

BANGLADESH RURAL ELECTRIFICATION BOARD

PBS INSTRUCTION 100-60

DEVELOPMENT AND MAINTENANCE OF GIS FOR PBS SERVICE AREA

**BANGLADESH RURAL ELECTRIFICATION BOARD
PBS INSTRUCTION 100-60**

Approval Date: 10/10/2005

Revision Date : 19/02/2020

**SUBJECT: DEVELOPMENT AND MAINTENANCE OF GIS FOR PBS
SERVICE AREA**

I. PURPOSE

This Instruction establishes the responsibilities and procedures for developing, managing and maintaining Geographic Information Systems (GIS) for PBS service areas.

II. PROGRAM MANAGEMENT POLICY

The GIS program will be managed and coordinated by the Office of the Superintending Engineer, GIS, BREB. The Superintending Engineer, GIS, BREB will also monitor progress of GIS development and GIS updating work in PBSs. GIS Developing Firms will be selected through open Tendering Method. The GIS Developing Consulting firm will be highly developed and specialized technical capabilities in development of Geographic Information System (GIS) including satellite imagery rectification and image processing; geographic and technical attribute data collection; GIS data and system integration; ArcGIS programming capabilities, among others specialized capabilities. GIS development and updating database will be archived in each month by the office of the Superintending

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Engineer, GIS and copy will also be preserved at ICT Directorate and respective PBS.

III. GENERAL

This BREB Guideline envisions GIS software users in the BREB program in a manner that is consistent with the use of this and other software packages throughout the world. That is, there are three levels of users, and thus three levels of training to correspond with their usage. The three levels of users are defined as follows, including identification of those groups consisting of:

- 1. GIS Proficient User level-** This group will consist of the PBS management/Technical personnel, RE (Retainer Engineer) and other RE (Retainer Engineering) consulting firm personnel. "Proficient Users" are capable of reviewing PBS system data, querying the GIS database, and evaluating PBS technical needs given a fully developed and functional GIS for any given PBS. Proficient Users shall possess a working knowledge of ArcView and/ or ArcGIS Desktop 10x or latest version for the purposes of utilizing the information contained in the GIS database.
- 2. GIS Expert User level-** Personnel of the office of the Superintending Engineer, GIS, BREB, and GIS Consulting Engineering Firms are included in this group. "Expert User" are capable of performing analysis of data contained within the GIS; configuring and printing PBS system maps; updating PBS data.
- 3. GIS Developer Level-** This group will consist of one or two special purpose consulting firms. presently fully trained to develop GIS. "GIS Developer" is to

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be a level of expertise wherein GIS experts have all the tools and knowledge necessary to develop a fully functioning Geographic Information System (GIS).

IV. GIS DEVELOPMENT PROCEDURE

This section defines the separation of responsibility between the Superintending Engineer, GIS, BREB, PBS, Retainer Engineering Consulting Firm, GIS Developing Firm and GIS Updating Consulting Firm with respect to development of GIS for a PBS. As described above, the Superintending Engineer, GIS, will be responsible for overall program coordination and for monitoring progress of GIS development and maintenance in PBSs. However, many of the tasks those are required in the process of GIS development.

Steps of GIS developing process for a PBS as follows:

First Step: The database for poles, lines, transformers, and other system components of electric system must be updated. On principal concern is the accuracy of card ERC (Equipment Record Card) data and single line diagram information. These data sets must be carefully checked, corrected, and updated. An inventory of system devices/ equipment shall be completed to record the location and characteristics of each system device/ equipment. System devices/ equipment include transformers, voltage regulators, ACR/ OCR/ VCB/ Breakers, switches, capacitors, fuse cut-outs, and others that may be installed in the electric system.

Second Step: Major activity that must be undertaken is to geographically reference the primary electric system. This is the primary field data collection task involved in developing the base GIS map for the electric network system. This process shall be

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performed by a team trained in the use of RTK GPS/DGPS Receivers with (\pm) 0.5 meter or lesser accuracy. The team shall be managed by GIS specialist, who is employee of PBS or GIS Developing Firm. The GIS Specialist shall retrieve the data from the RTK GPS/ DGPS receiver and download it into a computer where it will be checked for consistency and accuracy. Any inconsistency and inaccuracy shall be rectified after field verification. Quality control will be the primary concern of the GIS specialist. The GIS specialist performs field verification to assure data accuracy for the system inventory.

Third Step: While the field work is proceeding, several associated steps will be undertaken by the GIS Developing Firm. The PBS or the GIS Developing firm will process several data sets that comprise other key attributes of the base map. The base map can be enriched including other attribute data, such as satellite imagery, from which data for settlements, water bodies, and roads is derived; Settlement, Rail Track and other Important Landmark, WORPO from which political boundaries are defined; R&H from which national high ways are defined and CARE, Bangladesh/LGED, from which secondary roads are defined but not limited to those.


Fourth & Final Step: Finally, all of these data sets will be integrated into a common GIS platform. The GIS database will later be further processed to generate system maps and analyze to evaluate financial viability of individual feeders. This GIS database will also be imported by electrical system study and engineering analysis software, such as WindMil, Cyme, ETAP, ArcFM or similar type of software.

