Terms of Reference and Description of Services for preparation of Detailed Design for rehabilitation of the roads and adjacent infrastructure in the town of Vani, Imereti

Introduction

The Municipal Development Fund of Georgia (MDF) is a legal entity of public law whose purpose is to mobilize financial resources from donors including international and Georgian financial institutions, in order to make them available for investments in local infrastructure and services, while simultaneously helping local self-governments in strengthening their institutional and financial capacity.

MDF implements various regional and municipal development projects, including the Second Regional Development Project (RDP 2) financed by the World Bank Group and the Government of Georgia (GoG). The aim of the RDP 2 is to stimulate economic growth in Imereti region through provision of enabling environment for increased tourist visitation and private investment. Arrangement of public tourist infrastructure in the areas adjacent to the cultural heritage monuments is a type of activity supported by RDP 2.

One of the several sub-projects supported under RDP 2 is for the rehabilitation of roads and adjacent infrastructure in the town of Vani. MDF (the Employer) seeks consultant services for for the preparation of detailed engineering design for the local roads and adjacent infrastructure in the town of Vani. Present TOR is for this consultant assignment.

Objective and Conditions

The sub-project sites are located in the town of Vani. They include the Central Square, the section of Lortkipanidze Street from the Central Square to Diasamidze Street, Giorgadze Street Section from the Museum to Chanturia Street, the fences and outdoor illumination from the Central Square to the Museum Building, as well as the footpaths in the territotory of Vani aercheological area.

The length of Lortkipanidze Street is about 2,200 m (subject to specification on-site), width- 6-7 m. Part of the street is an earth road, and the remaining section is covered with damaged asphalt.

The length of Giorgadze Street is about 680 m (subject to specification on-site), ditches are absent and during the period of precipitations, water is flowing along the pavement, resulting in scouring of the road surface and street blockage.

The roads on Lortkipanidze and Giorgadze streets cross river Chishura with two bridges. The culverts are damaged; banisters, sidewalks, and guards are also in poor condition.

The asphalt concrete pavement of the central square is also damaged, the house fences and lightings located along the museum access road look unattractive due to their old age.

Vani aercheological site includes several points, located within walking distance from each other. The site connects to the museum with a bridge. There are no organized trailes organized and the site lacks basic infrastructure, such as benches, trash bins, shady spots to take a short rest, etc.

Scope of Services

This assignment includes the delivery of services with no limitation and in relation to the following detailed design works for:

1. Rehabilitation of the Central Square and road sections named above, and street lightings and two bridges along the access road to Vani Museum.
    a. The road parameters shall conform to category V (where it is possible to asphalt a wider road section), meeting requirements of Georgian National Standards (SST Groads: 2009).
    b. Road pavement structure should be calculated by axle weight 100kn.
    c. The road pavement should be of asphalt concrete.
    d. Culverts should comply with an 80 t wheel pressure (according to design loads AA-11 HK-80).
    e. Concrete road ditches, connections and driveways should be arranged in the streets; the existing culverts require cleaning and repair; banisters, sidewalks, and guard timbers should be repaired on the bridges.
    f. Signage to accommodate pedestrian and vehicular traffic, including speed limits, safe crossing points, etc.
    g. Given that the road, leading from the town square to the museum is fairly narrow, it is desired to determnime a parking location for busses in the lower section of the road.
2. Rehabilitation of fences located along the museum access road
3. Organization of footpaths (trails) in Vani aercheological area and basic infrastructure, including benches, trash bins, shady spots, etc.).

Stages and specific Tasks

Services to be carried out is three phased.

