INNOVATION SQUARE.

INFRASTRUCTURE OVERVIEW
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INTRODUCTION

To the casual observer infrastructure systems are often considered “out-of-sight and out-of-mind” but the reality is that these systems have a very real impact on the (everyday) world we experience: the placement of street lights along a sidewalk can affect pedestrian movement, the location of sewer grates can create a hazard for bicyclists, and designing buildings as individual developments can lead to infrastructure that is inefficient and under-capacity. Additionally all utilities have accessibility needs for maintenance reasons. If Innovation Square is to be an experience tailored to all potential users, all of these factors must be taken into consideration.

Public works departments and private companies have the dubious task of maintaining a careful balance between the timely expansion of infrastructure and the availability of funds for this purpose. The sequence in which any new utility construction takes places requires a great deal of effort to ensure that the infrastructure necessary to meet a growing customer base is constructed and maintained in a timely fashion.

Significant infrastructure, including stormwater upgrades and public space delineation, are targeted early allowing future flexibility and quickly defining a sense of place for the district. Initially, parking is served by existing surface lots. Subsequent phasing continues to focus on investment within or immediately adjacent to the core, building a concentration of activity and shared resources. Parking structures are timed to maintain a conservative parking to building ratio until such time as the projected density supports alternative transportation opportunities.

This study highlights key issues and general considerations for the major utilities at Innovation Square. The system of utilities is envisioned as a highly functioning infrastructure backbone that allows development to occur with minimal difficulty, ensuring efficient and appropriate interaction and support for future development. Phasing needs are identified, as well as an exploration into the type of systems and strategies required for a progressive district-wide approach to infrastructure. As the project unfolds the specific nature of development will need to be analyzed to ensure compatibility with the contiguous blocks as well as the overall infrastructure needs of the area.
APPROACH. INFRASTRUCTURE OVERVIEW.
The decision making process is critical to realizing the successful coordination and provision of utilities and services. In order to realize this success, we must make decisions that get us closer to our stated goals. This is the foundation upon which the process is built.

Business-as-usual solutions are no longer adequate to accomplish this task. Instead, a new approach for coordination infrastructure must be developed. This approach must reject tradition methods of segregated disciplines that make decisions in isolation and instead embrace interdisciplinary and collaborative decision making.

Utility and service providers, stakeholders, and users (to name a few) must come together to discuss key issues and requirements which then feed the development of a common vision by which all future project decisions are made. Ongoing communication throughout the entire process is extremely critical.

DECISION MAKING
Business-as-usual solutions should be challenged by examining alternatives, critically selecting the most appropriate of these alternatives, pre-testing the potential effectiveness of each, measuring the actual effectiveness in achieving the vision, and then monitoring each through implementation. Each step of the process should refer back to the stated goals and desired outcomes as the guiding criteria for movement through the decision making process. This focus will help ensure that the process is successful. It will also begin to build a decision-making convention within the entire team. In the end, the decision making process that emerges should become the new business-as-usual.

This process starts by understanding the current conditions relative to specific issues. It may be that the business-as-usual solution to a particular problem is the right answer. If it isn’t, then the team (and it is always the team) moves on to the preparation of alternative solutions.

Alternative solutions should be proposed in reference to the stated goal of a particular issue with a clear understanding at a preliminary level, of how each might successfully address
the issue as well as how the proposal could be pre-tested as well as monitored. Proposals that are either impossible (or unreasonably difficult) to pre-test should receive low priorities, while those that are more easily tested and monitored should be prioritized. It is probable that a significant part of this process will involve creating innovative testing methods and measurement procedures to help ensure positive outcomes.

To ensure the greatest success in the communication and collaboration process, the team may have to move beyond conventional protocols. At the core of the communication process is the idea that entire team supports the vision such that the communication process fosters refinement and that the entire team is ‘around the table’ for key critical events. This needs to be more than weekly conference calls. Face-to-face meeting should be prioritized when critical issues are to be considered and decided upon. As a general guideline, questions such as the following would be answered in this process:

- How should the streets be designed?
- How should stormwater be managed?
- What kinds of alternative energy technologies could be used?
- How can we reduce waste leaving the site?

