KEN SOBLE ENERPHIT TRANSFORMATION

Re-Use & Renewal

TOWER RENEWAL PARTNERSHIP

TRADES

PCL

CFMS-WEST CONSULTING INC. Serving South Western Ontario

Passive House Institute

ENTUITIVE

EBA

Herz & Lang Die Planer für energieeffizientes Bauen

JMV CONSULTING

CoEfficient Building Science

REINBOLD engineering group

Russell Richman Consulting Ltd.

engineeringlink building envelope & structure

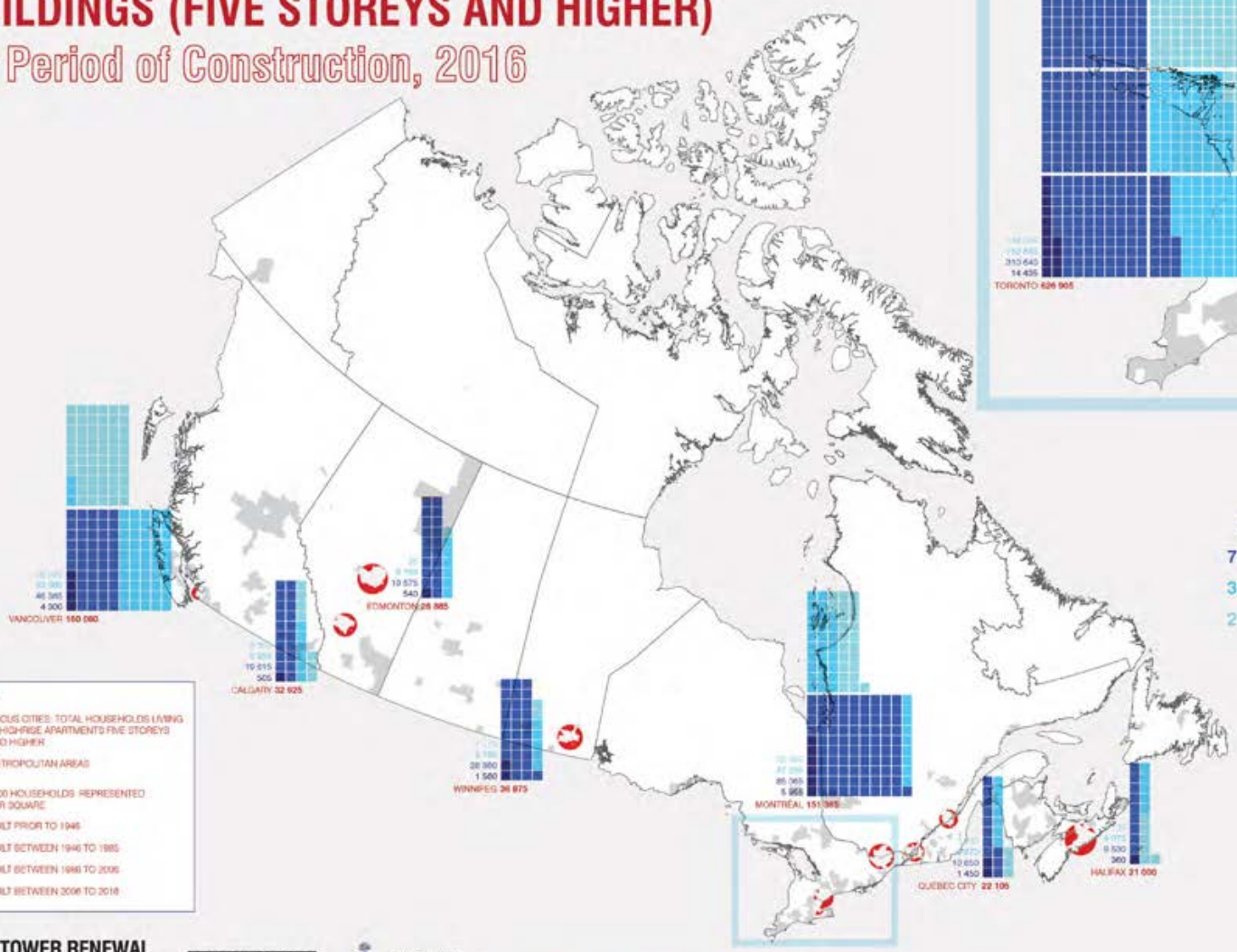

TOWER RENEWAL
PARTNERSHIP

Progressive Planning

progress continues . . .

CANADIAN HOUSEHOLDS LIVING IN HIGHRISE BUILDINGS (FIVE STOREYS AND HIGHER)

By Period of Construction, 2016



LEGEND

- FOCUS CITIES: TOTAL HOUSEHOLDS LIVING IN HIGHRISE APARTMENTS FIVE STOREYS AND HIGHER
- METROPOLITAN AREAS
- 1000 HOUSEHOLDS REPRESENTED PER SQUARE
- BUILT PRIOR TO 1946
- BUILT BETWEEN 1946 TO 1985
- BUILT BETWEEN 1986 TO 2005
- BUILT BETWEEN 2006 TO 2016

1 391 040 TOTAL HOUSEHOLDS LIVING IN HIGHRISE BUILDINGS IN CANADA

■ 1000 HOUSEHOLDS PER SQUARE

TOTAL HOUSEHOLDS LIVING IN HIGHRISE BUILDINGS BY PERIOD OF CONSTRUCTION

37 610 | (03%) PRE - 1946

739 490 | (53%) 1946 - 1985

335 870 | (24%) 1986 - 2005

278 075 | (20%) 2006 - 2016

ONTARIO

886 705 NUMBER OF HOUSEHOLDS LIVING IN HIGHRISE APARTMENTS IN ONTARIO

55% OF CANADIAN HIGHRISE HOUSEHOLDS LIVE IN APARTMENTS CONSTRUCTED BETWEEN 1946-1985

QUÉBEC

187 800 NUMBER OF HOUSEHOLDS LIVING IN HIGHRISE APARTMENTS IN QUÉBEC

56% OF CANADIAN HIGHRISE HOUSEHOLDS LIVE IN APARTMENTS CONSTRUCTED BETWEEN 1946-1985

BRITISH COLUMBIA

177 830 NUMBER OF HOUSEHOLDS LIVING IN HIGHRISE APARTMENTS IN BRITISH COLUMBIA

31% OF CANADIAN HIGHRISE HOUSEHOLDS LIVE IN APARTMENTS CONSTRUCTED BETWEEN 1946-1985

ALBERTA

62 395 NUMBER OF HOUSEHOLDS LIVING IN HIGHRISE APARTMENTS IN ALBERTA

66% OF CANADIAN HIGHRISE HOUSEHOLDS LIVE IN APARTMENTS CONSTRUCTED BETWEEN 1946-1985

TOWER RENEWAL PARTNERSHIP

NEIGHBOURHOOD CHANGE

UNIVERSITY OF TORONTO

SOURCE: STATISTICS CANADA, CMA DATA, CENSUS 2006/2016

TOWER RENEWAL **ADVISORY NETWORK**

TOWER RENEWAL PARTNERSHIP

CENTRE FOR URBAN GROWTH AND RENEWAL CUG+R
Maytree
DKGi Inc.
EVERGREEN
United Way Toronto & York Region
TAF
JOSHUA MONK VANWYCK CONSULTING
Transsolar KlimaEngineering
ERA
TORONTO
Ottawa
MISSISSAUGA
Hamilton
Greater Toronto Apartment Association
ENTUITIVE
PARK PROPERTY MANAGEMENT INC.
CITYHOUSING HAMILTON
Ontario Home Builders' Association
TORONTO Public Health
TORONTO REGION BOARD OF TRADE
National Housing Collaborative / Collectif pancanadien pour le logement
PEMBINA institute
Toronto and Region Conservation for The Living City
RESILIENT TORONTO
NAIMA CANADA
REPRESENTING MINERAL FIBRE INSULATION MANUFACTURERS
nblc
CAPREIT
Wellesley Institute advancing urban health
NEIGHBOURHOOD CHANGE Research Partnership
ACORN CANADA
Ryerson University
Ryerson City Building Institute
Toronto Community Housing


SIGNAL IDUNA


Sugginger Straße 50

Eco-Retrofits (60%+ GHG Reductions)

Social & Economic Life

Neighbourhood Transformations

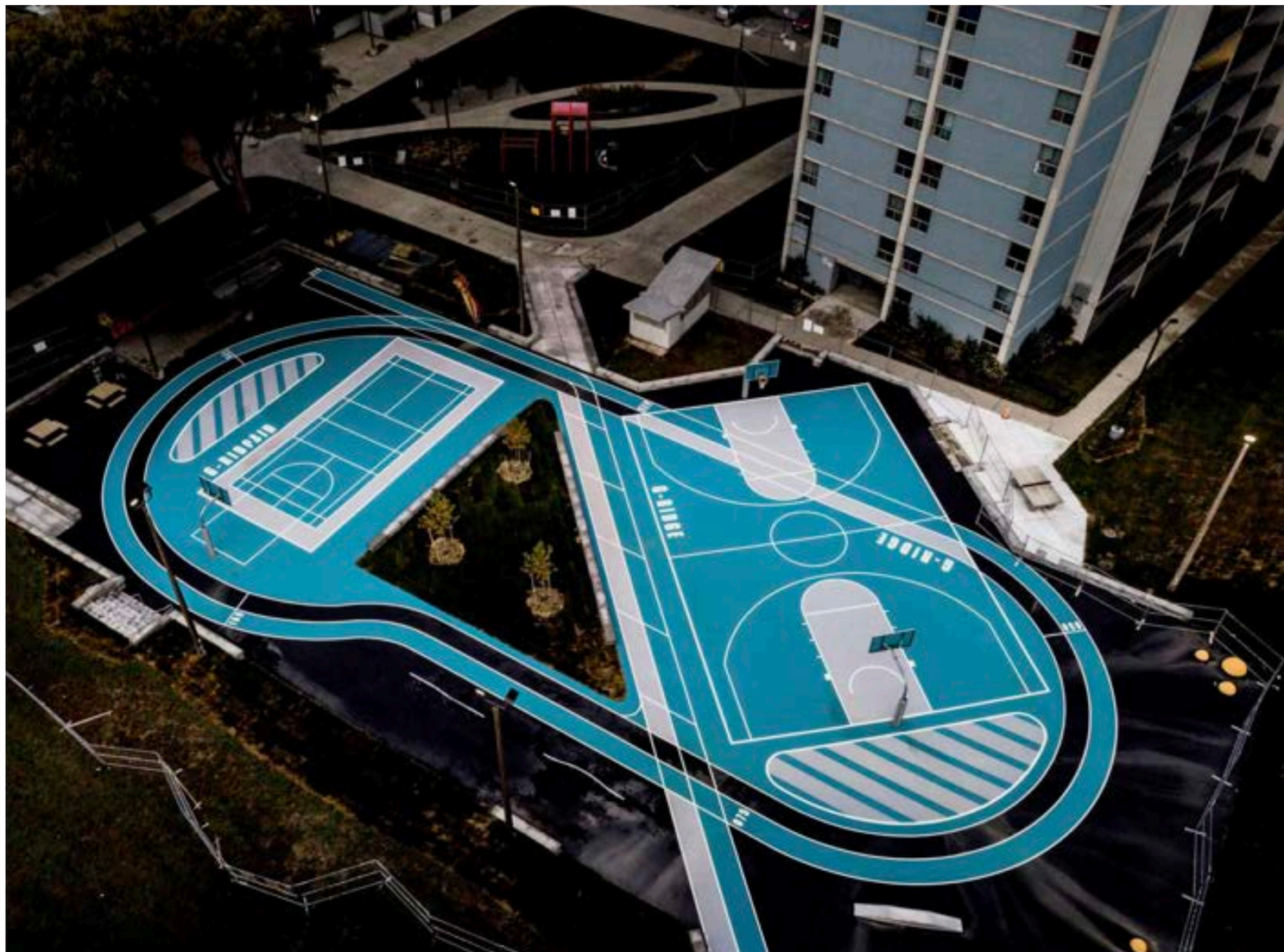
New Zoning, New Opportunities for Complete Communities:

Residential Apartment Commercial (RAC) Zone
Developed with

TORONTO · United Way Toronto · CENTRE FOR URBAN GROWTH AND RENEWAL www.cugr.ca CUG+R

Activity:	New Condo	Older Apartment
Dwelling	YES	YES
Clothing store	YES	YES
Bank	YES	YES
Coffee Shop	YES	YES
Accountant	YES	YES
Drug Store	YES	YES
Patio	YES	YES
Art Gallery	YES	YES
A Place of Worship	YES	YES

- Children's Play Areas
- Gathering
- Convenience (Food, Shops & Daycare
- Gardens
- Community Program
- Connections




G-RIDGE
G-RIDGE
DANGER


43947




Key Challenges

Deteriorating envelopes

Lack of insulation

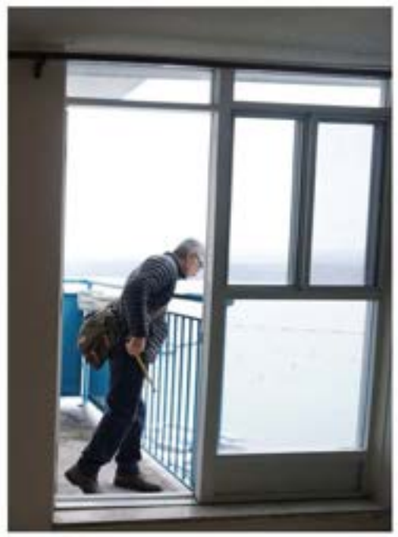
Inadequate ventilation

Mould and hazardous materials

Lack of thermal control

End of life systems

Occupied buildings


LINKING HOUSING QUALITY OUTCOMES TO RETROFITS

Tenant comfort

Thermal controls

Adequate ventilation

Life safety measures

Community connectivity

Climate resilience

TOWER RENEWAL PARTNERSHIP

Financing

Funding building retrofit with loan levels, interest rates and grants tied to achieving specific performance standards

Standards

Housing quality standards for retrofit implemented through building codes. Guidebooks to lead stakeholders through process with clear evidence base for investments

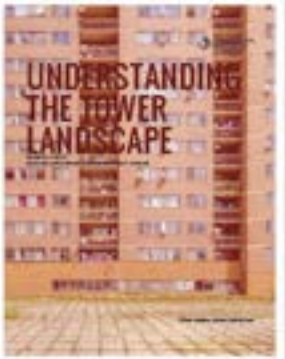
HOUSING REHABILITATION

Long-term Stewardship

Retrofit Industry

Research and development, skills training, new products, means and methods for a made-in-Canada approach

POLICY DEVELOPMENT



Federal Government:

National Housing Strategy Launched with Direction to Retrofit 200,000+ units of Public and Private Sector Housing through $15.8 Billion Co-Investment Fund

NATIONAL HOUSING STRATEGY

A place to call home

TOWER RENEWAL PARTNERSHIP

ONTARIO HOLISTIC BUILDING RETROFITS

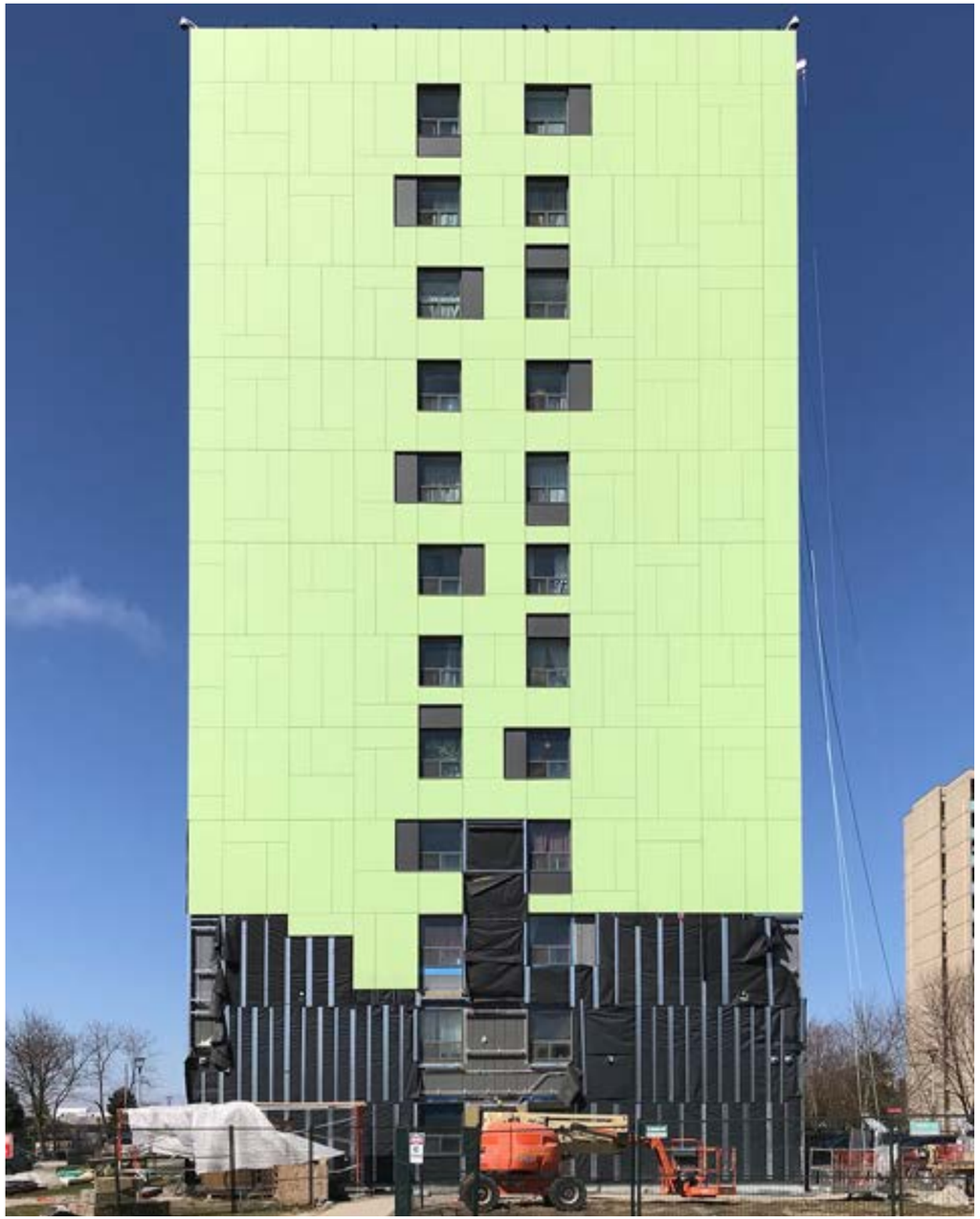
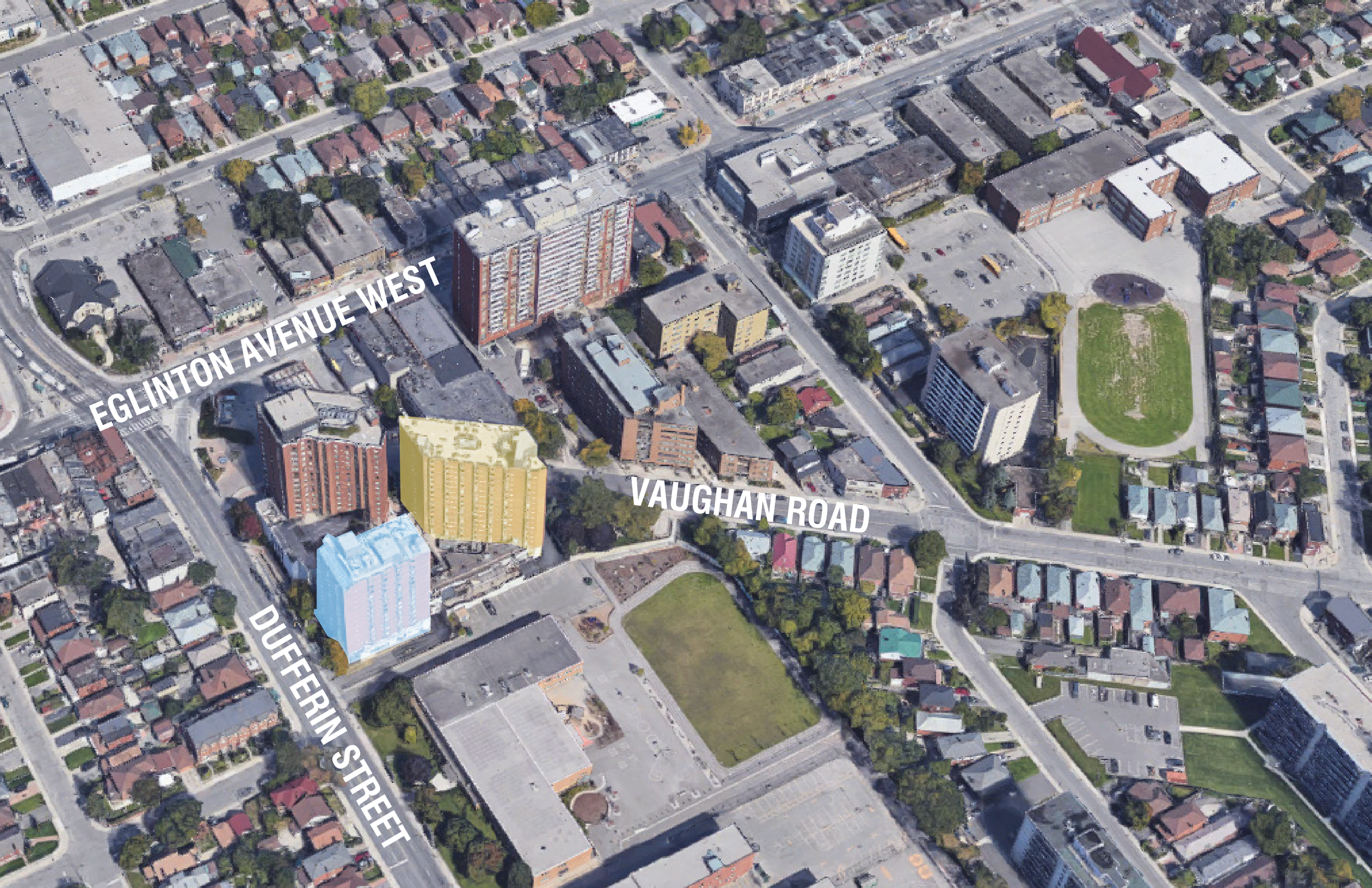


