TAPERAS SI 309km + 925

Cb (2x2) 312km +850

Cb (1x1) 316km +100

Cb (1x2.5) 318km +000

Cb (1x25) 318km +800

Cb (1x2.5) 325km +3...

V = 1:4,000
H = 1:50,000

600
500
400
300
200

GRADE					L			9		L		8	10		4			10	2	
DIFFRENCE	0.35	0.35	0.35	0.35	3.95	2.95	5.89	2.00	0.00	2.00	2.00	2.00	2.20	0.40	0.40	0.40	6.40	(7.40) (5.48)	(-1.40) (-3.50)
FORMATION LEVEL	386.350	386.350	386.350	386.350	389.950	398.950	406.114	412.000	412.000	412.000	412.000	404.000	412.200	420.400	424.400	428.400	432.400	444.400 (442.400)	456.400 (451.500)
GROUND LEVEL	386.00	386.00	386.00	386.00	386.00	396.00	412.00	410.00	412.00	410.00	410.00	402.00	411.00	420.00	424.00	428.00	426.00	437.00	455.00
CURVE KILOMETRAGE TRAGE	9	310km	1	2	3	4	5	6	7	8	9	320km	1	2	3	4	5	6	7

R=1000 R=1000 R=1500 R=1500 R=1000 R=1000 R=1000 R=1000

This page contains a railway/road longitudinal profile (engineering survey drawing) with elevation data, chainage markings, and gradient information.

Top annotations (inclined labels):
- Cb (1x2.5) 325km + 300
- Cb (1x1.5) 327km + 600
- NO.1 91 336km + 500

Circled elevation values and intermediate values (left to right):
419.200 — 700
4
432.400 — 888 10 9
443.400 — 100
453.300 — 200 12 10
476.300 — 500 9
481.700 — 100 10
493.700 — 300 9
516.750 — 883
502.250 — 250 L 10
516.750 — 700 4
511.550 — 5
506.550 — L 3
506.550 — 2
509.550 — 3
507.550 — L
510.550 — 3
510.550 —
513.550 — L
513.550 — 3
510.550 — L
510.550 — 5
515.550

Gradient row (/‰ values):
0.40 | 0.40 | 0.40 | 6.40 | (7.40)(5.40) | (-1.40)(-3.50) | 4.40(-2.70) | (-0.60)(-9.70) | -12.60(-23.30) | (-10.60)(-23.30) | -1.75(-15.00) | -1.75(-5.25) | 0.55 | 1.55 | 0.55 | 1.55 | 0.55 | 0.55 | 0.55 | 0.55 | 1.55 | 0.55 | 1.55 | 0.55 | 0.55 | 0.55 | 0.55

Elevation rows:
420.400 | 424.400 | 428.400 | 432.400 | 444.400(442.400) | 456.400(451.500) | 468.400(461.300) | 480.400(471.300) | 492.400(481.700) | 504.400(491.700) | 516.750(500.000) | 516.750(509.750) | 515.550 | 511.550 | 506.550 | 506.550 | 509.550 | 507.550 | 510.550 | 510.550 | 513.550 | 513.550 | 513.550 | 513.550 | 510.550 | 510.550 | 515.550

Ground elevations:
420.00 | 424.00 | 428.00 | 426.00 | 437.00 | 455.00 | 464.00 | 481.00 | 505.00 | 515.00 | 515.00 | 515.00 | 515.00 | 510.00 | 506.00 | 505.00 | 509.00 | 507.00 | 510.00 | 510.00 | 512.00 | 513.00 | 512.00 | 513.00 | 510.00 | 510.00 | 515.00

Chainage (bottom):
2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 330km | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 340km | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8

Curve data (bottom):
R=1000 | R=1000 | R=1000 | R=1000 | R=1000 | R=1000

NO.2 5I 358^km + 500

Cb (1×4.5) 362^km + 900
Cb (2×4) 364^km + 100
Cb (2×4.5) 367^km + 100

R = 2000

Station circle values (with interval counts):

L | (513.550) 3 | (510.550) L | (510.550) 5 | (515.550) 3 | (521.550) 9 | (512.550) 2 | (508.550) 2 | (510.550) 2 | (508.550) 3 | (505.550) 3 | (508.550) 2 | (506.550) L | (506.550) 10 | (532.550) 10 | (520.550) 6 | (533.750) 9 | (511.250) 1 | (512.750) 2

Upper difference row:

0.55 | 1.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 1.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 1.55 | 3.45 | 1.45 | 3.75 | 3.75 | 0.75 | 0.75 | 0.75 | 3.25 | 0.75

Ground level row:

513.550 | 513.550 | 513.550 | 510.550 | 510.550 | 515.550 | 518.550 | 521.550 | 512.550 | 510.550 | 508.550 | 510.550 | 508.550 | 505.550 | 508.550 | 506.550 | 506.550 | 516.550 | 526.550 | 528.550 | 521.750 | 527.750 | 533.750 | 524.750 | 515.750 | 511.250 | 512.750

Grade level row:

513.00 | 512.00 | 513.00 | 510.00 | 510.00 | 515.00 | 518.00 | 520.00 | 512.00 | 510.00 | 508.00 | 510.00 | 508.00 | 505.00 | 508.00 | 506.00 | 506.00 | 515.00 | 530.00 | 530.00 | 518.00 | 524.00 | 533.00 | 524.00 | 510.00 | 508.00 | 512.00

Station (km) row:

3 | 4 | 5 | 6 | 7 | 8 | 9 | 350^km | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 360^km | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

Cb (1×4.5) 362km+900 Cb (2×4) 364km+100 Cb (2×4.5) 367km+100 Cb (1×3.5) 375km+000 NO.3 SI 378km+500 B (2×15) l=30m0 384km+500

	0	6	9	1	2	4	L	4	10	4	10	L	10	9
station	520.550	533.750	511.250	512.750	514.750	510.750	510.750	514.750	493.250	500.650	510.650	510.650	412.650	408.150
(800 / 500 / 150)	800	800	500	800	800	800	800	800	150	800	800	800	800	800

| 3.75 | 3.75 | 0.75 | 0.75 | 0.75 | 3.25 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 1.25 | 5.75 | 2.65 | 0.65 | 0. | 0.65 | 1.35 | 7.35 | 9.35 | 9.35 | 1.35 | 1.35 | 9.35 | 10.35 | 10.35 | 5.15 |

| 521.750 | 527.750 | 533.750 | 524.750 | 515.750 | 511.250 | 512.750 | 514.750 | 510.750 | 510.750 | 514.750 | 504.750 | 494.750 | 496.650 | 500.650 | 510.650 | 510.650 | 500.650 | 490.650 | 480.650 | 470.650 | 460.650 | 450.650 | 440.650 | 430.650 | 420.650 | 410.850 |

| 518.00 | 524.00 | 533.00 | 524.00 | 510.00 | 508.00 | 512.00 | 514.00 | 510.00 | 510.00 | 514.00 | 506.00 | 489.00 | 494.00 | 500.00 | 510.00 | 510.00 | 502.00 | 498.00 | 490.00 | 480.00 | 462.00 | 452.00 | 450.00 | 441.00 | 431.00 | 416.00 |

| 3 | 4 | 5 | 6 | 7 | 8 | 9 | 370km | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 380km | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

R=2000   R=1500   R=1500   R=1500

B (2×15) l=30m0 384km+500

NO.4 St 401km+000

B (7×20) l=140m0 404km+500

Cb (1×35) 406km+500

B (8×20) l=160m0 407km+9

407km+9

| | 9 | 10 | 9 | L | 2 | 10 | L |

Circles: 412.650 / 408.150 — 340.150 — 300.550 L 300.550 — 294.750 — 260.750 — 260.750

Vertical labels: 800, 300, 100, 500, 500, 400, 800, 569.1

| −1.35 | −1.35 | −9.35 | −10.35 | −10.35 | 5.15 | 1.15 | 4.15 | 6.15 | 7.15 | 6.15 | 3.15 | 1.15 | 0.05 | 1.05 | 1.05 | 1.05 | 2.55 | 3.55 | 4.55 | 4.55 | 2.75 | 10.75 | 10.75 | 4.75 | 0.75 | 0.75 |

| 460.650 | 450.650 | 440.650 | 430.650 | 420.650 | 410.850 | 401.150 | 391.150 | 381.150 | 371.150 | 361.150 | 351.150 | 341.150 | 332.050 | 323.050 | 314.050 | 305.050 | 300.550 | 299.550 | 297.550 | 295.550 | 288.750 | 278.750 | 268.750 | 260.750 | 260.750 | 260.750 |

| 462.00 | 452.00 | 450.00 | 441.00 | 431.00 | 416.00 | 400.00 | 387.00 | 375.00 | 364.00 | 355.00 | 348.00 | 340.00 | 332.00 | 322.00 | 313.00 | 304.00 | 298.00 | 296.00 | 293.00 | 291.00 | 286.00 | 268.00 | 258.00 | 256.00 | 260.00 | 260.00 |

| 4 | 5 | 6 | 7 | 8 | 9 | 390km | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 400km | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 410km |

R=1500   R=1000   R=1000

Longitudinal profile drawing.

Top labels:
- NO.4 St. 40 1 km + 000
- B (7 x 20) l = 140m0 404 km + 500
- Cb (1 x 3.5) 406 km + 500
- B (8 x 20) l = 160m0 407 km + 900
- Br.M 412 km + 200 (+15 km + 300) 396 km + 900
- B l = 20m0 397 km + 390
- ROBORE St. 400 km + 408

Vertical callout values: 500, 500, 400, 800, 569.1, 760, 660, 360, 115, 680, 150

Circle elevations: 300.550 | 300.550 | 294.750 | 260.750 | 260.750 | 285.659 | 288.059 | 288.059 | 281.059 | 276.149 | 276.149

Labels between circles: L | 2 | 10 | L | 10 | 8 L 9 24 8 73 L

1.05	2.55	3.55	4.55	4.55	2.75	10.75	10.75	4.75	0.75	0.75	3.06	3.06	1.91	1.57	2.17	4.20	0.00
305.050	300.550	299.550	297.550	295.550	288.750	278.750	268.750	260.750	260.750	260.750	265.059	275.059 278.059	287.579	282.122	276.149	276.149
304.00	298.00	296.00	293.00	291.00	286.00	268.00	258.00	256.00	260.00	260.00	262.00	272.00 276.15	289.15	279.95	271.95	276.15

Station line: 400km 1 2 3 4 5 6 7 8 9 410km 1 2 397km 8 9 400km 1 2

R=1000   R=1000

Drawing - 2

Longitudinal Profile

Scale 1 / 50.000
      1 / 4.000

SECTION A-A

SECTION B-B

PLAN

TRACK CENTER
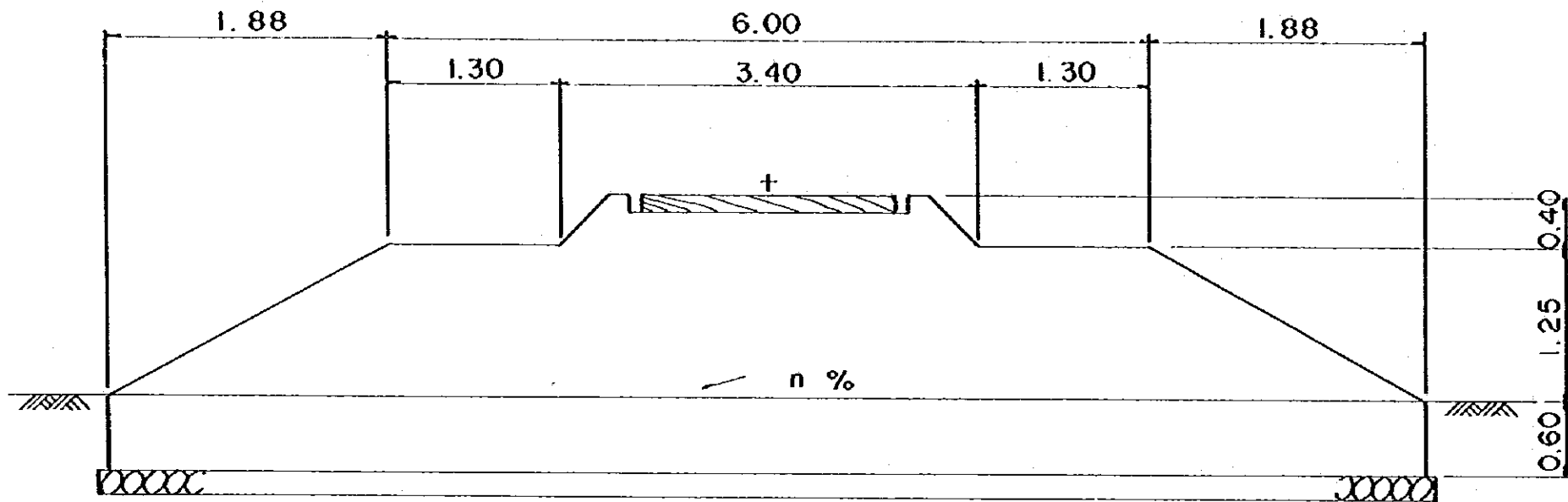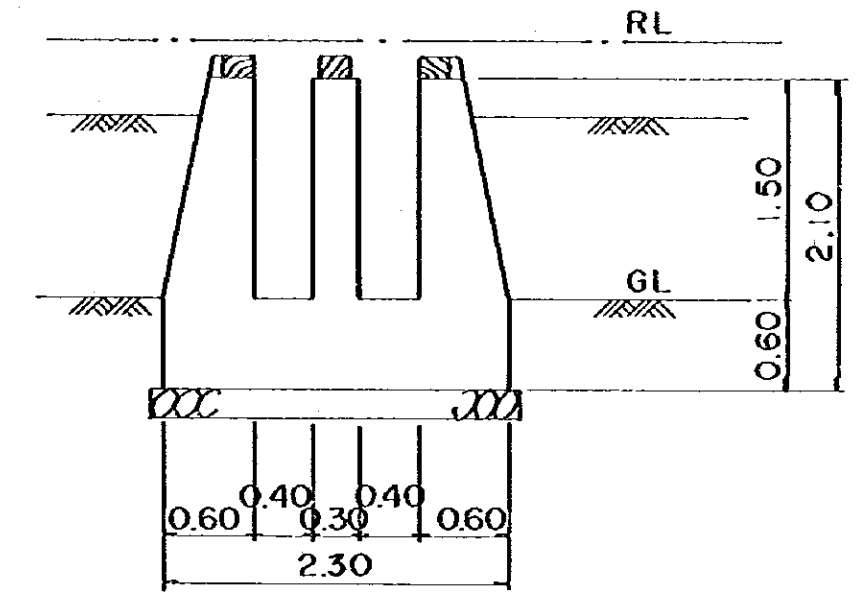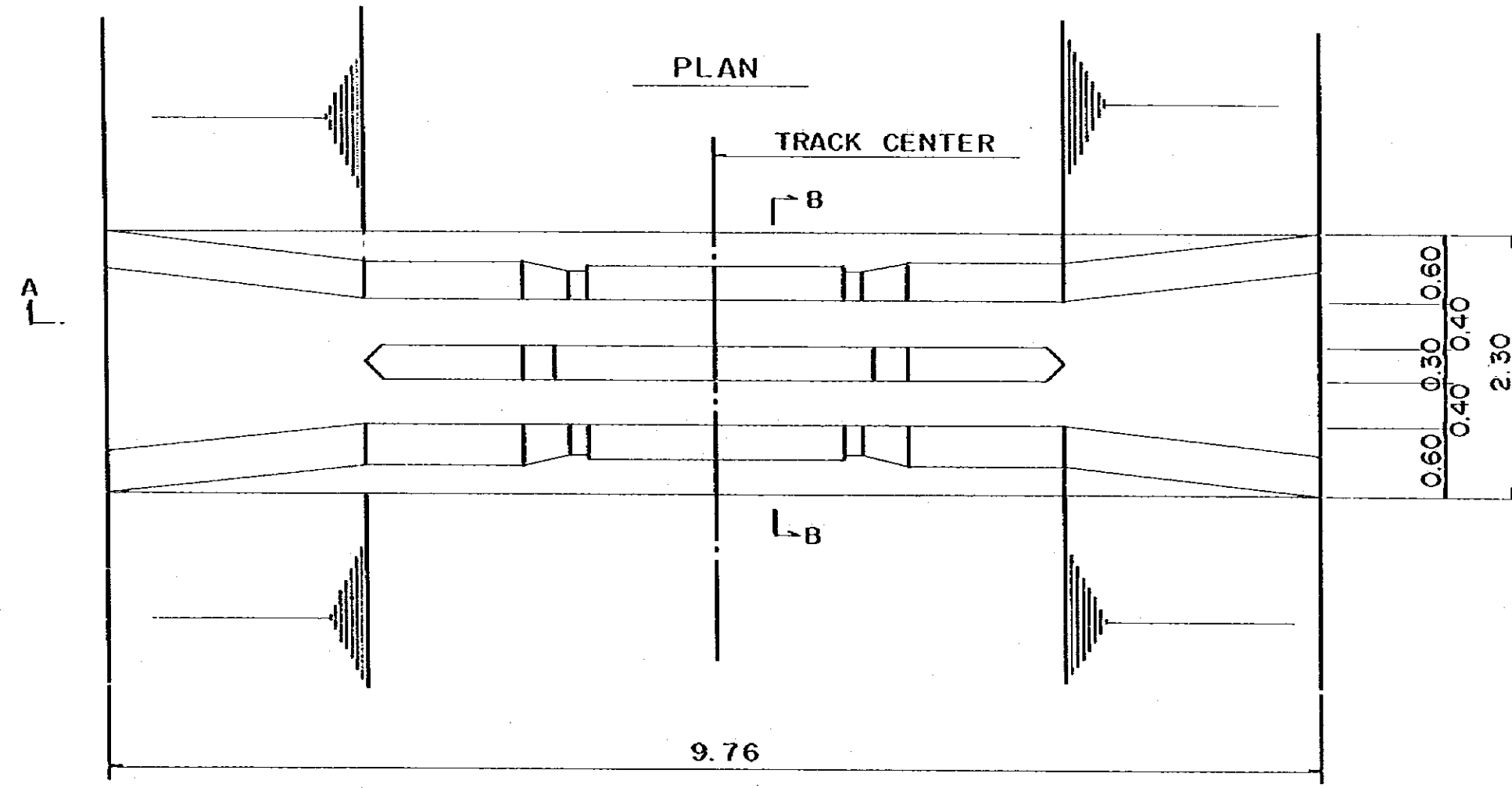
Drawing – 3

