

Foa Causeway

KA PROJECT REFERENCE: 13276T
INDUSTRY: Civil Infrastructure - Bridge
DISCIPLINES: Civil Engineering, Structural Engineering, Maritime Engineering, Design Engineering, Project Management, Construction Verification

PROJECT SUMMARY

CLIENT

Government of Tonga

LOCATION

Haápai, Kingdom of Tonga

PROJECT TYPE

Causeway

YEAR COMPLETED

2013



PROJECT DESCRIPTION

The original Foa Causeway linking Lifuka Island to Foa Island was built by New Zealand Army engineers beginning April 1979 and completed in February 1980. This causeway was severely damaged by tropical cyclones over the years.

As part of infrastructure development initiated by the Government of Tonga, the Federal Republic of Germany agreed to fund the upgrading of the Foa Causeway. Under a debt-swap agreement, the Tonga Government agreed to use the sum of TOP\$4.67 million it would otherwise have had to repay the German Government to fund a major development project within Tonga.

The Upgraded Causeway is comprised of two reinforced concrete walls and a tar sealed road between the two walls and three double box culverts (for free flow of water under the Causeway) and two side-bays to allow for give-ways and the passing of vehicles.

The main Contractor for the construction works was the China Civil Engineering Construction Corporation (CCECC).

Causeway Details:

- Length of Retaining Walls 1,150m (both sides),
- Three Twin Culverts 2No. x 4.5m clear length x 2m clear height
- Total Length of Upgrade work 680m, with 575m of causeway
- Two Side-Bays

PROJECT ROLE

Kramer Ausenco's services included: Civil Engineering, Structural Engineering, Maritime Engineering, Design Engineering and Project Management, and Construction Verification.

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Project Reference: 13276T

Industry: Civil Infrastructure - Bridge

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| ASSIGNMENT NAME: | APPROX. VALUE OF THE CONTRACT: |
| Foa Causeway | TOP\$4.67 million |
| LOCATION & COUNTRY: | DURATION OF ASSIGNMENT (MONTHS): |
| Haápai, Kingdom of Tonga | 9 Months |
| NAME OF FUNDING AGENCY: | TOTAL NO. OF STAFF-MONTHS OF THE ASSIGNMENT: |
| Government Of Tonga (under debt swap for infrastructure arrangement with Federal Republic of Germany) | Approx. 5 Person-Months |
| ADDRESS OF AGENCY: | APPROX. VALUE OF THE SERVICES PROVIDED BY YOUR FIRM UNDER THE CONTRACT: |
| Nuku'alofa, Kingdom of Tonga | Approximately TOP\$ 200k |
| START DATE (MONTH/YEAR): COMPLETION DATE (MONTH/YEAR): | NUMBER OF PROFESSIONAL STAFF-MONTHS PROVIDED BY ASSOCIATED CONSULTANTS: |
| Start date: March, 2013 Completion date: December, 2013 | N/A |
| NAME OF ASSOCIATED CONSULTANTS, IF ANY: | NAME OF SENIOR PROFESSIONAL STAFF OF YOUR FIRM INVOLVED AND FUNCTIONS PERFORMED: |
| N/A | Tahifisi Vehikite – Senior Civil Engineer Project Manager |

NARRATIVE DESCRIPTION OF PROJECT:

The original Foa Causeway linking Lifuka Island to Foa Island was built by New Zealand Army engineers beginning April 1979 and completed in February 1980. Prior to that, travel and trade between the two islands were conducted by boat or on horseback (during low tide). That Causeway was severely damaged over the years as a result of tropical cyclones and other natural climatic events. As part of infrastructure development initiated by the Government of Tonga, the Republic of the Federal Republic of Germany agreed to fund the upgrading of the Foa Causeway. Under a debt-swap agreement, the Tonga Government agreed to use the sum of TOP\$4.67 million it would otherwise have had to repay the German Government to fund a major development project within Tonga.