Image: LGA Architectural Partners

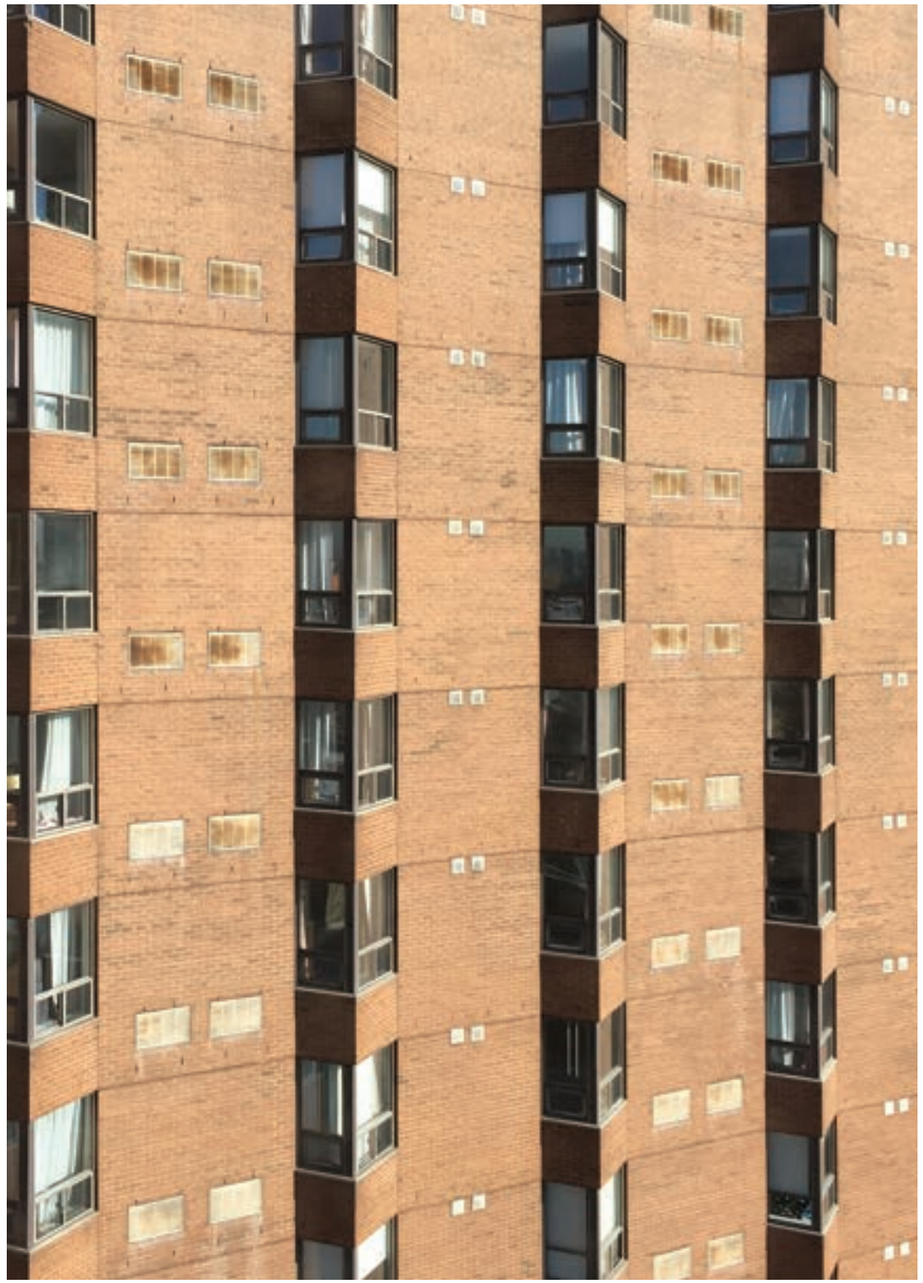
Image:Taylor Smyth Architects

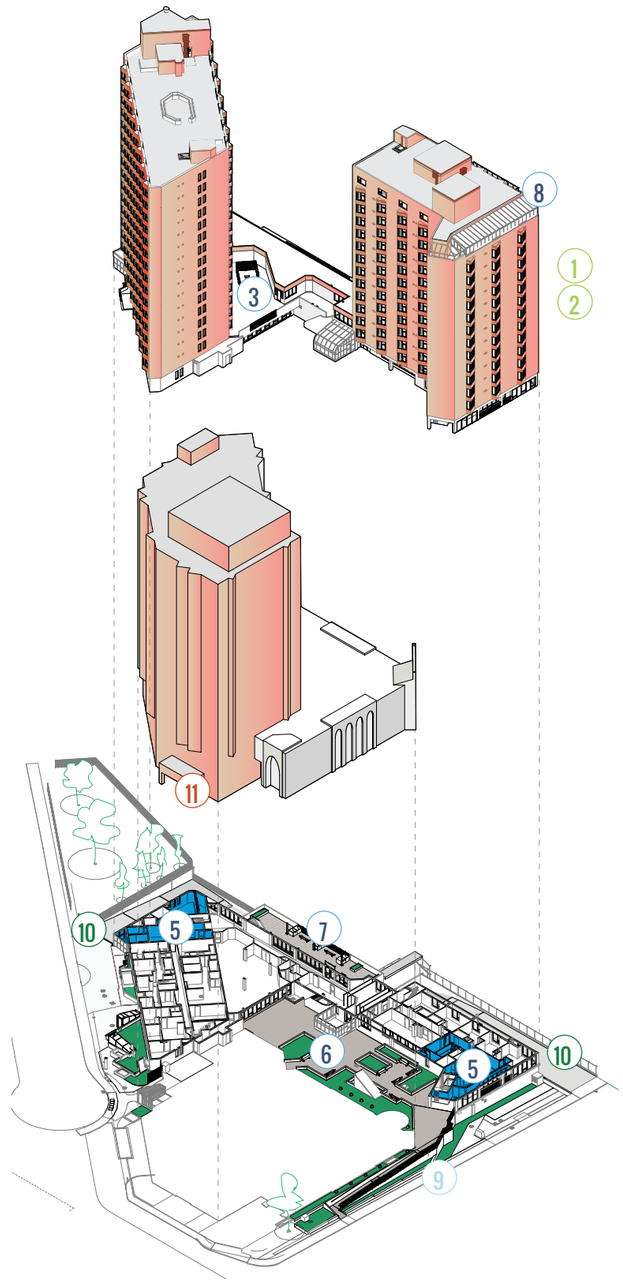
Image:ERA Architects

VARIOUS TORONTO COMMUNITY HOUSING PROJECTS, TORONTO ON
HOLISTIC RETROFITS WITH RESIDENTS IN PLACE
VARIOUS


EGLINTON AVENUE WEST
VAUGHAN ROAD
DUFFERIN STREET

ST HILDA'S **CAMPUS UPDATED**





ENVELOPE

1. New Windows
2. Repair to Existing Masonry

AMENITIES SPACES

5. Modernization Lobbies
6. Updated Courtyard
7. Updated Share Space Terrace
8. Updated Roof Amenities

ACCESSIBILITY

9. Existing Ramp Update - Improve access to Courtyard and Dufferin Main Entrance

STATE OF REPAIR

10. Repair in Underground parking

FUTURE UPDATES

11. Future New main Entrance for Campus

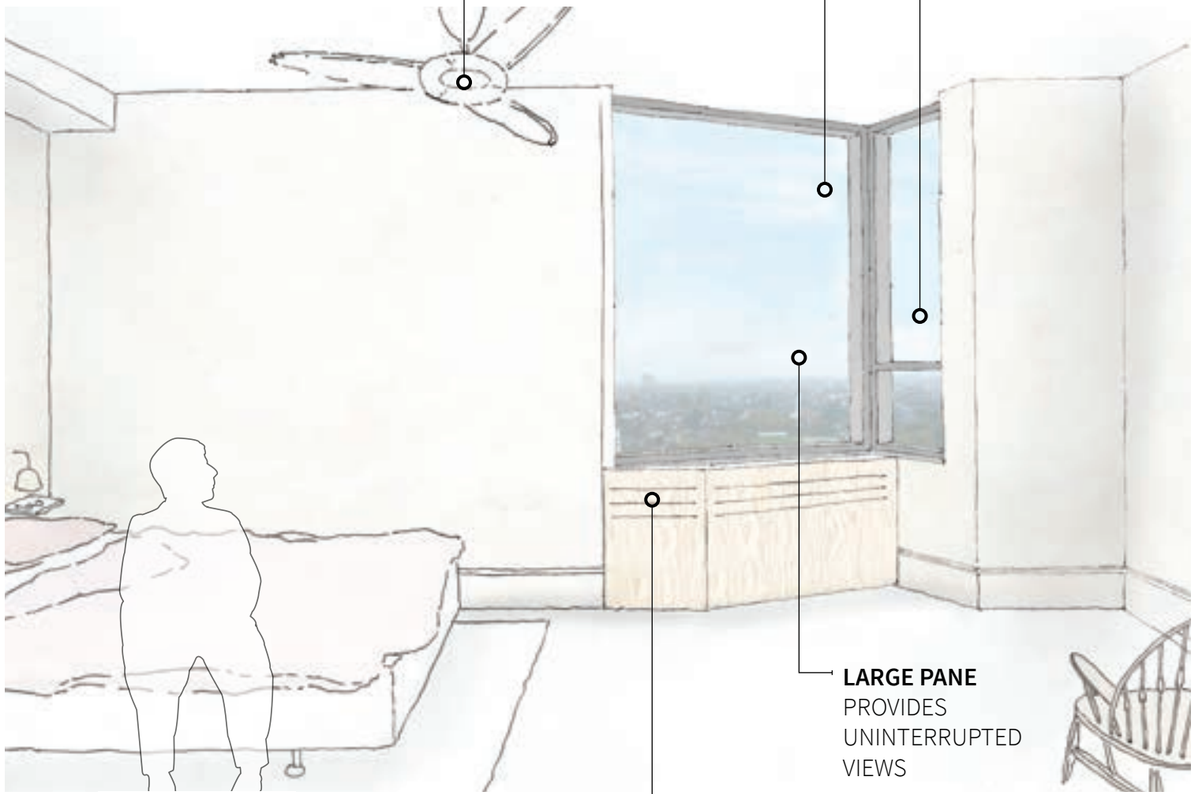

1703

UNIT ENHANCEMENTS: STUDIO & 1-BEDROOM

NEW CEILING FAN AND WINDOW SHADES PROVIDE LOW-ENERGY COOLING FOR ENHANCED COMFORT

HIGH PERFORMANCE WINDOWS UPGRADE ENVIRONMENTAL CONTROL AND REDUCE HEATING COSTS

NEW WINDOWS PROVIDE **GREATER OPERABILITY AND RESIDENT CONTROL**



LARGE PANE PROVIDES UNINTERRUPTED VIEWS

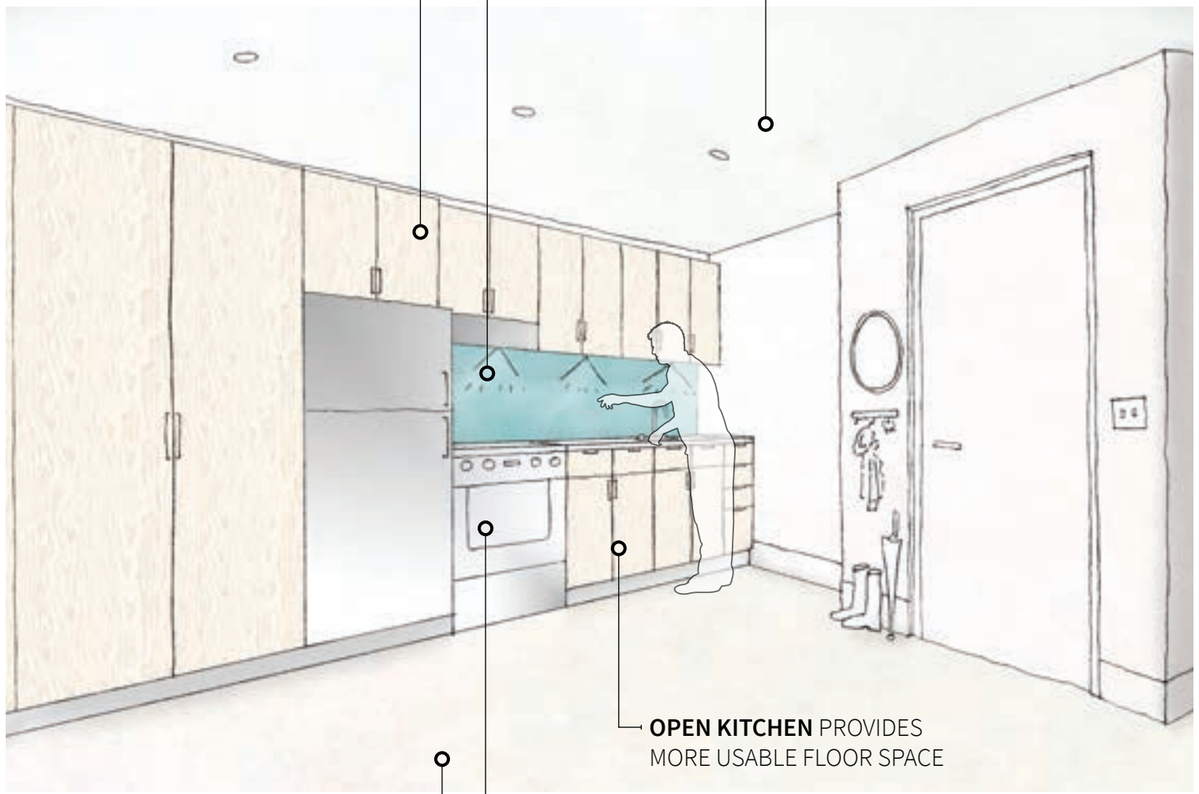
UPGRADED COOLING AND HEATING SYSTEM IMPROVES RESIDENT COMFORT AND CONTROL

View of Typical Suite Bedroom

EXPANDED MILLWORK PROVIDES IMPROVED STORAGE AND ALLOWS FOR MORE OPEN SUITE LAYOUT AND GREATER FLEXIBILITY

ROBUST COUNTERTOP AND BACKSPLASH EXTEND LIFESPAN OF FINISHES

REFINED LIGHTING PROVIDES WARMTH AND INTIMACY

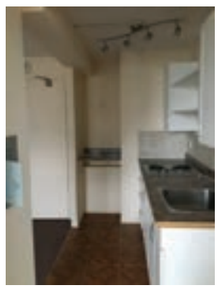


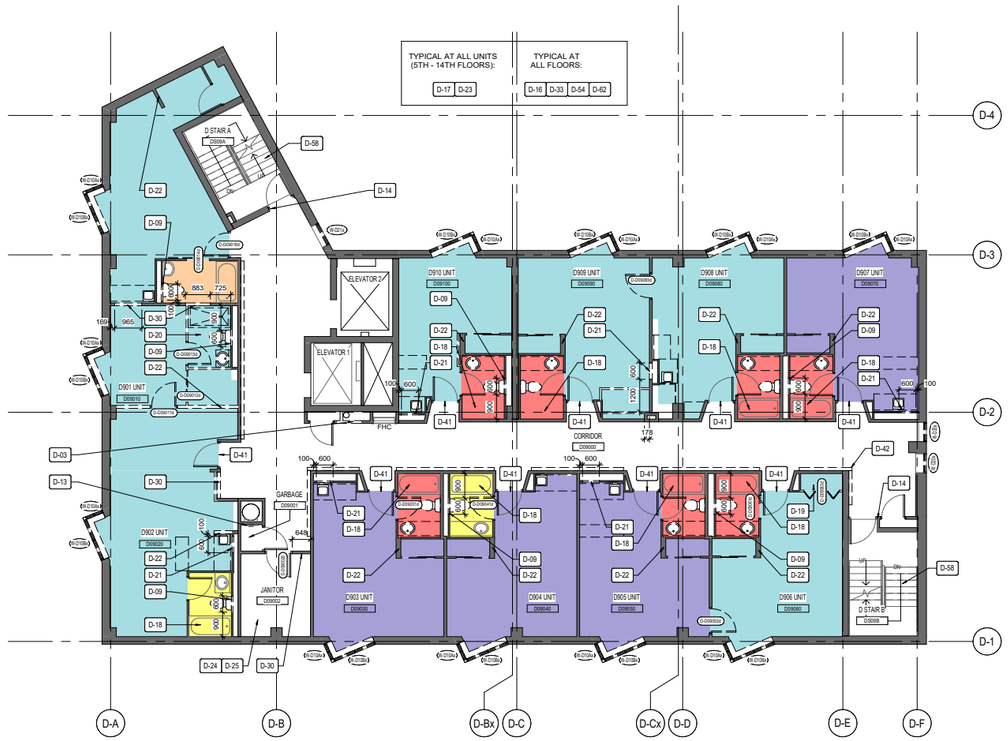
OPEN KITCHEN PROVIDES MORE USABLE FLOOR SPACE

UPGRADED FLOORING IMPROVES HYGIENE AND DURABILITY

LOW ENERGY APPLIANCES REDUCE OPERATIONAL COSTS

View of Typical Suite Kitchen





Dufferin 9th Floor Demolition

1 : 100

2 A-207D

D-Level 09 - Corridor - Levels of Retrofit and Site Audit Schedule

Room Name	Existing Flooring Material	Condition	Wall Condition	Ceiling Condition	Handrail Condition
CORRIDOR	Carpet	F4	B	A1	CH1

D-Level 09 - Main Room - Levels of Retrofit and Site Audit Schedule

Room Name	Existing Room Numbers	Level of Retrofit	Existing Flooring Material	Condition	Existing Wall Condition	Existing Ceiling Condition
D901 BEDROOM	D904	L2M	Vinyl Plank	F1	A	A1
D901 LIVING	D905	L2M	Vinyl Plank	F1	C	C1
D902 BEDSITTING	D906	L2M	Vinyl Plank	F1	C	C1
D903 BEDSITTING	D907	L1M	Vinyl Plank	F1	A	A1
D904 BEDSITTING	D908	L1M	Vinyl Plank	F1	A	A1
D905 BEDSITTING	D909	L1M	Vinyl Plank	F1	A	A1
D906 BEDSITTING	D910	L2M	Vinyl Plank	F1	A	A1
D907 BEDSITTING	D911	L1M	Vinyl Plank	F1	A	A1
D908 BEDSITTING	D912	L2M	Carpet	F4	C	C1
D909 BEDSITTING	D913	L2M	Carpet	F4	C	C1
D910 BEDSITTING	D914	L2M	Carpet	F4	C	A1

D-Level 09 - WC - Levels of Retrofit and Site Audit Schedule

Room Name	Existing Room Numbers	Level of Retrofit	Existing Flooring Material	Condition	Existing Wall Condition	Existing Ceiling Condition	Tub/Shower Condition	Sink and Vanity Condition
D901 WC	D904	L1W	Resilient Sheet	F1	A	A1	Acceptable	Acceptable
D902 WC	D906	L3W	Tile	F2	D	C1	Acceptable	Acceptable
D903 WC	D907	L2W	Tile	F4	A	A1	Minor Damage	Worn Out
D904 WC	D908	L3W	Tile	F1	A	A1	Minor Damage	Acceptable
D905 WC	D909	L2W	Tile	F4	A	A1	Acceptable	Worn Out
D906 WC	D910	L2W	Tile	F4	A	A1	Minor Damage	Worn Out
D907 WC	D911	L2W	Tile	F4	A	A1	Acceptable	Replace
D908 WC	D912	L2W	Tile	F4	A	A1	Minor Damage	Worn Out
D909 WC	D913	L2W	Tile	F4	A	A1	Minor Damage	Replace
D910 WC	D914	L2W	Tile	F1	A	T1	Minor Damage	Replace

