In accordance with the Department of Labor and Industry's statute 326.0981, Subd. 11,

"This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying **1.5 hours** of credit toward **Building Officials and Residential Contractors** continuing education requirements."

For additional continuing education approvals, please see your credit tracking card.

Wrenshall Residence

A LOCAL ARCHITECT PUTTING HIS MONEY WHERE HIS MOUTH IS.

PRESENTER: ELDEN LINDAMOOD

Learning Objectives:

1. Learn aspects of good design.
2. Identify primary drivers of design.
3. Discuss the interdependency of those drivers.
4. Consider what happens when too much emphasis is placed on only one driver.
5. Discuss how those drivers receive different emphasis from the different players involved in the design and construction of a residence.
6. Look at examples of good and bad design, and discuss why good design is important.
7. Review how these drivers were applied to the Wrenshall Residence case study.
8. Emphasize how the identified drivers need to be balanced to result in a successful project.

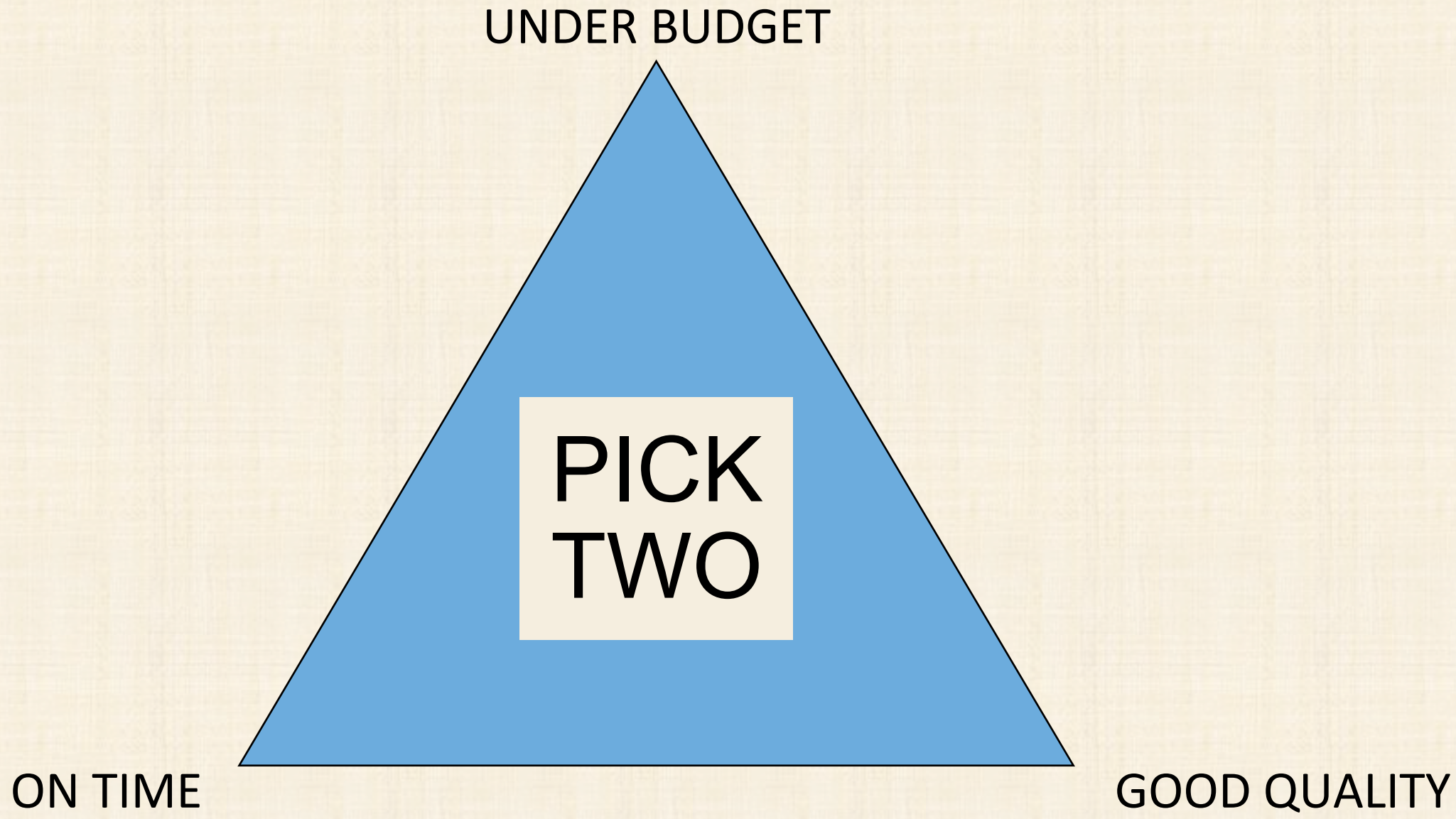
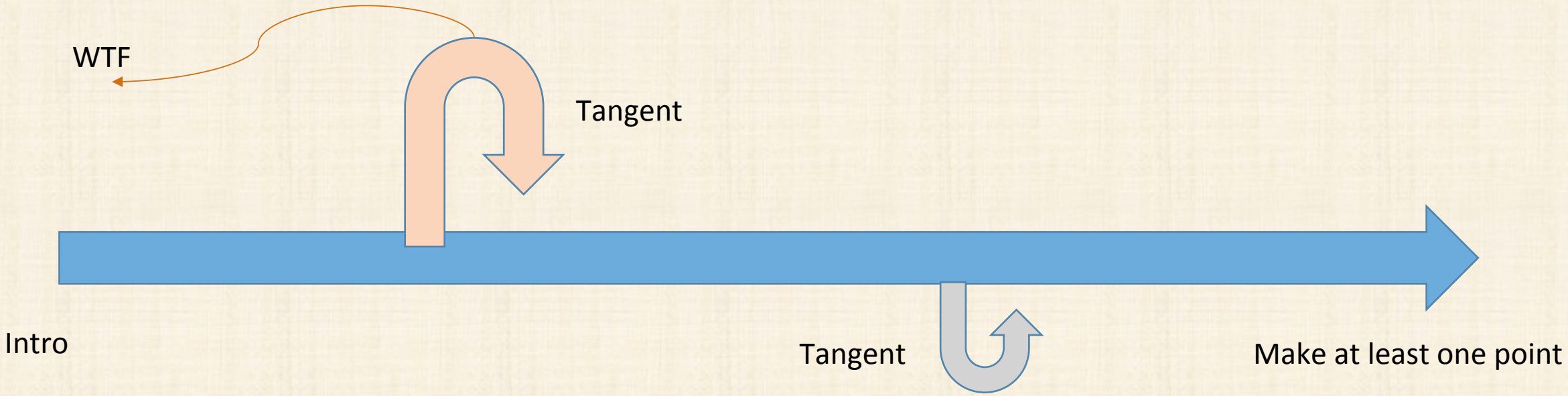

UNDER BUDGET
PICK TWO
ON TIME
GOOD QUALITY

Image Source [http://thelibertarianrepublic.com/wp-content/uploads/2016/04/Roark2-750x400.jpg]

Photo Credit: Mark Teskey Photography

Presentation Trajectory Graphic



DESIGN

BECAUSE IT

Awesome!

MATTERS

What is good design?

- Depends who you ask.
  - Beauty
  - Function
  - Affordability
  - Efficient
  - Environmentally responsible

What is good house design?

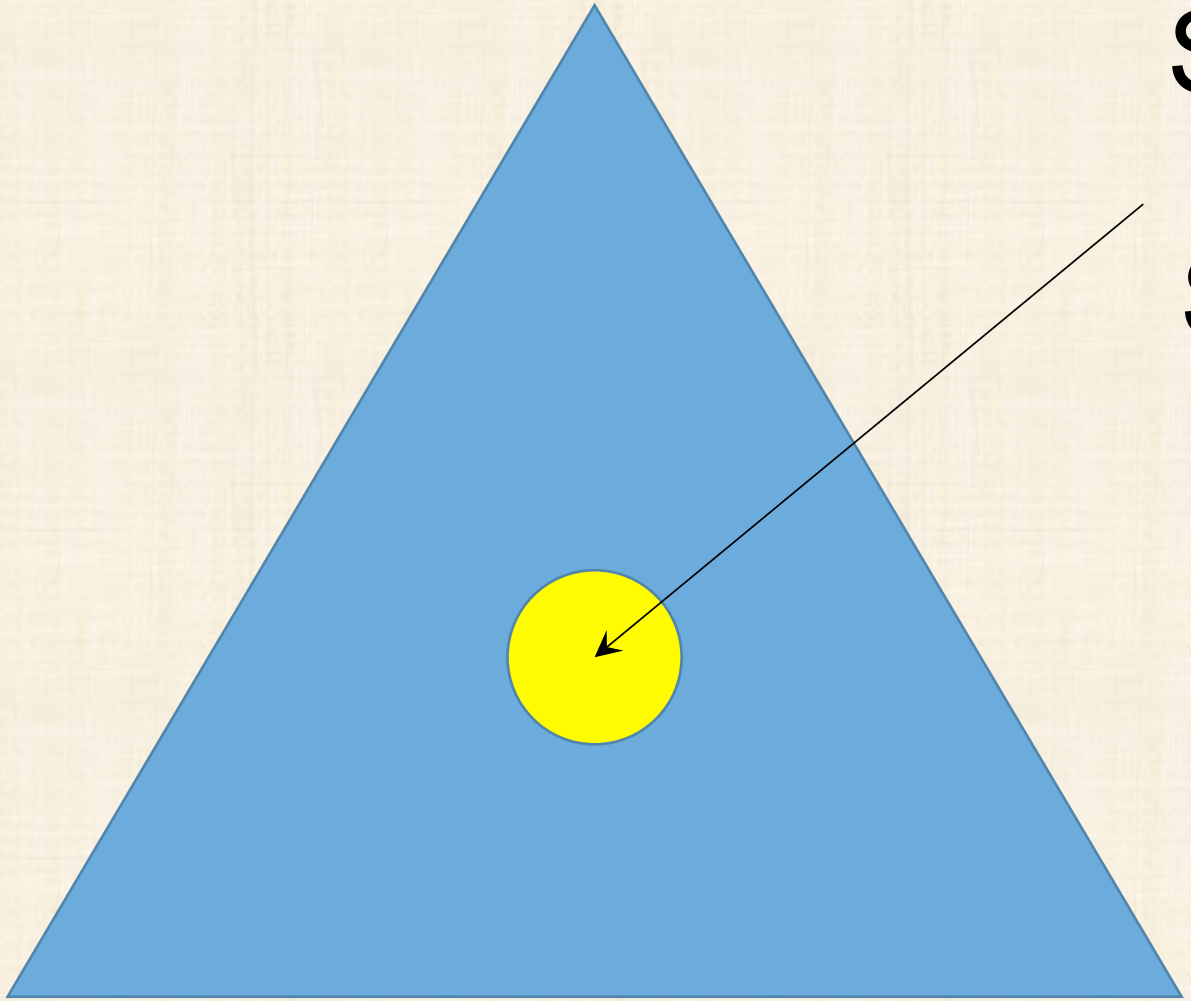
- All those things, plus…
  - Easy to maintain
  - Comfortable
  - Welcoming
  - Impressive?
  - Durable

