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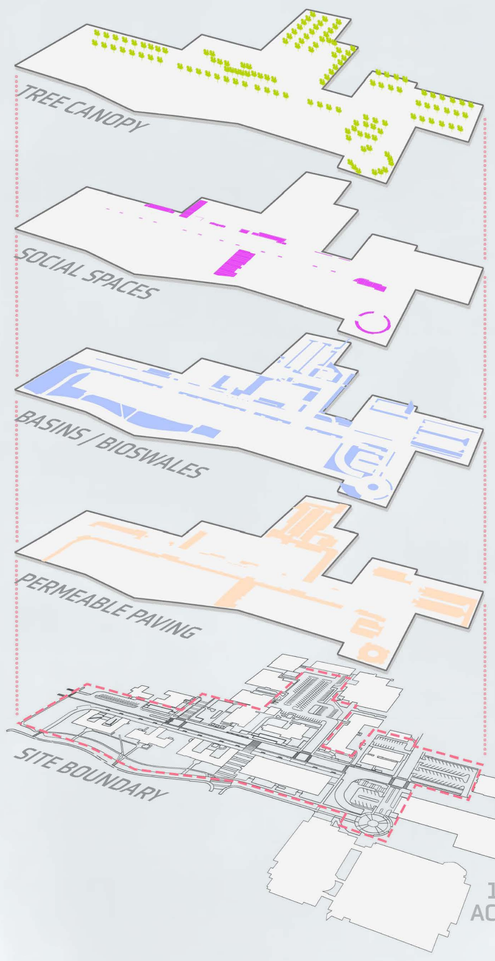
Team M10

SOCIO-HYDROLOGY

A frame for an integrated green infrastructure campus master plan

The University of Arizona is located in the Sonoran Desert, one of the wettest deserts in the world which receives the majority of its 12 inches of annual rainfall in two short periods. The 2nd Street corridor is a major vehicular and pedestrian thoroughfare running along the historic northern border of the University of Arizona. The 2nd Street corridor is the downstream confluence of 18 sub-basins within one of the 5 major watersheds on the University of Arizona campus. Runoff from contributing sub-basins leads to over 4.3 acre-feet of water running across the site. This creates dangerous conditions for pedestrians, cyclists and drivers. Issues stemming from poor stormwater management practices are compounded by an ever growing student body population and climate change. The following 15-acre master plan proposal introduces integrated green infrastructure (GI) practices to better utilize water as a resource on the University of Arizona campus while providing a dynamic space for cross-disciplinary collaboration while engaging a broader community.

DESIGN PERFORMANCE AND IMPACT



159,836 LBS — CO2 Reduced	+31,651 S.F. — Shade Canopy	+134 — Desert Trees
+24 K S.F. — Social Space	+3,000 L.F. — Enhanced Bike Lanes	+6 — Enhanced Crosswalks
+2.13 AC-FT. — Surface Storage	+159 K GAL — Cistern Storage	+1.3 AC — Restored Native Vegetation
37 % LESS — Impervious Surface	17.2 % — Reduced Runoff (1 Yr Storm)	30% — SRI Increase

2ND STREET MASTER PLAN

1. GI Plazas
2. Green Parking Lots
3. Northern GI Network
4. Southern Bioswale
5. Green Pedestrian Corridor
6. Historic Landscape GI Retrofit

7. Green Street
8. Detention Basin/ Social Space (P1)
9. Seating/Research Station (P2)
10. GI Gateway (P3)
- GI Art Feature

