Houston Wall Update

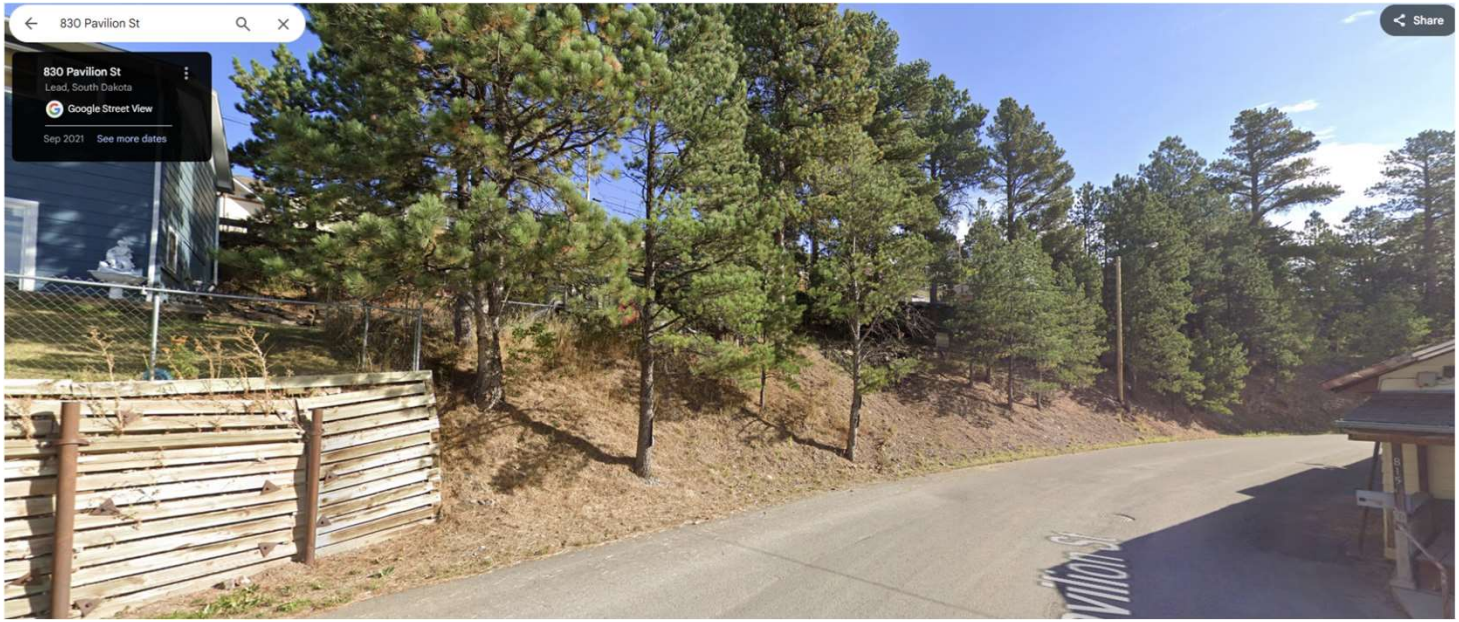
June 2025

The red line is the location of the wall.

The retaining wall is approximately 375 linear feet of stacked rock varying from 6 to 10 feet tall.

