



TERMS OF REFERENCE

CONSULTING SERVICES FOR THE SLOPE STABILITY ANALYSIS AND DETAILED ENGINEERING DESIGN OF THE PROPOSED RETAINING WALL AT BAYANIHAN STREET, LITEX ROAD AT BARANGAY COMMONWEALTH

I. RATIONALE/BACKGROUND OF THE STUDY

Slope stability issues commonly arise in both embankment and excavation of existing ground, particularly in instances where excessive pore water pressure accumulates during the rainy season or when the ground is unable to bear the surcharge loads. Consequently, an unstable slope presents an imminent peril to nearby residential neighborhoods and may cause potential disaster within the community. The scenario mirrors a situation already observed similar to an existing site in Barangay Bayanihan, Quezon City, where urgent measures are imperative to mitigate the hazardous condition of the terrain.



Figure 1
Existing Site Condition

To address the problem, the Local Government of Quezon City has proposed the construction of a retaining wall to protect vulnerable residents, along with the implementation of slope stabilization measures. These interventions are anticipated to enhance community safety and safeguard vital infrastructures within the site.

In addressing these imperatives, the following Terms of Reference (TOR) serve as a framework for executing the required initiatives, including the scope, objectives, and methodologies necessary for successful project implementation.



Figure 2
Project Location Site

II. PROJECT DESCRIPTION

The area is situated along Bayanihan Street, Litex Road has been regarded as a danger zone since the landslide that occurred in the subject site last August 7, 2012. Since then, the landslide area was converted into an urban farming site temporarily. The subject area is approximately 50 m in length and 15 m wide, with an approximate 20 m drop elevation from Litex Road (top) to Bayanihan Street (low). Furthermore, the site location is confined with residential dwellings fully surrounding the area. In consideration with the road access to the area, challenges may be encountered to its implementation due to tight alley entrance and limited space to store and station construction equipment and materials.

Given these observations, and after due diligence, it has been deemed necessary to engage a comprehensive slope stability analysis and to propose a detailed engineering design. This will allow for a thorough evaluation of the area's overall stability and safety, ensuring that any required reinforcements, and other interventions are based on accurate data and expert analysis. By proactively addressing these concerns, the Quezon City Government reinforces its commitment to structural integrity, public safety, and responsible infrastructure management.



III. SCOPE OF WORK

A. OBJECTIVES

The general objective of the study is the Detailed Engineering Design of a Retaining Wall and Slope Stabilization Analysis. The study shall cover the full length of the retaining wall and its back portion, which is sloping towards the top of the terrain.

This will be accomplished through the following sub-objectives:

- i. Assessment of the existing condition of the slope and identify the appropriate phasing of activities that prioritize the protection of the residents living at the toe of the slope;
- ii. Conduct a topographical survey and geotechnical exploration for engineering assessments of the existing site condition and for the subsequent determination of appropriate engineering measures that need to be undertaken;
- iii. Produce engineering drawings consequent to the detailed engineering design of the retaining wall, including slope stabilization measures, and erosion protection of the slope.

B. SCOPE OF CONSULTANCY SERVICES

The scope of the Consulting Services will involve surveys and investigations to be utilized in the preparation of the Detailed Engineering Design, which is the subject of this Terms of Reference (TOR).

The Consultant's scope of work will cover but not necessarily limited to the items listed hereunder:

A. General Scope of Works

1. Preliminary Assessment

Assessment of the existing condition on site including review of the previous and relevant data for the study.

2. Topographic Survey

Survey activities shall align with the specified requirements outlined in the DPWH Design Guidelines, Criteria and Standards (DGCS) Volume 2B – Engineering Surveys, 2015. The level of survey shall be tailored to the Detailed Engineering Design.

3. Geotechnical Exploration and Investigation

The geotechnical investigation program for retaining walls and slopes shall be conducted in accordance with Chapter IV, Part IV, Volume 2C, Geological and Geotechnical Investigations, DPWH Design Guidelines,



Criteria and Standard 2016; Manual on Technical Requirements for Geotechnical Investigation of Public Works and Highways Projects; that include but not limited to the following:

- Spacing: The spacing of boring shall be at every 30m along the alignment of the retaining structure and every 45m at the back of the retaining structure, which is at the slope.
- Depth: Borings located along the alignment of the retaining structure should extend at least to a depth equal to the height of the retaining structure/slope. For borings located at the back of the retaining structure/slope, it should extend to a depth equal to twice the height of the proposed retaining structure. When bedrock is encountered before reaching the above specified depths, rocks cored should be obtained for a length of at least 5.0m.
- Location: The location of borings should be along the proposed alignment of the retaining structure.
- Evaluation: The character and engineering properties of the underlying strata must be determined and identified for the subsequent engineering analysis and recommendations for this study. The engineering properties of the underlying strata shall be determined based on the combination of laboratory testing, and/or empirical correlations with the results of Standard Penetration Tests (SPT). Subsequent recommendations of the geotechnical evaluation report shall be made based on the results of the investigations, laboratory testing, and engineering analysis undertaken in this study.

The recommendation shall consist of but not limited to the following:

- Recommended geotechnical parameters of soil and rocks such as shear strength parameters, elastic modulus, consolidation parameters, and lateral earth pressures.
- Site Geology and Soil Characteristics per DPWH-BSDS 2013 Section 3.5 or NSCP Section 208.4 as applicable.
- Recommended Foundation and its geotechnical capacities
- Recommended Soil Improvement (if deemed necessary)

4. Geological and Geohazard Assessment

The consultant shall undertake the Geological and Geohazard Assessment in accordance with the DGCS Volume 2A 2015 to determine the geology and identify the presence of geohazards that may affect the area and the proposed slope stabilization structures.

The Geological and Geohazard Assessment shall consist of, but not limited to the following:

- Review regional and local geology of the project area from published literature.



- Conduct geologic mapping to determine the lithology of the area as well as to delineate the presence of structural discontinuities such as joints and faults if there's any. Performed geohazard assessment in accordance with DGCS Volume 2A 2015 to identify risks associated with natural phenomena such as landslides, floods, earthquakes, among others.
- Results of the Geological and Geohazard assessment shall be incorporated in the Geotechnical Evaluation Report along with the produced geologic maps and geohazard maps.

Additionally, the Consultant shall coordinate with the Local Government of Quezon City to gather any available data relating to soil/geotechnical investigations at or near the site during the conduct of this study. The consultant shall also gather any relevant existing laws, codes or city ordinances related in this study.

B. DETAILED ENGINEERING DESIGN

1. Slope Stability Analysis

The slope stability study of the proposed retaining wall and slope must be conducted, and an appropriate engineering measure must be recommended to ensure the safety of the inhabitants located at or near the toe of the slope. The slope stability analysis shall be conducted using any slope stability software that can check various types of slip surfaces, such as surficial, local, deep-seated, or global slip surfaces. Furthermore, the slope stability model shall be subjected to various loading conditions such as normal, raised water level, seismic, and any other load conditions and loadings following the prevailing local code provisions and standards.

Moreover, the consultant shall check the site for various geotechnical issues such as foundation bearing failure, overturning, and sliding of retaining walls, slope instability, ground settlement or heave. These geotechnical issues may be consequent to the construction of the proposed structures in combination with the site's existing condition.

2. Hydrological and Hydraulic Analysis

a. Basic Analysis

With the consolidated data gathered, the Consultant(s) shall perform hydrologic analysis using hydrological models within the limits of the catchment area that will provide the appropriate recommendation for the flood mitigation measure.

b. Rainfall Analysis

Probable rainfall shall be estimated for use in the determination of probable discharge and planning for the drainage improvements in the study area.



3. Prepare a Detailed Engineering Design of the retaining wall alignment and appurtenances containing the following but not limited to:
 - a. Structural Plans and Civil Works
 - b. Topographical Maps
 - c. Idealized Soil Profile
 - d. Cost Estimates/ Unit Cost Analysis
 - e. Indicative construction Schedule
4. Prepare the Bidding Documents for the procurement of a contractor for the construction of the proposed project following the provisions of the existing procurement laws.
5. Develop and submit one (1) set of the original copies of the Detailed Engineering Design in Mylar and corresponding electronic files.

C. SUBMITTALS

The Consultant shall submit the following:

- | | |
|-------------------------------------------------------------------------------|--------|
| • Site Investigation and Survey | 2 Sets |
| • Material Test Results | 2 Sets |
| • Geotechnical Investigation Report | 2 Sets |
| • Design Calculations, Technical Specifications | 5 Sets |
| • Structural Drawings (A3)
Duly Signed and Sealed by a Structural Engineer | 2 Sets |
| • Bill of Quantities/Cost Estimates | 2 Sets |
| • Electronic files of each document | 1 Set |

D. OWNER PROVIDED ITEMS

In the execution of the work, the following items shall be provided by the QCG:

- Clearance in surveying the building, and access to various parts of the building; and
- Building technical personnel to provide site assistance and support throughout the duration of the site works.



