Technical report /condition survey/ of the cultural monument
Code:N0002



Object:church in Drøbak (Drøbakkirke)

Owner: Drøbak parish**,** Diocese of Borg

Adress: Kirkegata 18, 1440 Drøbak

Type of the monument: church

Protection:protected monument

Date of the report ellaboration: July 2019

Contence

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Archive documentation:

Project documentation: at the time of inspection project documentation was not available for the inspection team

Other sources: wikipedia

Inspection information

Date: 4th of May 2019

Evaluation of its technical state (state of conservation)

1. good

2. acceptable

3. disturbed

4. poor

5.under construction

6. not assesed

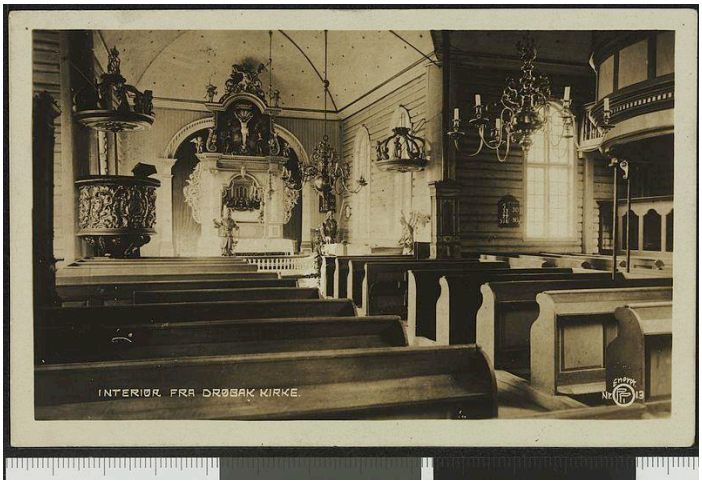
Due to the short time of inspection, the report was carried out in a limited form.

General description of the object





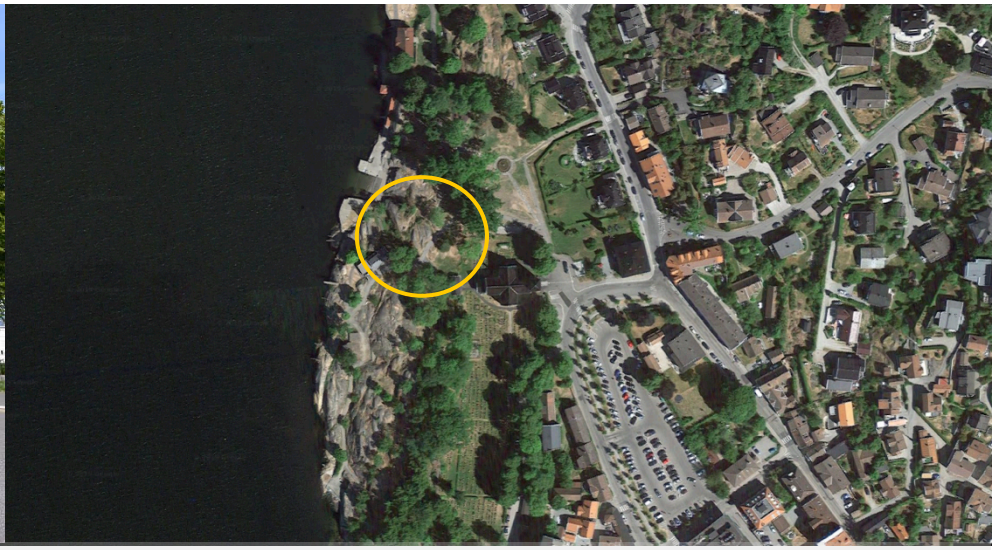




Drøbak Church (Drøbak Kirke) is located in Drøbak parish in the Søndre Follo deanery within the Diocese of Borg. The church was opened on October 29, 1776. The church was a gift from timber merchant, landowner and shipowner Niels Carlsen (1734-1809) and his wife Martha Zachariassen (1743–1821). Significant repairs were made to the church in the 1820s. Domenico Erdmann (1879–1940) led the restoration in conjunction with the 150th anniversary in 1926.

