

West Indian Islands, Registration of Bridges



Registration of Bridges on the former Danish West Indian Islands

A Report on Old Roads and Bridges on the Virgin Islands

With suggestions for preservation and maintenance of these Danish cultural remains.

By Arne Rosenkvist, engineer.

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1.0 Introduction

This report is a contribution to the preservation of the cultural heritage still to be found in the former Danish West Indies, St. Croix, St. John and St. Thomas. The author of this work spent time in January and February of 2005 in the islands to register technical marks of roads and bridges.

Principally the American conservation authorities protect the old bridges and roads. Unfortunately, it seems that a greater interest in these past memories must be created in order for the authorities and administration to find it worth preserving.

The former manager of the St. Croix Landmark Society, Mr. George Tyson, set motivation for this registration alive. One afternoon, by the gate of Kronborg, after an interesting visit of historical road marks in Northern Zealand in Denmark, Mr. Tyson said to me; "I have a project for you". "You are going to register the old Danish bridges in the former Danish West Indies, and then come up with suggestions for how to preserve them".

The old road engineer and road historian has now fulfilled this request. The intention is to create inspiration and further registration of road and bridges in the U.S. Virgin Islands. The author, gladly, makes his knowledge available for further studies of this kind.

Danmark 2007

Arne Rosenkvist

Presentation

The author is an engineer from The Engineering college of Aarhus, where he, for years, taught as a senior lecturer in Road Building and Geology.

Thanks

I would like to thank everyone who has been helpful and everyone who has shown interest in this project, during our visits in the U.S. Virgin Islands and in Denmark. Also thanks to translator and editor.

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Denmark 2007

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2.0 Conclusion

2.1 Main Conclusion

On all three islands, traces worth preserving, have been found of roads and bridges from the Danish period. This is Danish engineering competence at its highest, in collaboration with the uniquely high-qualified tradesmen. Skilled, free, coloured people and their descendents.

The professionalism and skills that craftsmen on the island had, had been conveyed by the Moravian missionaries that came to the island at that time.

The majority of these old craftsmen's traditions of craftsmanship has been lost since the transfer of the islands in 1917.

To keep up the old standards of professionalism in reparation and restoration of these culture memories, it can be considered to extend the VIDA (Danish Vest Indien Apprenticeship Program). The VIDA program might include courses about materials, mortar and reparation. In St. Thomas, a course of blue bits pavements would be fruitful, also.

Historical Research

It is recommended that this report be followed up by studies of archives of

- the layouts of the road and bridge planning, drawings, expenses and the year of their founding.
- shipping to and from the islands of materials as ballast, including the journey of the Flensborg-stones from the Tile Work by Flensborg inlet to the islands.
- road pavements, their introduction and use.
- the bridges should be measured accurately to supplement the summary registrations of this report.

2.2 General Description of Bridges on the West Indians Islands

Most of the bridges from the Danish era are small curved-bridges leading over guts.

The bridges were built for carrying the load of smaller carts, pulled by either horses, mules or oxes. However, for the most part, they have the strength and capacity of carrying the load of today's traffic as well.

These old bridges are protected according to the American legislation and for the most part worth preserving.

Materials

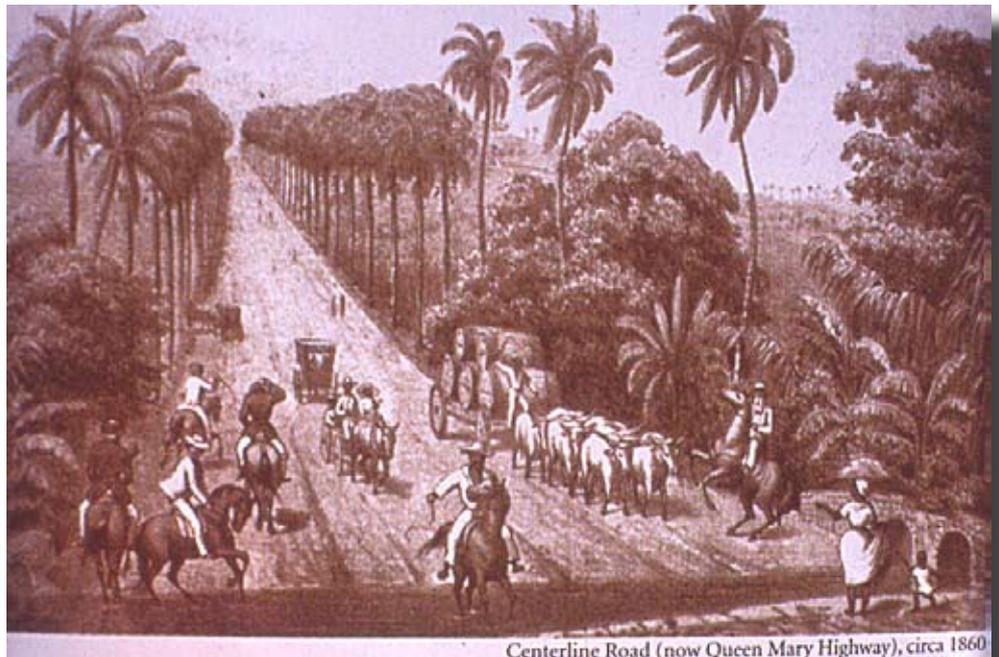
The bridges are built partly of local materials like coralstone, partly of Danish bricks. For the most part the danish bricks were brought to the islands as ballast on the ships carrying sugar and rhum. This shipping of sugar, rum and bricks is a subject to be considered for historical research – as information on origin of production, disembarkation, methods of transport, packing of the bricks and commercial marketing of the bricks is almost unknown on the islands.

Appendix 4 includes materials used for Bridges and Roads.

2.3 Conclusion and General Specification of Road and Pavement

In the western hemisphere there were no draught animals, before the Europeans arrived. The wheel was known in South America but only as a toy. The result of the lack of draught animals was no carts and no roads. Only a net of hiking paths existed, but they are difficult to find today

The demand for roads is growing with the production of sugar and rum on the islands. Old Danish rules say the road may go as direct as possible. However, topography of the islands makes this rule very difficult to follow.



P 2.3.1 Old picture showing The Centerline build in a straight line according to Old Danish rules.

Registration of Roads

Oxholms map of St. Croix from 1794 shows the position of the roads along the boundaries set out in connection with J.M. Becks survey of the island in 1754.

The width of the roads may be seen in the Danish rules from 1820 (appendix 2).

We have here one of the worlds best registrations of old roads.

All the old tracks should be registered, and noted where there is public accessibility according to current legislation.

Danish Mile

Oxholm's map shows the Danish mile. 1 Danish mile = 7.538 meter. There is no proof today, whether the roads of the islands was set in the Danish mile.



P 2.3.2 Oxholms map of the western part of St. Croix.

Pavement

The only real paved road in the West Indian Islands is the road in Estate Annaberg in St. John. This road is called “Danish Road” (chapter 5.1, St. John)

Macadam

In 1816 the Scottish road engineer Mc Adam constructed a new type of road pavement that is named after him “MACADAM”.

This new road pavement was introduced in the Danish kingdom 10 years later. On a monument near Pløn in Holstein, the text, written in Latin, says: king Frederik the VI built the first British macadam road in Holstein in 1826.

This new and relatively costly road pavement is introduced under Peter von Scholten, 1827-1848. (Source; W. Cissel).

Macadam consists of homogenous broken stones in a size of about 2”. (5 -7 cm). In a thickness of 10 inches. This pavement gives a higher bearing capacity, with the use of considerably less material.

The roadstones are crushed with relatively primitive tools. A ring of iron with a handle to hold the stone, and a hammer to break down the stones.

This simple, but time demanding production, may have taken part in the islands, but the tools were never found and preserved.



P 2.3.3 Monument by Bossau near Pløn in Slesvig, Holstein.



P 2.3.4 Tools used to make broken stone. Picture taken at the local historical museum in Børkop, Denmark.

Pavement Macadam (cont.)



P 2.3.5 Road paved with macadam in the rainforest in St. Croix.

Tarmac

Most of the macadam roads have later been covered with Tarmac. The English word for asphalt-pavement is “tarmac”. This comes from the fact that the first asphalt pavements was made with tar, covering the macadam – mostly to get a road free of dust.

Asphalt is yet a further development of the pavement – where the tar has been placed replaced with bitumen. Bitumen is remaining of oil refining.

Wherever we today find old roads, that can carry the load of modern traffic, we can assume that the road has been built on top of one of the old macadam roads.

Sidewalk Pavement

Olandssten, chapter 3.3, road pavements in St. Croix.

Blue Bits, chapter 4.3. Road Pavements in St. Thomas.

2.4 Conclusion and General Description of Guts in the U.S.V.I

No roads without drainage. That is the first rule of building roads. In the islands there is a great use of drainage to make sure the water from the heavy rainfalls of the tropics can be lead away quickly.

The English term, gutter, describes the ditch, leading water from the curb. IN the U.S.V.I “guts” or “gutter” covers everything leading surface water away from the curb over ditches to streams.

These guts were also planned out, constructed and maintained at a very high level.

The guts have two functions – they are leading surface water away from the streets, houses, etc. They are also green wedges running through the towns, playing an aesthetic role. (Chapter 6.3, Town Planning).

Earlier, these guts were used as a walk-path as well. A function that might successfully be reestablished in certain areas.



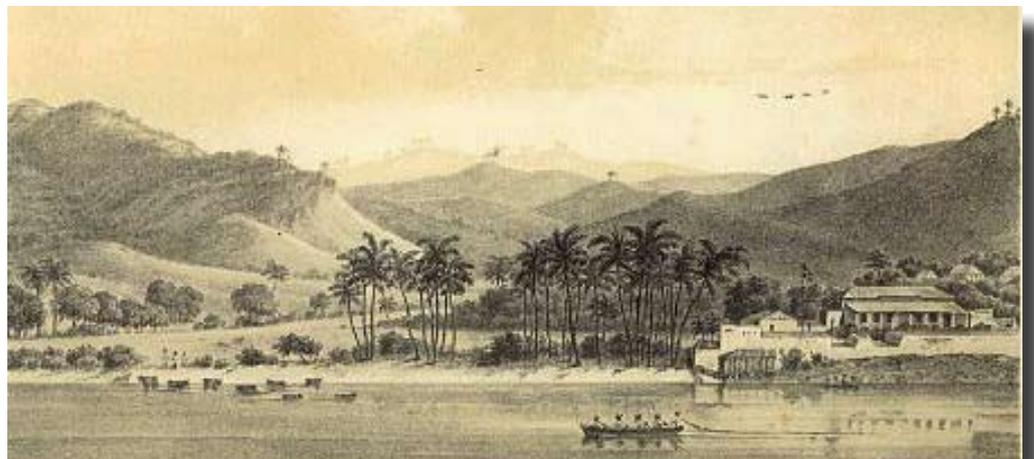
*P 2.4.1 Gut in Charlotte Amalie, can be reetablerer as footpath.
Foto by Sean Krigger.*

2.5 Aqueduct in St. Croix

St. Croix is the only one of the three islands having ground water. On the west end it has lead to the construction of an aqueduct leading water to irrigate the sugar fields by Estate La Grange in Frederiksted. From 1907 the aqueduct was part of the irrigation system keeping the sugar fields moist. *Source: Erik Lawaetz: “My fathers letters, 1891-1913”.*

This is a very impressive work of engineering and construction. It needs to be preserved. (Chapter 3.4; Aqueduct)

P 2.5.1 St Croix Frederiksted. The area north of the fort Frederikssted where irrigated. This area belongs to La Grange Estate.