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Responsibilities

Each task will be managed by a combination of personnel responsible for specific duties. The responsibilities of different offices are mentioned below:

A. Superintending Engineer, GIS of BREB

Superintending Engineer, GIS shall be responsible for managing overall implementation of GIS development activities; selection and management of GIS Developing Consulting Firms and GIS Updating Consulting Firms and other coordination and management duties as may be required. Superintending Engineer, GIS will also be responsible for coordination of tasks and assignments with the PBS, the Retainer Engineering Consulting Firms of PBS, GIS Updating Consulting Firm and the GIS Developing Consulting Firm, who may be engaged in this process. Apart from those the Superintending Engineer, GIS will coordinate logistical arrangements with the PBS Senior General Manager /General Manager. Superintending Engineer, GIS will develop and revise appropriate rates schedule of GIS tasks and submit the proposed rates to the appropriate authority for BREB Board approval. Superintending Engineer, GIS will assure these rates are maintained at an appropriate level, by recommending adjustments to these rates when necessary.

Superintending Engineer, GIS will also coordinate with the PBS, as well as with the Superintending Engineer, ICT to assure the PBS transformer and other equipment records and single line diagrams are updated. Superintending Engineer, GIS will further assure that pole numbers have been installed on all key poles in the field, that will help to find out pole number of other poles also and that all records updating procedures as described in PBS Instruction 100-59 are being adhered, prior to the beginning of the GIS work at PBS.

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The office of the Superintending Engineer, GIS will actively participate in monitoring the pace and quality of the field data collection that is undertaken by the Retainer Engineering Consulting Firms and/ or the GIS Development Consulting Firm. Personnel of the Office of the Superintending Engineer, GIS will sample the data those are collected and registered in the GIS database including ERC data, location and characteristics of system devices, etc. to assure that the quality is at an acceptable level. Checks that are completed may include a review of selected line segments against single line diagrams, selected evaluations of transformer and other equipment placements and consumer characteristics via field verification, and total line length, consumer data, and other system characteristics compared to data available in BREB Form No. 550.

Once the GIS development process has been completed, PBS will receive the draft product. Sr. GM/ GM will forward the same to the Superintending Engineer, GIS of BREB. Superintending Engineer, GIS, will review the draft product and back it to PBS with his/ her recommendation & rectification (if any). Sr. GM/ GM of PBS will send it to GIS Development Consulting Firm for final product. After submission of final product the Consulting will provide an orientation of the use of the GIS to PBS engineering and management personnel as well as to the personnel of the Retainer Engineering Consulting Firm of the PBS. This orientation will focus on the use of GIS for querying, printing of reports and printing maps.

The office of the Superintending Engineer, GIS will assure the GIS database is regularly updated by requiring the RE consulting firm assigned to the PBS to update

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single line diagrams and provide a list of all line extensions on the PBS system on a semi-annual basis. GIS database will be updated by PBS itself or by GIS Updating Consulting Firm. Updated data available with PBS or RE Consulting Firm, will be passed directly to the GIS Updating Consulting Firm. GPS reading and other necessary data of extended electric line will be collected by GIS Updating Firm to assure that the GIS is updated on a semi-annual basis.

In addition, the Superintending Engineer, GIS will coordinate with PBS to assure the GIS Updating Consulting Firm will input Geo reference of all new electrical network construction and all updated handed over ERC data into the GIS database. The GIS Updating Consulting Firm will further download system data in .STD (Straight Line Data), .SLD (Single Line Data) and .MPT (Mid Point Data) file format to facilitate system analysis performed with the WindMil, Cyme, ETAP, ArcFM or any other similar type Engineering Analysis Software. The updated GIS database and WindMil data or any other similar type of files will be provided to the Sr. GM/ GM of PBS, RE consulting firm and the Superintending Engineer, GIS. In case of using electrical network analysis software, other than WindMil software, necessary support file will be prepared by GIS Consulting Firm for analysis.

The Superintending Engineer, GIS will assure that the RE consulting firm, AGM (E&C/O&M/P&M) for the particular PBS are trained in the use of ArcView or any other similar type software to the “proficient user” level, by the GIS Consulting Firm, and are thus proficient in performing the following:

1. Query the GIS database
2. Select and displaying each individual map and report

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3. Print any selected map or report

Note: Training will be performed by the GIS consulting firm on ArcView or any other similar type software. For using other than ArcView, ArcGIS, ArcInfo, WindMil software, GIS Consulting Firm needs permission/approval from the Superintending Engineer, GIS of BREB for its competency and compatibility.

In addition, the Superintending Engineer, GIS of BREB will facilitate use of GIS database within BREB and PBS for queries, load intensification and program expansion analysis, and other analytical functions that may be useful or necessary in future years.