Surroundings, gutter system, rainwater drainage

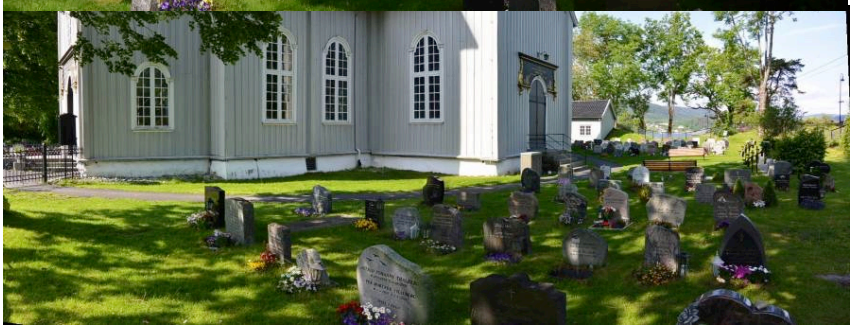




The building is located near the rocky shore of the sea bay in the area of the historic cemetery (W and S towards the church). The terrain is almost flat, slightly sloping from the rock boulder towards the city center - towards the east. The entrance to the building is from the east side, from the paved area (packing area) in front of the building. Along the sides of the entrance there is a pair of mature trees (lindens).

The wide surroundings are in good condition, regularly maintained, the terrain around the building is flat, without significant slopes. The surface forms a lawn, resp. gravel dump around facades. Around the church, without contact with the facades, there is an asphalt pavement about 1.2 m wide, without a clear slope towards or from the building. Water from the roofs is collected by a rain drip system, terminated in the immediate vicinity of the facades, where it is infiltrated at points on the lawn, resp. into the gravel dump (no tracing of the rain sewer is visible, part of the downpipes is terminated above the terrain). At the moment, therefore, all rainwater seeps into the area approximately bounded by the asphalt pavement. Despite this situation, the building shows almost no signs of excessive wetting, which is partly due to exemplary maintenance but, above all, suitable subsoil. As there are no faults, it is not necessary to modify the current solution. It is necessary to monitor the condition regularly, if necessary, it is possible to drain rain gutters through a surface or subsurface system to a sufficient distance from the building (min. 5m).







Location of roof gutters





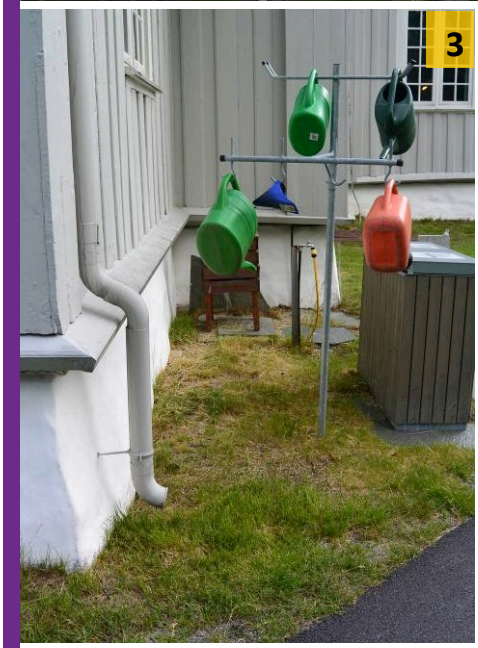




Gravel embankment in the inner corners of the church parimeter is probably related to the historical solution (without a gutter system), it still works under the tower. At present, roof gutters are raised into the backfill. Due to the sandy, extremely permeable subsoil, this solution does not cause significant problems. However, there are traces of running water in the adjacent places in the basin (chapter "basement"). The roof gutters are in good condition, fully functional, mostly equipped with self-cleaning pieces.











Facades

The facades of the building are divided by a plastered stone plinth and an upper wooden part. Within the cladding, some structural elements are visible on the facades. The load-bearing log structure is clad from the exterior with vertical wooden cladding, supplemented by platically divided window shutters, linings and cornices. The transition between the masonry plinth part is solved by means of a sloping horizontal end plate. All exterior wooden elements are treated with a top coat.



East view



Southern view



West view



North view



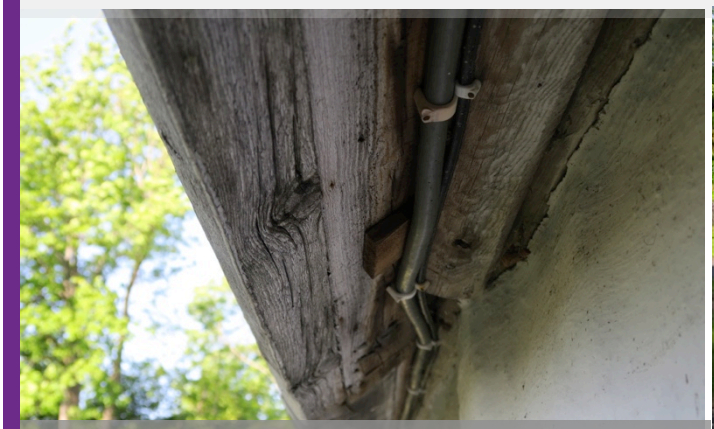


The masonry of the building is plastered with cement plaster on the exterior side. In the case of historic buildings, this is not a very suitable surface treatment, as it represents a diffusion barrier and promotes the emergence of moisture and salinity into higher parts of the facades. In this case, however, the interior of the basement is sufficiently ventilated, the subsoil is extremely dry and the cement plinth is unlikely to cause any significant damage. On cementitious substrates, lime coatings have relatively poor adhesion and are washed off in exposed areas. This is a visual defect.





