

Virginia Commonwealth University
Transportation Safety Training Center
Virginia Multi-disciplinary Crash Investigation Team

Report Number 207 – January, 2009

ABSTRACT

A motorcycle, traveling at night on a two lane primary highway, approached a series of curves. The alcohol-impaired rider, attempting to negotiate a left hand curve, ran off the roadway to the right into a shallow drainage ditch. The rider was able to keep the bike upright and travel in the ditch parallel to the roadway. After rolling along the bottom of the ditch, the bike and rider then struck a utility pole, just off the roadway, causing the rider to separate from the bike and land in the roadway. The bike sustained significant damage during the impact with the utility pole and afterward as it tumbled in the grass toward final rest. The driver died at the scene.

This crash illustrates the dangers of driving while under the influence of alcohol, as well as the risks motorcyclists take when they choose to wear helmets that are not compliant with U.S. Department of Transportation standards.

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SYNOPSIS

Day, Time, Season: Sunday, 12:15a.m., Summer

Road/Weather: Primary highway; clear and dry

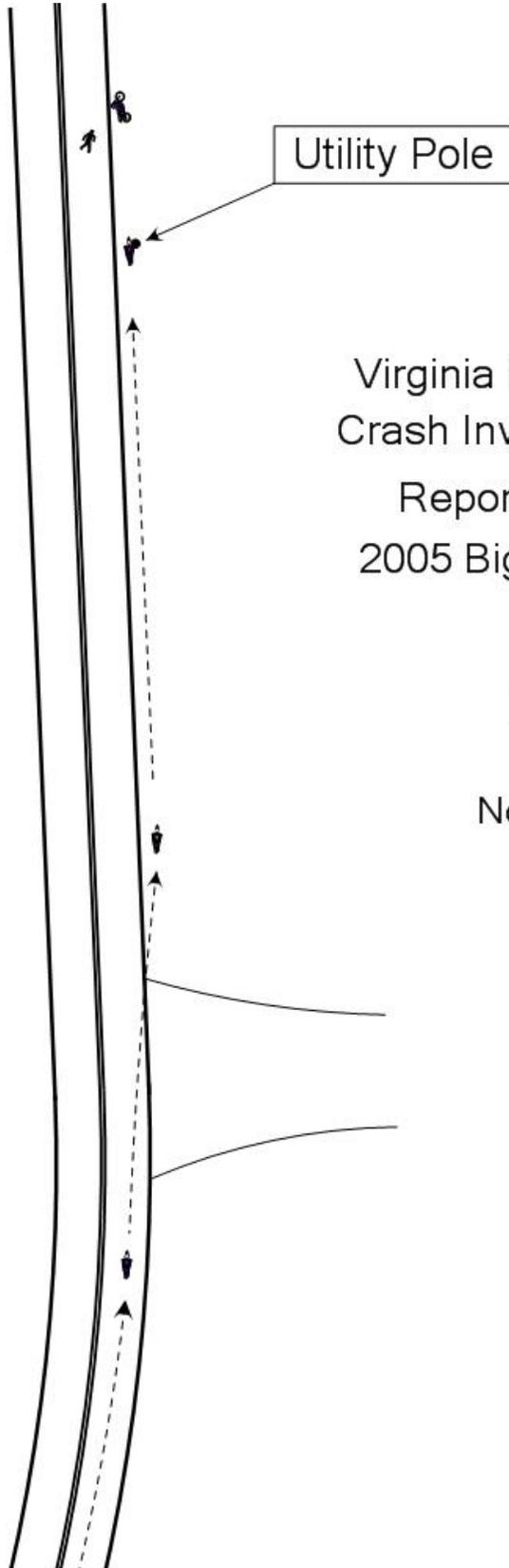
Vehicles Involved: 2005 Big Dog Ridgeback Motorcycle

Summary: Motorcycle ran off the road to the right and struck a utility pole

Severity: One fatality, severe property damage

Probable Cause: Failure to maintain control of motorcycle and driving under the influence of alcohol

