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BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

भारतीय मानक मसौदा

विंडसॉक्स — विशिष्टि

Draft Indian Standard

Windsocks — Specification

ICS 07.060

Meteorological Instruments Sectional Committee, PGD 21	Last date for receipt of comment is **30 November 2025**

FOREWORD

(Formal clause will be added later)

A windsock is a conically shaped tube made of woven textile that is used to measure both wind direction and speed. A wind cone is an assembly where a wind sock is fixed on a mast above the ground. This is mainly used in airport runways which is more useful for the pilot in the plane to know the direction and the approximate speed of the wind.

This draft standard prescribed the construction of the wind cone, material for the mast and the cone and performance requirements.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*).’ The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Draft Indian Standard

WINDSOCKS — SPECIFICATION

1 SCOPE

This standard specifies fabric windsocks and their supporting structures used at airports and heliports to indicate surface wind conditions.

NOTE — Windsock and wind cone are being used interchangeably and are synonyms.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

3 CLASSIFICATION

Based on the mounting types, style of lighting and size of the fabric windsock is classified as below:

3.1 Types

a) L-806 — Those mounted on low-mass supporting structures (*see* Fig. 1)
b) L-807 — Those mounted on rigid supporting structures (*see* Fig. 2)

3.2 Style of Lighting

a) Style I-A — externally lighted
b) Style I-B —internally lighted (*see* Fig. 3)
c) Style II — unlighted

3.3 Sizes

a) Size 1 — 2.5 m, for use with Type L-806 and L-807 assemblies
b) Size 2 — 3.75 m, for use with Type L-807 assemblies.

4 MANUFACTURE

4.1 Environmental Conditions

The wind cone assemblies shall be designed to operate under the following environmental conditions:

a) Temperature — Any ambient temperature between -20°C and +55°C.
b) Wind — Wind speeds up to 75 knots (140 km/h or 86 mph).

4.2 Fabric Windsocks

4.2.1 *Fabrication*

The fabric windsock shall be made so it takes the shape of a truncated cone (cone with the tip "sliced off") when it is filled with air. It shall be reinforced at all points that are subject to abrasion by flexing against the metal framework; and be designed to allow removal and replacement without the use of special tools or stitching. The fabric windsock shall be constructed to allow water drainage out of the area of the basket assembly.

4.2.2 *Dimensions*

4.2.2.1 The minimum effective length and the throat end opening diameter, respectively, of the fabric windsock shall be as follows:

a) Size 1 - 2.5 m in length and 0.45 m in throat diameter.
b) Size 2 - 3.75 m in length and 0.9 m in throat diameter.

4.2.2.2 The taper or the fabric windsock from the throat to the trailing end must be designed to cause the windsock to fully extend when exposed to a wind of 15 knots (28 km/h or 17mph).

4.2.3 *Fabric*

Fabric for the windsock may be made of cotton, a synthetic material, or a blend of the two, and may be coated. The fabric shall be water repellent (not a water absorbent), if the fabric is not naturally immune to water absorption, it shall be treated to become water repellent. The colour of the windsock fabric shall be natural (white), yellow, or orange as specified by the purchaser. There shall be no lettering or logos on the windsock. The fabric shall meet the following requirements for strength and colour fastness:

a) Minimum breaking strength — Warp - 667 N; Filling - 667 N; when tested as per IS 1969 (Part 1) to determine the minimum breaking strength.
b) Good or better colour fastness as determined by Method as per IS/ISO 105-B03.

4.3 Framework

4.3.1 A framework shall be provided to hold the throat of the fabric windsock fully open under no wind conditions and to provide an interface with the support. It shall be of low-mass design so as to offer minimum resistance to an inadvertent strike by aircraft. The framework may be made of metallic or nonmetallic material. Provide a means for protection against corrosion of ferrous materials. Ferrous materials shall be hot-dipped galvanized, zinc-plated, or epoxy-resin-coated to protect against corrosion.

4.3.2 The framework is to be constructed to deter the accumulation of water in the windsock. The framework must support the fabric windsock in a rigid position for three-eighths of its length. When the fabric windsock is attached to the framework the combination must perform as a wind vane. Bearings, bushings, or like devices must be either permanently lubricated or provided with fittings to allow periodic lubrication.

