

MAXIMUM EFFECT REAR VIEW MIRRORING OF THE SNOW PLOW/DUMP TRUCK

One of the things often overlooked on a snow plow/dump truck is the rear view mirror system, which provides the operator the indirect field of vision necessary to operate the vehicle and still be able to maintain eye contact with the upcoming road. Is the rear view mirror system performing for the operator to the maximum by providing a clear view of the entire sides of the vehicle or is it providing a handicap for the operator requiring him/her to turn their head to look into blind spots before making lane changes or turning maneuvers? Blind spots in a vehicles rear view mirror system plague all manner of vehicles and the purpose of this article is to show that they can be eliminated by proper location and use of the proper spot mirror.

Historically, placement of mirrors on a vehicle has been on the door in close proximity to the operator. The manufacturer places the required flat mirror (Federal Motor Vehicle Safety Standard 111) on the vehicle, often referred to as the West Coast Mirror, and from there the operator tries to cope with expanding this field of indirect vision by various means, which usually involves the use of the convex mirror. Generally, the convex mirror of some selected size is attached to the either the bottom or top of the West Coast mirror on the door and many have come to understand that this leaves the area behind the mirror as blind areas that must still be looked at physically by the operator so they have moved the mirror to the front fender. The convex mirror is designed to give an expanded field of indirect vision for it's size but does have it's limitations as to how much of an increase it provides that can only be solved by going to larger and larger convex mirrors, which many times means solving one problem but creating another simply by virtue of the size of the mirror and the blind spots it's physical presence creates.

With this understanding of the limitations of the convex mirror, we began a search of mirror technology based upon a "results achieved" criteria. We knew that we wanted to maximize the field of indirect vision produced by the mirror and we did not want the size of the mirror to cause more problems than it solved. We feel that we have found the answer with the BDS Dead Angle Spot Mirror. This mirror measures 9 x 6 inches and is cut from wide-angle glass in such a way that it produces a field of indirect vision up to 65% greater than that of a convex mirror of comparable size and does so with only limited distortion in the objects viewed.

Once the mirror was selected we, worked in association with Mr. Bill Ruhr, Director of the Minnesota Highway Safety and Research Center at St. Cloud State University in St. Cloud, Minnesota to select a sample that would be illustrative of what Transportation Departments around the country were doing. We wanted to look at an existing system and see if it could be improved. We selected the Minnesota Highway Department where they use a West Coast Mirror with an 8-inch convex mounted below the West Coast Mirror and also a front fender mounted 8-inch convex mirror.

We had the operator sit in the driver's seat and physically taped the fields of indirect vision provided by the various mirrors and took actual measurements and photos. Figure one shows what we found with the West Coast Mirror and the 8-inch convex attached combination.



(Figure 1)

This photo illustrates that simply placing the convex mirror in proximity with the flat mirror is helpful but does nothing to aid the operator in viewing the large area from the back of the mirror to the front of the vehicle. We measured the area of indirect vision created by this mirror combination and found that the two mirrors produced a cone shaped field of indirect vision for the operator which measured 0 inches at its apex (the mirrors location) and 218 inches at its base. To see anything outside of this cone would require the operator to take their eyes off the road, turn their head and look into the area before moving into that area.

We then examined the 8-inch convex mirror on the front fender mount and our findings are illustrated in figure 2.



(Figure 2)

For this photo we first taped the field of indirect vision provided by the 8 inch convex mirror and then removed this mirror and replaced it with the BDS Spot Mirror and re-taped the field of indirect vision provided. The photo clearly shows the use of the convex mirror on the front fender surpasses the field of indirect vision created by mounting the convex on the door but still left a blind spot as illustrated between the middle tape and the tape on the right side of the photo. To illustrate the extent of the blind spot still left by the convex mirror we measured and found at 10 feet from the center of the front axle of the truck the width of the blind spot at this point was already 8-feet.

Clearly, proper consideration for the location of the spot mirror and correct selection of the mirror to be used as the spot mirror can effectively remove blind spots and put your operators in a position of keeping their eyes on the road with just a glance in the mirrors to tell them exactly what is happening on each side of their vehicle.