The Upgraded Causeway is comprised of two reinforced concrete walls and a tarsealed road between the two walls and three double box culverts (for free flow of water under the Causeway) and two side- bays to allow for give-ways and the passing of vehicles. The main contractor for the project was China Civil Engineering Construction Corporation (CCECC).

The Project Site Supervisor was Manase Lavulavu from the Ministry of Infrastructure (MOI). MOI also provided technical oversight of the project whilst the Ministry of Finance and National Planning had financial oversight. The Ha’apai Development Committee under the Chairmanship of Lord Tu’iha’angana had general oversight of the Project with the assistance of the Ministry of Internal Affairs.

Causeway Details

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- Two Side-Bays

DESCRIPTION OF ACTUAL SERVICES PROVIDED BY YOUR STAFF WITHIN THE ASSIGNMENT:

Kramer Ausenco’s services included: Civil Engineering, Structural Engineering, Maritime Engineering, Design Engineering, Project Management, and Construction Verification.

Specific Scope of Services included:

- To upgrade the existing causeway and its approaches by improving safety, visibility and allowing for side bays, with improved road approaches on each side of the causeway.
- To investigate the use of three twincell box culverts and prepare detailed designs for two lanes + side bays.
- To investigate and prepare the optimal design to avoid or minimize land reclamation and retaining walls required.
- To provide adequate capacity and safety along the route
- To provide a road pavement with a sufficient design life for intended purpose.

Design Services

- Consultant should make use as much as possible of any previous and updated existing information that the Client is subsequently able to provide.
- There must be certain programming stages consisting of economic analysis, survey, initial site investigation and bridge investigation, gather service information, preparation of base plan, preliminary layouts with road markings, general arrangements, and initial cost estimates.
- Additional next steps and tasks consists of further geotechnical investigation, detailed design, proving of underground services, Bills of Quantities and cost estimates.
- Final design and tender documentation
- Allowance for hold point for Client review and comment.
- Carry out adequate but sufficient site investigations and tests performed to ensure the adequacy of foundation designs and road pavement designs and to confirm that technical specifications are suited to the properties of local material sources.
- Undertake a detailed survey with sufficient field survey measurements to enable accurate delineation of proposed road alignment and reserve boundaries
- Investigate and prepare detailed hydrological investigations, design to resolve or provide improvements

Supervision Services

To monitor, audit and perform independent testing to verify the processes and systems put in place by the Contractor complies with the required standards in accordance with the specifications.

The consultancy supervision services to be provided under this contract shall include the following:

- Provision of a suitably-qualified and experienced engineer who is capable of carrying out the duties of Project Manager Representative.
- Familiarisation with the contract documents, and the Contractor's methodology with particular attention to the pavement rehabilitation design and construction methodology. Seek additional information on methodology, as may become necessary during the execution of the works.
- Establishment of a positive and amicable liaison with the construction contractor.
- Regular site visits and overview of progress, with particular attention to ensuring contractors' adherence to the design and construction drawings and Specifications. Maintain records of the activities on the site, site conditions and Contractor's resources.
- Review and comment upon the Contractor's Works Program
- Weekly visits to any off-site works compounds to ensure all matters relating to off-site fabrication and materials handling and storage etc., are in accordance with best industry practice, the design and construction drawings and Specifications.
- Random, scrutiny of the contractors' daily records, material testing results, batch records, set-out survey records etc and report to the Client.
- Advise the Client of matters of concern
- Prepare monthly supervision reports with support photos for the Project Manager on behalf of the Client, Project Component Manager and the Project Management Unit.
- Conduct formal Site Meetings with the Contractor and keep Minutes of matters of concern.
- Guide the contractor on critical elements of construction, including but not limited to:
 - o Interpretation of technical specifications
 - o Matters relating to worksite safety and traffic management
 - o Construction methodology
- Measure the actual quantities of work carried out and agree these with the Contractor. Keep appropriate records of measured work.
- Receipt and checking of contractor's Monthly Statements, preparation of Interim Payment Certificates in the format prescribed in the contract and forwarding to the MWTI in a timely manner for due payment etc.
- Confirm that substantial completion has been reached, and advise the Project Manager in writing accordingly.