BIHAR URBAN INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

(A Govt. of Bihar Undertaking)

URBAN DEVELOPMENT & HOUSING DEPARTMENT, PATNA, BIHAR

GOBAL EXPRESSION OF INTEREST
FOR
SELECTION OF DESIGN, SUPERVISION CONSULTANT FOR COMPREHENSIVE STORM WATER DRAINAGE SYSTEM FOR PATNA NAGAR NIGAM, KHAGAUL, DANAPUR ETC.

No: BUIDCo/ Yo-1395/19-79
Nov- 2019

Managing Director

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BIHAR URBAN INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

"GLOBAL EXPRESSION OF INTEREST"

EOI.No. BUIDCo/ Yo-1395/19-79 Dated :- 01.11.2019

Invitation for Global Expression of Interest (EOI) for selection of design supervision consultant for comprehensive storm water drainage system for Patna Nagar Nigam, Khagaul, Danapur etc..

Bihar Urban Infrastructure Development Corporation limited (BUIDCo) invites EOI from qualified Nationally & Internationally reputed consultants/ consulting organization, firms to undertake a drainage master plan. This master plan will include an assessment of the current storm water drainage system, identification of storm water drainage deficiencies, recommendations for improvements required to satisfy current and future needs of drainage infrastructure. Such interested applicants are invited to submit Expression of Interest by online only through e procurement mode **website - http:// www.eproc.bihar.gov.in.**

For participating in E – tendering process, the contractor shall have to get themselves registered to get user ID, Password and Digital signature. This will enable them to access the website www.eproc.bihar.gov.in and download/participate in E – tender. All tender queries related to this tender shall be communicated at mdbuidco@gmail.com, cebuidco@gmail.com.

(i) Bid processing fees (INR 1180.00) to be paid through online mode i.e. Internet payment getaway (Credit/Debit Card), Net Banking, NEFT/RTGS.

(ii) Bids along with necessary online payments must be submitted through e-procurement portal www.eproc.bihar.gov.in before the date & time specified in the NIT. The department does not take any responsibility for the delay/Non availability of internet connection, Network Traffic/Holidays or any other reasons".

For clarification, regarding the E –tendering process, please contact e-procurement, Helpdesk, first Floor, M/22, Bank of India Building, Road No-25, Sri Krishna Nagar, Patna – 800 001, Telephone no. 0612-2523006, Mobile No –07542028164.

EOI document which includes instructions for submission of EOI and all other relevant information is available on. **www.eproc.bihar.gov.in.** and BUIDCo. **website i.e www.buidco.in** from 03.11.2019.

Pre-Proposal submission meeting: Venue: BUIDCo, Conference Hall Date: 07/11/2019 Time: 11.30 AM

The last date & time of EOI submission (in E-procurement portal) **18.11.2019 up to 03:00 PM.** The EOI will be opened on the same day **18.11.2019 up to 04:00 PM**.

Along with the Expression of Interest applicants shall have to submit the following documents.

A. Full particulars of the Constitution, Ownership, Organizational Structure and main activities of the prospective consultant, including details of full time profession.
B. Unabridged annual reports or audited financial accounts for the last three years.
C. Names and short CVs of the full time & part time researchers proposed to be Involved in the work (the CVs would need to be backed by written commitment and related experience proof of the person of availability of his service.)
D. Details major assignments undertaken of a similar nature, during the last 5years.

ELIGIBILITY :

Reputed consultants, consulting firms having an experience of at least 10 years in conducting such storm water drainage assignments of minimum-

Three completed projects having similar topography of project area covering at least project area of 130.03 Sq. KM.

PRESENTATION :

Eligible applicants would be required to make a presentation of their credentials and the proposal before a committee of Officers constituted by the UD&HD and BUIDCo. The exact date, time and venue of the presentation will be intimated separately.

Sd/-
Chief Engineer
BUIDCo.

