



U.S. National Grid Field Marker Prototyping

Project Title U.S. National Grid Field Marker Prototyping

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Problem A tremendous amount of public infrastructure is devoted to providing location information, but individual agencies often use different reference systems to locate the same object. It is difficult to translate from one system to another, such as from a street address system to one using X-Y coordinates, particularly in emergency response situations. To provide an interoperable location system for first responders, the federal government established the U.S. National Grid (USNG) system as a standard. USNG locations can be determined from GPS receivers or paper maps, but there are virtually no field markers referencing USNG locations.

Solution The City of St. Paul investigated the methodology and equipment necessary to inexpensively mark infrastructure in the field with USNG location and other data.

Procedure A system for generating portable markers in the field and a marker-reading application for end users were developed. Smart phones were used to obtain USNG locations and drive a printer to create a field marker. The markers were created using QR code, or 2D bar coding readable by almost any cellular phone handset with an embedded camera. QR technology allowed for encoding USNG locations as well as other data, such as a URL, text, or a phone number to refer users to additional information, in each marker.

Results The equipment and software were used at a variety of field locations to view a current GPS-derived location on a map, record the location in a database, and generate a QR-coded field marker containing the USNG location. The markers were printed using a mobile printer connected wirelessly to the smart phone, and the smart phone successfully read the field-produced markers and their encoded data. Marker specification details developed throughout the course of the project were incorporated into the Minnesota "Best Practices" USNG location marker proposal.

Approximate Cost \$10,000 (\$5,000 approved for project)

Implementation Research into appropriate, weatherproof print media for the markers is in progress. Testing is also under way to streamline the syncing process in order to make the systems as easy to use in the field as possible.

Status Complete

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