

## CONSUMER PRODUCT SAFETY COMMISSION

### 16 CFR Part 1203

#### Proposed Rule: Safety Standard for Bicycle Helmets

**AGENCY:** Consumer Product Safety Commission.

**ACTION:** Proposed rule.

**SUMMARY:** Pursuant to the Children's Bicycle Helmet Safety Act of 1994, the Commission is proposing a safety standard that would require bicycle helmets to meet impact-attenuation and other requirements. This proposal modifies the bicycle helmet standard proposed by the Commission in the Federal Register of August 15, 1994.

The proposed standard establishes requirements derived from one or more of the voluntary standards applicable to bicycle helmets. In addition, the proposed standard includes requirements specifically applicable to children's helmets and requirements to prevent helmets from coming off during an accident. The proposed standard also contains testing and recordkeeping requirements to ensure that bicycle helmets meet the standard's requirements.

**DATES:** Comments on the proposal should be submitted no later than February 20, 1996.

Comments on elements of the proposal that, if issued, would constitute collection of information requirements under the Paperwork Reduction Act may be filed with the Office of Management and Budget ("OMB"). OMB is required to make a decision concerning the collections of information contained in the proposed rule between 30 and 60 days after publication. Thus, although comments will be received by OMB until February 5, 1996, a comment to OMB is best assured of having its full effect if OMB receives it by January 4, 1996.

**ADDRESSES:** Comments to the Commission should be mailed to the Office of the Secretary, Consumer Product Safety Commission, Washington, D.C. 20207, or delivered to the Office of the Secretary, Consumer Product Safety Commission, room 502, 4330 East-West Highway, Bethesda, Maryland 20814-4408, telephone (301)504-0800. Comments also may be filed with the Commission by facsimile to (301)504-0127, or by electronic mail via [info@cpsc.gov](mailto:info@cpsc.gov). Comments should include a caption or cover indicating that they are directed to the Office of the Secretary and are comments on the

revised proposed Safety Standard for Bicycle Helmets.

Comments to OMB should be directed to the Desk Officer for the Consumer Product Safety Commission, Office of Information and Regulatory Affairs, OMB, Washington, D.C. 20503. The Commission encourages commenters to provide copies of such comments to the Commission's Office of the Secretary, with a caption or cover letter identifying the materials as comments submitted to OMB on the proposed collection of information requirements for bicycle helmets.

**FOR FURTHER INFORMATION CONTACT:** Scott Heh, Project Manager, Directorate for Engineering Sciences, Consumer Product Safety Commission, Washington, D.C. 20207; telephone (301) 504-0494 ext. 1308.

#### SUPPLEMENTARY INFORMATION:

##### A. Introduction and Background

*Introduction.* In this notice, the Consumer Product Safety Commission ("the Commission" or "CPSC") proposes a mandatory safety standard applicable to bicycle helmets.<sup>1</sup> This proposal modifies the bicycle helmet standard proposed by the Commission in the Federal Register of August 15, 1994. 59 FR 41719.

The Commission seeks comments from interested members of the public on the revised proposed standard. Comments should be limited to those aspects of the proposed standard that have changed substantively from the earlier proposal, or that are affected by a substantive change.

Because of the growing use of helmets, other nations may be developing or revising safety standards for bicycle helmets. Accordingly, the Commission invites comments from counterpart agencies in foreign governments, foreign standards developers, and others who might be interested in this proposed standard. This invitation is in addition to the routine international notification of this proposed rule that is provided by the World Trade Organization Agreement on Technical Barriers to Trade.

*Background.* Head injury is a leading cause of accidental death and disability among children in the United States, resulting in over 100,000 hospitalizations every year. Studies have shown that children under the age

of 14 are more likely to sustain head injuries than adults, and that children's head injuries are often more severe than those sustained by adults.

In general, head injuries fall under one of two main categories—focal and diffuse. Focal injuries are limited to the area of impact, and include injuries such as contusions, hematomas, lacerations, and fractures. Diffuse brain injuries (also known as diffuse axonal injury) involve trauma to the neural and vascular elements of the brain at the microscopic level. The effects of such diffuse damage may vary from a completely reversible injury, such as a mild concussion, to prolonged coma and death.

Based on data from CPSC's National Electronic Injury Surveillance System ("NEISS"), an estimated 606,000 bicycle-related injuries were treated in U.S. hospital emergency rooms in 1994. In addition, about 1,000 bicycle-related fatalities occur each year, according to the National Safety Council.

A Commission study of bicycle use and hazard patterns in 1993 indicated that almost one-third of the injuries involved the head.<sup>2</sup> Published data indicate that, in recent years, almost two-thirds of all bicycle-related deaths involved head injury.<sup>3</sup>

Younger children are at particular risk of head injury. The Commission's 1993 study indicated that when other factors were held constant statistically, the injury risk for children under age 15 was over 5 times the risk for older riders. About one-half of the injuries to children under the age of 10 involved the head, compared to about one-fifth of the injuries to older riders. Children were also less likely to have been wearing a helmet at the time of a bicycle-related incident than were adults.

Research has shown that helmets may reduce the risk of head injury to bicyclists by about 85 percent, and the risk of brain injury by about 88 percent.<sup>4</sup> The Commission's Bicycle Use Study

<sup>2</sup>Gregory B. Rodgers, Deborah K. Tinsworth, Curtis Polen, Suzanne Cassidy, Celestine M. Trainor, Scott R. Heh, Mary F. Donaldson, "Bicycle Use and Hazard Patterns in the United States," U.S. Consumer Product Safety Commission (June 1994) ("Bicycle Use Study").

<sup>3</sup>Jeffrey J. Sachs, MPH; Patricia Holmgren, M.S.; Suzanne M. Smith, M.D.; and Daniel M. Sosin, M.D., "Bicycle-Associated Head Injuries and Deaths in the United States from 1984 through 1988," *Journal of the American Medical Association* 266 (December 1991): 3016-3018.

<sup>4</sup>Robert S. Thompson, M.D.; Frederic P. Rivara, M.D.; and Diane C. Thompson, M.S., "A Case Control Study of the Effectiveness of Bicycle Safety Helmets," *The New England Journal of Medicine* 320 (May 1989): 1361-1367.

<sup>1</sup>The Commission approved this Federal Register notice by a vote of 2-1. Chairman Ann Brown and Commissioner Thomas H. Moore voted to approve it as published. Commissioner Mary Sheila Gall voted to approve the proposed rule with a change, which was not adopted by the Commission, to give companies more time to comply with agency requests for records.

found that about 18 percent of bicyclists wear helmets.<sup>5</sup>

On June 16, 1994, the Children's Bicycle Helmet Safety Act of 1994 (the "Act" or "the Bicycle Helmet Safety Act") was enacted. 15 U.S.C. 6001–6006. Section 205 of this Act provides that bicycle helmets manufactured more than 9 months from that date shall conform to at least one of the following interim safety standards: (1) The American National Standards Institute (ANSI) standard designated as Z90.4–1984, (2) the Snell Memorial Foundation standard designated as B–90, (3) the ASTM (formerly the American Society for Testing and Materials) standard designated as F 1447, or (4) any other standard that the Commission determines is appropriate. 15 U.S.C. 6004 (a)–(b). On March 23, 1995, the Commission published its determination that five additional voluntary safety standards for bicycle helmets are appropriate as interim mandatory standards. 60 FR 15,231. These standards are ASTM F 1447–1994, Snell B–90S, N–94, and B–95, and the Canadian voluntary standard CAN/CSA–D113.2–M89. In that notice, the Commission also clarified that the ASTM standard F 1447 referred to in the Act is the 1993 version of that standard. The interim standards are codified at 16 CFR 1203.

Section 205(c) of the Act directed the Consumer Product Safety Commission to begin a proceeding under the Administrative Procedure Act, 5 U.S.C. 553, to:

1. Review the requirements of the interim standards described above and establish a final standard based on such requirements;

2. Include in the final standard a provision to protect against the risk of helmets coming off the heads of bicycle riders;

3. Include in the final standard provisions that address the risk of injury to children; and

4. Include additional provisions as appropriate. 15 U.S.C. 6004(c).

Section 205(c) the Act provides that the final standard shall take effect 1 year from the date it is issued. 15 U.S.C. 6004(c). Section 205(d) of the Act provides that failure to conform to an interim standard shall be considered a violation of a consumer product safety standard issued under the Consumer Product Safety Act ("CPSA"), 15 U.S.C. 2051–2084. Section 205(d) also provides that the final standard shall be considered to be a consumer product safety standard issued under the CPSA. However, section 205(c) of the Act

provides that the provisions of the CPSA regarding rulemaking procedures, statutory findings, and judicial review (15 U.S.C. 2056, 2058, 2060, and 2079(d)) shall not apply to this proceeding or to the final standard. 15 U.S.C. 6004(c). When the final standard becomes effective, it will be codified at 16 CFR 1203 and will replace the interim standards. 15 U.S.C. 6004(d).

#### B. Originally Proposed Standard

The Commission reviewed the bicycle helmet standards identified in the Act (ANSI, ASTM, and Snell), as well as international bicycle helmet standards and draft revisions of the ANSI, ASTM, and Snell standards that were then under consideration. Based on this review, the Commission developed a proposed final safety standard for bicycle helmets. 59 FR 41,719 (August 15, 1994).

The major features of the originally proposed standard were as follows:

1. Impact attenuation. The originally proposed standard measures the ability of the helmet to protect the head in a collision by securing the helmet on a headform and dropping the helmet/headform assembly from various heights onto a fixed steel anvil. The original proposal specified a constant mass of 5 kg for the drop assembly (not including the helmet). However, the Commission requested comment on the alternative of specifying a different drop mass for each headform size.

Under the proposed standard, the helmet is tested with three types of anvils (flat, hemispherical, and "curbstone," as shown in Figures 11, 12, and 13 of the revised proposed standard published in this notice). These anvils represent types of surfaces that may be encountered in actual riding conditions. Instrumentation within the headform records the headform's impact in multiples of the acceleration due to gravity ("g"). Impact tests are performed on different helmets, each of which has been subjected to one of four environmental conditions. These environments are: ambient (room temperature), high temperature (117–127 °F), low temperature (3–9 °F), and immersion in water for 4–24 hours.

Impacts are specified on a flat anvil from a height of 2 meters and on hemispherical and curbstone anvils from a height of 1.2 meters. Consistent with the requirements of the ANSI, Snell, and ASTM standards, the peak headform acceleration of any impact shall not exceed 300 g for an adult helmet, the value originally proposed for both adult and child helmets. In addition, maximum time limits of 6 milliseconds ("ms") and 3 ms were

originally proposed for the allowable duration of the impact at the 150-g and 200-g levels, respectively.

One difference from the ANSI, ASTM, and Snell standards that was originally proposed for the mandatory standard was the designation for the area of the helmet that must provide impact protection. The originally proposed area of impact protection for the CPSC standard was reached by combining the ANSI and ASTM procedures. The procedure for defining the area of the helmet subject to impact attenuation testing is described at § 1203.11.

2. Children's helmets. The originally proposed mandatory standard specified an increased area of head coverage for small children. A study by Biokinetics & Associates Ltd. found differences in anthropometric characteristics between young children's heads and older children's and adult heads.<sup>6</sup> This study led to an ASTM proposal to change the position of the basic plane (an anthropometric reference plane that includes the external ear openings and the bottom edges of the eye sockets) on the smallest test headform to be more representative of children ages 4 years and under. Originally, § 1203.11(b) proposed an extent-of-protection requirement for helmets intended for children 4 years and under based on the adjusted basic plane.

3. Retention system. The dynamic strength of the retention system test addresses the strength of the chin strap to ensure against breakage or excessive elongation of the strap that may contribute to a helmet coming off the head during an accident.

The test requires that the chin strap remain intact and not elongate more than 30 mm (1.2 inches) when subjected to a "shock load" of a 4-kg (8.8-lb) weight falling a distance of 0.6 m (2 ft) onto a steel stop anvil (see Figure 8). This test is performed on one helmet under ambient conditions and on three other helmets after each is subjected to one of the different hot, cold, and wet environments.

4. Peripheral vision. Section 1203.14 of the originally proposed mandatory standard requires that a helmet shall allow a field of vision of 105 degrees to both the left and right of straight ahead. This requirement is consistent with the ANSI, ASTM, and Snell standards.

5. Labels and instructions. Section 1203.6 of the proposed mandatory standard requires certain labels on the helmet, which are consistent with all

<sup>6</sup>Heh, S., Log of ASTM F08.53 Headgear Subcommittee Meeting held May 21, 1992. Date of Entry—June 17, 1992. Office of the Secretary, U.S. Consumer Product Safety Commission, Washington, D.C. 20207.

<sup>5</sup>Supra note 1.

three U.S. voluntary standards. These labels provide the model designation and warnings regarding the protective limitations of the helmet. The labels also provide instructions regarding how to care for the helmet and what to do if the helmet receives an impact. The labels also must carry the statement "Not for Motor Vehicle Use" and a warning that for maximum protection the helmet must be fitted and attached properly to the wearer's head in accordance with the manufacturer's fitting instructions.

The proposed mandatory standard also requires that helmets be accompanied by fitting and positioning instructions, including graphic representation of proper positioning. As noted above, the proposed mandatory standard has performance criteria for the effectiveness of the retention system in keeping a helmet on the wearer's head. However, these criteria may not be effective if the helmet is not well matched to the wearer's head and carefully adjusted to obtain the best fit. Thus, the proposed mandatory standard contains the labeling requirement described above to help ensure that users will purchase the proper helmet and adjust it correctly.

To avoid damaging the helmet by contacting it with harmful common substances, the helmet must be labeled with any recommended cleaning agents, a list of any known common substances that will cause damage, and instructions to avoid contact between such substances and the helmet.

6. Roll off. The originally proposed mandatory standard specified a test procedure and requirement for the retention system's effectiveness in preventing a helmet from "rolling off" a head. The procedure specifies a dynamic impact load of a 4-kg (8.8-lb) weight dropped from a height of 0.6 m (2 ft) to impact a steel stop anvil. This load is applied to the edge of a helmet that is placed on a headform on a support stand (see Figure 7). The helmet fails if it comes off the headform during the test.

These safety requirements, which are proposed pursuant to the Bicycle Helmet Safety Act, are found in Subpart A of the proposed Safety Standard for Bicycle Helmets. The comments received in response to the original proposal, the Commission's responses to these comments, and other changes to the original proposal are discussed in section C of this notice.

Under the authority of section 14(a) of the CPSA, the Commission also proposed certification testing and labeling requirements to ensure that bicycle helmets meet the standard's

safety requirements. These certification requirements are found in Subpart B of the proposed Safety Standard for Bicycle Helmets and are discussed in section D of this notice.

Also, under the authority of section 16(b) of the CPSA, the Commission proposed requirements that records be kept of the required certification testing. These recordkeeping requirements are found in Subpart C of the proposed Safety Standard for Bicycle Helmets and are discussed in section E of this notice.

The interim standards, which are currently codified as 16 CFR 1203, will continue to apply to bicycle helmets manufactured from March 16, 1995, to the date that the final standard becomes effective. Accordingly, the interim standards will continue to be codified, as Subpart D of the standard.

As discussed below, although the Commission is proposing certain changes to the standard, the revised proposal still addresses each of the elements in the original proposal.

The Commission received 37 comments on the proposed bicycle helmet standard from 30 individuals and organizations. After considering these comments and other available information, the Commission decided to propose certain revisions to the originally proposed standard. The proposed revisions are discussed in sections C-E of this notice.

#### C. The Revised Proposed Standard—Comments, Responses and Other Changes

*Comment:* Definition of bicycle helmet. The original proposal defined bicycle helmet as "any headgear marketed as suitable for providing protection from head injuries while riding a bicycle." One comment suggested that the definition of a product should not be in terms of how it is marketed.

*Response:* The Commission disagrees with this comment. It is important that all products marketed as suitable for providing protection from head injuries while bicycling meet the applicable safety standard. However, the Commission proposes to amend the definition to include not only products specifically marketed for use as a bicycle helmet but also those products that can be reasonably foreseen to be used for that purpose.

*Comment:* Compliance with third-party standards as compliance with the rule. The Snell Memorial Foundation urged that the following statement be added to the certification portion of the rule that describes a reasonable testing program: "Helmets that are certified by the Snell Memorial Foundation to the

Snell B-95 or Snell N-94 Standards are considered to be in compliance with this regulation."

*Response:* One of the objectives of the Children's Bicycle Helmet Safety Act of 1994 is to establish a unified bicycle helmet safety standard that is recognized nationally by all manufacturers and consumers. The Commission believes it would be contrary to the intent of the Act to provide that certified conformance to any particular existing voluntary standard is compliance with the mandatory rule.

Allowing third-party certification to a voluntary standard to serve as compliance to the mandatory rule would not adequately deal with the issue of recalls or other corrective actions if defective helmets are nonetheless produced. A third party can only decertify helmets that do not meet its standard and can only request that the responsible firm take appropriate corrective action for previously produced helmets. CPSC, on the other hand, has the authority to order a firm to take corrective actions if necessary and to assess penalties where appropriate. Accordingly, the Commission declines to adopt the language requested by this commenter.

*Comment:* Multiple-activity helmets. Some commenters recommended that the CPSC include provisions for children's bicycle helmets so that helmets would provide protection in activities in addition to bicycling, such as skateboarding, skating, sledding, and the like. Two commenters recommended that the CPSC bike helmet standard also apply to helmets for roller skating and in-line skating. Other comments stated that the Commission should not delay promulgation of the bike helmet standard while multi-activity issues are explored.

*Response:* Recent forums on head protection concluded that there is a need to develop helmets that are suitable for use in a number of recreational activities, not just bicycling.<sup>7</sup> However, the CPSC's authority under the Children's Bicycle Helmet Safety Act of 1994 is to set mandatory requirements for bicycle helmets. Establishing criteria for products other than bicycle helmets would require the Commission to follow the procedures and make the findings

<sup>7</sup> Forum on Head Protection in Recreational Sports, Harborview Injury Prevention and Research Center (February 18, 1994); Chairman's Roundtable, Multi-Activity Helmets, U.S. Consumer Product Safety Commission (September 19, 1994).

prescribed by the CPSA or the Federal Hazardous Substances Act ("FHSA").

