

UT DALLAS LANDSCAPE ENHANCEMENTS PWP LANDSCAPE ARCHITECTS

LAF Performance Series Case Studies

Taylor Dave, Sydnie Kroneberger,
Vinnie Martinelli, Jessica Ricalde



VISION



Through the first phase of the University of Texas at Dallas' Campus Identity and Landscape Framework Plan, native plantings and walkable areas transformed the car-centric barren asphalt campus into one of architectural stability, forward-thinking greenery, and a social hub of the community.

ISSUES

- Foster connections and social interaction
- Become a place of curiosity and increase in desire for student retention and application rate
- Redesign the formal main entrance
- Increase quality of stormwater runoff and retention



METHODOLOGY

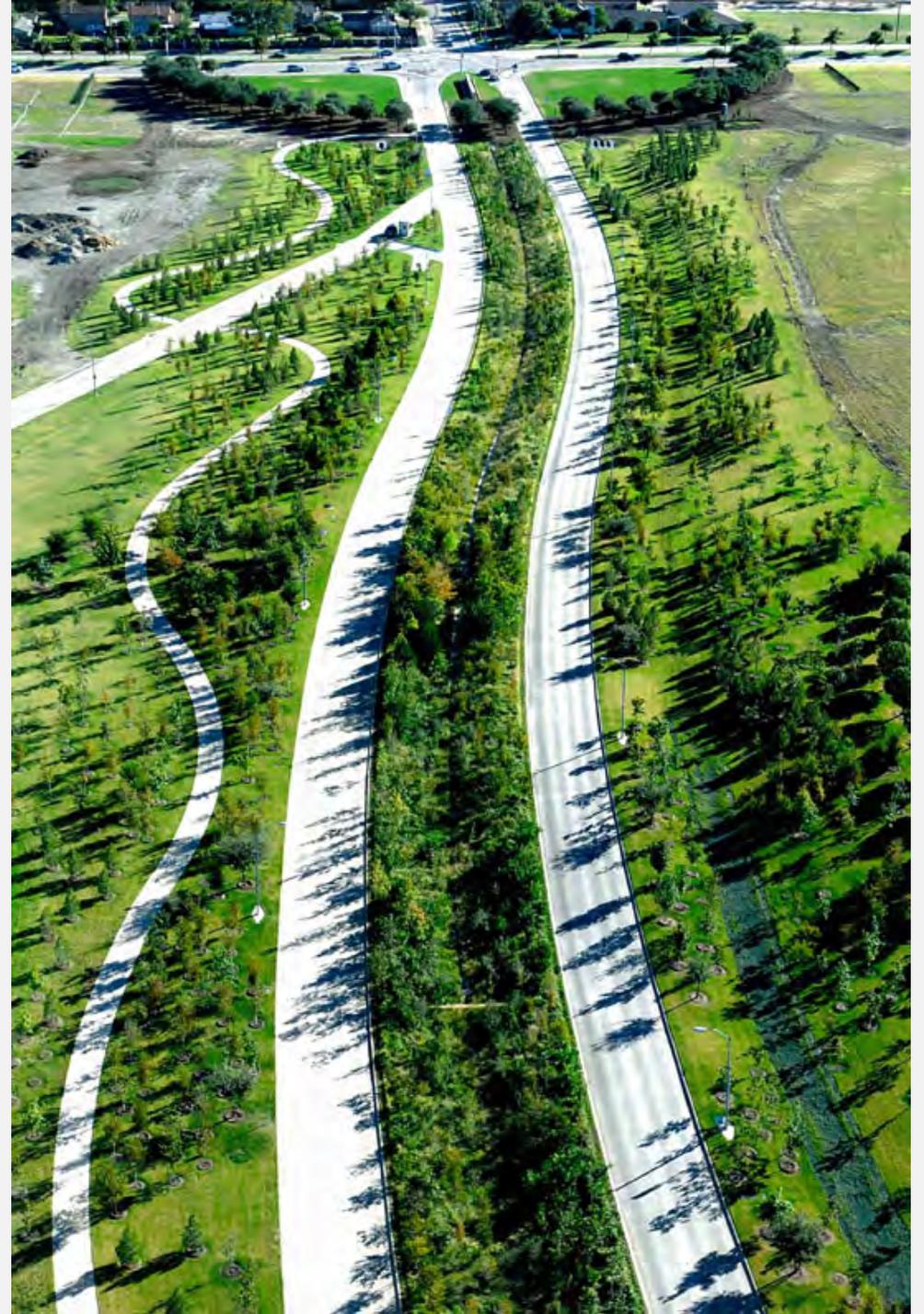
The UT Dallas team designed its research strategy under three focused thematic areas;

