

THE REPUBLIC OF COLOMBIA
THE BOGOTA-BUENAVENTURA ROAD PROJECT
FEASIBILITY SURVEY
DRAWING FOR EXISTING ROAD IMPROVEMENT
FINAL REPORT
MARCH 1982

JAPAN INTERNATIONAL COOPERATION AGENCY

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THE REPUBLIC OF COLOMBIA

THE BOGOTA-BUENAVENTURA ROAD PROJECT

FEASIBILITY SURVEY

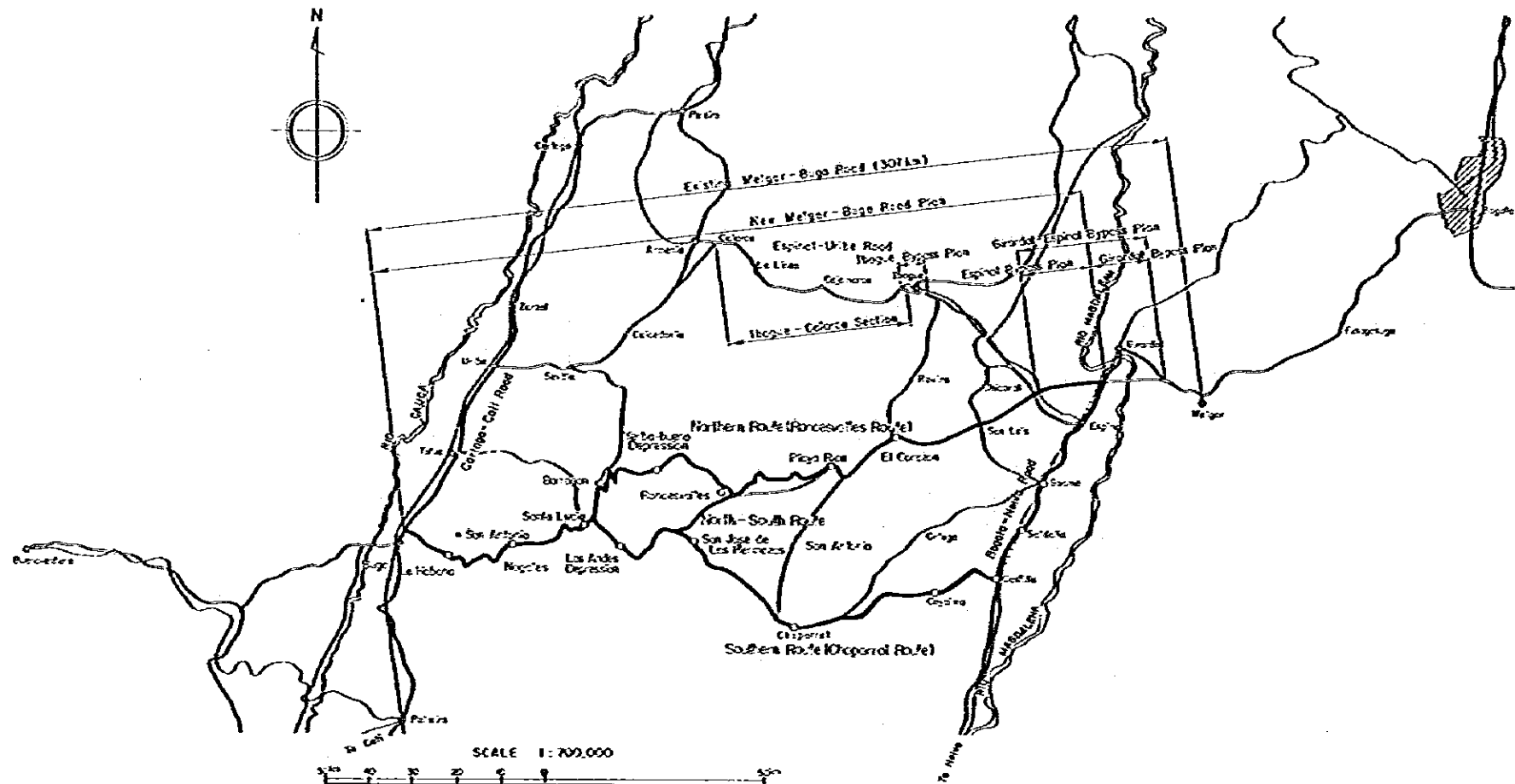
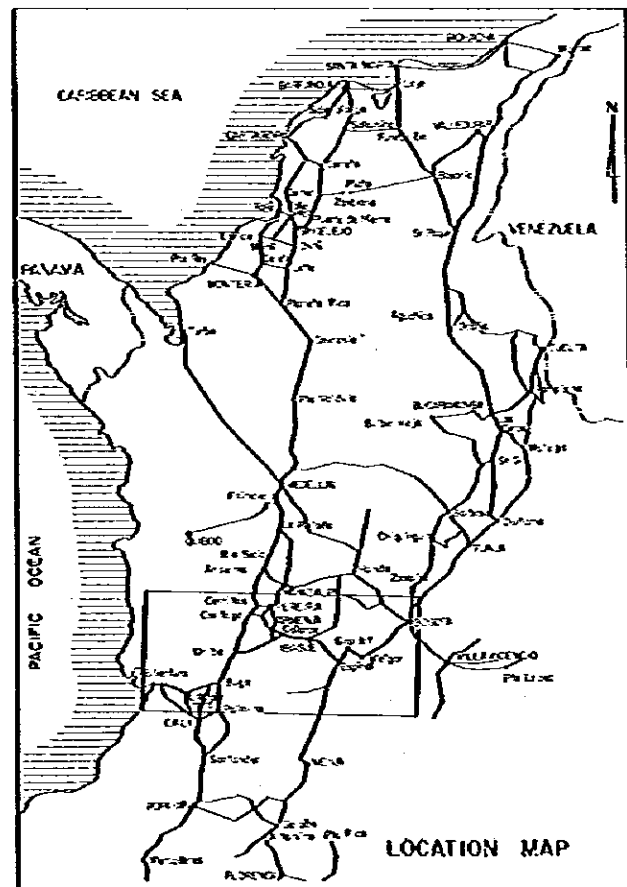
DRAWING FOR EXISTING ROAD IMPROVEMENT

FINAL REPORT

MARCH 1982

JAPAN INTERNATIONAL COOPERATION AGENCY

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- LEGEND**
- Alternative Route
 - - - Gravel Road
 - Paved Road
 - Railways
 - LS-1 Landslide Area Number
 - ⊖ Landslide

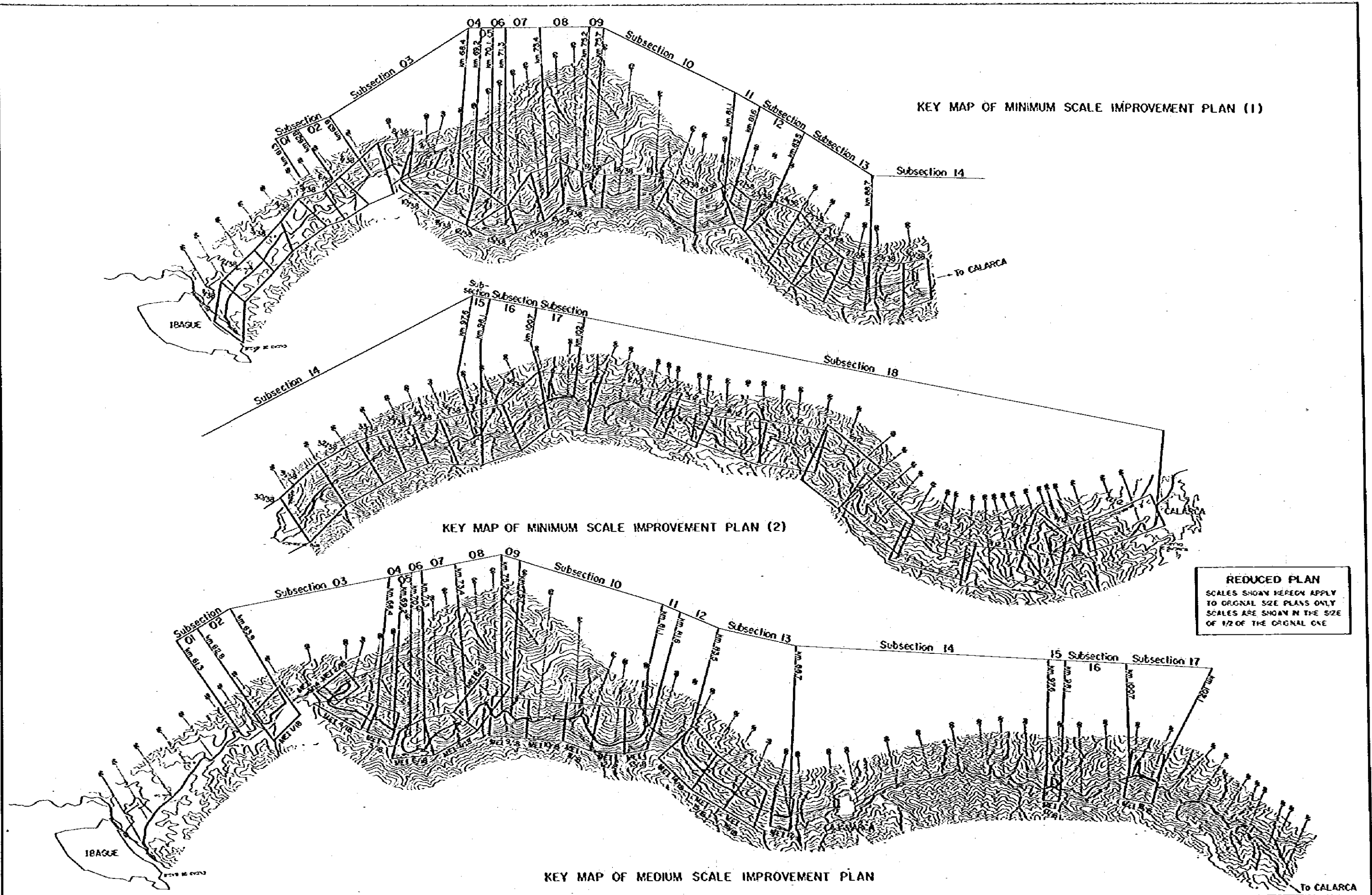
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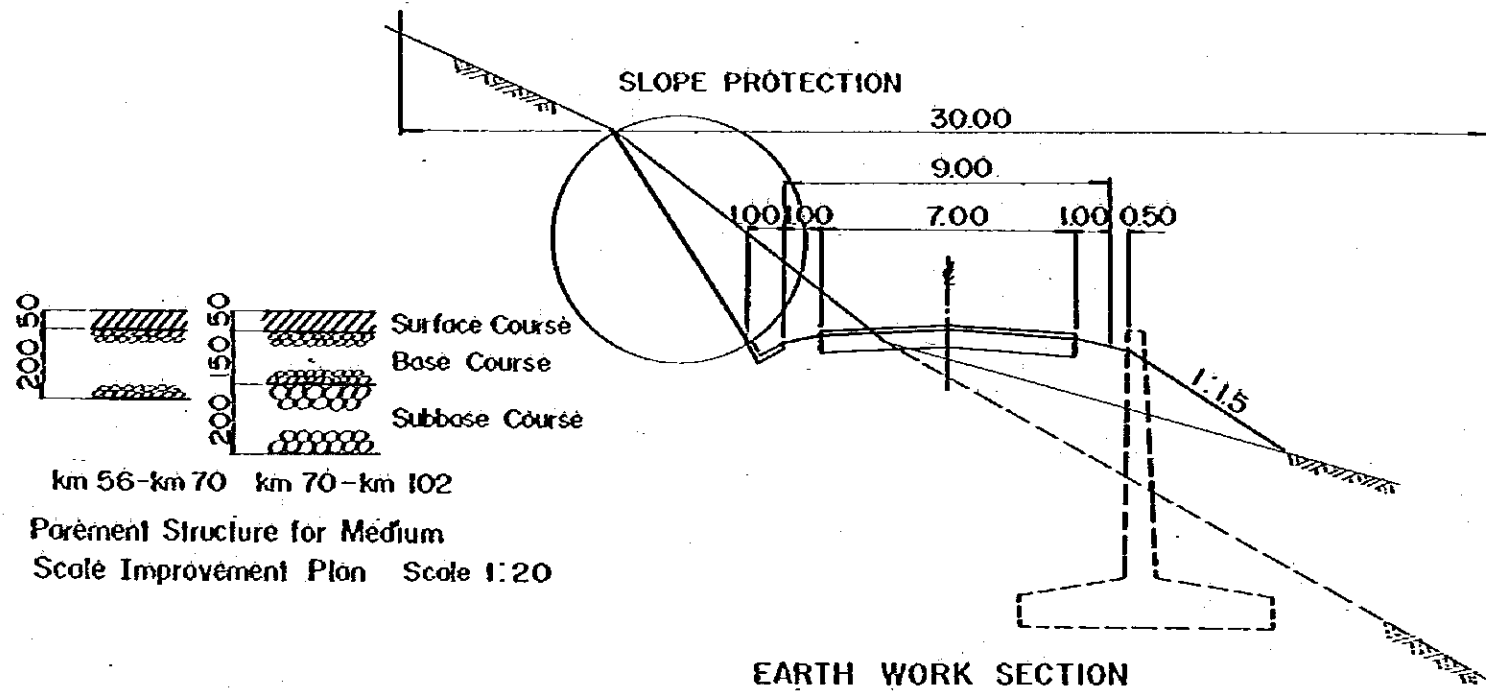
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

I MINIMUM AND MEDIUM SCALE IMPROVEMENT PLAN

| | | |
|--|---|---|
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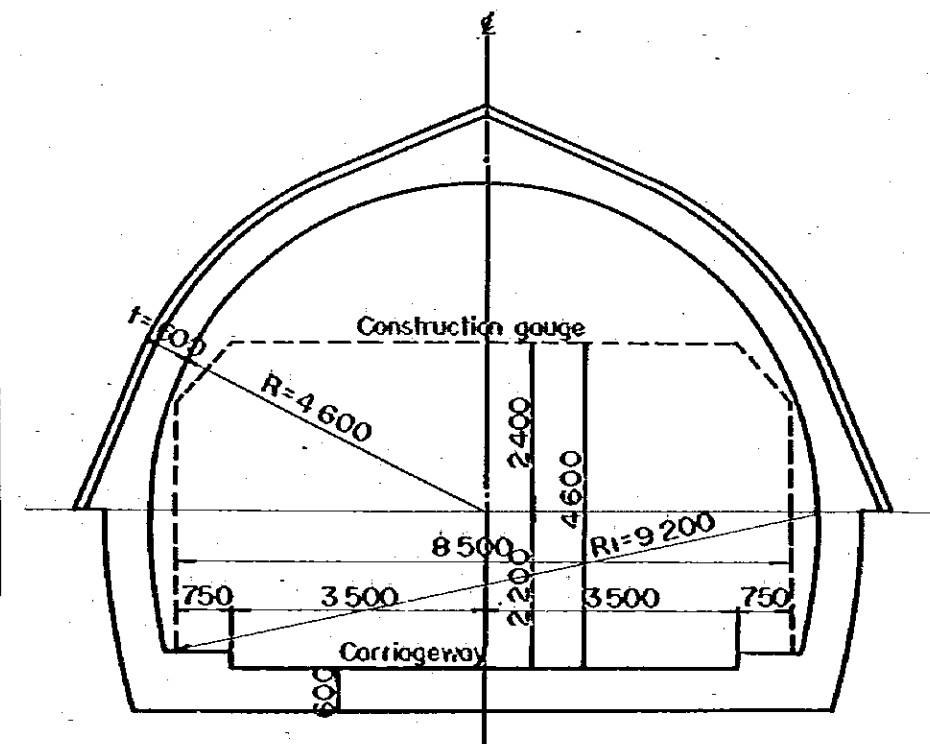
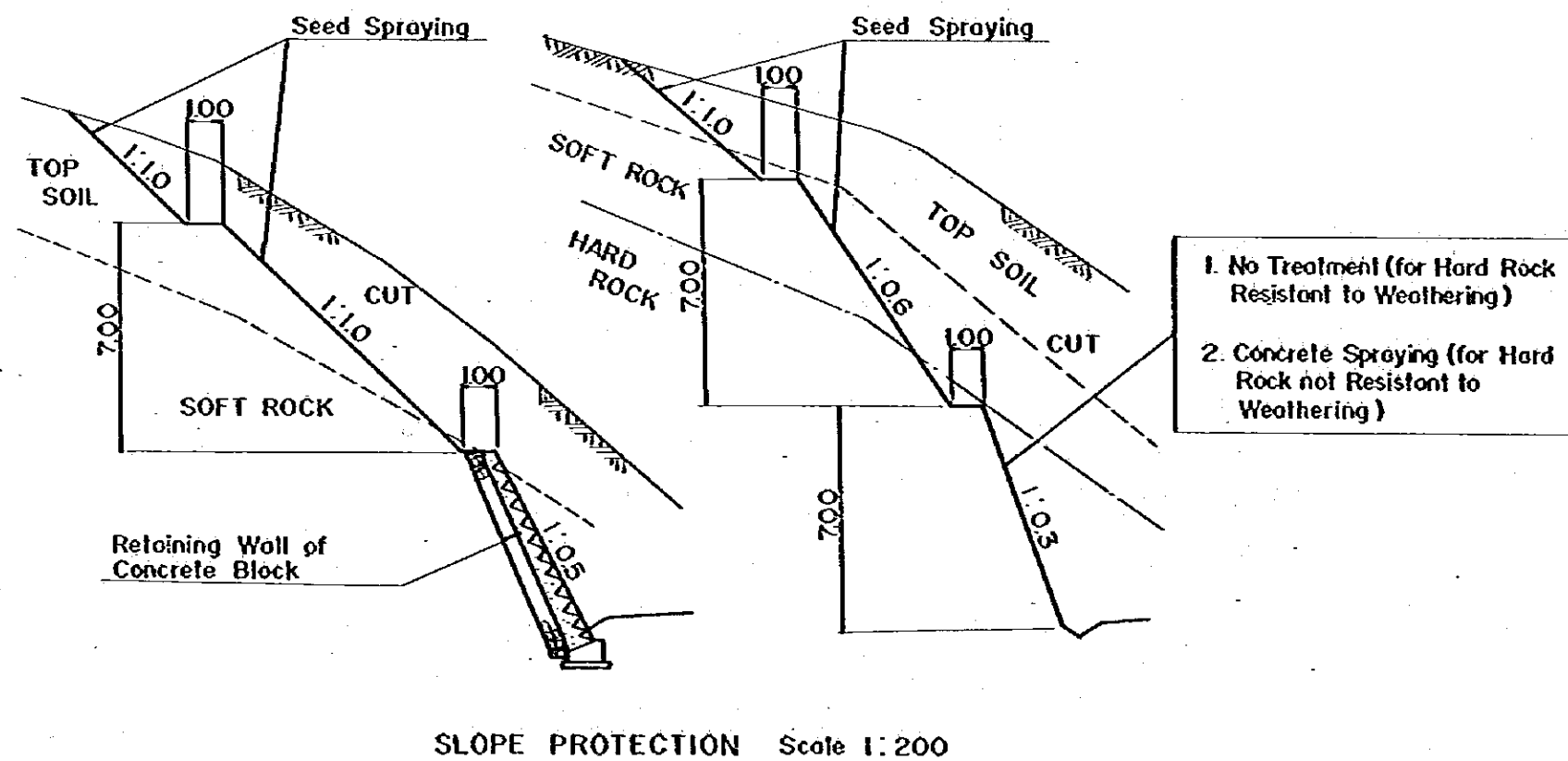
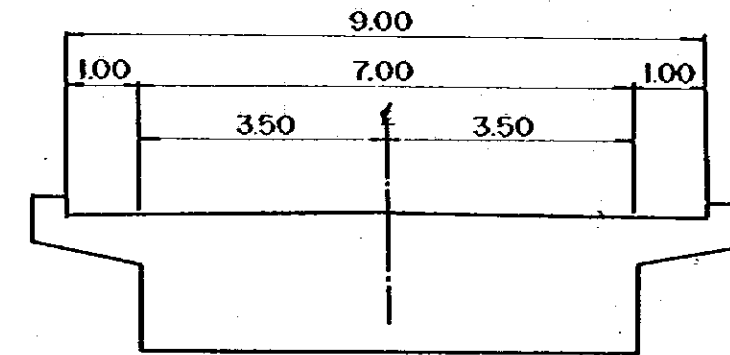
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|---------|---------------------------------------|--|----------------|--------------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | KEY MAP OF MINIMUM SCALE AND MEDIUM SCALE IMPROVEMENT PLANS | SCALE 1:50,000 | DATE MARCH 1982 |
| | | | | SHEET No. 2 OF 135 |



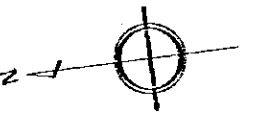
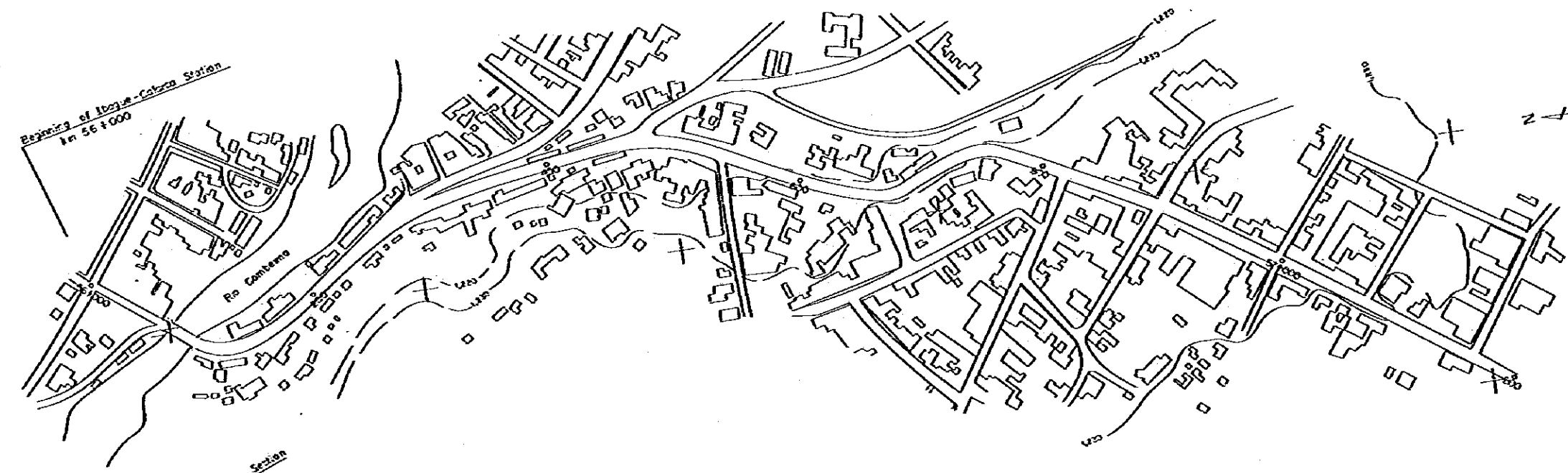
Surface Course
Base Course
Subbase Course

200 50
150 50
200

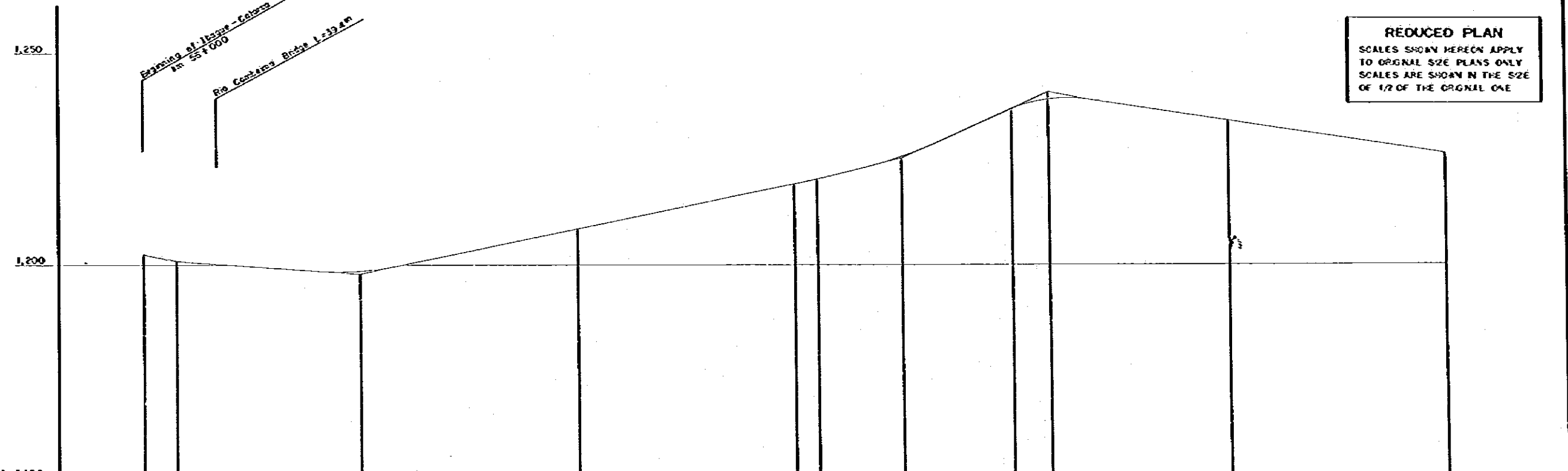
km 56-km 70 km 70-km 102
Pavement Structure for Medium
Scale Improvement Plan Scale 1:20



| | | | | |
|---------|---------------------------------------|--|--------------------|--------------------|
| M O P T | BOGOTÁ — BUENAVENTURA ROAD PROJECT | TYPICAL CROSS SECTION OF MINIMUM SCALE AND MEDIUM SCALE IMPROVEMENT | SCALE 1:100, 1:200 | DATE MARCH 1982 |
| | | | | SHEET No. 3 OF 135 |

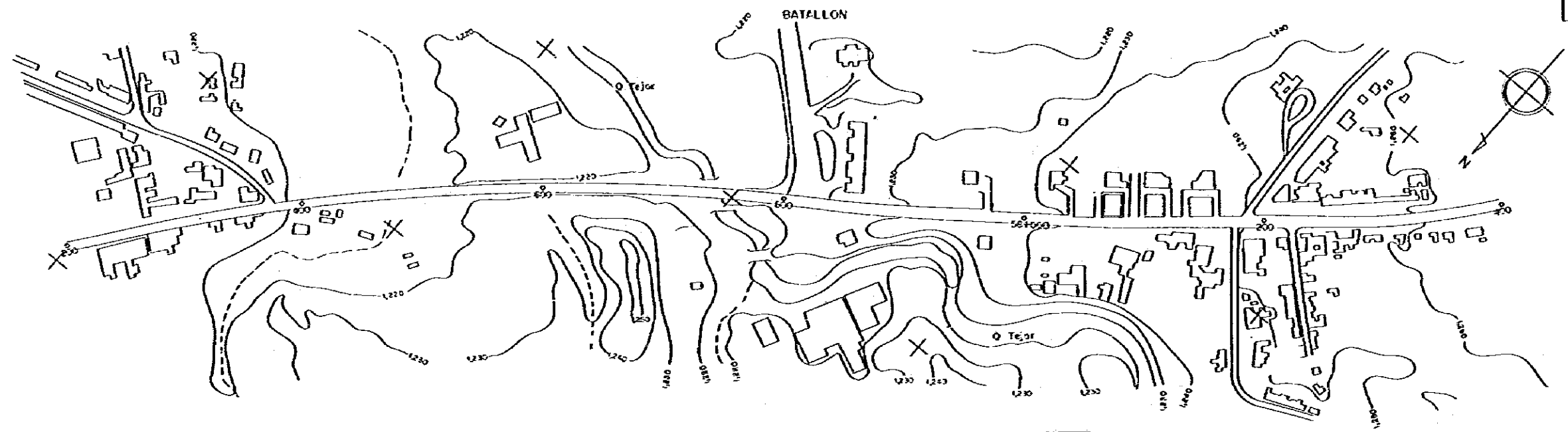


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 TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE
 OF 1/2 OF THE ORIGINAL ONE

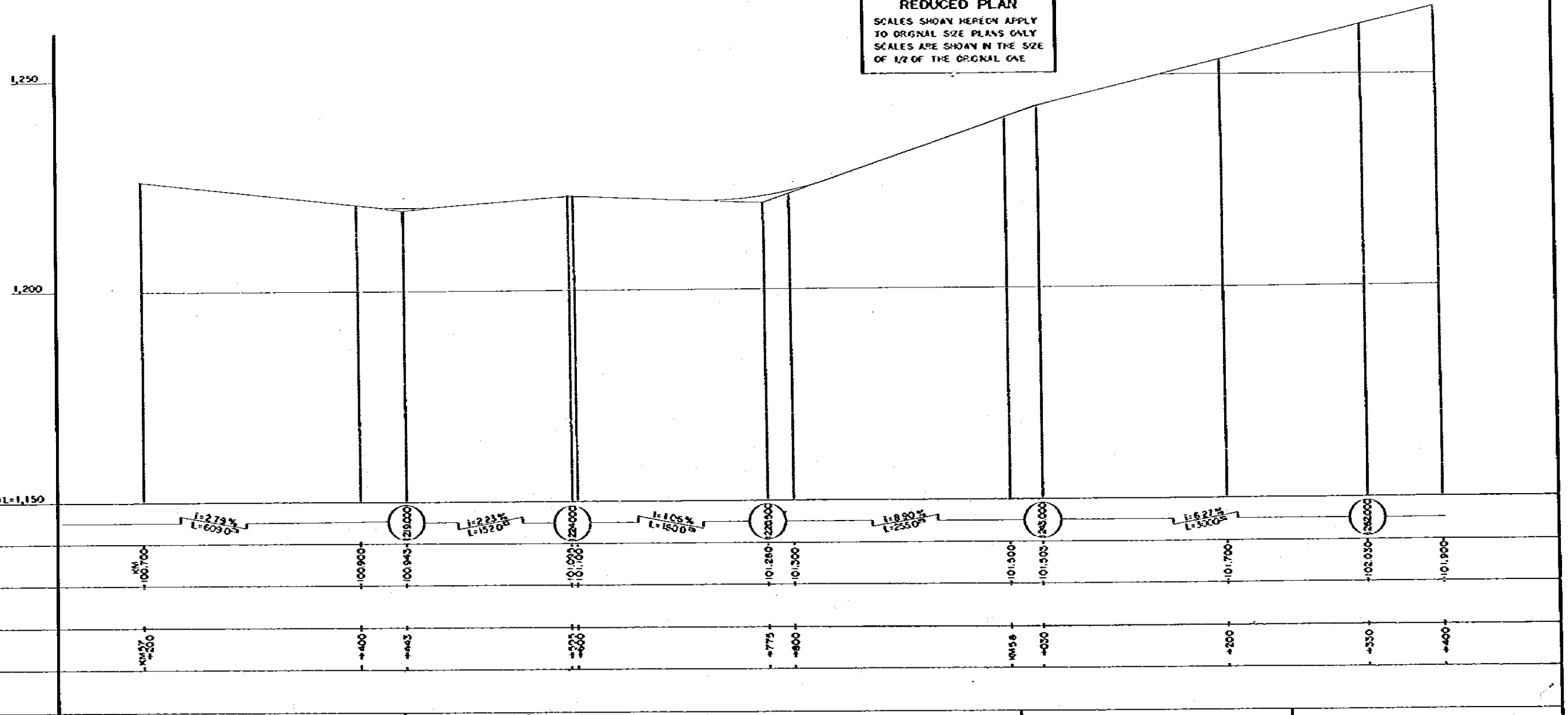


| | |
|-----------------------|---|
| DATUM LINE DL=1,150 | |
| VERTICAL GRADIENT | |
| ACCUMULATIVE DISTANCE | 98,500 98,530 98,700 99,000 100,100 100,126 100,198 100,300 100,334 100,500 100,700 |
| IN - SITU KM POST | KM 56 +000 +200 +400 +600 +826 +988 +800 +034 +207 +200 |
| CONSTRUCTION KM POST | KM 56 +000 +200 +400 +600 +826 +988 +800 +034 +207 +200 |
| HORIZONTAL CURVE | |

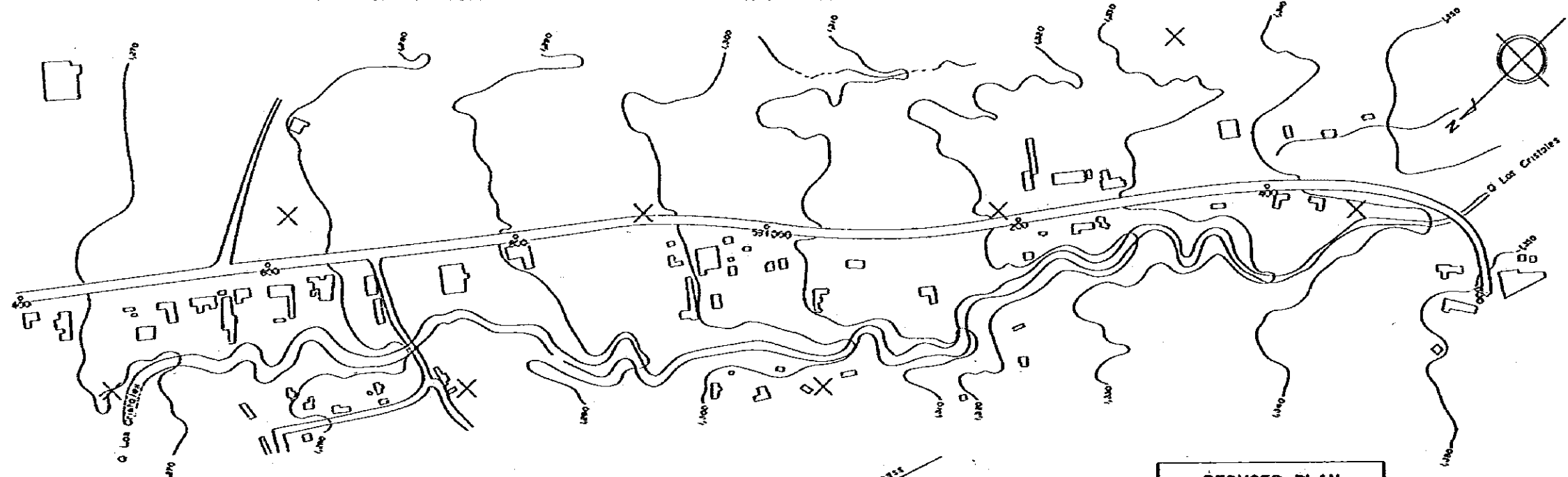
| | | | | |
|----------------|---------------------------------------|---|---------------------------|--------------------|
| M O P T | BOGOTÁ — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (1) KM 56+000 — KM 57+200 | SCALE H=1:2000 V=1:500 | DATE MARCH 1982 |
| | | | | SHEET No. 4 OF 135 |



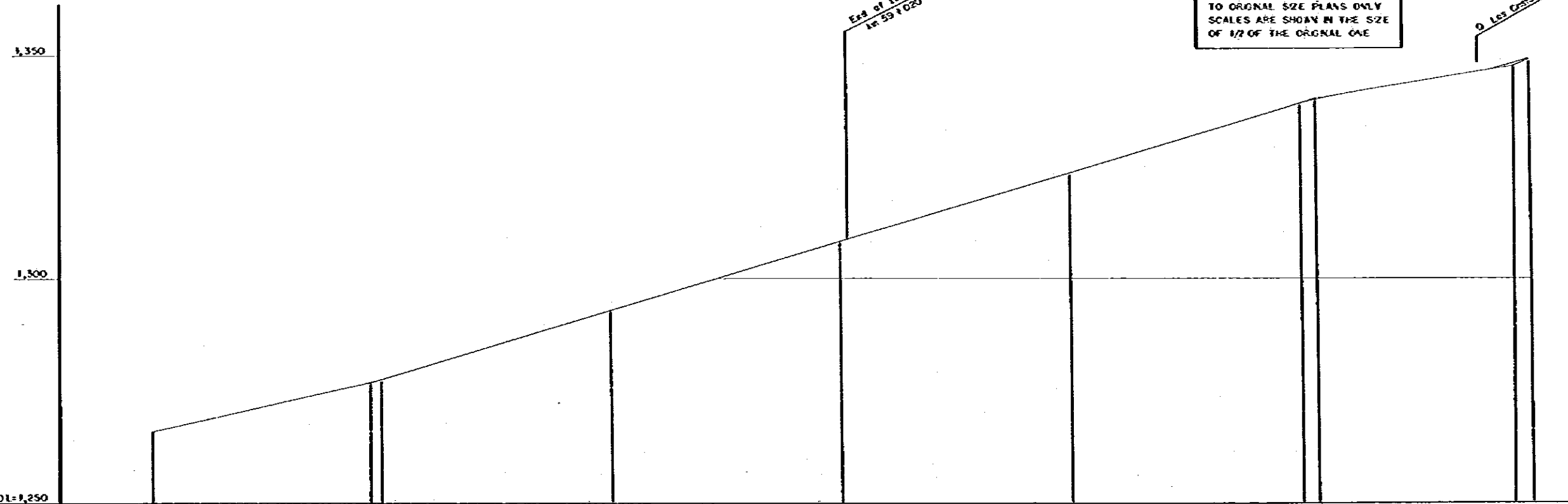
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL CASE



| | | | | | | | | | | | |
|-----------------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|
| DATUM LINE | DL=1,150 | | | | | | | | | | |
| VERTICAL GRADIENT | | | | | | | | | | | |
| ACCUMULATIVE DISTANCE | 100.700 | 100.900 | 100.945 | 101.000 | 101.080 | 101.130 | 101.200 | 101.300 | 101.500 | 101.900 | |
| IN - SITU KM POST | 7200 | 400 | 443 | 723 | 775 | 800 | 905 | 950 | 200 | 350 | 400 |
| CONSTRUCTION KM POST | 7200 | 400 | 443 | 723 | 775 | 800 | 905 | 950 | 200 | 350 | 400 |
| HORIZONTAL CURVE | | | | | | | | | | | |

