

McQuesten Lofts: how to build the best Passive House projects in North America



Session:
Design Process & Lessons Learned:
Multi-Family Case Studies

Time:
Oct. 27, 2022, 3:30 p.m. –
Oct. 27, 2022, 5:30 p.m.



Emma Cubitt - Invizij Architects
Graham Cubitt – Indwell

PERKINS CENTRE - HAMILTON

136

kWh/m²/yr

\$131/sf

(2011)

2009

2010

2011

2012

2013

2014

2015

2016

2017

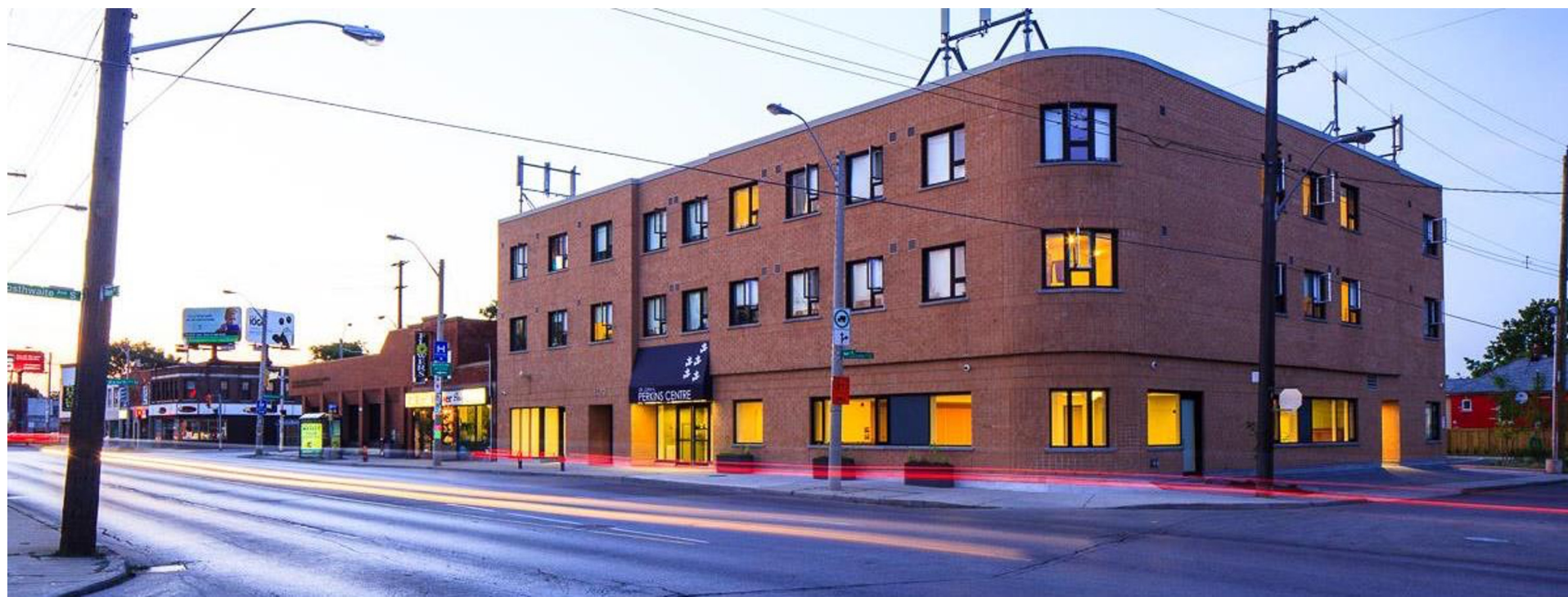
2018

2019

2020

2021

2022



HARVEY WOODS LOFTS - WOODSTOCK

- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022



86
kWh/m2/yr
(Geothermal)
\$170/sf
(2015)

RUDY HULST COMMONS - HAMILTON

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022



178

kWh/m²/yr

\$178/ft

(2016)

PARKDALE LANDING, HAMILTON

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022



101
kWh/m²/yr
\$219/ft
(2016)



EnerPHit: Component method (pass)

BLOSSOM PARK APARTMENTS, WOODSTOCK

2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019



69.5
kWh/m²/yr
\$236/ft
(2019)

2020
2021
2022

Heating Demand: 19 kWh/m²·a

Cooling Demand: 2 kWh/m²·a

PE = 152 kWh/m²·a (site energy = 69.5 kWh/m²·a)