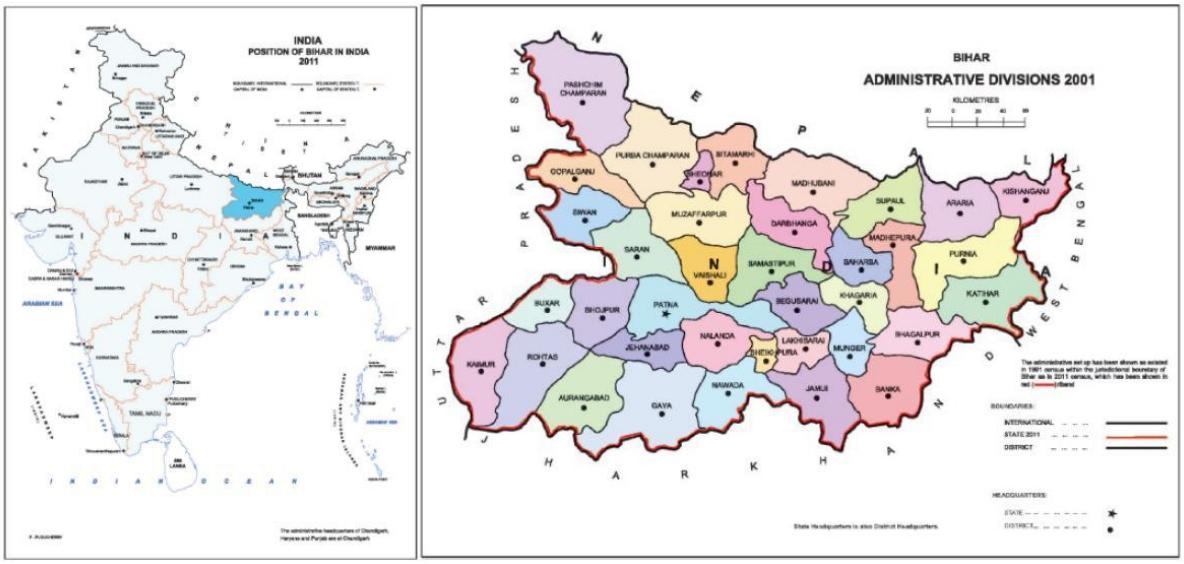
Table of Contents

1. GENERAL

1.1. Introduction

Bihar Urban Infrastructure Development Corporation limited (BUIDCo) invites proposals from qualified Nationally & Internationally reputed consultants/ consulting organization firms to undertake a drainage master plan. This master plan will include an assessment of the current storm water drainage system, identification of storm water drainage deficiencies, recommendations for improvements required to satisfy current and future needs of drainage infrastructure of Patna. Patna is the capital city of Bihar State situated 15 km along the confluence of the River Ganges. It is an entirely land–locked state and lies mid-way between the humid West Bengal in the east and the sub humid Uttar Pradesh in the west which provides it with a transitional position in respect of climate, economy and culture.

Figure 1: Location of Patna in Bihar State



Source: Administrative Atlas, Bihar State, Directorate of Census

Patna is located on the south bank of the river Ganga and it is an important administrative and educational centre. The city has a very long river line surrounded on three sides by rivers – The Ganga, Sone, and Punpun. The river Gandak flows into the river Ganga making it a unique place having four largish rivers in its vicinity to the north of Patna. The bridge over the river Ganges named Mahatma Gandhi Setu is 5575m long connecting Patna in the south to Hajipur in the north of Bihar.

Since the city of Patna is also a gateway to the Buddhist and Jain pilgrimage centers of Vaishali, Rajgir, Nalanda, Bodhgaya and Pawapuri, it attracts many tourists, apart from business class people. This shows that Patna not only played an important part economically, culturally, politically but also spiritually.

There is no existing Drainage Master Plan. The relevant data base related to existing infrastructure can be obtained from UD&HD, PMC and BUIDCo (if available). Reports available with us will be made available to the successful consultant for review and further action.

