INGENIEURSBUREAU

GRABOWSKY & POORT BV.

"Onse Lieve Heer op Solder" [Our Lord in the Attic]

Oudezijds Voorburgwal 40, Amsterdam.

Report on the structural condition of the atrium suspension located in the church hall.

Principal: Museum Amstelkring, Amsterdam

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Job No. 5993

1. GENERAL

Engineering firm Grabowsky & Poort have conducted an investigation at the request of the Amstelkring Museum Foundation – relative to a May 1985 De Prouw Driebergen Construction firm report which was subsequently included in our October 1987 memo – concerning the current state of the atrium suspension in the church hall.
Information concerning the building's history is essential for decision-making.
A chronological summary of the building's construction history was distilled from the following sources:

- A history of the secret church, *'t Haantje* and the Amstelkring Museum (1939)
- The Amstelkring Annual Report (1957)
- A history of the *Statie van St. Nicolaas* or "*Het Hert*" (December 1987)

From these documents it appears that the entrance hall and one of the backhouses were already in existence in the 16th century. The alley, "*Heyntjen Hoeck Stege*" got its present name in 1416; before that, it had been known as "*Sinte Katrinenstraet*" (1397); thus it is quite possible that at the time, the buildings already lined both sides, although that does not necessarily mean that these buildings were the current ones.
The following dates are known with certainty:
1629 the entrance hall and 2 back houses existed
1661 the building was bought by Jan Hartman
1663 the backhouse was remodeled into a church
1880 the museum was opened on April 24, 1880
1938 restoration (interior and exterior) of the building. At that time everything was restored to its condition 50 years prior, i.e., to the time that the museum was opened in 1880. No further painting was done in the church after this renovation.
1956 Repair of the foundation at the corner of *Heintje Hoek-steeg* and *Oude zijds Voorburgwal*. Partial restoration of the alley wall near the alley entrance to about 5 m. above street level.

2. FINDINGS

For the purpose of the investigation, Engineering firm Grabowsky & Poort performed a number of on-site inspections. The appendices contain the resulting photographic report. To get a vivid idea of the structure's current condition, please refer to the photographic report.

The church portion's current condition dates to the middle of the 17th century, when an atrium with balconies was created in the third and fourth story floors, 2.65 m in width and various lengths (the third floor L = 13.50 m, the fourth floor L = 8.70 m, see photograph 2).
To the left and right of the atrium, there is a 1.50 m wide walkway on the balconies.

The header joists, which were needed for the atrium, are suspended from the roof structure with wrought iron tension bars and supported by horizontal wrought iron bars, probably installed at a later stage (but possibly at the time the atrium was made), which run across the atrium from header joist to header joist.

These bars were installed floor by floor. At first it was presumed that these were tension bars, but we now think that they must have been intended as compression bars to counteract the tipping action of the header joists, and that they must have been installed at a later point in time. This conclusion is key in making the assessment that the assumed tensile forces are not transferred to the walls, which is also the opinion of third parties. This can be seen in photographs 5, 8 and 9. The view of the carefully installed fill-piece in photo 8 makes this clear.

The aforementioned bars hang approximately 2 cm down, and are spaced 2.65 m from each other. This would probably not have been the case if they had been tension bars. Moreover, the diameter of these bars is greater than that of the tension bars on which the crossbeams are hung. Therefore, in our opinion, it is quite reasonable to assume that they were not intended as tension bars.

Taking into account that the building was built in 1663 and that no displacement of the joints worth mentioning is evident, our office concludes that there is no danger of a calamity, since such a threat would have been indicated by the development of much larger deformations over time.

The fact that the wooden beams (200 x 250 mm) and the joints and the tension and compression bars have not been painted since 1940, and show no traces of cracks larger than usual in wooden beams of these dimensions, proves that in the last half century there have been no significant changes in structural behavior. This is very clear in the photographs.

It is our assessment that the flexions of the crossbeams along the atrium were caused by freedom of movement in the joints and by the cumulative flexion of the roof structure in the initial years after the atrium had been constructed.
The roof structure shows no traces of large displacements. The horizontal thrust forces originating in the roof are coupled at the attic height. The interior walls and the stucco ceiling below the attic floor have no cracks which might otherwise indicate that the original cross-beam flexions had increased over the course of time.
On this basis, Engineering firm Grabowsky & Poort considers there to be no reason to fear any problems with the structure's stability.

The most heavily loaded in the load-bearing structure is the fourth story's main-beam (photograph 2). When ascertaining the loading of this beam, we assumed a rigid support of the longitudinal beam as opposed to the tension rod, which holds up the longitudinal beam at a distance of about 4.50 m from the main-beam. Given that the longitudinal beam is "elastically suspended" by the tension bars, in contrast to the rigid loading of the main-beam, more loading will be transferred to the main-beam than could be determined by diagram and calculation.
Since the amount of bending stress on the main-beam calculated in this way approaches limit values, when extra loading is brought to bear, the main-beam could begin to behave like an unbraced beam, and therefore reinforcing the main-beam is to be recommended.
Such reinforcement can be done by adding steel structural elements. Given the historical nature of the structure however, this must be done in close consultation with the Directors of the Foundation. This reinforcement can be added in due time, when the necessary funds have been obtained.

3. CONCLUSION

On first impression, the 17th century structure, measured by current standards, seems to have been built by a "DO IT YOURSELFER."

The structure as a whole, and specifically joints such as the ones shown in photographs 13/14 for example, is difficult to calculate by today's standards, but demonstrate an inventiveness that has proven itself to be sound so far – 327 years later. This commands our respect.

To change such an excellent outcome seems a sacrilege. We do, however, think it makes sense to select a number of locations in the church hall in conducting measurements to monitor the behavior of the entire structure on annual basis. We would be happy to discuss this with you further.

April 1988

Engineering firm

GRABOWSKI & POORT BV

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