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Inspection Report, Analysis and Recommendations for Rehabilitation of the Little Log Church and Museum, Yachats, Oregon

I. Site: The Little Log Church and Museum,(LCC&M), 328 West 3rd St. Yachats, Oregon 91498

The Little Log Church and Museum is one of the City of Yachat's most charming and beloved landmarks. The original Church section of the building was built between 1927 and 1930 of locally sourced logs. The structure is constructed in the shape of cross An addition was added in approximately 2004 to the south of the original building to house a City Museum. The addition was designed to emulate the design features of the original building.

The original church component of the structure originally housed an Evangelical congregation and later a Presbyterian congregation. After the Presbyterian congregationI outgrew the original church's capacity the congregation began using the Ladies' Club facility directly across Pontiac St. from the church building. The original building, now owned by the City of Yachats, is currently in moderate to heavy use as an assembly space hosting activities ranging from weddings to classes. The building is two blocks from highway 101 and two blocks from the Yachats State Park overlooking the ocean. The building is also two blocks from the Yachats Commons and three blocks from the future site of the expanded Yachats Public Library. A number of restaurants, pubs, retail shops, hotels, guest cottages and a grocery store are located within four blocks of the structure. A Lincoln County Transit bus stop is adjacent to the church portion of the building. As mentioned, the Yachats Ladies Club assembly structure is directly across the street from the LLC& M on the south side of Pontiac Street at 3rd Street.

II. Site and Structure inspection

Consultant, Jonathan Pincus and senior consultant Don Peting, AIA, conducted a visual inspection of the LLC&M structure on September 26, 2017. The inspection findings are as follows:

A. Exterior Inspection:
1. Exterior Walls:

The south and east log walls of the east wing of the church section of the building had previously been covered by plywood as a response to the development of rot in some of the logs. For this inspection the

consultants requested that a panel of plywood be removed to provide access to the damaged area for the purpose if assessing of the type and severity of the damage to the logs. A panel was removed on the south facing side of the original church structure's eastern wing of the main assembly area. In that section alone a significant number of logs had developed severe rot. In one location a log had rotted all of the way through to the point that the back of the interior sheet-rock could be seen. While the panel was open we suggested that the hole be temporarily filled and covered with plastic to protect the sheet-rock. This was done by a City worker assisting the inspection.

We inspected all of the elevations of the exterior walls and found that in addition to the areas that had been covered with plywood a number of logs on the east and west side had also developed areas of rot although not as severely as those on the southeast portion of the building. The areas facing west had fewer logs impacted by rot than were visible on the other elevations. This difference is most likely the result of the sheltered conditions created by high vegetation and structures to the west and southwest of the small pocket park adjacent to the structure and the large bank of trees in the park area due west near the intersection of Third Street and Ocean View Drive.

The recently added museum section of the building connects to the original church structure at the southwest portion of the original structure and is set back from the street. This structure was found to be in good condition with few areas of external deterioration. The logs comprising the exterior walls of the museum portion of the building are constructed of manufactured logs which may have been treated during the manufacturing process. Although intact, these logs show a machined pattern deriving from the manufacturing process which is discernible at about ten feet distance. This section of the building is set back significantly, increasing the effect of the sheltered conditions created by trees, vegetation and nearby structures to the west and south

2. Exterior Inspection of under-structure conditions:

The consultants did not conduct a complete inspection of the under-structure and crawl-space of the original portion of the building. However we were able to make some observations by viewing and measuring the crawl space through the under-structure ventilation openings and an ample crawl space entry on the west side of the foundation. The under-structure vents are primarily below grade on north and northwest side of the building. Measurements taken through these openings revealed that the distances between the dirt and pebble floor of the under-structure and the bottom of the floor joists in the original portion of the building are generally 12", a full 6" short of the 18" required to prevent ground born infestation and to provide air circulation sufficient to prevent condensation and rot conditions that frequently result from this deficiency.

The area of the under-structure beneath the Museum portion of the building appears to meet or exceed the 18 " standard. Neither area showed readily visible indications of under-structure deterioration during this partial inspection. However the substandard clearance under the original church potion of the structure has the potential to result in serious structural problems in the future.

3. Belfry:

A belfry is present over the main entry foyer section of the building, which extends from the northeast corner of the sanctuary. According to materials located in the museum the bell was brought from a demolished church in southern Oregon. The consultants did not inspect the belfry specifically. However it appears to be intact and stable. There is a mechanism for ringing the bell with a rope and a pulley present, however the consultants were not able to identify the terminus of the mechanism from which the bell would have been operated, although it is clear that fuctional detail would have originally been located in the entry foyer. The entry foyer appears to have been enclosed and remodeled since its original construction.

