TAYLOR ARCHITECTURE GROUP

CMHC SCHL

CMHC LOW-RISE HOUSING CATALOGUE

Yellowknife Housing Symposium
January 2025

PRESENTATION SUMMARY

1 Background/History of the CMHC Project

2 Regional Approach/Project Team

3 Design & Project Approach

4 Context for Housing in the North

5 Northern Design Approach

6 “The North” Housing Designs (Preliminary)

7 Questions

BACKGROUND

PREVIOUS CATALOGUE CONTEXT

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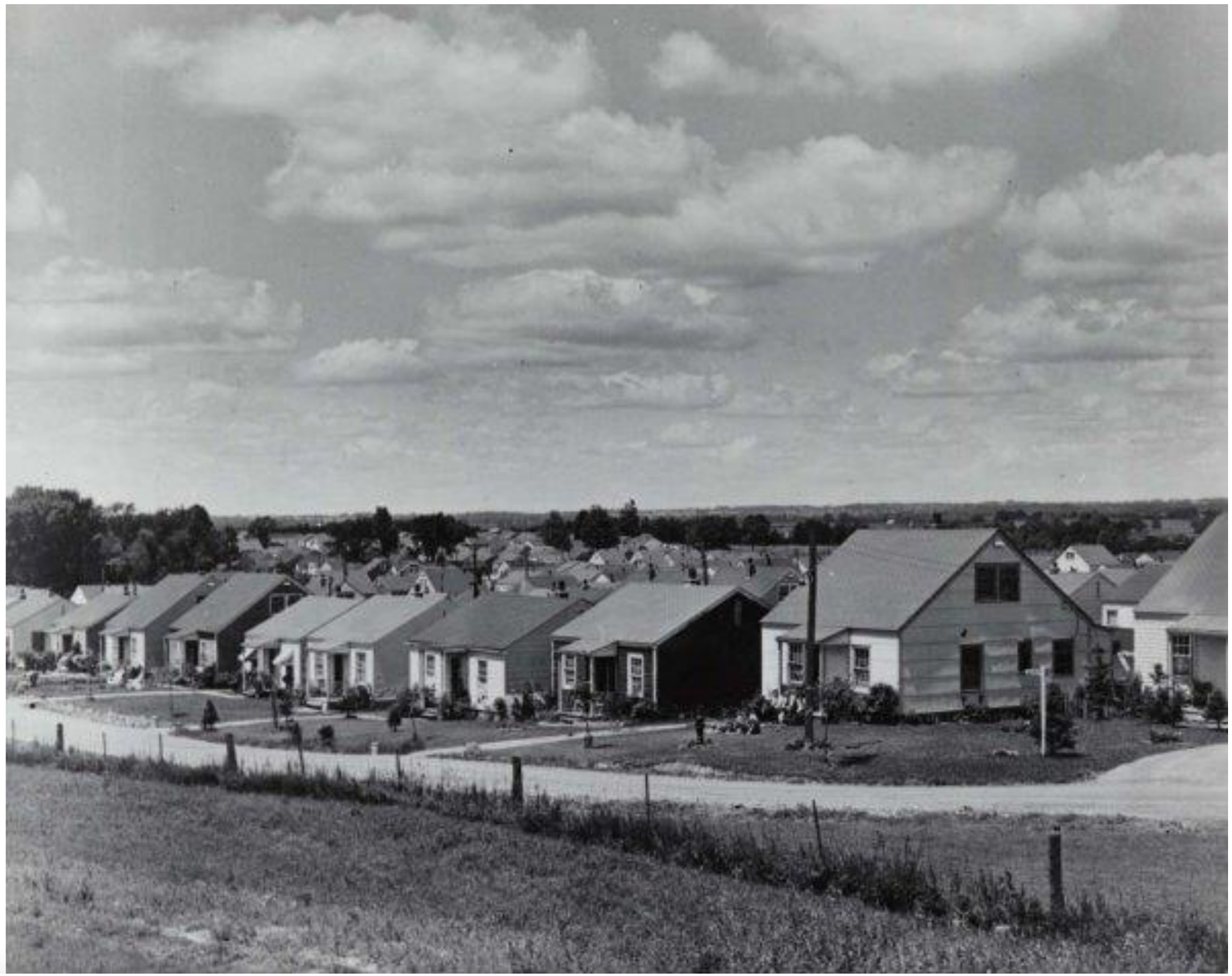
This is a small three bedroom house with dining space in the kitchen. The third bedroom, which is on the ground floor, could be used for other purposes. The living room has a bay window on the street side. The bathroom is beside the back door and at the foot of the main stairs. There is room for a play room as well as heating and laundry in the basement.

DESIGN 314

designed by: CENTRAL MORTGAGE & HOUSING CORPORATION



ENGAGEMENT

- January 2024: targeted engagement began
- Summer 2024: What We Heard Report released
- Fall 2024: CMHC met with Territorial/Provincial building code and planning departments

CONCEPT OVERVIEW

The Design Catalogue Initiative focuses on design and approval issues facing builders (“users”) and communities (“adopters”) that are affecting growth of housing supply

Builders

“User”

Unpredictable outcomes, delays, & lengthy timelines adding to costs

Housing Design Catalogue Initiative

Communities

“Adopter”

Higher approval volumes & new building methods creating operational strains

REGIONAL APPROACH

- Catalogue is divided into regions
- Launched in July 2024, a Request for Proposals process sought the services of qualified design firms to develop the first set of standardized designs for low-rise housing. The successful proponents were:
    - Taylor Architecture Group (Northern Territories)
    - MGA | Michael Green Architecture (British Columbia)
    - LGA Architectural Partners Ltd. (Ontario)
    - Dub Architects (Alberta)
    - 5468796 Architecture (Prairies)
    - KANVA (Quebec)
    - Abbott Brown Architects (Atlantic)

SCOPE OF DESIGNS

The Catalogue will focus primarily on infill new builds for ADUs, fourplexes, sixplexes, and rowhouses

DESIGN PRINCIPALS

- Innovation Enabling
- Family-Sized Homes
- Adaptable to Different Needs
- Modern & Efficient Design
- High Performance Construction

KEY COMPONENTS

The release of the Catalogue will include third party peer-reviewed, permit-ready design packages with the necessary drawings, specifications, construction documents and cost estimates to start the permit and construction process

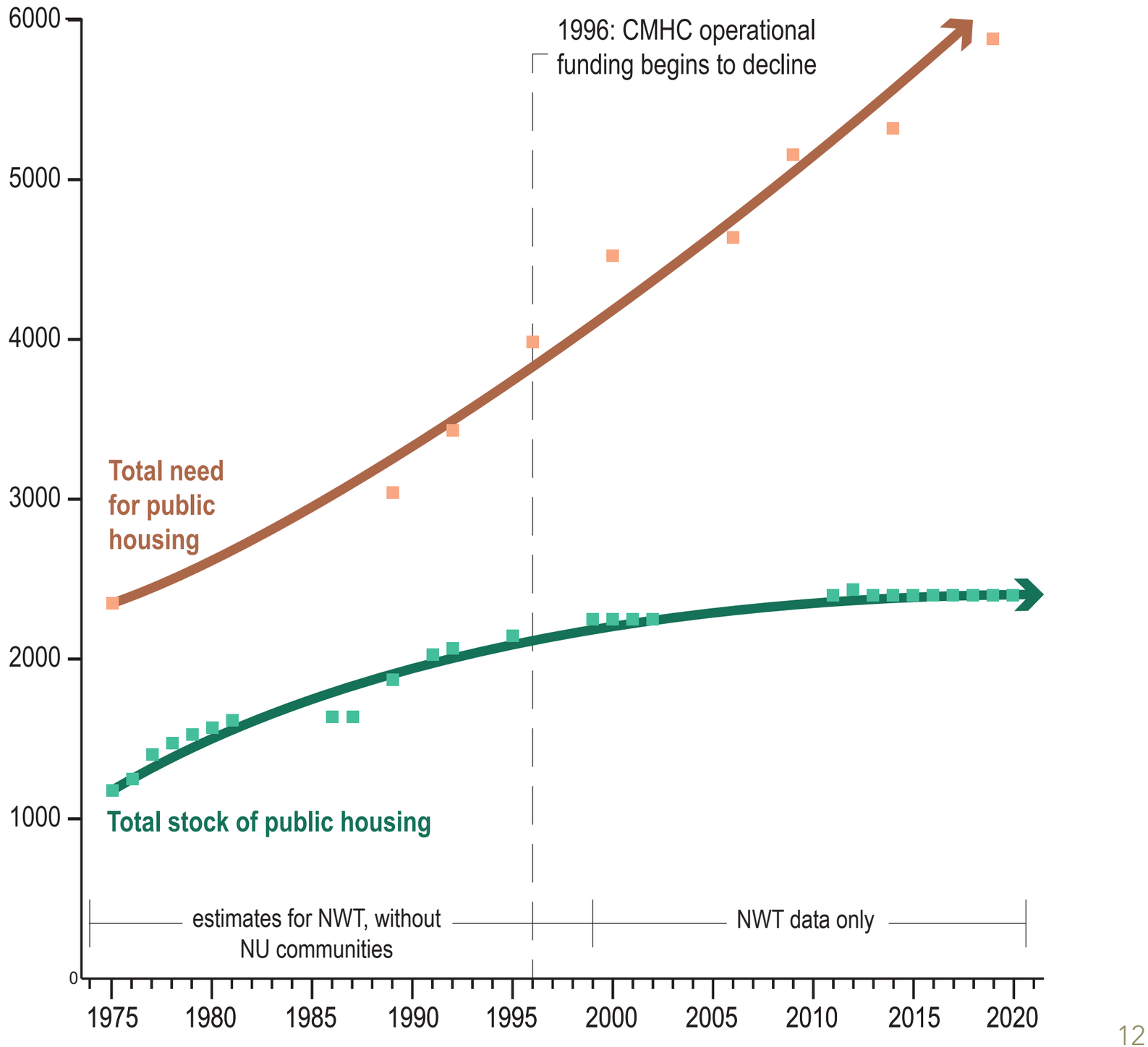
Illustrative Design Catalogue Example
South Bend, Indiana

