

**Local Government Engineering Department
Design Unit**

RDEC Building (Level-4)
Agargaon, Sher-e-Bangla Nagar, Dhaka-1207

Design Parameters & Other Relevant Information for the Proposed Bridge Construction Project.

Name of the Bridge: _____

Name of the Project: _____

Date of Performing Field Survey: _____ Upazila _____ District _____

TBM Location _____ RL at TBM _____ m PWD/SOB

1. Digital Topographical Survey Map shall be prepared as per TOR enclosed:
(Plane Table & Level Survey may be accepted for Bridges $\leq 30\text{m}$)

2. Sub Soil Investigation work shall be conducted as per TOR enclosed:

3. Give Details of proposed Site

For Non Tidal Region

Three High Floods

- i) HFL () m PWD/SOB
- ii) HFL () m PWD/SOB
- iii) HFL () m PWD/SOB

[Year must be mentioned within bracket]

iv) NFL m PWD/SOB

v) LWL Dry Season) m PWD/SOB

vi) SHWL at Bridge Site as per BIWTA ISOhytal Map [see LGED Web Site] mPWD

For Tidal Region

During Monsoon

- i) HTL m PWD/SOB
- ii) LTL m PWD/SOB

Dry Season

- i) HTL m PWD/SOB
- ii) LTL m PWD/SOB

4. Make comment about stability of the banks (Severely erodible/Moderately erodible/Non erodible).

5. Whether the river course is Severely Meandering/Moderately Meandering/ Not Meandering.

6. Whether there is any Regular Walkway parallel to the channel or Road along any bank, Yes/No.

If yes, Give details of it: _____

7. a) Whether proposed bridge site is located within any polder area ? If yes, Give details of the Water Control Structures in the same channel.

b) Whether the proposed bridge site needs major Hydrological & Morphological Study/ Survey, Yes/No.

8. Suggest possible Approach Road Level as per local situation & practical Considerations. RL m PWD/SOB

9. Type of Soil in Approach Road. Non plastic/ Low plastic/ Medium plastic/ High plastic/ Organic.

10. Whether navigation is needed, Yes/No.

If yes, State Navigation Type & Amount of free Board needed (Small boat/ large boat/ Launch/ Burge/ large Vessels etc.)

a) Minimum Vertical Clearance from SHWL/ HFL to soffit of Girder ----- m

b) Minimum Horizontal Clearance _____ m (face to face distance between Piers)

_____ m (face to face distance between Pile Caps)

(Actual Navigational requirements should be confirmed either by local water transport user's interview or from BIWTA.)

11. Type of Road or Road Category UZR/ UNR/ VR-A / VR-B

12. Type of Traffic/Loading Type. All Traffic HS20/ HL-93

13. Give some photographs of the site.

14. Proposed Carriage Way Width. 3.70/ 5.50/ 7.30m

* Road ID:

* Structure ID:

* As per latest RSDMS

15. Nearest Existing Paved Road Level & Distance of Paved Road from the proposed Abutment Location
a) RL m PWD b) Distancem.
16. Whether the canal/ khal/ River needs re-excavation at proposed site. If yes, How much? Give details of it.
(Possible source of this information may be from LGED/ BWDB)
17. Whether any existing bridge within 10.00 km **U/S** or **D/S** of the Same Channel, if yes, then state,
b) Length of the Existing Bridge (m) _____ No of Span _____ Each Span Length (m) _____
c) Water Way Distance of the Existing Bridge from the proposed Bridge site _____
d) Deck top level RL _____ m PWD/SOB
e) Soffit of girder level RL _____ m PWD/SOB
18. Navigational Clearance of the Existing Bridge.
a) Vertical Clearance _____ m
b) Horizontal Clearance _____ m
19. Proposed Length of the Bridge _____ m
20. Co-ordinate (longitude & Latitude) of both ends of the Proposed Bridge.
(You may collect this easily by GPS enabled Mobile Device.)
21. Some other Relevant Design parameters.
a) Additional transportation facilities requirement, like Intersection, Islands/ Divider/ Overpass/ Under Pass etc.
b) Drainage requirement.
c) Bank revetment / River training/ Road side slope Protection/ surface drain/ Guard posts/ W-Beam barrier etc.
d) Traffic signals/ Light Reflectors.
e) Electrical fittings/ Light posts.
f) Water transport safely signals/ Fender piles etc.
g) Stairs for Road crossing (People of one side village can cross the road to go to other side
h) Road side retaining structures.
22. On the basis of practical situation at site if any specific problem is identified (if not covered by above items), please give details of it: _____.
23. Socio-economic information
After construction of the bridge at the proposed location, population will have access to the following institutions.
a) Social Institutions (Name) _____
b) Educational Institutions (Name) _____
c) Health Care Centers (Name) _____
d) Agricultural input supply centers (Name) _____
24. Expected No. of traffic to be generated (no.) _____
25. Describe connectivity details with Approach & Access Road _____

Signature

Name:

Sub-Assistant Engineer

Upazila: Dist.:

Signature

Name:

Upazila Engineer

Upazila: Dist.:

Signature

Name:

Senior Assistant Engineer

District:

Signature

Name:

Executive Engineer

District:

Government of the People's Republic of Bangladesh
Local Government Engineering Department
Agargaon, Sher-e-Bangla Nagar, Dhaka-1207.

Terms of Reference
for
Digital Topographical Survey for Bridge

Name of the Project:

Name of Work:

Upazila: District:

The detailed survey to be carried out using high precision instrument i.e. Total station, Auto Level machine, GPS etc.

