Parish Board Meeting
April 10, 2019

Proposal to Replace and Upgrade Meetinghouse Sound System

Issues and Wishes

The existing system does not provide for good understanding of the spoken word, and several areas of the sanctuary have quite serious problems with intelligibility. Impaired hearing listeners are particularly affected and not well served.

The system frequently experiences feedback and other technical issues. There is no provision to make recordings, let alone video or broadcast anything going on in the sanctuary, for the benefit of shut-ins and remote members and friends.

Our wish is to preserve the intimacy of the space and its natural sound that comes from the room's acoustical properties, to provide a transparently clear and natural sound to all listeners in the sanctuary including the hearing impaired, and to develop a capability for quality recordings of the weekly service and other events, both audio and video, with the possibility of livestreaming.

The Team

An informal team has evolved this year with many contributors in response to difficulties with the sound system, led by Kristen Fehlhaber. We are fortunate to have in our midst and on the team both Jeff Litcofsky and Rob Close who is new to FRS, and partner to Betsy Hazen. Rob is recently retired from a long career as a sound engineer who designed and installed sound systems professionally in hundreds of churches and other venues. As a volunteer, Bob has designed a system for us, and with his professional connections has obtained very favorable pricing on primary system components. These prices are good until April 30.

The System

The existing speakers will be relocated to provide sound in the balcony, three speakers on each side. The sanctuary's first floor will be served by Bose line array speakers to control the direct sound patterns and minimize undesirable long reflections. The selected speakers have a very tightly controlled vertical pattern and a broad horizontal pattern to allow "aiming" of the speakers to provide direct coverage for people in the pews.

The system will also include a software-controlled audio processor with feedback reduction, an 8-channel automatic mixer for selection and balancing of audio inputs, a power amplifier, a wireless "loop" for blue tooth hearing aid connections, a video camera, and a digital VCR.

The Budget

Based on quotes in hand and mostly volunteer labor, a budget of $15,000 is proposed.

Next Steps

1. Parish Board to approve the project, schedule a Special Meeting of the membership on April 28 to approve use of the Bailey Fund, post the meeting Warrant on April 11.
2. Publicity. An informational Steeple Extra on the project around April 16th, including contact info for questions. A notice of the special meeting in Orders of Service for April 21 and 28.
3. Project approval at Special Meeting on April 28.

Cost Estimate

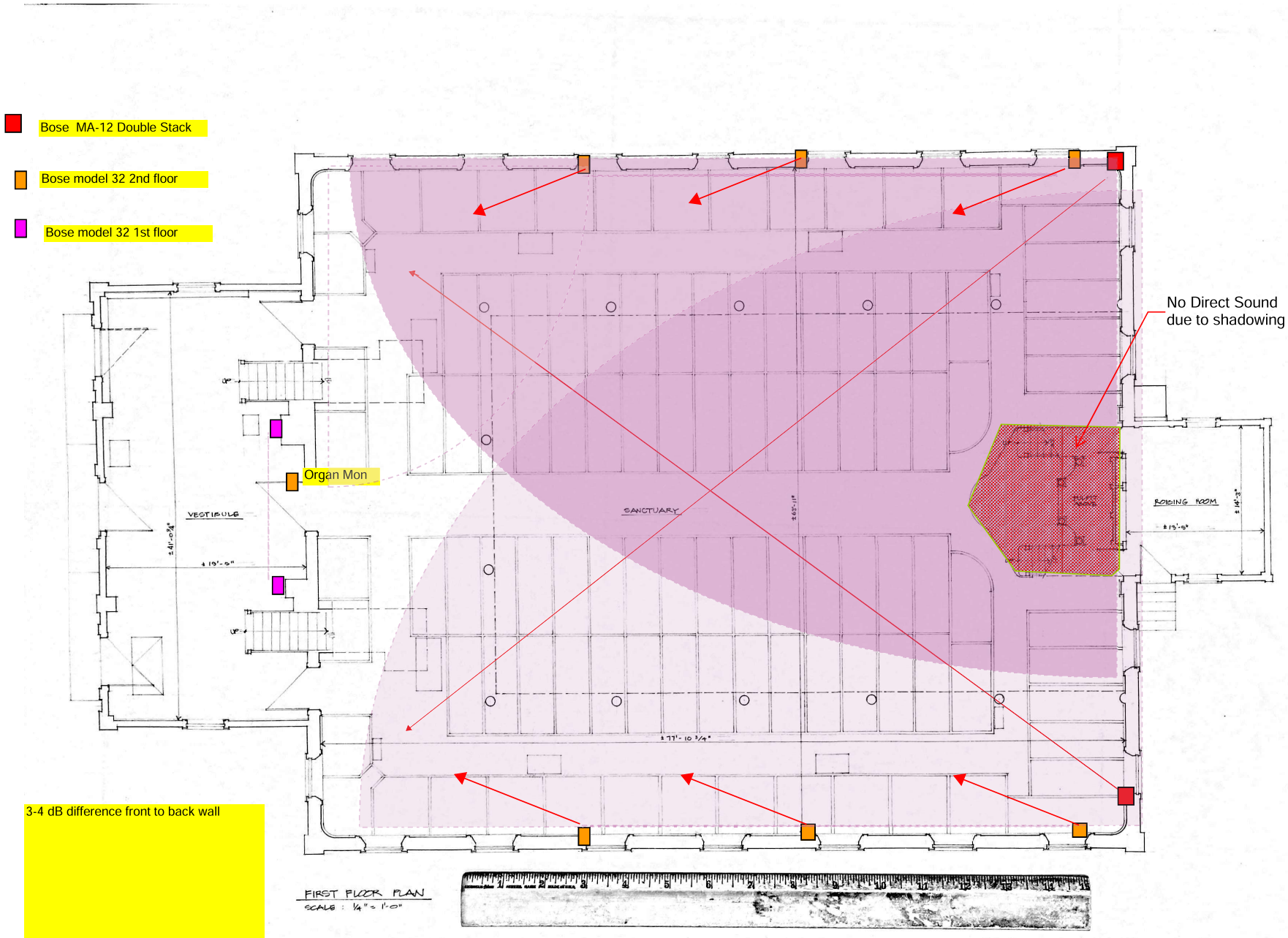
$	7,937.75	Central Comm Syst Invoice #1459
$	(450.00)	CC fee removed if we do ACH
$	(425.75)	tax removed
$	7,062.00	
$	3,482.00	loop system - from R. Close
$	500.00	misc. hardware
$	**11,044.00**	
$	11,044	4/7/19 estimate from R. Close
$	1,750	labor costs (loop)
$	2,201	Estimate for streaming equipment
$	**14,995**	
$	*1,159*	*built-in contingency (part of the $7938 - only one Crown Amplifier will be ordered)*
$	13,836	project less 2nd amplifier
$	1,159	2nd amplifier/contingency
$	**14,995**	
	8.4%	contingency as % of total

