

MINUTES
CITY & COUNTY BUILDING CONSERVANCY AND USE COMMITTEE
MONDAY, MARCH 12, 2012, 4:00 P.M.
Revised with changes 4/13/12

Committee Members Present:

Terry Wright Chairperson
Lisa Thompson Co-Chair
Jerod Johnson
John Phillips
Paul Heath
Mark Vlastic

Committee Members Not Present:

Ken Pollard

Ex Officio Members:

Sean Fyfe
Jim Cleland
Alden Breinholt

Interested Persons

Jaysen Oldroyd-Salt Lake Attorney's Office
Janice Lew – Historic Landmarks

Terry welcomed everybody and opened the meeting with roll call. Roll call: Lisa Thompson, Terry Wright, Mark Vlastic, John Phillips, Jason Oldroyd, Alden Breinholt, Jared Johnson, Sean Fyfe, Paul Heath, Jim Cleland and Janice Lew

Terry started the meeting with agenda item one. To review and approve the February 13, 2012 minutes. Terry asked if there was a motion to approve the minutes. Lisa stated that Ken had changes and wanted to know if they had been made. The changes were made to the January 9, 2012 that Ken had suggested. Terry asked if there is a motion to approve the minutes from February 13, 2012. John made the motion, it was seconded and the motion to approve to approve the February 13, 2012 minutes were approved.

The next agenda item was the Washington square café chairs upholstery. Jim made the presentation for Don Harward who could not be at the meeting.

The concessionaire at the Washington Square Cafe rejected the fabric the Conservancy and Use committee approved at the last meeting on February 12, 2012. The Concessionaire doesn't care for the pattern and when you see it in the café it does look out of place. Jim showed the committee two other upholstery options. Terry asked what the options are called. Jim said the first one approved on February 12, 2012 was option one. Option two, is the corn flower diamond pattern in the darker color. Option three, is the maroon dots on a more yellow color background.

The café manager prefers fabric option three, if we can't get her all new furniture.

Lisa asked if the price was the same, Jim answered yes the price is the same and the fabric has been approved historically.

John likes option three and Jared said he liked it too and wondered how it looks in the café. Jim answered it looks good. Alden asked if the maroon clashed. Lisa asked if the two new fabrics appear

elsewhere in the building. Jim said right, that is why we went with option one because it does appear on other furniture in the building. John asked if the committee should make an effort to keep option one because it does match with what is in this building or does it matter? Jared said he thinks a little variety would work.

Mark's made a comment; because he wasn't here at the last meeting, he is curious as to why this was even brought to this committee.

Jim stated that fabric choices have been brought to the committee in the past. In the past the fabric was a selected for chairs, an example is from room 126. Mark stated that the committee has gone to this kind of detail for specific pieces and not for a fixed part of the building. Jim said that we are trying to make it so people don't bring in furniture from other sources. Jim stated bringing the fabric choices to the committee is a courtesy. Lisa asked if the café operator preferred option three, Jim said yes.

Terry asked if there is any other discussion regarding the chair fabric. Alden asked if Don Harward has looked at both fabrics and if they both fit into the décor of the whole building. Jim said yes. Terry asked if there was a motion to approve the chair fabric.

Lisa made a motion to approve option three, given that they are both fabrics that don't exist in the whole building and the café manager prefers option three. Also, there are reports that the fabric seem to fit the décor in the café. The motion was seconded. The motion to approve option three the maroon dots fabric in the café was passed.

Next item on the agenda is the base isolator study update. Terry asked Jared if he is the presenter, Jared said yes. For this agenda item Jared would take himself off the conservancy committee as far as voting for this presentation.

The base isolator study is actually almost finished they are just waiting the final input.

Jared has approximately 25 slides that summarize everything the study showed (see attached.)

The following is an overview of the presentation.

There are several purposes for this study which stemmed from concerns from years ago with respect to some ongoing testing of the spare isolators. There are now nine or ten isolators that are sitting within the isolation space in ambient condition. Of those four are currently under load replicating the condition of actual isolators, those are tested approximately every five years. The concerns that have arisen is the results of the test indicate the properties are changing, at least from test to test there were different properties that had been recorded. Some of the test results indicate that over time the elastomeric materials in the isolators were getting harder. The actual behavior and performance did not substantiate those claims.

Jared has summarized the purpose for the testing is as follows:

- Assess whether isolator properties are changing
- Determine whether "exercising" is a factor
- Determine isolator properties
- Evaluate complete isolator system based on modern criteria
- Develop recommendations and rough costs for future action

Jared presented the study; the following questions and answers are from the discussion regarding the effective stiffness of the isolators.

