



Regional Amherst, MA Basemap Project

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The Amherst, Massachusetts community has a mature GIS history. With the growing popularity of the University of Massachusetts (UMass)–Amherst Campus and continued community growth in the Amherst region, they were looking to capture an entirely new base mapping dataset with the most high resolution imagery and latest LiDAR capture technologies. The Town of Amherst, MA (Town) contracted with Infotech; in January 2009, to provide photogrammetry, GIS base map development, and LiDAR data capture / development services.

The Amherst regional project encompassed roughly 86 square miles. Based on the region's needs, 1"=40' mapping scale was requested. Digital imagery was acquired with the Microsoft Vexcel UltraCamX digital sensor and the Optech ALTM 3100C was used for the LiDAR acquisition. The digital sensor encompassed 12 flight lines with over 500 exposures. Over 1.5 Billion points (40GB of data) were used from the LiDAR sensor to achieve an average of eight points per square meter. Both of these sensors were used to develop 1"=40' scale mapping. To achieve a new DTM, 25 new Photo Identifiable (PhotoID) ground control points; along with the bare earth LiDAR points, assisted the processing. Infotech generated 1 foot contours with spot elevation points and hydro enforced breaklines captured from the LiDAR bare earth point cloud and stereo imagery. Since we captured the region with a 4 band digital sensor, we were able to produce 3 inch color and Color Infrared (CIR) digital orthophotos. The detailed planimetric layers that we captured included *Buildings, Hydrographic, Transportation, Boundary, Vegetation, Recreation* and *Utility* features.

Infotech achieved full delivery of all data deliverables within six months of the image and LiDAR acquisition. Niels la Cour, Physical Planner of UMass–Amherst states, *"The data you provided us is obviously giving us a great base to work from and is the backbone of the system."*

The client approved all intermittent deliveries within this timeline at first time delivery with only minor misclassification errors. According to Mike Olkin, the Town's GIS Administrator states, *"You've exceeded our expectations throughout this project & I'm very happy that we chose Infotech."*

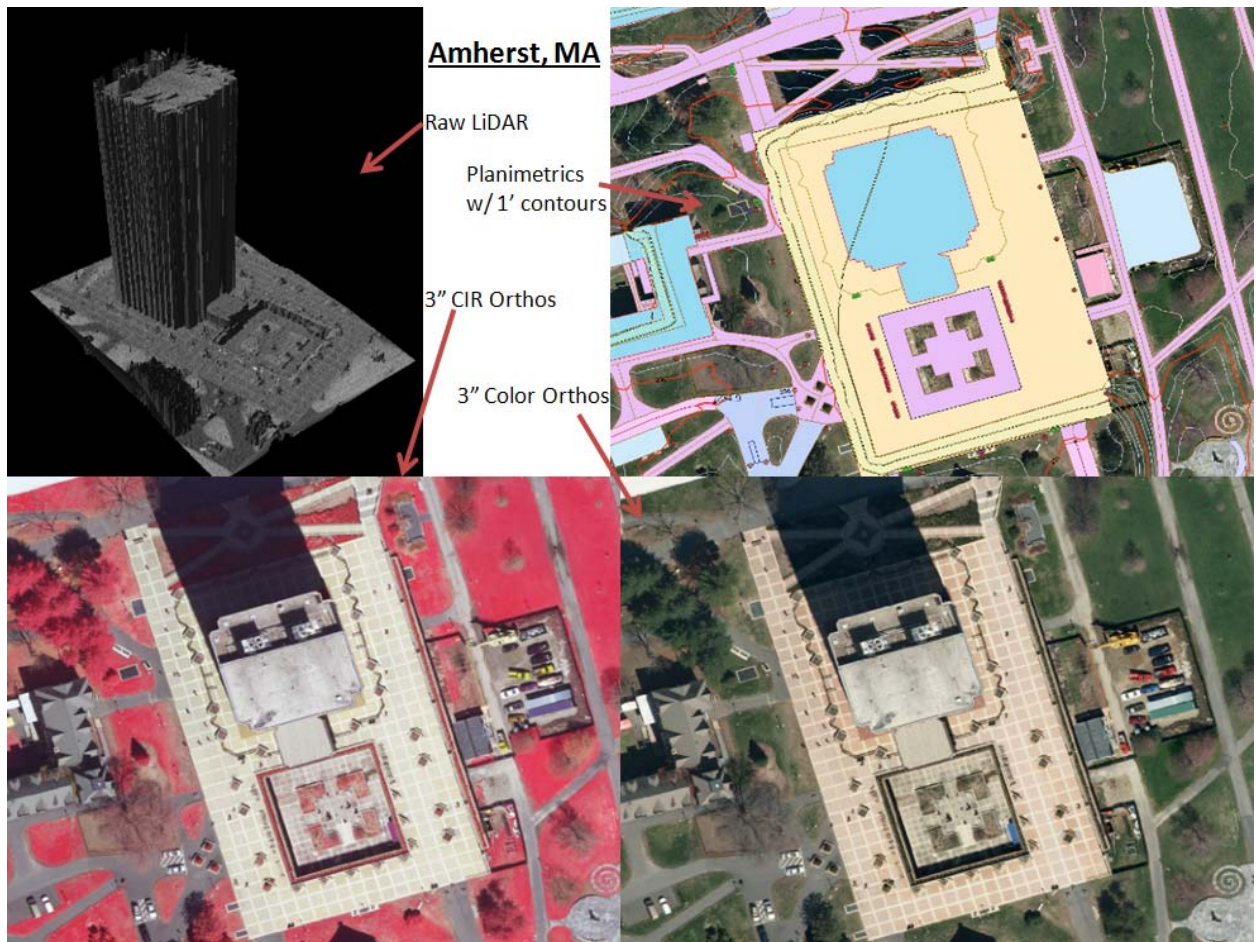
Achieving this delivery schedule has benefited the Amherst region immensely. As a result of our services, the Town and UMass–Amherst have begun several projects. The Town has:

- Served up all of its data onto its GIS website: <http://gis.amherstma.gov>
- Avoided costly ground surveys by using the 1"=40' basemap
- Using the new basemap for the design phase of roadway, bridges and sidewalk projects
- Using the first return LiDAR data for flood zone delineation. This is the primary data source for analyzing the floodway protection zones and modernizing the Town's Flood Prone Conservation Zoning District, which references ambiguous and outdated maps from the 1970's.

In addition UMass-Amherst has been able to begin work on many projects, including:

- Using the DTM to do a detailed slope analysis on their sidewalks for accessibility purposes and updating the accessibility map, parking spaces and entrances
- Creating a sidewalk network to be able to do routing from building to building (eventually classroom to classroom)
- Using LiDAR to create accurate wire frames for 3D models of our buildings
- Using the high resolution / high picture quality orthophotos to update the UMass-Amherst tree inventory
- Site analysis for construction of new buildings
- Linking / locating benches, trees, etc., and providing a mapping resource for some current campus websites
- Using highly accurate data instead of doing initial field verification to save much needed time and money

Please find below samples of the different deliverables for the Amherst Region project:



For further information on this project please contact:

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