



## about the new auditorium

Willow Creek Community Church began brainstorming with Goss/Pasma Architects back in 2000 options for expanding facilities to meet the needs of the church.

At the very first design team meeting for the new auditorium, Craig Janssen of Acoustic Dimensions stood in front of Willow Creek's leadership team and wrote three words on the board: mission, activity, facility. The concept he presented was this: if your mission drives what you do, then what you do should drive what you build.

It was a concept the church had no trouble understanding. One of the defining characteristics of Willow Creek Community Church is its sense of mission. This core sense of purpose has remained consistent to the ministry from its early days in the rented movie theatre from which the church gets its name to its current position at the epicenter of the evangelical world.

Three days of meetings which included the leadership team, design team, management team, operations team, production team and artistic teams, the mission was articulated clearly. It wasn't just about supporting the level of production for which Willow Creek is known. It was about connection. The space needed to be as much about people as it was about presentation. They wanted a space that would celebrate community and connectedness...between people in the seating areas, between the congregation and the platform, between the production team and artists.

*The water feature visually connects the main entrance to the lower level and adds its musical voice to the atrium space.*

The early design took these priorities and translated them into a room that enveloped. Acoustics and sightlines were purposefully designed to create a sense of aural and visual community. Large LED screens were designed to break the limitations of vision and to bring facial expressions to the furthest seat. The result is a space that values a sense of togetherness.

From Acoustic Dimensions' initial concept, Goss/Pasma Architects began to work on further development of the design, including the spaces outside of the auditorium. A comfortably oversized green room and kitchen was created as a space to build relationships between the production team and artists. Rehearsal rooms were created for small ensembles, instrumentals, vocals, orchestra, drama and dance. A loading dock, scene shop and storage room set free the set designers to be able to create things for events, conferences, and weekly services without having to limit their designs to the constraints of an 8' door....the width of the stage door on the previous facility.

Goss/Pasma created lobby spaces with aesthetically beautiful places to gather and talk. A coffee bar and spacious atrium blend seamlessly into the flow of the original facility. Water features add visual and aural beauty. Even when the facility is filled to capacity, people flow easily through the circulation areas.



Inside the auditorium, Acoustic Dimensions designed two balconies with the furthest seating sections of the first balcony terracing down to the main floor. The ceiling was designed to reflect sound down to create an intimate acoustic environment—which should have been an oxymoron in a room with 7,200 seats. It was important that the space not feel like an arena, yet too much absorption would kill the sense of excitement and people worshipping together. Careful studies of sound energy, room volume, and surfaces led to an integrated solution for creating the signature acoustic of the room. The room has energy without feeling cavernous.

The auditorium features a stage house that includes a fly tower designed by theatrical consultant, Schuler & Shook, with a grid at 70 feet, and a forestage grid at 56 feet



**Willow Creek Community Church**  
Leadership and Oversight / Installation of Systems

**Goss / Pasma Architects**  
Architectural Design

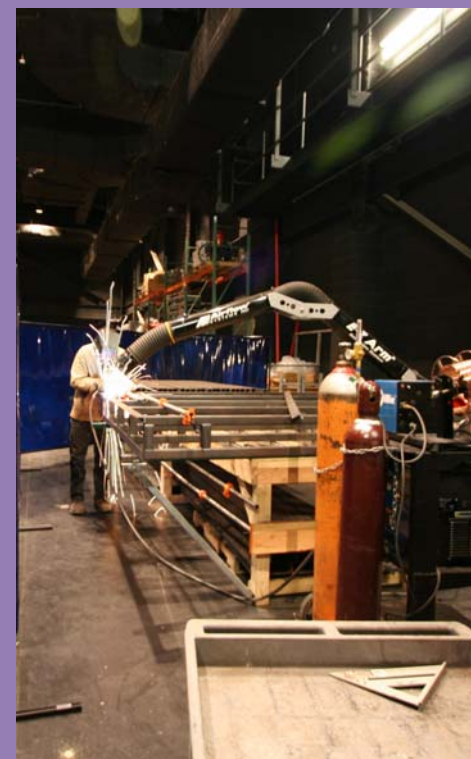
**Acoustic Dimensions**  
Auditorium Design, Audio, Video, and Lighting Design

**Schuler Shook**  
Stagehouse & Rigging Design

**Pepper Construction**  
General Contractor

**T.C. Furlong**  
Speaker System Design Assistance

**Meyer Sound**  
Speaker System Design Assistance



*A large backstage area in addition to a full scene shop allows sets to be constructed and stored onsite. Wagons on tricastors simplify the moving of set elements and speed up scene changes. Here a volunteer constructs one of the many wagons used in production.*

that allows for full rigging over the downstage area. The entire forestage is a lift that can park at stage level, thrust height, main floor, orchestra pit, or down to the scene shop under the stage.