- Phase 1 – survey works and design concept development
- Phase 2 – sketch design preparation.
- Phase 3 – detail design and cost estimations

Tasks and Stages of Service Delivery

Stage I – Documentation works, survey of the design area and Project Concept

The first stage entails the study and preparation of the following materials and documentation:

- Cadastral documents (topographic plan for design and existing situation should reflect the plan of registered land plot(s) showing cadastral borders and a code);
- Topo-geodesic surveying of the site in UTM coordinate system (GeoCORS);
- Topographic survey of the relief at 50 meters' distance and on both sides of the road axis, which should be elaborated in absolute U coordinate system;
- Engineering-geological survey of the design road by the following method: arrangement of 2 pits of 3 transverse profiles with the depth of 3,0m per kilometer and taking soil samples;
- Detailed survey of the landslide sections, bridge crossings;
- Survey of the base for the new pipe culverts by the mechanical, columnal drilling method, through arrangement of one or two 1,0 m deep boreholes per pipe (as required) and taking soil samples;
- On the existing bridge crossings, analysis of the state of the piers' and existing retaining walls' substructures;
- Laboratory testing of the soil samples taken from the pits and boreholes and rock bases and analysis of the test results;

- Engineering-geological description of the design road and investigation and analysis of previously conducted geological surveys;
- Road levelling;
- Surveying transverse profiles in hilly and curvy sections at 20 meter intervals;
- Determining transportation distance from the selected borrow pits to the design road;
- Exploration of the existing road pavement structure;
- Exploration of the existing engineering structures (retaining walls, bridges, culverts, water and sewage pipes, etc.);
- Analysis of the surface water diversion measures;
- For trails at the Vani Archeological site, initial art historians' and landscape survey, accompanied with proper schemes, photographic materials, connections, and routes, ensuring completeness of treatment for all the foreseen investments and works, including the unified treatment of the spaces and territory.

Following completion of exploration-survey works and upon submission of the respective reports, rehabilitation methods and concept, the Employer will specify project scope and parameters, and likely solutions, which will be followed by decision on commencement of the next stage works. After initial survey, the Employer may come up with a decision to suspend works services on any of the components, based on the findings and recommendations.
Consultant shoud also provide an assessment, inventory/survey of condition of elements of interface of the sub-project area with private properties along the road (e.g. fences and gates, building, light posts, etc) and propose possible design solutions for review and discussion with MDF and stakeholders (Georgian National Museum and Vani Municipality) to agree on final solutions.

Stage II

Preparation of the draft design documentation and their agreement with the stakeholders.

Stage III

Preparation of the detailed design documentation

Deliverables

Design-cost estimate documents shall comprise of but not limited to the documents indicated below. These documents shall be prepared in accordance with the requirements stipulated by Geometrical and Structural Standards of Georgian Roads of Public Use and other standards and construction regulations being effective in Georgia. In case of necessity of any deviations within the regulations, either provision or restriction of any specific regulation shall be agreed with the Employer in advance.

Stage I

Report, without being limited to the following:

1. Explanatory Note (including detailed description of problematic issues);
2. Topographic survey of the site (Topographic plan through UTM System of Coordinates: Scale 1: 200);
3. Cadastral documentation (including project and actual situation on topographic plan, layout of registered land plot(s) with indication of cadastral borders and a code);
4. Outcomes of engineering-geological survey – technical report, conclusions and recommendations (assessment of physical-mechanical features of soil, laboratorial analysis of samples, elaboration and conclusion of results);

5. Report on engineering-technical survey, including the information and schemes concerning connection to the utilities - water, sewage, electricity, gas;
6. Hydrological report for the river and run-off water;
7. Layout plan for location of the project site - Scale: 1:1000 or 1:500;
8. Initial study of art historians and recommendations, including landscape context, accompanied with proper schemes, photographic materials, connections, and routes;
9. A project concept – with specified project site parameters, structural and technical solutions, including the overall site plan;
10. Feasibility study covering all possible options, analysis of problems and risks, parameters and scales of the sub-project (including financial scales along with estimated budget), estimated method and schedule of implementation;
11. Classified photo material: general views of the project site, façades, interior, valuable elements from architectural-art standpoint, photos reflecting general and local damages (photos of high quality and resolution) – TIFF/JPEG expansion file).

Following completion of exploration-survey works and upon submission of the respective reports, rehabilitation methods and concept, the Employer will specify sub-project scope and parameters, and likely solutions, which will be followed by decision on commencement of the next stage works. After initial survey, the Employer may come up with a decision to suspend works services on any of the components, based on the findings and recommendations.