Environmental

Economic

Social (including cultural and aesthetic)

for all three case studies.





FINDINGS

The findings of the investigations in all cases focused on

- Site related performance benefits
- Its immediate adjacencies
- The project block group/neighborhood/district or zip code.

The data collected through these strategies were systematically reviewed.



METRICS

- The carbon sequestered is calculated with National Tree Benefit Calculator.
- The number of miles a motorized vehicle travels in a year was found at Federal Highway Administration (FHWA) website (recorded since 2010) with the carbon calculator (americanforests.org).
- The stormwater runoff is calculated with Rational Method ($Q=CiA$). The Co-efficient numbers for different materials is referenced from the LARE reference manual.
- The watersheds considered for calculations were referred from the documents provided by the firm. Three kinds of areas (bio-retention area, pervious surfaces area and impervious surfaces area) were calculated.



ACCOMPLISHMENTS

- Influenced decision 44% of students surveyed to apply and enroll. Also, likely contributed to a 13% increase in enrollment from 2010 to 2012.
- Source of pride for the community, students, faculty, etc.
- Increase in 5,000 trees (sequesters 154 tons of CO₂ annually- equivalent to the CO₂ emitted from driving approximately 373,494 miles in a single passenger vehicle, intercepts approximately 1,077,946 gallons of stormwater runoff annually.)