3.0 St Croix

3.1 Introduction and Conclusion of St Croix

3.2 Bridges in St. Croix

3.3 Road and Pavement in St. Croix

3.4 Aqueduct in St. Croix

3.1 Introduction and Conclusion of St. Croix

St. Croix is very interesting considering the roads and their history.

All known roads were constructed after the Danes bought the islands from France in 1733.

Bridges

This work presents 14 of the bridges in St. Croix.

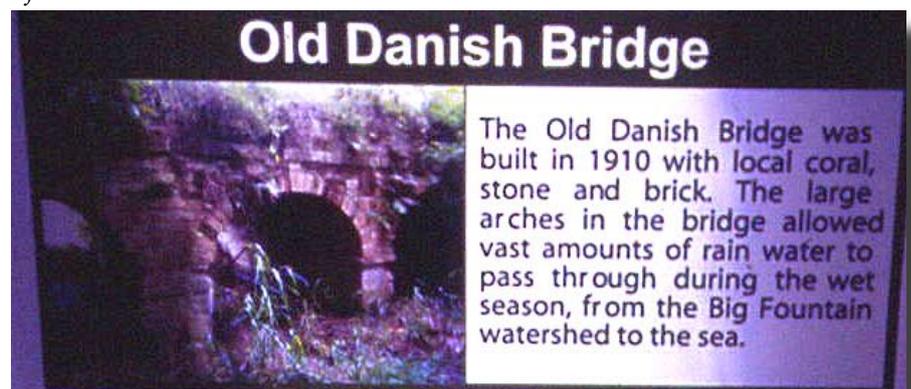
7 of the 14 bridges have been proposed to be included in the St.Croix Heritage Trail Map. It is suggested that these bridges be made accessible and they would be an attraction if they all had a board describing the history of the bridge, as we see by the bridge by Centerline Road (bridge 3.2.1).

The following 7 bridges are proposed for the St.Croix Heritage Trail Map

- 3.2.1 Bridge on Centerline Road, Estate Lower Love, VI Department of Agriculture
- 3.2.4 Bridge on Country Road 63 by Hams Bluff Road at Estate Prosperity Hall
- 3.2.5 Bridge on Country Road 63 Hams Bluff Road by Estate Sprat Hall
- 3.2.7 Bridge on Country Road 58 at Creque Dam Road by Estate Mount Victory
- 3.2.8 Bridge on Mahogany Road by Estate Orange Grove
- 3.2.9 Bridge on Country Road 82 East End near Altona grove
- 3.2.10 Bridge to Moravian Cemetery at Friedensthal Christiansted

P 3.1.1

The board by the bridge on Centerline Road build by the Danish road inspector Ejnar Kaern.





punkt 8 flyttes hen til over Orange Grove

Introduction and Conclusion of St. Croix (cont.) Pavements

Roads of St. Croix have a high standard due to the Macadam and the Oland Stones used as pavement.

Track with the original macadam-surface should be registered and preserved.

The Olands-stones used as sidewalk should be included in the preservation of houses in Christiansted and Frederiksstad (P 3.3.3).

Road Tracks

In St. Croix there are still many old road tracks that have been more or less forgotten and reclaimed by the wilderness. These tracks should be registered and the ownership made clear, so they could be used as tourist trails.

Aqueduct

On the west end of St. Croix there is an aqueduct, for irrigation of La Grange Estate's sugar fields.

This project is beyond the work of roads and bridges, but included here, for giving this interesting engineer project greater attention.

P 3.1.2 The Aqueduct today.



Bridge Nr. 3.2.1**Location**

Centerline Road, Estate Lower Love by the VI Department of Agriculture.

Description

The Bridge was built in the years of 1909 – 10 by road inspector Ejnar Kern (see Appendix 3). The Bridge is a three arched bridge built of cut out coral. The Bridge cross the Centerline Road at an angle of approximately 20 degrees. The blocks of coral are cut in this level.

The springing has a projection of ca. 4 cm / 2”

The parapet walls have rested on 20 cm / 8” of coral that has also been cantilevered over the front wall.

These parapet walls no longer exist, but have more than likely, been ca. 45 cm / 18 “ above the present roadway.

To the north, facing The Agriculture Fairground, the facade of the bridge is blemished by a by water pipes led on the foundry of the concrete foundations.

Conclusion

The bridge is in a good condition and does not give a direct impression of being overloaded or in need of emergency reparation.

The parapet can/should be rebuilt.

The blemishing water pipe, facing north, should be relocated by future reparation of the pipe. By doing so, the facade will, once again, appear beautiful, facing the Agriculture Fairground.

On the north side, an eventual bridge extension may be conducted with some luck. When extensioning the bridge, the front wall, with the beautiful formatted bridge facade, should be moved out, so the bridge is shown with its true face towards the fairground.

The blemishing water pipe may be either built in or relocated.

The bridge is part of VI Urban & Community Forestry Adventure Nature Trail. Therefore, this bridge is getting the necessary public interest.

P 3.3.1.1 Bridge seen from south.





P 3.3.1.2 Bridge seen from north.

Bridge # 3.2.2

Location

Between Estate Plessen and St George near the Methodist Church

Specification

The bridge is approx 2 m wide and 9 m long

The bridge is built in coral blocks as a single arch with radius of approx. 2 m

Conclusion:

The Bridges was briefly examined in November 2007

The bridge is worthy of preservation, but has to be properly measured and valued.

Location

Centerline near Hogensborg

Specification: The Bridge is one of the beautiful and well build bridges from the time before the Transfer

The bridge build of coral as a single arches, with free hight at aprox. 3m (10 ft) and aprox. 2 meter (7 ft) with, the bridge I aprox 10 m (30 ft) long.

The Bridge is built in coral blocks and the arched locked with projected Keystone. The side wall has one layer of stone projected 3 ft above the riverbed.

The bridge crosses the Centerline in an angle of about 20 degrees.

The face is nicely formed to this angle.

Picture P 3.2.3.1 and 3.2.3.2 (not yet taken)

Bridge # 3.2.3**Location**

Between Estate Plessen and St George near the Methodist Churchs

Standard of the bridge

The Bridges was briefly examined in November 2007

The bridge has to be properly measured and valued.

Due to overloading and bad maintenance, the bridge is in a very bad condition.

At both sides of the Bridge is a large crevice, about 2 ft from the faces.

The Crevice runs all the way trough to the shoulders of the road.

A slide of face is very likely and it can cause a collapse of the bridge

The condition of the bridge demands a quick action.

Proposal for Preservation

Different methods can be used to restore and maintain old historic bridges like this. Rebuilding the Historian Bridge, with the old coral blocks and materials will be difficult, due to a lack of qualified labour on St Croix

The most realistic solution concerning this poor bridge, will be to build a total new bridge over the old restricted bridge, and leave the old bridge beneath under the new one, as a Historical marker.

This can be done by placing precast concrete slaps, placed on top of piles (driven or drilled) or on concrete walls casted I situ behind the existing bridge.

This method makes it possible to rebuild the bridge in laps so the road will be closed only partly.

The rather short span of the bridge allows for new precast slabs to be produced in such a thickness that the road level may not be raised considerably.

The length of then precasted slap can be done in a tightness their no will lift the road perceptible.

It is possible to extend the bridge and widen the road at wish.

The old bridge will be left under the new bridge and stand as a historical marker.

Appendix 7 Reconstruction of bridge face.

(This app. Will show possible reconstruction methods.

The Appendix is under preparation)

Bridge # 3.2.4**Location**

63 Hams Bluff Road or Emancipation Drive at Estate Prosperity Hall

Specification

The bridge is built of coral.

It is very impressive with its 27 meter long supportive wall, along the road.

The wall ends in a 80 cm tall and 40 cm wide parapet wall.

The bridge (roadway) is 9.5 meter wide.

The roadway is 2 meter above the water level in the gut.

The bridge has 3 passages that all ends in circle-arches.

The middle passage is 180 cm wide and ends in a circular arch with a radius of 90 cm.

This passage has headroom of 185 cm.

On each side of the middle passage there is a passage of 120 cm, divided by a supportive wall of approximately 75 cm.

These passages end in circular arches with a radius of 60 cm.

Each of the side passages has 155 cm headroom over the waterlevel.

The side passages are partly covered with sand.

The bridge is recommended for the St. Croix Heritage Trail Map.

Conclusion

Apparently the bridge is in a good state of repair. The sanded up bays could be cleared for free passage and drainage to the sea. This would drain the gut and leave it a dry riverbed.

The bush along the bridge towards land, as well as toward the sea, should be removed. Since the bridge has headroom of 185 cm in the middle passage it can be used for a walking passage under the road.

This bridge is recommended to be on the St. Croix Heritage Trail Map.

P3.2.4.1 The bridge as seen from the seaside.

Bridge # 3.2.5**Location**

63 Hams Bluff Road by Est. Sprat Hole. The bridge lies after a sharp curve. The bridge leads over the gut, running from Mount Washington under Hams Bluff Road. The Landmark Society owns the area by the bridge.

Description

The height from the roadway to the bottom of the gut is more than 4 meters.

The bridge is 8.4 meters wide.

It is a single arched bridge with a free space of 270 cm.

The archs have a radius of 130 cm and is built of blocks of coral finished with projected keystones.

Characteristic supportive walls are surrounding the bridge. To be able to handle the water pressure from the eartfill behind the bridge, the supportive walls have unique drainage let-outs.

Conclusion

The bridge has several obvious cracks, and it is recommended that the Highway Department maintains the road and makes sure that the rain water is lead from the roadway to the gut, to avoid further damage of the bridge.

The Landmark Society could, successfully, make use of its ownership and make the bridge accessible. On the landside, a walk path could be made, leading from the road, along the supportive wall, through the bridge to the beach. Such a walk path would be a welcome access to the beach – and also create the necessary interest in this very beautiful and wellbuilt bridge.

The bridge is recommended to be on the St. Croix Heritage Trail Map.



P 3.2.5.1 bridge seen from the seaside.

*P 3.2.5.2
Drainage let-outs in the supportive walls.*

Bridge # 3.2.6**Location**

Country Road 72, Midland Road by Friedensfield Moravian Church.

Specification

Single arched bridge built of boulder with a 2.40-meter water gorge laid out.

The south side of the bridge has been extended with a pavement, which results in the cover up of the old bridge construction.

On the North side, in front of the bridge, a blemishing water pipe with two concrete buttresses, has been laid out

Conclusion

The owner, the Moravian Church, has cleared the area and the water pipe is now really blemishing. Especially when leaving the church via the driveway.

A redirection of the water pipe would allow for showing the fine construction of the bridge, towards the church and the cemetery.

A plate with the data of the bridge, put up after conferring with the Moravian church will create the necessary attention in making the bridge worth preserving.

P3.2.6.1 The Bridge as seen from the north side showing the blemishing water pipe.