E. CHANGES

All instructions for revisions to the drawings and other documents shall be authorized and issued under Quezon City Department of Engineering (QCDE).

Revisions to the drawings and other documents, at no fault of the CONSULTANT, during any Phase that will substantially affect the scope of the delivery of the services, as determined and agreed upon by both parties, shall be implemented by the CONSULTANT within the corresponding and reasonable extension of the period concerned at no additional cost to the QCG.

Major revisions may be pursued as a separate contract subject to the applicable provisions of the RIRR of RA 9184.

IV. PROJECT STANDARDS AND REQUIREMENTS

i. KEY PERSONNEL – QUANTITY AND QUALIFICATIONS

The Consultant shall provide the following key staff positions:

PERSONNEL	GENERAL EXPERIENCE	RELEVANT EXPERIENCE
Geotechnical Engineer/ Team Leader	Licensed Civil Engineer	<ul style="list-style-type: none">One (1) registered Civil Engineer with at least five (5) years of continuous experience in undertaking feasibility studies and detailed engineering design as a geotechnical engineerHas satisfactorily completed at least five (5) related studies or project developments
Geodetic Engineer	Licensed Geodetic Engineer	<ul style="list-style-type: none">One (1) registered Geodetic Engineer with at least five (5) years of continuous experience in undertaking feasibility studies and detailed engineering design as a geodetic engineerHas satisfactorily completed at least five (5) related studies or project developments
Hydrologist/Drainage Engineer	Licensed Civil Engineer	<ul style="list-style-type: none">One (1) Registered Civil Engineer with at least five (5) years of continuous experience in the field of hydrology and drainage design. Also, must be familiar and adept with pertinent technologies in hydrology research and design of drainage and flood control structures.



Civil Works/Structural Engineer	Licensed Civil Engineer	<ul style="list-style-type: none">At least two (2) registered Civil Engineer with at least five (5) years of cumulative experience as a structural engineer in detailed engineering design and preparatory works.
Quantity and Cost Engineer	Licensed Civil Engineer	<ul style="list-style-type: none">At least one (1) registered Civil Engineer with at least five (5) years of continuous experience in undertaking feasibility studies and detailed engineering design as a quantity/cost engineer
Contract and Procurement Specialist	Licensed Civil Engineer	<ul style="list-style-type: none">At least one (1) registered Civil Engineer with at least five (5) years of continuous experience in the preparation of bid/contract documents together with other relevant data required and prequalification documents.

Technical and Administrative Support Staffs:

- CAD Technician** – One (1) individual with a recognized certificate (e.g., TESDA Technical Drafting (NC II) National Certificate Level II), and at least one (1) year of experience in AutoCAD, Revit, or equivalent software for preparing engineering drawings.
- Administrative Staff/Document Controller** – One (1) technical staff responsible for keeping daily demolition logs, photo documentation, site reports, and coordinating permits and clearances with LGU offices.

The Consultancy Firm (CF) may also hire, as it deems necessary and at its own expense, additional experts and/or support staff to ensure the quality and timely delivery of the scope of work of the consultancy service.



ii. QUALIFICATIONS OF THE FIRM

The participating bidder shall be a registered local firm who may be a sole proprietorship, partnership, corporation, or joint venture pursuant to RA 9184 Revised Implementing Rules and Regulations 2016 (Section 23.4.2.1)

