Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
Batangas III District Engineering Office
J. Gonzales St., Barangay 4, Tanauan City, Batangas, Region IV-A

BAGONG PILIPINAS

TERMS OF REFERENCE

Consulting Services for the Conduct of Topographical Survey for the Pre-Feasibility Study of the Proposed Manila-Batangas-Lipa City-Balete Diversion Road

1. INTRODUCTION

The Department of Public Works and Highways (DPWH) is seeking to develop its pipeline of road transport projects nationwide for implementation, financed either through local funds (GAA) and/or external sources (e.g., ODA, PPP). As part of the initial stage in the project development cycle, feasibility studies assessing the technical, economic, social impacts of the project, and the detailed engineering design are required.

The Pre-Feasibility Study of the Proposed **Manila-Batangas-Lipa City-Balete Diversion Road** (hereinafter referred to as the **"Project"**) is envisaged to be carried by local consultant to be outsourced by DPWH Batangas 3rd District Engineering Office (hereinafter referred to as the "Implementing Office"). The study is expected to determine the extent and nature of improvements/construction required, to gather data through topographical survey for the conduct of assessment and evaluation of the feasibility of the Tanauan City Diversion Road project. The findings of the study are intended for use by the DPWH for programming purposes and for its implementation through local financing/external sources if determined to be feasible.

This Terms of Reference (TOR) refers to the services to be undertaken by the Consultant for the preparation of the Pre-Feasibility Study for the Proposed Project.

A. The Proposed Manila-Batangas-Lipa City-Balete Diversion Road

The project is envisioned to boost economic developments on the aforesaid territories of Batangas, which shall connect the nearby economic/agricultural/tourism zones.

The proposed project is composed of 8.78-km road and four (4) bridges. The project herein is expected to serve as an alternative route that will divert traffic to and from National Primary Road Manila - Batangas Road and Tertiary Road Lipa-Balete Road. It can also help decongest the newly built Manila Batangas Bypass Road.

2. OBJECTIVES

The objectives of the consulting services are to:

1. Conduct a Multi-Criteria Analysis (MCA) for three (3) Alignment Options and present it to the Implementing Office during the Kick-Off Meeting;
2. Gather data through topographical survey needed in the conduct of assessment and evaluation of the feasibility study of the proposed link road;
3. Provide a technical basis for recommended preliminary designs of road/highway geometry, bridge, drainage, road safety and pavement design in accordance to DPWH Standards;
4. Gather relevant data that will likely affect the design and construction procedures and activities.

3. SCOPE OF CONSULTING SERVICES

A. GENERAL

1. The Consultant shall provide professional services necessary for carrying out the objectives set out in this Terms of Reference (TOR) by conducting the necessary studies, field surveys and investigation, preparation of detailed engineering plans and specifications, cost estimates, bidding and contract documents, and other requirements stipulated herein for the implementation and construction of the project.

2. The Consultant shall coordinate and report directly to the DPWH Batangas 3rd District Engineering Office – Planning and Design Section to obtain uniformity and cohesiveness in the preparation of related documents consistent with DPWH Design Guidelines, Criteria and Standards (DGCS) 2015 Edition and applicable provisions of existing laws, codes, policies and Department Orders.

3. The Consultant shall establish and maintain proper coordination with the District Office of DPWH, Regional Development Council and concerned Local Government Units (LGU's) for consultation on any project-related issues and concerns.

4. The Consultant shall make sure to document all activities with geotagged photographs.

5. The Consultant shall coordinate with this Office prior to their conduct of the Engineering Surveys and Activities related to the Environmental and Social aspects of the road project. Environmental and social mitigation measures shall be in accordance with the DPWH Updated Social and Environmental Management System (SEMS) Operations Manual, 2016 Edition, and related Department Issuances for procedures, rules, and responsibilities of all offices concerned.

6. In the preparation of drawings, the Consultant shall use Computer Aided Design (CAD) software. All electronic files or reports, drawings and other relevant documents shall be turned over by the consultant to the Implementing Office through the Planning and Design Section (PDS).

