

Attachment 5
*Applicant's Design
Rationale*

April 18, 2022

817 St. Andrews St – PASSIVE HOUSE TRIPLEX

This summary is both a response to the *Pre-Application Review for 817 St Andrews* letter of September 28 2020, emails of March 2022 from planning and a Design Rationale.

1. DESIGN RATIONALE:

DLP Architecture Inc is proposing a triplex building at the above address in the City of New Westminster.

The subject property lies within the new DPA area 1.2 for Ground Oriented Housing. We intend to conform to this zoning designation with the following deviations:

Side-yard Setbacks: (to comply with RT-1 per exclusion 410.15)
5'-2" at east (331.16 – 4' ok)
6'-0" at west (331.16 – 4' ok)
13'-3" at front (331.14 – avg of neighbours ok)

The lot has dimensions of 49' 6.5" x 94' 9.5" and a total lot area of 4655 sf with a lane side dedication of 0.56m.

The current structure is a 1 level with basement single family home built after 1940 with no character merit and structural damage.

Total FSR proposed is 0.749 which meets the maximums suggested by the city planners and *Infill Townhouse and Rowhouse Residential Districts (RT)*. The FSR we are proposing includes allowances for passive house performing assemblies such as thicker exterior walls. See sheet A1.0 area calculations.

We see this proposal as a pilot project for targeting Passive House towards the 2032 BCBC goal of zero emissions and a housing type conforming to Section 1.3 the *Infill Townhouse and Rowhouse Residential District*.

The current design is smaller in size than what we would normally see for a Townhouse development due to the smaller size of the lot. The smaller lot presents many challenges and constraints but we feel our proposal is successful in achieving viable and desirable units despite that. It does retain a similar

typology and proportion to a townhome project, while maintaining setbacks suggested for both townhomes and single family types. Digressing slightly from the typology we have added a more private 3rd unit to the rear to maximize the potential and to provide 3 appropriately sized 3 and 4 bedroom units.

The location of the 3rd unit does not compromise the privacy of the front 2 units and creates a variety in the form rather than two simple side by side front units.

Design:

This design proposal must consider the delicate balance between rigorous Passive House requirements, RT guidelines, and affordability.

As such, we approached the initial design by giving the structure a simple form with respect to the neighbourhood, only stripping down the detailing to a more contemporary style.

Roof forms remain simple and reflect a transitional approach with two front gables of modest slope and a rear flat roof top deck.

The building forms are largely rectilinear which allows us to both maximize interior spaces and create thermal bridge free detailing that is crucial to affordable passive house construction.

The main approach to building is a raft slab at the ground floor fully insulated around footings and underneath. The required additional insulation is then wrapped around the entire envelope proceeding up the exterior walls. This approach allows us to use standard trades for all phases of the build.

Unit entries are clearly defined by the raised and inset front door areas. There is a clear typology of side by side row houses in play.

The rear unit is anomalous but unique in that it is entered from the rear but enjoys the most open and private space. This is a good trade off for not having adequate solar gain required for passive house performance.

We have designed a front trellis with gate and fence that defines and adds addresses for each unit and enhances the landscaping. See sheet A1.0.

Inherently, detailing for passive houses generally raised the level of durability and lessens the maintenance requirements. The mechanical systems are simple and scaled down, the exterior detailing is simplified, and the cladding materials are all resilient with long life spans. With this approach we are far exceeding Step Code requirements and the owner has taken on this goal to realize a higher quality product.

Carpports and Bicycle storage:

At the rear of the property we have incorporated a carport for each unit. They have been carefully located to make the most efficient circulation for all residents to access them from their units. However, due to the constraint of the site, there is little room for alternatives. Logically, the rear unit has the middle carport which allows the resident to access it from the main entry with close proximity and not cross over into the spaces for units 1 and 2.

At the northwest corner of the property next to carport 1, we have added a communal recycling station and covered bike parking for all residents. Size limits to carports and a short site do not allow for these requirements within the carports.

The carports are also designed to match the style of the building and conform to recent guidelines for carports in the OCP.

FSR and Massing:

After many iterations of the design and revisions required by planning we are conforming to an FSR of close to 0.75 as outlined in the Zoning bylaw. This includes a modest exclusion for thick walls.

The current configuration creates 2 units of approximately 1251sf and a 3rd smaller unit of around 1159sf. These sizes somewhat reflect current needs of homeowners for family sized housing without having to jump up into the single family model.

The front 2 units are 2 storeys.

The rear unit has its main floor within 12" of grade, with 2 storeys only and a full rooftop deck.

Density and Bonuses:

It is our opinion that the entire wall of a passive house should be an FSR exclusion because we are not just designing for extra insulation, the whole assembly is advanced in many respects. However, we are only adding exclusions that take into account wall thicknesses over 6" similar to other jurisdictions.

We also feel an added exclusion for advanced HRV systems is important but have excluded it based on comments in the Pre-app review. The HRV for a passive house is more complex and requires more room to install.

We would have proposed a minimum 2% FSR exemption which is inline with the City of Vancouver's exclusion bylaw, and hope the City of New West will consider this in the future. We would also propose exemptions for basement as the areas needed for these advanced systems is best installed in secondary spaces.