D-Level 08 - Corridor - Levels of Retrofit and Site Audit Schedule

Room Name	Existing Flooring Material	Condition	Wall Condition	Ceiling Condition	Handrail Condition
CORRIDOR	Carpet	F4	C	C1	QH1

D-Level 08 - Main Room - Levels of Retrofit and Site Audit Schedule

Room Name	Existing Room Numbers	Level of Retrofit	Existing Flooring Material	Condition	Existing Wall Condition	Existing Ceiling Condition
D801 BEDROOM	D804	L2M	Carpet	F4	A	A1
D801 LIVING	D805	L2M	Vinyl Plank	F1	A	A1
D802 BEDSITTING	D806	L1M	Vinyl Plank	F1	A	A1
D803 BEDSITTING	D807	L1M	Vinyl Plank	F1	A	A1
D804 BEDSITTING	D808	L1M	Vinyl Plank	F1	D	C1
D805 BEDSITTING	D809	L1M	Vinyl Plank	F1	D	C1
D806 BEDSITTING	D810	L1M	Vinyl Plank	F1	C	A1
D807 BEDSITTING	D811	L2M	Carpet	F4	B	A1
D808 BEDSITTING	D812	L2M	Carpet	F4	B	A1
D809 BEDSITTING	D813	L1M	Vinyl Plank	F1	D	A1
D810 BEDSITTING	D814	L1M	Vinyl Plank	F1	A	A1

D-Level 08 - WC - Levels of Retrofit and Site Audit Schedule

Room Name	Existing Room Numbers	Level of Retrofit	Existing Flooring Material	Condition	Existing Wall Condition	Existing Ceiling Condition	Tub/Shower Condition	Sink and Vanity Condition
D801 WC	D804	L1W	Tile	F2	E	A1	Acceptable	Acceptable
D802 WC	D805	L1W	Tile	F3	A	A1	Acceptable	Acceptable
D803 WC	D807	L1W	Tile	F1	A	A1	Acceptable	Acceptable
D804 WC	D808	L2W	Tile	F1	A	A1	Acceptable	Worn Out
D805 WC	D809	L1W	Resilient Sheet	F1	C	A1	Minor Damage	Acceptable
D806 WC	D810	L2W	Tile	F1	A	A1	Acceptable	Worn Out
D807 WC	D811	L1W	Tile	F2	C	C1	Acceptable	Acceptable
D808 WC	D812	L2W	Tile	F1	A	A1	Acceptable	Worn Out
D809 WC	D813	L2W	Tile	F3	A	G1	Acceptable	
D810 WC	D814	L2W	Tile	F2	A	A1	Acceptable	Replace

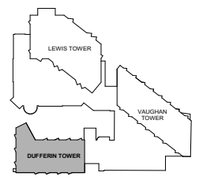
Dufferin 8th Floor Demolition

1 : 100

1 A-207D

DEMOLITION NOTES - DUFFERIN TOWER

NOTE NO.	NOTE CONTENT
D-01	RESERVED
D-02	RESERVED
D-03	PROVIDE NEW WALL OPENING, APPROX. 600 mm WIDE x FULL HEIGHT OF WALL TYPICAL FROM DUFFERIN GROUND FLOOR TO 15TH FLOOR. VERIFY EXACT SIZE AND LOCATION WITH MECHANICAL AND STRUCTURAL.
D-04	FOR EXTENT OF WORK, REFER TO ELECTRICAL.
D-05	FOR EXTENT OF WORK REFER TO ELECTRICAL AND MECHANICAL.
D-06	RESERVED
D-07	DEMOLISH WASHROOM AND CLOSET WALLS, DOORS, FRAMES AND HARDWARE. DEMOLISH KITCHEN MILLWORK, APPLIANCES AND LIGHT FIXTURES. DEMOLISH WASHROOM PLUMBING FIXTURES, ACCESSORIES, BASEBOARD AND WALL HEATER. DEMOLISH WASHROOM LIGHT FIXTURES. DEMOLISH ALL FINISHES BACK TO DRYWALL SUBSTRATE AND CONCRETE FLOOR SLAB. CAP ALL SERVICES, READY FOR NEW FIXTURES. REFER TO ELECTRICAL AND MECHANICAL.
D-08	DEMOLISH BATHROOM AND CLOSET CEILING DRYWALL FINISH. EXISTING CEILING FRAMING TO REMAIN. COORDINATE WITH MECHANICAL AND ELECTRICAL.
D-09	PROVIDE NEW WALL OPENING, APPROX. 600 mm WIDE x FULL HEIGHT OF WALL. COORDINATE WITH MECHANICAL.
D-10	INCREASE WIDTH OF DOOR OPENING. REFER TO DOOR SCHEDULE.
D-11	RESERVED
D-12	DEMOLISH WALLS, DOORS, FRAMES AND HARDWARE, AND ELECTRICAL SERVICES. UTILITY SINK TO REMAIN.
D-13	DEMOLISH GARBAGE CHUTE HATCH. PROVIDE ENOUGH ACCESS TO ACCOMMODATE NEW SPRINKLERS. COORDINATE WITH MECHANICAL.
D-14	DEMOLISH DOOR HARDWARE AT EXIT STAIR DOORS. EXISTING DOORS AND FRAMES TO REMAIN. REFER TO DOOR SCHEDULE.
D-15	DEMOLISH CORRIDOR DOORS, INCLUDING FRAME AND HARDWARE.
D-16	DEMOLISH ALL WINDOWS, INCLUDING GLAZING, FRAME AND ASSOCIATED FASTENINGS, FLASHINGS, BLOCKING AND HARDWARE, INCLUDING CEILING AND WALL FINISHES TO EXPOSE THE SUBSTRATE AT THE ROUGH OPENING. REFER TO WINDOW SCHEDULE.
D-17	FOR EXTENT OF BATHTUB AND SINK REPAIRS REFER TO LEVELS OF RETROFIT AND SITE AUDIT SCHEDULES. COORDINATE WITH MECHANICAL.
D-18	FOR EXTENT OF BATHTUB AND SINK REPAIRS REFER TO LEVELS OF RETROFIT AND SITE AUDIT SCHEDULES. COORDINATE WITH MECHANICAL.
D-19	DEMOLISH CLOSET DOORS, FRAME AND HARDWARE, INCLUDING WALLS TO SLAB ABOVE.
D-20	DEMOLISH WASHROOM DOOR, FRAME AND HARDWARE, INCLUDING WALLS TO SLAB ABOVE. DEMOLISH ALL FIXTURES AND FINISHES BACK TO DRYWALL SUBSTRATE, CAP ALL SERVICES, READY FOR NEW FIXTURES. REFER TO ELECTRICAL AND MECHANICAL.
D-21	PROVIDE NEW WALL OPENING, APPROX. 600 mm WIDE X 600 mm HIGH. COORDINATE WITH MECHANICAL.
D-22	PATCH AND MAKE GOOD DRYWALL AT RELOCATED ELECTRICAL PANEL LOCATION. REFER TO ELECTRICAL.
D-23	FOR EXTENT OF ELECTRICAL BASEBOARD HEATERS, TYPICAL AT 5TH TO 14TH LEVELS. COORDINATE WITH ELECTRICAL.
D-24	RESERVED
D-25	RESERVED
D-26	DEMOLISH DOOR, FRAME AND HARDWARE. REFER TO DOOR SCHEDULE.
D-27	SALVAGE EXISTING ROOF BALLAST AND PAVERS FOR REINSTALLATION. DEMOLISH ROOF MEMBRANE AND INSULATION BACK TO STRUCTURAL SUBSTRATE. REFER TO STRUCTURAL FOR EXTENT OF ROOF SLAB REPAIR.
D-28	RESERVED
D-29	FOR EXTENT OF DEMOLITION OF MECHANICAL AND ELECTRICAL EQUIPMENT, REFER TO MECHANICAL AND ELECTRICAL. FOLLOWING REMOVAL OF SELECTED EQUIPMENT PROTECT OPENINGS AND PREPARE FOR NEW ROOFING ASSEMBLY.
D-30	PROVIDE NEW OPENING FOR NEW DOOR. REFER TO DOOR SCHEDULE.
D-31	PROVIDE WALL OPENING BELOW WINDOW SILL, APPROX. 1800 mm WIDE X 305 mm HIGH.
D-32	EXISTING GLAZING STRUCTURE TO REMAIN. DEMOLISH GLAZED ROOF, FLOORING FINISH AND INTERIOR DRYWALL WALL DOWN TO THE FLOOR, PREPARE EXISTING STEEL STRUCTURE TO RECEIVE INTUMESCENT COATING. DEMOLISH PARTIALLY EXTERIOR WALLS AT 610 MM TO ACCOMMODATE NEW WINDOWS. REFER TO ELEVATIONS. COORDINATE WITH STRUCTURAL AND ELECTRICAL.
D-33	EXISTING FIRE HOSE CABINETS TO REMAIN. REFER TO MECHANICAL.
D-34	FOR EXTENT OF FINISHES AND SERVICES REMOVALS FOR CONCRETE REPAIRS, REFER TO LANDSCAPE, STRUCTURAL AND ELECTRICAL.
D-35	DEMOLISH CEILING AND FLOOR FINISHES. FOR EXTENT OF SERVICES COORDINATE WITH MECHANICAL AND ELECTRICAL. REMOVE AND SALVAGE LAUNDRY MACHINES.
D-36	DEMOLISH WALLS, RECEPTION DESK, FLOOR AND CEILING FINISHES, LIGHT FIXTURES, BASEBOARDS, HEATERS. REFER TO ELECTRICAL AND MECHANICAL.
D-37	PROVIDE NEW PEDIMAT FOOTPRINT. REMOVE EXISTING FLOOR FINISHES AND GRIND EXISTING FLOOR SLAB AS REQUIRED TO RECEIS NEW MATS 25 MM (APPROX.)
D-38	DEMOLISH EXTERIOR GUARDRAILS. FLOOR FINISH. EXISTING LIGHTING FIXTURES AND BUILDING SIGN. MAKE GOOD SURFACE. REFER TO LANDSCAPE.
D-39	FOR EXTENT OF DEMOLITION SCOPE, REFER TO LANDSCAPE.
D-40	CORE NEW PENETRATIONS THRU STRUCTURAL CONCRETE FLOOR SLAB FOR NEW SHOWER AND TOILET DRAINS FROM 2ND TO 4TH FLOORS. ADJUST EXISTING TUB DRAIN FOR REUSE AS A FLOOR DRAIN. COORDINATE WITH MECHANICAL AND STRUCTURAL.
D-41	REMOVE EXISTING DOOR THRESHOLD.
D-42	REMOVE CARPETING AN SAND OFF GLUE FROM WOOD HANDRAILS. DEMOLISH INTEGRATED LIGHTING FIXTURE AND MAKE READY FOR LIKE-FOR-LIKE FIXTURE REPLACEMENT. REFER TO ELECTRICAL.
D-43	FOLLOWING REMOVAL OF INTERIOR FINISHES AT SUITES, PREPARE SURFACE TO PROVIDE FIRESTOP SEALANT AT JUNCTION BETWEEN EXISTING WALL AND FLOOR SLAB. ASSUME 80% OCCURRENCE FOR COSTING.
D-44	DEMOLISH CEILING AS INDICATED BY HATCH PATTERN. FOR EXTENT OF DEMOLITION OR RELOCATION OF LIGHTING FIXTURES, FIRE ALARM DEVICES AND SPRINKLERS. REFER TO MECHANICAL AND ELECTRICAL.
D-45	PROVIDE NEW CEILING OPENINGS ON EACH SIDE ON THE COMPARTMENT DOORS, APPROX. 300 mm WIDE x 300 mm HIGH FOR REMOVAL OF DOOR CONNECTION. COORDINATE WITH ELECTRICAL.
D-46	FOR EXTENT OF REMOVAL OF EXISTING WALL-MOUNTED AND CEILING MOUNTED LIGHT FIXTURES, REFER TO ELECTRICAL.
D-47	FOR EXTENT OF FIRE ALARM SCOPE, REFER TO ELECTRICAL.
D-48	RECONFIGURE EXISTING SPRINKLERS TO SUIT NEW SPACE LAYOUT. REFER TO MECHANICAL.
D-49	FOR EXTENT OF DUCTWORK AND PIPING DEMOLITION, REFER TO MECHANICAL.
D-50	EXISTING SECURITY CAMERAS TO REMAIN.
D-51	DEMOLISH DROPPED CEILING/BULKHEAD AS DENOTED BY HATCH, INCLUDING EXHAUST FANS AND OTHER CEILING-MOUNTED EQUIPMENT. PATCH AND MAKE GOOD ADJACENT FINISHES.
D-52	DEMOLISH BOTTOM PORTION OF CORRIDOR BULKHEAD ONLY TO ALLOW ENLARGEMENT OF DOOR OPENING. REFER TO INTERIOR DETAILS.
D-53	DEMOLISH SUSPENDED DRYWALL CEILING/BULKHEAD AS DENOTED BY HATCH, INCLUDING FIRE ALARM DEVICES, LIGHTING FIXTURES, SPRINKLERS TO BE ADJUSTED TO NEW CEILING LAYOUT. REFER TO MECHANICAL AND ELECTRICAL.
D-54	REMOVE STAIRWELL NUMBERING, ELEVATOR FLOOR NUMBERING AND SUITE NUMBERING WAYFINDING SIGNAGE, INCLUDING ADHESIVES AND MECHANICAL FASTENING. MAKE GOOD SUBSTRATE.
D-55	DEMOLISH INTERIOR WALL, INCLUDING DOORS, FRAME AND HARDWARE.
D-56	REMOVE EXISTING FIRE ALARM ANNUNCIATOR PANEL. NEW TO BE PROVIDED. PATCH AND REPAIR FINISHES. COORDINATE WITH ELECTRICAL.
D-57	IF RISERS AND SERVICES ARE FOUND DURING DEMOLITION OF PARTITION, COORDINATE WITH CONSULTANTS: ARCHITECTURE, STRUCTURAL, MECHANICAL AND ELECTRICAL.
D-58	FOR SCOPE OF WORK AT STAIRWELLS REFER TO DRAWINGS SERIES A-000.
D-59	REMOVE EXISTING PARAPET FLASHING.
D-60	REMOVE EXISTING PARAPET WOOD BLOCKING AND FLASHING.
D-61	DEMOLISH EXISTING ROOF DRAINS. COVER AND PROTECT OPENING. NEW TO BE PROVIDED. COORDINATE WITH MECHANICAL.
D-62	PROVIDE NEW PAINT COATING TO ALL EXISTING OPAQUE DOORS. COVER AND PROTECT HARDWARE.
D-63	EXISTING CEILING AND LIGHTING FIXTURES TO REMAIN.



Key Plan

NO.	DATE	REVISION / ISSUANCE
1	2020-10-26	Issued for Tender 26 October 2020

NOT FOR CONSTRUCTION

LEGEND

- EXISTING
- DEMOLITION
- BULKHEAD ABOVE
- AREA OUT OF SCOPE
- DEMOLITION OF ROOF

LEVEL OF RETROFIT

MAIN ROOM

- L1M - **MINIMUM** FIT-OUT: ERV/VRF; LIGHTING UPGRADE; FIRE ALARM UPGRADE; CEILING FAN; NEW WINDOW; PAINT (INCL. PATCHING OF SMALL HOLES); NEW KITCHEN (INCL. LOCALIZED FLOORING REPLACEMENT, MILLWORK, PLUMBING FIXTURES)
- L2M - **MAXIMUM** FIT-OUT: ERV/VRF; LIGHTING UPGRADE; FIRE ALARM UPGRADE; CEILING FAN; NEW WINDOW; PAINT (INCL. PATCHING OF SMALL HOLES); NEW KITCHEN (INCL. LOCALIZED FLOORING REPLACEMENT, MILLWORK, PLUMBING FIXTURES); *NEW FLOORING*; *LOCALIZED DRYWALL REPAIRS*

WC

- L3W - **MINIMUM** FIT-OUT: FAUCETS; SHOWER ACCESSORIES; TUB CUT-OUT ADDITION; LIGHTING UPGRADE; ACRYLIC TUB SURROUND
- L1W - **MEDIUM** FIT-OUT: FAUCETS; SHOWER ACCESSORIES; TOILET REPLACEMENT; RE-ENAMEL TUB AND ADD CUT-OUT; LIGHTING UPGRADE; ACRYLIC TUB SURROUND
- L2W - **MAXIMUM** FIT-OUT: FAUCETS; SHOWER ACCESSORIES; TOILET REPLACEMENT; LIGHTING UPGRADE; *NEW FLOORING*; ACRYLIC TUB SURROUND; RE-ENAMEL TUB AND ADD CUT-OUT

SURFACE CONDITION KEY

FLOORING

F1 - ACCEPTABLE CONDITION
F2 - STAINED
F3 - CHIPPED
F4 - FULL REPLACEMENT

WALLS AND CEILING

A - ACCEPTABLE
B - PAINT PEELING
C - BUBBLED/CRACKED FINISH
D - MINOR HOLES (1x1", UP TO 5 LOCATIONS)
E - MINOR HOLES (1x1", > 10 LOCATIONS)
F - MINOR HOLES (LESS THAN 12x12")
G - MAJOR DAMAGE (LESS THAN 24x24")
H - MAJOR DAMAGE (LESS THAN 36x36")
I - FULL WALL DAMAGE

NOTES

- FOR REPAIR QUANTITIES, REFER TO DEMOLITION PLANS. IN ADDITION TO SCHEDULED QUANTITIES, PROVIDE UNIT RATES FOR EACH REPAIR TYPE.
- DEMOLITION DRAWINGS TO BE READ IN CONJUNCTION WITH CONTENT ON SHEET A-020D

E.R.A. Architects Inc.
info@eraarch.ca | www.eraarch.ca
T: 416.963.4497 | F: 416.963.8761
625 Church St, Suite 600
Toronto, Ontario, M4Y 2G1

Project

St. Hilda's Residences - Modernization
Project: Dufferin Building

Address	2339 Dufferin St.
For	St. Hilda's Towers Inc.
Project no.	ERA Project No: 17-277-04
Scale at Arch D	As indicated
Drawn by	NB / LG / AK / LM / DM
Reviewed by	GS / YS / BH / MSi / CS

Drawing title

Demolition Plans - Dufferin - 8th & 9th Floors

Sheet no.

A-207D


KEN SOBLE TOWER ENERPHIT
E B A
TOWER RENEWAL PARTNERSHIP
ENTUITIVE
REINBOLD
engineering group
JMV
CONSULTING

CityHousing Hamilton is using Passive House to accelerate social housing transformation by improving financial and social sustainability.