Typical Design of Double Open Culvert

Scale 1 / 50

FRONT VIEW

3.80

6.00

▽HWL

6.60

SIDE VIEW

20.00

▽ HWL

4.00

1.60

4.10

FOUNDATION PLAN

0.30

6.00

6.60

4.10

0.30

FRONT VIEW

3.80

6.00

▽HWL

6.60

SIDE VIEW

20.00

▽ HWL

5.50

1.80

4.50

FOUNDATION PLAN

4.50

0.30

6.00

6.60

0.30
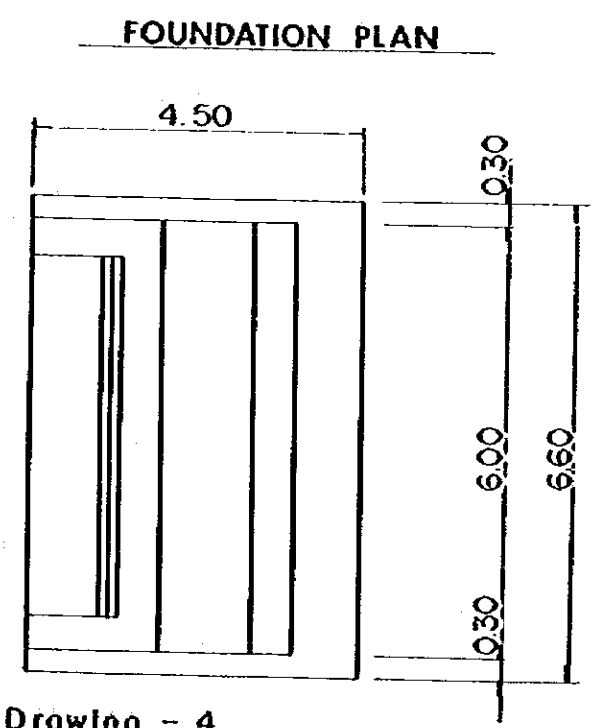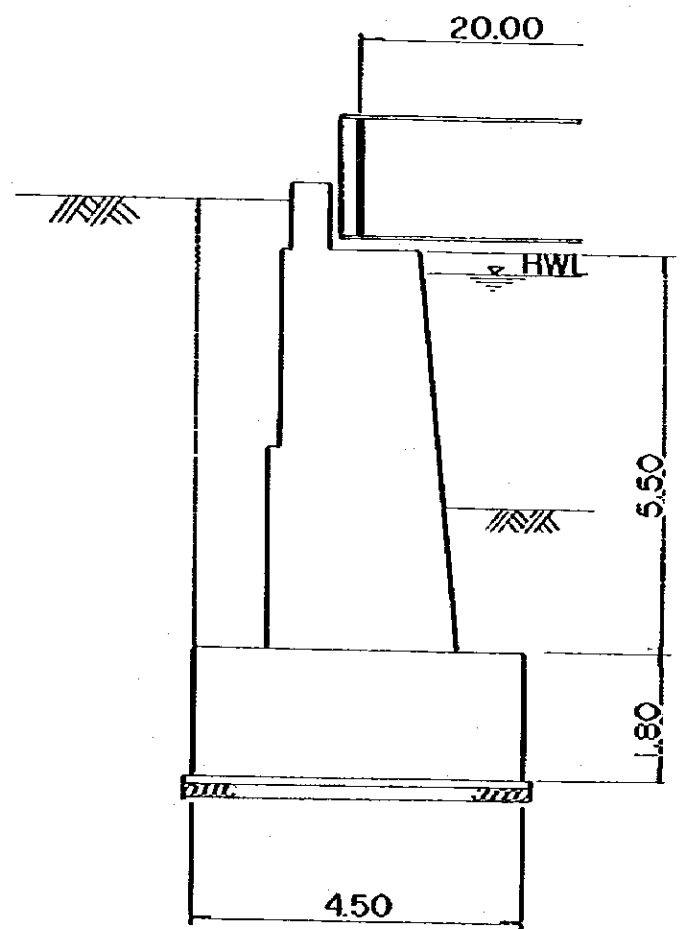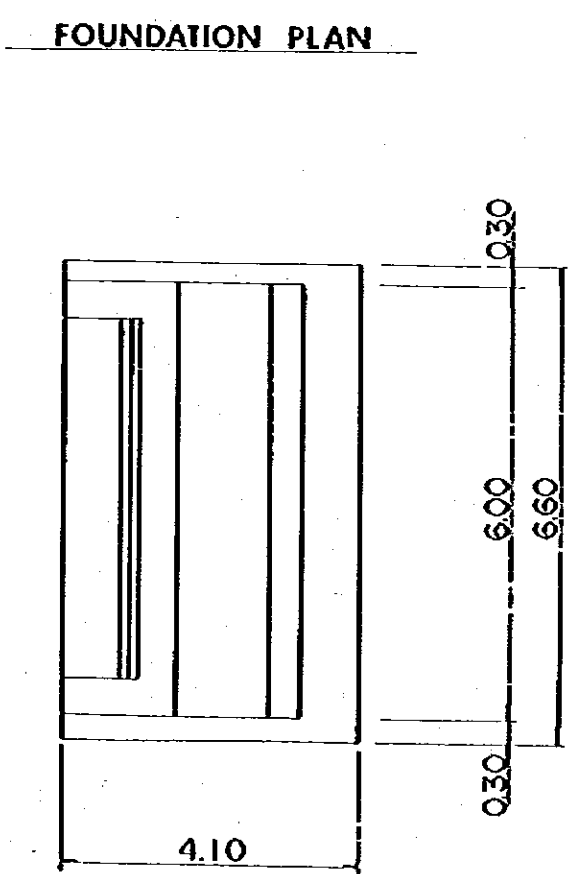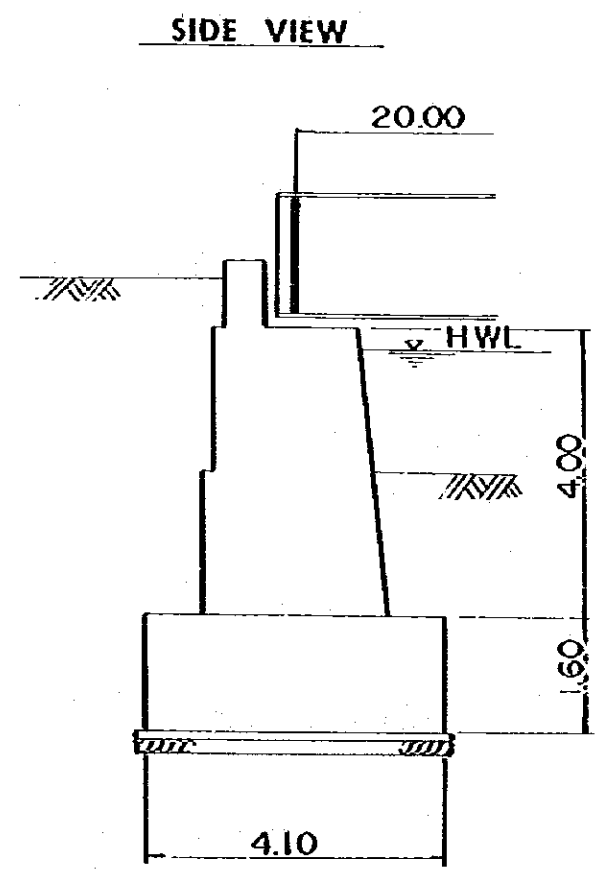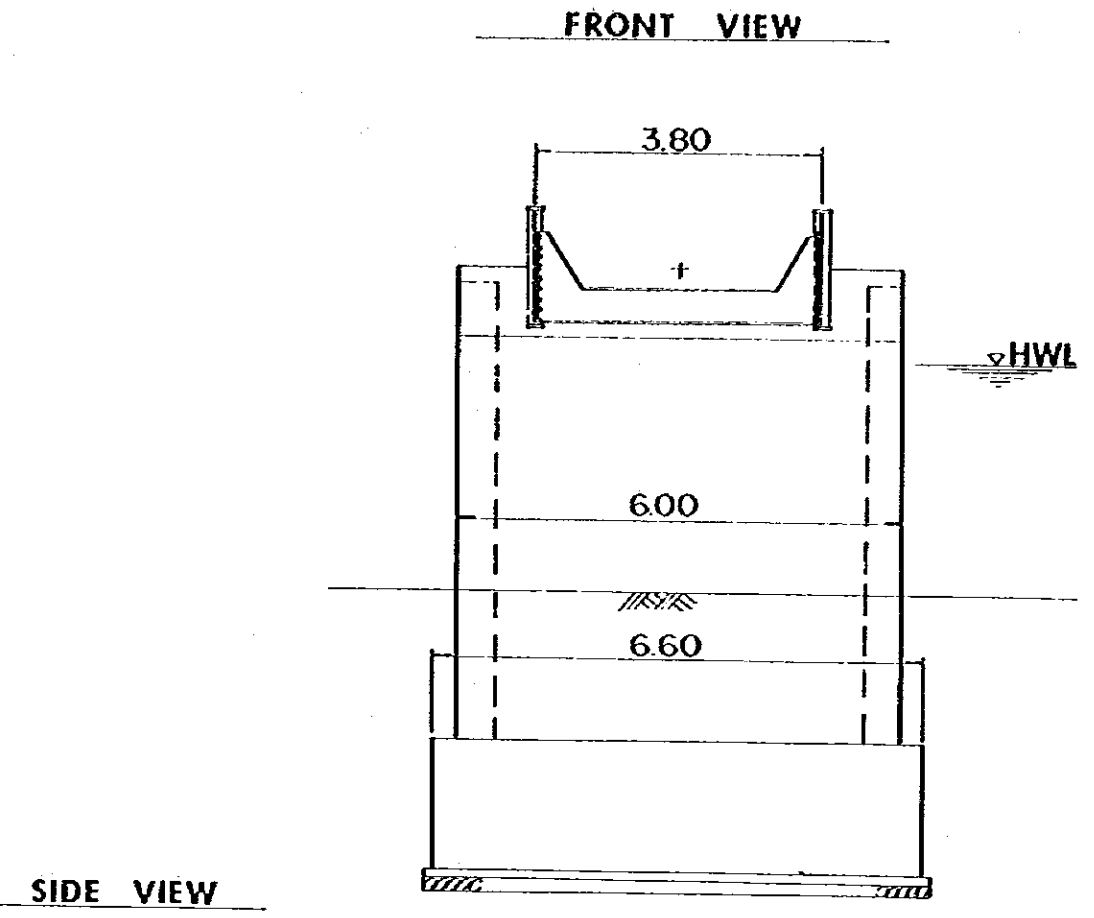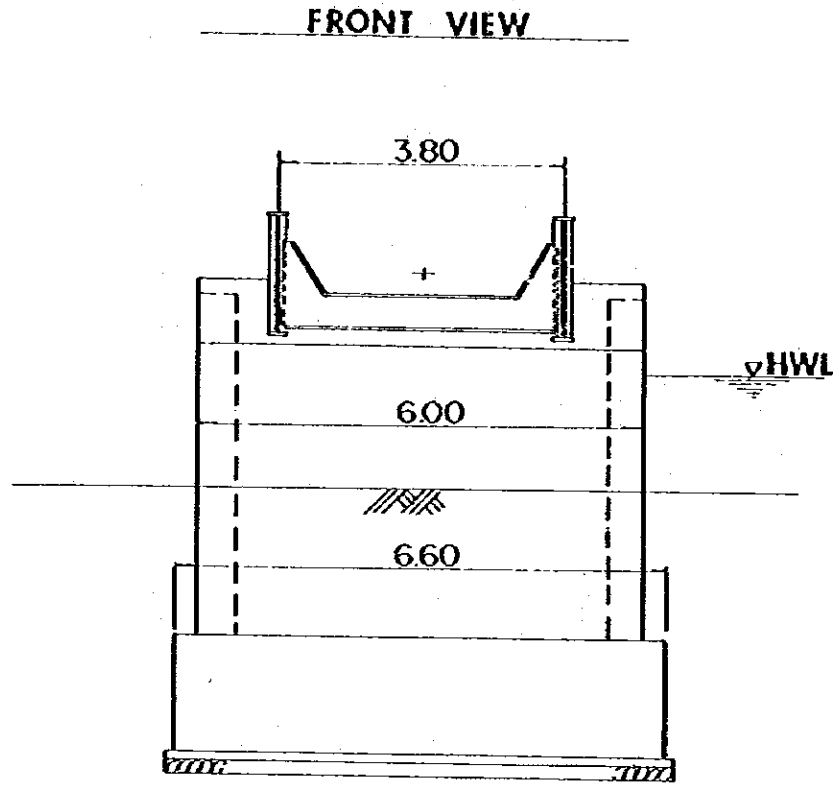
Drawing – 4

Typical Design of Abutment

Scal 1 / 100

FRONT VIEW

ON SUPPORT
BETWEEN SUPPORTS

3.80

HWL

0.50   5.00   0.50

4.00

7.00

1.20

SIDE VIEW

20.00   0.61   20.00

HWL

4.00

2.00

1.20

3.00

FOUNDATION PLAN

0.50

0.50

5.00   7.00

0.50

3.00

FRONT VIEW

ON SUPPORT
BETWEEN SUPPORTS

3.80

HWL

5.50

0.50   5.00   0.50

7.00

1.40

SIDE VIEW

20.00   0.61   20.00

HWL

5.50

2.00

1.40

3.50

FOUNDATION PLAN

0.50

0.50

5.00   7.00

0.50

0.50

3.50
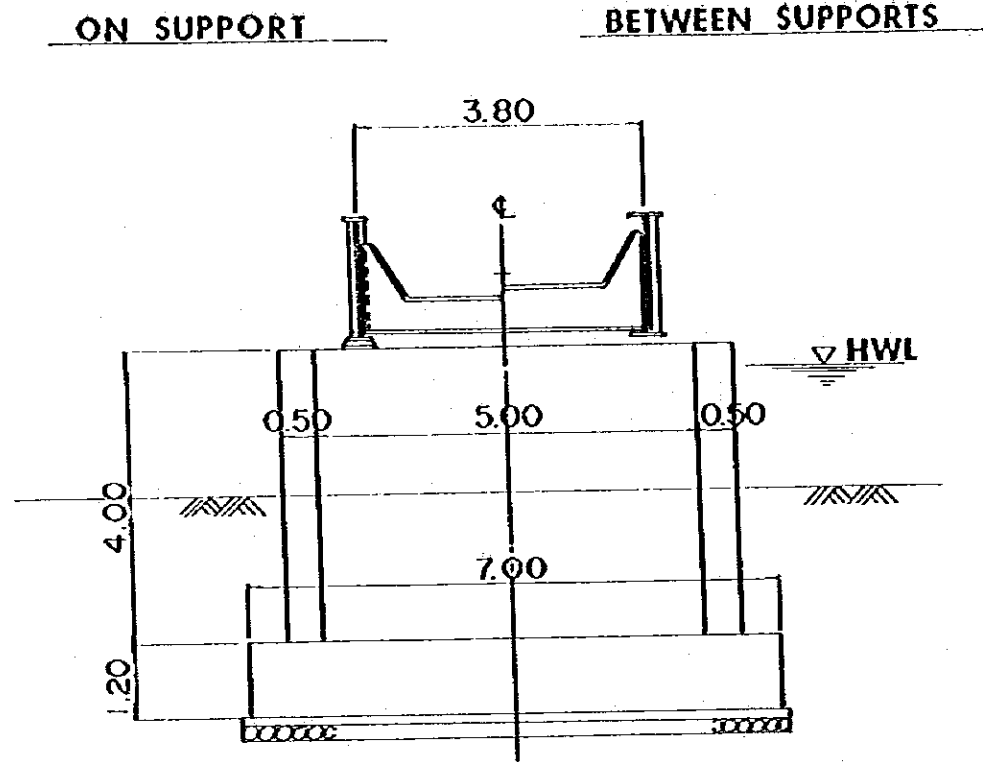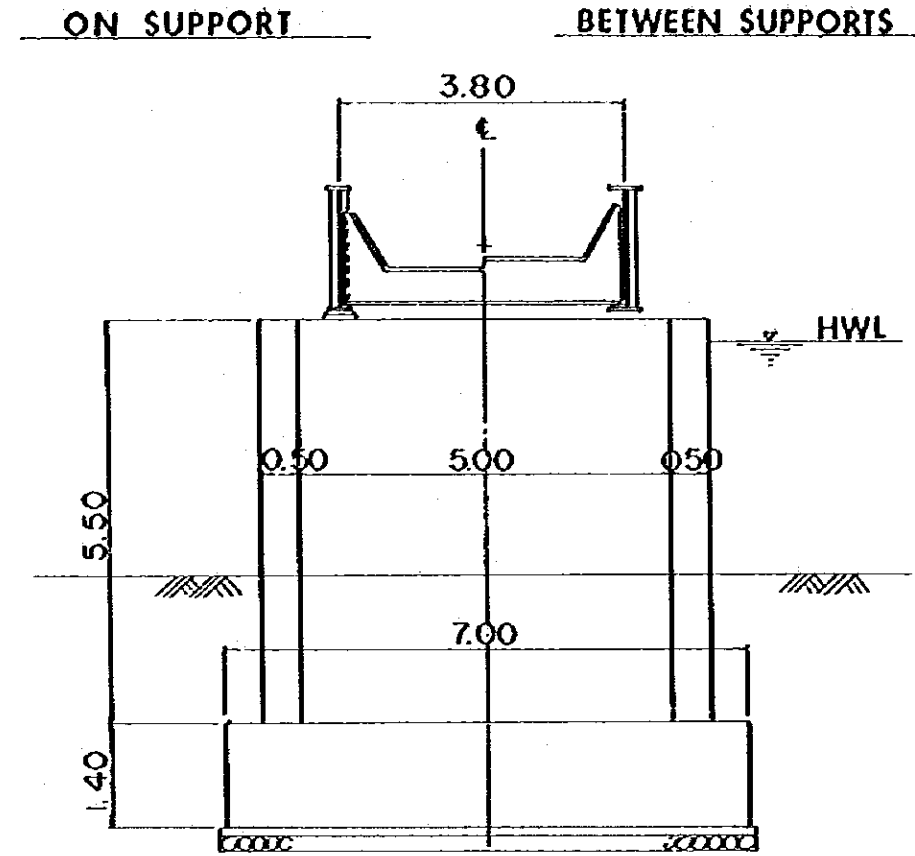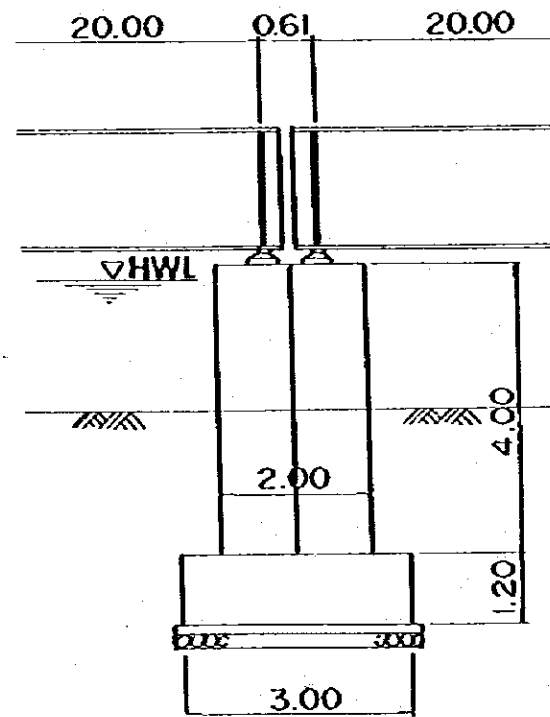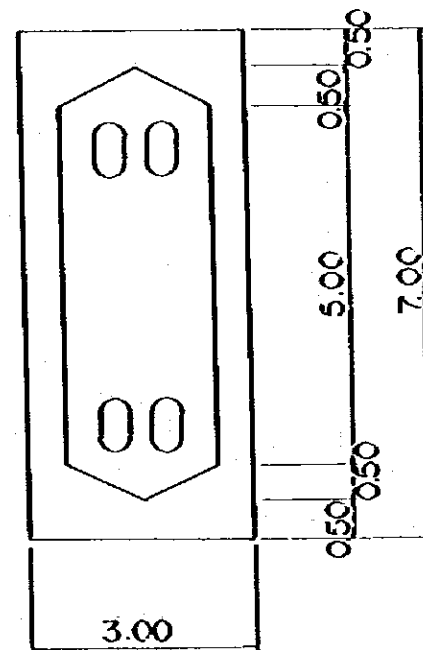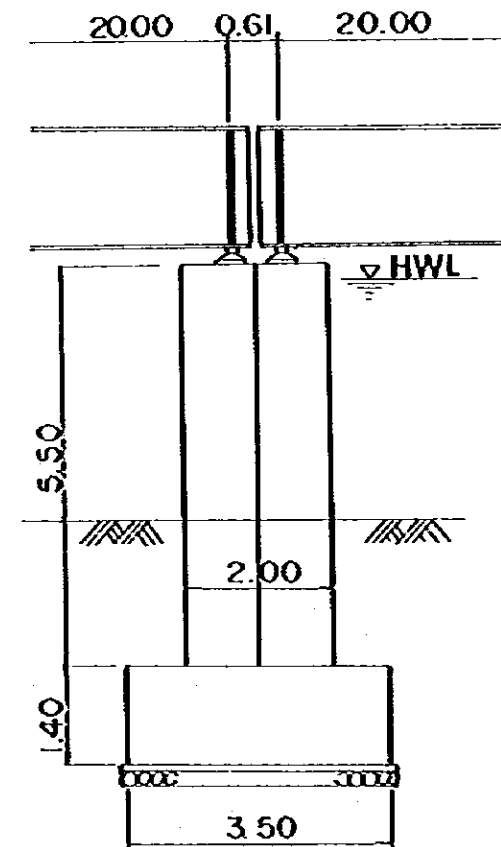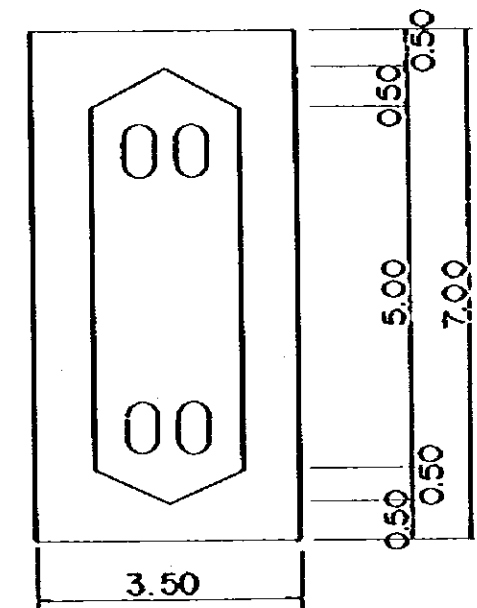
Drawing - 5

Typical Design of Pier

Scale 1 / 100

MAIN GIRDER SIDE VIEW

1.50

0.23

Span = 15.00

15.46

MAIN GIRDER PLAN

0.35

FLOOR SYSTEM

3.60
1.05
1.50

2.25   2.10   2.10   2.10

SECTION

A - A   B - B

0.16   R B   1.50

0.39   0.55   0.71

1.05   1.50   1.05

3.60
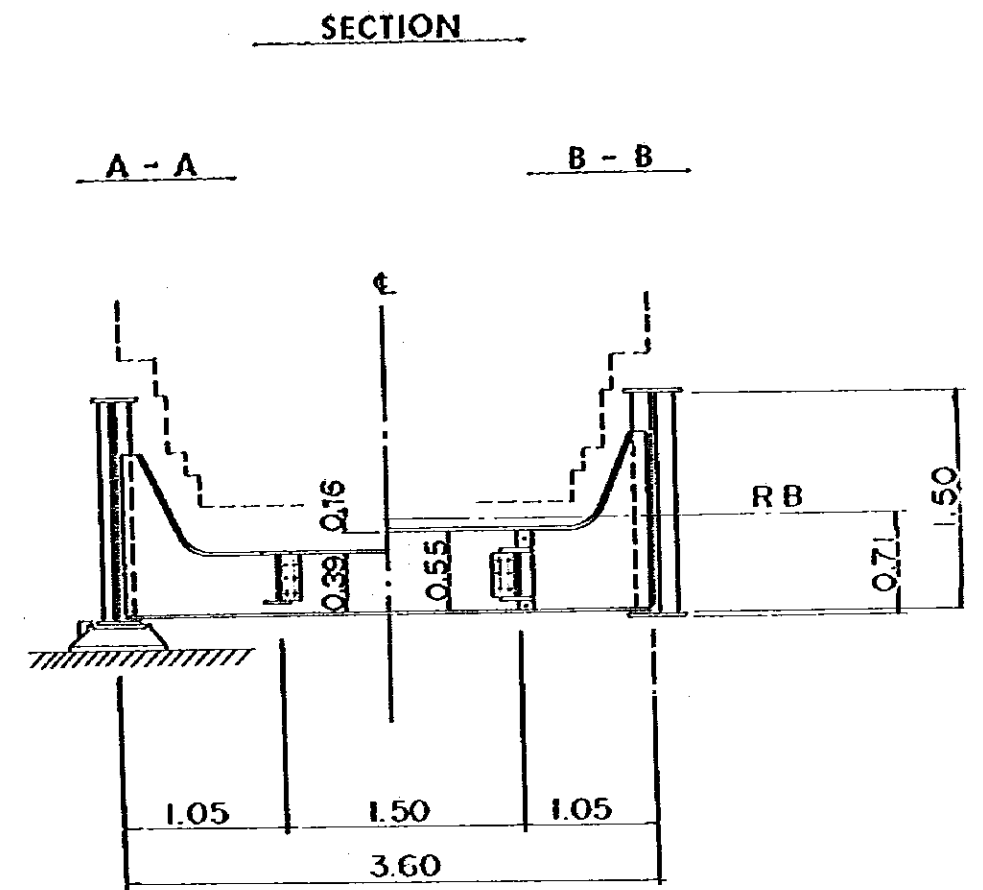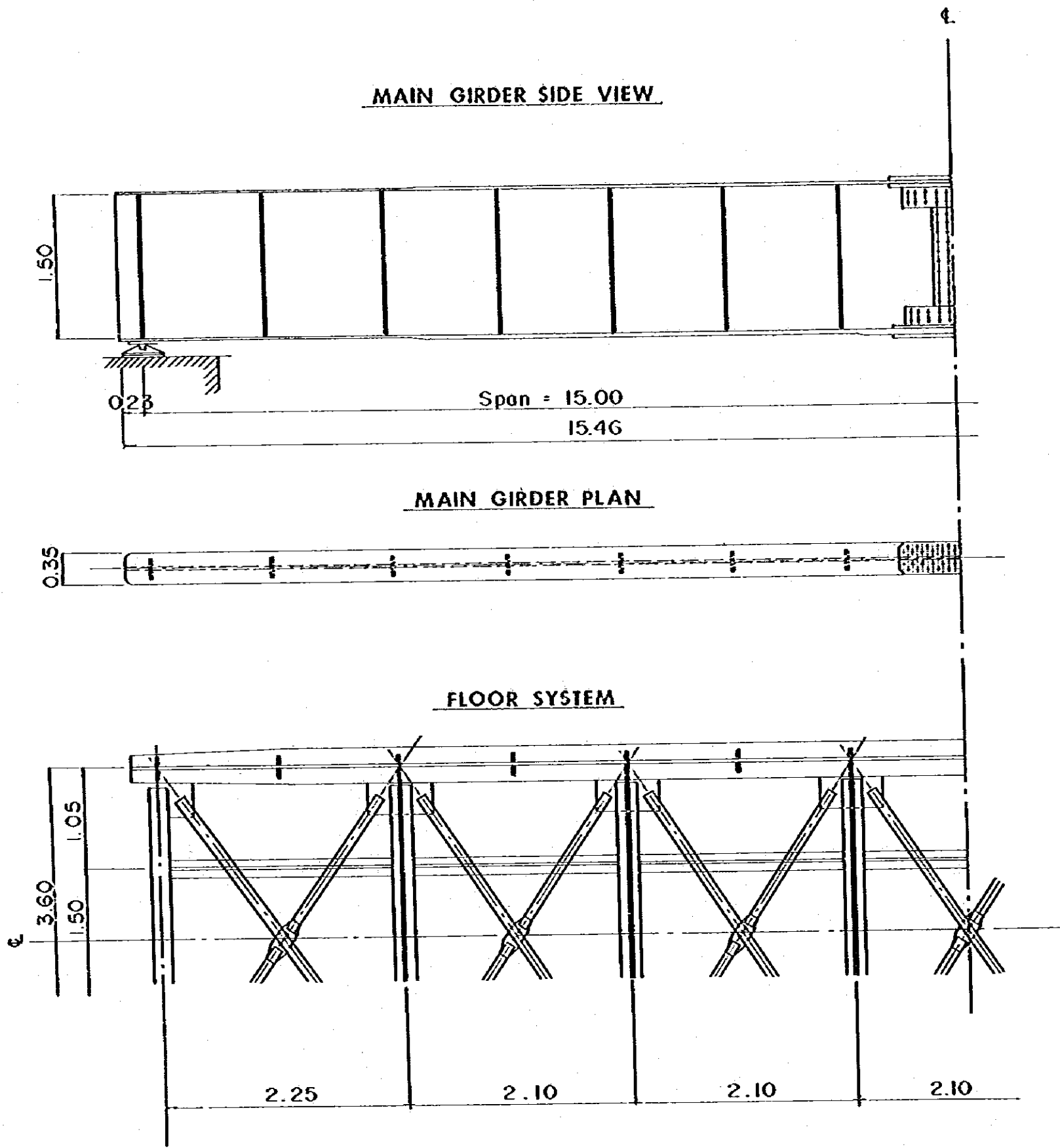
Drawing - 6

