR	0.17	A	18	0.17	A	18
Unsignalized Intersections						
Oxford Street / Thrift Avenue N	-	A	-	-	A	-
Oxford Street / Thrift Avenue S	-	A	-	-	A	-

Key Findings:

All approaches and laning groups have adequate capacity to accommodate the Future Background (2026) traffic volumes (AM and PM peak hour) at satisfactory levels.

4.3 Total Future (2026) Traffic Volumes & Traffic Operations

The Total Traffic Volumes (2026) is calculated by adding the Future Background to the proposed site’s anticipated traffic volumes. **Exhibit 4.3** shows the Total Future (2026) traffic volumes. **Table 4.3** summarizes the Total Future (2026) traffic operation analysis results.

Table 4.3: Total Future (2026) Traffic Conditions

Intersection/Movement	AM Peak Hour			PM Peak Hour		
	V/C	LOS	95 th Queue (m)	V/C	LOS	95 th Queue (m)
Signalized Intersections						
Oxford Street / North Bluff Road	0.29	B	-	0.30	B	-
EBL	0.31	B	17	0.44	C	16
EB TR	0.64	C	49	0.62	C	45
WBL	0.24	B	9	0.26	B	10
WBTR	0.34	B	25	0.59	C	42
NBL	0.10	A	10	0.17	A	14
NBTR	0.12	A	16	0.15	A	17
SBL	0.23	A	22	0.26	A	24
SBTR	0.17	A	19	0.23	A	24
Unsignalized Intersections						
Oxford Street / Thrift Avenue N	-	A	-	-	A	-
Oxford Street / Thrift Avenue S	-	A	-	-	A	-
Oxford Street Access	-	A	-	-	A	-

Key Findings:

All approaches and laning groups have adequate capacity to accommodate the Total Future (2026) traffic volumes (AM and PM peak hour) at satisfactory levels.

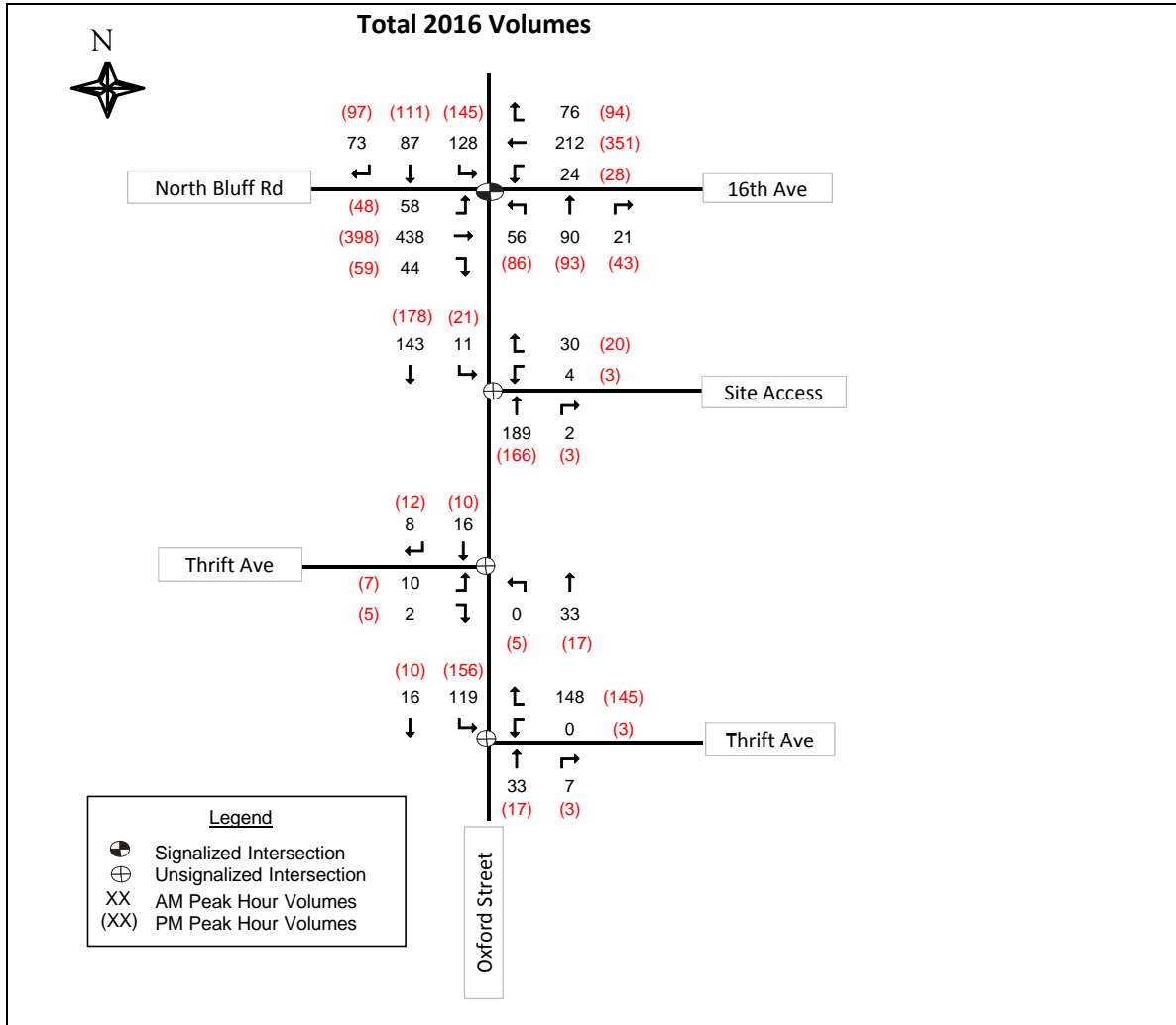


Exhibit 4.1

Opening Day (2016) Traffic Volumes

1454 Oxford Street Transportation Impact Assessment - White Rock, BC
 4862.03 March 2014 NTS



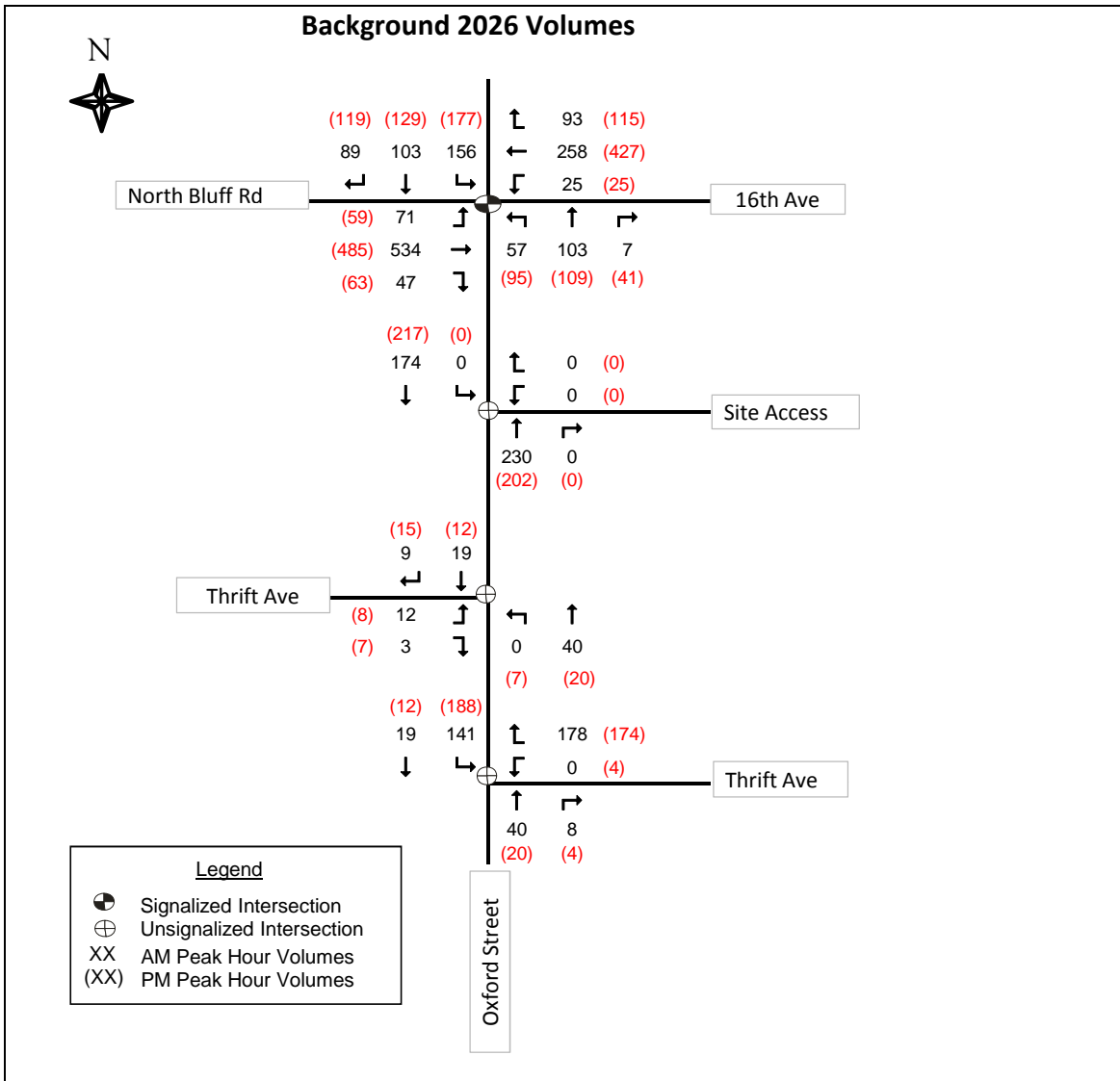


Exhibit 4.2

Future Background (2026) Traffic Volumes

1454 Oxford Street Transportation Impact Assessment - White Rock, BC
 4862.03 March 2014 NTS



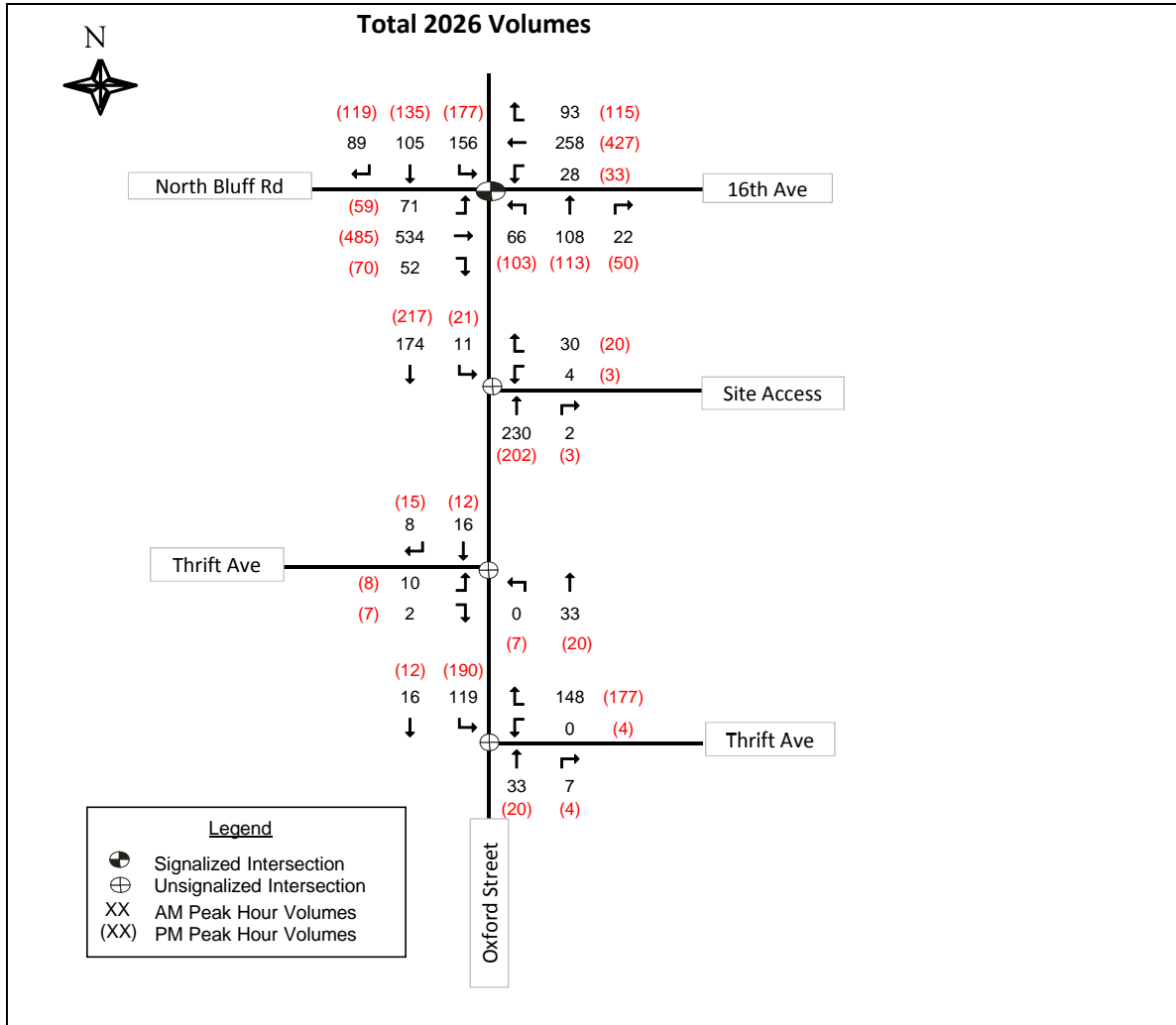


Exhibit 4.3

Total Future (2026) Traffic Volumes

1454 Oxford Street Transportation Impact Assessment - White Rock, BC
 4862.03 March 2014 NTS



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5. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusions

The proposed development will generate total of 47 and 47 trips onto the adjacent street network during the AM and PM peak hours, respectively. Oxford Street intersections with North Bluff Road and Thrift Avenue have adequate capacity to accommodate the existing, Opening Day (2016), Future Background (2026) and Total Future (2026) traffic volumes at satisfactory levels. The queue lengths at each time horizon are well accommodated within the available turning bay storage.

The proposed development proposes to provide 286 off-street parking spaces versus the 187 spaces required by the City of White Rock's By-law. The parking supply reflects the high-end nature of the condominiums planned for the two towers.

Based on the above information and considering the transportation analysis was conducted with a conservative approach, the proposed development and its additional traffic will be accommodated with the existing street network capacity.

5.2 Recommendations

The above analysis and its conclusions are based on available information for the development project. During the detailed design stage, the parking plans may be reviewed to ensure vehicular turning paths do not conflict with the opposing traffic or structural elements. In addition, the internal circulation paths may be tested for the vehicle turning path's width adequacy.

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APPENDIX A

Traffic Data Sheets

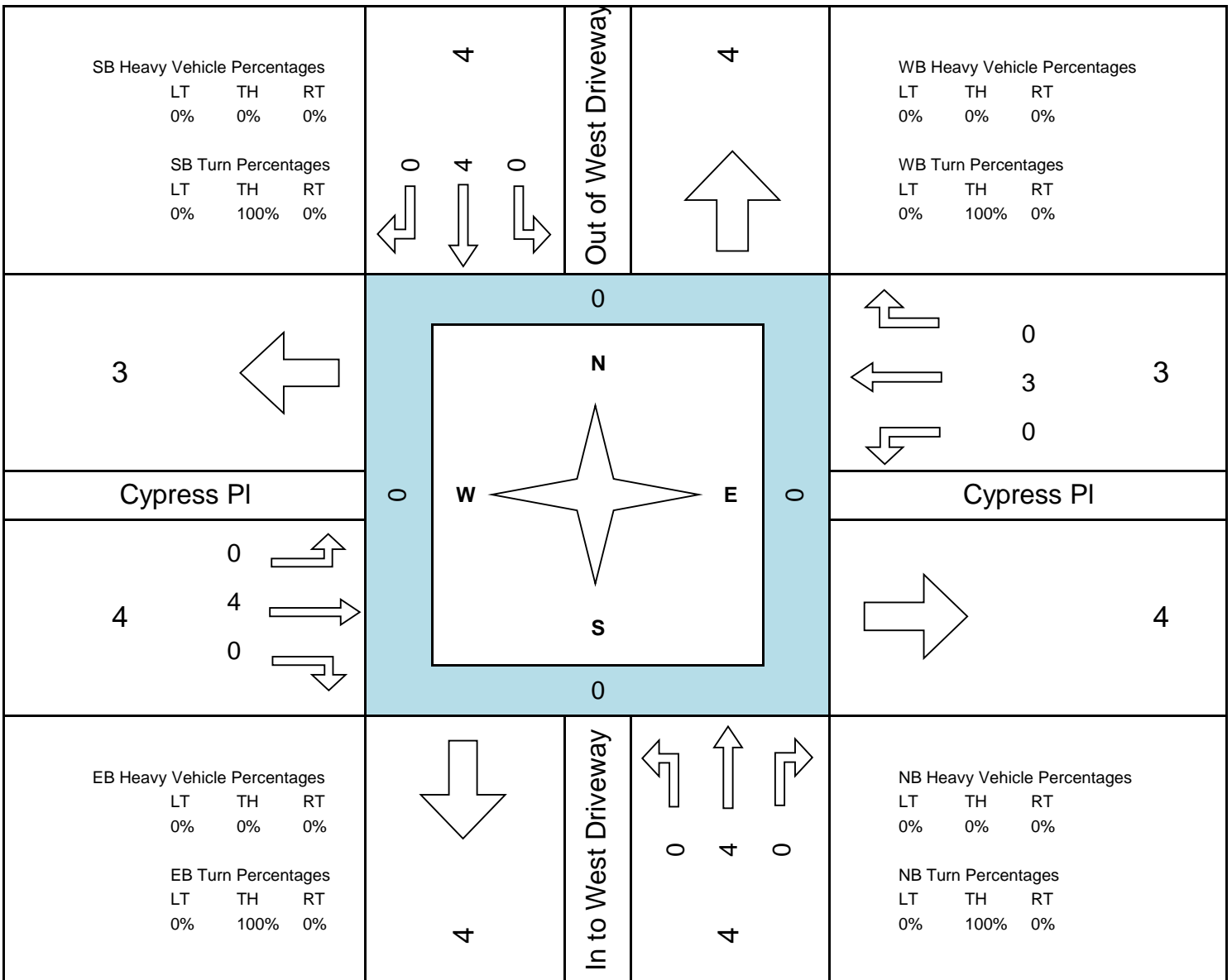
Stone Cliff Residence Driveways

Project #: 4862.03
 Peak Hour: 17:00 — 18:00
 Overall PHF: 0.63
 Notes: 0

Date: Feb 21, 2014
 Weather: Cloudy
 Road Cond: Dry



Time Intervals	Traffic Movements												Pedestrians				
	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	N	S	E	W	
15:00 - 15:15	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
15:45 - 16:00	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0
16:00 - 16:15	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
16:15 - 16:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
16:30 - 16:45	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
16:45 - 17:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00 - 17:15	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
17:15 - 17:30	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
17:30 - 17:45	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
17:45 - 18:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak V _{15min}		2			2			2			2						
PHF		0.50			0.50			0.50			0.38						