Bridge # 3.2.7**Location**

The Bridge is located on the country road, 58 Creque Dam Road by Est. Mount Victory (The Campground). The Bridge crosses the gut, that runs on the south side of Creque Dam Road, and it turns into the newly built road from Est. Oxford.

Specification

The Bridge is a single low arched bridge with a radius of 1.40 m.

The bridge arche is 40 cm high l with a projected keystone made of coral.

The 20 centimetre tall beam above the arch is only partly intact.

The bridge is 9.2 meters wide and runs in a soft curve. The bridge has been plastered in squares to make it appear as built in blocks.

Conclusion

There is a heavy load of traffic on this bridge and the Road Department should make sure that the bridge is not overloaded. It is recommended to reduce speed and axle load.

It is recommended that the bridge be cleared from bush and the blemishing barbed wire, to make it accessible for the many guests at the campground.

There should definitely be an opportunity to inspect this unique and outstanding construction.

The bridge is suggested for the St. Croix Heritage Trail Map.

P 3.2.7.1. Bridge at Mt Victory seen from the east, the remains of the plaster may be seen to the right side.



Bridge # 3.2.7 (cont.)

P 3.2.7. 2 The Mount Victory Bridge seen from the West.

Bridge # 3.2.7 A**Location**

The Bridge is located on the country road, 58 Creque Dam Road by Est. Mount Victory (The Campground). This is 80 meters south of bridge # 3.2.7. The bridge crosses the gut and leads the road into the field.

The bridge is within ROW (Right of Way)

Specification

The bridge is a single arched bridge with a radius of approximately 1.40 meter. The width of the bottom of the gut is 2.55 m and the bridge itself is 7.30 m wide.

Conclusion

The Bridge is of no further value and the vegetation of the rainforest has reconquered the bridge. The Road Department have to clear the guts of water to run freely, and leave the bridge to natural decline.

It would be suitable to mention this bridge together with bridge # 2.3.7 on The St. Croix Heritage Trail Map.

P 2.3.7.3 Shows how the Monkey don't clime tree grows into the old bridge construction.



Bridge # 3.2.8**Location**

58 Mahogany Road by Estate Orange Grove

Specification

The bridge is a single arched bridge built of Flensburg bricks.
The arch is finished with projected keystones.

The headroom under the bridge is 4.85 m and the width of 3.6 m.

The arche has a radius of 1.80 meter.

The total width of the bridge is 8.4 m, being one of the largest bridges in the U.S.V.I.

The bridge cross a steep ravine.

A 27 meter long fill, lead the road to the Bridge.

The fill is supported with a partly defect wall, this gives the road at risk of collapsing.

Use

The passage of the bridge has been used as cattle passage by the Lawaetz family. They drove the cattle from Estate Annaly to Orange Grove.

Conclusion

As one of the islands largest bridges, located in the middle of the rainforest area This Bridge is very much worth preserving.

The Bridge has to be cleared from roots a trees spoiling the foundation.

The supportive wall to the southwest has to be repaired to avoid road collapse.

The pillars of parapet, on the bridge have to be measured and recreated.

To create access to the bridge – a turnover or parking lot with path walk should be made

The bridge has been recommended to be on the St. Croix Heritage Trail Map.



P 3.2.8.2 The remains of pillars of parapet. It is requested to rebuild the parapet.

Bridge 3.2.8 cont.

P 3.2.8.1 The arch are built in Flensburg Stones and the arch is closed with projected key-stones.

Bridge # 3.2.9**Location**

82 East End Road by Roberts Hill leading water to Altona Lagoon.

Specification

Single brick culvert. The diameter of the arch is approximately 0.6 meter (2 feet).

The road has been extended towards the North and lengthened with concrete pipes.

Suggestion for preservation

The culvert is the smallest bridge in the world and does probably not deserve to go by the term "bridge". Although the importance of the deflection of the water coming from the valley to Altona Lagoon, has given the culvert a crucial position in the construction of East end Road.

The culvert has been made with such greatfull quality of craftsmanship, that it is still fully intact and should be preserved.

It is highly recommended that the culvert keeps its brick construction and that it is never replaced with concrete pipe.

It has been recommended that the bridge should be included in the St. Croix Heritage Trail Tour.

The bridge/culvert is accessible from the South side of the road.

P 3.2.9.1 The culvert seen from the South side of the road.

Richard Ridgeway has been very helpful locating the Old Danish bridges, sitting by the bridge.



Bridge # 3.2.10**Location**

Morovian Churchs Friedensthal in Christiansted.

The bridge crosses the ravine from the fatherhouse to the Morovian graveyard.

Specification

The bridge is built of Danish standard bricks and the footpath made with Flensburg brick stone.

The bridge is 30 m (100 ft) long.

The bridge is 1.85 m/6 ft. The footpath is 2.10 m/7 ft. wait due to the projected Flensburg Brick stone

The Bridge has three arches are built in Danish standard brick with projected keystone

The middle arch's is 3.70 m/ 12. ft. 4" with/ with a radius of 2 m/7ft

The two side arches are 2.74 meter/ 9 ft with half circle with a radius 1.37 m/ 4 ft 7 "

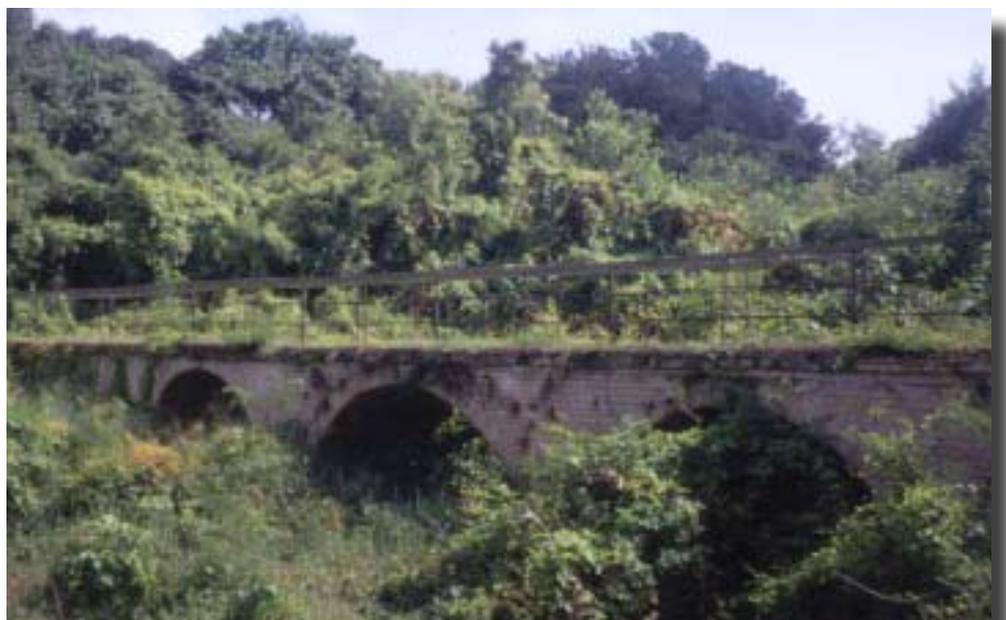
Suggestion for preservation

The bridge is in remarkably good condition.

The staircase down to the bridge, is built in Flensburg brick and need some repair.

The bridge has been recommended to the St. Croix Heritage Trail Tour.

P 3.2.10.1 the 30m/100ft long bridge by the Friedensthal.



Bridge # 3.2.10

Bridge by the Friedensthal
(cont.).

*P 3.2.10.2 Footpath on top of
the bridge with Flensburg brick
stone .*



P 3.2.10.3 the projected keystone on the arches made from Danish standard



P 3.2.10.4



Bridge # 3.2.11

Location

Schmidt's Street from St John Episcopal Church to Strand st.

Specification

The Bridge is a single curved bridge built in coral stone

The arch has 1.45 m in radius/5 ft.

With of the gut 2.90 m/10 ft.

With of the bridge 6,0 meter/20 ft

Conclusion see 3.2.12.



P 3.2.11 Single curved buildt in coral.

Bridge # 3.2.12**Location**

Location West Rd. from St John Episcopal Church to Strand St.

Specification

The Bridge is a single curved bridge built in coral stone.

Specification

The Bridge is a single curved bridge built in coral stone.

The Bridge has a 65 cm /2 ft. height Parapet.

The arch has 1.20 m in radius/4 ft.

With of the gut 2.40 m/8 ft.

With of the bridge 4.55 meter/15 ft.

The bridge is covered with concrete

Conclusion for bridge 3.2.11 and 3.2.12

These small unimpressive bridges, fulfil their purpose for traffic in the side street of Christiansted.

It is impressive how the bridge can carry the load of modern traffic and this tells something of how good it was built.

Repair of the bridges should not be made with concrete, but be carried out in coral stone.

The bridge can be protected against overload by putting up signs indicating reduced axle load.

P 3.2.12 Single curved bridge build in coral.



Bridge # 3.2.13

The lost bridge at Salt River

Location

Country Road 80 North shore rd. across Salt River

On this location there was an old protected bridge. This was damaged under a flood and not repaired, but replaced by the bridge shown below.



P3.2.13.1 the new bridge across Salt River.

Proposal for future replacement of old restricted bridges

This bridge is an example of what happens to historical bridges and buildings if the necessary interest and knowledge about the cultural heritage and protection is not created.

Where the protection of old bridges hinders rebuilding, detour of roads or relocation of routes is necessary. The old protected bridge may be left as a cultural mark.

Bridge # 3.2.14

Beliggenhed:

Sunday Market Square Christiansted.

There has been a market at this market place every Sunday many years back in time.



P 3.2.14.A The Sunday market seen from the South. This and the next Picture were taken by Gendarme Andreas Lauridsen 1911 .



P 3.2.14.1C The Sunday market, november 2007.



P 3.2.14.1.B The Sunday market seen from the North. To the left, the old historic well and headwall, can be seen.

Sunday Market Square Restoration Project

Before the reconstruction of the Sunday market place in 2004-2005

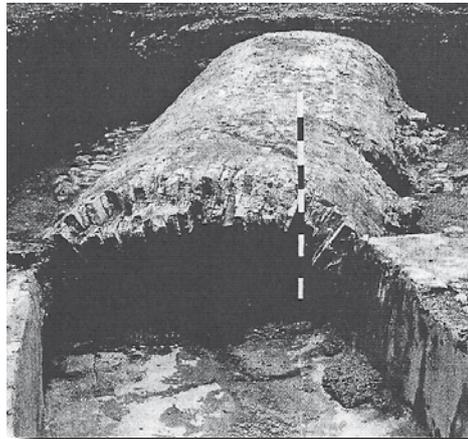
A thorough archaeological investigation was carried out by Soltec International Inc.

This archaeological investigation showed how the rainwater first ran in open guts, later on drains of conks and lately in a bricks culvert.

P 2.3.14.3 Historic culvert. Picture from the archaeological diggings.

Unfortunately the brick-culvert under the marketplaces was not kept, but replaced with a new culvert. However the old headwall and historic well has been reconstructed.

Source: Archaeological Investigation For Sunday Market Square Christiansted USVI Soltec Internationale Inc January 13 2005.



P 3.2.14.2 Drain made of conks.

