The **B** & **A DUPLEX** will be an energy efficient, environmentally responsib

project, that will consume approx 35% less energy than the present National Model. The design will meet or exceed the EnerGuide target rating of 85.



The home will meet or exceed City of Yellowknife Building Bylaw energy efficient standards. The building will be constructed on site with an eye to minimizing maintenance requirements All rooms feature ample day lighting.

Wherever possible, natural materials will be employed. These may include re-cycled content. Low VOC paints and adhesives will be used and sheathing products will feature urea-formaldehyde free resins. The owner is reviewing the lifecycle payback potential of various renewable energy sources including solar assisted technologies.

It is believed that an investment in better quality construction will realize a higher re-sale value and a more sustainable structure which will minimize its environmental footprint

SPECIFICATIONS

SCOPE OF DOCUMENTS

These plans, together with the building contract, describe construction requirements for the duplex residential building. Both units and shared assemblies are included.

1 CONTRACTOR RESPONSIBILITIES

- Verify all existing site conditions before starting construction.
 Notify the designer or client of discrepancies between site conditions and these plans.
- · Work not specifically detailed shall match the quality and intent of similar construction

2 CODE COMPLIANCE

- All work shall comply with the National Building Code of Canada (NBC), territorial (Northwest Territories), and local Yellowknife building codes that is classified as Climate
- Where conflicts exist between drawings and code, the more stringent requirement shall

3 DUPLEX FIRE SEPARATION

- As required by the City of Yellowknife, the party wall between units shall provide a minimum 1-hour fire-resistance rating.
- Construction includes balloon framing, staggered 2x4 studs, Type X drywall, mineral wool insulation, and furring layers.
- No through penetrations for shared mechanicals or wiring

4 STRUCTURAL SYSTEMS

- All framing, trusses, sheathing, and fasteners shall meet or exceed the requirements set by the structural engineer (as applicable).
- Best practices for structural anchoring to foundation and lateral bracing FOUNDATION AND SLAB

- Foundation is constructed directly on exposed bedrock, providing a stable and non-
- All anchoring sustems are mechanically fastened to bedrock per structural engineering.
- Below-grade thermal insulation and damp-proofing shall be applied as required for energy efficiency and moisture control, even with bedrock substrate.

 • All foundation details will comply with the City of Yellowknife and National Building Code
- requirements.

 The existing foundation includes a walkout basement at the rear, which will be developed into a conditioned, livable space with windows and door access, serving as a legal rental unit for each side (Unit A and B).

1 INSULATION & ENERGY PERFORMANCE

- Roof insulation: Minimum R-60.
- Walls, foundation, and slab insulation to meet or exceed energy code requirements for the

climate Insulation/Envelope Zone 8 2 MINDOMS, DOORS, & OPENINGS

- All units shall be installed per manufacturer specifications.
- Confirm all egress, thermal, and fire-rating requirements for doors and windows

3 MOISTURE & AIR MANAGEMENT

- Positive grading around the building to drain water away (min. 2% slope).
- Proper flashing.
 Air barriers to be installed where required.
- Vapor barriers to be installed on the warm side of insulation

4 MECHANICAL, ELECTRICAL, & PLUMBING

- All MEP systems to be installed per NBC, NWT Fire Marshal and City of Yellowknife building codes.
- No through penetrations for shared mechanical or electrical sustems unless compliant with NBC 2015 fire separation, acoustic, and air barrier requirements.
- All penetrations shall be firestopped, sealed, and insulated per applicable codes.
- Use fire-rated sleeves or collars for any necessary wall penetrations on exterior-rated

1 ACCESS & EGRESS

- All units shall have code-compliant entry, balcony, and egress points, including minimum 34" door clearances at balconies and 36" minimum front entry door width.
- 1 MISCELLANEOUS NOTES
- . Contractor must maintain a clean, safe jobsite. Coordinate with local building inspectors for required inspections as required by the City
- of Yellowknife. All work must follow City of Yellowknife Standards.
- Separate water and sewer services for each unit.
- Water/sewer below frost depth (~8 ft), with insulation as needed.
- Electrical services must have separate metering. Separate propane heating systems.
- Positive grading around the building to drain water away (min. 2% slope).
- Driveway must not obstruct utilities or drainage.
 ENERGY CODE COMPLIANCE- Walls min. R-30; Roof min. R-60; Floors min. R-31.
- Air barrier continuity required.
 ENERGY STAR® rated Window Zone 3 (ER ≥ 29, U ≤ 1.40 W/m2-K).
- HRV and mechanical systems must meet efficiency standards
- Optional blower door test encouraged. CONSTRUCTION SEQUENCING
- Coordinate all trades before rough-in.
- Maintain all fire-rated assemblies and acoustic separations
- Schedule all inspections with the city. Clean site practices and W5CC compliance mandatory.