B. THE SERVICES

1. Feasibility Study

The Consultant shall prepare a Pre-Feasibility Study and submit to the Planning and Design Section for review/comments and approval. The study shall contain, but not limited to the following:

1.1. Alignment Study

The Consultants shall identify at least **three (3) possible alignments** considering the technical, financial, environmental and social aspects of the project and present to the implementing office for approval and selection of the best alignment.

Analysis. The selection, recommendation and approval of the *best alignment* shall be based on a formulated Comprehensive **Multi-Criteria Analysis (MCA)** that takes into consideration the physical characteristics, technical complexity, strategic, social and environmental impact of the proposed project.

The Consultant shall submit a separate report of the Multi-Criteria Analysis (MCA) to the implementing office and discuss the selected alignment on the official kick-off meeting, 2-weeks after the issuance of Notice to Proceed (NTP).

2. Design Data Collection

The Consultant shall gather all necessary pertinent data about the project particularly on its topography, which often impose limitations upon location and design, and conduct site inspection on foot, jointly with the Implementing Office.

The Consultant shall conduct design data collection activities to verify and validate the recommendations of the Feasibility Study.

2.1. Preliminary Engineering Surveys

2.1.1. Topographic Survey

a. Undertake preliminary topographical survey along the selected alignment. The Consultant shall set out and establish reference points at appropriate locations as key control points of the survey. These points shall be used as benchmarks for identification and use during the subsequent engineering surveys. ("Geo-tagging")

b. The leveling shall be tied to the existing Government benchmarks in the area.

c. Cross-sections shall be taken at fifty (50) meters interval, unless local conditions require cross-section at closer intervals so as to provide the

necessary details for earthwork, quantity calculations with an accuracy of twenty percent (20%) of the final quantities.

d. Profiles and cross-sections shall be determined plus one hundred (100) meters beyond construction limits. Topographic maps with contours at 50-meter interval and coordinates and vicinity plan shall be prepared by the Consultants. All survey plans shall be prepared on reproducible materials of high quality.

e. River/creek profile and river/creek cross sections shall be surveyed for 500 meters each upstream and downstream sides from the centerline of the bridge. Cross-sections shall be measured at 50-meter interval.

f. All survey information and data shall be recorded and preserved in standard survey forms and notebooks, however, subject for review/checking of the Implementing Office. Upon completion of the works, all original survey notes will become property of the Implementing Office.

g. Relative to the data gathered, satisfactory harmony between the horizontal and vertical geometry can be established in complimentary with the existing terrain.

h. All activities shall be properly documented with geotagged photographs using NoteCam or similar applications.

4 REPORTING

4.1 Final results will be presented to the Planning Service and Planning and Design Division of the Regional Office concerned.

4.2 During the contract period, coordination meetings with the District Engineering Office and Regional Office concerned must be conducted to: (a) initiate agreements, (b) discuss the progress of the work and preliminary output; (c) make comments and suggestions on a timely basis; and (d) resolve problems and issues that may be encountered.

4.3 The Consultant shall also accommodate up to five (5) on-the-job observers (e.g., personnel from the Planning Service – Central Office and Regional Office), who shall be detailed to the project for the purpose of capacity-building and technology transfer.[3]

4.4 Further, aside from the specified scope of works mentioned above, the Consultant may propose additional works to enhance the study. The scope of any additional proposed works by the Consultant shall be established within the first two (2) months of the study, subject to the approval of the DPWH.

5 EXPECTED DELIVERABLES OF THE CONSULTING SERVICE

5.1 Inception Report

To be submitted **within the week** after effectivity of the contract, binded in A4 sized Bond paper, in **two (2) hard copies.**

It will outline a detailed work program and briefly describe the methodology proposed to meet the terms of reference. The report will include the initial findings as well as preliminary layout of the forms to be used for various investigations and calculations, Multi-Criteria Analysis for the three (3)-Alignment options, and proposed Activity-Time Schedule in Bar Chart Form

