

## **Standard Drawings for Construction of Water Supply System Structures**

1. B – 01 Siltbox
2. B – 02 CDC
3. B – 03 PBT
4. B – 04 VC
5. B – 05 Tank
6. B – 06 Tank
7. B – 07 WP
8. B – 08 WP
9. B – 09 ESPS
10. B – 10A DE Hse
11. B – 10B DE Hse
12. B – 11 ESPS
13. B – 12 FT Type I
14. B – 13 FT Type II
15. B – 14 FT Type III
16. C – 01 Standpipe
17. C – 01B GV Standpipe
18. D – 01 Spring Catchment
19. D – 02 Plastering
20. D – 04 Donga Crossing
21. D – 05A Solar Support Structures 6 Modules
22. D – 05B Solar Support Structures 8 Modules
23. D – 06 Fitting Arrangements
24. D – 07 Trench & Backfill
25. S – 01 Siltbox
26. S – 02 CDC
27. S – 03 PBT
28. S – 05 Tank (1-15 CubicM)
29. S – 06 Tank (20-40 CubicM)
30. S – 07 WP
31. S – 08 WP
32. VIP 01 – SINGLE-PIT – CONCRETE BLOCKS
33. VIP 03 – SINGLE-PIT – STONE MASONRY
34. VIP C105 SINGLE-PIT – IRON SHEETS
35. VIP D05 DETAILS
36. STAND -01
37. SIGNPOST-01
38. PRESSESSED STEEL TANK-01

# SILTBOX IN BRICKWORK

| MEASUREMENTS (cm) | Volume (Litres) |      |     |      |  |
|-------------------|-----------------|------|-----|------|--|
|                   | 300             | 500  | 750 | 1000 |  |
| A                 | 153             | 223  | 247 | 294  |  |
| B                 | 108             | 178  | 202 | 249  |  |
| C                 | 79              | 79   | 88  | 97   |  |
| D                 | 59              | 59   | 68  | 77   |  |
| E                 | 31.5            | 66.5 | 112 | 159  |  |

| FITTINGS                  | Unit  | Estimated Quantities |
|---------------------------|-------|----------------------|
| 40mm GI Pipe              | Metre | 4                    |
| 25mm GI Pipe (for lock)   | Metre | 1                    |
| 20mm GI Pipe (for lock)   | Metre | 1                    |
| Socket 20mm (for lock)    | Nos   | 2                    |
| Union Inlet*              | Nos   | 1                    |
| Union Outlet*             | Nos   | 1                    |
| Elbow 90° Inlet           | Nos   | 1                    |
| Elbow 90° Outlet          | Nos   | 2                    |
| Elbow 90° 40mm            | Nos   | 4                    |
| Elbow 90° .....           | Nos   | ..                   |
| Tee Equal 25mm (for lock) | Nos   | 2                    |
| Tee Equal Outlet*         | Nos   | 1                    |
| Solid Plug 40mm           | Nos   | 1                    |
| Strainer                  | Nos   | 1                    |
| Nipple                    | Nos   | 2                    |

| MATERIALS             | Unit           | Estimated Quantities |
|-----------------------|----------------|----------------------|
| Cement                | Bags           | 5                    |
| Sand (rough sand)     | M <sup>3</sup> | 0.49                 |
| Crushed Stones        | M <sup>3</sup> | 0.34                 |
| Bricks                | Nos            | 367                  |
| Shaped Stones         | M <sup>3</sup> | 4                    |
| Mesh Ref # 193        | M <sup>2</sup> | ..                   |
| Reinforcement 8mm dia | Metre          | 5                    |
| CI Manhole Cover      | Nos            | 1                    |
| SAP 6m x 38 x 225mm   | Metre          | 8                    |

| LABOUR           | Unit | Estimated Quantities |
|------------------|------|----------------------|
| Mason            | Nos  | 6                    |
| Village Labourer | Nos  | 26                   |

NOTES:

- Measurements are in Centimetres (cm)
- Inlet and outlet according to the Engineer (inlet position should be near the manhole cover)
- Sizes of some fittings (\*) depend upon inlet and outlet pipe sizes

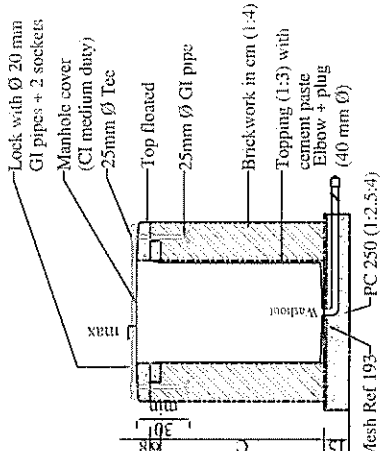
| TECHNICAL UNIT, DRWS HQ |         |    |     |
|-------------------------|---------|----|-----|
| Designed                | Jan '96 | By | LC  |
| Drawn                   | Jan '96 |    | GWC |
| Approved                | Jan '96 |    | LC  |
| Revised                 | Sep '05 |    | LRM |
| Scale                   | 1:20    |    |     |

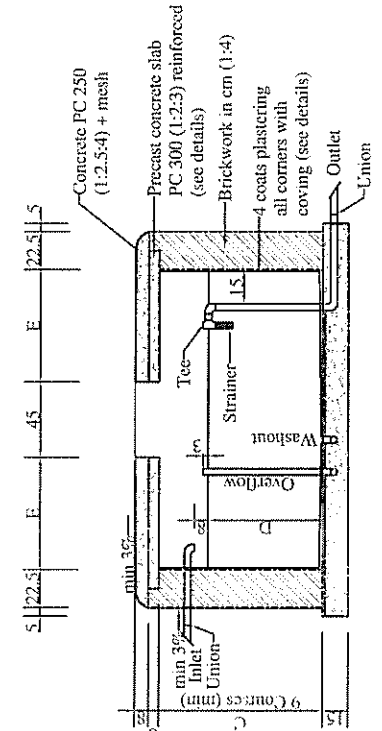
|                                  |  |
|----------------------------------|--|
| Government of Lesotho            |  |
| Department of Rural Water Supply |  |
| Ministry of Natural Resources    |  |

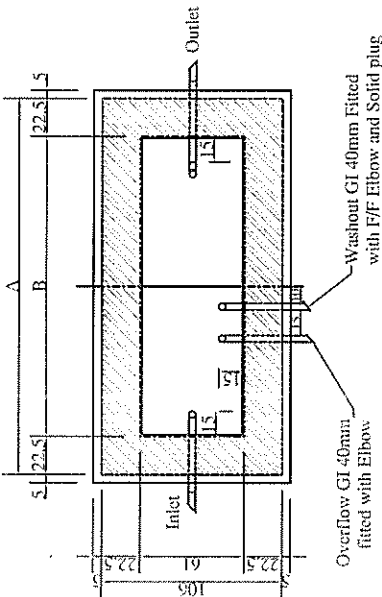
|                      |                  |
|----------------------|------------------|
| SILTBOX IN BRICKWORK | DRWG No.: B - 01 |
|----------------------|------------------|



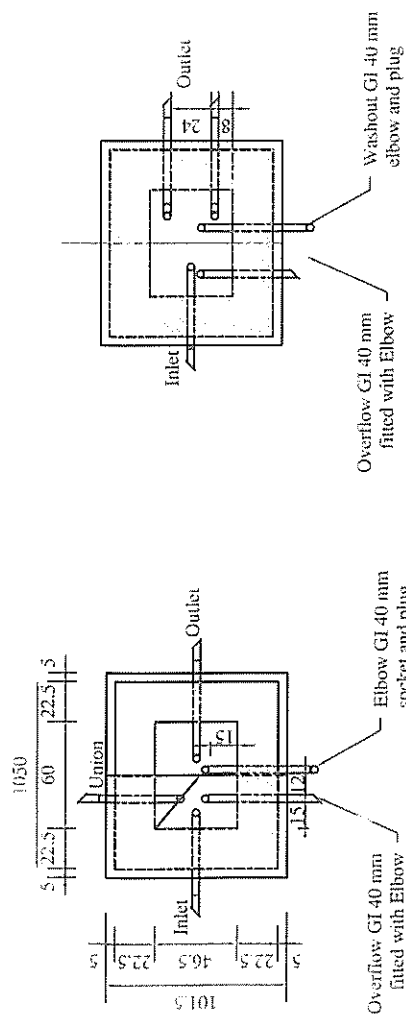
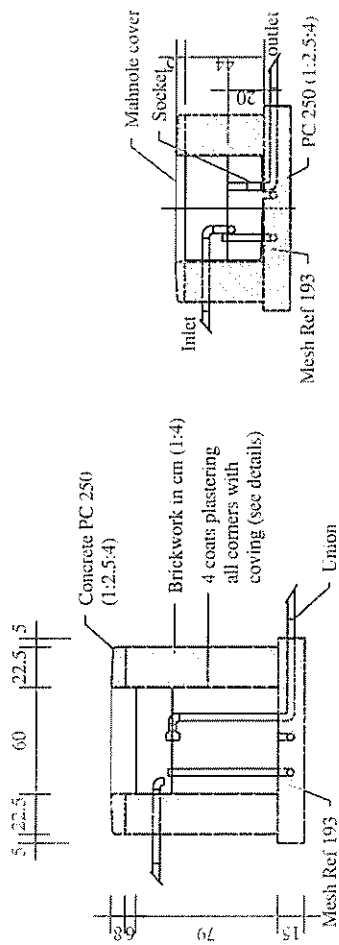
SECTION B - B



SECTION A - A



PLAN



| <b>COLLECTION AND DISTRIBUTION CHAMBER</b>                                                         |                         |       |      |     |      |
|----------------------------------------------------------------------------------------------------|-------------------------|-------|------|-----|------|
|                                                                                                    |                         |       |      |     |      |
|                                                                                                    |                         |       |      |     |      |
|                                                                                                    |                         |       |      |     |      |
| COLLECTION<br>CHAMBER                                                                              | DISTRIBUTION<br>CHAMBER |       |      |     |      |
| Estimated Quantities                                                                               |                         |       |      |     |      |
| FITTINGS                                                                                           | Unit                    | Metre | 3    | Nos | 2    |
| 40mm X GI Pipe                                                                                     | Metre                   | Metre | 1    | Nos | 1    |
| 25mm X GI Pipe (for lock)                                                                          | Metre                   | Metre | 1    | Nos | 1    |
| 20mm X GI Pipe (for lock)                                                                          | Nos                     | -     | 2    | Nos | 2    |
| Socket 20mm (for lock)                                                                             | Nos                     | -     | 1    | Nos | 1    |
| Union Inlet*                                                                                       | Nos                     | -     | 1    | Nos | 1    |
| Union Outlet*                                                                                      | Nos                     | -     | 2    | Nos | 2    |
| Elbow 90° Inlet                                                                                    | Nos                     | -     | 4    | Nos | 4    |
| Elbow 90° - Outlet                                                                                 | Nos                     | -     | 2    | Nos | 2    |
| Tee Equal 25mm (for lock)                                                                          | Nos                     | -     | 1    | Nos | 1    |
| Solid Plug 40mm                                                                                    | Nos                     | -     | 1    | Nos | 1    |
| Strainer                                                                                           | Nos                     | -     | 1    | Nos | 1    |
| MATERIALS                                                                                          | Unit                    | Bags  | 4    | Nos | 3    |
| Cement                                                                                             | M³                      | 0.37  | 0.30 | Nos | 2.23 |
| Sand (rough sand)                                                                                  | M³                      | 280   | -    | Nos | 150  |
| Crushed Stones                                                                                     | M²                      | -     | -    | Nos | -    |
| Shaped Stones                                                                                      | M²                      | -     | -    | Nos | -    |
| Mesh Ref # 193                                                                                     | Reinforcement 8mm dia   | -     | -    | Nos | -    |
| CI Manhole Cover                                                                                   | SAF 6m x 38 x 225mm     | -     | -    | Nos | -    |
| LABOUR                                                                                             | Unit                    | Metre | 6    | Nos | 6    |
| Mason                                                                                              | Nos                     | -     | -    | Nos | -    |
| Village Labourer                                                                                   | Nos                     | -     | -    | Nos | -    |
| NOTES:                                                                                             |                         |       |      |     |      |
| 1. Measurements are in Centimetres (cm)                                                            |                         |       |      |     |      |
| 2. Inlet and outlet according to the Engineer<br>(Inlet position should be near the manhole cover) |                         |       |      |     |      |

**TECHNICAL UNIT, DRWS HQ**

Government of Lesotho

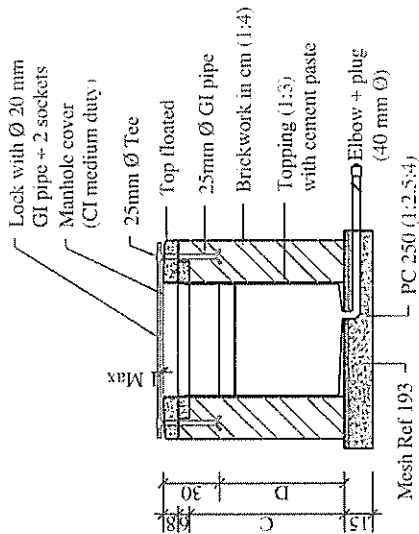
Department of Rural Water Supply

Ministry of Natural Resources

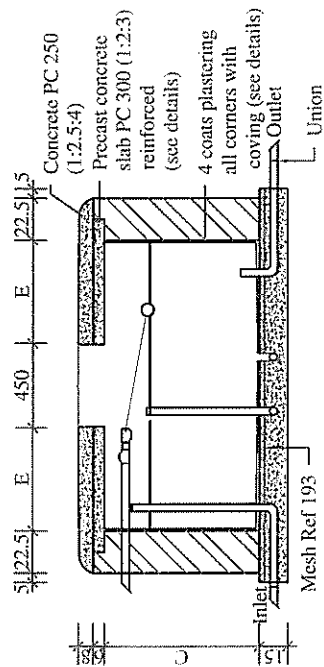


| Action   | Date    | By   |
|----------|---------|------|
| Designed | Jan '96 | L.C. |
| Drawn    | Jan '96 | GWC  |
| Approved | Jan '96 | L.C. |
| Revised  | Sep '05 | LRM  |
| Scale    | 1:20    |      |

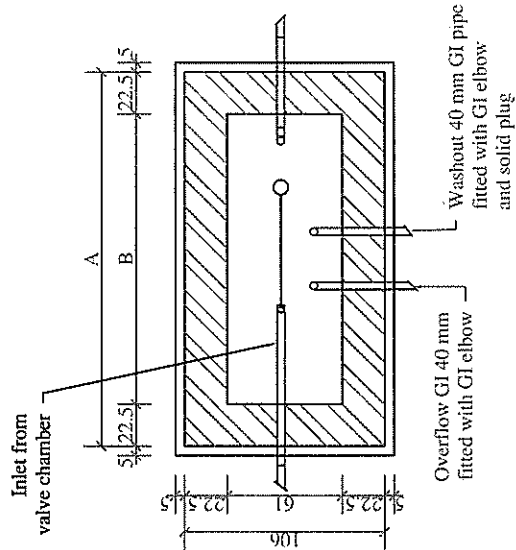
**DRWG No.: B - 02**



**SECTION B - B**



**SECTION A - A**



**PLAN**

| PRESSURE BREAK TANK                                                                             |                 |                      |         |
|-------------------------------------------------------------------------------------------------|-----------------|----------------------|---------|
| MEASUREMENTS (cm)                                                                               | Volume (Litres) |                      |         |
| A                                                                                               | 300             | 500                  |         |
| B                                                                                               | 153             | 200                  |         |
| C                                                                                               | 108             | 155                  |         |
| D                                                                                               | 88              | 88                   |         |
| E                                                                                               | 68              | 68                   |         |
| F                                                                                               | 31.5            | 31.5                 |         |
|                                                                                                 | 31.5            | 31.5                 |         |
| COLLECTION DISTRIBUTION CHAMBER                                                                 |                 |                      |         |
| FITTINGS                                                                                        | Unit            | Estimated Quantities | CHAMBER |
| 40mm Ø GI Pipe                                                                                  | Metre           | 4                    | 4       |
| 25mm Ø GI Pipe (for lock)                                                                       | Metre           | 1                    | 1       |
| 20mm Ø GI Pipe (for lock)                                                                       | Metre           | 1                    | 1       |
| Socket 20mm (for lock)                                                                          | Nos             | 2                    | 2       |
| Union Inlet*                                                                                    | Nos             | 1                    | 1       |
| Union Outlet*                                                                                   | Nos             | 1                    | 2       |
| Elbow 90° Inlet                                                                                 | Nos             | 1                    | 1       |
| Elbow 90° Outlet                                                                                | Nos             | 1                    | 1       |
| Elbow 90° 40mm                                                                                  | Nos             | 4                    | 4       |
| Tee Equal 25mm (for lock)                                                                       | Nos             | 2                    | 2       |
| Tee Equal*                                                                                      | Nos             | 2                    | 2       |
| Solid Plug 40mm                                                                                 | Nos             | 1                    | 1       |
| Gate Valve*                                                                                     | Nos             | 1                    | 1       |
| Strainer                                                                                        | Nos             | 1                    | 1       |
| MATERIALS                                                                                       |                 |                      |         |
|                                                                                                 | Unit            | Estimated Quantities |         |
| Cement                                                                                          | Bags            | 6                    | 8       |
| Sand (rough sand)                                                                               | M <sup>3</sup>  | 0.6                  | 1.0     |
| Crushed Stones                                                                                  | M <sup>3</sup>  | 0.5                  | 0.7     |
| Bricks                                                                                          | Nos             | 440                  | 540     |
| Shaped Stones                                                                                   | M <sup>3</sup>  | ..                   | ..      |
| Mesh Ref # 193                                                                                  | M <sup>2</sup>  | 4                    | 5       |
| Reinforcement 8mm dia                                                                           | Metre           | 5                    | 5       |
| CI Manhole Cover                                                                                | Nos             | 1                    | 1       |
| SAP 6m x 38 x 225mm                                                                             | Metre           | 8                    | 9       |
| Float Valve                                                                                     | Nos             | ..                   | 1       |
| LABOUR                                                                                          |                 |                      |         |
|                                                                                                 |                 | Estimated Mandays    |         |
| Mason                                                                                           | Nos             | 4                    | 4       |
| Village Labourer                                                                                | Nos             | 29                   | 32      |
| NOTES:                                                                                          |                 |                      |         |
| 1. Measurements are in Centimetres (cm)                                                         |                 |                      |         |
| 2. Inlet and outlet according to the Engineer (inlet position should be near the manhole cover) |                 |                      |         |
| 3. Sizes of some fittings (*) depend upon inlet and outlet pipe sizes                           |                 |                      |         |
| 4. 300 lt PBT without and 500 Lt PBT fitted with floatvalve                                     |                 |                      |         |
| TECHNICAL UNIT, DRWS HQ                                                                         |                 |                      |         |
| Government of Lesotho                                                                           | Action          | Date                 | By      |
| Department of Rural Water Supply                                                                | Designed        | Jan '96              | LC      |
| Ministry of Natural Resources                                                                   | Drawn           | Jan '96              | GAC     |
|                                                                                                 | Approved        | Jan '96              | LC      |
|                                                                                                 | Revised         | Sep '05              | LRM     |
|                                                                                                 | Scale           | 1:20                 |         |
| PRESSURE BREAK TANK                                                                             |                 |                      |         |
| DRWG No.: B - 03                                                                                |                 |                      |         |

