



Golf View

Neighborhood Infrastructure Studio
Spring 2016



Intro

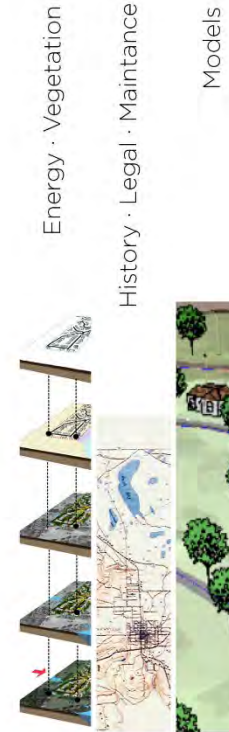
- **Infrastructure**
 - Roads
 - Pipes
 - Stormwater
 - Electric
- **Research**
 - Analysis
 - Iterations
 - Solutions

Design Development

- Case studies of historic and contemporary examples
- Traditional infrastructure and systems
- Design proposals for new combinations
- Individual infrastructure concepts
- Final comprehensive design



Assignment 1
**PRECEDENTS
AND
PROSPECTS**



Assignment 2
**ANALYSIS
AND
VISION**

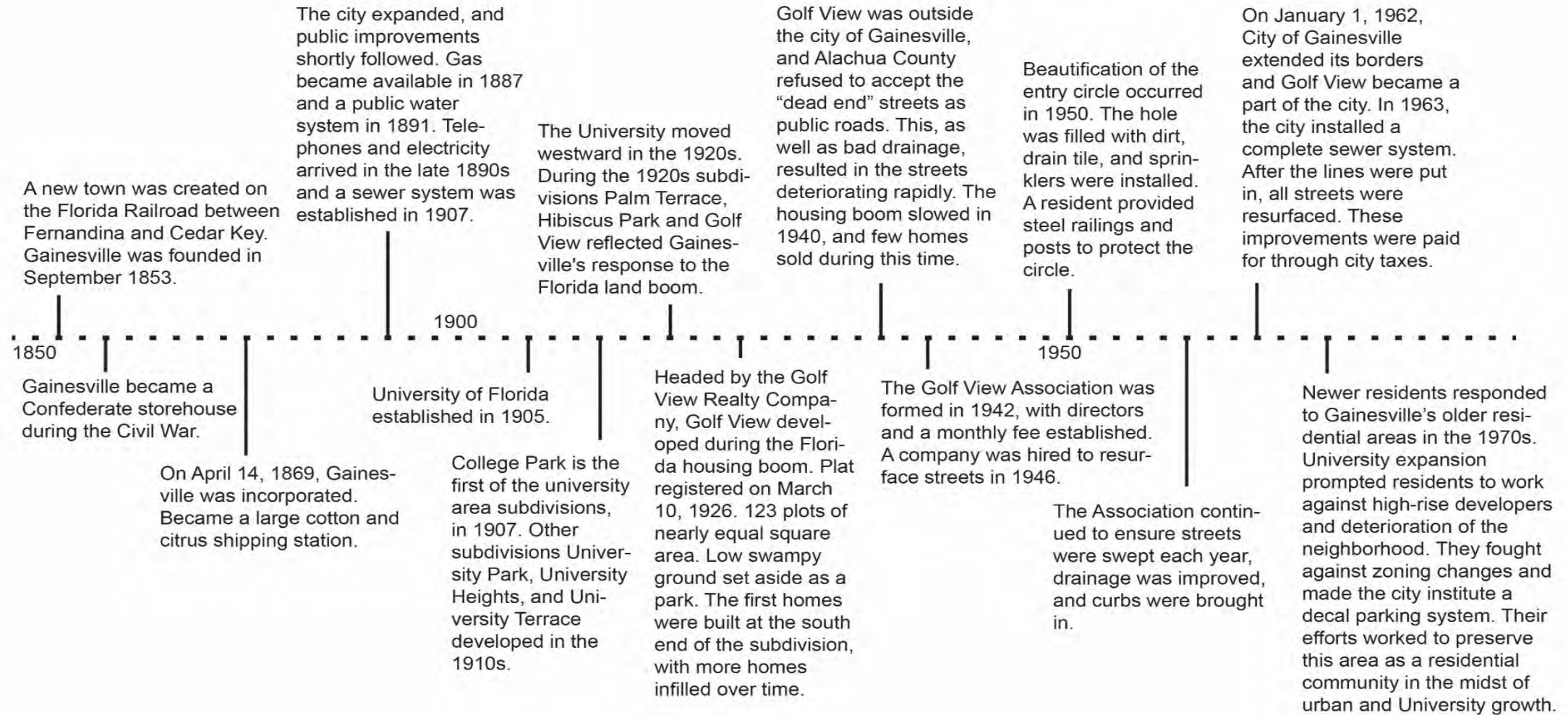


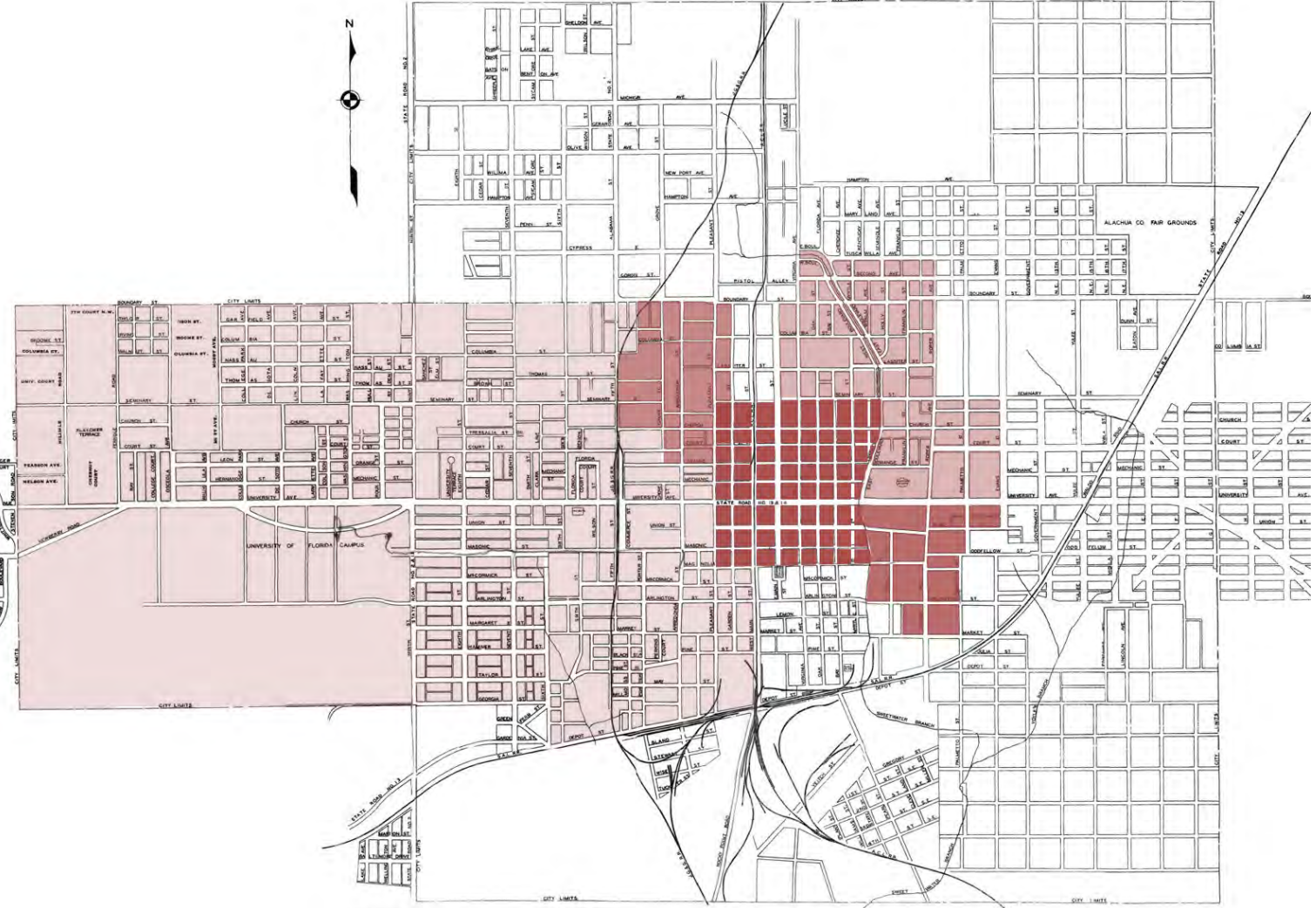
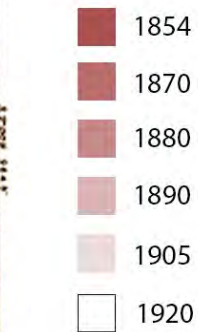
Assignment 3
**DESIGN
MESH-UP**



