

## M-59 Rehabilitation, from Wide Track to Opdyke Road

CS 63043, JN 80915A

Pontiac, Michigan

### Spalding DeDecker Associates, Inc. (SDA)

was retained by the Michigan Department of Transportation (MDOT) to provide complete design for the rehabilitation of M-59, from Wide Track to Opdyke Rd, located in the city of Pontiac. The overall project length was approximately two miles of concrete pavement. It was comprised of 0.75 miles of two separate, one-way, four-lane urban arterial roadways, and 1.25 miles of four-lane urban freeway. The project also included rehabilitation of interchange ramps at M.L. King Blvd and Opdyke Rd.



The project included performing a **photogrammetric control survey**. The base map was created using **photogrammetric** data, and supplemented with conventional observations for obscured areas and utilities. The scope included establishing two primary control points along with intermediate control. Static and RTK observations, with a base unit on each primary control point, were used to establish **state plane coordinates**, Michigan South Zone (2113), and international feet based upon the HARN adjustment of **NAD83**. The vertical datum was **NAVD'88**, based upon **OPUS** solutions. An **electronic Leica NA2002 digital level** was used to measure precise elevations for all intermediate control, benchmarks, and photo-control.

We were provided with an aerial target plan, including the proposed location for all photo-control points. We pre-targeted each location, marking them with crosses constructed using yellow pavement marking paint. Points were measured horizontally with GPS RTK observations using a base at each primary control point, incorporated into the GPS network, and adjusted with least-squares methods. All elevations were determined by direct leveling, using an electronic level, and also adjusted by least-squares methods. **OPUS** was used to validate the network solution and confirm the project datum, which was NAVD'88 based upon NGS monuments.

We provided ASCII files for the control, and our team produced comparison reports for the photogrammetric adjustments. All adjustment outputs, raw data, and comparison reports were included in an electronic **survey portfolio** for the project. We provided deliverables according to MDOT's *Standards of Practice*, including the additional comparison reports required for mobile LiDAR. The final deliverable included all items required, according to the *Standards of Practice*. Additional items included digital photographs and lidar point clouds, both from the mobile scanning equipment.

#### OWNER / CLIENT

Michigan Department of Transportation

#### PROJECT START - END

September 2006 - 2009

#### SDA PROJECT NO.

RB06-004

#### SDA SERVICES

Photogrammetric Control Surveys