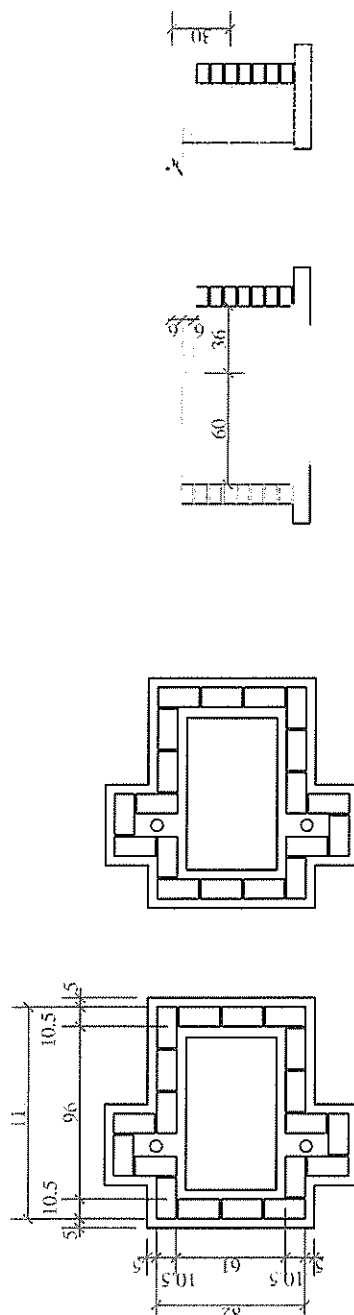
## VALVE CHAMBER

|                                                                                                                                                                                                                                      |                                                                                                                                  |         |     |                                                                                                                                               |  |  |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------|--|--|-------------------------|
| <b>NOTES:</b><br>1. Measurements are in Centimetres (cm)<br>2. Inlet and outlet according to the Engineer (inlet position should be near the manhole cover)<br>3. Sizes of some fittings (*) depend upon inlet and outlet pipe sizes | <b>TECHNICAL UNIT, DRWS HQ</b><br><br>Government of Lesotho<br>Department of Rural Water Supply<br>Ministry of Natural Resources |         |     | <br><br><b>VALVE CHAMBER</b><br><br>45 x 60 and 60 x 95 cm |  |  | <b>DRWG No.: B - 04</b> |
|                                                                                                                                                                                                                                      | Action                                                                                                                           | Date    | By  |                                                                                                                                               |  |  |                         |
|                                                                                                                                                                                                                                      | Designed                                                                                                                         | Jan '96 | LC  |                                                                                                                                               |  |  |                         |
|                                                                                                                                                                                                                                      | Drawn                                                                                                                            | Jan '96 | GWC |                                                                                                                                               |  |  |                         |
|                                                                                                                                                                                                                                      | Approved                                                                                                                         | Jan '96 | LC  |                                                                                                                                               |  |  |                         |
|                                                                                                                                                                                                                                      | Revised                                                                                                                          | Sep '05 | LKM |                                                                                                                                               |  |  |                         |
|                                                                                                                                                                                                                                      | Scale                                                                                                                            | 1:20    |     |                                                                                                                                               |  |  |                         |

TECHNICAL UNIT, DRWS HQ

**VALVE CHAMBER**  
45 x 60 and 60 x 95 cm

**DRWG No.: B - 04**



# STORAGE TANK

| MEASUREMENTS (cm)         |                | Volume (M <sup>3</sup> ) |      |       |       |       |       |       |       |     |    |
|---------------------------|----------------|--------------------------|------|-------|-------|-------|-------|-------|-------|-----|----|
|                           |                | 1                        | 2    | 3     | 4     | 5     | 6     | 7     | 8     | 9   | 10 |
| A                         |                | 153                      | 247  | 270   | 270   | 294   | 411   | 411   | 529   | 623 |    |
| B                         |                | 108                      | 202  | 225   | 225   | 223   | 366   | 366   | 484   | 578 |    |
| C                         |                | 88                       | 97   | 114   | 141   | 155   | 158   | 158   | 158   | 185 |    |
| D                         |                | 68                       | 77   | 94    | 121   | 138   | 138   | 138   | 138   | 165 |    |
| E                         |                | 5                        | 5    | 5     | 5     | 10    | 10    | 10    | 10    | 10  |    |
| F                         |                | 15                       | 15   | 15    | 15    | 20    | 20    | 20    | 20    | 20  |    |
| G                         |                | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     | 1   |    |
| H                         |                | ..                       | ..   | 3     | 3     | ..    | 2     | 2     | 6     | 6   |    |
| I                         |                | 1                        | 3    | ..    | ..    | 4     | 4     | 4     | 2     | 4   |    |
| FITTINGS                  |                | Estimated Quantities     |      |       |       |       |       |       |       |     |    |
|                           | Unit           | 6                        | 6    | 6     | 6     | 6     | 6     | 6     | 6     | 6   | 6  |
| 50mm V GI Pipe            | Metre          | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     | 1   | 1  |
| 25mm V GI Pipe (for lock) | Metre          | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     | 1   | 1  |
| 20mm V GI Pipe (for lock) | Metre          | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     | 1   | 1  |
| Socket 20mm (for lock)    | Nos            | 2                        | 2    | 2     | 2     | 2     | 2     | 2     | 2     | 2   | 2  |
| Union Inlet*              | Nos            | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     | 1   | 1  |
| Union Outlet*             | Nos            | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     | 1   | 1  |
| Elbow 90° Inlet           | Nos            | 2                        | 2    | 2     | 2     | 2     | 2     | 2     | 2     | 2   | 2  |
| Elbow 90° Outlet          | Nos            | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     | 1   | 1  |
| Elbow 90° 50mm            | Nos            | 4                        | 4    | 4     | 4     | 4     | 4     | 4     | 4     | 4   | 4  |
| Elbow 90° .....           | Nos            | ..                       | ..   | ..    | ..    | ..    | ..    | ..    | ..    | ..  | .. |
| Tee Equal 25mm (for lock) | Nos            | 2                        | 2    | 2     | 2     | 2     | 2     | 2     | 2     | 2   | 2  |
| Solid Plug 50mm           | Nos            | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     | 1   | 1  |
| Strainer                  | Nos            | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     | 1   | 1  |
| MATERIALS                 |                | Estimated Quantities     |      |       |       |       |       |       |       |     |    |
|                           | Unit           | 9                        | 14   | 15    | 18    | 25    | 34    | 41    | 51    |     |    |
| Cement                    | Bags           | 0.86                     | 1.36 | 1.47  | 1.73  | 2.4   | 3.34  | 3.91  | 4.9   |     |    |
| Sand (rough sand)         | M <sup>3</sup> | 0.57                     | 0.99 | 1.02  | 1.08  | 1.3   | 2.53  | 3.12  | 3.71  |     |    |
| Crushed Stones            | M <sup>3</sup> | 654                      | 874  | 1,169 | 1,324 | 1,618 | 2,022 | 2,351 | 3,118 |     |    |
| Shaped Stones             | M <sup>3</sup> | ..                       | ..   | ..    | ..    | ..    | ..    | ..    | ..    |     |    |
| Mesh Ref # 193            | M <sup>2</sup> | 10                       | 15   | 16    | 17    | 35    | 45    | 55    | 65    |     |    |
| Reinforcement 8mm dia     | Metre          | 12                       | 22   | 25    | 26    | 26    | 40    | 60    | 92    |     |    |
| CI Manhole Cover          | Nos            | 1                        | 1    | 1     | 1     | 1     | 1     | 1     | 1     |     |    |
| SAP 6m x 38 x 152mm       | Metre          | 8                        | 10   | 10    | 11    | 12    | 14    | 17    | 19    |     |    |
| Baffle Plate              | Nos            | ..                       | ..   | ..    | ..    | ..    | ..    | ..    | ..    |     |    |
| LABOUR                    |                | Estimated Quantities     |      |       |       |       |       |       |       |     |    |
|                           | Unit           | 7                        | 7    | 8     | 8     | 10    | 14    | 15    | 20    |     |    |
| Mason                     | Nos            | 37                       | 45   | 52    | 54    | 72    | 86    | 94    | 111   |     |    |
| Village Labourer          | Nos            | ..                       | ..   | ..    | ..    | ..    | ..    | ..    | ..    |     |    |

NOTES:

- Measurements are in Centimetres (cm)
- Inlet and outlet according to the Engineer  
(Inlet position should be near the manhole cover)
- Valve chamber according to the Engineer

## TECHNICAL UNIT, DRWS HQ

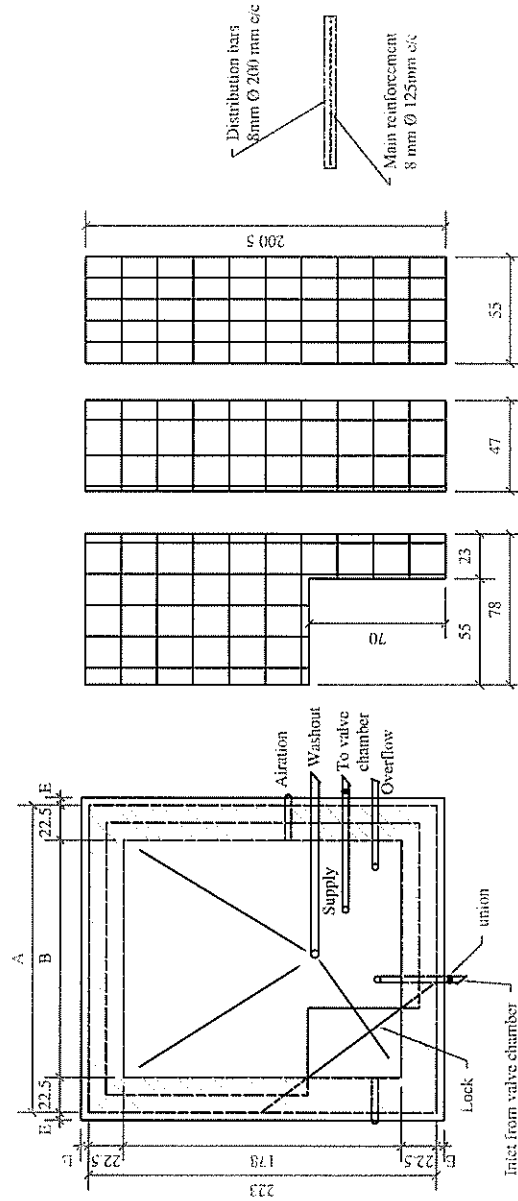
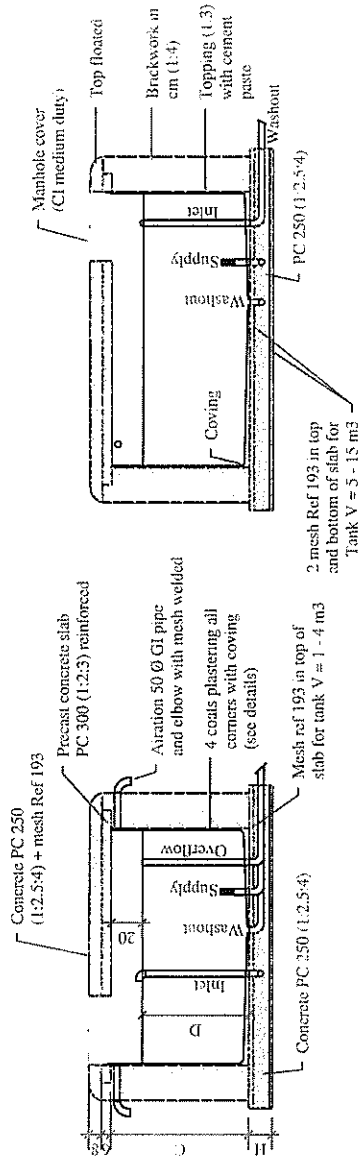
Government of Lesotho  
Department of Rural Water Supply  
Ministry of Natural Resources

## STORAGE TANK

VOLUME 1 - 15 M<sup>3</sup>

FOR APPROVAL

DRWG No.: B - 05



## STORAGE TANK

| MEASUREMENTS (cm) |                           | Volume (m <sup>3</sup> ) |       |       |        |        |        |
|-------------------|---------------------------|--------------------------|-------|-------|--------|--------|--------|
|                   |                           | 20                       | 25    | 30    | 35     | 40     |        |
| A                 |                           | 448                      | 548   | 648   | 748    | 848    |        |
| B                 |                           | 428                      | 528   | 628   | 728    | 828    |        |
|                   |                           |                          |       |       |        |        |        |
|                   | Precast Slab 185 x 78     | 1                        | 1     | 1     | 1      | 1      | 1      |
|                   | Precast Slab 185 x 55     | 12                       | 16    | 20    | 22     | 26     | 26     |
| FITTINGS          |                           | Estimated Quantities     |       |       |        |        |        |
| Unit              |                           | 12                       | 12    | 12    | 12     | 12     | 12     |
| Metre             | 50mm □ GI Pipe            | 2                        | 2     | 2     | 2      | 2      | 2      |
| Metre             | 25mm □ GI Pipe (for lock) | 2                        | 2     | 2     | 2      | 2      | 2      |
| Metre             | 20mm □ GI Pipe (for lock) | 2                        | 2     | 2     | 2      | 2      | 2      |
| Nos               | Socket 50mm               | 1                        | 1     | 1     | 1      | 1      | 1      |
| Nos               | Socket 20mm (for lock)    | 4                        | 4     | 4     | 4      | 4      | 4      |
| Nos               | Union Inlet*              | 1                        | 1     | 1     | 1      | 1      | 1      |
| Nos               | Union Outlet*             | 1                        | 1     | 1     | 1      | 1      | 1      |
| Nos               | Elbow 90°, Inlet          | 2                        | 2     | 2     | 2      | 2      | 2      |
| Nos               | Elbow 90°, Outlet         | 1                        | 1     | 1     | 1      | 1      | 1      |
| Nos               | Elbow 90°, 50mm           | 8                        | 8     | 8     | 8      | 8      | 8      |
| Nos               | Elbow 90° .....           | ..                       | ..    | ..    | ..     | ..     | ..     |
| Nos               | Tee Equal 25mm (for lock) | 4                        | 4     | 4     | 4      | 4      | 4      |
| Nos               | Tee Equal 50mm *          | 1                        | 1     | 1     | 1      | 1      | 1      |
| Nos               | Solid Plug 50mm           | 1                        | 1     | 1     | 1      | 1      | 1      |
| Nos               | Strainer                  | 1                        | 1     | 1     | 1      | 1      | 1      |
| MATERIALS         |                           | Estimated Quantities     |       |       |        |        |        |
| Unit              |                           | 80                       | 95    | 110   | 127    | 143    | 143    |
| Bags              | Cement                    | 80                       | 95    | 110   | 127    | 143    | 143    |
| M <sup>3</sup>    | Sand (rough sand)         | 7.42                     | 8.91  | 10.44 | 11.95  | 13.48  | 13.48  |
| M <sup>3</sup>    | Crushed Stones            | 5.59                     | 7.07  | 8.41  | 9.72   | 11.06  | 11.06  |
| Nos               | Bricks                    | 7,340                    | 8,330 | 9,440 | 10,460 | 11,480 | 11,480 |
| M <sup>3</sup>    | Shaped Stones             | ..                       | ..    | ..    | ..     | ..     | ..     |
| M <sup>2</sup>    | Mesh Ref # 193            | 60                       | 73    | 86    | 99     | 113    | 113    |
| Metre             | Reinforcement 8mm dia     | 147                      | 188   | 229   | 264    | 306    | 306    |
| Nos               | 2 CCI Manhole Cover       | 2                        | 2     | 2     | 2      | 2      | 2      |
| Metre             | SAP 6m x 38 x 725mm       | 24                       | 24    | 48    | 48     | 48     | 48     |
| Nos               | Baffle Plate              | ..                       | ..    | ..    | ..     | ..     | ..     |
| LABOUR            |                           | Estimated Quantities     |       |       |        |        |        |
| Nos               | Mason                     | 28                       | 34    | 36    | 39     | 44     | 44     |
| Nos               | Village Labourer          | 159                      | 184   | 209   | 231    | 265    | 265    |

**NOTES:**

1. Measurements are in Centimetres (cm)
2. Inlet and outlet according to the Engineer
3. (Inlet position should be near the manhole cover)
4. Sizes of some fittings (\*) depend upon inlet and outlet pipe sizes
5. Weight of precast slab size 185 x 50 x 6 cm about 133 kg