B. PBS Responsibilities

During the preparatory stages leading up to the field data collection process, the PBS AGM(O&M) will coordinate closely with the PBS Retainer Engineering Consulting Firm personnel to review and update all data related to the PBS electric network system. This review and update will include the following, listed in the order that they should be accomplished:

1. Complete field review and correction of the single line diagram to assure it accurately and completely depicts the actual PBS electrical system.
2. Install pole numbers in the field on all key poles in accordance with the pole numbers shown on the single line diagram. **Note:** Key poles include angle poles, tap poles, dead end poles and equipment poles, starting poles, road/river crossing poles, etc.

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3. Implement all record keeping processes described in PBS Instruction 100-59.
IMPORTANT: Implement these processes and assure they are functioning properly before proceeding to the next step!
4. Assure transformers and other equipment record cards are accurate and up to date with respect to data indicated on the updated single line diagram. All data must be confirmed through a field inventory/ survey/ review. Each transformer and other equipment record card must include the equipment name plate data (serial number, manufacturer, manufacturing year, capacity etc.) correct pole number according to the updated single line diagram, and number of consumers by consumer classification. To verify this data, inspectors will need to climb up transformer and other equipment poles to assure the of the equipment name plate data are is correct, as well as the pole location is correct as indicated on the single line diagram. (Equipment Record Card Forms for updating illustrated in PBS Instruction 100-59 may be used to record data).

Transformer and other equipment record data should be maintained on a regular and instantaneous basis, but if in the event it has not been recently updated, the AGM(O&M) and his/her staff are responsible to correct the data very carefully and submit to the RE of Consultant or assigned AJE/IE(ERC) of PBS for input to the Electronic Equipment Record Card (ERC) Software, The AGM(O&M) will assure that transformer and other equipment records have been updated prior to the date for which GIS field data collection will commence.

With respect to GIS field data collection, the PBS will help to arrange for all necessary logistical arrangements required as per contract to support the team of

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Retainer Engineering Consulting Firm, and Staffs of GIS Developing/Updating Consulting Firm involved in the process of field data collection.

After the GIS development has been completed, PBS engineering and management personnel will participate in a training course to master the basic software functions required to allow the PBS to review electric system data, query the geographic database, and to print reports and selected maps as needed for efficient electrical network system operation.

The PBS is responsible to provide available complete and accurate data to the RE and GIS Consulting Firm , as described in PBS Instruction 100-59, to allow the transformer/ equipment and other E&O (Engineering & operation) records to be kept up to date.

C. Retainer Engineering Consulting Firm Role and Responsibilities

The retainer engineering consulting firm (RE consulting firm) will assure the followings are is done:

1. Assure that the data reflected in the single line diagram is accurate and up-to-date.
2. Assure the transformer and other equipment records are kept up to date with information provided by the PBS.
3. Notify the PBS Sr. GM/ GM and BREB Zonal SE and concerned PBS monitoring & Management Operations Directorate in writing, if the PBS is not

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providing complete data to enable the updating of the transformer and other equipment records.

The retainer engineering consulting firm (RE consulting firm) shall have qualified personnel trained in ArcView or similar type software to a "proficient user" level. They will be proficient in performing the followings at a minimum:

1. Query the GIS database;
2. Select and displaying each individual map and report;
3. Print any selected map or report.

The office of the Superintending Engineer, GIS, will help to receive more training for the interest of GIS activities.

D. GIS Developing Consulting Firm Responsibilities

A firm with expert capabilities in processing satellite imagery, integrating data sets, and developing an integrated base map will be retained to support the GIS program of BREB. The firm will have a mastery of all functions related to GIS development and analysis of PBS electrical system, including a mastery of satellite imagery analysis, electronic database integration, geo-processing of integrated data sets, and revision and updating ArcView or similar type programs designed to analyze data sets. The specific duties of the GIS Development consultant during the GIS development phase will include:

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1. Procure, supply and rectify satellite images using precision GPS with differential correction capability.
2. Process satellite imagery to define base map layers that will include rivers, roads, settlement clusters, and other bodies of water.
3. Integrate existing electronic databases to develop base map layers that include political boundaries and secondary roads.
4. Integrate transformer and other equipment records databases with electric network system shape file. Integrate resulting shape file into base map.
5. Correct geographically referenced electric network system to close errors created during field data collection. Check each line segment for closure and continuity.
6. As necessary, update GIS analysis macros when changes in parameters occur, such as tariffs, materials costs, operating costs, among others.

The GIS Developing Consulting Firm will finalize the GIS product for PBS once all required data layers have been integrated, reviewed for data accuracy, and will be corrected. The product will consist of a master electronic file that will be archived by the consultant, BREB, concern PBS and by the GIS Updating Consulting Engineering Firm. It will also consist of a complete set of maps formatted and printed by the GIS Developing Consulting Firm and delivered to the office of the Superintending Engineer, GIS of BREB, the concerned PBS and to the RE consulting firm. In addition to that, the final product delivered will include a report on the economic viability analysis of each feeder, and projects identified that would improve the economic viability of the feeder.

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E. GIS Updating Consulting Firm Role and Responsibilities

The GIS Updating consulting firm will be the key lead technical agent, for PBS, responsible for keeping the PBS GIS database up to date once it is initially developed and implemented.

