Utilizing GIS as a Critical Campus Resource

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Agenda

- Campus Background

- Opportunity for a Campus-wide GIS

- Data Structure and Collection

- How Has GIS Been Utilized on Campus Over the Past Four Years?

- What Direction is UCR Taking Four Years After Implementation?

UCR Campus Background

- 1,127 Acre Campus
- Current enrollment of approx. 22,000 students
- Enrollment is estimated to increase 14% over the next 10 years
- Campus Gross Square Footage (GSF) expected to grow from 7 mil to 11.8 mil. (including the Medical School)

Opportunity for Campus-wide GIS

- Opportunity
  - UCR operates like a small city but, had no consistent way of tracking mapped assets
  - Inadequacy of existing campus CAD maps
  - Existing GIS data did not cover entire campus
  - Existing GIS data did not meet accuracy standards
  - Fiscal savings when beginning a new project on Campus
- Solution
  - Produce a campus-wide base map that can be used for planning, design and construction
  - Build the basis for a future campus-wide enterprise GIS system

Campus-wide GIS Data Layers

Original Layers

- Administrative:
  - Campus Boundary
  - Parcels
  - Easements
- Infrastructure:
  - Campus Lighting
  - Electrical Distribution System
  - Infrastructure converted from CAD
- Land Cover:
  - Campus Icons
  - Trees
  - 1ft Topography
  - Vegetation
- Reference Data:
  - Survey Monuments
- Structures:
  - Athletic Fields & Facilities
  - Buildings
  - 3D wire frame
- Transportation:
  - Parking Lots
  - Parking Spaces
  - Parking Striping
  - Sidewalks/Walkways
  - Streets (Center lines)
  - Streets (Edge of Pavement)

New Layers

- Land Cover:
  - Background
- Reference Data:
  - 2008 Spot Elevations
- Structures:
  - Construction Zones
  - Walls and Fences
- Transportation:
  - Disabled Access Routes
  - Stairs
  - Emergency Call Boxes
  - Parking Permit Dispensers
  - Transit Routes
  - Shuttle Stops
- Camus Aggregate Master Plan
  - Future Buildings
- Law Enforcement
  - Police Beats

How Has GIS Been Utilized on Campus Over the Past Four Years?

- GIS Data Integration – Facilities Management System
- Utilizing GIS on the Web
- Campus Planning and Analysis
- AutoCAD Exports

Integration of GIS with Existing Facilities Management System (FMS)

- Building data layer contains CAAN (Capital Asset Account Number) number that links to the FMS database

- FMS link will allow GIS to link to multiple systems campus wide (Data Repository)

