12.5 Consolidated List of Land Use Designations

A consolidated list of all of the land use designations used in the OCP Land Use Map (Map 2) is provided in the table below. Policies and objectives relating to these designations are provided in Parts One and Two and Schedule A of the OCP. The references to Floor Space Ratios (FSR) in the table provide guidance regarding the general massing and approximate density of development. The term "Floor Space Ratio", as used in the table, means generally the ratio of the floor area of a proposed development over the area of the lot or lots upon which the development is to be located. It does not regulate actual densities on individual lots, that being the function of the District's Zoning Bylaw. Council may, in its discretion, and with a public hearing, consider zoning bylaw amendments to permit density over and above that indicated in the table on a case by case basis where the proposed development is otherwise consistent with objectives and policies of the OCP.

RESIDENTIAL LEVEL 1: RURAL RESIDENTIAL. Areas designated for rural residential are intended for detached housing on large lots situated outside the urban boundary. The OCP does not envision further intensification of use through subdivision in this designation and/or through extension of services. Detached rural residences are generally allowed up to approximately 0.35 FSR.

RESIDENTIAL LEVEL 2: DETACHED RESIDENTIAL. Areas designated for detached residential are intended predominantly for detached housing within neighbourhoods. This designation accommodates secondary rental units such as suites or coach houses subject to the imposition and satisfaction of appropriate conditions. Detached residences (inclusive of suites and coach houses) are generally allowed up to approximately 0.55 FSR.

RESIDENTIAL LEVEL 3: ATTACHED RESIDENTIAL. Areas designated for attached residential are intended predominantly for ground-oriented multifamily housing within neighbourhoods, or as a transition between higher density sites and adjacent detached residential areas. Typical housing forms in this designation include duplex, triplex, and attached row houses up to approximately 0.80 FSR.

RESIDENTIAL LEVEL 4: TRANSITION MULTIFAMILY. Areas designated for transitional multifamily are intended predominantly for multifamily uses within or in close proximity to centres and corridors, or as a transition between higher density sites and adjacent detached and attached residential areas. This designation typically allows for a mix of townhouse and apartment developments up to approximately 1.20 FSR.

RESIDENTIAL LEVEL 5: LOW DENSITY APARTMENT. Areas designated for low density apartment are intended predominantly for multifamily housing in centres and corridors up to approximately 1.75 FSR. Development in this designation will typically be expressed in low rise apartments, but may include some townhouses. Some commercial use may be permitted at grade.

News Update

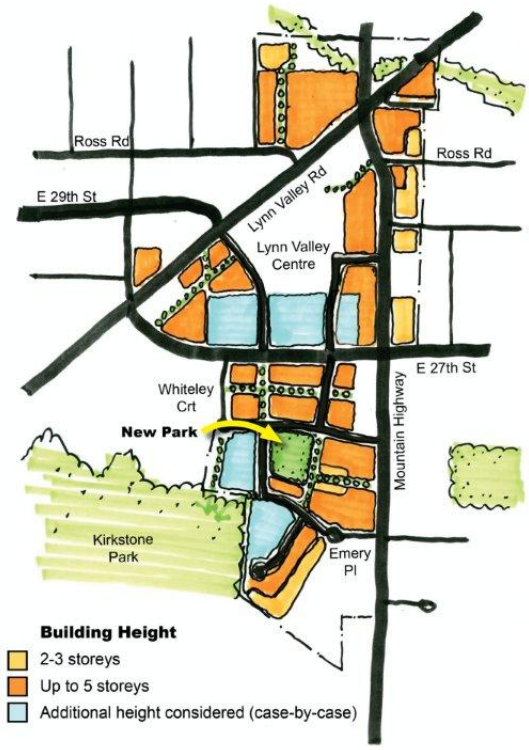
FOR IMMEDIATE RELEASE

October 8, 2013

North Vancouver District Council adopts Flexible Framework for future development in Lynn Valley Town Centre

North Vancouver District Council took a close look at the realities and facts of Lynn Valley Town Centre planning at their meeting last night and staked out a way forward.

At issue were two possible approaches to guiding new development over the next 20 years. The first option was to enshrine in policy an absolute height limit of five storeys across the town centre. The second option, recommended by staff and adopted by Council, was a 'flexible planning framework' that allows heights of predominantly five storeys, increasing to eight storeys at strategic locations. The framework also provides the flexibility to receive community input on and review, on a case-by-case basis, applications for developments that exceed eight stories. In adopting the framework Council set a height limit of 12 storeys for those specific locations.



Document: 2195101

Council arrived at this point after a rigorous and wide-ranging community consultation with 950 residents, during which they received over 1,400 submissions, distinctly focussed on Lynn Valley Town Centre. This was in addition to a previous public consultation program which reached over 5,000 people and resulted in the Official Community Plan being adopted by Council in 2011.

After much analysis, Planning staff provided Council with a side-by-side comparison of the trade-offs between the five storey absolute height limit and the flexible framework model. Highlights of the benefits of the flexible framework approach include:

- addition of a large local park as well as more public spaces and pocket green spaces
- the ability to create enough critical mass to support provision of enhanced transit service
- road dedication for a transit exchange along East 27th Street
- the ability to protect views in public spaces and avoid excessive shading from buildings
- enhancement of the area's ecology, including stream enhancement
- 45 – 60 percent difference in the dollar value of Community Amenity Contributions and Development Cost Charges (funds received from developers in exchange for additional density that help pay for highly-valued neighbourhood features such as daycare spaces, new parks, public plazas, walking trails, stream enhancements, etc.)
- increased economic opportunity by creating and maintaining a vibrant business community that enables and encourages a walkable streetscape
- the ability to more closely dictate and monitor the character of new buildings to meet the community's desired 'mountain village' aesthetic
- more diverse and plentiful mix of housing types suitable for seniors and young families

The flexible framework allows the District to continue to meet objectives already adopted in the Official Community Plan around transportation, housing, parks and open spaces, economic vibrancy, the environment and the social well-being of the population, while acknowledging community concerns about rapid or extreme change, cookie-cutter design, shading from buildings, and transportation improvements. It also allows the community to help shape the future look, feel and functionality of the area by being involved in redevelopment proposals and rezonings for the town centre, particularly those that ask to exceed eight storeys and build towards the 12 storey limit that Council has set.

Mayor Walton said, "I'm pleased that, with the help of the Community, Council has landed on a balanced approach that takes into consideration all viewpoints and provides a clear path forward for rejuvenation of the Lynn Valley Town Centre."

– 30 –

North Vancouver District Communications Office
604-990-2459

View the full Council report from the October 7 North Vancouver District Council Meeting

C Guidelines for Ground-Oriented Housing

The built-form of ground-oriented multi-family *development* should be integrated with existing neighbourhoods.

1. Public Realm, Streetscape Elements and Neighbourhood Fit

Discussion:

The built-form of ground-oriented multi-family *development* should be integrated with existing neighbourhoods, while enhancing architectural variety. *Development* should reflect the streetscape character of the neighbourhood in which it is located, or in the case of larger *developments,* it should create its own successful streetscape character.

Ground-oriented housing should be designed so that it complements the neighbourhood character, with minimum impact on adjacent properties. *Development* will often occur incrementally as pre-existing lots on record are assembled and consolidated. Accordingly, the design must carefully consider both the existing and future relationships to surrounding properties.

Figure 81

C1.1: Height and Massing: The height and massing of buildings should be in keeping with a single family dwelling or townhouse height, which is typically less than 12 metres. Architectural treatments that reduce apparent building height such as the use of trim, colour accents, secondary roof elements, building recesses and stepped building forms are encouraged (see Figure 81).

C1.2: Roof Treatment: The gable orientation and roof pitch should be sympathetic to the design of neighbouring buildings and help to maximize the space and light between buildings (see Figure 81).

C1.3: Street Orientation: Units are encouraged to be oriented towards, and have a visual connection to the street (see Figure 82).

C1.4: Corner Lots: Buildings on corner lots should "wrap the corner" providing an opportunity to have units facing both streets (see Figures 83).

C1.5: Minimum Frontage: Generally, *development* parcels should have a minimum frontage of 20 metres.

C1.6: Setbacks: The front yard setback should relate to, or appropriately transition from, the established pattern in the area.

Figure 82

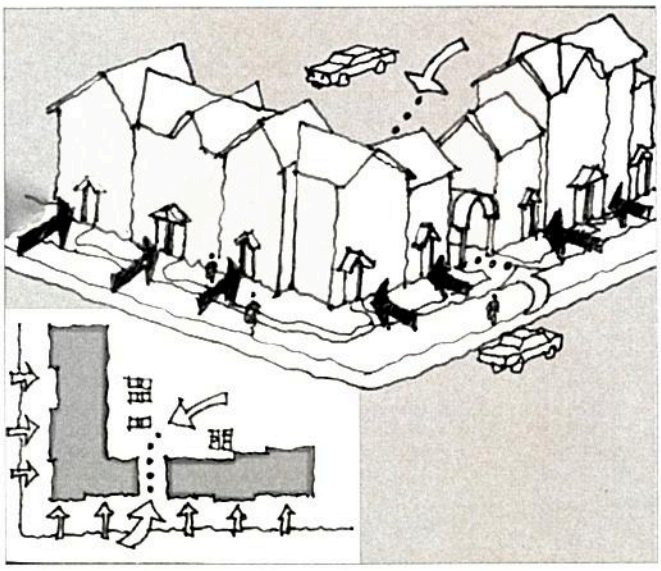


Figure 83

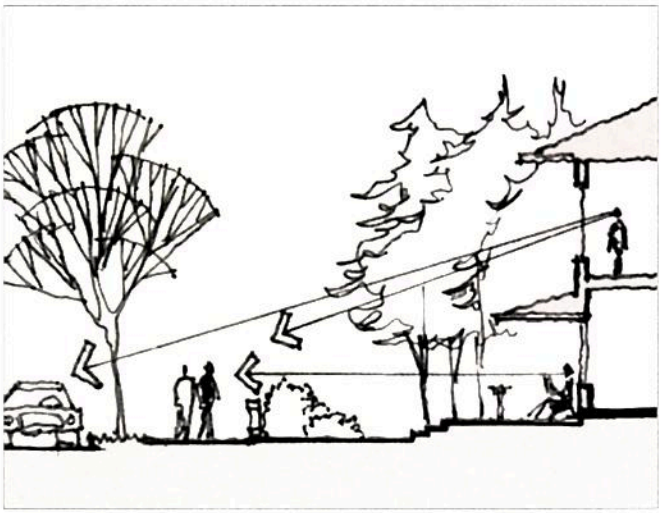


Figure 84

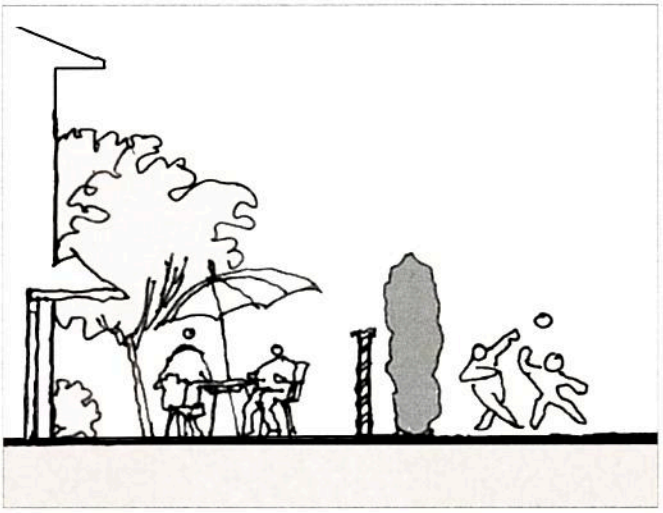


Figure 85

2. Site Planning and Landscaping

Discussion:

Good site planning and landscaping contribute to neighbourhood character and aesthetics, resident livability and environmental sustainability. In principle, site planning should strive to minimize building coverage, preserve natural features and minimize rainwater run-off. Mature trees shade and cool homes in the summer and absorb carbon dioxide and trap dust particles. Trees and other landscaping provide habitat, aid with energy conservation and absorb rain water, reducing stormwater run-off into creeks. Landscape plans should complement the building design and harmonize with the local setting and be prepared by a BC Registered Landscape Architect.

C2.1: Tree Retention: Healthy mature trees and natural features should be retained where possible.

C2.2: Sustainable Landscape Design: Sustainable landscape design should incorporate best practices for tree planting, rainwater management, accessibility and feature native and drought tolerant species. Sustainable landscape design should also be coordinated with building design, site servicing and utility placement.

C2.3: Street Interface: Landscaping and fencing should be kept low and open in the front yard to foster a strong relationship to the street and maintain visibility through to the front of the building (see Figure 84).

C2.4: Privacy: Incorporate planting and fencing to maximize privacy between dwelling units and neighbouring sites (see Figure 85).

C2.5: Shared Outdoor Space: Units should be clustered to create interesting shared outdoor spaces as well as usable and accessible private outdoor spaces. Encourage/integrate informal gathering, play and urban gardening opportunities (see Figure 86).

C2.6: Private Outdoor Space: At least 9 square metres of usable private outdoor space should be provided for all units (see Figure 87).

C2.7: Outward Facing Aspect: Units should be oriented such that windows from the principle living space of each unit are separated by a minimum of 9 metres from those of any other unit (see Figure 88)

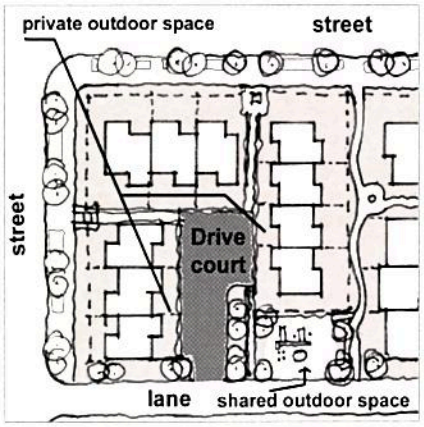


Figure 86

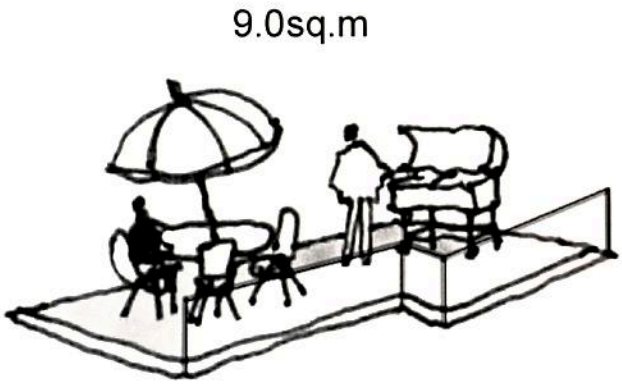


Figure 87

C2.8: Rear Yard Setbacks: Rear yard setbacks should be at least 6 metres, with some variation so that a visual wall is not created along the rear property line.

C2.9: Side Yard Setbacks: Side yard setbacks should be a minimum of 1.2 metres, and up to 3 metres when facing a side street or a single family home.

C2.10: Pedestrian Access: The main pedestrian access route should be from the street rather than the lane or parking area.

C2.11: Parking: Parking spaces should be located off a private driveway, and should not be visible from the street (see Figure 89) .

C2.12: Parking access: When parking is accessed from the front street the number of driveways should be kept to a minimum (see Figure 89).

C2.13: Shared Driveways: Where adjacent to another potential redevelopment site, the driveway should be designed so that it could in future be shared with the adjacent property (see Figure 89).

C2.14: Oil and Grit Separators: Oil and grit separators are required in all parking areas.

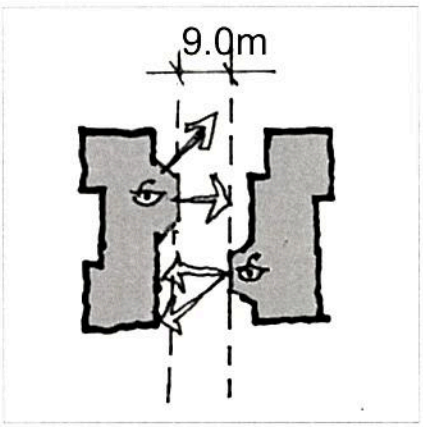


Figure 88

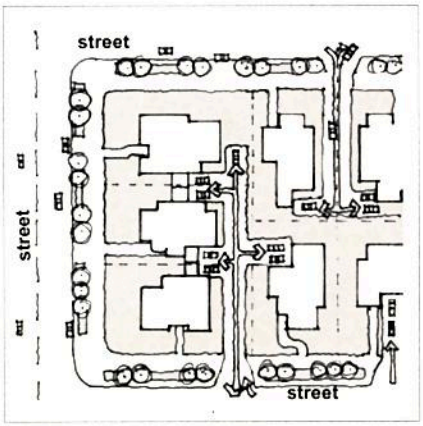


Figure 89

3. Architectural Character

Discussion:

The built form and character of new ground-oriented multi-family *development* should be consistent with and in harmony with the general rhythm, scale and height of the existing buildings in the neighbourhood. Ground-oriented housing is usually located in or adjacent to single family neighbourhoods. Building design therefore should generally have a single family character and incorporate west coast references while responding to local conditions such as topography, vegetation and heritage resources.

Consideration should be given to unit identity, roofscape, and other architectural elements, including fenestration, materials, and colour. Dormers and similar roof projections should read as subordinate or secondary architectural elements.

Ground-oriented housing should be designed in consideration of the needs of all residents regardless of their state of health, mobility or disabilities. Units should incorporate basic features that allow the units to be adapted to accommodate special needs without expensive retrofitting.

C3.1: Massing: The front façade of buildings should be broken up and portions stepped back to reduce the impression of bulk (see Figure 90).

C3.2: Variations in Design: Subtle design variations should be incorporated between neighbouring buildings to avoid a repetitive appearance.

C3.3: Cladding: Buildings should be clad primarily in natural materials although stucco accents may be used as a subordinate finish.

C3.4: Varied Rooflines: Varied roof lines with overhangs are encouraged.

C3.5: Roofing Materials: Laminated asphalt shingles or fire retardant treated cedar shakes are recommended as roofing materials. Tile roofing is discouraged.

Figure 90

C3.6: Noise Levels: Designs should demonstrate that the noise levels (A-weighted 24-hour equivalent LEQ sound level (the average sound level over the period of the measurement) in those portions of the dwelling listed below should not exceed the noise levels expressed in decibels set opposite such portions of the dwelling units. Examples include use of triple glazing, improved insulation etc.

PORTION OF DWELLING UNIT	NOISE LEVEL (DECIBELS)
bedrooms	35
living, dining, recreation rooms	40
kitchen, bathrooms, hallways	45

C3.7: Heating and Ventilation Systems: Ventilation, heating and cooling systems should be designed and insulated to minimize noise and located to be visually unobtrusive to neighbouring *developments.*

C3.8: Accessible Entrance: A level, no step entrance should be provided to each dwelling. If not possible, then platform areas should be provided at the top and bottom of ramps to facilitate the turning of wheelchairs, strollers and other mobility devices (see Figure 91).

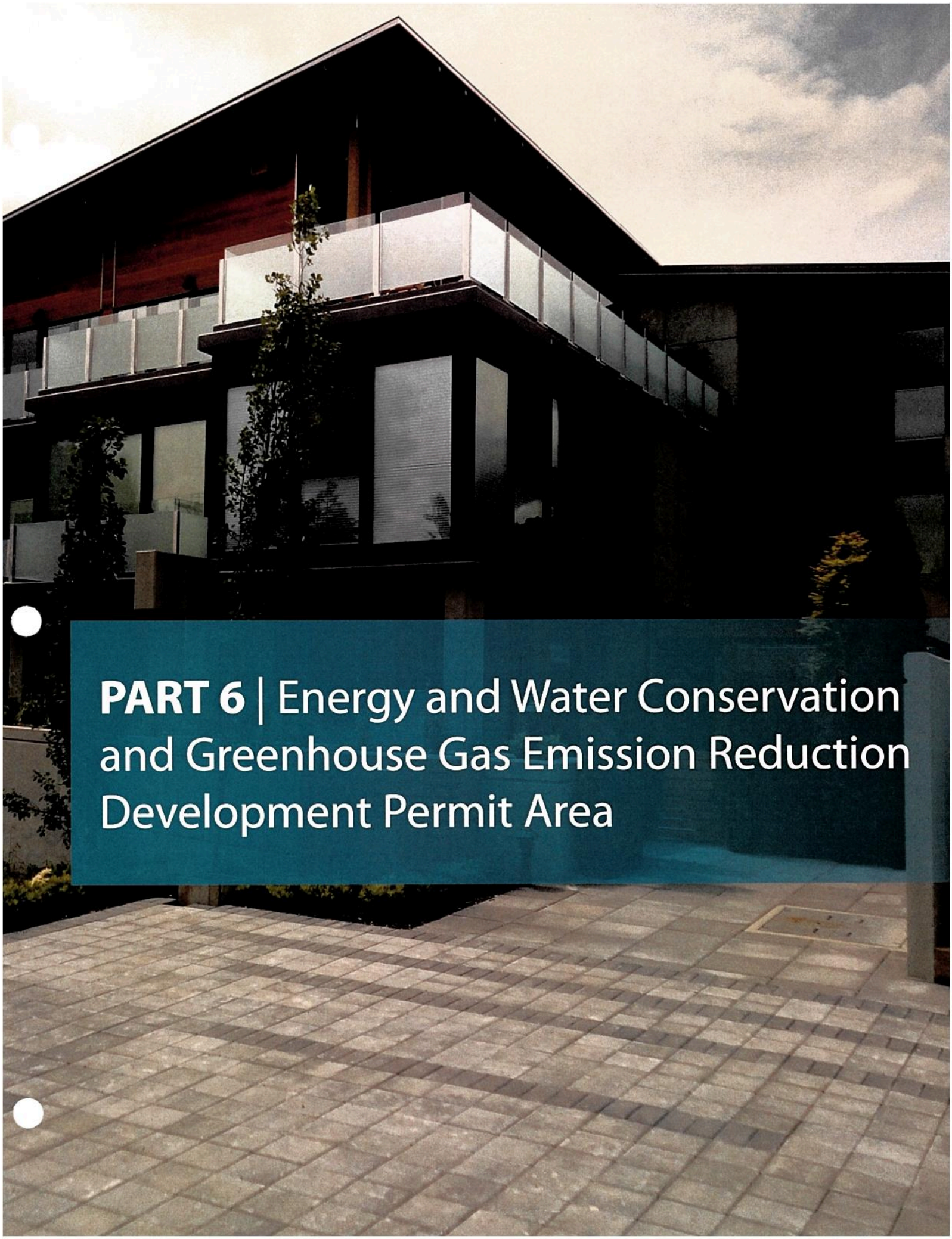
C3.9: Weather Protection: A canopy should be provided over the front entrance.

C3.10: Front Door Width: The front door opening should be no less than 0.9 metre in width.

C3.11: Accessible Doorbell: The front doorbell should be no higher than 1 metre above the entry way

C3.12: Legible Address: The address should be indicated in easy-to-read, 10 centimetre or taller numbers, shown in a clearly contrasting colour.

Figure 91



PART 6 | Energy and Water Conservation and Greenhouse Gas Emission Reduction Development Permit Area

Context

The purpose of this development permit area is to complement Council's Green Building Strategy as it applies to new buildings, including private sector and Municipal building projects and, to foster the conservation and efficient use of energy and water to reduce building-generated greenhouse gas emissions.

The construction, operation and maintenance of buildings takes a toll on the natural environment and represent a significant contributor to the creation of greenhouse gas emissions. In 2007, buildings in the *District* were estimated to contribute approximately 50% of the community's greenhouse gas emissions.

The *District* is seeking to reduce community GHG emissions by 8% from the 2007 levels by 2020, 13% by 2030 and 21% by 2050, through initiatives under its own influence, including: land use and transportation planning, *development*/building guidelines and waste reduction strategies. The *District* also supports community wide efforts to reduce GHG emissions by 33% by 2030.

Encouraging developers and builders to incorporate a wide range of measures, designed to work together to reduce a building's impact on the environment, is critical to reducing that portion of the *District's* greenhouse gas emissions attributable to the construction, operation and maintenance of buildings.

Objectives For Energy And Water Conservation And Greenhouse Gas Emission Reduction

The *Energy and Water Conservation and GHG Emissions Reduction DPA* and corresponding Development Approval Information Area are established to address the following objectives:

1. reduce consumption in new buildings;
2. create a positive impact on the natural environment and natural earth systems;
3. make the best possible use of existing infrastructure systems and minimize the need for system capacity expansion and extensions;
4. reduce the costs associated with the on-going operation and maintenance of buildings;
5. encourage occupant comfort and health and the efficient use of materials and resources in new buildings; and
6. encourage and support innovation in building design and *development.*

Exemptions

All *development* is exempt other than:

1. any *development* for which an amendment of the *Zoning Bylaw* or the *District's* Official Community Plan is required; and

2. the construction and installation of a *new ICI building or structure* for which a building permit is required pursuant to the *District's Building Regulation Bylaw*.

Despite the foregoing, owners, developers and designers are encouraged to consider these guidelines in site *development*, building, landscaping and engineering decisions relating to all *developments* within the *Energy and Water Conservation and GHG Emission Reduction DPA*, whether or not an energy and water conservation development permit is required.

Guidelines

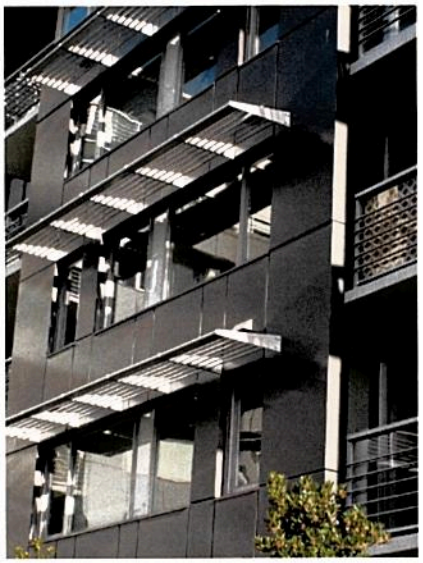
The following guidelines apply within the *Energy and Water Conservation and GHG Emission Reduction DPA*. These guidelines are not intended to be a definitive listing. Rather, they suggest issues to be considered and designers may respond to these guidelines in a variety of different ways. Creativity is encouraged.

Except where specific standards are referenced, these guidelines are not prescriptive. Designers are directed to consider a variety of synergistic approaches, particularly, passive design strategies, rather than active mechanical systems, to reduce a building's energy and water consumption and greenhouse gas emissions and improve occupant thermal comfort.

While these guidelines relate specifically to energy and water conservation and ghg emission reductions, it is important to consider other measures which reduce a building's overall carbon footprint by incorporating a variety of strategies to make the best use of the site, improve indoor air quality and utilize materials which can be sourced locally or regionally and reused/recycled at the time of construction and upon demolition.

A *qualified professional* retained by the applicant is required to provide a written report summarizing the proposed measures to be incorporated in the proposed *development*.

Development should be designed and constructed so that the energy budget for proposed buildings and structures, once complete, will be at least 33% better than the applicable standard in the Model National Energy Code for Buildings or at least 24% better than the applicable standard in ASHRAE 90.1 - 2007.



For Energy Conservation the following guidelines apply:

1. an integrated design process should be utilized to identify opportunities to reduce a building's energy consumption;

2. the effectiveness of the building envelope, including glazing, to reduce heat loss should be maximized;

3. overall building energy performance and interior thermal comfort should be maximized through a combination of passive design strategies, including, but not limited to:

    - » the sizing and placement of windows and the incorporation of operable windows to increase opportunities for natural ventilation, reducing the reliance on mechanical HVAC systems;

    - » the orientation of buildings to take maximum advantage of site specific climatic conditions especially in terms of solar access and wind flow, when possible;

    - » the use of thermally broken window frames and high performance glazing;

    - » the incorporation of roof overhangs, fixed fins or other solar shading devices to ensure that south facing windows are shaded from peak summer sun but enable sunlight penetration during winter months;

    - » design building massing and solar orientation to improve the passive performance of the structure

4. various measures should be utilized to reduce the heat island effect of a building's roof and heat transfer into the building, including: green roofs; Energy Star-rated or high albedo roofing material; or, other appropriate measures;

5. opportunities for the distribution of natural daylight into a building's interior spaces to reduce the energy consumption of electric lighting should be maximized. Avoid the use of heavily tinted or reflective glazing that reduces solar heat gain but also reduces the penetration of daylight and increases glare;

6. solar thermal or solar electric technologies should be incorporated, but, where it is not possible to incorporate solar technologies during initial construction of a building, the building should be designed to be solar ready;

7. on-site renewable energy systems should be pursued where feasible;

8. mechanical systems should be designed to enable interconnection to future district energy systems in those areas identified by the *District* as having potential for such systems;

9. on-site landscaping should be designed to promote opportunities for passive heating/cooling without negatively affecting the potential for solar thermal or solar electric systems on the site and on surrounding properties;

10. the planting of appropriate trees within parking lots should be maximized to provide shade, store carbon and reduce heat build-up; and

11. daylight-responsive controls should be incorporated in all regularly occupied spaces sited adjacent to windows/skylights.

For Water Conservation the following guidelines apply:

1. an integrated design process should be utilized to identify opportunities to reduce a building's water consumption and incorporate strategies for the capture and use of stormwater for landscaping purposes;

2. the stormwater and building water discharge should be managed on site to the extent possible. Measures could include:

    - » maximizing pervious surfaces to enhance stormwater infiltration opportunities
    - » incorporating bioswales and rain gardens for infiltration
    - » using drought-tolerant and native plants and other xeriscaping techniques to minimize the need for landscape irrigation;
    - » maximizing the use of topsoil or composted waste for finish grading to assist in infiltration and increase the water holding capacity of landscaped areas;

3. where a site is adjacent to open space or a watercourse, infiltrated stormwater should be directed to that receiving environment if appropriate; and

4. automated control systems should be utilized where temporary or permanent mechanical irrigation systems are required.

For Greenhouse Gas Emission Reductions the following guidelines apply:

1. building materials which are durable for the use intended should be selected;
2. locally or regionally sourced building materials should be used to reduce transportation energy costs;
3. existing building materials should be reused where practical;
4. building materials which may be reused or recycled upon building demolition should be selected;
5. a construction waste management plan should be developed and areas for the collection of recyclable materials during construction should be provided on site; and
6. building products which have low, or no-VOC off-gassing potential should be selected.

Development Approval Information Area

Land within the *Energy and Water Conservation and GHG Emission Reduction DPA* is also designated as a Development Approval Information Area in accordance with Section 920.01 of the Local Government Act. Applicants for energy and water conservation development permits may be required by the *District* to provide, at the applicant's expense, information in order to demonstrate compliance with the energy and water conservation guidelines.

Any such information deemed by the *District* to be necessary for the purposes of determining requirements to be addressed in a development permit shall be identified and conveyed to the applicant during the preliminary development application process.

BRODY
DEVELOPMENT GROUP

1060 West 14th Street, North Vancouver, B.C. V7P 3P3 Telephone: (604) 980-2954 Fax: (604) 980-0833

February 27, 2015

Lilian Arishenkoff
District of North Vancouver
355 West Queens Road
North Vancouver, BC V7N 4N5

Dear Ms. Arishenkoff:

Re: 1203 and 1207 Harold Road—Green Building

Please accept this letter as our Green Building Performance Commitment letter. For our 8 unit development at 1203 and 1207 Harold Road, we are committed to building to a Built Green Platinum standard and an EnerGuide rating of 82.

Energy and green initiatives will be incorporated in the project to meet the two standards mentioned above.

Yours truly,

HOMEFIELD INVESTMENTS LTD.

M.W. Brody
President

MWB/kjb

20150227

URBAN systems

REPORT

District of North Vancouver

Lynn Valley Town Centre

Transportation Assessment

550 - 1090 Homer Street, Vancouver, BC V6B 2W9 | T: 604.235.1701

2013

File: 1333.0018.01

Contents

Executive Summary

In June 2011, the District of North Vancouver adopted a new Official Community Plan (OCP), with a vision of establishing a 'network of centres' to manage expected growth over the next 20 years. Lynn Valley Town Centre, a deep-rooted community within the District, has been identified as one of two designated Town Centres within the OCP. With steady growth anticipated over the next two decades, the OCP calls for a revitalization of Lynn Valley Town Centre that will increase residential density, while providing more pedestrian-friendly roadways and housing options that maintain and enhance the community's overall vibrancy. This revitalization is possible only through redevelopment, which will make land and funds available for key improvements. Prior to approval of any future development projects, the Lynn Valley Town Centre Transportation Assessment was a necessary step to further understand the implications of such development on the transportation network, a vital component of any vibrant community.

The Lynn Valley Town Centre Transportation Assessment examines existing contexts, including roadway characteristics and an analysis of existing conditions. The analysis creates a better understanding of existing network deficiencies. Through this understanding, existing network issues and the resulting impacts can be mitigated.

Furthermore, a snapshot of Lynn Valley Town Centre by 2031 has been developed and included within this assessment. Future growth and land use as well as eight (8) mobility network policies, as described in the OCP, have been outlined for reference. Some of the benefits within this snapshot include a more walkable environment within a safe transportation network with strong connectivity, the establishment of a new pedestrian and vehicle oriented street within the core of the Town Centre, and opportunities for improvements to parking. Other plans and studies that will influence future transportation in Lynn Valley, including the North Shore Area Transit Plan, the District of North Vancouver Transportation Plan, and the North Vancouver Bicycle Master Plan have been considered and summarized to include relevant highlights complimentary to this report.

Building on the vision for the future, an assessment of future conditions was completed for two separate timelines, a 20-year horizon and an unlimited horizon, which will account for additional development not anticipated within the 20-year timeframe of the OCP. Future traffic forecasts indicate that the increase in new vehicle trips due to redevelopment will be small and may be further mitigated by increasing internal trips and non-auto mode share. These are both expected to increase over time as a result of a more vibrant, pedestrian focused Town Centre, with minimal impacts to its users. In line with the North Shore Transit Plan, an assessment of future transit needs shows an outlook of improved transit exchanges with more frequent service as well as better connectivity east and west. As identified within the OCP, the ability for the District to increase sustainable forms of transportation will result in a more liveable Town Centre. As a result, the transportation study has carefully considered the future needs of both pedestrians and cyclists in order to enable a safer environment for users of all ages and skill levels.

Also identified in this report are a number of guiding principles that will further improve accessibility for pedestrians, cyclists, transit users, and motorists. These guiding principles help inform improvement options, ultimately transforming Lynn Valley Town Centre into a complete community where people want to live, work, and play. The guiding principles align well with the final recommendations, included in

summary, of the impact future development will have on area residents over the next 20 years and beyond. A brief summary follows.

Impact of future growth on pedestrians could include:

- More walkable neighbourhoods,
- Improved connectivity and well designated spaces for pedestrians,
- Wider sidewalks,
- A new residential corridor within the core of the Town Centre,
- A safer, more comfortable walking environments for residents of all ages and mobilities, and
- A reduction in intersection crossing distances.

Impact of future growth on cyclists could include:

- Improved facilities for cyclists of all ages and abilities,
- A separated two-way cycle track along an important connection for area cyclists,
- Improved connectivity for cyclists traveling east-west,
- Decreased travel time and distance, and
- Clear signage that will help to direct users to their intended destinations.

Impact of future growth on drivers could include:

- An improved grid network that will lessen the impacts on the road network as vehicle trips increase,
- Continued access for commercial industries,
- New roadways to improve circulation,
- Safer intersection operations,
- Minor increase in travel time for some vehicle trips with all intersections operating at an acceptable level of service
- Minimal delays to through traffic on Mountain Highway and Lynn Valley Road, and
- Parking improvements.

Impact of future growth on transit users could include:

- Improved service, including increases in frequency and routes, for an exceptional overall experience, and
- Improved accessibility resulting in an increase in ridership.

