STANDARD PERFORMANCE SPECIFICATION FOR NEWLY MANUFACTURED LACROSSE FACE PROTECTORS

NOCSAE DOC (ND) 045 – 17m24

Prepared By

NOCSAE®

NATIONAL OPERATING COMMITTEE
ON STANDARDS FOR ATHLETIC EQUIPMENT

Modified June 2024

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1. Scope

1.1 This standard specification establishes performance requirements for new lacrosse face protectors intended to be mounted onto compatible lacrosse helmets that have been certified to meet the NOCSAE standard as supplied by manufacturers. In addition to meeting the requirements of this standard the entire headgear must be tested to demonstrate that the face protector has not compromised the ability of the helmet to comply with NOCSAE DOC 041. The requirements of this standard shall be subject to Level 3 compliance criteria unless otherwise stated herein.

1.2 **All testing and requirements of this standard specification must be in accordance with NOCSAE DOC (ND) 001 except where modified herein.**

1.3 **All testing and requirements of this standard specification must be in accordance with NOCSAE DOC (ND) 021 except where modified herein.**

1.4 **All testing and requirements of this standard specification must be in accordance with NOCSAE DOC (ND) 041 except where modified herein.**

1.5 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 NOCSAE DOC (ND) 001: *Standard Drop Test Method and Equipment Used in Evaluating the Performance Characteristics of Protective Headgear*

2.2 NOCSAE DOC (ND) 015: *Standard Test Method and Specification Used in Evaluating the Corrosion Characteristics and Effects on Metallic Hardware Disassembly*.

2.3 NOCSAE DOC (ND) 021: *Standard Projectile Impact Test Method and Equipment Used in Evaluating the Performance Characteristics of Protective Headgear/Projectiles*

2.4 NOCSAE DOC (ND) 041: *Standard Performance Specification for Newly Manufactured Lacrosse Helmets with Faceguard*

2.5 NOCSAE DOC (ND) 049: *Standard Performance Specification for Newly Manufactured Lacrosse Balls*

3. Test Sample Size

3.1 For any standalone test report; at least five (5) Face Protectors of each model mounted onto helmets that meet the requirements of NOCSAE DOC 041 and bear the NOCSAE logo, in each critical size must be tested.

4. Helmet Preparation

4.1 Helmets shall be tested complete in the condition as offered for sale.

4.2 Helmets used for testing shall be selected in a random manner.

4.3 Helmets shall be tested on each size headform that they fit. See ND 001 Section 20.

4.4 To obtain a reasonable fit (as determined by the test technician) for testing purposes, helmets larger than size 7 5/8 ***may*** require "shim" pads to be inserted between the largest NOCSAE headform and the interior of the helmet, opposite from the impact site.

4.5 Face protectors that must be mounted to helmets of a given model with a size smaller than 6 ⅝ may not fit the smallest NOCSAE headform. In that event, testing of that size is waived so long as the other sizes of that model have been tested and meet all requirements.

4.6 Conditioning Environments:

4.6.1 Ambient Temperature: Expose product to conditioned temperature of 72 ± 5°F (22° ± 2°C) for a minimum of four hours.

4.6.2 Low Temperature: Expose product to conditioned temperature of 32ºF +0/-3ºF (0ºC +0/-1ºC) for at least four hours.

4.6.3 When performing conditioned environment temperature testing, the first impact shall occur between the 1st and 2nd minute after removing the sample from the conditioning environment. The second impact shall occur 75 seconds (± 15 sec) after the first impact, etc. If the sample cannot be tested within these time constraints, the sample must be returned to the conditioning environment for a minimum of 3 minutes for each minute the sample was out of the conditioning environment. Conditioning must be complete before testing can resume on that sample.