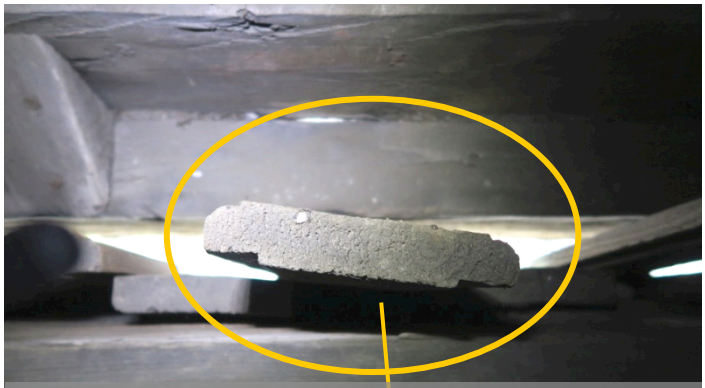
The load-bearing wooden elements on the corners are ventilated, sometimes in two directions. It is important that the ventilation is maintained when the façade is restored.



Detail of the end of the cladding above the plinth.







Original profiling of wooden cladding (visible in the roof of the tower).



There is a coating in the higher parts of the façade, covered from the weather and UV radiation in intact condition.







The paint is in good condition in almost the entire range of facades, in exposed places in the lower parts of the facades it is locally damaged by weather conditions. The oldest parts of the cladding have a relatively large coating thickness, as a result of which the local coating cracks and separates. Depending on the condition of the coating, it can be concluded that the paint will be renewed regularly in the past (before more extensive damage occurs). However, the lower part and especially the lower cover strip already need to be renewed. To prevent the formation of cracks in large layers of paint, it is suitable to apply the first layer of regenerative paint in the form of dilute paint or pure linseed oil, which partially replaces the washed-out binder of the lower layers of paint.









Increased attention during renovation must be paid to places alternately exposed to runningrain water and sunlight - typically horizontal elements of the cladding. I

Basement





Under the building there is a lowered structural floor, partly below ground level (approx. 0.5 m), thanks to which the waterproofing of wooden parts of the building and the possibility of checking the floor grate is ensured. The load-bearing structure rests on masonry perimeter walls and stone footings. Between the grate, the floor is insulated and covered with a diffusely open foil. Under the floor there are fire water distributions and other networks, but they do not interfere with historic structures. In the basement there are many items stored, e.g. replacement roofing (which is very important from the point of view of preventive maintenance). However, storage of wooden elements is not suitable - they can be a source of biotic damage to load-bearing structures. Any building modifications and storage must be carried out in such a way that they do not restrict the ventilation of the basement.





The condition of the structures in the basement is good, no significant damage was found by visual inspection, undemarked wood is seldom built in, but without traces of wood-destroying insect activity. However, there are traces of running water on the basement floor (probably during heavy rains or snow meltings).







Under the gravel drainage embankment in the corners, traces of running water are visible in the basement, on the inside of the masonry there are traces of leaks.





In the basement there is furniture damaged by a wood-destroying fungus, which is probably related to locally increased humidity. It is necessary to remove the damaged piece so that the spread of spores is minimized and to treat it appropriately. The germination of spores in most fungi ranges from 5-10 years, during this period it is necessary to thoroughly inspect the wooden elements in the basement, which are in contact with moisture (including condensation).

Proposed liquidation procedure:

1. Sampling, determination of the type of fungus
2. Chemical treatment by spraying on site
3. Thorough packaging of the item and disposal outside the building.

During all trusses, it is necessary to minimize manipulation with the object.







Exterior

The interior has a cross layout, it is entered through the hall from where the emporium, tower and attic are accessible. The ship is covered with a wooden vault. The walls have an acknowledged log construction, part of the interior surfaces (hall, sacristy) has a vertical wooden cladding. All surfaces have a top coat of paint.





The crowns of the log walls are without horizontal stiffening with tie beams. Their stability is ensured by steel rods in the interior.