The GIS Updating Consulting Firm shall have expert personnel trained in ArcView, ArcGIS Desktop10x or latest, ArcGIS Enterprise, ArcGIS Pro, NetCad, AutoDesk, AutoCAD and other software necessary to support GIS activities. They shall be capable of performing all the necessary functions to maintain existing and future GIS databases by updating GIS databases periodically. GIS Updating Consulting Firm personnel will be required to master GIS or similar type software to an “expert user” level as mentioned above. They should be able to, at a minimum, to complete the following tasks:

1. Perform all functions of the “casual user” level as described in the “Retainer Engineering Consulting Firm Role and Responsibilities” section
2. Geo reference additions to the electrical system of PBS.
3. Integrate geo referenced additions to the electrical system of PBS and updates to the ERC into the GIS database
4. Evaluate PBS feeder viability using the macros that have to be prepared by them or have been prepared for this analysis, when changes in parameters occur, such as tariffs, material cost, operating cost, among others .
5. Evaluate electrification expansion projects for areas that have not yet been electrified.
6. Define and print PBS system maps.

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৬২১ তম বোর্ড সভার অনুমোদিত সিদ্ধান্ত নং ১৭৭৩০

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7. Perform load intensification and system expansion analysis, identifying future projects and analyzing their costs, for each GIS that is developed.
8. Generate reports concerning analysis of financial viability of existing and future PBS feeders.
9. Provide training to PBS and RE personnel to 'proficient user' level.
10. Process satellite imagery to define Base Map layer.

F. Use of Forms:

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**GIS Inventory Work Sheet for 33/11/6.35/0.400/0.230 KV Electrical Line
(RTK/DGPS/GPS Receiver Serial No. -----)**

PBS Name:
S/S Name:
S/S ID:
Village:
Sheet No.:

Grid Name & Capacity:
Capacity:
Date:
Area:
Supervisor:

Sl No.	Items	Way Point							
		Sl No.	Sl No.	Sl No.	Sl No.	Sl No.	Sl No.	Sl No.	Sl No.
01	Way Point								
02	Feeder Name/ ID								
03	Pole Number								
04	Latitude								
05	Longitude								
06	Pole Size								
07	Pole Materials								
08	Pole Species ^{1*} (For Wood only)								
09	Pole Type ^{2*}								
10	Pole Fitting								
11	Pole Environment ^{3*}								
12	Pole Location ^{4*}								
13	Conductor Size/Type								
14	Conductor Phase								
15	Conductor Line Voltage (KV)								

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Sl No.	Items	Way Point							
		Sl No.	Sl No.	Sl No.	Sl No.	Sl No.	Sl No.	Sl No.	Sl No.
16	SS Name and Transformer Capacity (KVA)								
17	Transformer Serial No.								
18	Transformer Connection Phase								
19	Transformer Manufacturer								
20	Transformer Manufacture Year								
21	Name of Consumer								
22	Consumer A/C No.								
23	Category/ Type of Consumer								
24	Load of Consumer								
25	Guy Unit								
26	Jumper Size								
27	Devices-1 ^{5*}								
28	Devices-2 ^{5*}								
29	Landmarks ^{6*}								
30	Remarks								

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৬২১ তম বোর্ড সভায় অনুমোদিত সিদ্ধান্ত নং ১৭৭০০

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Note: For simplification of writing, during filling up the form the following table shall be followed-

1* Pole Species	1 = Yellow Pine, 2 = White Pine, 3 = Red Pine, 4 = Garzon, 5 = Sunduri, 6 = Other Bangladeshi wood
2* Pole Type	1 = Tangent, 2 = Angle, 3 = Tap 4 = Equipment, 5 = Dead End, 6 = Section Pole, 7 = Crossing 8 = Push Pole, 9 = H Pole, 10 = Service Pole, 11 = Others
3* Pole Environment (At bottom part of pole)	1 = 12 Months dry and 0 months under water or wet, 2 = 9 Months dry and 3 months under water or wet, 3 = 6 Months dry and 6 months under water or wet, 4 = 3 Months dry and 9 months under water or wet, 5 = 0 Months dry and 12 Months under water or wet.
4* Pole Erected On	1 = Cannel, 2 = Farm Land, 3 = Water Bodies, 4 = Dry Land, 5 = High Land, 6 = Residential Land, 7 = Social Forest, 8 = Natural Forest
5* Devices	1 = ACR/OCR/Breaker, 2 = Voltage Regulator, 3 = Isolator, 4 = ABS, 5 = Disconnect Switch, 6 = Oil Switch, 7 = Lightning Arrester, 8 = Fuse Cut-Out, 9 = Capacitor
6* Land Mark	Name of Grid Sub-Station, Name of PBS Sub-Station, Name of Switching Station, Name of Zonal Office, Name of Other BREB/ PBS Office, Name of Monument, Name of Educational Institute, Name of Government Office, Name of NGO, Name of Religious Institute, Name of Other Important Infrastructure
Pole Materials	Wood, Steel, SPC, Concrete etc.