5. Faceguard Projectile Test

5.1 Projectile tests shall be conducted using the procedures and equipment described in ND 021.

5.2 The lacrosse balls used must be of a model that meet the requirements of ND 049.

5.3 Five of the submitted sample face protectors to be tested shall be mounted on a lacrosse helmet according to the manufacturer’s instructions and impacted with a lacrosse ball one time each. No submitted sample shall be impacted more than once. Each submitted sample shall be impacted with a ball in one of the locations described below in accordance with Table 1 and Section 5.4. Examples of the locations are depicted in Figure 2.

5.3.1 Directly in front, aimed at the nose, with the headform and helmet in an upright (vertical) position. The barrel (line of ball travel) shall be perpendicular to the Coronal plane.

5.3.2 Directly in front, aimed at one eye, the headform and helmet in an upright (vertical) position and rotated away from the Midsagittal plane at an angle of 45° from the direction of impact that permits the ball to be aimed at the eye.

5.3.3 Random location: The headform may be located in any manner that allows the impact point to be within the “no contact area” as defined in Figure 1, attached. Pointer or other targeting means can be set within, or to any edge of, the “no

contact" area. The center of ball contact must be at the edge of, or within the "no contact" area.

5.4 Impact Targeting Options

5.4.1 At least one impact shall be at the center of the widest opening in the faceguard.

5.4.2 At least one impact shall be aimed at the material structure of the faceguard.

5.4.3 Impacts shall be selected to investigate any apparent weakness in the faceguard which may allow contact to the face.

5.5 A different faceguard shall be used for each test position at each temperature (five guards are needed for the complete test series).

5.6 The head model will be positioned with its impact site located within 24 inches (610 mm) from the end of the muzzle (or from the point at which the ball is released).

TABLE 1
Projectile Impact Schedule
Velocity - MPH (m/s) ± 3%

Sample #	Conditioning Environment	IMPACT VELOCITY MPH (M/S)	TARGETING OPTION	EYE	NOSE	RANDOM
1	Ambient Temperature	70 (32)	CENTER OF WIDEST OPENING OR MASK STRUCTURE	X		
2	Ambient Temperature	70 (32)	CENTER OF WIDEST OPENING OR MASK STRUCTURE		X	
3	Ambient Temperature	70 (32)	CENTER OF WIDEST OPENING OR MASK STRUCTURE			X
4	Low Temperature	70 (32)	CENTER OF WIDEST OPENING OR MASK STRUCTURE	X		
5	Low Temperature	70 (32)	CENTER OF WIDEST OPENING OR MASK STRUCTURE		X	

6. **Faceguard Penetration Test**

6.1 Each faceguard to be tested shall be mounted on a lacrosse helmet according to the manufacturer's instructions. Position the helmet onto the appropriate NOCSAE headform.

6.2 Attempt to pass the test blade (see Figure 3) through any opening in the face protector towards the ocular area no contact zone defined in Figure 1.

7. Test Requirements

7.1 Helmet repositioning during testing is anticipated. Any structural changes or other changes that take place during impact testing which result in un-restorable loosening of the fit shall be cause for failure. In the case of helmets “shimmed”, the replacement or repositioning of shims is allowed.

7.2 When tested according to Section 5, all faceguards shall remain intact with no crazing, breaking or cracking, either in the material or at the testing points.

7.3 A passing face protector is able to withstand all impacts and meets all other requirements when tested in accordance with this performance specification.

7.4 When tested in accordance with Section 6, no contact to the ocular area is ever permitted.

7.5 When tested in accordance with Section 5, no contact to the ocular area is ever permitted. Limited contact to specific areas of the headform is allowed (limited contact area)♦. Contact occurring to the limited contact area must be restricted to those non-structural components of the headgear that are designed/intended to rest on or come in contact with the wearers face. (See Figure 1).

7.5.1 Verification of ball contact: For verification of ball or protector contact with the face, cover the entire facial area (limited contact/ocular area) from the frontal bone superiorly to the mandible inferiorly with Pressure Indicator paste. Contact of either ball or protector with any part of the face will leave paste at the point of contact and proof of contact on the headform. Inspect thoroughly both the ball and the protector to determine if they contain residue of paste. Also inspect the headform ocular area for evidence of contact.

