



Auditor General's Report on the Beef Island Bridge Project



Office of the Auditor General
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I. INTRODUCTION

1. The original Beef Island Bridge (the Queen Elizabeth II Bridge) is a seven span single lane bridge which was constructed in 1966 for the purpose of facilitating travel between Tortola and Beef Island. After two decades of use the structure began to show visible signs of deterioration. In 1989 Chief Minister, Honorable H L Stoutt commissioned a structural survey of the bridge to determine its serviceability, or replacement, if needed.

II. IDENTIFYING THE PROBLEM

The bridge was examined by two agencies which independently concluded that there was an immediate need to address the advanced deterioration that the structure had undergone,

2. A visual site inspection was carried out on 21 April, 1989 by the Public Works Department (PWD) by land and sea. The survey indicated that the concrete supports on both sides of the structure were intact but the pillions (concrete filled steel piers) were rusted above sea level with similar conditions seen below the water. The steel beams which support the concrete slab of the driving surface had maintained their shape, but the web thickness (thin pieces of metal connecting two thicker parts) was showing signs of deterioration.

3. In addition, the wooden section of the bridge, which was designed to open up for vessels to pass through also showed defects. Many of the four by four hardwood beams were showing cracks in the grains of wood. There was a difference in elevation between the concrete and wood surfaces which caused vehicles to drop slightly at the beginning of the wooden section and resulted in other lateral movements of the bridge. It was also observed that the bridge appeared to have a slight deflection which it was thought may have been caused by the increased weight on the bridge over years of use.

4. Based on these findings the Public Works team recommended replacement of the structure, with a new bridge designed to accommodate two lanes of traffic and an increased load capacity to accommodate heavy equipment. They further recommended that the existing bridge remain in place and attention be given to maintenance and visual appearance while plans for a new bridge are developed.

5. Approximately one year after the PWD survey the British Development Division engaged the UK firm of consulting and structural engineers, Sir Alexander Gibbs and Partners, to perform an in-depth structural analysis of the bridge.

6. The report by Sir Alexander Gibbs and Partners (the Gibbs Report) which was submitted in March of 1990 agreed that action was needed to address the deterioration of the bridge. The Report however recommended that no action be taken to provide additional traffic capacity, and that the existing bridge be refurbished to arrest the areas of deterioration and to ensure serviceability in the short to medium term and that consideration be given to re-decking the lifting span. It also recommended that traffic flows over the bridge and development on Beef Island be monitored on an annual basis, and that the structure be reassessed at the end of a ten to fifteen year period. A cost of \$299,566 was estimated for rehabilitative works.

7. The recommendations of the Gibbs report were not well received by senior government officials as both the Assistant Secretary of the Development Planning Unit and the Acting Chief Engineer of the Public Works Department expressed the view that it understated the future use of the structure and failed to take into consideration the importance of the bridge as a gateway to the BVI and its relevance to upmarket tourism. The Acting Chief Engineer acknowledged that the quantification of such factors was not realistic but remained convinced that a replacement bridge was the best option.

III. FORMULATING A SOLUTION

a. *Indecision as to whether to repair or rebuild bridge resulted in substantial delays before project implementation.*

8. After the inspections which were performed the progress of the project lagged, due in part to the absence of funding and indecision as to which action would best address the situation. Eighteen months after the Gibbs Report was issued the Executive Council resolved that the Government would apply to the British Development Division for an amount of \$299,566 to renovate the Queen Elizabeth II Bridge.

9. One year later, in September 1992 the Public Works Department commenced the tendering process by compiling prequalification data from local and regional contractors A shortlist of firms, to be invited to tender for the rehabilitation work, was prepared and forwarded to the Ministry of Communications and Works in December 1992. The Chief Engineer also proposed to invite these contractors to include proposals for the design and construction of a new double span bridge in addition to their submission for rehabilitative works.

10. No further action was taken on this matter until March 1995 when a condition survey was performed by PWD to assess and record the level of deterioration at the bridge. The recommendation which arose from this inspection was for a new two-lane bridge to be built by 1996 as a replacement for the existing structure. In June 1995 a draft paper was prepared for the Executive Council in an attempt to bring forward the building of a new bridge to 1996, (which was estimated would cost \$2-\$3 Million). It is unclear whether this paper was ever presented to the Council.