The BIG THREE

- Budget
- Energy Efficiency
- Aesthetics

BUDGET

SWEE
T
SPOT



AESTHETICS

ENERGY
EFFICIENCY

Budget

- Fixed or loose
- Realistic or not
- Ultimate driver of project (?)
- Very emotional/stressful aspect
- Value versus cost
- Don’t max it out

Energy Efficiency

- Goals?
  - Better – aggressive – extreme
  - Programs
    - Energy Star, EEE, Passive house, LEED for homes, Living building challenge, Net zero, “Pretty Good House”
  - So many arguments
- Return on Investment (ROI) and payback
  - Simple payback
  - Intangible aspects
    - Passive survivability

Aesthetics

- 100% subjective, but some things are just ugly.
- Architect speak:
  - Massing, proportion, rhythm, balance, detail.
    - Simplicity/complexity
    - Framed views, axis, focal points
    - Context
- Design
  - Style and trends
  - Style books and websites like Pinterest and Houzz
  - Precedent photos good and bad

Architect Speak: Massing, composition, proportion and balance

Photo by Mark Teskey Photography

Image Source:[http://2.bp.blogspot.com/-ewPOEvFUr1I/URvPjdqHoxI/AAAAAAAADaw/0Ak7_pzNZO8/s1600/mcmansion3.jpg]

Architect Speak: Detail – Simplicity and complexity

Photo by Mark Teskey Photography

Photo by Elden Lindamood]

Architect Speak: Framed views, axis, alignment, and focal points

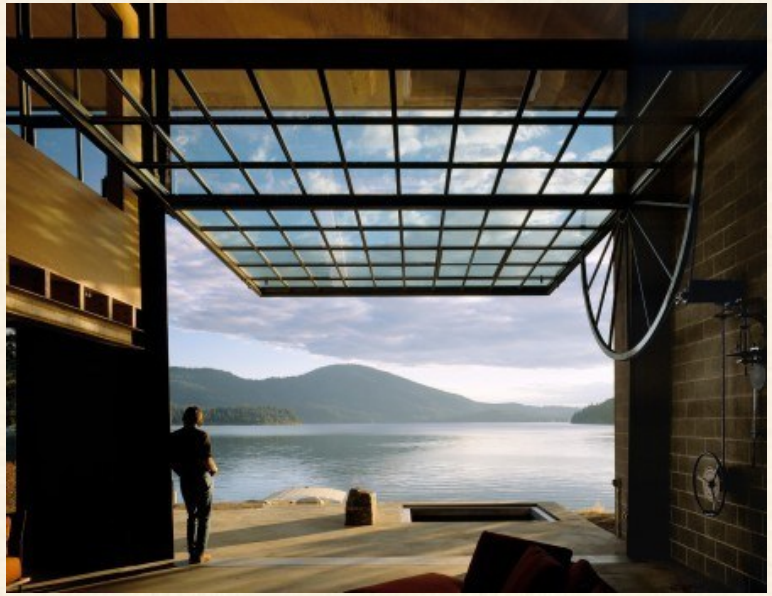


Image Source: http://d352orssbgs8s7.cloudfront.net/wp-content/uploads/2015/03/00015_00_Chicken_Point_Cabin_BB_N3-450x349.jpg

Image Source:[http://founterior.com/wp-content/uploads/2013/06/mystic-mountain-apartment-view.jpg]

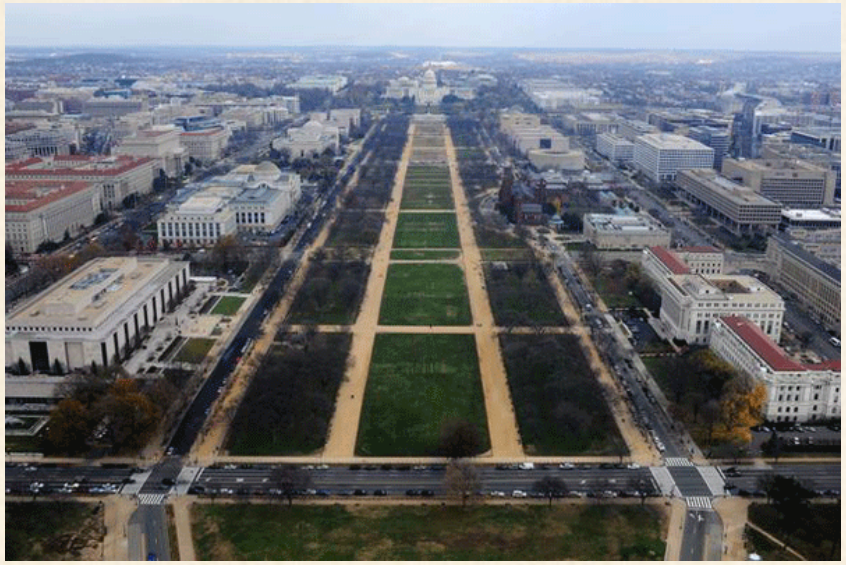


Image Source: [http://www.999photos.com/usa/washington_dc/national_mall_2.gif]

Architect Speak: Context and style

Image Source: [http://whitecenterblog.com/wp-content/uploads/2014/09/Seola-Gardens-phase-1-new-homes-streetscape.jpg]

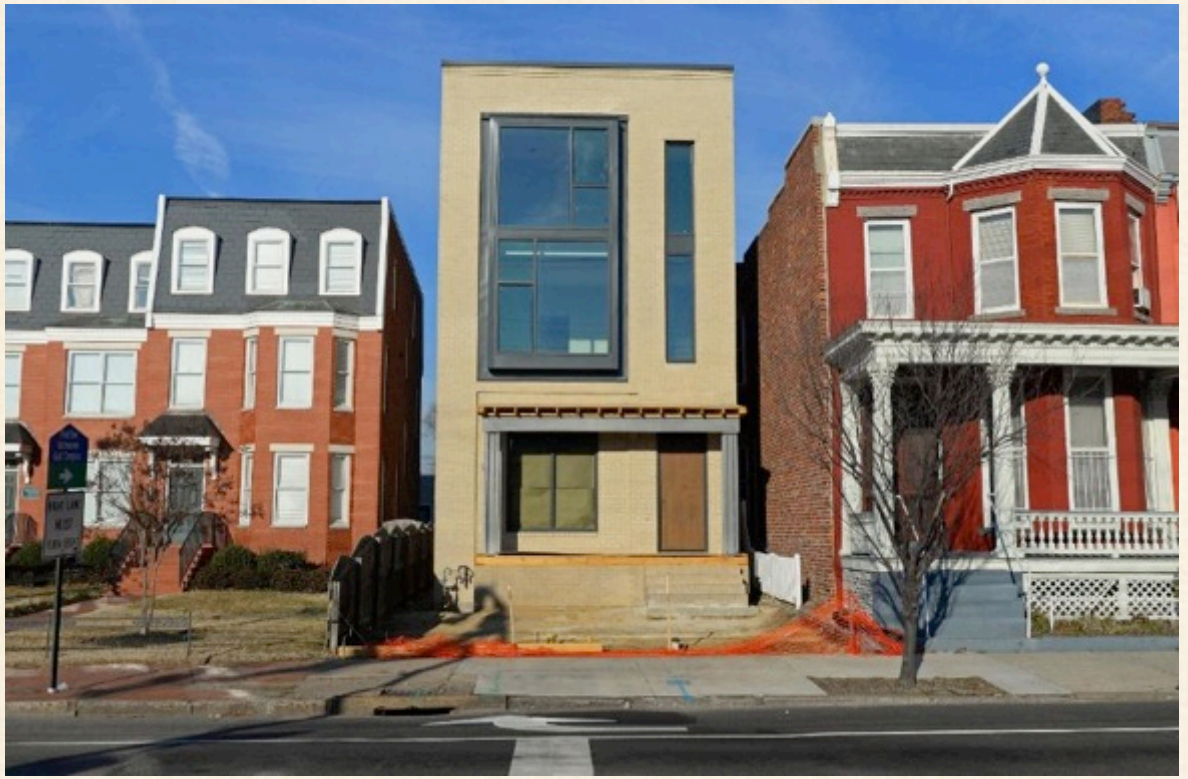


Image Source: [http://media1.fdncms.com/styleweekly/imager/one-of-richmonds-most-historic-neighborho/u/original/2173436/feat06_architecture_leigh_street.jpg]