Assignment 4
**BREAKOUT
DESIGN**

History



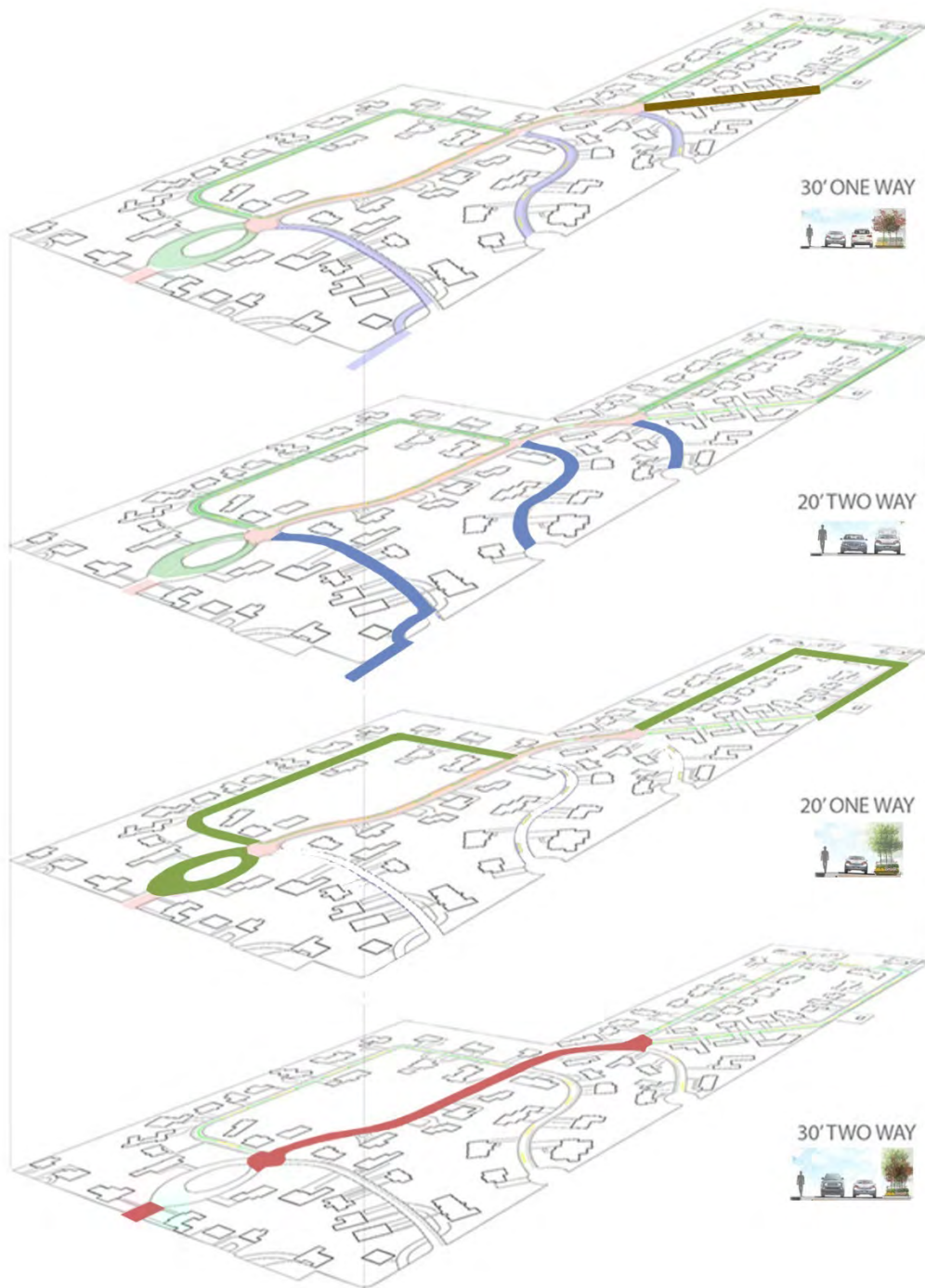


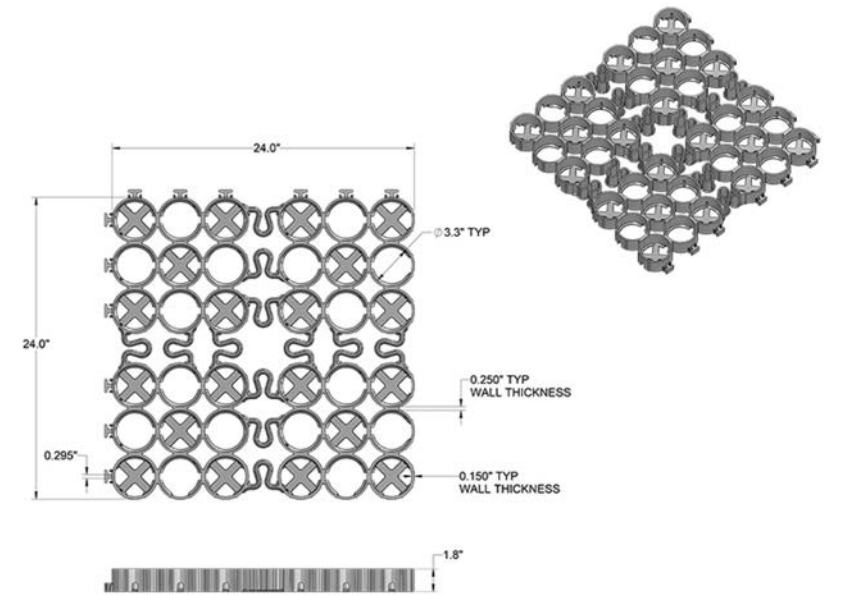


Street

Street Design

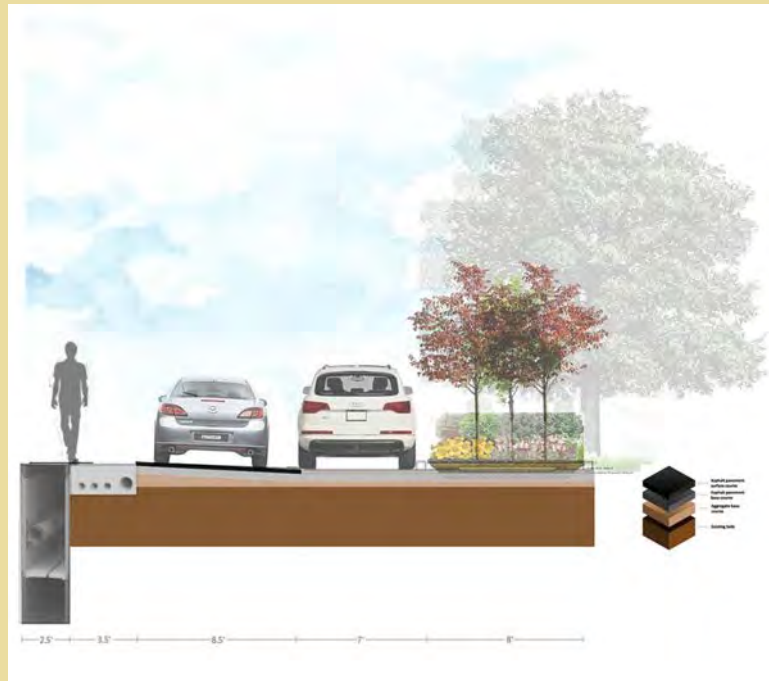
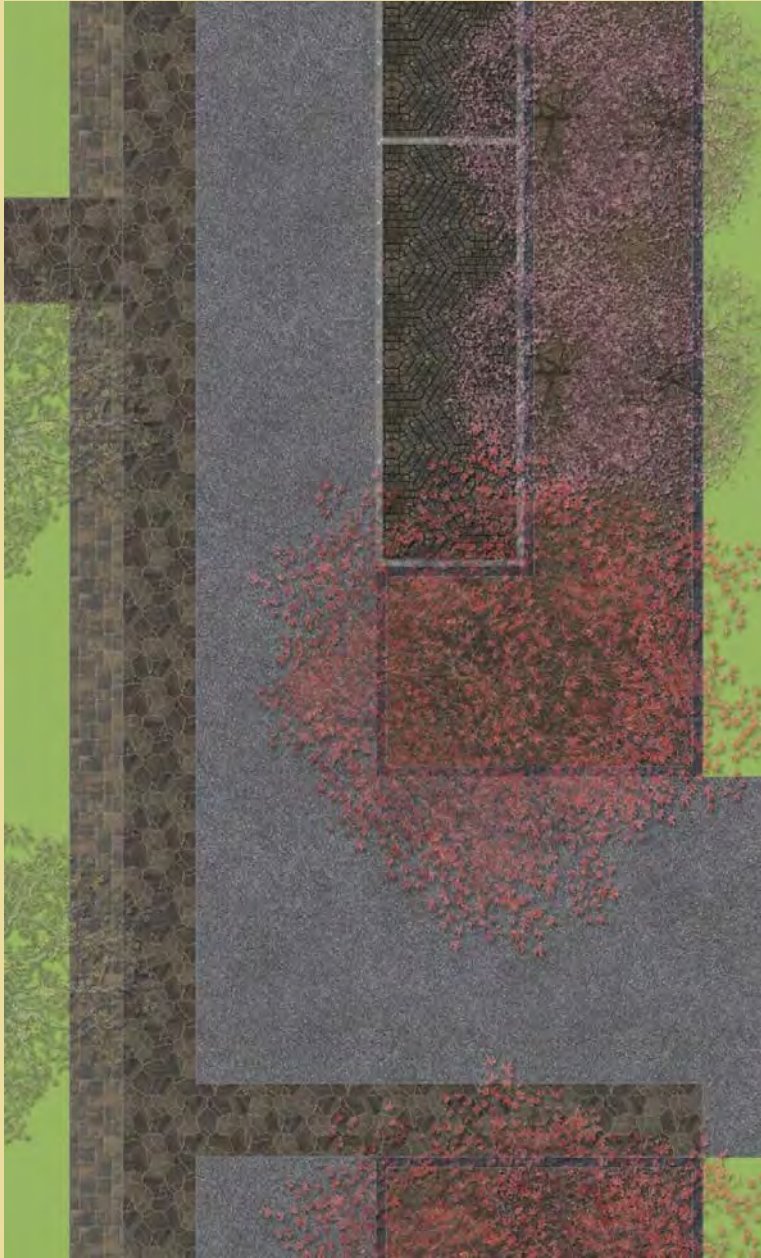
- Share narrow right of ways
- Build distinct pedestrian corridors
- Safety for pedestrians and vehicles
- Cohesive feel in the community





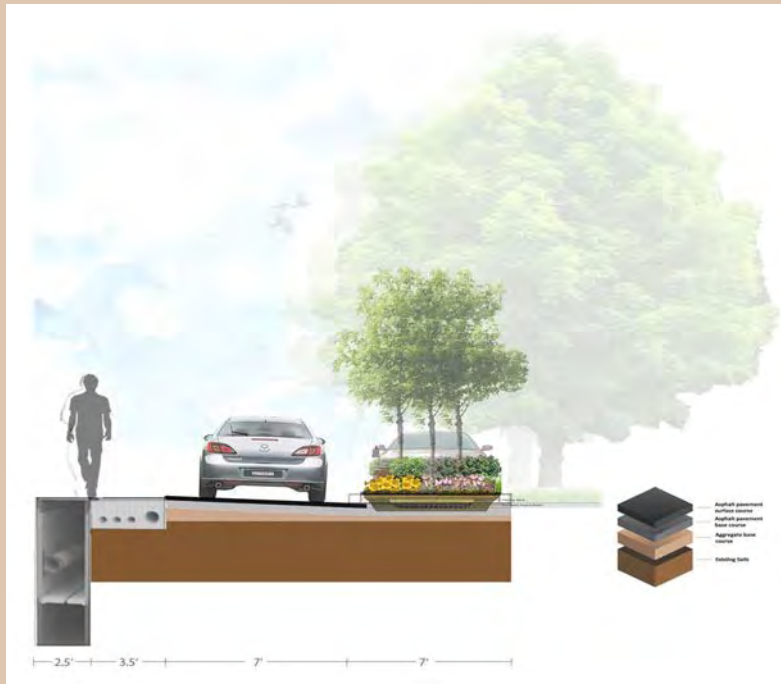
Social Strip

- Designated pedestrian walkway throughout Golf View
- Utilities located below for easy access
- 6' wide