4.4 Supporting Structures

Typical supporting structures are shown in Fig. 1, Fig. 2 and Fig. 3. Although the illustrations are typical, the dimensions shown are to be complied with.

4.4.1 *Type L-806*

The type L-806 support shall be of low mass, and designed for easy installation and maintenance. When firmly anchored, the frangible support shall withstand a moment of 475 N m without damage and fail before a moment of 950 N m is reached by a force applied parallel to and 1.8 m above the surface to which the support is attached.

4.4.2 *Type L-807*

The type L-807 support may be hinged at its base or near its middle so the wind cone and light fixture can be serviced from the ground. When the support is mounted in place, it must withstand, without damage, a moment of not less than 4340 Nm when the force is applied parallel to and 4.8 m above the surface to which the support is attached.

4.5 Windsock Movement

The windsock shall move freely about the vertical shaft it is attached to and when subjected to wind of 3 knots (5.6 km/h or 3.5 mph) or more and indicate the true wind direction within ± 5 degrees.

4.6 Photometric Requirements

Place and aim light fixtures to minimize objectionable glare to aircraft pilots. Wiring from the base of the supporting structure to the light fixture shall be housed in the structure or in electrical conduit. Ensure electrical cable is of the proper type and size for its application.

4.6.1 Style I-A, externally lighted wind cone assemblies shall be supplied with sufficient light fixtures to provide a minimum of 21.5 lux illumination on any point of the horizontal plane described by the complete rotation of the upper surface of a fully extended cone.

4.6.2 Style I-B, internally lighted wind cone assemblies shall have backup light sources so the wind cone will not be rendered ineffective at night if a primary light source fails. The power supply arrangement must be in such a way that when transferring electrical power to the lamps the wind cone assembly is allowed to rotate freely with the existing wind. The top and lateral surfaces of the fabric windsock of style I-B wind cone assemblies shall have an average luminance of 35 to 103 cd/m^2 (10 to 30 ft-lamberts (fL)) and a minimum luminance at any point of 7 cd/m^2 (ft-lamberts (fL)).

4.7 Painting

All exposed metal parts of the wind cone assembly, except reflecting surfaces of light fixtures, shall be given one prime, one body, and one finish coat of paint. The prime coat shall be appropriate for the particular metal being painted. The finish coat shall consist of colourfast orange colour paint.

4.8 Equipment Parts and Instructional Manual

A manual shall be supplied with each assembly containing, as a minimum, the following information:

a) Complete wiring diagram for lighted wind cones,
b) Complete parts list with the name and part number of the original manufacturer,
c) Assembly and installation instructions, including mounting foundation and anchor bolt requirements, and
d) Maintenance instructions.

5 TESTING

5.1 Qualification Tests

5.1.1 *General*

Each type, style, and size of wind cone assembly shall be tested.

5.1.2 *Windsock Cone Attachment*

Test the attachment of the fabric windsock to the metal framework by applying the following tension to the free end of the wind cone:

a) Size 1 - 200 N
b) Size 2 - 450 N

Any distress noted in the fabric windsock or the means of attachment shall be cause for rejection.

5.1.3 *Support Rigidity*

Mount the support on a surface to simulate its normal field installation and apply the following forces to the support. Apply the force parallel to and 2at the specified distance from the surface:

Type	*Force*		*Distance*
	Hold	*Fail by*	
L-806	264 N	530 N	1.8 m
L-807	890 N	—	4.9 m

NOTE — Low mass structures must cause minimal damage when struck by aircraft. The structure must not wrap around the aircraft but must crumple or collapse on impact.

5.1.4 *Windsock Movement*

Test the windsock movement around the vertical axis. Ensure the windsock moves freely and aligns with a 3 knots (5.6 km/h or 3.5 mph) wind as specified in **4.5**. The wind test shall be run at no less than 6 equally spaced points about the vertical axis.