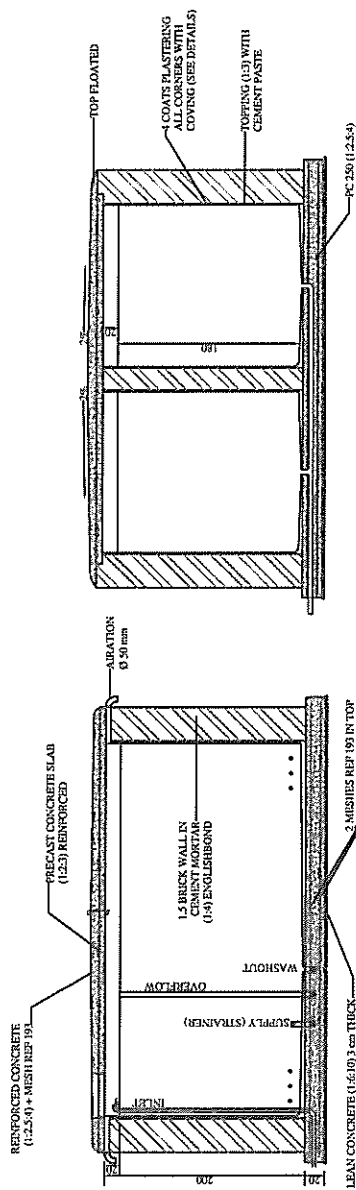
TECHNICAL UNIT, DRWS HQ

| TECHNICAL UNIT, DRWS HQ                                                                    |  |  |  | Action   | Date    | By  |
|--------------------------------------------------------------------------------------------|--|--|--|----------|---------|-----|
| Government of Lesotho<br>Department of Rural Water Supply<br>Ministry of Natural Resources |  |  |  | Designed | Jan '96 | LC  |
|                                                                                            |  |  |  | Drawn    | Jan '96 | GWC |
|                                                                                            |  |  |  | Approved | Jan '96 | LC  |
|                                                                                            |  |  |  | Revised  | Sep '05 | LRM |
|                                                                                            |  |  |  | Scale    | 1 : 50  |     |

## STORAGE TANK

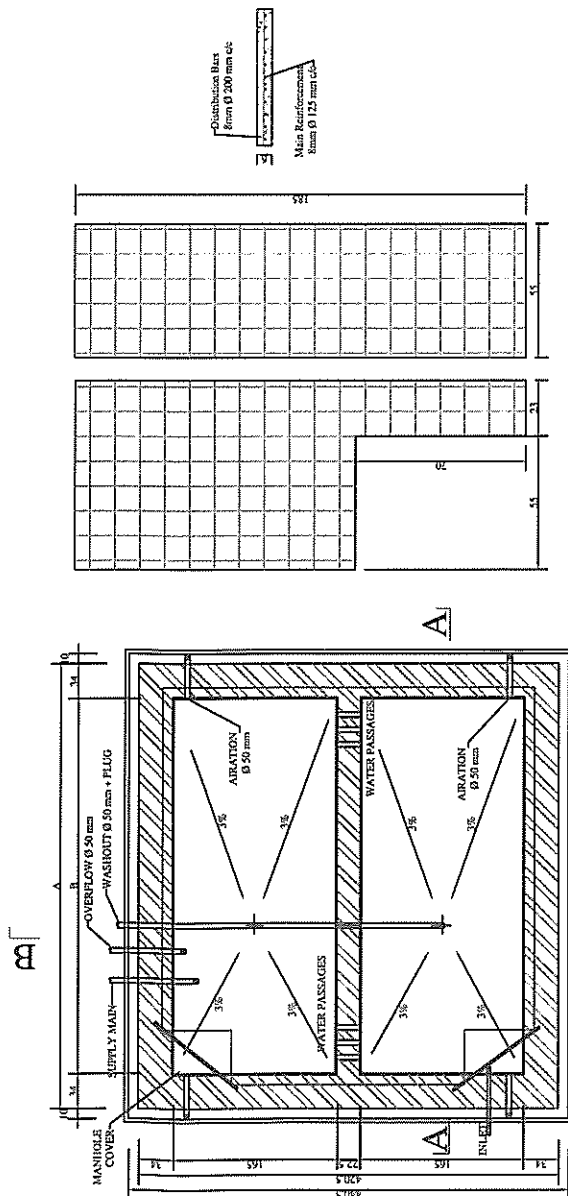
VOLUME 20 - 40 M<sup>3</sup>

**DRWG No.: B - 06**



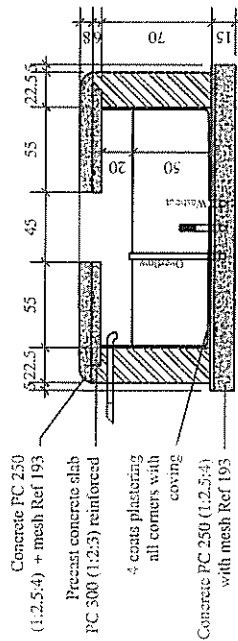
# SECTION A - A

## SECTION B - B

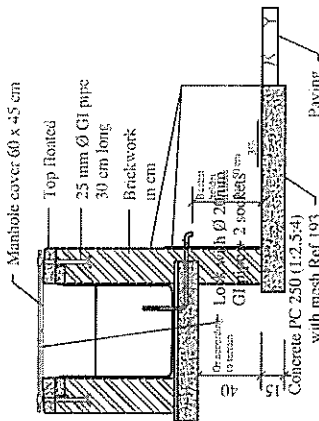


# PLAN

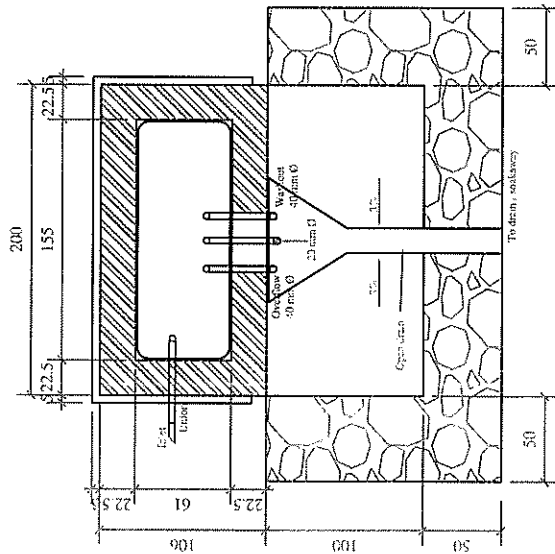
PRECAST REINFORCED  
CONCRETE SLAB PC 300, 1:20



**SECTION A - A**



**SECTION B - B**



**PLAN**

**PRECAST REINFORCED  
CONCRETE SLAB PC 300**

# **WATERPOINT (300 lt)**

| FITTINGS                          | Unit           | Estimated Quantities |
|-----------------------------------|----------------|----------------------|
| 40mm $\square$ GI Pipe            | Metre          | 3                    |
| 25mm $\square$ GI Pipe (for lock) | Metre          | 1                    |
| 20mm $\square$ GI Pipe (for lock) | Metre          | 2                    |
| Socket 20mm (for lock)            | Nos            | 2                    |
| Union Inlet*                      | Nos            | 1                    |
| Elbow 90° Inlet                   | Nos            | 1                    |
| Elbow 90° Outlet                  | Nos            | 1                    |
| Elbow 90° 40mm                    | Nos            | 4                    |
| Tee Equal 25mm (for lock)         | Nos            | 2                    |
| Tee Equal *                       | Nos            | 2                    |
| Solid Plug 40mm                   | Nos            | 1                    |
| Strainer                          | Nos            | 1                    |
| B/B Cock                          | Nos            | 1                    |
| MATERIALS                         | Unit           | Estimated Quantities |
| Cement                            | Bags           | 8                    |
| Sand (rough sand)                 | M <sup>3</sup> | 0.76                 |
| Crushed Stones                    | M <sup>3</sup> | 0.57                 |
| Bricks                            | Nos            | 506                  |
| Shaped Stones                     | M <sup>3</sup> | -                    |
| Mesh Ref # 193                    | M <sup>2</sup> | 5                    |
| Reinforcement 8mm dia             | Metre          | 5                    |
| CI Manhole Cover                  | Nos            | 1                    |
| SAP 6m x 38 x 225mm               | Metre          | 6                    |
| LABOUR                            | Unit           | Estimated Quantities |
| Mason                             | Nos            | 7                    |
| Village Labourer                  | Nos            | 35                   |

- NOTES:**
- Measurements are in Centimetres (cm)
  - Inlet and outlet according to the Engineer  
(Inlet position should be near the manhole cover)
  - Sizes of some fittings (\*) depend upon inlet and outlet pipe sizes

| TECHNICAL UNIT, DRWS HQ          |          |         |     |
|----------------------------------|----------|---------|-----|
| Government of Lesotho            | Action   | Date    | By  |
| Department of Rural Water Supply | Designed | Jan '96 | LC  |
| Ministry of Natural Resources    | Drawn    | Jan '96 | GWC |
|                                  | Approved | Jan '96 | LC  |
|                                  | Revised  | Sep '05 | LRM |
|                                  | Scale    | 1 : 50  |     |
| DRWG No.: B-07                   |          |         |     |

# WATERPOINT

| MEASUREMENTS (cm) | Volume (m <sup>3</sup> ) |     |      |      |      |     |
|-------------------|--------------------------|-----|------|------|------|-----|
|                   | 500                      | 750 | 1000 | 2000 | 3000 |     |
| A                 | 200                      | 200 | 200  | 223  | 3000 | 223 |
| B                 | 155                      | 155 | 155  | 178  | 178  | 178 |
| C                 | 53                       | 67  | 70   | 105  | 139  | 139 |
| D                 | 33                       | 47  | 50   | 85   | 119  | 119 |
| E                 | 90                       | 90  | 90   | 113  | 113  | 113 |

| FITTINGS                  | Unit  | Estimated Quantities |   |   |   |   |   |
|---------------------------|-------|----------------------|---|---|---|---|---|
|                           |       | 3                    | 3 | 3 | 3 | 3 | 3 |
| 40mm GI Pipe              | Metre | 1                    | 1 | 1 | 1 | 1 | 1 |
| 25mm GI Pipe (for lock)   | Metre | 2                    | 2 | 2 | 2 | 2 | 2 |
| 20mm GI Pipe (for lock)   | Nos   | 2                    | 2 | 2 | 2 | 2 | 2 |
| Socket 20mm (for lock)    | Nos   | 1                    | 1 | 1 | 1 | 1 | 1 |
| Union Inlet*              | Nos   | 1                    | 1 | 1 | 1 | 1 | 1 |
| Elbow 90°, Inlet          | Nos   | 1                    | 1 | 1 | 1 | 1 | 1 |
| Elbow 90°, 20mm Outlet    | Nos   | 1                    | 1 | 1 | 1 | 1 | 1 |
| Elbow 90°, 40 mm          | Nos   | 4                    | 4 | 4 | 4 | 4 | 4 |
| Elbow 90°, 50mm           | Nos   | 2                    | 2 | 2 | 2 | 2 | 2 |
| Tee Equal 25mm (for lock) | Nos   | 2                    | 2 | 2 | 2 | 2 | 2 |
| Solid Plug 40mm           | Nos   | 1                    | 1 | 1 | 1 | 1 | 1 |
| Strainer                  | Nos   | 1                    | 1 | 1 | 1 | 1 | 1 |

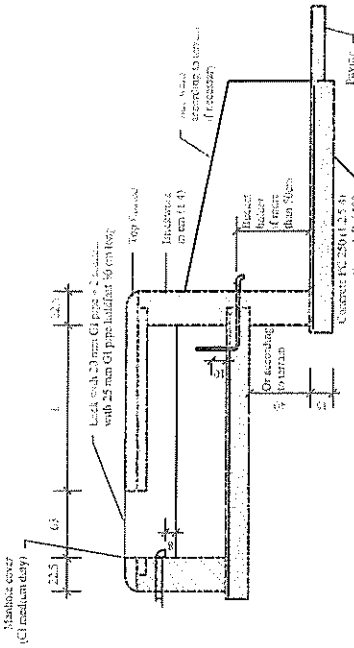
| MATERIALS             | Unit           | Estimated Quantities |      |      |       |       |       |
|-----------------------|----------------|----------------------|------|------|-------|-------|-------|
|                       |                | 11                   | 12   | 13   | 17    | 17    | 17    |
| Cement                | Bags           | 1.06                 | 1.17 | 1.27 | 1.58  | 1.63  | 1.63  |
| Sand (rough sand)     | M <sup>3</sup> | 0.55                 | 0.95 | 0.95 | 1.26  | 1.17  | 1.17  |
| Crushed Stones        | M <sup>3</sup> | 660                  | 703  | 857  | 1,025 | 1,170 | 1,170 |
| Shaped Stones         | M <sup>3</sup> | 8                    | 8    | 12   | 16    | 18    | 18    |
| Mesh Ref # 193        | M <sup>2</sup> | 5                    | 16   | 16   | 25    | 25    | 25    |
| Reinforcement 8mm dia | Nos            | 1                    | 1    | 1    | 1     | 1     | 1     |
| CI Manhole Cover      | Metre          | 7                    | 7    | 8    | 10    | 10    | 10    |
| SAP 6m x 38 x 152mm   | Metre          | 7                    | 7    | 8    | 10    | 10    | 10    |

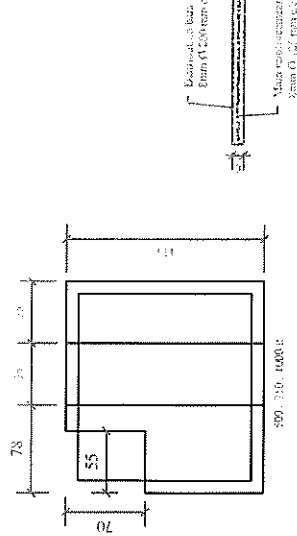
| LABOUR           | Unit | Estimated Mandays |    |    |    |    |    |
|------------------|------|-------------------|----|----|----|----|----|
|                  |      | 7                 | 7  | 7  | 8  | 8  | 8  |
| Mason            | Nos  | 39                | 42 | 43 | 49 | 51 | 51 |
| Village Labourer | Nos  |                   |    |    |    |    |    |

- NOTES:
- Measurements are in Centimetres (cm)
  - Inlet and outlet according to the Engineer  
(Inlet position should be near the manhole cover)
  - Sizes of some fittings (\*) depend upon inlet and outlet pipe sizes

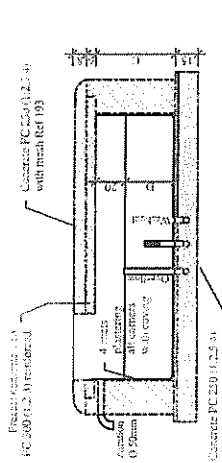
| TECHNICAL UNIT, DRWS HQ |         |     |  |
|-------------------------|---------|-----|--|
| Action                  | Date    | By  |  |
| Designed                | Jan '96 | LC  |  |
| Drawn                   | Jan '96 | GWC |  |
| Approved                | Jan '96 | LC  |  |
| Revised                 | Sep '05 | LRM |  |
| Scale                   | 1:50    |     |  |
| DRWG No.: B - 08        |         |     |  |



SECTION B - B



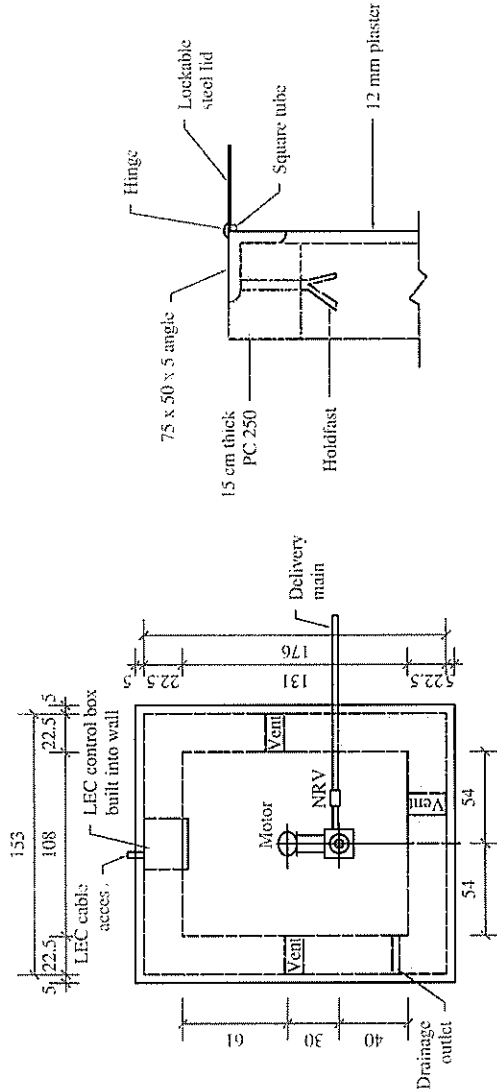
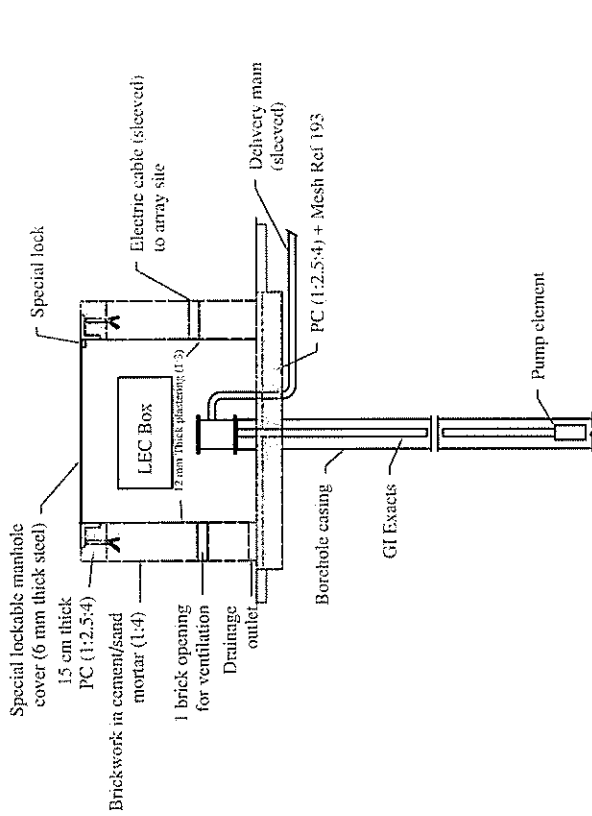
SECTION A - A