11. Notwithstanding PWD's recommendation to replace the bridge, efforts in pursuit of the rehabilitative works continued. In correspondence dated 28 September 1995 the Development Territories Regional Secretariat issued approval for the rehabilitation project. This provided a cost ceiling of \$600,000 and a compulsory disbursement date of 31 March 1996.

12. An open invitation to tender for the rehabilitation works was issued in August 1995. This resulted in eight submissions which were opened on 9 November 1995. On the recommendation of the Public Tenders Committee, the Executive Council gave approval for Island Construction to be awarded the contract for the rehabilitative works in the amount of \$482,719.77. Subsequent to which the DTRS Secretariat was notified and permission sought for commencement of works.

13. In view of the length of time which had passed since the Gibbs Report, the British Development Division thought it prudent to re-engaged Sir Alexander Gibbs and Partners to perform an assessment of the current situation and prepare an addendum to their initial report.

14. Upon conclusion of this second survey, the firm of Alexander Gibbs and Partners determined that the bridge had deteriorated significantly since 1990 and strong consideration should be given to replacing the bridge instead of repairing it. In their addendum to their final report, received in January 1996, they stated that if the present condition (deterioration) existed in 1990, replacement rather than refurbishment would have been recommended. The Report also advised that any remedial work would extend the life of the structure, but not significantly, and the Government should plan to have a new structure in place by 2005. It estimated that the refurbishment would now likely cost an additional \$200,000 to complete.

15. As a result of the above, the Executive Council via memo no. 96/97 dated 12 March 1997 advised that plans for the construction of a bridge linking the Island of Tortola to Beef Island be prepared and that steps be taken to identify and secure relevant funding to enable early commencement of construction. Council further advised on 2 April 1997 that the project be handled by means of a “design and build contract”.

16. Contractors were invited to bid for a design and build contract via Public Tender notice No. 8 of July 1997. The requirements stipulated in the tender included a two lane, three span structure, positioned as near as possible to the existing bridge, along with approach roads and an electronic toll booth. The request for tender also required that the new bridge design be able to withstand earthquakes and average hourly wind speeds of 90 mph.

17. Nine bids were received and opened by the Public Tenders Committee on 26 August 1997. These were subsequently submitted to the Public Works Department for evaluation. Of the nine proposals only four were considered for award of contract. These were Mirsand\ Conde\ Mouchel, Gimrock Construction Inc, BWC Contractors Limited and ASTA Engineers Ltd.

18. The contract was awarded to Mirsand\Conde\Mouchel on 27 February, 1998 for the sum of \$2,372,504.05. The Public Works Department concluded that their expertise was more than the project required.

IV. ADOPTING A NEW BRIDGE DESIGN

Indecision as to the type of bridge design to be adopted resulted in delays in implementation and significant cost increases.

19. From the outset, delays were caused by indecision on the bridge design and specifications to be adopted. The format which was proposed in the invitation to tender was a 3-span, 70 meter conventional bridge.

20. Conde, in addition to submitting a proposal for a three span conventional bridge also submitted an alternative proposal for a cable stayed bridge which they subsequently stated could be built at a cost of \$2.75million. The latter design had certain structural engineering and cost maintenance advantages. The contract with Mirsand\Conde\Mouchel was signed on 9 April 1998 for a single span cable stayed bridge.

21. After the contract was signed the Contractor proposed to the Ministry a change in the design of the bridge from a "cable stayed" to a "sail" bridge. The sail bridge design was said to offer slightly lower construction costs, would potentially greatly reduce lifetime maintenance costs, and it was thought that this would provide a landmark structure which suited the BVI as the "sailing capital of the world". No formal authorisation for this change was issued by Executive Council. Nor is there any correspondence on file from the Ministry or the Public Works Department directing the Contractor to change the design. Notwithstanding, the preliminary design for a sail bridge was prepared and submitted by the Contractor in September 1998. Subsequent to this the Contractor submitted a comparison briefing paper which presented the Sail Bridge as having substantially greater construction costs.