Passive House

- 1x high-rise retrofit
- 2x neighbourhood revitalization
- 4x new builds

Social

- Air quality
- Wellness
- Aging in Place
- Resiliency

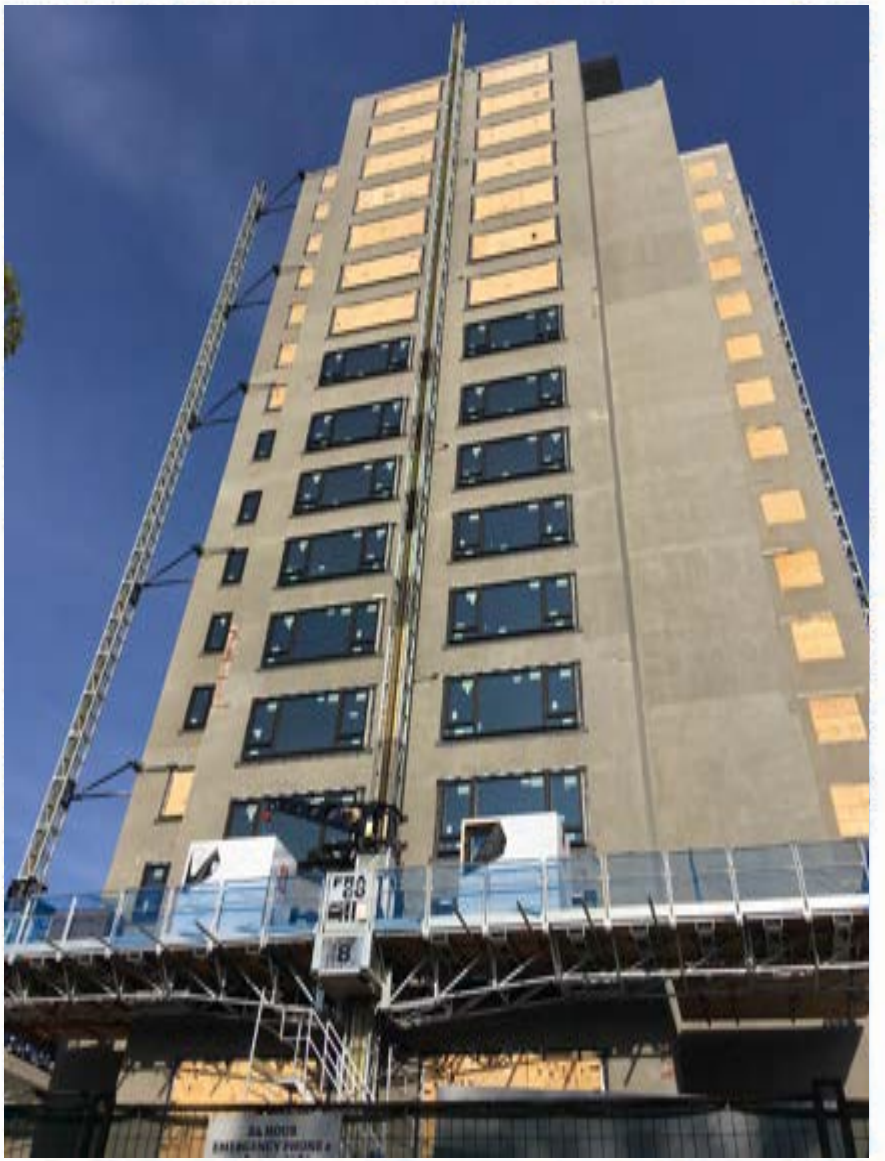
Financial

- Energy
- Maintenance
- Grants

TOWER RENEWAL PARTNERSHIP

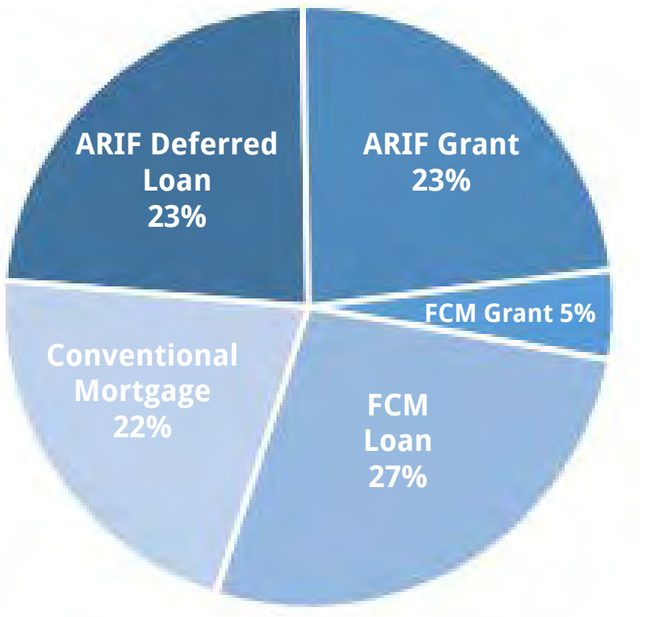
500 MACNAB **1967**

500 MACNAB **2020**



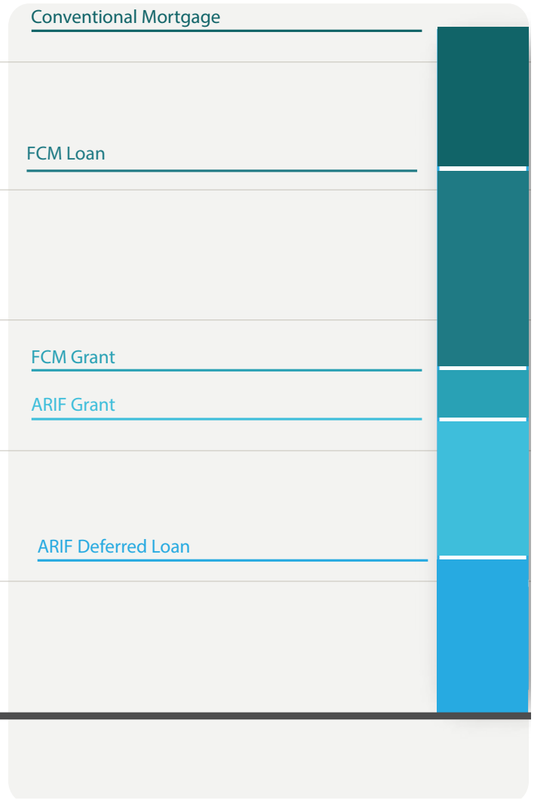
TOWER RENEWAL PARTNERSHIP

FINANCIAL INNOVATION AND SUSTAINABILITY



Source of Funds Breakdown

Project Costs



Financing Structure


50

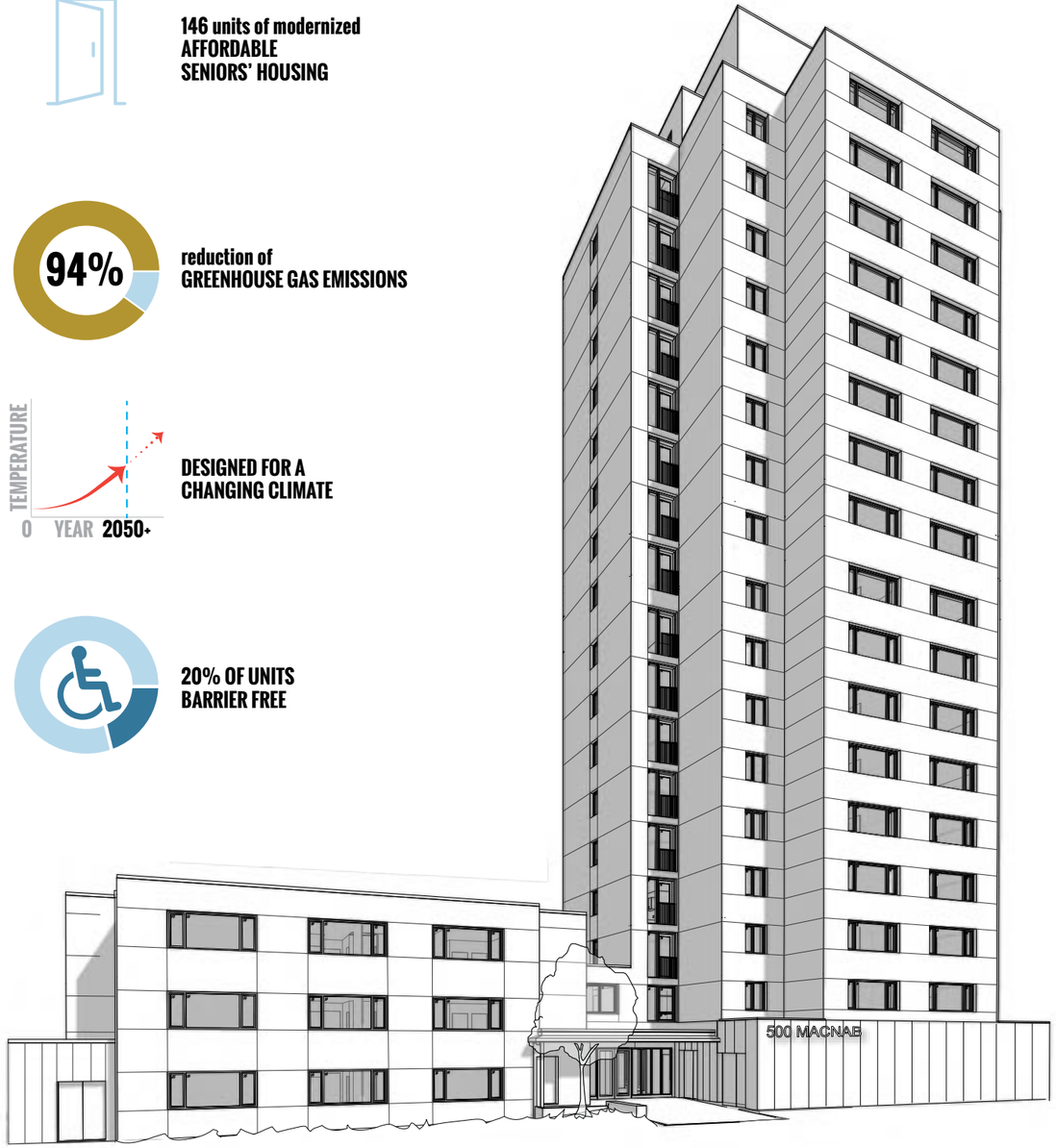
146 units of modernized
AFFORDABLE
SENIORS' HOUSING

94%

reduction of
GREENHOUSE GAS EMISSIONS

DESIGNED FOR A
CHANGING CLIMATE

20% OF UNITS
BARRIER FREE



SYSTEMS

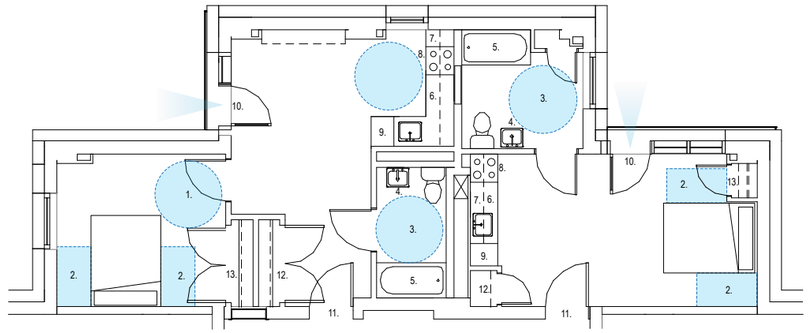
Centralized HVAC with Cooling
Riser Replacements for Most Systems
Full Building Sprinklering

ENVELOPE

R38 Overcladding
Passive House Windows
Juliette Balconies

MODERNIZATION

Accessibility Upgrades
New Community Room and Solarium
Interior Upgrades to Support Aging-in-Place
Rain Gardens and Green Gathering Spaces



TYPICAL BARRIER FREE UNITS - SELECTED ACCESSIBILITY FEATURES*

ACCESSIBLE BEDROOM
1.1500mm diameter turn space
2. A clear floor area of 750x1200mm on two sides of a queen-size bed (CSA 7.4.6)

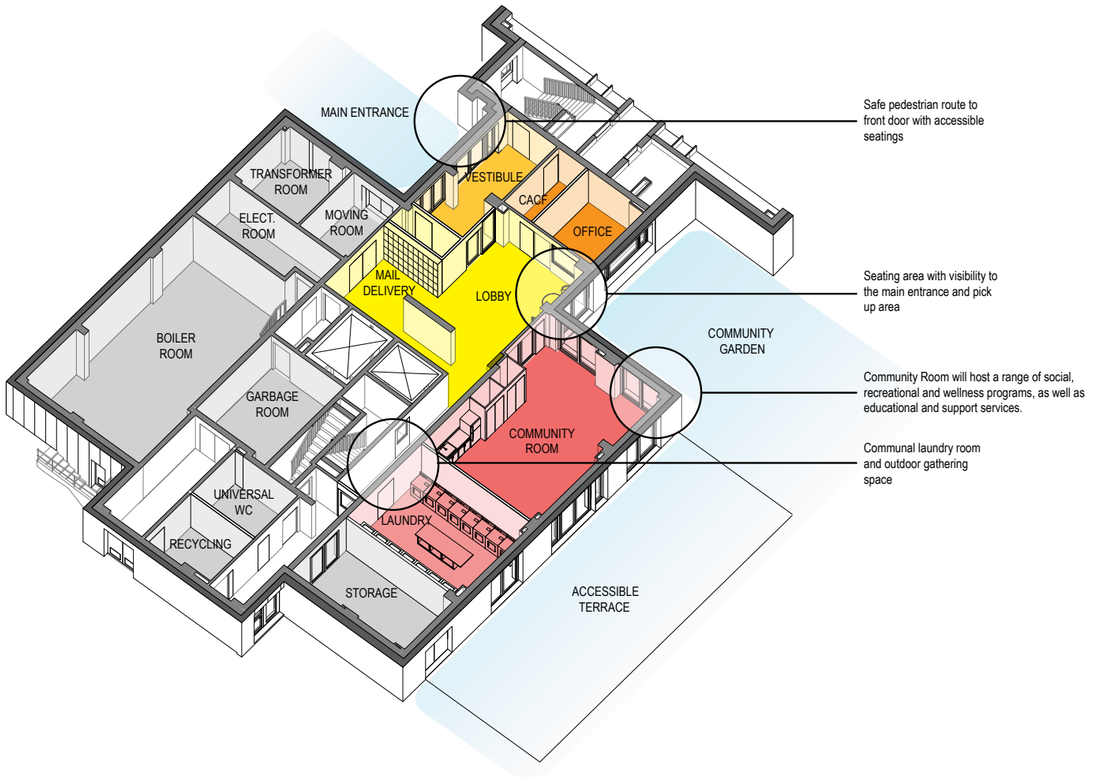
ACCESSIBLE WASHROOM
3. 1500mm diameter turn space and appropriate clearances at bathtubs, toilets, and sinks (CSA 7.4.3.1)
4. Appropriate clearance underneath bathroom sinks (CSA 7.4.3.1)
5. New barrier-free appropriate fixtures and grab-bars

ACCESSIBLE KITCHEN
6. New counter tops at 860mm high, and 600mm deep with appropriate knee clearance underneath. Section of clear counter top 760mm long. (CSA 7.4.4.2)
7. New millwork with at least one shelf at 1100mm high (CSA 7.4.4.9)
8. New kitchen sink and cook top at 860mm high with appropriate clearance under (CSA 7.4.4.4, CSA 7.4.4.6)
9. Refrigerator with freezer shelf-space no more than 1100mm high (CSA 7.4.4.8)

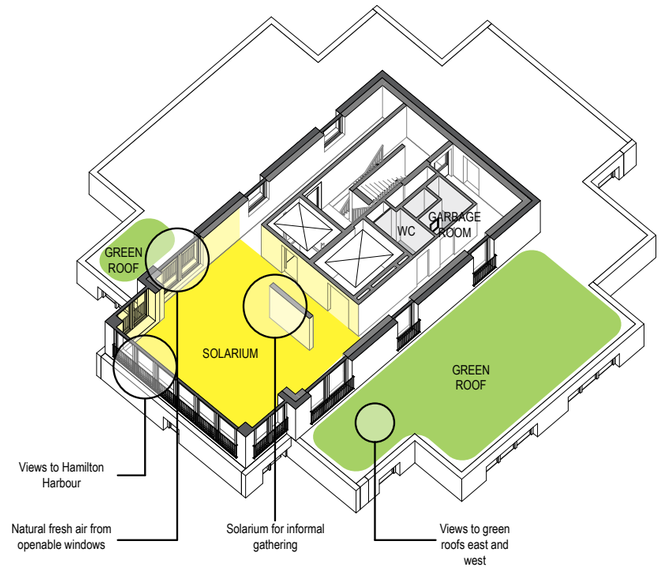
FULL-HEIGHT OPERABLE DOOR to new Juliette Balcony
10. Full door lite allowing exterior views (CSA 7.4.6.2)

ACCESSIBLE DOORS
11. Minimum 860mm clearance and appropriate push and pull side clearances

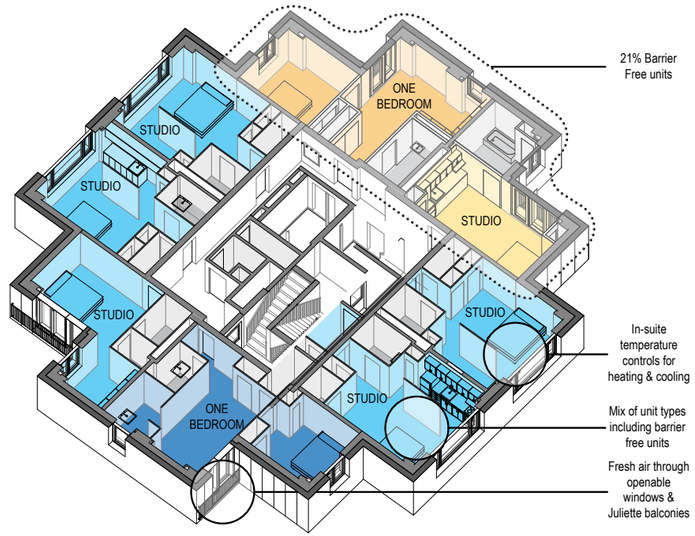
ACCESSIBLE CLOSETS
12. Doors that swing outward (CSA 7.4.6.5)
13. Clothes rails between 1200-1400mm and shelves between 300-1200mm (CSA 7.4.6.4)