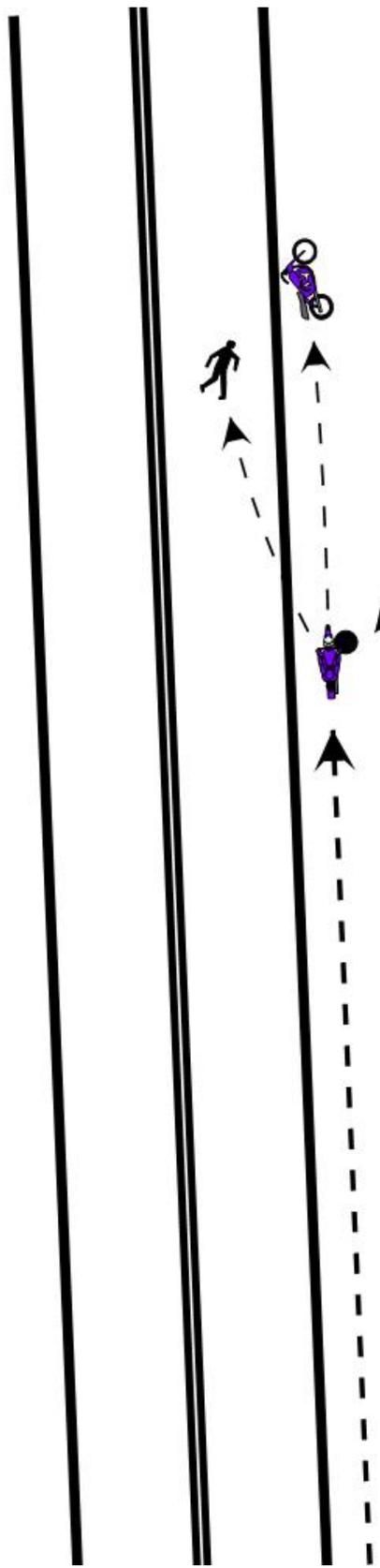
Significant Points: Run off the road crashes, use of non-compliant (U. S. Department of Transportation) helmets; riding while under the influence of alcohol



Virginia Multi-Disciplinary
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2005 Big Dog Motorcycle



Not to scale



Utility Pole

Virginia Multi-Disciplinary
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2005 Big Dog Motorcycle



Not to scale

CRASH DESCRIPTION

On a clear dry night, shortly after midnight on Sunday, a 49 year old male was driving south on a 2005 custom built Big Dog Ridgeback motorcycle on a two lane primary highway. The driver was wearing a black helmet that was not compliant with U.S. Department of Transportation (DOT) requirements, Snell Memorial Foundation (Snell) or American National Standards Institute (ANSI) standards.

The road is a two lane, north-south route located in a mixed residential/business area of the county. Each lane is approximately 9 feet 5 inches wide and is straight and on a slight upgrade at the location of the crash, although a left curve precedes the straight segment. The pavement is asphalt and in good condition. There is no shoulder adjacent to the southbound lane. Adjacent to the edge of pavement, the ground slopes to a grass-covered drainage ditch. Utility poles are adjacent to the ditch. The road is controlled by signs and pavement markings, including double solid yellow lines in the area of the crash. The signs are in good condition and the pavement markings are in fair condition. In addition, snow plowable reflective pavement markers are installed to help delineate the roadway at night and during inclement weather. There is no overhead lighting. The posted speed limit is 35 mph.

The motorcyclist had just left a local bar and grill, where he had been socializing with a friend, and had travelled less than a mile. He was en route to a friend's home about four miles further. He had turned onto this primary road after passing through a signalized intersection and successfully negotiated most of a section of highway that curved to the left.

At the end of the curve, the rider ran off the roadway to the right into a shallow drainage ditch. The ditch is approximately 12 inches from the pavement edge and varies in depth from 8 inches to 12 inches as it runs parallel the roadway. He was able to keep the bike upright and negotiate the ditch for approximately 300 feet until it struck a utility pole. There were no tire marks where the bike left the roadway or in the grass leading up to the utility pole. There was no evidence that the rider attempted to exit the drainage ditch before impacting the pole. The right side of the bike, mainly the air cleaner and handle bar, struck the utility pole and caused the bike to rotate clockwise. During the motorcycle's impact, the rider's head and face also made contact with the pole, cracking the non-compliant helmet. The rider separated from the bike during the rotation and landed 30 feet away from the pole, in the roadway. The bike slid and tumbled in the

direction of travel after impact for another 33 feet and came to rest in the grass two feet from the edge of the roadway.