3. Interior inspection:

The interior of the building appeared to be in generally good condition. The original interior walls have been replaced with sheet-rock and finished with a thin -coat of plaster. The original base boards and door frames have been preserved and re-used. The original windows were brought during the LLC's original construction from a church demolition site in Philomath, as were the pews. These have also been preserved and reused in the new interior. The window frames and trim are a combination of original and new pieces fashioned to resemble the original pieces which they replaced The original organ and another organ of the same period remain in the sanctuary along with the original bible and other artifacts of the church's historic period. The paired sets of north and east facing large vertical double-hung windows provide the sanctuary with a beautiful soft light. Although the sheetrock wall covering is made of a modern material (sheetrock with a thin plaster coating) the overall effect of the interior treatment is compatible with the historic character of the building and quite appropriate for a historic church interior. Good craftsmanship is evident in all of the interior details.

The ceilings in the two primary sections of the building are partially vaulted A hallway connects the entry area of the museum portion of the building. A bathroom serving both sections of the building enters on the west wall of this hallway. A storage area is located west of the bathroom but is entered from the museum section of the building. There was no indication of leakage in the bathroom area. There was some indication of leakage in southeast corners of both sections of the building and at the base of the window in the museum section of the building. This window is of a newer type of construction which does not include some of the features which are typical in the older window sets that prevent leakage and sill rot . Overall the building interior is in good condition with the exception of the symptoms of incursion mentioned above

4. Attic Inspection:

The consultants did not inspect the entire attic over the original church portion of the building. Instead this area was viewed via an attic access in the sanctuary ceiling. Although there was some minor staining on roof batting and rafters these are typical for buildings which are old enough to have had one or more roof replacements. The consultants saw no indication of current leaking from our limited

vantage point. A significant amount of rodent droppings were observed on the material covering the sanctuary ceiling. The City conducted a follow up examination of this area from which it was determined that the droppings were from bats. Screens were subsequently installed over the gable vents to keep bats from continuing to enter the attic.

It was not possible from the viewpoint noted to determine the precise method by which the sheetrock of the interior walls is attached to the interior side of the logs. At the consultant's request a notice was subsequently placed in the City's newsletter requesting information from anyone familiar with the details of various renovations that had been conducted on the building. No pertinent information resulted from this request. Further research into newspaper articles and photographs that may have appeared in the Newport News-Times at the time of the construction or renovation of the building may yield related names or other clues that may lead to such information. These records are archived at the Toledo. Oregon City Library. The consultants believe that the interior sheetrock is likely attached to the structural log walls via a batton system.Please see the attached photographs taken during the inspection. They illustrate the types of conditions found at the site during the inspection..

III. Consultations

The presence of Professor Peting during the inspection was an invaluable resource. He was the primary structural consultant for this study. Having him present during the physical inspection enabled "in the moment" consultation.I had a brief conversation with Al Eames of the Lincoln County building inspection department during the course of a consultation regarding another project regarding the library. He affirmed that major structural alteration at the LLC would require a building permit. Any building permit application may trigger an occupancy review.. Lincoln County building records describe the occupancy as A-2. However the uses listed for the A-2 occupancy do not represent any previous uses of the structure nor do they represent any current use. I had a second consultation with Al Eames to clarify this issue. He stated that he views the correct occupancy for the LLC&M as A-3. This would be consistent with its uses as either a place of worship, a community hall or a museum. Mr. Eames stated that the building could be treated as a B occupancy if the capacity of the entire building was limited to 50 persons,

I consulted with Harrison Goodall. He is a trainer of historic site managers for the National Park Service in architectural conservation. He is well known for his work with log structures including many of the structures in Yellowstone National Park. Dr. Goodall offered to assist, if invited, in efforts to repair the log church free of charge beyond travel costs. Dr. Goodall resides in Whidbey Island. He indicated that he would be traveling by car. Mr. Goodall is capable of specifying treatment on a log by log basis. His presence and advice would be a great asset to the operation of any treatment program chosen for the LLC&M.

I had additional discussions with Steven Baker, a specialist in environmentally sound building design. Mr. Baker,s expertise includes the functional impact of climate conditions in buildings. His advice has been particularly helpful in regard to my efforts to identify the cause of the rotting patterns observed in the log church.