In March 1994, Snell established the N-94 Standard For Protective Headgear For Use in Non-Motorized Sports. This standard provides greater head coverage than current bicycle helmet standards, tests for multiple impacts at a single location on the helmet, and tests to see if the helmet will roll off on impact. However, the Commission lacks data that multiple impacts at a single location are a factor in injuries to persons wearing bicycle helmets or that greater helmet coverage is needed for bicycle accidents. Furthermore, the use of an additional anvil in the Snell N-94 test may preclude the use of some current vent designs used in bicycle helmets. The Commission is aware of only a few helmets currently on the market that are certified to this standard.

Activities like roller skating, in-line skating, and skateboarding are typically conducted on the same types of surfaces as bicycling and can generate speeds similar to bicycling. In addition, these other activities do not put the user at a higher height than when using a bicycle. Thus, fall heights can be expected to be similar. It is reasonable to assume that the test requirements in the bicycle helmet regulation would allow the helmet to provide some protection for other activities—such as in-line skating, roller skating and skateboarding—until multiple-activity helmets become widely available. However, the Commission does not have sufficient data on the benefits and costs of additional features directed at injuries incurred other than bicycling to make the findings that would be required by either the CPSA or FHSA. Also, procedures in addition to those required by the Bicycle Helmet Safety Act would have to be followed. The Commission does not want to delay establishment of a mandatory bicycle helmet standard in order to pursue rulemaking for other types of helmets. Accordingly, this proposed regulation only addresses bicycle helmets.

*Comment:* General construction provisions. Section 1203.5 of the originally proposed mandatory standard included several provisions that addressed general construction characteristics of a bicycle helmet. These provisions specified that helmets shall be designed to reduce the acceleration forces imparted to the wearer's head by an impact and to remain on the wearer's head during impact. It was also specified that helmets shall be constructed not to be harmful or potentially injurious to the wearer. For example, the original

proposal stated that the helmet surface shall not have projections that may increase the likelihood of injury to the rider during an accident. In addition, the original proposal provided that construction materials should be resistant to environmental conditions that may be reasonably expected during helmet use and storage and shall not be harmful to the wearer.

Some commenters on the proposed rule stated that many of the requirements in § 1203.5 are subjective, since they have no performance-related criteria. One respondent suggested that these sections be located in an informative annex rather than in the body of the standard.

*Response:* Sections 1203.5(a) and (d) of the original proposal—titled "General" and "Materials," respectively—contained no objective performance criteria to establish compliance. Section 1203.5(c)—"Retention System"—was redundant since it merely referenced test requirements elsewhere in the standard. Accordingly, the Commission is eliminating these paragraphs from the revised proposal.

The first proposed standard required that external projections must "readily break away" and internal projections shall be protected by "some means of cushioning." In response to the comments that this language was subjective, the Commission is revising the language to define more objective performance criteria. The revised requirement is that the helmet be examined after impact testing to determine whether there are any rigid internal projections that could contact the wearer's head.

*Comment:* Children's peak g-value. Some comments recommended that the peak g-value for children be dropped from 300 g to 250 g or 200 g. Some commenters suggested that no change be made in the g-value.

*Response:* Despite the high incidence of head injury among children, studies addressing mechanisms of injury and recovery are lacking. Therefore, even though children make up the majority of the population at risk for head injury, children's helmets sold on the market today generally are designed to meet the attenuation and absorption criteria established for the adult helmeted-headform drop tests. The criteria for testing and evaluating the performance of helmets have been established primarily on the basis of data derived from injury tolerance studies conducted on adults. This is a matter of some concern, since studies indicate that the type of head injury resulting from blunt

trauma may differ significantly between adults and children.

The skull is the brain's primary protection against blunt force trauma. The properties of the skull change significantly as a child matures. Cranial capacity reaches adult size by 5 years of age. At 18 months, the brain has attained almost 70% of its adult size and, by 5-8 years, it is 90% of adult size.

Most of the head growth beyond the first 5 years involves hardening of the skull and thickening of the soft tissue around the brain. Children appear to be at greater risk of diffuse brain injury because their skulls have a lower degree of calcification, which provides a reduced capacity to absorb an impact. This results in a greater transfer of the kinetic energy from the impact site to the brain tissue.

The differences in the type of head injuries sustained by children and adults should have some bearing on helmet design. Currently, no compensation has been made for the differences between adults and children in head injury tolerance levels regarding the bending strength of the skull.

Current United States bicycle helmet voluntary standards recommend that helmets limit an attenuation impact to below 300 g in order to reduce the risk of severe injury. However, for the reasons described above, this may be inadequate to protect children. Published reports have suggested reducing the g-value for children from 300 g to 150 to 250 g.<sup>8</sup>

A helmet may partially compensate for the flexibility of a child's skull. However, the interior dimensions of the helmet will not perfectly fit the skull. In an accident, point contact is likely to occur between the skull and the helmet, which will tend to flex the child's skull more than an adult's. Accordingly, the Commission concludes that a differential in the g criteria is needed between adults' and children's standards. The Commission proposes to lower the g-value to 250 g. This will provide a substantial extra margin of safety to account for the increased flexibility of children's skulls, without making the criterion so stringent that it is either not cost effective or results in helmets that are so heavy or bulky that their use would be discouraged.

<sup>8</sup> Corner JP, Whitney CW, O'Rourke N, and Morgan DE. Motorcycle and Bicycle Protective Helmets—Requirements. Dept. of Trans. and Comm., Federal Office of Road Safety, Australia, May 1987. Lane JC. Helmets for Child Bicyclists, Some Biomedical Considerations. Federal Dept. of Transport, Office of Road Safety, Australia, CR 47, 1986.

*Comment:* Drop mass. Several commenters favored a variable drop mass instead of the originally proposed 5 kg drop mass, which would have been used for testing both adults' and children's helmets. (The helmet's mass is not included in the drop mass.) Some respondents felt a reduced drop mass is especially important for testing young children's helmets. One respondent opposed lowering the drop mass, stating that there is no benefit in different drop masses for each headform.

*Response:* A 1979 study found that in head-first free fall, a child's body mass and orientation at impact have little influence on head loading (g-forces) during impact.<sup>9</sup> The study also explains that head loading in adult falls is influenced by a more complex relationship between head mass and body mass. This suggests that the actual head mass of a child is an important factor in determining head loading during impact.

The helmet liner is designed to absorb the energy of impact by deformation, and to deform at force levels below that which would cause head injury. However, children's heads have less mass and their skulls are more flexible than those of adults. Therefore, a child's head may not deform the helmet's foam padding during impact if the foam is designed to protect the heavier adult head. This lack of deformation may result in greater kinetic energy being transferred to a child's brain, possibly resulting in a greater likelihood of intracranial injury. This strongly suggests that children's helmets should be tested with a lower headform mass than helmets for adults.

The Commission's Directorate for Epidemiology and Health Sciences concluded that the head mass of children under the age of 5 years ranges from approximately 2.8 to 3.9 kg. Accordingly, the Commission is proposing a reduced drop assembly mass of 3.90 kg±0.1 kg for testing helmets for children under 5. The lower mass will better represent the head mass of children under 5 years of age than the 5 kg mass specified for testing helmets for older children and adults.

Testing helmets for children under 5 years with a more appropriate mass should lead to helmets that are better designed to accommodate maturational differences of a young child's head. An even lower mass is not feasible with current test rigs, because a drop assembly mass of less than 3.90 kg

would shift the center of gravity on current test equipment enough to potentially influence test results.

*Comment:* Extent of protection. Current U.S. voluntary bicycle helmet standards, and the originally proposed CPSC standard, specify an extent-of-protection boundary and an impact test line. The extent-of-protection boundary defines the area of the head that must be covered by the helmet. The impact line designates the lowest point on the helmet where the center of the anvil may be aligned for testing. A clearance is specified between the extent-of-protection boundary and the impact line to allow for the imprint of the test anvil.

A number of comments on the proposed standard concerned the extent-of-protection (or extent of coverage) requirements. One commenter stated that the extent-of-protection requirement was subjective since no test is applied in these areas. Some commenters believed the proposed extent-of-protection requirement was design-restrictive, since some helmets have features like rear vents that may rise above the extent of coverage line but nevertheless will provide protection if impacted on the test line.

*Response:* The Commission believes that a performance test using a single test line and no extent-of-protection requirement is adequate for testing the impact-attenuation capabilities of a helmet. Not requiring specific helmet coverage allows manufacturers the flexibility to include desirable features such as a central rear vent, provided the features do not hinder the helmet's ability to meet the impact requirements if tested anywhere on or above the test line. Accordingly, the Commission has deleted the extent-of-protection line from the revised proposed standard.

*Comment:* Extended coverage for young children's helmets. A number of commenters favored an extended area of coverage for young children's helmets. However, one commenter suggested that the coverage lines defined in the first CPSC-proposed standard were not practical, since portions of the test line extended lower than the edge of an impact headform.

*Response:* As noted above, young children's skulls lack the calcification of older children's and adult skulls. This is especially true of children under 5 years old, where the curve of head growth and skull development is steepest. The temporal region (area above and around the ear) is much thinner than other parts of the skull. As a result, a much smaller force at the temporal region can cause a serious injury than at other regions of the skull. Accordingly, the Commission concludes that helmets for children

under 5 years should have a greater area of protection than those for older children and adults.

A recent proposal for infant helmet test lines by the ASTM Headgear Subcommittee Infant/Toddler Working Group specifies a "two-step" test line that is measured directly from the reference plane of the ISO A and ISO E headforms. The Commission considers the proposed ASTM test line appropriate for testing helmets for children under 5 years. The revised test line (Figure 5) provides an increased area of protection, including the temporal area.

Many young children's helmets on the market already provide an area of protection comparable to the revised CPSC proposal, though it is not required by any current U.S. bike helmet standard. The revised CPSC test line is easier to define and mark on a helmet than the first proposed CPSC line, which was referenced from an adjusted basic plane inclined 15 degrees from horizontal. This new test line does not extend lower than the edge of the headform.

*Comment:* Determining which helmets are for young children. A commenter asked for clarification of how to determine whether helmets are "intended" for children 4 years and under. The concern is that small helmets are often sold to adults with small heads.

*Response:* Typically, helmets for children are advertised and promoted with children's themes. The Commission will consider relevant factors, such as the design and marketing of a helmet, to determine whether it is intended for young children.

However, it is also important that consumers not mistake adult and older children's helmets that are the same size as helmets for children under 5 years of age as complying with the extra coverage and other special provisions required for helmets intended for children under 5. Therefore, the proposal provides that helmets specifically designed for children under 5 years of age be labeled to read: "Complies with CPSC Safety Standard for Bicycle Helmets for Children Under 5 years."

*Comment:* Peripheral vision. One commenter recommended revising the peripheral vision requirement to specify clearances of two separate 105° arcs from the center of each eye.

*Response:* The existing requirement of 105° clearance from the central point K is an established criterion that provides sufficient peripheral vision and allows for helmet protective coverage to the

<sup>9</sup>Mohan D, Bowman B, Snyder RG, and Frost, DR. A Biomechanical Analysis of Head Impact Injuries to Children. *J. Biomechanical Eng.* 101, pp. 250-260, U.S., Nov. 1979.

temporal area of the head. The proposed criterion is consistent with ANSI, ASTM, and Snell bicycle helmet standards, and with the FMVSS 218 motorcycle helmet standard. Therefore, the Commission makes no change to the proposed rule in response to this comment.

*Comment:* Vertical vision. One commenter suggested that the Commission adopt requirements for a vertical field of vision.

*Response:* The Commission has no information to indicate that bicycle helmets are posing a risk of injury due to inadequate upward or downward visual clearance. Accordingly, the Commission is not proposing a vertical field of vision requirement.

*Comment:* Dwell time. Several commenters disagreed with the dwell time specification in the first proposed CPSC standard.

*Response:* The Commission agrees with these comments, and the impact attenuation requirements are revised to specify only peak g as the evaluation criteria. This change was made because of a lack of scientific evidence to support application of dwell time as a bike helmet evaluation criterion.

*Comment:* Point loading requirements. Two commenters recommended that the Commission explore requirements to limit localized loads on the head that could be caused by strategically located high-density foam in helmet liners.

*Response:* The Commission has no information to indicate that some helmet designs may pose a risk of injury due to localized loading. Therefore, the Commission is not adding point loading requirements to the proposed rule at this time.

*Comment:* Daytime and nighttime conspicuity. Some comments related to possible requirements for helmets to improve a bicyclist's conspicuity in both daytime and nighttime conditions.

*Response:* Available data do not suggest that requirements to increase the visibility of bicyclists to others would significantly reduce daytime incidents. Data do show an increased risk of injury while bicycling during non-daylight hours.

Commission staff observed informal demonstrations which suggested that reflective material on bike helmets could enhance the conspicuity of a nighttime rider. However, at this time, the Commission lacks information on what requirements might be effective to achieve this goal.

The Commission intends to study this issue further in conjunction with planned work on evaluating the bicycle reflector requirements of CPSC's

mandatory requirements for bicycles. 16 CFR part 1512. After that work is completed, the Commission will decide whether to propose reflectivity requirements for bicycle helmets under the authority of the Children's Bicycle Helmet Safety Act of 1994. The Commission does not intend to delay issuance of the standard proposed in this notice to coincide with any reflectivity requirements that may be issued later.

*Comment:* Type of test rig. The originally proposed CPSC standard and the current interim mandatory standards allow the use of either a wire- or rail-guided impact test rig. A commenter recommended that the Commission adopt a free-fall test rig that has no rigid connection between the headform and the guide system. The Commission also received a proposal from one respondent to evaluate differences between twin-wire and monorail test rigs through exhaustive comparison testing.

*Response:* The Commission has no information to indicate that the suggested free-fall rig provides a more reliable test system or that it represents the dynamics of a human head impacting a surface better than other types of impact test equipment. Accordingly, the Commission is not proposing a free-fall test rig.

To avoid the possibility that different results would be obtained with the two types of test rigs, the Commission is specifying only the monorail test rig in the revised mandatory standard. The suggested tests would be helpful only if both test rigs were permitted.

For helmet certification testing, the regulation does not require that the manufacturer follow specifically the procedures of the CPSC standard. Thus, a manufacturer may choose to certify helmets by testing with a wire-guided test rig, provided the manufacturer assures that the helmets will meet the requirements of the CPSC standard when tested on the standard's monorail test rig.

*Comment:* Dynamic strength of retention system test—spinning rollers. A comment suggested that the "jaw rods" in the strength of retention system test rig should be rotatable.

*Response:* The requested feature is consistent with provisions in both the ANSI and Canadian standards and should help ensure that the maximum loading is transmitted to the retention system attachment points. Accordingly, the Commission has adopted this suggestion, and the revised proposal states that the "stirrups" that represent the bone structure of the jaw shall be freely spinning cylindrical rollers.

*Comment:* Dimensions of impact base. Three commenters recommended revising the standard to allow a smaller impact base. The commenters claimed that the dimensions specified in the proposed standard are not consistent with many existing test rigs.

*Response:* The Commission concludes that there is no known reason to exclude bases with smaller surface dimensions. Therefore, the Commission proposes to reduce the minimum surface area specification from 0.30 m<sup>2</sup> to 0.10 m<sup>2</sup>. This is consistent with impact base specifications in Snell helmet standards. The minimum mass of the impact base will still be the originally proposed 135 kg.

*Comment:* Instrument system check procedure. One commenter claimed that the instrument system check procedure specified in the first proposed rule only tests repeatability and not the accuracy of calibration. The commenter recommended that the procedure allow using a test headform, instead of the spherical impactor, for the instrument system check impacts. The commenter also suggested that the instrument system check be performed at least once a week.

*Response:* The commenter is correct that this instrument system check procedure primarily indicates that the test is producing repeatable results. The Commission's staff, using the procedures proposed in the originally proposed CPSC standard, obtained daily test results on an average of 12 drops of a spherical impactor on a modular elastomer programmer ("MEP") pad for 3 months. These tests yielded peak accelerations that met the originally proposed 389±8g criteria for the specified velocity range. The specific g-level that will be achieved depends on the MEP pad in use.

The Commission agrees that the instrument system check procedure should have greater flexibility to allow other laboratories to conduct testing based on their internal procedures. To help assure that consistent, reproducible data are obtained, the Commission proposes to continue the use of an impactor with a spherical impact surface, rather than impact headforms. The Commission also believes that the system check interval should not be longer than the beginning and end of each test day. The revised procedure, however, is not intended to prevent each laboratory from exercising sound engineering practice in establishing their specific methodology.

*Comment:* Distance between impacts. A commenter recommends revising the minimum distance between impact sites

from "one fifth the circumference of the helmet" to 120 mm.

*Response:* The Commission believes that 120 mm allows sufficient distance to minimize the effects of impact site proximity and provides a more straightforward measurement than the original one-fifth circumference criteria. Accordingly, the Commission proposes to adopt this recommendation.

*Comment:* Impact velocity tolerance. One commenter suggested a change from  $\pm 2\%$  to  $\pm 5\%$  for the tolerance on impact velocity.

*Response:* Tests by CPSC staff indicated that helmet impact velocities sometimes fell outside the proposed  $\pm 2\%$  tolerance. However, the impact velocities almost always were within  $\pm 3\%$  of the specified value. These tests showed that a  $\pm 3\%$  velocity tolerance is reasonable to maintain a test procedure that will reliably indicate the equipment is functioning properly. Accordingly, the velocity tolerance for helmet testing has been changed to  $\pm 3\%$  in the revised proposal.

*Comment:* Number of helmets required for testing. Comments were submitted requesting clarification of the number of helmet samples needed if attachments are provided with the helmet and if the helmet fits two headform sizes.

*Response:* An additional set of five helmets is needed for each additional attachment (e.g., visors or shields), or combinations thereof, sold for use with the helmet. Two additional samples per set are needed if the helmet fits two headform sizes.

*Comment:* Fit and testing. A comment stated that the standard needed to define "fit" as it relates to the process of selecting a test headform. Another comment provided a definition of "fit" and suggested that the language for selecting a test headform should more clearly explain how a sample set of helmets is divided when a helmet fits two different headform sizes.

*Response:* Language addressing these concerns, including a definition of "fit," has been added to the revised proposed rule.

*Comment:* Wet-conditioning. A number of commenters suggested that wet-conditioning by totally immersing the helmet in water is unrealistically severe. These commenters recommended that the Commission consider a water-spray environment.

