PROPOSED SMPTE STANDARD

SMPTE 419M

for Motion-Picture Film (70-mm) —
Projectable Image Area, 15/70 Format

1 Scope

This standard specifies the dimensions of the film image area intended for projection from a 15/70 special-venue motion-picture film, the placement of this area relative to the perforations and the reference edge of the film, and the location of pins used for registration during projection.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were 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 the standards indicated below.

SMPTE 119-2004, Motion-Picture Film (70-mm) — Perforated 65-mm, KS-1870

SMPTE 417M, Motion-Picture Film (65-mm) — Camera Aperture Image and Usage, 15/70 Format

3 Dimensions

The dimensions shall be as given in figure 1 and table 1.

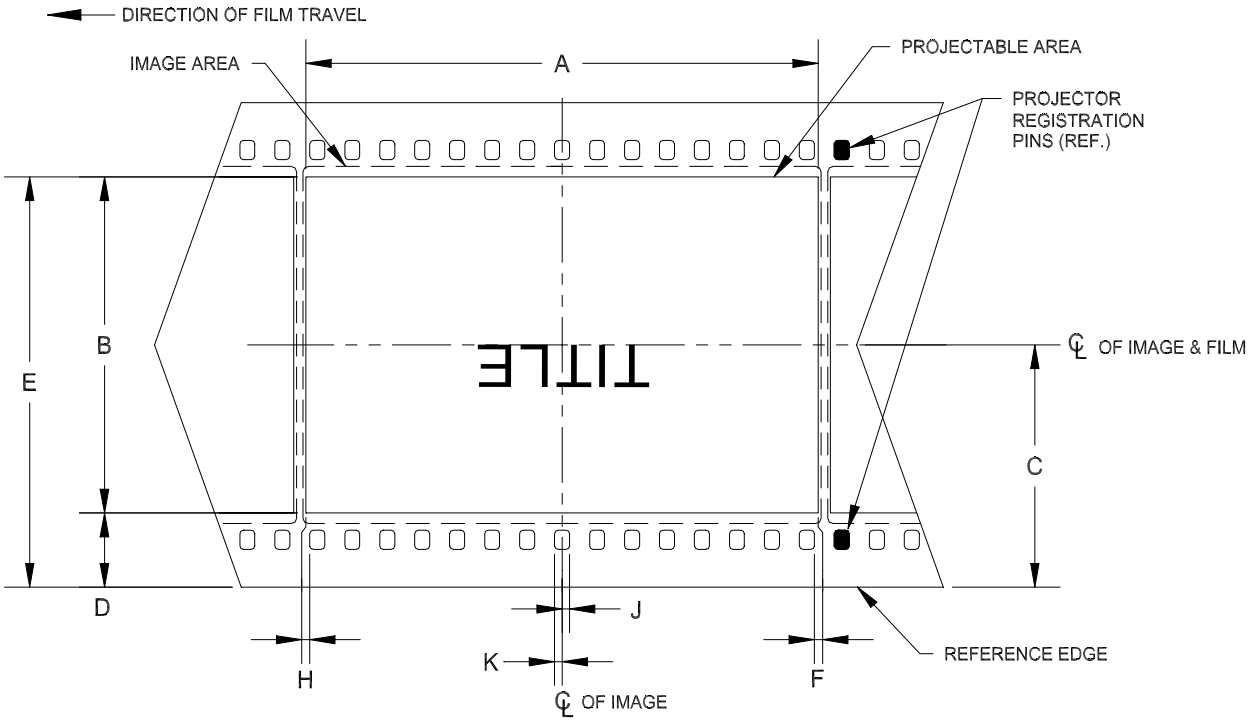

Figure 1 – Projectable area of film

(looking toward projector lens, facing emulsion side)

Table 1 – Specifications

Dimensions	Description	Inches	Millimeters
A	Projectable width	2.740 max	69.60 max
B	Projectable height	1.912 max	48.56 max
C	Reference edge to image centerline	1.377 ref	34.98 ref
D	Reference edge to image	0.420 min	10.67 min
E	Reference edge to image	2.334 max	59.28 max
F=H	Projection edges centered to perforations	within 0.008	within 0.20
J=K	Projection centerline to perforations	nominally equal	nominally equal

NOTES

1 Aspect ratio. The nominal projected aspect ratio of this film system is 1.435:1. However, it should be understood that material cross-printed to this format from a different-format source may result in non-standard frame boundaries.

2 Camera vs. projector aperture. The actual image on the film is significantly larger than the maximum area intended for projection, such that no portion of the image will be cropped prior to the projector aperture.

3 Projector aperture vs. projectable area. Dimensions A, B, D, and E define the maximum area on the film that is available for projection. They do not define the opening in the aperture plate of a projector. The size of this opening may differ from dimensions A and B, for example, because of the physical separation necessary between the aperture plate and the film to avoid scratching the film, the slant of the marginal rays accepted by the projection lens, etc.

4 Projected area distortions. It is recognized that, in many cases, the actual film image area that is projected may be smaller than the projectable maximum and, in some cases, may be nonrectangular (for example, an irregular four-sided figure bound by either straight or curved lines). Such departures may result from equipment considerations, such as slight inconsistencies among lenses, screen sizes, etc.; from geometric limitations such as the screen surface being at an angle other than 90° from the projection axis, or being nonplanar, or both; from aesthetic considerations such as pictorial composition within more restrictive image limits; and finally, architectural limitations of the venue itself. It is intended that the actual projected film image area be the largest appropriately-shaped figure that can be inscribed within the specified dimensions.

5 Perforation. Film intended for projection in this format shall be perforated as specified in SMPTE 119.

Annex A (informative)
Additional data

A.1 Film axis rotated

This film format uses a horizontal orientation on the film, whereas most other motion picture formats are vertical. Other similar standards use dimension ‘A’ for image width and ‘B’ for height. In those documents the image width extends laterally across the width of the film strip, and the image height extends in the longitudinal direction. The traditional relationship of the dimension letters A and B to height and width of the image was maintained in this standard. However, because this format is oriented on the film rotated 90° from the traditional, here ‘A’ represents the longitudinal direction on the film, and ‘B’ is the lateral axis.

A.2 Emulsion side for 3D use

The image orientation shown in figure 1 represents the preferred configuration for all uses, including 3D. However, in some cases the film orientation for 3D films may be reversed for either the right eye or the left eye film strips, as a result of some camera systems using a beamsplitter in order to obtain one of the images. The resulting contact-printed release print is reversed for one of the eyes. Some camera rigs mirror the right eye image, some mirror the left eye image. This has caused problems in making prints as well as projecting the film. Focus problems are sometimes encountered with prints that alternate between emulsion-toward-the-lens vs. emulsion-toward-the-lamp orientations within the same title.

In addition, the projectors typically used for this format utilize a field flattener in contact with the film. This optical surface is occasionally shifted laterally in order to clean off dirt. With the emulsion side in contact with the field flattener, the emulsion tends to adhere to it, such that film damage can result when the device is shifted. For these reasons, it is preferred to utilize optical printing for 3D films as required to convert the print orientation to that shown in figure 1.