**Asset type:** Sign

**Process map name:** sign replacement project

**Identifier:** PM.S.2

**OVERVIEW**

A funding of $300 million per year is assigned for monthly replacement of signs from 6 districts. The workflow of sign replacement can be divided into the following phases (see the top row in the process map): planning and programming, design, contract development, fabrication and installation, and operation and maintenance. Actors involved in the workflow, as presented on the left column of the process map, are district maintenance office, traffic engineering (design function), Iowa sign shop or fabricator, office of contracts, office of construction and materials and resident construction engineering, contractor.

**ACTORS**

**District Maintenance Office**

The maintenance office of each district evaluates the condition of their signs and develops a list of potential signs needed to be replaced. This list of signs is sent to the traffic engineers in the office of Traffic and Safety for review and approval.

**Traffic Engineering - design function**

The traffic engineers of T&S office are responsible for reviewing sign replacement needs from districts. The final list is selected based on a holistic consideration of sign condition and available budge. This final list of selected signs along with their corresponding inventory data extracted from the oracle database in excel format will be sent to the designers in T&S office to update design in accordance with the latest specifications and standards. Any changes to the existing signs are highlighted in the excel file which is sent to the operation engineers in the office of T&S for updating the inventory data. Please see PM.S.1 for more details regarding the design process.

**Iowa Sign Shop**

See PM.S.1

**Office of Contracts**

See PM.S.1

**Office of construction and materials**

See PM.S.1

**Contractor**

See PM.S.1

**Databases:**

The following are three databases used to archive data created through the entire workflow of sign replacement.

* ProjectWise is used to stored data related to the project such as MicroStation files, tabulations, excel files.
* ERMS (Electronic Records Management System) systems stores contracts data and others such as design plan pdfs, CAD files and as-built drawings.
* Oracle database consists of data regarding to sign inventory information and condition. Historical data for each sign is stored in a single table. This is managed by traffic operation engineers.

**Software applications and data format**

* SignCAD: Used to design signs in 3D. Once the design is complete, it is exported to MicroStation.
* MicroStation: Signs are modeled as 3D object with the attributes including dimensions, geolocation information, sign type, sign identification number, and ground level. MicroStation can generate 2D CAD or PDF drawings based the 3D model.
* MS Excel: Design information is summarized in excel format.
* Adobe Acrobat: Final design details is summarized in a PDF file.

**DATA EXCHANGE**

This row shows the Exchange Requirement (ER) documents for different exchange cases within the workflow. There are cases where data exchange is required that are listed below. The detail of this data to be exchanged are presented in these ERs.

* Designer to Iowa sign shop or fabricator
* Designer to office of contracts
* Office of contracts to office of construction and materials or RCE
* Office of contracts to contractor
* Contractor to office of construction and materials