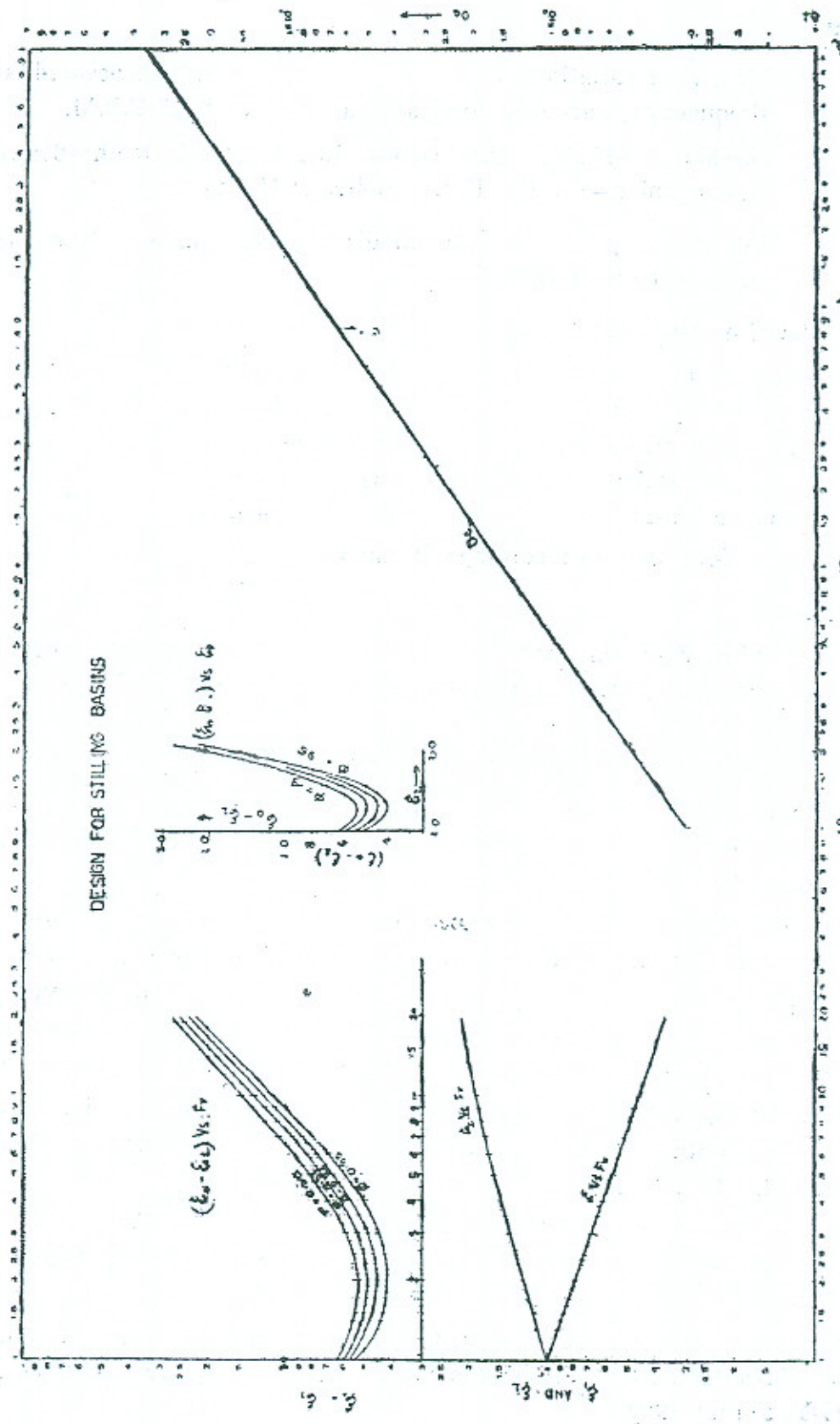
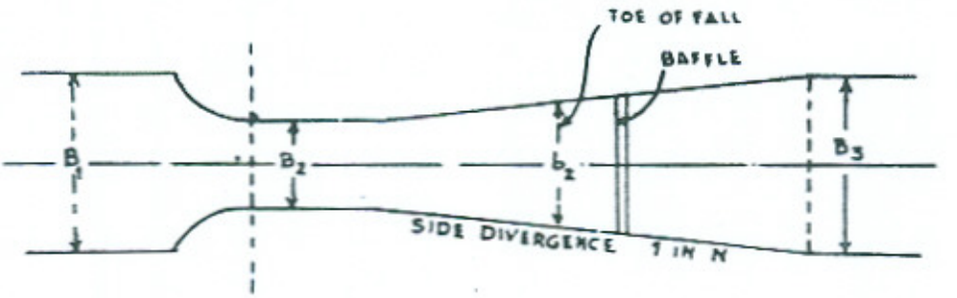
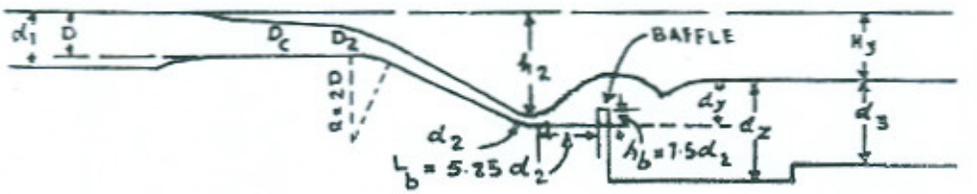


Fig. 1 (*a*).



SECTION



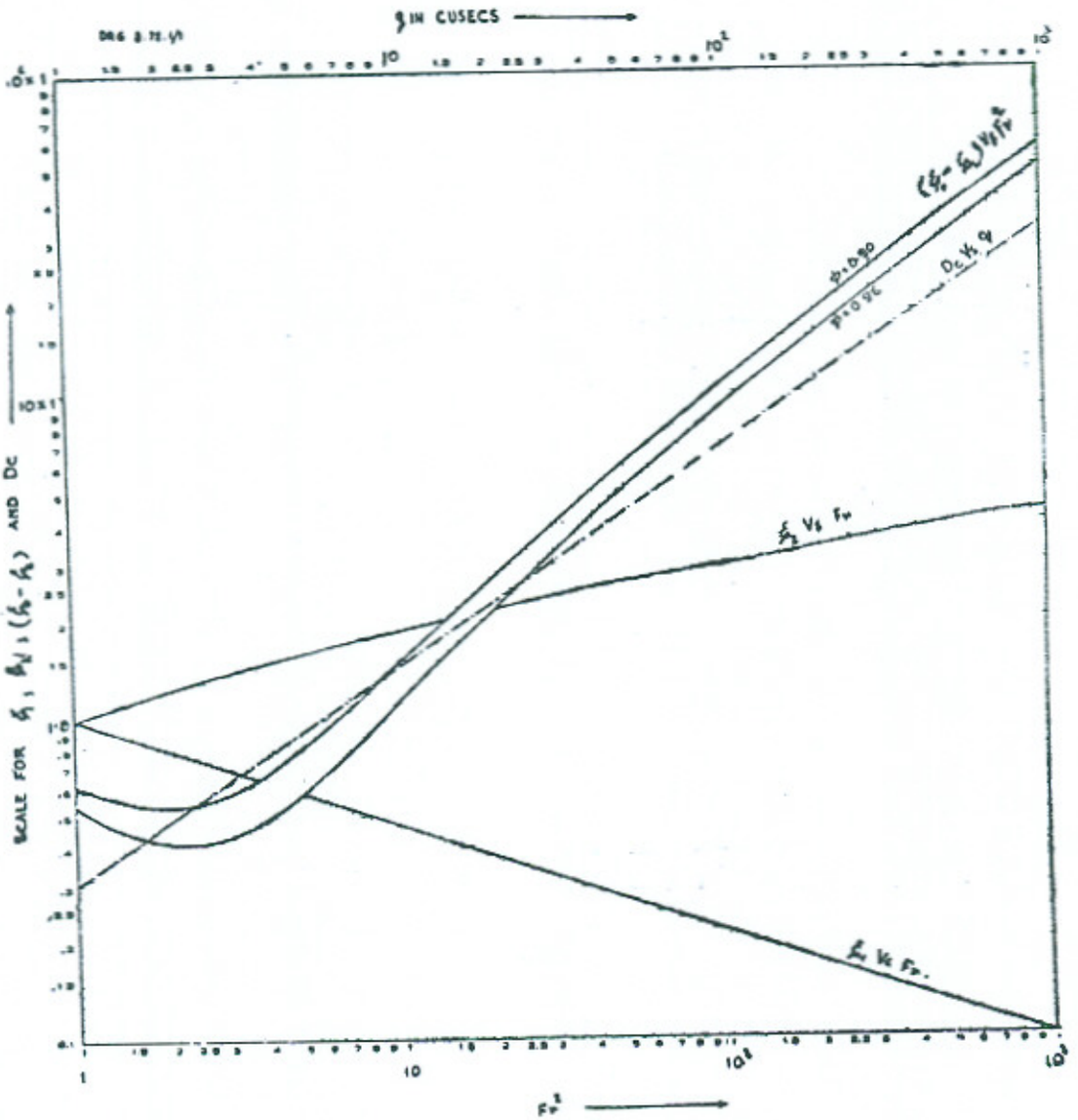


Fig. 1 (*a*, *b*)

ANGLE OF DIVERGENCE VERSUS DISCHARGE

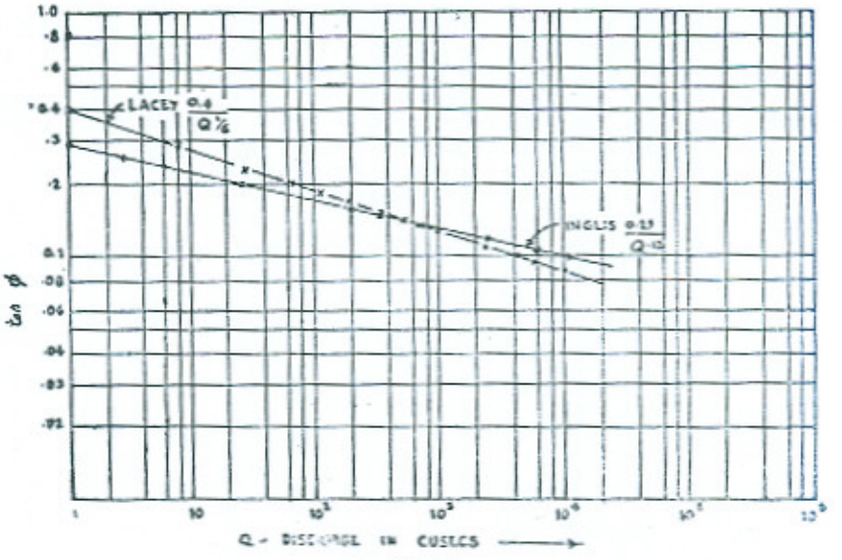


Fig. 2

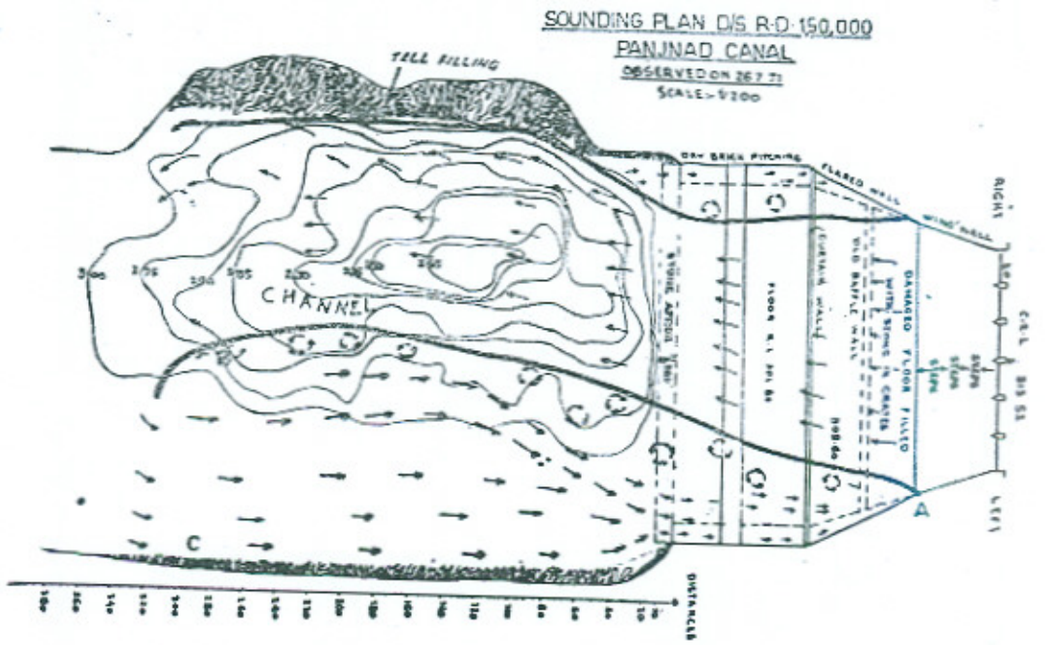


Fig. 3

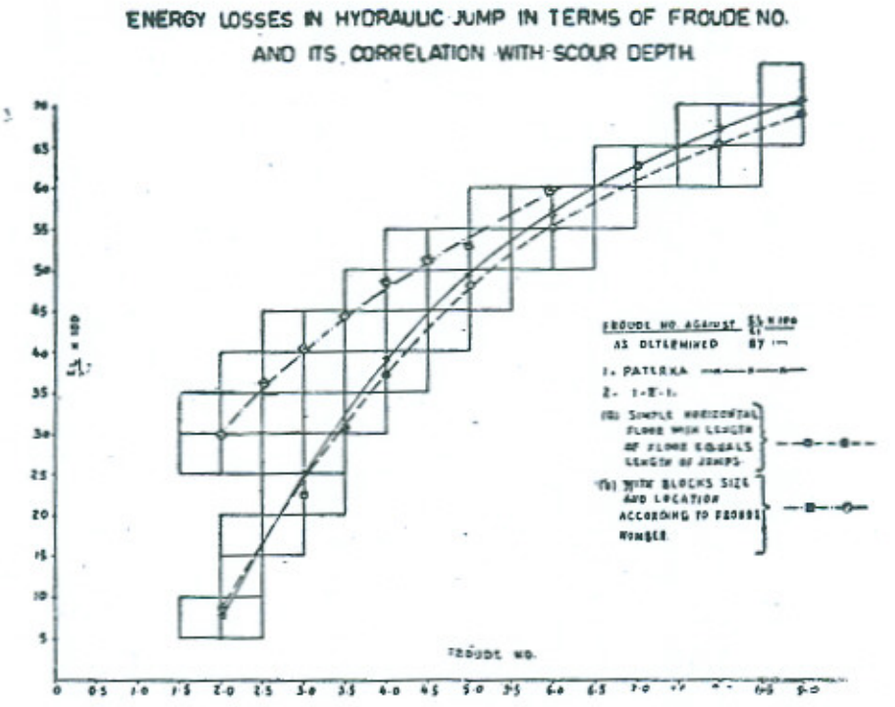

ENERGY LOSSES IN HYDRAULIC JUMP IN TERMS OF FROUDE NO.
AND ITS CORRELATION WITH SCOUR DEPTH
FROUDE NO.

