

Togafuafua Bridge

KA PROJCT REFERENCE: 7084W
INDUSTRY: Civil Infrastructure - Bridges
DISCIPLINES: Bridge and Roadway Designing, Contract Administrating, Clark of Works

PROJECT SUMMARY

CLIENT

Land Transport Authority,
Government of Samoa

LOCATION

Apia, Upolu, Samoa

PROJECT TYPE

Bridges

YEAR COMPLETED

2013



PROJECT DESCRIPTION

The Government of Samoa received a Credit from the International Development Association (IDA), to assist in the funding of the Togafuafua Bridge and Vaimoso-uta Bridge. The existing Togafuafua Bridge and Vaimoso-uta Ford are in close proximity from each other of about 5minutes drive. The existing Togafuafua Bridge was a single lane bridge, single span with a total length at 7m. This Bridge is located at approximately 100m to the south east of the Apia Town Clock. It only takes about three (3) minutes drive and approximately ten (10) minutes in walking distance. This single lane bridge had been identified in the 10year road sector plan prepared in the year 2001 that should be replaced. This single lane bridge was a bottle neck causing several vehicle and pedestrian accidents because of conflicting movement when approaching the bridge.

The new replacement was a two-lane bridge, with associated road works of approximately 1000m of realigned and widened road. The design objectives for the new bridge can be summarized as improving the capacity deficiencies and also improving the road safety and accessibility for vehicles and pedestrians.

PROJECT ROLE

Purpose was to upgrade the existing single lane bridge and its road approaches by improving safety and widening the bridge from a single lane to two (2) lanes, with improved road approaches marrying the bridge lanes up to the 4corner junction on the east side and up to the T-Junction on Vaea Street to the west side. Kramer Ausenco developed a list of possible design solutions and determine the best optimal design option which should take into account the availability of local construction materials. The optimal design option was selected based on cost / benefit analysis, financial analysis and economic analysis. The work included an assessment of the hydrological and geotechnical requirements of the site. Economic evaluation and a preliminary environmental assessment was undertaken in consultation with MNRE.

Kramer Ausenco's role included:

- Bridge and Roadway Designers
- Procurement Management
- Contract Administrators

Togafuafua Bridge

Project Reference: 7084W

Industry: Civil Infrastructure - Bridges

ASSIGNMENT NAME:	APPROX. VALUE OF THE CONTRACT:
Togafuafua Bridge	~WST 1,100,000
LOCATION & COUNTRY:	DURATION OF ASSIGNMENT (MONTHS):
Apia, Upolu, Samoa	12 Months
NAME OF FUNDING AGENCY:	TOTAL NO. OF STAFF-MONTHS OF THE ASSIGNMENT:
Land Transport Authority (LTA) Samoa	18 Person-Months
ADDRESS OF AGENCY:	APPROX. VALUE OF THE SERVICES PROVIDED BY YOUR FIRM UNDER THE CONTRACT:
Apia, Upolu, Samoa	WST229,305.00
START DATE (MONTH/YEAR): COMPLETION DATE (MONTH/YEAR):	NUMBER OF PROFESSIONAL STAFF-MONTHS PROVIDED BY ASSOCIATED CONSULTANTS:
Start date: July, 2012 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	Arthur Budveitas – Project Manager Jason Goddard – Project Manager Faufata Levi – Civil Engineer Peter Vanheeswyk – Civil Engineer Vincent Hampalekie – Structural Engineer William Vincent – Structural Engineer Adam Jowitt – Civil Engineer Peni Gari – Structural Engineer

NARRATIVE DESCRIPTION OF PROJECT:

The Government of Samoa received a Credit from the International Development Association (IDA), to assist in the funding of the Togafuafua Bridge and Vaimoso-uta Bridge. The existing Togafuafua Bridge and Vaimoso-uta Ford are in close proximity from each other of about 5minutes drive. The existing Togafuafua Bridge was a single lane bridge, single span with a total length at 7m. This Bridge is located at approximately 100m to the south east of the Apia Town Clock. It only takes about three (3) minutes drive and approximately ten (10) minutes in walking distance. This single lane bridge had been identified in the 10year road sector plan prepared in the year 2001 that should be replaced. This single lane bridge was a bottle neck causing several vehicle and pedestrian accidents because of conflicting movement when approaching the bridge.

The new replacement was a two-lane bridge, with associated road works of approximately 1000m of realigned and widened road. The design objectives for the new bridge can be summarized as improving the capacity deficiencies and also improving the road safety and accessibility for vehicles and pedestrians.

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

Kramer Ausenco's services included: Bridge and Roadway Designing, Procurement Management and Contract Administrating.

