

## **I. TITLE**

Accommodating Oversized/Overweight Vehicles at Roundabouts

## **II. RESEARCH PROBLEM STATEMENT**

There is considerable evidence that roundabouts are the safest most efficient form of traffic control for most intersections. Some of their reported advantages over signalized and stop controlled intersections include a 40% reduction in overall accidents, an 80% reduction in injury accidents and reductions in vehicle delay, queuing and stopping. Their operational efficiency also leads to less vehicle emissions and air pollution. They also offer better management of speed and opportunities for community enhancement features, e.g. gateways, and in many cases economic benefits. Although they are relatively new to the United States, they are rapidly growing in most states. Kansas is one of the leaders in roundabout growth, particularly in constructing roundabouts on state routes.

The potential use of roundabouts with all their inherent benefits may be greatly diminished because they may not be able to accommodate oversized/overweight vehicles, sometimes called "Superloads". Roundabouts are generally designed for the largest vehicles that normally use our highways on a predictable basis, usually a large tractor trailer. These vehicles have no problem with a properly designed roundabout. However, oversized/overweight vehicles, or Superloads, are much larger and can only use our roadways by special permits and they travel on a random basis. In Kansas, these vehicles average 122 feet long, 12'9" wide and are almost 15 feet high, with an average weight of 218,000 pounds. In addition, many of these loads have low clearance above the roadway surface. There has been a significant increase in the number of these loads moving through the state of Kansas. From 1999 to 2007 the number of these loads grew from 433 to 6402. It is important to the Kansas economy that these Superloads be able to move freely over Kansas highways. As the popularity of roundabouts grow, it will be increasingly difficult for these Superloads to find routes that will avoid them. To use these Superloads as a design vehicle for roundabouts would be very costly and inefficient, and more importantly, negate the benefits of roundabouts which rely on being designed to operate at slower speeds, with narrow roadway widths and tight turning radii. The problem, therefore, is how to accommodate Superloads without sacrificing the integrity, safety and other benefits of roundabouts.

## **III. RESEARCH OBJECTIVE**

The main objective of this research project is to survey and compile current worldwide practice to fill in gaps in knowledge on the effects that oversized/overweight vehicles (Superloads) have on roundabout location, design, and accommodation. Then to use this knowledge to recommend solutions such that roundabout growth with all its benefits can continue without negatively affecting that segment of the Kansas economy that relies on Superloads. Currently, there is little information available.

**IV. ESTIMATES OF FUNDING AND RESEARCH PERIOD**

*Period:* 18 months

*Funding:* \$25,000

**V. URGENCY AND POTENTIAL PAYOFF**

Due to the safety and efficiency benefits of roundabouts they are growing rapidly in Kansas, including use at intersections of state highways. Permits for Superloads are also growing rapidly (433 to 6492 in 8 years). To not find a solution can either be detrimental to a segment of the Kansas economy and more detrimental to the safety benefits of roundabouts, with potential for many injuries avoided and/or lives not saved.

**VI. IMPLEMENTATION STRATEGY**

There is no doubt that when his solutions are found, they will be implemented in KDOT policy. They should also be advantageous to many other states.

**VII. PROJECT PERSONNEL**

This research will be directed by Dr. Gene Russell who will be responsible for the research work plan, conduct of the research, and all reports. He has been is involved in roundabout research for 12 years, having conducted a number of studies for KDOT and the Insurance Institute for highway Safety. He chairs the TRB Roundabout Task Force and other national roundabout committees and has worldwide roundabout contacts including a listserv he directs that has over 400 roundabout experts and/or advocates He will be assisted in collecting and compiling data by Mr. Dean Landman, who has several years experience in KDOT highway planning and operation, and graduate student help as appropriate.

**VII. CONTACT**

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