VERMONT AMERICAN COMPLEX
500 E. MAIN STREET
LOUISVILLE, KENTUCKY

Photograph No. 1 – Left to right view of front of Buildings 6, 5, and 2 from the intersection of Main Street and Jackson Street. The existing highway bridge is shown in the background to the left.

STRUCTURAL ASSESSMENT
JULY 22, 2011

PARSONS

INTRODUCTION

The Vermont-American Complex located at 500 E. Main Street in Louisville, Kentucky consists of five interconnected buildings. The buildings that are present on site today are only a portion of those that made up the entire complex, as several buildings have been demolished or occupied by others over the years. The buildings that remain have been vacant for approximately 15 years. During that time, there has been little or no maintenance performed and the buildings have been occupied by vagrants on a regular basis. All of the buildings have sustained damage due to vandalism and a lack of maintenance which has created substantial exposure to the elements. All of the existing buildings are in an advanced state of disrepair.

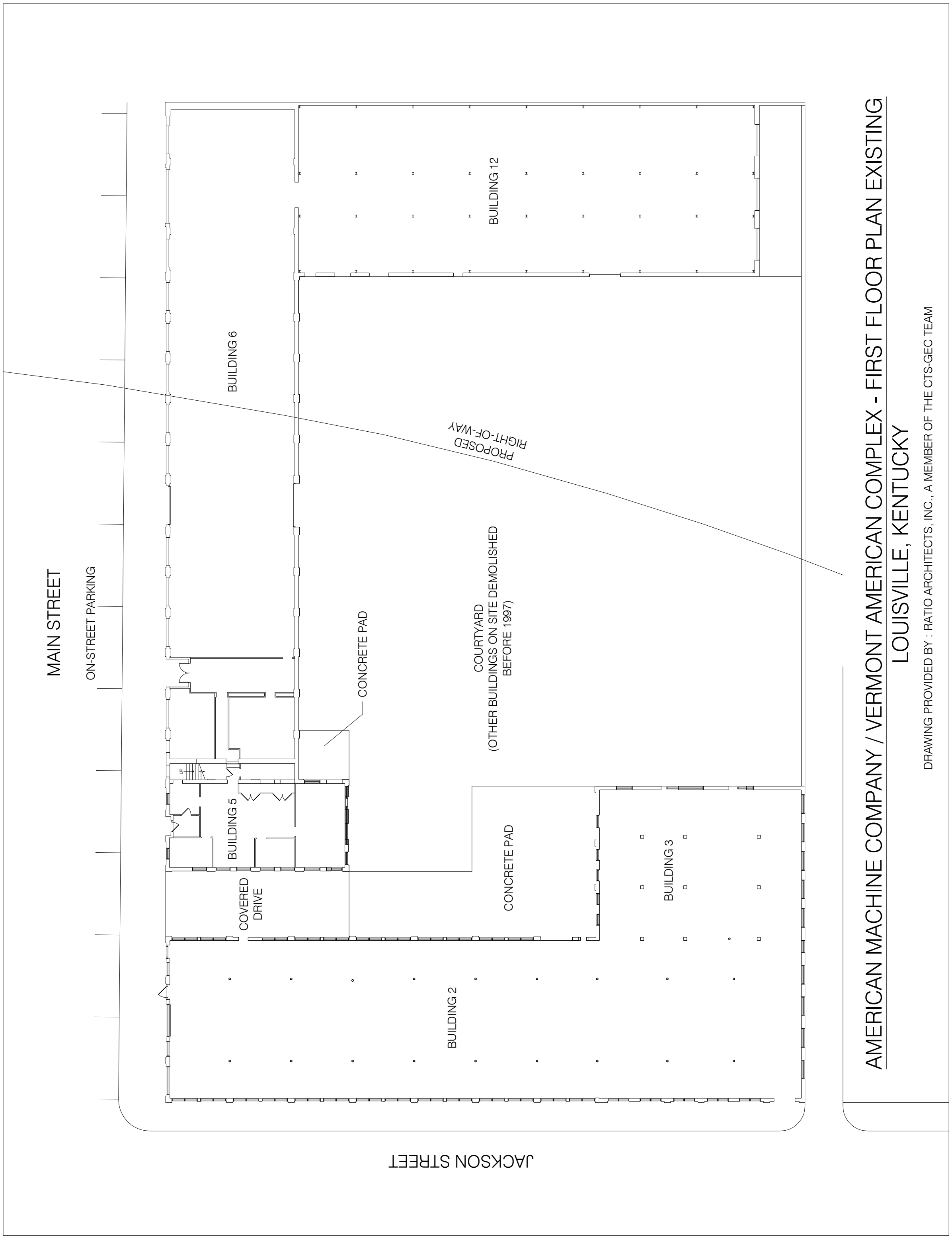
Upgrades to the Ohio River Bridges Project (The Project) will have an impact on the existing buildings. Current plans include the construction of two bridges over the Ohio River with the roadway on the Kentucky side of the river adjacent to the Vermont-American site. The proposed right of way crosses the site and divides the buildings into those that are within the right of way and those that are outside the right of way. Buildings 2, 3, and 5 are outside of the proposed right of way. Building 12 is within the proposed right of way. Building 6 is divided by the proposed right of way. As stated earlier, other buildings were either previously demolished or occupied by different owners.

