

**Development & Application of Potentially
Important Jute Geotextiles
(CFC/IJSG/21)**

**GUIDELINES FOR INSTALLATION OF
JUTE GEOTEXTILES**

*Prepared by
Project Executing Agency (PEA)*

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National Jute Board

Project Office: 75C, Park Street, 6th floor, Kolkata 700 016
T: (033) 2226 7534 / 4064 6316 / 6455 2404 / 05 / 08:: F: (033) 2226 7535
E: cfcijsg21@gmail.com : jutegeotech@gmail.com :: W:www.jutegeotech.com

USER'S GUIDE TO INSTALLATION OF JUTE GEOTEXTILE

This booklet highlights the salient point to be followed in regard to installation of Jute Geotextile (JGT) at work sites. It also contains typical figures depicting installation of JGT for different application.

1. Acceptance at site

- 1.1 Check the name of the supplier-mill, brand-mark if any, type of JGT supplied vis-à-vis specification stated in the contract document, test certificate (whether by the mill or by any independent testing outfit), whether the material recommended for laying by the competent authority and the quantity in the consignment.

Note: One set of tests for each consignment of 16,000 sqm of JGT or as specified shall be carried out.

- 1.2 Any palpable shortcoming in JGT-construction, (quality and quantity etc.) should be brought to the notice of the Engineer

2. Storage & handling

- 2.1 JGT to be kept in a covered shed without removing the protective poly-sheet / pack sheet
- 2.2 JGT not to be kept directly on ground/floor
- 2.3 JGT not to be stored normally beyond 1 month
- 2.4 JGT to be carried by inserting a bamboo or similar pole into the central hole of the roll or as convenient at site.
- 2.5 Check that the fabric does not get damaged due to wrong handling before laying
- 2.6 In case of supply of JGT in bale form, JGT shall not be dragged on ground.

3. Installation

- 3.1 Demarcate the entire area to be covered by JGT & measure the area
- 3.2 Ascertain how JGT is to be placed considering the size (especially width) with the specified overlaps
- 3.3 Decide on cutting the fabric supplied in rolls considering the length & width to be covered including the length needed inside anchoring trenches and ensuring minimum wastage
- 3.4 Stitching of JGT is discouraged as it is difficult to achieve seam-strength of the order of 90% of fabric strength. Overlapping is advised usually.
- 3.5 Ensure anchoring of JGT at the beginning and the end of a roll.
- 3.6 In road construction, anchoring is done by pinning staples spaced @ 150 mm along the length and 100 mm along the width

- 3.7** In slopes & river-banks, JGT shall be secured in anchor-trenches invariably at the top of the slope. The usual dimension of such a trench of rectangular section is 250 mm (base) x 500 mm (ht).
- 3.8** Ensure that JGT touches the base and the two sides of the anchor trench uniformly at all points
- 3.9** There shall be at least 2 staples at the bottom of the trench & 3 at the two sides
- 3.10** Longitudinal spacing of staples within the trench shall be @150 mm usually.
- 3.11** All trenches shall be filled with brick bats /stones after stapling is complete
- 3.12** Surface of slope should be dressed properly and angle of slope should not generally exceed 30 degree.
- 3.13** In river-bank erosion control, JGT is to be taken to the lowest of water level (LWL).
- 3.14** A sand-filled toe-beam is to be made by folding the end-fringe of the JGT-roll with river sand inside and sewing it manually. Alternatively, a bevel at the lower end of the bank could be made.
- 3.15** In other slope protection works (embankment slope, hill slope etc), it is advisable to construct a rubble-filled drain at the toe that will serve both as anchor and drain.
- 3.16** The shape of the drain-cum-anchor could be similar to the top anchor trench in shape & size.
- 3.17** Usual overlap is 150 mm.
- 3.18** JGT should be stapled by inserting U-shaped or broad-headed nails or fork-shaped wooden pegs.
- 3.19** May have closer staples in case of roads with CBR <5%, slopes > 30°, eroding river banks with eddies at the toe, large water-level fluctuation (>3 m) and flow velocity > 1 m/sec
- 3.20** Ensure that the overlaps of successive JGT rolls do not fall along the same line.
- 3.21** Ensure that the fabric touches ground at all points, staples are firmly embedded in the ground
- 3.22** Installed fabric shall not be left uncovered except in case of slopes.
- 3.23** Heavy granular overlay over JGT should be placed softly to avoid puncturing of the fabric
- 3.24** Usually a thin cushion of sand (15 mm to 25 mm) is spread over and under JGT to avoid direct contact with the sharp aggregates and soil. Note that JGT is more durable when sandwiched between sand-layers