Typical Design of Through Girder

(TG - 15)

Scale 1 / 50

MAIN GIRDER SIDE VIEW

1.65

0.23
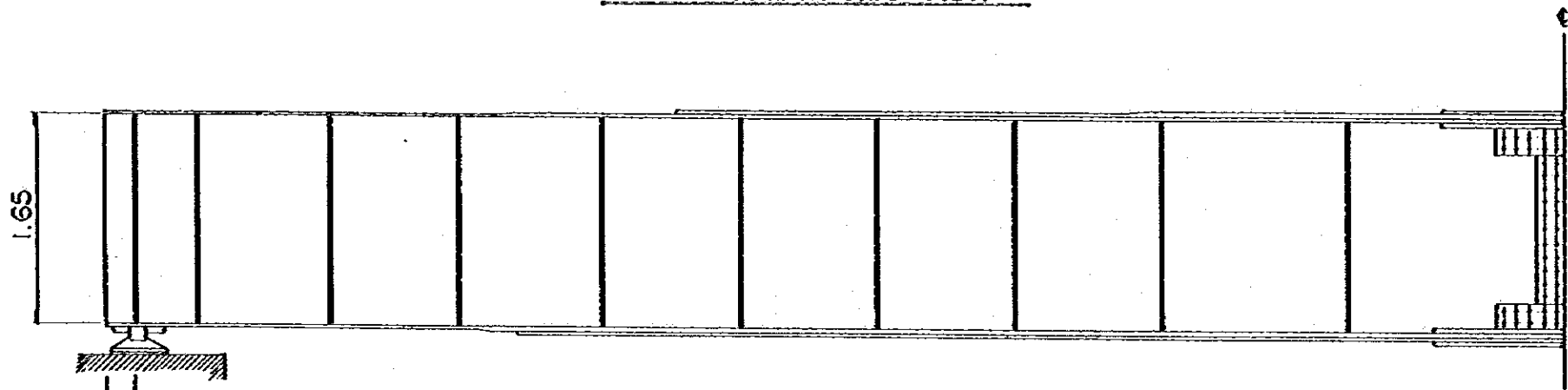
Span = 20.00

20.46

MAIN GIRDER PLAN

0.45

A

B

FLOOR SYSTEM

1.15

3.80

1.50

2.50　　3.00　　3.00　　3.00

SECTION

A - A　　　　　B - B

0.15

0.50　0.65

RB

1.65

0.81

1.15　1.50　1.15

3.80
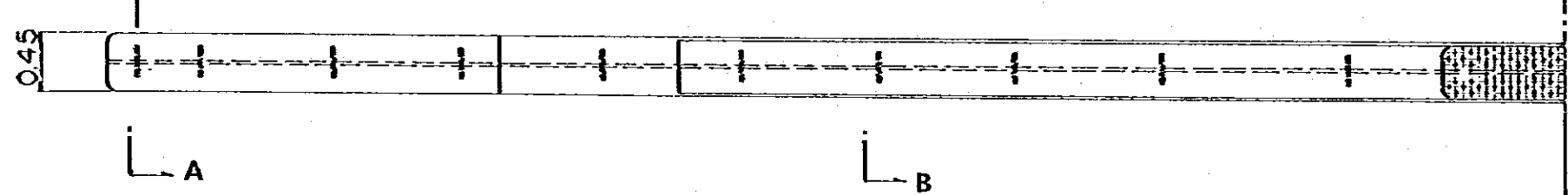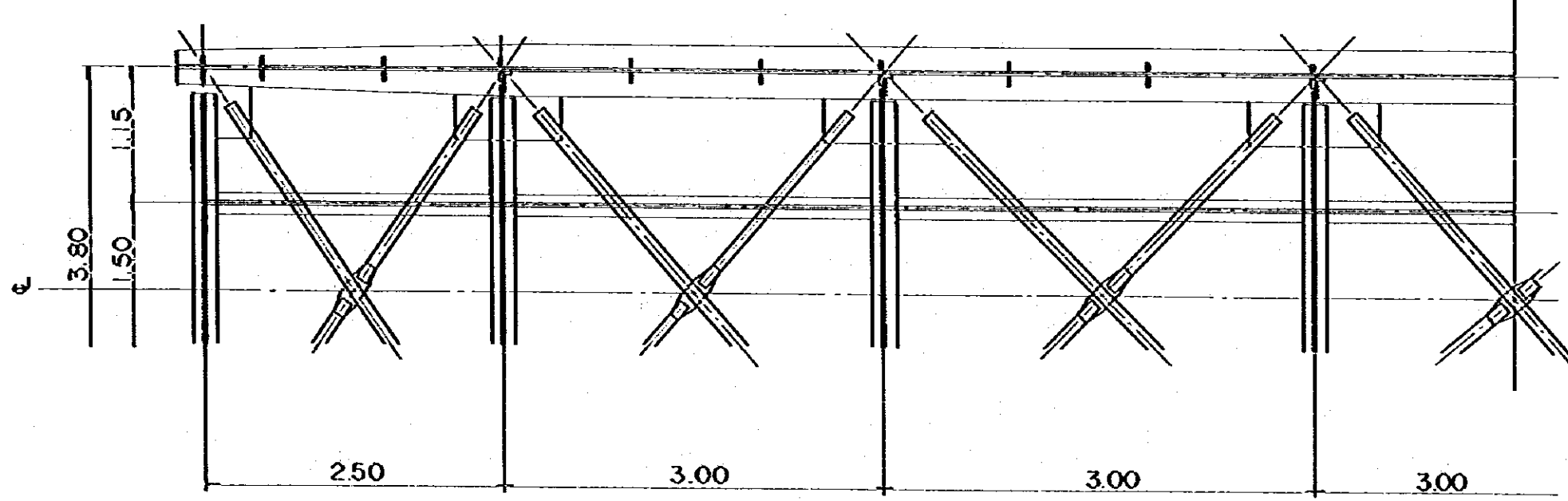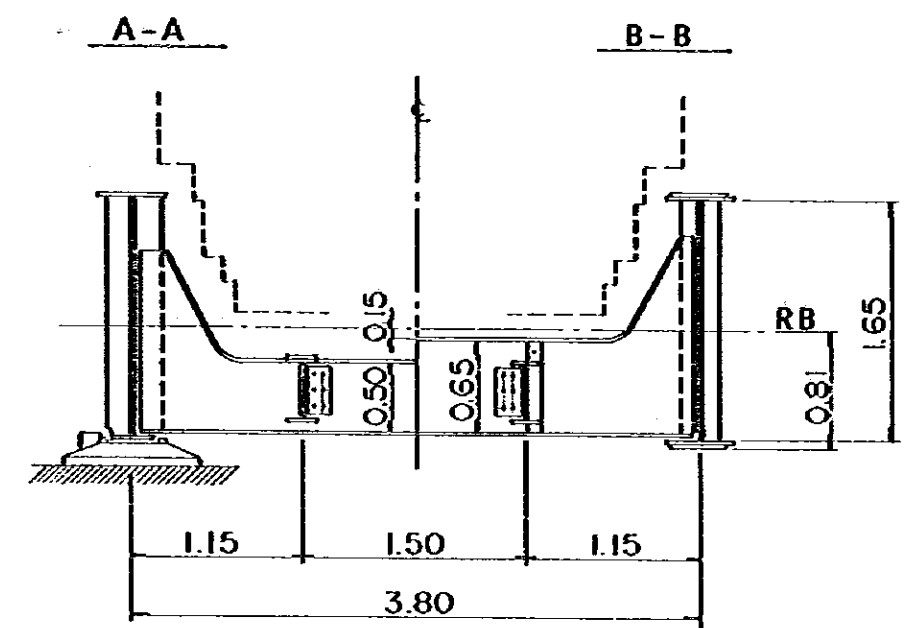
Drawing — 7

Typical Design of Through Girder

(TG — 20)

Scale 1 / 50

SECTION A-A

6.00

1:1.5

10%

4.00 · 0.25 · 0.35 · 2.50

SIDE VIEW

7.20

▽ RL
▽ FL
▽ GL

PLAN

9.25

0.30 · 0.30

30°

B — B

A · A

B — B

TRACK CENTER

SECTION B-B

0.25 · 2.50 · 3.10 · 0.35

0.20 · 0.20 · 0.20 · 0.20

0.30 · 2.00 · 0.25 · 2.00 · 0.30

4.85
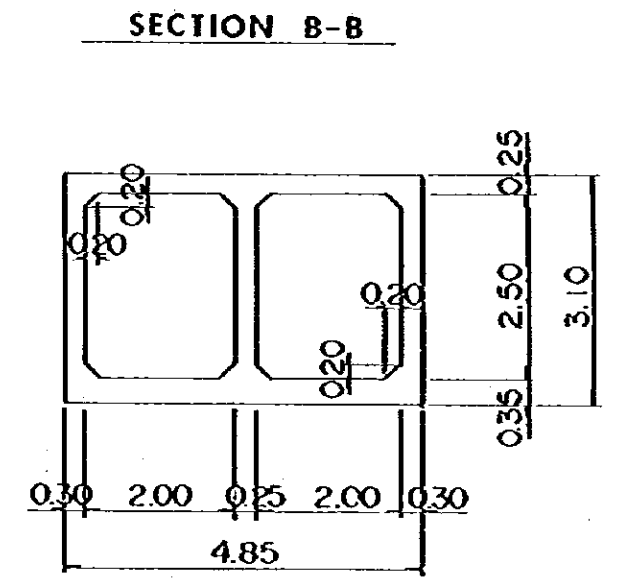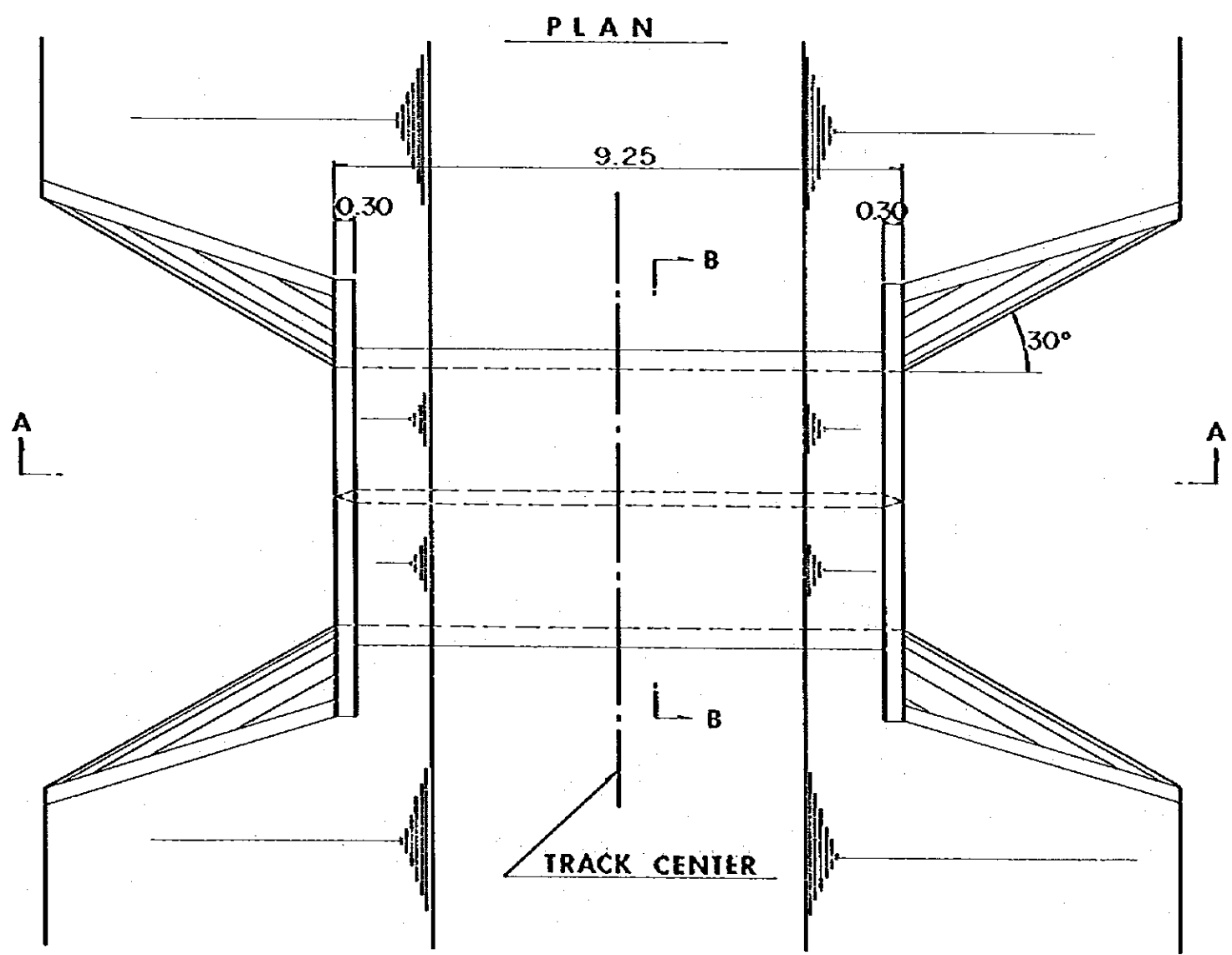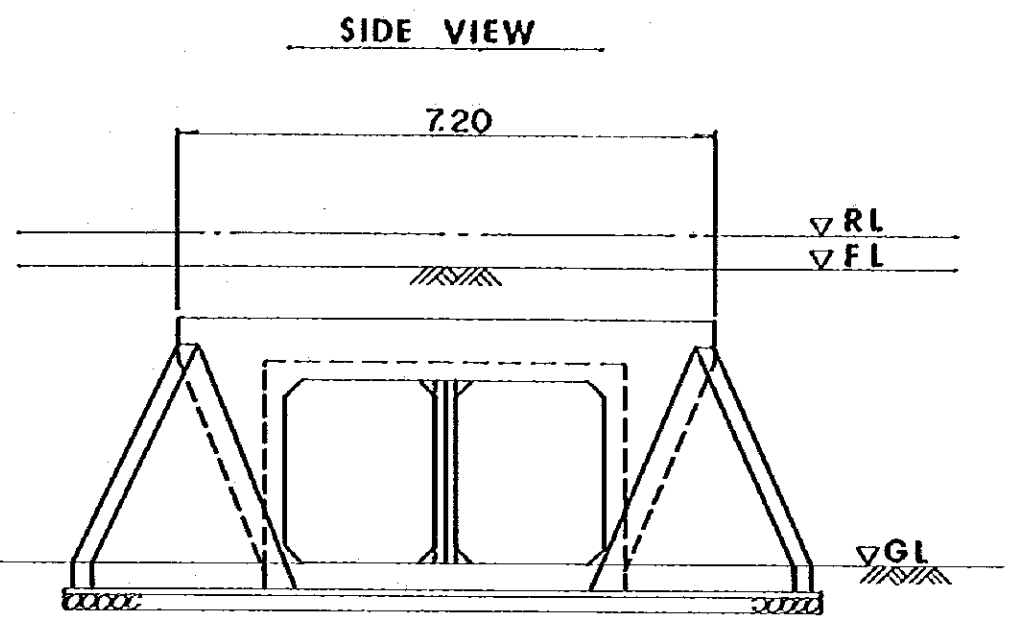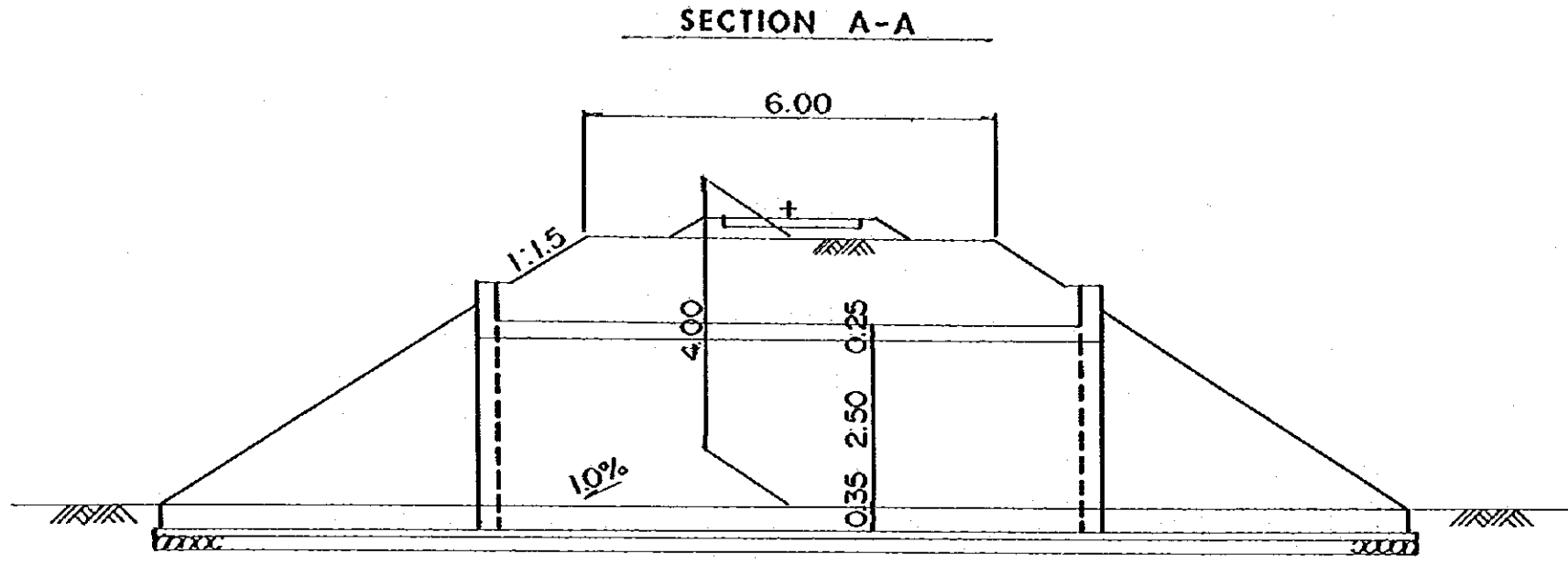
Drawing - 8