Under maintenance the old drains have been demolished by mistake and new drains were established.



The new drains leads to this arch.

The headwall is chalked red and the historic well is reconstructed.

P 3.2.13.4 New Headwall and well at Sunday market place.

Outlet with cobbellinet guts of Blue bits.



3.3 Roads Track and pavement in St Croix

In St Croix there is about one hundred miles of good roads. (Kilde: Zabriskie)

Macadam

Macadam see 2.3 conclusion of pavement.

We owe the good roads there to the new and expensive way of paving. The Macadam. This was introduced in the time of Governor Peter von Scholten 1827 - 1848.

P. 3.3.1 Macadamroad at the old sugar factory by Estate Lower Love.



The stones were cut out with primitive tools. This time consuming production may have taken place in St. Croix, but the tools were never found and preserved.

Should tools be found at St Croix, bring it to the historical museum of Whim.

3.3.2 Tools used to crush the stone for Macadam.

Tool to produce Macadam from rock is showing in a local Danishes museum.



Oland stones

The sidewalks or arcades in Christiansted are, to a great extent, built of Oland stones the size of 45 x 45 cm (18 x 18 inches).

The Oland stones are Swedish limestone settled in Ortovisium approximately 450 million years ago. Many great fossils appear in these limestones.

The stones, like the Danish bricks, were shipped to St. Croix as ballast on board the ships that sailed between Denmark and The West Indies.

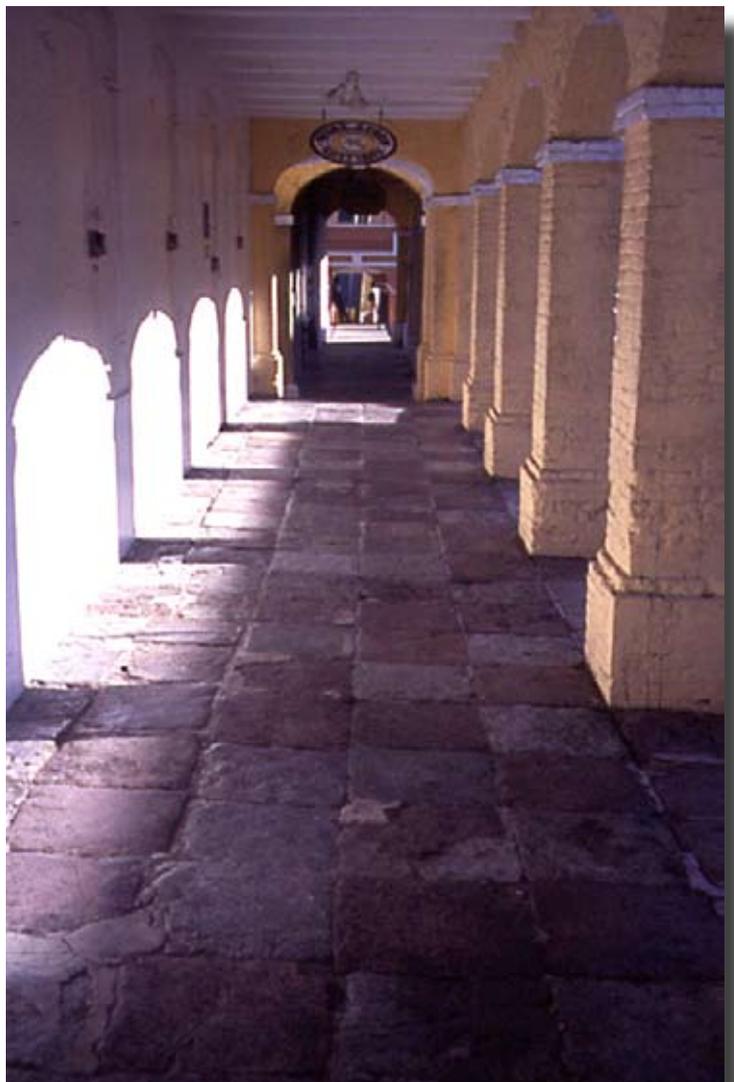
The Oland stones are still sold and used in Denmark.

Repair

The Oland stones should be reused as long as they are suitable to be reorganized. Even if they are cracked or semi crushed, they should still be reused.

Pavement made of Oland stones. The Christiansted arcade appears in an urban plan that allows adding an overhang to the first floor, therefore appearing over the pavement.

P. 3.3.3 Pavement build with Oland stone. The Christiansted arcade exists because of an urban plan that allows building an overhang to the first floor, therefore hanging over the pavement.



Road Track at St Croix

As mentioned in the main conclusion the position of old road and track is difficult to prove.

But in St Croix we have the world's finest registration in the Oxholm map and the Danish rule from 1820.

There are many old road tracks, more or less forgotten and reclaimed by the wilderness. These tracks should be registered and, made accessible to the public in accordance with current legislation, so they could be used as tourist trails.

At Fareham Estate, road nr 62. Southside Rd., an old track and an old bridge can be seen some 100 yard into field. The bridge proves a track of some importance.



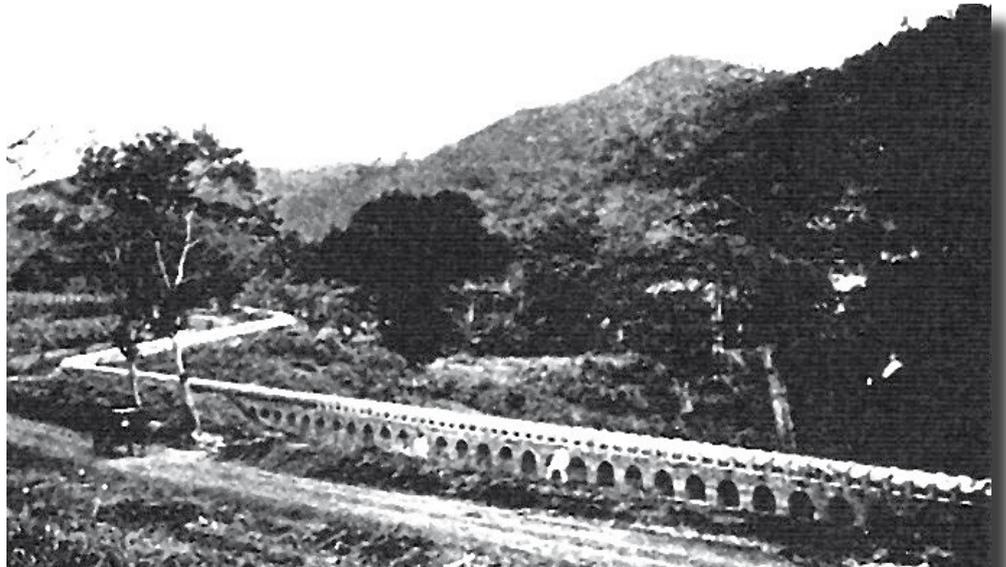
*P 3.3.4 Old Bridge at Fareham Estate.
The concrete extension was built in later to prevent erosion.*

3.4 Aqueduct

Introduction

By Mahogany Road on the West end of St. Croix – an aqueduct was built around 1910. The purpose of this aqueduct was to supply water for irrigation of the sugar fields on the plantation, Estate La Grange, located between Mahogany Road and Frederiksted town.

This outstanding work of engineering is also to be mentioned in this report – to make sure it is remembered and kept alive.



P 3.4.1 This photograph was taken before 1915 by the danish photographer Ovesen.

Historical background of the aqueduct

The aqueduct runs from Estate Jolly Hill along Mahogany Road through the fields of Estate Little La Grange owned by deceased Carl Lawaetz to Estate La Grange owned by G.A. Hagemann.

An Agreement was made between the two Estate owners. Carl Lawaetz sold his rights to the strip of lands on which the aqueduct was built to G.A. Hagemann on Estate La Grange. A clause was made, with the right of buying back the strip of land if the use of the aqueduct ended. This clause has never been executed. (Source; Fritz Lawaetz, Kai Lawaetz and Hans Lawaetz, “The book about G.A. Hagemann” by Poul Vinding, Gads Forlag, 194 2).

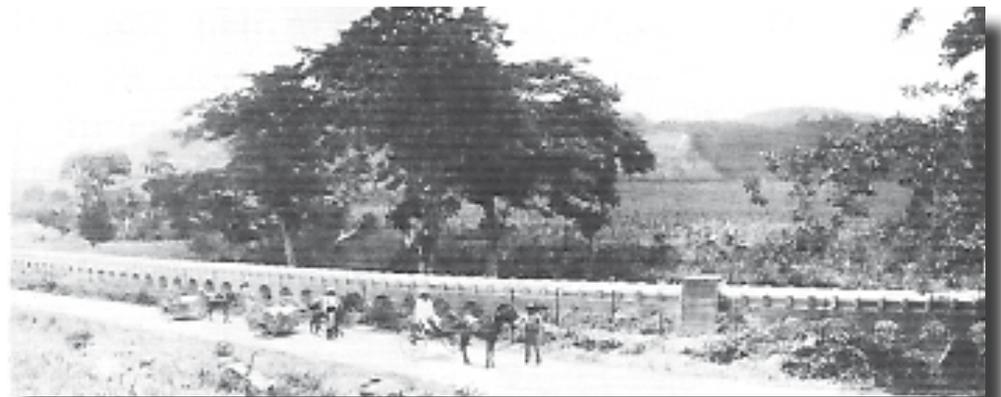
The construction

The aqueduct consists of 45 cm concrete pipes rested on concrete arches cast in situ.

The aqueduct starts on Estate Jolly Hill where a dam was built. This dam was partly destroyed but reconstructed and extended under The New Deal Program in the 1930’s. The dam was partly flushed away in a river and never rebuilt. Parts of the dam and the *overfall construction* are still visible approximately 75 meter from Mahogany Road.



P 3.4.2 The aqueduct as of today.



P 3.4.3 The dam by the reservoir. Photo with kind permission by Erik Lawaetz.



P 3.4.4 The dam by the reservoir photo from 1919.



P.3.4.5 The aqueduct near the dam with Hans Lawaetz, the photo was taken in 2005.

Preservation

It is questionable whether the aqueduct is preserved under US act. If not, the aqueduct is definitely worth preserving.

Ownership

The ownership of the aqueduct should be made clear, since it seems unclear whom the owner is. Parts of the aqueduct must be on the land belonging to the Lawaetz Family Trust Fund, and parts along Mahogany Road are on the area of Right of Way.

Suggested preservation

Bushes between road and aqueduct should be cleared and the section registered. This is to prevent further damage to the pipes and concrete construction.

Landmark Society

The aqueduct is recommended for the St. Croix Heritage Trail Map to awaken the interest of this historical monument to the tourists.

4.0 St. Thomas

- 4.1 Introduction and conclusion
- 4.2 Bridges in St. Thomas
- 4.3 Pavement in Charlotte Amalie
- 4.4 Guts in Charlotte Amalie
- 4.5 Shipyards Hassel Island

4.1 Introduction and Conclusion

Two automobiles were imported to St. Thomas in the early part of 1916. It was expected, in general, that the introduction of the two automobiles would result in great interest in part of the local government and the battement of the roads. It was not yet time for the luxury of automobiles in St. Thomas. (Source: Zabriskie)

This indicates not to look for Danish road and bridge constructions outside Charlotte Amalie in St. Thomas.