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Guideline, how to fill up the BREB Form No. 100-60-01 (Version-1)
GIS Inventory Work Sheet for 33/11/6.35/0.400/0.230 KV Electrical Line
(RTK/DGPS/GPS Receiver Serial No. -----)

PBS Name: *Name of concern PBS*, Grid Name & Capacity: *Grid name with capacity*
 PBS S/S, ID & Capacity: *Name with ID & capacity*, Date: *Survey date (dd/mm/yyyy)*
 Village: *Name of village* Area: *Moholla*
 Sheet No.: *Number of sheet* Surveyor: *Name of person, who performed survey*

ক্রঃ	আইটেম	ছক পূরণ করার নিয়মাবলী
01	Way Point	এখানে GPS Receiver এ দেখানো Way Point Serial নাম্বার লিখতে হবে। যেমনঃ GPS Receiver এর 03 Serial No. এর অনুকূলে তথ্য নিলে ঐ Serial No. লিখতে হবে।
02	Feeder Name/ ID	এখানে ফিডার নাম/নাম্বার লিখতে হবে। যেমনঃ 33KV লাইনের ক্ষেত্রে ফিডারের পূর্ণ নাম লিখতে হবে অর্থাৎ ৩৩ কেভি Feeder এর নাম Ashulia হলে এ ক্ষেত্রে Ashulia লিখতে হবে এবং উপকেন্দ্রের ফিডারের জন্য বরাদ্দকৃত আইডি নম্বর লিখতে হবে। 11KV লাইনের ক্ষেত্রে ফিডারের নাম্বার অনুসারে অবশ্যই একটি নাম্বার ও একটি অক্ষর দিয়ে ফিডার এর নামকরণ করতে হবে অর্থাৎ ফিডারের নাম্বার অনুসারে যথাক্রমে 1A, 2B, 3C ইত্যাদি লিখতে হবে।
03	Pole Number	ক) ৩৩ কেভি সোর্স লাইনের ক্ষেত্রে প্রথমে গ্রীড এর জন্য G এবং পাওয়ার প্লান্ট এর জন্য P লিখতে হবে এর পর গ্রীড/পাওয়ার প্ল্যান্টের নামের প্রথম ০৩টি অক্ষর, হাইপেন (-) দিয়ে প্রধান প্রকৌশলী (প্রকল্প) এর দপ্তর কর্তৃক জারীকৃত সার্কুলার অনুযায়ী পবিস কোড ক্যারেক্টার, হাইপেন (-) দিয়ে ফিডারের নামের প্রথম তিন অক্ষর, তারপর হাইপেন (-) দিয়ে পোল নাম্বার লিখতে হবে। যেমনঃ-৩৩ কেভি সোর্স যদি গ্রীড হয় এবং গ্রীডের নাম SAVAR, সমিতির নাম Dhaka PBS-1 এবং ফিডারের নাম BISMILE হয়, সে ক্ষেত্রে সম্পূর্ণ Pole Number হবেঃ- GSAV-DH1-BIS-1, GSAV-DH1-BIS-2, GSAV-DH1-BIS-3 ইত্যাদি। আবার ৩৩ কেভি সোর্স যদি পাওয়ার প্ল্যান্ট হয় এবং পাওয়ার প্ল্যান্টের নাম Ashulia Power Plant, সমিতির নাম Dhaka PBS-1 এবং ফিডারের নাম JIRABO হয়, সেক্ষেত্রে সম্পূর্ণ Pole Number হবে- PASH-DH1-JIR-1, PASH-DH1-JIR-2, PASH-DH1-JIR-3 ইত্যাদি। এছাড়া এতদসংক্রান্ত এসইএন্ডডি পরিদপ্তর কর্তৃক সর্বশেষ জারীকৃত সার্কুলার (স্মারক নং-১৭৪৫, তারিখঃ ৩১/০১/২০১৭ খ্রিঃ) অনুসরণ যোগ্য। খ) ১১ কেভি লাইন ও ৬.৩৫ কেভি লাইনের ক্ষেত্রে ১১ কেভি লাইন ও ৬.৩৫ কেভি লাইনের পোল নাম্বারিং এসইএন্ডডি পরিদপ্তর কর্তৃক সর্বশেষ সার্কুলারের স্মারক নং-১৭৪৫, তারিখঃ ৩১/০১/২০১৭ খ্রিঃ মোতাবেক উপকেন্দ্রের নামকরণ ও ফিডার নাম্বারিং করতেঃ Microsoft Excel Sheet এবং As Built Staking Sheet এ নিম্নলিখিতভাবে পোল নাম্বারিং করতে হবে। যেমনঃ উপকেন্দ্রের নাম SAVAR, পবিসের নাম Dhaka-1 এবং ফিডার নাম্বার 2B হলে, এক্ষেত্রে পোল নাম্বারিং হবেঃ SA-DH1-2B-1, SA-DH1-2B-2, SA-DH1-2B-3 ও SA-DH1-2B-4 ইত্যাদি। এ ছাড়া উক্ত S/S হতে যতগুলো ফিডার বের হবে ঠিক