The floor in the whole building is wooden board, in the aisle it is covered with a new tread layer (diffusely closed fiber cement board approx. 15 mm thick), probably due to wear of the original board floor. Due to the ventilation of the floor by the basement, the solution does not cause problems. It is essential that the underside of the floor remains diffusely open.





No significant damage was found in the interior, the structures are maintained in good technical condition. Minor damage is the repair of the damaged step of the staircase, the added wood is separated, as it is the most mechanically stressed part of the staircase.



The heating of the building is electric under the benches, optically almost imperceptible.

Windows and doors





The original window wings are supplemented from the interior by newer wings (as additional thermal insulation). The solution is very sensitive, both wings are maintained, without significant damage. Minor defects are manifested in the outer window frame damaged exterior paint and corrosion of corner fittings. An anti-corrosion intermediate paint was probably not used, as a result of which corrosion penetrates the surface. Metal elements exposed to the weather must be treated before painting - the traditional method of "black annealing" in which the heated element is inserted into linseed oil, or. single anti-corrosion primer.









Preserved original glazing in the tower

Truss and roof





From the interior side, the log structure of the tower is supported by a frame structure. The construction is practically undamaged. During the last renovation, probably associated with the replacement of the roofing, some defects were solved.









On the west side of the tower, there are traces of past leakage damage on the tie beam. The defect is currently inactive.

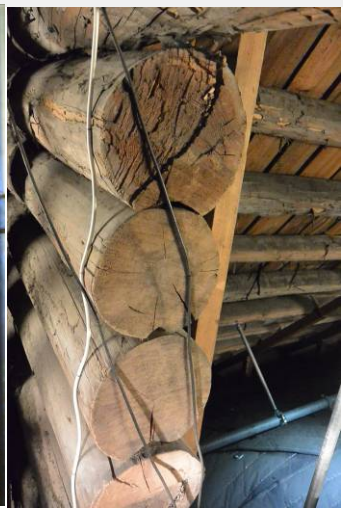




The bell is slightly damaged, according to the traces of the heart it was probably never turned. A campanological assessment and a bell care proposal are required.

The truss above the aisle is formed by horizontal rafters placed on log gables. The roof valleyes above the crossing of aisles are solved by massive valley rafters used in the past as gargoyles.





Overall, the truss of the building is in very good condition without significant damage. A large part of the truss is made of the members with rounded profiles (not hewed), often with bark, locally infected with wood-destroying insects. The truss is without significant ventilation, the roof hatches were removed during the last reconstruction. Due to the relatively oversized construction and harsh climatic conditions, there is probably no immediate risk, but due to the probable changes in climatic conditions, it is necessary to pay increased attention to monitoring the activity of wood-destroying insects.
It is advisable to analyze the incipient damage in good time, its causes - e.g.
- damage to the roof cladding actively or passively (also latent from the past - infestation by wood-destroying fungi or insects can pose a risk of their spread due to changing conditions, damaged wood must be removed)
-change of external conditions (climate change, new invasive insect species),
-change of the microclimate of the building due to building modifications (use of membranes, modification of the composition of the roof cladding),
It is necessary to know the species composition of insects that also occur infrequently in the building and to prepare the possibilities of its elimination. In addition to keeping structures in good technical condition and ongoing maintenance, it is appropriate to deal with damage preventively and proceed from less invasive methods (eg analysis and restoration of natural ventilation, especially attic space), to more demanding and extensive methods in case of stronger attack (chemical protection, physical methods of insect liquidation).