22. The plans were reviewed by the Employer Representative who in a report submitted to the Ministry on 4 December 1998 commented that use of the sail design provided greater surface exposure to the wind and additional weight to an already heavy structure. The report also suggested that the design be adjusted to accommodate a higher wind speed and be resubmitted. The design was amended to accommodate wind speeds of 180mph with three seconds gusts and a revised cost estimate of \$4,388,710 was submitted by the Contractor on 11 February 1999. This amount was exclusive of land acquisition costs, project management fees and road works.

23. This unexpected high estimate had the effect of derailing the process and returning it to the beginning design phase. At a meeting with the Chief Minister on 18 March 1999, the Contractor was asked to revert to the original tendered design and prepare cost proposal for the conventional three span bridge, amended to withstand wind speeds of 180mph with 3-second gusts and an increase in the overall length to 83.5 meters. This proposal was submitted to Director PWD on 03 May 1999 for works which totaled \$3,349,694. A formal notification to proceed was issued to the Contractor by the Ministry in mid June 1999. The contract amount was subsequently changed to \$3,668,350 in June 1999 then finally to \$3,720,350 one month later.

24. Preliminary designs for the conventional bridge were submitted in early July 1999 and approval was given later that month to begin the detailed designs. These were partially submitted in mid August 1999 and the remaining documents, amendments, addendums and details followed over a period of the next four months. The final design was approved on 31 March 2000, almost two years after the contract with Conde had been signed. Construction of the new bridge began in April with an extended deadline for completion of 15 December 2000.

25. After a decision was taken to revert to the conventional bridge design Conde submitted a request to be compensated for the design work performed on the sail bridge. The Ministry agreed to cover the costs and requested that an estimate be submitted. This was done and an amount of \$250,000 was agreed by the parties. The Ministry decided that this amount would be assimilated into the new revised costs of the bridge. The amount was subsequently increased to \$444,721 but no documentation was found to explain this increase.

26. The project suffered a two year delay because the Government was unsure of which design to adopt. In an attempt to obtain what it perceived to be the best deal the Ministry agreed to the sail bridge design without first allowing its technocrats to assess the implications of this change.

V. EXECUTION OF PROJECT

The inability of the project management team to function as a cohesive unit coupled with delays in the acquisition of land and shipment of beams conspired to delay the completion of the structure.

Project Management Team

27. The key persons/agencies responsible for moving the project forward were the Ministry of Communication and Works, the Public Works Department, Project Manager, Employer's Representative and Contractor. One of the primary weaknesses of the project was the failure of these individuals/agencies to function together as a team.

28. The Ministry of Communication and Works was the primary executing agency. It was responsible for bringing the project on stream and for facilitating developments by assisting the other parties where necessary in overcoming administrative and other obstacles. Specifically, the Ministry was responsible for ensuring the parties access to the property required for the project. Its failure to deliver this on a timely manner resulted in substantial costs to the Government. The Ministry's decision to endorse the sail bridge design without first seeking technical expertise from the Public Works Department may have contributed to the delays and cost increases.

29. The Public Works Department (PWD) was the Government agency most directly involved with the project. Its job was to take steps for the engagement of the Project Manager, Employer's Representative and Contractor all of whom reported directly or indirectly to the Director of Public Works. He was also responsible for briefing the Ministry on the progress of the project and any problems impeding the works. The Department seemed unable to push the project forward and was sometimes omitted or bypassed when important decisions affecting the project were made. In the later stages of the project the PWD's role in the project was more subdued.

30. A project manager is responsible for planning, controlling and administering the overall project design and construction programme in a manner best suited to the objectives of the Government while maintaining a fair relationship with all parties involved. Because of the pivotal role of the project manager this individual should ideally be one of the first persons assigned to the project. This was not the case with the Bridge Project. After the Contractor and the Employer Representative were contracted steps were taken to have a Project Manager put in place. Mr Angus Watson, a Public Works Department's Design and Planning Engineer, who had been working with the project since 1998 was recommended for the position in a letter dated 1 December 1999 but was never appointed. He acted as Project Manager for the period 1998 until his resignation which took effect in September 2000. The project continued to completion without an appointment of a Project Manager.