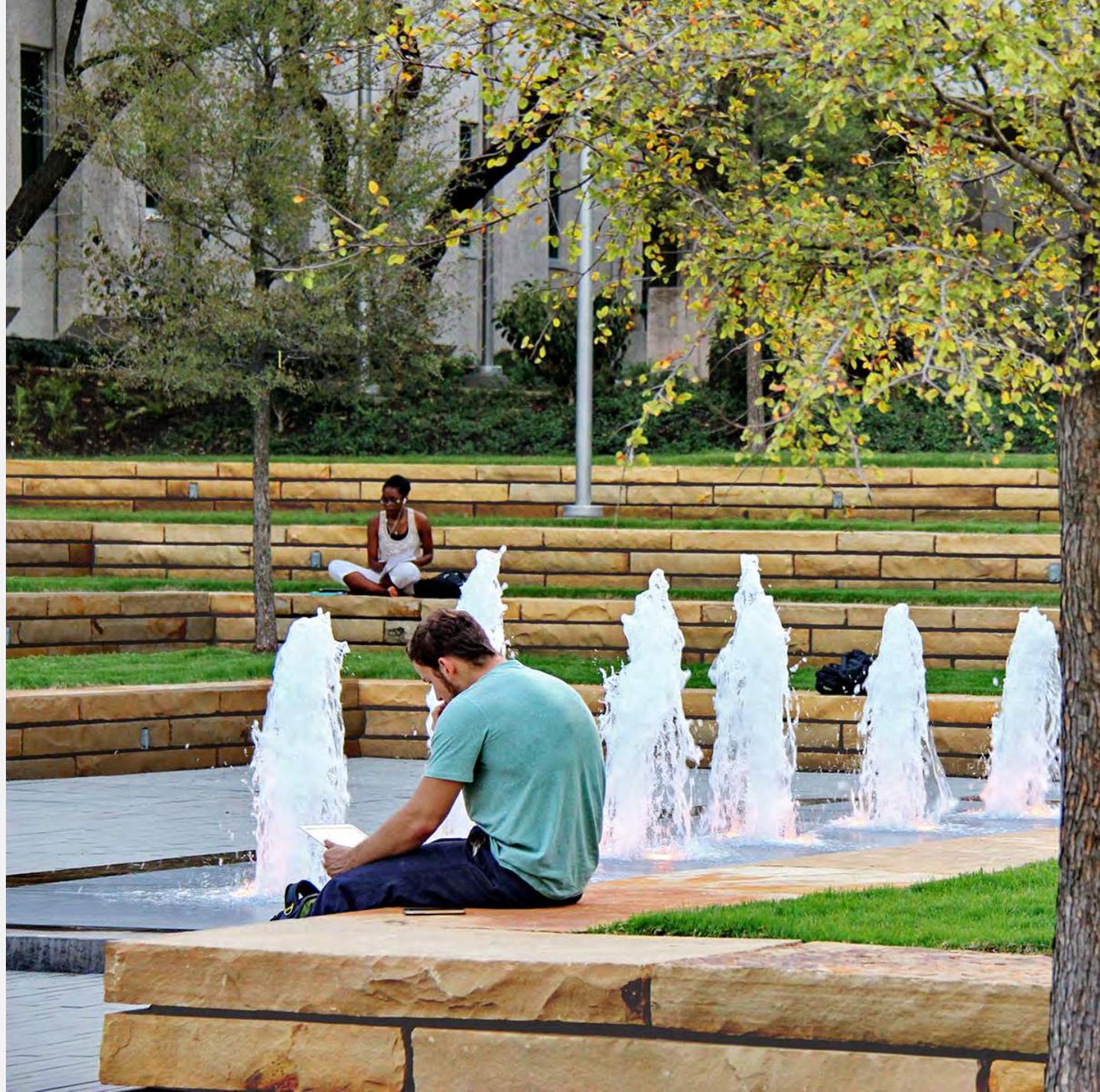
ACCOMPLISHMENTS

- Contains one of the largest rain gardens in the Dallas Fort Worth region.
- Increase in seating and recreational objects (256-sf, human-scale chess boards and 1,112 linear ft. of seat wall made of Austin-sourced granite, large walls as bulletin boards).
- Strong relationships in design to the history (digital clock walls to tie to instruments legacy, fog fountain to mist vines).