1.2 Objective/ Purpose

The prime objective of this consultancy is to provide holistic solution to make Patna free from water logging in future. Consultant shall have to prepare Drainage Master Plan (DMP) for Patna nagar nigam, khagaul , Danapur etc area- 130.03 Square kilometer based on CPHEEO guideline. This plan is to provide a map to identify areas of hydraulic and structural deficiencies, upgrading options and a prioritized phased improvement program (such as short term, mid term and long term solution). In addition, this plan must include computer modeling of the system to determine system capacity, unified command system for monitoring and use of latest technology including future growth.

The objective of this EOI is to select qualified firm who will provide Short term, Mid term and long term solutions to make Patna free from water logging problems. Recently due to heavy rainfall and inadequate drainage infrastructure many locations of Patna were water logged for 3-4 days.

1.3 Available information

This EOI accompany Appendix 'A' which contains scope of work, Appendix 'B' which contains Contour Map for Patna Municipal Corporation, Khagaul and Danapur, Appendix 'C' which contains present status of Drainage pumping Stations.

2. REQUIRED FORMAT FOR PROPOSAL SUBMITTAL

2.1 Cover Letter

Provide an executive summary emphasizing the strengths, qualifications and experience of the project team, and information regarding the methods, procedures, quality control, safety, and reporting structure proposed to explain how your firm will develop the Drainage Master Plan. The cover letter must be signed by a person with official authority to bind the company. The letter must include the name, address, telephone number, title and signature of the firm's contact person for this proposal, and state the submittal is valid for 90 days.

2.2 Table of Contents

Include a list of all sections and appendices in the proposal response and indicate corresponding page numbers.

2.3 Approach and Scope of Work

Provide your approach and a detailed scope of work demonstrating that your firm can complete the Drainage Master Plan, including all items as specified in Appendix 'A'.

2.4 Project Team/Key Personnel and Resumes

Provide an organization chart showing the names and responsibilities of key personnel required to complete the work specified in Appendix 'A'. Identify and provide resumes for the following key persons:

- Contract Principal-in-Charge (a principal of the firm who will have the ultimate authority and responsibility to bind the Consultant, sign agreements, assign required personnel and resources to the City, and ensure that the services are provided in a cost and time efficient manner.
- Senior Staff Member (primary contact)

It is imperative that the key personnel preparing the Drainage Master Plan have the background, experience and qualifications to complete the project. After the contract is signed, the consultant may not replace key staff unless their employment is terminated or agreed. The Authority must approve replacement staff before a substitute person is assigned to the project. The Authority reserves the rights to request that the

consultant replace a staff person assigned to the contract should the authority consider such a replacement to be in the best interest of the project.

2.5 Firm Qualifications

Provide your firm's service capabilities, qualifications and experience.

2.6 Work Schedule

Provide a project work schedule demonstrating completion of key milestones for short term, mid-term and long term solution and overall project including project execution.

3. Consultant Shortlisting Methodology

BUIDCo will shortlist from the participants who has experience of carrying out at least three storm water drainage projects of similar topographical area & each area at least 130.03 Sq. Km. in last 10 years.

4. Appreciation Rewards

Consultant who provides best solution and presentation shall be rewarded suitably.

APPENDIX 'A' - SCOPE OF WORK

A) Preparation of Storm Water Drainage Plan for Patna Nagar Nigam, Khagaul and Danapur (Some more Area may be include if required) including Design and Drawing, Estimate.

The Consultant will provide the following consulting services and deliverables:

1. The Consultant will carry out detailed survey, review complete existing infrastructure such as storm water drainage network, drainage pumping stations and other utilities in terms of its capacities, civil structure stability, electrical and mechanical components and other components if any.
2. After assessment of existing infrastructure consultant will prepare master plan of comprehensive storm water drainage system for whole area i.e. under master city plan area.
3. Consultant will carry out detailed design of all trunk drain, branch drain, and drainage pumping station including entire collecting system from the tertiary level and outfall disposal arrangement.
4. Consultant will assess the requirement of up gradation/ modification/addition/ alteration of existing infra-structure. Consultant will review for the missing link of existing drainage system and provide appropriate solutions.