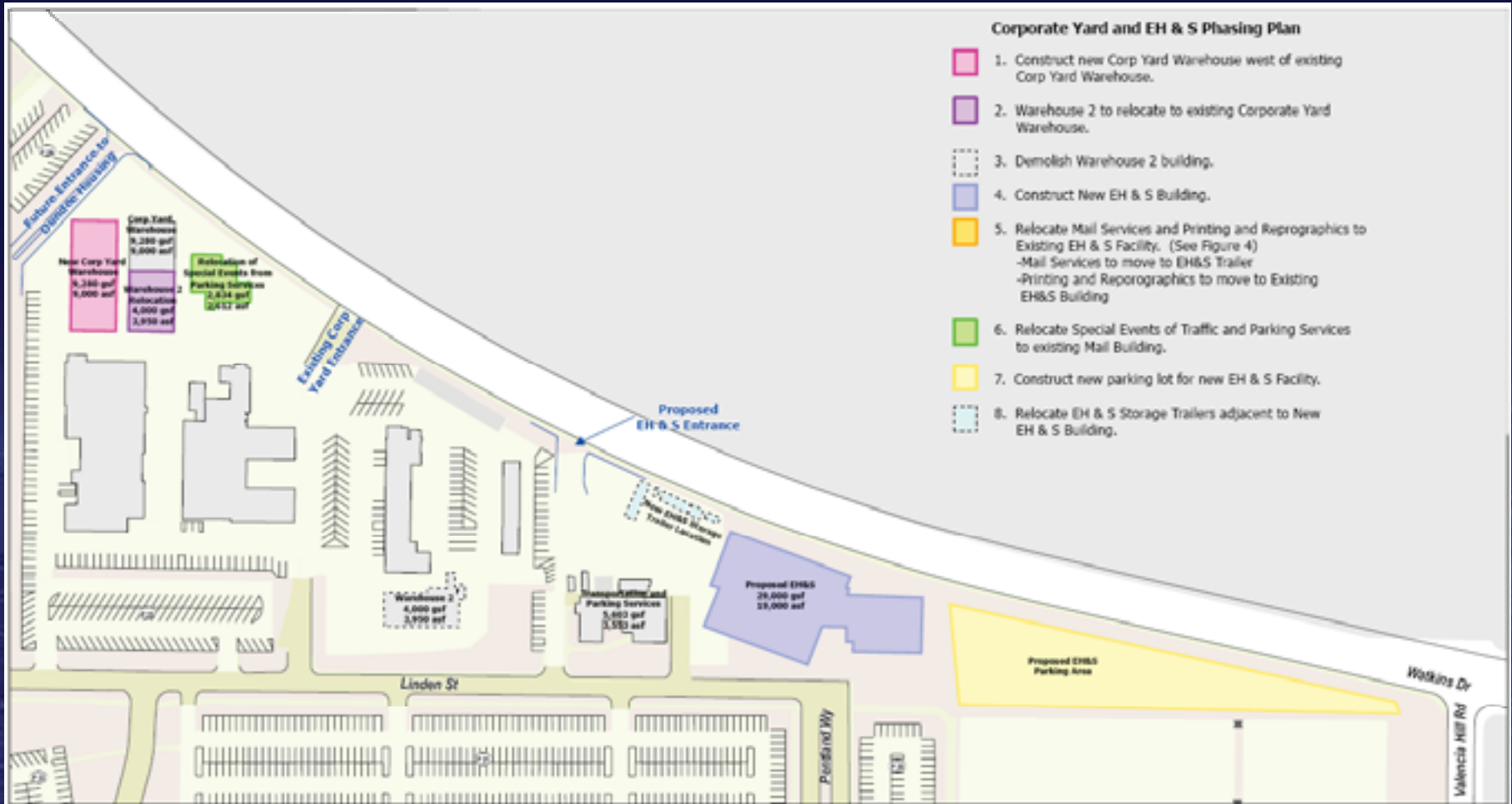- Capability to run cross referenced queries

GIS & FMS Query

Buildings with Classrooms
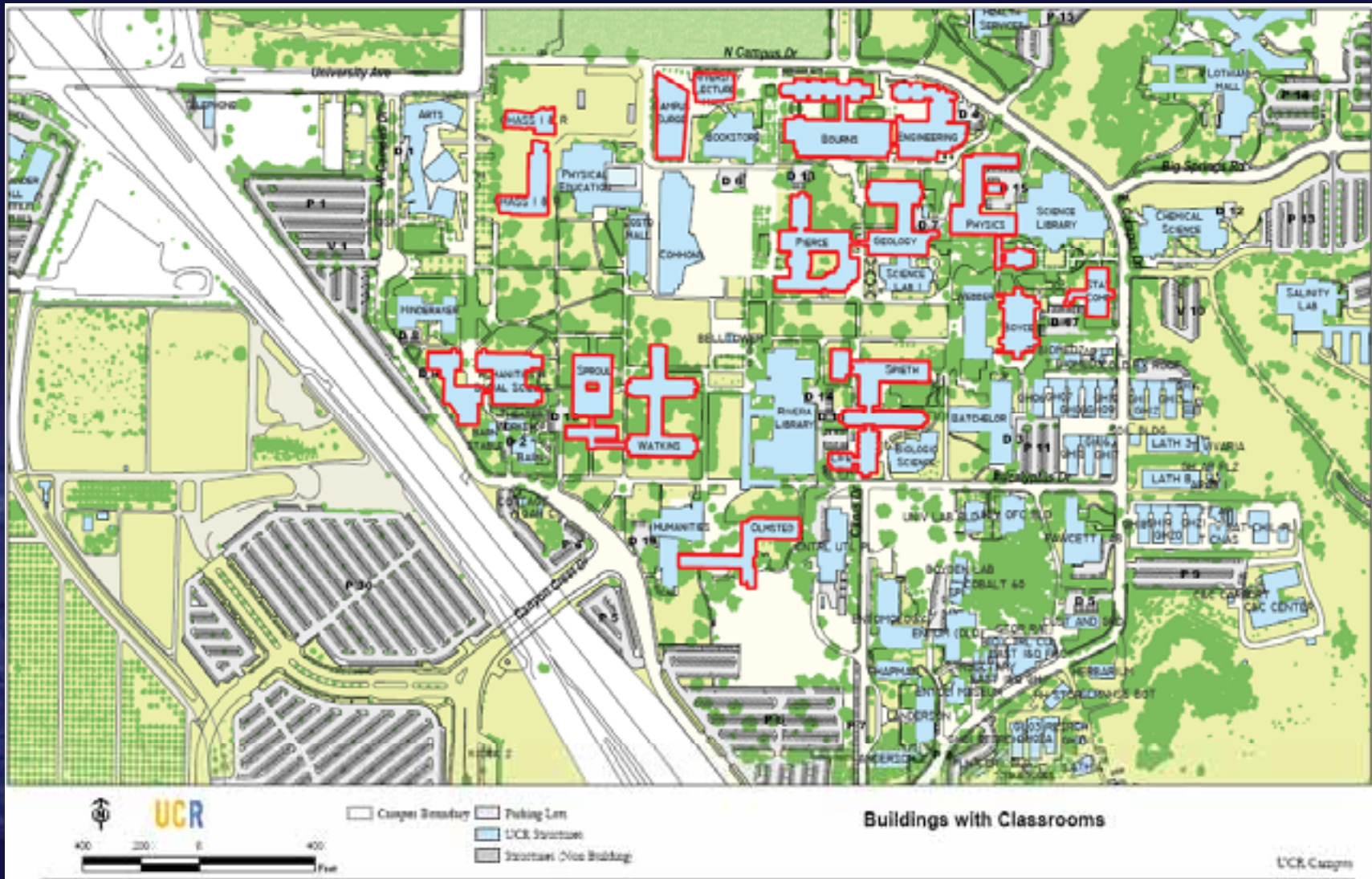
Utilizing GIS on the Web