- 3.25** JGT should not be placed directly over soil-slurry or mud. It is advisable to level off the ground, remove the muddy portion & place a thin cushion of sand before placing JGT
- 3.26** Find from the drawing the position of JGT in the pavement-structure i.e. whether it is to be placed over sub-grade or over sub-base or over the base-course.
- 3.27** Similarly follow the working drawing in case of a river bank erosion control and ensure placement of JGT at the right place. The piece of JGT at the higher level should be laid over the piece immediately next to it at the lower level.

INSTALLATION METHOD OF JUTE GEOTEXTILE FOR SLOPE PROTECTION

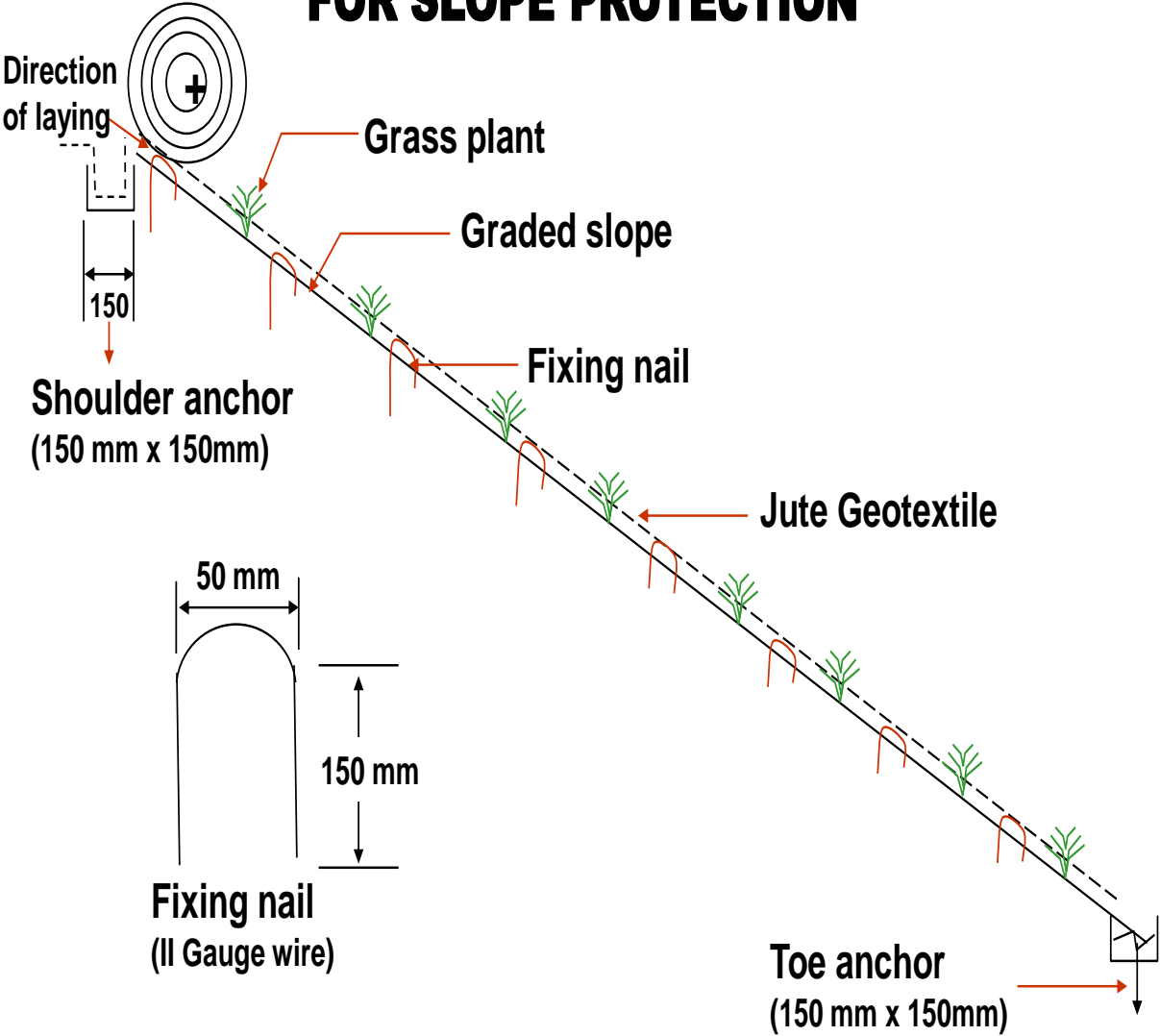


Fig-1

SLOPE STABILIZATION WITH JUTE GEOTEXTILE

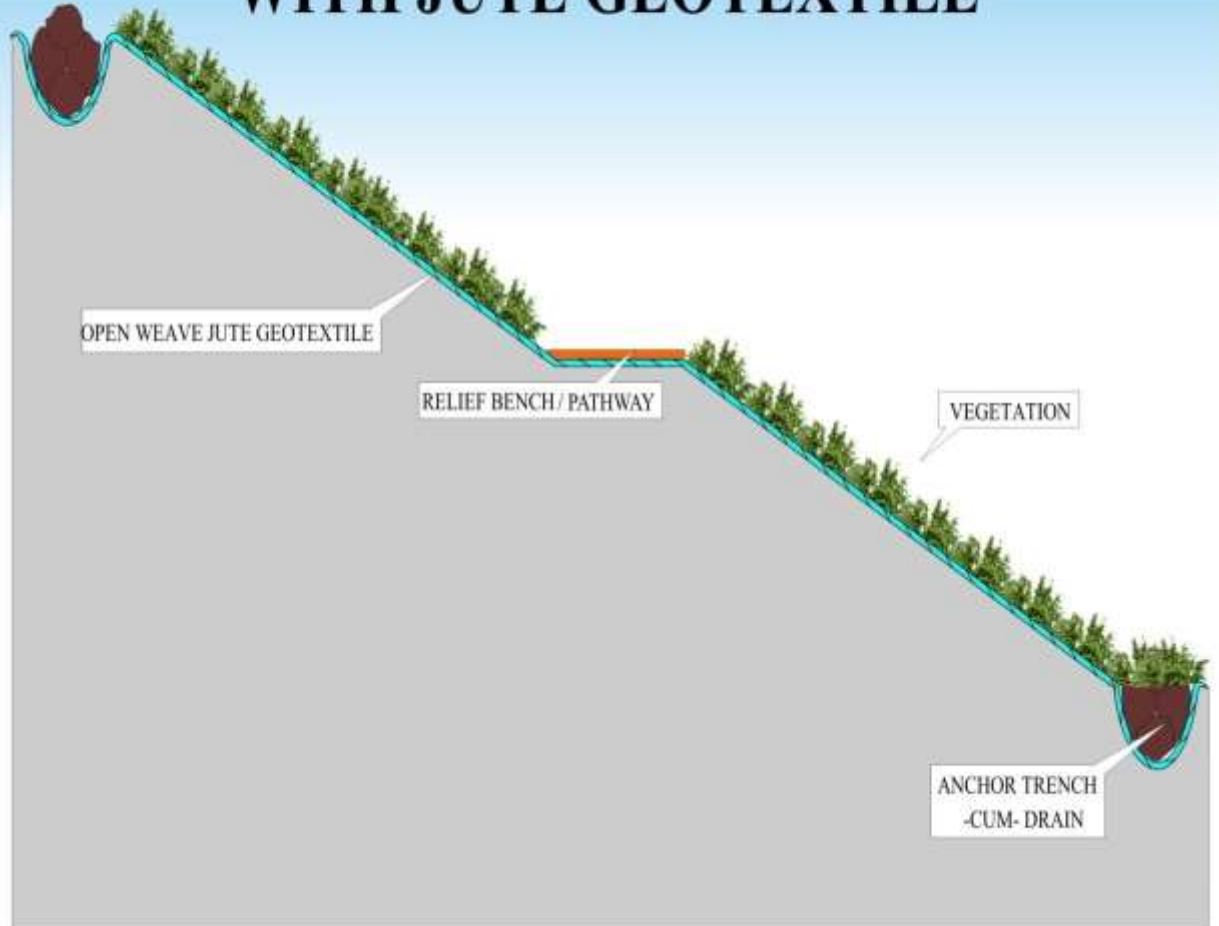
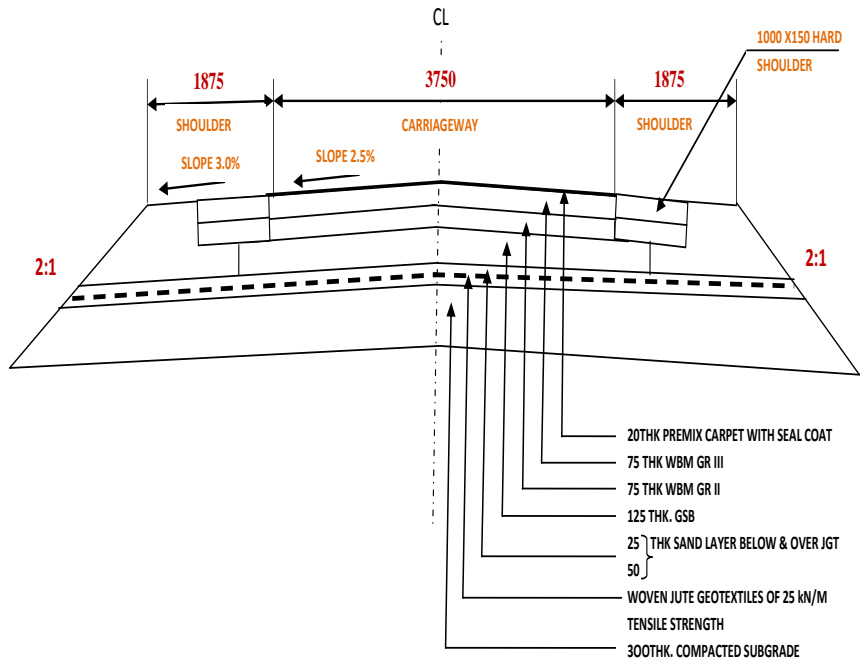