IV. Analysis

The pattern of rotting logs present in the log church structure will likely compromise the structural integrity of the building within several years if left unchecked. Such instances of rot are most often found near the bottom or top of the affected wall. This was not the case in the area we were able to inspect. We did not see any immediate indication of roof leaks on the interior or in the attic. Nor was there any immediately observable evidence of deterioration in the floor assembly. The only water features inside the building are in the bathroom which is not near the area of concentrated rot conditions. In this case visible rot conditions were present in logs about halfway up height of the affected walls on the south elevation of the east wing of the sanctuary. In our conversations with various parties onsite there seemed to be consensus that weathering was the primary cause of the rot in the logs we could examine. We believe that the causes may be somewhat less straightforward. When we examined a log that was rotted through on the south facing wall of the eastern wing we noted that the sheet-rock back was directly visible from the exterior. Evidence of a nailing strip and a plywood interior covering were also visible. The plywood was painted with a black coating which could be tar or vapor inhibiting paint. apparently used in combination with the plywood to create a vapor barrier. However it did not appear that the painted or spread substance was applied thoroughly. Small areas of bare plywood were visible through the painted layer. This condition would allow air and its moisture content to transfer through the sheet-rock and plywood from the interior space, normally kept at perhaps 60 to 70 degreesand moving toward an exterior that is much cooler in the winter months. This trajectory from warm to cold would cause humidity to rise from approximately 50% inside the building to perhaps 90 % in the area between the logs and the interior layers of the wall. This heightened humidity would tend to create condensation in that area resulting in rot. Our inspection also showed that the exterior chinking and its paint seal have failed in between some logs, thus allowing moisture to enter the interior of the wall assembly from the outside. This incursion was probably accelerated by wind driven force and again would lead to rot. Additionally, the paint sealing over the broad exterior surface of the logs has cracked or flaked in a number of locations. Failure to maintain the seal provided by the coating could result in rot conditions particularly in a place often affected by driving rain. The eaves on the structure do not provide sufficient cover for the walls to mitigate the effects of the horizontally whipping rain in that location but they may be providing some protection for the logs and structural material near the top of the wall. Historic photographs of the building indicate that no gutters were present during the early use of the building. It may have been a number of years before gutters were installed. The absence of gutters would have caused water running off of the roof to be blown onto the walls by the strong horizontal winds, increasing the potential for rot.

V. Treatment Options

I discussed various approaches to creating a treatment program for the Little Log Church with Don Peting and Harrison Goodall. Two factors which present logistical challenges for any treatment program are:

1. The regular use of the building particularly for events which have great personal meaning for the participants such as weddings, These events are typically scheduled well in advance. and

2. Code considerations regarding the "grandfathered" or "legacy" structural system and occupancy of the building. (In Portland and other jurisdictions the term "grandfathered" has now been replaced with the term "legacy structure"). The structure will ultimately be found to be a "legacy structure" in either Occupancy Category B or in A-3 depending on capacity. If occupancy A-3 is assigned, the building could be described as a place of worship, a community hall and/or a museum. "Community Hall" is the occupancy category which most accurately describes the structure's current use, as it is programmed with a variety of secular activities as well as religious activities. Category B can only serve as a" legacy" occupancy if the total building capacity is less than 50 persons . The connection between the two buildings includes considerable square footage of floor space including a storage area and a bathroom in addition to the hallway. Lincoln County building official Al Eames confirmed that the county treats the complex as one building. As the museum addition has been in use for a number of years it should not pose an obstacle to the structural complex being considered a "legacy structure". The occupancy category most likely to be applied is A-3 . As the current use has been ongoing for many years the primary concern regarding the buildings' "legacy" status will instead rest on the percentage of alteration occurring per project. This concern may affect the staging of treatment. It may be practical to choose a treatment sequence which limits alteration covered by any individual building permit to less than 50% of the value of the improvement.

In any treatment sequence removal of the interior assembly of the wall being treated will be required. Although not impossible, it will prove difficult to maintain the integrity of interior walls adjoining those which are subject to repair due to the notched pattern of assembly of the exterior logs. Full removal of the interior assembly would enable assessment of each log in place from the interior as well as the exterior. Full removal of the interior wall assembly would also facilitate replacement with an assembly utilizing properly installed vapor containment features. The vapor barrier may be achieved with foil backed insulation, or other systems backed by a suitable vapor barrier. If conditions require a structural element, plywood fully coated and sealed at the edges with vapor repellent paint may be used if the application of the repellent covering is very complete.The exterior south and east walls of the east wing of the sanctuary are covered with plywood. We were only able to examine the area in which one plywood panel had been removed. It is assumed that the other areas covered by plywood have been protected due to multiple areas of rot as well. Fully dismantling severely damaged exterior walls and reconstructing it from ground up may be the preferred option. The notched corner pattern of the logs will again present a challenge regarding the adjoining walls even if whole elevations are dismantled. In order to avoid a full tear down of the entire original church structure, logs which must be removed may