Photo #1: View looking south, in the direction the motorcyclist was travelling. The crash occurred at the second utility pole on the right side of the roadway.

No one reported witnessing the actual crash; however, a couple driving through the area observed headlights from the downed motorcycle and the driver's body lying in the road. They did not have a cell phone available, so the passenger ran to a nearby house and knocked on the door. When no one answered, she began to run to another house but saw a vehicle approaching in the lane where the motorcyclist lay. She stopped that vehicle and asked to use a cell phone to report the crash. In the meantime, the driver went to check the victim, who appeared to be dead. The occupants of both vehicles stayed at the site until authorities and rescue personnel arrived shortly thereafter.



Photo #2: Utility pole with marks where the helmet (top) and handle bars (lower gouge) made contact.

The motorcyclist had obvious head injuries. Once his death was confirmed by emergency rescue workers, the local medical examiner was called. A medico-legal death investigator responded to the scene and had the victim's body transported first to a nearby medical center and then to the District Office of the Chief Medical Examiner for examination and toxicology tests.

Local fire department personnel managed traffic at the scene while the investigating Trooper collected evidence and photographed the scene and motorcycle. They restored normal traffic patterns and cleared the scene approximately four hours after the crash. The investigating Trooper notified the victim's mother of her son's death.

REMARKS

Members of the Virginia Multi-disciplinary Crash Investigation Team (VMCIT) had been tracking motorcycle fatalities after the spike in such deaths in 2007. When this crash occurred, they made contact with the investigating officer and learned that the rider had been wearing a helmet that did not appear to meet DOT requirements. That, combined with the fact that many of the fatalities across the state had similar run off the road characteristics, made this a crash of research interest.

A visit to the crash scene revealed that roadway conditions are generally good; however, there are no improved shoulders on either side of the road. The pavement edge is bordered by grass, and on the southbound edge, the ground drops to an 8 to 12 inch deep ditch. The center (bottom) of the ditch is 31 inches from the pavement edge and the utility pole was only 5 inches further from the edge. Once the motorcyclist left the pavement and dropped into the bottom of the ditch, he would have had to “fight” the slope and the lower traction on the grass to regain the road. Instead, he remained in the parallel “groove” until the right side of his motorcycle hit the utility pole.

The vehicle involved, a 2005 Big Dog custom motorcycle, had been purchased by the driver from a friend several months prior to the crash. However, he had often ridden the vehicle prior to purchasing it and he was familiar with its handling characteristics. The bike was inspected after the crash and found to be in fair condition. An owner had replaced several factory parts with aftermarket parts, all of which were compliant with current DOT standards. The bike had a valid Virginia State Inspection sticker. The bike, at first, appeared to have only cosmetic damage, but closer inspection by the members of VMCIT revealed significant damage to other areas. Contact between the utility pole and the air cleaner caused the engine to break free from its mounts and move rearward. This movement caused separation between the engine and the transmission, rendering the bike immobile.

The 49 year old motorcyclist had lived in the area most of his life and often rode motorcycles during the weekends and good weather. He was very familiar with the roadway and had been riding motorcycles in this section of the state for many years. Prior to purchasing the vehicle involved in this crash, he rode a Harley Davidson Roadster, a touring bike. The deceased’s driving record revealed no violations, convictions or accidents. He had a driver point balance of +5. In addition, he had a Class M license, meaning that he was licensed to operate

both motorcycles and other vehicles not requiring a commercial license. His only license restriction was a requirement to wear corrective lenses. The investigating Trooper found a pair of glasses at the crash site. They were damaged and both lenses were missing. This Trooper had known the motorcyclist for many years and stated that he never saw him without his glasses. It is highly probable, then, that he was wearing them at the time of the crash.



Photo #3: Motorcycle as viewed from side that struck the utility pole.