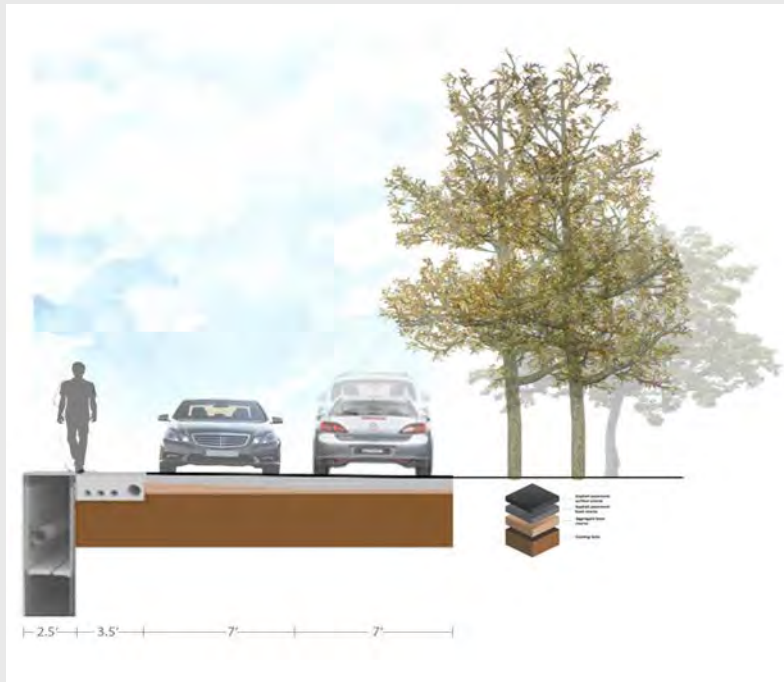
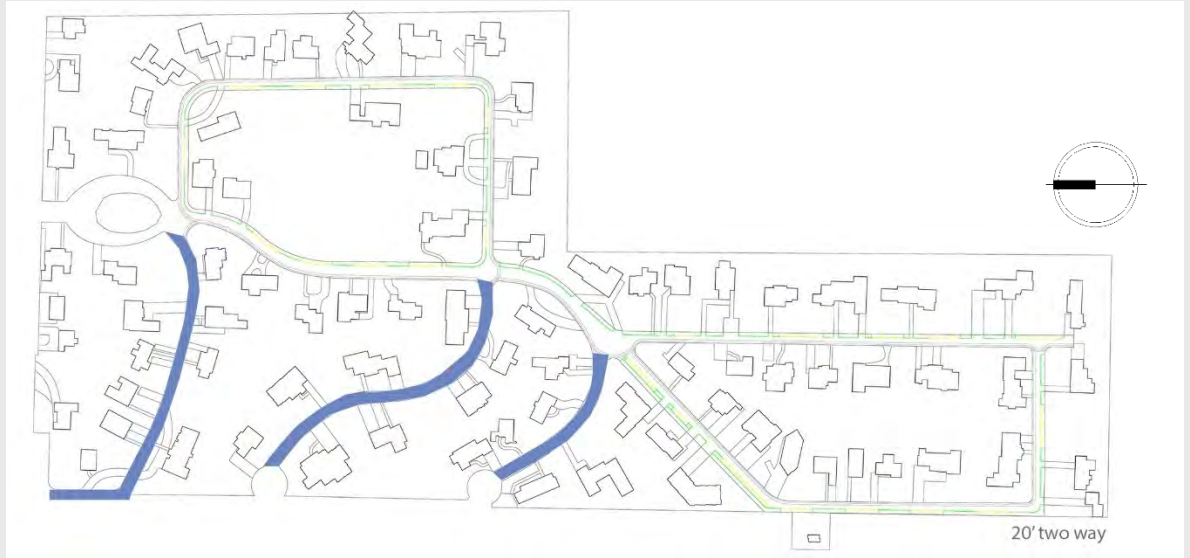
1- Way Corridor

- 30' right of way
- 6' pedestrian social strip above utilities
- 8.5' travel lane
- 14' area for planting and intermittent parking



1-Way Loops

- 20' Right of Way
- 6' social strip above utilities
- 7' travel lane
- 7' wide strip for planting and parking



2-Way Cul-de-sacs

- 20' right of way
- 6' social strip above utilities
- 7' travel lane
- parallel parking areas intermittent

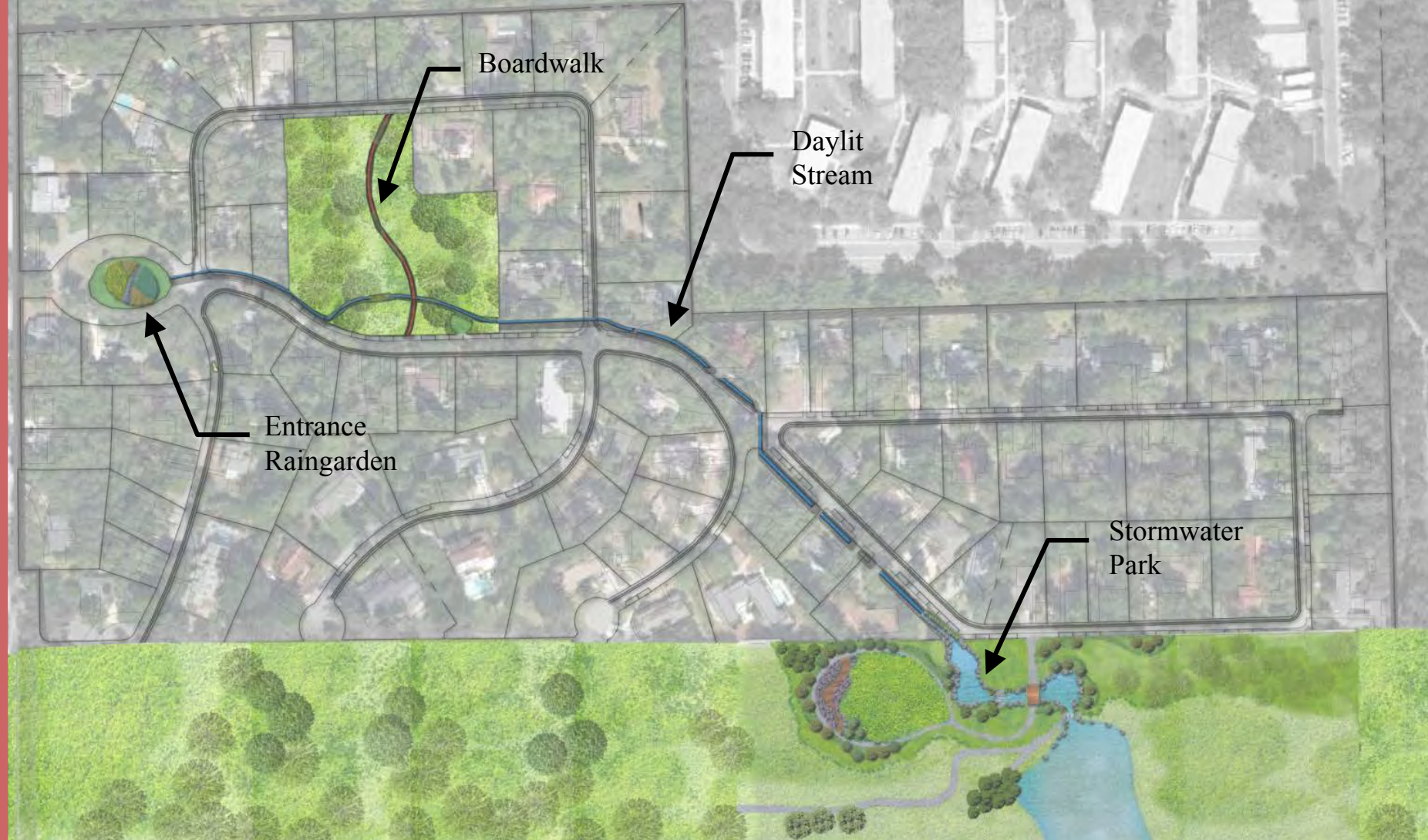




Stormwater

Main Goals:

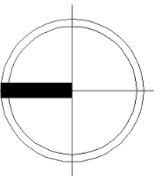
- Collect stormwater runoff in a more visible, and elegant design.
- Create synergy between functionality and aesthetics.
- Be in accordance with the topography and hydrology of the existing landform.



Project Plan View

Main Components:

- Entrance Raingarden
- Boardwalk
- Day lit Stream
- Stormwater Park



Entrance Raingarden

- Displays colorful wetland planting.
- Reduces velocity of stormwater runoff.
- Replenishes the aquifer.
- Offers opportunity for community involvement (e.g. garden club).



Perspective View



Section A-A





Section A-A

Boardwalk

- Invites nature walks through pristine conservation area.
- Engages users with outdoor activities...birdwatching.
- Provides connectivity.
- Provides an undulating form for visual interest and preservation of existing vegetation.



Daylit Stream Design

Transports water in a visible, elegant, enjoyable way.

Location: Between front yard and road area.