In summary we are proposing a wall thickness exclusion beyond the first 6 inches of all exterior walls.

Amenity and Open Space:

All units will have their own private spaces either in the form of balconies, enclosed yard or roof top deck. In all cases we achieve at least 160sf of individual open space with minimum dimensions of 6ft in width.

Unit 1:

-full front yard with side-yard access to carport and garbage/recycling area
-2nd floor balcony facing south.

Unit 2:

-full front yard with side-yard access to carport and garbage/recycling area
-2nd floor balcony facing south.

Unit 3:

-partial rear enclosed yard with direct access to carport and garbage/recycling area and east facing large patio at grade.
– full roof top deck with no privacy issues to units 1 and 2

2. Some of the Drawing revisions completed per Pre-Application Reviews for 817 St Andrews Include:

1. HRV exclusion request removed and this area has been added back to the main calculation which brings the project to 0.749 to conform.
2. See associated Arborist report. Only one tree at the rear of the property is proposed to be removed and two new trees added. Adjacent property trees and hedges should not be affected according to the report.
3. Sideyard setbacks have been reduced.
4. A reflected outline of the west facing home has been added to the elevation drawing on sheet A3.1 showing no major privacy issues between new and existing windows. See 2/A3.1.

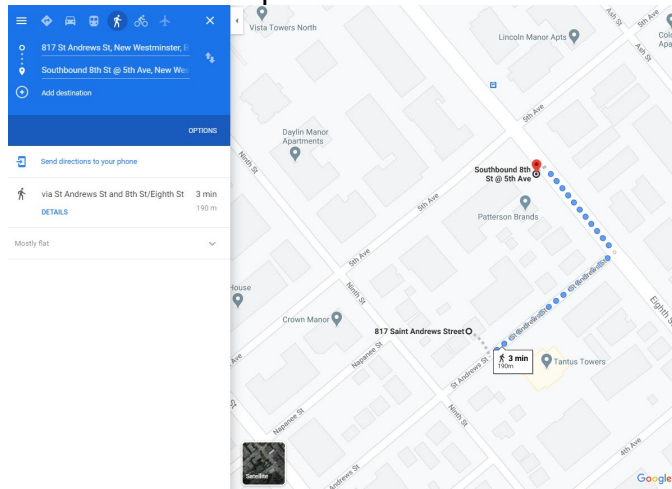
5. Heat pump outdoor units added to site plan A1.0 (unit 1 west side-yard, unit 2 front yard) and roof plan A2.1(unit 3 deck). The units have a Db of less than 50 and do not face adjacent properties except for the one at unit 3. This unit will be more than 9ft away from any existing or proposed building and also have a fence blocking its noise. The 50db is only achieved sporadically when the unit is at full operation which is not frequent. These units are only meant to heat hot water and as such run less frequently than a mini-split. Despite that, the 50db is barely noticeable in our experience and we have not had a single complaint from several similar projects.
6. See site plan A1.0. Unit 3 walkway now has its own entry trellis from the front and does not overlap other units or routes. Unit 1 will need to share this walkway to access the garbage/recycling and their carport.
7. Turning radius of a midsize sedan added to site plan unit 2 carport.
8. We have added an elevation of how the proposed bike enclosure and garbage/recycling structure could work. The bike storage has now been moved to within the carports for added accessibility and security.
9. While wood may soften the look and adds texture and contrast, it is a costly and high maintenance product. We feel the amount shown on design is adequate.
10. Shadow studies added see sheet A0.2
11. Site plan extended A1.0.
12. Landscape plan added showing planting adjacent to front fences in various locations, See sheet A1.2 and A1.0.
13. Two Dogwood trees added at front yards for units 1 and 2. These will be changed per city comments during BP phase.
14. Open space areas added to site plan and conform.
15. Entry trellises and gates with address numbers and mailboxes have added at the front property line. See A1.0.
16. Unit 3 side entry privacy fence shortened to 48 inches per city comments. Other screens at the carports also removed for site lines within the backyard area.
17. Landscaping removed at this location.
18. See arborist report included.

Additional comments:

Off-Street Vehicle Parking and Bicycle Parking – page 4

The proposed lot is small. In order to achieve 3 viable units and maximize the FSR the remaining space at the rear would not be conducive to providing an additional loading space. These units are residential and mirror more closely a duplex development both in size and scale – which would not require the loading stall and visitor parking.

There is also an argument to be made against any parking requirement, despite zoning. Many people do not require vehicles nor desire them, yet have families or want larger units. The location near the arterial of 8th St provides for a short 190m walk to the bus stop on the same block. See below.



The required parking at the rear, though we have included, adds to the cost of each unit and displaces open yard/garden space that is not possible anywhere else on this site. We ask that the City of New Westminster relax the load and visitor stall requirements for this project, given its size and proximity to public transit.

Electric Vehicle Charging

One energized Level 2 charger has been added to each carport location. See A1.0.

BC energy Step Code

This project exceeds the requirements of even Step 5 and is seeking Passive House Certification. Letter of pre-certification submitted from our Passive House Certifier.

We feel this project has the potential to set a precedent for smaller developments by showing we can achieve high performing Passive House structures at near market rate costs.

Sincerely,
Lucio Picciano Architect AIBC CPHD
dlp architecture inc.