Survey report shall include following information:

1. A north direction shall be prominently shown.
2. All the physical features, such as ponds, permanent structures, drains, hills, wells shall be shown at their exact locations.
3. (a) One river/ channel/ khal cross section to be exclusively taken along the center line of the proposed bridge alignment and other sections at distances of 0.5, 1, 2 and 4 times channel widths at upstream and at distances of 0.5, 1 and 2 times channel widths at downstream. Spot levels on river cross section to be taken at 3.0m intervals or as necessary.
(b) The length of each cross section should cover the full channel width plus same length of left & right banks.
4. Road cross sections to be taken along approach road at both ends of the proposed bridge. Four road sections at each end of the bridge @25m interval shall be taken. Spot levels on road cross sections to be preferably taken at 1.0m interval.
5. Bank line survey of the channel shall be conducted by the following manner:
 - a. For less than 100m bridges, bank line survey of both sides shall be carried out minimum 300m towards upstream and downstream of the river course way.
 - b. For bridges of the proposed length 100-300m, the bank line survey of both side shall be carried out minimum 500m towards upstream and downstream of the river course way.
 - c. For bridges of the proposed length more than 300m, the bank line survey of both sides shall be carried out minimum 1km or as required towards upstream and downstream of the river course way.
6. All details within the area as instructed by the client to be surveyed which shall show summarized information about road alignment, side slope, bridges, homesteads, government/ non-government offices, Important or historic buildings or structures, tress, electrical installations markets, community center and other public places.
7. Sufficient spot levels to be taken at the rate of one per 16sqm area i/c river bank, road edges and embankment toes.
8. HFL to be provided reference to the PWD/SOB Bench Mark (BM).
9. All RLs to be taken with respect to SOB/PWD Bench mark available near by the bridge site and location of TBM to be clearly shown on the map.
10. All survey data to be submitted in an appropriate electronic form suitable for inputting in to design software being used by the Engineer.
11. Survey data shall also be submitted in print format **(with seal and signature)** with suitable text in a **suitable scale** as required by the Engineer, showing all the topographical features surveyed, spot levels with x, y, z, such that these can be used to establish Digital Terrain model (DTL).
12. Three permanent spots near each bridge site shall be marked with Global Co-ordinates (Longitude & Latitude) and Elevation.
13. For Bridge length more than 100m, the Topographical information provided in major Hydrological and Morphological Study report shall duly be incorporated in the Digital Topo Survey Map.
14. Digital photographs of daylight condition shall be provided which shall show, Canal/River/khal/approach/access road to the site and other important features around the site.
15. Co-ordinate (longitude & latitude) of both ends of all cross section of Roads and River/Canal/khal shall be shown on Topographic Survey Map. A satellite photograph (taken from Google earth) shall be provided and these co-ordinates shall also be identified properly on it.
16. Total job shall be carried out up to the satisfaction of the Design Unit, LGED.
17. In addition to the above requirements if any other special parameters are needed for a particular project site that shall be invariably incorporated.

Government of the People's Republic of Bangladesh
Local Government Engineering Department

Terms of Reference
For
Sub-soil Testing Work for Bridge

Name of Work:.....

Upazila:District:.....

The sub-soil investigation firm shall have good reputation. The firm shall have its own soil testing laboratory and a Geotechnical engineer (Graduate Civil Engineer from recognized institution).

The Sub-soil Investigation work shall be carried out following Standard Practices as stated below:

1. Prepare a work-plan showing the time schedule for conducting sub-soil investigation and submit the same to the Project Director, concerned Executive Engineer LGED.
2. Mobilize and start sub-soil investigation work with prior written information to XEN and UE's
3. The sub-soil investigation equipment shall be checked by UE's and LT's [dimension of Shelby tubes & Auto release hammer etc. They also check the Liquid Limit of Bentonite Powder (LL>350) & the mix ratio (4%-6%) of Bentonite with water for preparation of Slurry.
4. The borehole layout plan should be shown in the Digital Topographical survey map in x, y, z Co-ordinate. The 'z' co-ordinate shall be in respect to SOB/PWD BM.
5. Conduct sub-soil investigation work using 100mm exploratory boring for SPT test and soil sample collection.
6. For single span Bridge at least two nos. and for three and five span Bridge at least four nos. bore-hole, for Large Bridge (L>100m) at each support of the bridge (Pier, abutment) one bore hole should be made.
7. Take at least 3 (Three) digital Photo graph of each Boring operation in presence of LGED's representatives and the firm's Engineer (Graduate Civil Engineer from recognized institution).
8. For each bore-hole, minimum depth of boring shall be 20m. if poor quality soil encountered (say SPT value<20) the depth shall be extended upto 30m or more.
9. Normally SPT is taken @1.5m interval, but SPT must be taken @ 1m interval upto top 6m depth.
10. If clayey soil encountered at any depth during boring, undisturbed soil samples must be collected with the help of shelby tubes.
11. Following laboratory test must be carried out:
 - i) Unconfined compression for cohesive soil (C)
 - ii) Direct shear (ϕ)
 - iii) Grain size analysis, Natural Moisture Content, Liquid Limit, and Plastic Limit
12. Submit draft **Soil Test Report** (2 copies) with all necessary data, information, bore log, photograph, analysis, comments with result mentioning soil bearing capacity. Bore log shall Contain N-Value, soil type, Water table Level (RL). EGL (SOB/PWD BM) of Borehole Top and Date & time of commencement & completion of each borehole shall be mentioned clearly.
13. A power point presentation by the firm may be held at LGED Design unit for review and comment.
14. Final soil test report (4 copies) including the comments of LGED's design unit shall be submitted within 10(ten) days after presentation.