The victim's family indicated that he had been riding his motorcycle all day before the crash. That night, the driver had been seen at a local bar and grill with a male friend. Both were observed leaving the parking lot on their motorcycles not long before the crash. According to the friend, they were both headed to the friend's house for the night, with the friend in the lead. This individual initially told the investigating officer that he was not aware of the crash until

much later, when the victim failed to show up at their destination. However, the couple first on the scene reported that a motorcyclist who appeared to be driving drunk passed them headed in the opposite direction just before they came upon the downed motorcycle and driver in the roadway. One witness wrote that a motorcyclist came by very shortly thereafter, circled the scene while repeating the victim's nickname several times, then drove off. She had the impression that this motorcyclist was the same one they had seen earlier. When the investigating officer questioned the driver's friend and examined his motorcycle, he found that the motorcycle had damage consistent with being dropped and sliding. That driver indicated that he had dropped his motorcycle but denied that the incident had any connection to the fatal crash. During a later interview, this individual stated that he had been travelling ahead of his friend and turned around when he realized the other man was no longer behind him. He admitted being at the site after the crash and seeing his friend lying in the road, but he did not stay. Just two miles from the crash scene, on his return trip home, he lost control of his motorcycle while turning onto a gravel road. He stated that he dropped the bike, causing the damage the officer noted. This individual refused to provide the investigator with a written statement about any of the events the night of the crash.

A toxicology report from the Department of Forensic Science revealed that the victim's blood alcohol content (BAC) was .14%, well above the presumptive level of impairment under the Code of Virginia. The ethanol content of his vitreous humor was .16%, which is only slightly higher than levels found in the sample of blood and consistent with consumption of alcoholic beverages a short time before he crashed (see *VMCIT Report Number 204* for a discussion of toxicological analyses of blood and vitreous). These results are consistent with National Highway Traffic Safety Administration (NHTSA) reports showing that drivers killed in motorcycle crashes are more likely to have consumed alcohol than those killed while operating other types of motor vehicles (NHTSA, 2007 & 2008b, Pickrell, 2006). For single vehicle crashes in 2007, 41 percent of motorcyclists killed had a BAC of .08% or higher. On weekends, 65 percent of motorcyclists killed in single vehicle crashes had blood alcohol levels above the legal limit. Those in the 30 to 39 year and 40 to 49 year age groups typically have higher median BACs, which ranged between .14% and .17% over several years of data (NHTSA, 2007). Impairment can have a profound impact on a motorcyclist's ability to maintain control over his vehicle (see *VMCIT Report Number 201*). With the increase in motorcycle fatalities across the country and in Virginia in 2007, NHTSA, the Department of Motor vehicles (DMV), the

Virginia Department of State Police and other safety agencies stress the importance of identifying and stopping impaired motorcyclists before they crash.

The Medical Examiner's report, which was completed by a medico-legal death investigator, indicated that the deceased suffered blunt force injuries, mainly massive facial and head trauma. These injuries occurred when the motorcyclist's head struck the utility pole and their severity was increased because he chose to wear a helmet that was not compliant with DOT standards. A compliant helmet has a hard outer shell that will not crack except under extreme loads (Refer to Federal Motor Vehicle Safety Standard 218, Title 49 of the United States Code, Chapter 301) and it is lined with a material similar to Styrofoam that is at least an inch thick (NHTSA, 2004). This dense material compacts during a crash, absorbing much of the kinetic energy that would otherwise transfer directly to the wearer's head. The helmet the victim chose to wear had a thin outer shell that cracked in the area that covered the right forehead and temple when it made contact with the pole.



Photo #4: Helmet exterior. Note crack on brim in left side of photo and scuffs.

An examination of the interior of this helmet revealed that it was lined with a layer of soft foam rubber padding less than 1/8 inch thick, which offered little protection and absorbed an insignificant amount of the energy. This lining did not extend throughout the interior of the helmet—the top was lined only with cloth.



Photo #5: Helmet interior. Note partial lining of thin, soft foam.

It is not certain that the rider would have survived if he had been wearing a DOT compliant helmet. However, it is certain that the helmet he wore did not protect his head from serious injury. Although the novelty helmet offered some minimal protection, it cracked when it struck the utility pole and failed to absorb much of the impact force. The energy from these forces then transferred to the rider's skull, resulting in the massive head injuries which caused his death.

