

Project Name: Survey of Bridge over Spring Creek, Town of Lemont, PA
Project Description: Accurate as-built for rehab & modification design
Scope: 300' (including approaches); 2D CAD drawings for Microstation®
Owner: Pennsylvania Department of Transportation
Project Date: May 21, 1999

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"What we have been seeing is that Cyrax can gather thousands of points in one day which would take us weeks using traditional methods"

**Brad Foltz, Chief, Photogrammetry and Survey Division
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BACKGROUND: The Pennsylvania Department of Transportation (PennDOT) has a large number of bridges that need to be surveyed yearly. Bridges are complex structures that are difficult to measure using traditional survey methods. Parts of a bridge are inaccessible, and it is difficult to ensure that sufficient detail is captured.

PROJECT: A trial scan was performed with the following goals—

- a) Capture the physical geometry of the bridge
- b) Create as-built drawings of the bridge and adjacent areas
- c) Draw comparison between existing data acquisition methods and *Cyrax*

from more complete information, which will reduce the need for site revisits to collect data missed the first time.

Improved safety is another benefit, as the road surface can be surveyed remotely even as vehicles drive by.

PennDOT has acquired two *Cyrax* systems. In addition to bridge surveys, PennDOT is planning to use *Cyrax* to expand its services to its clients. *Cyrax* will fit seamlessly with PennDOT's present organizational setup and will require only a moderate amount of training for its current surveying and CAD staff.

PROJECT FACTS

| | |
|------------------------|------------|
| Cyrax | |
| Field man-hours | 10 |
| Office man-hours | 28 |
| Total man-hours | 38 |
| Conventional | |
| Field man-hours | 112 |
| Office man-hours | 24 |
| Total man-hours | 136 |

CYRAX ADVANTAGES: In terms of field time, a 2-person crew using *Cyrax* needed only 5 hours to finish 13 scans from 5 locations, compared to 3½ field days for a 4-person crew using traditional survey methods.

In addition to increased productivity, users of the field data will benefit

CYRAX BENEFITS

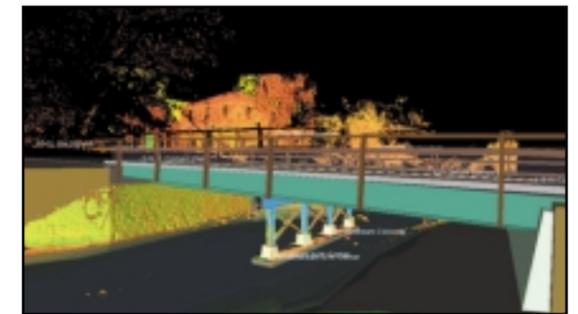
- Major savings in survey cost and time
- Improved safety
- More complete geometry than that obtained using traditional methods
- 3D views enable better design of modifications to existing structures



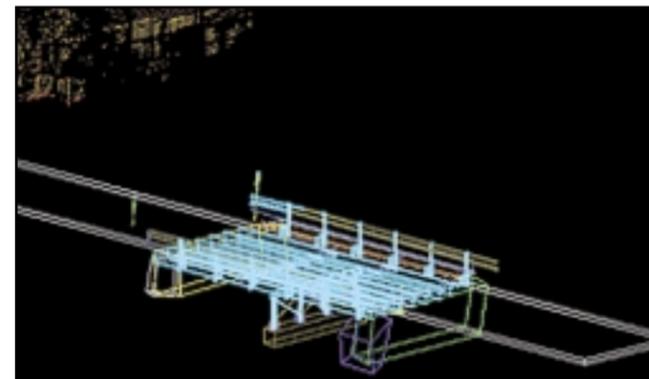
The two-lane bridge spanning Spring Creek was built around the turn of the century. Part of its structure is a historical monument. There were no reliable as-built drawings available of the bridge.



Point cloud view from scan #3. Under the foliage the historical stone embankment is clearly visible from this angle.



The view of scan #3 is shown after partial modeling was completed using *Cyra* Software.



Cyrax model exported into CAD (above) compared to original historical sketches (right).