It is understood that the buildings located within the proposed right of way will be demolished to make room for the roadway construction. Those located outside of the proposed right of way may be renovated for future use with a different occupancy classification. Building 6 could potentially be partially demolished. There was a previous study performed by RATIO Architects, Inc., a member of the CTS-GEC team with a subsequent report titled "Vermont American Complex Building Treatment Plan". This report presents options for different layouts and proposed adaptive usage for those buildings located outside the proposed right of way. The study assumes that Buildings 6 and 12 will be demolished in their entirety leaving Buildings 2, 3 and 5 as the only structures to remain for future renovation. Figure 1 on the next page shows the footprint of the buildings and the approximate location of the proposed right of way. This drawing was prepared by RATIO Architects, Inc., a member of the CTS-GEC team and was provided by them for our use in this report.

The buildings as they currently exist pose health and safety risks. The current schedule for the construction of the proposed roadway would not have the demolition of the buildings to occur until sometime in 2014. The health risks are being assessed by others. The purpose of this study is to assess the safety risks posed by the decaying structure and to make recommendations as may be necessary to stabilize the buildings until construction begins in about three years. Our observations, conclusions, and recommendations follow.

OBSERVATIONS

We arrived on site on the morning of June 27. One of the safety concerns associated with this building assessment has to do with the vagrants who occupy the building and not knowing who or what may be in the building at any given time. Therefore, we were provided an escort at all


AMERICAN MACHINE COMPANY / VERMONT AMERICAN COMPLEX - FIRST FLOOR PLAN EXISTING
LOUISVILLE, KENTUCKY
DRAWING PROVIDED BY : RATIO ARCHITECTS, INC., A MEMBER OF THE CTS-GEC TEAM
MAIN STREET
ON-STREET PARKING
JACKSON STREET
BUILDING 12
BUILDING 6
PROPOSED RIGHT-OF-WAY
CONCRETE PAD
COURTYARD
(OTHER BUILDINGS ON SITE DEMOLISHED BEFORE 1997)
BUILDING 5
COVERED DRIVE
CONCRETE PAD
BUILDING 3
BUILDING 2

