Texas Case Studies

Phius Con 2023 | Houston, TX
Introduction

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

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%

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
Cascedera Residence

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

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 ¼” ComfortBatt
Continuous Inslations 2” ComfortBoard
Roof Assembly | R-48
Continuous Insulation:
Cavity Insulation:
Window Values
U-Value: 0.15
SHGC: 0.27
Window Wall Ratio | 20%

Timeline
Construction Start: Sep 2023
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
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

Zilker Studios

Integral Care

Temenos
Zilker Studios

Integral Care

Temenos
Zilker Studios

Project Info
Multi-Family Affordable Housing
110 SRO Units
AEGB - 5

Wall Assembly | R-30
Continuous Insulation: 2” EIFS
Cavity Insulation: 5.5” Dense Pack Cellulose Bibb

Air Tightness | 4 ACH 50

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

Floor Assembly | R-20
Monoglass spray at conditioned space

Roof Assembly | R-38
Cavity Insulation: 24” Fiberglass Batt

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

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
Integral Care
Integral Care

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
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?

Find us...

www.forgexcraft.com
Social: @forgexcraft