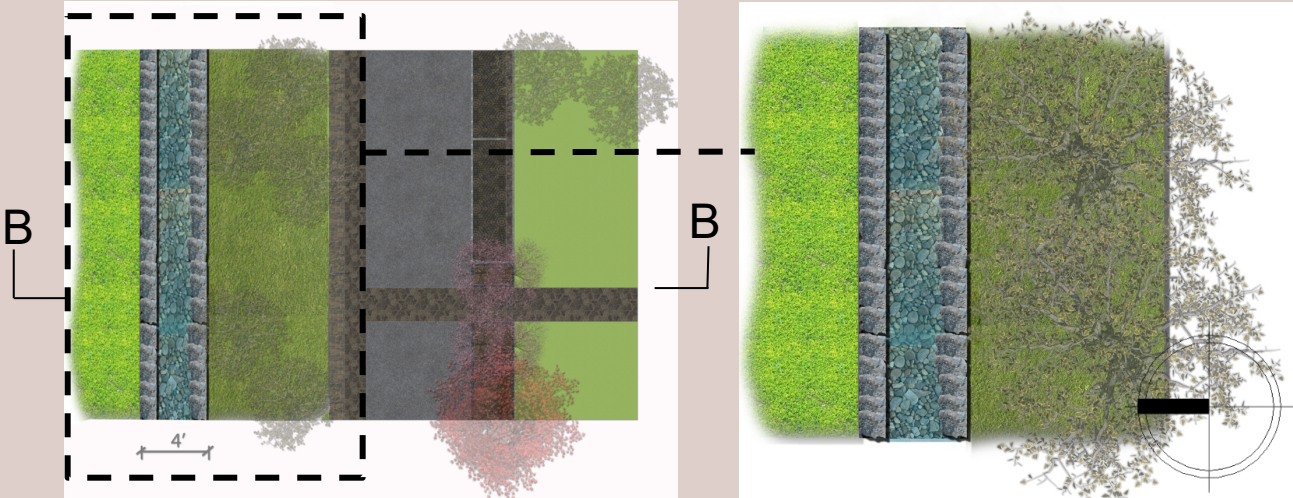


Section B-B

Perspective

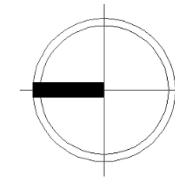


Plan View





Plan View of Stormwater Park



Stormwater Park

Location: Lowest point of Golf View.

Design Principle: Combines function and aesthetic together and transports water in an elegant and visible way.

Function:

Transport water by channel, pond, weir
- Provide multi-purpose field for people to enjoy the scenery, play, gather together, walk the dog, have a picnic, take a break and so forth.

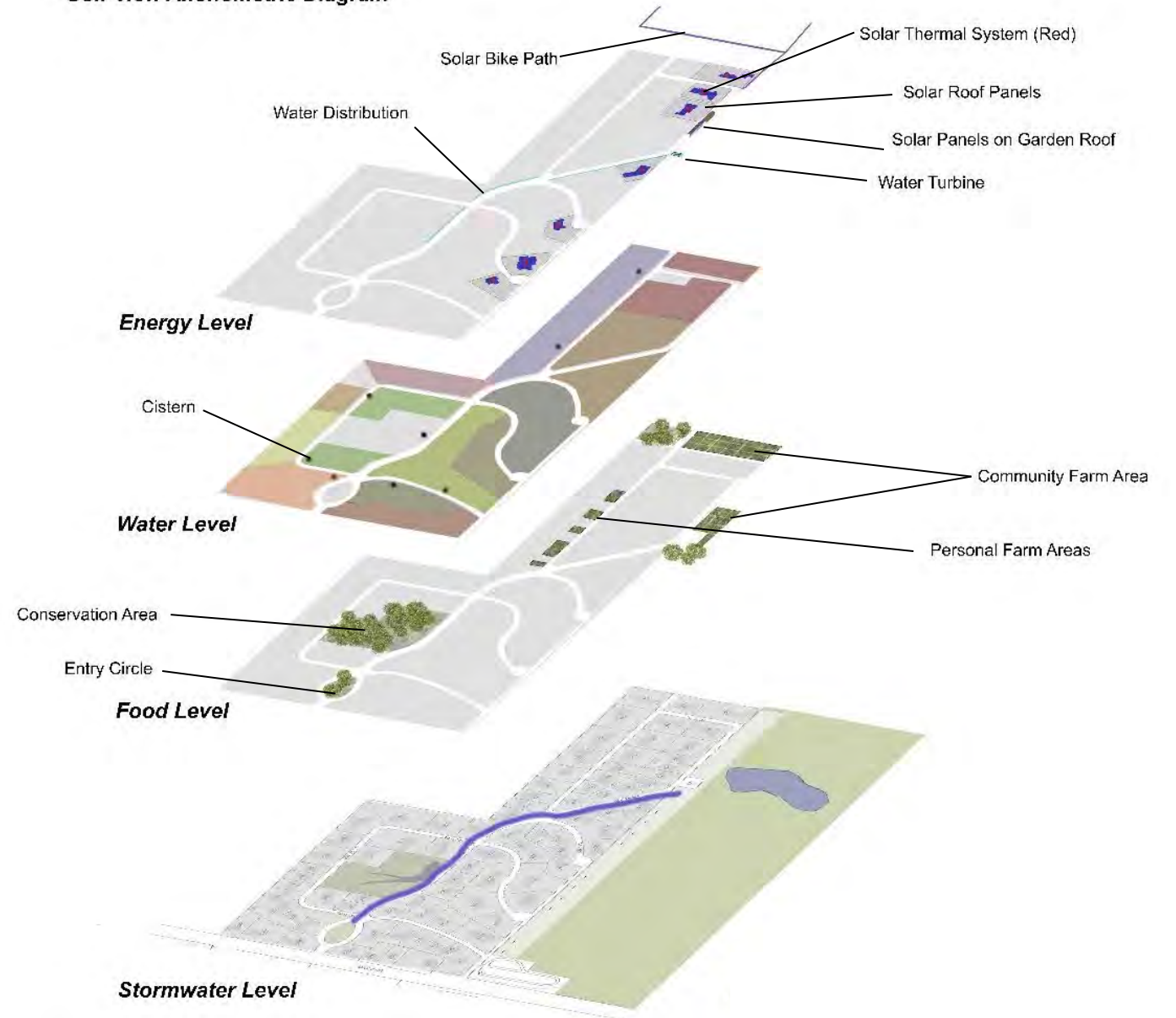


Infused Infrastructures

Infused Infrastructure

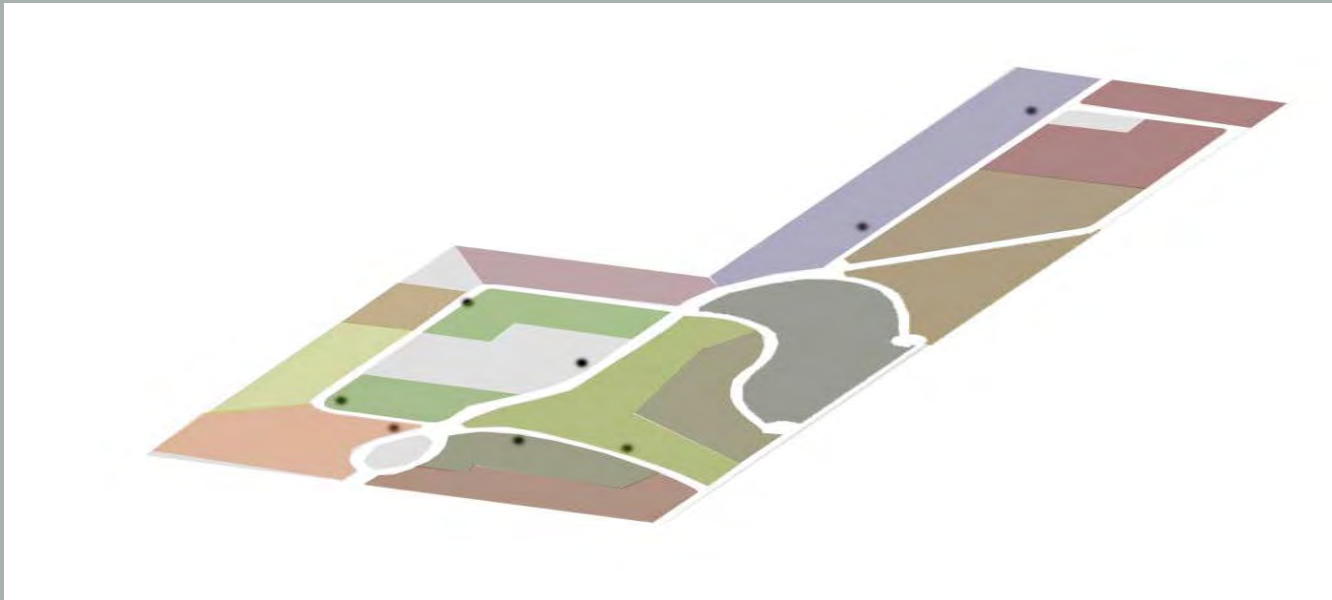
- **Stormwater**
- **Water**
- **Food**
- **Energy**

Golf View Axonometric Diagram

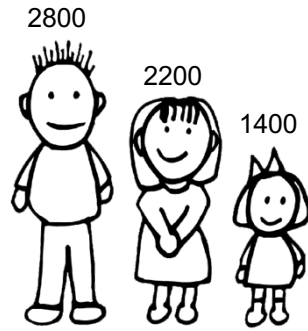
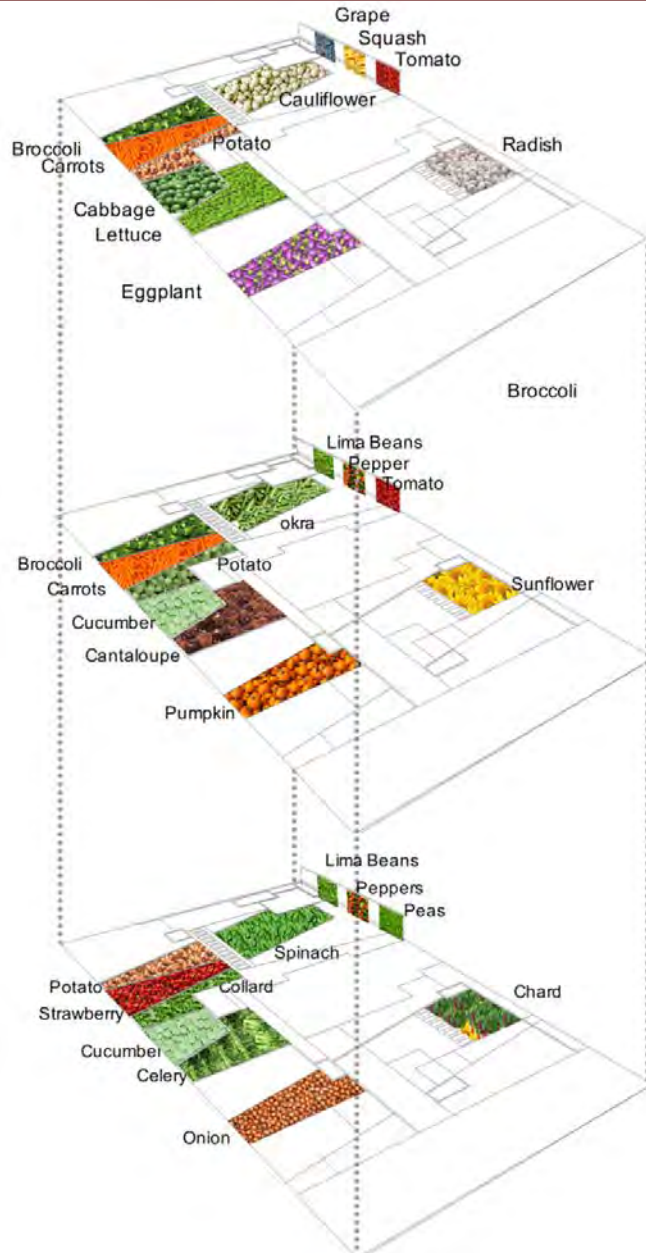