NORTH END LANDING, HAMILTON



- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022



52
kWh/m²/yr
\$265/ft
(2020)

MCQUESTEN LOFTS, HAMILTON



2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

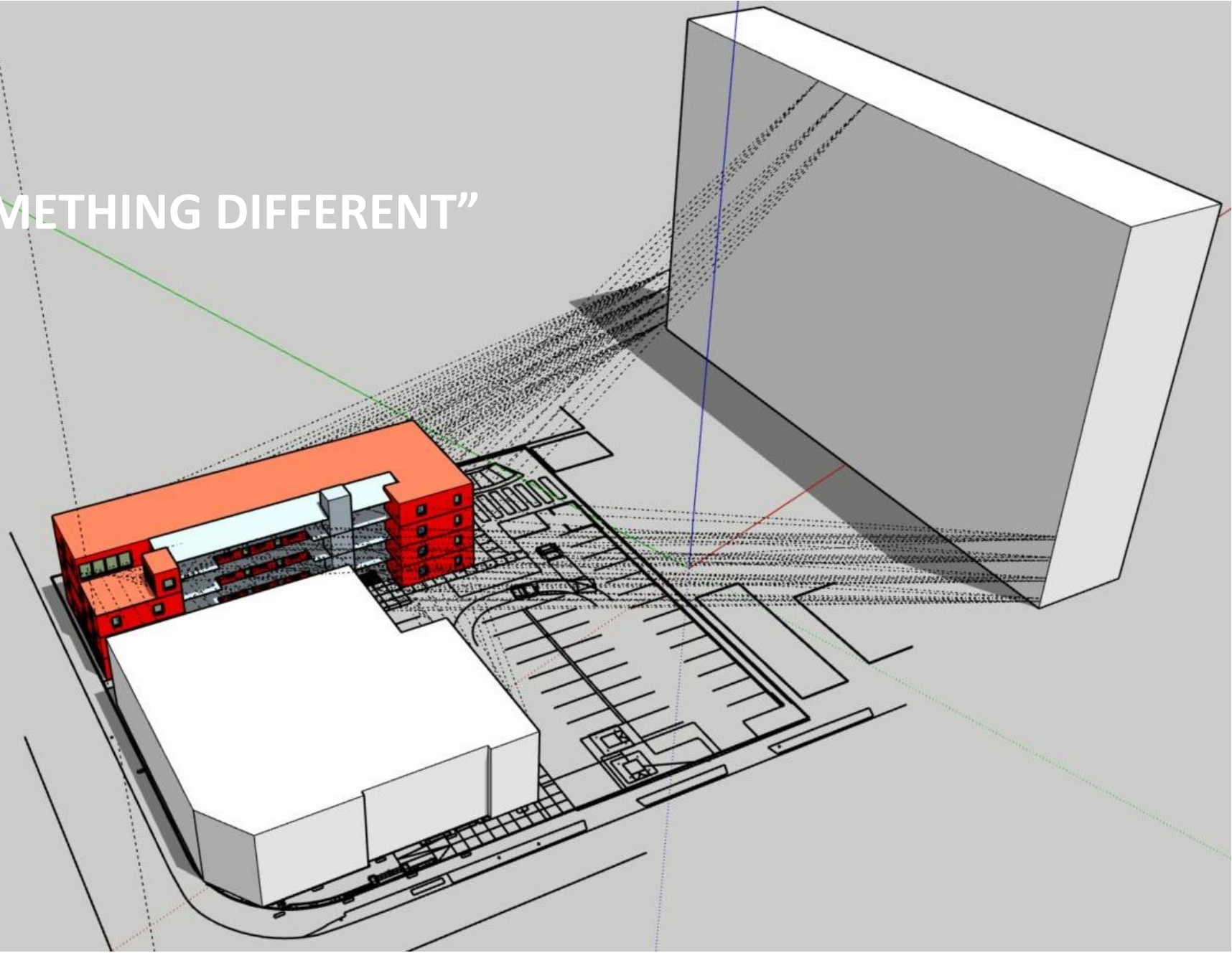


80
kWh/m²/yr
\$270/ft
(2021)