Volunteers have constructed a series of wagons which allow sets to be rolled on and off the stage between scenes. In addition, there is a 90' x 30' door that separates the stage from the shop, so that work can continue even when the auditorium is in use. The Willow Creek production team was told that such a wall couldn't be built. But, they designed and installed it anyway. The wall bears the signatures of the crew of volunteers that built it.

The Willow Creek production team took on an enormous task in serving as their own installation contractor for the performance systems. The installation was no small task. Catwalks, rigging, audio, video and lighting systems were installed over the course of two years by hundreds of salesmen, truck drivers, managers and tradesmen working alongside contractor teams in the evenings and on weekends to integrate the systems. The endeavor has given a great sense of ownership to the talented people in the church's production ministry.

There are five 100-foot long motorized lighting bridges across the platform: two downstage of the proscenium over the apron and three upstage of the proscenium. The bridges can fly to any height and are easily lowered to stage level. The stage proscenium is 90 feet wide with a fixed height of 54 feet, though it is usually closed to 40 feet. The moving lighting bridges make that flexibility possible: an open, large operatic feeling for one event, and a small, cozy, more intimate atmosphere for acoustic sets.



Steve Hall - Hedrich Blessing

The panoramic windows flanking the stage were an important design directive not only because the campus has a beautiful view, but because it preserved the character of the previous auditorium. Acoustically, however, they presented a large reflective surface that was a challenge. To address this, the auditorium was shaped so that the windows splay wide from the stage. Acoustical banners can be lowered over the windows as needed.

The floor beneath the seating areas is reflective to support congregational worship.

A distributed dimming system was chosen for the 4-point theatrical lighting design over a traditional SCR dimmer rack system. Distributed dimming power is fed to the grid and broken out to the dimmer strips. Control is via an Ethernet network. The church is utilizing dual networks, one for day-to-day control of the system, and the other for backup or alternate use. The lighting console supports multiple universes of DMX.

The architectural lighting control systems were designed in harmony with the theatrical lighting control systems. The system was much more aligned with a traditional theatrical house lighting

system rather than a broadcast driven system and was designed at 35 footcandles. The main floor is lit with theatrical pars off of the catwalks and transitions into traditional recessed downcans in the balcony areas.

To achieve consistent illumination through the transition there are different wattage lamps. The high ceiling fixtures were strategically located close to the last catwalk to ease maintenance. The underbalcony uses lit coffers for architectural interest and to visually raise the ceiling height.

With valuable input from the church (supported by TC Furlong and Meyer Sound) AD designed a dual voice/music system (split mono) similar to Acoustic Dimensions' design for Hillsong Church in Sydney, Australia.

Furlong encouraged the church to self-perform the installation of the speaker clusters. There were a number of quality manufacturers of line arrays to choose from, so a "shoot out" was arranged allowing the client to hear different product in the space, assisting the church in their selection.

Sub-bass speakers are mounted under the platform and in the speaker cluster

area to support low frequencies. Front fill speakers cover the front rows and enhance realistic sound imaging.

Three existing digital consoles were reused at front of house, monitor, and broadcast mix positions. The digital consoles have built-in digital effects, and a MIDI sequencer is located at the front of house position to assist in productions. There are 16 channels of stereo in ear monitors (IEM) and 10 wedge mixes.

There are three producer's desks at the main technical booth. Each position has a digital intercom, two video monitors and a router control panel. This set up is not only for production, but also so that new producers and volunteers can be trained.