- GIS Web Server
- Data is available for authorized users via the web

Campus Planning and Analysis

- Site planning and phasing for new facilites

Example of GIS Export

- Deliver GIS data in AutoCAD Format

What Direction is UCR Taking Four Years After Implementation?

- Campus Way Finding
- Fire Access Mapping
- Asset Management/Utility Mapping
- Campus Easements and License Agreements
- Estimating Future Energy Consumption of New Facilities

Campus Way Finding

- Opportunity
  - Each Department utilized a different base map for their own map production
  - As new buildings were built or acquired for the Campus each department would use their own version of the building outline to add into their map
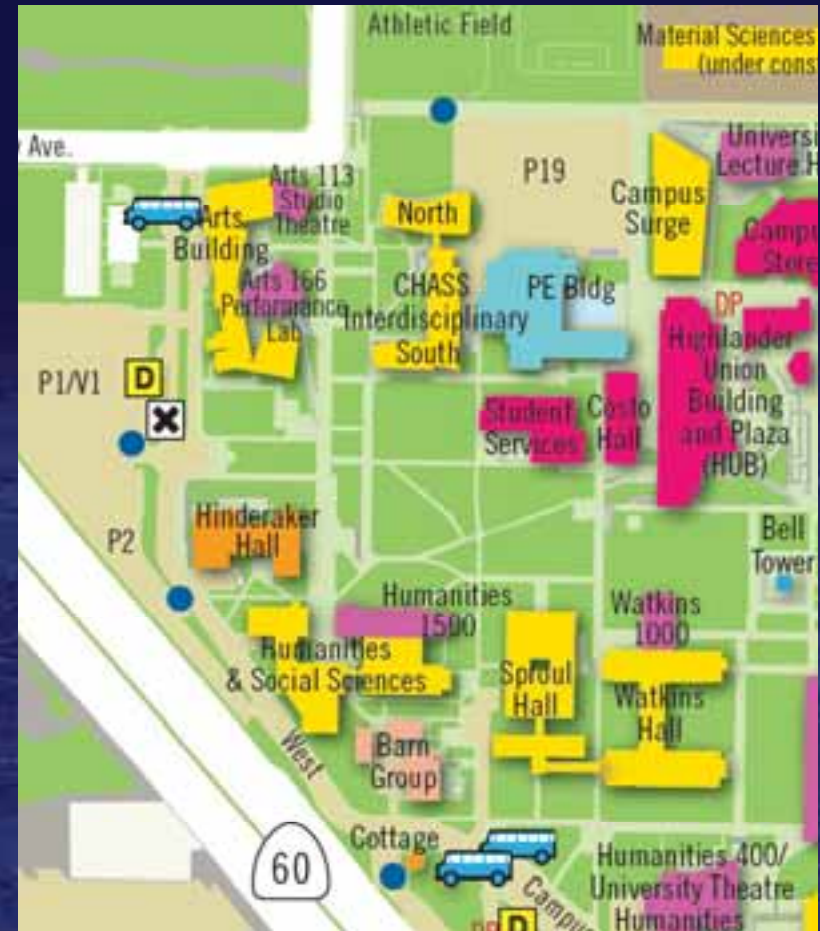- Solution
  - Utilizing one consistent base map for Way Finding on Campus
  - Coordinate with multiple departments to disseminate the GIS data to create a consistent base map
    - i.e. Campus Directory, Parking Kiosk Map, Campus Tours, etc.

