

Golf View

Neighborhood Infrastructure Studio Spring 2016



Intro

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

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** Pod & Residence house

Assignment 4

BREAKOUT DESIGN

History

A new town was created on the Florida Railroad between Fernandina and Cedar Key. Gainesville was founded in September 1853.

Gainesville became a Confederate storehouse during the Civil War.

1850

On April 14, 1869, Gainesville was incorporated. Became a large cotton and citrus shipping station.

The city expanded, and public improvements shortly followed. Gas became available in 1887 and a public water system in 1891. Telephones and electricity arrived in the late 1890s and a sewer system was established in 1907.

The University moved westward in the 1920s. During the 1920s subdivisions Palm Terrace, Hibiscus Park and Golf View reflected Gainesville's response to the Florida land boom.

the city of Gainesville, and Alachua County refused to accept the "dead end" streets as public roads. This, as well as bad drainage, resulted in the streets deteriorating rapidly. The housing boom slowed in 1940, and few homes sold during this time.

Golf View was outside

Beautification of the entry circle occurred in 1950. The hole was filled with dirt, drain tile, and sprinklers were installed. A resident provided steel railings and posts to protect the circle.

On January 1, 1962, City of Gainesville extended its borders and Golf View became a part of the city. In 1963, the city installed a complete sewer system. After the lines were put in, all streets were resurfaced. These improvements were paid for through city taxes.

University of Florida established in 1905.

1900

College Park is the first of the university area subdivisions, in 1907. Other subdivisions University Park, University Heights, and University Terrace developed in the 1910s.

Headed by the Golf View Realty Company, Golf View developed during the Florida housing boom. Plat registered on March 10, 1926. 123 plots of nearly equal square area. Low swampy ground set aside as a park. The first homes were built at the south end of the subdivision, with more homes infilled over time.

The Golf View Association was formed in 1942, with directors and a monthly fee established. A company was hired to resurface streets in 1946.

1950

The Association continued to ensure streets were swept each year, drainage was improved, and curbs were brought in.

Newer residents responded to Gainesville's older residential areas in the 1970s. University expansion prompted residents to work against high-rise developers and deterioration of the neighborhood. They fought against zoning changes and made the city institute a decal parking system. Their efforts worked to preserve this area as a residential community in the midst of urban and University growth.

