



# City of Homer

[www.cityofhomer-ak.gov](http://www.cityofhomer-ak.gov)

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## Memorandum 20-072

**TO:** Marvin Yoder, City Manager  
**FROM:** Carey Meyer, City Engineer  
**DATE:** May 11, 2020  
**SUBJECT:** Seawall Failure Concerns

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Rigid (steel) sheet piling is typically driven into the ground to a depth that allows it to support itself and resists loads applied from behind the wall (and in the case of a seawall wave forces from the front).

Our seawall was designed to utilize less rigid piling and tie-rods connected to concrete blocks (sometimes called dead men) buried behind the wall to provide the additional support necessary. See attached drawing. The blocks are tie-rodged to the wall. This tie-rod technique is used successfully in many civil engineering applications.

The vulnerability of this technique is that loss of the backfill in which the tie-rodged concrete “dead men” block is buried can result in the loss of structural support of the wall. As long as the wall protects the material behind the wall, the concrete blocks will continue to provide wall support.

Since the wall was backfilled with dredge spoils (sand), this material is very erodible.

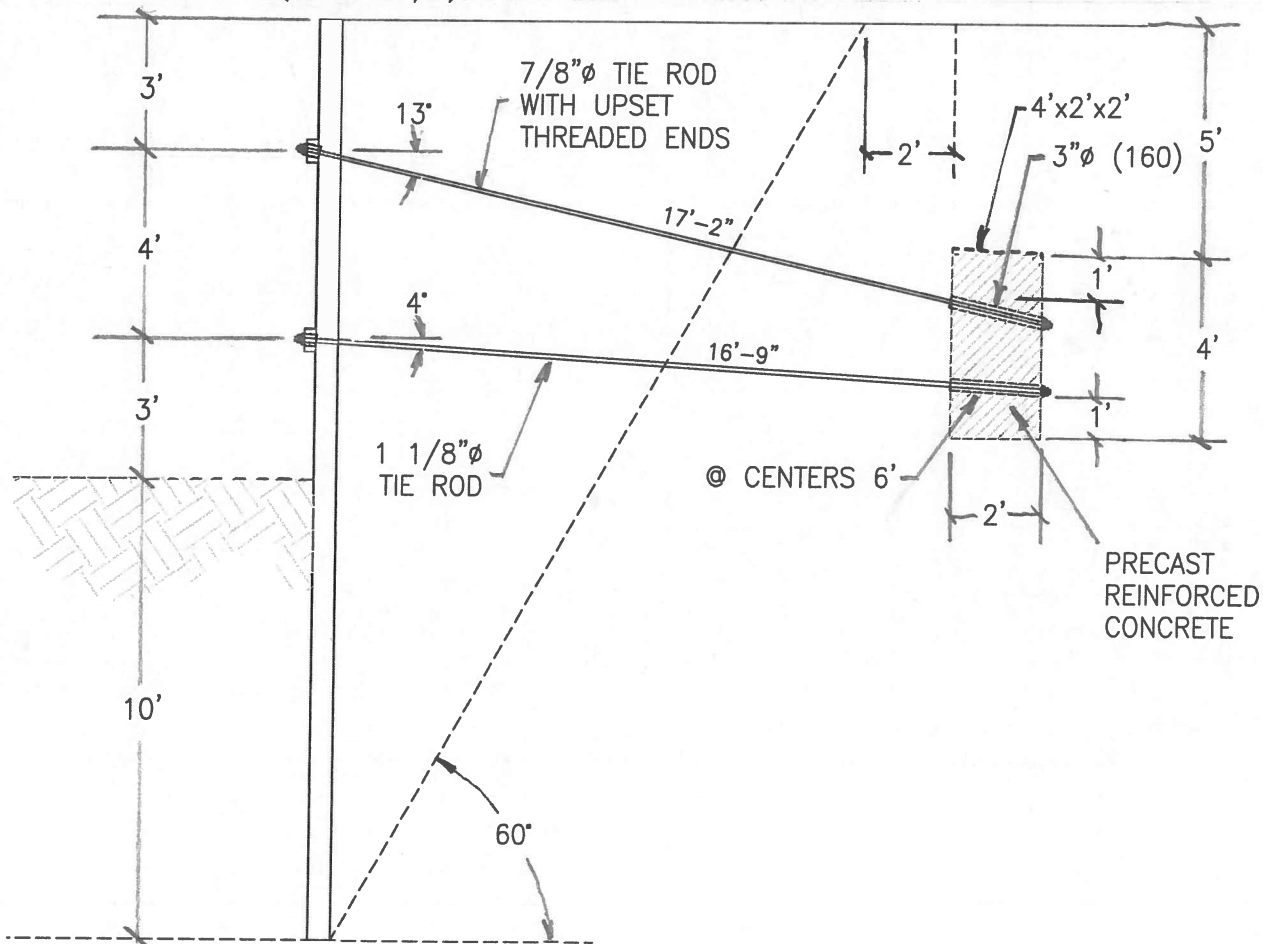
The fear that I have expressed (regarding complete failure of the wall) stems from the potential that should a section of wall be punctured (most probable during a significant winter storm), material from behind the punctured wall section would begin eroding away. This would expose and undermine the concrete block and eliminate support of that wall section.

Once one wall section was lost, material behind the adjacent wall section would begin to erode, exposing and undermining its dead man concrete block, removing structural support of the adjacent wall section. This would trigger the loss of the adjacent wall section and this would domino down the wall, potentially taking out the entire wall. In a storm this would happen very quickly.

**Why is this important now?** An inspection in April determined that 20 of the 85 wood panels that protect the sheet piling from damage needs significant rebuild (cost approaching \$100,000). In addition, sinkholes behind the wall are more frequent, indicating puncturing of the fiberglass sheet piling. The sheet piling behind one wood panel has experience significant damage this last winter and is particularly susceptible to the type of wall failure described above.

This year’s allocated maintenance budget has been spent (approximately \$45,000), make necessary repairs between January 1 and April 30.

WALER  
STRUCTURAL TUBE  
(TS 6x3x3/8)



C:\PhukanLogo.jpg	Civil Geotechnical Surveying Environmental Construction Materials Testing 2702 Gambell Street, Suite 201 Anchorage, Alaska, 99503 Tele: (907) 272-7111 Fax: (907) 277-3177 Email: pccarls@alaska.net	DATE	12/11/01	FIGURE 1  -  -  EROSION CONTROL PROJECT HOMER, AK
		SCALE	1/4" = 1'-0"	
		FILE NAME	FIG-DRAFT	
		JOB NO.	01965.1	