Design of Box Culvert

Station 312^{km}+ 850^{m}

Scale 1/100

SECTION A-A

6.00

1:1.5

2.00

0.18

1.00

0.20

SIDE VIEW

2.60

▽ RL

▽ EL

▽ GL

PLAN

8.00

0.30

0.30

30°

B

B

A

A

TRACK CENTER

SECTION B-B

0.18

0.15

0.15

1.00

0.20

1.38

0.20

1.00

0.20

1.40
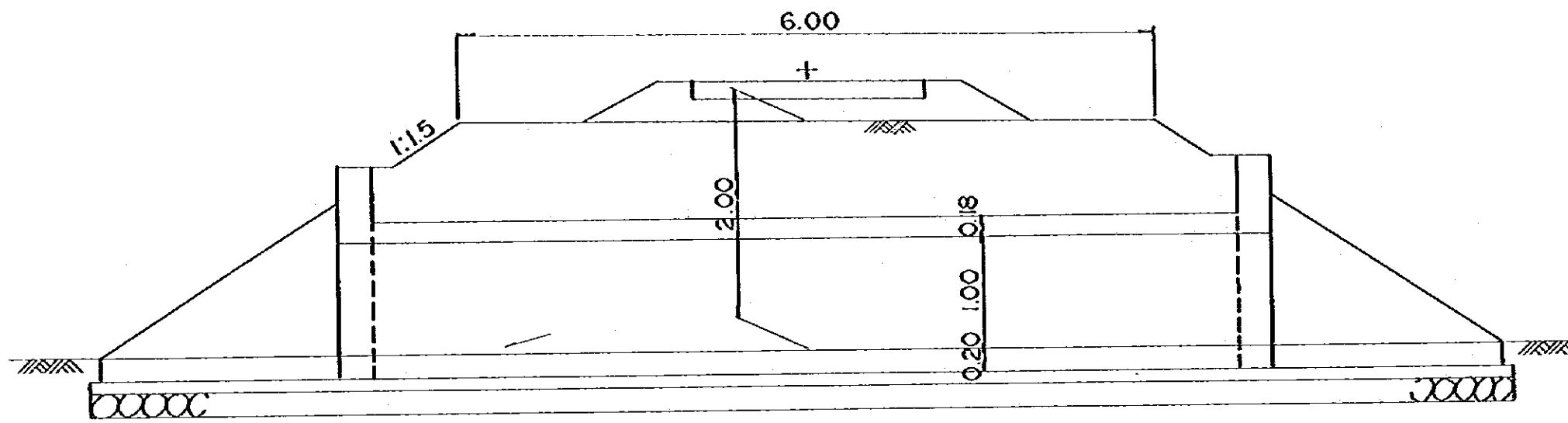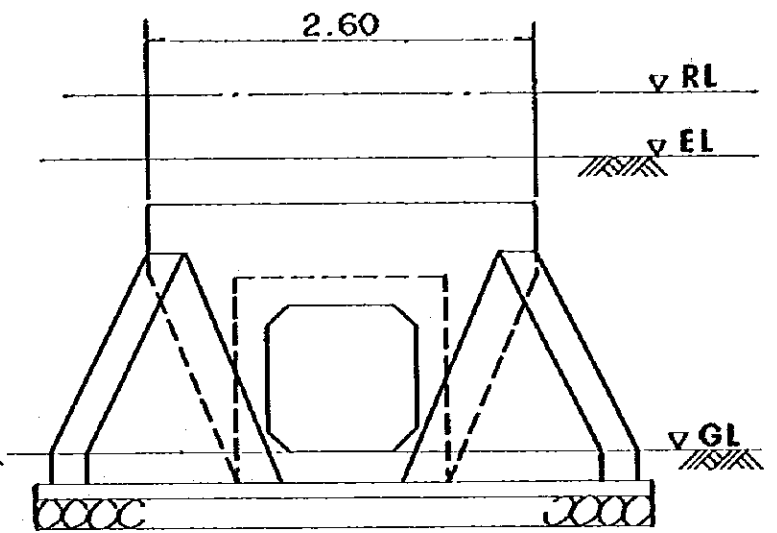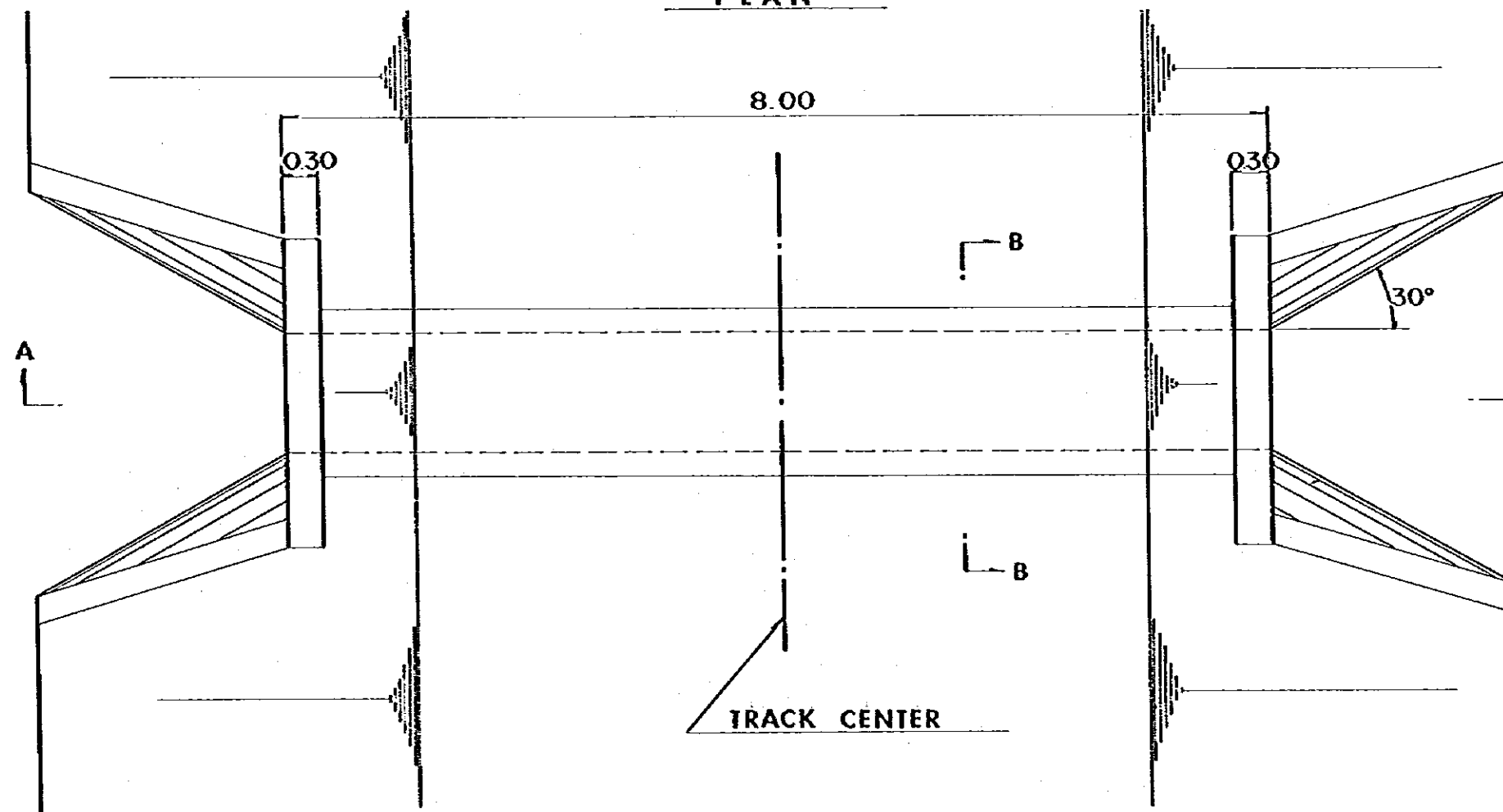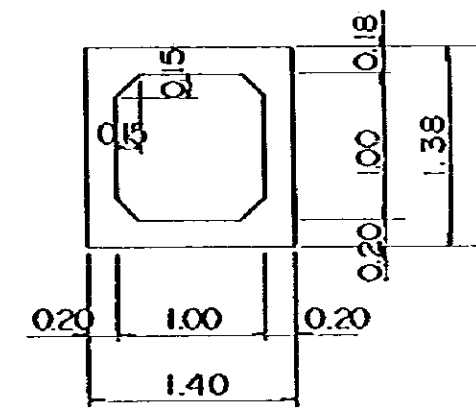
Drawing — 9

Design of Box Culvert

Station 316 km +100 m

Scale 1 / 100

SECTION A-A

6.00

2.50 0.25

1:1.5

10%

0.35 2.00

SIDE VIEW

4.85

▽ RL
▽ FL

▽ GL

PLAN

6.00

0.30   0.30

B

30°

A   A
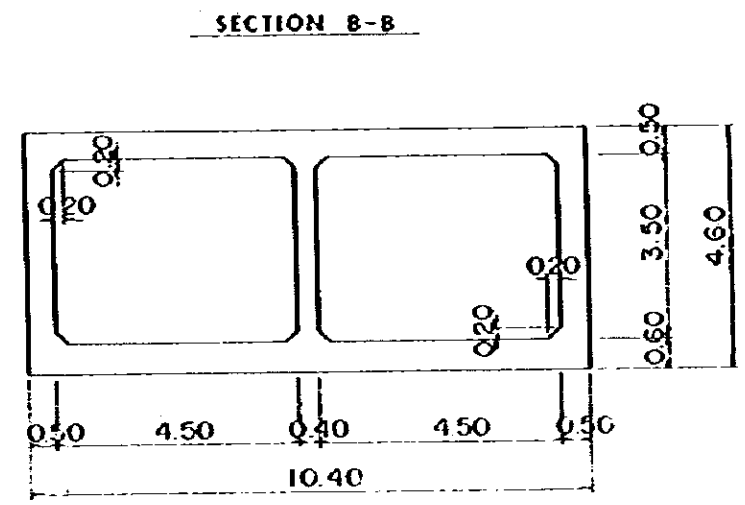
B

TRACK CENTER

SECTION B-B

0.25

0.20

0.20

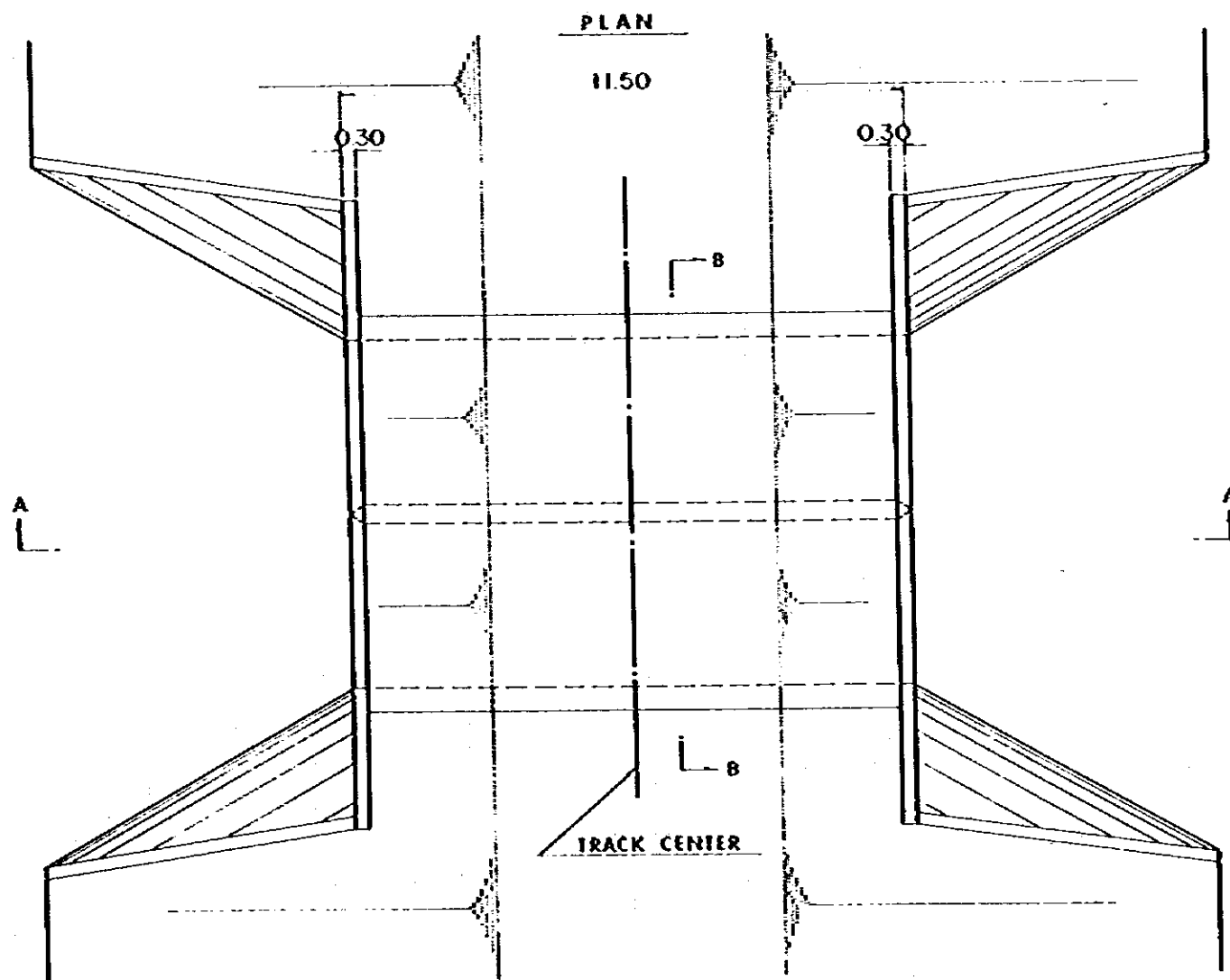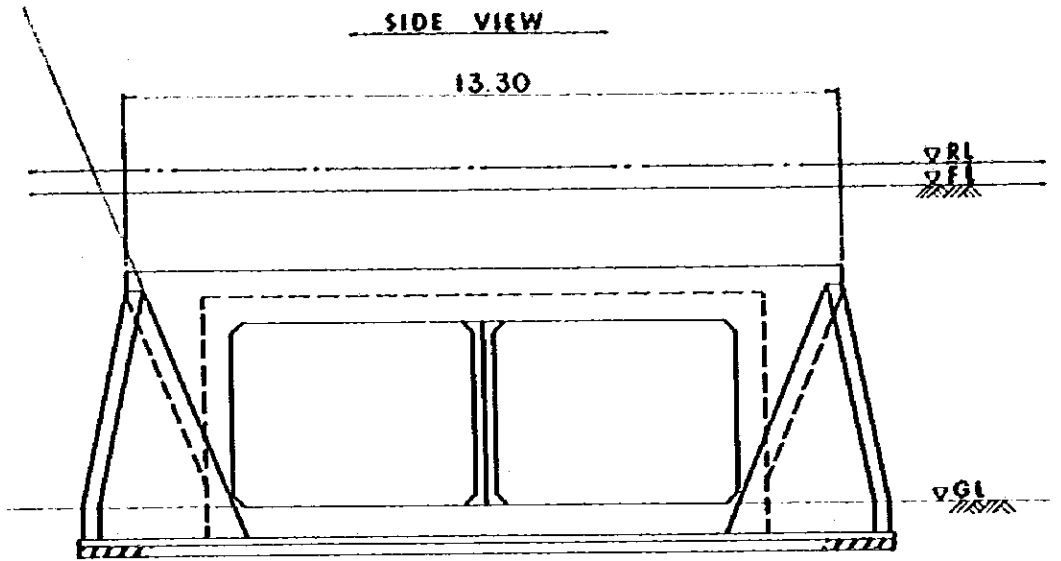2.00 2.60

0.35

0.25   2.50   0.25

3.00
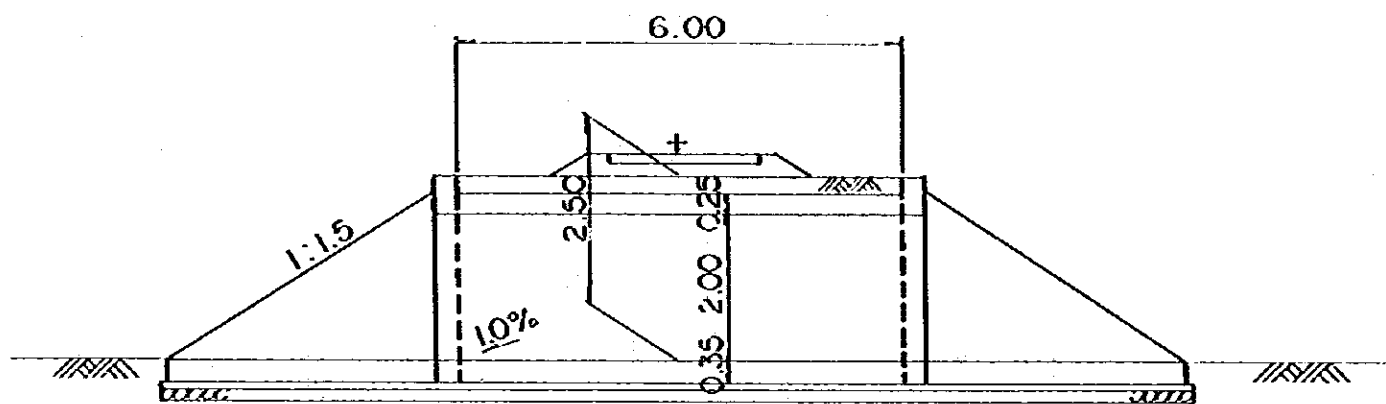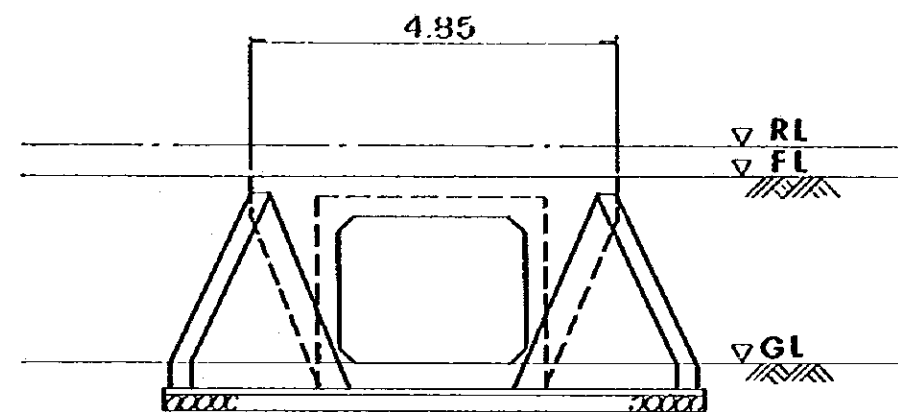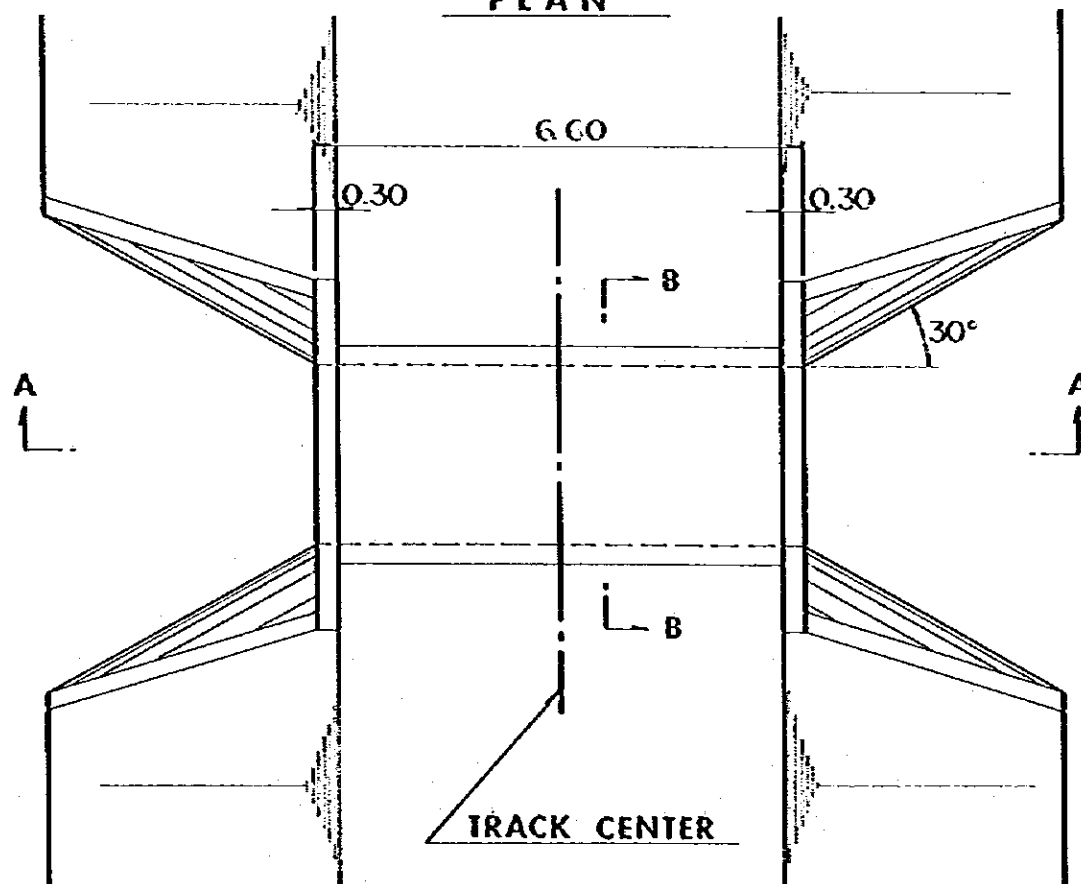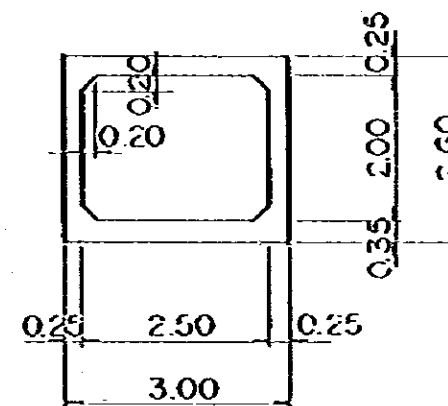
Drawing - 10