The use of non-compliant helmets is a concern to safety and health professionals in Virginia and at the national level. Statistics for 2006 reported by NHTSA (Glassbrenner & Ye, 2007) suggest that in states which require helmets for riders, including Virginia, 15 percent of riders wore non-compliant helmets. The same statistics for 2007 indicate that the non-compliant helmet use rate was nearly 23 percent. When examined with other data, this seems to be on a recent upward trend (Glassbrenner & Ye, 2007, Glassbrenner, 2005).

One reason for this trend in Virginia may be legal challenges to the current motorcycle helmet law, making the law almost unenforceable with regard to the type of helmet used. The helmet law is a primary offense, meaning that an officer can stop a driver for failing to wear a compliant helmet while operating a motorcycle. The problems, however, lie in identifying whether or not the helmet is compliant, both as a reason for making the stop and, once the officer can closely examine the helmet, as a reason for citing the operator. Non-compliant, hard shell novelty helmets, like the one used by the driver in this crash, may not be obviously non-compliant until examined closely. The interior lining is easy to identify as sub-standard once the helmet is taken off. The lack of thickness to the exterior shell may not be apparent to the average person. The current Virginia statute requires the enforcing officer to have an understanding of compliance standards of American National Standards Institute (ANSI), Snell Memorial Foundation (SNELL, an independent research group) and DOT. Many sections of these standards are only testable with specific equipment not accessible to the average law enforcement officer, much less the average rider. As a consequence, in some jurisdictions, the standards set forth in the law are “unconstitutionally vague, deny due process and are unenforceable” (Commonwealth of Virginia v. Dennis W. Wolf, 2005, Circuit Court for the City of Newport News).

Compounding this problem are groups dedicated to repealing the helmet law all together. These groups intentionally bring cases into court to challenge the helmet statute. Their overall approach uses two main arguments: (1) helmet use should be a matter of individual choice and (2) the claims that helmet laws prevent death and injury to riders are exaggerated.

Helmet use laws are one example of a fundamental philosophical/political conflict present in our culture. On one side, the principle of individual rights as delineated in the Constitution of the United States guarantees the right to liberty in making decisions about one’s life and actions, as long as the individuals’ behavior does not violate the individual rights of others. Those against motorcycle helmet laws maintain that their personal liberty is being

restricted by these laws and that they do not violate others' rights when they choose to not wear a helmet. Leaders of organizations such as the Virginia Coalition of Motorcyclists (VCOM) and a Virginia Chapter of the Gold Wing Road Riders Association (GWRRA) maintain this view. The director of a local GWRRA chapter indicated that many members believe that helmet laws violate their individual rights by removing the decision from the individual. He noted that some organizations take an anti-helmet stance just because the right to choose was denied. However, GWRRA still advocates helmet use, requiring that participants wear helmets during sponsored activities and reinforcing the value of wearing compliant helmets in their educational programs. VCOM, on the other hand, is more focused on political and legal issues rather than safety concerns. Consequently, their leadership does not consistently model behaviors that decrease risk of injury to riders, although they do stress that the individual is responsible for the consequences of his behavior, including the risks he takes.

On the other side of this conflict, legislators and other government officials, often backed by the courts, claim that when an individual is injured or killed in a crash, "society" is impacted negatively. "Society", which means other people, pays for many of the costs that occur as a consequence of a crash and "society" loses the productivity and income that the individual might have created. This argument, when applied to seat belt laws in Massachusetts, was cited in a 1972 United States Supreme Court decision (*Simon v. Sargent*). The decision included the following passage: "From the moment of injury, society picks the person up off the highway; delivers him to a municipal hospital and municipal doctors; provides him with unemployment compensation if, after recovery, he cannot replace his lost job; and, if the injury causes disability, may assume the responsibility for his and his family's continued subsistence. We do not understand a state of mind that permits a plaintiff to think that only he himself is concerned." The fundamental principle underlying this argument is that the individual rights are secondary to the welfare of society (of which the individual is a part). The question of whether or not it is appropriate and right for "society" to assume all the responsibilities it takes on when caring for an injured individual and his family is not addressed (individual rights' proponents claim that only the individual is responsible for the consequences of his behavior). But the conclusion is: "society"—in the form of government—has the right to dictate individual behavior, if it decides that certain behaviors are harmful to "society's" needs.

Resolution of this ongoing philosophical/political conflict is the purview of the legislatures and the courts.