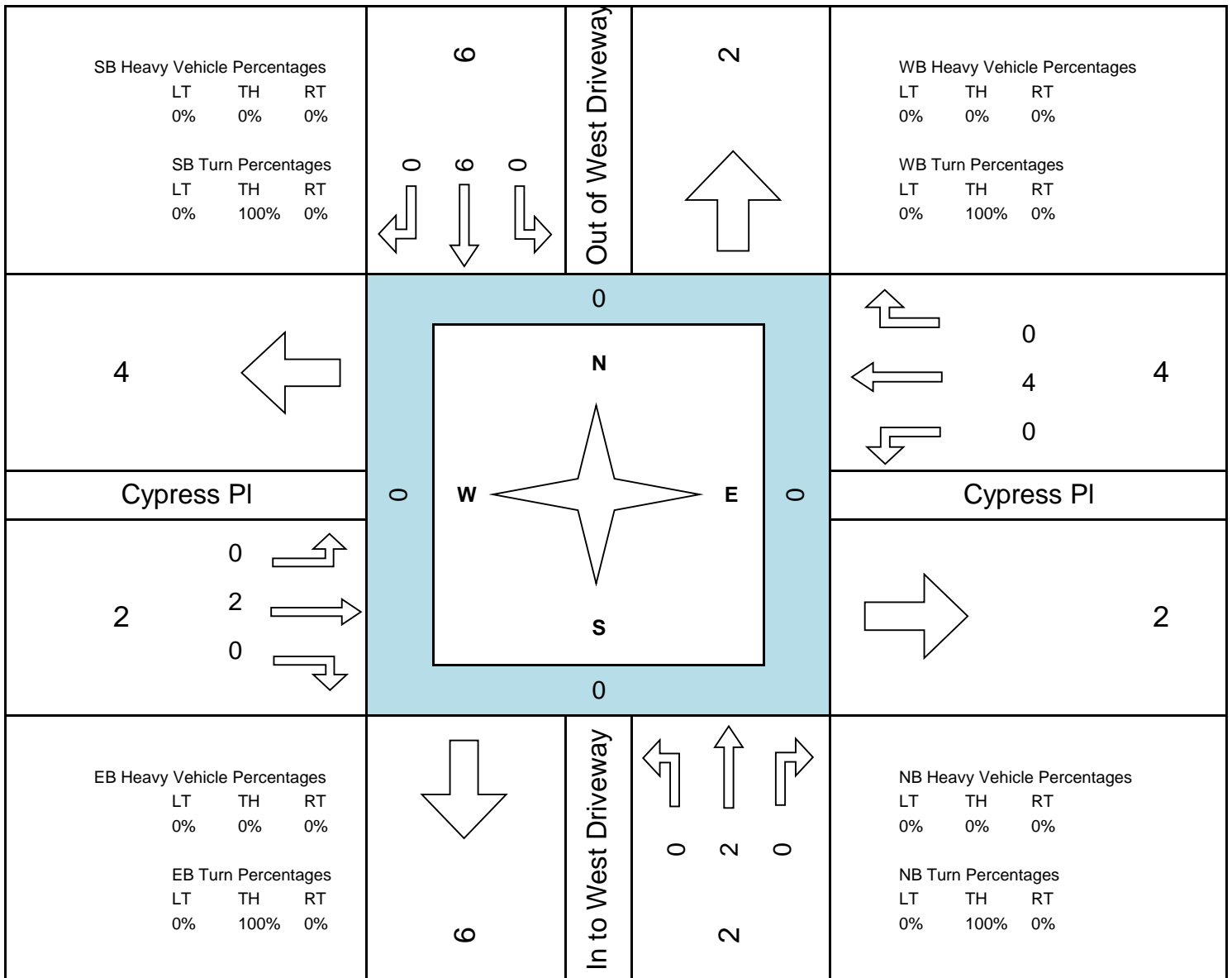
Stone Cliff Residence Driveways



Project #: 4862.03
 Peak Hour: 08:15 — 09:15
 Overall PHF: 0.58
 Notes: 0

Date: Feb 21, 2014
 Weather: Cloudy
 Road Cond: Dry

Time Intervals	Traffic Movements												Pedestrians				
	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	N	S	E	W	
07:00 - 07:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
07:15 - 07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 - 07:45	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0
07:45 - 08:00	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
08:00 - 08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 - 08:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
08:30 - 08:45	0	0	0	0	1	0	0	1	0	0	2	0	0	0	0	0	0
08:45 - 09:00	0	0	0	0	4	0	0	0	0	0	2	0	0	0	0	0	0
09:00 - 09:15	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
09:15 - 09:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
09:30 - 09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 - 10:00	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak V _{15min}		1			4			1			2						
PHF		0.50			0.38			0.50			0.50						



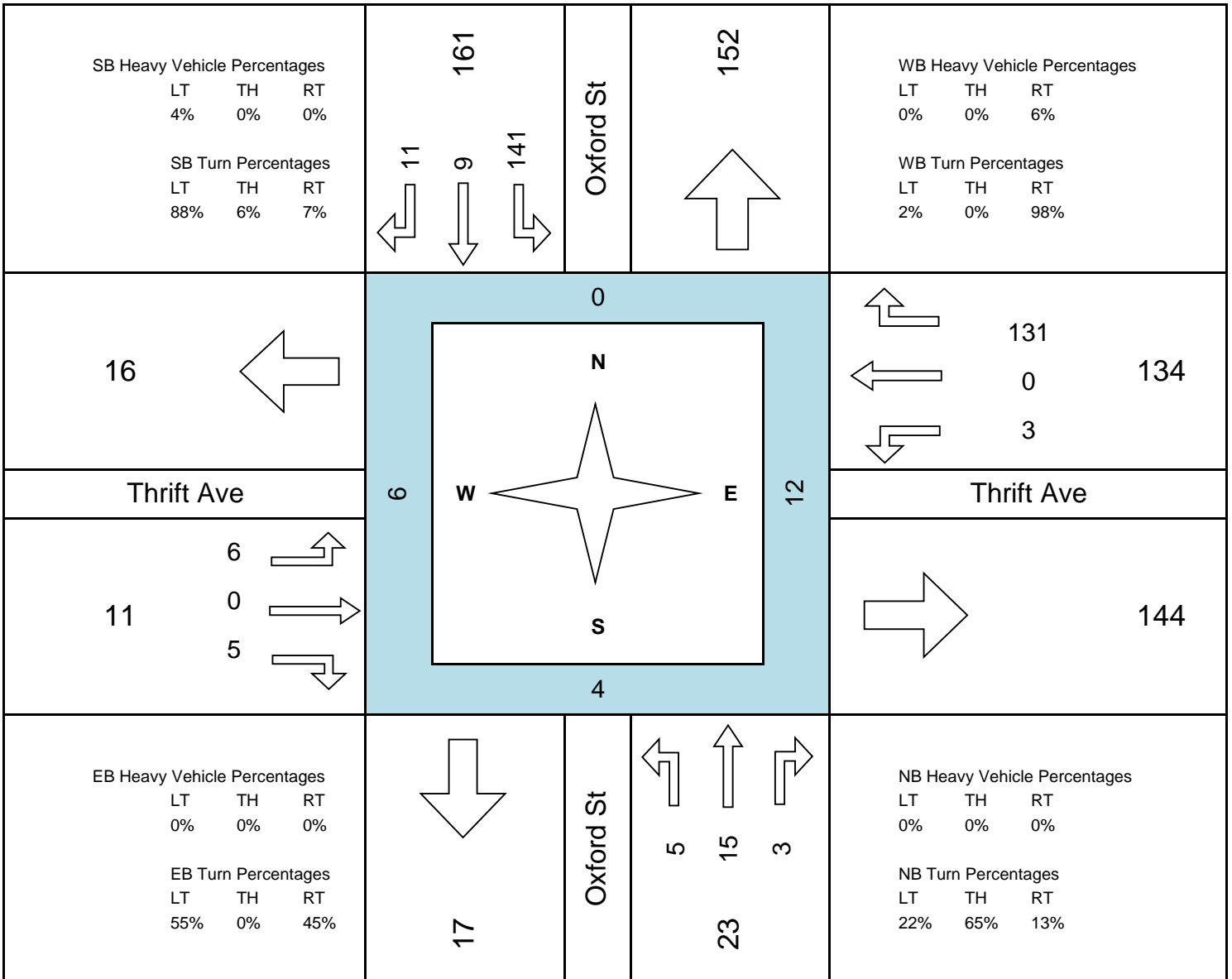
Oxford St @ Thrift Ave



Project #: 4862.03
 Peak Hour: 15:00 — 16:00
 Overall PHF: 0.86
 Notes: 0

Date: Feb 24, 2014
 Weather: Snowing
 Road Cond: Wet and Snow

Time Intervals	Traffic Movements												Pedestrians			
	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	N	S	E	W
15:00 - 15:15	1	4	0	39	0	1	2	0	0	1	0	48	0	1	1	2
15:15 - 15:30	2	1	1	41	2	4	1	0	3	0	0	34	0	2	5	3
15:30 - 15:45	0	5	0	30	3	4	2	0	0	1	0	21	0	0	1	0
15:45 - 16:00	2	5	2	31	4	2	1	0	2	1	0	28	0	1	5	1
16:00 - 16:15	0	2	0	27	4	2	0	0	0	0	0	24	0	2	2	2
16:15 - 16:30	1	2	2	26	0	2	3	0	2	0	0	28	0	4	0	0
16:30 - 16:45	0	1	0	25	0	2	0	0	1	1	0	31	0	0	3	0
16:45 - 17:00	0	2	0	20	0	3	0	0	0	0	0	36	0	2	1	0
17:00 - 17:15	3	1	1	24	3	1	0	0	3	0	0	33	0	1	0	0
17:15 - 17:30	0	0	0	18	2	3	1	0	0	0	0	30	0	0	2	0
17:30 - 17:45	1	0	0	30	1	2	1	0	0	0	0	17	0	0	0	0
17:45 - 18:00	0	1	0	31	2	3	0	0	1	0	0	28	0	0	3	1
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak V_{15min}	2	5	2	41	4	4	2		3	1		48				
PHF	0.63	0.75	0.38	0.86	0.56	0.69	0.75		0.42	0.75		0.68				



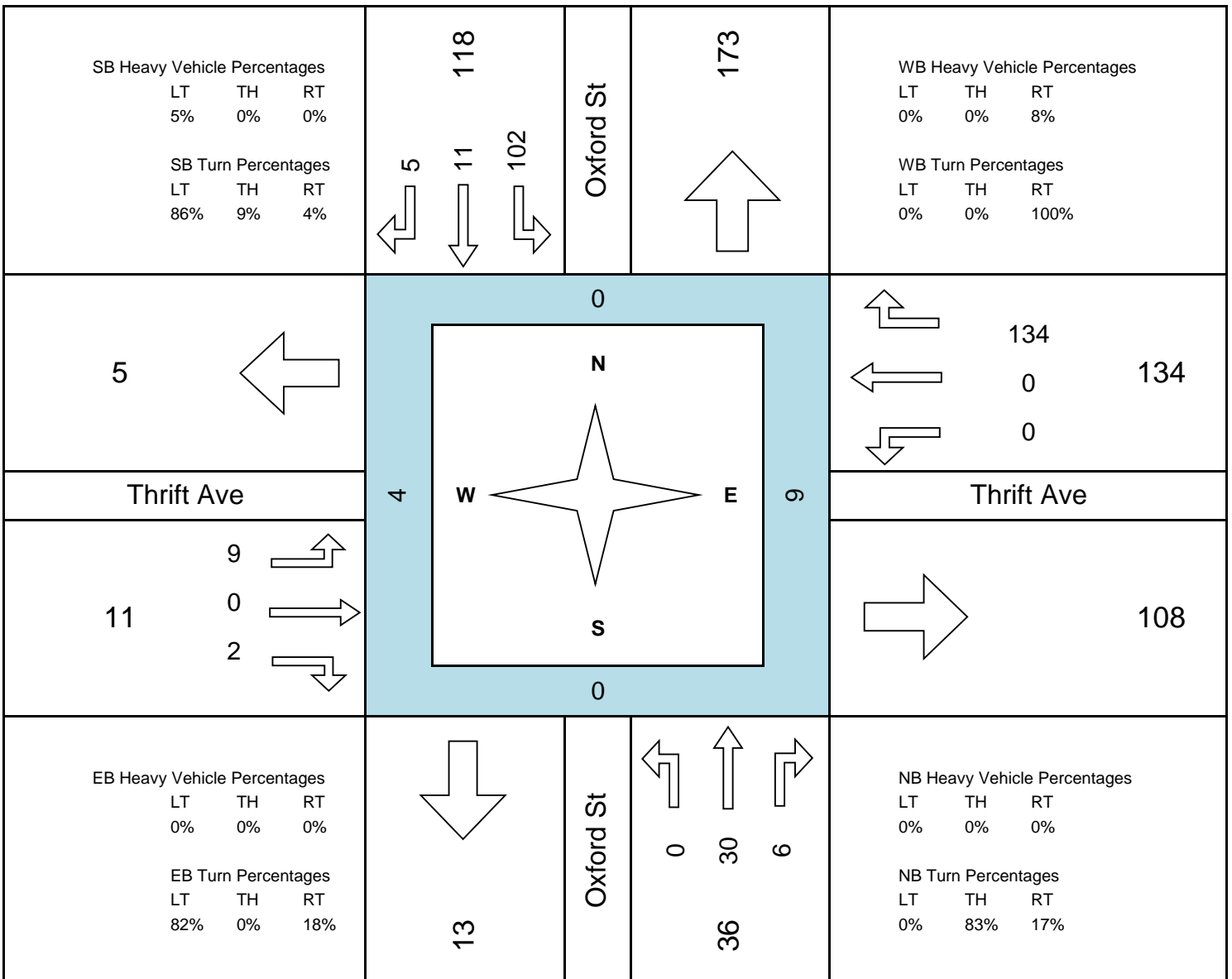
Oxford St @ Thrift Ave



Project #: 4862.03
 Peak Hour: 08:00 — 09:00
 Overall PHF: 0.77
 Notes: 0

Date: Feb 24, 2014
 Weather: Snowing
 Road Cond: Wet and Snow

Time Intervals	Traffic Movements												Pedestrians			
	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	N	S	E	W
07:00 - 07:15	0	3	0	7	1	0	2	0	0	1	0	10	0	0	0	0
07:15 - 07:30	1	8	1	14	0	1	0	0	0	0	0	11	0	0	0	0
07:30 - 07:45	0	11	0	15	1	0	2	0	0	1	0	21	1	1	1	1
07:45 - 08:00	1	7	0	18	6	1	1	0	2	0	0	18	0	0	0	0
08:00 - 08:15	0	7	0	14	1	1	4	0	1	0	0	23	0	0	0	1
08:15 - 08:30	0	15	4	28	2	1	2	0	1	0	0	44	0	0	4	3
08:30 - 08:45	0	2	0	35	4	2	2	0	0	0	0	33	0	0	3	0
08:45 - 09:00	0	6	2	25	4	1	1	0	0	0	0	34	0	0	2	0
09:00 - 09:15	1	2	2	16	4	1	2	0	0	0	0	21	0	2	2	1
09:15 - 09:30	0	5	1	10	8	2	0	0	1	0	0	22	0	0	0	2
09:30 - 09:45	0	2	2	13	1	1	1	0	1	1	0	14	0	0	0	0
09:45 - 10:00	2	5	1	16	2	1	1	0	0	0	0	20	0	0	1	1
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak V_{15min}		15	4	35	4	2	4		1			44				
PHF		0.50	0.38	0.73	0.69	0.63	0.56		0.50			0.76				



