



CITICORP CENTER NYC, 1978

One Storm

a case study by Carl Nehme, PE



**COULD HAVE
BROUGHT IT DOWN.**



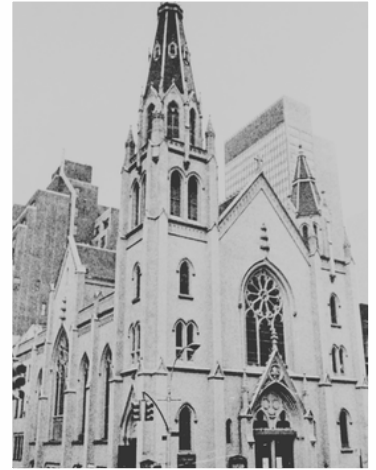
ALMOST NOBODY KNEW.

The engineer who found the flaw, the secret night repairs, and the hurricane that almost tested them.

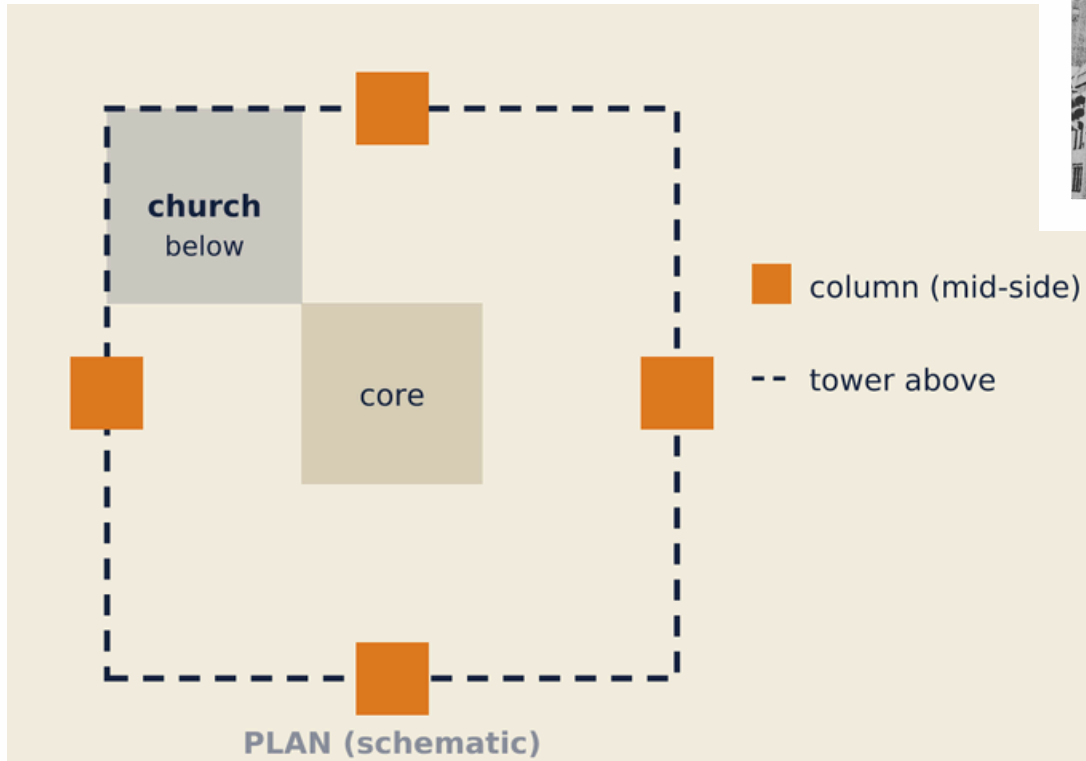
A CHURCH OWNED THE CORNER. SO THE COLUMNS MOVED.

St. Peter's Lutheran Church would only give up its corner if the proposed Citicorp Center could be built there with no columns passing through it.

The fix: four columns at the middle of each side, with the tower cantilevering 72 ft over the church. Chevron braces carry the wind loads, and a tuned mass damper at the top controls sway.



Saint Peter's Lutheran Church,
pictured here before 1970.
Saint Peter's Church Archive

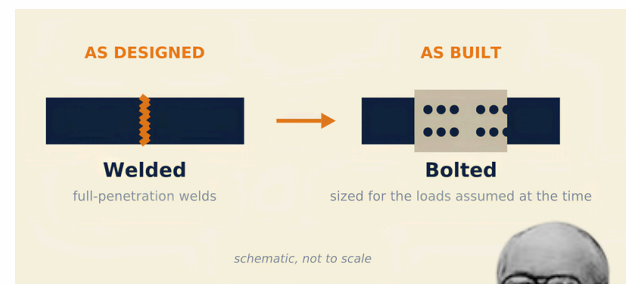


THE CHANGE NOBODY QUESTIONED

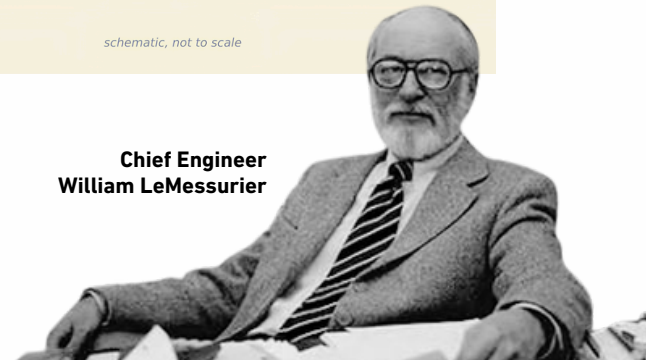
William LeMessurier served as design and construction consultant on the innovative Citicorp headquarters tower.

