

3.2 Drainage Facilities in Upper Pasig

3.2.1 Summary of Quantity

Summary of Quantity

| BQ No. | Name of Item | Unit | Qty. |
|---|--|-------|-----------|
| BILL No. 4 -EXCAVATION AND EARTH WORKS | | | |
| 4.8/1 | Excavation for manholes and junction manholes | | |
| | Excavation | Cu.m | 4,719.04 |
| | Clearing and Grubbing | Sq.m. | 3,777.76 |
| 4.8/1-2 | Excavation for manholes | | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 3,805.41 |
| | Clearing and Grubbing | Sq.m. | 3,268.82 |
| 4.8/1-2 | Excavation for junction manholes (junction pits) | | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 913.63 |
| | Clearing and Grubbing | Sq.m. | 508.94 |
| 4.8/2 | Excavation for pipe culverts | | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 3,481.08 |
| | Clearing and Grubbing | Sq.m. | 2,277.04 |
| 4.8/3 | Excavation for other structures | | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 446.57 |
| | Clearing and Grubbing | Sq.m. | 717.92 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 332.38 |
| 4.16/1 | Random backfill | Cu.m. | 3,813.76 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 3,813.76 |
| 4.16/1-1 | Random backfill for manholes | Cu.m. | |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 3,096.49 |
| 4.16/1-2 | Random backfill for junction manholes (junction pits) | Cu.m. | |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 717.27 |
| 4.17/1 | Zone B pipe backfill | Cu.m. | 688.36 |
| | Sand Fill, in Small Area: V<100 cu.m. | Cu.m. | 688.36 |
| 4.17/2 | Zone C pipe backfill (excavated material) | Cu.m. | 2,413.36 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 2,413.36 |
| 4.5/31-A | Temporary Removal and reinstallation of existing fences | L.m. | 274.79 |
| | Temporary removal of existing fences (for manhole) | L.m. | 146.26 |
| | Tempoary removal of existing fences (for collector pipe) | L.m. | 128.53 |
| | Reinstallation of existing fences (for manhole) | L.m. | 146.26 |
| | Reinstallation of existing fences (for collector pipe) | L.m. | 128.53 |
| 4.5/48-A | Demolition and removal of existing revetment | L.m. | 1,456.54 |
| | Demolition and removal of existing revetment (for manhole) | L.m. | 636.82 |
| | Demolition and removal of existing revetment (for collector pipe) | L.m. | 819.72 |
| 4.5/50-A | Demolition and restoration of existing CHB wall | L.m. | 813.44 |
| | Temporary removal of existing fences (for manhole) | L.m. | 337.65 |
| | Tempoary removal of existing fences (for collector pipe) | L.m. | 475.79 |
| 4.5/51-A | Temporary Removal and reinstallation of existing steel handrail | L.m. | 0.00 |
| | Temporary removal of existing steel handrail (for manhole) | L.m. | 0.00 |
| | Tempoary removal of existing steel handrail (for collector pipe) | L.m. | 0.00 |
| | Reinstallation of existing steel handrail (for manhole) | L.m. | 0.00 |
| | Reinstallation of existing steel handrail (for collector pipe) | L.m. | 0.00 |
| 4.5/52-A | Restoration of existing revetment | L.m. | 288.98 |
| | Temporary removal of existing revetment (for manhole) | L.m. | 128.78 |
| | Tempoary removal of existing revetment (for collector pipe) | L.m. | 160.20 |
| BILL No. 5 - CONCRETE | | | |
| 5.11/1 | Reinforcement Grade 275 | Ton | 80.11 |
| | Ladder Rung (16mm dia-Grade 275) in Manholes | Kg | 770.82 |
| | Ladder Rung (16mm dia-Grade 275) in Junction Manholes | Kg | 223.49 |
| | Reinforcement (16mm dia-Grade 275) in U - ditch | Kg | 8,855.24 |
| | Reinforcement (16mm dia-Grade 275) in box culvert | Kg | 12,657.29 |
| 5.16/1 | Precast concrete manhole and junction boxes covers | Cu.m. | 17.95 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 56.85 |
| | Reinforcement | Ton | 2.50 |
| 5.16/2 | Precast concrete U-ditch covers | Cu.m. | 16.30 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 62.10 |
| | Reinforcement | Ton | 2.35 |
| 5.22/1 | Concrete in manholes, junction boxes and outlets | | 631.79 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 3,951.37 |
| | Staging/Scaffolding Work | Sq.m. | 2,434.31 |
| | Supporting/Scaffolding Work | Cu.m. | 98.36 |
| 5.22/1-1 | Concrete in manholes | | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 403.94 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 2,854.36 |
| | Staging/Scaffolding Work | Sq.m. | 1,947.24 |
| | Supporting/Scaffolding Work | Cu.m. | 50.91 |
| 5.22/1-2 | Concrete in junction manholes (junction pits) | | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 93.04 |

| BQ No. | Name of Item | Unit | Qty. |
|------------------------------|---|-------|----------|
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 481.56 |
| | Staging/Scaffolding Work | Sq.m. | 264.16 |
| | Supporting/Scaffolding Work | Cu.m. | 1.29 |
| 5.22/1-3 | Concrete in outlets | | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 134.80 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 615.46 |
| | Staging/Scaffolding Work | Sq.m. | 222.91 |
| | Supporting/Scaffolding Work | Cu.m. | 46.17 |
| 5.22/16 | Concrete in U-Ditches | Cu.m. | 136.23 |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 136.23 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 1,161.33 |
| 5.22/2 | Concrete for pipe bedding | Cu.m. | 17.19 |
| | Concrete Work for Massive Concrete, Class-B, Manpower Placing | Cu.m. | 17.19 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 67.22 |
| 5.22/3 | Concrete for Box Culvert | Cu.m. | 140.64 |
| | Concrete Work for Massive Concrete, Class-B, Manpower Placing | Cu.m. | 140.64 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 1,375.76 |
| | Supporting/Scaffolding Work | Cu.m. | 195.89 |
| | Water Stop | L.m. | 96.20 |
| | Joint Sealant | L.m. | 165.10 |
| | Cork Filler | Sq.m. | 12.03 |
| 5.23/1 | Levelling concrete | Cu.m. | 39.20 |
| | Concrete Work for Leveling Concrete, Class-F, Concrete Pump Placing | Cu.m. | 39.20 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 229.20 |
| BILL No. 8 - DRAINAGE | | | |
| 8.4/9 | Unreinforced concrete pipe - 200mm dia. | | |
| | Installation of CDP, 200mm (10") Dia. | L.m. | 4.00 |
| | Cement Mortar (1:2) for Joint Collar of CDP | Cu.m. | 0.02 |
| 8.4/1 | Reinforced concrete pipe - 300 mm dia. | | |
| | Installation of RC Pipe Culvert, 300mm (12") Dia. | L.m. | 58.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 1.06 |
| 8.4/2 | Reinforced concrete pipe - 460 mm dia. | | |
| | Installation of RC Pipe Culvert, 460mm (18") Dia. | L.m. | 35.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.75 |
| 8.4/3 | Reinforced concrete pipe - 525 mm dia. | | |
| | Installation of RC Pipe Culvert, 460mm (18") Dia. | L.m. | 1.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.03 |
| 8.4/5 | Reinforced concrete pipe - 760 mm dia. | | |
| | Installation of RC Pipe Culvert, 760mm (30") Dia. | L.m. | 8.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.40 |
| 8.4/6 | Reinforced concrete pipe - 910 mm dia. | | |
| | Installation of RC Pipe Culvert, 910mm (36") Dia. | L.m. | 289.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 11.98 |
| 8.4/7 | Reinforced concrete pipe - 1,070 mm dia. | | |
| | Installation of RC Pipe Culvert, 1070mm (42") Dia. | L.m. | 8.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.40 |
| 8.9/1 | PVC drainage pipes - 50mm dia. | | |
| | Installation of PVC Pipe, 75mm (3") Dia. X 6m | ea | 3.00 |
| | Coupling for PVC Joint | ea | 2.00 |
| 8.9/2 | PVC drainage pipes - 100mm dia. | | |
| | Installation of PVC Pipe, 100mm (4") Dia. X 6m | ea | 34.00 |
| | Coupling for PVC Joint | ea | 22.00 |
| 8.9/3 | PVC drainage pipes - 150mm dia. | | |
| | Installation of PVC Pipe, 150mm (6") Dia. X 6m | ea | 49.00 |
| | Coupling for PVC Joint | ea | 35.00 |
| 8.9/4 | PVC drainage pipes - 200mm dia. | | |
| | Installation of PVC Pipe, 200mm (8") Dia. X 6m | ea | 34.00 |
| | Coupling for PVC Joint | ea | 29.00 |
| 8.9/5 | PVC drainage pipes - 250mm dia. | | |
| | Installation of PVC Pipe, 250mm (10") Dia. X 6m | ea | 4.00 |
| | Coupling for PVC Joint | ea | 3.00 |
| 8.10/2 | Galvanised iron drainage pipes - 150 mm dia. | | |
| | Installation of Steel Pipe, 150mm Dia. X 6m | ea | 5.00 |
| 8.10/3 | Galvanised iron drainage pipes - 300 mm dia. | | |
| | Installation of Steel Pipe, 200mm Dia. X 6m | ea | 2.00 |
| 8.6/1 | FRP flap gate - 300 mm | | |
| | Installation of Flap Gate for 300mm (12") Dia. Pipe | Set | 2.00 |
| 8.6/2 | FRP flap gate - 910 mm | | |
| | Installation of Flap Gate for 910mm (36") Dia. Pipe | Set | 3.00 |

STA 10.341 - 14+440

| BQ No. | Name of Item | Unit | Qty. |
|--|--|-------|-----------|
| BILL No. 4 - EXCAVATION AND EARTH WORKS | | | |
| 4.8/1 | Excavation for manholes and junction manholes | | |
| | Excavation | Cu.m | 3,089.78 |
| | Clearing and Grubbing | Sq.m. | 2,253.79 |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 2,595.03 |
| | Clearing and Grubbing | Sq.m. | 1,865.19 |
| 4.8/1-2 | Excavation for junction manholes (junction pits) | Cu.m. | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 494.76 |
| | Clearing and Grubbing | Sq.m. | 388.60 |
| 4.8/2 | Excavation for pipe culverts | | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 2,917.17 |
| | Clearing and Grubbing | Sq.m. | 1,765.84 |
| 4.8/3 | Excavation for other structures | | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 308.82 |
| | Clearing and Grubbing | Sq.m. | 472.17 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 230.81 |
| 4.16/1 | Random backfill | Cu.m. | 2,606.62 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 2,606.62 |
| 4.16/1-1 | Random backfill for manholes | Cu.m. | |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 2,194.33 |
| 4.16/1-2 | Random backfill for junction manholes (junction pits) | Cu.m. | |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 412.30 |
| 4.17/1 | Zone B pipe backfill | Cu.m. | 508.76 |
| | Sand Fill, in Small Area: V<100 cu.m. | Cu.m. | 508.76 |
| 4.17/2 | Zone C pipe backfill (excavated material) | Cu.m. | 2,064.66 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 2,064.66 |
| 4.5/31-A | Temporary Removal and reinstallation of existing fences | L.m. | 142.23 |
| | Temporary removal of existing fences (for manhole) | L.m. | 65.64 |
| | Tempoary removal of existing fences (for collector pipe) | L.m. | 76.59 |
| | Reinstallation of existing fences (for manhole) | L.m. | 65.64 |
| | Reinstallation of existing fences (for collector pipe) | L.m. | 76.59 |
| 4.5/48-A | Demolition and removal of existing revetment | L.m. | 942.14 |
| | Demolition and removal of existing revetment (for manhole) | L.m. | 386.52 |
| | Demolition and removal of existing revetment (for collector pipe) | L.m. | 555.62 |
| 4.5/50-A | Demolition and restoration of existing CHB wall | L.m. | 437.74 |
| | Temporary removal of existing fences (for manhole) | L.m. | 183.17 |
| | Tempoary removal of existing fences (for collector pipe) | L.m. | 254.57 |
| 4.5/51-A | Temporary Removal and reinstallation of existing steel handrail | L.m. | |
| | Temporary removal of existing steel handrail (for manhole) | L.m. | |
| | Tempoary removal of existing steel handrail (for collector pipe) | L.m. | |
| | Reinstallation of existing steel handrail (for manhole) | L.m. | |
| | Reinstallation of existing steel handrail (for collector pipe) | L.m. | |
| 4.5/52-A | Restoration of existing revetment | L.m. | 262.06 |
| | Temporary removal of existing revetment (for manhole) | L.m. | 101.86 |
| | Tempoary removal of existing revetment (for collector pipe) | L.m. | 160.20 |
| BILL No. 5 - CONCRETE | | | |
| 5.11/1 | Reinforcement Grade 275 | Ton | 52.98 |
| | Ladder Rung (16mm dia-Grade 40) in Manholes | Kg | 463.04 |
| | Ladder Rung (16mm dia-Grade 40) in Junction Manholes | Kg | 95.65 |
| | Reinforcement (16mm dia-Grade 275) in U - ditch | Kg | 6,242.15 |
| | Reinforcement (16mm dia-Grade 275) in box culvert | Kg | 12,657.29 |
| 5.16/1 | Precast concrete manhole and junction boxes covers | Cu.m. | 10.99 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 35.91 |
| | Reinforcement | Ton | 1.50 |
| 5.16/2 | Precast concrete U-ditch covers | Cu.m. | 10.71 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 40.77 |
| | Reinforcement | Ton | 1.58 |
| 5.22/1 | Concrete in manholes, junction boxes and outlets | Cu.m. | 364.21 |
| 5.22/1-1 | Concrete in manholes | Cu.m. | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 234.83 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 1,688.65 |
| | Staging/Scaffolding Work | Sq.m. | 1,141.98 |
| | Supporting/Scaffolding Work | Cu.m. | 27.94 |
| 5.22/1-2 | Concrete in junction manholes (junction pits) | Cu.m. | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 44.80 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 358.68 |
| | Staging/Scaffolding Work | Sq.m. | 184.74 |
| | Supporting/Scaffolding Work | Cu.m. | 1.29 |

| BQ No. | Name of Item | Unit | Qty. |
|------------------------------|---|-------|----------|
| 5.22/1-3 | Concrete in outlets | Cu.m. | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 84.58 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 391.38 |
| | Staging/Scaffolding Work | Sq.m. | 171.12 |
| | Supporting/Scaffolding Work | Cu.m. | 27.67 |
| 5.22/1-4 | Concrete in U-Ditches | Cu.m. | 96.03 |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 96.03 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 828.28 |
| 5.22/2 | Concrete for pipe bedding | Cu.m. | 8.39 |
| | Concrete Work for Massive Concrete, Class-B, Manpower Placing | Cu.m. | 8.39 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 33.31 |
| 5.22/3 | Concrete for Box Culvert | Cu.m. | 140.64 |
| | Concrete Work for Massive Concrete, Class-B, Manpower Placing | Cu.m. | 140.64 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 1,375.76 |
| | Staging/Scaffolding Work | Sq.m. | |
| | Supporting/Scaffolding Work | Cu.m. | 195.89 |
| | Water Stop | L.m. | 96.20 |
| | Joint Sealant | L.m. | 165.10 |
| | Cork Filler | Sq.m. | 12.03 |
| 5.23/1 | Levelling concrete | Cu.m. | 22.06 |
| | Concrete Work for Leveling Concrete, Class-F, Concrete Pump Placing | Cu.m. | 22.06 |
| | Formwork for Leveling Concrete, Class-F | Sq.m. | 170.58 |
| BILL No. 8 - DRAINAGE | | | |
| 8.4/9 | Unreinforced concrete pipe - 200mm dia. | | |
| | Installation of CDP, 200mm (10") Dia. | L.m. | 4.00 |
| | Cement Mortar (1:2) for Joint Collar of CDP | Cu.m. | 0.02 |
| 8.4/1 | Reinforced concrete pipe – 300 mm dia. | L.m. | |
| | Installation of RC Pipe Culvert, 300mm (12") Dia. | L.m. | 54.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 1.01 |
| 8.4/2 | Reinforced concrete pipe – 460 mm dia. | L.m. | |
| | Installation of RC Pipe Culvert, 460mm (18") Dia. | L.m. | 12.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.36 |
| 8.4/3 | Reinforced concrete pipe – 530 mm dia. | | |
| | Installation of RC Pipe Culvert, 530mm (21") Dia. | L.m. | 1.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.03 |
| 8.4/5 | Reinforced concrete pipe – 760 mm dia. | L.m. | |
| | Installation of RC Pipe Culvert, 760mm (30") Dia. | L.m. | 1.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.04 |
| 8.4/6 | Reinforced concrete pipe – 910 mm dia. | L.m. | |
| | Installation of RC Pipe Culvert, 910mm (36") Dia. | L.m. | 121.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 4.27 |
| 8.9/1 | PVC drainage pipes - 50mm dia. | | |
| | Installation of PVC Pipe, 75mm (3") Dia. X 6m | ea | 3.00 |
| | Coupling for PVC Joint | ea | 2.00 |
| 8.9/2 | PVC drainage pipes - 100mm dia. | | |
| | Installation of PVC Pipe, 100mm (4") Dia. X 6m | ea | 30.00 |
| | Coupling for PVC Joint | ea | 20.00 |
| 8.9/3 | PVC drainage pipes - 150mm dia. | | |
| | Installation of PVC Pipe, 150mm (6") Dia. X 6m | ea | 31.00 |
| | Coupling for PVC Joint | ea | 22.00 |
| 8.9/4 | PVC drainage pipes - 200mm dia. | | |
| | Installation of PVC Pipe, 200mm (8") Dia. X 6m | ea | 25.00 |
| | Coupling for PVC Joint | ea | 22.00 |
| 8.9/5 | PVC drainage pipes - 250mm dia. | | |
| | Installation of PVC Pipe, 250mm (10") Dia. X 6m | ea | 4.00 |
| | Coupling for PVC Joint | ea | 3.00 |
| 8.10/2 | Galvanised iron drainage pipes – 150 mm dia. | | |
| | Installation of Steel Pipe, 150mm Dia. X 6m | ea | 5.00 |
| 8.10/3 | Galvanised iron drainage pipes – 300 mm dia. | | |
| | Installation of Steel Pipe, 200mm Dia. X 6m | ea | 2.00 |
| 8.6/1 | Flap gate – 300 mm dia. | | |
| | Installation of Flap Gate for 300mm (12") Dia. Pipe | Set | 2.00 |
| 8.6/2 | Flap gate – 910 mm dia. | | |
| | Installation of Flap Gate for 910mm (36") Dia. Pipe | Set | 3.00 |

QUANTITIES OF MANHOLE

Manhole No.: ML 113.12

Location: 13 + 845

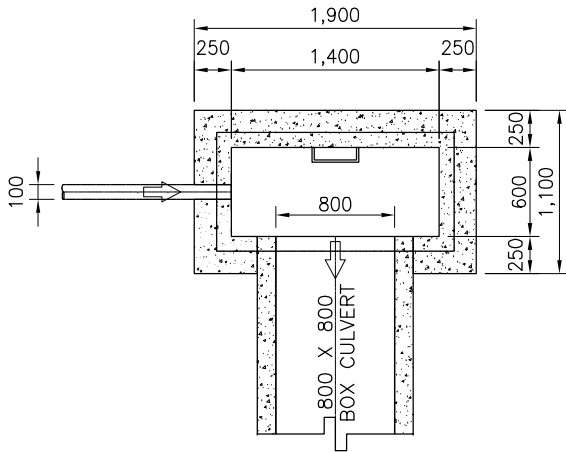
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|--|---|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=16.40 | 4.91 | 80.58 | |
| | | | | 80.58 | m ³ |
| 2. Lev. Concrete (Manhole) | W=2.10 L=2.11 | 4.43 | 0.1 | 0.44 | m ³ |
| 3. Lev. Concrete (Junction Box) | W=1.30 L=1.40 | 1.82 | 0.1 | 0.18 | m ³ |
| 4. Bottom Slab (Manhole) | W=1.90 L=1.91 | 4.26 | 0.25 | 1.07 | m ³ |
| 3. Bottom Slab (Junction Box) | W=1.10 L=1.20 | 1.32 | 0.15 | 0.20 | m ³ |
| 4. Wall | | | | | |
| Manhole | Wout=1.90 Lout=1.91 Win=1.40 Lin=1.41 | Aout=3.63 Ain=1.97 Anet=1.66 | 3.256 | 5.389 | m ³ |
| Minus | D=1.05 Pipe hole on Wall B Pipe hole on Wall C Pipe hole on Wall D | W=1.05 DiaB=0.59 DiaC=0.00 DiaD=1.11 | 1.10 0.40 0.00 0.97 | 0.25 0.25 0.25 0.25 | 0.28 0.10 0.00 0.24 |
| Net Wall Vol. | | | | 4.77 | m ³ |
| 4. Wall | | | | | |
| Junction Box | Wout=1.10 Lout=1.20 Win=0.80 Lin=.90 | Aout=1.32 Ain=0.72 Anet=0.60 | 1.209 | 0.725 | m ³ |
| Minus | Depth of Ditch=0.30 Pipe hole on Wall B Depth of Ditch=0.30 Pipe hole on Wall D | W=0.50 DiaB=0.00 W=0.50 DiaD=0.59 | 0.15 0.00 0.15 0.27 | 0.15 0.15 0.15 0.15 | 0.02 0.00 0.02 0.04 |
| Net Wall Vol. | | | | 0.64 | m ³ |
| 5. Conc. Cover (Manhole) | L=1.60 W=1.10 | 1.76 | 0.1 | 0.18 | m ³ |
| 5. Conc. Cover (Junction Box) | L=1.05 W=0.95 | 0.9975 | 0.1 | 0.10 | m ³ |
| 6. Ladder Rung (Manhole) | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 6. Ladder Rung (Junction Box) | L=0.60 Dia=.016m Qty=4 | 0.000201062 | | 0.000120637 0.95 3.79 | m ³ kg/pc kg |
| 7. Flapgate | | | | 1 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.61 Win=1.51 Lin=1.51 DiaD=1.11 | Ain=4.99 Aout=2.28 Apipe=.97 | 0.7 0.3 0.4 | 3.49 0.68 0.39 2.42 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | | 2 pc |
| 10. Conc. Collar (Outlet Pipe) | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. New Pipe | Dia=.460m | L=1.70 | | | 2 pc |
| 11. Conc. Collar (New Pipe) | D1=.586m D2=.766m | A1=0.27 A2=0.46 Anet=0.19 | 0.17 Qty=1 | 0.032492864 | m3 |
| 12. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058275 | m3 |
| 13. Conc. Bedding (New Pipe) | Dia=.590m | L=1.30 | | 0.0767 | m3 |
| 14. Backfill | | | | 67.15 | m3 |

QUANTITIES OF MANHOLE

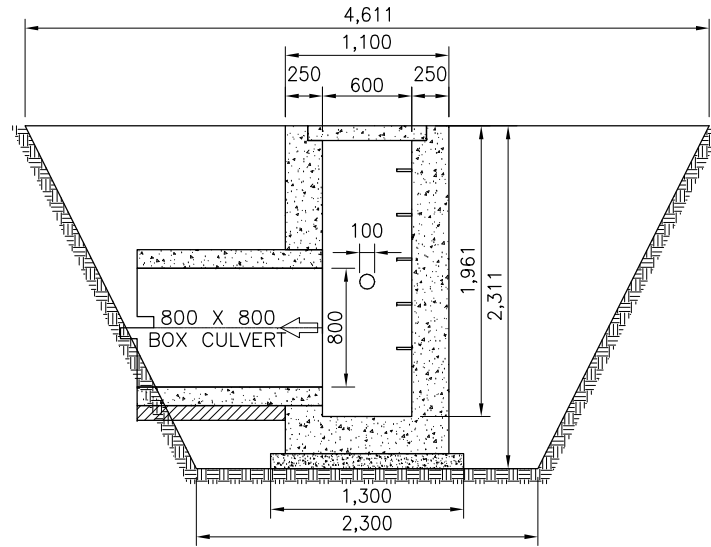
Manhole No.: ML 113.10

Location: 13 + 835

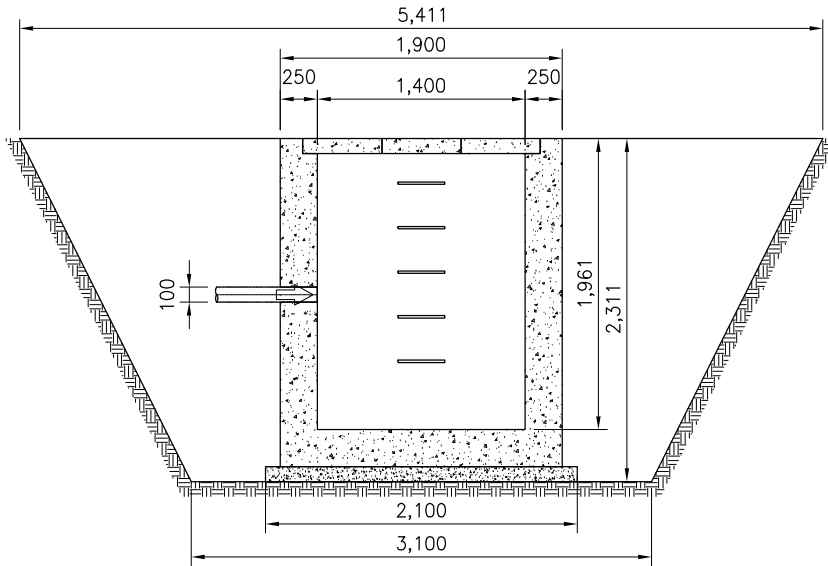
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|-------------------------------|
| 1. Excavation | | A1=9.83 | 3.46 | 33.98 | |
| | | | | 33.98 | m ³ |
| 2. Lev. Concrete | W=2.10 L=1.30 | 2.73 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.10 | 2.09 | 0.25 | 0.52 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.10 Win=1.40 Lin=.60 | Aout=2.09 Ain=0.84 Anet=1.25 | 1.961 | 2.451 | m ³ |
| Minus | | | | | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall B | DiaB=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 2.17 | m ³ |
| 5. Conc. Cover | L=0.80 W=1.60 | 1.28 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Backfill | | | | 28.32 | m ³ |



1 PLAN
SCALE A



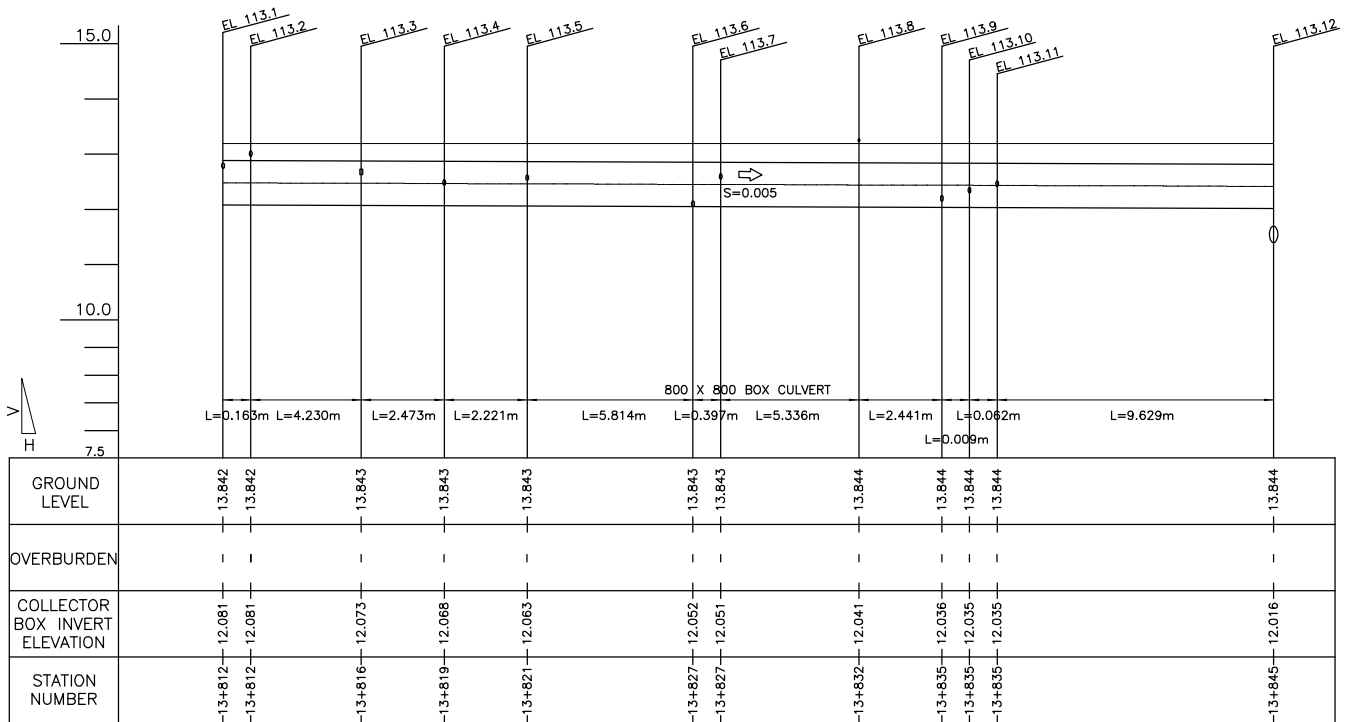
3 SECTION (ML113.1)
SCALE A



2 SECTION
SCALE A

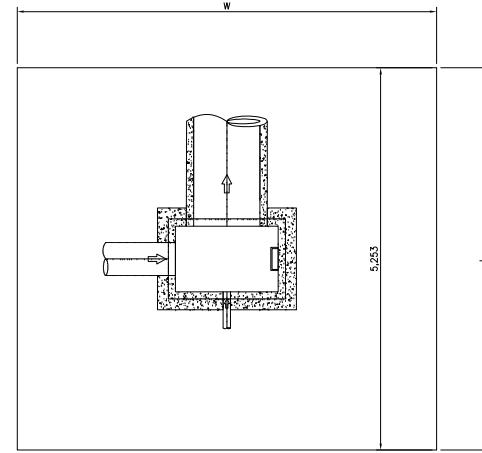
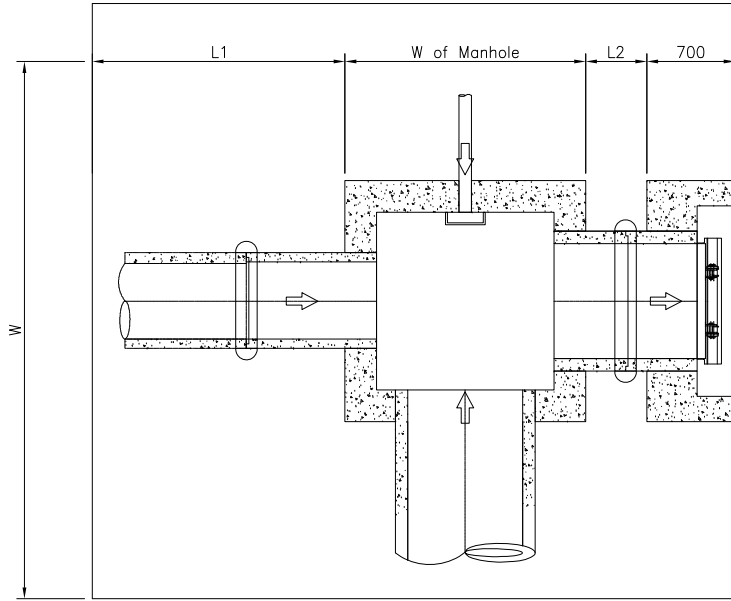
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-------------------------|---------------------|------|----------------|---------------|----------------|
| 1. BOX CULVERT | | | | | |
| Bottom | W=1.050m L=.125m | 0.13 | 32.94 | 4.32 | m ³ |
| Wall | W=.125m L=.800m | 0.20 | 32.94 | 6.59 | m ³ |
| Top | W=1.050m L=.125m | 0.13 | 32.94 | 4.32 | m ³ |
| Conc. Bedding | W=1.050m L=.100m | 0.11 | 32.94 | 3.46 | m ³ |
| 2. Formworks | | | | 130.85 | m ³ |
| 3. Water Stop | | | | 12.19 | m |
| 4. Joint Sealant | | | | 20.92 | m |
| 5. Cork Filler | | | | 0.46 | m ² |

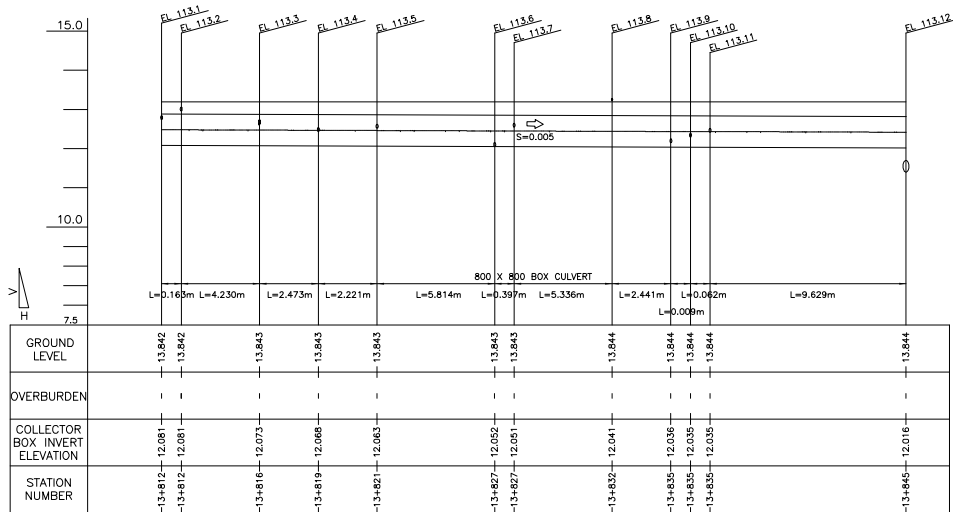


2 PROFILE
SCALE B

| | | |
|-------------------------------------|-------------------------------|-------------------------------|
| Clearing (Manhole 113.12) | | |
| L1 | 2.403 m | |
| W of Manhole | 1.9 m | A=37.13 m² |
| L2 | 0.525 m | |
| W | 6.716 m | |
| Clearing (Manhole 113.1) | | |
| W | 5.411 m | A=24.95 m² |
| L | 4.611 m | |
| Clearing (Collector 113.1 - 113.12) | | |
| W | 4.2695 m | A=139.93 m² |
| L | 32.775 m | |
| (Collector Box) Downstream | 113.1 - 113.12 | Excavation |
| W1 | 4.303 m | A=6.73 m ² |
| W2 | 3.2765 | Backfill Zone B |
| H | 2.053 m | A=1.61 m ² |
| H/2 | 1.0265 m | Backfill Zone C |
| EL A. | 13.844 m | A=3.89 m ² |
| ELB. | 12.016 m | |
| (Collector Box) Upstream | | Excavation |
| W1 | 4.236 m | A=6.44 m ² |
| W2 | 3.243 | Backfill Zone B |
| H | 1.986 m | A=1.50 m ² |
| H/2 | 0.993 m | Backfill Zone C |
| EL A. | 13.842 m | A=3.71 m ² |
| ELB. | 12.081 m | |
| Collector Box 113.1 - 113.12 | Volume | |
| Excavation | 216.8572 m³ | |
| Backfill Zone B | 51.19937 m³ | |
| Backfill Zone C | 125.2254 m³ | |



3.489



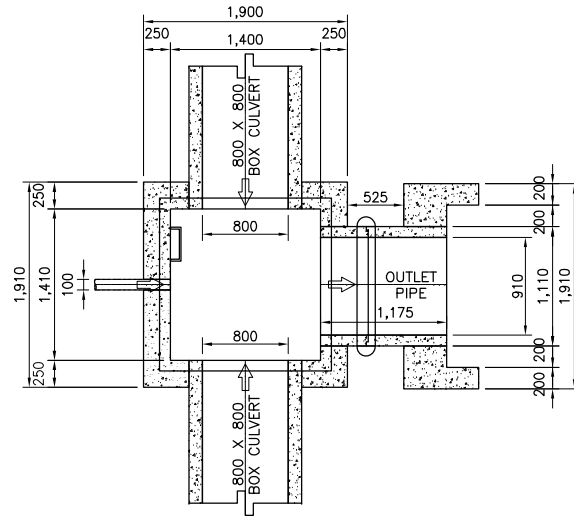
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

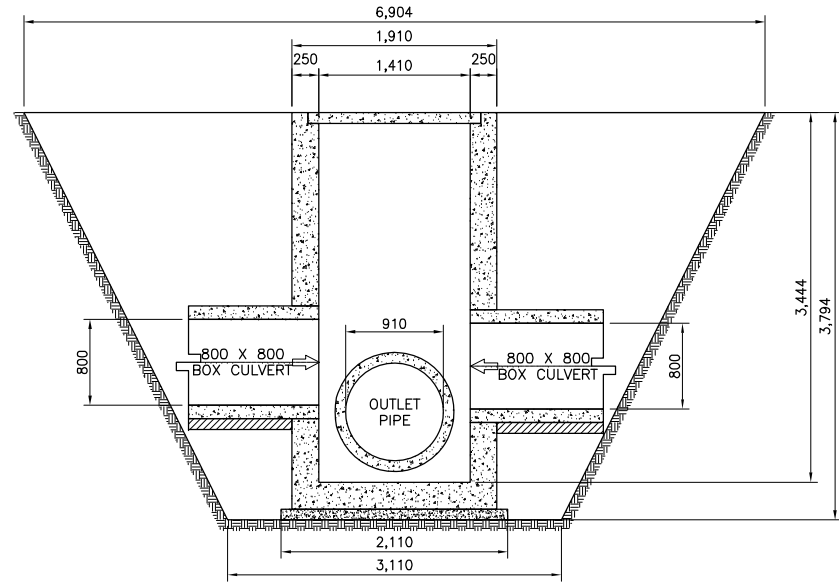
Manhole No.: ML 113.19

Location: 13 + 886

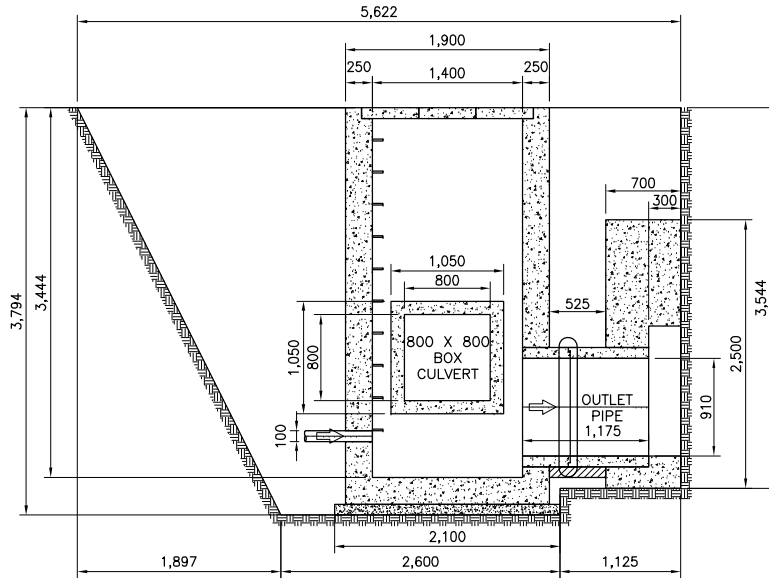
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=17.45 | 5.01 | 87.37 | |
| | | | | 87.37 | m ³ |
| 2. Lev. Concrete | W=2.10 L=2.11 | 4.43 | 0.1 | 0.44 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.91 | 4.26 | 0.25 | 1.06 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.91 Win=1.40 Lin=1.41 | Aout=3.63 Ain=1.97 Anet=1.66 | 3.444 | 5.700 | m ³ |
| Minus | | | | | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall B | DiaB=0.10 | 0.01 | 0.25 | 0.00 | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.90 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.60 | 1.76 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.50 Win=1.51 Lin=1.51 DiaD=1.11 | Ain=4.78 Aout=2.28 Apipe=.97 | 0.7 0.3 0.4 | 3.34 0.68 0.39 2.27 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058275 | m3 |
| 12. Backfill | | | | 72.81 | m3 |



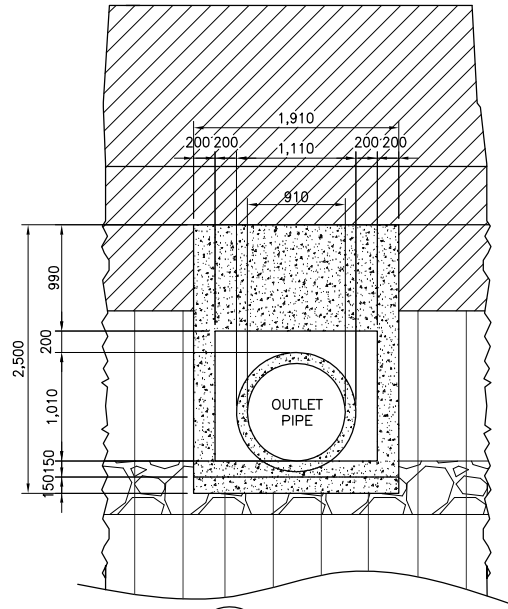
1 PLAN
SCALE A



3 SECTION (ML113.19)
SCALE A



2 SECTION
SCALE A



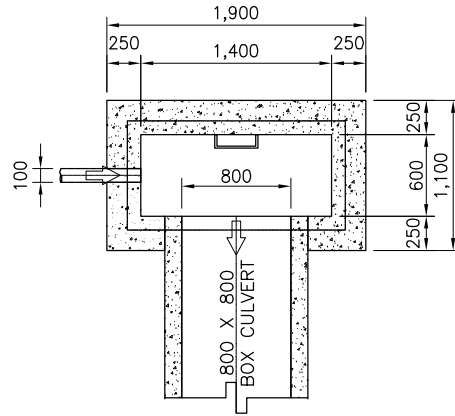
4 ELEVATION
SCALE B

QUANTITIES OF MANHOLE

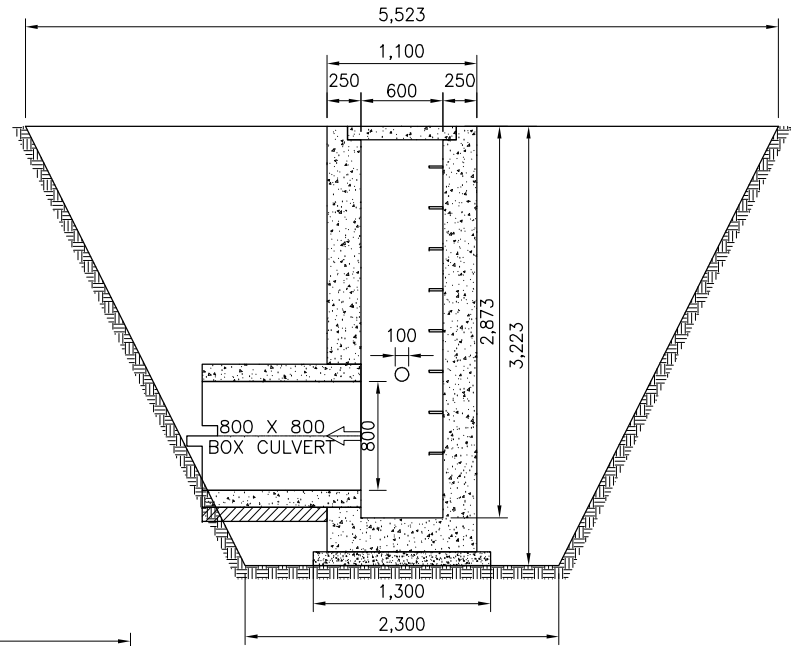
Manhole No.: ML 113.13

Location: 13 + 859

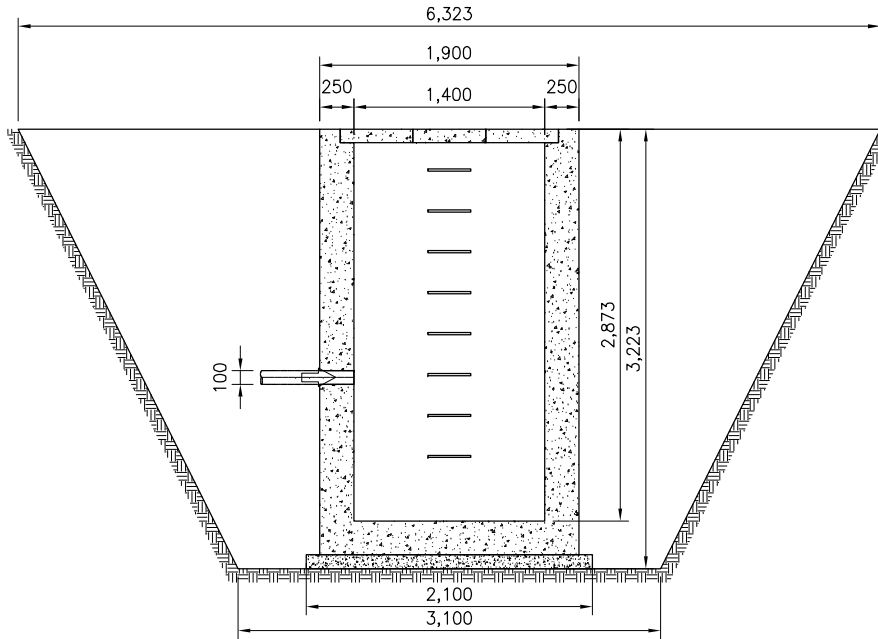
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=15.19 | 3.91 | 59.40 | |
| | | | | 59.40 | m ³ m ³ |
| 2. Lev. Concrete | W=2.10 L=1.30 | 2.73 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.10 | 2.09 | 0.25 | 0.52 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.10 Win=1.40 Lin=.60 | Aout=2.09 Ain=0.84 Anet=1.25 | 2.873 | 3.592 | m ³ |
| Minus | | | | | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall B | DiaB=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 3.31 | m ³ |
| 5. Conc. Cover | L=0.80 W=1.60 | 1.28 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Backfill | | | | 49.50 | m ³ |



1 PLAN
SCALE A



3 SECTION (ML113.13)
SCALE A



2 SECTION
SCALE A

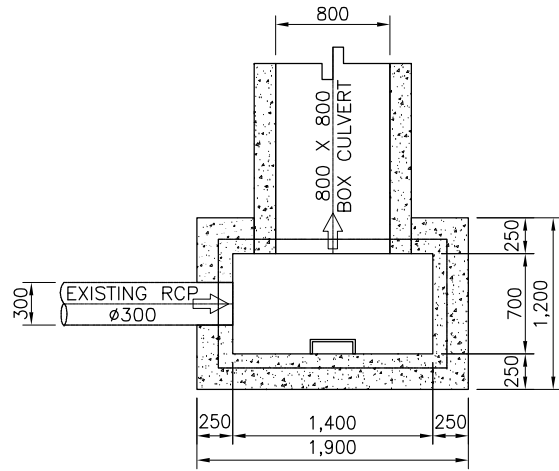
QUANTITIES OF MANHOLE

Manhole No.: ML 113.25

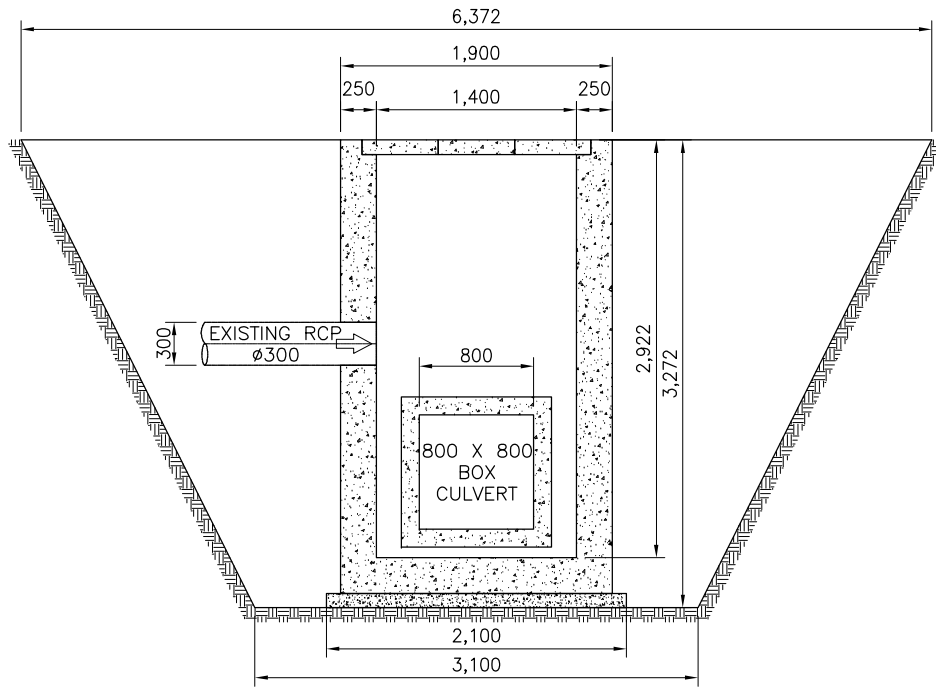
Location: 13 + 908

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=15.50 | 3.94 | 60.99 | |
| | | | | 60.99 | m ³ m ³ |
| 2. Lev. Concrete | W=2.10 L=1.40 | 2.94 | 0.1 | 0.29 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.20 | 2.28 | 0.25 | 0.57 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.20 Win=1.40 Lin=.70 | Aout=2.28 Ain=0.98 Anet=1.30 | 2.922 | 3.799 | m ³ |
| Minus | | | | | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 3.49 | m ³ |
| 5. Conc. Cover | L=0.90 W=1.60 | 1.44 | 0.1 | 0.14 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Backfill | | | | 50.83 | m ³ |

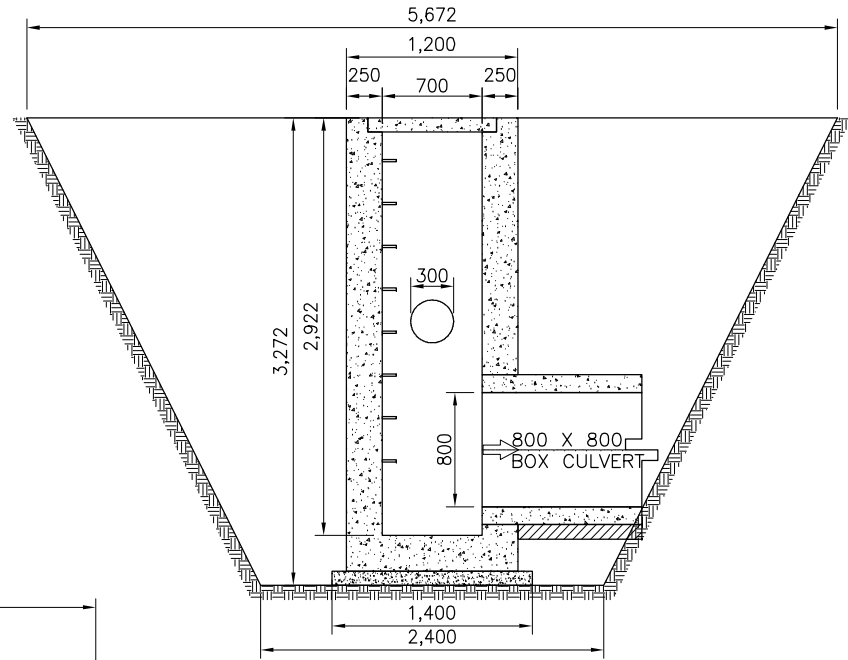
3.495



4 PLAN
SCALE A



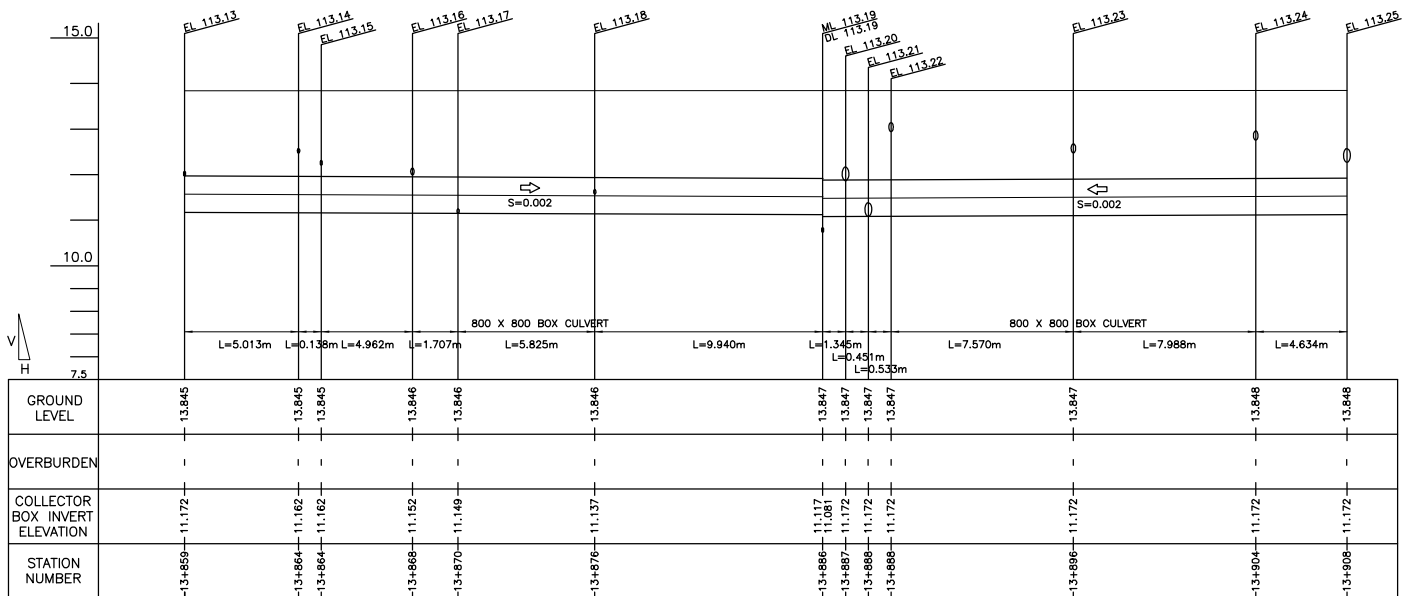
5 SECTION
SCALE A



6 SECTION (ML113.25)
SCALE A

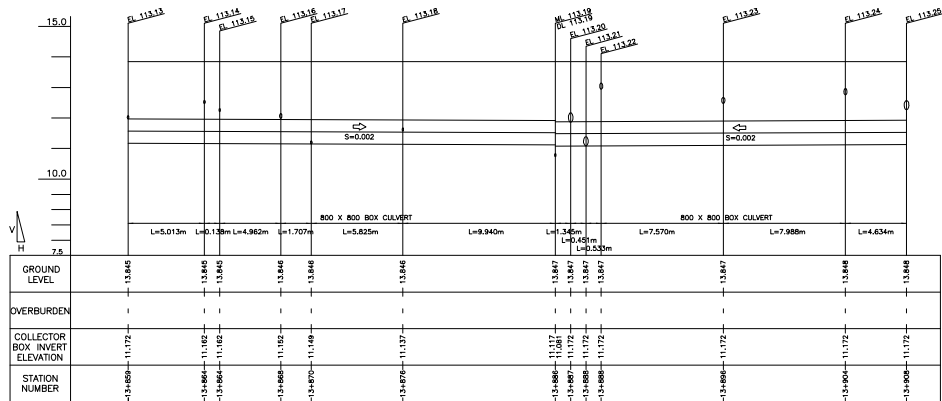
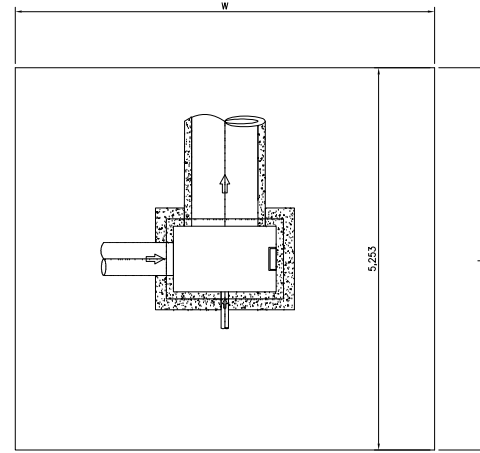
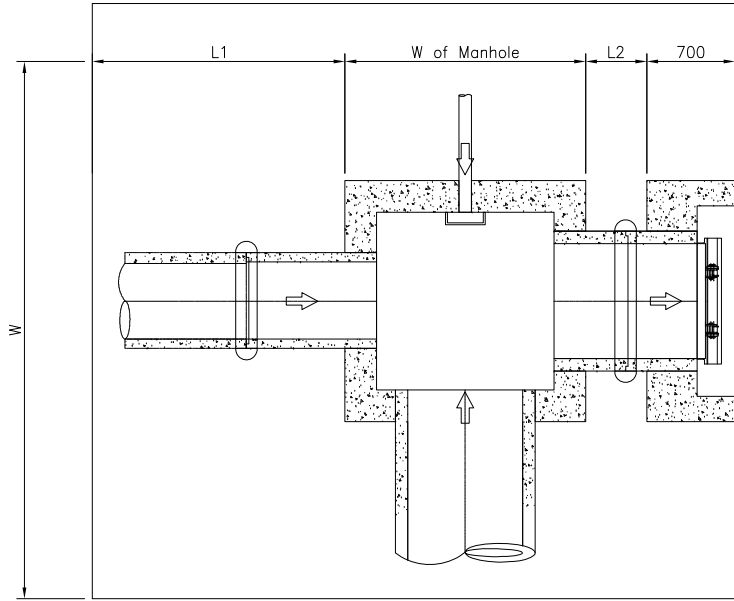
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-------------------------|---------------------|------|----------------|---------------|----------------|
| 1. BOX CULVERT | | | | | |
| Bottom | W=1.050m L=.125m | 0.13 | 50.21 | 6.59 | m ³ |
| Wall | W=.125m L=.800m | 0.20 | 50.21 | 10.04 | m ³ |
| Top | W=1.050m L=.125m | 0.13 | 50.21 | 6.59 | m ³ |
| Conc. Bedding | W=1.050m L=.100m | 0.11 | 50.21 | 5.27 | m ³ |
| 2. Formworks | | | | 199.44 | m ³ |
| 3. Water Stop | | | | 18.58 | m ³ |
| 4. Joint Sealant | | | | 31.88 | m ³ |
| 5. Cork Filler | | | | 0.46 | m ³ |



2 PROFILE
SCALE B

| | | |
|--------------------------------------|-------------------------------|-------------------------------|
| Clearing (Manhole 113.19) | | |
| L1 | 2.497 m | |
| W of Manhole | 1.9 m | A=38.81 m² |
| L2 | 0.525 m | |
| W | 6.904 m | |
| Clearing (Manhole 113.13) | | |
| W | 6.323 m | A=34.92 m² |
| L | 5.523 m | |
| Clearing (Manhole 113.25) | | |
| W | 6.372 m | A=36.14 m² |
| L | 5.672 m | |
| Clearing (Collector 113.13 - 113.19) | | |
| W | 5.1765 m | A=142.79 m² |
| L | 27.585 m | |
| Clearing (Collector 113.25 - 113.19) | | |
| W | 5.219 m | A=117.54 m² |
| L | 22.521 m | |
| (Collector Box) Downstream | 113.13 - 113.19 | Excavation |
| W1 | 5.205 m | A=11.01 m ² |
| W2 | 3.7275 | Backfill Zone B |
| H | 2.955 m | A=3.19 m ² |
| H/2 | 1.4775 m | Backfill Zone C |
| EL A. | 13.847 m | A=6.60 m ² |
| ELB. | 11.117 m | |
| (Collector Box) Upstream | | Excavation |
| W1 | 5.148 m | A=10.72 m ² |
| W2 | 3.699 | Backfill Zone B |
| H | 2.898 m | A=3.08 m ² |
| H/2 | 1.449 m | Backfill Zone C |
| EL A. | 13.845 m | A=6.41 m ² |
| ELB. | 11.172 m | |
| (Collector Box) Downstream | 113.25 - 113.19 | Excavation |
| W1 | 5.241 m | A=11.20 m ² |
| W2 | 3.7455 | Backfill Zone B |
| H | 2.991 m | A=3.26 m ² |
| H/2 | 1.4955 m | Backfill Zone C |
| EL A. | 13.847 m | A=6.72 m ² |
| ELB. | 11.081 m | |
| (Collector Box) Upstream | | Excavation |
| W1 | 5.197 m | A=10.97 m ² |
| W2 | 3.7235 | Backfill Zone B |
| H | 2.947 m | A=3.17 m ² |
| H/2 | 1.4735 m | Backfill Zone C |
| EL A. | 13.848 m | A=6.57 m ² |
| ELB. | 11.126 m | |
| Collector Box 113.13 - 113.19 | Volume | |
| Excavation | 300.3721 m³ | |
| Backfill Zone B | 86.66477 m³ | |
| Backfill Zone C | 179.7791 m³ | |
| Collector Box 113.25 - 113.19 | Volume | |
| Excavation | 250.2117 m³ | |
| Backfill Zone B | 72.5398 m³ | |
| Backfill Zone C | 149.972 m³ | |



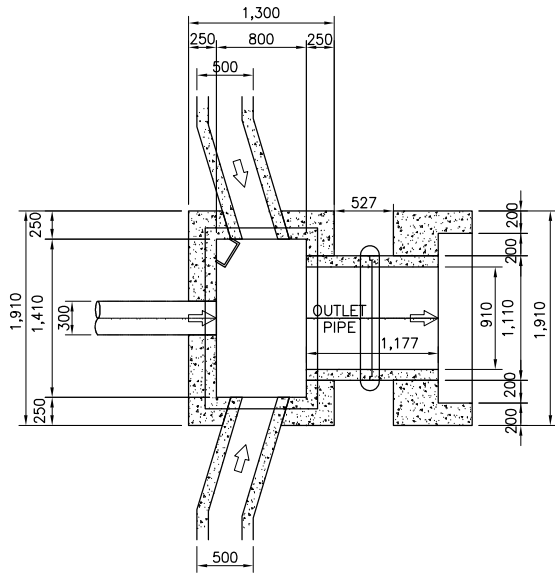
2 PROFILE
SCALE 8

QUANTITIES OF MANHOLE

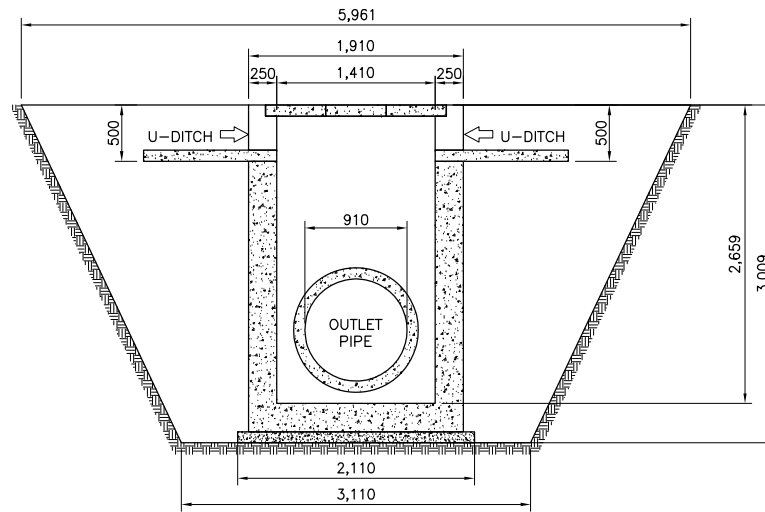
Manhole No.: ML 113.26

Location 13 + 924

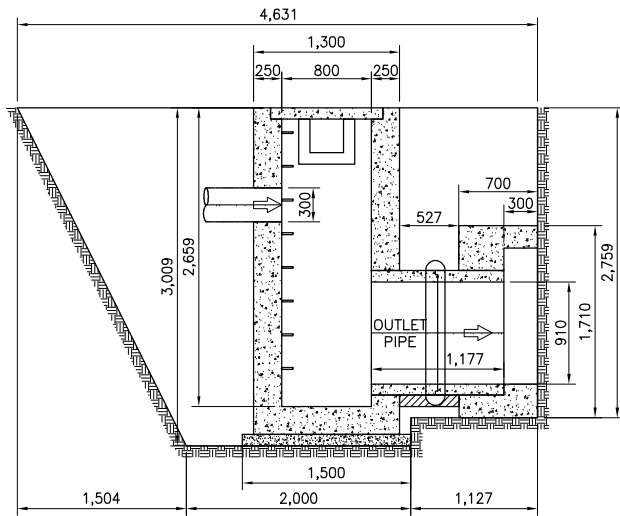
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=11.39 | 4.61 | 52.56 | |
| | | | | 52.56 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.659 | 3.603 | m ³ |
| Minus | | | | | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.20 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058497 | m3 |
| 12. Backfill | | | | 43.80 | m3 |



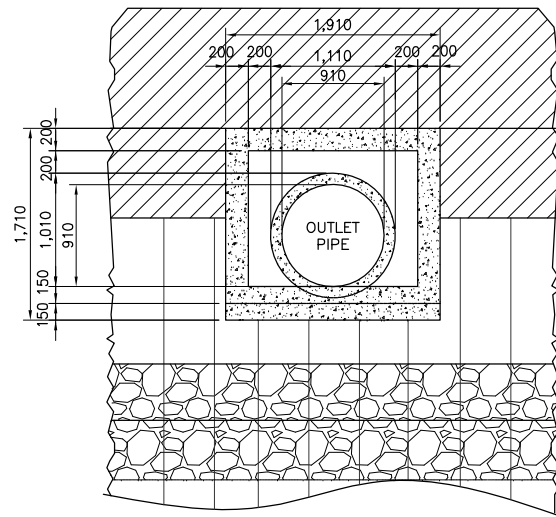
2 PLAN
SCALE B



4 SECTION (ML1 13.26)
SCALE B



3 SECTION
SCALE B

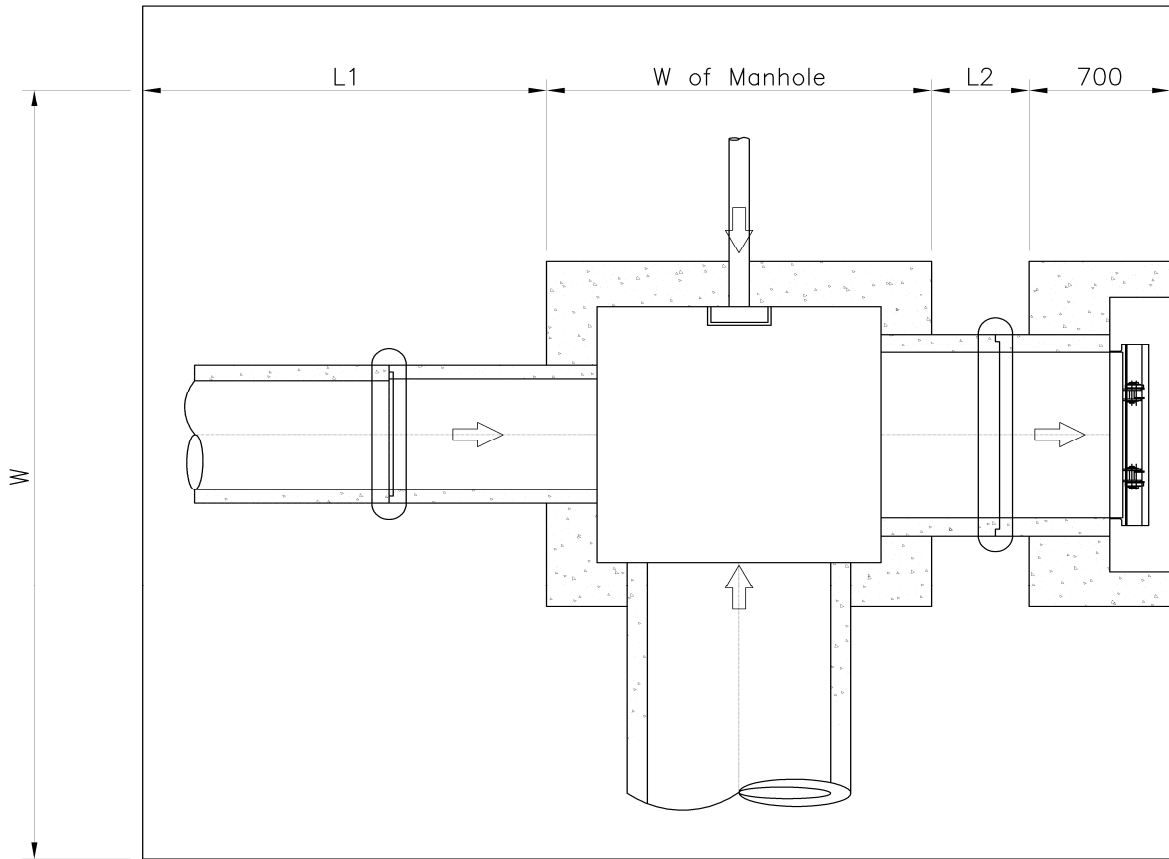


5 ELEVATION
SCALE B

Clearing (Manhole 97.5)

| | |
|--------------|----------|
| L1 | 2.1045 m |
| W of Manhole | 1.3 m |
| L2 | 0.527 m |
| W | 6.119 m |

A=28.34 m²

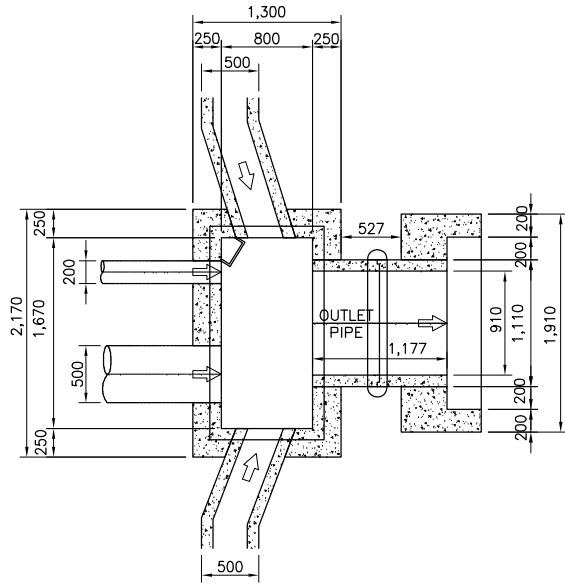


QUANTITIES OF MANHOLE

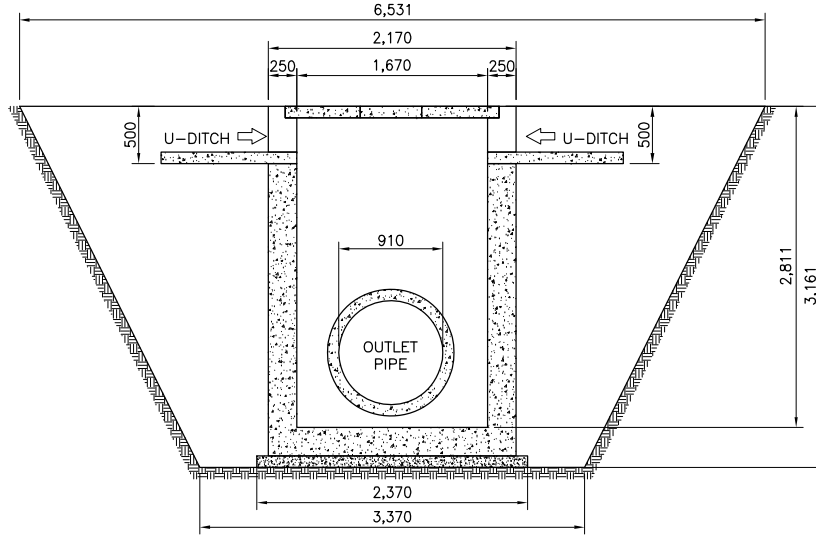
Manhole No.: ML 113.27

Location 13 + 936

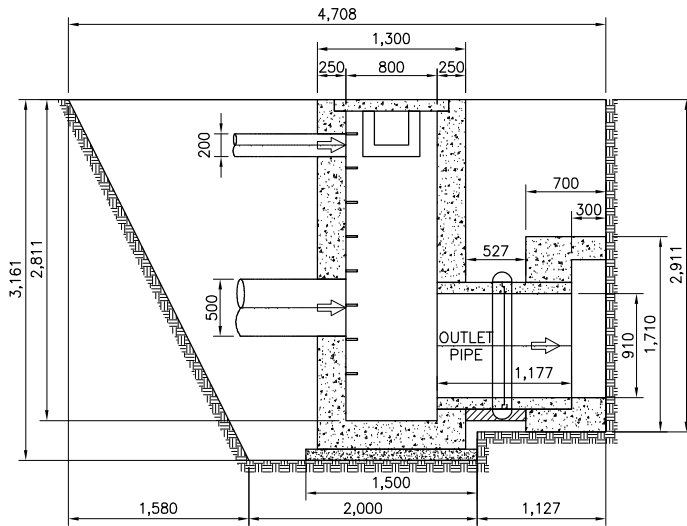
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=12.10 | 4.95 | 59.90 | |
| | | | | 59.90 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.37 | 3.56 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.30 L=2.17 | 2.82 | 0.25 | 0.71 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=2.17 Win=0.80 Lin=1.67 | Aout=2.82 Ain=1.34 Anet=1.49 | 2.811 | 4.174 | m ³ |
| Minus | | | | | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.38 | 0.25 | 0.09 | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.71 | m ³ |
| 5. Conc. Cover | L=1.87 W=1.00 | 1.87 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058497 | m3 |
| 12. Backfill | | | | 49.92 | m3 |



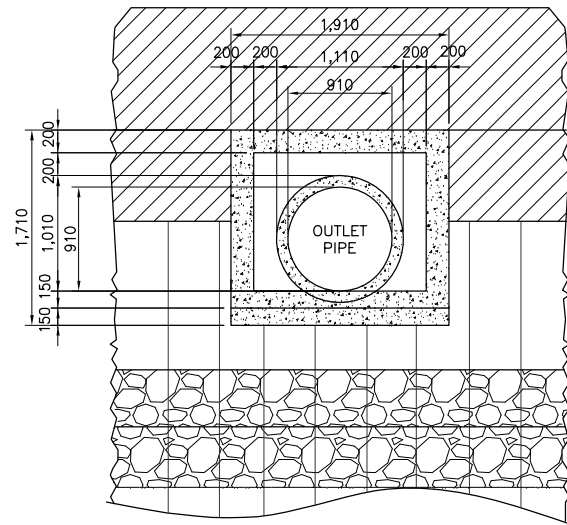
2 PLAN
SCALE B



4 SECTION (ML 113.27)
SCALE B



3 SECTION
SCALE B

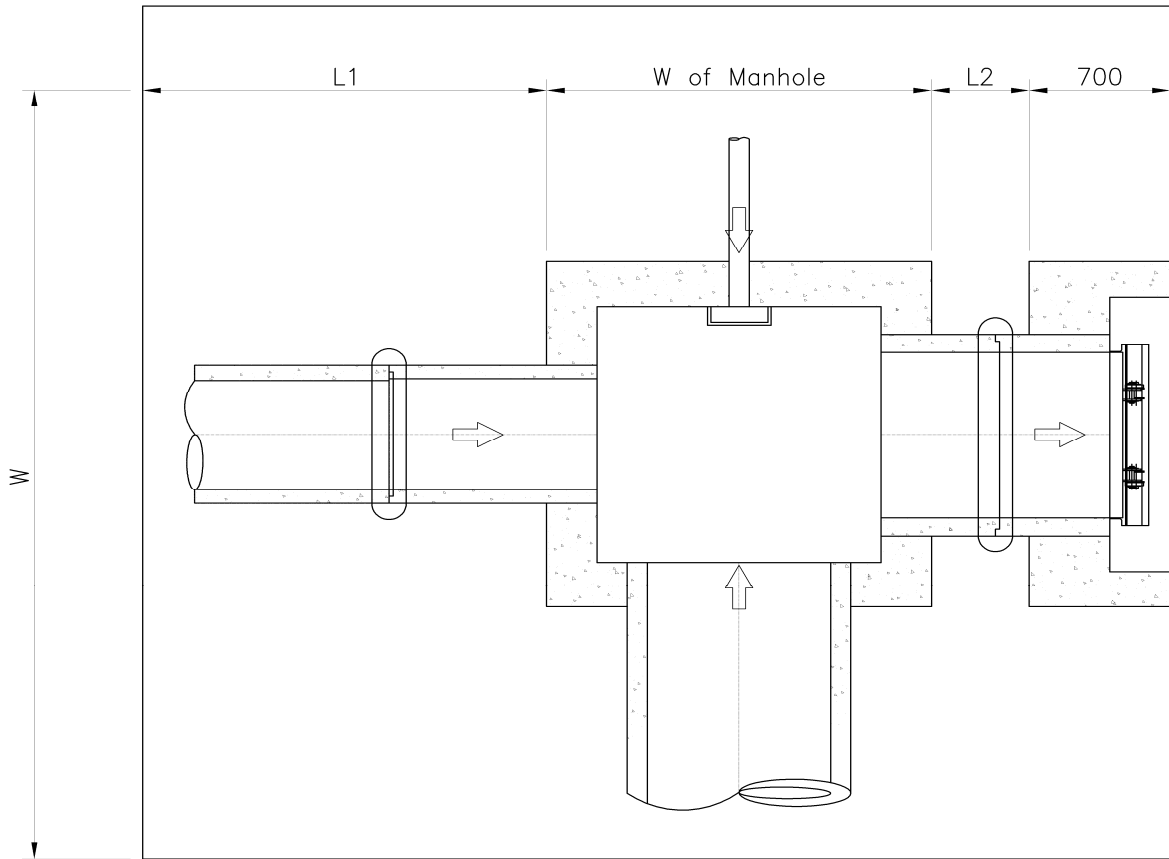


5 ELEVATION
SCALE B

Clearing (Manhole 113.27)

| | |
|--------------|----------|
| L1 | 2.1805 m |
| W of Manhole | 1.3 m |
| L2 | 0.527 m |
| W | 9.901 m |

A=46.61 m²

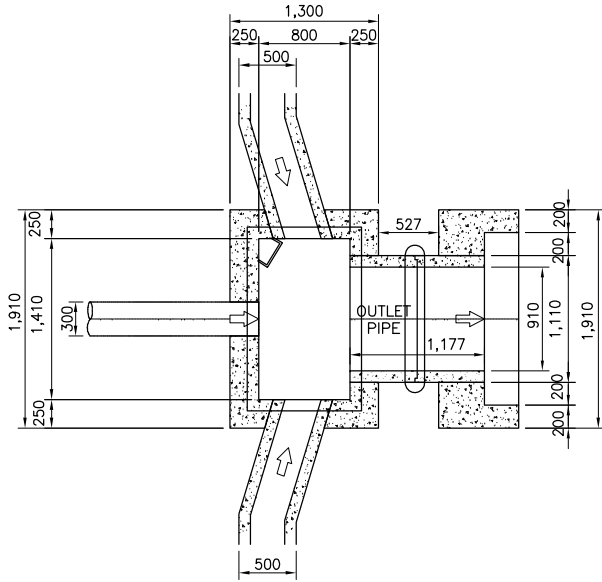


QUANTITIES OF MANHOLE

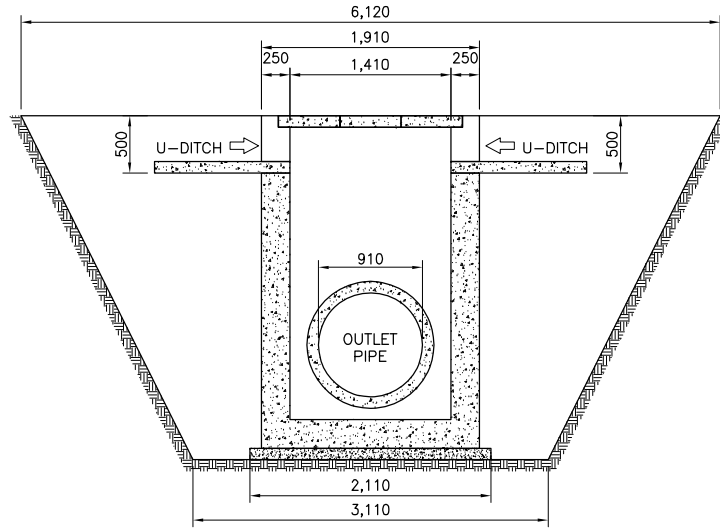
Manhole No.: ML 113A

Location 13 + 947

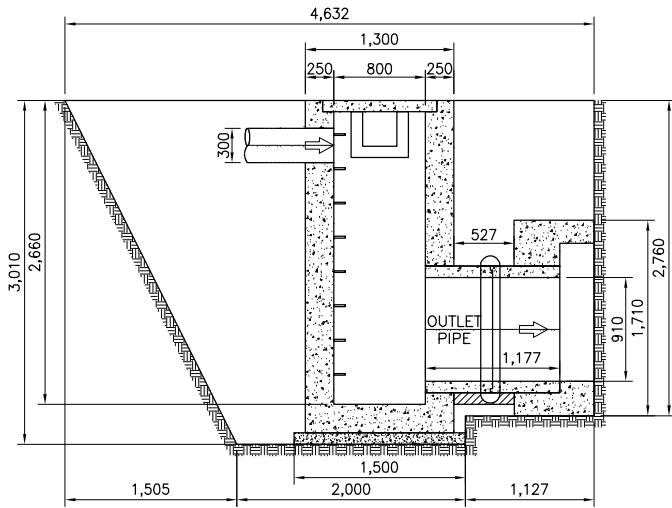
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=11.40 | 4.62 | 52.59 | |
| | | | | 52.59 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.660 | 3.604 | m ³ |
| Minus | | | | | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.21 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058497 | m3 |
| 12. Backfill | | | | 43.83 | m3 |