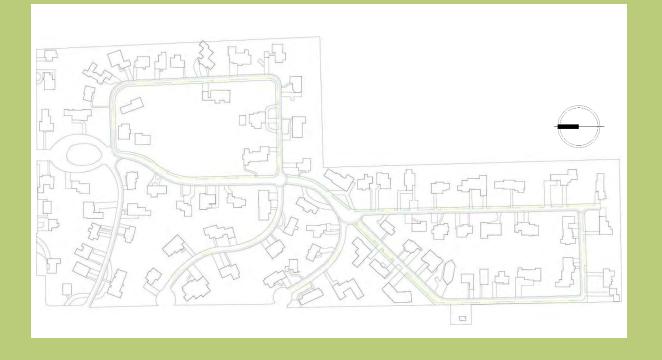






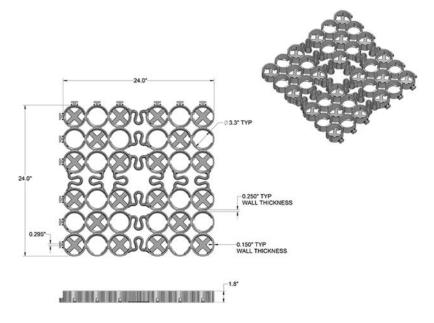
Street Design

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





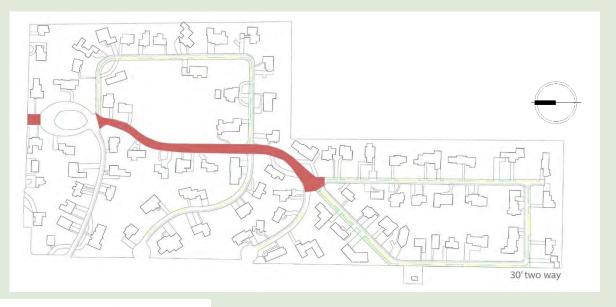




Social Strip

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

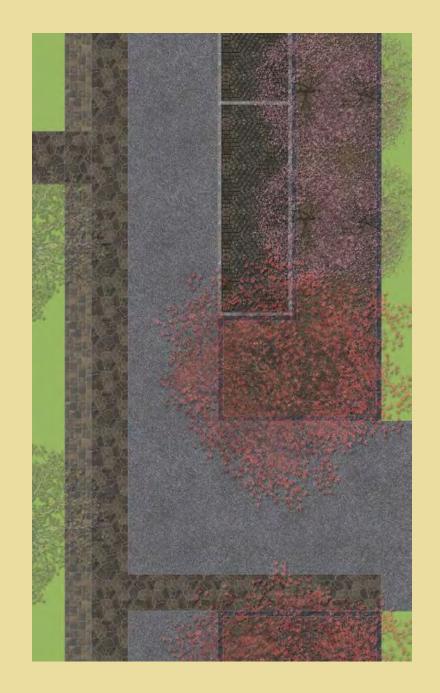


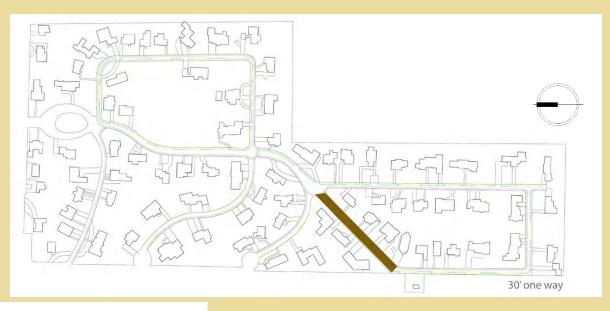




2-Way Corridor

- 30' right of way
- 6' pedestrian social strip above utilities
- Two 8.5' travel lanes
- 7' wide area for planting and parking

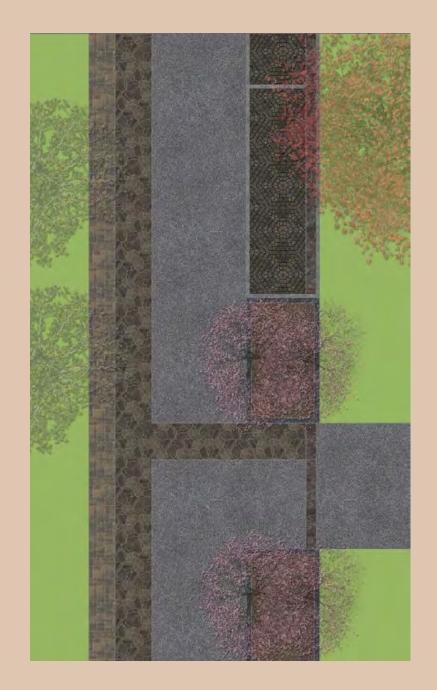






1- Way Corridor

- 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





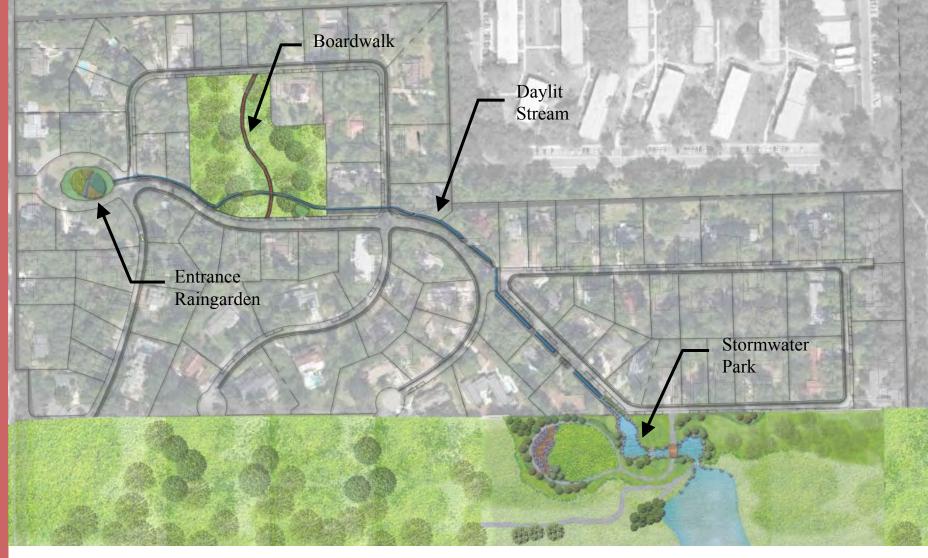
Stormwater

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.

Main Components:

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



Project Plan View





Entrance Raingarden

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







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.

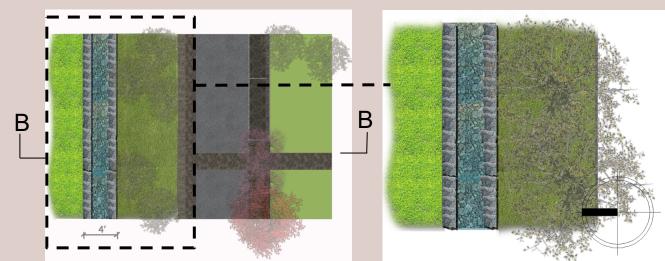


Section B-B

Perspective



Plan View



Plan View of Stormwater Park

Stormwater Park

Location: Lowest point of Golf View.