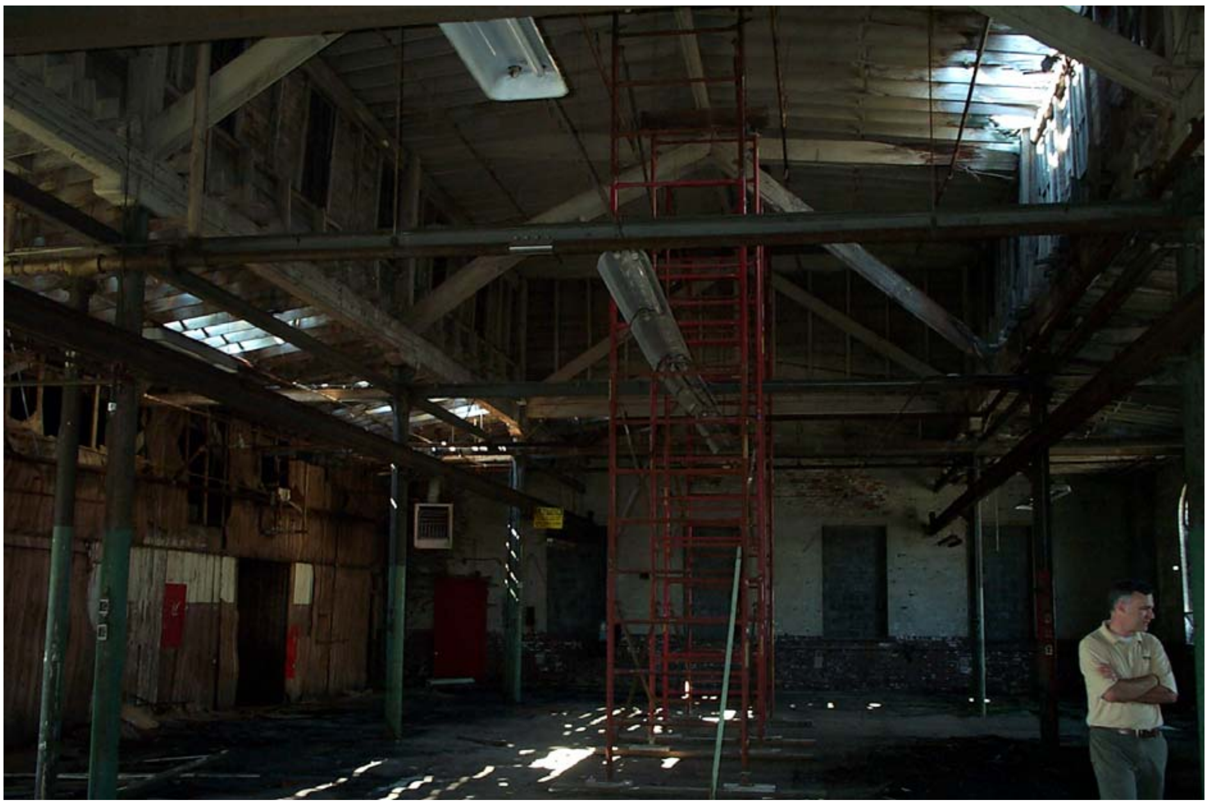
times when we were inside the building. The first day at the site was spent walking through the entire facility and around the outside to get a feel of the general condition of the different buildings and where to concentrate our time on the remaining days at the site. All five buildings are of one or two story construction with solid red brick masonry walls that have been painted. The walls are three or four wythes thick depending on location. All exterior walls that face the street and most exterior walls that face the courtyard behind the building are divided into regular bays by pilasters. There are arched window openings between the pilasters formed with rowlock brick courses. The window openings facing the street have been in-filled with concrete masonry units and several of those openings have had smaller windows installed. Some of the openings facing the courtyard have wood sash double hung windows which may be the original windows. Buildings 2, 3, and 6 have gabled roofs and buildings 5 and 12 have flat roofs. Buildings 2 and 12 have clerestories approximately six feet high running along the center of the roofs for most of the building length. Photograph No. 1 shows the Main Street elevation. Photograph Nos. 2 and 3 show the courtyard elevation.

Photograph No. 2 - Left to right view of Buildings 3, 2, and 5 from the courtyard.

Photograph No. 3 - View of Building 6 from the courtyard.