Water

- Innovative cistern design
- Previous water runoff collected (Rainwater collection from rooftop)
- Efficient distribution
- Natural slope is an advantage



Food



6400
calories/day

4741 calories/ day
74% needs

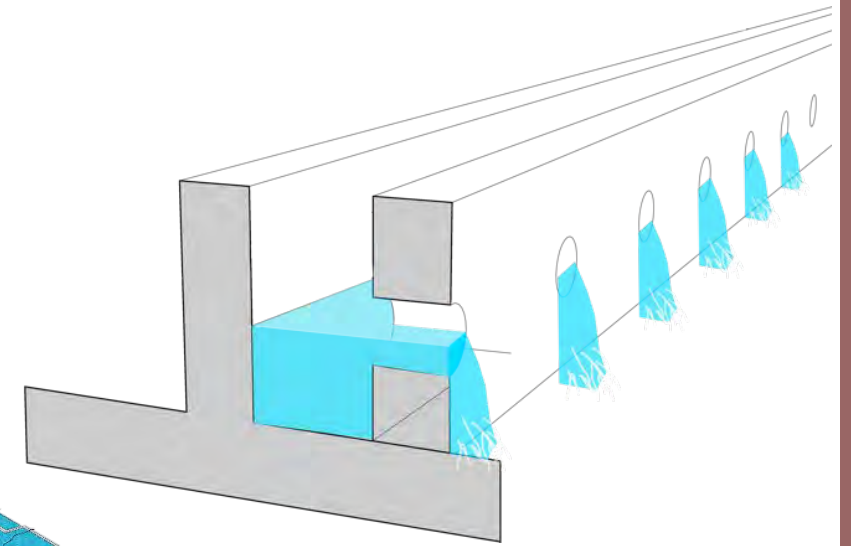
Spring & Summer

4562 calories/ day
71.2% needs

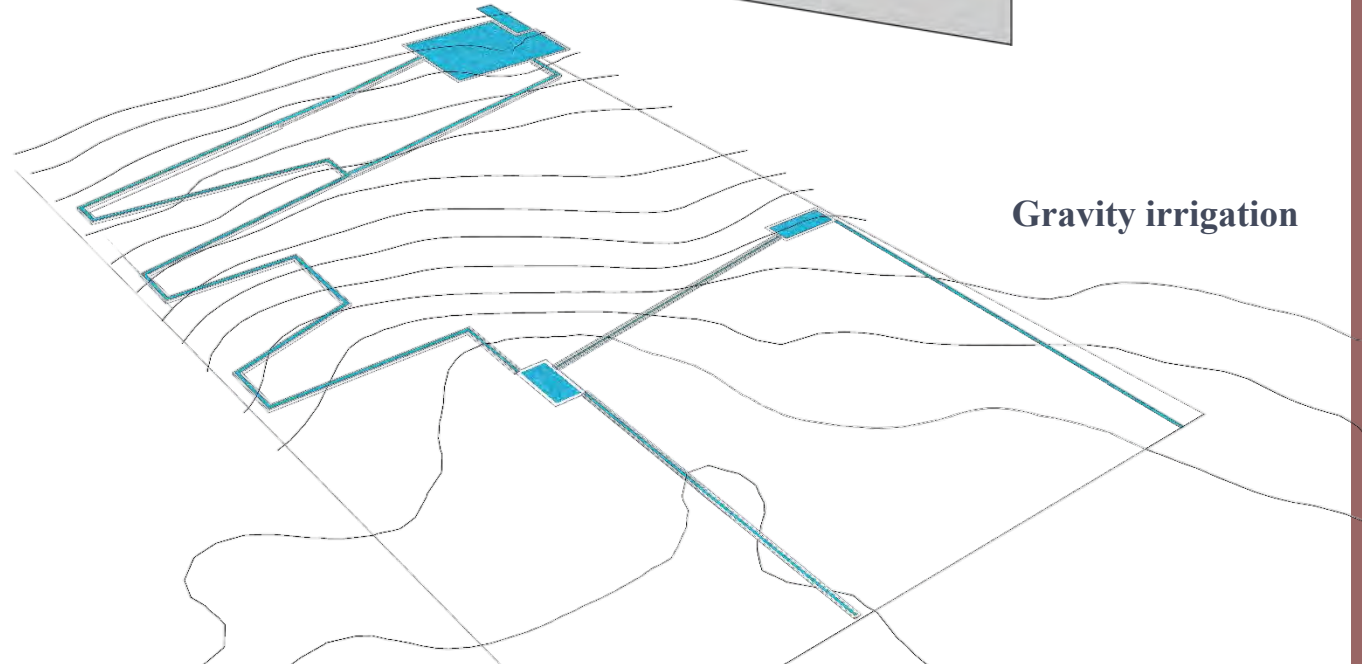
Summer & Fall

4331 calories/ day
67% needs

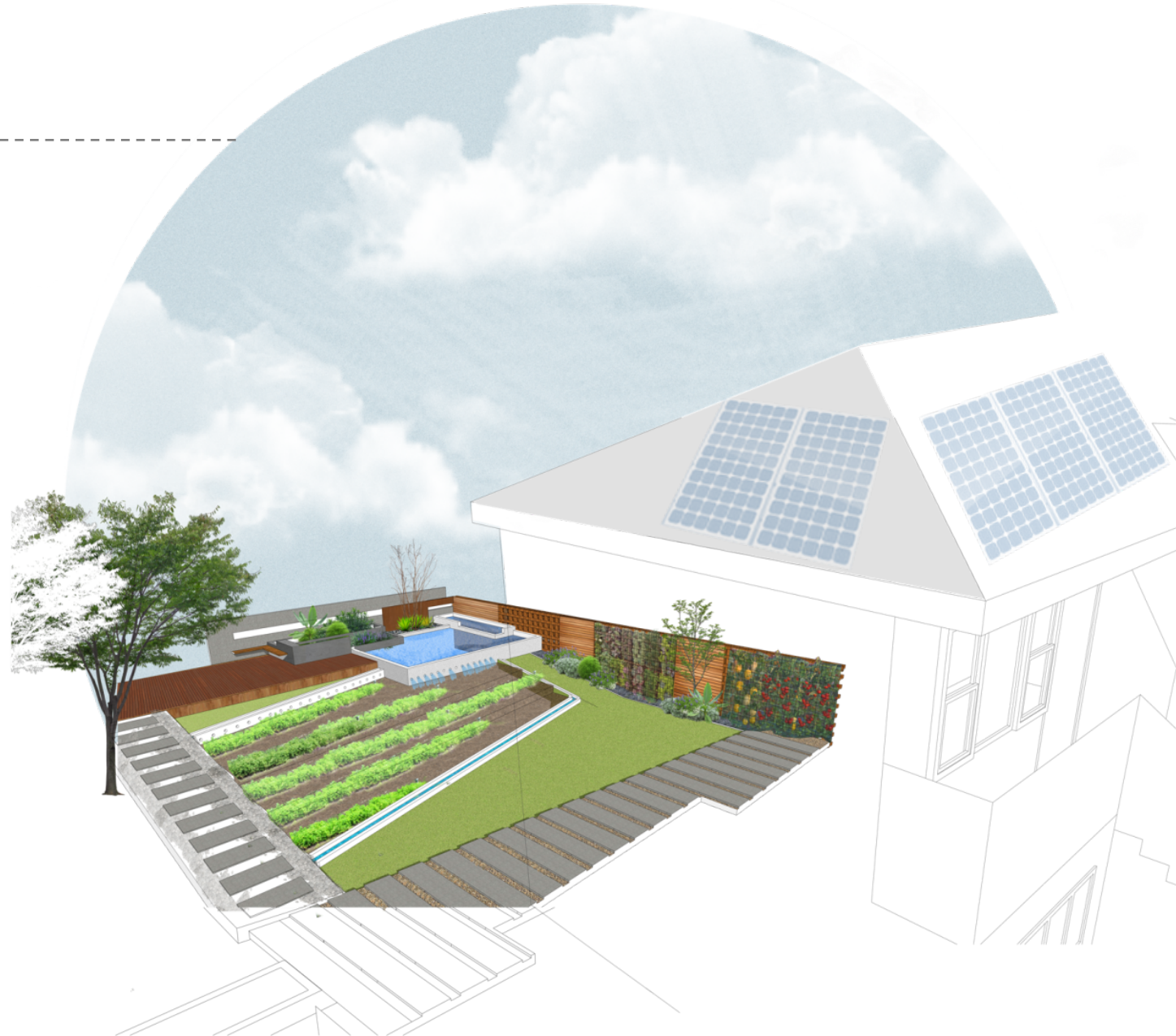
Fall & Winter



Gravity irrigation



Design Proposal





Utilities Design

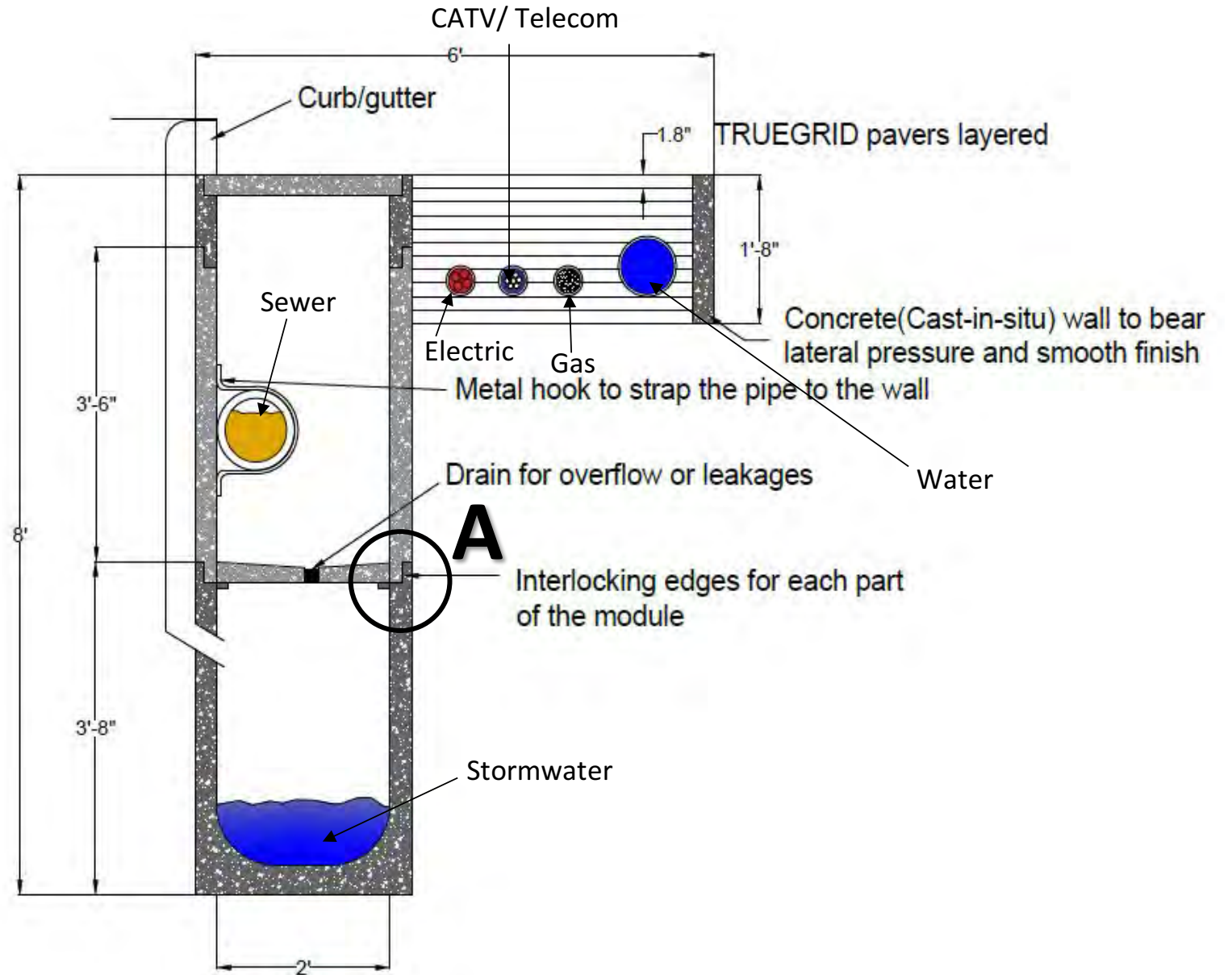
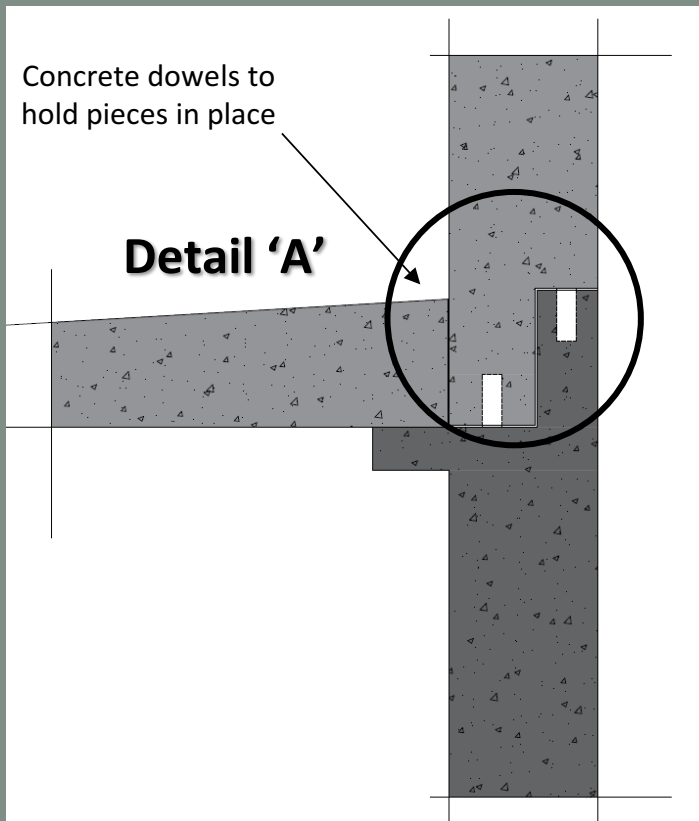


Smart-U

- Modular utilities
(Horizontal & Vertical)

Assembly

- Wet utilities
 - Divided in 5 pieces connected by concrete dowel
- Dry utilities and potable water

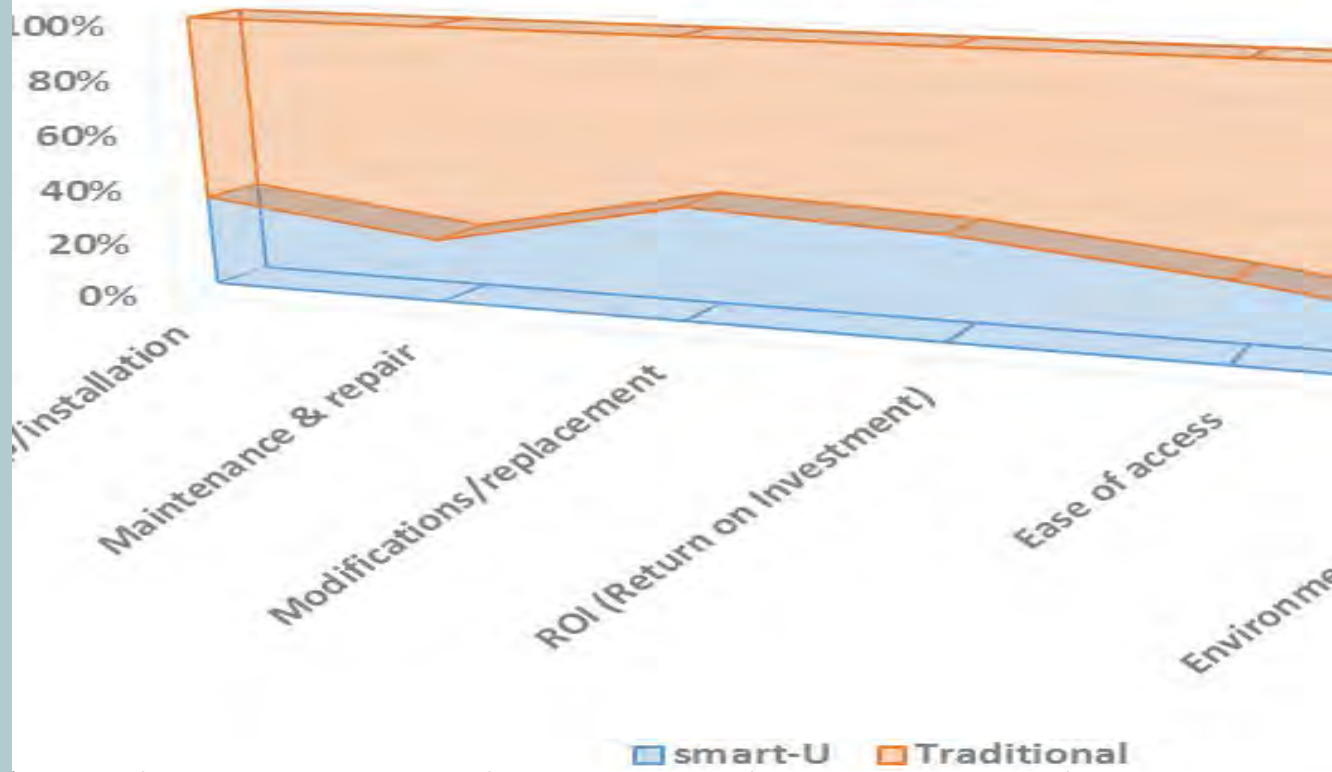




Junction box

Module connections
for each property

smart-U v/s Traditional



Smart-U vs. traditional utility

Parameters

- Setup/ Installation
- Maintenance & Repair
- Modifications/ replacement
- R.O.I. (Return on investment)
- Ease of access
- Environmentally friendly

SCORECARD