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

Function:

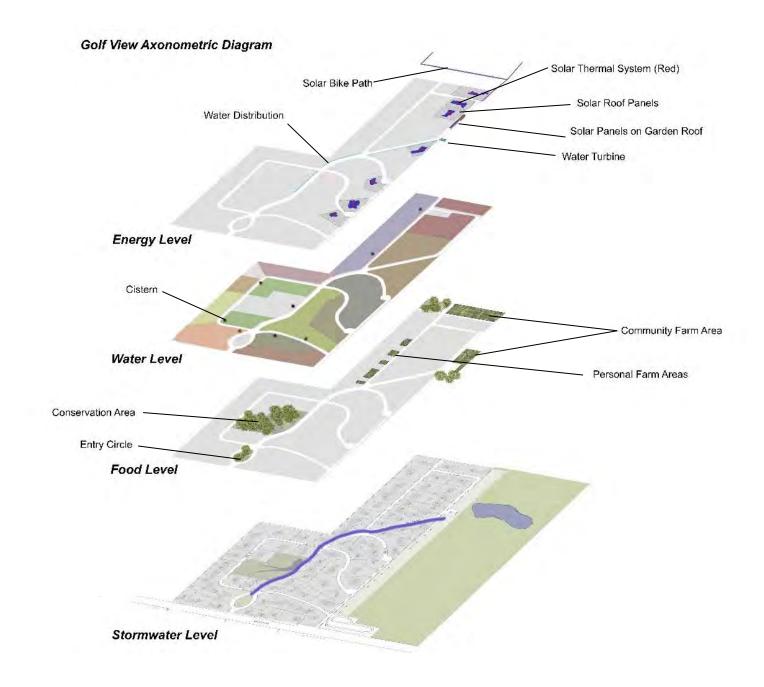
Transport water by channel, pond, weir

- 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.