On the second day at the site, we began our visual investigation on the lower level of Building 2 beginning at the north end and working our way south to Building 3. The first floor is a concrete slab-on-grade. The second floor framing of Building 2 is wood joist construction supported on steel girders. There is water ponded on the slab-on-grade and with no ventilation it is evident that these ponds stay here nearly all of the time. This area of the building is infested with mosquitoes. The transverse direction of the building is divided into three bays by two rows of interior steel columns. There is a bridge crane in the center bay which runs the full length of the building. Building 3 is connected to Building 2 at the south end and the footprint of the two buildings is “L” shaped as shown in Figure 1. The second floor framing of Building 3 is wood joists and deck on heavy timber girders supported by heavy timber columns.

A very large portion of the second floor wood framing in both buildings 2 and 3 has rotted and is in advanced stages of decay. The steel framing at the second floor of Building 2 is rusted but does not appear to have any significant loss of cross section. The upper level of Building 2 is laid out similarly to the lower level with the same columns dividing the building into three transverse bays. There are interior walls in the northernmost bay which divide the space into offices. From there to the south and into Building 3, the space is open with a clerestory extending above the roof down the center of the building. There is a bridge crane running the length of the center bay in Building 2 and another one in Building 3. The roof of Buildings 2 and 3 are framed with wood. There are heavy timber trusses in Building 3 and somewhat lighter wooden trusses framing the clerestory in Building 2. One of the trusses in Building 2 has failed and is currently supported by metal scaffolding on the second floor wooden deck and framing.



Photograph No. 4 – Scaffolding on the second floor of Building 2 which shores up a failed roof truss. The typical framing for the roof of Building 2 can also be seen. Note the numerous holes in the roof of varying sizes and the sun spots on the floor.

The wooden roof deck has rotted and deteriorated in both buildings to the point that it has collapsed in several places and large areas of daylight can be seen through the open holes. These open holes have permitted enormous amounts of rain water to enter the buildings and subsequent deterioration of the second floor framing has occurred over a major portion of the buildings. The first and second floors of Building 5 are divided by interior partitions forming offices. As is the case with Buildings 2 and 3, there are again large areas where the wooden roof framing and the floor below have deteriorated due to water entering the building through badly compromised roof framing and decking. There are large areas, in fact entire rooms, where the metal lath and plaster ceilings have collapsed. The second floor of Building 5 connects to Building 2 forming a drive through area at the lower level between the two buildings.

Photograph No. 5 - Failed roof truss in Building No. 2 clerestory.

Photograph No. 6 – Failed metal lath and plaster ceiling in Building No. 5 exposing the deteriorated roof framing.

Building 6 is a long building with an open floor space. It is a single story factory style building. The floor is concrete slab-on-grade. Some areas of the floor have been cut out exposing the subgrade. There are heavy corbelled pilasters on each side supporting two overhead cranes on the same track. The west end on this building contains a mezzanine that is framed with open web steel joists supported by steel girders. The floor of the mezzanine is concrete on metal deck. The mezzanine is heavily designed as is evidenced by a sign on the mezzanine indicating a capacity of 400 pounds per square foot. The roof is framed with steel trusses spanning the entire width of the building. Steel decking is supported on steel roof purlins which span between the trusses. This building appears to be in much better condition than any of the other buildings.

Building 12, like Building 6, is a long one story factory style building. The exterior walls on the longer east and west sides were the exterior walls of other buildings that have long since been demolished. The transverse dimension of the building is divided into three bays. The roof is framed with wooden joists supported on steel girders. The wooden roof deck and the wooden joists framing in the main field of the roof are deteriorated similar to, but not as bad as, Building 2. Even so, the deterioration is in a very advanced state. There is a clerestory running the length of this building which is also framed with wood. The roof of the clerestory is in very bad condition and allows large amounts of rain water to pour through the roof. The clerestory framing is rotten and decayed.