With all change and growth cultivates a need to better understand the surrounding area and how certain regeneration will impact others. The report has considered the impact of future development on the residents who call the District of North Vancouver home and how best to mitigates any potential impacts. The recommended changes are expected to provide a better function while balancing the needs of both vehicular traffic and other sustainable modes of transportation now and into the future.

1.0 Introduction

1.1 Lynn Valley

Lynn Valley Town Centre is a long-established community in the District of North Vancouver, located amongst a beautiful, natural setting. In the core of the community there are retail establishments and civic uses, including the new Lynn Valley Main Library. In 2011, District of North Vancouver Council adopted a new Official Community Plan (Bylaw 7900). This OCP establishes a 'network of centres' to manage growth within a defined urban structure over the next 20 years. Lynn Valley Town Centre is one of two Town Centres identified in the OCP and is the designated Municipal Town Centre under the *Metro Vancouver 2040: Shaping Our Future (2011)* Regional Growth Strategy. In particular, the OCP calls for the revitalization of the Lynn Valley Town Centre and provides land uses that increase residential density, making the community more pedestrian-oriented, vibrant and with more housing choices.

1.2 Project Rationale

Before development projects are approved under the scope of the new OCP, the implications on the transportation network must first be well understood. As such, a major component of the Transportation Study has been to examine the future transportation conditions that are anticipated as a direct result of future land use plans. Once the impacts of the land use changes on the transportation system were identified, required multi-modal transportation improvements were developed in consultation with the District of North Vancouver.

In addition to land use and density projections, the Transportation Study required an update to the existing Synchro model, local area traffic projections and the development of a new Synchro model. The project included an assessment of alternative modes and planning for transit stops, pedestrian, and cycling connectivity. Goods movement access and internal study area configuration were also considered. Finally, a number of alternatives for various segments of the transportation network were developed and assessed. The recommended scenario is a transportation network that accommodates growth while supporting mobility for all modes.

The overall purpose of this study is to ensure that the community's vision for a vibrant and complete Town Centre is upheld. The functionality of the transportation network is a major factor in achieving this objective.

1.3 Report Outline

This report is divided into eight sections that describe the study processes, analysis, and recommendations. The sections are as follows:

1. **Introduction**
2. **Scope of Work**: Description of the approach to the study, including the area and time horizons considered.
3. **Existing Context**: Summary of the existing pedestrian, cycling, transit, and road networks, including analysis of existing intersection operations.

4. **Lynn Valley Town Centre by 2031**: Presentation of the anticipated growth and land use patterns based on the OCP. The vision for Lynn Valley is summarized along with the planned transportation network for all modes.
5. **Future Conditions Assessment**: Summary of forecast conditions for the roadway network and analysis of roadway operations. Description of future transit, cycling, and pedestrian needs.
6. **Guiding Principles**: Identification of the guiding principles that informed the design. These principles are based on the vision and conditions outlined in previous sections.
7. **Recommendations by 2031**: Presentation of the recommended transportation network for 2031 and beyond.
8. **Conclusion**

2.0 Scope of work

2.1 Deliverables

In pursuing the objectives of this Transportation Study, two major deliverables have been completed by the consulting team with guidance from the District. These deliverables include:

1. The traffic model, to provide developers with assistance in identifying development impacts and solutions that will mitigate these impacts.
2. The recommended improvements to the transportation network, illustrated in plan view, with cross-sections showing laning, road classification, traffic control, bus stops, parking, cycling and pedestrian accommodation, as well as other road elements.

2.2 Time Horizon

The scope of the Transportation Study includes two future horizons, one for 2031 (20 year horizon) and one for full build-out, which would occur in the future after 2031 (ultimate horizon). The timing of the ultimate horizon is unknown and would be subject to future assessment of long term market conditions. The purpose of modelling two future horizons is to assess the impact on the transportation network of a partial mall redevelopment (within the timeframe of the OCP) and the impact on the network when the remainder of the mall redevelops (anticipated at some point after 2031). One analysis period (P.M. peak hour) was used to assess impacts. The A.M. peak hour impacts are estimated at a high level by comparing trip generation rates to the P.M. peak. This provides a rough gauge of the difference between the two peaks.

2.3 Study Area

The Transportation Study addresses the road network surrounding the Lynn Valley Town Centre area. The Town Centre area, as identified in the Official Community Plan, is shown in Figure 2-1**.**

Figure 2-1: *Lynn Valley Town Centre*

2.4 Analysis

In order to achieve the vision of a vibrant, mixed use centre with sustainable modes of transportation (walking, cycling, transit), a balance must be achieved between accommodating vehicular traffic and supporting these sustainable modes. Because of these diverse objectives, it was determined that traditional measures of effectiveness, such as level of service and volume to capacity ratios, do not necessarily indicate whether the transportation network will meet future needs. This is especially important for the internal road network in the Study Area because the community's vision is for a pedestrian, cycling and transit-friendly, vibrant mixed use centre. Achieving this vision may result in an internal network with reduced vehicular capacity. Along the adjacent arterial and collector roads, the priority is to maintain lower delays and limit queues. Traditional measures of effectiveness and analysis tools were used to measure changes in mobility along these corridors.

In keeping with the vision for the Lynn Valley Town Centre and the analysis boundaries described above, the Study Area intersections were divided into two categories:

1. **Connectivity intersections**: these intersections are important for connectivity within the broader road network. The analysis includes turning movement forecasts and assessment in Synchro.

Analysis is completed for the 2031 build-out scenario (i.e. with upper shopping mall site not redeveloped, and using design concept road network) and for an ultimate future build-out (i.e. with upper shopping mall site redeveloped and OCP road network).

2. **Vision intersections**: it is most important for these intersections to be designed consistently, with the sustainable-mode vision. As described above, analysis tools like Synchro are not an effective tool to determine if these intersections meet their intended purpose. Instead, recommendations are made based on best practices for sustainable modes, urban livability, and the vision for the community.

In Figure 2-2 below, the key connectivity intersections are identified in blue and the vision intersections are highlighted in orange.

Figure 2-2: *Proposed Intersections for Analysis*

3.0 Existing Context

Traffic counts were collected in the autumn of 2012 to confirm existing traffic volumes within the study area. The counts are summarized in Table 3-1.

Table 3-1: Intersection Count Locations

Intersection Location	Count Date
Fromme Road and E 29th Street	September 19, 2012
Mountain Highway and Lynn Valley Road	September 20, 2012
Mountain Highway and E 27th Street	September 25, 2012
Mountain Highway and Ross Road	September 26, 2012
Mountain Highway and Emery Place	September 27, 2012
Mountain Highway and Existing Mall Entrance	October 2, 2012
Fromme Road / E 27th Street and Lynn Valley Road	September 26, 2012
Whiteley Court and E 27th Street	October 3, 2012
Lynn Valley Road and Ross Road	October 4, 2012

Existing traffic count volumes were balanced within the study area to ensure consistency between intersections prior to commencing evaluation of existing traffic conditions. Traffic volumes at some intersections were not available. For connectivity intersections where traffic volumes were not available (including Lynn Valley Road at E 29th Street) were estimated based on the best available information and engineering judgement.

3.1 Roadway Characteristics

The study area road network consists of almost a dozen different streets as summarized in the following table:

Road	Class	Number of Lanes	Existing Transit Service	Existing Bicycle Facilities	Existing Pedestrian Facilities	On Street Parking
Lynn Valley Road (LVR)	Major Arterial	5 lanes – two per direction + left turn lane	Route 228 Route 255 Route 229 (N of 29th St) Bus lay-by on south side of LVR by Main Library	Northbound shared lanes between Molly Nye way and E. 29th Street	Sidewalks on north and south sides	Small pocket of on street parking on south side at Ross Road
Mountain Highway	Major Arterial	3 lanes – one per direction + left turn lane	Route 209 Route 210 Route 255	Northbound and southbound painted bike lanes from E. 27th St to E. 29th St	Continuous Sidewalk on west side. Sidewalk on portions of east side, some on private property.	Small pocket of on street parking on east side north of Lynn Valley Road
E 27th Street	Collector	3 lanes – one per direction + left turn lane	None	None	Sidewalks on north and south sides	On street parking on south side of E 27th Street
Fromme Road (North of LVR)	Collector	2 lanes – one per direction	None	None	Sidewalks on east and west sides	On street parking on east and west sides
Fromme Road (South of LVR)	Local Road	2 lanes – one per direction	None	None	Sidewalk on east side	On street parking on west side
Ross Road (East of Mountain Hwy)	Collector	2 lanes – one per direction	None	None	Sidewalk on south side	On street parking on north and south sides
Ross Road (West of LVR)	Local Road	2 lanes – one per direction	None	None	Sidewalk on south side	On street parking on south side
Whiteley Court	Local Road	2 lanes – one per direction	None	None	Sidewalks on east and west sides	On street parking on east and west sides
E 29th Street (West of LVR)	Major Arterial	2 lanes – one per direction	Route 229	None	Sidewalks on portion of north and south sides	On street parking on north and south sides
E 29th Street (East of Mountain Hwy)	Local Road	2 lanes – one per direction	None	None	None	On street parking on north and south sides
Emery Place / E 24th Street	Local Road	2 lanes – one per direction	None	None	None	On street parking on north and south sides

3.2 Existing Conditions Analysis

Existing traffic volumes were obtained at key intersections in the study area and modeled to identify existing network issues and deficiencies. Traffic operations at key street intersections within the Study Area were evaluated using the Synchro 7 traffic analysis software package. This operational analysis included calculation of volume-to-capacity (v/c) ratios, and predicted delay based Level of Service (LOS) for each traffic movement at each intersection assessed.

At signalized intersections, the v/c ratio is used as a measurement of the traffic congestion for a particular traffic lane, lane group, or entire intersection. Generally, values up to 0.85 are considered appropriate for the intersection and up to 0.90 for individual lanes or lane groups. A v/c ratio of 1.0 or greater indicates that the traffic operation is over-capacity. The traffic LOS indicator ranges from the ideal LOS A condition with minimal or no delay through to the LOS F condition with extensive delay.

For unsignalized intersections, the LOS is based on the estimated average control delay per vehicle for each crucial movement. A control delay less than 10 seconds indicates sufficient capacity and good traffic conditions. A calculated control delay value that is greater than 50 seconds is assigned a LOS F performance measure. Balanced existing traffic volumes at key Study Area intersections are shown in Figure 3-1**.** The results of the Synchro analysis of signalized intersections are shown in Figure 3-2**.** All individual movements at signalized and unsignalized key connectivity intersections operate with LOS D or better and volume to capacity (v/c) ratio less than 0.90.

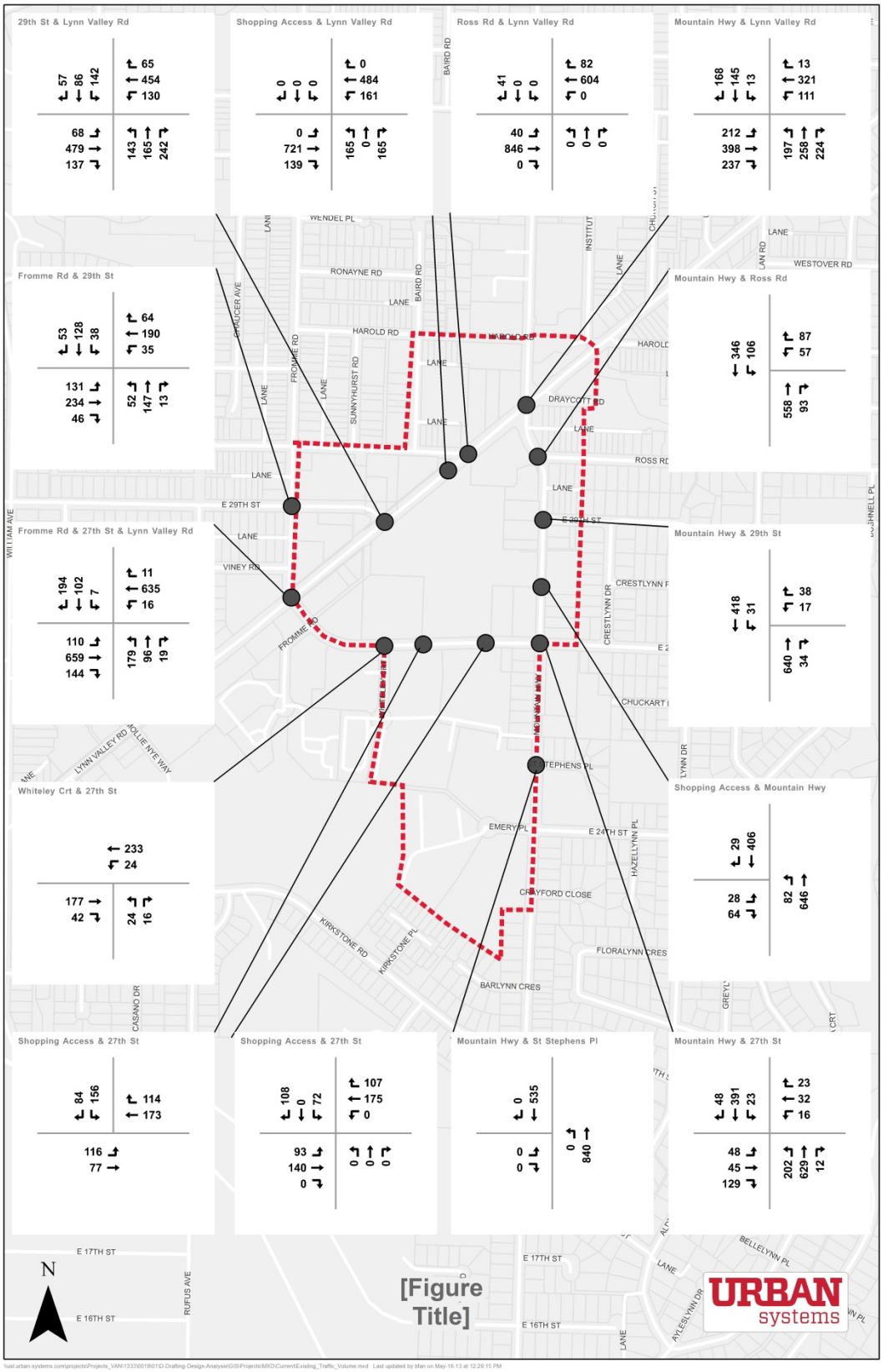


Figure 3-1: Existing traffic volumes (PM Peak)

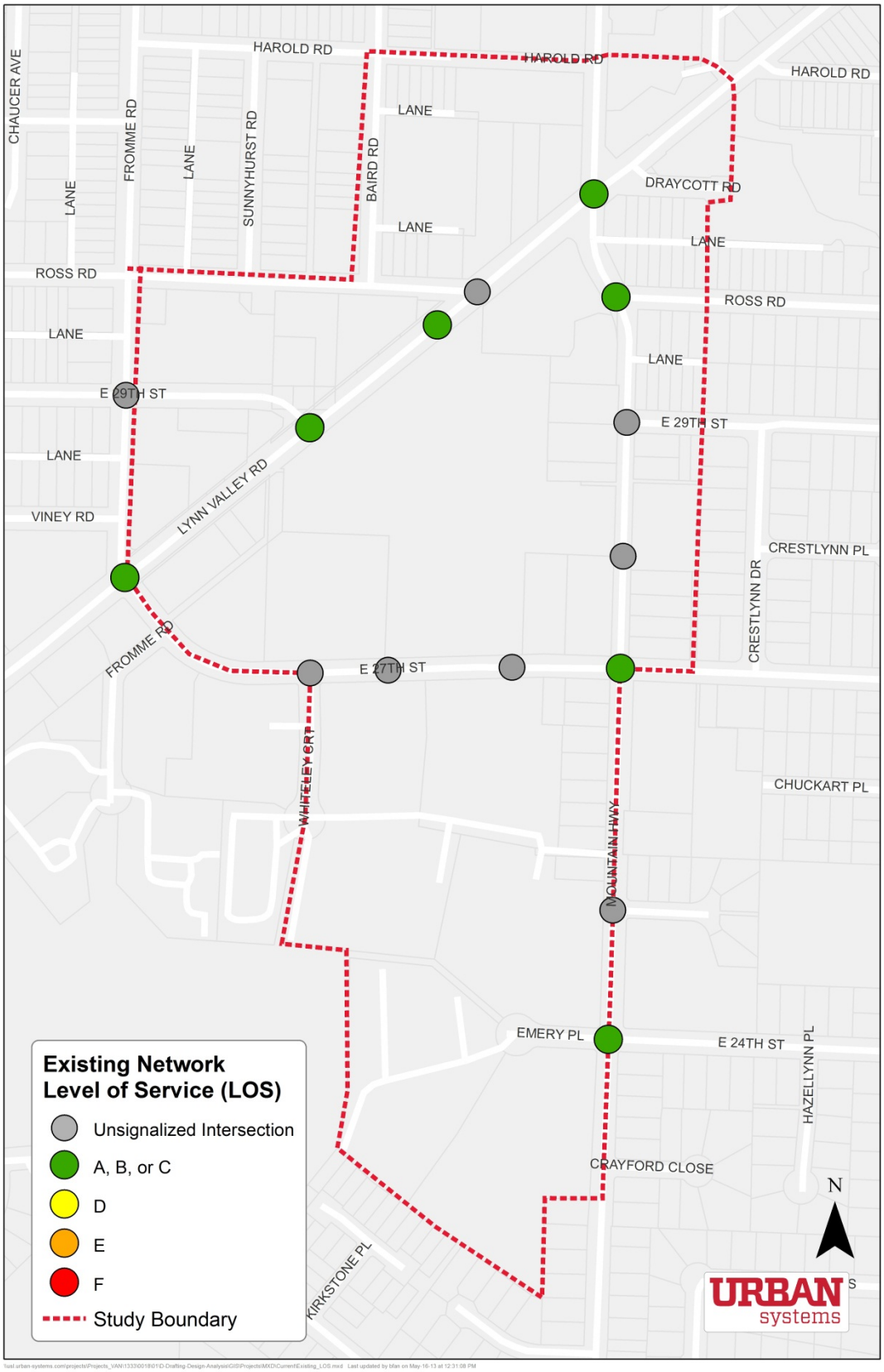


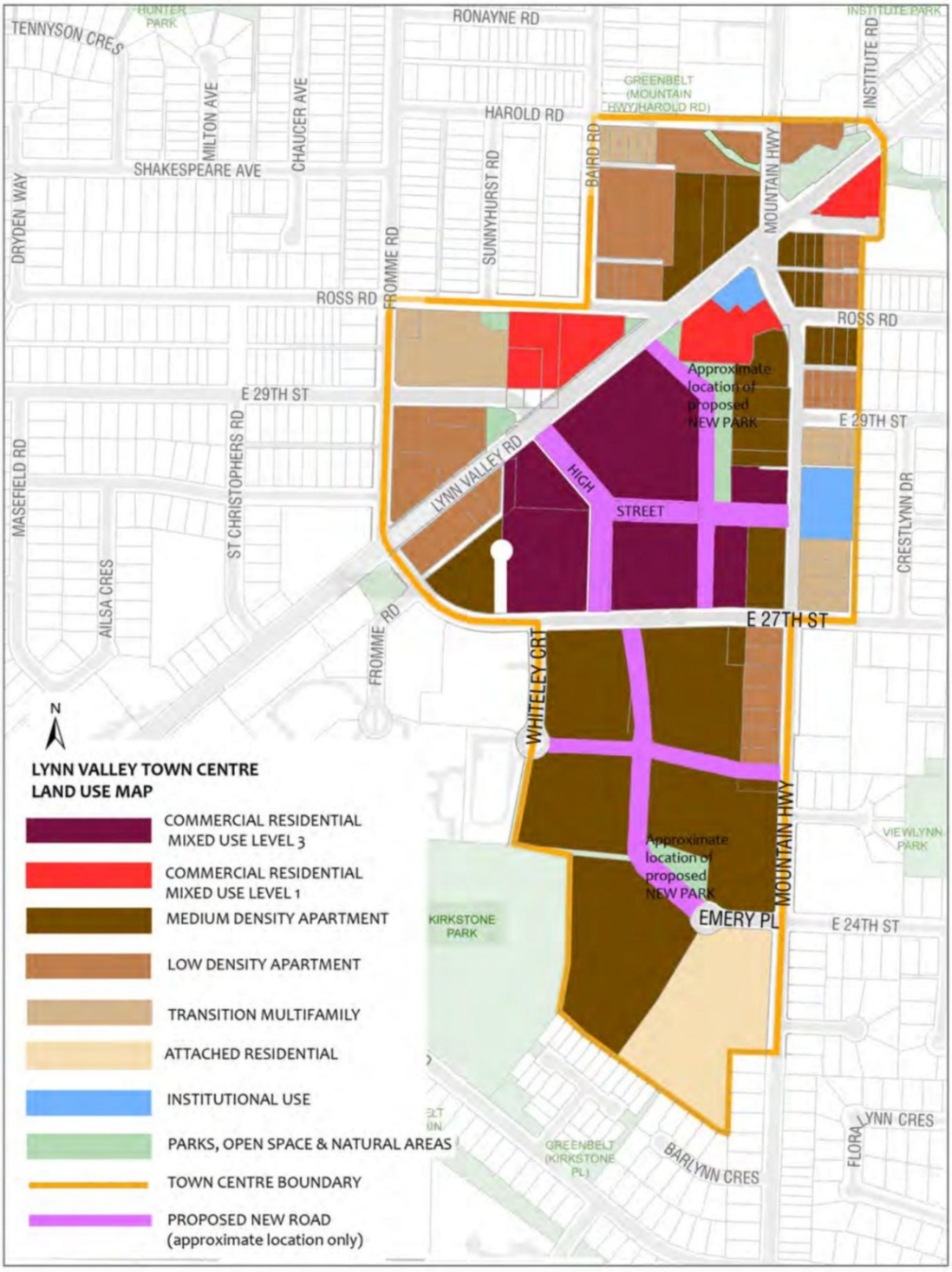
Figure 3-2: Existing traffic level of service (PM Peak)

4.0 Lynn Valley Town Centre by 2031

4.1 Growth and Land Use

The District's Official Community Plan (OCP) was approved by Council in June 2011. The OCP identifies two Town Centres in the District, Lynn Valley and Lower Lynn, both of which will experience growth, development and redevelopment over the next 20 years. Medium and higher densities in Lynn Valley will be located in the core area of the Town Centre and will include commercial, employment, recreational and civic uses as well as approximately 2,500 new residential units by 2031. Because of the growth that is expected, Lynn Valley is also a focus for potential frequent transit service.

According to the OCP, higher densities will be located in the Town Centre core in order to create a walkable environment. Near the outward areas of the Town Centre, the focus will be on ground-oriented multi-family housing. The OCP establishes East 27th Street as a predominantly residential street with the potential for limited retail on the north side. Finally, according to the plan, a gateway to Lynn Valley is to be established at the intersection of Mountain Highway and Lynn Valley Road. The Lynn Valley Town Centre Land Use Map, which also shows the approximate locations of proposed roads, is provided in Figure 4-1**.**



Source: DNV Official Community Plan

Figure 4-1: Lynn Valley Town Centre Land Use Map

The proposed changes in land use for the interim and ultimate horizons are summarized in Table 4-1. These land use changes were used to estimate future traffic in order to complete the future conditions assessment.

Table 4-1: Proposed changes in Study Area land use

	Residential	Gas Station	Commercial
	Units)	(pumps)	(sq ft)
20 Year Horizon			
New development	3,910	-	253,049
Existing to be removed	546	22	238,823
Net development	3,365	(22)	14,226
Ultimate Horizon			
New development	4,633	-	320,062
Existing to be removed	546	22	306,961
Net development	4,088	(22)	13,101

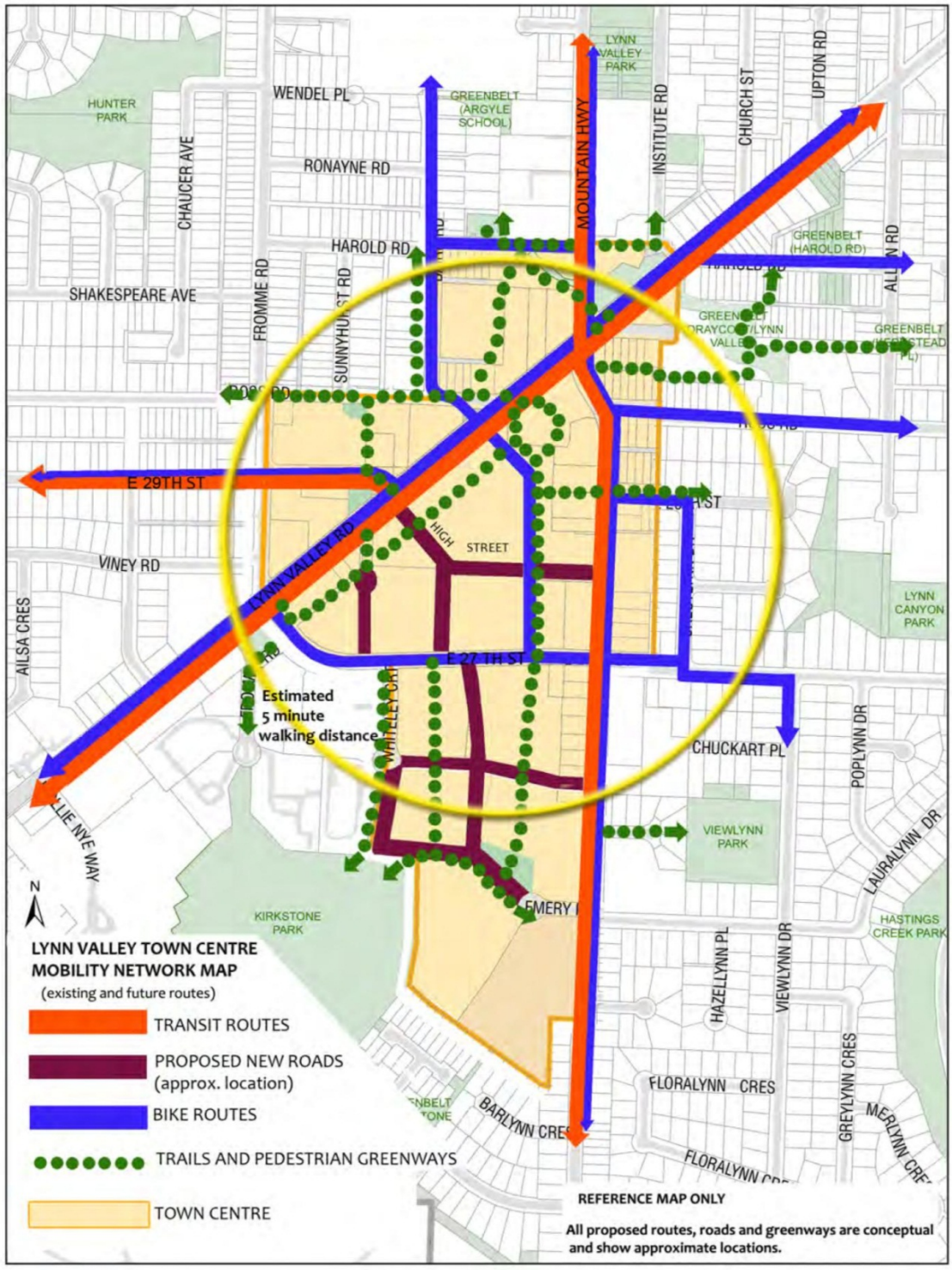
The summary above shows that growth in commercial is expected to increase modestly as commercial uses transition over time from large format retail with no residential to mixed use with the inclusion of residential components, while the number of residential units is expected to grow more significantly within the study area. This will allow for improved neighbourhood and economic vibrancy by increasing the number of residents, pedestrians, cyclists, and local shoppers in the area. At the same time, existing low-density “big box” commercial is expected to be augmented with higher value street-facing commercial along the High Street. For both the residential and commercial space, existing land uses that are high trip generators per unit are being replaced with more sustainable land use that typically generates fewer trips per unit. This type of development also typically results in a higher mode share for walking, cycling, and transit and a lower mode share for driving.

4.2 Vision and Mobility Network

Part of the Vision for the community, as described in the OCP, includes well-designed pedestrian and cycling facilities as well as transit-oriented mixed uses in the heart of the community. In order to achieve its transportation-related vision, Mobility Network Policies and a Mobility Network Map were prepared for the OCP. The policies are listed below and the Mobility Network Map is provided in Figure 4-2**.**

Mobility Network Policies – DNV Official Community Plan

1. Support a safe and integrated transportation network that includes all modes of transportation with an emphasis on walkability and strong pedestrian connections and plan road, transit, bike and pedestrian routes in accordance with the Lynn Valley Town Centre Mobility Network Map
2. Connect the Town Centre to outside destinations and explore opportunities to establish a north-south pedestrian/cycle route east of Mountain Highway
3. Maintain Lynn Valley Road and Mountain Highway as primary vehicular routes for Lynn Valley
4. Establish a pedestrian and vehicle oriented High Street in the core of the Town Centre to include generous sidewalks, weather protection, bike facilities and on-street parking
5. Encourage the majority of parking to be located underground, and explore opportunities for reduced parking standards and shared residential/commercial parking in concert with enhanced pedestrian, cycling and transit facilities
6. Work with the regional transportation authority to support the provision of frequent transit service to and from the Town Centre and support transit service with appropriately located lay-by areas and accessible, safe and attractive transit stops
7. Provide accessible and comfortable sidewalks in the Town Centre and provide safe and attractive pedestrian crossings of Lynn Valley Road, Mountain Highway and East 27th Street at strategic locations
8. Continue to explore innovative transit choices in the long-term



Source: DNV Official Community Plan

Figure 4-2: Lynn Valley Town Centre Mobility Network Map

The OCP acknowledges that implementation plans may be required in order for the District to achieve the concepts and objectives in the OCP. This Transportation Assessment is a key input into the development of the Lynn Valley implementation plan, which is being developed to align with the policies and objectives set out in the OCP.

Other plans and visions influence the future of transportation in Lynn Valley. These include the North Shore Area Transit Plan, the District of North Vancouver Transportation Plan, and the North Vancouver Bicycle Master Plan. The application of these plans is outlined in the paragraphs below.

The North Shore Area Transit Plan was completed by TransLink in consultation with the North Shore communities between fall 2010 and fall 2012. The report was finalized in October 2012. Through investigation of existing conditions, anticipated growth, and the community vision identified, a 2040 transit network vision for the north shore was developed. Relevant highlights from this plan for Lynn Valley Town Centre are as follows:

- New or Improved Transit Exchange located at Lynn Valley Town Centre
- Frequent Transit Service along Lynn Valley Road
- Frequent Transit Service along Mountain Highway
- Frequent Transit Service along E 29th Street west to Lonsdale Avenue
- Rapid Transit Service along E 29th Street west to Capilano Road

The District's vision for future bus routes and stop locations, which has been developed in consultation with TransLink, is shown in Figure 4-3 below.

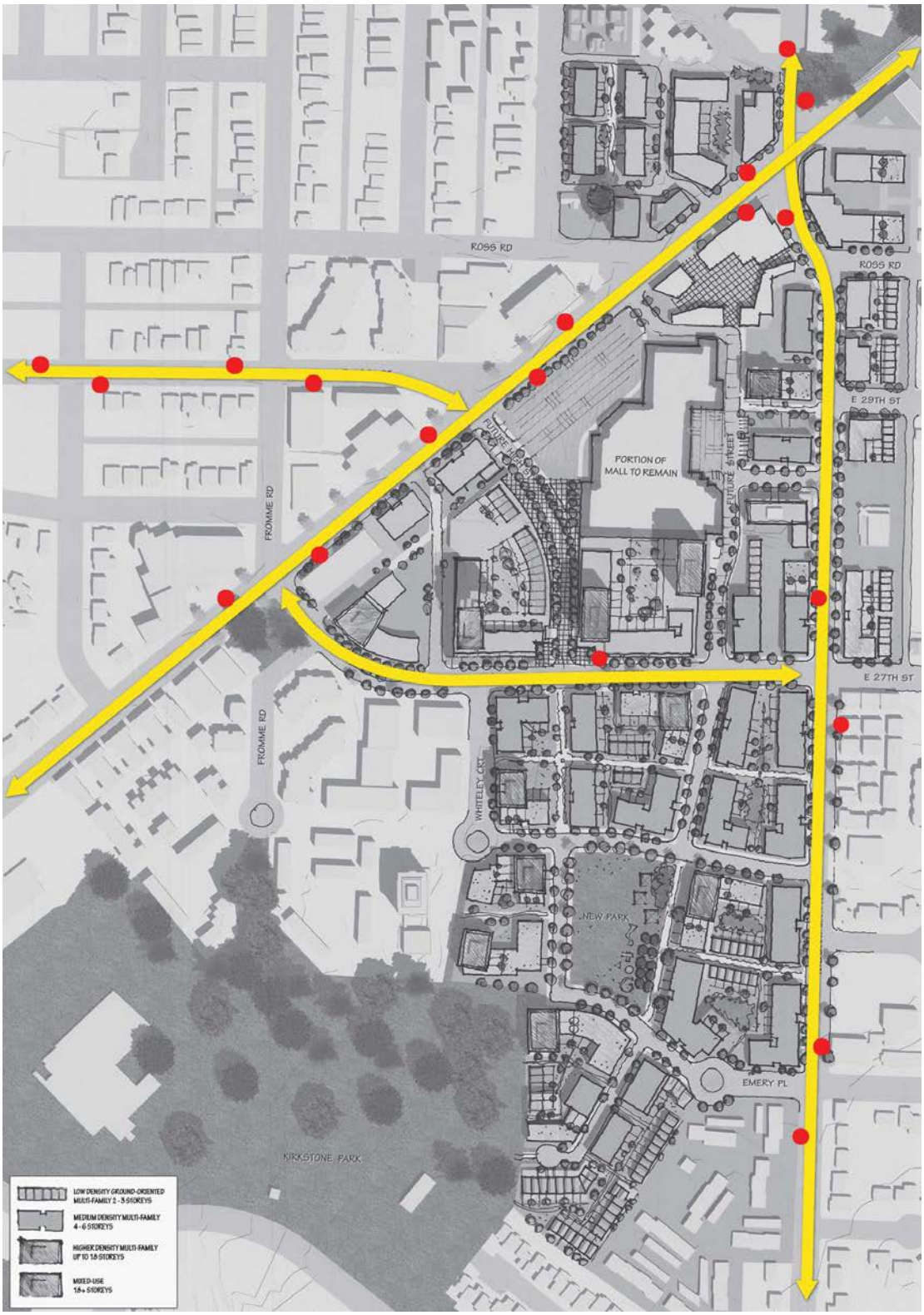


Figure 4-3: District's Vision for Future Route and Stop Locations

Outlining priorities for improving the transportation network in support of the OCP, the District of North Vancouver Transportation Plan was approved by Council in 2012. As part of this study of the Lynn Valley Town Centre, consideration was provided to how the transportation priorities identified within this plan could be incorporated into the Lynn Valley Town Centre network. Relevant outcomes were identified in the pedestrian, bicycle, and road safety sections of the transportation plan, and are summarized as follows:

High priority sidewalks were identified as part of the transportation plan in the following locations:

- Ross Road, east of Mountain Highway
- Mountain Highway, north of E 27th Street to E 29th Street
- E 29th Street, west of Fromme Road

High priority bike improvements were identified as part of the transportation plan in the following locations:

- E 27th Street between Mountain Highway and Lynn Valley Road
- Lynn Valley Road, south of Mountain Highway
- E 29th Street, west of Lynn Valley Road

These cycling improvements are integral to the implementation of the North Vancouver Bicycle Master Plan. As shown in Figure 4-4, these improvements are particularly important in a regional context, as they connect missing linkages in both the east-west and north-south directions to enable greater accessibility by bicycle for all residents and visitors in the District of North Vancouver. The improved on street connection along E 27th Street will connect to both Mountain Highway and Viewlynn Drive, important north-south corridors within the region. E 27th Street also provides an important connection for less confident cyclists who may use the trail network to connect to Fromme Road and on to the Lynn Valley Main Library and other destinations in Lynn Valley. The improved on street connection along Lynn Valley Road will provide a future connection from Dempsey Road in the north of the District all the way to Grand Boulevard south of Highway 1.The improved connection to E 29th Street will provide an east-west linkage in the northern segment of the district.