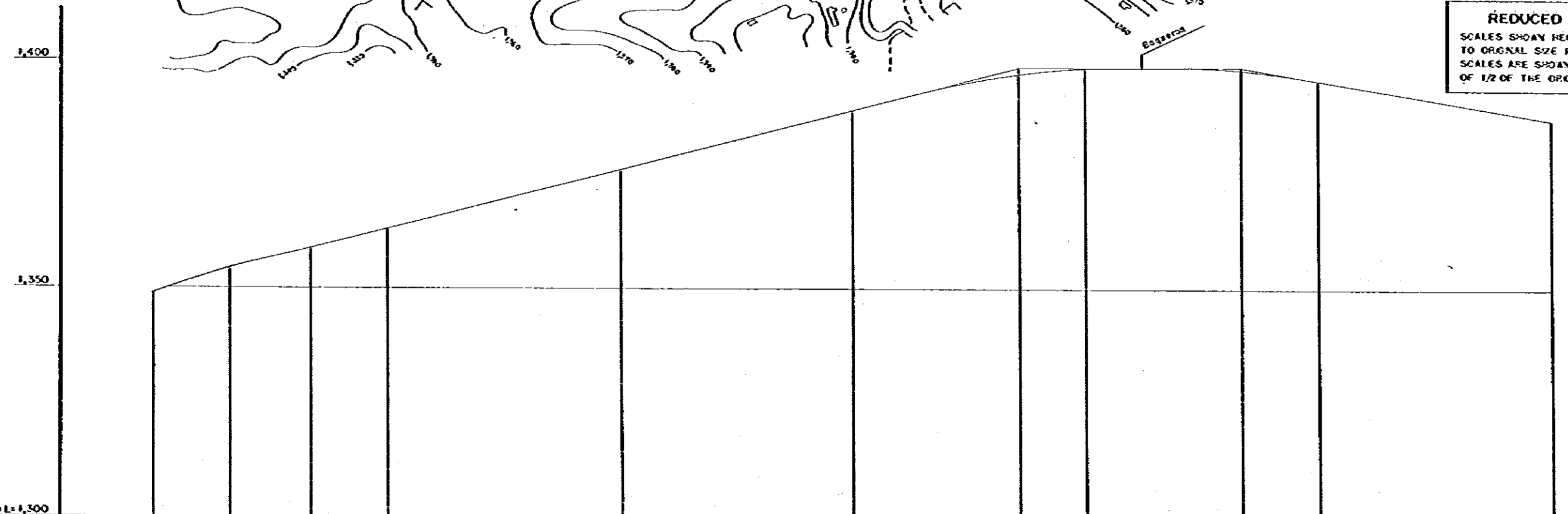


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 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

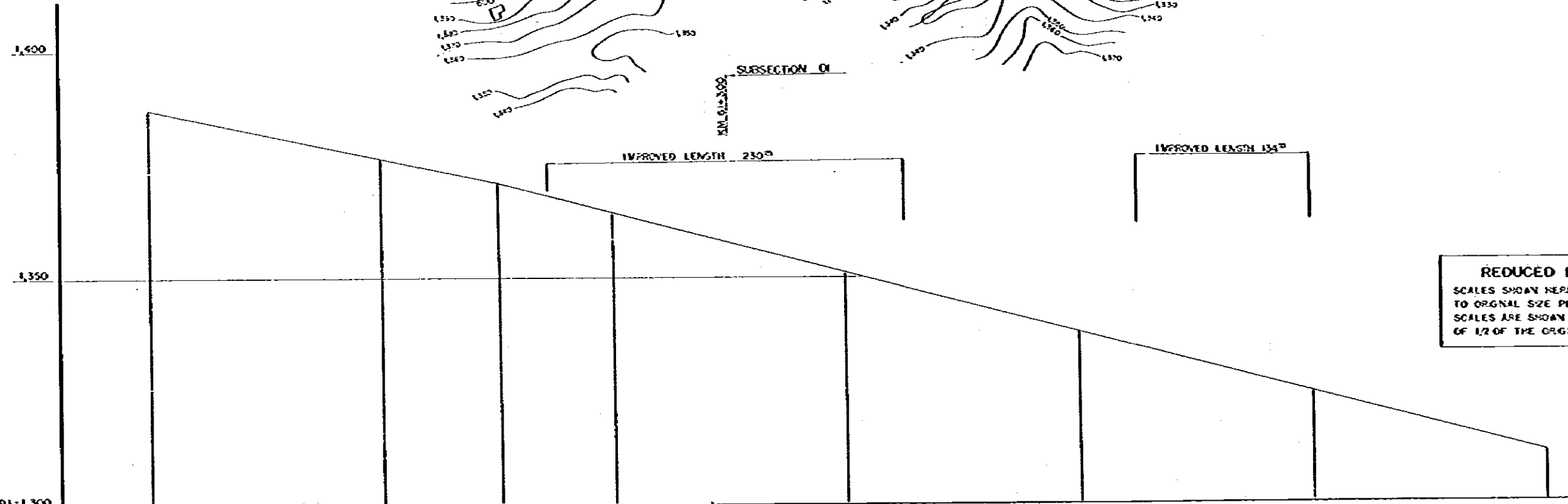
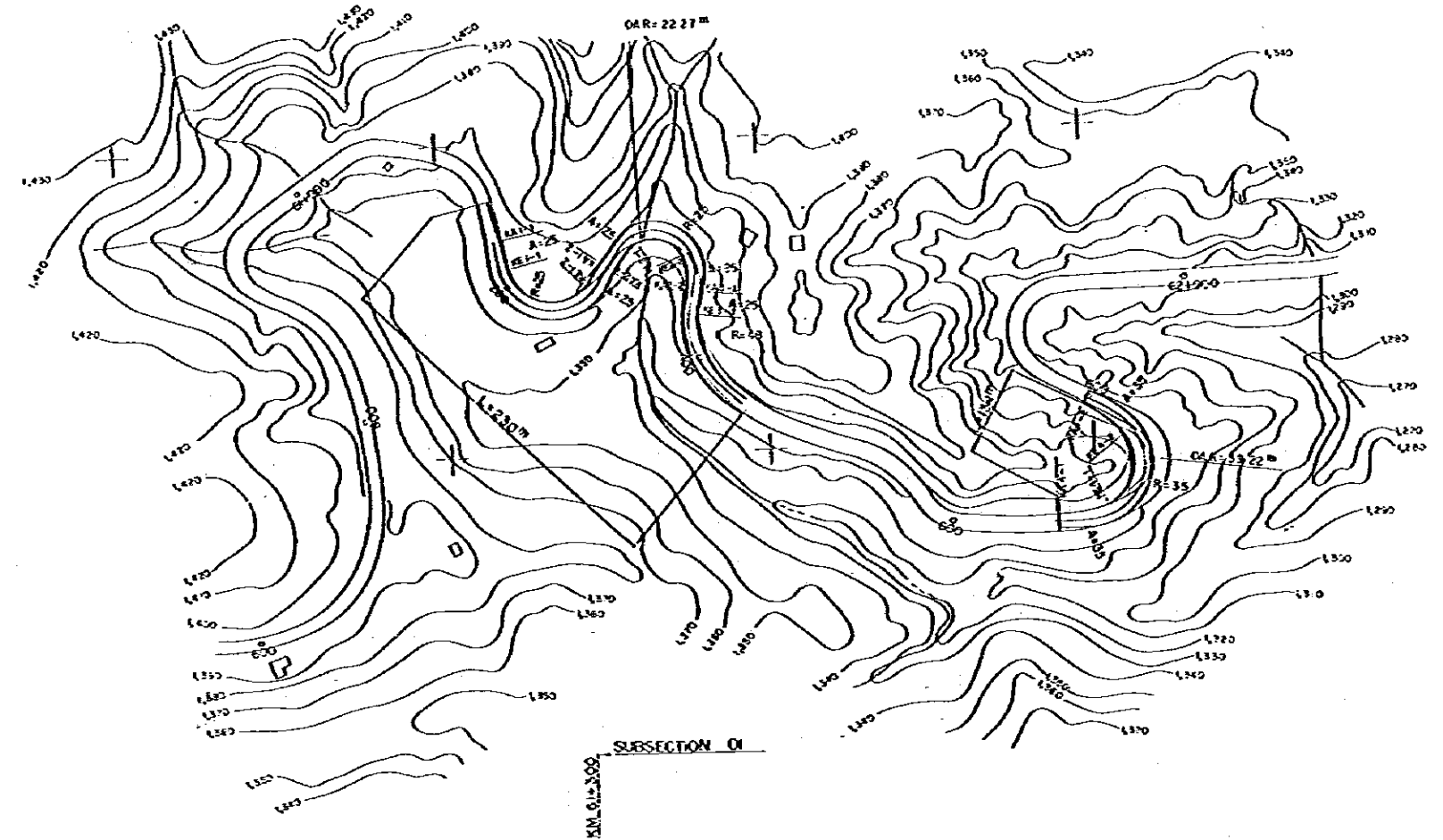


| | |
|-----------------------|--|
| DATUM LINE | DL=1,250 |
| VERTICAL GRADIENT | $L=577\%$ $L=260\%$ |
| ACCUMULATIVE DISTANCE | 15,300 102,400 102,100 102,300 102,201 100,201 100,100 |
| IN-SITU KM POST | |
| CONSTRUCTION KM POST | KM 58+400 +500 +600 +700 +800 +900 +1000 |
| HORIZONTAL CURVE | |

| | | | | |
|---------|------------------------------------|---|----------------------------|--------------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (3) KM 58+400 — KM 59+600 | SCALE H=1:2000 V=1: 500 | DATE MARCH 1982 |
| | | | | SHEET No. 6 OF 135 |

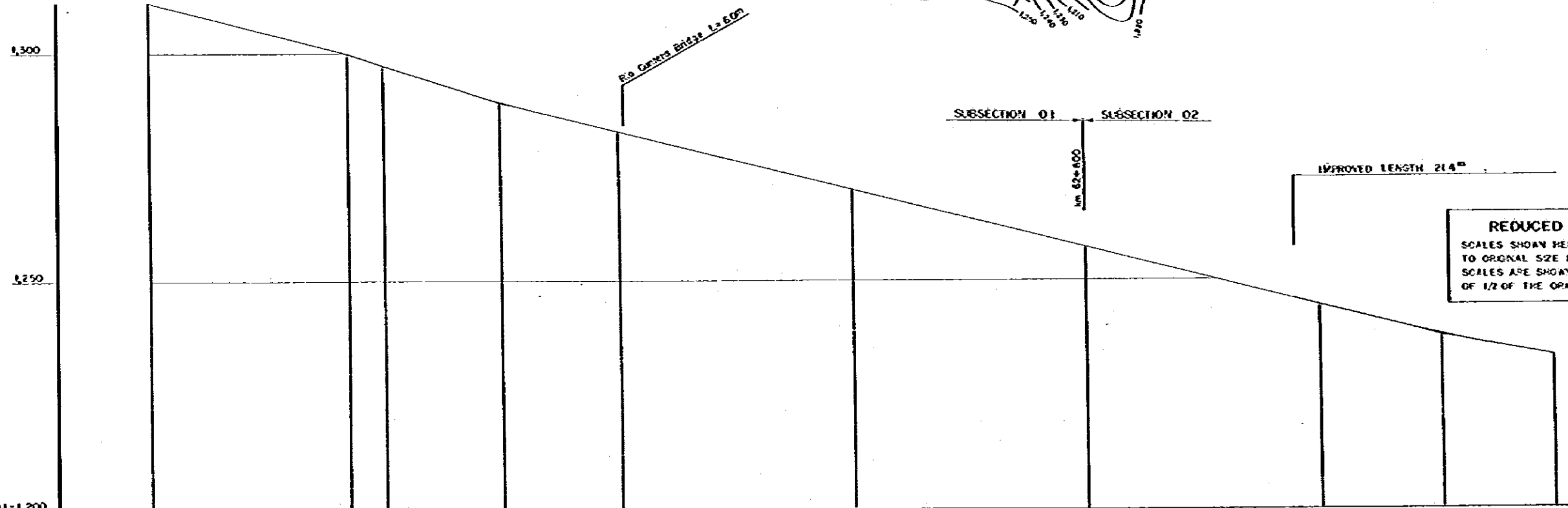
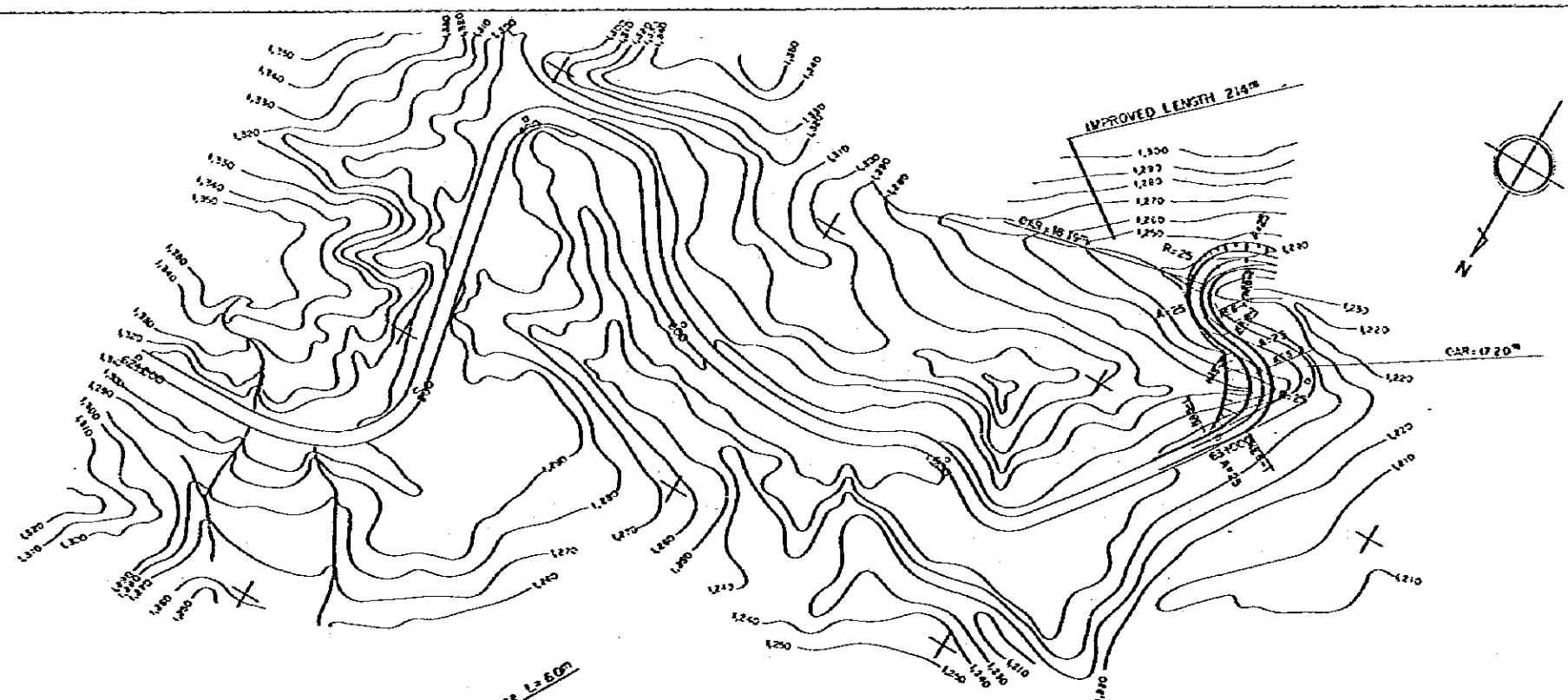


| | | | | | | | | | | |
|-----------------------|------------------|-------|------------------|-------|------------------|-------|-------------------|-------|-------------------|-------|
| DATUM LINE | DL = 1,300 | | | | | | | | | |
| VERTICAL GRADIENT | -1.875% L=810 | | -1.500% L=700 | | -1.659% L=670 | | -1.012% L=1730 | | -1.365% L=2260 | |
| ACCUMULATIVE DISTANCE | 0+000 | 0+164 | 0+234 | 0+300 | 0+350 | 0+400 | 0+574 | 0+600 | 0+714 | 0+800 |
| IN - SITU KM POST | | | | | | | | | | |
| CONSTRUCTION KM POST | +600 | +684 | +734 | +800 | +975 | +1016 | +1000 | +1000 | +1014 | +1000 |
| HORIZONTAL CURVE | | | | | | | | | | |



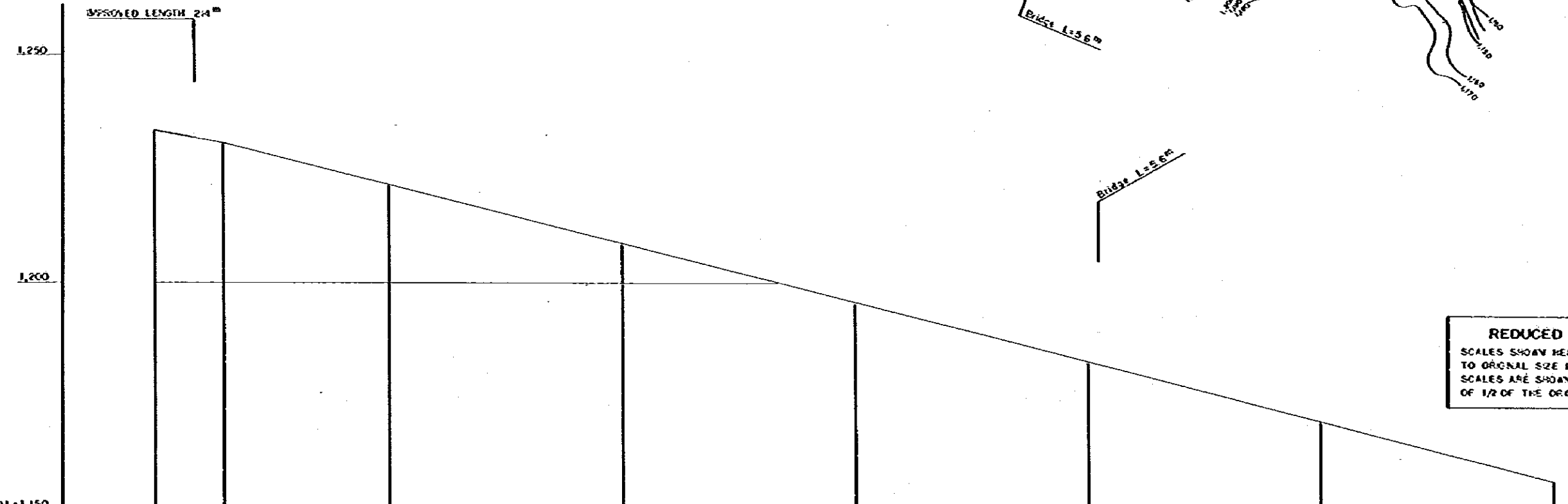
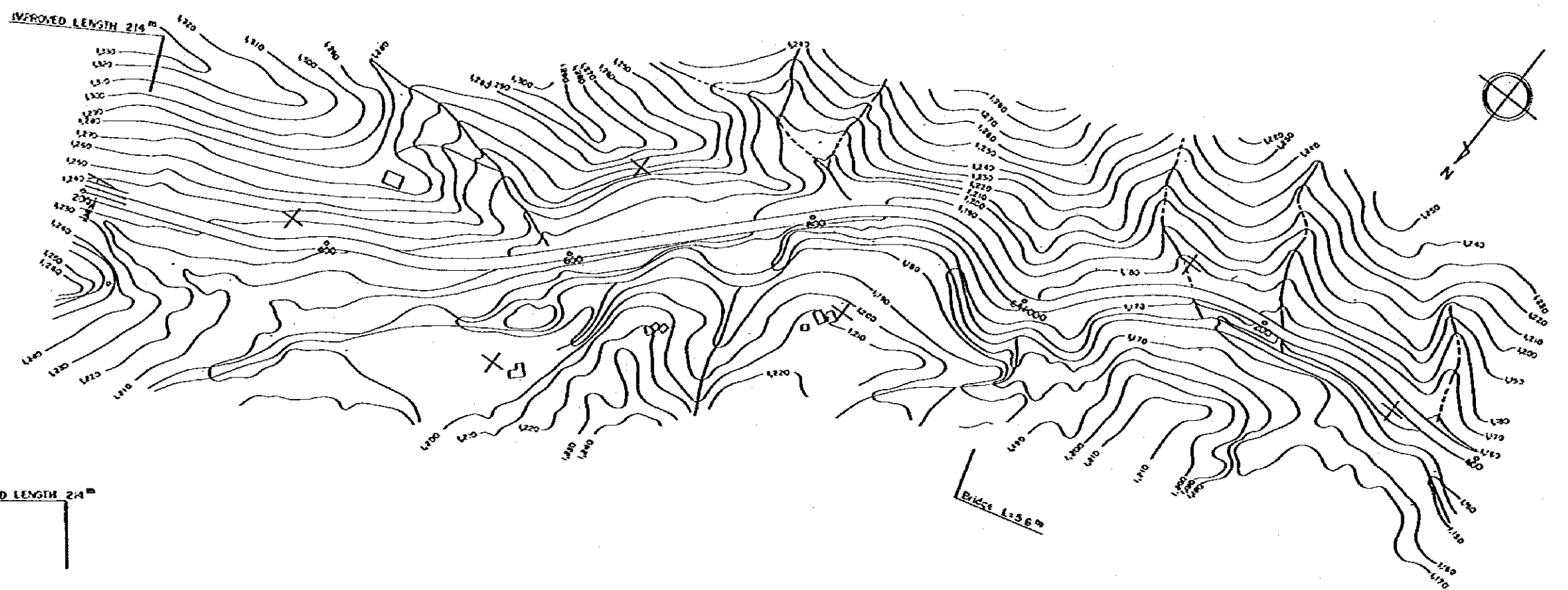
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

| | |
|-----------------------|---|
| DATUM LINE | DL=1,300 |
| VERTICAL GRADIENT | |
| ACCUMULATIVE DISTANCE | 0+300, 0+500, 0+692, 0+700, 0+900, 0+1000, 0+1050, 0+10500, 0+10550 |
| IN-SITU KM POST | |
| CONSTRUCTION KM POST | +800, +801, +802, +800, +800, +800, +800, +800, +800, +800 |
| HORIZONTAL CURVE | |



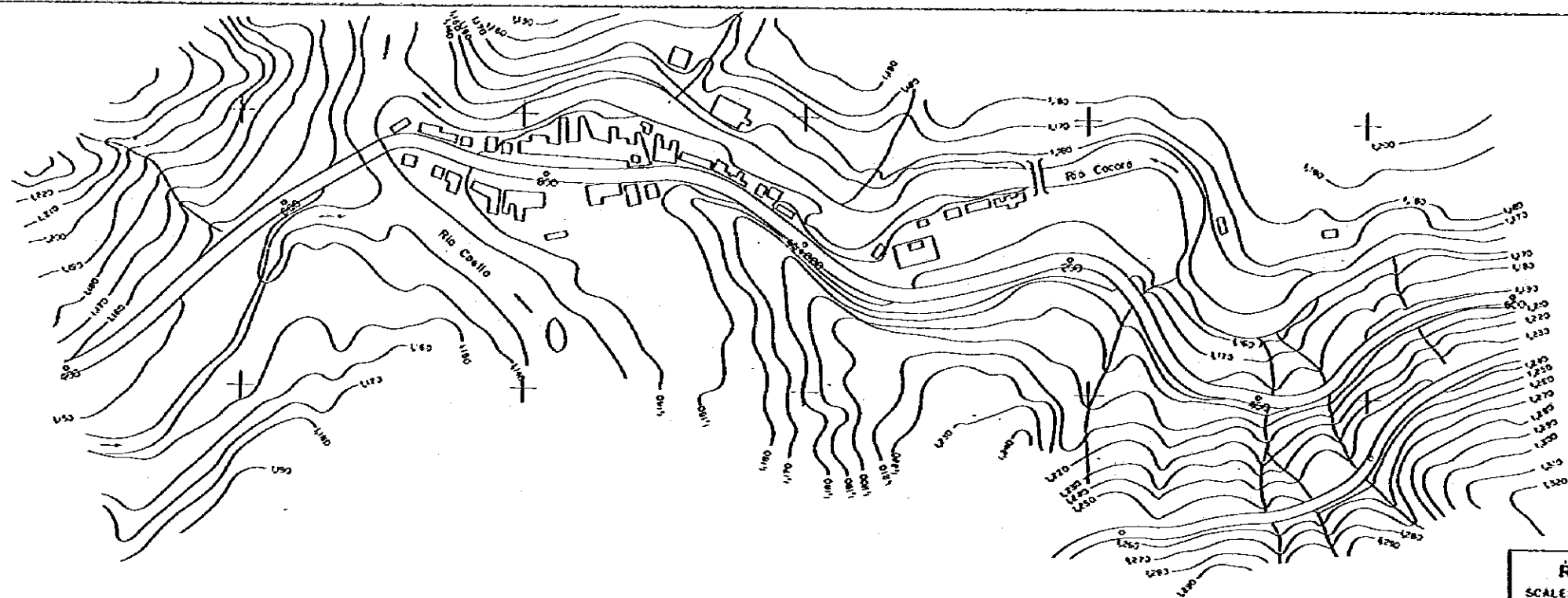
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

| | | | | | | | | | | |
|------------------------------|---------------------|--------|---------------------|--------|---------------------|--------|---------------------|--------|--------|--------|
| DATUM LINE DL=1,200 | | | | | | | | | | |
| VERTICAL GRADIENT | -1.665% L=1067.0 | | -1.704% L=1310.0 | | -1.633% L=8030.0 | | -1.497% L=1570.0 | | | |
| ACCUMULATIVE DISTANCE | 105500 | 105600 | 105700 | 105800 | 105900 | 106000 | 106100 | 106200 | 106300 | 106400 |
| IN-SITU KM POST | | | | | | | | | | |
| CONSTRUCTION KM POST | 29.114 | 52.1 | 75.1 | 98.1 | 121.1 | 144.1 | 167.1 | 190.1 | 213.1 | 236.1 |
| HORIZONTAL CURVE | | | | | | | | | | |

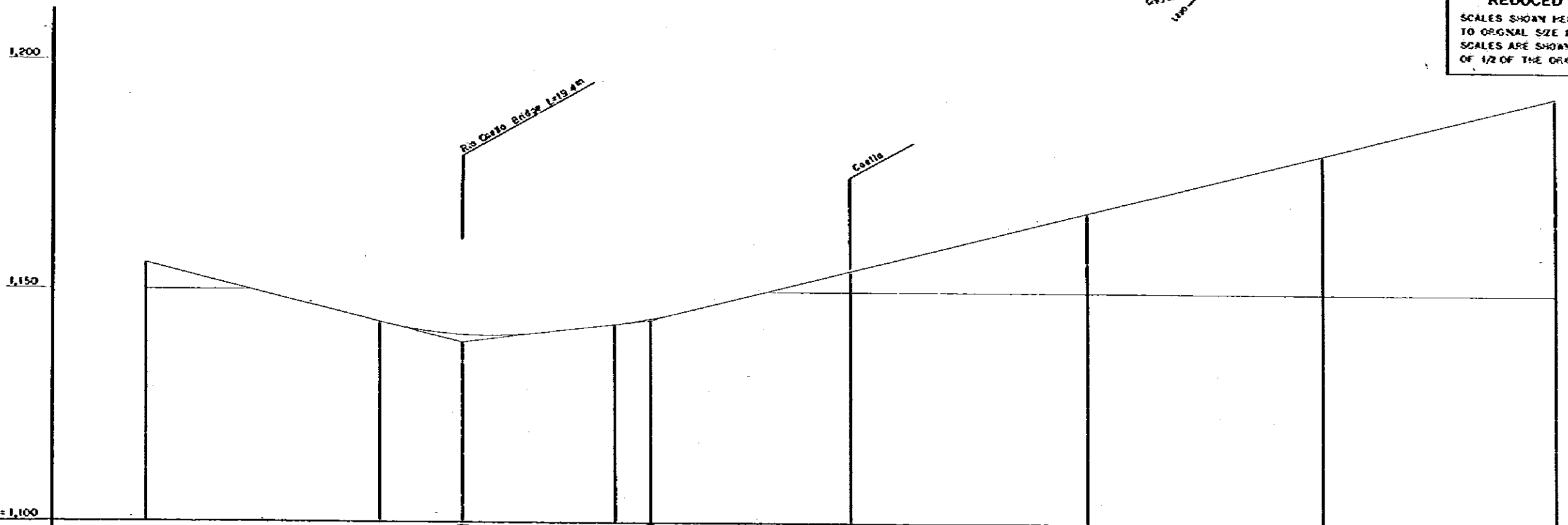


REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

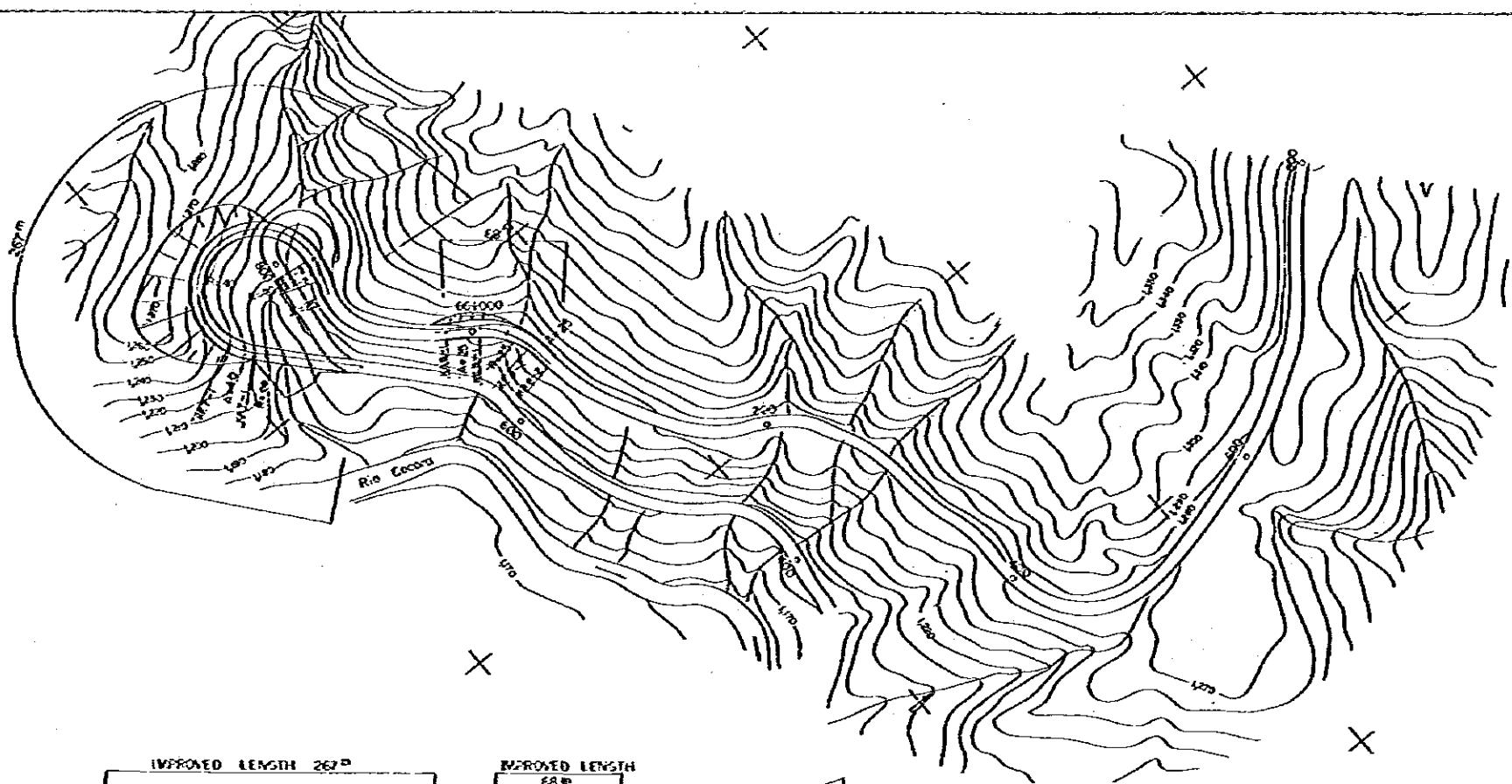
| | | | | | | | | |
|-----------------------|-------------------|-------|-------------------|--------|--------|-------------------|--------|--------|
| DATUM LINE DL=1,150 | | | | | | | | |
| VERTICAL GRADIENT | I=4.97% L=370m | | I=6.35% L=740m | | | I=5.57% L=670m | | |
| ACCUMULATIVE DISTANCE | 0+000 | 0+370 | 0+740 | 0+1110 | 0+1480 | 0+1850 | 0+2520 | 0+3190 |
| IN - SITU KM POST | | | | | | | | |
| CONSTRUCTION KM POST | +200 | +260 | +400 | +600 | +800 | +929 | +964 | +980 |
| HORIZONTAL CURVE | | | | | | | | |



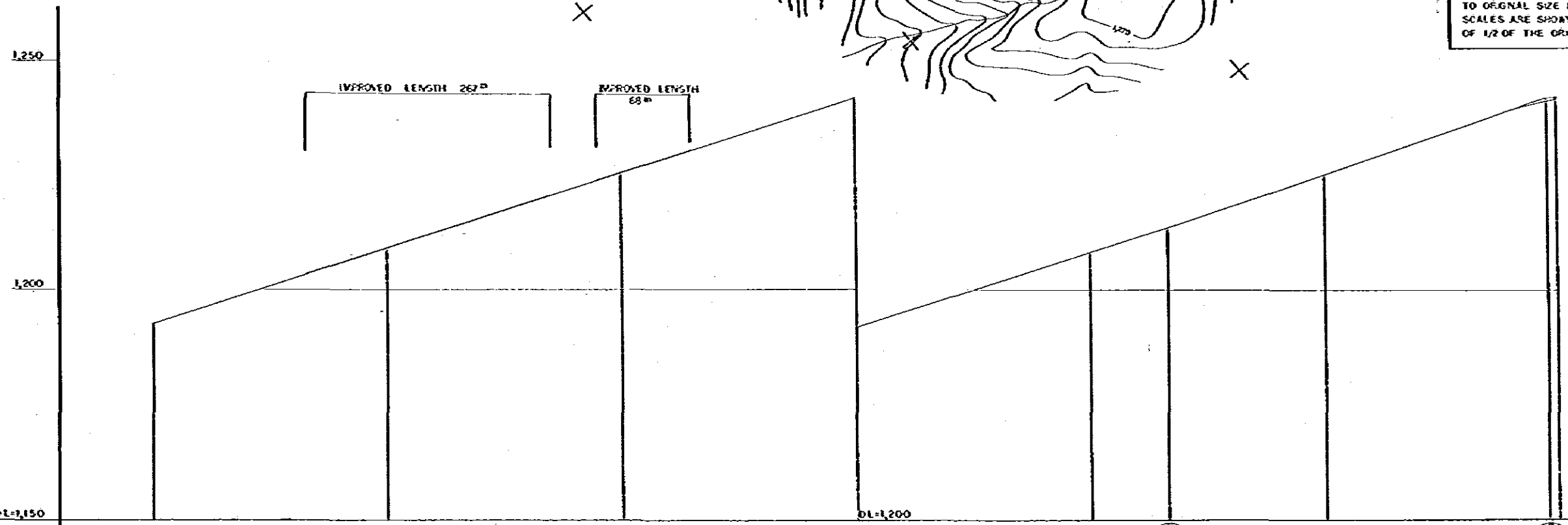
REDUCED PLAN
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 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



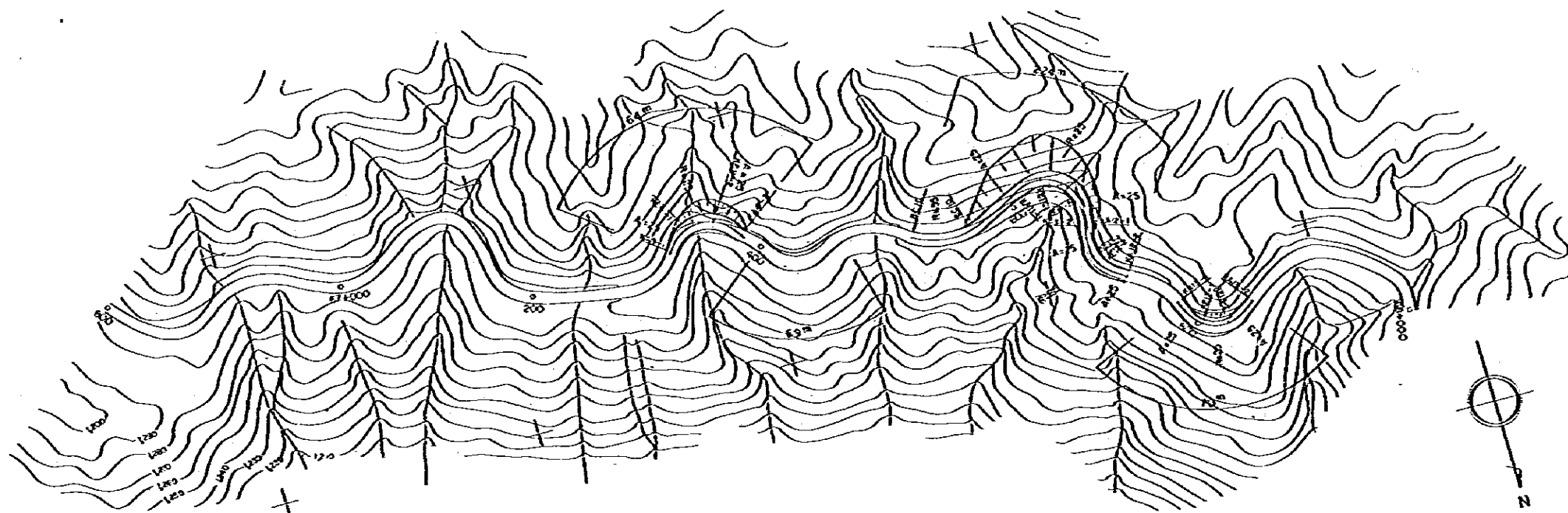
| | |
|-----------------------|---|
| DATUM LINE DL=1,100 | |
| VERTICAL GRADIENT | $I=6.51\%$ $L=6700m$ |
| ACCUMULATIVE DISTANCE | 107.900 108.100 108.170 108.300 108.350 108.500 108.700 108.900 109.100 |
| IN - SITU KM POST | |
| CONSTRUCTION KM POST | +400 +600 +670 +900 +850 +700 +685 +200 +600 +600 |
| HORIZONTAL CURVE | |



