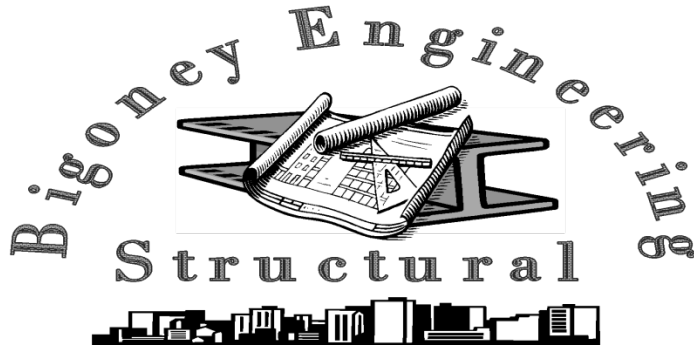




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**Condition Survey Report  
General Structural Assessment  
Main Sewage Pump Station  
City of Petersburg, VA**

October 24, 2016

**Purpose:**

The pump station is a critical link in the city's sewage disposal system. Obvious cracks and blemishes are visible on the exterior face. Concern for structural integrity had been aroused and a professional evaluation was desired.

**Scope:**

This engineer visited the premises on 2/12/16. Observations were visual and made only in areas readily accessible.

A copy of original 'as built' drawings prepared by "Wiley & Wilson" in 1954 were also available and reviewed.

**Description:**

The pump station consists of cast-in-place concrete foundations, wells, and pump room extending approximately 25 ft. below grade. From the grade floor up the exterior walls and partitions are unreinforced brick. The roof is a cast-in-place concrete slab with brick parapet walls around.

**Observations & Discussions:**

1. At (2) corners, at the approximate elevation of the parapet/roof slab intersection, the brick wall has pushed out along a bed joint plane approximately  $\frac{1}{2}$ ". See photo #2 at the end of this report.

The cause is almost certainly the consequence of thermal expansion.

2. At most or perhaps even all of the brick wall openings at doors and windows there are significant cracks in the masonry in the general vicinity of the lintel bearings. See photos #2, 3 and 4.

It looks as though all of those lintels are steel and are showing signs of corrosion. I would speculate that the cracks are the consequence of the swelling that occurs as the steel rusts.

3. There is a concrete spall at the edge of the ground floor slab. See photo #5. The cause was not obvious. There is not an appearance of delamination or deterioration. It seems more likely that it is the consequence of a deliberate or accidental impact.

A cursory walk around the inside of the building did not reveal conspicuous cracking or any other evidence of structural distress.

### **Conclusions:**

The building was designed by reputable engineers and overall seems to be performing well.

The brick construction is in keeping with the normal standard of care for that era. Unfortunately, that still left it vulnerable to the problems noted. I do not feel that structural integrity is significantly compromised. The problems are primarily a cosmetic concern at this time.

The lintel corrosion could become critical at some point. It may be advisable to clean the steel as best as possible and provide some sort of moisture seal.

The brick expansion problem can probably only be corrected by removal of the upper courses and a reinstallation with expansion joints.

Submitted by,

Burton F. Bigoney, Jr., P.E.  
Attachment: photos



An overview of the facility.



One of two corners where brick has pushed out along a bed joint. Also, cracking can be seen at the lintel bearing areas at the openings.



Cracking of brick at lintel bearing areas.



Cracking of brick at lintel bearing areas.



Floor slab spall.