Affordable Housing
Innovative Design

Creating homes in our community

Innovative Design Concepts

Working together to *create homes in our community*

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Project Parameters

- AFFORDABILITY
  - Meets Housing Demand
    (the “affordable market”)
  - Achieves 30% of Income Cost
  - Utilizes Affordability Tools When Necessary
  - Suitable For Various Tenure Arrangements

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Project Parameters

- ACCESSIBILITY
  - Equitable use
  - Flexibility in use
  - Simple and intuitive use
  - Perceptible information
  - Tolerance for error
  - Low physical effort
  - Size and space for approach and use

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Project Parameters

- SMALL ECOLOGICAL FOOTPRINT
  - Air Quality considerations
  - Water
  - Sustainable Site
  - Building Materials
  - Energy

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Project Parameters

- Site Context
  - For demonstration
  - Compliance with policy
  - Repeatable

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Project Working Groups

- SINGLE UNIT DWELLINGS
- MULTIPLEXES
- STREET-ORIENTED TOWNHOUSES
- APARTMENT-STYLE BUILDINGS

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SINGLE UNIT DWELLING: Key Concepts

- Small is beautiful
- Well-designed small, flexible-use spaces can accommodate families
- Target household: 5-persons
- Opportunity for "growing" the home
- Small doesn't have to look small

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SINGLE UNIT DWELLING: Key Concepts

- Sustainability Features
- Leadership in Energy & Environmental Design for Houses (LEED-H)
  - Innovation & Design Process
  - Location & Linkages
  - Sustainable Sites
  - Water Efficiency
  - Energy & Atmosphere
  - Materials & Resources
  - Indoor Environmental Quality
  - Awareness & Education
  - Incorporates Energy Star for Homes

SINGLE UNIT DWELLING: Context

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SINGLE UNIT DWELLING: Context

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SINGLE UNIT DWELLING: Site

NORTH SITE PLAN

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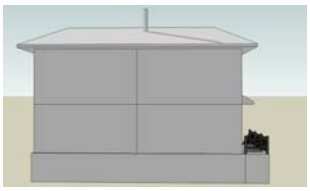
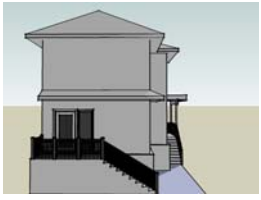
SINGLE UNIT DWELLING: Elevations



North Elevation

East Elevation

South Elevation



West Elevation

SINGLE UNIT DWELLING: Perspectives

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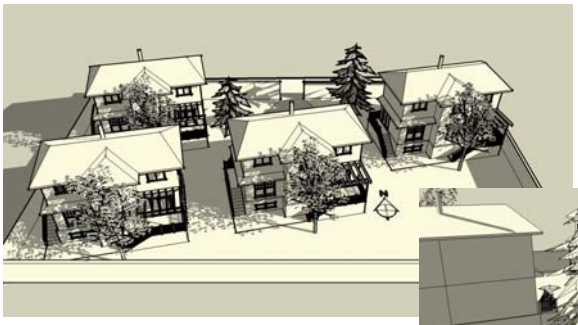

Bird's Eye View
Looking North

View from 18th Street

SINGLE UNIT DWELLING: Floor-Plans

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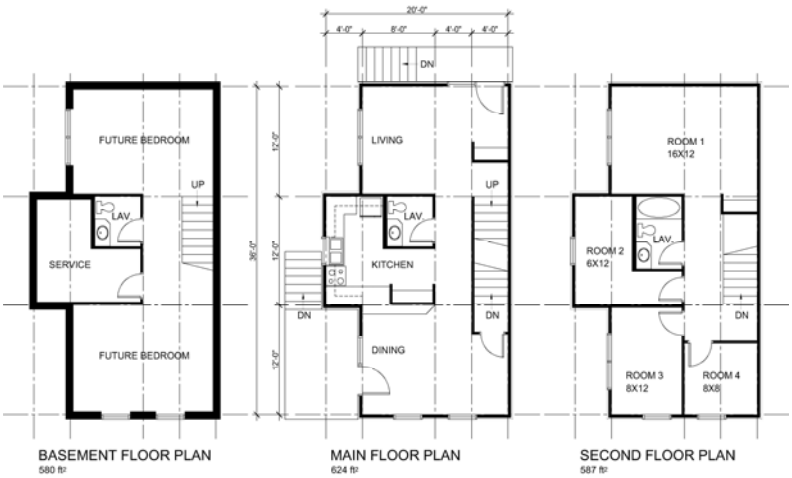