PROPOSED GROUND FLOOR



PROPOSED ROOFTOP SOLARIUM

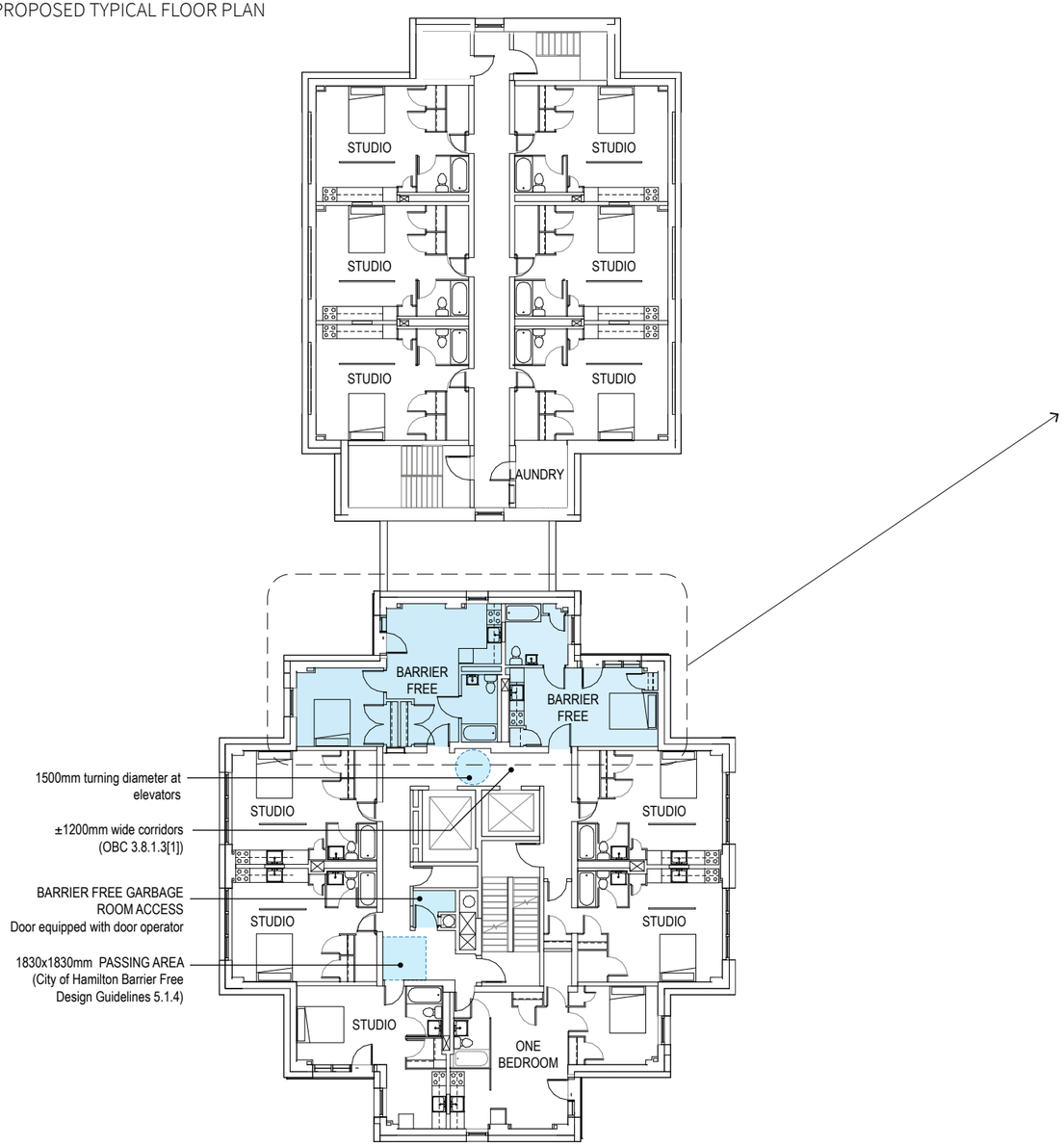


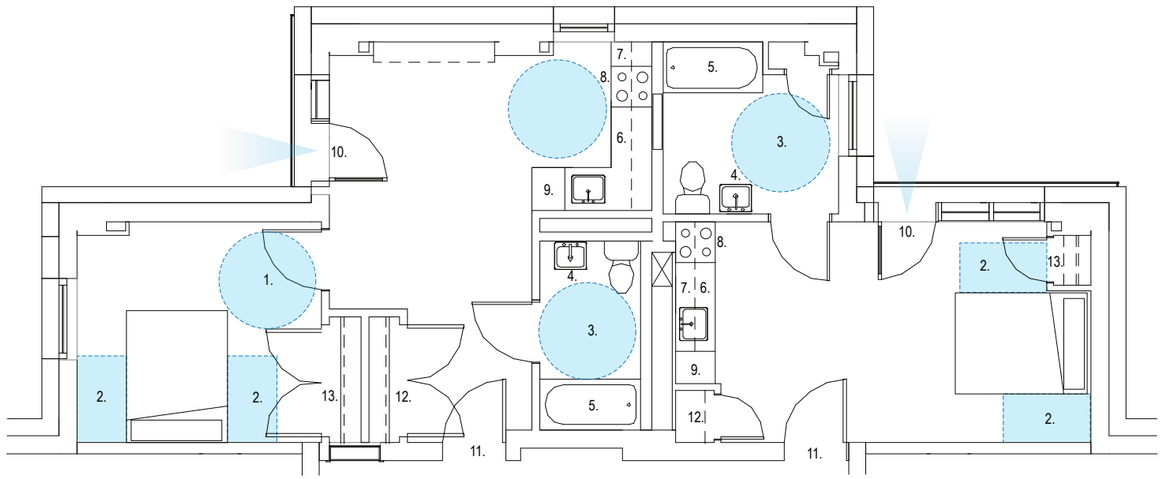
PROPOSED TYPICAL FLOOR

KEN SOBLE TOWER TRANSFORMATION - ACCESSIBILITY REVIEW

500 MacNab Street North

PROPOSED TYPICAL FLOOR PLAN





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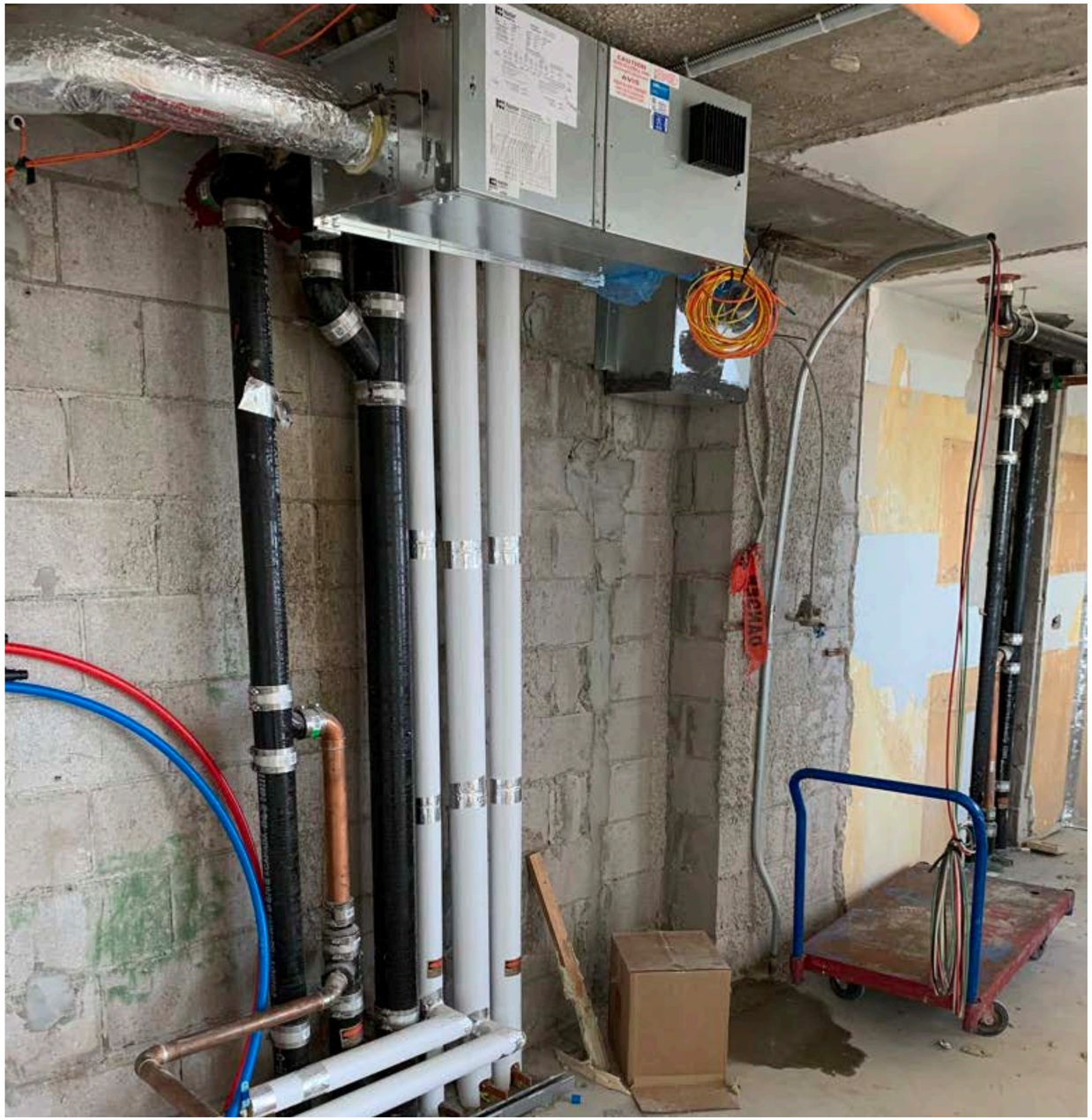
**Accessibility requirements listed above provide a list of the key requirements addressed in this project from the National Housing Strategy Accessibility Requirements for Repairs and Renewals Table A (Technical Criteria for Accessible Dwelling Units) and Table B (Technical Criteria for Barrier-Free Common Areas).*
***Barrier Free requirements are based on the National Housing Strategy Accessibility Requirements for Repairs and Renewals, and also meet all OBC and City of Hamilton Barrier Free Design Guidelines.*

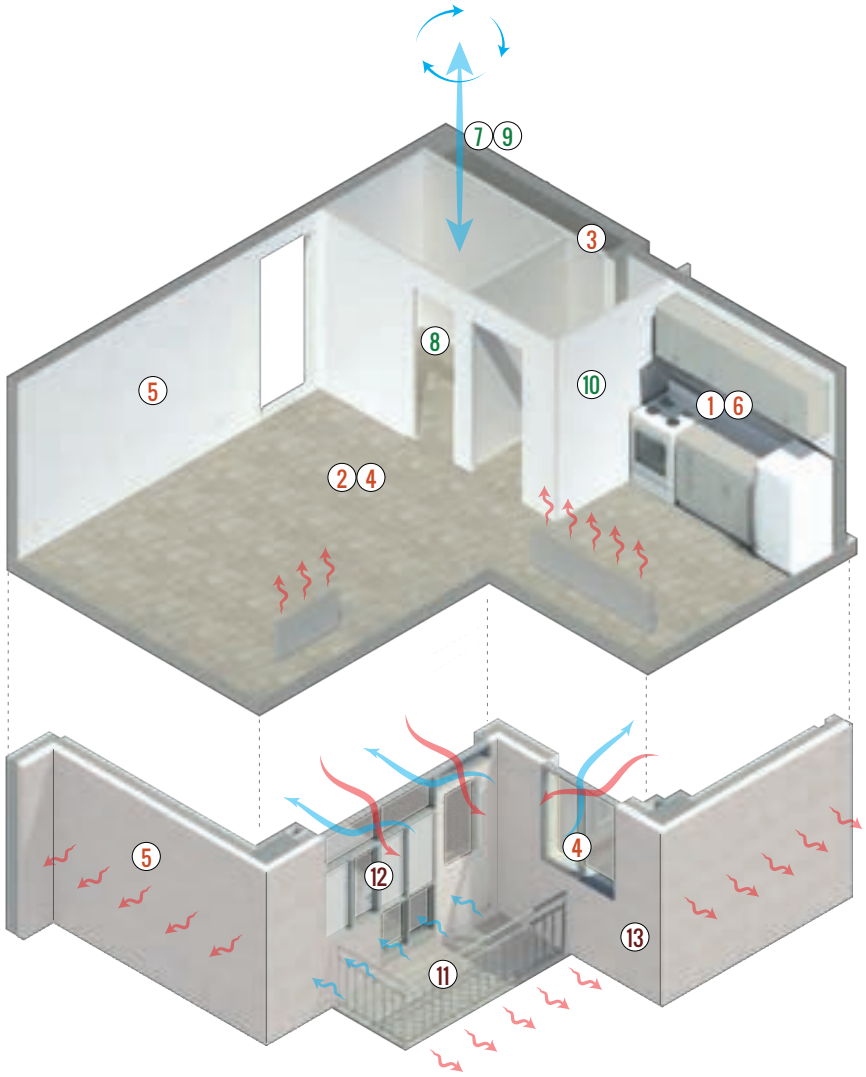
DRAWINGS NOT TO SCALE

ERA

HVAC STRATEGY DIRECT DUCTING



500 MACNAB **BASE CONDITIONS**



INTERIORS

1. Deteriorated fixture, millworks and appliances
2. Deteriorated flooring
3. Holes in fire separations between units
4. Asbestos containing materials
5. Mould remediation required in all interior walls
6. Pervasive pests

SYSTEMS

7. Deteriorated central ductwork
8. Deteriorated plumbing
9. Inadequate ventilation
10. Deteriorated electrical system

ENVELOPE

11. Deteriorated balcony slab edge
12. Deteriorated windows
13. Masonry repairs required
14. Deteriorated roof

TOWER RENEWAL PARTNERSHIP

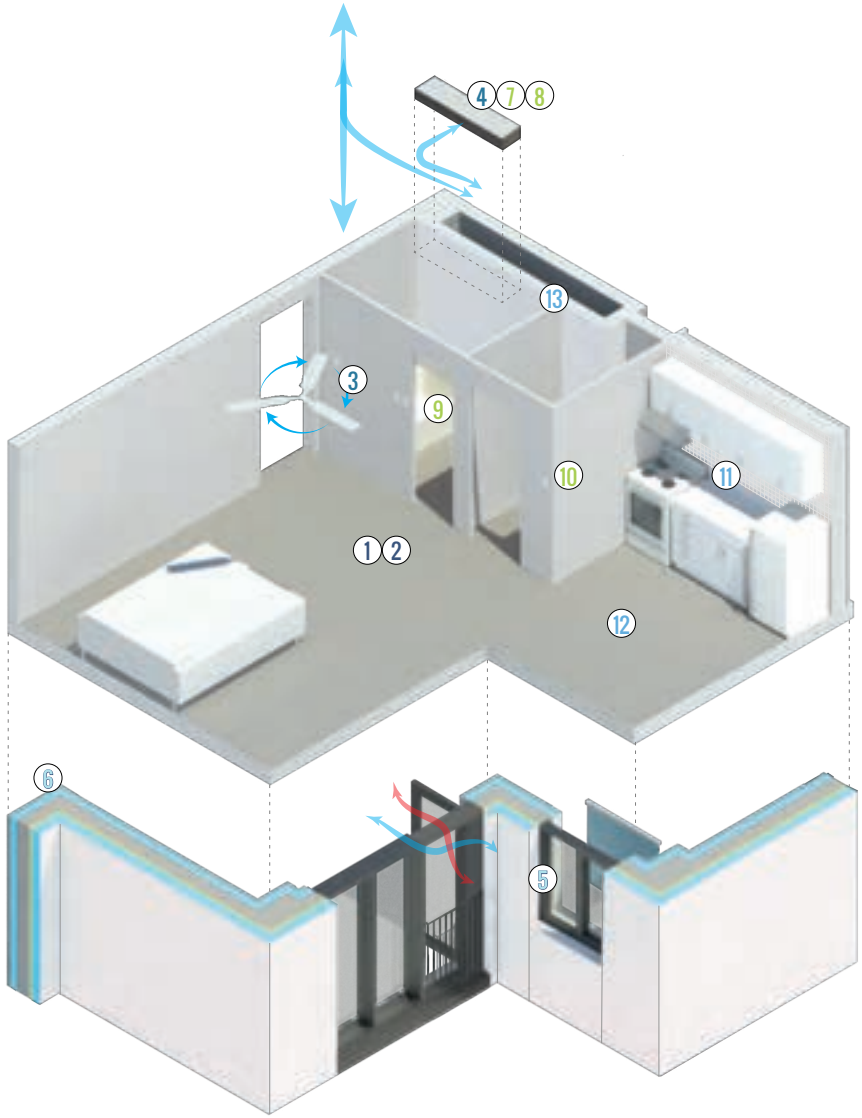
ERA

500 MACNAB **PASSIVE HOUSE RENEWAL**

LIFE SAFETY
① Sprinklers
② New fire alarm system

COMFORT
③ Ceiling fans
④ Central low energy cooling

ENVELOPE
⑤ Triple glazed windows
⑥ Thermally continuous and airtight envelope with exterior and Interior Insulation



SYSTEMS
⑦ Direct ducting for fresh air supply in units with
⑧ Heat recovery
⑨ New plumping system
⑩ Modernized electrical system

UNITS
⑪ New kitchen
⑫ New flooring
⑬ Repair of walls for continuous fire separations between units

BUILDING AMENITY
⑭ New community space at base and penthouse
⑮ New laundry facility
⑯ Modernized landscape

STATE OF REPAIR
⑰ All state of repair issues addressed to achieve 30 year plus asset renewal

TOWER RENEWAL PARTNERSHIP

ERA

500 MACNAB **PASSIVE HOUSE RENEWAL: ACCESSIBLE UNITS**

ACCESSIBILITY

Ⓐ 20% of units fully accessible with new washrooms and kitchens meeting CSA standard

LIFE SAFETY

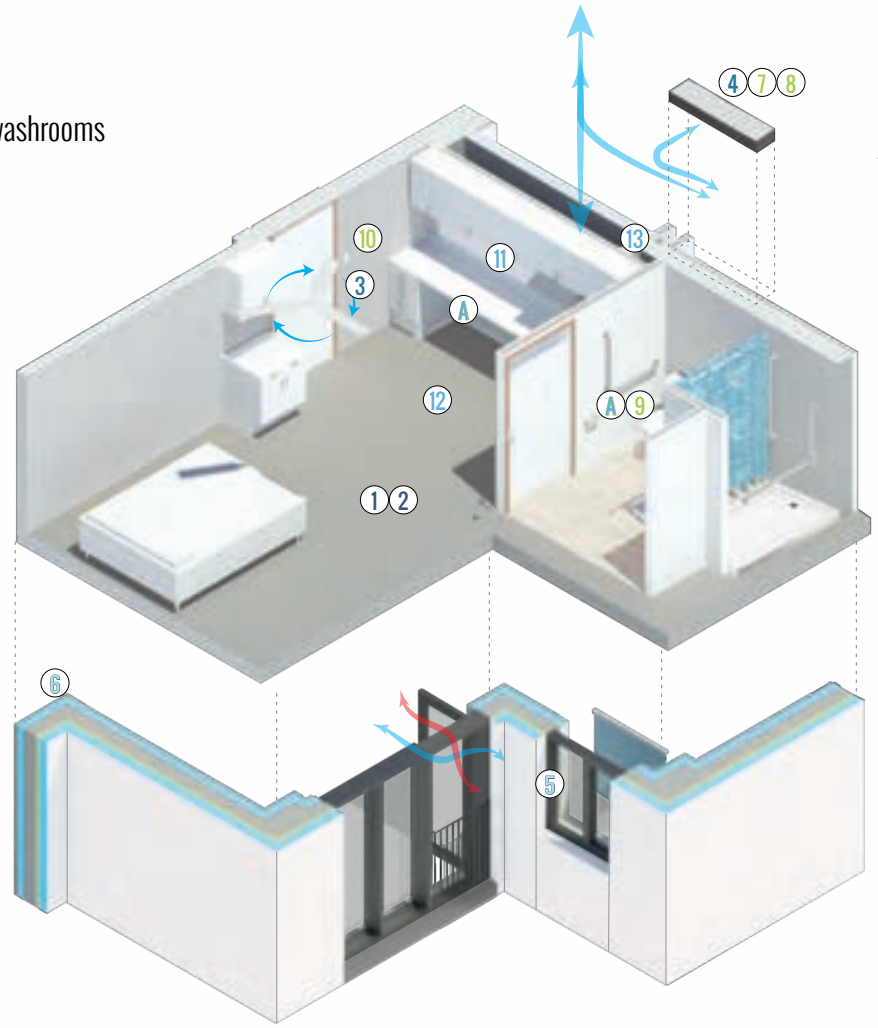
① Sprinklers
② New fire alarm system

COMFORT

③ Ceiling fans
④ Central low energy cooling

ENVELOPE

⑤ Triple glazed windows
⑥ Thermally continuous and airtight envelope with exterior and Interior Insulation



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TOWER RENEWAL PARTNERSHIP

ERA

BRIGHT, CLEAN SUITES PROVIDE HIGH-QUALITY, HEALTHY AND SECURE HOUSING (DOUBLESPACE PHOTOGRAPHY)

Modernized HVAC Systems

Centralized air-source heat pumps and ERV

Addition of active cooling

Direct ducting of primary air heating and cooling

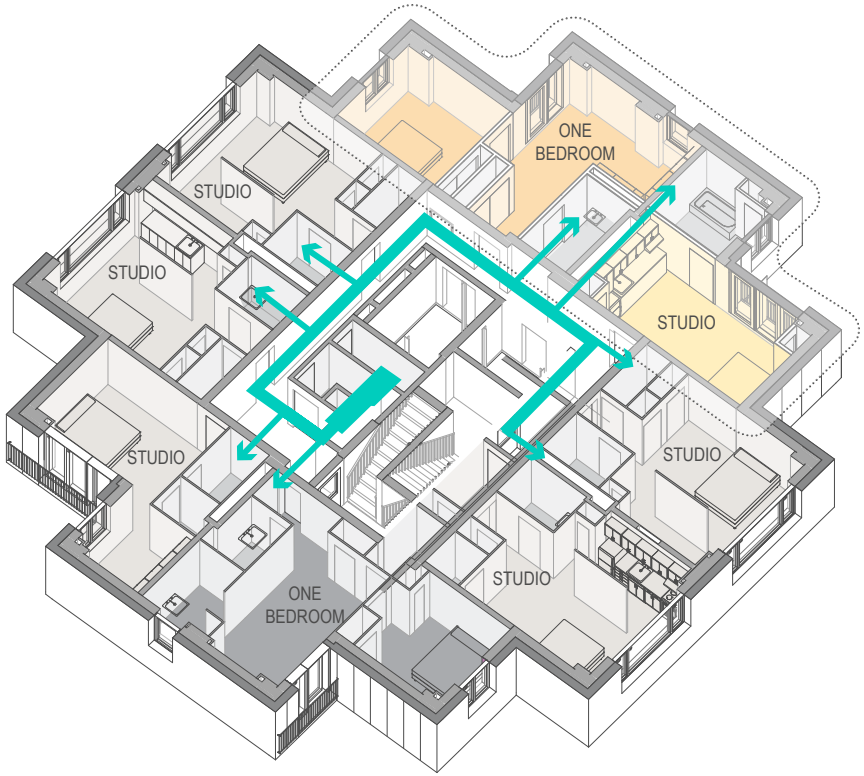
In-suite electric VAVs to allow for variable demand

--

Overall reduction of TEDI* by 89%

Reduction of GHG emissions by 94%

Thermal Energy Demand Intensity



TOWER RENEWAL
PARTNERSHIP

OVERHEATING A PASSIVE HOUSE CHALLENGE

DYNAMIC THERMAL COMFORT MODELLING

EXTREME WEATHER DAYS

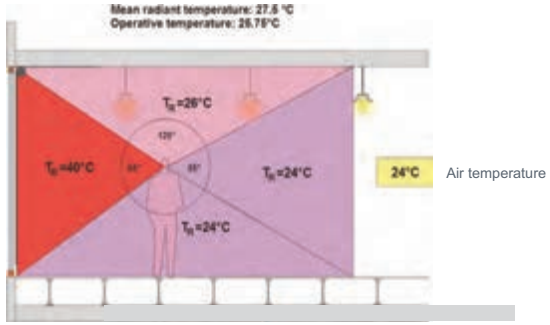
IMG: TRANSSOLAR

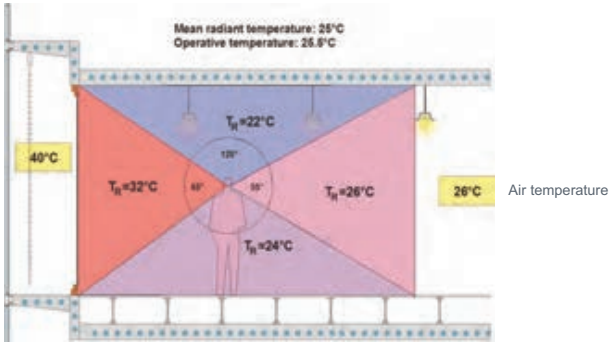
Operative Temperature vs. Air Temperature

Thermal Comfort

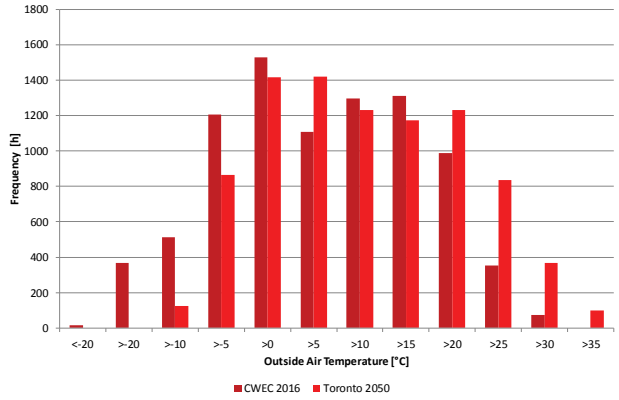
What we experience and perceive as thermal comfort in a building is influenced by both the air temperature and the mean radiant temperature. The mean radiant temperature accounts for the temperature of the surfaces to which a person is exposed. Balancing the operative temperature can create more comfortable spaces in a building.