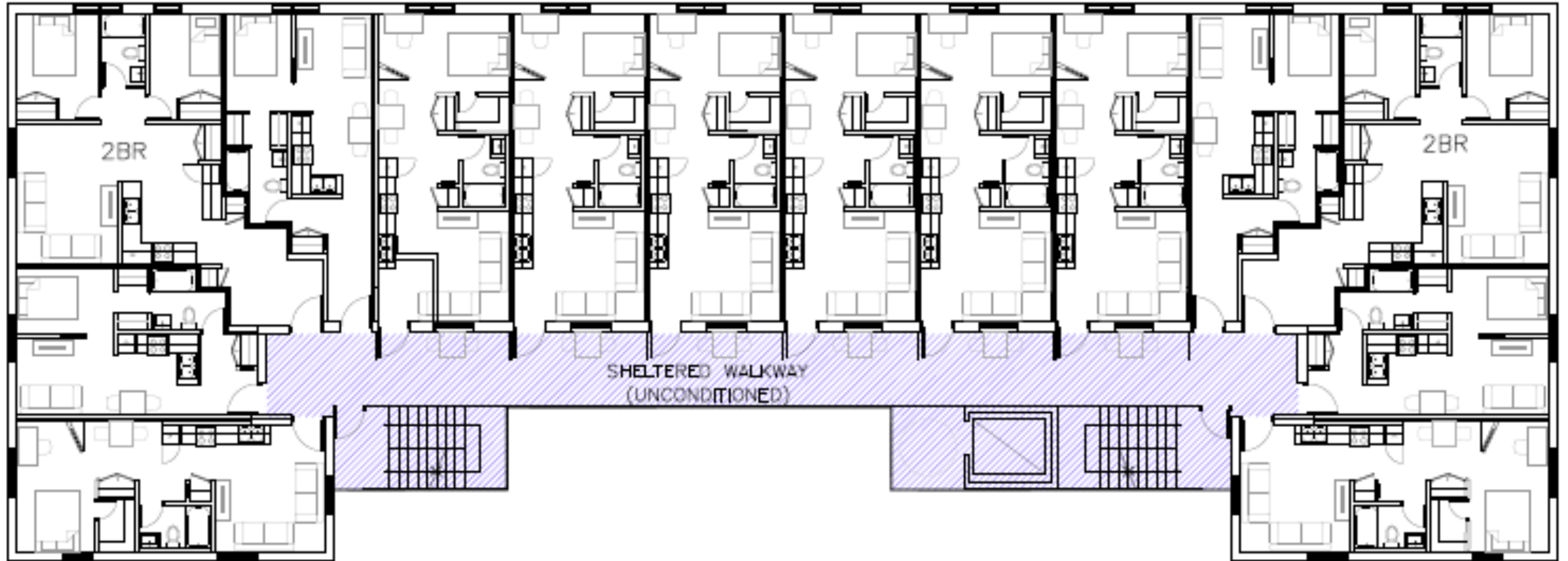
EARLIER DESIGN – EXTERIOR WALKWAYS

Climate: London
Qh 23 kWh/m²a
TFA 2207 m² (User-defined)
Heat Loss Form Factor 1.50

“LET’S TRY SOMETHING DIFFERENT”