MULTIPLEX: Concepts

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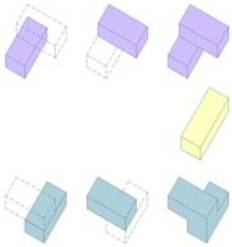
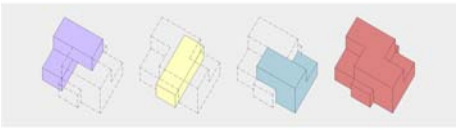
- Desirable to look like a large, single family detached house.
- Embrace materials, colours and styles of the neighbourhood.
- 2/3rds to be 3 bedroom units, 1/3rd to be 2 bedroom units.
- Each unit to have its own separate entrance at ground level.
- Maximize green space by building two stories tall.
- Consider alternate forms of stacking units rather than traditional side-by-side method.





MULTIPLEX: Site Plan

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- Designed to fit on 2 – 33'x110' lots in an established neighbourhood.
- Surface parking is provided off the back lane.
- Each unit has an entry facing the street.
- Unit 1 has it's living room facing the backyard, Unit 2 faces the front yard.

MULTIPLEX: Main Floor

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- Unit 1 – 3 Bedrooms
  1st = 18'x36' = 648 sf
  2nd = 36'x18' = 648 sf
  TOTAL = 1296 sf
- Unit 2 – 2 Bedrooms
  18'x46' = 828 sf
  TOTAL = 828 sf
- Unit 3 – 3 Bedrooms
  1st = 18'x36' = 648 sf
  2nd = 36'x18' = 648 sf
  TOTAL = 1296 sf

MULTIPLEX: Second Floor

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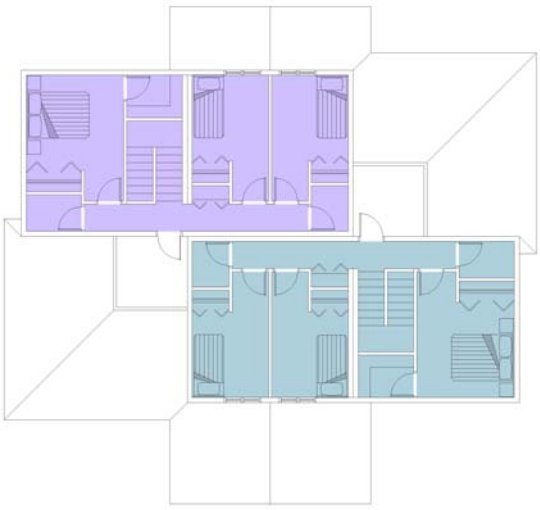
- Unit 1
  36'x18' = 648sf
- Unit 3
  36'x18' = 648sf
- Units 1 and 3 overlap Unit 2 on the second floor in order for one to face the back yard and one the front.
- Bedrooms are separated from neighbouring unit by a double corridor.
- Units have potential to have a small deck on the upper floor.