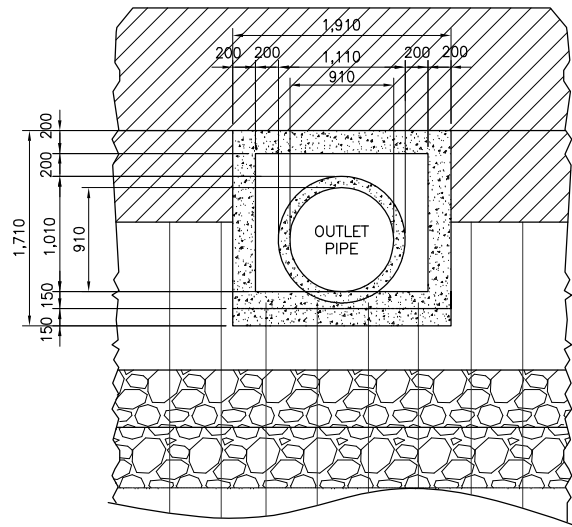
2 PLAN
SCALE B



4 SECTION (ML113A)
SCALE B



3 SECTION
SCALE B

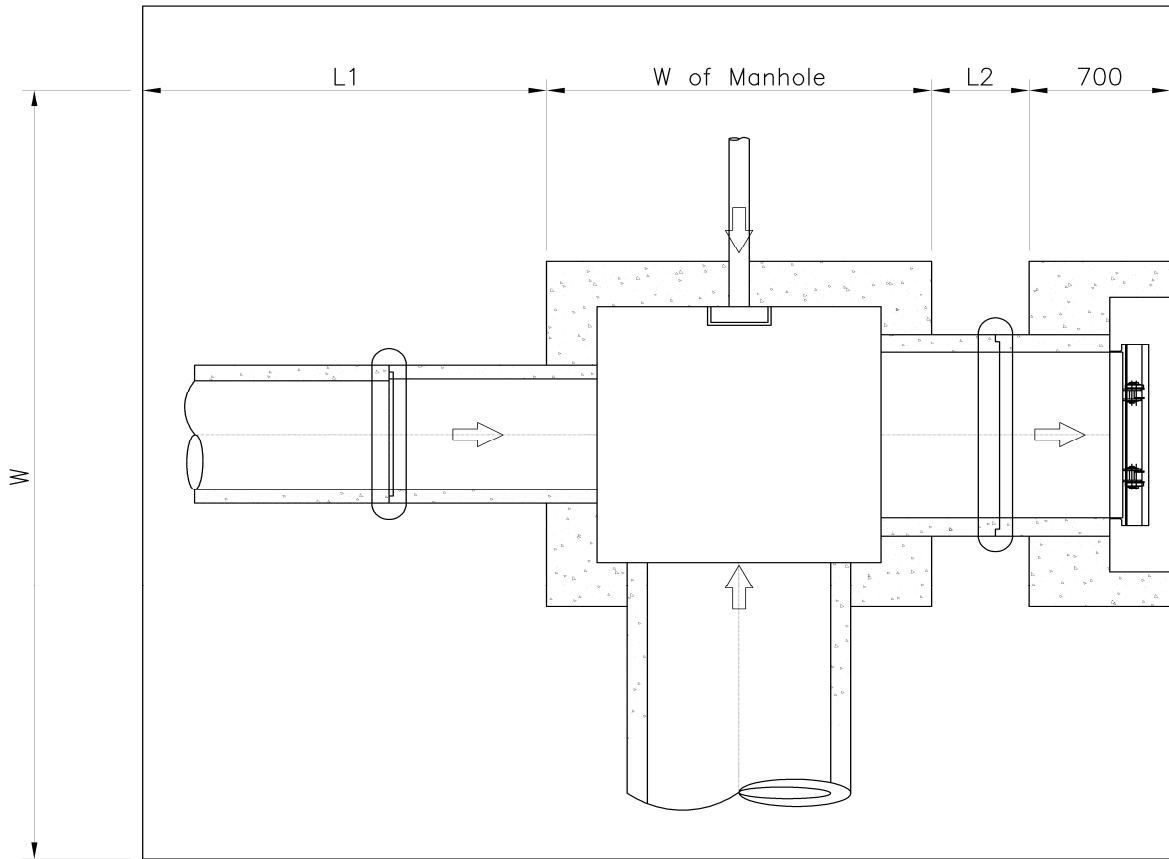


5 ELEVATION
SCALE B

Clearing (Manhole 113A)

| | |
|--------------|---------|
| L1 | 2.15 m |
| W of Manhole | 1.3 m |
| L2 | 0.527 m |
| W | 6.21 m |

A=29.04 m²

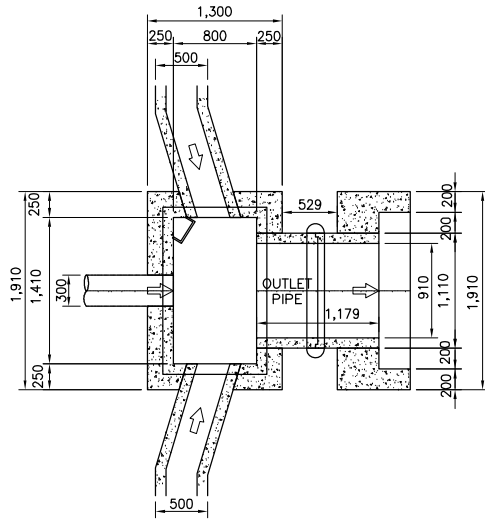


QUANTITIES OF MANHOLE

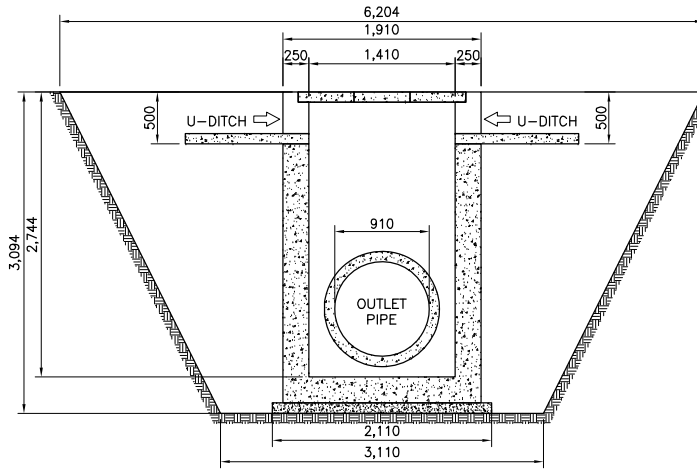
Manhole No.: ML 113B.10

Location 14 + 002

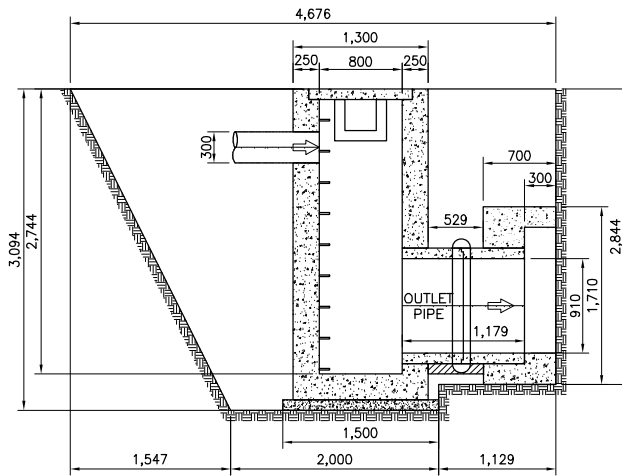
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=11.79 | 4.86 | 57.27 | |
| | | | | 57.27 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.744 | 3.718 | m ³ |
| Minus | | | | | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.32 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058719 | m3 |
| 12. Backfill | | | | 47.72 | m3 |



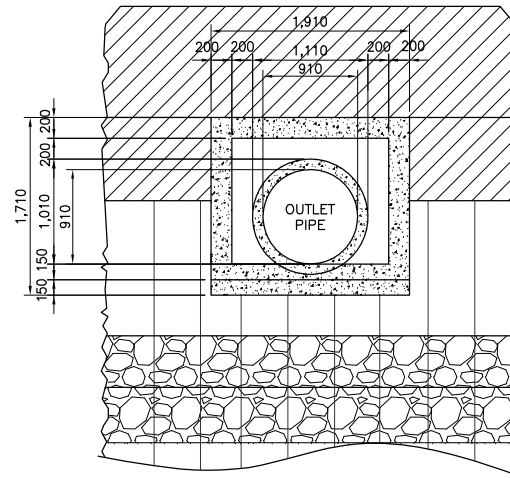
2 PLAN
SCALE B



4 SECTION (ML113B.10)
SCALE B



3 SECTION
SCALE B

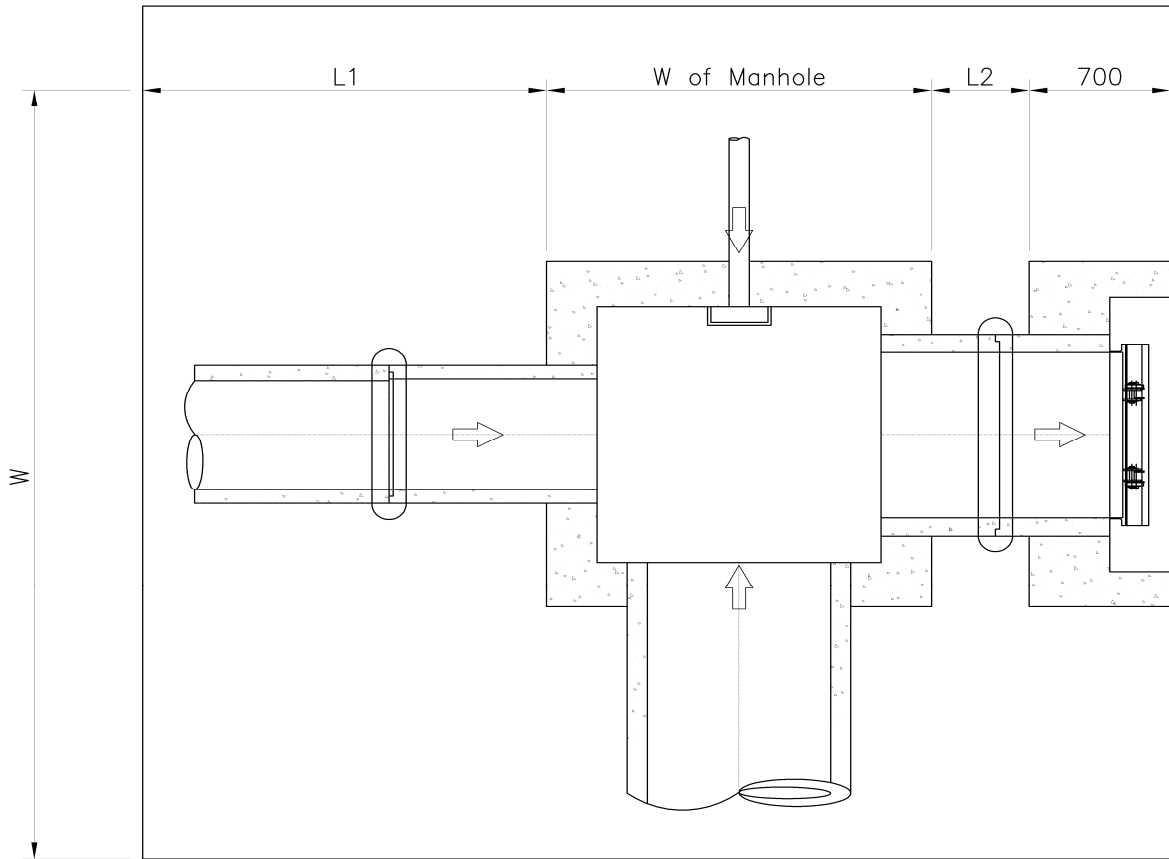


5 ELEVATION
SCALE B

Clearing (Manhole 113B.10)

| | |
|--------------|---------|
| L1 | 2.147 m |
| W of Manhole | 1.3 m |
| L2 | 0.529 m |
| W | 6.204 m |

A=29.01 m²

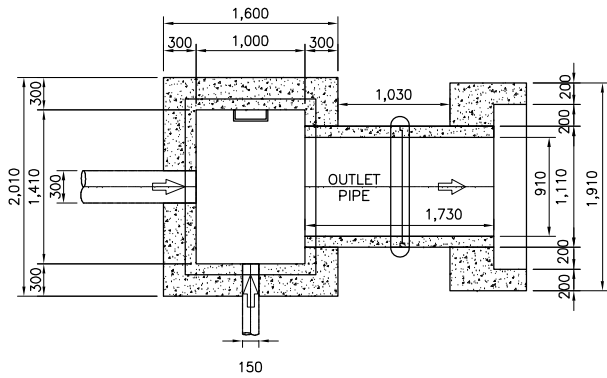


QUANTITIES OF MANHOLE

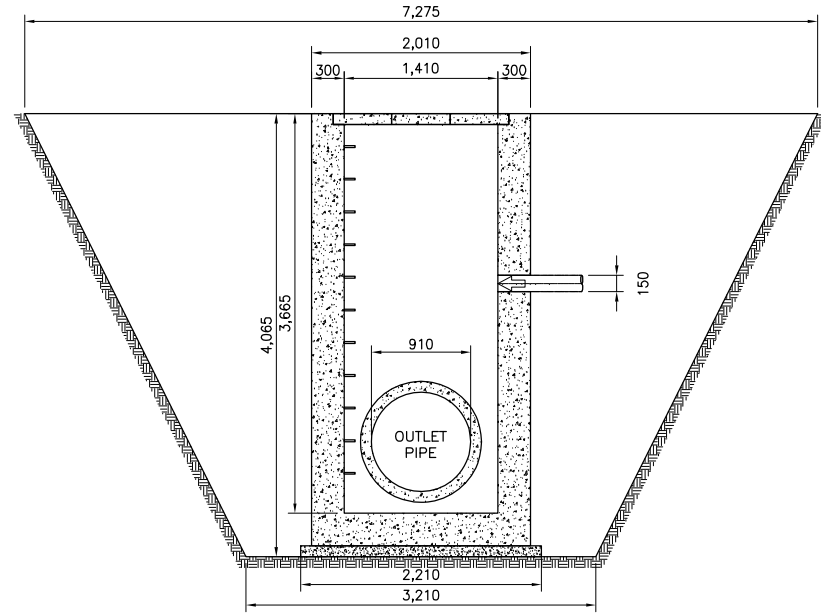
Manhole No.: ML 113B.12

Location: 14 + 023

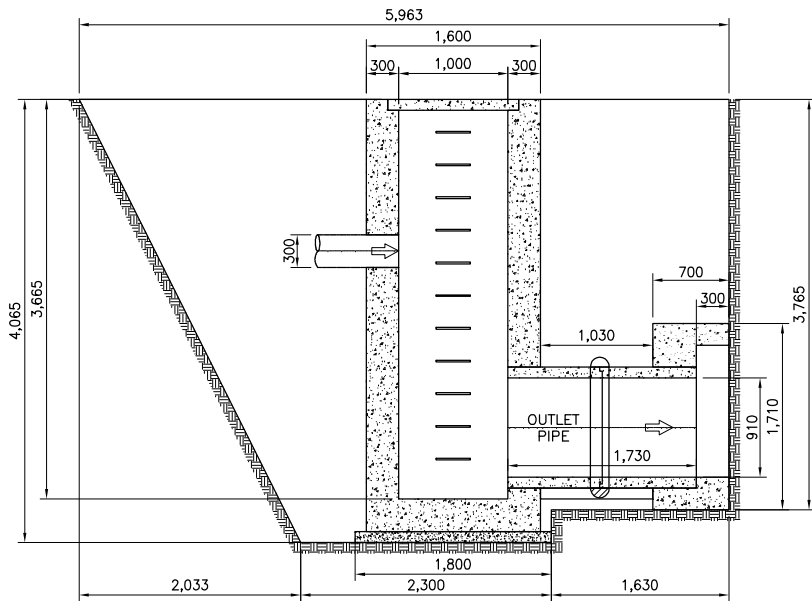
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=19.62 | 5.24 | 102.85 | |
| | | | | 102.85 | m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.22 | 0.3 | 0.96 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 3.665 | 6.619 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.30 | 0.03 | |
| Pipe hole on Wall C | DiaC=0.15 | 0.02 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 6.34 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=12 | 0.000201062 | | 0.000120637 0.95 11.36 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.73 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.03 | | 0.11433 | m3 |
| 12. Backfill | | | | 85.71 | m3 |



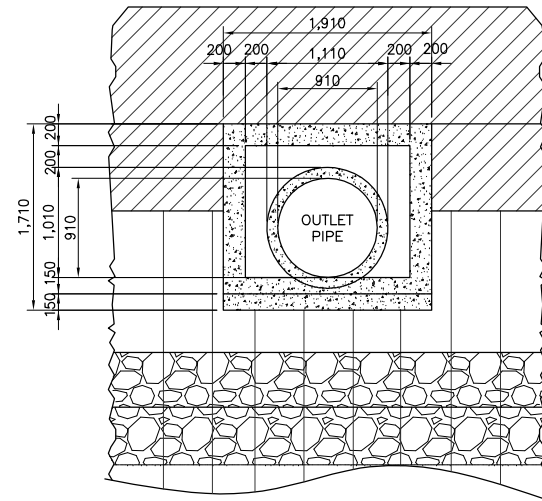
1 PLAN
SCALE A



3 SECTION (ML113B.11)
SCALE A



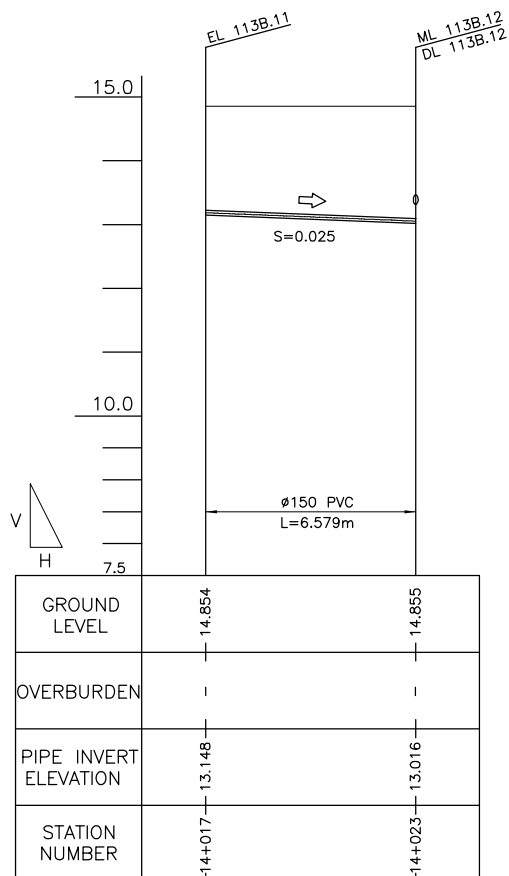
2 SECTION
SCALE A



4 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=6.74 | 3 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.15 | | | 2 | pc |



2 PROFILE
 SCALE B

Clearing (Manhole 113B.12)

| | | |
|--------------|----------|------------------------------|
| L1 | 2.6325 m | |
| W of Manhole | 1.6 m | A=43.38 m² |
| L2 | 1.03 m | |
| W | 7.275 m | |

Clearing (Collector 113B.11 - 113B.12)

| | | |
|---|----------|------------------------------|
| W | 2.9225 m | A=19.23 m² |
| L | 6.579 m | |

(Collector PVC) Downstream 113B.11 - 113B.12

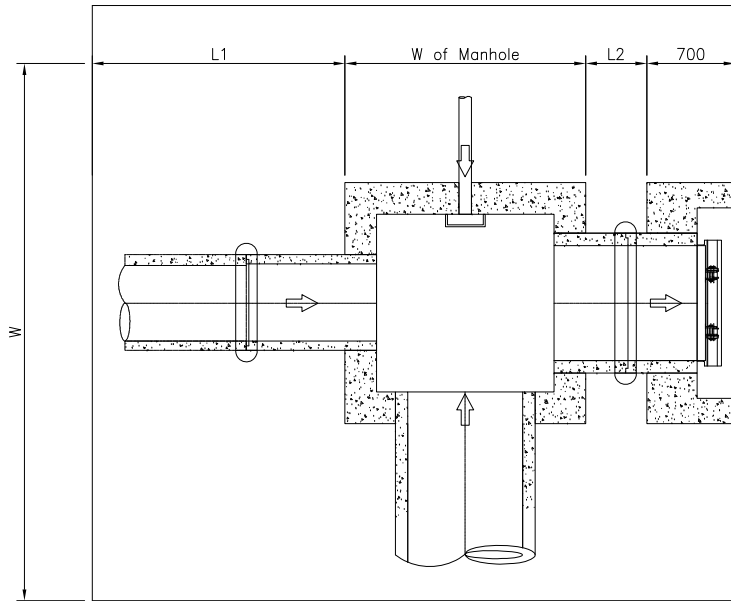
| | | |
|-------|----------|-----------------------|
| D | 0.15 m | Excavation |
| W1 | 2.99 m | A=3.81 m ² |
| W2 | 2.07 m | Backfill Zone B |
| H | 1.839 m | A=1.46 m ² |
| H/2 | 0.9195 m | Backfill Zone C |
| EL. A | 14.855 m | A=2.33 m ² |
| EL. B | 13.016 m | |

(Collector PVC) Upstream

| | | |
|-------|----------|-----------------------|
| D | 0.15 m | Excavation |
| W1 | 2.86 m | A=3.42 m ² |
| W2 | 2.00 m | Backfill Zone B |
| H | 1.706 m | A=1.33 m ² |
| H/2 | 0.853 m | Backfill Zone C |
| EL. A | 14.854 m | A=2.07 m ² |
| EL. B | 13.148 m | |

Collector PVC 113B.11 - 113B.12

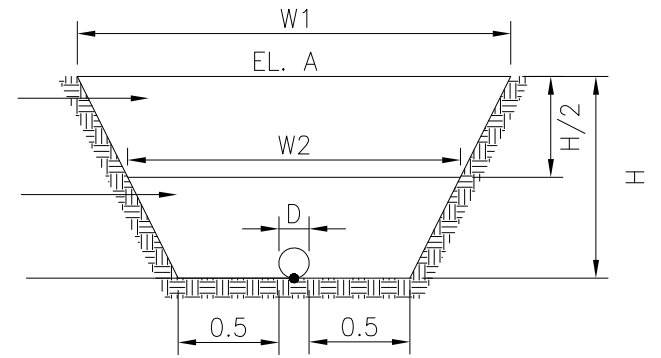
| | |
|-----------------|-------------------------------|
| Excavation | 24.35382 m³ |
| Backfill Zone B | 9.40572 m³ |
| Backfill Zone C | 14.82893 m³ |



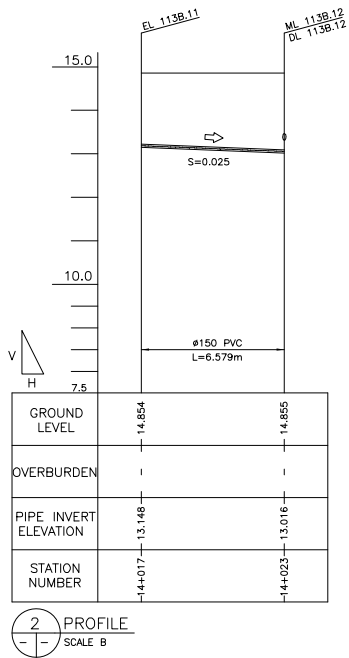
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.515

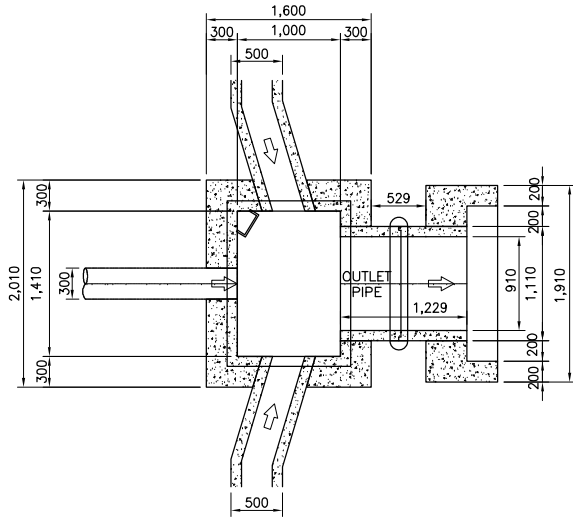


QUANTITIES OF MANHOLE

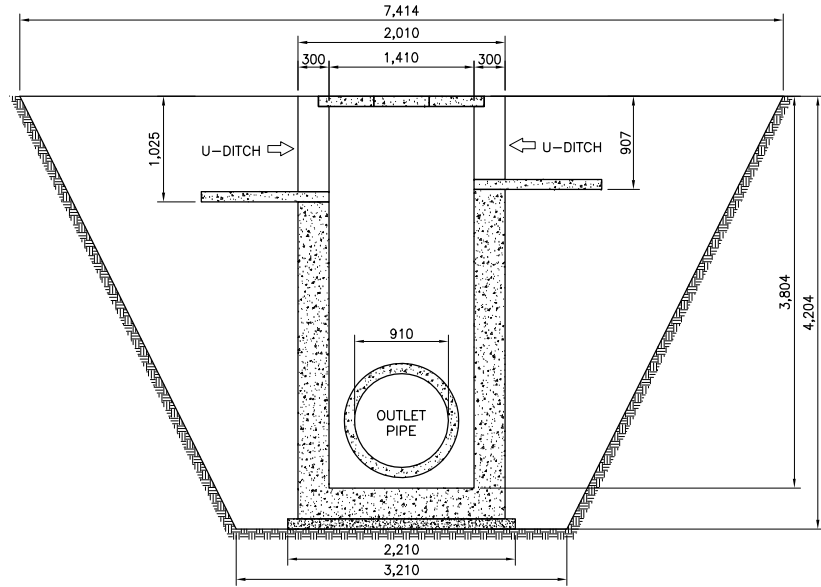
Manhole No.: ML 113B.4

Location: 13 + 974

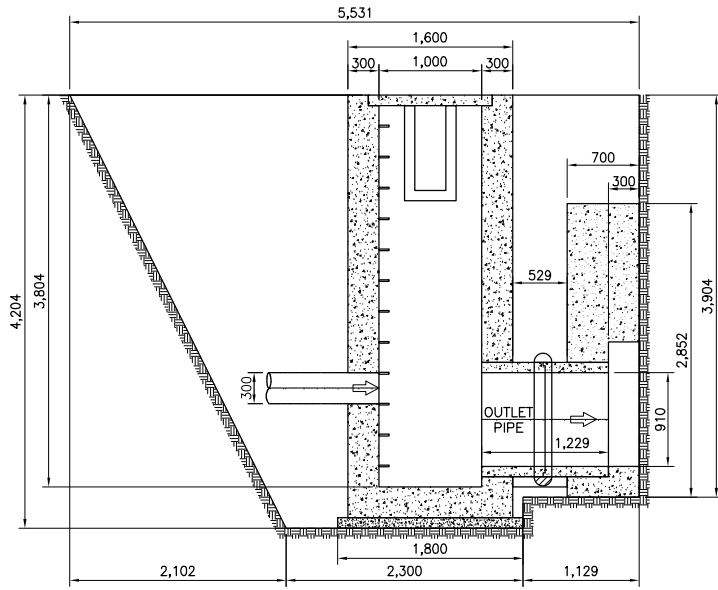
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=18.50 | 5.31 | 98.25 | |
| | | | | 98.25 | m ³ |
| 2. Lev. Concrete | W=1.65 L=2.11 | 3.48 | 0.1 | 0.35 | m ³ |
| 3. Bottom Slab | W=1.45 L=1.91 | 2.77 | 0.25 | 0.69 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.45 Lout=1.91 Win=0.95 Lin=1.41 | Aout=2.77 Ain=1.34 Anet=1.43 | 3.352 | 4.793 | m ³ |
| Minus | | | | | |
| D=1.03 | W=0.65 | 0.67 | 0.25 | 0.17 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| D=0.91 | W=0.60 | 0.54 | 0.25 | 0.14 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.22 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.15 | 1.8515 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.40 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=4.58 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 3.21 0.55 0.39 2.27 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058941 | m3 |
| 12. Backfill | | | | 81.87 | m3 |



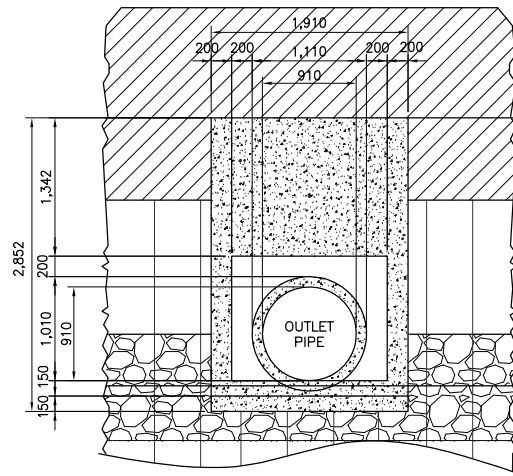
2 PLAN
SCALE B



4 SECTION (ML113B.4)
SCALE B



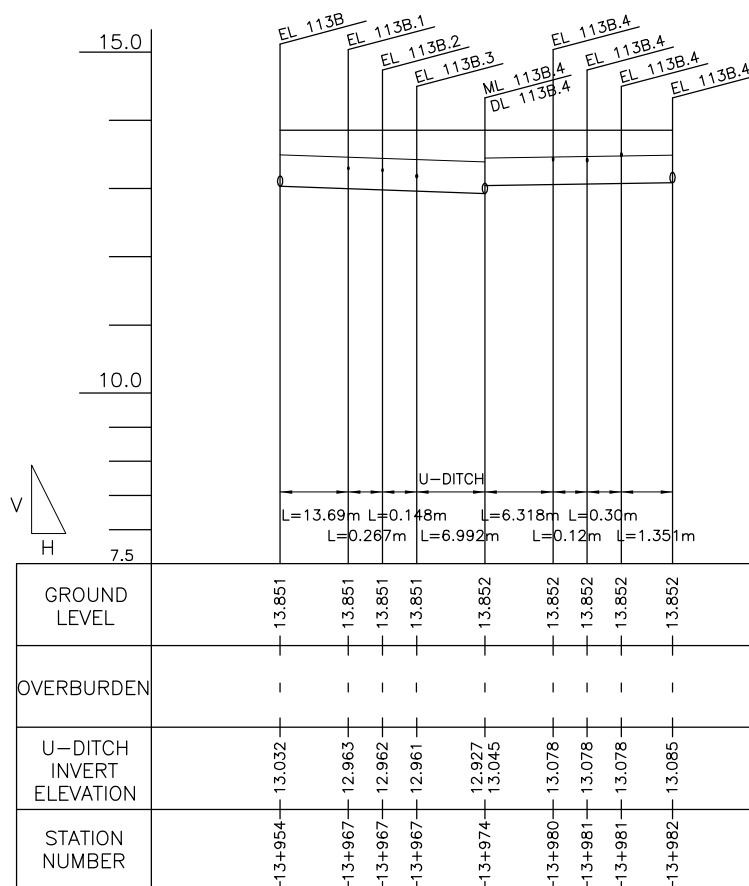
3 SECTION
SCALE B



5 ELEVATION
SCALE B

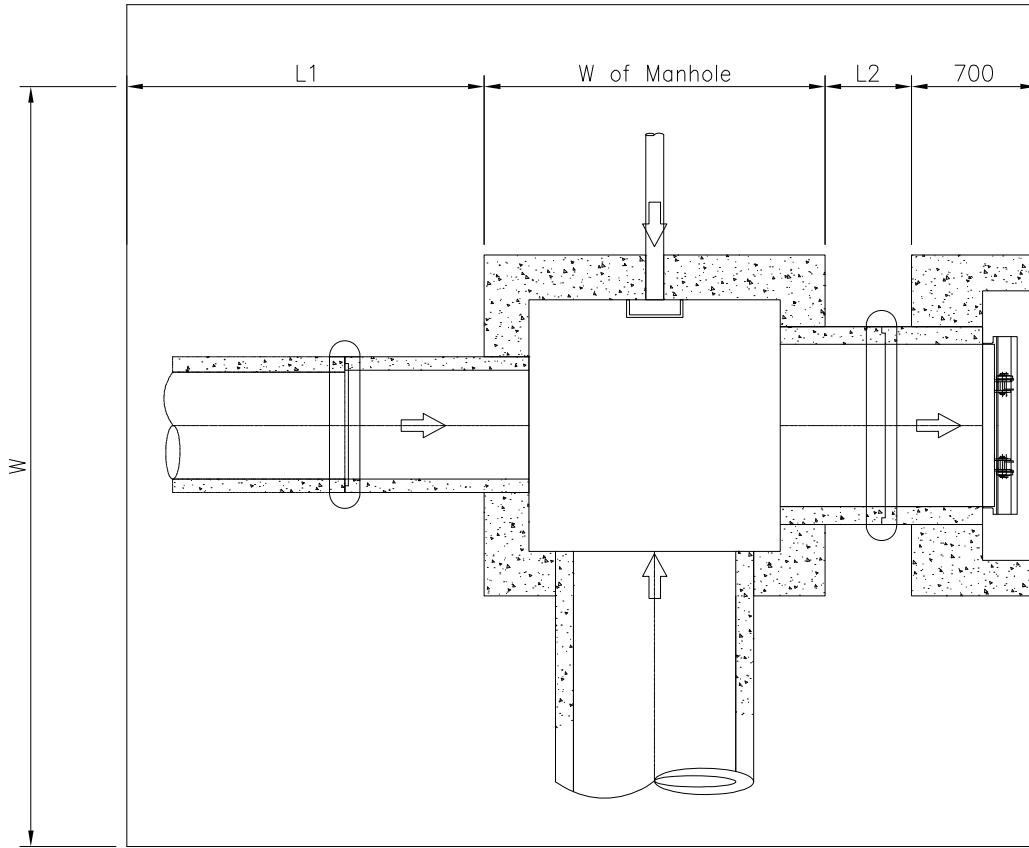
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-----------------------|----------------------|-----------|----------------|---------------|----------------|
| 1. U - Ditch 1 | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 21.20 | 1.06 | m ³ |
| Wall | W=.972m L=21.097m | 41.012568 | 0.1 | 4.10 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 21.10 | 1.05 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 21.20 | 1.06 | m ³ |
| U - Ditch 2 | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 8.129445 | 0.41 | m ³ |
| Wall | W=.887m L=8.09m | 14.35 | 0.1 | 1.43 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 8.09 | 0.40 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 8.13 | 0.41 | m ³ |
| 4. Formworks | | | | 69.50 | m3 |



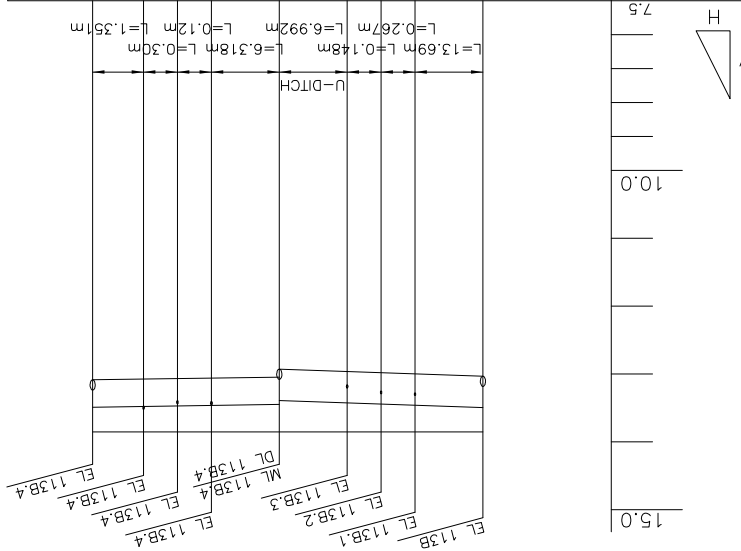
2 PROFILE
 SCALE B

| | | |
|--------------------------------------|-------------------------------|------------------------------|
| Clearing (Manhole 113B.4) | | |
| L1 | 2.702 m | |
| W of Manhole | 1.6 m | A=41.01 m² |
| L2 | 0.529 m | |
| W | 7.414 m | |
| Clearing (U - Ditch 113B - 113B.4) | | |
| W | 2.622 m | A=55.32 m² |
| L | 21.097 m | |
| Clearing (U - Ditch 113B.8 - 113B.4) | | |
| W | 2.537 m | A=20.52 m² |
| L | 8.089 m | |
| (U - Ditch) Downsteram | 113B - 113B.4 | |
| d | 0.925 m | Excavation |
| D | 1.075 m | A=2.30 m ² |
| D/2 | 0.5375 m | Backfill Zone B |
| W1 | 2.675 m | A=0.73 m ² |
| W2 | 2.1375 m | Backfill Zone C |
| EL. A | 13.852 m | A=1.02 m ² |
| EL. B | 12.927 m | |
| (U - Ditch) Upstream | | |
| d | 0.819 m | Excavation |
| D | 0.969 m | A=2.02 m ² |
| D/2 | 0.4845 m | Backfill Zone B |
| W1 | 2.569 m | A=0.65 m ² |
| W2 | 2.0845 m | Backfill Zone C |
| EL. A | 13.851 m | A=0.89 m ² |
| EL. B | 13.032 m | |
| (U - Ditch) Downsteram | | |
| d | 0.807 m | Excavation |
| D | 0.957 m | A=1.99 m ² |
| D/2 | 0.4785 m | Backfill Zone B |
| W1 | 2.557 m | A=0.64 m ² |
| W2 | 2.0785 m | Backfill Zone C |
| EL. A | 13.852 m | A=0.87 m ² |
| EL. B | 13.045 m | |
| (U - Ditch) Upstream | | |
| d | 0.767 m | Excavation |
| D | 0.917 m | A=1.89 m ² |
| D/2 | 0.4585 m | Backfill Zone B |
| W1 | 2.517 m | A=0.60 m ² |
| W2 | 2.0585 m | Backfill Zone C |
| EL. A | 13.852 m | A=0.82 m ² |
| EL. B | 13.085 m | |
| U - Ditch 113B - 113B.4 | | |
| Excavation | 45.77291 m³ | |
| Backfill Zone B | 14.58756 m³ | |
| Backfill Zone C | 20.24487 m³ | |
| U - Ditch 113B.8 - 113B.4 | | |
| Excavation | 15.75799 m³ | |
| Backfill Zone B | 5.041444 m³ | |
| Backfill Zone C | 6.867254 m³ | |



2 PROFILE
SCALE B

| STATION NUMBER | ELEVATION | U-DITCH INVERT | OVERBURDEN | GROUND LEVEL |
|----------------|-----------|----------------|------------|--------------|
| 13+954 | 13.032 | - | - | 13.851 |
| 13+967 | 12.963 | - | - | 13.851 |
| 13+967 | 12.962 | - | - | 13.851 |
| 13+967 | 12.961 | - | - | 13.851 |
| 13+974 | 12.927 | - | - | 13.852 |
| | 13.045 | - | - | 13.852 |
| 13+980 | 13.078 | - | - | 13.852 |
| 13+981 | 13.078 | - | - | 13.852 |
| 13+981 | 13.078 | - | - | 13.852 |
| 13+982 | 13.086 | - | - | 13.852 |



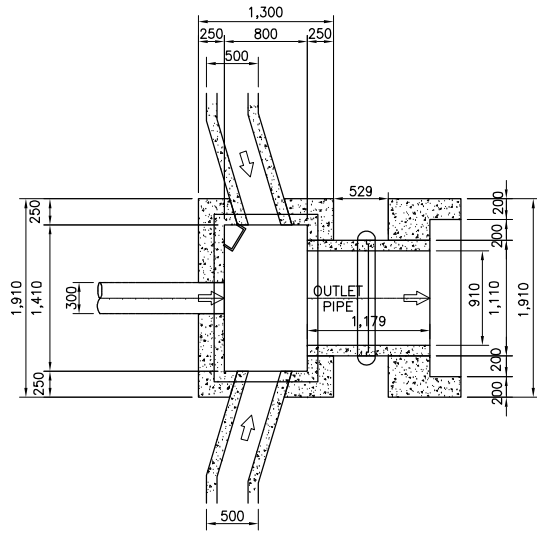
3.520

QUANTITIES OF MANHOLE

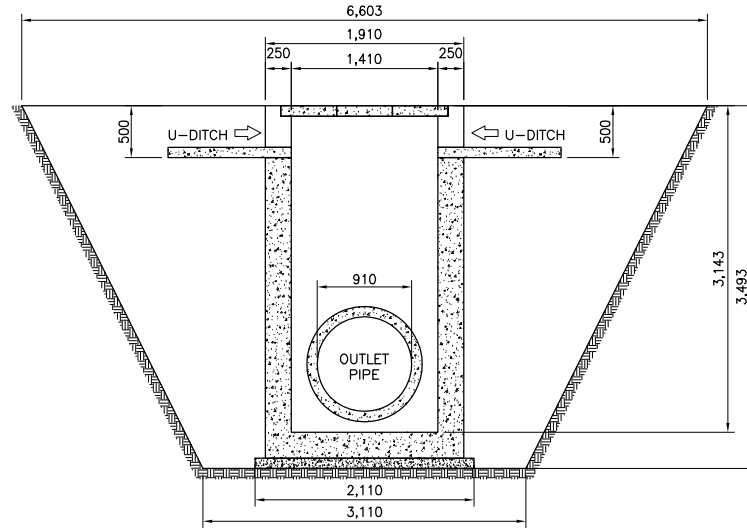
Manhole No.: ML 113B.9

Location 13 + 997

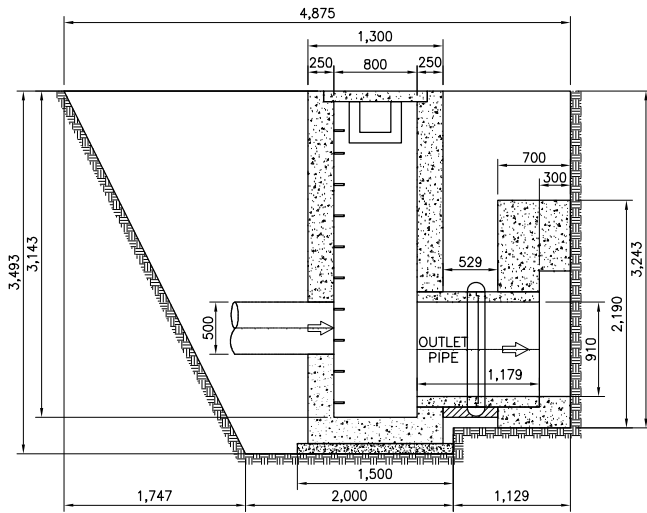
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=13.70 | 4.86 | 66.53 | |
| | | | | 66.53 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 3.143 | 4.259 | m ³ |
| Minus | | | | | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.25 | 0.08 | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.81 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.19 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=4.18 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.93 0.55 0.39 1.99 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058719 | m3 |
| 12. Backfill | | | | 55.44 | m3 |



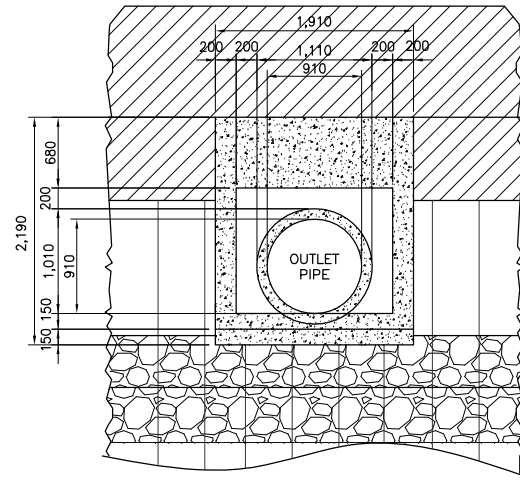
2 PLAN
SCALE B



4 SECTION (ML113B.9)
SCALE B



3 SECTION
SCALE B

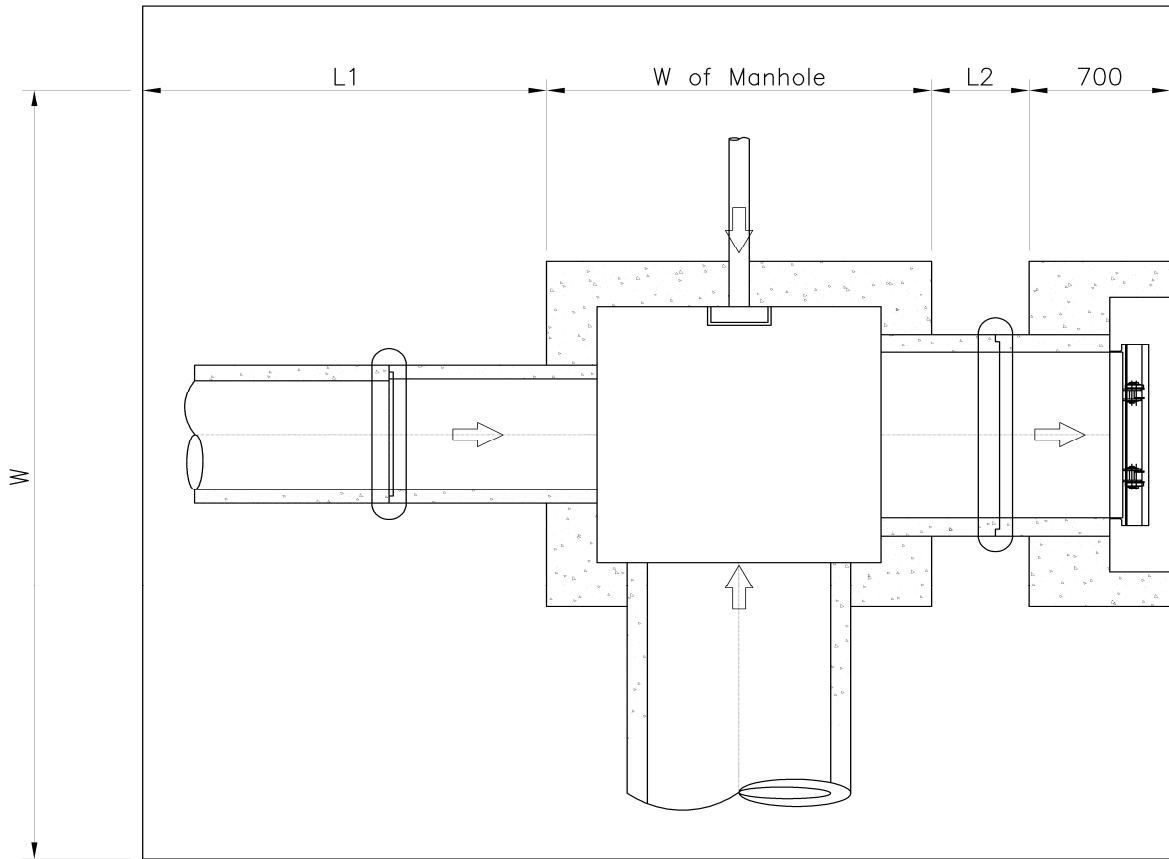


5 ELEVATION
SCALE B

Clearing (Manhole 113B.9)

L1 2.3465 m
W of Manhole 1.3 m
L2 0.529 m
W 6.603 m

A=32.19 m²

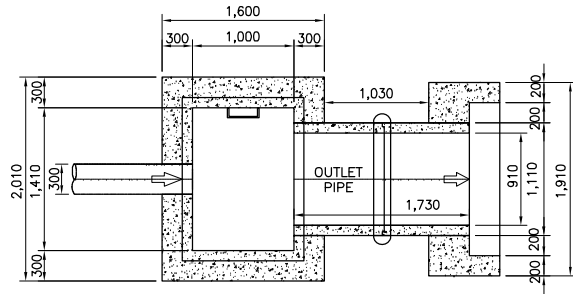


QUANTITIES OF MANHOLE

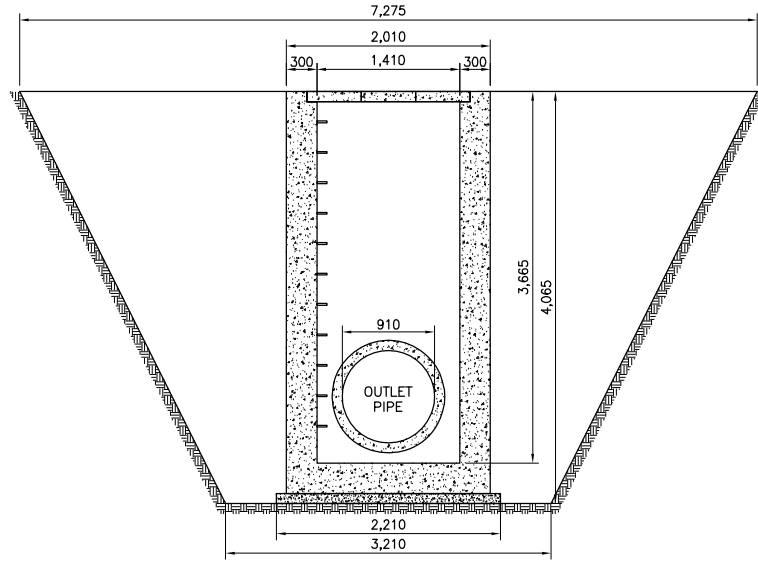
Manhole No.: ML 113C

Location 14 + 033

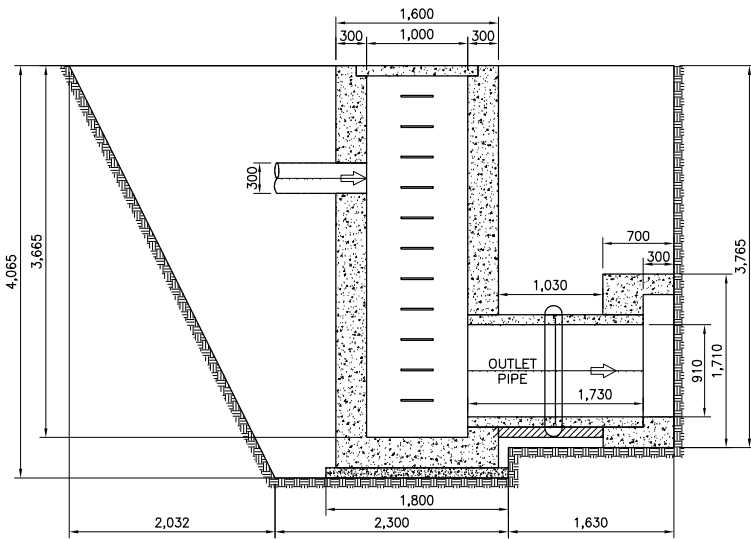
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=19.62 | 5.24 | 102.85 | |
| | | | | 102.85 | m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.22 | 0.3 | 0.96 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 3.665 | 6.619 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.30 | 0.03 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 6.35 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=12 | 0.000201062 | | 0.000120637 0.95 11.36 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.73 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.03 | | 0.11433 | m3 |
| 12. Backfill | | | | 85.71 | m3 |



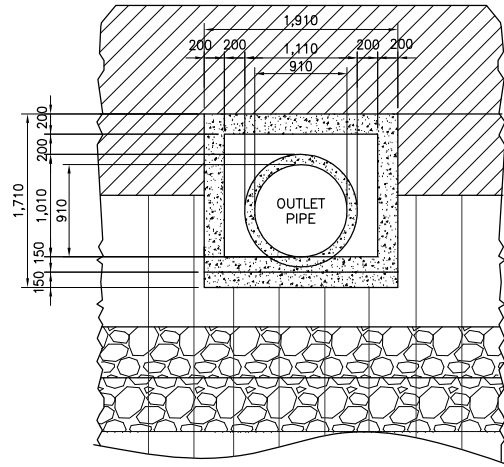
2 PLAN
SCALE B



4 SECTION (ML113C)
SCALE B



3 SECTION
SCALE B

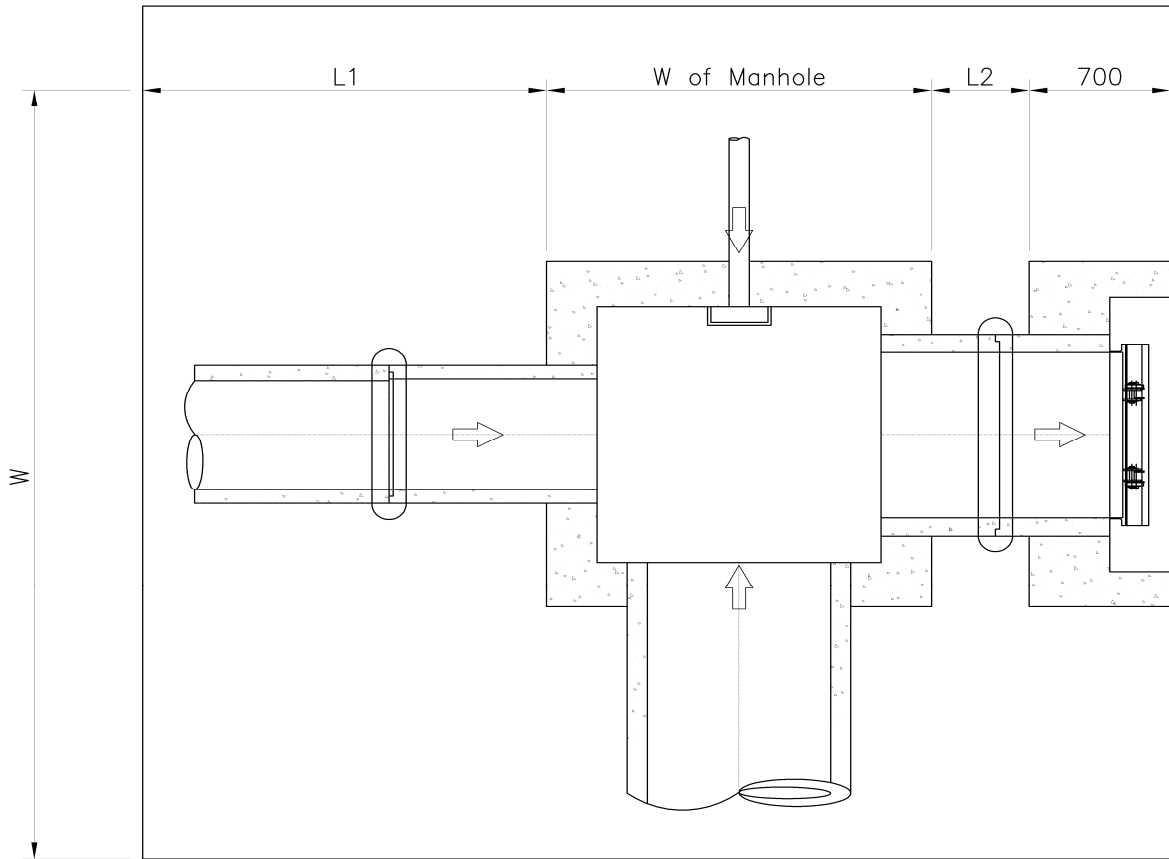


5 ELEVATION
SCALE B

Clearing (Manhole 113C)

| | |
|--------------|----------|
| L1 | 2.6325 m |
| W of Manhole | 1.6 m |
| L2 | 1.03 m |
| W | 7.275 m |

A=43.38 m²

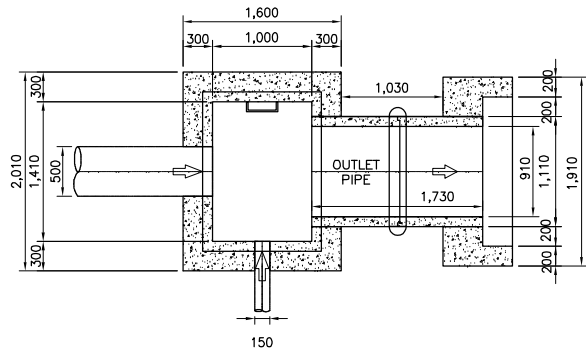


QUANTITIES OF MANHOLE

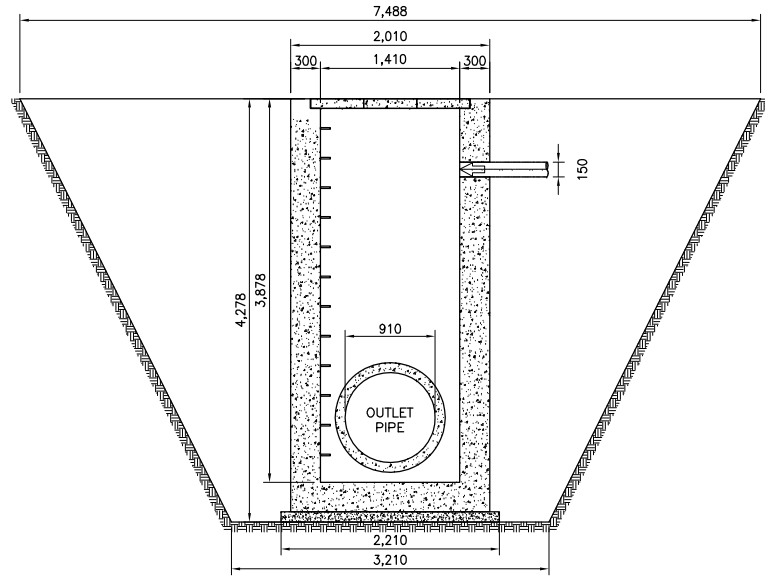
Manhole No.: ML 113D

Location: 14 + 044

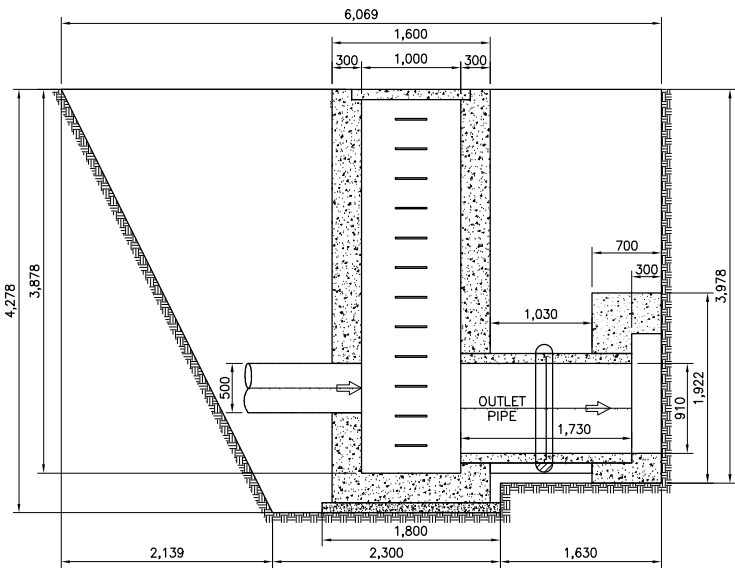
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=20.90 | 5.35 | 111.79 | |
| | | | | 111.79 | m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.22 | 0.3 | 0.96 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 3.878 | 7.004 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.30 | 0.08 | |
| Pipe hole on Wall C | DiaC=0.15 | 0.02 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 6.68 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=12 | 0.000201062 | | 0.000120637 0.95 11.36 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.92 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.67 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.57 0.55 0.39 1.63 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.73 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.03 | | 0.11433 | m3 |
| 12. Backfill | | | | 93.16 | m3 |



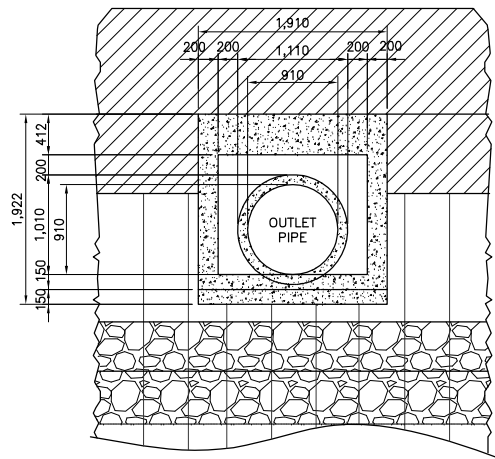
1 PLAN
SCALE A



3 SECTION (ML113D)
SCALE A



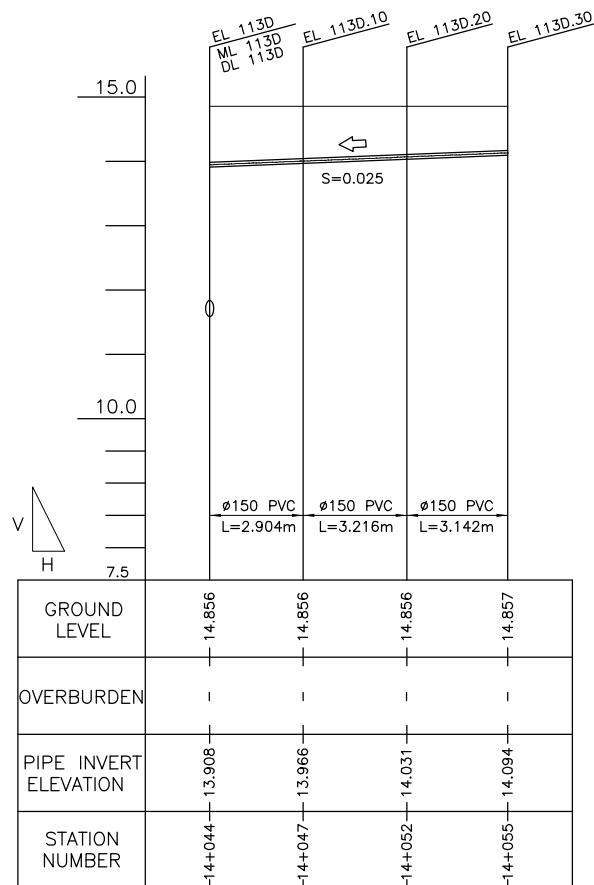
2 SECTION
SCALE A



4 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=9.49 | 4 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.15 | | | 3 | pc |



2 PROFILE
 SCALE B

Clearing (Manhole 113D)

| | | |
|--------------|---------|------------------------------|
| L1 | 2.739 m | |
| W of Manhole | 1.6 m | A=45.44 m² |
| L2 | 1.03 m | |
| W | 7.488 m | |

Clearing (Collector 113D.3 - 113D)

| | | |
|---|----------|------------------------------|
| W | 2.0055 m | A=18.57 m² |
| L | 9.262 m | |

(Collector PVC) Downstream

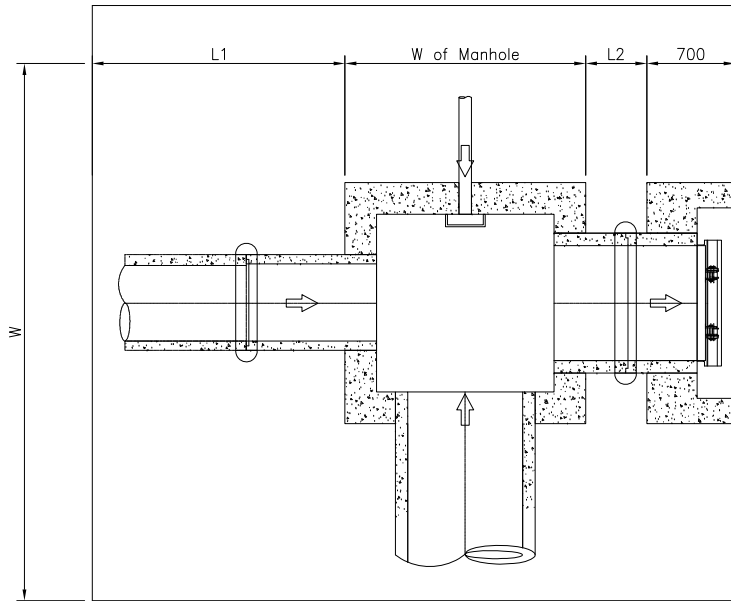
| | | |
|---------------|----------|-----------------------|
| 113D.3 - 113D | | |
| D | 0.15 m | Excavation |
| W1 | 2.10 m | A=1.54 m ² |
| W2 | 1.62 m | Backfill Zone B |
| H | 0.948 m | A=0.64 m ² |
| H/2 | 0.474 m | Backfill Zone C |
| EL. A | 14.856 m | A=0.88 m ² |
| EL. B | 13.908 m | |

(Collector PVC) Upstream

| | | |
|-------|----------|-----------------------|
| D | 0.15 m | Excavation |
| W1 | 1.91 m | A=1.17 m ² |
| W2 | 1.53 m | Backfill Zone B |
| H | 0.763 m | A=0.49 m ² |
| H/2 | 0.3815 m | Backfill Zone C |
| EL. A | 14.857 m | A=0.66 m ² |
| EL. B | 14.094 m | |

Collector PVC 113D.3 - 113D

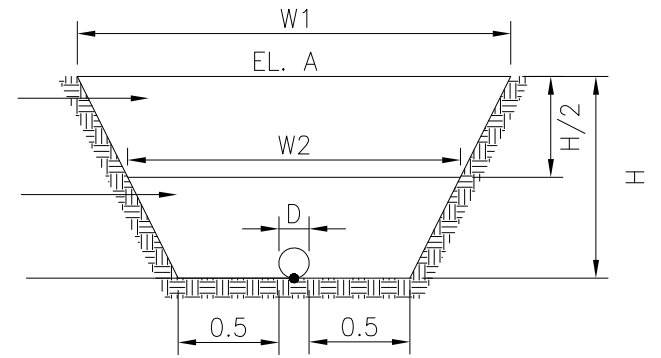
| | |
|-----------------|-------------------------------|
| Volume | |
| Excavation | 12.85468 m³ |
| Backfill Zone B | 5.380902 m³ |
| Backfill Zone C | 7.30601 m³ |



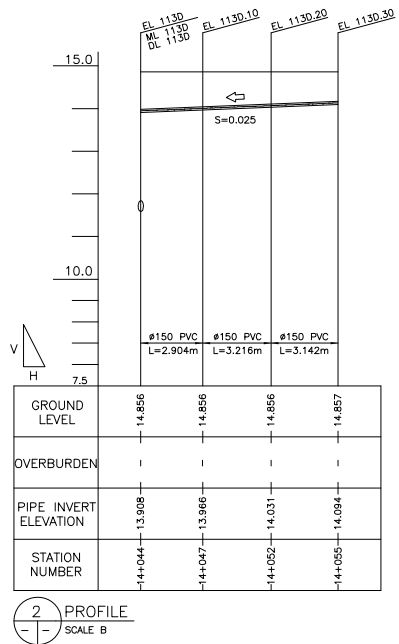
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.531

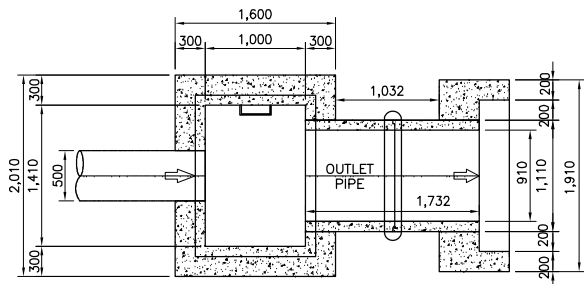


QUANTITIES OF MANHOLE

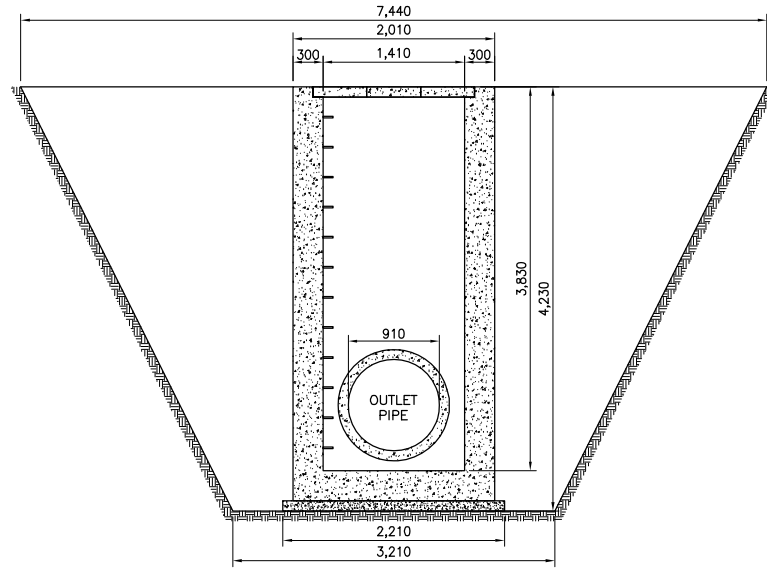
Manhole No.: ML 113E

Location 14 + 076

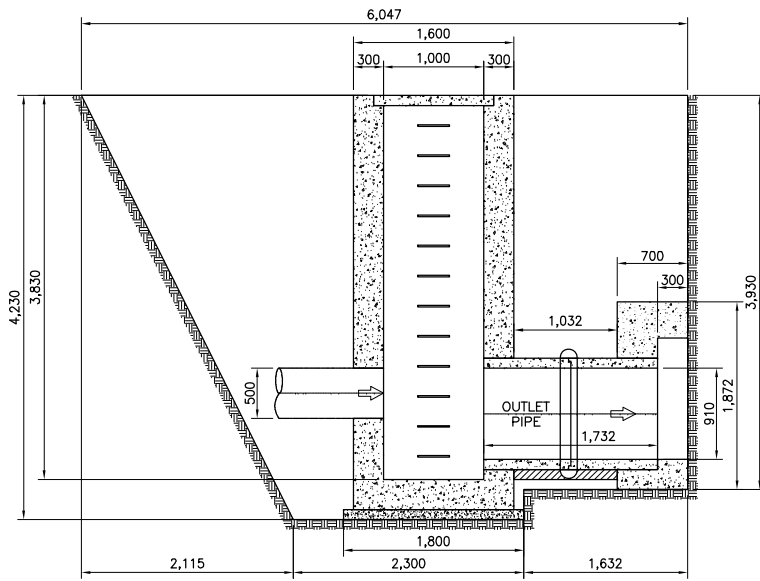
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=20.62 | 5.33 | 109.78 | |
| | | | | 109.78 | m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.22 | 0.3 | 0.96 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 3.830 | 6.917 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.30 | 0.08 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 6.60 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=12 | 0.000201062 | | 0.000120637 0.95 11.36 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.87 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.58 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.50 0.55 0.39 1.57 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.73 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.03 | | 0.114552 | m3 |
| 12. Backfill | | | | 91.48 | m3 |



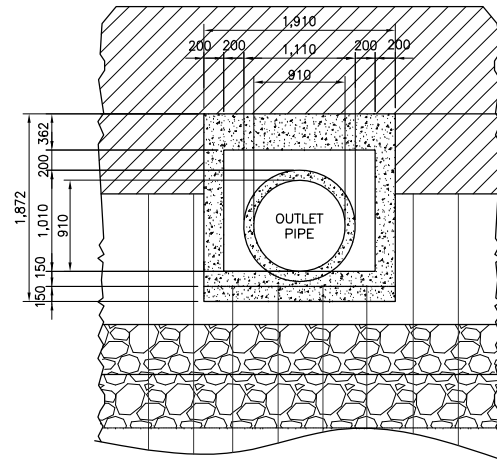
2 PLAN
SCALE B



4 SECTION (ML113E)
SCALE B



3 SECTION
SCALE B

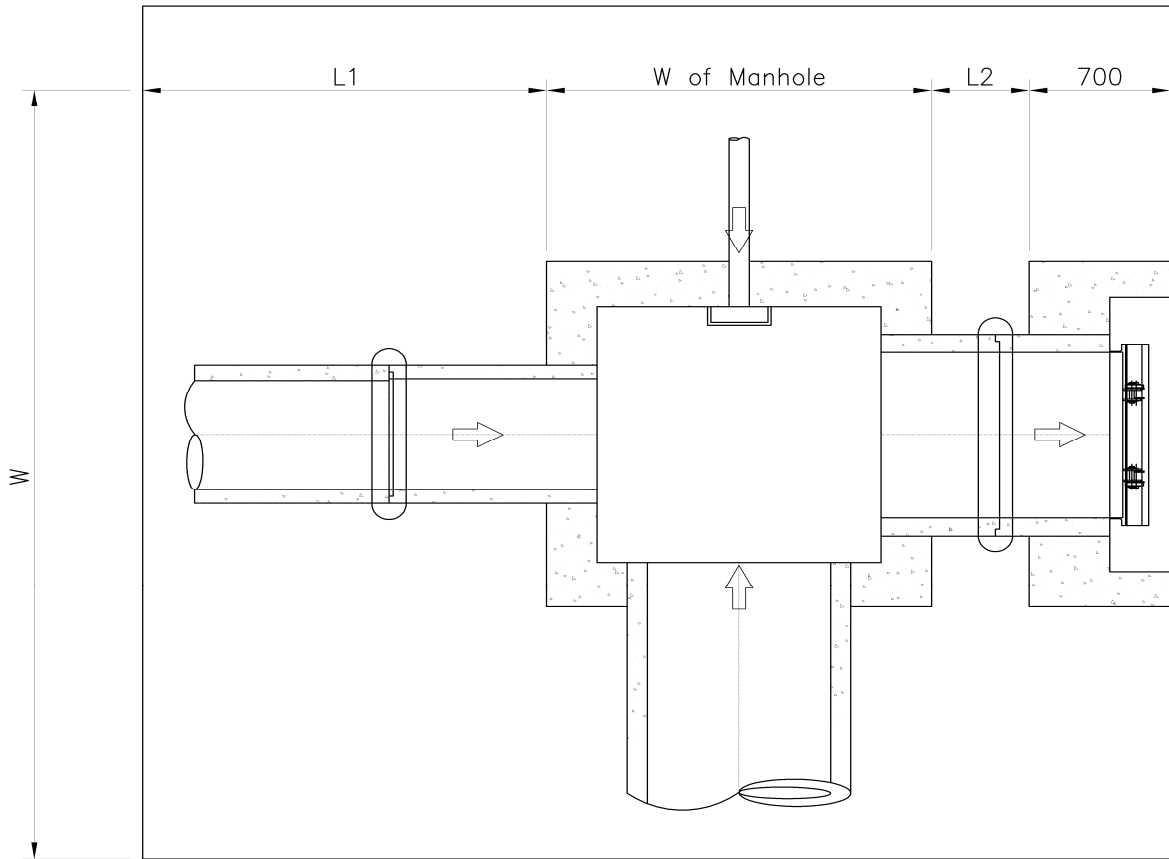


5 ELEVATION
SCALE B

Clearing (Manhole 113E)

L1 2.715 m
W of Manhole 1.6 m
L2 1.032 m
W 7.44 m

A=44.99 m²

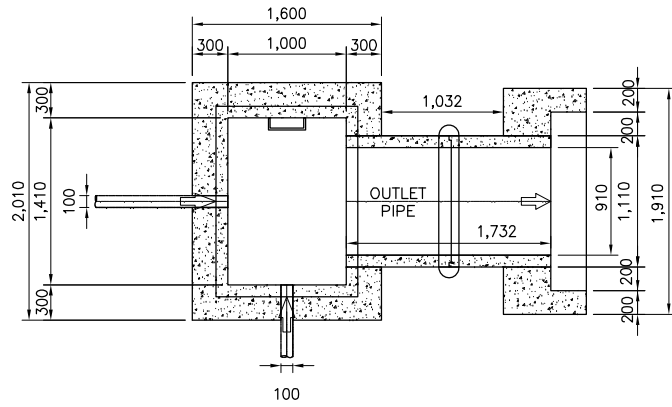


QUANTITIES OF MANHOLE

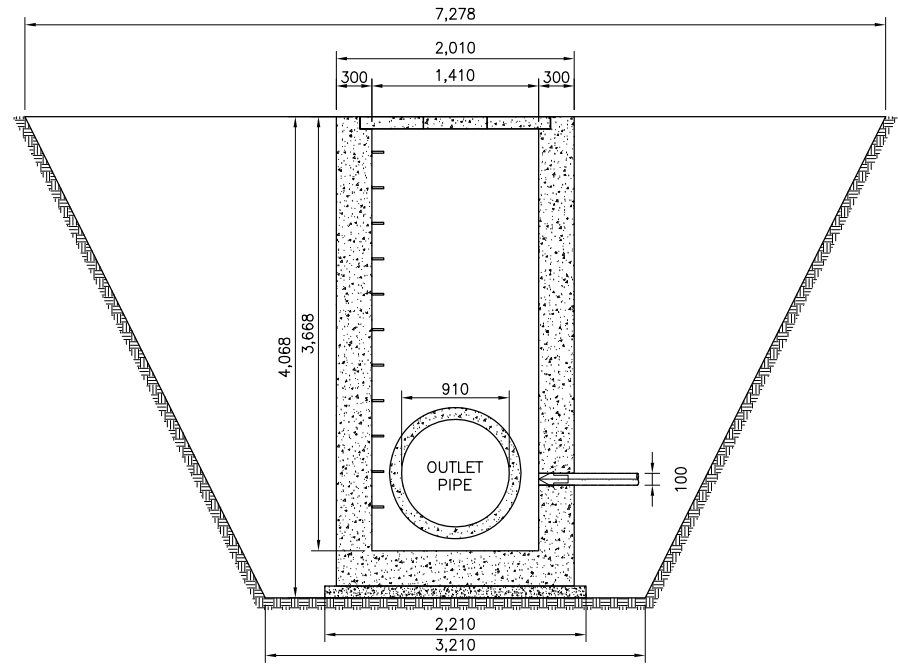
Manhole No.: ML 113F

Location: 14 + 080

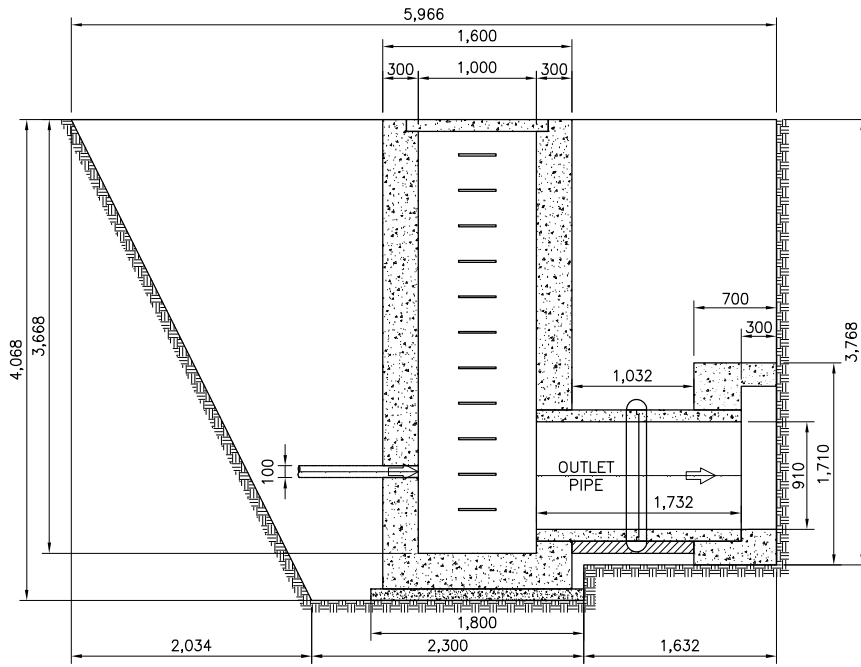
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=19.64 | 5.24 | 103.01 | |
| | | | | 103.01 | m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.22 | 0.3 | 0.96 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 3.668 | 6.624 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.10 | 0.01 | 0.30 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.10 | 0.01 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 6.38 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=12 | 0.000201062 | | 0.000120637 0.95 11.36 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.73 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.03 | | 0.114552 | m ³ |
| 12. Backfill | | | | 85.84 | m ³ |