Example Campus Map

Previous Campus Map
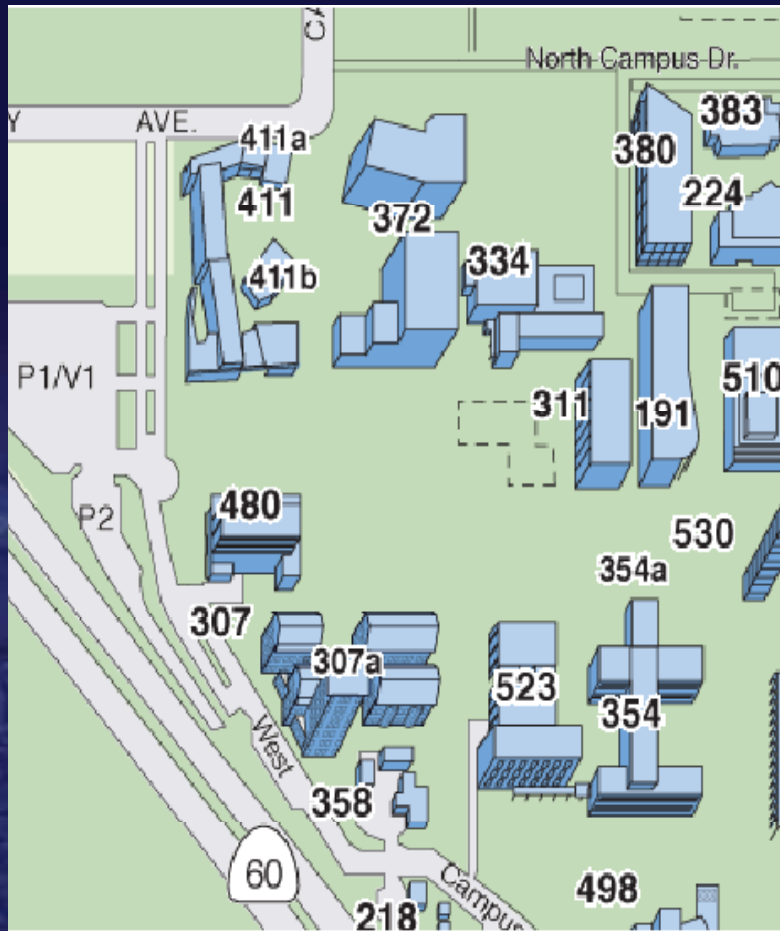
New Campus Map

Fire Access Routes for the Campus

- **Opportunity**
  - Fire Access Routes was a patch work of data
  - Reliant on Institutional knowledge
  - Data existed in an outdated 2002 AutoCAD file
- **Solution**
  - Collaborate with Campus Fire Marshal to update and verify Fire Access Routes
  - Establish a Fire Access Route Layer using standards from the California Fire Code for Emergency Personnel (Police, EH&S and City Fire)

# Existing and Revised Fire Access Routes
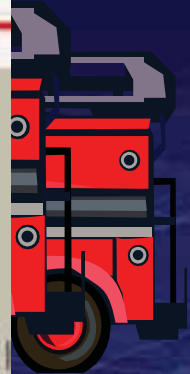
Electrical Distribution System

- Opportunity
  - Current Electrical Distribution System existed primarily in a paper version
  - Updated institutional knowledge existed largely with the Campus Maintenance Electrician
  - As new projects were completed a patch work of AutoCAD data existed but, not in one cohesive piece of data
- Solution
  - Collaborate with the Electric Shop to update Electrical Distribution System utilizing the GIS base map
  - Develop new Campus Electric Distribution Data for planning and maintenance of existing systems