The examples to the right illustrate the importance of balancing the operative temperature and not just the air temperature. People would feel the same level of comfort in both cases. Even though the air temperature in the example in the bottom right is warmer (26°C) than the example in the top right (24 °C), their operative temperature is around the same (25.5 °C). In the first example, since the surfaces are warmer, the air temperature needs to be cooler to provide the same level of comfort as the bottom room.





COOLING APPROACHES



Tmean_2016 = 8.3 °C → Tmean_2050 = 13.0 °C

	slightly cool	comfortable	slightly warm	warm
	-1.5>PMV>-0.5	-0.5>PMV>0.5	0.5>PMV>1.5	1.5>PMV>2.5
VAR2B g34 CWEC Hamilton	0	8760	0	0
VAR2B g36 CWEC Hamilton	0	8760	0	0
VAR2B g40 CWEC Hamilton	0	8759	1	0
VAR2B g34 Toronto 2050	0	8488	272	0
VAR2B g36 Toronto 2050	0	8420	340	0
VAR2B g40 Toronto 2050	0	8333	427	0

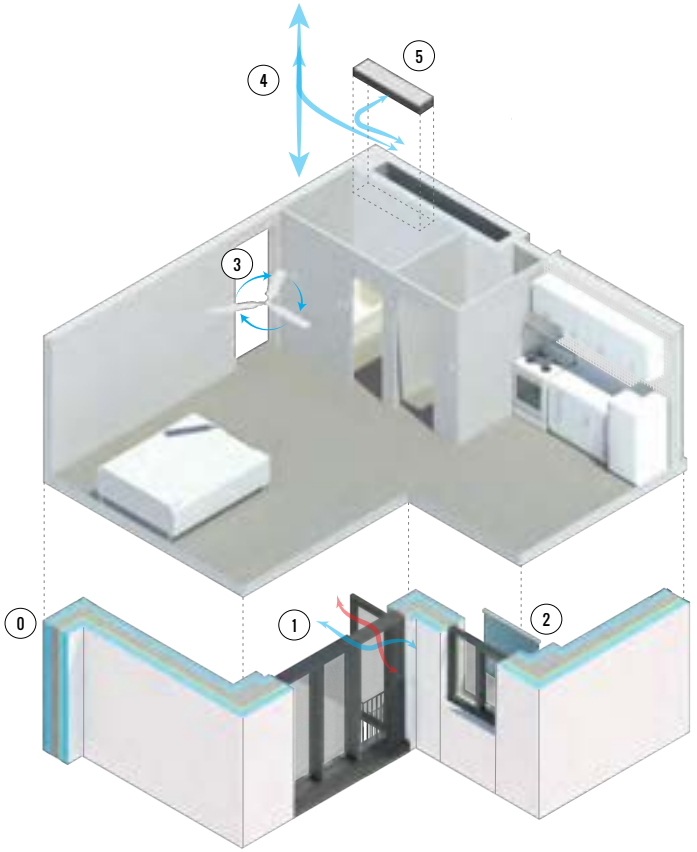
- CONSIDER RESILIENCY FOR CLIMATE CHANGE
- EVALUATE HOURLY RESULTS BY PMV COMFORT CRITERIA FOR 2016 WEATHER DATA + 2050 TORONTO CONDITIONS

COOLING MULTI-STAGE SYSTEM

0 1 2 3 4 5

Passive *Active*

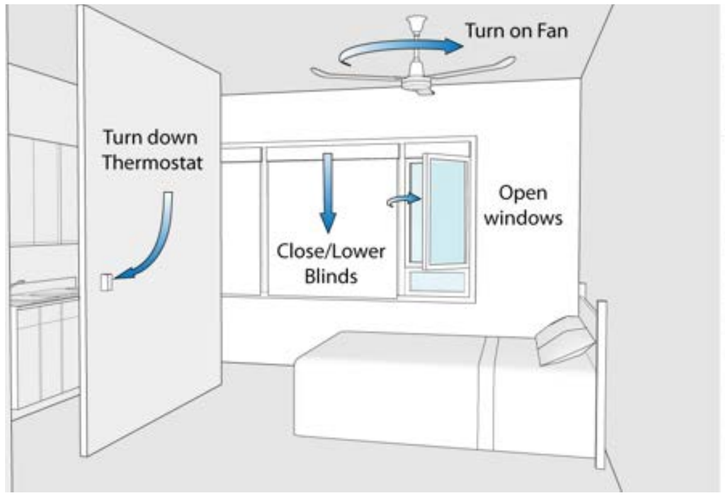
0. R38 Effective Envelope
1. Glazing with a low Solar Heat Gain Coefficient
2. Low emissivity interior shades
3. Ceiling fans to circulate air within units
4. Lightly tempered air delivered through a centralized ventilation system
5. Decentralized cooling 'boost' through a Variable Air Volume Unit activated by in-suite controls



RESIDENT'S OPERATION GUIDE

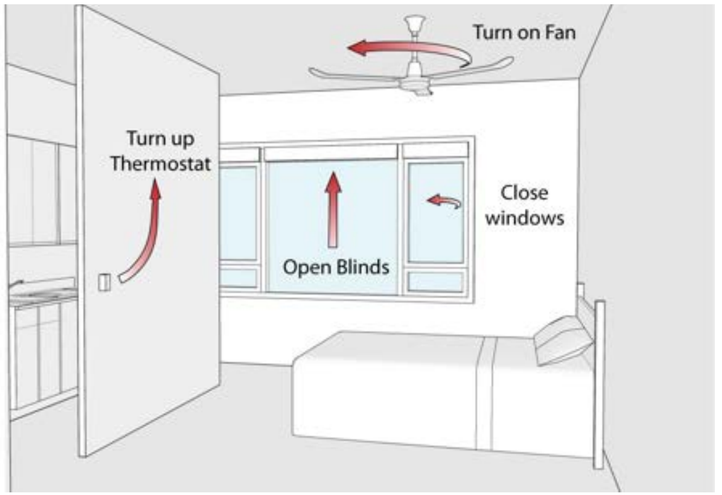
To Cool Down the Space

Step 1: Open the windows* and use the fan to provide light cooling.
Step 2: Close or lower the blinds.
Step 3: Hit the boost for cooling.

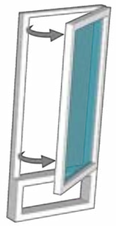


To Warm Up the Space

Step 1: Ensure all windows are closed.
Step 2: Open the blinds to increase sunlight.
Step 3: Adjust the thermostat up.
Step 4: Use the fan to circulate warm air.



***Tilt Open** windows in the evening.

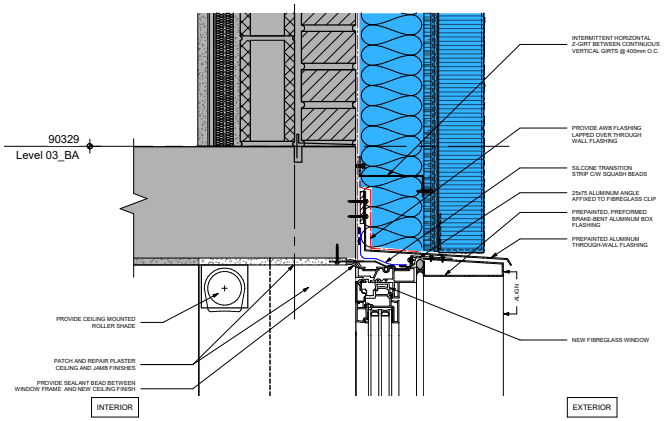


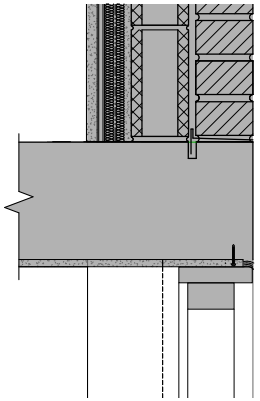
***Wide Open** windows when outside is cooler than inside.

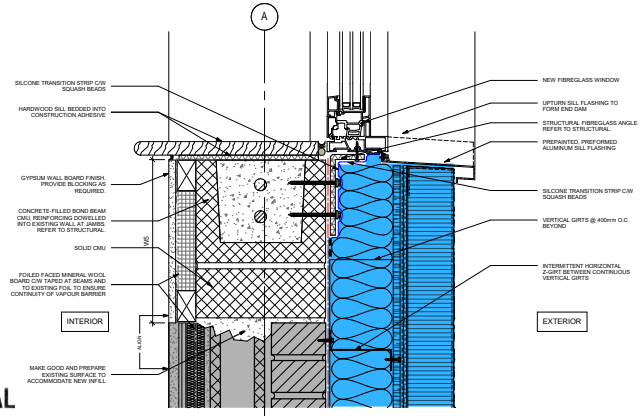
Hit the Boost when cooking or using the bathroom.

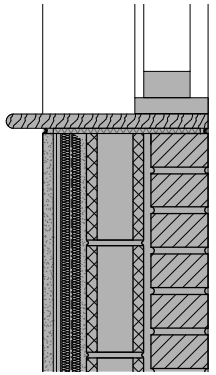
FACADE APPROACH R38 EFFECTIVE

KEN SOBLE TOWER TRANSFORMATION









TOWER RENEWAL PARTNERSHIP

FACADE APPROACH R38 EFFECTIVE

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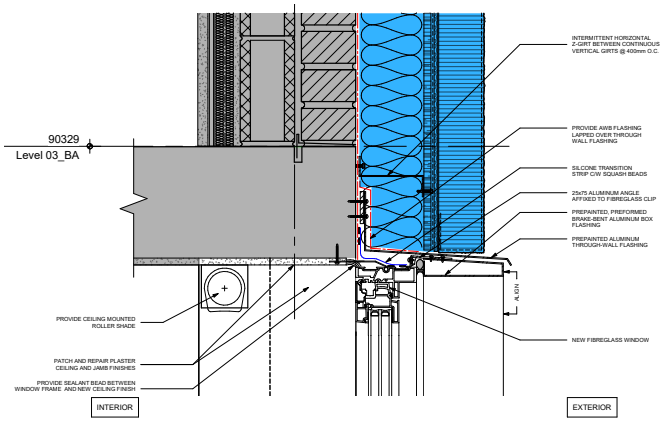

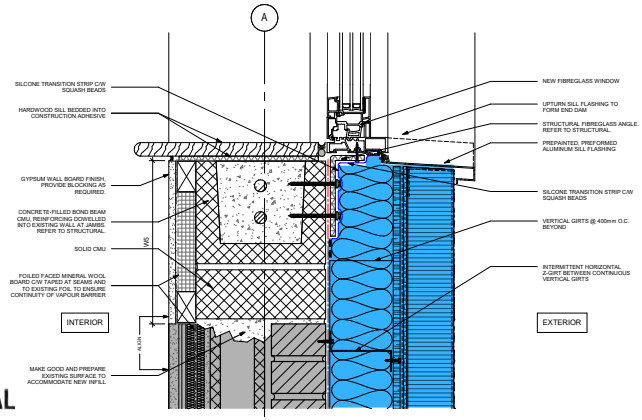

TOWER RENEWAL PARTNERSHIP

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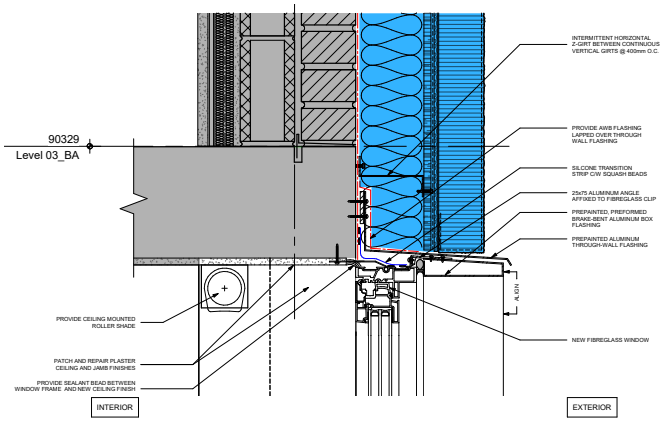
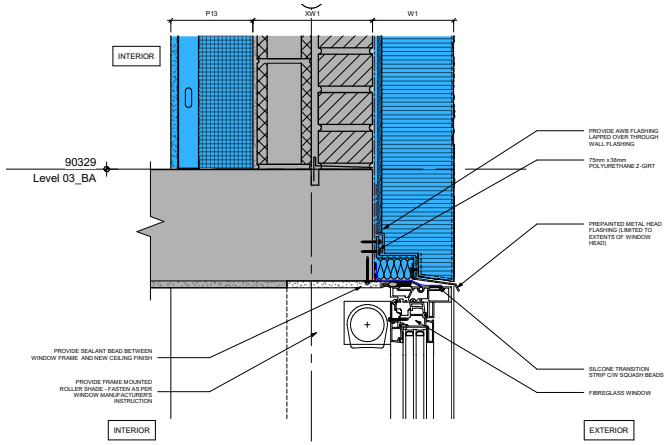
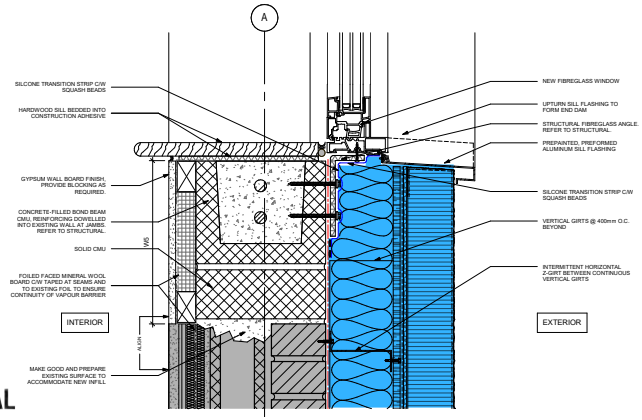
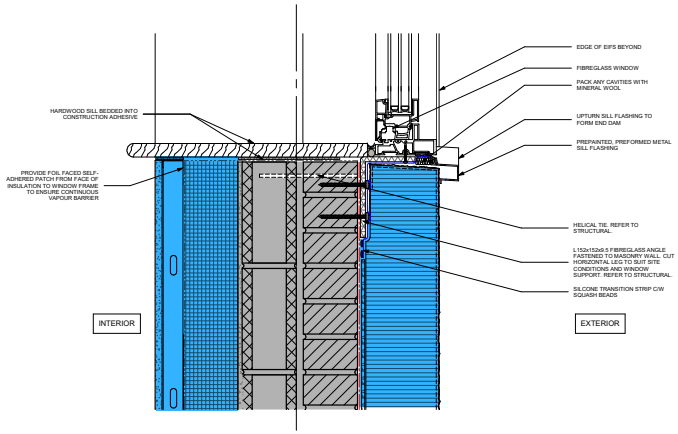




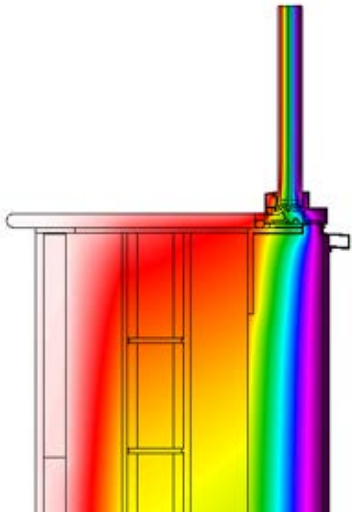




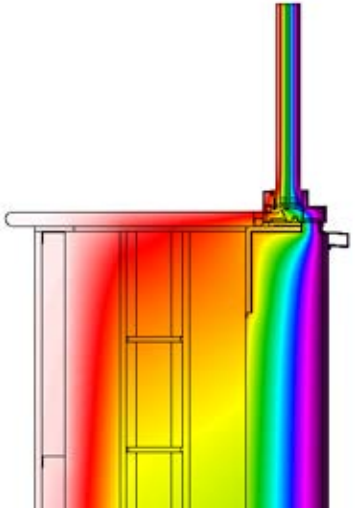
TOWER RENEWAL PARTNERSHIP

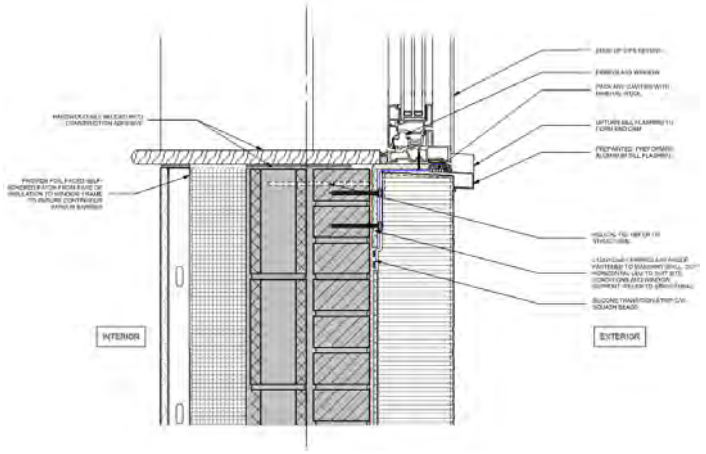
THERMAL BRIDGING WINDOW SILL DETAIL

Fiberglass Angle



Steel Angle

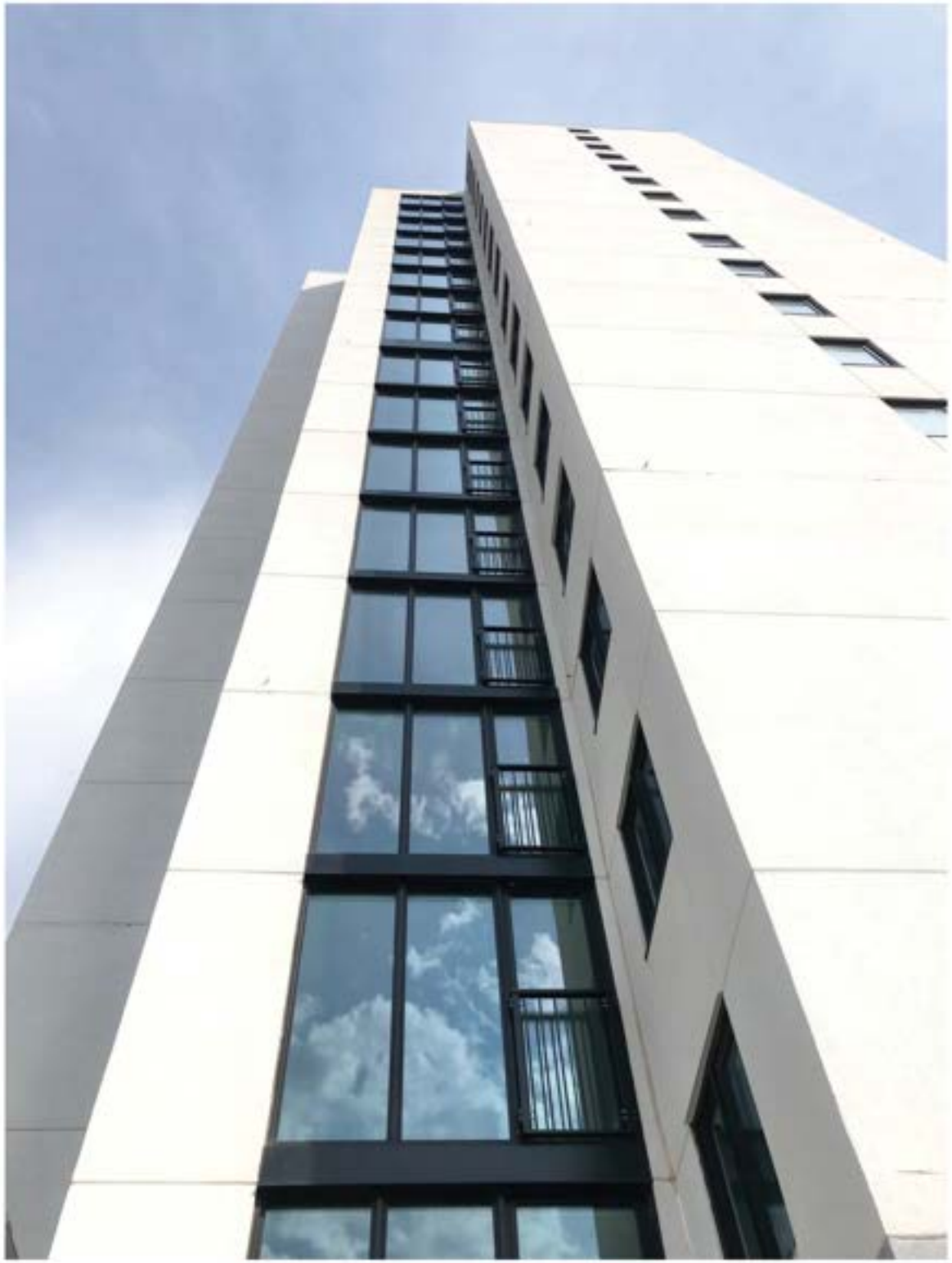




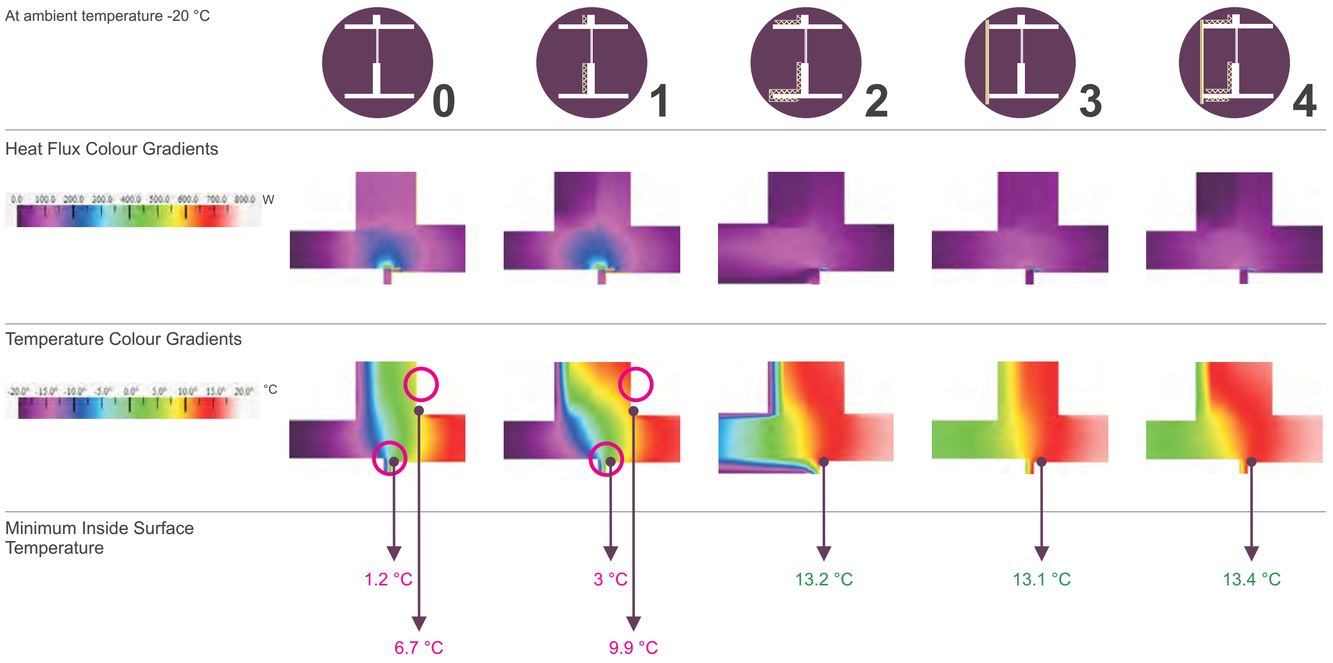
	Psi- Value (W/mK)	Heating Demand (kWh/m²a)
Window Sill Detail - Steel Angle	0.114	
Window Sill Detail - Fiberglass Angle	0.086	-0.16