Stage II

Report, without being limited to the following:

1. Explanatory Note (providing description of existing situation and arrangements stipulated by the project);
2. Topographic plan including cadastral borders and code(s);
3. Cadastral documentation (to include in the design and status quo topographic plans the registered land plot(s) outline with indication of cadastral boundaries and codes);
4. Layout plan for location of the project site - Scale 1:1000 or 1:500;
5. General location and master plans of the project site (scale 1:2000; 1:10000; 1:500);
6. Master plan, with topographic mapping of the design area, with showing of red lines scale 1:500; 1:1000; including the design of pedestrian and vehicle routes, accesses, communications, and parking lots and dedicated place for the vendors to sell their handicraft and souvenirs;
7. Drawings (plans, sections, facades);
8. Solutions: graphic and textual material – layouts, sections, elevations;
9. Structural solutions;
10. For trails, art historian's conclusion and recommendations, accompanied with proper schemes, photographic materials, connections, and routes, ensuring completeness of treatment for all the foreseen investments and works, including the unified treatment of public spaces and territory connecting the Monastery, parking lot, pedestrian trails, resting points, as applicable and other key elements.
11. Information given below aimed at preparing Environmental and Social Review (ESR) and Environmental and Social Management Plan:

- Brief description of relief, geology and soil, based on archive data and as a result of visual survey; information regarding existence or probability of hazardous geological processes, necessity for conducting of explosive works; depth of location of ground water;
- Hydrology and water quality of the water body in which treated waste water from toilets will be discharged;
- Brief description of climate conditions;
- Brief information on vegetation and flora species on and around of sub-project site;
- identification of any Red Listed flora and and fauna species that may be occur in the sub-project site;
- Suggested sites for disposing of excess material and construction waste identified through consultations with Vani Municipality Gamgeoba, including cadastral information and maps of suggested sites;
- Locations and distances to the nearest licensed borrow pits producing natural construction materials that maybe required for construction works under the SP;
- Land ownership and land use issues: a) Cadastral data of the project implementation site. b) Formally attested information whether the project impacts on privately owned, or leased land plots or not (temporal disturbance; loss of the part of the land plot or whole land plot by the owner; loss of the property being on the land plot; loss of income etc.);
- Information on archeological zones;
- Brief social-economic information on surrounding area, including tourism, and on potential beneficiaries, such as monks, pilgrims, local population, tourists, etc. Map of sub-project implementation site with cadastral information;
- Photos for sites defined for separate structures.

Using the baseline information to be collected as described above, the Consultant will carry out environmental and social screening of the sub-project at the stage of preliminaroy design in order to avoid or minimize negative impacts on the identified sensitive receptors through the design solutions. Temporary impacts expected at the construction stage as well as those likely at the operation phase should be taken into consideration and design alternatives explored for impact mitigation should be included in the ESR. Towards this end, the consultant should cooperate with the safeguards team of the Employer and use safeguards' inputs to provide support in considering alternative options where needed. Social and environmental impacts should take into consideration temporary impacts, for example areas used during construction, for access of machinery, etc.

Completion of the draft design documentation will be applicable only after the endorsement by all stakeholders, including Vani Municipality for the roads and sidewalks, Georgian National Museum for the trails, and cleared by MDF.

Stage III

Report, without being limited to the following:

1. Executive Summary (with description of status quo and activities to be carried out under the project);
2. General location and Master plan, with topographic mapping of the design area, with showing of red lines scale:1:500; 1:1000; including the design of roads, pedestrian and vehicle routes, accesses, communications, pedestrian and traffic safety, etc.;
3. Topographic survey UTM (international) coordinate system;
4. Longitudinal profiles across the road and trail axis which shall consist of project (red), earth (black) and working marks, kilometer performance, picketage and distances between characterizing points,

graphical reflections of longitudinal slopes, vertical and horizontal curves along with numerical indexes, projected and existing artificial structures with the parameters.