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		ততগুলোতে অনুরূপভাবে পোল নামাঙ্কিং করতে হবে। উল্লেখ্য যে, S/S এর ফিডার নামাঙ্কিং করতে ৩৩কেভি সোর্স লাইনকে পিছনের দিকে রেখে লোডের দিকে মুখ করে ঘড়ির কাঁটার বিপরীতে (এ্যান্টি ক্লকওয়াইজ) অর্থাৎ ডান দিক হতে ফিডার নামাঙ্কিং করতে হবে।
04	Latitude	GPS Receiver এ দেখানো Latitude লিখতে হবে। যেমনঃ 23.45605 অর্থাৎ দশমিকের পর কমপক্ষে ৫ (পাঁচ)টি সংখ্যা লিখতে হবে।
05	Longitude	GPS Receiver এ দেখানো Longitude লিখতে হবে। যেমনঃ 90.36737 অর্থাৎ দশমিকের পর কমপক্ষে ৫ (পাঁচ)টি সংখ্যা লিখতে হবে।
06	Pole Size	Pole এর সাইজ বলতে Pole টি কত লম্বা ও উহার ক্লাস কত তা লিখতে হবে। যেমন 35'-5, 40'-5 ইত্যাদি লিখতে হবে।
07	Pole Materials	পোলের ধরণ অনুযায়ী Wooden/SPC/Steel ইত্যাদি লিখতে হবে।
08	Pole Species ^{1*} (For Wood only)	পোল কাঠের হলে উহা কি কাঠ তা লিখতে হবে।
09	Pole Type ^{2*}	এসইএন্ডডি পরিদপ্তর কর্তৃক সর্বশেষ জারীকৃত সার্কুলার স্মারক নং- ১৭৪৫, তারিখঃ ৩১/০১/২০১৭ খ্রিঃ অনুসরণযোগ্য। উক্ত সার্কুলারে ১৩(তেতোরো) ধরণের পোলকে কন্ট্রোল/কী পোল হিসেবে চিহ্নিত করা হয়েছে। যেমনঃ ফিডারের/লাইনের প্রথম পোল (Starting Pole), ট্যাপ পোল (Tap Pole), ক্রস সেকশন পোল, এ্যাংগেল পোল, রোড/রেল/নদী/গভীর ও বড় জলাশয়/হ্রদ ইত্যাদি ক্রসিং এর উভয় পাশের পোল অথবা দৃশ্যমান হলে যে কোন এক পাশের পোল, সেকশনলাইজিং পোল, ডেড-এন্ড পোল, ইকুইপমেন্ট পোল এবং পুশ পোল ইত্যাদি। এ ছাড়াও Tangent Pole, H Pole, Structure Pole & Service Pole ইত্যাদি লিখতে হবে।
10	Pole Fitting	Pole এর Fittings এর নাম লিখতে হবে। যেমনঃ T1, T2, C1, A1, A5 ইত্যাদি।
11	Pole Environment ^{3*}	Pole এর অবস্থান কেমন স্থানে যেমন- বৎসরে কত মাস শুকনো বা কত মাস জলমগ্ন অথবা আর্দ্র থাকে তা লিখতে হবে। খাল (Canal)/ জলাভূমি (Wet Land)/ শুকনো স্থান (Dry Area,)/ কৃষি মাঠ (Farm Land) ইত্যাদি লিখতে হবে।
12	Pole Location ^{4*}	পোল কি ধরনের ভূমিতে স্থাপন করা আছে তা এই ঘরে লিখতে হবে। যেমন- কৃষি জমি, জলাভূমি, সামাজিক বনভূমি, প্রাকৃতিক বনভূমি, আবাসিক এলাকা, উঁচু বা পাহারী ভূমি ইত্যাদি
13	Conductor Size/Type	Conductor Size/Type লিখতে হবে। যেমনঃ #477MCM, #4/0 ACSR, #1/0 ACSR, Dog, Marlin, Rabbit ইত্যাদি।
14	Conductor Phase	Single Phase Conductor হলে R অথবা Y অথবা B, Three Phase Conductor হলে R-Y-B (Horizontal Line এর ক্ষেত্রে) বা Y-R-B (Vertical Line এর ক্ষেত্রে)