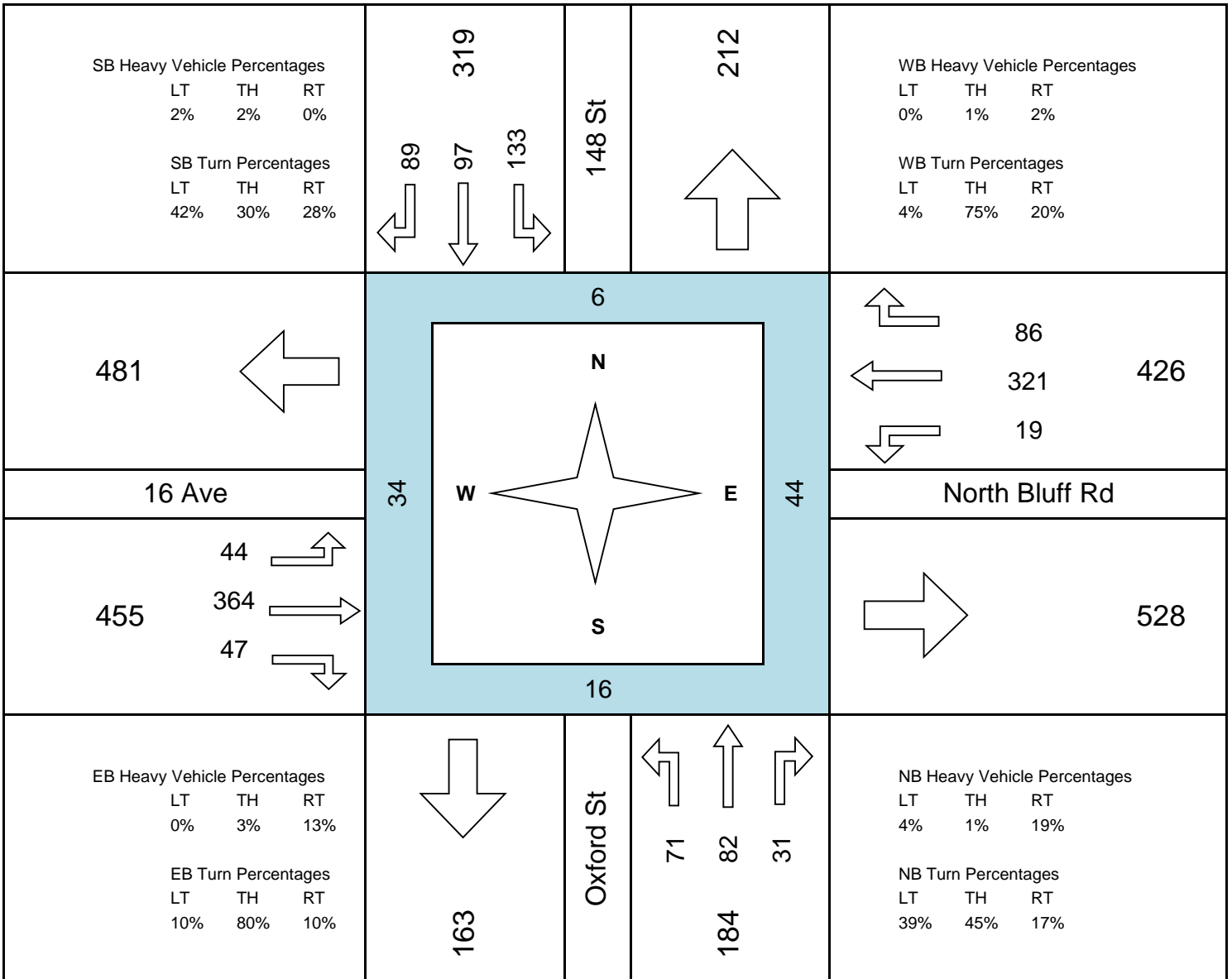
Oxford St @ North Bluff Rd



Project #: 4862.03
 Peak Hour: 15:00 — 16:00
 Overall PHF: 0.83
 Notes: 0

Date: Feb 24, 2014
 Weather: Snowing
 Road Cond: Wet and Snow

Time Intervals	Traffic Movements												Pedestrians			
	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	N	S	E	W
15:00 - 15:15	25	37	16	41	18	16	21	106	18	3	82	34	2	1	21	15
15:15 - 15:30	13	15	5	50	27	27	12	86	15	3	69	19	3	11	14	15
15:30 - 15:45	20	18	5	22	26	25	3	97	6	7	63	10	0	1	7	2
15:45 - 16:00	13	12	5	20	26	21	8	75	8	6	107	23	1	3	2	2
16:00 - 16:15	10	6	6	25	13	9	13	61	6	13	99	14	0	2	0	7
16:15 - 16:30	10	19	3	30	16	16	7	78	9	5	96	13	0	3	2	1
16:30 - 16:45	19	7	7	20	19	13	7	65	9	5	88	17	4	0	2	3
16:45 - 17:00	18	8	7	15	12	25	4	67	6	2	94	11	1	4	2	0
17:00 - 17:15	17	13	1	21	21	13	2	60	4	7	114	19	3	1	3	1
17:15 - 17:30	12	10	2	22	9	17	3	57	12	7	79	21	2	1	2	1
17:30 - 17:45	9	5	4	22	19	32	7	62	11	5	101	10	0	1	1	0
17:45 - 18:00	9	7	8	20	27	64	8	98	4	4	65	13	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak V_{15min}	25	37	16	50	27	27	21	106	18	7	107	34				
PHF	0.71	0.55	0.48	0.67	0.90	0.82	0.52	0.86	0.65	0.68	0.75	0.63				



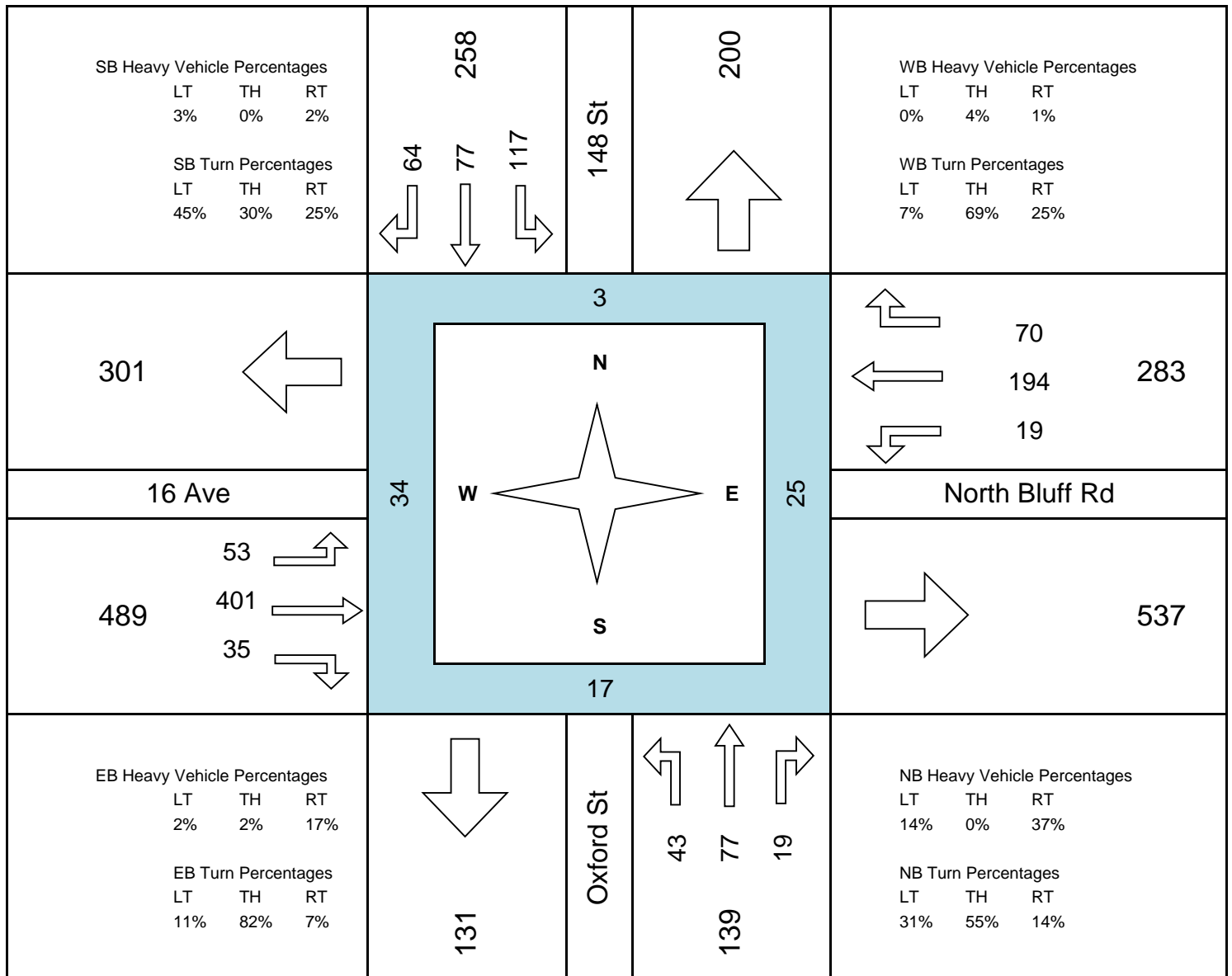
Oxford St @ North Bluff Rd



Project #: 4862.03
 Peak Hour: 08:15 — 09:15
 Overall PHF: 0.88
 Notes: 0

Date: Feb 24, 2014
 Weather: Snowing
 Road Cond: Wet and Snow

Time Intervals	Traffic Movements												Pedestrians			
	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	N	S	E	W
07:00 - 07:15	4	20	6	9	3	7	12	45	5	3	23	19	1	1	2	0
07:15 - 07:30	1	15	0	5	8	3	9	47	6	3	30	8	0	0	0	0
07:30 - 07:45	8	24	3	11	9	8	13	81	7	0	28	10	1	2	1	4
07:45 - 08:00	2	20	5	21	7	8	19	109	10	4	40	13	0	0	1	0
08:00 - 08:15	9	17	7	10	12	12	9	68	6	4	60	14	0	2	3	10
08:15 - 08:30	12	38	6	31	20	18	15	86	5	6	60	34	0	6	11	18
08:30 - 08:45	12	11	2	48	21	20	13	77	9	5	40	7	1	9	9	13
08:45 - 09:00	10	18	8	20	24	20	15	117	13	3	46	14	1	1	4	0
09:00 - 09:15	9	10	3	18	12	6	10	121	8	5	48	15	1	1	1	3
09:15 - 09:30	10	9	10	14	8	11	12	94	6	3	68	6	0	1	0	2
09:30 - 09:45	8	7	3	11	12	10	8	79	5	4	65	14	1	2	0	1
09:45 - 10:00	8	6	6	0	0	0	7	68	5	0	0	0	0	5	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N/A - N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak V_{15min}	12	38	8	48	24	20	15	121	13	6	60	34				
PHF	0.90	0.51	0.59	0.61	0.80	0.80	0.88	0.83	0.67	0.79	0.81	0.51				



APPENDIX B

Synchro Reports

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	64	604	36	589	112	177	192	276
v/c Ratio	0.44	0.63	0.26	0.61	0.17	0.16	0.26	0.25
Control Delay	28.9	22.2	22.6	20.8	7.6	5.6	8.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	22.2	22.6	20.8	7.6	5.6	8.2	5.7
Queue Length 50th (m)	6.1	30.8	3.3	28.2	5.0	6.1	9.2	9.2
Queue Length 95th (m)	16.4	44.7	10.0	41.8	14.4	16.7	23.6	23.8
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	293	1907	281	1895	662	1100	735	1087
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.32	0.13	0.31	0.17	0.16	0.26	0.25

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014




























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	485	71	33	427	115	103	113	50	177	135	119
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	59	556	0	33	542	0	103	163	0	177	254	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.97	0.85	0.95	0.95	0.85	0.95	0.93	0.85
Saturated Flow (vph)	1805	3548	0	1805	3502	0	1805	1813	0	1805	1766	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	3.9	18.8	0.0	2.2	18.6	0.0	6.8	10.8	0.0	11.8	17.3	0.0
Adj Reference Time (s)	8.0	22.8	0.0	8.0	22.6	0.0	10.8	14.8	0.0	15.8	21.3	0.0
Permitted Option												
Adj Saturation A (vph)	120	1774		120	1751		120	1813		120	1766	
Reference Time A (s)	58.8	18.8		32.9	18.6		102.7	10.8		176.5	17.3	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		58.8			32.9			102.7			176.5	
Adj Reference Time (s)		62.8			36.9			106.7			180.5	
Split Option												
Ref Time Combined (s)	3.9	18.8		2.2	18.6		6.8	10.8		11.8	17.3	
Ref Time Seperate (s)	3.9	16.4		2.2	14.6		6.8	7.5		11.8	9.2	
Reference Time (s)	18.8	18.8		18.6	18.6		10.8	10.8		17.3	17.3	
Adj Reference Time (s)	22.8	22.8		22.6	22.6		14.8	14.8		21.3	21.3	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	30.8		32.1									
Permitted Option (s)	62.8		180.5									
Split Option (s)	45.4		36.0									
Minimum (s)	30.8		32.1		62.9							
Right Turns												
Adj Reference Time (s)												
Cross Thru Ref Time (s)												
Oncoming Left Ref Time (s)												
Combined (s)												
Intersection Summary												
Intersection Capacity Utilization			52.4%		ICU Level of Service		A					
Reference Times and Phasing Options do not represent an optimized timing plan.												

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (vph)	59	485	71	33	427	115	103	113	50	177	135	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.95		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3510		1789	3465		1789	1797		1789	1751	
Flt Permitted	0.29	1.00		0.28	1.00		0.58	1.00		0.65	1.00	
Satd. Flow (perm)	542	3510		520	3465		1096	1797		1216	1751	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	527	77	36	464	125	112	123	54	192	147	129
RTOR Reduction (vph)	0	18	0	0	39	0	0	15	0	0	30	0
Lane Group Flow (vph)	64	586	0	36	550	0	112	162	0	192	246	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.0	17.0		17.0	17.0		38.2	38.2		38.2	38.2	
Effective Green, g (s)	17.0	17.0		17.0	17.0		38.2	38.2		38.2	38.2	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.60	0.60		0.60	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	146	944		140	932		662	1086		735	1058	
v/s Ratio Prot		c0.17			0.16			0.09			0.14	
v/s Ratio Perm	0.12			0.07			0.10			c0.16		
v/c Ratio	0.44	0.62		0.26	0.59		0.17	0.15		0.26	0.23	
Uniform Delay, d1	19.1	20.3		18.1	20.1		5.5	5.4		5.9	5.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.3		1.0	1.0		0.6	0.3		0.9	0.5	
Delay (s)	21.2	21.5		19.1	21.1		6.1	5.7		6.7	6.3	
Level of Service	C	C		B	C		A	A		A	A	
Approach Delay (s)		21.5			21.0			5.9			6.5	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	4	177	20	4	190	12
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	181	0	24	0	0	202
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.97	0.85	0.95	0.95
Saturated Flow (vph)	1620	0	1853	0	0	1811
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1853		0	126
Reference Time A (s)	201.2		1.6		0.0	192.9
Adj Saturation B (vph)	NA		1853		0	0
Reference Time B (s)	NA		1.6		20.6	21.4
Reference Time (s)			1.6			21.4
Adj Reference Time (s)			8.0			25.4
Split Option						
Ref Time Combined (s)	13.4		1.6		0.0	13.4
Ref Time Seperate (s)	0.3		1.3		12.6	0.8
Reference Time (s)	13.4		1.6		13.4	13.4
Adj Reference Time (s)	17.4		8.0		17.4	17.4
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		25.4			
Split Option (s)	17.4		25.4			
Minimum (s)	17.4		25.4		42.8	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			35.7%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	4	177	20	4	190	12
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	192	22	4	207	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	450	24			26	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450	24			26	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	82			87	
cM capacity (veh/h)	493	1053			1588	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	197	26	220
Volume Left	4	0	207
Volume Right	192	4	0
cSH	1027	1700	1588
Volume to Capacity	0.19	0.02	0.13
Queue Length 95th (m)	5.4	0.0	3.4
Control Delay (s)	9.3	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization		35.7%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization
8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	8	7	7	20	12	15
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right	No				No	
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	15	0	0	27	27	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.91	0.85	0.95	0.99	0.92	0.85
Saturated Flow (vph)	1720	0	0	1875	1742	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00		0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)	0.0				0.0	
Adj Reference Time (s)	0.0				0.0	
Permitted Option						
Adj Saturation A (vph)	115	0		376	1742	
Reference Time A (s)	15.7	0.0		8.6	1.9	
Adj Saturation B (vph)	NA	0		0	1742	
Reference Time B (s)	NA	8.5		9.7	1.9	
Reference Time (s)			8.6		1.9	
Adj Reference Time (s)			12.6		8.0	
Split Option						
Ref Time Combined (s)	1.0	0.0		1.7	1.9	
Ref Time Seperate (s)	0.6	0.5		1.3	0.8	
Reference Time (s)	1.0	1.7		1.7	1.9	
Adj Reference Time (s)	8.0	8.0		8.0	8.0	
Summary	EB	NB SB		Combined		
Protected Option (s)	NA	NA				
Permitted Option (s)	Err	12.6				
Split Option (s)	8.0	16.0				
Minimum (s)	8.0	12.6		20.6		
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						

Intersection Summary
 Intersection Capacity Utilization 17.2% ICU Level of Service A
 Reference Times and Phasing Options do not represent an optimized timing plan.

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	7	7	20	12	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	8	8	22	13	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					378	
pX, platoon unblocked						
vC, conflicting volume	58	21	29			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	58	21	29			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	944	1056	1584			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	16	29	29			
Volume Left	9	8	0			
Volume Right	8	0	16			
cSH	993	1584	1700			
Volume to Capacity	0.02	0.00	0.02			
Queue Length 95th (m)	0.4	0.1	0.0			
Control Delay (s)	8.7	1.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.7	1.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization		17.2%		ICU Level of Service		A
Analysis Period (min)			15			

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	3	21	202	3	21	217
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	24	0	205	0	0	238
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1640	0	1896	0	0	1892
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	109		1896		0	825
Reference Time A (s)	26.3		13.0		0.0	34.6
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			13.0			34.6
Adj Reference Time (s)			17.0			38.6
Split Option						
Ref Time Combined (s)	1.8		13.0		0.0	15.1
Ref Time Seperate (s)	0.2		12.8		1.4	13.7
Reference Time (s)	1.8		13.0		15.1	15.1
Adj Reference Time (s)	8.0		17.0		19.1	19.1
Summary	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		38.6			
Split Option (s)	8.0		36.1			
Minimum (s)	8.0		36.1		44.1	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						

Intersection Summary

Intersection Capacity Utilization 36.7% ICU Level of Service A
 Reference Times and Phasing Options do not represent an optimized timing plan.

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	21	202	3	21	217
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	23	220	3	23	236
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	503	221			223	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	503	221			223	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			98	
cM capacity (veh/h)	519	818			1346	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	26	223	259
Volume Left	3	0	23
Volume Right	23	3	0
cSH	763	1700	1346
Volume to Capacity	0.03	0.13	0.02
Queue Length 95th (m)	0.8	0.0	0.4
Control Delay (s)	9.9	0.0	0.8
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	0.8
Approach LOS	A		

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		36.7%	ICU Level of Service
Analysis Period (min)		15	A

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	637	32	381	72	142	170	212
v/c Ratio	0.31	0.64	0.24	0.38	0.10	0.13	0.23	0.20
Control Delay	21.8	23.1	22.4	15.7	7.5	6.4	8.3	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	23.1	22.4	15.7	7.5	6.4	8.3	5.2
Queue Length 50th (m)	7.3	34.3	3.0	15.2	3.3	5.7	8.4	6.4
Queue Length 95th (m)	16.9	48.8	9.2	24.8	10.4	15.8	22.1	18.6
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	450	1798	245	1779	705	1107	751	1080
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.35	0.13	0.21	0.10	0.13	0.23	0.20

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	71	534	52	29	258	93	66	109	22	156	106	89	
Pedestrians													
Ped Button													
Pedestrian Timing (s)													
Free Right			No			No			No			No	
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120	
Volume Combined (vph)	71	586	0	29	351	0	66	131	0	156	195	0	
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Factor (vph)	0.95	0.99	0.85	0.95	0.96	0.85	0.95	0.97	0.85	0.95	0.93	0.85	
Saturated Flow (vph)	1805	3569	0	1805	3474	0	1805	1852	0	1805	1770	0	
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00		
Protected Option Allowed		Yes			Yes			Yes			Yes		
Reference Time (s)	4.7	19.7	0.0	1.9	12.1	0.0	4.4	8.5	0.0	10.4	13.2	0.0	
Adj Reference Time (s)	8.7	23.7	0.0	8.0	16.1	0.0	8.4	12.5	0.0	14.4	17.2	0.0	
Permitted Option													
Adj Saturation A (vph)	120	1785		120	1737		120	1852		120	1770		
Reference Time A (s)	70.8	19.7		28.9	12.1		65.8	8.5		155.6	13.2		
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA		
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA		
Reference Time (s)		70.8			28.9			65.8			155.6		
Adj Reference Time (s)		74.8			32.9			69.8			159.6		
Split Option													
Ref Time Combined (s)	4.7	19.7		1.9	12.1		4.4	8.5		10.4	13.2		
Ref Time Seperate (s)	4.7	18.0		1.9	8.9		4.4	7.1		10.4	7.2		
Reference Time (s)	19.7	19.7		12.1	12.1		8.5	8.5		13.2	13.2		
Adj Reference Time (s)	23.7	23.7		16.1	16.1		12.5	12.5		17.2	17.2		
Summary													
	EB WB		NB SB		Combined								
Protected Option (s)	31.7		26.9										
Permitted Option (s)	74.8		159.6										
Split Option (s)	39.8		29.7										
Minimum (s)	31.7		26.9		58.6								
Right Turns													
Adj Reference Time (s)													
Cross Thru Ref Time (s)													
Oncoming Left Ref Time (s)													
Combined (s)													
Intersection Summary													
Intersection Capacity Utilization			48.8%		ICU Level of Service				A				
Reference Times and Phasing Options do not represent an optimized timing plan.													

