

Texas Case Studies

Phius Con 2023 | Houston, TX



Trey Farmer
Partner + Chief Sustainability Officer



Livia Barrett
Designer

Introduction



Case Study Homes | Austin, TX



Theresa Passive House



Cascadera Residence



W 7th Passive

Theresa Passive House



Theresa Passive House



Cascadera Residence



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Theresa Passive House



Project Info

Single Family Custom Home
2100 SF | 3 Bedroom | 2.5 Bath
PHIUS+ Source Zero 2018

Systems

VRF Heat Pump
Whole Home Dehumidification
MERV 16 Filter
ERV

Timeline

Design Start: Jan 2015
Construction Start: Oct 2018
Completion: Feb 2020

Wall Assembly | R-28

Continuous Insulation: R-6 Insulated Sheathing
Cavity Insulation: 5.5" Rockwool Comfortbatt

Air Tightness | 0.06 CFM/SF

Floor Assembly | R-12

Pier and Beam 2" CCSPF

Roof Assembly | R-38

Cavity Insulation: 11" Rockwool Comfortbatt

Window Values

U-Value: 0.19
SHGC: 0.21

Window Wall Ratio | 29%

Theresa Passive House



Theresa Passive House



Lessons Learned...

- Build with your friends
- Try new things... but not all at once
- Design comes first, then...
- Make it work
- And make it a party



Cascadera Residence



Theresa Passive House



Cascadera Residence



W 7th Passive



Project Info

Single Family Home Renovation
3000 SF | 4 Bed | 3.5 Bath
PHIUS+ 2021 Core in process

Systems

VRF Heat Pump
Whole Home Dehumidification
ERV

Timeline

Construction Start: Sep 2023

Wall Assembly | R-22

Continuous Insulation: 2" ComfortBoard
Cavity Insulation: 3.5" ComfortBatt

Air Tightness | 0.04 CFM/SF

Floor Assembly | R-48

Pier and Beam Cavity: 9 1/4" ComfortBatt
Continuous Insulations 2" ComfortBoard

Roof Assembly | R-48

Continuous Insulation:
Cavity Insulation:

Window Values

U-Value: 0.15
SHGC: 0.27

Window Wall Ratio | 20%

Cascadera Residence





Lessons Learning...

- 2x4 walls hard on cooling/heating load...
- So is renovating a house not designed for compactness
- But Schuco windows pick up the slack
 - Minimal cost differential between dual and tri pane
- Client as high-performance builder is an air tightness dream
- Don't skip the overhangs, bruh

W 7th Passive



Theresa Passive House



Cascadera Residence



W 7th Passive



Project Info

Single Family Custom Home

Unit A: 3325 SF | 5 Bed | 3.5 Bath

Unit B: 1380 SF | 3 Bed | 2.5 Bath

PHIUS+ 2018 Pending

Systems

VRF Heat Pump

Whole Home Dehumidification

ERV

Timeline

Design Start: March 2019

Construction Start: Oct 2022

Wall Assembly | R-25

Continuous Insulation: R-3 Insulated Sheathing

Cavity Insulation: 5.5" Dense Pack Cellulose Bibb

Air Tightness | 0.04 CFM/SF

Foundation Assembly

Crawl Space | R-4: 1" EPS

Retaining Wall | R-10: 2"

Roof Assembly | R-48

Continuous Insulation: 2" Polyiso

Cavity Insulation: 10" OCSPF

Window Values

U-Value: 0.22

SHGC: 0.23

Window Wall Ratio | 17%

W 7th Passive





Lessons Learned...

- Play with the model
- Different forms have different rules
 - crawl space game changer
- Listen to your friends
 - Be careful of compartmentalization
- Lean into your network
- Find good clients or be your own
- Have a healthy contingency

Multi-Family Case Studies | Austin, TX



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Integral Care



Temenos



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Project Info

Multi-Family Affordable Housing
110 SRO Units
AEGB - 5

Systems

Units: PTAC
Common Areas: VRF
Whole Building: Central DOAS
ventilation, conditioning, and
dehumidification