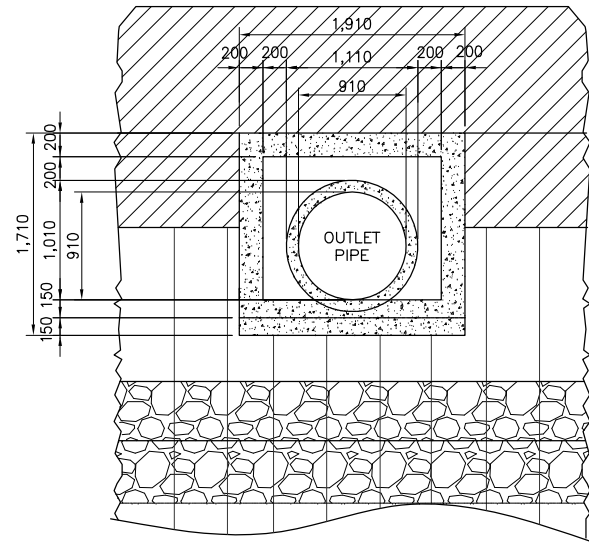
1 PLAN
SCALE A



3 SECTION (ML113F)
SCALE A



2 SECTION
SCALE A

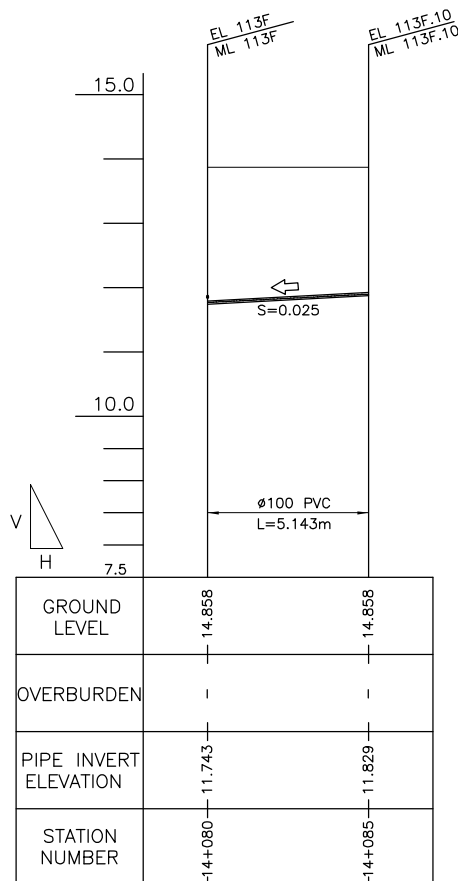


4 ELEVATION
SCALE A

3.536

QUANTITIES

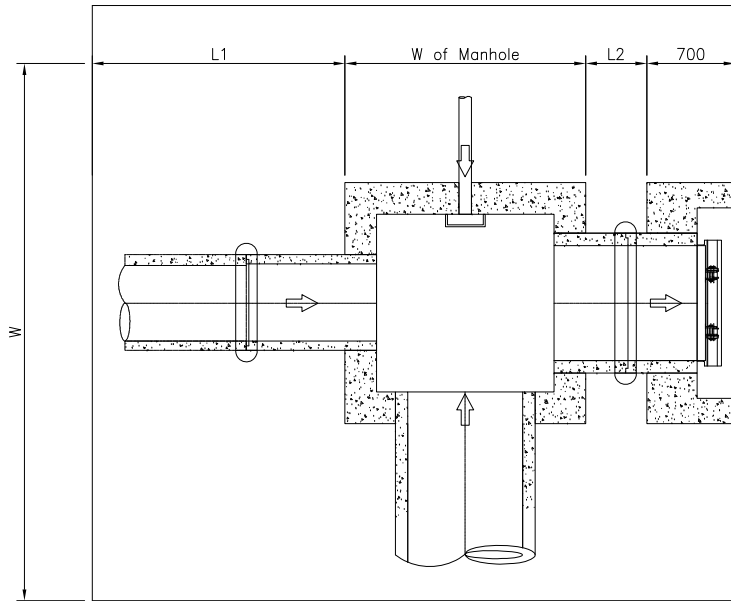
| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.10 | | L=5.27 | 2 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.15 | | | 1 | pc |



2 PROFILE
 SCALE B

3.537

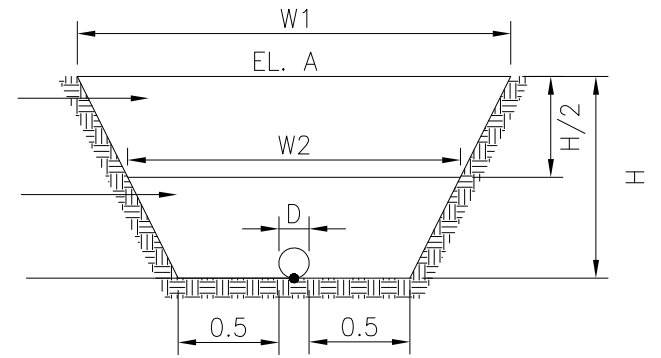
| | | |
|------------------------------------|-------------------------------|------------------------------|
| Clearing (Manhole 113F) | | |
| L1 | 2.634 m | |
| W of Manhole | 1.6 m | A=43.42 m² |
| L2 | 1.032 m | |
| W | 7.278 m | |
| | | |
| Clearing (Collector 113F.1 - 113F) | | |
| W | 4.172 m | A=21.46 m² |
| L | 5.143 m | |
| | | |
| (Collector PVC) Downstream | 113F.1 - 113F | |
| D | 0.1 m | Excavation |
| W1 | 4.22 m | A=8.28 m ² |
| W2 | 2.66 m | Backfill Zone B |
| H | 3.115 m | A=2.92 m ² |
| H/2 | 1.5575 m | Backfill Zone C |
| EL. A | 14.858 m | A=5.35 m ² |
| EL. B | 11.743 m | |
| | | |
| (Collector PVC) Upstream | | |
| D | 0.1 m | Excavation |
| W1 | 4.13 m | A=7.92 m ² |
| W2 | 2.61 m | Backfill Zone B |
| H | 3.029 m | A=2.80 m ² |
| H/2 | 1.5145 m | Backfill Zone C |
| EL. A | 14.858 m | A=5.11 m ² |
| EL. B | 11.829 m | |
| | | |
| Collector PVC 113F.1 - 113F | Volume | |
| Excavation | 42.69299 m³ | |
| Backfill Zone B | 15.08527 m³ | |
| Backfill Zone C | 27.5824 m³ | |



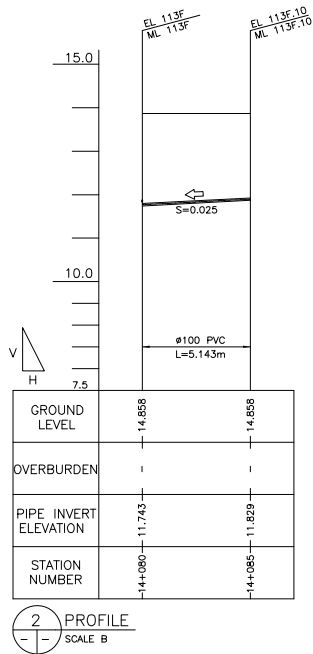
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.539

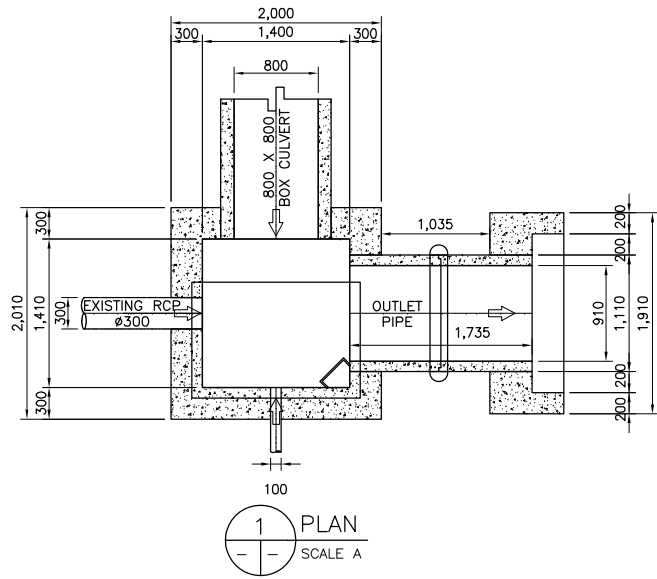


QUANTITIES OF MANHOLE

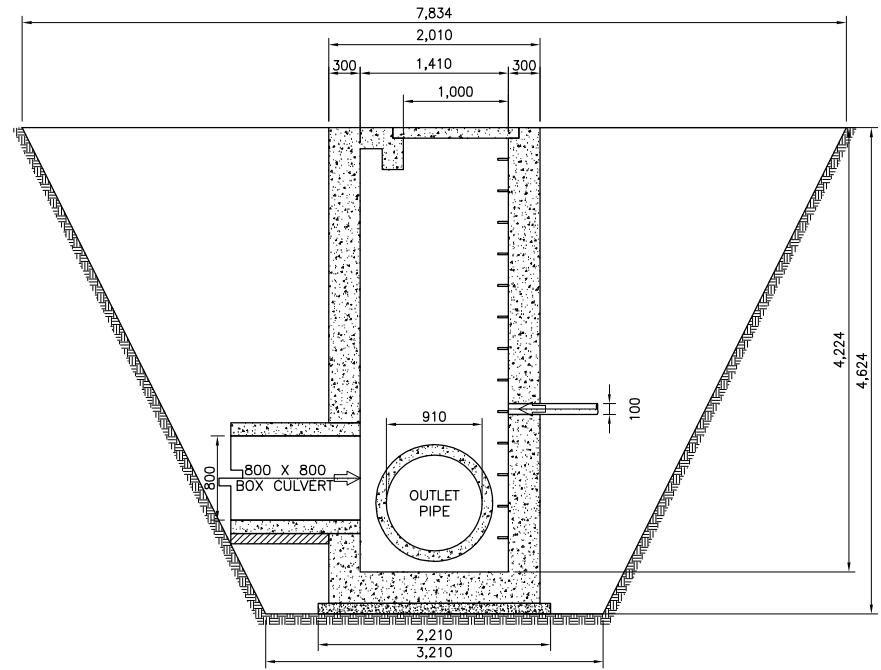
Manhole No.: ML 113F.17

Location: 14 + 176

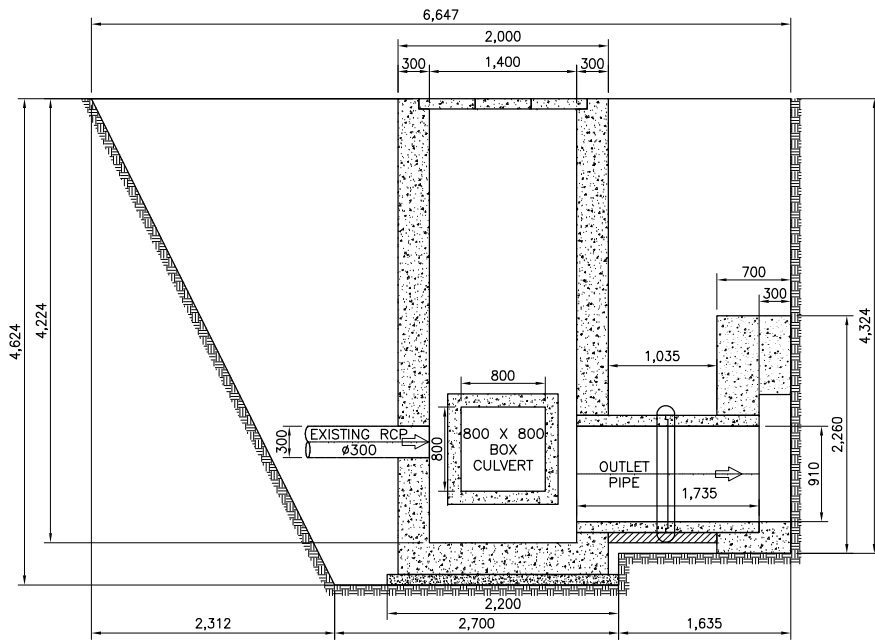
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=24.90 | 5.52 | 137.50 | |
| | | | | 137.50 | m ³ |
| 2. Lev. Concrete | W=2.20 L=2.21 | 4.86 | 0.1 | 0.49 | m ³ |
| 3. Bottom Slab | W=2.00 L=2.01 | 4.65 | 0.3 | 1.39 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=2.00 Lout=2.01 Win=1.40 Lin=1.41 | Aout=4.02 Ain=1.97 Anet=2.05 | 4.224 | 8.642 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.10 | 0.01 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.30 | 0.03 | |
| D=1.05 | W=1.05 | 1.10 | 0.30 | 0.28 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 8.09 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.60 | 1.76 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=14 | 0.000201062 | | 0.000120637 0.95 13.26 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.26 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=4.32 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 3.02 0.55 0.39 2.09 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.74 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.04 | | 0.114885 | m3 |
| 12. Backfill | | | | 114.58 | m3 |



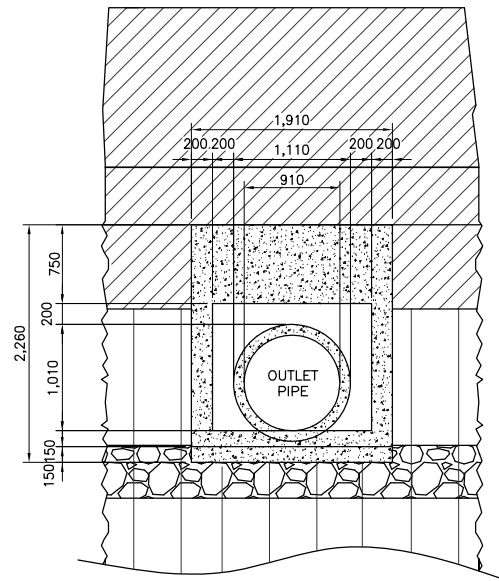
1 PLAN
SCALE A



3 SECTION (ML113F.17)
SCALE A



2 SECTION
SCALE A



4 ELEVATION
SCALE B

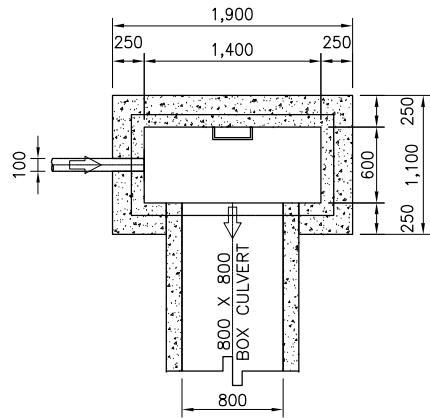
3.541

QUANTITIES OF MANHOLE

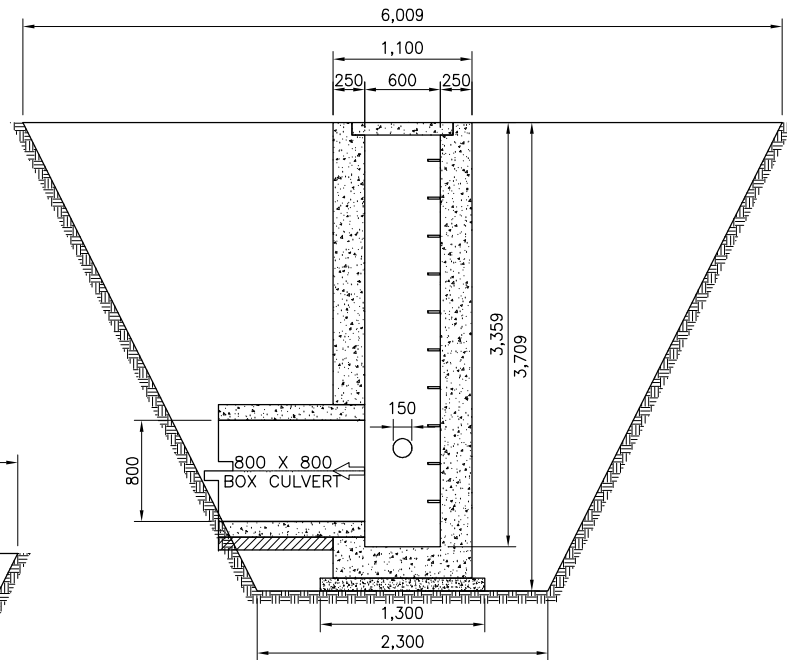
Manhole No.: ML 113F.10

Location: 1 4 + 144

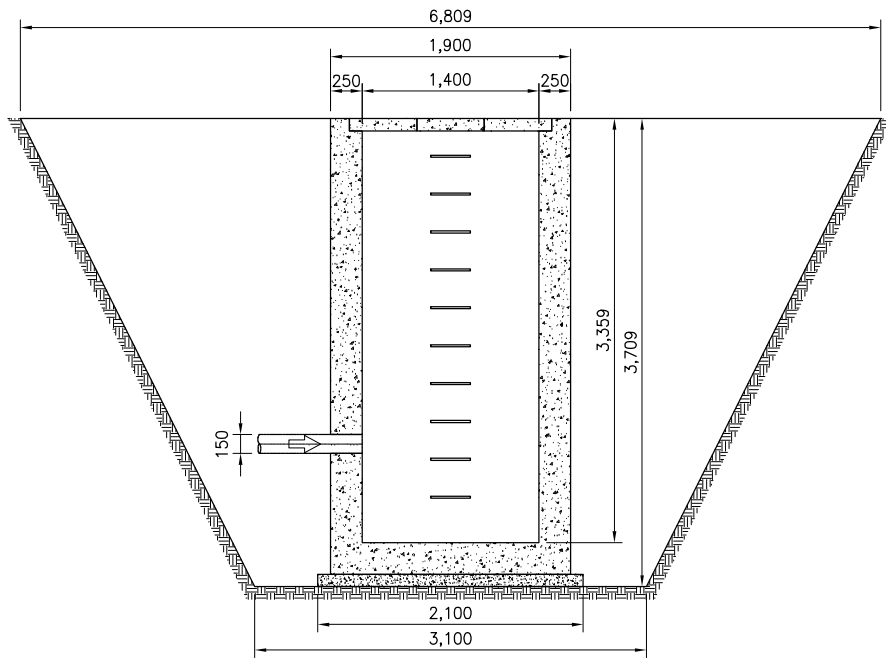
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|---------------------|----------------------------------|
| 1. Excavation | | A1=18.38 | 4.15 | 76.34 | |
| | | | | 76.34 | m ³ m ³ |
| 2. Lev. Concrete | W=2.10 L=1.30 | 2.73 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.10 | 2.09 | 0.25 | 0.52 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.10 Win=1.40 Lin=.60 | Aout=2.09 Ain=0.84 Anet=1.25 | 3.359 | 4.199 | m ³ |
| Minus | | | | | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall B | DiaB=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 3.92 | m ³ |
| 5. Conc. Cover | L=0.80 W=1.60 | 1.28 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 | m ³ kg/pc |
| | | | | 10.42 | kg |
| 7. Backfill | | | | 63.62 | m ³ |



1 PLAN
SCALE A



3 SECTION (ML113F.10)
SCALE A

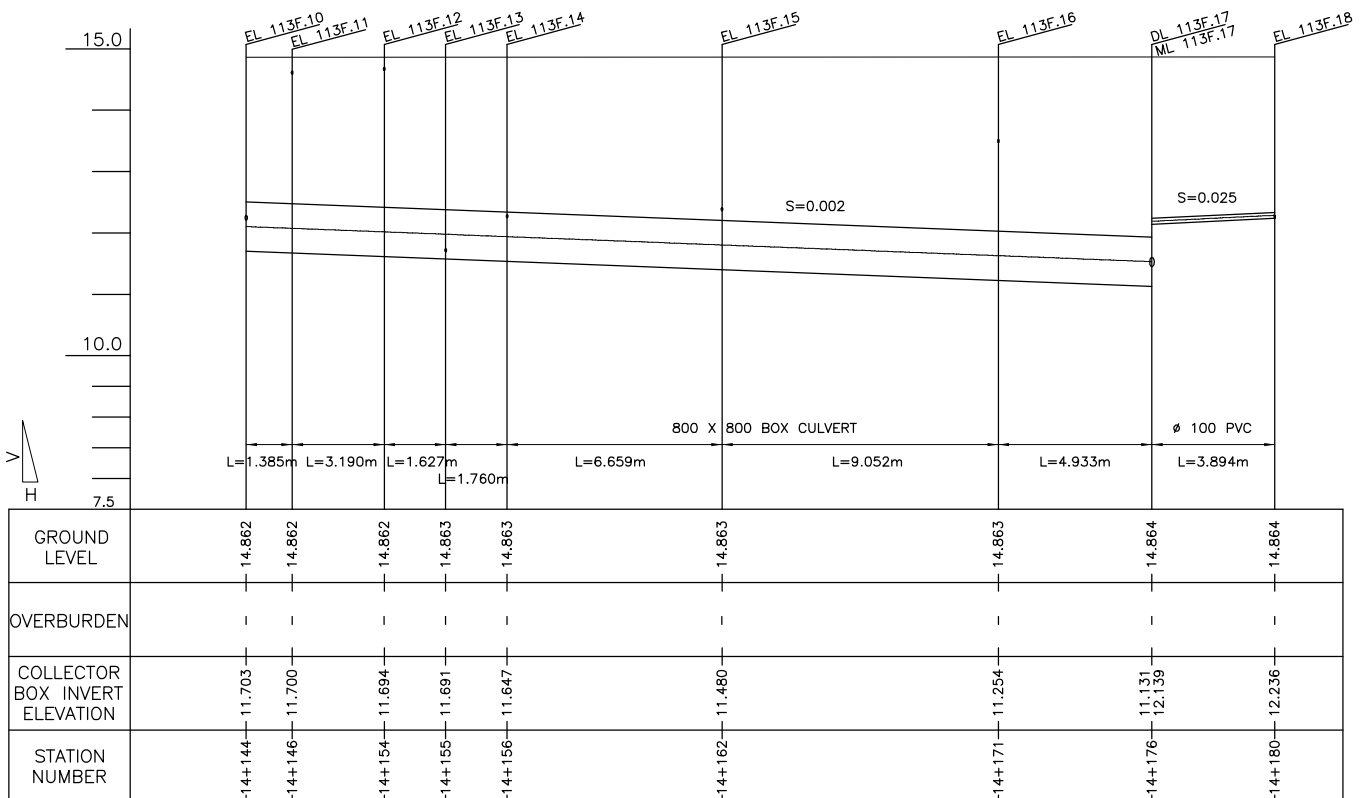


2 SECTION
SCALE A

3.543

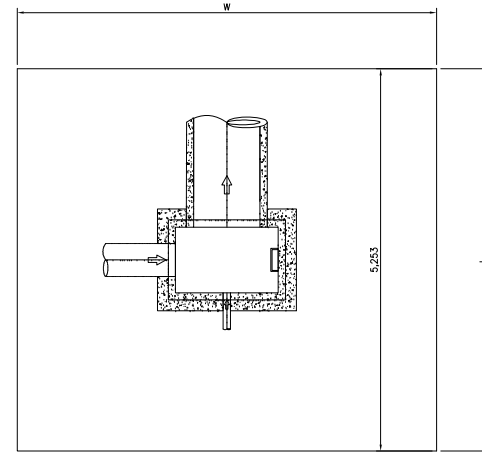
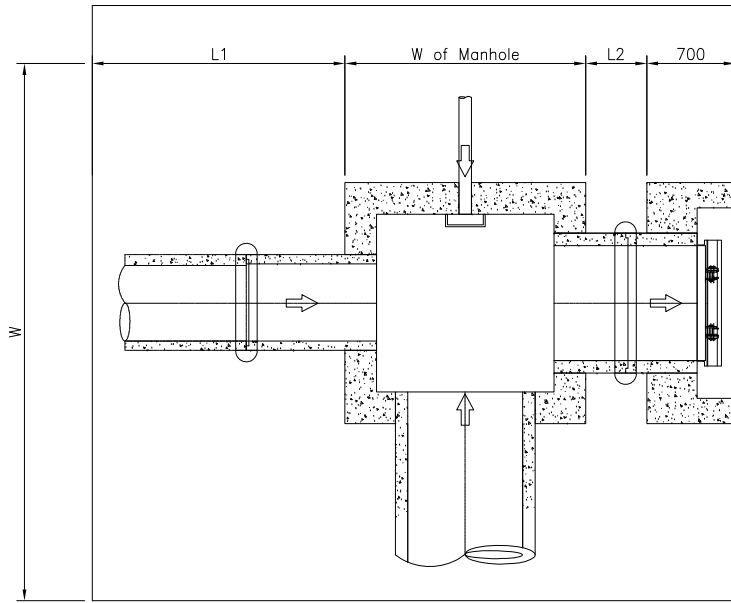
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|---------------------|------|----------------|---------------|----------------|
| 1. BOX CULVERT | | | | | |
| Bottom | W=1.050m L=.125m | 0.13 | 32.57 | 4.27 | m ³ |
| Wall | W=.125m L=.800m | 0.20 | 32.57 | 6.51 | m ³ |
| Top | W=1.050m L=.125m | 0.13 | 32.57 | 4.27 | m ³ |
| Conc. Bedding | W=1.050m L=.100m | 0.11 | 32.57 | 3.42 | m ³ |
| 1. Collector Pipe (PVC) | Dia=0.10 | | L=5.27 | 2 | pc |
| 2. PVC coupling | Dia=0.15 | | | 1 | pc |
| 2. Formworks | | | | 129.36 | m ³ |
| 3. Water Stop | | | | 12.05 | m |
| 4. Joint Sealant | | | | 20.68 | m |
| 5. Cork Filler | | | | 0.46 | m ² |

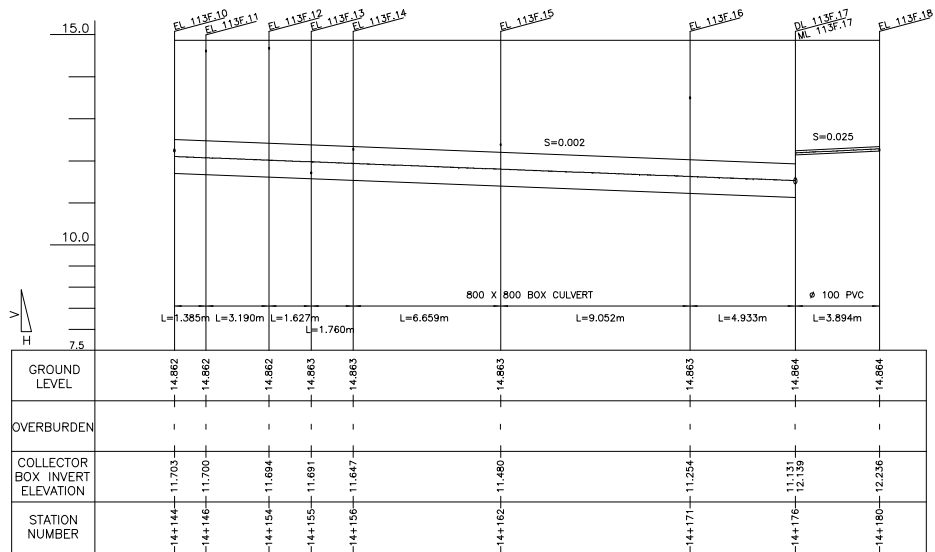


2 PROFILE
 SCALE B

| | | |
|--|-------------------------------|-------------------------------|
| Clearing (Manhole 113F.17) | | |
| L1 | 2.912 m | |
| W of Manhole | 2 m | A=52.07 m² |
| L2 | 1.035 m | |
| W | 7.834 m | |
| Clearing (Manhole 113F.10) | | |
| W | 6.809 m | A=40.92 m² |
| L | 6.009 m | |
| Clearing (Collector 113F.10 - 113F.17) | | |
| W | 5.921 m | A=169.38 m² |
| L | 28.606 m | |
| Clearing (Collector 113F.18 - 113F.17) | | |
| W | 3.7765 m | A=14.71 m² |
| L | 3.894 m | |
| (Collector Box) Downstream | 113F.10 - 113F.17 | Excavation |
| W1 | 6.208 m | A=16.74 m ² |
| W2 | 4.229 m | Backfill Zone B |
| H | 3.958 m | A=5.18 m ² |
| H/2 | 1.979 m | Backfill Zone C |
| EL A. | 14.864 m | A=10.33 m ² |
| ELB. | 11.131 m | |
| (Collector Box) Upstream | | Excavation |
| W1 | 5.634 m | A=13.34 m ² |
| W2 | 3.942 | Backfill Zone B |
| H | 3.384 m | A=4.01 m ² |
| H/2 | 1.692 m | Backfill Zone C |
| EL A. | 14.862 m | A=8.10 m ² |
| ELB. | 11.703 m | |
| (Collector PVC) Downstream | 113F.18 - 113F.17 | Excavation |
| D | 0.1 m | |
| W1 | 3.83 m | A=6.71 m ² |
| W2 | 2.46 m | Backfill Zone B |
| H | 2.725 m | A=2.42 m ² |
| H/2 | 1.3625 m | Backfill Zone C |
| EL. A | 14.864 m | A=4.28 m ² |
| EL. B | 12.139 m | |
| (Collector PVC) Upstream | | Excavation |
| D | 0.1 m | |
| W1 | 3.73 m | A=6.34 m ² |
| W2 | 2.41 m | Backfill Zone B |
| H | 2.628 m | A=2.30 m ² |
| H/2 | 1.314 m | Backfill Zone C |
| EL. A | 14.864 m | A=4.04 m ² |
| EL. B | 12.236 m | |
| Collector Box 113F.10 - 113F.17 | Volume | |
| Excavation | 431.0676 m³ | |
| Backfill Zone B | 131.7706 m³ | |
| Backfill Zone C | 264.113 m³ | |
| Collector PVC 113F.18 - 113F.17 | Volume | |
| Excavation | 26.05215 m³ | |
| Backfill Zone B | 9.419473 m³ | |
| Backfill Zone C | 16.60133 m³ | |



3.546



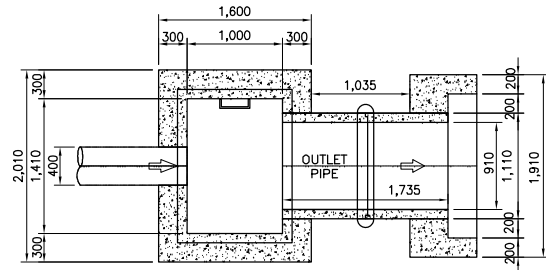
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

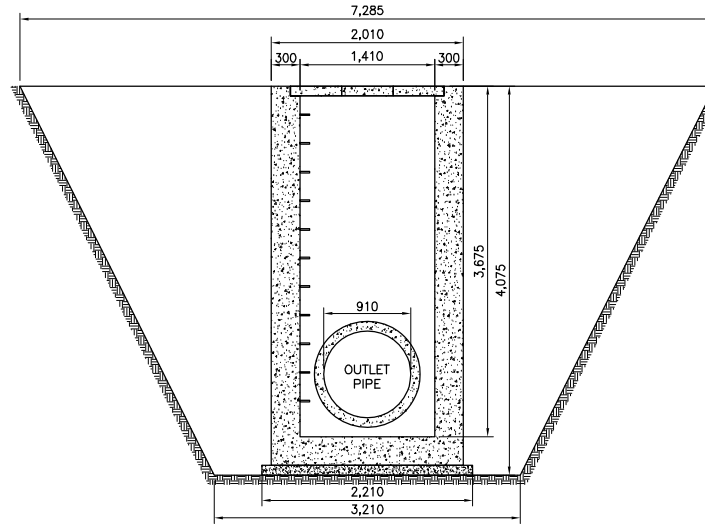
Manhole No.: ML 113F.20

Location 14 + 195

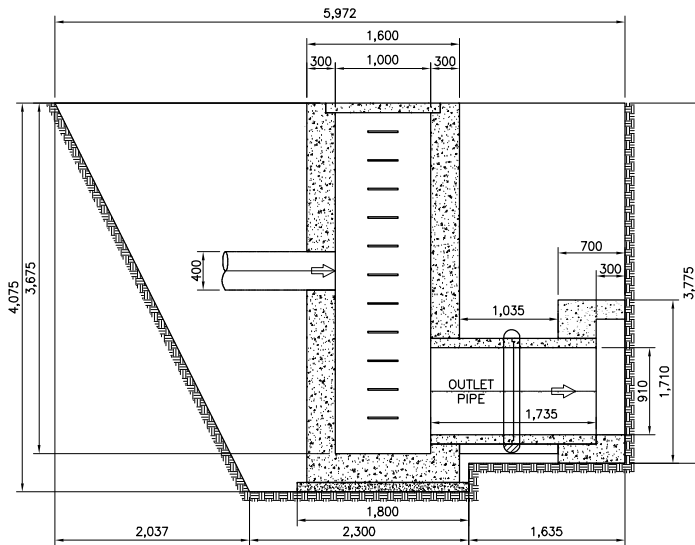
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=19.70 | 5.25 | 103.35 | |
| | | | | 103.35 | m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.22 | 0.3 | 0.96 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 3.675 | 6.637 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.53 | 0.22 | 0.30 | 0.05 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 6.34 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=12 | 0.000201062 | | 0.000120637 0.95 11.36 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.74 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.04 | | 0.114885 | m3 |
| 12. Backfill | | | | 86.12 | m3 |



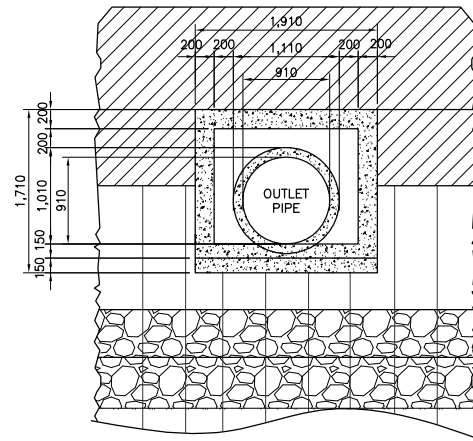
2 PLAN
SCALE B



4 SECTION (ML113F.20)
SCALE B



3 SECTION
SCALE B

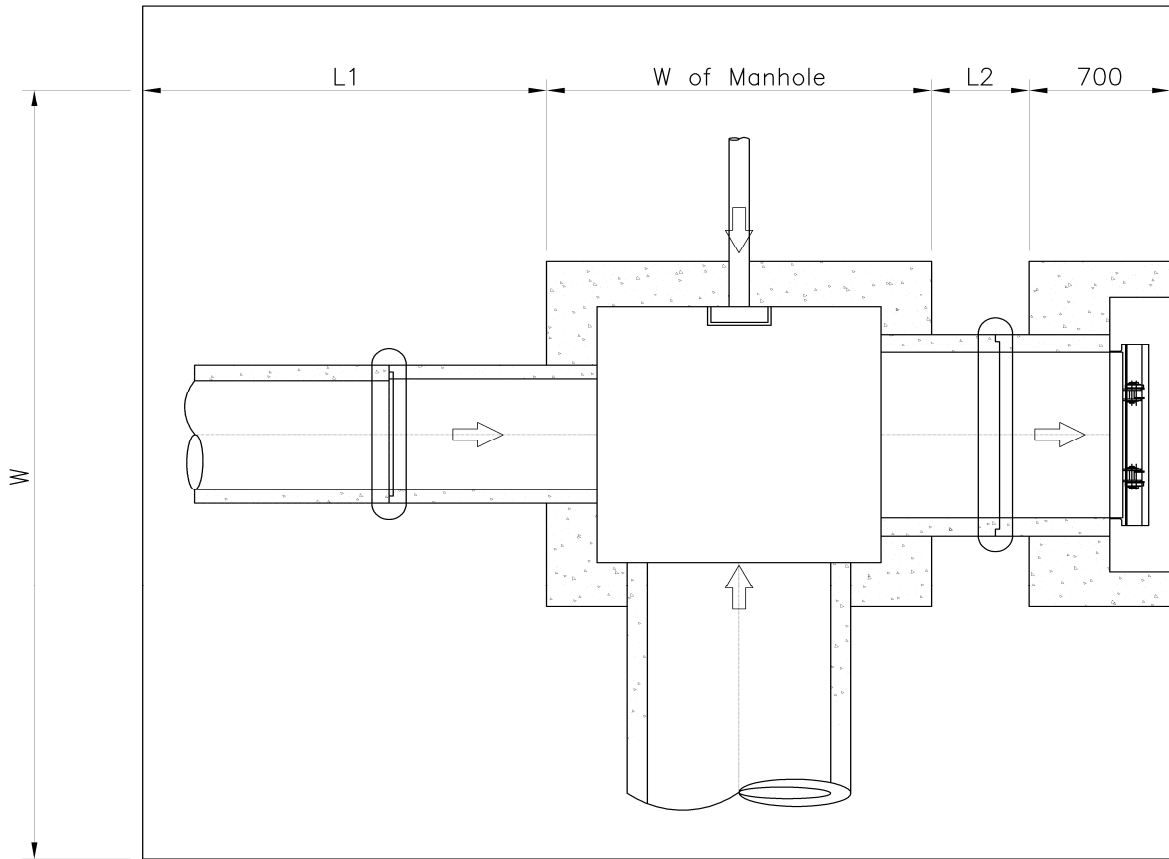


5 ELEVATION
SCALE B

Clearing (Manhole 113F.20)

L1 2.6375 m
W of Manhole 1.6 m
L2 1.035 m
W 7.285 m

A=43.51 m²

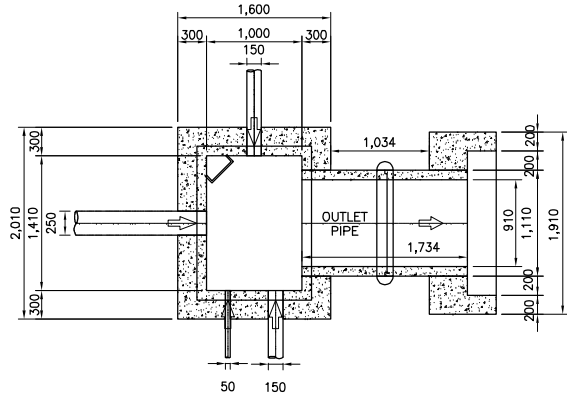


QUANTITIES OF MANHOLE

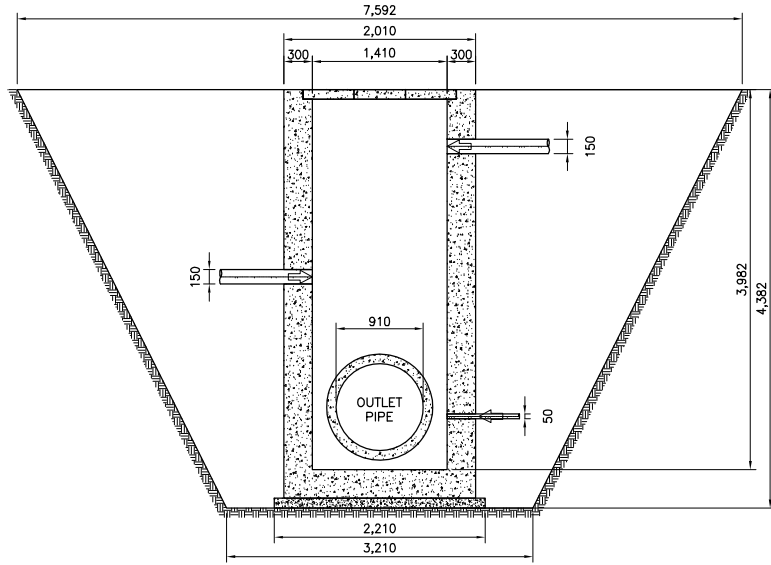
Manhole No.: ML 113F.38

Location: 14 + 260

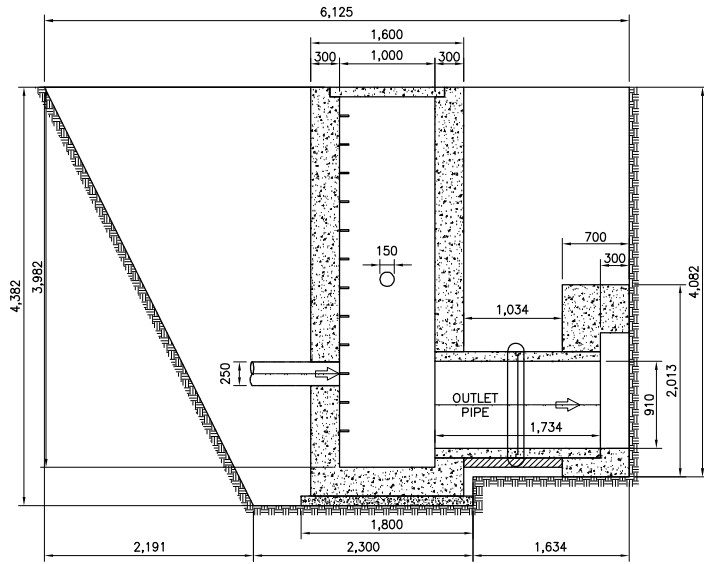
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=21.55 | 5.40 | 116.39 | |
| | | | | 116.39 | m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.22 | 0.3 | 0.96 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 3.982 | 7.191 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.03 | 0.30 | 0.01 | |
| Pipe hole on Wall B | DiaB=0.35 | 0.10 | 0.30 | 0.02 | |
| Pipe hole on Wall C | DiaC=0.15 | 0.02 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 6.91 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=13 | 0.000201062 | | 0.000120637 0.95 12.31 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.01 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.84 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.69 0.55 0.39 1.76 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.73 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.03 | | 0.114774 | m3 |
| 12. Backfill | | | | 96.99 | m3 |



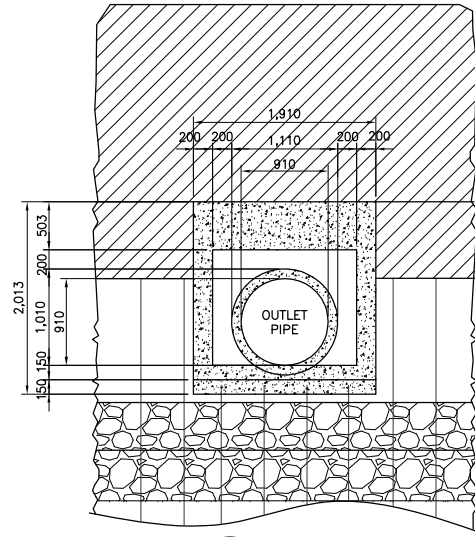
1 PLAN
SCALE A



3 SECTION(ML113F.38)
SCALE A



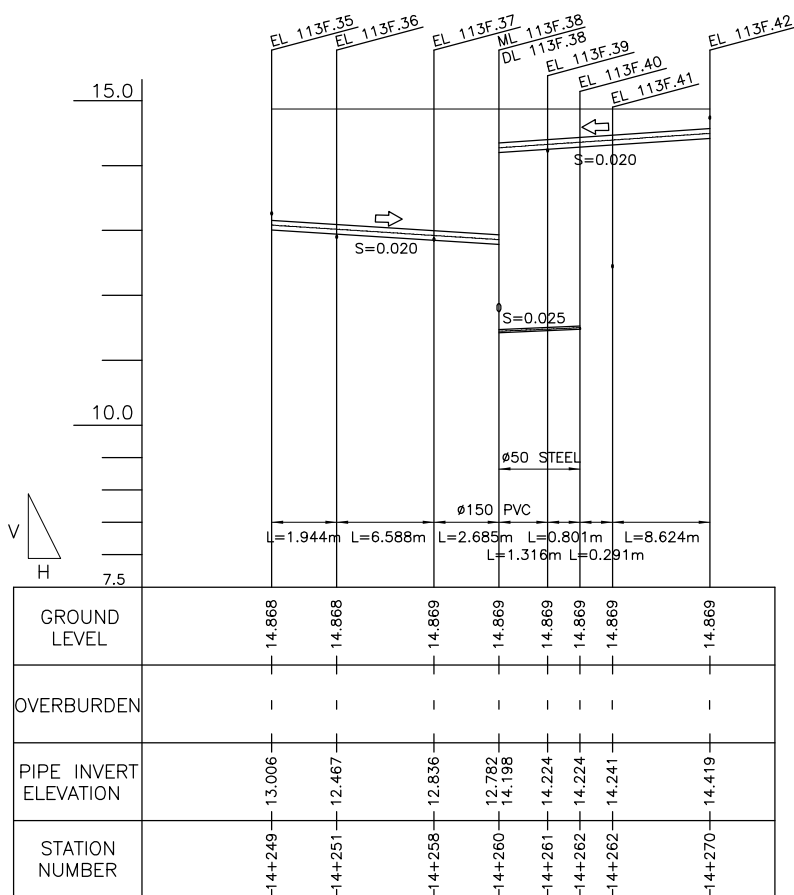
2 SECTION
SCALE A



4 ELEVATION
SCALE A

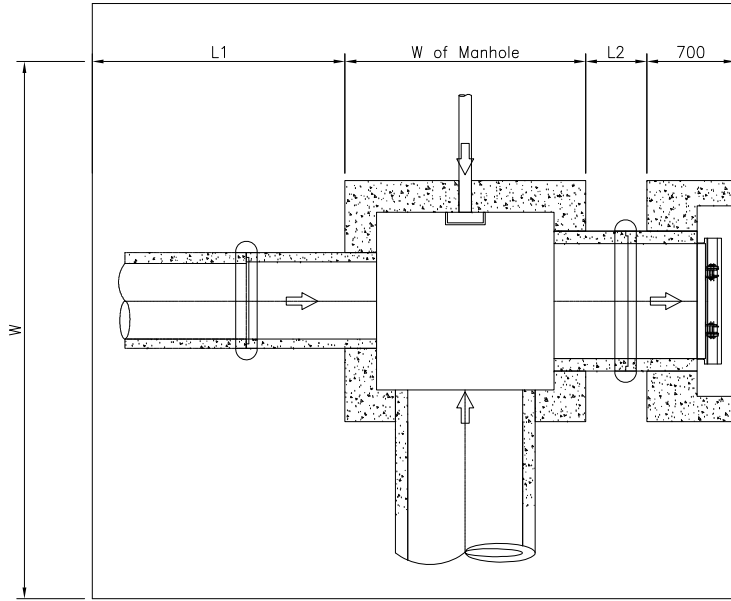
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|---------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=22.58 | 8 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.15 | | | 7 | pc |
| 1. Collector Pipe (Steel) | Dia=0.05 | | L=1.08 | 1 | pc |
| | | | | | |



2 PROFILE
 SCALE B

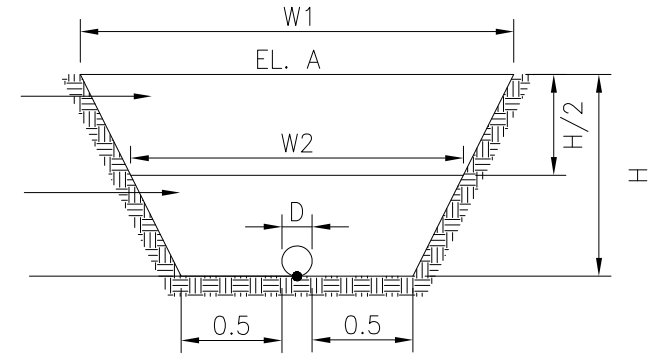
| | | |
|--|-------------------------------|------------------------------|
| Clearing (Manhole 113F.38) | | |
| L1 | 2.79 m | |
| W of Manhole | 1.60 m | A=46.50 m² |
| L2 | 1.03 m | |
| W | 7.59 m | |
| Clearing (Collector 113F.35 - 113F.38) | | |
| W | 3.12 m | A=35.05 m² |
| L | 11.22 m | |
| Clearing (Collector 113F.42 - 113F.40) | | |
| W | 1.69 m | A=15.06 m² |
| L | 8.92 m | |
| Clearing (Collector 113F.40 - 113F.38) | | |
| W | 4.47 m | A=9.48 m² |
| L | 2.12 m | |
| (Collector PVC) Downstream 113F.35 - 113F.38 | | |
| D | 0.15 m | Excavation |
| W1 | 3.24 m | A=4.58 m ² |
| W2 | 2.19 m | Backfill Zone B |
| H | 2.087 m | A=1.73 m ² |
| H/2 | 1.0435 m | Backfill Zone C |
| EL. A | 14.869 m | A=2.83 m ² |
| EL. B | 12.782 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 3.01 m | A=3.87 m ² |
| W2 | 2.08 m | Backfill Zone B |
| H | 1.862 m | A=1.49 m ² |
| H/2 | 0.931 m | Backfill Zone C |
| EL. A | 14.868 m | A=2.37 m ² |
| EL. B | 13.006 m | |
| (Collector PVC) Downstream 113F.42 - 113F.40 | | |
| D | 0.15 m | Excavation |
| W1 | 1.78 m | A=0.92 m ² |
| W2 | 1.46 m | Backfill Zone B |
| H | 0.629 m | A=0.39 m ² |
| H/2 | 0.3145 m | Backfill Zone C |
| EL. A | 14.869 m | A=0.51 m ² |
| EL. B | 14.24 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 1.60 m | A=0.62 m ² |
| W2 | 1.38 m | Backfill Zone B |
| H | 0.45 m | A=0.27 m ² |
| H/2 | 0.225 m | Backfill Zone C |
| EL. A | 14.869 m | A=0.33 m ² |
| EL. B | 14.419 m | |
| (Collector Steel) Downstream 113F.40 - 113F.38 | | |
| D | 0.05 m | Excavation |
| W1 | 4.50 m | A=9.56 m ² |
| W2 | 2.77 m | Backfill Zone B |
| H | 3.448 m | A=3.29 m ² |
| H/2 | 1.724 m | Backfill Zone C |
| EL. A | 14.869 m | A=6.27 m ² |
| EL. B | 11.421 m | |
| (Collector Steel) Upstream | | |
| D | 0.05 m | Excavation |
| W1 | 4.45 m | A=9.33 m ² |
| W2 | 2.75 m | Backfill Zone B |
| H | 3.395 m | A=3.22 m ² |
| H/2 | 1.6975 m | Backfill Zone C |
| EL. A | 14.869 m | A=6.10 m ² |
| EL. B | 11.474 m | |
| Collector PVC 113F.35 - 113F.38 Volume | | |
| Excavation | 48.35486 m³ | |
| Backfill Zone B | 18.38142 m³ | |
| Backfill Zone C | 29.77125 m³ | |
| Collector PVC 113F.42 - 113F.40 Volume | | |
| Excavation | 7.00148 m³ | |
| Backfill Zone B | 3.000106 m³ | |
| Backfill Zone C | 3.840682 m³ | |
| Collector Steel 113F.40 - 113F.38 Volume | | |
| Excavation | 20.51703 m³ | |
| Backfill Zone B | 7.07574 m³ | |
| Backfill Zone C | 13.39868 m³ | |



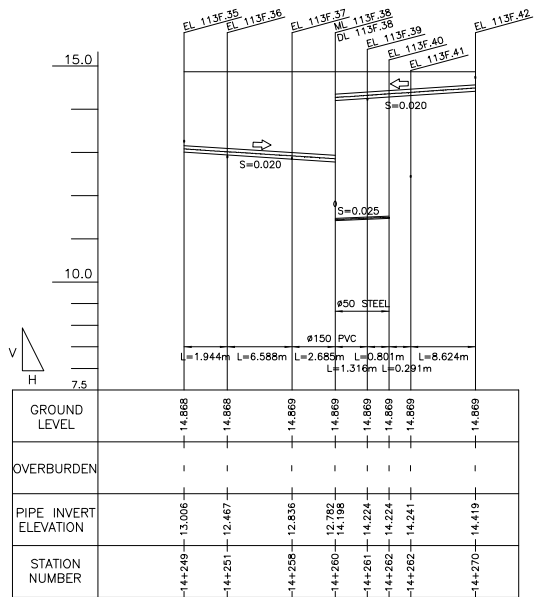
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.554



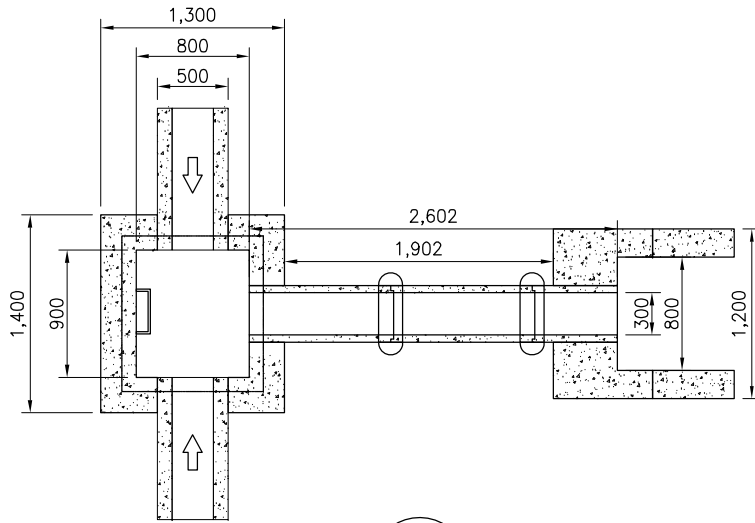
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

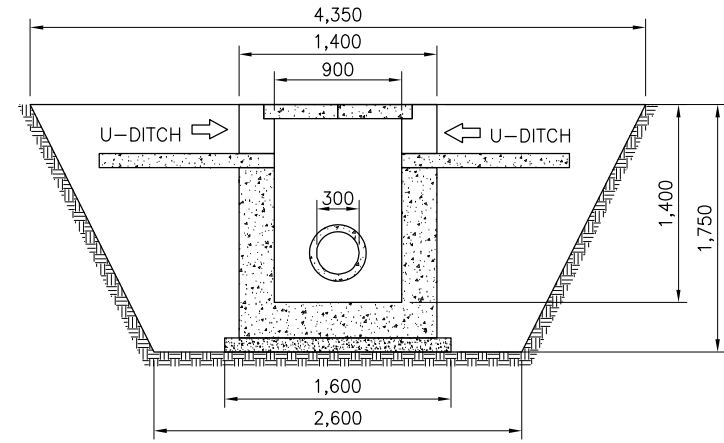
Manhole No.: ML 91.4

Location 10 + 247

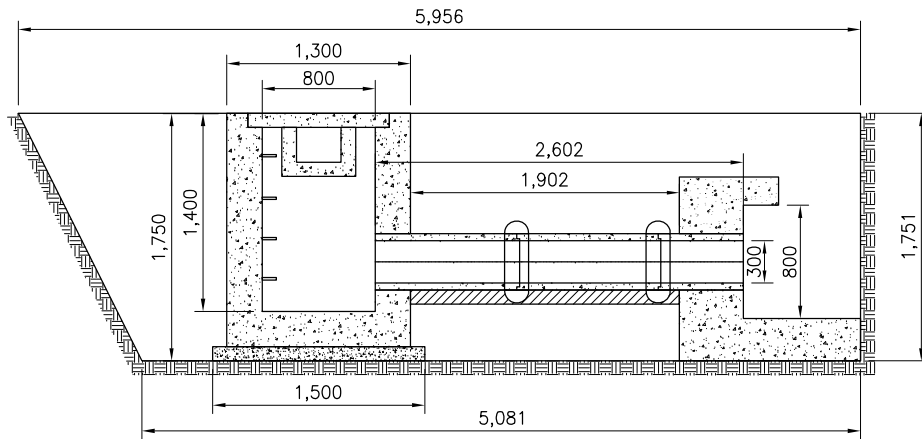
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|--|--|-----------------------------|---|-------------------------------|
| 1. Excavation | | A1=13.70 | 4.86 | 66.53 | |
| | | | | 66.53 | m ³ |
| 2. Lev. Concrete | W=1.50 L=1.60 | 2.40 | 0.1 | 0.24 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.40 | 1.82 | 0.25 | 0.46 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.40 Win=0.80 Lin=.90 | Aout=1.82 Ain=0.72 Anet=1.10 | 1.400 | 1.540 | m ³ |
| Minus | | | | | |
| D=0.44 | W=0.50 | 0.22 | 0.25 | 0.05 | |
| Pipe hole on Wall B | DiaB=0.00 | 0.00 | 0.25 | 0.00 | |
| D=0.45 | W=0.50 | 0.22 | 0.25 | 0.06 | |
| Pipe hole on Wall D | DiaD=0.40 | 0.13 | 0.25 | 0.03 | |
| Net Wall Vol. | | | | 1.40 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.00 | 1.1 | 0.1 | 0.11 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=4 | 0.000201062 | | 0.000120637 0.95 3.79 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.20 Lout=1.30 Win=0.80 Lin=.80 DiaD=0.40 | Ain=1.56 Aout=0.64 Apipe=.13 | 0.7 0.25 0.45 | 1.09 0.16 0.06 1.08 | m3 |
| 9. Outlet Pipe | Dia=.300m | L=2.60 | | 3 | pc |
| 10. Concrete Collar | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=2 | 0.04710504 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=.400m | L=1.90 | | 0.07608 | m3 |
| 12. Backfill | | | | 55.44 | m3 |



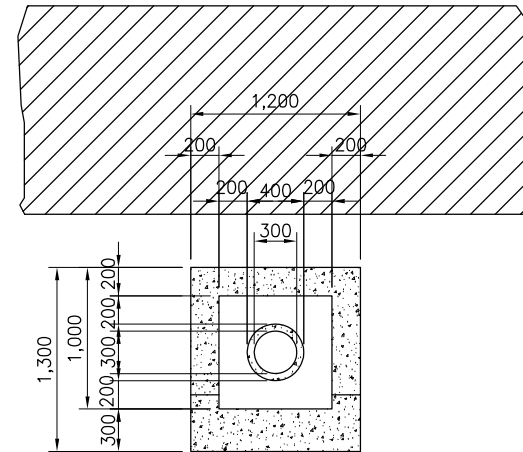
1 PLAN
SCALE A



3 SECTION (JL91.4)
SCALE A



2 SECTION
SCALE A

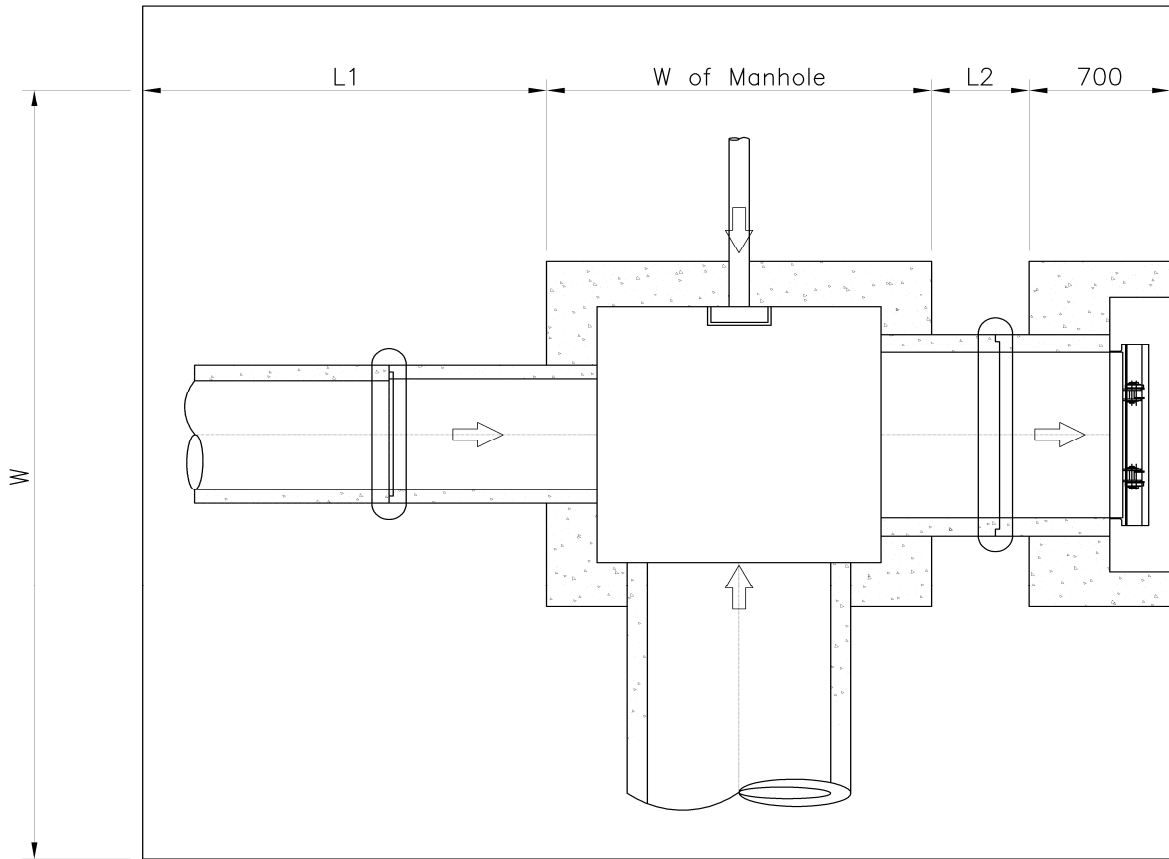


4 ELEVATION
SCALE A

Clearing (Manhole 91.4)

| | |
|--------------|---------|
| L1 | 1.475 m |
| W of Manhole | 1.3 m |
| L2 | 1.902 m |
| W | 4.35 m |

A=23.39 m²

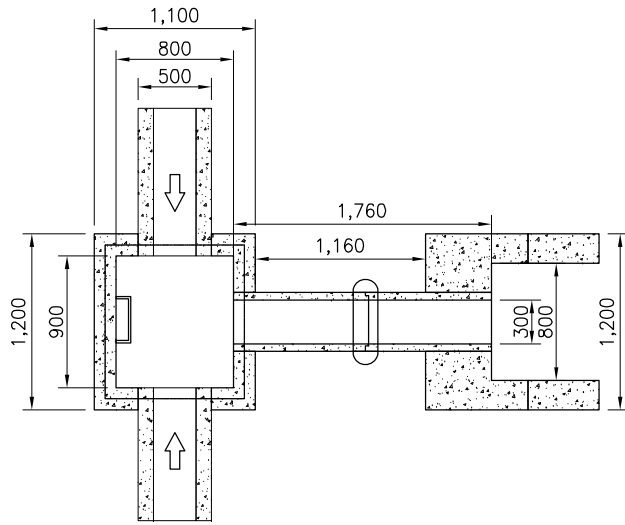


QUANTITIES OF MANHOLE

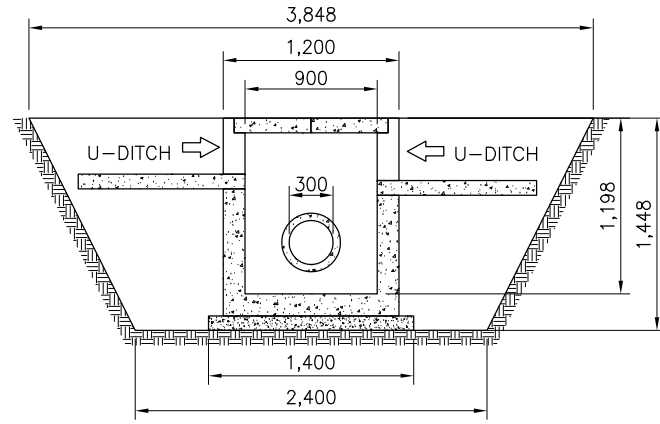
Manhole No.: ML 91.8

Location 10 + 300

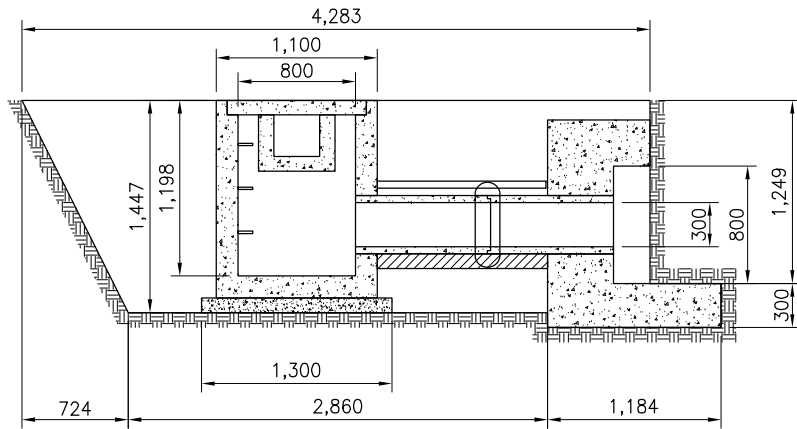
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|--|--|-----------------------------|---|-------------------------------|
| 1. Excavation | | A1=13.70 | 4.86 | 66.53 | |
| | | | | 66.53 | m ³ |
| 2. Lev. Concrete | W=1.30 L=1.40 | 1.82 | 0.1 | 0.18 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.20 | 1.32 | 0.15 | 0.20 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.20 Win=0.80 Lin=.90 | Aout=1.32 Ain=0.72 Anet=0.60 | 1.198 | 0.719 | m ³ |
| Minus | | | | | |
| D=0.48 | W=0.50 | 0.24 | 0.15 | 0.06 | |
| Pipe hole on Wall B | DiaB=0.00 | 0.00 | 0.15 | 0.00 | |
| D=0.53 | W=0.50 | 0.26 | 0.15 | 0.07 | |
| Pipe hole on Wall D | DiaD=0.40 | 0.13 | 0.15 | 0.03 | |
| Net Wall Vol. | | | | 0.56 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.00 | 1.1 | 0.1 | 0.11 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=3 | 0.000201062 | | 0.000120637 0.95 2.84 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.20 Lout=1.42 Win=0.80 Lin=.80 DiaD=0.40 | Ain=1.70 Aout=0.64 Apipe=.13 | 0.7 0.25 0.45 | 1.19 0.16 0.06 1.18 | m3 |
| 9. Outlet Pipe | Dia=.300m | L=1.75 | | 2 | pc |
| 10. Concrete Collar | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=1 | 0.02355252 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=.400m | L=1.16 | | 0.0464 | m3 |
| 12. Backfill | | | | 55.44 | m3 |



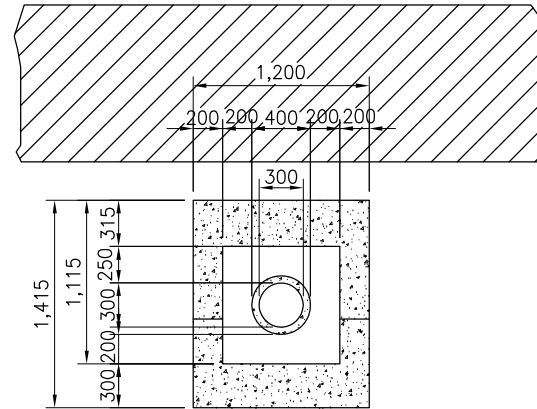
1 PLAN
SCALE A



3 SECTION (JL91.8)
SCALE A



2 SECTION
SCALE A

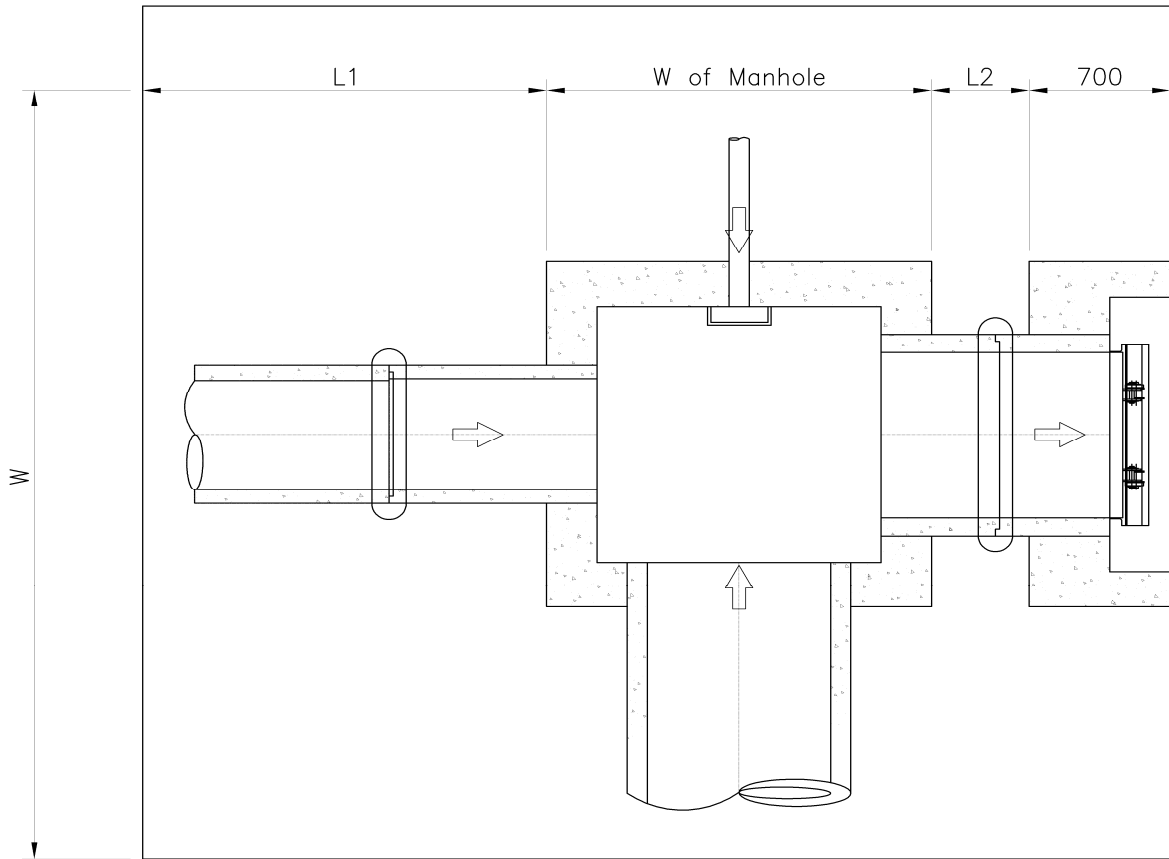


4 ELEVATION
SCALE A

Clearing (Manhole 91.4)

| | |
|--------------|---------|
| L1 | 1.324 m |
| W of Manhole | 1.1 m |
| L2 | 1.16 m |
| W | 4.048 m |

A=17.34 m²

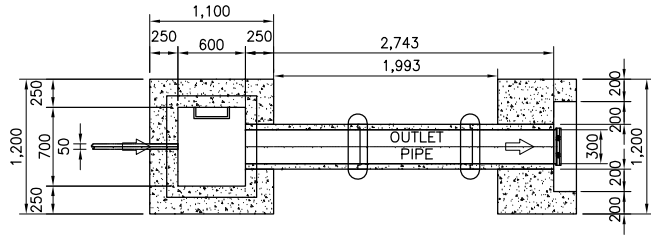


QUANTITIES OF MANHOLE

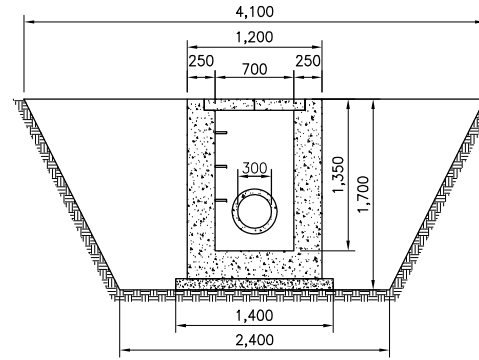
Manhole No.: ML 97.10

Location 11 + 618

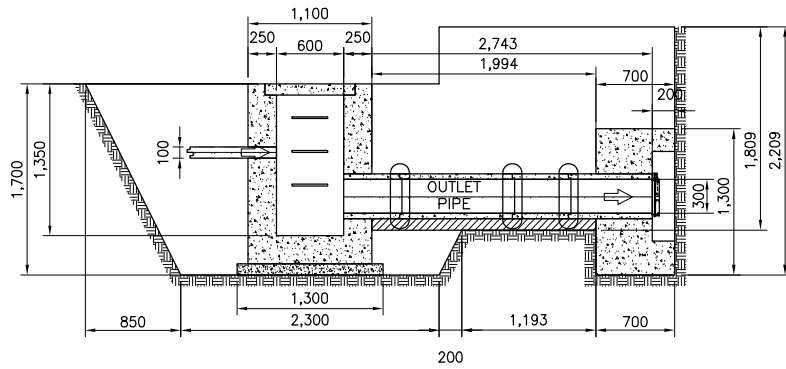
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|--|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=8.44 | 3.25 | 27.43 | |
| | | | | 27.43 | m ³ |
| 2. Lev. Concrete | W=1.10 L=1.20 | 1.32 | 0.1 | 0.13 | m ³ |
| 3. Bottom Slab | W=0.90 L=1.00 | 0.90 | 0.15 | 0.14 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=0.90 Lout=1.00 Win=0.60 Lin=.70 | Aout=0.90 Ain=0.42 Anet=0.48 | 1.350 | 0.648 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 D=0.10 W=0.05 | 0.00 0.01 | 0.15 0.15 | 0.00 0.00 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.15 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.40 | 0.13 | 0.15 | 0.03 | |
| Net Wall Vol. | | | | 0.62 | m ³ |
| 5. Conc. Cover | L=0.75 W=0.85 | 0.6375 | 0.1 | 0.06 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=4 | 0.000201062 | | 0.000120637 0.95 3.79 | m ³ kg/pc kg |
| 7. Flapgate | | | | 1 | pc |
| 8. Conc. Mouth | Wout=1.20 Lout=1.30 Win=0.80 Lin=.80 DiaD=0.40 | Ain=1.56 Aout=0.64 Apipe=.13 | 0.7 0.2 0.5 | 1.09 0.13 0.06 0.90 | m3 |
| 9. Outlet Pipe | Dia=.300m | L=2.64 | | 3 | pc |
| 10. Concrete Collar | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=2 | 0.04710504 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=.400m | L=1.99 | | 0.07976 | m3 |
| 12. Backfill | | | | 22.86 | m3 |



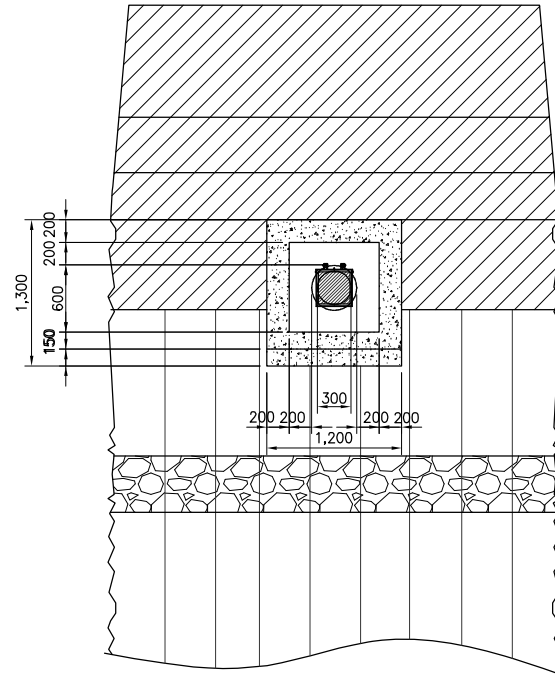
2 PLAN
SCALE B



4 SECTION (ML97.10)
SCALE B



3 SECTION
SCALE B

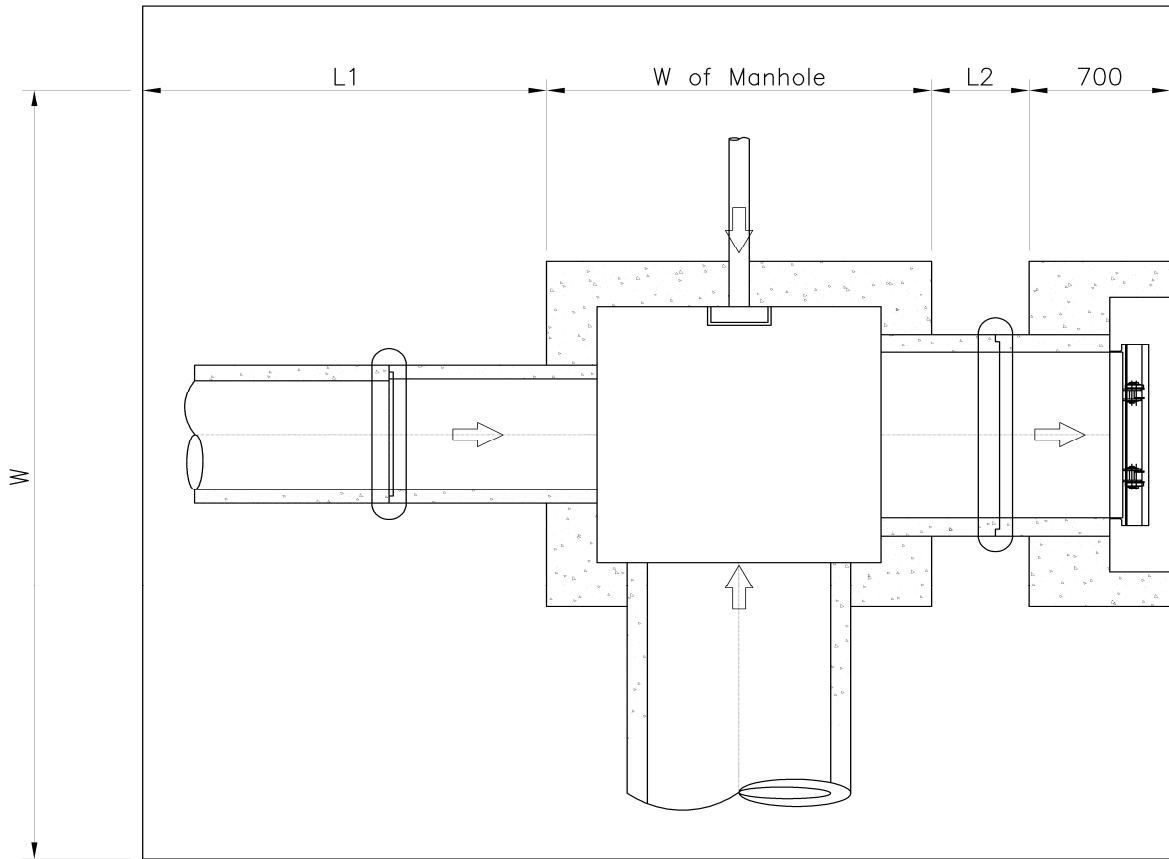


5 ELEVATION
SCALE B

Clearing (Manhole 97.10)

| | |
|--------------|---------|
| L1 | 1.4 m |
| W of Manhole | 0.9 m |
| L2 | 1.994 m |
| W | 3.8 m |

