

# **Urban development of areas with low social status from shipyards and industry to living and city center-areas.**

**Gry Brandin STENERSEN, Norway**

**Key words:** Urban development, building bridges, contractor, structural design, design for all, land surveying, moveable bridged, new seabed,

## **SUMMARY**

Bergen is an old Hanseatic city with close connection to Europe by sea and markets within the maritime industries. Shipyards have been important activity in the city for hundreds of years. The area of Damsgård shed has been used for shipyard, navy, workers homes - an area with a low social status.

City of Bergen started a develop program to give the area new energy and make the standard of living better. New activities were started as new houses, upgrading the school, new pedestrian bridge to connect the area closer to city center. Småpudden is a movable bridge with interesting technical solutions and design.

This year the work to isolate contamination at the bottom of the shed starts when creating a new seabed to make it clean for everybody.

## **SAMMENDRAG**

Bergen er en Hansa by med nær tilknytning til sjø og handel med Europa. Skipsverft har vært viktige arbeidsplasser.

Området ved Damsgård sundet har vært preget at skipsverft, marinebase,arbeiderboliger og har hatt lav sosial status.

Området har gjennomgått en transformasjon etter at kommunens program for områdesatsing startet ” Ny energi rundt Damsgårdsundet”

Det er bygget nye boliger, skolen er blitt opprustet, industri er erstattet av forretningsbygg. Ny gang/sykelbro har blitt realisert og binder Damsgård tettere til sentrum av Bergen. Broen er en bevegelig bro med interessant tekniske løsninger og design.

Og nå startet arbeidet med å isolere forurensingen i fjorden med å etablere ny sjøbunn over den gamle slik at sundet blir rent.

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## **1. INTRODUCTION**

Bergen was founded in 1070. Until 1830s it was the biggest town in Norway, a major European trading and seafaring port and an important trading center for Hanseatic merchants.

Bergen is the capital of western Norway and an important maritime site in Europe ever since it became part of the mighty Hanseatic League in the 13th century. The yards have always benefitted from its close proximity to important markets within the maritime industries. The last decades, specialized on offshore ships, seismic vessels, research vessels and other sophisticated vessels for the international oil and gas industry.

Bergen has a small-town charm and atmosphere. Its passionately patriotic 277 000 inhabitants are proud of their many-sided city and its history and cultural traditions.

## **2. AREA – URBAN DEVELOPMENT**

Every city has an area which is worse than others, a backyard. Damsgård is an area that was forgotten for a long time. An area with low social status, with shipyards and industry, and homes for the workers.

Historical there was a big city fire in Bergen in 1916. When rebuilding the city, the poorest moved to this side called “the blood city”. Because of a large surplus of red paint were used on the houses here. But there the name pointed also at an area with a lot of crime.

Poor people after the war were placed here. Alcohol and drugs users were placed here. Later immigrants moved into the area. This was too much to carry for Damsgård.

The City started active urban development in 2001 with the vision in the program “New Energy by the Damsgård Strait”. People in the area felt neglected. Open up dialog was necessary. This program saved the lives of some people.

A pedestrian bridge in Puddefjorden became a huge dream in 2001. Småpudden bridge was really ambitious. It would connect the area with the city in a new way. This connection is crucial in the dream of a better area.

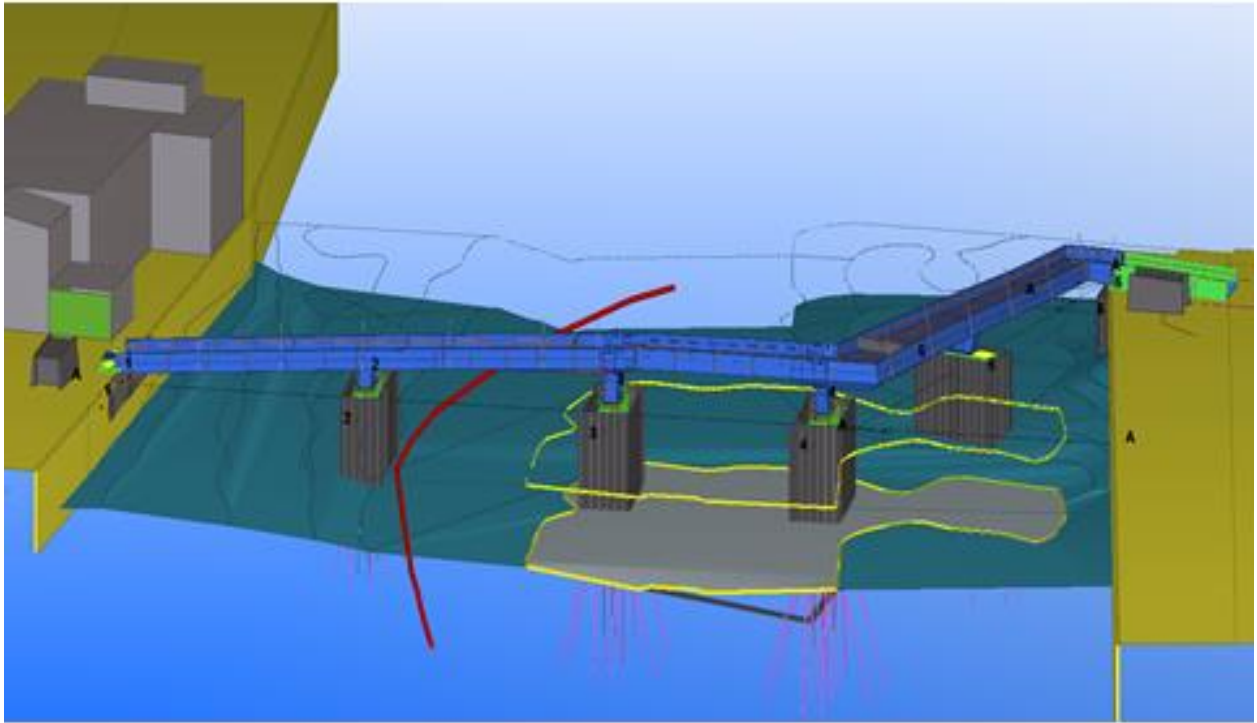
Everybody waited for the new bridge, especially the private developers. 1500 new homes along the strait were planned built in a few years. In addition to the new houses, the City spend a lot of money on upgrading the existing houses and the school.

