MIRROR LOCATION ON THE VEHICLE AND ADJUSTMENT

Paul Abelson in an article in THE CONCRETE PRODUCER OF August 2007 provides us some reminders:

“The TMC (Truck Maintenance Council) Recommended Practice RP 425, ‘Mirror Positioning and Aiming Guidelines’, recommends mounting mirrors so ‘the outer edge of the mirror is at least 1 inch, outboard of the widest portion of the load or cargo box on the truck or trailer. The preferable position to be as far outboard as is practical considering causes of physical damage to the mirror’.

If the mirrors are placed in closer unnecessary blind spots could be created along the side of the vehicle as is shown by the attached diagram:

Mr. Abelson goes on:

“TMC also found most drivers aim outside mirrors so the horizon is halfway up the mirror, matching normal sightlines. This position wastes much the mirror’s area because it includes too much of the sky in the field of view. When drivers aim the mirrors so the horizon is within 1 to 1 ½ inches (depending upon the mirror height) of the mirror’s top edge, they get a better coverage of blind spots close to the sides of the truck.”
“It should be noted that the coverage of the right side mirror is quite limited, it makes only a small area close to the bus visible to the driver. The coverage is much more limited than the coverage from the left side mirror because of the greater distance between the driver and the mirror. Many buses have a second mirror for each side with a convex surface giving the driver a larger field of view. But it is very difficult to estimate distances with the convex mirror and it is therefore hard to judge if a situation is dangerous. It also needs to be mentioned that the right side mirror is sometimes obstructed by passengers standing in the bus close to the door either because the bus is full beyond capacity or because passengers are slow to move to the back of the bus.”

They then include a diagram as representative of the blind spots or areas that cannot be seen by the operator which is included as illustrative of the problem.

Transit bus collisions with Person, Vehicles or other Objects are over 60,000 per year.
M-C 8 X 8 INCH VS. STANDARD 8 INCH ROUND CONVEX MIRROR

A large ready-mix company in Canada found that the 8 inch round convex mirror showed a particular area to the driver but there were complaints that objects seen in the mirror were distorted. The M-C 8 x 8 inch (203.2 x 203.2 mm) mirror showed the same area but did so with clarity demanded of drivers.

In a major metropolitan area trash and recycle cab over trucks the 8 inch round mirror installed below the standard west coast mirror was replaced with the M-C 8 x 8 inch mirror. Driver of the truck has had his truck replaced 3 times and each time has removed our mirrors and placed them on his new truck.

M-C 6 X 9 MIRROR USED ON HOUSEBOAT APPLICATION

Owners of house boats know it is one thing to get the unit into the slip, but quite another to back the boat out for use. Spotters are usually a necessity. In the following photo a M-C 6 x 9 inch mirror was added to the right front and one was added to the middle of the cabin to show the area immediately behind the boat. Owner reports spotters no longer necessary to back the boat out of the slip.
FORKLIFT SAFETY

A forklift spends most of its travel time in reverse. A major cause of forklift accidents is collisions with persons or objects, not seen by the operator while in this mode of travel.

Use of the M-C 4 X 10 inch mirror as in the following photo can greatly aid the prevention of rear-traveling forklifts. Do not solely rely on designated pedestrian walkways and/or backing signals to try to prevent injury/death to co-employees.

The operator can keep track of the blind area in the direction opposite that of travel with just a glance in the mirror.
MILITARY VEHICLES

Military vehicles require complete visibility surrounding the vehicle for operator safety, especially in combat situations. A sample of how the government has responded to this need:

Side view of blind areas on HUMMVV vehicle

Governments position is that their Mirrors in “Theory” create a field of vision necessary for the safe operation of their vehicles.
Logging continues to be one of the most dangerous occupations. Much of the equipment used is akin to the front end loader discussion contained in our white paper on Construction. Various other types such as the logging forwarder which hauls cut logs out of the woods to various pick-up locations, is shown below. Note: no exterior mirrors.

The operator’s view of the proximity area of the machine is provided solely with an interior mirror. In the following photo, the M·C 6 x 9 mirror’s view is compared to that of the factory installed interior mirror.

The M·C Spot mirror is available in many different sizes and can be used in any situation where a clear view of a specific area is necessary.
MINE SAFETY AND HEALTH ADMINISTRATION (MSHA) CONSIDERATION OF ELECTRONIC EQUIPMENT TO SOLVE THE BLIND SPOT PROBLEM ON MINE TRUCKS.

Under the MSHA Accident Prevention Program they state:

“As surface haulage trucks continue to get larger, the corresponding blind areas are also getting larger. Since 1987, there have been 58 fatalities in the mining industry involving haul trucks where restricted visibility was determined to be a contributing factor. In these accidents, the equipment operator did not expect a person or vehicle to be in the immediate area. This is a serious safety concern throughout the mining community. The increased production levels afforded by the ever increasing size of haulage equipment must not be at the expense of miner’s safety. The Mine Safety and Health Administration strongly supports the use of video cameras in large haulage vehicles to help solve the problem”.

NOTE: Under its statutory authority MSHA could mandate the use of video equipment but they choose not to do so and instead “strongly supports” its use and it is submitted that they choose not to mandate the equipment because no one can guarantee these units are “fail-safe”. Statement of Stephen R. Kratzke, Associate Administrator for Rule Making at NHTSA, Federal Register Vol. 68 no. 14 NHTSA Petition 12347 on use of video systems on trucks, at page 2998, states:

“The agency is concerned that, if there is not a fail-safe mode for these systems, an unsafe situation could occur. The agency has already prohibited liquid crystal dimmable mirrors because of the insurmountable fail-safe issues.”

To address this issue with video cameras and other electronic methods the MSHA:

For instance on its Instruction tips for Best Results suggests that “Keeping a spare system on the shelf will virtually eliminate system downtime concerns” and

on the Sample Letter of Intent for operators to sign for the use of Electronic Equipment prepared by MSHA and must be agreed to by the operator they include the following paragraph:

“Our intent (the Operator) is to try and make these systems work. We intend to fix them on a priority basis if they fail. Until repaired, personnel are to turn the cameras off and operate per normal safe operating procedures, as if the camera systems were never installed”.

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MSHA “strongly supports” the use of electronic equipment but warns if it fails have a replacement ready to prevent downtime and also have your equipment ready to continue operation as you would if the camera had not been installed. It is submitted that the operator should maintain an exterior mirror system that works as the ultimate back-up and if this is done, the only cameras possibly necessary would on the back of the vehicle and maybe one on the right front of vehicle might be necessary.

HAULAGE TRUCK DUMP POINT

“The major mineral industries use mobile equipment in elevated areas near dump point, either through the construction of temporary material stockpiles or the construction of semi-permanent waste or spoil piles. Dumping over an edge is an efficient means of handling material and is widely practiced. However, working near an edge is considered a common hazard for off-highway mobile equipment, and dumping over an edge has been identified as one of the highest risk activities at a dump site. The amount of risk depends upon many factors. These factors include dump site layout, dump site stability, truck performance, amount of light, decision-making abilities of equipment operators, and weather conditions. Important tasks for safety professions are to quantify work site risks, to provide guidelines for identifying when risks are too great and to determine what can be done to reduce these risks’. Source CDC Information Circular/2001-Haulage Truck Dump Site Safety: An Examination of Reported Injuries. (emphasis supplied)

Back ing the haulage dump truck to the dump site requires that the operator be provided with aids that allow decision making to be quick and accurate. Providing exterior mirrors without distortion, is a necessary aid to such a maneuver, and will also aid the operator in placing the vehicle for loading.