*Response:* Commission testing of both immersed and water-sprayed helmets under various time durations showed no consistent trend in resulting peak acceleration levels. The immersion environment has the advantages of being easier to define and of subjecting

the helmet to a uniform conditioning exposure. Since testing showed that these commenters' concerns are unfounded, the Commission is retaining the immersion method of wet-conditioning in the proposed standard. However, additional specifications to standardize the wet environment are included.

*Comment:* Anvil test schedule. In the originally proposed standard, helmets 1 through 4 would have been tested with the flat and hemispherical anvils and the fifth helmet would be tested with the curbstone anvil. Two commenters suggested that there is no reason for a curbstone anvil impact to be treated differently from the flat and hemispherical anvil impacts.

*Response:* Each anvil has a unique "imprint" that could stress helmet designs differently. Therefore, the proposed standard has been revised so that each of test helmets 1 through 4 must meet the standard's impact criteria on four impacts, once with each of the three anvils and once with the anvil likely to result in the highest g-value. In the absence of an indication why another anvil would be more stringent, this fourth impact should be made with the anvil that produced the highest g-value in the previous three impacts. This is consistent with the test schedules of the Snell B-90(S), N-94, and B-95 helmet standards. (Under the revised proposal, the fifth helmet is tested only for positional stability.)

*Comment:* Helmet straps. A commenter recommended that the test procedure require that all slack be removed from the helmet straps when fastening the helmet to the test headform.

*Response:* The Commission agrees with this comment and has revised the proposal accordingly.

*Comment:* Lateral positional stability test. A commenter recommended the addition of a positional stability test in the lateral direction.

*Response:* The shape of the head is such that a properly fitted helmet is more likely to come off to the front or rear than to the side. Accordingly, the suggested lateral positioning test is unnecessary and not proposed.

*Comment:* Dynamic v. static-load positional stability test. One commenter suggested that the CPSC consider the static load positional stability test specified in the Canadian Standards Association ('CSA') bicycle helmet standard.

*Response:* The Commission believes that a dynamic test provides a more rigorous and realistic test of the restraint system, and has not adopted this suggested change.

*Comment:* Retention system test schedule. Some commenters asked that the CPSC consider a change to the test schedule so that at least one impact attenuation drop per sample would be performed prior to testing the retention system.

*Response:* CPSC staff testing did not show evidence to warrant a change in the sequence of retention system strength tests and impact tests. Accordingly, the Commission did not make this suggested change.

*Comment:* Use of a Rubber Pad on the Stop Anvil. One commenter recommended using a rubber pad between the steel drop mass and the stop anvil.

*Response:* The current ASTM and ANSI bicycle helmet standards do not require a rubber pad on the stop anvil. Based on comparison testing with and without a rubber pad, the Commission believes a rubber pad may produce a somewhat less stringent test. In the absence of any compelling reason to allow a rubber pad, therefore, the Commission has not changed the original proposal in this regard.

*Comment:* Self-release buckle. One commenter suggested that consideration be given to requirements for a self-release buckle that could be used to prevent strangulation if the helmet becomes caught. The commenter stated that there are now efforts in Europe to develop a test method that would ensure that buckles release or break away when subjected to a load equivalent to the weight of a child.

*Response:* The Commission has received reports of eight or nine deaths of children in Sweden and Norway that occurred when helmets became caught in trees or playground equipment, causing the child to become suspended by the chin strap. The Commission also has received reports of four nonfatal incidents in the United States since 1990, involving children of ages from 5 through 7 years, that occurred in the same fashion.

However, the Commission is not proposing requirements for a self-release buckle at this time. Considering the frequency and potential severity of head injuries in bicycle accidents, it is important to ensure that the helmet retention strength requirements are not compromised.

*Comment:* Use labeling. A number of comments concerned what information should be on a bike helmet label to inform consumers of the helmet's intended use. Some commenters favored the "Not For Motor Vehicle Use" label that was first proposed in the CPSC standard. Others felt the helmet should be labeled "For Bicycle Use Only."

*Response:* Currently, the ANSI and Snell voluntary standards require the label "For Bicycle Use Only." ASTM requires the label "Not for Motor Vehicle Use." The ASTM label was originally proposed because helmets are currently not made specifically for many non-bicycling activities, and people should not be discouraged from using a helmet for such activities by a label that states it is for bicycle use only.<sup>10</sup>

Other commenters, however, disagreed. One indicated that labeling "Not for Motor Vehicle Use" would stifle the development of separate helmet standards for other sports by voluntary organizations. The commenter believed that the "Not for Motor Vehicle Use" label suggests that a bicycle helmet is as effective for any non-motorized use as a helmet designed specifically for that activity.

The Commission has no evidence to support the contention that the ASTM label would inhibit the development of voluntary standards for non-motorized activities, and no evidence that a bicycle helmet is inadequate for some of these activities. For this reason, the Commission continues to propose the ASTM label, "Not for Motor Vehicle Use."

*Comment:* Label language and format. Some commenters suggested that the labels have specific language and format (e.g., the ANSI Warning Format).

*Response:* The Commission concludes that requiring specific language or format is inappropriate for bicycle helmet labels, because the variety of helmet styles and limited space on the interior of some helmets requires more flexibility in labeling.

*Comment:* Fit information on box. One commenter recommended that information on how to properly fit a helmet be required on the outside of the box.

*Response:* Children frequently report uncomfortable fit as a reason for not wearing a helmet all the time. It is reasonable to expect that improper fit was sometimes involved in complaints that helmets are uncomfortable. A label on the box could inform parents, before they buy the helmet, that they need to properly fit it to the child's head. However, the Commission is not aware of any information which indicates that such a label would be any more effective in assuring proper fit in use than the originally proposed instructions, which need not be on the

box. Accordingly, the Commission did not adopt this requested change.

*Comment:* Age-specific fit instructions. A commenter suggested that instructions on fitting a helmet be age-specific, so that a young child can read them.

*Response:* The Commission believes that age-specific instructions are unnecessary. The Commission lacks data showing that young children would act on age-specific instructions without urging from their parents. The originally proposed rule requires that the instruction sheet have graphics showing proper fit and position of the helmet. Children who can read may well be able to understand pictures showing proper fit. If not, the involvement of parents will likely be needed to convey the information on how to fit the helmet. Parents reading along with the child and discussing the pictures will likely deliver the message of proper fit.

*Comment:* Life of helmets. One commenter was concerned that the requirement of § 1203.6(a) that labels be legible for the life of the helmet was indefinite, because the life of a helmet is not known.

*Response:* Snell N-94 and B-95 helmet standards recommend that helmets be replaced after 5 years, or less if the manufacturer so recommends. The Commission concludes that the manufacturer or importer can determine the life of a particular helmet and assure that the labels will remain legible for that time. However, to make this requirement more definite, the Commission has amended the proposal to state that the labels shall remain legible for the intended design life of the helmet.

*Comment:* Helmet label—post-impact instructions. Some commenters requested that more direct information be provided about what to do with a helmet that has received an impact. One respondent stated that the current wording—"after receiving an impact, the helmet should be returned to manufacturer or be destroyed and replaced"—is ambiguous.

*Response:* Damage to a helmet from an impact is not always visible to the user. To describe on a label the circumstances in which helmets can be used again, can be fixed, or should be destroyed, if feasible at all, would make the label excessively wordy and likely to be skimmed or ignored. Therefore, the Commission concludes that the most specific and appropriate label would state that the helmet be returned to the manufacturer or destroyed after impact because any damage may not be visible to the user.

*Comment:* Neck injury protection. One commenter requested that the Commission include in this Federal Register notice a statement encouraging helmet manufacturers to "undertake the development and marketing of helmets that protect wearers from paralyzing neck injuries as a result of bicycle riding." The commenter referred to a report that indicates that bike helmets reduce the risk of head injury, but do not seem to have any effect in reducing the risk of serious neck injury.

*Response:* The Commission is aware of some efforts to reduce the risks of serious neck injury to bicyclists and participants in other recreational activities. The Commission always encourages research and development of safety-related devices. The Commission's staff will continue to monitor progress in this area. However, such devices are beyond the scope of this proceeding.

Other changes to the standard:

1. Impact-attenuation test—support assembly mass. The specification that the mass of the support assembly be no greater than 25 percent of the mass of the total drop assembly has been deleted. The boundary on the location for the center of gravity at § 1203.17(a)(3) will adequately limit the mass variance between the support assembly and the headform assembly.

2. Dynamic strength of retention system test—mass of the test rig. The ASTM F1446 standard specifies a support assembly mass in the range of 6 kg to 12 kg (including the drop mass). CPSC considered this range too wide when developing the first CPSC proposed standard and specified a mass of 6 kg with a tight tolerance of  $\pm 0.5$  kg. Subsequent consideration of this issue by the ASTM Headgear Subcommittee concluded that the assembly mass, excluding the drop weight, should be specified at 7 kg (11 kg including the drop weight) with a narrow tolerance. It was agreed that this rig applies a rigorous test of retention system strength and provides a system better suited for adapting an electronic displacement transducer to provide an accurate means for measuring elongation. Accordingly, the mass of the test rig has been revised to  $11 \text{ kg} \pm 0.5 \text{ kg}$ .

3. Dynamic strength of retention system test—deletion of preload ballast procedure. The procedure to place a preload ballast on top of the helmet has been deleted, since the more massive test rig in the revised proposal applies a sufficient preload to the helmet retention system to set the helmet fit padding against the test headform.

<sup>10</sup>In fact, despite the "For bicycle use only" label, the U.S. Amateur Confederation of Roller Skating adopted the ANSI and Snell helmet standards years ago for use in competitive roller skating.

4. Children's helmets—age range. The age break for special provisions for children's helmets was originally proposed for "children 4 years of age and under." The Commission has revised this language to "children under 5 years of age." This language clarifies the intent to include children until they reach their fifth birthday.

5. Older children and adults test line. The Commission is proposing a revised test line for adults' and older children's helmets, as shown in Figure 4. The portion of the test line that extends from the front of the headform and through its center portion is essentially the test line specified in the Snell B-90 standard. Compared to the test lines in other U.S. voluntary bike helmet standards to which bike helmets are currently certified, the Snell B-90 test line provides the greatest area of impact protection in the front and central portions of the head.

The rear step in the revised CPSC test line is derived by using a 20 mm clearance from the extent-of-protection boundary specified in the August 15, 1994, CPSC-proposed bike helmet standard. The revised test region provides an acceptable area of head protection while allowing for certain design flexibility.

6. Definition of Helmet Positioning Index ("HPI"). In the originally proposed standard, the HPI is defined as a distance that locates where the brow of the helmet should be positioned on the headform. In the revised proposal, the HPI is defined (§ 1203.4(f)) to be a specified distance from the reference plane (defined at § 1203.4(l) and Figure 3), rather than from the basic plane (defined at § 1203.4(a) and Figures 1 and 2). This change is made because impact headforms are cut away (above the basic plane) at the front brow area, making it difficult to measure for the HPI from the basic plane.

#### D. Certification Testing and Labeling

General. Section 14(a) of the CPSA, 15 U.S.C. 2063(a), requires that every manufacturer (including importers) and private labeler of a product that is subject to a consumer product safety standard issue a certificate that the product conforms to the applicable standard, and to base that certificate either on a test of each product or on a "reasonable testing program." Subpart B of the proposed Safety Standard for Bicycle Helmets contains these certification requirements.

The originally proposed certification rule. The proposed certification rule would require manufacturers of bicycle helmets that are manufactured 1 year after the issue date of the final standard

to affix permanent labels to the helmets. These labels would be the "certificates of compliance," as that term is used in § 14(a) of the CPSA. In the rule as originally proposed, all helmets would have had a label stating "Complies with CPSC Safety Standard for Bicycle Helmets (16 CFR 1203)". As explained below, the Commission is proposing somewhat different language for this label.

In some instances, the label on the bicycle helmet may not be immediately visible to the ultimate purchaser of the helmet prior to purchase because of packaging or other marketing practices. In those cases, it is proposed to advise consumers that the helmet meets the CPSC standard by a second label that would be on the helmet's container or, if the container is not visible, on the promotional material used in connection with the sale of the bicycle helmet.

The proposed certification label also contains the name and address of the manufacturer or importer, and identifies the production lot and the month and year the product was manufactured. Some of the required information may be in code.

The proposed certification rule requires manufacturers and importers to conduct a reasonable testing program to demonstrate that their bicycle helmets comply with the requirements of the standard. This reasonable testing program may be defined by the manufacturers, but must include either the tests prescribed in the standard or any other reasonable test procedures that assure compliance with the standard.

The originally proposed certification rule provides that the required testing program will test bicycle helmets sampled from each production lot in such a manner that there is a reasonable assurance that, if the bicycle helmets selected for testing meet the standard, all bicycle helmets in the lot will meet the standard.

The rule as originally proposed provided that bicycle helmet importers may rely in good faith on the foreign manufacturer's certificate of compliance, provided that a reasonable testing program has been performed by or for the foreign manufacturer; the importer is a U.S. resident or has a resident agent in the U.S.; and the required test records are kept in the U.S. As explained in section E below, the Commission proposes an exception to the requirement that test records must be kept in the U.S.

Comments, responses, and other changes to the certification testing and labeling requirements.

*Comment:* Production lot. One commenter stated that the rule should use "frequency of production" rather than the originally proposed "manufacturing lot" method to define a lot. The commenter explained that a manufacturing lot may encompass well over a million helmets if there are no changes in the design and production of a helmet. The commenter further explained that using frequency of production as the basis of the required reasonable testing program would require a firm to test after a specified number of helmets are produced. The commenter believes this would catch any defects more readily.

Another commenter stated that the production lot should be based on a monthly or yearly period, as a production lot could include helmets made well after the qualification testing.

Another commenter stated that the proposed definition of a production lot is unmanageable and may be expensive if a large number of helmets is produced and if there are any variations in the materials or processes in the production of the helmets. The commenter recommends that the definition of production lot be changed to either "sequentially labeled helmets bonded and tested separately, or a continuous production of like models produced in accordance with a quality system ensuring traceability for all component parts." Comment CC94-2-25.

In addition, a commenter stated that CPSC should allow manufacturers flexibility to establish their own recognized quality assurance program, such as Mil Std 105D, ISO 9000, or ASQC.

*Response:* The proposed rule defines a "production lot" as "a quantity of bicycle helmets from which certain bicycle helmets are selected for testing before certifying the lot." In the proposed regulation, the helmets in a lot must be essentially identical in design, construction, and materials. This definition of a production lot does not require the lot to be a specified number of helmets or a set time interval of helmet production, such as weekly or monthly. However, the definition in the proposed regulation does not prohibit certification based on testing after a specified number of helmets or period of time, provided that changes in the design, construction, or materials of the helmet are not made in that production lot. Firms must define their production lots in such a fashion that samples collected for testing represent all the bicycle helmets in a particular lot.

The firms responsible for certification know their products and manufacturing processes. These firms are in the best

position to define their production lot and set up a reasonable testing program in order to assure that their helmets meet the standard. Furthermore, testing on only a number or time basis could allow changes in the helmets' specifications during a production lot that might cause failing results to go undetected until the specified interval occurs. Accordingly, the Commission is not proposing to require testing after a specified number of helmets or time period of production.

A firm is not restricted in any way from establishing its own quality control program, including programs based on Mil Std. 105D, ISO 9000, or ASQC. Therefore, no change in the proposal is required in this regard.

The Commission believes that the certifying firms can determine, based on their production lot and methods of manufacture, how best to sample their lot in order to insure that the helmets meet the standard.

*Comment: Sampling.* A commenter stated that the testing program should provide for sampling over the entire production lot in order to discover the production of noncomplying helmets.

*Response:* Under the proposed rule, there is no requirement that sampling be conducted over the entire production lot. The rule states that the manufacturers and importers may set up their own testing program, provided the program is reasonable. The testing program is to insure that the helmets selected for testing represent all the helmets in the production lot. For the guidance of certifying firms, however, the Commission notes that a reasonable testing program would include both prototype and production testing, to provide reasonable assurance that all of the bicycle helmets in the production lot being tested comply with the requirements of the standard.

*Comment: Certification label.* A commenter inquired whether the content of the certification label could be divided among more than one label.

*Response:* The originally proposed regulation did not address whether the placement should be on one label. However, the restricted space inside helmets requires that there be flexibility for the format of the certification labeling.

The Commission's Division of Human Factors believes that the name and address of the manufacturer, private labeler, or importer, where required and not in code, should be on one label. This is so the consumer can associate the address with the name if it is necessary to contact the manufacturer, private labeler, or importer for repair or replacement of the helmet. Also, if it is

too difficult to find the information, consumers are less likely to follow through with repair or replacement of helmets. Accordingly, the Commission is revising the proposal to require that the name and address of firms required to be identified uncoded on the label must be on the same label.

However, the Commission now proposes to allow separate labels for the other required information, including the statement of compliance with the CPSC standard, the production lot, and the date of manufacture.

*Comment: Third-party testing.* A commenter suggested that certification testing should be conducted by a third party and include off-the-shelf random testing.

*Response:* Under the proposed rule, testing may be done by the manufacturer or importer or by a third party. Regardless of who performs the test, certifying firms are responsible for insuring compliance with all requirements of the standard. No data are available showing that third-party certification would improve compliance with the standard. Accordingly, there is no reason to change the proposal in that regard.

*Comment: Verification by CPSC.* A commenter suggested that the quality control testing program, testing equipment, and calibration of the testing equipment should be verified by CPSC.

*Response:* It would be an inefficient use of Commission resources to conduct either quality control verification or calibration of industry equipment, and the need to do this has not been demonstrated. Accordingly, the proposal is unchanged in this regard.

*Comment: Production testing of features unlikely to change.* A commenter stated that, once a model is certified, testing of helmets for peripheral vision, labeling, and instructions are unnecessary when performing routine compliance testing.

*Response:* The proposal allows each firm to establish its own testing program, provided the testing program is reasonable. No specific tests are required. When there have not been any changes in the design of the helmet, the firm may establish simple visual examination of some attributes of helmets. For example, if the manufacturer is assured that there has been no change in the physical dimensions of a helmet, there would be no need to retest the helmet's peripheral vision.

No change to the proposal is required to accommodate this commenter's concern.

*Comment: Certification label content—coding of foreign*

manufacturer. A commenter complained that the true name of the foreign manufacturer could be coded and not disclosed.