A=18.98 m²

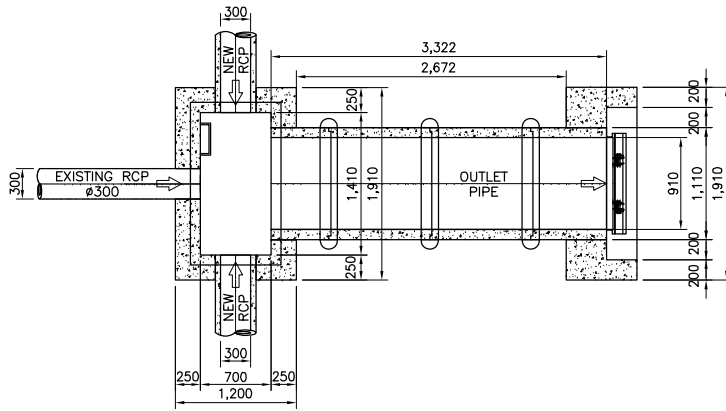


QUANTITIES OF MANHOLE

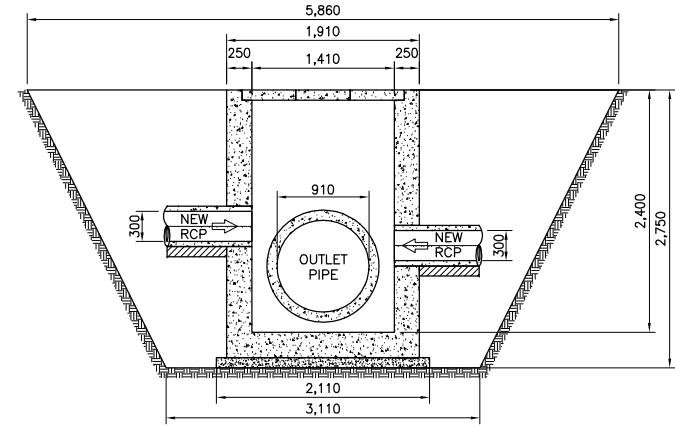
Manhole No.: ML 97.2

Location: 11 + 512

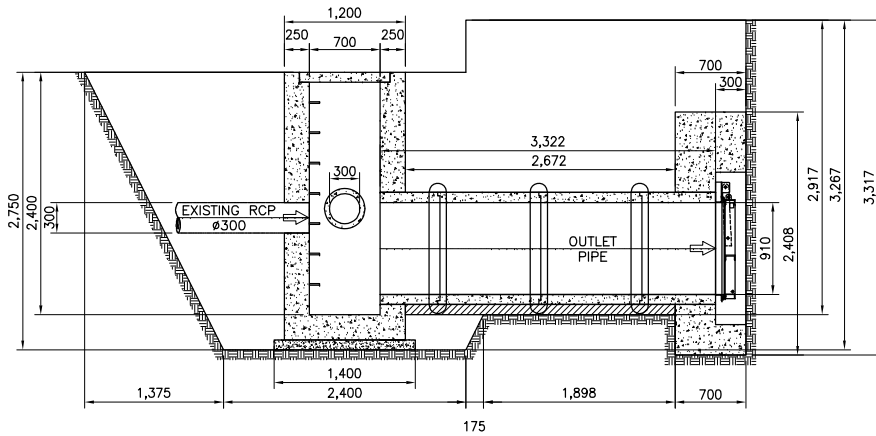
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=16.81 | 4.49 | 75.41 | |
| | | | | 75.41 | m ³ |
| 2. Lev. Concrete | W=1.40 L=2.11 | 2.95 | 0.1 | 0.30 | m ³ |
| 3. Bottom Slab | W=1.20 L=1.91 | 2.29 | 0.25 | 0.57 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.20 Lout=1.91 Win=0.70 Lin=1.41 | Aout=2.29 Ain=0.99 Anet=1.31 | 2.400 | 3.132 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 2.80 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.90 | 1.449 | 0.1 | 0.14 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 1 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.41 Win=1.51 Lin=1.51 DiaD=1.11 | Ain=4.60 Aout=2.28 Apipe=.97 | 0.7 0.3 0.4 | 3.22 0.68 0.39 2.15 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=3.32 | | 4 | pc |
| 11. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=3 | 0.173038923 | m3 |
| 12. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=2.67 | | 0.296592 | m3 |
| 13. Backfill | | | | 62.84 | m3 |



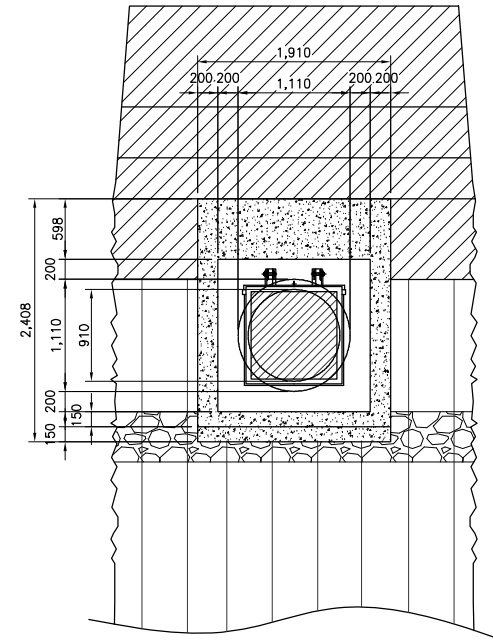
1 PLAN
SCALE A



3 SECTION (ML97.2)
SCALE A



2 SECTION
SCALE A



4 ELEVATION
SCALE A

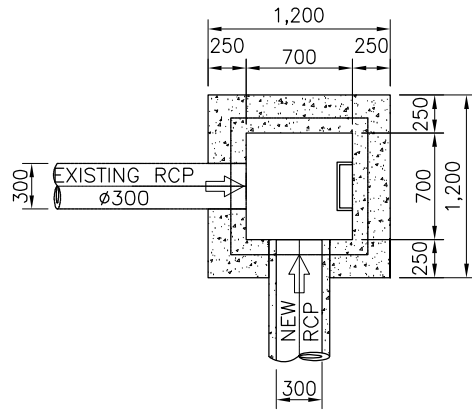
3.565

QUANTITIES OF MANHOLE

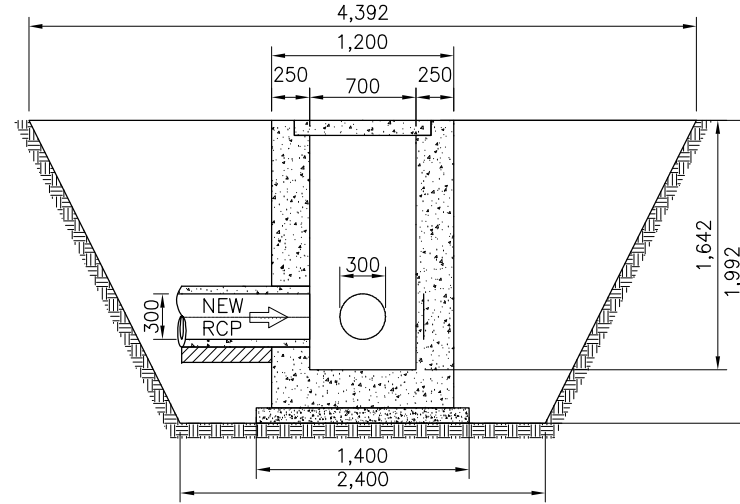
Manhole No.: ML 97.1

Location: 11 + 500

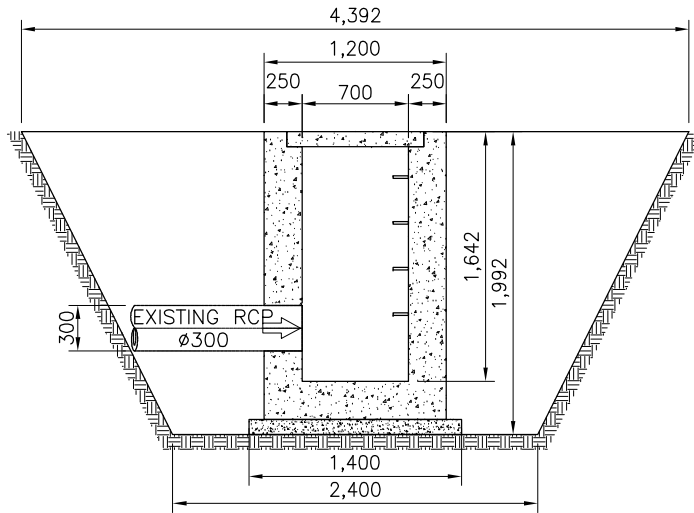
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=6.76 | 3.40 | 22.97 | |
| | | | | 22.97 | m ³ m ³ |
| 2. Lev. Concrete | W=1.40 L=1.40 | 1.96 | 0.1 | 0.20 | m ³ |
| 3. Bottom Slab | W=1.20 L=1.20 | 1.44 | 0.25 | 0.36 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.20 Lout=1.20 Win=0.70 Lin=.70 | Aout=1.44 Ain=0.49 Anet=0.95 | 1.642 | 1.560 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 1.50 | m ³ |
| 5. Conc. Cover | L=0.90 W=0.90 | 0.81 | 0.1 | 0.08 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=5 | 0.000201062 | | 0.000120637 0.95 4.74 | m ³ kg/pc kg |
| 7. Backfill | | | | 19.14 | m ³ |



3 PLAN
SCALE C



5 SECTION (ML97.1)
SCALE C



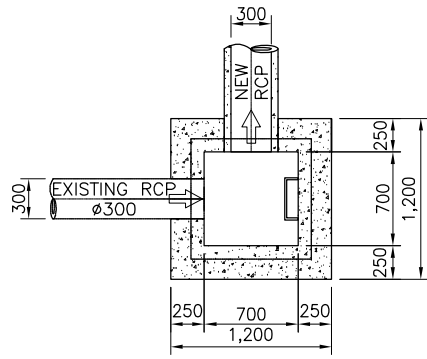
4 SECTION
SCALE C

QUANTITIES OF MANHOLE

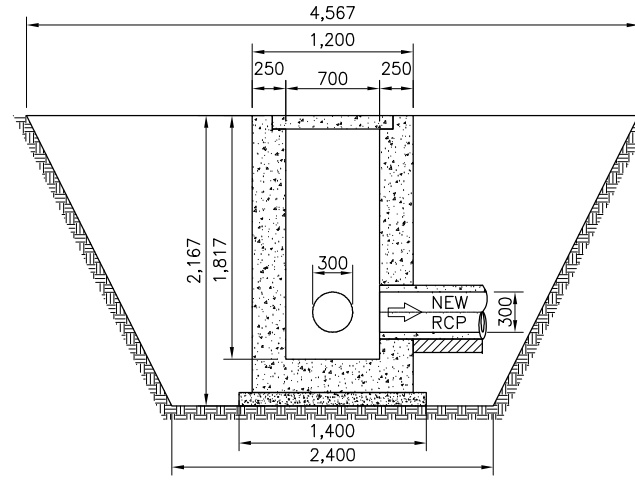
Manhole No.: ML 97.3

Location: 11 + 514

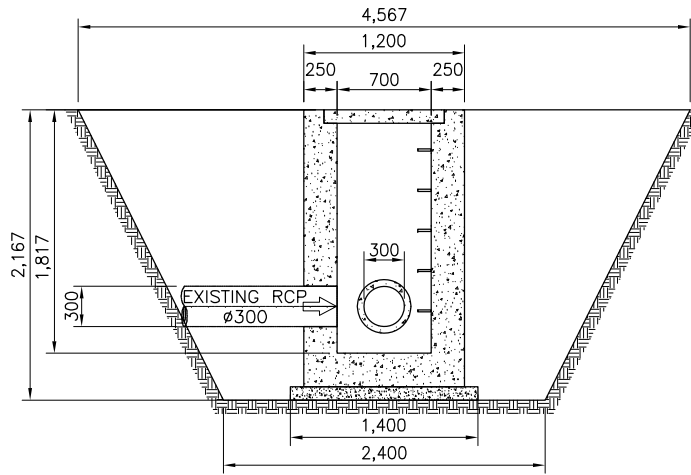
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=7.55 | 3.48 | 26.30 | |
| | | | | 26.30 | m ³ m ³ |
| 2. Lev. Concrete | W=1.40 L=1.40 | 1.96 | 0.1 | 0.20 | m ³ |
| 3. Bottom Slab | W=1.20 L=1.20 | 1.44 | 0.25 | 0.36 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.20 Lout=1.20 Win=0.70 Lin=.70 | Aout=1.44 Ain=0.49 Anet=0.95 | 1.817 | 1.726 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 1.66 | m ³ |
| 5. Conc. Cover | L=0.90 W=0.90 | 0.81 | 0.1 | 0.08 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Backfill | | | | 21.91 | m ³ |



1 PLAN
SCALE A



3 SECTION (ML97.3)
SCALE A



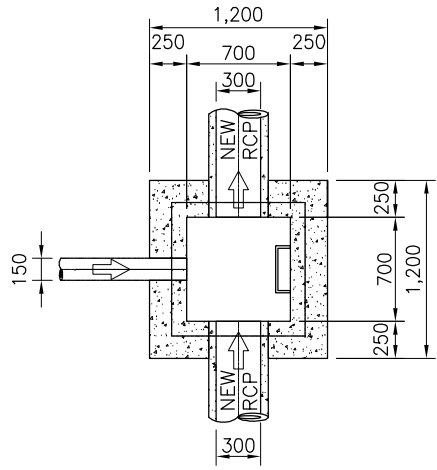
2 SECTION
SCALE A

QUANTITIES OF MANHOLE

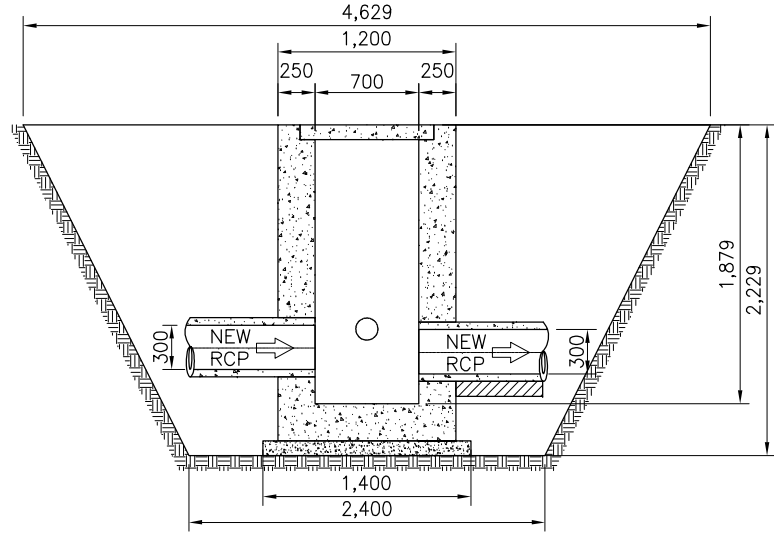
Manhole No.: ML 97.4

Location: 11 + 521

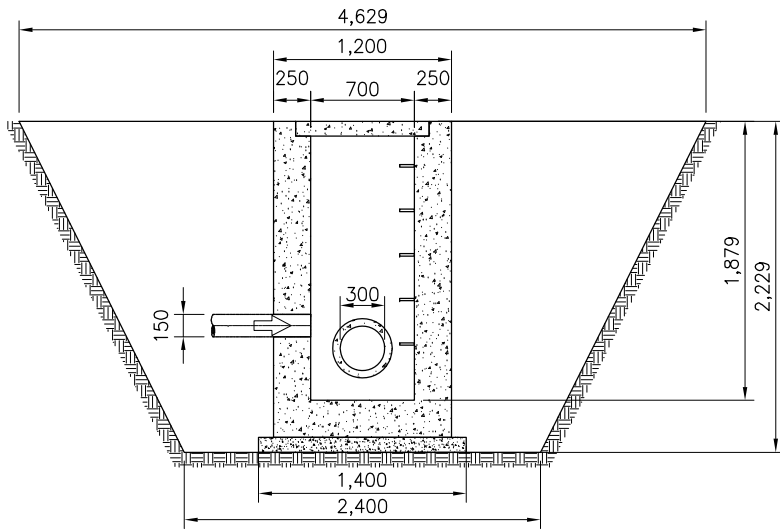
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=7.83 | 3.51 | 27.53 | |
| | | | | 27.53 | m ³ m ³ |
| 2. Lev. Concrete | W=1.40 L=1.40 | 1.96 | 0.1 | 0.20 | m ³ |
| 3. Bottom Slab | W=1.20 L=1.20 | 1.44 | 0.25 | 0.36 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.20 Lout=1.20 Win=0.70 Lin=.70 | Aout=1.44 Ain=0.49 Anet=0.95 | 1.879 | 1.785 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall B | DiaB=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 1.72 | m ³ |
| 5. Conc. Cover | L=0.90 W=0.90 | 0.81 | 0.1 | 0.08 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Backfill | | | | 22.94 | m ³ |



4 PLAN
SCALE A



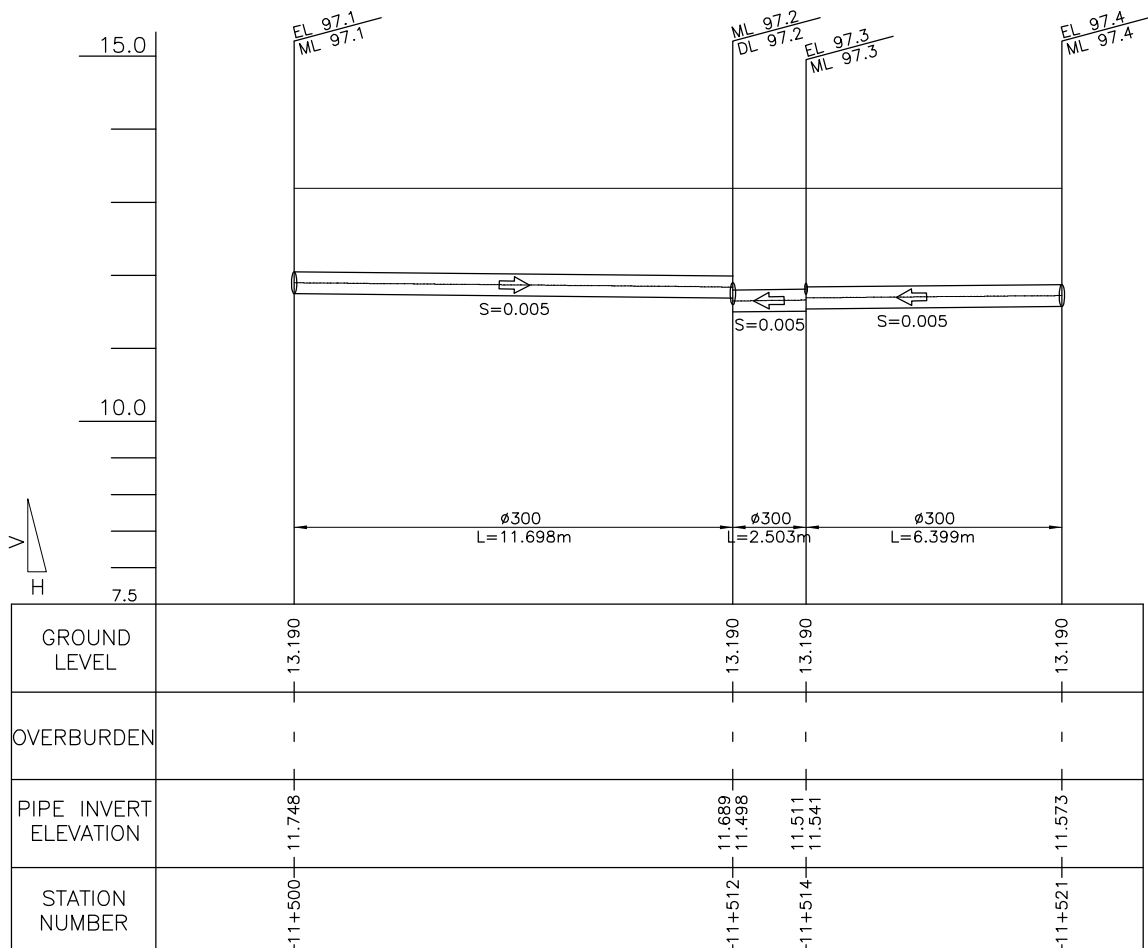
6 SECTION (ML97.4)
SCALE A



5 SECTION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|-----------|----------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.30 | | L=20.70 | 21 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=0.30 | L=20.70 | 0.1 | 0.62 | m ³ |
| 3. Conc. Collar | D1=.400m | A1=0.13 | 0.17 | 0.47 | m ³ |
| | D2=.580m | A2=0.26 | | | |
| | | Anet=0.14 | Qty=20 | | |
| 4. Formworks | | | | 7.64 | m ³ |



| | | |
|---|----------|------------------------------|
| Clearing (Manhole 97.2) | | |
| L1 | 1.975 m | |
| W of Manhole | 1.91 m | A=42.53 m² |
| L2 | 2.672 m | |
| W | 5.86 m | |
| Clearing (Manhole 97.4) | | |
| W | 4.629 m | A=21.43 m² |
| L | 4.629 m | |
| Clearing (Manhole 97.3) | | |
| W | 4.567 m | A=20.86 m² |
| L | 4.567 m | |
| Clearing (Manhole 97.1) | | |
| W | 4.392 m | A=19.29 m² |
| L | 4.392 m | |
| Clearing (Collector 97.4 - 97.3) | | |
| W | 3.233 m | A=20.69 m² |
| L | 6.399 m | |
| Clearing (Collector 97.3 - 97.2) | | |
| W | 3.2855 m | A=8.22 m² |
| L | 2.503 m | |
| Clearing (Collector 97.1 - 97.2) | | |
| W | 3.0715 m | A=35.93 m² |
| L | 11.698 m | |
| (Collector Pipe) Downstream 97.4 - 97.3 | | Excavation |
| Do | 0.4 m | A=4.30 m ² |
| Di | 0.3 m | Backfill Zone B |
| tpipe | 0.05 m | A=1.52 m ² |
| H | 1.849 m | Backfill Zone C |
| EL. A | 13.19 m | A=1.54 m ² |
| EL. B | 11.541 m | |
| W | 3.249 m | |
| (Collector Pipe) Upstream | | Excavation |
| Do | 0.4 m | A=4.19 m ² |
| Di | 0.3 m | Backfill Zone B |
| tpipe | 0.05 m | A=1.48 m ² |
| H | 1.817 m | Backfill Zone C |
| EL. A | 13.19 m | A=1.50 m ² |
| EL. B | 11.573 m | |
| W | 3.217 m | |

| | | |
|-----------------------------|-------------|-----------------------|
| (Collector Pipe) Downstream | 97.3 - 97.2 | Excavation |
| Do | 0.4 m | A=4.44 m ² |
| Di | 0.3 m | Backfill Zone B |
| tpipe | 0.05 m | A=1.57 m ² |
| H | 1.892 m | Backfill Zone C |
| EL. A | 13.19 m | A=1.58 m ² |
| EL. B | 11.498 m | |
| W | 3.292 m | |

| | | |
|---------------------------|----------|-----------------------|
| (Collector Pipe) Upstream | | Excavation |
| Do | 0.4 m | A=4.40 m ² |
| Di | 0.3 m | Backfill Zone B |
| tpipe | 0.05 m | A=1.55 m ² |
| H | 1.879 m | Backfill Zone C |
| EL. A | 13.19 m | A=1.57 m ² |
| EL. B | 11.511 m | |
| W | 3.279 m | |

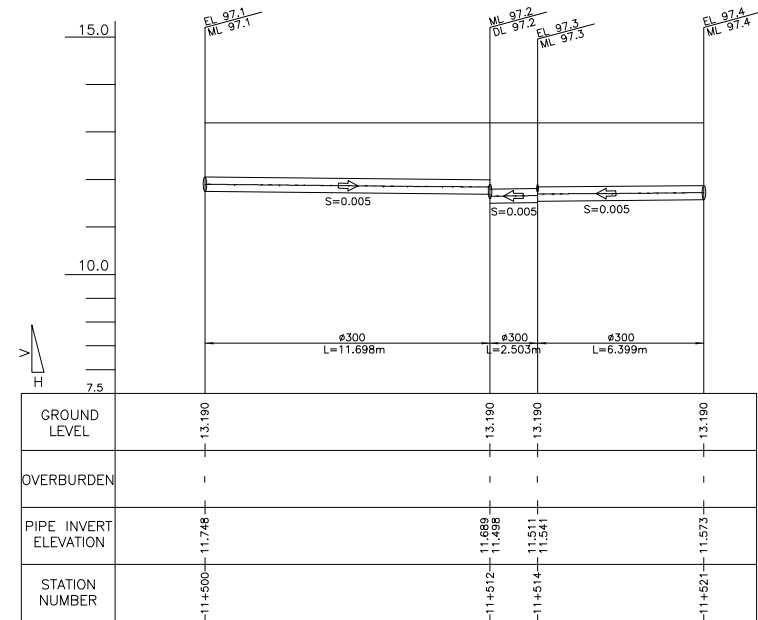
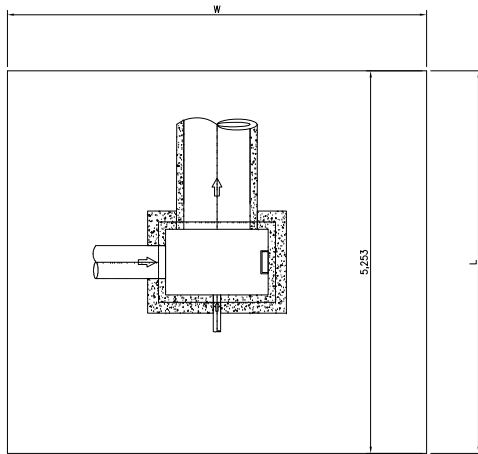
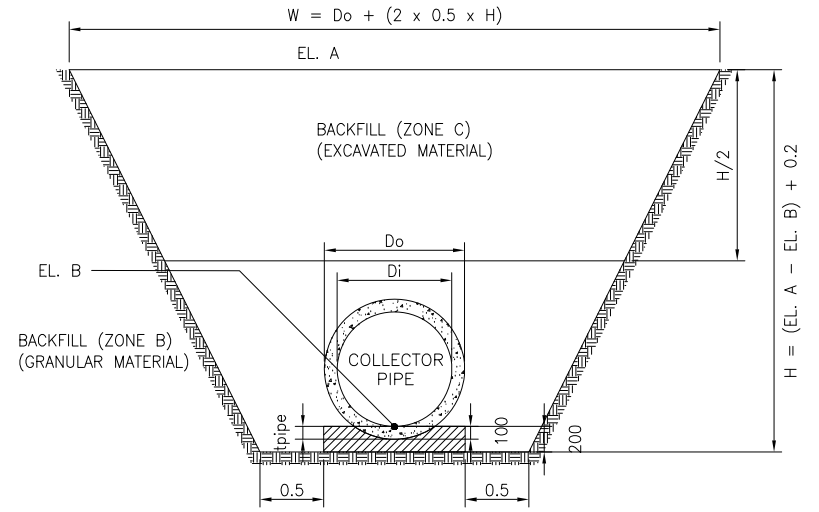
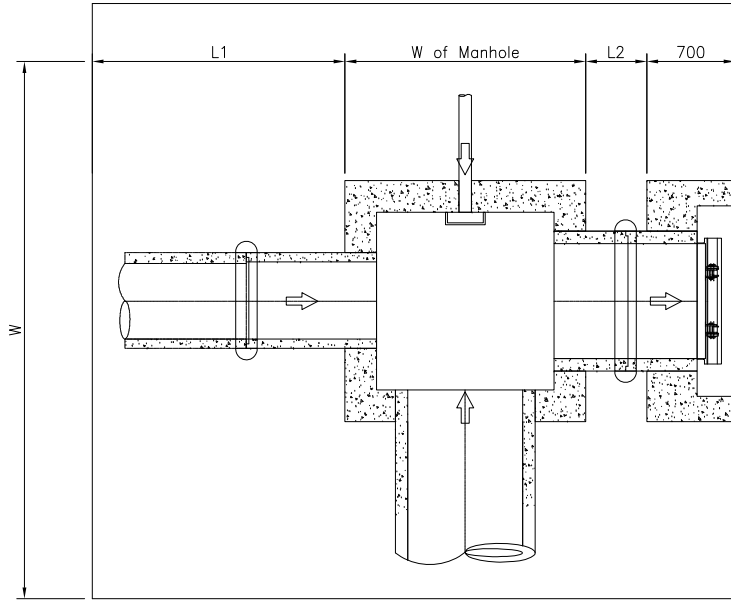
| | | |
|-----------------------------|-------------|-----------------------|
| (Collector Pipe) Downstream | 97.1 - 97.2 | Excavation |
| Do | 0.4 m | A=3.83 m ² |
| Di | 0.3 m | Backfill Zone B |
| tpipe | 0.05 m | A=1.35 m ² |
| H | 1.701 m | Backfill Zone C |
| EL. A | 13.19 m | A=1.38 m ² |
| EL. B | 11.689 m | |
| W | 3.101 m | |

| | | |
|---------------------------|----------|-----------------------|
| (Collector Pipe) Upstream | | Excavation |
| Do | 0.4 m | A=3.65 m ² |
| Di | 0.3 m | Backfill Zone B |
| tpipe | 0.05 m | A=1.28 m ² |
| H | 1.642 m | Backfill Zone C |
| EL. A | 13.19 m | A=1.32 m ² |
| EL. B | 11.748 m | |
| W | 3.042 m | |

| | |
|----------------------------|--------------------------------|
| Collector Pipe 97.4 - 97.3 | Volume |
| Excavation | 27.30776 m ³ |
| Backfill Zone B | 9.630122 m ³ |
| Backfill Zone C | 9.773943 m ³ |

| | |
|----------------------------|--------------------------------|
| Collector Pipe 97.3 - 97.2 | Volume |
| Excavation | 11.11172 m ³ |
| Backfill Zone B | 3.920632 m ³ |
| Backfill Zone C | 3.963682 m ³ |

| | |
|-----------------------------|--------------------------------|
| Collector Steel 97.1 - 97.2 | Volume |
| Excavation | 43.93978 m ³ |
| Backfill Zone B | 15.4449 m ³ |
| Backfill Zone C | 15.89769 m ³ |

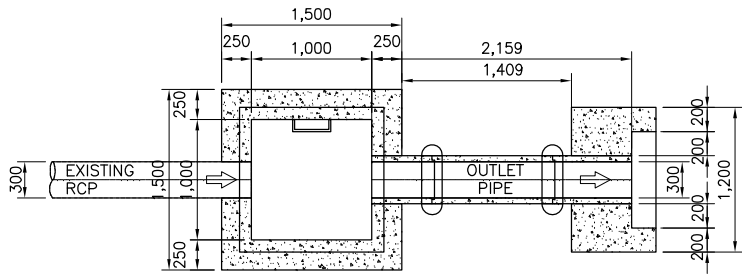


QUANTITIES OF MANHOLE

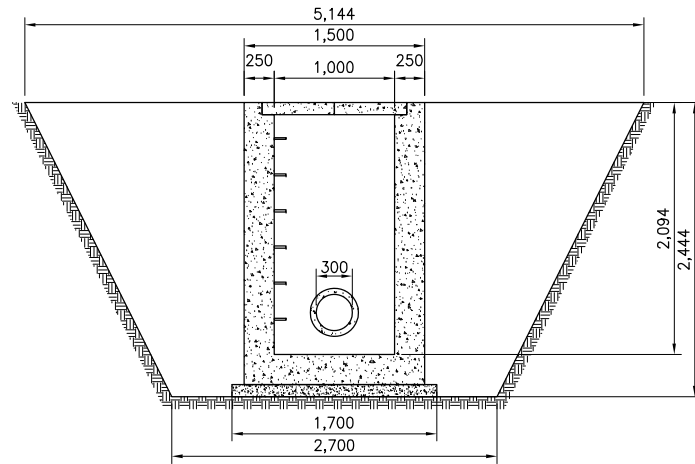
Manhole No.: ML 97.5

Location: 11 + 529

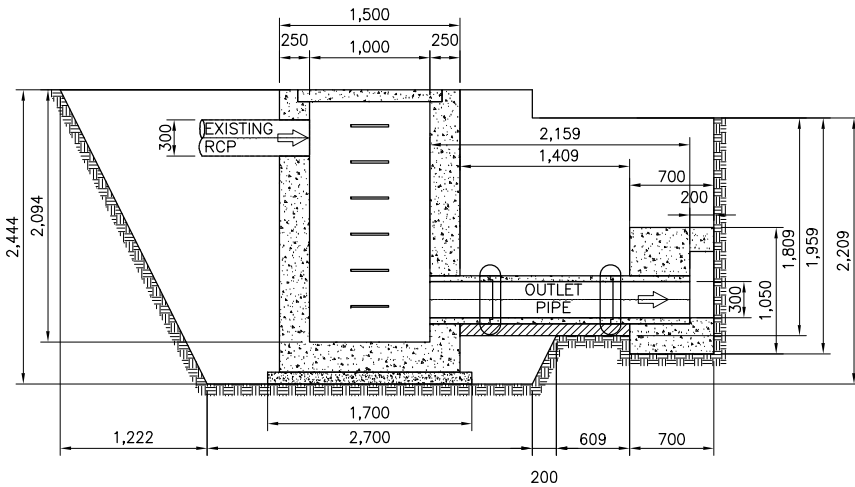
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|---------------------------|------------------------------|----------------|
| 1. Excavation | | A1=1.22 | 1.35 | 1.65 | |
| | | | | 1.65 | m ³ |
| 2. Flapgate | | | | 1 | pc |
| 3. Conc. Mouth | Wout=1.70 Lout=2.30 Win=1.30 Lin=1.40 DiaD=0.90 | Ain=3.92 Aout=1.82 Apipe=.64 | 0.7 0.3 0.4 | 2.74 0.55 0.25 | |
| | | | | 1.94 | m3 |
| 4. Outlet Pipe | D1=1.470m D2=1.830m | A1=1.70 A2=2.63 Anet=0.93 | 1.308 | 1.22 | m3 |
| 6. Conc. Bedding (Outlet Pipe) | Dia=1.350m | L=1.31 | | 0.17658 | m3 |
| 7. Backfill | | | | 1.38 | m3 |



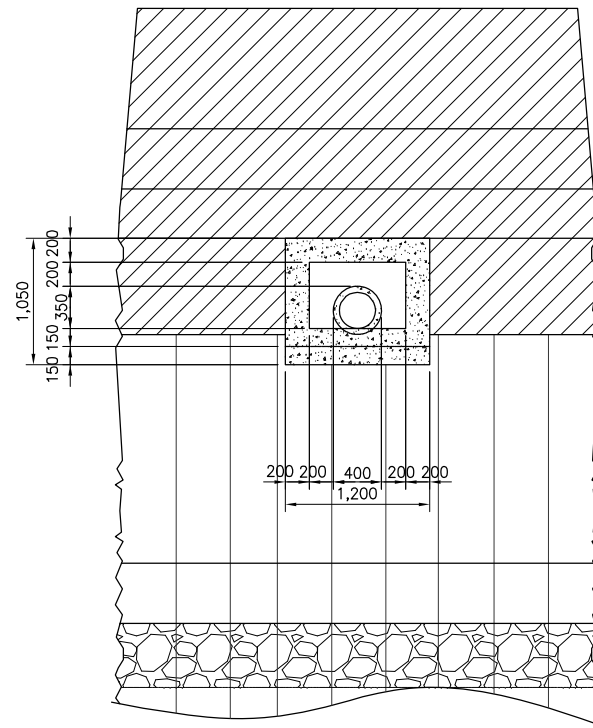
2 PLAN
SCALE B



4 SECTION (ML97.5)
SCALE B



3 SECTION
SCALE B



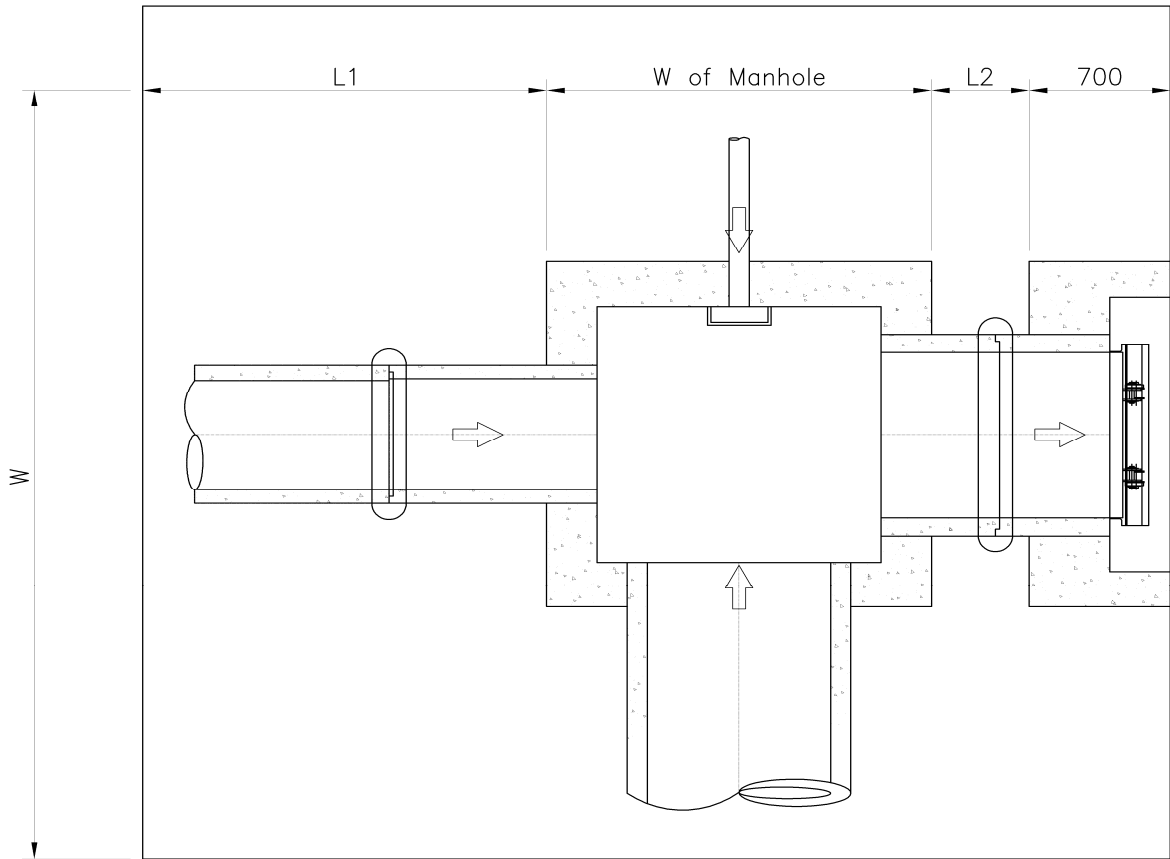
5 ELEVATION
SCALE B

3.577

Clearing (Manhole 97.5)

| | |
|--------------|---------|
| L1 | 0 m |
| W of Manhole | 0 m |
| L2 | 1.308 m |
| W | 1.35 m |

A=2.71 m²

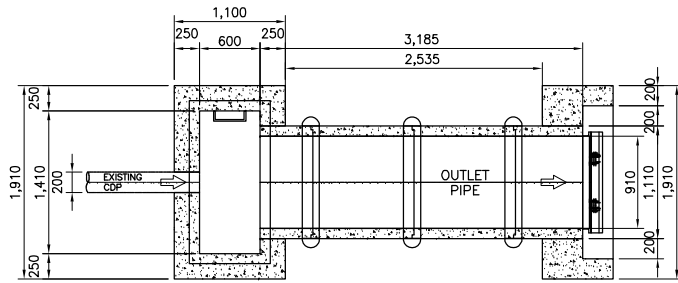


QUANTITIES OF MANHOLE

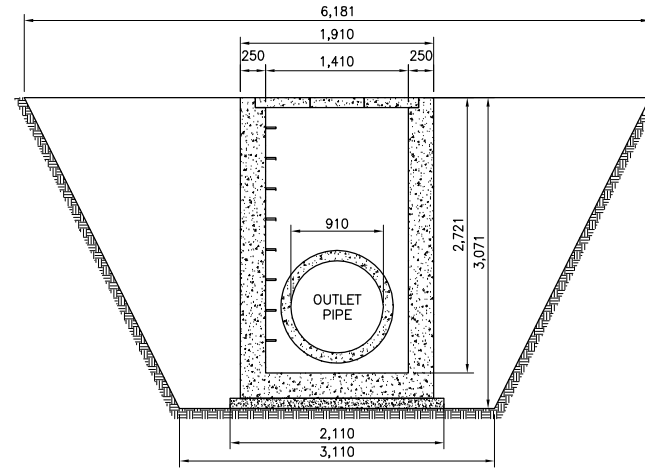
Manhole No.: ML 97.6

Location 11 + 550

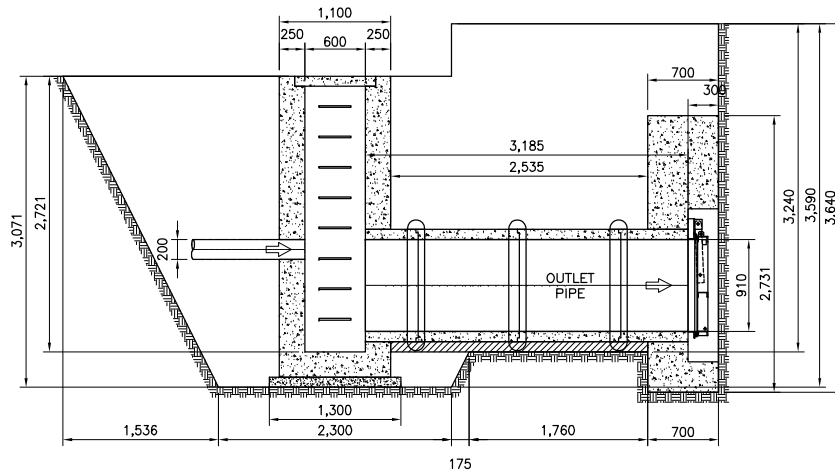
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=18.27 | 4.65 | 84.87 | |
| | | | | 84.87 | m ³ |
| 2. Lev. Concrete | W=1.30 L=2.11 | 2.74 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.91 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.91 Win=0.60 Lin=1.41 | Aout=2.10 Ain=0.85 Anet=1.26 | 2.721 | 3.415 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.30 | 0.07 | 0.25 | 0.02 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.16 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.80 | 1.288 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 1 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.73 Win=1.51 Lin=1.51 DiaD=1.11 | Ain=5.22 Aout=2.28 Apipe=.97 | 0.7 0.3 0.4 | 3.65 0.68 0.39 2.58 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=3.19 | | 4 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=3 | 0.173038923 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=2.54 | | 0.281385 | m3 |
| 12. Backfill | | | | 70.73 | m3 |



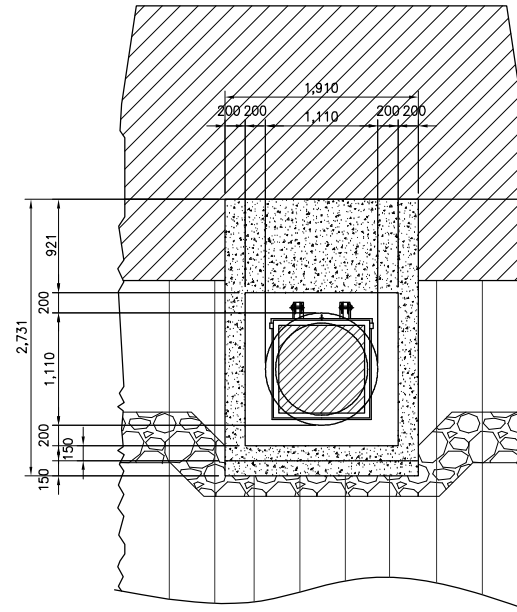
2 PLAN
SCALE B



4 SECTION (ML97.6)
SCALE B



3 SECTION
SCALE B

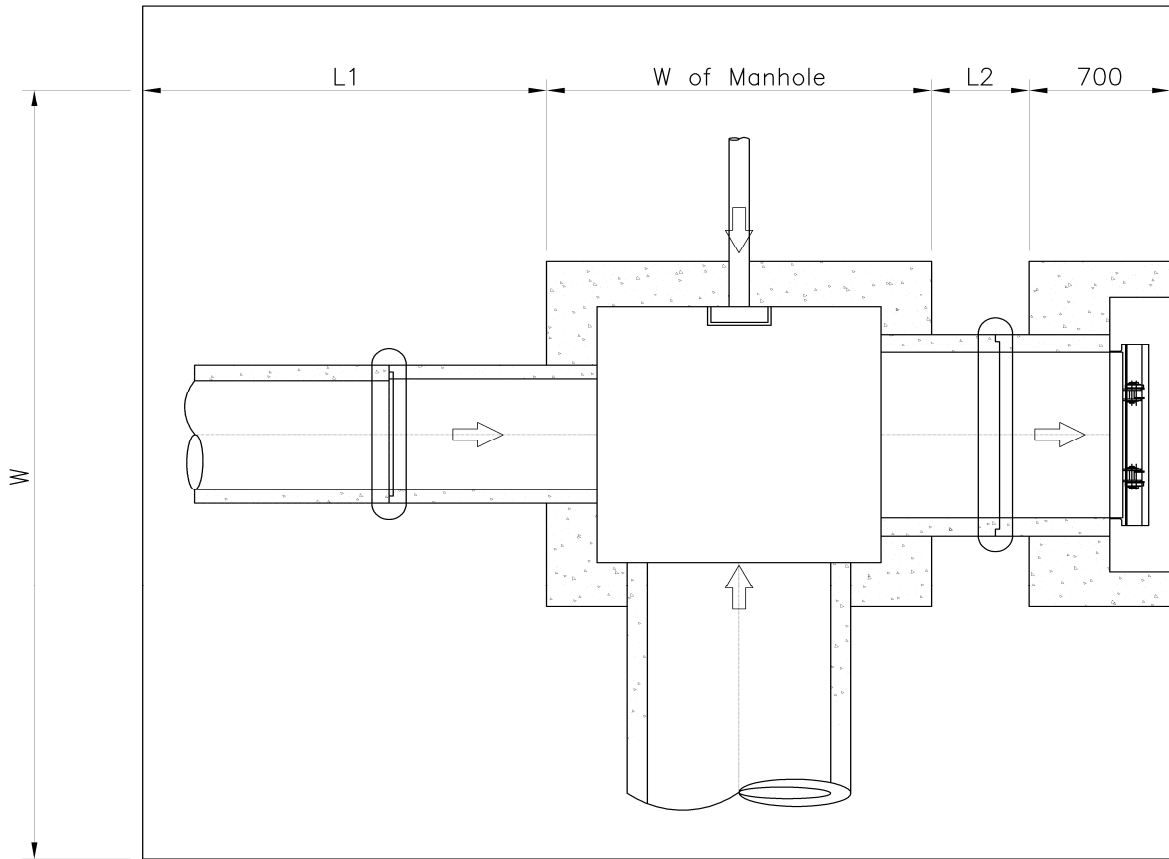


5 ELEVATION
SCALE B

Clearing (Manhole 97.6)

| | |
|--------------|----------|
| L1 | 2.1355 m |
| W of Manhole | 1.1 m |
| L2 | 2.535 m |
| W | 6.181 m |

A=39.99 m²

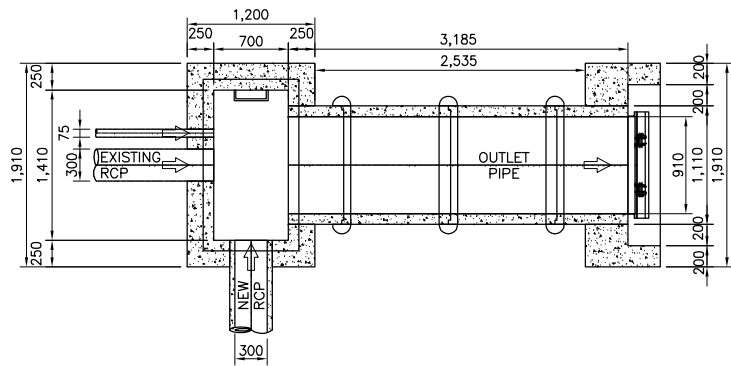


QUANTITIES OF MANHOLE

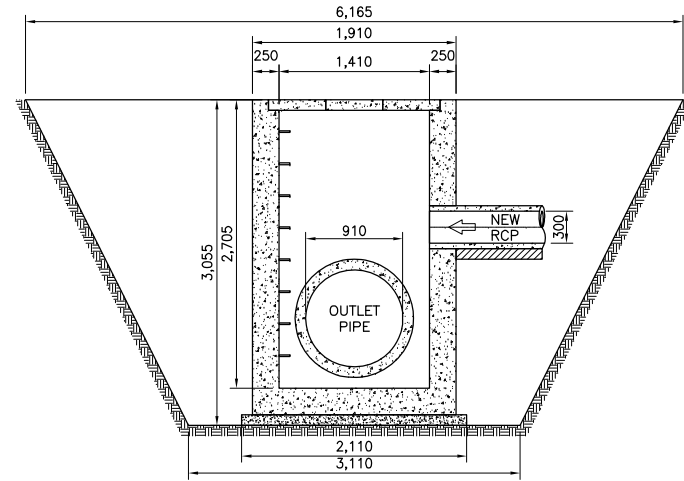
Manhole No.: ML 97.8

Location: 11 + 581

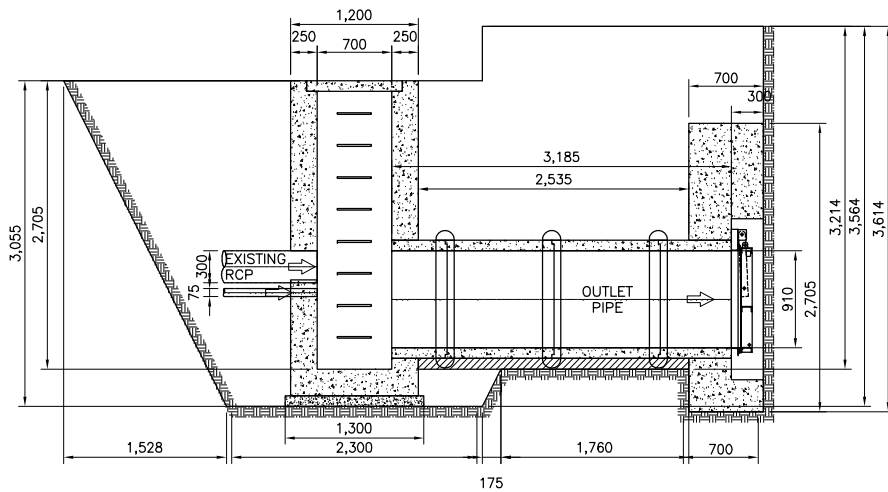
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=18.45 | 4.64 | 85.54 | |
| | | | | 85.54 | m ³ |
| 2. Lev. Concrete | W=1.40 L=2.11 | 2.95 | 0.1 | 0.30 | m ³ |
| 3. Bottom Slab | W=1.20 L=1.91 | 2.29 | 0.25 | 0.57 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.20 Lout=1.91 Win=0.70 Lin=1.41 | Aout=2.29 Ain=0.99 Anet=1.31 | 2.705 | 3.530 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.22 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.90 | 1.449 | 0.1 | 0.14 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 1 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.71 Win=1.51 Lin=1.51 DiaD=1.11 | Ain=5.17 Aout=2.28 Apipe=.97 | 0.7 0.3 0.4 | 3.62 0.68 0.39 2.55 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=3.19 | | 4 | pc |
| 11. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=3 | 0.173038923 | m3 |
| 12. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=2.54 | | 0.281385 | m3 |
| 13. Backfill | | | | 71.28 | m3 |



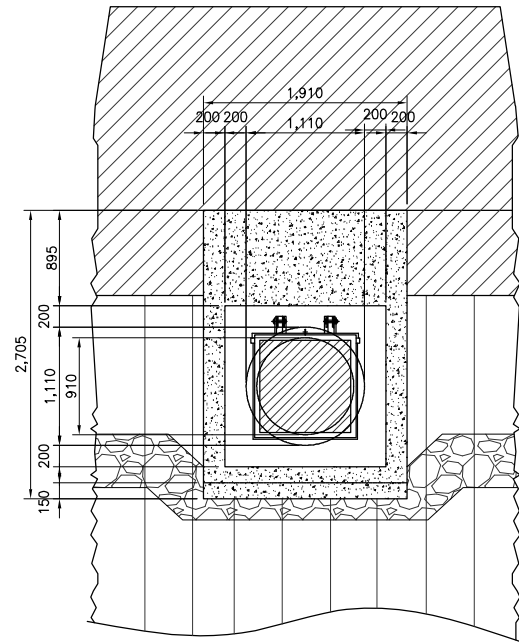
1 PLAN
SCALE A



3 SECTION (ML97.8)
SCALE A



2 SECTION
SCALE A



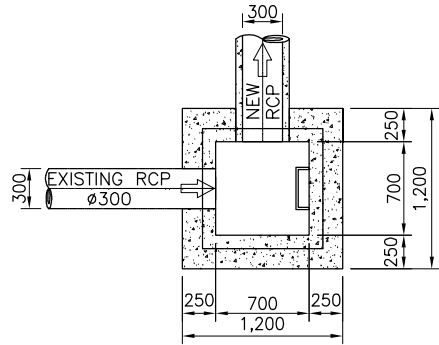
4 ELEVATION
SCALE A

QUANTITIES OF MANHOLE

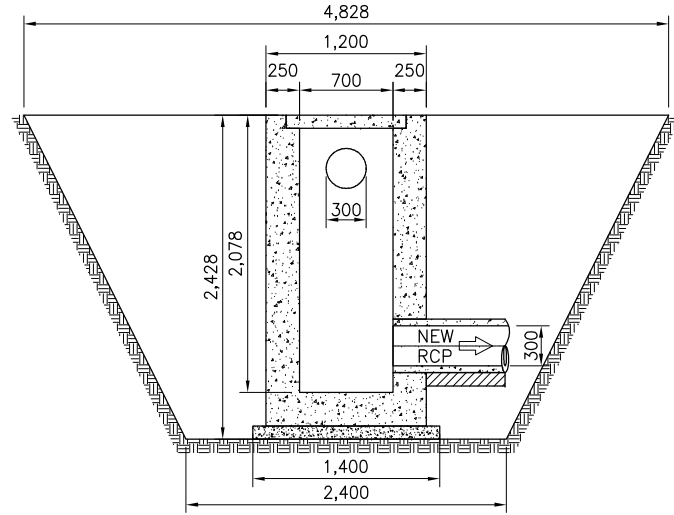
Manhole No.: ML 97.9

Location: 11 + 587

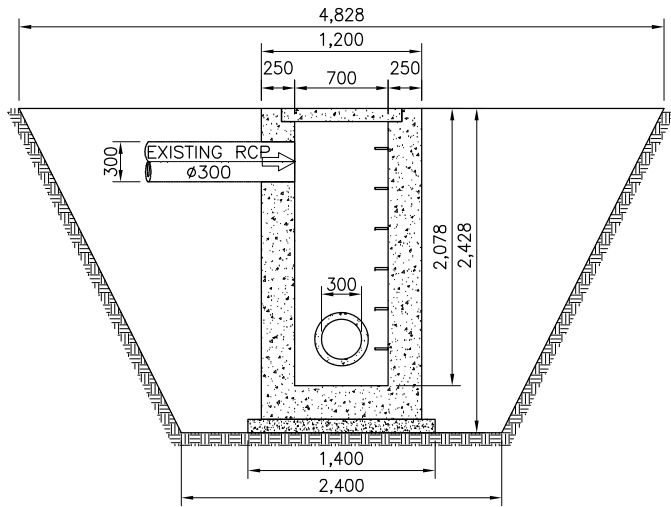
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=8.77 | 3.61 | 31.71 | |
| | | | | 31.71 | m ³ m ³ |
| 2. Lev. Concrete | W=1.40 L=1.40 | 1.96 | 0.1 | 0.20 | m ³ |
| 3. Bottom Slab | W=1.20 L=1.20 | 1.44 | 0.25 | 0.36 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.20 Lout=1.20 Win=0.70 Lin=.70 | Aout=1.44 Ain=0.49 Anet=0.95 | 2.078 | 1.974 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 1.91 | m ³ |
| 5. Conc. Cover | L=0.90 W=0.90 | 0.81 | 0.1 | 0.08 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Backfill | | | | 26.43 | m3 |



1 PLAN
SCALE C



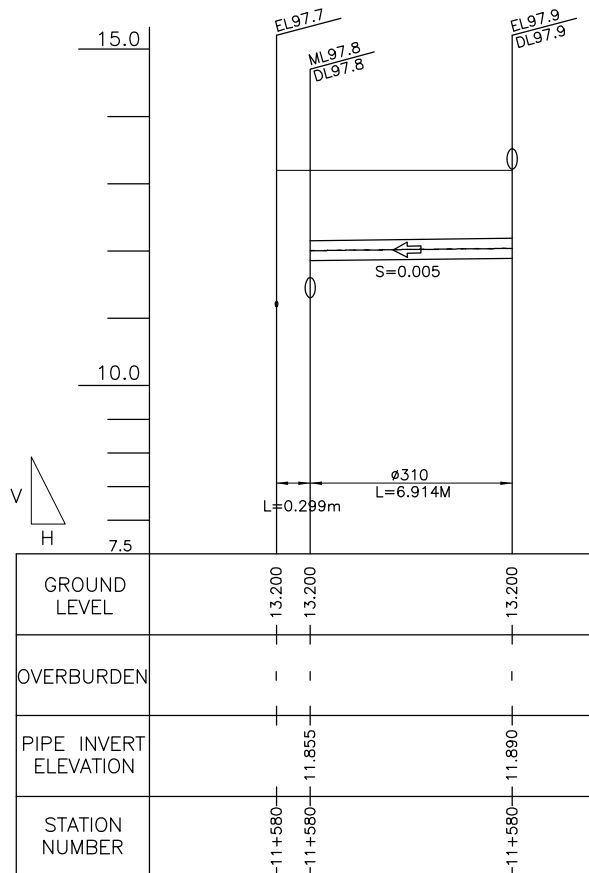
3 SECTION (ML97.9)
SCALE C



2 SECTION
SCALE C

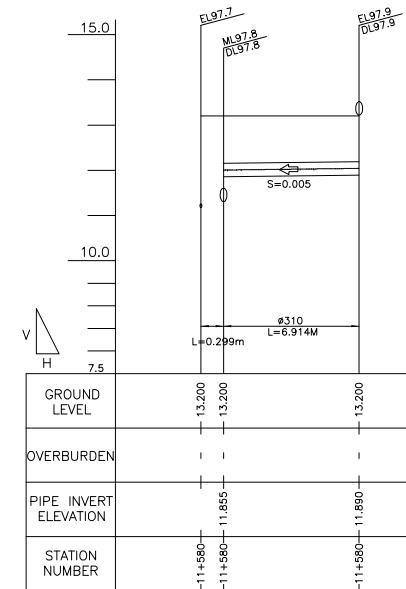
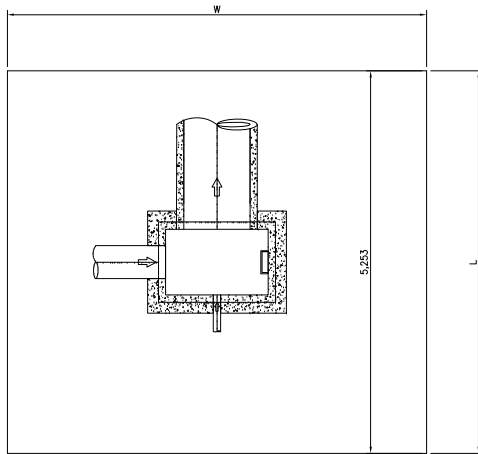
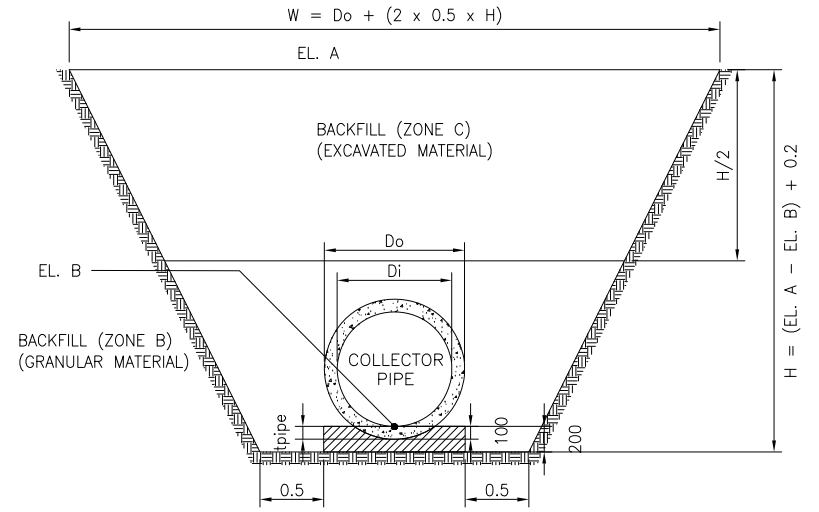
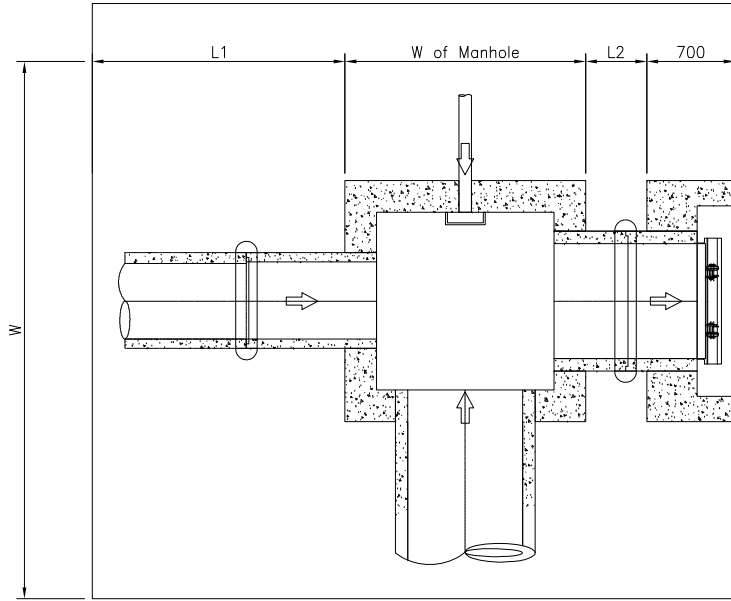
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|-----------|----------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.30 | | L=6.95 | 7 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=0.30 | L=6.95 | 0.1 | 0.21 | m ³ |
| 3. Conc. Collar | D1=.400m | A1=0.13 | 0.17 | 0.14 | m ³ |
| | D2=.580m | A2=0.26 | Qty=6 | | |
| 4. Formworks | | Anet=0.14 | | 2.45 | m ³ |



2 PROFILE
 SCALE B

| | | |
|----------------------------------|-------------------------------|------------------------------|
| Clearing (Manhole 97.8) | | |
| L1 | 2.1275 m | |
| W of Manhole | 1.2 m | A=40.46 m² |
| L2 | 2.535 m | |
| W | 6.165 m | |
| Clearing (Manhole 97.9) | | |
| W | 4.828 m | A=23.31 m² |
| L | 4.828 m | |
| Clearing (Collector 97.9 - 97.8) | | |
| W | 2.9275 m | A=20.24 m² |
| L | 6.914 m | |
| (Collector Pipe) Downstream | 97.9 - 97.8 | Excavation |
| Do | 0.4 m | A=3.36 m ² |
| Di | 0.3 m | Backfill Zone B |
| tpipe | 0.05 m | A=1.17 m ² |
| H | 1.545 m | Backfill Zone C |
| EL. A | 13.2 m | A=1.23 m ² |
| EL. B | 11.855 m | |
| W | 2.945 m | |
| (Collector Pipe) Upstream | | Excavation |
| Do | 0.4 m | A=3.25 m ² |
| Di | 0.3 m | Backfill Zone B |
| tpipe | 0.05 m | A=1.14 m ² |
| H | 1.51 m | Backfill Zone C |
| EL. A | 13.2 m | A=1.19 m ² |
| EL. B | 11.89 m | |
| W | 2.91 m | |
| Collector Pipe 97.9 - 97.8 | Volume | |
| Excavation | 22.96698 m³ | |
| Backfill Zone B | 8.03 m³ | |
| Backfill Zone C | 8.40 m³ | |

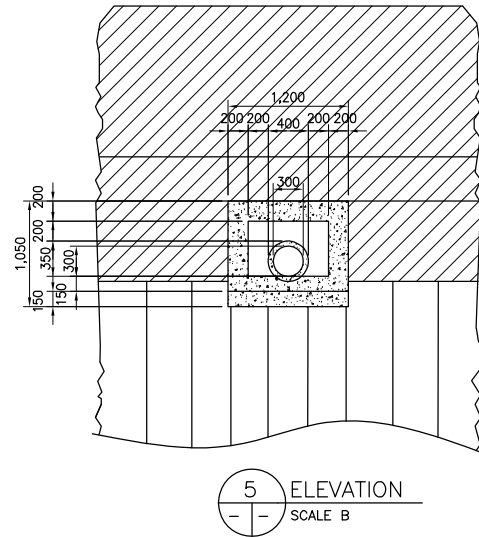
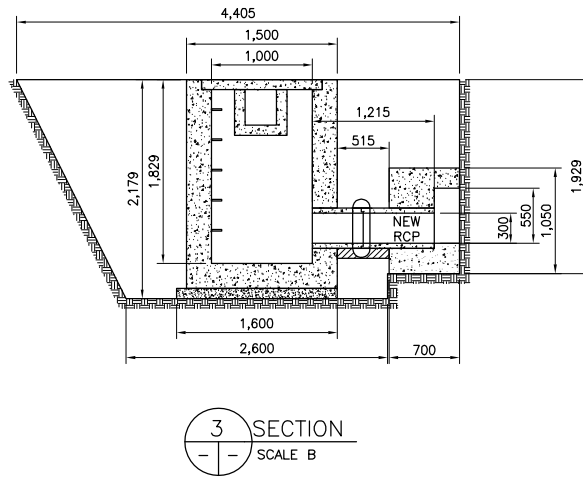
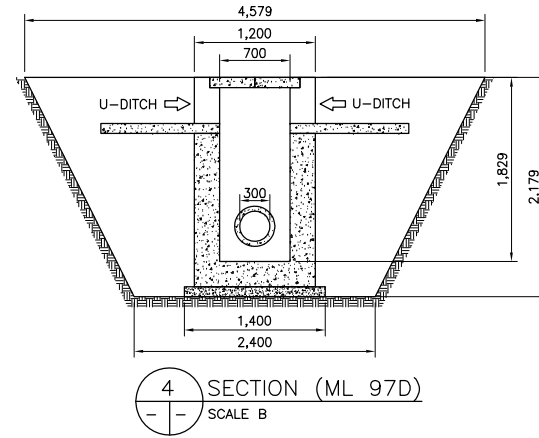
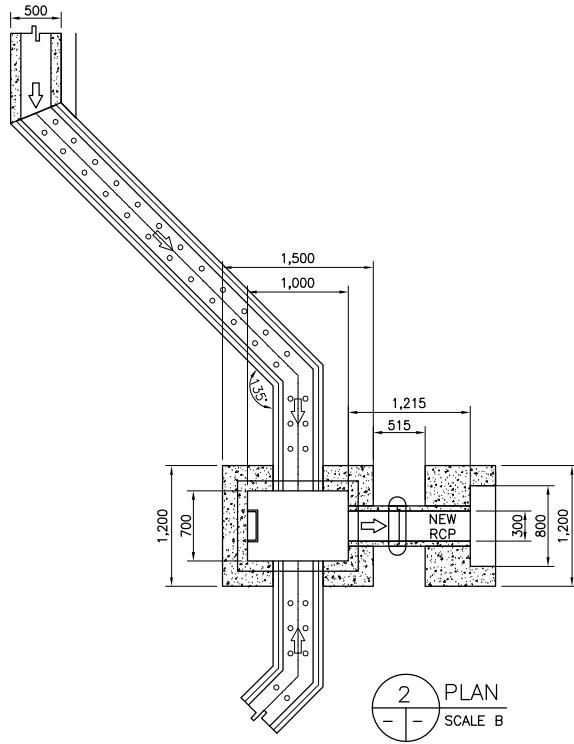


2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

Manhole No.: ML 97D
Location 12 + 055.5

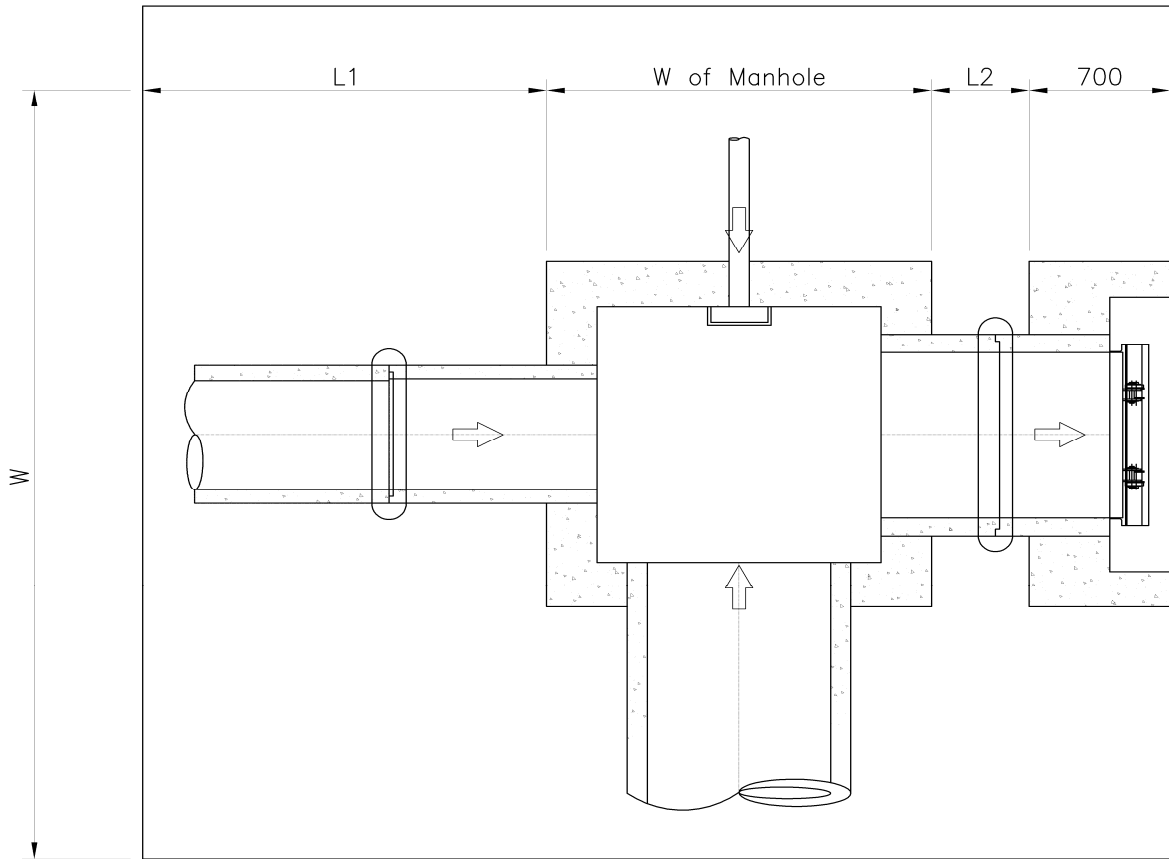
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|--|--|-----------------------------|---|-------------------------------|
| 1. Excavation | | A1=13.70 | 4.86 | 66.53 | |
| | | | | 66.53 | m ³ |
| 2. Lev. Concrete | W=1.70 L=1.40 | 2.38 | 0.1 | 0.24 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.20 | 1.80 | 0.25 | 0.45 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.20 Win=1.00 Lin=.70 | Aout=1.80 Ain=0.70 Anet=1.10 | 1.829 | 2.012 | m ³ |
| Minus | | | | | |
| D=0.56 | W=0.50 | 0.28 | 0.25 | 0.07 | |
| Pipe hole on Wall B | DiaB=0.00 | 0.00 | 0.25 | 0.00 | |
| D=0.56 | W=0.50 | 0.28 | 0.25 | 0.07 | |
| Pipe hole on Wall D | DiaD=0.40 | 0.13 | 0.25 | 0.03 | |
| Net Wall Vol. | | | | 1.84 | m ³ |
| 5. Conc. Cover | L=0.90 W=1.20 | 1.08 | 0.1 | 0.11 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.20 Lout=1.05 Win=0.80 Lin=.55 DiaD=0.40 | Ain=1.26 Aout=0.44 Apipe=.13 | 0.7 0.25 0.45 | 0.88 0.11 0.06 0.72 | m3 |
| 9. Outlet Pipe | Dia=.300m | L=1.22 | | 2 | pc |
| 10. Concrete Collar | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=1 | 0.02355252 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=.400m | L=0.52 | | 0.0206 | m3 |
| 12. Backfill | | | | 55.44 | m3 |



Clearing (Manhole 97D)

L1 1.5145 m
W of Manhole 1.5 m
L2 1.215 m
W 4.579 m

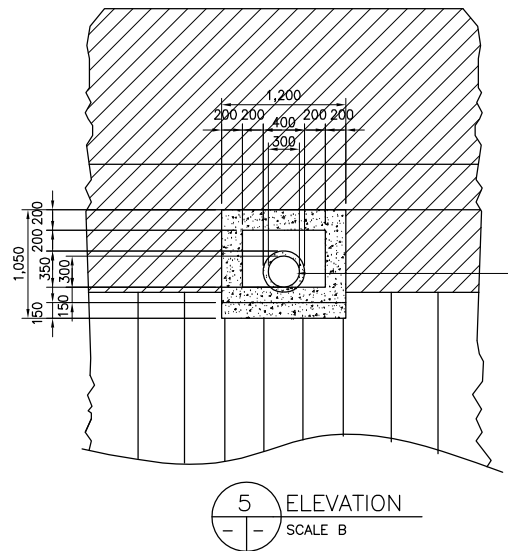
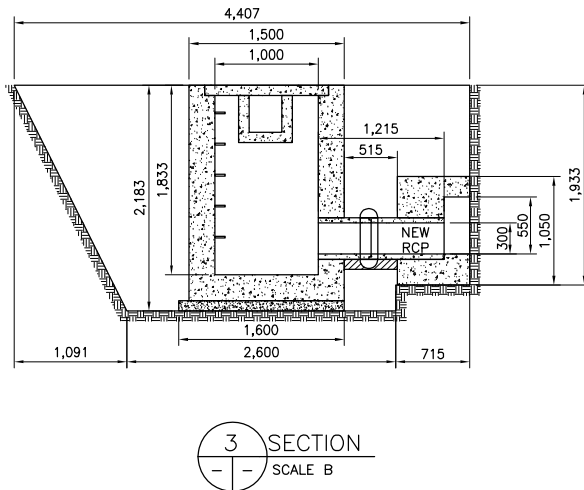
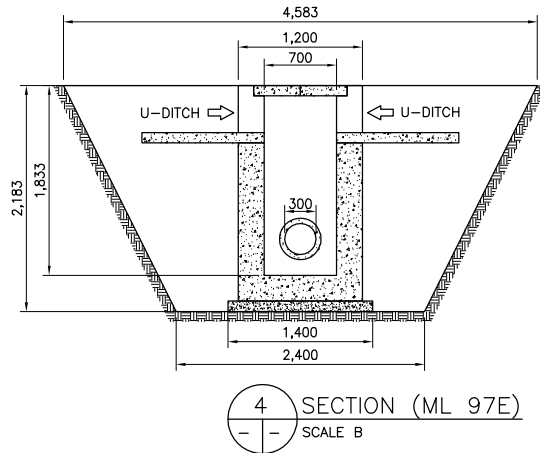
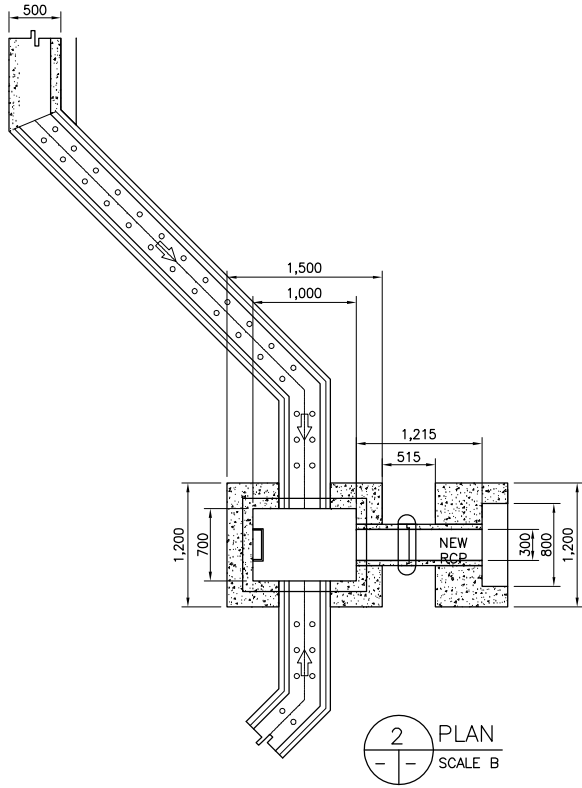
A=22.57 m²



QUANTITIES OF MANHOLE

Manhole No.: ML 97E
Location 12 + 118.5

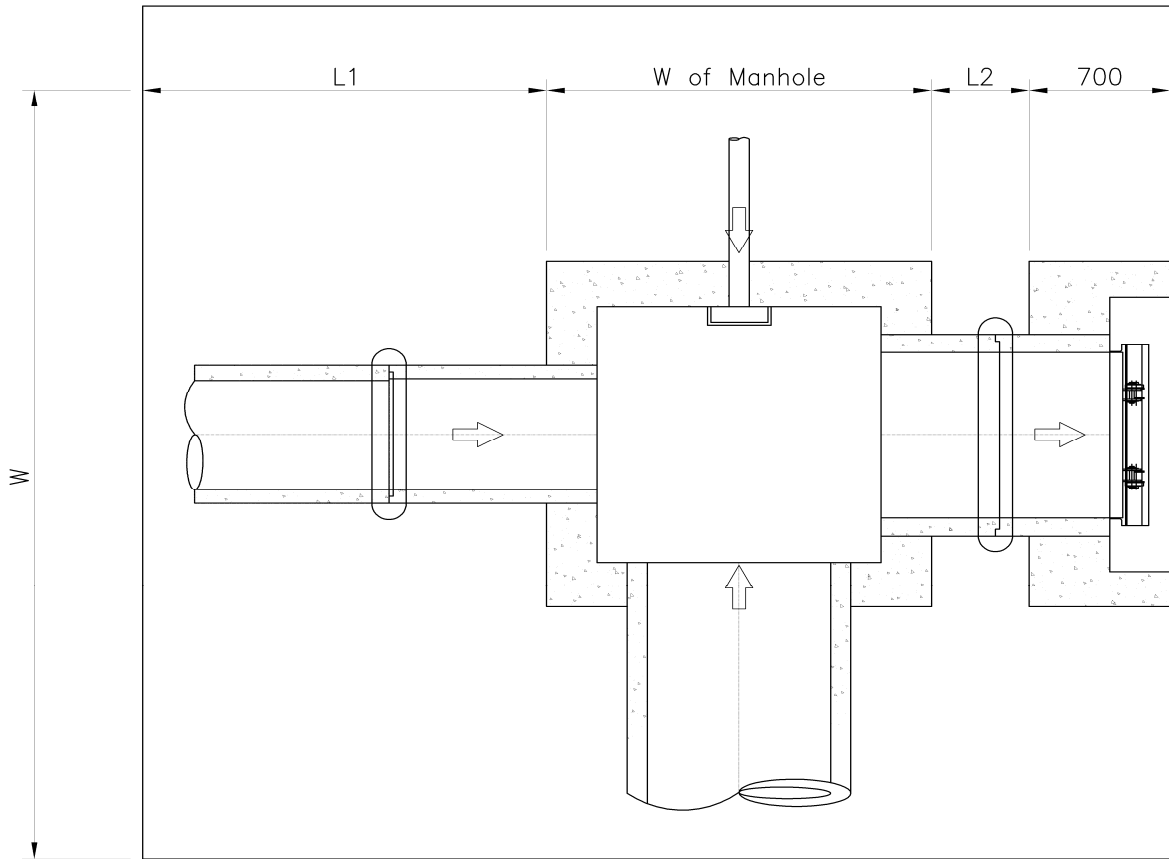
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|--|--|-----------------------------|---|-------------------------------|
| 1. Excavation | | A1=13.70 | 4.86 | 66.53 | |
| | | | | 66.53 | m ³ |
| 2. Lev. Concrete | W=1.70 L=1.40 | 2.38 | 0.1 | 0.24 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.20 | 1.80 | 0.25 | 0.45 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.20 Win=1.00 Lin=.70 | Aout=1.80 Ain=0.70 Anet=1.10 | 1.833 | 2.016 | m ³ |
| Minus | | | | | |
| D=0.56 | W=0.50 | 0.28 | 0.25 | 0.07 | |
| Pipe hole on Wall B | DiaB=0.00 | 0.00 | 0.25 | 0.00 | |
| D=0.56 | W=0.50 | 0.28 | 0.25 | 0.07 | |
| Pipe hole on Wall D | DiaD=0.40 | 0.13 | 0.25 | 0.03 | |
| Net Wall Vol. | | | | 1.85 | m ³ |
| 5. Conc. Cover | L=0.90 W=1.20 | 1.08 | 0.1 | 0.11 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.20 Lout=1.05 Win=0.80 Lin=.55 DiaD=0.40 | Ain=1.26 Aout=0.44 Apipe=.13 | 0.7 0.25 0.45 | 0.88 0.11 0.06 0.72 | m3 |
| 9. Outlet Pipe | Dia=.300m | L=1.22 | | 2 | pc |
| 10. Concrete Collar | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=1 | 0.02355252 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=.400m | L=0.52 | | 0.0206 | m3 |
| 12. Backfill | | | | 55.44 | m3 |