As mentioned in 6.2 “Town planning”, the topography complicates the road construction in St. Thomas. This has created the special development with the many streets of stairs. Besides the staircase with the 99 steps, little has been done to make the stair-streets attractive to tourists.

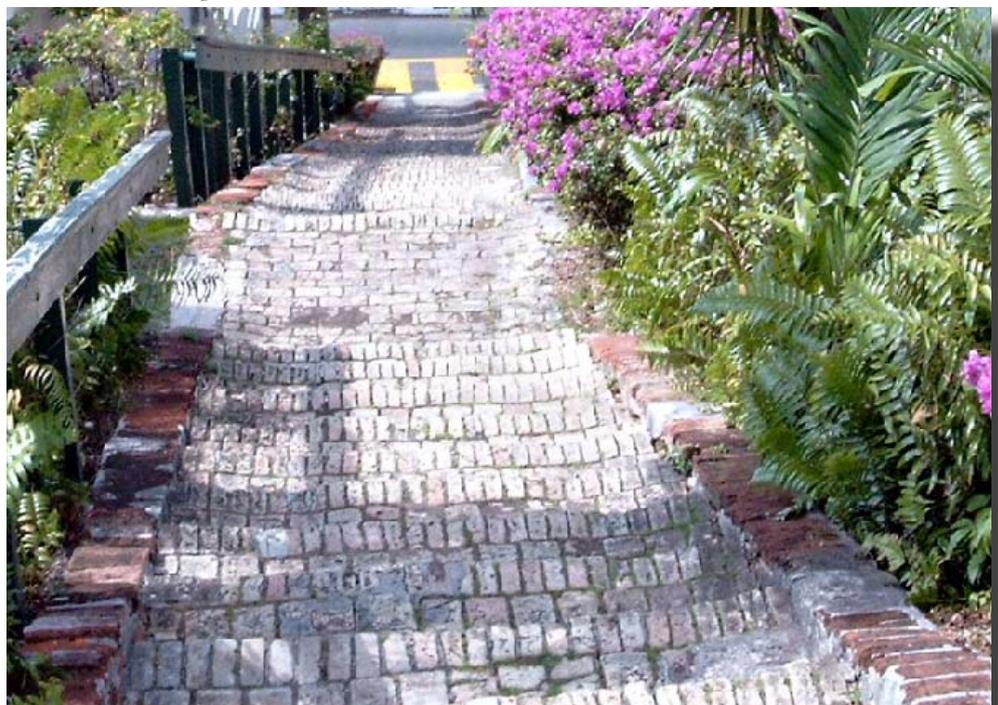
4.2 Conclusion on roads and bridges in St. Thomas

In Charlotte Amalie three bridges over guts are mentioned. For historical reasons, they should be preserved and restored. Even despite the miserable condition of two of the three bridges.

Stair-streets should be made more attractive to the tourists and along with the recreation of walking paths in the guts; interesting hikes for the tourists could also be made.

The pathway surface of the unique blue bits should be preserved and renewed. A training programme/courses could be initiated to educate qualified craftsmen to take care of this job of restoration and development.

P 4.1.1 The 99 steps.



4.2.1 Bridge Kongens Gade Charlotte Amalie

This bridge is 12 meters wide. The photograph below, taken by the Danish Gendarme, Andreas Lauridsen 1911 – 1914, shows the bridge in Kongens Gade. A bridge of this width is rarely seen.

Specification: Double curved bridge leading Kongens Gade over Major Gut in New Town, laid out in 1765.

The curves have a diameter of 2.30 meter including a 90 cm solid centre wall ending in a wall of support to break the water. The bridge has the original parapet of approximately 45 cm of width, including a plastered crown of bricks. The parapet is a good example of how to recreate the parapet of other bridges. At the North East side of the bridge is a staircase.



P 4.2.1.1. Kongens Gade, Charlotte Amalie by Andreas Lauridsen, 1911.

Suggestion of preservation/conclusion

The bridge is in a fair condition and it appears in its full from the North.

Wastewater runs in the guts, this should be cut off soon and lead to the sewer.

The staircase from Kongens gade to Kanal Gut is easy to clean and repair. This will be relevant if the kanal-gut is recreated as a walking path between Kongens gade and Hospitalsgade. (section 4.4 Guts).

P 4.2.1.2 A Little photo shows bridge seen from West. Taken by Sean Krigger.



P 4.2.1.2 B Bridge, leading Kongens Gade in Charlotte Amalie, over Major Gut, as seen from the North. The shrubbery hides the staircase to the left.





P 4.2.2.1 Bridge by Grønnegade and Kommandantens Gade oven vandet.

4.2.2 Bridge Kommandantens Gade Charlotte Amalie

Location

Grønnegade and Kommandantens Gade oven Vandet.

Description

Single curved bridge of bricks with a radius of approximately 2.5 meters /7.5 ft. The bridge appears as a circle segment with 3.7 meters /11 ft. free space of width at the bottom of the gut.

The bridge is in a very poor condition and the parapet is not the original brick construction, but a defect wall of concrete-stone.

Suggestion of preservation/conclusion

The bridge, the gut and the surrounding park have not been kept in a condition worth preserving.

Since St. Thomas and Charlotte Amalie have only a few old bridges, this curved bridge should be repaired and preserved.

The bridge itself needs a detailed examination to find out if the bridge is still capable of handling the load of the traffic.



P4.2.3.1 Kurvehanksbuet bridge over Savanne Gut. As seen from the North.

4.2.3 Bridge Savanne Guts Charlotte Amalie

Location

Bridge over Savanne Guts by Savanne Social Centre .
(The place is called London) Charlotte Amalie.

Description

Bridge built of Danish standard bricks. The bridge is made as a Kurvehangsbue/Danish Arch.

The bridge has been extended to the South, without further concern about the original architecture of the prior bridge.

The parapet is completely missing.

Suggestion for preservation/conclusion

The bridge is unique in its shape build as a kurvehangsbue.

The northern part of the bridge can still be preserved after general reparation.

A parapet should be recreated. The Southern part, on the other hand, is difficult to recreate. The unsuccessful extension might be camouflaged.

The suggestion is to build a staircase to Savanne Gut, along with the reparation of the bridge. The Gut can be used as a walking path into the valley towards the North.

Proposal

Savanne Guts could be used as a local path from the bridge to the ravine. A staircase is needed from the ravine to the gut.

4.3 Blue Bits Pavement in Charlotte Amalie

Blue bit is a local basal stone of volcanic origin. The stone is cut from a local quarry. It has beautiful even surfaces, which gives a unique pavement especially known in Charlotte Amalie.

Suggestion for preservation and conclusion

Blue bits pavements are unique and should be preserved.

All pedestrian areas should be paved with this solid pavement and in this way improve the impression of the town.

Education

In the U.S.V.I. there are self-taught craftsmen, who master the technique of laying Blue Bit pavement. These craftsmen should have the opportunity to attend courses to learn more about materials and the production of the right type of mortars, etc.

It could be taken into consideration whether the VIDA project could be extended to cover courses of this nature in St. Thomas.

P 4.3. Blue bits pavement in Charlotte Amalie.



4.4 Guts in Charlotte Amalie in St. Thomas

Introduction and Conclusion

The importance of drainage has been taken into consideration on the islands, so the rainwater from the heavy tropical storms is quickly lead away from the streets. The English word "gutter" is used for the ditch leading the water away, running along the curb. Curb and gutter.

In the U.S.V.I. "Guts" or "Gutter" cover everything leading water on the surface away, whether it is from a gutter, ditch or stream/watercourse.

Three main gutters cut through Charlotte Amalie. The eastern Major-Gut cuts through Kongens Kvarter in the interesting development from 1765 called New Town (section 6.2 "Town Planning").

Kanal Guts or Kommandantens Gut defines the border between Kongens and Dronningens Kvarter.

Savanne Guts is the most Western and defines the border between Dronningens and Kronprinsens Kvarter.

The Guts in Charlotte Amalie cuts their way like green wedges through town, and was previously used as a system of a footpath.

It is assumed that the Guts are public owned and under the jurisdiction of the local Government. Thereby, the demand to remove the illegal super structures is possible and a free passage through the Gut is created.

This path can be part of a tourist route, where you take tourists from the historic area around Government House through Kongens Kvarter .

The wastewater running into the Gut should be led to the sewer.

*P 4.4.1 Kanal Gut.
Foto by Sean Krigger.*



4.4



Picture P 4.4.2 Staircase from Kanal Gut to Hospitalsgade /Hospitalslinien.

Blue bits gutter

In front of Doctor Hansen's house in Kongens Gade is a gutter formed as a trapeze made with blue bits and with Flensborg stones at the bottom of the gutter .

These elegant guts should be preserved just like the blue bit pavements. The craftsmen who is to carry out this restoration should have some training in the techniques.

P 4.4.3 Shows the guts along Kongens gade.



Stairs over the guts

Old stairs built, in Danish brick, can still be seen.

Outside the protections area of Charlotte Amalie, this fine old buildings detail deserves protection, too.

P 4.4.4. Old Stairs over the guts in Kings street.



P4.4.5 King Street, postcard by gendarme Andreas Lauridsen 1911. To the left Dr. Hansens House. At the bottom of the street is the Bridge over Canal guts. The Kings Street end up in the welcome Arms staircase at Kings Street Nr 1. The old building has been owned by Generalgovernor Peter von Scholten. This stair should be restored, too.

Shipyards at Hassel Island /

"Creque Slip" or St Thomas Marine Railway, Hassel Island

The shipyard is an outstanding industrial-plant with a main role in communications between Denmark and the Virgin Islands

History and background

The Hassel was until 1865 connected to St. Thomas with Hassel as a Peninsula. That year a canal was built. The island is named after James Hassel the owner of Estate Orkanhullet (Hurricane Hole) and a shipyard there.

The St Thomas Marine Railway Company was founded in 1841 on 6 acres purchased from Mr. Hassel.

The Warf was built at the North end of Hassel Island opposite of St Thomas Harbour

Specification

The slipway is 18 meter (60 foot) wide and 48 meter long (156 foot).

It is stone-paved with Iron rail to carry the cradle, hauling 200-ton ships to and from the water and repair-shop at Hassel Island.

Preservation

The Pier and slipway could easily be cleared of bush and debris.