A communication plan should be set up at the very outset of the project. It should have specific targets for participation and it should be monitored and modified if it is not meeting the target performance requirements. The goal is a collaborative, efficient and expeditious process.
This was not what we proposed.

Concept + revisions a + b + c

Landscape architect

Public works

Power company

Data provider

Concept + revision a

Concept + revisions a + b

Initial concept

Concept + revision a

Data provider

Public works

Power company

Landscape architect

Combined common vision + the ability to concurrently make decisions

Siloed, discipline-segregated model

Common vision + way forward
Utilities and services are critical to the operation of any development project in the city. Elements such as underground sewer pipes, overhead power lines, and cell phone towers are omnipresent in the cities they inhabit and often go unnoticed by the people they serve. A great deal of effort is required to ensure that the infrastructure necessary to meet a growing customer base is constructed and maintained in a timely fashion. People demand that the lights will always turn on, the water will always flow, and that wireless data coverage is uniform. Public works departments and utility companies have the difficult task of maintaining a careful balance between the timely expansion of infrastructure and services and the availability of funds for this purpose.

At Innovation Square, these systems are even more important as the buildings that will comprise the development district have very specific requirements. These advanced buildings will push the limit of services already provided in the area requiring that additional infrastructure be provided. However, these buildings also have the opportunity to push beyond convention and find strategies to be self-sustaining; even providing surplus resources in some cases. These buildings have the potential to be part of the supply as well as part of the demand.

This section provides as a comprehensive overview of the infrastructure systems most critical to the successful development of Innovation Square. Each system has its own separate set of needs and issues that need to be considered and balanced against each other. Foregrounded these issues is a critical first step in that process.

**MORE THAN ENERGY**

Utility services will be provided to the Innovation District by Gainesville Regional Utilities (GRU). GRU is a municipally owned electric, water, wastewater, natural gas, telecommunications, and distributed energy services utility. With exceptional financial strength and operational capability, GRU is one of only a few utilities in the USA rated “double A” by Moody’s Investor Services, Standard and Poor’s, and Fitch bond rating agencies.
ENERGY
GRU not only has ample generation capacity to serve the Gainesville community through at least 2032, it has a uniquely diverse portfolio of fuels and renewable energy to meet its customers’ needs. GRU has nuclear, coal, natural gas, biomass, and solar photovoltaic generation capacity, and has the highest percentage of renewable energy of any electric utility in Florida. The first utility in the USA to offer a European style feed in tariff, GRU will work with projects to secure the renewable energy credits to assure the highest possible LEED certification.

Energy issues for Innovation Square include:
- General emergency power system(s)
- Redundant back-up power
- Type of continuous service
- Locations of service components (diesel generators/battery back-up/UPS)
- District wide requirements
- Individual building requirements
- Power requirements
- Use differentiation (those demanding continuous service against those not)

CHILLED WATER
Gainesville Regional Utilities’ Innovation Energy Center (IEC) will provide efficient chilled water and emergency power services to the Innovation District from a central energy plant. Not having these facilities on a project’s balance sheet will not only save on capital while capturing the advantage of large scale units, but can have significant operational, space optimization and tax benefits as well.

The first phase of the IEC has 700 tons of chilled water
capacity and 500 kilowatts of diesel fueled emergency power. This capacity is ample to serve not only the Innovation Hub currently under construction and design, but at least two additional buildings of similar size and use as well. The IEC designed and permitted for easy expansion, and GRU intends to lead the expansion of the Innovation District to assure no delays for new buildings. IEC is designed to ensure high efficiency and reliability so that building owners have a cost-effective “plug and play” solution. Reliability will be assured with N+1 chiller units, dual power feeds provided for the central energy plant, and the full technical and fuel storage capabilities of GRU’s power supply system.