An old and worn down industrial area has been transformed into an idyllic promenade with support from The State Housing Bank and the House developers. The city Council presented a great investment plan for the area, upgrading the school, sports arena and money for the bridge. People from 38 different nations live here.

### 3. SMÅPUDDEN MOVEABLE BRIDGE

Småpudden foot and cycle path bridge consists of a new bridge over Damsgård Strait. The bridge is a part of Bergen municipality's plan to develop the area and it will ensure better access between this area and the centre of Bergen.

The bridge manages, with help of a z like layout, to combine a free sailing height, incline conditions and landing near the quay front. The bridge has been designed for all, and has a shape that gives a gentle crossing of fjord. It is bike-lane in both directions



FIG

30.06.2019

- Steel construction 330 tons
- Concrete construction 1,200 m<sup>3</sup>
- Steel core piles 670m
- Excavation 1000 m<sup>3</sup>
- Technical building 30 m<sup>2</sup> 2 pcs
- Hydraulic cylinders 2 main cylinders 4 tumbler cylinders
- Pumps 4 pieces
- Lighting
- Control System
- Pot bearings and joints 7 + 2 pcs

The bridge has concrete pillars with steel core piles. First we made a steel framework of steel sheet piles to keep the water out. Then the reinforcement and formwork could start to make concrete base pillars.



FIG



30.06.2017

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In 2016 the parts of the bridge that was a part of an impossible dream- were on their way on a ship from Poland. On the ship there's a Polish team that will assembly the bridge. The steel bridge that has been sent from Poland was unloaded. Then the pieces were moved over to the foundations in the fjord. Huge forces were at work and the bridge itself weighs more than 300 000 kilos. There was no margin for error. It has been great demands to the surveying because of small margins in placing the steel structure. For that reason, it has been carried out precision measurements of the constructions both in Norway and Poland. The 3 parts of hundreds of tons steel matched perfect.



#### **4. SUCCESS CRITERIAS FOR THE PROJECT SMÅPUDDEN**

One of the success criteria for the project has been good cooperation between the developer and contractor with shared office and an interaction deal with bonus to the contractor if they come up with better solutions than planned.

It has been challenging with construction work close to homes and schools and boats where people area living. The project has invested in active information, been on live TV and in newspapers. Construction of the bridge is documented with both drone and time-lapse, and has been shared on different media. This leads to ownership for the city's population.

A ten year old adventure is almost over as the pedestrian bridge Småpudden is being opened by lowering the flaps and connecting the area to the city center.

The people show a pride they haven't had for a long time.



#### **6. NEW SEABED IN INDUSTRIAL AREA**

The next project is to isolate contamination at the bottom of the fjord so that the sea can be used to swimming, fishing and others activities, in addition to avoid spreading contaminants. Rubbish will be removed and the bottom will be covered with fine fractions of stone. In this way the plan is to establish a new seabed and make new organisms. Covering the seabed will make a healthier environment at this polluted fjord.

## **REFERENCES**

Områdesatsingen på Damsgård: Brobyggerne <https://www.youtube.com/watch?v=n82dsKF1gLE>

Vi bygde Småpudden – timelaps <https://www.youtube.com/watch?v=34ZJfIk9ha0>

Renere Havn Bergen <https://www.bergen.kommune.no/aktuelt/tema/renehav>

Instagram: <http://instagram.com/smapudden>

## **BIOGRAPHICAL NOTES**

After graduating in land consolidation from the Norwegian Agriculture University in 1987, Gry Brandin Stenersen worked as a cadastral surveyor in Municipality of Bergen. Country manager of Hardangervidda nasjonal park, Project manager for 25 new bridges at Bergen railway, Project manager for Bergen light rail, Project manager Småpudden moveable bridge and new seabed in Puddefjorden.

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