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

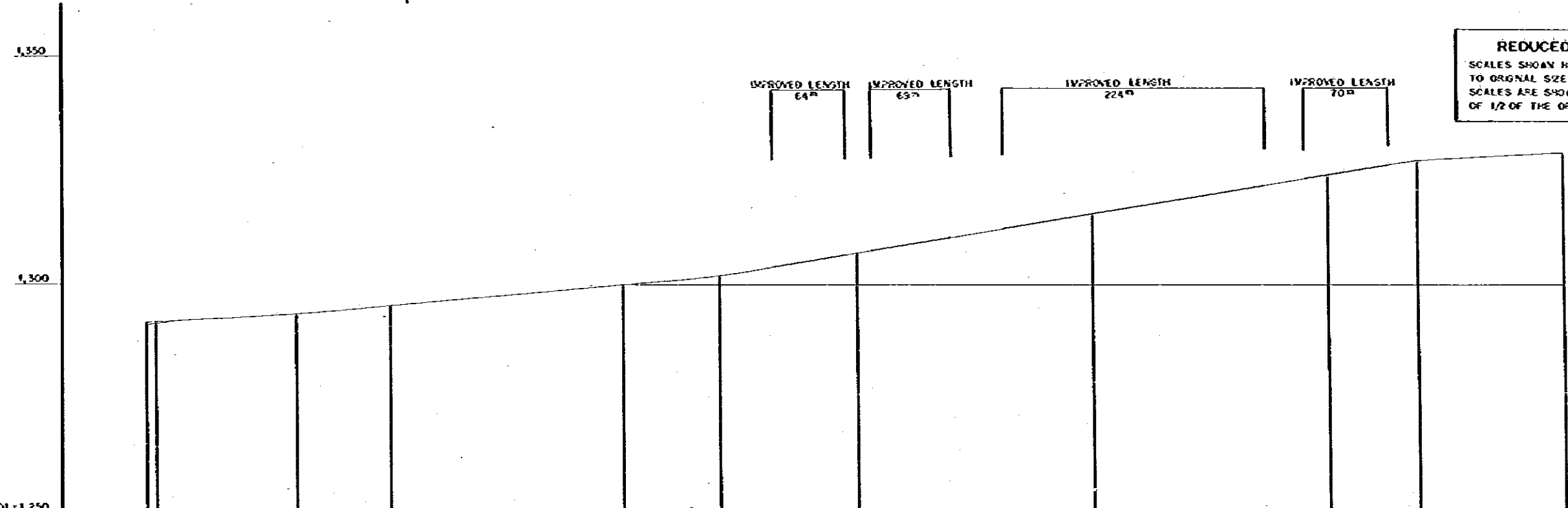


| | | | | | | | |
|-----------------------|---------|--------------------|---------|---------|--------------------|---------|---------|
| VERTICAL GRADIENT | | -1.732% L=1630m | | | -1.862% L=3260m | | |
| ACCUMULATIVE DISTANCE | 109,100 | 109,300 | 109,500 | 109,700 | 109,800 | 109,966 | 110,100 |
| IN - SITU KM POST | | | | | | | |
| CONSTRUCTION KM POST | 600 | 800 | 1466 | 200 | 400 | 466 | 800 |
| HORIZONTAL CURVE | | | | | | | |



REDUCED PLAN
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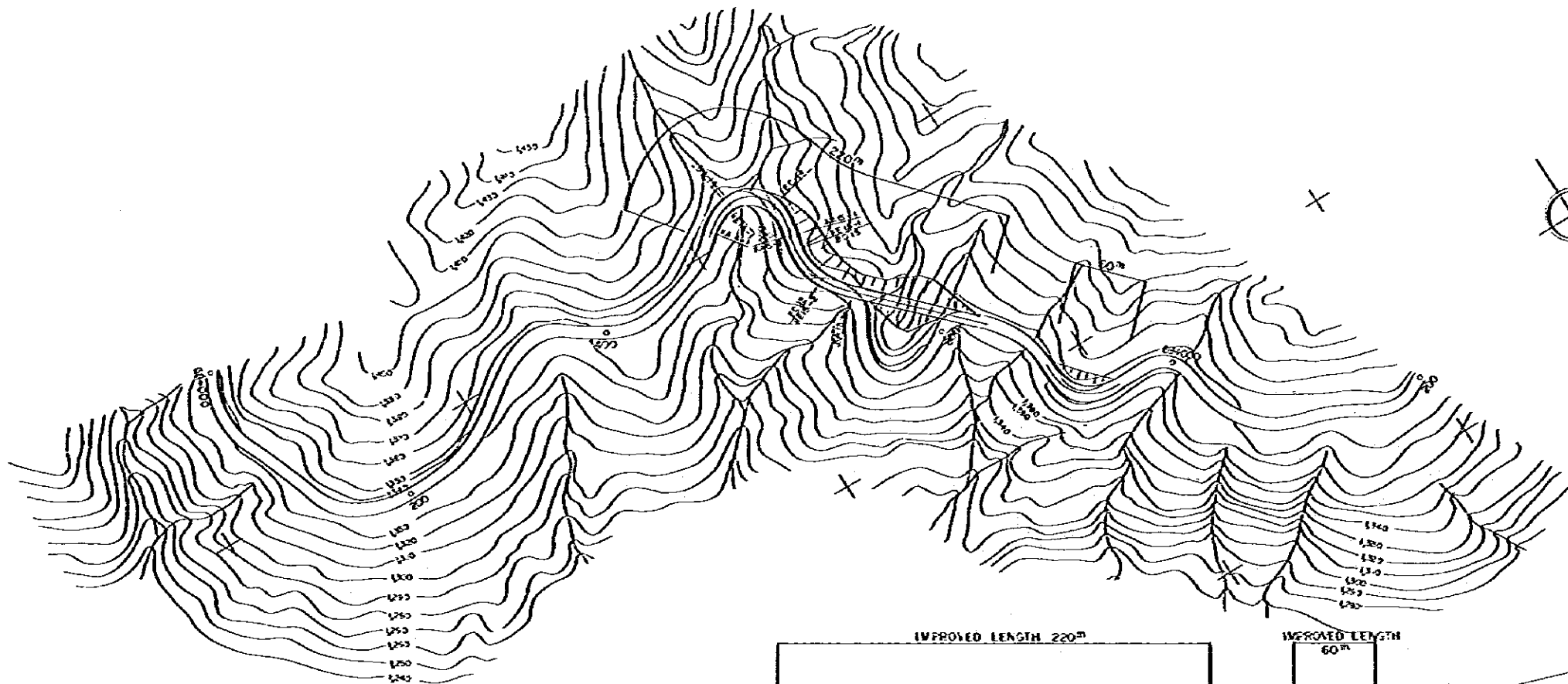
IMPROVED LENGTH 64^m IMPROVED LENGTH 63^m IMPROVED LENGTH 224^m IMPROVED LENGTH 70^m



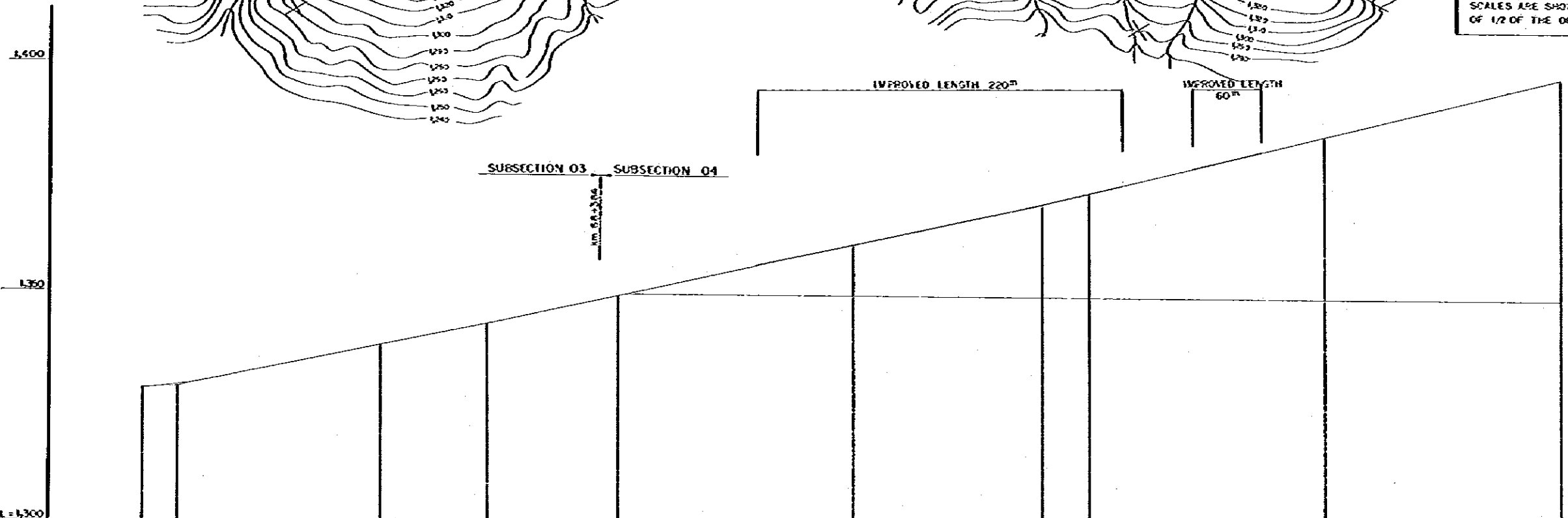
DATUM LINE OL=1,250

| | | | | |
|-----------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| VERTICAL GRADIENT | 1:172% L=1280 ^m | 1:215% L=3620 ^m | 1:428% L=5340 ^m | 1:144% L=1530 ^m |
| ACCUMULATIVE DISTANCE | 110,292 | 110,492 | 110,792 | 111,092 |
| IN-SITU KM POST | 792 | 907 | 1022 | 1137 |
| CONSTRUCTION KM POST | 800 | 920 | 1000 | 1100 |
| HORIZONTAL CURVE | | | | |

| | | | | | |
|---------|------------------------------------|--|------------------------------|-----------|------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (10) KM 66+800 — KM 68+000 | SCALE H=1:2000 V=1:500 | DATE | MARCH 1982 |
| | | | | SHEET No. | 13 OF 135 |

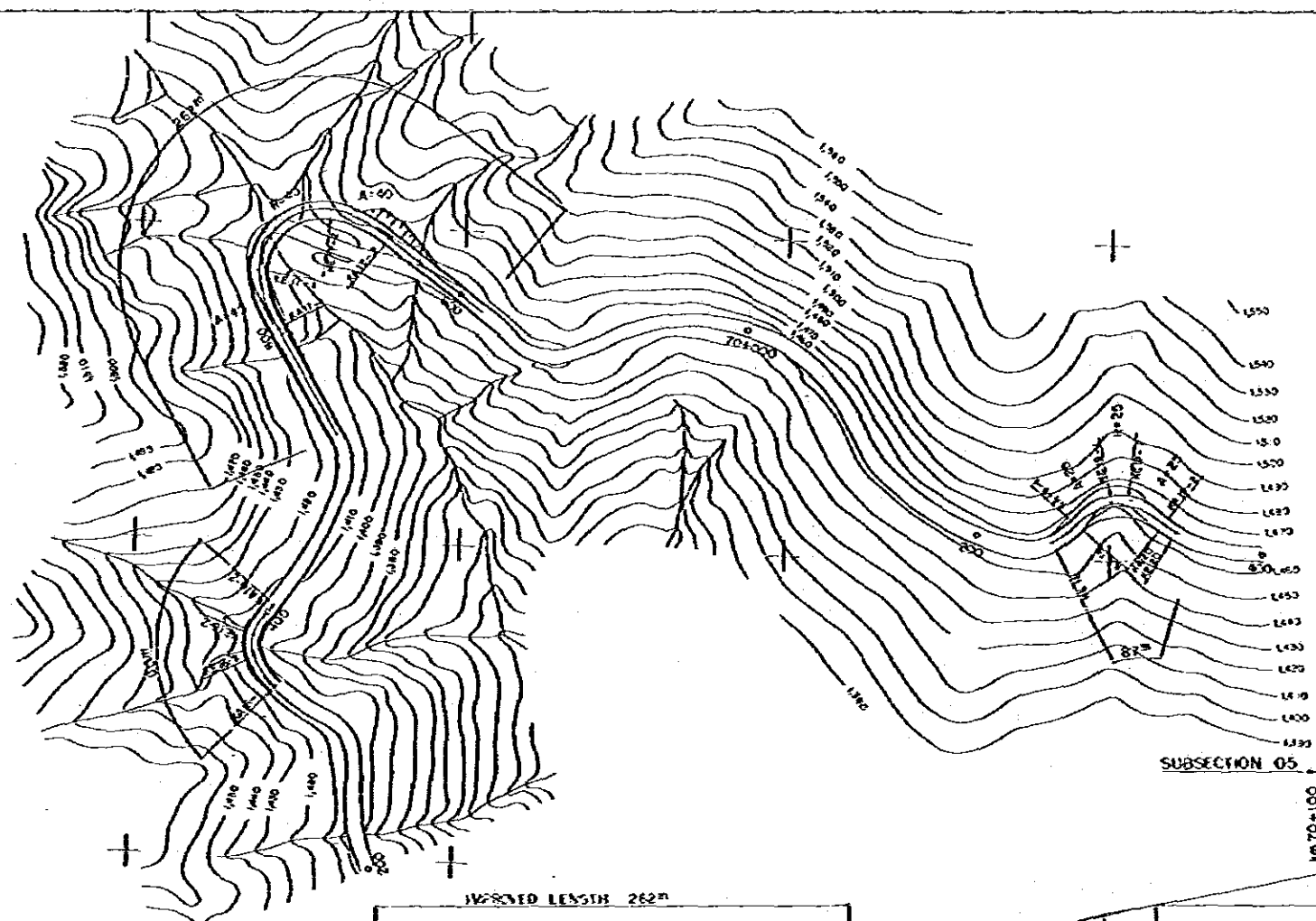


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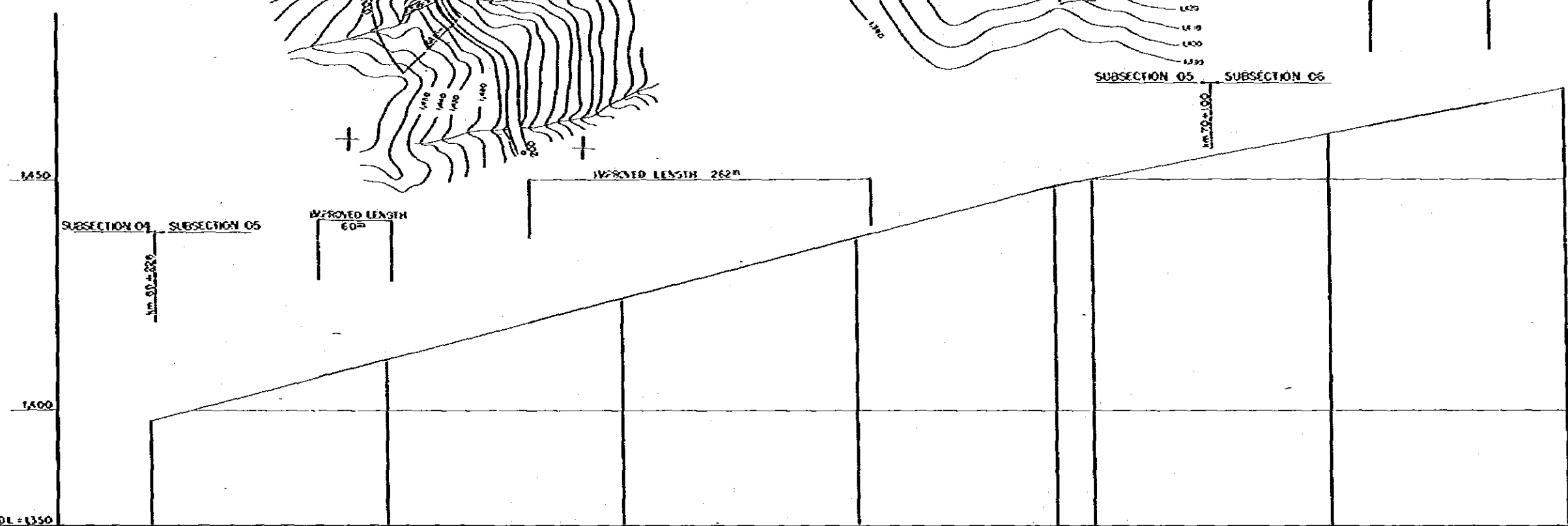


| | |
|-----------------------|----------------------------|
| DATUM LINE | DL = 1300 |
| VERTICAL GRADIENT | $L = 140m$ $L = 1530m$ |
| ACCUMULATIVE DISTANCE | $L = 540m$ $L = 2010m$ |
| IN - SITU KM POST | $L = 564m$ $L = 4700m$ |
| CONSTRUCTION KM POST | $L = 651m$ $L = 12080m$ |
| HORIZONTAL CURVE | |

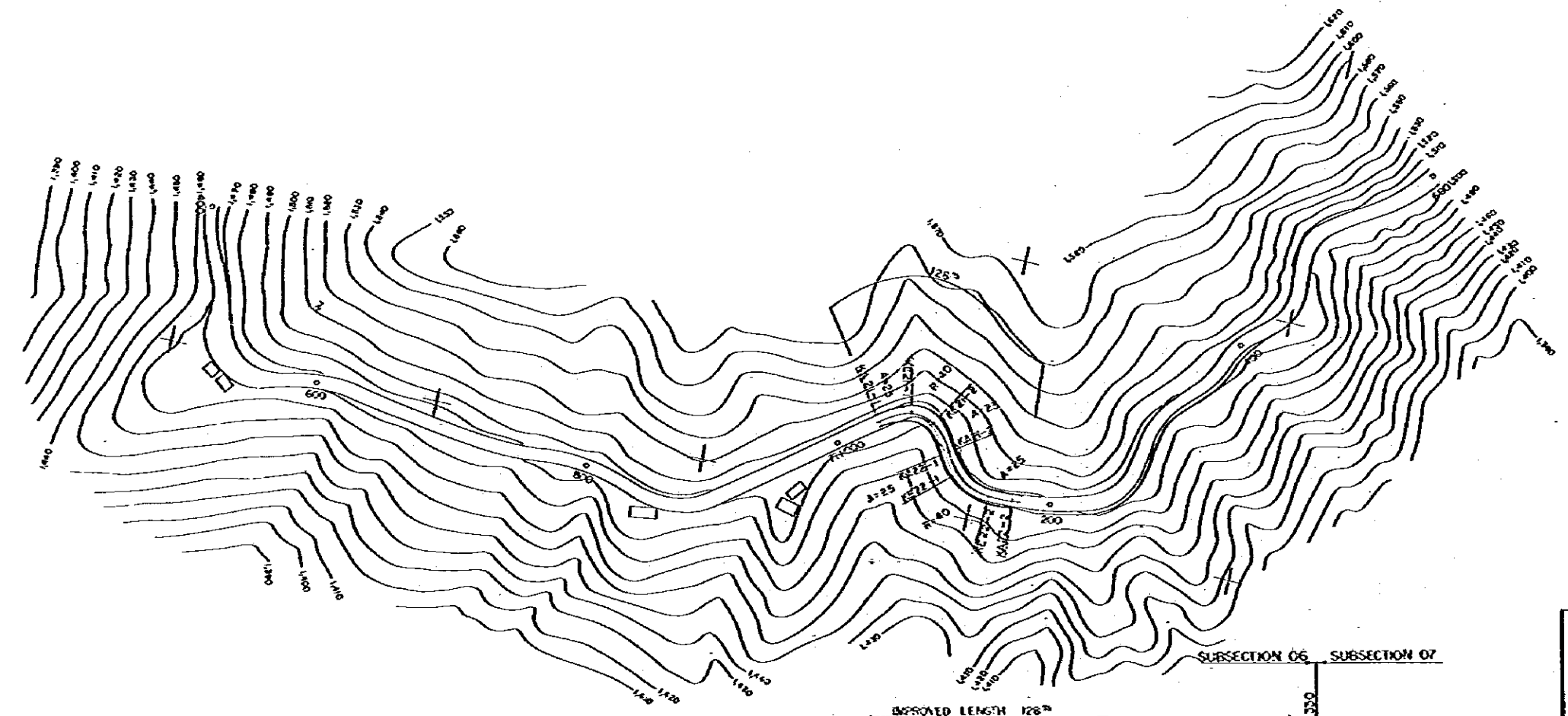
| | | | | | |
|---------|------------------------------------|--|----------------------------------|-----------|------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (II) KM 68+000 — KM 69+200 | SCALE H = 1:2000 V = 1:500 | DATE | MARCH 1982 |
| | | | | SHEET No. | 14 OF 135 |



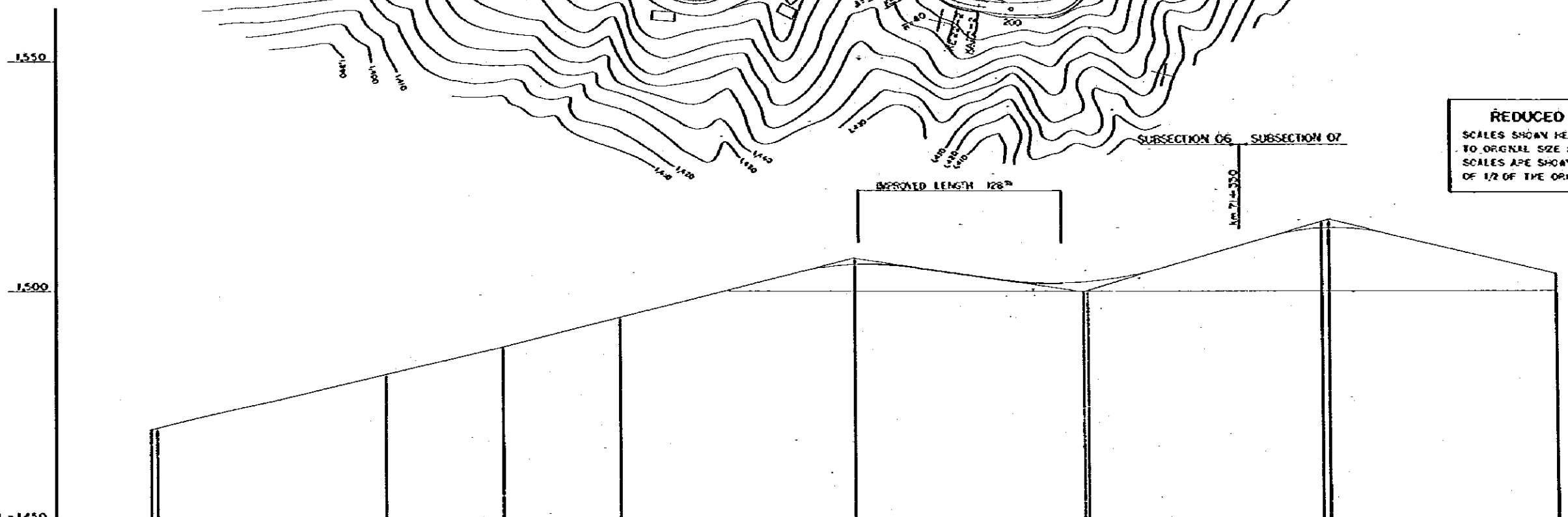
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



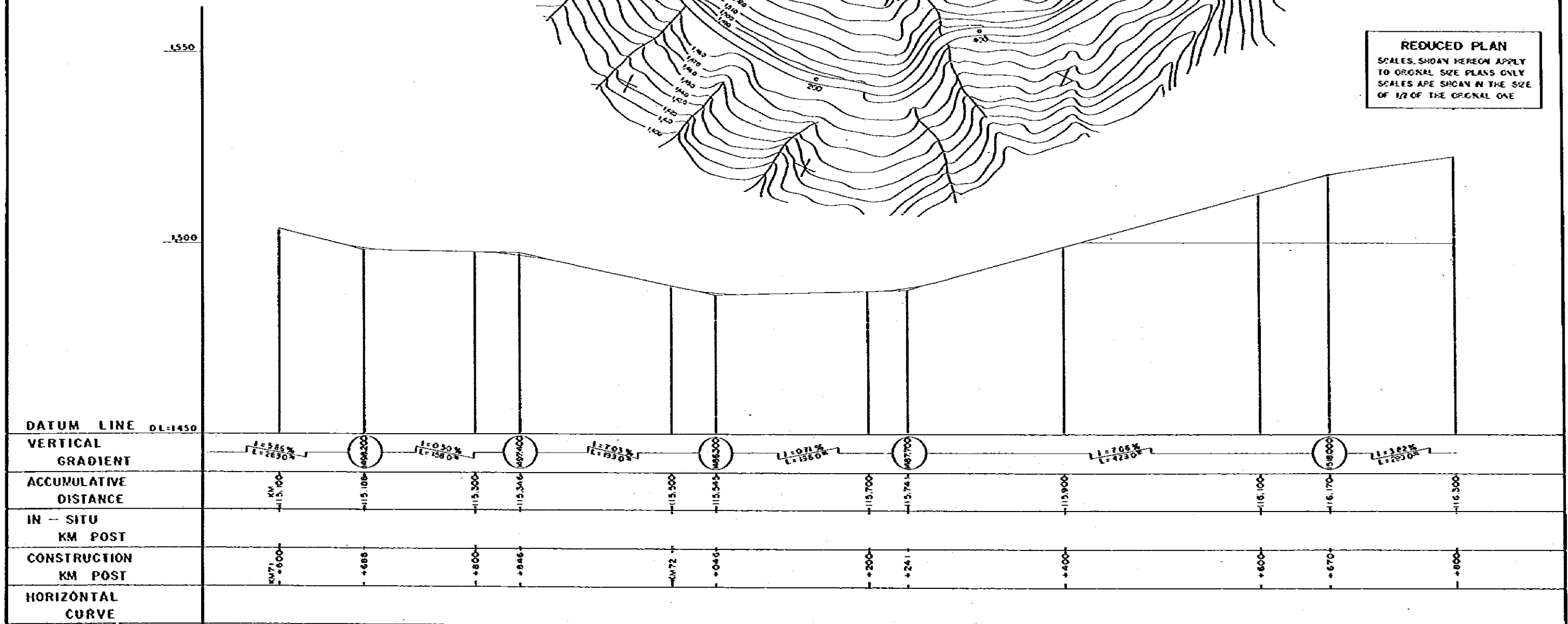
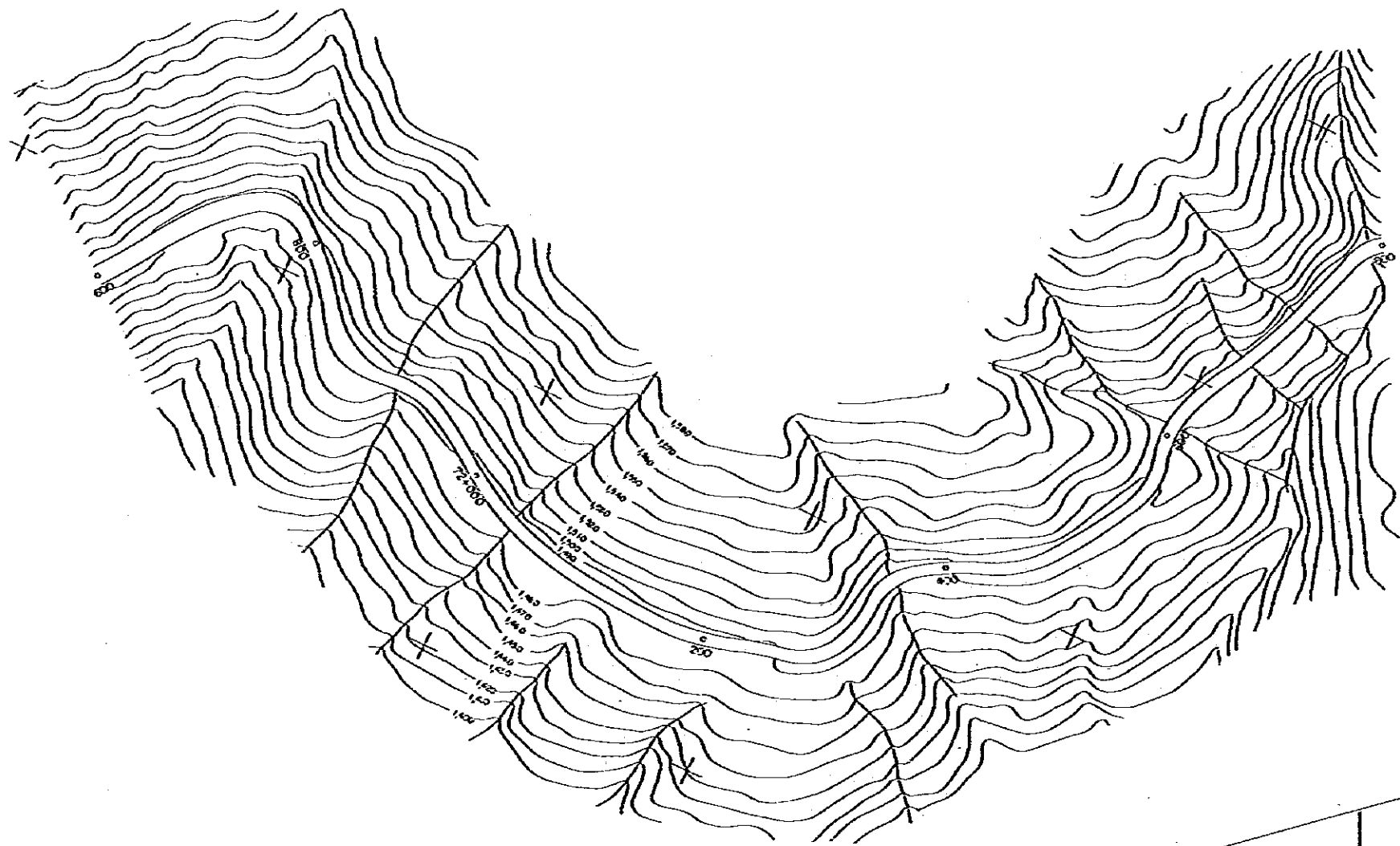
| | |
|-----------------------|---|
| DATUM LINE | DL = 1350 |
| VERTICAL GRADIENT | |
| ACCUMULATIVE DISTANCE | KM 112.700, 112.900, 113.100, 113.300, 113.488, 113.500, 113.700, 113.900 |
| HORIZONTAL CURVE | Vertical curve data: L=651M, L=1268M; L=487M, L=437M |



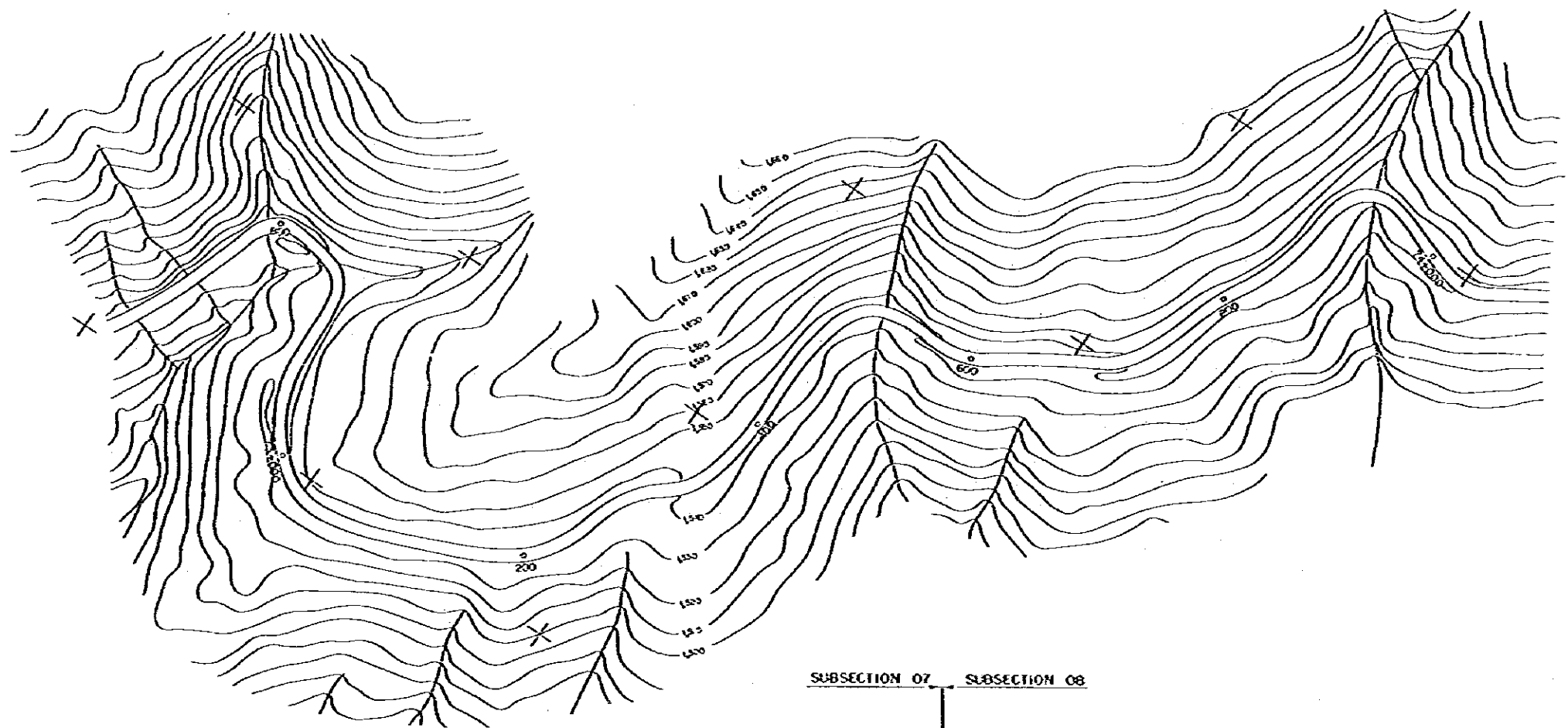
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL CASE



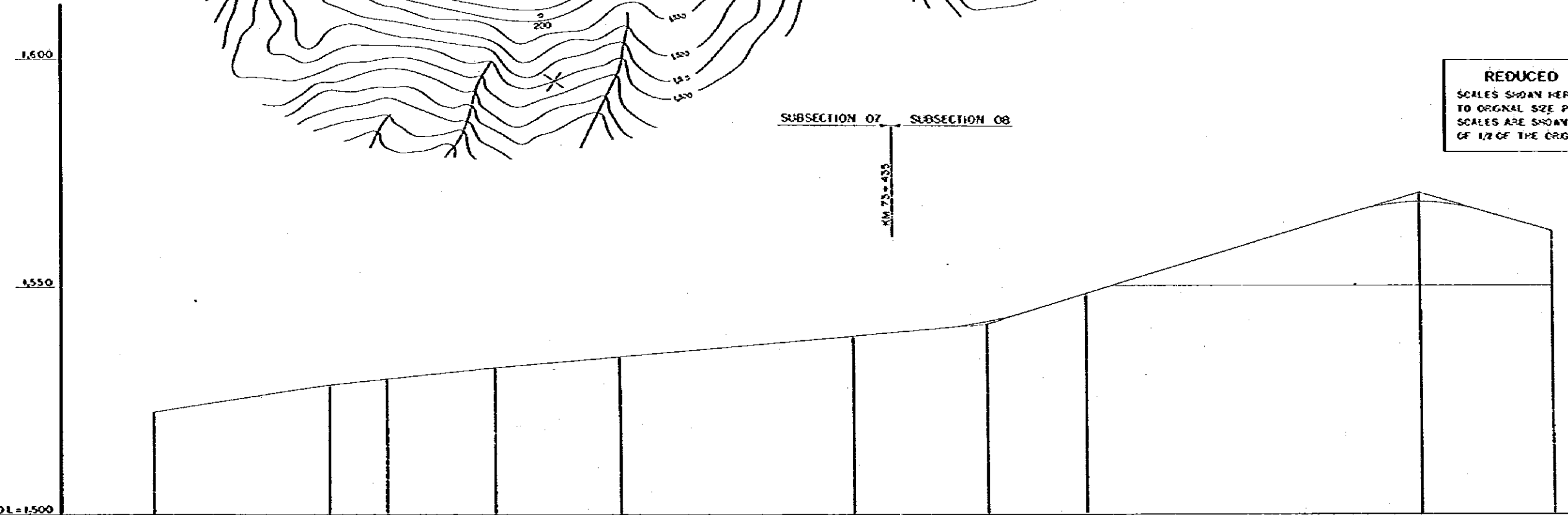
| | | | | | | | | |
|-----------------------|------------------------|------------------------|---------|------------------------|------------------------|------------------------|------------------------|---------|
| DATUM LINE DL=1450 | | | | | | | | |
| VERTICAL GRADIENT | $L=487.0$ $L=437.0$ | $L=610.0$ $L=250.0$ | | $L=633.0$ $L=300.0$ | $L=435.0$ $L=168.0$ | $L=816.0$ $L=207.0$ | $L=556.0$ $L=263.0$ | |
| ACCUMULATIVE DISTANCE | 113.900 | 114.100 | 114.200 | 114.300 | 114.500 | 114.900 | 114.900 | 115.100 |
| IN - SITU KM POST | | | | | | | | |
| CONSTRUCTION KM POST | 70+000 | 70+600 | 70+700 | 70+800 | 71+000 | 71+200 | 71+400 | 71+600 |
| HORIZONTAL CURVE | | | | | | | | |



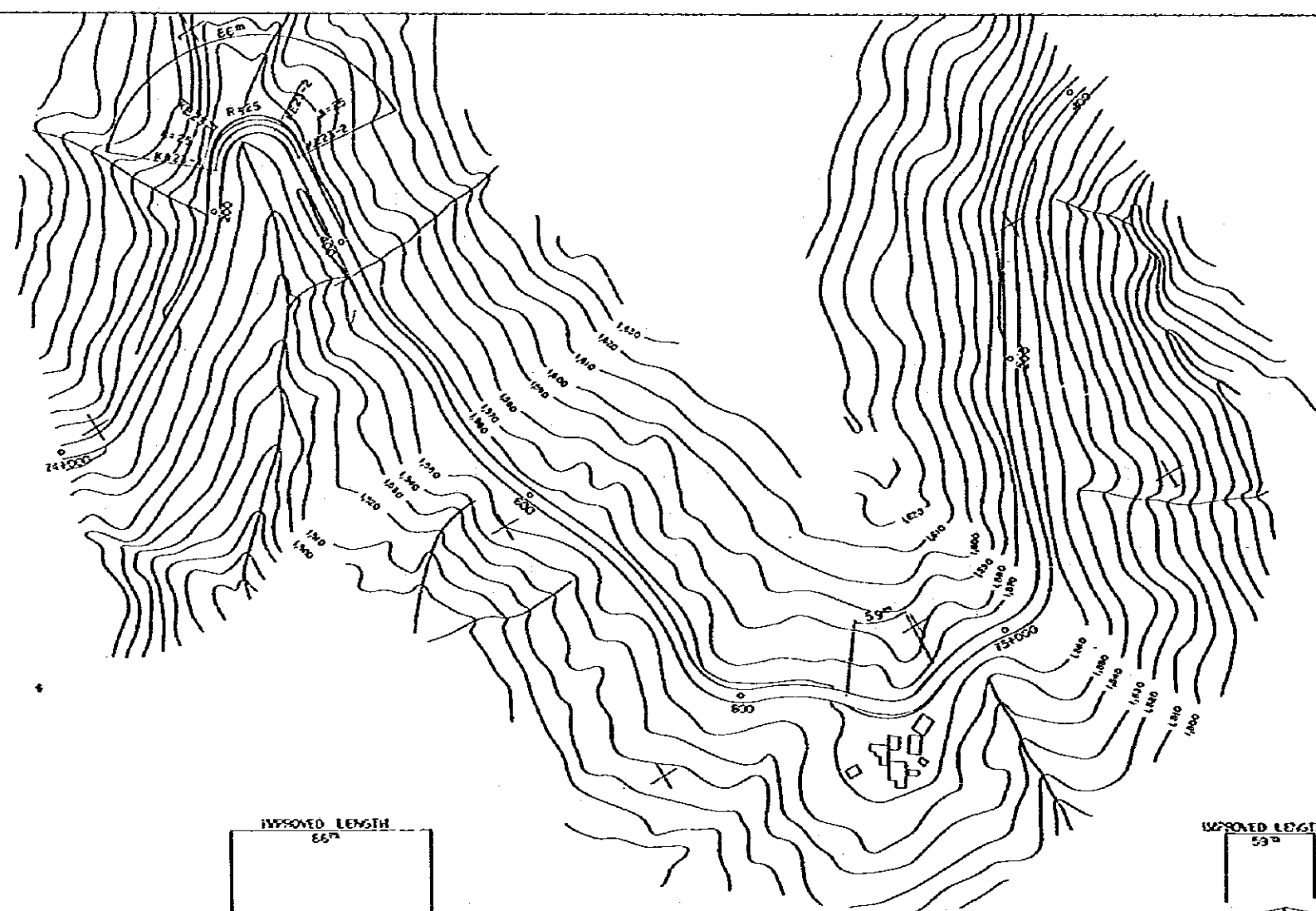
| | | | | |
|---------|------------------------------------|--|----------------------------------|---------------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (14) KM 71+600 — KM 72+800 | SCALE H = 1:2000 V = 1:500 | DATE MARCH 1982 |
| | | | | SHEET No. 17 OF 135 |



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY. SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE.

