

BANGLADESH RURAL ELECTRIFICATION BOARD

PBS INSTRUCTION 100-12

**FUNCTIONS OF BREB/PBS ENGINEERS/ OFFICERS/ INSPECTORS
FOR ONSTRUCTION OF ELECTRIC NETWORK SYSTEM
AND CIVIL WORKS**

BANGLADESH RURAL ELECTRIFICATION BOARD
PBS INSTRUCTION 100-12

Approval Date: 07/03/1979
Revision Date : 19/02/2002

**SUBJET: FUNCTIONS OF BREB/PBS ENGINEERS/ OFFICERS/ INSPECTORS
FOR ONSTRUCTION OF ELECTRIC NETWORK SYSTEM AND
CIVIL WORKS**

I. PURPOSE

This instruction set forth the BREB policy, procedure and guidelines in respect of functions of BREB/ PBS Engineers/Officers and Inspectors for construction of Electrical Network Systems and Civil Works.

II. GENERAL

A. While the BREB/ PBS Electrical, Architectural & Civil Engineering Consultants have contractual responsibility for the planning, design and construction supervision of PBS's Electrical Network Systems, Buildings and other facilities, it is the responsibility of the consultants to ensure that PBS's interests are protected and that the physical facilities which represent security of BREB loans are constituted in accordance with BREB approved plans, design and specifications. BREB will rely to a large extend on BREB Engineers and Officers to provide such assurance.

B. Construction supervision of Electrical Network Systems, Buildings & other facilities

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During construction of electrical network systems, buildings and other facilities, minimum percentage of inspection that shall be carried out by various levels of Engineers/Officers and Inspectors of BREB & PBS as follows:

| Engineers/Officers & Inspectors of BREB | % Responsibility | Engineers/Officers & Inspectors of PBS | % Responsibility |
|---|------------------|--|------------------|
| Executive Engineer | 10% | Sr. GM/ GM | 5% |
| Assistant Engineer | 25% | DGM(Tech-HQ) | 20% |
| Sub-Assistant Engineer | 50% | AGM(E&C)/ AGM(O&M) | 25% |
| Inspectors | 100% | AJE/JE | 100% |

C. During construction of electrical network systems, the inspection shall include but not limited to the followings:

1. Electrical Network Construction

- Adequacy of staking sheets and BOQ for construction against target;
- Check the staking sheets and BOQ prepared by consultant;
- Maintain the store and ensure to provide the materials for construction;
- Adherence to staking sheets for construction;
- Structure erection/ pole framing- adherence to construction drawing;
- Structure erection/ pole setting- framing- depth, tamping and back filling, alignment and cant, pole rack;
- Placement of anchors- depth and angle, tamping and back filling;

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- h) Guy & Guy grip installation;
- i) Pole grounds- depth and connections;
- j) Conductor stringing- Proper use of stringing blocks, conductor reel mounting or turn table arrangement and protection against nicks.
- k) Conductor sag;
- l) Conductor grip, armor rod installation and ties;
- m) Adequacy of ground clearance and foreign conductor separation;
- n) Insulator handling to avoid chips and cracks;
- o) Transformer and other equipment installations and connections;
- p) Installation of hot line clamps;
- q) Correct use of bi-metallic connectors where required;
- r) Placement of service terminals on poles and structures. Service connections at transformer;
- s) Tightening of hardware- use lock washers where specified;
- t) Installation of disconnect switches and fuse cutOut with proper fuse;
- u) Installation of lightening arresters;
- v) Proper clearance of high-ways, roads, lines and others at crossing points;
- w) Right of ways clearing of lines;
- x) Energization of constructed lines;
- y) Complete the close-out and arrange to settle the final bill of contract.