Clearing (Manhole 97E)

| | |
|--------------|----------|
| L1 | 2.0915 m |
| W of Manhole | 1.5 m |
| L2 | 0.515 m |
| W | 5.383 m |

A=25.87 m²

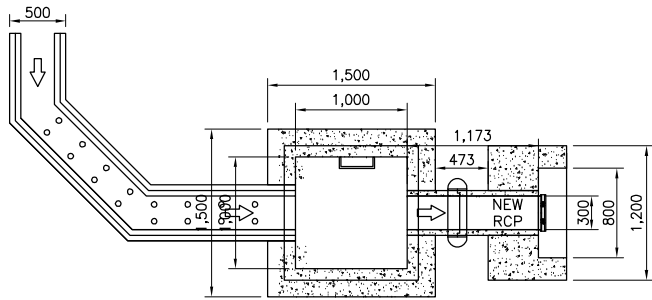


QUANTITIES OF MANHOLE

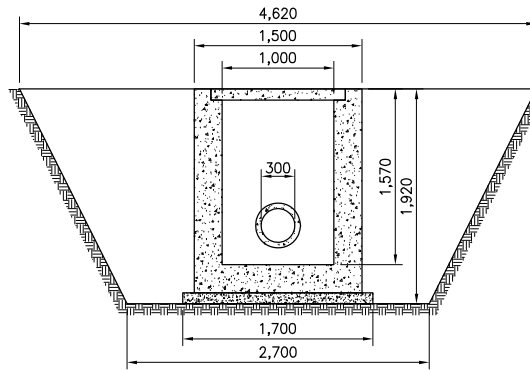
Manhole No.: ML 97F

Location 12 + 173

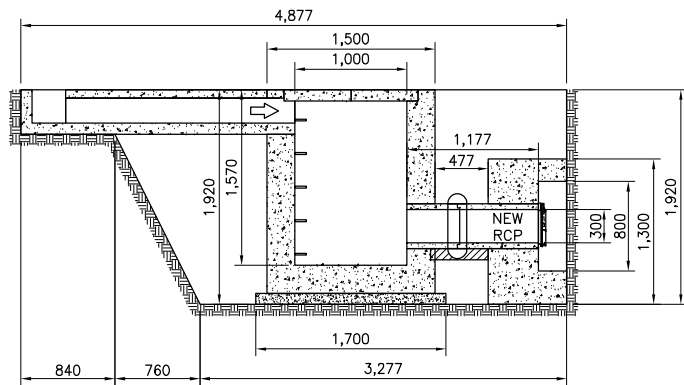
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|--|--|-------------------------|---|-------------------------------|
| 1. Excavation | | A1=13.70 | 4.86 | 66.53 | |
| | | | | 66.53 | m ³ |
| 2. Lev. Concrete | W=1.70 L=1.70 | 2.89 | 0.1 | 0.29 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.50 | 2.25 | 0.25 | 0.56 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.50 Win=1.00 Lin=1.00 | Aout=2.25 Ain=1.00 Anet=1.25 | 1.570 | 1.963 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 D=0.40 W=0.50 | 0.00 0.20 | 0.25 0.25 | 0.00 0.05 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.40 | 0.13 | 0.25 | 0.03 | |
| Net Wall Vol. | | | | 1.88 | m ³ |
| 5. Conc. Cover | L=1.20 W=1.20 | 1.44 | 0.1 | 0.14 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=5 | 0.000201062 | | 0.000120637 0.95 4.74 | m ³ kg/pc kg |
| 7. Flapgate | | | | 1 | pc |
| 8. Conc. Mouth | Wout=1.20 Lout=1.30 Win=0.80 Lin=.80 DiaD=0.40 | Ain=1.56 Aout=0.64 Apipe=.13 | 0.7 0.25 0.45 | 1.09 0.16 0.06 0.88 | m ³ |
| 9. Outlet Pipe | Dia=.300m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=1 | 0.02355252 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=.400m | L=0.48 | | 0.01908 | m ³ |
| 12. Backfill | | | | 55.44 | m ³ |



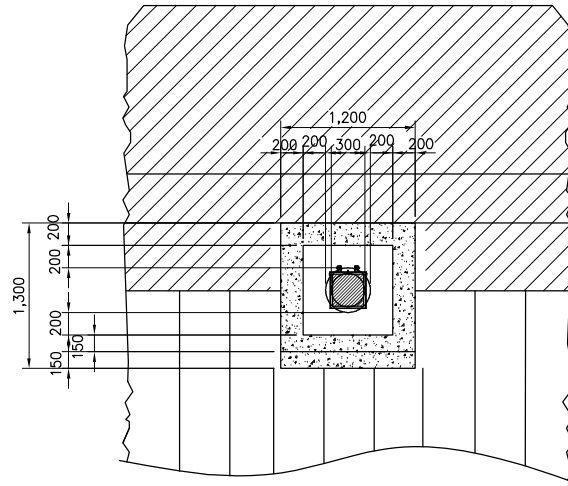
2 PLAN
SCALE B



4 SECTION (ML 97F)
SCALE B



3 SECTION
SCALE B

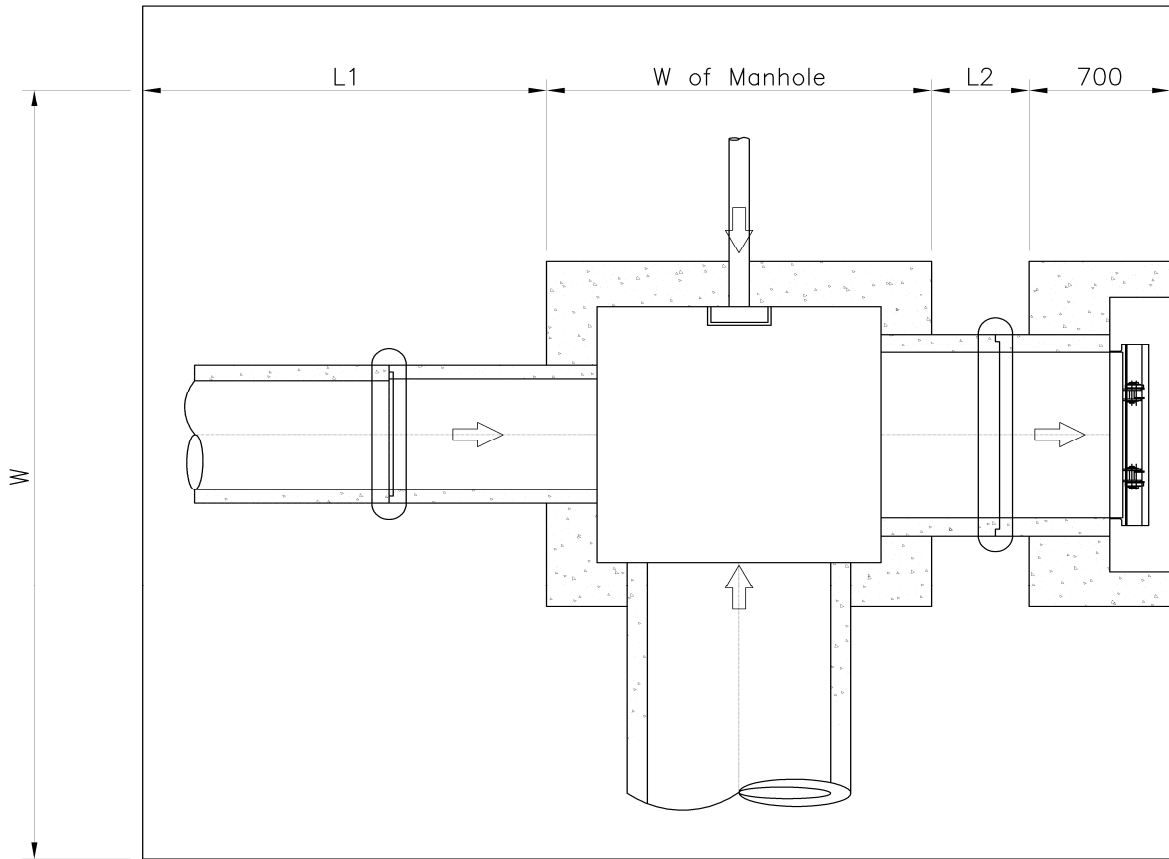


5 ELEVATION
SCALE B

Clearing (Manhole 97F)

| | |
|--------------|---------|
| L1 | 1.56 m |
| W of Manhole | 1.5 m |
| L2 | 0.477 m |
| W | 4.62 m |

A=19.57 m²

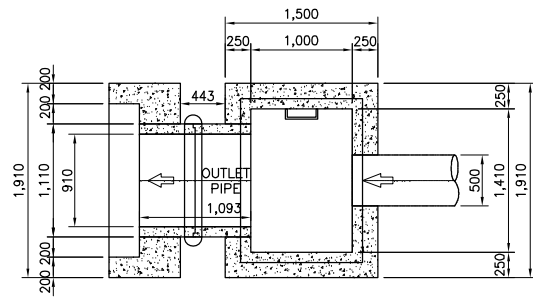


QUANTITIES OF MANHOLE

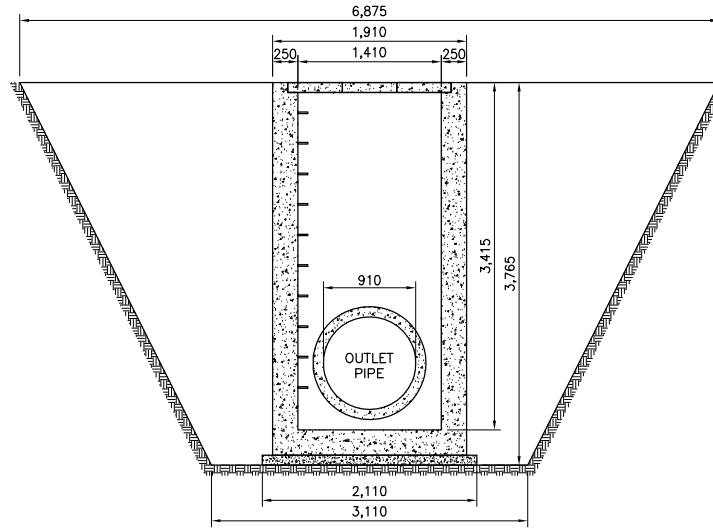
Manhole No.: MR 117.10

Location: 11 + 176

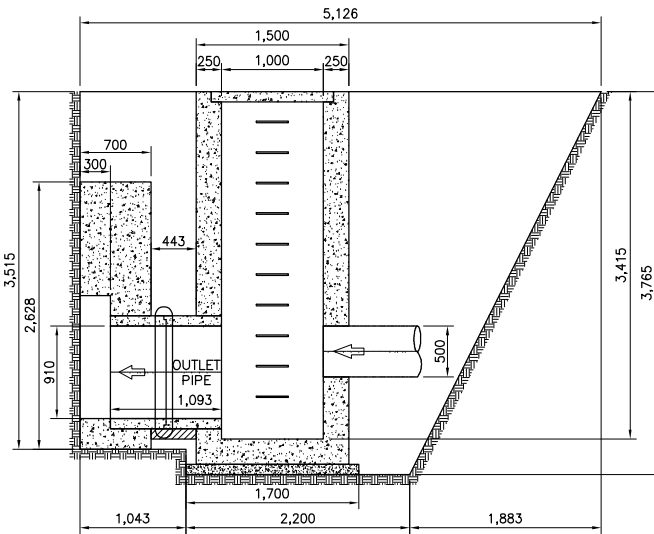
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.67 A2=11.83 | 4.99 4.99 | 18.30 59.05 | 77.35 m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.415 | 4.969 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.25 | 0.08 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.65 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.63 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=5.02 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 3.51 0.37 0.48 2.66 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.09 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.44 | | 0.049173 | m ³ |
| 12. Backfill | | | | 64.46 | m ³ |



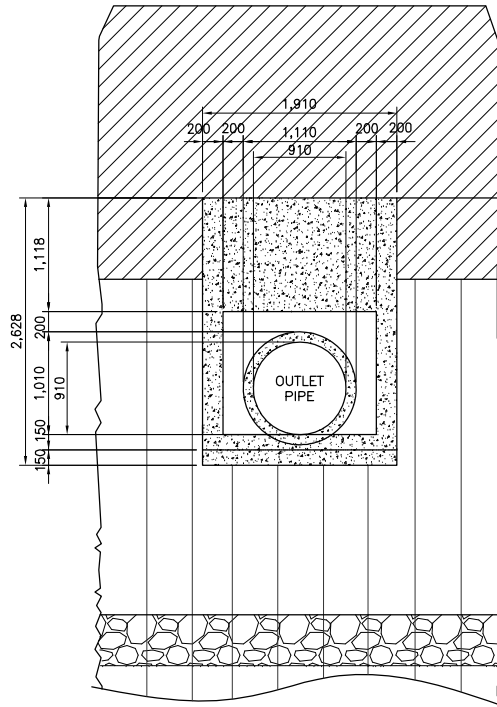
2 PLAN
SCALE B



4 SECTION(MR.117.10)
SCALE B



3 SECTION
SCALE B

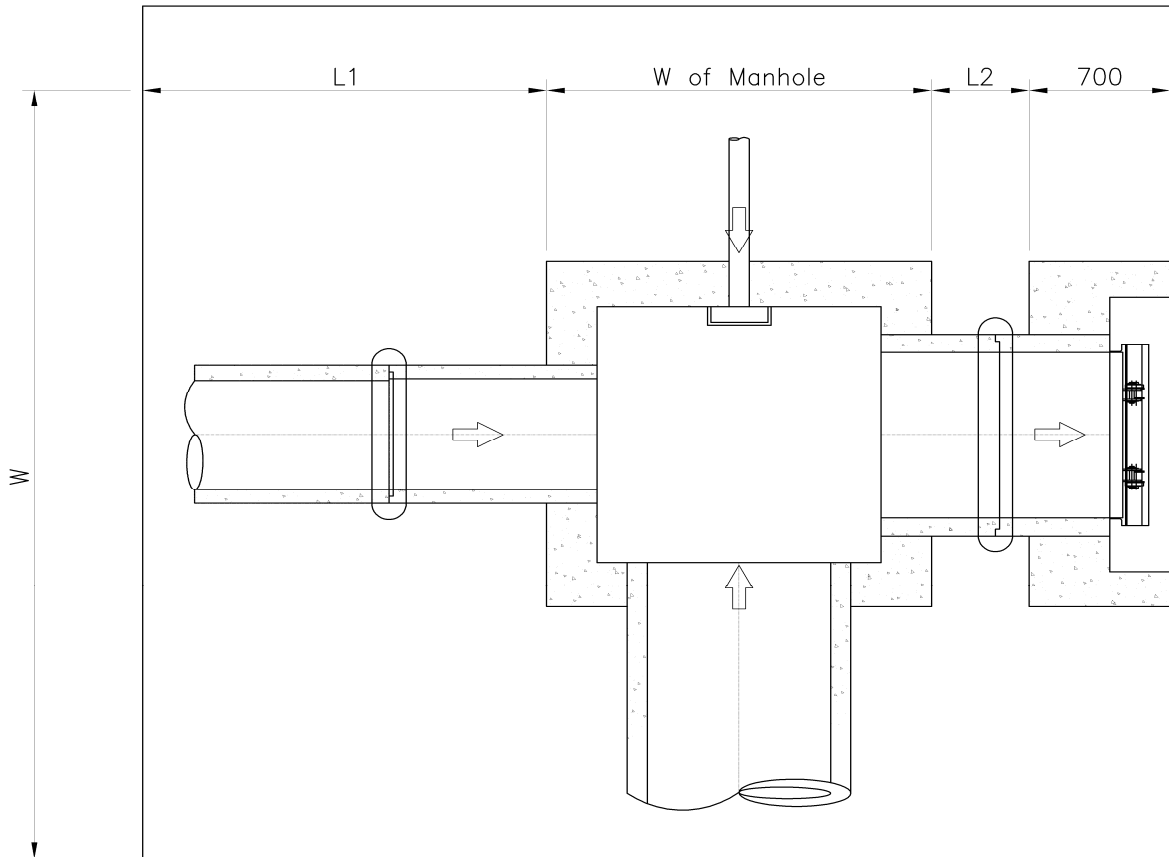


5 ELEVATION
SCALE B

Clearing (Manhole 117.10)

| | |
|--------------|----------|
| L1 | 2.4825 m |
| W of Manhole | 1.5 m |
| L2 | 0.443 m |
| W | 6.875 m |

A=35.24 m²



QUANTITIES OF MANHOLE

Manhole No.: MR 117.12

Location: 11 + 232

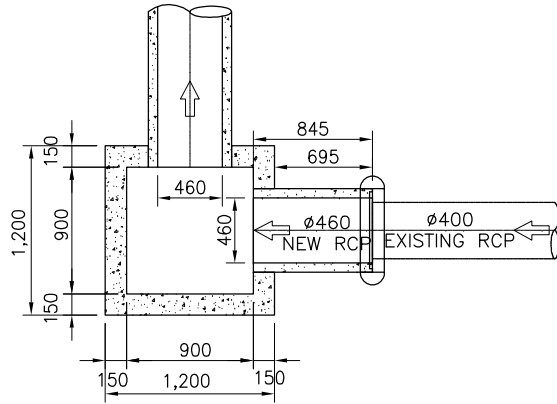
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.47 A2=10.54 | 4.83 4.83 | 21.60 50.91 | 72.51 m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.093 | 4.500 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.59 | 0.55 | 0.25 | 0.14 | |
| Pipe hole on Wall C | DiaC=0.59 | 0.27 | 0.25 | 0.07 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.05 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.30 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=4.40 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 3.08 0.37 0.48 2.23 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.45 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.80 | | 0.0888 | m ³ |
| 12. Inlet Pipe | Dia=.460m | L=0.98 | | 2 | pc |
| 13. Concrete Collar | D1=.590m D2=.770m | A1=0.27 A2=0.47 Anet=0.19 | 0.17 Qty=2 | 0.06537026 | m ³ |
| 14. Conc. Bedding (Inlett Pipe) | Dia=.590m | L=0.48 | | 0.028143 | m ³ |
| 15. Backfill | | | | 60.42 | m ³ |

QUANTITIES OF JUNCTION BOX

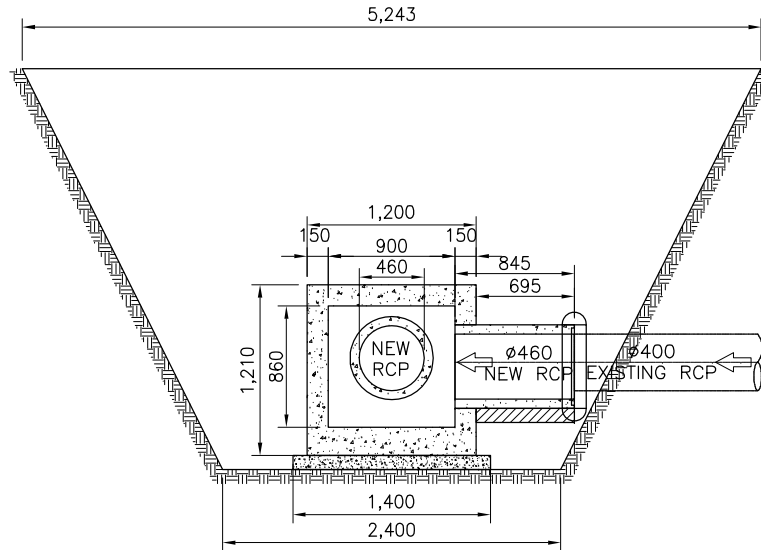
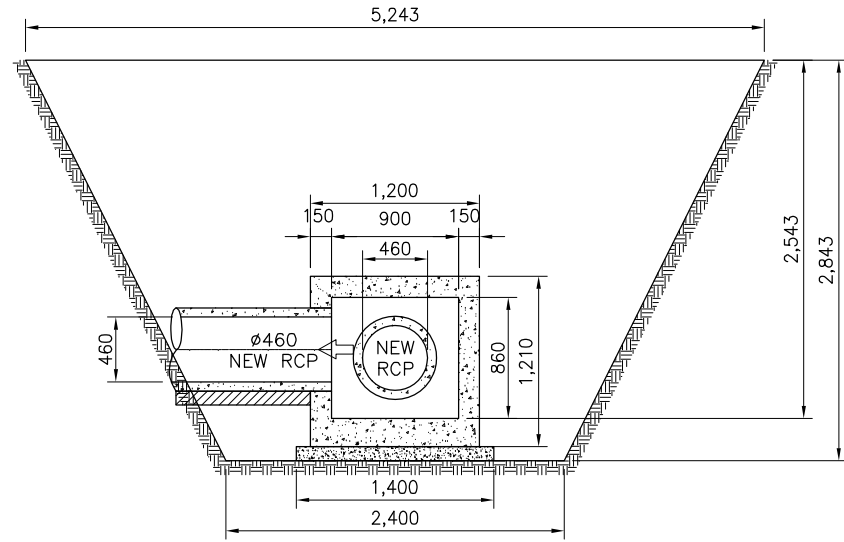
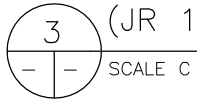
Junction Box No.: JB 117.13

Location: 11 + 240

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|-------------------|--------------|----------------|
| 1. Excavation | | A1=10.86 | 3.82 | 41.52 | |
| | | | | 41.52 | m ³ |
| 2. Lev. Concrete | W=1.40 L=1.40 | 1.96 | 0.1 | 0.20 | m ³ |
| 3. Bottom Slab | W=1.20 L=1.20 | 1.44 | 0.2 | 0.29 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.20 Lout=1.20 Win=0.90 Lin=.90 | Aout=1.44 Ain=0.81 Anet=0.63 | 0.860 | 0.542 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.59 | 0.27 | 0.15 | 0.07 | |
| Pipe hole on Wall A | DiaB=0.59 | 0.27 | 0.15 | 0.07 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.15 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.15 | 0.00 | |
| Net Wall Vol. | | | | 0.41 | m ³ |
| 5. Top Slab | L=1.20 W=1.20 | 1.44 | 0.15 | 0.22 | m ³ |
| 6. Inlet Pipe | Dia=.460m | L=0.85 | | | 1 pc |
| 7. Concrete Collar | D1=.590m D2=.770m | A1=0.27 A2=0.47 Anet=0.19 | 0.17 Qty=1 | 0.03268513 | m3 |
| 8. Conc. Bedding (Inlett Pipe) | Dia=.590m | L=0.70 | | 0.041005 | m3 |
| 9. Backfill | | | | 34.60 | m3 |

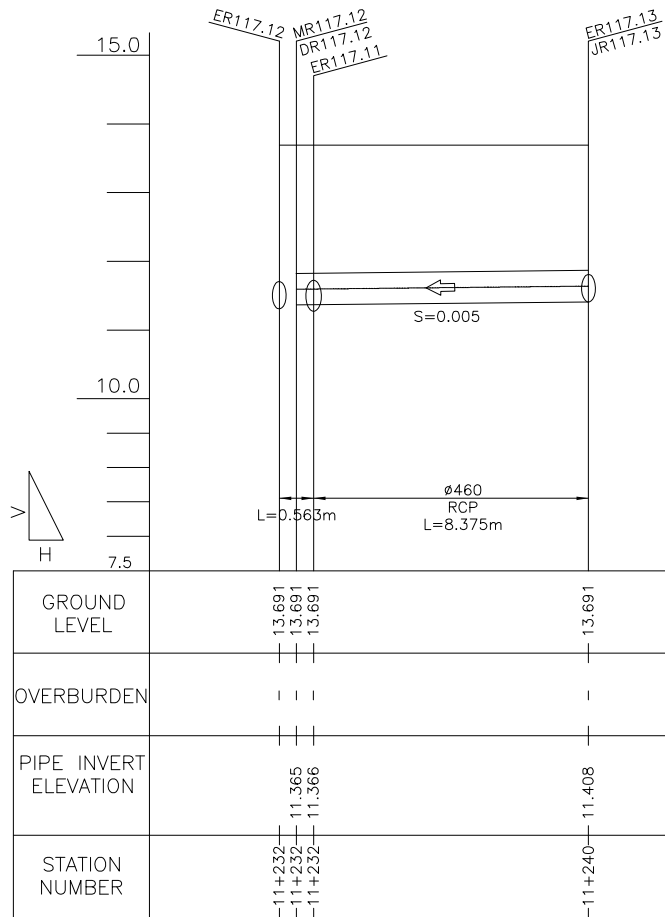


PARTIAL PLAN JUNCTION BOX
(JR 117.13)



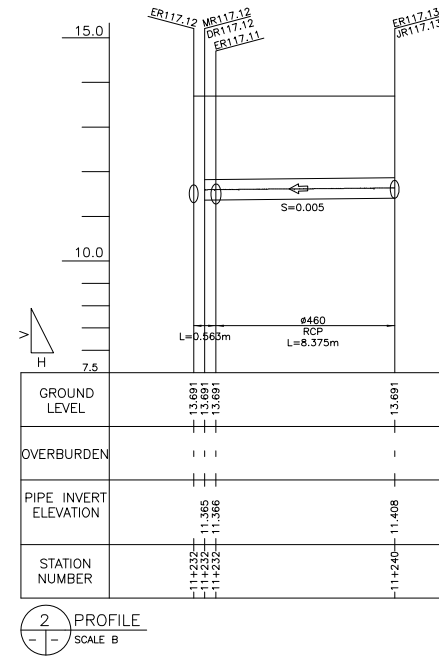
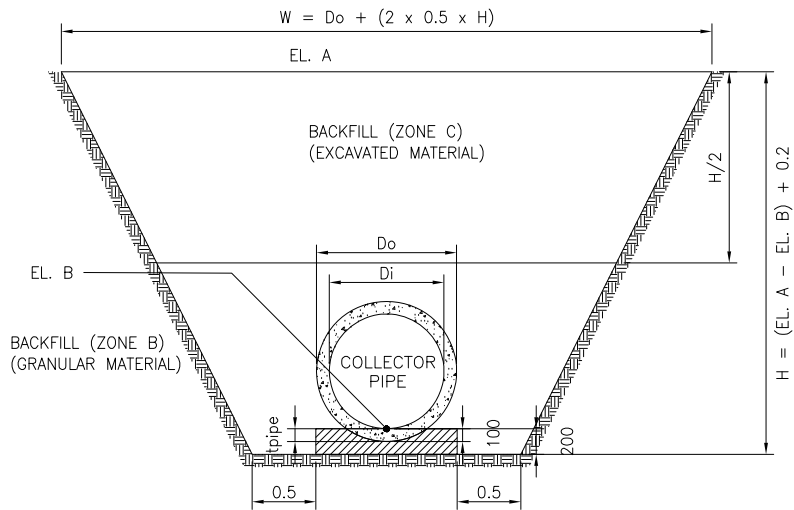
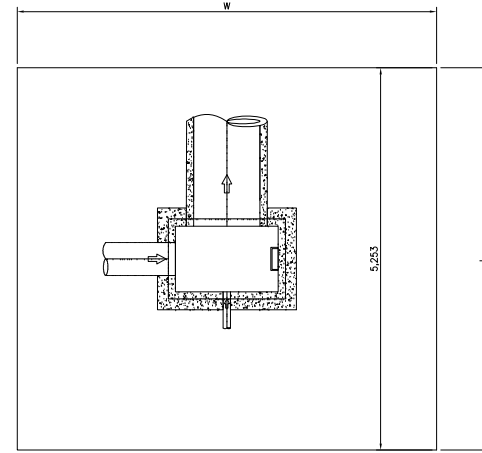
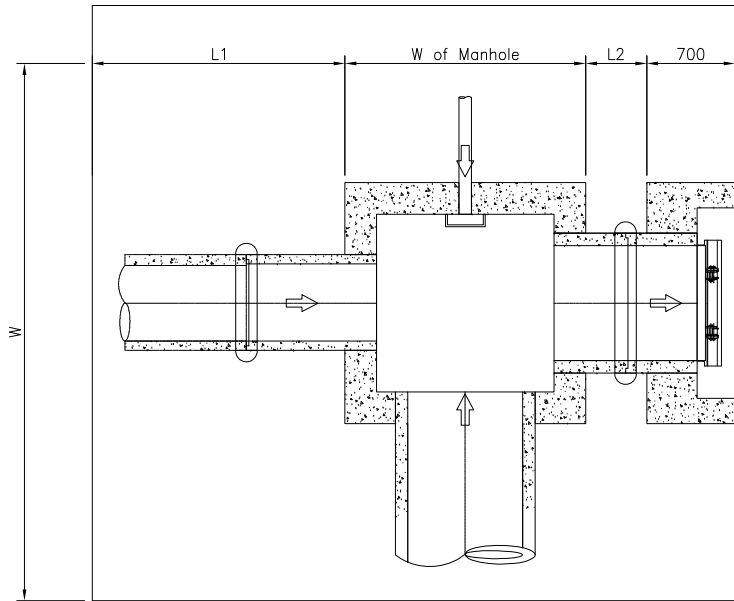
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|-----------|----------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.46 | | L=8.70 | 9 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=0.59 | L=8.70 | 0.1 | 0.51 | m ³ |
| 3. Conc. Collar | D1=.590m | A1=0.27 | 0.17 | 0.26 | m ³ |
| | D2=.770m | A2=0.47 | Qty=8 | | |
| 4. Formworks | | Anet=0.19 | | 5.42 | m ³ |



2 PROFILE
 SCALE B

| | | |
|--------------------------------------|-------------------------------|------------------------------|
| Clearing (Manhole 117.12) | | |
| L1 | 2.3215 m | |
| W of Manhole | 1.5 m | A=34.87 m² |
| L2 | 0.8 m | |
| W | 6.553 m | |
| Clearing (Junction Manhole 117.13) | | |
| W | 5.243 m | A=27.49 m² |
| L | 5.243 m | |
| Clearing (Collector 117.13 - 117.12) | | |
| W | 4.0945 m | A=35.44 m² |
| L | 8.6565 m | |
| (Collector Pipe) Downstream | 117.13 - 117.12 | Excavation |
| Do | 0.59 m | A=7.21 m ² |
| Di | 0.46 m | Backfill Zone B |
| tpipe | 0.065 m | A=2.41 m ² |
| H | 2.526 m | Backfill Zone C |
| EL. A | 13.691 m | A=2.43 m ² |
| EL. B | 11.365 m | |
| W | 4.116 m | |
| (Collector Pipe) Upstream | | Excavation |
| Do | 0.59 m | A=7.03 m ² |
| Di | 0.46 m | Backfill Zone B |
| tpipe | 0.065 m | A=2.35 m ² |
| H | 2.483 m | Backfill Zone C |
| EL. A | 13.691 m | A=2.38 m ² |
| EL. B | 11.408 m | |
| W | 4.073 m | |
| Collector Pipe 117.13 - 117.12 | Volume | |
| Excavation | 61.93067 m³ | |
| Backfill Zone B | 20.74 m³ | |
| Backfill Zone C | 20.93 m³ | |

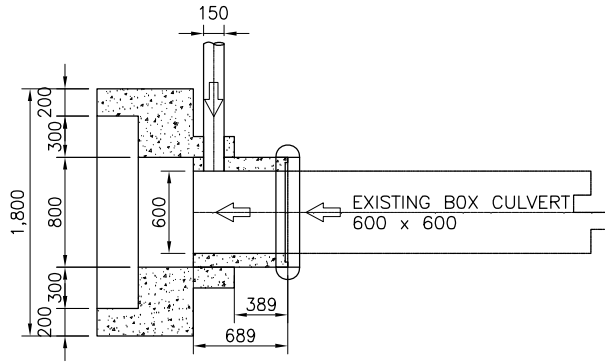


QUANTITIES OF MANHOLE

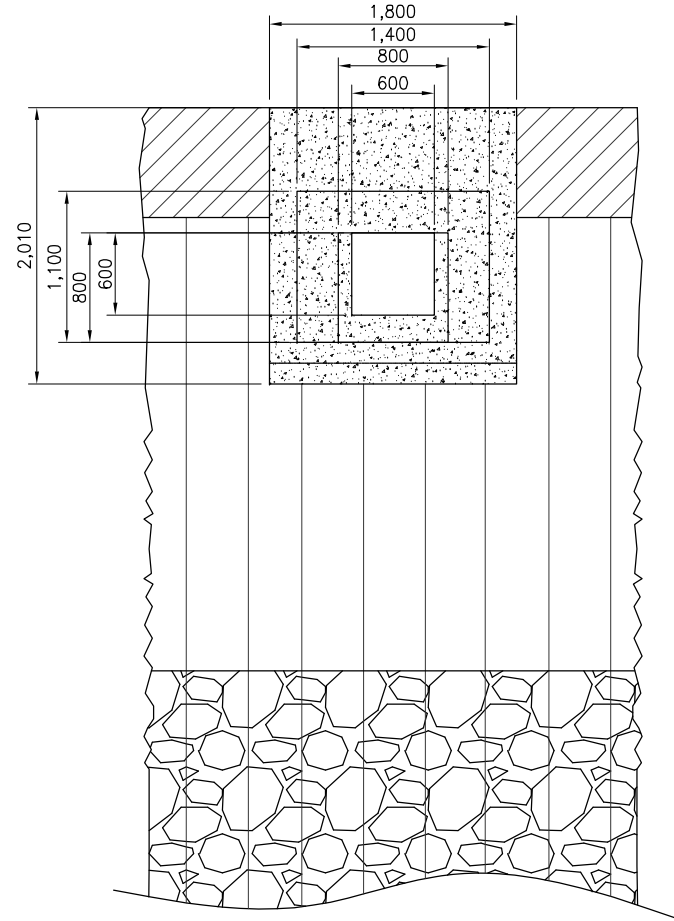
Manhole No.: MR 117.2

Location: 10 + 977

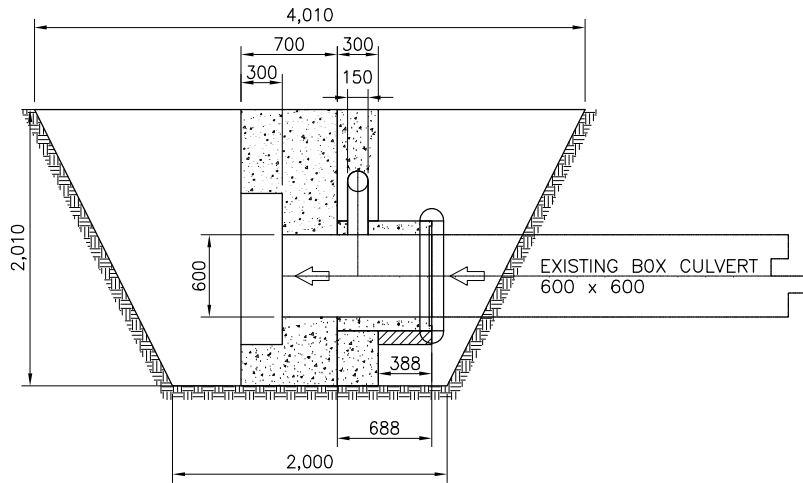
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|---|---------------------------|------------------------------|----------------|
| 1. Excavation | | A1=6.04 | 2.81 | 16.94 | |
| | | | | 16.94 | m ³ |
| 2. Conc. Mouth | Wout=1.80 Lout=2.01 Win=1.40 Lin=1.10 DiaD=0.60 | Ain=3.62 Aout=1.54 Apipe=.36 | 0.7 0.3 0.4 | 2.53 0.46 0.14 | |
| | | | | 1.93 | m3 |
| 3. Outlet Pipe | Wout=0.80 Lout=.80 Win=0.60 Lin=.60 DiaD=0.15 | Ain=0.64 Aout=0.36 Apipe=.02 Anet=0.26 | 0.1 | 0.03 | m3 |
| 4. Concrete Collar | D1=.800m D2=.980m | A1=0.50 A2=0.75 Anet=0.25 | 0.17 Qty=1 | 0.04 | m3 |
| 5. Conc. Bedding (Outlet Pipe) | Dia=.800m | L=0.39 | | 0.03104 | m3 |
| 6. Backfill | | | | 14.12 | m3 |



1 PLAN
SCALE A



3 ELEVATION
SCALE A

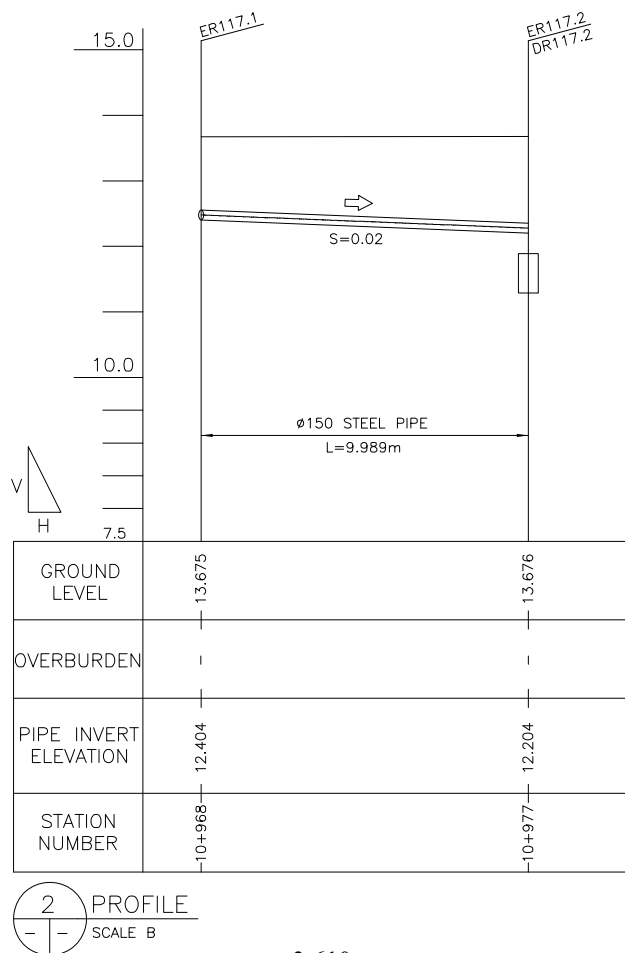


2 SECTION
SCALE A

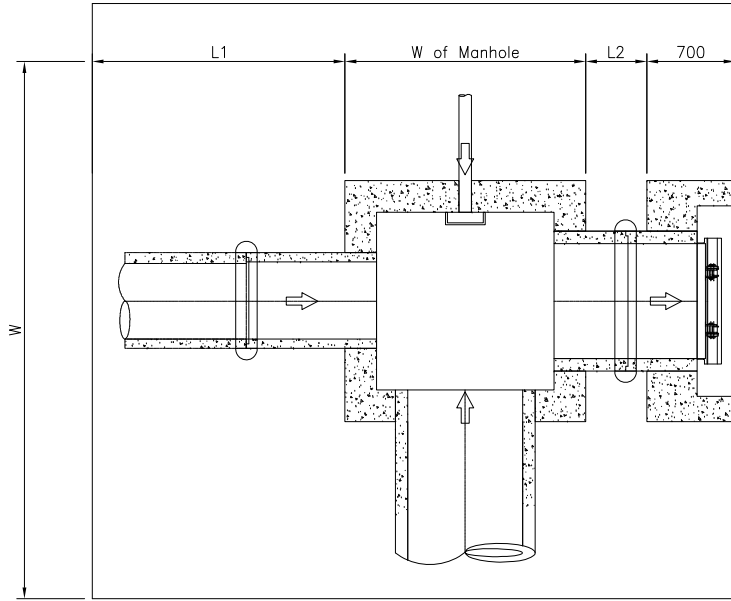
3 600

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|----------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (Steel) | Dia=0.15 | | L=10.19 | 2 | pc |
| | | | | | |



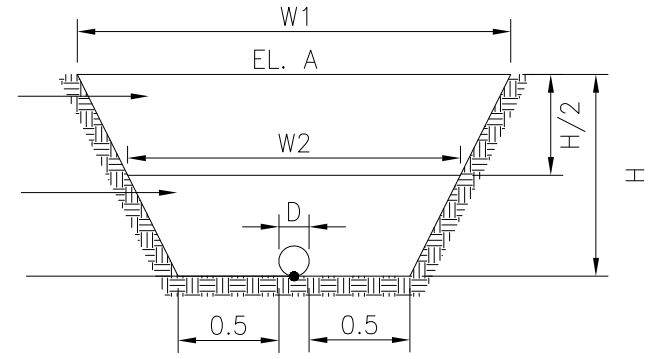
| | | |
|------------------------------------|-------------------------------|------------------------------|
| Clearing (Manhole 117.2) | | |
| W | 4.01 m | |
| L | 3.81 m | A=15.28 m² |
| | | |
| Clearing (Collector 117.1 - 117.2) | | |
| W | 2.5215 m | |
| L | 9.989 m | A=25.19 m² |
| | | |
| (Collector Steel) Downstream | 117.1 - 117.2 | |
| D | 0.15 m | Excavation |
| W1 | 2.62 m | A=2.78 m ² |
| W2 | 1.89 m | Backfill Zone B |
| H | 1.472 m | A=1.10 m ² |
| H/2 | 0.736 m | Backfill Zone C |
| EL. A | 13.676 m | A=1.66 m ² |
| EL. B | 12.204 m | |
| | | |
| (Collector Steel) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 2.42 m | A=2.27 m ² |
| W2 | 1.79 m | Backfill Zone B |
| H | 1.271 m | A=0.92 m ² |
| H/2 | 0.6355 m | Backfill Zone C |
| EL. A | 13.675 m | A=1.34 m ² |
| EL. B | 12.404 m | |
| | | |
| Collector PVC 117.1 - 117.2 | Volume | |
| Excavation | 25.70406 m³ | |
| Backfill Zone B | 10.26346 m³ | |
| Backfill Zone C | 15.26055 m³ | |



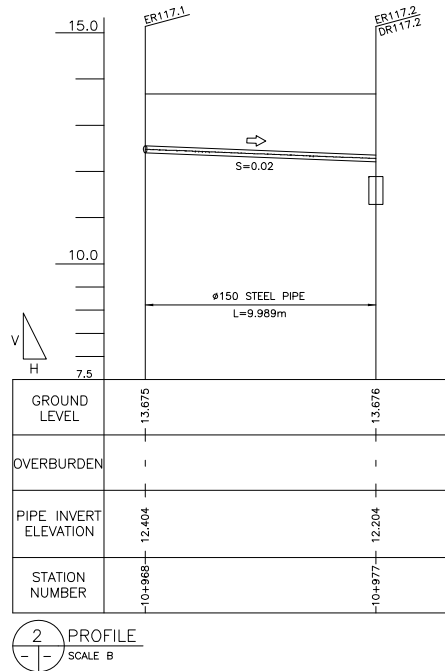
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.612

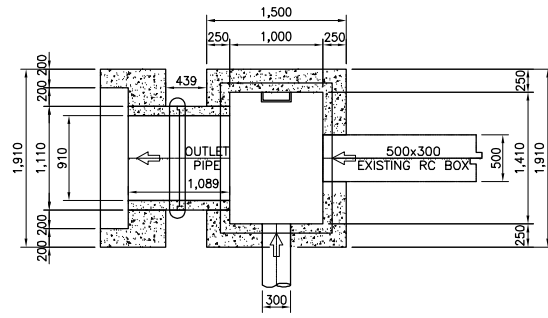


QUANTITIES OF MANHOLE

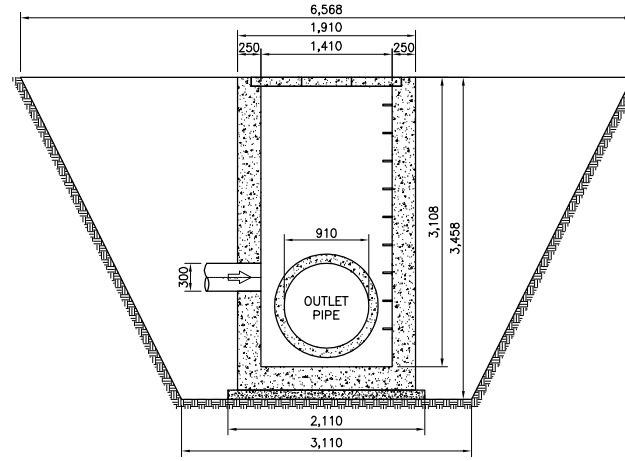
Manhole No.: MR 117.3

Location: 11 + 006

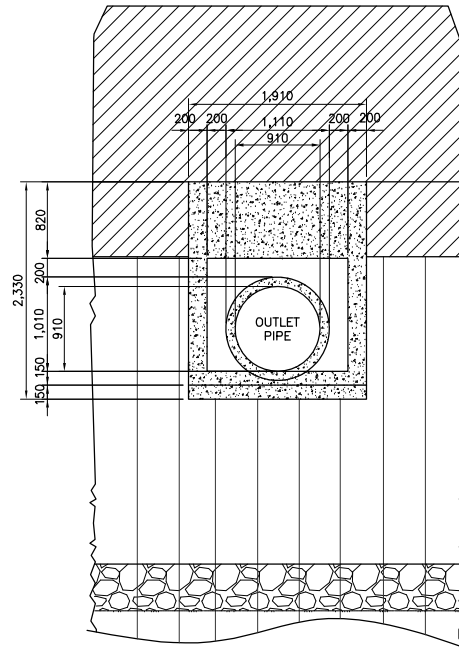
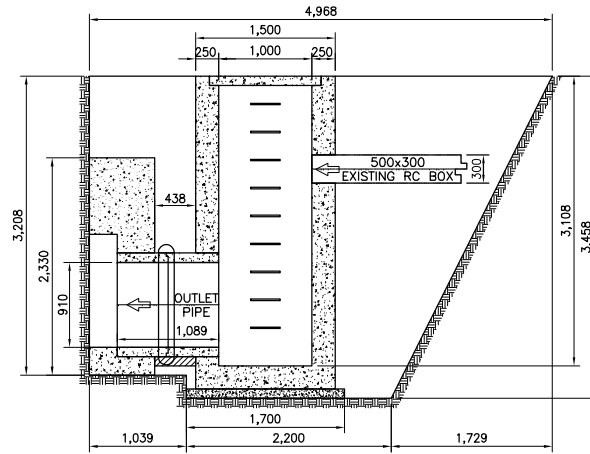
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.33 A2=10.60 | 4.84 4.84 | 16.13 51.28 | 67.41 m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.108 | 4.522 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.50 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall C | DiaC=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.21 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.33 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=4.45 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 3.12 0.37 0.48 2.27 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.09 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.44 | | 0.048618 | m ³ |
| 12. Backfill | | | | 56.17 | m ³ |



2 PLAN
SCALE A



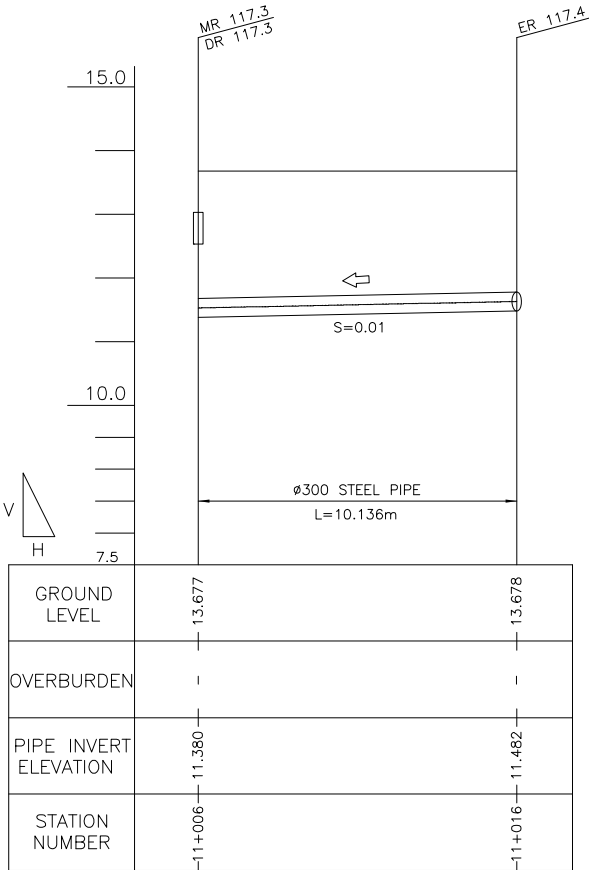
4 SECTION (MR.117.3)
SCALE A



5 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|---------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (Steel) | Dia=0.30 | | L=10.24 | 2 | pc |
| | | | | | |



2 PROFILE
 SCALE B

Clearing (Manhole 117.3)

| | | |
|--------------|---------|------------------------------|
| L1 | 2.329 m | |
| W of Manhole | 1.5 m | A=32.62 m² |
| L2 | 0.438 m | |
| W | 6.568 m | |

Clearing (Clearing 117.4 - 117.3)

| | | |
|---|----------|------------------------------|
| W | 3.5465 m | A=35.95 m² |
| L | 10.136 m | |

(Collector Steel) Downstream

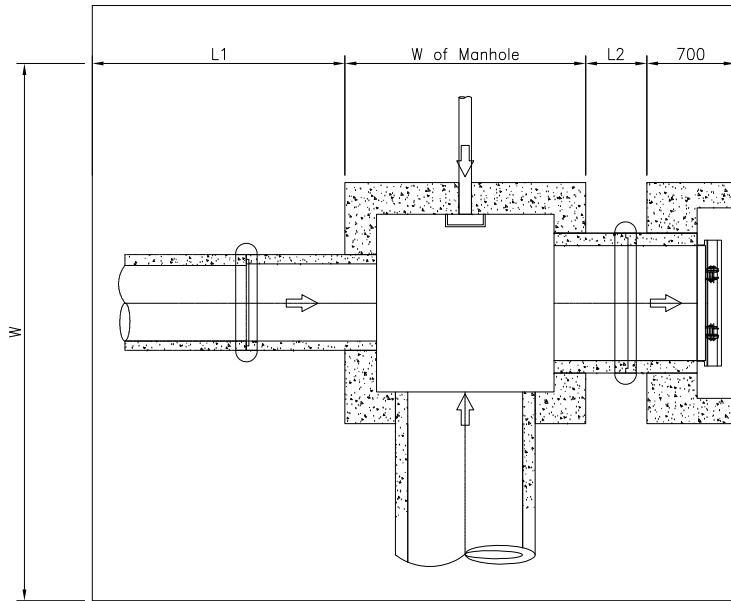
| | | |
|---------------|----------|-----------------------|
| 117.4 - 117.3 | | |
| D | 0.3 m | Excavation |
| W1 | 3.60 m | A=5.62 m ² |
| W2 | 2.45 m | Backfill Zone B |
| H | 2.297 m | A=2.08 m ² |
| H/2 | 1.1485 m | Backfill Zone C |
| EL. A | 13.677 m | A=3.47 m ² |
| EL. B | 11.38 m | |

(Collector Steel) Upstream

| | | |
|-------|----------|-----------------------|
| D | 0.3 m | Excavation |
| W1 | 3.50 m | A=5.27 m ² |
| W2 | 2.40 m | Backfill Zone B |
| H | 2.196 m | A=1.96 m ² |
| H/2 | 1.098 m | Backfill Zone C |
| EL. A | 13.678 m | A=3.24 m ² |
| EL. B | 11.482 m | |

Collector Steel 117.4 - 117.3

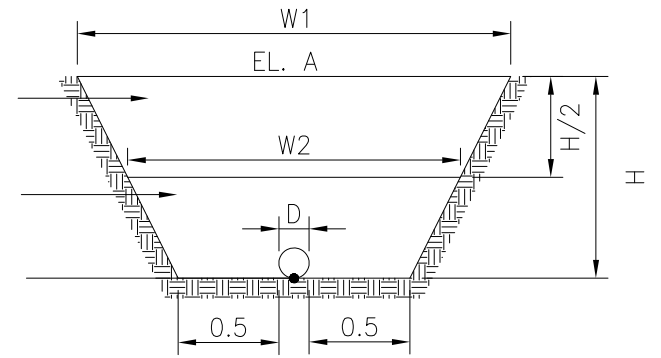
| | |
|-----------------|-------------------------------|
| Volume | |
| Excavation | 55.74351 m³ |
| Backfill Zone B | 20.68667 m³ |
| Backfill Zone C | 34.33321 m³ |



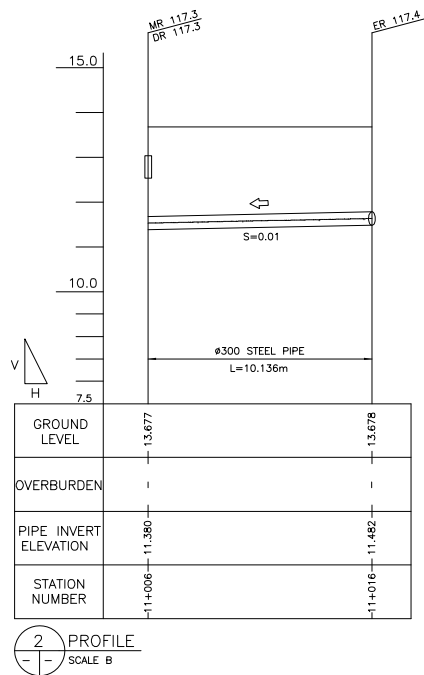
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.617

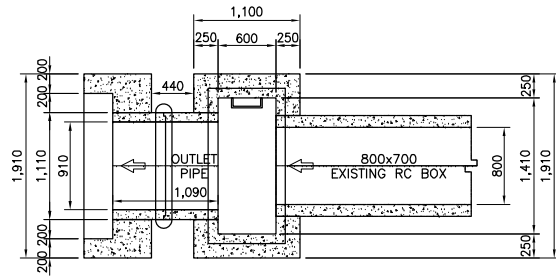


QUANTITIES OF MANHOLE

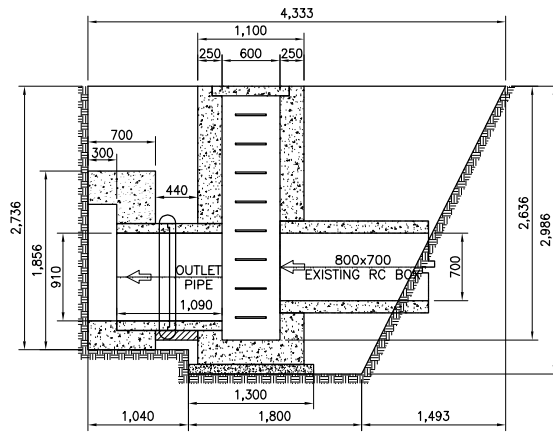
Manhole No.: MR 117.5

Location: 11 + 046

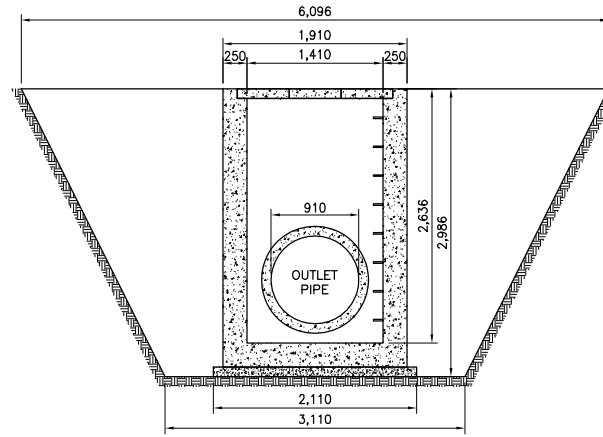
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=2.85 A2=7.60 | 4.60 4.60 | 13.10 35.00 | 48.10 m ³ |
| 2. Lev. Concrete | W=1.30 L=2.11 | 2.74 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.91 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.91 Win=0.60 Lin=1.41 | Aout=2.10 Ain=0.85 Anet=1.26 | 2.636 | 3.308 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.80 | 0.56 | 0.25 | 0.14 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 2.93 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.80 | 1.288 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.86 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.54 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.48 0.37 0.48 1.63 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.09 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.44 | | 0.04884 | m ³ |
| 12. Backfill | | | | 40.08 | m ³ |



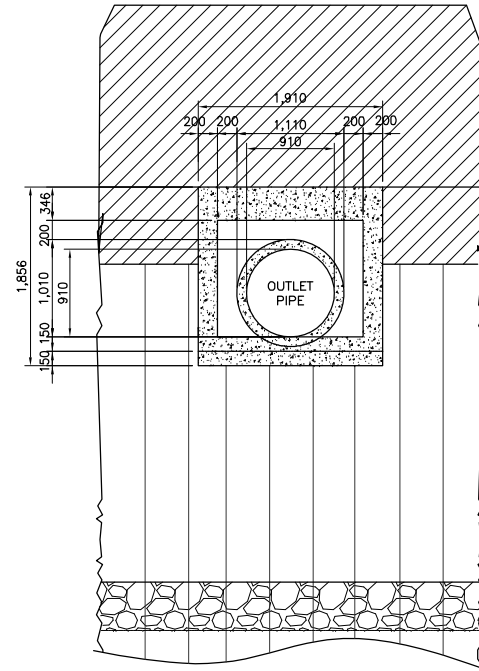
2 PLAN
SCALE B



3 SECTION
SCALE B



4 SECTION (MR. 117.5)
SCALE B

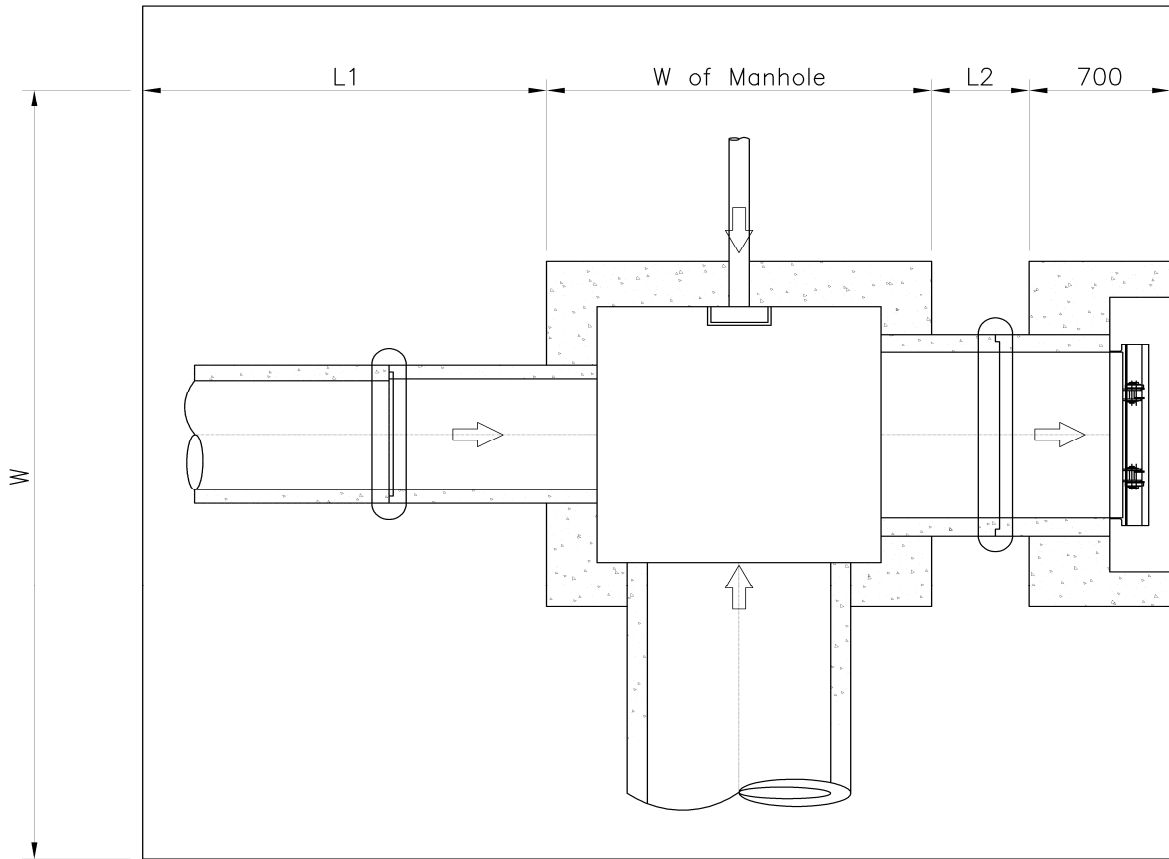


5 ELEVATION
SCALE B

Clearing (Manhole 117.5)

| | |
|--------------|---------|
| L1 | 2.093 m |
| W of Manhole | 1.1 m |
| L2 | 0.44 m |
| W | 6.096 m |

A=26.41 m²

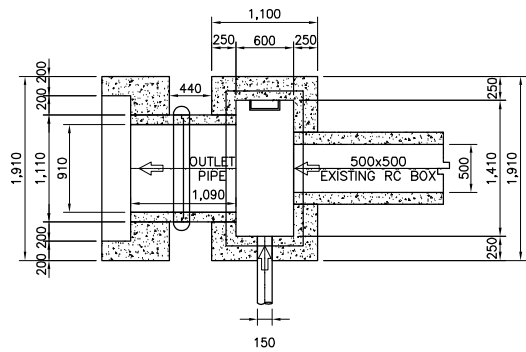


QUANTITIES OF MANHOLE

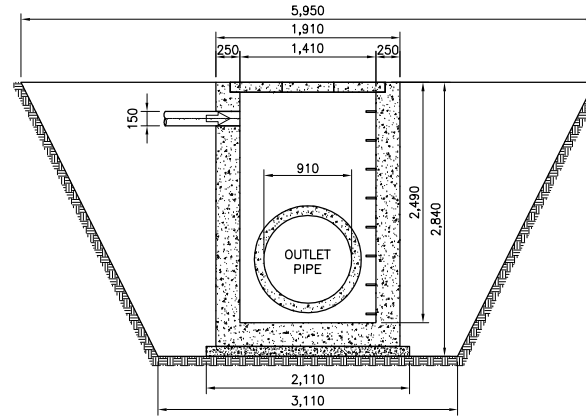
Manhole No.: MR 117.6

Location: 11 + 046

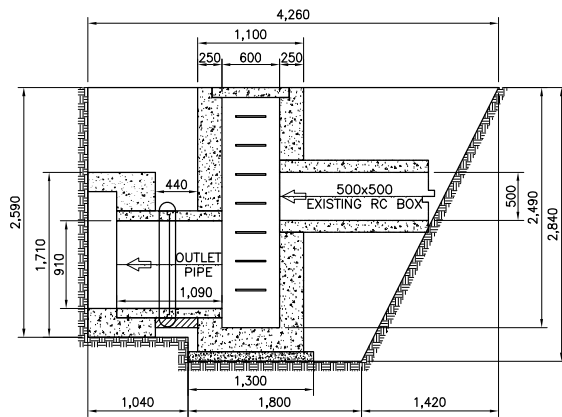
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=2.69 A2=7.13 | 4.53 4.53 | 12.20 32.29 | 44.49 m ³ |
| 2. Lev. Concrete | W=1.30 L=2.11 | 2.74 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.91 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.91 Win=0.60 Lin=1.41 | Aout=2.10 Ain=0.85 Anet=1.26 | 2.490 | 3.125 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall C | DiaC=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 2.82 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.80 | 1.288 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.29 0.37 0.48 1.44 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.09 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.44 | | 0.04884 | m ³ |
| 12. Backfill | | | | 37.08 | m ³ |



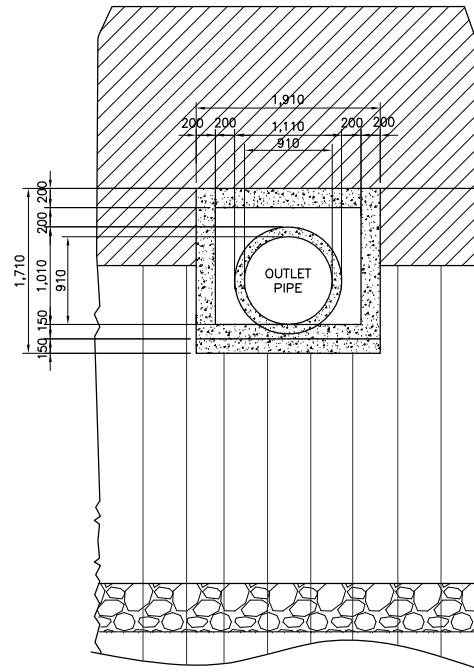
2 PLAN
SCALE A



4 SECTION (MR.117.6)
SCALE A



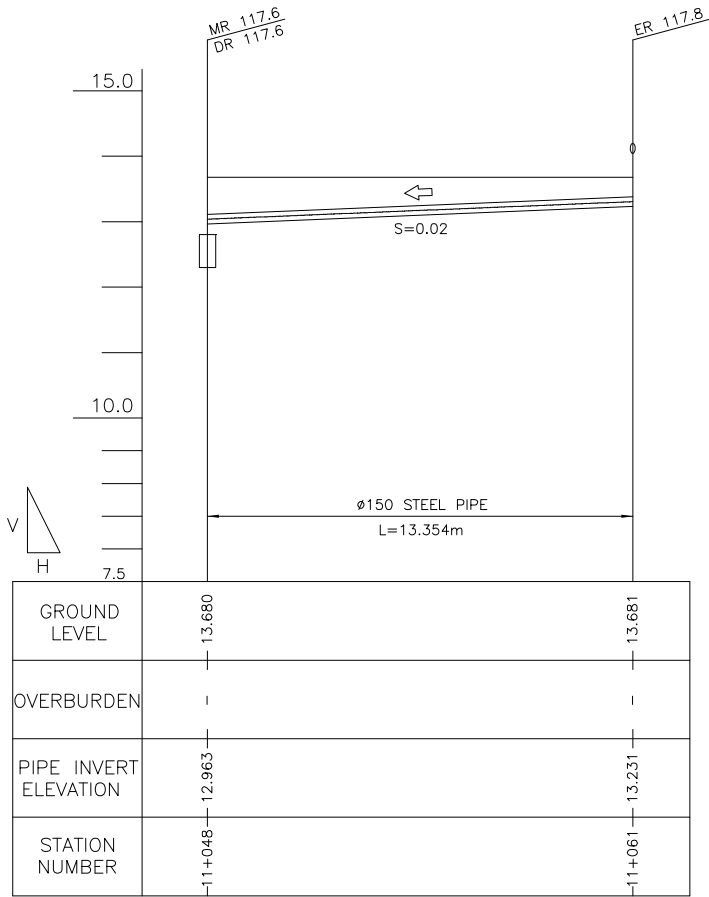
3 SECTION
SCALE A



5 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|---------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (Steel) | Dia=0.15 | | L=13.62 | 3 | pc |
| | | | | | |



2
 PROFILE
 SCALE B

Clearing (Manhole 117.6)

| | | |
|--------------|--------|------------------------------|
| L1 | 2.02 m | |
| W of Manhole | 1.5 m | A=27.73 m² |
| L2 | 0.44 m | |
| W | 5.95 m | |

Clearing (Clearing 117.8 - 117.6)

| | | |
|---|----------|------------------------------|
| W | 1.7335 m | A=23.15 m² |
| L | 13.354 m | |

(Collector Steel) Downstream

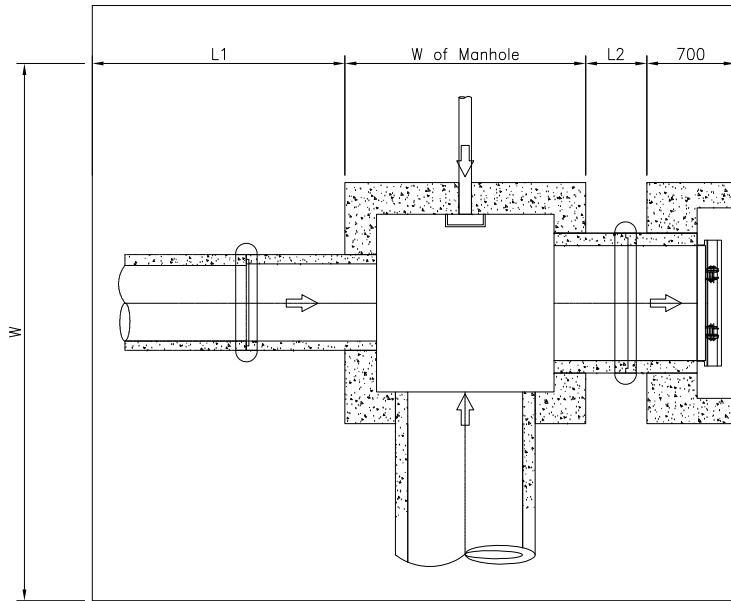
| | | |
|---------------|----------|-----------------------|
| 117.8 - 117.6 | | |
| D | 0.15 m | Excavation |
| W1 | 1.87 m | A=1.08 m ² |
| W2 | 1.51 m | Backfill Zone B |
| H | 0.717 m | A=0.46 m ² |
| H/2 | 0.3585 m | Backfill Zone C |
| EL. A | 13.68 m | A=0.61 m ² |
| EL. B | 12.963 m | |

(Collector Steel) Upstream

| | | |
|-------|----------|-----------------------|
| D | 0.15 m | Excavation |
| W1 | 1.60 m | A=0.62 m ² |
| W2 | 1.38 m | Backfill Zone B |
| H | 0.45 m | A=0.27 m ² |
| H/2 | 0.225 m | Backfill Zone C |
| EL. A | 13.681 m | A=0.33 m ² |
| EL. B | 13.231 m | |

Collector Steel 117.8 - 117.6

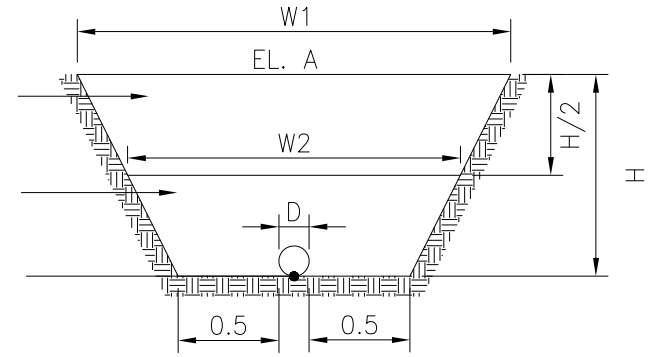
| | |
|-----------------|-------------------------------|
| Volume | |
| Excavation | 11.58026 m³ |
| Backfill Zone B | 4.939383 m³ |
| Backfill Zone C | 6.400177 m³ |



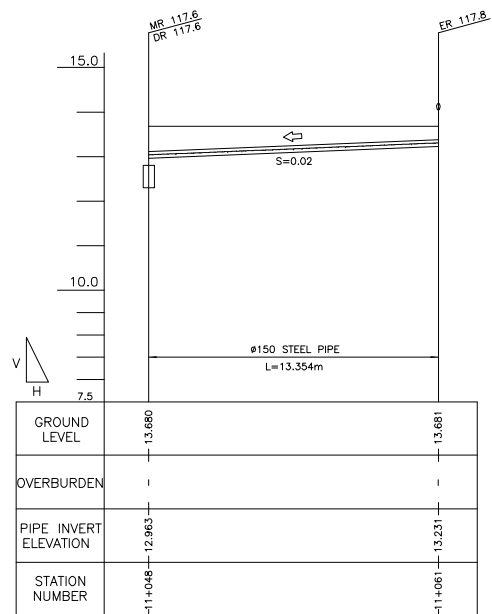
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.625



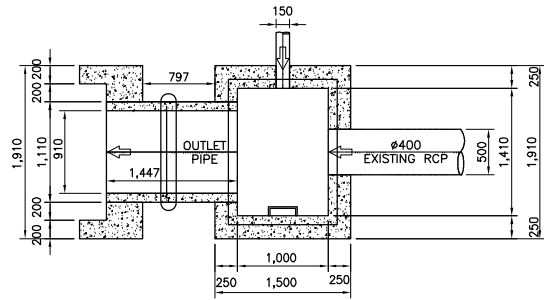
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

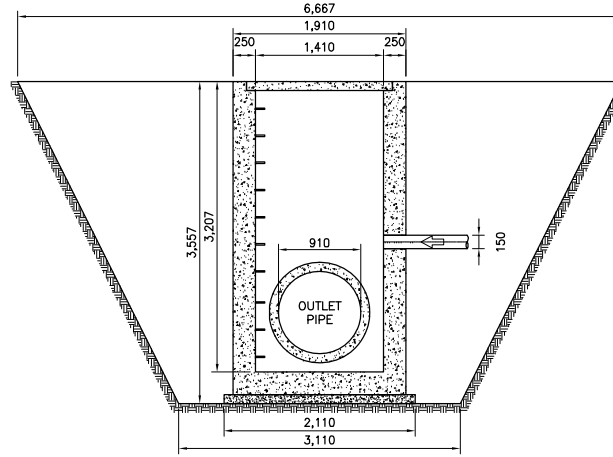
Manhole No.: MR 117.9

Location: 8 + 653

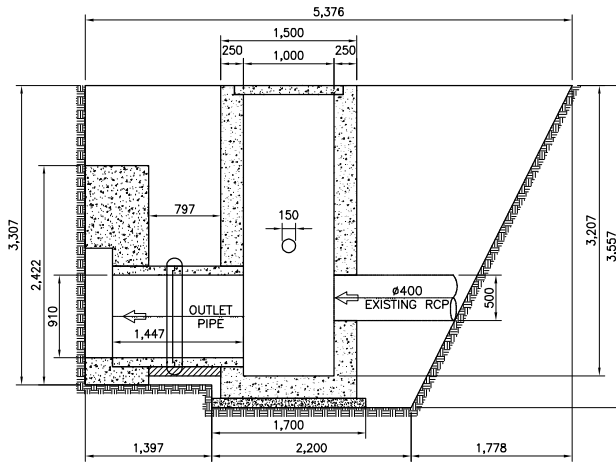
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.62 A2=10.99 | 4.89 4.89 | 22.58 53.71 | 76.30 m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.207 | 4.666 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.53 | 0.22 | 0.25 | 0.06 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.36 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.42 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=4.63 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 3.24 0.37 0.48 2.39 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.45 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.80 | | 0.088467 | m ³ |
| 12. Backfill | | | | 63.58 | m ³ |



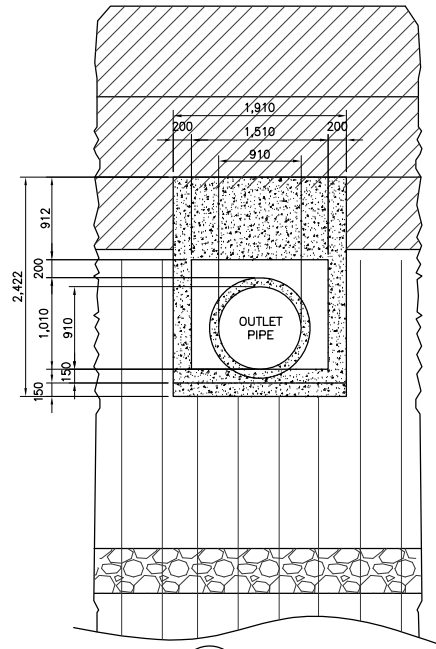
1 PLAN
SCALE A



3 SECTION
SCALE A



2 SECTION
SCALE A



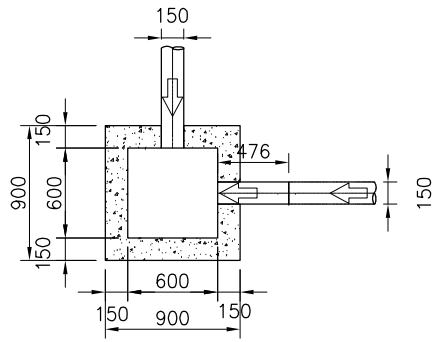
4 ELEVATION
SCALE A

QUANTITIES OF JUNCTION BOX

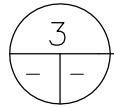
Junction Box No.: JB 117.7

Location: 11 + 134

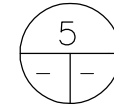
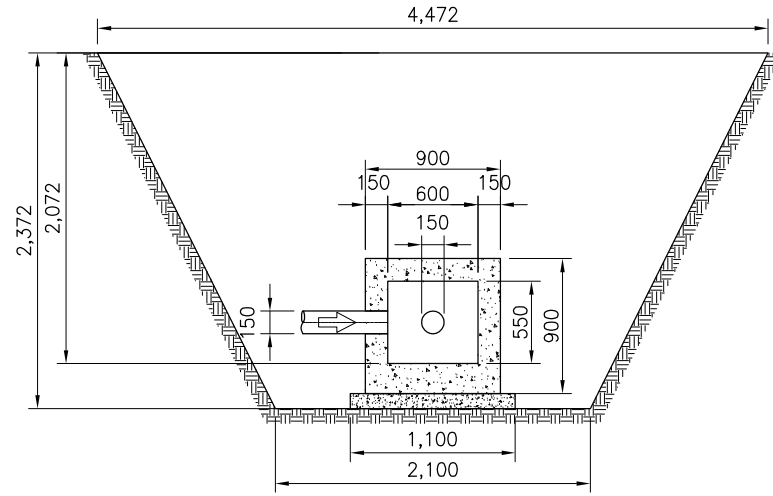
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|--|--|---------------|--------------------|----------------|
| 1. Excavation | | A1=7.79 | 3.29 | 25.61 | |
| | | | | 25.61 | m ³ |
| 2. Lev. Concrete | W=1.10 L=1.10 | 1.21 | 0.1 | 0.12 | m ³ |
| 3. Bottom Slab | W=0.90 L=0.90 | 0.81 | 0.2 | 0.16 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=0.90 Lout=.90 Win=0.60 Lin=.60 | Aout=0.81 Ain=0.36 Anet=0.45 | 0.550 | 0.248 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.02 | 0.15 | 0.00 | |
| Pipe hole on Wall A | DiaB=0.15 | 0.02 | 0.15 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.15 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.15 | 0.00 | |
| Net Wall Vol. | | | | 0.24 | m ³ |
| 5. Top Slab | L=0.90 W=0.90 | 0.81 | 0.15 | 0.12 | m ³ |
| 6. Inlet Pipe | Dia=.150m | L=0.48 | | 1 | pc |
| 7. Concrete Collar | D1=.150m D2=.330m | A1=0.02 A2=0.09 Anet=0.07 | 0.17 Qty=1 | 0.011535928 | m3 |
| 8. Conc. Bedding (Inlett Pipe) | Dia=.150m | L=0.33 | | 0.00489 | m3 |
| 9. Backfill | | | | 21.34 | m3 |



PARTIAL PLAN JUNCTION BOX
(JR 117.7)

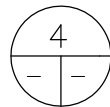
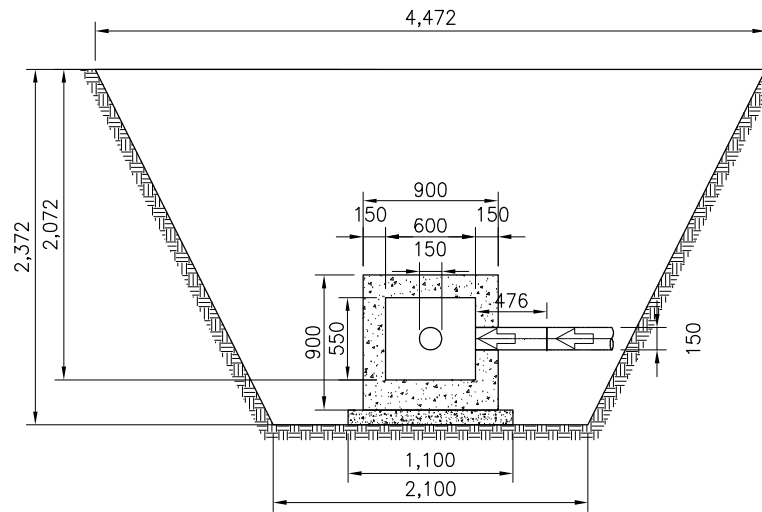