<u>Description</u>	Setup/installation	Maintenance & repair	Modifications/replacement	ROI (Return on Investment)	Ease of access	Environmentally friendly
smart-U	50	30	70	60	40	20
Traditional	100	100	100	100	100	100

Note: **Lesser** the value, **better** the characteristic

Traditional Setup has been used as a benchmark for assessing smart-U module

Life Cycle Assessment

- Environmentally friendly alternative
- Low energy consumption (Production/ Use/ End-of-life phases)
- Higher initial costs, but smarter option in the long run.

Life Cycle Assessment (LCA)

Category	Energy (TJ)	Carbon emission (t Co2e)
Utilities	379.662	467.936
smart-U Module	120.78	76.43
Streets	448.63	1298.477

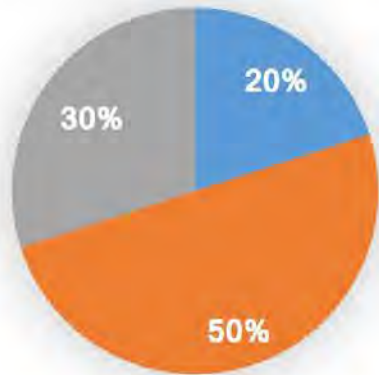
Source:

Carnegie Mellon University Green Design Institute. (2016) Economic Input-Output Life Cycle Assessment (EIO-LCA) US 2002 (428 sectors) Producer model [Internet], Available from: <<http://www.eiolca.net/>> [Accessed April 15th, 2016]

Category	Production	Use Phase	End-of-Life
Utilities	40	40	20
smart-U Module	20	50	30
Streets	60	30	10

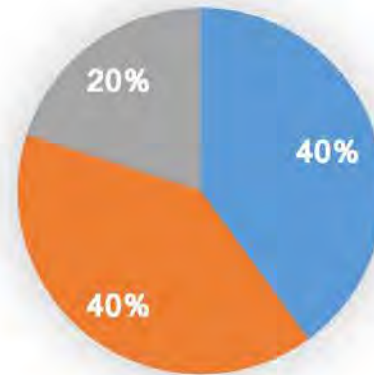
Note - Utilities include Water, Electricity, Stromwater, Sewage, Telecommunications, CableTV & Gas.