be separated from the notched corner by surgically removing the damaged portion while leaving the corner prepared in a grafting pattern as an alternative to completely dismantling whole elevations or the whole structure. Replacement would require preparing each corner with a grafting arrangement or utilizing a difficult but achievable jacking technique, enabling insertion of new logs. A third option would be to rely on the corner covering that is already in place to conceal an altered connection pattern at the corners. This method would either (a.) reduce the diameter of each log at the corner section to allow the straightforward insertion of logs or (b) simply replace of the corners with a post connecting to the roof structure. As the corners are currently covered it was not possible during our inspection to determine if any of these alternatives has previously been applied. Therefore prior to settling on a strategy for treating the building the corner coverings on at least one corner should be removed to determine if any such alterations have previously occurred. Until that additional inspection has been completed we must assume that the logs are set in place using the corner detail shown in historic photographs of the building. Based on that assumption the following project sequences are recommended

A. For the south elevation of the east wing:

1. Carefully remove, number and store the existing interior and exterior wooden trim hardware etc.and preserve for reattachment

2. Remove the interior wall covering assembly of the elevation to be replaced or

3. Remove the entire interior wall assembly of the original church portion of the structure.

4. . Conduct a log-by-log inspection with Harrison Goodall present to advise on treatment in place, removal by piece or complete dismantling of the entire wall to achieve repair or replacement of each log.

5. Conduct the recommended treatment. Treatment may involve splicing a new log section into an existing log, filling cavities with an epoxy product, or complete replacement of a log.

B. For the east elevation of the east wing

1. Make provisions for the removal and preservation of the existing windows frames and sashes along with existing interior and exterior wood trim. Preservation of these items may be able to be accomplished with the windows in place or removed depending on the extent of the work needed on the walls being exposed. Removal should be conducted with extreme care. All items removed should be numbered, cataloged and carefully stored during construction.

2. Repeat the choices and processes prescribed for the south elevation

C. Conduct reconstruction of both exterior walls either through ground up construction, repair or insertion using jacking techniques. Jacking and insertion should be conducted either under the direct supervision of Dr. Goodall or, if he is unavailable, using the techniques that he has published.

D. Survey the remaining exterior wall sections to verify that they do not require extensive grafting or replacement

1. Where repair is needed determine in consultation with Dr. Goodall whether any logs on these elevation is sufficiently damaged to warrant extraction

2. it is unlikely that any logs will need extraction on elevations beyond those elevations currently protected by exterior plywood. However if so, some or all of the interior wall assembly will have to be removed to accomplish the needed jacking and removal.

3. in areas where rotting seems minimal conduct a moisture test by inserting a moisture testing needle into both the interior wall assembly and the exterior log to assess moisture content of the area. If moisture content is high a more intrusive or surgical treatment may be required.

4. Conduct the repairs indicated by the results of the moisture tests. Most repairs on the remaining elevations should require only cleaning out the damaged area and filling it with an epoxy product or a grafted replacement piece. In cases where a graft is required, removal of a small section of any interior wall assembly left in place may be sufficient to accommodate the needed surgery However crown replacement will require replacement of the entire interior wall assembly for both of the joining walls affected due to the notched corner detail of the log structure. As mentioned further inspection ot the corners will indicate which approach is necessary for the interior assembly..

E. Reassemble the exterior walls with a combination of existing logs, new logs, grafted or repaired log or filled logs. Provide fresh chinking throughout . Paint the entire exterior with a new coat of water impervious paint with sufficient coverage to insure that no wood will be exposed.

F. Restore the church section's interior assembly with the inclusion of a carefully installed vapor barrier or equivalent seal..