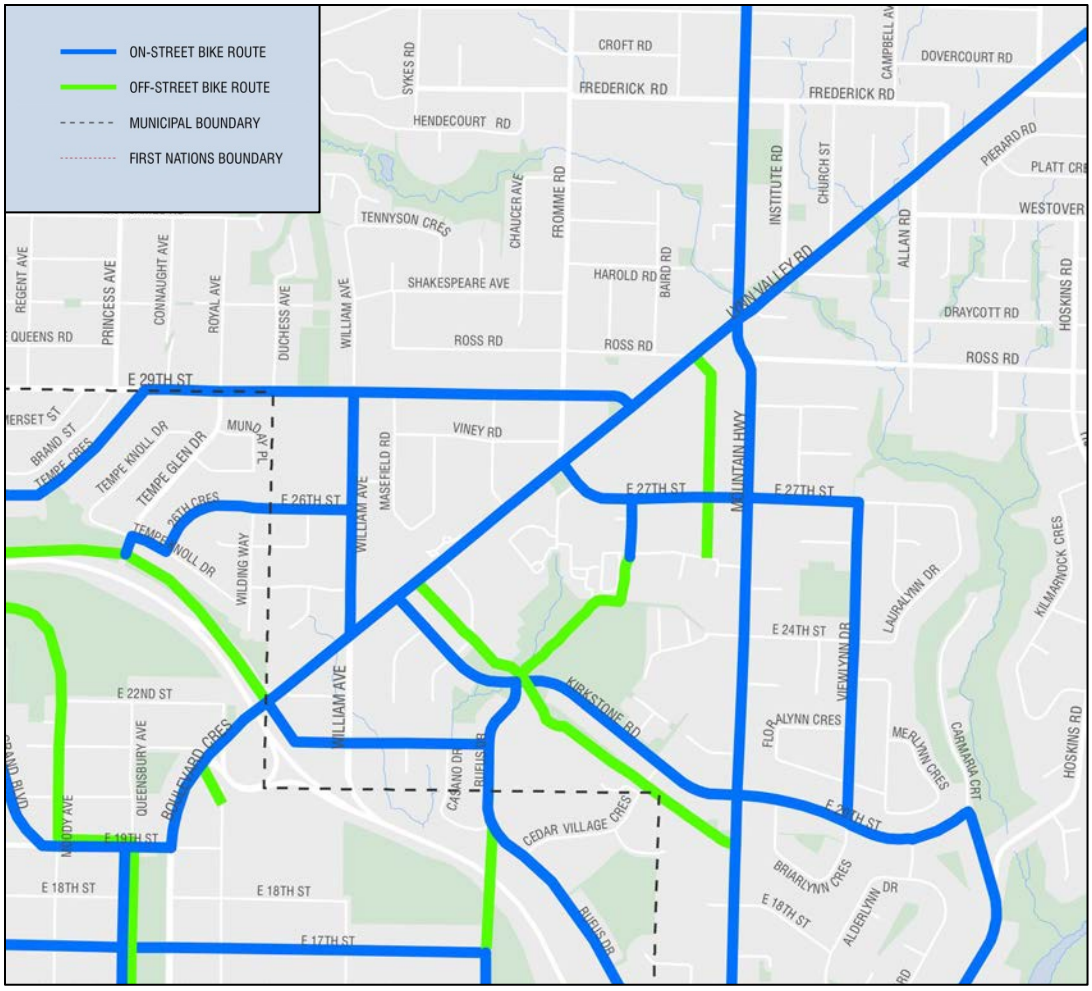


Figure 4-4: Portion of North Vancouver Bicycle Master Plan

High priority intersection improvements were identified as part of the transportation plan in the following locations:

- Lynn Valley Road and Mountain Highway
- Lynn Valley Road and E 29th Street
- Lynn Valley Road and E 27th Street/Fromme Road

The vision and priorities set forth in the Transportation Plan, North Shore Area Transit Plan, and North Vancouver Bicycle Master Plan were all incorporated into the study process to enable redevelopment within the Lynn Valley Town Centre to help achieve community aspirations already identified.

5.0 Future Conditions Assessment

The future conditions assessment included a review of all modes along the corridors in the Study Area. The assessment included traffic forecasting, intersection operations, bicycle and pedestrian connectivity, site access, internal circulation, and other measures.

5.1 Background Traffic Conditions

A growth rate of 0.3% was determined based on a review of the District's EMME transportation demand forecasting model and was applied to existing traffic in order to determine background traffic volumes in the 20 year horizon. The background was modified to reflect the redevelopment of Lynn Valley as an infill area. Because Lynn Valley has existing development that will be transformed and replaced over time, some existing trips must be removed from the network. The trips associated with these buildings must be deleted from the analysis. The existing built area expected to be removed to permit new development is summarized in Table 5-1. Trips generated by this built area were estimated using the methodology summarized in Appendix A. No internal trip reduction factor was applied, however a non-auto mode share shift of 20% was applied to the total person trips to reflect the District's current share of sustainable modes. Pass-by was assumed to be 30% for retail uses. Pass-by trips are those that would have travelled on the study area road network without the development being in place. For example, a driver that stops to get a coffee at a local shop on their way to work is a pass-by trip; they are not a "new" trip generated by the development, they are an existing trip that is 'passing by' and decides to stop at the development. A value of 30% was chosen based on information provided in the Institute of Transportation Engineers (ITE) Trip Generation reference book. The total trips deleted from the background condition to account for existing buildings that will be removed by 2031 are summarized in Table 5-2. These are the total vehicle trips, adjusted for mode share and pass-by assumptions.

Table 5-1: Existing built area to be removed

Land Use	Unit	Total Built Area to be Removed
Single Family Dwelling	(Dwelling Units)	32
Low Density Apartment	(Dwelling Units)	435
Mid-Rise Apartment	(Dwelling Units)	64
Low Rise Residential Condominium/Townhouse	(Dwelling Units)	9
Residential Condominium/Townhouse	(Dwelling Units)	6
Gasoline/Service Station w/ Convenience Market	(Vehicle Fueling Positions)	14
Gasoline/Service Station with Convenience market and Car Wash	(Vehicle Fueling Positions)	8
Old Lynn Valley Library[1]	(sq ft)	19,443
Shopping Centre[2]	(sq ft)	154,110
Supermarket	(sq ft)	33,274
Church	(sq ft)	8,271
Specialty Retail Centre	(sq ft)	5,545
Nursery (Garden Centre)	(sq ft)	14,168
Walk in Bank	(sq ft)	5,214
Coffee Shop	(sq ft)	6,685
Building Materials and Lumber Store	(sq ft)	9,519
Fast food restaurant	(sq ft)	2,037

Table 5-2: Trips to be deleted from background

Horizon	Inbound	Outbound	Total
20 Year	877	818	1,695
Ultimate	941	885	1,826

As discussed earlier, a number of land uses with high trip generation per unit are expected to be removed to allow for more compact development, which is expected to generate fewer trips per unit For example, low density apartments typically generate around 0.58 trips per unit in the p.m. peak period, while medium and high density apartments typically generate about 65% of that (0.38 trips per unit). This is because people living in medium and high density apartments are less likely to drive or own vehicles. These types of residential developments may also have a different mix of demographics, with fewer people per household and more seniors and / or students; all of these factors may result in fewer trips per

[1] The Old Lynn Valley Library was already closed at the time of the traffic counts and no trips were removed from the network to account for the redevelopment of this site. It is listed here for completeness.
[2] This is the full amount to be removed to accommodate the Ultimate horizon. Approximately 68,128 square feet of Shopping Centre Land Use is expected to remain in the 20 Year horizon, but be removed before the Ultimate horizon.

unit More information about expected future traffic is provided in the next section. As noted above, 1,826 existing trips were deleted from the network in the Ultimate horizon to account for the removal of these existing land uses.

5.2 Future Traffic Forecast

Traffic forecasts were completed for the 20-year and ultimate horizons in the p.m. A four-step traffic forecast model was used to complete the analysis. This model was based on a number of key assumptions at each step. The trip generation for the 20 year and Ultimate horizons are shown in Table 5-3 and Table 5-4. The trip generation is based on the land use shown earlier in Table 4-1. The trip generation assumptions included an internal reduction of 10% to account for travel within the Study Area that will not result in vehicle trips on the road network. They also include a non-auto mode share reduction of 20% of person-trips, which is the same reduction that was used in the estimation of existing network trips to be removed. This non-auto modes share is consistent with the existing non-auto mode share of 21% across the District of North Vancouver. This estimate is conservative, as the percentage of internal trips and the non-auto mode share are both expected to increase over time as Lynn Valley develops into a more vibrant, pedestrian focused village centre. Increases in either the internal trip share or the non-auto mode share will decrease the total number of trips generated by the site. Pass-by trips were assumed to be 30% for the shopping centre land use. This is consistent with the rate used for the existing network trips to be removed. Future trip distribution was estimated using the District of North Vancouver's EMME model and engineering judgement. Trip distribution assumptions are summarized in Error! Reference source not found.. Finally, trips were assigned based on most likely route.

Table 5-3: 20 Year horizon trip generation summary (PM Peak)

	Quantity	Units	Total Trips	Reduction	Pass-by	New Trips	
						IN	OUT
Low Density Apt	425	# of dwelling units	247	54	-	126	67
Medium Density Apt	2,494	# of dwelling units	973	178	-	461	333
Medium Rise Apartment	188	# of dwelling units	73	18	-	32	23
High Rise Townhouse	691	# of dwelling units	263	64	-	123	75
Shopping Centre	253	1000 sq ft	1,625	328	388	448	461
Transition Multifamily	111	# of dwelling units	42	10	-	20	12
TOTAL			3,222	651	388	1,210	973

Table 5-4: Ultimate Horizon trip generation summary (PM Peak)

	Quantity	Units	Total Trips	Reduction	Pass-by	New Trips	
						IN	OUT
Low Density Apt	425	# of dwelling units	247	54	-	126	67
Medium Density Apt	2,494	# of dwelling units	973	178	-	461	333
Medium Rise Apartment	188	# of dwelling units	73	18	-	32	23
High Rise Townhouse	691	# of dwelling units	263	64	-	123	75
Shopping Centre	320	1000 sq ft	1,855	364	446	514	531
Transition Multifamily	111	# of dwelling units	42	10	-	20	12
TOTAL			3,452	688	446	1,276	1,042

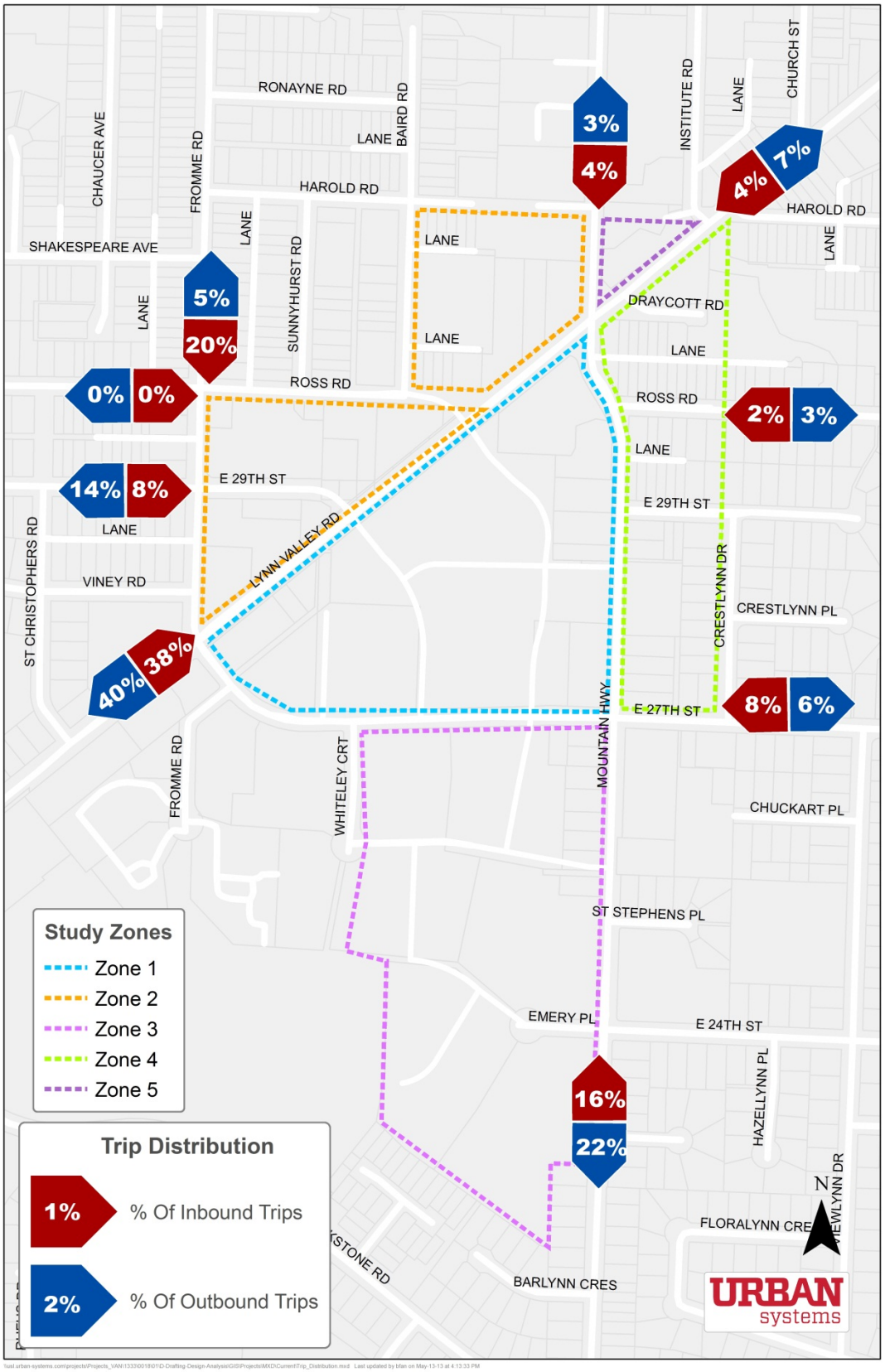


Figure 5-1: Trip distribution assumptions (PM Peak)

The new trips generated by the study area in the 20-year and Ultimate Horizons are shown in Figure 5-2 and Figure 5-3. The new trips are added to the modified background trips to determine future total trips for analysis. The future total trips are illustrated in Figure 5-4 and Figure 5-5**.**

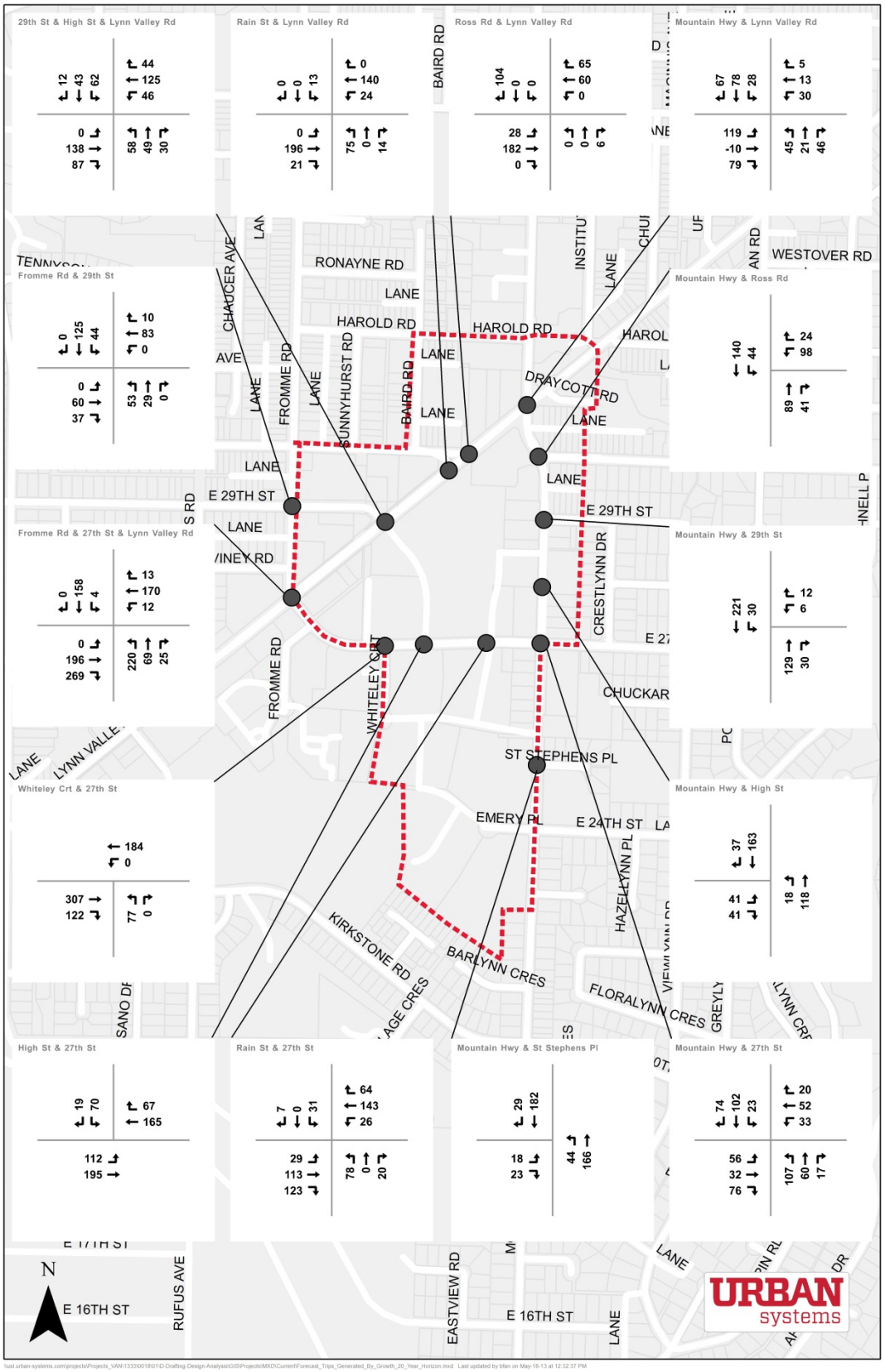


Figure 5-2: Forecast Trips Generated by Growth – 20 Year Horizon (PM Peak)

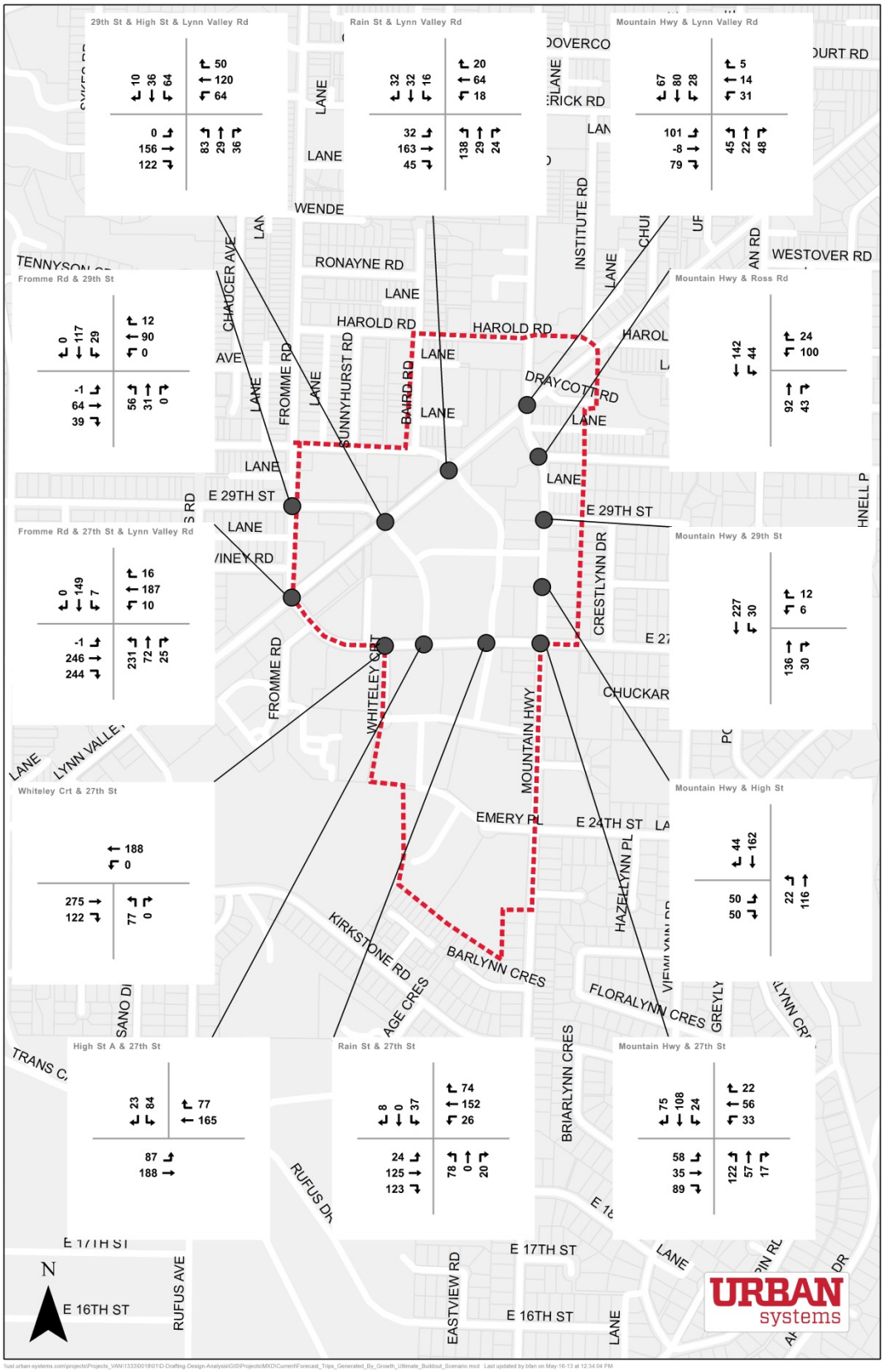


Figure 5-3: Forecast Trips Generated by Growth – Ultimate Horizon (PM Peak)

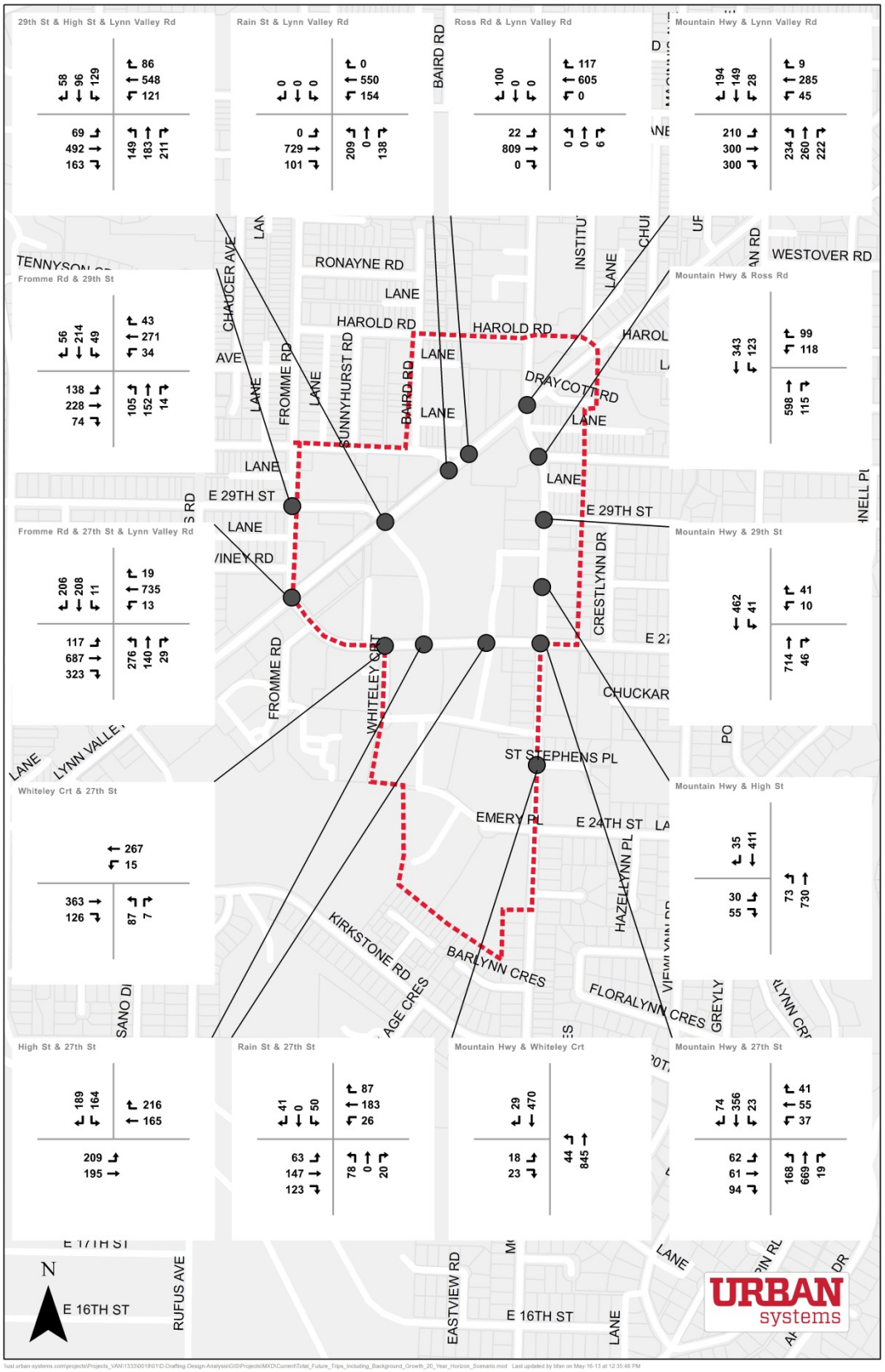


Figure 5-4: Total Future Trips (Including Background Growth) – 20 Year Horizon (PM Peak)

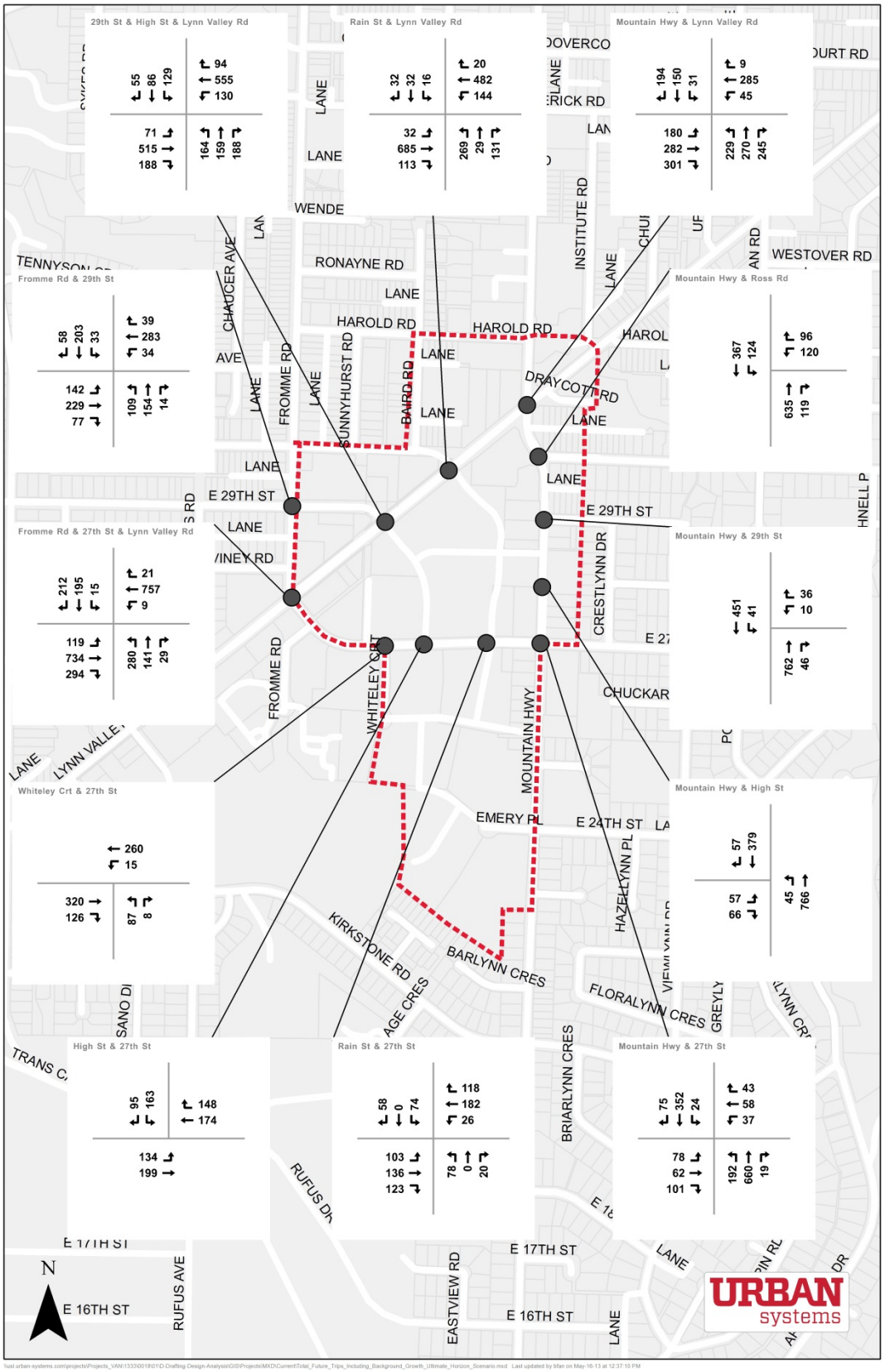


Figure 5-5: Total Future Trips (Including Background Growth) – Ultimate Horizon (PM Peak)

5.3 Future Transit Needs

As previously discussed, the North Shore Area Transit Plan was completed in 2012 after extensive consultation with the North Shore Communities. Through this process, a network vision was identified to serve projected land use on the North Shore and achieve a 50 percent increase in transit mode share from 10 to 15 percent for the entire North Shore by 2040. The vision for the North Shore Area Transit Network is illustrated in Figure 5-6.

Based on the projected population growth at Lynn Valley Town Centre, substantial transit improvements connecting to this area were prioritized as part of the plan. These improvements can be summarized into three categories as noted below:

- **Improved transit exchanges.** Lynn Valley Town Centre has been designated with an improved transit exchange. This should provide appropriate transit infrastructure to facilitate efficient exchange operation, along with urban design and land use to provide a high quality customer experience

- **Frequent transit service**. Metro Vancouver's Frequent Transit Network (FTN) is a network of corridors where transit service runs at least every 15 minutes in both directions throughout the day and into the evening, every day of the week. . Lynn Valley Road, Mountain Highway, and E 29th Street (west to Lonsdale Avenue) have all been designated as frequent transit service routes as part of this plan.
- **Rapid transit service.** The North Shore Area Transit Plan defines rapid transit service as frequent transit service with faster, more reliable travel times in order to be more competitive with the private automobile. E 29 Street was identified in the long-term vision as a potential corridor for east-west transit service.
- **Improved east-west mobility.** A new route connecting Lynn Valley Town Centre to Park Royal via Edgemont Village has been identified as a priority to facilitate the demand for an additional east-west connection within the area. This will introduce additional transit arrivals and departures terminating at Lynn Valley Town Centre to the frequent transit service routes already identified.

Through District discussions with TransLink representatives in December 2011, it was identified that an on-street transit exchange along the north side of E 27th Street would be desirable. This would involve reintroducing transit service on 27th Street to better integrate with a clockwise delivery and departure of buses arriving from and departing to Lynn Valley Road, Mountain Highway, and E 29th Street. Room for two standard 12.44 m buses complete with bike rack installation independently arriving and departing from the on-street transit exchange is likely needed. The space should be flexible to also potentially accommodate an 18.50 m articulated bus, should longer buses be introduced on buses servicing Lynn Valley Town Centre.

In addition to the forecast improvements to service identified, it is expected that existing local bus routes with stops in the study area will be maintained.

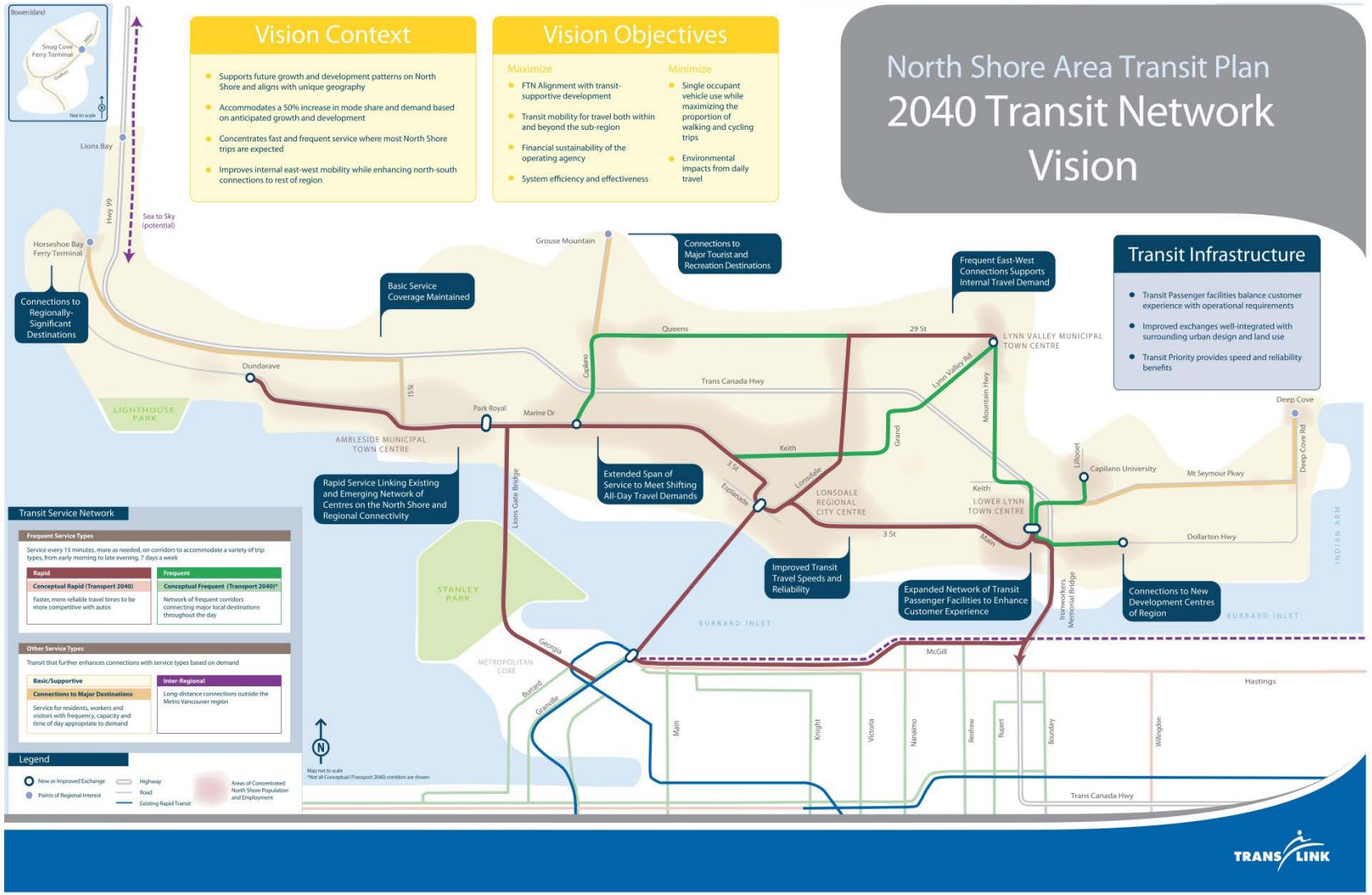


Figure 5-6: North Shore Transit Vision

5.4 Future Pedestrian and Cycling Needs

As previously identified, the OCP, Transportation Plan, and North Vancouver Bicycle Master Plan all emphasize infrastructure improvements for pedestrians and bicycles within the Town Centre. The specific road, sidewalk, and intersection upgrades identified in these studies should be paired with a design philosophy which emphasizes consideration for vulnerable road users. This approach will encourage multiple modes of transportation utilized within the town centre. Regionally, Lynn Valley Road, E 29th Street, E 27th Street, and Mountain Highway are all designated as important bicycle connections. Therefore, incorporating road network improvements which will encourage bicycle users of all ages and abilities along these improved routes will enable a safer and more comfortable environment.