5. Lateral profiles shall be surveyed (shot) in each 20 m (in case of requirement) and at characterizing points and shall comprise of project (red), earth (black) and working marks, distances between characterizing points, graphical reflection of lateral slopes along with numerical indexes and situation being in the vicinity of the project site. There shall be provided also the project and existing artificial structures along with the parameters).
6. The roadbed structure with consideration of respective reports (in coordination with the Employer);
7. Design for water diversion and drainage structures;
8. Design of bridge crossings considering calculation of anticipated maximum loads;
9. All required registers (in accordance with the design);
10. For setting the road in profile, arrangement of permanent and temporary bench marks by engineering structures, large bridges on both sides of the river, by large sections of cut soil, on both sides at the beginning of the section, and in the plains – at the intervals of 1200 m;
11. Road layout and bench mark hand-over to the Employer under the respective certificate;
12. Layout plan for the road route in case of complicated relief from the standpoint of designing, Scale: 1:1000; in case of crossed relief the Scale to be as follows: 1:2000;
13. Longitudinal profile of the road in case of crossed relief: Scale 1 :2000 _ 1:200, whereas in case of complicated relief the scale will be as follows: 1 : 1000 _ 1 : 100;
14. Lateral profiles in case of complicated relief. Scale: 1:100 in levelled off locations: Scale 1:200;
15. The situation on the route plan and longitudinal profile shall be provided by applying of conditional marks determined under construction regulations;
16. Work organization project with time schedule, and tentative financial schedule list of requisite machinery and equipment, etc.;
17. BoQ for works to be implemented; Cost estimations (unit rate breakdown by resources and summarized unit rates);
18. Detailed and general specifications of bidding documentation. For contractor (bidder), technical specifications should include general instructions and recommendations. Also detailed specifications (indicating all necessary standards) for proposed material, works performance methods and quality control. Graphical part of the design (both as constructive as tender drawings) should be prepared in compliance with required norms and standards for engineering documentation in appropriate scale with breakdowns;
19. Determination of load on engineering communication network for obtaining technical conditions from relevant institutions, as required;
20. Economic analysis (should include capital expenditures required for project implementation as well as average annual operation and maintenance costs. The named data should be provided for each possible alternative solution of project design (based on technical specifics of the project, at least two alternative technological solutions should be presented). The deliverables should also include methodology of each alternative of cost calculation with respective clarification and reference to the data sources.

Note

Applied construction norms and regulations, calculation methods and justification of proposed technical solution should be indicated.

Additional conditions

Design supervision: During the construction period, once a month or upon MDF's request, a consultant or his representative will visit and monitor the construction progress on site. Following the visit, the consultant will prepare and submit a report to the Employer, which will cover the situational analysis on site, list any deviations observed or variations needed, supported by argumentation.

Reporting and Schedule

a) Within 6 weeks from the commencement of service provision, the Consultant shall submit results of survey-investigation works (topo-geodetic survey, cadastral maps, final draft of feasibility study, stakeholder consultations report etc.) to the Employer. **At the present stage, the contractor shall agree the concept with the stakeholders, including Vani Municipality (for roads and public spaces), and Georgian National Museum (for trails).**
b) Within 7 weeks, from the commencement of service provision, the Consultant shall submit Environmental and Social survey, and within one week the Employer will provide consultant with comments.
c) Within 10 weeks, the Consultant shall submit preliminary detailed design to the Employer, and within one week the Employer will provide consultant with comments and notes relating to design. **At the present stage, the contractor shall agree sketch design with the stakeholders, including Vani Municipality (for roads and public spaces), and Georgian National Museum (for trails).**
d) Within 12 weeks, the Consultant is obliged to enter relevant amendments into design and submit final design along with feasibility study and tender documentation to Employer.
e) Within one-week period since submission of final design consultant will submit to the Employer design liaison document with local municipality.

At every stage, within one-week period following submission of the documentation, the Employer will furnish the consultant with its remarks. The consultant shall consider the above-mentioned for the following stage and introduce the respective amendments to the design documentation.