Various studies on helmet use show that when states repeal their helmet laws, helmet use on average drops to around 50 percent and motorcycle fatalities jump significantly the following year (Ulmer & Preusser, 2002). Typically, helmet use levels are assessed by counting the number of riders wearing helmets at a fixed location. This does not take into account riders wearing novelty helmets, which may account for up to 15% of riders. Statistical evidence also suggests that many more fatal motorcycle crashes occur in states without helmet laws than in states of similar size and population that have helmet laws (Ulmer & Preusser, 2002).

On the issue of the effectiveness of helmets in preventing injury and death, those opposed to helmet use laws are skeptical of the studies and statistics NHTSA and others cite. This debate is not confined to the United States. In a recent comprehensive review of research on helmet protection, authors noted that “in both developing and developed countries, resistance to legislation on motorcycle helmets still coexists with debate on the effectiveness of motorcycle helmets in reducing morbidity and mortality” (Liu, Ivers, Norton, Boufous, Blows & Lo, 2008).

NHTSA claims that DOT compliant helmets are estimated to be 37 percent effective in preventing fatal injuries to motorcyclists. This means that for every 100 motorcyclists killed in crashes while not wearing a helmet, 37 could have been saved had all 100 worn helmets (NHTSA, 2008b). One NHTSA study (Subramanian, 2007) that specifically addresses the relationship between injury type and helmet use is consistent with what would be expected just by the nature of motorcycle crash dynamics: helmet use is correlated with a lower risk of head injuries in fatally injured motorcyclists. The author concluded that if riders were wearing helmets at the time of a crash, they received injuries to the head about 35 percent of the time. Un-helmeted riders suffered head injuries 51 percent of the time. When only one injury was identified in the fatality, helmeted riders suffered head injuries about 19 percent of the time, while those without helmets had only head injuries at nearly double that rate, 36 percent. Those with head injuries only, however, made up just 27 percent of the sample. Over half of those killed had multiple injury locations, meaning they may have head injuries in addition to thorax, abdominal and/or other injuries. The data contained injury types only; it did not explicitly identify the injury that caused the motorcyclist’s death. While this supports the claim that helmets protect riders from head injuries and, to some extent, fatal head injuries, it also reveals that motorcyclists are vulnerable to other types of injury which a helmet cannot lessen or prevent.

The above results are consistent with the overall conclusions of Liu et al. (2008): “A review of studies concluded that helmets reduce the risk of head injury by around 69% and death by around 42%.” This review addressed issues of confounding variables, such as speed, that may interact with the effectiveness of helmets, especially in terms of mortality. At higher speeds, helmets may not have as much influence in lowering mortality because of the extreme energy forces acting upon a rider’s entire body during a crash. The authors add: “Further well-conducted research is required to determine the effects of helmets and different helmet types on mortality, head, neck and facial injuries.”

This fatal crash highlights the fact that, despite Virginia’s motorcycle helmet law and despite awareness that such helmets may decrease their risk of death or injury, some riders still opt to wear non-compliant helmets. Motorcycles are inherently riskier to operate compared to other motor vehicles because they do not provide the protection of vehicle interiors and because they are not as conspicuous as other vehicles. Some motorcycle operators increase their risk by not wearing compliant helmets, driving under the influence of alcohol, or (as observed in other crashes) exceeding safe speeds. Education and/or laws are often not enough to motivate changes such individuals, especially since the culture tends to glorify such activities (see VMCIT Report #204). We can expect to continue to see tragic crashes as long as social and emotional rewards are culturally and individually linked with irrational, self-destructive behavior.

RECOMMENDATIONS

1. The General Assembly should review the current law requiring motorcycle helmet use in Virginia (Code of Virginia § 46.2-91. Motorcyclist to wear helmets, etc.; certain sales prohibited; penalty). Revisions to improve its enforceability should:
 - a. Remove references to ANSI and Snell standards, as the Commonwealth cannot require a standard more stringent than that of the U.S. Department of Transportation.
 - b. Clearly define the meaning of “motorcycle helmet” in such a way that compliance is easier to determine (such as labeling) and is consistent with the purpose of protecting injury. For example:

A motorcycle helmet is defined as a protective head covering made of a hard material to resist impact. A protective helmet shall meet the following minimum specifications:

