

ZAAC PA System & Stage Information for State Theatre Shows

(This document includes ONLY State Theatre PA gear)

Last update: February 5, 2018 by Doug Duncan

Mixer & Accessories

- **Behringer X32 Digital** 32-channel mixer: **32 XLR inputs** with individual phantom power, 6 AUX ins/outs, 16 sends: 2 connected for FOH L&R, 12 connected for monitors (we have amps for **four monitor mixes** and one powered monitor), multiple internal effects processors, compressors, equalizers, etc. Mixer is connected to a wireless router to allow operation via iPad running X32-Edit anywhere in the room. (*The security key is on the bottom of the router*).
- CD Player, USB memory stick reader and 3.5mm cable for MP3 playback - all connected.
- 1 - 150-foot 16x4 snake to WEST side of stage (Ch 1 - 16, Aux 9 & 10: Pre, 11 & 12: Post)
- 1 - 100-foot 16x4 snake to EAST side of stage (Ch 17 - 32). Four 1/4" jacks on stage-end are connected to monitor sends 5 thru 8 for use with in-ear or powered monitors. (all pre-fader).
- 2 - 100-foot, 8-channel monitor / FOH L&R snakes. (Hidden under stage)
- So, four snakes carry 32 input channels from the stage and 12 monitor mixes (8 powered).

Microphones (*best listed first*)

- 4 - **Shure SM58** Vocal mics (*ZAAC owned*)
- 2 - **AT 4041** Condenser mics (*ZAAC owned*)
- 3 - **AKG C1000S** condenser mics – use phantom power or 9V (*ZAAC owned*)
- 1 - **Sennheiser E609** Guitar amp mic (*ZAAC owned*)
- 4 - **GLS SM57** clones (*ZAAC owned*)
- 5-piece **EV** drum mic set (includes kick drum mic)

Microphone Stands & Accessories

- 12 - Tripod Microphone boom stands & microphone clips
- 1 - Round base Microphone stand
- 2 - Sampson min mic stands
- 2 mini note holders that clamp to mic stands
- 2 guitar stands
- 2 - Manhasset music stands & 3 folding music stands (cheap kind!)
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Direct Boxes & Cables

- 5 **passive DIs**: 2-Behringer, 3-Live Wire Solutions Model PDI
- Cables: XLR, TRS, Speakons, etc. to connect PA & monitors for moderately-sized show. (*3', 10', 25' and 50'*)

Speakers, Monitors & Amps

- 2 - **QSC KW122** powered speakers (1000 watts, 1 x 12" plus horn) **FOH**
- 2 - **Behringer Ultrawave B300** powered speakers (300 watts, 1 x 15" plus horn) **Front fills**
- 2 - **QSC KW181** 1000-watt powered subwoofer under the stage
- 4 - **Yamaha SM112** Club Series IV passive monitors (1 x 12" plus horn)
- 2 - **Behringer Eurolive F1220** passive monitors (1 x 12" plus horn)
- 4 - **QSC RMX850** monitor amps (stereo 300W @ 8 ohms) two installed under the stage
- 1 - **Galaxy Core PA5X140** "Hot Shot" powered monitor (small, but clear)
- Floor box in front-center of stage with Speakon jacks for monitor mixes 1 thru 4
- Floor box also has female XLR jacks for FOH or front fill powered speakers
- Floor boxes for Monitor, Backline & PA Top AC (separate 20-amp circuits) Subs have own too.

- 4 tripod speaker stands (two spares)

Electrical Service

- 200 amp service panel.
- SIX 20-amp circuits to the stage (FOH, Monitors, Sub, Backline, Utility x 2)
- EIGHT 20-amp circuits for lighting (four at ceiling, two at floor level on stage sides)
- 3 additional 20-amp outlets at side of service panel
- 220-volt 50-amp outlet at service panel for distribution panel, if necessary

Lighting

- 8 PAR 64s, 8 PAR 56s, 6 Ellipsoidal stage lights distributed between 8 positions.
- 4 Chauvet Colorado One Tour LED wash lights mounted to stage sides.
- 2 Chauvet Colorado Tri-7 Tour LED wash lights
- DMX lighting network with controller at sound booth and hub at stage for expansion.
- Notebook PC in sound booth running QLC+ software for alternate lighting controller.

LCD Projector *(May need permission from theatre owner to use)*

- Installed in projection room for large-screen movies. (Cannot be moved)
- HDMI & VGA cables run to sound booth.
- Various adapters in-house.
- Sound can be run into mixer.
- DVD Player connected in projection room.
- HDMI-cable DVD Player could be operated from sound booth.

Notes:

- Performance room is 50 feet x 38 feet with a 20-foot ceiling. Sound booth is in back corner.
- Stage is roughly 26 feet wide by 15 feet deep ?
- Stage is: 30" above main floor and approximately 24' wide by 12' deep *(roughly!)*
- Stage backdrop can be heavy black velour drapery, painted antique mural.
- The backstage is available as a "Green Room" for musicians -- including new toilet.
- [Plexiglass drum surround](#) for controlling drum kit volume, plus 3 panels for amps.
- We have six 5 x 8 foot carpets for stage use.
- The theatre has a reconditioned **upright piano** on a wheeled dolly.
- The theatre has a **Baby Grand piano** on a wheeled dolly.
- At times we have access to additional equipment.
- Crossings gear is marked with **GREEN** tape.
- ZAAC gear is marked with **WHITE** tape.

Questions:

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Bringing Your Gear In / Using the house system:

If you bring in your own mixer please just place it on top of the wooden cover that protects ours, and don't disconnect or relocate any of our house system. It has to remain functional and organized for State Theatre movies and concerts. So, we need to leave the system functional for those needs.

Sound Policy Request:

We desire a moderate decibel level in the upper 80's to low 90's range, not to exceed 100 decibels at peaks (A-rating, slow response, front of room). This is to foster our reputation as an "arts house" that is comfortable for all our guests. We more complaints about high volume than anything else. We need to keep our relatively small community coming back to remain viable. Thank you!

Typical FOH speaker setup:

The QSC KW122 speakers on stands placed on the floor against sidewalls even with stage front. Aimed in so outside horn throw is parallel to theatre sidewalls.

Typical Front-fill speaker setup:

The Behringer powered speakers are placed a little back from front corners of stage, to minimize interference with sight lines. Aim speakers in to cover front few rows of center section, but keep inside throw of horns off the stage -- to minimize feedback. Adjust the EQ on the back of the speakers to turn the bass OFF, or way down, to minimize resonance with the stage. (Low frequencies are much less directional, so are heard from the FOH QSC speakers.) Adjust the volume on the back of the Behringer speakers so they are relatively less-loud (about 10 o'clock) than the QSC FOH speakers. The goal is for the front-fill speakers to add clarity for the front few rows, not volume. Without the front-fill speakers, vocals may be hard to understand in the front, because the high frequencies are missing from the QSC's.

Speaker placement:

Yes, where we place our speakers is contrary to some of the "science", and possibly there is a better way. (Ultimately, we would like to "fly" the FOH) However, given the room and equipment we have to work with, sight lines, stage area, the need to keep the PA permanently in place, and experimenting, this seems to be the most practical. Some experienced sound people say it is wrong and others say have said it is all we can do with what we have. The vast majority of performers have no comment about it and are satisfied with the sound on stage and in the room.