8. Construction

8.1 General: Headgear is worn on the head in an effort to reduce or minimize injury to that portion of the head which is within the specified area of coverage. Headgear shall be constructed to reduce the risk of injury to the wearer and to remain on the wearer during impact. Optional devices fitted to the headgear/equipment shall be designed so that they are unlikely to cause injury during use. For example: wire face protectors must not be designed with weld junctions and/or wire terminus ends in the ocular area, such that in the event of a weld separation, the wire ends could come into contact with the ocular area.

8.2 The protective equipment must survive all test protocols substantially intact and ready for use.

8.3 Projections: Internal rigid projections that may contact the wearer's head during impact shall be covered to reduce the likelihood of injury. Pressure sensitive film or electronic methods may employed to evaluate the transmitted force of internal projections suspected to be a likely source of injury, such forces shall be limited to a maximum of 750 lbs/in^2.

8.4 Metallic Hardware as defined in ND 001 shall meet the requirements of ND015.

9. Materials

9.1 Materials used in the product shall be durable and resistant to exposure to sun, rain, cold, dust, vibration, perspiration, and products likely to be applied to the skin or hair. Materials known to cause skin irritation or disease shall not be used. Lining materials, if used, may be detachable for washing. If hydrocarbons, cleaning fluids, paints or transfers/decals or other additions may affect the equipment adversely, a warning shall be provided.

10. Labels and Warnings

10.1 Each faceguard shall be permanently and legibly labeled or marked in a manner such that the following information can be easily read and is not obscured in any manner.

10.1.1 Name of Manufacturer

10.1.2 Model of Designation

10.2 A permanent and legible label or mark that denotes the month and year of manufacture that can be easily read without removing any permanent component. If this mark or label requires a “code” to determine month and year, such code shall be made available upon request.

10.3 The phrase, “SEI Certified, Meets NOCSAE Standard®” Shall be permanently affixed.

NOTE: You must have an executed, valid license agreement with NOCSAE to use any of the NOCSAE marks at any time. NOCSAE, the NOCSAE marks, and the National Operating Committee on Standards for Athletic Equipment are registered marks and the exclusive property of the Committee. Use of the marks in any manner is prohibited without prior written permission of the NOCSAE Board of Directors.

10.4 All face protectors shall have instructions provided that inform the consumer of which helmet model(s) and helmet size the face protector is intended to be used with and how the face protector is to be attached to the compatible helmet.

10.5 Have permanently affixed to it a clearly legible statement which effectively communicates to the end user the following information, using the same or similar language:

WARNING: THIS FACEGUARD DOES NOT COMPLY WITH NOCSAE REQUIREMENTS UNLESS IT IS ATTACHED TO A HELMET SPECIFICALLY LISTED BY THE MANUFACTURER AND WHICH BEARS THE NOCSAE LACROSSE LOGO.