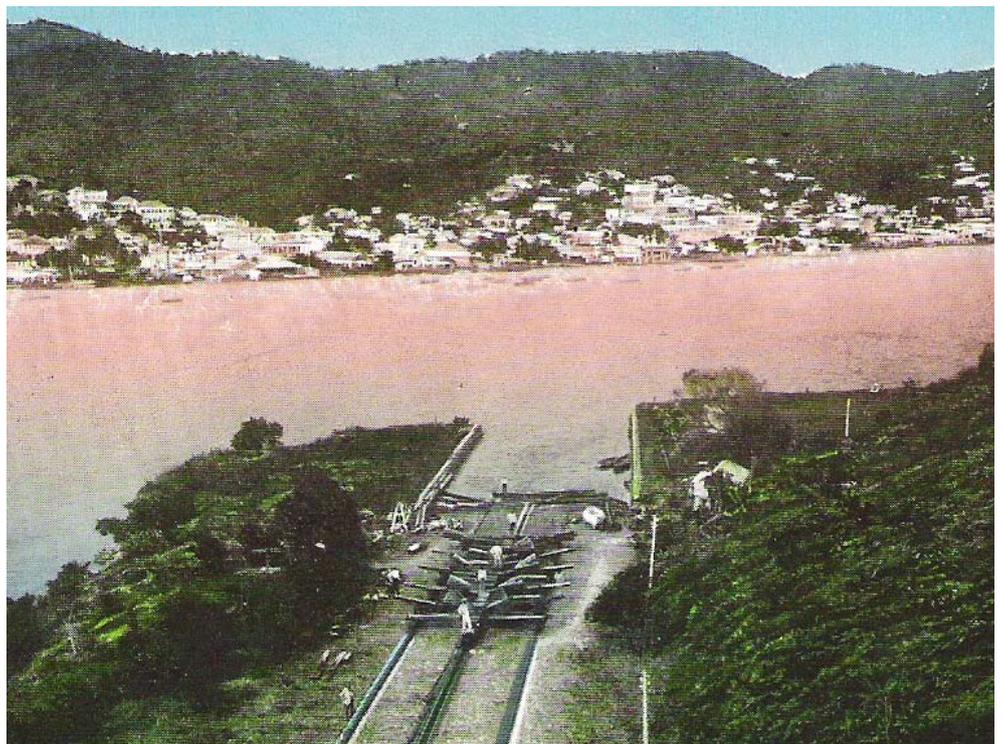
The Warf slipway together with the winch house could be a very interesting tourist site.

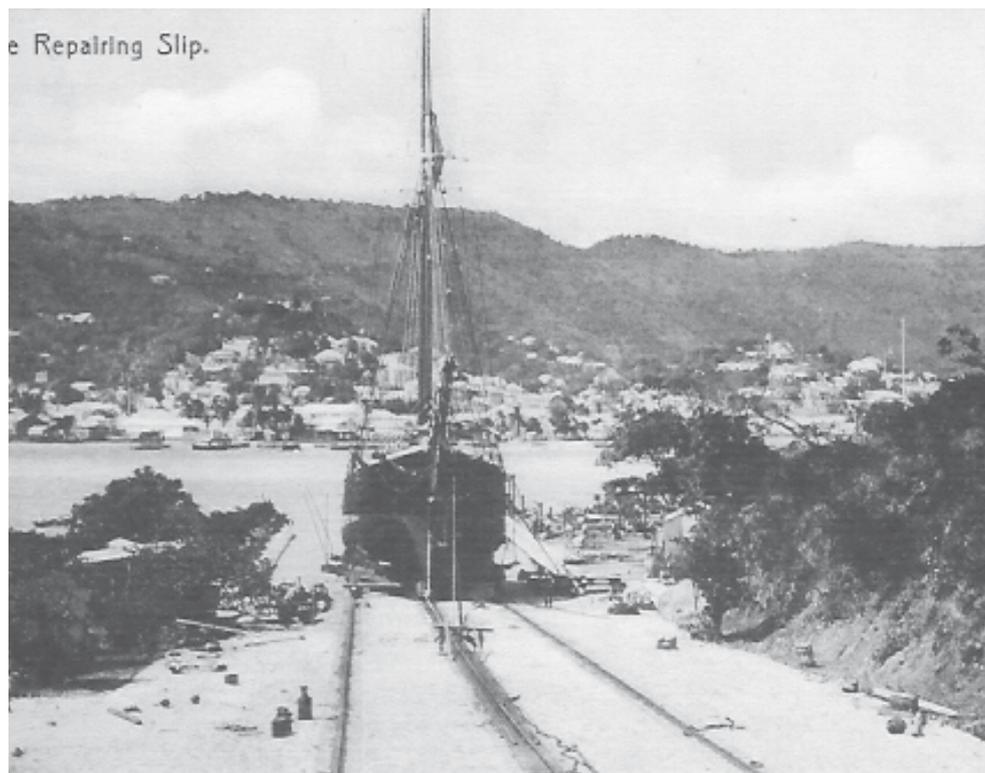
Source: National register of Historic places Inventory July 1977.

Department of the Interior, National Park Service.

Edith deJongh Woods Creque's Marine Railway.

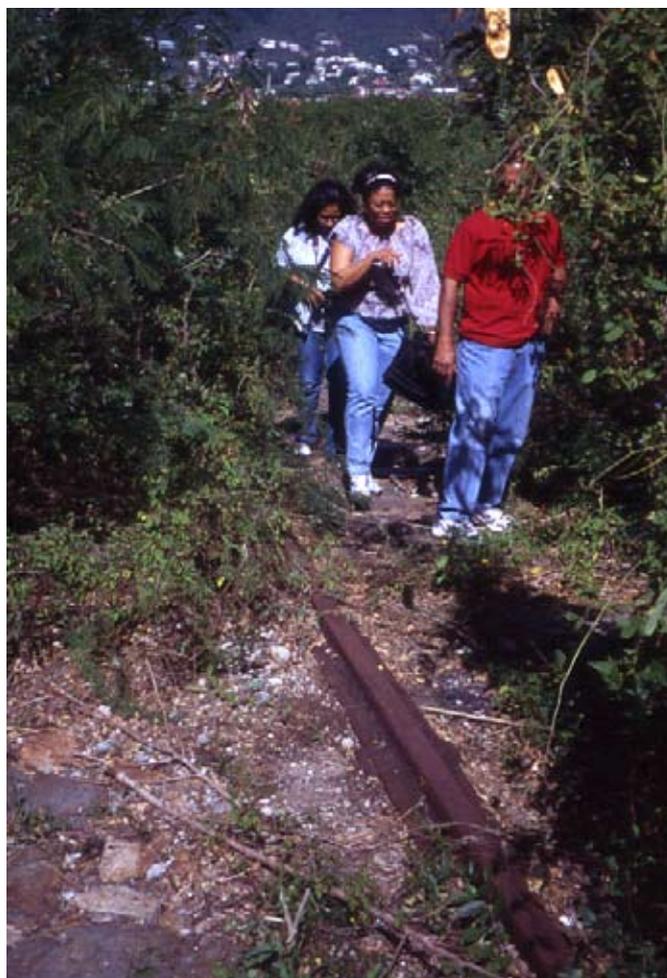
P 4.5.1 Creque Slip Hassel Island





Old postcard showing Creque Slip, by Andreas Lauritsen.

Marine Railway as it looks today.



5.0 St Jan/John

Index St John:

- 5.1 Introduction and conclusion
- 5.2 Bridges
- 5.3 Roads and track

5.1 Introduction and conclusion

The topography of St John gives little opportunity to build bridges. Only one old bridge has been found for this report.

The author has been told about a bridge, somewhere in the jungle, but he did not find this bridge.

St John has the only known road in the USVI; there is properly build as a paved road, made from Blue bits of high quality and costs.

Historical research

The Road at Anneberg is subject to detailed technical examination of the road construction and a follow up with studies of archives, to find out when and why this expensive road was build here.

Tourism

St John has a good deal of old roads and track claimed back by the jungle. If the tracks are registered and marked, some very interesting tourist tracks could be developed.

P 5.1.1 Danish road at Anneberg.



Bridges of St. John**Bridge # 5.2.1****Location**

Centerline, the bridge crosses the guts into the field, between Adrian and Hammer Estate.

Specification

The Bridge is a single curved arch built in Danish normal brick.

The radius of the arch is 75 cm (2 ft 6").

Free space below the arch, 55 cm (2 ft).

With of the bridge 8 meter (26 ft).

Suggestion for preservation

The bridge is the only old Danish brick-bridge in St John.

The Bridge has no function today.

The bridge lay within ROW and the Highways Dept. have to look after and maintain this old bridge.

Bridge # 5.2.2**"The hidden Bridge"**

In the areas of Mahobay and Annely farm, according to local historians, there is a bridge, no longer in use.

The author of this report did not find this "The hidden Bridge".

Somebody else may survey and register this bridge as a supplement to this chapter about bridge in St John.

P 5.2.1 Bridge seen from the North East.



5.3

Road and tracks at St John

Near Anneberg Estate the only known paved road is found
 The US National Park Authority, has here open an section of this old road.
 The road is paved with raw cut Blue bits.
 The road was built with height skill and with heigh baring capacity.



P 5.3.1. Shows a detail of the Blue bit paved road at Anneberg Estate.



P 5.3.2. Sign from National Park Authorities.

Old hidden trail

In an attempt to find “The Hidden Bridge” the Author found an old road track on the Westside of the ravine going from Centerline before Kings Hill and ending up in the old sugar mill of Maho Bay Estate.

This track was cut into the rock and very steep.

It could be use as a tourist track.



*P 5.3.3 Seashore at Cinnamon Bay
where the old track along the coast is assumed to have been.*

Coast track

Without doubt there were tracks along the coast in ancient times leading to the old settlements.

As mentioned it is rather difficult to confirm the exact age of road and tracks.

The Author is an Engineer and not a historian, but he assumes that already in ancient times people used these tracks along the coast.

Excavation by National Park authorities has proven this theory.

6.0 Traffic and Street Names

6.1 Driving on the left

6.2 Streetsigns

6.3 Townplanning

6.1 Driving on the left

In the U.S.V.I you drive on the left. It is the only place in America that you do so. This goes back from the English occupation of the islands under the war of Napoleon. The English commandant introduced driving on the left.

As early as 1758 the Chief of Constable in Copenhagen introduced driving on the right. It only included Copenhagen, though, and was not a general law for the entire country of Denmark. The law of driving on the right – had probably not reached the islands yet.

The islands were occupied twice. First, in 1801 after the battle in Copenhagen (Slaget ved Reden). The islands were occupied by the English marines and the Danish officials, including military governor Casimir von Scholten and his son, Peter von Scholten, were taken as prisoner of war to England. They were released quickly here after.

In 1807 the Englishmen once more, attacked Copenhagen, and the Danish fleet is captured. Again, The West Indian Islands were occupied by English troops, and they were occupied until after the Congress in Vienna in 1815.

In Vienna it was decided that Denmark should have all its possessions, except Norway, back. After the return of the islands to the Danish reign no one was concerned about the Englishmen's introduction of driving on the left.

At the transfer in 1917 the Danish administrative rules for the islands continued. That explains the driving on the left in the islands today.



P. 6.2 Street signs in Christianssted.

6.2 Street Names of the US Virgin Islands

Street names shown on the next page are the names in general use all over the Islands.

Danish names

The Danish alphabet has two letters, unknown to Americans, i.e. Ø ö and Æ ä. These letters give some problems in American spelling, and are not used in this report in order to prevent confusion in copying.

Street signs. In the year 2000, the Danish Vest Indian Friendship (Dansk Vest Indiens Venner, or DVIV), raised funds to donate new street signs. These signs are made in the old Danish way on enamelled signs.

Where streets have one name in Danish and one name in English, both names are written on the signs.

Appendix 6 contains the meaning and explanation of street names in Charlotte Amalie.

Street Names of the US Virgin Islands

This list below shows street-names in general use all over the Islands

The Danish names with translation of the street names.