smart-U Module



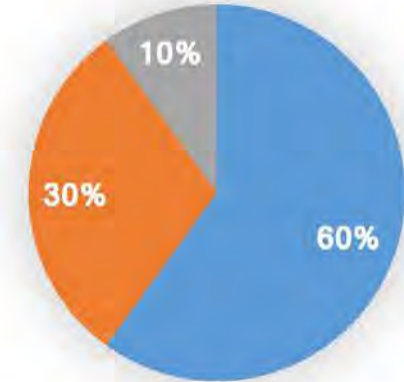
■ Production ■ Use Phase ■ End-of-Life

Utilities



■ Production ■ Use Phase ■ End-of-Life

Streets



■ Production ■ Use Phase ■ End-of-Life



Implementation

Sequence



Cost Estimate

Dry Utilities (horizontal)

\$ 2,006,400

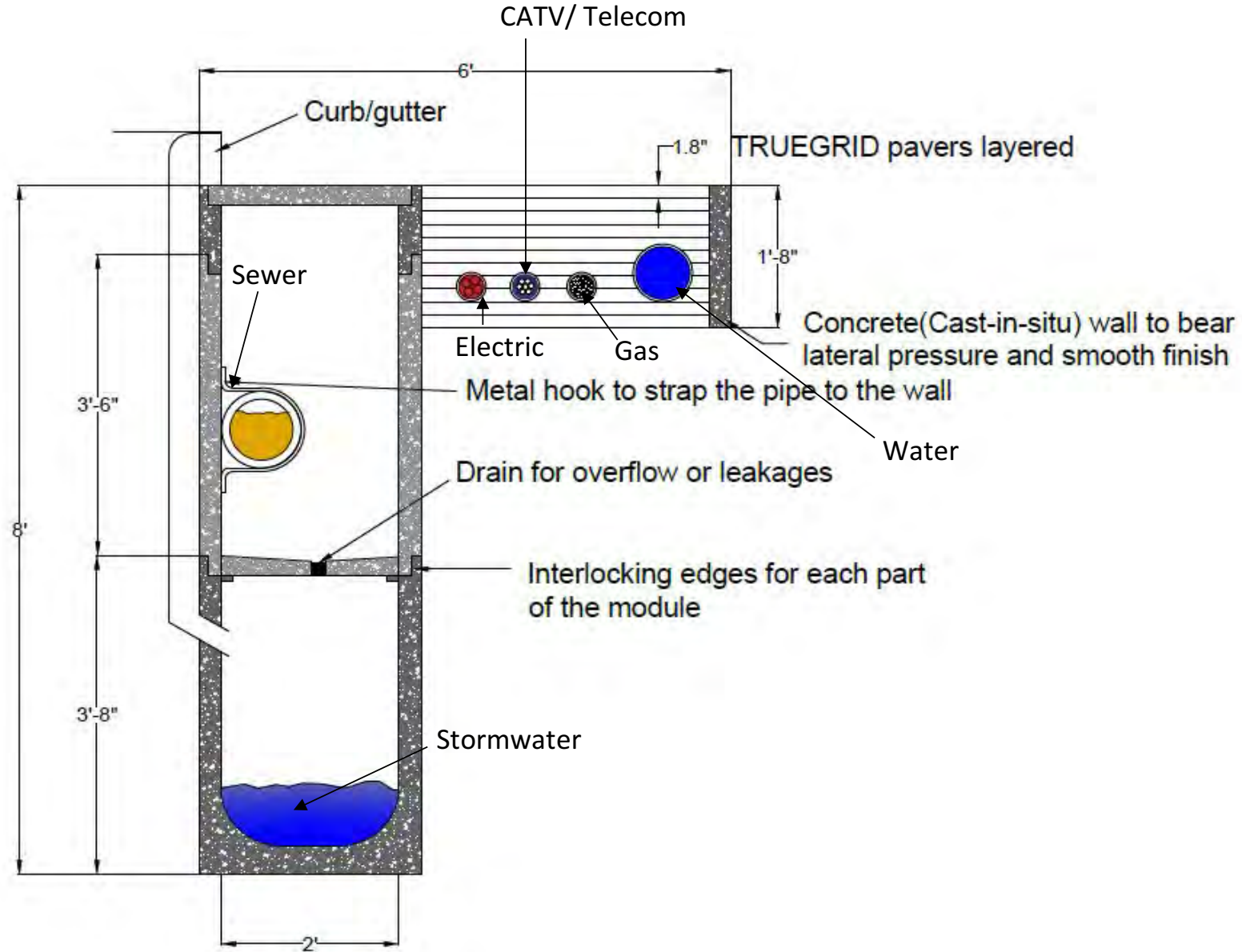
- Water
- Electric
- CATV/Telecom
- Gas

Wet Utilities (vertical)

1,478,400

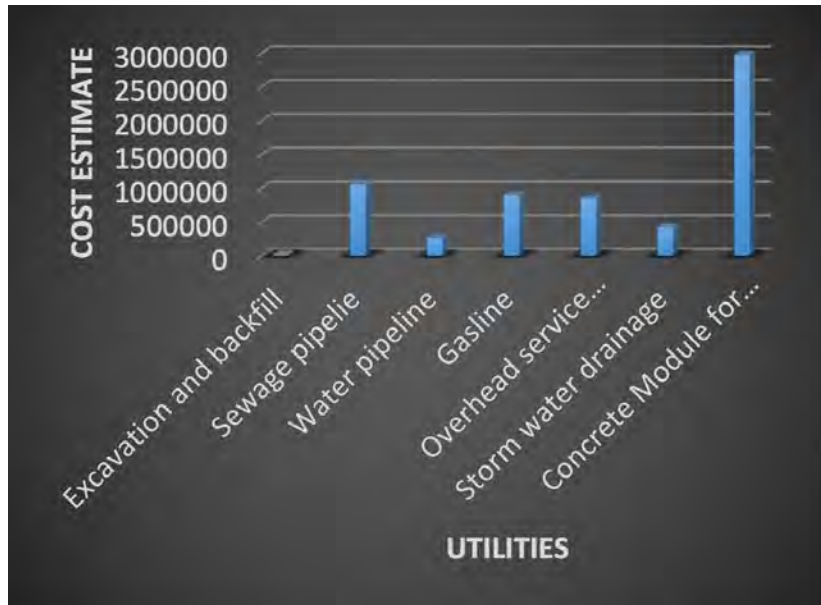
- Sewer
- Stormwater

\$



Cost Estimate

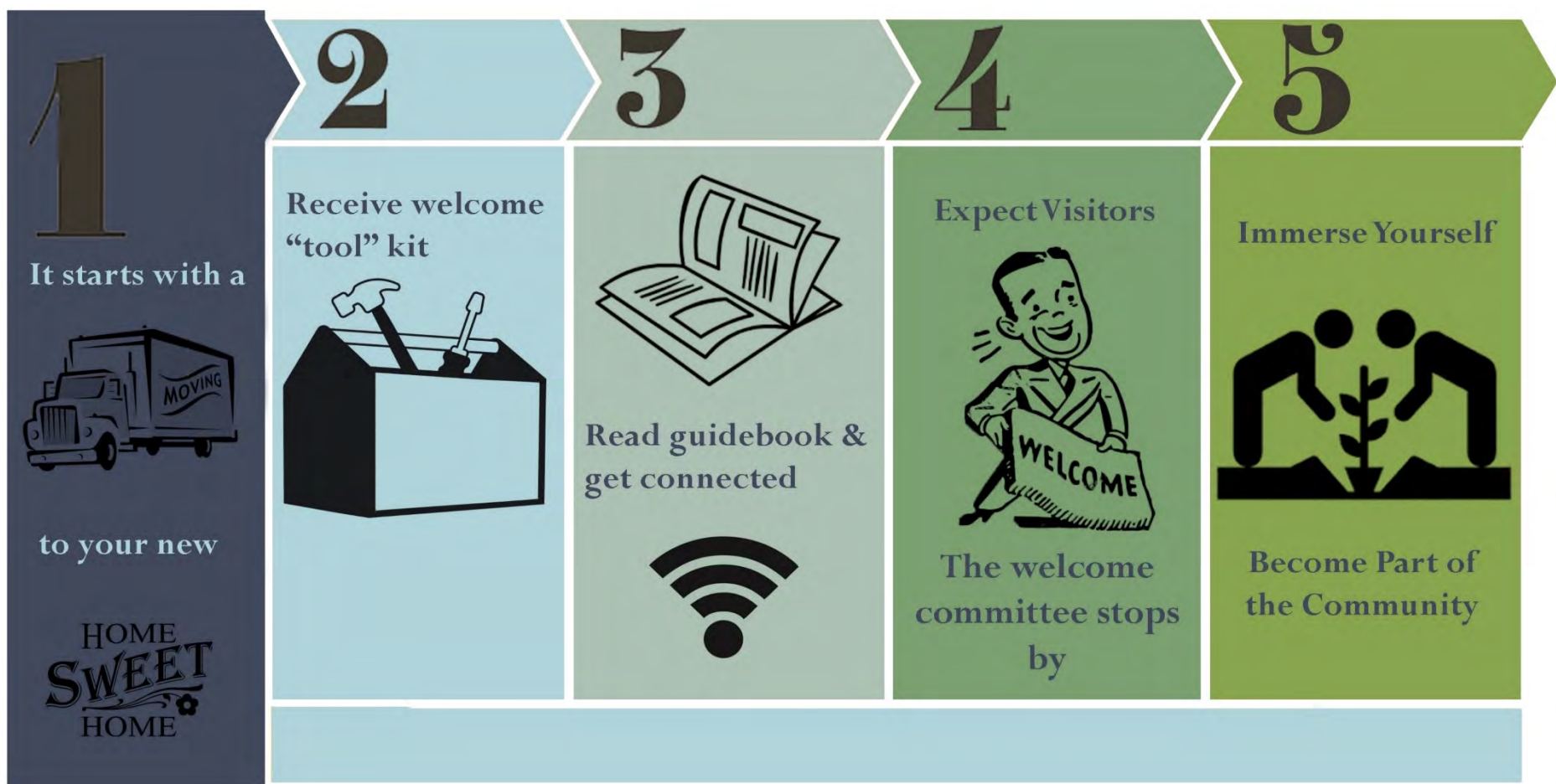
- Total cost estimate to uninstall existing and install new utilities is \$ 6,479,615.75