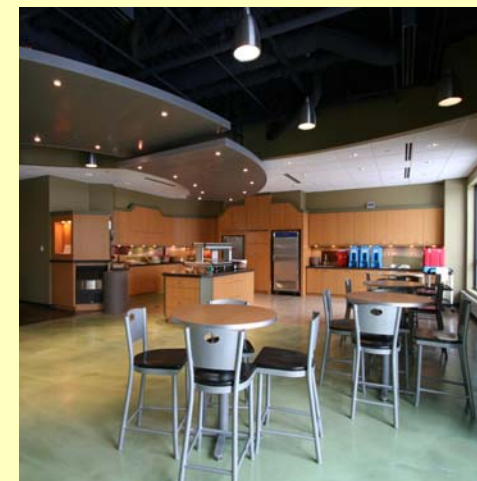
Rear projection was not possible in the space due to the stagehouse and counterweight systems. High ambient light from the windows precluded front projection. The solution was two tracking 25"W x 14"H LED display panel systems. Though the LED screens were a substantial investment, image magnification (IMAG) video plays a significant role in supporting the connection between people in the seating area and people on the platform. The tracking feature gives the church the flexibility to change the position of the

screens or to remove them when needed. The screens can come together to form a 32 x 9 aspect ratio, then be split apart and moved off stage for IMAG. They also have the ability to move onstage to make it appear visually smaller by reducing the proscenium, or they can be used in the extreme wide position to make use of the full width of the stage.

Given the height to the room and the height of the speaker clusters and the off-axis angle of the far seats in the upper balcony, four video screens were added to the media bulkhead to enhance the visual experience for people in the side upper balconies.

There are two remote pan/tilt units integrated into the front face of the mezzanine level as part of the nine cameras that are integrated into the auditorium. There are 54 triax panels to serve the lobby, rehearsal and studio spaces in the video production area on the first level of the building.

In the end, the most outstanding feature of the room isn't the level of excellence with which performance is supported. The most important achievement is the way the space works as a whole.



The green room is designed to build community within the production and artistic teams.



Individual rehearsal rooms located behind the auditorium provide spaces for artists to practice their craft.

## Selected equipment list

### Audio

- 14 Meyer MILO Loudspeakers (main L/R line arrays)
- 4 Meyer MILO 120 (expanded coverage)
- 22 Meyer M2D's (L/R line array speakers)
- 1 Meyer MSL-4 (fill for center seating)
- 4 Meyer MSL-4 L Track (sidefill coverage)
- 2 Meyer DF-4 (downfills)
- 7 Meyer M1D Loudspeakers (frontfills)
- 24 Meyer UPM-1 Loudspeakers (under mezzanine)
- 4 Meyer P-1 Processor
- 16 QSC CX702
- 34 Meyer UPM-1 Loudspeakers
- 2 P-1 Processor
- 9 Meyer UPA-1P (upper delay ring)
- 3 Yamaha PM1D Systems
- BSS Soundweb Processing System
- 5 Behringer Eurorack UuB802 audio mixers
- 1 Blue Sky SAT 6.5 powered monitors, sub (control room)
- 1 Mackie 1202-VLZPro 8 channel audio mixer
- 1 Panasonic amp
- 8 Tannoy Reveal systems

### Engineering

- 1 ADC component patchbay
- 18 ADC HD super video patchbays
- 18 analog DA cards
- 2 ADC RS422 patchbays
- 8 ADC Triax patchbays
- 30 AJA digital converters
- 16 Audio Accessory Mini Shorti Quick-Switch patchbays
- 1 Belkin 4-port KVM switch
- 1 Blonder Tongue off-air rooftop antenna
- 1 Cherry keyboard/trackpad in Middle Atlantic keyboard drawer
- 1 Dell CPU
- 1 ESE GPS time code generator, re-generator
- 1 Extron Hi-Def wideband video DA
- 1 Extron USP-405 Universal signal processor
- 1 Fast Forward F30 time code reader
- 1 Hamlet Microscope waveform/vectorscope (LD position)
- 1 Horita TVC time code clock keyer
- 3 Leader LZV-5100DE waveform/vectorscopes (shader position)
- 1 Leitch SDI multiplexer/demultiplexer, frame
- 3 Miranda Picolink ARC-371P aspect ratio converters
- 11 Ross Gear terminal frames
- 3 Ross Gear Analog audio frames
- 89 Ross video DA, converter cards
- 1 Samsung SIRT351 HDTV OTA receiver
- 2 Symetrix 422 stereo audio AGC/levelers
- 1 VBrick MPEG4 dual channel encoder
- 1 Videotek VSG-204D digital sync generator
- 1 Videotek VTM-320 waveform/vectorscope
- 1 Wohler AMP2 L8 8 channel digital audio meter
- 2 Wohler VAMP-1 analog AV monitor panels
- Belden cable
- Gepco cable