Discussions on Project Background and Description, Objectives, Scope of Work and Survey Methodologies shall also be included and presented in the following;

i. Project Background
ii. Project Description
iii. Objectives
iv. Scope of Work
v. Alternative-Alignments Assessment
    1. Presentation of Three (3) Alignment Options
    2. Multi-Criteria Analysis
    3. Recommendation
vi. Proposed Work Program
vii. Survey Methodologies
viii. S-CURVE/Manning/Activity Schedule (A3 Sized paper)
ix. Company Profile

5.2 Progress Report

To be submitted together with the request for progress billing, binded in A4 sized Bond paper, in **two (2) hard copies.**

The Progress report shall contain the following:

1. Overall Accomplishment report
    a. Narrative Report of the activities conducted
    b. Percentage Per Planned
    c. Percentage Per Actual
    d. Positive/Negative Slippage
    e. Summary of Findings, Issues/concerns/problems
2. Updated S-CURVE/Manning/Activity Schedule (A3 Sized paper)
3. Documentation (Geotagged Photographs with date) for every activity during the implementation.

5.3 The Draft Final Report shall contain the following major deliverables of the Study

5.1.1 Overall Summary of Accomplishment Report
5.1.2 Plan and Profile with the Final alignment incorporated in the Topographic/Hydrographic Plans
5.1.3 Laboratory Test Accomplishment Report (if applicable)

5.1.4 Preliminary Highway Engineering Design and Studies/Assessment Report (typical Roadway Section, Summary of Quantities[4], Table of Reference of Horizontal and Vertical Control)

5.1.5 Other data/documents to be submitted shall include but not limited to:

5.1.5.1 Geo-tagged Photographs

5.1.5.2 Latest Comprehensive Land Use Plan (CLUP), Comprehensive Development Plan (CDP) and other related plans of all Cities/Municipalities within the project's influence area

5.1.5.3 Map of the alignment (including shape file format and CAD file with coordinates), plotted/converted to PRS92

All outputs shall be presented in a Feasibility Study report[6], in English language, and shall be submitted to DPWH in three (3) copies. Electronic file formats (i.e., Microsoft Office, Adobe PDF, AutoCAD, transport model input and output files, etc.) of all reports and documents systematically organized in traceable and auditable formats shall be prepared in 1TB Hard Drive (3 unit).

All Draft Final Outputs shall be submitted at least two weeks prior to the contract expiration and be subjected to review and evaluation of the Implementing Office, PPD, ESSD, and other relevant offices as deemed necessary. The reviewing office shall review the draft reports for a maximum of two weeks. Therefore, Final Reports are expected to be delivered not later than the contract expiration.

5.4 Topographic Survey Plan

a. The Consultant shall submit one (1) set of A-1 size print of the plotted topographic survey plan/profile, and cross-sections for preliminary review.

The below listed documents shall be submitted, if necessary, for use as reference in the review of topographic survey plan, to wit:

i. Survey data/computations
ii. Plan and Profile with the Final alignment and cross-sections incorporated in the Topographic/Hydrographic Plans
iii. Pictures of horizontal/vertical control monuments showing the location and inscriptions
iv. Certification from DENR, of the horizontal and vertical control reference points used in each project
v. Horizontal curve computation
vi. Electronic copy of the final alignment (including shapefile and kml format), plotted in PRS92 coordinates (in dwg format)
vii. Electronic copy of the Complete Report consolidated in one PDF file
viii. Electronic copy of all software input and output files, if applicable

[3] Applicable for big-ticket projects (worth more than 2.5B) only; [4] See Annex G for the prescribed template in providing the summary of cost estimates;
[5] Includes Stakeholders Analysis, Standards for Gender Analyses, and Gender-Aware Cost Benefit Analysis, as described in Tool Nos. 2 to 4 of the DPWH GAD Toolkit; and [6] Observe proper citation of reference

Other data/documents to be submitted shall include but not limited to:

i. Geo-tagged photographs
ii. Map of the alignment plotted/converted to PRS92 (shapefile format and CAD file with coordinates)
iii. Updated barangay shapefiles of the affected cities/municipalities
iv. Overall Accomplishment Reports

b. The review of the topographic survey plan is subject to field verification to minimize changes/modifications and unnecessary delays in the preparation of final plans.

c. The review and approval of the said survey plans by DPWH do not relieve the Consultant from responsibility for the accuracy of the survey works and permanency of the horizontal and vertical ground controls and reference stations due to improper placement.