Design of Box Culvert

Station $318^{km}+000^{m}$

Scale 1/100

SECTION A-A

6.00

1:1.5

2.50

0.25

10%

2.00

0.35

SIDE VIEW

4.85

▽ RL
▽ FL
▽ GL

PLAN

6.60

0.30

0.30

B

B

30°

A

A

TRACK CENTER

SECTION B-B

0.25

0.10

0.20

2.00

0.35

2.60

0.25

2.50

0.25

3.00
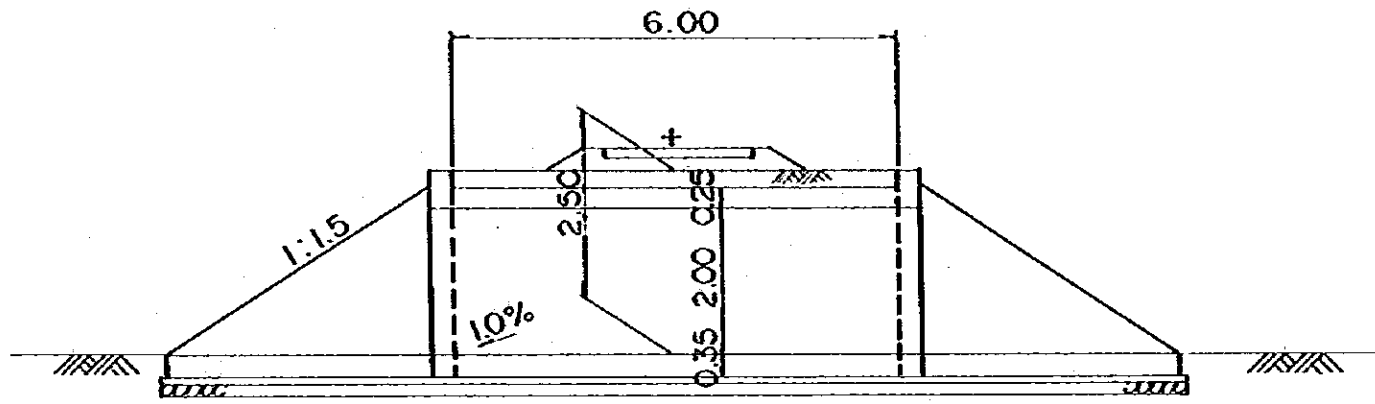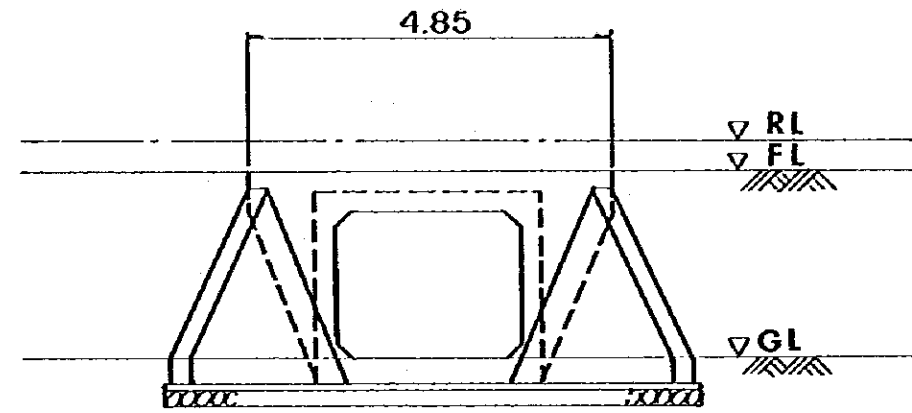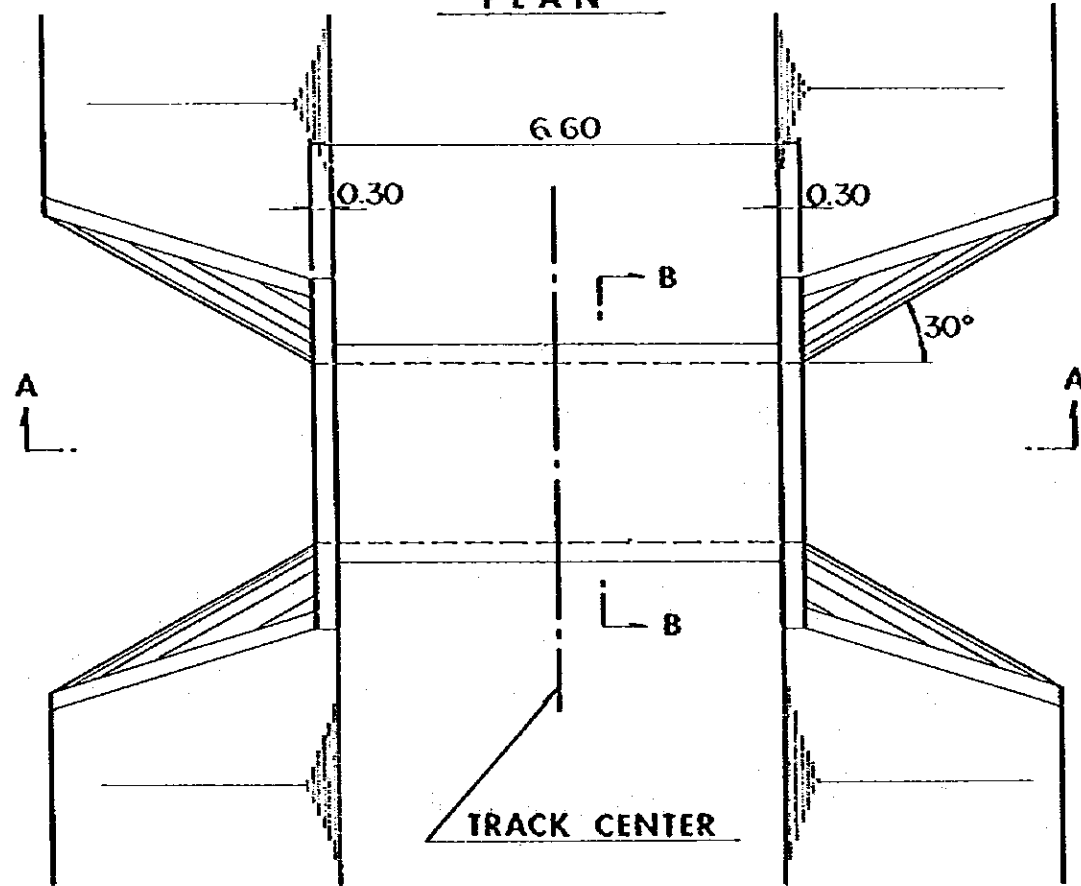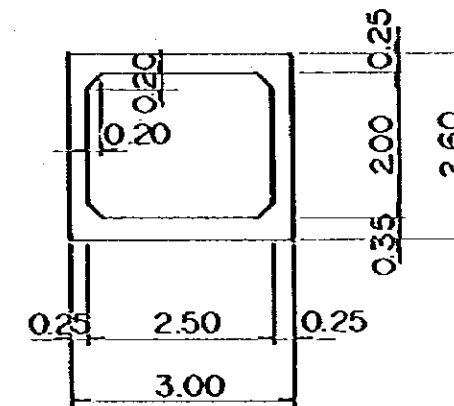
Drawing — II

Design of Box Culvert

Station 318^{km}+800^m

Scale 1 / 100

SECTION A-A

6.00

1:1.5

6.50

0.25

2.50

0.35

SIDE VIEW

▽RL
▽FL

5.40

▽GL

PLAN

16.75

0.30

0.30

30°

A — A

B — B

TRACK CENTER

SECTION B-B

0.25
0.20
0.20
2.50
3.10
0.35

0.30 2.50 0.30
3.10
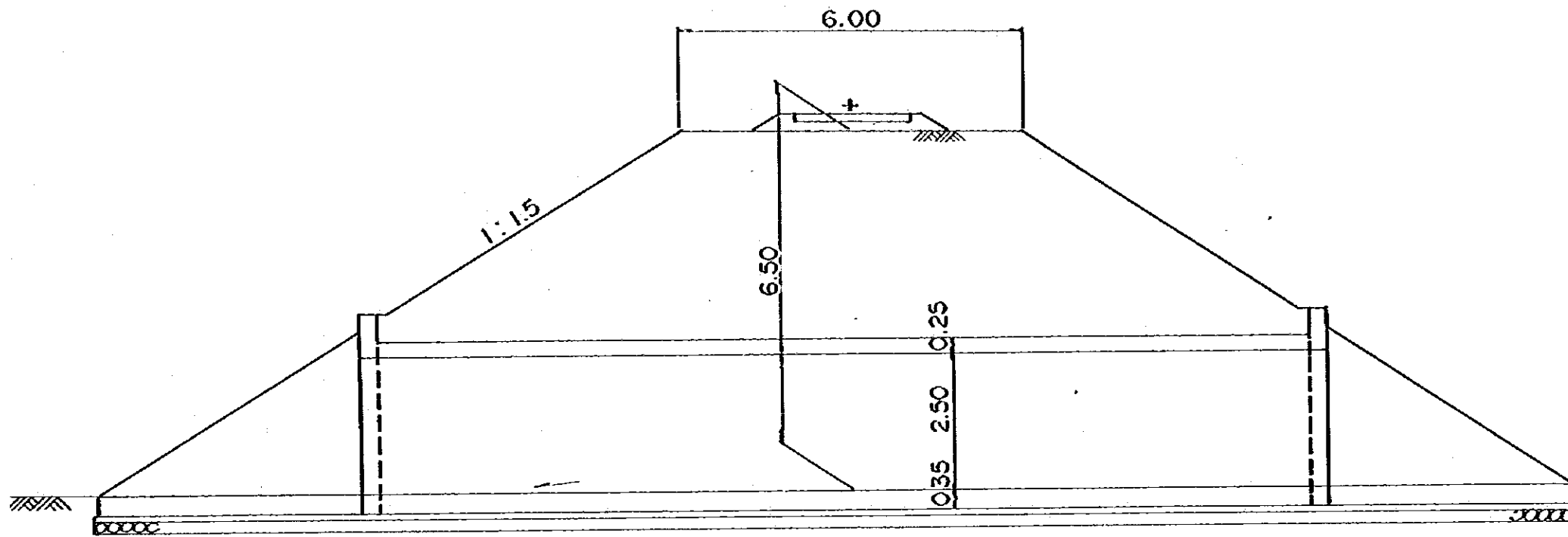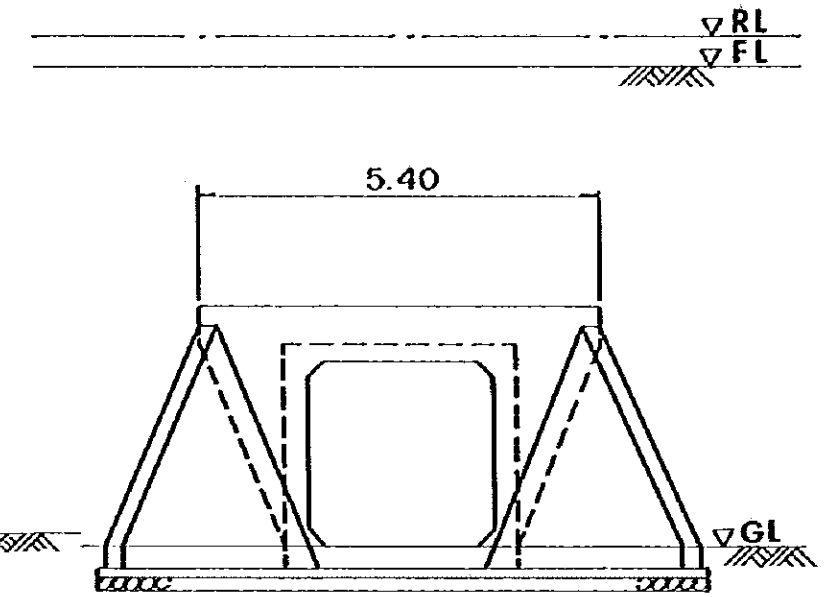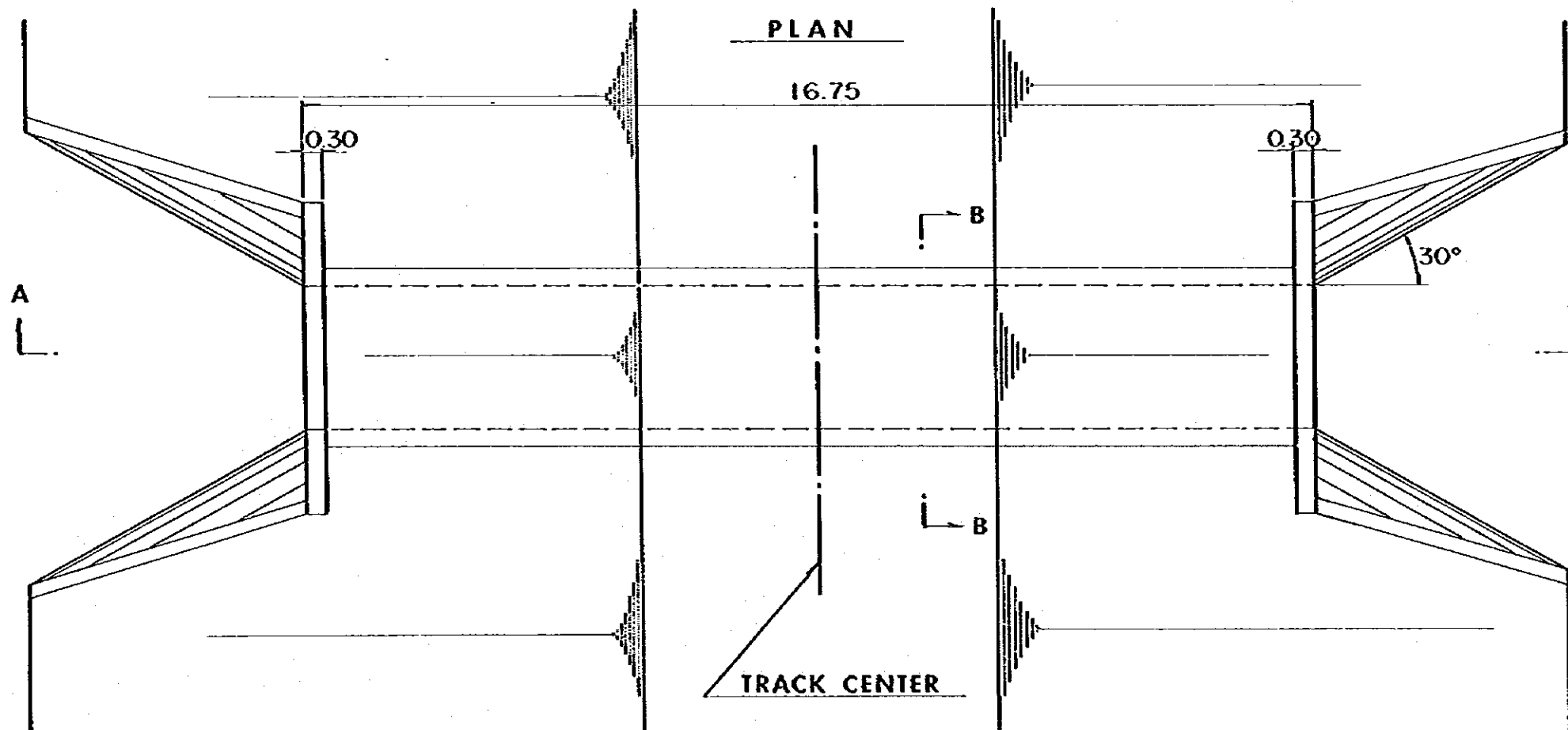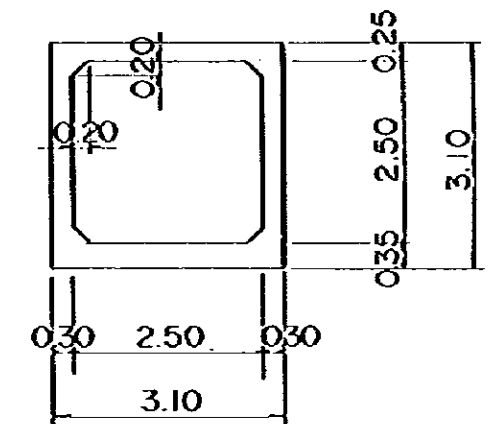
Drawing - 12

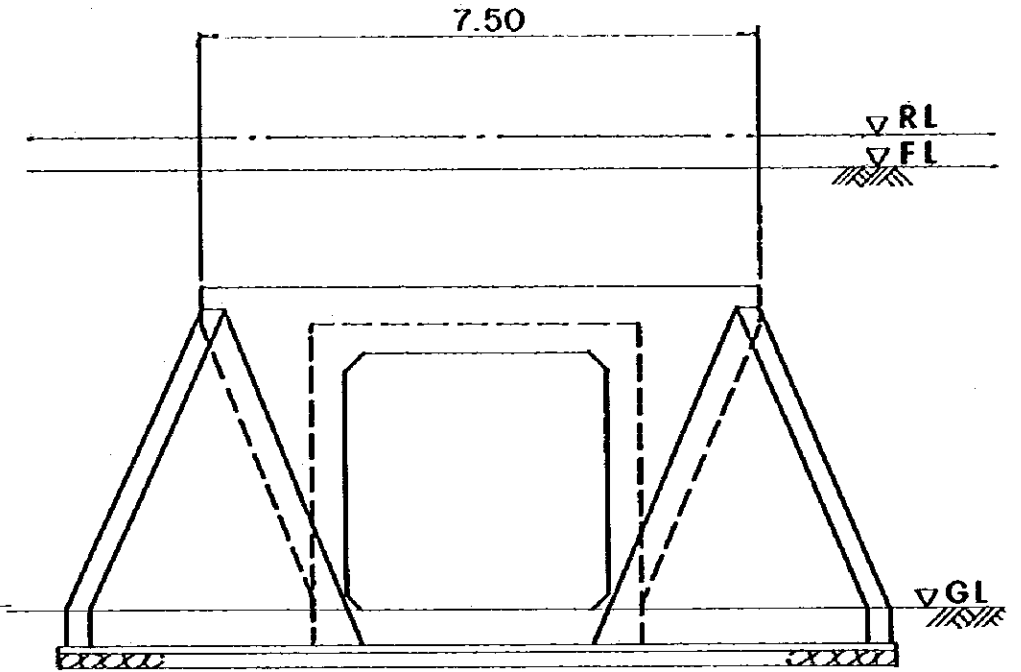Design of Box Culvert

Station 325^{km}+300^{m}

Scale 1/100

SECTION A-A

6.00

1:1.5

2.00

0.18

1.00

0.20

10%

SIDE VIEW

3.15

▽ RL

▽ FL

▽ GL

PLAN

8.00

0.30

0.30

30°

B

B

A

A

TRACK CENTER

SECTION B-B

0.18

0.15

0.15

1.00

1.38

0.20

0.20

1.50

0.20

1.90
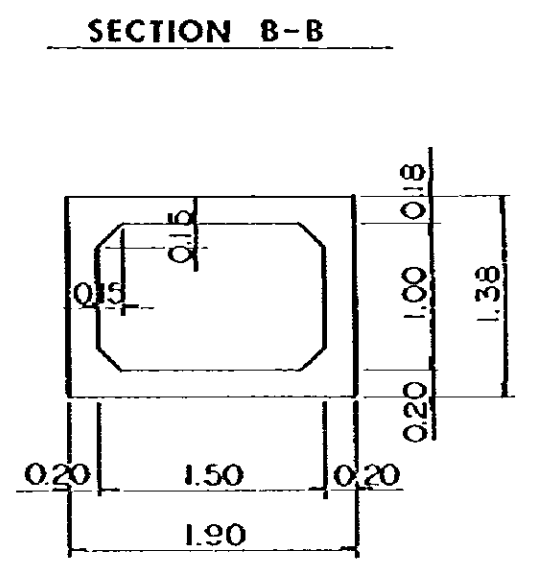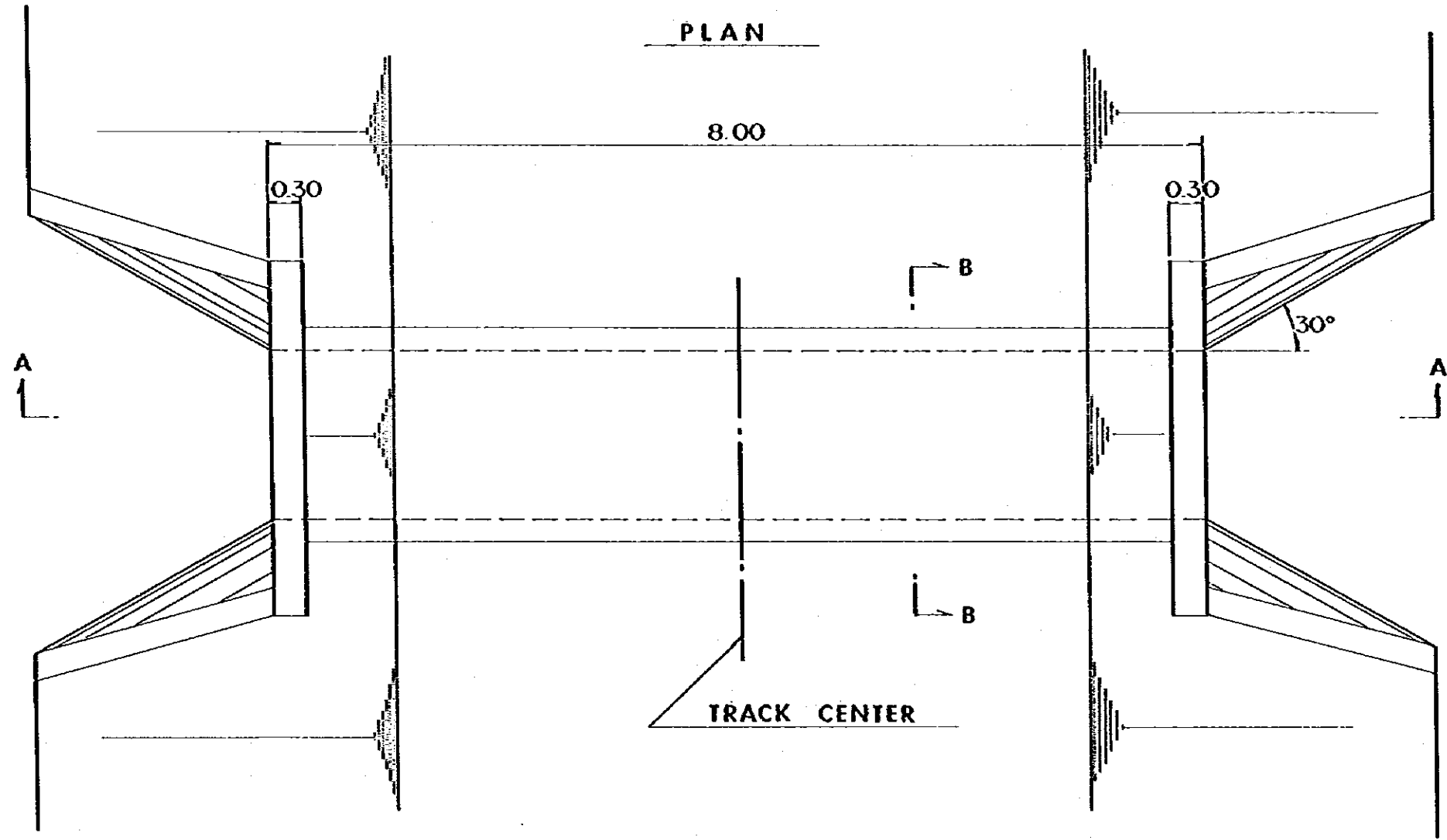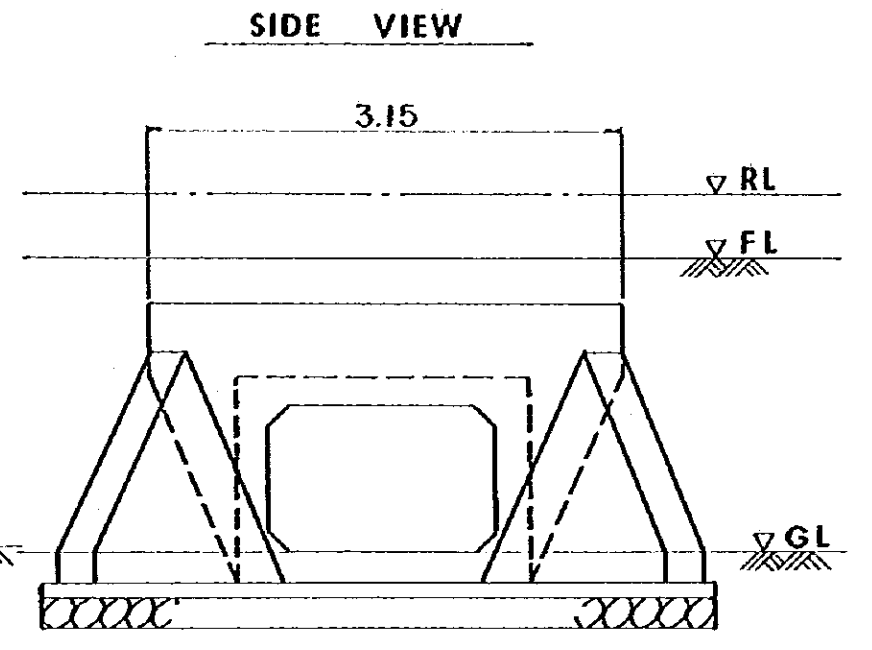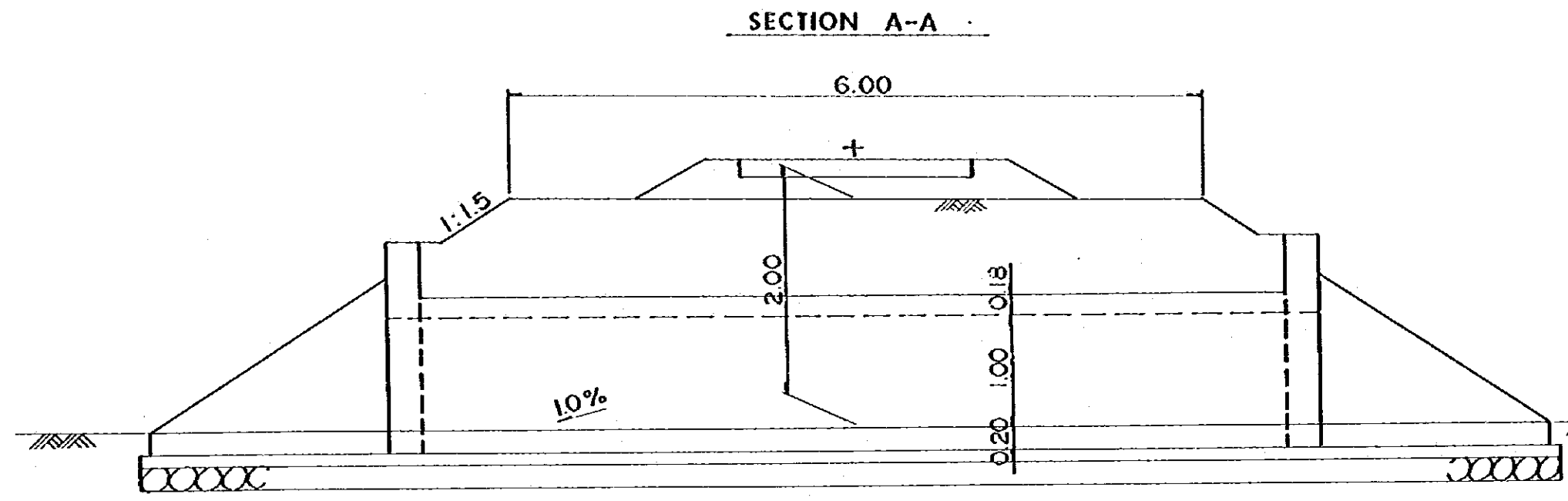
Drawing — 13