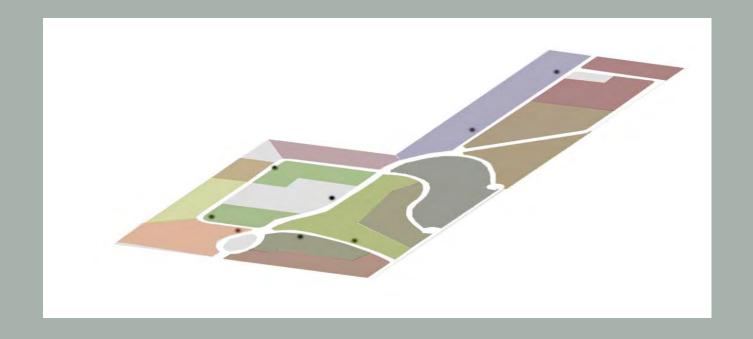
Infused Infrastructure

- Stormwater
- Water
- Food
- Energy

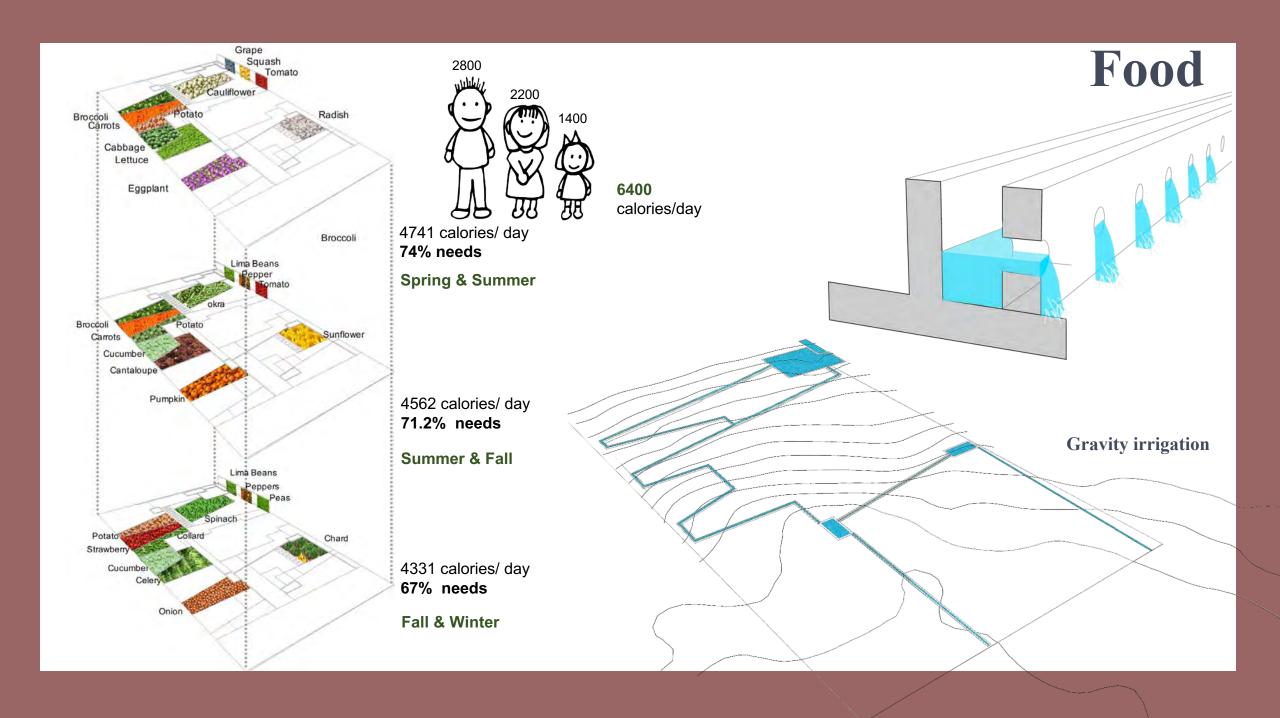


Water

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

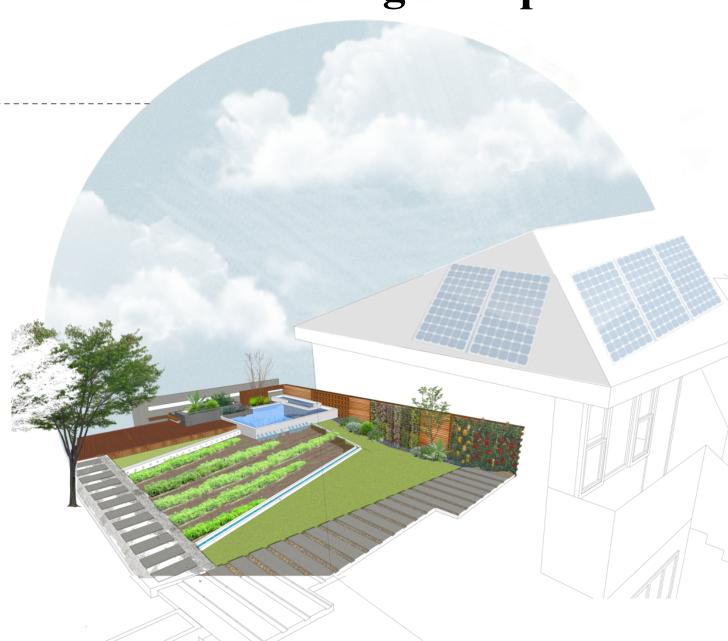






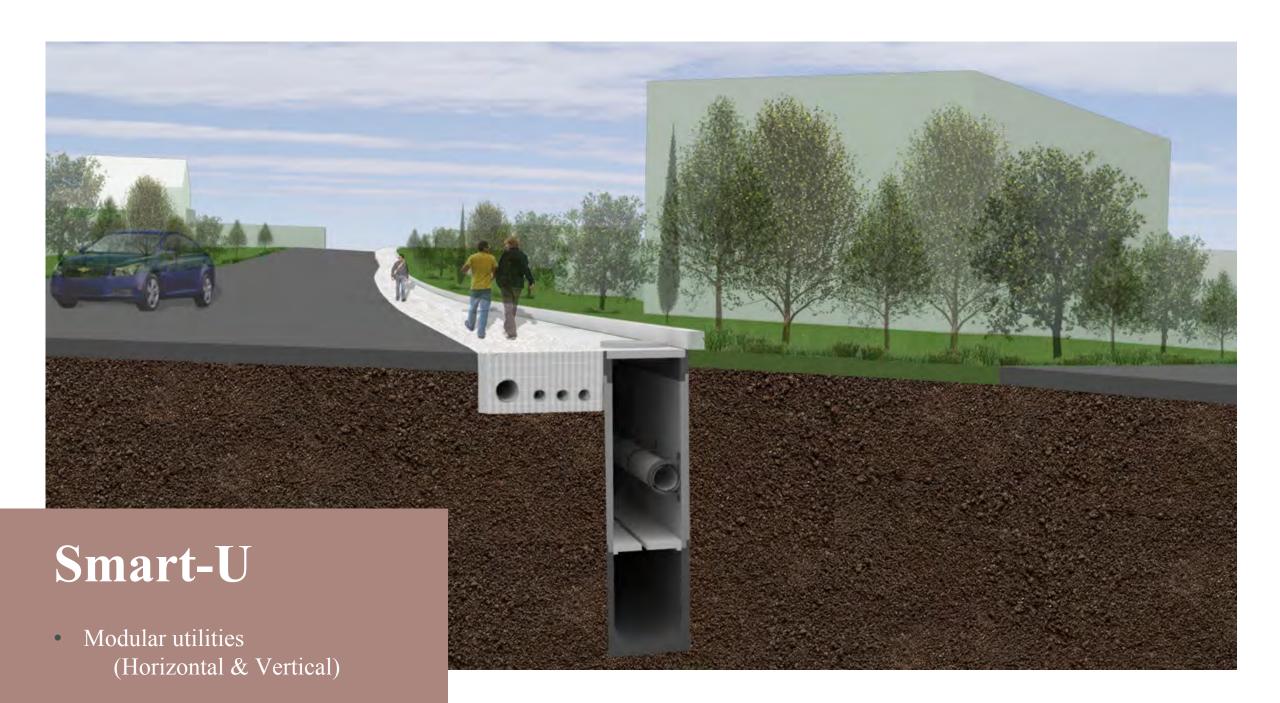


Design Proposal



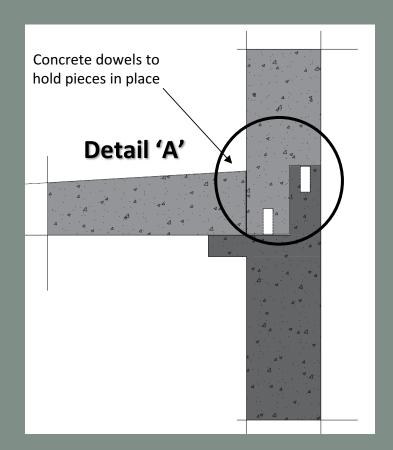


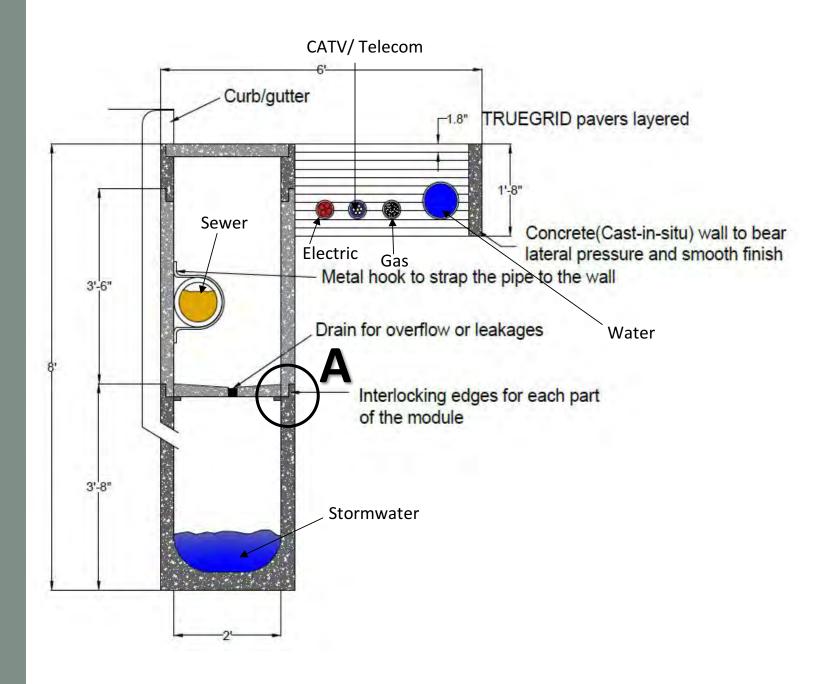
Utilities Design

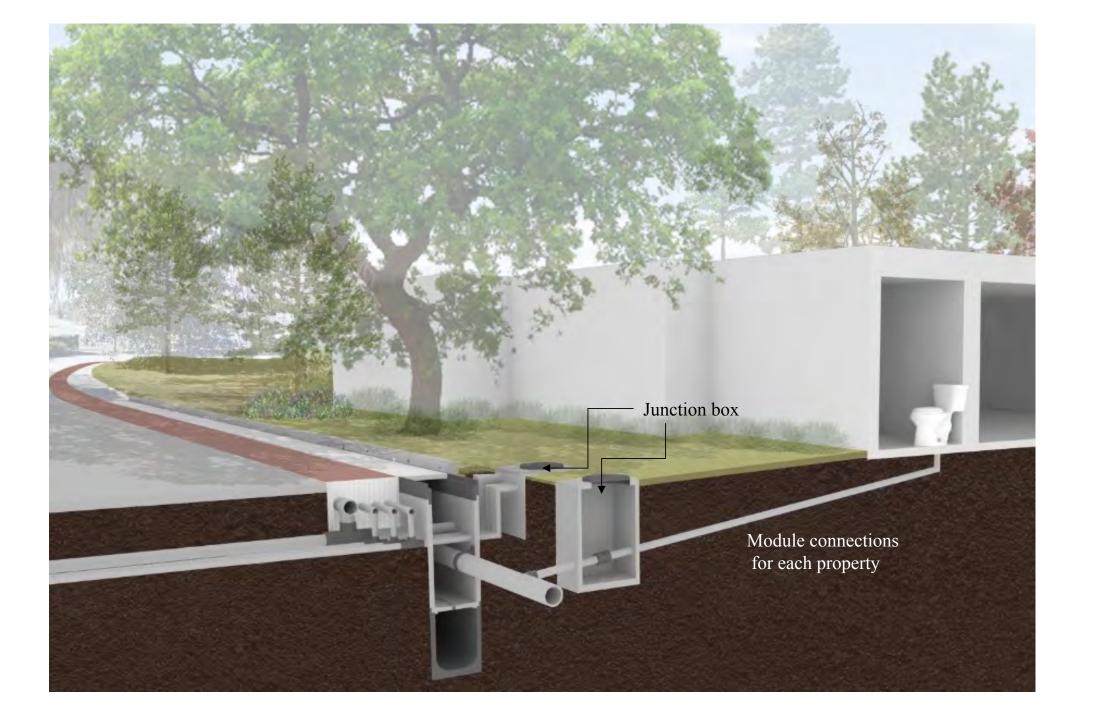


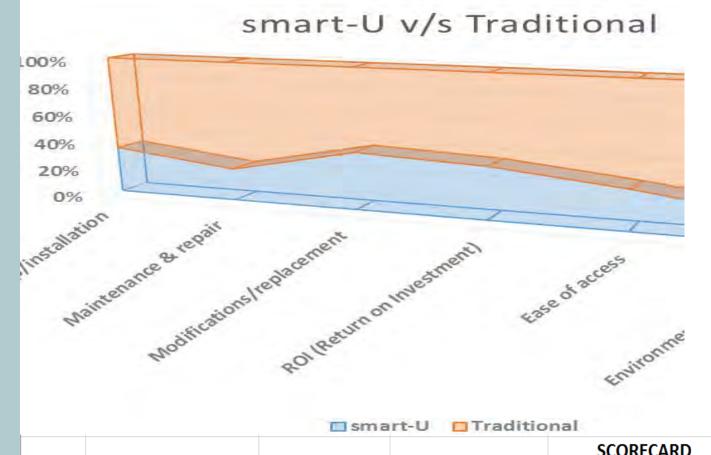
Assembly

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









Smart-U vs. traditional utility

Parameters

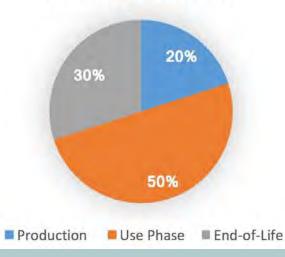
- Setup/ Installation
- Maintenance & Repair