Fig. 4

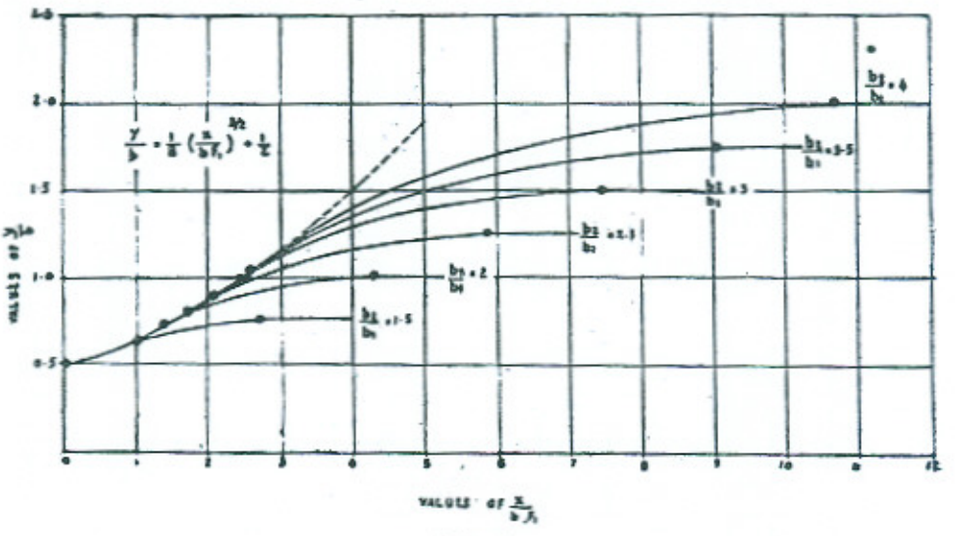


Fig. 5

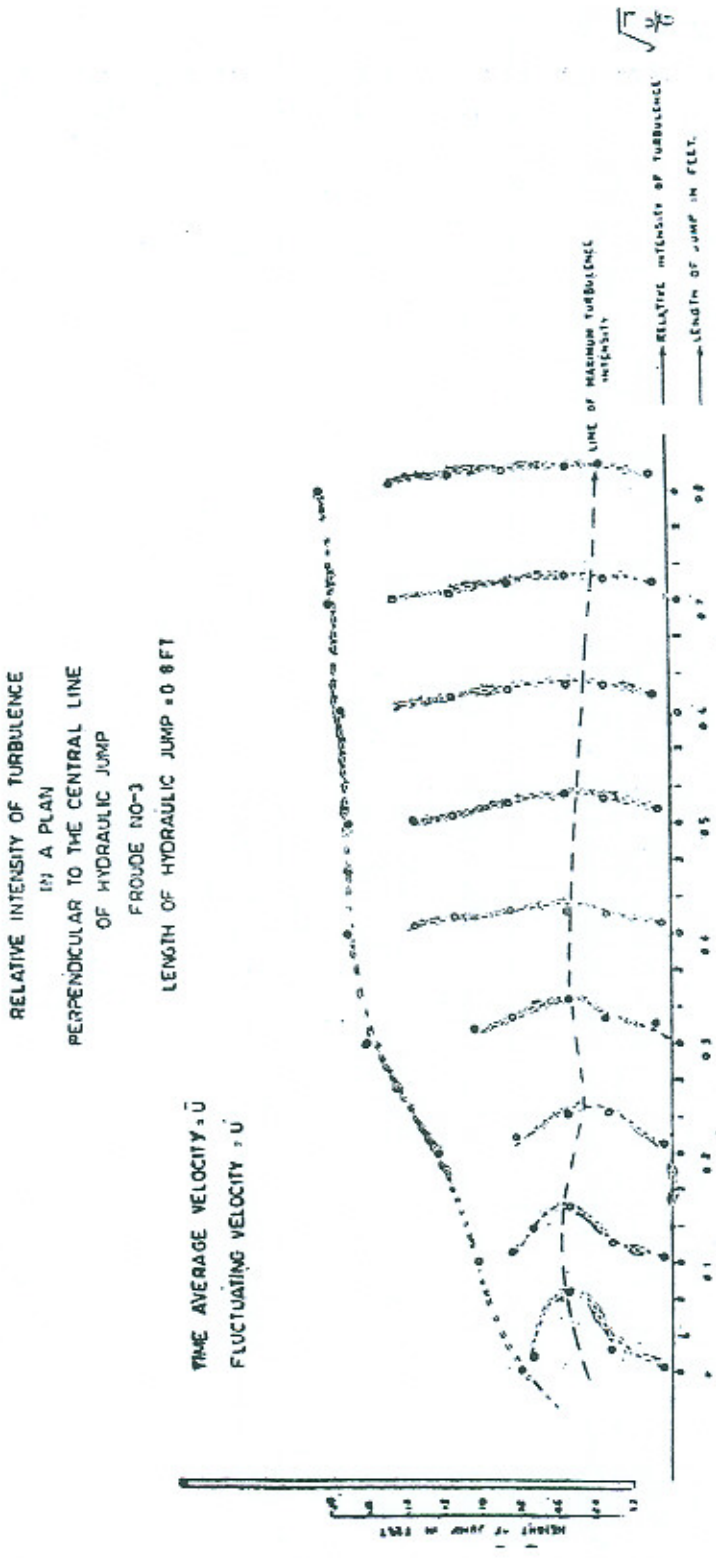

RELATIVE INTENSITY OF TURBULENCE
IN A PLAN
PERPENDICULAR TO THE CENTRAL LINE
OF HYDRAULIC JUMP
FROUDE NO=3
LENGTH OF HYDRAULIC JUMP = 0 8 FT
TIME AVERAGE VELOCITY = Ū
FLUCTUATING VELOCITY = u'
LINE OF MAXIMUM TURBULENCE INTENSITY
RELATIVE INTENSITY OF TURBULENCE
LENGTH OF JUMP IN FEET.

Fig. 5 (a)

MODEL OF THE FALL AT R D 455 OF B S FEEDER

SHOWING BED CONFIGURATION AFTER SEASONS RUN WITH D/S WALL CONVERTED IN TO PARABOLA OF 5 + 1·4 HAVING 9·4 FLARE RATIO AND D/S STILLING BASIN ELIMINATED

