



**VILLAGES OF KAPOLEI**  
**VILLAGE 1 – KUMU IKI SUBDIVISION**  
**Existing Mauka Perimeter CMU Wall (Wall No. 10)**  
**Final Condition Assessment Report**  
**December 2022**

**Inspection Summary**

Wall No. 10 is a 1,223 foot long fully grouted 6" CMU wall approximately 6'-10" tall. A total of 25 -16" x 16" fully grouted CMU pilasters are spaced along the full length of the wall. The wall sits on a reinforced concrete foundation that is 2'-11" to 3'-3" wide x 0'-10" thick with #4 rebar dowels extending 2'-0" into the wall at 8" OC. A #4 rebar extending the full height of the wall is placed at 2'-0" OC. Continuous horizontal reinforcing consists of 2-#4 rebar in the 1<sup>st</sup> and 6<sup>th</sup> course of CMU from the top.

Inspection of the wall's exterior (open lot) face was performed on October 18, 2022.

Inspection of the wall's interior (private property) face was performed on November 16, 2022. Access was granted to 11 of 17 properties.

The wall was inspected visually and with the use of a 16-ounce carpenter hammer to sound the delaminated areas.

The inspection resulted in the following:

	Exterior (Open Lot)	Interior (Private Property)
Cracks (LF)	60	107
Delamination (SF)	249	1717
Pilasters (Ea.)	22	3

Note: A vertical crack is measured as 1 LF. The quantity listed consists of both vertical and horizontal cracks.

**Notable defects were as follows:**

**Pilasters** - The 16" x 16" pilaster consists of two columns of fully grouted 16" x 8" CMU blocks. The outer (open lot) column at 22 of 25 pilasters has separated from the inner column (private property) and leans outwards towards the open lot. It is recommended that these columns be removed and rebuilt. The inner column of the pilasters exhibited vertical cracking at 3 locations. These cracks can be repaired with epoxy injection.

**Interior (Private Property) Face** – The upper 5 courses of CMU is leaning outwards (towards the open lot) approximately 1%-3% in all of the properties that were inspected. It is assumed that this condition exists throughout the length of the wall. The point at which the wall starts to lean is approximately at the top of the #4 rebar dowels spaced at 8" OC. As a result of the leaning, there is separation along the grout line between the 5<sup>th</sup> and 6<sup>th</sup> course of CMU from the top. There are locations where the horizontal #4 rebar is exposed and has corroded to the point of needing replacement. Additionally, at several locations along the 7<sup>th</sup> course of CMU, cracking and delamination have occurred as a result of the wall leaning outward towards the open lot. This will require that individual blocks be removed and replaced.



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### Repair Options

Three repair options were considered and are listed below. While all three options are within a similar cost range, the Option 3 has a significantly higher labor content.

#### **Option No. 1 - Remove and Replace Entire Length of the CMU Wall**

**ROM Estimate of Costs = \$240,220**

Demolish and dispose of the upper 6 courses of CMU along the entire length of the wall and selected CMU blocks shown on the Defect Plans. Do not damage or remove the #4 Dowels @ 8" OC extending from the wall footing.

Demolish and remove the outer (open lot) column for 22 of the 25 pilasters as shown on the Defect Plan.

Rebuild the wall and pilasters.

#### **Option No. 2 - Remove Entire Length of CMU Wall, Replace with Vinyl Fencing**

**ROM Estimate of Costs = \$244,500**

Demolish and dispose of the upper 6 courses of CMU along the entire length of the wall and selected CMU blocks shown on the Defect Plans. Do not damage or remove the #4 Dowels @ 8" OC extending from the wall footing.

Demolish and remove the outer (open lot) column for 22 of the 25 pilasters as shown on the Defect Plan.

Rebuild the pilasters and replace the select CMU blocks.

Install vinyl fencing along the entire length of the wall between the pilasters.

#### **Option No. 3 – Remove and Replace Select Areas along the Entire Length of the Wall**

**ROM Estimate of Costs = \$245,000**

Remove the CMU shell portion at selected areas of the wall as shown on the defect plan without damaging the original grout column. Restore the inside (private property) and outside (open lot) faces by installing a veneer created by cutting a split face CMU block in half.

Demolish and re-build the outer (open lot) column for 22 of the 25 pilasters as shown on the Defect Plan.

### Recommendations

It is recommended for all three options that the finish grade on both side of the wall should be at the same elevation plus or minus six inches. The finish grade elevation should not exceed 2'-0" above the top of footing.