31. The contract for the Employer's Representative (ER) was awarded in September 1998 to a joint venture between Advance Engineering of Washington and Caribbean Basin Enterprises. The ER's job was to review the design submissions of the Contractor, provide value engineering, manage construction of the project and recommend improvements to the Government and the Contractor.

32. The ER was assigned eight months after the design and build contract was awarded. As a result the review of the first design submission was delayed. In addition, for the period September 1998 - March 2000 the ER did not maintain any staff on location. Instead information was sent to the Washington office for review and occasionally site visits to the BVI were made. The absentee manner in which the ER performed its duties may have marginalized the ER's role by promoting a situation where the Contractor became accustomed to reporting directly to the Ministry rather than through the ER.

33. Throughout the life of the project there were complaints and comments from the Contractor about the performance of the Employer's Representative. This began when the Contractor's design engineer expressed disappointment at the lack of substance displayed in the Employer's Representative's review report and surprise appeared to know about the project. This was followed with claims that the ER consistently failed to review documents within the stipulated contract time and failed to respond to submissions for payment.

34. Our perusal of the volumes of files generated over the period of the project revealed little in the form of advice and guidance from the Employer's Representative to the Government throughout this sometimes turbulent project.

35. The Contractor was engaged to design and construct the new Beef Island Bridge. It was on the Contractor's unsolicited proposals that the Government was enticed into the changing in bridge design from conventional to cable stayed to sail. Their proposal for the Sail bridge design misrepresented the financial and other implications that the change would have on the project. When that course of action eventually collapsed the Contractor took no responsibility for the delays caused in part by this misrepresentation but instead issued a claim for extension of time with cost for the late instruction to revert to a conventional bridge. This claim was submitted notwithstanding the Government's agreement to cover the costs involved in designing the Sail Bridge. Similarly, the Contractor sought to take advantage of each setback experienced by the project. Their constant complaints, issuing of claims and threat of legal and later industrial action, eroded the relationship between themselves, the Employer and the Employer's Representative.

36. As a way forward a Beef Island Bridge Project Committee was formed in June 1999. The purpose of this Committee was to ensure that the project proceeded in a timely manner with the least amount of expense. The members of the Committee were Ag Permanent Secretary C&W, Ag. Director PWD, Financial Secretary, Project Manager (designate), Head of the Development Planning Unit and Chief Physical Planning Officer. The Committee functioned satisfactorily in the resolution of minor problems associated with the project. But major issues such as getting the Contractor to comply with the seismic requirements for the bridge continued to present problems for the Government.

Land Acquisition

37. The Contractor was instructed to commence the Design and Build of the New Beef Island Bridge on 25 May 1998. However, despite repeated requests for permission to move onto site, authorisation for right of access was not granted until 7 March 2000.

38. The entire effort to acquire land developed in spurts. The process of determining land needs and began in February 1997 when the Permanent Secretary of Communications and Works instructed the Way-leaves officer to "move right away to obtain plans of all lands on both islands that might be affected" by the construction of the bridge. On 29 January 1998 one day after Council decided to award the contract to Conde, the Minister sent a memorandum to his Permanent Secretary in which he instructed "to avoid any prolonged delay in the execution of this work, please update me on steps being taken with reference to Way-leave work done on this site to date."

39. Three months later in March 1998) correspondence from the Public Works Department advised that there was no confirmed location for the new bridge. It was not until December of the same year that correspondence was received from the Director of Public Works outlining the land areas required for the project.

40. A portion of parcel 16 was required for road realignment on the western (Tortola) side of the bridge. This presented a challenge because of demands made by the owner Mr Frankly Dailey who insisted on being given the right to develop the small strip of land which would fall between the existing road and the proposed road. After much negotiation the required land was compulsorily acquired by the Government in November 2000. Mr Dailey was paid \$166,357.00 on 9 March 2001 and provision was made to allow him the right to develop the small enclosed strip of land provided that this satisfied a number of stipulated terms.

41. Parcel 17 Block 3640B which was owned by Development Corporation of the Virgin Islands was required for road realignment on the eastern (Beef Island) side of the bridge. An agreement for the sale was signed on 20 July 1999 and the property was purchased for the sum of \$168,481.79.