Example Contents for Each Catalogue Design

Document	Description
Site Plan	Overview of a specific piece of land, illustrating the layout, dimensions, and other site features.
Floor Plan & Layout	Graphical representation of a building's interior spaces.
Cross-Sections	Shows the internal details and relationships between different components, such as walls, floors, ceilings, and structural elements.
HVAC & Plumbing	HVAC regulates indoor climate, while plumbing manages water, and wastewater drainage.

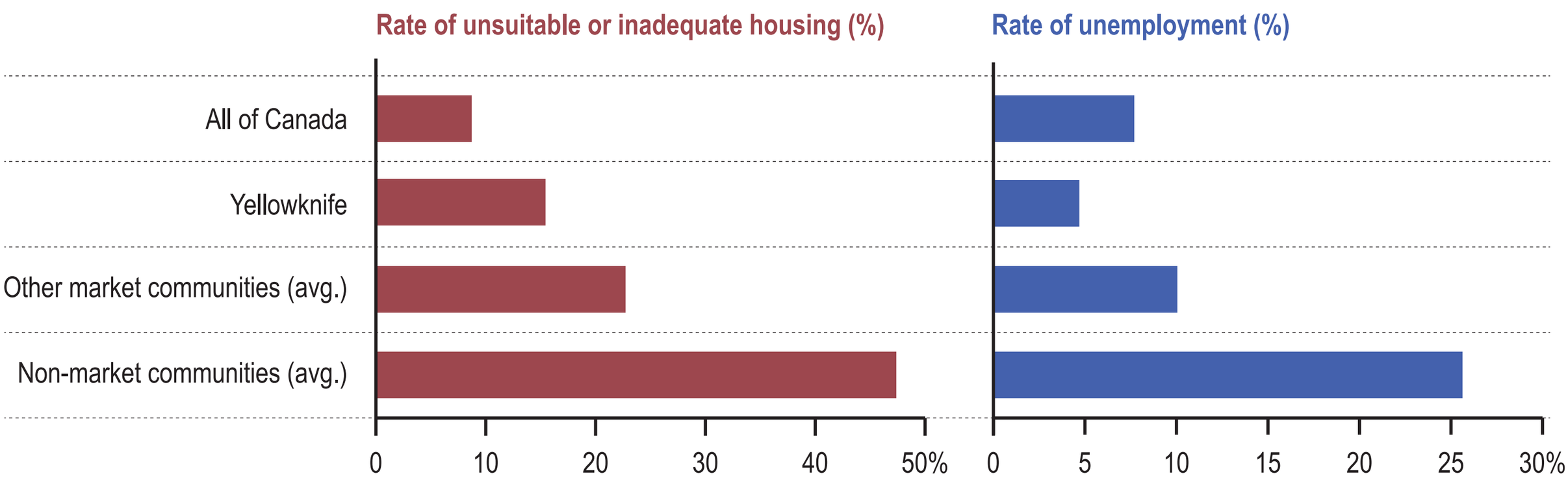
CONTEXT FOR HOUSING IN THE NORTH

Total Public Housing Stock and
Total Public Housing Need in NWT
(1975-2021)



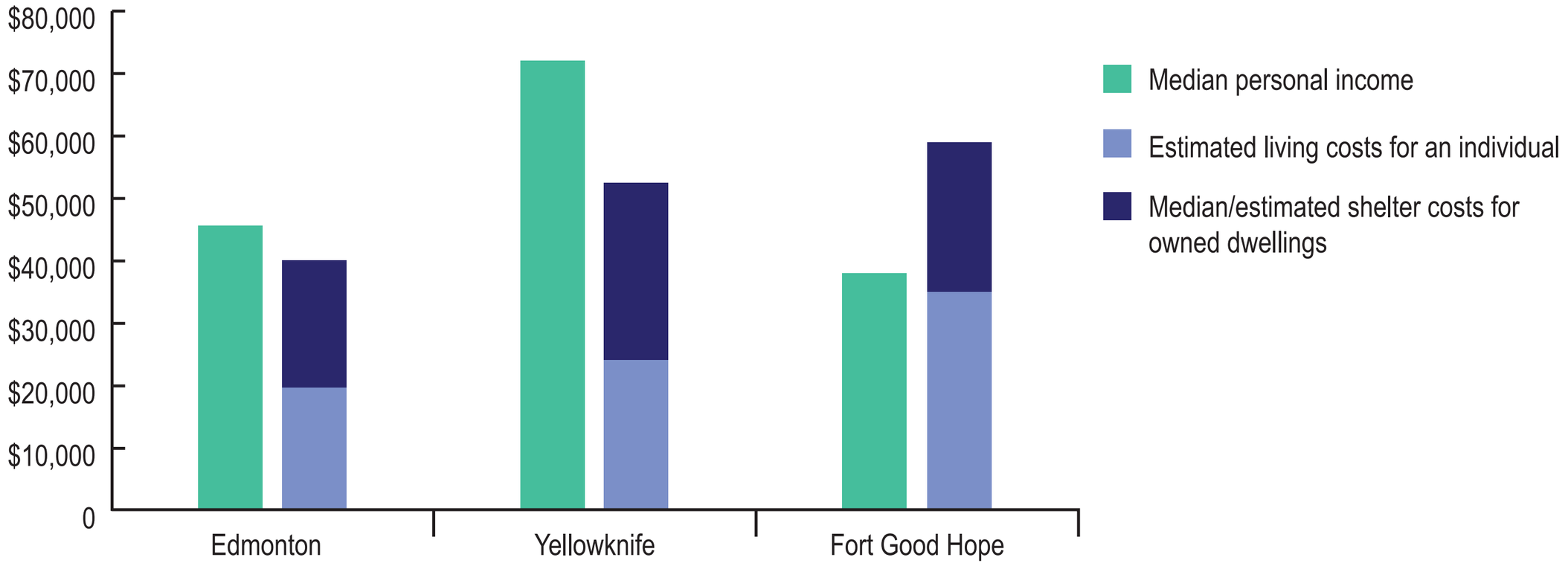
Derkowski, Kristel. Data compiled from Annual Reports of the Northwest Territories Housing Corporation, 1974 to 2020-2021.

Market vs. Non-market Communities



Derkowski, Kristel. Data compiled from 2021 Census Data, Statistics Canada.