Fig-2



ASSUMPTION

a.	Soil CBR	3 to 4%
b.	Sub grade CBR enhanced with use of JGT	5 to 6%
c.	Traffic (CVPD) ESAL "b" Curve	60000 to 100000
d.	Rainfall (mm/year)	1500 to 1800mm
e.	Carriage width	3.75m

CROSS-SECTION DESIGN INCORPORATING JGT

Design thickness	275mm
Drainage Layer	75mm
GSB	125mm
WBM	150mm
PMC+ Seal Coat	20+6 mm

TYPICAL CROSS-SECTION OF ROAD WITH JGT

Fig-3

STRENGTHENING OF ROAD WITH JUTE GEOTEXTILE

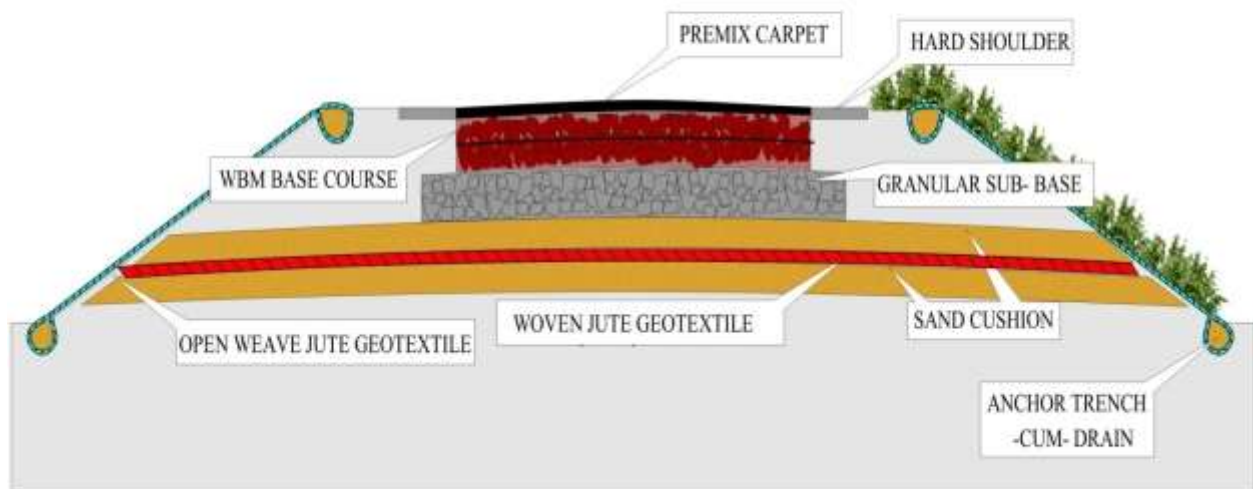


Fig-4

RIVER BANK PROTECTION WITH JUTE GEOTEXTILE

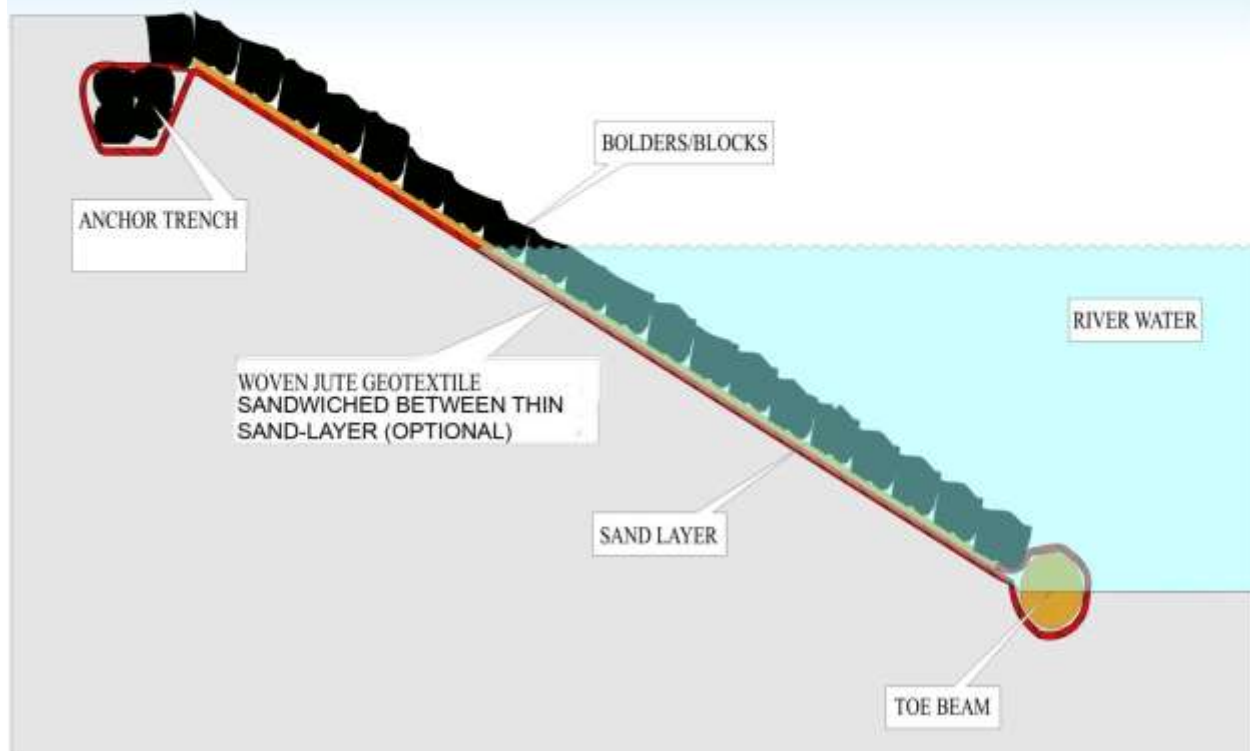


Fig-5

RIVER BANK PROTECTION WITH JUTE GEOTEXTILE (ALTERNATIVE METHOD)