UPDATED TECHNICAL NOTES (Incorporating Local Standards)

Desian and construction to conform with the National Buildina Code of Canada 2020, relevant CSA standards, and all local bylaws and regulations applicable in the City of Yellowknife. Snow, wind, and bearing capacities align with typical engineering assumptions used in recent developments in the same neighborhood.

1.3 ENVIRONMENTAL LOADS (TYPICAL FOR YELLOWKNIFE)

- Ground Snow Load (Ss): 45.0 psf Rain Load (Sr): 2.1 psf
- Roof Design Snow Load: 38.8 psf (ULS), 35.0 psf (SLS)
 Wind Load (1/50 Hour): 9.8 psf
- Wind Uplift: 12.0 psf
- Main/Second Floor Live Load: 40 psf Dead Load Assumptions: 50 psf typical for framed floors

No site-specific geotechnical report available; design assumes typical conditions in Yellowknife with 2000 psf bearing capacity and a presumed subgrade modulus of 365 lb/ft.3.

2.2 STRUCTURAL WOOD SYSTEMS

All floor and roof trusses, structural LVLs, and engineered beams to be accompanied by shop drawings sealed by a licensed professional engineer in the NWT. Use CSA 086 for wood engineering and CSA 080 for wood preservation.

Roof and floor diaphragm nailing per standard blocked/unblocked configurations with min. fastener specs: - Common nails, min. 3.33 mm dia. \times 64–84 mm length Spacing: 150 mm O/C at edges, 300 mm O/C in field unless otherwise noted

Ready-mix concrete to meet C5A A23.1 standards, min. 25 MPa at 2ô days. Provide 4–7% air entrainment for freeze/thaw durability.

Slab-on-grade placed on compacted granular base (150 mm min.) over fine sand leveling course Concrete cover: 75 mm for concrete cast against earth

Reinforcement: deformed bars with 400 MPa yield strength. Lap splices: 36x bar diameter typical.

Duplex Supplementary Notes – Structural Clarification

NOTE REGARDING FLOOR FRAMING OVER FORMER GARAGE AREA

Due to the updated duplex configuration and absence of a poured concrete garage slab, flooring above the former garage space may be framed similarly to upper levels using engineered wood systems such as I-joists, LVL (Laminated Veneer Lumber), or Glulam beams. This is contingent upon appropriate structural support being provided by the central party wall, which now acts as a load-bearing firewall and must be continuous from foundation to roof.

- Engineered joist spans and spacing must be calculated based on applied live/dead loads
- Floor assemblies must meet NBC-mandated 1-hour fire resistance rating between units.
- Acoustic separation must also meet applicable code requirements (e.a., STC ≥ 50)

NOTE REGARDING FLOOR FRAMING OVER FORMERLY DESIGNATED GARAGE AREA:

Due to the updated duplex configuration and absence of a poured concrete garage slab, flooring above the formerly designated garage space may be framed similarly to upper levels using engineered wood systems such as I-joists, LVL (Laminated Veneer Lumber), or Giulam beams. This is contingent upon appropriate structural support being provided by the central party wall, which now acts as a load-bearing firewall and must be continuous from foundation to roof.

- Engineered joist spans and spacing must be calculated based on applied live/dead loads.
- Floor assemblies must meet NBC-mandated 1-hour fire resistance rating between units
- Acoustic separation must also meet applicable code requirements (e.g., STC ≥ 50).

CLIENT: Ben Webber

ADDRESS: 6 MCMAHON CRT, Yellowknife, NT, Canada

BUILDING PERMIT: [Roll: 0308006500], Yellowknife, LOT: 65, BLOCK: 308, PLAN: 4204.

DESIGNER: Vivi Lazar BUILDER: Ben

ENGINEERING:

SUPPLEMENTARY NOTES -

This project, originally designed as a single detached dwelling at 6 McMahon Court, Yellowknife, has been revised mid-stage to a duplex construction, with only the foundation completed under the original design. The updated plans, general notes, and supplementary notes herein reflect the duplex adaptation, and all construction movina forward must comply with the revised scope.