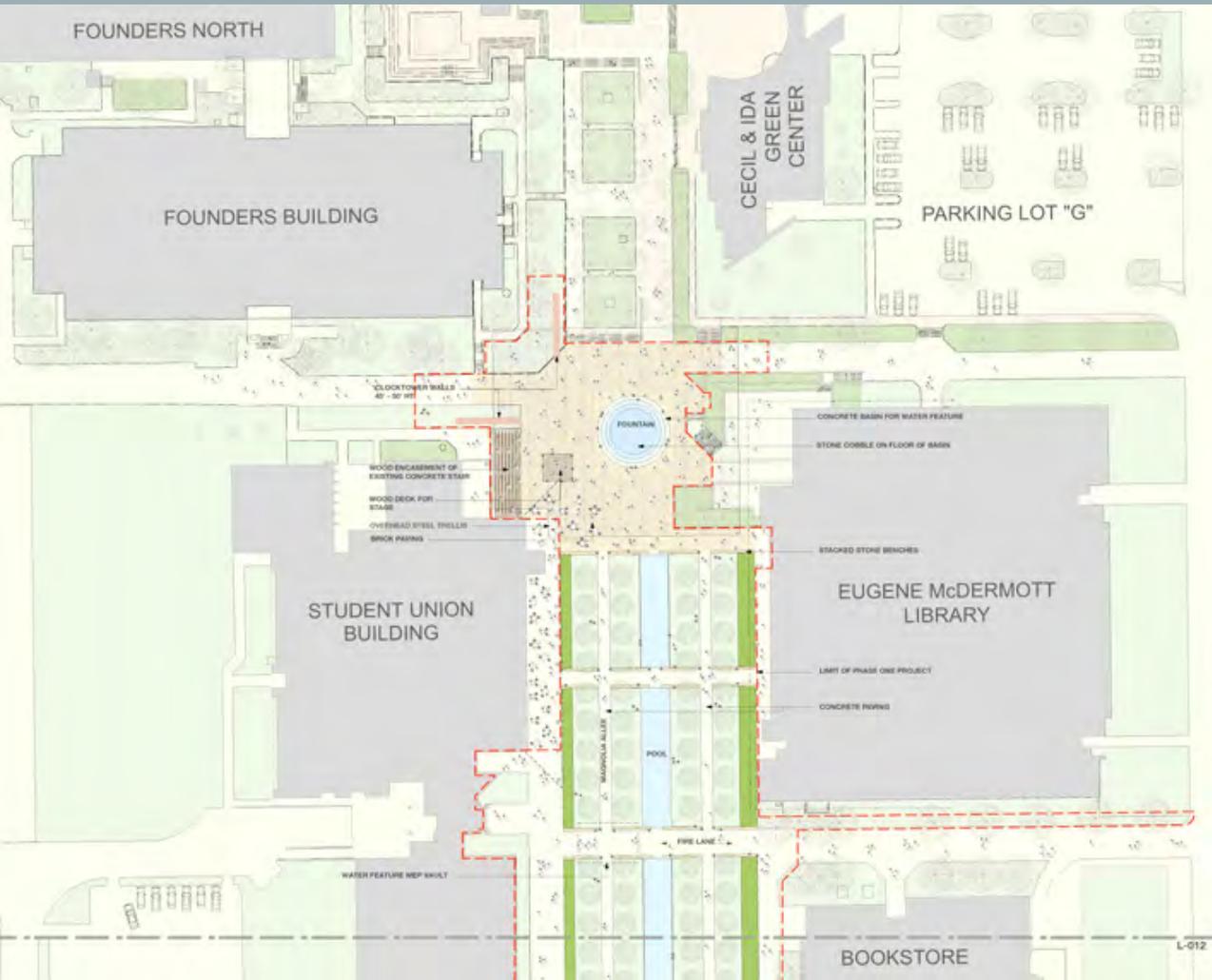


ACCOMPLISHMENTS

- Low carbon-footprint materials.
- New amphitheater.
- 97% native plant palette (reduce maintenance and irrigation costs).
- Created an estimated 72 jobs with approximately 150,000 construction man-hours documented for the time period between October 2008 to October 2010.



COMPARISONS



PROS

Central trellis materials:

- Major sculptural element
- Fiberglass Reinforced Polymer (FRP)
- 79% weight difference (lighter than standard industry materials)
- Lower dead load, limited corrodibility, and a lifespan that is approximately twice as long a conventional metal building material

•Research into economic changes

•Able to use the tree benefit calculator tool

•Watersheds calculated by the firm

•Surveys conducted about enrollment decisions and campus improvement opinions to minimize bias

CONS

•Cost of installation may be up to 20% higher than typical industry standards

•Economic changes was indirect and not as informative as researcher desired

•Plants aren't fully matured- hard to get concise evidence on water retention and stormwater runoff interception

•Potential for human error in area calculations
 •Calculations may vary significantly and produce different results; especially if the porosity of the soil changes and if the bio-retention area has an outflow or any kind of perforated pipes

•Survey conducted over the summer months and nearly half of the respondents were employees, while the other half was students

CHALLENGES

SOLUTIONS

FEATURES

METHODS

PERFORMANCE MEASURES

LACK OF CAMPUS IDENTITY

CREATE AN ENDURING IDENTITY

ENVIRONMENTAL

Identity of a Texas campus and landscape:
Local + Sustainable Materials Selection
 - Local stone; native Texas and southern plants; vernacular forms (wisteria arbor; tree stands); oversized clock (T.I. heritage)
 - Existing Trees on site transplanted to Campus Entry
Mitigate heat-island effect through shade
 - 5 acres of land along the entry drive has been reforested with over 5,000 native trees; magnolia allees and wisteria arbor shade quad and plaza
Use native/naturalized species
 - 33 acres of restored native woodland along entry drive; 97% native
Improve infiltration and stormwater quality
 - Surface water detained on Central Mall in perforated pipe below grade and allowed to percolate, contributing to groundwater recharge
 - Native, low-maintenance woodland absorbs and filters stormwater runoff along campus entry drive

NATIONAL TREE BENEFIT CALCULATOR WITH EPA BENCHMARKS.