*Response:* The intent of the certification label is to identify a party that the consumer or the CPSC can contact concerning the safety of a helmet. In addition, consumers need to be able to contact someone in the U.S. for repair or replacement information. Since foreign manufacturers are not subject to this regulation, there is no need for consumers to know the identity of the foreign manufacturer. Accordingly, the importer may code the foreign manufacturer's name. Similarly, a private labeler may code the U.S. manufacturer or both the importer and foreign manufacturer.

The identification of the coded information must be available upon request from the importer or private labeler whose name is required to appear on the certification label. This adequately protects the interests the consumer and the CPSC have in this information. In addition, consumers could be confused if two firms were identified on the label. Accordingly, no change to the proposal is made in this regard.

*Comment: Certification label content—age of helmet.* A commenter stated that permitting the coding of the product lot number and the date of manufacture denies consumers important information on the age of their helmets, as manufacturers commonly recommend replacing the helmet after 5 years. The commenter contends also that it would be easier for consumers to recognize recalls of helmets identified by dates on the helmets rather than by other codes.

*Response:* Under the proposed rule, the manufacturer, importer, or private labeler may code the production lot and the date of production. These codes on the helmets should not place an undue burden on the consumer in determining the date of manufacture, as this information can be obtained if necessary.

Manufacturers recommend that helmets be replaced after 5 years of use. The manufacture date or code would not identify the "use" age of the helmet, which relates more to the date of purchase of the helmet.

During recalls, the affected firms will identify the model of the helmet, any codes, where it was sold, and the dates of distribution. A consumer can readily ascertain if his/her helmet is being recalled by examining the model number and the date of manufacture, which may be coded. Having the manufacturing date coded would not

interfere with identifying a recalled helmet. Accordingly, no change in the proposal is needed in this regard.

*Comment:* Certification label content—date of manufacture, serial number, and test date. One firm wants to provide the date of manufacture, serial number, and test date on the helmet, rather than a production lot.

*Response:* The proposed regulation requires the production lot and the month and year of manufacture to be identifiable from the label, but does not require or prohibit the serial number or test date. Both the production lot and the time of manufacture may be in code. The test date would not add any information for the consumer. The serial number, however, may serve as a code to identify the production lot and, if so, may be used in its place.

Accordingly, the proposed rule has been revised to state that a serial number may be used in place of a production lot identification if it can serve as a code to identify the production lot.

*Comment:* Certification label content—telephone number. A commenter contends that the telephone number of the responsible firm should be on the certification label.

*Response:* A telephone number is not required. This might place a burden on small firms with insufficient staff to handle a large number of calls. The consumer can contact the responsible firm in writing if the need arises.

*Other change:* Compliance labels. Section 14(a) of the CPSA requires that certifying firms issue a certificate certifying that the product conforms to all applicable consumer product safety standards. 15 U.S.C. 2063(a). Accordingly, the original proposal would have required the label statement "Complies with CPSC Safety Standard for Bicycle Helmets (16 CFR part 1203)".

The Commission wants to guard against the possibility that small adult helmets will be purchased for children. Therefore, the revised proposed standard requires that helmets that do not comply with the requirements for young children's helmets be labeled "Complies with CPSC Safety Standard for Bicycle Helmets for Adults and Children Age 5 and Older (16 CFR 1203)". Helmets intended for children 4 years of age and younger would bear a label stating "Complies with CPSC Safety Standard for Bicycle Helmets for Children Under 5 Years (16 CFR 1203)". Helmets that comply with both standards could be labeled "Complies with the CPSC Safety Standard for Bicycle Helmets for Persons of All Ages", or equivalent language.

#### E. Recordkeeping

Section 16(b) of the CPSA requires that: [e]very person who is a manufacturer, private labeler, or distributor of a consumer product shall establish and maintain such records, make such reports, and provide such information as the Commission may reasonably require for the purposes of implementing this Act, or to determine compliance with rules or orders prescribed under this Act.

15 U.S.C. 2065(b).

The rule as originally proposed would have required every entity issuing certificates of compliance for bicycle helmets to maintain written records that show the certificates are based on a reasonable testing program. As explained below, the Commission proposes to relax the requirement that the records be kept in written form.

These records were proposed to be maintained for a period of at least 3 years from the date of certification of the last bicycle helmet in each production lot and shall be available to any designated officer or employee of the Commission upon request in accordance with § 16(b) of the CPSA, 15 U.S.C. 2065(b).

*Comment:* Location of test records. The original proposal required that records be kept by the importer in the U.S. to allow inspection by CPSC staff within 48 hours of a request by an employee of the Commission. A commenter inquired whether test records must be kept in the U.S. in the case of a Canadian firm that is owned by a U.S. firm, if the records are available to the U.S. company upon request.

*Response:* The situation described by the commenter would achieve the result desired by the Commission. Accordingly, the Commission has revised the proposed regulation to state that if the importer can provide the records to the CPSC staff within the 48-hour time period, the records will be considered kept in the U.S.

*Comment:* Records on disk. The proposed regulation stated that every person issuing a certificate of compliance for bicycle helmets shall maintain written records that show certificates are based on a reasonable testing program. A commenter requested that the certification test records be allowed to be kept on disk instead of paper.

*Response:* The Commission agrees with the commenter that firms should be allowed to keep the records on disk, if the records can be made available upon request in an appropriate format. Accordingly, the Commission has

amended the proposal to state that certification test record results may be kept on paper, microfiche, computer disk, or other retrievable media. Where records are kept on computer disk or other retrievable media, the records shall be made available to the Commission upon request on paper copies, or via electronic mail in the same format as paper copies.

#### F. Regulatory Flexibility Act Certification

When an agency undertakes a rulemaking proceeding, the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., generally requires the agency to prepare proposed and final regulatory flexibility analyses describing the impact of the rule on small businesses and other small entities.

The purpose of the Regulatory Flexibility Act, as stated in section 2(b) (5 U.S.C. 602 note), is to require agencies, consistent with their objectives, to fit the requirements of regulations to the scale of the businesses, organizations, and governmental jurisdictions subject to the regulations. Section 605 of the Act provides that an agency is not required to prepare a regulatory flexibility analysis if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.

The Commission's Directorate for Economics has prepared a preliminary economic assessment of the safety standard for bicycle helmets. The proposed rule would establish performance requirements for bicycle helmets. The vast majority of helmets now sold conform to one (or more) of three existing voluntary standards. The one-time costs associated with the redesign and testing of helmets to the new performance standards are not known. On a per-unit basis, however, costs associated with redesign and testing are expected to be small. The Commission solicits comment on the costs of the redesign and testing of bicycle helmets that would be required by the proposed standard.

The vast majority of manufacturers now use third party testing and monitoring for product liability reasons, and are likely to continue to do so in the future. The proposed standard allows for self certification and monitoring, however, which is substantially less costly than third party testing and monitoring.

The proposed labeling requirement is unlikely to have a significant impact on small firms, since virtually all bicycle helmets now bear a permanent label on their inside surface. Industry sources

report that, given sufficient lead time to modify these labels, any increased cost of labeling would be insignificant.

Accordingly, for the reasons given above, the Commission preliminarily certifies that the proposed Safety Standard for Bicycle Helmets, if promulgated, will not have any significant economic effect on a substantial number of small entities.

#### G. Environmental Considerations

Pursuant to the National Environmental Policy Act, and in accordance with the Council on Environmental Quality regulations and CPSC procedures for environmental review, the Commission has assessed the possible environmental effects associated with the proposed safety standard for bicycle helmets.

The Commission's regulations at 16 CFR 1021.5(c)(1) and (2) state that safety standards and product labeling or certification rules for consumer products normally have little or no potential for affecting the human environment. Preliminary analysis of the potential impact of this proposed rule indicates that the rule is not expected to affect preexisting packaging or materials of construction now used by manufacturers. Existing inventories of finished products would not be rendered unusable, since section 9(g)(1) of the CPSA provides that standards apply only to products manufactured after the effective date. Changes in coverage areas for helmets may require modification or replacement of existing injection molds. However, molds are routinely replaced due to wear or to changes in style, and modified molds could be incorporated in this replacement process. Thus, the quantity of discarded molds attributable to the rule is likely to be small. Especially in view of the statutory 1-year effective date, it is unlikely that significant stocks of current labels would require disposal.

The requirements of the standard are not expected to have a significant effect on the materials used in production or packaging, or on the amount of materials discarded due to the regulation. Therefore, no significant environmental effects are expected from the proposed rule if it is adopted. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

#### H. Paperwork Reduction Act

As noted above, the requirements proposed below, if issued as a final rule, would require U.S. manufacturers and importers of bicycle helmets to conduct a reasonable testing program to ensure their products comply with the

standard. They are also required to keep records of such testing so that the Commission's staff can verify that the testing was conducted properly. This will enable the staff to obtain information indicating that a company's helmets comply with the standard, without having itself to test helmets. U.S. manufacturers and importers of bicycle helmets would also have to label their products with specified information.

For these reasons, the proposal published below contains "collection of information requirements" subject to the Paperwork Reduction Act of 1995, 15 U.S.C. 3501-3520, Pub. L. 104-13, 109 Stat. 163 (1995). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The control number may be displayed by publication in the Federal Register. Accordingly, the Commission has submitted the proposed collection of information requirements to OMB for review under section 3507(d) of the Paperwork Reduction Act of 1995. The title of the submission is "Safety Standard for Bicycle Helmets—Testing and Recordkeeping Requirements."

The Commission's staff estimates that there are about 30 manufacturers and importers subject to these collection of information requirements. There are an estimated 200 different models of bicycle helmets currently marketed in the U.S.

Industry sources advise the Commission's staff that the time that will be required to comply with the collection of information requirements will be from 100 to 150 hours per model per year. Therefore, the total amount of time required for compliance with these requirements will be 20,000 to 30,000 hours per year. However, these estimates are based on the amount of time that is currently expended in complying with the similar requirements that are in the various voluntary standards. Thus, the net burden of the proposed final collection of information requirements is expected to be insignificant, or at least a small fraction of the total hours given above. The Commission would like to receive comments on the activities and time required to comply with these requirements and how these differ from usual and customary current industry practices, on the accuracy of the Commission's burden estimate, and on how that burden could be reduced.

It is possible that firms will consider some of the records required to be provided to the Commission upon request to be trade secret or other

confidential commercial information. Under section 6(a)(2) of the CPSA, the Commission may not disclose information that contains or relates to a trade secret, or is of a type referred to in 18 U.S.C. 1905 or subject to 5 U.S.C. 552(b)(4), 15 U.S.C. 2055(a)(2). Under this section and 16 CFR 1015.18-.19, persons desiring confidential treatment for information must request that it not be disclosed. If the Commission's staff nevertheless determines that the information may be disclosed because it is not confidential, the person submitting the information will be given written notice at least 10 working days before the information is released. Thus, the submitter has an opportunity to seek judicial review of the Commission's determination before the information is released. Also, see 16 CFR part 1101. These procedures also apply to rulemaking comments for which the commenter seeks confidentiality.

Any person may also submit comments to OMB on these proposed collection of information requirements. OMB is required to make a decision concerning the collections of information contained in the proposed rule between 30 and 60 days after publication. Thus, although comments will be received by OMB until February 5, 1996, a comment to OMB is best assured of having its full effect if OMB receives it by January 5, 1996. Comments should be submitted to the Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for the Consumer Product Safety Commission. Persons filing comments with OMB are encouraged to send copies to the Commission's Office of the Secretary, with a caption or cover letter identifying the materials as comments submitted to OMB on the proposed collection of information requirements for bicycle helmets.

#### List of Subjects in 16 CFR Part 1203

Consumer protection, Bicycles, Incorporation by reference, Infants and children, Safety.

For the reasons given above, the Commission proposes to revise Part 1203 of Title 16 of the Code of Federal Regulations, to read as follows:

### **PART 1203—SAFETY STANDARD FOR BICYCLE HELMETS**

#### **Subpart A—The Standard**

- Sec.
- 1203.1 Scope and effective date.
  - 1203.2 Purpose.
  - 1203.3 Referenced documents.
  - 1203.4 Definitions.
  - 1203.5 Construction requirements - projections.
  - 1203.6 Labeling and instructions.

- 1203.7 Samples for testing.
- 1203.8 Conditioning environments.
- 1203.9 Test headforms.
- 1203.10 Selecting the test headform.
- 1203.11 Marking the test line.
- 1203.12 Test requirements.
- 1203.13 Test schedule.
- 1203.14 Peripheral vision test.
- 1203.15 Positional stability test (roll-off resistance).
- 1203.16 Dynamic strength of retention system test.
- 1203.17 Impact attenuation test.
- 1203.18 Reflectivity. [Reserved]

#### Subpart B—Certification

- 1203.30 Purpose and scope.
- 1203.31 Effective date.
- 1203.32 Definitions.
- 1203.33 Certification testing.
- 1203.34 Product certification and labeling by manufacturers (including importers).

#### Subpart C—Recordkeeping

- 1203.40 Effective date.
- 1203.41 Recordkeeping requirements.

#### Subpart D—Bicycle Helmets Manufactured From March 16, 1995, Through Date That Is 1 Year After The Final Rule Is Issued

- 1203.51 Purpose.
- 1203.52 Scope and effective date.
- 1203.53 Interim safety standards.

#### Figures to Part 1203

Authority: Secs. 201–207, Pub. L. 103–267, 108 Stat. 726–729, 15 U.S.C. 6001–6006.

#### Subpart A—The Standard

##### § 1203.1 Scope and effective date.

This standard describes test methods and defines minimum performance criteria for protective headgear used by bicyclists. The values stated in International System of Units (“SI”) measurements are the standard. The inch-pound values stated in parentheses are for information only. The standard shall become effective 1 year after publication of the final rule and shall apply to all bicycle helmets manufactured after that date. Bicycle helmets manufactured between March 16, 1995, and the date that is 1 year after publication of the final rule, inclusive, are subject to the requirements of Subpart D, rather than this Subpart A.

##### § 1203.2 Purpose.

The purpose and basis of this standard is to reduce the likelihood of serious injury and death to bicyclists resulting from impacts to the head, as provided in 15 U.S.C. 6001–6006.

##### § 1203.3 Referenced documents.

The following documents are referenced in this standard.

(a) Draft ISO/DIS Standard 6220–1983—Headforms for Use in the Testing of Protective Helmets.<sup>1</sup>

(b) Federal Motor Vehicle Safety Standard 218, Motorcycle Helmets.<sup>2</sup>

(c) SAE Recommended Practice SAE J211 OCT88, Instrumentation for Impact Tests.<sup>3</sup>

##### § 1203.4 Definitions

(a) Basic plane means an anatomical plane that includes the auditory meatuses (the external ear openings) and the inferior orbital rims (the bottom edges of the eye sockets). The ISO headforms are marked with a plane corresponding to this basic plane (see Figures 1 and 2 to this part).

(b) Bicycle helmet means any headgear that either is marketed as, or has a reasonably foreseeable use as, a device intended to provide protection from head injuries while riding a bicycle.

(c) Comfort or fit padding means resilient lining material used to configure the helmet for a range of different head sizes. This padding has no significant effect on impact attenuation.

(d) Coronal plane is an anatomical plane perpendicular to both the basic and midsagittal planes and containing the midpoint of a line connecting the right and left auditory meatuses. The ISO headforms are marked with a transverse plane corresponding to this coronal plane (see Figures 1 and 2).

(e) Field of vision is the angle of peripheral vision allowed by the helmet when positioned on the reference headform.

(f) Helmet positioning index (HPI) is the vertical distance from the brow of the helmet to the reference plane, when placed on a reference headform. The vertical distance shall be specified by the manufacturer for each size of headform the helmet fits.

(g) Midsagittal plane is an anatomical plane perpendicular to the basic plane and containing the midpoint of the line connecting the notches of the right and left inferior orbital ridges and the midpoint of the line connecting the superior rims of the right and left auditory meatuses. The ISO headforms are marked with a longitudinal plane corresponding to the midsagittal plane (see Figures 1 and 2 to this part).

(h) Modular elastomer programmer (MEP) is a cylindrical pad, typically consisting of a polyurethane rubber, used as a consistent impact medium for the systems check procedure.

(i) Preload ballast is a “bean bag” filled with lead shot placed on the helmet to secure its position on the headform. The mass of the preload ballast is 5 kg (11 lb).

(j) Projection is any part of the helmet, internal or external, that extends beyond the faired surface.

(k) Reference headform is a headform used as a measuring device and contoured in the same configuration as one of the test headforms A, E, J, M, and O defined in DRAFT ISO DIS 6220–1983. The reference headform shall include surface markings corresponding to the basic, coronal, midsagittal, and reference planes (see Figures 1 and 2 to this part).

(l) Reference plane is a plane marked on the ISO headforms at a specified distance above and parallel to the basic plane (see Figure 3 to this part).

(m) Retention system is the complete assembly that secures the helmet in a stable position on the wearer’s head.

(n) Shield means optional equipment for helmets that is used in place of goggles to protect the eyes.

(o) Spherical impactor is a 146 mm (5.75 in.) diameter aluminum sphere, with a mass of  $4005 \pm 5$  g ( $8.83 \pm 1.10$  lb), that is specifically machined for mounting onto the ball-arm connector of the drop-test assembly. The impactor is used to check the electronic equipment (see § 1203.17).

(p) Test headform is a solid model in the shape of a human head of sizes A, E, J, M, and O as defined in DRAFT ISO/DIS 6220–1983. Headforms used for the impact attenuation test shall be constructed of K–1A magnesium alloy or functionally equivalent metal. The test headforms shall include surface markings corresponding to the basic, coronal, midsagittal, and reference planes (see Figure 2 to this part).

(q) Test region is the area of the helmet, on and above a specified test line, that is subject to impact testing.

(r) Visor (peak) is optional helmet equipment for protection against sun or glare, and is sometimes used as a rock or dirt deflector.

##### § 1203.5 Construction requirements—projections.

Any unfaired projection extending more than 7 mm (0.28 in.) from the helmet’s outer surface shall break away or collapse when impacted with forces equivalent to those produced by the applicable impact-attenuation tests in § 1203.17 of this standard. Rigid

<sup>1</sup> Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

<sup>2</sup> Available from the Department of Transportation, National Highway Traffic Safety Administration, Office of Vehicle Safety Standards, 400 7th St. S.W., Washington D.C. 20590.