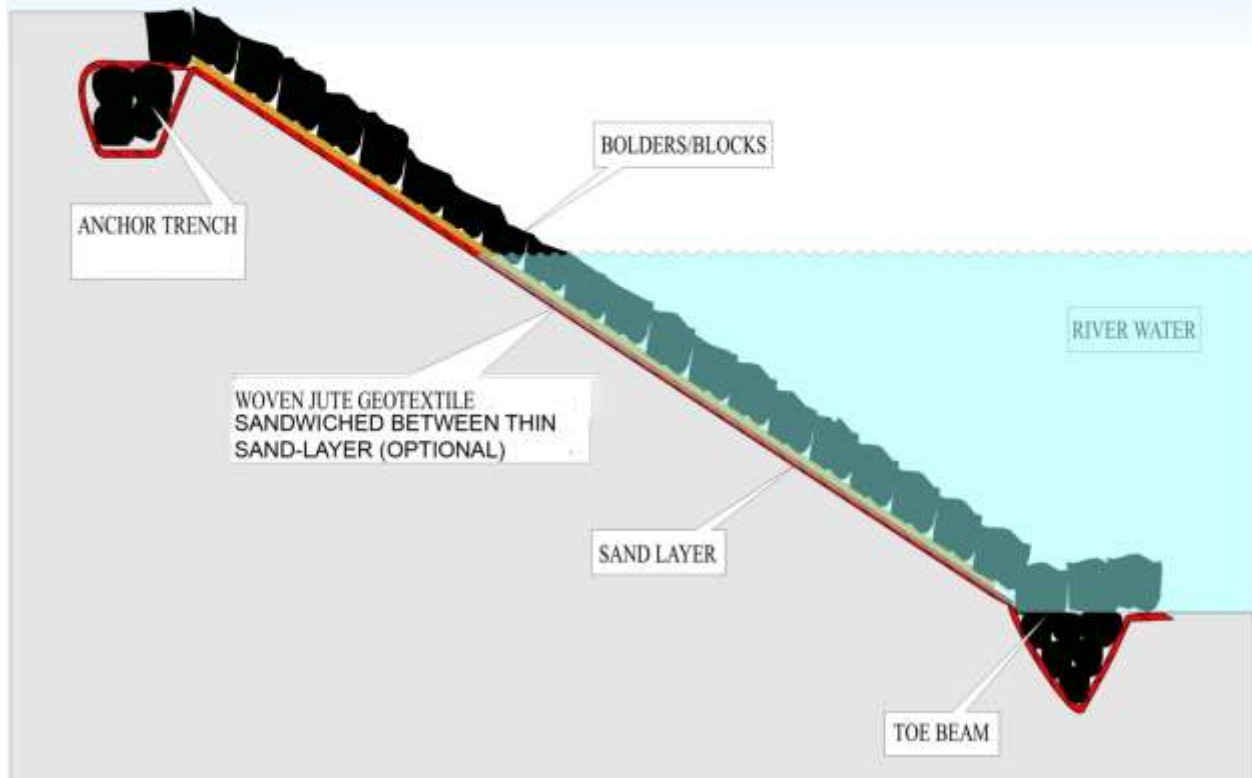


Fig-6

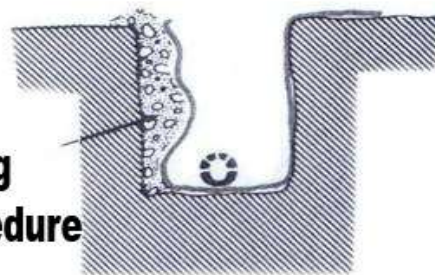


correct procedure



wrong procedure

minimum overlap: 0.30 m



wrong procedure

JGT-ENCAPSULATED DRAIN

Fig-7



Common Fund for Commodities

Willemshuis |Stadhouderskade 55
1072 AB Amsterdam
The Netherlands
Tele fax: (31 20) 676 0231
Website : www.common-fund.org



International Jute Study Group

145 Monipuri Para | Near Farmgate | Tejgaon
Dhaka 1215 | Bangladesh
Ph.: (880-2) 9125581-5 (5 Lines)
Fax : (880-2) 9125248-9 (2 Lines)
Website: www.jute.org



Jute Diversification Promotion Centre

145 Monipuri Para | Near Farmgate | Tejgaon
Dhaka 1215 | Bangladesh
Ph.: 88-02-9145511, 9125581-5 (exchange)
Fax : 88-02-9121523
Email: ed@jdpc.gov.bd



National Jute Board

Head Office : 3A & 3B, Park Plaza | 71 Park Street | Kolkata 700 016
E : jute@njbindia.in | W: www.jute.com
Project Office: 75C, Park Street | 6th Floor | Kolkata 700 016
T : (033) 2226 7534 / 4064 6316 / 64995824/25/26/27/28/33/34 |
F : (033) 2226 7535
Email: cfcijsg21@gmail.com, jutegeotech@gmail.com |
Website: www.jutegeotech.com