Tangent:

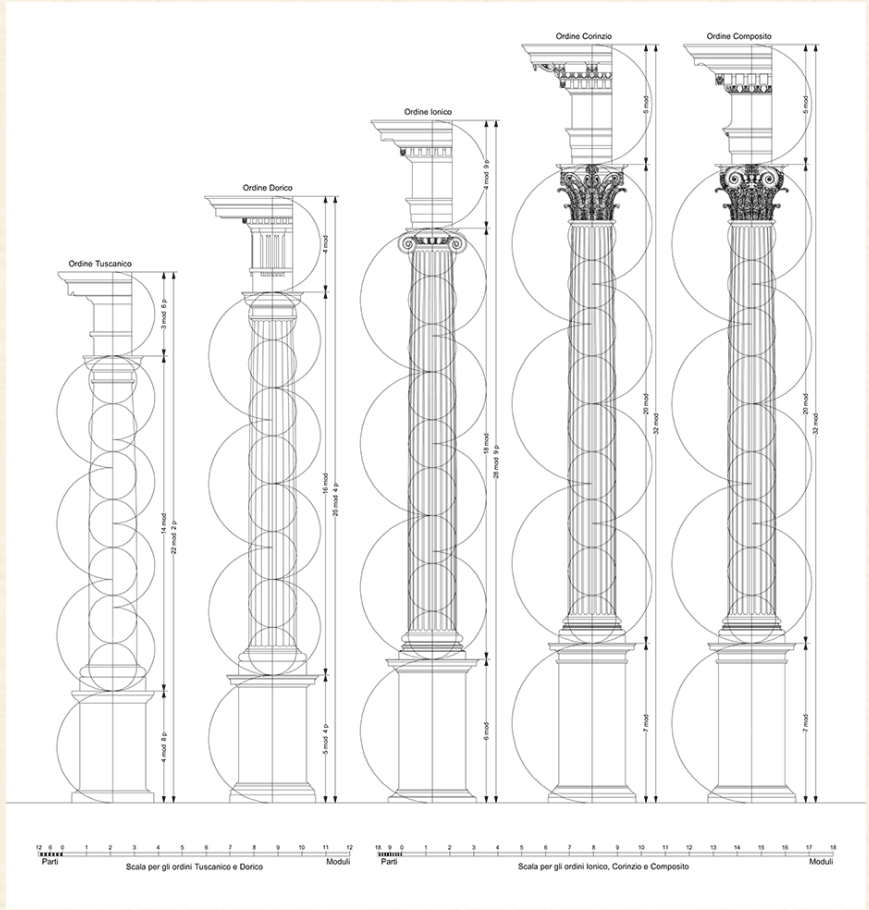


Image Source [http://blog.classicist.org/wp-content/uploads/2011/06/Figure-1-corporate-office-building-1024x687.jpg]

Image Source [http://www.thegoodstuffguide.com/wp-content/uploads/2011/11/Beaux-Arts.jpg]

Too often we shoot for this…

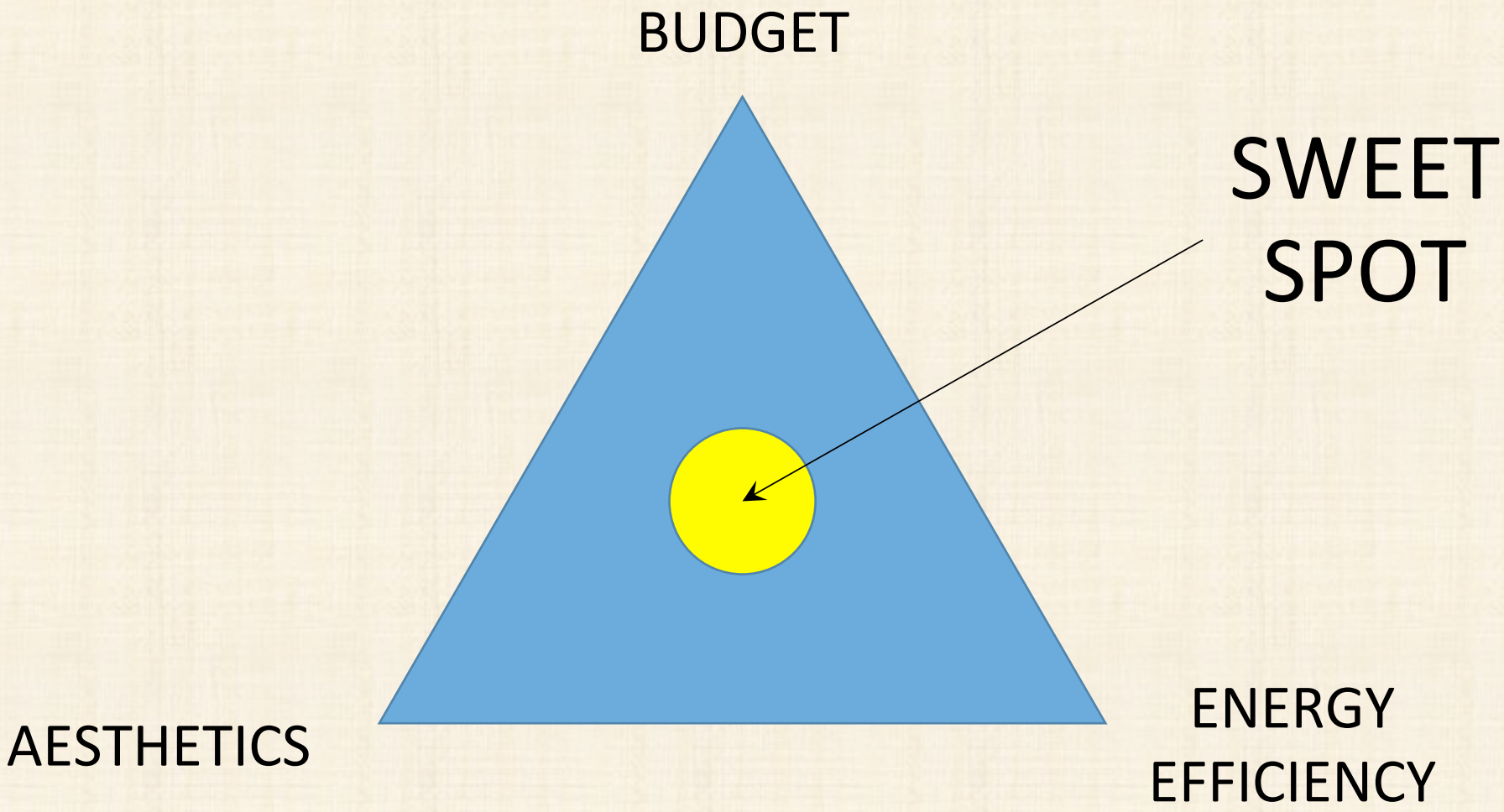
Image Source: [https://paulmullins.files.wordpress.com/2016/09/jenny-mcmansion-ohio.jpg]

…and end up with this.

- Lack of context.
- Off the shelf parts.
- Hodgepodge of styles.
- Landscaping.

…or this.

- Why?



Not mutually exclusive

Image Source: https://upload.wikimedia.org/wikipedia/en/c/c5/Bob_the_builder.jpg

BUDGET

SWEET SPOT

Image Source: [https://irp-cdn.multiscreensite.com/fb415c73/dms3rep/multi/tablet/20130610161557299_website_services_78366512edit-1501x1000.jpg]

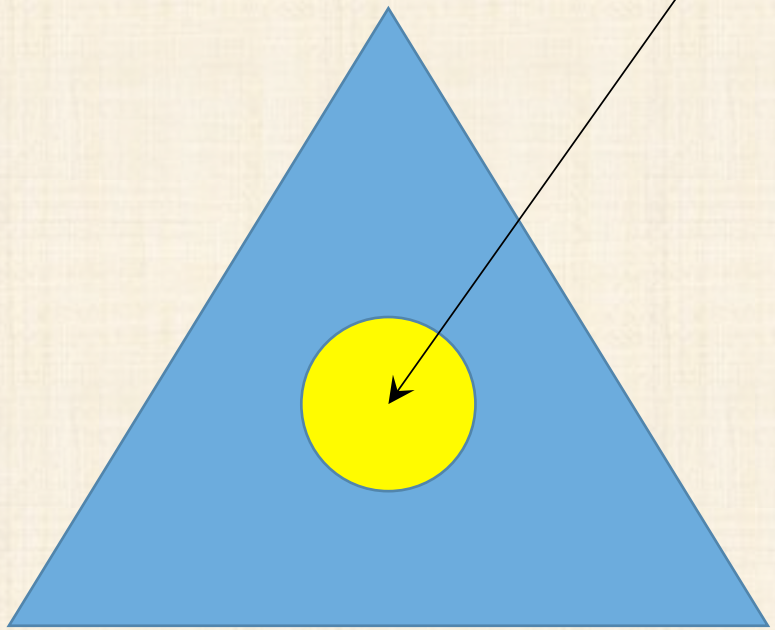


Image Source [http://thelibertarianrepublic.com/wp-content/uploads/2016/04/Roark2-750x400.jpg]

AESTHETICS

ENERGY EFFICIENCY

Image Source: [http://atlaseps.com/wordpressfiles/wp-content/uploads/2011/03/builder-remodeler-m.png]