CONCLUSIONS

The wooden roofs of Buildings 2, 3, 5 and 12 and the wooden floors in Buildings 2, 3 and 5 are severely deteriorated. The clerestories on the roofs of Buildings 2 and 12 are extremely deteriorated and decayed. The wooden members in all of these areas are saturated due to constant exposure to the elements. The lack of any ventilation in the buildings creates a situation where these wooden members remain saturated and the decay and deterioration is a non-stop process. Like a cancer, once wood has started to rot and decay, it will continue to do so unless the affected areas are cut out and removed. The lack of any maintenance of these buildings over the years has allowed the deterioration to advance, again similar to a cancer that is untreated. Although there are a few areas where the wooden materials in these buildings may seem to be substantially better than most other areas, the percentage of decaying material is such that trying to save any of it is not worth the effort or the expense.

The steel framing in all locations is in fair condition. In most areas it is in need of cleaning and painting. We did not see any place in these buildings where the steel materials could not be left in place and re-used.

For the most part, the brick masonry walls are in fair condition given their age and lack of maintenance. The mortar has significantly eroded in areas subject to water such as under window sills. Most of the rain leaders are missing so the gutters release water at the pilaster locations and they also show significant erosion of the mortar. In order to salvage the walls and re-use them, the mortar joints will have to be raked to remove loose mortar and then re-pointed to repair them. That will be an expensive operation as well as very time consuming.

To summarize the conclusions, it is easiest to talk in terms of material rather than location within the buildings. All roofs are severely deteriorated which permits water to enter the buildings unobstructed in most cases. As a result, all wood framing is extremely rotted and decayed and in some case has already failed. All steel framing is rusted and in need of cleaning and painting. The degree of rusting depends upon the location and its exposure to the elements. All exterior brick masonry walls are in need of raking and re-pointing the mortar joints. The bricks themselves seem to be in good condition. It is important to note here that the buildings or portions of buildings that are in the best condition are those that are within the proposed right of way and will most likely be demolished anyway in three years. Conversely, the buildings that are currently in the worst condition are the ones that are under consideration for renovation in three years.

RECOMMENDATIONS

As stated in the Introduction section of this report, the purpose of this study is to assess the safety risks posed by the decaying structure and to make recommendations as may be necessary to stabilize the buildings until construction begins in about three years. With that in mind, the following recommendations are made with regard to available options.

OPTION 1: In the case of trying to salvage the buildings that are outside the proposed right of way, it is our professional opinion that it will cost more to perform selective demolition and then repair and renovate the buildings to prepare them for reuse than it would to perform a complete demolition and build a new building that has been designed for a specific occupancy. We realize that this option is technically outside the scope of this study since we have been charged with determining what must be done to stabilize the buildings until such time as they are either demolished or refurbished. Our point here is that if they are going to be demolished anyway, it will cost less in the long run to go ahead and demolish them now rather than try to stabilize them and then either partially or totally demolish them in three years. Having said this, if there is a feeling that the buildings will be demolished in three years, our recommendation is to go ahead and demolish them now rather than spend money to stabilize them just to be demolished in three years.

OPTION 2: Considering the case of demolishing the entire complex, our recommendation would be the same as Option 1 and that is demolish them now and save the cost of trying to stabilize them just so they can stand there for three more years and then be demolished.

OPTION 3: The buildings located outside the proposed right of way may be salvaged, regardless of cost, for their historic value to the community. The buildings located within the proposed right of way will be demolished under any circumstances. We therefore recommend that the buildings within the proposed right of way be demolished now. The buildings which are intended to be salvaged and refurbished could then be stabilized in accordance with the recommendations that follow to protect their structural integrity for the next three years.

OPTION 4: If it develops that no decision can be made at the present time with regard to the demolition of some or all of the buildings or that the funding is not available for demolition, then the buildings could be stabilized in accordance with the recommendations that follow to protect their structural integrity for the next three years.