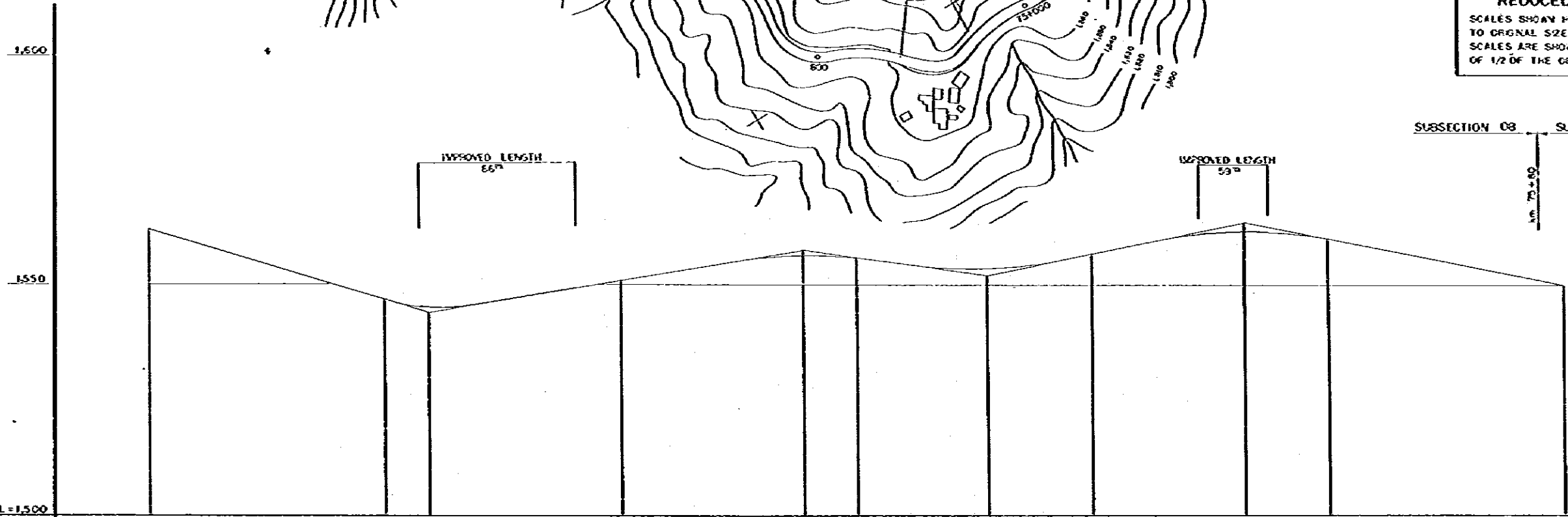


| | |
|-----------------------|---|
| DATUM LINE | DL=1500 |
| VERTICAL GRADIENT | $L=382\%$ $L=283.0\%$ |
| ACCUMULATIVE DISTANCE | 116.300, 116.450, 116.500, 116.595, 116.700, 116.900, 117.016, 117.100, 117.300, 117.306, 117.500 |
| IN-SITU KM POST | |
| CONSTRUCTION KM POST | $+800$, $+950$, $+975$, $+295$, $+200$, $+400$, $+516$, $+600$, $+800$, $+806$, $+974$ |
| HORIZONTAL CURVE | |

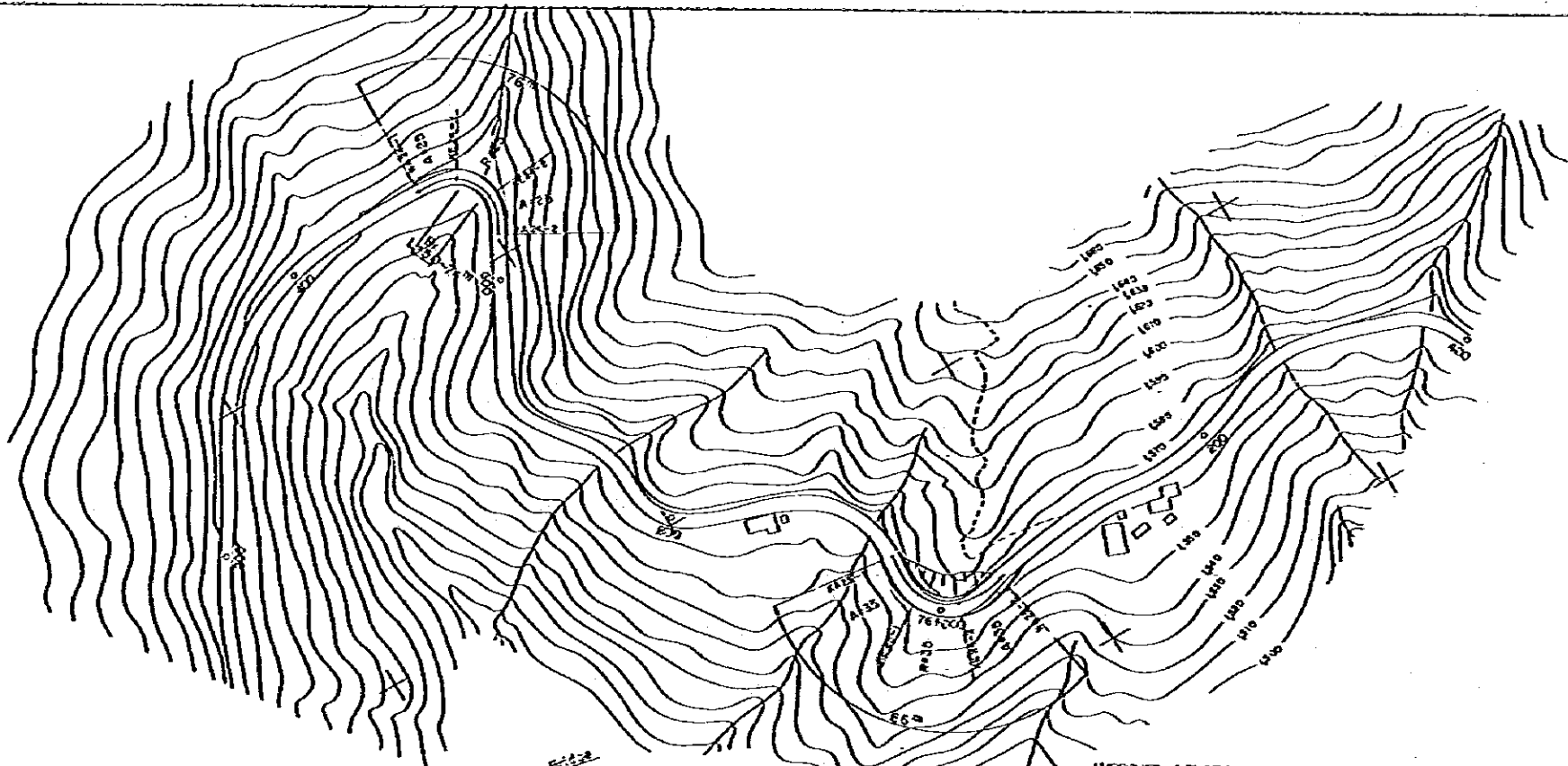


REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

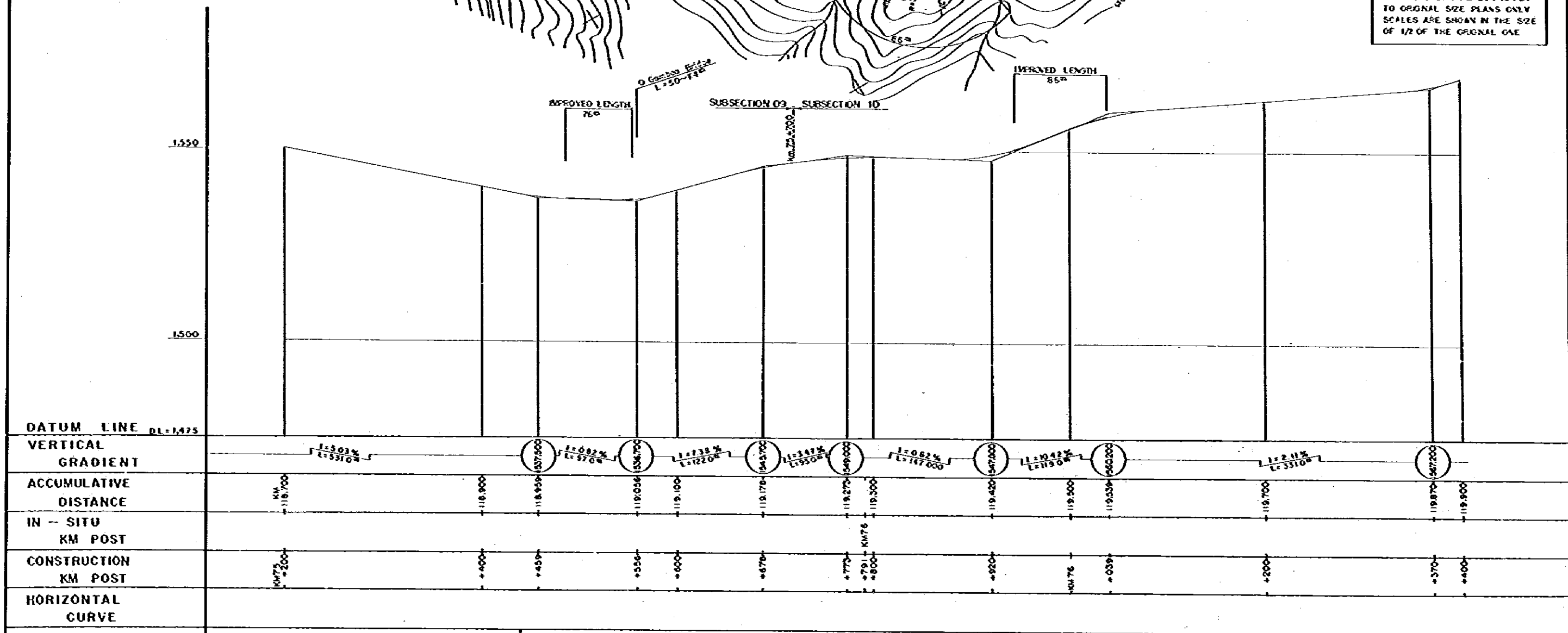
SUBSECTION 08 SUBSECTION 09



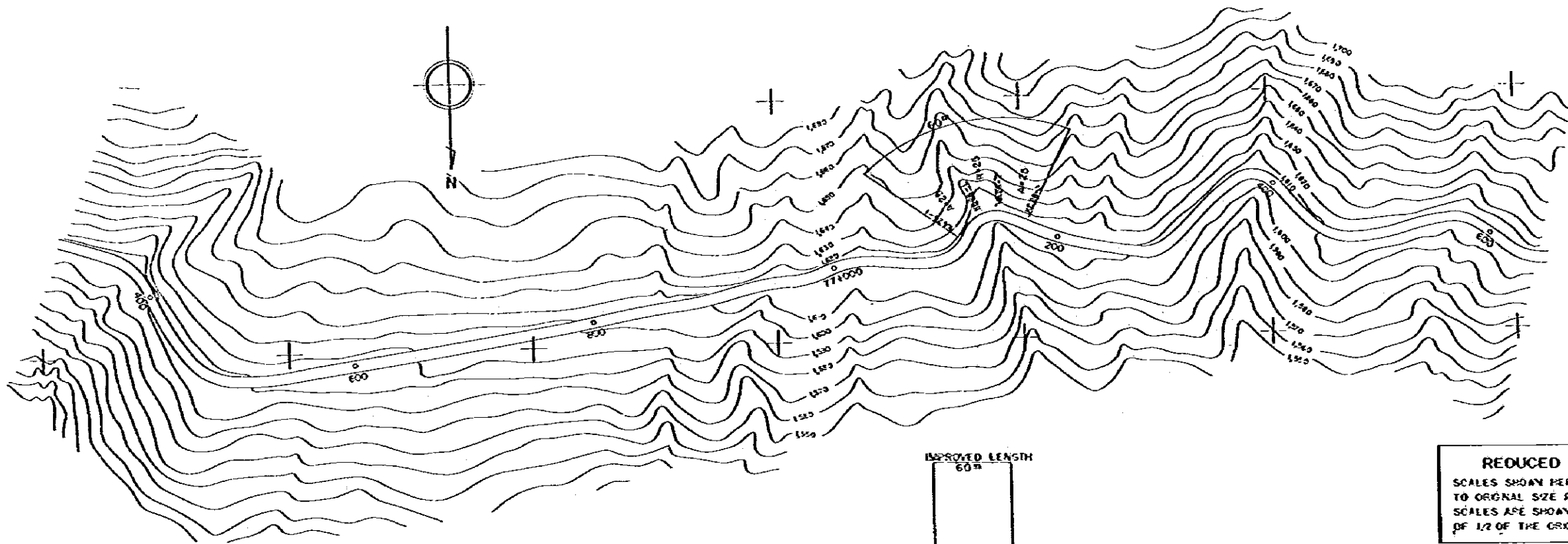
| | | | | | | | | | | | |
|-----------------------|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| DATUM LINE | DL=1500 | | | | | | | | | | |
| VERTICAL GRADIENT | $i = 2.48\%$ $L = 349.04$ | | | | | | | | | | |
| ACCUMULATIVE DISTANCE | 117.500 | 117.700 | 117.750 | 117.900 | 118.050 | 118.100 | 118.200 | 118.300 | 118.426 | 118.500 | 118.700 |
| IN - SITU KM POST | | | | | | | | | | | |
| CONSTRUCTION KM POST | +74 | +200 | +235 | +400 | +555 | +600 | +706 | +802 | +926 | +975 | +200 |
| HORIZONTAL CURVE | | | | | | | | | | | |



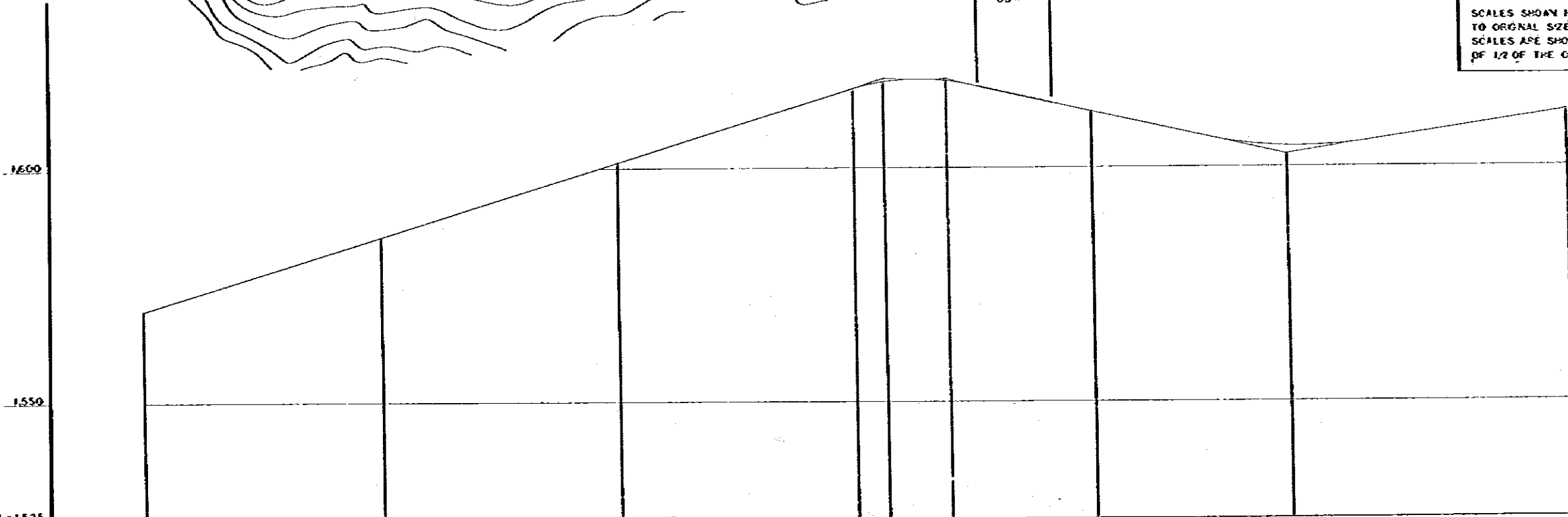
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



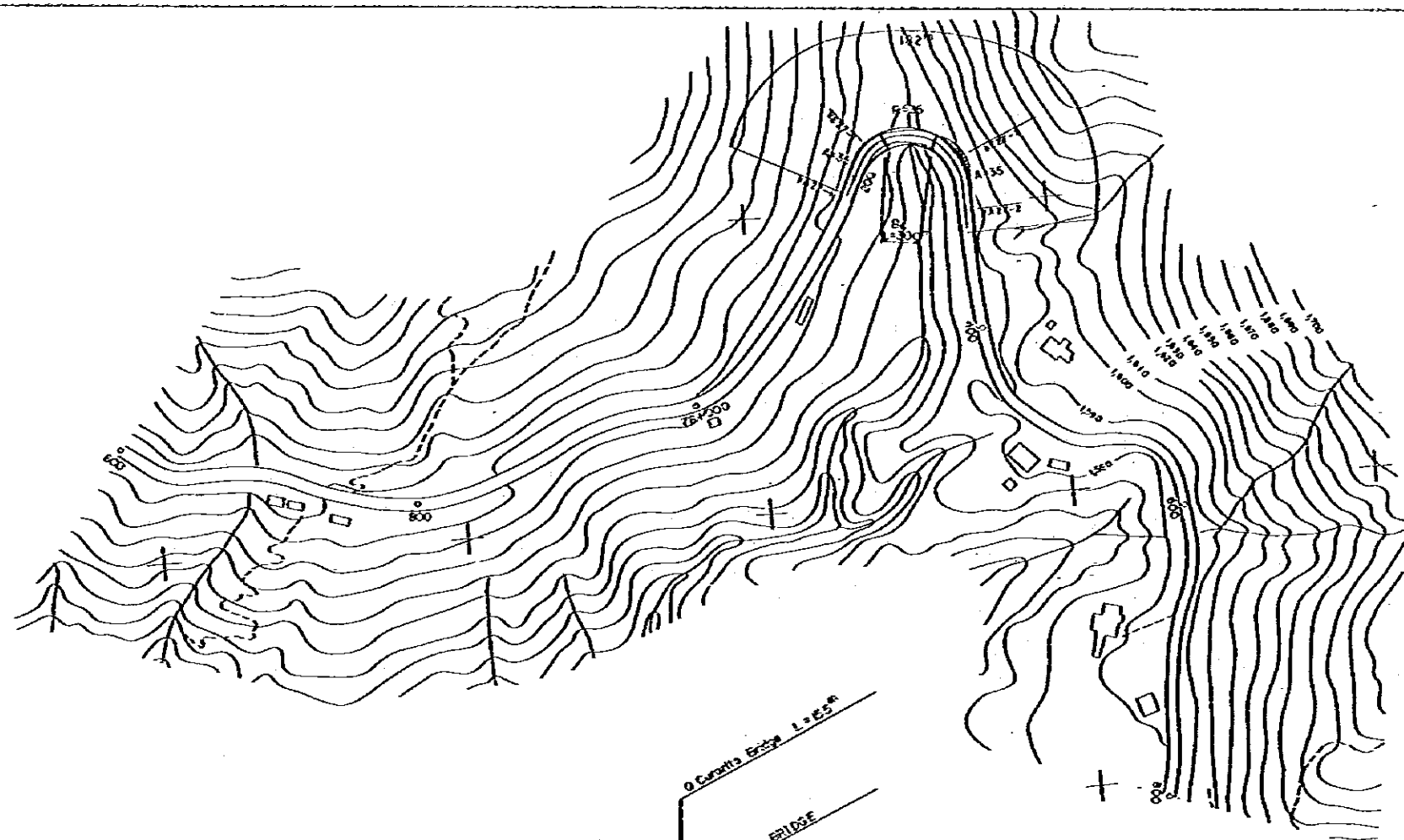
| | |
|-----------------------|--|
| DATUM LINE | DL=1475 |
| VERTICAL GRADIENT | $I = 5.03\%$ $L = 551.0m$ |
| ACCUMULATIVE DISTANCE | KM 118.700 118.900 118.934 119.034 119.100 119.178 119.270 119.300 119.420 119.500 119.534 119.700 119.870 119.900 |
| IN - SITU KM POST | |
| CONSTRUCTION KM POST | +200 +400 +434 +534 +600 +674 +774 +791 +800 +920 +976 +939 +200 +370 +400 |
| HORIZONTAL CURVE | |



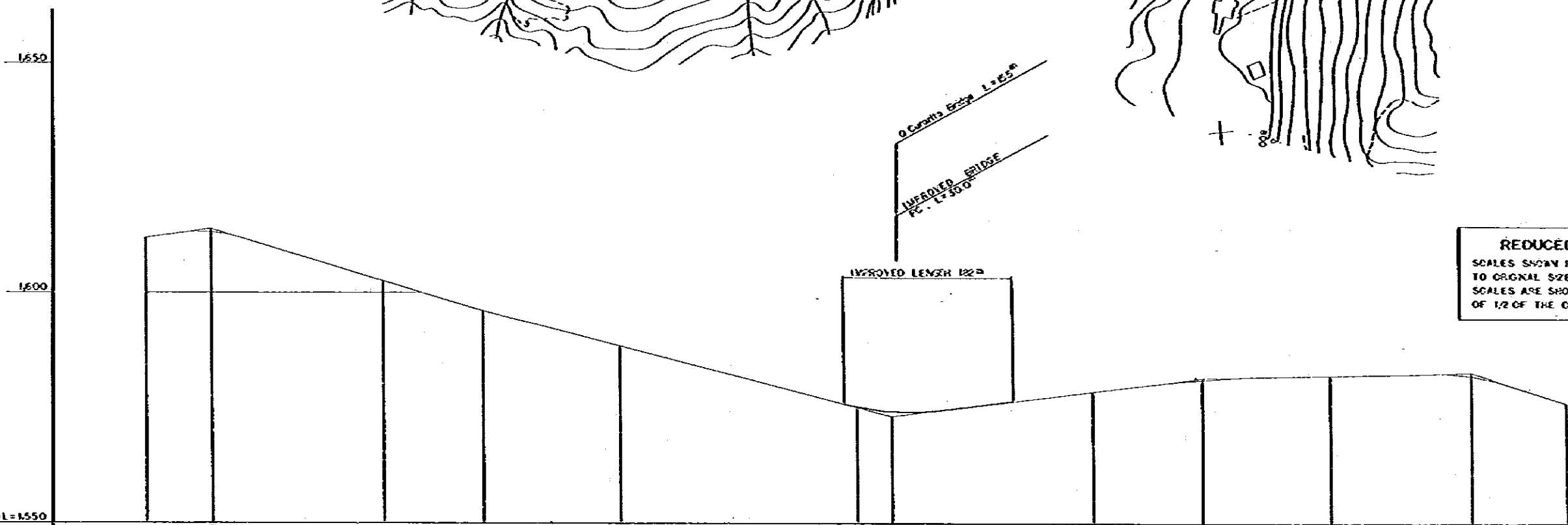
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



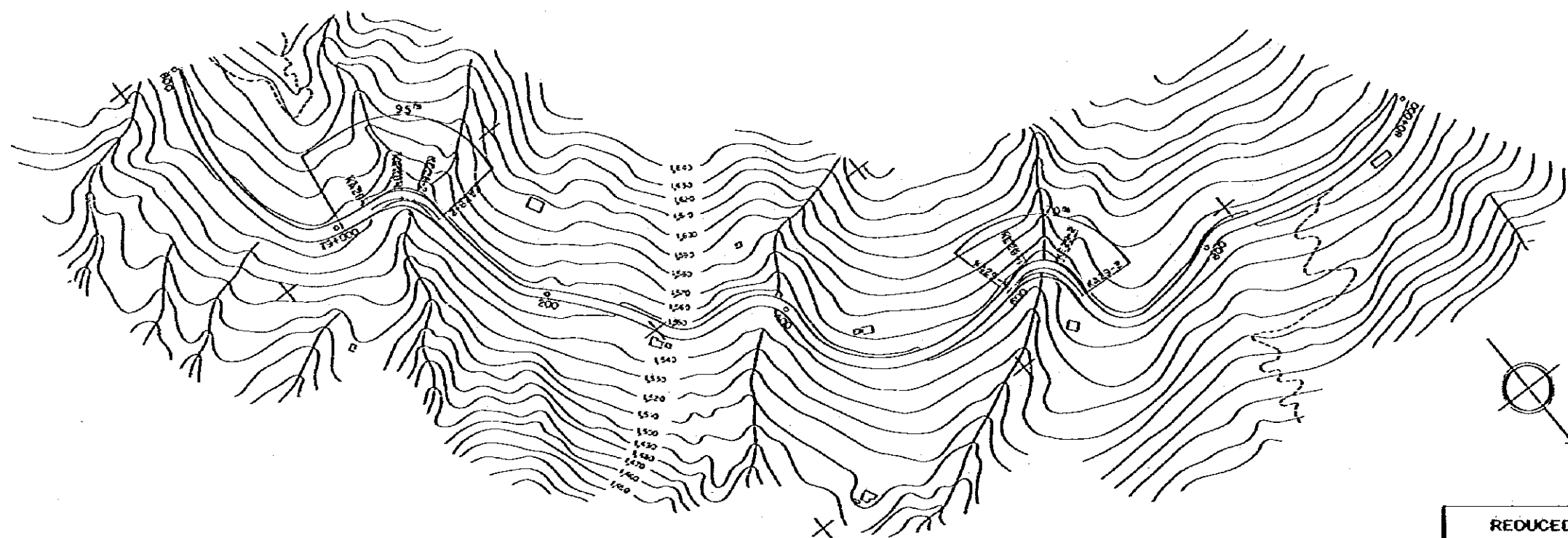
| | |
|-----------------------|--|
| DATUM LINE | DL=1525 |
| VERTICAL GRADIENT | $L=7.94\%$ $L=456.0\text{m}$ |
| ACCUMULATIVE DISTANCE | KM 118.900 120.100 120.500 120.500 120.524 120.570 120.700 120.862 120.900 121.100 |
| IN - SITU KM POST | |
| CONSTRUCTION KM POST | 0+000 0+600 0+800 0+877 0+926 0+978 0+200 0+362 0+400 0+600 |
| HORIZONTAL CURVE | |



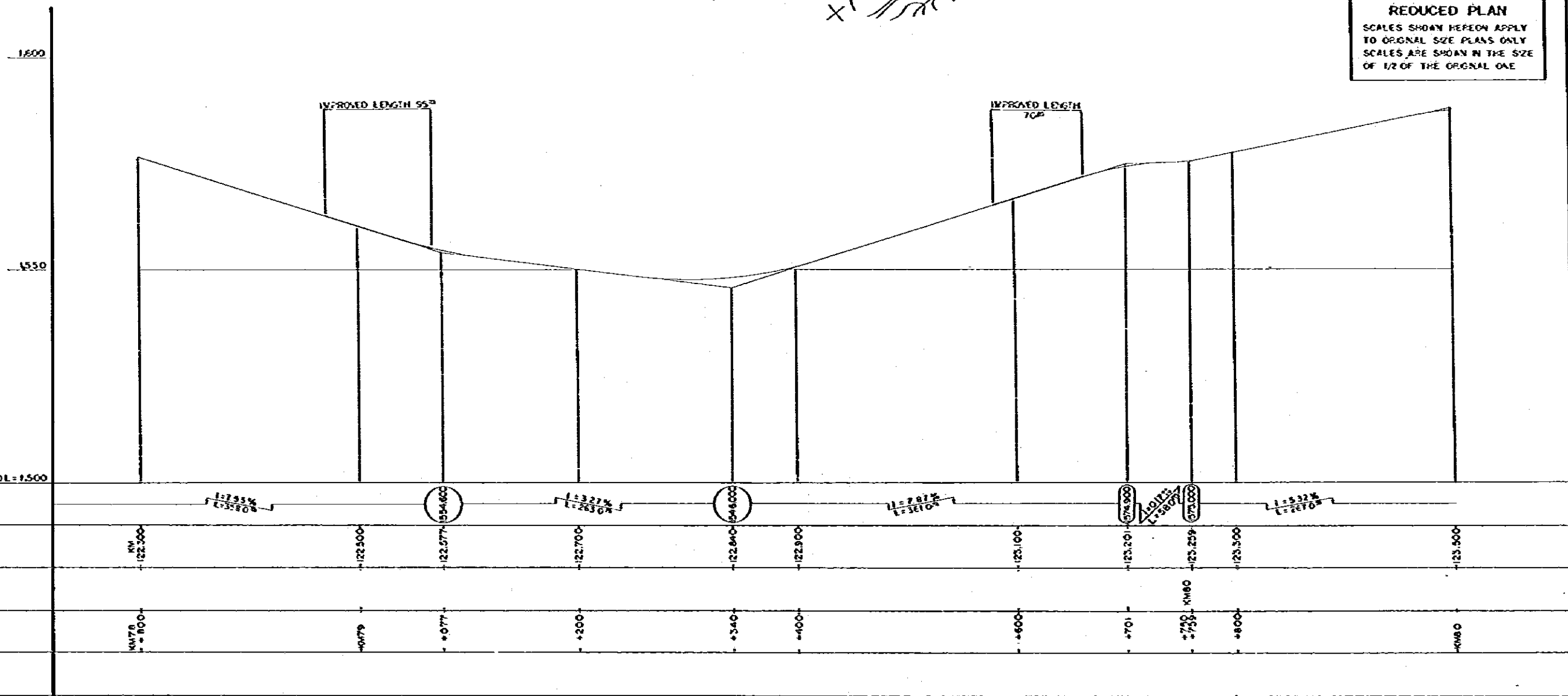
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



| | |
|-----------------------|--|
| DATUM LINE | DL=1550 |
| VERTICAL GRADIENT | $1 = 3.91\%$ $L = 231.0m$ |
| ACCUMULATIVE DISTANCE | 121.100 121.100 121.300 121.300 121.500 121.700 121.700 121.900 121.900 122.100 122.100 122.300 |
| IN - SITU KM POST | $77+000$ $77+200$ $77+400$ $77+600$ $77+800$ $78+000$ $78+200$ $78+400$ $78+600$ $78+800$ |
| CONSTRUCTION KM POST | $77+000$ $77+050$ $77+172$ $77+200$ $77+250$ $77+300$ $77+400$ $77+450$ $77+500$ $77+600$ $77+650$ $77+700$ $77+750$ $77+800$ |
| HORIZONTAL CURVE | |