PLAN

PRECAST REINFORCED  
CONCRETE SLAB PC 300, 1:50

# VALVE CHAMBER FOR ELECTRICAL AND SOLAR PUMPING SYSTEMS



## FITTINGS

| Unit | Estimated Quantities |
|------|----------------------|
|      |                      |
|      |                      |
|      |                      |
|      |                      |

## MATERIALS

| Unit                | Estimated Quantities |
|---------------------|----------------------|
| Cement              | Bags 10              |
| Sand (rough sand)   | M <sup>3</sup> 1.2   |
| Crushed Stones      | M <sup>3</sup> 0.5   |
| Bricks              | Nos 650              |
| Mesh Ref # 193      | M <sup>2</sup> 4     |
| CI Manhole Cover    | Nos 1                |
| SAP 6m x 38 x 152mm | Metre 7              |

## LABOUR

| LABOUR           | Estimated Mandays |
|------------------|-------------------|
| Mason            | Nos               |
| Village Labourer | Nos               |

## NOTES:

- Measurements are in Centimetres (cm)
- Special LTC / LEC type of lockable MH covers are available from Maluti Irrigation
- NRV = Non Return Valve
- Location of meter according to Engineer

## TECHNICAL UNIT, DRWS HQ

Government of Lesotho  
Department of Rural Water Supply  
Ministry of Natural Resources

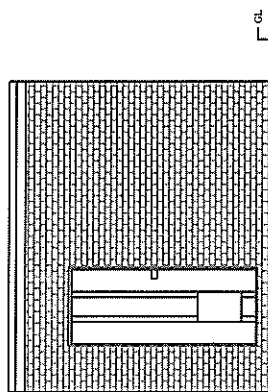
| Action   | Date    | By  |
|----------|---------|-----|
| Designed | Jan '96 | LC  |
| Drawn    | Jan '96 | GWC |
| Approved | Jan '96 | LC  |
| Revised  | Sep '05 | LRM |
| Scale    | 1 : 50  |     |

## VALVE CHAMBER FOR PUMPING SYSTEMS

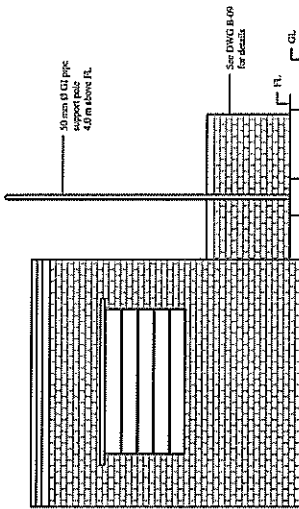


DRWG No.: B - 09

# DIESEL ENGINE HOUSE



FRONT ELEVATION



SIDE ELEVATION

| FITTINGS    | Unit  | Estimated Quantities |
|-------------|-------|----------------------|
| 50 mm Pipe  | metre | 16                   |
| Union 50 mm | Nos   | 2                    |
| Elbow 50 mm | Nos   | 2                    |

| MATERIALS             | Unit           | Estimated Quantities |
|-----------------------|----------------|----------------------|
| Cement                | Bags           | 63                   |
| Sand (rough sand)     | M <sup>3</sup> | 9.2                  |
| Crushed Stones        | M <sup>3</sup> | 6                    |
| Bricks                | Nos            | 3865                 |
| Mesh Ref # 193        | M <sup>2</sup> | 14                   |
| Reinforcement 8mm dia | Metre          | 30                   |
| CI Manhole Cover      | Nos            | 1                    |
| Lintel 1.7m           | Metre          | 2                    |
| Lintel 1.0m           | Metre          | 1                    |

| LABOUR           | Unit | Estimated Mandays |
|------------------|------|-------------------|
| Mason            | Nos  | 14                |
| Village Labourer | Nos  | 108               |

NOTES:  
 1. Measurements are in Centimetres (cm)  
 2. Valve chamber, refer to drawing No B 09  
 3. Doors and windows available from Maluti Irrigation

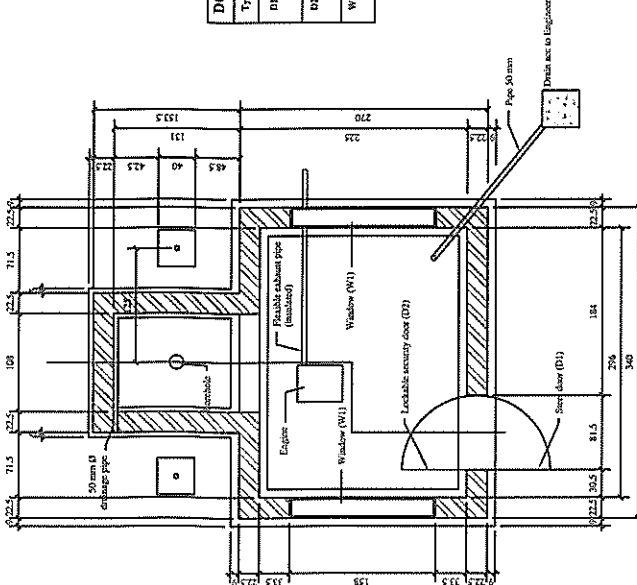
## TECHNICAL UNIT, DRWS HQ

Government of Lesotho  
 Department of Rural Water Supply  
 Ministry of Natural Resources

## DIESEL ENGINE HOUSE

DRWG No.: B - 10 A

| Type | Details                                                                                     | Qty |
|------|---------------------------------------------------------------------------------------------|-----|
| D1   | Type A with AV vent opening size 81.5 x 181 cm outside opening, special pad lock protection | 1   |
| D2   | Security door, lockable from inside (28 mm dia steel tube)                                  | 1   |
| W1   | Lowered window type ALV/BLV, Size 158 x 145 cm                                              | 2   |



PLAN

# FEED TANK - TYPE III for Waterhog and Buffalo Pump

| MEASUREMENTS (cm)         | Volume (M <sup>3</sup> ) |      |      |      |      |      |      |   |   |    |    |
|---------------------------|--------------------------|------|------|------|------|------|------|---|---|----|----|
|                           | 1                        | 2    | 3    | 4    | 5    | 6    | 7    | 8 | 9 | 10 | 11 |
| A                         | 153                      | 247  | 270  | 294  | 411  | 529  | 623  |   |   |    |    |
| B                         | 108                      | 202  | 225  | 223  | 366  | 484  | 578  |   |   |    |    |
| C                         | 88                       | 97   | 114  | 141  | 155  | 158  | 185  |   |   |    |    |
| D                         | 68                       | 77   | 94   | 121  | 138  | 138  | 138  |   |   |    |    |
| E                         | 5                        | 5    | 5    | 5    | 10   | 10   | 10   |   |   |    |    |
| H                         | 15                       | 15   | 15   | 15   | 20   | 20   | 20   |   |   |    |    |
| Precast Slab 200.5 x 78   | 1                        | 1    | 1    | 1    | 1    | 1    | 1    |   |   |    |    |
| Precast Slab 200.5 x 55   | 1                        | 3    | 3    | 3    | 4    | 4    | 4    |   |   |    |    |
| Precast Slab 200.5 x 47   | 1                        | 3    | 3    | 3    | 4    | 4    | 4    |   |   |    |    |
| Fittings                  |                          |      |      |      |      |      |      |   |   |    |    |
| 50mm f GI Pipe            | Unit                     | 6    | 6    | 6    | 6    | 6    | 6    |   |   |    |    |
| 25mm f GI Pipe (for lock) | Metre                    | 1    | 1    | 1    | 1    | 1    | 1    |   |   |    |    |
| 20mm f GI Pipe (for lock) | Metre                    | 1    | 1    | 1    | 1    | 1    | 1    |   |   |    |    |
| Socket 20mm (for lock)    | Nos                      | 2    | 2    | 2    | 2    | 2    | 2    |   |   |    |    |
| Union Inlet*              | Nos                      | 1    | 1    | 1    | 1    | 1    | 1    |   |   |    |    |
| Union Outlet*             | Nos                      | 1    | 1    | 1    | 1    | 1    | 1    |   |   |    |    |
| Elbow 90° Inlet           | Nos                      | 2    | 2    | 2    | 2    | 2    | 2    |   |   |    |    |
| Elbow 90° Outlet          | Nos                      | 1    | 1    | 1    | 1    | 1    | 1    |   |   |    |    |
| Elbow 90° 50mm            | Nos                      | 4    | 4    | 4    | 4    | 4    | 4    |   |   |    |    |
| Elbow 90° .....           | Nos                      | 2    | 2    | 2    | 2    | 2    | 2    |   |   |    |    |
| Tee Equal 25mm (for lock) | Nos                      | 2    | 2    | 2    | 2    | 2    | 2    |   |   |    |    |
| Solid Plug 50mm           | Nos                      | 1    | 1    | 1    | 1    | 1    | 1    |   |   |    |    |
| Strainer                  | Nos                      | 1    | 1    | 1    | 1    | 1    | 1    |   |   |    |    |
| Materials                 |                          |      |      |      |      |      |      |   |   |    |    |
| Cement                    | Unit                     | 27   | 32   | 33   | 36   | 43   | 52   |   |   |    |    |
| Sand (rough sand)         | M <sup>3</sup>           | 2.11 | 2.61 | 2.72 | 2.98 | 3.65 | 4.49 |   |   |    |    |
| Crushed Stones            | M <sup>3</sup>           | 1.33 | 1.65 | 1.78 | 1.84 | 2.56 | 3.29 |   |   |    |    |
| Bricks                    | Nos                      | 2070 | 2360 | 2600 | 2900 | 3170 | 3590 |   |   |    |    |
| Shaped Stones             | M <sup>3</sup>           | 14   | 19   | 20   | 21   | 39   | 49   |   |   |    |    |
| Mesh Ref # 193            | Metre                    | 12   | 22   | 25   | 26   | 26   | 40   |   |   |    |    |
| Reinforcement 8mm dia     | Nos                      | 1    | 1    | 1    | 1    | 1    | 1    |   |   |    |    |
| CI Manhole Cover          | Metre                    | 8    | 10   | 10   | 11   | 12   | 14   |   |   |    |    |
| SAP 6m x 38 x 152mm       | Metre                    | 8    | 10   | 10   | 11   | 12   | 14   |   |   |    |    |
| Labour                    |                          |      |      |      |      |      |      |   |   |    |    |
| Mason                     | Nos                      | 7    | 7    | 8    | 8    | 10   | 14   |   |   |    |    |
| Village Labourer          | Nos                      | 37   | 45   | 52   | 54   | 72   | 86   |   |   |    |    |

- NOTES:
- Measurements are in Centimetres (cm)
  - Special LTC / LEC type of lockable MH covers are available from Maluti Irrigation
  - Valve chamber and special lockable MH according to the Engineer
  - Location of meter according to the Engineer
  - Tank sizes as per brick masonry structures

TECHNICAL UNIT, DRWS HQ

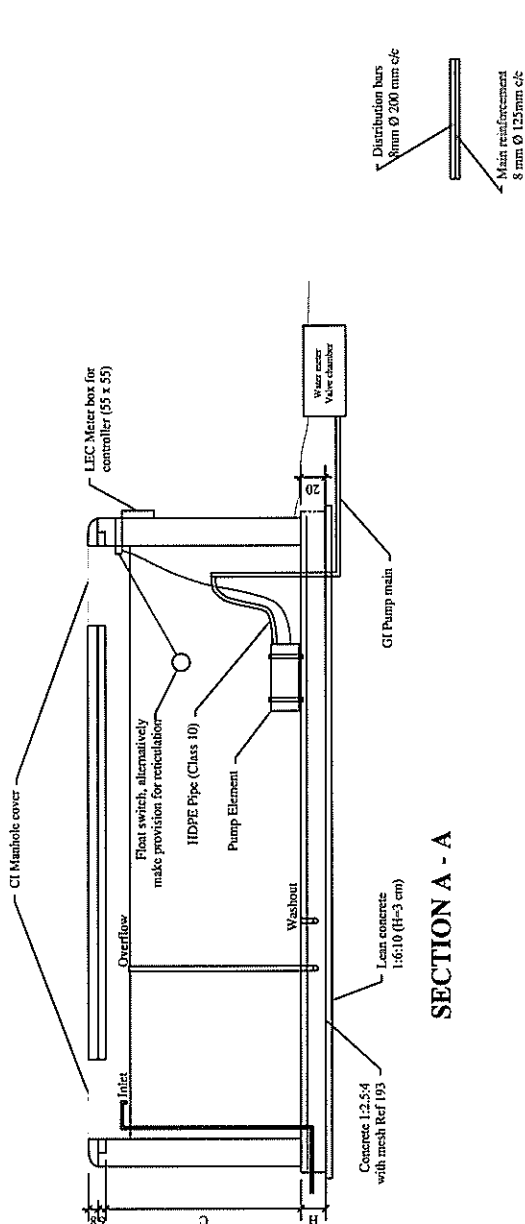
Government of Lesotho

Department of Rural Water Supply

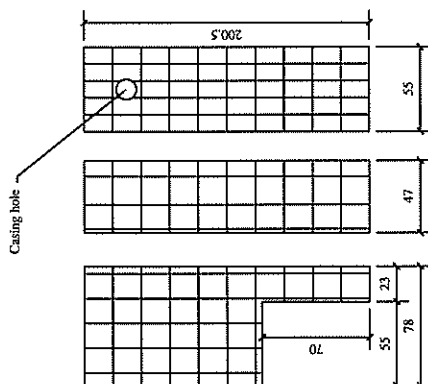
Ministry of Natural Resources

FEED TANK - TYPE III

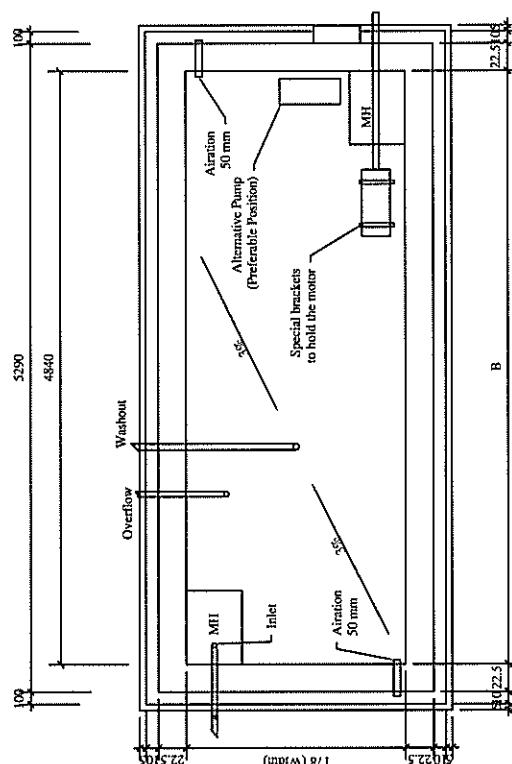
DRWG No.: B - 14



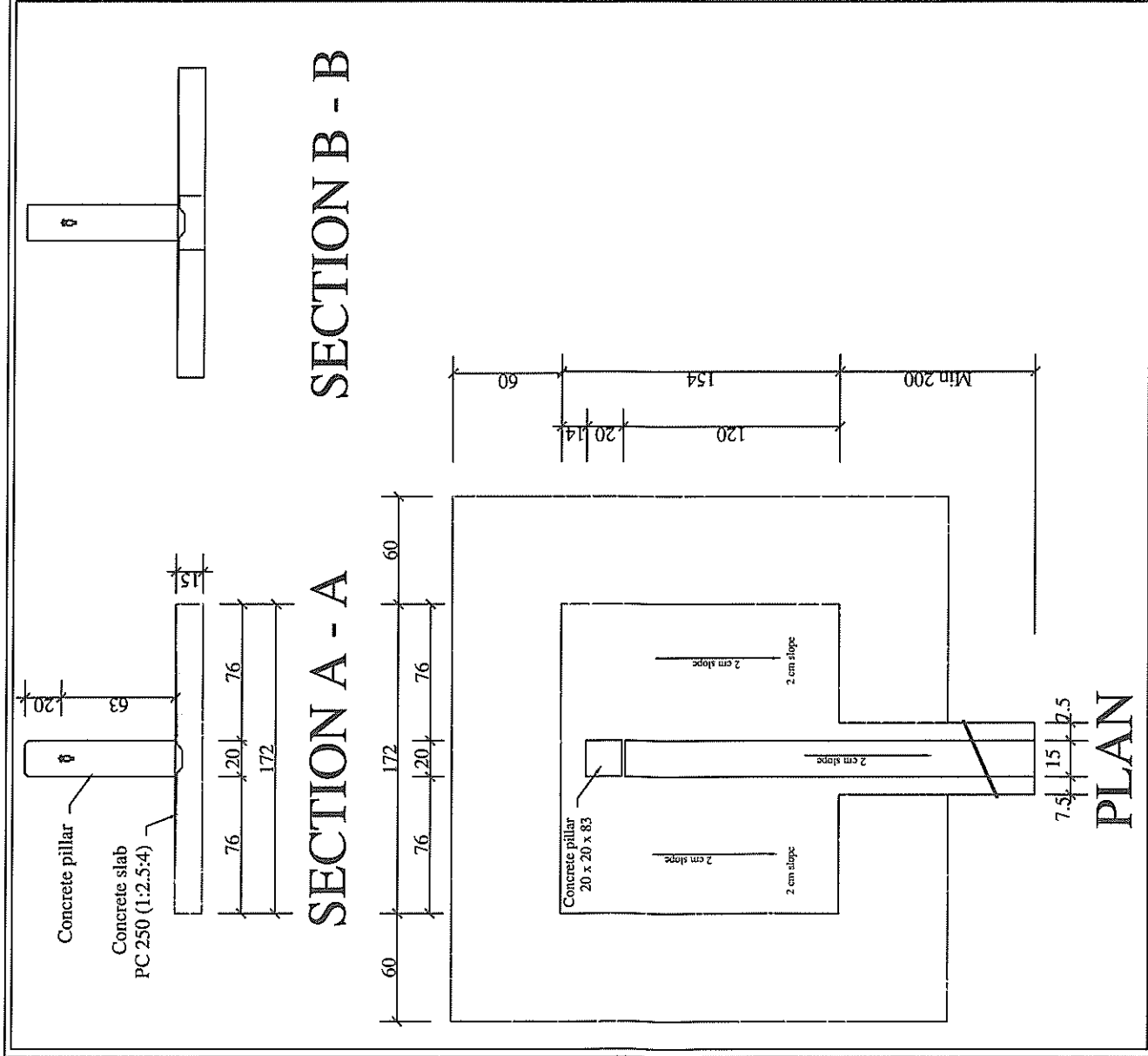
SECTION A - A



PRECAST REINFORCED  
CONCRETE SLAB PC 300



PLAN



| STANDPIPE IN CONCRETE                                                                                     |       |                      |             |
|-----------------------------------------------------------------------------------------------------------|-------|----------------------|-------------|
| FITTINGS                                                                                                  | Unit  | Estimated Quantities |             |
| 20 mm Pipe                                                                                                | metre | 4                    |             |
| Socket                                                                                                    | Nos   | 2                    |             |
| Elbow 90°                                                                                                 | Nos   | 2                    |             |
| Union                                                                                                     | Nos   | 1                    |             |
| Biblap                                                                                                    | Nos   | 1                    |             |
| M/F Bend 90°                                                                                              | Nos   | 1                    |             |
| Tee*                                                                                                      | Nos   | 1                    |             |
| Plug - Washout*                                                                                           |       | 1                    |             |
| MATERIALS                                                                                                 | Unit  | Estimated Quantities |             |
| Cement                                                                                                    | Bags  | 4                    |             |
| Sand (rough sand)                                                                                         | M³    | 0.25                 |             |
| Crushed Stones                                                                                            | M³    | 0.3                  |             |
| Paving Stones                                                                                             | M³    | 5                    |             |
| NOTES:<br>1. Measurements are in Centimetres (cm)<br>2. Some fittings (*) depend on location of standpipe |       |                      |             |
| TECHNICAL UNIT, DRWS HQ                                                                                   |       | Action               | By          |
| Government of Lesotho                                                                                     |       | Designed             | Jan '96 LC  |
| Department of Rural Water Supply                                                                          |       | Drawn                | Jan '96 GWC |
| Ministry of Natural Resources                                                                             |       | Approved             | Jan '96 LC  |
|                                                                                                           |       | Revised              | Sep '05 LRM |
|                                                                                                           |       | Scale                | 1 : 50      |
| STANDPIPE<br>IN CONCRETE                                                                                  |       | DRWG No.: C - 01     |             |