Chilled water will be distributed throughout the Innovation District at 42 degrees F, with a 16 degree F delta T. Emergency power or optional standby power will be distributed via a dedicated 12 KV distribution backbone, with step down transformers at each building provided by GRU.

GRU’s other distributed energy services plant, the South Energy Center, is a combined heat and power plant serving the new Shands Cancer Hospital—a 200 bed in-patient hospital with the region’s only Level 1 Trauma Center (and the first LEED™ Gold hospital in Florida). The SEC was awarded the Florida Institute of Consulting Engineers 2010 Engineering Excellence Grand Award.

DOMESTIC WATER
The Gainesville community is extremely fortunate that GRU’s water supplies come from the pristine and locally abundant Floridian Aquifer, a geological formation with uniquely beneficial properties. For more than a century, GRU has provided clean, safe, great tasting water to the Gainesville area at a tremendous value. GRU softens, fluoridates, filters, and chlorinates this excellent quality water before distributing it throughout the community. The level of service provided by GRU’s water distribution system is a primary factor in maintaining the City’s excellent insurance rating.

GRU’s existing water infrastructure in the Innovation Square area will serve as a backbone to facilitate the extension of distribution lines within the project vicinity. However, water system improvements in the vicinity of the project area will be required to satisfy the projected demands and provide adequate fire flow for this project. GRU’s water extension policy requires that new development pay for the water distribution system infrastructure improvements required to serve it. This includes both the additional piping needed to connect the development and improvements to existing facilities required to provide additional capacity to serve the project. GRU may elect to fund oversizing of the improvements, if deemed feasible. Depending on the availability of capacity and the needs of the project, system improvements required to provide additional capacity may be minimal or could be extensive.

One existing concern is that water system improvements could be disproportionately borne by some projects depending on the timing of projects. Efforts are underway to develop a funding mechanism to ensure that the cost of capacity will not become an impediment to redevelopment.

Domestic water issues for Innovation Square include:

- Service requirements for tenants/developers
- Metering
- Underground locations/easements/repair and
WASTEWATER

The City of Gainesville and GRU work towards sustainable solutions that enhance our Community. GRU has the only reclaimed water treatment facility licensed to meet drinking water standards in Florida. GRU’s high level of treatment assures not only the availability of safe reclaimed water, but protects the natural ecosystems surrounding the Gainesville community.

GRU has two water reclamation facilities: Kanapaha Water Reclamation Facility and Main Street Water Reclamation Facility. Rather than discharge treated water directly back into the watershed, these facilities cycle the water back to the community for use in irrigation, water features, industrial uses, aquifer recharge and environmental restoration.

The wastewater collection system serving the Innovation District flows by gravity to the Main Street Water Reclamation Facility. The Main Street Water Reclamation Facility has adequate capacity to meet current and anticipated future flows. The existing wastewater collection system is adequate to meet current demands. However, significant capital improvements to the collection system both within the project area and downstream of the project area will be required in order to satisfy anticipated increases in flow associated with redevelopment of the Innovation District area as well as areas located upstream.
Per GRU policy, wastewater collection system improvements needed to serve new development will be funded by the developer. GRU may elect to oversize the improvement, if deemed feasible. Collection system improvements which must be funded by the developer includes extensions needed to connect the development as well as downstream improvements to existing collection system facilities needed to provide adequate flow capacity. Depending on the availability of capacity and timing of a project, there may be no capacity improvements required, or there can be extensive improvements required.

As with water distribution, there is a concern that the cost of wastewater collection system improvements could be disproportionately borne by certain projects, depending on the timing of the projects relative to other projects and capacity availability. GRU has in place an Urban Core Extension policy that partially mitigates this situation. Within the designated Urban Core area (which includes this project), GRU will pay 40% of the cost for additional wastewater infrastructure improvements within the designated Urban Core area. In addition, GRU will be responsible for all of the cost for upgrading gravity lines which have slopes that do not meet current design standards. In addition, efforts are underway to develop an alternative funding mechanism to pay for the remaining costs for sewer improvements.

