INTEROFFICE MEMORANDUM

TO: CITY MANAGERS OFFICE
FROM: CAMILLE WEHS

SUBJECT: COC MEETING ROOM
DATE: FEBRUARY 9, 2015

I. Acoustical Analysis Report

1. Statement of Problem-
The newly renovated meeting room is experiencing issues relating to the acoustics in the space. The problems range from slap-back echoes, lack of articulation in the lower tones, and there is a mumbling character to the voice which causes the spoken word to be unintelligent.

2. Acoustical Engineer Phase 1 Findings -
The City of Canton requested pricing from 3 different Acoustical Engineers to perform an initial study. CDAI performed an Acoustical study at a cost of $1,540.43 which identified several issues and concerns. Install acoustical panels to diffuse the fluttering and echoing in the room. The installation of these panels will significantly reduce the "echoing" background noise.

3. Acoustical Engineer Recommendations-
a. Perform a more in-depth evaluation of space. This phase cost $1,800.00. This phase gave us a detailed look at Sound System, examination current configuration of Taiden System, speaker locations, speaker quality, and data analysis recordings.

b. Install Acoustic Panels Staff solicited quotes from Accutrak Systems- $10,640.00, Benton Brothers- $18,456.00, and Cornerstone Media- $17,800.00

4. Acoustical Engineer Phase 2 Findings-
This phase consisted of data analysis from sound recordings of the room during visit, HVAC review of schematics, and noise level calculations.

5. Acoustical Engineer Phase 2 Recommendations -

a. Bring in a MEP to perform a HVAC analysis.

b. The City could look into upholstering the "backs" of the current seating area. This would further help in the absorption of sound.

6. MEP Study on HVAC System

The Mechanical Study from S & S Engineers provided us with an extensive list of recommendations. Please remember that this room The City of Canton Meeting Hall was redesigned for a new use in 2004 with construction completed in 2005. The Meeting Hall is an old sanctuary that is now being used for municipal and court

functions. New HVAC equipment (Water Source Heat Pumps, piping, etc.) were selected, designed and installed in 2005 with much of the existing ductwork and air distribution (grilles, diffusers) being reused from the existing systems. The ductwork and supply fusers are showing significant signs of aging. These signs were evident in the lining break down inside the ductwork, poorly insulated (if insulated at all) ductwork, the two (2) supply diffusers are attached at a direct 90° angle to each branch of the supply duct with no transition or run-out (this causes excessive turbulence). The return diffuser (actually a supply diffuser being used as a return) is attached via 24" diameter flexible ductwork to a return air plenum box that is not internally lined with acoustical liner. The very close proximity of the return air diffuser to the fan causes excessive fan noise coming out of the return diffuser. The 24" return air diffuser is undersized for the quantity of air moving through it, thus creating excessive noise.

7. MEP Recommendations From Study-

WSHP-23 (Main Hall Unit)

a. Install (6) Spring-Type Vibration Isolators under the WSHP unit. The combination of the isolators should be selected in conjunction with the weight of the unit.

b. Install acoustical batt mineral wool sound absorption material underneath the unit. The material should be selected for the frequency range of refrigerant compressors.

c. The return air plenum box is lined with ½" acoustical liner. The 10 feet of ductwork preceding theplenum should also be lined with ½" or 1" acoustical liner. The return ductwork should remain wrapped with 2" of external insulation.

d. The custom return air grille should be measured and free area estimated. Intake velocity of air through the grille should be no more than 500 feet per minute. If this cannot be achieved via one (1) return grille, the other identical return grille should be connected to the return duct system.

e. The supply duct within the attic space should be replaced and redesigned for proper air velocity through the duct. The two branches of supply duct should be raised into the air as high as possible. A manual volume adjustable damper should be installed in the supply duct and 5-8 feet of flexible, round

WSHP-24 (Balcony Unit)

a. Install (4) Spring-Type Vibration Isolators on the threaded rod in place of the rubber isolators connected to the unistrut. The combination of the isolators should be selected in conjunction with the weight of the unit. The unit should have rubber and cork

isolation pads in between the unistrut and unit for further dampening.

b. Install acoustical batt mineral wool sound absorption material underneath the unit. The material should be selected for the frequency range of refrigerant compressors.

c. The return air plenum box should be replaced with a box lined with 1" acoustical liner.

d. The center return air grille should be removed and the hole in the ceiling patched.

e. Two (2) new return air grilles should be positioned in the back of the balcony ceiling. Properly sized and acoustically lined return air duct should be run to each return diffuser. Though they are not technically return air grilles, an oversized Titus TMRA Surface Mount with Outer Cone diffuser may be used to keep with the aesthetics of the space.

f. The supply duct within the attic space should be replaced and redesigned for proper air velocity through the duct. Flexible duct connectors should be installed in between the supply duct main duct and the WSHP. The two branches of supply duct should be raised into the air as high as possible.

g. A manual volume adjustable damper should be installed in the supply duct and 5-8 feet of flexible, round take off ductwork should be run to each diffuser. Alternative ducting methods may also be used to provide minimal turbulence before the diffuser.

h. The two (2) existing supply air diffusers should be replaced with three (3) or four (4) appropriately sized diffusers with a Room Criteria Noise Level of 25 or less. To keep the aesthetics of the old-style diffuser, a diffuser type similar to a Titus TMRA Surface Mount with Outer Cone should be selected.

i. Cones should be adjusted to allow the diffuser to supply air horizontally and vertically. Dampers should not be installed in the diffuser body.

8. HVAC System Quotes-

We have met with 3 contractors in regards to the Meeting Room and the Acoustical Issues from the HVAC unit. Each contractor stated the complexity and problems identical to each other. We have received pricing from two (2) firms. Burch Corporation opted not to bid on the project for unknown reasons.

Mike Partain with Action Sheet Metal proposed pricing: $ 155,768.00

Jim Fortson with McKenney's, Inc. proposed pricing: $106,805.00

9. Correction Steps-

a. We will proceed with installing acoustical panels to diffuse the fluttering and echoing in the room. The installation of these panels will significantly improve the experience in this room. These panels will be installed on the side walls, rear walls, and balcony facing areas. This cost will be $10,640.00. After the installation is complete we will evaluate and test the results. We will be installing panels above the chair rail, the panels will be 1inch thick, and the panels on the front side face of the balcony will be 2inch thick panels. If the room is usable and this step has resulted in significant reduction in the fluttering and echoing, then we can return to using the room. If not we will proceed to Step 2.

b. We will price out applying upholstered backs to the pews. This cost could range anywhere between $5,000.00 and $8,000.00.

c. If the above steps do not create a usable space, we will then write an RFP addressing the HVAC system. This cost will exceed $100,000.00.

II. Lighting Issues

The Meeting room lighting system has been experiencing failures that are related to the hardware and installation of the hardware. The manufacturer of the lights is in the process of sending replacement fixtures to the Electrical Engineer. It is unclear at this time who will burden the cost of installing manufactured recommended shielding of fixtures.

III. Benches

City staff has noticed a significant amount of cracking and splitting of the pews. Staff is currently engaging with several cabinet/ wood working experts to determine what the cause of this is. Staff will prepare a list of questions to submit to City's Project manager for answers prior to making a recommendation to proceed with this issue.