6 STUDY SCHEDULE

The Study shall be completed within a period of one and a half (1.5) months. To fast track the implementation, the Consultant will immediately commence activities upon issuance of Notice to Proceed (NTP).

7 HUMAN RESOURCE/ STAFF REQUIREMENT

The Consultant shall be composed of qualified staff with experience in the conduct of data gathering for infrastructure feasibility studies including preliminary detailed engineering design, traffic, social, and environmental impact assessment.

The Consultant shall provide the following key staff for the Topographical Survey for the Proposed Manila-Batangas-Lipa City-Balete Diversion Road:

Position	Job Description	No. of Months	Required Qualifications
1. Project Manager/ Transport Planner (1)	Act as the team leader for the study team and ensure timely and quality delivery of the work specified in this Terms of Reference.	1.50	• Registered/Licensed Civil Engineer, or equivalent, with extensive experience in structural design of flood control structures and bridges and construction of modern structures

Position	Job Description	No. of Months	Required Qualifications
			• At least 10 years of experience in the related field; maximum of 15 years' experience in the same field
2. Geodetic Engineer (1)	Undertake topographic survey and provide the necessary topographic maps in aide of the preliminary design of alignment(s).	1.00	• Registered/Licensed Geodetic Engineer, or equivalent, with specialization in geodetic engineering. He/she must have experience in the field of surveying and other related studies • At least 5 years of experience in the related field; maximum of 10 years' experience
3. Civil Engineer (1)	Responsible in supervision of field staff and the methods of work, oversees the progress of works and assists the Geotechnical Engineer in collection of necessary data and information in carrying out detailed soil investigations along the road alignment	1.00	• Registered/Licensed Civil Engineer, or equivalent with experience on soil, subsurface and geotechnical survey and other related studies • At least 5 years of experience in the related field; maximum of 10 years' experience in the same field

8 INSTITUTIONAL ARRANGEMENTS

8.1 Implementing Office

8.1.1 Disburse the fund for the conduct of the F/S once the contract is executed;

8.1.2 Implement and manage the contract, including ensuring the quality of output, the monitoring and evaluation of the progress of the study and approval of reports to ensure delivery of outputs as specified in this TOR;

8.1.3 Provide assistance in the coordination with other concerned agencies/entities in the conduct of the study, such as securing the required permits(s) from the Protected Area Management Board (PAMB)

- Department of Environment and Natural Resources (DENR) for the conduct of activities and entry into the protected area, among others;

8.1.4 Provide reasonable technical assistance to personnel of the Consultant with respect to incidents related to the conduct of the study;

8.1.5 Provide, upon the request of the Consultant, available information/data and also if available, copies of previous related studies subject to the execution of the Confidentiality and Non-Disclosure Agreement (CNDA), if necessary.

8.1.6 [1]Coordinate with the Regional Office and Project Preparation Division – Planning Service of the DPWH regarding all the activities relating to the conduct of the study, included but not limited to the implementation timelines, submission of deliverables, notice of meetings, etc. Should the need arise, consult with the PPD-PS in coordination with the Regional Office in the implementation of the study.

8.2 Consultant

8.2.1 Conduct the study and deliver **ON TIME** the results/outputs as indicated in this TOR;

8.2.2 Provide the necessary office equipment (i.e., laptop, smartphone, office supplies, etc.) for the conduct of the study. All equipment procured for the development of the project shall be transferred to the Government by the end of the project;

8.2.3 Carry out the services in accordance with the accepted theories and practices to ensure that the final works will provide the most economical and feasible development for the study;

8.2.4 Accept full responsibility for the consulting services to be performed under this TOR for which the Consultant is liable to DPWH;

8.2.5 Perform the work in an efficient and diligent manner and shall adhere to the agreed schedule and deliverables; and

8.2.6 Provide on-the-job capacity building/technology transfer to the Implementing Office.

[1] Include only if the DEO is the Implementing Office

9 TERMS OF PAYMENT

Payment shall be based on the approved and accepted deliverables and percent (%) accomplishment of the Consultant.