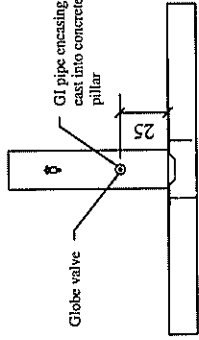
# STANDPIPE IN CONCRETE

| FITTINGS        | Unit  | Estimated Quantities |
|-----------------|-------|----------------------|
| 20 mm Pipe      | metre | 4                    |
| Socket          | Nos   | 2                    |
| Elbow 90°       | Nos   | 2                    |
| Union           | Nos   | 1                    |
| Blank           | Nos   | 1                    |
| W/F Bend 90°    | Nos   | 1                    |
| Tee*            | Nos   | 1                    |
| Plug - Washout* |       | 1                    |

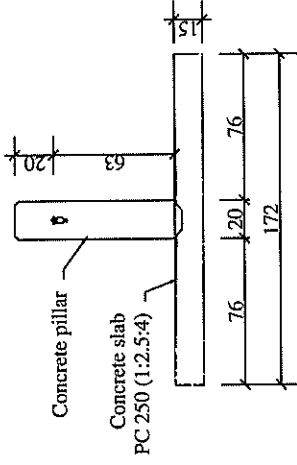
| MATERIALS         | Unit | Estimated Quantities |
|-------------------|------|----------------------|
| Cement            | Bags | 4                    |
| Sand (rough sand) | M³   | 0.25                 |
| Crushed Stones    | M³   | 0.3                  |
| Paving Stones     | M³   | 5                    |

- NOTES:
1. Measurements are in Centimetres (cm)
  2. Some fittings (\*) depend on location of standpipe

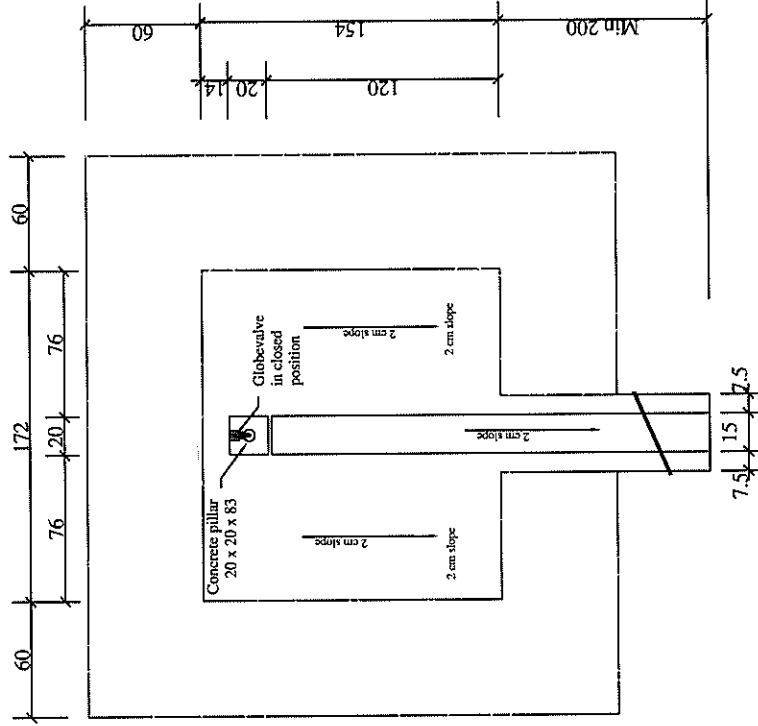
| TECHNICAL UNIT, DRWS HQ                                                                    |  | Action   | Date    | By             |
|--------------------------------------------------------------------------------------------|--|----------|---------|----------------|
| Government of Lesotho<br>Department of Rural Water Supply<br>Ministry of Natural Resources |  | Designed | Jan '96 | LC             |
|                                                                                            |  | Drawn    | Jan '96 | GWC            |
|                                                                                            |  | Approved | Jan '96 | LC             |
|                                                                                            |  | Revised  | Sep '05 | LRM            |
|                                                                                            |  | Scale    | 1:50    |                |
| STANDPIPE IN CONCRETE<br>WITH GLOBE VALVE                                                  |  | LOGO     |         | DRWG No. C-01B |



## SECTION B - B

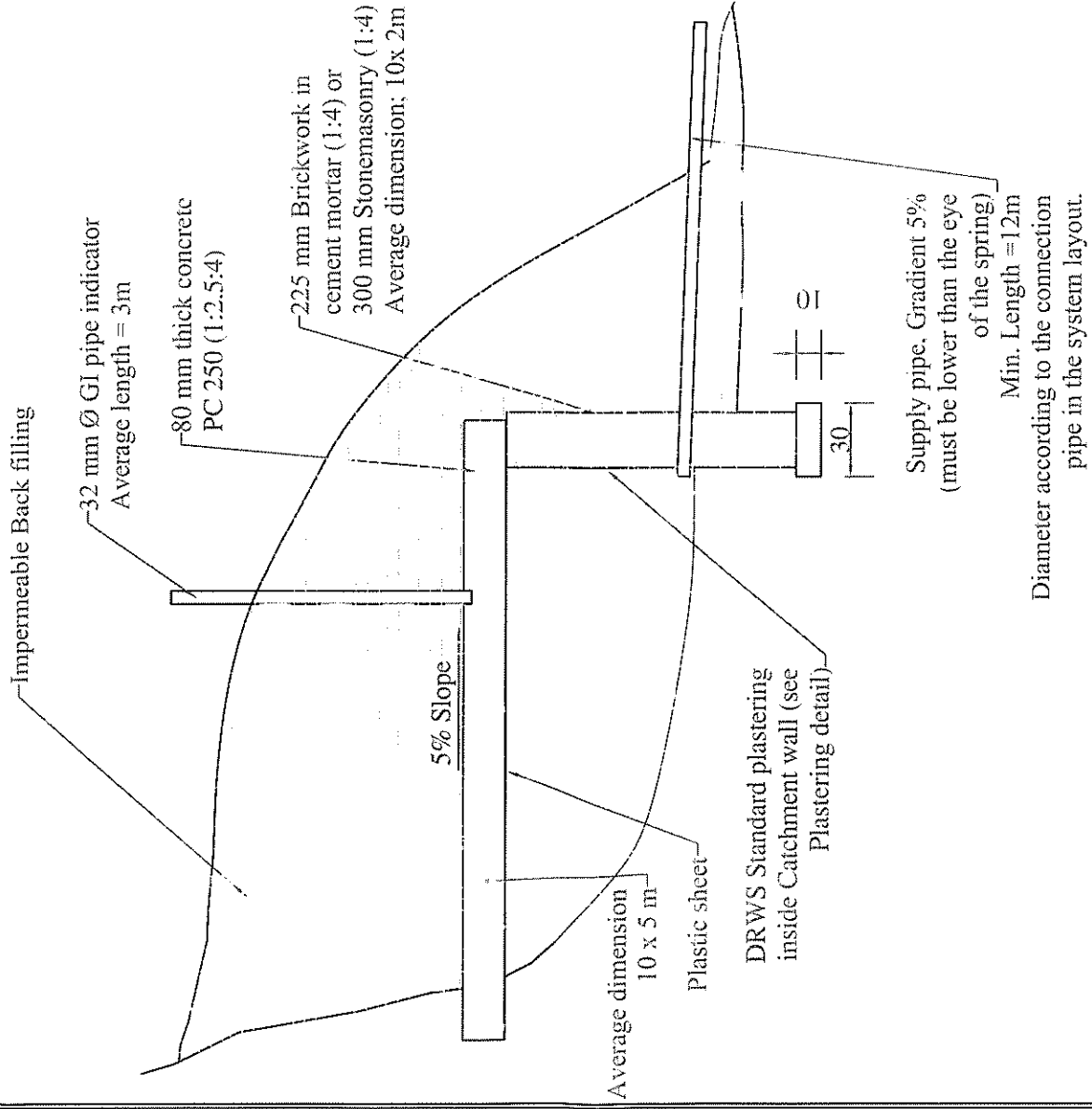


## SECTION A - A



## PLAN

# SPRING CATCHMENT



| MATERIALS         | Unit           | Estimated Quantities |
|-------------------|----------------|----------------------|
| Cement            | Bags           |                      |
| Sand (rough sand) | M <sup>3</sup> |                      |
| Crushed Stones    | M <sup>3</sup> |                      |
| Bricks            | Nos            |                      |
| Shaped stones     | M <sup>3</sup> |                      |

| LABOUR           | Estimated Mandays |
|------------------|-------------------|
| Mason            | Nos               |
| Village Labourer | Nos               |

## NOTES:

- Measurements are in Centimetres (cm)
- Do not back fill before an Approval from the Supervisor

## TECHNICAL UNIT, DRWS HQ

Government of Lesotho

Department of Rural Water Supply

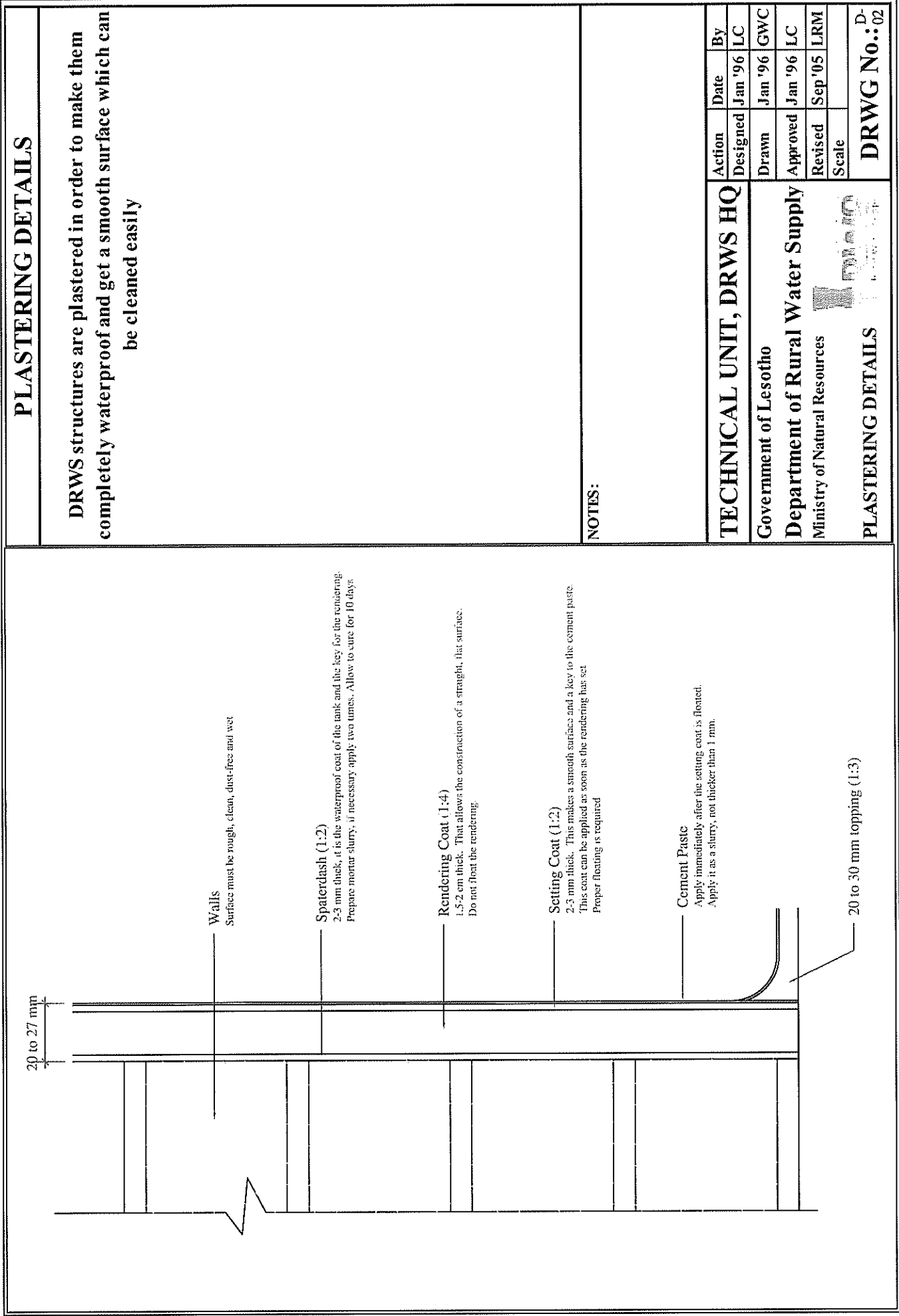
Ministry of Natural Resources



## SPRING CATCHMENT

DRWG No.:D-01

| Action   | Date    | By  |
|----------|---------|-----|
| Designed | Jan '96 | LC  |
| Drawn    | Jan '96 | GWC |
| Approved | Jan '96 | LC  |
| Revised  | Sep '05 | LRM |
| Scale    | 1 : 50  |     |



**PLASTERING DETAILS**

DRWS structures are plastered in order to make them completely waterproof and get a smooth surface which can be cleaned easily

NOTES:

|                                                                                                                      |          |              |     |  |
|----------------------------------------------------------------------------------------------------------------------|----------|--------------|-----|--|
| TECHNICAL UNIT, DRWS HQ                                                                                              |          |              |     |  |
| Government of Lesotho<br>Department of Rural Water Supply<br>Ministry of Natural Resources<br><br>PLASTERING DETAILS | Action   | Date         | By  |  |
|                                                                                                                      | Designed | Jan '96      | LC  |  |
|                                                                                                                      | Drawn    | Jan '96      | GWC |  |
|                                                                                                                      | Approved | Jan '96      | LC  |  |
|                                                                                                                      | Revised  | Sep '05      | LRM |  |
|                                                                                                                      | Scale    |              |     |  |
|                                                                                                                      |          | DRWG No.: 02 |     |  |

# DONGA CROSSING

| Supply V (mm) | Sleeve V (mm) |
|---------------|---------------|
| 20            | 40            |
| 25            | 40            |
| 32            | 50            |
| 40            | 65            |
| 50            | 80            |
| 65            | 100           |

| MATERIALS         | Unit           | Estimated Quantities |
|-------------------|----------------|----------------------|
| Cement            | Bags           |                      |
| Sand (rough sand) | M <sup>3</sup> |                      |
| Crushed Stones    | M <sup>3</sup> |                      |
| Bricks            | Nos            |                      |
| Shaped stones     | M <sup>3</sup> |                      |

| LABOUR           | Estimated Mandays |
|------------------|-------------------|
| Mason            | Nos               |
| Village Labourer | Nos               |

## NOTES:

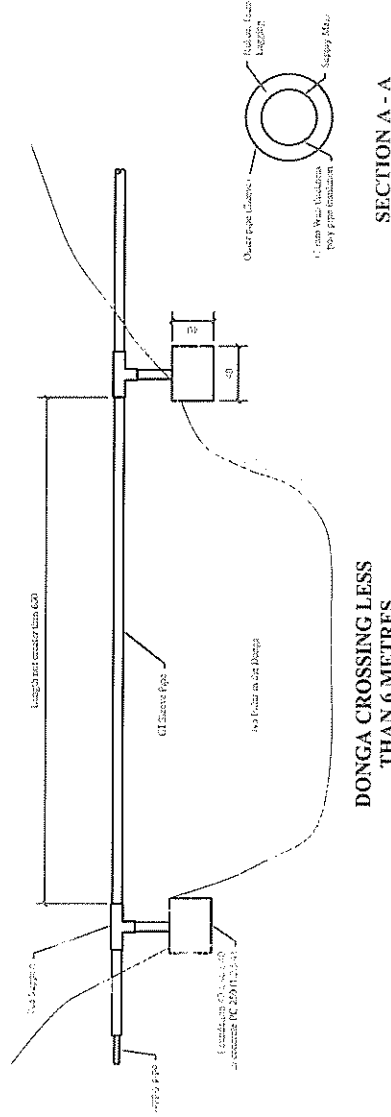
- Measurements are in Centimetres (cm)
- Where Donga Crossing is a low point include Washout as close as possible to Tee Support outside of Sleeve