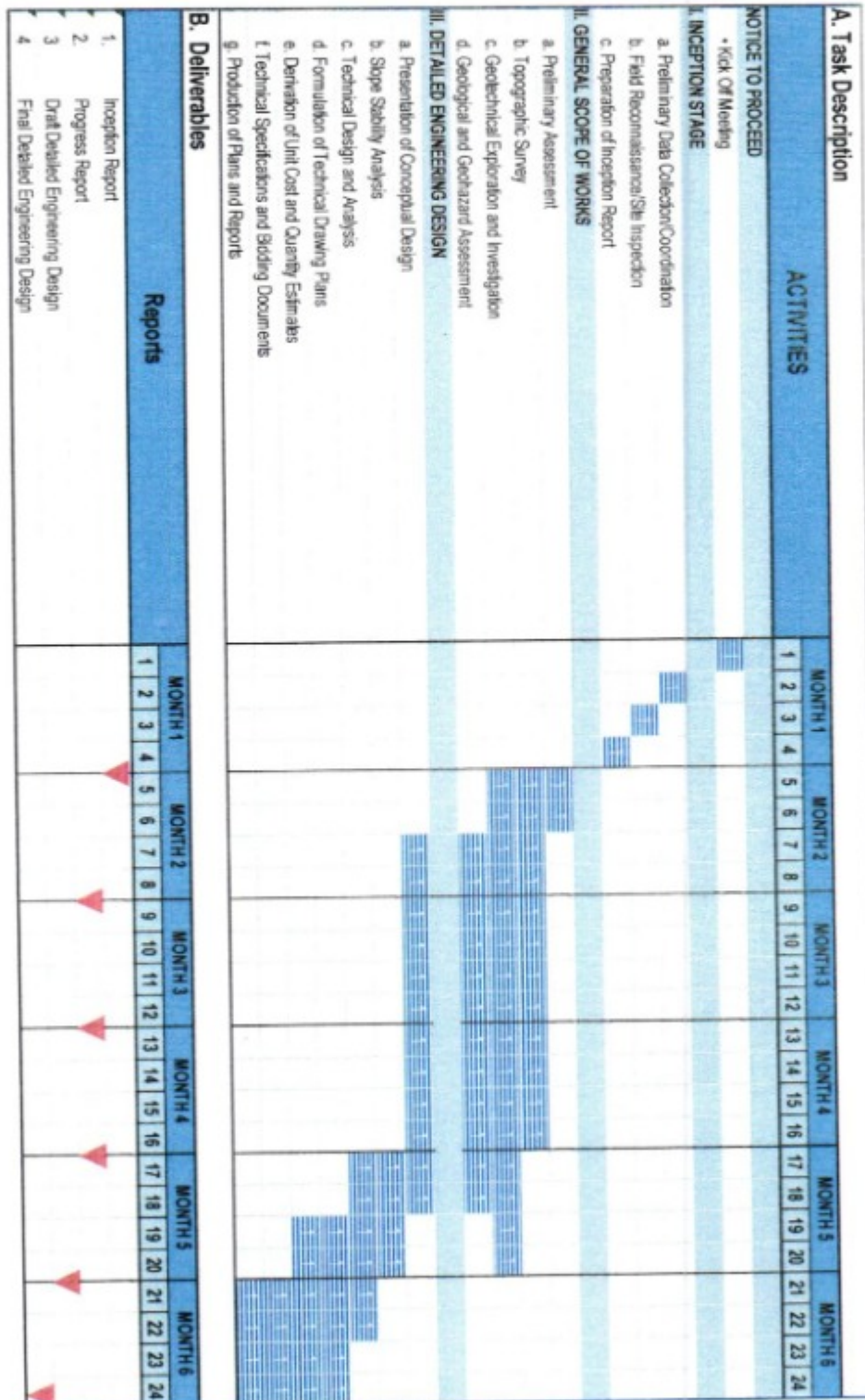
PARTICULAR	REQUIRED QUALIFICATIONS
1. Experience	With at least ten (10) years of similar (e.g., retaining walls, slope protection, cut/fill slopes) or relevant infrastructure experience related to this TOR
2. Minimum Number of Projects Undertaken	Have successfully undertaken and completed at least one (1) related infrastructure project within the last five (5) years
3. Single Largest Completed Contract (SLCC)	Have completed at least one (1) e.g., retaining wall, slope protection, cut/fill slopes, or related infrastructure project relevant to this TOR having a cost equivalent to at least 50% of the ABC



V. PROJECT DURATION

The project must be completed in **ONE HUNDRED TWENTY (120) CALENDAR DAYS** upon issuance of the Notice to Proceed. A detailed schedule of work and activity plan shall be prepared and submitted together with the Consultant's Proposal.