TOWER RENEWAL PARTNERSHIP


6234-02
CRATE 17



THERMAL BRIDGING

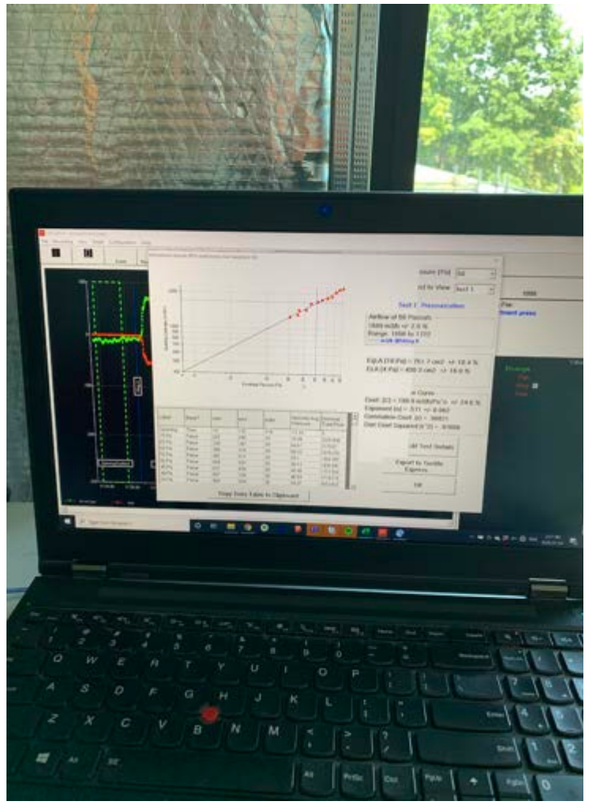


AIR TIGHTNESS PROTOCOLS

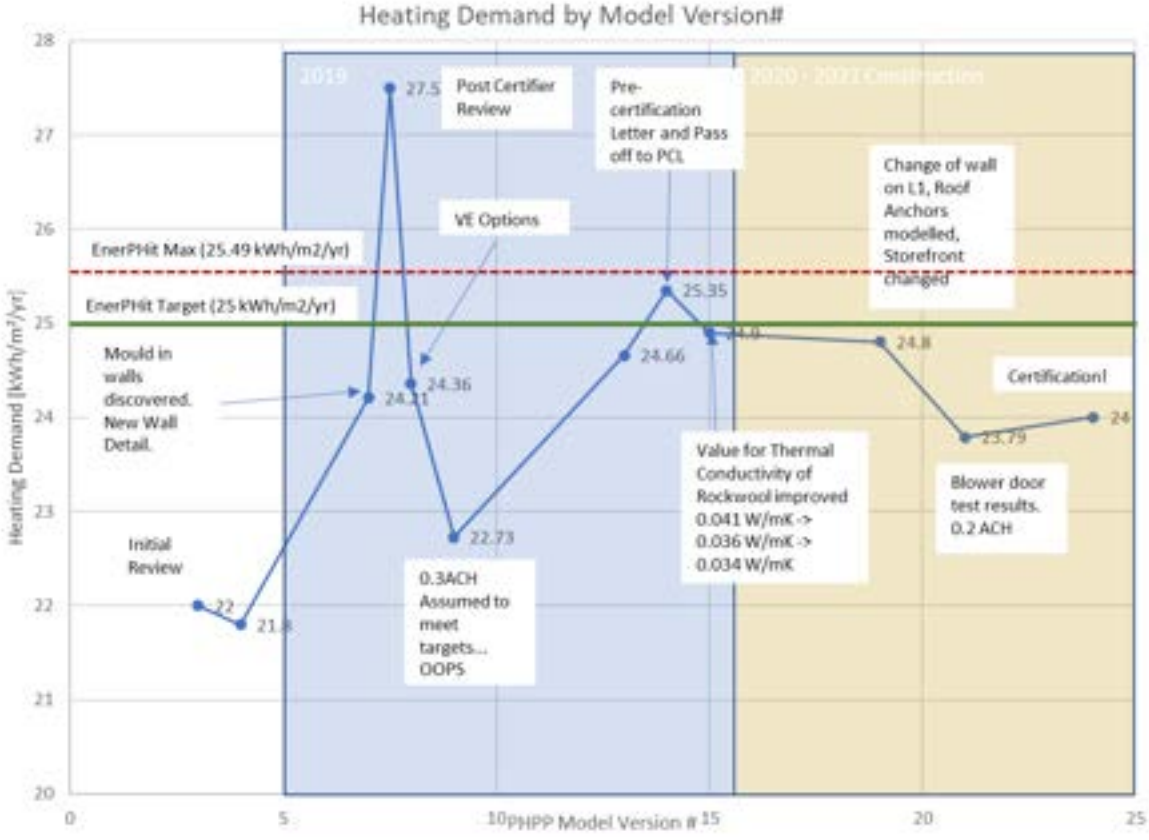
- PRE-CONSTRUCTION BASELINE
- MOCK-UP TEST
- SINGLE FLOOR TESTS (x5)
- FINAL CERTIFICATION TEST

Air Tightness Criteria	ACH 50
Passive House Limit	**1.0**
Baseline Test (Full Building)	5.41
Final Test (Full Building)	**0.235**

AIR TIGHTNESS TESTING GUARDED TESTS



The Journey in Numbers



Certificate

Certified retrofit
'EnerPHit Classic'
(Climate zone: Cool-temperate)

Herz & Lang GmbH
Die Planer für energieeffizientes Bauen
Ritzensonnenhalb 5a
87480 Weitnau, Germany

Authorised by:

Dr. Wolfgang Feist
64283 Darmstadt
Germany

Ken Soble Tower
500 MacNab St N, L8L 1L8 Hamilton, Canada

Client	CityHousing Hamilton 55 Hess St S, 23rd Floor L8N 4E5 Hamilton - PO Box 2500, Canada
Architect	ERA Architects 625 Church St #600 M4Y 2G1 Toronto, Canada
Building Services	REINBOLD ENGINEERING GROUP 214 King Street West, Suite 212 M5H 3S6 Toronto, Canada
Energy Consultant	JMV / Transsolar GmbH 1586 Robb Ave. V9M 2Y2 Comox, Canada

Buildings retrofitted to the EnerPHit Standard offer excellent thermal comfort and very good air quality all year round. Due to their high energy efficiency, energy costs as well as greenhouse gas emissions are extremely low.

The design of the above-mentioned building meets the criteria defined by the Passive House Institute for modernization to the 'EnerPHit Classic' standard:

Building quality			This building		Criteria	Alternative criteria
Heating	Heating demand	[kWh/(m²a)]	24	≤	25	-
Cooling	Cooling + dehumidification demand	[kWh/(m²a)]	4	≤	19	19
	Cooling load	[W/m²]	7	≤	-	11
	Frequency of excessively high humidity	[%]	9	≤	10	
Airtightness	Pressurization test result (n_{50})	[1/h]	0.2	≤	1.0	
Non-renewable primary energy (PE)	PE demand	[kWh/(m²a)]	155	≤	196	
Component quality						
	Building envelope to ambient air (U-value)	[W/(m²K)]	0.13	≤	-	
	Building envelope to ground (U-value)	[W/(m²K)]	3.58	≤	-	
	Windows/Exterior doors (Uw,installed)	[W/(m²K)]	1.09	≤	-	
	Glazing (g-value)	[-]	0.40	≥	-	
	Glazing/shading (max. solar load)	[kWh/(m²a)]	113	≤	-	
	Ventilation (effect. heat recovery efficieny)	[%]	84	≥	-	

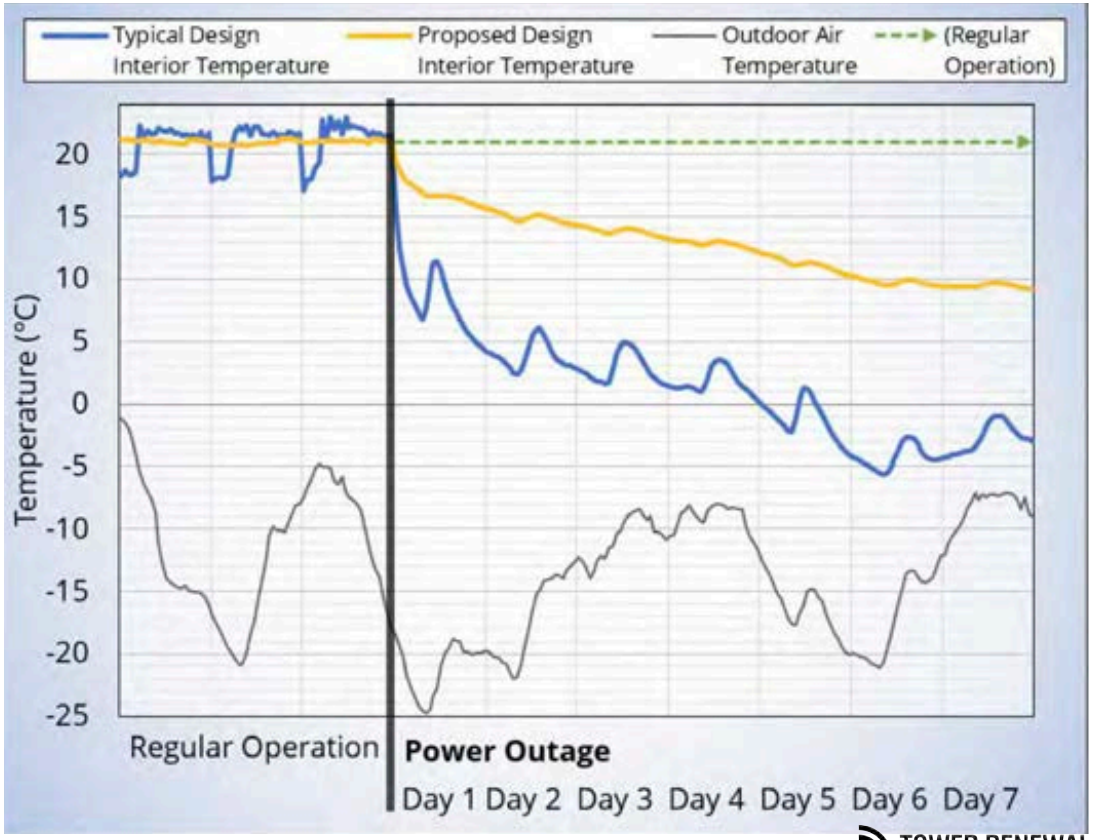
The associated certification booklet contains more characteristic values for this building.

Weitnau, 09. December 2021

Certifier: Florian Lang - Raphaël Vibert, Herz & Lang GmbH

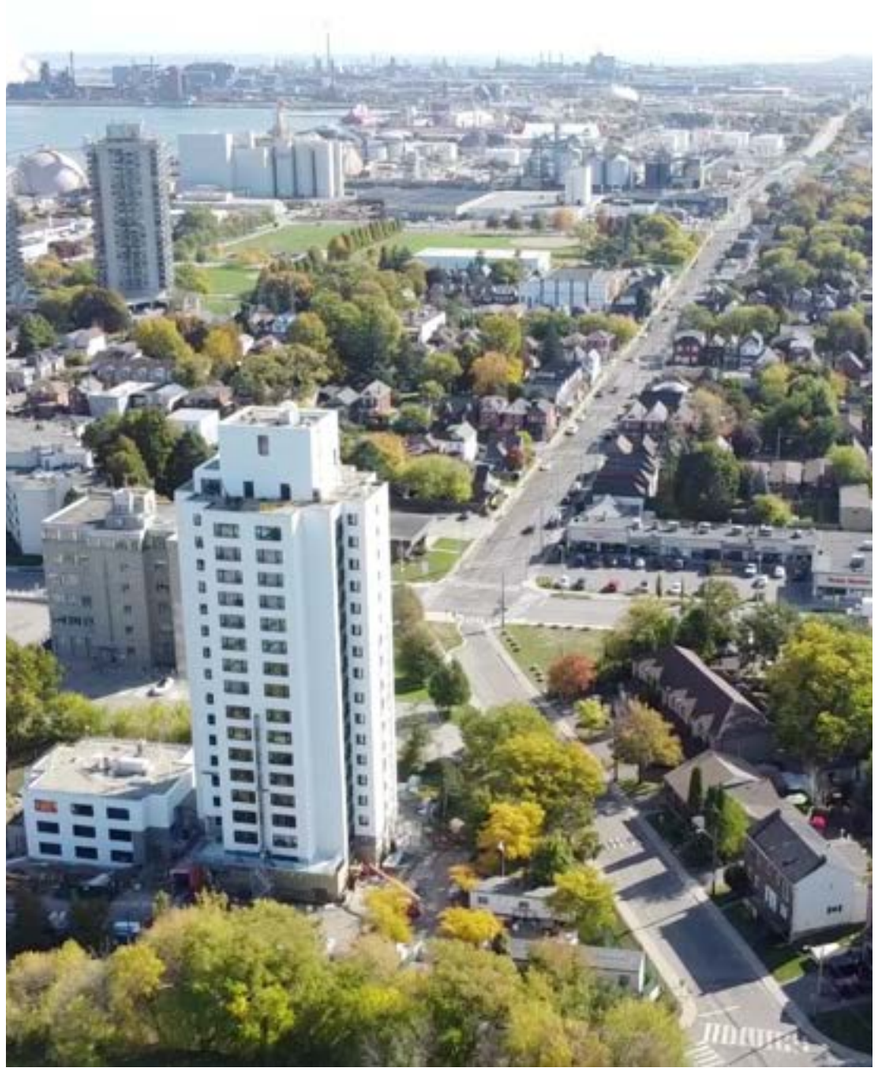
RESILIENCE PASSIVE 'SURVIVABILITY'

RESILIENCE TO EXTREME CLIMATE EVENTS



IMG: UNION GAS SAVINGS BY DESIGN

TOWER RENEWAL PARTNERSHIP



MEASURING IMPACT TO SCALE CHANGE

KEN SOBLE TOWER TRANSFORMATION

HEALTH IMPACTS ER visits / Attendance at Public Health Services / Heat-Related Thermal Stress / Missed Work

SAFETY FACTORS Home Fire Incidents / Accessibility within Common Areas / Police Calls / Break-Ins

HOUSING QUALITY IMPACTS Outdoor Noise Disruptions / Indoor Air Quality / Elevator Breakdowns

AFFORDABILITY IMPACTS Tenant Turnover / Ability to Pay Utility Bills / Ability to Pay Rent / High-Cost Loans

OPERATIONS Pest Control Incidents / Tenant Complaints / Equipment Maintenance / Repairs and Replacements

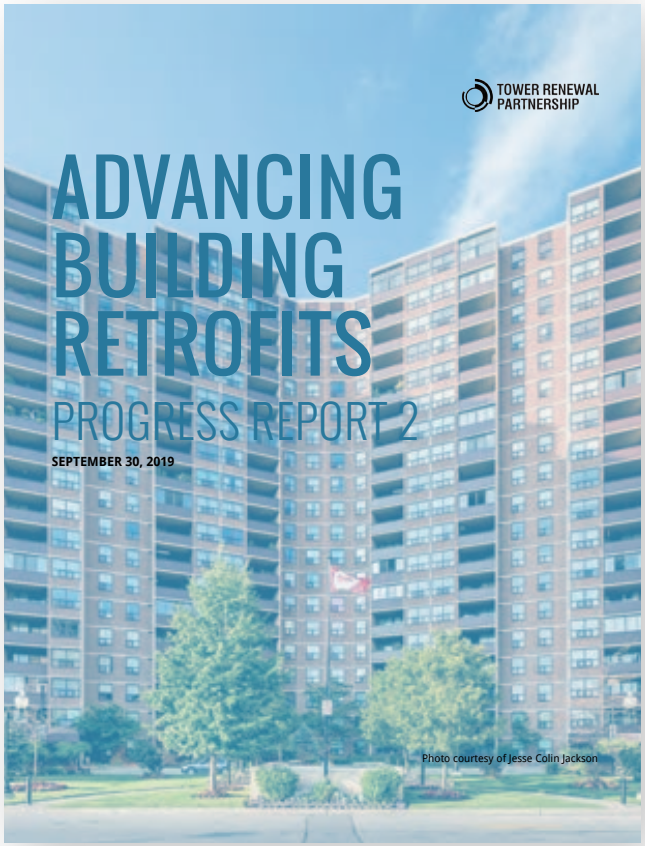
ENVIRONMENTAL FACTORS Avoided GHG Emissions / Utility Costs / Avoided Material in Waste Stream

ECONOMIC FACTORS Trades Training / Property Value / Operating Costs / Vacancy Rate / Reserve Fund

