

# Technical requirements for the construction process of the silver screen frame system

## I. Ordinary reverse-wrap screen frame

### (i) Technical requirements

- 1、 The design and production of the screen frame shall be combined with the technical parameters of the cinema hall and implemented according to the technical design plan. The design of the screen frame system shall meet the needs of various screen formats.
2. The minimum design viewpoint height shall meet the requirement of unobstructed sight lines, and the line of sight height (C value) shall not be less than 120mm.
- 3, the vertical projection angle should generally be less than  $6^{\circ}$ , should not be greater than  $10^{\circ}$ , when the venue conditions can not meet, can be adjusted by the pitch angle of the screen frame.
- 4, the design of the screen frame should pay attention to the cooperation with the projection window, the ideal situation should be the centre of the projection window should be placed on the screen picture centre in the same axis, the horizontal projection angle should not be greater than  $3^{\circ}$ , if deviations can be adjusted by the screen frame level angle with.
- 5, the use of high gain screen screen frame should be designed as an

arc to meet the requirements of the audience area viewing screen brightness uniformity. After the installation of the curved screen, should ensure that the arc is round and smooth. When the screen is curved in the horizontal direction, the radius of curvature should be 1.5 to 2 times the projection distance  $L$ ; the distance from the midpoint of the curved screen to the wall behind the screen should not be greater than 1200mm. when the projection distance and the screen width ratio is greater than 1.5 and the screen width does not exceed 10m, the screen can be flat, the distance from the screen to the wall behind the screen should not be greater than 1000mm.

6、 Usually, the distance between the left and right edges of the screen frame and the star screen/special cinema screen frame from the wall finish should be controlled at 150mm (not less than 100mm, not more than 300mm)

7. The materials, strength, cross-sectional dimensions and geometric parameters used are not lower than those required on the process drawings and ensure the safety and stability of the screen frame during use.

8, the curved surface of the screen frame should be based on the projection distance of each hall, projector pitch angle, projection lens specifications, the lowest viewpoint height of the hall and the height of the projector's optical axis to calculate the curvature and tilt of the screen to ensure the clarity of the screen image, the uniform distribution of brightness and the precise match between the projection screen and the screen.

9、The relevant parameters of the screen frame are required.

a/ The frame is made of light steel frame structure, mainly composed of outer frame, screen support frame, speaker support frame, installation and maintenance horse path, shock absorbing support members, etc.

b/ The main parameters are indicated in the process design drawings, the height and width dimensions of the shelves are matched in the design according to the specific conditions of the cinema hall according to the principle of synchronisation.

c/ Screen stand columns: in principle, the distance between each column is approximately 2800mm and must not exceed 3m. For cinema halls with a screen width of 9000mm or less, 4 columns are required; from 9100mm to 14000mm, 6 columns are required; from 15000mm to 20000mm, 8 columns are required; from 21000mm to 26000mm, 10 columns are required.

d/ Each part of the components must be factory-produced prefabricated components, through the universal connection components to complete

the steel structure on site assembly production, installation site allows only a small amount, the necessary welding construction, and the screen after the speaker support frame (main speaker platform) into a whole structure, the main speaker platform should be set up to reliably stabilize the entire screen frame, and facilitate the future installation of the main speaker, commissioning and maintenance The main speaker platform should be set up to reliably stabilise the entire screen frame and facilitate future installation, commissioning and maintenance of the main speakers.

e/screen/screen frame/screen size: after the completion of the cinema structure layout process planning drawings (plan, elevation), according to this drawing combined with the template "screen/screen frame/technical parameters of the calculation table" to complete the calculation of the relevant parameters, as the "first draft" of the calculation table. To initially determine the projection ratio, screen screen and screen frame specifications; after the construction progress to the completion of the interior decoration surface of the cinema hall, it is necessary to further arrive at the scene to collect data to deepen the synchronous changes, replace the dimensions to the "preliminary draft", the formation of the "final draft" of the calculation table "To order and implement, in order to achieve the perfect combination of screen, screen frame, projection screen and the parameters of the cinema. During the process, the construction site conditions are encountered

Changes must also be made to the calculation sheet at the same time as the change.

f/ Speaker support frame: The speaker support frame is located at the rear of the screen frame, set up in the horizontal direction in a total of three places, left, centre and right, the height of the frame is adjustable, and the surface material is 18mm thick joinery painted with black fireproof paint. Static load: the static load of each speaker support frame is not less than 300kg.

h/ Vibration damping support frame: The vibration damping support frame is used for the connection and fixing of the screen frame to the wall. At the connection with the wall, vibration damping material must be used to isolate the connection.

i/ Decorative black curtain: the curtain is a black matt sound-transmitting cloth, the curtain should be treated with flame retardant to ensure that it meets the national fire rating. The material used must be provided by the supplier with the fire rating B1 test certificate issued by the national authority.

j/ The screen frame must be set up for screen installation and maintenance of the horse path, the height of the horse path installation so that personnel hanging screen shall prevail. k/ Road length: synchronous screen frame width; road width: not less than 400mm; load: not less than  $1\text{KN}/\text{m}^2$ ; (above the speaker for the screen installation and maintenance road, the speaker platform needs to be connected between the road for the speaker installation and

maintenance replacement)

1/ Requirements for external surface treatment of structural parts: All parts should have a smooth surface without flying edges or burrs, no bad cutting or welding is allowed; all steel parts must be treated with sandblasting and rust removal, black matte powder spraying and baking on the exterior, no overall brushing/spraying at the construction site.

9. The individual components of the screen frame can be packed and transported separately for easy access to the construction site.

10. The screen frame shall comply with the relevant national or international industry and local standards and specifications, and in case of conflict, the higher one shall prevail.