42. The area of land which was required for the Contractor's use was approximately 10,000 sf of Parcel 22 Block 3640B on Beef Island which was owned by the Development Corporation of the British Virgin Islands. The process of acquiring this property seemed to gain impetus only after the Director of Public Works complained to the Permanent Secretary C&W in mid May 1999 about the lack of progress on the land issues and the effect that this was having on the project. There is nothing on file to indicate when the owners were first contacted but letters of consent were received from representatives of the company one month after the Director's complaint. Arrangements for use of this property were not completed until March 2000 when the lease was signed.

43. When asked whether the delay in obtaining access to the property was due to reservations on the part of the owners, the agent of this company responded that his clients were "very accommodating" when asked for access and that the delay could not in any way be attributed to them. He further observed that the rents stated in the lease agreement and in the agreed terms of the extension had not been paid by the Government. Examination of the Treasury records indicate that neither the \$100.00 nominal amount nor the monthly rents of \$1,000.00 were paid by the Government.

44. The Contractor was granted access to the site twenty-three days before the final design plans were formally approved. However, because of the difficulties in the design phase, an

earlier access to the site was not likely to have resulted in an earlier construction. Therefore, notwithstanding the problems with the land issues, the delays caused by the slow progress in the design phase would have been the major impediment to implementation of the project.

45. Cracks in the Bridge Structure 45. With the construction of the bridge nearing completion, cracks were observed in various parts of the bridge by members of the public. The design engineer for the Contractor quickly asserted that the cracks were of no structural significance in the service performance of the bridge.

46. The Employer's Representative engaged an independent engineer on 8 November 2000 who examined the bridge and agreed with the assessment of the Contractor's engineer. He, notwithstanding, expressed the view that the bridge (at the time of inspection) was not up to the standard of a new installation which should not have visible flaws and should not reflect extensive repairs. He recommended that either the cracks be repaired by the Contractor or the work be rejected and beams and pier caps with no cracks be installed.

47. The contractors were required to repair the cracks at no cost to the Government and were warned that any similar damage in the future would be rejected.

Final Shipment of Beams

48. Finally, failure on the part of the Contractor to deliver the final ten beams in October 2000 resulted in a later assigned date for completion of the bridge. The Contractor, in a letter dated 13 December 2000, claimed that the delay was due to congestion at the port in Santo Domingo which rendered him unable to secure a suitable time slot for shipping. He stated that attempts were being made to have the beams shipped during the first week in January 2001. He then released his workers on site for an "early Christmas break" from 15 December 2000.

49. The beams were shipped in early March 2001. One month later the Contractor submitted a claim requesting payment for 146 days (including the non-productive period from December 2000 to March 2001), claiming that the delay was Employer's failure to pay the Contractor his entitlements."

Bridge Completion

50. The Bridge was completed on 14 May 2001. It was inspected on 14 and 17 May by the Government's representative and the Director of Public Works and a take over certificate was issued to the Contractor on 18 May 2001. Because the Contractor failed to complete the works by 15 December 2000, liquidated damages of \$60,000 was deducted from contract sum and the demolition of the existing bridge was taken out of the contract leading to another reduction of \$76,000.

VI. CONTRACTOR CLAIMS

The project was attended by persistent claims and threats of litigation and work stoppages by the Contractor.

51. Claims Extension of Time with Costs 51. In March 1999 the Chief Minister received a letter from the Contractor's attorneys claiming that their client had incurred significant expenses in maintaining plant, equipment and personnel in a state of readiness (for some 646 days) in order to proceed with construction as soon as they were notified to do so. The letter claimed these expenses to be in excess of \$150,000 per month and that the Contractor was forgoing substantial income that would be generated if the plant equipment and personnel were put to use elsewhere rather than being placed on standby for use on the project. These concerns would later result in a \$4.24 million dollar claim by the Contractor.

52. One month later, the Contractor submitted four claims for extension of time with costs for losses allegedly sustained due to substantial delays incurred on the project. These claims were for late hand over of the geotechnical investigation, late change of wind loading, non-availability of land for use of contractor and default of employer to pay sums due in a timely manner. Two additional claims were submitted by Conde in March 2000 for late instruction to design and build a conventional 3 span bridge, and the late appointment of the Employer's Representative.