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	71	534	52	29	258	93	66	109	22	156	106	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3531		1789	3436		1789	1836		1789	1754	
Flt Permitted	0.47	1.00		0.26	1.00		0.63	1.00		0.67	1.00	
Satd. Flow (perm)	886	3531		484	3436		1178	1836		1255	1754	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	580	57	32	280	101	72	118	24	170	115	97
RTOR Reduction (vph)	0	12	0	0	56	0	0	7	0	0	30	0
Lane Group Flow (vph)	77	625	0	32	325	0	72	135	0	170	182	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.2	18.2		18.2	18.2		39.2	39.2		39.2	39.2	
Effective Green, g (s)	18.2	18.2		18.2	18.2		39.2	39.2		39.2	39.2	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.60	0.60		0.60	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	247	983		135	956		706	1100		752	1051	
v/s Ratio Prot		c0.18			0.09			0.07			0.10	
v/s Ratio Perm	0.09			0.07			0.06			c0.14		
v/c Ratio	0.31	0.64		0.24	0.34		0.10	0.12		0.23	0.17	
Uniform Delay, d1	18.7	20.7		18.2	18.8		5.6	5.7		6.1	5.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.4		0.9	0.2		0.3	0.2		0.7	0.4	
Delay (s)	19.4	22.1		19.1	19.0		5.9	5.9		6.8	6.2	
Level of Service	B	C		B	B		A	A		A	A	
Approach Delay (s)		21.8			19.0			5.9			6.5	
Approach LOS		C			B			A			A	

Intersection Summary

HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization
7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	180	40	8	145	19
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	180	0	48	0	0	164
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.97	0.85	0.95	0.96
Saturated Flow (vph)	1615	0	1853	0	0	1816
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1853		0	131
Reference Time A (s)	200.6		3.1		0.0	149.7
Adj Saturation B (vph)	NA		1853		0	0
Reference Time B (s)	NA		3.1		17.6	18.8
Reference Time (s)			3.1			18.8
Adj Reference Time (s)			8.0			22.8
Split Option						
Ref Time Combined (s)	13.4		3.1		0.0	10.8
Ref Time Seperate (s)	0.0		2.6		9.6	1.2
Reference Time (s)	13.4		3.1		10.8	10.8
Adj Reference Time (s)	17.4		8.0		14.8	14.8
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		22.8			
Split Option (s)	17.4		22.8			
Minimum (s)	17.4		22.8		40.2	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			33.5%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	180	40	8	145	19
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	196	43	9	158	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	384	48			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	384	48			52	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	81			90	
cM capacity (veh/h)	556	1021			1554	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	196	52	178
Volume Left	0	0	158
Volume Right	196	9	0
cSH	1021	1700	1554
Volume to Capacity	0.19	0.03	0.10
Queue Length 95th (m)	5.4	0.0	2.6
Control Delay (s)	9.4	0.0	6.8
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	6.8
Approach LOS	A		

Intersection Summary			
Average Delay		7.1	
Intersection Capacity Utilization		33.5%	ICU Level of Service A
Analysis Period (min)		15	

Intersection Capacity Utilization
8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			T	T	
Volume (vph)	10	180	0	40	19	10
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	190	0	0	40	29	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.95	1.00	0.95	0.85
Saturated Flow (vph)	1626	0	0	1900	1802	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	108		0	1900	1802	
Reference Time A (s)	210.4		0.0	2.5	1.9	
Adj Saturation B (vph)	NA		0	1900	1802	
Reference Time B (s)	NA		0.0	2.5	1.9	
Reference Time (s)				2.5	1.9	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	14.0		0.0	2.5	1.9	
Ref Time Seperate (s)	0.7		0.0	2.5	1.3	
Reference Time (s)	14.0		2.5	2.5	1.9	
Adj Reference Time (s)	18.0		8.0	8.0	8.0	
Summary	EB		NB SB	Combined		
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	18.0		16.0			
Minimum (s)	18.0		8.0	26.0		
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization	21.7%		ICU Level of Service		A	
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	180	0	40	19	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	196	0	43	21	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	378					
pX, platoon unblocked						
vC, conflicting volume	70	26	32			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70	26	32			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	81	100			
cM capacity (veh/h)	935	1050	1581			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	207	43	32			
Volume Left	11	0	0			
Volume Right	196	0	11			
cSH	1043	1581	1700			
Volume to Capacity	0.20	0.00	0.02			
Queue Length 95th (m)	5.6	0.0	0.0			
Control Delay (s)	9.3	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.3	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization			21.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	4	31	230	2	12	174
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	35	0	232	0	0	186
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1638	0	1898	0	0	1894
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	109		1898		0	978
Reference Time A (s)	38.5		14.7		0.0	22.8
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			14.7			22.8
Adj Reference Time (s)			18.7			26.8
Split Option						
Ref Time Combined (s)	2.6		14.7		0.0	11.8
Ref Time Seperate (s)	0.3		14.5		0.8	11.0
Reference Time (s)	2.6		14.7		11.8	11.8
Adj Reference Time (s)	8.0		18.7		15.8	15.8
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		26.8			
Split Option (s)	8.0		34.5			
Minimum (s)	8.0		26.8		34.8	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			29.0%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	4	31	230	2	12	174
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	34	250	2	13	189
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	466	251			252	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	466	251			252	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	96			99	
cM capacity (veh/h)	549	788			1313	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	252	202
Volume Left	4	0	13
Volume Right	34	2	0
cSH	750	1700	1313
Volume to Capacity	0.05	0.15	0.01
Queue Length 95th (m)	1.2	0.0	0.2
Control Delay (s)	10.1	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.6
Approach LOS	B		

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		29.0%	ICU Level of Service
Analysis Period (min)		15	A

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	52	497	30	484	93	148	158	227
v/c Ratio	0.34	0.60	0.21	0.58	0.12	0.13	0.20	0.20
Control Delay	26.4	23.3	22.5	21.7	5.9	4.2	6.3	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	23.3	22.5	21.7	5.9	4.2	6.3	4.1
Queue Length 50th (m)	5.0	25.5	2.8	23.1	3.5	3.9	6.3	5.7
Queue Length 95th (m)	13.6	38.3	8.9	35.6	10.6	12.0	16.8	16.4
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	335	1810	323	1798	744	1163	800	1150
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.27	0.09	0.27	0.13	0.13	0.20	0.20

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	↗	↗↘		↗	↗↘		↗	↘		↗	↘			
Volume (vph)	48	398	59	28	351	94	86	93	43	145	112	97		
Pedestrians														
Ped Button														
Pedestrian Timing (s)														
Free Right			No			No			No			No		
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120		
Volume Combined (vph)	48	457	0	28	445	0	86	136	0	145	209	0		
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.97	0.85	0.95	0.95	0.85	0.95	0.93	0.85		
Saturated Flow (vph)	1805	3548	0	1805	3503	0	1805	1810	0	1805	1768	0		
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00			
Protected Option Allowed		Yes			Yes			Yes			Yes			
Reference Time (s)	3.2	15.5	0.0	1.9	15.2	0.0	5.7	9.0	0.0	9.6	14.2	0.0		
Adj Reference Time (s)	8.0	19.5	0.0	8.0	19.2	0.0	9.7	13.0	0.0	13.6	18.2	0.0		
Permitted Option														
Adj Saturation A (vph)	120	1774		120	1751		120	1810		120	1768			
Reference Time A (s)	47.9	15.5		27.9	15.2		85.8	9.0		144.6	14.2			
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA			
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA			
Reference Time (s)		47.9			27.9			85.8			144.6			
Adj Reference Time (s)		51.9			31.9			89.8			148.6			
Split Option														
Ref Time Combined (s)	3.2	15.5		1.9	15.2		5.7	9.0		9.6	14.2			
Ref Time Seperate (s)	3.2	13.5		1.9	12.0		5.7	6.2		9.6	7.6			
Reference Time (s)	15.5	15.5		15.2	15.2		9.0	9.0		14.2	14.2			
Adj Reference Time (s)	19.5	19.5		19.2	19.2		13.0	13.0		18.2	18.2			
Summary														
	EB WB		NB SB		Combined									
Protected Option (s)	27.5		27.9											
Permitted Option (s)	51.9		148.6											
Split Option (s)	38.7		31.2											
Minimum (s)	27.5		27.9		55.4									
Right Turns														
Adj Reference Time (s)														
Cross Thru Ref Time (s)														
Oncoming Left Ref Time (s)														
Combined (s)														
Intersection Summary														
Intersection Capacity Utilization			46.1%			ICU Level of Service			A					
Reference Times and Phasing Options do not represent an optimized timing plan.														

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	398	59	28	351	94	86	93	43	145	112	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.95		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3509		1789	3465		1789	1794		1789	1753	
Flt Permitted	0.35	1.00		0.33	1.00		0.62	1.00		0.66	1.00	
Satd. Flow (perm)	654	3509		630	3465		1162	1794		1248	1753	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	433	64	30	382	102	93	101	47	158	122	105
RTOR Reduction (vph)	0	18	0	0	38	0	0	15	0	0	28	0
Lane Group Flow (vph)	52	479	0	30	446	0	93	133	0	158	199	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.5	14.5		14.5	14.5		40.1	40.1		40.1	40.1	
Effective Green, g (s)	14.5	14.5		14.5	14.5		40.1	40.1		40.1	40.1	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	813		146	803		744	1149		799	1123	
v/s Ratio Prot		c0.14			0.13			0.07			0.11	
v/s Ratio Perm	0.08			0.05			0.08			c0.13		
v/c Ratio	0.34	0.59		0.21	0.55		0.12	0.12		0.20	0.18	
Uniform Delay, d1	20.1	21.4		19.4	21.2		4.4	4.4		4.6	4.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	1.1		0.7	0.8		0.3	0.2		0.6	0.3	
Delay (s)	21.5	22.5		20.1	22.0		4.7	4.6		5.2	4.9	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		22.4			21.9			4.6			5.0	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	3	145	17	3	156	10
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	148	0	20	0	0	166
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.98	0.85	0.95	0.95
Saturated Flow (vph)	1619	0	1857	0	0	1811
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1857		0	126
Reference Time A (s)	164.5		1.3		0.0	158.5
Adj Saturation B (vph)	NA		1857		0	0
Reference Time B (s)	NA		1.3		18.4	19.0
Reference Time (s)			1.3			19.0
Adj Reference Time (s)			8.0			23.0
Split Option						
Ref Time Combined (s)	11.0		1.3		0.0	11.0
Ref Time Seperate (s)	0.2		1.1		10.4	0.6
Reference Time (s)	11.0		1.3		11.0	11.0
Adj Reference Time (s)	15.0		8.0		15.0	15.0
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		23.0			
Split Option (s)	15.0		23.0			
Minimum (s)	15.0		23.0		38.0	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			31.6%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	145	17	3	156	10
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	158	18	3	170	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	370	20			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	370	20			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	85			89	
cM capacity (veh/h)	563	1058			1594	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	161	22	180
Volume Left	3	0	170
Volume Right	158	3	0
cSH	1039	1700	1594
Volume to Capacity	0.15	0.01	0.11
Queue Length 95th (m)	4.2	0.0	2.7
Control Delay (s)	9.1	0.0	7.1
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	7.1
Approach LOS	A		

Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization		31.6%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	7	5	5	17	10	12
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	12	0	0	22	22	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.91	0.85	0.95	0.99	0.92	0.85
Saturated Flow (vph)	1729	0	0	1878	1745	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	115		0	420	1745	
Reference Time A (s)	12.5		0.0	6.3	1.5	
Adj Saturation B (vph)	NA		0	0	1745	
Reference Time B (s)	NA		8.3	9.4	1.5	
Reference Time (s)				6.3	1.5	
Adj Reference Time (s)				10.3	8.0	
Split Option						
Ref Time Combined (s)	0.8		0.0	1.4	1.5	
Ref Time Seperate (s)	0.5		0.3	1.1	0.7	
Reference Time (s)	0.8		1.4	1.4	1.5	
Adj Reference Time (s)	8.0		8.0	8.0	8.0	
Summary						
	EB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		10.3			
Split Option (s)	8.0		16.0			
Minimum (s)	8.0		10.3		18.3	

Right Turns	
Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary			
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	5	5	17	10	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	5	5	18	11	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					378	
pX, platoon unblocked						
vC, conflicting volume	47	17	24			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	47	17	24			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	960	1061	1591			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	13	24	24			
Volume Left	8	5	0			
Volume Right	5	0	13			
cSH	1000	1591	1700			
Volume to Capacity	0.01	0.00	0.01			
Queue Length 95th (m)	0.3	0.1	0.0			
Control Delay (s)	8.6	1.7	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.6	1.7	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization		15.2%		ICU Level of Service		A
Analysis Period (min)		15				

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	3	21	166	3	21	178
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	24	0	169	0	0	199
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	1.00	0.85	0.95	0.99
Saturated Flow (vph)	1640	0	1895	0	0	1890
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	109		1895		0	739
Reference Time A (s)	26.3		10.7		0.0	32.3
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			10.7			32.3
Adj Reference Time (s)			14.7			36.3
Split Option						
Ref Time Combined (s)	1.8		10.7		0.0	12.6
Ref Time Seperate (s)	0.2		10.5		1.4	11.2
Reference Time (s)	1.8		10.7		12.6	12.6
Adj Reference Time (s)	8.0		14.7		16.6	16.6
Summary	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		36.3			
Split Option (s)	8.0		31.3			
Minimum (s)	8.0		31.3		39.3	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						

Intersection Summary

Intersection Capacity Utilization 32.8% ICU Level of Service A
 Reference Times and Phasing Options do not represent an optimized timing plan.

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	21	166	3	21	178
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	23	180	3	23	193
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	421	182			184	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	421	182			184	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			98	
cM capacity (veh/h)	579	860			1391	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	26	184	216
Volume Left	3	0	23
Volume Right	23	3	0
cSH	811	1700	1391
Volume to Capacity	0.03	0.11	0.02
Queue Length 95th (m)	0.8	0.0	0.4
Control Delay (s)	9.6	0.0	0.9
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	0.9
Approach LOS	A		

Intersection Summary			
Average Delay		1.1	
Intersection Capacity Utilization		32.8%	ICU Level of Service A
Analysis Period (min)		15	

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	63	524	26	313	61	121	139	174
v/c Ratio	0.25	0.59	0.17	0.34	0.08	0.11	0.18	0.16
Control Delay	20.3	21.9	20.0	14.3	5.9	5.1	6.5	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	21.9	20.0	14.3	5.9	5.1	6.5	4.0
Queue Length 50th (m)	5.5	25.6	2.3	10.7	2.2	3.7	5.5	3.9
Queue Length 95th (m)	13.8	38.4	7.4	19.3	7.5	11.2	15.1	12.7
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	596	2072	363	2044	754	1139	791	1113
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.25	0.07	0.15	0.08	0.11	0.18	0.16

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	438	44	24	212	76	56	90	21	128	87	73
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right	No			No			No			No		
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	58	482	0	24	288	0	56	111	0	128	160	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.99	0.85	0.95	0.96	0.85	0.95	0.97	0.85	0.95	0.93	0.85
Saturated Flow (vph)	1805	3568	0	1805	3474	0	1805	1846	0	1805	1770	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00			0.00			0.00		
Protected Option Allowed	Yes			Yes			Yes			Yes		
Reference Time (s)	3.9	16.2	0.0	1.6	9.9	0.0	3.7	7.2	0.0	8.5	10.8	0.0
Adj Reference Time (s)	8.0	20.2	0.0	8.0	13.9	0.0	8.0	11.2	0.0	12.5	14.8	0.0
Permitted Option												
Adj Saturation A (vph)	120	1784		120	1737		120	1846		120	1770	
Reference Time A (s)	57.8	16.2		23.9	9.9		55.8	7.2		127.6	10.8	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		0	1770	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		16.5	10.8	
Reference Time (s)		57.8			23.9			55.8			16.5	
Adj Reference Time (s)		61.8			27.9			59.8			20.5	
Split Option												
Ref Time Combined (s)	3.9	16.2		1.6	9.9		3.7	7.2		8.5	10.8	
Ref Time Seperate (s)	3.9	14.7		1.6	7.3		3.7	5.9		8.5	5.9	
Reference Time (s)	16.2	16.2		9.9	9.9		7.2	7.2		10.8	10.8	
Adj Reference Time (s)	20.2	20.2		13.9	13.9		11.2	11.2		14.8	14.8	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	28.2		23.7									
Permitted Option (s)	61.8		59.8									
Split Option (s)	34.2		26.1									
Minimum (s)	28.2		23.7		51.9							
Right Turns												
Adj Reference Time (s)												
Cross Thru Ref Time (s)												
Oncoming Left Ref Time (s)												
Combined (s)												
Intersection Summary												
Intersection Capacity Utilization			43.3%				ICU Level of Service				A	
Reference Times and Phasing Options do not represent an optimized timing plan.												