Existing Electrical Distribution System

Updated Electrical Distribution System
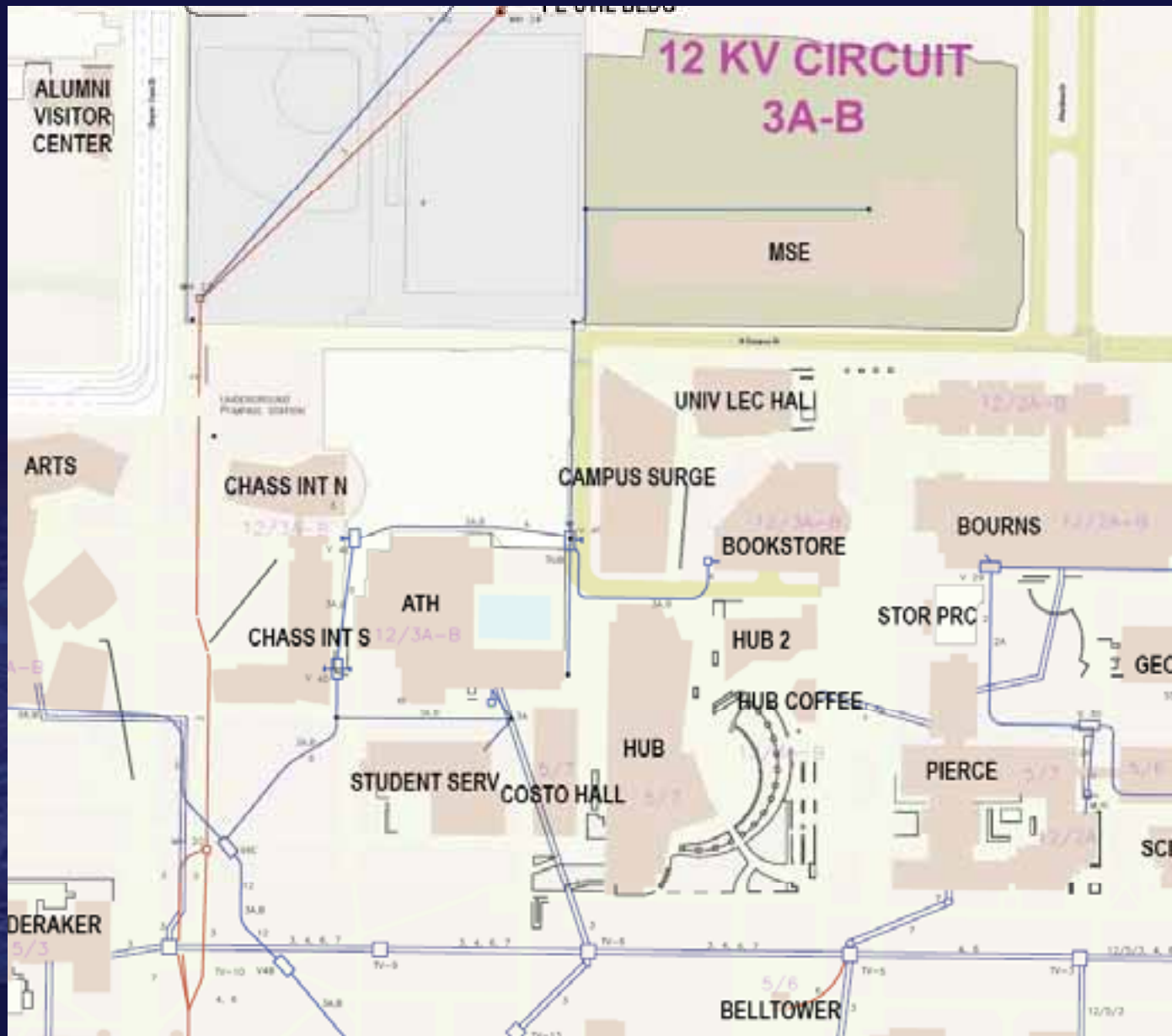
Campus Easements