53. The Government on 10 April 2000 granted an extension of time to the Contractor but without acknowledgment of the costs claimed by Conde.

54. After repeated requests for documentation to substantiate the six claims, Conde, on 26 July 2000, submitted correspondence detailing costs of \$4,024,075.00. These claims were rejected by the Ministry on the ground that there was no legal basis for them. Unfazed, the Contractor submitted another six claims for extension of time with cost over the period August 2000 to May 2001.

55. 55. On 5 January 2001 Conde submitted two notices to the Ministry advising that the company would suspend work on the project. The first notice arose from a dispute over the certification of payments on the extension of time claims. Conde asserted that at least \$2,327,200.00 of the amount claimed could be verified by the Employer's representative as payable. The second suspension notice was issued because an application for payment of retention moneys in the amount of \$93,008.75 had not been certified.

56. The Permanent Secretary responded to the notices by reminding Conde of its various breaches of contract (including failure to provide the last ten beams for the bridge, failure to complete repairs to cracks on the underside of the bridge, failure to complete the project by 15 December 2000 and failure to return his workmen to the site) and invited the Contractor to revoke the notices. The notices were suspended by Conde who offered a more conciliatory approach and requested that "high level" discussions be held with a view to resolving the matter. The Permanent Secretary agreed to arrange such a meeting and no further attempts were made by the Contractor to enforce the notices.

57. Representatives of the Government and the Contractor met on 29 March 2001 in an attempt to resolve differences with respect to the claims. This proved futile and steps were taken to have the matter adjudicated.

Adjudication

58. After unsuccessful attempts by the parties to set up an Adjudication Board, Conde applied to the International Federation of Consulting Engineers (FIDIC) to nominate a suitable individual. On 23 October 2001 the General Manager of FIDIC nominated and appointed Gwyn Peredur Owen to act as sole member of the Dispute Adjudication Board. The Contractor submitted their referral notice claims for remedy totaling \$5,960,193.00 on 5 November 2001 and the Government sent its response eight days later.

59. Presentations were made to the Adjudicator by representatives of both sides on 6 and 7 December 2001. The decision was rendered on the 5 January 2002 in which the Adjudicator awarded the Contractor a total of \$3,575,226 in remedies. The largest portion of this award was in the amount of \$2,398,574 for claims 1-6 and appeared to be based primarily on the unavailability of site to the Contractor. The Adjudicator concluded that the respondent with knowledge of the scale of costs involved, proceeded to deny the Referring Party access to the site until March 2000 and did not elect to ...mitigate or terminate the Contract..."

60. In addition the Arbitrator found that the Contractor had suffered hardship in relation to claims 8 and 9 and awarded an amount of \$723,596. The Contractor was also awarded an amount of \$202,716 to compensate for lost overheads and profit on casting beds which had been reserved but not used in Santo Domingo.

61. In addition, because of the findings on claims 8 and 9 the Adjudicator extended the completion date of the contract (with costs) to 14 May 2001 and ruled that the Contractor was entitled to recover the liquidated damages of \$60,000 which had been deducted by the Government for late completion of the project. These and other awards are shown in Appendix IV attached.

62. The Government on 26 April 2002 paid a sum of \$3 million on the adjudicated award of \$3,575,226.

VII. PROJECT COMPLETION

Many aspects of the project remained incomplete after the bridge was handed over by the Contractor to the Government in mid 2002.

Approach Roads

63. Despite the Government's take over of the Bridge in May 2001 the project remained incomplete. The approach roads, toll booth and demolition of the old structure were still to be addressed.

64. The road work and toll booth for this project was initially included as a part of Conde's contract for a sum of \$140,640.00. This was removed and a decision was taken to have the work performed by independent contractors. An estimate of costs prepared in 2001 for the bridge project included provision for roads of \$1.4 million and a toll booth of \$50,000. It also included \$50,000 for roadside furniture and road markings. The preliminary drawings for the road designs were prepared and submitted by Conde in July 2000 and final drawings were approved by the Ministry on 21 December 2000.