SCALE C



SECTION

SCALE C

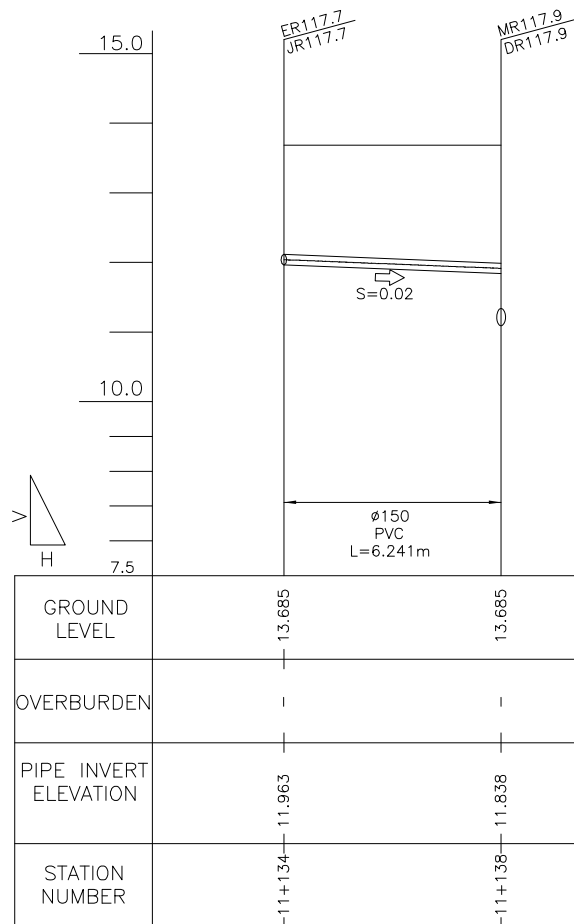


SECTION

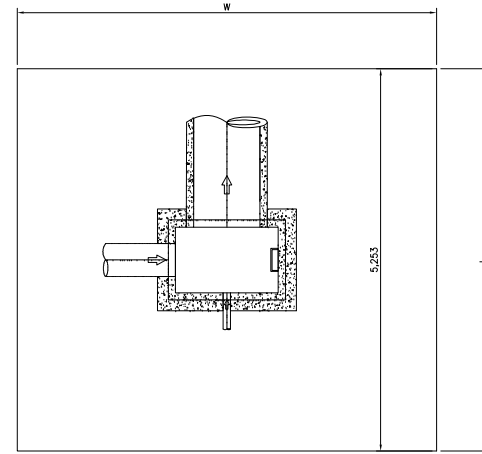
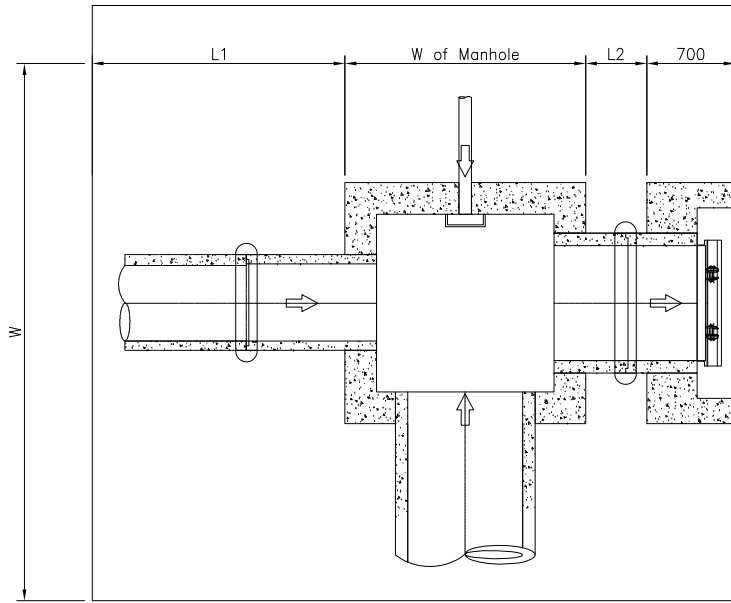
SCALE C

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=6.24 | 2 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=0.15 | | | 1 | pc |



| | | |
|--|-------------------------------|------------------------------|
| Clearing (Manhole 117.9) | | |
| L1 | 2.3785 m | |
| W of Manhole | 1.5 m | A=35.84 m² |
| L2 | 0.797 m | |
| W | 6.667 m | |
| Clearing (Junction Manhole 117.7) | | |
| W | 4.472 m | A=20.00 m² |
| L | 4.472 m | |
| Clearing (Clearing 117.7 - 117.9) | | |
| W | 2.9345 m | A=18.31 m² |
| L | 6.241 m | |
| (Collector PVC) Downstream 117.7 - 117.9 | | |
| D | 0.15 m | Excavation |
| W1 | 3.00 m | A=3.83 m ² |
| W2 | 2.07 m | Backfill Zone B |
| H | 1.847 m | A=1.47 m ² |
| H/2 | 0.9235 m | Backfill Zone C |
| EL. A | 13.685 m | A=2.34 m ² |
| EL. B | 11.838 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 2.87 m | A=3.46 m ² |
| W2 | 2.01 m | Backfill Zone B |
| H | 1.722 m | A=1.34 m ² |
| H/2 | 0.861 m | Backfill Zone C |
| EL. A | 13.685 m | A=2.10 m ² |
| EL. B | 11.963 m | |
| Collector PVC 117.7 - 117.9 | | |
| Excavation | 23.212 m³ | |
| Backfill Zone B | 8.95645 m³ | |
| Backfill Zone C | 14.14305 m³ | |

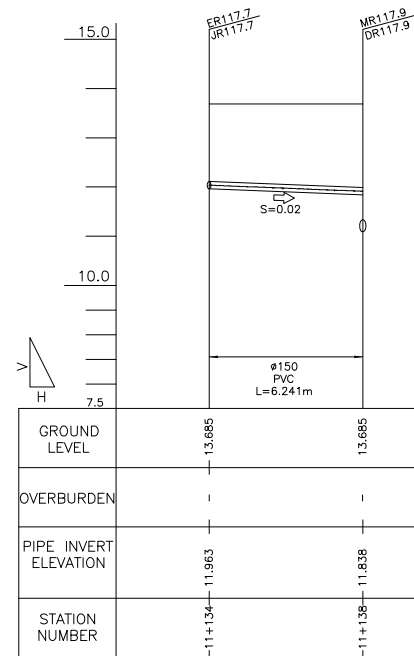
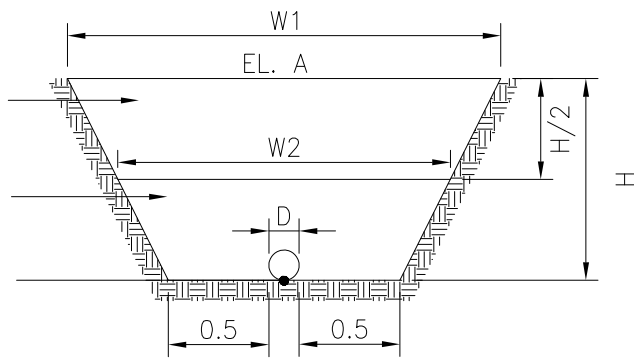


3.632

BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC

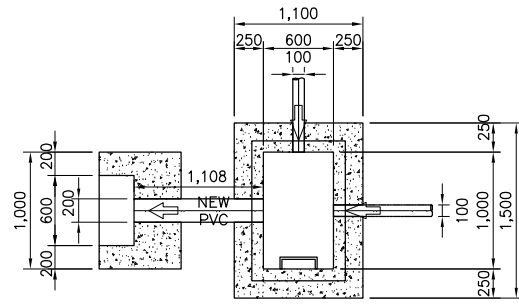


QUANTITIES OF MANHOLE

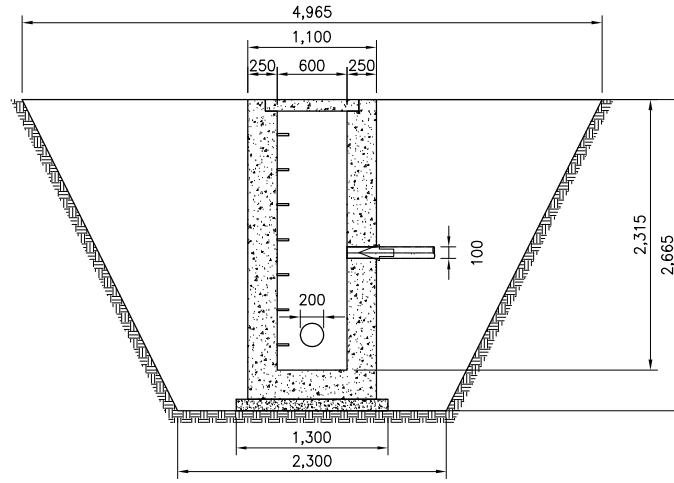
Manhole No.: MR 117B.13

Location: 11 + 638

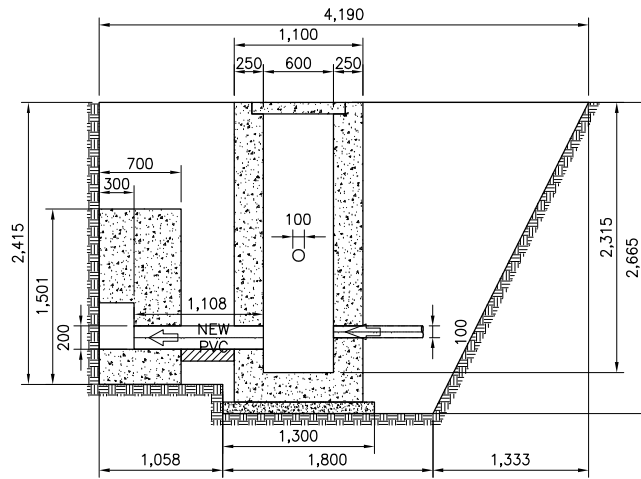
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|--|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=2.56 A2=6.57 | 3.63 3.63 | 9.28 23.88 | 33.16 m ³ |
| 2. Lev. Concrete | W=1.30 L=1.30 | 1.69 | 0.1 | 0.17 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.10 | 1.21 | 0.25 | 0.30 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.10 Win=0.60 Lin=.60 | Aout=1.21 Ain=0.36 Anet=0.85 | 2.315 | 1.968 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.20 | 0.03 | 0.25 | 0.01 | |
| Net Wall Vol. | | | | 1.96 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=7 | 0.000201062 | | 0.000120637 0.95 6.63 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.20 Lout=1.50 Win=0.80 Lin=.55 DiaD=0.40 | Ain=1.80 Aout=0.44 Apipe=.13 | 0.7 0.2 0.5 | 1.26 0.09 0.06 1.11 | m ³ |
| 9. Outlet Pipe (PVC) | Dia=.300m | L=1.11 | | 1 | pc |
| 10. Conc. Bedding (Outlet Pipe) | Dia=.400m | L=0.46 | | 0.01832 | m ³ |
| 11. Backfill | | | | 27.63 | m ³ |



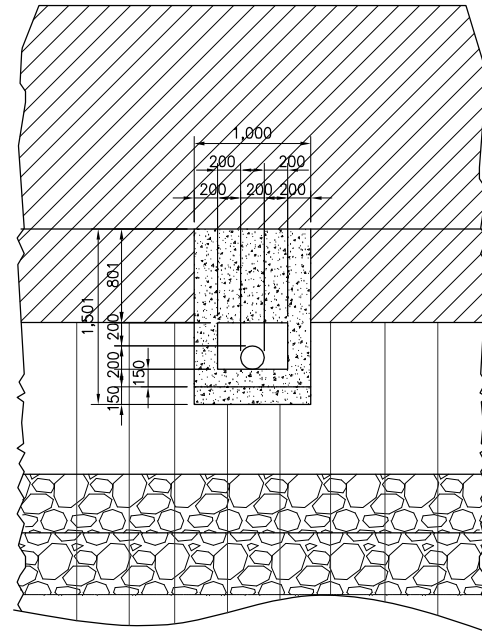
1 PLAN
SCALE A



3 SECTION (ML117.13)
SCALE A



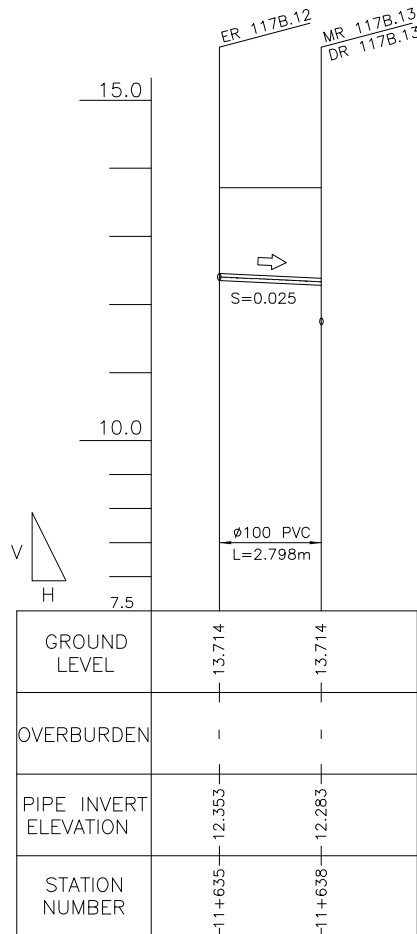
2 SECTION
SCALE A



4 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.10 | | L=2.80 | 1 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=0.10 | | | 0 | pc |



Clearing (Manhole 117B.13)

| | | |
|--------------|----------|------------------------------|
| L1 | 1.9325 m | |
| W of Manhole | 1.1 m | A=20.81 m² |
| L2 | 0.458 m | |
| W | 4.965 m | |

Clearing (Clearing 117B.12 - 117B.13)

| | | |
|---|---------|-----------------------------|
| W | 2.496 m | A=6.98 m² |
| L | 2.798 m | |

(Collector PVC) Downstream 117B.12 - 117B.13

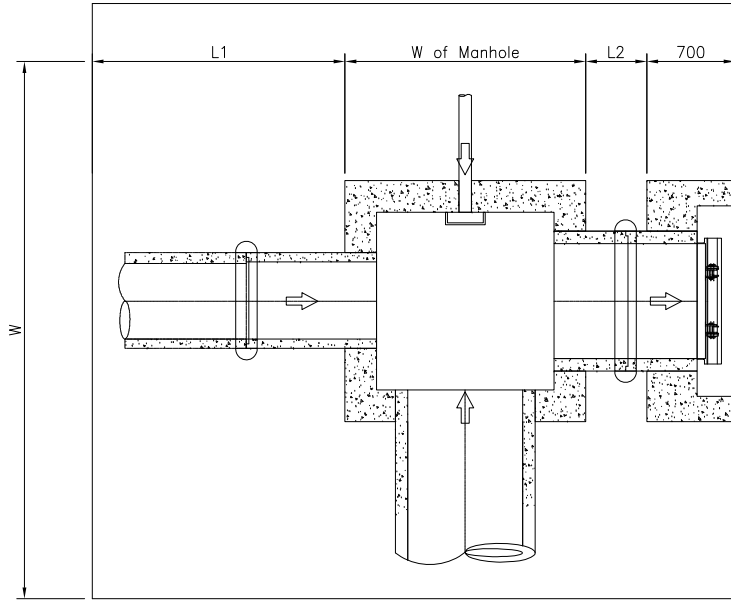
| | | |
|-------|----------|-----------------------|
| D | 0.1 m | Excavation |
| W1 | 2.53 m | A=2.60 m ² |
| W2 | 1.82 m | Backfill Zone B |
| H | 1.431 m | A=1.04 m ² |
| H/2 | 0.7155 m | Backfill Zone C |
| EL. A | 13.714 m | A=1.55 m ² |
| EL. B | 12.283 m | |

(Collector PVC) Upstream

| | | |
|-------|----------|-----------------------|
| D | 0.1 m | Excavation |
| W1 | 2.46 m | A=2.42 m ² |
| W2 | 1.78 m | Backfill Zone B |
| H | 1.361 m | A=0.97 m ² |
| H/2 | 0.6805 m | Backfill Zone C |
| EL. A | 13.714 m | A=1.44 m ² |
| EL. B | 12.353 m | |

Collector PVC 117B.12 - 117B.13

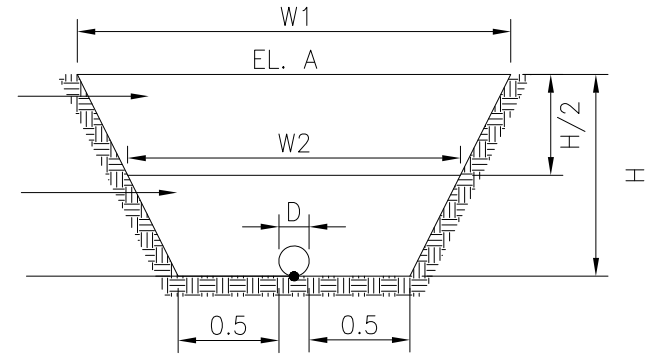
| | |
|-----------------|-------------------------------|
| Volume | |
| Excavation | 7.200334 m³ |
| Backfill Zone B | 2.878565 m³ |
| Backfill Zone C | 4.299245 m³ |



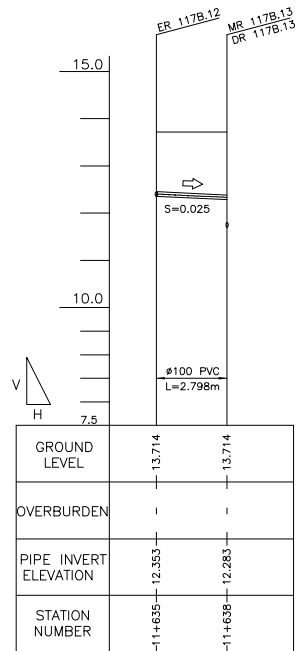
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.637

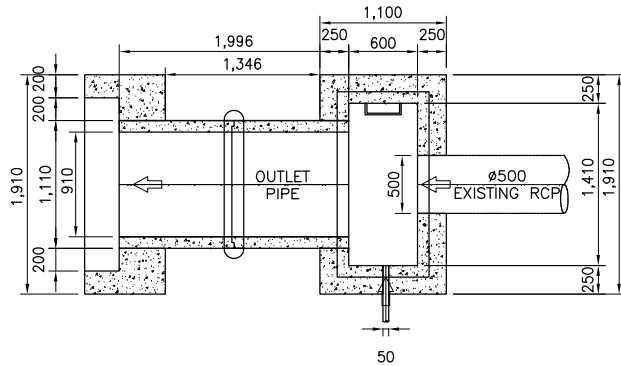


QUANTITIES OF MANHOLE

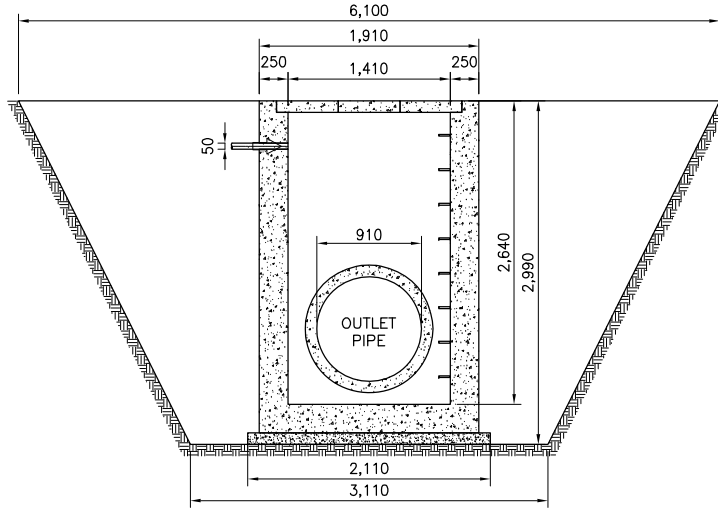
Manhole No.: MR 170.1

Location: 13 + 604

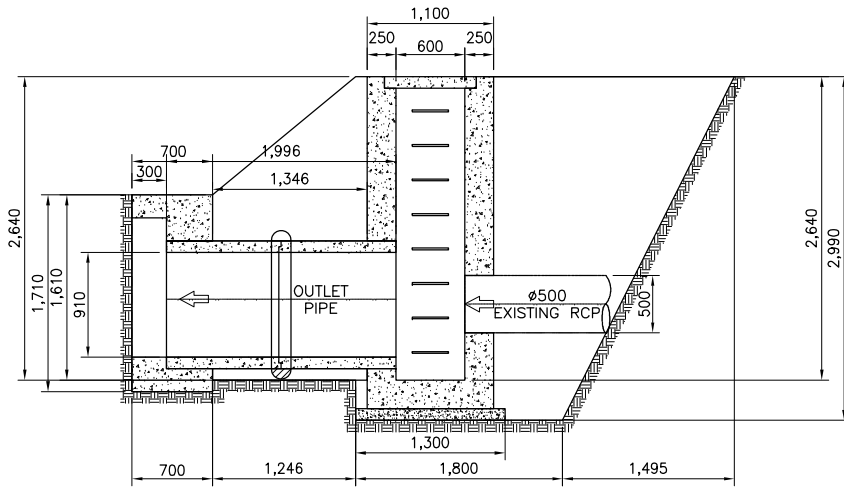
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=11.46 | 4.61 | 52.78 | |
| | | | | 52.78 | m ³ |
| 2. Lev. Concrete | W=1.30 L=2.11 | 2.74 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.91 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.91 Win=0.60 Lin=1.41 | Aout=2.10 Ain=0.85 Anet=1.26 | 2.640 | 3.313 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.25 | 0.08 | |
| Pipe hole on Wall C | DiaC=0.05 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 2.99 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.80 | 1.288 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=2.00 | | 2 | pc |
| 11. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 12. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.35 | | 0.149406 | m3 |
| 13. Backfill | | | | 43.98 | m3 |



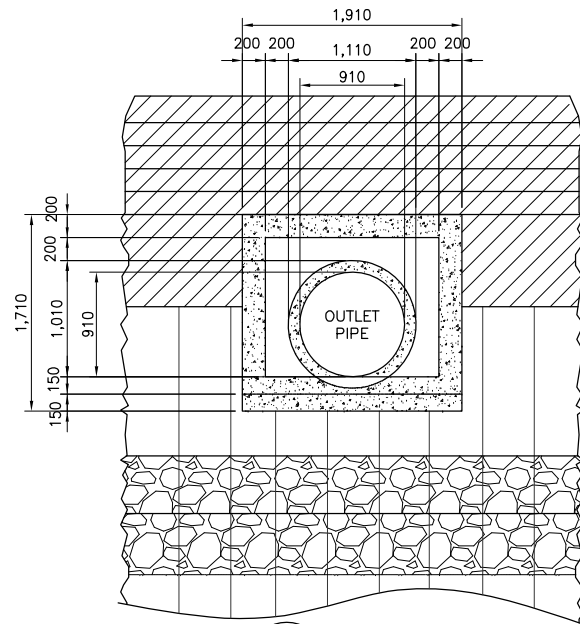
1 PLAN
SCALE B



4 SECTION
SCALE B



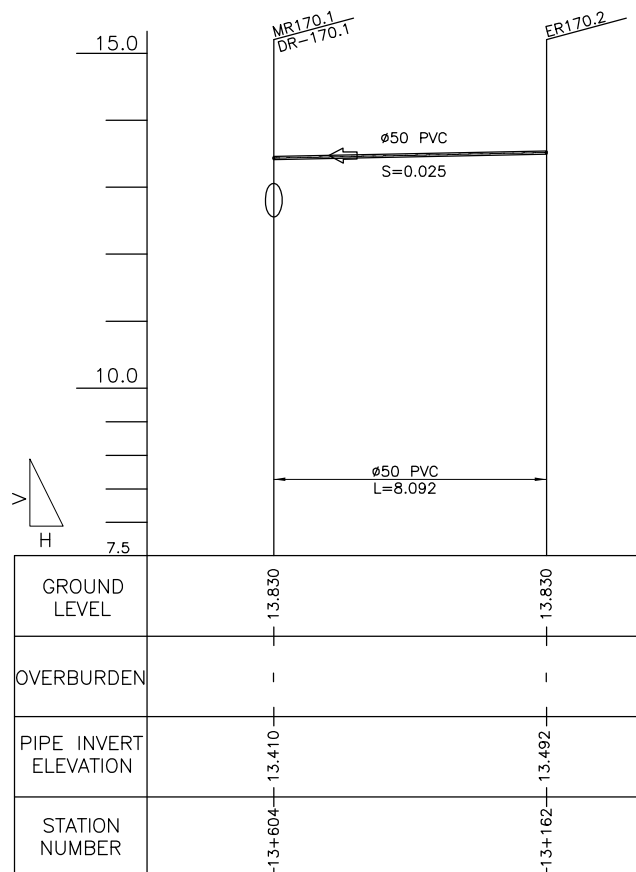
3 SECTION
SCALE B



5 ELEVATION
SCALE B

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.05 | | L=8.29 | 3 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.05 | | | 2 | pc |



2 PROFILE
 SCALE B

Clearing (Manhole 170.1)

| | | |
|--------------|---------|------------------------------|
| L1 | 2.095 m | |
| W of Manhole | 1.1 m | A=31.97 m² |
| L2 | 1.346 m | |
| W | 6.1 m | |

Clearing (Collector 170.2 - 170.1)

| | | |
|---|----------|------------------------------|
| W | 1.3675 m | A=11.07 m² |
| L | 8.092 m | |

(Collector PVC) Downstream 170.2 - 170.1

| | | |
|-------|----------|-----------------------|
| D | 0.05 m | Excavation |
| W1 | 1.35 m | A=0.36 m ² |
| W2 | 1.20 m | Backfill Zone B |
| H | 0.297 m | A=0.16 m ² |
| H/2 | 0.1485 m | Backfill Zone C |
| EL. A | 13.83 m | A=0.19 m ² |
| EL. B | 13.533 m | |

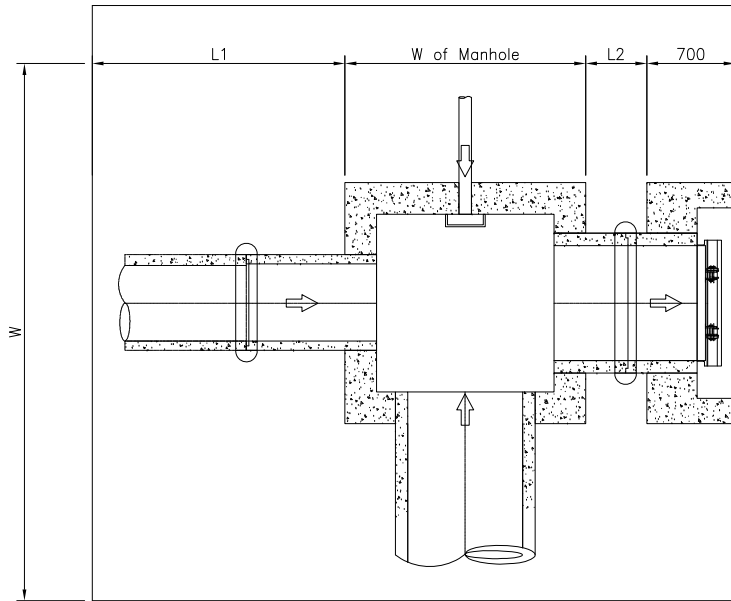
(Collector PVC) Upstream

| | | |
|-------|----------|-----------------------|
| D | 0.05 m | Excavation |
| W1 | 1.39 m | A=0.41 m ² |
| W2 | 1.22 m | Backfill Zone B |
| H | 0.338 m | A=0.19 m ² |
| H/2 | 0.169 m | Backfill Zone C |
| EL. A | 13.83 m | A=0.22 m ² |
| EL. B | 13.492 m | |

Collector PVC 170.2 - 170.1

Volume

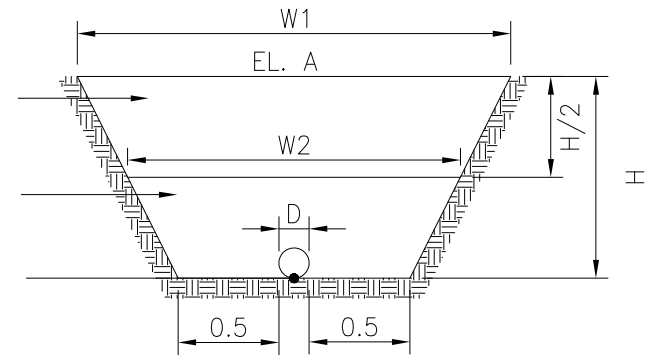
| | |
|-----------------|-------------------------------|
| Excavation | 3.184914 m³ |
| Backfill Zone B | 1.471221 m³ |
| Backfill Zone C | 1.697407 m³ |



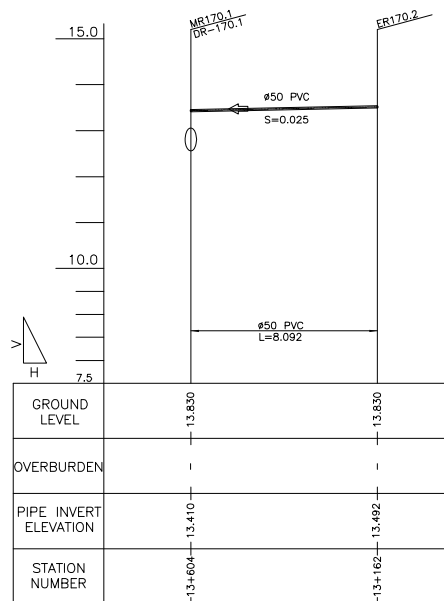
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.642



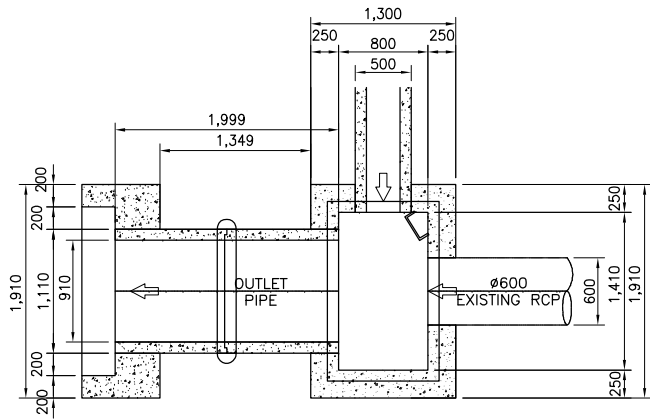
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

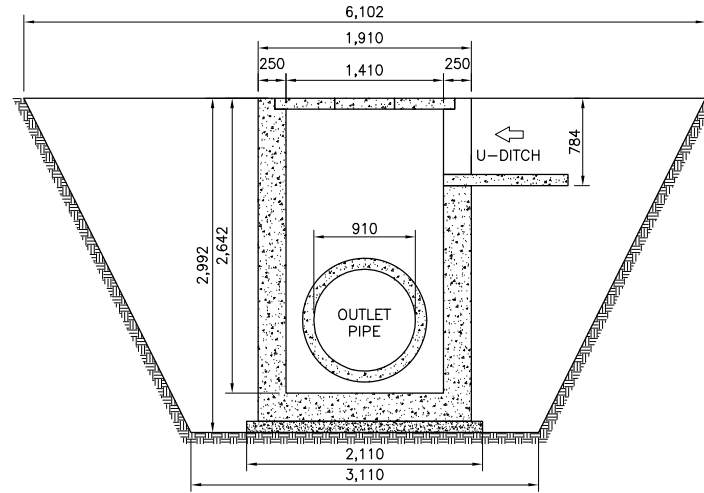
Manhole No.: MR 171

Location: 13 + 630

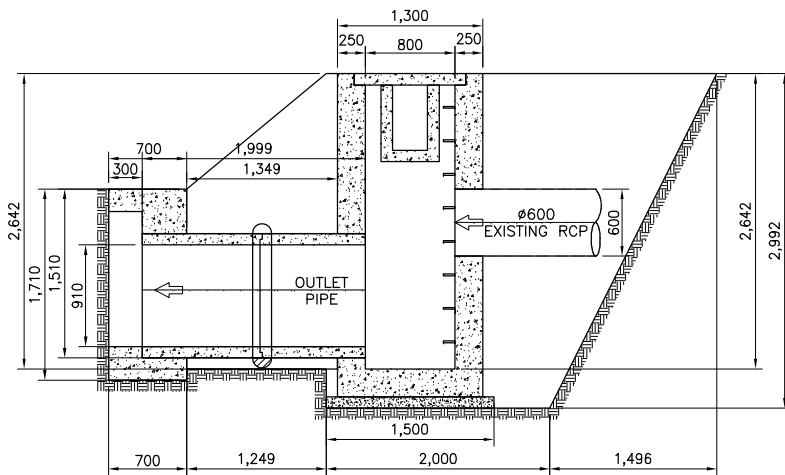
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=12.07 | 4.61 | 55.61 | |
| | | | | 55.61 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.642 | 3.580 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.75 | 0.44 | 0.25 | 0.11 | |
| D=0.78 | W=0.50 | 0.39 | 0.25 | 0.10 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.13 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.80 | 1.288 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=2.00 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.35 | | 0.149739 | m3 |
| 12. Backfill | | | | 46.35 | m3 |



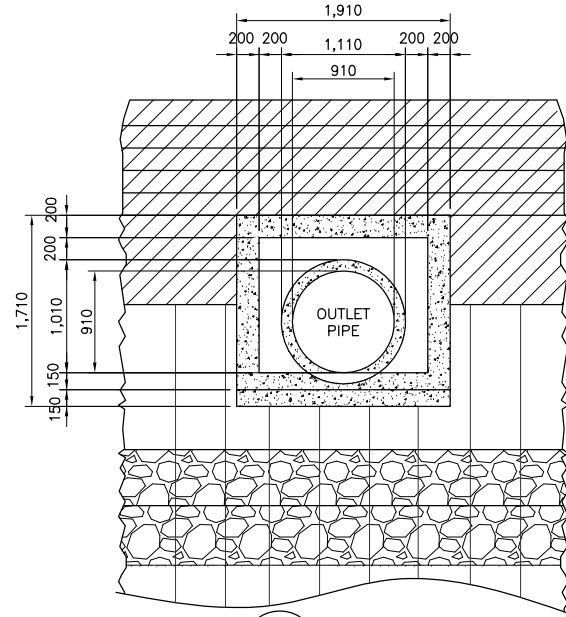
1 PLAN
SCALE B



3 SECTION(MR171)
SCALE B



2 SECTION
SCALE B



4 ELEVATION
SCALE B

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|---------------------|----------------------|-----------|----------------|---------------|----------------|
| 1. U - Ditch | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 33.03033 | 1.65 | m ³ |
| Wall | W=.705m L=32.866m | 46.308194 | 0.1 | 4.63 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 32.866 | 1.64 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 33.03 | 1.65 | m ³ |
| 4. Formworks | | | | 67.04 | m3 |



2 PROFILE
 SCALE B

Clearing (Manhole 171)

| | | |
|--------------|---------|------------------------------|
| L1 | 2.096 m | |
| W of Manhole | 1.3 m | A=33.23 m² |
| L2 | 1.349 m | |
| W | 6.102 m | |

Clearing (U - Ditch 171.5 - 171)

| | | |
|---|----------|------------------------------|
| W | 2.3545 m | A=77.38 m² |
| L | 32.866 m | |

(U - Ditch) Downstream

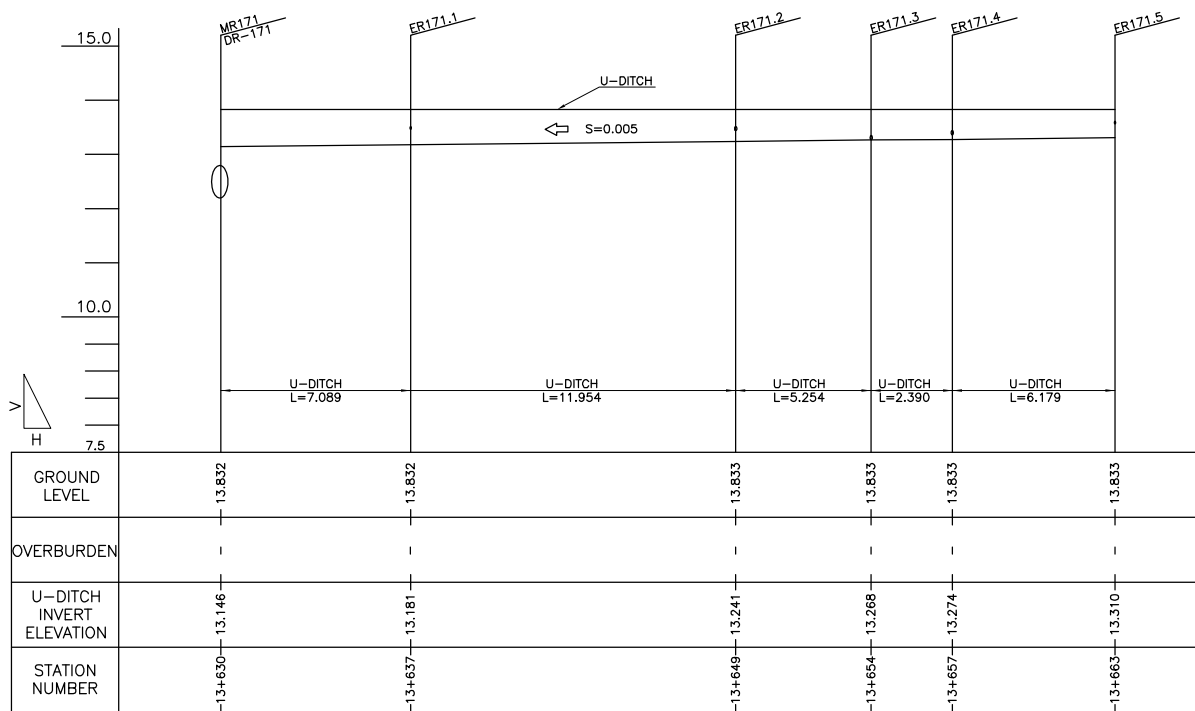
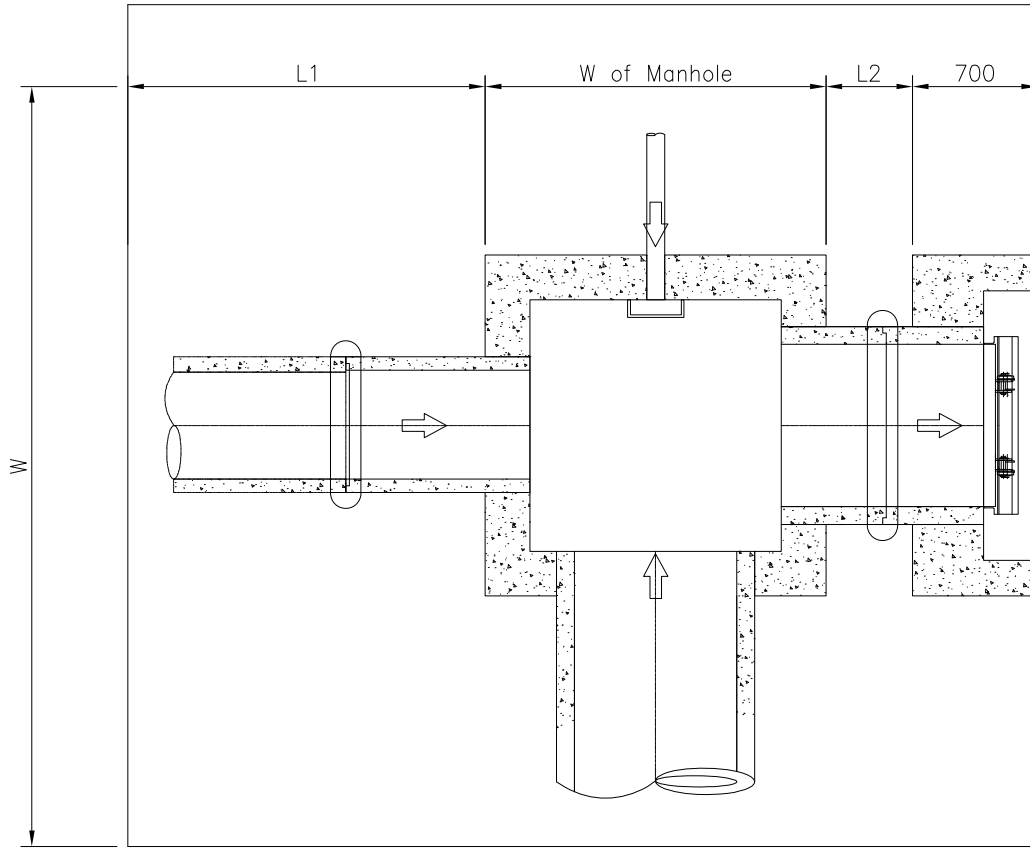
| | | |
|-------------|----------|-----------------------|
| 171.5 - 171 | | |
| d | 0.686 m | Excavation |
| D | 0.836 m | A=1.69 m ² |
| D/2 | 0.418 m | Backfill Zone B |
| W1 | 2.436 m | A=0.54 m ² |
| W2 | 2.018 m | Backfill Zone C |
| EL. A | 13.832 m | A=0.72 m ² |
| EL. B | 13.146 m | |

(U - Ditch) Upstream

| | | |
|-------|----------|-----------------------|
| d | 0.523 m | Excavation |
| D | 0.673 m | A=1.30 m ² |
| D/2 | 0.3365 m | Backfill Zone B |
| W1 | 2.273 m | A=0.42 m ² |
| W2 | 1.9365 m | Backfill Zone C |
| EL. A | 13.833 m | A=0.54 m ² |
| EL. B | 13.31 m | |

U - Ditch 171.5 - 171

| | |
|-----------------|-------------------------------|
| Excavation | 49.3855 m³ |
| Backfill Zone B | 15.91943 m³ |
| Backfill Zone C | 20.84023 m³ |



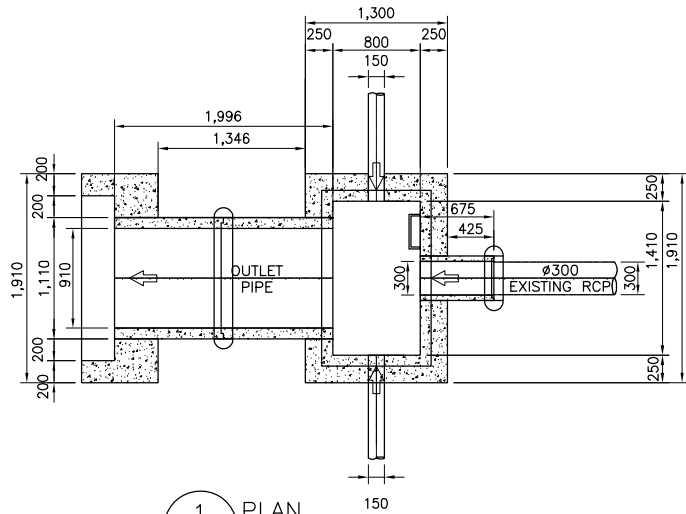
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

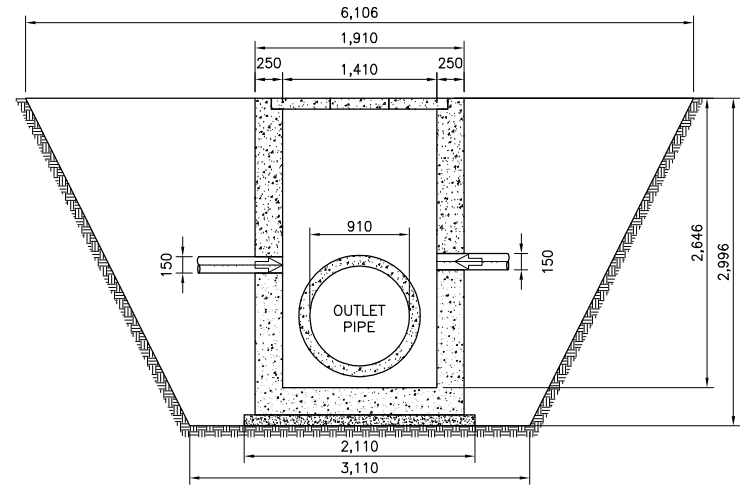
Manhole No.: MR 172

Location: 13 + 707

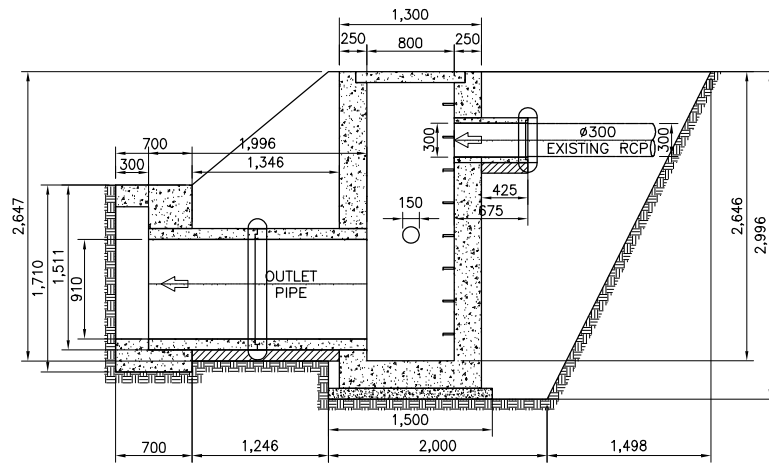
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=12.09 | 4.61 | 55.69 | |
| | | | | 55.69 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.646 | 3.585 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaB=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.30 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=2.00 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.35 | | 0.149406 | m ³ |
| 12. Inlet Pipe | Dia=.300m | L=0.68 | | 1 | pc |
| 13. Conc. Collar (Inlet Pipe) | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=1 | 0.02355252 | m ³ |
| 14. Conc. Bedding (Inlet Pipe) | Dia=.400m | L=0.43 | | 0.017 | m ³ |
| 15. Backfill | | | | 46.41 | m ³ |



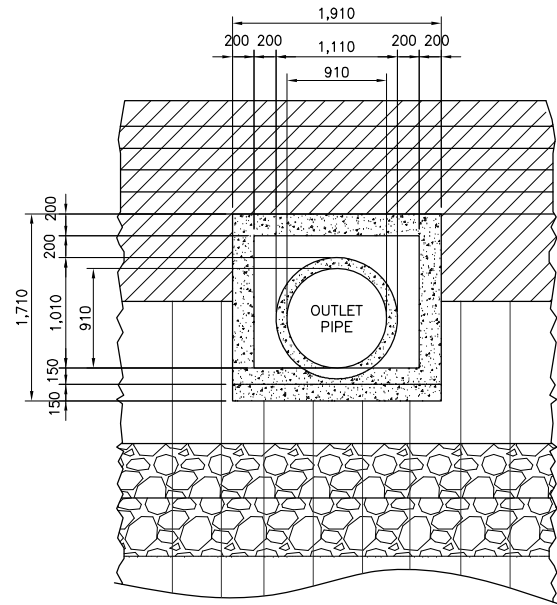
1 PLAN
SCALE A



3 SECTION
SCALE A



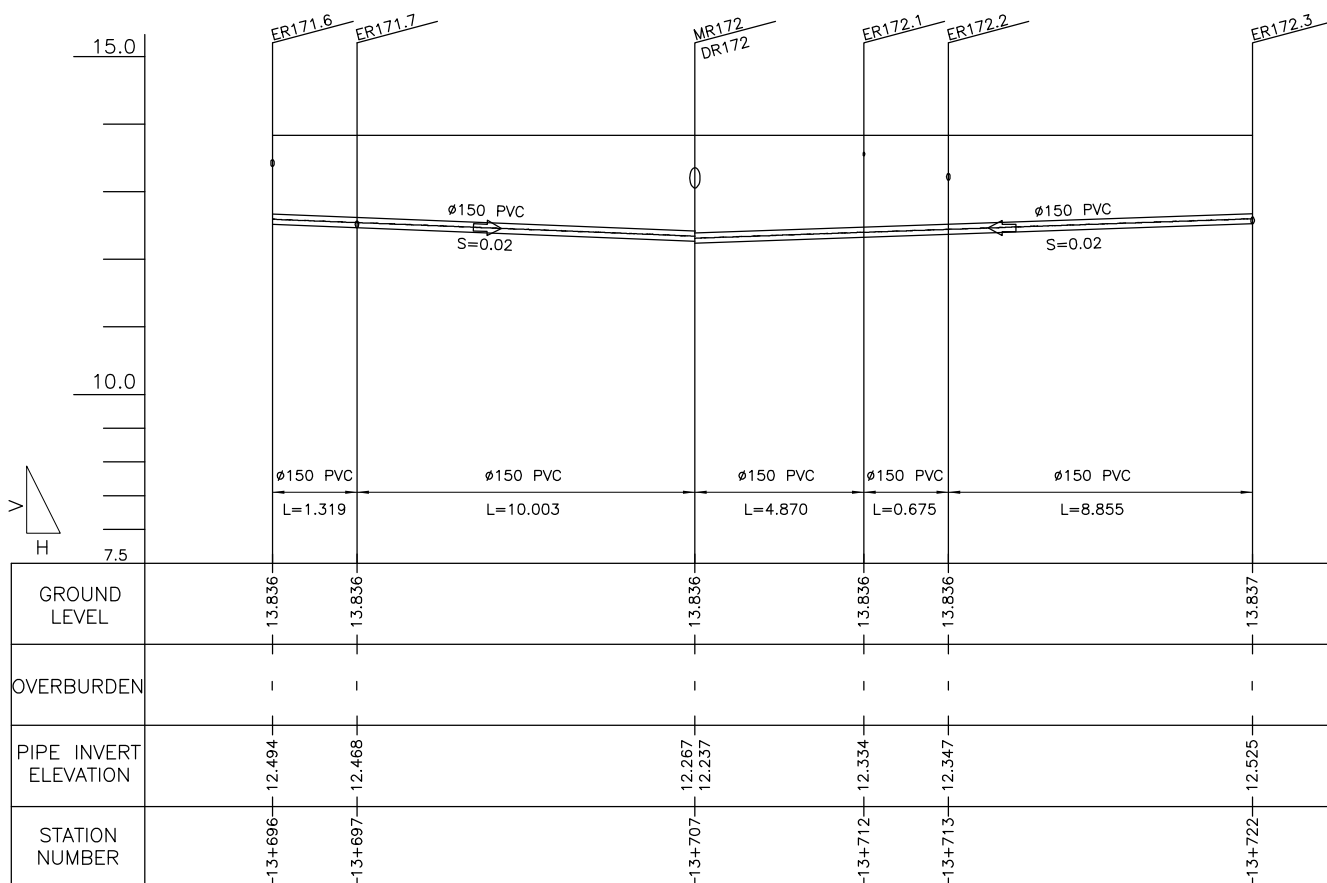
2 SECTION
SCALE A



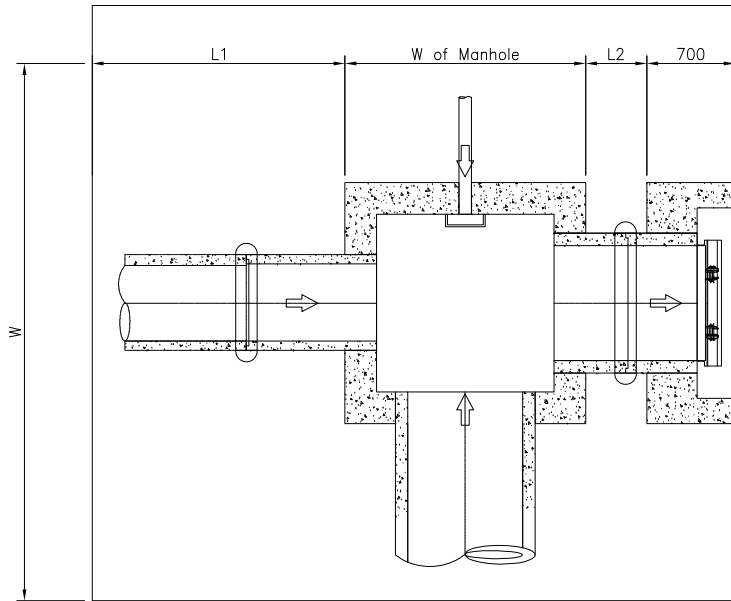
4 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=26.24 | 9 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.15 | | | 7 | pc |



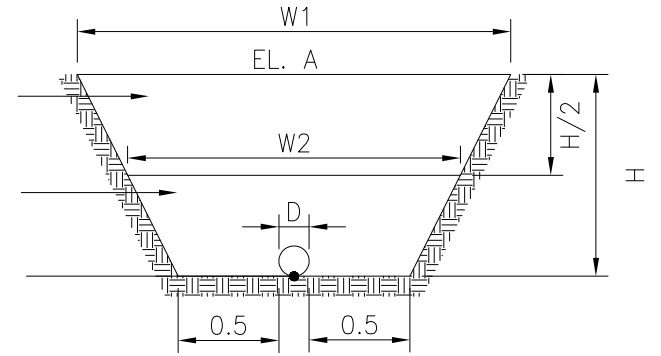
| | | |
|--|-------------------------------|------------------------------|
| Clearing (Manhole 170.1) | | |
| L1 | 2.098 m | |
| W of Manhole | 1.3 m | A=33.24 m² |
| L2 | 1.346 m | |
| W | 6.106 m | |
| Clearing (Collector 171.6 - 172) | | |
| W | 2.6055 m | A=29.50 m² |
| L | 11.322 m | |
| Clearing (Collector 172.3 - 172) | | |
| W | 2.6055 m | A=37.52 m² |
| L | 14.4 m | |
| (Collector PVC) Downstream 171.6 - 172 | | |
| D | 0.15 m | Excavation |
| W1 | 2.72 m | A=3.04 m ² |
| W2 | 1.93 m | Backfill Zone B |
| H | 1.569 m | A=1.19 m ² |
| H/2 | 0.7845 m | Backfill Zone C |
| EL. A | 13.836 m | A=1.83 m ² |
| EL. B | 12.267 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 2.49 m | A=2.44 m ² |
| W2 | 1.82 m | Backfill Zone B |
| H | 1.342 m | A=0.98 m ² |
| H/2 | 0.671 m | Backfill Zone C |
| EL. A | 13.836 m | A=1.45 m ² |
| EL. B | 12.494 m | |
| (Collector PVC) Downstream 172.3 - 172 | | |
| D | 0.15 m | Excavation |
| W1 | 2.75 m | A=3.12 m ² |
| W2 | 1.95 m | Backfill Zone B |
| H | 1.599 m | A=1.22 m ² |
| H/2 | 0.7995 m | Backfill Zone C |
| EL. A | 13.836 m | A=1.88 m ² |
| EL. B | 12.237 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 2.46 m | A=2.37 m ² |
| W2 | 1.81 m | Backfill Zone B |
| H | 1.312 m | A=0.95 m ² |
| H/2 | 0.656 m | Backfill Zone C |
| EL. A | 13.837 m | A=1.40 m ² |
| EL. B | 12.525 m | |
| Collector PVC 133C.6-134 Volume | | |
| Excavation | 31.63702 m³ | |
| Backfill Zone B | 12.5377 m³ | |
| Backfill Zone C | 18.89525 m³ | |
| Collector PVC 134.1-134 Volume | | |
| Excavation | 40.29449 m³ | |
| Backfill Zone B | 15.96035 m³ | |
| Backfill Zone C | 24.07458 m³ | |



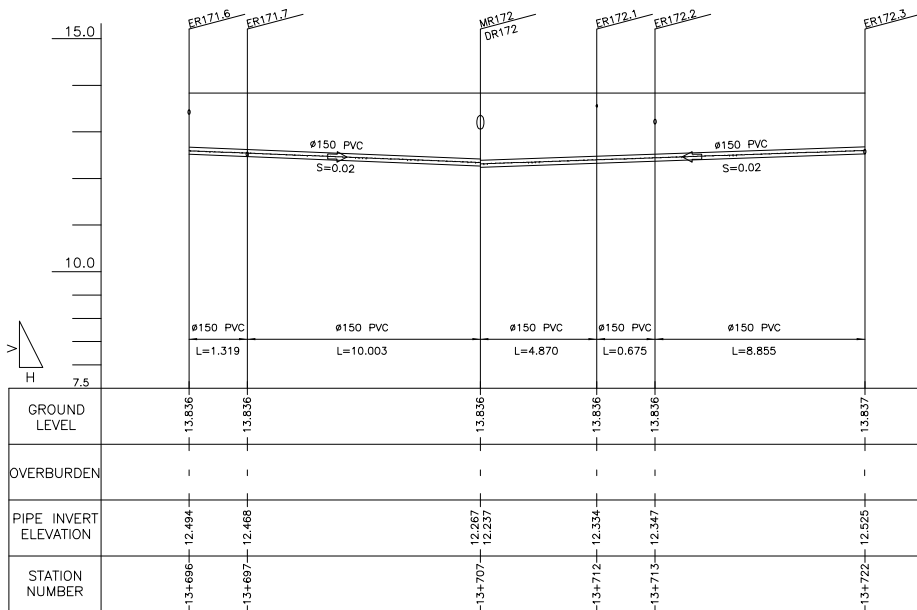
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.652



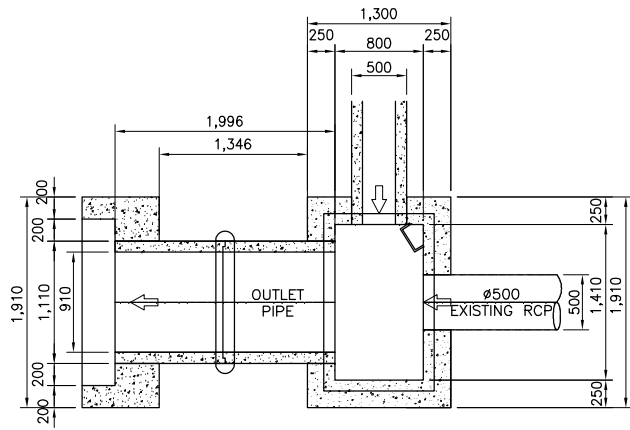
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

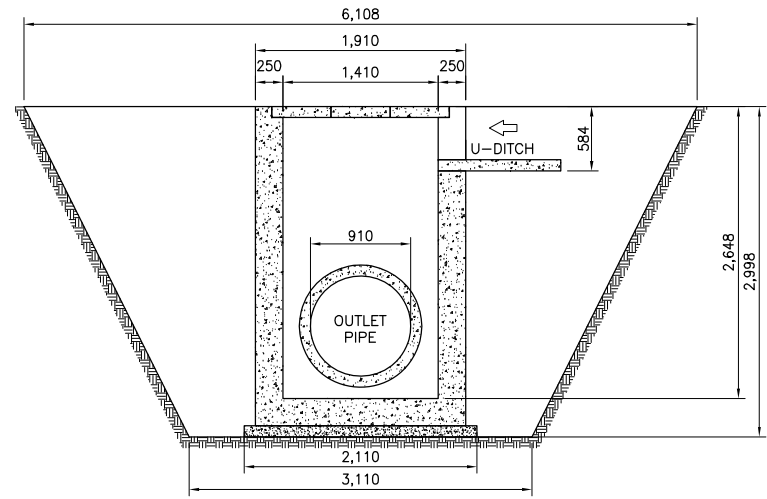
Manhole No.: MR 172.6

Location: 13 + 733

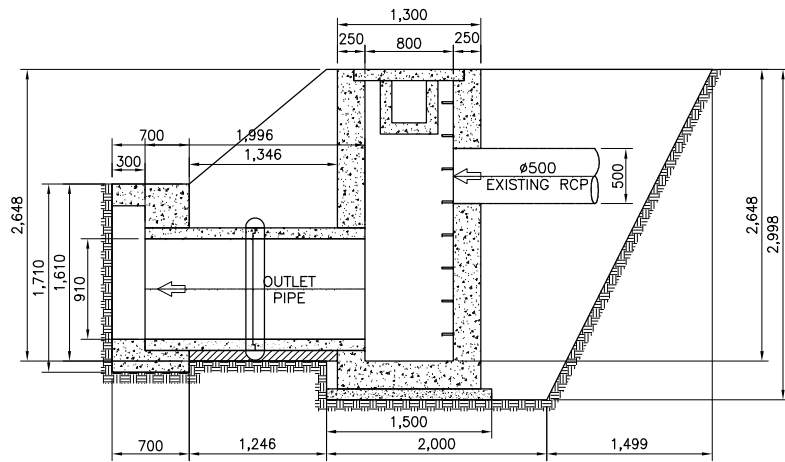
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=12.09 | 4.61 | 55.72 | |
| | | | | 55.72 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.648 | 3.588 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.25 | 0.08 | |
| D=0.58 | W=0.50 | 0.29 | 0.25 | 0.07 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.19 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=2.00 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.35 | | 0.149406 | m3 |
| 12. Backfill | | | | 46.44 | m3 |



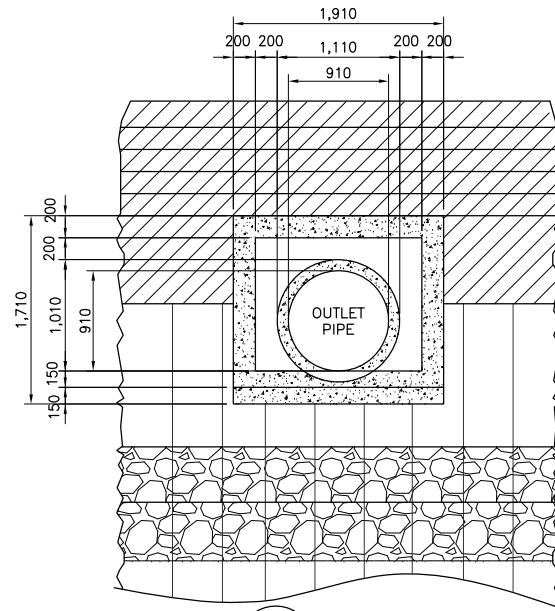
1 PLAN
SCALE B



3 SECTION (MR172.6)
SCALE B



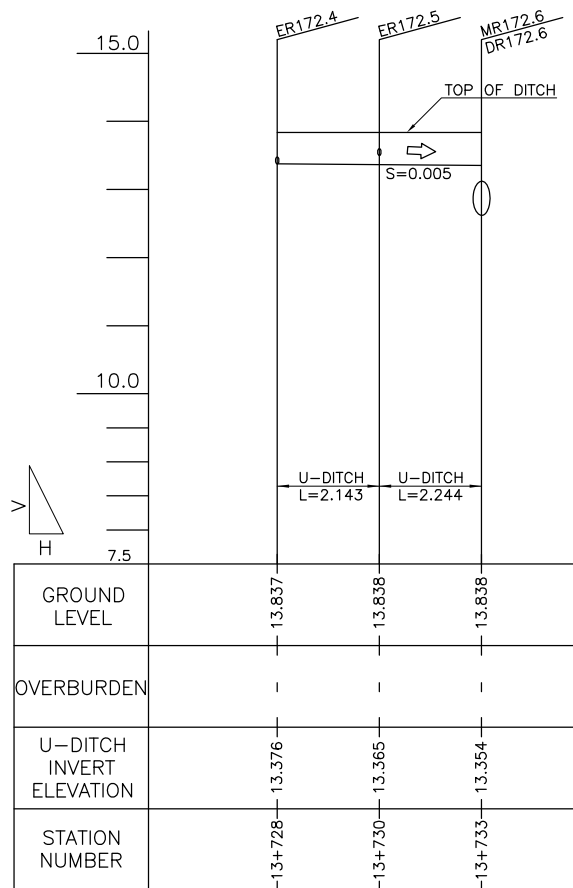
2 SECTION
SCALE B



4 ELEVATION
SCALE B

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|---------------------|---------------------|----------|----------------|---------------|----------------|
| 1. U - Ditch | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 4.408935 | 0.22 | m ³ |
| Wall | W=.573m L=4.387m | 5.023115 | 0.1 | 0.50 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 4.387 | 0.22 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 4.41 | 0.22 | m ³ |
| 4. Formworks | | | | 8.14 | m3 |



2 PROFILE
 SCALE B

Clearing (Manhole 172.6)

| | | |
|--------------|---------|------------------------------|
| L1 | 2.099 m | |
| W of Manhole | 1.3 m | A=33.26 m² |
| L2 | 1.346 m | |
| W | 6.108 m | |

Clearing (U - Ditch 172.4 - 172.6)

| | | |
|---|----------|-----------------------------|
| W | 2.2225 m | A=9.75 m² |
| L | 4.387 m | |

(U - Ditch) Downstream

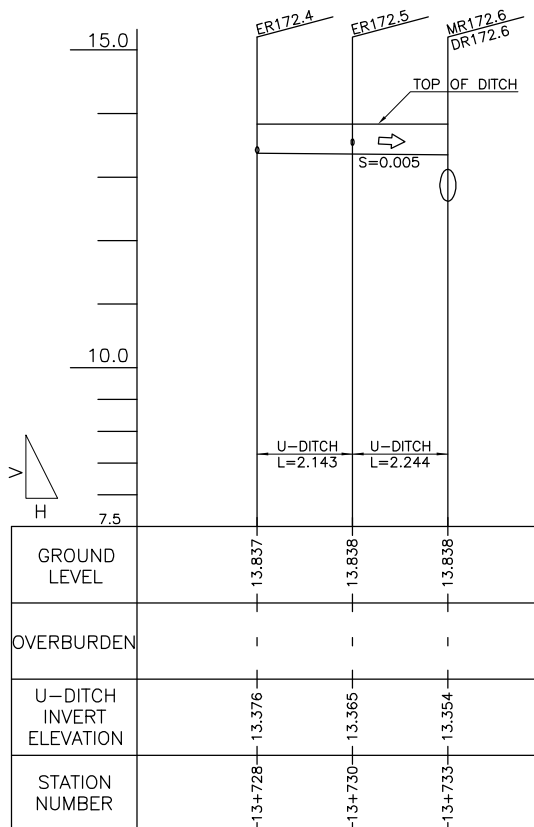
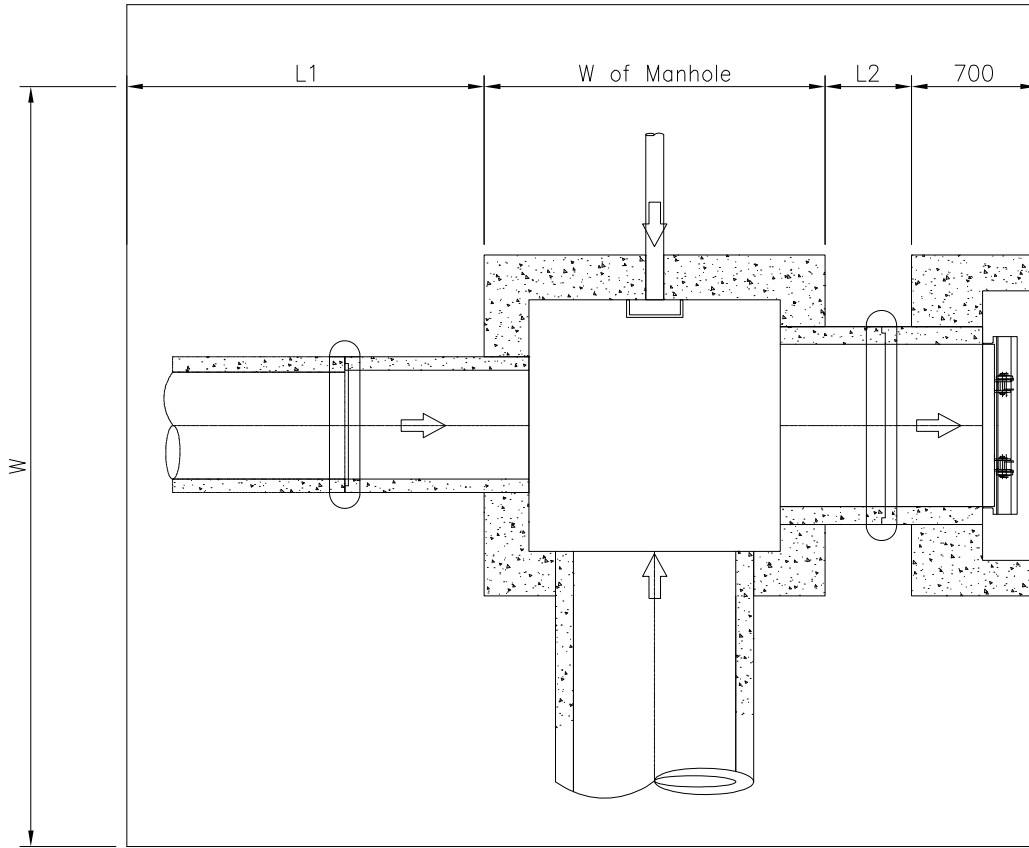
| | | |
|---------------|----------|-----------------------|
| 172.4 - 172.6 | | |
| d | 0.484 m | Excavation |
| D | 0.634 m | A=1.22 m ² |
| D/2 | 0.317 m | Backfill Zone B |
| W1 | 2.234 m | A=0.39 m ² |
| W2 | 1.917 m | Backfill Zone C |
| EL. A | 13.838 m | A=0.50 m ² |
| EL. B | 13.354 m | |

(U - Ditch) Upstream

| | | |
|-------|----------|-----------------------|
| d | 0.461 m | Excavation |
| D | 0.611 m | A=1.16 m ² |
| D/2 | 0.3055 m | Backfill Zone B |
| W1 | 2.211 m | A=0.38 m ² |
| W2 | 1.9055 m | Backfill Zone C |
| EL. A | 13.837 m | A=0.48 m ² |
| EL. B | 13.376 m | |

U - Ditch 172.4 - 172.6

| | |
|-----------------|-------------------------------|
| Excavation | 5.245836 m³ |
| Backfill Zone B | 1.701099 m³ |
| Backfill Zone C | 2.150411 m³ |



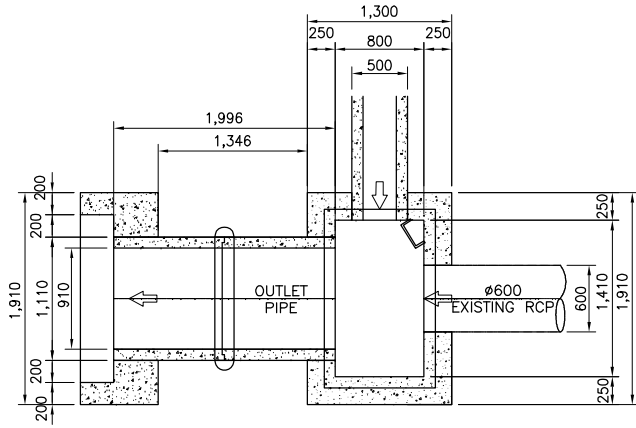
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

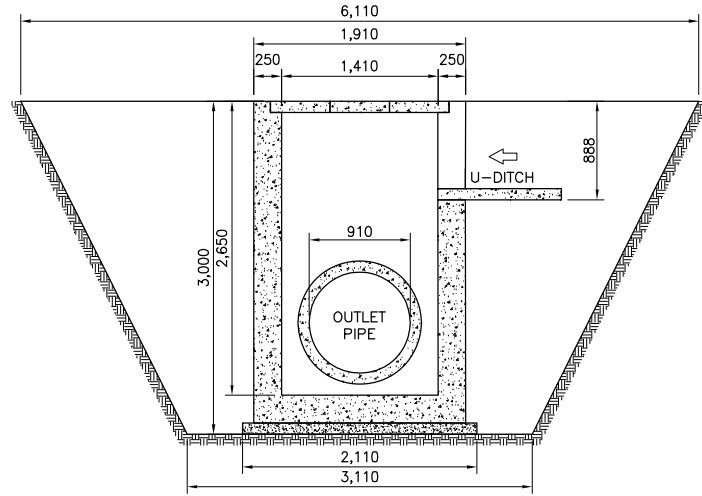
Manhole No.: MR 173A

Location: 13 + 776

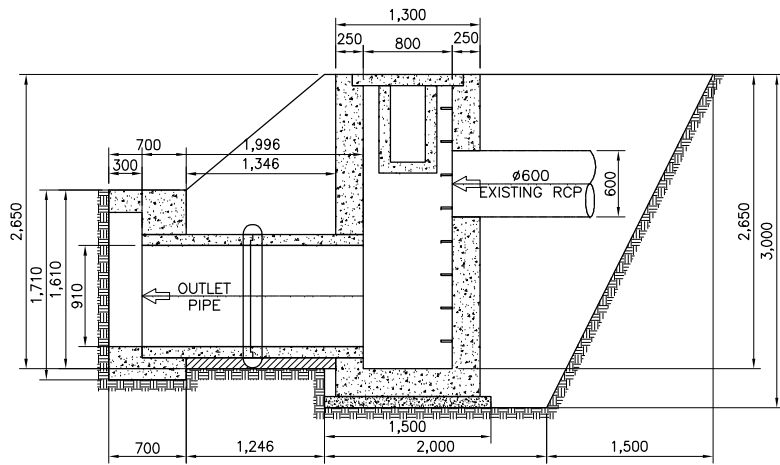
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|---|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=12.10 | 4.61 | 55.79 | |
| | | | | 55.79 | m ³ |
| 2. Lev. Concrete | W=1.80 L=3.92 | 7.06 | 0.1 | 0.71 | m ³ |
| 3. Bottom Slab | W=1.60 L=3.72 | 5.95 | 0.3 | 1.79 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=3.72 Win=1.00 Lin=3.12 | Aout=5.95 Ain=3.12 Anet=2.83 | 2.650 | 7.505 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.75 | 0.44 | 0.30 | 0.11 | |
| D=0.89 | W=0.50 | 0.44 | 0.30 | 0.11 | |
| Pipe hole on Wall D | DiaD=1.11 | 1.94 | 0.30 | 0.48 | |
| Net Wall Vol. | | | | 6.80 | m ³ |
| 5. Conc. Cover | L=1.20 W=1.10 | 1.32 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=3.26 Lout=1.71 Win=3.22 Lin=1.21 DiaD=1.11 | Ain=5.57 Aout=3.90 Apipe=1.94 | 0.7 0.3 0.4 | 3.90 1.17 0.77 1.96 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=2.00 | | 4 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=2 | 0.115359282 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.35 | | 0.298812 | m3 |
| 12. Backfill | | | | 46.49 | m3 |



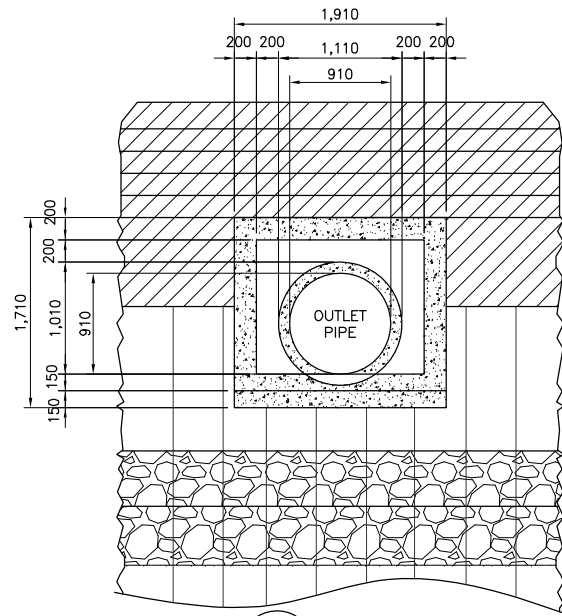
1 PLAN
SCALE A



3 SECTION(MR173A)
SCALE A



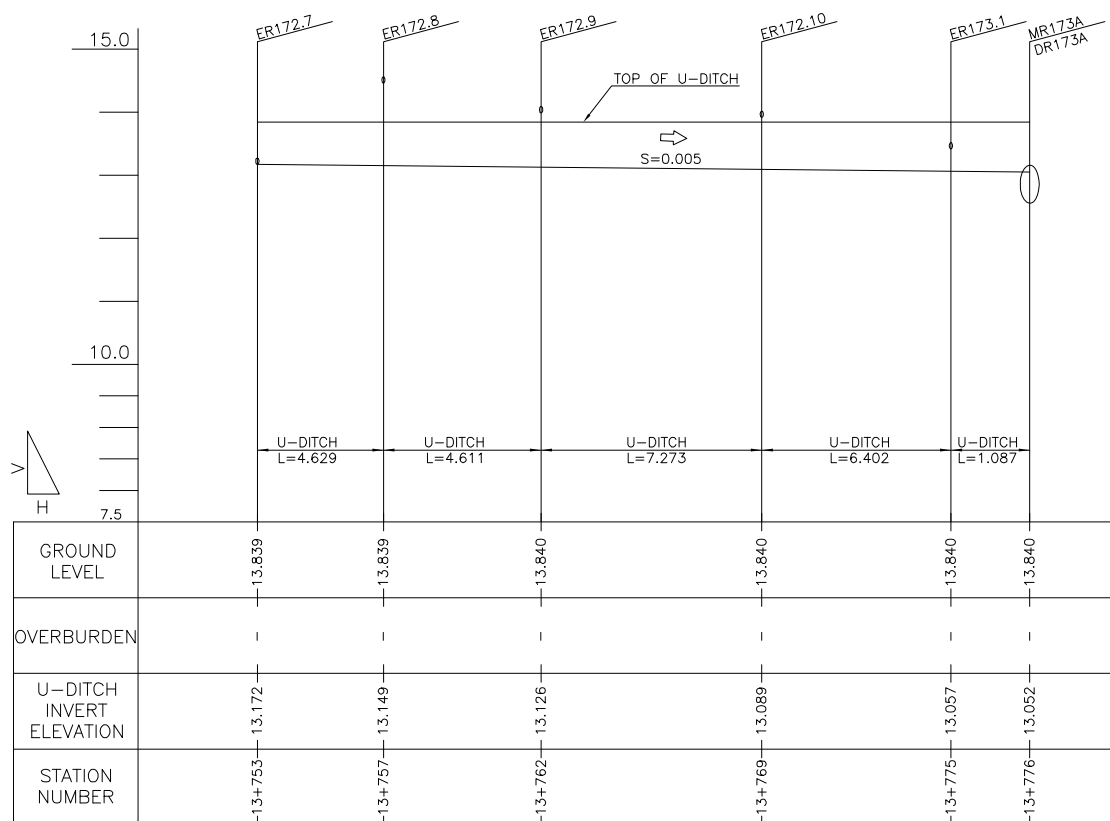
2 SECTION
SCALE A



4 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|---------------------|----------------------|----------|----------------|---------------|----------------|
| 1. U - Ditch | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 24.12201 | 1.21 | m ³ |
| Wall | W=.828m L=24.002m | 39.72331 | 0.1 | 3.97 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 24.002 | 1.20 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 24.12 | 1.21 | m ³ |
| 4. Formworks | | | | 53.09 | m3 |



2 PROFILE
 SCALE B

Clearing (Manhole 173A)

| | | |
|--------------|---------|------------------------------|
| L1 | 2.1 m | |
| W of Manhole | 1.3 m | A=33.28 m² |
| L2 | 1.346 m | |
| W | 6.11 m | |

Clearing (U - Ditch 172.7 - 173A)

| | | |
|---|----------|------------------------------|
| W | 2.4775 m | A=59.46 m² |
| L | 24.002 m | |