- (1) Design. -- One which is specifically designed for motorcycle riders and motorcycle passengers to reduce injuries to the user resulting from head impacts.*
- (2) Exterior shell. -- A hard exterior shell of crush and penetration resistant material. Rigid projections outside any helmet's shell shall be limited to those required for operation of essential accessories, and shall not protrude more than 0.20 inch (5 mm). A helmet shall not have any rigid projections inside its shell.*
- (3) Interior Padding. -- A firmly secured shock absorbent cradle made from expanded polystyrene or cushioning material of substantial thickness (at least 3/4 inch) in all areas of the helmet to form a barrier between the head and the outer shell.*
- (4) Chin strap. -- An adjustable chin strap permanently attached with solid rivets that will hold the helmet securely in place.*
- (5) Visor. -- Not required, but, if the helmet is so equipped, the visor must be flexible or of a snap on type.*
- (6) Labeling. -- Each helmet shall be labeled permanently and legibly, in a manner such that the label(s) can be read easily without removing padding or any other*

permanent part, with the following: (a) Manufacturer's name or identification. (b) Precise model designation. (c) Size. (d) Month and year of manufacture.

(7) DOT symbol. -- The symbol DOT, constituting the manufacturer's certification that the helmet conforms to the applicable Federal motor vehicle safety standards. This symbol shall appear on the outer surface, in a color that contrasts with the background, in letters at least 3/8 inch (1 cm) high centered laterally with the horizontal centerline of the symbol located a minimum of 1- 1/8 inches (2.9 cm) and a maximum of 1-3/ 8 inches (3.5 cm) from the bottom edge of the posterior portion of the helmet.

2. The Virginia Department of Motor Vehicles (DMV), the Department of State Police (VSP), educators and public information personnel should continue to stress the importance of refraining from driving any vehicle while under the influence of alcohol.
3. DMV, VSP, educators and public information personnel should continue to promote the safe operation of motorcycles, emphasizing the increased risks associated with driving such vehicles generally, along with the need for skills training, defensive driving strategies, and the increased danger when driving while impaired.
4. The Virginia Department of Transportation (VDOT) should review the pavement markings and shoulder conditions on this road. VDOT should remark the pavement if necessary and consider improving the shoulders.

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Appendix A

Code of Virginia

§ 46.2-910. Motorcyclist to wear helmets, etc.; certain sales prohibited; penalty.

Statute text

- A. Every person operating a motorcycle shall wear a face shield, safety glasses or goggles, or have his motorcycle equipped with safety glass or a windshield at all times while operating the vehicle, and operators and any passengers thereon shall wear protective helmets. Operators and passengers riding on motorcycles with wheels of eight inches or less in diameter or in three-wheeled motorcycles which have nonremovable roofs, windshields and enclosed bodies shall not be required to wear protective helmets. The windshields, face shields, glasses or goggles, and protective helmets required by this section shall meet or exceed the standards and specifications of the Snell Memorial Foundation, the American National Standards Institute, Inc., or the federal Department of Transportation. Failure to wear a face shield, safety glasses or goggles, or protective helmets shall not constitute negligence per se in any civil proceeding. The provisions of this section requiring the wearing of protective helmets shall not apply to operators of or passengers on motorcycles being operated (i) as part of an organized parade authorized by the Department of Transportation or the locality in which the parade is being conducted and escorted, accompanied, or participated in by law-enforcement officers of the jurisdiction wherein the parade is held and (ii) at speeds of no more than fifteen miles per hour.

No motorcycle operator shall use any face shield, safety glasses or goggles, or have his motorcycle equipped with safety glass or a windshield unless of a type either (i) approved by the Superintendent prior to July 1, 1996, or (ii) that meets or exceeds the standards and specifications of the Snell Memorial Foundation, the American National Standards Institute, Inc., or the federal Department of Transportation and is marked in accordance with such standards.

- B. It shall be unlawful to sell or offer for sale, for highway use in Virginia, any protective helmet that fails to meet or exceed any standard as provided in the foregoing provisions of this section. Any violation of this subsection shall constitute a Class 4 misdemeanor.