Terry asked, with it becoming more stiff is that suggesting that it will take more energy to be able to displace this which means the building will be experience more of a load. Jared answered yes, a higher value as represented on the chart, means a higher force it takes to mobilize the isolators, so there is higher stress and the potential for more damage within the superstructure.

Lisa asked if the original base isolators system is designed with an intended effective stiffness in mind. Jared answered yes and that is shown on the far left of the chart on the handout.

John stated that he didn't see any statistics on this. How can one say that anything is more significantly different than another, there are no error bars. Jared answered that is the challenge on this because there is no way to take a statistical sample large enough to reflect a bell curve, standard deviation or coefficients of variation. They would have to get a very large population of representative isolators in order to do that. The testing that was done precludes that as a possibility, it is compounded that the testing is done in tandem. There is not a statistically large enough sample to develop the error bars.

Terry stated, going back to where it is mentioned that four of the isolators have been tested under load and have been shipped to the testing center, are these results of those four? Jared answered yes; these are the original test of the four isolators up until 2006. Jared will show a complimenting figure that has this most recent testing that happened in May of 2011 from the SRMD laboratories.

Mark asked about the rating system that determines effective stiffness. The chart shows a score of 4.27 versus 2.85, does that mean it is a 67% less effective system? Jared answered it is a 67% stiffer system, so the actual force that can be generated in that isolator is that much higher. Terry stated it is more like 1 ½ times higher, Jared said yes it could be a 50% increase overall.

Sean asked why the 1999 study is trending towards a more exclusive isolator. Jared answered that he and his team and other consultants has debated that, but there are many different variables that Jared did not anticipate that could account for the inconsistencies in the 1999 study.

Jared went on with the presentation. He talked about the testing and the testing was done by 1" increments. He continued to discuss displacement and referred too many of the pictures and charts. (Please refer to packet.)

Jared asked Terry for information regarding the bumpers. Terry answered that there was some concern if there is a large earthquake the walls would bump into the other walls and self destruct the building. That is why the bumpers were installed.

Jared said the study found that if the isolators roll over to 14" they will hit the bumpers causing a big impact. If the isolator hits the bumper it would send a shock wave throughout the building. The bumpers may have a negative effect on the building.

A part of the overall system evaluation they modeled the entire building. It is not enough to know how just the isolators are going to behave but how they are going to behave in regards to the building. Jared demonstrated this on his computer. It showed that the building kind of floated just swayed. Ideally this is what is wanted.

Provided that they get the kind of performance they hope for out of the isolators, they suspect the building will perform quite well. There is a caveat if they do get displacement beyond 14" and the isolators want to roll over.

Terry asked, on the modeling is the modeling taking into account the higher stiffness level or is it still taking into account the original design stiffness level. Jared said it is taking into account the stiffness from the most recent test.

Jared referred to a chart that summarizes the overall system performance under the earthquakes that the study considered and the various behaviors that are possible with the isolation system. There are two classification of earthquake intensity that is prescribed by nationally recognized standards for evaluations of buildings of this nature. They are called BSE1 and BSE2. The BSE1 has a return interval about once every 500 years; this would be a 6.2 to 7 on the Richter scale. The BSE2 is the really large rare seismic event, almost cataclysmic this is a return interval of about 2500 year it could have a magnitude of a 7.3 to 7.5.

Looking at the system and how it wants to behave, the 500 year event the analysis shows the system wants to displace at approximately 8" for that level of event. This is consistent with what the original design parameter of the 1980's which shows that the system will perform the way it was original designed.

As you look at the BSE2 earthquake we get potential for impact with bumper at about 9 3/4", which is an earthquake every 750 – 800 years. Looking further how big of an earthquake would be required that would actually roll the isolator over that would be an earthquake about every 1500 yrs.

The fact has been established that the system would roll over at probably about 14"; it cannot reach 14" without impacting the moat bumpers (8").

Outlined in report are five different options with costs.

- | | |
|---|---------------------------|
| 1. Do nothing | no cost |
| 2. Remove bumpers | \$5,000 - \$10,000 |
| 3. Remove Bumper, add fail-safe | \$1,500,000 – 7,000,000 |
| 4. Remove Bumpers, add supplemental damping | \$5,000,000 – 7,000,000 |
| 5. Remove bumpers, replace isolators and moat | \$10,000,000 – 15,000,000 |

Reaveley and the testing team recommends option three, remove bumper and add fail safe system.

Terry asked if the material rolls off and slides onto a fail-safe devices, the earthquake could still be going on and the building will perform as if it was not on an isolator. Jared answered yes.