TECHNICAL UNIT, DRWS HQ

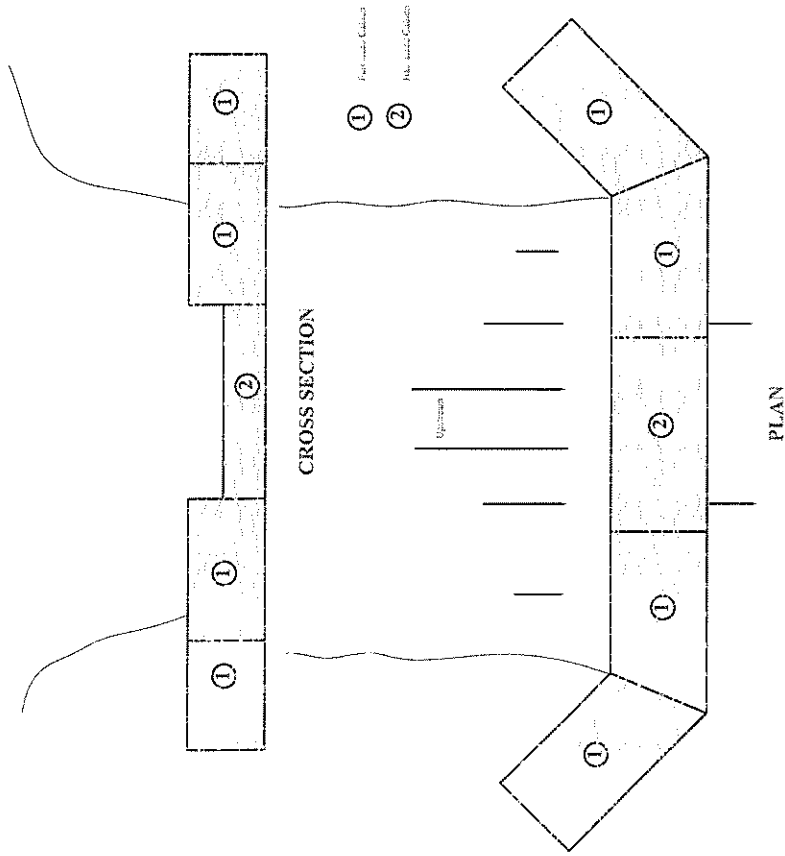
Government of Lesotho  
Department of Rural Water Supply  
Ministry of Natural Resources

DONGA CROSSING

DRWG No.: D - 04



SECTION A - A



PLAN

DONGA CROSSING MORE THAN 6 METRES

## SUPPORT STRUCTURE FOR SOLAR SYSTEMS



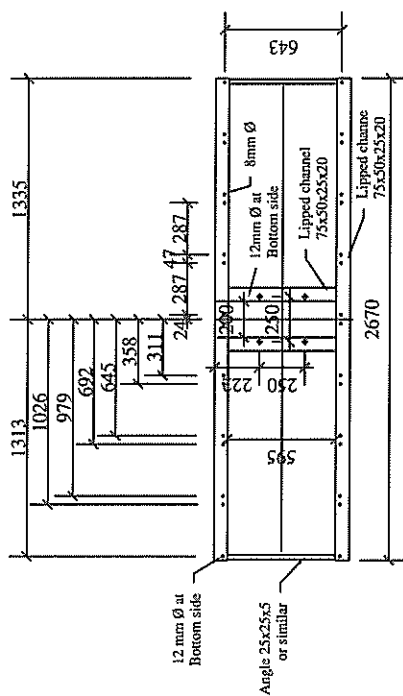
DRWG No.: **D-05A**

| MATERIALS         | Unit           | Estimated Quantities |
|-------------------|----------------|----------------------|
| Cement            | Bags           |                      |
| Sand (rough sand) | M <sup>3</sup> |                      |
| Crushed Stones    | M <sup>3</sup> |                      |
| Paving Stones     | M <sup>3</sup> |                      |

1. Measurements are in Centimetres (cm)
2. All channel openings towards outside
3. Weld all bolts below frame after installation

**SUPPORT STRUCTURE  
FOR SOLAR SYSTEMS**

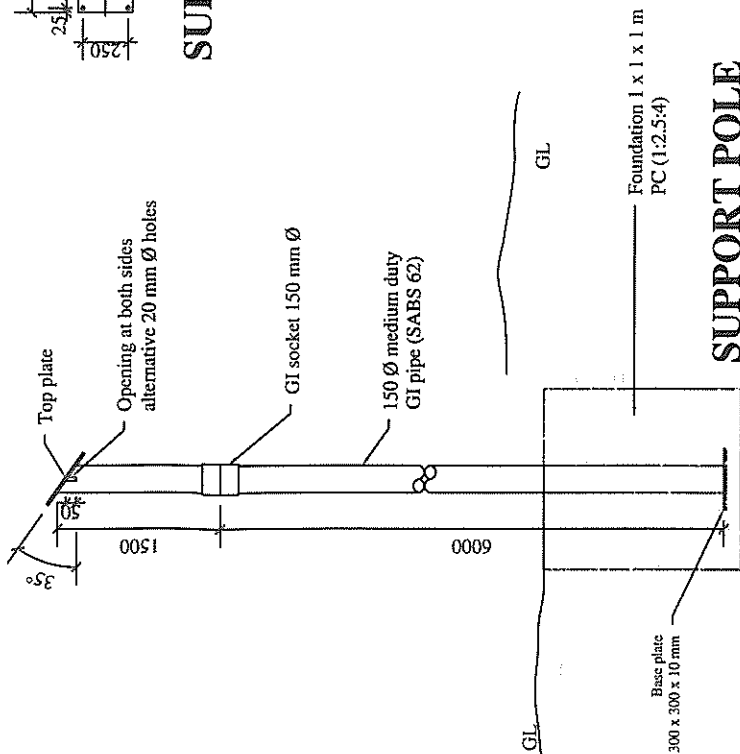
# SUPPORT STRUCTURE FOR SOLAR SYSTEMS



## SUPPORT FRAME FOR 8 pcs. OF ARCO OR SIEMENS MODULES



## SUPPORT POLE



## SUPPORT POLE

| FITTINGS                                                   |  | Unit  | Estimated Quantities |
|------------------------------------------------------------|--|-------|----------------------|
| 150 mm dia GI Pipe                                         |  | metre | 4                    |
| 150 mm dia GI Socket                                       |  | Nos   | 2                    |
| Frames as shown                                            |  | Nos   | 2                    |
| Base / Top Plate                                           |  | Nos   | 1                    |
| Anti theft Module Mounting                                 |  | Nos   | 1                    |
| Bolts M6 x 25 incl Spring and flat washers                 |  | Nos   | 1                    |
| Frame mounting bolts M16 x 40 incl spring and Flat Washers |  | Nos   | 1                    |

| MATERIALS         | Unit           | Estimated Quantities |
|-------------------|----------------|----------------------|
| Cement            | Bags           |                      |
| Sand (rough sand) | M <sup>3</sup> |                      |
| Crushed Stones    | M <sup>3</sup> |                      |
| Paving Stones     | M <sup>3</sup> |                      |

**NOTES:**

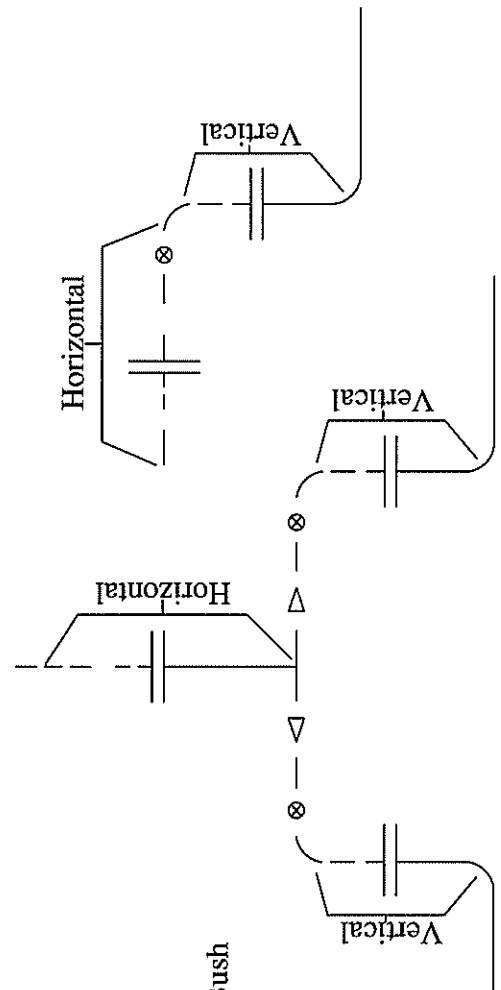
1. Measurements are in Centimetres (cm)
2. All channel openings towards outside
3. Weld all bolts below frame after installation

| TECHNICAL UNIT, DRWS HQ                                                                    | Action   | Date    | By  |
|--------------------------------------------------------------------------------------------|----------|---------|-----|
| Government of Lesotho<br>Department of Rural Water Supply<br>Ministry of Natural Resources | Designed | Jan '96 | LC  |
|                                                                                            | Drawn    | Jan '96 | GWG |
|                                                                                            | Approved | Jan '96 | LC  |
|                                                                                            | Revised  | Sep '05 | LRM |
|                                                                                            | Scale    | 1 :50   |     |

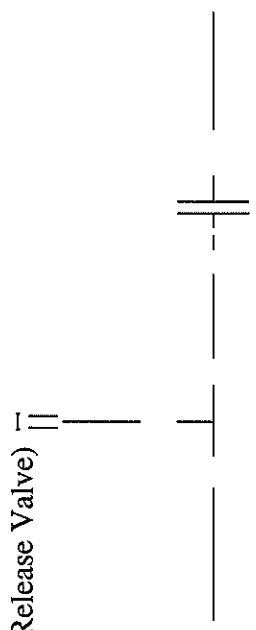
DRWG No.: **D-05B**

# LEGEND

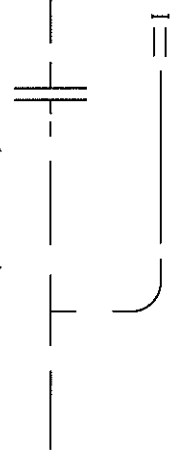
- Pipe
- Union
- Nipple
- Tee
- ▷ Reducing Bush
- ⊗ Valve
- ⌋ M/F Bend
- └ Elbow
- || Socket
- I Plug



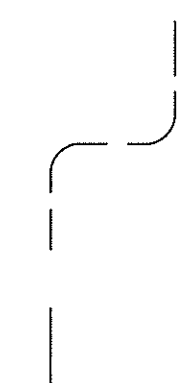
A.R.V (Air Release Valve)



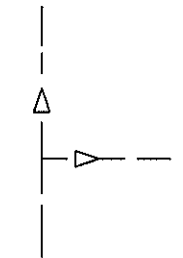
W.O. (Washout)



CHANGE IN DIRECTION



TEE JUNCTION



## FITTING ARRANGEMENT

NOTES:

1. Measurements are in Centimetres (cm)

TECHNICAL UNIT, DRWS HQ

Government of Lesotho

Department of Rural Water Supply

Ministry of Natural Resour

FITTING  
ARRANGEMENTS

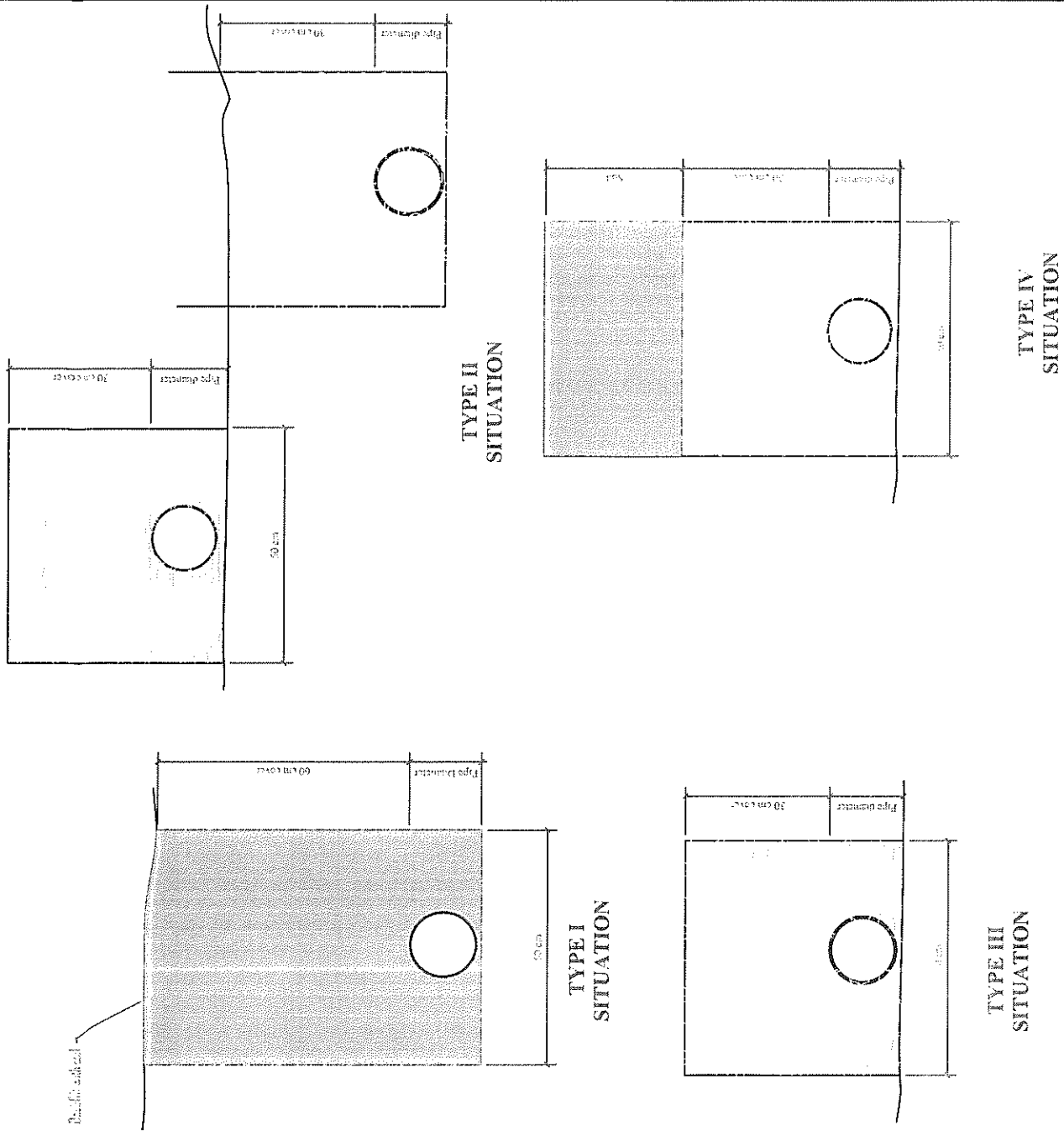
| Action   | Date    | By  |
|----------|---------|-----|
| Designed | Jan '96 | LC  |
| Drawn    | Jan '96 | GWC |
| Approved | Jan '96 | LC  |
| Revised  | Sep '05 | LRM |
| Scale    |         |     |

DRWG No.:D-06

# TRENCH AND BACKFILLING

NOTES:

| Action                                                                                                                                            | Date    | By  |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----|
| Designed                                                                                                                                          | Jan '96 | IC  |
| Drawn                                                                                                                                             | Jan '96 | GWC |
| Approved                                                                                                                                          | Jan '96 | IC  |
| Revised                                                                                                                                           | Sep '05 | LRM |
| Scale                                                                                                                                             |         |     |
| <b>TECHNICAL UNIT, DRWS HQ</b><br><b>Government of Lesotho</b><br><b>Department of Rural Water Supply</b><br><b>Ministry of Natural Resources</b> |         |     |
| <b>TRENCH AND BACKFILLING</b><br><b>D-07</b>                                                                                                      |         |     |



## SILTBOX IN STONEMASONRY

| MEASUREMENTS (cm)         |  | Volume (Litres) |                      |     |      |  |
|---------------------------|--|-----------------|----------------------|-----|------|--|
|                           |  | 300             | 500                  | 750 | 1000 |  |
| A                         |  | 160             | 210                  | 240 | 270  |  |
| B                         |  | 100             | 150                  | 180 | 210  |  |
| C                         |  | 75              | 80                   | 90  | 105  |  |
| D                         |  | 55              | 60                   | 70  | 85   |  |
| E                         |  | 22.7            | 52.5                 | 45  | 60   |  |
| FITTINGS                  |  | Unit            | Estimated Quantities |     |      |  |
| 40mm □ GI Pipe            |  | Metre           | 4                    | 4   | 4    |  |
| 25mm □ GI Pipe (for lock) |  | Metre           | 1                    | 1   | 1    |  |
| 20mm □ GI Pipe (for lock) |  | Metre           | 1                    | 1   | 1    |  |
| Socket 40mm               |  | Nos             | 1                    | 1   | 1    |  |
| Socket 20mm (for lock)    |  | Nos             | 2                    | 2   | 2    |  |
| Union Inlet*              |  | Nos             | 1                    | 1   | 1    |  |
| Union Outlet*             |  | Nos             | 1                    | 1   | 1    |  |
| Elbow 90°, Inlet          |  | Nos             | 1                    | 1   | 1    |  |
| Elbow 90°, Outlet         |  | Nos             | 2                    | 2   | 2    |  |
| Elbow 90°, 40mm           |  | Nos             | 4                    | 4   | 4    |  |
| Tee Equal 25mm (for lock) |  | Nos             | 2                    | 2   | 2    |  |
| Solid Plug 40mm           |  | Nos             | 1                    | 1   | 1    |  |
| Strainer                  |  | Nos             | 1                    | 1   | 1    |  |
| Nipple Outlet*            |  | Nos             | 1                    | 1   | 1    |  |
| MATERIALS                 |  | Unit            | Estimated Quantities |     |      |  |
| Cement                    |  | Bags            | 8                    | 11  | 13   |  |
| Sand (rough sand)         |  | M³              | 0.80                 | 1   | 1.3  |  |
| Crushed Stones            |  | M³              | 0.50                 | 0.6 | 0.8  |  |
| Bricks                    |  | Nos             | ..                   | ..  | ..   |  |
| Shaped Stones             |  | M³              | 1.3                  | 1.7 | 2.1  |  |
| Mesh Ref# 193             |  | M²              | 6                    | 9   | 10   |  |
| Reinforcement 8mm dia     |  | Metre           | 6                    | 6   | 8    |  |
| CI Manhole Cover          |  | Nos             | 1                    | 1   | 1    |  |
| SAP 6m x 38 x 22.5mm      |  | Metre           | 8                    | 9   | 9    |  |
| Baffle Plate              |  | Nos             | ..                   | ..  | ..   |  |
| LABOUR                    |  |                 | Estimated Quantities |     |      |  |
| Mason                     |  | Nos             | 6                    | 6   | 6    |  |
| Village Labourer          |  | Nos             | 26                   | 28  | 33   |  |