Wastewater issues for Innovation Square include:
- Capacity within the project vicinity
- Downstream capacity beyond the project boundary
- Pipe locations and sizes of pipes
- Spacing requirements (especially as it relates to potable water supply)
- Grease trap locations, operation, sizing
- Clean-out requirements
- Financing for wastewater system improvements

### STORMWATER

In early 2011, the GCRA commissioned a study of the Innovation Square District which revealed much of the stormwater conveyance infrastructure in the district to be out-of-date and incapable of accommodating a 5-year storm. The design standard for most stormwater conveyance infrastructure in this area is a 10-year storm event. A significant amount of this stormwater overflow is discharged directly into Tumblin Creek and left untreated.

Stormwater issues for Innovation Square include:
- Underground locations and sizes of pipes
- Spacing requirements for maintenance
- Service crossings (with perpendicular crossing coordination)
- Volume and conveyance capacity
- Untreated stormwater runoff
- Opportunities for Low Impact Development design techniques

### EXFILTRATION

Another potential strategy for stormwater management is to utilize methods of exfiltration. Exfiltration is the practice by which stormwater is retained underground and released into the soil. Typically stormwater runoff is conveyed from the surface to a below ground perforated pipe or aggregate material bed where the water is treated and allowed to infiltrate back into the soil. This technique is only suited to areas where soil is of sufficient permeability and capable of
facilitating infiltration. At a minimum, exfiltration systems should be capable of processing the runoff from a 15-minute rain event within 72 hours.

The benefits of exfiltration are numerous: overall stormwater loads can be reduced; the initial flows from a rain event (typically the most polluted) can be retained; contaminants can be filtered; and groundwater can be more efficiently recharged. Implementation of exfiltration should be considered as a part of a comprehensive stormwater strategy at Innovation Square.

- Exfiltration issues at Innovation Square include:
  - Stormwater loads and capabilities of conveyance systems
  - Soil permeability
  - Water table level and contamination prevention

- Sediment load and oil/grease content of water
- Design interface with streetscapes/landscapes

**NATURAL GAS**

GRU’s combined volumes of natural gas not only for distribution, but for electric generation provide a distinct advantage in helping keep costs to a minimum. GRU trades daily in gas and pipeline capacity markets to assure a continuous, secure supply for the community.

Natural gas issues for Innovation Square include:

- Service requirements for tenants/developers
- Metering
- Underground locations/easements/repair and maintenance
- Taps/connections
INTERNET & DATA
GRUCom is the department of Gainesville Regional Utilities that provides broadband data and internet services throughout the Gainesville urban area, including connectivity to cities throughout the southeast. GRUCom maintains interconnections with major telecommunications carriers and can facilitate worldwide data connectivity. GRUCom also operates Alachua County’s public safety radio system and offers co-location space leases for privately owned equipment needing secure power and cooling, as well as access to high levels of connectivity.

GRUCom provides its services over a looped, 100% fiber optic network accommodating both SONET and Ethernet protocols. GRUCom has existing fiber optic facilities surrounding and throughout the innovation zone with enough spare capacity to handle any data need up to and including 10 gigabits per second. Through GRUCom’s interconnection with the University of Florida network, occupants of facilities at Innovation Square that qualify as research or educational affiliates will have access to UF services, including the Florida Lambda Rail, National Lambda Rail and Internet 2.

GRUCom also can provide hardened co-location facilities, virtual private networks and VOIP with full features such as phone answering trees, and voice mail.

