

Date: April 22, 2020

To: Jennifer Keenan, Ryan Hayward

CC: Richard Irons

From: Peter Hedlund

Project: Thomas Brooks Park

Subject: Slave wall assessment by Restoration Masons

This memo outlines the present wall conditions and treatment plan for the historic slave wall at the Thomas Brooks Park project as directed by Richard Irons of Restoration Masons.

I. Existing Conditions

- This wall, said to have been built about 1760 by a slave named Pompeii, can hopefully last another 100+ years with prompt, minimal repairs and monitoring.
- It has had many different repairs, additions, repointing and rebuilding over its 260-year lifetime, some not compatible or beneficial.
- The original materials were handmade, well-fired bricks, made nearby, laid in lime mortar.
- The wall was composed of 3 courses of 4" wide brick courses for an approximate 12" deep wall laid in Flemish Bond (every other brick a "header") turned 90 degrees and interlocked with the course behind it (Figure 1).
- A limited sample of original work exists mid-wall, with eroded bricks and eroded lime mortar joints (Figure 2).
- The wall is 76'7" long, 4' above grade on the north side and 3' above grade on the south side.
- At the south end of the wall there is 8" of wall or 3 brick courses below grade (Figure 6).
- The first 6-7' of the north end of the wall was added late in the nineteenth century. It is laid in straight running bond, not integrally tied together with the other courses (Figure 3).
- The existing wall footing is flat stone bedded on stable soil. The northern end of the footing is stuccoed over with Portland based mortar.
- The wall is capped by bluestone or brownstone in random lengths, some are older and presumably 50+ years old. The cap sections average 30" long and 14" wide, properly overhanging the brick 1" on the sides (Figure 4).
- Mortar joints between cap stones are missing or in poor condition. There is some evidence of flashing (copper, lead or tin) under edges of stones (not the whole top of the wall).
- Stone capping is probably not original, and capping was probably originally pitched brick.
- There are many brick replacements and sections of the rebuilt wall done in running bond, not Flemish Bond. Most are secure but of poor reproduction masonry.
- There are many open joints, especially at the southern half of the wall, with dirt bed joints behind it.
- Other repaired joints are too hard and may cause future spalling of the brick faces.
- The wall is out of plumb 4" in 4' on the north end (which is significant) leaning towards the road (Figure 5).

- The middle of the wall (30'-50' in from the north end) improves to being out of plumb 2" in 4' and improves to almost plumb at the south end (Figure 6).
- The wall is still intact, however, and has not shifted apart vertically.

II. **Treatment and Repair** (costs based on Restoration Masons estimates)

A. Current Problem - Water Infiltration Causing Freeze / Thaw Cycles and Erosion

Issue: All open joints need to be closed, loose bricks relayed and repointed with proper matching materials.

Solution:

- Cap Stone Option 1 – At a minimum – fill cap stone joints with 3.5 hydraulic lime mortar mix, reset loose stones with the same.
- Cap Stone Option 2 – Remove all cap stones, install metal flashing over wall, pin and reset cap stones (with lead).
- Repointing (needed with either Option 1 or Option 2): Repoint all open joints in brickwork with lime mortar. Proper prep / clean and wash. Re-lay bricks in loose areas (where bricks move with tapping or joints eroded past 1.5" depth).

Cost: (two options)

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|-----------------------|------------------|
| • Cap Stone Option 1: | \$ 4,000 |
| • <u>Repointing:</u> | <u>\$ 20,000</u> |
| • Subtotal | \$ 24,000 |
| • Cap Stone Option 2: | \$ 12,000 |
| • <u>Repointing</u> | <u>\$ 20,000</u> |
| • Total | \$ 32,000 |

B. Current Problem - Out of Plumb Wall

Issue:

A key issue is if the existing wall is stable and secure or still moving. The wall needs to be monitored and documented yearly. An increase of tilting forward by 1/4" per year on the north end of the wall would be significant (but this is not expected). Movement could be caused by road expansion, freeze/thaw pushing footing base in on the west face, less soil backup on north end, and traffic vibration. The wall is still very intact to itself.

Solution: Add more soil up over the foundation stones on the north end, compact, and cover these brick courses similar to the south end of the wall. Plant groundcover vegetation on the pitched soil away from wall (west side) to slow water runoff and minimize erosion on the road side.

Cost:

\$1,000 - \$3,000

C - Current Problem: Out of Plumb Wall - If Wall Shows Continued Movement Over Time**Issue:**

If wall does show continued “out of plumb” movement – a much more costly and complex solution will be needed and designed by a structural engineer.

Solution:

In concept – it could be possible to encase, secure and stabilize the wall in its twisted shape condition. First, expose and clear around stone footing to determine if footing is bonded to the bottom brick course. Lift wall up and tilt it back to the east to a compromised plumb position and pour a concrete footing below the frost line under the wall (if it is possible). Note – it might be less costly to dismantle and accurately rebuild the wall.

Cost:

This is difficult to price. A rough estimate is \$100,000 but there are many variables to be considered and a structural engineering proposal would probably be needed.

III. Conclusion

- The best scenario for the City of Medford is an estimated cost of \$25,000 - \$27,000 which would include repointing the wall and repointing and resetting the cap (Option 1) and adding soil and groundcover vegetation up against the north end of the wall.
- New metal flashing (Option 2) may or may not be needed and would be determined during the repointing and resetting described above.
- If the wall does show out of plumb movement after monitoring over time, a much more significant stabilization project would be needed as described in Section C above.



Figure 1. Typical wall condition mid-wall.



Figure 2. Presumed original wall brick work, with eroded bricks and eroded lime mortar joints.



Figure 3. North end of wall – presumably added late 19th century – with vertical joint separation.



Figure 4. Bluestone or brownstone wall cap.



Figure 5. North end of wall – out of plumb and leaning towards road.



Figure 6. South end of wall – nearly plumb – with soil built up against wall footer.