NOTES:

1. Measurements are in Centimetres (cm)
2. Inlet and outlet according to the Engineer  
(Inlet position should be near the manhole cover)
3. Sizes of some fittings (\*) depend upon inlet and outlet pipe sizes
4. Weight of precast slab size 1.85 x 50 x 6 cm about 133 kg

TECHNICAL UNIT, DRWS HQ

**Government of Lesotho**

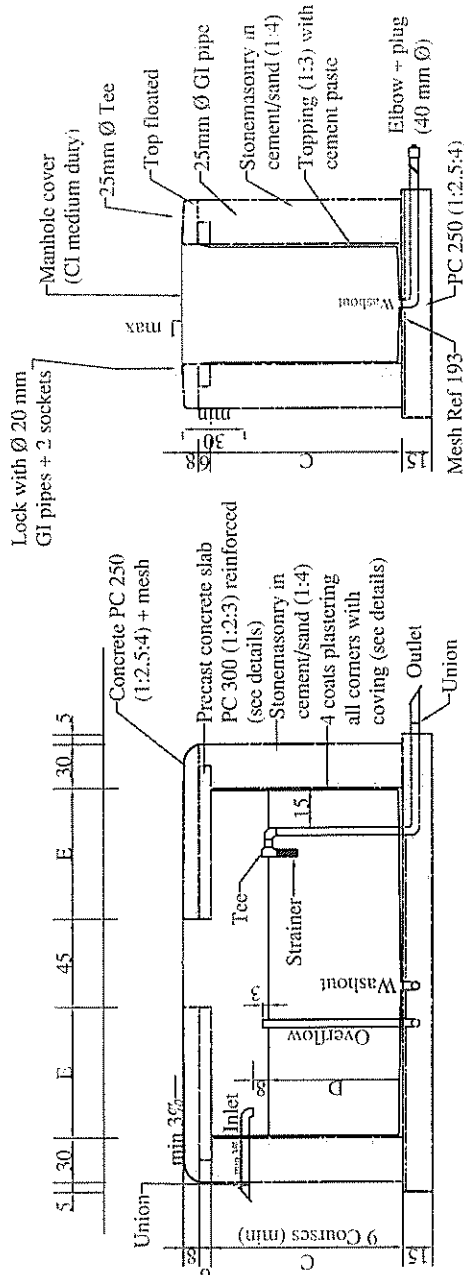
Department of Rural Water Supply

Ministry of Natural Resources

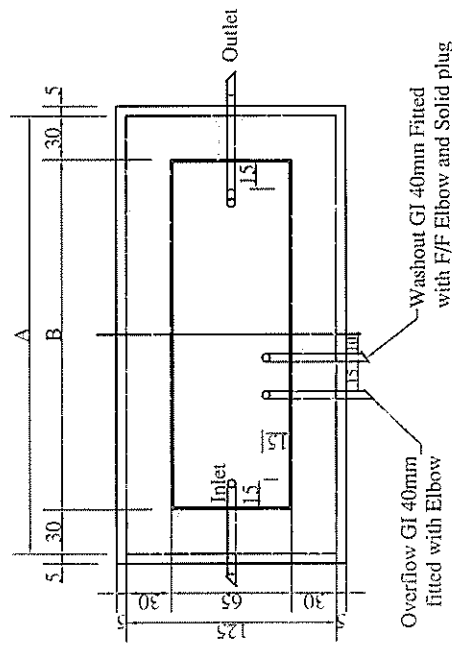
|       |      |
|-------|------|
| Scale | 1:20 |
|-------|------|

1

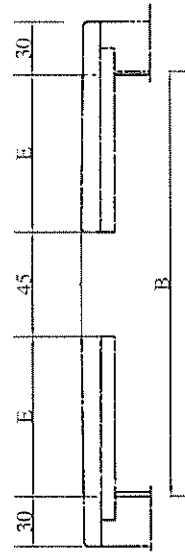
DRWG No.: S-01



## SECTION A - A



# PLAN



DETAIL TOP OF SILTBOX

$$V = 100 \text{ It}$$

# SILTBOX IN STONEMASONRY

# COLLECTION AND DISTRIBUTION CHAMBER

| FITTINGS                  | Unit  | COLLECTION CHAMBER   | ESTIMATED QUANTITIES | DISTRIBUTION CHAMBER |
|---------------------------|-------|----------------------|----------------------|----------------------|
| 40mm GI Pipe              | Metre | 3                    | 2                    |                      |
| 25mm GI Pipe (for lock)   | Metre | 1                    | 1                    |                      |
| 20mm GI Pipe (for lock)   | Metre | 1                    | 1                    |                      |
| Socket 20mm (for lock)    | Nos   | 2                    | 2                    |                      |
| Union Inlet*              | Nos   | 2                    | 2                    |                      |
| Union Outlet*             | Nos   | 1                    | 1                    |                      |
| Elbow 90°, Inlet          | Nos   | 2                    | 2                    |                      |
| Elbow 90°, Outlet         | Nos   | 2                    | 2                    |                      |
| Elbow 90°, 40mm           | Nos   | 3                    | 3                    |                      |
| Elbow 90° .....           | Nos   | 0                    | 0                    |                      |
| Tee Equal 25mm (for lock) | Nos   | 2                    | 2                    |                      |
| Tee Equal Outlet*         | Nos   | 0                    | 0                    |                      |
| Solid Plug 40mm           | Nos   | 1                    | 1                    |                      |
| Strainer                  | Nos   | ..                   | ..                   |                      |
| MATERIALS                 | Unit  | ESTIMATED QUANTITIES |                      |                      |
| Cement                    | Bags  | 4                    | 3                    |                      |
| Sand (rough sand)         | M³    | 0.37                 | 0.23                 |                      |
| Crushed Stones            | M³    | 0.6                  | 0.4                  |                      |
| Bricks                    | Nos   | ..                   | ..                   |                      |
| Shaped Stones             | M³    | 1.10                 | 0.60                 |                      |
| Mesh Ref # 193            | M²    | 2                    | 2                    |                      |
| Reinforcement 8mm dia     | Metre | ..                   | ..                   |                      |
| CI Manhole Cover          | Nos   | 1                    | 1                    |                      |
| SAP 6m x 38 x 152 mm      | Metre | 6                    | 6                    |                      |
| LABOUR                    |       | ESTIMATED QUANTITIES |                      |                      |
| Mason                     | Nos   | 4                    | 3                    |                      |
| Village Labourer          | Nos   | 24                   | 22                   |                      |

NOTES:  
 1. Measurements are in Centimetres (cm)  
 2. Inlet and outlet according to the Engineer  
 (Inlet position should be near the manhole cover)

| TECHNICAL UNIT, DRWS HQ | Action | Date    | By  |
|-------------------------|--------|---------|-----|
| Designed                |        | Jan '96 | LC  |
| Drawn                   |        | Jan '96 | GWC |
| Approved                |        | Jan '96 | LC  |
| Revised                 |        | Sep '05 | LRM |
| Scale                   |        | 1:20    |     |
| DRWG No.: S-02          |        |         |     |

**SECTION A - A**

**SECTION B - B**

**PLAN OF COLLECTION CHAMBER, V = 150 lt**

**PLAN OF DISTRIBUTION CHAMBER**

| MEASUREMENTS (cm) |  | Volume (litres) |     |
|-------------------|--|-----------------|-----|
|                   |  | 300             | 500 |
| A                 |  | 160             | 200 |
| B                 |  | 100             | 140 |
| C                 |  | 85              | 95  |
| D                 |  | 65              | 60  |
| E                 |  | 25              | 65  |

| FITTINGS                  | Unit           | Estimated Quantities |
|---------------------------|----------------|----------------------|
| 40mm V GI Pipe            | Metre          | 3                    |
| 22mm V GI Pipe (for lock) | Metre          | 1                    |
| 20mm V GI Pipe (for lock) | Metre          | 1                    |
| Socket 40mm               | Nos            | 1                    |
| Socket 20mm (for lock)    | Nos            | 2                    |
| Union Inlet*              | Nos            | 1                    |
| Union Outlet*             | Nos            | 1                    |
| Elbow 90°, Inlet          | Nos            | ..                   |
| Elbow 90°, Outlet         | Nos            | 1                    |
| Elbow 90°, 40mm           | Nos            | 4                    |
| Elbow 90° .....           | Nos            | ..                   |
| Tee Equal 25mm (for lock) | Nos            | 2                    |
| Solid Plug 40mm           | Nos            | 1                    |
| Floot Valve               | Nos            | ..                   |
| Strainer                  | Nos            | ..                   |
| MATERIALS                 | Unit           | Estimated Quantities |
| Cement                    | Bags           | 9                    |
| Sand (rough sand)         | M <sup>3</sup> | 0.90                 |
| Crushed Stones            | M <sup>3</sup> | 0.50                 |
| Bricks                    | Nos            | ..                   |
| Shaped Stones             | M <sup>3</sup> | 1.60                 |
| Mesh Ref # 193            | M <sup>2</sup> | 5                    |
| Reinforcement 8mm dia     | Metre          | 6                    |
| CI Manhole Cover          | Nos            | 1                    |
| SAP 6m x 38 x 152 mm      | Metre          | 6                    |
| LABOUR                    |                | Estimated Quantities |
| Mason                     | Nos            | 7                    |
| Village Labourer          | Nos            | 37                   |

1. Measurements are in Centimetres (cm)
2. Inlet and outlet according to the Engineer  
(Inlet position should be near the manhole cover)
3. Sizes of some fittings (x) depend upon inlet and outlet pipe sizes
4. 300 lt PBT without and 500 lt PBT fitted with float valve

|                                                                                                                 |               |             |           |
|-----------------------------------------------------------------------------------------------------------------|---------------|-------------|-----------|
| <b>TECHNICAL UNIT, DRWS HQ</b>                                                                                  | <b>Action</b> | <b>Date</b> | <b>By</b> |
| <b>Government of Lesotho</b><br><b>Department of Rural Water Supply</b><br><b>Ministry of Natural Resources</b> | Designed      | Jan '96     | LC        |
|                                                                                                                 | Drawn         | Jun '96     | GW/C      |
|                                                                                                                 | Approved      | Jan '96     | LC        |
|                                                                                                                 | Revised       | Sep '05     | LRM       |
|                                                                                                                 | Scale         | 1:20        |           |

## PRESSURE BREAK TANK

DRWG No.: S - 03



## SECTION A - A



| MEASUREMENTS (cm)                                                                                                                                                                                                                                                                                                                                                                  |                | Volume            |                      |                   |                   |                   |                   |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|----------------------|-------------------|-------------------|-------------------|-------------------|--|
|                                                                                                                                                                                                                                                                                                                                                                                    |                | 20 M <sup>3</sup> | 25 M <sup>3</sup>    | 30 M <sup>3</sup> | 35 M <sup>3</sup> | 40 M <sup>3</sup> | 40 M <sup>3</sup> |  |
| A                                                                                                                                                                                                                                                                                                                                                                                  |                | 450               | 550                  | 650               | 750               | 820               | 820               |  |
| B                                                                                                                                                                                                                                                                                                                                                                                  |                | 390               | 490                  | 590               | 670               | 760               | 760               |  |
| Precast Slab 185 x 78                                                                                                                                                                                                                                                                                                                                                              |                | 1                 | 1                    | 1                 | 1                 | 1                 | 1                 |  |
| Precast Slab 185 x 55                                                                                                                                                                                                                                                                                                                                                              |                | 6                 | 8                    | 10                | 11                | 13                | 13                |  |
| FITTINGS                                                                                                                                                                                                                                                                                                                                                                           |                | Unit              | Estimated Quantities |                   |                   |                   |                   |  |
| 50mm $\geq$ GI Pipe                                                                                                                                                                                                                                                                                                                                                                | Metre          | 12                | 12                   | 12                | 12                | 12                | 12                |  |
| 25mm $\geq$ GI Pipe (for lock)                                                                                                                                                                                                                                                                                                                                                     | Metre          | 2                 | 2                    | 2                 | 2                 | 2                 | 2                 |  |
| 20mm $\geq$ GI Pipe (for lock)                                                                                                                                                                                                                                                                                                                                                     | Metre          | 2                 | 2                    | 2                 | 2                 | 2                 | 2                 |  |
| Socket 20mm (for lock)                                                                                                                                                                                                                                                                                                                                                             | Nos            | 4                 | 4                    | 4                 | 4                 | 4                 | 4                 |  |
| Union Inlet*                                                                                                                                                                                                                                                                                                                                                                       | Nos            | 1                 | 1                    | 1                 | 1                 | 1                 | 1                 |  |
| Union Outlet*                                                                                                                                                                                                                                                                                                                                                                      | Nos            | 1                 | 1                    | 1                 | 1                 | 1                 | 1                 |  |
| Elbow 90° Inlet                                                                                                                                                                                                                                                                                                                                                                    | Nos            | 2                 | 2                    | 2                 | 2                 | 2                 | 2                 |  |
| Elbow 90° Outlet                                                                                                                                                                                                                                                                                                                                                                   | Nos            | 1                 | 1                    | 1                 | 1                 | 1                 | 1                 |  |
| Elbow 90° 50mm                                                                                                                                                                                                                                                                                                                                                                     | Nos            | 8                 | 8                    | 8                 | 8                 | 8                 | 8                 |  |
| Elbow 90° 25mm                                                                                                                                                                                                                                                                                                                                                                     | Nos            | -                 | -                    | -                 | -                 | -                 | -                 |  |
| Tee Equal 25mm (for lock)                                                                                                                                                                                                                                                                                                                                                          | Nos            | 4                 | 4                    | 4                 | 4                 | 4                 | 4                 |  |
| Tee Equal 50mm *                                                                                                                                                                                                                                                                                                                                                                   | Nos            | 1                 | 1                    | 1                 | 1                 | 1                 | 1                 |  |
| Solid Plug 50mm                                                                                                                                                                                                                                                                                                                                                                    | Nos            | 1                 | 1                    | 1                 | 1                 | 1                 | 1                 |  |
| Strainer                                                                                                                                                                                                                                                                                                                                                                           | Nos            | 1                 | 1                    | 1                 | 1                 | 1                 | 1                 |  |
| MATERIALS                                                                                                                                                                                                                                                                                                                                                                          |                | Unit              | Estimated Quantities |                   |                   |                   |                   |  |
| Cement                                                                                                                                                                                                                                                                                                                                                                             | Bags           | 77                | 93                   | 108               | 124               | 140               | 140               |  |
| Sand (rough sand)                                                                                                                                                                                                                                                                                                                                                                  | M <sup>3</sup> | 7.30              | 8.75                 | 10.24             | 11.73             | 13.22             | 13.22             |  |
| Crushed Stones                                                                                                                                                                                                                                                                                                                                                                     | M <sup>3</sup> | 5.50              | 6.81                 | 8.09              | 9.36              | 10.64             | 10.64             |  |
| Bricks                                                                                                                                                                                                                                                                                                                                                                             | Nos            | -                 | -                    | -                 | -                 | -                 | -                 |  |
| Shaped Stones                                                                                                                                                                                                                                                                                                                                                                      | M <sup>3</sup> | 16.9              | 19.4                 | 21.9              | 24.2              | 26.1              | 26.1              |  |
| Mesh Ref # 193                                                                                                                                                                                                                                                                                                                                                                     | M <sup>2</sup> | 60                | 73                   | 86                | 99                | 113               | 113               |  |
| Reinforcement 8mm dia                                                                                                                                                                                                                                                                                                                                                              | Metre          | 111               | 140                  | 169               | 198               | 228               | 228               |  |
| GI Manhole Cover                                                                                                                                                                                                                                                                                                                                                                   | Nos            | 2                 | 2                    | 2                 | 2                 | 2                 | 2                 |  |
| SAP 6m x 50 x 225mm                                                                                                                                                                                                                                                                                                                                                                | Metre          | 24                | 30                   | 30                | 36                | 36                | 36                |  |
| LABOUR                                                                                                                                                                                                                                                                                                                                                                             |                |                   | Estimated Quantities |                   |                   |                   |                   |  |
| Mason                                                                                                                                                                                                                                                                                                                                                                              | Nos            | 28                | 34                   | 36                | 39                | 44                | 44                |  |
| Village Labourer                                                                                                                                                                                                                                                                                                                                                                   | Nos            | 159               | 184                  | 209               | 231               | 265               | 265               |  |
| NOTES:                                                                                                                                                                                                                                                                                                                                                                             |                |                   |                      |                   |                   |                   |                   |  |
| 1. Measurements are in Centimetres (cm)                                                                                                                                                                                                                                                                                                                                            |                |                   |                      |                   |                   |                   |                   |  |
| 2. Inlet and outlet according to the Engineer                                                                                                                                                                                                                                                                                                                                      |                |                   |                      |                   |                   |                   |                   |  |
| (Inlet position should be near the manhole cover)                                                                                                                                                                                                                                                                                                                                  |                |                   |                      |                   |                   |                   |                   |  |
| 3. Sizes of some fittings (*) depend upon inlet and outlet pipe sizes                                                                                                                                                                                                                                                                                                              |                |                   |                      |                   |                   |                   |                   |  |
| 4. Weight of precast slab size 185 x 50 x 6 cm about 133 kg                                                                                                                                                                                                                                                                                                                        |                |                   |                      |                   |                   |                   |                   |  |
| <b>TECHNICAL UNIT, DRWS HQ</b>                                                                                                                                                                                                                                                                                                                                                     |                |                   |                      |                   |                   |                   |                   |  |
| Government of Lesotho                                                                                                                                                                                                                                                                                                                                                              |                |                   |                      |                   |                   |                   |                   |  |
| Department of Rural Water Supply                                                                                                                                                                                                                                                                                                                                                   |                |                   |                      |                   |                   |                   |                   |  |
| Ministry of Natural Resources                                                                                                                                                                                                                                                                                                                                                      |                |                   |                      |                   |                   |                   |                   |  |
|                                                                                                                                                                                                                                                                                                 |                |                   |                      |                   |                   |                   |                   |  |
| <b>STORAGE TANK</b>                                                                                                                                                                                                                                                                                                                                                                |                |                   |                      |                   |                   |                   |                   |  |
| <b>VOLUME 20 - 40 M<sup>3</sup></b>                                                                                                                                                                                                                                                                                                                                                |                |                   |                      |                   |                   |                   |                   |  |
| <div> <div>Action</div> <div>Date</div> <div>By</div> </div> <div> <div>Designed</div> <div>Jan '96</div> <div>LC</div> </div> <div> <div>Drawn</div> <div>Jan '96</div> <div>GWC</div> </div> <div> <div>Approved</div> <div>Jun '96</div> <div>LC</div> </div> <div> <div>Revised</div> <div>Sep '05</div> <div>LRM</div> </div> <div> <div>Scale</div> <div>1 : 50</div> </div> |                |                   |                      |                   |                   |                   |                   |  |
| DRWG No.: S - 06                                                                                                                                                                                                                                                                                                                                                                   |                |                   |                      |                   |                   |                   |                   |  |