Affordability Crisis: O&M

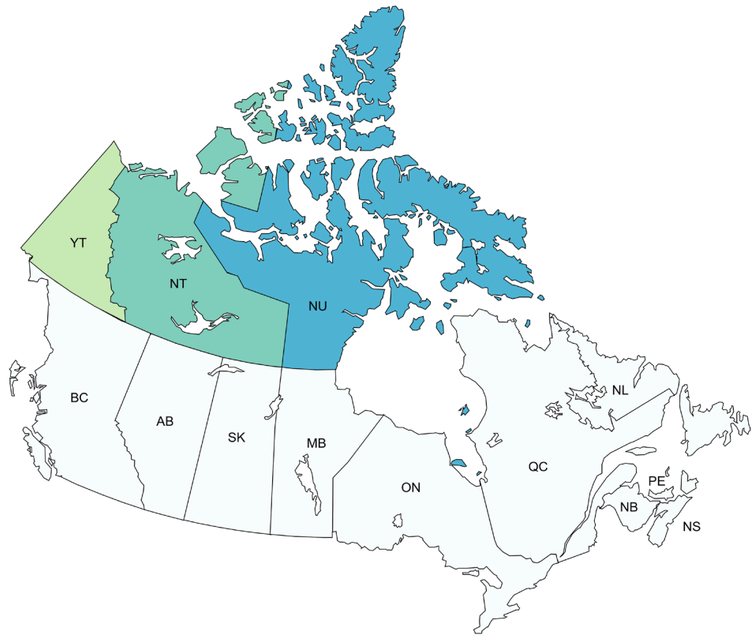


Derkowski, Kristel. Data compiled from 2021 Census Data, Statistics Canada.

NORTHERN DESIGN VISION & REQUIREMENTS

Equity	Focus on providing appropriate and affordable housing for the communities, with particular consideration for needs for Indigenous and Inuit populations.
Appropriate Design for the North	Consider not just the engineering, logistics and environmental considerations of the North but how people live and what are practical requirements. Living: Focus on the more utilitarian spaces (such as exterior and interior storage, appropriate entryway for putting on winter gear, space for chest freezer and potentially gun cabinet, space for larger family to dine, etc.). Engineering: grouping plumbing together, having simple shape that works for various foundation types, minimizing need for electric power (as this is extremely expensive in the vast majority of communities).
Flexibility	Incorporate flexibility in the design so that it could accommodate different numbers of bedrooms, more or less storage and barrier-free design.
Modular Mechanical Component	Group plumbing together in a service core to minimize risk of freezing lines, provide ease of construction and as straight forward as possible routing to sewage holding tank as possible (for tanked services option).
Sense of Home and Uniqueness	Avoid a mundane, repetitive look to the units and buildings by providing various options for cladding and colours on exterior, while also ensuring a street presence (entry off of street ideally). Aim to provide distinction between units as much as possible.
Energy Efficient and Sustainable	Avoid modulation of the envelope as this is less energy efficient, more likely to have imperfections in the air barrier (thus more leaky) and more costly in terms of foundation and structural design. Look to provide this visual interest on the exterior in other ways. HVAC: efficient and low-maintenance system; consider incorporating AC due to potential for overheating in summer. Allow for solar gain and natural light while avoiding glare from low winter sun and overheating from 24hr sun in summer. Provide exterior shading if possible. Detail to ensure continuous air-vapour barrier (most important aspect in terms of heat loss).
Future-Ready and Resilient	Consider melting permafrost condition and instability of soil (foundation approach that deals best with this is multi-point). Consider higher winds (attachment system for cladding that is strong; entry that is oriented to avoid snow build up). Provide ability to connect to power grid if and when sustainable power is implemented in the community.
Affordable and Straight-forward Construction and Operation/ Maintenance	Construction: Keep form straight forward and use available materials/materials that are easily shippable by barge and winter road. Maintenance: consider that it is extremely difficult to get replacement materials to many communities so design things to be as resilient and straight-forward as possible to minimize chance of them breaking/maximize lifespan, while also being as simple to use as possible (not requiring specialized tradespeople to fix them and/or are easily understood by building occupant).
Pre-Fab Ready	Consideration for prefabricated construction, or components of the building that can be prefabricated (such as the service core) in order to fast-track the most complex building aspects in a short building season, but still allow for site built components that can be completed with local labour.

Site & Service Considerations



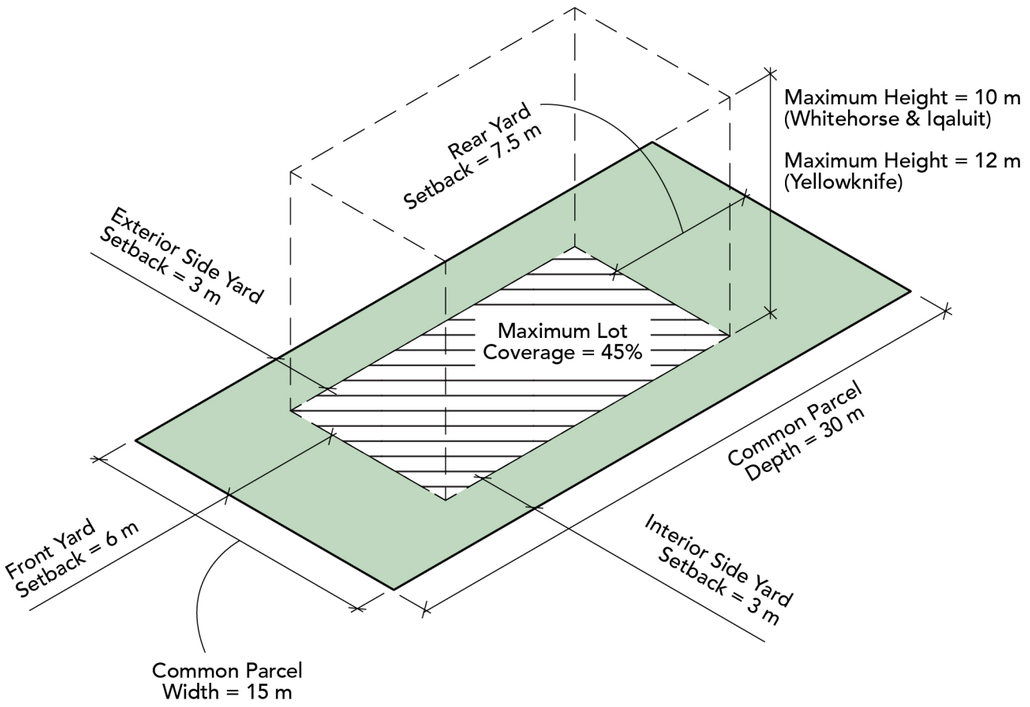
	Yukon	NWT	Nunavut
All-year road access	Almost all	58% (19 of 33)	None
Winter road access only	1 (Old Crow)	30% (10 of 33)	None
No road access	None	12% (4 of 33)	All
Piped / city service delivery (underground)	Majority	A few (e.g., Yellowknife, Hay River, Fort Smith, Behchoko)	Only Iqaluit and Rankin Inlet (and some parts are trucked), and part of Cambridge Bay for water
Piped services (above-ground utilidor)	None	1 (Inuvik)	None
Tanks / trucked service delivery	1 (Old Crow)	Vast majority	Almost all
Septic field	Some	n/a	n/a
Main fuel type (if tanked services)	Likely propane (except Old Crow: diesel)	Diesel (propane for a few communities)	Diesel
Easy access to wood for fuel / fireplaces (above treeline)	Most	Most	None
Zone for NECB	About 85% Zone 8 About 15% Zone 7 (inlcuding Whitehorse)	100% Zone 8	100% Zone 8
Permafrost conditions	None/discontinuous for most Approx. bottom 1/3 is sporadic, mid 1/3 is extensive discontinuous and one comm. is extensive continuous	About 60% Yes, rest is sporadic South of YK: sporadic (~40%) North of YK: extensive discontinuous or continuous (~50%) and North tip is subsea permafrost (10%)	100% extensive, continuous permafrost
Foundation type (most typical)	Slab on grade/below grade for majority, some multipoint	Multipoint (can use below grade where no permafrost)	Multipoint
Seismic zone	High (~10%) Medium (~90%)	High (~10%), medium to low (~50%), no (~40%)	High (~12%) No (~88%)
Percentage of Indigenous population	22.3%	49.6%	85.7%

