

4.9 - RIVER BEEJI AT GAMBORU BRIDGE.

4.9.1 - LOCATION

Latitude $12^{\circ} - 22'$ Longitude $14^{\circ} - 12'$. Situated on Bridge site on river Bheji at Border of Nigeria and Cameroon Republic at mile 89/90 on Maiduguri Fort Lamy Road.

ESTABLISHED

Station was first established by PWD during 1954. This was later taken over by Ministry of Agriculture, Irrigation Division during 1957. Gauge record available from August, 1962 onwards.

GUAGE

The first gauge was attached to pier of a timber bridge at this site during the construction period of the present Reinforced concrete Bridge. The old gauge was temporarily shifted to a distance of 2,000 feet U/S and a 2 inch dia G.I. pipe was used as gauge. The present Bridge was completed during 1960 when the present gauge, was painted on the U/S left nose of pier number four from Maiduguri side of the bridge. Up to 30/6/65 the zero R.L. was 98.92 (Wulgo Datum). From December, 1965 to 31/12/66 it was 99.13 (marte - wulgo Survey and Fundamental B.M. "D" at mile 86 Maiduguri Gaboru Road value of which is 116.28). From 31/12/66 zero R.L. of gauge has been assumed as 0.00 for facility and simplicity of reference and two local Bench Marks have been established at site. The gauge position at site however continues unaltered.

BENCH MARK

Two local Bench Marks were established during December, 1966. B.M. No. 1 is painted on wheel guide of bridge about 14 feet from left abutment downstream side R.L. = 23.09. B.M. No. 2 is painted on wheel guide of bridge about 14 feet from left abutment U/S side R.L. = 23.12.

GATHERMENT AREA

6,261 square miles.

REGULATION OR DIVERSION

Situated at about half a mile upstream of the Gaboru Irrigation pump house. About 40 to 50 cfs of water are drawn out to irrigate area 1400-acres. There are however some fish traps which fishermen have fixed just on the upstream of this bridge, but they cause no Afflux or blockage of water way to influence the gauge discharge relationship.

CHANNEL

Left bank is relatively speaking a bit higher than right bank on the upstream side, but it is all the same on the downstream side. During higher stages river spill occurs on the right bank and sluggish sheet flow occurs up to a width of about half a mile on the right bank. But these conditions do not alter gauge discharge relationship on bridge site as there is no by passing of water. There is no afflux (also) because of bridge gullet and inflow and outflow remain constant. One fact however is to be kept in mind. the velocity of approach has oblique entry into the bridge. It is therefore to apply a correction factor in discharge computations.

DISCHARGE MEASUREMENT

0.2 and 0.8 method is in use. Measurements are made from Bridge with the help of water current Meter. Wading measurements are made in low flows. with a piggy C.M.

POINT OF ZERO FLOW

Flow ceases at gauge 0.87.

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3.2: ABBREVIATIONS:

3.2.1: MEASUREMENT UNITS:

P. P. S. UNITS.

In = Inches
 Ft = Feet
 Yd = Yards
 MI = Miles

Sq In = Square Inches
 ac = Acre
 Sq MI = Square miles

Cft = Cubic Feet
 Aft = Acre-feet

Ft/sec = Feet per second
 MPH = Miles per Hour

CFS = Cubic feet per second

a) LENGTH.

mm = Millimetres
 cm = Centimetres
 M = Metres
 Km = Kilometres

b) AREA.

mm² = Square millimetres
 cm² = Square centimetres
 M² = Square metres

c) VOLUME.

cc = Cubic centimetres
 L. = Litre = 1000 c.c.
 ml = millilitres = c.c.
 M³ = Cubic metres

d) VELOCITY.

M/sec = Metres per second
 Km/H = Kilometres per Hour

e) DISCHARGE.

M³/sec = Cubic metres

METRIC UNITS.

3.2.2: GENERAL.

W.L. = Water level
 R.L. = Reduced level
 M.S.L. = Mean Sea level
 Max = Maximum
 Min = Minimum

| | | |
|--------|---|--------------------------------|
| Av | = | Average |
| approx | = | Approximate, Approximately |
| V | = | Velocity |
| Q | = | Discharge |
| H | = | Depth of water or gauge height |
| B.M. | = | Bench Mark |
| N | = | North |
| S | = | South |
| E | = | East |
| W | = | West |
| C.con | = | Cement concrete |
| R.c.c. | = | Reinforced cement concrete |
| U/s | = | Upstream |
| D/s | = | Downstream |
| G.I | = | Galvanised Iron |
| Ø | = | Diameter. |
| M.O.W. | = | Ministry of Works |
| M.N.R. | = | Ministry of Natural Resources |

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4.6.1

STATION DESCRIPTION.

4.6 RIVER EBEJI AT GAMBORU BRIDGE

LOCATION:

Latitude 12° - 22' Longitude 14° - 12'. Situated on Bridge site on river Ebeji at Border of Nigeria and Cameroon Republic at mile 89/90 on Maiduguri-Fort Lamy Road.

ESTABLISHED:

Station was first established by PWD during 1954. This was later taken over by Ministry of Agriculture, Irrigation Division during 1957. Gauge record available from August, 1962 onwards.

GAUGE:

The first gauge was attached to pier of a timber bridge at this site; during the construction period of the present Reinforced concrete bridge the old gauge was temporarily shifted to a distance of 2,000 feet U/S and a 2 inch dia G.I. pipe was used as gauge. The present bridge was completed during 1960 when the present gauge was painted on the U/S left nose of pier number four from Maiduguri side of the bridge. Up to 30/6/65 the zero R.L. was 98.92 (Wulgo Datum). From December, 1965 to 31/12/66 it was 99.13 (Wulgo Survey and Fundamental B.M. "D" at mile 86 Maiduguri Gamboru Road value of which is 116.26). From 31/12/66 zero R.L. of gauge has been assumed as 0.00 for facility and simplicity of reference and two local Bench Marks have been established at site. The gauge position at site however continues unaltered.