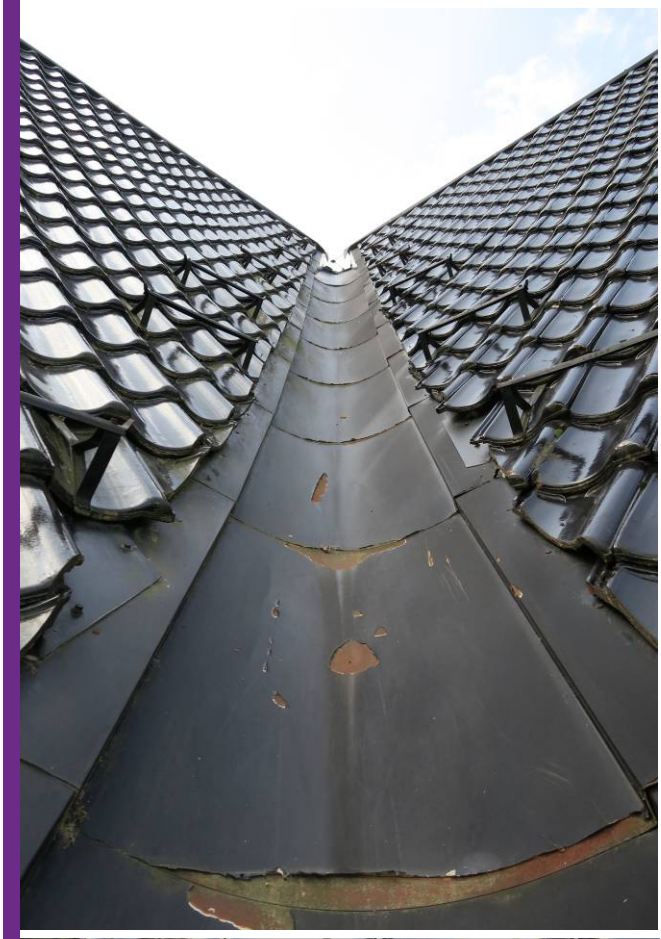


During the last reconstruction, the roof hatches were boarded up, which complicates access to the roof and its maintenance and can have a negative effect on the ventilation of the attic. It would also be appropriate to assess the effect of thermal insulation on airflow and humidity conditions of the attic.





The backfill of the truss (sawdust) is in accessible places without traces of condensation, the thermal insulation used is sufficiently vapor permeable.

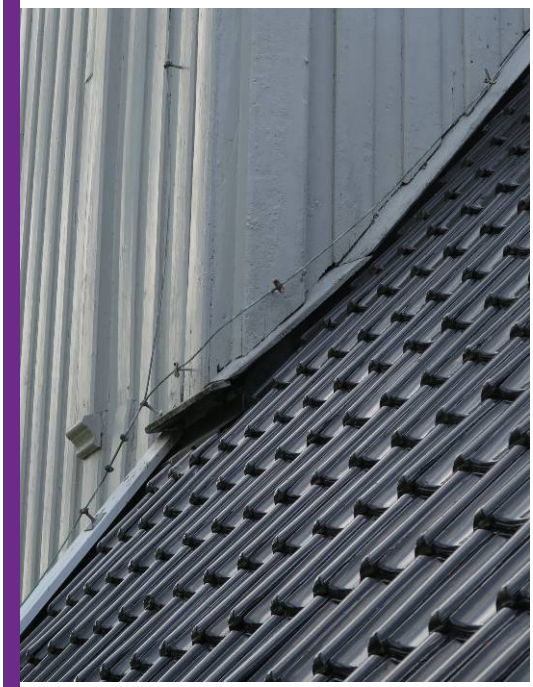




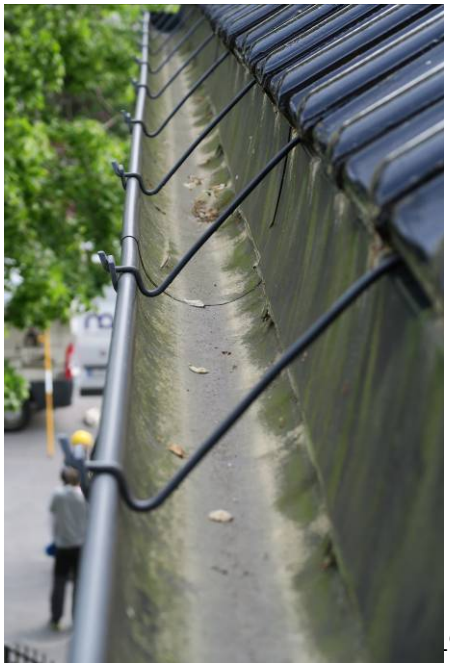




The roofing is glazed ceramic, from relatively recent times. The roof valleys gutters and snow guards are slightly damaged by corrosion, it is advisable to plan the renewal of their paint in the horizon of about 3 years. The rain drip system is fully functional, regularly cleaned and without damage (despite the presence of growing greenery).







Conclusons

The church building is in very good construction and technical condition, mainly due to effective maintenance. Minor damagees occur locally, but does not endanger the building. A potential risk is posed by wood-destroying insects in the attic, the occurrence of which needs to be monitored.

Procedure for recommended measures:

Regular visual inspection of all structural parts of the building.

Surroundings of the building

Anually:Continual maintenance.

Facades

Other recomended interventions:Renewal of the coating of the lower parts of the cladding in 2 years. Restoration of windows.

Basement

Priority:Removal of infested wood from the basement.

Annually:Basement humidity monitoring during the year.

Roof, truss, rain drip system

Priority:Analysis of truss damage by wood-destroying insects.

Annually:Monitoring the activity of wood-destroying insects in the truss.

Other recommended interventions:Campanological assessment of the condition and method of care for the bell.