City/Market Community

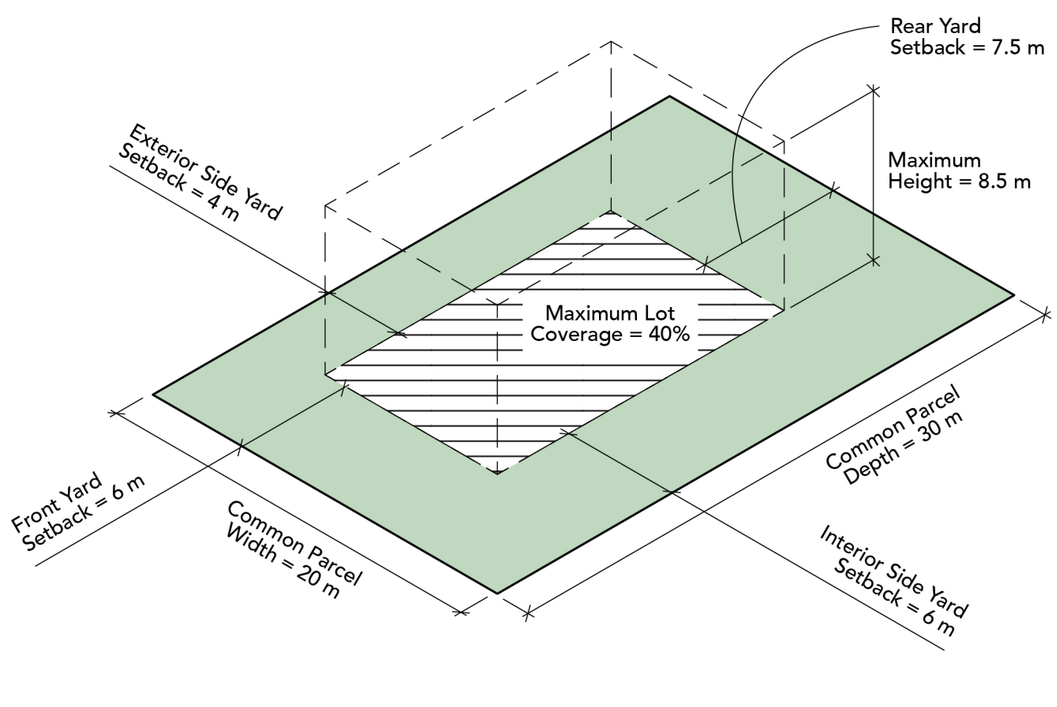
Remote Community

Design Consideration	City	Remote Community
Assumed Client	• Private developer	• Government • Community Group/Indigenous or Inuit Government
Safety	• 2 exits preferred	• 2 exits preferred • Consider exterior stair (not enclosed area)
Accessibility	• Barrier-free design	• Barrier-free design
Wind, Snow and Sun	• Wind protection at entrance (vestibule) • Option to flip entrance to either side (due to location of sun, views, power pole and/or road)	• Wind protection at entrance (vestibule) • Option to flip entrance to either side (due to location of sun, views, power pole and/or road)
Materials & Equipment Selection	• Low maintenance & durable • Low energy usage • Limited building articulation for tight envelope	• Low maintenance & durable • Low energy usage • Limited building articulation for tight envelope
Number of Bedrooms	• Mix of 1, 2 and 3 bedroom units • 2 and 3 bedroom units particularly needed	• Mix of 1, 2 and 3 bedroom units • 1 bedroom units particularly needed
Living Areas	• Dining room: seat larger group of people • Living room: TV suitable	• Dining room: seat larger group of people • Living room: TV suitable
Storage	• Arctic entry (cold porch) • Consideration for chest freezer • Bicycle storage	• Arctic entry (cold porch) • Chest freezer (in cold porch or interior) • Considedration for exterior sheds • Consideration for parking for quads and snowmobiles

TYPICAL LOTS



City



Remote
Community

Room Sizing Requirements

Based on NWT Housing Corporation's Standards

Other design requirements were taken from Government of Nunavut multi-unit housing RFPs

Storage	Minimum Area
1-Bedroom Unit	7.80 m^2
2-Bedroom Unit	9.91 m^2
3-Bedroom Unit	12.05 m^2
4-Bedroom Unit	14.20 m^2

Room	Minimum Width	Minimum Length	Minimum Area
Vestibule	1525 mm (excluding closet)	1525 mm	2.32 m^2
Hallways	1065 mm	—	—
Stair	1065 mm	—	—
Living Room (1 & 2 bedroom units)	3048 mm	4420 mm	13.47 m^2
Living Room (3 & 4 bedroom units)	3660 mm	4065 mm	14.90 m^2
Dining Area (1 & 2 bedroom units)	2290 mm	3048 mm	6.97 m^2
Dining Area (3 & 4 bedroom units)	2290 mm	4065 mm	9.30 m^2
Kitchen (1 & 2 bedroom units)	—	—	4.20 m^2
Kitchen (3 & 4 bedroom units)	—	—	6.30 m^2
Primary or Accessible Bedroom	2895 mm	3696 mm	10.70 m^2
Other Bedrooms	2895 mm	2902 mm	8.40 m^2
Barrier-free Bathroom	1500 mm	4834 mm	7.25 m^2
Closet, Entry	—	—	0.60 m^2 + additional 0.10 m^2 per bedroom in unit)
Closet, Primary Bedroom	—	—	1.20 m^2
Closet, Other Bedrooms	—	—	0.60 m^2
Closet, Linen	—	—	0.60 m^2
Laundry	915 mm clear space in front of washer and dryer	—	—