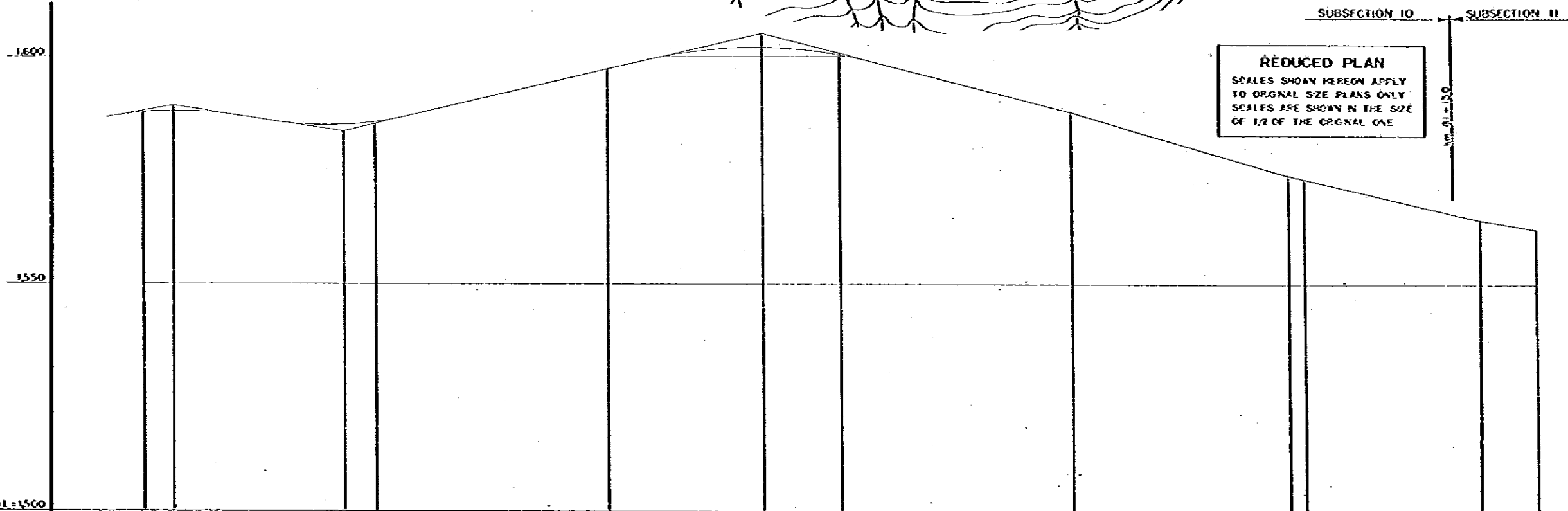
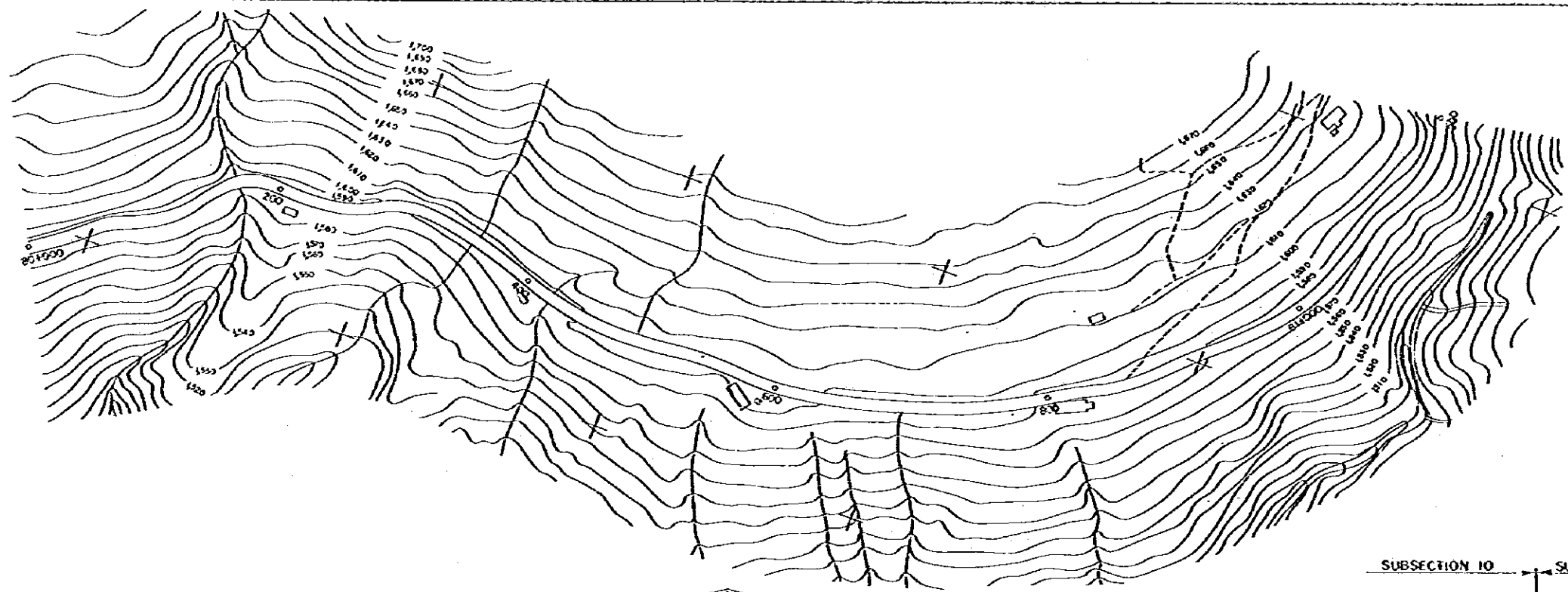


REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



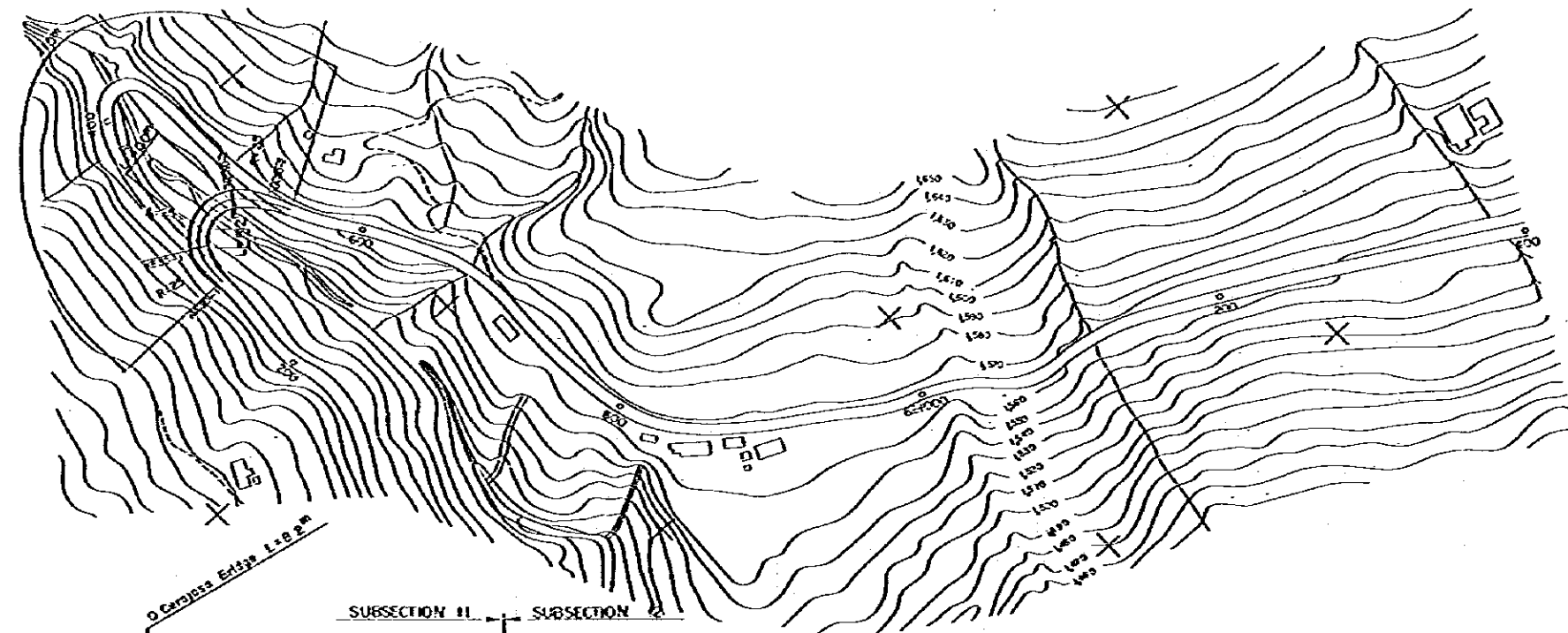
DATUM LINE DL=1560

| | | | | | | | | | | | | | |
|-----------------------|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| VERTICAL GRADIENT | 1.275% 1.358% 1.321% 1.263% 1.281% 1.361% 1.532% 1.267% | | | | | | | | | | | | |
| ACCUMULATIVE DISTANCE | 78+800 | 78+900 | 79+000 | 79+100 | 79+200 | 79+300 | 79+400 | 79+500 | 79+600 | 79+700 | 79+800 | 79+900 | 80+000 |
| IN - SITU KM POST | 78+800 | 78+900 | 79+000 | 79+100 | 79+200 | 79+300 | 79+400 | 79+500 | 79+600 | 79+700 | 79+800 | 79+900 | 80+000 |
| CONSTRUCTION KM POST | 78+800 | 78+900 | 79+000 | 79+100 | 79+200 | 79+300 | 79+400 | 79+500 | 79+600 | 79+700 | 79+800 | 79+900 | 80+000 |
| HORIZONTAL CURVE | | | | | | | | | | | | | |

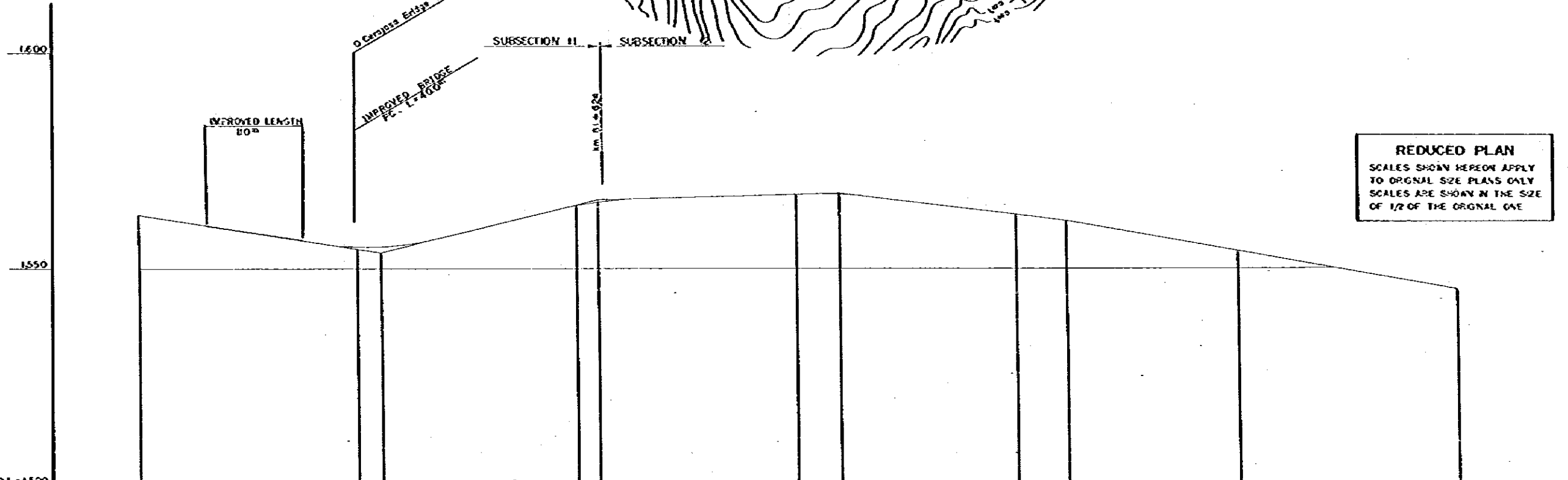


REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

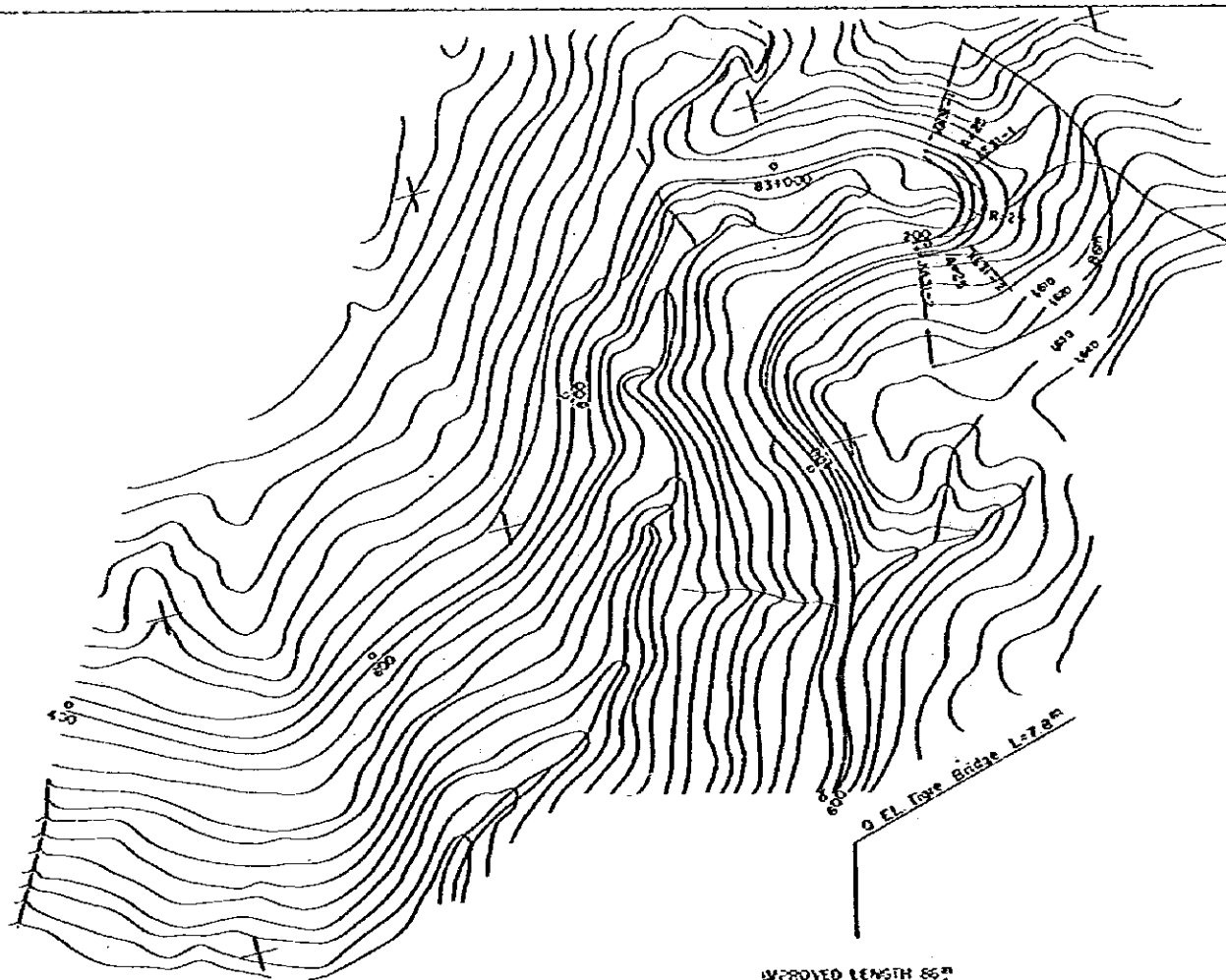
| | |
|-----------------------|---|
| DATUM LINE | DL=1500 |
| VERTICAL GRADIENT | $\frac{1}{L=267.0m}$ $\frac{1}{L=145.0m}$ $\frac{1}{L=361.0m}$ $\frac{1}{L=265.0m}$ $\frac{1}{L=370.0m}$ $\frac{1}{L=165.0m}$ |
| ACCUMULATIVE DISTANCE | KM 123.500 123.526 123.672 123.700 123.900 124.023 124.100 124.300 124.486 124.500 124.651 124.700 |
| IN - SITU KM POST | |
| CONSTRUCTION KM POST | +080 +026 +172 +200 +400 +553 +600 +737 +800 +900 +981 +131 +200 |
| HORIZONTAL CURVE | |



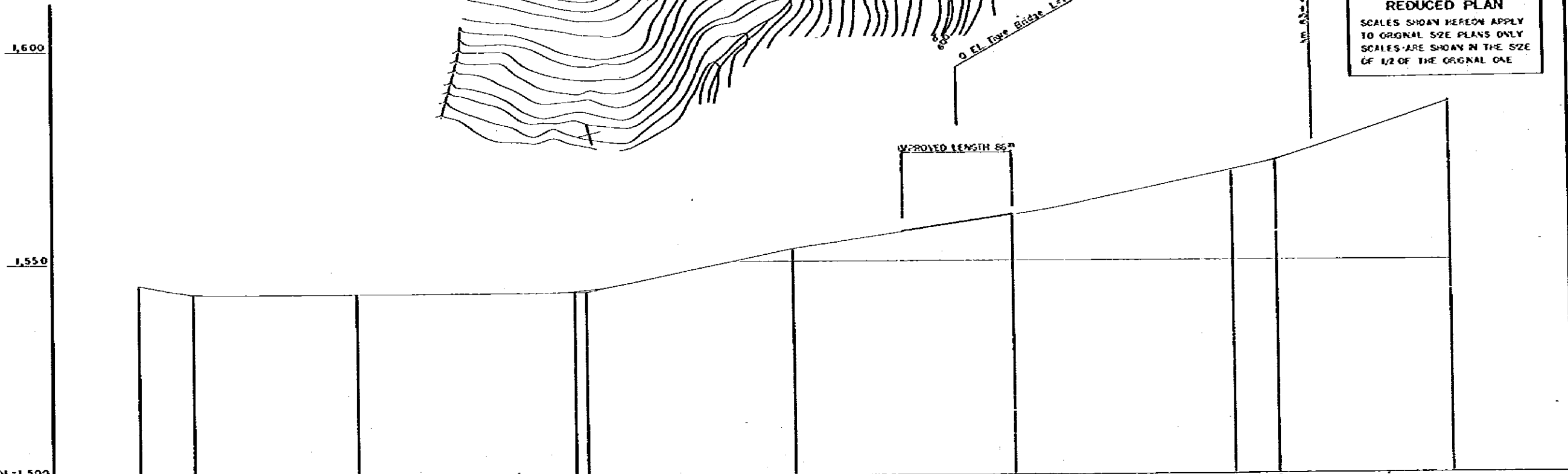
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



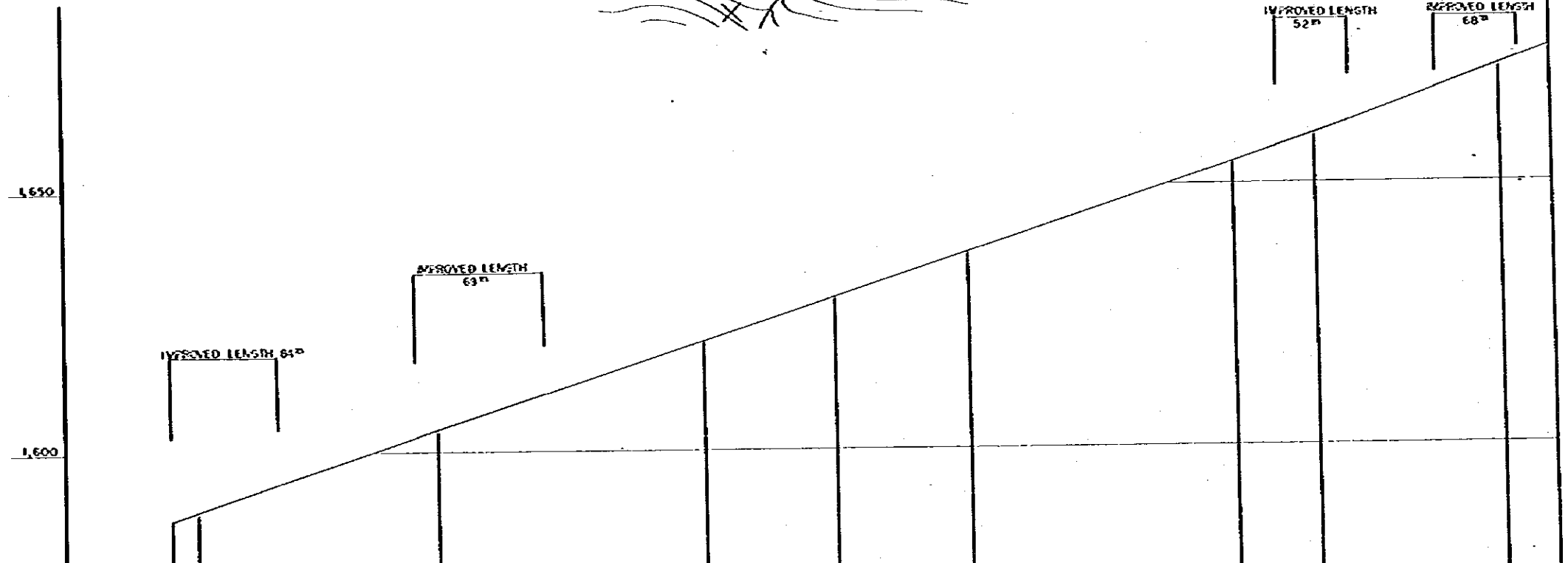
| | |
|-----------------------|---|
| DATUM LINE | DL=1550 |
| VERTICAL GRADIENT | $\frac{1}{L=3910\%}$ $\frac{1}{L=2710\%}$ $\frac{1}{L=621\%}$ $\frac{1}{L=1930\%}$ $\frac{1}{L=639\%}$ $\frac{1}{L=2190\%}$ $\frac{1}{L=3060\%}$ $\frac{1}{L=2060\%}$ $\frac{1}{L=450\%}$ $\frac{1}{L=2030\%}$ |
| ACCUMULATIVE DISTANCE | +124.700 +124.900 +124.922 +125.100 +125.120 +125.300 +125.334 +125.500 +125.545 +125.700 +125.900 |
| IN - SITU KM POST | |
| CONSTRUCTION KM POST | -200 +00 +22 +00 +20 +00 +39 +00 +05 +20 +00 |
| HORIZONTAL CURVE | |



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY. SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE.



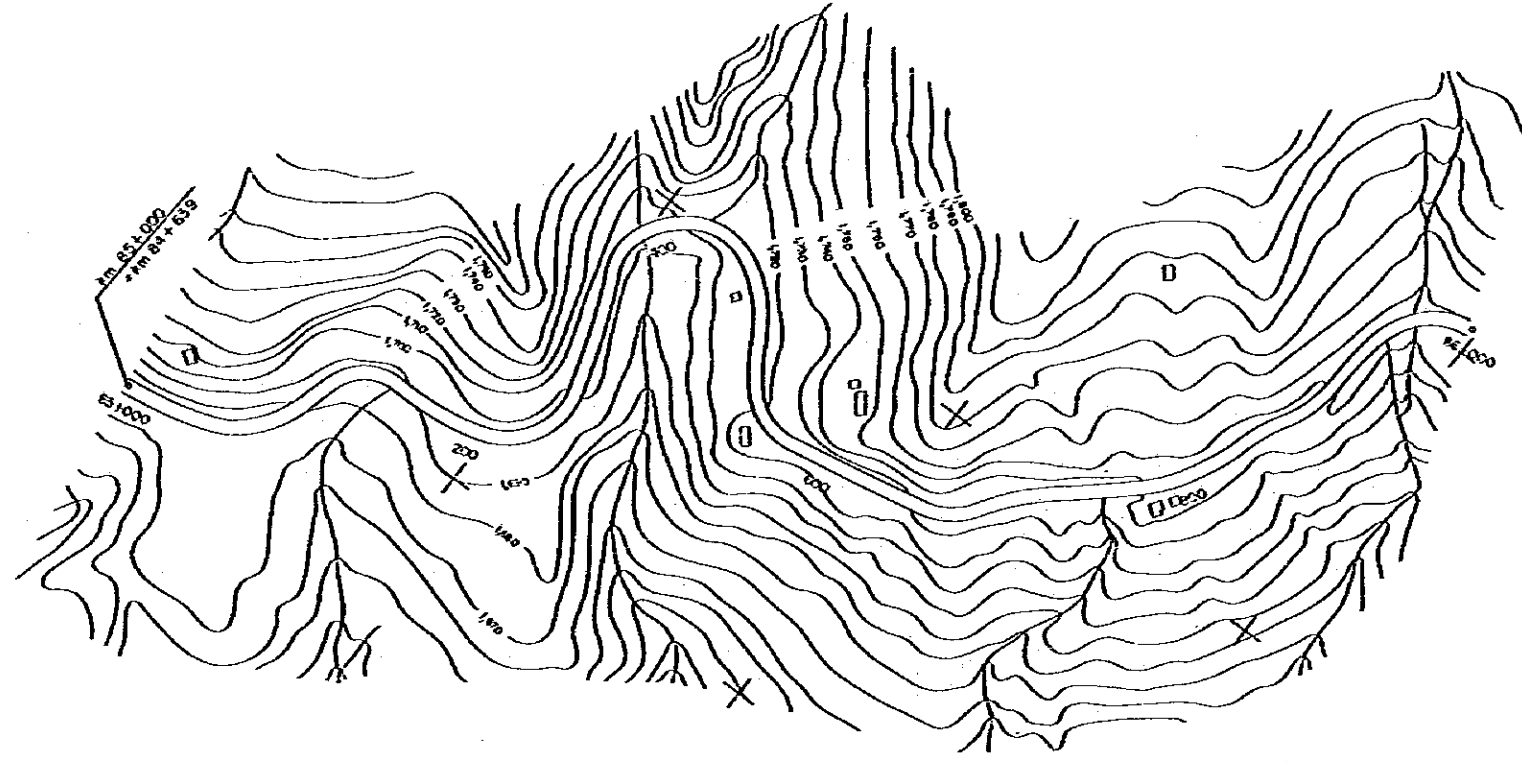
| | |
|-----------------------|--------------------------|
| DATUM LINE | DL=1,500 |
| VERTICAL GRADIENT | $i=4.50\%$ $L=426.0m$ |
| ACCUMULATIVE DISTANCE | 125,900 |
| IN - SITU KM POST | 440 |
| CONSTRUCTION KM POST | 450 |
| HORIZONTAL CURVE | $i=0.06\%$ $L=350.0m$ |
| | $i=5.26\%$ $L=190.0m$ |
| | $i=3.91\%$ $L=230.0m$ |
| | $i=5.33\%$ $L=210.0m$ |
| | $i=8.78\%$ $L=150.0m$ |



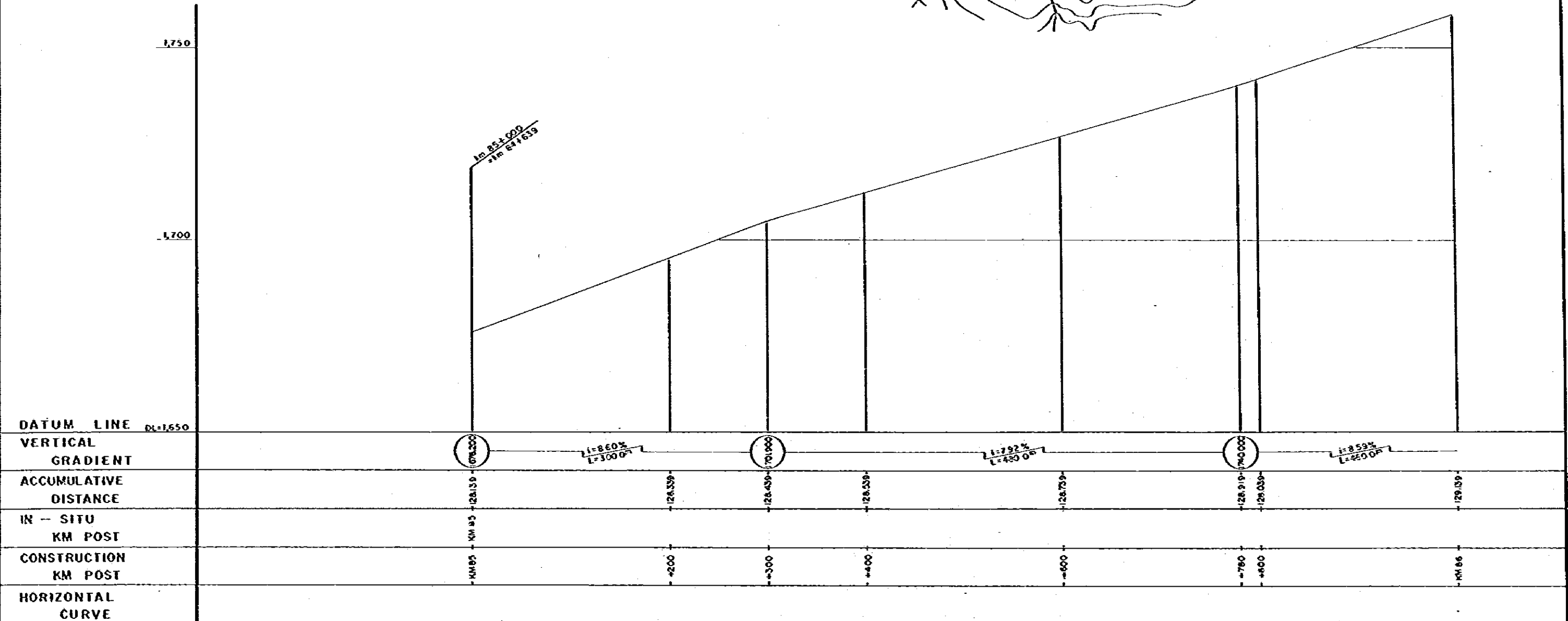
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

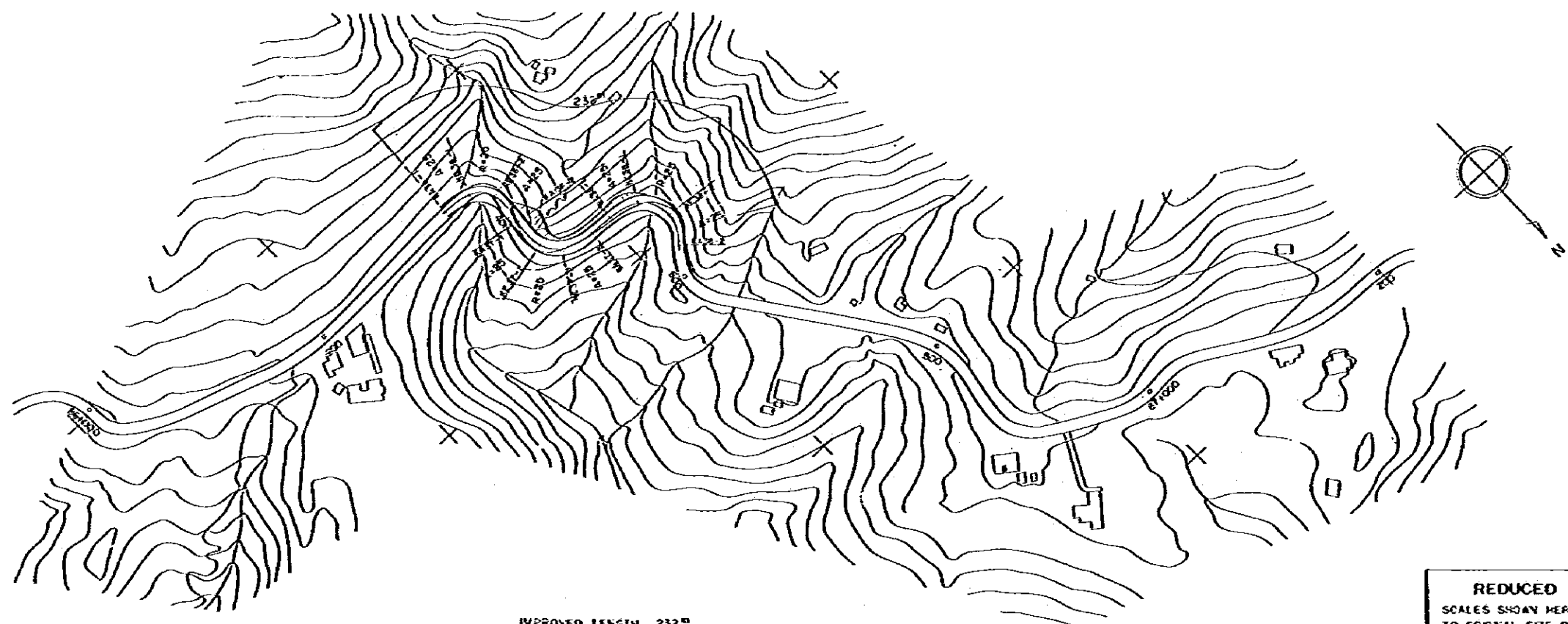
| | |
|-----------------------|------------------------------|
| DATUM LINE | OL = 1,575 |
| VERTICAL GRADIENT | $L = 8.78\%$ $L = 200.0m$ |
| ACCUMULATIVE DISTANCE | $L = 8.33\%$ $L = 450.0m$ |
| IN - SITU KM POST | $L = 8.31\%$ $L = 350.0m$ |
| CONSTRUCTION KM POST | $L = 9.65\%$ $L = 175.0m$ |
| HORIZONTAL CURVE | |

| | | | | | |
|---------|------------------------------------|--|-----------------------------------|-----------|------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (24) KM 83+600 — KM 85+000 | SCALE H = 1:2000 V = 1: 500 | DATE | MARCH 1982 |
| | | | | SHEET No. | 27 OF 135 |

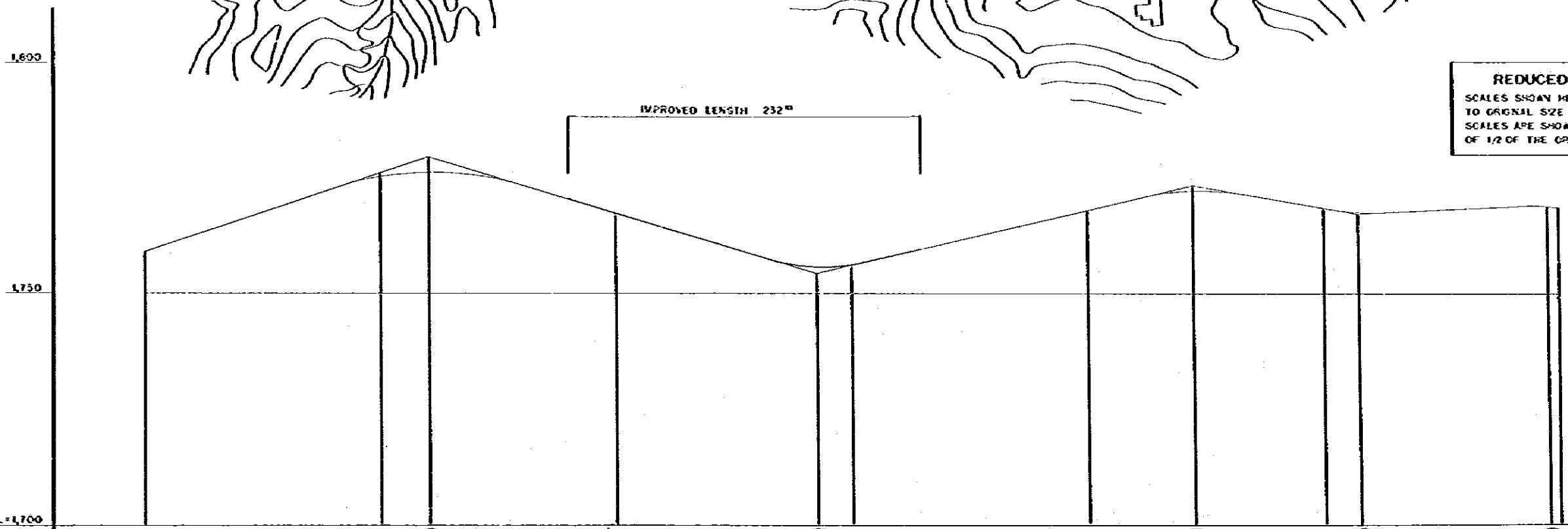


REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

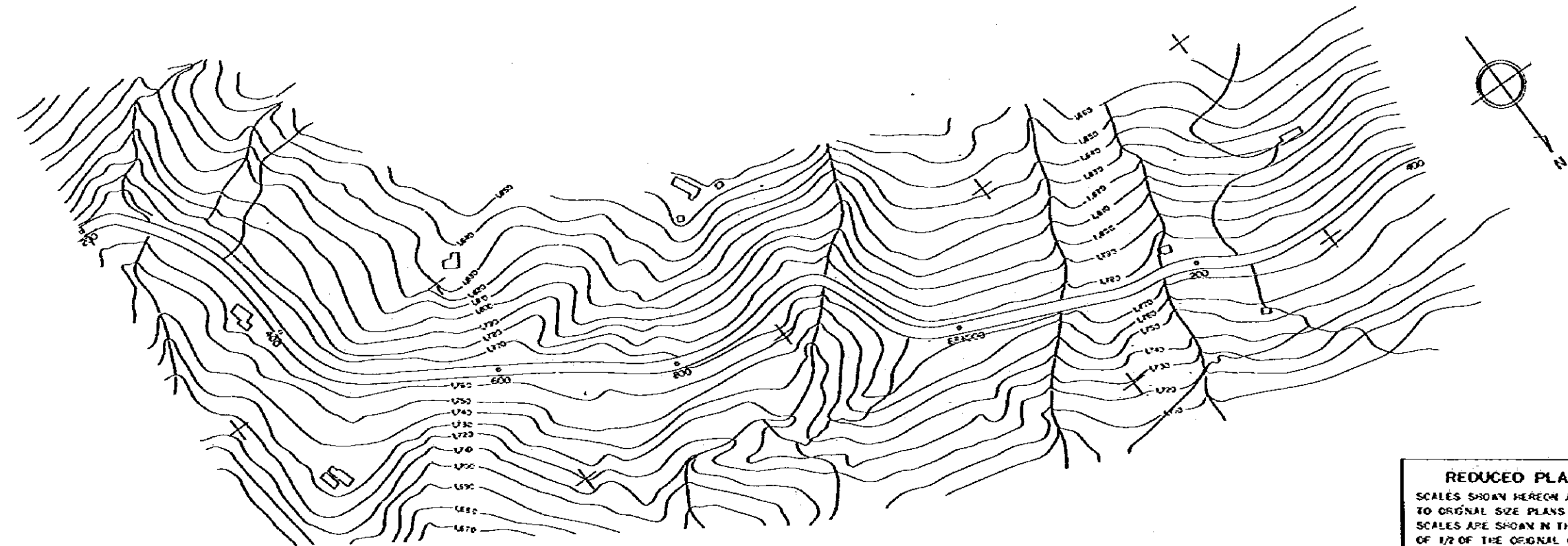




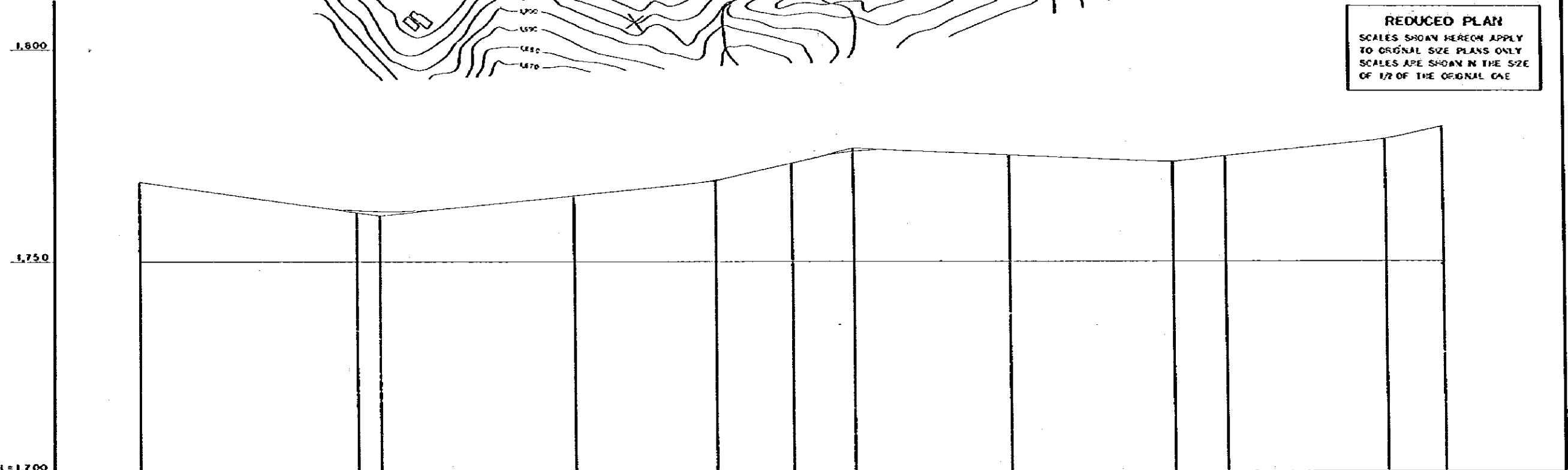
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL



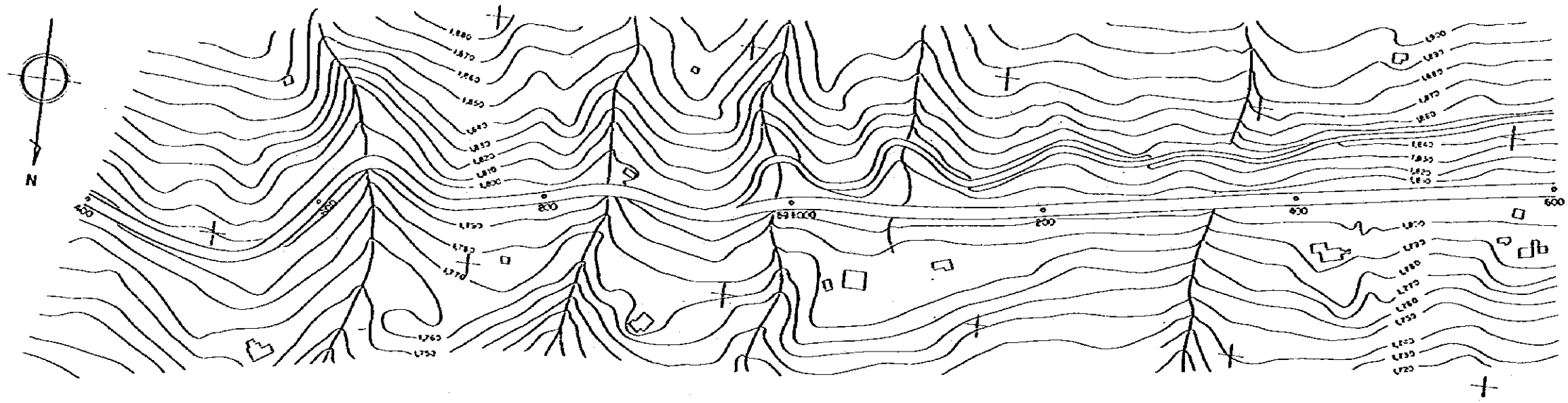
| | |
|-----------------------|---|
| DATUM LINE | DL=1700 |
| VERTICAL GRADIENT | $i = 8.59\%$ $L = 450.00m$ |
| ACCUMULATIVE DISTANCE | KM +29.159 +29.339 +29.379 +29.539 +29.709 +29.759 +29.939 +30.029 +30.139 +30.169 +30.339 |
| IN - SITU KM POST | +037 +200 +240 +400 +370 +600 +800 +890 +867 +038 +200 |
| CONSTRUCTION KM POST | +037 +200 +240 +400 +370 +600 +800 +890 +867 +038 +200 |
| HORIZONTAL CURVE | |



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

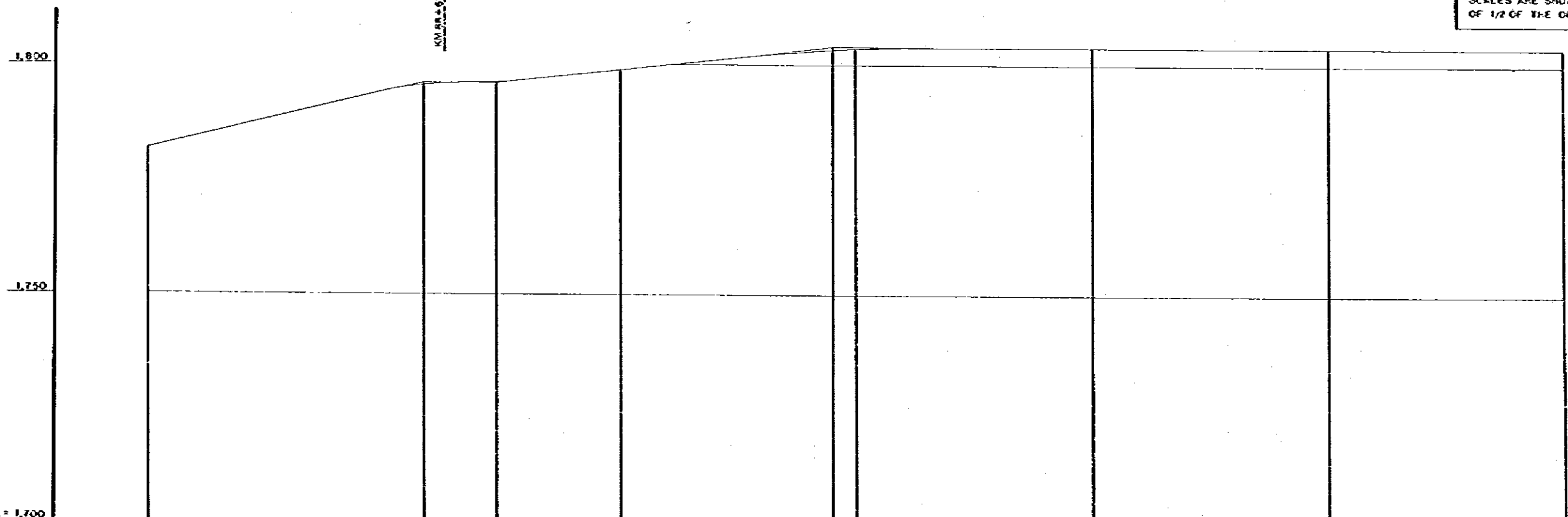


| | |
|-----------------------|--|
| DATUM LINE | DL=1,700 |
| VERTICAL GRADIENT | $i = 3.65\%$ $L = 230.0$ |
| ACCUMULATIVE DISTANCE | KM 87+200 130.559 130.540 130.700 130.849 130.819 130.992 131.139 131.299 131.359 131.446 131.539 |
| IN - SITU KM POST | |
| CONSTRUCTION KM POST | 400 421 600 750 800 858 888 927 950 970 987 990 |
| HORIZONTAL CURVE | |

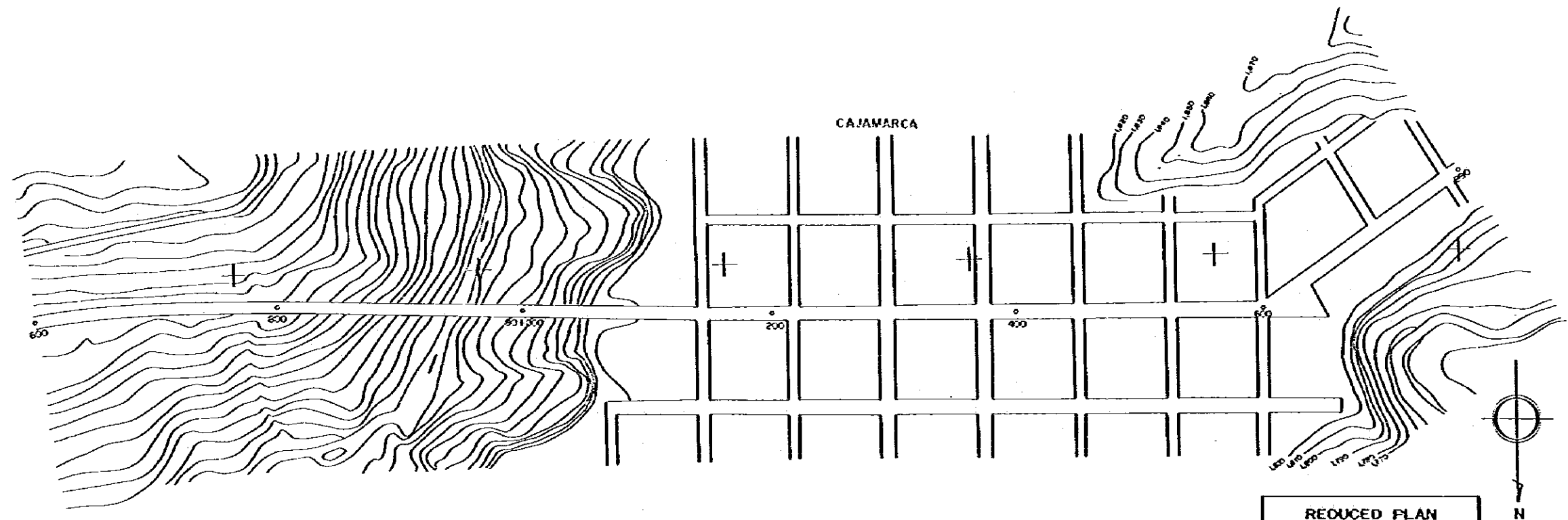


SUBSECTION 13 SUBSECTION 14

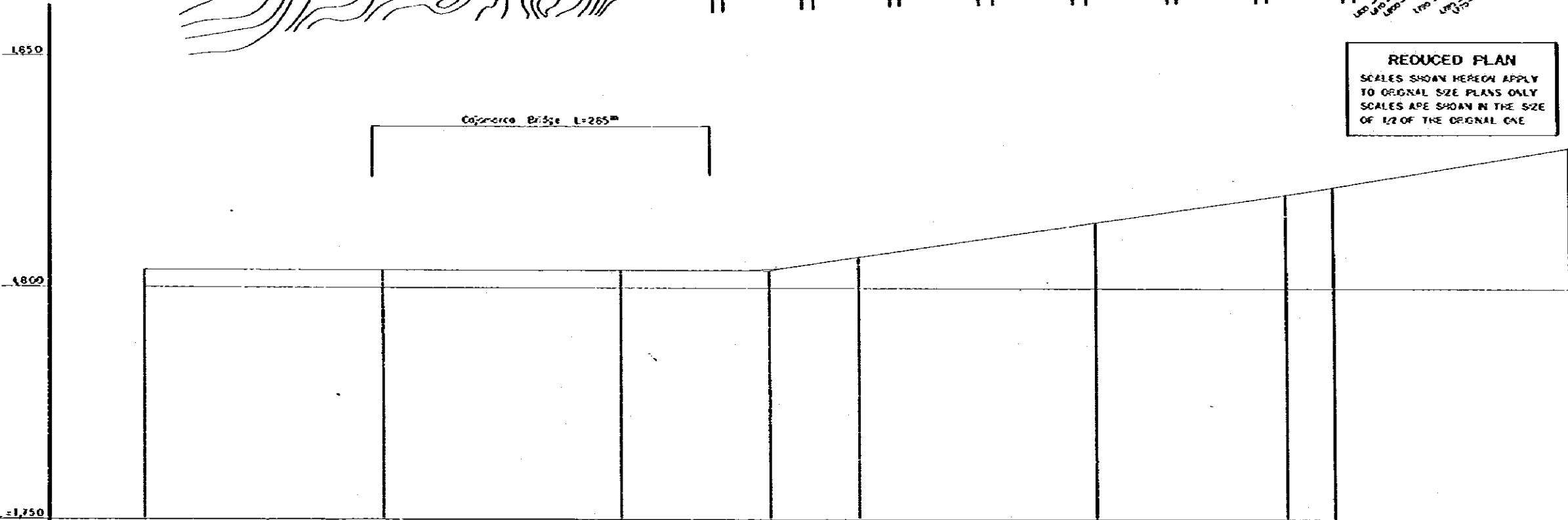
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



| | |
|-----------------------|--|
| DATUM LINE | CL = 1,700 |
| VERTICAL GRADIENT | $L = 5.66\%$ $L = 265.0\text{m}$ |
| ACCUMULATIVE DISTANCE | 131,539 131,709 131,772 131,835 131,898 132,119 132,159 132,339 132,539 132,739 |
| IN - SITU KM POST | |
| CONSTRUCTION KM POST | 88+400 +600 +635 +696 +800 +980 KM 89 +011 +200 +400 +600 |
| HORIZONTAL CURVE | |
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT |
| | MINIMUM SCALE IMPROVEMENT PLAN (28) KM 88+400 — KM 89+600 |
| | SCALE H = 1:2000 V = 1: 500 |
| | DATE MARCH 1982 SHEET No. 31 OF 135 |

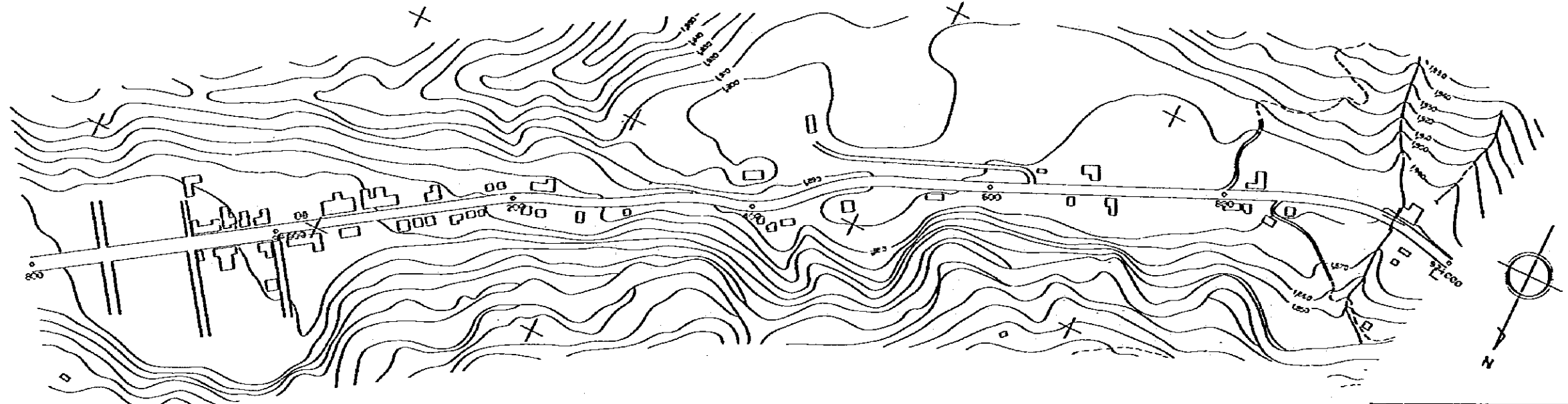


REDUCED PLAN
 SCALES SHOWN HEREON APPLY
 TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE
 OF 1/2 OF THE ORIGINAL ONE



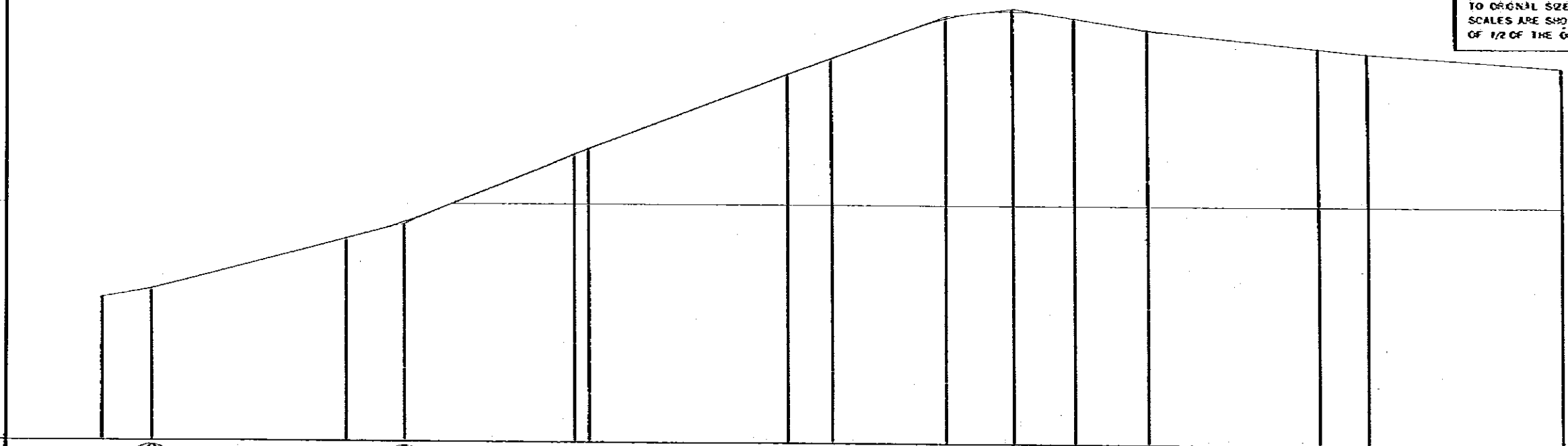
| | |
|-----------------------|--|
| DATUM LINE | DL=1,250 |
| VERTICAL GRADIENT | LEVEL L=1145.0m |
| ACCUMULATIVE DISTANCE | KM 132.750, 132.800, 133.199, 133.264, 133.339, 133.399, 133.609, 133.600, 133.600 |
| IN - SITU KM POST | |
| CONSTRUCTION KM POST | +0+00, +0+00, +0+00, +0+125, +0+200, +0+400, +0+500, +0+600, +0+800 |
| HORIZONTAL CURVE | |

| | | | | |
|---------|------------------------------------|--|---------------------------|---------------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (29) KM 89+600 — KM 90+800 | SCALE H=1:2000 V=1:500 | DATE MARCH 1982 |
| | | | | SHEET No. 32 OF 135 |



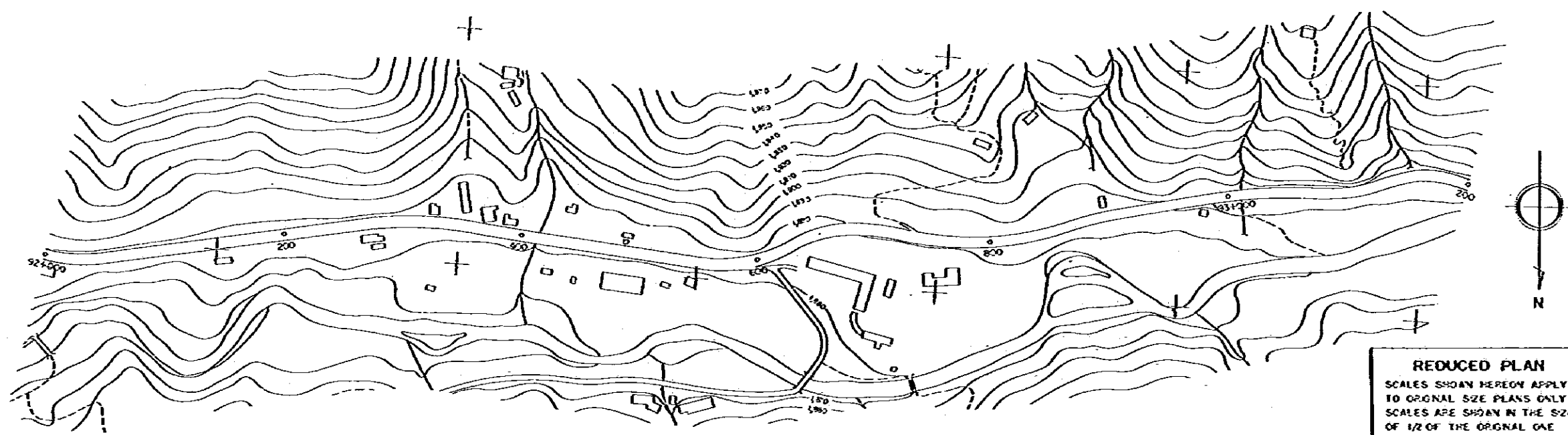
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL CASE

1,900
 1,650



| | |
|-----------------------|--------------------------|
| DATUM LINE | DL=1,600 |
| VERTICAL GRADIENT | $i=4.18\%$ $L=2800m$ |
| ACCUMULATIVE DISTANCE | $i=6.63\%$ $L=2080m$ |
| IN-SITU KM POST | $i=10.37\%$ $L=1350m$ |
| CONSTRUCTION KM POST | $i=3.40\%$ $L=1810m$ |
| HORIZONTAL CURVE | $i=3.08\%$ $L=1550m$ |
| | $i=4.00\%$ $L=1100m$ |
| | $i=2.61\%$ $L=1550m$ |
| | $i=1.76\%$ $L=3450m$ |

| | | | | | |
|---------|------------------------------------|--|------------------------------|-----------|------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (30) KM 90+800 — KM 92+000 | SCALE H=1:2000 V=1:500 | DATE | MARCH 1982 |
| | | | | SHEET No. | 33 OF 135 |



1,900

1,650

DATUM LINE DL=1600

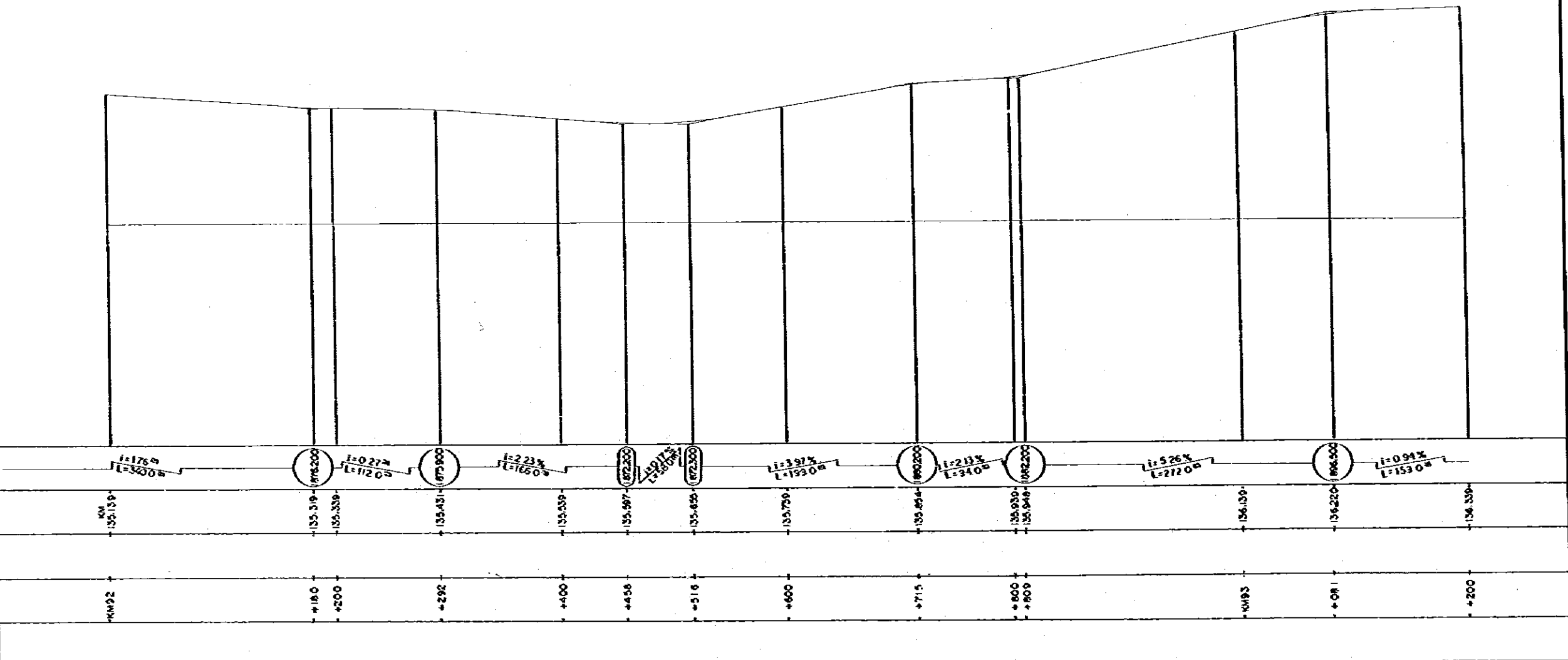
VERTICAL GRADIENT

ACCUMULATIVE DISTANCE

IN - SITU KM POST

CONSTRUCTION KM POST

HORIZONTAL CURVE



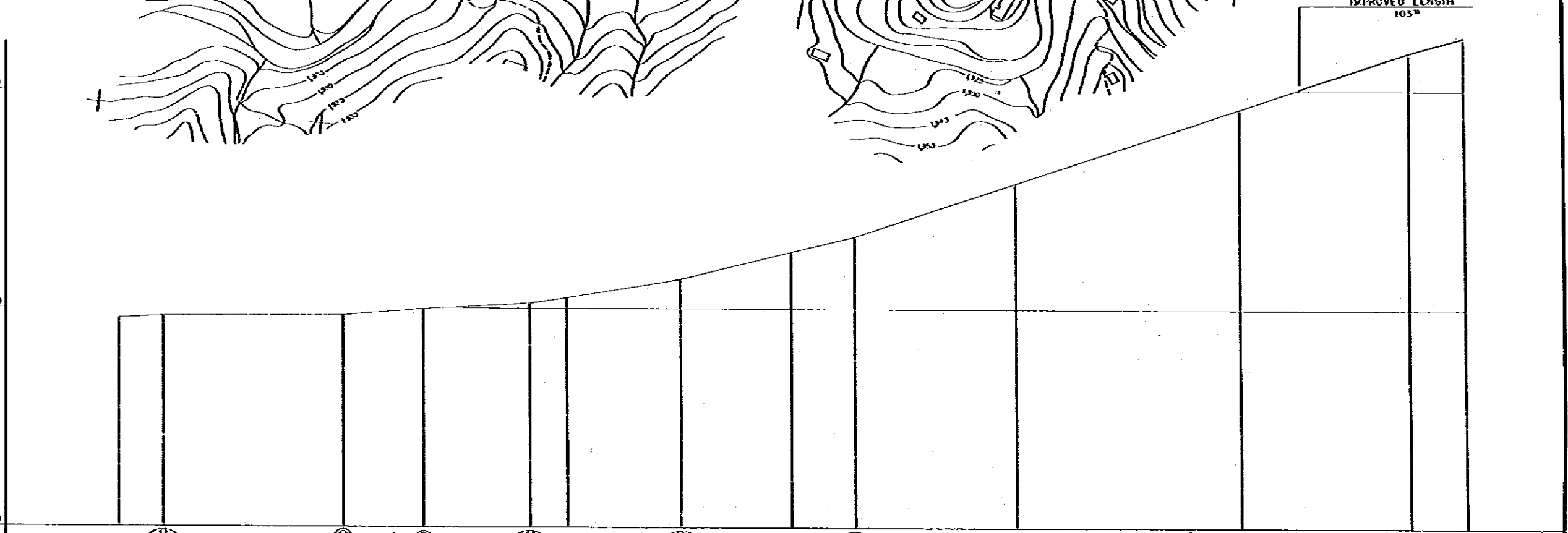
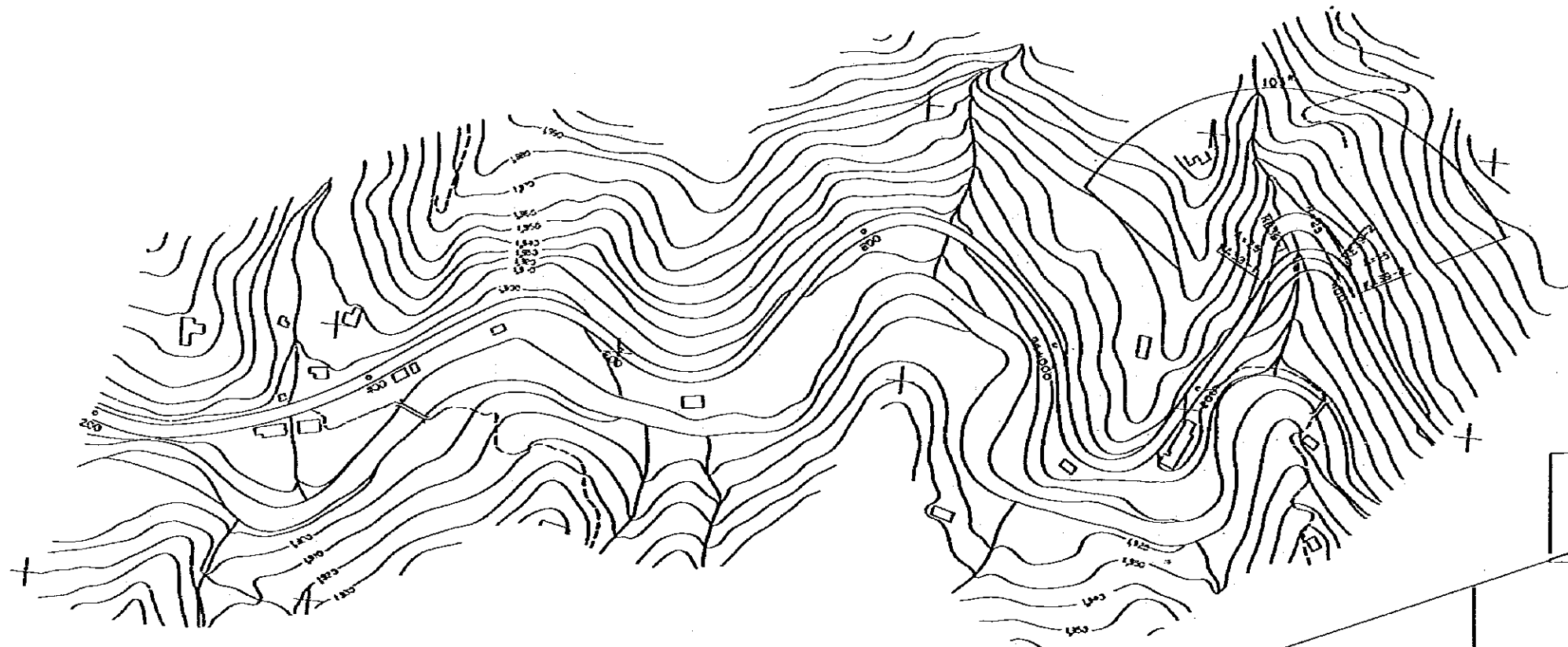
M O P T

BOGOTA — BUENAVENTURA ROAD PROJECT

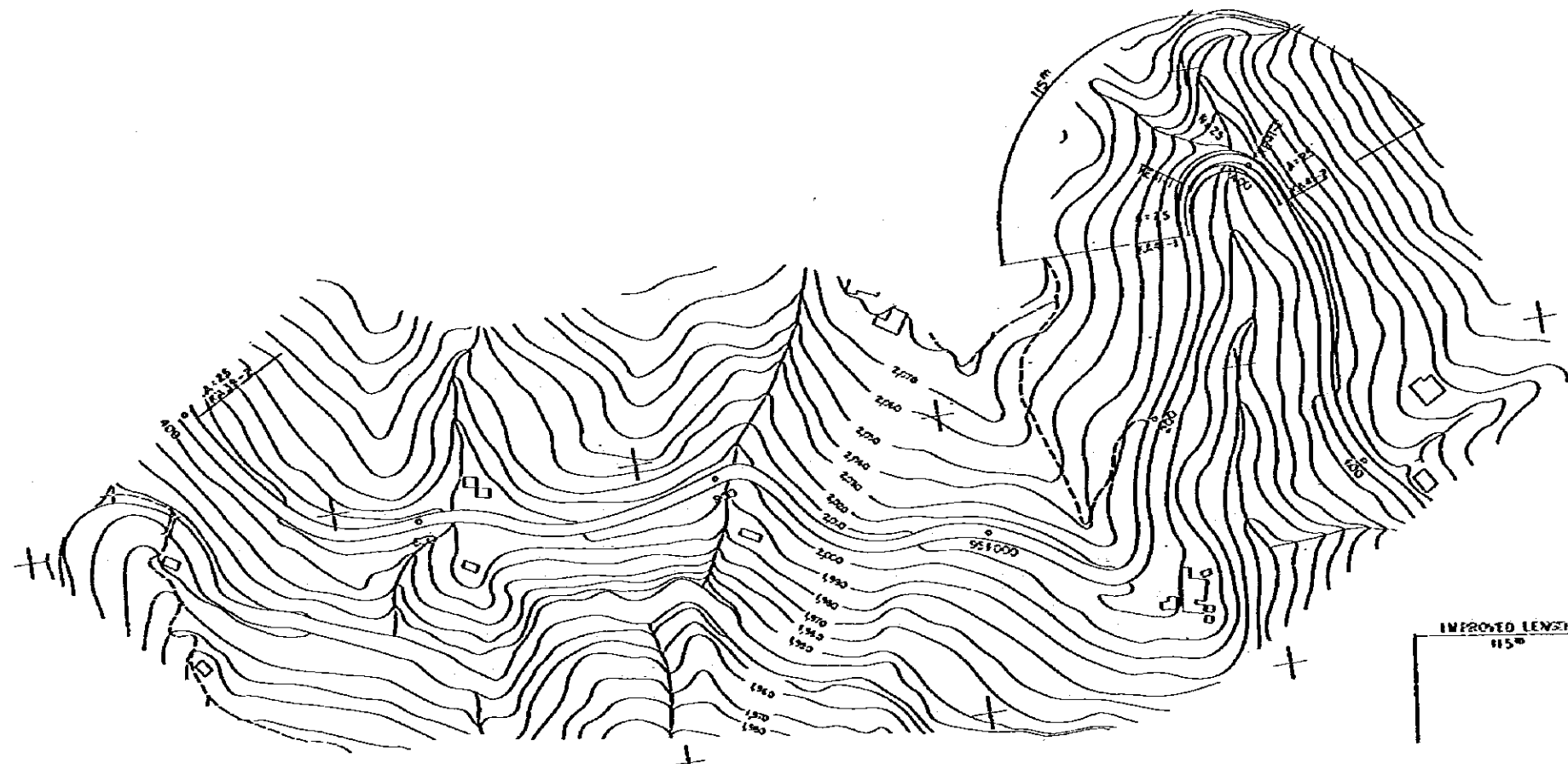
MINIMUM SCALE IMPROVEMENT PLAN (31)
KM 92+000 — KM 93+200