The proposed land use changes are expected to result in an improved pedestrian and cycling environment and related infrastructure. Within the existing road right-of-way, there is minimal space to provide improved walking and cycling connectivity or to improve quality of experience and safety for cyclists and pedestrians. The proposed land use changes add new trips to this area, but they also provide property and resources to allow for improved cycling and pedestrian space. Density is also expected to increase the number of pedestrians and cyclists in the area. Simply increasing the number of cyclists is known to make cycling safer. Increasing the number of pedestrians improves livability, safety, and community vibrancy.

5.5 Future Goods Movement and Access Needs

Lynn Valley will continue to be a hub of commercial and economic activity for the area and access for goods movement and passenger vehicles to individual parcels and underground parking lots will continue to be important. Small retail uses and grocery uses have different goods movement needs. Grocery providers typically use large tractor-trailer units and require access to loading bays. Smaller retailers require single unit truck access. To ensure effective goods movement in Lynn Valley, a WB-20 tractor-trailer unit was used as the design vehicle. A travel path for these vehicles was provided via Lynn Valley Road / E 27 Street, with direct access from the lane between Lynn Valley Road and High Street. Access for a Heavy Single Unit (HSU) design vehicle was maintained from Mountain Highway to E 27th Street and Rain Street.

Accesses to underground parking should be concentrated to four-way intersections wherever possible. Accesses should be provided midblock to reduce conflicts with intersection traffic operations and queues.

6.0 Guiding Principles

A number of guiding principles were established to help inform the development of improvement options for the Town Centre. These principles were considered across the four main transportation modes within this area: pedestrians, cyclists, transit and motor vehicles.

6.1 Pedestrians

- **Improve permeability and connections to the town centre.** Greater connectivity through safe and appealing pedestrian crosswalks shall be established along the appropriate desire lines to connect pedestrians from surrounding neighbourhoods to the Town Centre.
- **Ensure safe and comfortable mobility for all road users.** The road cross section features and landscape improvements should consider the safety and comfort of the most vulnerable road users. This should emphasize children, elderly people, and those with mobility impairments.
- **Transform the network into a great space.** In line with the District's vision to create a well-designed pedestrian, biking and transit-oriented mixed use centre in the heart of Lynn Valley that celebrates its natural and cultural setting and strong sense of community, Lynn Valley Town Centre should become an attraction and destination in and of itself to live, work, play and learn.
- **Reduce crossing distances at all intersections.**

6.2 Cyclists

- **Complete the envisioned bicycle network.** Improvements to transportation infrastructure should incorporate routes identified in the North Vancouver Bicycle Master Plan (2012). Where applicable, and in conjunction with the redevelopment taking place, regional connections on 27th Street, 29th Street, Mountain Highway, and Lynn Valley Road should be made more direct ; considering major road crossings, left turns, and route continuity.
- **Ensure a safe and comfortable transportation network for both commuter and recreational cyclists.** Provisions should be made to attract recreational cyclists with pleasing pathways that allow for "conversational cycling" at moderate travel speeds. In addition, consideration of connection for higher speed cyclists should be provided for daily commuter needs within the area.
- **Design bicycle facilities to attract new riders of all ages and abilities.** All bicycle facilities should be designed to attract new cyclists and increase cycling mode share within the District. Where possible, facilities should be physically separated from automobile traffic and wide enough to allow for safe passing.
- **Incorporate clear and consistent wayfinding signage for bicycle users.** As part of the implementation of the enhanced bicycle network within the Town Centre, clear signage

should be introduced along all routes and at all decision points to direct cyclists to their intended destination in a safe and direct manner. Where changes to existing travel routes are introduced, additional temporary signage is recommended to emphasize new routes within the transportation network. Signage should be consistent in format and approach with the remainder of the District; however, it is recommended that signage provides direction, distance, and time to reach important destinations on the North Shore.

6.3 Transit

- **Facilitate efficient transit vehicle operation.** Design transit facilities in accordance with TransLink's Bus Infrastructure Design Guidelines.
- **Create an exceptional customer service experience for transit passengers.** This includes developing livable communities and supportive cycling and pedestrian infrastructure around transit centres. The Transit-Oriented Communities Design Guidelines shall be used as a basis for design.
- **Establish a short connection between the transit exchange and the town centre.** Through consideration of any alternate location for a transit exchange along 27th Street, prioritization should be given to maintain a short walking distance between the intersection of High Street and High Street B.
- **Facilitate intermodal travel.** Accommodation should be provided within the transit passenger area for different means of access to the transit exchange. Referencing TransLink's Transit Passenger Facility Design Guidelines (201X) Strategy 02: Support transit by integrating with other modes, enhanced access for pedestrians, cyclists, taxis, and drop off should be considered. This includes the provision of convenient, multiple, and direct pedestrian access points for all origins and destinations; both short term and long term bicycle parking in safe and well-lit areas; and clear signage for separate passenger pick-up and drop off areas for taxis and private vehicles.

6.4 Motor Vehicles

- **Provide satisfactory level of service for all vehicle movements at all Town Centre intersections.** Maintain level of service (LOS) D or better for all signalized intersections with volume to capacity (v/c) ratios for all individual movements less than or equal to 0.90. Minimize delays at unsignalized intersections.
- **Establish safe intersection operations through laning, geometry, and signalization.**
- **Ensure turning movements accommodate the appropriate design vehicles at all locations.** Provide access to the site for appropriate design vehicles through specified routes. Accommodation for a WB-20 Tractor-Semitrailer should be provided only for access to the laneway immediately east Lynn Valley Road on 27th Street. Accommodation for a Heavy Single Unit (HSU) truck should be provided only for access to Rain Street.

7.0 Recommendations by 2031

7.1 Planned Network

A planned network was developed based on the Guiding Principles above and the analysis presented in earlier sections.

The recommended network provides a number of key benefits, while mitigating the impacts of increased traffic due to development. Some of these benefits are:

- Walkable neighbourhood with improved pedestrian connectivity and urban streetscape. The increase in residents, combined with street-facing shops and well designed pedestrian spaces will contribute to a vibrant community.
- Improved facilities for cyclists of all ages and abilities, including a separated two-way cycle track along E 27 Street, an important connection for local and regional cyclist.
- Better intermodal and transit facilities, with an accessible bus exchange area that can accommodate TransLink's plans for increased service to Lynn Valley.
- Continued access for local delivery of goods.
- Enhanced traffic operations through better lane continuity and the introduction of an improved grid network. Although the number of vehicle trips is expected to increase, the impacts on the road network are expected to be minimal.

The proposed Study Area network with all improvements is illustrated in Exhibit 1. More detailed plans are included in Exhibit 2**,** Exhibit 3**,** and Exhibit 4. This is the ultimate concept, which includes a realigned Ross Road / Rain Street & Lynn Valley Road intersection. The full extension of Rain Street and completion of High Street B will not be complete within the 20 Year horizon. A memo describing the typical cross sections for streets within the Study Area is included as Appendix B.

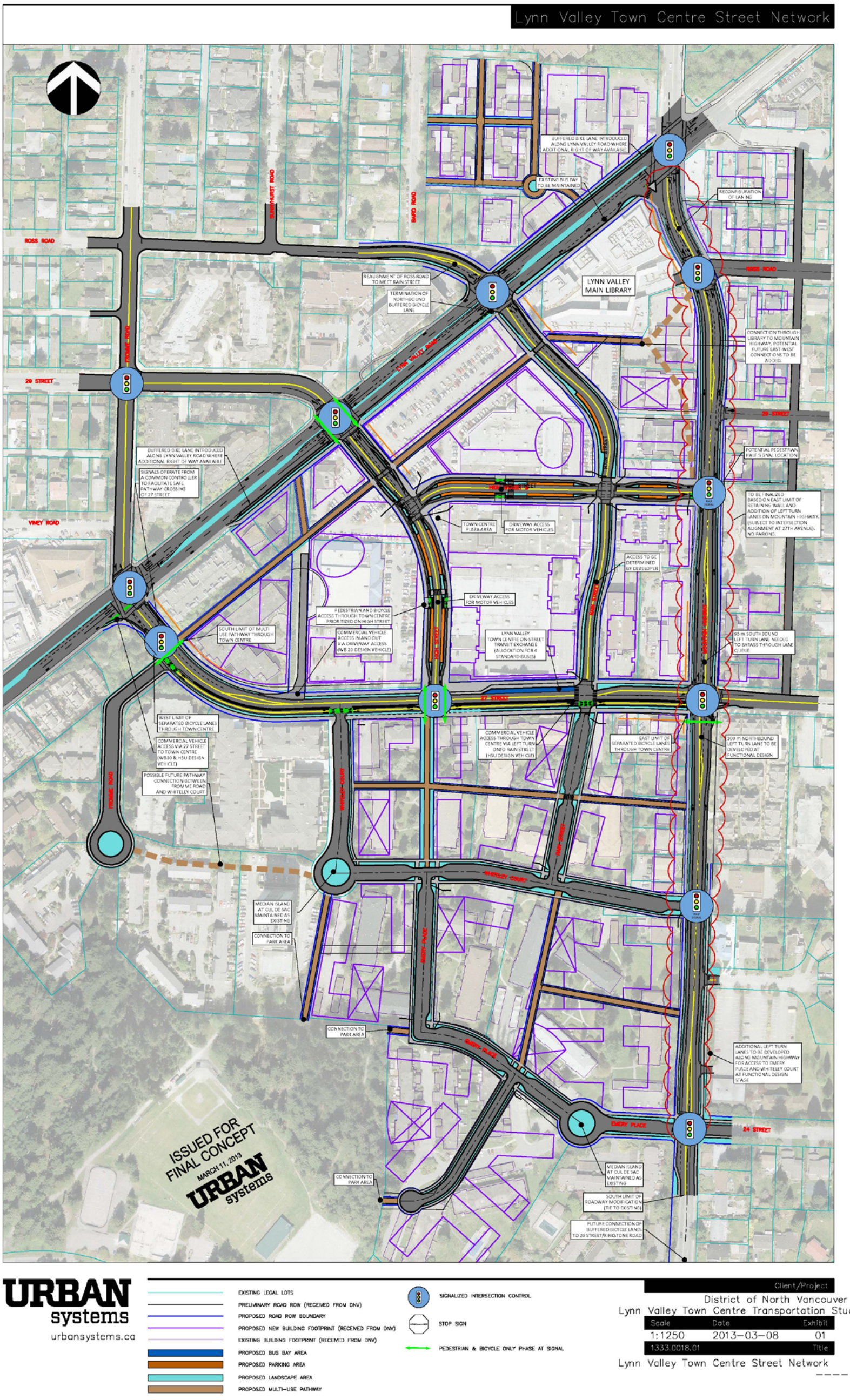
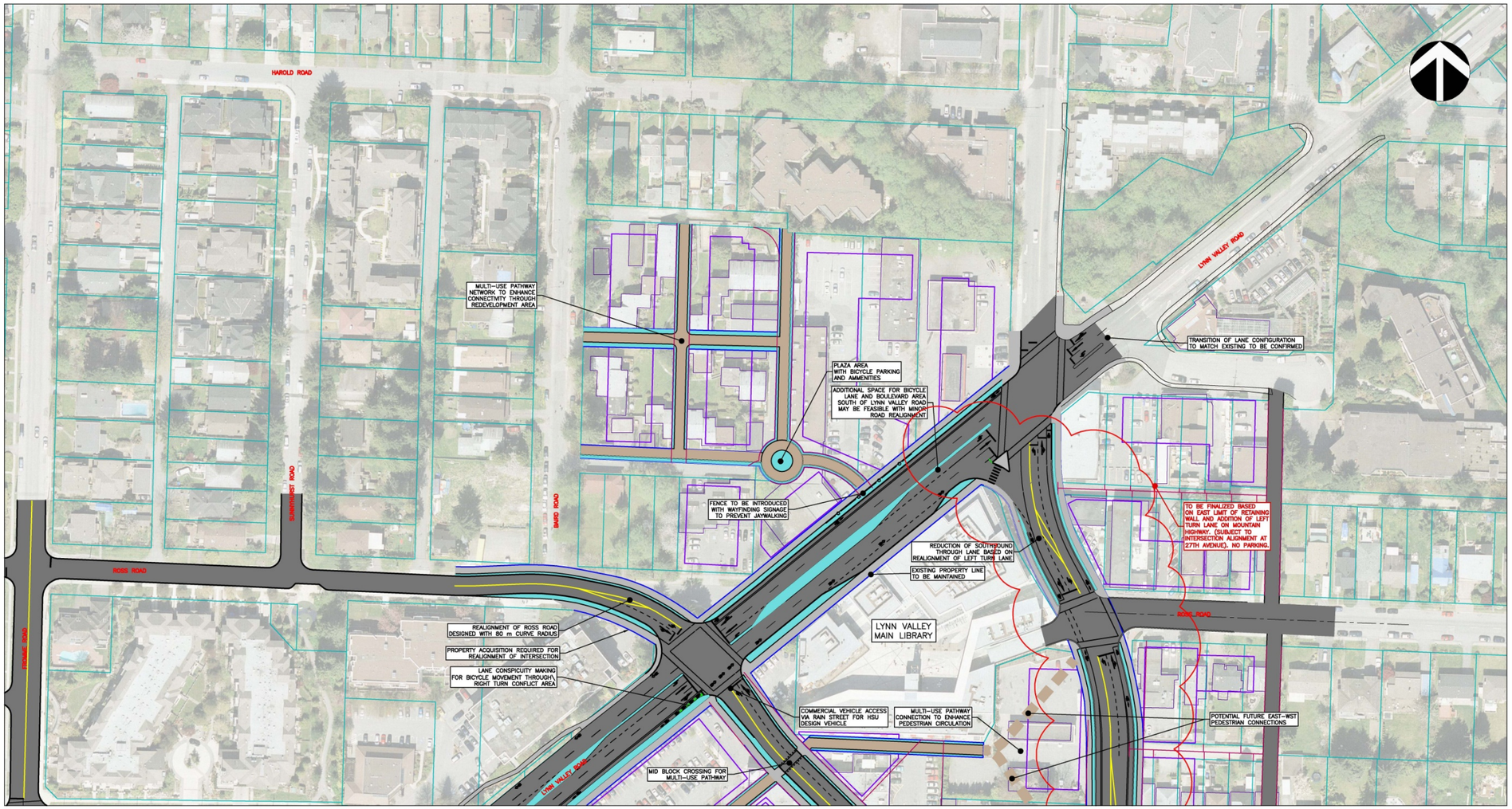


Exhibit 1: Proposed Study Area transportation network

Street Network – North



URBAN systems
urbansystems.ca

EXISTING LEGAL LOTS
PRELIMINARY ROAD ROW (RECEIVED FROM DNV)
PROPOSED ROAD ROW BOUNDARY
PROPOSED NEW BUILDING FOOTPRINT (RECEIVED FROM DNV)
EXISTING BUILDING FOOTPRINT (RECEIVED FROM DNV)
PROPOSED BUS BAY AREA
PROPOSED PARKING AREA
PROPOSED MULTI-USE PATHWAY
PROPOSED LANDSCAPE AREA
STOP SIGN

ISSUED FOR FINAL CONCEPT
MARCH 11, 2013
URBAN systems

Client/Project
District of North Vancouver
Lynn Valley Town Centre Transportation Study

Scale	Date	Exhibit
1: 750	2013-03-13	02
1333.0018.01		Title

Street Network – North

\\ut.urban-systems.com\projects\projects_van\1333\0018\01\a-drafting-design-analysis\CAD\DC\URRENT\production\P04-08-1333-0018-01.dwg, P04, 2013/05/22 09:40 ans jacobsen

Exhibit 2: North Section

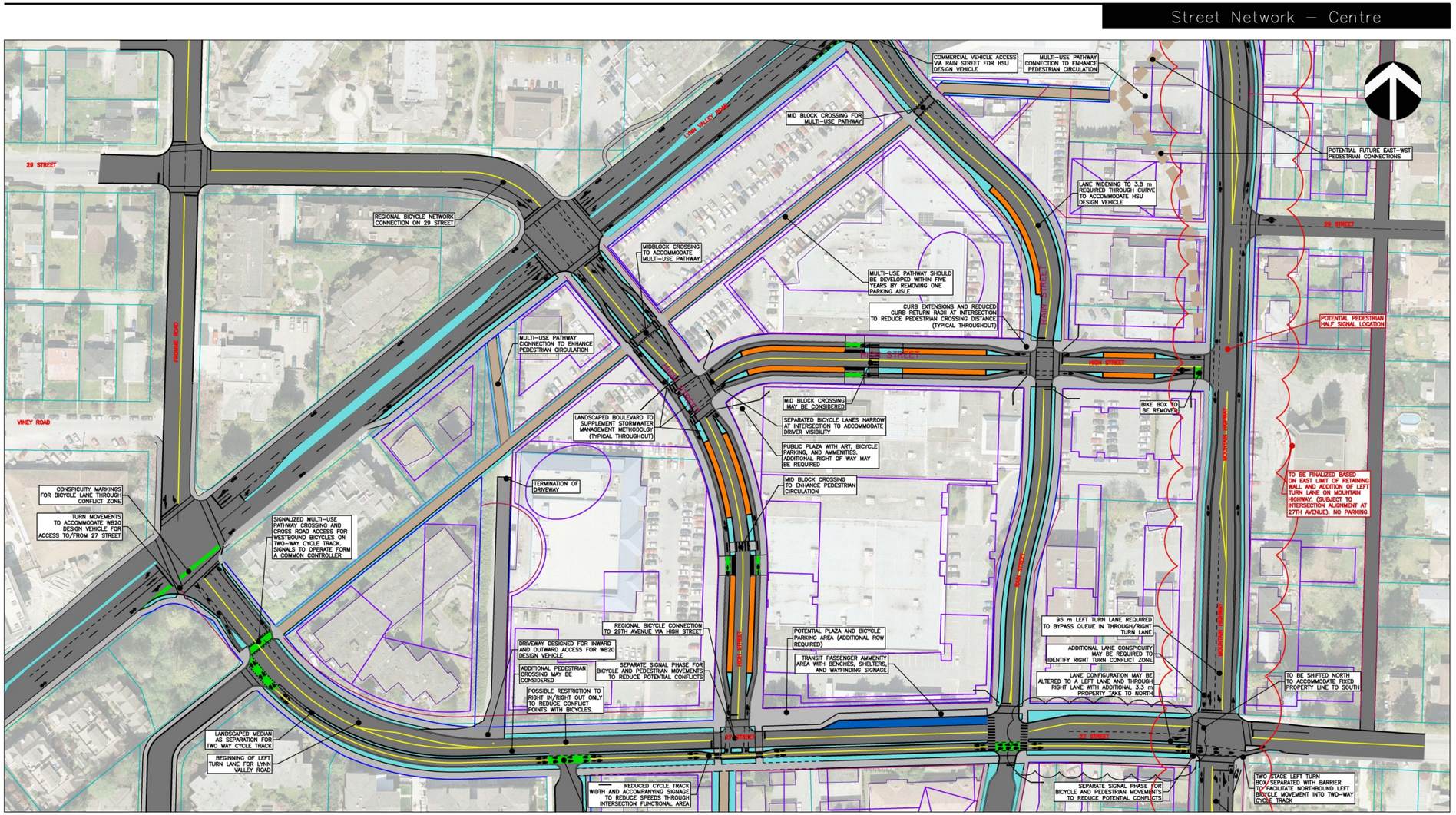


Exhibit 3: Central Section

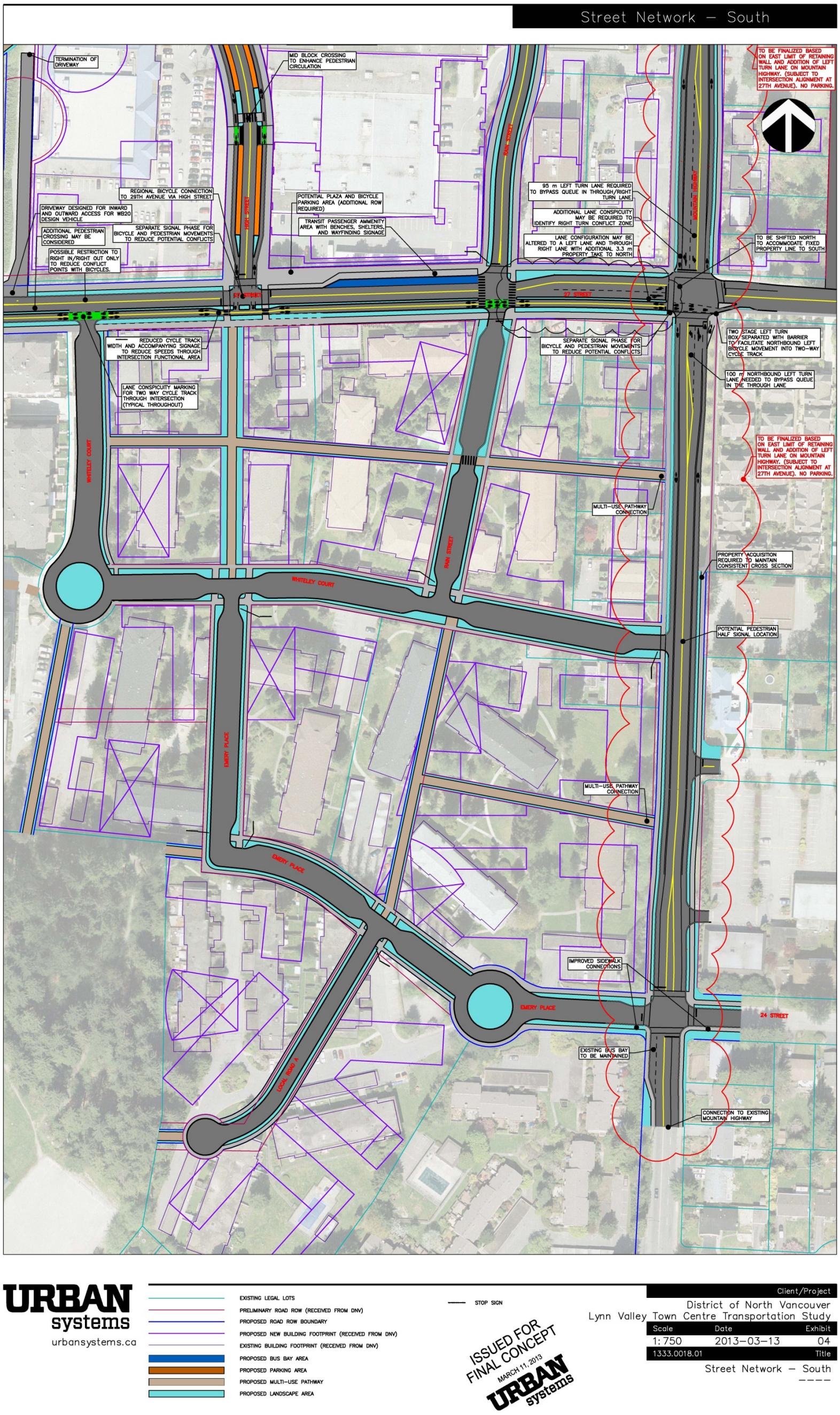


Exhibit 4: South Section

7.1.1 *PEDESTRIANS*

Specific changes/enhancements for pedestrians.

- Improved access and shorter walking distances due to grid network of new local streets and a multi-use pathway network.
- Two new pedestrian signals crossing Mountain Highway – one midblock between Lynn Valley Road and E 27th Street and a second between E 27th Street and E 24th Street – shortening long blocks for pedestrian, and connecting anticipated desire lines to the Lynn Valley Town Centre with the surrounding residential areas.
- New crossing of E 27th Street at Fromme Road facilitates pedestrian connectivity. Provide a pedestrian and cyclist-activated signal at Fromme Road and E 27th Street. This signal facilitates safe pedestrian crossing from the park connections at Fromme Road and Whiteley Court to the proposed pathway that connects to the Lynn Valley Main Library. Enabling safe crossing at this location is an important component of the pedestrian network. The signal must be operated jointly with Lynn Valley Road / E 27 Street / Fromme Road from a single controller. This is the recommended configuration for this crossing location and will require further study to confirm sight lines and traffic operation details.
- Reduced crossing distances through the use of curb bulges.
- Crosswalks on both sides of all intersection crossings.

7.1.2 *CYCLISTS*

Specific changes/enhancements for bicycles include:

- Two-way cycle track on south side of E 27th Street connects cyclists to Lynn Valley Town Centre and provides an essential link in the North Shore cycling network. This treatment is recommended for two reasons:
    - To provide maximum separation from motor vehicle traffic to encourage bicycle travel to Lynn Valley Town Centre for riders of **all ages and abilities.** A fully separated link is essential over this short stretch. E 27 Street is a key link in the cycling network. In addition to its function joining two commuter cyclist routes (Mountain Highway and Lynn Valley Road), it also serves a special function for less confident cyclists. Fromme Road and Whiteley Crescent, two low volume, local roads, connect E 27 Street to the network of trails in Kirkstone Park. With a separated facility on E 27 Street, residents between Kirkstone Road and Lynn Valley can easily travel without being exposed to vehicles on a major road. E 27 is an important link in the District of North Vancouver's network for cyclists of all ages and abilities and must be constructed in a way that maximizes separation from vehicle traffic.

- To significantly reduce the number of conflict points with vehicles on the north side of E 27th Street. The specific treatment proposed for Lynn Valley is a two-way separated cycle track; although this type of facility is less common, this configuration provides special benefits in the context of E 27 Street. In particular, it is anticipated that a bike lane or separated bike lane on the north side of the road would experience a high level of conflict with buses and pedestrians at the on street transit exchange. By providing a separated facility with appropriate traffic controls, signage, and travel space, 27th Street will become a more attractive corridor for cyclists, pedestrians, and transit passengers.

- New crossing of E 27th Street at Fromme Road facilitates pedestrian connectivity. Provide a pedestrian and cyclist-activated signal at Fromme Road and E 27th Street. This signal facilitates safe cyclist crossing from the park connections at Fromme Road and Whiteley Court to the proposed pathway that connects to the Lynn Valley Main Library. Enabling safe crossing at this location is an important component of the cycling network. The signal must be operated jointly with Lynn Valley Road / E 27 Street / Fromme Road from a single controller. Operation of the joint controller may present a challenge for the District. The recommended configuration for this crossing location requires further study to confirm sight lines and traffic operation details.
- One way cycle tracks on High Street provide access from bike routes south of Lynn Valley to the key E 29th Street bicycle route.
- Opportunities for improved bicycle parking in public areas due to the creation of parks and plazas.

7.1.3 *Transit Users*

Specific changes/enhancements for transit include:

- New bus layover area on north side of E 27th Street can accommodate up to 4 standard buses (12.4 metres) and provides sufficient space for two articulated buses (18.6 metres).
- A total width of 3.0 m provided for passenger waiting areas within the bus exchange area on E 27th Street provides the preferred space identified in TransLink's Bus Infrastructure Design Guidelines to ensure accessibility, waiting areas, and wayfinding features.
- More street facing commercial will improve 'eyes on the street' and augment services available for transit passengers.
- Street-side space was designed utilizing five zones of the sidewalk as recommended in TransLink's Transit Oriented Development Design Guidelines. This provides space for an edge zone, extension zone, furnishings, throughway, and frontage.
- Existing bus pull-out on Lynn Valley Road in front of the Lynn Valley Main Library will be maintained for future use.
- Intersections were designed to accommodate articulated buses moving clockwise around the Study Area along Lynn Valley Road, Mountain Highway and E 27th Street. All right turn

movements in the clockwise direction around the town centre accessing the E 27th Street Bus Stop were designed using the most conservative bus turn template; the 12.4 m Standard Bus with a bike rack in use. (It is noted that articulated bus turn templates are less restrictive than the standard bus turn template).

- Lane width and length for the on-street transit exchange were developed based on guidance from the TransLink Bus Infrastructure Design Guidelines. A minimum width of 6.5 m from the edge of curb to the centreline was used as the guiding criteria for the on-street bus space allocation. This includes both the bus layover width as well as through lane width. Existing bus stops for local transit access will be maintained on Lynn Valley Road, Mountain Highway and E 29th Street. Required stop locations for frequent transit service envisioned within the area outside of the E 27th Street Transit Exchange should be confirmed with TransLink at the next stage of design.
- Enhance opportunities for bike and ride with secure bike parking.

7.1.4 *MOTORISTS*

Specific changes/enhancements for motorists include:

- New signal at Fromme Road and E 29th Street improves operations and safety at this key intersection. This signal could be coordinated with the signal at the intersection of Lynn Valley Road and Fromme Road; however, further study is needed.
- New signal at High Street and E 27th Street provides access to the main commercial area.
- New protected / permitted left turn phases to improve safety and operations at E 29th Street and Lynn Valley Road (southbound left) and at Fromme Street and Lynn Valley Road (eastbound left). The protected / permitted left turn phases for the opposing movements (northbound left at E 29 Street and Lynn Valley Road and westbound left at Fromme Street and Lynn valley Road) are not required from an operational perspective, but may be included to improve safety.
- Overall improvement in access due to the new internal grid network created by High Street and Rain Street.
- Consolidated intersection of Ross Road (west) and Rain Street allows for removal of turning restrictions, better circulation, and improved operations.
- Improved lane continuity throughout, with existing shared through-left lanes replaced by exclusive left turn lanes with accompanying shared through-right lanes.
- Signal timing improvements as required to accommodate forecasted traffic volumes.
- Reconfiguration of Mountain Highway to reduce driver confusion and provide road space for cyclists. The recommended configuration for Mountain Highway requires further study at the feasibility and functional design stages to resolve challenges related to retaining walls, road space, and property needs.

Assessing future total trips on the planned network shows that all intersections operate with LOS D or better, in accordance with the design principles. LOS for signalized intersections for the 20 Year and Ultimate horizons are shown in Figure 7-1 and Figure 7-2. All individual movements at signalized intersections are expected to operate with v/c less than or equal to 0.90. All movements at unsignalized intersections also operate with v/c less than or equal to 0.90. The LOS for the eastbound movement at the unsignalized intersection of Mountain Highway and E 29th Street operates with LOS 'E'. Operations for this movement should be improved with the planned addition of a pedestrian half-signal (described below) and vehicles have the option of using alternative signalized accesses. All other movements at unsignalized intersections operate with LOS 'D' or better.

Despite the addition of density to the Lynn Valley area, traffic operations are expected to improve at some locations and the overall network is expected to experience minimal additional delay. As discussed above, no operational issues are expected for any movements within the study area. SimTraffic analysis for the network as a whole shows a reduction in stops per vehicle from 2.02 in the Existing horizon to 1.97 in the Ultimate. Delay per vehicle is expected to increase from 85.2 second to 114.5 seconds, which is acceptable given background growth of 0.3% annually.

As a result of the signal operation improvements, lane continuity, removal of turning restrictions, and overall circulation enhancements, it is anticipated that safety benefits will result at many intersections within the study area. Further evaluation of safety benefits may be undertaken at the functional design stage. This is in alignment with the vision for intersection safety improvement set forth in the District of North Vancouver Transportation Plan.

The analysis does not show the need to provide left turn bays for unsignalized intersections on Mountain Highway; however, these may be added at the functional design stage to remove left turning vehicles from the path of through traffic and provide a separate queuing zone for these vehicles. The District prefers to provide left turn bays at unsignalized intersections. The final alignment and cross-section of Mountain Highway should be determined at the functional design stage.

Figure 7-1: 20 Year Signalized Intersection LOS

Figure 7-2: Ultimate Signalized Intersection LOS

7.1.5 *Goods Movement and Access Needs*

Specific changes/enhancements for goods/vehicle movement include:

- WB-20 design vehicle used to secure access to loading bays between High Street and Lynn Valley Road. Intersections designed to provide sufficient space for WB-20 vehicles. The access path to the site was assumed to be on / off of Lynn Valley Road.
- Access to Rain Street designed to permit minor truck access (HSU) to Rain Street from Mountain Highway.

7.2 Design Outcomes

Some key design outcomes will influence the District's approach as this area develops. The Ultimate network is not possible in the short-term, as it requires a new north-south road through the site of the existing mall. The full network will not be possible until that site redevelops. Development of the full Ultimate network also requires land acquisition along key roadways. Land acquisition for the Ultimate network is illustrated in

Improvements to the transportation network in the Study Area should be made as developers come forward and land is available. The final steps in the completion of the Ultimate Network rely on the redevelopment of the Lynn Valley Mall and will be:

- Development of High Street B
- Development of Rain Street north of High Street B
- Realignment of the intersection of Ross Road / Rain Street & Lynn Valley Road

All other improvements can be completed over time as land becomes available. When the southern portion of Lynn Valley Mall redevelops, it may be possible to replace one row of above ground parking with a multiuse trail parallel to Lynn Valley Road. This will allow for early completion of a pedestrian and cycling connection from 27th Street to the Lynn Valley Library parallel to Lynn Valley Road.