Data issues for Innovation Square include:
- Co-location of a server farm in the second building (currently proposed); how will this work, how should it be sized
- Proposed requirements of tenants for data service
Landscape supports the overall vision for the Innovation District, defining in greater detail, the types of spaces within the district. Landscape encompasses the common pedestrian areas within the district. These spaces are designed for people, encouraging pedestrian movement along with critical infrastructure elements within the district. Not all spaces are located within the public realm but each contributes to the unique character of the district while enhancing the quality of life of researchers, residents, students and visitors. These spaces provide opportunities for gatherings, collaboration and reflection. The goal of the Landscape is to provide a spatial strategy to define areas of development within the district.

Landscape issues for Innovation Square include:

- Tree vault requirements
- Root disturbance area
- Planting area requirements
- Perpendicular coordination with lateral utilities
- Parallel coordination with service utilities
- Tree types
- Hardscape systems
- Structural soils issues
- Tree replacement issues
CHARRETTE INFRASTRUCTURE OVERVIEW.
In modern times the term “charrette” is used to describe an intense, facilitated session that harnesses the talents and energies of all interested parties to create and support specific documents and drawings for a planning or design challenge.

Utilities and services are critical to the success of Innovation Square because the buildings that will comprise the district have very specific requirements. The research center requires a comprehensive strategy for the design, construction, operations and maintenance of utility systems. In an effort to become more familiar with those needs and to foster future collaboration, an infrastructure charrette was held on June 10, 2011 at the Austin Carey Memorial Forest Learning Center.

The various utilities under discussion included data and internet, energy, a central chiller plant, metering, stormwater, domestic water, wastewater and landscaping. The system of utilities is envisioned as a highly functioning infrastructure backbone that allows development to occur with minimal difficulty, insuring efficient and appropriate interaction and support for future development.

In general, the purpose was to meet with an extended group of stakeholders in the areas of infrastructure and services and to provide a platform for investigating a number of issues, both broad and specific. The primary issues discussed were:

- Current policy/standards at GRU versus state and other policy/standards
- Sectional coordination of multiple utilities now and into the future
- Examples and best-practices for district-wide systems
- Vault requirements

The ultimate goal was for each smaller grouping of stakeholders to establish ideas of how to resolve old standing institutional barriers and develop sketches of solutions that would actually address the aforementioned issues. This report includes the agenda, summaries and sketches developed by teams of utility representatives over the course of the 6 hour charrette.
AGENDA
In general the purpose of the meeting on June 10, 2011 is to meet with an extended group of stakeholders in the areas of infrastructure and services and to provide a platform for investigating a number of issues, both broad and specific, with the ultimate goal of coming to high percentage solutions for outstanding issues. The meeting will be located at the Austin Carey Memorial Forest Learning Center; 10625 NE Waldo Road, Gainesville, FL.

The general agenda was:
- Project introduction: Linda Dixon
- City Infrastructure Study Update: Diane Bennett
- Infrastructure Goals: Ed Regan
- Project Specifics, Projections, Uses + Design: David Green
- Breakout Groups [each addressing specific issues]
- Breakout Group Presentations + Group Feedback
- Breakout Groups Reevaluation
- Breakout Groups Way Forward

The goal of the meeting is to get to 95% decisions on each issue.

The primary issues are:
- Current policy/standards at GRU versus state and other policy/standards
- Sectional coordination of multiple utilities now and into the future
- Examples and best-practices for district-wide systems

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BREAKOUT GROUPS

One of the key purposes of the charrette was to initiate a dialog among the various stakeholders, utility providers, and design disciplines. Breakout sessions in which participants were assigned to one of four groups played a major role in the charrette. In these sessions groups were tasked with further discussing utilities and services issues as identified earlier in the charrette and working collaboratively to develop solutions that addressed those issues. The groups developed several district plan diagrams and street sections that suggest solutions to a wide variety issues. Those topics that were a common theme for all groups include:

- Tree locations and stormwater management capabilities
- Stormwater infrastructure location, capacity, and management strategies
- Provision of and access to central chilled water
- Location of duct banks for the provision of power and data services
- Location of meters for any utility for which they are required

