

## OPENING WINDOWS ON HARVARD'S ENVIRONMENT: USE OF GIS TO SUPPORT CAMPUS PLANNING

The University Planning Office has been using spatial technologies for more than 15 years. Our activities cover data collection, mapping, and analysis across a broad range of topics: planimetric mapping, facilities management, housing, transportation, campus design, historical trends, regulatory constraints, and master planning. In addition to our primary mission in support of campus planning, we provide GIS and mapping services to many administrative departments and faculties throughout the University.

### TRANSPORTATION

As Harvard's campus expands, increasing attention must be paid to transportation connections within the campus. Impacts of campus development on metropolitan transportation systems must also be considered.

- ① Network analysis of pedestrian and shuttle bus routes, including typical trip times between different parts of the campus.
- ② Geolocation of faculty and staff residential addresses as part of an investigation of commuting modes.
- ③ MBTA subway and Bus routes.

### REGULATORY ENVIRONMENT

Any development on Harvard's campus must of course be consistent with the regulatory constraints imposed by zoning, historical districts, national landmark status, and environmental considerations. We also track allocation of parking spaces to buildings in accordance with municipal agreements.

- ④ Cambridge Zoning districts and Parcel map

### WEB AND INFORMATION MAPS

Leveraging our standard planimetric data layers – streets, buildings, greenspace, parking etc. – we produce a variety of maps for clients across the campus including maps for the News Office, UIS telephone directory, ADA accessibility, and commencement.

- ⑤ The Harvard Web map ([map.harvard.edu](http://map.harvard.edu)) consists of over 2,500 overlapping images tiles generated by an internally developed ArcMap application.

### HISTORICAL AND ARCHIVAL MAPS AND SURVEYS

The UPO Property Information Resource Center serves as a repository for documentation of the University's land and buildings. Its collections include an archive of historical and current architectural drawings, aerial photos, deeds and other property-related information.

- ⑥ Geographical extents of surveys of the Charles River Basin by the Metropolitan District Commission.
- ⑦ A georegistered 1883 map of Brighton overlaid by the current street network

### HOUSING

Given the University's commitment to house the majority of its graduate student population, the location and mix of housing types on campus is a major planning topic. We assist Harvard Real Estate Services in the delineation of residential precincts for rent setting purposes and in the evaluation of potential new locations for housing.

- ⑧ Analysis of Harvard Dental School student addresses to understand spatial patterns underlying housing choices.

### CAMPUS DESIGN

New or redeveloped parts of the campus must be designed with understanding of the antecedent and surrounding built environment. UPO has collected data on numerous design parameters as they are exhibited on campus.

- ⑨ Harvard buildings by architectural style. While most people think Harvard's buildings are all red-brick neo-Georgian or Colonial, the reality is that a wide variety of other styles – for better or for worse – can be seen throughout the campus.
- ⑩ 3D visualizations. Three dimensional models of most campus buildings have been compiled, allowing evaluation of proposed construction or alterations in semi-realistic renderings.

### MASTER PLANNING

"Big picture" analysis for master planning purposes requires the integration of numerous planning threads: utility and transportation infrastructure, programmatic requirements, regulatory and physical constraints, and legal considerations.

- ⑪ Easements granted to various parties on the Beacon Railyards parcels acquired by Harvard in 2000 or 2003.

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