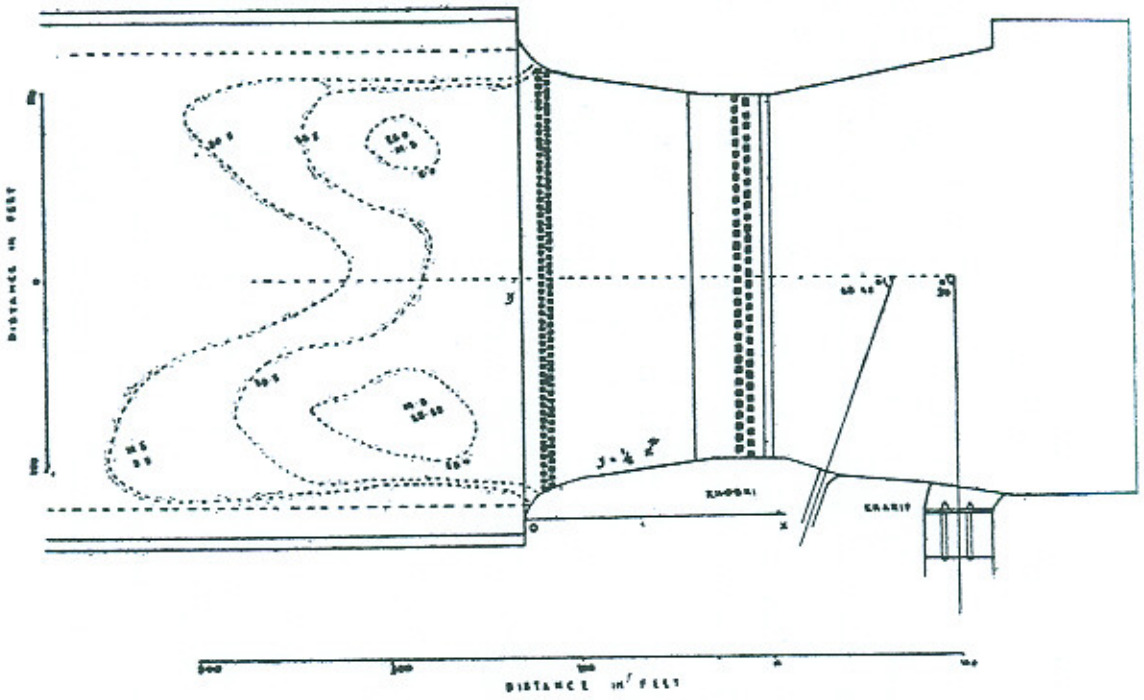


Fig. 6

D G KHAN CANAL SILT E JECTOR
VORTEX TUBE TYPE

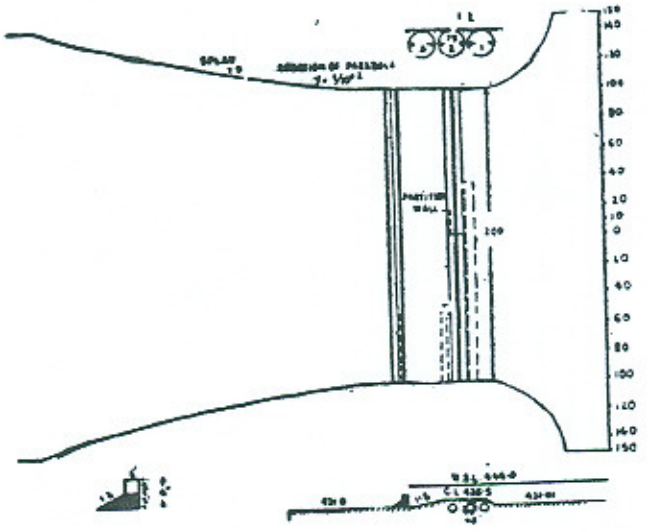


Fig. 7

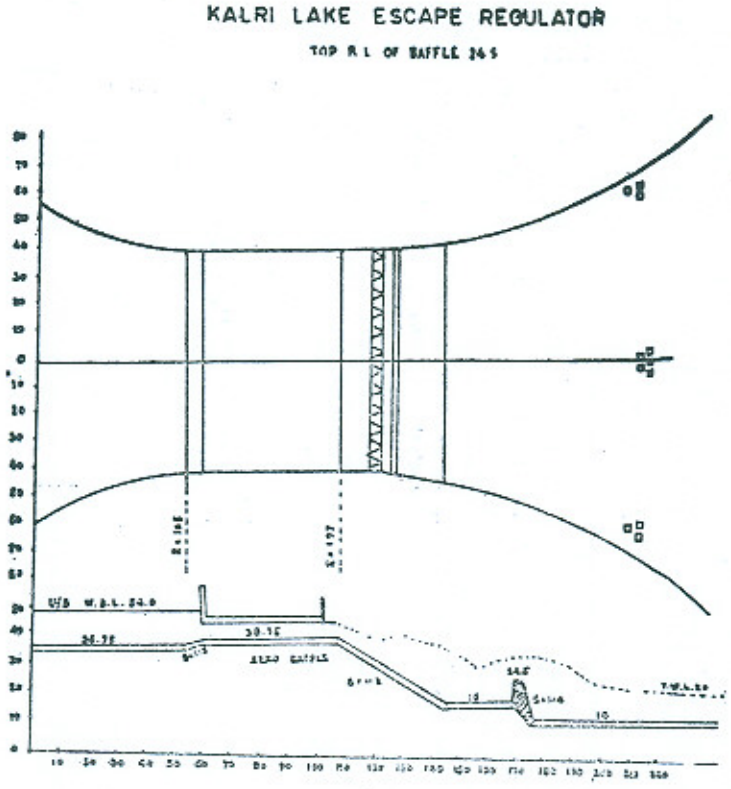


Fig. 8

MODEL OF SUBSIDIARY WEIR BELOW ISLAM SLOPING WING WALLS

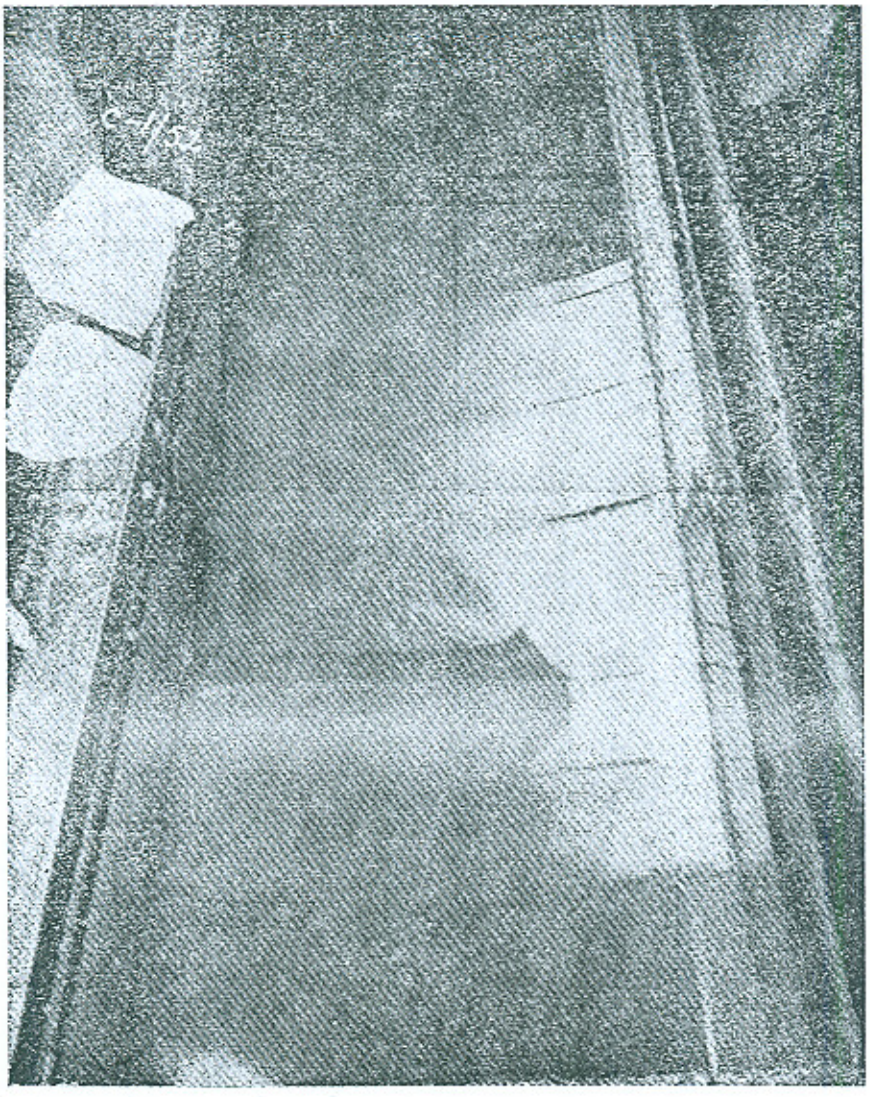


Fig. 9(*a*)—Notice Sloping Rollers

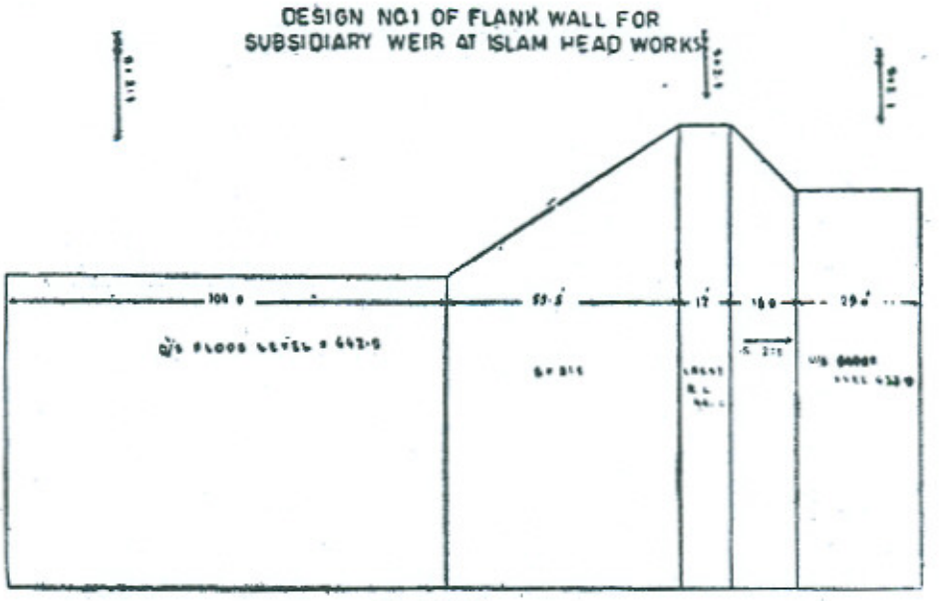

DESIGN NO.1 OF FLANK WALL FOR
SUBSIDIARY WEIR AT ISLAM HEAD WORKS

Fig. 9 (*b*)

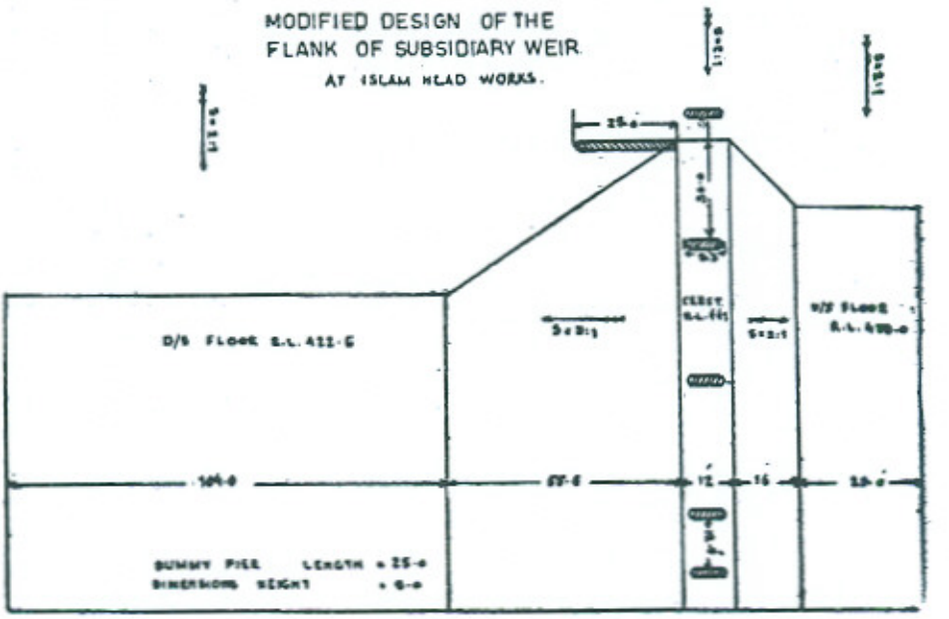

MODIFIED DESIGN OF THE
FLANK OF SUBSIDIARY WEIR
AT ISLAM HEAD WORKS.

Fig. 9 (*c*).

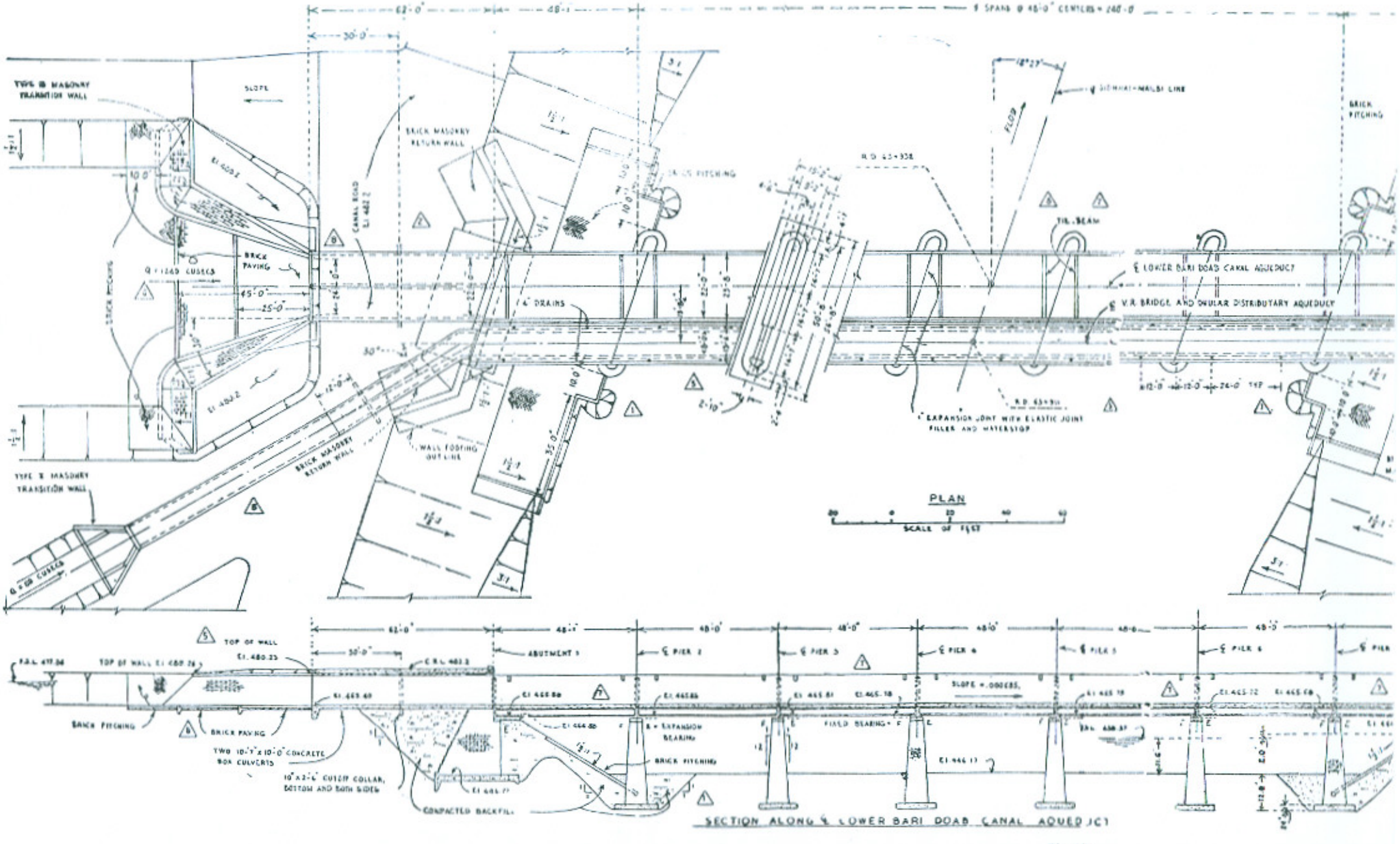
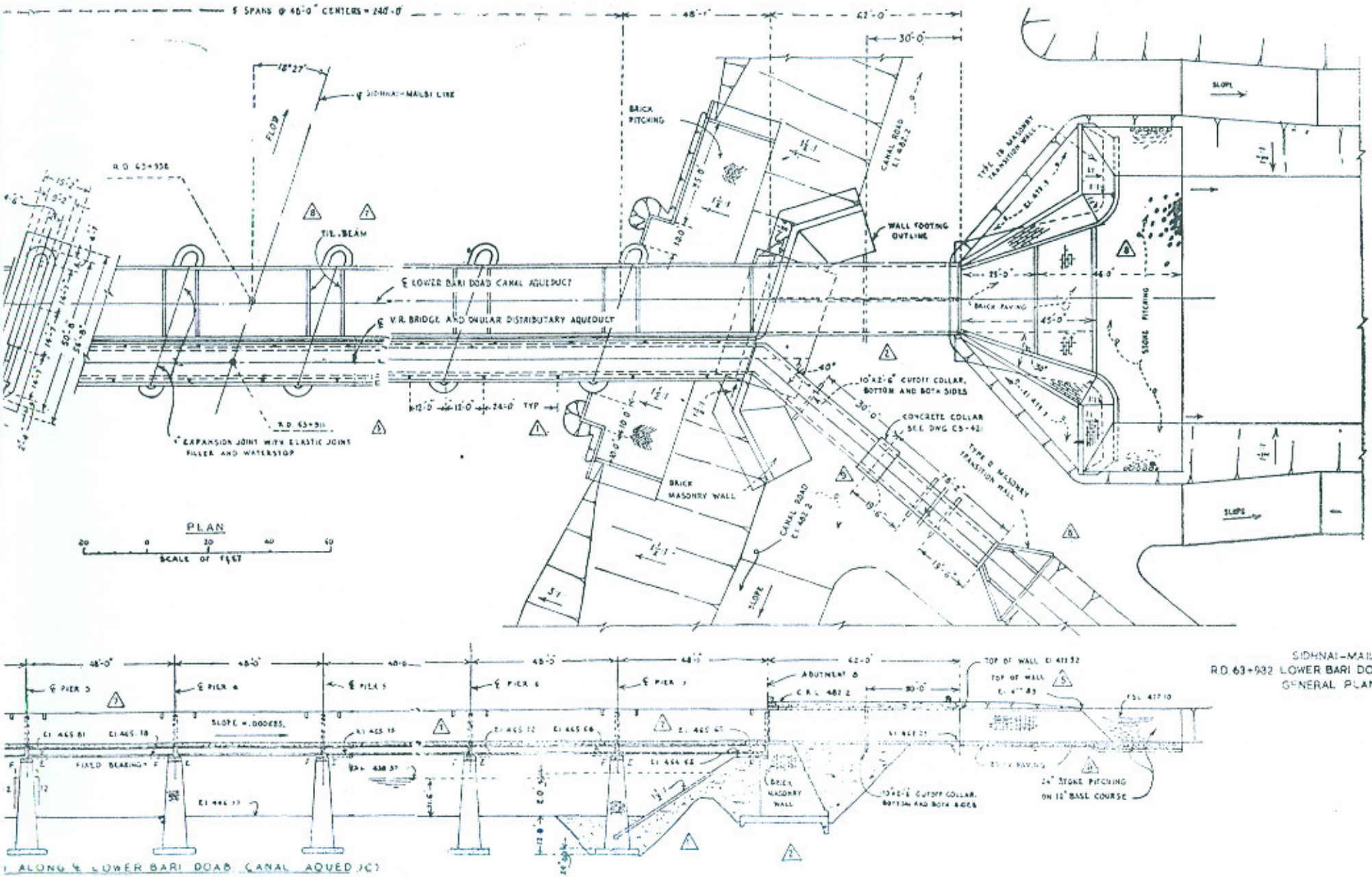

TYPE B MASONRY TRANSITION WALL
SLOPE
BRICK MASONRY RETURN WALL
BRICK PAVING
BRICK PITCHING
4" DRAINS
WALL FOOTING OUT LINE
TYPE B MASONRY TRANSITION WALL
BRICK MASONRY RETURN WALL
CANAL ROAD
E LOWER BARI DOAB CANAL AQUEDUCT
E V.R. BRIDGE AND ONULAR DISTRIBUTARY AQUEDUCT
E EXPANSION JOINT WITH ELASTIC JOINT FILLER AND WATERSTOP
PLAN
SCALE OF FEET
TOP OF WALL
BRICK PITCHING
BRICK PAVING
TWO 10'-1" x 10'-0" CONCRETE BOX CULVERTS
10" x 2'-6" CUTOFF COLLAR, BOTTOM AND BOTH SIDES
COMPACTED BACKFILL
ABUTMENT 1
E PIER 2
E PIER 3
E PIER 4
E PIER 5
E PIER 6
E EXPANSION BEARING
FIXED BEARING
SECTION ALONG E LOWER BARI DOAB CANAL AQUEDUCT