HOUSING EXAMPLES IN THE NORTH

Housing in the North - Rankin Inlet

Housing in the North - TAG Project Examples

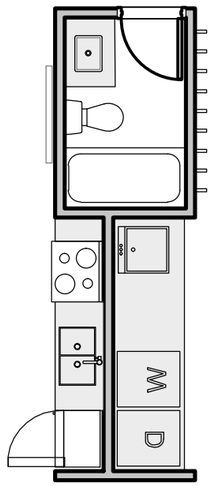
Whatì, NT

Old Crow, Yukon

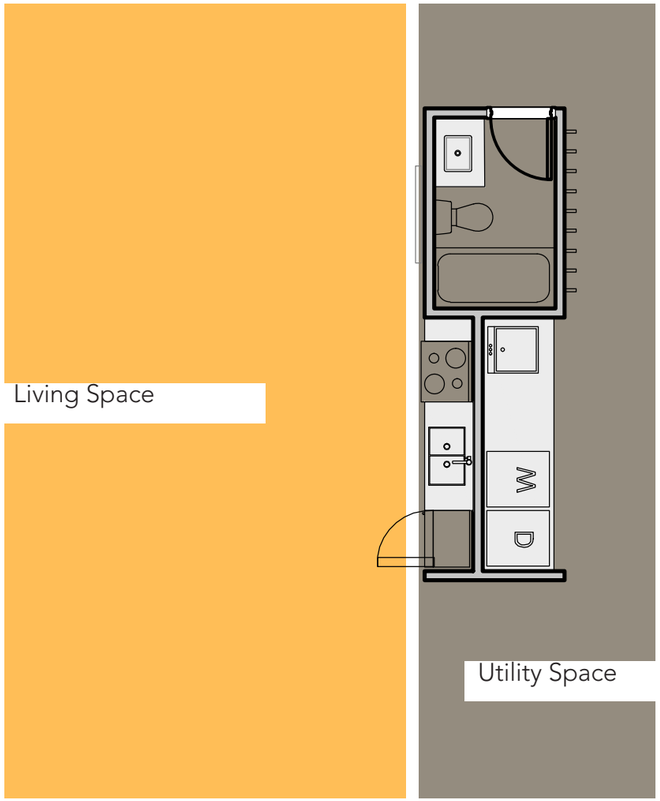
Fort Good Hope, NT

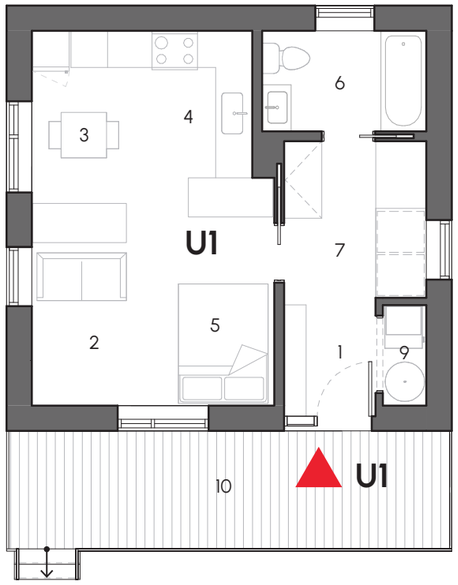
“THE NORTH” HOUSING DESIGNS

Service Core Concept

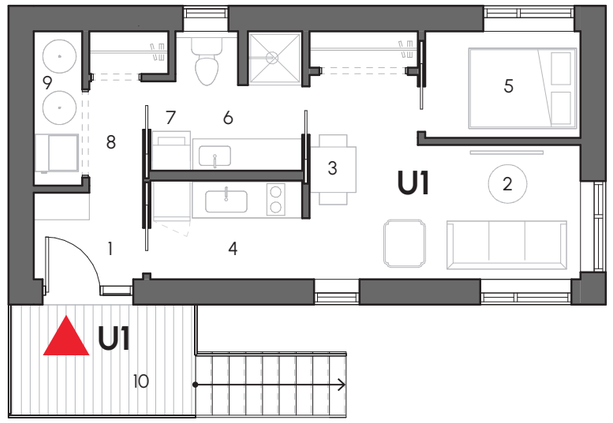


Design Concept - High Priority to Utility Space

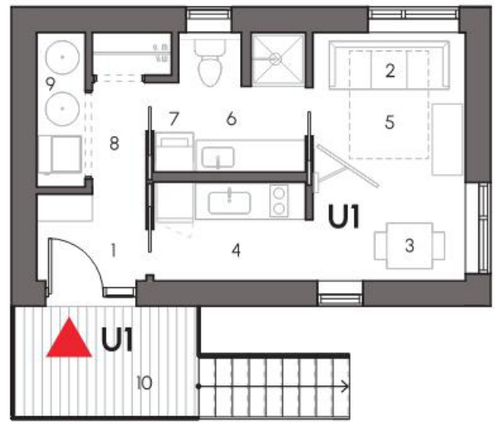




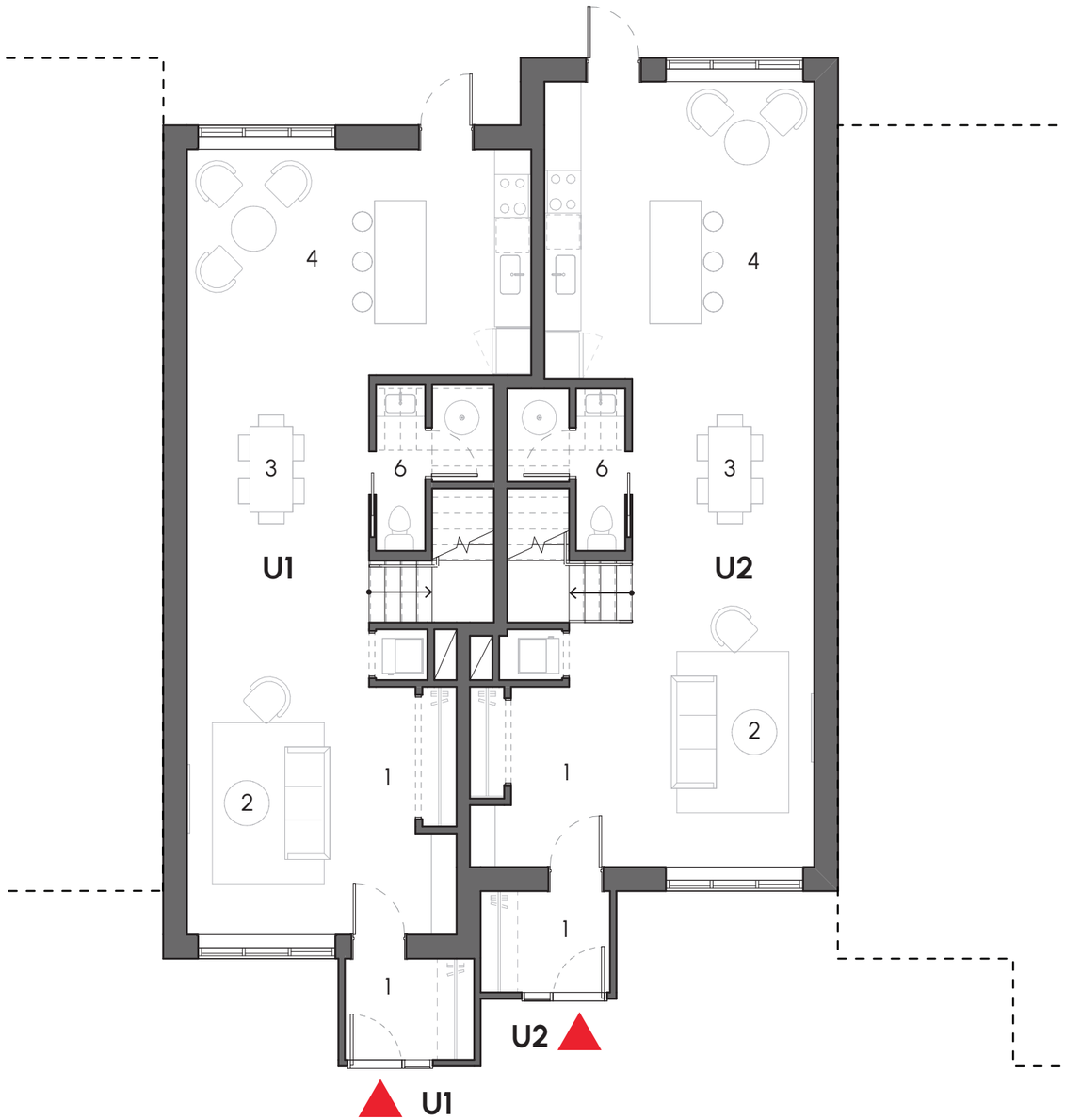
Accessible Dwelling Unit 1
(municipal services)



Accessible Dwelling Unit 2
(tanked services)

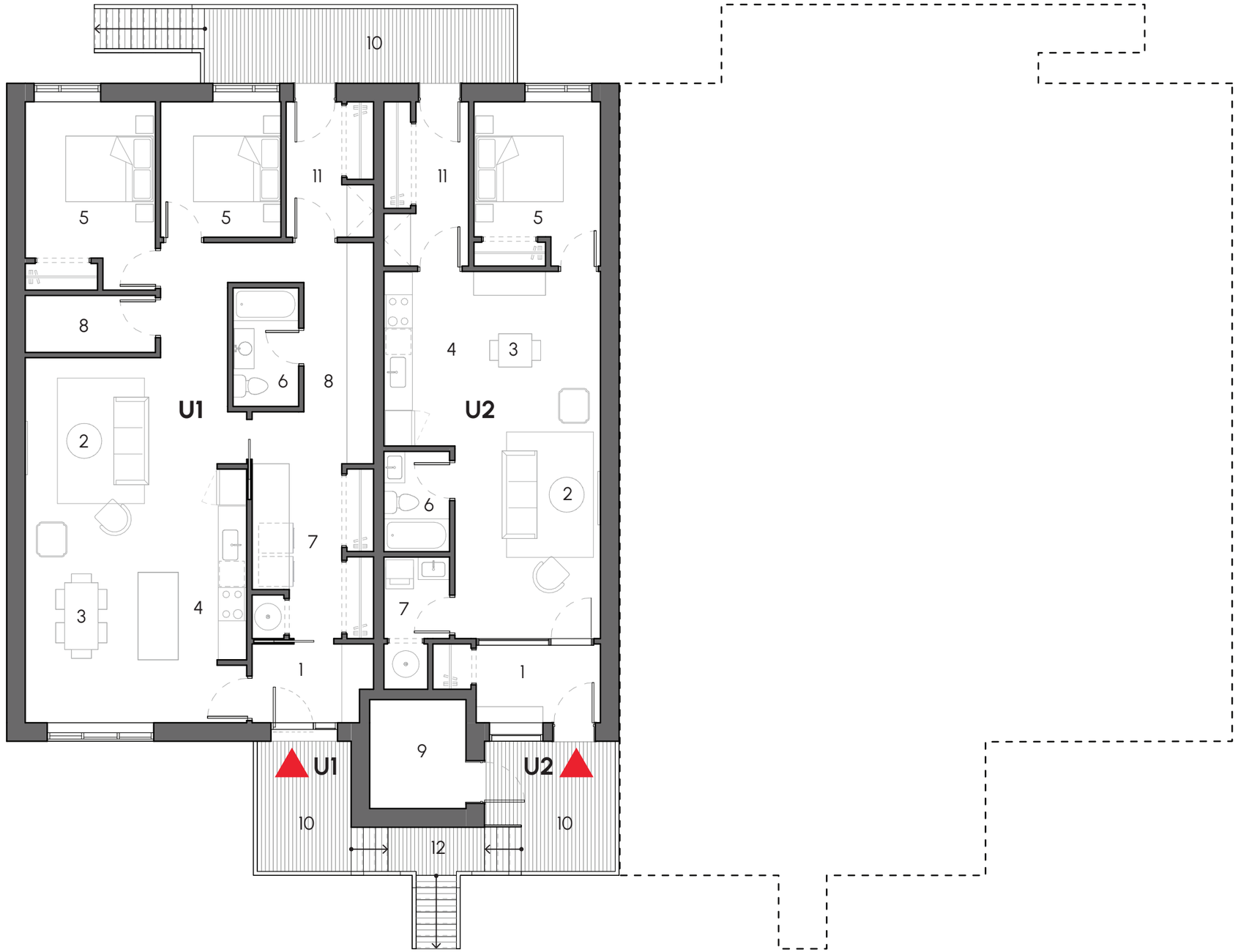


Accessible Dwelling Unit 2 - ALT
(tanked services)

