ENGINEERING PARTNERS

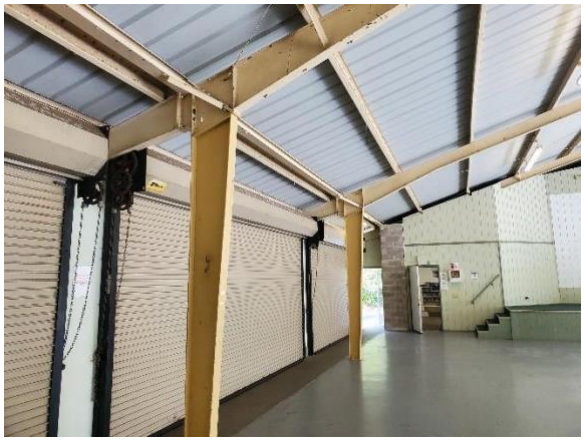
455 E. Lanikaula Street
Hilo, Hawaii 96720
www.epinc.pro

Date:	December 19, 2022
To:	Hawaiian Paradise Park Owners Association HC3 Box 11000 15-1570 Maku'u Drive Kea`au, HI 96749 www.hppoa.net 808-966-4500
Attn:	Jon Loehndorf

EP JN:	17104-22-01
Re:	**Structural Assessment Report** **HPPOA Activity Center** 15-1570 Maku'u Drive Kea`au, HI 96749
TMK:	(3) 1-5-023: 040

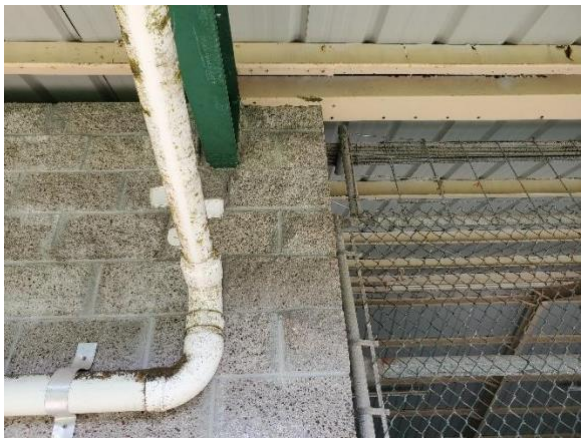
On December 14, 2022, Engineering Partners (EPI) performed a site investigation at the HPPOA Activity Center located in Hawaiian Paradise Park, Hawaii. The purpose of the investigations is to evaluate the structural condition of the building which was originally constructed in 1980. The following is a summary of the results of the assessment.

The building measures approximately fifty feet wide by one hundred feet long and is constructed with preengineered structural steel framing and a concrete slab-on-grade foundation. Six clear-span steel moment frames provide gravity support for the roof framing and lateral support in the north-south direction. These frames are spaced twenty feet apart. Concrete masonry shear walls are located at each end of the building which provide lateral support in the east-west direction. These walls enclose a kitchen/bath at one end and library/storage rooms at the other. Most of the structural framing is exposed and visible with exception of the buried footings and framing above kitchen/bath and library/storage ceilings. Record drawings of the original construction were not made available for our review.

Overall, the structural steel and concrete masonry framing is in fair condition. The structural steel framing is painted, but some of the paint appears to be failing. There is surface corrosion that is visible where the paint has failed, but this corrosion has not caused significant material loss. The corrosion is most severe at the anchor bolts and base plates on the South side of the structure, which are more exposed to exterior elements. There are also some sections at the exposed ends of the purlins that exhibit material loss due to corrosion.


The concrete masonry walls have hairline cracks at the corners where the rafters penetrate the wall. The lateral loads are transferred from the roof framing to the masonry walls at these locations. Given the cracks are generally less than ¼-inch wide these can be filled with epoxy repair material. Other than the visible corrosion and hairline cracks the structural steel and concrete masonry framing are in good condition.




The condition of the metal roofing is fair to poor as the original finish has worn and the steel is beginning to corrode. The condition of concrete slab-on-grade and foundation appears good. The exposed ends of the embedded anchor bolts are corroded but we did not observe any cracks or spalls in the concrete foundation. The condition of the underground footings could not be verified as they were beneath the ground surface. There does not appear to be any significant settlement of the foundation system, or other signs of structural damage from wind or seismic events.

Recommendations: Based on the extent of visible damage we recommend painting the structural steel framing and filling the hairline concrete masonry cracks with an epoxy injecting repair material.

1) Paint the structural steel including the top of the roof purlins. First remove any loose paint or corrosion, then clean and dry the surface to be painted. "Loose" implies any material that can be removed with a knife. Prepare the surface to be coated as directed by the paint manufacturer. Ensure the ambient condition is as dry as possible to ensure paint doesn't peel or blister. This work should be performed within 5 years to minimize further corrosion and mitigate potential material loss of structural members.

2) Replace the metal roofing when the steel is painted. This will facilitate painting of the purlins.

3) Sister on a new section of purlin at eaves and other locations where corrosion has resulted in material loss. The new purlin should be the same depth, width, and thickness of the existing purlin. At cantilever ends the length of new purlin should be three times the length of the damages section.

4) Repair the spall in the concrete masonry by using an epoxy injection resin such as Hilti CI 060 EP Crack Injection System or Sikadur Crack Repair Kit. If required, repair spalled masonry with a onecomponent, shrinkage compensated, fiber reinforced repair mortar with integral corrosion inhibitor, such as Planitop X as manufactured by Mapei. Before installing the repair materials, the existing deteriorated or damaged concrete masonry shall be sawcut and removed. Any exposed

reinforcing steel should be cleaned by grinding the rust and bonded grout from its surface. These repairs should be completed within five years and can be performed while the building is safely occupied.

This report is presented as a Limited Condition Survey. Problem areas that were not observed during the survey may exist. Evaluation of the existing structure requires that certain assumptions be made regarding existing conditions. Some of these assumptions cannot be verified without destroying otherwise adequate or serviceable portions of the building. Therefore, the scope of this report shall be limited to its contents with respect to the review of exposed steel and concrete masonry construction. No other inspections of the other structural members in the structure were checked or inspected. This report does not warranty the structural systems or strength of any members due to live, seismic or wind loads. Please contact us if you have any questions.

Regards,

Engineering Partners, Inc.

December 19, 2022

Yen Wen Fang, P.E. Date
Principal