Jared went on if you look at earthquake history it is usually one or two pulses that drive it to displacement. When we say 16" of displacement it rarely means the system is moving 16" back and forth. It typically means that there is one big pulse and then many small pulses and the likely hood of having multiple pulses pushing that far is extremely small.

Terry's scenario is that one pulse takes it out there while the other smaller pulses the building is going on. For example, say it is an equivalent of a 6.5 remaining pulses that is still a significant amount of load. Jared agreed.

Jim asked if it falls onto another isolator or does it fall into a pillar. Jared answered it falls onto a pillar and basically slides. If there is the right kind of motion content within the record it could push back to neutral or it could impact the moat wall and create pulses that go through the building. This is a scenario, not a large rare earthquake but a something less like the 1500 year or 2500 year event it is still a very rare event that could lead to this behavior

Terry stated that if you get to that event you still did not salvage the building, wouldn't pulling out the bumpers create the same effect.

John has two questions first if you remove the bumper how much room would that create. Jared said about 9". He then asked about the manufacturing of the isolators, what is the industry rate of change? Are there other test results and what is their outcome? Jared answered this is the first test he is aware of on this type of isolator.

Alden has a follow up to Jared's presentation. One million dollars was put into the CIP budget for this project. The City has recently requested it bumped it to two million dollars, with the thought of removing bumpers and doing a fail-safe system. That was a starting place and seemed the most logical at the time and the council will see the one million dollar bumped to two million dollars on the CIP projects. Alden is trying to frame up from a budget standpoint so the committee knows where we are.

Jared said if it is the fail safe option that is chosen, then half could be installed and it would not be a problem. Until the bumpers are removed the system is not going to behave any other way.

Lisa asked if it is worse for the building to fall off the isolators than to smash against the bumper. Jared said yes.

Terry stated that if you take the bumpers off you have better safety up to the 1500 year event.

John stated there is another option not mentioned that is to replace the bumpers that only go to 14". Jared said they did consider it but the bumper would be very stiff and would be like there are no isolators.

Mark question is at the time, the isolators were the best possible technology they had, but where does it end. At one point there was a decision to improve safety in the building and that was achieved and it doesn't meet contemporary standards. Looking just at this logically, to keep picking away at it year after year it is a waste of money. The city is concerned with that, where does the city draw the line?

Alden said we do that with all kinds of systems; you get to a certain point useful life and end up changing them out. Like an A/C system it has a 25 year life, you can extend it to a 30 to 35 year life span with good maintenance and upkeep. He feels that it is like changing out parts and pieces for the base isolators, to try to extend their life knowing that maybe in ten years or so you would have to change the whole thing as technology gets better.

Alden asked what the survivability of the structure is. Jared answered, typically in earthquake modeling you look for different survivability like life safety and say the building, or it will stay fully functional without major damage. Maybe something that could be in the study and presented to the committee after the isolator has done its thing is what the survivability of the building is.

Terry asked if it goes onto the fail safe his first thought is does the tower come down. He feels that if the tower comes down with the fail safe system then it isn't really worth the money.

Jared said the study did not include anything above the isolators. Terry said that he feels that the study needs to look at the superstructure too.

Terry asked Alden what the committee needs to do with this presentation. Alden's take on this is that the study is approximately 99% done. He would hope the committee will accept the findings of the study and give a general recommendation of the actions the city should take.

Jared said the whole study is about 800 pages and can be made available to the committee.

Terry asked if there were other comments.

Mark said he feels there needs to be additional study on the whole building. Alden stated we paid Reaveley for the test on the isolators and the structure study would cost another \$100,000. Terry said he feels it is worth it to see if any other work needs to be done. Alden stated that the city went with what they had the budget to do at the time. The study was for the isolators.

Jared stated that the study on the building would require many building samples to be able to conduct an extensive study of the superstructure.

Terry said he has a hard time recommending anything without a study of the building. Alden stated then that may be what the committee recommends.

Mark feels the key here is there are two points. One to accept the study and the second is how we phrase the recommendation of doing a study on the building, because there is a difference between \$40,000 and \$2,000,000. Mark feels the \$100,000 for a study on the building would be worth it.

John feels for a relatively nominal amount of money you can remove the bumpers and put different bumpers in place that give you the "14." That would give you a reasonable amount of protection for this building.