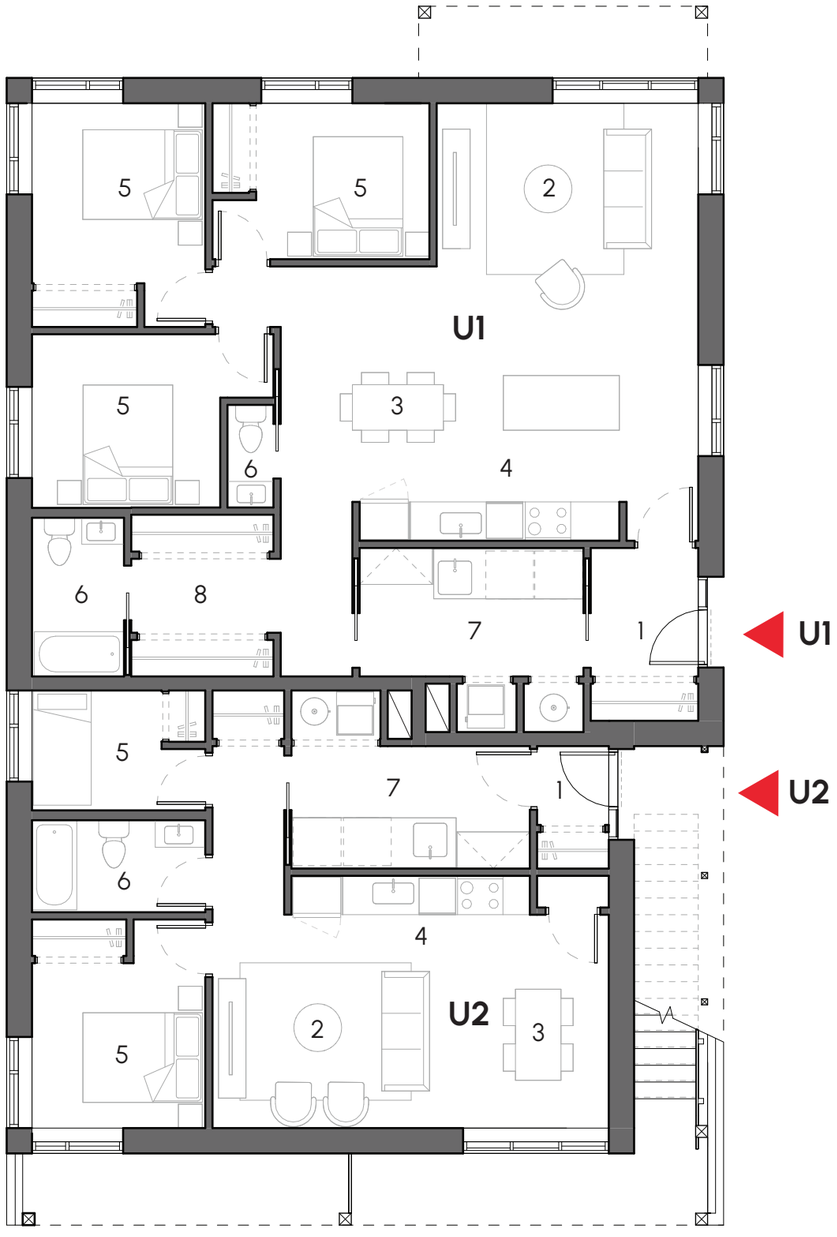


Rowhouse1 - 1st Floor Plan

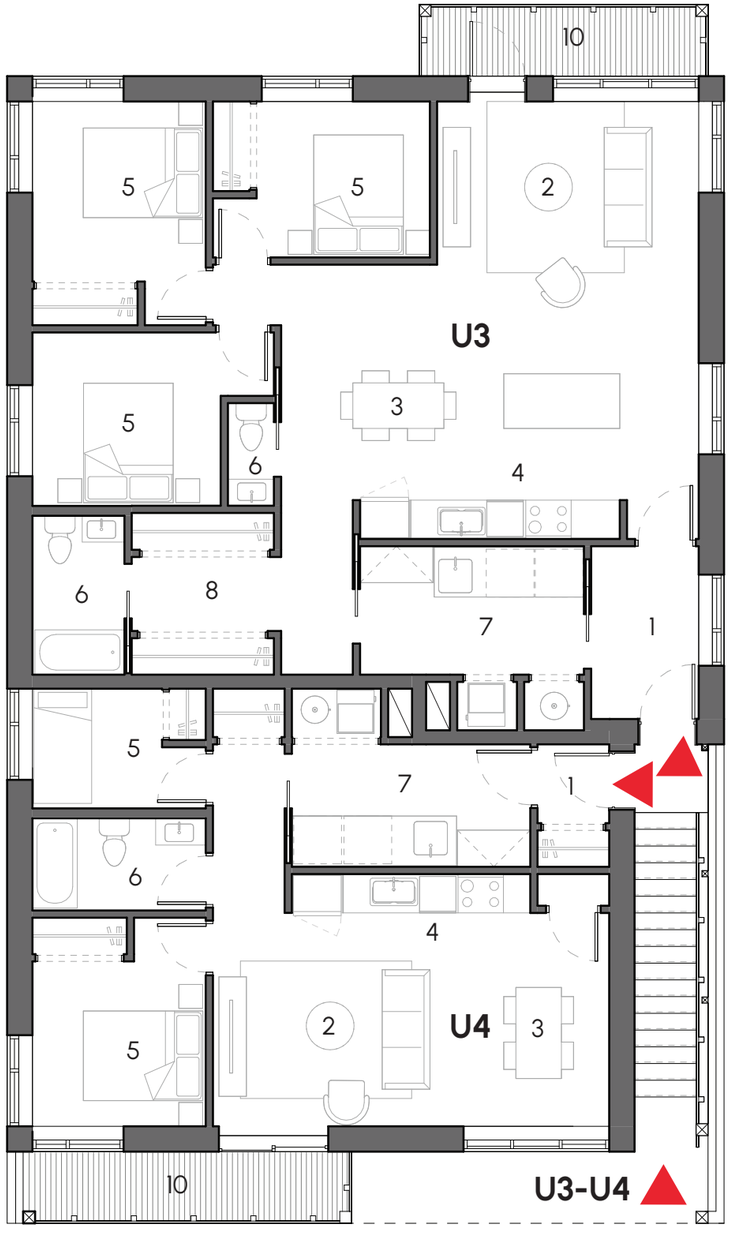
Rowhouse1 - 2nd Floor Plan



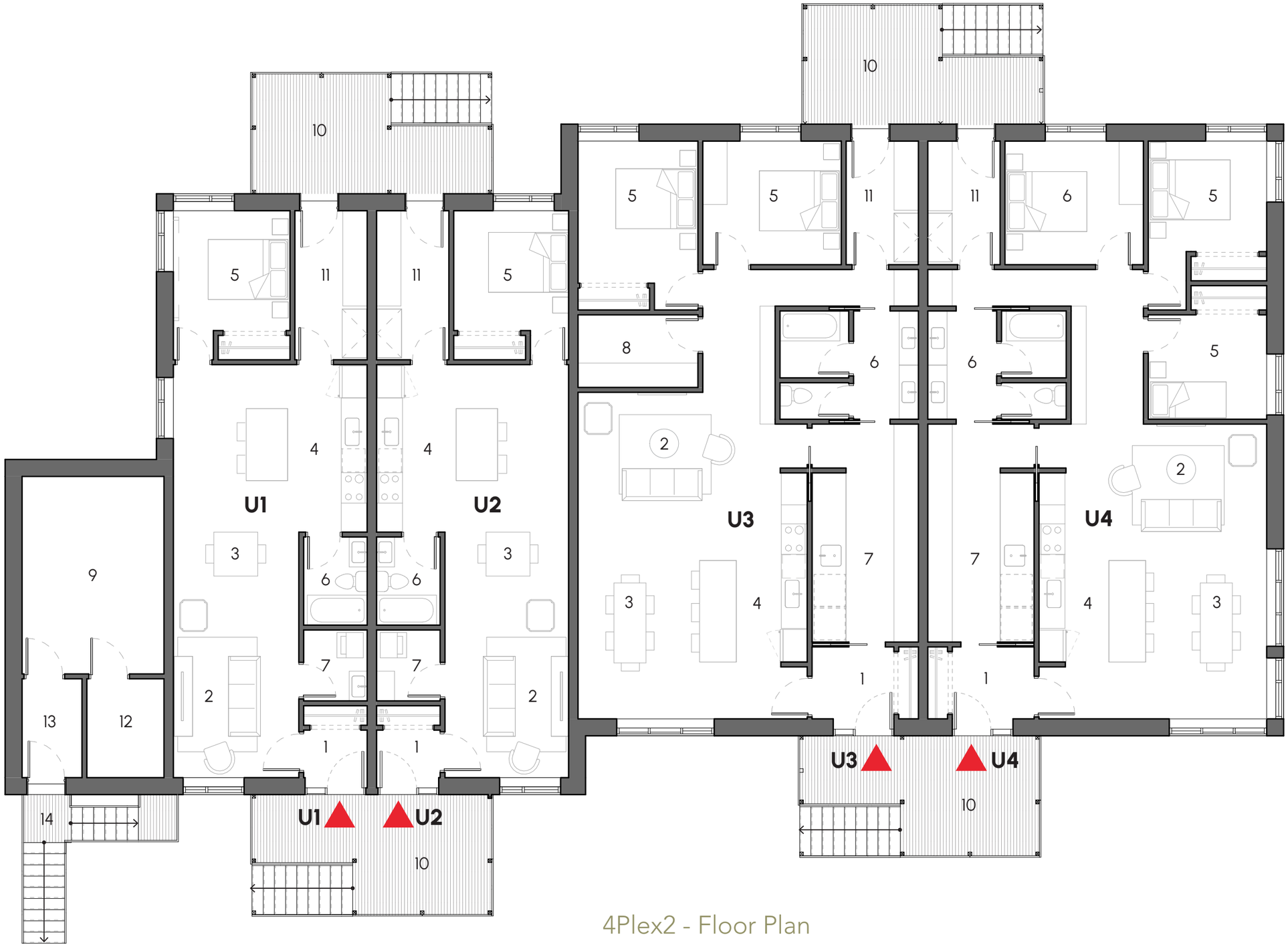