Determining the scope of work and the cost to stabilize any or all of these buildings in such a way to reduce the safety risks for the next three years would be an engineering project in itself which is far beyond the scope of this study. However, our professional opinion based upon our cursory walk through of the complex is that the following items would have to be done on a building by building basis to stabilize each building for a period of at least three years.

BUILDING 2: Significant portions of the roof framing and deck of Building 2 must be removed since there are several members hanging loosely and close to falling. All loose framing members and decking must be removed and properly disposed of. Then temporary supports sufficient to shore up a temporary roof must be erected. This can be accomplished either by installing new wood framing or installing scaffolding either of which must be sized to support code required live loads. If scaffolding is used, it will be similar to that already installed in one area of the second floor to shore up an already failed truss as discussed earlier in this report. An extensive set of scaffolding would be required because nearly the entire roof of this building would have to be shored. In addition, scaffolding would be required on the first floor level to transfer the load from the second floor on down to ground level because it is very doubtful that the second floor framing can support the weight of the scaffolding and the roof loads that it would be supporting. Essentially, this building would be full of scaffolding. For this reason, we believe that the best way to stabilize the roof is to go ahead and replace the roof framing with like or similar construction. Since this building is outside the proposed right of way and may be salvaged anyway, it makes sense to incorporate the current stabilization effort with the permanent framing of the new roof. This will save both time and money in the future. It is our opinion that once the roof is stabilized and that a temporary roof is placed on the building such that water can no longer penetrate the building envelope, the second floor, while certainly incapable of supporting heavy loads, should last the three years until the construction phase of the project. This idea is based upon the assumption that this space will continue to remain free of any loads. The second floor should be posted with a sign which states that storage of any items is absolutely not allowed. With the roof stabilized, the steel framing at the second floor and the brick masonry walls in this building are currently sufficient to last for the three year period until construction begins.

An alternate recommendation to stabilizing this building would be to remove the entire wood roof structure and all of the wood framing at the second floor level. The exterior walls could then be braced with diagonal braces or with scaffolding erected on the inside face of the wall and connected to the wall and anchored to the concrete floor. This would leave only the brick walls and the structural steel framing in place and would add the bracing as described above. The shell of the building would be standing with no roof. The interior of the shell, including the structural steel, would have more exposure to the elements. This could cause further deterioration of the inside face of the walls and the structural steel, but even so, they would be stabilized for the three year period until they are either demolished or refurbished. This alternate would be less costly initially than the temporary roof idea and it would discourage vagrants from using the building because there would be no roof. It would leave the building's interior completely exposed to the elements however.

BUILDING 3: Our recommendations for stabilizing Building 3 are very similar to those for Building 2. In summary, the building is outside the proposed right of way and therefore may be salvaged. Since it will require a new roof structure in the future if and when it is renovated, it makes sense to put the new roof including the new framing on the building now and use the new framing as the current stabilizing structure, thus saving both time and money. The other method of temporary stabilization is to use scaffolding to support a temporary roof as described in the Building 2 recommendations above until such time as a decision can be made concerning the building's future. In either case, there will have to be a new or a temporary roof installed to dry-in the building to arrest the ongoing deterioration. Our thinking here, once again, is to take advantage of the savings in time and money offered if the building is to be salvaged by going ahead at this time and replacing the roof structure with a new one.

The alternate recommendation of completely gutting the building and bracing the walls as described above for Building 2 is also an option for this building.

BUILDING 5: As is the case with Buildings 2 and 3, the wood framing at the roof level of this building needs to be removed and discarded. This is the case whether or not the building is salvaged for later use. The second floor ceilings have collapsed in a number of areas leaving metal lath and other material hanging from a roof structure that could collapse at any time. It is our opinion that the roof could be framed with wood in a manner similar to the existing with new materials and either a new or temporary roof installed. This can most likely be done at no more cost than shoring up a temporary roof with scaffolding as described for Buildings 2 and 3, especially considering the cost of scaffold rental over a three year period. If the building is to be salvaged for re-use, it makes sense to spend just a little more money for a permanent roof structure. If the building is to be demolished, it makes sense to demolish it now and save the additional cost of temporary stabilization. The second floor of this building is in poor condition, but it should be able to last three more years assuming the roof is replaced so that it is no longer exposed to water intrusion.