<sup>3</sup> Available from Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA 15096.

projections on the inner surface shall not exceed 2 mm (0.08 in.) and shall not make contact with the test headform after testing in accordance with § 1203.17.

#### § 1203.6 Labeling and instructions.

(a) Labeling. Each helmet shall be marked so that the following information is legible and easily visible to the user and is likely to remain on the helmet and legible throughout the intended design life of the helmet:

(1) Model designation.

(2) A warning to the user that no helmet can protect against all possible impacts.

(3) A warning that for maximum protection the helmet must be fitted and attached properly to the wearer's head in accordance with the manufacturer's fitting instructions.

(4) A warning to the user that the helmet may, after receiving an impact, be damaged to the point that it is no longer adequate to protect the head against further impacts, and that this damage may not be visible to the user. This label shall also state that a helmet that has sustained an impact should be returned to the manufacturer for competent inspection, or be destroyed and replaced.

(5) A warning to the user that the helmet can be damaged by contact with common substances (for example, certain solvents, cleaners, etc.), and that this damage may not be visible to the user. This label shall also state any recommended cleaning agents and procedures, list any known common substances that damage the helmet, and warn against contacting the helmet with these substances.

(6) The statement "Not For Motor Vehicle Use".

(b) Instructions. Each helmet shall have fitting and positioning instructions, including graphic representation of proper positioning.

#### § 1203.7 Samples for testing.

(a) General. Helmets shall be tested in the condition in which they are offered for sale. They must pass all tests, both with and without any attachments that may be offered by the helmet's manufacturer, and with all possible combinations of such attachments.

(b) Number of samples. Five samples of each size for each model and combination of attachments offered for sale are required to test conformance to this standard. If a helmet fits more than one size of test headform, two additional samples are needed for each additional headform size for the testing described in § 1203.10—Selecting the test headform.

#### § 1203.8 Conditioning environments.

Helmets shall be conditioned to one of the following environments prior to testing in accordance with the test schedule at § 1203.13. The barometric pressure in all conditioning environments shall be 75 to 110 kPa (22.2 to 32.6 inches of Hg). All test helmets shall be stabilized within this ambient range for at least 4 hours prior to further conditioning and testing. Storage or shipment within this ambient range satisfies this requirement.

(a) Ambient condition. The ambient condition of the test laboratory shall be within 17 °C to 27 °C (63 °F to 81 °F), and 20 to 80 percent relative humidity. The ambient test helmet does not need further conditioning.

(b) Low temperature. The helmet shall be kept at a temperature of -16 °C to -13 °C (3 °F to 9 °F) for 4 to 24 hours prior to testing.

(c) High temperature. The helmet shall be kept at a temperature of 47 °C to 53 °C (117 °F to 127 °F) for 4 to 24 hours prior to testing.

(d) Water immersion. The helmet shall be fully immersed "crown" down in potable water at a temperature of 17 °C to 27 °C (63 °F to 81 °F) to a crown depth of 305 mm±25 mm (12 in.±1 in.) for 4 to 24 hours prior to testing.

#### § 1203.9 Test headforms.

The headforms used for testing shall be sizes A, E, J, M, and O, as defined by DRAFT ISO/DIS 6220-1983. Headforms used for impact testing shall be constructed of K-1A magnesium alloy or other functionally equivalent metal and must have no resonant frequencies below 3000 hz.

#### § 1203.10 Selecting the test headform.

A helmet shall be tested on the appropriate size(s) of headform(s) on which it fits. Fit means that it is not physically difficult to put the helmet on the headform, and that the helmet's comfort or fit padding is partially compressed. A complete set of five helmets of each size and model shall be tested on the smallest size test headform on which they fit. Two additional helmets shall be tested on each of the larger headforms the helmets fit. Testing on the larger headform(s) will include at least one peripheral vision test, dynamic retention test, positional stability test, and impact attenuation test (complete set of four impacts) using the conditioning environment that produced the highest g value in the impact attenuation tests on the smallest headform the helmet fit.

#### § 1203.11 Marking the test line.

Prior to testing, the test line shall be determined for each helmet in the following manner.

(a) Position the helmet on the appropriate headform as specified by the manufacturer's head positioning index (HPI), with the brow parallel to the basic plane. Place a 5-kg (11-lb) preload ballast on top of the helmet to set the comfort or fit padding.

(b) Draw a test line on the outer surface of the helmet coinciding with the intersection of the surface of the helmet with the impact line planes defined from the reference headform as shown in:

(1) Figure 4 to this part for helmets intended for adults and for children 5 years of age and older.

(2) Figure 5 for helmets intended for children under 5 years of age.

(c) The center of the impact sites shall be selected at any point on the helmet on or above the test line.

#### § 1203.12 Test requirements.

(a) Peripheral vision. The helmet shall allow unobstructed vision through a minimum of 105° to the left and right sides of the midsagittal plane when measured in accordance with § 1203.14 of this standard.

(b) Positional stability. The helmet shall not release from the test headform when tested in accordance with § 1203.15 of this standard.

(c) Dynamic strength of retention system. The retention system shall remain intact without elongating more than 30 mm (1.2 in.) when tested in accordance with § 1203.16 of this standard.

(d) Impact attenuation criteria. (1) For bicycle helmets intended for adults and children 5 years and older. The peak acceleration of any impact shall not exceed 300 g when the helmet is tested in accordance with § 1203.17 of this standard.

(2) For bicycle helmets intended for children under 5 years. The peak acceleration of any impact shall not exceed 250 g when the helmet is tested in accordance with § 1203.17 of this standard.

#### § 1203.13 Test schedule.

(a) One of the set of five helmets shall be tested for peripheral vision in accordance with § 1203.14 of this standard.

(b) Helmet samples 1 through 4 shall be conditioned in the ambient, high temperature, low temperature, and water immersion environments, respectively. Helmet 5 shall be conditioned in the ambient condition.

(c) Testing must begin within 2 minutes after the helmet is removed

from the conditioning environment. The helmet shall be returned to the conditioning environment within 3 minutes after it was removed for a minimum of 2 minutes before testing is resumed. If the helmet is out of the conditioning environment for longer than 3 minutes, it shall be reconditioned for 5 minutes for each minute it is out of the conditioning environment beyond

the allotted 3 minutes before testing is resumed.  
 (d) Helmets shall be tested for dynamic strength of the retention system prior to being tested for impact attenuation. Helmets 1 through 4 (conditioned in ambient, high temperature, low temperature, and water immersion environments) shall be tested in accordance with the dynamic retention system strength test at

§ 1203.16. Helmets 1 through 4 shall then be tested in accordance with the impact attenuation tests on the flat, hemispherical, and curbstone anvils in accordance with the procedure at § 1203.17. Helmet 5 (conditioned in an ambient environment) shall be tested in accordance with the positional stability tests at § 1203.15. Table 1203.13 summarizes the test schedule.

TABLE 1203.13.—TEST SCHEDULE

	§ 1203.14 Peripheral vision	§ 1203.15 Positional stability	§ 1203.16 Retention system strength	§ 1203.17 Impact tests—4 im- pacts per helmet
Helmet 1—Ambient .....	X		X	1 Flat X 1 Hemi. X 1 Curb. X 1 TBD* X
Helmet 2—High Temperature .....			X	1 Flat X 1 Hemi. X 1 Curb. X 1 TBD* X
Helmet 3—Low Temperature .....			X	1 Flat X 1 Hemi. X 1 Curb. X 1 TBD* X
Helmet 4—Water Immersion .....			X	1 Flat X 1 Hemi. X 1 Curb. X 1 TBD* X
Helmet 5—Ambient .....	X	X		

\* To Be Determined. The fourth impact can be on any of the anvils, at the discretion of the test personnel.

**§ 1203.14. Peripheral vision test.**

Position the helmet on a reference headform in accordance with the HPI and place a 5-kg (11-lb) preload ballast on top of the helmet to set the comfort or fit padding. (Note: Peripheral vision clearance may be determined when the helmet is positioned for marking the test lines.) Peripheral vision is measured horizontally from each side of the midsagittal plane around the point K (see Figure 6 to this part). Point K is located on the front surface of the reference headform at the intersection of the basic and midsagittal planes. The vision shall not be obstructed within 105 degrees on each side of the midsagittal plane from point K.

**§ 1203.15 Positional stability test (roll-off resistance).**

(a) Test equipment. (1) Headforms. The geometry of the test headforms shall comply with the dimensions of the full chin ISO reference headforms sizes A, E, J, M, and O.  
 (2) Test fixture. The headform shall be secured in a test fixture with its vertical axis pointing downward and 45 degrees to the direction of gravity (see Figure 7 to this part). The test fixture shall

permit rotation of the headform about its vertical axis and include means to lock the headform in the face up and face down positions.

(3) Dynamic impact apparatus. A dynamic impact apparatus shall be used to apply a shock load to a helmet secured to a test headform. The dynamic impact apparatus shall allow a 4-kg (8.8-lb) drop weight to slide in a guided free fall to impact a rigid stop anvil (see Figure 7). The entire mass of the dynamic impact assembly, including the drop weight, shall be no more than 5 kg (11 lb).

(4) Strap or cable. A hook and flexible strap or cable shall be used to connect the dynamic impact apparatus to the helmet. The strap or cable shall be of a material having an elongation of no more than 5 mm (0.20 in.) per 300 mm (11.8 in.) when loaded with a 22-kg (48.5 lb) weight in a free hanging position.

(b) Test procedure. (1) Orient the headform so that its face is down, and lock it in that orientation.

(2) Place the helmet on the appropriate size full chin headform in accordance with the HPI and fasten the retention system in accordance with the

manufacturer's instructions. Adjust the straps to remove any slack.

(3) Suspend the dynamic impact system from the helmet by positioning the flexible strap over the helmet along the midsagittal plane and attaching the hook over the edge of the helmet as shown in Figure 7.

(4) Raise the drop weight to a height of 0.6 m (2 ft) from the stop anvil and release it, so that it impacts the stop anvil.

(5) The test shall be repeated with the headform face pointing upwards, so that the helmet is pulled from front to rear.

**§ 1203.16 Dynamic strength of retention system test.**

(a) Test equipment. (1) ISO headforms without the lower chin portion shall be used.

(2) The retention system strength test equipment shall consist of a dynamic impact apparatus that allows a 4-kg (8.8-lb) drop weight to slide in a guided free fall to impact a rigid stop anvil (see Figure 8). Two cylindrical rollers that spin freely, with a diameter of 12.5±0.5 mm (0.49 in.±0.02 in.) that have a center-to-center distance of 76.0±1 mm (3.0±0.04 in.), shall make up a stirrup that represents the bone structure of the

lower jaw. The entire dynamic test apparatus hangs freely on the retention system. The entire mass of the support assembly, including the 4-kg (8.8-lb) drop weight, shall be 11 kg $\pm$ 0.5 kg (24.2 lb $\pm$ 1.1 lb).

(b) Test procedure. (1) Place the helmet on the appropriate size headform on the test device according to the HPI. Fasten the strap of the retention system under the stirrup.

(2) Mark the pre-test position of the retention system, with the entire dynamic test apparatus hanging freely on the retention system.

(3) Raise the 4-kg (8.8-lb) drop weight to a height of 0.6 m (2 ft) from the stop anvil and release it, so that it impacts the stop anvil.

(4) Record the maximum elongation of the retention system during the impact. A marker system or a displacement transducer, as shown in Figure 8, are two methods of measuring the elongation.

#### § 1203.17 Impact attenuation test.

(a) Test instruments and equipment.

(1) Measurement of impact attenuation. Impact attenuation is determined by measuring the acceleration of the test headform during impact. Acceleration is measured with a uniaxial accelerometer that is capable of withstanding a shock of at least 1000 g. The helmet is secured onto the headform and dropped in a guided free fall, using a monorail test apparatus (see Figure 9), onto an anvil fixed to a rigid base. The base shall consist of a solid mass of at least 135 kg (298 lb), the upper surface of which shall consist of a steel plate at least 12 mm (0.47 in.) thick and having a surface area of at least 0.10 m<sup>2</sup> (1.08 ft<sup>2</sup>).

(2) Accelerometer. A uniaxial accelerometer is mounted at the center of gravity of the test headform, with the sensitive axis aligned within 5 degrees of vertical when the test headform is in the impact position. The acceleration data channel and filtering shall comply with SAE Recommended Practice J211 OCT88, Instrumentation for Impact Tests, Requirements for Channel Class 1000.

(3) Headform and drop assembly—centers of gravity. The center of gravity of the test headform is located at the center of the mounting ball on the support assembly and lies within an inverted cone with its axis vertical, and forming a 10 degree included angle with the vertex at the point of impact. The location of the center of gravity of the drop assembly (combined test headform and support assembly) must meet FMVSS 218 S7.1.8. The center of gravity of the drop assembly lies within the rectangular volume bounded by  $x =$

$-6.4$  mm ( $-0.25$  in.),  $x = 21.6$  mm (0.85 in.),  $y = 6.4$  mm (0.25 in.), and  $y = -6.4$  mm ( $-0.25$  in.), with the origin located at the center of gravity of the test headform. The rectangular volume has no boundary along the z-axis. The x-y-z axes are mutually perpendicular and have positive or negative designations in accordance with the right-hand rule. The origin of the coordinate axes is located at the center of the mounting ball on the support assembly. The x-y-z axes of the test headform assembly on monorail impact-test equipment are oriented as follows: From the origin, the x-axis is horizontal with its positive direction going toward and passing through the vertical centerline of the monorail. The positive z-axis is downward. The y-axis also is horizontal, and its direction is decided by the z- and x-axes, using the right-hand rule. See Figure 10 for an overhead view of the x-y boundary of the location of the center of gravity.

(4) Drop assembly. The center of gravity of the headform shall be at the center of the mounting ball.

(i) Mass of the drop assembly for testing helmets for adults and children 5 years of age and older. The combined mass of the instrumented test headform and support assembly (excluding the test helmet) for the impact test shall be 5.0  $\pm$  0.1 kg (11.00  $\pm$  0.22 lb).

(ii) Mass of the drop assembly for testing helmets for children under 5 years. The combined mass of the instrumented test headform (ISO A or ISO E) and support assembly (excluding the test helmet) for the impact test shall be 3.9  $\pm$  0.1 kg (8.60  $\pm$  0.22 lb).

(5) Impact anvils. Impact tests shall be performed against the three different anvils described below. All of the anvils shall be constructed of steel and shall be solid (i.e., without internal cavities).

(i) Flat Anvil. The flat anvil shall have a flat surface area with an impact face having a minimum diameter of 125 mm (4.92 in.) and shall be at least 24 mm (0.94 in.) thick (see Figure 11).

(ii) Hemispherical anvil. The hemispherical anvil shall have an impact surface with a radius of 48  $\pm$  1 mm (1.89  $\pm$  0.04 in.). The profile of the impact surface shall be one half the surface of a sphere (see Figure 12).

(iii) Curbstone anvil. The curbstone anvil shall have two flat faces making an angle of 105 degrees and meeting along a striking edge with a radius of 15 mm  $\pm$  0.5 mm (0.59  $\pm$  0.02 in.). The height of the curbstone anvil shall not be less than 50 mm (1.97 in.), and the length shall not be less than 200 mm (7.87 in.) (see Figure 13).

(b) Test Procedure. (1) Instrument system check. The impact-attenuation

test instrumentation shall be checked before and after each series of tests (at least at the beginning and end of each test day) by dropping an impactor with a spherical impact surface onto an elastomeric test medium (MEP). The impactor shall be dropped onto the MEP at a specified impact velocity ( $\pm$ 2% of a central value) that is representative of helmet testing drop heights. Before conducting a series of drops, the center vertical axis of the accelerometer (see § 1203.17(a)(2)) shall be aligned with the geometric center of the MEP pad. Six impacts, at intervals of 75  $\pm$  15 seconds, shall be performed at the beginning and end of the day. The first three impacts at the beginning and end of the day shall be considered warm-up drops and shall be discarded from the series. The test parameters selected at each laboratory shall produce impact accelerations shown to be repeatable within  $\pm$ 2% of a central value.

(2) Impact sites. Each of helmets 1 through 4 (one helmet for each conditioning environment) shall impact at four different sites, one impact on the flat anvil, one impact on the hemispherical anvil, one impact on the curbstone anvil, and one impact on an anvil chosen at the discretion of the test personnel.<sup>4</sup> The center of any impact may be on or anywhere above the test line, provided it is at least 120 mm (4.72 in), measured on the surface of the helmet, from any prior impact center. Rivets and other mechanical fasteners, vents, and any other helmet feature within the test region are valid test sites.

(3) Impact velocity. The helmet shall be dropped onto the flat anvil from a theoretical drop height of 2 meters (6.56 ft) to achieve an impact velocity of 6.2 m/s  $\pm$  3% (20.34 ft/s  $\pm$  3%). The helmet shall be dropped onto the hemispherical and curbstone anvils from a theoretical drop height of 1.2 meters (3.94 ft) to achieve an impact velocity of 4.8 m/s  $\pm$  3% (15.75 ft/s  $\pm$  3%). The impact velocity shall be measured during the last 40 mm (1.57 in) of free-fall for each test.

(4) Helmet position. Prior to each test, the helmet shall be positioned on the test headform in accordance with the HPI. The helmet shall be secured so that it does not shift position prior to impact. The helmet retention system shall be secured in a manner that does not interfere with free-fall or impact.

<sup>4</sup>The intent of this requirement is that the fourth impact will be on the anvil likely to result in the highest g-value. In the absence of an indication why another anvil would be more stringent, this fourth impact should be made with the anvil that produced the highest g-value in the previous three impacts.

(5) Data. Record the maximum acceleration in g's during impact.

**§ 1203.18 Reflectivity. [Reserved]**

**Subpart B—Certification**

**§ 1203.30 Purpose and scope.**

(a) Purpose. Section 14(a) of the Consumer Product Safety Act (CPSA), 15 U.S.C. 2063(a), requires every manufacturer (including importers) and private labeler of a product which is subject to a consumer product safety standard to issue a certificate that the product conforms to the applicable standard. Section 14(a) further requires that the certificate be based either on a test of each product or on a "reasonable testing program." The purpose of this subpart is to establish requirements that manufacturers and importers of bicycle helmets subject to the Safety Standard for Bicycle Helmets (Subpart A of this Part 1203) shall issue certificates of compliance in the form specified.