The following pages illustrate and discuss the solutions of each group. The primarily goal of these sessions was not to immediately establish a single, coherent plan for deploying utilities and services at Innovation Square. Rather the point was foster a spirit of collaboration among the participants that would carry on throughout the development process. These solutions provide a foundation on which to build a common vision for Innovation Square.
GROUP 1 CONCEPT SKETCHES
GROUP 1 SUMMARY

Upon review of a typical street section proposed for Innovation Square, there appears to be adequate room to locate all infrastructure elements. However, careful coordination and location of all elements (utilities and trees) will be critical to using the space efficiently.

The first consideration is the wastewater line which was located in the center of the street because it is usually the deepest utility and serves both sides of the street. The water line is then shown with a minimum 10-foot separation from the wastewater line. A primary concern of other utilities will be the location of wastewater and water line laterals connecting buildings with the main line.

Electrical lines and fiber optic cable runs are placed in duct banks and stacked in the configuration shown to allow for wastewater and water line laterals to run underneath them and still serve the buildings. Chilled water lines were placed in the street to keep pressurized water away from the buildings. These lines will also have laterals whose size and location will need to be considered relative to other utilities.

The stormwater line is shown three feet offset from the curb to allow for storm inlets to feed from the curb and to also avoid the tree roots of the planting areas. The curb inlet type shown was used to minimize conflict with trees. An eight foot wide zone has been shown dedicated for tree planting area. Perpendicular utilities across this area should be limited in order to maximize soil volume and minimize conflicts with utilities. Structural soil cells are recommended for the tree planting area to maximize soil volume, while providing required compaction for paving above.

One last concern is the location of utility meters. The primary goal is that utility meters should be easily accessible for reading and servicing but not placed in a location that would detract from appearance of the building relative to the streetscape. Metering should occur either in the building or in alcoves outside of building.
GROUP 2 SUMMARY

The focus should be on the initial form of the streetscape and embedding flexibility in that design. For the street section considered, the goal was to create a tree-lined space to facilitate a park-like walk while not precluding the opportunity for street side cafes. The street was developed to include a four lane section (two travel lanes in each direction) and a tree-lined and landscaped center island that could accommodate an exclusive bus/trolley lane if so desired in the future.

Within the roadway is the major storm sewer trunk line which will collect the overflow from the tree well detention facilities. The wastewater collection main has been shown with a minimum 10-foot separation from the storm sewer main. Utilities on the opposite side of the landscape island include the potable and reclaim water mains along with chilled water and return mains for a potential central cogeneration facility.

Natural gas and data lines to accommodate all GRUCoM services are shown under the sidewalk on the left side of the street section. The electrical mains have been located under the right sidewalk. All utilities were strategically placed both horizontally and vertically so as to serve both sides of the street and be accessible for maintenance.

Tree wells on each side of the street are shown eight feet deep along the curb and spaced at 30 feet on center. Tree wells are intended to serve a dual function for stormwater detention as well as the reduction of the volume of irrigation required to sustain growth of landscaped amenities.

By nature of the layout and stormwater design intent, maximum practical efficiency is achieved even though the primary focus is on use of the space for commerce and recreation. The spacing of trees optimizes the use of space but also easily accommodates bus stop installation which is accomplished by removing one tree and transitioning the space to the trees on either side. The combination of these components should facilitate the potential of achieving at least 80% of site LEED credits.
GROUP 3 CONCEPT SKETCHES
GROUP 3 SUMMARY

One primary concern is the location of all utilities and services in a smaller street cross section. The “storefront street” section used for this exercise affords a very generous 102-foot right-of-way width in which to place all utilities. In reality, however, many of the streets in this district may actually be much narrower. The group adopted a smaller 60-foot right-of-way (20-foot curb-to-curb) in order to establish and test minimum dimensional clearances required for certain utilities.