Item Name	Description	Quantity	Unit	Unit cost	Total Cost	Date release	Labor typ	CCI location
Excavation and backfill	Machine excavation 8' deep, backfilling, sand ,gravel and offsite storage	1013.75	CY/2000	\$25/CY	\$ 25,343.75	Year 2016	open shop	FLORIDA / GAINESVILLE (326,344)
Smart-U module	Concrete and true grid	5280	LF	562.4/LF	\$ 2,969,472.00	Year 2016	open shop	FLORIDA / GAINESVILLE (326,344)
Horizontal Utilities								
Water pipeline	Waterline, 6" diameter, PVC class 200	5280	LF	\$50/LF	\$ 264,000.00	Year 2016	open shop	FLORIDA / GAINESVILLE (326,344)
Gasline	Gasline, polthn, 60 PSI, 4' deep	5280	LF	170/LF	\$ 897,600.00	Year 2016	open shop	FLORIDA / GAINESVILLE (326,344)
Elctrical & Telecom	Overhead service installation, includes breakers, metering, 20' conduit & wire, 3 phase, 4wire, 120/208 V, 200 A w/c circuit beaker	5280	LF	160/LF	\$ 844,800.00	Year 2016	open shop	FLORIDA / GAINESVILLE (326,344)
					Horizontal utilities cost \$	2,006,400		
Vertical Utilities								
Sewage pipelie	Sewage piping, 8" diameter, plain PVC	5280	LF	\$200/LF	\$ 1,056,000.00	Year 2016	open shop	FLORIDA / GAINESVILLE (326,344)
Storm water drainage	36' CMP Pipe	5280	LF	80/LF	\$ 422,400.00	Year 2016	open shop	FLORIDA / GAINESVILLE (326,344)
					Vertical utilities cost \$	1,478,400		
Total cost estimate					\$	6,479,615.75		



Social Infrastructure



A Social Proposal

- Intention
- Benefit
- 5 Step Process
- Improving and maintaining an established social infrastructure

Identity

Utilizes characteristics of the neighborhood to create an image, something for all of the residents to identify with and support. Encompasses digital platforms and social structure.

Helps keep current residents active and feeling connected to their community.

















Realm of the home



12 ways

to save money and be off the grid

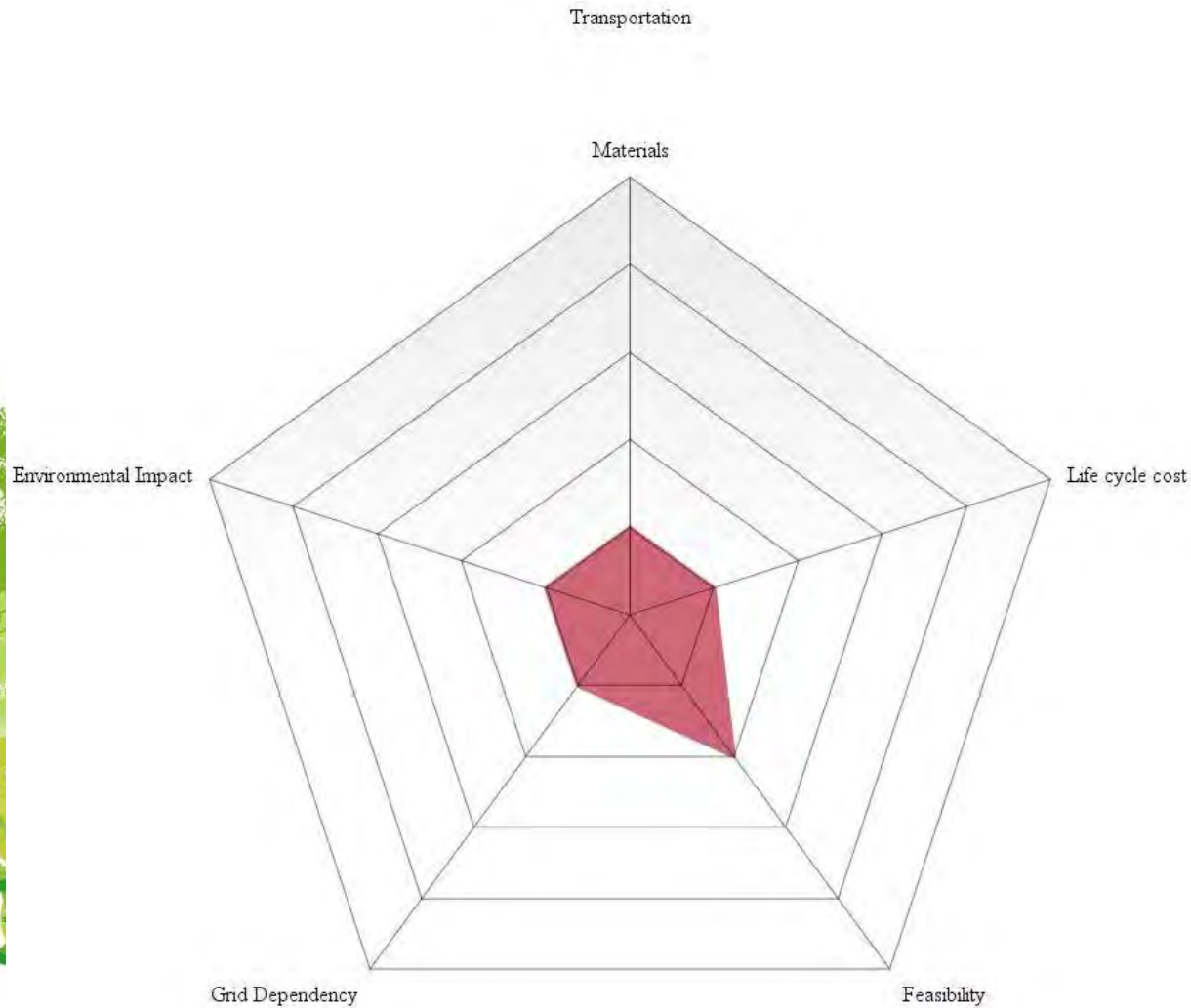
-  1. Dehumidifier
-  2. Transportation
-  3. Rainwater collection
-  4. Solar thermal
-  5. Air sealing
-  6. Stormwater treatment
-  7. Using windows with better u-value
-  8. Grow your own food
-  9. Passive sun shading device
-  10. Installing cool roofs
-  11. Home automation
-  12. PV



Green Transportation



- Carpooling
- Walking
- Bus riding
- Biking



ortation
id



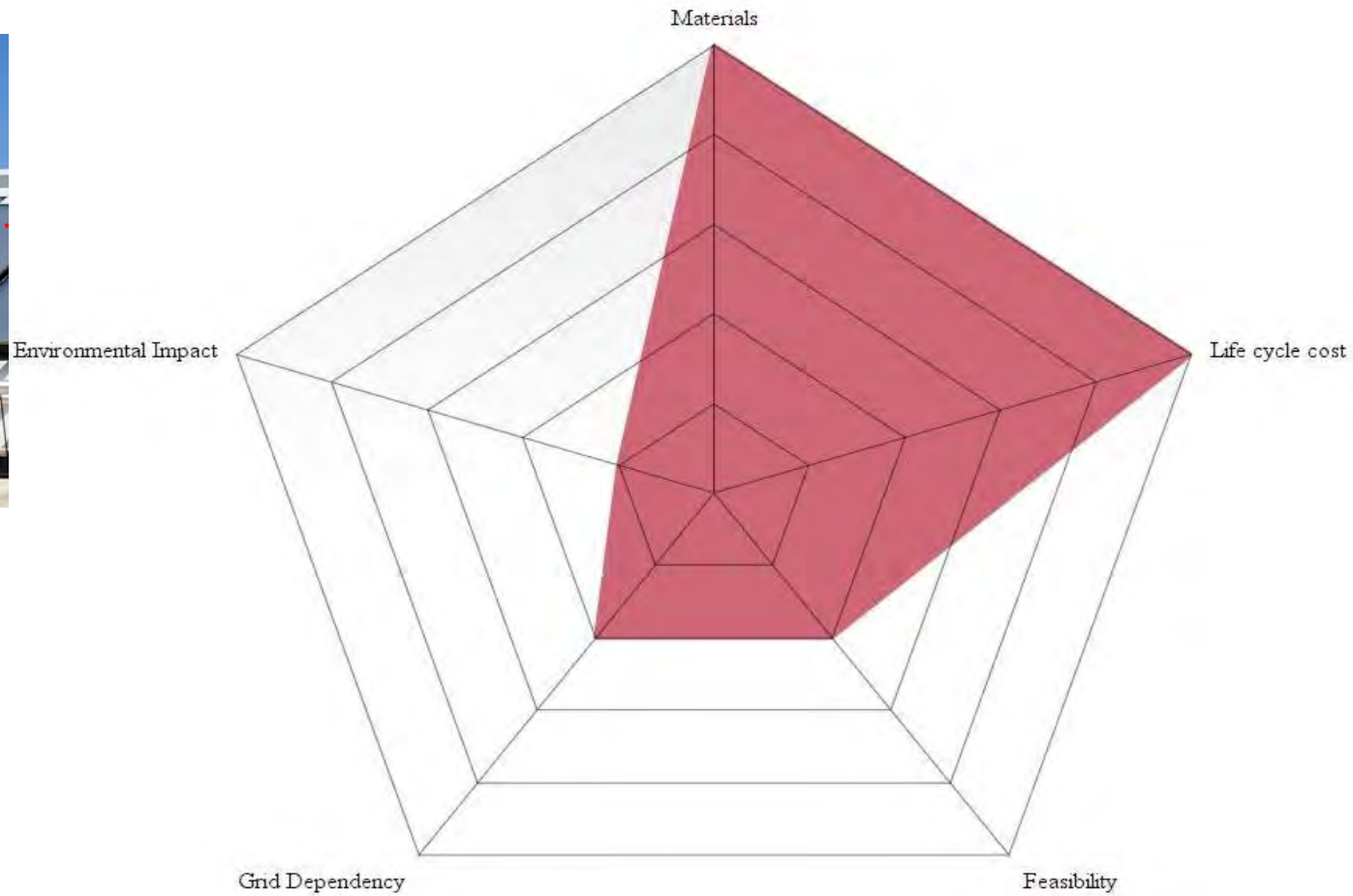


Photovoltaic Panels

- Cost
- Life Cycle



P.V. System



Project Follow-Up

Golf View is great!

- Acts as a model for potential
- Best qualities have been challenged
- Strives for a better and brighter future



EMBRACE --- EXPAND --- EMPOWER

Acknowledgments

Thanks to:

- University of Florida Witter's Competition
 - UF DCP
 - UF BCN
 - UF LAE
 - UF ARCH
 - UF MAE
- Golf View Neighborhood
- GRU
- City of Gainesville





Thank you