BUDGET

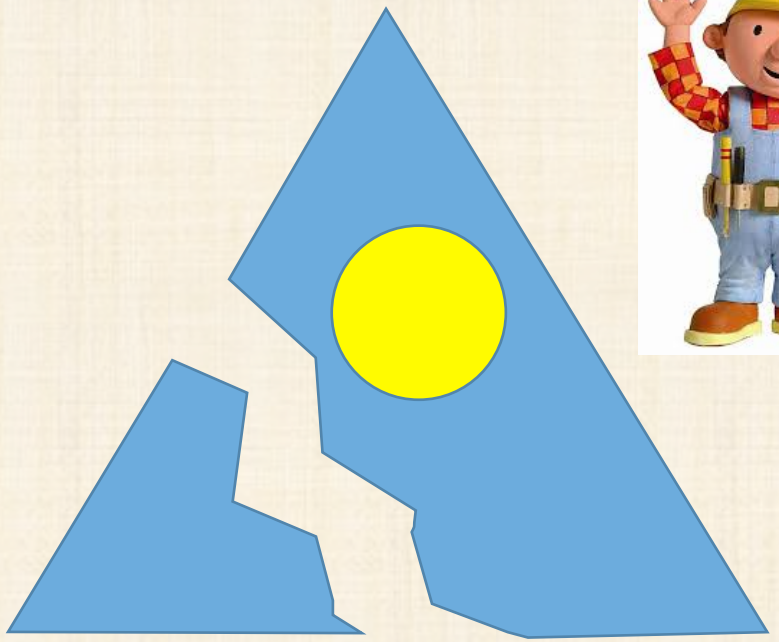


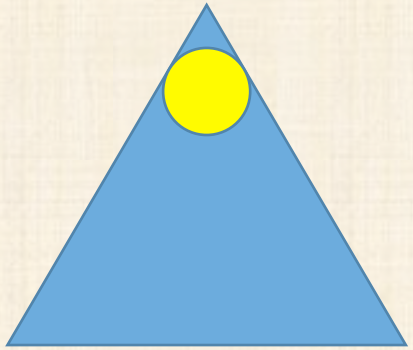
Image Source: https://upload.wikimedia.org/wikipedia/en/c/c5/Bob_the_builder.jpg

Image Source: [https://irp-cdn.multiscreensite.com/fb415c73/dms3rep/multi/tablet/20130610161557299_website_services_78366512edit-1501x1000.jpg]

AESTHETICS

ENERGY EFFICIENCY

BUDGET



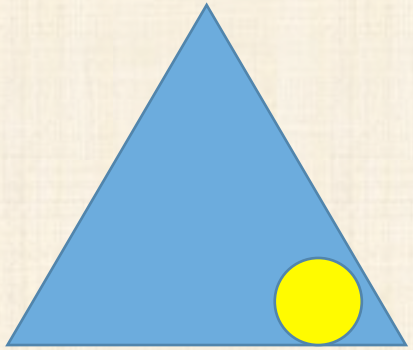
AESTHETICS

ENERGY EFFICIENCY

Image Source: http://www.rukle.com/at/13025/exterior-modular-home-floor-plans/1471/

Image Source: http://blog.modernmechanix.com/mags/PopularScience/10-1937/cheap_house.jpg

BUDGET



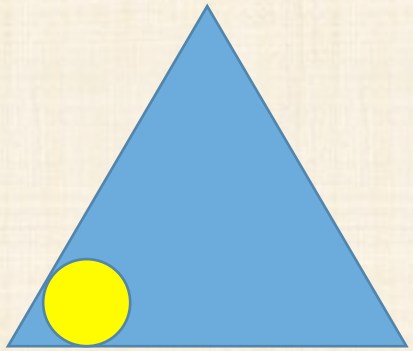
AESTHETICS

ENERGY EFFICIENCY

Image Source: [https://s-media-cache-ak0.pinimg.com/originals/60/5c/a6/605ca65b4d8ba3ce449a639d60baf2e3.jpg]

Image Source: [http://www.ecohome.net/sites/www.ecohabitation.com/files/imagecache/G12-Image principale/nouvelle/saskcatchewan_conservation_house_passive_solar.jpg]

BUDGET



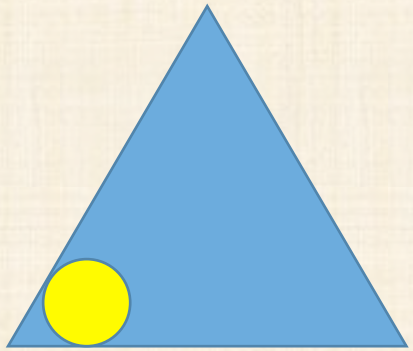
AESTHETICS

ENERGY
EFFICIENCY

Image Source: http://www.hdwallpaperup.com/wp-content/uploads/2014/12/Beautiful-House.jpg

Image Source: [http://www.vourtimeri.com/I/2016/05/luxury-home-plan-design-bedroom-that-has-a-great-combination-together-with-luxury-modern-house-design-architectures-images-luxury-house-designs.-elegant-outdoor-living]

BUDGET



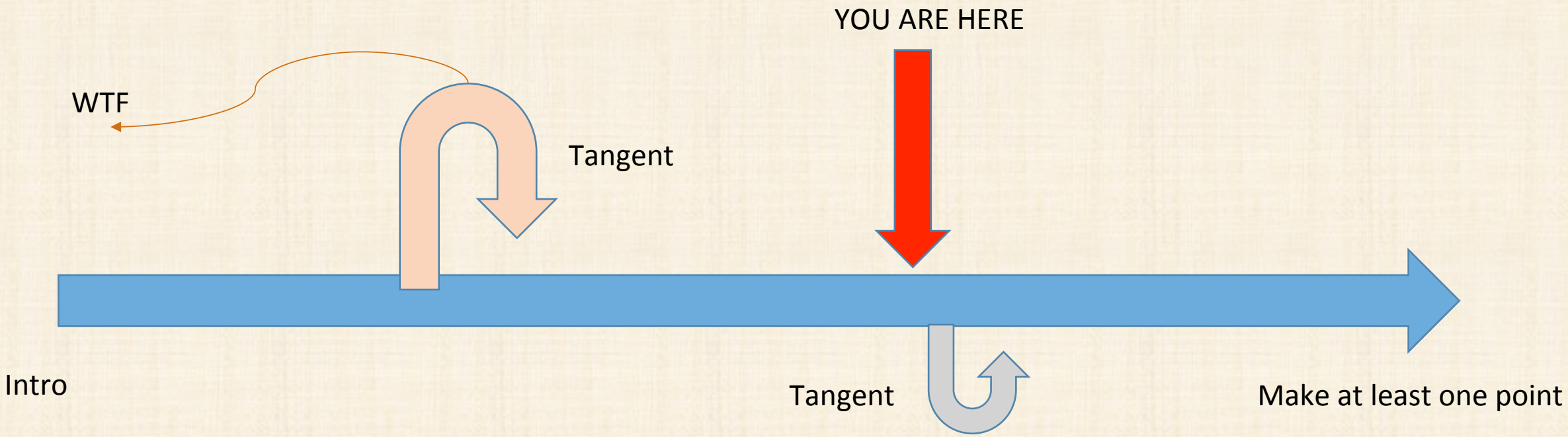
AESTHETICS

ENERGY
EFFICIENCY

Image Source:http://www.niloblog.com/files/images/xm43jsfxsujcdulmi60.jpg

Image Source: http://www.fallingwater.org/img/home_assets/FW_FALL_01.jpg

Presentation Trajectory Graphic (updated)