Fig. 10



SIDHNAI-MAILSI LINK
R.D. 63+932 LOWER BARI DOAB CANAL AQUEDUCT
GENERAL PLAN AND PROFILES

Fig. 10

MODEL OF L.B.D.C. AQUEDUCT CROSSING S.M. LINK
ORIGINAL TEST FLOW CONDITIONS D/S OF THE AQUEDUCT

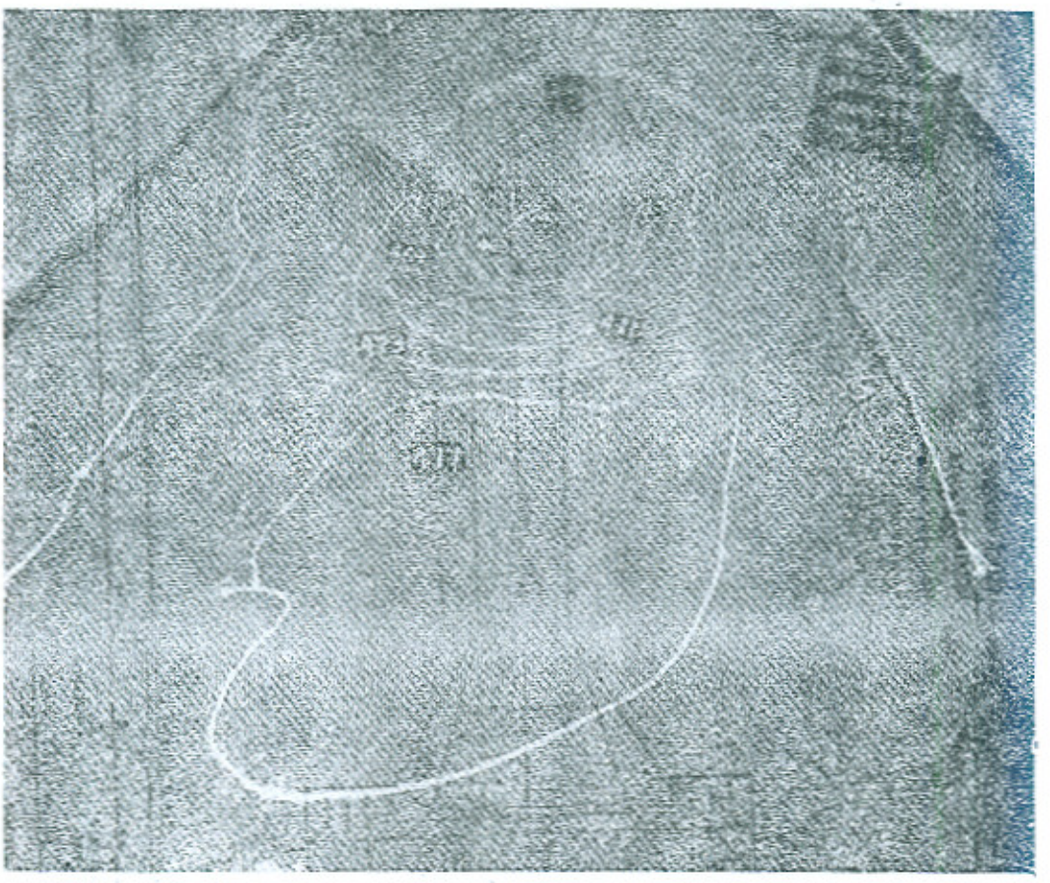


Fig. 11(a)—Bed Configuration after Normal Run of Model with Maximum Discharge of 1496 cusecs.
Maximm Scour=11 Ft.

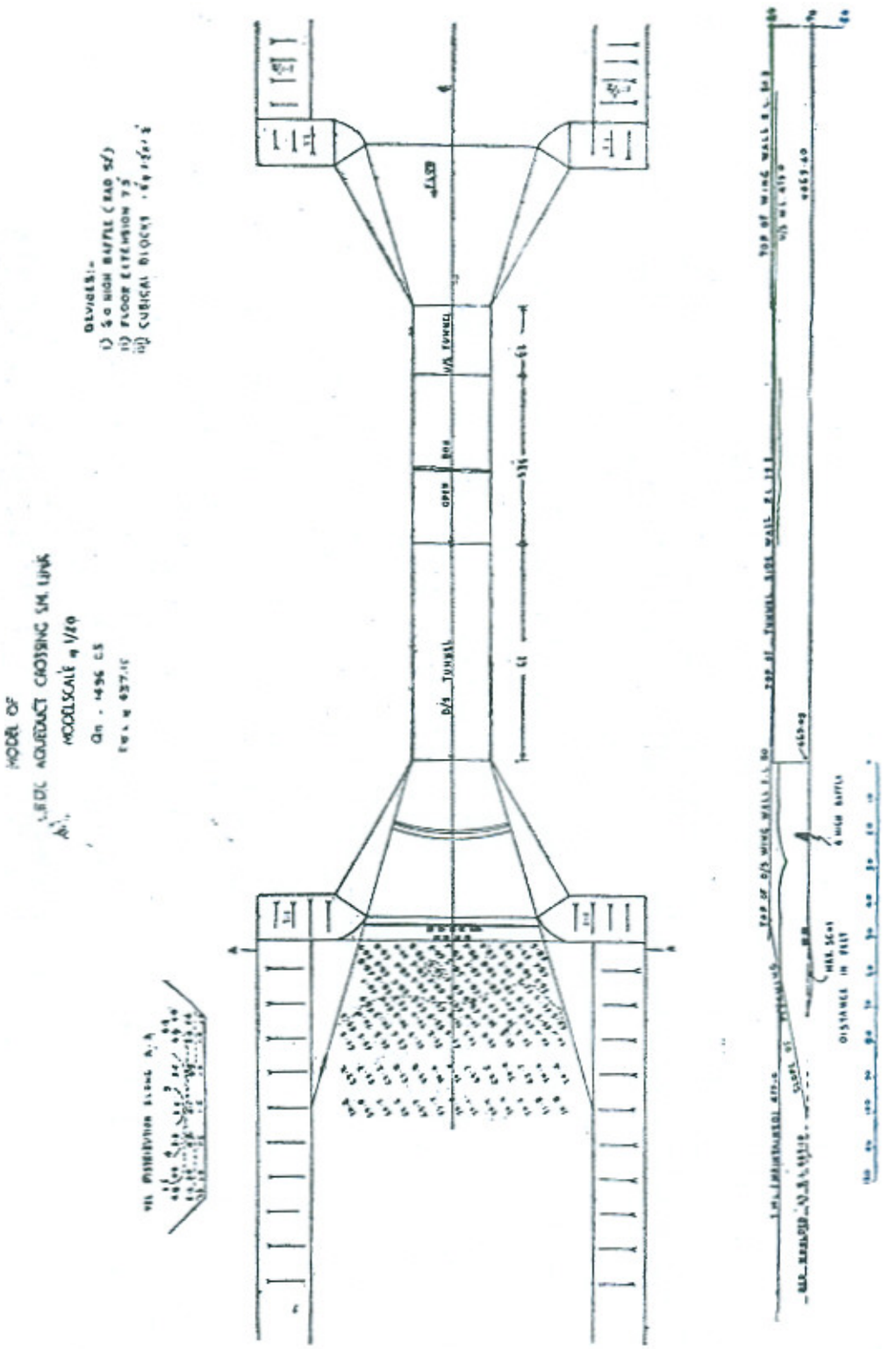


Fig. 11 (*b*)

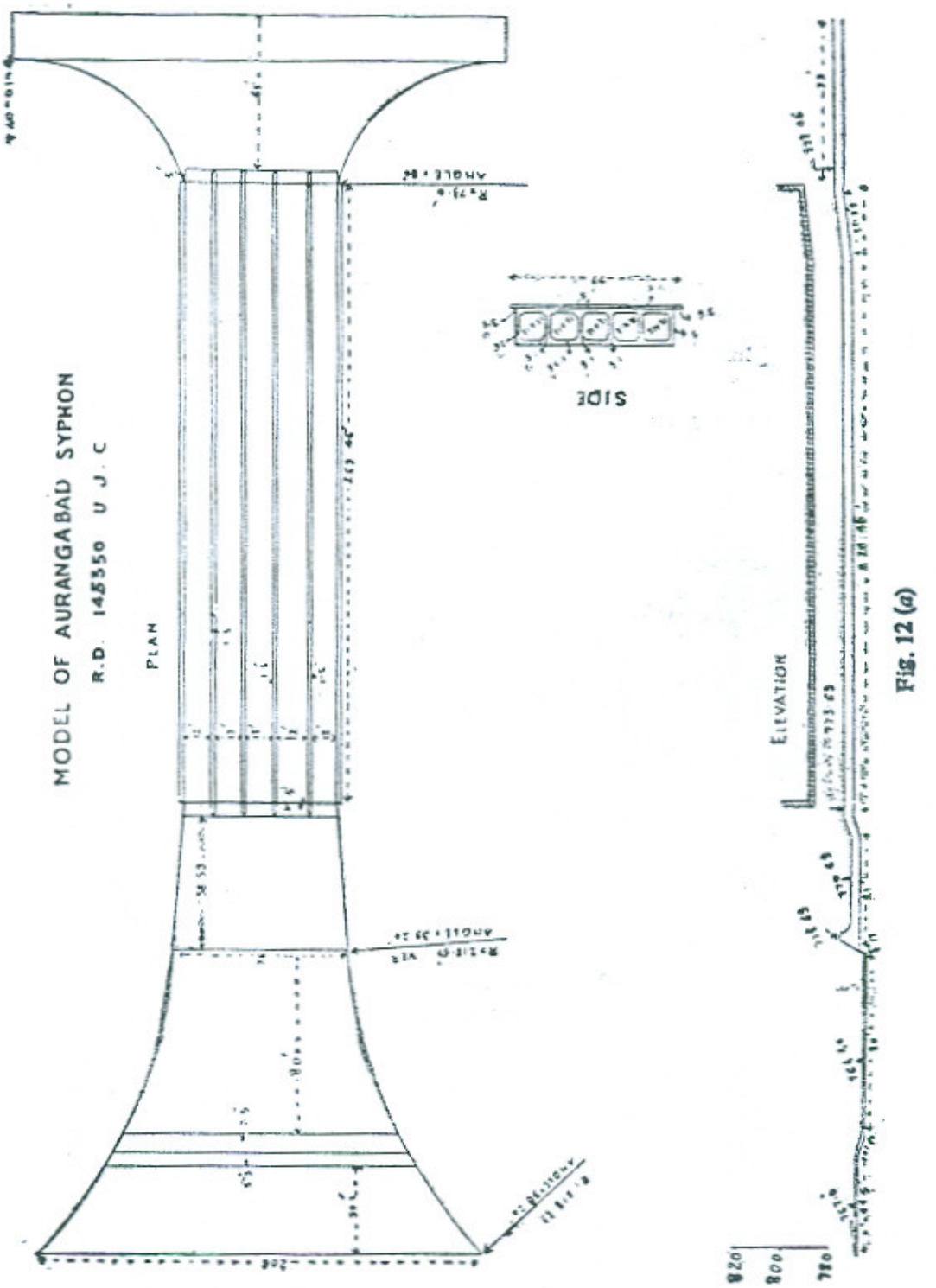

MODEL OF AURANGABAD SYPHON
R.D. 148550 U.J.C
PLAN
SIDE
ELEVATION

Fig. 12 (a)

MODEL OF AURANGABAD SYPHON WITH

(1) Curved baffle having spectures at ends.
(2) Impact blocks.
(3) Deflector blocks.