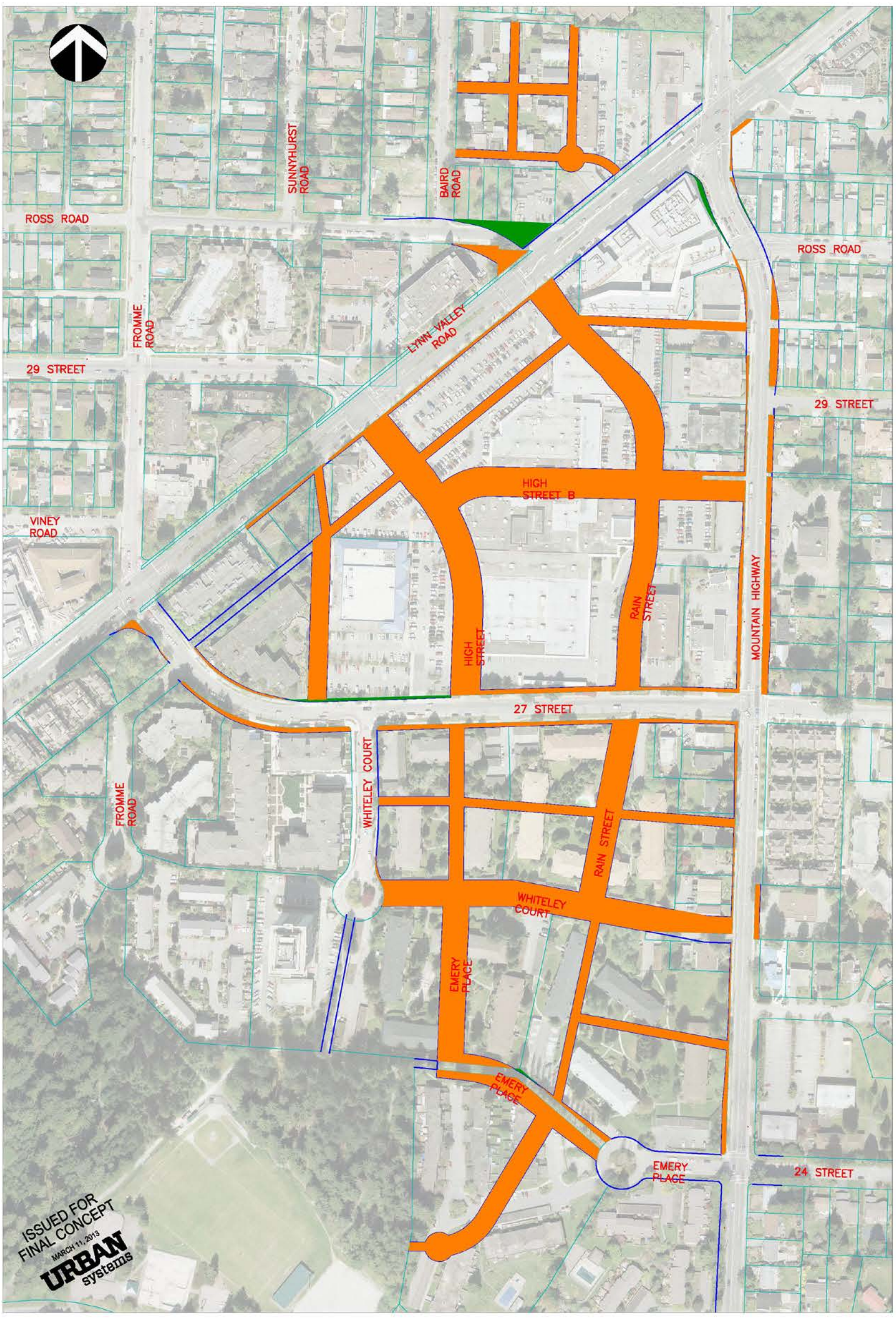


Exhibit 5: Property Acquisition

7.3 Impacts and Further Consideration

The revised Synchro networks containing the 20-Year and Ultimate networks are available for use by developers in the preparation of their Traffic Impact Assessments within the Study Area. Precise locations of accesses and the final design of Mountain Highway are subject to further design and considerations as the Study Area develops.

8.0 Conclusion

The Vision for the Lynn Valley community includes a vibrant and livable Town Centre. This vision can be achieved through changes in the land use and transportation network. This study examined the proposed land use changes and provided a recommended transportation network that provides many benefits, while mitigating the impacts of increased traffic. The overall effect of these changes will be a balanced impact on the vehicle network, with some improvements and some minimal negative impacts.

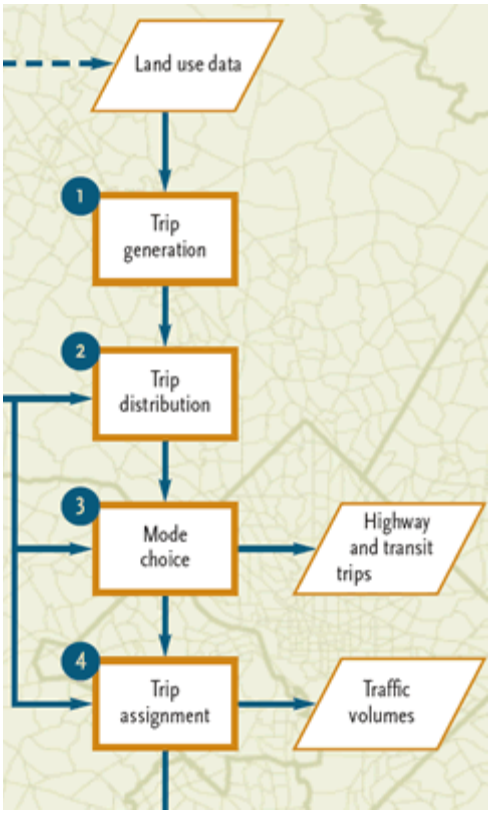
- With the type and levels of development analyzed in this report, the resulting growth in traffic can be accommodated within the proposed transportation network. This is a worst case scenario, as the auto mode share for external trips was not projected to decrease. If the auto mode share decreases, vehicle traffic will be even less than what is shown here.
- New roadways within the study area will improve circulation, allowing for more direct routing for vehicles. The new links will also decrease distance and travel time for pedestrians and cyclists.
- Delays for traffic travelling through Lynn Valley are expected to be minimal.
- The realignment of Ross Road to meet High Street at Lynn Valley Road is expected to improve access, circulation, and safety.
- Street-facing stores, combined with more residents and improved pedestrian space will create a more vibrant, livable neighbourhood.
- Cycling facilities suitable for all ages and abilities will encourage less confident cyclists to cycle more frequently, with positive impacts to access, health, and affordability.
- Transit accessibility will be improved and the changes to property and the road network will enable TransLink to move forward with plans for increased service. With more residents in the area, ridership can be expected to increase.

The changes to Lynn Valley enable valuable improvements to the pedestrian, cycling, transit, and roadway networks. In turn, these improvements will allow the District to achieve the vision for Lynn Valley; however, without development and densification, the improvements recommended here are difficult or impossible to attain.

Appendix A: Four Step Travel Model

The model consists of the following steps:

1. Trip generation;
2. Trip distribution;
3. Mode choice; and,
4. Trip assignment.



Trip Generation

Step one of the process is to determine the number of additional AM and PM peak hour vehicle trips added to the network by the change in land use. The *ITE Trip Generation Manual* were used to determine vehicle trip generation rates for different land use types. ITE trip rates represent land-use specific averages that have been determined through years of case studies and background research. Rates are tied to the number of dwelling units, square footage, acres of land, or employees (i.e. average number of trips per employee in the AM peak hour).

Directionality is also indicated in the *ITE Trip Generation Manual* and specifies what percentage of generated trips is heading into the development (inbound trips) versus how many trips are leaving the development (outbound trips). Generally residential land uses have significantly more outbound trips than inbound trips in the AM peak hour; the opposite is true for the PM peak hour. This phenomenon is generally reversed for employment-oriented land uses.

Trip Distribution

Step two of the process establishes where trips generated by the new development are coming from and going to (i.e. 20% of site trips are coming from the north, 30% from the south, 40% from the west, and 10% from the east). The trip distribution pattern for the Study Area was determined through assessment using the District's EMME model and then adjusted based on engineering judgement.

A distribution matrix determines the share of site generated traffic coming from/destined for various zones outside of the study area. Because Lynn Valley is a large area with many different planned land use types, a share of the total trips will be local – e.g. they will both begin and end within the Study Area itself. Because of the size and nature of the Study Area, local trips were assumed to be made by alternative modes (walking and cycling).

Mode Choice

Not all trips are made by automobile. Other modes, such as public transit, walking, and cycling can also be options for travelers, particularly within an urban context. Step three of the process factors in the effect of other modes on projected traffic. The *ITE Trip Generation Manual* trip rates, used in step 1 of the four step process, represent vehicle trips, not total person trips. Most of the survey data in the Trip Generation Manual was collected in suburban locations in North America. Generally, non-auto mode share of 5% and average vehicle occupancy of 1.2 persons per vehicle can be assumed for the rates within the manual. In many cases, the combined non-auto mode share in a study area is significantly higher than 5% and/or carpooling is more widespread.

In order to account for these differences, total vehicle trips generated are reduced to account for location-specific vehicle occupancy and non-auto trips to more accurately reflect the traffic generated by the proposed land use change. This was completed by converting the vehicle trips provide in the ITE Trip Generation Manual to person trips and then recalculating vehicle trips based on local conditions.

For the Study Area, future mode share was assumed to be the same as current mode share. The mode share for the District as a whole was used to complete this estimate. These estimates are conservative – vehicle trips generated by development will likely be lower than those estimated. Mode share is expected to shift away from single occupancy vehicles over time – this change is not reflected in the mode choice reductions in this analysis.

Trip Assignment

The final step in forecasting travel behaviour is determining which roads travelers use within the study area to reach the new site. This step is known as trip assignment. Trip assignment is distinctly different from trip distribution (step 2). While trip distribution determines where travelers are coming from/going to, trip assignment determines which roads travelers use to get between where they are coming from and the site. Once assigned, development traffic is then added to background traffic at the chosen horizon year. Intersection performance is then assessed to determine the impact of the land use change on the surrounding road network.

Appendix B: Supplemental Cross Section Appendix

MEMORANDUM

URBAN systems

Date:	March 13, 2013
To:	Erica Geddes
cc:	Tegan Smith, Annie Chung
From:	Allison Clavelle
File:	1333.0018.01
Subject:	Lynn Valley Road Typical Cross Sections

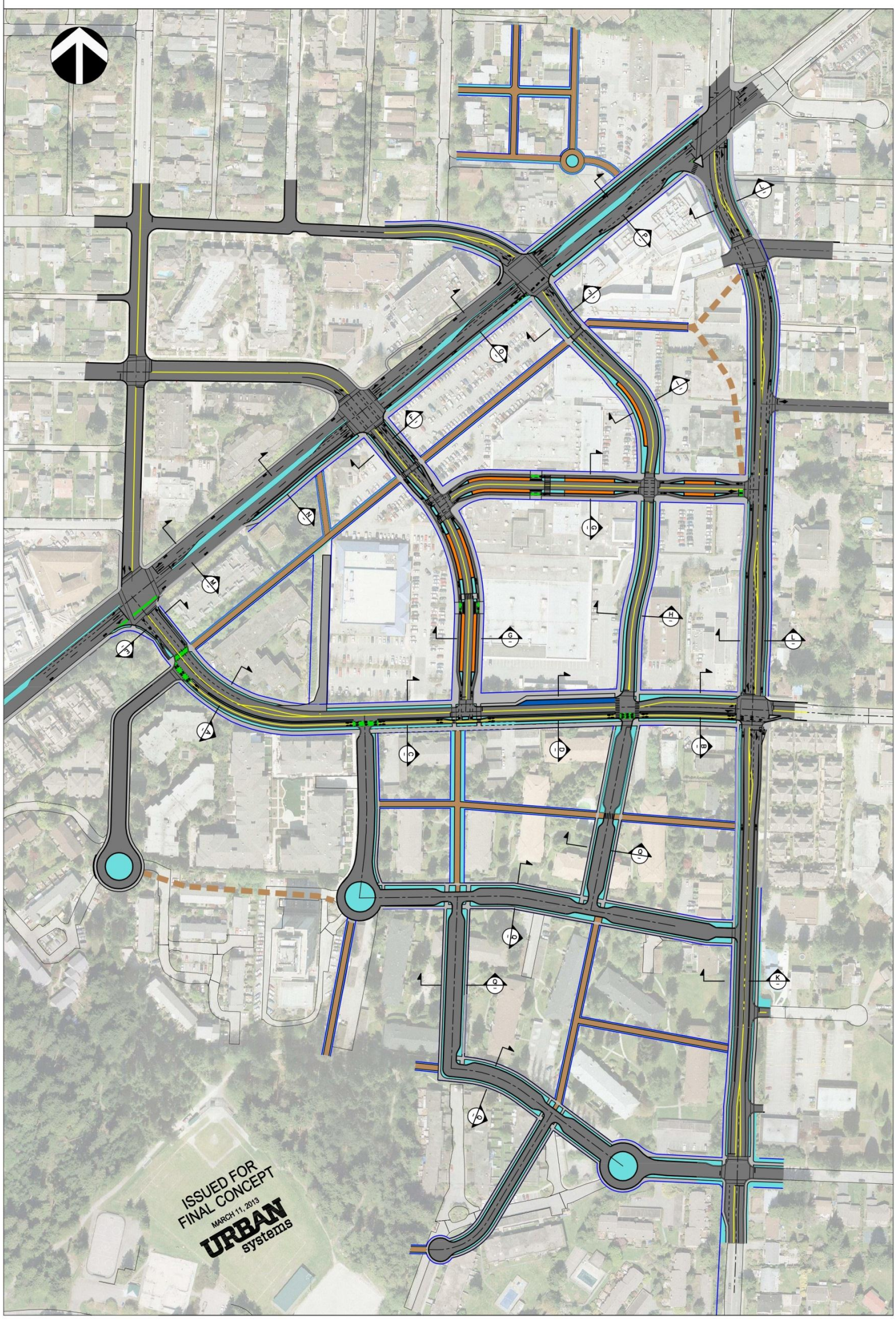
This memo provides additional detail to the *District of North Vancouver Lynn Valley Town Centre Transportation Assessment* (LVTC Transportation Assessment) completed by Urban Systems in March 2013. Typical cross sections are illustrated for streets within the study area. Cross sections for 27th Street, High Street, Rain Street, Mountain Highway, and Lynn Valley Road as well as a typical section that was utilized for all new local roads within the study area. These local roads include Whiteley Court, Rain Street south of 27th Street, and Emery Place.

The design philosophy and impacts associated with these cross sections are consistent with the discussion provided in the LVTC Transportation Assessment.

All cross sections provided herein are associated with Exhibit 1 – Cross Section Locations.

URBAN systems

Cross Section Locations



URBAN systems
urbansystems.ca

EXISTING LEGAL LOTS

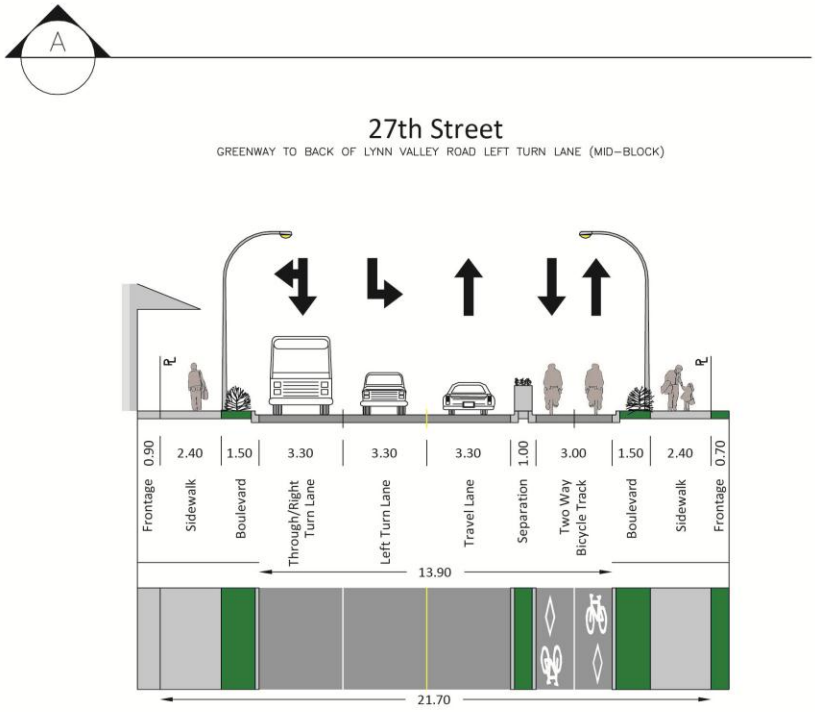
Client/Project
District of North Vancouver
Lynn Valley Town Centre Transportation Study

Scale	Date	Exhibit
1:1250	2013-03-08	01
1333.0018.01		Title

Lynn Valley Town Centre Street Network

\\sd.urban-systems.com\projects\projects_van\1333\0018\01\d-drafting-design-analysis\CADD\CURRENT\production\P09-1333-0018-01 - Cross Section Legend.dwg, P03-1, 2013/03/17 07:06 pm jworkman

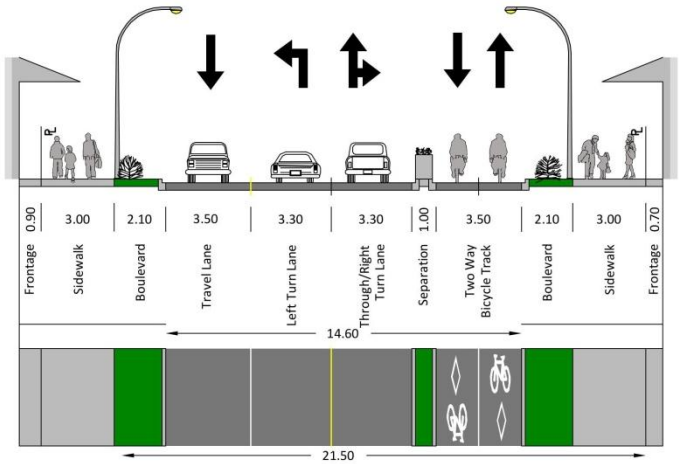
1.0 27TH STREET



B

27th Street

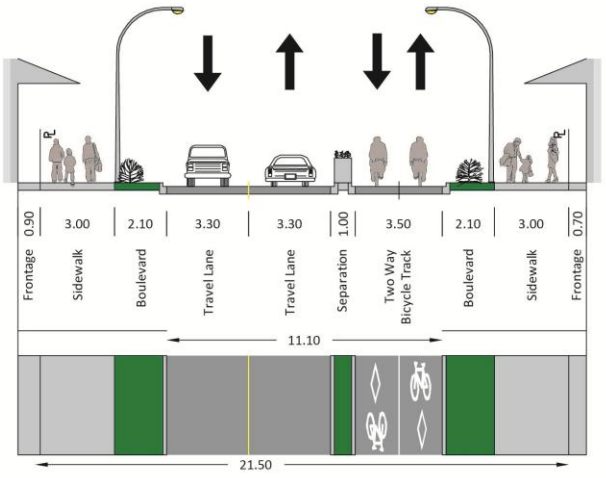
RAIN STREET TO MOUNTAIN HIGHWAY (INTERSECTION)



C

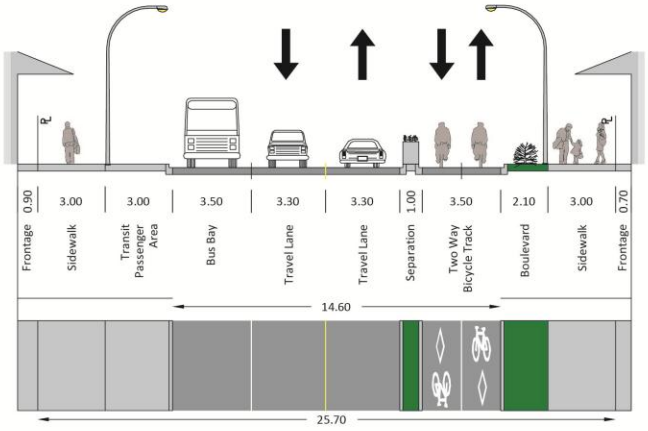
27th Street

LYNN VALLEY ROAD TO MOUNTAIN HIGHWAY (MID-BLOCK)



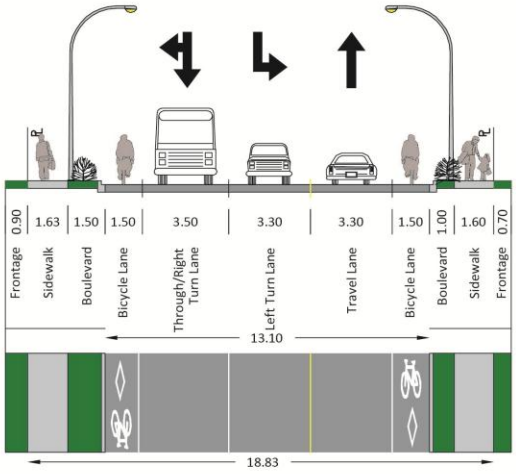
D

27th Street
LYNN VALLEY ROAD TO MOUNTAIN HIGHWAY (BUS BAY)



E

27th Street
LYNN VALLEY ROAD GREENWAY (INTERSECTION)

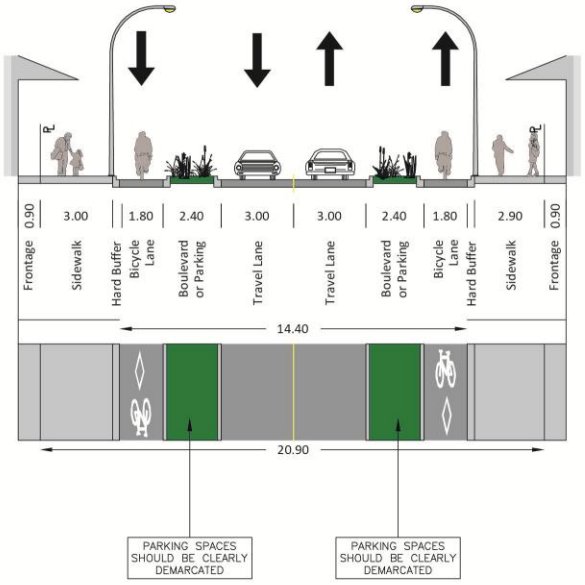


2.0 HIGH STREET

G

High Street

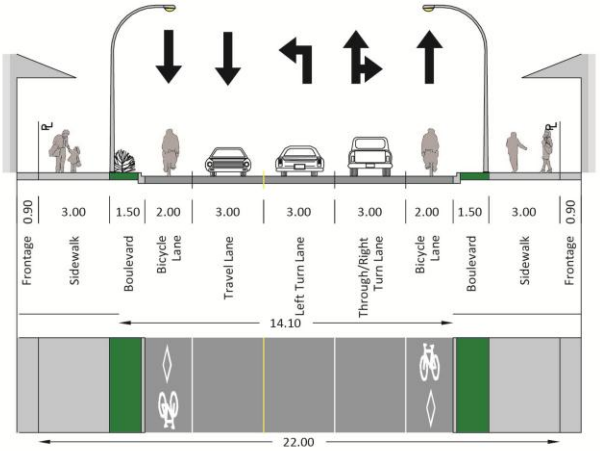
HIGH STREET A: 27th STREET TO HIGH STREET B (MID-BLOCK)
HIGH STREET B: HIGH STREET A TO MOUNTAIN HIGHWAY (MID-BLOCK)



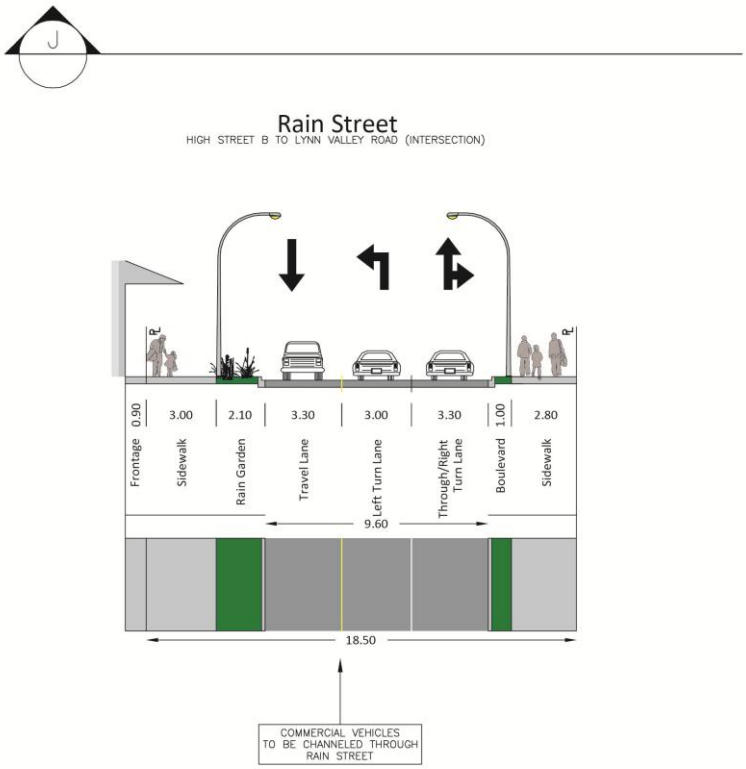
F

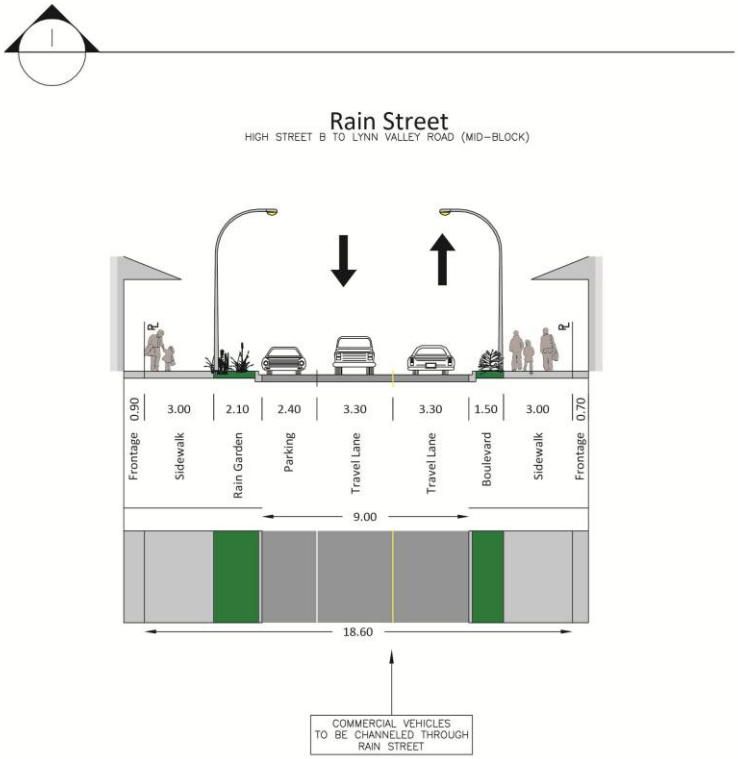
High Street A

HIGH STREET B TO LYNN VALLEY ROAD (INTERSECTION)

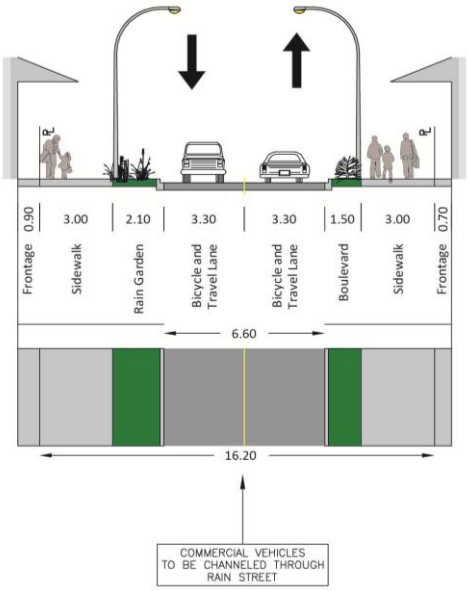


3.0 RAIN STREET



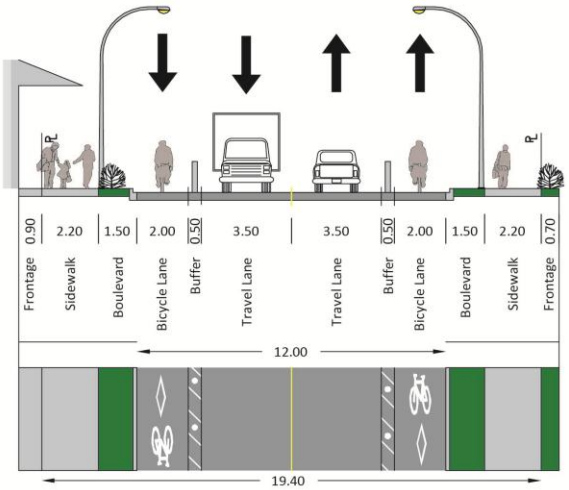


Rain Street
27TH STREET TO HIGH STREET B (MID-BLOCK)

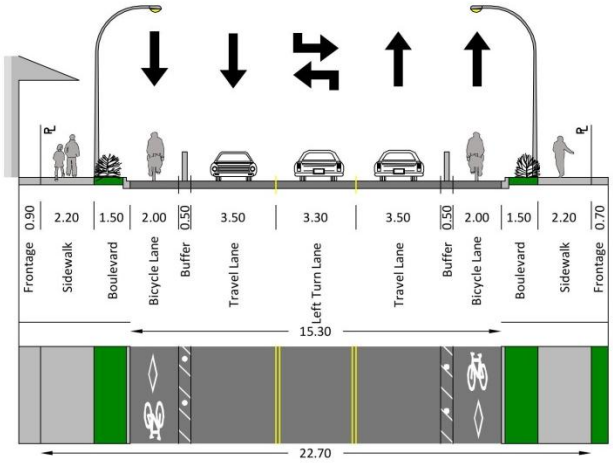


4.0 MOUNTAIN HIGHWAY

Mountain Highway
24TH STREET TO ROSS ROAD (MID-BLOCK)

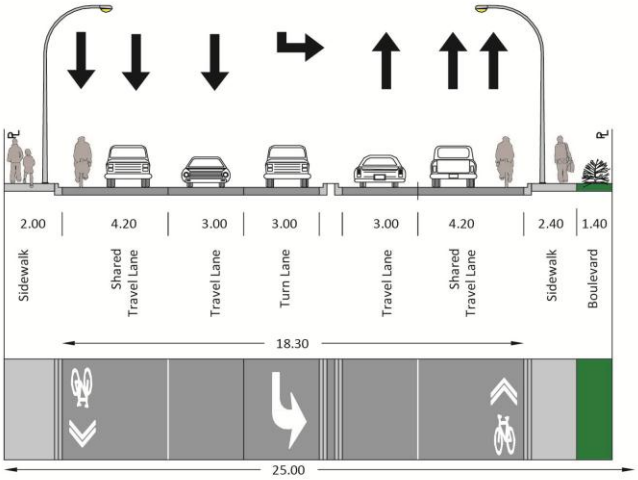


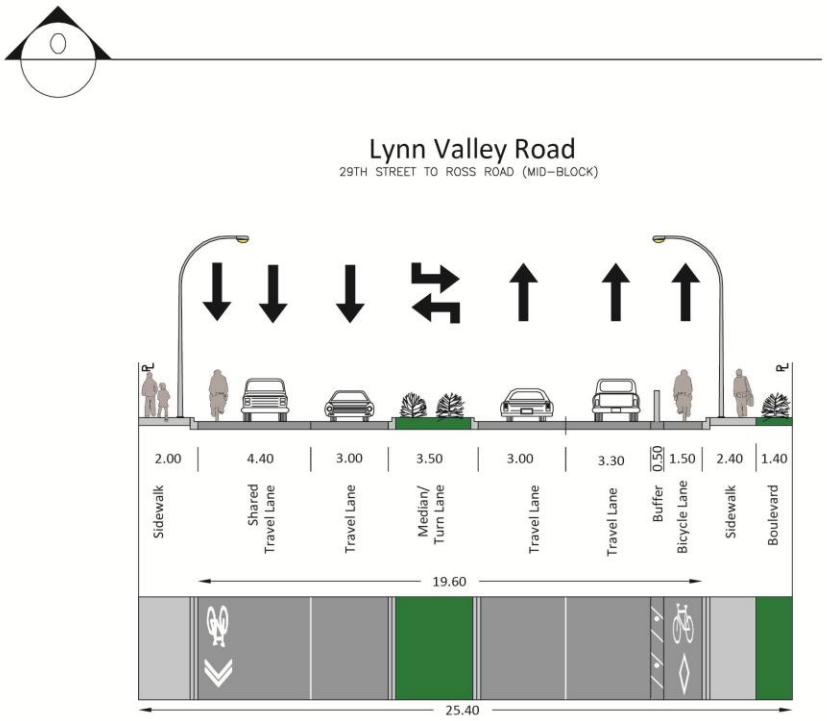
Mountain Highway
ROSS ROAD TO LYNN VALLEY ROAD (MID–BLOCK)
27th STREET TO HIGH STREET (MID BLOCK)

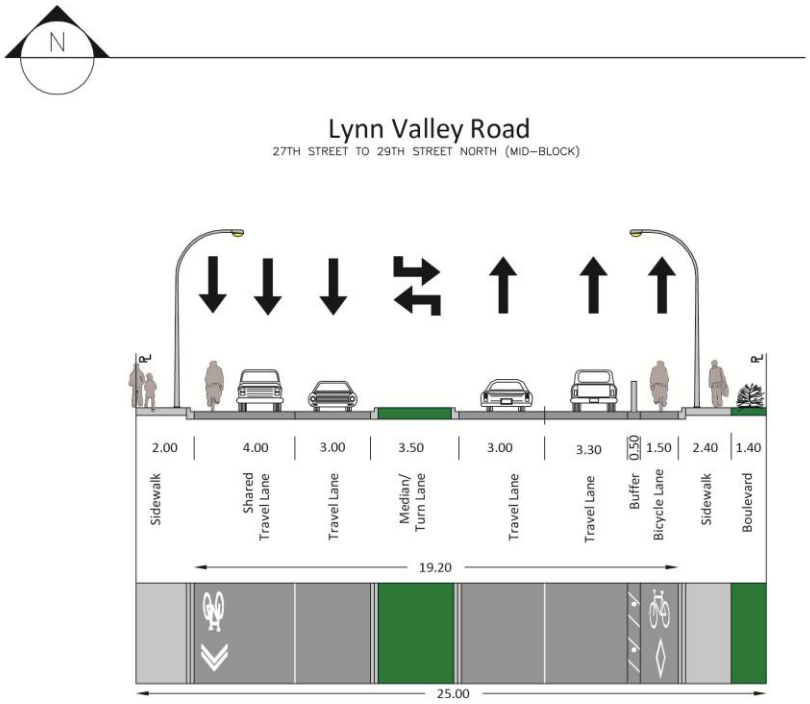


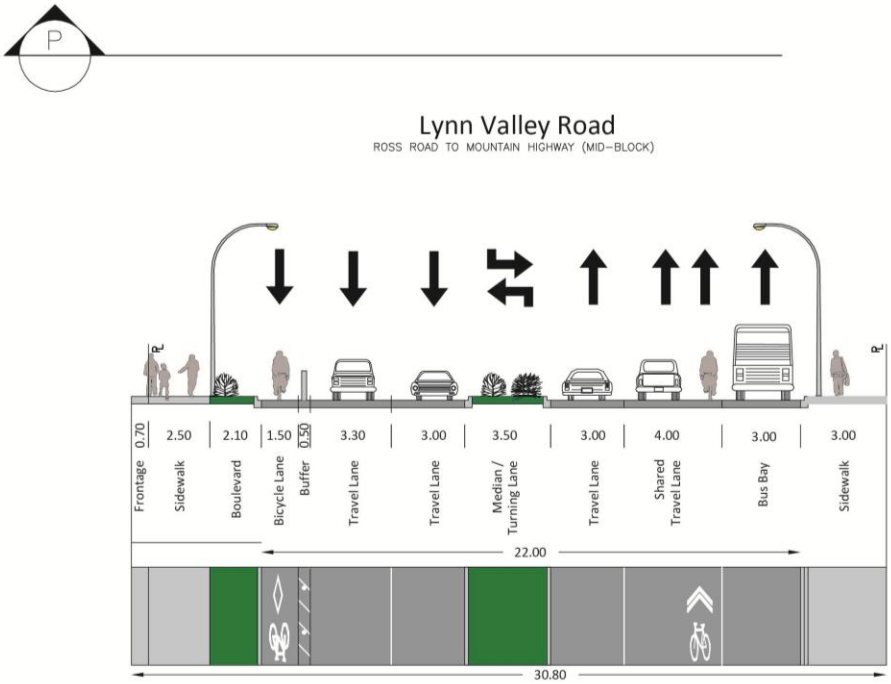
5.0 LYNN VALLEY ROAD

Lynn Valley Road
27TH STREET TO 29TH STREET SOUTH (MID–BLOCK)



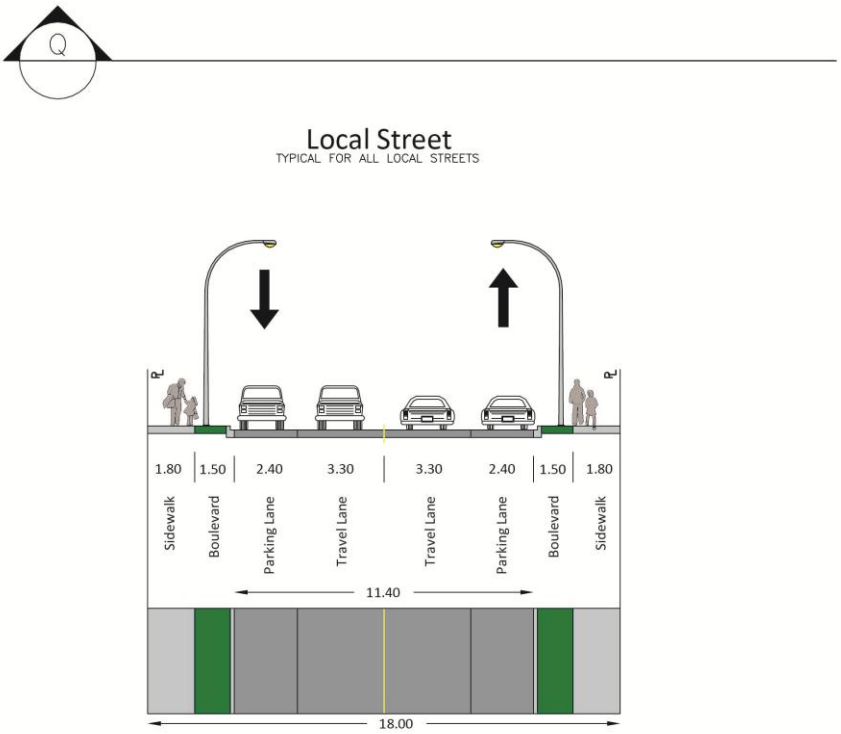

Lynn Valley Road
29TH STREET TO ROSS ROAD (MID–BLOCK)
2.00
4.40
3.00
3.50
3.00
3.30
0.50
1.50
2.40
1.40
Sidewalk
Shared Travel Lane
Travel Lane
Median/ Turn Lane
Travel Lane
Travel Lane
Buffer
Bicycle Lane
Sidewalk
Boulevard
19.60
25.40


Lynn Valley Road
27TH STREET TO 29TH STREET NORTH (MID–BLOCK)
2.00
4.00
3.00
3.50
3.00
3.30
0.50
1.50
2.40
1.40
Sidewalk
Shared Travel Lane
Travel Lane
Median/ Turn Lane
Travel Lane
Travel Lane
Buffer
Bicycle Lane
Sidewalk
Boulevard
19.20
25.00

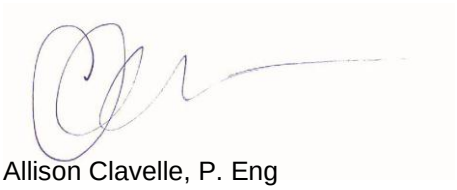


6.0 OTHER ROADS

As previously noted, a typical cross section was used for all new or modified local streets within the study area. It was assumed that the cross section for Fromme Road north of 27th Street, 29th Street, and Ross Road would all remain consistent with existing conditions.