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	438	44	24	212	76	56	90	21	128	87	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3529		1789	3436		1789	1830		1789	1755	
Flt Permitted	0.54	1.00		0.33	1.00		0.65	1.00		0.68	1.00	
Satd. Flow (perm)	1019	3529		620	3436		1219	1830		1279	1755	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	63	476	48	26	230	83	61	98	23	139	95	79
RTOR Reduction (vph)	0	13	0	0	61	0	0	8	0	0	27	0
Lane Group Flow (vph)	63	511	0	26	252	0	61	113	0	139	147	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.8	14.8		14.8	14.8		37.1	37.1		37.1	37.1	
Effective Green, g (s)	14.8	14.8		14.8	14.8		37.1	37.1		37.1	37.1	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.62	0.62		0.62	0.62	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	872		153	849		755	1133		792	1087	
v/s Ratio Prot		c0.14			0.07			0.06			0.08	
v/s Ratio Perm	0.06			0.04			0.05			c0.11		
v/c Ratio	0.25	0.59		0.17	0.30		0.08	0.10		0.18	0.14	
Uniform Delay, d1	18.1	19.9		17.7	18.3		4.6	4.6		4.9	4.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	1.0		0.5	0.2		0.2	0.2		0.5	0.3	
Delay (s)	18.6	20.9		18.3	18.5		4.8	4.8		5.4	5.0	
Level of Service	B	C		B	B		A	A		A	A	
Approach Delay (s)		20.6			18.5			4.8			5.2	
Approach LOS		C			B			A			A	

Intersection Summary

HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization
7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	148	33	7	120	16
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	148	0	40	0	0	136
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.97	0.85	0.95	0.96
Saturated Flow (vph)	1615	0	1850	0	0	1816
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1850		0	132
Reference Time A (s)	165.0		2.6		0.0	123.9
Adj Saturation B (vph)	NA		1850		0	0
Reference Time B (s)	NA		2.6		16.0	17.0
Reference Time (s)			2.6			17.0
Adj Reference Time (s)			8.0			21.0
Split Option						
Ref Time Combined (s)	11.0		2.6		0.0	9.0
Ref Time Seperate (s)	0.0		2.1		8.0	1.0
Reference Time (s)	11.0		2.6		9.0	9.0
Adj Reference Time (s)	15.0		8.0		13.0	13.0
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		21.0			
Split Option (s)	15.0		21.0			
Minimum (s)	15.0		21.0		36.0	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			30.0%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	148	33	7	120	16
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	161	36	8	130	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	318	40			43	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	318	40			43	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	84			92	
cM capacity (veh/h)	619	1032			1565	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	161	43	148
Volume Left	0	0	130
Volume Right	161	8	0
cSH	1032	1700	1565
Volume to Capacity	0.16	0.03	0.08
Queue Length 95th (m)	4.2	0.0	2.1
Control Delay (s)	9.1	0.0	6.7
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	6.7
Approach LOS	A		

Intersection Summary			
Average Delay		7.0	
Intersection Capacity Utilization		30.0%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	8	148	0	33	16	8
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	156	0	0	33	24	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.95	1.00	0.95	0.85
Saturated Flow (vph)	1625	0	0	1900	1805	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	108		0	1900	1805	
Reference Time A (s)	172.8		0.0	2.1	1.6	
Adj Saturation B (vph)	NA		0	1900	1805	
Reference Time B (s)	NA		0.0	2.1	1.6	
Reference Time (s)				2.1	1.6	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	11.5		0.0	2.1	1.6	
Ref Time Seperate (s)	0.6		0.0	2.1	1.1	
Reference Time (s)	11.5		2.1	2.1	1.6	
Adj Reference Time (s)	15.5		8.0	8.0	8.0	
Summary						
	EB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	15.5		16.0			
Minimum (s)	15.5		8.0		23.5	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization		19.6%		ICU Level of Service		A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	148	0	33	16	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	161	0	36	17	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	378					
pX, platoon unblocked						
vC, conflicting volume	58	22	26			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	58	22	26			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	85	100			
cM capacity (veh/h)	950	1055	1588			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	170	36	26
Volume Left	9	0	0
Volume Right	161	0	9
cSH	1049	1588	1700
Volume to Capacity	0.16	0.00	0.02
Queue Length 95th (m)	4.4	0.0	0.0
Control Delay (s)	9.1	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.1	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		6.7	
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	4	31	189	2	12	143
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	35	0	191	0	0	155
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1638	0	1897	0	0	1893
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	109		1897		0	889
Reference Time A (s)	38.5		12.1		0.0	20.9
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			12.1			20.9
Adj Reference Time (s)			16.1			24.9
Split Option						
Ref Time Combined (s)	2.6		12.1		0.0	9.8
Ref Time Seperate (s)	0.3		12.0		0.8	9.0
Reference Time (s)	2.6		12.1		9.8	9.8
Adj Reference Time (s)	8.0		16.1		13.8	13.8
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		24.9			
Split Option (s)	8.0		29.9			
Minimum (s)	8.0		24.9		32.9	

Right Turns	
Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary			
Intersection Capacity Utilization	27.4%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	4	31	189	2	12	143
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	34	205	2	13	155
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	388	207			208	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	388	207			208	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	96			99	
cM capacity (veh/h)	610	834			1363	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	208	168
Volume Left	4	0	13
Volume Right	34	2	0
cSH	800	1700	1363
Volume to Capacity	0.05	0.12	0.01
Queue Length 95th (m)	1.1	0.0	0.2
Control Delay (s)	9.7	0.0	0.7
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	0.7
Approach LOS	A		

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization	27.4%		ICU Level of Service A
Analysis Period (min)		15	

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBT	WBL	NBL	NBT	SBT
Lane Group Flow (vph)	9	9	9	14	7
v/c Ratio	0.01	0.05	0.01	0.01	0.00
Control Delay	0.0	26.6	1.0	0.7	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	26.6	1.0	0.7	1.0
Queue Length 50th (m)	0.0	0.9	0.0	0.0	0.0
Queue Length 95th (m)	0.0	5.0	0.8	0.8	0.7
Internal Link Dist (m)	294.4			190.0	82.5
Turn Bay Length (m)		45.0	35.0		
Base Capacity (vph)	2157	1037	1356	1609	1801
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.00	0.01	0.01	0.01	0.00

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗		
Volume (vph)	0	0	8	8	0	0	8	4	9	0	6	0	
Pedestrians													
Ped Button													
Pedestrian Timing (s)													
Free Right			No			No			No			No	
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120	
Volume Combined (vph)	0	8	0	8	0	0	8	13	0	0	6	0	
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Factor (vph)	0.95	0.85	0.85	0.95	1.00	0.85	0.95	0.90	0.85	0.95	1.00	0.85	
Saturated Flow (vph)	1805	3075	0	1805	3618	0	1805	1703	0	1805	1900	0	
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00		
Protected Option Allowed		Yes			Yes			Yes			Yes		
Reference Time (s)	0.0	0.3	0.0	0.5	0.0	0.0	0.5	0.9	0.0	0.0	0.4	0.0	
Adj Reference Time (s)	8.0	8.0	0.0	8.0	8.0	0.0	8.0	8.0	0.0	8.0	8.0	0.0	
Permitted Option													
Adj Saturation A (vph)	120	1537		120	1809		120	1703		120	1900		
Reference Time A (s)	0.0	0.3		8.0	0.0		8.0	0.9		0.0	0.4		
Adj Saturation B (vph)	0	3075		0	3618		0	1703		0	1900		
Reference Time B (s)	8.0	0.3		8.5	0.0		8.5	0.9		8.0	0.4		
Reference Time (s)		0.3			8.0			8.0			0.4		
Adj Reference Time (s)		8.0			12.0			12.0			8.0		
Split Option													
Ref Time Combined (s)	0.0	0.3		0.5	0.0		0.5	0.9		0.0	0.4		
Ref Time Seperate (s)	0.0	0.0		0.5	0.0		0.5	0.3		0.0	0.4		
Reference Time (s)	0.3	0.3		0.5	0.5		0.9	0.9		0.4	0.4		
Adj Reference Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0		
Summary													
	EB WB		NB SB		Combined								
Protected Option (s)	16.0		16.0										
Permitted Option (s)	12.0		12.0										
Split Option (s)	16.0		16.0										
Minimum (s)	12.0		12.0		24.0								
Right Turns													
Adj Reference Time (s)													
Cross Thru Ref Time (s)													
Oncoming Left Ref Time (s)													
Combined (s)													
Intersection Summary													
Intersection Capacity Utilization	20.0%		ICU Level of Service						A				
Reference Times and Phasing Options do not represent an optimized timing plan.													

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Volume (vph)	0	0	8	8	0	0	8	4	9	0	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0			4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00			1.00	1.00			1.00	
Frt		0.85		1.00			1.00	0.89			1.00	
Flt Protected		1.00		0.95			0.95	1.00			1.00	
Satd. Flow (prot)		3042		1789			1789	1682			1883	
Flt Permitted		1.00		1.00			0.75	1.00			1.00	
Satd. Flow (perm)		3042		1883			1418	1682			1883	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	9	9	0	0	9	4	10	0	7	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	9	0	0	9	13	0	0	7	0
Turn Type	Perm	NA		Perm			Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		1.2		1.2			54.3	54.3			54.3	
Effective Green, g (s)		1.2		1.2			54.3	54.3			54.3	
Actuated g/C Ratio		0.02		0.02			0.86	0.86			0.86	
Clearance Time (s)		4.0		4.0			4.0	4.0			4.0	
Vehicle Extension (s)		3.0		3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)		57		36			1213	1438			1610	
v/s Ratio Prot		0.00						c0.01			0.00	
v/s Ratio Perm				c0.00			0.01					
v/c Ratio		0.00		0.25			0.01	0.01			0.00	
Uniform Delay, d1		30.6		30.7			0.7	0.7			0.7	
Progression Factor		1.00		1.00			1.00	1.00			1.00	
Incremental Delay, d2		0.0		3.6			0.0	0.0			0.0	
Delay (s)		30.6		34.3			0.7	0.7			0.7	
Level of Service		C		C			A	A			A	
Approach Delay (s)		30.6			34.3			0.7			0.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM Average Control Delay			12.6				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.01									
Actuated Cycle Length (s)			63.5				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			20.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c	Critical Lane Group											

Intersection Capacity Utilization

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	2	0	0	2	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	2	0	0	0	0	2
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	1.00	0.85	0.95	0.95
Saturated Flow (vph)	1615	0	1900	0	0	1805
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1900		0	1023
Reference Time A (s)	2.2		0.0		0.0	0.2
Adj Saturation B (vph)	NA		1900		0	0
Reference Time B (s)	NA		0.0		8.1	8.1
Reference Time (s)			0.0			0.2
Adj Reference Time (s)			8.0			8.0
Split Option						
Ref Time Combined (s)	0.1		0.0		0.0	0.1
Ref Time Seperate (s)	0.0		0.0		0.1	0.0
Reference Time (s)	0.1		0.0		0.1	0.1
Adj Reference Time (s)	8.0		0.0		8.0	8.0
Summary	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	8.0		8.0			
Minimum (s)	8.0		8.0		16.0	

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	2	0	0	2	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	0	0	2	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	4	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	4	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1016	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	0	2
Volume Left	0	0	2
Volume Right	2	0	0
cSH	1085	1700	1623
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	8.3	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.3	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay		7.8	
Intersection Capacity Utilization		13.3%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Volume (vph)	0	0	0	0	0	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	0	0	0	0	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	1805	0	0	1900	1900	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	120		0	1900	1900	
Reference Time A (s)	0.0		0.0	0.0	0.0	
Adj Saturation B (vph)	NA		0	1900	1900	
Reference Time B (s)	NA		0.0	0.0	0.0	
Reference Time (s)				0.0	0.0	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	0.0		0.0	0.0	0.0	
Ref Time Seperate (s)	0.0		0.0	0.0	0.0	
Reference Time (s)	0.0		0.0	0.0	0.0	
Adj Reference Time (s)	0.0		0.0	0.0	0.0	
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	0.0		0.0			
Minimum (s)	0.0		0.0		0.0	

Right Turns	
Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary

Intersection Capacity Utilization 0.0% ICU Level of Service A
 Reference Times and Phasing Options do not represent an optimized timing plan.

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	378					
pX, platoon unblocked						
vC, conflicting volume	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	0.0%			ICU Level of Service	A	
Analysis Period (min)	15					

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	3	21	0	3	21	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	24	0	3	0	0	21
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.85	0.85	0.95	0.95
Saturated Flow (vph)	1640	0	1615	0	0	1805
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	109		1615		0	120
Reference Time A (s)	26.3		0.2		0.0	20.9
Adj Saturation B (vph)	NA		1615		0	0
Reference Time B (s)	NA		0.2		9.4	9.4
Reference Time (s)			0.2			9.4
Adj Reference Time (s)			8.0			13.4
Split Option						
Ref Time Combined (s)	1.8		0.2		0.0	1.4
Ref Time Seperate (s)	0.2		0.0		1.4	0.0
Reference Time (s)	1.8		0.2		1.4	1.4
Adj Reference Time (s)	8.0		8.0		8.0	8.0
Summary						
	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		13.4			
Split Option (s)	8.0		16.0			
Minimum (s)	8.0		13.4		21.4	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			17.8%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	21	0	3	21	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	23	0	3	23	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	47	2			3	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	47	2			3	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			99	
cM capacity (veh/h)	949	1083			1619	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	26	3	23
Volume Left	3	0	23
Volume Right	23	3	0
cSH	1064	1700	1619
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.6	0.0	0.3
Control Delay (s)	8.5	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	7.3
Approach LOS	A		

Intersection Summary			
Average Delay		7.4	
Intersection Capacity Utilization	17.8%	ICU Level of Service	A
Analysis Period (min)		15	

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBT	WBL	NBL	NBT	SBT
Lane Group Flow (vph)	7	3	10	24	3
v/c Ratio	0.01	0.02	0.01	0.01	0.00
Control Delay	0.0	26.7	0.9	0.6	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	26.7	0.9	0.6	1.0
Queue Length 50th (m)	0.0	0.3	0.0	0.0	0.0
Queue Length 95th (m)	0.0	2.6	0.8	1.1	0.4
Internal Link Dist (m)	294.4			190.0	82.5
Turn Bay Length (m)		45.0	35.0		
Base Capacity (vph)	2164	1039	1364	1614	1804
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.00	0.00	0.01	0.01	0.00

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	↶	↶↷		↶	↶↷		↶	↷		↶	↷			
Volume (vph)	0	0	6	3	0	0	9	6	16	0	3	0		
Pedestrians														
Ped Button														
Pedestrian Timing (s)														
Free Right	No			No			No			No				
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120		
Volume Combined (vph)	0	6	0	3	0	0	9	22	0	0	3	0		
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Turning Factor (vph)	0.95	0.85	0.85	0.95	1.00	0.85	0.95	0.89	0.85	0.95	1.00	0.85		
Saturated Flow (vph)	1805	3075	0	1805	3618	0	1805	1693	0	1805	1900	0		
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Pedestrian Frequency (%)	0.00			0.00			0.00			0.00				
Protected Option Allowed	Yes			Yes			Yes			Yes				
Reference Time (s)	0.0	0.2	0.0	0.2	0.0	0.0	0.6	1.6	0.0	0.0	0.2	0.0		
Adj Reference Time (s)	8.0	8.0	0.0	8.0	8.0	0.0	8.0	8.0	0.0	8.0	8.0	0.0		
Permitted Option														
Adj Saturation A (vph)	120	1537		120	1809		120	1693		120	1900			
Reference Time A (s)	0.0	0.2		3.0	0.0		9.0	1.6		0.0	0.2			
Adj Saturation B (vph)	0	3075		0	3618		0	1693		0	1900			
Reference Time B (s)	8.0	0.2		8.2	0.0		8.6	1.6		8.0	0.2			
Reference Time (s)		0.2			3.0			8.6			0.2			
Adj Reference Time (s)		8.0			8.0			12.6			8.0			
Split Option														
Ref Time Combined (s)	0.0	0.2		0.2	0.0		0.6	1.6		0.0	0.2			
Ref Time Seperate (s)	0.0	0.0		0.2	0.0		0.6	0.4		0.0	0.2			
Reference Time (s)	0.2	0.2		0.2	0.2		1.6	1.6		0.2	0.2			
Adj Reference Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0			
Summary														
	EB WB		NB SB		Combined									
Protected Option (s)	16.0		16.0											
Permitted Option (s)	8.0		12.6											
Split Option (s)	16.0		16.0											
Minimum (s)	8.0		12.6		20.6									
Right Turns														
Adj Reference Time (s)														
Cross Thru Ref Time (s)														
Oncoming Left Ref Time (s)														
Combined (s)														
Intersection Summary														
Intersection Capacity Utilization			17.2%			ICU Level of Service			A					
Reference Times and Phasing Options do not represent an optimized timing plan.														

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	6	3	0	0	9	6	16	0	3	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0			4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00			1.00	1.00			1.00	
Frt		0.85		1.00			1.00	0.89			1.00	
Flt Protected		1.00		0.95			0.95	1.00			1.00	
Satd. Flow (prot)		3042		1789			1789	1683			1883	
Flt Permitted		1.00		1.00			0.76	1.00			1.00	
Satd. Flow (perm)		3042		1883			1424	1683			1883	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	7	3	0	0	10	7	17	0	3	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	0	0	3	0	0	10	22	0	0	3	0
Turn Type	Perm	NA		Perm			Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		1.1		1.1			54.2	54.2			54.2	
Effective Green, g (s)		1.1		1.1			54.2	54.2			54.2	
Actuated g/C Ratio		0.02		0.02			0.86	0.86			0.86	
Clearance Time (s)		4.0		4.0			4.0	4.0			4.0	
Vehicle Extension (s)		3.0		3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)		53		33			1219	1441			1612	
v/s Ratio Prot		0.00						c0.01			0.00	
v/s Ratio Perm				c0.00			0.01					
v/c Ratio		0.00		0.09			0.01	0.01			0.00	
Uniform Delay, d1		30.6		30.6			0.7	0.7			0.7	
Progression Factor		1.00		1.00			1.00	1.00			1.00	
Incremental Delay, d2		0.0		1.2			0.0	0.0			0.0	
Delay (s)		30.6		31.8			0.7	0.7			0.7	
Level of Service		C		C			A	A			A	
Approach Delay (s)		30.6			31.8			0.7			0.7	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.02		
Actuated Cycle Length (s)	63.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	2	0	0	4	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	2	0	0	0	0	4
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	1.00	0.85	0.95	0.95
Saturated Flow (vph)	1615	0	1900	0	0	1805
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1900		0	1023
Reference Time A (s)	2.2		0.0		0.0	0.5
Adj Saturation B (vph)	NA		1900		0	0
Reference Time B (s)	NA		0.0		8.3	8.3
Reference Time (s)			0.0			0.5
Adj Reference Time (s)			8.0			8.0
Split Option						
Ref Time Combined (s)	0.1		0.0		0.0	0.3
Ref Time Seperate (s)	0.0		0.0		0.3	0.0
Reference Time (s)	0.1		0.0		0.3	0.3
Adj Reference Time (s)	8.0		0.0		8.0	8.0
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	8.0		8.0			
Minimum (s)	8.0		8.0		16.0	

Right Turns	
Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	2	0	0	4	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	0	0	4	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	9	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	9	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1009	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	0	4
Volume Left	0	0	4
Volume Right	2	0	0
cSH	1085	1700	1623
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	8.3	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.3	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization		13.3%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			T	T	
Volume (vph)	0	2	0	0	0	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right	No				No	
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	2	0	0	0	0	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	1615	0	0	1900	1900	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00		0.00	
Protected Option Allowed	No		No		No	
Reference Time (s)	0.0				0.0	
Adj Reference Time (s)	0.0				0.0	
Permitted Option						
Adj Saturation A (vph)	108		0	1900	1900	
Reference Time A (s)	2.2		0.0	0.0	0.0	
Adj Saturation B (vph)	NA		0	1900	1900	
Reference Time B (s)	NA		0.0	0.0	0.0	
Reference Time (s)			0.0		0.0	
Adj Reference Time (s)			8.0		8.0	
Split Option						
Ref Time Combined (s)	0.1		0.0	0.0	0.0	
Ref Time Seperate (s)	0.0		0.0	0.0	0.0	
Reference Time (s)	0.1		0.0	0.0	0.0	
Adj Reference Time (s)	8.0		0.0	0.0	0.0	
Summary	EB		NB SB	Combined		
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	8.0		0.0			
Minimum (s)	8.0		0.0	8.0		

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	2	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					378	
pX, platoon unblocked						
vC, conflicting volume	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	0	0
Volume Left	0	0	0
Volume Right	2	0	0
cSH	1085	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	8.3	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.3	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		8.3	
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Capacity Utilization
10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	4	31	0	2	12	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	35	0	2	0	0	12
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.85	0.85	0.95	0.95
Saturated Flow (vph)	1638	0	1615	0	0	1805
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	109		1615		0	120
Reference Time A (s)	38.5		0.1		0.0	12.0
Adj Saturation B (vph)	NA		1615		0	0
Reference Time B (s)	NA		0.1		8.8	8.8
Reference Time (s)			0.1			8.8
Adj Reference Time (s)			8.0			12.8
Split Option						
Ref Time Combined (s)	2.6		0.1		0.0	0.8
Ref Time Seperate (s)	0.3		0.0		0.8	0.0
Reference Time (s)	2.6		0.1		0.8	0.8
Adj Reference Time (s)	8.0		8.0		8.0	8.0
Summary	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		12.8			
Split Option (s)	8.0		16.0			
Minimum (s)	8.0		12.8		20.8	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						

Intersection Summary

Intersection Capacity Utilization 17.3% ICU Level of Service A
Reference Times and Phasing Options do not represent an optimized timing plan.