(U - Ditch) Downstream

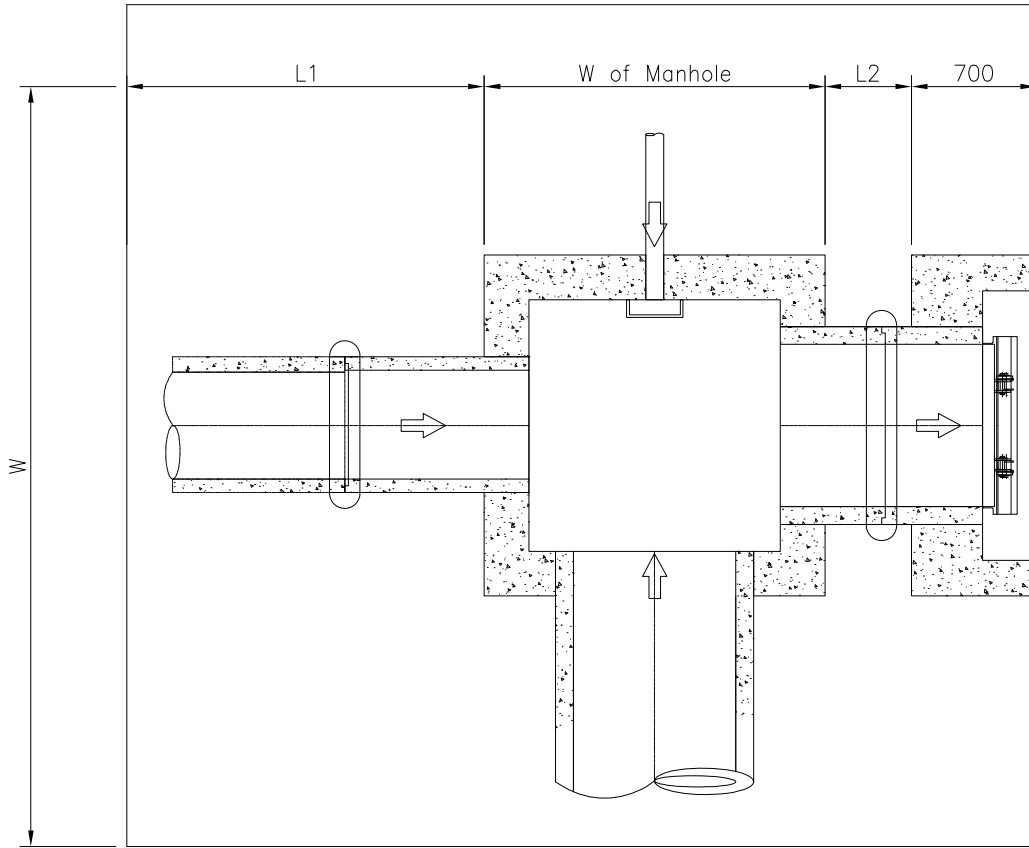
| | | |
|--------------|----------|-----------------------|
| 172.7 - 173A | | |
| d | 0.788 m | Excavation |
| D | 0.938 m | A=1.94 m ² |
| D/2 | 0.469 m | Backfill Zone B |
| W1 | 2.538 m | A=0.62 m ² |
| W2 | 2.069 m | Backfill Zone C |
| EL. A | 13.84 m | A=0.85 m ² |
| EL. B | 13.052 m | |

(U - Ditch) Upstream

| | | |
|-------|----------|-----------------------|
| d | 0.667 m | Excavation |
| D | 0.817 m | A=1.64 m ² |
| D/2 | 0.4085 m | Backfill Zone B |
| W1 | 2.417 m | A=0.53 m ² |
| W2 | 2.0085 m | Backfill Zone C |
| EL. A | 13.839 m | A=0.70 m ² |
| EL. B | 13.172 m | |

U - Ditch 172.7 - 173A

| | |
|-----------------|-------------------------------|
| Excavation | 43.1985 m³ |
| Backfill Zone B | 13.85407 m³ |
| Backfill Zone C | 18.64028 m³ |



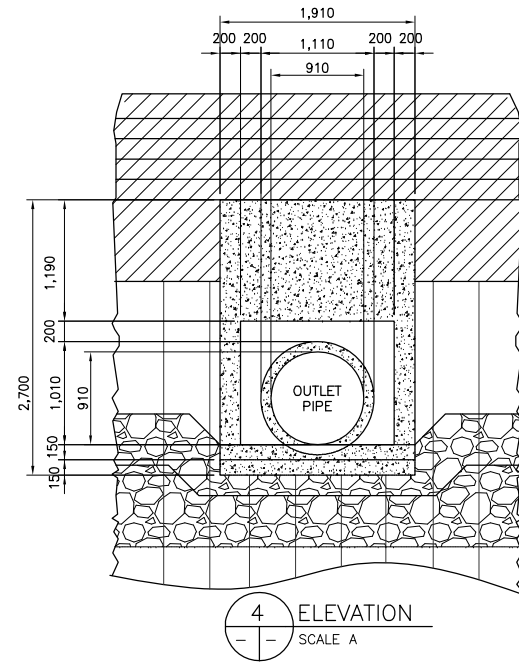
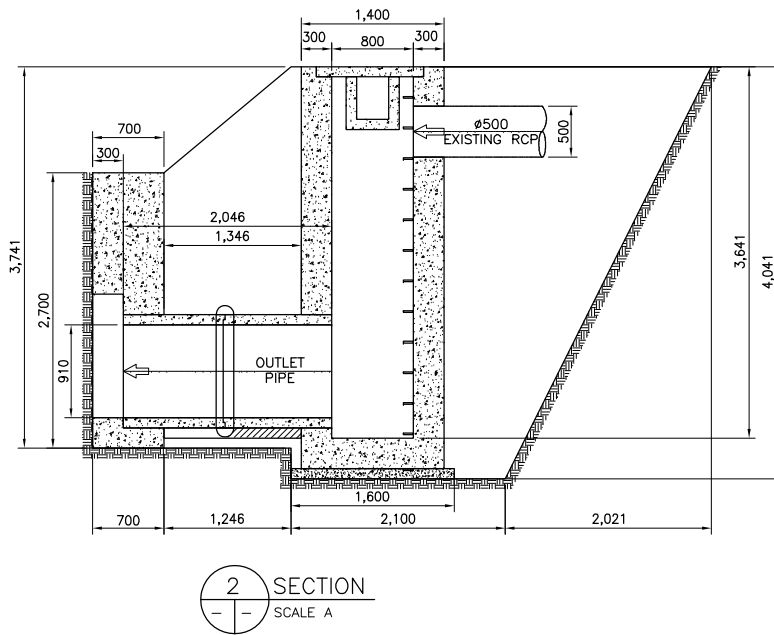
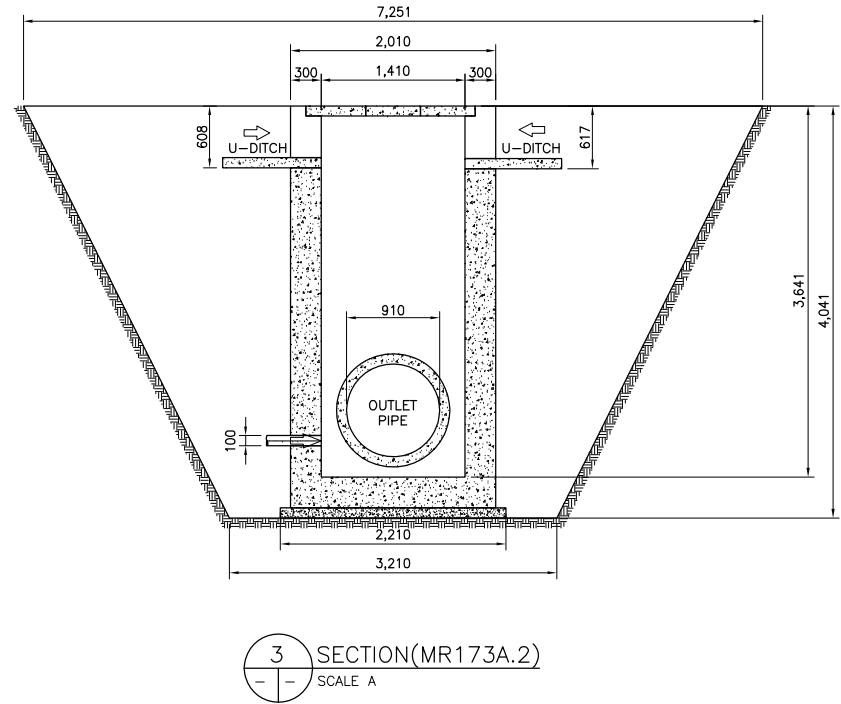
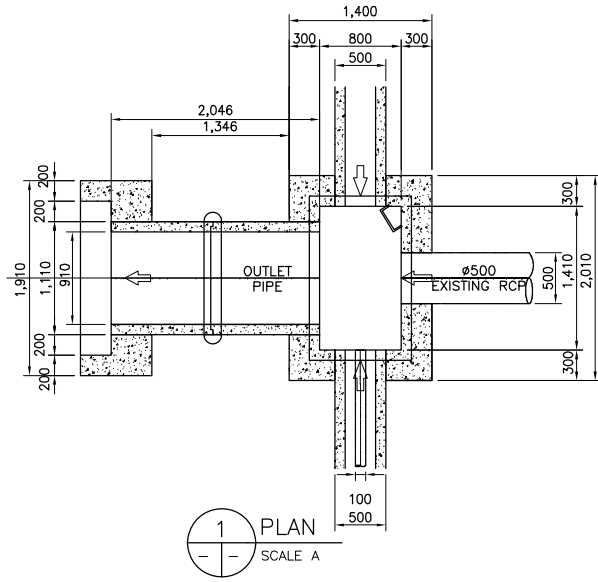
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

Manhole No.: MR 173A.2

Location: 13 + 784

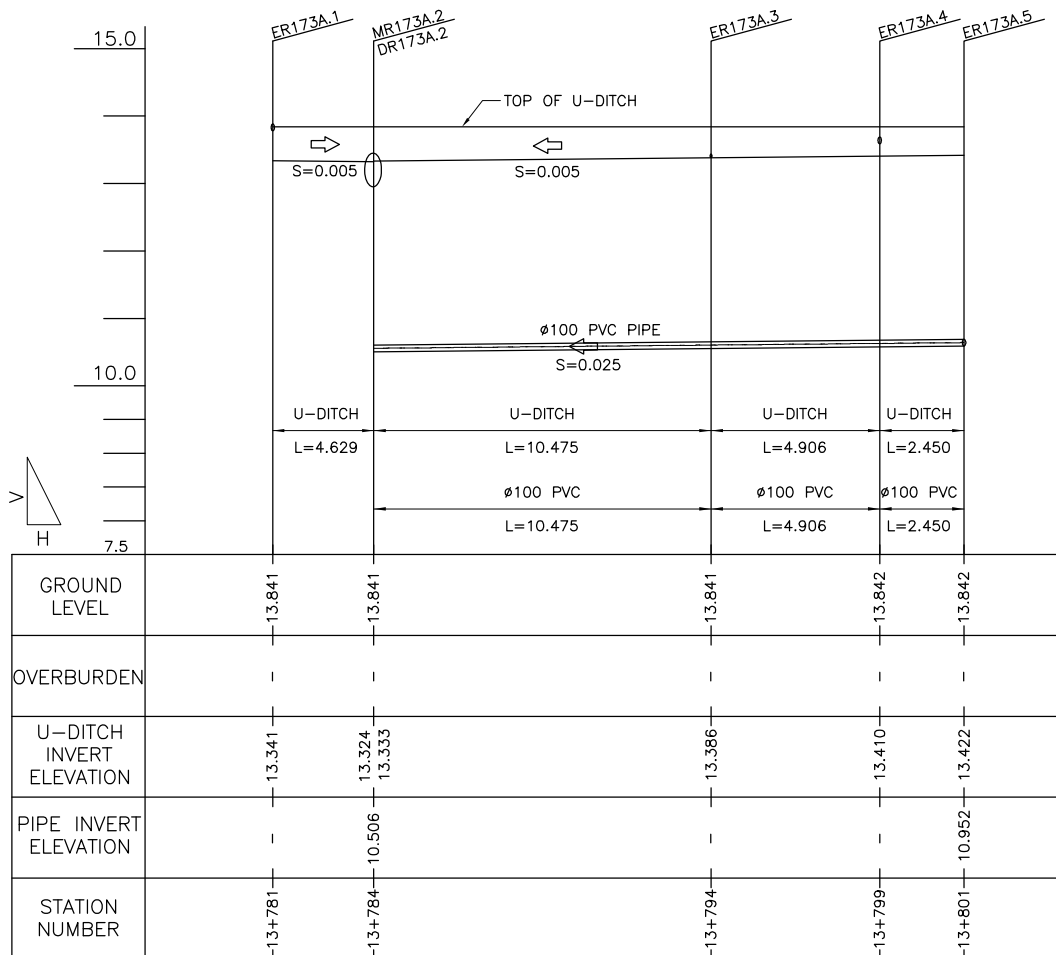
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=18.42 | 5.23 | 96.36 | |
| | | | | 96.36 | m ³ |
| 2. Lev. Concrete | W=1.60 L=2.21 | 3.54 | 0.1 | 0.35 | m ³ |
| 3. Bottom Slab | W=1.40 L=2.01 | 2.81 | 0.3 | 0.84 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.40 Lout=2.01 Win=0.80 Lin=1.41 | Aout=2.81 Ain=1.13 Anet=1.69 | 3.641 | 6.139 | m ³ |
| Minus | | | | | |
| D=0.61 | W=0.50 | 0.31 | 0.30 | 0.08 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.30 | 0.08 | |
| D=0.62 | W=0.50 | 0.31 | 0.30 | 0.08 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 5.66 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=12 | 0.000201062 | | 0.000120637 0.95 11.36 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.70 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=5.16 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 3.61 0.55 0.39 2.67 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=2.05 | | 3 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=2 | 0.115359282 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.35 | | 0.149406 | m3 |
| 12. Backfill | | | | 80.30 | m3 |



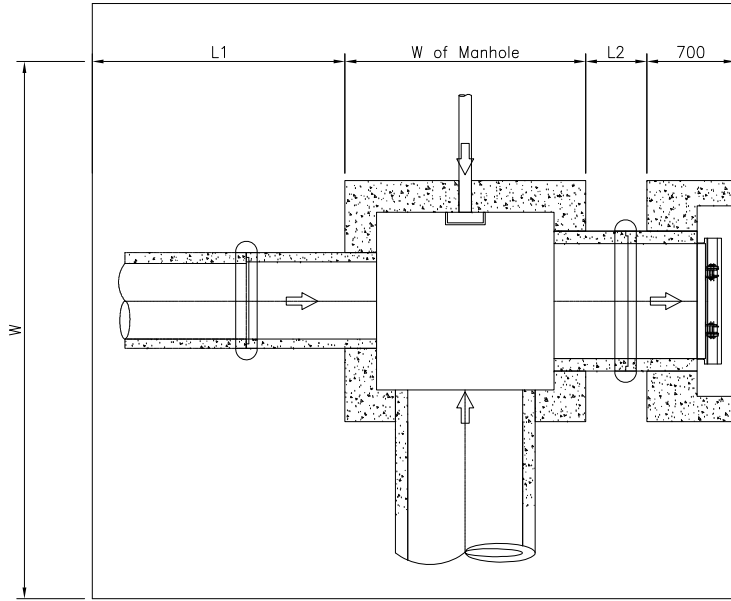
3 664

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|--------------------|-------|----------------|---------------|----------------|
| 1. Collector Pipe (PVC) | Dia=0.10 | | L=18.28 | 7 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=.100m | | | 6 | pc |
| 3. U - Ditch | | | | | |
| Bottom | W=0.50 L=0.10 | 0.05 | 22.57 | 1.13 | m ³ |
| Wall | W=0.57 L=22.46 | 12.77 | 0.1 | 1.28 | m ³ |
| Top | W=0.50 L=0.10 | 0.05 | 22.46 | 1.12 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 22.46 | 1.12 | m ³ |



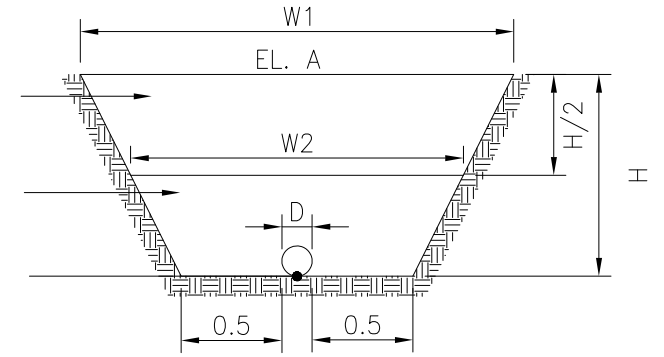
| | | |
|--|-------------------------------|------------------------------|
| Clearing (Manhole 173A.2) | | |
| L1 | 2.6205 m | |
| W of Manhole | 1.4 m | A=43.99 m² |
| L2 | 1.346 m | |
| W | 7.251 m | |
| Clearing (Collector 173A.5 - 173A.2) | | |
| W | 4.2125 m | A=75.11 m² |
| L | 17.831 m | |
| Clearing (U - Ditch 173A.1 - 173A.2) | | |
| W | 2.2585 m | A=10.45 m² |
| L | 4.629 m | |
| (Collector PVC) Downstream 173A.5 - 173A.2 | | |
| D | 0.1 m | Excavation |
| W1 | 4.44 m | A=9.23 m ² |
| W2 | 2.77 m | Backfill Zone B |
| H | 3.335 m | A=3.22 m ² |
| H/2 | 1.6675 m | Backfill Zone C |
| EL. A | 13.841 m | A=5.67 m ² |
| EL. B | 10.506 m | |
| (Collector PVC) Upstream | | |
| D | 0.1 m | Excavation |
| W1 | 3.99 m | A=7.36 m ² |
| W2 | 2.55 m | Backfill Zone B |
| H | 2.89 m | A=2.63 m ² |
| H/2 | 1.445 m | Backfill Zone C |
| EL. A | 13.842 m | A=4.43 m ² |
| EL. B | 10.952 m | |
| (U - Ditch) Downstream 173A.1 - 173A.2 | | |
| d | 0.517 m | Excavation |
| D | 0.667 m | A=1.29 m ² |
| D/2 | 0.3335 m | Backfill Zone B |
| W1 | 2.267 m | A=0.42 m ² |
| W2 | 1.9335 m | Backfill Zone C |
| EL. A | 13.841 m | A=0.53 m ² |
| EL. B | 13.324 m | |
| (U - Ditch) Upstream | | |
| d | 0.5 m | Excavation |
| D | 0.65 m | A=1.25 m ² |
| D/2 | 0.325 m | Backfill Zone B |
| W1 | 2.25 m | A=0.41 m ² |
| W2 | 1.925 m | Backfill Zone C |
| EL. A | 13.841 m | A=0.52 m ² |
| EL. B | 13.341 m | |
| Collector PVC 173A.5 - 173A.2 Volume | | |
| Excavation | 151.5571 m³ | |
| Backfill Zone B | 53.3895 m³ | |
| Backfill Zone C | 92.32167 m³ | |
| U - Ditch 173A.1 - 173A.2 | | |
| Excavation | 5.910305 m³ | |
| Backfill Zone B | 1.913831 m³ | |
| Backfill Zone C | 2.441494 m³ | |



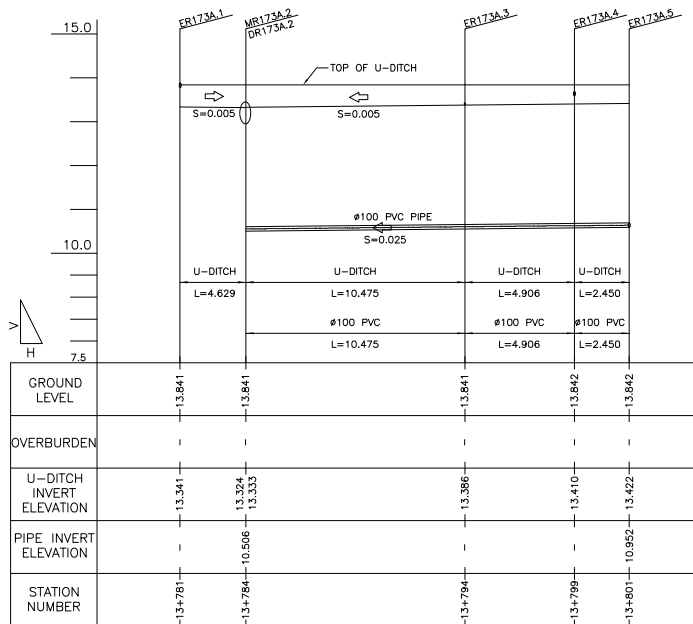
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.667



QUANTITIES OF MANHOLE

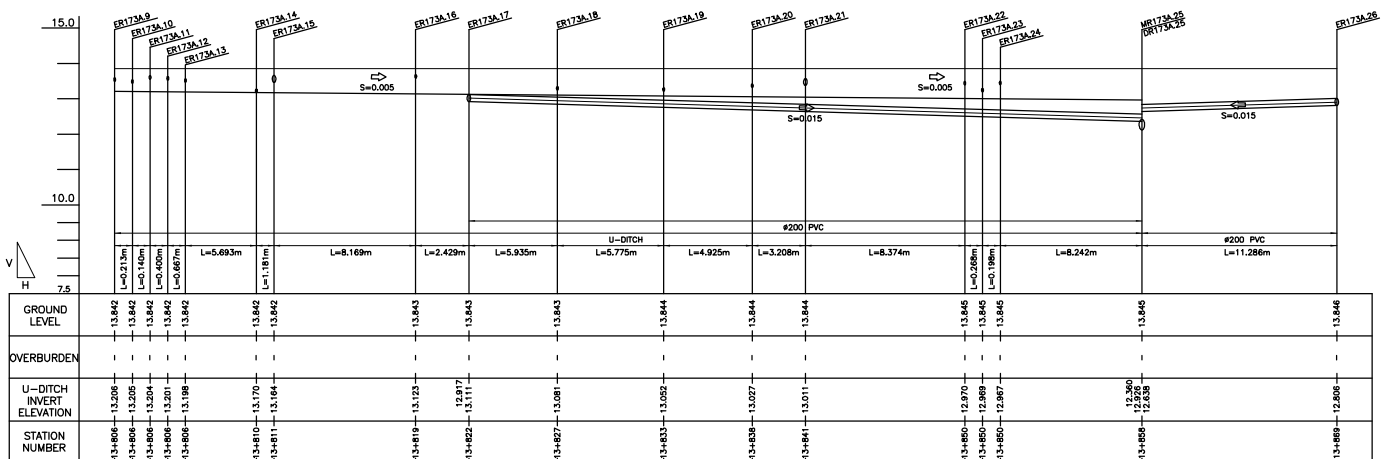
Manhole No.: MR 173A.25

Location: 13 + 858

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=11.36 | 4.61 | 52.42 | |
| | | | | 52.42 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.655 | 3.598 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.20 | 0.03 | 0.25 | 0.01 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| D=1.02 | W=0.50 | 0.54 | 0.25 | 0.14 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.18 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.17 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.52 | | 0.058164 | m ³ |
| 12. Inlet Pipe | Dia=.300m | L=0.81 | | 1 | pc |
| 13. Conc. Collar (Inlet Pipe) | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=1 | 0.02355252 | m ³ |
| 14. Conc. Bedding (Inlet Pipe) | Dia=.400m | L=0.56 | | 0.02244 | m ³ |
| 15. Backfill | | | | 43.68 | m ³ |

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|--------------------|-------|----------------|---------------|----------------|
| 1. Collector Pipe (PVC) | Dia=0.20 | | L=48.93 | 17 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=.200m | | | 16 | pc |
| 3. U - Ditch | | | | | |
| Bottom | W=0.50 L=0.10 | 0.05 | 56.10 | 2.80 | m ³ |
| Wall | W=0.88 L=55.82 | 48.98 | 0.1 | 4.90 | m ³ |
| Top | W=0.50 L=0.10 | 0.05 | 55.817 | 2.79 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 55.82 | 2.79 | m ³ |
| 4. Formworks | | | | 92.99 | m3 |



2 PROFILE
SCALE B

| | | |
|--|-------------------------------|------------------------------|
| Clearing (Manhole 173A.25) | | |
| L1 | 2.1025 m | |
| W of Manhole | 1.3 m | A=28.29 m² |
| L2 | 0.524 m | |
| W | 6.115 m | |
| Clearing (Collector 173A.26 - 173A.25) | | |
| W | 2.3235 m | A=26.22 m² |
| L | 11.286 m | |
| Clearing (Collector 173A.17 - 173A.25) | | |
| W | 2.4055 m | A=88.82 m² |
| L | 36.925 m | |
| Clearing (U - Ditch 173A.9 - 173A.17) | | |
| W | 2.434 m | A=45.98 m² |
| L | 18.892 m | |
| (Collector PVC) Downstream 173A.26 - 173A.25 | | |
| D | 0.2 m | Excavation |
| W1 | 2.41 m | A=2.18 m ² |
| W2 | 1.80 m | Backfill Zone B |
| H | 1.207 m | A=0.87 m ² |
| H/2 | 0.6035 m | Backfill Zone C |
| EL. A | 13.845 m | A=1.27 m ² |
| EL. B | 12.638 m | |
| (Collector PVC) Upstream | | |
| D | 0.2 m | Excavation |
| W1 | 2.24 m | A=1.79 m ² |
| W2 | 1.72 m | Backfill Zone B |
| H | 1.04 m | A=0.73 m ² |
| H/2 | 0.52 m | Backfill Zone C |
| EL. A | 13.846 m | A=1.03 m ² |
| EL. B | 12.806 m | |
| (Collector PVC) Downstream 173A.17 - 173A.25 | | |
| D | 0.2 m | Excavation |
| W1 | 2.69 m | A=2.88 m ² |
| W2 | 1.94 m | Backfill Zone B |
| H | 1.485 m | A=1.14 m ² |
| H/2 | 0.7425 m | Backfill Zone C |
| EL. A | 13.845 m | A=1.27 m ² |
| EL. B | 12.36 m | |
| (Collector PVC) Upstream | | |
| D | 0.2 m | Excavation |
| W1 | 2.13 m | A=1.54 m ² |
| W2 | 1.66 m | Backfill Zone B |
| H | 0.926 m | A=0.63 m ² |
| H/2 | 0.463 m | Backfill Zone C |
| EL. A | 13.843 m | A=0.34 m ² |
| EL. B | 12.917 m | |
| (U - Ditch) Downstream 173A.9 - 173A.17 | | |
| d | 0.732 m | Excavation |
| D | 0.882 m | A=1.80 m ² |
| D/2 | 0.441 m | Backfill Zone B |
| W1 | 2.482 m | A=0.58 m ² |
| W2 | 2.041 m | Backfill Zone C |
| EL. A | 13.843 m | A=0.78 m ² |
| EL. B | 13.111 m | |
| (U - Ditch) Upstream | | |
| d | 0.636 m | Excavation |
| D | 0.786 m | A=1.57 m ² |
| D/2 | 0.393 m | Backfill Zone B |
| W1 | 2.386 m | A=0.50 m ² |
| W2 | 1.993 m | Backfill Zone C |
| EL. A | 13.842 m | A=0.66 m ² |
| EL. B | 13.206 m | |
| Collector PVC 173A.26 - 173A.25 Volume | | |
| Excavation | 22.71369 m³ | |
| Backfill Zone B | 9.179549 m³ | |
| Backfill Zone C | 13.17426 m³ | |
| Collector PVC 173A.17 - 173A.25 Volume | | |
| Excavation | 82.91359 m³ | |
| Backfill Zone B | 33.1052 m³ | |
| Backfill Zone C | 30.16324 m³ | |
| U - Ditch 173A.9 - 173A.17 | | |
| Excavation | 31.96048 m³ | |
| Backfill Zone B | 10.27039 m³ | |
| Backfill Zone C | 13.6778 m³ | |

QUANTITIES OF MANHOLE

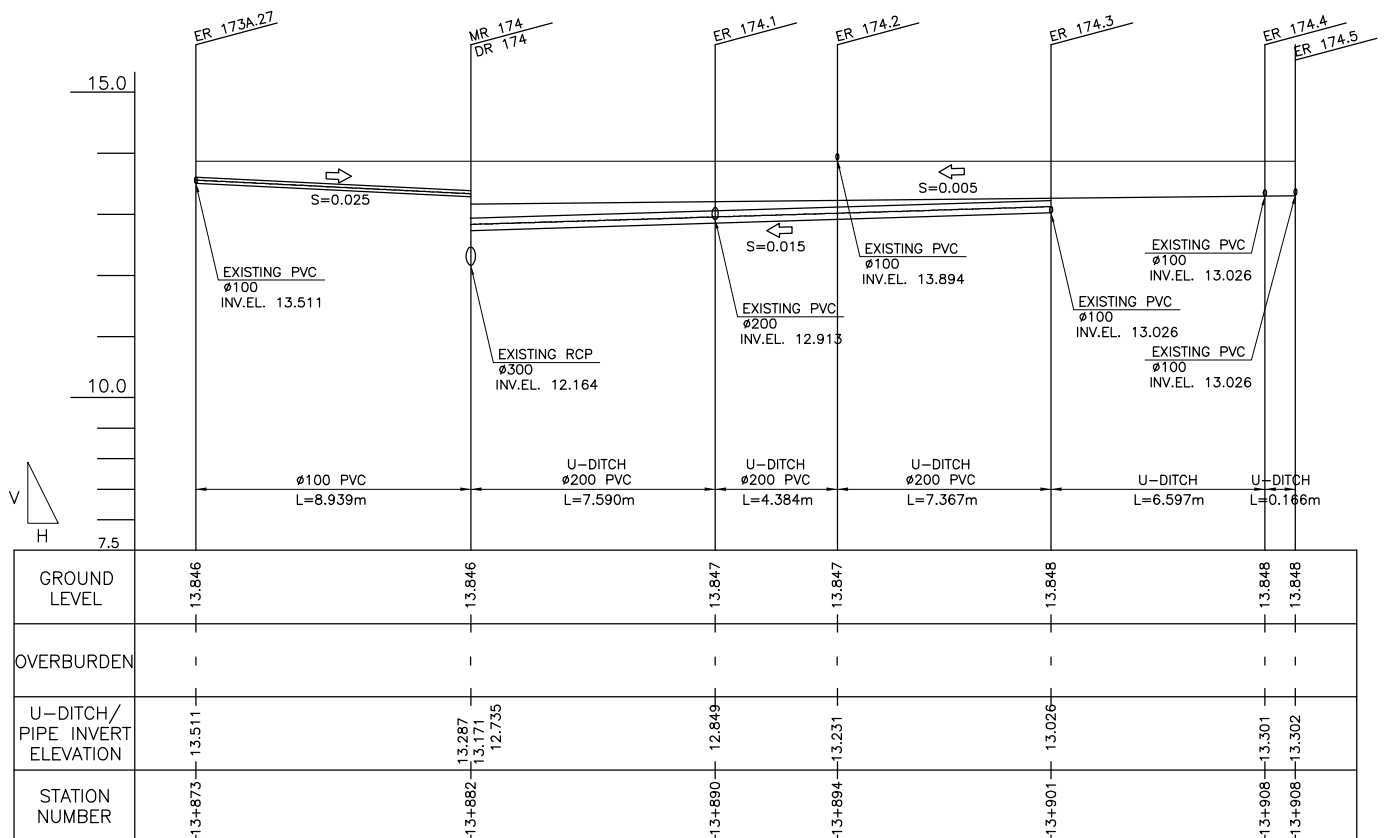
Manhole No.: MR 174

Location: 13 + 882

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=11.37 | 4.61 | 52.46 | |
| | | | | 52.46 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.656 | 3.599 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.16 | 0.25 | 0.04 | |
| D=0.78 | W=0.50 | 0.39 | 0.25 | 0.10 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.22 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058275 | m3 |
| 12. Inlet Pipe | Dia=.300m | L=0.55 | | 1 | pc |
| 13. Conc. Collar (Inlet Pipe) | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=1 | 0.02355252 | m3 |
| 14. Conc. Bedding (Inlet Pipe) | Dia=.400m | L=0.30 | | 0.012 | m3 |
| 15. Backfill | | | | 43.71 | m3 |

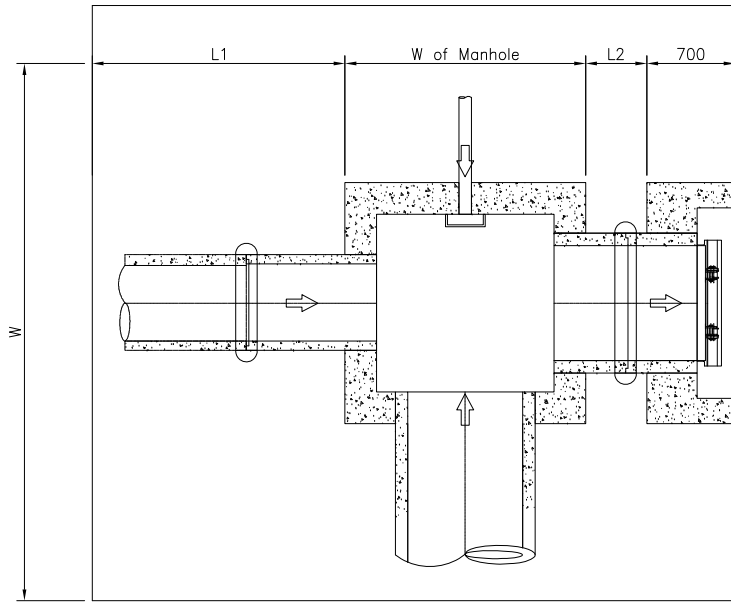
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|--------------------|-------|----------------|---------------|----------------|
| 1. Collector Pipe (PVC) | Dia=0.20 | | L=19.63 | 7 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=.200m | | | 6 | pc |
| 1. Collector Pipe (PVC) | Dia=0.10 | | L=9.16 | 4 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=.100m | | | 3 | pc |
| 3. U - Ditch | | | | | |
| Bottom | W=0.50 L=0.10 | 0.05 | 26.23 | 1.31 | m ³ |
| Wall | W=0.71 L=26.10 | 18.55 | 0.1 | 1.85 | m ³ |
| Top | W=0.50 L=0.10 | 0.05 | 26.104 | 1.31 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 26.10 | 1.31 | m ³ |



2 PROFILE
 SCALE B

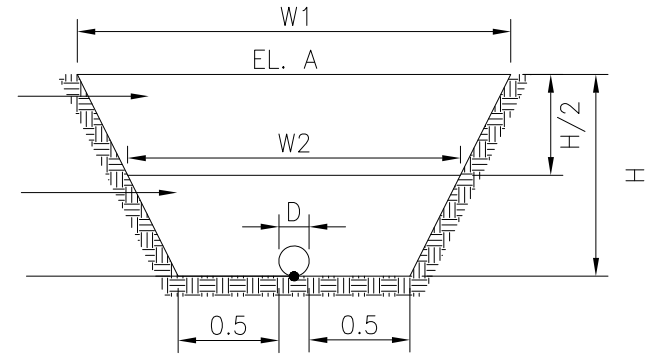
| | | |
|--|-------------------------------|------------------------------|
| Clearing (Manhole 174) | | |
| L1 | 2.103 m | |
| W of Manhole | 1.3 m | A=28.30 m² |
| L2 | 0.525 m | |
| W | 6.116 m | |
| Clearing (Collector 173A.27 - 174) | | |
| W | 1.597 m | A=14.28 m² |
| L | 8.939 m | |
| Clearing (Collector 174.3 - 174) | | |
| W | 2.1665 m | A=41.90 m² |
| L | 19.341 m | |
| Clearing (U - Ditch 174.5 - 174.3) | | |
| W | 2.313 m | A=15.64 m² |
| L | 6.763 m | |
| (Collector PVC) Downstream 173A.27 - 174 | | |
| D | 0.2 m | Excavation |
| W1 | 1.76 m | A=0.83 m ² |
| W2 | 1.48 m | Backfill Zone B |
| H | 0.559 m | A=0.34 m ² |
| H/2 | 0.2795 m | Backfill Zone C |
| EL. A | 13.846 m | A=0.45 m ² |
| EL. B | 13.287 m | |
| (Collector PVC) Upstream | | |
| D | 0.1 m | Excavation |
| W1 | 1.44 m | A=0.42 m ² |
| W2 | 1.27 m | Backfill Zone B |
| H | 0.335 m | A=0.19 m ² |
| H/2 | 0.1675 m | Backfill Zone C |
| EL. A | 13.846 m | A=0.23 m ² |
| EL. B | 13.511 m | |
| (Collector PVC) Downstream 174.3 - 174 | | |
| D | 0.2 m | Excavation |
| W1 | 2.31 m | A=1.95 m ² |
| W2 | 1.76 m | Backfill Zone B |
| H | 1.111 m | A=0.79 m ² |
| H/2 | 0.5555 m | Backfill Zone C |
| EL. A | 13.846 m | A=0.71 m ² |
| EL. B | 12.735 m | |
| (Collector PVC) Upstream | | |
| D | 0.2 m | Excavation |
| W1 | 2.02 m | A=1.32 m ² |
| W2 | 1.61 m | Backfill Zone B |
| H | 0.822 m | A=0.55 m ² |
| H/2 | 0.411 m | Backfill Zone C |
| EL. A | 13.848 m | A=0.43 m ² |
| EL. B | 13.026 m | |
| (U - Ditch) Downstream 174.5 - 174.3 | | |
| d | 0.58 m | Excavation |
| D | 0.73 m | A=1.43 m ² |
| D/2 | 0.365 m | Backfill Zone B |
| W1 | 2.33 m | A=0.46 m ² |
| W2 | 1.965 m | Backfill Zone C |
| EL. A | 13.848 m | A=0.60 m ² |
| EL. B | 13.268 m | |
| (U - Ditch) Upstream | | |
| d | 0.546 m | Excavation |
| D | 0.696 m | A=1.36 m ² |
| D/2 | 0.348 m | Backfill Zone B |
| W1 | 2.296 m | A=0.44 m ² |
| W2 | 1.948 m | Backfill Zone C |
| EL. A | 13.848 m | A=0.56 m ² |
| EL. B | 13.302 m | |
| Collector PVC 173A.27 - 174 | | |
| Excavation | Volume | |
| | 5.73412 m³ | |
| Backfill Zone B | 2.443945 m³ | |
| Backfill Zone C | 3.11027 m³ | |
| Collector PVC 174.3 - 174 | | |
| Excavation | Volume | |
| | 32.14205 m³ | |
| Backfill Zone B | 13.11082 m³ | |
| Backfill Zone C | 11.17552 m³ | |
| U - Ditch 174.5 - 174.3 | | |
| Excavation | 9.482434 m³ | |
| Backfill Zone B | 3.063544 m³ | |
| Backfill Zone C | 3.961841 m³ | |



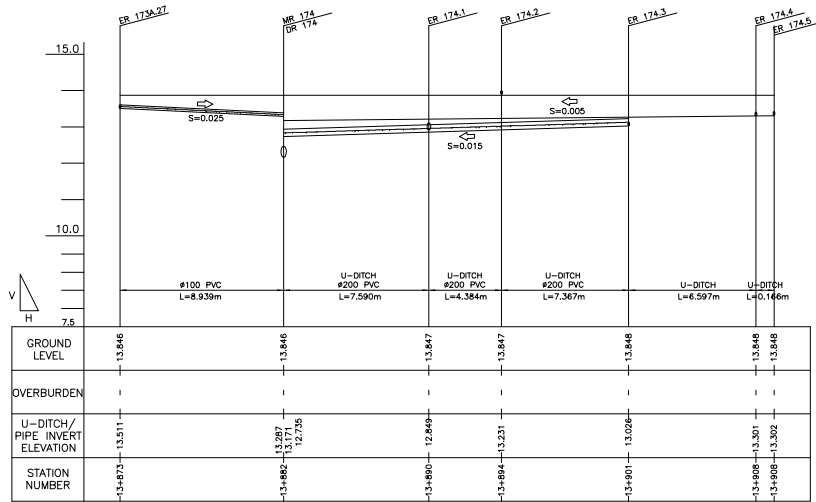
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.677



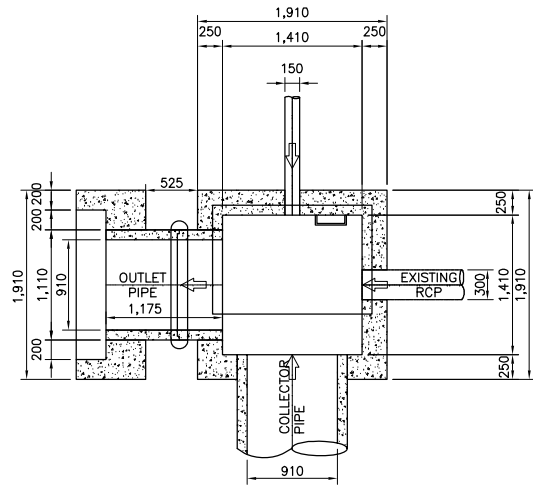
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

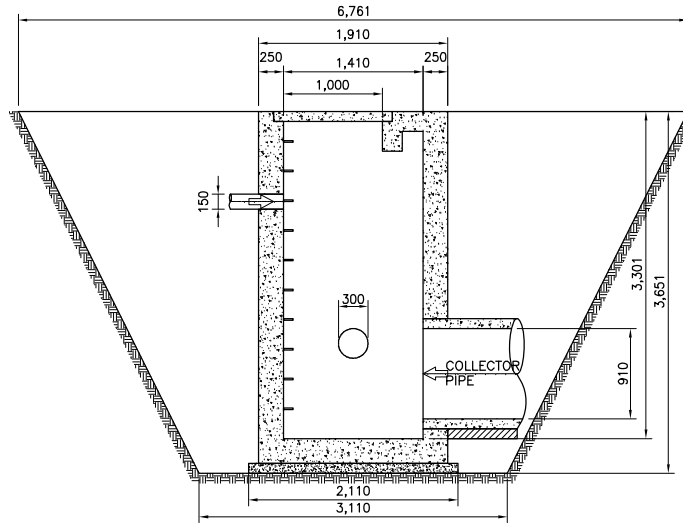
Manhole No.: MR 174.9

Location: 13 + 917

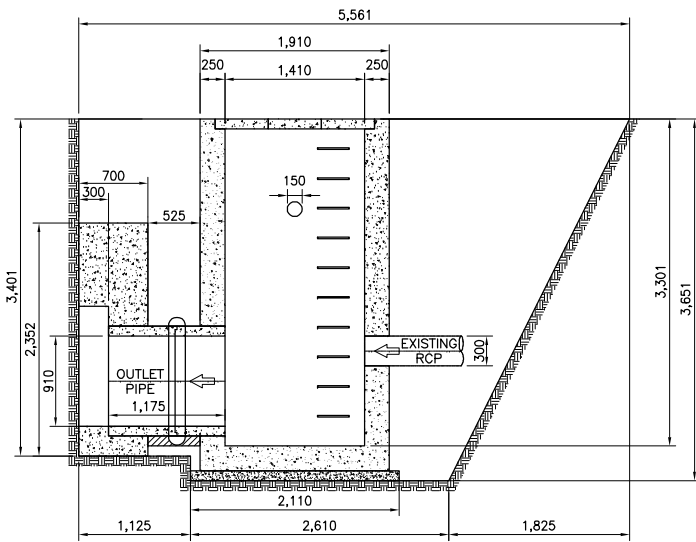
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=16.60 | 4.94 | 81.95 | |
| | | | | 81.95 | m ³ |
| 2. Lev. Concrete | W=2.11 L=2.11 | 4.45 | 0.1 | 0.45 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.91 | 4.28 | 0.25 | 1.07 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.91 Win=1.41 Lin=1.41 | Aout=3.65 Ain=1.99 Anet=1.66 | 3.301 | 5.480 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.96 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.61 | 1.771 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.35 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=4.49 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 3.14 0.55 0.39 2.21 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058275 | m3 |
| 12. Backfill | | | | 68.29 | m3 |



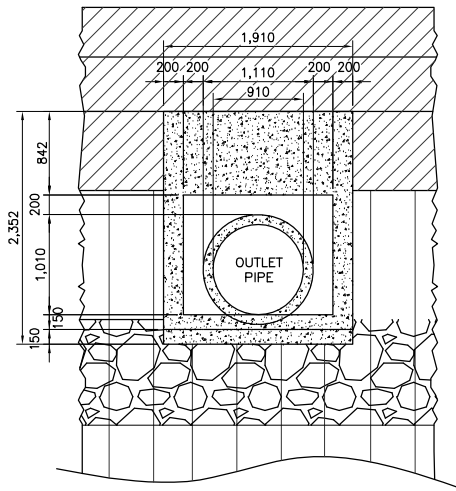
1 PLAN
SCALE A



3 SECTION (MR174.9)
SCALE A



2 SECTION
SCALE A



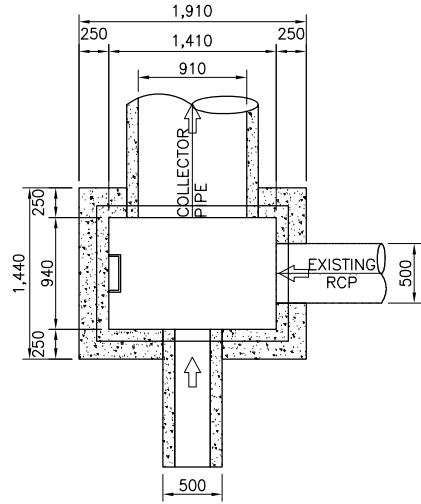
4 ELEVATION
SCALE A

QUANTITIES OF MANHOLE

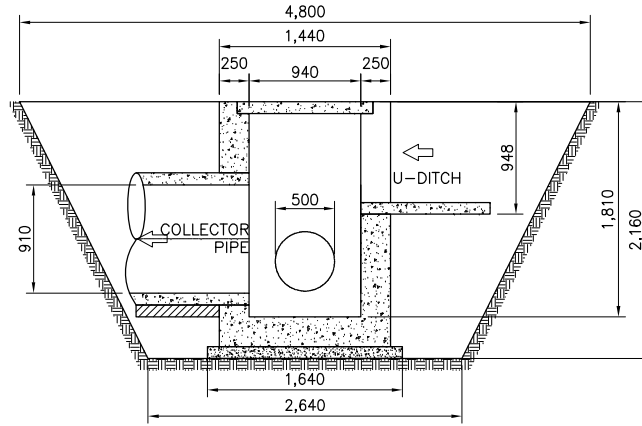
Manhole No.: MR 174.11

Location: 13 + 919

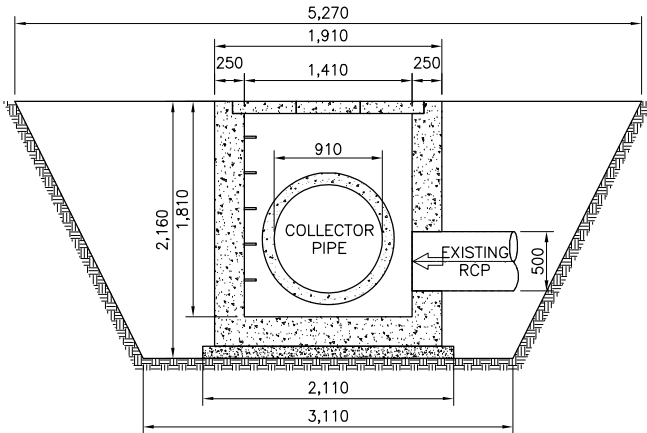
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=9.05 | 3.51 | 31.81 | |
| | | | | 31.81 | m ³ m ³ |
| 2. Lev. Concrete | W=2.11 L=1.64 | 3.46 | 0.1 | 0.35 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.44 | 2.75 | 0.25 | 0.69 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.44 Win=1.41 Lin=.94 | Aout=2.75 Ain=1.33 Anet=1.43 | 1.810 | 2.579 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.25 | 0.08 | |
| D=0.95 | W=0.50 | 0.47 | 0.25 | 0.12 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 2.14 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.14 | 1.8354 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Backfill | | | | 26.51 | m ³ |



1 PLAN
SCALE A



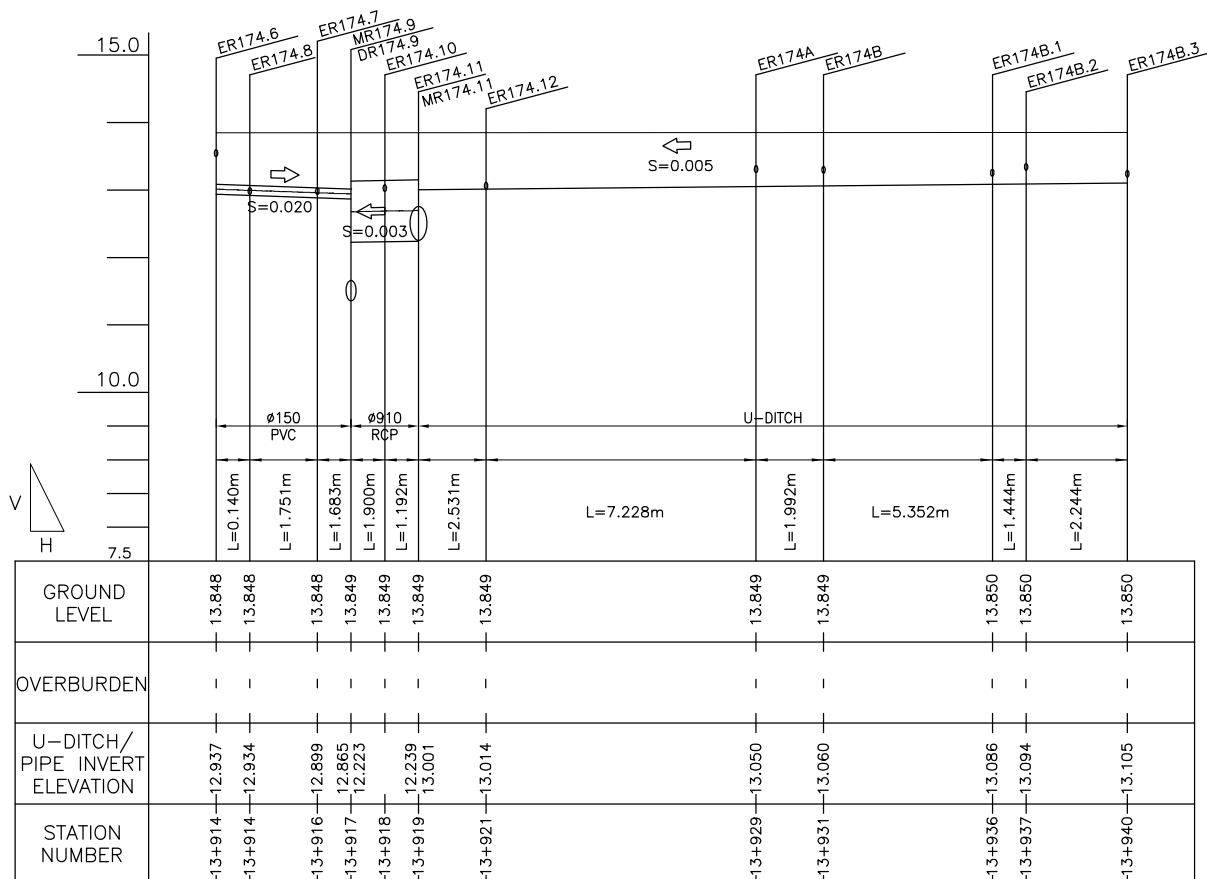
3 SECTION (MR174.11)
SCALE A



2 SECTION
SCALE A

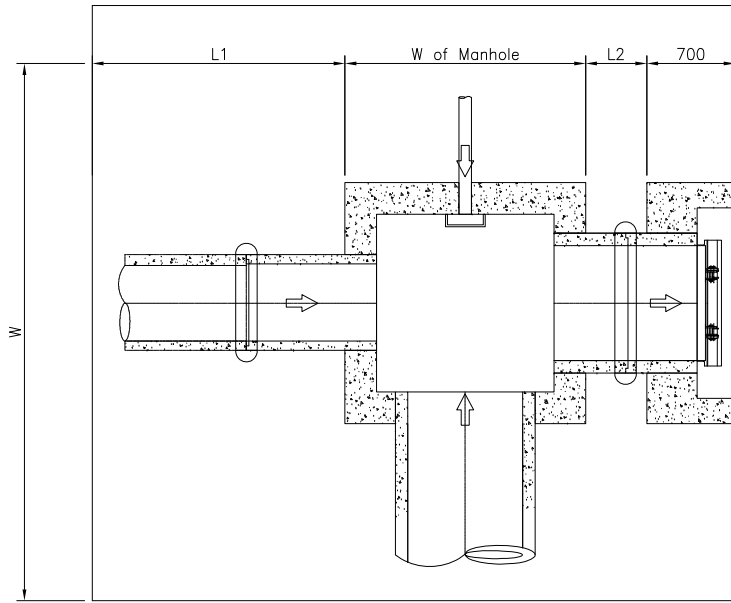
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-------------------------|--------------------|-----------|----------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.91 | | L=3.10 | 4 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=0.91 | L=3.10 | 0.1 | 0.28 | m ³ |
| 3. Conc. Collar | D1=1.110m | A1=0.97 | 0.17 | 0.17 | m ³ |
| | D2=1.290m | A2=1.31 | | | |
| | | Anet=0.34 | Qty=3 | | |
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=3.65 | 2 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=.150m | | | 1 | pc |
| 3. U - Ditch | | | | | |
| Bottom | W=0.50 L=0.10 | 0.05 | 20.89 | 1.04 | m ³ |
| Wall | W=0.90 L=20.79 | 18.64 | 0.1 | 1.86 | m ³ |
| Top | W=0.50 L=0.10 | 0.05 | 20.791 | 1.04 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 20.79 | 1.04 | m ³ |



2 PROFILE
 SCALE B

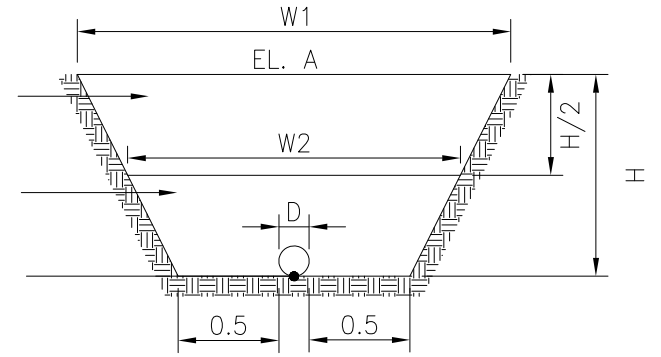
| | | |
|--|-------------------------------|------------------------------|
| Clearing (Manhole 174.9) | | |
| L1 | 2.4255 m | |
| W of Manhole | 1.91 m | A=37.59 m² |
| L2 | 0.525 m | |
| W | 6.761 m | |
| Clearing (Manhole 174.11) | | |
| W | 5.27 m | A=25.30 m² |
| L | 4.8 m | |
| Clearing (Collector 174.11 - 174.9) | | |
| W | 3.928 m | A=12.15 m² |
| L | 3.092 m | |
| Clearing (Collector 174.6 - 174.9) | | |
| W | 2.097 m | A=7.49 m² |
| L | 3.574 m | |
| Clearing (U - Ditch 174.3 - 174.11) | | |
| W | 2.5465 m | A=52.94 m² |
| L | 20.791 m | |
| (Collector Pipe) Downstream 174.11 - 174.9 | | |
| Do | 1.11 m | Excavation |
| Di | 0.91 m | A=5.52 m ² |
| tpipe | 0.1 m | Backfill Zone B |
| H | 1.826 m | A=1.15 m ² |
| EL. A | 13.849 m | Backfill Zone C |
| EL. B | 12.223 m | A=1.84 m ² |
| W | 3.936 m | |
| (Collector Pipe) Upstream | | |
| Do | 1.11 m | Excavation |
| Di | 0.91 m | A=5.46 m ² |
| tpipe | 0.1 m | Backfill Zone B |
| H | 1.81 m | A=1.13 m ² |
| EL. A | 13.849 m | Backfill Zone C |
| EL. B | 12.239 m | A=1.82 m ² |
| W | 3.92 m | |
| (Collector PVC) Downstream 174.6 - 174.9 | | |
| D | 0.15 m | Excavation |
| W1 | 2.13 m | A=1.61 m ² |
| W2 | 1.64 m | Backfill Zone B |
| H | 0.983 m | A=0.67 m ² |
| H/2 | 0.4915 m | Backfill Zone C |
| EL. A | 13.848 m | A=0.93 m ² |
| EL. B | 12.865 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 2.06 m | A=1.46 m ² |
| W2 | 1.61 m | Backfill Zone B |
| H | 0.911 m | A=0.61 m ² |
| H/2 | 0.4555 m | Backfill Zone C |
| EL. A | 13.848 m | A=0.84 m ² |
| EL. B | 12.937 m | |
| (U - Ditch) Downstream 174.3 - 174.11 | | |
| d | 0.848 m | Excavation |
| D | 0.998 m | A=2.09 m ² |
| D/2 | 0.499 m | Backfill Zone B |
| W1 | 2.598 m | A=0.67 m ² |
| W2 | 2.099 m | Backfill Zone C |
| EL. A | 13.849 m | A=0.92 m ² |
| EL. B | 13.001 m | |
| (U - Ditch) Upstream | | |
| d | 0.745 m | Excavation |
| D | 0.895 m | A=1.83 m ² |
| D/2 | 0.4475 m | Backfill Zone B |
| W1 | 2.495 m | A=0.59 m ² |
| W2 | 2.0475 m | Backfill Zone C |
| EL. A | 13.85 m | A=0.79 m ² |
| EL. B | 13.105 m | |
| Collector Pipe 174.11 - 174.9 | | |
| Excavation | Volume | |
| Backfill Zone B | 17.02158 m³ | |
| Backfill Zone C | 3.53995 m³ | |
| Backfill Zone C | 5.664926 m³ | |
| Collector PVC 174.6 - 174.9 | | |
| Excavation | Volume | |
| Backfill Zone B | 5.607122 m³ | |
| Backfill Zone C | 2.329887 m³ | |
| Backfill Zone C | 3.212814 m³ | |
| U - Ditch 174.3 - 174.11 | | |
| Excavation | Volume | |
| Backfill Zone B | 41.03053 m³ | |
| Backfill Zone C | 13.11972 m³ | |
| Backfill Zone C | 17.9178 m³ | |



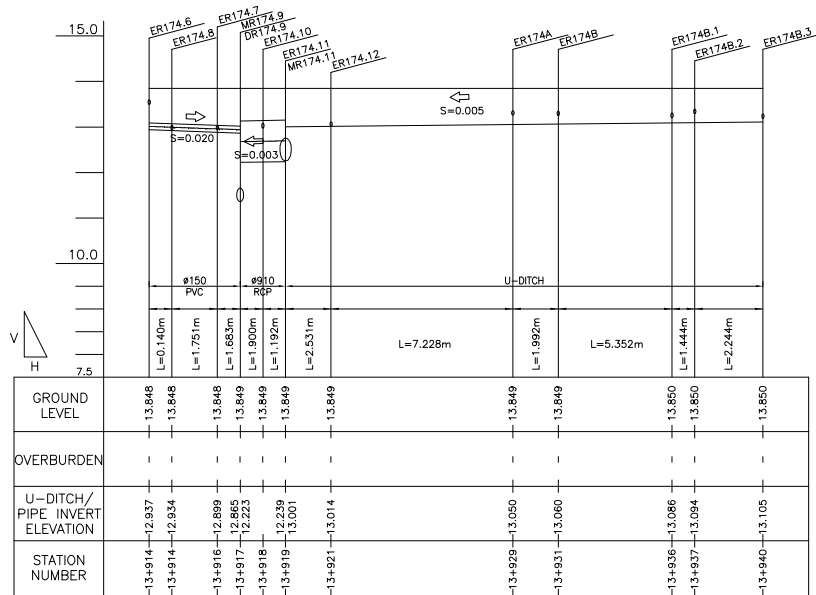
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.684



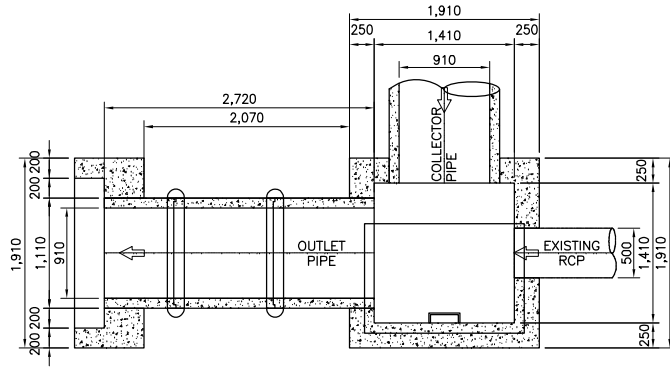
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

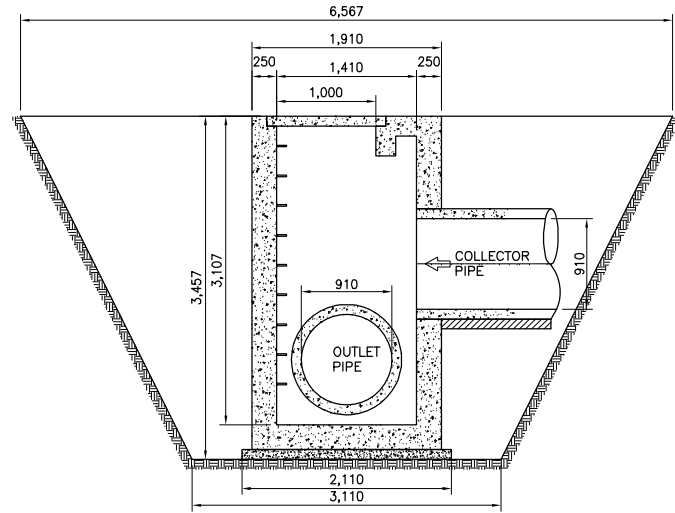
Manhole No.: MR 174C.1

Location: 13 + 955

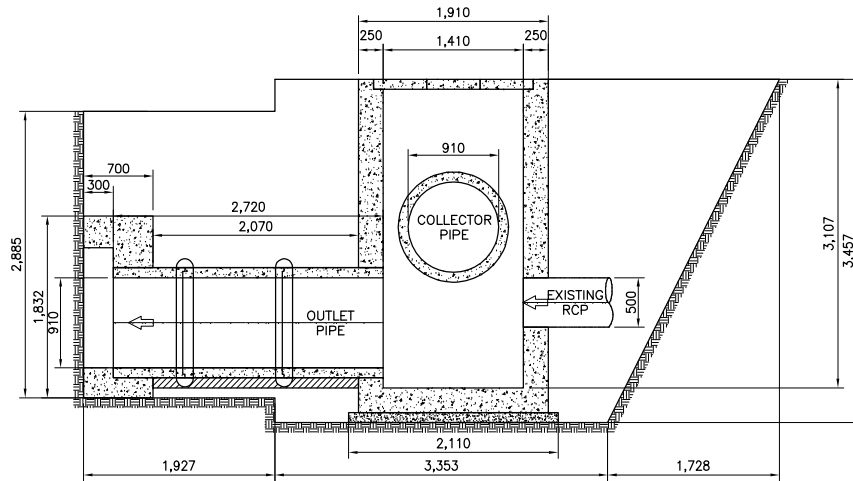
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=20.14 | 4.84 | 97.44 | |
| | | | | 97.44 | m ³ |
| 2. Lev. Concrete | W=2.11 L=2.11 | 4.45 | 0.1 | 0.45 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.91 | 4.28 | 0.25 | 1.07 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.91 Win=1.41 Lin=1.41 | Aout=3.65 Ain=1.99 Anet=1.66 | 3.107 | 5.158 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.25 | 0.08 | |
| Pipe hole on Wall C | DiaB=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.60 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.61 | 1.771 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.83 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.50 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.45 0.55 0.39 1.51 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=2.72 | | 3 | pc |
| 11. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=2 | 0.115359282 | m3 |
| 12. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=2.07 | | 0.22977 | m3 |
| 13. Backfill | | | | 81.20 | m3 |



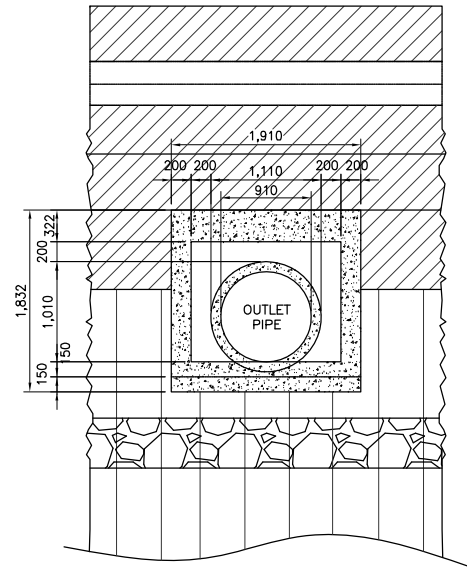
1 PLAN
SCALE A



3 SECTION (MR174C.1)
SCALE A



2 SECTION
SCALE A



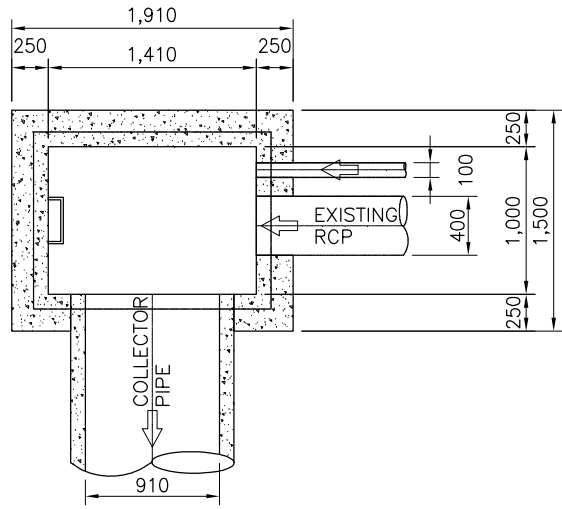
4 ELEVATION
SCALE A

QUANTITIES OF MANHOLE

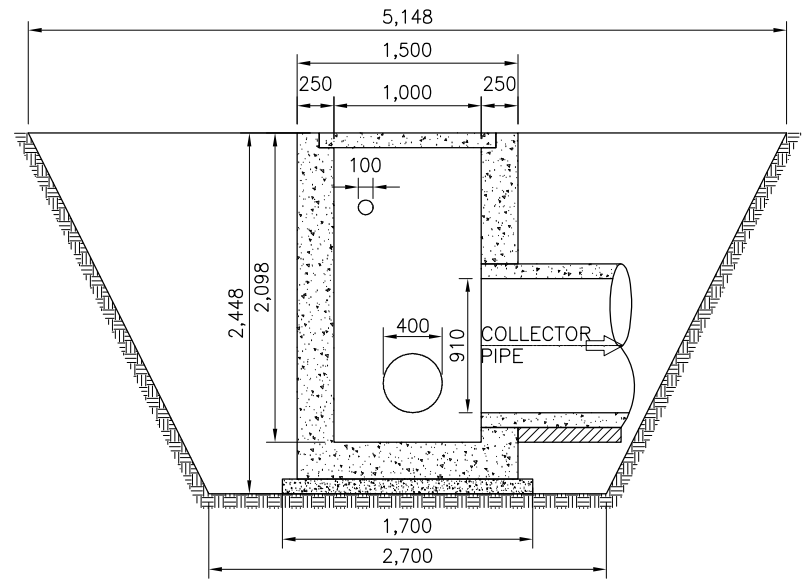
Manhole No.: MR 174C

Location: 13 + 952

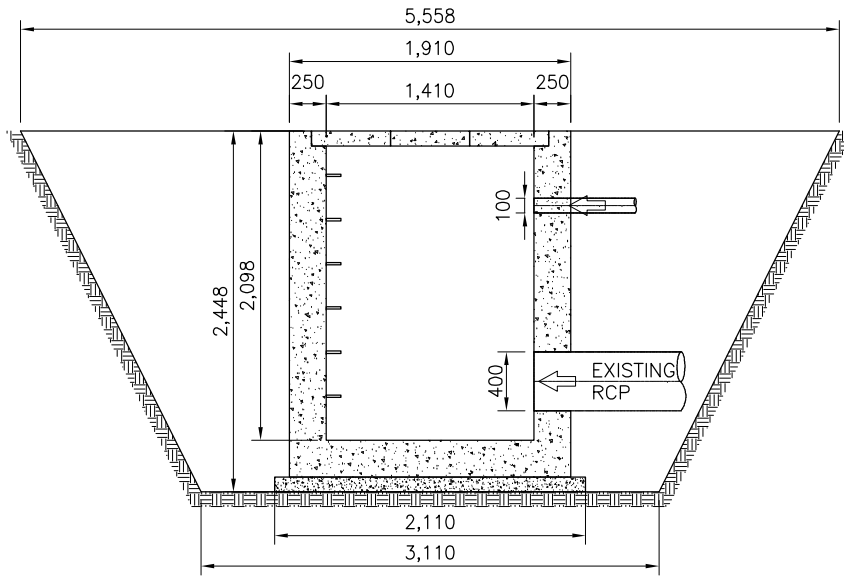
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|--|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=10.61 | 3.92 | 41.63 | |
| | | | | 41.63 | m ³ m ³ |
| 2. Lev. Concrete | W=2.11 L=1.70 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.50 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.50 Win=1.41 Lin=1.00 | Aout=2.87 Ain=1.41 Anet=1.46 | 2.098 | 3.053 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.53 | 0.23 | 0.25 | 0.06 | |
| Pipe hole on Wall C | DiaC=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 2.75 | m ³ |
| 5. Conc. Cover | L=1.20 W=1.61 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Backfill | | | | 34.69 | m ³ |



3 PLAN
SCALE C



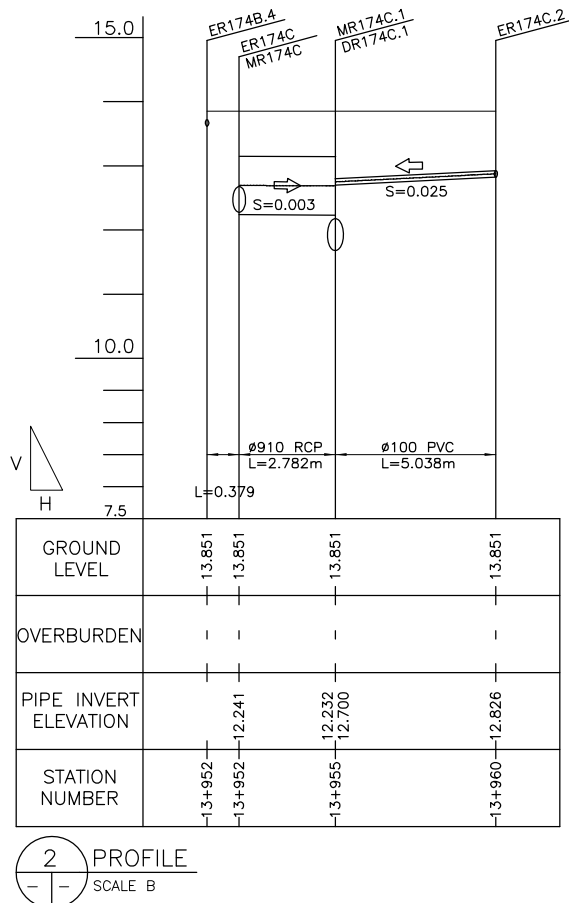
5 SECTION (MR174B.4)
SCALE C



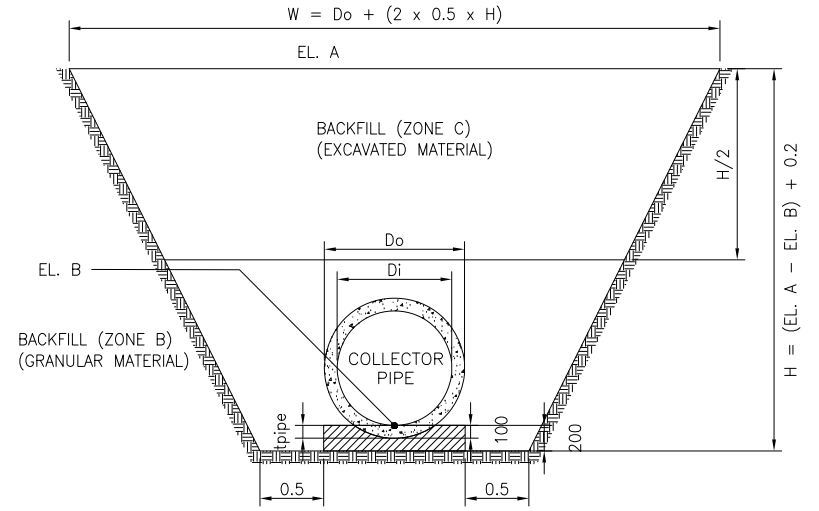
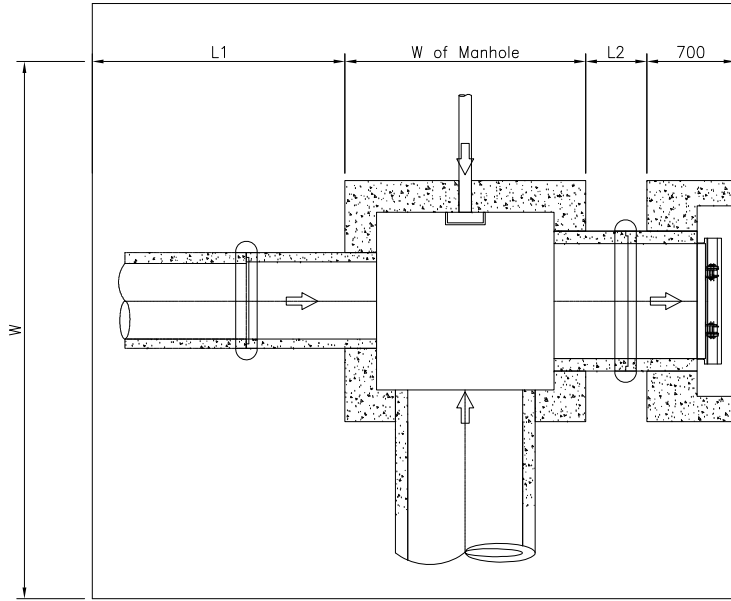
4 SECTION
SCALE C

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|-----------|-----------|----------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.91 | | L=2.79 | 3 | pc |
| | | | | | |
| Collector Pipe (PVC) | Dia=0.10 | | L=5.16 | 2 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=0.91 | L=2.79 | 0.1 | 0.25 | m ³ |
| 3. Conc. Collar | D1=1.110m | A1=0.97 | 0.17 | 0.12 | m3 |
| | D2=1.290m | A2=1.31 | | | |
| | | Anet=0.34 | Qty=2 | | |
| 3. PVC coupling | Dia=0.10 | | | 1 | pc |
| 4. Formworks | | | | 2.58 | m ³ |



| | | |
|--|-------------------------------|-------------------------------------|
| Clearing (Manhole 174C.1) | | |
| L1 | 2.3285 m | |
| W of Manhole | 1.41 m | A=42.74 m² |
| L2 | 2.07 m | |
| W | 6.567 m | |
| Clearing (Manhole 174C) | | |
| W | 5.558 m | A=28.61 m² |
| L | 5.148 m | |
| Clearing (Collector 174C - 174C.1) | | |
| W | 3.9245 m | A=10.92 m² |
| L | 2.782 m | |
| Clearing (Collector 174C.2 - 174C.1) | | |
| W | 2.188 m | A=11.02 m² |
| L | 5.038 m | |
| (Collector Pipe) Downstream 174C - 174C.1 | | |
| Do | 1.11 m | Excavation A=5.49 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.14 m ² |
| H | 1.819 m | Backfill Zone C |
| EL. A | 13.851 m | A=1.83 m ² |
| EL. B | 12.232 m | |
| W | 3.929 m | |
| (Collector Pipe) Upstream | | |
| Do | 1.11 m | Excavation A=5.46 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.13 m ² |
| H | 1.81 m | Backfill Zone C |
| EL. A | 13.851 m | A=1.82 m ² |
| EL. B | 12.241 m | |
| W | 3.92 m | |
| (Collector PVC) Downstream 174C.2 - 174C.1 | | |
| D | 0.1 m | Excavation |
| W1 | 2.25 m | A=1.93 m ² |
| W2 | 1.68 m | Backfill Zone B |
| H | 1.151 m | A=0.79 m ² |
| H/2 | 0.5755 m | Backfill Zone C |
| EL. A | 13.851 m | A=1.13 m ² |
| EL. B | 12.7 m | |
| (Collector PVC) Upstream | | |
| D | 0.1 m | Excavation |
| W1 | 2.13 m | A=1.65 m ² |
| W2 | 1.61 m | Backfill Zone B |
| H | 1.025 m | A=0.69 m ² |
| H/2 | 0.5125 m | Backfill Zone C |
| EL. A | 13.851 m | A=0.96 m ² |
| EL. B | 12.826 m | |
| Collector Pipe 174C - 174C.1 Volume | | |
| Excavation | 15.27661 m³ | |
| Backfill Zone B | 3.170286 m³ | |
| Backfill Zone C | 5.084924 m³ | |
| Collector PVC 174C.2 - 174C.1 Volume | | |
| Excavation | 9.246861 m³ | |
| Backfill Zone B | 3.816211 m³ | |
| Backfill Zone C | 5.390092 m³ | |

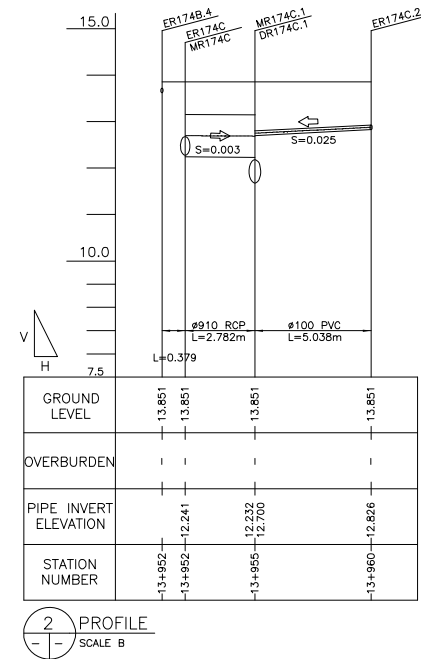
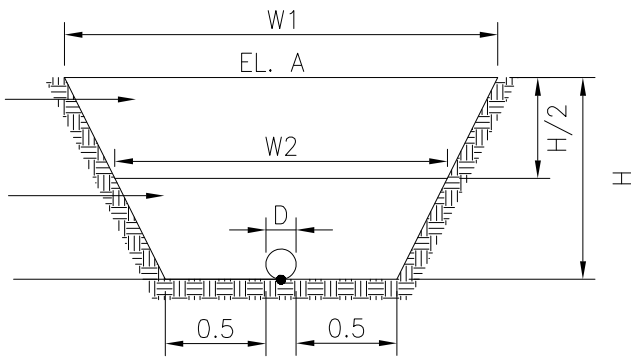