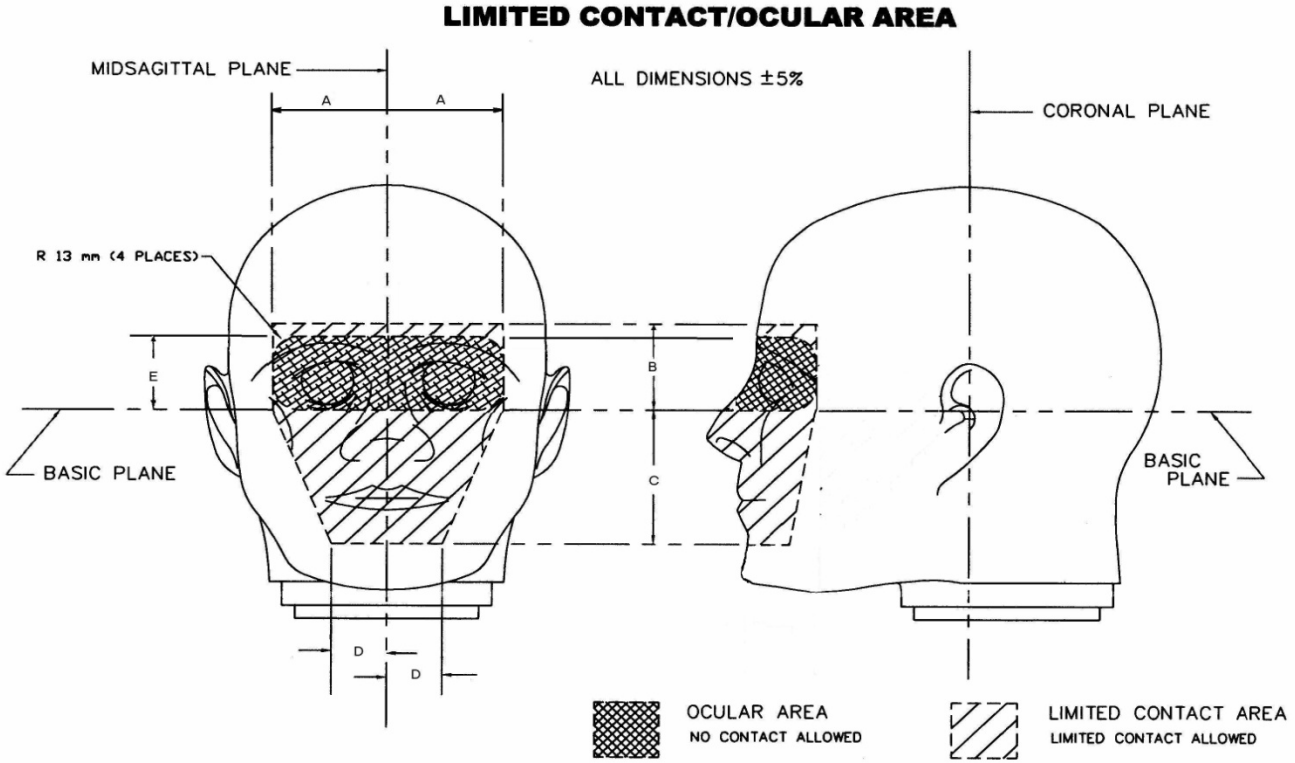
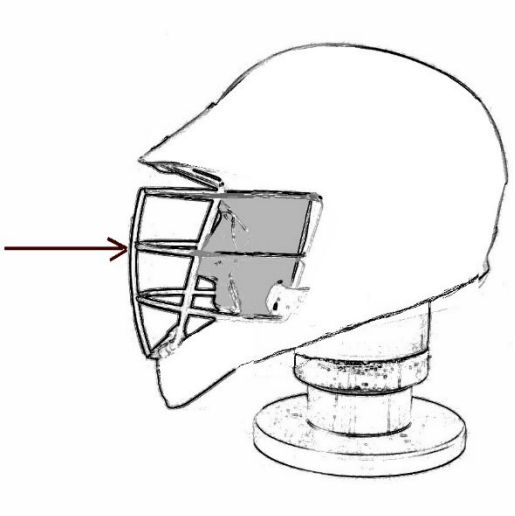