PLAN

1. Measurements are in Centimetres (cm)
2. Inlet and outlet according to the Engineer  
(Inlet position should be near the manhole cover)
3. Sizes of some fittings (\*) depend upon inlet and outlet pipe sizes
4. Weight of precast slab size  $185 \times 50 \times 6$  cm about 133 kg

## TECHNICAL UNIT, DRWS HQ

|                                  |             |
|----------------------------------|-------------|
| Government of Lesotho            |             |
| Department of Rural Water Supply |             |
| Ministry of Natural Resources    |             |
| Drawn                            | Jan '96 GWC |
| Approved                         | Jun '96 LC  |
| Revised                          | Sep '05 LRM |
| Scale                            | 1 : 50      |

## STORAGE TANK

VOLUME 20 - 40 M<sup>3</sup>

**DRWG No.: S-06**

DRWG No.: S-17

| MEASUREMENTS (cm)                                                                                                            |                           | Volume (m <sup>3</sup> ) |                      |      |      |      |  |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------|----------------------|------|------|------|--|
|                                                                                                                              |                           | 500                      | 750                  | 1000 | 2000 | 3000 |  |
| A                                                                                                                            | 50mm X GI Pipe            | 125                      | 160                  | 160  | 225  | 225  |  |
|                                                                                                                              |                           | 65                       | 100                  | 100  | 165  | 165  |  |
| B                                                                                                                            | 40mm X GI Pipe            | 80                       | 80                   | 95   | 105  | 140  |  |
|                                                                                                                              |                           | 60                       | 60                   | 75   | 85   | 120  |  |
| C                                                                                                                            | 25mm X GI Pipe (for lock) | -                        | 35                   | 35   | 100  | 100  |  |
|                                                                                                                              |                           | -                        | -                    | -    | -    | -    |  |
| D                                                                                                                            | 20mm X GI Pipe (for lock) | -                        | -                    | -    | -    | -    |  |
|                                                                                                                              |                           | -                        | -                    | -    | -    | -    |  |
| E                                                                                                                            | 16mm X GI Pipe (for lock) | -                        | -                    | -    | -    | -    |  |
|                                                                                                                              |                           | -                        | -                    | -    | -    | -    |  |
| FITTINGS                                                                                                                     |                           | Unit                     | Estimated Quantities |      |      |      |  |
| A                                                                                                                            | 50mm X GI Pipe            | Metre                    | -                    | -    | 1    | 1    |  |
|                                                                                                                              |                           | Metre                    | 3                    | 3    | 3    | 3    |  |
| B                                                                                                                            | 40mm X GI Pipe            | Metre                    | 1                    | 1    | 1    | 1    |  |
|                                                                                                                              |                           | Metre                    | 1                    | 1    | 1    | 1    |  |
| C                                                                                                                            | 25mm X GI Pipe (for lock) | Nos                      | 2                    | 2    | 2    | 2    |  |
|                                                                                                                              |                           | Nos                      | 1                    | 1    | 1    | 1    |  |
| D                                                                                                                            | 20mm X GI Pipe (for lock) | Nos                      | 1                    | 1    | 1    | 1    |  |
|                                                                                                                              |                           | Nos                      | 1                    | 1    | 1    | 1    |  |
| E                                                                                                                            | 16mm X GI Pipe (for lock) | Nos                      | 1                    | 1    | 1    | 1    |  |
|                                                                                                                              |                           | Nos                      | 1                    | 1    | 1    | 1    |  |
| F                                                                                                                            | Union Inlet*              | Nos                      | 1                    | 1    | 1    | 1    |  |
|                                                                                                                              |                           | Nos                      | 1                    | 1    | 1    | 1    |  |
| G                                                                                                                            | Elbow 90° Inlet           | Nos                      | 1                    | 1    | 1    | 1    |  |
|                                                                                                                              |                           | Nos                      | 1                    | 1    | 1    | 1    |  |
| H                                                                                                                            | Elbow 90° X 20mm Outlet   | Nos                      | 1                    | 1    | 1    | 1    |  |
|                                                                                                                              |                           | Nos                      | 1                    | 1    | 1    | 1    |  |
| I                                                                                                                            | Elbow 90° Inlet           | Nos                      | 6                    | 6    | 6    | 6    |  |
|                                                                                                                              |                           | Nos                      | 2                    | 2    | 2    | 2    |  |
| J                                                                                                                            | Tee Equal 25mm (for lock) | Nos                      | 2                    | 2    | 2    | 2    |  |
|                                                                                                                              |                           | Nos                      | 2                    | 2    | 2    | 2    |  |
| K                                                                                                                            | Solid Plug 40mm           | Nos                      | 1                    | 1    | 1    | 1    |  |
|                                                                                                                              |                           | Nos                      | 1                    | 1    | 1    | 1    |  |
| L                                                                                                                            | S/rafter                  | Nos                      | 1                    | 1    | 1    | 1    |  |
|                                                                                                                              |                           | Nos                      | 1                    | 1    | 1    | 1    |  |
| MATERIALS                                                                                                                    |                           | Unit                     | Estimated Quantities |      |      |      |  |
| A                                                                                                                            | Cement                    | Bags                     | 17                   | 18   | 19   | 25   |  |
|                                                                                                                              |                           | M <sup>3</sup>           | 1.6                  | 1.8  | 1.9  | 2.5  |  |
| B                                                                                                                            | Crushed Stones            | M <sup>3</sup>           | 1.1                  | 1.1  | 1.1  | 1.4  |  |
|                                                                                                                              |                           | Nos                      | -                    | -    | -    | -    |  |
| C                                                                                                                            | Shaped Stones             | M <sup>3</sup>           | 2.2                  | 2.4  | 2.7  | 3.4  |  |
|                                                                                                                              |                           | M <sup>2</sup>           | 13                   | 15   | 15   | 19   |  |
| D                                                                                                                            | Reinforcement 8mm dia     | Metre                    | 6                    | 12   | 12   | 24   |  |
|                                                                                                                              |                           | Nos                      | 1                    | 1    | 1    | 1    |  |
| E                                                                                                                            | SAP 6m x 38 x 152mm       | Metre                    | 7                    | 7    | 8    | 10   |  |
|                                                                                                                              |                           | M <sup>2</sup>           | -                    | -    | -    | -    |  |
| LABOUR                                                                                                                       |                           |                          | Estimated Mandays    |      |      |      |  |
| A                                                                                                                            | Village Labourer          | Nos                      | 7                    | 8    | 9    | 10   |  |
|                                                                                                                              |                           | Nos                      | 53                   | 57   | 57   | 68   |  |
| NOTES:                                                                                                                       |                           |                          |                      |      |      |      |  |
| 1. Measurements are in Centimetres (cm)                                                                                      |                           |                          |                      |      |      |      |  |
| 2. Inlet position should be near the manhole cover                                                                           |                           |                          |                      |      |      |      |  |
| 3. Sizes of some fittings (*) depend upon inlet and outlet pipe sizes                                                        |                           |                          |                      |      |      |      |  |
| <b>TECHNICAL UNIT, DRWS HQ</b><br>Government of Lesotho<br>Department of Rural Water Supply<br>Ministry of Natural Resources |                           |                          |                      |      |      |      |  |
| ACTION                                                                                                                       |                           | Date                     | By                   |      |      |      |  |
| DESIGNED                                                                                                                     |                           | Jan '96                  | LC                   |      |      |      |  |
| DRAWN                                                                                                                        |                           | Jan '96                  | GWC                  |      |      |      |  |
| APPROVED                                                                                                                     |                           | Jan '96                  | LC                   |      |      |      |  |
| REVISED                                                                                                                      |                           | Sep '05                  | LRM                  |      |      |      |  |

| MEASUREMENTS (cm) |  | Volume (m <sup>3</sup> ) |     |      |      |      |
|-------------------|--|--------------------------|-----|------|------|------|
|                   |  | 500                      | 750 | 1000 | 2000 | 3000 |
| A                 |  | 125                      | 160 | 160  | 225  | 225  |
| B                 |  | 65                       | 100 | 100  | 165  | 165  |
| C                 |  | 80                       | 80  | 95   | 105  | 140  |
| D                 |  | 60                       | 60  | 75   | 85   | 120  |
| E                 |  | --                       | 35  | 35   | 100  | 100  |

| FITTINGS                  |                | Unit | Estimated Quantities |     |     |     |     |
|---------------------------|----------------|------|----------------------|-----|-----|-----|-----|
| 50mm X GI Pipe            | Metre          | --   | --                   | 1   | 1   | 1   | 1   |
| 40mm X GI Pipe            | Metre          | 3    | 3                    | 3   | 3   | 3   | 3   |
| 25mm X GI Pipe (for lock) | Metre          | 1    | 1                    | 1   | 1   | 1   | 1   |
| 20mm X GI Pipe (for lock) | Metre          | 1    | 2                    | 1   | 1   | 1   | 1   |
| Socket 20mm (for lock)    | Nos            | 2    | 2                    | 2   | 2   | 2   | 2   |
| Union Inlet*              | Nos            | 1    | 1                    | 1   | 1   | 1   | 1   |
| Elbow 90° Inlet           | Nos            | 1    | 1                    | 1   | 1   | 1   | 1   |
| Elbow 90° X 20mm Outlet   | Nos            | 1    | 1                    | 1   | 1   | 1   | 1   |
| Elbow 90° X 40 mm         | Nos            | 6    | 6                    | 6   | 6   | 6   | 6   |
| Elbow 90° .....           | Nos            | 2    | 2                    | 2   | 2   | 2   | 2   |
| Tee Equal 25mm (for lock) | Nos            | 2    | 2                    | 2   | 2   | 2   | 2   |
| Tee Equal*                | Nos            | 2    | 2                    | 2   | 2   | 2   | 2   |
| Solid Pipe 40mm           | Nos            | 1    | 1                    | 1   | 1   | 1   | 1   |
| Strainer                  | Nos            | 1    | 1                    | 1   | 1   | 1   | 1   |
| B/B Tap                   | Nos            | 1    | 1                    | 1   | 1   | 1   | 1   |
| MATERIALS                 |                | Unit | Estimated Quantities |     |     |     |     |
| Cement                    | Bags           | 17   | 18                   | 19  | 25  | 25  | 29  |
| Sand (rough sand)         | M <sup>3</sup> | 1.6  | 1.8                  | 1.9 | 2.5 | 2.9 | 2.9 |
| Crushed Stones            | M <sup>3</sup> | 1.1  | 1.1                  | 1.1 | 1.4 | 1.5 | 1.5 |
| Bricks                    | Nos            | --   | --                   | --  | --  | --  | --  |
| Shaped Stones             | M <sup>3</sup> | 2.2  | 2.4                  | 2.7 | 3.4 | 4.3 | 4.3 |
| Mesh Ref # 193            | M <sup>2</sup> | 13   | 15                   | 15  | 19  | 19  | 19  |
| Reinforcement 8mm dia     | Metre          | 6    | 12                   | 12  | 24  | 24  | 24  |
| GI Manhole Cover          | Nos            | 1    | 1                    | 1   | 1   | 1   | 1   |
| SAP 6m x 38 x 152mm       | Metre          | 7    | 7                    | 8   | 10  | 10  | 10  |
| LABOUR                    |                |      | Estimated Mandays    |     |     |     |     |
| Mason                     | Nos            | 7    | 8                    | 9   | 10  | 13  | 13  |
| Village Labourer          | Nos            | 53   | 57                   | 57  | 68  | 82  | 82  |

NOTES:

- Measurements are in Centimetres (cm)
- Inlet and outlet according to the Engineer  
(Inlet position should be near the manhole cover)
- Sizes of some fittings (\*) depend upon inlet and outlet pipe sizes

| TECHNICAL UNIT, DRWS HQ          |         |     |  |
|----------------------------------|---------|-----|--|
| Government of Lesotho            |         |     |  |
| Department of Rural Water Supply |         |     |  |
| Ministry of Natural Resources    |         |     |  |
| Action                           | Date    | By  |  |
| Drawn                            | Jan '96 | LC  |  |
| Approved                         | Jan '96 | GWC |  |
| Revised                          | Sep '95 | LC  |  |
| Scale                            | 1:20    | LRM |  |

| WATERPOINT                         |  |
|------------------------------------|--|
| 500, 750, 1000, 2000 & 3000 litres |  |



**DRWG No.: S - 08**

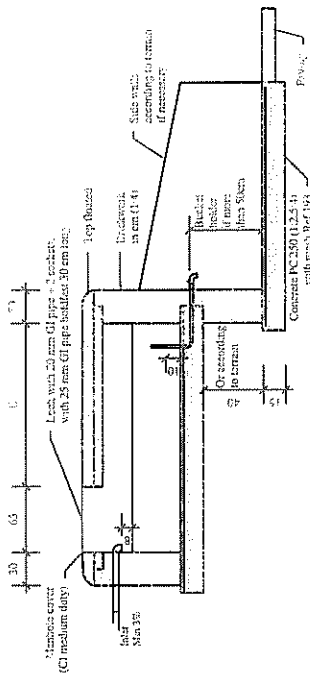
**NOTES:**

1. Measurements are in Centimetres (cm)
2. Inlet and outlet according to the Engineer  
(Inlet position should be near the manhole cover)
3. Sizes of some fittings (\*) depend upon inlet and outlet

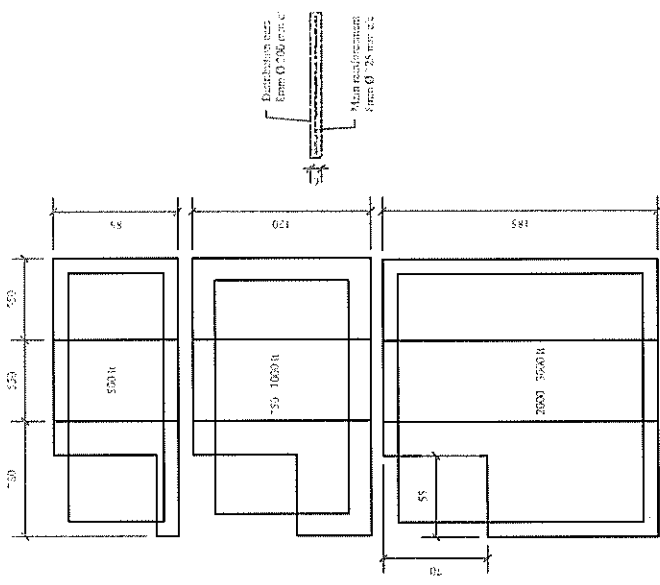
TECHNICAL UNIT, DRWS HQ

**Government of Lesotho**  
**Department of Rural Water Supply**  
Ministry of Natural Resources

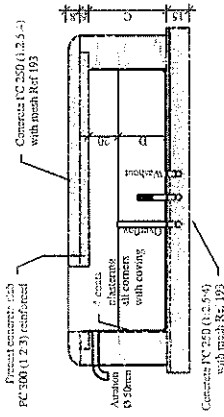
**WATERPOINT**  
500, 750, 1000, 2000 & 3000 litres



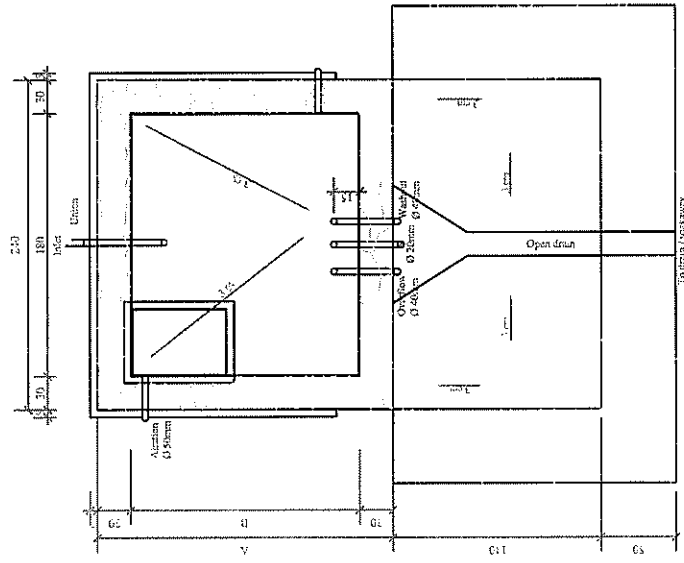
## SECTION B - 1



PRECAST REINFORCED  
CONCRETE SLAB PC 300, 1:50



## SECTION A - A



# PLAN

Answer: 0.67