EARLIER DESIGN – EXTERIOR WALKWAYS



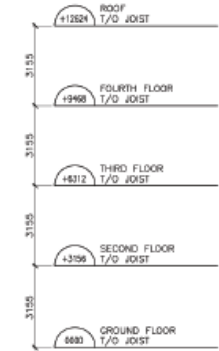
DESIGN INSPIRATION



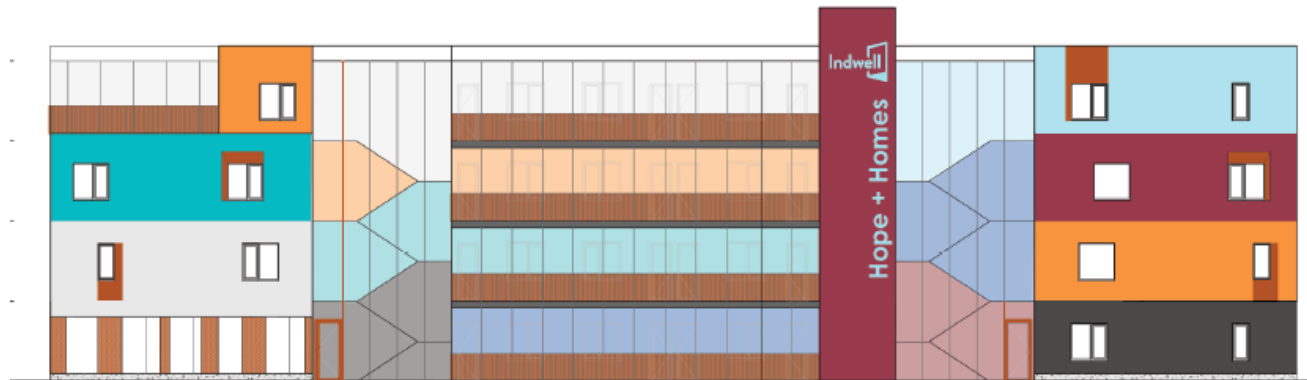
NORTH ELEVATION 2
1:100 A4.0



WEST (PARKDALE AVE.) ELEVATION 2
1:100 A4.0



EAST ELEVATION 2
1:100 A4.0



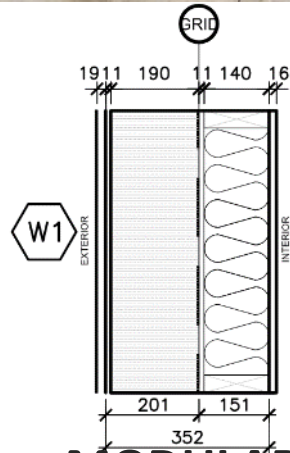
SOUTH (PARKING LOT) ELEVATION 1
1:100 A4.0