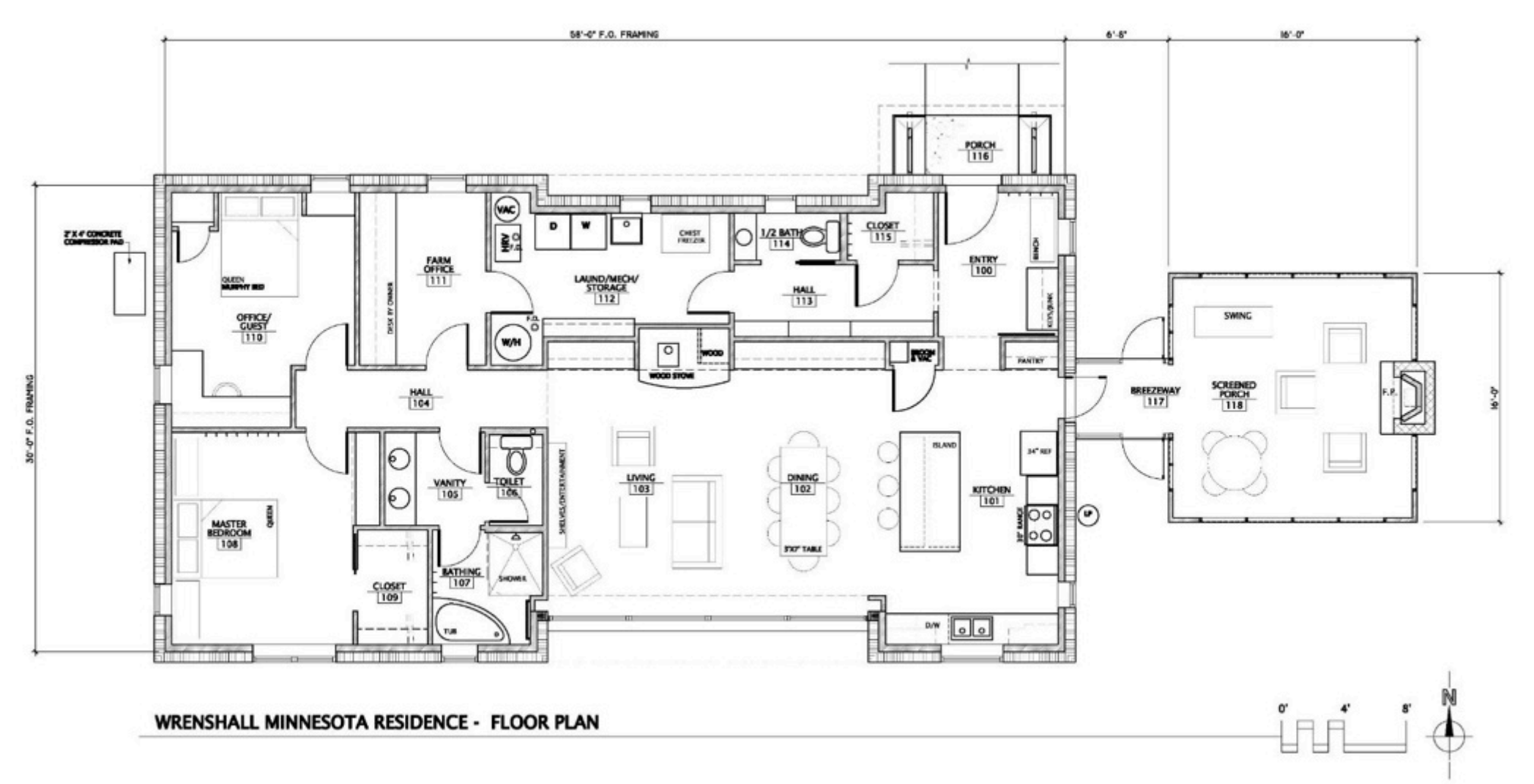


Case Study: Wrenshall Residence (my house)

The Stats – About the House

- 1668 Gross Square Feet, 1575 interior square feet.
  - Plus 260 s.f. screened porch
- One story, slab on grade.
  - Frost protected shallow foundation on a flat site
- 3 bedroom. 1-1/2 bath.
- All electric.

The Stats – About the House



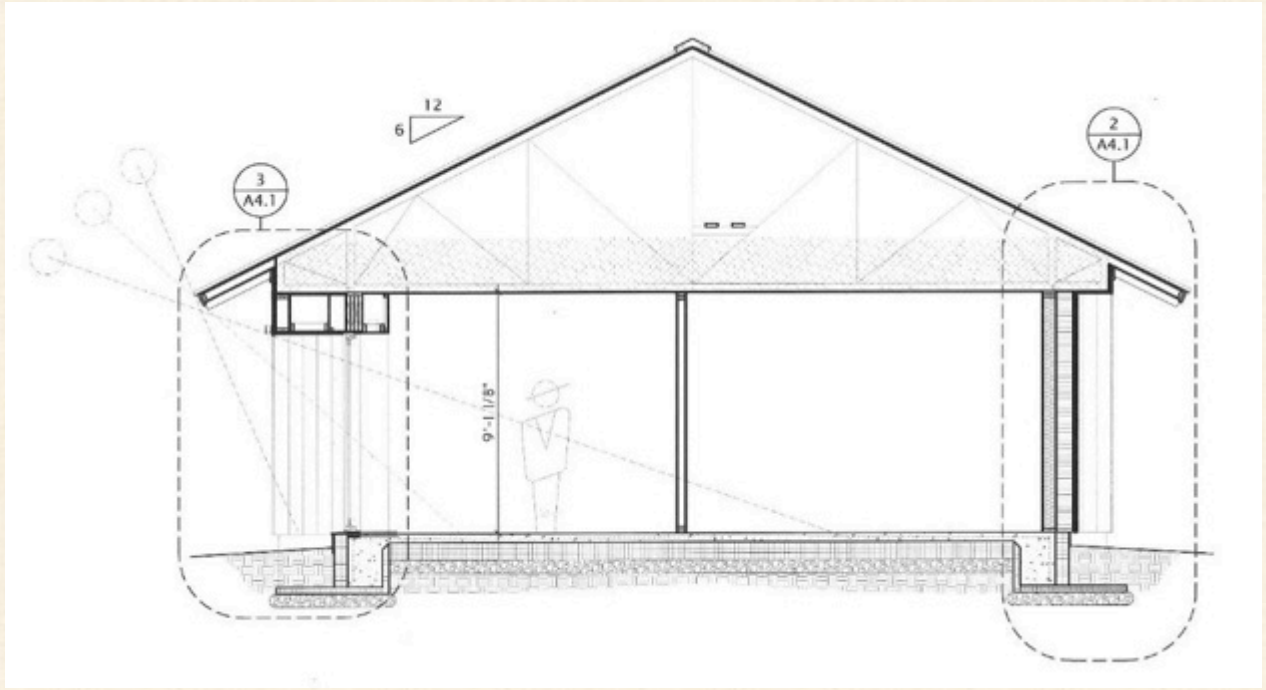
The Stats - Budget

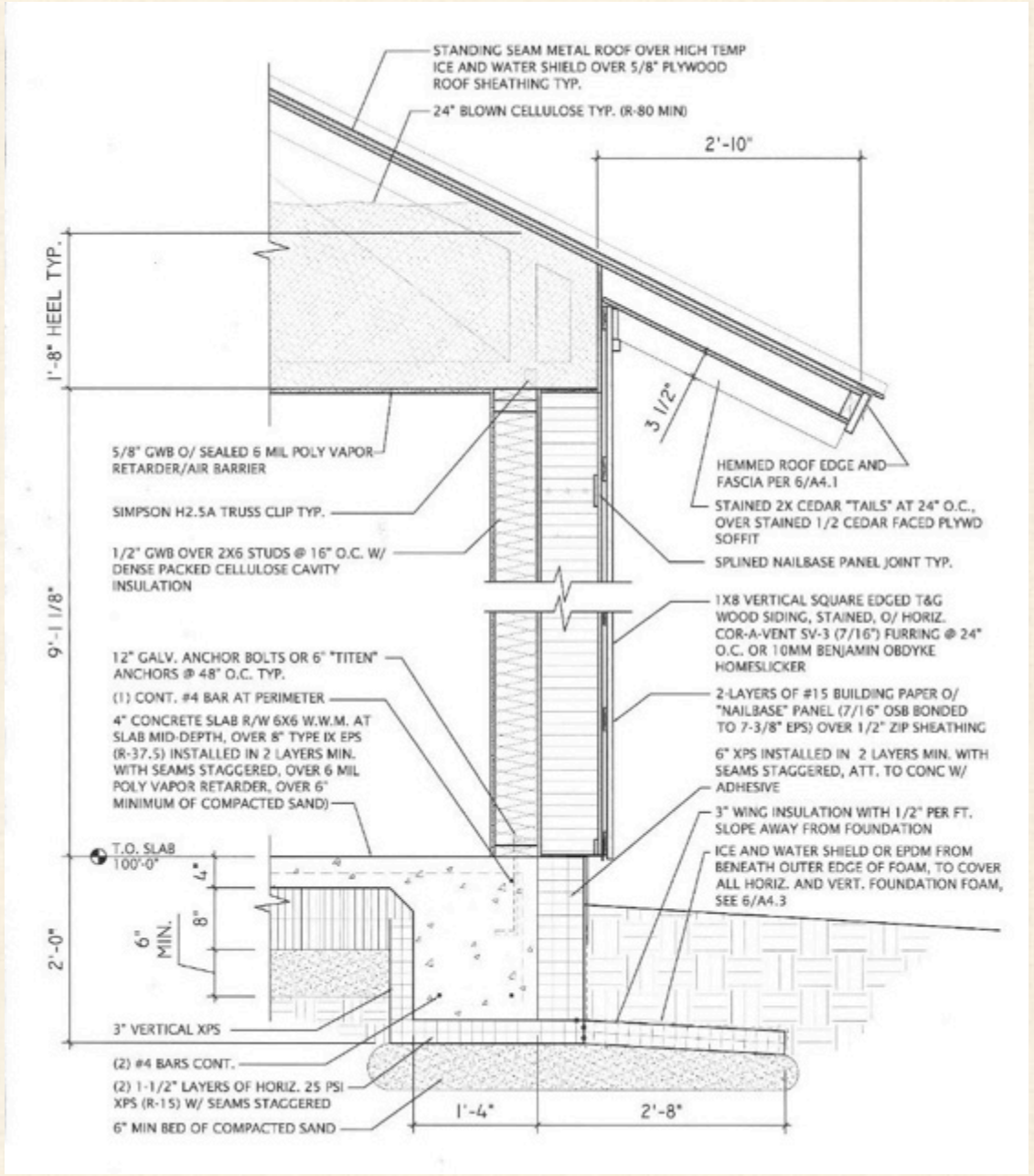
- $300K target – house and porch only
- Soft target depending on how much of the work I could do myself.
  - Banks suck
- T&M contract

The Stats – Energy Efficiency

- R-30 slab
- R-50 walls
- R-80 attic
- U 0.18 Tri-pane fiberglass windows
- Air Tightness goal of < 0.6 ACH/50. Tested at 0.2 ACH/50 (58 CFM/50)
- Ducted mini-split heat pump with electric resistant cove heaters for backup.
- Wood stove, exhausted range hood, bath exhaust via HRV, condensing clothes dryer, Marathon hot water storage tank.
- Modeled passive solar with favorable orientation and window design.
- “Solar ready”

The Stats – Energy Efficiency



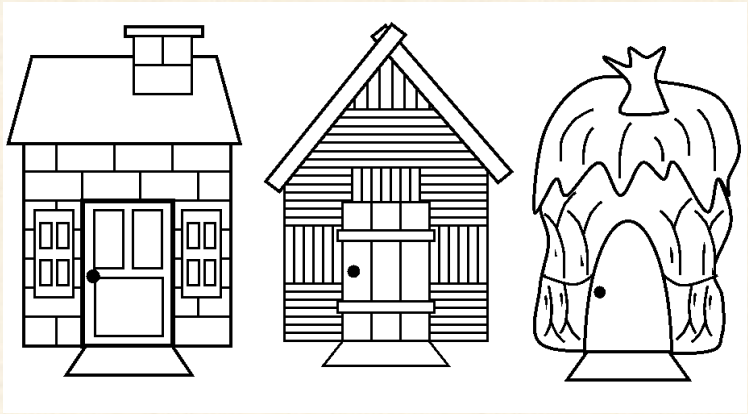


What did I do?