MULTIPLEX: Basement

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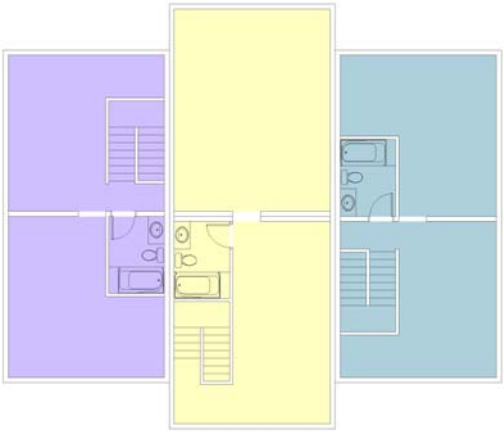
- Unit 1
  18'x36' = 648sf
- Unit 2
  18'x46' = 828sf
- Unit 3
  18'x36' = 648sf
- Group debated whether to have a basement or not.
- Plumbing lines up with washrooms on main floor.
- Basement to be finished? Unfinished?



MULTIPLEX: Elevations

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MULTIPLEX: Systems

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- To promote responsible use, provide individually metered space heating and water heating equipment.
- Use high efficiency equipment.
- Use a fan coil to distribute the space heating and ventilation air to each room.
- Use an air to air heat exchanger for ventilation air (esp. important where tobacco use is high).

OR …

- Take dollars that would go into a gas fired heating system for each unit and use in the envelope (better insulation, air tightness, windows). Heating load could be substantially reduced and space heating could be covered by electric baseboards.

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STREET-ORIENTED TOWNHOUSES

CAMPONI CRESCENT

CONFEDERATION SUBURBAN CENTRE

SASKATOON

GROUP 3:

S. Afseth, M. Bigland-Pritchard, I. Hayes,

K. Mahan, L. Njaa, C. Olfert, B. Wallace

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STREET-ORIENTED TOWNHOUSE: Overview

- "Townhouse" – 5 or more adjoined housing units with entrances at or near grade
- Affordable – construction, operating and life cycle costs, close to services and public transit
- Demographics – families with children, single/couple persons with accessibility needs, seniors

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STREET-ORIENTED TOWNHOUSE: Neighbourhood

STREET-ORIENTED TOWNHOUSE: Site - Camponi Cres.

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STREET-ORIENTED TOWNHOUSE: SITE PLAN

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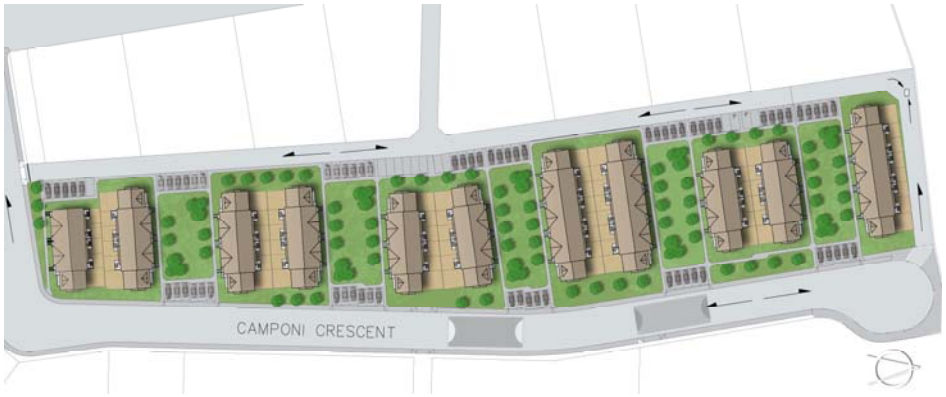

STREET-ORIENTED TOWNHOUSE: Site and Development

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- Site area 14,498m2 / 3.58 acre / 1.25 ha
- 71 Townhouse units (main, second, basement)
- 86 Parking stalls i.e. 1 per unit
- Unit size 107m2 / 1150 ft2, plus basement
- Accessible units – 10%
- Potential for upper or lower level rental or separate unit