Danish names	Meaning
Gade	Street
Strade	Lane /Alley or Narrow Street
Torv	Square /Market
Vej	Road/Way
Bjerg Gade	Hill Street
Bredgade	Broad Street
Dronnings Gade	Queen's Street
Dronningens Tvargade	Queen's Cross Road
Gronne Gade	Green Street
Kongens Gade	King's Road
Kongens Tvargade	King's Cross Road
Hospitalsgade	Hospital Street
Kompagni Gade	Company Street
Markeds Gade	Market Street
Norre Gade	North Street
Nye Gade	New Street
Ostergade	East Street
Prinsessegade	Princess Street
Prinsensgade	Prince Street
Strandgade	Shore or Beach Street
Vester Gade	West Street

6.3 Town Planning

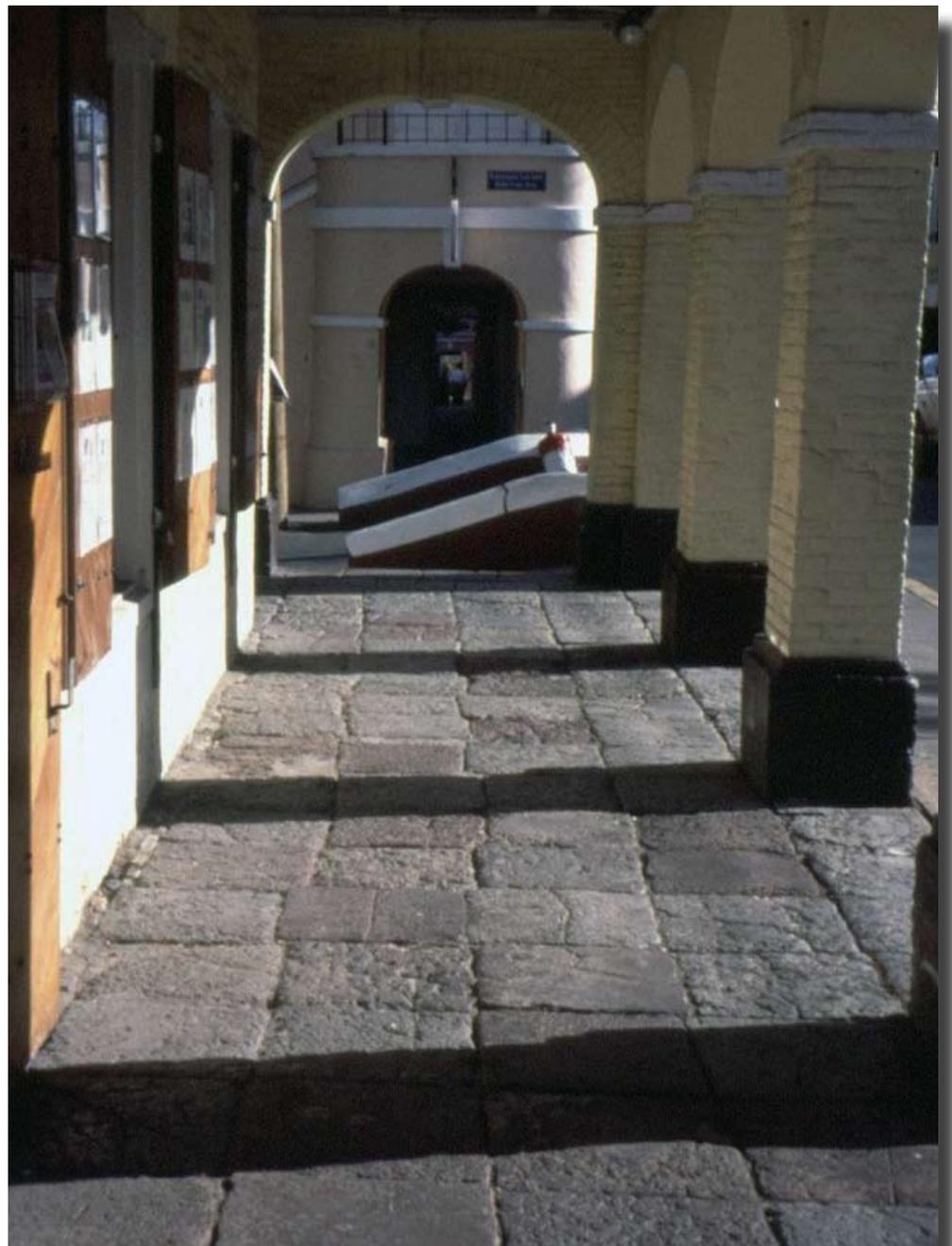
Towns build under orders, were build with streets in a straight line crossing each other in right angles. Preferably oriented North /South or East /West. In the U.S.VI the coast-line determined the orientation of the streets.

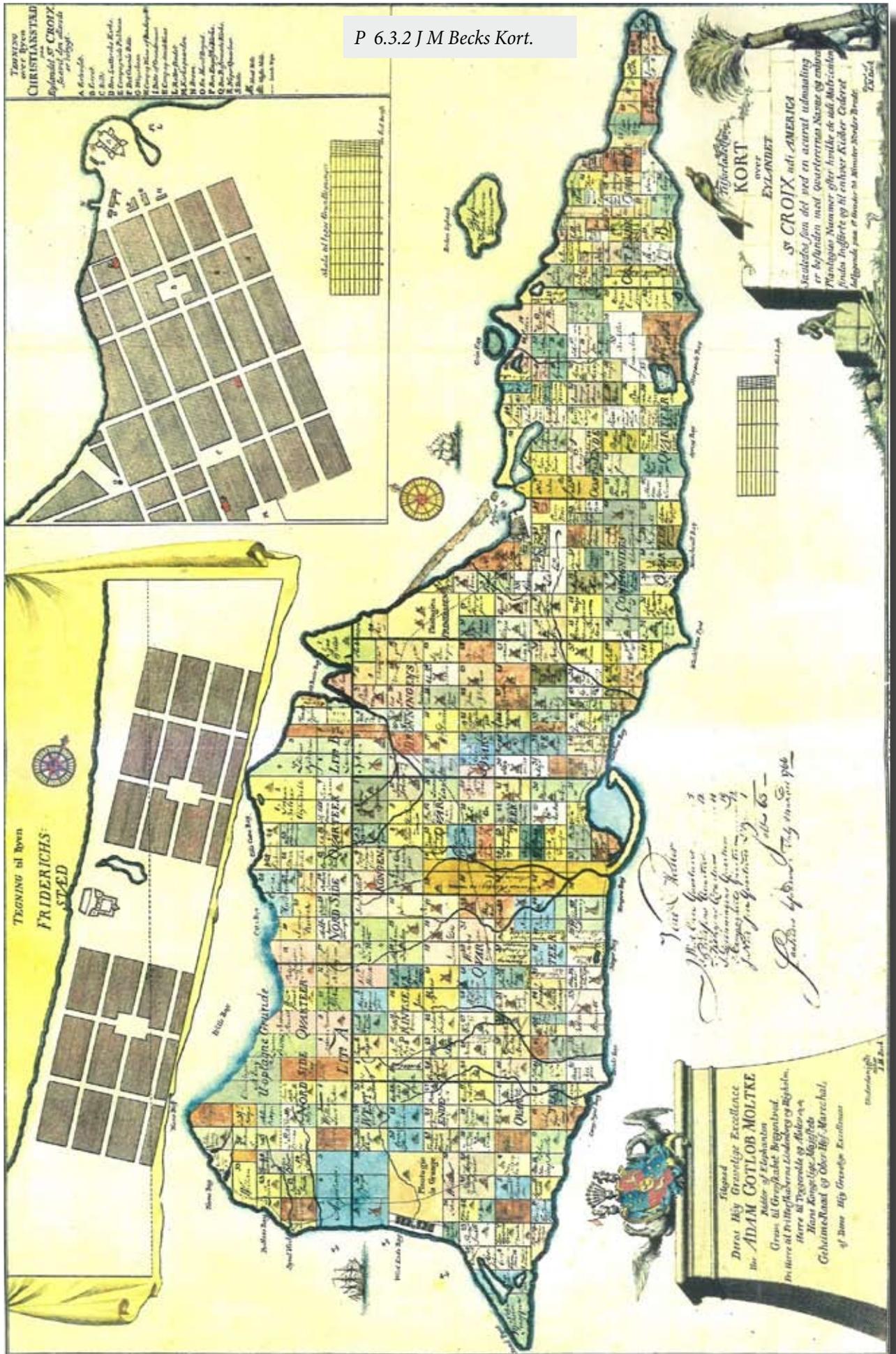
The towns of St. Croix were built under an absolute monarch, Christian VI, the danish king at the time. Christiansted was named after him and established in 1734 by Frederik Moth of Norway (Norway was under the Danish flag at the time). Frederik Moth built Christiansted after the same principles as the capital of Norway, Christiania, now Oslo. (Source; Nina York, 2005)

On the map by J. M. Bech (next page)from 1754 you see his suggestion for a town plan for Christiansted and Frederiksted. His plans were never used, though.

P. 6.3.1 Pavement build with Oland stone. The Christiansted arcade exists because of an urban plan that allows building an overhang to the first floor, therefore hanging over the pavement.

See chapter3.3.





P 6.3.2 J M Becks Kort.

Charlotte Amalie, St. Thomas

The topography with the steep mountains makes a regular town planning difficult. A more arbitrary line parallel with the coastline and several stair- streets is a result of this.

An example of the arbitrary laid out streets is in Vimmelskaflet (Back Street). Its bended line gave it its name. (appendix 6, Street Names)



P 6.3.4 99 Steps today. Photo by Arne Rosenkvist.

Three Quarters

The administration divides Charlotte Amalie into three areas. To the East is Kongens Kvarter. In the centre Dronningens Kvarter, and Kronprinsens Kvarter to the west.

In 1764-65 two new subdivisions was planned. Savanne was one of them and it was planned to be a residential area for the growing freecolored population. Savanne is located in Kronprinsens Kvarter West of Denmark Hill. The other subdivision was called New Town or East Savanne and is located to the East of Kongens Kvarter. This area was planned to be regular streets and blocks around Major Gut.

(Source: Three Towns, DK Copenhagen, 1980).

7. Appendix

Appendix is a supplement to the rapport for registration of bridges and road in the former Danish West Indian Island

Copyright. As for the report thee Appendix can free be used for non-commercial purpose, with specification of source.