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		লিখতে হবে।
15	Conductor Line Voltage (KV)	Conductor Line Voltage এর ক্ষেত্রে কত KV এর Line তা লিখতে হবে। যেমনঃ 33/11/6.35/0.400/0.230 ইত্যাদি লিখতে হবে।
16	Transformer Capacity (KVA)	সিস্টেম ফেজ Transformer এর ক্ষেত্রে 5, 10, 15, 25, 37.5, 50, 75, 100, 200 KVA ইত্যাদি এবং Transformer Bank এর ক্ষেত্রে 10-10-10, 37.5-10-75 KVA ইত্যাদি লিখতে হবে।
17	Transformer Serial No.	Transformer এর গায়ে লিখিত Serial No. লিখতে হবে।
18	Transformer Connection Phase	Single Phase হলে R অথবা Y অথবা B, Transformer Bank হলে Bank লিখতে হবে এবং Three Phase (PDB Type) হলে R-Y-B।
19	Transformer Manufacturer	নেম প্লেট ডাটা থেকে Transformer এর গায়ে লিখিত Manufacturer এর নাম লিখতে হবে লিখতে হবে।
20	Transformer Manufacture Year	নেম প্লেট ডাটা থেকে Transformer এর গায়ে লিখিত Manufacture Year লিখতে হবে লিখতে হবে।
21	Name of Consumer	গ্রাহকের নাম পবিসে ব্যবহৃত Billing Software থেকে সংগ্রহ করতঃ লিখতে হবে। [প্রযোজ্য ক্ষেত্রে]
22	Consumer A/C No.	গ্রাহকের Account No. পবিসে ব্যবহৃত Billing Software থেকে সংগ্রহ করতঃ লিখতে হবে। [প্রযোজ্য ক্ষেত্রে]
23	Category/ Type of Consumer	গ্রাহকের Category/Type পবিসে ব্যবহৃত Billing Software থেকে সংগ্রহ করতঃ লিখতে হবে। যেমন- Domestic/Commercial/Char. Inst./Irrigation/GP/LP/St. Light/Solar etc [প্রযোজ্য ক্ষেত্রে]
24	Load of Consumer	গ্রাহকের Load পবিসে ব্যবহৃত Billing Software থেকে সংগ্রহ করতঃ লিখতে হবে। [প্রযোজ্য ক্ষেত্রে]
25	Guy Unit	Guy Unit এর ক্ষেত্রে E1-1, E1-2, E1-3, E2-1, E2-2, E2-3, E5-1, E5-2, E6-2, E6-3 ইত্যাদি লিখতে হবে।
26	Jumper Size	Jumper Size অর্থাৎ Jumper এ কি Size এর Conductor ব্যবহৃত হয়েছে তা লিখতে হবে। যেমনঃ #477 MCM, #4/0 ACSR, #1/0 ACSR, #3/0 ACSR, Dog, Marlin, Rabbit ইত্যাদি।
27	Devices-1 ^{5*}	Transformer বাদে অন্যান্য যে কোন Device থাকলে তার নাম লিখতে হবে। যেমনঃ ACR/OCR, Voltage Regulator, Isolator, ABS, DS, CT, PT, Fuse-Cutout, L.A., Capacitor ইত্যাদি।

BANGLADESH RURAL ELECTRIFICATION BOARD				
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৬২১ তম বোর্ড সভার অনুমোদিত সিদ্ধান্ত নং ১৭৭০০

28	Devices-2 ^{5*}	একাধিক Device হলে অবশিষ্ট আইটেমগুলো কমা (,) দিয়ে লিখতে হবে।
29	Landmarks ^{6*}	কোন গুরুত্বপূর্ণ স্থাপনা থাকলে তার নাম লিখতে হবে। যেমনঃ Grid S/S, S/S, Switching Station, PBS HQ, BREB Office, School, College, Hospital, Govt./Private Office, NGOs, Important Infrastructure, Monuments, Religious structure ইত্যাদি। এক্ষেত্রে সংশ্লিষ্ট কলামটির শুধু ০৪, ০৫ ও ২৫ নং Row পূরণ করে বাকি Row গুলো ফাঁকা রাখতে হবে।
30	Remarks	ভাটা সংগ্রহের ক্ষেত্রে প্রয়োজনীয় কোন তথ্য থাকলে, তা এখানে উল্লেখ করতে হবে।
GPS Receiver Serial No: পবিস-এ একাধিক GPS Receiver ব্যবহৃত হলে, সেক্ষেত্রে বর্ণিত Inventory Sheet এ ব্যবহৃত GPS Receiver এর Serial No. লিখতে হবে।		

বিঃ দ্রঃ- আলোচ্য Inventory Sheet এ মাঠ পর্যায়ে কাজ করার সময় কোন সমস্যা দেখা দিলে তা তত্ত্বাবধায়ক প্রকৌশলী (জিআইএস) এর কার্যালয়কে অবহিত করতে হবে।

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৬২১ তম বোর্ড সভায় অনুমোদিত সিদ্ধান্ত নং ১৭৭০০

BANGLADESH RURAL ELECTRIFICATION BOARD

BREB Form No. 100-60-02 (Version-1)

**SUB-STATION WISE PROGRESS REPORT OF GIS DEVELOPMENT WORK
(----- KV SOURCE LINE)**

Name of the Office of Executive Engineer, BREB: -----

Name of PBS : ----- Reporting Month & Year: -----

Total Existing 33 KV Source Line (Km)	:	
This Month Progress (Km)	:	
Total Cumulative Progress (Km)	:	

SL No.	Name of Grid Sub-station	Feeder Name	Name of Connected 33/11 KV (PBS or Private) SS	GIS Data Collection Completed upto -----20-----	
				Line Length (Km)	No. of Pole/ Tower (Nos.)