STREET-ORIENTED TOWNHOUSE: Typical Plans

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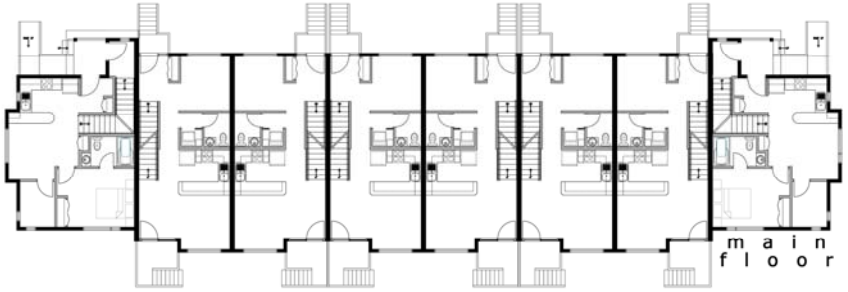

STREET-ORIENTED TOWNHOUSE: Typical Plans

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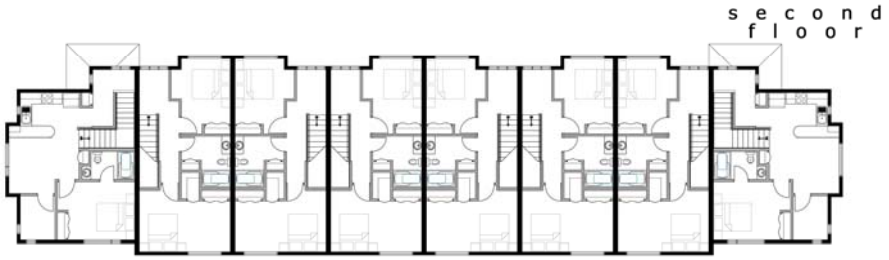

STREET-ORIENTED TOWNHOUSE: Typical Plans

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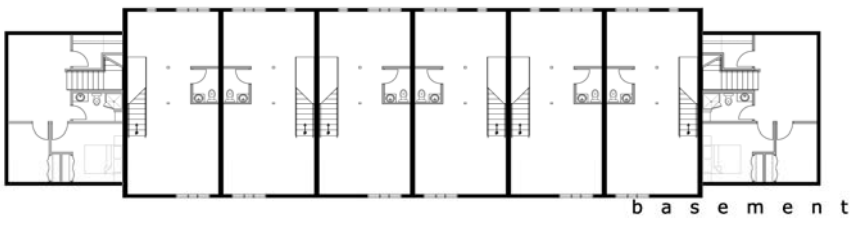

STREET-ORIENTED TOWNHOUSE: Building Sections

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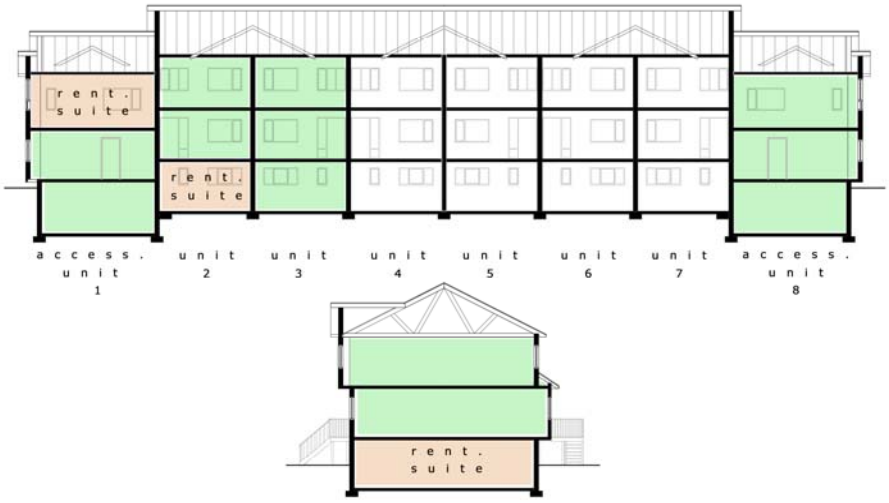

STREET-ORIENTED TOWNHOUSE: Typical Center Unit

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STREET-ORIENTED TOWNHOUSE: Typical Accessible End Unit