Because of its required depth, the wastewater line was placed in the middle of the street and shown at the greatest depth relative to the other utilities. A 12-inch diameter wastewater line has been indicated but actual line size will need to be determined based on future development demands. The chilled water supply and return lines and the potable water line are placed on either side of the wastewater though at a shallower depth. Both lines should maintain a minimum 10-foot horizontal separation from the curb though spacing will ultimately depend on the actual size of the line. For this example an 18-inch diameter stormwater line is assumed. It is important to note that the lines were located in close proximity to the tree wells in the sidewalks. It is conceived that the stormwater lines and adjacent tree wells will be designed to work in tandem to create a unified system for stormwater filtration and retention. As such the close proximity of the lines and well should be maintained to facilitate this goal.

Utilities placed within the sidewalks were limited to reduce potential maintenance issues. Cable and telecommunications are shown on the right side of the street while data is shown on the left. Both sets of conduits are shown placed horizontally in a vault in order to accommodate lateral lines between buildings and utility main lines in the street.
GROUP 4 CONCEPT SKETCHES
**GROUP 4 SUMMARY**

For the street section considered, the goal was to create a tree-lined space to facilitate a park-like walk while not precluding the opportunity for street side cafes and building awnings. The street was developed to include six lanes that include on-street parking, and a central bus/trolley lane. There is also provision for a bicycle lane.

Initial consideration was for the wastewater line - located at the street center. Secondly, major storm sewer lines are located on either side of the road within the road section itself (9 inches from the sidewalk curb). The major storm sewer trunk line will collect the overflow from the tree well detention facilities. Utilities on one side of the street include Cable Television (4 feet from the building face), and Telephone – located under the sidewalk, and Chilled Water supply and return – 12 feet into the street section. In addition the group also proposed a reclaimed water line running under the sidewalk. On the other side of the street, the group proposed Electrical lines (including emergency Power, Primary & secondary electrical lines), Natural Gas and Data lines – all under the sidewalk, and potable water 12 feet into the street section.

Tree wells on each side of the street are shown seven feet deep along the curb and spaced at 30 feet on center. Tree wells are intended to serve a dual function for stormwater detention as well as the reduction of the volume of irrigation required to sustain growth of landscaped amenities.

By nature of the layout and stormwater design intent, maximum practical efficiency is achieved even though the primary focus is on use of the space for commerce and recreation. The spacing of trees optimizes the use of space but also easily accommodates bus stop installation which is accomplished by removing one tree and transitioning the space to the trees on either side. The combination of these components should facilitate the potential of achieving at least 80% of site LEED credits.
The charrette was an instrumental step in critically rethinking the role that infrastructure will play in the development of Innovation Square. The process foregrounded several key issues and generated a first round of potential solutions that has produced a foundation on which future decisions will be made. While none of these solutions will serve as the final design for utilities and services, the ideas embedded within them and spirit of collaboration they fostered during their creation has established a path for making future decisions in a collaborative fashion.

The four design groups in the charrette developed four different creative alternatives for locating utilities within the Innovation District with the UMU-2 zoning. Perhaps the most significant challenge identified from the charrette work is meeting utility separation requirements while providing for the ability to install the variety of required utilities in addition to landscaping and other amenities. The design standards establish adequate utility spacing in order to meet regulatory requirements, protect public health and ensure that utilities will be reliable and can be reasonably accessed for service in the future.

As part of the next step in the process, GRU has developed a set of refined utility allocation sections that combines the ideas and sketches from the charrette with GRU Design Standards and separation requirements. These revised utility allocations are fully consistent with GRU Utility Standards. It is important to note that these allocations are not a rigid set of solutions. Rather it is expected that they will needed to be adjusted or changed to reflect unforeseen conditions or design requirements. For example, separation distances can be reduced where necessary by providing protection for the utility infrastructure as detailed in the GRU Water/Wastewater Utility Standards. It is the policy of GRU to work with developers to provide adequate utility capacity in a safe and efficient manner.