Finally, the consultant shall submit to the Employer four printed copies of the detailed design documentation and bidding documents prepared in Georgian and English languages. The submitted materials shall be accompanied with their electronic versions (textual part in Word and Excel file form, and drawings in - AutoCAD and PDF format).

Employer's Contribution

The Employer shall grant access to all available materials, which may be required for the Consultant to perform their services.

Duration of the assignment

Tentitive time for this assignment is 12 weeks.

Annex 1: Consultant's Personnel and Schedule of Rates

In order to provide for the top-level performance of the assigned task, the Consultant shall mobilize the qualified staff (key personnel as well as the support staff). All the specialists shall be well-recognized professionals in their respective fields with at least 5-year experience in the similar work environment.

The consultant should mobilize the following personnel:

N	Consultants	Number	Month	Input, person*month
	Key Experts			
1	Team leader	1	3	3
2	Road engineer	1	3	3
3	Topographer	1	3	3
4	Geotechnical Engineer	1	1,5	1,5
	Non-Key Experts			
5	Environmental Specialist	1	1,0	1,0
6	Architect	1	1,5	1,5
7	Electrician	1	1,5	1,5
8	Quantity surveyor	1	1,0	1,0

Annex 2: Narrative Qualification Requirements for Experts

Title	Specific experience (Years)	Area of Specialization, Qualification	Main Responsibilities, but not limited to
Team Leader/ Road Engineer	5	Civil Engineering - Road Design Management, experience of implementation of similar size and type projects (design services); Minimum bachelor's degree in civil/road engineering;	• Overall responsibility for elaboration of the road design and managing the Consultant's team; • Monitor performance, deadlines, progress, and manage risks to ensure timely and quality delivery of outputs; • Coordinate and liaison with Local Government/Employer; • In-depth overall knowledge in detailed design for medium sized road projects; • Knowledge of the local and international standards for construction/rehabilitation works; • Report writing and oral presentation.
Road Engineer	5	Civil Engineering - Road Designing, experience of implementation of similar size and type projects (design services); Minimum bachelor's degree in civil/road engineering; Experience in traffic and pedestrian safety organization	• Elaboration of road design; • In-depth overall knowledge in detailed design for medium sized road and projects; • Knowledge of the local and international standards for construction/rehabilitation works.
Geotechnical Engineer	5	Civil Engineering — Geotechnical Engineering; Minimum bachelor's degree	• Ground and soil investigations; • Checking of designs of foundations, slope and embankment construction; • Laboratory and in-situ testing; • Preparation of geological report.
Topographer	5	Civil Engineering – land survey, topography and geodesy, experience of implementation of similar size and type projects (design services); Minimum bachelor's degree in topography and geodesy;	• Topo and Geodetic survey; • Preparation of survey report and drawings
Electrician	5	M&E Engineering – design of mechanical and electrical equipment, power supply and lighting systems Minimum 's degree in M&E engineering;	• Elaboration of electrical design; • Conducts the research on the existing communications; • Preparation of design report and drawings • Knowledge of the local and international standards for construction/rehabilitation works.
Architect	5	Architect/Recreation and urban area design/landscaping, experience of implementation of similar size and type projects; Minimum bachelor's degree in civil engineering	• Conducts the research on the existing building and the surroundings; • Plans and prepares all the architectural project documentation; • Preparation of design report and drawings • Knowledge of the local and international standards for construction/rehabilitation works.

Annex 3: Payment Schedule

Deliverables	Submission Date	Language	Payment (% of the total contract cost)
Report of the site survey work	Within 6-week from commencement of services	Georgian	20%
Report on environmental and social survey	Within 7-week from commencement of services	Georgian/English	15%
Sketch design	Within 10-week from commencement of services	Georgian	15%
Final Detailed Design Documentation	Within 12-week from commencement of services	Georgian/English	40%
Design supervision (at least once a month during the construction phase)	Within a week after the site visit(s)	Georgian	10%