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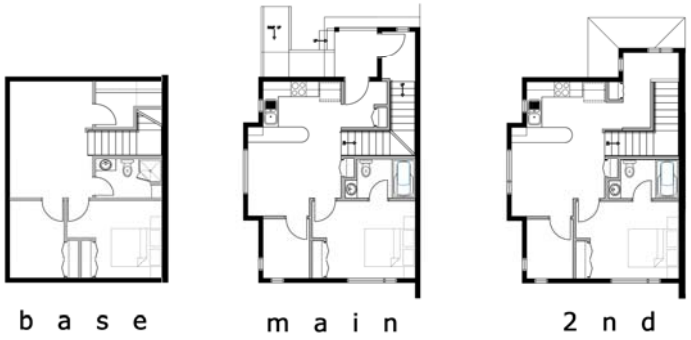

STREET-ORIENTED TOWNHOUSE: Concepts

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Affordability

- Multiple units - 2 types
- Standard sizes, modular, 600mm grid
- Cost-effective materials, economies of scale
- Reduced land costs over single house lot size

Sustainability

- 'Neighbourhood' concept for development
- Close to community services and bus transportation
- Ease of maintenance and operation, life cycle costing
- Maximize energy efficiency and sustainable construction practices
- Landscaping for minimal maintenance, reduced parking

STREET-ORIENTED TOWNHOUSE: Concepts

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Energy Efficiency

- North-south orientation: solar gain, daylighting, passive ventilation
- Window sizes to enhance/limit solar gain, overhangs
- Energy efficient lighting and appliances; 'Energy Star' program
- Low-flow temperature-control water fixtures, individual metering
- Energy modelling to be performed

Construction Technology

- Higher insulation values in walls and roof, shared walls
- Engineered trusses and floor joists
- Balance costs with durability and long-term maintenance
- Incorporate 'Value Engineering' principles

STREET-ORIENTED TOWNHOUSE: Elevations

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STREET-ORIENTED TOWNHOUSE: Elevations

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STREET-ORIENTED TOWNHOUSE: Elevations

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APARTMENT-STYLE BUILDINGS: Area Plan

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APARTMENT-STYLE BUILDINGS: Area Plan

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APARTMENT-STYLE BUILDINGS: Saskatoon Mixed Use Examples

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APARTMENT-STYLE BUILDINGS: Area Plan

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APARTMENT-STYLE BUILDINGS: Visualization

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APARTMENT-STYLE BUILDING: Key Concepts

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- Mixed use development
- Building massing compatible with neighbourhood
- Sustainable Design
- Live/Work units
- 10 Family sized units –
  6 x 3bedroom
  4 x 2bedroom
- Wood frame construction
- Amenity Space – indoor and outdoor

APARTMENT-STYLE BUILDNGS: Sustainable Design Concepts and Approach

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- Low Energy Use
  - Well insulted
  - Efficient mechanical systems
  - Master switch in each suite
  - Energy Star Appliances
  - Wind turbines on roof
  - Solar Wall - South
  - Solar Shading - West

APARTMENT-STYLE BUILDNGS: Sustainable Design Concepts and Approach

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- Low Water Use
  - Low flow fixtures, toilets and showers.
  - Rain water collection
  - High efficiency appliances

APARTMENT-STYLE BUILDNGS: Sustainable Design Concepts and Approach

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- Low Impact Site
  - Core neighbourhood
  - previously developed site
  - Increasing area density
  - Public Transit
  - Walking distance to many amenities
  - Bicycle Storage
  - Recycling area

APARTMENT-STYLE BUILDNGS: Sustainable Design Concepts and Approach

Creating homes in our community

- Healthy indoor Environment
  - 100% outdoor air
  - Direct ventilation to living and bedrooms
  - Daylighting
  - low toxic paints, carpets etc.