CHOSEN DESIGN – 50 UNITS + LIBRARY

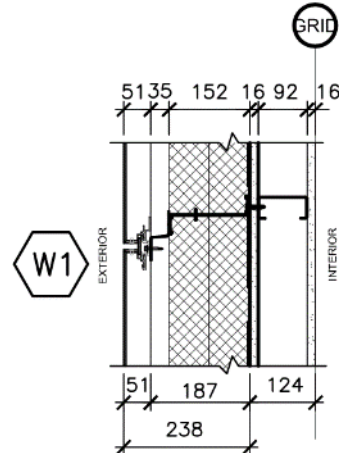


2rd & 3rd Floor Plan
770m²/ floor (8,285 ft²)
Scale 1:150

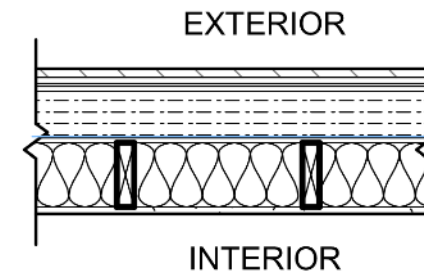
PASSIVE HOUSE WALL TYPE PROGRESSION



MODULAR SANDWICH
1 PROJECT

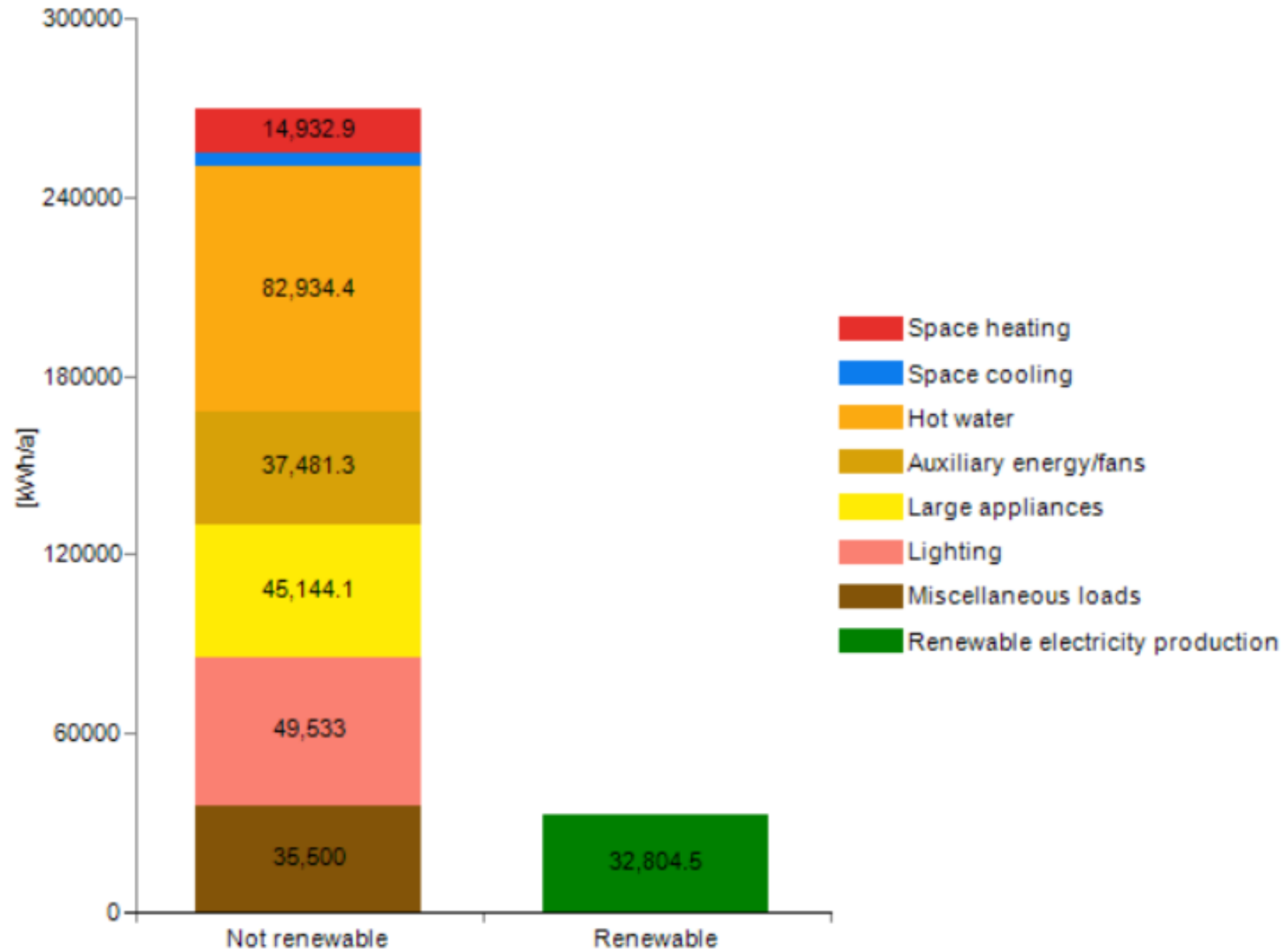


EXTERIOR ONLY
1 PROJECT



HYBRID
9 PROJECTS

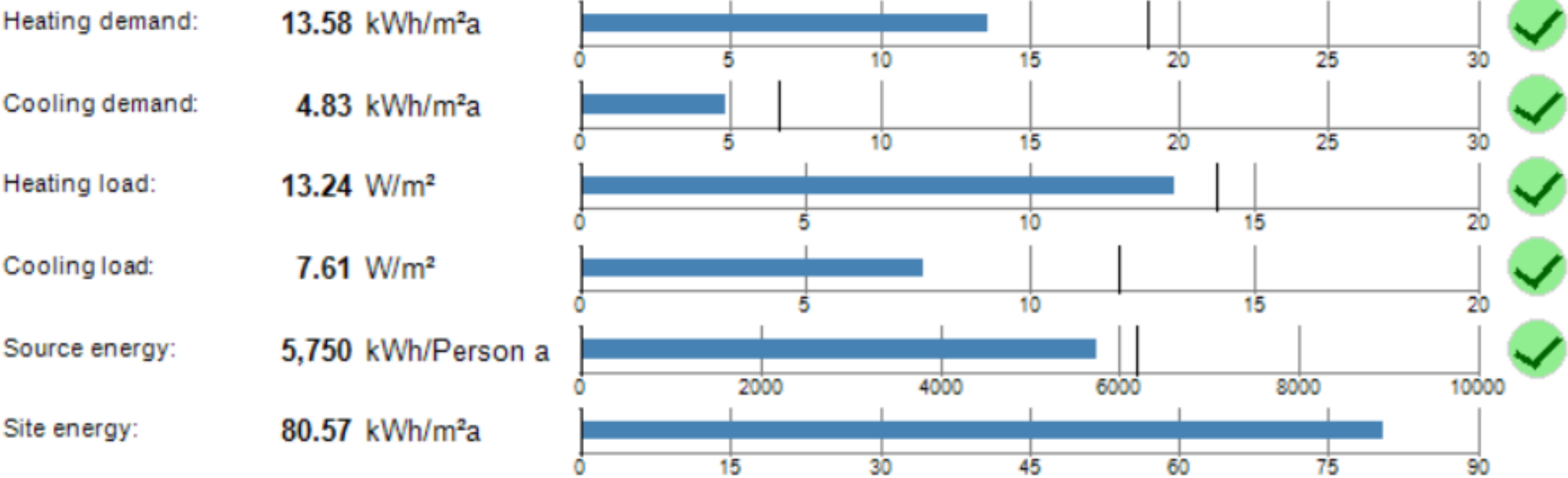
MCQUESTEN LOFTS – ENERGY LOAD BREAKDOWN