2. Sub-station Construction

- a) Site and land selection as close as possible to load center for sub-station;

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- b) Acquisition or purchase of land for sub-station;
- c) Site preparation and preparation of contour map;
- d) Adherence to plan and design of sub-station;
- e) Layout of sub-station;
- f) Piling (if needed) and foundations;
- g) Placement of structure and equipment;
- h) Stringing of bus bar and wiring of equipment;
- i) Connection of feeders;
- j) Fence installation;
- k) Grounding system installation and connection with fence;
- l) Connection of source line;
- m) Connection of sub-station with source;
- n) Commissioning of sub-station and connect with load;
- o) Maintaining of slop of sub-station side and tariffing;
- p) Approach road of sub-station;
- q) Ensure settings of equipment for protection properly;
- r) Equipment inspection and all other installations and ensure the tests of oil as required;

3. Civil Construction

During construction of Civil Works inspection shall include but not limited to the followings:

- a) Exercise control over time and implement project progress on the basis of implementation schedule;

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- b) Strict adherence of the construction works to the plans, drawings and specifications and ensure that the standard specification are followed in construction work;
- c) Check the construction layout and plans and levels. Establish necessary data for contractor(s) to lay out the details of the works and make spot checks of construction locations and elevations established by the contractors.
- d) Issue necessary instruction to the contractor(s) for and on behalf of the BREB/ PBS, to ensure orderly progress of the work;
- e) Interpret the drawings, specifications and conditions of contract etc. to the contractor;
- f) Ensure against the use of inferior materials and workmanship;
- g) Collect samples of materials for test and conduct site test as and when required. Direct test on materials and workmanship as per construction contract send test report to XEN, BREB or Sr. GM/ GM, PBS for evaluation and compare with tested and previously approved sample;
- h) Record authorized deviation from contract drawings as and when approved by the Sr. GM/ GM, PBS or Zonal SE/authority, BREB;
- i) Record measurements of works which are completed and specifically of works which will be covered from view or excluded from excess.
- j) Maintain daily records of progress, materials, labors, machinery at site as well as Daily Log & Monthly basis comparison plan progress with real progress by S-Curve;
- k) Approve/ disapprove material brought to the site in predetermined approval format;
- l) Approve progressive construction work such as brick laying, plastering, form work, cleaning of aggregate, MS rod binding, cutting and placing of reinforcement, etc. as per approved format;

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- m) Approve pour slip for RCC/ CC works submitted by contractor, when all preparatory work before pouring has been completed satisfactorily and previously been approved;
- n) Prepare as-built drawing of works as actually performed;
- o) Certify quality of material and construction works;
- p) Check contractor's and supplier's application for payment and scrutinize and certify the provisional final bill of the contractors and suppliers. Assist in preparation of payment documents and BREB/ PBS certification of such documents in association with accepted standard and requirement;
- q) Advise the BREB/ PBS in respect of extension of time to the contractor for completion of works if claimed by contractor.
- r) Completion of close-out and arrange to settle the final accounts with contractor. Maintain site note book of consultant;
- s) Arrange to make payment of R/A bill and approval of variation against actual work to be done due to change of works, correction of work, addition of works etc. before starting construction of that portion;
- t) Approval of final inventory, as-built drawings, contract close-out documents and arrange to make payment of final bill of contractor.

III. DETAIL INSPECTION REPORT FORMAT

1. FOR ELECTRICAL NETWORK SYSTEM

While inspection is being carried out by BREB Engineer will review the observation of correction mentioned in BREB Form No. 341(enclosed) prepared by Consultant

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and will verify that rectification/ correction has been carried out by contractor accordingly.

2. FOR CIVIL WORKS

During inspection of civil works BREB of PBS Engineer will review inspection report prepared by consultant and will verify that rectification / correction has been made by the contractor in accordance with the report. If rectification / correction has not been carried out properly instruct the contractor for compliance.