A. Gantt Chart of Activities and Deliverables





B. Time Schedule of Personnel

TIME SCHEDULE OF PROFESSIONAL PERSONNEL

Name	Position	Months (in the Form of a Bar Chart)																								No. of Months			
		MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5	MONTH 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		19	20	21
A. KEY STAFF																													
1. To be Named	Geotechnical Engineer (Team Leader)	[Bar chart showing 6 months of activity]																								6.00			
2. To be Named	Civil Works/Structural Engineer	[Bar chart showing 5 months of activity]																								5.00			
3. To be Named	Geodetic Engineer	[Bar chart showing 2 months of activity]																								2.00			
4. To be Named	Quantity and Cost Engineer	[Bar chart showing 2 months of activity]																								2.00			
5. To be Named	Contract and Procurement Specialist	[Bar chart showing 2 months of activity]																								2.00			
SUB-TOTAL																												17.00	
B. TECHNICAL AND ADMINISTRATIVE SUPPORT STAFF																													
1. To be Named	Civil Engineer	[Bar chart showing 6 months of activity]																								6.00			
2. To be Named	CAD Operator (2)	[Bar chart showing 8 months of activity]																								8.00			
3. To be Named	Administrative Officer	[Bar chart showing 6 months of activity]																								6.00			
SUB-TOTAL																												20.00	
GRAND TOTAL																												37.00	



VI. APPROVED BUDGET FOR THE CONTRACT

The approved budget is shown below in respective to phase(s) which includes the cost of all taxes, such as but not limited to value added levies and duties. Any and all taxes, charges, imposts and other legal exactions due or that may become due under this contract shall be for the account of the contractor / Consultant. The Implementing Agency shall withhold applicable withholding taxes, if any, from its payment to the Contractor/Consultant in accordance with the requirements of the law.

SCOPE OF WORKS	PERCENTAGES
PRELIMINARY / FIELD INVESTIGATION	
1. Visual Inspection	73.60%
2. Data Gathering and Site Documentation	
3. Preparation for materials testing	
4. Renumeration and Professional Fees (≥ 20 Personnels)	
FIELD INVESTIGATION EVALUATION	
1. Actual Ground Investigation / Activity	24.57%
2. Structural, Hydrological and Slope Stabilization Analysis and drawings	
3. Evaluation Report	
DETAILED EVALUATION	
1. Preparation of Reports / Consumables	1.83%
GRAND TOTAL	100%

The Approved Budget for the Contract is **SEVEN MILLION ONE HUNDRED TWENTY-ONE THOUSAND SIX HUNDRED PESOS AND 00/100 ONLY (Php 7,121,600.00)**, inclusive of all government taxes/fees.

No Price Adjustment

The project cost shall be fixed and there shall be no price adjustments applicable for the duration of the contract except when the operations costs are increased by more than 10% as a result of any extraordinary circumstances as determined by the National Economic Development Authority (NEDA). Pursuant to the provisions of RA 9184 and its RIRR on contract price escalation, all contract price escalation shall be approved by the Government Procurement Policy Board (GPPB).

VII. BID EVALUATION METHODOLOGY

For the purpose of procuring the services of Consultant / Contractor for this undertaking, the Revised IRR of the Republic Act 9184 shall govern. An "Instruction to Bidders" (ITB) shall be issued detailing the requirements and procedures as provided in the RIRR, which includes the following:

a. Quality-Cost Based Evaluation Procedure

- i. The technical proposal together with the financial proposal shall be considered in the evaluation of consultants. The technical proposals shall be evaluated first using the criteria in Section 33.2.2 of the RIRR of RA 9184. The financial proposals of the consultants who meet the minimum technical score shall then be opened.
- ii. The financial and technical proposals shall be given corresponding weights with the financial proposal given a minimum weight of fifteen percent (15%) up to a maximum of forty percent (40%). The weight of the technical criteria shall be adjusted accordingly such that their total weight



in percent together with the weight given to the financial proposal shall add to one hundred percent (100%). The exact weights shall be approved by the HoPE upon the recommendation of the BAC and indicated in the Bidding Documents. The BAC shall rank the consultants in descending order based on the combined numerical ratings of their technical and financial proposals and identify the Highest Rated Bid.