Design of Box Culvert

Station 327^{km}+600^{m}

Scale 1 / 50

SECTION A-A

6.00

1 : 1.5

10%

0.50

4.00

3.00

0.60

SIDE VIEW

8.20

▽RL
▽FL

▽GL

PLAN

6.60

0.30   0.30

30°

B

B

A   A

TRACK CENTER

SECTION B-B

0.20

0.20

0.50

0.50

3.00

4.10

0.60

0.50   4.50   0.50

5.50
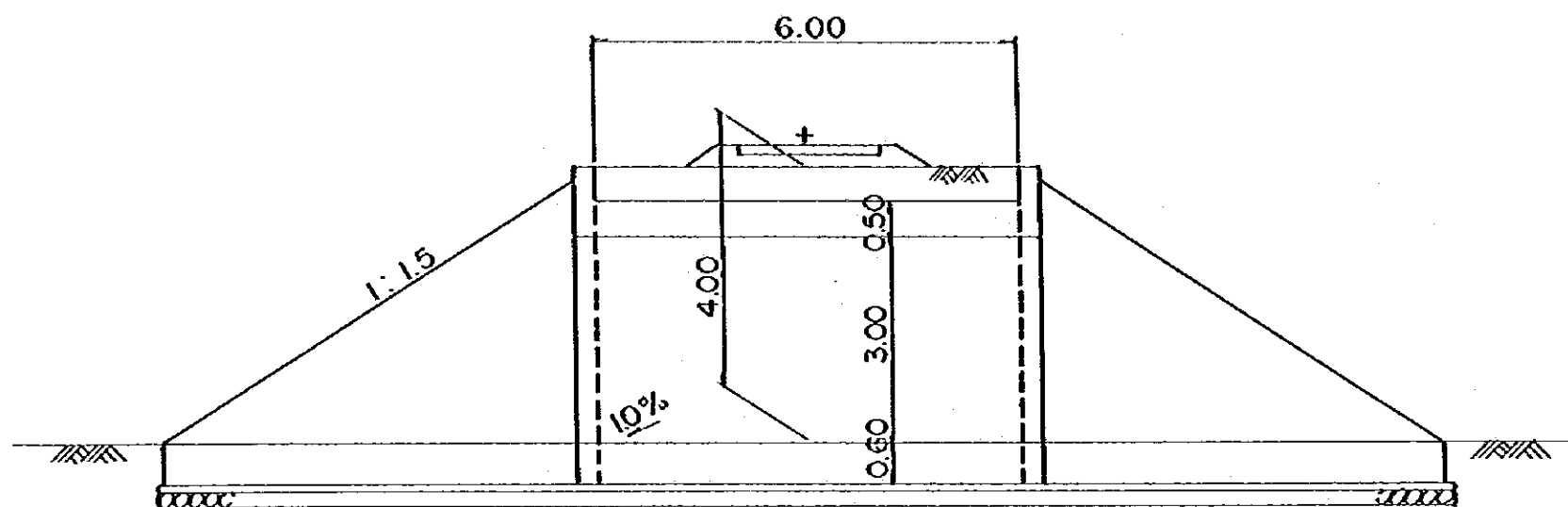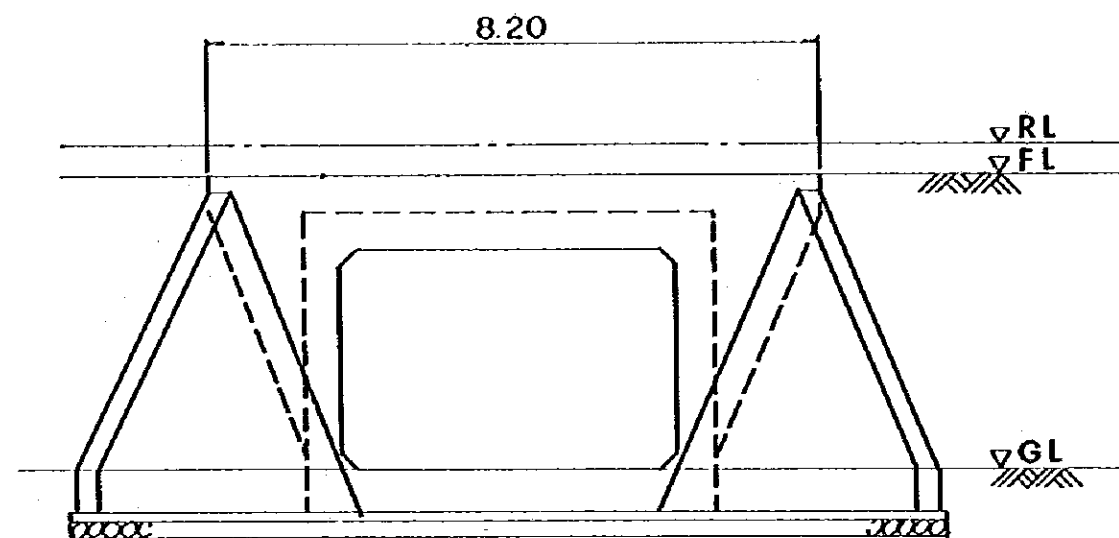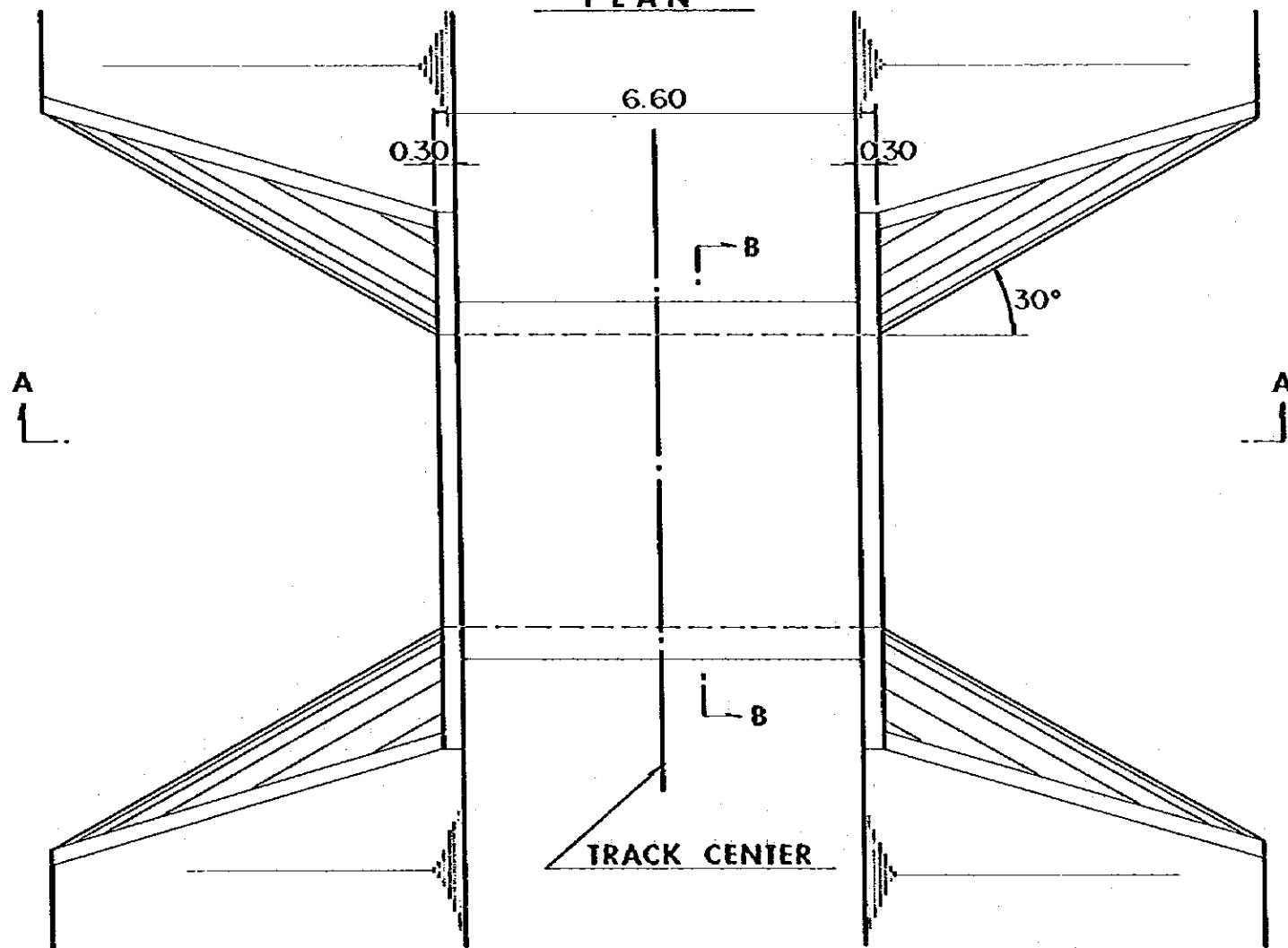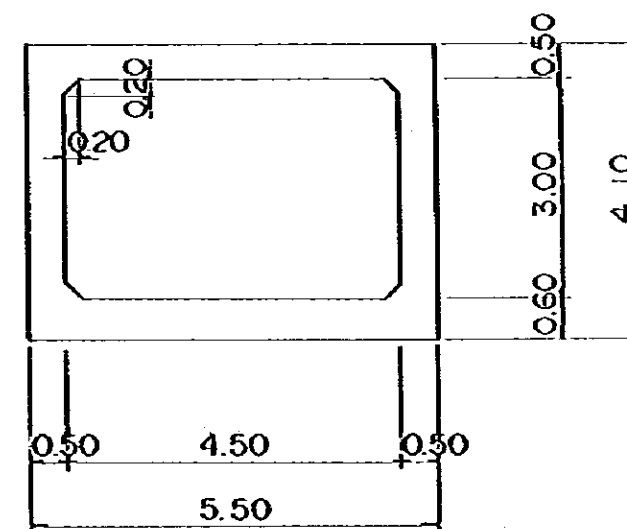
Drawing - 14

Design of Box Culvert

Station 362^{km}+900^{m}

Scale 1/100

SECTION A-A

6.00

1:1.5

10%

0.40

4.00

3.00

0.50

PLAN

7.30

0.30 0.30

30°

A A

B

B

TRACK CENTER

SIDE VIEW

11.90

▽RL
▽FL

▽GL

SECTION B-B

0.40

0.20

0.20

0.20

0.20

3.00

0.50

3.90

0.45 4.00 0.40 4.00 0.45

9.30
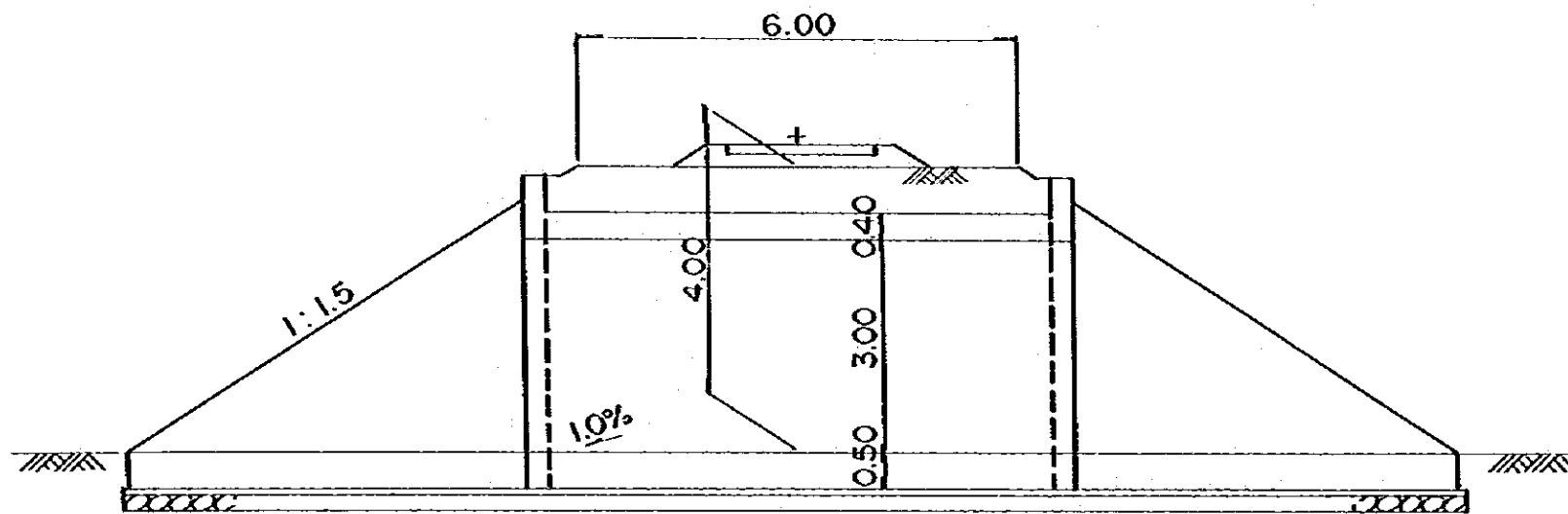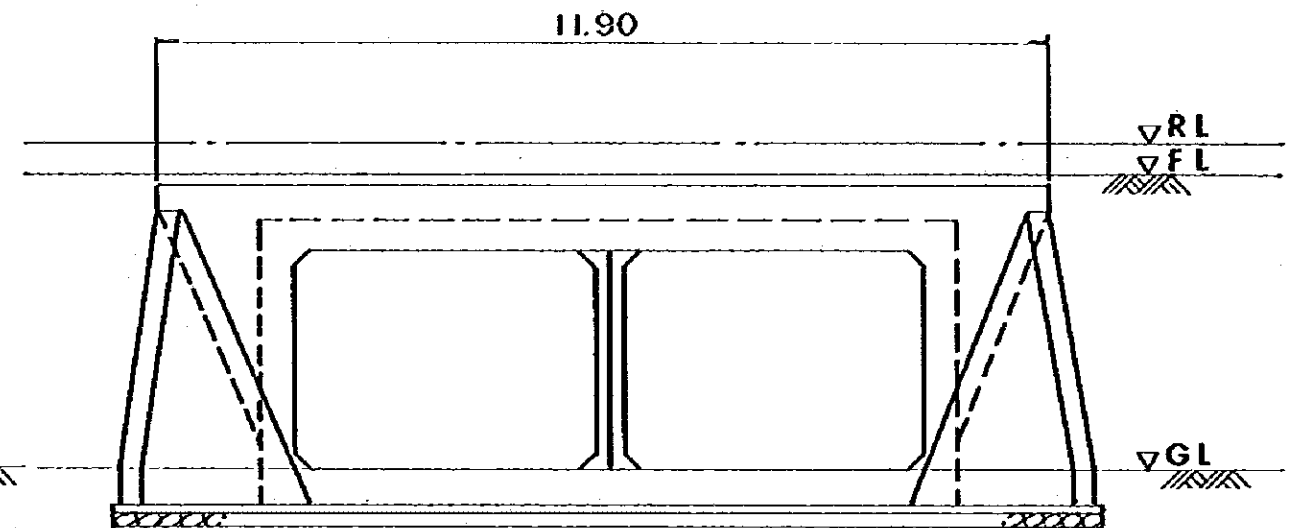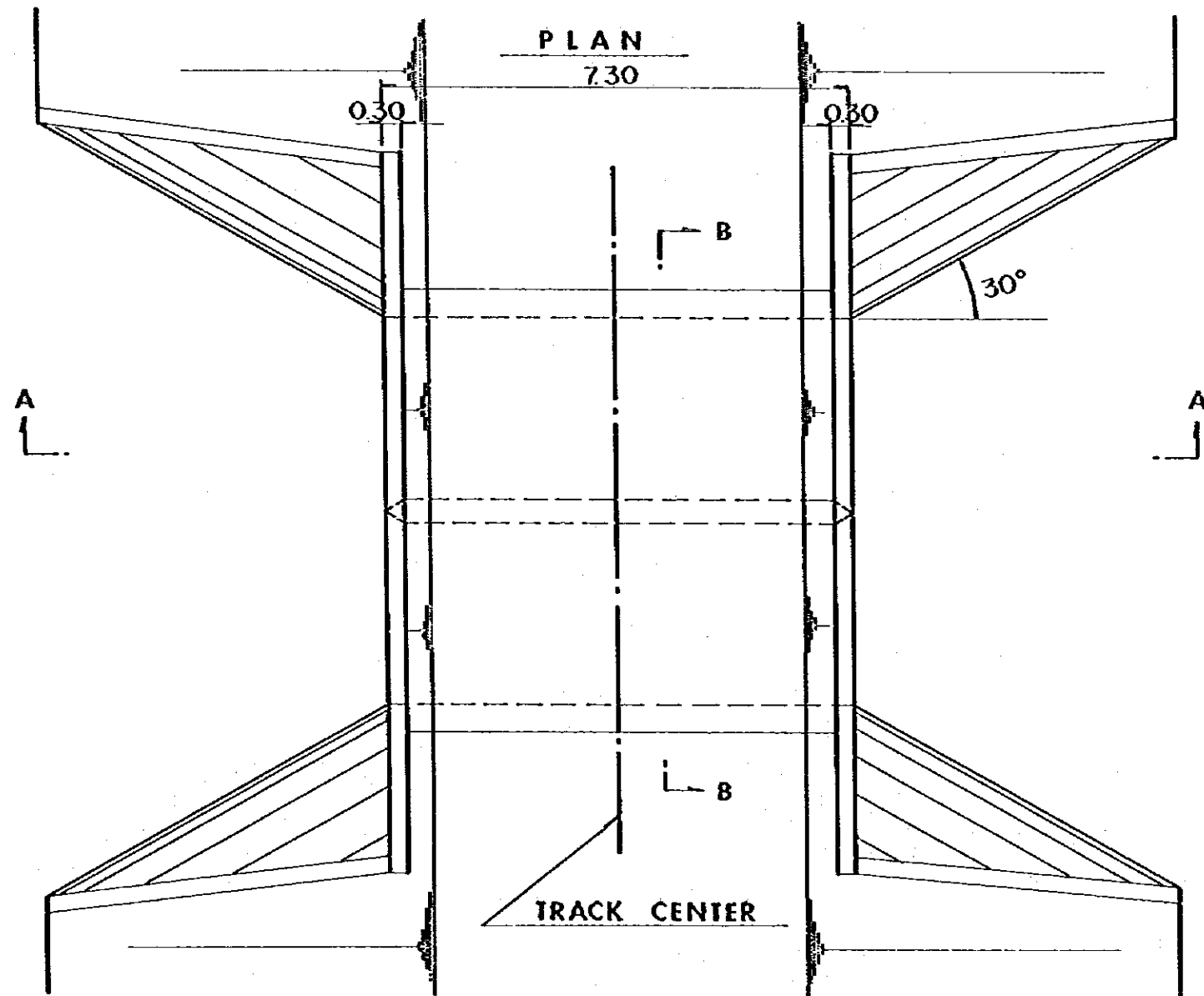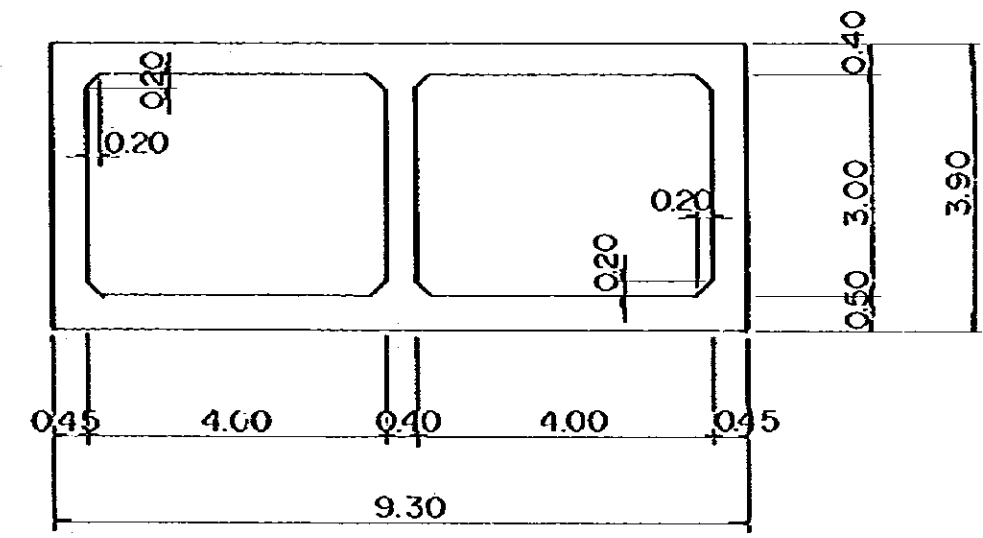
Drawing — 15