Timeline

Design Start: Jan 2020
Construction Start: Mar 2021
Completion: July 2023

Wall Assembly | R-30

Continuous Insulation: 2" EIFS
Cavity Insulation: 5.5" Dense Pack Cellulose Bibb

Air Tightness | 4 ACH 50

Floor Assembly | R-20

Monoglass spray at conditioned space

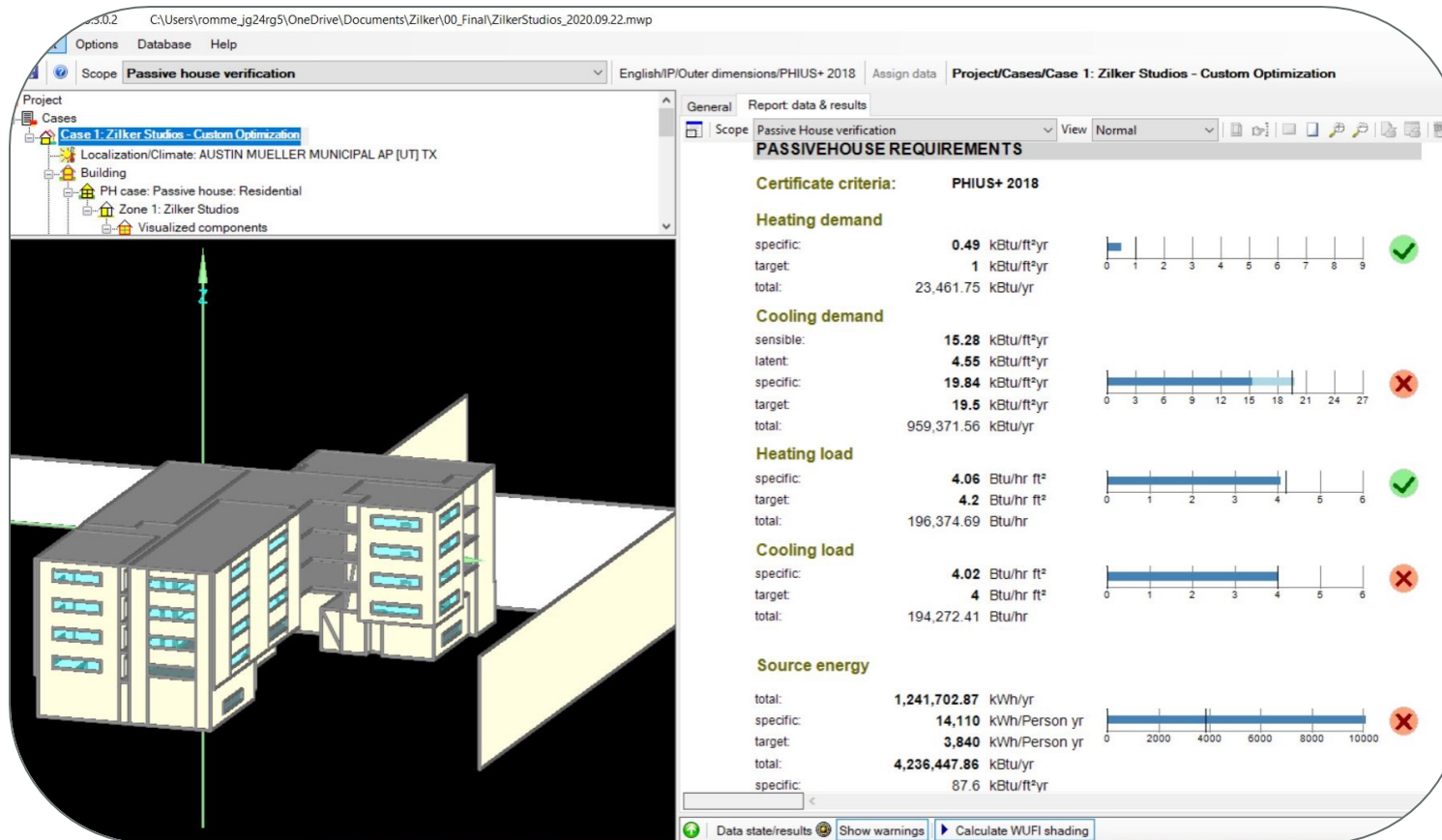
Roof Assembly | R-38

Cavity Insulation: 24" Fiberglass Batt

Window Values

U-Value: 0.37
SHGC: 0.3

Window Wall Ratio | 10%



Lessons Learned

- Climate appropriateness of targets?? Work with PHIUS.
- Back off CI for other efficiencies
- Air Sealing is cultural and culture is hard to change
- ABAA Certified WRB Installers