5.1.5 *Photometric Test*

5.1.5.1 *Style I-A, externally lighted wind cone*

The illumination shall be tested at the throat, trailing end, and center points of the upper surface of the extended fabric wind cone at 30°intervals throughout a complete horizontal rotation of the wind cone. The illumination at the test points shall not be less than 21.5 lx (2 foot-candles) as noted in **4.6.1**.

5.1.5.2 *Style I-B, internally lighted wind cone*

The internally lighted wind cone shall be tested for luminance while fully extended. Luminance measurements shall be taken from 0.3 m away from the throat to 3.3 m for Size 2, or 2.1 m for Size 1, away from the throat at 0.3 m intervals and 45° increments around the circumference of the wind cone. The spot size for the luminance measurement must be 4 cm in diameter. The average luminance on the top and lateral surfaces of the windsock must be between 35 lx and 103 lx as noted in **4.6.2**.

5.1.6 *Windsock Extension*

Test the windsock to assure that it extends fully when subjected to a wind of 15 (+2, -1) knots [(+3.7, -1.8) km/h or 17.26 (+2.3, -1.2) m/h].

6 MARKING

6.1 The instrument shall be supplied with the marking of the following details:

a) Style of the windsock,
b) Type of the pole,
c) Size of the wind cone,
d) Name of the manufacturer or trademark, and
e) Date of testing.

6.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark.