Billing shall be in accordance with the above stated conditions and subject to the usual Government accounting and auditing requirements.

The contingency which takes 5% of the Contract Amount exclusive of local taxes or VAT shall be used only through an approved additional works by the Implementing Office due to unforeseen difference in the actual length of road alignment. It shall not be used as payment due to suspension and time extension.

10 OWNERSHIP OF THE OUTPUTS/REPORTS/DOCUMENTS

All submitted outputs/reports/documents under this contract, including but not limited to tracings, as-built drawings, estimates, digital information, computer model and data, specifications, investigations and studies completed or partially completed, inspection logs, and photographs, shall be the property of DPWH and the use of these data for other purposes shall require written consent from the Department. Copyrights will be governed by existing laws, rules and regulations.

Prepared By:

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Engineer II

Submitted By:

ERIKA RACHELLE L. LAUREL
OIC, Planning and Design Section

Recommending Approval:

BENSON P. TESNADO
Assistant District Engineer

Approved By:

CAROLINA D. PASTRANA
District Engineer

Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
BATANGAS 3RD DISTRICT ENGINEERING OFFICE
J. Gonzales St., Barangay 4, Tanauan City, Batangas, Region IV-A

Project Name and Location :	***Consulting Services for the Conduct of Topographical Survey for the Pre-Feasibility Study of the Proposed Manila-Batangas-Lipa City-Balete Diversion Road***

Contract Duration: 1.5 months
45 cd

APPROVED BUDGET FOR THE CONTRACT		
A.	PERSONNEL SERVICES	904,500.00
B.	REIMBURSABLES	91,438.50
C.	SURVEYS	324,500.00
D.	Total A + B + C	1,320,438.50
E.	VALUE ADDED TAX (12% A)	108,540.00
F.	CONTINGENCY (5% D)	66,021.93
G.	GRAND TOTAL (D + E+ F)	1,495,000.43
I.	**SAY**	**1,495,000.00**

Prepared and Submitted By:

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Recommending Approval:

BENSON P. TESNADO
Assistant District Engineer

APPROVED:

CAROLINA M. PASTRANA
District Engineer

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Project Name and Location :	***Consulting Services for the Conduct of Topographical Survey for the Pre-Feasibility Study of the Proposed Manila-Batangas-Lipa City-Balete Diversion Road***

PERSONNEL SERVICES

		NO.	MONTHS	P-M	MONTHLY RATE	AMOUNT
I.	**Key Staff**					
1	Project Manager/Transport Planner	1	1.50	1.50	325,000.00	487,500.00
3	Geodetic Engineer	1	1.00	1.00	225,000.00	225,000.00
				2.50	**Sub-Total**	**712,500.00**
II.	**Technical Support Staff**					
1	Civil Engineer (Engineering Surveys)	2	1.00	2.00	60,000.00	120,000.00
		2		**2.00**	**Sub-Total**	**120,000.00**
III.	**Administrative Support Staff**					
1	Administrative Officer	1	1.50	1.50	48,000.00	72,000.00
		1		**1.50**	**Sub-Total**	**72,000.00**
					Total Personnel	**904,500.00**

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REIMBURSABLES

			Description	Unit	Quantity	Unit Cost	Amount
B.			**Reimbursable Items**				
	1.		Per Diems	person-days	0	2,200.00	0.00
	3.		Domestic Land Transportation	veh-months	1	65,000.00	32,500.00
	4.		Communication	months	0	9,000.00	0.00
	5.		Office/Engineering Supplies				
		a.	Reproduction of Reports	provisional sum	1	21,300.00	21,300.00
		b.	Office Supplies for the Study Team	months	1	3,638.50	3,638.50
		c.	Office Supplies for the Implementing Office	provisional sum	1	34,000.00	34,000.00
						Sub-total Reimbursable Items	**91,438.50**

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SURVEYS

	Surveys	Unit	Quantity	Unit Cost	Amount
2.	Topographic Survey				
	a. Roads	km	8.8	25,000.00	219,500.00
	b. Bridge	bridges	4	25,000.00	100,000.00
				Sub-total Surveys	**324,500.00**

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