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BANGLADESH RURAL ELECTRIFICATION BOARD

BREB Form No. 341

(Electrical Line Inspection for closing-out purpose)

PBS: -----, Sub-Station: -----,

W/O No. ----- Voltage Level: 33KV/ 11KV/ 6.35KV/ LT

Line Section: (1) From Pole No. ----- to Pole No. -----

(2) From Pole No. ----- to Pole No. -----

(3) From Pole No. ----- to Pole No. -----

| SI No. | List of Inspected Items | Deviation (Total Nos.) | List of Total Pole Nos. | Remarks |
|--------|--------------------------------------|------------------------|-------------------------|---------|
| 01 | Poles | | | |
| 02 | Anchors | | | |
| 03 | Guys & Guy Accessories | | | |
| 04 | Grounding (Pole, Equipment & System) | | | |
| 05 | Framing (Pol top Assembly) | | | |
| 06 | Equipment (Transformer) | | | |
| 07 | Equipment (ACR/OCR/Breaker) | | | |
| 08 | Equipment (Switching Devices) | | | |
| 09 | Equipment(Others) | | | |
| 10 | Conductor Stringing | | | |
| 11 | Conductor Accessories | | | |
| 12 | LT & Service | | | |
| 13 | Right of Way | | | |
| 14 | Others-1 | | | |
| 15 | Others-2 | | | |

| Inspected by | Certified by | Counter Signed by |
|---------------------------------------|---|----------------------------|
| Consultant/ SAE/LCI, BREB/AJE/IE, PBS | AE, BREB/ AGM(E&C)/AGM(O&M)/ DGM(Tech), PBS | XEN, BREB/ Sr. GM/ GM, PBS |

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BREB Form No. 100-12-01 (Version-1)

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(Civil and Mechanical Items Inspection for closing-out purpose)

PBS: -----, W/O No. -----,

Location of Site: -----, Name of Work: -----

| Sl No. | List of Inspected Items | Satisfactory and Acceptable | Not Satisfactory (Needs Compliance) | Remarks |
|--------|------------------------------|-----------------------------|-------------------------------------|---------|
| 01 | Foundation including Piling | | | |
| 02 | Great Beam | | | |
| 03 | Column | | | |
| 04 | Floor Casting | | | |
| 05 | Brick Work | | | |
| 06 | Plaster | | | |
| 07 | Tiles/ Mosaic | | | |
| 08 | Paint | | | |
| 09 | Water Reservoir Tank | | | |
| 10 | Overhead Water Tank | | | |
| 11 | Septic Tank & Soak Well | | | |
| 12 | Drain Apron | | | |
| 13 | Sanitary Works | | | |
| 14 | Water Line & Plumbing | | | |
| 15 | Deep Tube Well & Pump House | | | |
| 16 | Water Supply Line Connection | | | |
| 17 | Gas Connection | | | |
| 18 | Electrical Wiring | | | |
| 19 | Electrical Fittings | | | |
| 20 | Grill | | | |
| 21 | Window Glass Fitting | | | |
| 22 | Door | | | |
| 23 | Polishing of Wooden Items | | | |

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| Sl No. | List of Inspected Items | Satisfactory and Acceptable | Not Satisfactory (Needs Compliance) | Remarks |
|--------|----------------------------|-----------------------------|-------------------------------------|---------|
| 24 | Lime Terracing | | | |
| 25 | Security Wall of Top Floor | | | |
| 26 | Stair Handle | | | |
| 27 | Generator Connection | | | |
| 28 | Sub-Station Connection | | | |
| 29 | Kitchen Room Fittings | | | |
| 30 | Bath Room Fittings | | | |
| 31 | Boundary Wall | | | |
| 32 | Security Post | | | |
| 33 | Guard Shade | | | |
| 34 | Main Gate | | | |
| 35 | Approach Road | | | |
| 36 | Lift | | | |
| 37 | Others-1 | | | |
| 38 | Others-2 | | | |
| 39 | Others-3 | | | |
| 40 | Others-4 | | | |

Inspected by
Consultant// SAE/LCI,
BREB//AJE/JE, PBS

Certified by
AE, BREB/ AGM(E&C)/AGM(O&M)/
DGM(Tech), BREB

Counter Signed by
XEN, BREB// Sr. GM/ GM, PBS

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