INTRODUCTION

In recent years, the Iowa Department of Transportation has put greater emphasis on improving highway safety. This effort has been relatively successful with a reduction in traffic-related fatalities to levels experienced prior to 1950. The nationwide speed limit of 55 mph was probably the greatest contributor to the decline in traffic fatalities, but there have been many other efforts that have also contributed to this decline. The Iowa DOT has been testing all paved roadways periodically for friction coefficient since 1969. New techniques have been used to obtain a greater depth of surface texture on paved roadways. Transverse tined grooving has been used on portland cement concrete to provide increased texture depth.

The frictional values of asphalt concrete pavements are highly dependent on the characteristics of the aggregates incorporated into the mixture. The predominant aggregates available in Iowa for highway construction are crushed limestone or dolomite. Even the gravel deposits contain substantial quantities of carbonate aggregate. Unfortunately, many of these crushed limestones or dolomites are relatively soft and prone to polishing under traffic.

The Iowa Department of Transportation has established a frictional classification for aggregates.(1) This classification is divided into five types with Type 1 being the hardest and the coarsest grained aggregates and Type 5 being the softest and finest grained aggregates. There are no naturally occurring Type 1 or Type 2 ag-

gregates within the state of Iowa. Crushed quartzites and granites, which are in Type 2, may be obtained from adjoining states. The crushed limestone and dolomites in Iowa range from Type 3 which include the coarse grain dolomitic ledges to Type 5 which contains the fine grained, soft limestones.

With the energy crisis, it is very expensive to transport aggregates for long distances and, therefore, in many cases is not economically feasible to import hard, sharp, durable aggregates to provide more desirable or increased frictional qualities. Economically, it is more desirable to use locally available aggregate. Iowa began experimental investigation of improving frictional quality on asphalt concrete pavement by sprinkling a hard, durable aggregate on the surface of the fresh mat in 1974. There were problems in obtaining a uniform coverage with the hard, durable aggregate. This problem was alleviated with the use of the Bristowes spreader, which became available in 1977. Since that time, there have been numerous applications of sprinkle treatment on asphalt concrete surfaces to provide improved frictional qualities.

The most extensive investigation of sprinkle treatment of asphalt surfaces to improve frictional qualities was conducted as Iowa DOT project HR-199 (2), also known as U.S. Department of Transportation contract DOT-FH-15-295. This research evaluated the use of six sprinkle aggregates on three standard asphalt concrete mixtures. The research concluded that sprinkle treatments increase not only

the surface macrotexture significantly, but also improve the friction numbers of asphalt pavements.

CONCLUSION

It can be concluded from this experimental evaluation of the use of sprinkle treatment that a sprinkle treatment application does pro- vide improved, durable friction qualities to an asphalt concrete roadway even though soft aggregate is used in the asphalt mixture.