65. The road works commenced in earnest in March 2001 with the hiring of excavators and truckers. Treasury records indicate that between the period 15 March 2001 and 11 June 2002 a total of \$600,990.00 was spent of site excavation and trucking. This was done using several different operators and without any formal contracts.

66. For construction of the roads four petty contracts were issued for a total of \$148,609. Payments totaling \$92,408 were made to the four contractors and suppliers of cement and asphalt were paid directly by the Public Works Department in the amount of \$81,750.

67. The road work was completed in June 2002, and the bridge was opened to the public that same month. Notwithstanding the opening of the bridge to the public issues of the toll system and demolition of the old structure remained to be addressed.

Toll System

68. Alternative proposals have been looked at and evaluated by the Ministry of Communication and Works but none have been implemented. Presently the old system remains in place with a \$0.50 toll charge per vehicle (this may vary depending on the collection officer present). Unfortunately payment of tolls are not strictly enforced and members of the public have taken to ignoring the unobtrusive toll hut on the side of the road and its occupant.

Demolition of Bridge

69. Use of the old bridge was discontinued in June 2002 and the approach roads were barricaded to prevent traffic from accessing the structure. Correspondence on file indicate that plans are in progress to have the structure removed. But little detail was available to indicate how and when.

VIII. COSTS

70. The New Beef Island Bridge project began with the Chief Engineer's cost estimate of \$825,000 in 1990 and grew into an eight million dollar project.

71. The contract to design and build the bridge structure was awarded for a total of \$2,372,504.05 however at the time of writing the total disbursements made to the Contractor alone totaled \$6,682,002.16. The amount spent on the entire project was \$8,314,143.49. These costs are incomplete as provision will have to be made for a new toll system and the demolition and disposal of the existing bridge. The costs as at October 2002 were:

| DESCRIPTION | AMOUNT |
|---------------------------|-----------------|
| Design and Build Contract | \$ 6,682,002.16 |
| Employer’s Representative | 285,636.47 |
| Land Acquisition | 334,838.77 |

| | |
|-------------------------------------|------------------------|
| Road Alignment & Construction | 820,406.40 |
| Professional Services (Surveys etc) | 122,793.00 |
| Miscellaneous | 25,492.79 |
| Vehicle | 20,000.00 |
| Adjudication Fees and Expenses | 22,974.00 |
| Total | <u>\$ 8,314,143.59</u> |

IX. CONCLUSION

72. This project highlights the need for better planning of Government projects prior to implementation and more effective co-ordination and management of the same. The New Beef Island Bridge Project, suffered greatly from indecision, procrastination and the absence of effective management. This led to the numerous delays, persistent uncertainty and ultimately profound cost increases.

X. RECOMMENDATIONS/ LESSONS LEARNED

- i. Project Manager should be assigned to each major project at an early stage.
- ii. Project should be adequately planned and major details such as specifications and land requirement should be determined before the project is put to tender.
- iii. Legal title should be obtained for property required for Government development before commencement of works.
- iv. Where changes are to be made to the specifications or design of a project the Government's qualified technocrats should be consulted before decisions are adopted
- v. Government regulations and policies with regards to contracts should be complied with. Petty contracts should be issued for all works in excess of \$10,000 and works which are estimated to cost in excess of \$60,000 should be tendered.

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APPENDICIES

APPENDIX I

DESIGN & BUILD NEW BEEF ISLAND BRIDGE - CONTRACT SUM

| Item | Description | Original Contract | Revised Contract | Difference |
|------|---|-------------------------|------------------|-----------------|
| A | Bridge Design | Included in items below | \$ 444,721.00 | |
| B | Bond/Insurance | \$ 25,000.00 | \$ 33,135.00 | \$ 8,135.00 |
| C | Testing, traffic management | \$ 18,000.00 | \$ 22,560.00 | \$ 4,560.00 |
| D | Plant, labour, shipping and contractor's facilities | \$ 1,259,314.00 | \$ 1,595,180.00 | \$ 335,866.00 |
| E | Abutments | \$ 318,582.00 | \$ 410,310.00 | \$ 91,728.00 |
| F | Piers - piles and pile caps | \$ 111,592.00 | \$ 349,680.00 | \$ 238,088.00 |
| G | Deck | \$ 386,881.00 | \$ 454,584.00 | \$ 67,703.00 |
| H | Bearings, joints, finishings etc | \$ 112,495.00 | \$ 185,180.00 | \$ 72,685.00 |
| I | Roadworks, toll building, demolition | \$ 140,640.00 | | |
| J | Demolition | | \$ 100,000.00 | |
| K | Additional storage and handling of deck beams | | \$ 125,000.00 | \$ 125,000.00 |
| | TOTAL | \$ 2,372,504.05 | \$ 3,720,350.00 | \$ 1,347,845.95 |