APARTMENT-STYLE BUILDINGS: Site Plan

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APARTMENT-STYLE BUILDINGS: Elevations

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APARTMENT-STYLE BUILDINGS: Ground Floor

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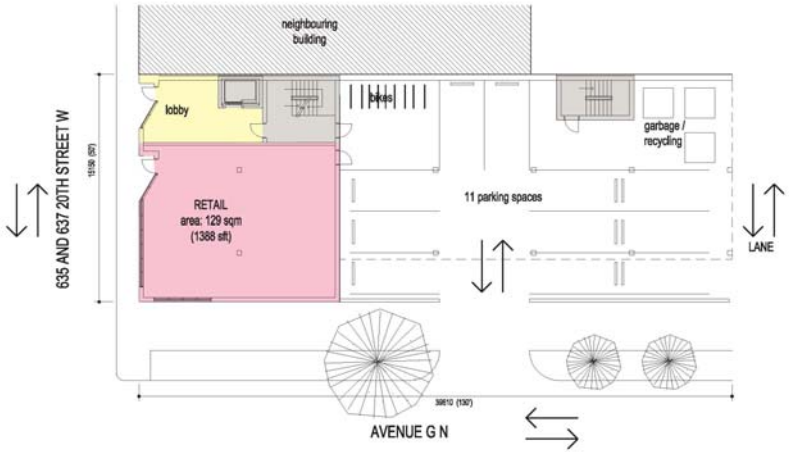

APARTMENT-STYLE BUILDINGS: 1st Floor

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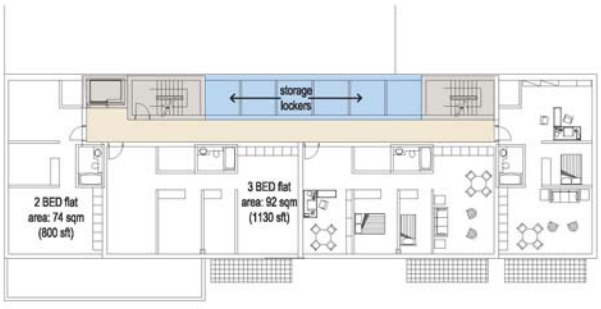

APARTMENT-STYLE BUILDINGS: 1st Floor

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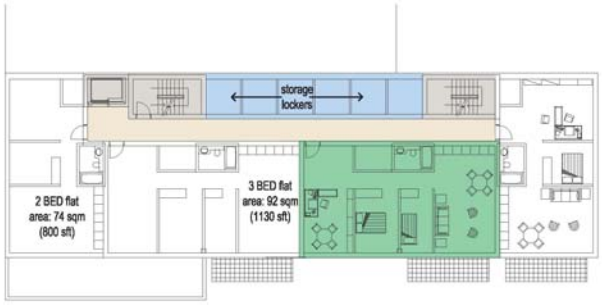

APARTMENT-STYLE BUILDINGS: 1st Floor

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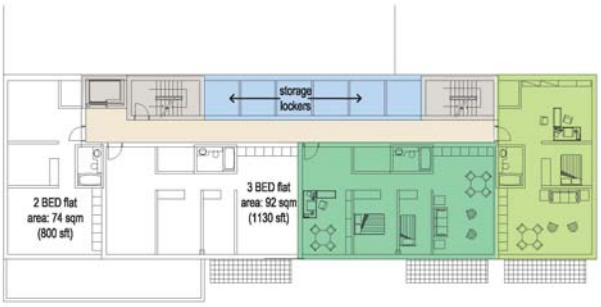

APARTMENT-STYLE BUILDINGS: 1st Floor

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APARTMENT-STYLE BUILDINGS: 2nd and 3rd

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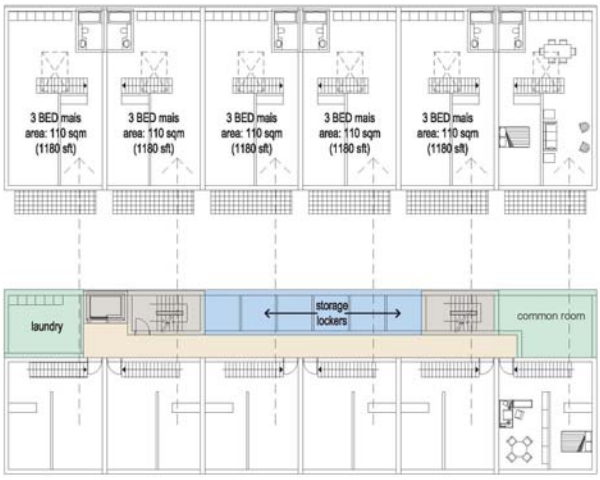

