

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

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, 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.

### SAFETY STUDIES

SDA performed a 3R/4R safety review and crash analysis for accidents over the previous three years (2004-2007). A crash analysis was also conducted for all signalized intersections and both interchanges within the project. The overall number of crashes did not exceed its allowable threshold. However, the analysis did reveal that several types of accidents did exceed allowable threshold limits. SDA then conducted a field investigation at those locations to identify road hazards. In addition, SDA submitted Design Exception Requests and conducted site-specific crash analyses for each of those sites, as well as time-of-return analyses for all recommended countermeasures.

### ROAD AND STREET DESIGN / ROADWAY REHABILITATION & RURAL FREEWAYS

The project scope called for a comprehensive rehabilitation effort that included the following:

- Extensive Pavement Repairs
- Longitudinal Joint Repairs
- Coldmilling Concrete Pavement
- HMA Shoulder Widening/Reconstruction
- Underdrain Retrofitting
- Culvert Replacement
- Superelevation Improvements & Crown Correction
- Minor Geometric Improvements
- HMA Resurfacing
- Upgrading of Approximately 35 Sidewalk Ramps to Current ADA Standards
- Guardrail Replacement

All work was done in accordance with **3R guidelines** for 2010 construction. Additionally, the termini of Ramps C & D at the M.L. King Blvd interchange required reconstruction to provide a safer geometric configuration. In addition to submitting road design plans and specifications, the project also included preliminary and final ROW plans, permanent pavement marking plans, and non-freeway signing plans. Several design exceptions were required to keep the project within programmed funding. Signal upgrades were also performed at the EB and WB M-59 intersections with Paddock St.

Coordination with MDOT was also required since the design / rehabilitation of the Opdyke Road Bridge (S01 of 63043) was within the project limits.

#### OWNER / CLIENT

MDOT - Oakland TSC

#### PROJECT START - END

September 2006 - 2009

#### SDA PROJECT NO.

RB06-004

#### SOFTWARE

MicroStation

## **ROAD DESIGN SURVEY**

SDA performed a pick-up topographical survey for the project. Horizontal control was established using GPS observations and post-processing the data was performed using the NGS OPUS program to achieve state plane coordinates in relation to the HARN adjustment. Vertical control was established in relation to the NAVD'88 datum, with observations performed using a Leica NA2002 electronic level and least-squares adjustment of the vertical control network. Mapping included performing pavement cross-sections in certain areas and locating surface features, along with underground utilities and surface drainage and creating a Digital Terrain Model (DTM). Data was combined with aerial mapping for this project.