- Modifications/ replacement
- R.O.I. (Return on investment)
- Ease of access
- Environmentally friendly

| | smart-U Traditional | | | | | | | | | | | | |
|-------|---|--------------------|----------------|----------------------|--------------------|---------------------------|---------|----------------------------|-----|----------------|-----|--------------------------|-----|
| | | | SC | | | SCORECARD | ORECARD | | | | | | |
| | | | | | | | | | | | | | |
| | <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: | <u>Lesser</u> the value, <u>better</u> the characteristic | | | | | | | | | | | | |
| | Traditional Setup has been us | sed as a | a benchmark fo | assess | ing 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.

smart-U Module



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 | | | |
| | | 14444 | | | |

Source:

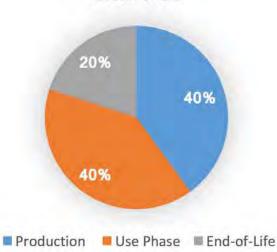
Carnegie Mellon University Green Design Institute. (2016) Economic Input-Output Life Cycle Assessment (EIO-LCA) US 2002 (428 sectors)

Producer model [Internet], Available from: http://www.eiolca.net/ [Accessed April 15th, 2016]

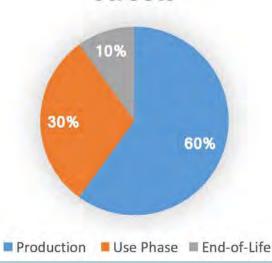
| Category | Production | Use Phase | End-of-Life | | |
|----------------|------------|-----------|-------------|--|--|
| Utilities | 40 | 40 | 20 | | |
| smart-U Module | 20 | 50 | 30 | | |
| Streets | 60 | 30 | 10 | | |
| | | | | | |