APARTMENT-STYLE BUILDINGS: 2nd and 3rd

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APARTMENT-STYLE BUILDINGS: 2nd and 3rd

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APARTMENT-STYLE BUILDINGS: Cross Section

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APARTMENT-STYLE BUILDINGS: Cross Section

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APARTMENT-STYLE BUILDINGS: Long Section

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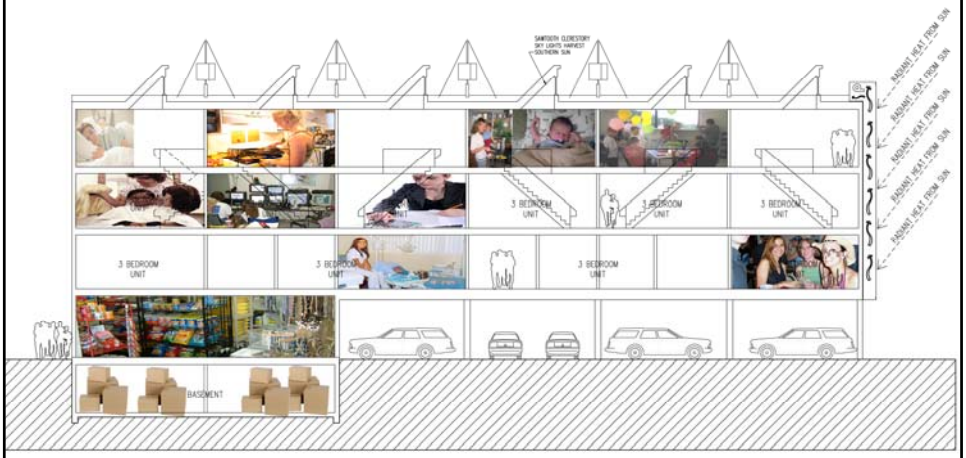

APARTMENT-STYLE BUILDINGS: Long Section

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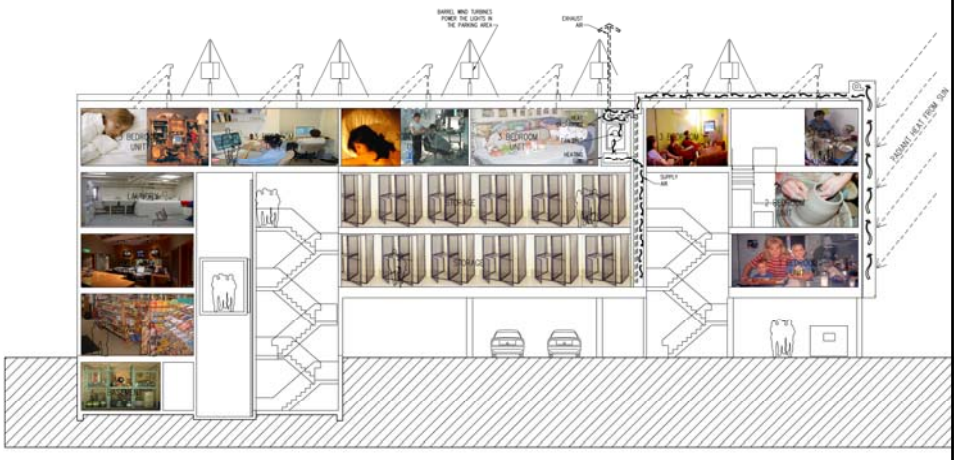

APARTMENT-STYLE BUILDINGS: Visualization

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