G. Reinstall any wooden trim, window frames, sashes and hardware that have been removed at their original locations.

VI. Replacement Materials

During our inspection we noted that several different approaches have been taken in previous replacements of logs in the walls of the Little Log Church. Some of the replacement logs and logs used in the museum addition are manufactured logs. These logs have a distinctive machined pattern which is

identifiable from a distance of ten to twenty feet. We strongly recommend against the use of such products as replacements for damaged logs The presence of manufactured logs detracts from the sense of authenticity that is essential to the overall character and attraction of this landmark. It is my belief that among the forest products firms conducting logging operations and operating mills in western Oregon companies may be found that can provide logs of the appropriate species, diameter, length and quality for use in the repair/reconstruction of the Little Log Church and Museum. I recommend that those companies be surveyed as to their ability to provide the logs needed

We strongly recommend against the use of treated logs. The substances used for wood treatment are highly toxic. In place they will leach into the ground surrounding the structure. Contact with the logs by members of the public visiting the landmark structure is predictable. These substances will off-gas for several years. While a tight interior assembly is recommended, window, door, ventilation and other openings may provide avenues for off-gassed fumes to enter the church interior. For these reasons we recommend avoiding treated materials except in very limited applications.

VII. Resources for accomplishing treatment

When I first viewed the church building during a visit preceding our more extensive inspection former it was mentioned by one of my hosts that the structure had undergone too much previous alteration to be considered eligible for the National Register of Historic Places. Placement on the Register is a basic qualification for many of the governmental and foundation resources which are typically used to finance this type of a project. While it is probably true that too much alteration has already occurred for the building to qualify for the Register in its current state, I think that there is funding available for landmark preservation that is not tied to listing on the National Register. The State of Oregon Heritage Programs list includes a fund entitled "Diamonds in the Rough" which is intended to assist in the rehabilitation of resources which may not have sufficient remaining integrity for qualify for National Register listing, but which have the potential for restoration to the point at which their original character is apparent. A number of foundations also may fund restoration or rehabilitation projects for resources that may lack high integrity of original material but remain of high cultural significance in their community or region. Oregon's tourism and economic development agencies may also have funds available to fund such projects, particularly if they play a role in attracting business and investment to a community. I recommend that prior to selecting a treatment program for the church's rehabilitation a search be conducted to identify such funding sources and applications be forwarded to sources whose criteria fit this project. The criteria for some of the potential funding sources may be relevant in identifying appropriate treatment regimes for LLC&M project. I also believe a local fund drive for the project would garner much support. The returns on these efforts may impact the viability of various choices that may be made in conducting the project.

I strongly recommend that the offers of Harrison Goodall and Don Peting to participate in the project free of charge be utilized. Dr. Goodall is one of the leading experts in the rehabilitation of log structures in the United States. His presence during a more in-depth inspection of the structure and during the construction phase of the project can dramatically improve both efficacy and economy in the work. Don

Peting is able to assist in assessing the appropriateness of overall treatment strategies and in identifying challenges and solutions involving the alteration of load bearing structural elements. There offers to participate free of charge can be viewed as substantial resources for mounting the project.

VIII. Conclusion

Mounting and completing the restoration/rehabilitation of the Little Log Church and Museum will be a challenging project that will likely require the facility to be closed for most of a calendar year. Because there are neither complete records or witnesses to the various treatments and alterations previously applied to the structure the project will, in some sense be a journey of discovery. Many treatment choices will have to be made while the project is in process. The varying conditions, efforts at protecting or concealing damaged areas and various "work-arounds" that have been applied have created a prospect for the project that implies that many large and small choice will be made after demolition of existing wall assemblies. The participation of experienced practitioners of this work will be essential if choices which provide long term stability are to be made. The prospective process may seem daunting but if approached carefully and thoughtfully will be fulfilling and will yield high-value results.

The Little Log Church and Museum is a premier landmark attraction for the City of Yachats. Its charm and historical reference are significant in the community's efforts to encourage visitors to choose Yachats as a destination and in creating a climate which encourages business development within the community. Equally important is the facility's role in hosting a wide array of community events and programs. The building's historic charm is an essential element in making the Little Log Church a preferred location for conducting functions of profound personal significance such as weddings. As a repository of the community's historical record the museum housed there plays a significant role in the community's efforts to retain and emphasize its unique identity which in turn, for Yachats particularly, helps foster a healthy local economy.

A building that is significant in so many ways to so many people is worth the effort and investments it will take to restore or rehabilitate it in a way that supports its longevity. Authenticity is a prime value in the significance of this landmark even though it may not meet National Register standards for material integrity. I believe that quality is essential to pursue in any treatment program for the Little Log Church and Museum. in the long view doing so will bring greater rewards to the City of Yachats and the local community than more easily accessible but less diligent approaches might.

VII. Acknowledgements

I would like to thank Don Peting, Harrison Goodall and Steven Baker for their essential roles in enabling this study to be conducted. I would also like to thank Joan Davies and the City of Yachats staff for their assistance in facilitating the inspection and analysis components of the study.