URBAN SYSTEMS LTD.



Allison Clavelle, P. Eng
Transportation Engineer

/jw

U:\Projects_VAN\1333\0018\01\R-Reports-Studies-Documents\DRAFT\Appendices\Supplemental Cross Section Appendix\2013-03-13 Supplemental Cross Section Appendix.docx

DUNSTER & ASSOCIATES
Environmental Consultants Ltd.

An Inventory and Assessment of Trees Located at 1203 and 1207 Harold Road North Vancouver, British Columbia.

Prepared by

Dr. Julian A. Dunster, R.P.F., R.P.P., ISA Certified Arborist
ASCA Registered Consulting Arborist # 378
PNWISA Certified Tree Risk Assessor # 1
ISA Tree Risk Assessor Qualified
Honourary Life Member ISA + PNWISA

May 27, 2014

4621 Cliffwood Place, Victoria, B.C. Canada V8Y 1B6 Tel: 778 433 8465 email: jadunster@gmail.com

An Inventory and Assessment of Trees Located at 1203 and 1207 Harold Road North Vancouver, British Columbia.

Background

The two properties located at 1203 and 1207 Harold Road are being prepared for redevelopment. This report documents the trees present on site as of May 2014. The area has been surveyed and this data, prepared on April 14th 2014 by Rankine Land Surveying Ltd. has been used as the baseline.

Conditions of Site

Figure 1 is an aerial view taken from the District of North Vancouver GIS data.

Figure 1. Aerial view of the site.

Figure 2 is an extract of the Rankine Survey plan. Eighteen trees have been identified on site. Table 1 lists the trees by species, size, and comments. The tree are not tagged on site.

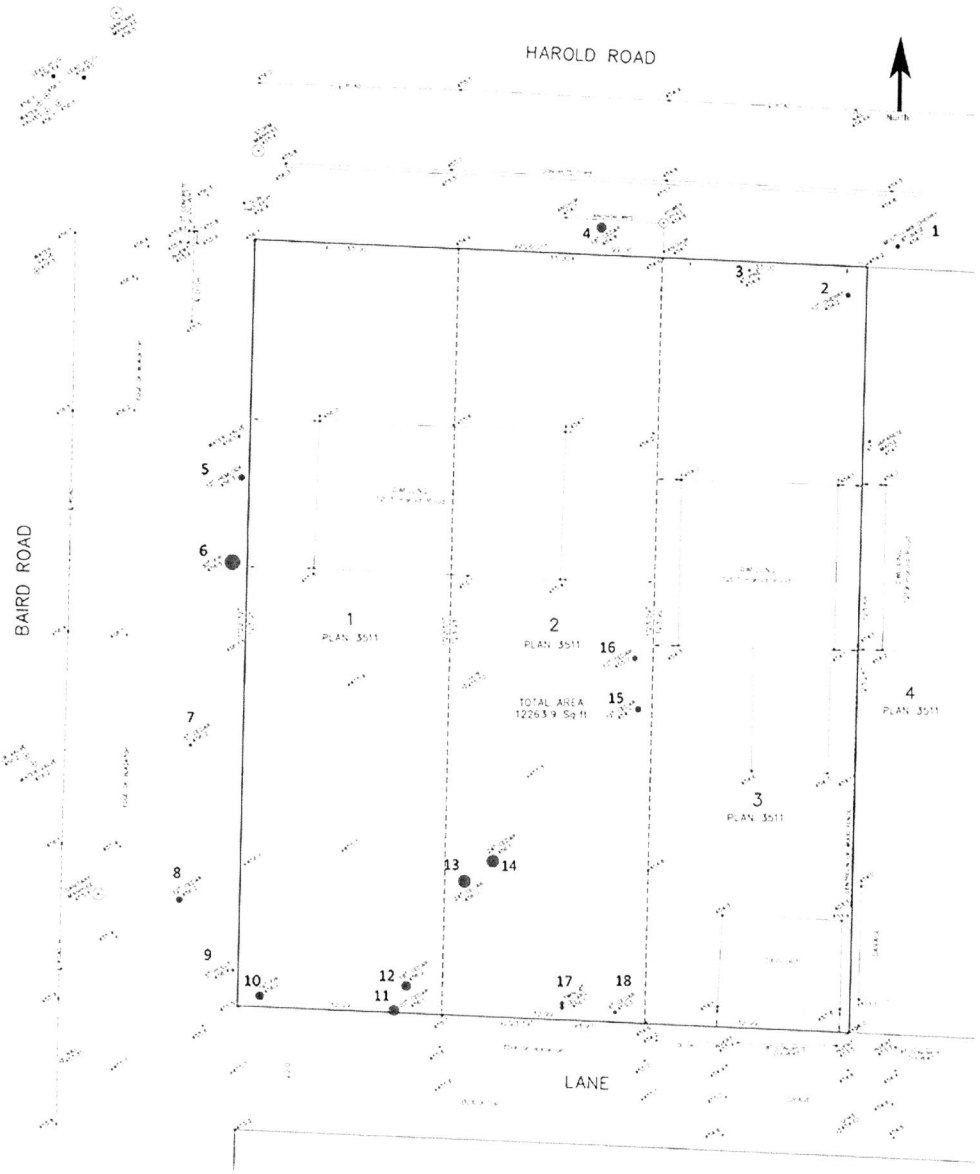


Figure 2. Survey plan of site showing trees by location and number.

Table 1. Details of trees on site.					
Tree #	Species	Trunk diameter (cm)	Bylaw sized Y or N	On site - OS District tree - DT	Comments
1	Ornamental cherry	20	N	DT	Multiple stems, poor condition
2	Ornamental cherry	25	N	OS	Poor condition
3	Pine	10	N	OS	Good condition
4	Redcedar	46	N	DT	Topped
5	Hemlock	30	N	DT	

6	Douglas-fir	76	Y	DT	Good condition
7	Redcedar	13	N	DT	
8	Redcedar	30	N	DT	Topped
9	Holly	13	N	DT	Bush form
10	Douglas-fir	41	N	OS	
11	Redcedar	51	N	OS	Topped
12	Redcedar	46	N	OS	Topped
13	Redcedar	61	N	OS	Topped
14	Redcedar	61	N	OS	Topped
15	Redcedar	30	N	OS	Topped
16	Redcedar	25	N	OS	Topped
17	Redcedar	20/20	N	OS	Topped
18	Redcedar	15	N	OS	Topped

Discussion

There is only one bylaw sized[1] tree, #6, a Douglas-fir, and it is on District land. There are no protected trees on or adjacent to the site. Many of the trees have been previously topped, and not all are in good condition. There are no trees that warrant transplanting.

[1]Tree Protection Bylaw 7671, 2012.

b. 1203-1207 Harold Rd – Detailed Rezoning and Development Permit Application for 8 townhouse units (File: 08.3060.20/030.14)

Mr. Kevin Hanvey joined the Panel at 7:40 pm.

Ms. Casey Peters of the District Planning Department gave a brief overview of the application and site context. The site is located at Harold and Baird Roads, on the edge of the Lynn Valley Town Centre. It is designated in the Official Community Plan as Residential Level 4 – transitional multi-family with a maximum FSR of 1.2. Surrounding developments include existing single family homes to the north, existing multi-family Residential Level 3 with a 0.8 FSR to the west, designated Residential Level 4 properties to the east and Residential Level 5 properties with a maximum 1.75 FSR to the south.

This project forms a transition from lower densities to the Lynn Valley Town Centre, and as a part of the project plan, there is a required dedicated portion of land to the east. The long term plan for this area is to create a new pathway that connects to an existing trail network to the north, as well as to future development to the south.

Ms. Peters noted that this development is in the development permit areas for Form and Character, as well as Energy and Water Conservation and Green House Gas Emission Reduction.

Clarification was requested on whether public art is part of the project. Ms. Peters noted that a Community Amenity Contribution is a part of the application, and that public art could be one of the potential amenities. Ms. Peters also noted that a decision has not been made as to whether this public art would be located on site or elsewhere in Lynn Valley.

Ms. Peters introduced the design team, Duane Siegrist, project architect, Mike Brody, project applicant and Bill Harrison, landscape architect.

The Chair thanked Ms. Peters for her presentation, welcomed the applicant team to the meeting and outlined the procedure to be followed in reviewing the proposal.

Mr. Siegrist reviewed the highlights of the application, beginning with the site planning. Mr. Siegrist noted the park connection and future green walkway connection that are intended to reinforce pedestrian movement through the site and to the Town Centre. He also noted that the built form in the surrounding area is predominantly of the same size, and that the proposed development will reflect this scale.

Mr. Siegrist spoke to the urban form of the project, noting that the built form in the area over the past few years focuses on street access to the front door and parking located in the interior of the site. It was noted that the setbacks proposed are typical in the area. Mr. Siegrist commented on the building mass and noted that the design team felt strongly about the need to provide a soft edge to the building with a vertical transition from the sidewalk. He indicated that the intent is to provide gated access to the interior parking, so as to create the sense of an internal courtyard.

Mr. Siegrist reviewed the building elements, highlighting the sliding screen features to help create a sense of privacy and comfort, as well as sun-shading on the balconies. Mr. Siegrist noted that the materials used are durable, west coast materials, that the building form provides weather protection with deep overhangs, that the colours and materials generally include a

solid stone base to ground the form, and lighter, more muted colour choices above. The rooftop decks are an element reflecting the design team's' livability statement, and are intended to provide residents with quality outdoor spaces. Mr. Siegrist noted that the plans for the building include elevator rough-ins that can provide access to bedrooms and underground parking and help to assist with aging in place.

Mr. Bill Harrison, project landscape architect, outlined the use of a limited but attractive selection of landscape materials. He noted the emphasis on connecting the units to the street front, including the use of stoops or porches for most of the units. Mr. Harrison noted the European feel of the drive and courtyard interior and pointed out the simple planting palette proposed so as not to take away from the building's design elements. Mr. Harrison noted that there are rain gardens proposed on Harold Road, as well as the use of permeable paving as a part of the stormwater strategy. Mr. Harrison also noted that the access gate will be well lit and secure.

Mr. Siegrist summarized the design team's objectives and pointed out that the proposal meets zoning requirements with the exception of height due to the taller building elements that allow stair access to the roof decks.

The Chair thanked the design team for their presentation and asked if there were any questions of clarification from the Panel members.

Questions of clarification were asked of the design team on the following topics:

Will some of the units be able to have step-free access off the street? Answer: Stairs cannot be eliminated for any of the units, but the intent is to reduce the number of stairs.

Will elevators provide access to roof decks? Answer: Solutions to mobility challenges have been focused on vehicle and bedroom access, not the roof decks. Allowing for this might create more bulk, as well as reduced floor space.

Could the "coach house" style units have doors to the lane, rather than to Harold Road? Answer: The intent was to create a street connection to Harold Road.

Has Swiss Pearl panelling been used on townhouse projects in the past? Answer: Yes, but the approach in this building will employ a rail system rather than exposed fasteners.

How many units are roughed-in for elevators? Answer: 4 of the 8 proposed units.

How do the screens on the west elevation slide? Answer: The screens will be made of treated cedar. They are built on rails with a spring system to allow for movement.

Will the building be wood frame? Answer: Yes.

How will the thin balcony edge detail be achieved? Answer: The balconies will have a vinyl membrane running to the edge, likely with a cap flashing.

Are both the pedestrian and vehicle gates secured? Answer: Yes.

Will there be lighting on the easterly walkway? Answer: Yes, soffit lighting.

The Chair thanked the applicant team for their clarifications and asked for comments from the District Urban Design Planner, Mr. Frank Ducote.

Mr. Ducote noted that the proposal included a number of innovative features. Mr. Ducote wondered if the laneway façade of the "coach house" building could be treated differently so as to benefit the lane. With regard to the roofscape, it was suggested that the many stair towers seem to add bulk to the building and could perhaps be minimized to some extent. While there is an appreciation for a natural pallet, the choices were noted as being quite muted and there could be an opportunity for additional colour, perhaps on the doors. As well, the edges of the building could be treated in a somewhat more delicate manner and this would add to the West Coast feel of the building.

The Chair thanked Mr. Ducote for his comments and asked the Panel members for their comments on the proposal.

A Panel member commented that this appears to be a well-conceived design that accommodates the density on the site quite well.

It was noted that while the project is an attractive design, the quality of the detailing will make it successful as a finished project. It was noted that the applicant may wish to consider an alternate material for the proposed sliding screens to ensure they are functional and durable.

It was suggested that access to garages could be challenging and should be reviewed.

Some Panel members felt that the height of the stair towers seemed to be an attractive counterpoint to the horizontality of the project overall, and that there was generally no objection to the increased height. With regard to the stair towers in particular, one Panel member noted that horizontal bands of glazing on the stair towers might keep the parapet from appearing relentless.

Some Panel members suggested that the east elevation appeared poorly resolved and would benefit from more interest and variety.

One Panel member noted some disappointment with the conversion of the project to a townhouse form and the fact that this will reduce accessibility in the project. It was noted that access from the street with fewer steps would be a positive outcome. It was suggested that there was some lack of clarity on formatting for future elevator installations, and that while this is a very positive idea, there might be other ways to achieve them which would provide improved access to the interior spaces.

The Chair thanked the Panel for their comments and invited the applicant team to respond to the comments made by the Panel.

Mr. Siegrist thanked the Panel for their comments.

The Chair thanked the applicant team and invited the Panel to compose a motion.

MOVED by Kevin Hanvey and **SECONDED** by Robert Heikkila:

THAT the ADP has reviewed the proposal and recommends **APPROVAL** of the project **SUBJECT** to addressing the following items to the satisfaction of staff:

- Further study of the eastern elevation and auto court to promote greater variety and interest, including colour
- Further consideration of fenestration of stair towers on the western façade
- Further review of stair access from the street for the four westerly units
- Review of the practicality of the gate to the auto court
- Further review of detail of balcony projections to ensure thinness and reflection of building images as presented
- Review of provisions for future elevator format for westerly four units to provide access from the street and garage
- Review of parking opportunities for handicap parking on site

MOTION CARRIED

c) Seylynn Village – Phase Two, Buildings A and D (08.3060.20/052.12)

Mr. Michael Hartford of the District Planning Department introduced the design team and gave a brief overview of the application and site context. Mr. Hartford noted that these are two separate development permit applications being processed simultaneously. Mr. Hartford provided background information for Panel members who were not present at the beginning of the project and outlined that Council recently adopted an Implementation Plan for the Lower Lynn Town Centre. Surrounding land uses include Highway 1 to the east and north, lands for future residential development to the south, and existing Seylynn Park to the west. A new bypass road is currently under construction at the north edge of the site.

Buildings A and D constitute the subject development and comprise Phase 2 of the larger project. Design Guidelines specific to Seylynn Village were adopted at the time of rezoning in order to shape the development and to help respond to site specific issues such as:

- Addressing the internal roadway and how best to approach it
- The handling of pedestrian opportunities throughout the site
- A unique identity for the site
- How to deal with open space on the site so that it works for residents and the community

Mr. Hartford noted that the site falls into Development Permit Areas for Form and Character, Creek Hazard (flooding) and Energy, Water and Greenhouse Gases. The target for all buildings is LEED Silver.

Mr. Hartford outlined the District input for Building D, the 6 storey building, and that topics which the District had reviewed with the applicant included the interior organization of the recreation facility, the relationship of the building to the new East Keith Road, a review of the main plaza area in order to make it a successful space, and the need to define travel paths for users of the site.

For Building A, the 28 storey tower, it was noted that the District reviewed items such as the format of the residential lobby area and its relationship to the second plaza, the relationship between the driveway and the residential lobby, the townhouses on the west of the site and their relationship to Mountain Highway, building massing of the north podium arm, and a review of the tower proportions.

HAROLD ROAD TOWNHOMES, NORTH VANCOUVER, BC

PROPOSED RESIDENTIAL DEVELOPMENT - BROADY DEVELOPMENT

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Cover Page

13321	[PROJECT]
NTS	[SCALE]
April 10, 2015	[DATE]
ISSUE 4 - DP RESUBMISSION	[ISSUE]

[DRAWING]

A-0.1

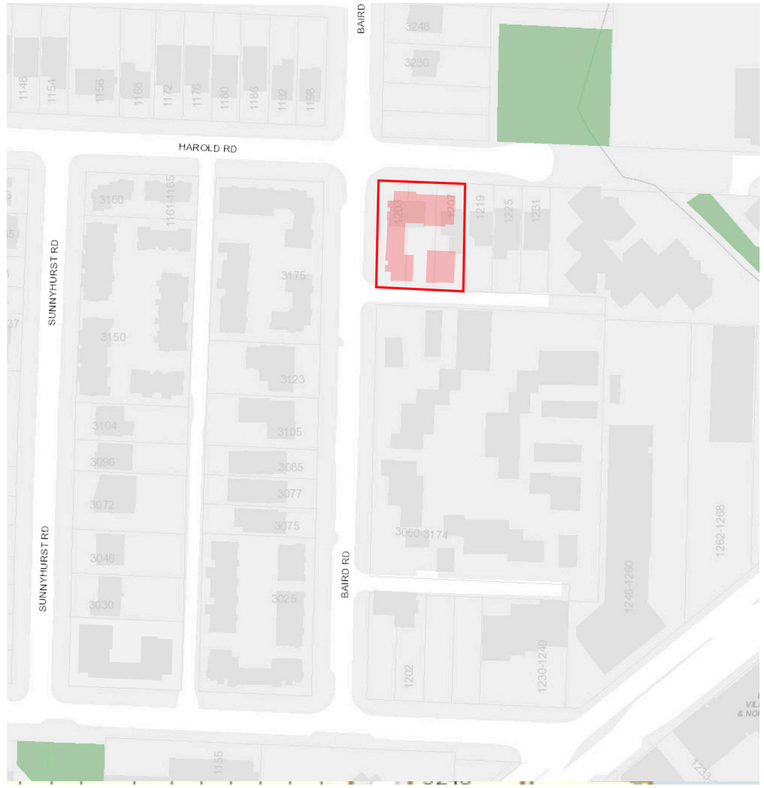
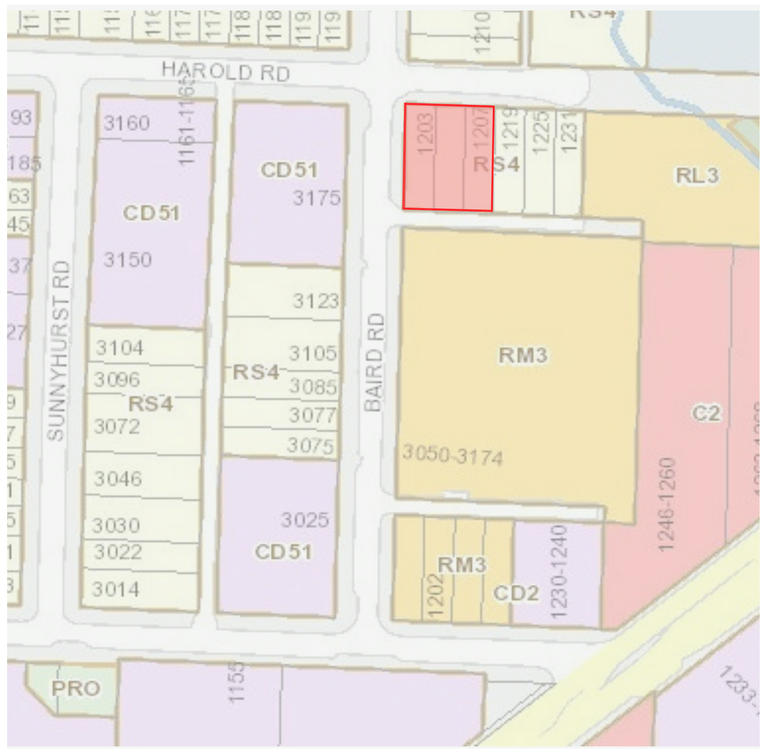


FIGURE GROUND



ZONING MAP

Project: **Baird Road & Harold Road Townhouses**
North Vancouver

Client: Brody Development Corp.

Project No.

Date: ***April 9, 2015***

Issue: 4- DP Resubmission

PROJECT DATA

ADDRESS: **Harold Road / Baird Road , North Vancouver , BC**

Legal Description:

ZONING:

Existing Zoning: RES4

Proposed Zoning: **CD**

OCP Residential Level 4

SITE AREA:

Total lot area Gross	**0.2815 Acres**	**total**	**12,263.9 sq.ft.**	**1,139.32 m2**	
Total Site Area net	**554 Dedications sq.f**	**total**	**11,709.9 sq.ft.**	**1,087.85 m2**	

FLOOR AREA RATIO:

Max. F.A.R.	1.20	14,716.7 sq.ft.	1,367.18 m2
Proposed F.A.R.	**1.20**	**14,761.0 sq.ft.**	**426.50 m2**

F.A.R **Exclusions - sq.ft**

1ST FLOOR	**sq.ft.**	**Total sq.ft**	**Total m2**	**Elevator**	**Crawlspace**	**Bay Windows**	**Roof Access**	**Carport**
Unit A1 Level 1	328.00			27.00	24.00	0.00		397.00
Level 2	837.00			27.00	0.00	23.00		
Level 3	794.00	1,959.00	181.99	27.00	0.00	23.00	112.00	
Unit A2 Level 1	328.00			27.00	24.00	0.00		396.00
Level 2	717.00			27.00	0.00	61.00		
Level 3	717.00	1,762.00	163.69	27.00	0.00	61.00	112.00	
Unit A3 Level 1	500.00			0.00	21.00	0.00		0.00
Level 2	735.00			0.00	0.00	25.00		
Level 3	741.00	1,976.00	183.57	0.00	0.00	25.00	52.00	
Unit A4 Level 1	651.00			0.00	22.00	0.00		0.00
Level 2	594.00			0.00	0.00	26.00		
Level 3	594.00	1,839.00	170.84	0.00	0.00	26.00	52.00	
Unit B1 Level 1	477.00			27.00	60.00	0.00		206.00
Level 2	740.00			27.00	0.00	38.00		
Level 3	778.00	1,995.00	185.34	27.00	0.00	0.00	106.00	
Unit B2 Level 1	238.00			27.00	54.00	0.00		244.00
Level 2	888.00			27.00	0.00	0.00		
Level 3	882.00	2,008.00	186.54	27.00	0.00	0.00	123.00	
Unit C1 Level 1	301.00			0.00	15.00	0.00		405.00
Level 2	690.00			0.00	0.00	0.00		
Level 3	750.00	1,741.00	161.74	0.00	0.00	67.00	104.00	
Unit C2 Level 1	219.00			0.00	13.00	0.00		407.00
Level 2	607.00			0.00	0.00	0.00		
Level 3	655.00	1,481.00	137.58	0.00	0.00	54.00	111.00	
	14,761.00	**14,761.00**	**1,371.30**	**324.00**	**233.00**	**429.00**	**772.00**	**2,055.00**

Total				
Level 1	3,042.00			
Level 2	5,808.00			
Level 3	5,911.00			
Total GFA	**14,761.00**	**1,371.30 m2**	**Total Exlusions**	**3,813.00**

FAR Exlcusions: Crawl space, Elevators, Carport, Roof Acces/Deck and Services, Bay Windows

Notes:

Note 1: Unit areas are measured to the center of partywalls and to the exterior of sheathing of exterior walls.
(marked on the floor plans as shaded areas)
Note 2: Level 1 Floor area includes garage space where illustrated

Parking Required :

Resident Parking	8 units @	2.00 stalls/ unit	16
Visitor parking (inclusive)	0 units @	stalls /unit	0
Total Parking Required:			**16.0**

Parking Provided : **Variance Required**

Regular stalls			8
Small car stalls	50.00%		8
		2 tandem (inclusive)	
Visitor Parking			0
Total Parking Provided:			**16.0**

Bike/ Storage lockers: internal storage - 1st level

Site Coverage **Variance Required**

Max. Lot Coverage:	70%		
Proposed Lot Coverage:	**73.8%**	9,047.00 sq.ft.	840.4663 m2
(Incl. building, parking, driveways, balconies, trellis)			
(Excl. overhangs, walkways and patios)			

Building Coverage **Variance Required**

Max. Bldg Coverage:	45%		
Proposed Bldg Coverage:	**56.0%**	6,866.00 sq.ft.	637.85 m2
(Incl. building, balconies, trellis)			
(Excl. overhangs, driveways, walkways, patios)			

Building setbacks:
(Excl. stairs / entry feature / bay windows)

	South Front	8'-0" (laneway)	2.44 m
	East: Front	4'-11"	1.50 m
	West: rear	10'-0" (Baird Rd.)	3.05 m
	North side	10'-0" (Harold Rd.)	3.05 m
LAND DEDICATION	East Boundary	4'-1"	1.25m
	North West Corner	49 sq.ft	3m x 3m

Building Height: **Variance Required**

Bylaw as per CD51 (12.5m - 15% for sloped roof)	**35'-0"**
T.O.R Main Structure	29'-9"
Top of Roof Deck Stairs	38'-8"

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Project Data

[PROJECT] **13321**

[SCALE] **NTS**

[DATE] **April 10, 2015**

[ISSUE] **ISSUE 4 - DP RESUBMISSION**

[DRAWING] **A-0.4**

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Elevations - Streetscape

[PROJECT]	13321
[SCALE]	NTS
[DATE]	April 10, 2015
[ISSUE]	ISSUE 4 - DP RESUBMISSION

[DRAWING]

A-0.5

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Elevations - Typical

[PROJECT]
13321

[SCALE]
NTS

[DATE]
April 10, 2015

[ISSUE]
ISSUE 4 - DP RESUBMISSION

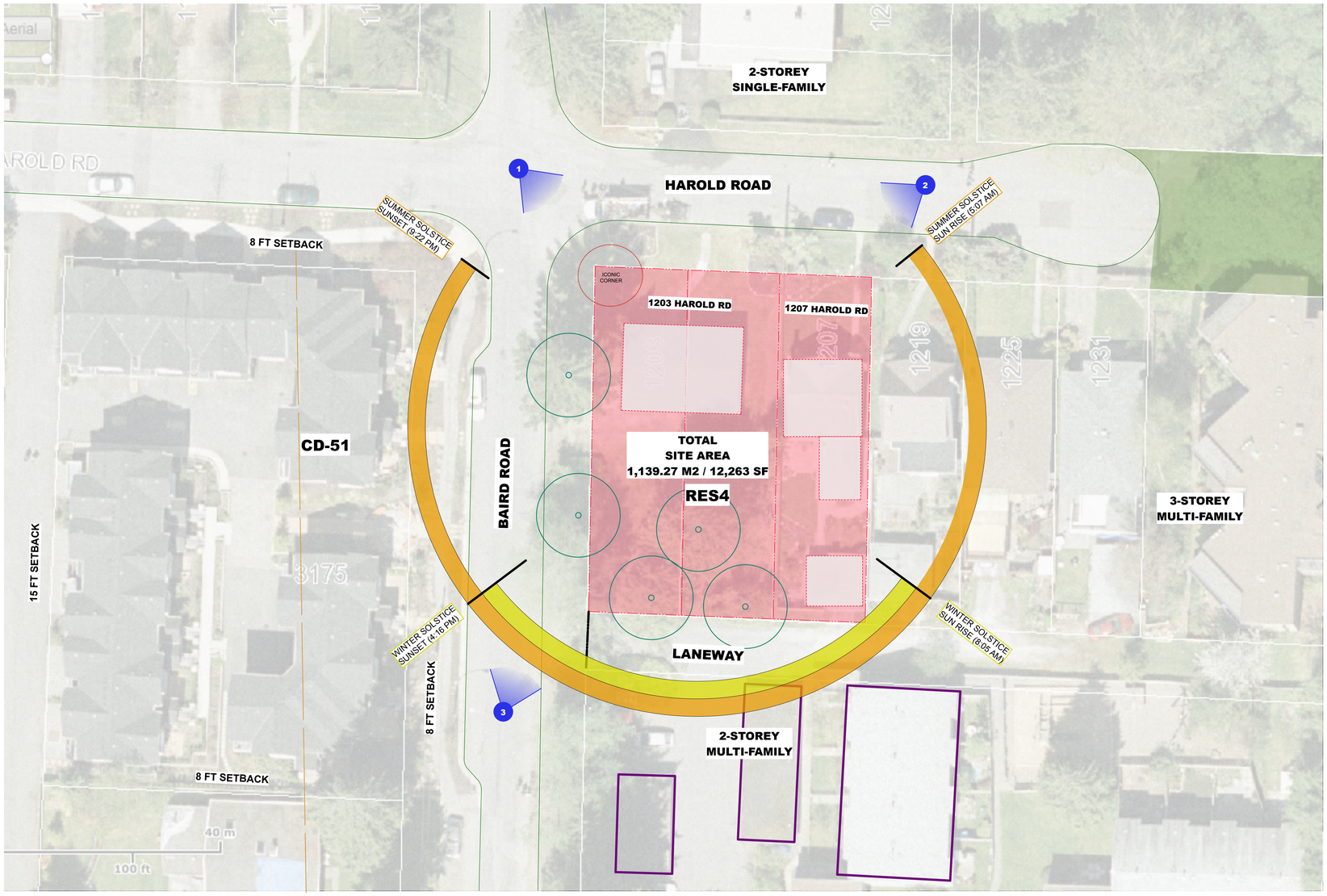
[DRAWING]

A-0.6

1. VIEW AT NORTH WEST CORNER

2. VIEW ALONG HAROLD ROAD AT NORTH EAST CORNER

3. VIEW ALONG BAIRD ROAD AT SOUTH WEST CORNER



Supplemental drawings from the following dated July 11th, 2014 for the purposes of a preliminary development application to the District of North Vancouver:

- Integra Architecture Inc.
- Forma Design Inc. landscape drawings
- Creus Engineering Ltd.

DESIGN RATIONALE

This proposed project consists of eight 3-storey family-oriented townhouses. The townhouse design maximize natural ventilation, neighborhood views and a connection to the outdoors.

The positioning of the building was carried out to create a prominent corner of Baird and Harold Rd with landscape planting to establish a strong street presence. The character of residential scale entries and front patios at grade provide a semi private space to transition from street to entry. The setbacks are typical to adjacent townhouse developments in the area.

The townhomes are positioned around an internal autocourt providing access to the parking of each townhouse. The pathway, planting and proposed dedication, links the two rear townhomes to a street frontage on Harold Rd. This emphasizes connections to the street and parks in the area. To minimize the impact of parking maneuvering on the rest of the block and to increase the amount of landscaping, parking access and garbage / recycling is located from the laneway.

The modern townhouses have a strong undulating building façade with individual entries from Harold and Baird Rd. The building's size, colours, form and height have been used to accentuate the individuality of each townhouse. Townhouses feature work spaces, storage, parking, provision for future elevator access and private roof deck access.

A balance of horizontal and vertical elements is to be considered to avoid a repetitive horizontal appearance; using strong balcony elements framed and screened to increase solar protection and privacy. The building is to have a bold presence softened by materials such as wood and stone, common in residential use. Substantial elements such as larger roof overhangs and the use of stone are proposed at the corners, base of the building, and main entries are used to create a sense of permanence.

The landscape design of this project is intended to create an interesting and sustainable landscape character for this site, as well as create a unique and friendly streetscape, Roof decks provide private outdoor spaces and enhance views of the surrounding area.

Measurable sustainability targets will be developed and assessed. Features such as storm-water retention are to be finalized in the detail design phase to confirm practical implementation of these objectives. Passive solar design and cross ventilation has been used to increase sustainable livability. The project is intended to contribute to Lynn Valley area according the District's directions as a more sustainable and livable community, in a practical and cost efficient manner.