Design of Box Culvert

Station 364^{km}+100^{m}

Scale 1/100

SECTION A-A

6.00

1:1.5

6.00

0.50

3.50

0.60

1.0%

SIDE VIEW

13.30

▽RL
▽FL

▽GL

PLAN

11.50

0.30

0.30

B

B

A

A

TRACK CENTER

SECTION B-B

0.50

4.60

3.50

0.60

0.20

0.20

0.20

0.50 4.50 0.40 4.50 0.50

10.40
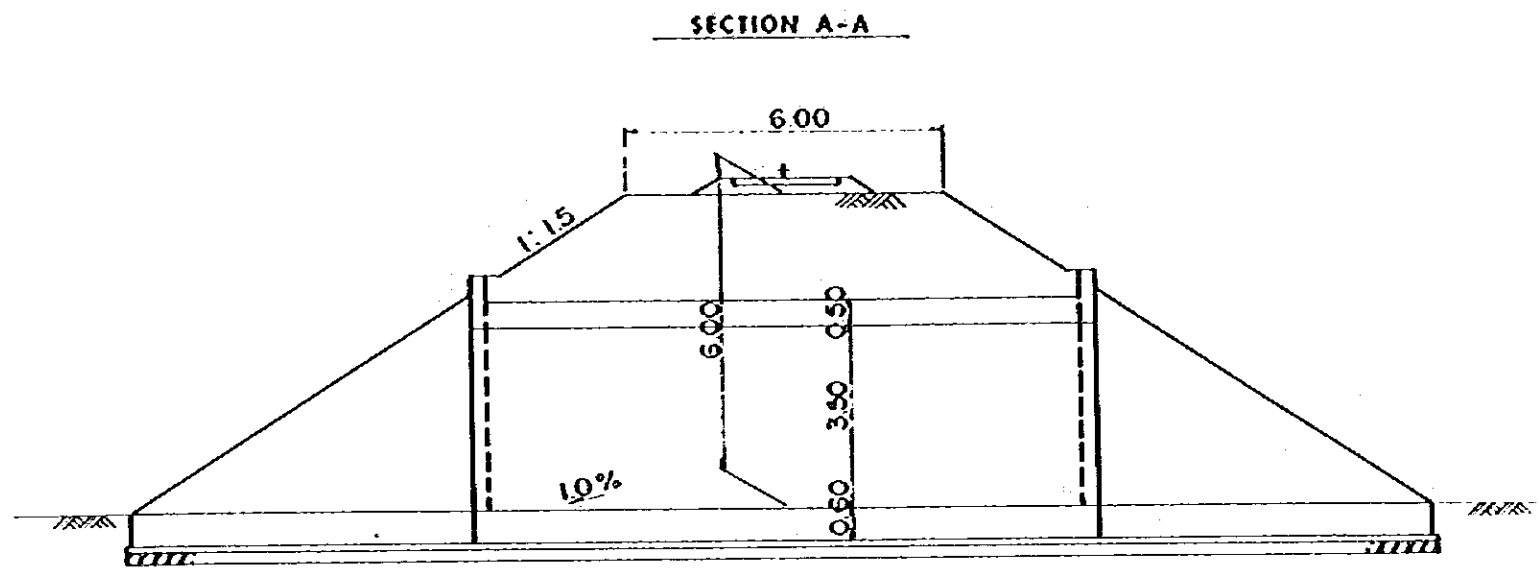
Drawing — 16

Design of Box Culvert

Station 367^{km} 100^{m}

Scale 1/100

SECTION A-A

6.00

1:15

10%

6.00 / 6.00

0.40

3.50

0.50

SIDE VIEW

7.50

▽RL
▽FL
▽GL

PLAN

11.800

0.30

0.30

30°

A — A

⌐ B

⌐ B

TRACK CENTER

SECTION B-B

0.20

0.20

0.20

0.40

3.50

4.40

0.50

0.45 3.50 0.45

4.40
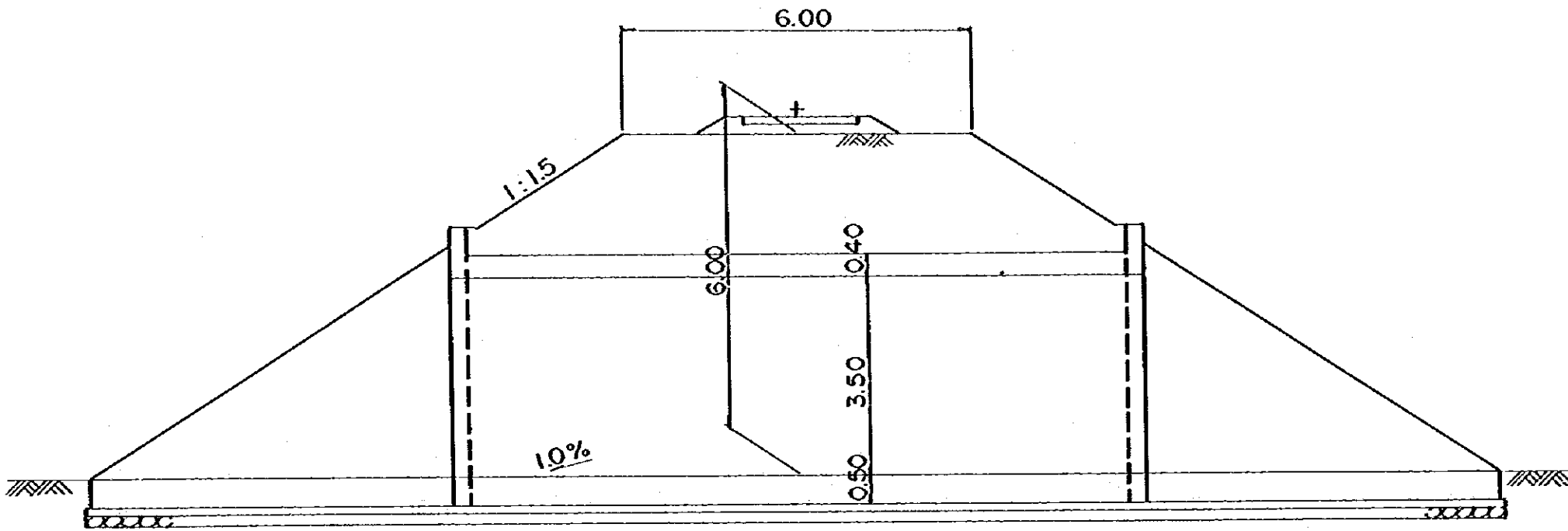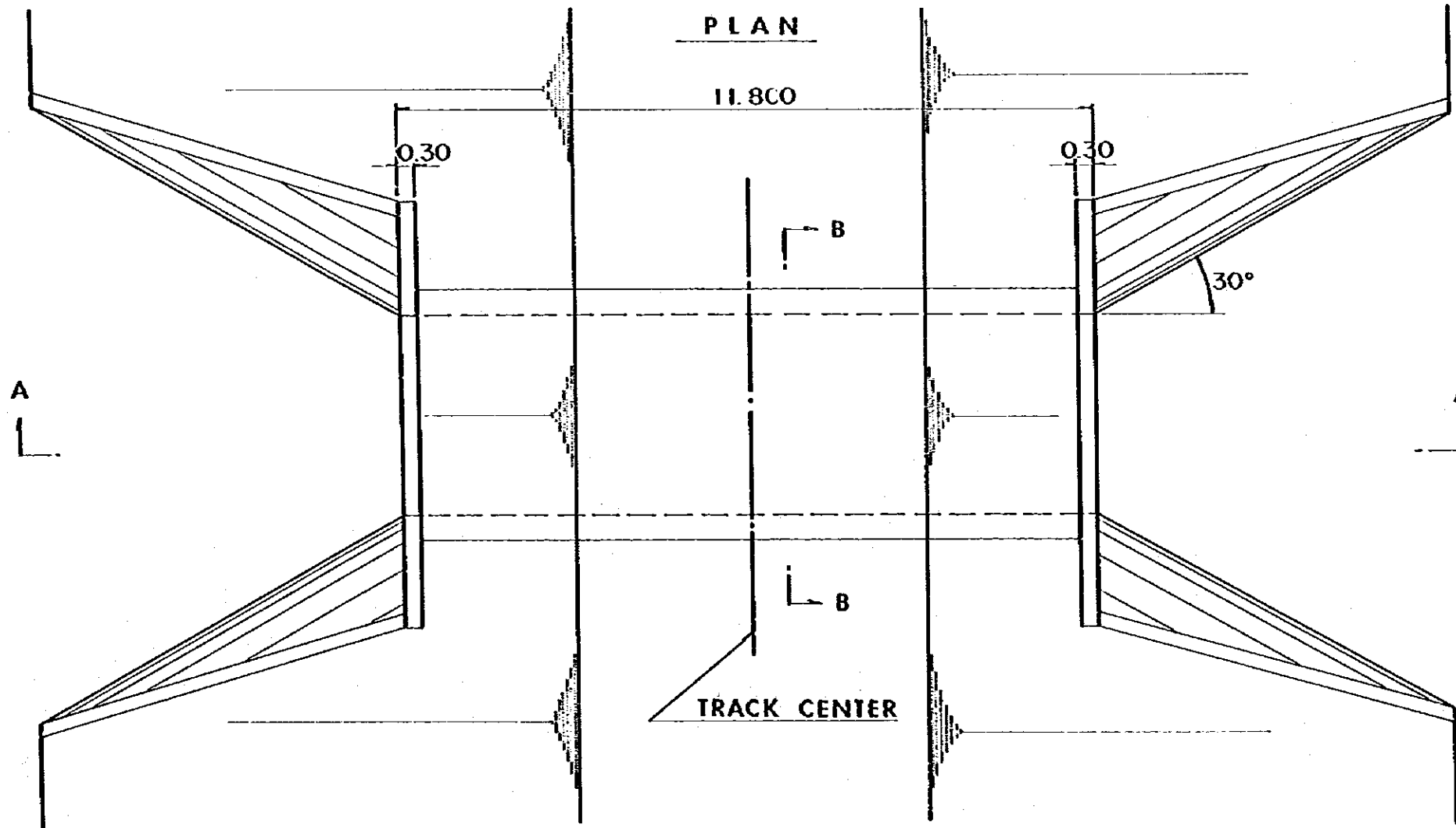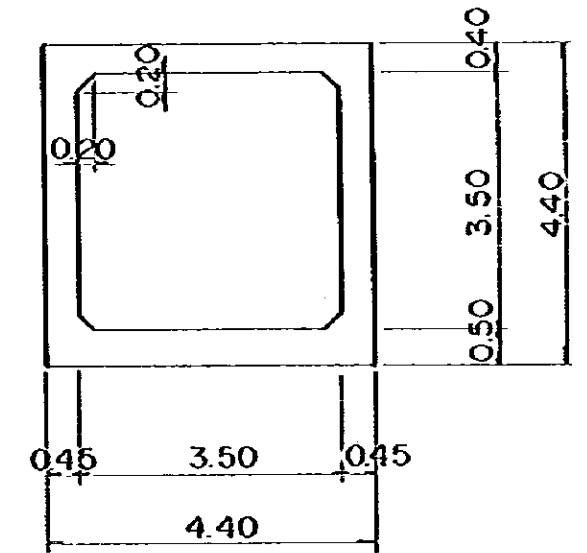
Drowing – 17

Design of Box Culvert

Station 375^{km}+000^{m}

Scole 1/100

SECTION A–A

31.07

0.23   15.00   0.61   15.00   0.23

RL

1.50

0.14

2.00

4.00

4.00

1.20

1.60

4.00   3.00

SECTION B–B

6.00

0.79

4.00

1.60

6.60

SECTION C–C

6.00

4.00

1.20

7.00

PLAN

C

B

0.50 0.50

A

A

3.00

7.00

TRACK CENTER

0.50 0.50

C

B

0.50 0.50

4.00   0.50 2.00 0.50

3.00
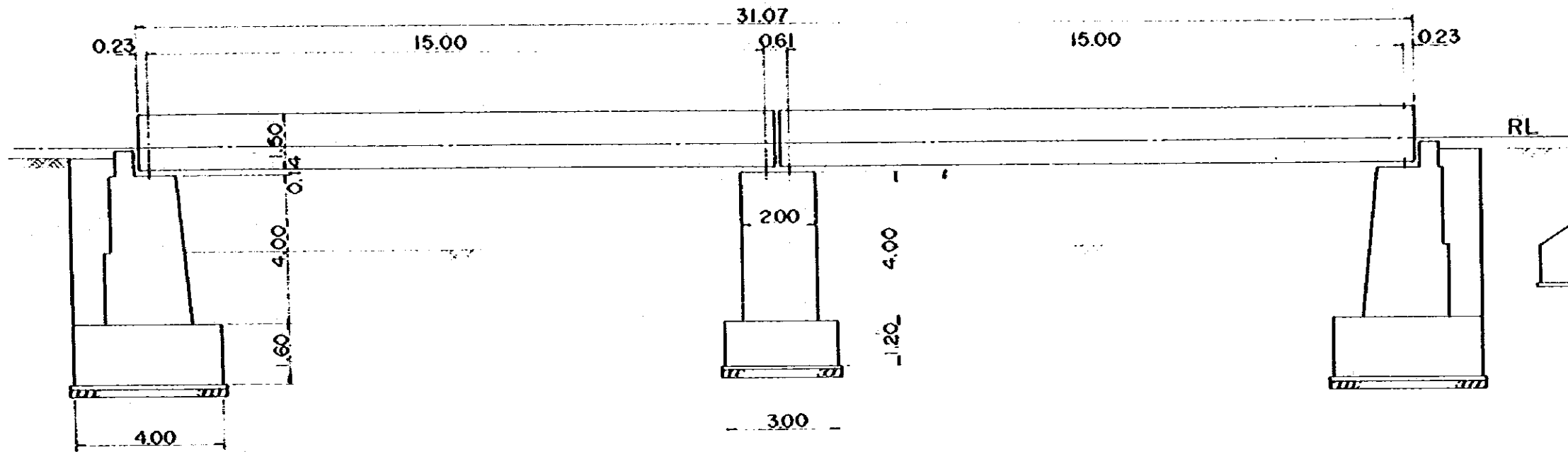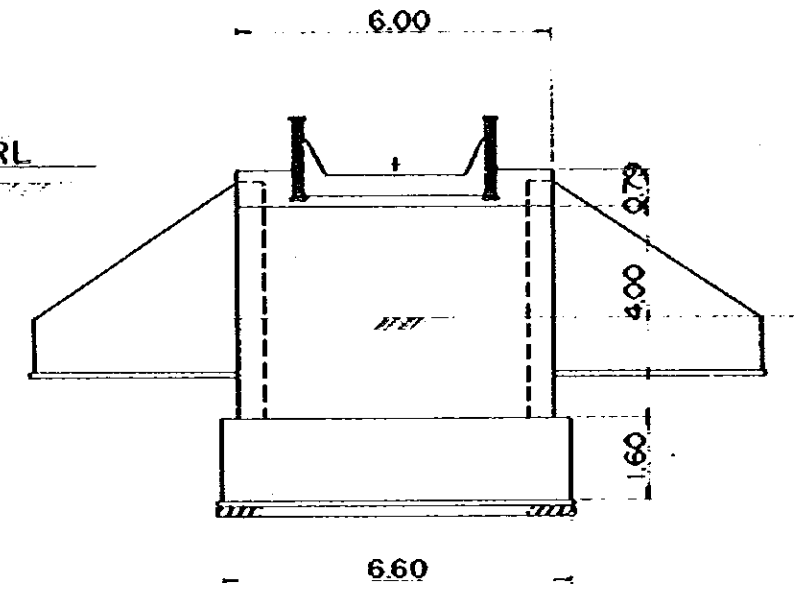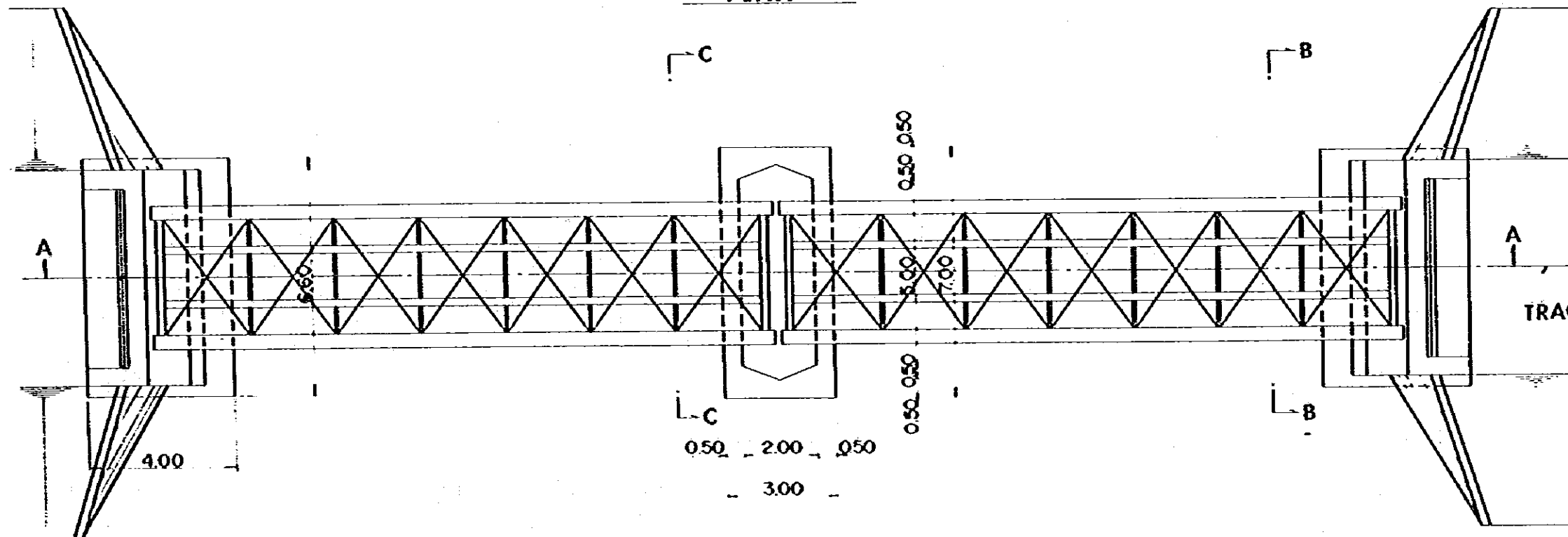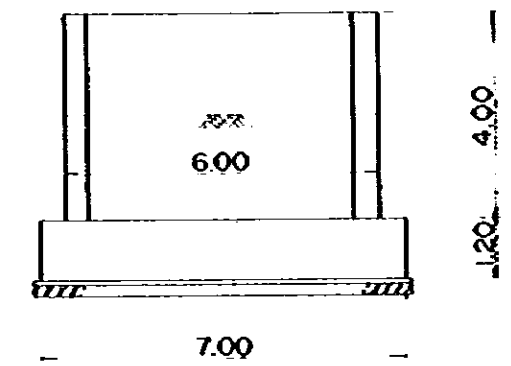
Drawing – 18