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	4	31	0	2	12	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	34	0	2	13	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	27	1			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	27	1			2	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	980	1083			1620	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	2	13
Volume Left	4	0	13
Volume Right	34	2	0
cSH	1071	1700	1620
Volume to Capacity	0.04	0.00	0.01
Queue Length 95th (m)	0.8	0.0	0.2
Control Delay (s)	8.5	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay		7.8	
Intersection Capacity Utilization		17.3%	ICU Level of Service A
Analysis Period (min)		15	

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	468	22	464	82	129	152	212
v/c Ratio	0.33	0.59	0.15	0.57	0.11	0.11	0.19	0.18
Control Delay	25.7	23.1	20.9	21.4	5.4	4.0	5.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	23.1	20.9	21.4	5.4	4.0	5.8	3.6
Queue Length 50th (m)	4.7	23.3	2.0	21.3	2.9	3.3	5.7	4.7
Queue Length 95th (m)	12.9	35.5	6.9	33.4	8.8	10.1	15.0	13.8
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	373	1930	369	1915	759	1176	819	1158
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.24	0.06	0.24	0.11	0.11	0.19	0.18

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↗	↗↘		↗	↗↘		↗	↘		↗	↘		
Volume (vph)	46	382	49	20	337	90	75	86	33	140	102	93	
Pedestrians													
Ped Button													
Pedestrian Timing (s)													
Free Right			No			No			No			No	
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120	
Volume Combined (vph)	46	431	0	20	427	0	75	119	0	140	195	0	
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.97	0.85	0.95	0.96	0.85	0.95	0.93	0.85	
Saturated Flow (vph)	1805	3556	0	1805	3503	0	1805	1821	0	1805	1764	0	
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00		
Protected Option Allowed		Yes			Yes			Yes			Yes		
Reference Time (s)	3.1	14.5	0.0	1.3	14.6	0.0	5.0	7.8	0.0	9.3	13.3	0.0	
Adj Reference Time (s)	8.0	18.5	0.0	8.0	18.6	0.0	9.0	11.8	0.0	13.3	17.3	0.0	
Permitted Option													
Adj Saturation A (vph)	120	1778		120	1752		120	1821		120	1764		
Reference Time A (s)	45.9	14.5		19.9	14.6		74.8	7.8		139.6	13.3		
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		0	1764		
Reference Time B (s)	NA	NA		NA	NA		NA	NA		17.3	13.3		
Reference Time (s)		45.9			19.9			74.8			17.3		
Adj Reference Time (s)		49.9			23.9			78.8			21.3		
Split Option													
Ref Time Combined (s)	3.1	14.5		1.3	14.6		5.0	7.8		9.3	13.3		
Ref Time Seperate (s)	3.1	12.9		1.3	11.5		5.0	5.7		9.3	6.9		
Reference Time (s)	14.5	14.5		14.6	14.6		7.8	7.8		13.3	13.3		
Adj Reference Time (s)	18.5	18.5		18.6	18.6		11.8	11.8		17.3	17.3		
Summary													
	EB WB		NB SB		Combined								
Protected Option (s)	26.6		26.3										
Permitted Option (s)	49.9		78.8										
Split Option (s)	37.2		29.1										
Minimum (s)	26.6		26.3		52.9								
Right Turns													
Adj Reference Time (s)													
Cross Thru Ref Time (s)													
Oncoming Left Ref Time (s)													
Combined (s)													
Intersection Summary													
Intersection Capacity Utilization			44.1%		ICU Level of Service						A		
Reference Times and Phasing Options do not represent an optimized timing plan.													

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	382	49	20	337	90	75	86	33	140	102	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.96		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3518		1789	3465		1789	1805		1789	1749	
Flt Permitted	0.36	1.00		0.36	1.00		0.63	1.00		0.67	1.00	
Satd. Flow (perm)	684	3518		677	3465		1178	1805		1270	1749	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	415	53	22	366	98	82	93	36	152	111	101
RTOR Reduction (vph)	0	16	0	0	40	0	0	12	0	0	28	0
Lane Group Flow (vph)	50	452	0	22	424	0	82	117	0	152	184	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.5	13.5		13.5	13.5		39.1	39.1		39.1	39.1	
Effective Green, g (s)	13.5	13.5		13.5	13.5		39.1	39.1		39.1	39.1	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.65	0.65		0.65	0.65	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	152	784		151	772		760	1165		819	1128	
v/s Ratio Prot		c0.13			0.12			0.06			0.10	
v/s Ratio Perm	0.07			0.03			0.07			c0.12		
v/c Ratio	0.33	0.58		0.15	0.55		0.11	0.10		0.19	0.16	
Uniform Delay, d1	19.8	21.0		18.9	20.9		4.1	4.1		4.3	4.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	1.0		0.4	0.8		0.3	0.2		0.5	0.3	
Delay (s)	21.0	22.0		19.4	21.7		4.4	4.3		4.8	4.6	
Level of Service	C	C		B	C		A	A		A	A	
Approach Delay (s)		21.9			21.6			4.3			4.7	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization
7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	3	138	16	3	148	9
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	141	0	19	0	0	157
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.98	0.85	0.95	0.95
Saturated Flow (vph)	1619	0	1855	0	0	1810
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1855		0	125
Reference Time A (s)	156.7		1.2		0.0	150.2
Adj Saturation B (vph)	NA		1855		0	0
Reference Time B (s)	NA		1.2		17.8	18.4
Reference Time (s)			1.2			18.4
Adj Reference Time (s)			8.0			22.4
Split Option						
Ref Time Combined (s)	10.4		1.2		0.0	10.4
Ref Time Seperate (s)	0.2		1.0		9.8	0.6
Reference Time (s)	10.4		1.2		10.4	10.4
Adj Reference Time (s)	14.4		8.0		14.4	14.4
Summary	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		22.4			
Split Option (s)	14.4		22.4			
Minimum (s)	14.4		22.4		36.9	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			30.7%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	138	16	3	148	9
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	150	17	3	161	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	351	19			21	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	351	19			21	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	86			90	
cM capacity (veh/h)	582	1059			1595	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	153	21	171
Volume Left	3	0	161
Volume Right	150	3	0
cSH	1041	1700	1595
Volume to Capacity	0.15	0.01	0.10
Queue Length 95th (m)	3.9	0.0	2.6
Control Delay (s)	9.1	0.0	7.1
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	7.1
Approach LOS	A		

Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization		30.7%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			T	T	
Volume (vph)	6	5	0	0	9	12
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	11	0	0	0	21	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.91	0.85	0.95	1.00	0.91	0.85
Saturated Flow (vph)	1722	0	0	1900	1737	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	115		0	1900	1737	
Reference Time A (s)	11.5		0.0	0.0	1.5	
Adj Saturation B (vph)	NA		0	1900	1737	
Reference Time B (s)	NA		0.0	0.0	1.5	
Reference Time (s)				0.0	1.5	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	0.8		0.0	0.0	1.5	
Ref Time Seperate (s)	0.4		0.0	0.0	0.6	
Reference Time (s)	0.8		0.0	0.0	1.5	
Adj Reference Time (s)	8.0		0.0	0.0	8.0	
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	8.0		8.0			
Minimum (s)	8.0		8.0		16.0	

Right Turns	
Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	6	5	0	0	9	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	5	0	0	10	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					378	
pX, platoon unblocked						
vC, conflicting volume	16	16	23			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16	16	23			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	1002	1063	1592			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	12	0	23			
Volume Left	7	0	0			
Volume Right	5	0	13			
cSH	1029	1700	1700			
Volume to Capacity	0.01	0.00	0.01			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	8.5	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.5	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.9			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			15			

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	160	0	0	171
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	0	160	0	0	171
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	1900	0	0	1900
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	120		1900		0	1900
Reference Time A (s)	0.0		10.1		0.0	10.8
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			10.1			10.8
Adj Reference Time (s)			14.1			14.8
Split Option						
Ref Time Combined (s)	0.0		10.1		0.0	10.8
Ref Time Seperate (s)	0.0		10.1		0.0	10.8
Reference Time (s)	0.0		10.1		10.8	10.8
Adj Reference Time (s)	0.0		14.1		14.8	14.8
Summary						
	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		14.8			
Split Option (s)	0.0		28.9			
Minimum (s)	0.0		14.8		14.8	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			12.3%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	160	0	0	171
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	174	0	0	186
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	360	174			174	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	360	174			174	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	639	870			1403	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	174	186
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1403
Volume to Capacity	0.00	0.10	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay			0.0
Intersection Capacity Utilization	12.3%	ICU Level of Service	A
Analysis Period (min)			15

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	498	22	302	49	110	134	164
v/c Ratio	0.24	0.58	0.14	0.34	0.06	0.10	0.17	0.15
Control Delay	20.4	22.1	19.4	14.3	5.6	4.8	6.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	22.1	19.4	14.3	5.6	4.8	6.2	3.7
Queue Length 50th (m)	5.3	24.2	1.9	10.2	1.7	3.2	5.1	3.3
Queue Length 95th (m)	13.5	36.6	6.7	18.7	6.2	10.0	14.1	11.4
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	617	2100	387	2067	770	1152	809	1124
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.24	0.06	0.15	0.06	0.10	0.17	0.15

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗			
Volume (vph)	56	421	37	20	204	74	45	81	20	123	81	70		
Pedestrians														
Ped Button														
Pedestrian Timing (s)														
Free Right			No			No			No			No		
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120		
Volume Combined (vph)	56	458	0	20	278	0	45	101	0	123	151	0		
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Turning Factor (vph)	0.95	0.99	0.85	0.95	0.96	0.85	0.95	0.97	0.85	0.95	0.93	0.85		
Saturated Flow (vph)	1805	3574	0	1805	3473	0	1805	1844	0	1805	1768	0		
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00			
Protected Option Allowed		Yes			Yes			Yes			Yes			
Reference Time (s)	3.7	15.4	0.0	1.3	9.6	0.0	3.0	6.6	0.0	8.2	10.2	0.0		
Adj Reference Time (s)	8.0	19.4	0.0	8.0	13.6	0.0	8.0	10.6	0.0	12.2	14.2	0.0		
Permitted Option														
Adj Saturation A (vph)	120	1787		120	1737		120	1844		120	1768			
Reference Time A (s)	55.8	15.4		19.9	9.6		44.9	6.6		122.7	10.2			
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		0	1768			
Reference Time B (s)	NA	NA		NA	NA		NA	NA		16.2	10.2			
Reference Time (s)		55.8			19.9			44.9			16.2			
Adj Reference Time (s)		59.8			23.9			48.9			20.2			
Split Option														
Ref Time Combined (s)	3.7	15.4		1.3	9.6		3.0	6.6		8.2	10.2			
Ref Time Seperate (s)	3.7	14.1		1.3	7.0		3.0	5.3		8.2	5.5			
Reference Time (s)	15.4	15.4		9.6	9.6		6.6	6.6		10.2	10.2			
Adj Reference Time (s)	19.4	19.4		13.6	13.6		10.6	10.6		14.2	14.2			
Summary														
	EB WB		NB SB		Combined									
Protected Option (s)	27.4		22.8											
Permitted Option (s)	59.8		48.9											
Split Option (s)	33.0		24.8											
Minimum (s)	27.4		22.8		50.1									
Right Turns														
Adj Reference Time (s)														
Cross Thru Ref Time (s)														
Oncoming Left Ref Time (s)														
Combined (s)														
Intersection Summary														
Intersection Capacity Utilization			41.8%			ICU Level of Service			A					
Reference Times and Phasing Options do not represent an optimized timing plan.														

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	56	421	37	20	204	74	45	81	20	123	81	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3535		1789	3436		1789	1827		1789	1753	
Flt Permitted	0.55	1.00		0.35	1.00		0.65	1.00		0.69	1.00	
Satd. Flow (perm)	1041	3535		653	3436		1230	1827		1292	1753	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	458	40	22	222	80	49	88	22	134	88	76
RTOR Reduction (vph)	0	11	0	0	61	0	0	8	0	0	27	0
Lane Group Flow (vph)	61	487	0	22	241	0	49	102	0	134	137	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.1	14.1		14.1	14.1		37.1	37.1		37.1	37.1	
Effective Green, g (s)	14.1	14.1		14.1	14.1		37.1	37.1		37.1	37.1	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.63	0.63		0.63	0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	248	842		156	818		771	1145		810	1099	
v/s Ratio Prot		c0.14			0.07			0.06			0.08	
v/s Ratio Perm	0.06			0.03			0.04			c0.10		
v/c Ratio	0.25	0.58		0.14	0.29		0.06	0.09		0.17	0.12	
Uniform Delay, d1	18.2	19.9		17.8	18.5		4.3	4.4		4.6	4.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	1.0		0.4	0.2		0.2	0.2		0.4	0.2	
Delay (s)	18.8	20.9		18.2	18.7		4.5	4.5		5.0	4.7	
Level of Service	B	C		B	B		A	A		A	A	
Approach Delay (s)		20.7			18.6			4.5			4.9	
Approach LOS		C			B			A			A	

Intersection Summary

HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization
7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	141	32	0	111	15
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	141	0	32	0	0	126
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	1.00	0.85	0.95	0.96
Saturated Flow (vph)	1615	0	1900	0	0	1816
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1900		0	132
Reference Time A (s)	157.2		2.0		0.0	114.7
Adj Saturation B (vph)	NA		1900		0	0
Reference Time B (s)	NA		2.0		15.4	16.3
Reference Time (s)			2.0			16.3
Adj Reference Time (s)			8.0			20.3
Split Option						
Ref Time Combined (s)	10.5		2.0		0.0	8.3
Ref Time Seperate (s)	0.0		2.0		7.4	0.9
Reference Time (s)	10.5		2.0		8.3	8.3
Adj Reference Time (s)	14.5		8.0		12.3	12.3
Summary						
	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		20.3			
Split Option (s)	14.5		20.3			
Minimum (s)	14.5		20.3		34.8	

Right Turns	
Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary			
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	141	32	0	111	15
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	153	35	0	121	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	292	35			35	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	292	35			35	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	85			92	
cM capacity (veh/h)	645	1038			1577	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	153	35	137
Volume Left	0	0	121
Volume Right	153	0	0
cSH	1038	1700	1577
Volume to Capacity	0.15	0.02	0.08
Queue Length 95th (m)	3.9	0.0	1.9
Control Delay (s)	9.1	0.0	6.7
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	6.7
Approach LOS	A		

Intersection Summary			
Average Delay		7.1	
Intersection Capacity Utilization		29.0%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	7	141	0	32	15	7
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	148	0	0	32	22	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.95	1.00	0.95	0.85
Saturated Flow (vph)	1625	0	0	1900	1809	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	108		0	1900	1809	
Reference Time A (s)	164.0		0.0	2.0	1.5	
Adj Saturation B (vph)	NA		0	1900	1809	
Reference Time B (s)	NA		0.0	2.0	1.5	
Reference Time (s)				2.0	1.5	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	10.9		0.0	2.0	1.5	
Ref Time Seperate (s)	0.5		0.0	2.0	1.0	
Reference Time (s)	10.9		2.0	2.0	1.5	
Adj Reference Time (s)	14.9		8.0	8.0	8.0	
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	14.9		16.0			
Minimum (s)	14.9		8.0		22.9	

Right Turns	
Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary			
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	141	0	32	15	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	153	0	35	16	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					378	
pX, platoon unblocked						
vC, conflicting volume	55	20	24			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	55	20	24			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	86	100			
cM capacity (veh/h)	953	1058	1591			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	161	35	24			
Volume Left	8	0	0			
Volume Right	153	0	8			
cSH	1052	1591	1700			
Volume to Capacity	0.15	0.00	0.01			
Queue Length 95th (m)	4.1	0.0	0.0			
Control Delay (s)	9.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			6.6			
Intersection Capacity Utilization		19.1%		ICU Level of Service		A
Analysis Period (min)			15			

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	182	0	0	138
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	0	182	0	0	138
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	1900	0	0	1900
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	120		1900		0	1900
Reference Time A (s)	0.0		11.5		0.0	8.7
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			11.5			8.7
Adj Reference Time (s)			15.5			12.7
Split Option						
Ref Time Combined (s)	0.0		11.5		0.0	8.7
Ref Time Seperate (s)	0.0		11.5		0.0	8.7
Reference Time (s)	0.0		11.5		8.7	8.7
Adj Reference Time (s)	0.0		15.5		12.7	12.7
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		15.5			
Split Option (s)	0.0		28.2			
Minimum (s)	0.0		15.5		15.5	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			12.9%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	182	0	0	138
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	198	0	0	150
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	348	198			198	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	348	198			198	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	649	843			1375	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	198	150
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1375
Volume to Capacity	0.00	0.12	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		12.9%	ICU Level of Service A
Analysis Period (min)		15	