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

Utilities



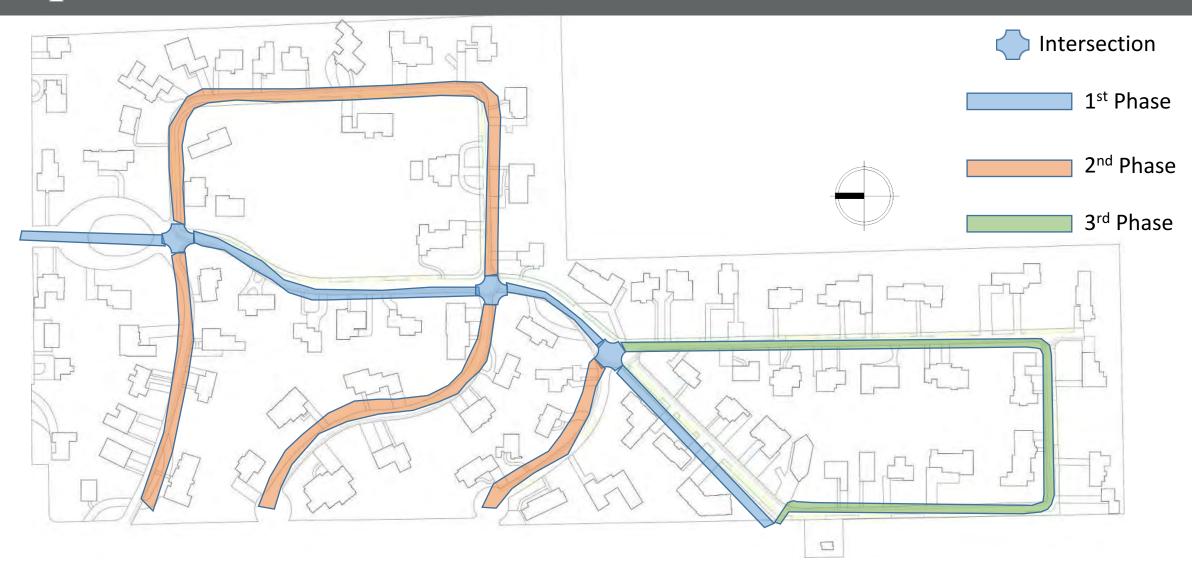
Streets





Implementation

Sequence



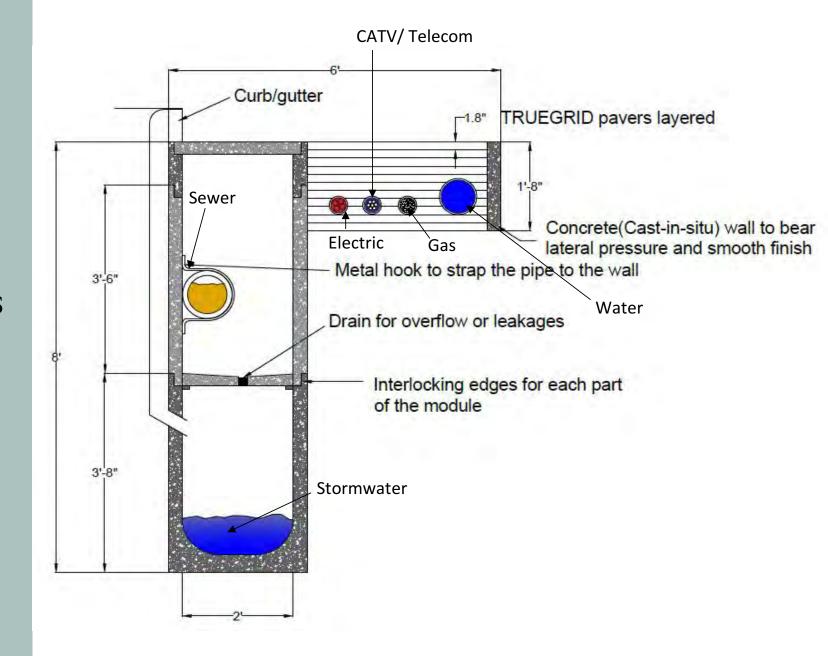
Cost Estimate

Dry Utilities (horizontal) \$ 2,006,400

- Water
- Electric
- CATV/Telecom
- Gas

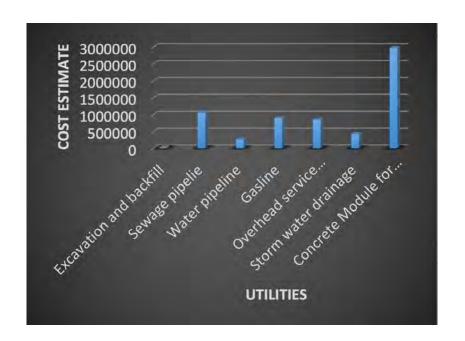
Wet Utilities (vertical) 1,478,400

- 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 | 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 |
| 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 cos | st\$ | 1,478,400 | | | |
| | | | | Total cost estimate | \$ | 6,479,615.75 | | | |





A Social Proposal

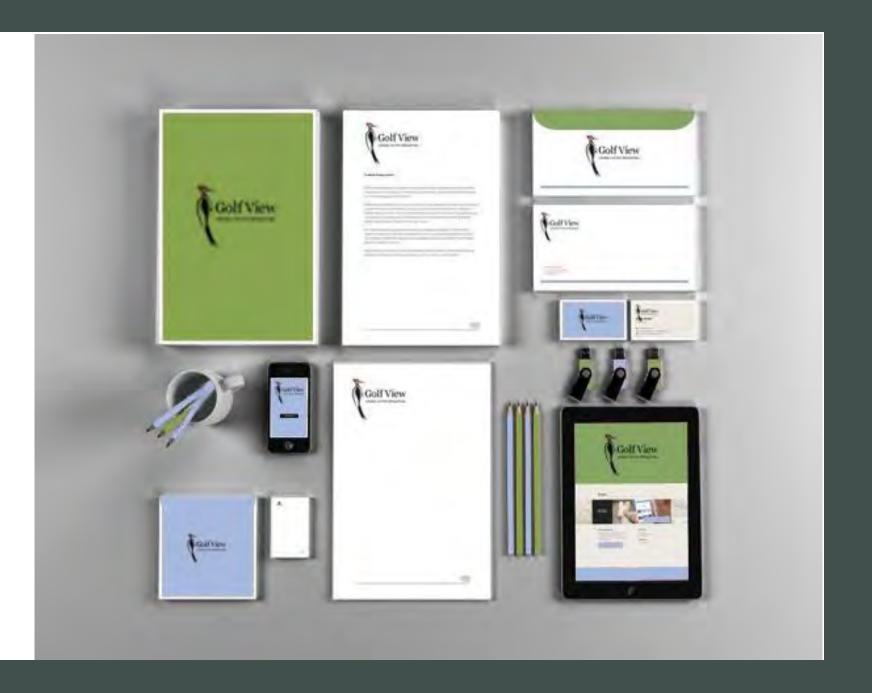
- Intention
- Benefit
- 5 Step Process
- Improving and maintaining an established social infrastructure