SEQUESTRATION of CO2 through newly planted trees.

NATIONAL TREE BENEFIT CALCULATOR WITH EPA BENCHMARKS.

INTERCEPTION of stormwater runoff through the canopy of newly planted trees.

RATIONAL STORMWATER RUNOFF METHOD; Q=CiA

REDUCTION of stormwater runoff through a decrease of impermeable surface area after the landscape enhancements.

COMPARISON OF BEFORE & AFTER SITE CONDITIONS.

INCREASE of permeable surface area reduces the impact of the urban heat island effect and decreases the amount of reflectivity to create a more pedestrian friendly environment.

LACK OF SOCIAL AND AESTHETIC CHARACTER

FOSTER SOCIAL AND AESTHETIC CHARACTER

SOCIAL

Social Identity through Gathering
 - Two Community Bulletin Boards for notices and events
 - New Central Quad and Central Plaza with fountains + bleachers, new trees and planting, and a shade trellis
 - Approximately 70+ new seating opportunities (fixed & movable) along enhanced central mall
Cultural Identity
 - (4) Human-scale chess boards at Chess Plaza celebrates UTD Chess Team's achievements
 - Iconic quad and plaza are stages for student and alumni events
Spaces for Diverse Programs + Gatherings
 - Where and how do events happen? >200 student programs
Focus on pedestrian and bicycle experience
 - New shaded bike path extends adjacent infrastructure to campus core; new shaded and pedestrian-scaled paths in Central Mall
Limit car circulation
 - Vehicular access restricted with new entry drive circle

SYSTEMATIC REVIEW OF PLANTING PLAN & ON-SITE OBSERVATIONS.

INTRODUCES a predominately native plant palette to promote sustainability through a reduction of irrigation needs and maintenance and upkeep.

SYSTEMATIC REVIEW OF CONSTRUCTION DOCUMENTS.

ABSORPTION and filtration of stormwater along main entry LID feature reduces the pollution impact of surface runoff.

INHOSPITABLE OUTDOOR SPACES

CLIMATE MEDIATION

ON-SITE & ONLINE SURVEY MEASURES THE SOCIAL BENEFITS THAT THE CAMPUS PROVIDES.

EVALUATION of social benefits through a variety of variables like physical well-being, quality of life, event opportunities, educational experiences, sustainability, safety & security, exposure to arts, and campus perception.

CAR-CENTRIC SUBURBAN CAMPUS

DIVERSIFIED CIRCULATION STRATEGIES

ECONOMIC

Enrollment Impacts
 - 15-20% Enrollment increase; over 100 endowments in perpetuity since 2009; 70% increase in endowed faculty chairs
 - Increased resident student population (versus commuter)
Economy of Landscape
 - 150,000 total construction man-hours created indirect employment
 - Landscape features like magnolia trees & reflecting pools provide approximately 158 naming opportunities for additional donations to campus

CALCULATION OF JOBS CREATED THROUGH USE OF SECONDARY DATA.

CREATION of indirect employment opportunities through the construction phase of the landscape enhancements.

SYSTEMATIC REVIEW OF ARCHIVAL AND SECONDARY DATA.

IMPACTS campus population through a projected yearly growth of new student enrollment.

HIGHLY ENGINEERED LANDSCAPE

INCREASED BIODIVERSITY AND FUNCTION

ENVIRONMENTAL + SOCIAL + ECONOMIC + OTHERS

LEARNING

A catalysis project like phase I of the UT Dallas Campus Identity & Landscape Framework Plan can **instigate changes not only within the campus but also in the community at large.**

Example:

- The 'Cotton Belt' line from DART with a 'transit plaza' and mixed-use center directly north of the campus UT Dallas LPS Methodology will be activated with multi-modal connections.
- The 2025 vision has the place-holder property valued at approximately \$165 million (2010).