TABLE 2

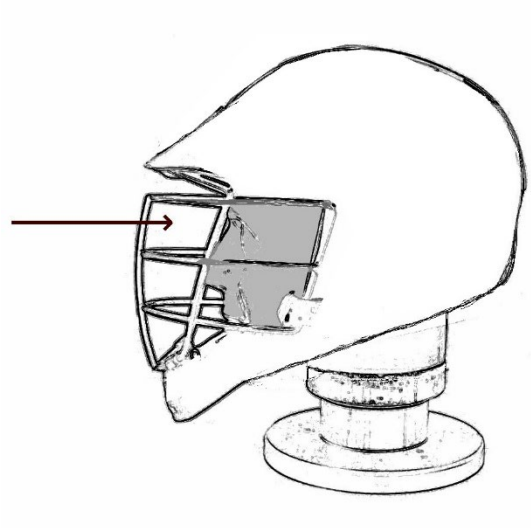
DIMENSIONS – MILLIMETERS (INCHES) ± 5%

HEADFORM	A	A'	B	C	D	E
Small	44 (1.736)	54 (2.113)	41 (1.619	64 (2.518)	26 (1.019)	32 (1.259)
Medium	46 (1.811)	56 (2.205)	45 (1.772)	70 (2.756)	27 (1.062)	35 (1.378)
Large	51 (1.989)	62 (2.421)	50 (1.969)	78 (3.063)	30 (1.167)	39 (1.532)