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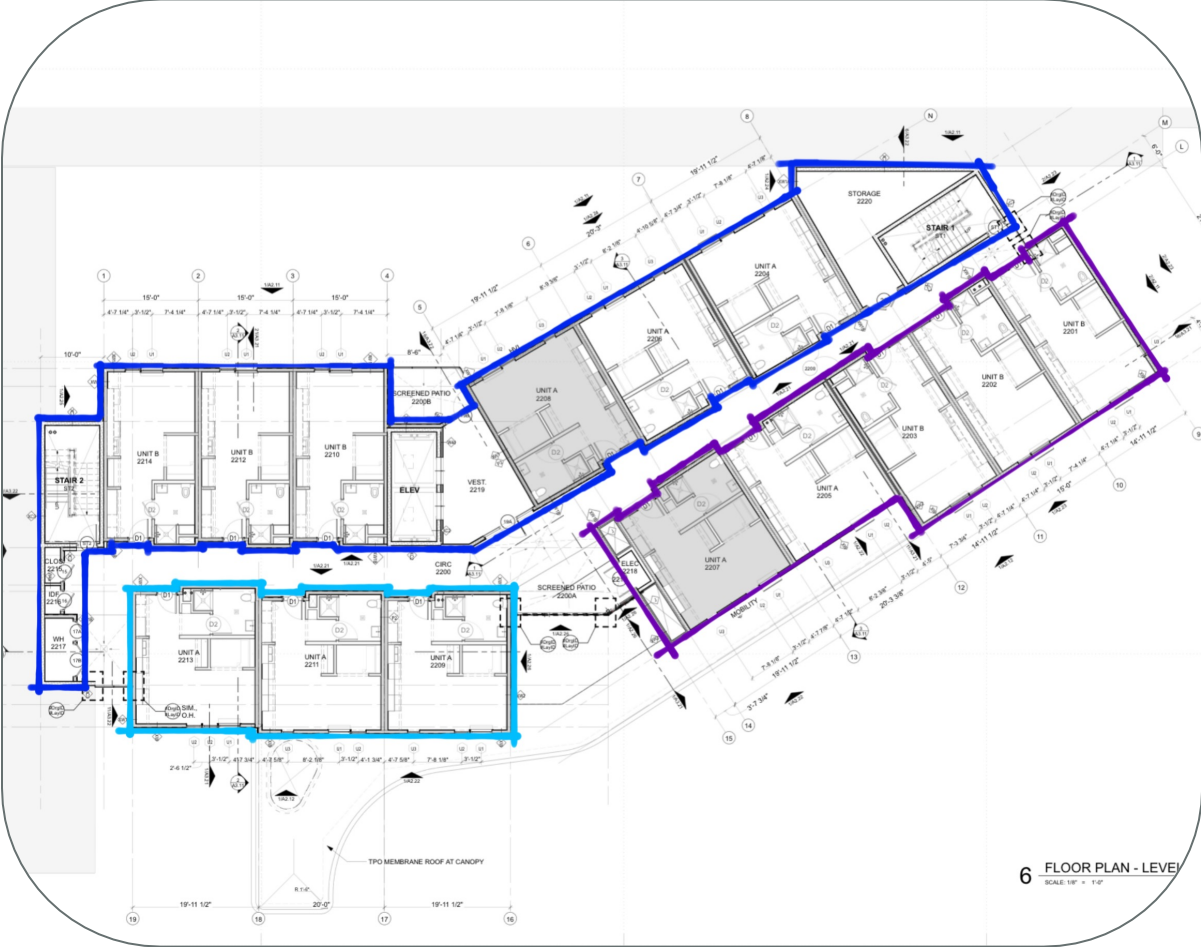
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Plan - Original



Plan - Enclosed Corridors



Lessons Learned...

- Feasibility Study with PHIUS...do it
- Single enclosure = 20% annual utility savings AND easier path to PH
- Construction cost neutral but still a tough sell to some clients



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Final Thoughts

- Get a good team, with everyone on board at the start
- Form matters, so use the model to inform rules of thumb
- Energy and utility cost savings are easier to pitch to owners
- Find a good GC and test drive the model to cost optimize
- Bigger projects are more complex, and harder to course correct



Questions?

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