BED CONFIGURATION AFTER FIVE HOURS RUN

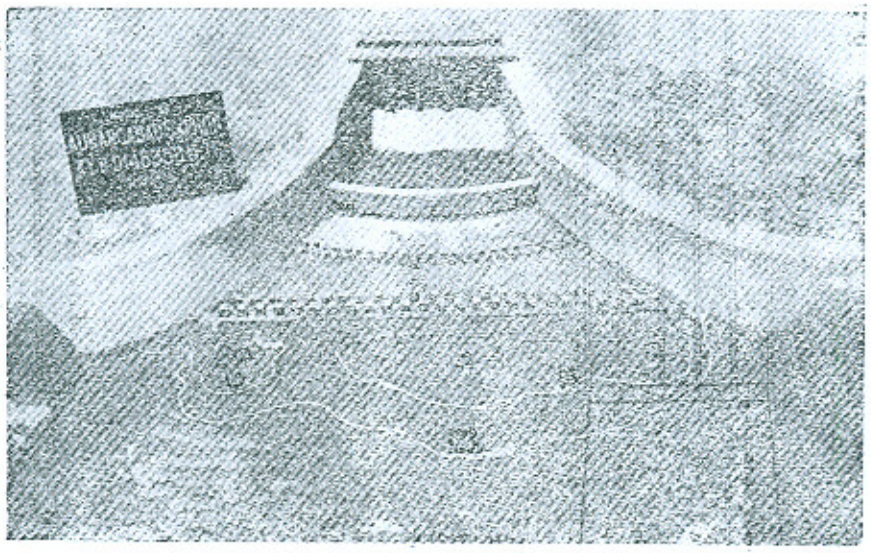


Fig. 12(*b*)—Maxium Scour Depth on
(*i*) centre = 3.5′
(*ii*) sides = 4.0′

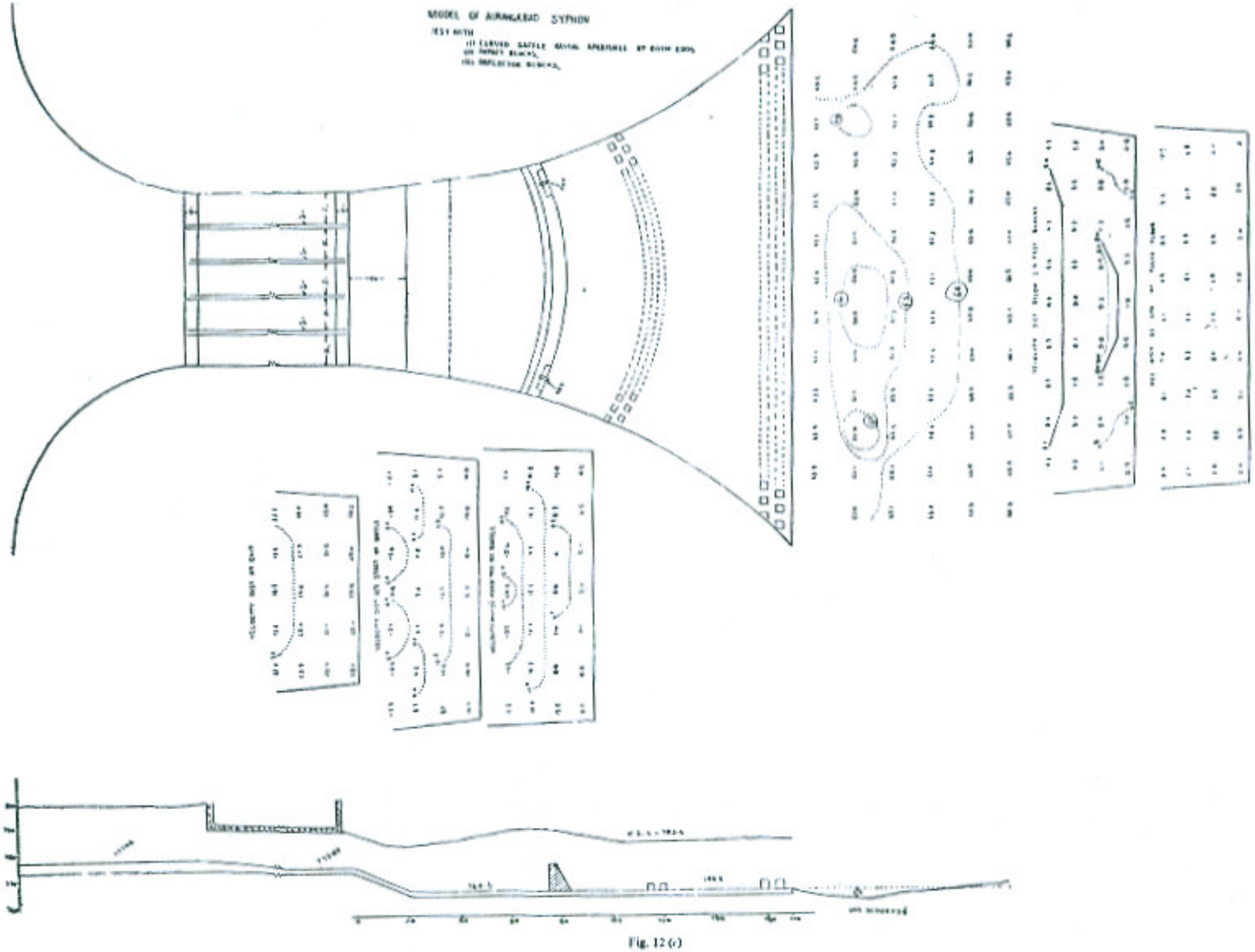
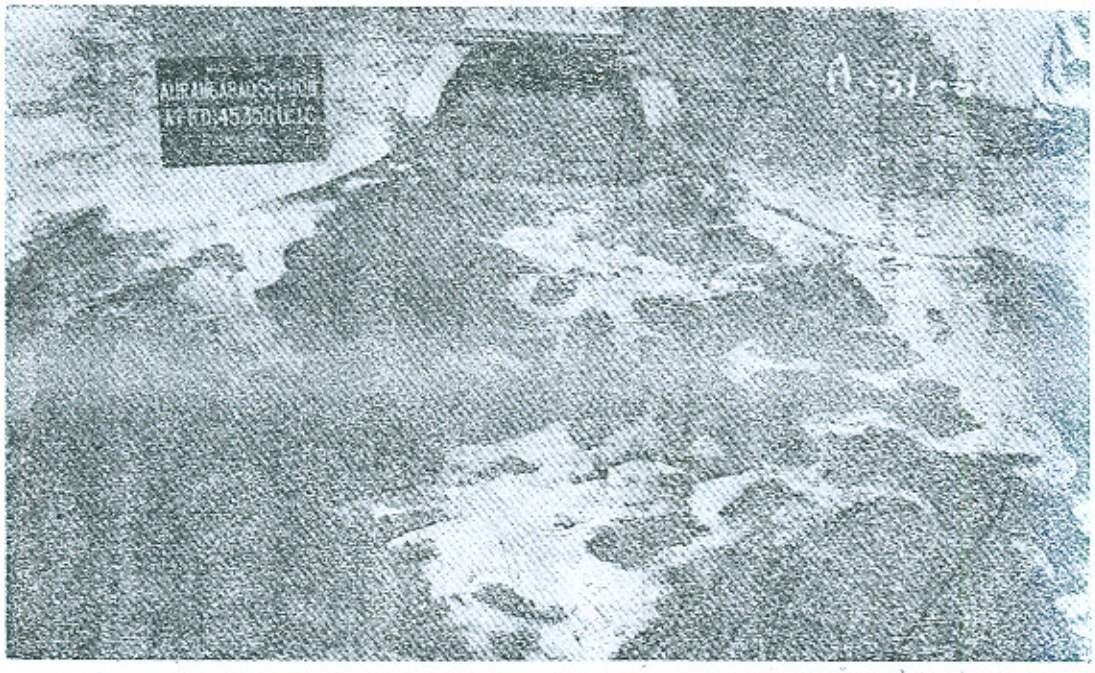


Fig. 12 (c)

MODEL OF AURANGABAD SYPHON WITH

(*i*) A curved Baffle, R = 100′ with aperatueus Top R.L.— 773.69
(*ii*) Impact row of blocks.
(*iii*) Deflector blocks.

Flow Conditions



Qn = 16,000 Cusecs.

Fig. 12(d)—Almost uniform flow throughout the channel section.

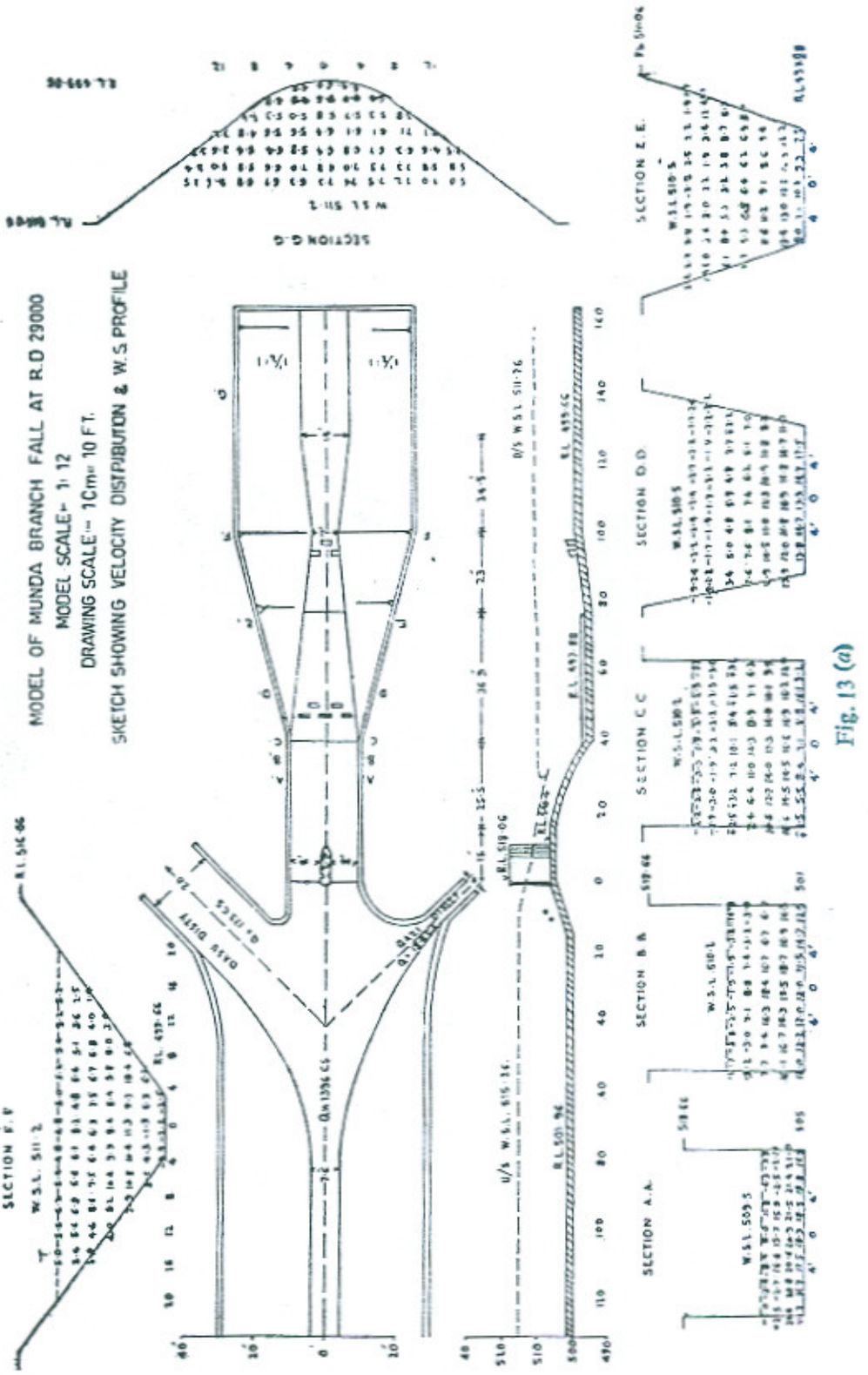

MODEL OF MUNDA BRANCH FALL AT R.D 29000
MODEL SCALE= 1: 12
DRAWING SCALE= 10cm= 10 FT.
SKETCH SHOWING VELOCITY DISTRIBUTION & W.S PROFILE
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
SECTION E-E
SECTION F-F
SECTION G-G
U/S W.S.L. 515.36
D/S W.S.L. 511.76
R.L. 501.96
R.L. 519.06
R.L. 495.66
R.L. 546.66
R.L. 499.66
1½:1
1½:1

Fig. 13 (a)

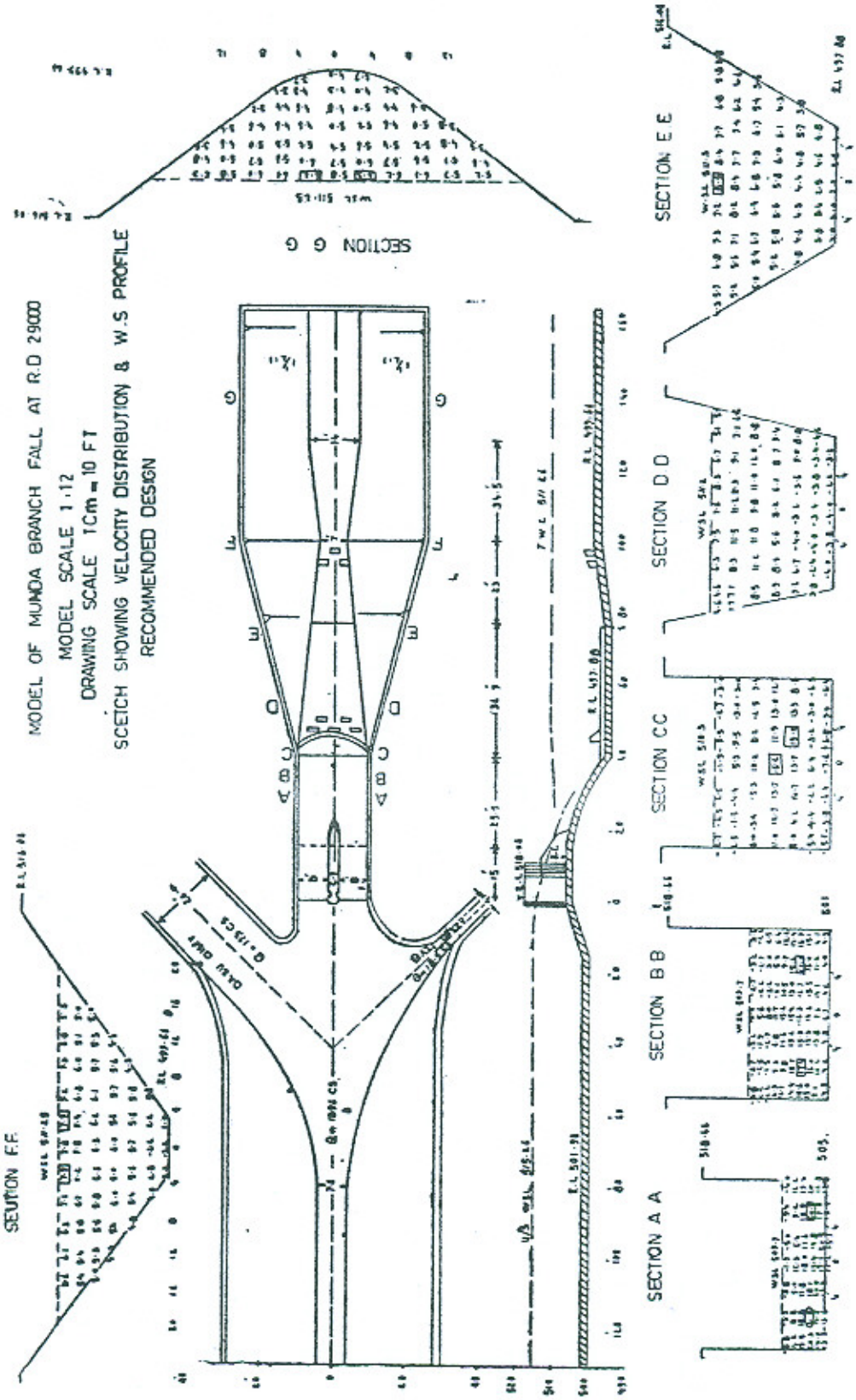

MODEL OF MUNDA BRANCH FALL AT R.D 29000
MODEL SCALE 1:12
DRAWING SCALE 1Cm = 10 FT
SCETCH SHOWING VELOCITY DISTRIBUTION & W.S PROFILE
RECOMMENDED DESIGN
SECTION G G
SECTION E E
SECTION D D
SECTION C C
SECTION B B
SECTION A A
SECTION F F

Fig. 13 (b)