History

(Code 1950, §§ 46-183.1, 46-183.2; 1954, c. 204; 1958, c. 541, § 46.1-172; 1968, c. 498; 1970, cc. 29, 99; 1982, cc. 390, 681; 1989, cc. 6, 727; 1996, c. 690; 1998, c. 789.)

Suggested changes:

§ 46.2-910. Motorcyclist to wear helmets, etc.; certain sales prohibited; penalty.

Statute text

- B. Every person operating a motorcycle shall wear a face shield, safety glasses or goggles, or have his motorcycle equipped with safety glass or a windshield at all times while operating the vehicle., ~~and Operators~~ and any passengers thereon shall wear protective helmets *as defined in paragraph C of this section*. Operators and passengers riding on motorcycles with wheels of eight inches or less in diameter or in three-wheeled motorcycles which have non-removable roofs, windshields and enclosed bodies shall not be required to wear protective helmets. ~~The windshields, face shields, glasses or goggles, and protective helmets required by this section shall meet or exceed the standards and specifications of the Snell Memorial Foundation, the American National Standards Institute, Inc., or the federal Department of Transportation.~~ Failure to wear a face shield, safety glasses or goggles, or protective helmets shall not constitute negligence per se in any civil proceeding. The provisions of this section requiring the wearing of protective helmets shall not apply to operators of or passengers on motorcycles being operated (i) as part of an organized parade authorized by the Department of Transportation or the locality in which the parade is being conducted and escorted, accompanied, or participated in by law-enforcement officers of the jurisdiction wherein the parade is held and (ii) at speeds of no more than fifteen miles per hour. No motorcycle operator shall use any face shield, safety glasses or goggles, or have his motorcycle equipped with safety glass or a windshield unless of a type either (i) approved by the Superintendent prior to July 1, 1996, or (ii) that meets or exceeds the standards and specifications of ~~the Snell Memorial Foundation, the American National Standards Institute, Inc., or the~~ federal Department of Transportation and is marked in accordance with such standards.
- C. It shall be unlawful to sell or offer for sale, for highway use in Virginia, any protective helmet that fails to meet or exceed any standard as provided *in paragraph C of this section* ~~the foregoing provisions of this section~~. Any violation of this subsection shall constitute a Class 4 misdemeanor.
- C. *A motorcycle helmet is defined as a protective head covering made of a hard material to resist impact. A protective helmet shall meet the following minimum specifications:*
- (1) Design. -- One which is specifically designed for motorcycle riders and motorcycle passengers to reduce injuries to the user resulting from head impacts.*
 - (2) Exterior shell. -- A hard exterior shell of crush and penetration resistant material. Rigid projections outside any helmet's shell shall be limited to those required for operation of essential accessories, and shall not protrude more than 0.20 inch (5 mm). A helmet shall not have any rigid projections inside its shell.*
 - (3) Interior Padding. -- A firmly secured shock absorbent cradle made from expanded polystyrene or cushioning material of substantial thickness (at least 3/4 inch) in all areas of the helmet to form a barrier between the head and the outer shell.*
 - (4) Chin strap. -- An adjustable chin strap permanently attached with solid rivets that will hold the helmet securely in place.*

(5) *Visor.* -- Not required, but, if the helmet is so equipped, the visor must be flexible or of a snap on type.

(6) *Labeling.* -- Each helmet shall be labeled permanently and legibly, in a manner such that the label(s) can be read easily without removing padding or any other permanent part, with the following: (a) *Manufacturer's name or identification.* (b) *Precise model designation.* (c) *Size.* (d) *Month and year of manufacture.*

(7) *DOT symbol.* -- The symbol DOT, constituting the manufacturer's certification that the helmet conforms to the applicable Federal motor vehicle safety standards. This symbol shall appear on the outer surface, in a color that contrasts with the background, in letters at least 3/8 inch (1 cm) high centered laterally with the horizontal centerline of the symbol located a minimum of 1- 1/8 inches (2.9 cm) and a maximum of 1-3/ 8 inches (3.5 cm) from the bottom edge of the posterior portion of the helmet.

History

(Code 1950, §§ 46-183.1, 46-183.2; 1954, c. 204; 1958, c. 541, § 46.1-172; 1968, c. 498; 1970, cc. 29, 99; 1982, cc. 390, 681; 1989, cc. 6, 727; 1996, c. 690; 1998, c. 789.)