Conventionally, pavement lane-line and edge-line demarcation is accomplished by use of traffic paints having minute glass beads intermixed or dropped thereon. The system performs rather well except on wet nights when need for demarcation is the greatest. Once the glass beads are inundated or blanketed by water meniscuses, their lens-action is destroyed. Raised pavement marking materials are effective by virtue of the fact they protrude above the water. The value of the large-diameter bead depicted in the accompanying sketch thus becomes obvious in that respect. Its effectiveness may be increased many fold by the use of a secondary reflex-reflector on the bottom hemisphere. The large convex lens captures the light and directs it to the secondary reflex-reflector - which merely reverses the light, and it returns along the same path by which it entered. This innovation has been demonstrated in the laboratory and in a pavement nearby. The system is so efficient that only a very sparse deployment would be needed to delineate the centerline of the roadway. Another unique method of centerlining is now being evaluated by the Department. Corrugated longitudinal grooves have been cut along the centerline of a roadway prior to painting. The grooves provide for drainage from the beaded paint, which greatly increases wet, nighttime visibility and hopefully will enhance durability of the paint and beads.

Figure 38. Idealized, Retrodirecive Bead