Scope of Services included:

Togafuafua Bridge

- To upgrade the existing single lane bridge and its road approaches by improving safety and widening the bridge from a single lane to two (2) lanes, with improved road approaches marrying the bridge lanes up to the 4corner junction on the east side and up to the T-Junction on Vaea Street to the west side.
- To investigate the existing bridge located at Togafuafua and prepare detailed designs for widening to two lanes.
- To provide adequate longitudinal and cross drainage along the bridge road approaches.
- To investigate and prepare the optimal design at the 4 corner junction. One aspect of the design should be to avoid or minimize land take.
- To provide adequate capacity and safety at all other road junctions along the route
- To investigate and design improved pedestrian safety facilities including (where necessary) full length footpaths and pedestrian crossings
- To provide a road pavement with a twenty year design life

- Develop a list of possible design solutions and determine the best optimal design option which should take into account the availability of local construction materials. The optimal design option will be considered based on cost / benefit analysis, financial analysis and economic analysis. The work will include an assessment of the hydrological and geotechnical requirements of the site. Economic evaluation and a preliminary environmental assessment in consultation with MNRE will also be required and the preparation of a land acquisition plan, if necessary. The bridge can be closed to traffic during construction.

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 with Stage 1 consisting of , economic analysis, survey, initial site investigation and bridge investigation, gather service information, preparation of base plan, preliminary layouts with road markings, bridge general arrangements, preparation of draft Land Acquisition and Resettlement Action Plans (LARAPs), initial cost estimates and independent stage 1 safety audit.
- Stage 2 consists of further geotechnical investigation, detailed design, proving of underground services, Bills of Quantities and cost estimates based thereon, independent stage 3 safety audit, submission of draft design report and draft tender documents.
- Stage 3 is final design and tender documentation **to enable tender using slice and package method.**
- Between each stage there shall be a 14 days hold point for Client review and comment.
- Land Acquisition and Resettlement Plans (LARAP) will be prepared using the IDA template where land is required to accommodate the permanent structure and improve vertical road alignment.
- Prepare Final LARAP for each component after the road alignment design is completed and the new road reserve boundaries have been fixed. The Consultant will liaise closely with the Client and MNRE in preparing the LARAPs which shall include the proposed road alignment, encroachment area into customary or private land and/or properties, inventory of properties and owners or stakeholders affected, detailed land use survey, estimated value for compensation, results of preliminary consultation. The Consultant should also become familiar with the Land Acquisition and Resettlement Framework that was prepared for SIAM-2. The costs of formal consultation including such things as venue hire, transport for participants and refreshments will be met directly by the Client.
- Social impact assessment must be carried out in close consultation with the Client, MNRE and other Government departments using the Framework set out in the report that was prepared for SIAM-21
- The Consultant will prepare a Preliminary Environmental Impact Report (PEAR) for each component of the project. When preparing the PEAR the Consultant should refer to the Environmental Assessment Framework and the Environmental Assessment Report² that has been prepared for SIAM-2, and the interim COEP³ adopted by the MWTI. An EMP⁴ outlining the risks that require mitigation measures must be included as part of the PEAR. Consultant must liaise closely with personnel of MNRE – PUMA office to avoid surprises when submitting development consent. Following approval by PUMA⁵, the EMP must be incorporated as part of the tender documentation. The Specification must require the Contractor, with reference to the EMP, to set out the mitigation measures and management procedures that will be implemented during construction. Approval of the Contractor's environmental mitigation plan by the Engineer shall be one of the conditions for the granting of possession of site. The EMP must be followed to the satisfaction and approval of the Engineer throughout the construction period with a Special Condition of Contract that should allow the Project Manager's Representative to suspend the works if the agreed EMP is not adhered to.
- Carry out adequate but sufficient site investigations and tests performed to ensure the adequacy of structure 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 road reserve boundaries, structures or buildings encroaching into road reserve or sections of the road encroaching into private and/or customary land.
- Investigate and prepare detailed hydrological investigations, design to resolve or provide improvements to existing drainage problems but noting that no new drainage outfalls across private land, are to be generated
- Allow for independent safety audits of all preliminary designs and final designs
- Include the preparation of an inception report, feasibility study reports for each separate bridge, safety audit reports, draft and final tender documentation for the works including engineering drawings, detailed cost estimates and technical specifications. Standard Ministry of Works, Transport and Infrastructure formats and specifications are to be used where appropriate.

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 under the WB SBD for Smaller Works Conditions of Contract.
- 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.
- Daily site visits and overview of progress, with particular attention to ensuring contractors' adherence to the design and construction drawings and Specifications. Maintain daily 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 (e.g. pre-casting yards, fabrication workshop etc.), 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 (but at least fortnightly), scrutiny of the contractors' daily records, material testing results, batch records, set-out survey records etc and report to the Client.
- Random independent sampling and testing of Contractor's materials to ensure compliance with the Specifications. The Consultant can make use of the Client's Lab facilities at no cost, but test equipment that is considered necessary but not available from the Client will have to be provided by the Consultant.
- Review and monitor contractor's adherence to the Environmental Management Plans and Traffic Management Plan.
- Advise the Project Manager and the Employer 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.
- Review and make recommendations on any claims submitted by the Contractor for additional payments and extensions of time.
- 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.