Source: Ministry Communications and Works

APPENDIX II

**BEEF ISLAND BRIDGE PROJECT
LAND REQUIREMENTS**

BRIDGE AND ROADS (Land Acquired)

| PORTION OF LAND | OWNER | ACTION | COST |
|-------------------------------|--|--------------------------------|-------------------|
| Parcel #20 - 687.98 sq meters | Crown | No action required | 0.00 |
| Parcel #16 - .5559acres | Franklyn Dailey | Compulsorily Acquired Nov 2000 | \$166,357.00 |
| Parcel #17 - .563 acres | Development Corp of the Virgin Islands | Purchased June 99 - May 2000 | \$168,481.79 |
| Total Cost: | | | 334,838.79 |

BASE CAMP (Land Leased)

| PORTION OF LAND | OWNER | ACTION | COST |
|-----------------------------------|--|--|--|
| Parcel 22 - Block 3640B 10,000 sf | Development Corp of the Virgin Islands | Leased: March 2000 Lease Renewed: March 2001 | Nominal Fee\$100 Monthly rental of \$1,000 |

Sources: Public Works Department, Ministry of Communications and Works, Ministry of Natural Resources and Labour, Treasury Department

APPENDIX III

**CLAIMS FOR REMEDY
SUBMITTED BY THE CONTRACTOR**

| DESCRIPTION OF COMPLAINT | | ACTION REQUESTED |
|---------------------------------|--|------------------------------|
| Claim 1 | Late handover of Geotechnical information | Extension of time with costs |
| Claim 2 | Late change of design wind loading requirements | Extension of time with costs |
| Claim 3 | Non availability of site | Extension of time with costs |
| Claim 4 | Default of Employer to pay sums due under the contract | Extension of time with costs |
| Claim 5 | Late change of design details | Extension of time with costs |
| Claim 6 | Late appointment of Employer's Representative | Extension of time with costs |
| Claim 7 | Disruptions caused by Hurricane Debby | Extension of time with costs |
| Claim 8 | Late design instruction for approach roads | Extension of time with costs |
| Claim 9 | Delays due to failure of Employer to pay sums due under the Contract | Extension of time with costs |
| Claim 10 | Deletion of demolition of old Queen Elizabeth II Bridge | Additional Payment |
| Claim 11 | Recovery of deduction by Employer of Liquidated Damages | Additional Payment |
| Claim 12 | Recovery of costs due to prevention of demobilisation | Additional Payment |
| OTHER CLAIMS | | |
| | Losses of overheads and profit on casting beds in Santo Domingo | Additional Payment |
| | Costs of claims and submissions and Legal Costs | Additional Payment |

Sources: Public Works Department, Ministry of Communications and Works

APPENDIX IV

**REMEDIES AWARD
BY DISPUTE ADJUDICATION BOARD**

| DESCRIPTION | CONDE CLAIMED | DAB AWARDED |
|---------------------------------|--------------------------|------------------------|
| Claims 1-6 | 3,032,605.00 | 2,398,574.00 |
| Claims 7-9 | 941,101.00 | 723,596.00 |
| Claim 10 | 52,000.00 | 26,000.00 |
| Claim 11 | 60,000.00 | 60,000.00 |
| Claim 12 | 182,550.00 | 0.00 |
| Loss of Overheads: Casting Beds | 1,404,937.00 | 202,716.00 |
| Submission Costs | 287,000.00 | 149,840.00 |
| Contribution to DBA Costs | 0.00 | 14,500.00 |
| | <u>5,960,193.00</u> | <u>3,575,226.00</u> |

Source: DBA Notice of Decision