(b) Scope. The provisions of this subpart apply to all bicycle helmets that are subject to the requirements of the Safety Standard for Bicycle Helmets.

**§ 1203.31 Effective date.**

Any bicycle helmet manufactured more than 1 year after publication of a final rule must meet the standard and must be certified as complying with the standard in accordance with this Subpart B.

**§ 1203.32 Definitions.**

The following definitions shall apply to this subpart:

(a) Foreign manufacturer means an entity that manufactured a bicycle helmet outside the United States.

(b) Manufacturer means the entity that either manufactured a helmet in the United States or imported a helmet manufactured outside the United States.

(c) Private labeler means an owner of a brand or trademark that is used on a bicycle helmet subject to the standard and which is not the brand or trademark of the manufacturer of the bicycle helmet, provided the owner of the brand or trademark caused, authorized, or approved its use.

(d) Production lot means a quantity of bicycle helmets from which certain bicycle helmets are selected for testing prior to certifying the lot. All bicycle helmets in a lot must be essentially identical in those design, construction, and material features that relate to the ability of a bicycle helmet to comply with the standard.

(e) Reasonable testing program means any tests which are identical or equivalent to, or more stringent than, the tests defined in the standard and

which are performed on one or more bicycle helmets selected from the production lot to determine whether there is reasonable assurance that all of the bicycle helmets in that lot comply with the requirements of the standard.

**§ 1203.33 Certification testing.**

(a) General. Manufacturers, as defined in § 1203.32(a), shall conduct a reasonable testing program to demonstrate that their bicycle helmets comply with the requirements of the standard.

(b) Reasonable testing program. This paragraph provides guidance for establishing a reasonable testing program.

(1) Manufacturers and importers may define their own reasonable testing programs. Reasonable testing programs may, at the option of manufacturers and importers, be conducted by an independent third party qualified to perform such testing programs. However, manufacturers, as defined in § 1203.32(a), are responsible for insuring compliance with all requirements of this standard.

(2) To conduct a reasonable testing program, the bicycle helmets shall be divided into production lots. Sample bicycle helmets from each production lot shall be tested in accordance with the reasonable testing program. Whenever there is a change in parts, suppliers of parts, or production methods that could affect the ability of the bicycle helmet to comply with the requirements of the standard, the manufacturer shall establish a new production lot for testing.

(3) The Commission will test for compliance with the standard by using the standard's test procedures. However, a reasonable testing program need not be identical to the tests prescribed in the standard.

(4) If the reasonable testing program shows that a bicycle helmet may not comply with one or more requirements of the standard, no bicycle helmet in the production lot can be certified as complying until all noncomplying bicycle helmets in the lot have been identified and destroyed or altered by repair, redesign, or use of a different material or components to the extent necessary to make them conform to the standard.

(5) The sale or offering for sale of a bicycle helmet that does not comply with the standard is a prohibited act and a violation of § 19(a) of the CPSA (15 U.S.C. 2068(a)), regardless of whether the bicycle helmet has been validly certified.

**§ 1203.34 Product certification and labeling by manufacturers (including importers).**

(a) Form of permanent label of certification. Manufacturers, as defined in § 1203.32(a), shall issue certificates of compliance for bicycle helmets manufactured after the effective date of the standard in the form of a legible and readily visible label which can reasonably be expected to remain on the bicycle helmet and legible for the intended design life of the helmet. Such labeling shall be deemed to be a certificate of compliance, as that term is used in § 14 of the CPSA, 15 U.S.C. 2063.

(b) Contents of certification label. The certification labels required by this section shall contain the following:

(1) The statement "Complies with CPSC Safety Standard for Bicycle Helmets for Adults and Children Age 5 and Older (16 CFR 1203)" or "Complies with CPSC Safety Standard for Bicycle Helmets for Children Under 5 Years (16 CFR 1203)", as appropriate (for a helmet that meets the criteria for both an adult helmet and a helmet for children under age 5, the label may state "Complies with the CPSC Safety Standard for Bicycle Helmets for Persons of All Ages", or equivalent language);

(2) The name of the U.S. manufacturer or importer responsible for issuing the certificate;

(3) The address of the U.S. manufacturer or importer responsible for issuing the certificate or, if the name of a private labeler is on the label, the address of the private labeler;

(4) The name and address of the foreign manufacturer, if the helmet was manufactured outside the United States;

(5) An identification of the production lot; and

(6) The month and year the product was manufactured.

(c) Coding. (1) The information required by paragraphs (b) (4) through (6) of this section may be in code, provided:

(i) the person or firm issuing the certificate maintains a written record of the meaning of each symbol used in the code, and

(ii) the record shall be made available to the distributor, retailer, consumer, and Commission upon request.

(2) A serial number may be used in place of a production lot identification on the helmet if it can serve as a code to identify the production lot. If a bicycle helmet is manufactured for sale by a private labeler, and if the name of the private labeler is on the certification label, the name of the manufacturer or importer issuing the certificate, and the name and address of any foreign

manufacturer, may also be in such a code.

(d) Placement of the label(s). The information required by paragraphs (b) (2) through (3) must be on one label, unless allowed to be in code. The other required information may be on separate labels. The label(s) required by this section must be affixed to the bicycle helmet. If the label(s) are not immediately visible to the ultimate purchaser of the bicycle helmet prior to purchase because of packaging or other marketing practices, a second label is required. That label shall state, as appropriate, "Complies with CPSC Safety Standard for Bicycle Helmets for Adults and Children Age 5 and Older", or "Complies with CPSC Safety Standard for Bicycle Helmets for Children Under 5 Years". The additional label must appear on the container or, if the container is not visible before purchase, on the promotional material used with the sale of the bicycle helmet. (For a helmet that meets the criteria for both an adult helmet and a helmet for children under age 5, the label may state "Complies with the CPSC Safety Standard for Bicycle Helmets for Persons of All Ages", or equivalent language.)

(e) Additional provisions for importers.

(1) General. The importer of any bicycle helmet subject to the standard in Subpart A of this Part 1203 must issue the certificate of compliance required by § 14(a) of the CPSA and this section.

(i) If a reasonable testing program meeting the requirements of this subpart has been performed by or for the foreign manufacturer of the product, the importer may rely in good faith on such tests to support the certificate of compliance provided:

(A) the importer is a resident of the United States or has a resident agent in the United States,

(B) the records of such tests required by § 1203.41 of Subpart C of this part are maintained in the United States, and

(C) such records are available to the Commission upon request to the importer.

(ii) Test records may be maintained outside of the United States if they will be provided to the Commission within 48 hours of a request for the records.

(2) Responsibility of importer. If the importer relies on tests by the foreign manufacturer to support the certificate of compliance, the importer shall—in addition to complying with paragraph (e)(1) of this section—examine the records supplied by the manufacturer to determine that they comply with § 1203.41 of Subpart C of this part.

### Subpart C—Recordkeeping

#### § 1203.40 Effective date.

The recordkeeping requirements in this subpart are effective [1 year after publication of the final rule] and apply to bicycle helmets manufactured after that date.

#### § 1203.41 Recordkeeping requirements.

(a) General. Every person issuing certificates of compliance for bicycle helmets subject to the standard in Subpart A of this part shall maintain records which show that the certificates are based on a reasonable testing program. The records shall be maintained for a period of at least 3 years from the date of certification of the last bicycle helmet in each production lot. These records shall be available, upon request, to any designated officer or employee of the Commission, in accordance with § 16(b) of the CPSA, 15 U.S.C. 2065(b).

(b) Contents of records. Complete test records shall be maintained. Records shall contain the following information.

- (1) An identification of the bicycle helmets tested;
  - (2) An identification of the production lot;
  - (3) The results of the tests, including the precise nature of any failures;
  - (4) A description of the specific actions taken to address any failures;
  - (5) A detailed description of the tests;
  - (6) The manufacturer's name and address;
  - (7) The model and size of each helmet tested;
  - (8) Identifying information for each helmet tested, including the production lot for each helmet, and the environmental condition under which each helmet was tested;
  - (9) The temperatures in each conditioning environment, and the relative humidity and temperature of the laboratory;
  - (10) The peripheral vision clearance;
  - (11) A description of any failures to conform to any of the labeling and instruction requirements;
  - (12) Performance impact results, stating the location of impact, type of anvil used, velocity prior to impact, and maximum acceleration measured in g's;
  - (13) The results of the positional stability test;
  - (14) The results of the dynamic strength of retention system test;
  - (15) The name and location of the test laboratory;
  - (16) The name of the person(s) who performed the test;
  - (17) The date of the test; and
  - (18) The system check results.
- (c) Format for records. The records required to be maintained by this

section may be in any appropriate form or format that clearly provides the required information. Certification test results may be kept on paper, microfiche, computer disk, or other retrievable media. Where records are kept on computer disk or other retrievable media, the records shall be made available to the Commission on paper copies, or via electronic mail in the same format as paper copies, upon request.

### Subpart D—Bicycle Helmets Manufactured From March 16, 1995, Through Date That Is 1 Year After the Final Rule Is Issued

#### § 1203.51 Purpose and basis.

The purpose and basis of this rule is to protect bicyclists from head injuries by ensuring that bicycle helmets comply with the requirements of appropriate existing voluntary standards, as provided in 15 U.S.C. 6004(a).

#### § 1203.52 Scope and effective date.

(a) Bicycle helmets manufactured after March 16, 1995, through the date that is 1 year after issuance of the final standard (Subparts A, B, and C) shall comply with the requirements of one of the standards specified in § 1203.53. This requirement shall be considered a consumer product safety standard issued under the Consumer Product Safety Act.

(b) The term "bicycle helmet" is defined at § 1203.4(b).

(c) These interim mandatory safety standards will not apply to bicycle helmets manufactured after the effective date of the final bicycle helmet standard.

#### § 1203.53 Interim safety standards.

(a) Bicycle helmets must comply with one or more of the following standards, which are incorporated herein by reference:

- (1) American National Standards Institute (ANSI) standard Z90.4-1984, Protective Headgear for Bicyclists,
- (2) ASTM standards F 1447-93 or F 1447-94, Standard Specification for Protective Headgear Used in Bicycling, incorporating the relevant provisions of ASTM F 1446-93 or ASTM F 1446-94, Standard Test Methods for Equipment and Procedures Used in Evaluating the Performance Characteristics of Protective Headgear, respectively,
- (3) Canadian Standard Association standard, Cycling Helmets—CAN/CSA—D113.2-M89,
- (4) Snell Memorial Foundation (Snell) 1990 Standard for Protective Headgear for Use in Bicycling (designation B-90),
- (5) Snell 1990 Standard for Protective Headgear for Use in Bicycling, including

March 9, 1994 Supplement (designation B-90S),

(6) Snell 1994 Standard for Protective Headgear for Use in Non-Motorized Sports (designation N-94), or

(7) Snell 1995 standard for Protective Headgear for Use with Bicycles B-95.

(b) This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the standards may be obtained as follows. Copies of the ANSI Z90.4

standard are available from: American National Standards Institute, 11 W. 42nd Street, 13th Floor, New York, NY 10036. Copies of the ASTM standards are available from: ASTM, 1916 Race Street, Philadelphia, PA 19103. Copies of the Canadian Standards Association CAN/CSA-D113.2-M89 standard are available from: CSA, 178 Rexdale Boulevard, Rexdale (Toronto), Ontario, Canada, M9W 1R3. Copies of the Snell standards are available from: Snell

Memorial Foundation, Inc., P.O. Box 493, 7 Flowerfield, Suite 28, St. James, New York 11780. Copies may be inspected at the Office of the Secretary, Consumer Product Safety Commission, 4330 East-West Highway, Bethesda, Maryland 20814, or at the Office of the Federal Register, 800 N. Capitol Street NW, Room 700, Washington, DC.

Figures to Part 1203

**BILLING CODE 6355-01-U**

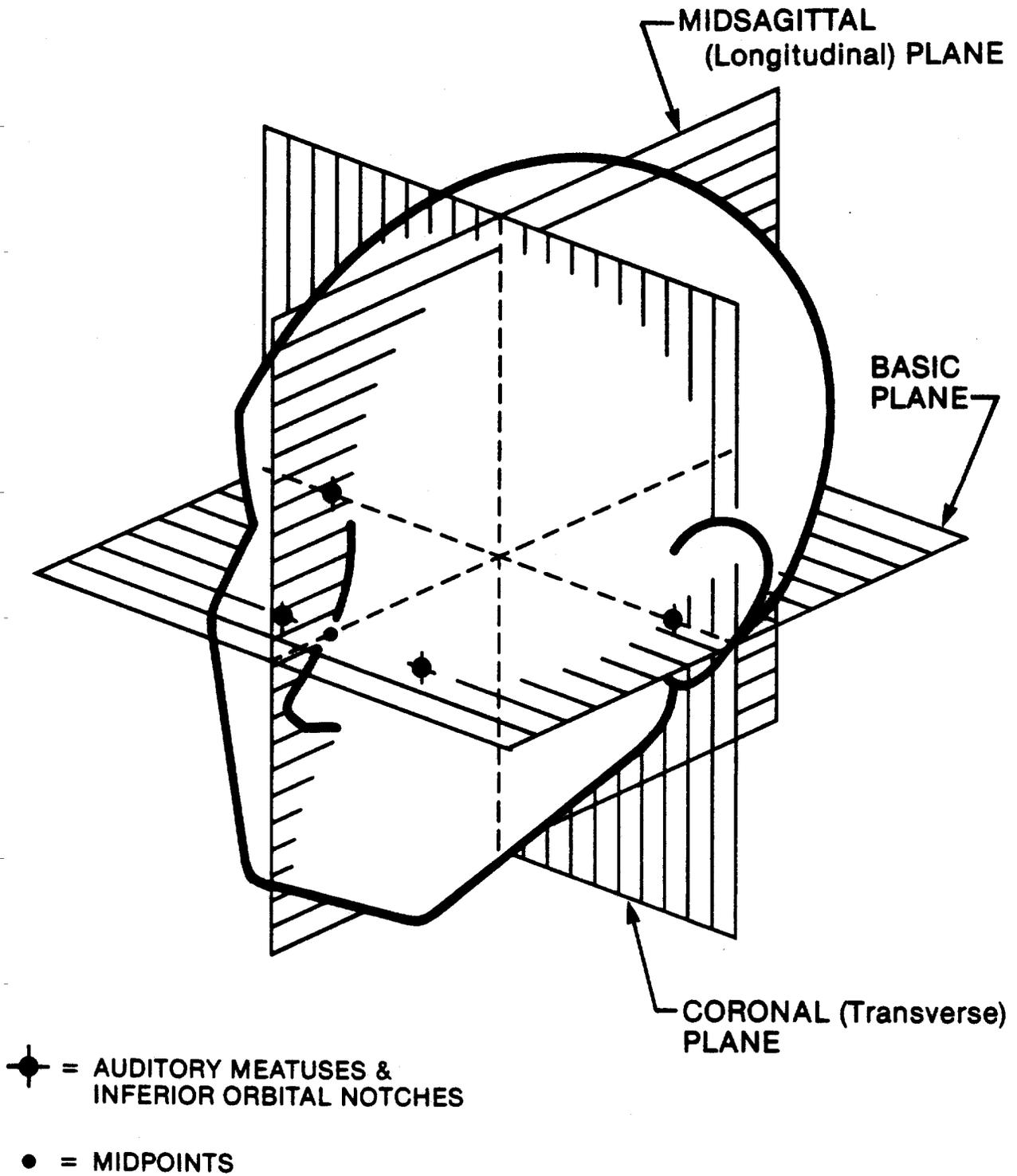
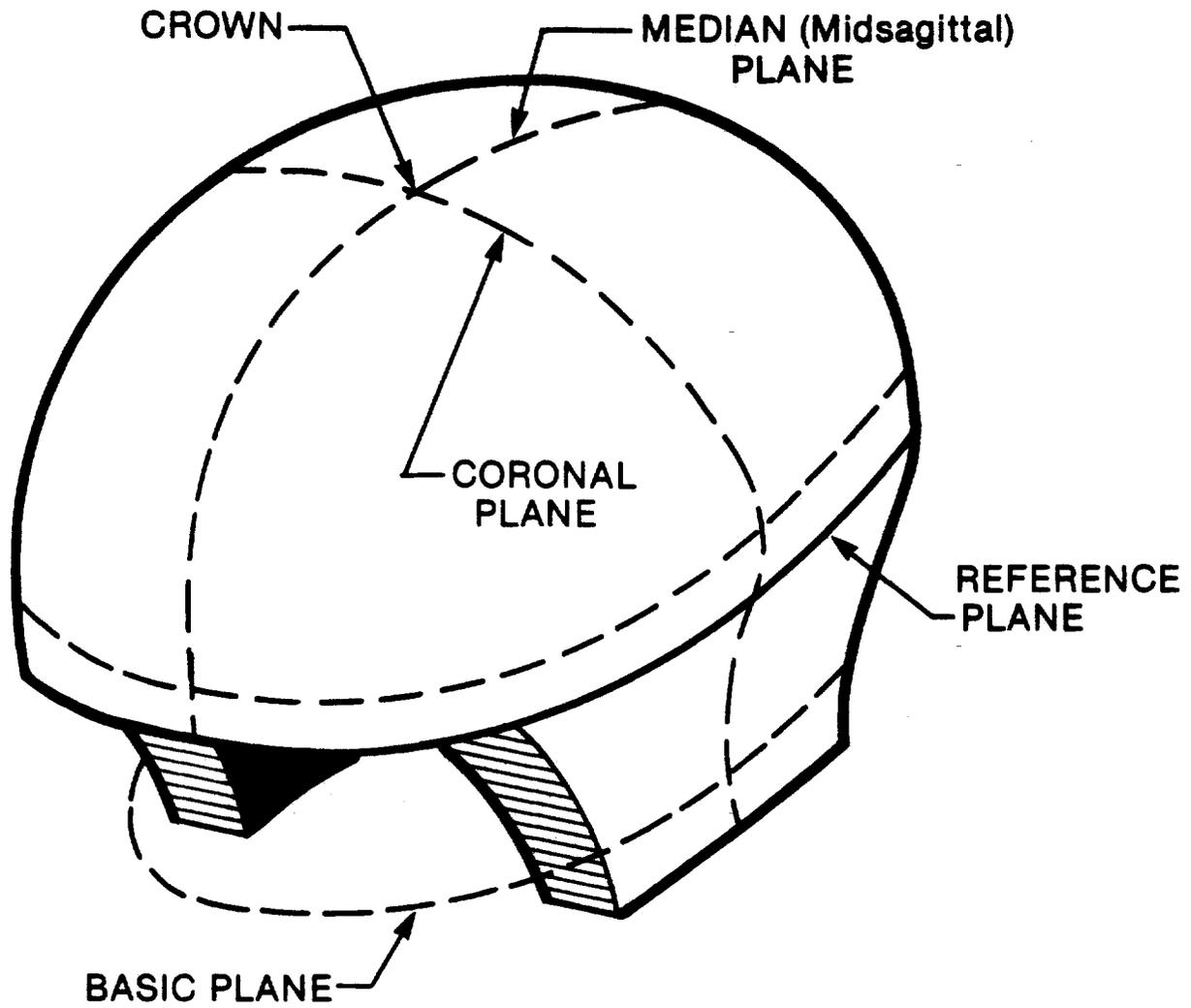
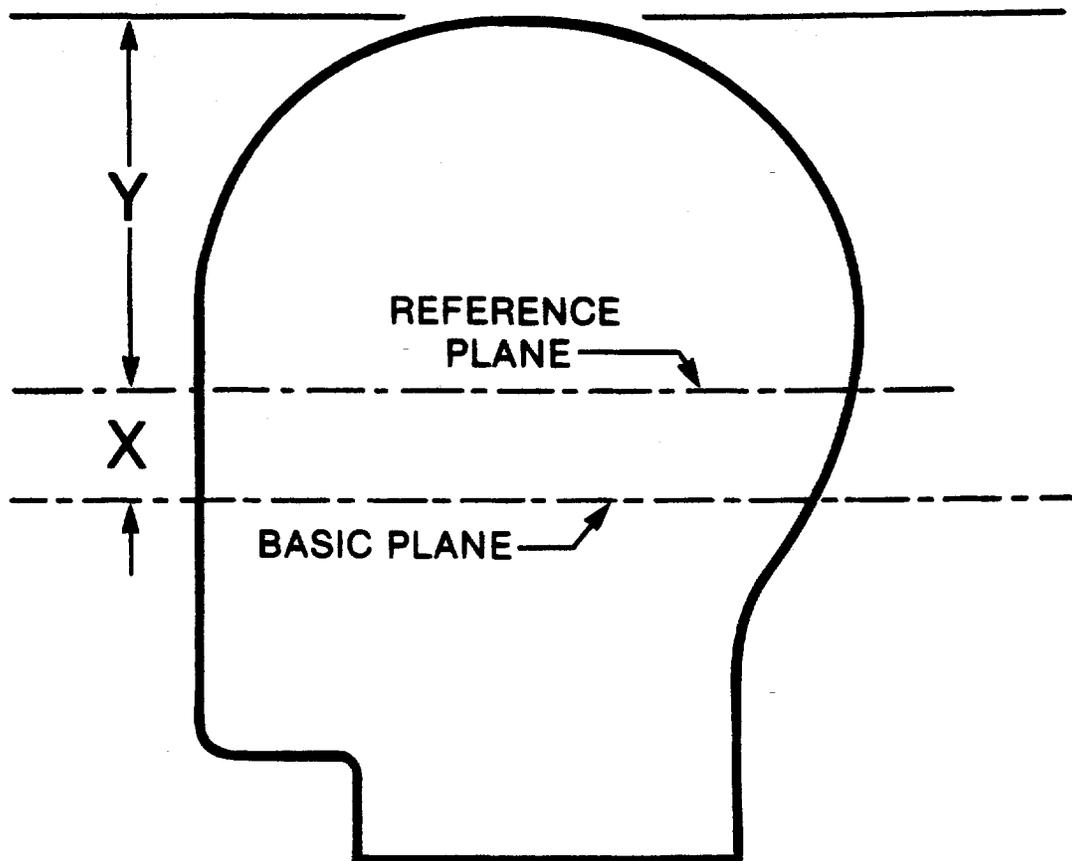