MCQUESTEN LOFTS – THE SITE @ PARKDALE AVE.



MCQUESTEN LOFTS – ENERGY LOAD BREAKDOWN



CONSTRUCTION PROGRESSION

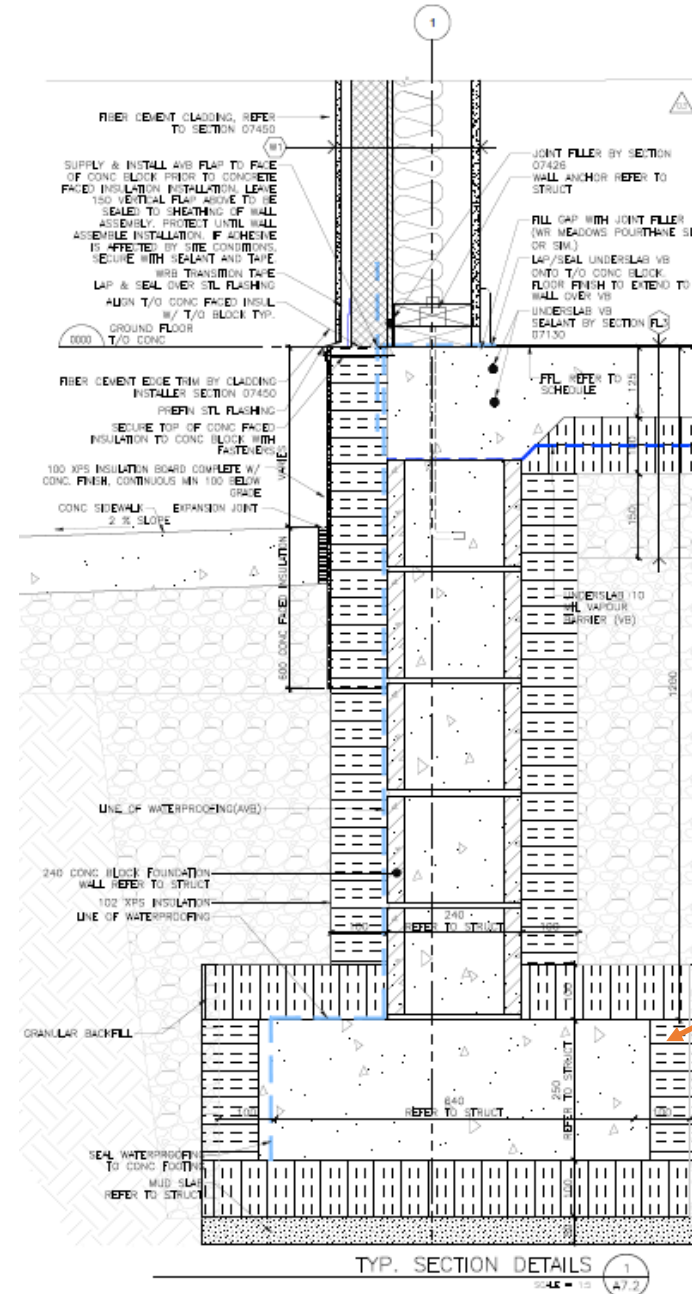
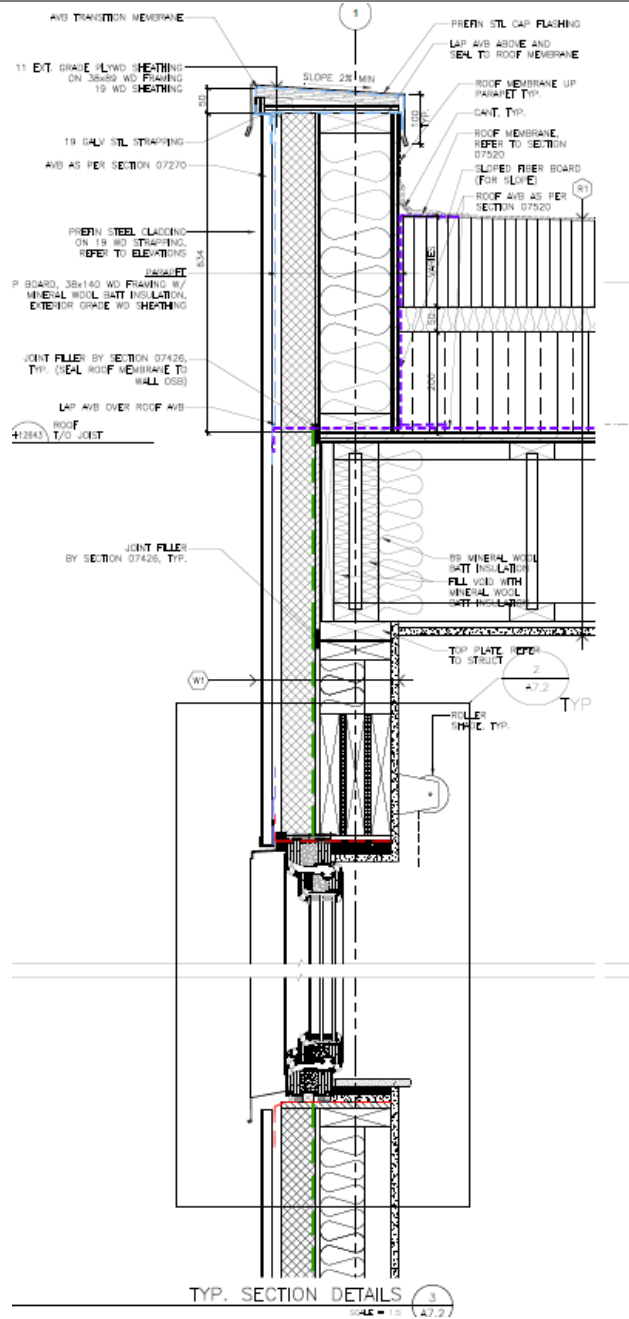