Bethlehem Steel proposed a more economical bolted alternative, and LeMessurier's office approved it. On its own, a reasonable substitution.

What nobody checked: how those bolted joints would perform under quartering (45°) wind, a loading condition not previously considered critical in the design.



Chief Engineer
William LeMessurier



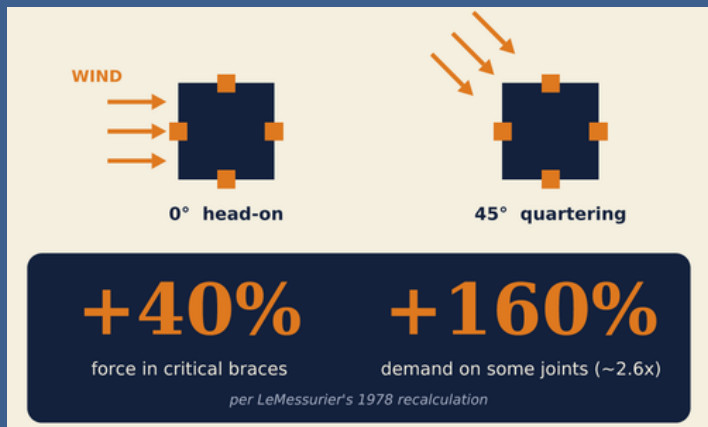


JUNE 1978

“What happens when the wind hits the corners?”

It was the kind of question that is easy to wave off. LeMessurier answered it confidently, then decided to check his own answer.

Footnote for the historians: who made the call is disputed and it may have been more than one student. Princeton student Diane Hartley studied the quartering-wind question for her thesis and New Jersey architecture student Lee DeCarolis has said it was his call that prompted the re-check.



THE MATH THAT CHANGED EVERYTHING

NYC's code only required wind hitting the faces head-on.

LeMessurier reran the numbers for quartering (45°) wind.

Why 40% became 160%: the bolted connections had been sized treating the diagonal braces as truss members rather than columns, so the higher column safety factor was never applied. The quartering-wind increase stacked on top of that.



THE VERDICT



1 IN 16

years

By LeMessurier's 1978 analysis, the joints could fail in roughly a 50-year storm with the damper running, and roughly a 16-year storm if it lost power.

And hurricane season was weeks away.

Figures per LeMessurier's analysis, as reported by The New Yorker (1995) and ASCE.

THE CHOICE



Stay silent and hope a storm never comes.



Quietly move on and protect his reputation.



Pick up the phone, tell the architect, insurers, and Citicorp leadership.



The Citicorp Center pictured days before it was officially dedicated in October 1977.
UPI/Bettmann Archive/Getty Images

He described the disclosure as his *social obligation*.

PROJECT SERENE



Special Engineering Review of Events Nobody Envisioned

- 2-inch steel plates welded over more than 200 bolted joints.
- Crews worked at night. Offices stayed open during the day.
- Strain gauges on the frame and weather forecasts reviewed several times a day.
- A standby evacuation plan for the surrounding blocks, prepared with the Red Cross.



THEN CAME HURRICANE ELLA, 1978.

Repairs were about half done. Ella was heading up the coast toward New York.

And then at the last minute, she turned.

The repairs were finished. Citicorp acknowledged the strengthening work, but how serious the danger had been stayed largely unknown for 17 years, until The New Yorker reconstructed the story in 1995.



WAS THE DANGER OVERSTATED?

Decades later, National Institute of Standards and Technology (NIST) researchers revisited the design wind loads with modern methods. They found face winds could govern over corner winds, suggesting the 1978 quartering-wind scenario may have been overly conservative.





WAS LEMESSURIER'S CALL STILL RIGHT?

ABSOLUTELY.

Engineers act on the evidence and tools available at the time, not on analyses that will exist decades later.

WHAT IT MEANS FOR US TODAY?

A “value engineering” change is a design change.

Even a reasonable substitution needs a full load-path review.

Code compliance doesn't replace engineering judgment.

Unusual structural systems deserve to have their load paths questioned.

Take the student's question seriously.

A fresh set of eyes can find the assumption everyone else stopped questioning.

Owning the problem protects the public.

It ultimately strengthened his reputation, but nothing guaranteed that when he made the call.

Sources: J. Morgenstern, “The Fifty-Nine-Story Crisis,” The New Yorker (1995); ASCE Civil Engineering Source (2025); NIST, “Modern reassessment of the Citicorp Building design wind loads”; PBS Building Big.



The tower, since renamed 601 Lexington, pictured in 2020.
John Lamparski/Getty Images



Case Study by
Carl Nehme, PE
Assistant Project Manager, Jezerinac Group