Identity

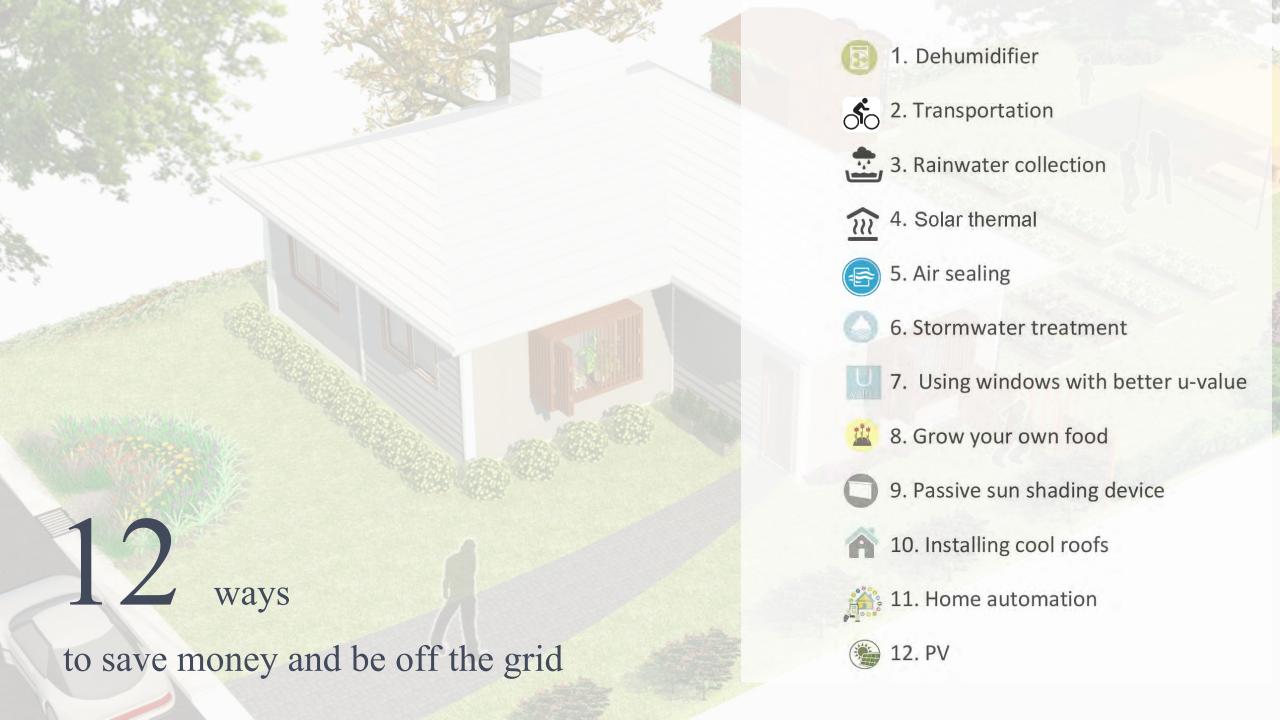
Utilizes characteristics of the neighborhood to create an image, something for all of the residents to identify with and support. Encompasses digital platforms and social structure.

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











Green Transportation

Transportation

Materials





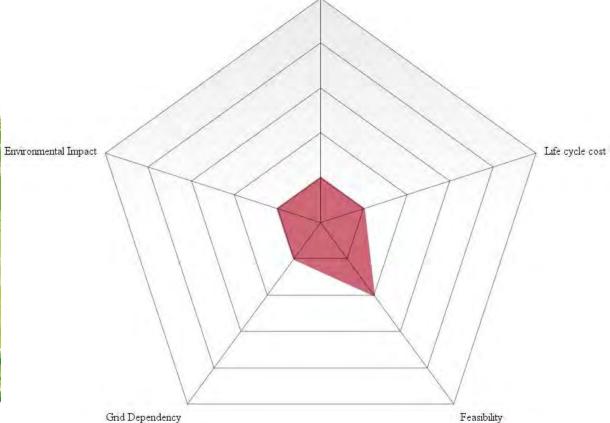
Walking



• Biking







ortation





Photovoltaic Panels

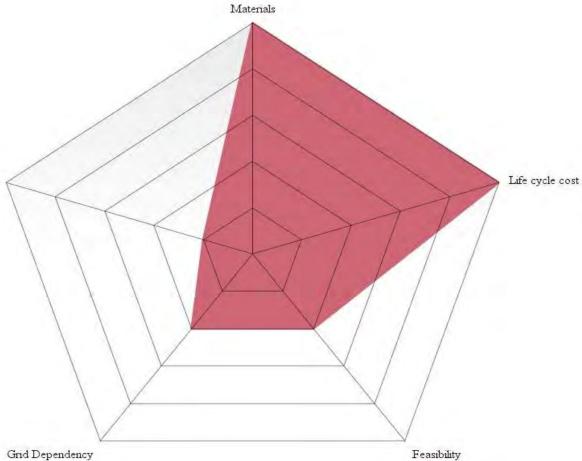
• Cost

P.V. System

• Life Cycle



Environmental Impact





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

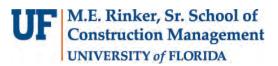
Acknowledgments

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