Appendix 1. Ciriculum for the author

Appendix 2. Law (to be prepared)

Appendix 3. Biography of Ejnar Kern

Appendix 4. Materials (to be prepared)

Appendix 5. Bridges recommendation to The Heritage trail st Croix

Appendix 6. Street Names of Charlotte Amalie

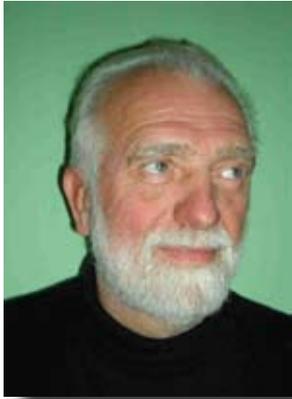
Appendix 7. Reconstruction of Bridge Face (to be prepared)

Danmark 2007

Arne Rosenkvist

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**Appendix 1.
Curriculum Vitae of the
author**



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Name:	Arne Rosenkvist
Profession:	Engineer
Date of Birth:	5/16/40
Nationality:	Danish
Key Qualification:	<p>Mr. Rosenkvist has more than 30 years of experience within highway and bridge construction, contract management and postgraduate education. In these years Mr. Rosenkvist has held relevant positions in Denmark and abroad on bridge and highway projects as Construction Supervisor, Contract Manager, Quality Controller and Chief Soils and Materials Engineer. During this periode Mr. Rosenkvist has gained experience in working with World Bank projects in Africa/Kenya and Philippines.</p> <p>Worked as Associated Professor (senior lecturer) at the Building and Construction University in Aarhus teaching in highway construction, supervision and maintenance. He also teaches in management, building materials, geology, hydrology and ground water, water supply and environmental relations.</p> <p>Due to his teaching experience he has since 1978 been planning and co-ordinating training programs for overseas engineers and technicians.</p> <p>After the cold war he has been to East Europe to assist the new country to change from Russian tradition to European norm and rules.</p> <p>Guest Professor in Sleswig and Flensburg in the northern part of Germany. This part of Germany played an important role in trade with the Virgin Island.</p> <p>Mr Rosenkvist speaks German too.</p>
Education:	<p>Mr Rosenkvist is Full qualified bricklayer</p> <p>Supplied with Degree of civil engineering from The Technical University, Aarhus, 1965.</p> <p>Commissioned as officer I the Danish Royal Engineer cops and served 25 years as first lieutenant in the Danish Army reserve.</p>
Professional Memberships:	<p>The Danish Society of Engineers (IDA)</p> <p>The Danish Geotechnical Society</p> <p>Danish Road Historian Society</p> <p>Local History Society</p> <p>Danish Society for Conservation of Nature</p>

**Appendix 3.
Biography of Ejnar Kern**

Born April 23, 1877 Copenhagen, the son of cashier at Burmese & Wain's.

Bachelor of Laws, Niels Nielsen Kern and Wife Vilhelmine Wandel.

Bachelor of Engineering 1901.

1901 –1905 in the employ of engineer G R Oellegaard, Hellerup/Copenhagen. Worked mainly with surveying and mapping tasks, road planning, interior installations such as WC and bath and the construction of machine houses and dwellings.

1905 he went to USA on a grant and worked for New York Central and Hudson River Rail Co's construction department, among other things, with the refurbishment of the central station of New York city and for Pennsylvania Rail Roads East River Division with tunnel building under Hudson River.

1906 to 1907 he was an assistant engineer with H S Jandon a civil engineer in Thomasville Georgia. USA. Here he dealt with surveying of small towns and road construction as resident Engineer.

1905 and 1907 he applied for the post as housing inspector in St Croix but was refused. 1908 the post fell vacant aging, and Ejnar Kern was engaged April 1. 1908

As housing and road Inspector in St Croix, due to his experience from Georgia. The hiring committee pointed out that Ejnar Kern has directed construction project that involved controlling "up to 200 Negroes", that he can stand the tropical climate, and that he speaks and writes English.

He became Chairman of the road Commission and the committee for the new road system in St. Croix. However, after the repairer work following on a storm in st Croix in September 1910 led to budget exceeding, he was dismissed and had to accept a claim for damages. He work continued as an assistant engineer in St. Croix on Kongshøj (mid-land) Church, Dansk Vestindien Plantation Company and for Bethlehem sugar factory. From July 1912 to October 1913 when he left the Islands for Denmark.

1913-1921 He was employed as city and harbor engineer at Rønde Bornholm

1921 to his retirement I 1947, he held the position of Chief road inspector in the county of Ribe.

He died in 1953



*Ejnar Kern and his fiancé.
Photo taken at St.Croix.*

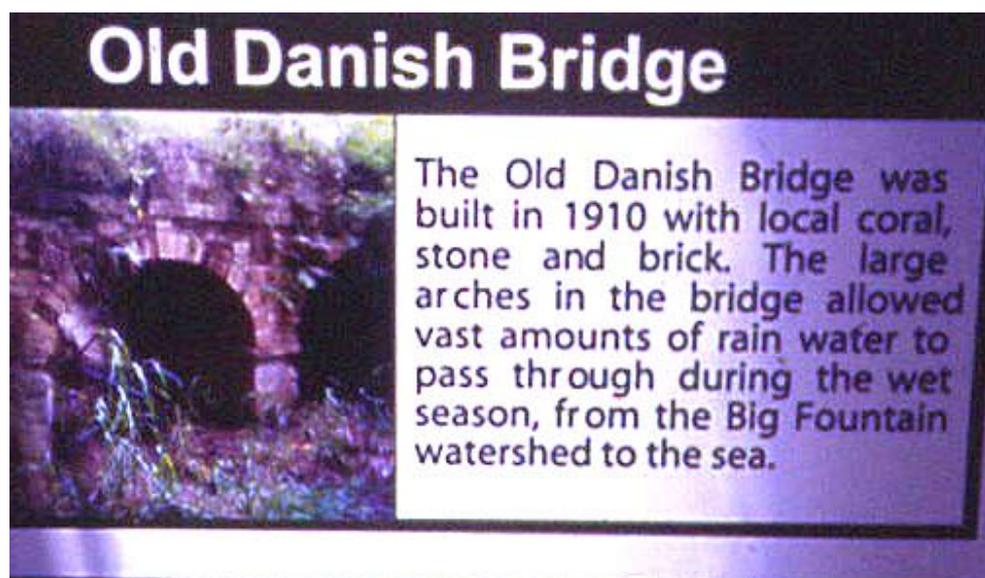
Appendix 5. Bridges recommendation to The Heritage trail St Croix

The following 7 bridges are proposed to be included on the St.Croix Heritage Trail Map

- 3.2.1 Bridge on Centerline Road, Estate Lower Love, VI Department of Agriculture
- 3.2.4 Bridge on Country Road 63 by Hams Bluff Road at Estate Prosperity Hall
- 3.2.5 Bridge on Country Road 63 Hams Bluff Road by Estate Sprat Hall
- 3.2.7 Bridge on Country Road 58 at Creque Dam Road by Estate Mount Victory
- 3.2.8 Bridge on Mahogany Road by Estate Orange Grove
- 3.2.9 Bridge on Country Road 82 East End near Altona grove
- 3.2.10 Bridge to Moravian Cemetery at Friedensthal Christiansted

P 3.1.1

The board by the bridge on Centerline Road build by the Danish road inspector Ejnar Kaern.



Appendix 6. Street Names of Charlotte Amalie

Many Islanders have asked me the meaning of the Danish street names that are still on use at the Islands. To fulfil a promise, I have translated the names, the meanings of the street names.

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Danmark 2005

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Danish names. The Danish alphabet has two, for American, unknown letters Ø ö and Æ ä. These letters give some problems in American spelling, and are not used here in order to prevent confusion in copying.



Street names of Charlotte Amalie, St. Thomas

Charlotte Amalie was officially named in 1691 after the Queen of Denmark.

The town was divided into 3 administrative Kvarterer/ Quarters

The streets listed below are within the separate Quarters

Streets in Kongens Quarter

Danish names	English names	Meaning
Adel Gade		Noble Street
Bjerge or Bjerg Gade		Hill Street
Bredgade		Broad street
Dronnings Gade		Queen's street
Dronningens Tvargade		Queens Crossroad
Grønne Gade		Green Street
Fredericksberg Gade	Fredericks Hill Street	Berg is the German word for hill.
Fortets Strade	Fortress Lane	
Hospital Gade	Hospital Street	
Kanal Gade	Major gut	Canal Street
Kirke Strade	Church Lane	
Kommandant Gade	Bunker Hill	Commandant Street
Kommandant Gade over Vandet	Garden Street	Commandant Street over the water. (here up over the Gut)
Kommandant Tvargade		Commandant Crossroad
Kongens gade	Goverment Hill	The King's Road
Kongens gade	Education Street	The King's Road
Kongens Tværgade		The King's Cross Road
Lille Taarne Gade		Small Tower Street
Norre Gade		North Street
Torvet Gade		Market Street
Prindsens gade		Old way of spelling Prindsens = Prince
Prindsens Gade	Glass Bottle Allay	Prince Street
Prindsens Gade	Goat Street	Prince Street
Store Taarne Gade		Great Tower Street
Store Tvaer Gade		Great Cross Street
Tolbod Pladsen		Customs House Square
Toldbod Gade		Custums House Street
Torvet Gade		Market Street

Street names of Charlotte Amalie St Thomas Dronningens Quarter

Danish names	English names	Meaning
Annanas Gade		Pineapple Street; Annanas is the danish and swahili word for pineapple.
Bjergen Gade		Hill street
Bredgade	Broad street	
Dronningens gade	Main Street	Queen's Street
Grønne Gade		Green Street
Krystalgade	Synagogue Hill	Two possibilities: 1. The synagogue in Copenhagen is placed in Krystalgade. 2. The first private home with glass windows and crystal chandeliers in Charlotte Amalie - the Crystal Palace, was in this street.
Lille Gade		Small Road
Lille Gronne Gade		Small Green Street
Nordside Vei		Norths Side Way
Norre Gade		North Street There are two "Norre Gade". One by the Lutheran Church and another one at Goververment Hill in Dronningens Quarter.
Nye Gade		New Street
Nye Strade		New Lane
Palme Strade		Palm Lane
Raadets Gade		Council Street
Paradises Gade		Paradise Street
Snegle Gade		Snail Street
Stille Gade		Silent Road
Store Gronne Gade		Great Green Street
Store Tvargade		Great Cros Road
Trumpeter Gade		Trumpeter Street
Vester Gade		West Road
Vimmelskafet	Back Street	Streets bend like an old drillhandel are in Denmark named Vimmelskafet



Vimmelskafet in Copenhagen.

Street names of Charlotte Amalie St Thomas Kronprinsens (Crown prince) Quarter

In Kronprinsens Quarter you find the “Savan – plain”.

This area was subdivided in 1764-65

To accommodate the free-colored population.

Danish names	English names	Meaning and background for the streetname
Borger Gade		Citizen Street
Brother´s Street		Hill Street
Brond Strade		Broad street
Casimir Plads	Rothschild Francis Square/ Market Square	Casimir von Scholten was Military Governor and father to Peter von Scholten
Frigang		Free Lane
Gamle Gade		Old Street
Gamle Nordside Vei		Old North Side Way
General Gade		General Street
Haabets Gade		Street of Hope
Jode Gade		Jew Street (By the Jewish Cemetery)
Kronprinsens Gade		Crown Prince Street
Kronsprindsens Tvar Gade		Crown Prince Crossroad
Kanal Gade		Canal Street
Levekoj Strade		(Flower) Stock Street
Skylark Street		Lorke Gade
Nye Nordsidevei		New Northside Way
Nye Tvar Gade		New Crossroad
Pile Strade		Willow Lane
Prinsesse Gade		Princess Street
Regjerings Gade		Government Street
Regne Gade		Rain Street
Rosen Gade		Rose Street
Butcher Street		Slagter Gade
Silke Gade		Silk Street
Smal Strade		Narrow Lane
Store Strade		Great Lane
Torvets Strade		Marketplace Lane
Tulipan Strade		Tulip Lane

