

## Technical Requirements for Virtual Field Trip Experience

### Pamplin Historical Park & The National Museum of the Civil War Soldier



Pamplin Historical Park's virtual field trip experiences are available to anyone around the globe who enjoys a premium dedicated Internet connection and video conferencing equipment supporting the H.323 protocol. If the customer's conferencing equipment is in the Polycom HDX series (or supports the standards for H.264 high profile communications), and the customer is able to dedicate at least 512 kbps (outgoing and incoming) to the video conferencing connection, the video signal received will be processed and delivered in 720p HD quality.

For best results, it is suggested that, at minimum, the customer use traffic shaping technology to "guarantee" that a bandwidth of 512 kbps (outgoing and incoming) be available for the H.323 communications with Pamplin Historical Park for the duration of the scheduled experience. By guaranteeing that optimal bandwidth is available for the connection, the customer can ensure that their experience will be the best possible, within the limits of state of the art video conferencing technology. While the Park supports a lesser bandwidth of 384 kbps, the customer should be advised that this will limit the quality of the participants' experience.

Pamplin Historical Park recommends that a "test call" be arranged between the Park and the customer's site, approximately one week prior to the scheduled event, in order to ensure that all necessary configurations have been made for satisfactory H.323 communication between the two sites prior to the date of the event. Arrangements for a second "test call" should be made within 15 minutes prior to the start of the program to test for any new idiosyncrasies or issues that may have been introduced since the first test call was made, and to ensure that the customer's equipment is prepared and functioning properly. This provides some time for resolving any unforeseen problems without encroaching on the time reserved for the experience.

Pamplin Historical Park will initiate all IP communications with the customer's site, both for testing purposes, and for the virtual experience itself. Arrangements should be made accordingly.

The following ports must be open at the customer's site, and not used by any other services, in order to allow for proper H.323 communication between Pamplin Historical Park and the customer's site.

PORT	TYPE	PROTOCOL	DESCRIPTION
<b>1720</b>	Static	TCP & UDP	h323hostcall Q.931 (Call Setup) (must be bi-directional)
1024 - 65535	Dynamic	TCP	H245. Can be set to "Fixed Ports" on Polycom systems. See the next line.
<b>3230 - 3243</b>	Static	TCP	H.245 call control: aka RTCP (must be bidirectional). Fixed Ports must be enabled on the Polycom system with said range. Consult the system's documentation.
1024 - 65535	Dynamic	UDP	RTP (video and audio data). Can be set to "Fixed Ports" on Polycom systems. See the next line.
<b>3230 - 3341</b>	Static	UDP	Audio and Video (must be bidirectional). Fixed Ports must be enabled on the Polycom system with said range. Consult the system's documentation.

The customer should be able to freely exchange packets of data over the above ports with the static IP address **65.242.93.198**, and should be able to provide a static IP address, external to their local area network, by which their video conferencing equipment may communicate over the same ports with Pamplin Historical Park.