5. Objectives of Planning & Investigation:- The objective of planning and investigation is to provide detailed information about the type and topography of each land/catchment and its sub catchment area. Consultant should consider the following aspects while planning & investigating for development of a drainage system and prime objective of this consultancy is to provide holistic solution to make Patna free from water logging in future:

i. Identification and marking of Catchment areas

ii. Identification and marking of probable drainage zones, the direction of gradients and selection of disposal points

iii. Preparation of topographical layout of collection and conveyance

iv. Storm water drainage plan should be separate from the sewerage system for all stages of planning and designing

v. Identification of locations for pumping stations

vi. Strategy for rainwater storage and its recharge to groundwater and disposal of excess storm water

vii. Identification of stretches of drains / vulnerable points susceptible to the dumping of solid waste / C & D waste/encroachment/ choking point

viii. Strategy for prevention of solid waste and C & D waste into storm waterways

ix. Strategy for arresting pollutants with urban runoff from entering into water bodies

x. Conserving the aesthetics, public safety and other social concerns of recreational open space and landscape to preserve the ecological nature of waterways

xi. Identification of existing storm water drains / drainage corridors including age-old drainage

conduits for rehabilitation

xii. Non-structural and structural measures should be studied and components designed accordingly to provide relief during the occurrence of disasters due to flooding

xiii. Frame a Road Map for Urban Storm Water Best Management Practices (BMP)

xiv. Preparation of a strategy for protection of urban areas from flooding. This need to include any excess runoff likely to come to the city area from upper reaches. To attenuate flooding, the water storage ponds should be rejuvenated within city and also created outside city if feasible.

xv. Strategy for sustainable operation & maintenance of storm water systems

xvi. A holistic approach to local area planning including aspects of sustainability, consistency, and responsiveness to community values

6. Data Collection, Survey and Investigation:-

Before the start of field survey, sufficient desk work should be carried out using the existing details and that should be corroborated by field visits and discussions with local community and municipal officials. This iterative process should be followed to prepare a comprehensive workable plan. The data/information to be collected and the elements to be surveyed for preparation of the project plan are given below:

I. Physical Characteristics

a) Topographical details including the slope of catchment / contributing area and outfall point

b) Identification of existing and expected future land uses

c) Identify a list of open spaces

d) Details of Bridges, culverts, railway crossings, etc.

e) Areas of the urban forest, wetlands, marshy lands, flood plains, water bodies, etc.

f) Data on inflows from contiguous upper regions

g) Soil characteristics including its permeability

h) Groundwater table and its seasonal variations

i) Location and capacity of Existing water retention structures

j) Details of Wastewater treatment plants along with their capacities

k) Treated wastewater available for recycle and reuse out of decentralized wastewater plants in city/housing complexes

l) Potential of use of storm water in the project area or adjoining area

m) Identification of storm drainage related problems within urban areas that may warrant further detailed investigations and planning such as:

- Littering, garbage, domestic wastes, plastic waste, etc.
- Solid waste / C & D waste points nearer to the drainage system
- Nearby dump site status
- Natural pollution, such as leaves, etc.
- Chemical pollution, such as detergents, oil or fertilizers

II. **Rainfall Characteristics**

a) Rainfall data for the last 30 years or more depending upon the availability from digitized / Automatic Rain gauge station needs to be obtained / collected from IMD in the specified format

b) Rainfall data collection comprising of annual average daily and monthly rainfall and no of rainy days

c) Data on historical flood events

III. Waterway Characteristics

a) The capacity of water receiving the body and its HFL and other relevant details

b) Physical condition and characteristics of the existing (size, slope, and material) storm water conveyance system
c) Existing natural, as well as, engineered drainage channels
d) Details of existing water bodies
e) Location of existing and prospective rainwater harvesting structures;
f) Water quality & quantity in existing storm water conveyance systems / natural drains and in receiving water bodies under wet and dry conditions
g) Back water influence on receiving water bodies for the catchment