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	631	27	381	62	120	170	209
v/c Ratio	0.31	0.63	0.19	0.38	0.09	0.11	0.22	0.19
Control Delay	21.3	22.6	20.6	15.2	7.4	6.8	8.2	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	22.6	20.6	15.2	7.4	6.8	8.2	5.2
Queue Length 50th (m)	7.1	33.2	2.4	14.7	2.8	5.1	8.2	6.1
Queue Length 95th (m)	16.6	47.5	7.9	24.2	9.2	14.3	21.8	18.2
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	475	1892	265	1868	704	1114	763	1074
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.33	0.10	0.20	0.09	0.11	0.22	0.19

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↗	↕		↖	↕		↗	↕		↖	↕		
Volume (vph)	71	534	47	25	258	93	57	103	7	156	103	89	
Pedestrians													
Ped Button													
Pedestrian Timing (s)													
Free Right			No			No			No			No	
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120	
Volume Combined (vph)	71	581	0	25	351	0	57	110	0	156	192	0	
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Factor (vph)	0.95	0.99	0.85	0.95	0.96	0.85	0.95	0.99	0.85	0.95	0.93	0.85	
Saturated Flow (vph)	1805	3574	0	1805	3474	0	1805	1882	0	1805	1768	0	
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00		
Protected Option Allowed		Yes			Yes			Yes			Yes		
Reference Time (s)	4.7	19.5	0.0	1.7	12.1	0.0	3.8	7.0	0.0	10.4	13.0	0.0	
Adj Reference Time (s)	8.7	23.5	0.0	8.0	16.1	0.0	8.0	11.0	0.0	14.4	17.0	0.0	
Permitted Option													
Adj Saturation A (vph)	120	1787		120	1737		120	1882		120	1768		
Reference Time A (s)	70.8	19.5		24.9	12.1		56.8	7.0		155.6	13.0		
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		0	1768		
Reference Time B (s)	NA	NA		NA	NA		NA	NA		18.4	13.0		
Reference Time (s)		70.8			24.9			56.8			18.4		
Adj Reference Time (s)		74.8			28.9			60.8			22.4		
Split Option													
Ref Time Combined (s)	4.7	19.5		1.7	12.1		3.8	7.0		10.4	13.0		
Ref Time Seperate (s)	4.7	17.9		1.7	8.9		3.8	6.6		10.4	7.0		
Reference Time (s)	19.5	19.5		12.1	12.1		7.0	7.0		13.0	13.0		
Adj Reference Time (s)	23.5	23.5		16.1	16.1		11.0	11.0		17.0	17.0		
Summary													
	EB WB		NB SB		Combined								
Protected Option (s)	31.5		25.4										
Permitted Option (s)	74.8		60.8										
Split Option (s)	39.6		28.0										
Minimum (s)	31.5		25.4		56.9								
Right Turns													
Adj Reference Time (s)													
Cross Thru Ref Time (s)													
Oncoming Left Ref Time (s)													
Combined (s)													
Intersection Summary													
Intersection Capacity Utilization			47.4%		ICU Level of Service						A		
Reference Times and Phasing Options do not represent an optimized timing plan.													

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	534	47	25	258	93	57	103	7	156	103	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.99		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3535		1789	3436		1789	1865		1789	1752	
Flt Permitted	0.47	1.00		0.26	1.00		0.63	1.00		0.68	1.00	
Satd. Flow (perm)	891	3535		497	3436		1181	1865		1281	1752	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	580	51	27	280	101	62	112	8	170	112	97
RTOR Reduction (vph)	0	10	0	0	57	0	0	2	0	0	30	0
Lane Group Flow (vph)	77	621	0	27	324	0	62	118	0	170	179	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.9	17.9		17.9	17.9		38.2	38.2		38.2	38.2	
Effective Green, g (s)	17.9	17.9		17.9	17.9		38.2	38.2		38.2	38.2	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.60	0.60		0.60	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	249	987		139	960		704	1111		763	1044	
v/s Ratio Prot		c0.18			0.09			0.06			0.10	
v/s Ratio Perm	0.09			0.05			0.05			c0.13		
v/c Ratio	0.31	0.63		0.19	0.34		0.09	0.11		0.22	0.17	
Uniform Delay, d1	18.2	20.2		17.6	18.4		5.5	5.6		6.0	5.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.3		0.7	0.2		0.2	0.2		0.7	0.4	
Delay (s)	18.9	21.5		18.3	18.6		5.8	5.8		6.7	6.2	
Level of Service	B	C		B	B		A	A		A	A	
Approach Delay (s)		21.2			18.6			5.8			6.4	
Approach LOS		C			B			A			A	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization
7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	178	40	8	141	19
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	178	0	48	0	0	160
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.97	0.85	0.95	0.96
Saturated Flow (vph)	1615	0	1853	0	0	1816
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1853		0	132
Reference Time A (s)	198.4		3.1		0.0	145.7
Adj Saturation B (vph)	NA		1853		0	0
Reference Time B (s)	NA		3.1		17.4	18.6
Reference Time (s)			3.1			18.6
Adj Reference Time (s)			8.0			22.6
Split Option						
Ref Time Combined (s)	13.2		3.1		0.0	10.6
Ref Time Seperate (s)	0.0		2.6		9.4	1.2
Reference Time (s)	13.2		3.1		10.6	10.6
Adj Reference Time (s)	17.2		8.0		14.6	14.6
Summary						
	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		22.6			
Split Option (s)	17.2		22.6			
Minimum (s)	17.2		22.6		39.8	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			33.2%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	178	40	8	141	19
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	193	43	9	153	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	375	48			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	375	48			52	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	81			90	
cM capacity (veh/h)	564	1021			1554	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	193	52	174
Volume Left	0	0	153
Volume Right	193	9	0
cSH	1021	1700	1554
Volume to Capacity	0.19	0.03	0.10
Queue Length 95th (m)	5.3	0.0	2.5
Control Delay (s)	9.3	0.0	6.8
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	6.8
Approach LOS	A		

Intersection Summary			
Average Delay		7.1	
Intersection Capacity Utilization		33.2%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	9	178	0	40	19	9
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	187	0	0	40	28	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.95	1.00	0.95	0.85
Saturated Flow (vph)	1625	0	0	1900	1808	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	108		0	1900	1808	
Reference Time A (s)	207.2		0.0	2.5	1.9	
Adj Saturation B (vph)	NA		0	1900	1808	
Reference Time B (s)	NA		0.0	2.5	1.9	
Reference Time (s)				2.5	1.9	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	13.8		0.0	2.5	1.9	
Ref Time Seperate (s)	0.7		0.0	2.5	1.3	
Reference Time (s)	13.8		2.5	2.5	1.9	
Adj Reference Time (s)	17.8		8.0	8.0	8.0	
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	17.8		16.0			
Minimum (s)	17.8		8.0		25.8	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization		21.5%		ICU Level of Service		A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	9	178	0	40	19	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	193	0	43	21	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					378	
pX, platoon unblocked						
vC, conflicting volume	69	26	30			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69	26	30			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	82	100			
cM capacity (veh/h)	936	1050	1582			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	203	43	30			
Volume Left	10	0	0			
Volume Right	193	0	10			
cSH	1044	1582	1700			
Volume to Capacity	0.19	0.00	0.02			
Queue Length 95th (m)	5.5	0.0	0.0			
Control Delay (s)	9.3	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.3	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization		21.5%		ICU Level of Service		A
Analysis Period (min)			15			

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	230	0	0	174
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	0	230	0	0	174
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	1900	0	0	1900
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	120		1900		0	1900
Reference Time A (s)	0.0		14.5		0.0	11.0
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			14.5			11.0
Adj Reference Time (s)			18.5			15.0
Split Option						
Ref Time Combined (s)	0.0		14.5		0.0	11.0
Ref Time Seperate (s)	0.0		14.5		0.0	11.0
Reference Time (s)	0.0		14.5		11.0	11.0
Adj Reference Time (s)	0.0		18.5		15.0	15.0
Summary						
	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		18.5			
Split Option (s)	0.0		33.5			
Minimum (s)	0.0		18.5		18.5	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization		15.4%		ICU Level of Service		A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	230	0	0	174
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	250	0	0	189
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	439	250			250	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	439	250			250	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	575	789			1316	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	250	189
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1316
Volume to Capacity	0.00	0.15	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay			0.0
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)			15

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	631	27	381	77	169	170	209
v/c Ratio	0.31	0.63	0.19	0.38	0.11	0.15	0.23	0.19
Control Delay	21.3	22.6	20.6	15.2	7.5	6.5	8.3	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	22.6	20.6	15.2	7.5	6.5	8.3	5.2
Queue Length 50th (m)	7.1	33.2	2.4	14.7	3.5	6.7	8.3	6.1
Queue Length 95th (m)	16.6	47.5	7.9	24.2	10.8	18.2	22.1	18.2
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	475	1892	265	1868	704	1096	729	1074
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.33	0.10	0.20	0.11	0.15	0.23	0.19

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Volume (vph)	71	534	47	25	258	93	71	123	32	156	103	89		
Pedestrians														
Ped Button														
Pedestrian Timing (s)														
Free Right			No			No			No			No		
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120		
Volume Combined (vph)	71	581	0	25	351	0	71	155	0	156	192	0		
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Turning Factor (vph)	0.95	0.99	0.85	0.95	0.96	0.85	0.95	0.97	0.85	0.95	0.93	0.85		
Saturated Flow (vph)	1805	3574	0	1805	3474	0	1805	1841	0	1805	1768	0		
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00			
Protected Option Allowed		Yes			Yes			Yes			Yes			
Reference Time (s)	4.7	19.5	0.0	1.7	12.1	0.0	4.7	10.1	0.0	10.4	13.0	0.0		
Adj Reference Time (s)	8.7	23.5	0.0	8.0	16.1	0.0	8.7	14.1	0.0	14.4	17.0	0.0		
Permitted Option														
Adj Saturation A (vph)	120	1787		120	1737		120	1841		120	1768			
Reference Time A (s)	70.8	19.5		24.9	12.1		70.8	10.1		155.6	13.0			
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA			
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA			
Reference Time (s)		70.8			24.9			70.8			155.6			
Adj Reference Time (s)		74.8			28.9			74.8			159.6			
Split Option														
Ref Time Combined (s)	4.7	19.5		1.7	12.1		4.7	10.1		10.4	13.0			
Ref Time Seperate (s)	4.7	17.9		1.7	8.9		4.7	8.0		10.4	7.0			
Reference Time (s)	19.5	19.5		12.1	12.1		10.1	10.1		13.0	13.0			
Adj Reference Time (s)	23.5	23.5		16.1	16.1		14.1	14.1		17.0	17.0			
Summary														
	EB WB		NB SB		Combined									
Protected Option (s)	31.5		28.5											
Permitted Option (s)	74.8		159.6											
Split Option (s)	39.6		31.1											
Minimum (s)	31.5		28.5		60.0									
Right Turns														
Adj Reference Time (s)														
Cross Thru Ref Time (s)														
Oncoming Left Ref Time (s)														
Combined (s)														
Intersection Summary														
Intersection Capacity Utilization			50.0%			ICU Level of Service			A					
Reference Times and Phasing Options do not represent an optimized timing plan.														

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	534	47	25	258	93	71	123	32	156	103	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3535		1789	3436		1789	1825		1789	1752	
Flt Permitted	0.47	1.00		0.26	1.00		0.63	1.00		0.65	1.00	
Satd. Flow (perm)	891	3535		497	3436		1181	1825		1225	1752	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	580	51	27	280	101	77	134	35	170	112	97
RTOR Reduction (vph)	0	10	0	0	57	0	0	9	0	0	30	0
Lane Group Flow (vph)	77	621	0	27	324	0	77	160	0	170	179	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.9	17.9		17.9	17.9		38.2	38.2		38.2	38.2	
Effective Green, g (s)	17.9	17.9		17.9	17.9		38.2	38.2		38.2	38.2	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.60	0.60		0.60	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	249	987		139	960		704	1088		730	1044	
v/s Ratio Prot		c0.18			0.09			0.09			0.10	
v/s Ratio Perm	0.09			0.05			0.07			c0.14		
v/c Ratio	0.31	0.63		0.19	0.34		0.11	0.15		0.23	0.17	
Uniform Delay, d1	18.2	20.2		17.6	18.4		5.6	5.7		6.1	5.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.3		0.7	0.2		0.3	0.3		0.7	0.4	
Delay (s)	18.9	21.5		18.3	18.6		5.9	6.0		6.8	6.2	
Level of Service	B	C		B	B		A	A		A	A	
Approach Delay (s)		21.2			18.6			6.0			6.5	
Approach LOS		C			B			A			A	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	178	40	8	141	19
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	178	0	48	0	0	160
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.97	0.85	0.95	0.96
Saturated Flow (vph)	1615	0	1853	0	0	1816
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1853		0	132
Reference Time A (s)	198.4		3.1		0.0	145.7
Adj Saturation B (vph)	NA		1853		0	0
Reference Time B (s)	NA		3.1		17.4	18.6
Reference Time (s)			3.1			18.6
Adj Reference Time (s)			8.0			22.6
Split Option						
Ref Time Combined (s)	13.2		3.1		0.0	10.6
Ref Time Seperate (s)	0.0		2.6		9.4	1.2
Reference Time (s)	13.2		3.1		10.6	10.6
Adj Reference Time (s)	17.2		8.0		14.6	14.6
Summary						
	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		22.6			
Split Option (s)	17.2		22.6			
Minimum (s)	17.2		22.6		39.8	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			33.2%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	178	40	8	141	19
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	193	43	9	153	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	375	48			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	375	48			52	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	81			90	
cM capacity (veh/h)	564	1021			1554	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	193	52	174
Volume Left	0	0	153
Volume Right	193	9	0
cSH	1021	1700	1554
Volume to Capacity	0.19	0.03	0.10
Queue Length 95th (m)	5.3	0.0	2.5
Control Delay (s)	9.3	0.0	6.8
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	6.8
Approach LOS	A		

Intersection Summary			
Average Delay		7.1	
Intersection Capacity Utilization		33.2%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization
8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	9	178	0	40	19	9
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	187	0	0	40	28	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.95	1.00	0.95	0.85
Saturated Flow (vph)	1625	0	0	1900	1808	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	108		0	1900	1808	
Reference Time A (s)	207.2		0.0	2.5	1.9	
Adj Saturation B (vph)	NA		0	1900	1808	
Reference Time B (s)	NA		0.0	2.5	1.9	
Reference Time (s)				2.5	1.9	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	13.8		0.0	2.5	1.9	
Ref Time Seperate (s)	0.7		0.0	2.5	1.3	
Reference Time (s)	13.8		2.5	2.5	1.9	
Adj Reference Time (s)	17.8		8.0	8.0	8.0	
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	17.8		16.0			
Minimum (s)	17.8		8.0		25.8	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization		21.5%		ICU Level of Service		A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	9	178	0	40	19	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	193	0	43	21	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					378	
pX, platoon unblocked						
vC, conflicting volume	69	26	30			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69	26	30			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	82	100			
cM capacity (veh/h)	936	1050	1582			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	203	43	30			
Volume Left	10	0	0			
Volume Right	193	0	10			
cSH	1044	1582	1700			
Volume to Capacity	0.19	0.00	0.02			
Queue Length 95th (m)	5.5	0.0	0.0			
Control Delay (s)	9.3	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.3	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization		21.5%		ICU Level of Service		A
Analysis Period (min)			15			

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	230	0	0	174
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	0	230	0	0	174
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	1900	0	0	1900
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	120		1900		0	1900
Reference Time A (s)	0.0		14.5		0.0	11.0
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			14.5			11.0
Adj Reference Time (s)			18.5			15.0
Split Option						
Ref Time Combined (s)	0.0		14.5		0.0	11.0
Ref Time Seperate (s)	0.0		14.5		0.0	11.0
Reference Time (s)	0.0		14.5		11.0	11.0
Adj Reference Time (s)	0.0		18.5		15.0	15.0
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		18.5			
Split Option (s)	0.0		33.5			
Minimum (s)	0.0		18.5		18.5	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization		15.4%		ICU Level of Service		A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	230	0	0	174
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	250	0	0	189
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	439	250			250	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	439	250			250	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	575	789			1316	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	250	189
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1316
Volume to Capacity	0.00	0.15	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay			0.0
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)			15

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	52	488	23	484	85	135	158	220
v/c Ratio	0.35	0.59	0.16	0.58	0.11	0.12	0.19	0.19
Control Delay	26.6	23.4	21.2	21.8	5.8	4.3	6.2	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	23.4	21.2	21.8	5.8	4.3	6.2	3.9
Queue Length 50th (m)	5.0	25.2	2.1	23.1	3.2	3.7	6.2	5.2
Queue Length 95th (m)	13.6	37.8	7.2	35.6	9.7	11.3	16.7	15.3
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	335	1815	331	1802	750	1170	811	1150
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.27	0.07	0.27	0.11	0.12	0.19	0.19

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↗	↗↘		↗	↗↘		↗	↘		↗	↘		
Volume (vph)	48	398	51	21	351	94	78	90	34	145	106	97	
Pedestrians													
Ped Button													
Pedestrian Timing (s)													
Free Right			No			No			No			No	
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120	
Volume Combined (vph)	48	449	0	21	445	0	78	124	0	145	203	0	
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.97	0.85	0.95	0.96	0.85	0.95	0.93	0.85	
Saturated Flow (vph)	1805	3556	0	1805	3503	0	1805	1822	0	1805	1764	0	
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00		
Protected Option Allowed		Yes			Yes			Yes			Yes		
Reference Time (s)	3.2	15.2	0.0	1.4	15.2	0.0	5.2	8.2	0.0	9.6	13.8	0.0	
Adj Reference Time (s)	8.0	19.2	0.0	8.0	19.2	0.0	9.2	12.2	0.0	13.6	17.8	0.0	
Permitted Option													
Adj Saturation A (vph)	120	1778		120	1751		120	1822		120	1764		
Reference Time A (s)	47.9	15.2		20.9	15.2		77.8	8.2		144.6	13.8		
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA		
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA		
Reference Time (s)		47.9			20.9			77.8			144.6		
Adj Reference Time (s)		51.9			24.9			81.8			148.6		
Split Option													
Ref Time Combined (s)	3.2	15.2		1.4	15.2		5.2	8.2		9.6	13.8		
Ref Time Seperate (s)	3.2	13.4		1.4	12.0		5.2	5.9		9.6	7.2		
Reference Time (s)	15.2	15.2		15.2	15.2		8.2	8.2		13.8	13.8		
Adj Reference Time (s)	19.2	19.2		19.2	19.2		12.2	12.2		17.8	17.8		
Summary													
	EB WB		NB SB		Combined								
Protected Option (s)	27.2		27.0										
Permitted Option (s)	51.9		148.6										
Split Option (s)	38.4		30.0										
Minimum (s)	27.2		27.0		54.2								
Right Turns													
Adj Reference Time (s)													
Cross Thru Ref Time (s)													
Oncoming Left Ref Time (s)													
Combined (s)													
Intersection Summary													
Intersection Capacity Utilization			45.2%		ICU Level of Service				A				
Reference Times and Phasing Options do not represent an optimized timing plan.													