Terry would like to make the motion to accept the report as reported to the committee by Jared at Reaveley Engineering. With the recommendation to the city council that they review the recommend options, with a caveat that if they do accept option 3 that they look at an additional study to look at the structural performance of the rest of building and life safety before the fail safe option is designed and implemented. Mark asked Terry if he wanted to say something about the tower. Terry will amend the previous, to look at the functionality of the tower and life safety issues, for example, around entrances and exits and how they may function. Sean asked if Terry would expand on that with have fail safe mean beams and revised bumpers. John asked if we could expand that to replacement bumpers. Lisa seconded the motion.

Terry has a motion to amend the motion to have a look at option 2; there are two parts to it. One is to look at a differing cushion that would allow the 14" of displacement. The second possibility is relocating the moat wall to do the same type of thing. John said he agrees in any way to extend that distance. Terry said there is a motion to the amendment and asks if there is a second to the amendment. The amendment was seconded.

Lisa asked if Reaveley, evaluated the idea of having bumpers at 14" and didn't include that in the report. Is that because they believe the performance is worse with a bumper at 14" than nothing when the isolators go over or equivalent to that. Jared answered if there is a 14" gap and it closes and we get that impact it sends a pulse up through the building and that can create some real dangerous performance

scenario. Without the bumpers there then there is the potential for the building to roll off of the isolators and not only does it introduce the horizontal stability issues but also vertical stability issues. Lisa said so either way there is vertical shocks. Jared said it is horizontal behavior either way without having something to restrain the building vertically then we introduce both horizontal and vertical issues.

Lisa said she doesn't feel she has an informed decision. She stated it sounds like if the result is cataclysmic either way if it hits the bumpers or falls off the isolators. Jared answered yes.

Alden asked Jared if there is any additional information based on the study you have done at this point in time regarding the superstructure. Jared answered yes but it is probably more qualitative and conjectures about the superstructure. They have the model but have taken liberties with material properties and overall geometries with it and they may or may not point us in the right direction.

Alden said based on the isolation system as it is presently is designed, there is a life safety already designed into this building based on the isolators can you give us that information. Jared answered based on what they have concluded so far on all the studies, they believe that the building will behave to a life safety level and performance for a 500 year event, which is roughly consistent with standards for new construction. By that they believe that for an every 500 year event, the occupants should be able to safety leave the building. Alden stated that life safety, meaning that there could be significant damage to the building but the occupants would be able to leave safely. The current design gives us life safety occupancy, what we don't know is the 14" scenario whether the building would still have life safety properties around it. Jared said yes. Lisa stated that in a way it may be moot, that if it's flexing to 14" the building can't withstand that much load whether it is hitting a bumper, falling off its isolators or going to 13.9" and barely staying on its isolators? Jared answered what they would study is they know they can get good performance at 8", 8" qualify as a life safety performance, between 8 "and 14" he can't really say.

Terry asked if there is any other discussion on the amendment. Alden asked if in the amendment that the committee is recommending the city look at an additional study to finish this. Terry said no, the amendment is to alter the first one. Saying also take into account besides the fail safe beam scenario, also to take a look at the moat configuration whether it is adding a different kind of cushion or modify the location of the moat so that you would get more than 14" movement with existing cushions. Terry went to say that in the original motion said that prior to the city just going ahead and doing a failsafe system is to take a look at additional study to see how the building will perform before the city spends the extra two-million dollars.

Terry asked if there were any other discussions. Terry asked for all those in favor of the amendment, the amendment was approved.

Terry asked if there was vote to approve the base recommendation, all approved and the recommendation was passed.

Alden asked Jaysen Oldroyd from the City Attorneys, that the committee voted on the base isolator recommendation, there are four voting members there has to be five to make a quorum. Mark asked if the quorum still exists even if one member excused himself. Jaysen answered that it is probably sufficient simply because you have the quorum here as far as the total goes as far as the total goes you have the total here and you have majority of votes of that total then it is okay.

Terry asked if there are any other items to bring up for the agenda items for the next meeting.

Alden told the committee that the city council will return some money for this building. Their focus was for energy and safety items, for the items they sited with their recommendations back. The items Alden gave the council were for the A/C upgrades which will cost about 2.4 million dollars. The stone work was six million, the council only gave 1.2 million for the stone, plus we have the base isolators and some electrical work. Alden would like the committee to give some recommendations in the next meeting as to what energy and safety items they recommend by addressed for the City and County Building.

John asked if Jim could put together a list of what the returned money would cover. Jim said he will put together a list. Terry said that the committee will review it at the next Conservancy and Use meeting and asked the committee's secretary to put it on the agenda.

Lisa asked if the citizen's review board that reviewed the stone come back with any recommendations. Alden said that should come back in May.

Terry asked for a motion to adjourn the meeting a motion was made to adjourn the meeting it was seconded and the meeting was adjourned.