

**BANGLADESH RURAL ELECTRIFICATION BOARD**

**PBS INSTRUCTION 100-08**

**PREPARATION OF PLANS AND SPECIFICATIONS FOR ELECTRIC  
NETWORK FACILITIES FOR PBS**

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**PBS INSTRUCTION 100-08**

Approval Date: 07/03/1979

Revision Date : 19/02/2020

**SUBJECT: PREPARATION OF PLANS AND SPECIFICATIONS FOR ELECTRIC NETWORK FACILITIES FOR PBS**

**I. PURPOSE**

To set forth BREB policy and procedure guidelines for PBS and their electrical consultants with respect to the preparation of plans, design and specifications for the construction of electric network facilities in electrified or non-electrified areas for new construction or up-gradation, renovation, modernization, new technology adaptation in existing electrified areas of that PBS.

**II. GENERAL**

Plans and Specifications for electric network facilities, including sub-stations (if any), shall be based on a system design and plan which has been approved by the Director, SE&D (System Engineering and Design).

**III. GENERAL CONTENT OF PLANS AND SPECIFICATIONS**

In preparing plans, PBS instruction 100-21, 100-28, 100-45, 100-70 for electric network system shall be consulted in detail, so that including potential consumers all other

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consumers within that particular zone of PBS service area can be served at least for 15 (fifteen) years. Guide Line for "Load Study and other Design Considerations" which will appear to be an useful tool for preparing plan and design for a PBS Electric Network System is enclosed as Appendix-A to this Instruction. It is advised to follow this Guide Line for preparing plan and specification. In preparing the plan, review the condition of existing source line, location & sizing of electric sub-station are needed.

The following matters should be given consideration during preparing plans & specification for the construction of electric network facilities.

1. Each construction plan should include a current key map of the electric system showing existing, under construction and proposed facilities in different color code.
2. One proposed circuit diagram showing the present voltage level at the point of extension. The diagram should also show calculated voltage drop of the existing system as well as the proposed system.
3. The construction plan for new distribution & renovation facilities are to be divided in different sections. For distribution lines, it is to be started from source.
4. The consideration on the following matters will enrich medium and long-range plan-
  - (a) Structure type of electric substation (Steel, SPC Pole, Wooden Pole);
  - (b) Substation type(Indoor, Outdoor);
  - (c) Control room of substation;
  - (d) Inclusion of modern and new technology (SCADA, remote control, smart substation);

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- (e) MVA capacity of substation;
- (f) Source line voltage to be maintained;
- (g) Length of source line;
- (h) Load flow through source line during short-range, medium-range and long-range period;
- (i) Number of back-bone line and back-bone line voltage to be maintained;
- (j) Load flow through back-bone line during short-range, medium-range and long-range period;
- (k) Distance of large load from load center;
- (l) Distance of up-coming large load from load center;
- (m) Up-coming take over plan of electric facilities of other organization.

**5. All drawing & specifications should be prepared in accordance with BREB Standards.**

In case of line construction, the Maps should show topographical features such as waterways, national roads, local roads, rail road, electric transmission and distribution facilities of PBS and other organizations. It can be epitomized in the following way :

**5.1 Key Map**

- a. Primary lines to be constructed.
- b. Designed primary lines that have not been staked.
- c. Primary lines that have already been constructed.
- d. Primary lines under construction.
- e. All existing primary lines to which changes are to be made (conversion, re-conductoring and removal) with appropriate notations of the changes required.

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## 5.2 Detail and Mouza Maps

- Primary lines to be constructed.
- Designed primary lines that have not been staked.
- Primary lines that have already been constructed.
- Primary lines under construction.
- All existing primary lines to which changes are to be made (conversion, re-conductoring and removal) with appropriate notations of the changes required.
- Location of pole, transformer, grounding, under-build, if any.
- Location of consumers to be served.

## 5.3 Secondary Line

Location of Secondary lines are to be flashed enlarged in a separate sheet which is not required in scale.

## 5.4 Single-Line Diagram

The single-line diagram should show the relations and connections of lines and apparatus of a circuit of an existing transmission or distribution system of the project.

## IV. APPROVAL OF PLANS AND SPECIFICATIONS

Plans and specifications shall be approved by the Director, SE&D (System Engineering and Design). If heavy investment is required to implement the plan, Director, SE&D will conduct a technical meeting with SE (Grid & Transmission)/XEN, (Substation construction Division), representative of concern PBS and consultant. A minutes of the meeting will be prepared. There will be an indication source of fund. PBS will arrange fund in cooperation with the competent authority of BREB. PBS authority can also request to BREB to include the work in GOB of Foreign financed project, especially big volume of work where strong financial support is required.

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GUID LINE FOR LOAD STUDY AND OTHER DESIGN  
CONSIDERATIONS FOR A PBS NETWORK SYSTEM

**(Design Step For a PBS Network  
System For Both Existing and New)**

**A. Contents of Design Report**

1. A plastic Cover : A4 size, cliff type
2. 1<sup>st</sup> : (a) Name of PBS  
(b) Design statement (Subject)  
(c) Name of consulting firm etc.
3. 2<sup>nd</sup> Page : Index
4. 3<sup>rd</sup> Page : At a glance (Copy enclosed)
5. 4<sup>th</sup> Page : A geographical area map on 1 : 1,26,720 scale (Present system)
6. 5<sup>th</sup> Page : A second map developed from geographical area map (as stated)
7. From 6<sup>th</sup> Page : Area and household numbers of Upazila- Each Upazila in one page of A4 size (as enclosed)
8. Next a design criterion will be stated (copy enclosed)
9. Next 5<sup>th</sup> stage load description for each Upazila in A4 size, each page will contain two types of statements-  
(a) Statement of Upazila consumer  
(b) Upazilawise load description (copy enclosed)
10. The block diagram will be submitted (as enclosed)

Required numbers of block diagram will be submitted containing the followings-

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