Rob Close - brief bio

Robert Close has been involved in sound system installation and design, as well as being a sound equipment manufacturer's representative and system troubleshooter, for most of his professional life. His favorite projects in the business were providing quality sound systems into houses of worship of all denominations. In the Eastern USA his projects ranged from small 20-member churches in downeast Maine, to very large churches such as the Alfred Street Baptist Church in Alexandria VA as well as major synagogues in New England. Commercial projects are too many to list (or remember) many in the retail field such as the LLBean stores, large auditoriums, court rooms, universities, etc.

His education in music education and performance along with electrical engineering and business management combined nicely to a career in the sound world. Training and certification continued with focus in computer modeling of systems before installation, primarily using Bose Modeler software, as well as many seminars with focus on all aspects of sound design and theory.

Now retired, he lives in Newburyport with his partner Betsy Hazen and has been attending FRS for six months.


Bose MA-12 Double Stack
Bose model 32 2nd floor
Bose model 32 1st floor
Organ Mon
No Direct Sound due to shadowing
VESTIBULE
SANCTUARY
ROBING ROOM
FIRST FLOOR PLAN
SCALE : 1/4" = 1'-0"
3-4 dB difference front to back wall
WILLIAM MARCH · ARCHITECT
CHURCH OF THE FIRST RELIGIOUS SOCIETY UNITARIAN UNIVERSALIST
FIRST FLOOR PLAN
EXISTING CONDITIONS
SCALE : 1/4" = 1'-0"
DATE : 30 JAN '96
DWG. NO.

Panaray® MA12
mid/high modular line array

TECHNICAL DATA SHEET

Key Features

- **Twelve 2.25" (64 mm)** drivers mounted in a vertical line array deliver wide horizontal coverage with narrow vertical pattern control
- **Modular design** allows stacking of multiple enclosures in a line array configuration to provide increased vertical pattern control which improves “throw” distance and reduces unwanted floor/ceiling reflections
- **145° horizontal x 20° nominal coverage** for a single module. Vertical coverage varies with number of modules stacked in line array configuration
- **Mid/high configuration** allows bass management and design flexibility. Use with Bose MB4, MB12, or MB24 modular bass loudspeakers for full-range reinforcement
- **Optional brackets** allow easy installation of single-, double- or triple-stack line array modules

Product Overview

The Bose® Panaray® MA12 is a mid/high-frequency modular line array loudspeaker designed to provide outstanding vocal intelligibility in acoustically demanding spaces. The slim column enclosure blends with almost any décor.

Technical Specifications

System Performance	
Frequency Response (+/-3 dB)[1]	155 Hz - 12 kHz
Frequency Range (-10 dB)[1]	100 Hz - 16 kHz
Nominal Dispersion[2]	145° H x 20° V
Recommended High-Pass Filter	125 Hz
Loudspeaker EQ	Required
Overload Protection	PTC / Lamp
Long-Term Power Handling[3]	300 W (1200 W peak)
Sensitivity (SPL / 1 W @ 1 m)[4]	88 dB SPL
Maximum SPL @ 1 m[5]	113 dB SPL (119 dB SPL peak)
Nominal Impedance	8 Ω
Transformer Taps (70/100 V)	CVT-MA12 transformer available
Transducers	
Driver Compliment	Twelve (12) 2.25" (57 mm) mid/high-frequency drivers
Physical	
Enclosure	Extruded-aluminum sidewalls with steel top and bottom endcaps, all powder coated
Grille	Powder-coated steel grille
Environmental	Indoor use only
Connectors	Two (2) parallel-wired NL4 Neutrik® Speakon® connectors One (1) two-conductor barrier strip
Suspension / Mounting	Four (4) x M6 threaded inserts (back)
Dimensions	38.8" H x 4.2" W x 5.0" D (984 mm x 105 mm x 128 mm)
Net Weight	19 lb (8.5 kg)
Shipping Weight	21 lb (9.4 kg)
Product Code	
Black	040189
White	040188

Footnotes:

1. Frequency response and range measured on-axis with recommended active EQ in an anechoic environment.
2. Vertical coverage varies by number of modules vertically arrayed and distance from line-source boundary. Use Modeler® software for the best prediction.
3. Power handling tested using pink noise filtered to meet IEC 268-5, 6 dB crest factor, 100 hours, with recommended EQ.
4. Sensitivity measured in free field (no boundary-loading gain) with recommended active EQ, referenced to 1W/1m.
5. Maximum SPL calculated from sensitivity and power handling specifications, exclusive of power compression.