Figure 1. Anatomical Planes



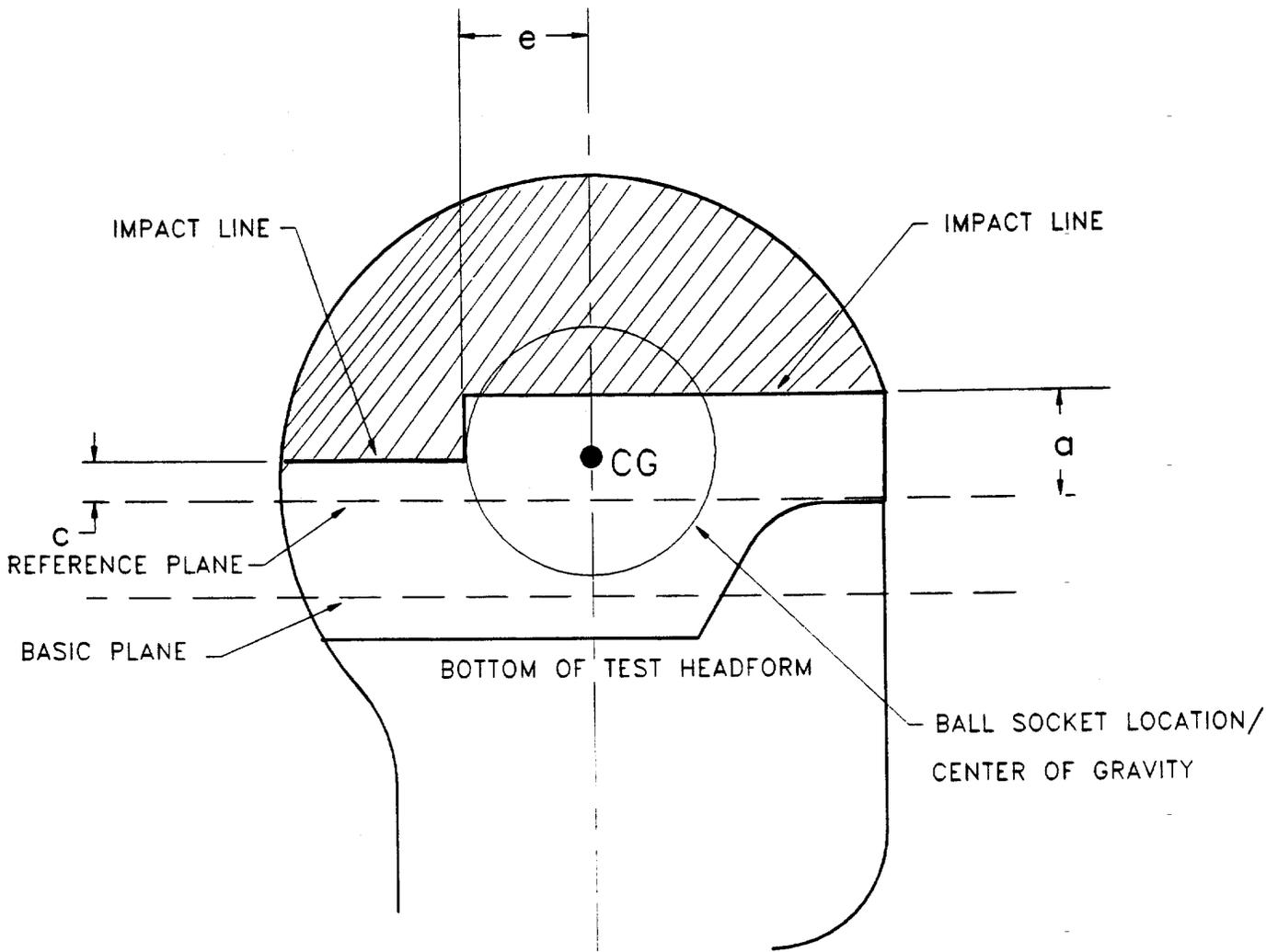
**Figure 2. ISO Headform-Basic, Reference, and Median Planes**



HEADFORM	SIZE	X	Y
A	500	24	90
E	540	26	96
J	570	27.5	102.5
M	600	29	107
O	620	30	110

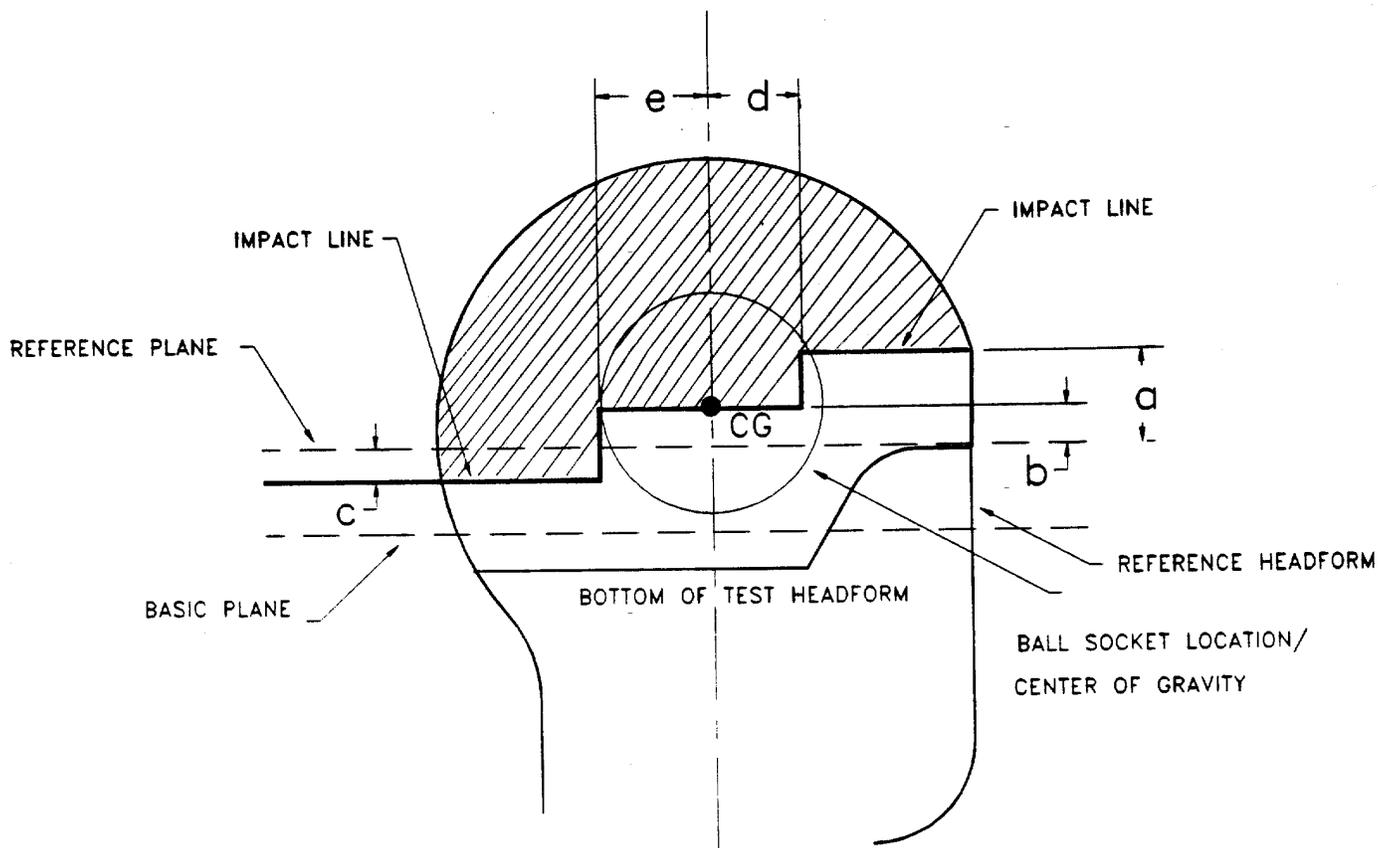
DIMENSIONS IN MILLIMETERS

Figure 3. Location of Reference Plane



HEADFORM	DIMENSIONS mm(in)		
	a	c	e
ISO A	38 (1.49)	27 (1.06)	49 (1.93)
ISO E	39 (1.54)	27 (1.06)	52 (2.05)
ISO J	41 (1.61)	27 (1.06)	54 (2.13)
ISO M	41 (1.61)	27 (1.06)	55 (2.16)
ISO O	42 (1.65)	27 (1.06)	56 (2.20)

**Figure 4. Location of Test Lines for Helmets Intended for Persons Five (5) Years of Age and Older.**



HEADFORM	DIMENSIONS mm (in)				
	a	b	c	d	e
ISO A	30 (1.18)	12.7 (0.50)	15 (0.59)	25 (0.98)	30 (1.18)
ISO E	32 (1.26)	12.7 (0.50)	16 (0.63)	27 (1.06)	32 (1.26)

