

# TOWER SURVEY

## INTRODUCTION

We provided a Survey in January of 2012 based on an interior walk-through. In November of 2013 we surveyed the exterior of the tower from a crane basket. For this current document, I will be building on the 2012 report so you can have a comprehensive summary of all of the issues I have identified in the tower to date.

## SUMMARY

We have identified about \$300,000 worth of work to the tower, which should be done in the next two years. After 90 years, this is routine maintenance on a structure that is in excellent condition with no significant previous repairs.

## DESCRIPTION OF TOWER

The tower is load-bearing masonry, with poured concrete floors on steel beams. All of the exterior work is brick or limestone including the balustrades, capitals and columns.

There are five levels as shown in the sketch.

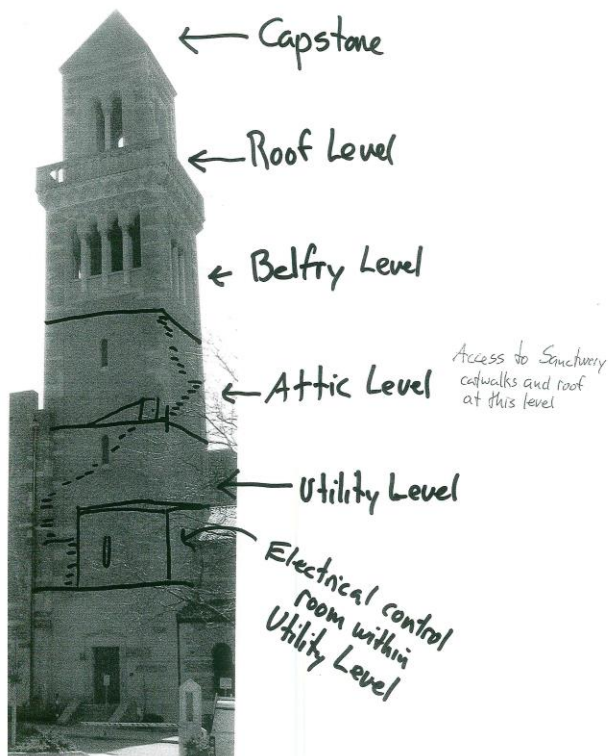
**Sanctuary Level** with memorial mosaics

**Utility Level**, which is reached from the Sunday School hallway. Within this level is a newer insulated utility room housing transformers, electrical panels and lighting controls. This room is air conditioned and insulated and includes the lowest tower window

**Attic Level** which includes a fire-rated access room to the catwalks of the sanctuary, and access to the sanctuary roof by way of a hatch.

**Belfry Level** which is “outside” and includes the bells, enclosed with bird screen.

**Roof Level**, which is a large open space with no screens.



The tower is topped with a pyramidal limestone capstone, comprised of multiple slabs. The attic of this cap is accessible by way of a scuttle hole in the ceiling. This hole can be reached only by a very tall ladder so we did not explore it. Interior access is by original wooden stairs, with hatches at the belfry and roof level.

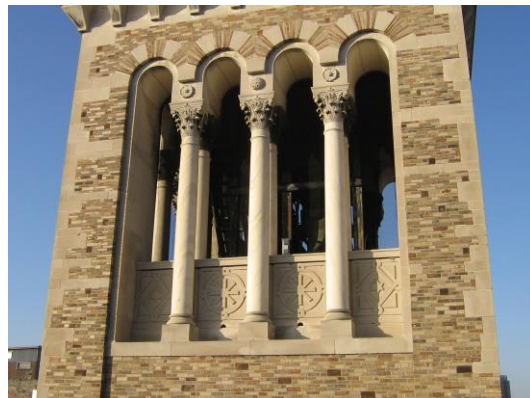
## BELFRY LEVEL

This level houses the bells and is exposed to the exterior. The “floor” is a roof of built-up tar. This flat roof is probably leaking, but is less exposed than the roof above it, so there is less damage. This level is very complicated with many penetrations, obstructions and outlets. The drain outlets are inadequate and clogged by previous repairs.



The perimeter openings are screened. A steep stair leads up to the Roof Level.

There are three paired limestone columns on each side with ornate carved limestone capitals, and carved limestone panels forming a low wall between the column pairs.





## ROOF LEVEL

The roof level is surrounded by a limestone balustrade, and is open, without screening. The area inside is open and empty. The roof surface is tar applied over a woven membrane. It appears to be original, with perhaps additional tar applied later. It leaks around the perimeter and is letting water into the masonry wall below. Water and efflorescence is visible on the wall at the top of the Belfry level from these leaks.

The roof under the capstone is concrete poured in a pyramidal shape with a small access hatch in the center.

There is a single limestone column on each side with an ornate carved limestone capital.





## CAPSTONE

The capstone is made from limestone slabs which are supported by the pyramidal poured concrete substructure visible as the ceiling of the Roof Level.



## SPECIFIC RECOMMENDATIONS

I have identified four projects that can be undertaken separately.

**1. Fire Wall Between Church House and Tower** There does not appear to be a fire break between the church house and the Utility Level of the tower. A fire in the church house would quickly move into the tower and create a very strong chimney effect. It is a confusing bit of space that is hard to describe on paper, but the condition can be easily seen by walking into the tower from the Sunday school hallway. There was a large opening on the south wall of the tower that has been partially blocked by the electrical room, but there is still a very large opening (perhaps 10'x12') above the ceiling of the electrical room leading into the Utility level. This opening needs to be framed in and drywalled to create a fire wall. This will also block heat from moving into the unheated tower from the church house.

ESTIMATE: \$10,000

**2. New Roof at Roof Level** The roof surface of the top level is tar applied over a woven membrane. It appears to be original, with perhaps additional tar applied later. It leaks around the perimeter and is letting water into the masonry wall below. Water and efflorescence is visible on the wall at the top of the Belfry level from these leaks. This roof needs to be replaced. This roof drains through one 4" or 5" hole, which drains straight on to the Belfry level below (there were downspouts at one time).

ESTIMATE: \$15,000

**3. New Roof at Belfry Level** This flat roof is probably leaking, but is less exposed than the roof above it, so there is less damage. This level is very complicated with many penetrations, obstructions and outlets. The drain outlets are inadequate and clogged by previous repairs. It would be a good idea to clean up this floor and apply some more tar until it can be replaced and perhaps paint the steelwork for the bells. I have guessed at a budget of \$30,000 for this work, but I want to have other roofing specialists look at it.

**4. Masonry Repairs** The upper sections need to be repointed and two areas need to be rebuilt. Our survey from the crane found enough damage to warrant setting up for a major project on the upper section. The conditions are described below in detail. An initial budget for this is \$250,000.

## CONCLUSION

The timing on these repairs is good; the work is needed but has not gotten "too far gone". Each of the four projects can be performed separately, but ideally the two roofing projects would be done after the masonry project.