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

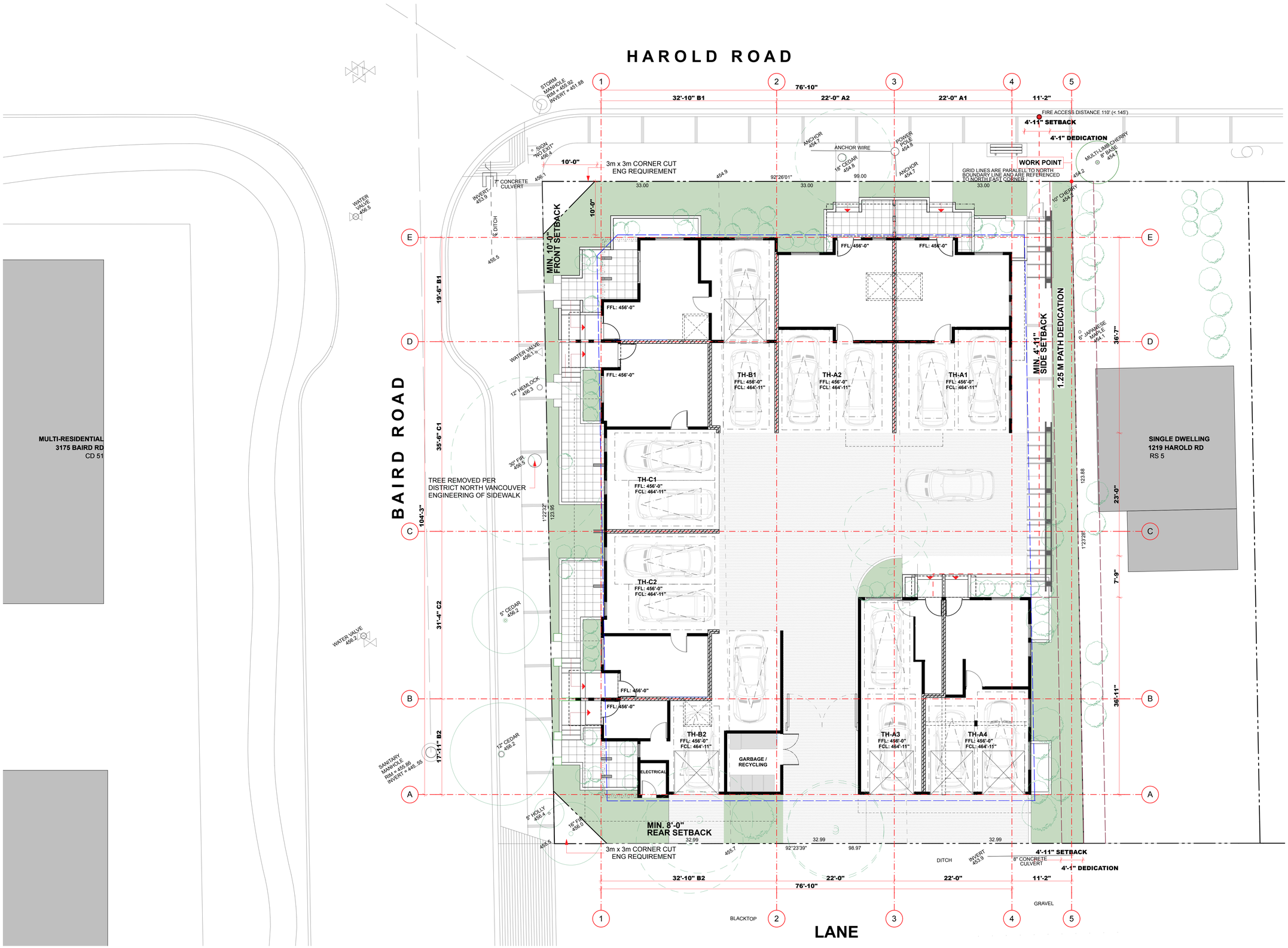
[TITLE]

Context - Site

13321	[PROJECT]
NTS	[SCALE]
April 10, 2015	[DATE]
ISSUE 4 - DP RESUBMISSION	[ISSUE]

[DRAWING]

A-0.7



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

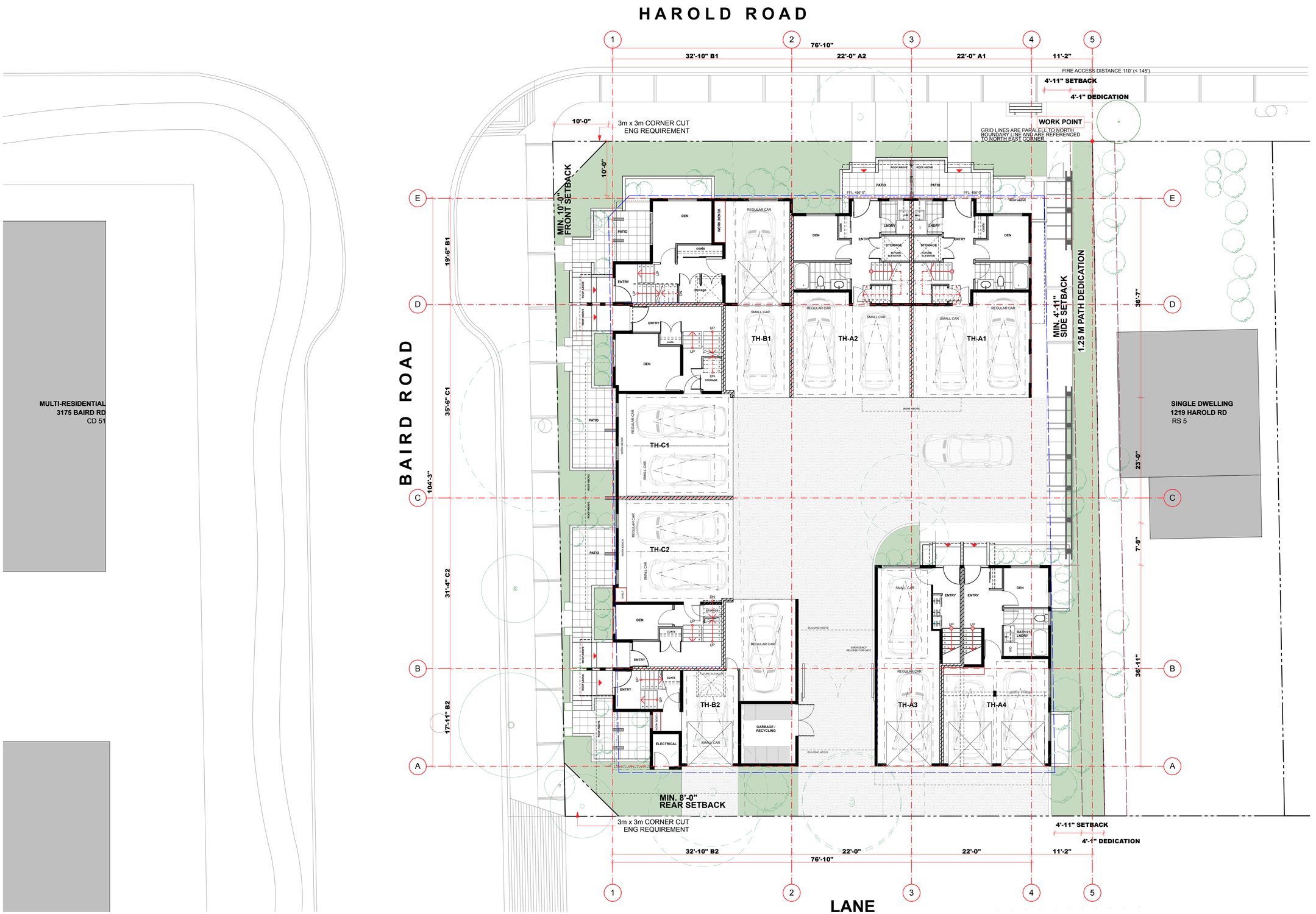
[TITLE]

Site Plan

13321	[PROJECT]
1/8" = 1'-0"	[SCALE]
April 10, 2015	[DATE]
ISSUE 4 - DP RESUBMISSION	[ISSUE]

[DRAWING]

A-1.1



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

1st Storey

[PROJECT] 13321

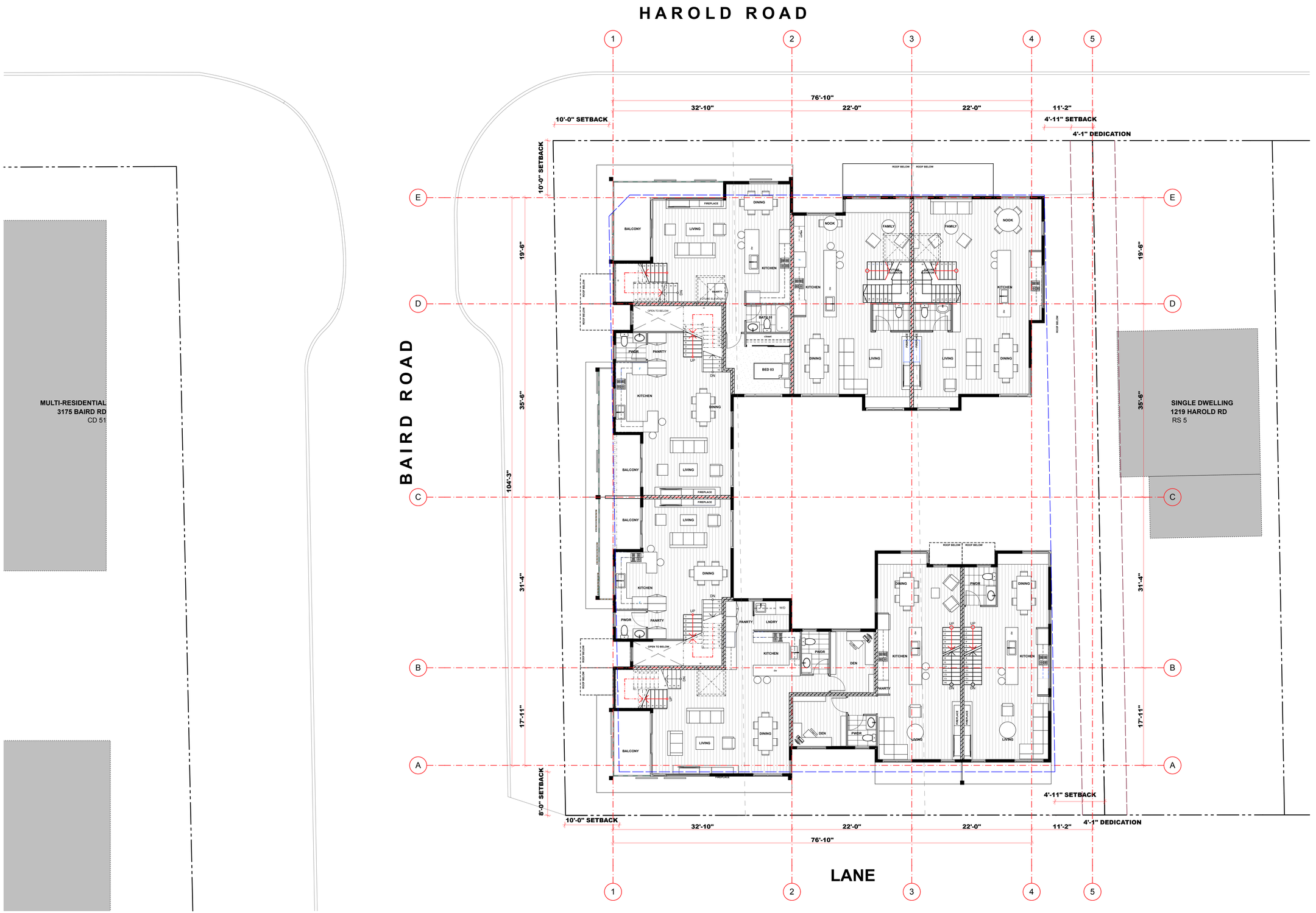
[SCALE] 1/8" = 1'-0"

[DATE] April 10, 2015

[ISSUE] ISSUE 4 - DP RESUBMISSION

[DRAWING]

A-1.2



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

2nd Storey

13321 [PROJECT]

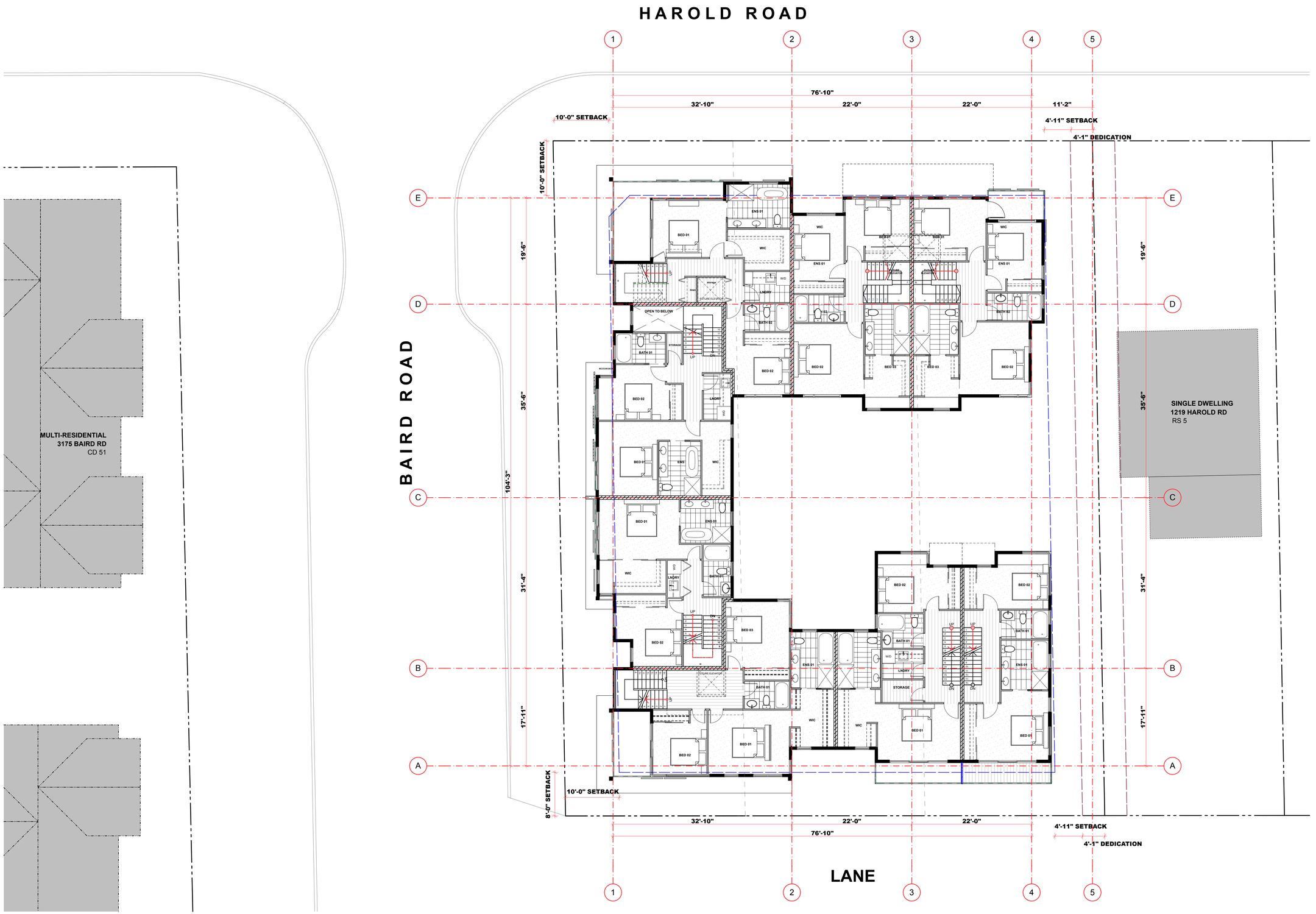
1/8" = 1'-0" [SCALE]

April 10, 2015 [DATE]

ISSUE 4 - DP RESUBMISSION [ISSUE]

[DRAWING]

A-1.3



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

3rd Storey

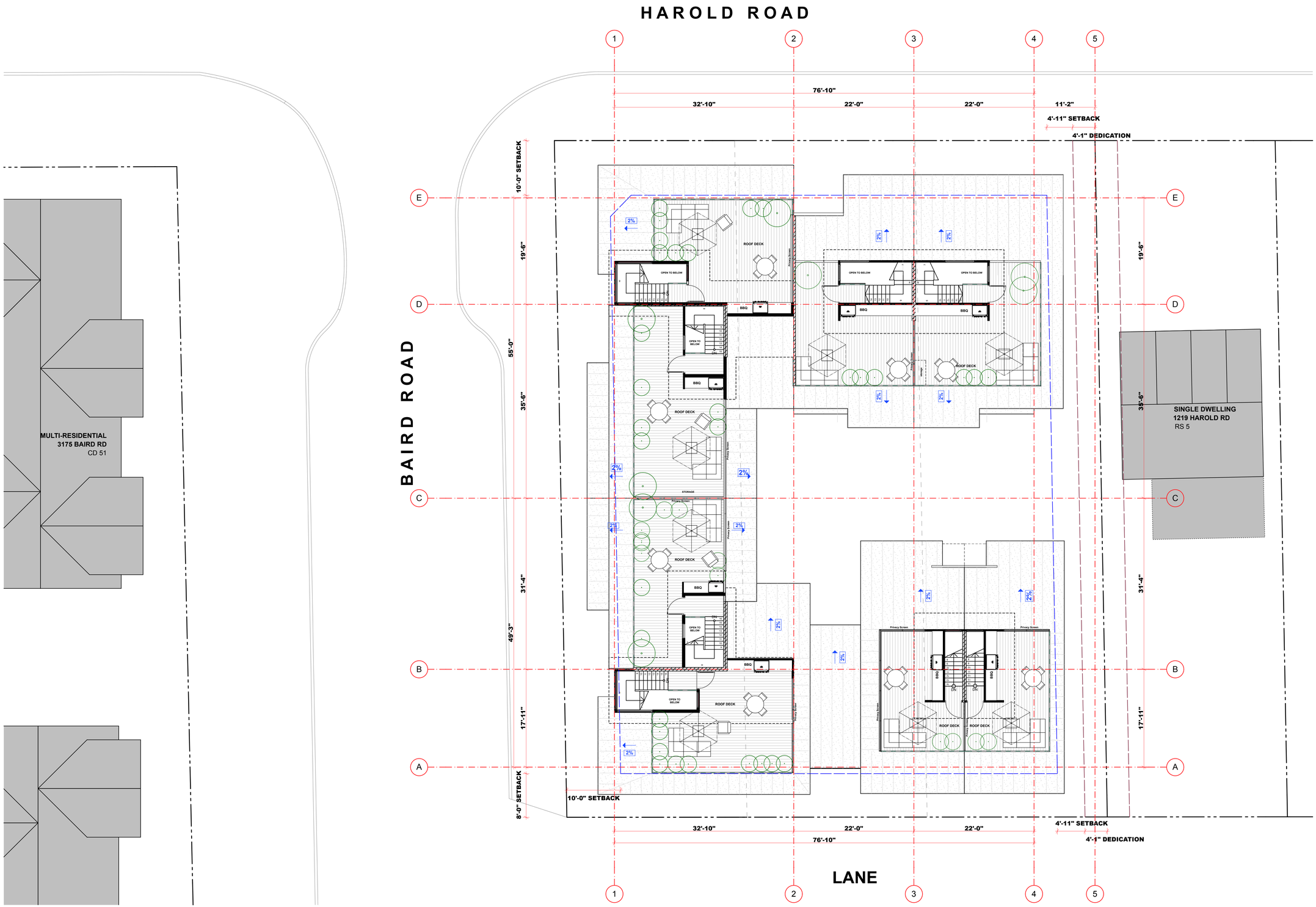
[PROJECT] 13321

[SCALE] 1/8" = 1'-0"

[DATE] April 10, 2015

[ISSUE] ISSUE 4 - DP RESUBMISSION

[DRAWING] A-1.4



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Roof Plan

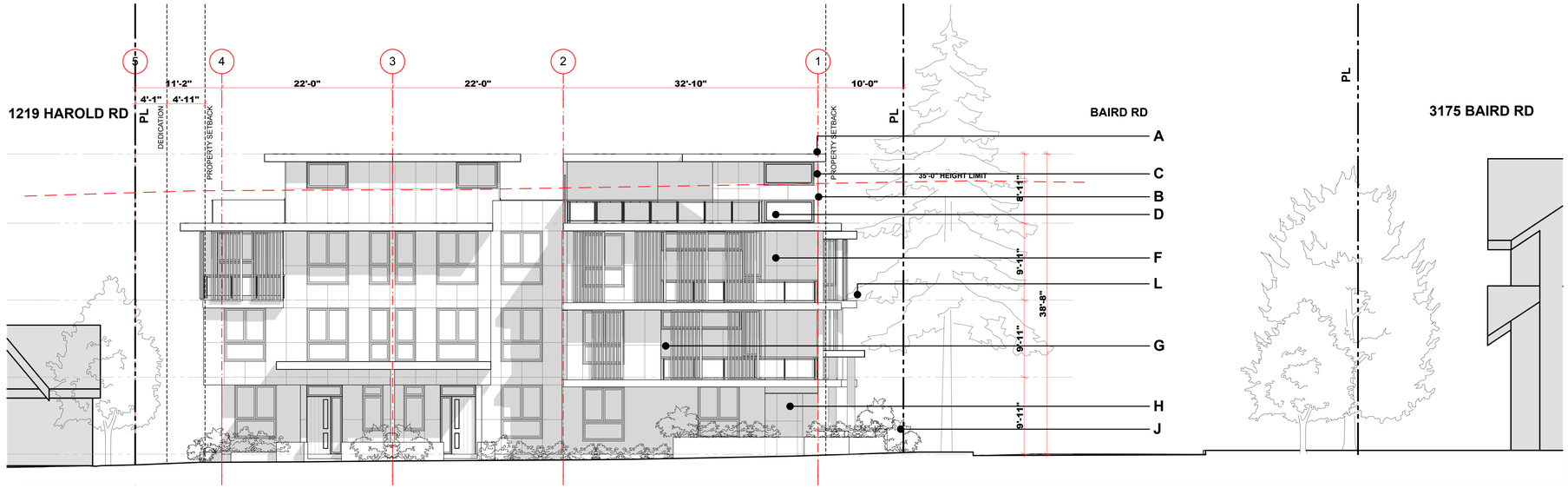
[PROJECT] 13321

[SCALE] 1/8" = 1'-0"

[DATE] April 10, 2015

[ISSUE] ISSUE 4 - DP RESUBMISSION

[DRAWING] A-1.5

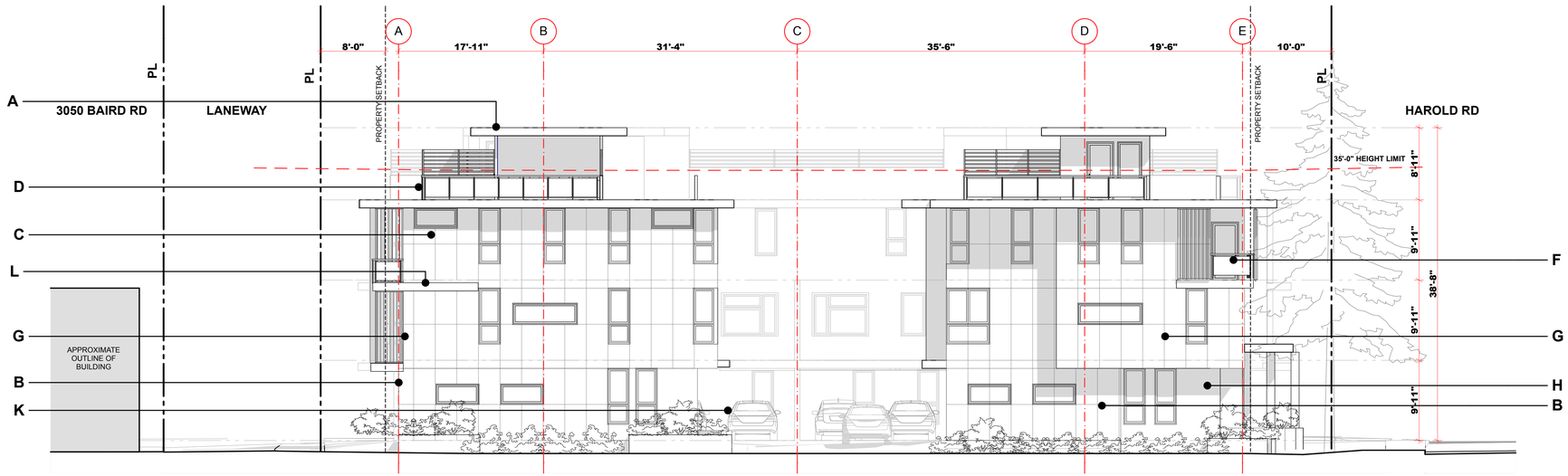


NORTH ELEVATION

MATERIAL LEGEND

		Colour	Manufacturer	Colour to match…	Reference
A	*Grey*	TBC	TBC	Torch-on SBS Roofing
B	*Matte Silver/ Aluminum*	Alucobond	Steel City Silver	Alucobond- Mirca Cool
C	*Charcoal*	Aluminium Doors/Windows	Benjamin Moore: Kendall Charcoal	Aluminium sliding doors and windows w/ matching flashing and trim
D	*Charcoal*	Supermel Powder Coatings	Benjamin Moore: Kendall Charcoal	Aluminum / glass railing @ balconies
F	*Stained*	Cedar Screens	-	Select grade cedar with water based stain to sliding screen system
G	*Beige*	Facade Panel	Champagne 9090	Swisspearl - Reflex

H	*Grey / Brown*	TBC	Cultured Stone Veneer	Cultured Ledge Stone veneer at selected locations, entry accent elements, corner units
J	*Light Beige*	Architectural concrete	-	Exposed concrete walls, retaining walls, landscape walls c/w clear water repellant
K	*Silver*	TBC	Alucobond: Steel City Silver	Garage Doors: Aluminum overhead door assembly
L	*Charcoal*	Makin Metals Ltd.	Benjamin Moore: Kendall Charcoal	Aluminium flashing and trim



EAST ELEVATION

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Elevations

[PROJECT] 13321

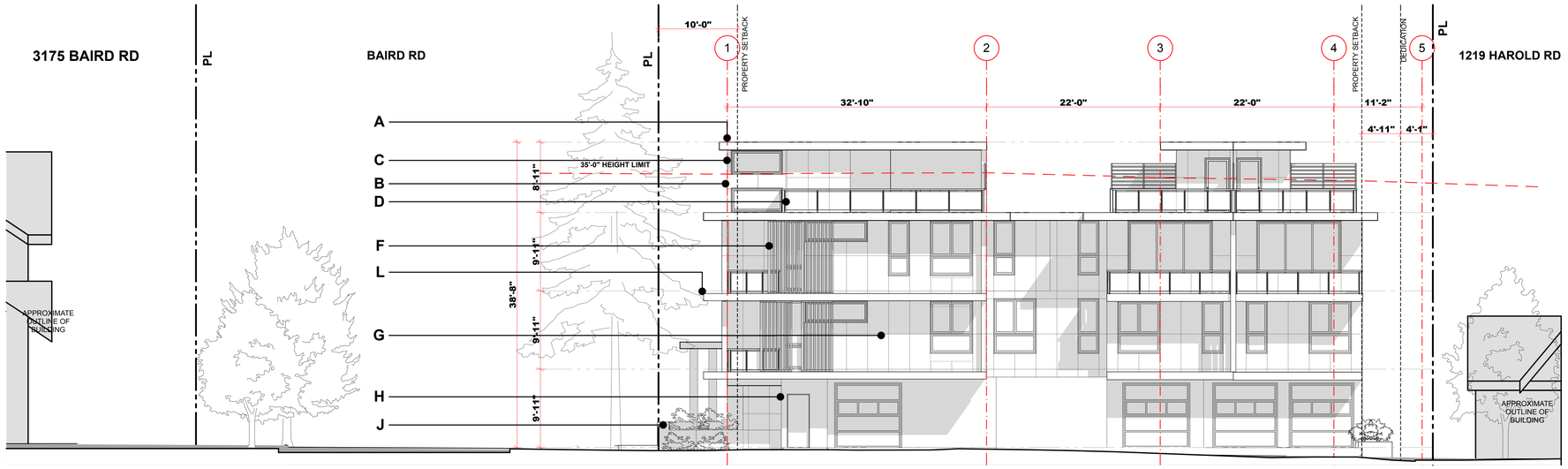
[SCALE] 1/8" = 1'-0"

[DATE] April 10, 2015

[ISSUE] ISSUE 4 - DP RESUBMISSION

[DRAWING]

A-3.1

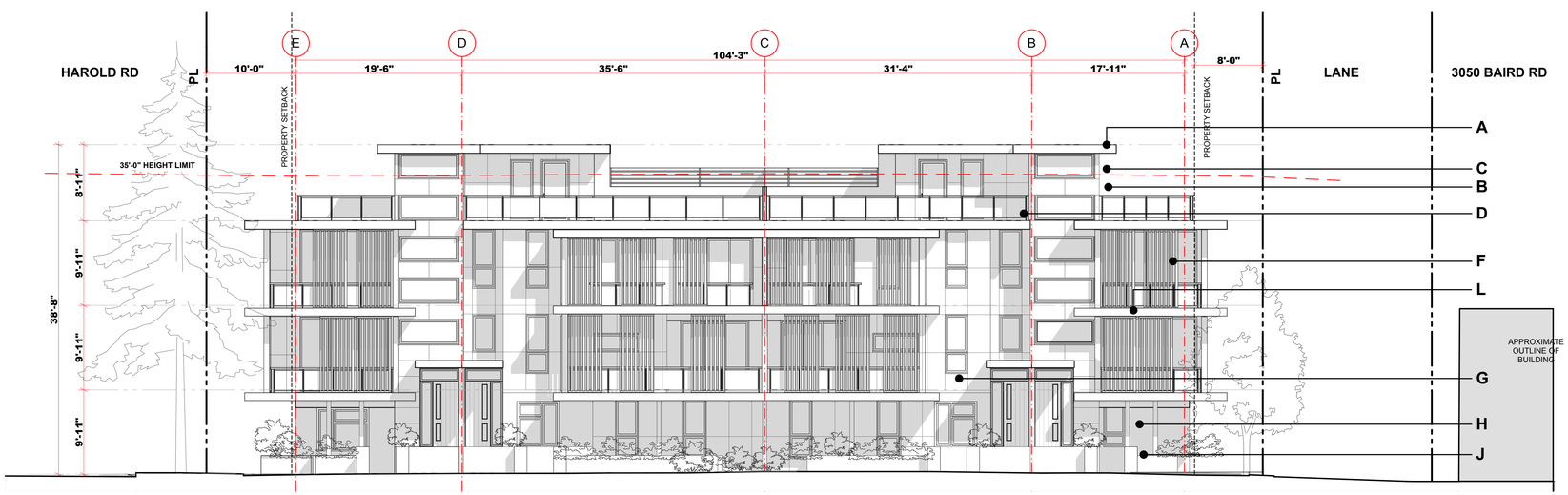


SOUTH ELEVATION

MATERIAL LEGEND

		Colour	Manufacturer	Colour to match…	Reference
A	*Grey*	TBC	TBC	Torch-on SBS Roofing
B	*Matte Silver/ Aluminum*	Alucobond	Steel City Silver	Alucobond- Mirca Cool
C	*Charcoal*	Aluminium Doors/Windows	Benjamin Moore: Kendall Charcoal	Aluminium sliding doors and windows w/ matching flashing and trim
D	*Charcoal*	Supermel Powder Coatings	Benjamin Moore: Kendall Charcoal	Aluminum / glass railing @ balconies
F	*Stained*	Cedar Screens	-	Select grade cedar with water based stain to sliding screen system
G	*Beige*	Facade Panel	Champagne 9090	Swisspearl - Reflex

H	*Grey / Brown*	TBC	Cultured Stone Veneer	Cultured Ledge Stone veneer at selected locations, entry accent elements, corner units
J	*Light Beige*	Architectural concrete	-	Exposed concrete walls, retaining walls, landscape walls c/w clear water repellant
K	*Silver*	TBC	Alucobond: Steel City Silver	Garage Doors: Aluminum overhead door assembly
L	*Charcoal*	Makin Metals Ltd.	Benjamin Moore: Kendall Charcoal	Aluminium flashing and trim



WEST ELEVATION

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Elevations

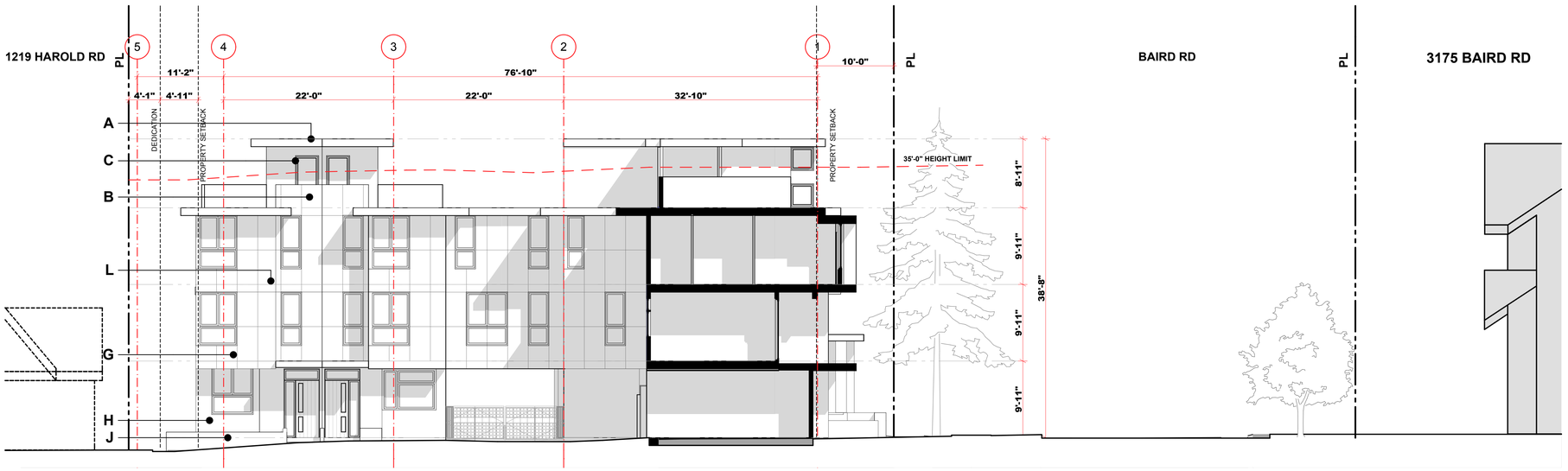
[PROJECT] 13321

[SCALE] 1/8" = 1'-0"

[DATE] April 10, 2015

[ISSUE] ISSUE 4 - DP RESUBMISSION

[DRAWING] **A-3.2**



INTERNAL STREET

MATERIAL LEGEND

	Colour	Manufacturer	Colour to match…	Reference
A	*Grey*	TBC	TBC	Torch-on SBS Roofing
B	*Matte Silver/ Aluminum*	Alucobond	Steel City Silver	Alucobond- Mirca Cool
C	*Charcoal*	Aluminium Doors/Windows	Benjamin Moore: Kendall Charcoal	Aluminium sliding doors and windows w/ matching flashing and trim
D	*Charcoal*	Supermel Powder Coatings	Benjamin Moore: Kendall Charcoal	Aluminum / glass railing @ balconies
F	*Stained*	Cedar Screens	-	Select grade cedar with water based stain to sliding screen system
G	*Beige*	Facade Panel	Champagne 9090	Swisspearl - Reflex

H	*Grey / Brown*	TBC	Cultured Stone Veneer	Cultured Ledge Stone veneer at selected locations, entry accent elements, corner units
J	*Light Beige*	Architectural concrete	-	Exposed concrete walls, retaining walls, landscape walls c/w clear water repellant
K	*Silver*	TBC	Alucobond: Steel City Silver	Garage Doors: Aluminum overhead door assembly
L	*Charcoal*	Makin Metals Ltd.	Benjamin Moore: Kendall Charcoal	Aluminium flashing and trim