- Opportunity
  - Most of the existing easements were not mapped or on maps that were decades old and did not consider current conditions surrounding the Campus
  - There was not a complete understanding of which easements and license agreements were current or expired.
  - There were two different sources for data
- Solution
  - Combine the two sets of documents and determine which is still current
 - Develop new Campus Easement Data

Existing Campus Easements

Updated Campus Easements
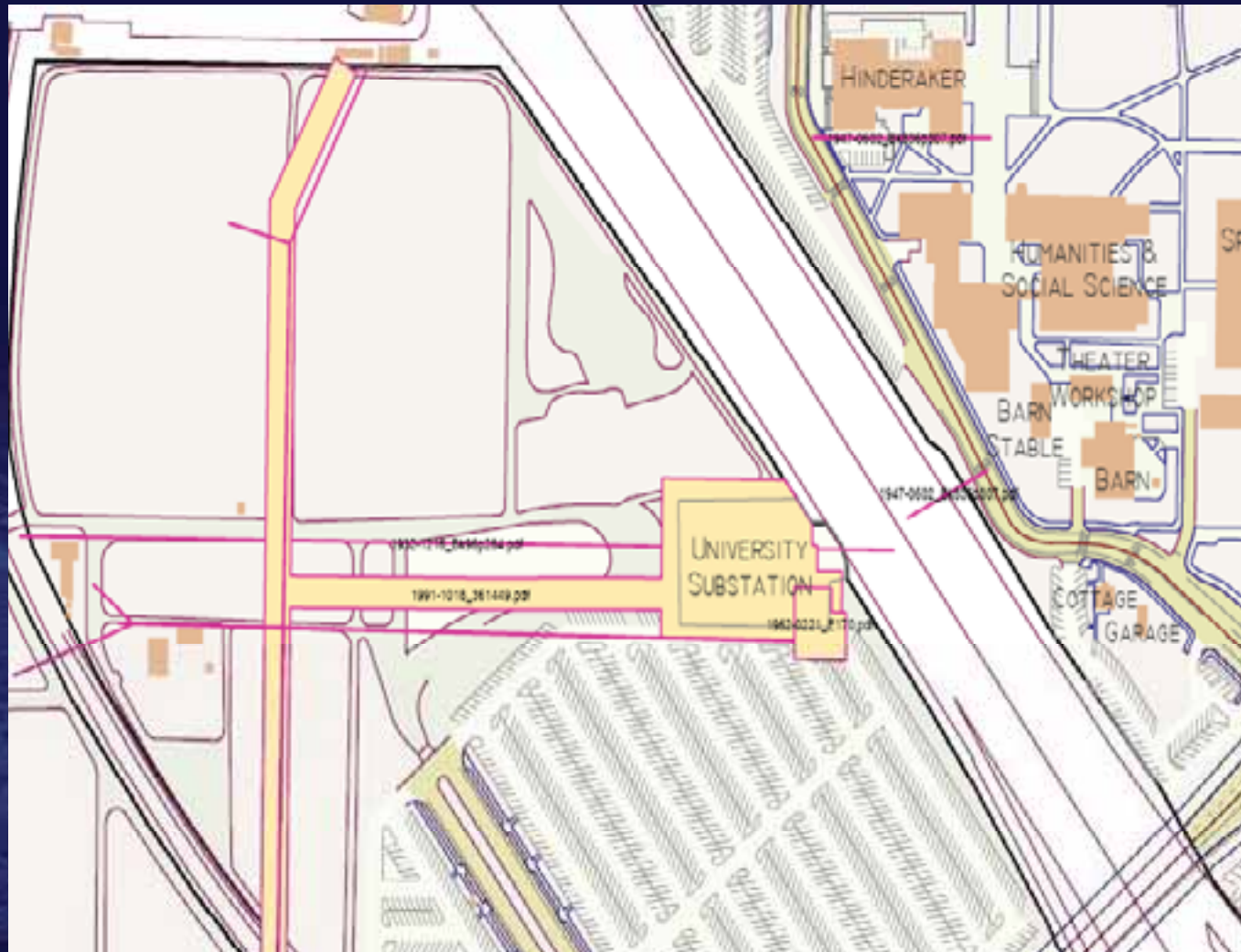
LEED Accreditation

- Opportunity
  - Utilize GIS as a tool to obtain LEED Accreditation for new Facilities