FIGURE 1

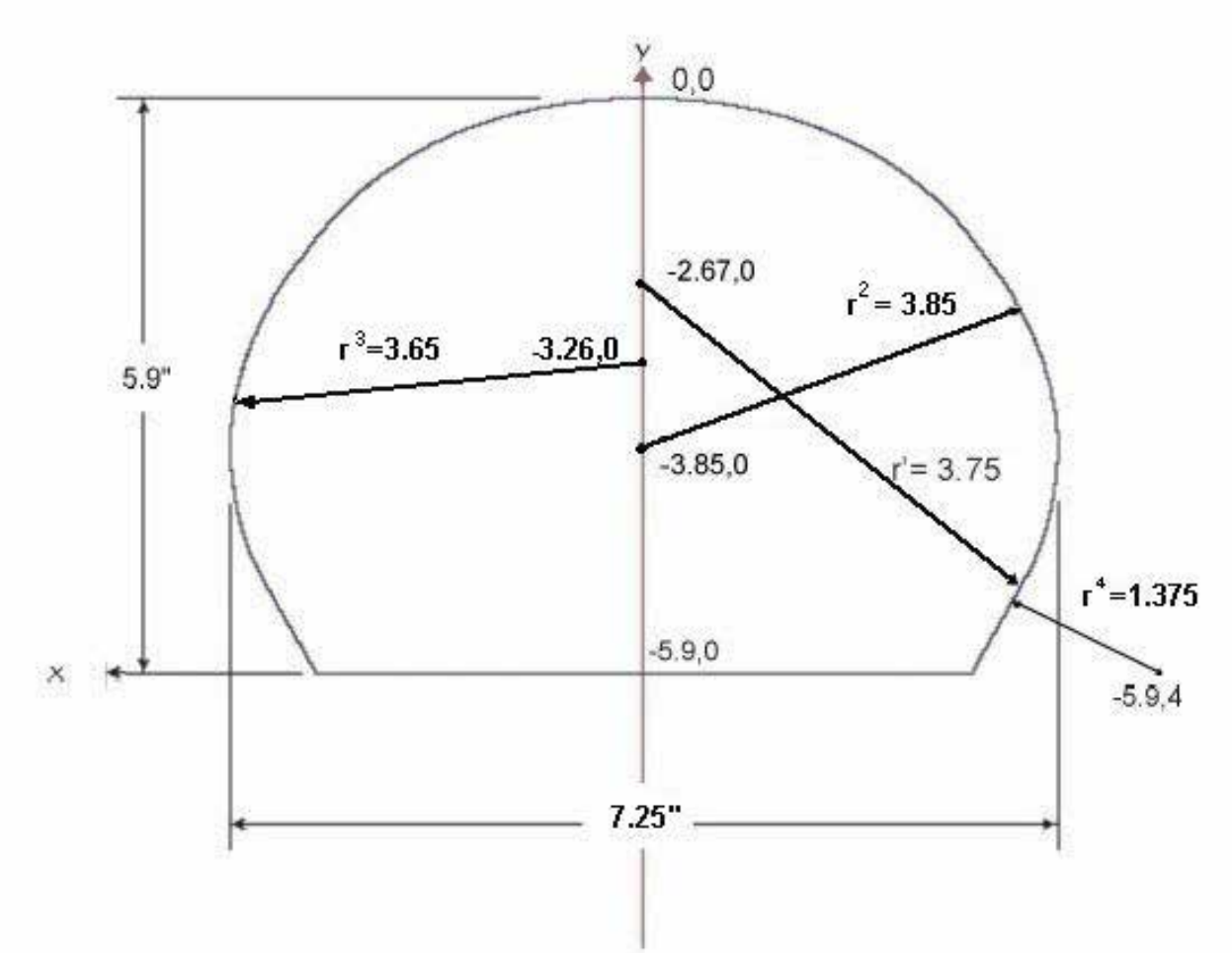


At the nose



At the eye

FIGURE 2



Drawing not to scale.

Test Blade Penetrator[1]

Cut from $^1/_4$-inch rigid material. All dimensions in inches. Tolerance ± 0.125 inch.
Drawing uses a coordinate system with its origin at the top along the centerline. Radii 1 and 2 begin on the centerline and blend smoothly with radius 3, also beginning on the centerline, all of which blends smoothly to reverse radius 4. The center point of radius 4 is –5.9" from apex at the centerline and to the right 4". The left and right sides are mirrored. Only the edges that have radii are for penetration testing. The corner points created at the base of the test penetrator shall not be used to test for penetration.

FIGURE 3

[1] Test Blade Penetrator is available from Southern Impact Research Center.

JULY 2004 MODIFICATIONS/REVISIONS

- Clarified penetrator drawing.

AUGUST 2004 MODIFICATIONS/REVISIONS

- Modified Scope
- Added NOCSAE 041 as a referenced document

NOVEMBER 2004 MODIFICATIONS/REVISIONS

- Clarified penetrator drawing by adding 4th radius.

JUNE 2007 MODIFICATIONS/REVISIONS

- Updated Figure 1 to show limited contact/ocular area coverage on headforms

DECEMBER 2009 MODIFICATIONS/REVISIONS

- REVISION: Added dimensions for limited contact/ocular area for small and large headforms to Figure 1
- Corrected typo in dimension for penetrator Figure 3

FEBRUARY 2011 MODIFICATIONS/REVISIONS

- Moved test requirements to Section 8. Clarified test requirements.

MAY 2012 MODIFICATIONS/REVISIONS

- Clarified Section 3 for standalone test report
- Moved requirements to Section 4 from Section 3 for clarity
- Specified Lacrosse Ball requirements
- Added NOCSAE 049 as a referenced document

APRIL 2013 MODIFICATIONS/REVISIONS

- Corrected typos

OCTOBER 2014 MODIFICATIONS/REVISIONS

- Updated document to include level of compliance requirements.
- Added Date specification becomes effective
- Updated title name of NOCSAE DOC. 001
- Added Lacrosse Ball Parameters to Section 5 for Clarification
- Added language to Section 5 to clarify impacts to the face protector
- Added SEI Certification to Section 8, “Labels and Warnings”

JUNE 2015 MODIFICATIONS/REVISIONS

- Updated NOCSAE seal/logo artwork

JANUARY 2017 MODIFICATIONS/REVISIONS

- REVISION**:** Changed Section 5.2 projectile requirements

JUNE 2017 MODIFICATIONS/REVISIONS

- Modified labeling reference from ND021 to ND001

DECEMBER 2017 MODIFICATIONS/REVISIONS

- Updated formatting and corrected typos
- Removed shimming language from 7.1

JUNE 2024 MODIFICATIONS/REVISIONS

- Replaced references to ND 001 Sections 9.1, 9.2, and 9.4 with the referenced language
- Removed reference to ND 021 Section 5.2
- Copied and added Condioning Environments, Construction, and Materials requirements from ND 001
- Added ND 015 as a referenced document
- General formatting updates