----- GIS Inspector Retainer Engineer Asstt. Engineer Executive Engineer
Sr. GM/ GM

BANGLADESH RURAL ELECTRIFICATION BOARD				
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৬২১ তম বোর্ড সভার অনুমোদিত সিদ্ধান্ত নং ১৭৭০০

BANGLADESH RURAL ELECTRIFICATION BOARD

BREB Form No. 100-60-05 (Version-1)

PROGRESS REPORT OF GIS DEVELOPMENT WORK (11 KV LINE)

APA Target FY 20----- - 20-----

Name of PBS	:	
Reporting Month & Year	:	
Total Target 11 KV Line (Km)	:	
This Month Progress (Km)	:	
Total Cumulative Progress (Km)	:	

SL No.	Name of 33/11 KV PBS Sub-station	Feeder ID	GIS Survey Completed in Km	
			Line Length Surveyed (Km)	No. of Pole surveyed (Nos)
Total				

 LT/ LMG-1/2 AJE/ JE (O&M/E&C) DGM(Tech-HQ) Sr. GM/ GM

BANGLADESH RURAL ELECTRIFICATION BOARD				
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৬২১ তম বোর্ড সভায় অনুমোদিত সিদ্ধান্ত নং ১৭৭০০

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BANGLADESH RURAL ELECTRIFICATION BOARD

BREB Form No. 100-60-06 (Version-1)

PBS WISE PROGRESS REPORT OF GIS DEVELOPMENT WORK

Under ----- Project

Progress Report Prepared By: Office of Superintending Engineer, GIS, BREB

Reporting Month & Year : -----

SL No.	Items	Quantity (Km)
1	Total 33 KV Line of ----- PBS	:
2	Total 33 KV Line of ----- PBSs under ----- Project	:
3	Progress upto ----- 20----- under----- Project	:
4	This Month Progress under----- Project	:

SL No.	Name PBS	Existing Line		Achievement (Km)		Remarks
		33 KV	11/6.35/4/.23 KV	Field Data Collection	Data Processed	

 Asstt GIS Specialist GIS Specialist Deputy Director (Tech) SE, GIS

BANGLADESH RURAL ELECTRIFICATION BOARD				
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		(Kamrul Ahsan Mollik) Asst. Secy. (Board), BREB,	

BANGLADESH RURAL ELECTRIFICATION BOARD

BREB Form No. 100-60-07 (Version-1)

MONTHLY PROGRESS REPORT OF GIS DEVELOPMENT WORK

APA Target FY ----- 20----- - 20-----

Progress Report Prepared By: Office of Superintending Engineer, GIS, BREB

Reporting Month & Year : -----

A) Summary of 33 KV Line		Qty. (Km)	B) Summary of 11/ 6.35/ 0.4/ .23 KV Line		Qty. (Km)
1. Total Target of 33 KV Line	:		1. Total Target of 33 KV Line	:	
2. This Month Progress	:		2. This Month Progress	:	
3. This Year Progress	:		3. This Year Progress	:	
4. Achievement (%)	:		4. Achievement (%)	:	

PBS Wise GIS Mapping of 33 KV Line					PBS Wise GIS Mapping of 11/6.35/4/.23 KV Line		
Sl No.	PBS Name	Target	Progress (Km)	Progress (%)	Target	Progress (Km)	Progress (%)
Total							

C) GIS Mapping of a Pilot Project PBS (----- PBS)

Sl No.	Category Wise Electric Line	Line Length	Target (%)	Progress (Km)	Progress (%)
1	11 KV Electric Line				
2	6.35 KV Electric Line				
3	0.4 KV Electric Line				
4	0.23 KV Electric Line				
Total					

Asstt GIS Specialist GIS Specialist Deputy Director (Tech) SE, GIS

BANGLADESH RURAL ELECTRIFICATION BOARD				
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৬২১ তা বেড সভায় অনুমোদিত সিদ্ধান্ত নং ৩৭৭০০

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BANGLADESH RURAL ELECTRIFICATION BOARD

BREB Form No. 100-60-08 (Version-1)

**MONTHLY PROGRESS REPORT OF GIS DEVELOPMENT WORK
(33/11 KV SS to Service Pole and Pole Numbering)**

Reporting Month & Year: -----

Reporting Month & Year: -----

Items	Qty. (Nos.)
1. Target of Pole Numbering	:
2. This Month Progress	:
3. This Year Progress	:
4. Achievement (%)	:

Items	Qty. (Km)
1. Target of GIS Dev. Work	:
2. This Month Progress	:
3. This Year Progress	:
4. Achievement (%)	:

Sl No.	PBS Name	Pole Numbering Status			GIS Development Work Status		
		Pole Numbering Target	Pole Numbering Progress	Progress (%)	11/6.35/0 .4/0.23 KV GIS Target	11/6.35/0 .4/0.23 KV GIS Progress	Progress (%)
Total							

Asstt. GIS Specialist GIS Specialist

Deputy Director (Tech)

SE, GIS

BANGLADESH RURAL ELECTRIFICATION BOARD				
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৬২১ তম বোর্ড সভায় অনুমোদিত সিদ্ধান্ত নং ১৭৭০০

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