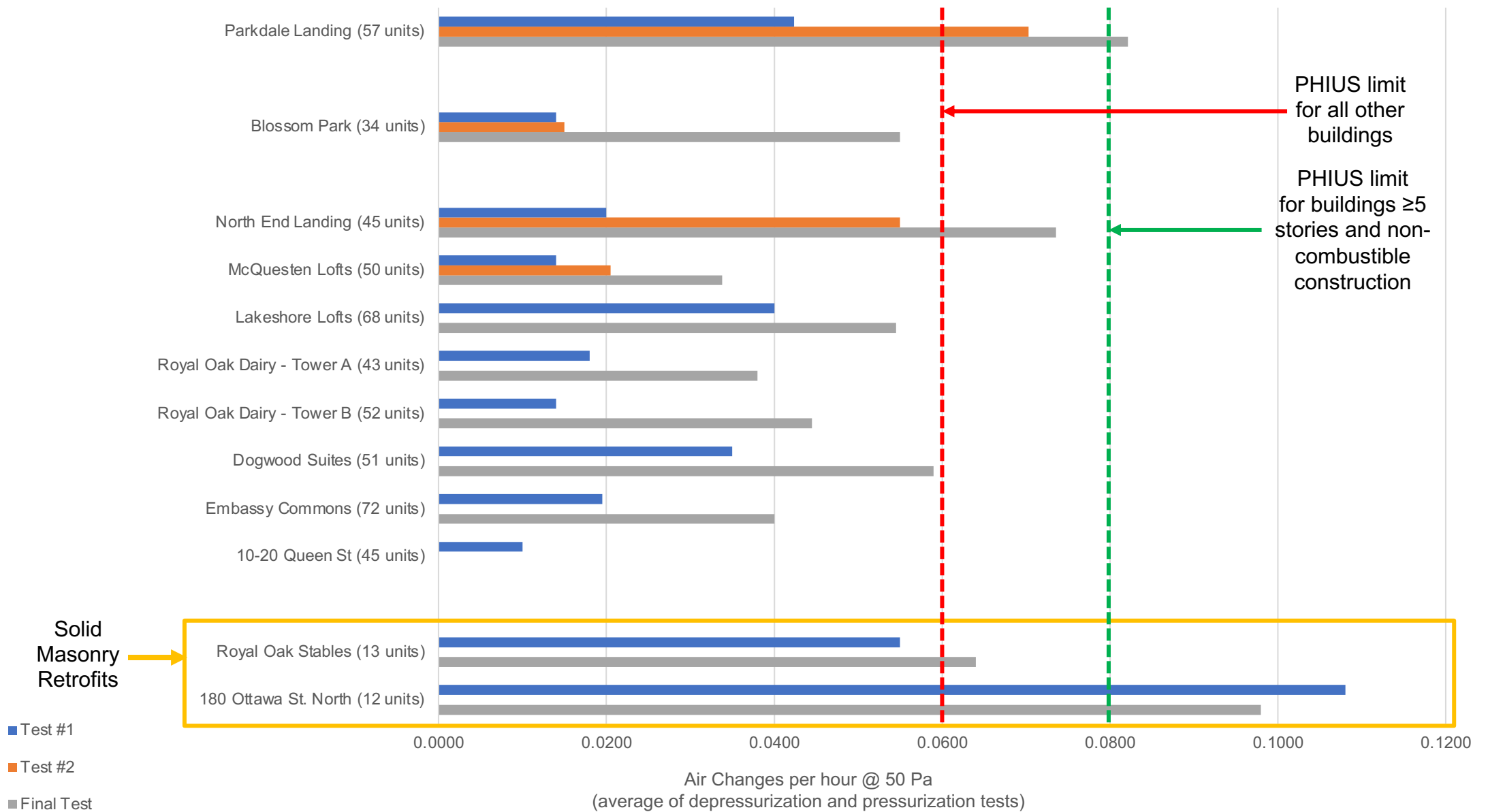


SECTION DETAILS



FOOTING INSULATION LATER DELETED

Whole Building Air Tightness (cfm/ft² @ 50 Pa)



WINDOW DETAILING







DANGER
DUE TO

MUST BE WORN

- Hard Hat
- Safety Glasses
- Safety Vest
- Fall Protection

BANTERBY
1-800-RENT-CAT

MECHANICAL SYSTEMS – VRF, CENTRAL ERV, DHW, PV



MECHANICAL SYSTEMS – CENTRAL VENTILATION, SINGLE HEAD VRF



ROOFTOP SOLAR PV SYSTEM

- 33.3 kWac
- 44.2 kWdc
- SMA STP Core1 inverter
- Sun Spec Optimizers
- 120x 370 W modules
- Net-Metered
- Ballast Mounted
- 5° Tilt



INDIGENOUS LANDSCAPING









Indwell
McQUESTEN
LOFTS

PROUDLY
SUPPORTED BY
AM

Hamilton
Public
Library
FREEDOM TO DISCOVER
PARKDALE
256 PARKDALE AVE. NORTH





Hamilton
Public
Library



PROJECT 1594

Indwell McQuesten Lofts & Hamilton Public Library – Parkdale Branch

Hamilton, Ontario

BUILDING FUNCTION

Multifamily

STATUS

Final Certified

PROJECT TYPE

New Construction

ASHRAE CLIMATE ZONE

7A - Very Cold - Humid

INT. CONDITIONED FLOOR AREA

31657 sq. ft.

Core Project Team

PHIUS CERTIFIED VERIFIER

Stephen Magneron

PHIUS CPHC (LEAD)

Greg Leskien

PROJECT SUBMITTER

Greg Leskien

PRIMARY REVIEWER

James Ortega



- Best Overall Project of 2021 (tied with Solis)
- Winner of Affordable category
- Honorable mentioned in Multi-family category

PASSIVE HOUSE PROJECTS UNDER CONSTRUCTION/ JUST COMPLETED



THANK YOU!





EMMA CUBITT, OAA, RAIC, LEED AP
Principal

cubitt@invizij.ca

social: @invizij



GRAHAM CUBITT

Director of Projects and Development

graham@indwell.ca

social: @IndwellCA