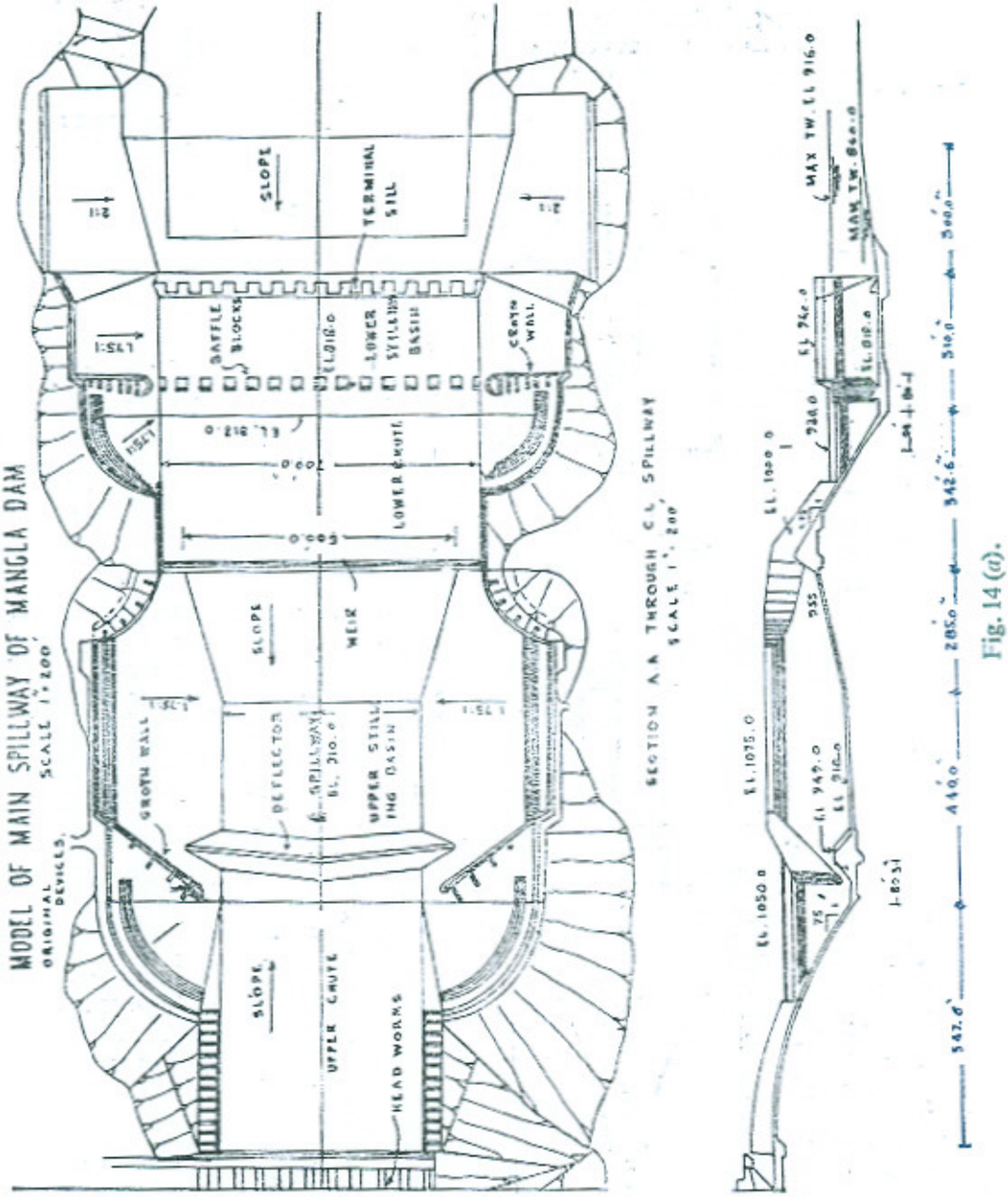

MODEL OF MAIN SPILLWAY OF MANGLA DAM
ORIGINAL DEVICES.
SCALE 1" = 200'
SLOPE
TERMINAL SILL
BAFFLE BLOCKS
LOWER STILLING BASIN
CROSS WALL
LOWER CHUTE
SLOPE
WEIR
GROIN WALL
DEFLECTOR
SPILLWAY EL. 910.0'
UPPER STILLING BASIN
SLOPE
UPPER CHUTE
HEAD WORKS
SECTION A A THROUGH C.L. SPILLWAY
SCALE 1" = 200'
MAX TW. EL 916.0
EL. 1020.0
EL. 1050.0
EL. 1035.0
EL. 949.0
EL. 910.0
342.6'
440.0
285.0
342.6
310.0
300.0

Fig. 14 (*a*).

MODEL OF MAIN SPILLWAY OF MANGLA DAM
Qn = 900,000 Cusecs.

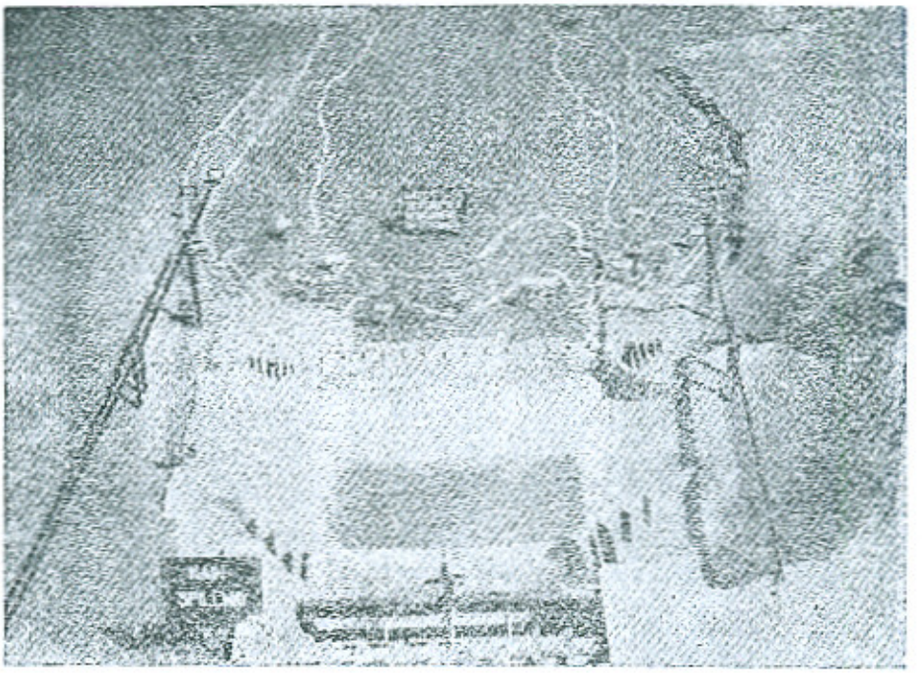


Fig. 14 (*b*)—Bed confinguration after 4 hours run. Maximum scour R.L. 795 is observed on the right side below the floor at R.L. 818.

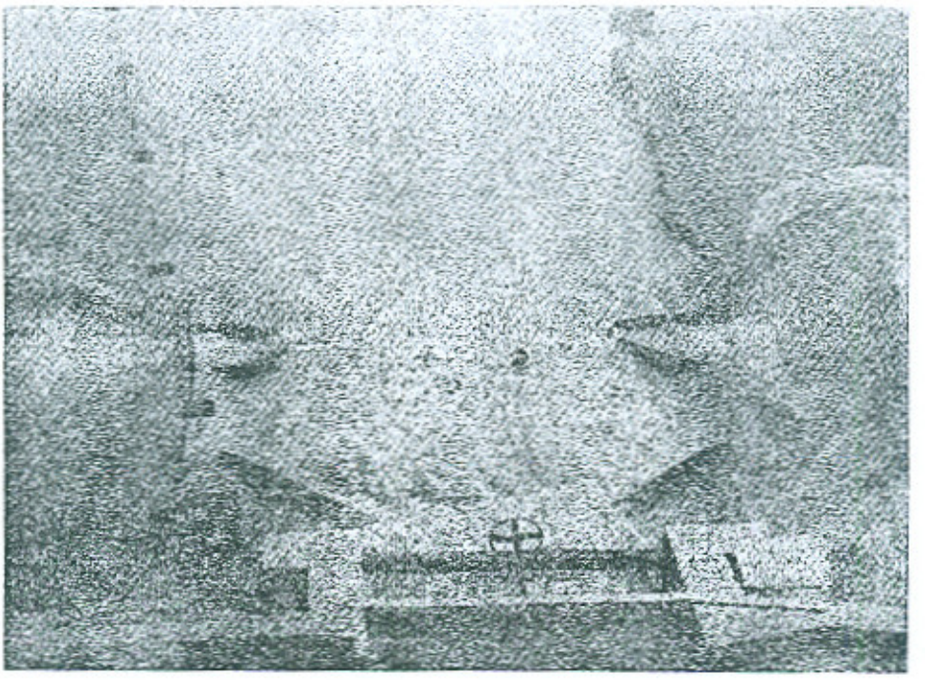


Fig 14(*c*) —Flow pattern d/s of the Head Regulator of the Main Spillway and the Tailrace Channel

MODEL OF MAIN SPILLWAY, MANGLA DAM

SCALE 1"=200

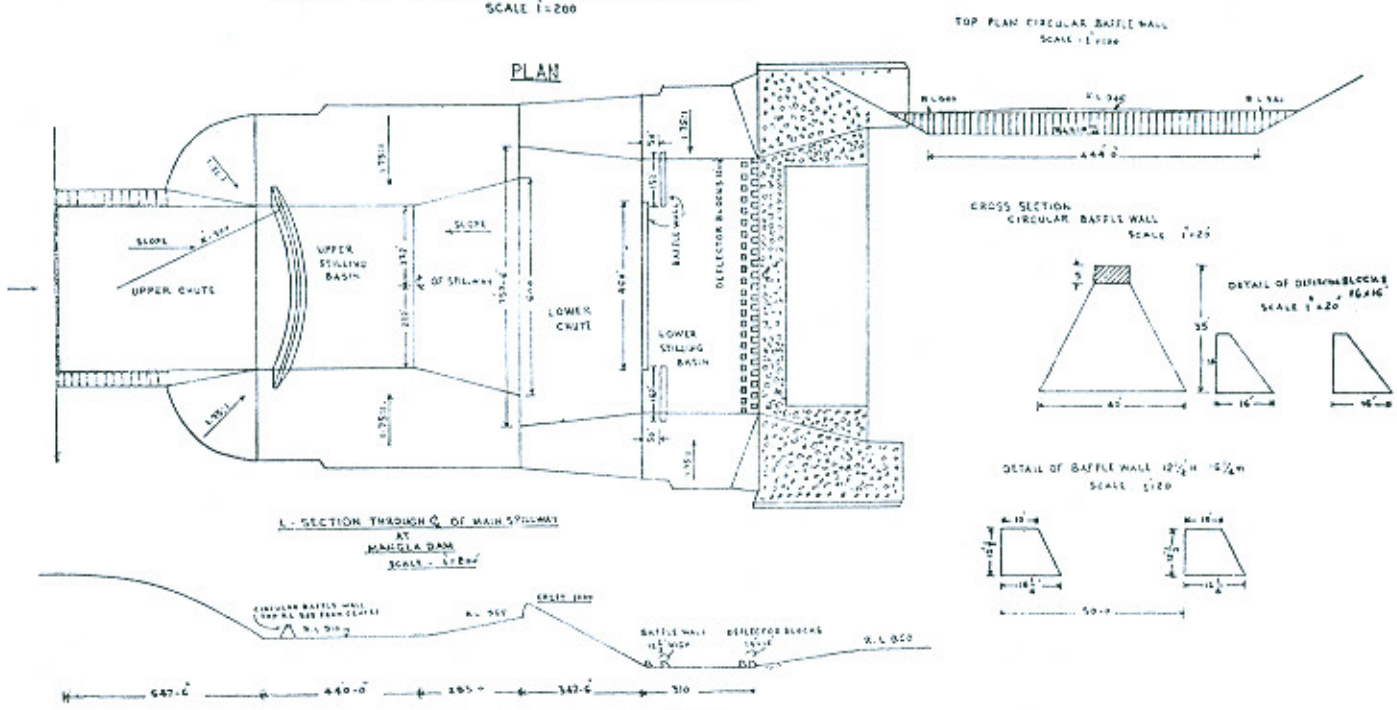


Fig. 15 (a)

MODEL OF MAIN SPILLWAY OF MANGLA DAM
QN = 500,000 Cusecs.

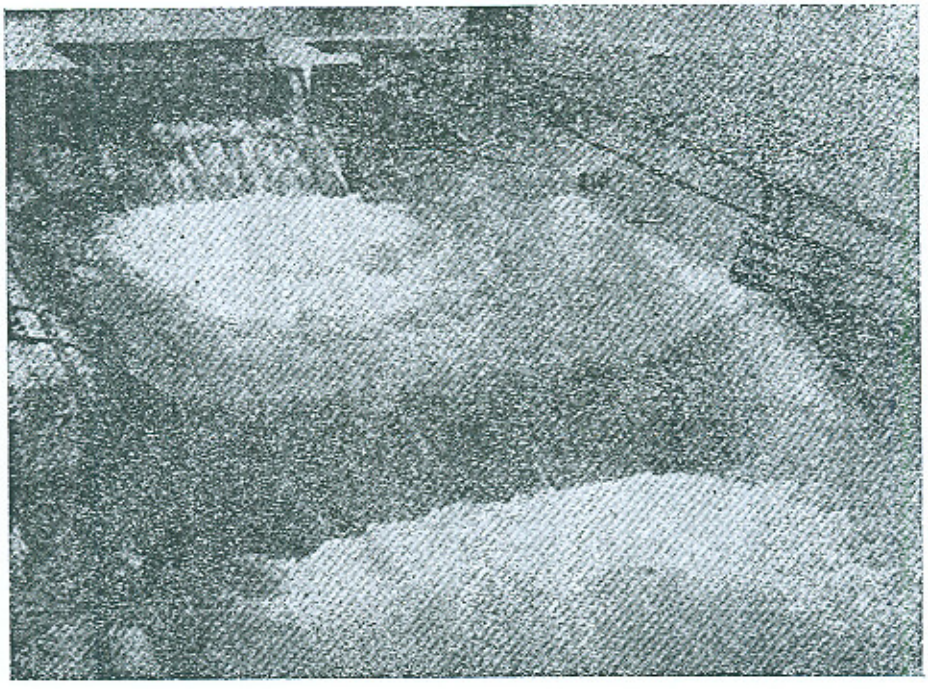


Fig. 15(*b*)= Qn = 900,000 Cusecs

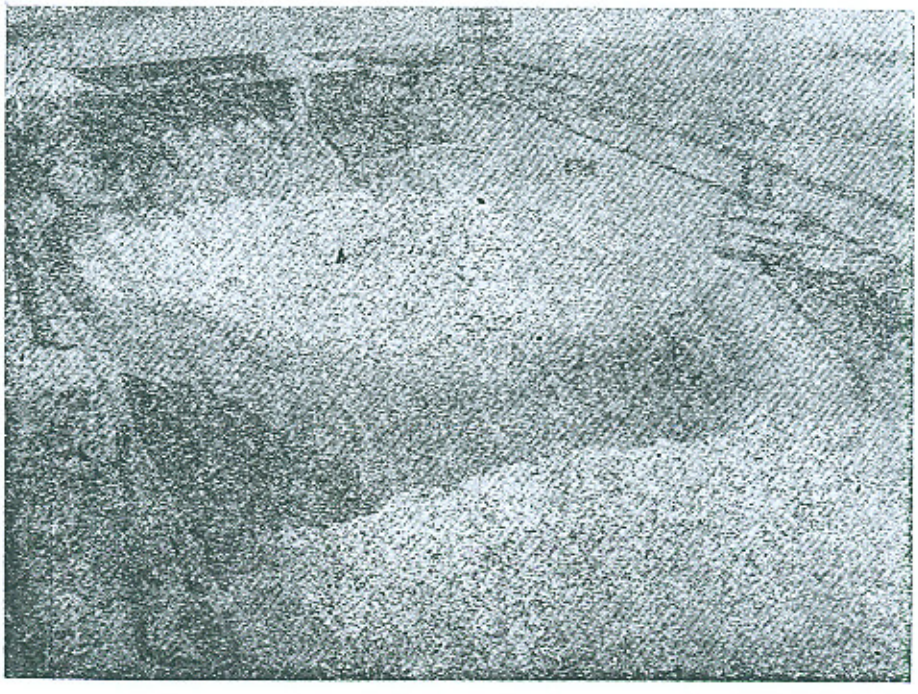


Fig. 15(*c*)

