

Projector and Screen Data and Considerations: Lynnhurst Church

Projection Screen Size Selection

One of the most important decisions in screen selection is to determine the correct size of screen based upon—

1. The dimensions of the audience area.
 2. The projection format(s) to be used.
- Audience Area—The goal is to make the screen large enough so those in the back row can read the subject matter easily, but not so large as to overwhelm the closest viewer.
 - Height—Use the following formulas for calculating screen height for maximum legibility. For 4:3 NTSC moving video and entertainment, screen height should be at least 1/6 the distance from the screen to the furthest seat; for charts and data, as in a conference or lecture room, use 1/4; for complex graphics found in a command/control center, use 1/2.
 - Width—Screen width is generally determined by the height of the screen and the projection formats to be used.
 - Ceiling Height—The bottom of the screen should be approximately 33-36” above the floor in a room with a level floor and several rows of seats. In rooms with theatre seating or only one or two rows, the bottom of the screen should usually be 33-36” above the floor. Evaluate any barriers, and try to make sure that the lower part of the screen will be visible from all seats. Extra drop may be required to position the screen at a comfortable viewing level in a room with a high ceiling.
 - Projection Format—Once you have determined the correct size of screen based upon the audience area, that size may be modified based upon the projection equipment. If the screen will only be used with one type of projector (NTSC video, HDTV, etc.), it is easy to determine the exact screen dimensions based upon its projection format.

Lynnhurst Calculation:

Distance from rear pew to screen location: ~ 54'-0"

Recommended Height of screen based on above: $54' / 6 = 9'-0''$

NTSC ratio WxH 4:3 = 9' high x12' wide screen size recommendation

A smaller screen may be desired for the project for aesthetic reasons and specific desired projection needs.

Information reference source:

http://www.draperinc.com/Screen_Pages/ProjectionCalculator.htm

Projector and Lens Selection

Two things need to be considered:

1. Appropriate brightness of the projector and
2. Capability of the projector to support a long-throw lens due to the distance from projector position to screen.

Canon

Throw Distance Calculator
LV-7565
Ultra Long Focus Zoom Lens

The throw distance can be calculated by entering the screen diagonal, height or width.
Throw distance ratio (throw distance: screen-size width ratio) 4.15 - 5.78 : 1

Download the projection distance PDF data

Adjust projector to desired distance or image size

Adjust Projector
Forward
Backward

Select the model LV-7565/F Ultra Long Focus Zoom Lens

Calculation according to Image Size

Calculation based on the throw distance

Image Size		
Diagonal	180"	Calculate
Height	9'0"	Calculate
Width	12'0"	Calculate

Throw distance 49'4" ~ 68'11"

Change Units m inch

Change the Aspect Ratio 4:3 16:9 16:10

One Possible High Output Projector (4400 Ansi Lumens) with an Ultra Long Throw lens (Ultra Long Focus Zoom Lens LV-IL04) is the LV-7565. As shown, this projector and lens would provide a 9x12 image at the throw distance from the rear of the sanctuary to the proposed screen position in the chancel area (54'6"). A projector with less light output can be considered. The LV-7555 has an output of 2500 Ansi Lumens. Other projector brands and lenses can be considered as well.

<http://www.canon.com/lcd-sim/simulator.html>

Wiring and Electrical Considerations

Projector: The projector requires 120volt AC at its mounting location. Wiring for computer video and composite video from the control position at the rear of the sanctuary should be provided. Depending on the model of projector selected, remote control wiring may be needed between the Sound/Video position and the projector. Alternately, an infrared remote may be used with many projectors.

Wiring for computer video signal from a laptop at the front of the sanctuary to the projector should be provided.

Motorized Screen: 120V AC should be provided to the hanging position for a future screen (rear side of beam). A low voltage control module is mounted near the screen and power supply. A 3-wire 20 to 24 AWG low-voltage control cable runs from the control module to the screen control switch plate (single gang box). A screen control plate should be located in the chancel area and at the sound/video control area at the rear of the sanctuary.

Refer to the following for manufacturer details:

<http://da-lite.com/products/product.php?pID=78&cID=8>