What did I NOT do?

Did I stay in that “sweet spot”?

Budget

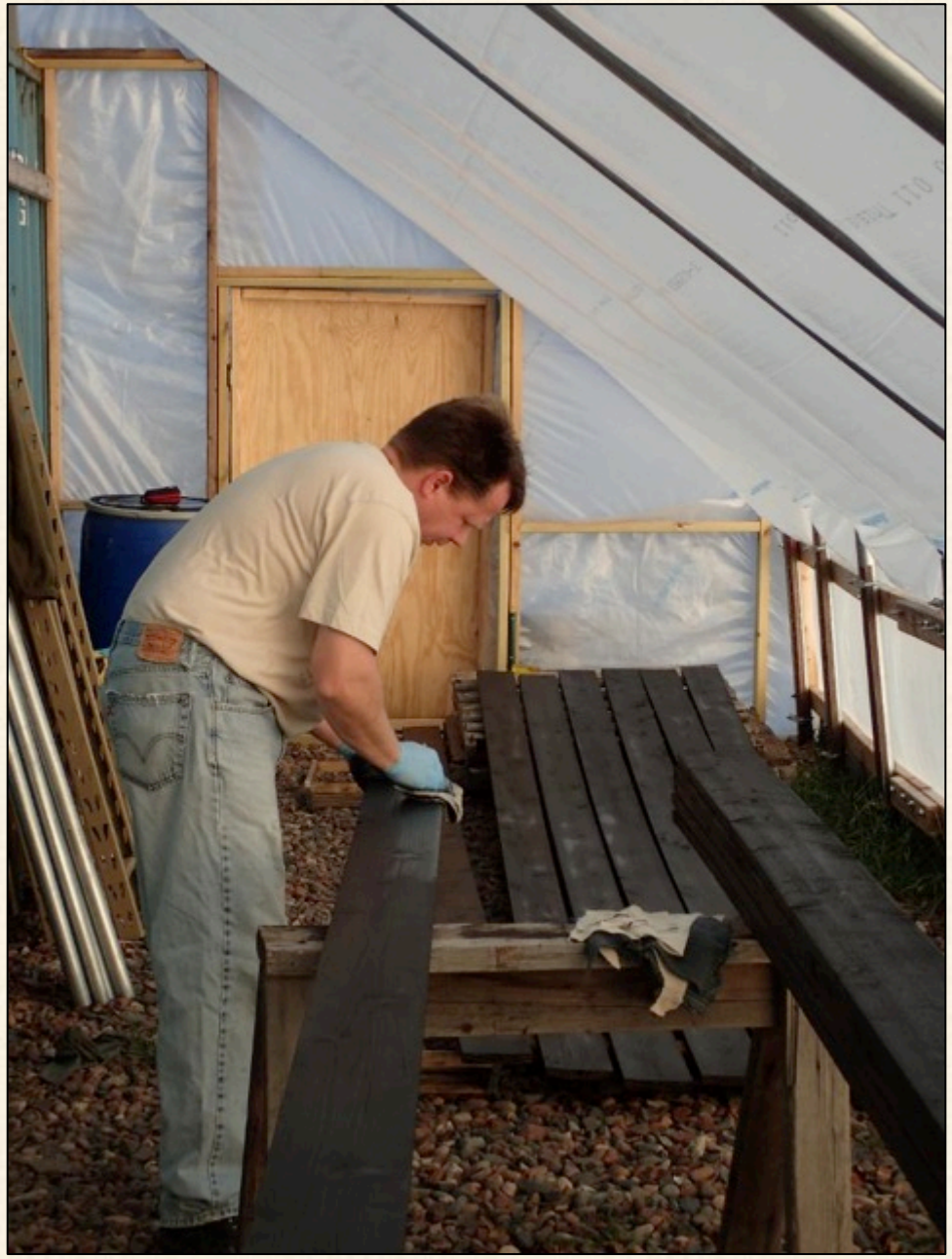


Budget

Aesthetics - Massing

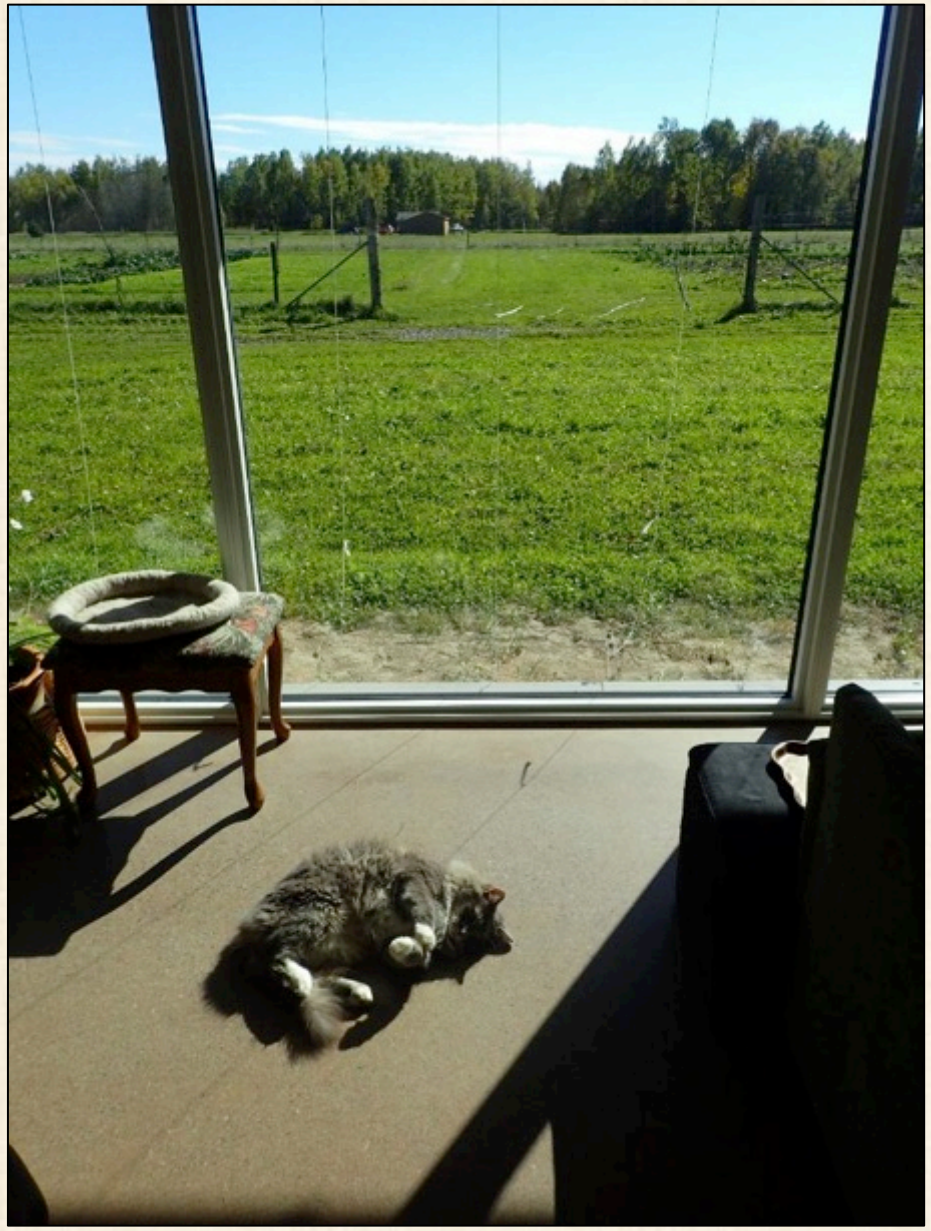
Aesthetics - Details

Aesthetics – Details



Aesthetics - Products

Energy Efficiency/ Aesthetics

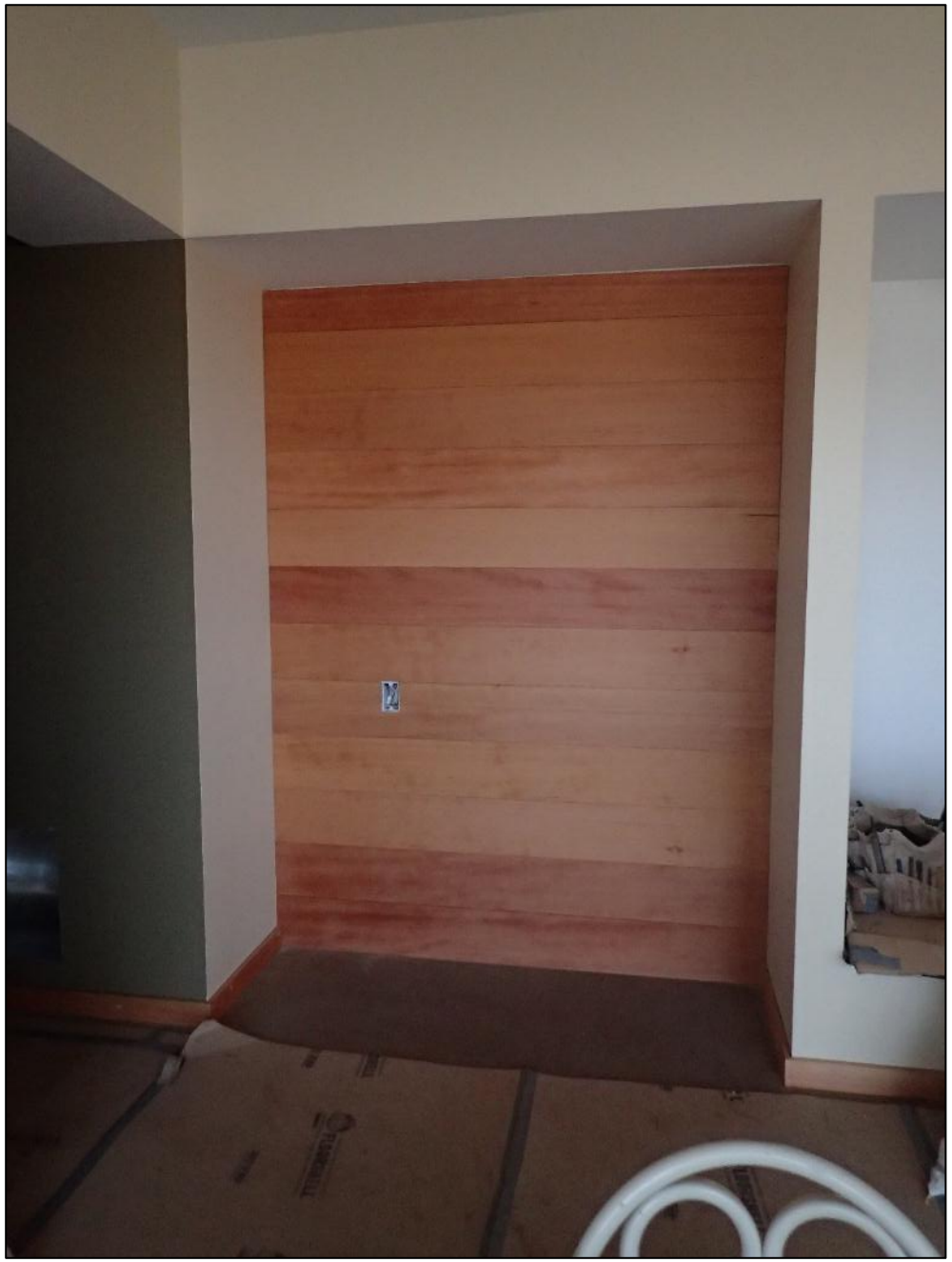