SCALE H=1:2000
V=1:500

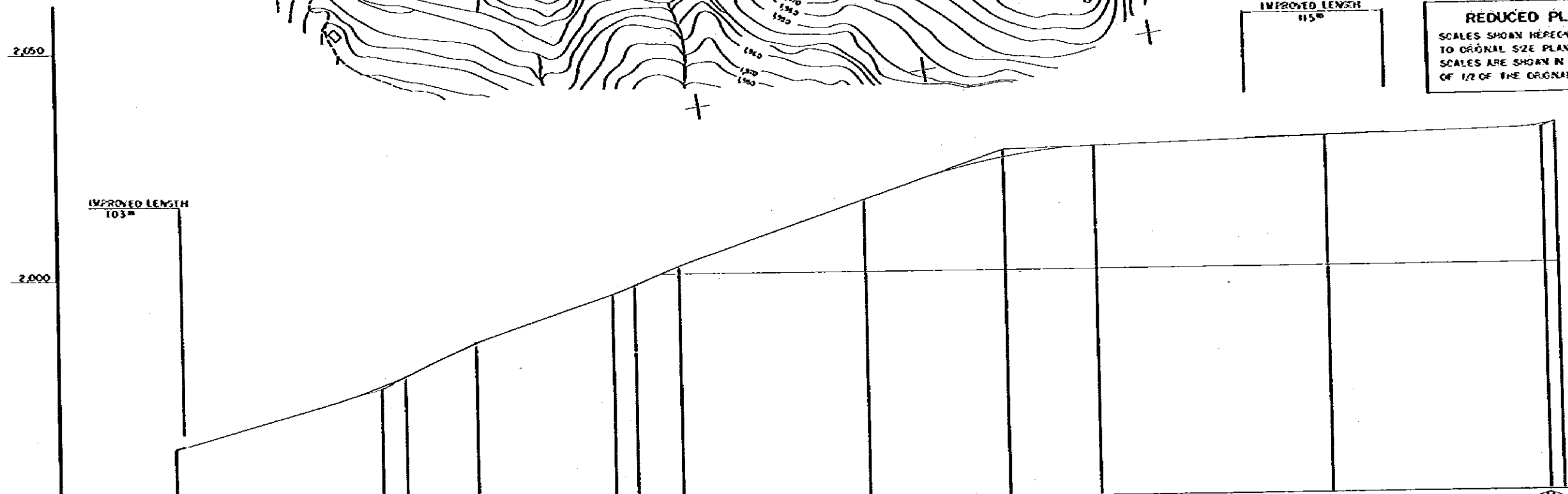
DATE MARCH 1982
SHEET No. 34 OF 135



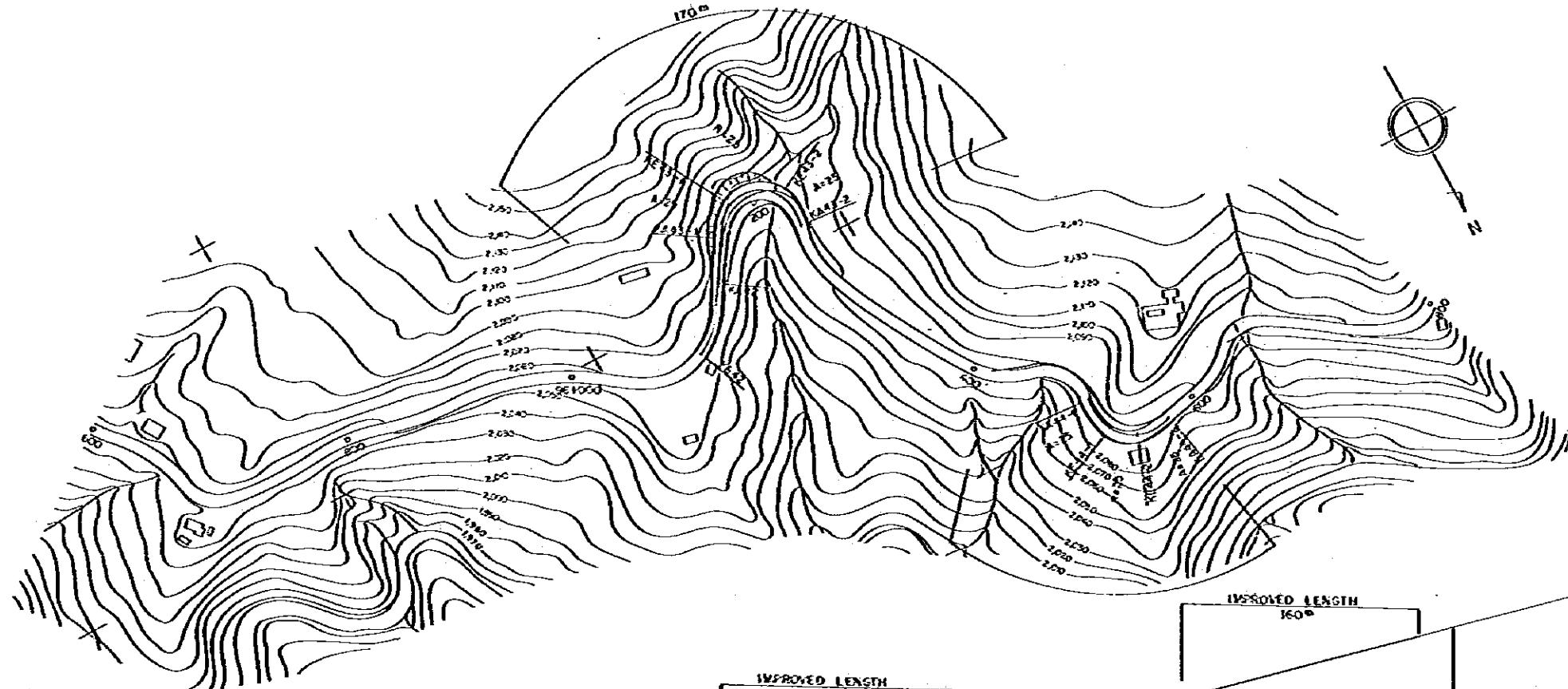
| | |
|-----------------------|--------------------------|
| DATUM LINE | OL=1,850 |
| VERTICAL GRADIENT | $i=0.94\%$ $L=159.0m$ |
| ACCUMULATIVE DISTANCE | 136.339 |
| IN - SITU KM POST | 200 |
| CONSTRUCTION KM POST | 240 |
| HORIZONTAL CURVE | $i=0.19\%$ $L=160.0m$ |
| | 400 |
| | 472 |
| | 566 |
| | 600 |
| | 700 |
| | 800 |
| | 856 |
| | 920 |
| | 994 |
| | 1074 |
| | 1174 |
| | 1200 |
| | 1374 |
| | 1400 |
| | 1539 |
| | 1574 |
| | 1600 |
| | 1739 |
| | 1774 |
| | 1800 |
| | 1939 |
| | 1974 |
| | 2000 |
| | 2139 |
| | 2174 |
| | 2200 |
| | 2339 |
| | 2374 |
| | 2400 |
| | 2539 |
| | 2574 |
| | 2600 |
| | 2739 |
| | 2774 |
| | 2800 |
| | 2939 |
| | 2974 |
| | 3000 |
| | 3139 |
| | 3174 |
| | 3200 |
| | 3339 |
| | 3374 |
| | 3400 |
| | 3539 |
| | 3574 |
| | 3600 |
| | 3739 |
| | 3774 |
| | 3800 |
| | 3939 |
| | 3974 |
| | 4000 |
| | 4139 |
| | 4174 |
| | 4200 |
| | 4339 |
| | 4374 |
| | 4400 |
| | 4539 |
| | 4574 |
| | 4600 |
| | 4739 |
| | 4774 |
| | 4800 |
| | 4939 |
| | 4974 |
| | 5000 |
| | 5139 |
| | 5174 |
| | 5200 |
| | 5339 |
| | 5374 |
| | 5400 |
| | 5539 |
| | 5574 |
| | 5600 |
| | 5739 |
| | 5774 |
| | 5800 |
| | 5939 |
| | 5974 |
| | 6000 |
| | 6139 |
| | 6174 |
| | 6200 |
| | 6339 |
| | 6374 |
| | 6400 |
| | 6539 |
| | 6574 |
| | 6600 |
| | 6739 |
| | 6774 |
| | 6800 |
| | 6939 |
| | 6974 |
| | 7000 |
| | 7139 |
| | 7174 |
| | 7200 |
| | 7339 |
| | 7374 |
| | 7400 |
| | 7539 |
| | 7574 |
| | 7600 |
| | 7739 |
| | 7774 |
| | 7800 |
| | 7939 |
| | 7974 |
| | 8000 |
| | 8139 |
| | 8174 |
| | 8200 |
| | 8339 |
| | 8374 |
| | 8400 |
| | 8539 |
| | 8574 |
| | 8600 |
| | 8739 |
| | 8774 |
| | 8800 |
| | 8939 |
| | 8974 |
| | 9000 |
| | 9139 |
| | 9174 |
| | 9200 |
| | 9339 |
| | 9374 |
| | 9400 |
| | 9539 |
| | 9574 |
| | 9600 |
| | 9739 |
| | 9774 |
| | 9800 |
| | 9939 |
| | 9974 |
| | 10000 |



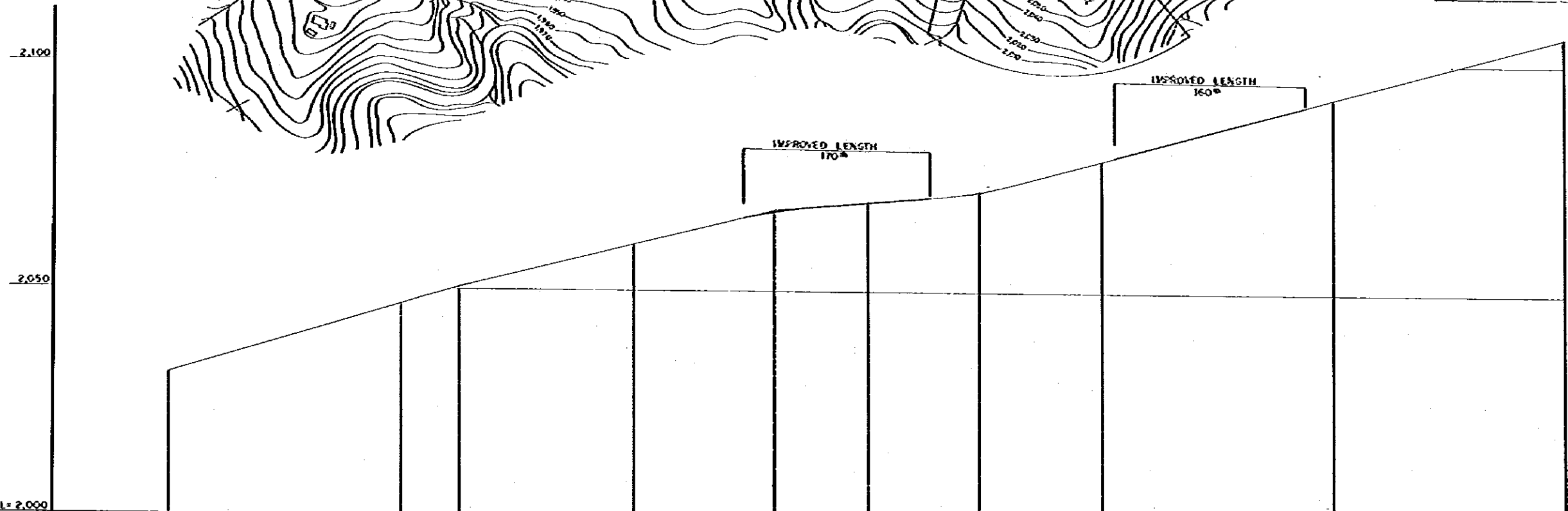
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



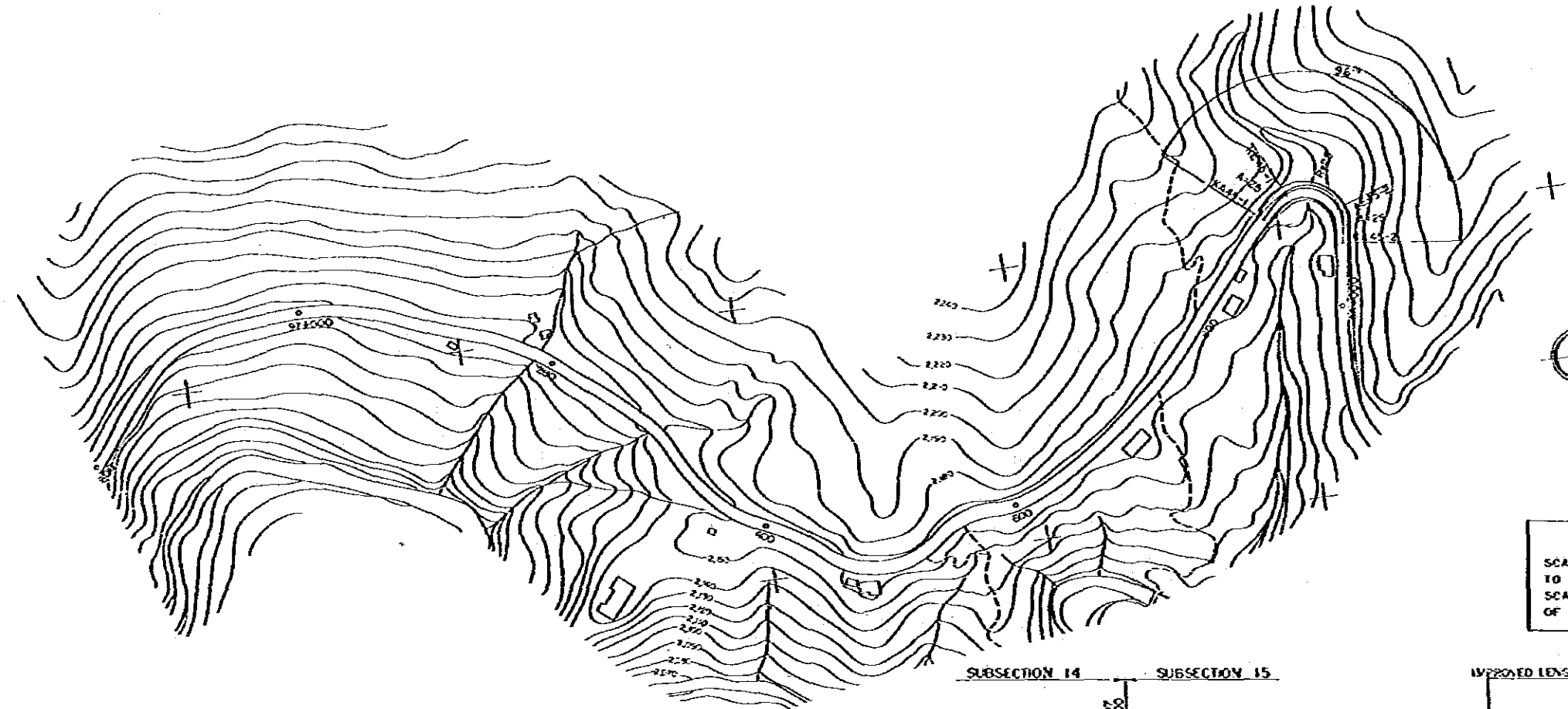
| | | |
|-----------------------|--|--|
| DATUM LINE | DL=1,950 | |
| VERTICAL GRADIENT | $L=237.0m$ $L=83.0m$ $L=83.0m$ $L=283.0m$ $L=468.0m$ | |
| ACCUMULATIVE DISTANCE | 137.53 137.71 137.75 137.80 137.91 137.97 137.97 138.26 138.53 139.53 139.73 | |
| IN - SITU KM POST | 400 478 480 461 470 480 488 483 495 495 500 500 589 600 | |
| CONSTRUCTION KM POST | 400 478 480 461 470 480 488 483 495 495 500 500 589 600 | |
| HORIZONTAL CURVE | | |
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (33) KM 94+400 — KM 95+600 |
| | SCALE | H = 1:2000 V = 1:500 |
| | DATE | MARCH 1982 |
| | SHEET No. | 36 OF 135 |



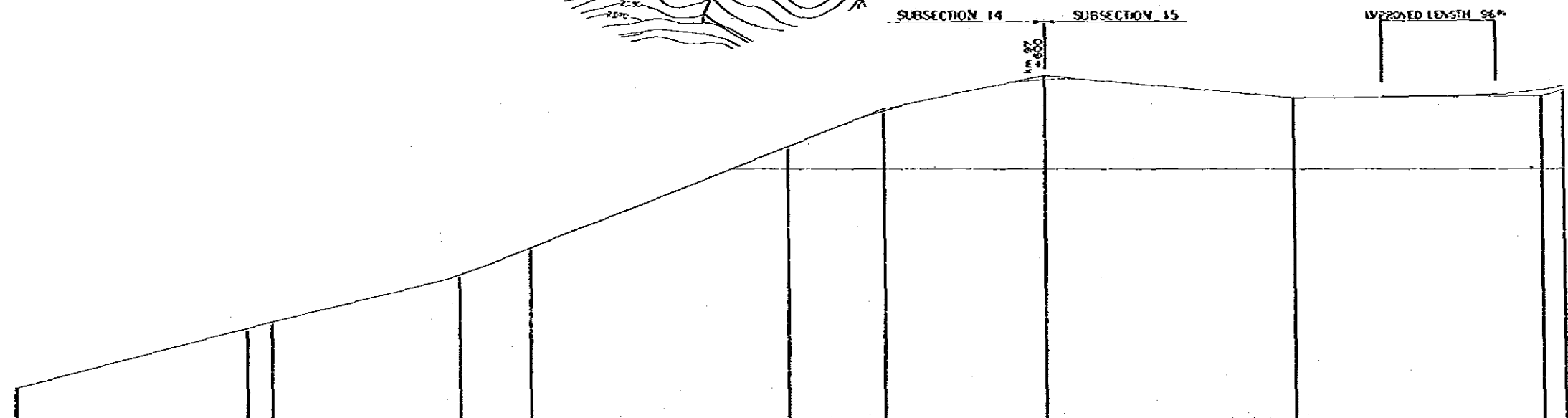
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY. SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE.



| | |
|-----------------------|------------------------------|
| DATUM LINE | DL = 2,000 |
| VERTICAL GRADIENT | $L = 7.78\%$ $L = 261.0m$ |
| ACCUMULATIVE DISTANCE | $L = 6.41\%$ $L = 250.0m$ |
| IN - SITU KM POST | $L = 2.23\%$ $L = 115.0m$ |
| CONSTRUCTION KM POST | $L = 6.86\%$ $L = 685.0m$ |
| HORIZONTAL CURVE | |



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



DATUM LINE $Dt=2,100$
 VERTICAL GRADIENT
 ACCUMULATIVE DISTANCE
 IN - SITU KM POST
 CONSTRUCTION KM POST
 HORIZONTAL CURVE

| | | | | | | |
|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| VERTICAL GRADIENT | $L=665m$ $L=655.0m$ | $L=630m$ $L=165.0m$ | $L=991m$ $L=329.0m$ | $L=524m$ $L=124.0m$ | $L=245m$ $L=191.0m$ | $L=036m$ $L=154.0m$ |
| ACCUMULATIVE DISTANCE | 000.000 | 066.500 | 132.000 | 231.100 | 329.200 | 420.200 |
| IN - SITU KM POST | 000.000 | 066.500 | 132.000 | 231.100 | 329.200 | 420.200 |
| CONSTRUCTION KM POST | 000.000 | 066.500 | 132.000 | 231.100 | 329.200 | 420.200 |
| HORIZONTAL CURVE | | | | | | |

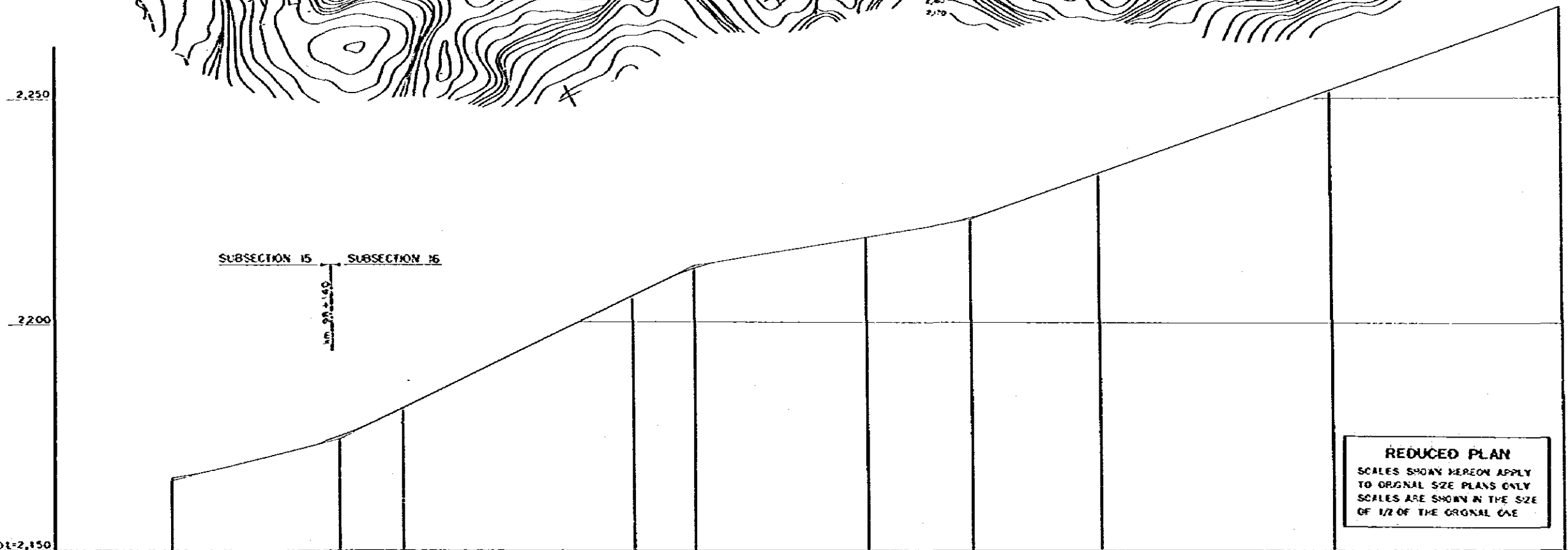
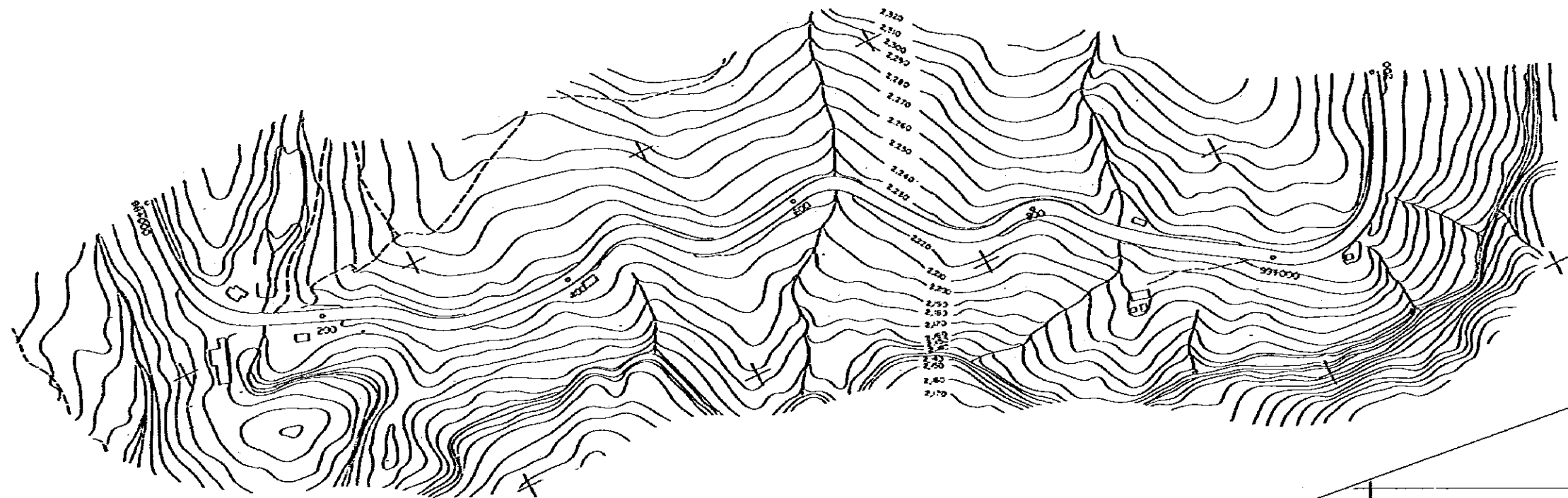
M O P T

BOGOTA - BUENAVENTURA ROAD PROJECT

MINIMUM SCALE IMPROVEMENT PLAN (35)
 KM 96+800 - KM 98+000

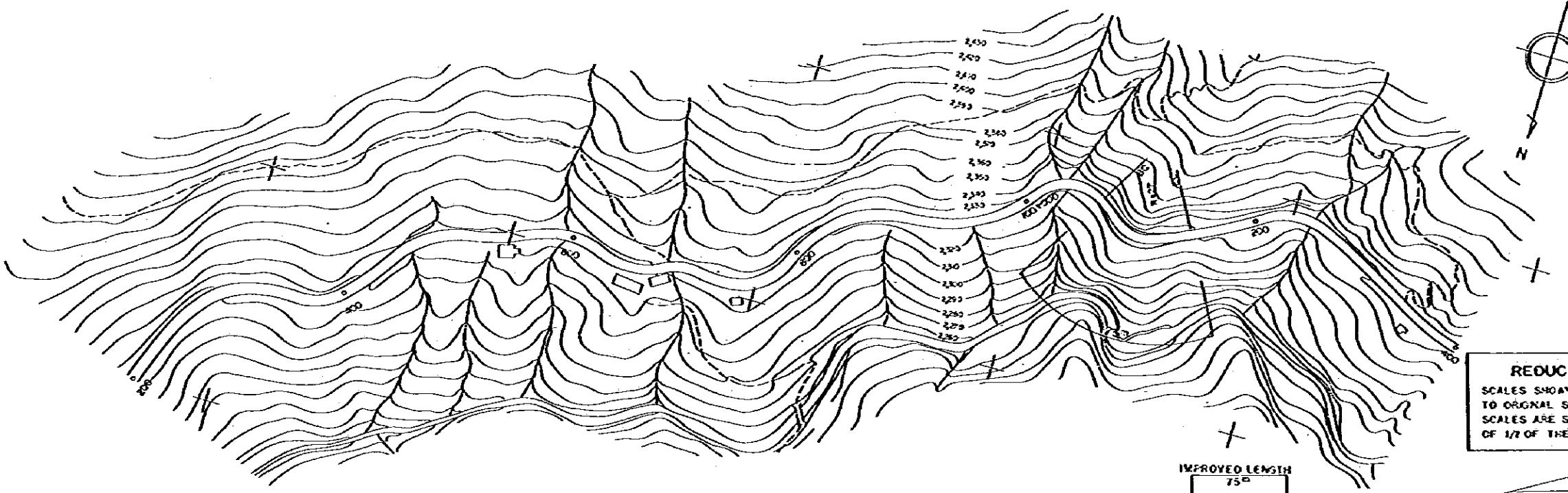
SCALE H = 1:2000
 V = 1:500

DATE MARCH 1982
 SHEET No. 38 OF 135

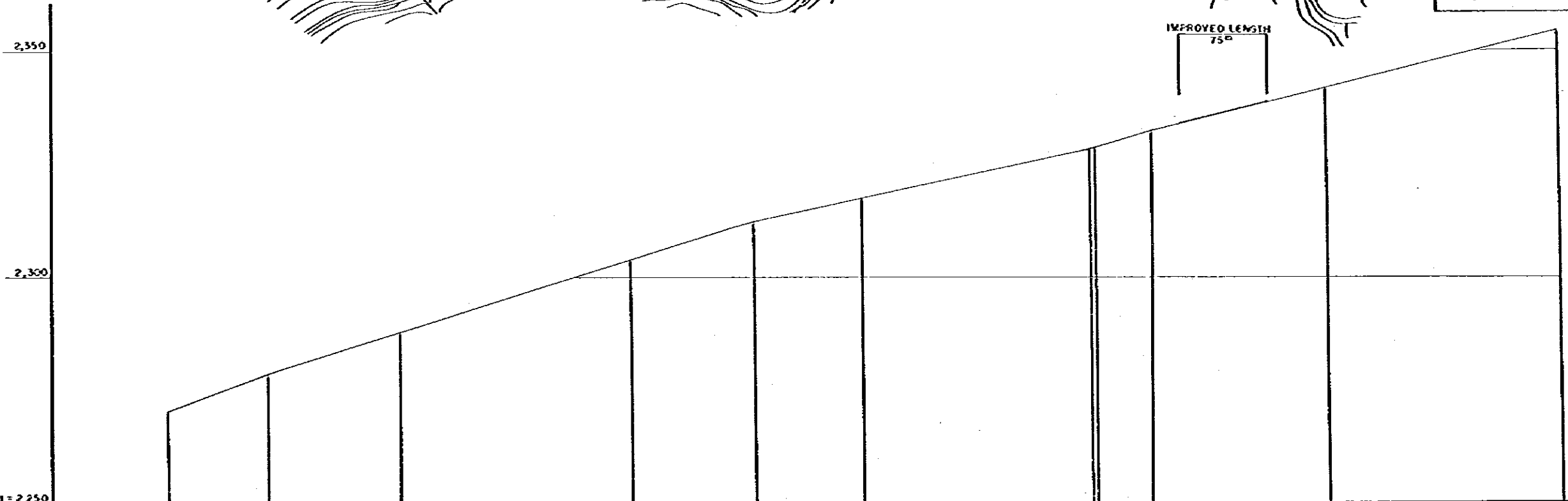


REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL CASE

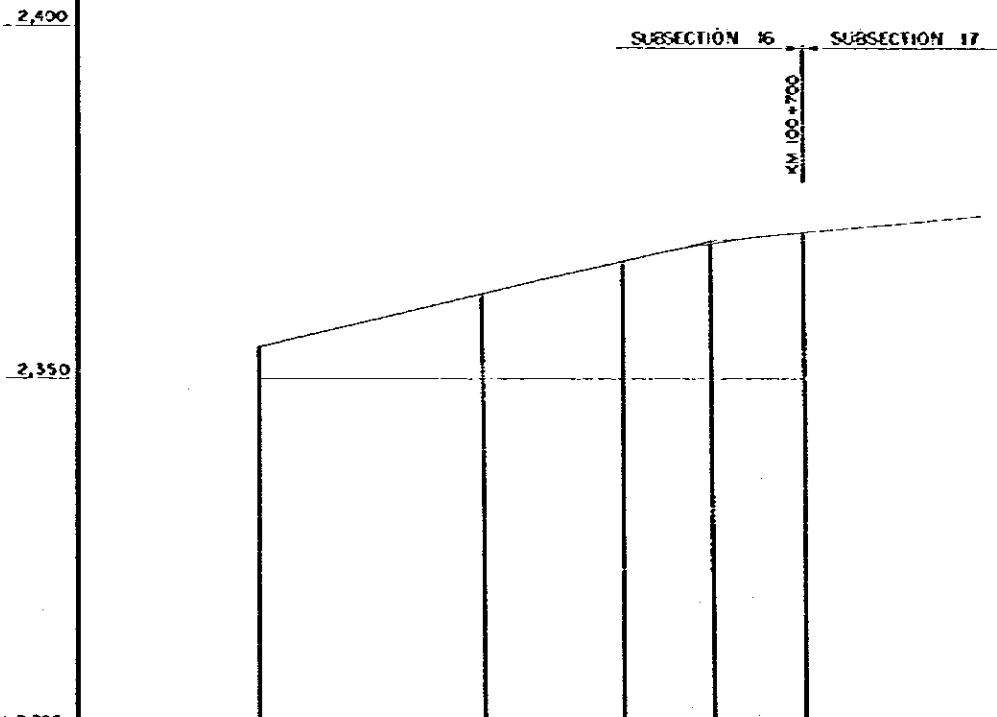
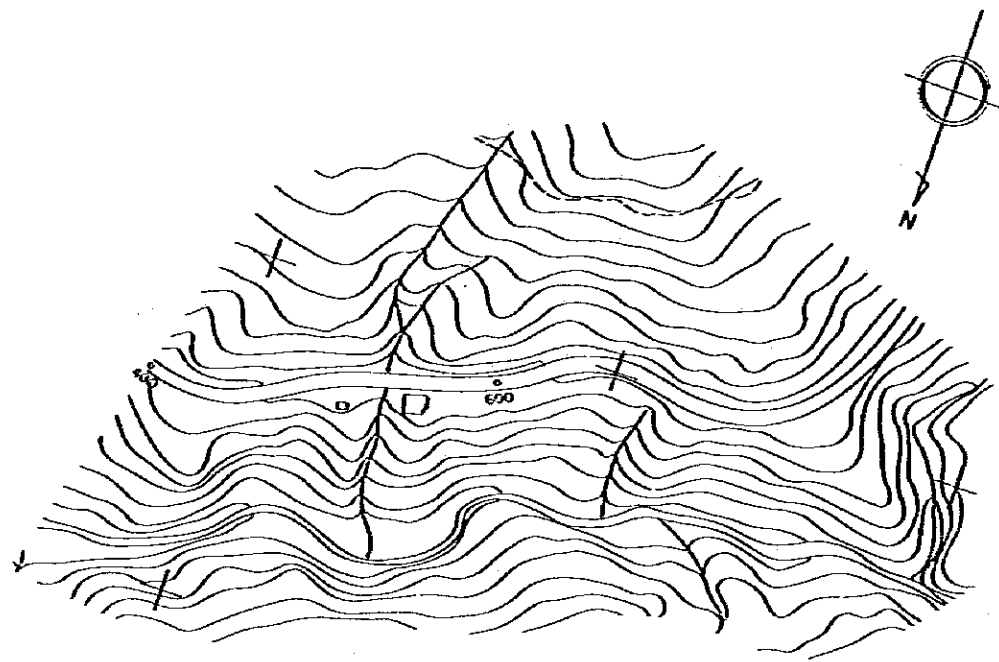
| | | | | | | | | | | |
|-----------------------|----------|------------------------------|--|------------------------------|--|------------------------------|--|------------------------------|--|---------|
| DATUM LINE | 01=2,150 | | | | | | | | | |
| VERTICAL GRADIENT | | $i = 6.36\%$ $L = 162.0m$ | | $i = 9.45\%$ $L = 407.0m$ | | $i = 7.32\%$ $L = 138.0m$ | | $i = 9.33\%$ $L = 597.0m$ | | |
| ACCUMULATIVE DISTANCE | | 141.139 | | 141.294 | | 141.509 | | 141.759 | | 142.339 |
| IN - SITU KM POST | | | | | | | | | | |
| CONSTRUCTION KM POST | | 0+000 | | 0+105 | | 0+200 | | 0+400 | | 0+502 |
| HORIZONTAL CURVE | | | | | | | | | | |



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE



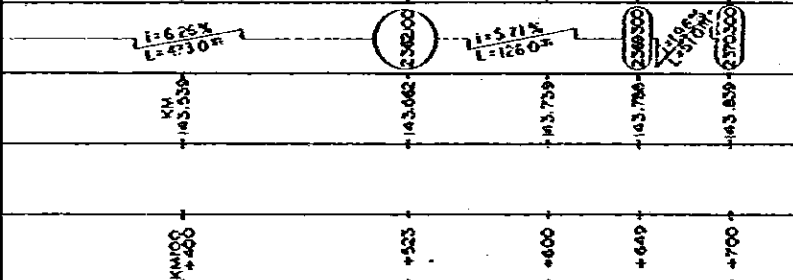
| | | | | | | | | |
|-----------------------|---------------------|---------|-------------------|---------|---------------------|---------|---------------------|---------|
| DATUM LINE | dl=2250 | | | | | | | |
| VERTICAL GRADIENT | L=9.33% L=534.0m | | L=8.04% L=430m | | L=5.43% L=290.0m | | L=6.26% L=473.0m | |
| ACCUMULATIVE DISTANCE | 142.539 | 142.426 | 142.539 | 142.709 | 142.840 | 142.909 | 143.189 | 143.339 |
| IN - SITU KM POST | | | | | | | | |
| CONSTRUCCIÓN KM POST | 99+200 | +297 | +400 | +600 | +706 | +800 | +996 | +1000 |
| HORIZONTAL CURVE | | | | | | | | |



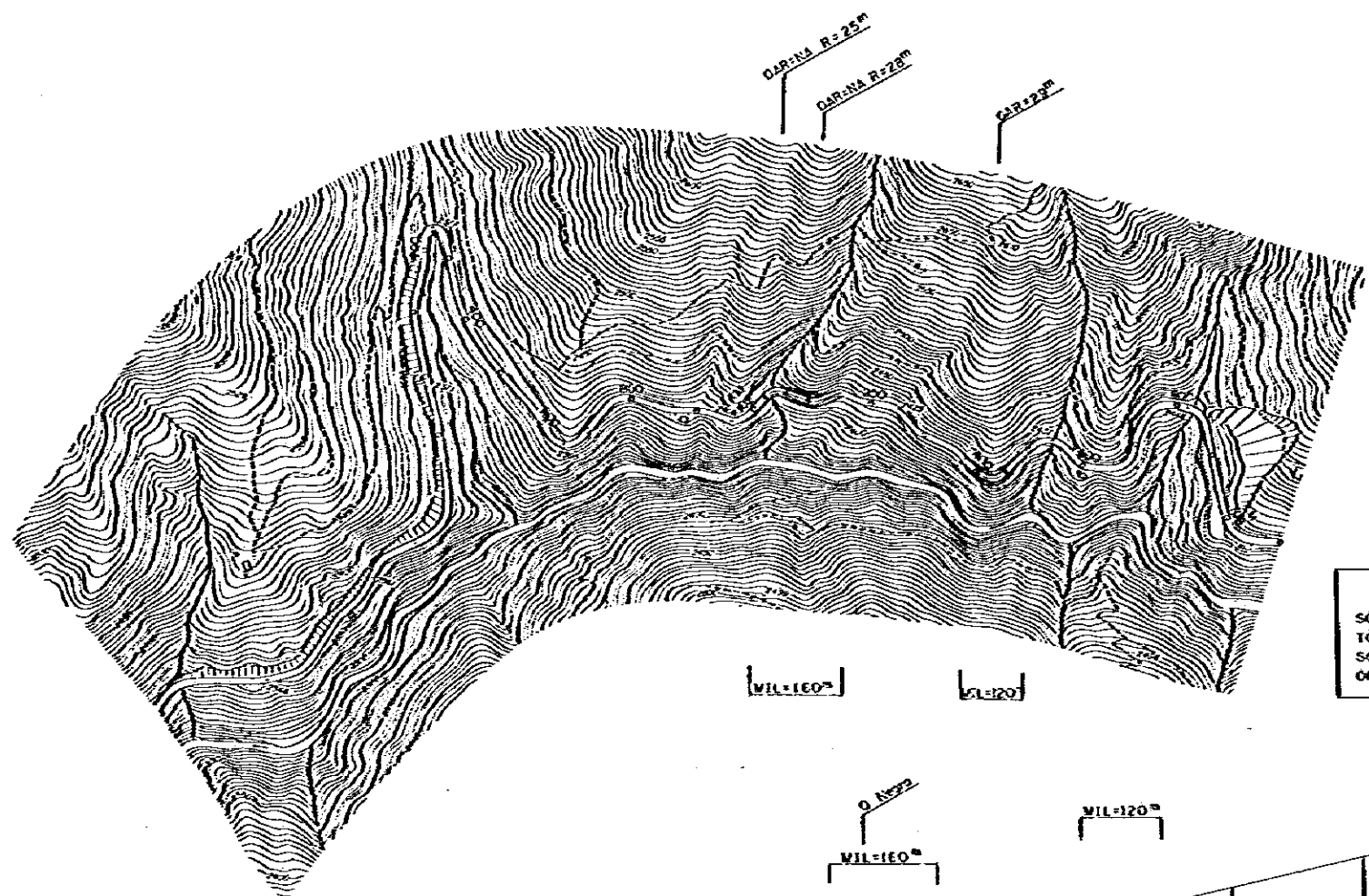
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL CASE