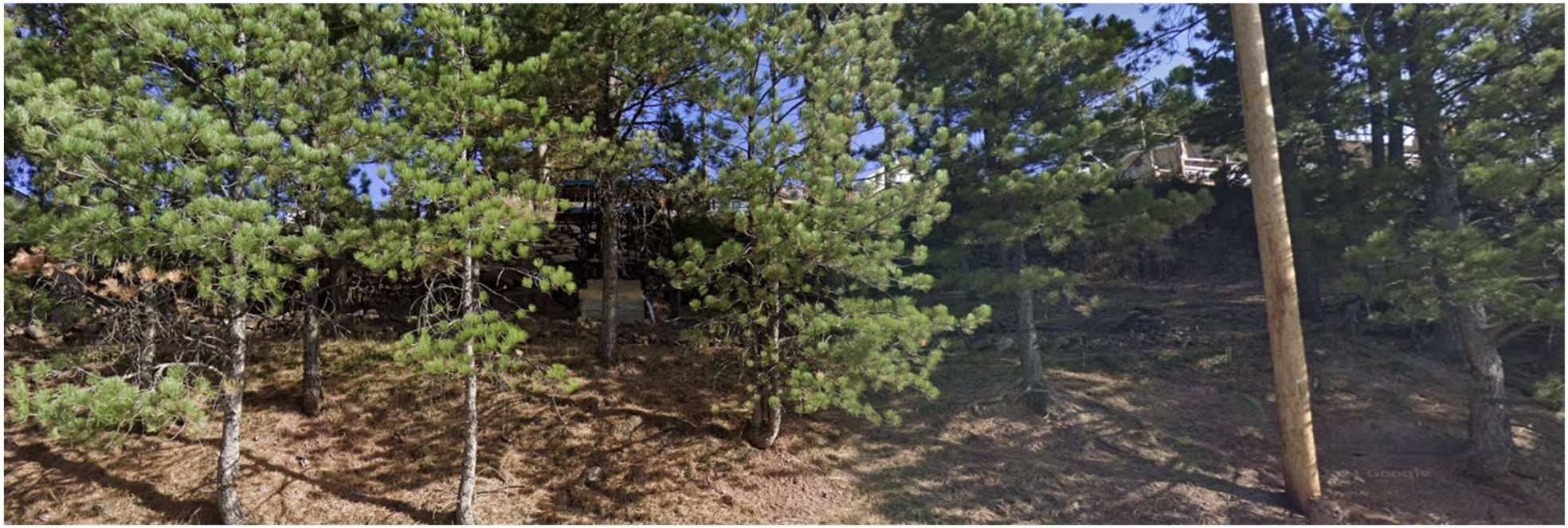
The wall is holding up Houston Street.

3 sections have currently failed over the past year.



View from Pavilion St

The parcel is a hillside with a flat benched area in the middle with hillside on the south and the wall on the north. (North is uphill and south is at the road here on Pavilion)



View to the north off of Pavilion St

View looking west, this shows a section of the wall that has failed.

View looking north, this shows a section of the wall that has failed near the adjacent homeowner's fort.

View looking north, this shows a section of the wall that has failed to the far east.

Woodchucks have moved into the sections that have failed, which is not helping!

View looking west, this shows a section of the wall that has failed.

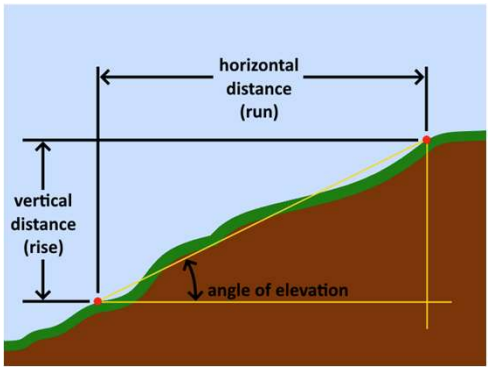
View looking west, this shows a section of the wall that has failed.

Failure area

2 Options to Fix the Wall

Option 1: Backfill

- From Houston at the wall toward the south at a 2:1 slope.
- Example: If the wall is 8 feet tall, the fill will extend 16 feet to the south.
- Need:
  - Landowner agreement
  - Significant amount of fill dirt
  - City crew time

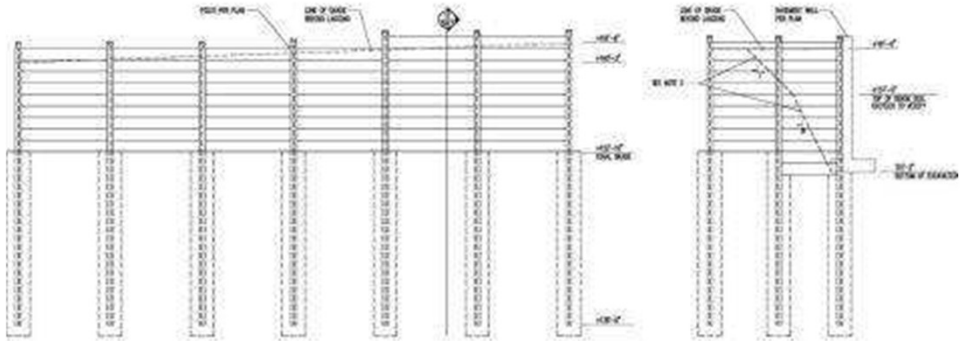


Best option for safety, cost and time

Option 2: Construct New Wall

- Type: Soldier pile wall
- New wall would be built in front of failing wall in the 2 locations the rocks are loose and a safety hazard.
- This would not fix the entire wall, just the two failed sections.
- Cost estimates are significant; we have not identified a funding source more than the Retaining Wall Reserve Fund of $18,000.
- To keep costs as low as possible, if we can do it safety, the city crew would build this wall at a significant time contribution.
- If the long-term plan is to keep a retaining wall here, it will be necessary to add storm drainage to Houston street to mitigate future water/wall issues.