Energy Efficiency

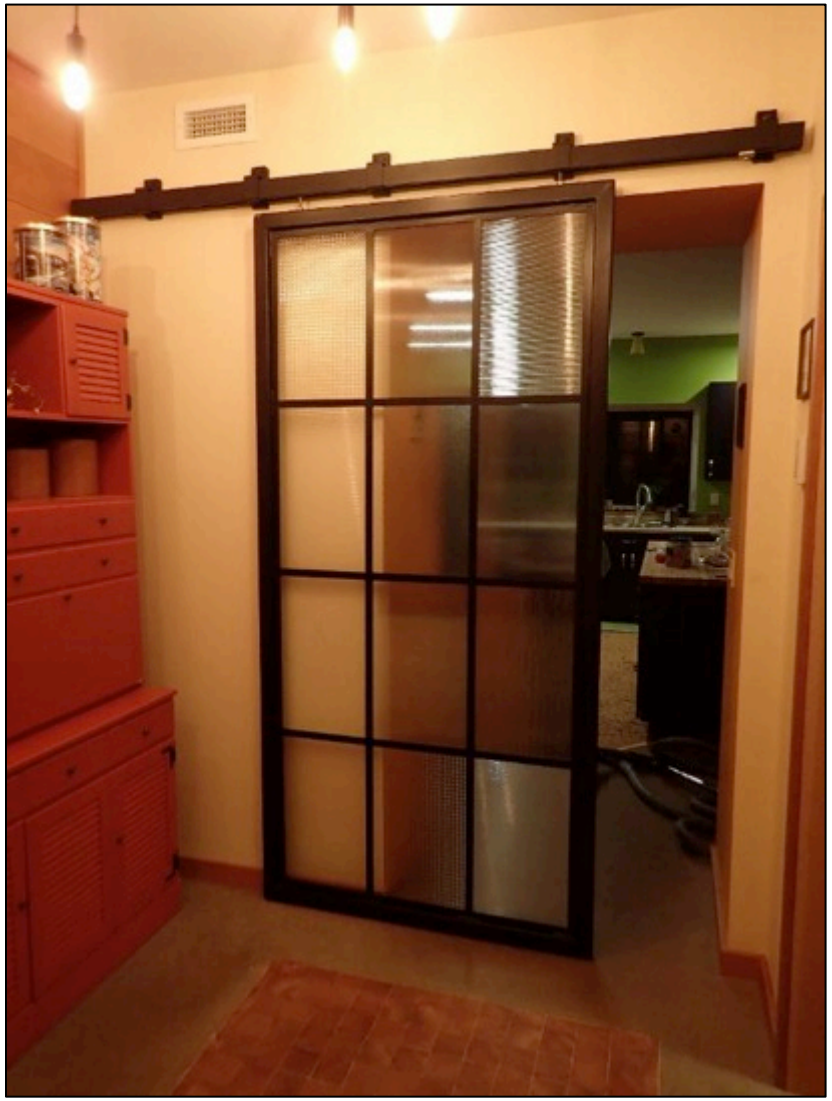
Working out the details with the builder

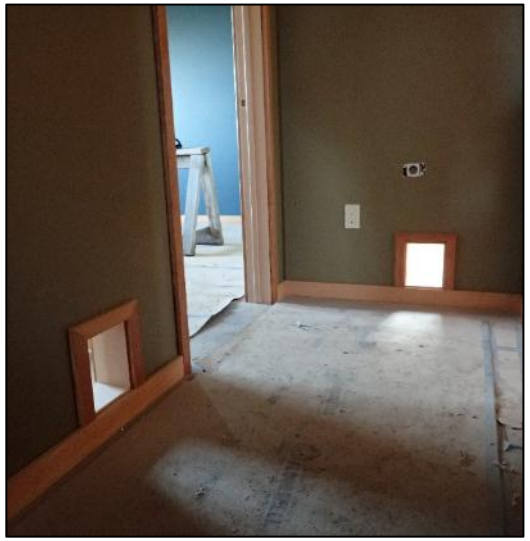
Tangent:
Why do people always ask about the ROI for insulation, but never for granite countertops or hot tubs?

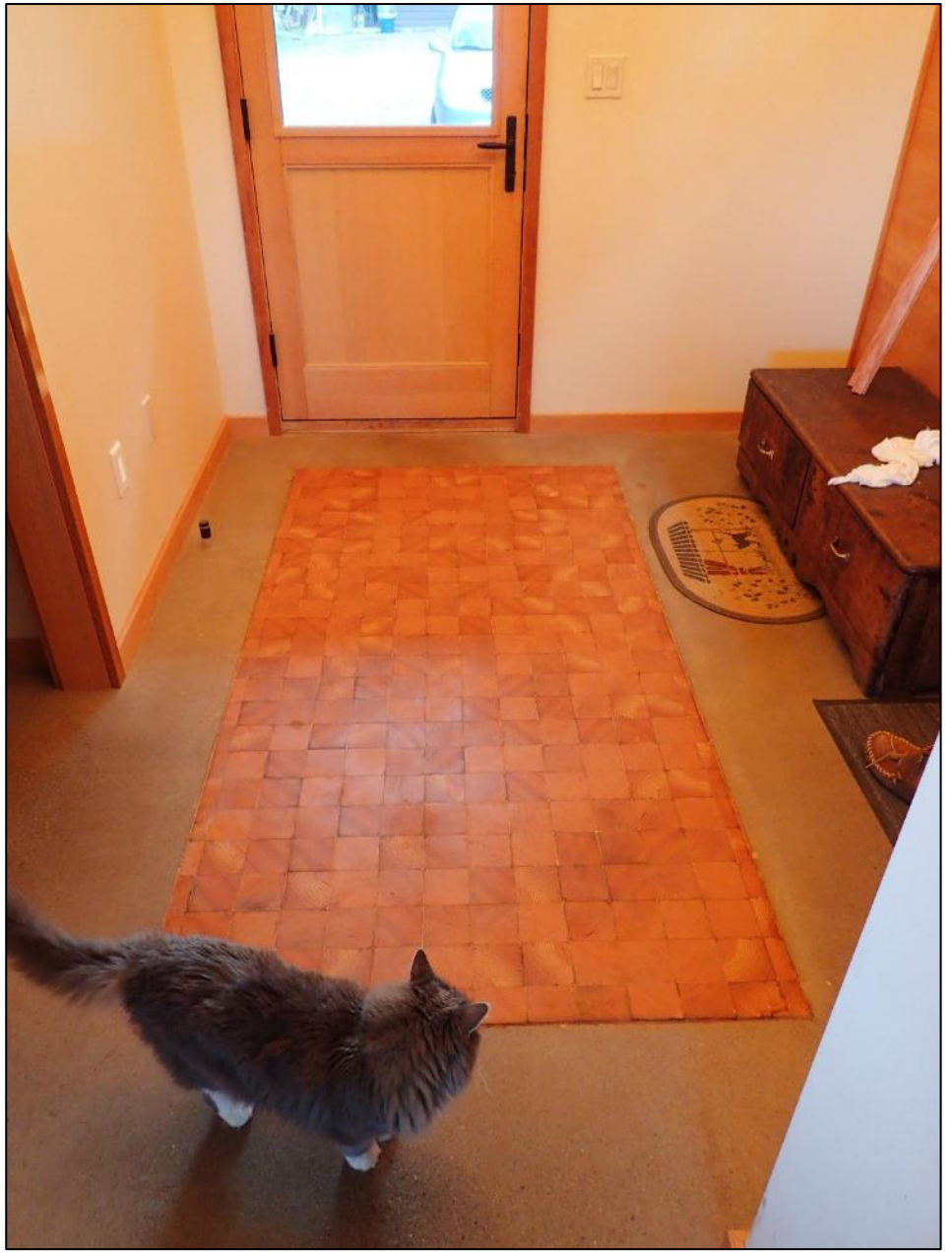
Hair-brained ideas?