TOWER RENEWAL PARTNERSHIP

RETROFIT ECOSYSTEM

ADVANCING RETROFITS IN THE CANADIAN MARKET



TOWER RENEWAL PARTNERSHIP

CMHC SCHL

A FIELD GUIDE TO RETROFITS IN OCCUPIED BUILDINGS

June 2020

CENTRE FOR URBAN GROWTH AND RENEWAL

TOWER RENEWAL PARTNERSHIP

EVERGREEN

MaRS

ACORN CANADA

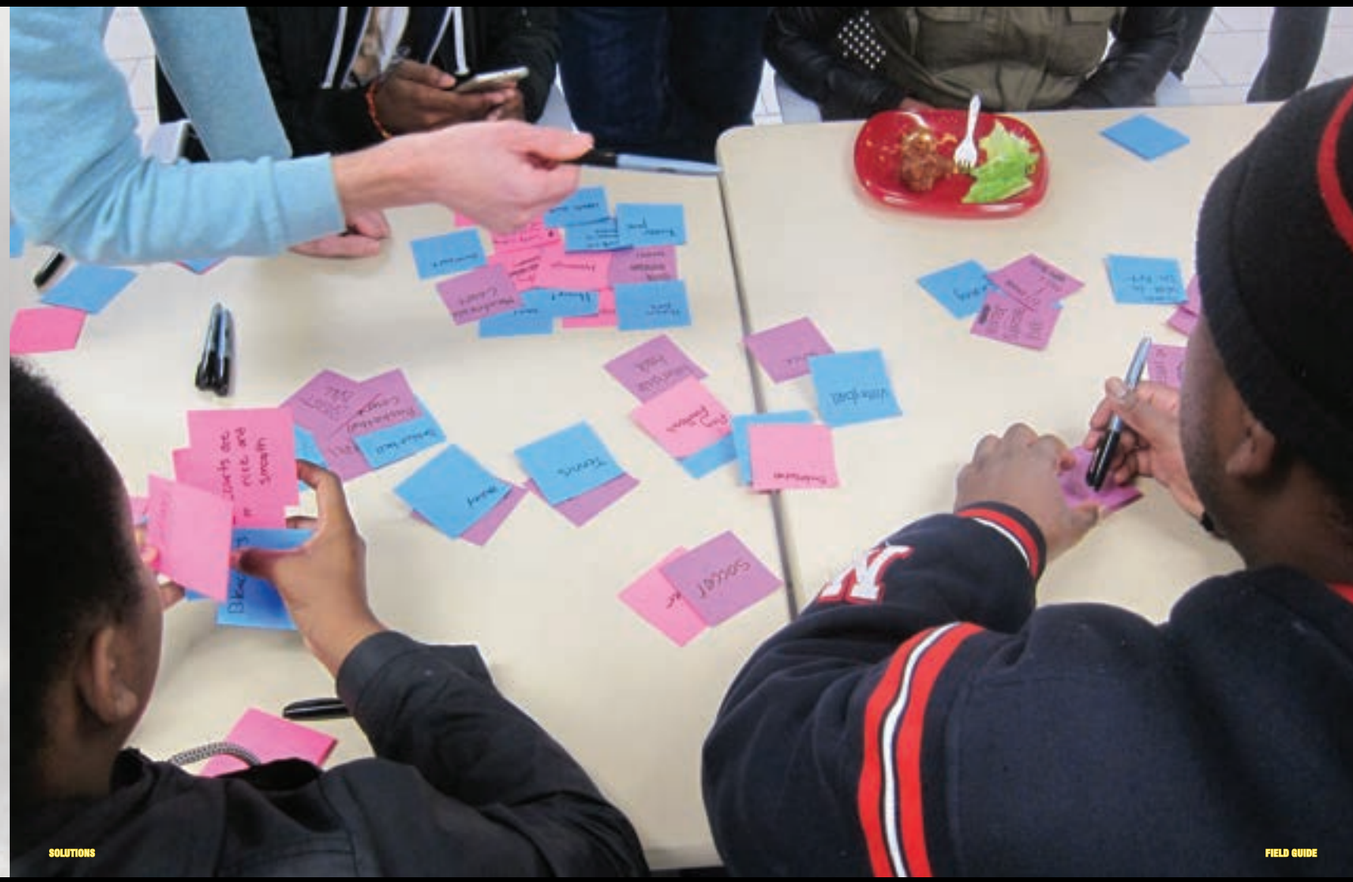
The Natural Step

NAIMA CANADA

REPRESENTING MINERAL FIBRE INSULATION MANUFACTURERS

SUPPORTED BY:

CMHC SCHL



CASE STUDY PROJECTS

Windrush Towers, Oxford UK

Gueterstrasse 30, Pforzheim, DE

Grandview Terrace, Vancouver BC

TOWER RENEWAL PARTNERSHIP


Mönch Gerüstbau
Mönch Gerüstbau

INTERIM CASE STUDY / GAP ANALYSIS SUMMARY

DECEMBER 13, 2019

Case Study	Market Transformation Phase		Envelope	
BC Housing Grandview Terrace	**Phase**	**Notes**	**Component**	**Strategy**
Canada	Early Adopter (Demonstration of comprehensive retrofit in an unfamiliar market)	Mid-Performance Range	Windows	**Double glazed**
			Shading	N/A
			Cladding	**New exterior over-cladding: rockwool with hardyboard sheathing**
Oxford City Council Towers	**Phase**	**Notes**	**Component**	**Strategy**
United Kingdom	Early Majority (Higher performance in an emerging retrofit market)	High-Performance Range	Windows	**Double glazed, higher performance and retrofit ready**
			Shading	N/A
			Cladding	**New exterior over-cladding: rockwool and metal panel cladding**
Pforzeim Bau und Grund Tower	**Phase**	**Notes**	**Component**	**Strategy**
Germany	Late Majority (Best in Class in a mature retrofit market)	Peak-Performance	Windows	**Triple glazed, designed for retrofit exterior face application**
			Shading	**Exterior operables shades**
			Cladding	**New exterior over-cladding: rockwool and precast concrete cladding**
BC Housing Grandview Terrace	**Component**	**Notes**	**Component**	**Notes**
Canada	Heating	**Hydronic, existing system**	Balconies	N/A
	Fresh Air	**Central system replacement with air condition and dehumidification**	Typ. Details	**Commitment to air tightness, mid performance mandate**
	Natural Ventilation	N/A	Other Penetrations	**Commitment to air tightness, mid performance mandate**
	Heat Recovery	N/A		
Oxford City Council Towers	Component	Notes	Component	Notes
United Kingdom	Heating	**Hydronic, Updated Low-Energy System**	Balconies	**Enclosed with wintergarden glazed assembly**
	Fresh Air	**Retrofit specific unitized HERV systems with 'snap' ductwork for easy install**	Typ. Details	**Commitment to air tightness, high performance mandate**
	Natural Ventilation	**Operable Windows**	Other Penetrations	**Commitment to air tightness, high performance mandate**
	Heat Recovery	**Contained in in-suite units**		
Pforzeim Bau und Grund Tower	Component	Notes	Component	Notes
Germany	Heating	**Hydronic, Updated Low-Energy System**	Balconies	**Replaced, thermally broken new assembly**
	Fresh Air	**In-suite HERVs, minimal ductwork, Passive House Certified**	Typ. Details	**PH House Certified**
	Natural Ventilation	**Operable Windows / trickle vents**	Other Penetrations	**PH House Certified**
	Heat Recovery	**Contained in in-suite units, Passive House Certified**		
BC Housing Grandview Terrace	**Occupancy During Construction**	**Notes**	**Context**	**Notes**
Canada	**Residents in Place**	**Sophisticated staging, scheduling and communication plan lead by constructor superintendent in consultation with BC Housing. Model scaling to other complex renovation projects.**	Code	**BC Step Code**
			Funding	**Provincial Low-Carbon Funds / BC Housing**
Oxford City Council Towers	**Occupancy During Construction**	**Notes**	**Context**	**Notes**
United Kingdom	**Residents in Place**	**Council mandated and resident endorsed 'customer care' directive for selected contractor, ensuring minimal tenant disruption and inclusion in key decision making through contractor 'tenant liaison' and weekly meetings between council, tenants and contractor.**	Code	Code for Sustainable Homes / Decent Homes Standard
			Funding	Oxford Council (Supported by Government Carbon Reduction Funds)
Pforzeim Bau und Grund Tower	**Occupancy During Construction**	**Notes**	**Context**	**Notes**
Germany	**Residents in Place**	**Interior works minimized and per-fabrication used to minimize construction duration and disruption. Housing company highly involved in day to day construction to minimize tenant disruption.**	Code	EnEv 2019
			Funding	KfW

Availability in Canadian Marke of Product / Approach:

Commonly Available

Challenging to Implement

Unavailable

TOWER RENEWAL PARTNERSHIP

INTRODUCTION

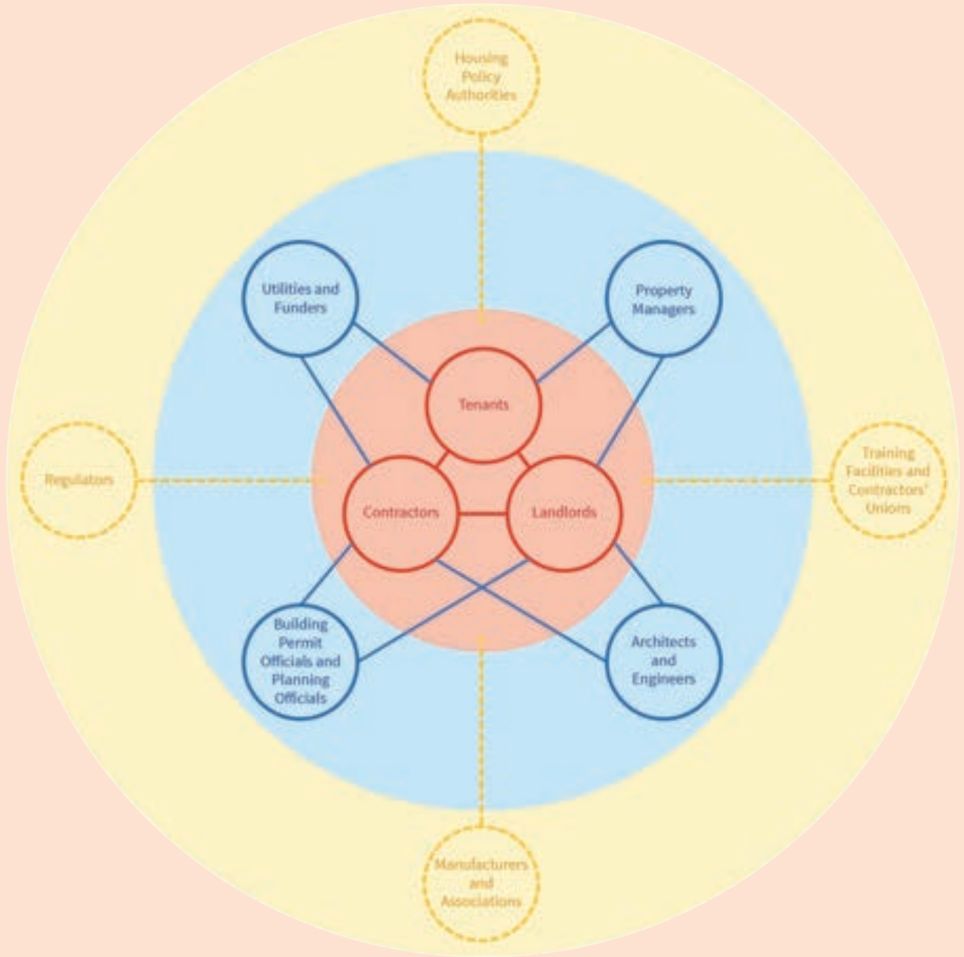
The Landlord Considers doing a Retrofit

A Team is Hired to Plan and Design the Retrofit

A Contractor is Selected to do the Work

Construction Takes Place in Your Apartment Unit

Residents Adjust to Post-Construction Apartment and Provide the Landlord with Feedback



INFLUENCE THE RETROFIT DIRECTLY

INFLUENCE THE RETROFIT INDIRECTLY

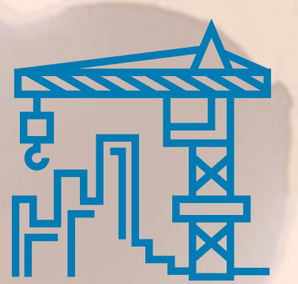
ACTIVE DAY-TO-DAY IN THE RETROFIT

Landlord

As construction begins, clear communication becomes extremely important.

Tenants

Gather information and understand your rights.



Industry

Prepare the crew and relevant subtrades for the specific requirements of the project.

SOLUTIONS: INCORPORATE TENANT LIAISON ROLE INTO CONTRACTOR REQUIREMENTS

Incorporate Tenant Liaison Role into Contractor Requirements

Carrying out a construction project in an occupied building is complex: shared vertical access, maintaining exit routes, scheduling notifications for suite access, and maintaining safe and clear work areas inside people's homes can all pose challenges above and beyond a typical construction project. This unique set of challenges can be offset by incorporating a new role into the construction team: a "Tenant Liaison" can be responsible for foreseeing these scheduling and logistical challenges, and building solutions into the construction project.

The integration of a Tenant Liaison into retrofit projects can reduce construction delays, eliminate unforeseen remobilization and lost productivity costs, and provide tenants with a single, trusted point of contact who is on site at all times.

In many cases, the Tenant Liaison will know most tenants' names and unique needs, having completed surveys to identify things like respiratory or mental health conditions, overcrowding or hoarding, mobility assistance required, etc.

While some owners may prefer to fill this role themselves, there are significant benefits to integrating this role into the construction team: construction schedules, access and sequencing plans should be directly and dynamically informed by the Tenant Liaison.

SOLUTIONS: SPECIALIZED TRADES TRAINING PROGRAMS

Specialized Trades Training Programs

Training programs and certifications can play a role in familiarizing trades with the special skills required to work in occupied buildings. Communication procedures, sequence planning, scheduling for anticipated refused entry, safety and workplace protocols will all be part of this training.

Building this comfort and expertise into retrofits will expedite the process, while decreasing the “risk premium” making retrofits cheaper. Construction and design industries typically price work according to their comfort, experience and potential liability with the work which can result in higher costs for projects with new or different processes.

How is the training implemented?

A trades training program can be offered by construction associations, colleges and training facilities, or even in-house by specialized contractors.

Owners requiring or preferring contractors with this specialized retrofit certification will make it increasingly desirable, as more retrofit projects come online.

What are the Next Steps?

NAIMA Canada in partnership with TRP has developed a draft curriculum for a “Tenant Liaison Training Program”, alongside a sample “Healthy Housing Advocacy” training module. These can be used as the basis for development of programs across a number of institutions.


Zero Energy Building Learning House
Tyvek
HomeWrap
DUPONT
of Passive House

COMPLEMENTARY REGULATION AND INCENTIVES

LINKING HOUSING QUALITY TO RETROFITS

STANDARDS* (FOR LARGE BUILDINGS)

	CANADA new	CANADA retrofit	GERMANY new	GERMANY retrofit
HEALTHY SPACE				
Condensation / Mould mitigated through min. interior surface temperature (12.6oC)	●	●	●	●
Healthy Ventilation Systems by mechanical and natural means	●	◐	●	●
Controlled 'Infiltration' by operable windows or trickle vents	●	●	●	●
THERMAL COMFORT				
Interior Temperatures based on dynamic metrics (i.e. operative temperature and adaptive comfort modelling)	●	●	●	●
Thermostat Control individual control of thermostats / heaters in each room	◐	●	●	●
Eliminating Thermal Bridging by implementing continuous insulation and other strategies	◐	●	●	●
Air Tightness in-situ testing required	◐	●	●	●
Triple-pane Windows / Doors max U-Value 0.85 W/m2K (installed) (current PH standard for comfort reasons)	●	●	●	●
Shading Control for summer cooling	●	●	●	●
FIRE SAFETY				
Overcladding** avoiding flammable insulation materials at all building heights	●	●	●	●
Sprinklers	●	●	?	?
ENERGY PERFORMANCE				
Energy Requirements low energy performance standards	◐	◐	●	●
TRACKING AND MONITORING				
Commissioning	◐	●	●	●
Sub-Metering / Energy Tracking / Energy Modelling	◐	●	●	●

LEGEND

● Enforced ◐ Proposed Change

● Not Enforced ◐ Under Consultation

* Deep energy currently considered for non-extensive renovations.

** Non-flammable insulation required for six storeys and above in Ontario.

CANADIAN COMMISSION
ON BUILDING AND FIRE CODES

FINAL REPORT
Alterations to Existing Buildings

Joint CCBFC/PTPACC Task Group on Alterations to Existing Buildings

August 2019

This document is a working paper dealing with the national model codes. Work on these codes is carried out under the authority of the Canadian Commission on Building and Fire Codes of the National Research Council of Canada

National Research Council Canada
Conseil national de recherches Canada

Canada

CODES AND STANDARDS:

HEALTH / COVID:

- ACCESS TO FRESH AIR

GHG REDUCTION:

- LOW CARBON / M2;
- LOW EMBEDDED CARBON

CLIMATE RESILIENCE & LIFE SAFETY:

- MIN OPERATIVE TEMPERATURE RANGES TO AVOID OVERHEATING DEATHS;
- BACK-UP SYSTEMS FOR OUTAGES
- MANDATORY SPRINKLERS;
- NON-FLAMMABLE INSULATION

REGULATORY OUTLOOK EXISTING BUILDING RETROFITS

2016

VANCOUVER LAUNCHES THE ZERO EMISSIONS BUILDINGS PLAN WHICH REQUIRES ALL CITY-OWNED BUILDINGS TO BE RETROFITTED TO NET ZERO BY 2040, AND A FORTHCOMING PLAN WILL REQUIRE ALL OTHER EXISTING BUILDINGS TO COMPLY BY 2045

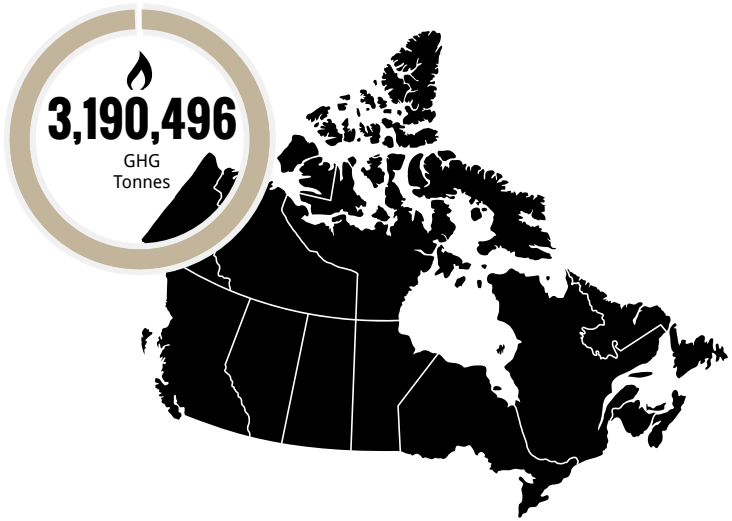
2019

NEW YORK CITY ENACTS LOCAL LAW 97 WHICH STARTS WITH MANDATORY ENERGY REPORTING AND MOVES TO FINE BUILDINGS THAT EMIT ABOVE THEIR INCREASINGLY STRINGENT TARGETS

2021

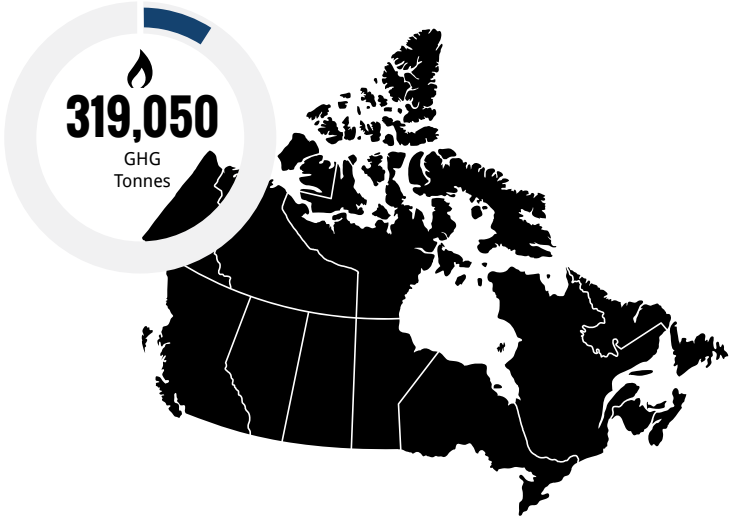
TORONTO COUNCIL PASSES THE NET ZERO EXISTING BUILDING STRATEGY WHICH WILL REQUIRE ALL EXISTING BUILDINGS TO MEET EMISSIONS TARGETS BEGINNING IN 2025

NATIONAL IMPACT



4.11 GHG/Unit

IN CANADA THERE ARE 777,100 HOUSEHOLDS LIVING IN AGING POST-WAR HIGHRISES.
EACH HOUSEDHOLD EMITS 4.11 TONNES GHG/YR*.



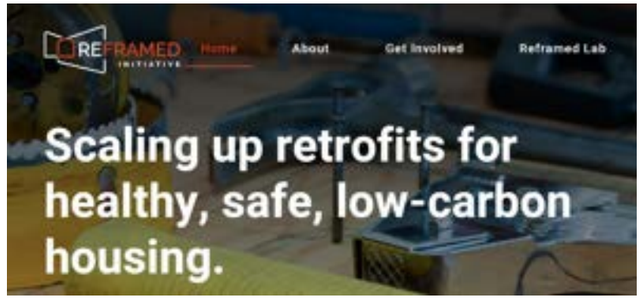
0.41 GHG/Unit

FOLLOWING RETROFIT GHG REDUCTION OF 90%

EACH HOUSEHOLD*

** The average based on typical building condition per city of Toronto 2016*

TOWER RENEWAL PARTNERSHIP



ReCover
ReImagine. ReBuild. ReCover.

PEER – Prefabricated Exterior Energy Retrofit

Developing, testing and validating innovative prefabricated building envelope technologies for retrofitting existing Canadian homes from the exterior.

be ex building energy exchange

Events

Low Carbon Multifamily Retrofit Playbooks

These playbooks summarize retrofit strategies that maximize occupant comfort and energy savings through a transition from fuel to electricity-based heating, cooling and hot water systems.

READ PROJECT SUMMARY >

TAF

Retrofit Accelerator

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