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Elevations

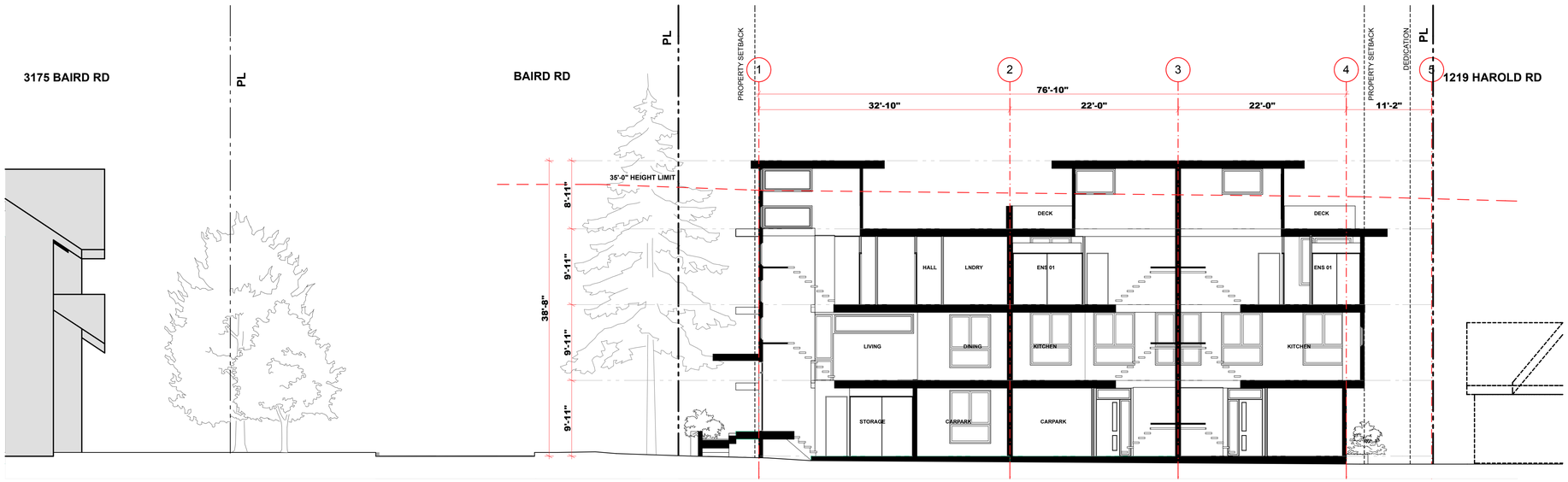
[PROJECT]
13321

[SCALE]
1/8" = 1'-0"

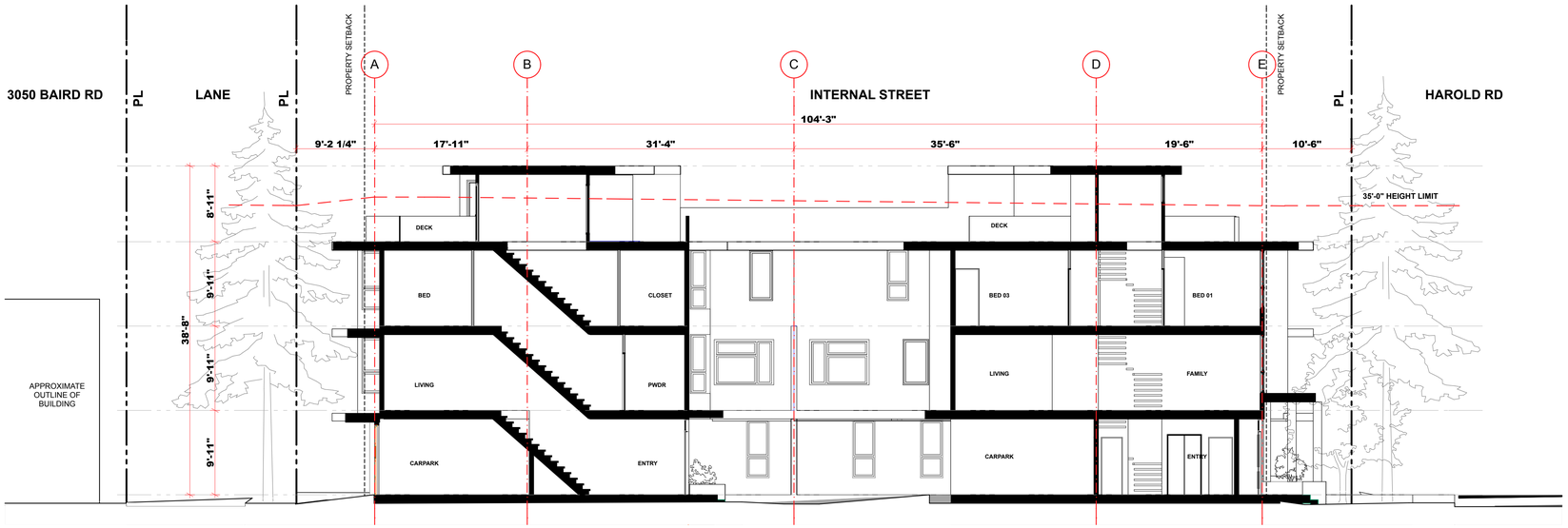
[DATE]
April 10, 2015

[ISSUE]
ISSUE 4 - DP RESUBMISSION

[DRAWING]
A-3.3



SECTION A



SECTION B

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Sections

[PROJECT]
13321

[SCALE]
1/8" = 1'-0"

[DATE]
April 10, 2015

[ISSUE]
ISSUE 4 - DP RESUBMISSION

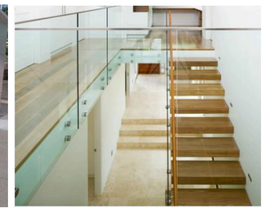
[DRAWING]
A-4.1

Cedar soffit lining

Entry door with frosted glass, aluminium frame

Sliding wood screen

Roof Deck



	Colour	Manufacturer	Colour to match…	Reference
A	*Grey*	TBC	TBC	Torch-on SBS Roofing
B	*Matte Silver/ Aluminum*	Alucobond	Steel City Silver	Alucobond- Mirca Cool
C	*Charcoal*	Aluminium Doors/Windows	Benjamin Moore: Kendall Charcoal	Aluminium sliding doors and windows w/ matching flashing and trim
D	*Charcoal*	Supermel Powder Coatings	Benjamin Moore: Kendall Charcoal	Aluminum / glass railing @ balconies
F	*Stained*	Cedar Screens	-	Select grade cedar with water based stain to sliding screen system
G	*Beige*	Facade Panel	Champagne 9090	Swisspearl - Reflex

	Colour	Manufacturer	Colour to match…	Reference
H	*Grey / Brown*	TBC	Cultured Stone Veneer	Cultured Ledge Stone veneer at selected locations, entry accent elements, corner units
J	*Light Beige*	Architectural concrete	-	Exposed concrete walls, retaining walls, landscape walls c/w clear water repellant
K	*Silver*	TBC	Alucobond: Steel City Silver	Garage Doors: Aluminum overhead door assembly
L	*Charcoal*	Makin Metals Ltd.	Benjamin Moore: Kendall Charcoal	Aluminium flashing and trim

FLAT ROOF
DARK GREY 2% SLOPE
TORCH-ON

SOFFIT
1X4 CEDAR SOFFIT,
CLEAR FINISH

FLASHING
ALUMINIUM, CHARCOAL

FASCIA
ALUMINIUM, CHARCOAL

COLUMN
CHARCOAL ALUMINUM
FINISH

BALUSTRADE
CHARCOAL ALUMINUM /
GLASS RAILING / TOP
MOUNTED

BLADE WALL
ALUMINUM WRAPPED
BLADE SUPPORT WALL

LANDSCAPE WALLS
ARCHITECTURAL
CONCRETE
SINAGE WITH RECESSED
LIGHT FIXTURES

VINYL WINDOWS
COLOUR TBC - SILVER

HARDIE PANEL
BEIGE

ALUCOBOND PANEL
ALUMINIUM PANEL

VINYL WINDOWS
COLOUR TBC - CHARCOAL

STONE VENEER
LEDGE STONE -
CHARCOAL TBC

FRONT DOOR
CEDAR FRONT DOOR
WITH
HIGHLIGHT + SIDELIGHT
WINDOWS

BLADE WALL
ALUMINUM WRAPPED
BLADE SUPPORT WALL

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Materials

[PROJECT]	13321
[SCALE]	NTS
[DATE]	April 10, 2015
[ISSUE]	ISSUE 4 - DP RESUBMISSION

[DRAWING]

A-5.1

INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

1st Storey -FAR

[PROJECT] 13321

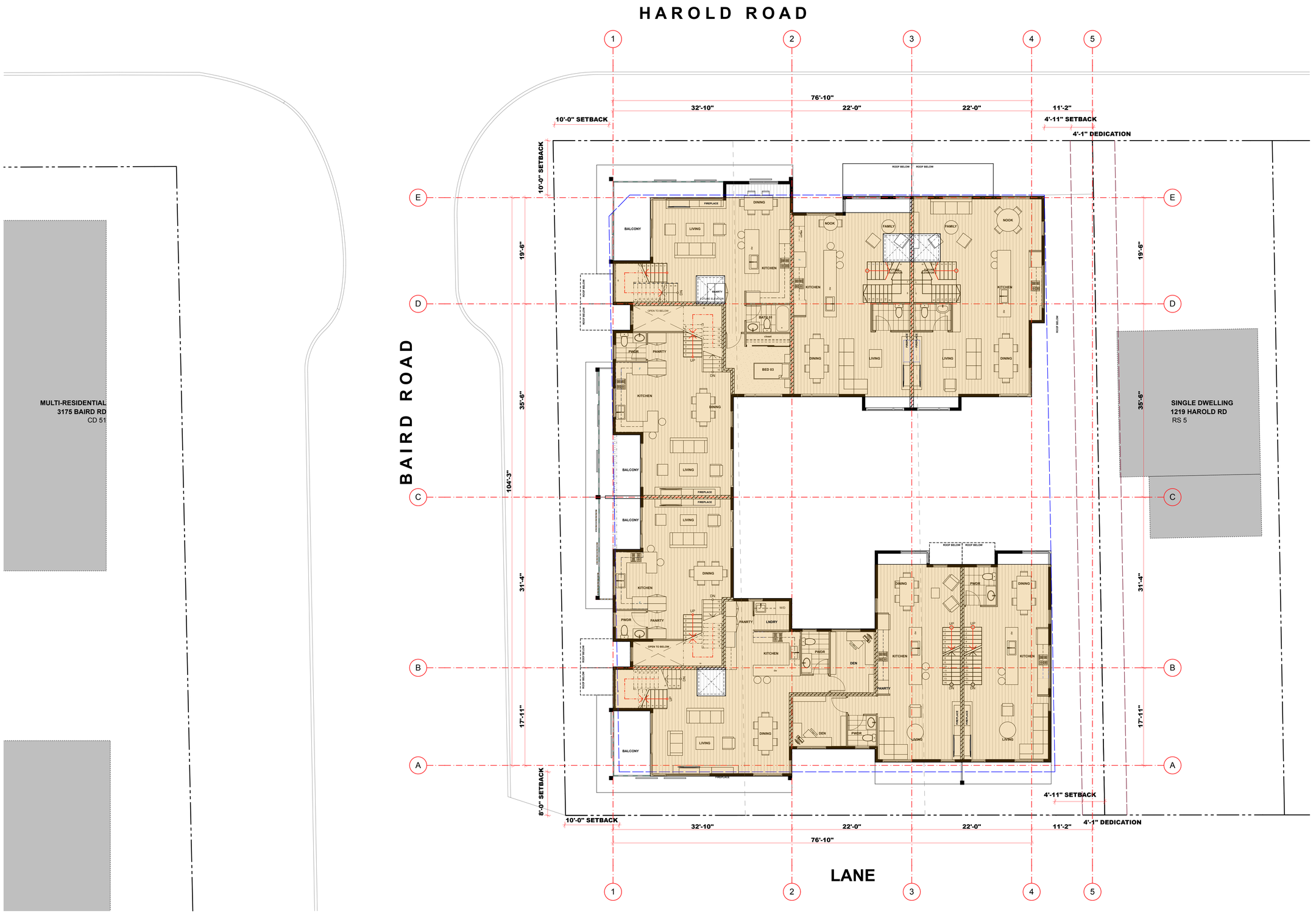
[SCALE] 1/8" = 1'-0"

[DATE] April 10, 2015

[ISSUE] ISSUE 4 - DP RESUBMISSION

[DRAWING]

A-8.1



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

2nd Storey -FAR

[PROJECT] 13321

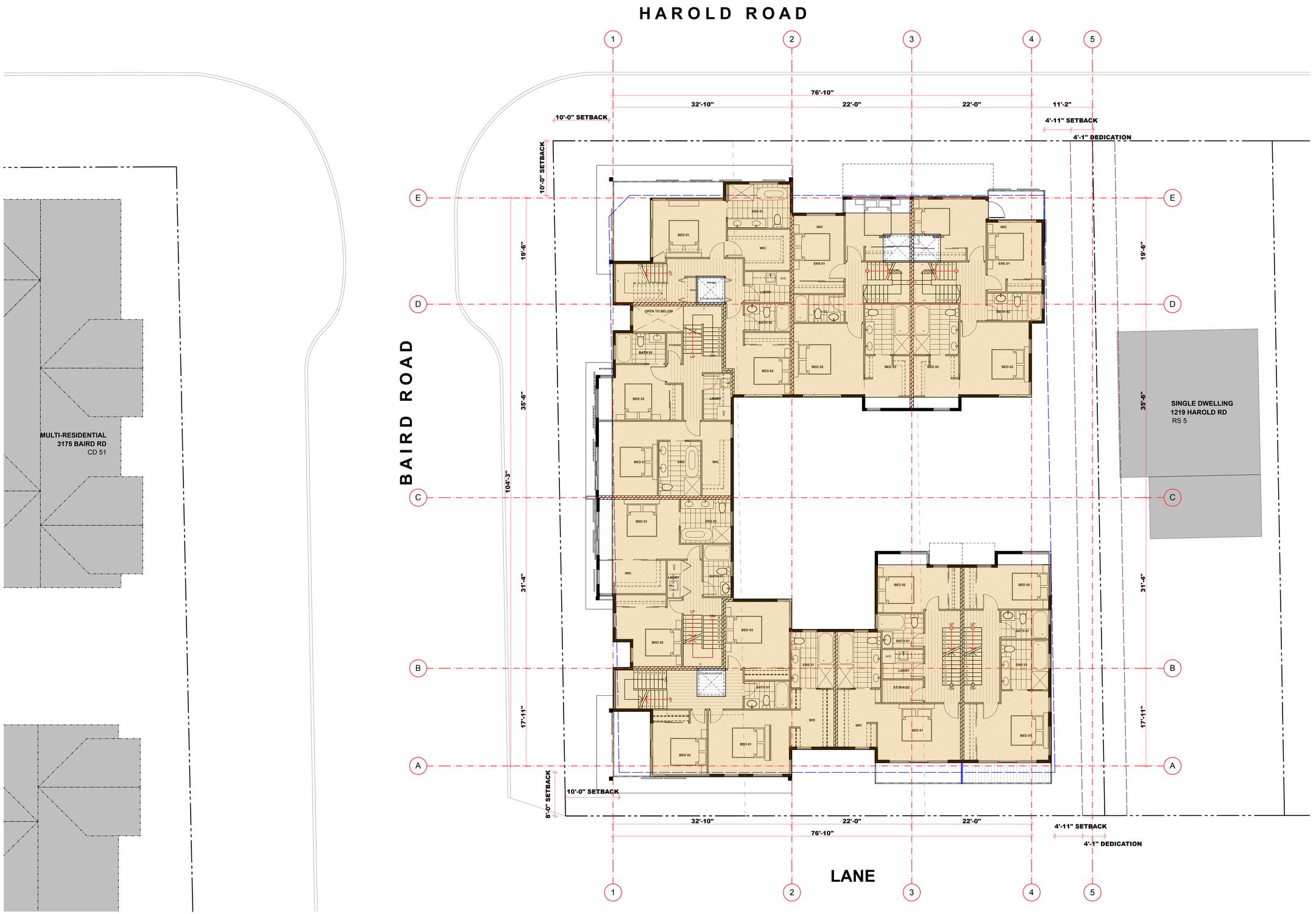
[SCALE] 1/8" = 1'-0"

[DATE] April 10, 2015

[ISSUE] ISSUE 4 - DP RESUBMISSION

[DRAWING]

A-8.2



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

3rd Storey -FAR

[PROJECT] 13321

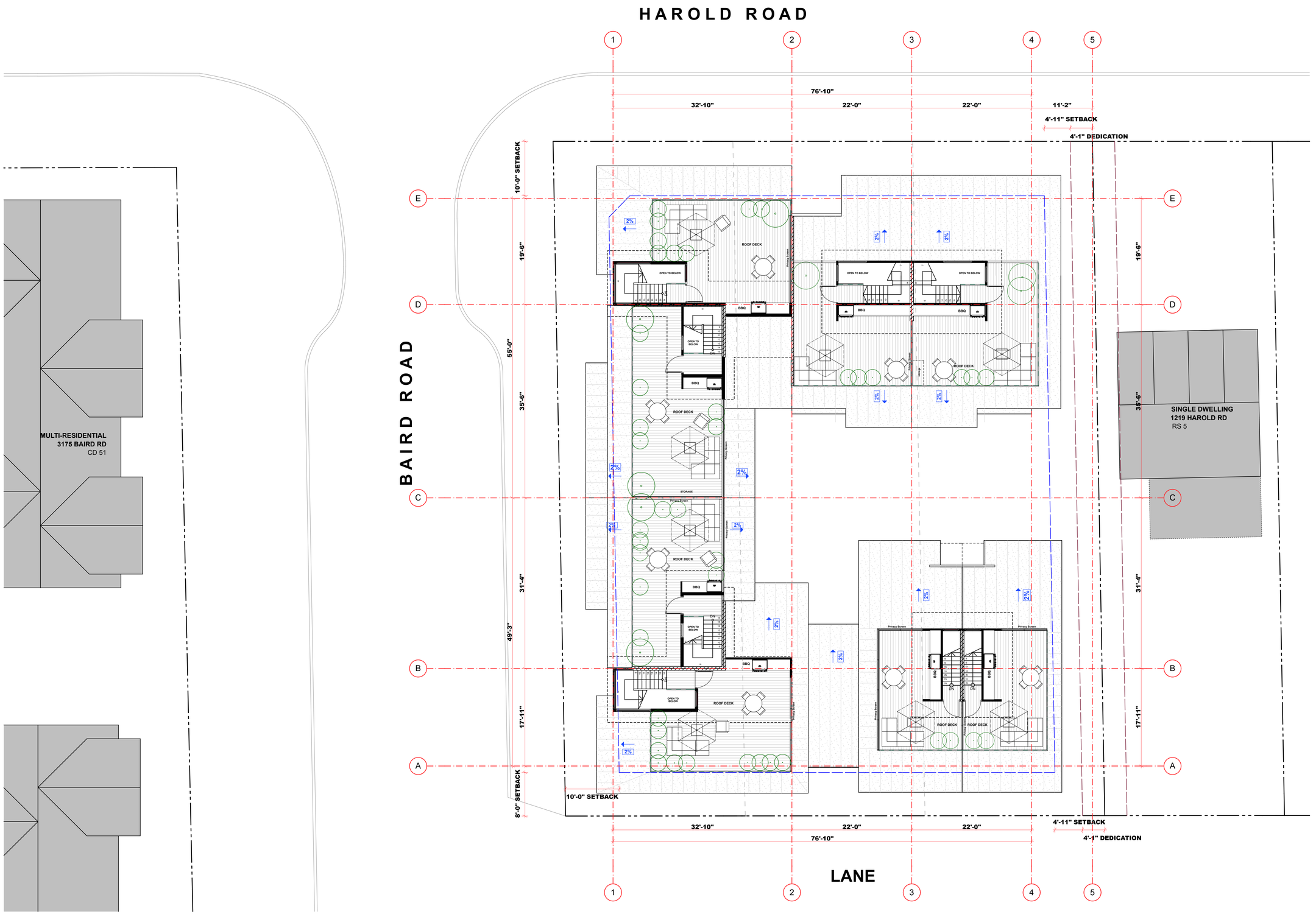
[SCALE] 1/8" = 1'-0"

[DATE] April 10, 2015

[ISSUE] ISSUE 4 - DP RESUBMISSION

[DRAWING]

A-8.3



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

4th Storey -FAR

13321 [PROJECT]

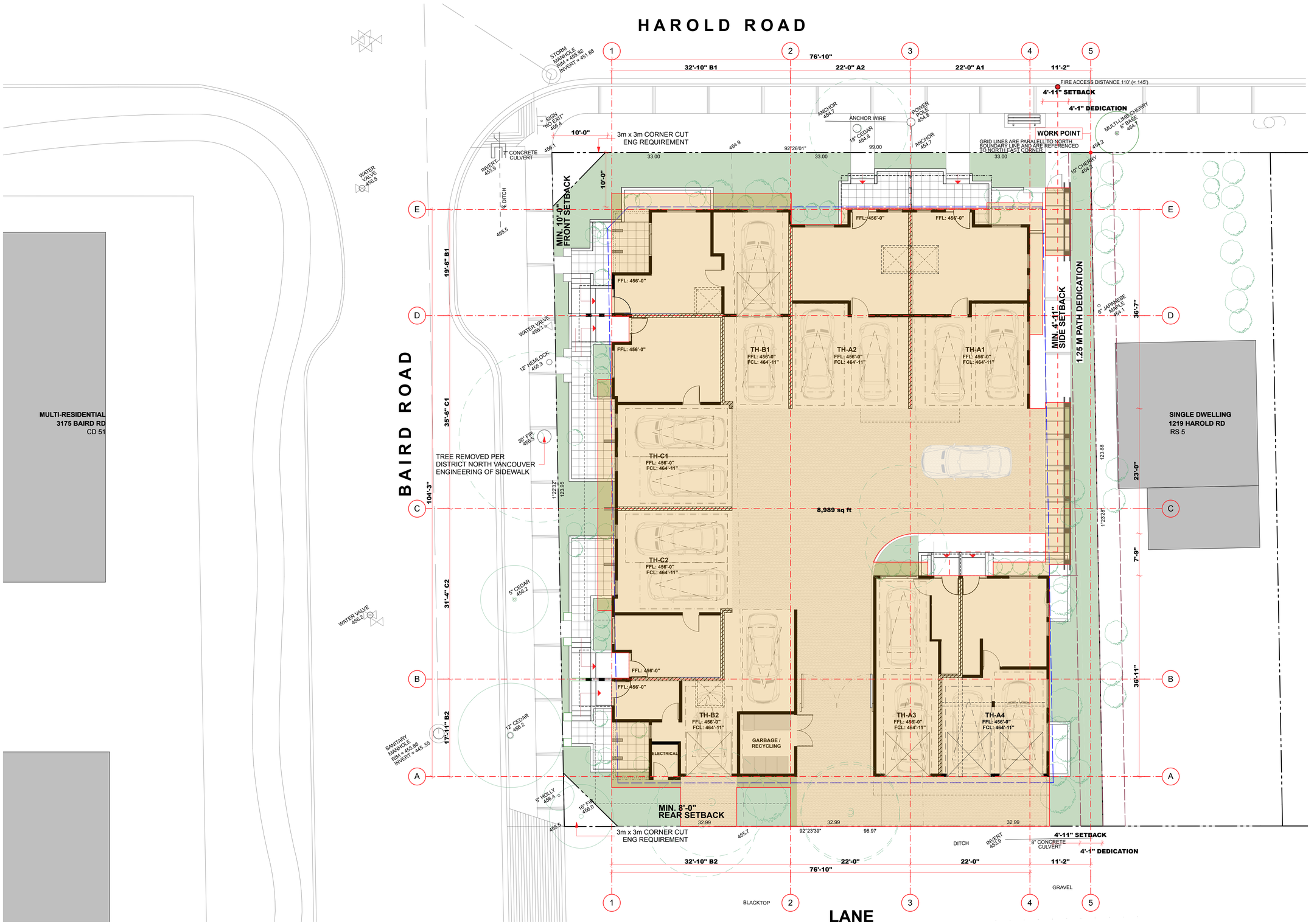
1/8" = 1'-0" [SCALE]

April 10, 2015 [DATE]

ISSUE 4 - DP RESUBMISSION [ISSUE]

[DRAWING]

A-8.4



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

1st Storey - Site Coverage

13321 [PROJECT]

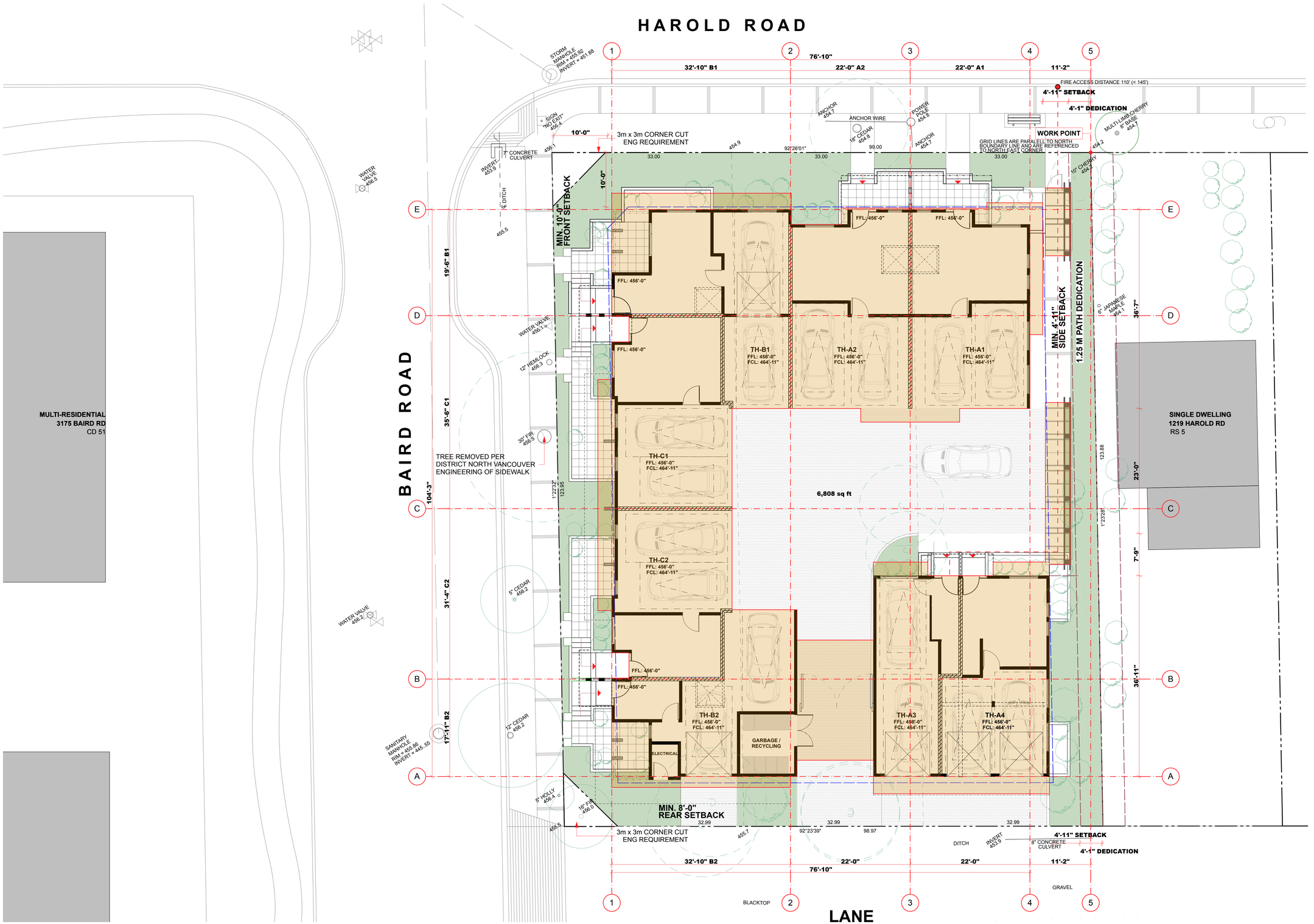
1/8" = 1'-0" [SCALE]

April 10, 2015 [DATE]

ISSUE 4 - DP RESUBMISSION [ISSUE]

[DRAWING]

A-8.5



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

1st Storey - Bldg Coverage

13321 [PROJECT]

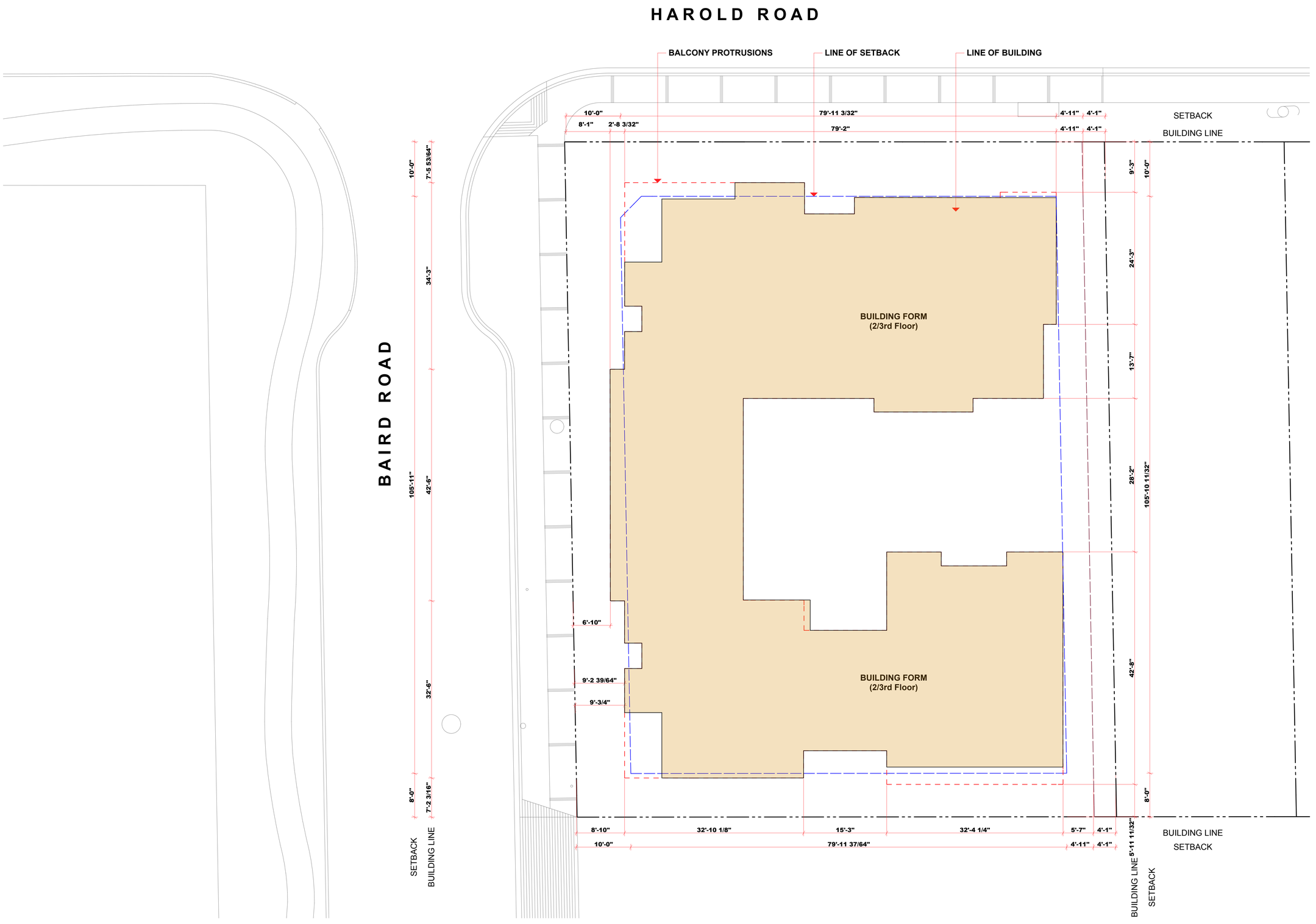
1/8" = 1'-0" [SCALE]

April 10, 2015 [DATE]

ISSUE 4 - DP RESUBMISSION [ISSUE]

[DRAWING]

A-8.6



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Bldg Setback Diagram

[PROJECT] 13321

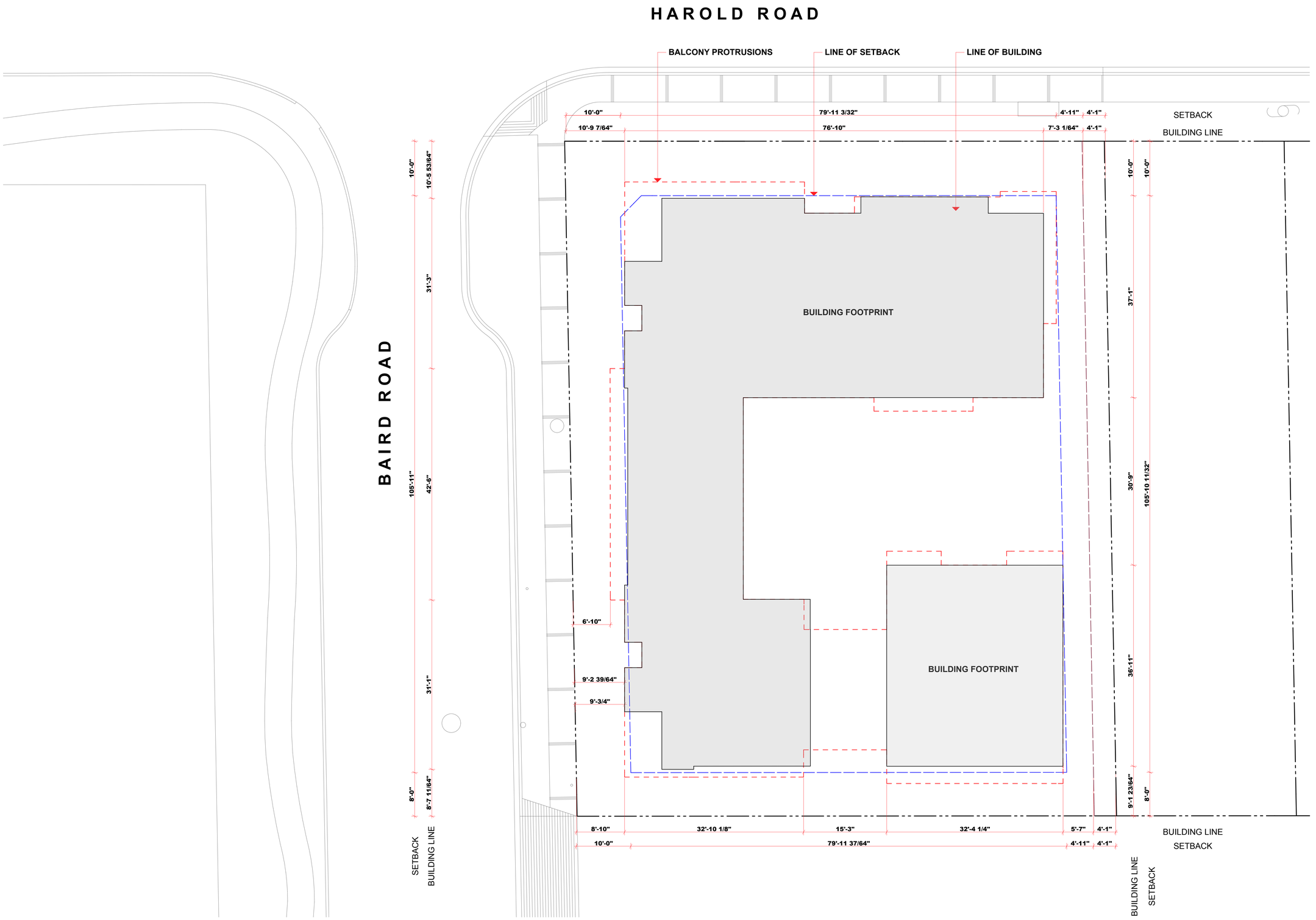
[SCALE] 1/8" = 1'-0"

[DATE] April 10, 2015

[ISSUE] ISSUE 4 - DP RESUBMISSION

[DRAWING]

A-8.7



INTEGRA ARCHITECTURE INC.

416 WEST PENDER STREET
VANCOUVER, BC V6B 1T5
T 604.688.4220 F 604.688.4270
info@integra-arch.com
www.integra-arch.com

N

[ARCHITECT SEAL]

[CLIENT]

BRODY DEVELOPMENT (2008) LTD.

[PROJECT]

RESIDENTIAL DEVELOPMENT

1203 HAROLD RD
NORTH VANCOUVER, BC

[TITLE]

Bldg Footprint Diagram

13321	[PROJECT]
1/8" = 1'-0"	[SCALE]
April 10, 2015	[DATE]
ISSUE 4 - DP RESUBMISSION	[ISSUE]

[DRAWING]

A-8.8