1. PROJECT SITE & FOUNDATION

- Lot Area: 1,258 m²
- Foundation: Built directly on exposed bedrock; all anchoring must be mechanically fastened per structural specifications
- Slab Specs (as applicable to each unit):
 Basement: 150 mm thick slab on crushed gravel + 101.6 mm
- Note: No further concrete walls exceeding 3.66 m (12 ft) shall
- 2. DESIGN STANDARDS & LOADS
- CAN/C5A 086-09 for wood design Seismic and snow/wind load data specific to Yellowknife, NT:
- Ground snow load (Ss): 2.2 kPa • Rain load (Sr): 0.1 kPa
- Seismic Design: Low-risk seismic zone per NBCC; site-specific values: PGA = 0.036a, Sa(0.2) = 0.095
- 3. DUPLEX CONVERSION CONSIDERATIONS - Mechanical Isolation: All utilities must be metered separately and routed independently for each unit.
- Driveway: Must not obstruct existing utilities or surface drainage (min. 2% slope away from foundation).
- Roof: min. R-60
- Minimum bearing stiffeners: 10 mm thick.

PROJECT BACKGROUND & DUPLEX CONVERSION

- insulation, reinforced with rebar (TBD).
- be constructed without structural engineer endorse
- National Building Code 2010 (NBC 2010)
- Wind (1/50ur): 0.47 kPa
- Party Wall: To be constructed as a 1-hour fire-rated separation, with no shared MEP penetrations, per Yellowknife fire code.
- Energy Code: Must meet updated thermal requirements:
- Floors: min. R-31
- 4. STRUCTURAL STEEL REQUIREMENTS (If Applicable) - Conformance with CAN/CSA G40.21, W59, and S136.