MODEL OF MAIN SPILLWAY OF MANGLA DAM
Qn = 900,000 Cs

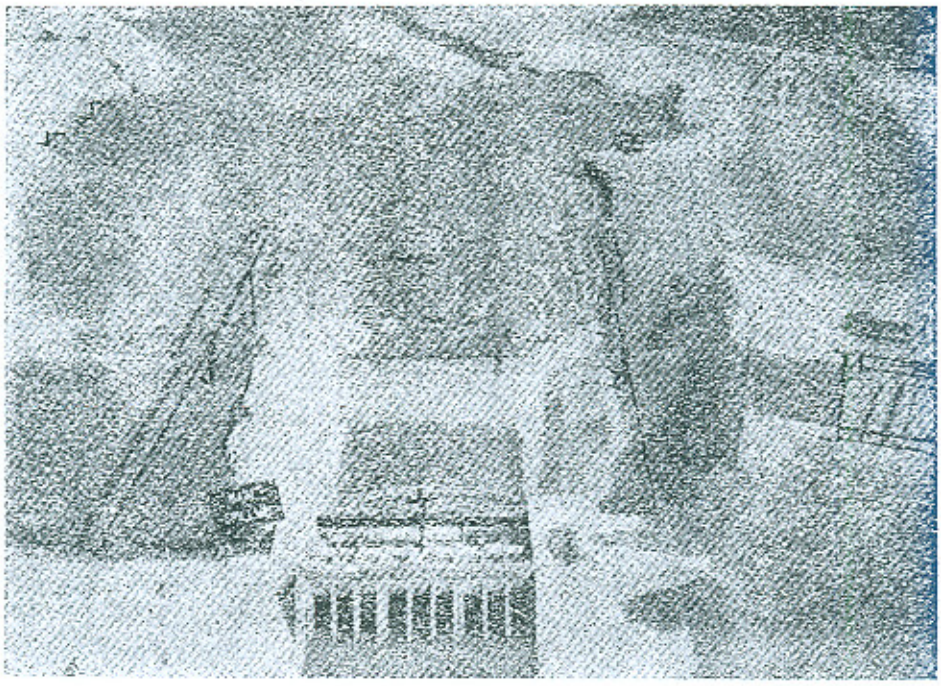
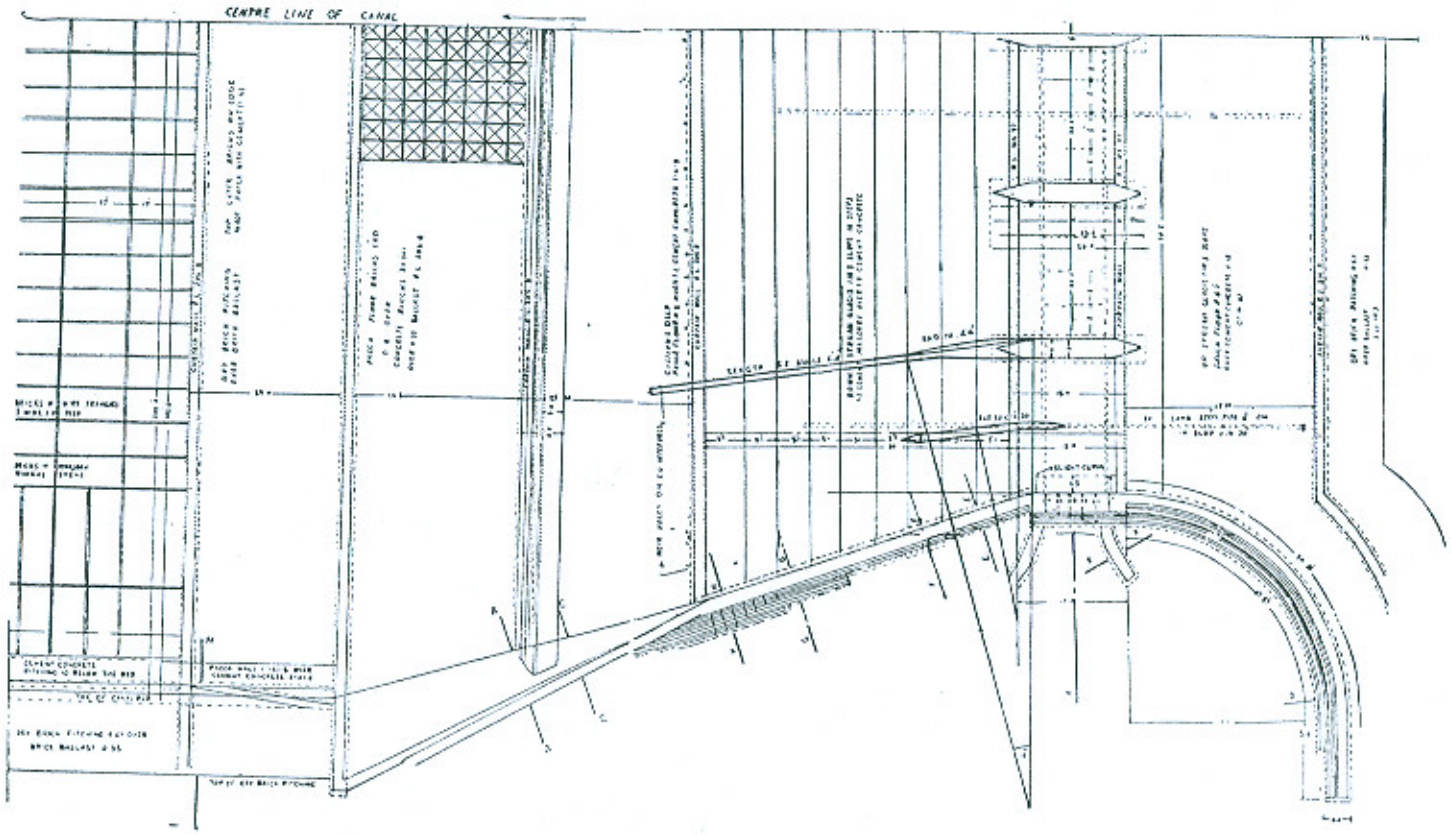


Fig. 15 (*d*)—Model was run on the bed of above test without remoulding bed configuration after 4 hours run. Maximum Scour is R.L. 803 (fl. or R.L. 818)



L. SECTION

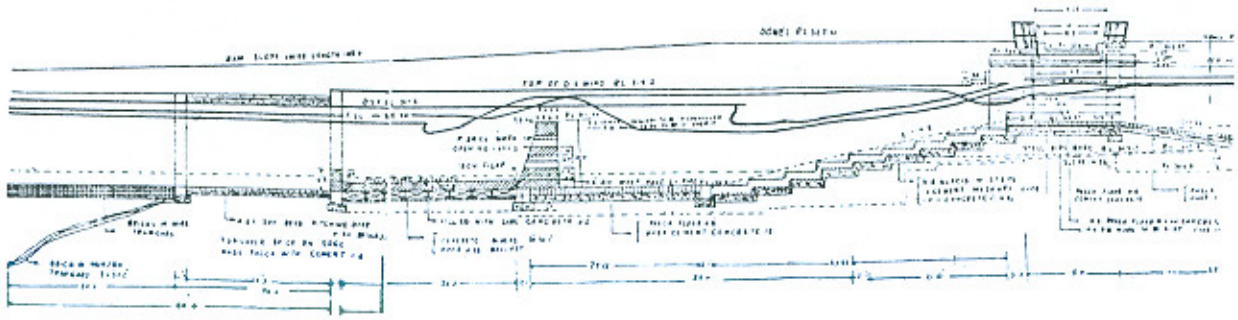


FIG 16
KHANPUR DIVISION S.V.C
PLAN OF
RAIL COMBINED WITH V.R BRIDGE AT R.D 1409'0"
OF PANJNAD CANAL MAIN LINE
SCALE = 1/100

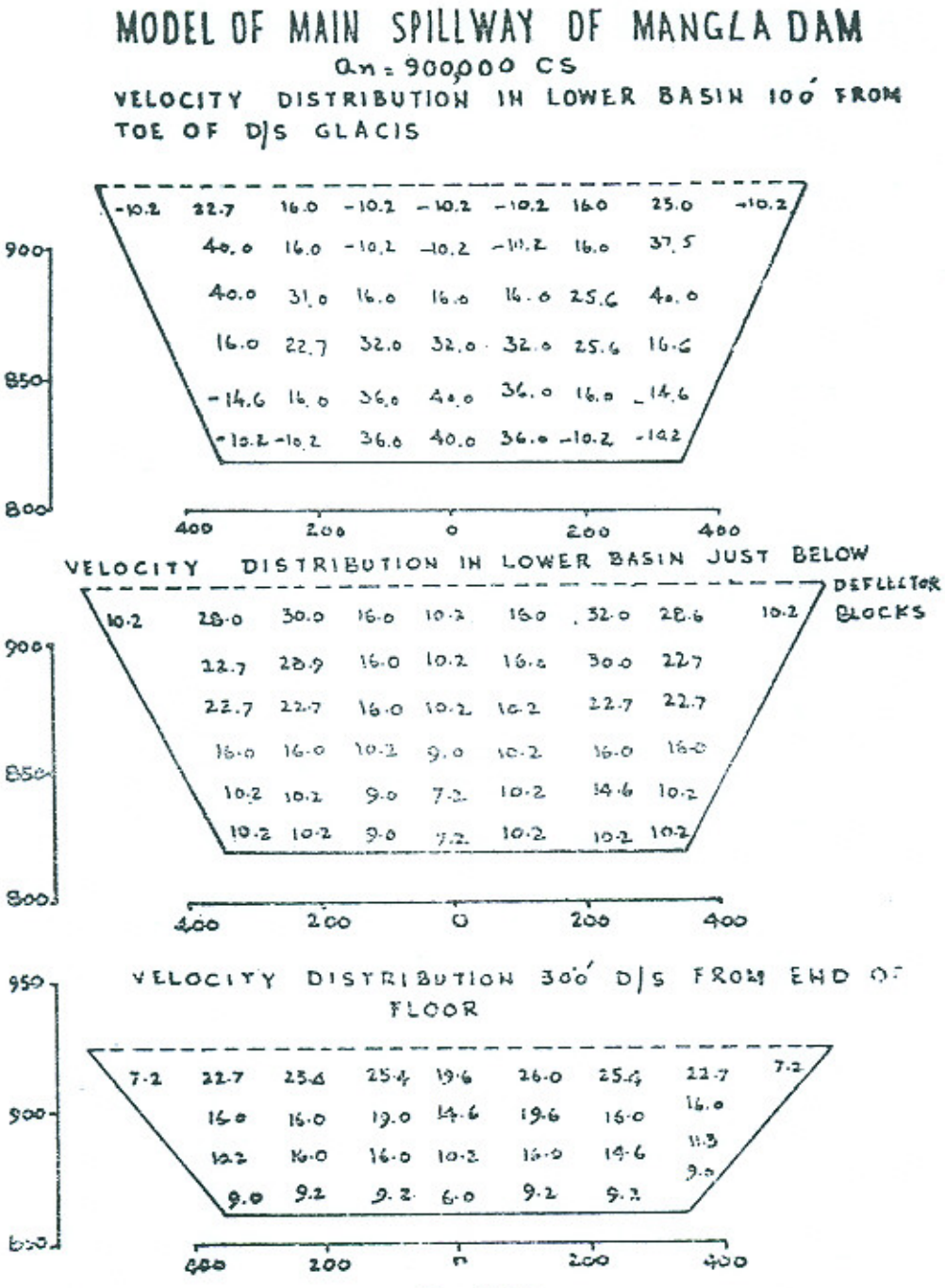
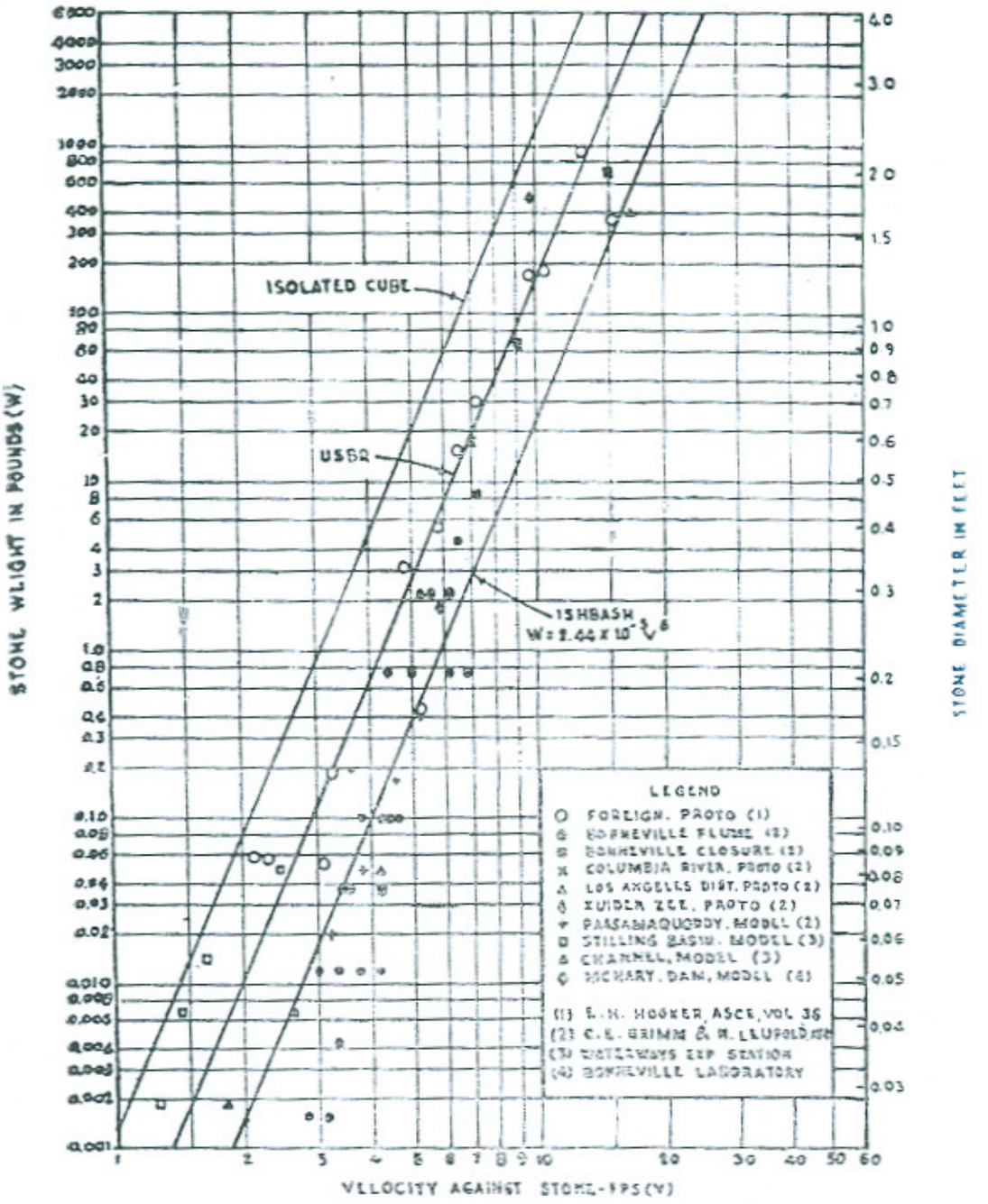