- Solution
  - Utilize existing GIS Data
  - Map Alternative Transportation, Bicycle Storage & Changing Rooms to assist in LEED Silver Accreditation

LEED Accreditation Mapping
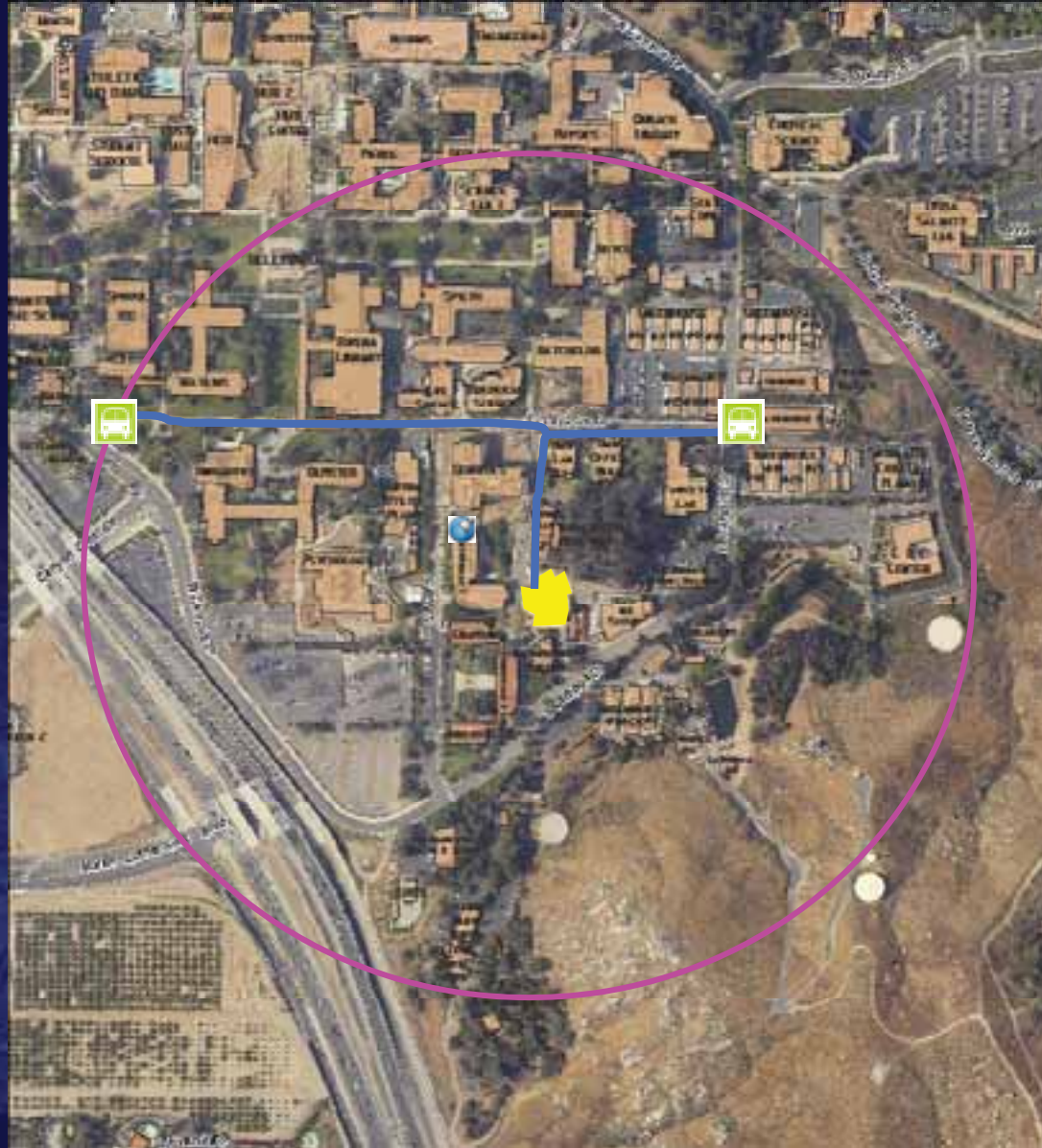
Outcomes

- UCR now has a seamless campus-wide Geodatabase
- Data is being used for Planning, Design and Construction
- UCR is utilizing data as base for enterprise-wide GIS system
- UCR makes selected GIS data available to campus departments
- UCR shares GIS data with other public agencies

Questions

Capital and Physical Planning

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