The alternate recommendation of completely gutting the building and bracing the walls as described above for Building 2 is also an option for this building.

BUILDING 6: As stated earlier, of all of the buildings addressed by this study, Building 6 is in the best condition. It is our opinion that this building is sound enough to last for three more years. Since it is divided by the proposed right of way, at least a portion of it must be demolished in the construction phase of the project. The earlier study "Building Treatment Plan" indicates that the entire building is to be demolished and we suspect that this will be the case. Therefore, we recommend that no money be spent on this building at this time.

BUILDING 12: Since Building 12 is located within the proposed right of way, it will surely be demolished in the construction phase of this project. Our recommendation would be to demolish it now to save the cost of any remedial work. The demolition would be more expensive than temporary stabilization, but over the three year period the result would be a savings because the cost of temporary stabilization would not be incurred. If the demolition can't be done now, then it will be necessary to temporarily stabilize the clerestory in order to keep it from further failure. We believe the least expensive method of temporary stabilization would be to remove the clerestory entirely and replace it with temporary framing which would span the width of the existing clerestory and supported by the existing structure on either side of the clerestory. A temporary roof should then be placed on the entire building to protect it from further deterioration due to moisture penetration.

SUMMARY

In summary, it is our professional opinion that the entire roof structures of Buildings 2, 3 and 5 and the clerestory of Building 12 must be stabilized in order to have some level of confidence that they will not pose a safety concern prior to the construction phase of this project which will not begin for another three years. The method of stabilization of the roofs for Buildings 2, 3, and 5 will depend upon whether decisions can be made now concerning the future of these buildings. For Buildings 2 and 3, either temporary shoring with the use of scaffolding two stories high or the complete removal and replacement of the roof structure with similar construction should be employed depending on whether the buildings are to be salvaged and how much funding is available now. For Building 5, we recommend the removal and replacement of the wood framing at the roof level and the replacement with either temporary or permanent construction, again depending on the future plans for the building and the current level of funding available.

All three of these buildings could be completely gutted if the exterior walls are braced as described earlier in this report.

The clerestory on Building 12 should be removed and replaced with temporary framing and temporary roofing at the level of the main roof with the framing being supported by the existing structural steel. There is no need to replace the clerestory since this building will be demolished during the construction phase of this project.

While the buildings are in very poor condition, the structural steel framing and the brick walls are structurally sound enough to last for three more years without posing a safety threat. Obviously there will be a lot of work in the future for those areas that may be salvaged for future use. At that time, the steel will need to be cleaned and painted and the mortar joints in the brick walls will need to be raked and re-pointed. We have included additional photographs in an appendix to this report to better describe the current condition of these buildings.

Respectfully submitted,

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APPENDIX

Additional Photographs

Photograph No. A-1: Decay of second floor wood framing supported by rusted steel in Building No. 2.

Photograph No. A-2: Decay of second floor wood framing on heavy timber supports in Building 3

Photograph No. A-3: Severe erosion of mortar joints at corner of Building 5.

Photograph No. A-4: Ceiling collapse in Building 5

Photograph No. A-5: Ceiling collapse in Building 5.

Photograph No. A-6: Deteriorated wood roof at junction of main roof and clerestory in Building 2. Rusted steel support framing.

Photograph No. A-7: Failed truss in clerestory of Building No. 2

Photograph No. A-8: Daylight through the roof of Building 2.

Photograph No. A-9: Daylight through roof of Building 2.

Photograph No. A-10: Deterioration of roof at Building 3.

Photograph No. A-11: Mezzanine framing in Building 6 showing that it is relatively good condition.

Photograph No. A-12: Deterioration of clerestory in Building 12.