6.4.3 Using and Maintaining A Flexible, User-Friendly Linear Referencing System for Locally Developed, Spatially Accurate Roadway Alignments

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For many years, the California Department of Transportation (Caltrans) has relied on a roadway base map called the Functional Classification (FUNC) coverage for transportation data analysis and mapping. Due to its relatively low level of accuracy and resolution the FUNC proved to be impractical for many local uses, although it had been acceptable for high-level, statewide planning purposes. The FUNC had originally been sourced from a 1:100,000 USGS DLG layer. To support its local needs, District 11 (encompassing San Diego and Imperial counties) used a CAD-based system to generate a spatially accurate highway alignment layer and a set of control points registered to Caltrans' county-route-postmile linear referencing method (LRM). The alignment layer was used to build a highway route layer for mapping Caltrans infrastructure and projects using dynamic segmentation technology, and the linear reference points were used to build a conversion table for translating highway event postmile references to the highway route layer's internal measurement system. A GIS application (called the CTLRS) was developed that allows users to maintain the highway route layer, the linear reference points, and the conversion table as highway alignments change and more linear reference points are identified. The application can also be used to validate and map highway event data. Because the highway route layer uses internal measures that are independent from the county-route-postmile LRM, the CTLRS can easily be enhanced to support other LRMs, such as a proposed state-route-postmile LRM. The project at District 11 was supported by Caltrans headquarters as a pilot project, and as such the CTLRS was designed to be easily ported to other Caltrans districts as their local data sets come on line.