Design of Bridge

Station 384^{km} + 500^{m}

Scale 1 / 100

144.12

0.23 | 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.61

RL

4.00

1.20

3.00

SIDE VIEW   station 407^{Km}+ 900

164.73

0.23 | 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.61

RL

5.50

1.40

3.50

E VIEW   station 404^{Km}+ 505

144.12

| 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.23 |

RL

4.00

1.20

3.00

4.00

1.60

4.10

VIEW   station 407^{Km}+ 900

164.73

| 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.61 | 20.00 | 0.23 |

RL

5.50

1.80
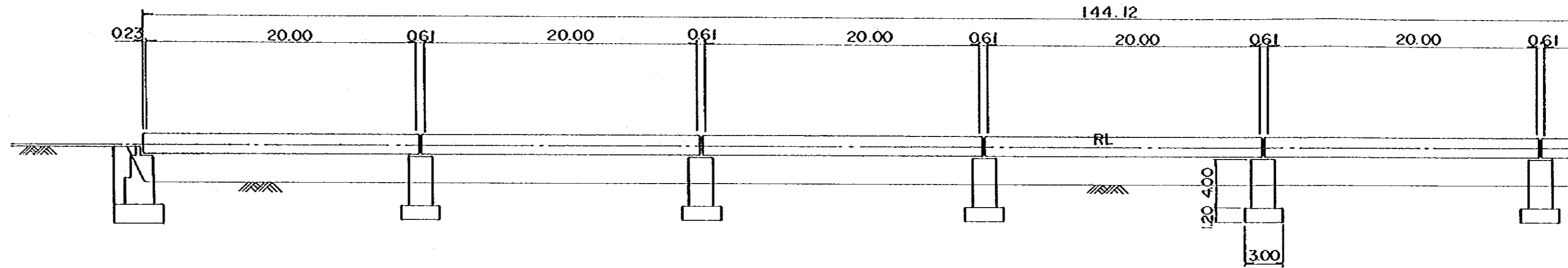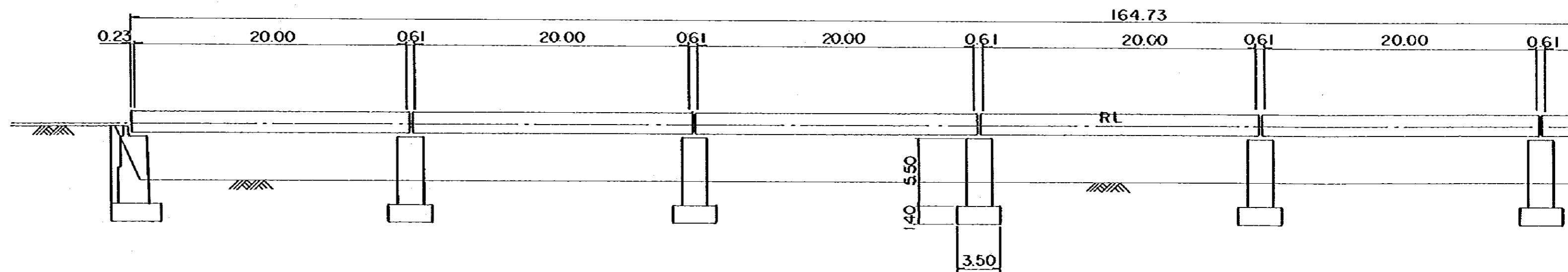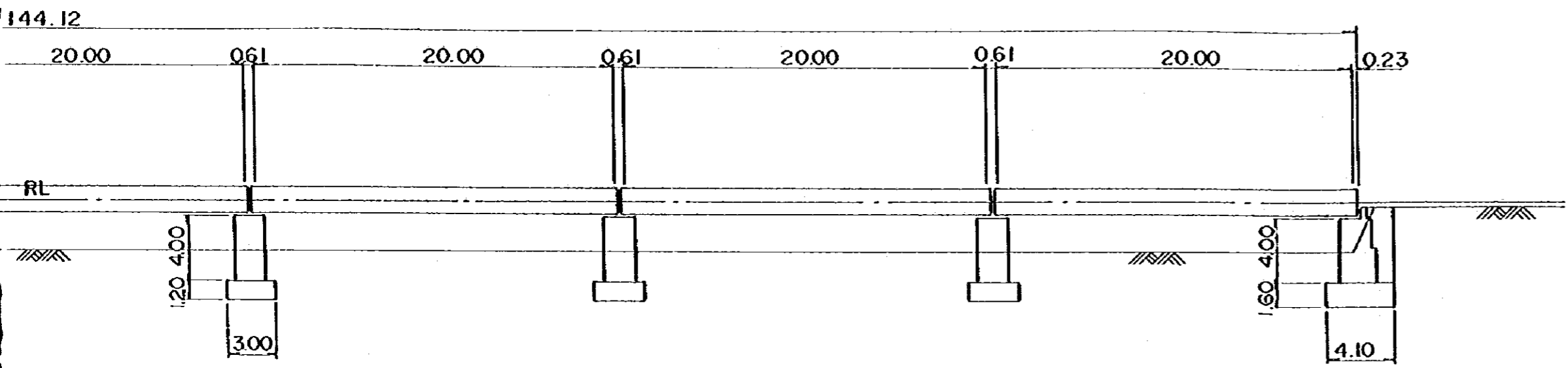
4.50
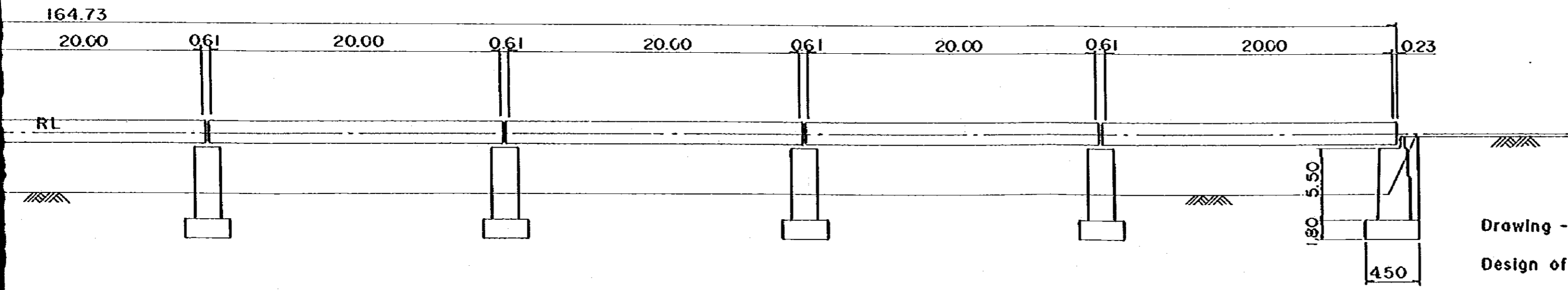
Drawing - 19

Design of Bridges

Station 404^{km}+505^{m}
        407^{km}+900^{m}

Scale 1/200

SECTION A-A S: 1/200

6.00

1:1.5

1.00

0.40

3.00

10%

0.50

SIDE VIEW S=1/200

▽ RL   ▽ FL

7.40

▽ GL

PLAN S=1/200

25.30

0.30   0.30

30°

A   A

B
B

TRACK CENTER

SECTION B-B S=1/100

0.20

0.20

0.40

3.00   3.90

0.50

0.45   3.50   0.45
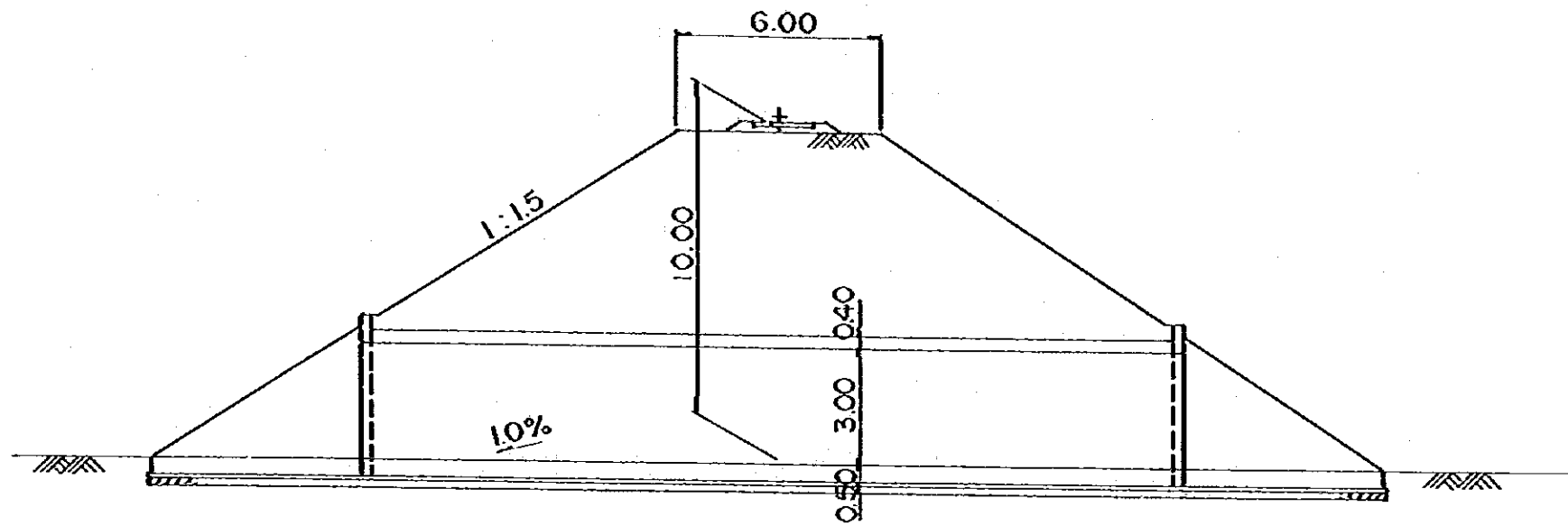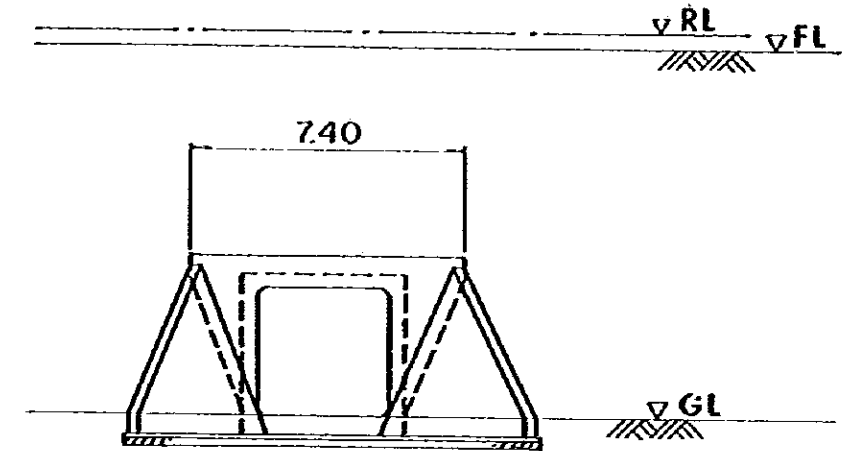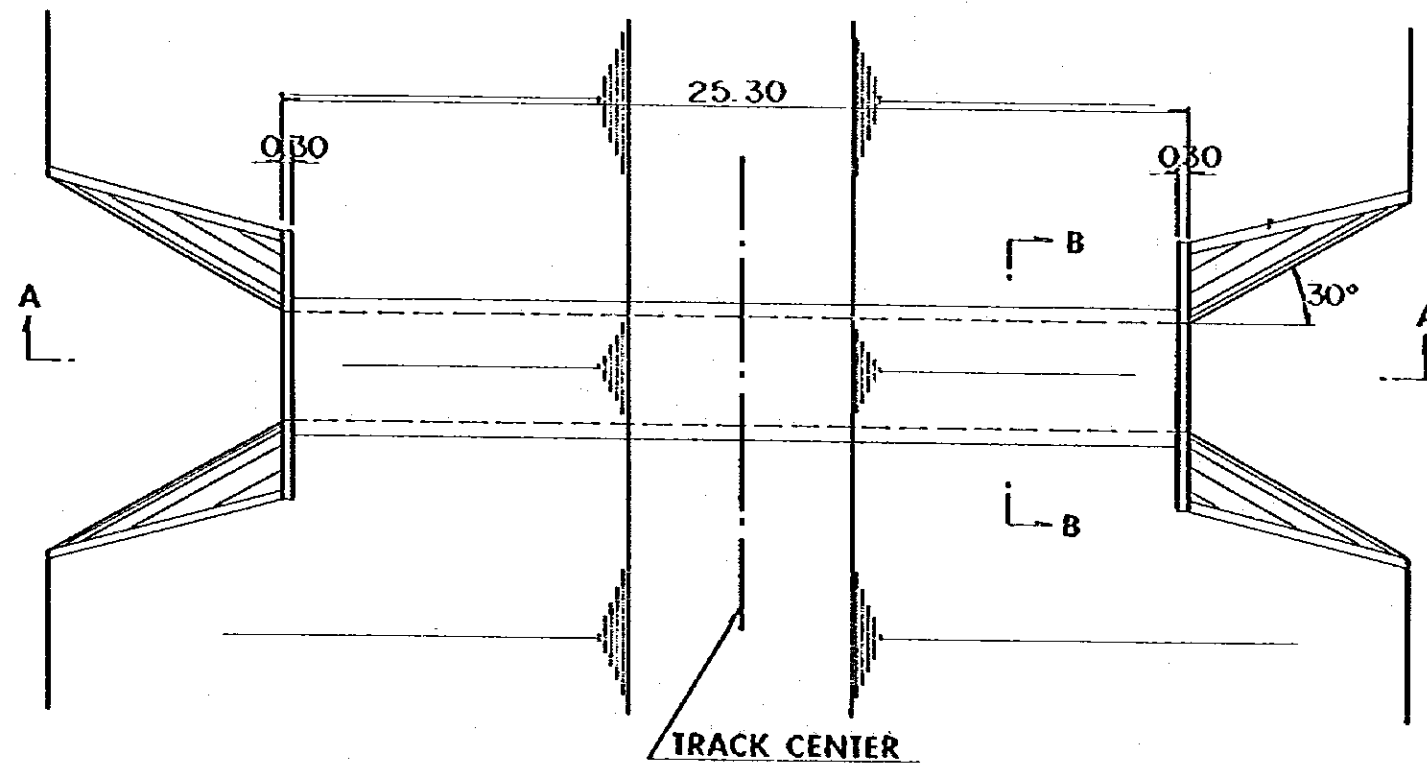
4.40
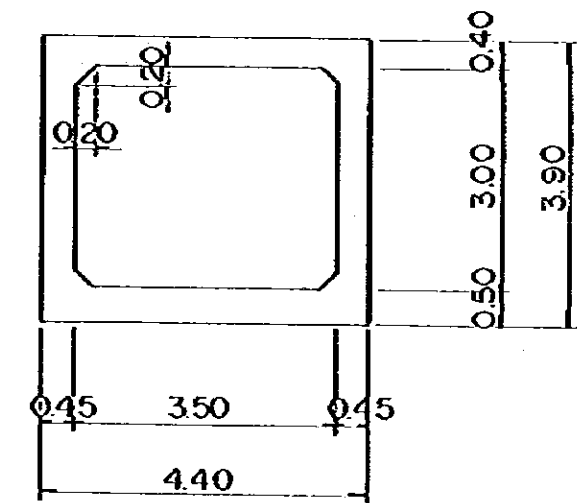
Drawing - 20

Design of Box Culvert

Station 406^{km}+500^{m}

Scale 1/100 , 1/200

SECTION A - A

0.23 20.00 0.23

1.65
0.15
RL

5.00   5.00

0.80 2.30 1.00

1.60   1.60

4.10

SECTION B - B

6.00

0.87

5.00

1.60

6.60

PLAN

B

0.50

4.10

A   A

5.00   6.00   TRACK CENTER

0.50

B
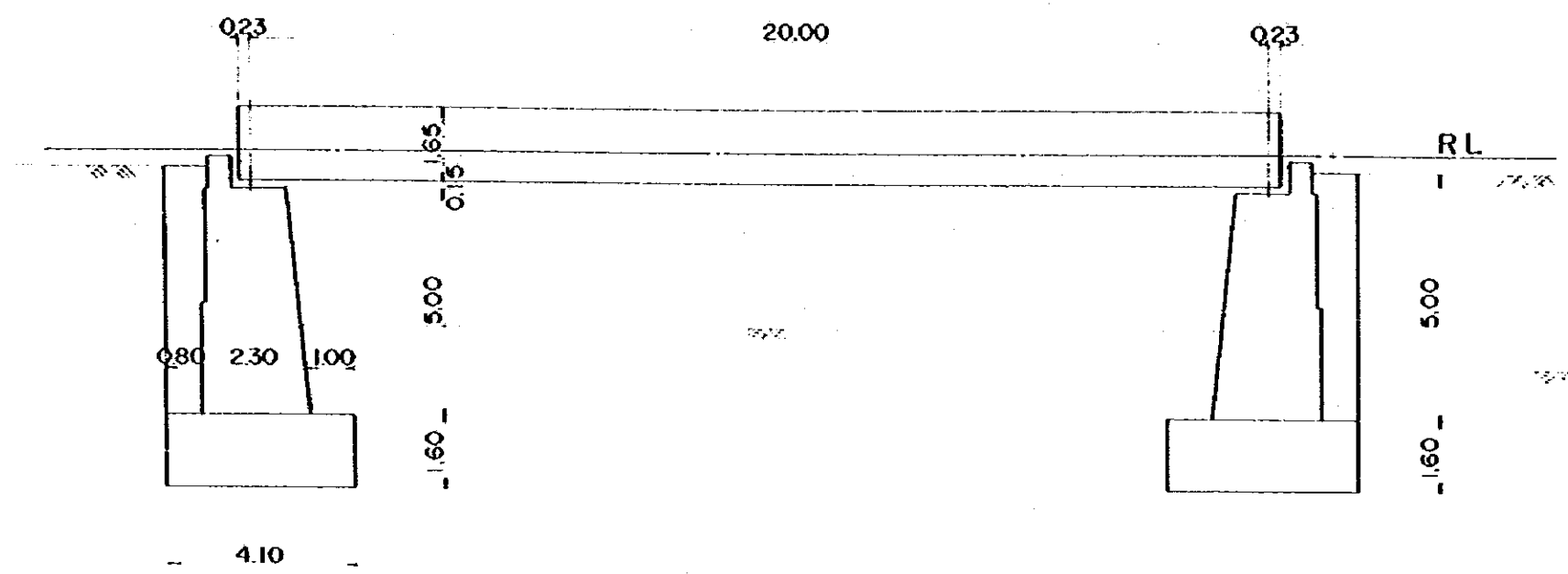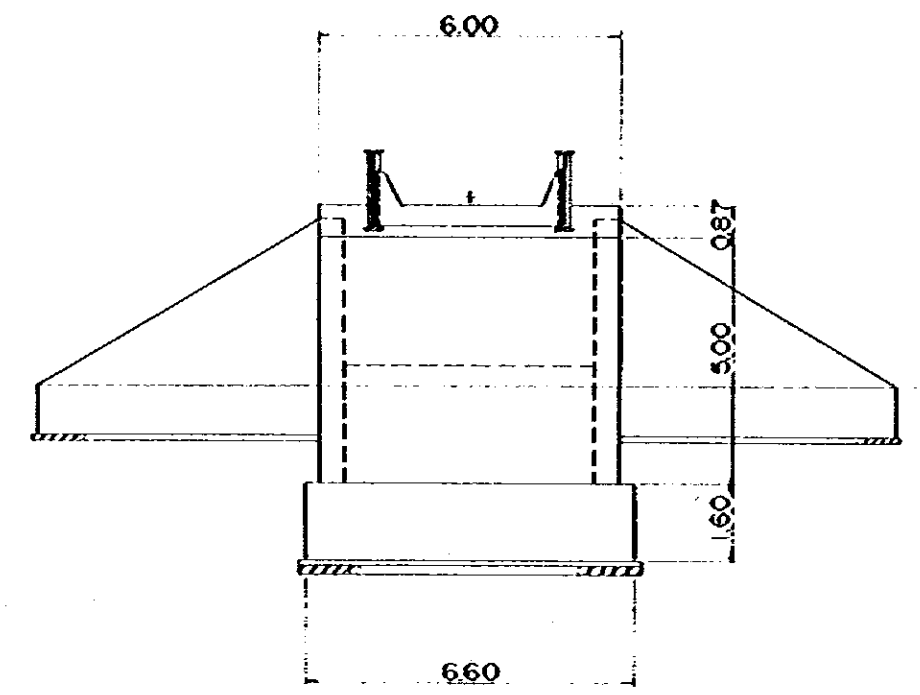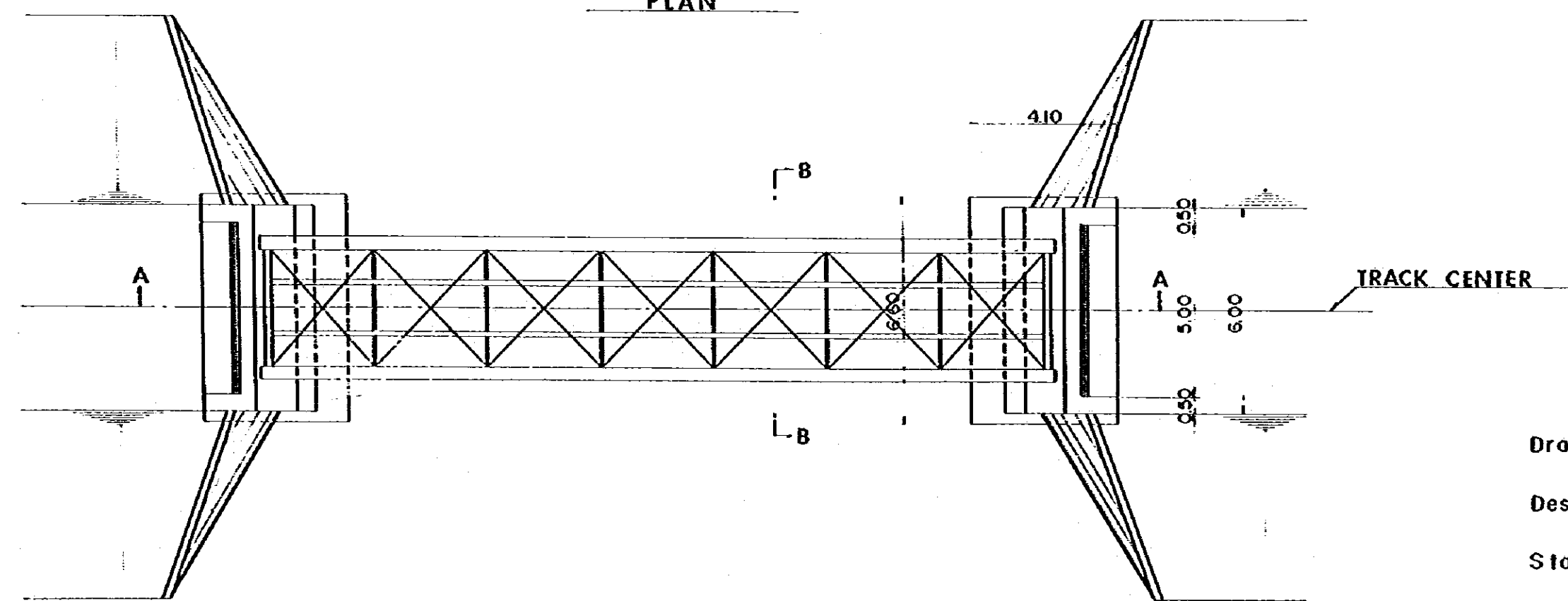
Drawing — 21

Design of Bridge

Station 397^{km}+390^{m}

Scale 1 / 100