BENCH MARK:

Two local Bench Marks were established during December, 1966. B.M. No. 1 is painted on wheel guide of bridge about 14 feet from left abutment downstream side R.L. = 23.09. B.M. No. 2 is painted on wheel guide of bridge about 14 feet from left abutment U/S side R.L. = 23.12.

CATCHMENT AREA:

6,261 square miles.

REGULATION OR DIVERSION:

Situated at about half a mile upstream of the Gamboru Irrigation pump house. About 40 to 50 cfs of water are drawn out to irrigate area 1400 acres. There are however some fish traps which fishermen have fixed just on the upstream of this bridge, but they cause no afflux or blockage of water way to influence the gauge discharge relationship.

CHANNEL:

Left bank is relatively speaking a bit higher than right bank on the upstream side, but it is all the same on the downstream side. During higher stages river spill occurs on the right bank and sluggish sheet flow occurs up to a width of about half a mile on the right bank, but these conditions do not alter gauge discharge relationship on bridge site as there is no by passing of water. There is no afflux (also) because of bridge gullet and inflow and outflow remain constant. One fact however is to be kept in mind, the velocity of approach has oblique entry into the bridge. It is therefore to apply a correction factor in discharge computation.

DISCHARGE MEASUREMENT:

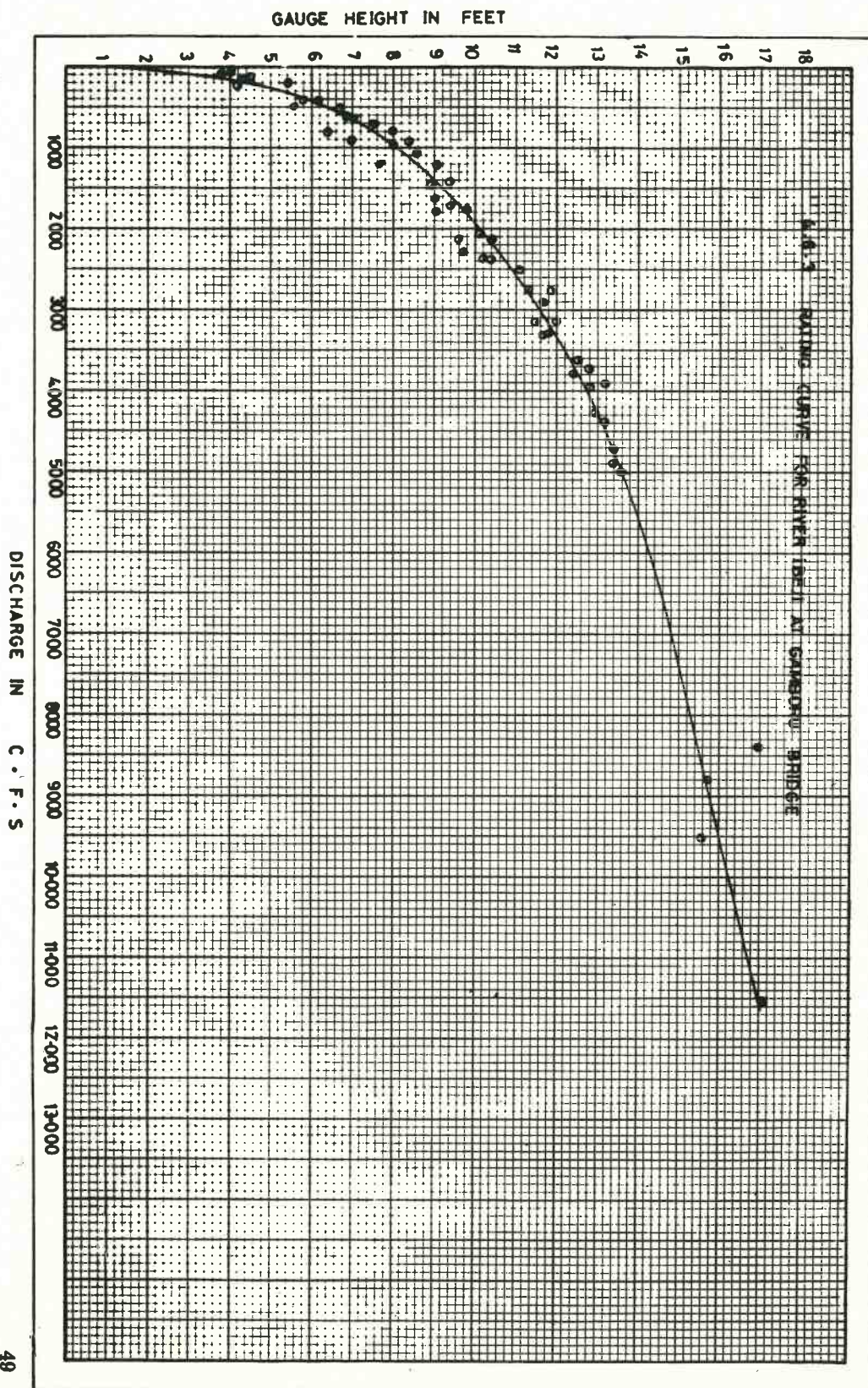
0.2 and 0.8 method is in use. Measurements are made from Bridge with the help of water current meter. Wading measurements are made in low flows, with a pigmy C.M.

POINT OF ZERO FLOW:

Flow ceases at Gauge 0.87.

Similar to 22-23

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