MODEL OF MAIN SPILLWAY OF MANGLA DAM
Qn = 900,000 CS
VELOCITY DISTRIBUTION IN LOWER BASIN 100' FROM TOE OF D/S GLACIS
-10.2 22.7 16.0 -10.2 -10.2 -10.2 16.0 25.0 -10.2
40.0 16.0 -10.2 -10.2 -10.2 16.0 37.5
40.0 31.0 16.0 16.0 16.0 25.6 40.0
16.0 22.7 32.0 32.0 32.0 25.6 16.0
-14.6 16.0 36.0 40.0 36.0 16.0 -14.6
-10.2 -10.2 36.0 40.0 36.0 -10.2 -10.2
900
850
800
400 200 0 200 400
VELOCITY DISTRIBUTION IN LOWER BASIN JUST BELOW DEFLECTOR BLOCKS
10.2 28.0 30.0 16.0 10.2 16.0 32.0 28.6 10.2
22.7 28.9 16.0 10.2 16.0 30.0 22.7
22.7 22.7 16.0 10.2 10.2 22.7 22.7
16.0 16.0 10.2 9.0 10.2 16.0 16.0
10.2 10.2 9.0 7.2 10.2 14.6 10.2
10.2 10.2 9.0 7.2 10.2 10.2 10.2
900
850
800
400 200 0 200 400
VELOCITY DISTRIBUTION 300' D/S FROM END OF FLOOR
7.2 22.7 23.6 25.4 19.6 26.0 25.4 22.7 7.2
16.0 16.0 19.0 14.6 19.6 16.0 16.0
12.2 16.0 16.0 10.2 16.0 14.6 11.3
9.0 9.2 9.2 6.0 9.2 9.2 9.0
900
850
400 200 0 200 400

Fig. 15 (e)



NOTE SPECIFIC WEIGHT OF ROCK = 165 LB/CU FT

RIVER CLOSURES
VELOCITY VS STONE WEIGHT

Fig. 17

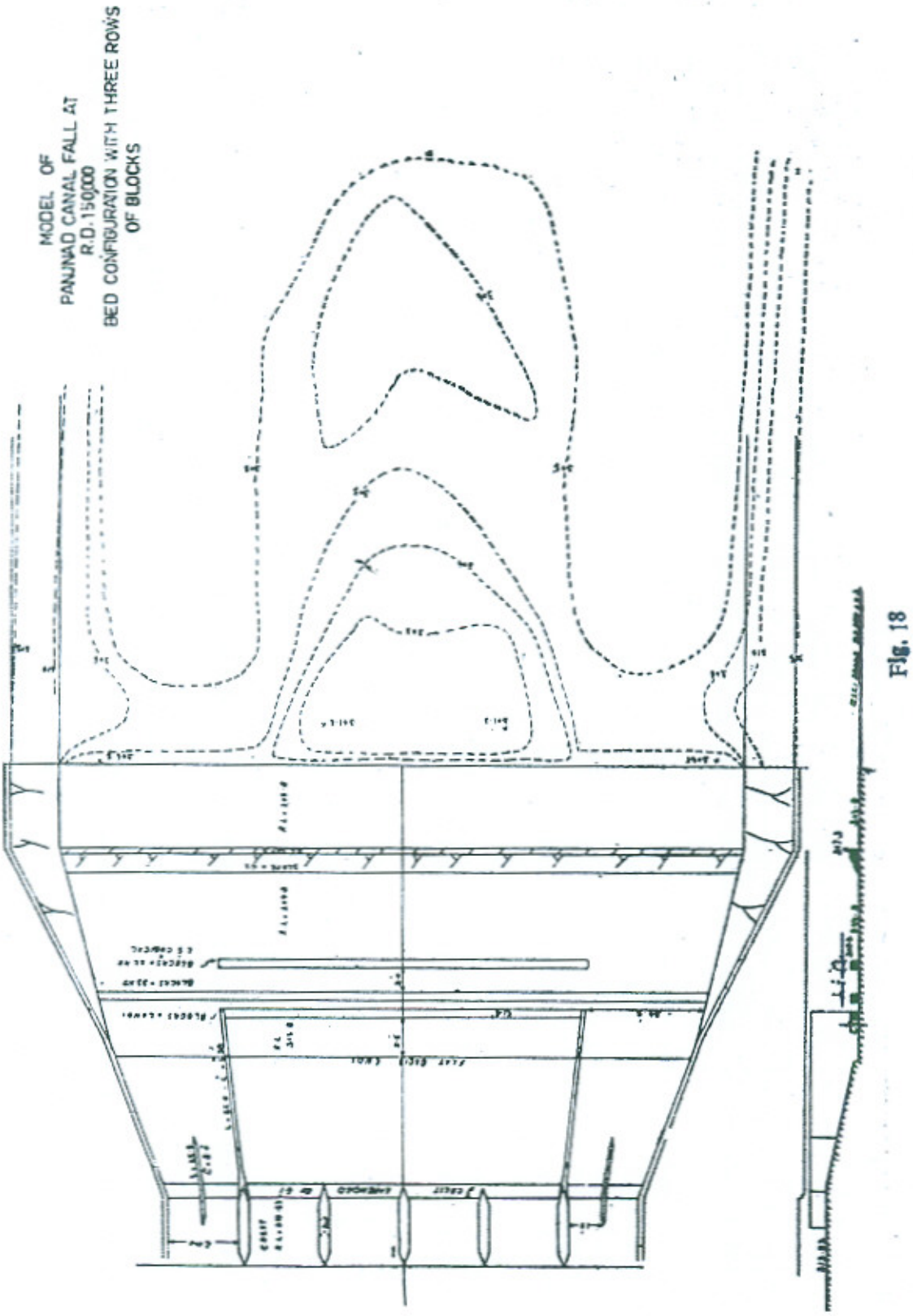

MODEL OF
PANJNAD CANAL FALL AT
R.D.150000
BED CONFIGURATION WITH THREE ROWS
OF BLOCKS

Fig. 18

MODEL OF PANJNAD CANAL FALL AT R.D. 150,000
(Scale = 1 : 12)
Three rows of blocks with raised floor u/s and d/s of b./wall Flow directions.



Qn = 7238 Cs. Qn = 7238 Cs.

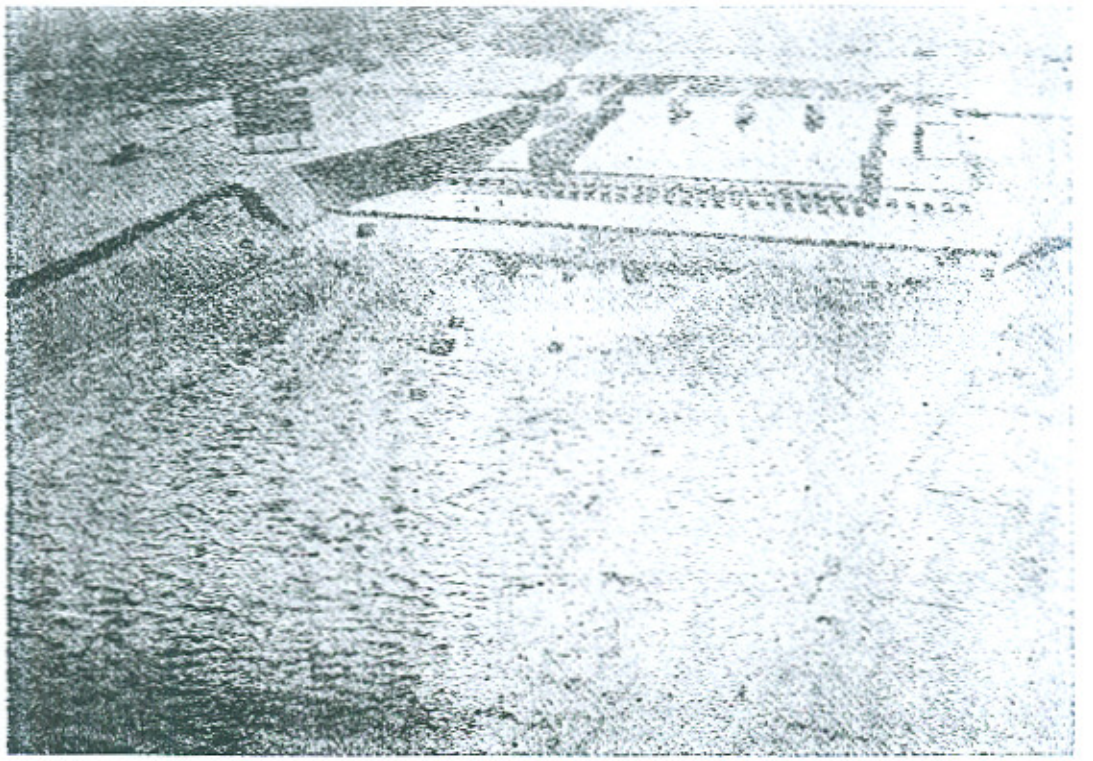


Fig. 19.—Bed configuration

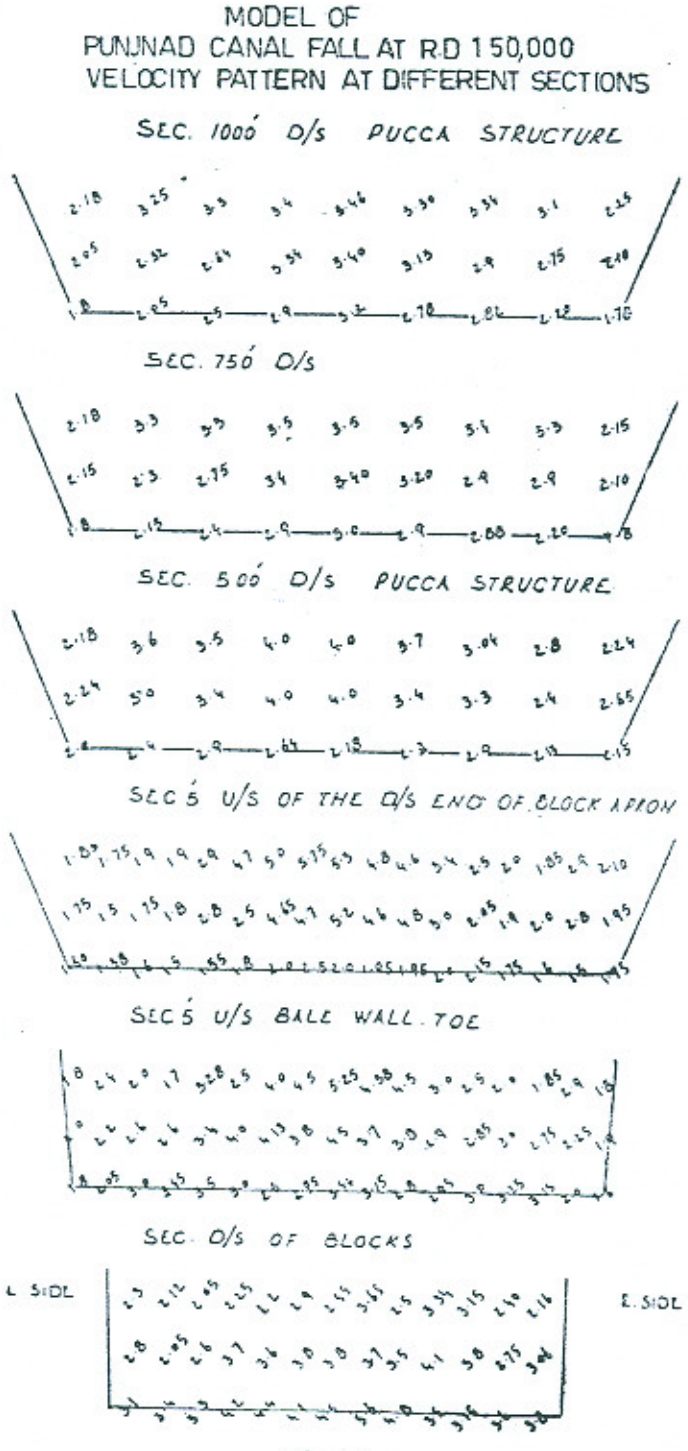

MODEL OF
PUNJNAD CANAL FALL AT R.D 150,000
VELOCITY PATTERN AT DIFFERENT SECTIONS
SEC. 1000' O/S PUCCA STRUCTURE
SEC. 750' O/S
SEC. 500' O/S PUCCA STRUCTURE
SEC 5 U/S OF THE O/S END OF BLOCK APRON
SEC 5 U/S BALE WALL TOE
SEC. O/S OF BLOCKS
L SIDE
R. SIDE

Fig. 20

MODEL OF ROHRI CANAL FALL AT R.D. 15,000

Test with

(*i*) 1st row of blocks at 6′ for toe of glacis.
(*ii*) 2nd row of blocks at 0.5′ from the d/s end of d/s floor.
(*iii*) The d/s floor at R.L. 167.62 Lowered to cistern R.L. 166.12.



Fig. 21—Current Directions
Qn = 11,887 cusecs.