### Communication

- 1 ClearCom Compact System including 72-port Matrix Plus digital intercom frame

## Selected equipment list *(continued)*

### Wireless Communications

10 beyerdynamic double muff headsets  
3 BTR-500 UHF RadioCom wireless 2-chan base  
Lectrosonics used as RadioCom IFB  
20 Telex PH-88 lightweight headsets  
6 TR-500 UHF 2-chan beltpack for BTR-500

### Monitor Gear

6 QSC PL236 amplifiers for wedge monitors  
2 QSC PLX1602 amplifiers for bass shakers  
10 Yamaha SM12-IV wedge monitors  
10 Meyer UPA-1A bi-amped wedge monitors  
4 Meyer M1-A UPA-1A controller  
4 Guitammer Butt kicker2 bass shakers

### Video Monitoring

4 Marshall V-R63P LCD monitors (shading)  
8 Marshall V-R44P LCD monitors (tape op)  
1 Marshall V-R25P LCD monitor  
3 Philips 17PF8946A 17" LCD TVs  
2 Sony PVM-14MR4 (shading)  
1 Sony PVM-14MR4 (tape op)  
20 Sony LMD720W dual 7" LCD monitors

### Graphics

2 Communications Specialties Scan Do Pro II/D scan converters  
2 Dell computers for PowerPoint  
1 Inscribe Video Carte still store system  
1 Inscribe VMP CG system  
1 Inscribe CG Extreme system

### Screens, Projection

2 Barco ELM R12 projectors 12,000 lumen, w/0.8:1 lens (center stage)  
2 Mitsubishi Diamond Vision AVL-ID5 LED 14x24' 5.08mm dot pitch main side screens  
16 Philips 17PF8946A 17" LCD TVs (handicapped seating)  
16 Philips 17PF8946A 17" LCD TVs (parents rooms)  
10 Philips 17PF8946A 17" LCD TVs (backstage)  
11 Samsung PPM42S3 42" plasma displays (lobbies)  
4 Samsung PPM63H3 63" plasma displays (lobbies)  
12 Panasonic TH-42PWN6UY 42" plasmas (under balconies)  
3 Samsung PPM42S3 42" plasma displays (front row prompters)  
3 Samsung PPM42S3 42" plasma displays (stage front)  
2 Samsung PPM42S3 42" plasma displays (green room)  
4 Sanyo PLC-XF35 6200 lumen w/0.8:1 lens (balcony)  
1 Screenworks HDTV RP truss screen (14'x24'9" rear-projection (center stage)  
4 Screenworks Permscreen 6'8"x11'4" rear-projection screens (balcony)

### Routing, Switching

1 Ross Talia Kondor video router 96x96 SDI  
1 Ross Talia Kondor audio router 64x64 stereo analog  
1 Ross Talia Kondor data router 32-port RS422  
1 Ross Talia Kondor UMD talley router 128 routable 2-color tally  
4 Ross Talia RCP-SN spin knob remote router control panel XY remote controls  
7 1 Ross Talia KM1 40 button remote router control panel 40-button remote controls  
1 Ross Synergy 4 Digital Production switcher 4 ME, 32-input, 4 DVE, 2 ARC

### Monitor Wall

1 ESE ES943U time code clock  
3 Miranda Kaliedo Alto virtual monitor wall processors w/RCPs  
3 Mitsubishi PD5030 50" hi-def plasmas  
2 Sony PVM-14M4U 14" 4.3 CRT monitors  
5 Sony LMD720W dual 7" LCD monitors  
9 Zenith L17W36 LCD monitors

### Cameras

1 Canon YJ12x6.5KRSA lens lock down wideshot  
2 Canon HJ40x14BIASD/V Tele 40x w/image stabilization  
1 Fujinon 15x wide angle handheld  
5 Fujinon 22x w/studio kits  
1 Panasonic AWE800A camera lock down wideshot  
5 Sachler Vision 18 tripods w/fluid heads  
8 Sony DXC-D35 WLS cameras w/CATX7 triax back (widescreen version)

### Control

2 Extron IP devices control of 12 Panasonic plasmas  
1 ICC-HE coax headend network controller  
1 ICC Commander 4 system software  
16 ICC CR ICC2-VDC 2 way devices RS232 plasma controls (lobbies)  
65 ICC-IR devices control of LCD TVs  
4 Sanyo projector network cards control of 4 projectors (balcony)