Rowhouse2 - Floor Plan



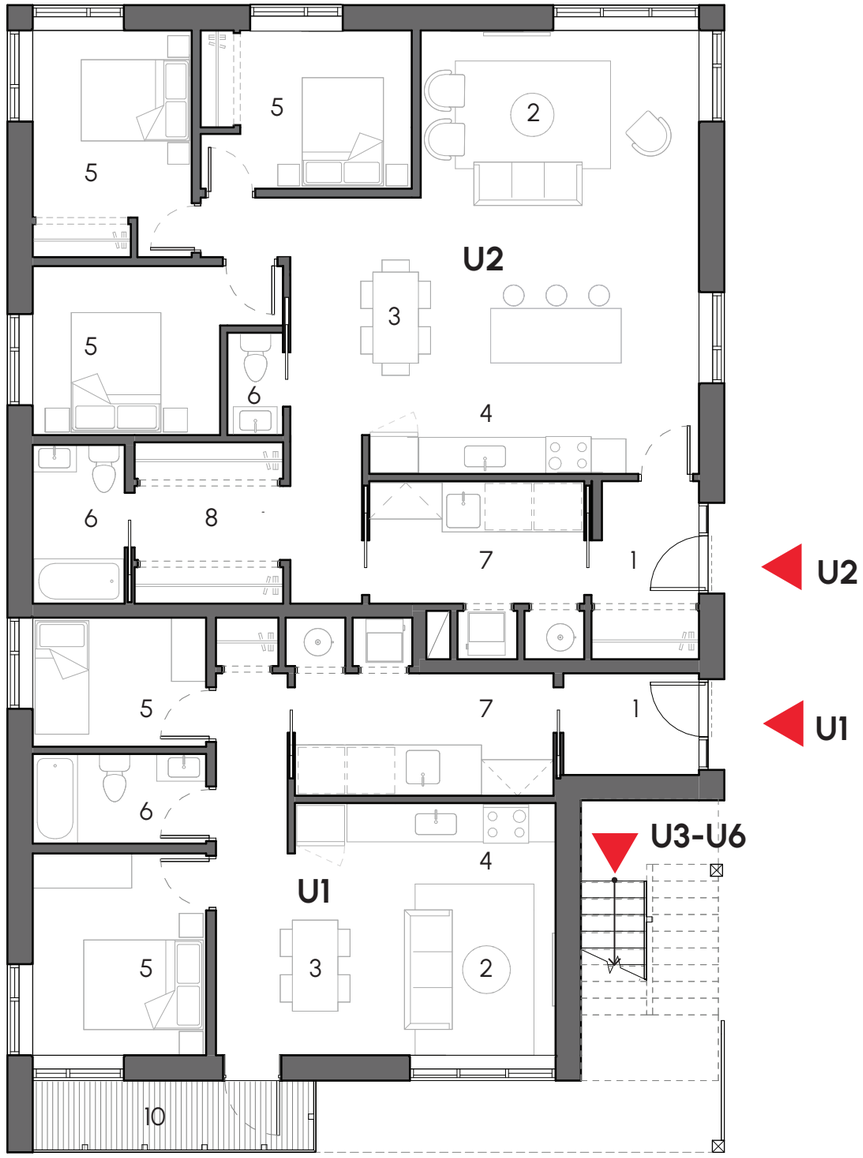
4Plex1 - 1st Floor Plan



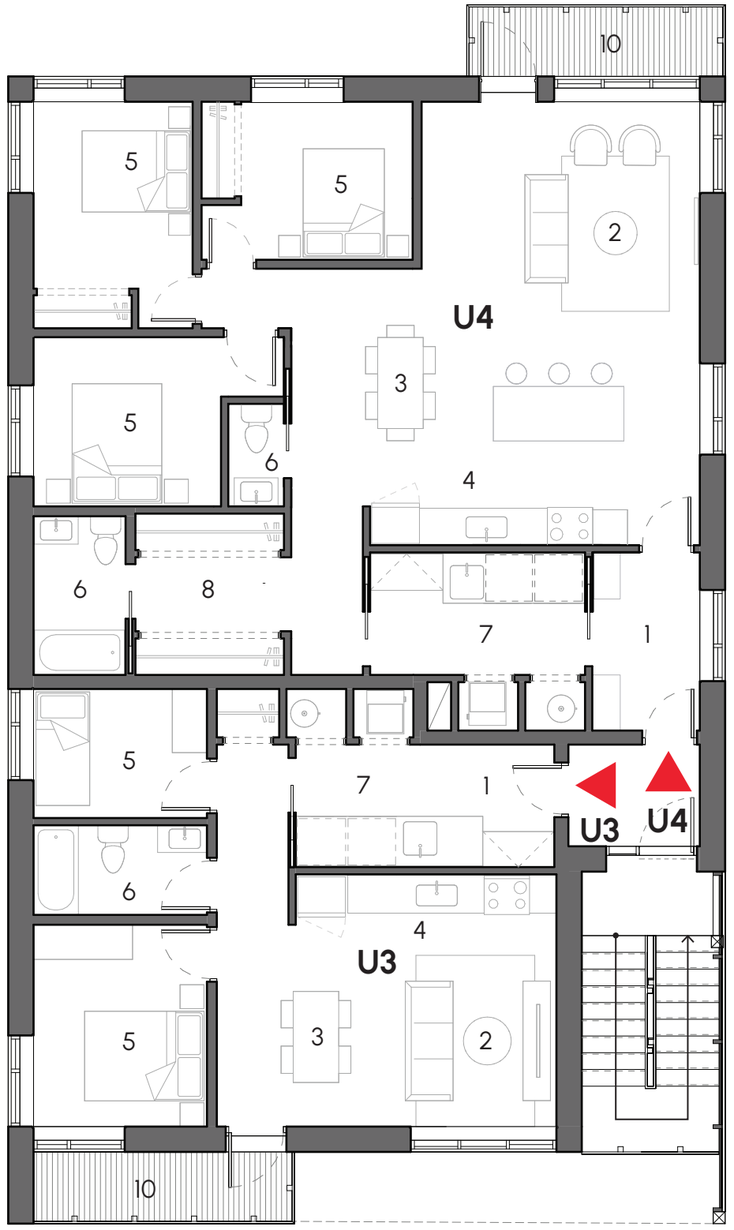
4Plex1 - 2nd Floor Plan



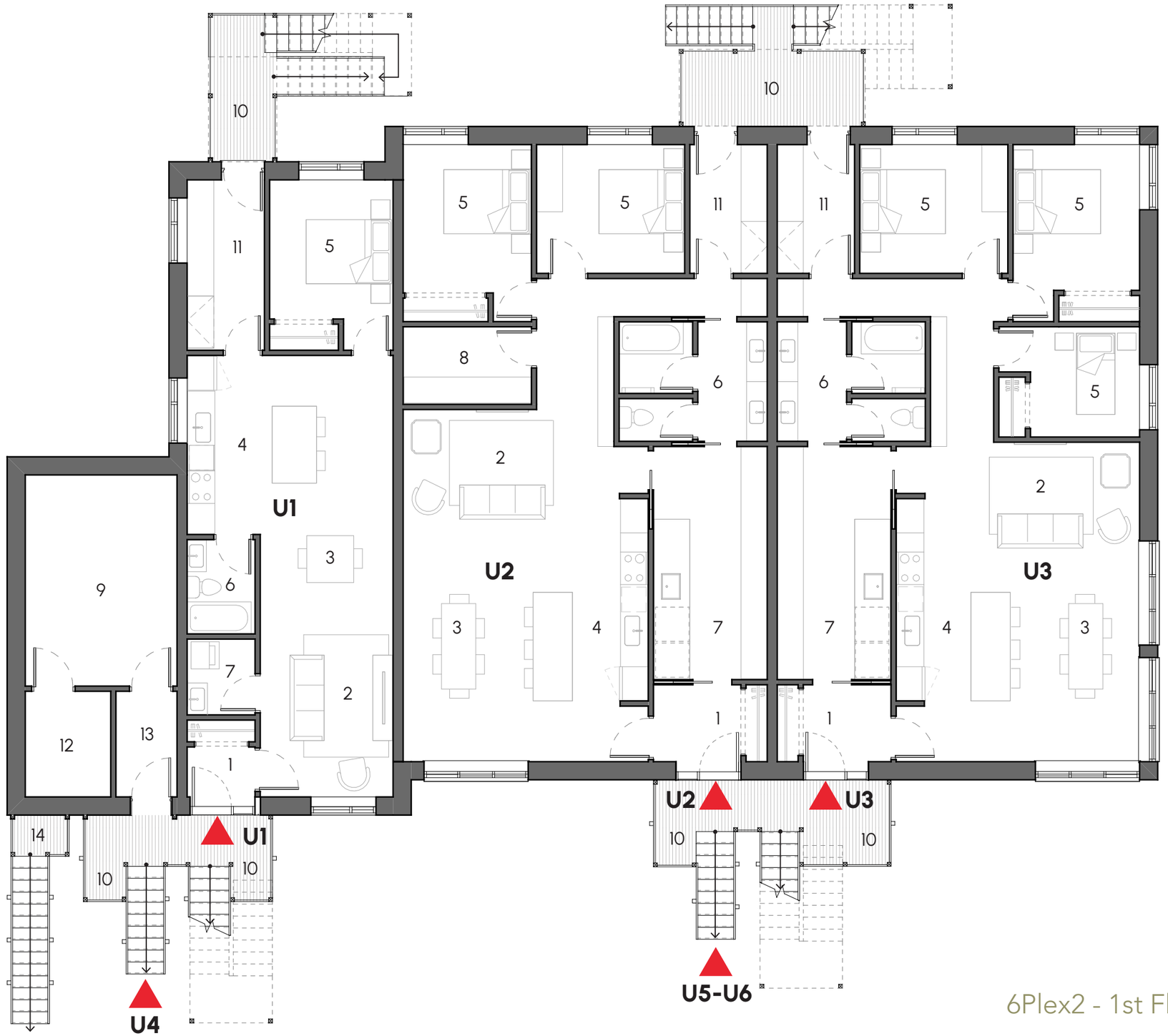