- iii. The HoPE shall approve or disapprove the recommendations of the BAC within two (2) calendar days after receipt of the results of the evaluation from the BAC.
- iv. After approval by the HoPE of the Highest Rated Bid, the BAC shall, within three (3) calendar days, notify and invite the consultant with the Highest Rated Bid for negotiation in accordance with Section 33.2.5 of the RIRR of RA 9184, except for the financial proposal under item (e) thereof.

b. Shortlisting Requirement

i. Minimum Eligibility Score

The minimum Eligibility Score is 70%.

ii. Number of Consultant/s to be Shortlisted

The BAC shall draw up the short list of consultants from those who have been determined as eligible in accordance with the provisions of this IRR. The number of short-listed consultants, which shall be determined in the pre procurement conference, shall consist of three (3) to seven (7) consultants, with five (5) as the preferable number. Should only one (1) or less than the required number apply for eligibility and short listing, pass the eligibility check, and/or pass the minimum score required in the short listing, the BAC shall consider the same.

c. Eligibility Evaluation

i. Criteria and Rating System

The Eligibility criteria and rating system for short listing of consultants:

1. Applicable experience of the consultant and members in case of joint ventures, considering both the overall experiences of the firm or, in the case of new firms, the individual experiences of the principal and key staff, including the times when employed by other consultants.
2. Qualification of personnel who may be assigned to the job vis-à-vis extent and complexity of the undertaking and;
3. Current workload relative to capacity.

ii. Weights for Each Criterion

CRITERIA	WEIGHT
Experience of the consultant	50%
Qualification of personnel	30%
Current workload relative to capacity	20%
TOTAL	100%



d. Technical Evaluation

i. Criteria and Rating System

The technical proposal together with the financial proposal shall be considered in the evaluation of consultant / contractor. The technical proposals shall be evaluated first using the following criteria:

1. Quality personnel to be assigned to the project, ensuring the suitability of key staff to perform the duties required. This includes the general qualifications, competence, education, and training of key personnel, particularly Registered/Licensed Civil / Structural Engineers (CE/StrE) with expertise in structural auditing, analysis, and retrofitting; Registered/Licensed Civil Engineers specializing in Geotechnical Engineering, with expertise in soil investigation, foundation analysis, and geotechnical design;
2. Experience and capability of the Consultant / Contractor which include records previous engagement and quality performance in similar and in other projects; relationship with the previous and current clients and overall work commitments, geographical distribution of current / impending projects and attention to be given by the Consultant / Contractor. The experience of the Consultant / Contractor to the project shall be considering both the overall experiences of the firm and the individual experiences of the principal and key staff including the times when employed by other consultants; and
3. Plan of approach and methodology with emphasis on the clarity, feasibility, innovativeness and comprehensiveness of the plan approach and the quality of interpretation of the project problems, risks and suggested solutions.

ii. Weights for Each Criterion

CRITERIA	WEIGHT
Quality personnel	50%
Experience and capability of consultant/contractor	30%
Plan of approach and methodology	20%
TOTAL	100%

iii. Passing Score

The minimum Technical Score is 70%.

e. Calculation of Rating

i. Weights for Technical and Financial

1. The financial proposal of Consultant / Contractor who meet the minimum technical score shall be opened; and
2. In identifying the Highest Rated Bid, the Technical Proposal shall be given a weight 60% while the Financial Proposal shall have 40%.

All conditions for recommendations shall be in consideration with the minimum disturbance to the occupants both on the subject structure and other nearby buildings;



All procedures shall be able to satisfy the "LIFE SAFETY OBJECTIVE" since the structure is one of the essential facilities;

VIII. PAYMENT DETAILS AND DELIVERABLES

Relative to the deliverables, the following are the terms of payment:

DELIVERABLES / ACTIVITIES	TIMELINE	PAYMENT
Submission of Inception Report	1 month from receipt of NTP	15%
Submission of Progress Report (Initial Survey Reports)	2 months from receipt of NTP	35%
Submission of Draft Detailed Engineering Design and Report	5 months from receipt of NTP	35%
Submission of Final Detailed Engineering Design and Report	6 months from receipt of NTP	15%



IX. CANCELLATION/TERMINATION OF CONTRACT

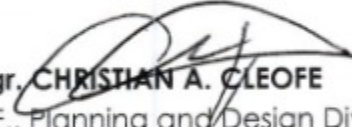
A. PENALTIES FOR BREACH OF CONTRACT


Failure to deliver the services according to the standards and requirements set by the Quezon City Government shall constitute an offense and shall subject the Supplier to penalties and/or liquidated damages pursuant to RA 9184 and its revised Implementing Rules and Regulations.

B. TERMINATION

The guidelines contained in RA 9184 and its revised IRR shall be followed in the termination of any service contract. In the event the City terminated the Contract due to default insolvency, or for cause, it may enter into negotiated procurement pursuant to section 53 of RA 9184 and its RIRR.

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