* College of Architecture, Planning and Landscape Architecture

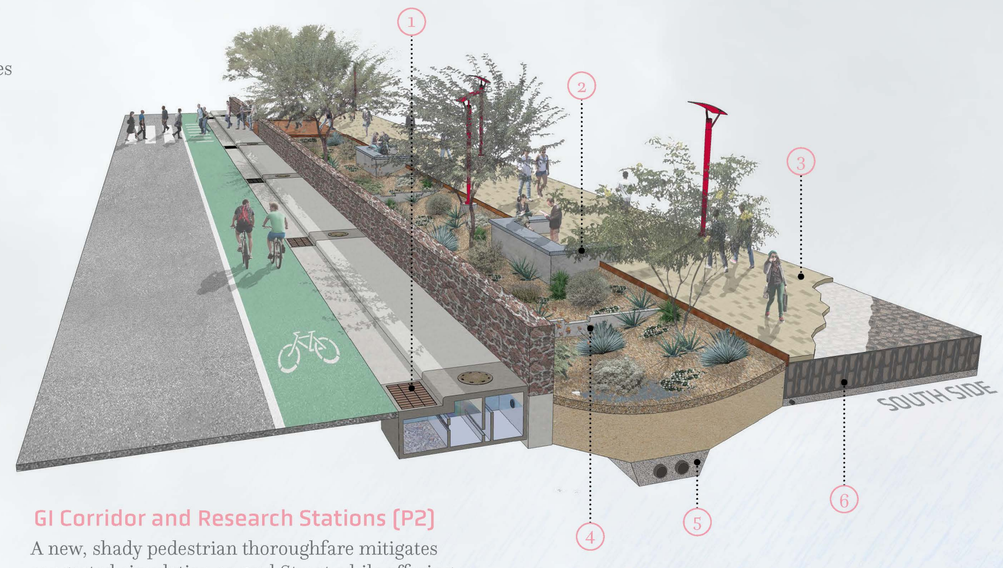
2ND STREET GI SYSTEMS

Sod to GI Social Space (P1)

Spaces outside buildings that are currently underutilized will be retrofitted with GI strategies that increase shade while creating social spaces for students, faculty and visitors.

1. **Bioswale network** connects beyond site and accounts for overflow
2. **Curb cuts** alleviate flooding on street and provide supplemental irrigation
3. **Native plantings** reduce urban heat island effect while intercepting rain
4. **Perforated bridge** allows water to pass through and under into basins
5. **Decomposed granite** detention basin floods during large rain events
6. **Perforated pipes** mandated by campus guidelines aid in water conveyance and infiltration
7. **Rock-weirs** slow water and allow temporary storage and percolation of rainfall

1. **Sediment catchments** slow and filter water before it enters bioswales
2. **Research station and seating** allow observation of bioswales for purposes of collaborative study
3. **Permeable pavers** promote percolation and minimize runoff
4. **Concrete weirs** slow water and allow temporary storage and percolation of rainfall
5. **Perforated pipes** mandated by campus guidelines aid in water conveyance and infiltration
6. **Structural soil cells** hold stormwater and provide room for tree roots

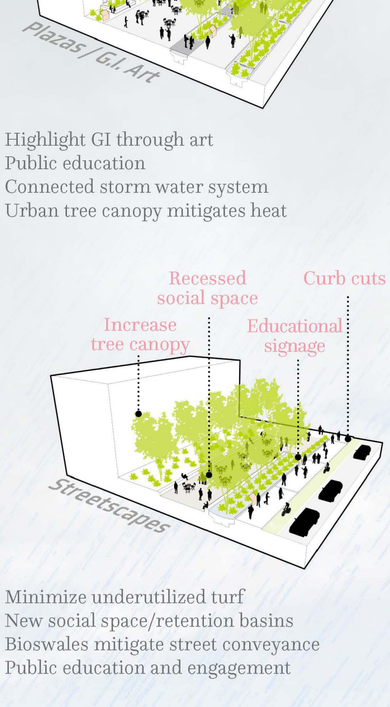


GI Corridor and Research Stations (P2)

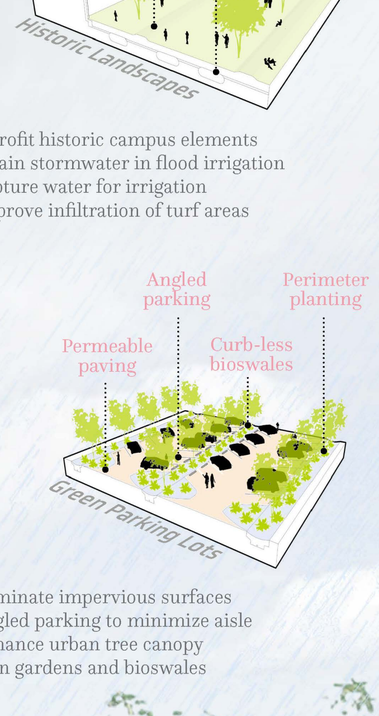
A new, shady pedestrian thoroughfare mitigates congested circulation on 2nd Street while offering chances to experience and study GI

SCALABLE CAMPUS STRATEGIES

Typologies of smaller scalable strategies specific to the 2nd St. corridor proposal seek to demonstrate GI solutions that can be implemented on a broader scale within the neighboring and upstream campus landscape.



- Highlight GI through art
- Public education
- Connected storm water system
- Urban tree canopy mitigates heat



- Retrofit historic campus elements
- Retain stormwater in flood irrigation
- Capture water for irrigation
- Improve infiltration of turf areas

- Minimize underutilized turf
- New social space/retention basins
- Bioswales mitigate street conveyance
- Public education and engagement

- Eliminate impervious surfaces
- Angled parking to minimize aisle
- Enhance urban tree canopy
- Rain gardens and bioswales