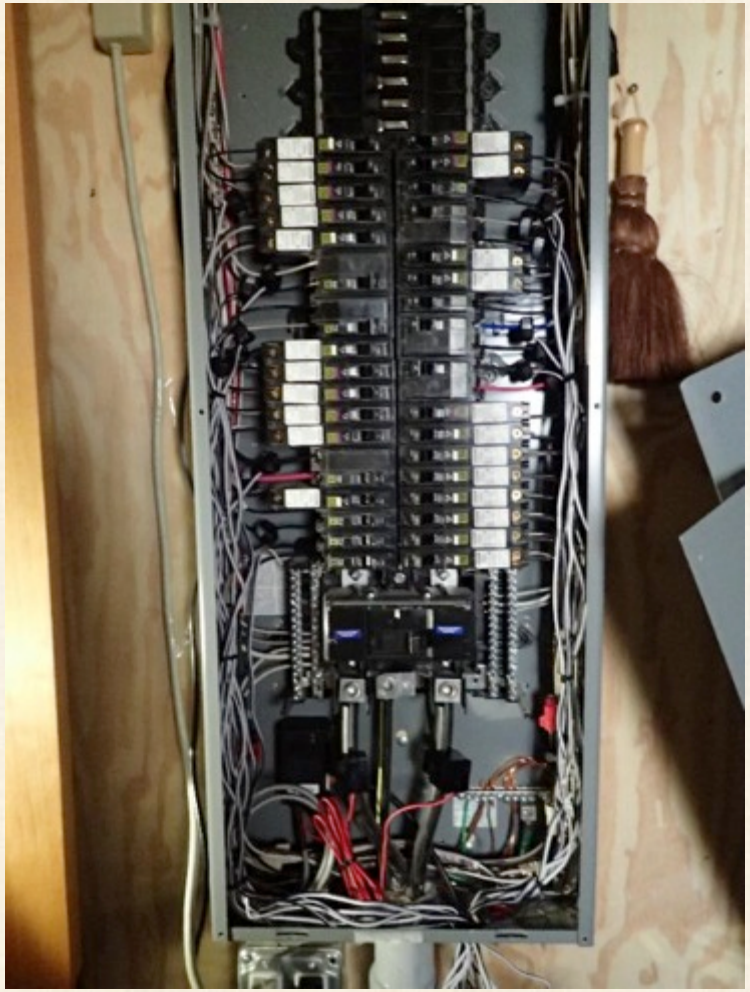


Hair-brained ideas?









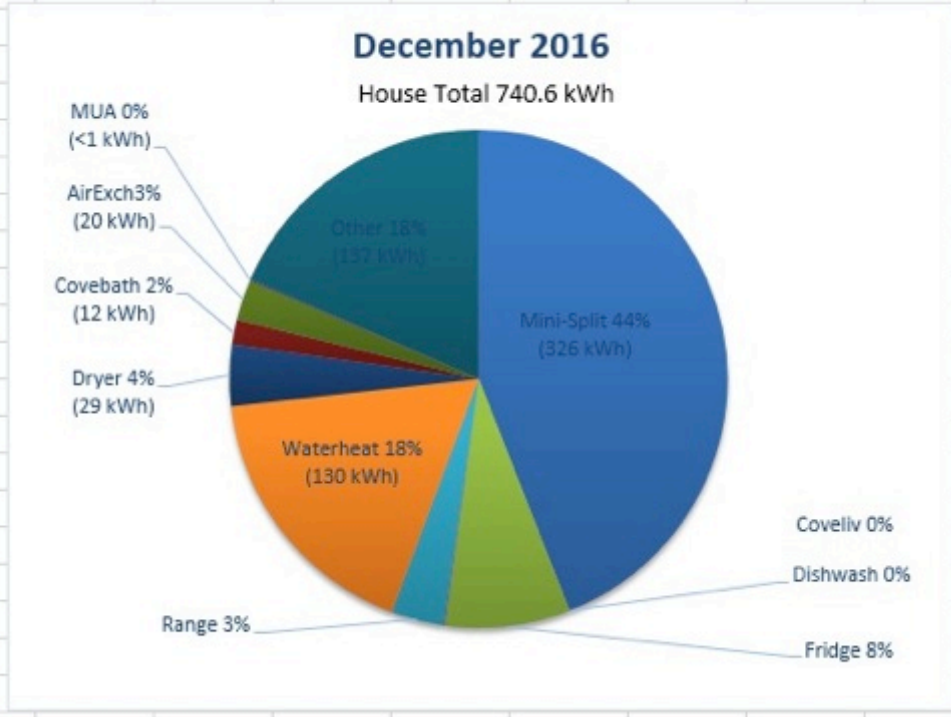
CTs connected in electrical panel

Energy Use Graphing example

Some stats:

- House (we) using about 750 kWh/mo for house.
- December heat cost - $34. January heat cost - $40.
- DHW is about 13% of farm, or 18% of house use.

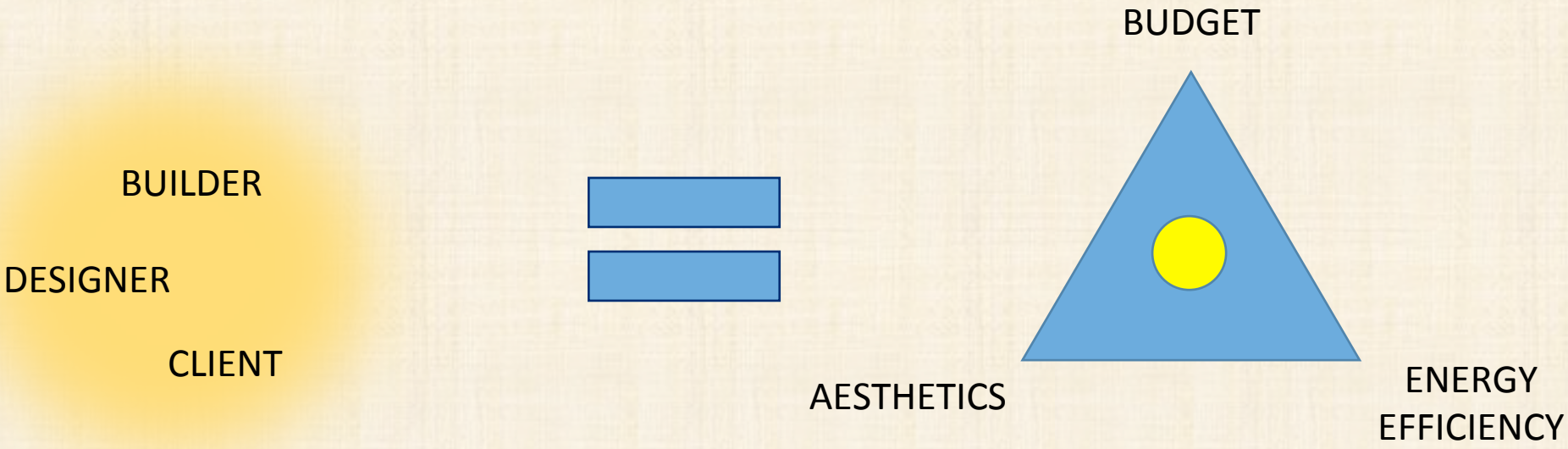
		Usage	Percent of house	Percent of farm				
12/1/2016	House total	740.602	100	75.6				
12/1/2016	Minisplt	326.251	44.05					
12/1/2016	Dishwash	0	0					
12/1/2016	Fridge	60.088	8.11					
12/1/2016	Coveliv	0.611	0.08					
12/1/2016	Range	25.498	3.44					
12/1/2016	Wtrheat	130.001	17.55					
12/1/2016	Dryer	29.369	3.96					
12/1/2016	Covebath	11.862	1.6					
12/1/2016	AirExch	19.522	2.64					
12/1/2016	MUA	0.728	0.09					
12/1/2016	House Other	136.681	18.46					
	Farm Other	239.398		Total for month		980		
Notes: House includes car block heaters, chest freezer, elec. Blanket and incandescent x-mas lights								
Farm other includes heat lamps for the kitty, and the heater in the cooler, as well as well, septic, and hoop house fans.								
326 kWh = about 12.4 gallons propane from a 94% efficient boiler.								
326.251 kWh = 1,113 KBtu = 7 Btu/s.f. consumption								



December data set

Conclusion(s):

- Aim for the sweet spot
- Budgets, Energy Efficiency and Aesthetics are NOT mutually exclusive.
- Keep all parties involved in decisions during the construction process: Designer, Client, Builder.
- Respect and value what each can bring to the table.
- Some things are more valuable than their cost, and “payback” is a non-issue.



“My buildings will be my legacy…they will speak for me long after I’m gone”

- Julia Morgan

Wagner Zaun ARCHITECTURE