### Shading

1 Panasonic RCP Camera 9 remote  
8 Sony CCUTX7/1 CCU Triax base stations  
5 Sony RCPD51 Camera RCP CCU remotes  
3 Sony RCP-TX7 camera RCP CCU remotes

### Distribution

12 Allen VIT-75 video isolation transformers  
1 AXISTV tei channel server (lobby infochannel)  
1 Blonder Tongue OC-16 combiner  
10 Blonder Tongue AM-60-860 stereo agile modulators  
3 Blonder Tongue AM series mono agile modulators  
10 Blonder Tongue BIDQ 750-30 amps  
1 Dell CPU control software  
1 Extron VSC 75 scan converter

### Robotics

1 Kramer VS-601XLM 6x1 vertical interval switcher (control room)  
1 Marshall V-R63P LCD camera 7 monitor (control room)  
1 Philips 17PF8946A 17" LCD TV camera 7 monitor (control room)  
2 Sony 9" camera monitors (camera platform)  
1 Vinten MCS-4000 joystick controller (control room)  
1 Vinten HS102 robotic head camera 7 (stage)  
2 Vinten Lynx control system tripod encoder controller (camera platforms)  
2 Vinten 3880-3 tripod encoder controller (camera platform)  
2 Vinten HS105P robotic head camera 2 & 3 (balcony edge)

### Broadcast Mix Equipment

1 Fostex D-5 CD Recorder  
2 Genelec 8040 A  
1 Fostex D-5 CD recorder  
2 Genelec 8040A near field active monitors  
1 Genelec 7070A subwoofer companion to 8040  
1 HHB CDR-850 CD recorder  
1 Logitek Ultra VU VU meter  
1 Lucid Genx6 word clock generator  
2 Mackie HR824 near field active monitors  
2 Mackie MDR 24/96 hard disk recorder  
3 Mackie SDR 24/96 hard disk recorder  
2 Yamaha NS-10 near field passive monitors

### Measurement

SIA Software Smaart Live (v5.4) FFT based software  
3 Mobile Devices USBPre USB mic preamp  
1 Studio Technologies Model 90 mic switcher  
6 Earthworks M30 measurement mics

Broadcast and editing capabilities were critical to the four local Willow Creek regional ministry sites and for the Willow Creek Association that does live broadcasts of some of their conferences to up to 100 cities around the country.

The loading dock was designed for access by mobile broadcast units. In addition, there is an intermediate patch point for camera selection between broadcast and in-house video production. Satellite dishes provide uplink/downlink transmission.

A number of video edit suites located near the video production control room support post production.

Catwalks were designed so that lighting could be hung for both theatrical and broadcast angles maximizing flexibility in the use of the room.



*Video production control is located downstairs in the facility. At the front of the room is a large videowall made up of both LCD and plasma screens. The router can put any source or any camera on any monitor giving flexibility to the variety of video directors.*

Rehearsal spaces were a much needed addition to Willow Creek's facility. Actors, musicians, vocalists and dancers now have spaces of their own.

The floors in the two largest rehearsal rooms are made of the same materials as the stage, so that the feel and sound is the same.

Excavation had to be done to set the ceiling height high enough to create the proper acoustic volume needed for orchestral rehearsal. In addition, large ramps are located at the entryway to make the spaces handicapped accessible.

Smaller rooms provide spaces for vocal coaching, solo and small ensemble practice.



## Selected equipment list *(continued)*

### Mics

19 Shure UHF series wireless mics w/ Beta 87 heads  
Shure, Sennheiser, AKG, Beyer Dynamic, Audio Technica,  
Gefell, Audix, Electro Voice

### Lighting

Grand MA lighting console  
9 Mac 2k wash fixtures  
17 Giotto Wash fixtures  
14 High End Systems X-spots (Extreme)  
32 Autoyokes: 10 degree ellipsoidals  
ETC Source IV static fixtures covering 17 zone areas:  
2 frontlights & 1 white backlight per zone

### Stage Rigging & Curtaining

5 motorized lighting bridges over stage  
15 (available) single-purchase linesets behind proscenium;  
locking rail SL  
4 (available) motorized linesets in front of proscenium  
light-blue cyc (filled leno)  
upstage traveler; downstage traveler- both navy velour  
full complement of masking drapes- navy velour  
200 amp company switch SR