- Fabrication to include QA/QC documentation

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SUMMARY

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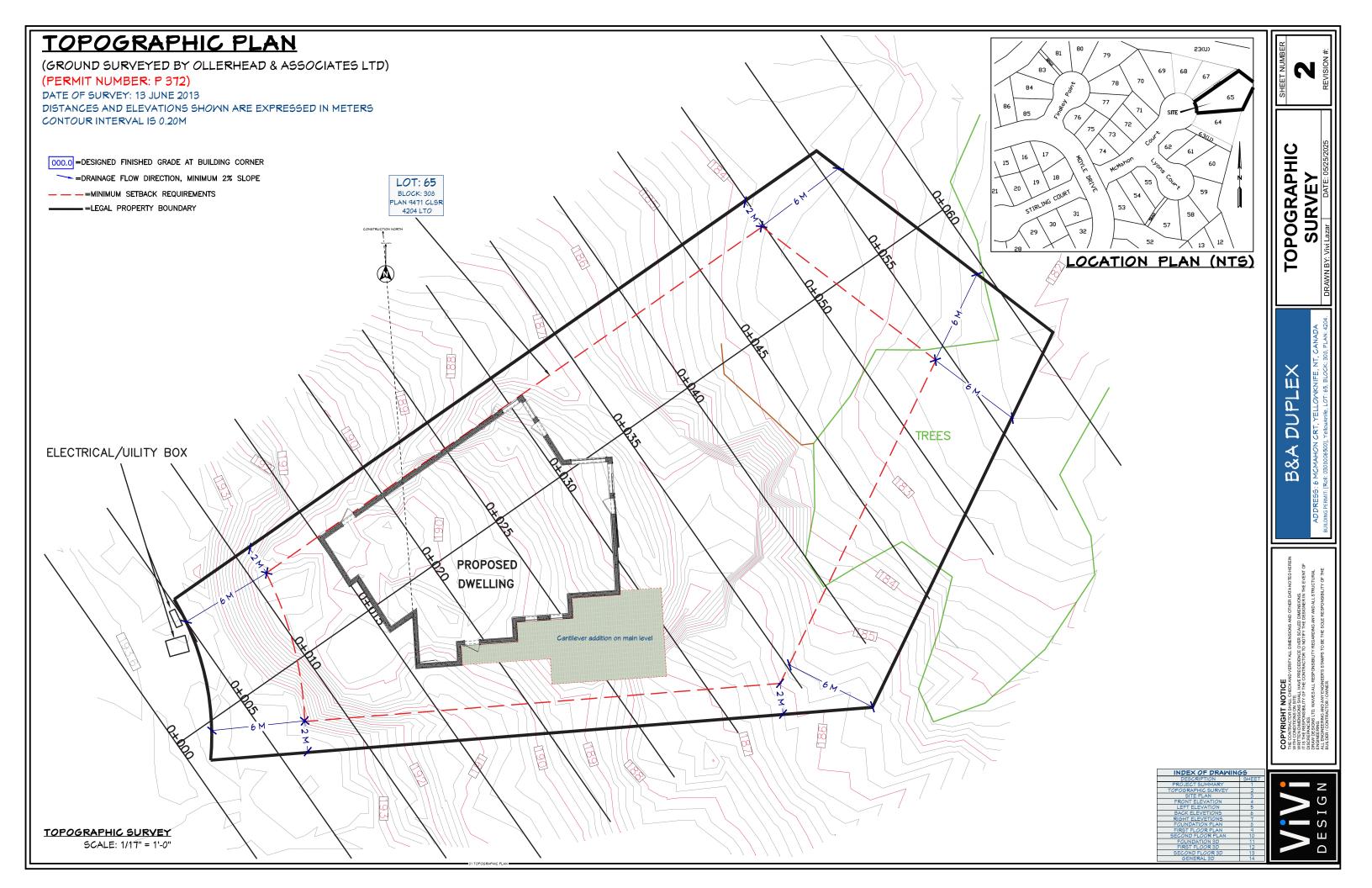
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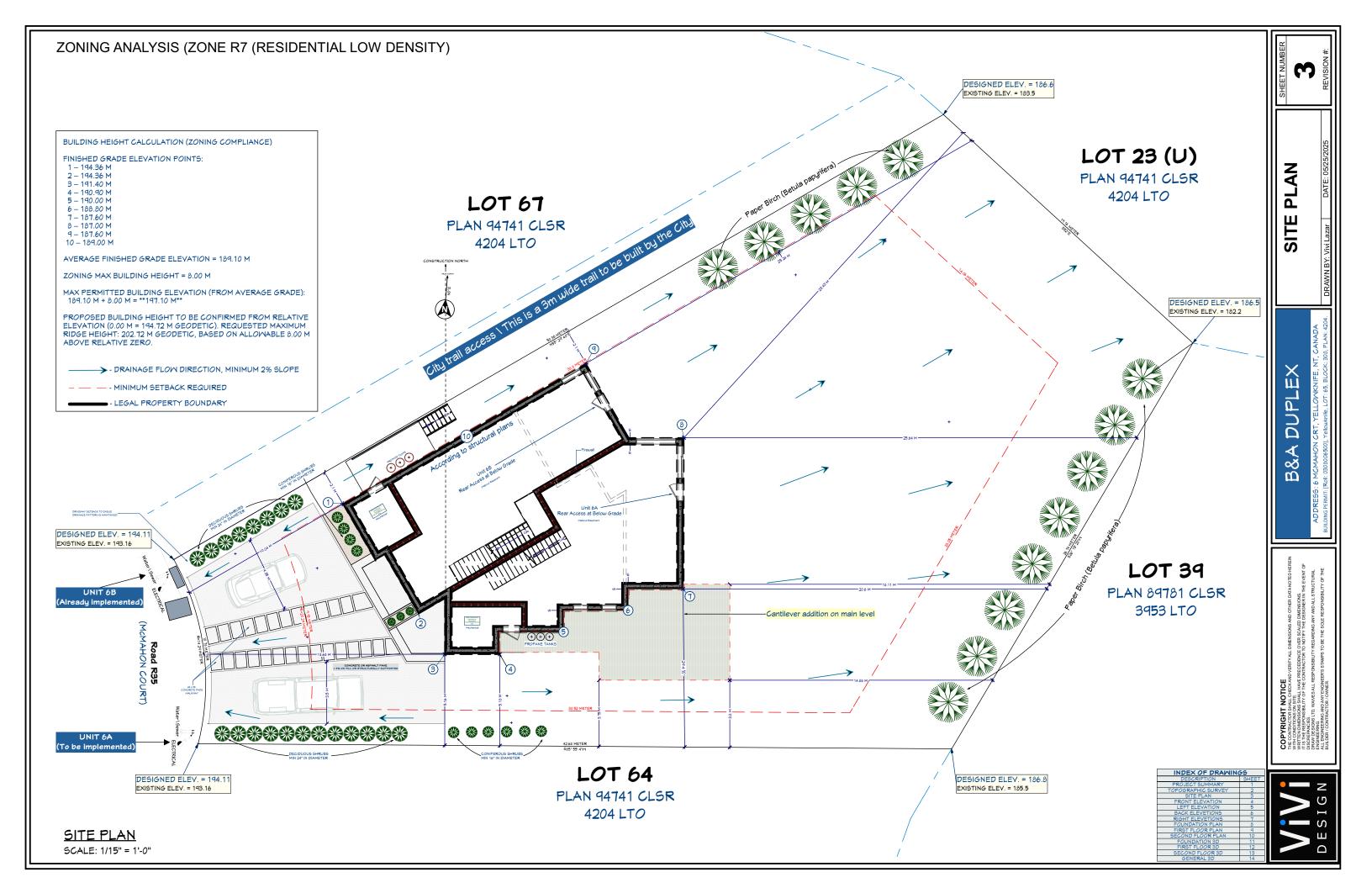
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INDEX OF DRAWINGS







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