Soldier Pile Wall Example



Soldier Pile Wall Plan

(Estimate 24 working days or 7-8 weeks total)

1. Prep wall site:
    1. Remove trees. (Drop, limb, cut up, haul, approximately 50 trees.) (Road closures and 3+ city crew for 10 days)
    2. Remove fill in the area the new wall would be constructed, 2 days for excavation.
2. Foundations
    1. Drill 22 8′ deep holes every 8′ for the length of the two sections that failed at 24″ diameters. This should be done from up on Houston street due to immediate safety concerns with ground vibrations and large loose rocks.
    2. Set I-beams. I-beams are 10″ diameter, coated and shipped.
    3. Encase in concrete.
       In case of rock or loose soils, the beam would require either a dead-man or to dig a footing, (this scenario was NOT included in the price estimate). (2 days to set beams)
    4. Install 7″x9″ railroad ties or lagging into the I-beams from the bottom up, lagging will be treated 8′ long pieces. (crew of 4, 8 days)
    5. Backfill between the new wall and the failing wall with either sand or clean rock. (2 days)
    6. Storm drainage should be addressed in Houston Street to detour further failure of this wall ($30,000 estimated from Rock street to W. Summit)

Soldier Pile Wall Cost Estimate

$56,750 materials

24 working days or 7-8 weeks total

1. I-beams: 10" diameter, 22 beams at 15 feet long, coated with anti-corrosion paint and delivered (10-day lead time) $30,750
2. 1 CY of reinforced concrete per column (22), #4 greenbar: $7,700
3. Lagging: 7"x9" railroad ties, treated 8' long with shipping (220 pieces) $6,000
4. Clean rock $3,200
5. Drain tile $800

Materials $48,450

Drilling I-beam holes:

Option 1: City crew completes project (5-8 working days):

1. Rent excavator ($600/day) $3,000
2. Purchase rod extension $400
3. Purchase adapter for extension $2,900
4. Technician flow adjustment $1,000
5. Purchase 24" Auger $1,000

Drilling Cost $8,300

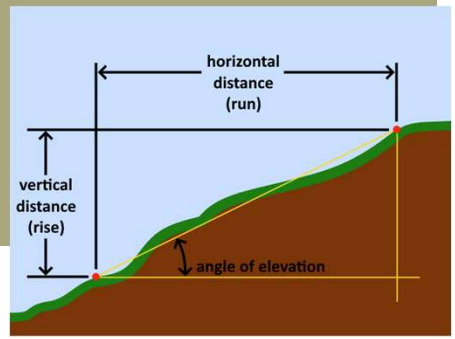
Option 2: Contract out drilling operation

Waiting on cost estimates from 2 local drilling companies ??????

Total $56,750

Backfill Plan & Cost Estimate

Estimate: $10,300 7-10 days or 2 weeks total



Plan:

1. Remove any small trees, larger trees would be monitored and hopeful they will survive being slightly buried. A small amount of excavation is needed. Set jersey barriers at a 2:1 angle, leaving as much space unaffected as possible. Install drain tile at the toe of the wall.
2. Bring in fill dirt, dump into the road on Houston and then use an excavator to set the dirt in the two areas of safety concern first, eventually filling the entire area. 60 freight-liner loads of fill to be hauled. Pack and hydro-seed to mitigate possible run-off.
3. Jersey barriers and drain tile would be removed after grass is securing slope.

Timeline: Estimated 3 days to prep site with excavation and small amount of tree removal. 4 days to haul and spread fill. Possible stipend paid to landowner for devaluing land (waiting attorney opinion).

Backfill		$2,000 our price to haul
Drain tile (temporary until grass grows)		$800
Jersey barriers (temporary until grass grows) (25 @ $200)		$5,000
Hydro-seeding		$2,500
	Total	$10,300

That's the update!

MILES BEYOND ORDINARY
ELEVATION 5280

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