DATUM LINE DL=2,300

VERTICAL GRADIENT
 ACCUMULATIVE DISTANCE
 IN - SITU KM POST
 CONSTRUCTION KM POST
 HORIZONTAL CURVE



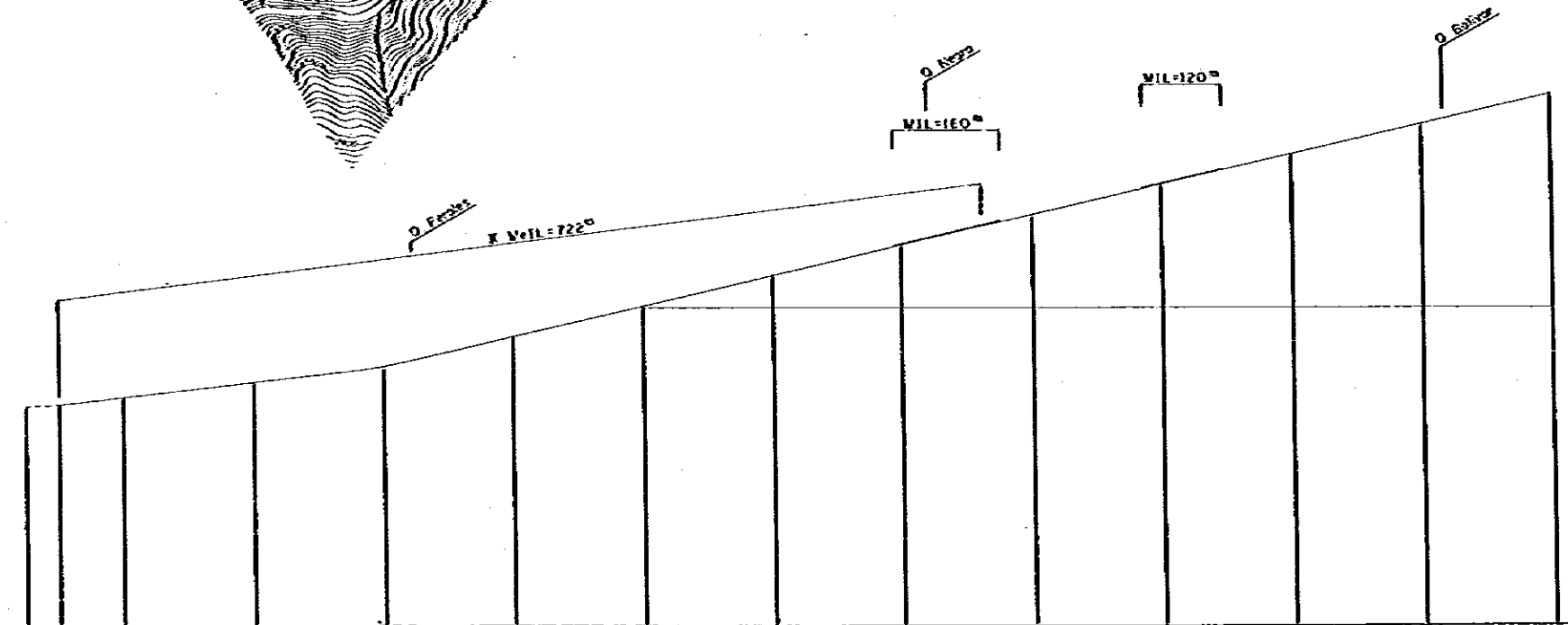
| | | | | |
|---------|------------------------------------|--|------------------------------|---------------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (38) KM 100+400 — KM 100+700 | SCALE H=1:2000 V=1:500 | DATE MARCH 1982 |
| | | | | SHEET No. 41 OF 135 |



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

2,500
 2,400

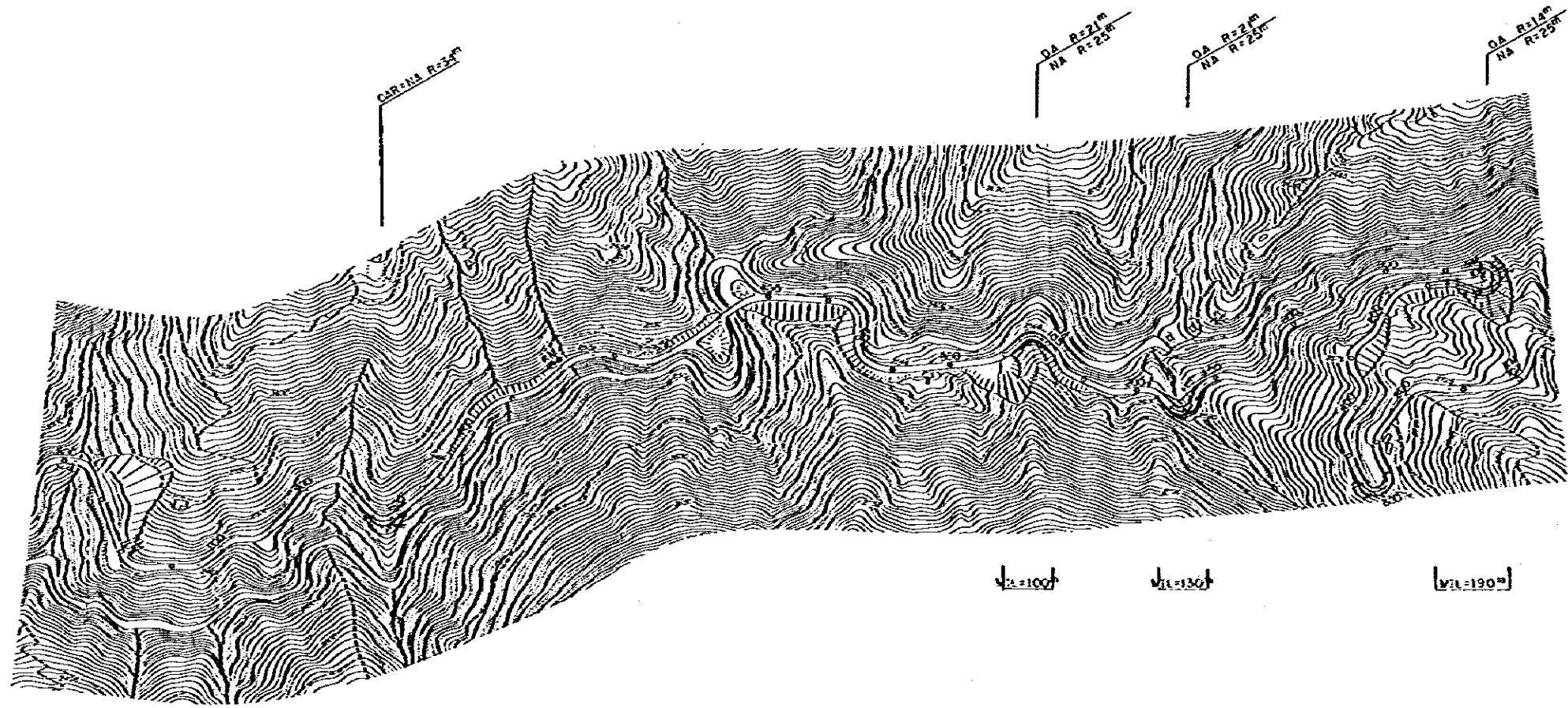
Legend
 X WIL - Median Improvement Length



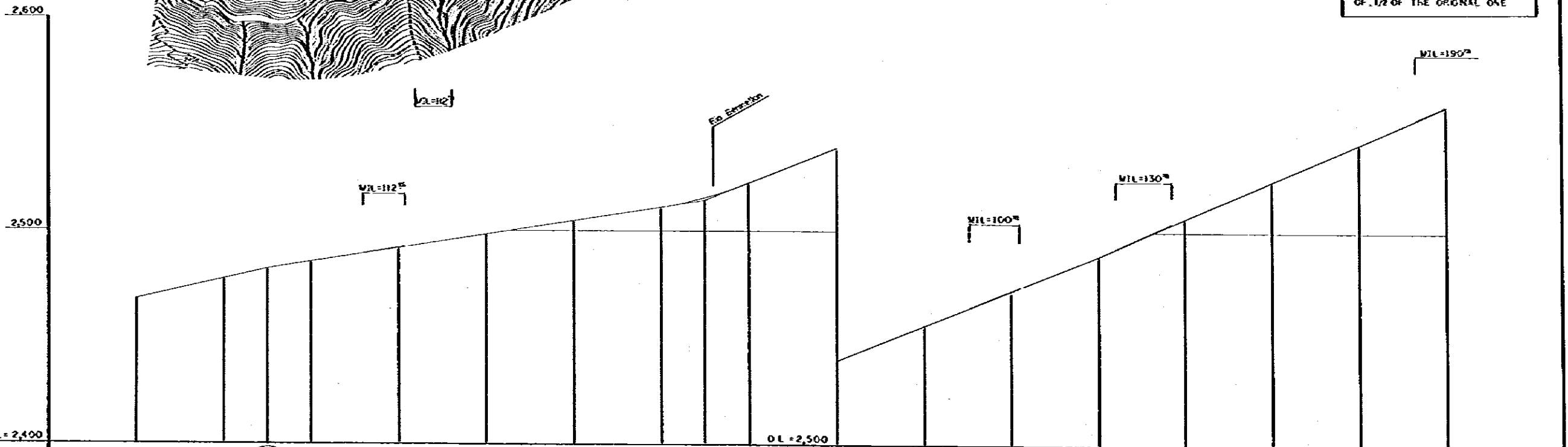
DATUM LINE DL=2,300

| | | | | | | | | | | | | | | |
|-----------------------|------------|---------|---------|------------|---------|---------|---------|---------|------------|---------|---------|---------|---------|------------|
| VERTICAL GRADIENT | | | | | | | | | | | | | | |
| ACCUMULATIVE DISTANCE | 143,780 | 143,839 | 144,829 | 144,139 | 144,359 | 144,439 | 144,709 | 144,939 | 145,139 | 145,339 | 145,539 | 145,700 | 145,939 | 146,139 |
| IN - SITU KM POST | | | KM 101 | | | | | KM 102 | | | | | | |
| CONSTRUCTION KM POST | KM 100+649 | +700 | +800 | KM 101+000 | +200 | +400 | +600 | +772 | KM 102+000 | +200 | +400 | +600 | +800 | KM 103+000 |
| HORIZONTAL CURVE | | | | | | | | | | | | | | |

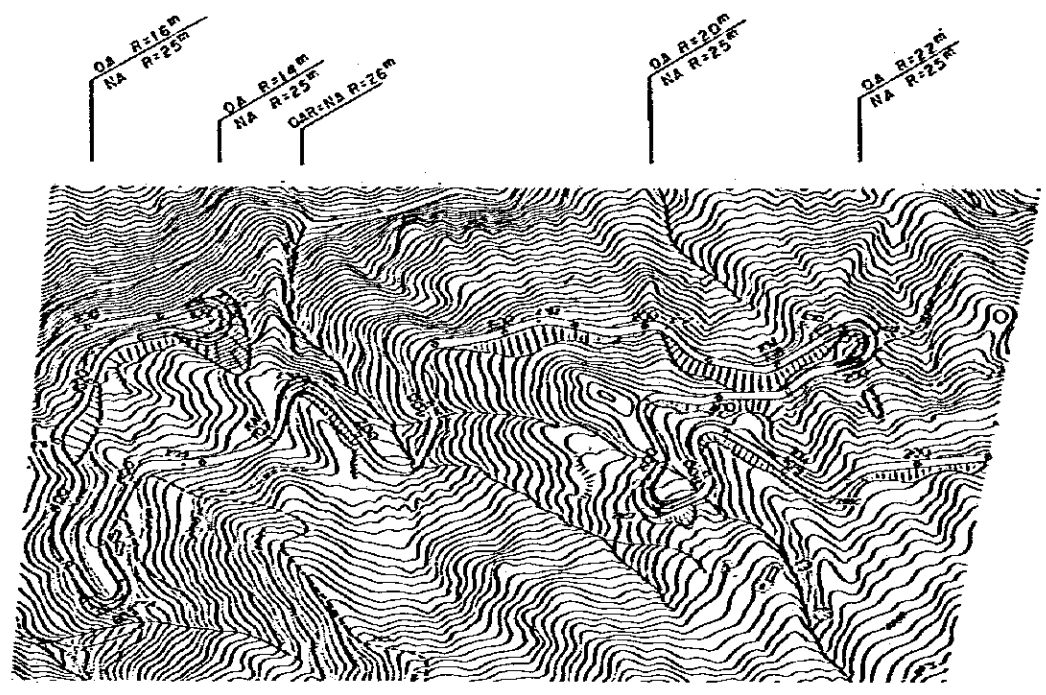
| | | | | |
|---------|------------------------------------|--|----------------------------|---------------------|
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | MINIMUM SCALE IMPROVEMENT PLAN (39) KM 100+700 — KM 103+000 | SCALE H=1:5000 V=1:1000 | DATE MARCH 1982 |
| | | | | SHEET No. 42 OF 135 |



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

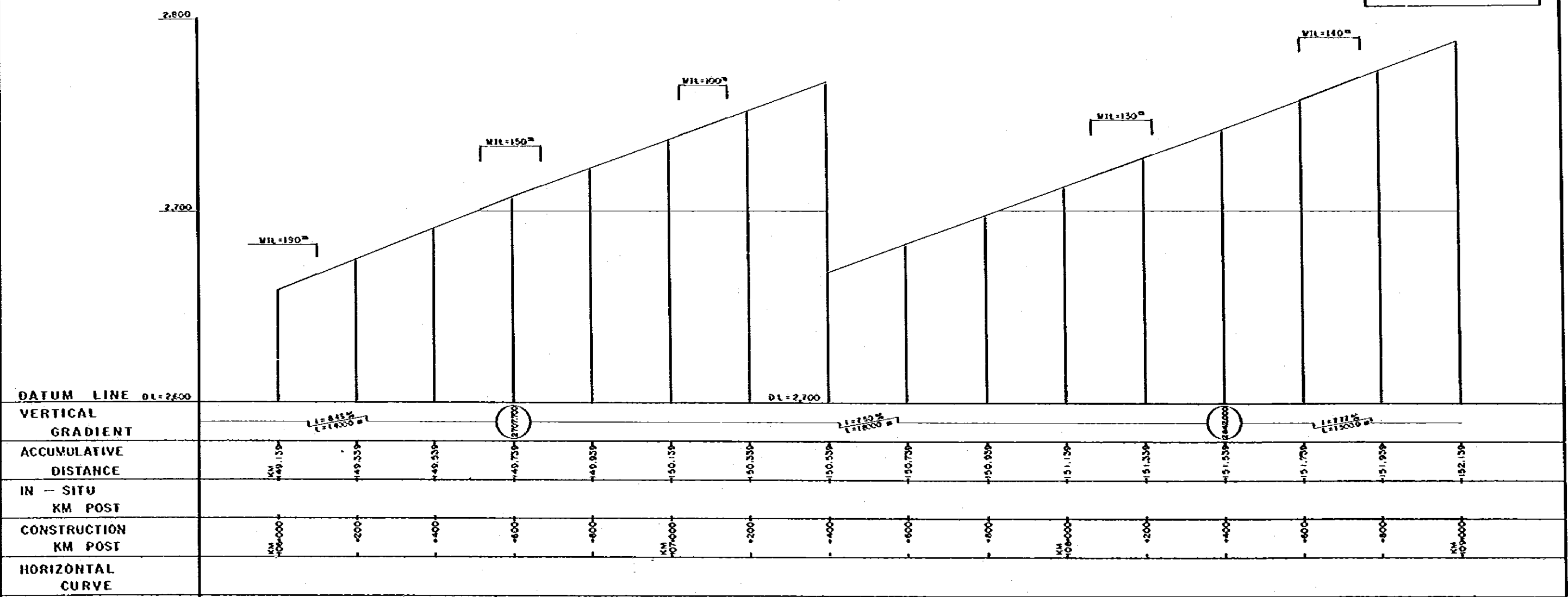


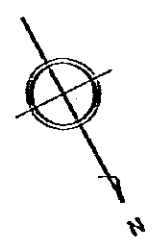
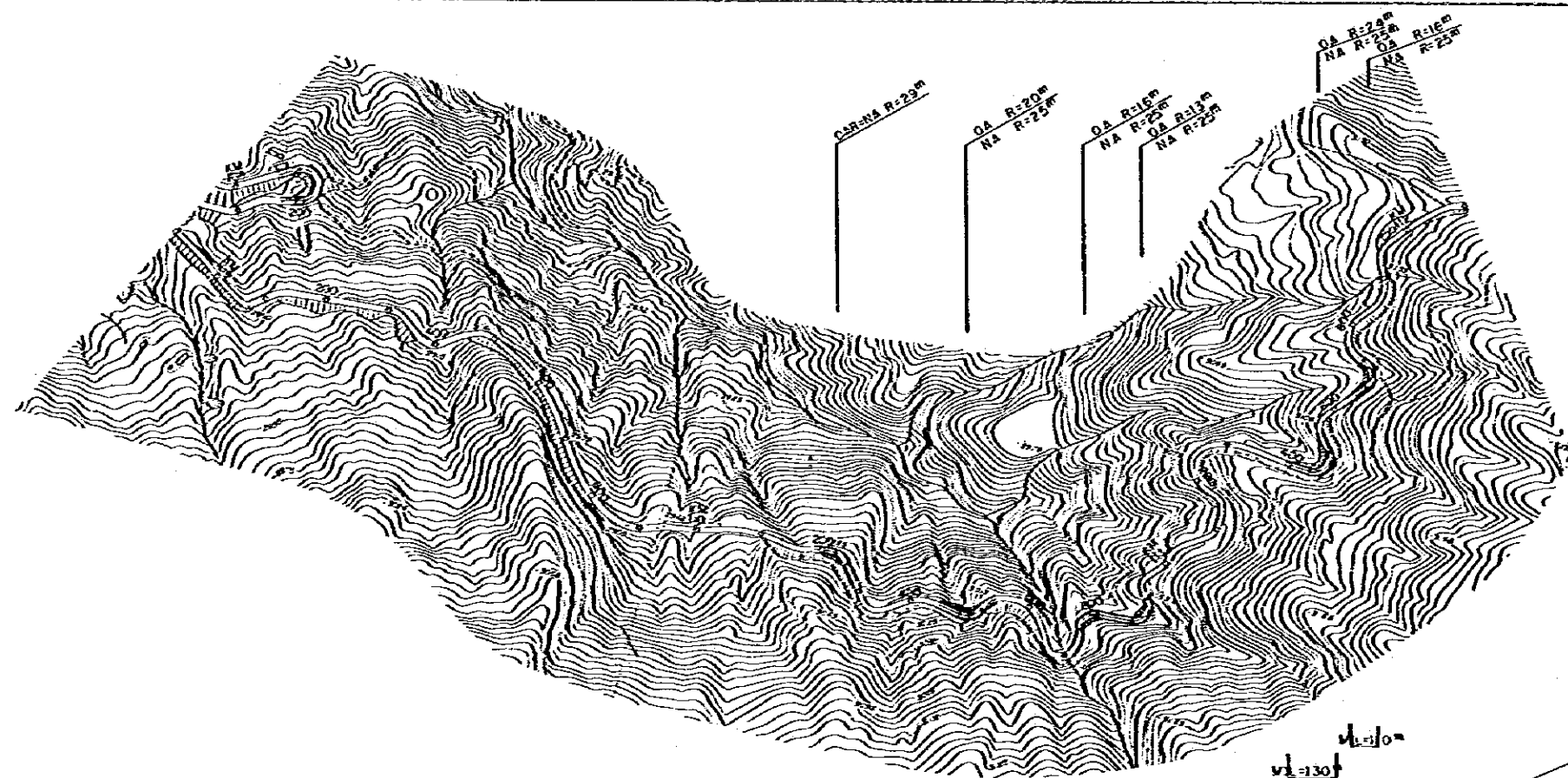
| | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|------|---------|
| DATUM LINE | D.L. = 2,400 | | | | | | | | | | | | | | | | | | | | | | |
| VERTICAL GRADIENT | $L=146.139$ $L=21000$ | | | | | | | | | | | | | | | | | | | | | | |
| ACCUMULATIVE DISTANCE | 146.139 | 146.339 | 146.439 | 146.539 | 146.739 | 146.839 | 147.039 | 147.139 | 147.239 | 147.339 | 147.439 | 147.539 | 147.739 | 147.939 | 148.139 | 148.339 | 148.539 | 148.739 | 148.939 | 149.139 | | | |
| IN - SITU KM POST | | | | | | | | | | | | | | | | | | | | | | | |
| CONSTRUCTION KM POST | 103+000 | +200 | +300 | +400 | +500 | +600 | +750 | +800 | 104+000 | +200 | +300 | +400 | +500 | +600 | 105+000 | +800 | 106+000 | +200 | +400 | +600 | +711 | +800 | 106+000 |
| HORIZONTAL CURVE | | | | | | | | | | | | | | | | | | | | | | | |



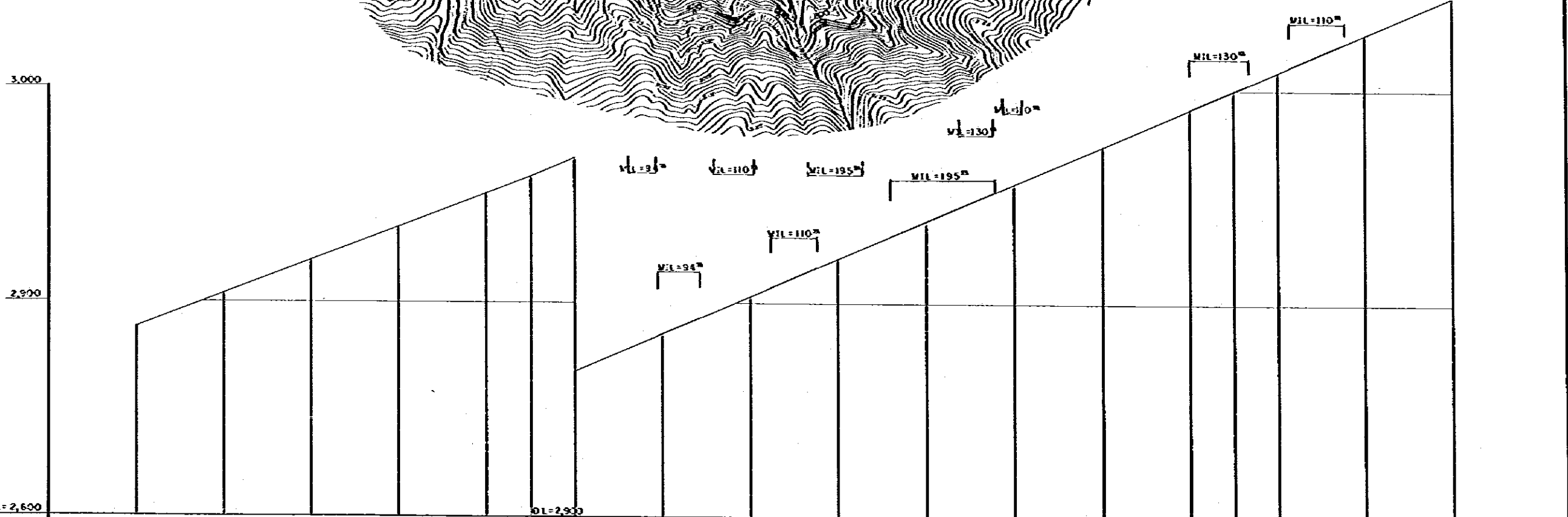
MIL-150 MIL-120 MIL-100 MIL-40 MIL-130

REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

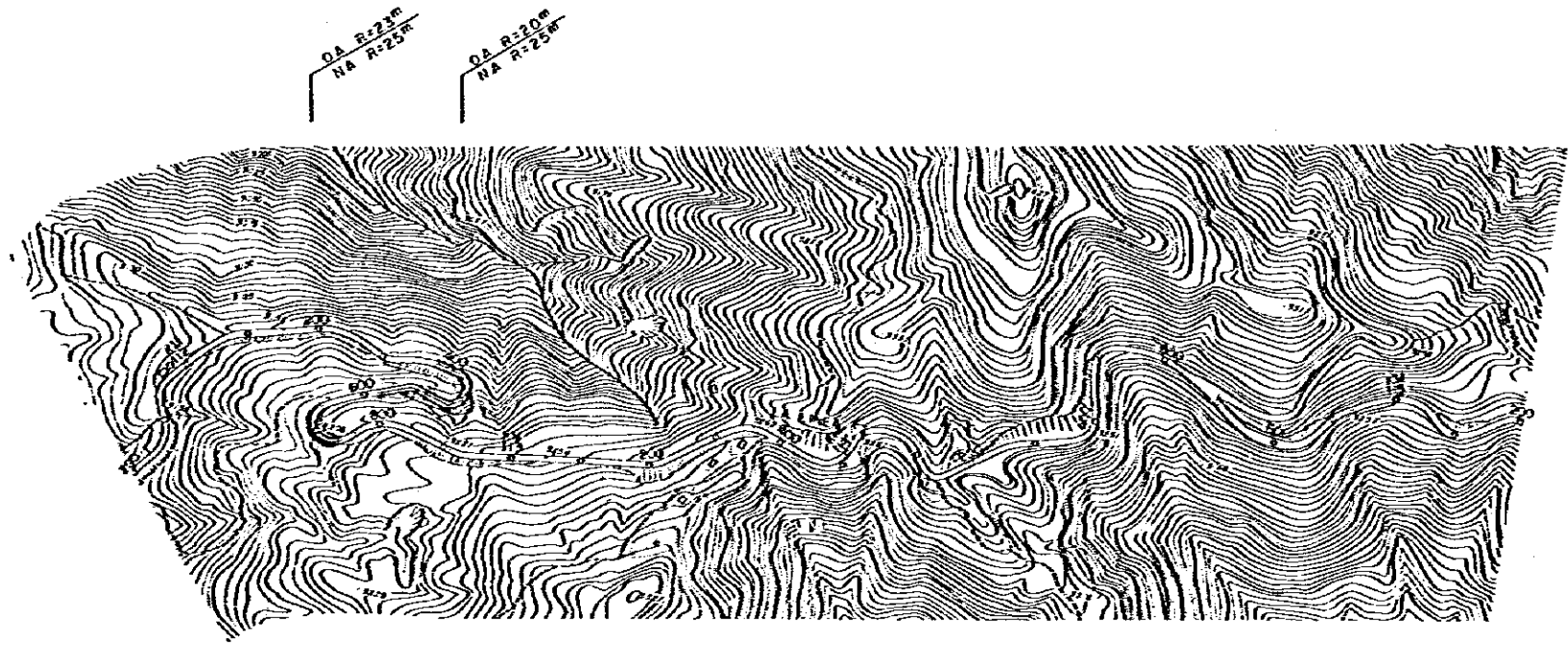




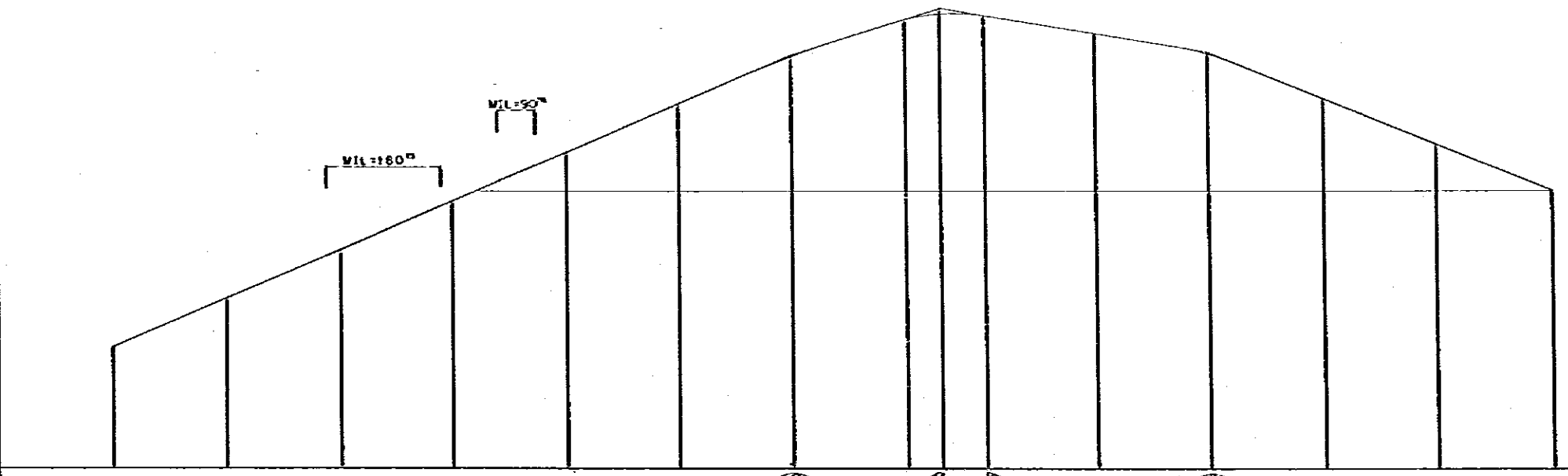
REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY. SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE.



| | | | | | | | | | | | | | | | | |
|-----------------------|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| DATUM LINE | DL=2,600 | | | | | | | | | | | | | | | |
| VERTICAL GRADIENT | $L=127^m$ $L=1500^m$ | | | | | | | | | | | | | | | |
| ACCUMULATIVE DISTANCE | 152.130 | 152.330 | 152.530 | 152.730 | 152.930 | 153.130 | 153.330 | 153.530 | 153.730 | 153.930 | 154.130 | 154.330 | 154.530 | 154.730 | 154.930 | 155.130 |
| IN-SITU KM POST | | | | 110 | | | | | | | | | | 112 | | |
| CONSTRUCTION KM POST | 109+000 | +200 | +400 | +600 | +800 | +900 | 110+000 | +200 | +400 | +600 | +800 | 111+000 | +200 | +400 | +600 | 112+000 |
| HORIZONTAL CURVE | | | | | | | | | | | | | | | | |

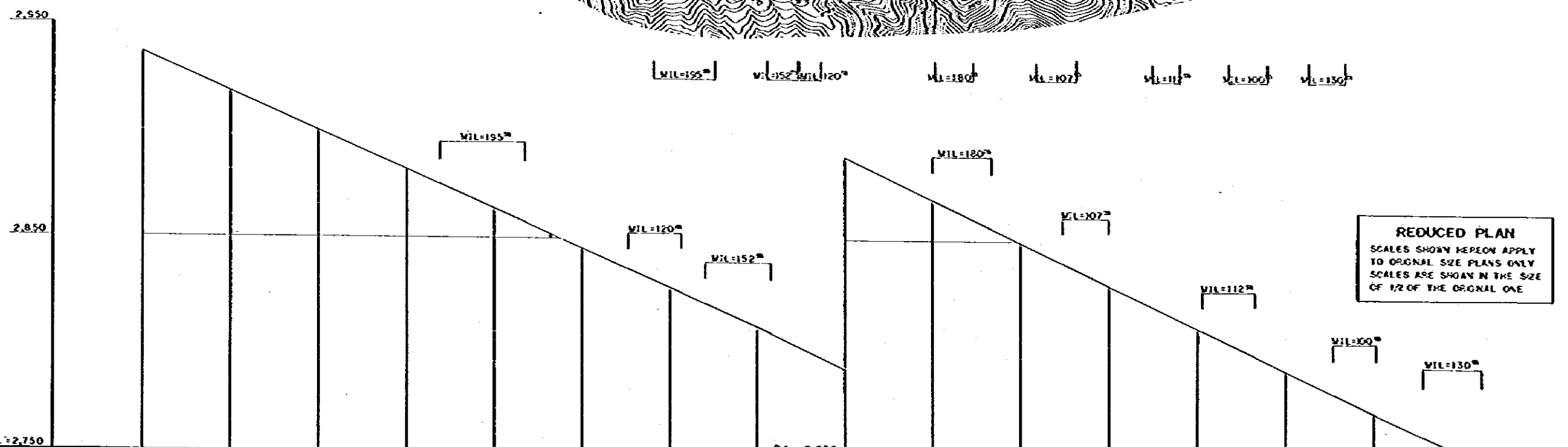
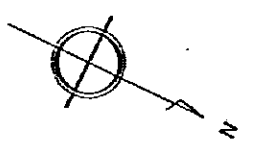
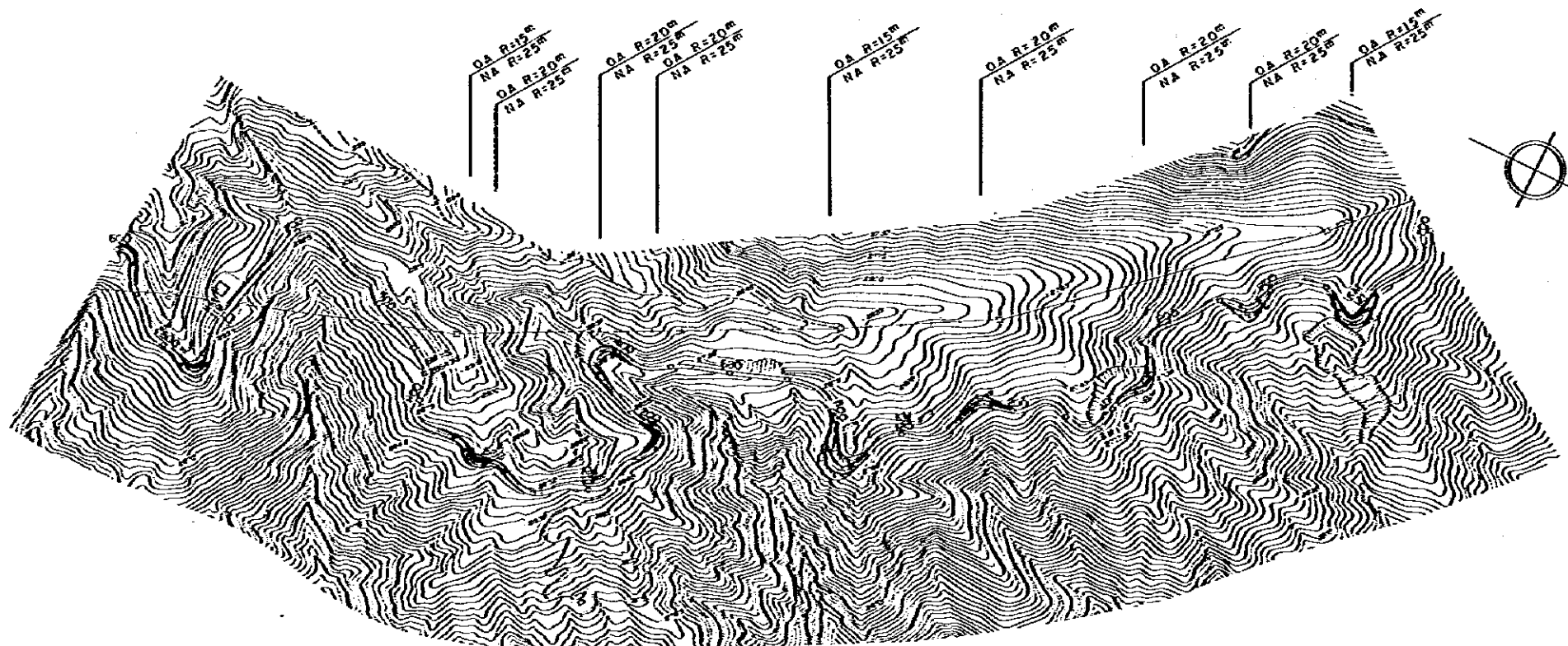


MIL=180m



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY
 SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE

| | | | | | | | | | | | | | |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| DATUM LINE DL=3,100 | | | | | | | | | | | | | |
| VERTICAL GRADIENT | | | | | | | | | | | | | |
| ACCUMULATIVE DISTANCE | 155.130 | 155.330 | 155.530 | 155.730 | 155.930 | 156.130 | 156.330 | 156.530 | 156.730 | 156.930 | 157.130 | 157.330 | 157.530 |
| IN - SITU KM POST | | | | | | | | | | | | | |
| CONSTRUCTION KM POST | 12+000 | 200 | 400 | 600 | 800 | 1000 | 200 | 400 | 600 | 800 | 1000 | 200 | 400 |
| HORIZONTAL CURVE | | | | | | | | | | | | | |



REDUCED PLAN
 SCALES SHOWN HEREON APPLY TO ORIGINAL SIZE PLANS ONLY. SCALES ARE SHOWN IN THE SIZE OF 1/2 OF THE ORIGINAL ONE.

| | | | | | | | | | | | | | | | | |
|------------------------------|------------------------------------|------|------|--|------|-------|------------|-------|-------|----------------------------|-------|--|-------|-------|-------|------------|
| DATUM LINE 2,750 | | | | | | | | | | | | | | | | |
| VERTICAL GRADIENT | | | | | | | | | | | | | | | | |
| ACCUMULATIVE DISTANCE | | | | | | | | | | | | | | | | |
| IN - SITU KM POST | KM 118+000 | | | | | | KM 119+000 | | | | | KM 120+000 | | | | KM 121+000 |
| CONSTRUCTION KM POST | +000 | +200 | +400 | +600 | +800 | +1000 | +1200 | +1400 | +1600 | +1800 | +2000 | +2200 | +2400 | +2600 | +2800 | +3000 |
| HORIZONTAL CURVE | | | | | | | | | | | | | | | | |
| M O P T | BOGOTA — BUENAVENTURA ROAD PROJECT | | | MINIMUM SCALE IMPROVEMENT PLAN (45) KM 118+000 — KM 121+000 | | | | | | SCALE H=1:5000 V=1:1000 | | DATE MARCH 1982 SHEET No. 48 OF 135 | | | | |