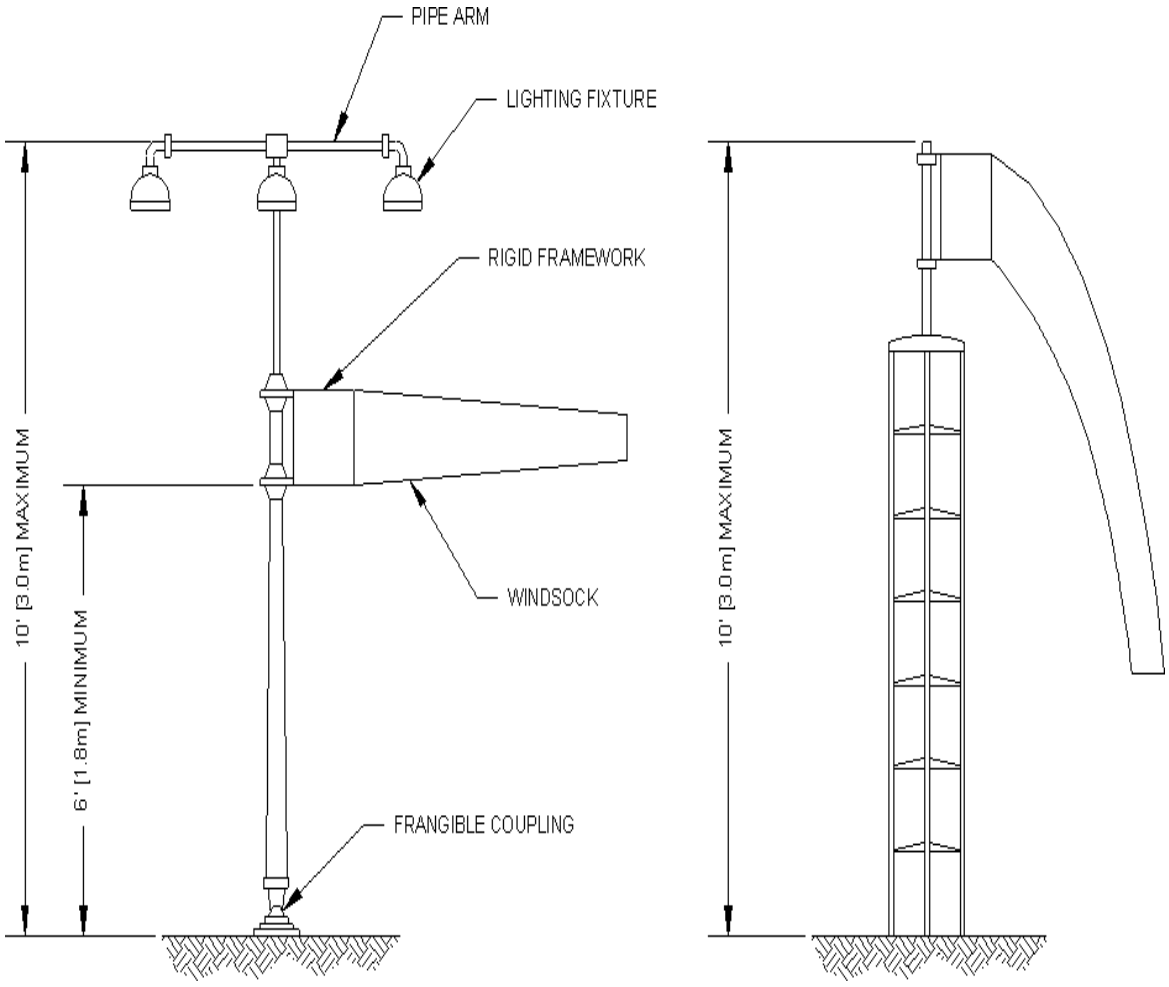

FIG. 1 TYPICAL TYPE L-806 SUPPORTS

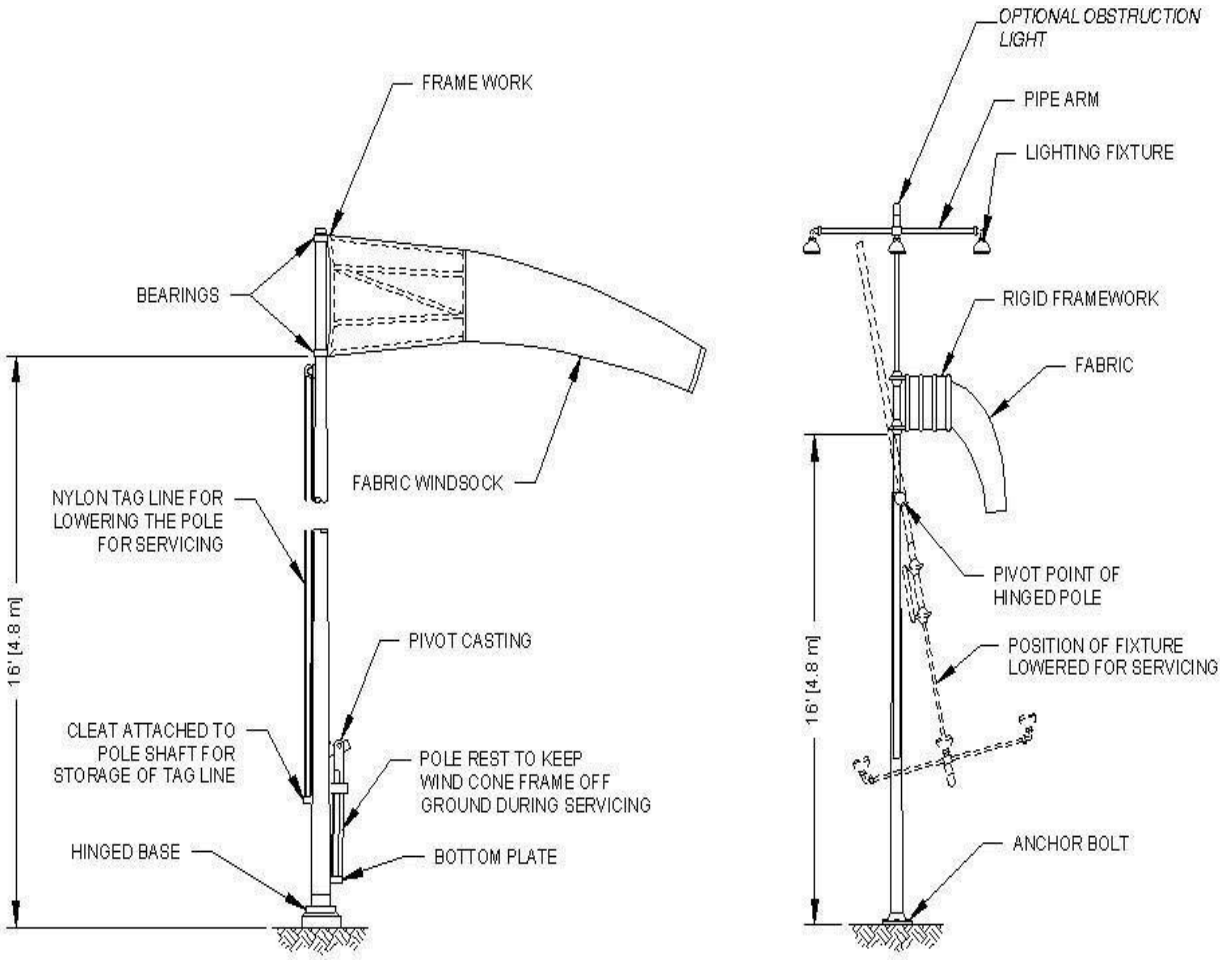

FIG. 2 TYPICAL TYPE L-807 SUPPORTS

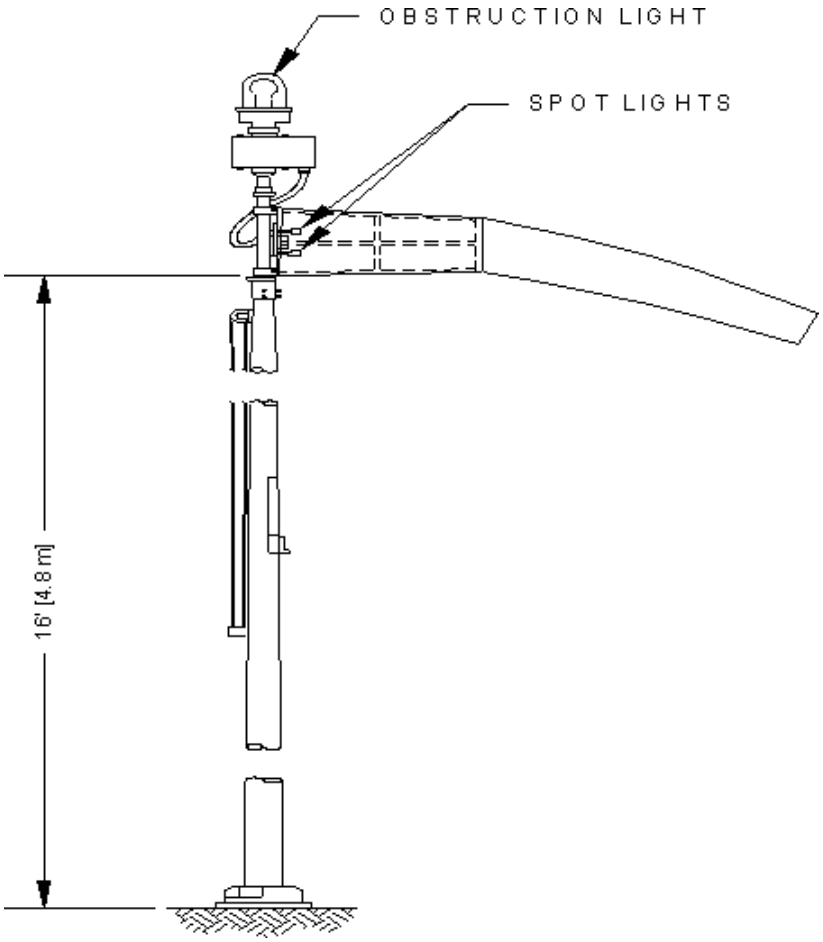

FIG. 3 TYPICAL INTERNALLY LIGHTED WIND CONE

ANNEX A
(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
1969 (Part 1) : 2018/ ISO 13934-1 : 2013	Textiles — Tensile properties of fabrics: Part 1 Determination of maximum force and elongation at maximum force using the strip method (*fourth revision*)
IS/ISO 105-B03 : 2017	Textiles — Tests for colour fastness: Part B03 Colour fastness to weathering — Outdoor exposure
IS/ISO 105-B04 : 2024	Textiles — Tests for colour fastness: Part B04 Colour fastness to artificial weathering — Xenon arc fading lamp test (*first revision*)