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	398	51	21	351	94	78	90	34	145	106	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.96		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3518		1789	3465		1789	1806		1789	1749	
Flt Permitted	0.35	1.00		0.34	1.00		0.62	1.00		0.67	1.00	
Satd. Flow (perm)	652	3518		645	3465		1169	1806		1263	1749	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	433	55	23	382	102	85	98	37	158	115	105
RTOR Reduction (vph)	0	15	0	0	38	0	0	12	0	0	29	0
Lane Group Flow (vph)	52	473	0	23	446	0	85	123	0	158	191	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.4	14.4		14.4	14.4		40.1	40.1		40.1	40.1	
Effective Green, g (s)	14.4	14.4		14.4	14.4		40.1	40.1		40.1	40.1	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	811		149	798		750	1159		810	1122	
v/s Ratio Prot		c0.13			0.13			0.07			0.11	
v/s Ratio Perm	0.08			0.04			0.07			c0.13		
v/c Ratio	0.35	0.58		0.15	0.56		0.11	0.11		0.20	0.17	
Uniform Delay, d1	20.1	21.4		19.2	21.2		4.3	4.3		4.6	4.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	1.1		0.5	0.9		0.3	0.2		0.5	0.3	
Delay (s)	21.5	22.5		19.7	22.1		4.6	4.5		5.1	4.8	
Level of Service	C	C		B	C		A	A		A	A	
Approach Delay (s)		22.4			22.0			4.5			5.0	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	3	143	16	3	154	10
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	146	0	19	0	0	164
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.98	0.85	0.95	0.95
Saturated Flow (vph)	1619	0	1855	0	0	1811
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1855		0	126
Reference Time A (s)	162.3		1.2		0.0	156.5
Adj Saturation B (vph)	NA		1855		0	0
Reference Time B (s)	NA		1.2		18.2	18.9
Reference Time (s)			1.2			18.9
Adj Reference Time (s)			8.0			22.9
Split Option						
Ref Time Combined (s)	10.8		1.2		0.0	10.9
Ref Time Seperate (s)	0.2		1.0		10.2	0.6
Reference Time (s)	10.8		1.2		10.9	10.9
Adj Reference Time (s)	14.8		8.0		14.9	14.9
Summary	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		22.9			
Split Option (s)	14.8		22.9			
Minimum (s)	14.8		22.9		37.7	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						

Intersection Summary

Intersection Capacity Utilization 31.4% ICU Level of Service A
 Reference Times and Phasing Options do not represent an optimized timing plan.

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	143	16	3	154	10
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	155	17	3	167	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	365	19			21	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	365	19			21	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	85			90	
cM capacity (veh/h)	568	1059			1595	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	159	21	178
Volume Left	3	0	167
Volume Right	155	3	0
cSH	1041	1700	1595
Volume to Capacity	0.15	0.01	0.10
Queue Length 95th (m)	4.1	0.0	2.7
Control Delay (s)	9.1	0.0	7.1
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	7.1
Approach LOS	A		

Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization		31.4%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			T	T	
Volume (vph)	7	5	5	16	10	12
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right	No				No	
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	12	0	0	21	22	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.91	0.85	0.95	0.99	0.92	0.85
Saturated Flow (vph)	1729	0	0	1877	1745	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00		0.00	
Protected Option Allowed	No		No		No	
Reference Time (s)	0.0				0.0	
Adj Reference Time (s)	0.0				0.0	
Permitted Option						
Adj Saturation A (vph)	115	0		404	1745	
Reference Time A (s)	12.5	0.0		6.2	1.5	
Adj Saturation B (vph)	NA	0		0	1745	
Reference Time B (s)	NA	8.3		9.3	1.5	
Reference Time (s)			6.2		1.5	
Adj Reference Time (s)			10.2		8.0	
Split Option						
Ref Time Combined (s)	0.8	0.0		1.3	1.5	
Ref Time Seperate (s)	0.5	0.3		1.0	0.7	
Reference Time (s)	0.8	1.3		1.3	1.5	
Adj Reference Time (s)	8.0	8.0		8.0	8.0	
Summary	EB	NB SB		Combined		
Protected Option (s)	NA	NA				
Permitted Option (s)	Err	10.2				
Split Option (s)	8.0	16.0				
Minimum (s)	8.0	10.2		18.2		
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						

Intersection Summary

Intersection Capacity Utilization 15.2% ICU Level of Service A
 Reference Times and Phasing Options do not represent an optimized timing plan.

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	5	5	16	10	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	5	5	17	11	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					378	
pX, platoon unblocked						
vC, conflicting volume	46	17	24			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46	17	24			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	961	1061	1591			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	13	23	24			
Volume Left	8	5	0			
Volume Right	5	0	13			
cSH	1001	1591	1700			
Volume to Capacity	0.01	0.00	0.01			
Queue Length 95th (m)	0.3	0.1	0.0			
Control Delay (s)	8.6	1.8	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.6	1.8	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			15.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	166	0	0	178
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	0	166	0	0	178
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	1900	0	0	1900
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	120		1900		0	1900
Reference Time A (s)	0.0		10.5		0.0	11.2
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			10.5			11.2
Adj Reference Time (s)			14.5			15.2
Split Option						
Ref Time Combined (s)	0.0		10.5		0.0	11.2
Ref Time Seperate (s)	0.0		10.5		0.0	11.2
Reference Time (s)	0.0		10.5		11.2	11.2
Adj Reference Time (s)	0.0		14.5		15.2	15.2
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		15.2			
Split Option (s)	0.0		29.7			
Minimum (s)	0.0		15.2		15.2	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization		12.7%		ICU Level of Service		A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	166	0	0	178
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	180	0	0	193
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	374	180			180	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	374	180			180	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	627	862			1395	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	180	193
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1395
Volume to Capacity	0.00	0.11	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		12.7%	ICU Level of Service A
Analysis Period (min)		15	

Queues

3: Oxford St & N Bluff Rd

2/26/2014



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	63	517	23	313	51	96	139	170
v/c Ratio	0.26	0.60	0.15	0.35	0.07	0.08	0.17	0.15
Control Delay	21.5	23.1	20.6	15.2	5.8	5.4	6.3	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	23.1	20.6	15.2	5.8	5.4	6.3	3.7
Queue Length 50th (m)	5.8	26.7	2.1	11.5	1.9	3.4	5.5	3.5
Queue Length 95th (m)	14.3	39.6	7.2	20.3	6.6	10.0	15.0	11.9
Internal Link Dist (m)		294.4		210.6		190.0		82.5
Turn Bay Length (m)	45.0		45.0		35.0		30.0	
Base Capacity (vph)	535	1888	328	1864	770	1177	823	1130
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.27	0.07	0.17	0.07	0.08	0.17	0.15

Intersection Summary

Intersection Capacity Utilization

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↗	↕		↖	↕		↖	↕		↗	↕	↘	
Volume (vph)	58	438	38	21	212	76	47	84	5	128	84	73	
Pedestrians													
Ped Button													
Pedestrian Timing (s)													
Free Right			No			No			No			No	
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120	
Volume Combined (vph)	58	476	0	21	288	0	47	89	0	128	157	0	
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Factor (vph)	0.95	0.99	0.85	0.95	0.96	0.85	0.95	0.99	0.85	0.95	0.93	0.85	
Saturated Flow (vph)	1805	3574	0	1805	3474	0	1805	1884	0	1805	1767	0	
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00		
Protected Option Allowed		Yes			Yes			Yes			Yes		
Reference Time (s)	3.9	16.0	0.0	1.4	9.9	0.0	3.1	5.7	0.0	8.5	10.7	0.0	
Adj Reference Time (s)	8.0	20.0	0.0	8.0	13.9	0.0	8.0	9.7	0.0	12.5	14.7	0.0	
Permitted Option													
Adj Saturation A (vph)	120	1787		120	1737		120	1884		120	1767		
Reference Time A (s)	57.8	16.0		20.9	9.9		46.9	5.7		127.6	10.7		
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		0	1767		
Reference Time B (s)	NA	NA		NA	NA		NA	NA		16.5	10.7		
Reference Time (s)		57.8			20.9			46.9			16.5		
Adj Reference Time (s)		61.8			24.9			50.9			20.5		
Split Option													
Ref Time Combined (s)	3.9	16.0		1.4	9.9		3.1	5.7		8.5	10.7		
Ref Time Seperate (s)	3.9	14.7		1.4	7.3		3.1	5.4		8.5	5.7		
Reference Time (s)	16.0	16.0		9.9	9.9		5.7	5.7		10.7	10.7		
Adj Reference Time (s)	20.0	20.0		13.9	13.9		9.7	9.7		14.7	14.7		
Summary													
	EB WB		NB SB		Combined								
Protected Option (s)	28.0		22.7										
Permitted Option (s)	61.8		50.9										
Split Option (s)	33.9		24.3										
Minimum (s)	28.0		22.7		50.6								
Right Turns													
Adj Reference Time (s)													
Cross Thru Ref Time (s)													
Oncoming Left Ref Time (s)													
Combined (s)													
Intersection Summary													
Intersection Capacity Utilization	42.2%		ICU Level of Service						A				
Reference Times and Phasing Options do not represent an optimized timing plan.													

HCM Signalized Intersection Capacity Analysis

3: Oxford St & N Bluff Rd

2/26/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	58	438	38	21	212	76	47	84	5	128	84	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.99		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3536		1789	3436		1789	1869		1789	1752	
Flt Permitted	0.53	1.00		0.33	1.00		0.65	1.00		0.69	1.00	
Satd. Flow (perm)	1006	3536		616	3436		1224	1869		1309	1752	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	63	476	41	23	230	83	51	91	5	139	91	79
RTOR Reduction (vph)	0	11	0	0	59	0	0	2	0	0	28	0
Lane Group Flow (vph)	63	506	0	23	254	0	51	94	0	139	142	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.1	15.1		15.1	15.1		39.1	39.1		39.1	39.1	
Effective Green, g (s)	15.1	15.1		15.1	15.1		39.1	39.1		39.1	39.1	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.63	0.63		0.63	0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	244	858		150	834		769	1175		823	1101	
v/s Ratio Prot		c0.14			0.07			0.05			0.08	
v/s Ratio Perm	0.06			0.04			0.04			c0.11		
v/c Ratio	0.26	0.59		0.15	0.30		0.07	0.08		0.17	0.13	
Uniform Delay, d1	19.0	20.8		18.5	19.3		4.5	4.5		4.8	4.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	1.1		0.5	0.2		0.2	0.1		0.4	0.2	
Delay (s)	19.6	21.9		19.0	19.5		4.6	4.7		5.2	4.9	
Level of Service	B	C		B	B		A	A		A	A	
Approach Delay (s)		21.7			19.4			4.6			5.1	
Approach LOS		C			B			A			A	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Capacity Utilization

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	146	33	7	116	15
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	146	0	40	0	0	131
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.97	0.85	0.95	0.96
Saturated Flow (vph)	1615	0	1850	0	0	1816
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	108		1850		0	131
Reference Time A (s)	162.7		2.6		0.0	119.7
Adj Saturation B (vph)	NA		1850		0	0
Reference Time B (s)	NA		2.6		15.7	16.7
Reference Time (s)			2.6			16.7
Adj Reference Time (s)			8.0			20.7
Split Option						
Ref Time Combined (s)	10.8		2.6		0.0	8.7
Ref Time Seperate (s)	0.0		2.1		7.7	0.9
Reference Time (s)	10.8		2.6		8.7	8.7
Adj Reference Time (s)	14.8		8.0		12.7	12.7
Summary						
	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		20.7			
Split Option (s)	14.8		20.7			
Minimum (s)	14.8		20.7		35.5	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization	29.6%		ICU Level of Service		A	
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

7: Oxford St & Thrift Ave

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	146	33	7	116	15
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	159	36	8	126	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	308	40			43	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	308	40			43	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	85			92	
cM capacity (veh/h)	629	1032			1565	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	159	43	142
Volume Left	0	0	126
Volume Right	159	8	0
cSH	1032	1700	1565
Volume to Capacity	0.15	0.03	0.08
Queue Length 95th (m)	4.1	0.0	2.0
Control Delay (s)	9.1	0.0	6.7
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	6.7
Approach LOS	A		

Intersection Summary			
Average Delay		7.0	
Intersection Capacity Utilization		29.6%	ICU Level of Service
Analysis Period (min)		15	A

Intersection Capacity Utilization
8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Volume (vph)	8	146	0	33	15	8
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	154	0	0	33	23	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.95	1.00	0.95	0.85
Saturated Flow (vph)	1626	0	0	1900	1801	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	108		0	1900	1801	
Reference Time A (s)	170.5		0.0	2.1	1.5	
Adj Saturation B (vph)	NA		0	1900	1801	
Reference Time B (s)	NA		0.0	2.1	1.5	
Reference Time (s)				2.1	1.5	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	11.4		0.0	2.1	1.5	
Ref Time Seperate (s)	0.6		0.0	2.1	1.0	
Reference Time (s)	11.4		2.1	2.1	1.5	
Adj Reference Time (s)	15.4		8.0	8.0	8.0	
Summary						
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		8.0			
Split Option (s)	15.4		16.0			
Minimum (s)	15.4		8.0		23.4	

Right Turns	
Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary			
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

HCM Unsignalized Intersection Capacity Analysis

8: Oxford St & Thrift Ave

2/26/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	146	0	33	15	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	159	0	36	16	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					378	
pX, platoon unblocked						
vC, conflicting volume	57	21	25			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57	21	25			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	85	100			
cM capacity (veh/h)	951	1057	1589			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	167	36	25			
Volume Left	9	0	0			
Volume Right	159	0	9			
cSH	1051	1589	1700			
Volume to Capacity	0.16	0.00	0.01			
Queue Length 95th (m)	4.3	0.0	0.0			
Control Delay (s)	9.1	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.1	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			6.7			
Intersection Capacity Utilization		19.5%		ICU Level of Service		A
Analysis Period (min)			15			

Intersection Capacity Utilization

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	189	0	0	143
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	0	189	0	0	143
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	1900	0	0	1900
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.0		
Adj Reference Time (s)		0.0		0.0		
Permitted Option						
Adj Saturation A (vph)	120		1900		0	1900
Reference Time A (s)	0.0		11.9		0.0	9.0
Adj Saturation B (vph)	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			11.9			9.0
Adj Reference Time (s)			15.9			13.0
Split Option						
Ref Time Combined (s)	0.0		11.9		0.0	9.0
Ref Time Seperate (s)	0.0		11.9		0.0	9.0
Reference Time (s)	0.0		11.9		9.0	9.0
Adj Reference Time (s)	0.0		15.9		13.0	13.0
Summary						
	WB		NB SB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	Err		15.9			
Split Option (s)	0.0		29.0			
Minimum (s)	0.0		15.9		15.9	
Right Turns						
Adj Reference Time (s)						
Cross Thru Ref Time (s)						
Oncoming Left Ref Time (s)						
Combined (s)						
Intersection Summary						
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.						

HCM Unsignalized Intersection Capacity Analysis

10: Oxford St & Site Access

2/26/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	189	0	0	143
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	205	0	0	155
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						214
pX, platoon unblocked						
vC, conflicting volume	361	205			205	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	361	205			205	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	638	835			1366	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	205	155
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1366
Volume to Capacity	0.00	0.12	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay			0.0
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)			15

MINUTE EXTRACTS REGARDING BYLAW 2467: WHITE ROCK ZONING BYLAW, 2012, NO. 2000, AMENDMENT (CD-46 – 1454 OXFORD STREET) BYLAW, 2023, NO. 2467

CIVIC ADDRESS: 1454 Oxford Street

Regular Council Meeting – April 17, 2023

6.2.e INITIAL REVIEW OF 1454 OXFORD STREET - BUILDING B UNIT COUNT CHANGE

Corporate report dated April 17, 2023 from the Director of Planning and Development Services titled "Initial Review of 1454 Oxford Street - Building B Unit Count Change".

Note: Bylaw 2467 (and report recommendations 2-4) are on the agenda for consideration under Item 8.1.g.

The following discussion points were noted:

- Application was previously the approved Elegant project (two (2) buildings a 21 storey and a 24 storey)
- Amending the number of units in one (1) building from 78 to 121 (consistent with Official Community Plan)
- Traffic Impact Study completed and revised
- New Amenity Contribution Amount \$2,320,661.46
- Memorandum of Understanding to include Pre-Sale only to White Rock residents for first 60 days
- Concern with parking and visitor parking impact with additional units
- Consideration of EV Charging Stations in regard to bylaw
- Would like staff and the Applicant to discuss the Community Amenity Contribution further in regard to affordable housing

Motion Number: 2023-154 It was MOVED and SECONDED

THAT Council receive for information the corporate report dated April 17, 2023, from the Director of Planning and Development Services titled "Initial Review of 1454 Oxford Street - Building B Unit Count Change".

Motion CARRIED (7 to 0)

Regular Council Meeting – April 17, 2023 (cont'd)

8.1.g BYLAW 2467 - WHITE ROCK ZONING BYLAW, 2012, NO. 2000, AMENDMENT (CD-46 - 1454 OXFORD STREET) BYLAW, 2023, NO. 2467

Bylaw 2467 - A bylaw to amend the White Rock Zoning Bylaw to allow for a change in the number of units in Building B (from 43 to 125 units) at 1454 Oxford Street. The OCP and Zoning Amendment for this property were adopted by Council in 2017.

Motion Number: 2023-164 It was MOVED and SECONDED

THAT Council give first and second reading to Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2023, No. 2467" as presented.

Motion CARRIED (7 to 0)

Motion Number: 2023-165 It was MOVED and SECONDED

THAT Council direct staff to schedule the public hearing for "*White Rock Zoning Bylaw, 2012, No. 2000, Amendment (CD-46 – 1454 Oxford Street) Bylaw, 2023, No. 2467*".

Motion CARRIED (7 to 0)

Motion Number: 2023-166 It was MOVED and SECONDED

THAT Council direct staff to resolve the following issues before final adoption if Bylaw No. 2467 is given Third Reading after the Public Hearing;

- a. **Ensure that all engineering requirements and issues, to the satisfaction of the Director of Engineering and Municipal Operations;**
- b. **Council acknowledges and accepts the negotiated community amenity contribution concerning the change in units in Building B, 43 units to 125 units at 1454 Oxford Street, in the amount of \$2,320,661.46 million.**

Note: Council requests staff to meet with the Applicant to have further discussion regarding Item B (CAC amount).

Motion CARRIED (7 to 0)