**Figure 5. Location of Test Lines for Helmets Intended for Children Under Five (5) Years of Age**

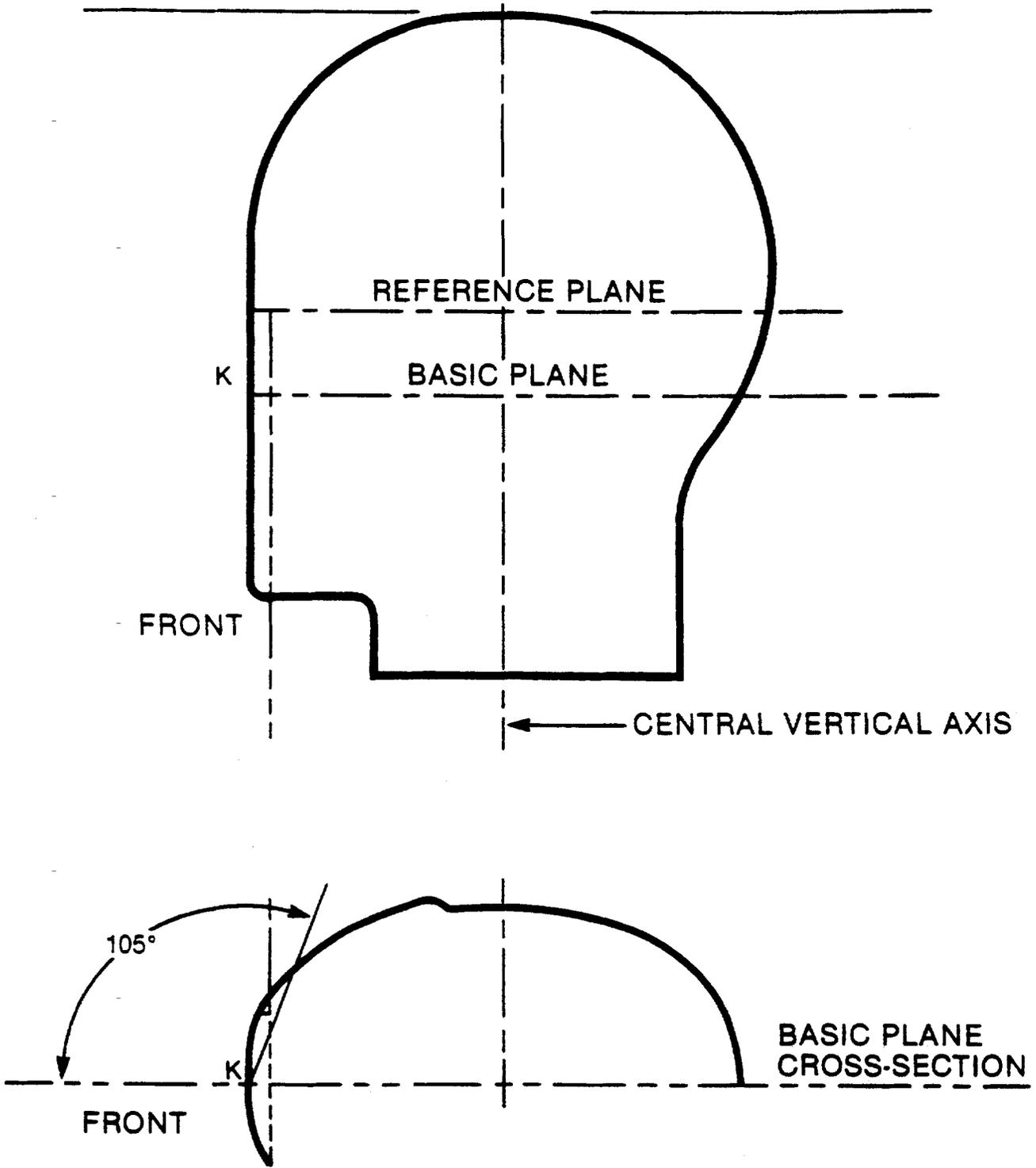
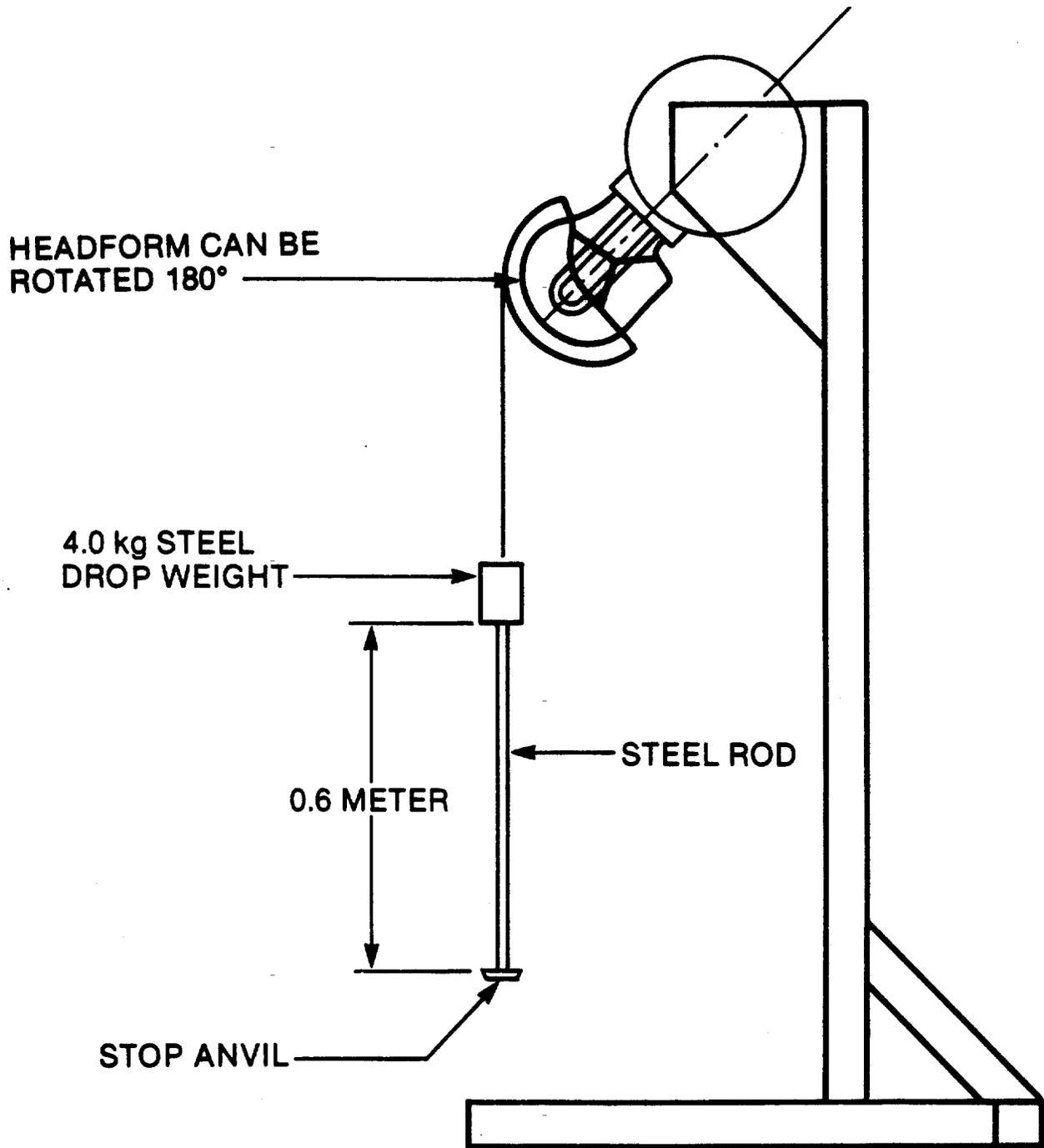
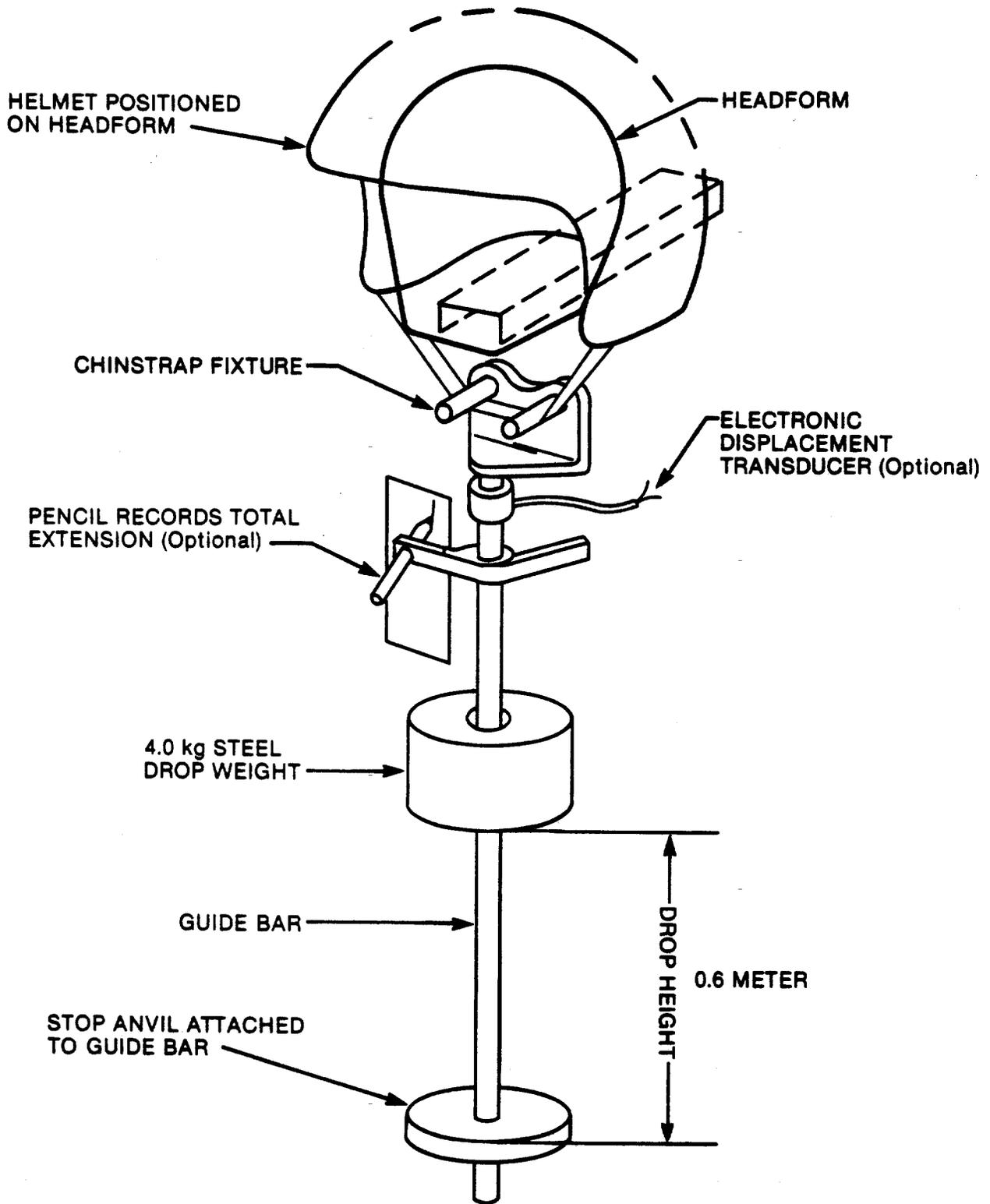


Figure 6. Field of Vision



**Figure 7. Typical Test Apparatus for Positional Stability Test**



**Figure 8. Apparatus for Test of Retention System Strength and Extention**

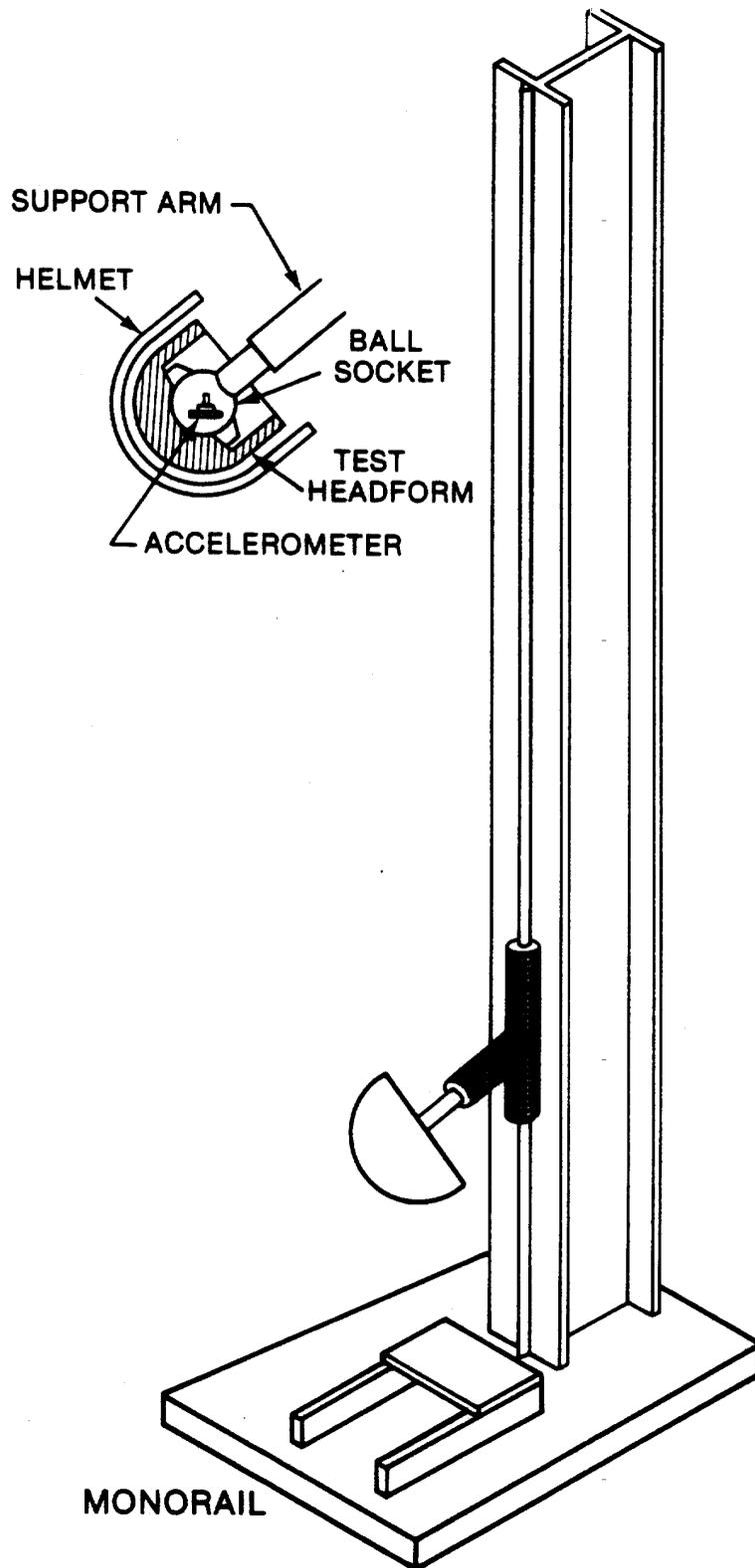
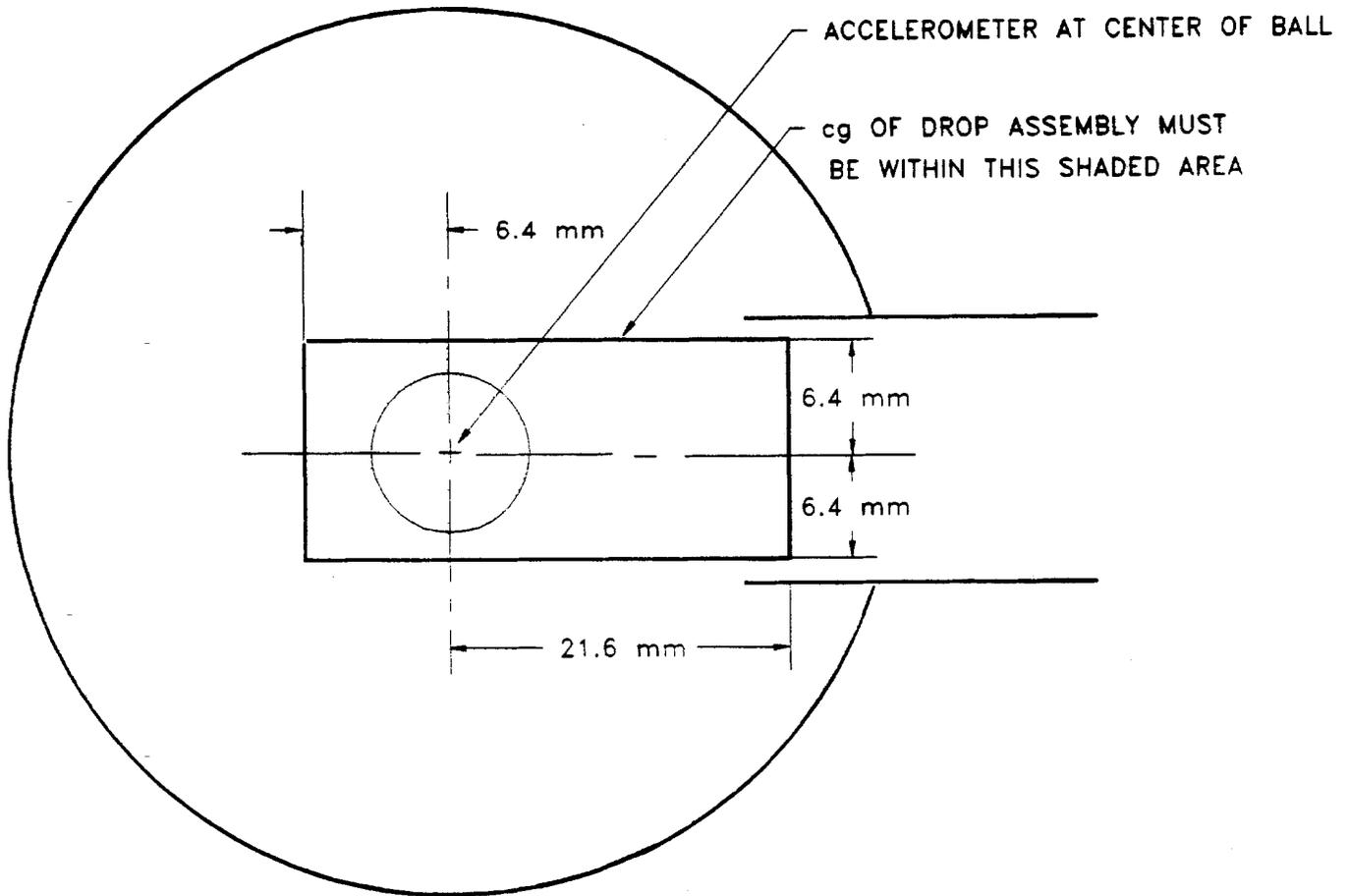


Figure 9. Impact Test Apparatus

### Overhead View of Ball-Arm as Installed on Impact Test Apparatus



**Figure 10. Center of Gravity for Drop Assembly**

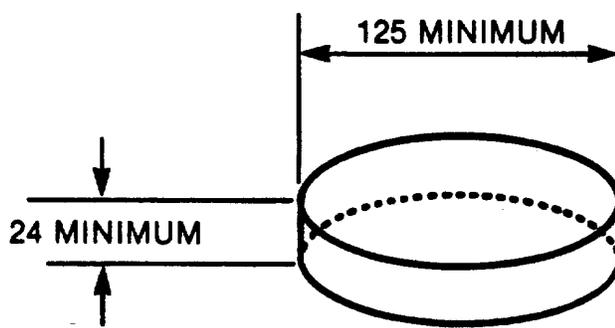


Figure 11. Flat Anvil

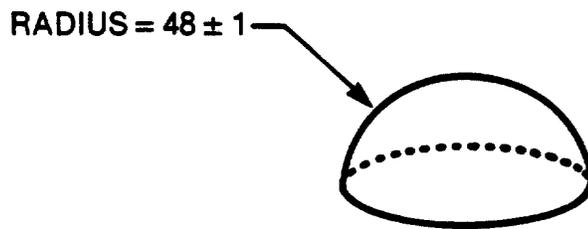


Figure 12. Hemispherical Anvil

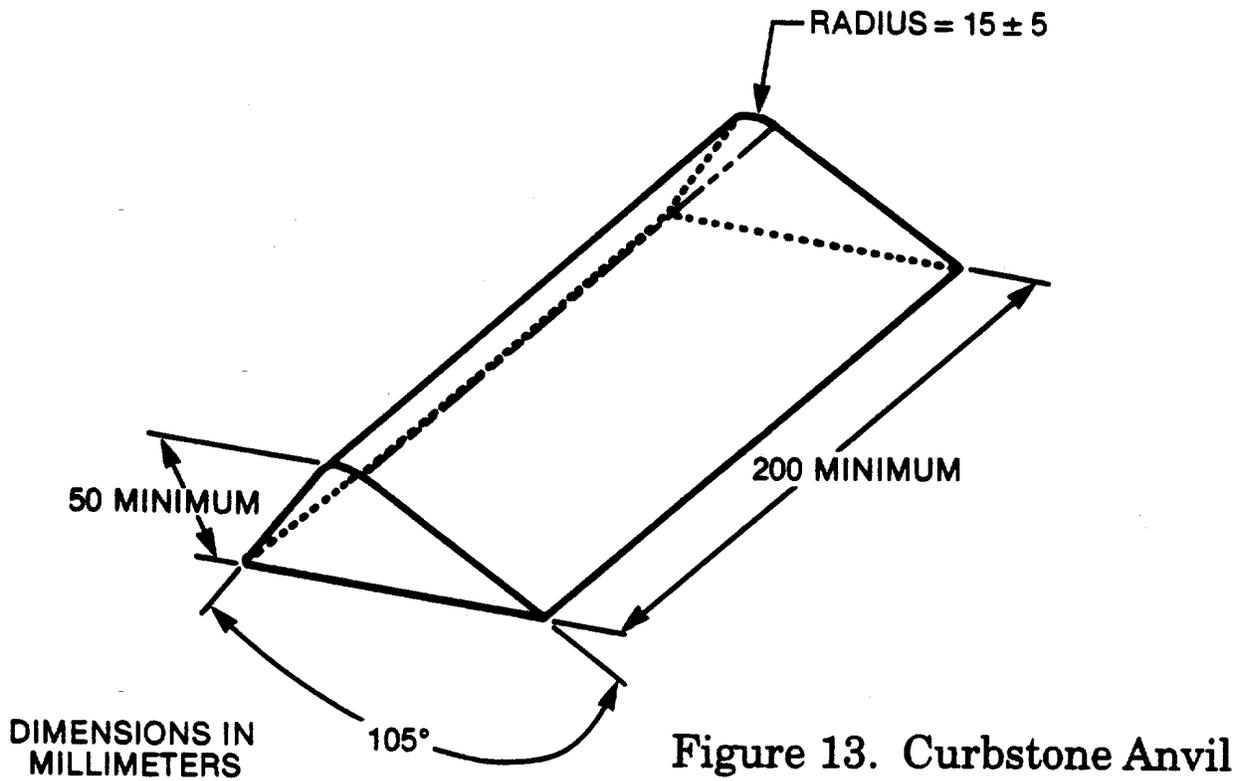


Figure 13. Curbstone Anvil

DIMENSIONS IN  
MILLIMETERS

Dated: November 13, 1995.

Sadye E. Dunn,

*Secretary, Consumer Product Safety  
Commission.*

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