4Plex2 - Floor Plan



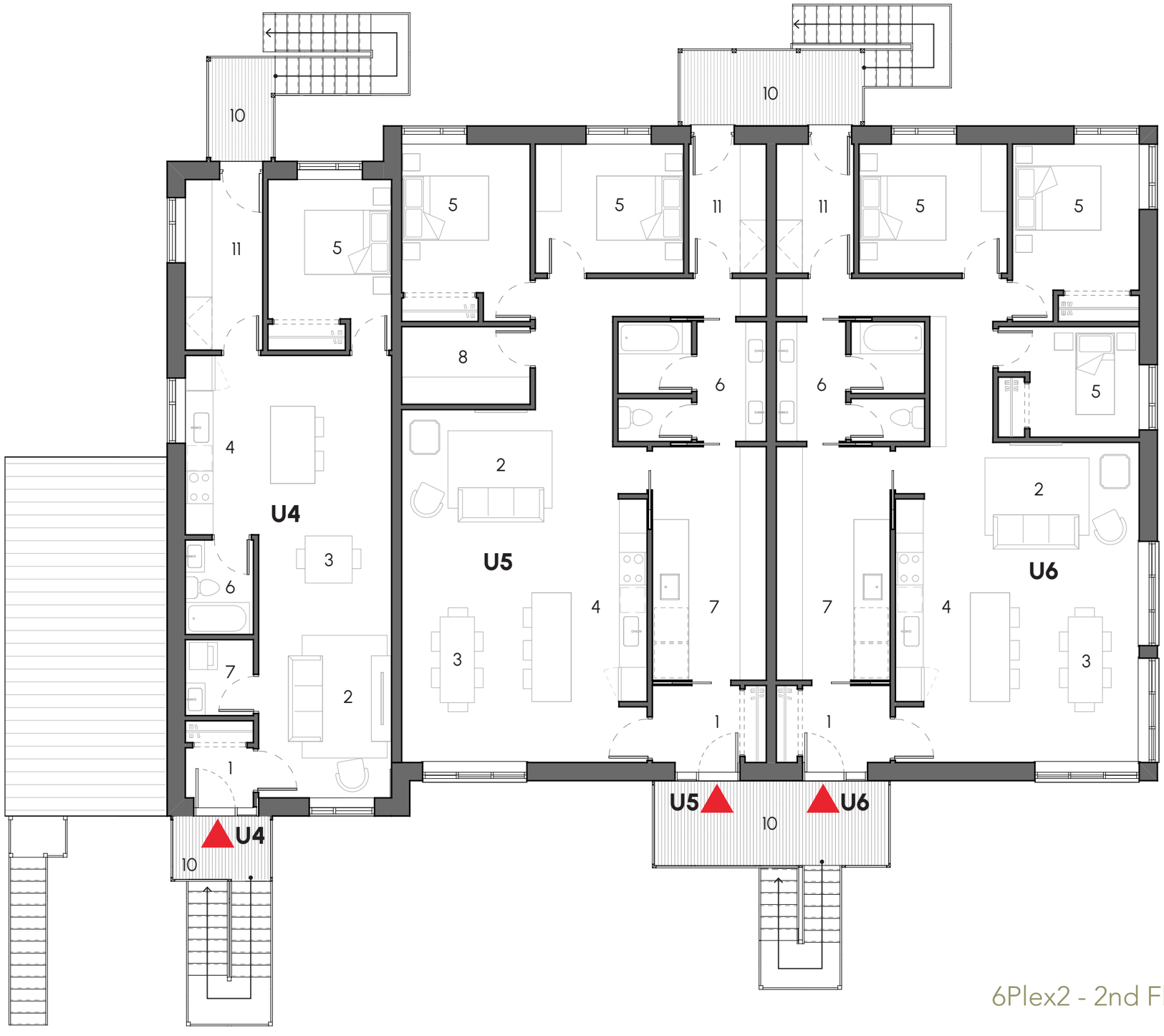
6Plex1 - 1st Floor Plan



6Plex1 - 2nd and 3rd Floor Plan



6Plex2 - 1st Floor Plan



6Plex2 - 2nd Floor Plan

THANK YOU