IV. Collection of topographical survey details/maps:- Following documents/maps are needed to be collected for proper planning:

a) Survey of India topographical maps (1:50,000) of the catchment/planning area for comprehension of topography, watercourses and other physical features like major roads, railway lines, location and levels on benchmarks, etc.
b) Details of benchmarks established by Survey of India in the planning area or its neighborhood
c) Existing aerial survey of the planning area
d) Digital data/satellite data
e) Local planning area maps and scheme maps of various scales prepared by various agencies such as Department of Town and Country Planning, Water & Sewerage Boards, Municipal Corporations, etc. for comprehension of watercourses, irrigation channels, storm water drains, tanks, temple, ponds, etc.
f)Reconnaissance survey for verification and updation of the complete inventory of drainage system of the planning area consisting of watercourses, irrigation channels, storm water drains, tanks, temple ponds, etc.

g) Reports on existing drainage system and its study/evaluation, if any.

h) Location of underground electric cables, telephone lines, water supply, and sewer lines, etc.

i) Watershed maps including topographic features, watershed boundaries, existing drainage patterns, and ground cover
2.3.2 Survey and Investigation
After analyzing the collected data including the existing survey maps and existing drainage details, broad alignment for drainage network should be firmed up and the survey should be commenced to collect the requisite data/field details for the preparation of alignment of drains/maps with suitable ground levels.

For carrying out the survey, the latest survey instruments like Total Station Survey / Mobile LiDAR/ Drone / aerial survey techniques, etc. should be used. Based on the survey, the coordinates and

levels of various important locations/benchmarks should be collected. Further, field survey for the project should include overall infrastructure mapping, strip survey and site survey. During the topographical survey, traversing should be done along the centre line of the corridor. Longitudinal cross-sections should be taken at intervals as required for clarity. Also, the final data should be converted in Environment System Research Institute (ESRI) (Shapefile) format with its defining projection and survey collected attributes in the requisite database format.

The layout plan should be prepared and integrated on the GIS base with a selected computer model. Layers and attributes to be shown on the map should be flexible to control and give appropriate information for different requirements. The city should prepare GIS maps of storm water drainage system and upload in public domain (Respective ULB website). This would help in regular monitoring of the drainage system to ensure that there is no encroachment. This will also facilitate ease in operation & maintenance.

Based on the above survey, following plans should be prepared:

a) Topographical maps (1:1000) bringing out existing storm water drainage system, the crossing of main watercourses eg. rivers, irrigation channels, and drains, tanks, ponds, roads, railway lines, built-up areas, open fields, and playgrounds, flood-prone areas, etc.

b) Demarcation of the urban catchment in sectors, zones and subzones to plan layout of Primary, Secondary & Tertiary drains

c) Alignment of watercourses showing locations of temporary/ permanent structures within 15 m on either side of the bank location of electric cables, telephone lines, water supply, and sewer lines in the vicinity of the drains

d) Storm water drains with a longitudinal section at 30-50 m interval and cross-section at every 1 m interval (for the main drains) within the drain and 2 - 5 m outside the drain

e) Mapping of storm water drainage layout on GIS platform

f) Water harvesting structures, Water detention tanks, Pumping points, water usage points, parks, disposal point should also be shown on the map

g) Details in and around the drain for recharge should also be identified particularly at the places along the stretch of the drain where soil strata/log is changing indicating Type of soil, Permeability, Ground Water Table, Rock strata

h) Identification of Vulnerable silting / landslide points, Low lying points, vulnerable stretches

i) The above details collected can be used for planning of drainage system including its integration with existing drains and rehabilitation of other existing drains

Consultant should consider all the design parameter of CPHEEO guidelines latest publication for Preparation of Strom water drainage project.

B) Preparation of Bidding Document and assisting BUIDCO in selection of Contractor for execution of the project

C) Carryout construction supervision and quality control work

APPENDIX 'B' – Contour Map for Patna Nagar, Khagaul and Danapur.

Attachment to be attached.

APPENDIX 'C' – PRESENT STATUS OF PATNA DRAINAGE PUMPING STATIONS.

Attachment to be attached.