3 691

BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC

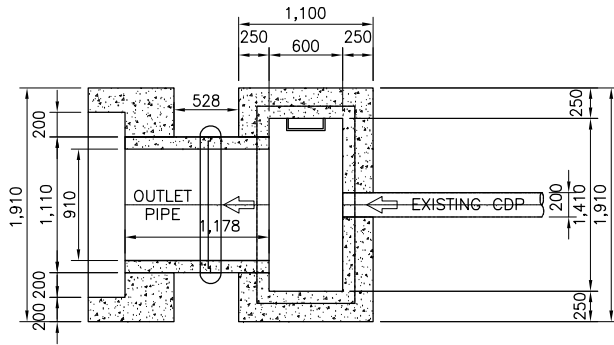


QUANTITIES OF MANHOLE

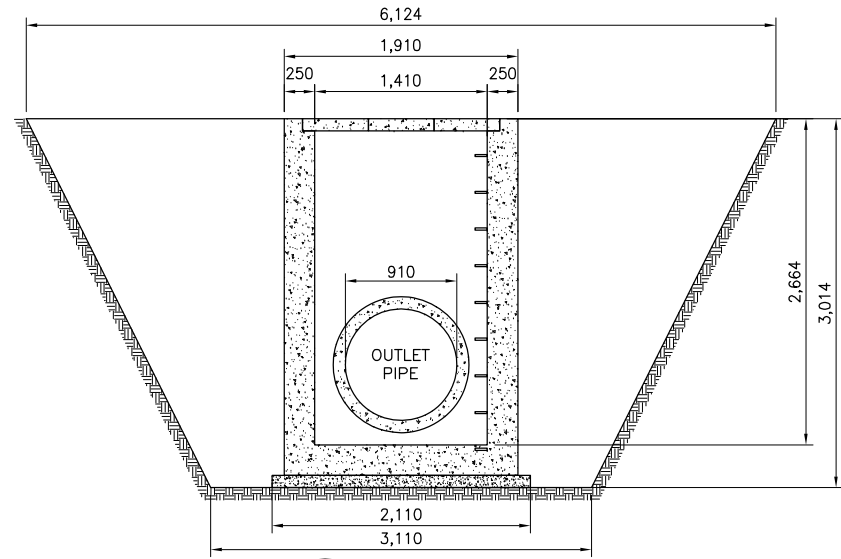
Manhole No.: MR 174C.3

Location 14 + 028

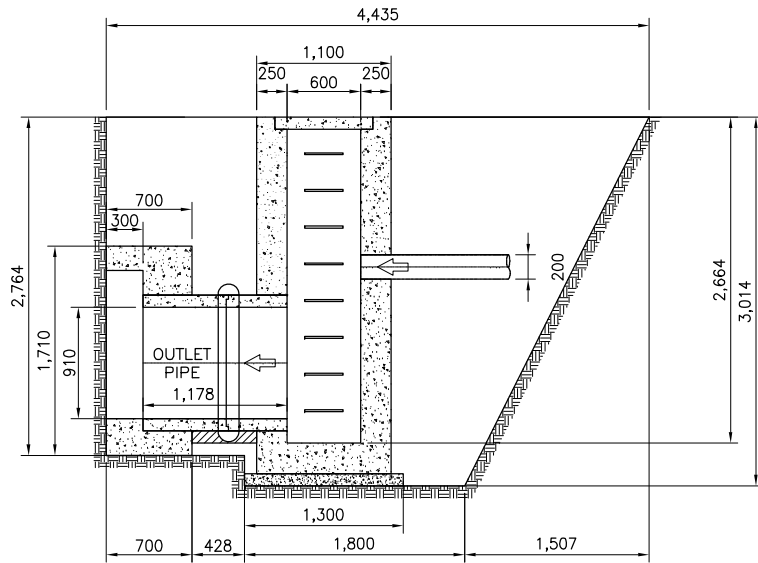
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=10.81 | 4.62 | 49.93 | |
| | | | | 49.93 | m ³ |
| 2. Lev. Concrete | W=1.30 L=2.11 | 2.74 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.91 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.91 Win=0.60 Lin=1.41 | Aout=2.10 Ain=0.85 Anet=1.26 | 2.664 | 3.343 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.30 | 0.07 | 0.25 | 0.02 | |
| Pipe hole on Wall C | DiaB=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.08 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.80 | 1.288 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058608 | m3 |
| 12. Backfill | | | | 41.61 | m3 |



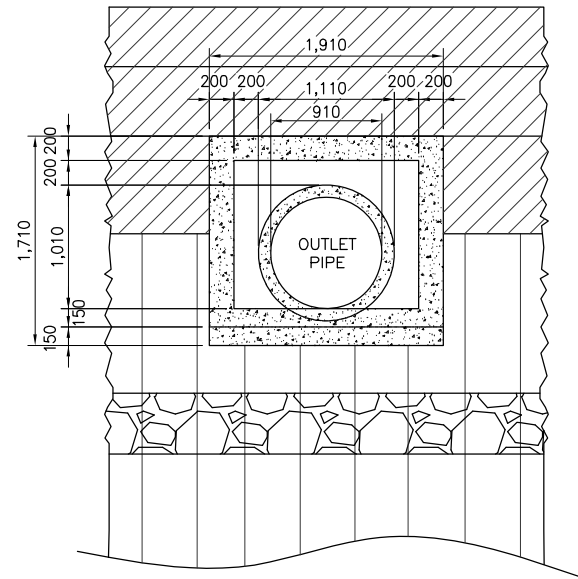
2 PLAN
SCALE B



4 SECTION (MR174C.3)
SCALE B



3 SECTION
SCALE B

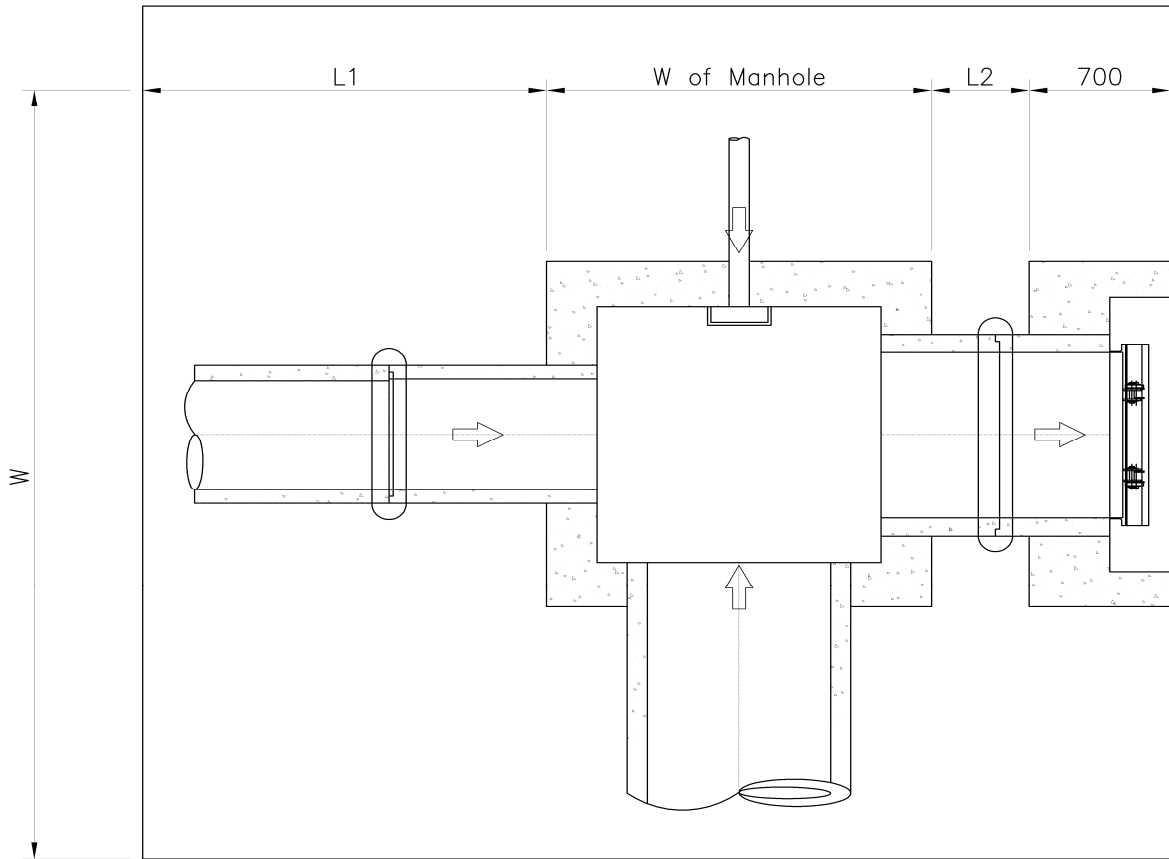


5 ELEVATION
SCALE A

Clearing (Manhole 174C.3)

L1 2.107 m
W of Manhole 1.1 m
L2 0.528 m
W 6.124 m

A=27.16 m²

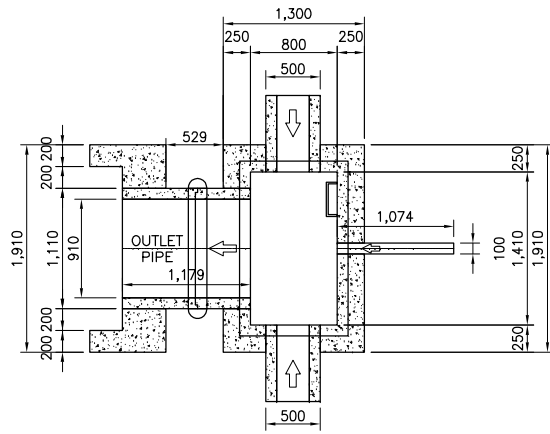


QUANTITIES OF MANHOLE

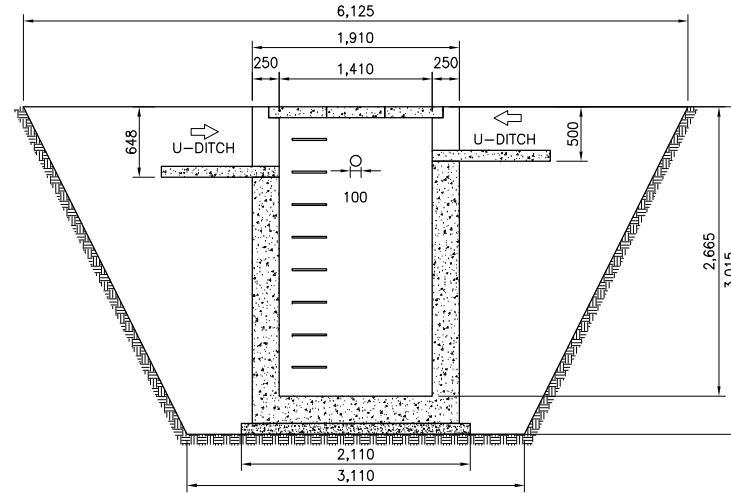
Manhole No.: MR 174C.7

Location: 14 + 028

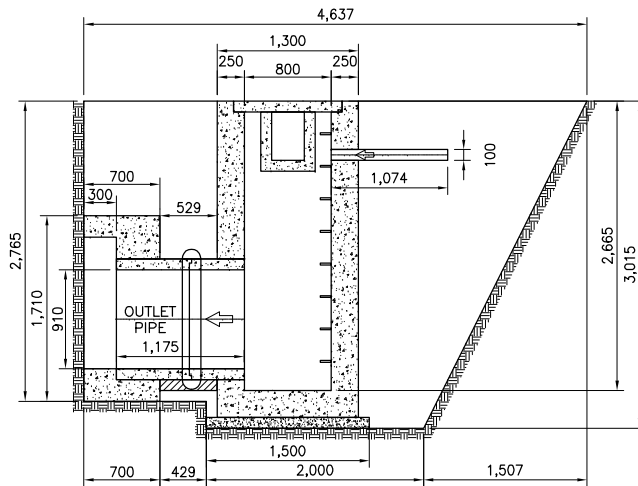
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=11.42 | 4.62 | 52.75 | |
| | | | | 52.75 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.665 | 3.611 | m ³ |
| Minus | | | | | |
| D=0.50 | W=0.50 | 0.25 | 0.25 | 0.06 | |
| Pipe hole on Wall B | DiaB=0.10 | 0.01 | 0.25 | 0.00 | |
| D=0.65 | W=0.50 | 0.32 | 0.25 | 0.08 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.22 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058719 | m3 |
| 12. Inlet Pipe (PVC) | Dia=.100m | L=1.07 | | 1 | pc |
| 13. Backfill | | | | 43.96 | m3 |



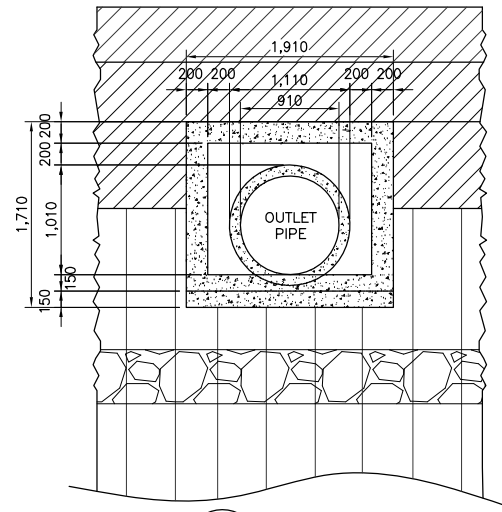
1 PLAN
SCALE A



3 SECTION (MR174C.7)
SCALE A



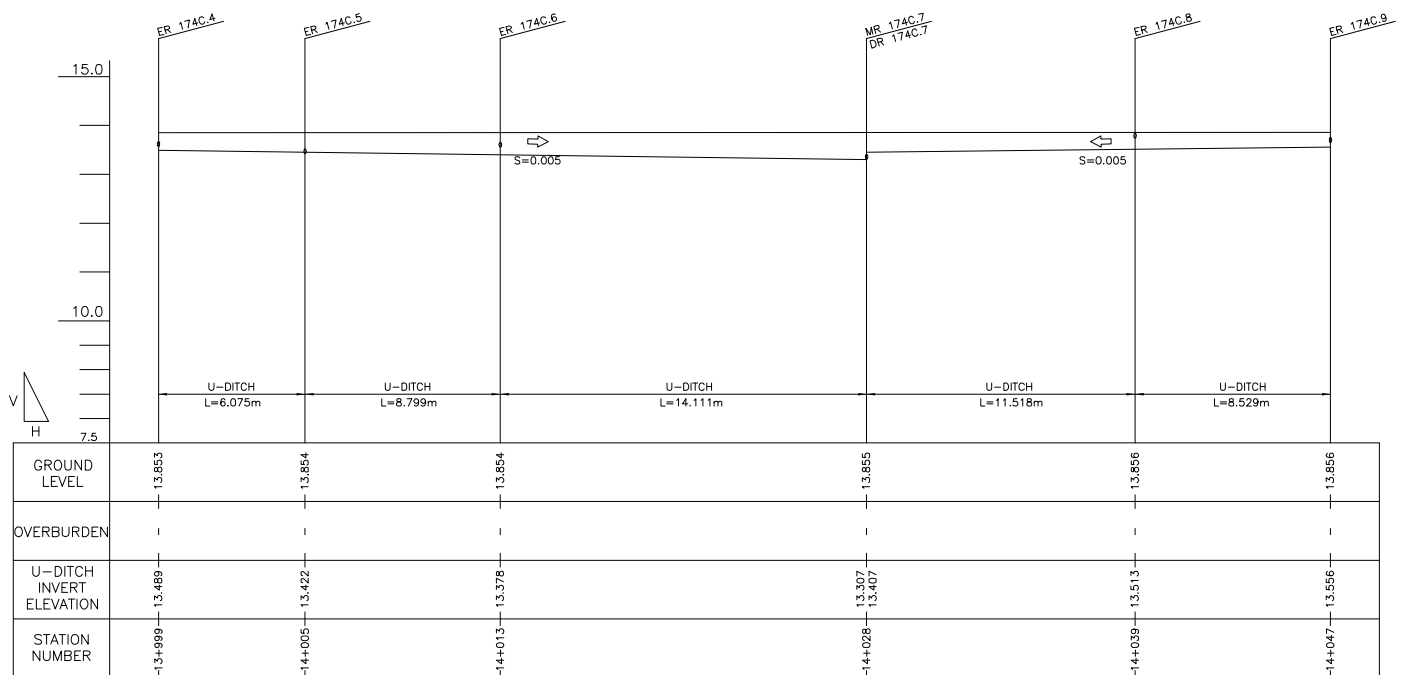
2 SECTION
SCALE A



4 ELEVATION
SCALE A

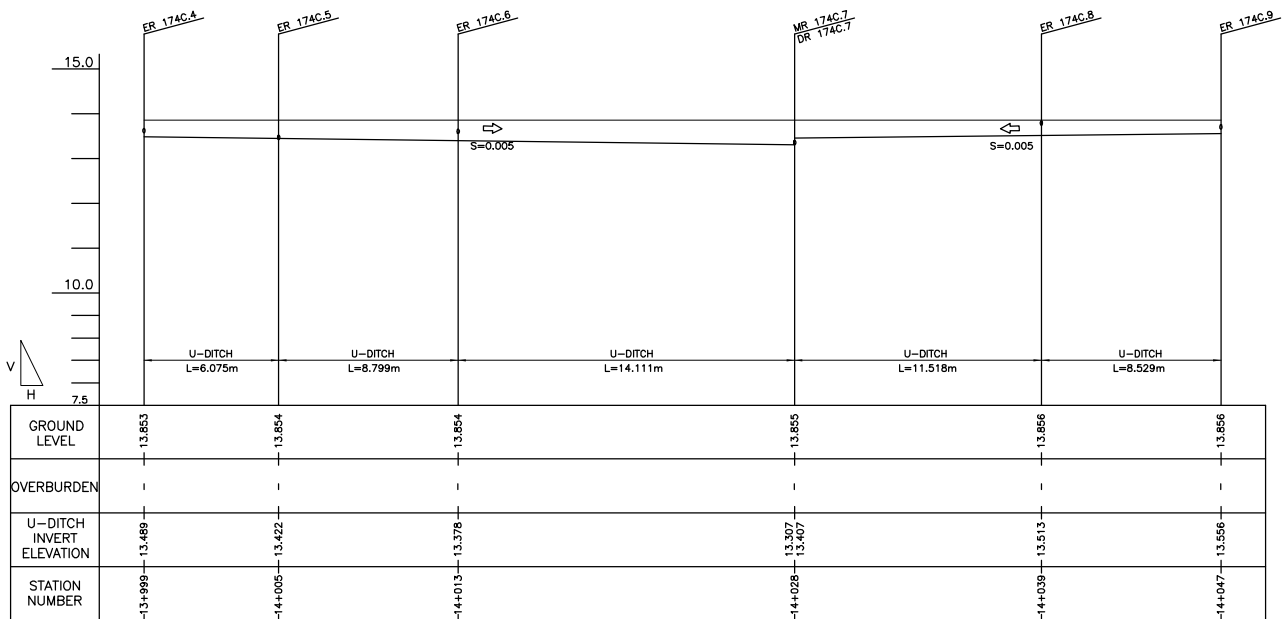
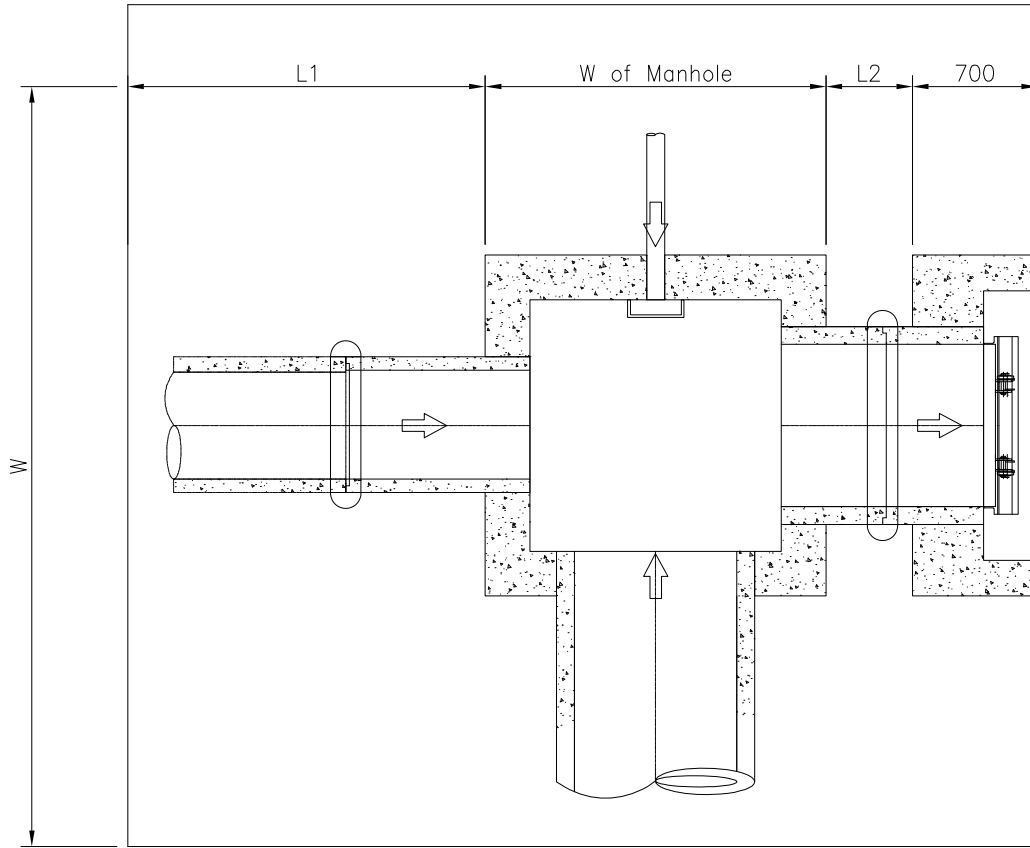
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-----------------------|----------------------|----------|----------------|---------------|----------------|
| 1. U - Ditch 1 | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 29.129925 | 1.46 | m ³ |
| Wall | W=.556m L=28.985m | 32.23132 | 0.1 | 3.22 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 28.99 | 1.45 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 29.13 | 1.46 | m ³ |
| U - Ditch 2 | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 20.147235 | 1.01 | m ³ |
| Wall | W=.474m L=20.05m | 19.00 | 0.1 | 1.90 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 20.05 | 1.00 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 20.15 | 1.01 | m ³ |
| 4. Formworks | | | | 87.52 | m3 |



2 PROFILE
SCALE B

| | | |
|--------------------------------------|-------------------------------|------------------------------|
| Clearing (Manhole 174C.7) | | |
| L1 | 2.1075 m | |
| W of Manhole | 1.3 m | A=28.40 m² |
| L2 | 0.529 m | |
| W | 6.125 m | |
| Clearing (U - Ditch 174C.4 - 174C.7) | | |
| W | 2.206 m | A=63.94 m² |
| L | 28.985 m | |
| Clearing (U - Ditch 174C.9 - 174C.7) | | |
| W | 2.124 m | A=42.58 m² |
| L | 20.047 m | |
| (U - Ditch) Downsteram | 174C.4 - 174C.7 | |
| d | 0.548 m | Excavation |
| D | 0.698 m | A=1.36 m ² |
| D/2 | 0.349 m | Backfill Zone B |
| W1 | 2.298 m | A=0.44 m ² |
| W2 | 1.949 m | Backfill Zone C |
| EL. A | 13.855 m | A=0.57 m ² |
| EL. B | 13.307 m | |
| (U - Ditch) Upstream | | |
| d | 0.364 m | Excavation |
| D | 0.514 m | A=0.95 m ² |
| D/2 | 0.257 m | Backfill Zone B |
| W1 | 2.114 m | A=0.31 m ² |
| W2 | 1.857 m | Backfill Zone C |
| EL. A | 13.853 m | A=0.38 m ² |
| EL. B | 13.489 m | |
| (U - Ditch) Downsteram | | |
| d | 0.448 m | Excavation |
| D | 0.598 m | A=1.14 m ² |
| D/2 | 0.299 m | Backfill Zone B |
| W1 | 2.198 m | A=0.37 m ² |
| W2 | 1.899 m | Backfill Zone C |
| EL. A | 13.855 m | A=0.46 m ² |
| EL. B | 13.407 m | |
| (U - Ditch) Upstream | | |
| d | 0.3 m | Excavation |
| D | 0.45 m | A=0.82 m ² |
| D/2 | 0.225 m | Backfill Zone B |
| W1 | 2.05 m | A=0.27 m ² |
| W2 | 1.825 m | Backfill Zone C |
| EL. A | 13.856 m | A=0.32 m ² |
| EL. B | 13.556 m | |
| U - Ditch 174C.4 - 174C.7 | | |
| Excavation | 33.71643 m³ | |
| Backfill Zone B | 10.93137 m³ | |
| Backfill Zone C | 13.81305 m³ | |
| U - Ditch 174C.9 - 174C.7 | | |
| Excavation | 19.71258 m³ | |
| Backfill Zone B | 6.410981 m³ | |
| Backfill Zone C | 7.922286 m³ | |



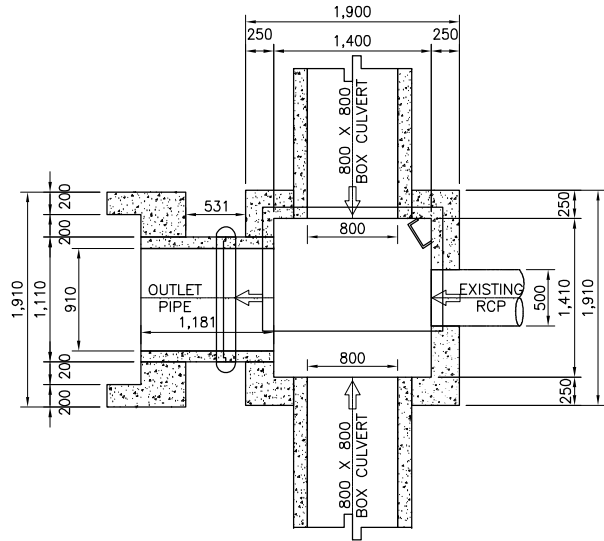
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

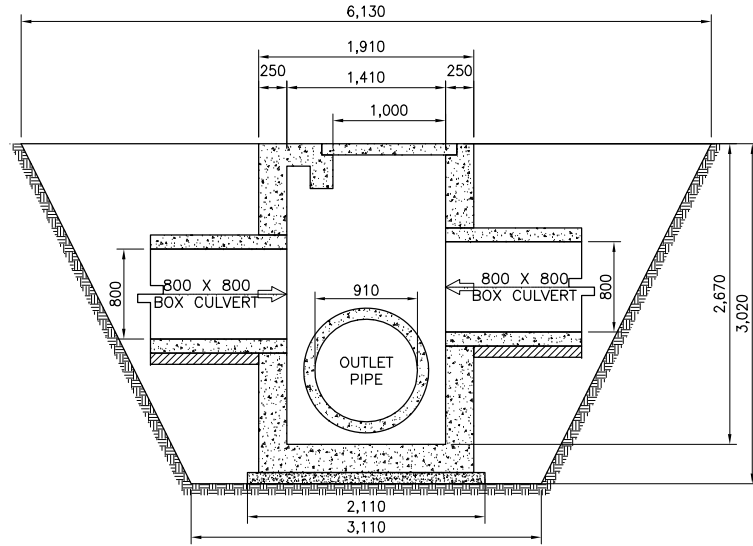
Manhole No.: MR 174E

Location: 14 + 110

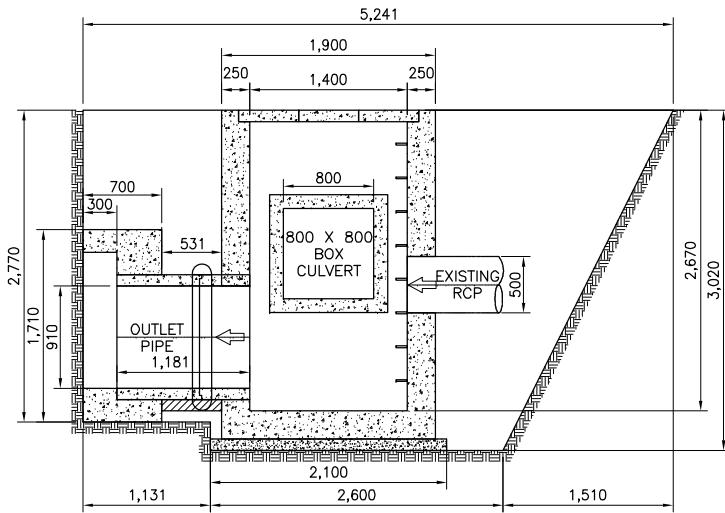
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=13.26 | 4.62 | 61.28 | |
| | | | | 61.28 | m ³ |
| 2. Lev. Concrete | W=2.10 L=2.11 | 4.43 | 0.1 | 0.44 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.91 | 4.26 | 0.25 | 1.06 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.91 Win=1.40 Lin=1.41 | Aout=3.63 Ain=1.97 Anet=1.66 | 2.670 | 4.419 | m ³ |
| Minus | | | | | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.25 | 0.08 | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.55 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.60 | 1.76 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.058941 | m3 |
| 12. Backfill | | | | 51.07 | m3 |



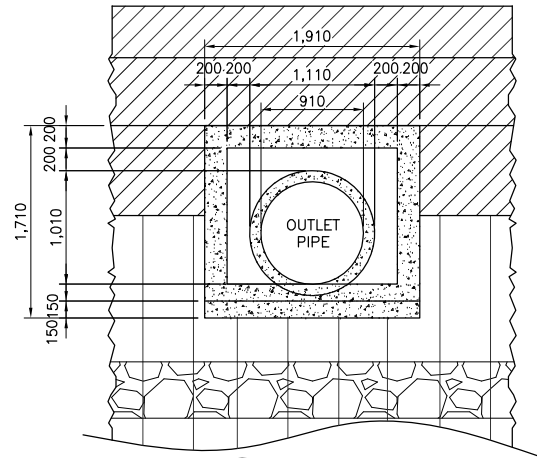
1 PLAN
SCALE A



3 SECTION (MR174E)
SCALE A



2 SECTION
SCALE A



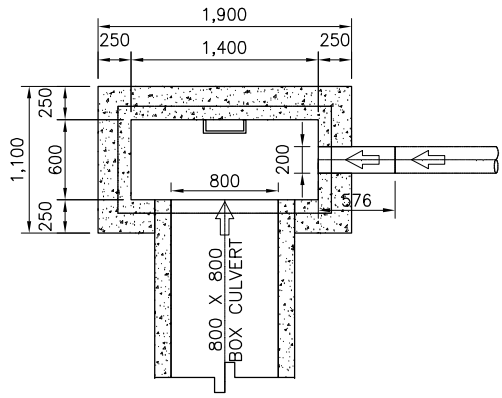
4 ELEVATION
SCALE B

QUANTITIES OF MANHOLE

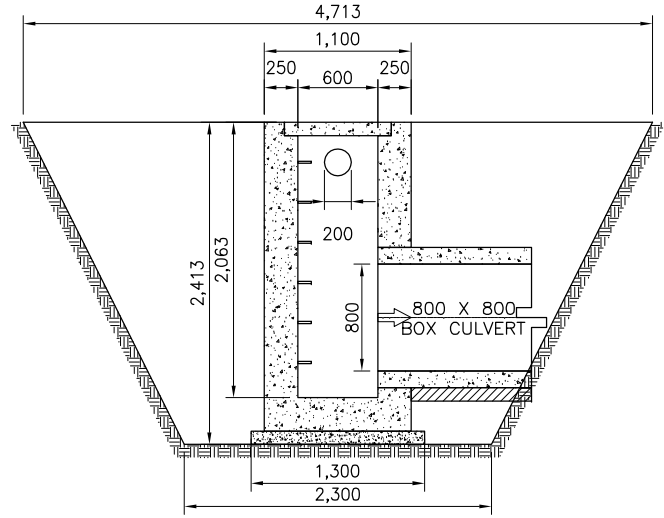
Manhole No.: MR 174C.16

Location: 14 + 099

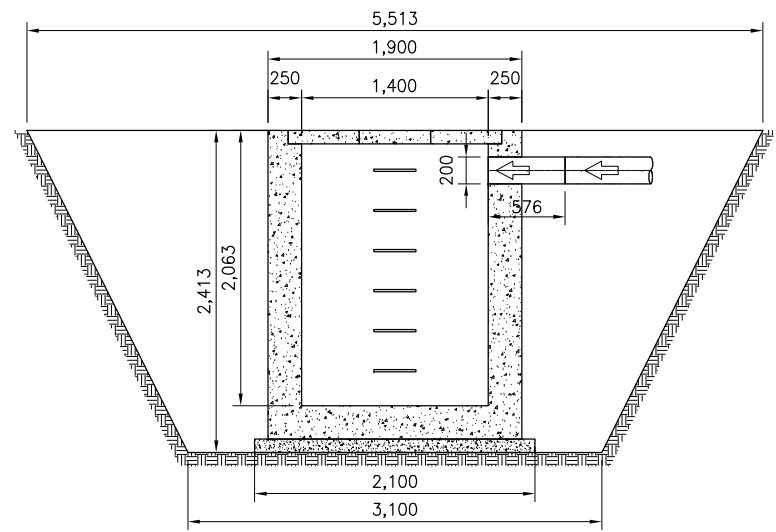
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|----------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=10.39 | 3.51 | 36.44 | |
| | | | | 36.44 | m ³ m ³ |
| 2. Lev. Concrete | W=2.10 L=1.30 | 2.73 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.10 | 2.09 | 0.25 | 0.52 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.10 Win=1.40 Lin=.60 | Aout=2.09 Ain=0.84 Anet=1.25 | 1.850 | 2.313 | m ³ |
| Minus | | | | | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall B | DiaB=0.20 | 0.03 | 0.25 | 0.01 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 2.03 | m ³ |
| 5. Conc. Cover | L=0.80 W=1.60 | 1.28 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Inlet Pipe (PVC) | Dia=.200m | L=0.58 | | 1 | pc |
| 8. Backfill | | | | 30.37 | m ³ |



1 PLAN
SCALE A



3 SECTION (MR174C.16)
SCALE A



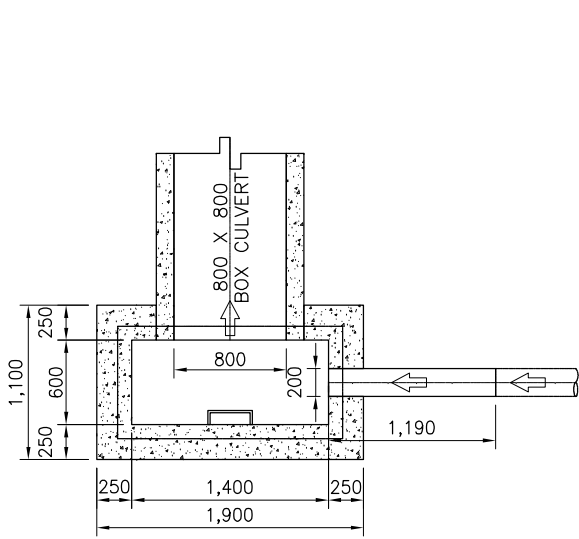
2 SECTION
SCALE A

QUANTITIES OF MANHOLE

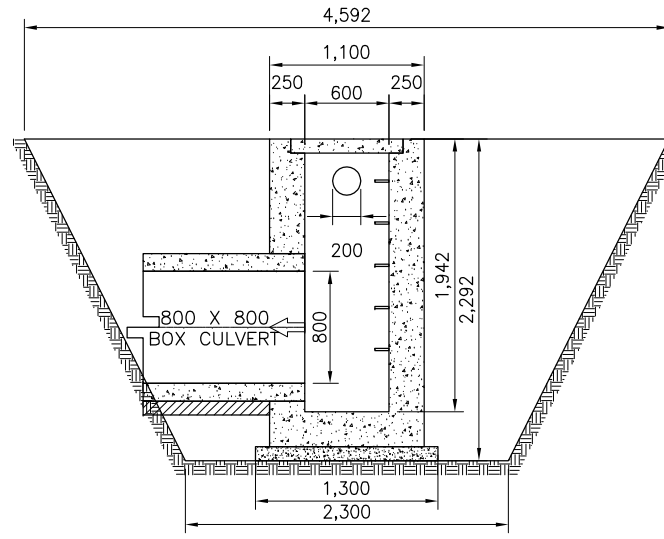
Manhole No.: MR 174E.10

Location: 14 + 149

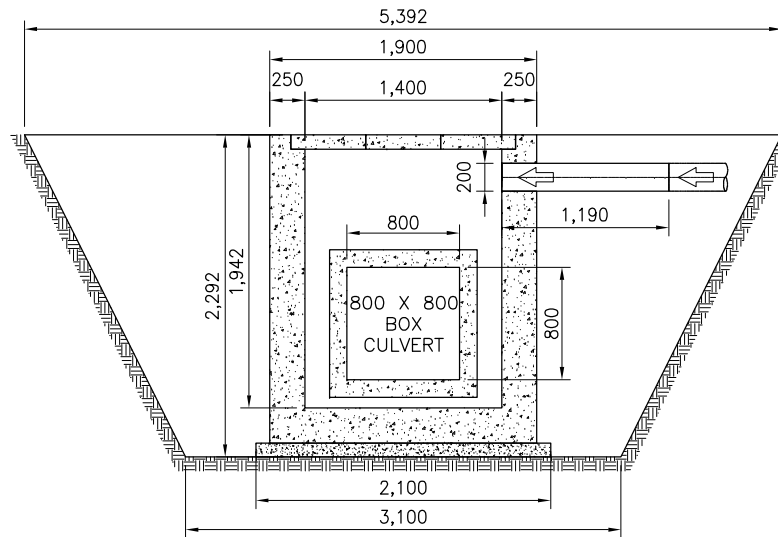
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|----------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=9.73 | 3.45 | 33.54 | |
| | | | | 33.54 | m ³ m ³ |
| 2. Lev. Concrete | W=2.10 L=1.30 | 2.73 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.10 | 2.09 | 0.25 | 0.52 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.10 Win=1.40 Lin=.60 | Aout=2.09 Ain=0.84 Anet=1.25 | 1.850 | 2.313 | m ³ |
| Minus | | | | | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall B | DiaB=0.20 | 0.03 | 0.25 | 0.01 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 2.03 | m ³ |
| 5. Conc. Cover | L=0.80 W=1.60 | 1.28 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Inlet Pipe (PVC) | Dia=.200m | L=1.19 | | 1 | pc |
| 8. Backfill | | | | 27.95 | m ³ |



4 PLAN
SCALE A



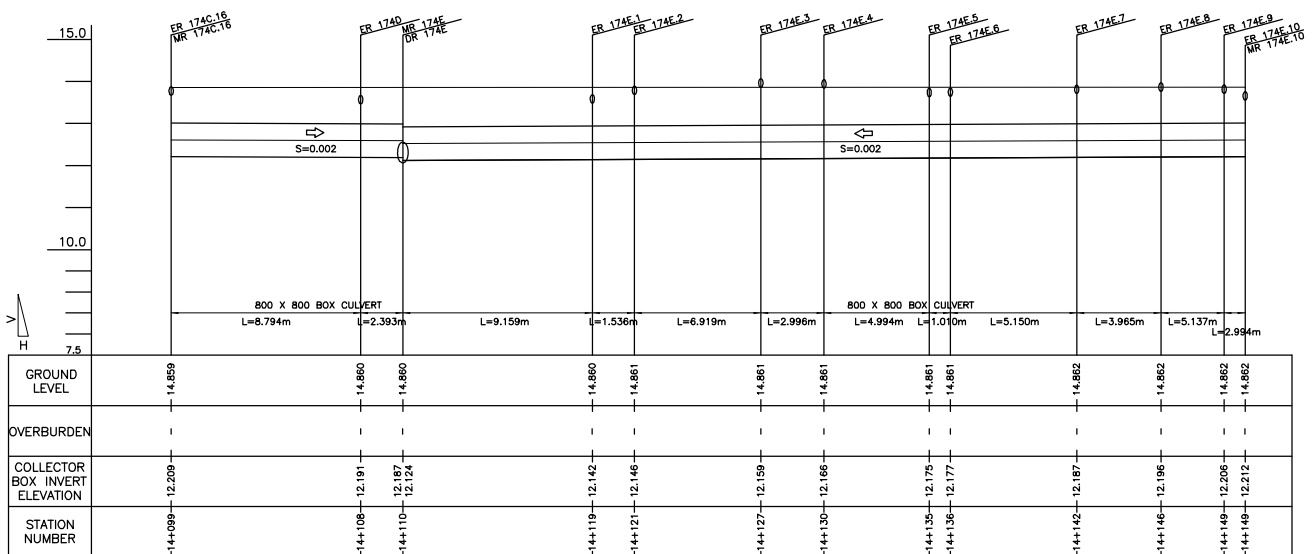
6 SECTION (MR174E.10)
SCALE A



5 SECTION
SCALE A

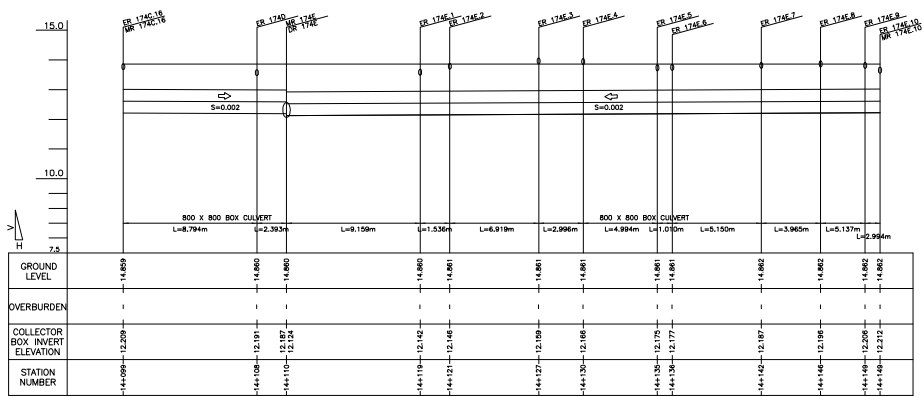
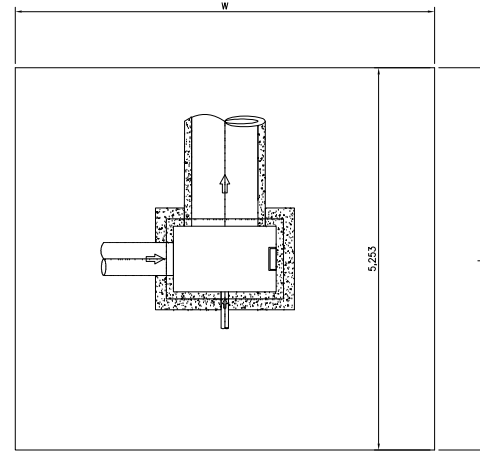
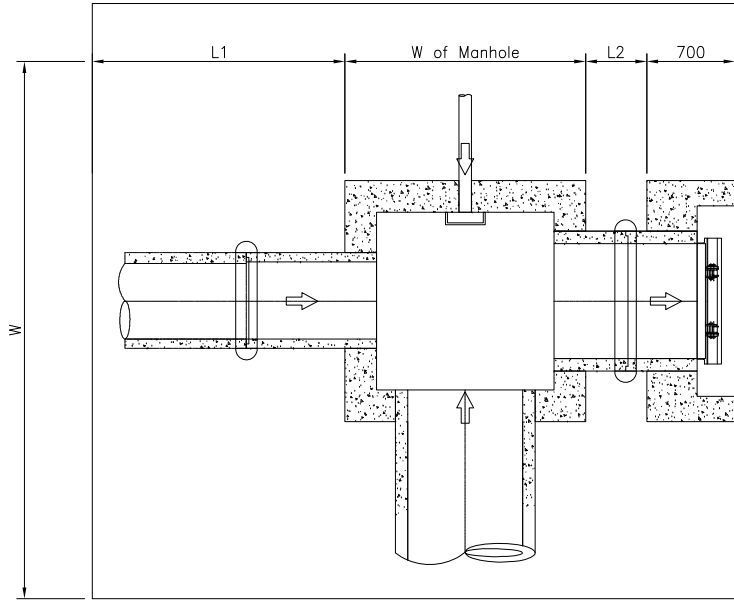
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-------------------------|---------------------|------|----------------|---------------|----------------|
| 1. BOX CULVERT | | | | | |
| Bottom | W=1.050m L=.125m | 0.13 | 55.16 | 7.24 | m ³ |
| Wall | W=.125m L=.800m | 0.20 | 55.16 | 11.03 | m ³ |
| Top | W=1.050m L=.125m | 0.13 | 55.16 | 7.24 | m ³ |
| Conc. Bedding | W=1.050m L=.100m | 0.11 | 55.16 | 5.79 | m ³ |
| 2. Formworks | | | | 219.11 | m ³ |
| 3. Water Stop | | | | 20.41 | m |
| 4. Joint Sealant | | | | 35.02 | m |
| 5. Cork Filler | | | | 0.46 | m2 |



2 PROFILE
SCALE B

| | | |
|-------------------------------------|-------------------------------|-------------------------------|
| Clearing (Manhole 174E) | | |
| L1 | 2.11 m | |
| W of Manhole | 1.9 m | A=32.13 m² |
| L2 | 0.531 m | |
| W | 6.13 m | |
| Clearing (Manhole 174E.10) | | |
| W | 5.392 m | A=24.76 m² |
| L | 4.592 m | |
| Clearing (Manhole 174C.16) | | |
| W | 5.513 m | A=25.98 m² |
| L | 4.713 m | |
| Clearing (Collector 174E.10 - 174E) | | |
| W | 5.168 m | A=278.35 m² |
| L | 53.86 m | |
| Clearing (Collector 174C.16 - 174E) | | |
| W | 5.1365 m | A=57.46 m² |
| L | 11.187 m | |
| (Collector Box) Downstream | 174E.10 - 174E | Excavation |
| W1 | 5.211 m | A=11.05 m ² |
| W2 | 3.7305 | Backfill Zone B |
| H | 2.961 m | A=3.20 m ² |
| H/2 | 1.4805 m | Backfill Zone C |
| EL A. | 14.86 m | A=6.62 m ² |
| ELB. | 12.124 m | |
| (Collector Box) Upstream | | Excavation |
| W1 | 5.125 m | A=10.60 m ² |
| W2 | 3.6875 | Backfill Zone B |
| H | 2.875 m | A=3.04 m ² |
| H/2 | 1.4375 m | Backfill Zone C |
| EL A. | 14.862 m | A=6.33 m ² |
| ELB. | 12.212 m | |
| (Collector Box) Downstream | 174C.16 - 174E | Excavation |
| W1 | 5.148 m | A=10.72 m ² |
| W2 | 3.699 | Backfill Zone B |
| H | 2.898 m | A=3.08 m ² |
| H/2 | 1.449 m | Backfill Zone C |
| EL A. | 14.86 m | A=6.41 m ² |
| ELB. | 12.187 m | |
| (Collector Box) Upstream | | Excavation |
| W1 | 5.125 m | A=10.60 m ² |
| W2 | 3.6875 | Backfill Zone B |
| H | 2.875 m | A=3.04 m ² |
| H/2 | 1.4375 m | Backfill Zone C |
| EL A. | 14.859 m | A=6.33 m ² |
| ELB. | 12.209 m | |
| Collector Box 174E.10 - 174E | Volume | |
| Excavation | 584.1351 m³ | |
| Backfill Zone B | 168.3697 m³ | |
| Backfill Zone C | 349.52 m³ | |
| Collector Box 174C.16 - 174E | Volume | |
| Excavation | 119.499 m³ | |
| Backfill Zone B | 34.31542 m³ | |
| Backfill Zone C | 71.42409 m³ | |



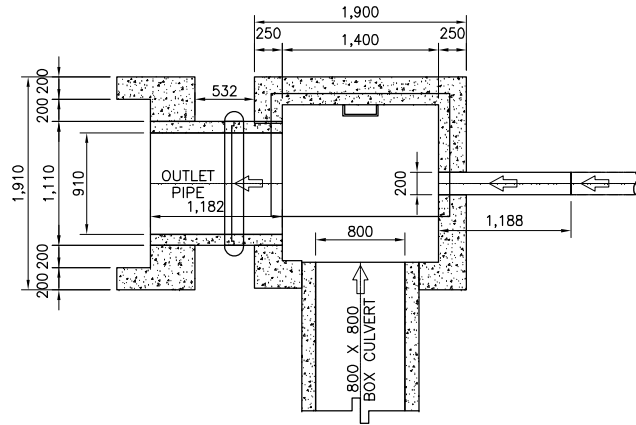
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

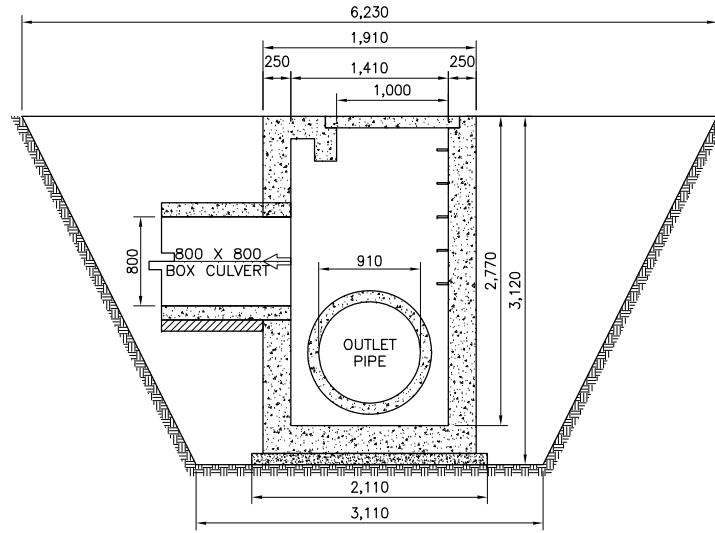
Manhole No.: MR 174E.12

Location: 14 + 161

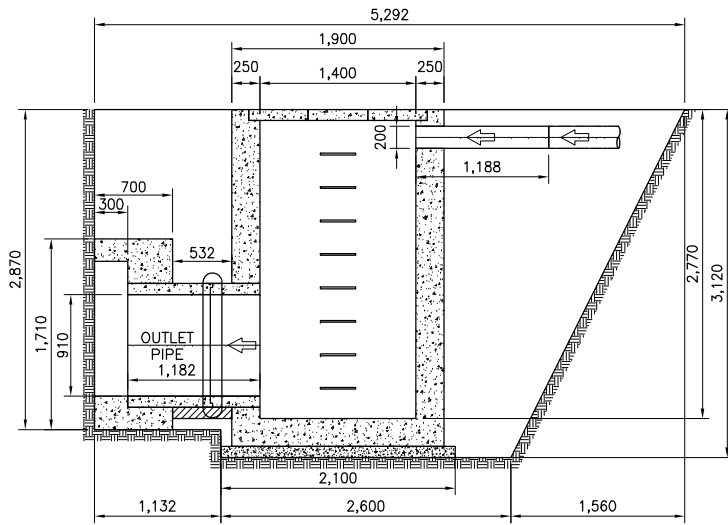
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=13.79 | 4.67 | 64.42 | |
| | | | | 64.42 | m ³ |
| 2. Lev. Concrete | W=2.10 L=2.11 | 4.43 | 0.1 | 0.44 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.91 | 4.26 | 0.25 | 1.06 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.91 Win=1.40 Lin=1.41 | Aout=3.63 Ain=1.97 Anet=1.66 | 2.673 | 4.424 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.20 | 0.03 | 0.25 | 0.01 | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.90 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.60 | 1.76 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.059052 | m3 |
| 12. Inlet Pipe (PVC) | Dia=.200m | L=1.19 | | 1 | pc |
| 13. Backfill | | | | 53.68 | m3 |



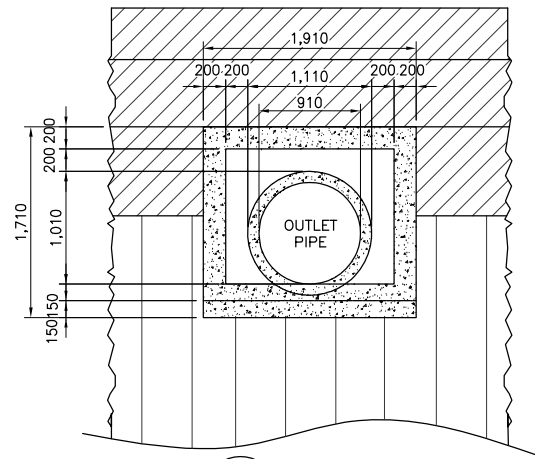
1 PLAN
SCALE A



3 SECTION (MR174E.12)
SCALE A



2 SECTION
SCALE A



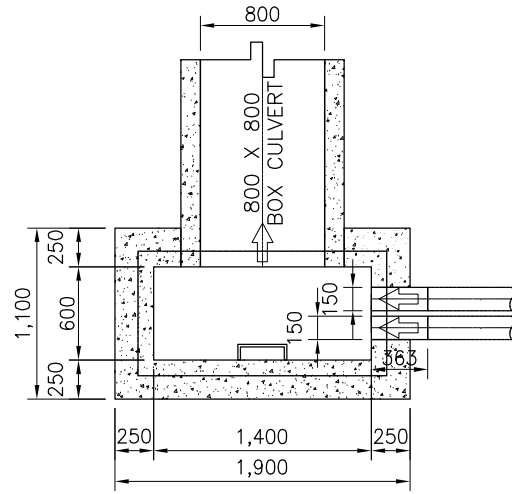
4 ELEVATION
SCALE B

QUANTITIES OF MANHOLE

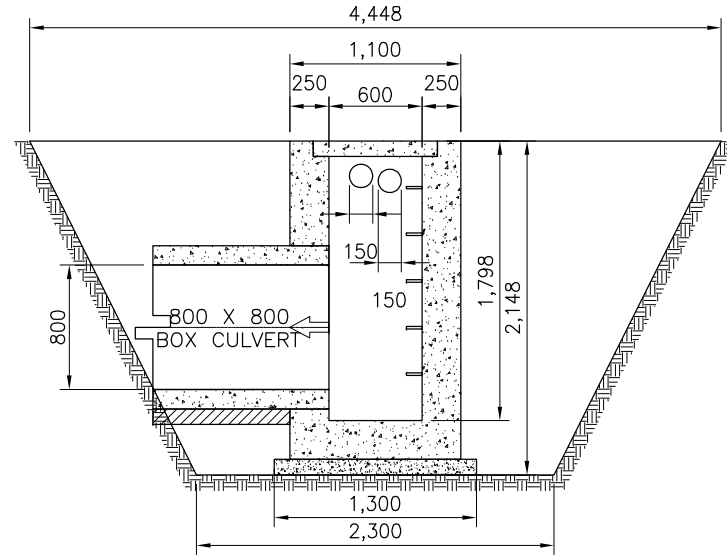
Manhole No.: MR 174E.26

Location: 14 + 197

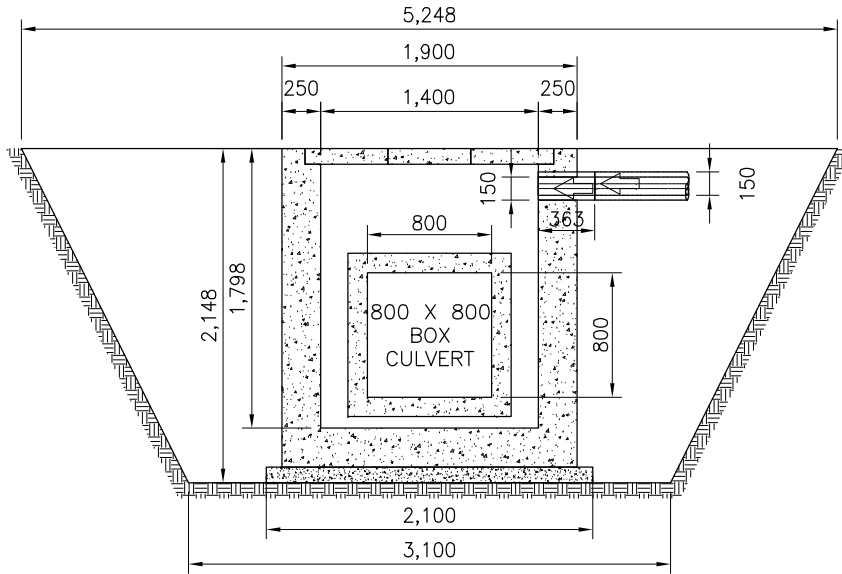
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|----------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=8.97 | 3.37 | 30.25 | |
| | | | | 30.25 | m ³ m ³ |
| 2. Lev. Concrete | W=2.10 L=1.30 | 2.73 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.90 L=1.10 | 2.09 | 0.25 | 0.52 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.90 Lout=1.10 Win=1.40 Lin=.60 | Aout=2.09 Ain=0.84 Anet=1.25 | 1.731 | 2.164 | m ³ |
| Minus | | | | | |
| D=1.05 | W=1.05 | 1.10 | 0.25 | 0.28 | |
| Pipe hole on Wall B | DiaB=0.15 | 0.04 | 0.25 | 0.01 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 1.88 | m ³ |
| 5. Conc. Cover | L=0.80 W=1.60 | 1.28 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=5 | 0.000201062 | | 0.000120637 0.95 4.74 | m ³ kg/pc kg |
| 7. Inlet Pipe (PVC) | Dia=.150m | L=0.73 | | 1 | pc |
| 8. Backfill | | | | 25.21 | m ³ |



1 PLAN
SCALE A



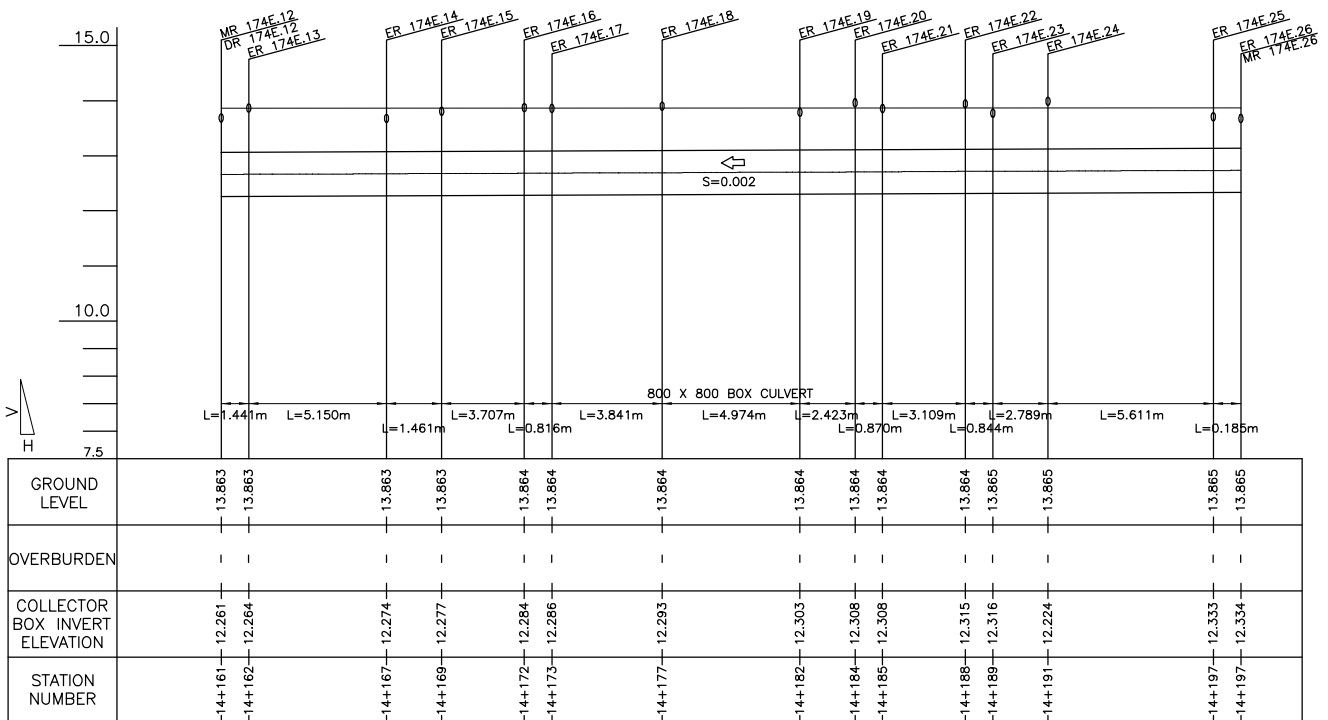
3 SECTION (MR174E.26)
SCALE A



2 SECTION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-------------------------|---------------------|------|----------------|---------------|----------------|
| 1. BOX CULVERT | | | | | |
| Bottom | W=1.050m L=.125m | 0.13 | 37.30 | 4.90 | m ³ |
| Wall | W=.125m L=.800m | 0.20 | 37.30 | 7.46 | m ³ |
| Top | W=1.050m L=.125m | 0.13 | 37.30 | 4.90 | m ³ |
| Conc. Bedding | W=1.050m L=.100m | 0.11 | 37.30 | 3.92 | m ³ |
| 2. Formworks | | | | 148.16 | m ³ |
| 3. Water Stop | | | | 13.80 | m |
| 4. Joint Sealant | | | | 23.68 | m |
| 5. Cork Filler | | | | 0.46 | m ² |



2 PROFILE
SCALE B

Clearing (Manhole 174E.12)

| | | |
|--------------|---------|------------------------------|
| L1 | 2.16 m | |
| W of Manhole | 1.9 m | A=32.97 m² |
| L2 | 0.532 m | |
| W | 6.23 m | |

Clearing (Manhole 174E.26)

| | | |
|---|---------|------------------------------|
| W | 5.248 m | A=23.34 m² |
| L | 4.448 m | |

Clearing (Collector 174E.26 - 174E.12)

| | | |
|---|----------|-------------------------------|
| W | 4.0415 m | A=150.43 m² |
| L | 37.221 m | |

(Collector Box) Downstream 174E.26 - 174E.12

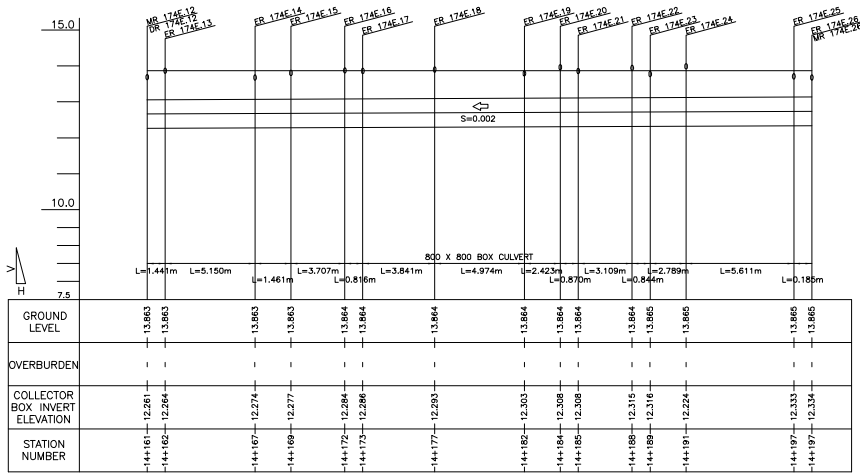
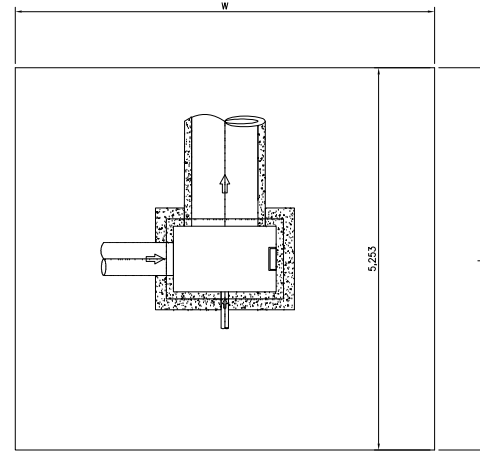
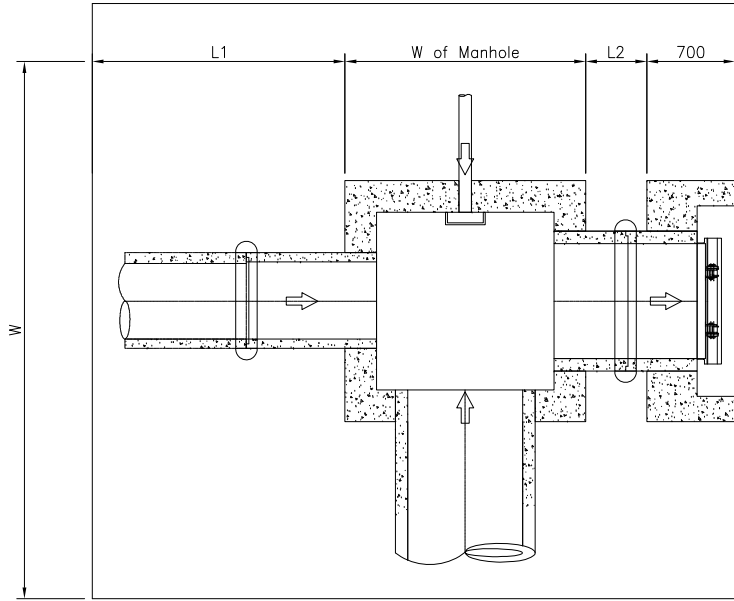
| | | |
|-------|----------|-------------------------------------|
| W1 | 4.077 m | Excavation A=5.78 m ² |
| W2 | 3.1635 | Backfill Zone B |
| H | 1.827 m | A=1.25 m ² |
| H/2 | 0.9135 m | Backfill Zone C |
| EL A. | 13.863 m | A=3.31 m ² |
| ELB. | 12.261 m | |

(Collector Box) Upstream

| | | |
|-------|----------|-------------------------------------|
| W1 | 4.006 m | Excavation A=5.49 m ² |
| W2 | 3.128 | Backfill Zone B |
| H | 1.756 m | A=1.13 m ² |
| H/2 | 0.878 m | Backfill Zone C |
| EL A. | 13.865 m | A=3.13 m ² |
| ELB. | 12.334 m | |

Collector Box 174E.26 - 174E.12

| | |
|-----------------|-------------------------------|
| Volume | |
| Excavation | 210.2061 m³ |
| Backfill Zone B | 44.35469 m³ |
| Backfill Zone C | 120.0713 m³ |



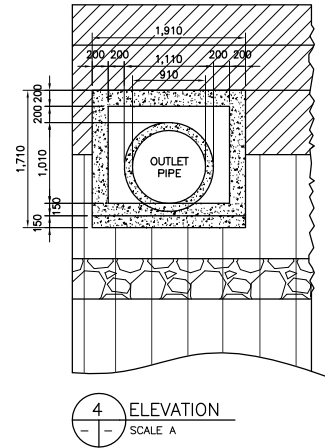
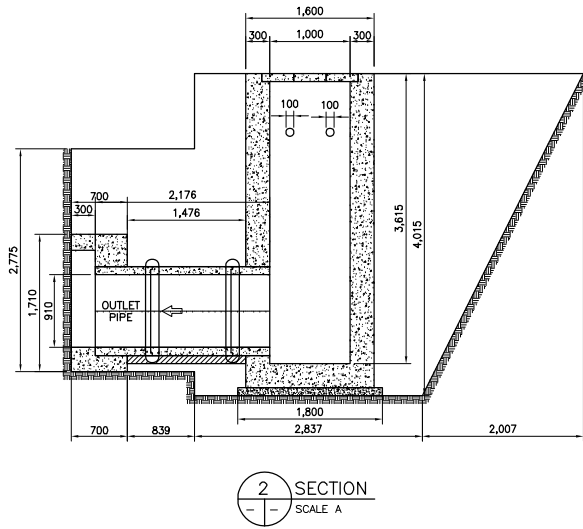
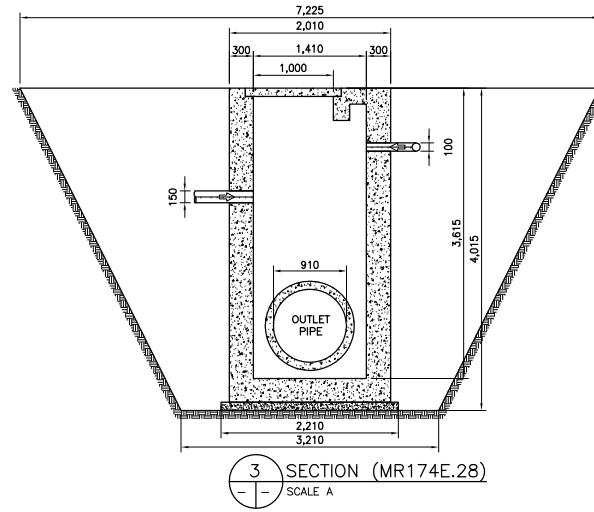
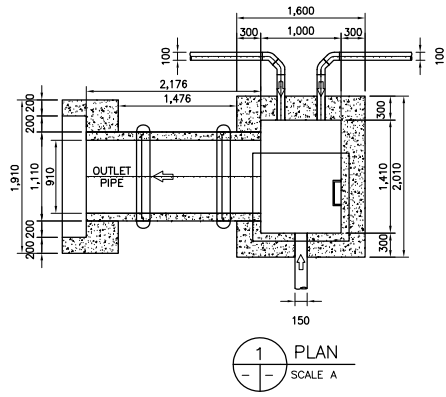
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

Manhole No.: MR 174E.28

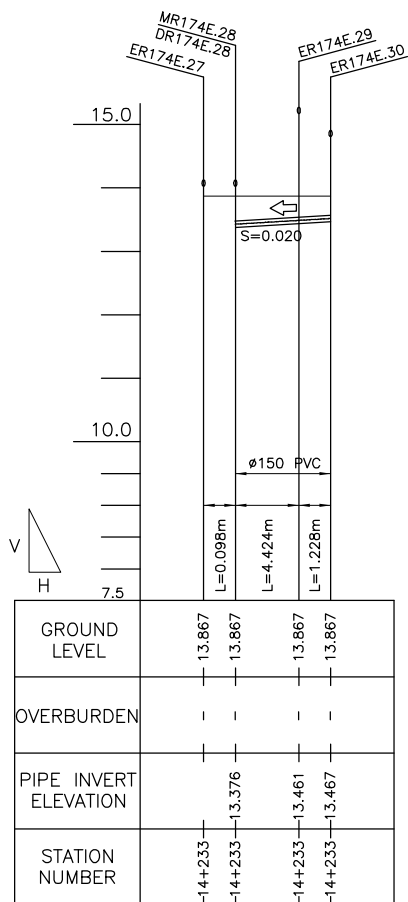
Location: 14 + 233

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=19.69 | 5.22 | 102.73 | |
| | | | | 102.73 | m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.66 | 0.3 | 1.10 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 3.615 | 6.529 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.02 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.10 | 0.02 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 6.28 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.20 | 1.32 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=12 | 0.000201062 | | 0.000120637 0.95 11.36 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=2.18 | | 3 | pc |
| 11. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=2 | 0.115359282 | m3 |
| 12. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=1.48 | | 0.163836 | m3 |
| 13. Backfill | | | | 85.61 | m3 |



QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=5.77 | 2 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.15 | | | 1 | pc |



2 PROFILE
 SCALE B

3.718

Clearing (Manhole 174E.28)

| | | |
|--------------|----------|------------------------------|
| L1 | 2.6075 m | |
| W of Manhole | 1.6 m | A=38.94 m² |
| L2 | 1.476 m | |
| W | 6.1 m | |

Clearing (Collector 174E.30 - 174E.28)

| | | |
|---|----------|-----------------------------|
| W | 1.5955 m | A=9.02 m² |
| L | 5.652 m | |

(Collector PVC) Downstream 174E.30 - 174E.28

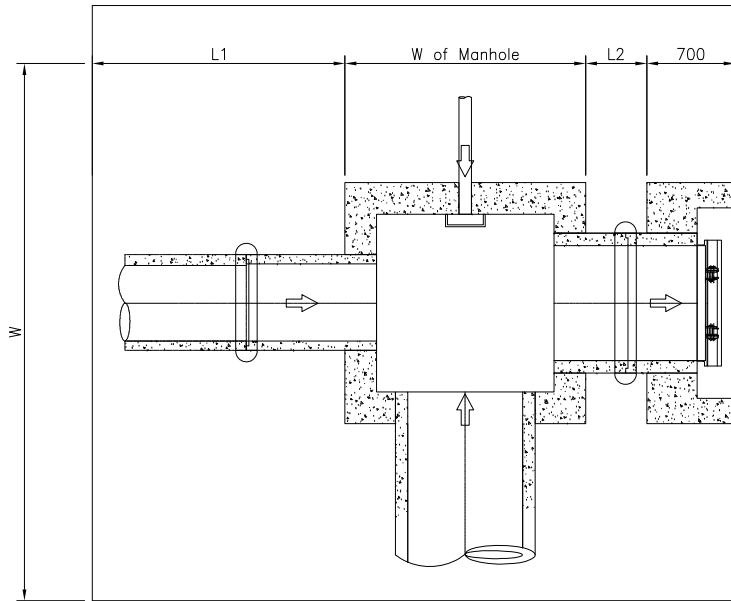
| | | |
|-------|----------|-----------------------|
| D | 0.15 m | Excavation |
| W1 | 1.64 m | A=0.69 m ² |
| W2 | 1.40 m | Backfill Zone B |
| H | 0.491 m | A=0.29 m ² |
| H/2 | 0.2455 m | Backfill Zone C |
| EL. A | 13.867 m | A=0.37 m ² |
| EL. B | 13.376 m | |

(Collector PVC) Upstream

| | | |
|-------|----------|-----------------------|
| D | 0.15 m | Excavation |
| W1 | 1.55 m | A=0.54 m ² |
| W2 | 1.35 m | Backfill Zone B |
| H | 0.4 m | A=0.23 m ² |
| H/2 | 0.2 m | Backfill Zone C |
| EL. A | 13.867 m | A=0.29 m ² |
| EL. B | 13.467 m | |

Collector PVC 174E.30 - 174E.28 Volume

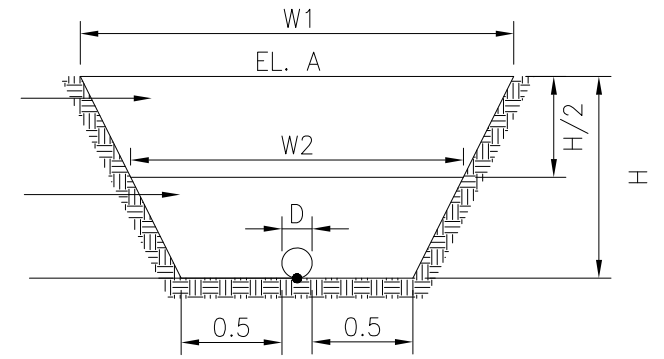
| | |
|-----------------|-------------------------------|
| Excavation | 3.531636 m³ |
| Backfill Zone B | 1.519426 m³ |
| Backfill Zone C | 1.910334 m³ |



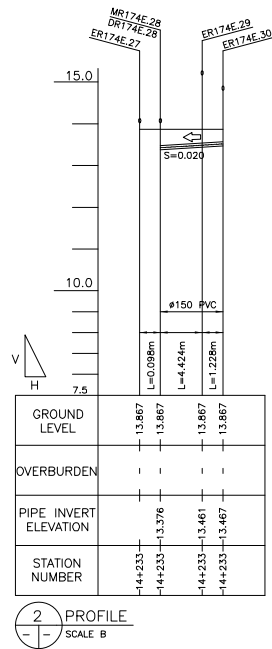
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.720

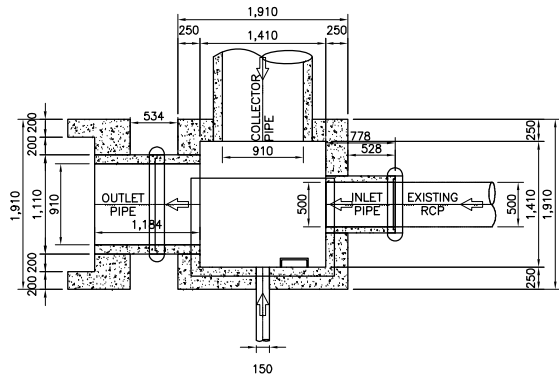


QUANTITIES OF MANHOLE

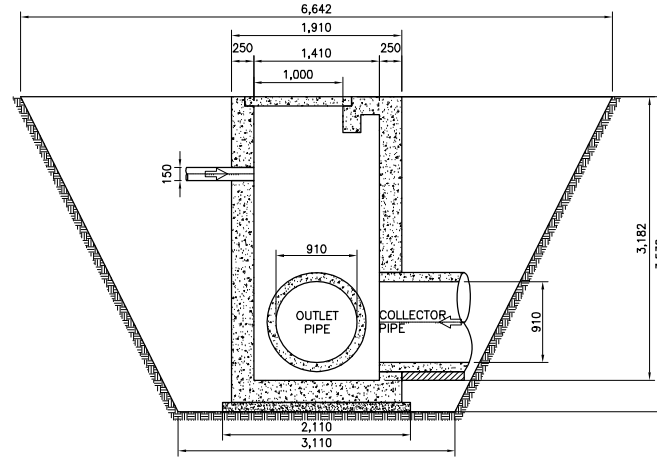
Manhole No.: MR 175

Location: 14 + 285

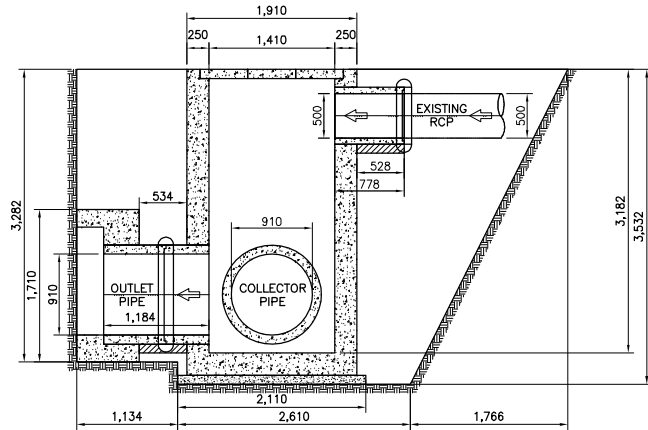
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=16.06 | 4.88 | 78.30 | |
| | | | | 78.30 | m ³ |
| 2. Lev. Concrete | W=2.11 L=2.11 | 4.45 | 0.1 | 0.45 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.91 | 4.28 | 0.25 | 1.07 | m ³ |
| 4. Wall Entire Wall | Wout=1.91 Lout=1.91 Win=1.41 Lin=1.41 | Aout=3.65 Ain=1.99 Anet=1.66 | 2.675 | 4.441 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.25 | 0.08 | |
| Pipe hole on Wall C | DiaB=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.88 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.61 | 1.771 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.059274 | m3 |
| 12. Inlet Pipe | Dia=.500m | L=0.78 | | 1 | pc |
| 13. Conc. Collar (Inlet Pipe) | D1=.626m D2=.806m | A1=0.31 A2=0.51 Anet=0.20 | 0.17 Qty=1 | 0.034415519 | m3 |
| 14. Conc. Bedding (Inlet Pipe) | Dia=.626m | L=0.53 | | 0.0330528 | m3 |
| 15. Backfill | | | | 65.25 | m3 |



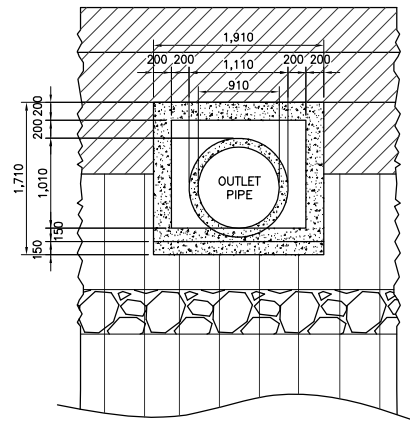
1 PLAN
SCALE A



3 SECTION (MR175)
SCALE A



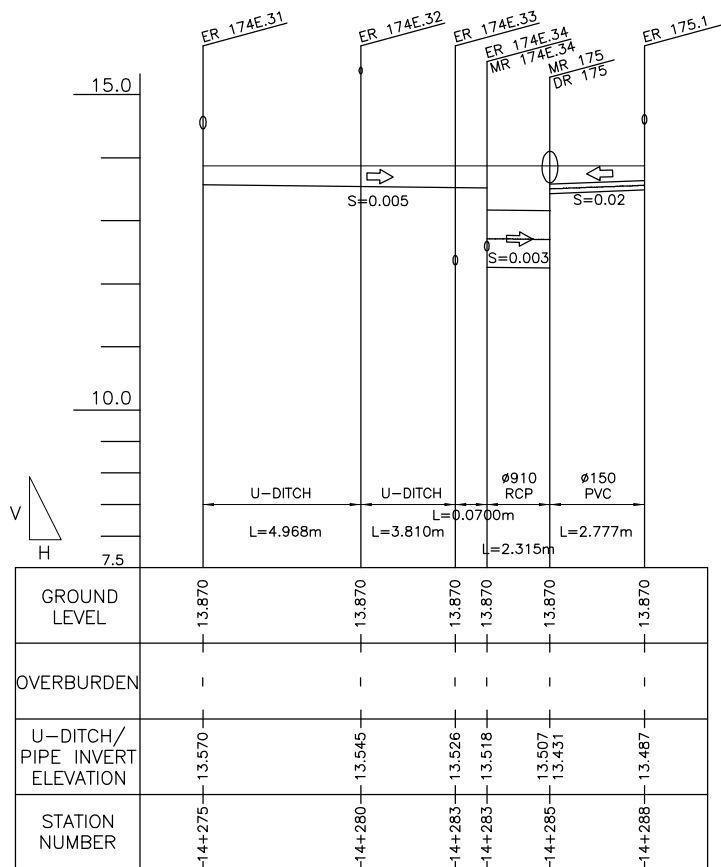
2 SECTION
SCALE A



5 ELEVATION
SCALE A

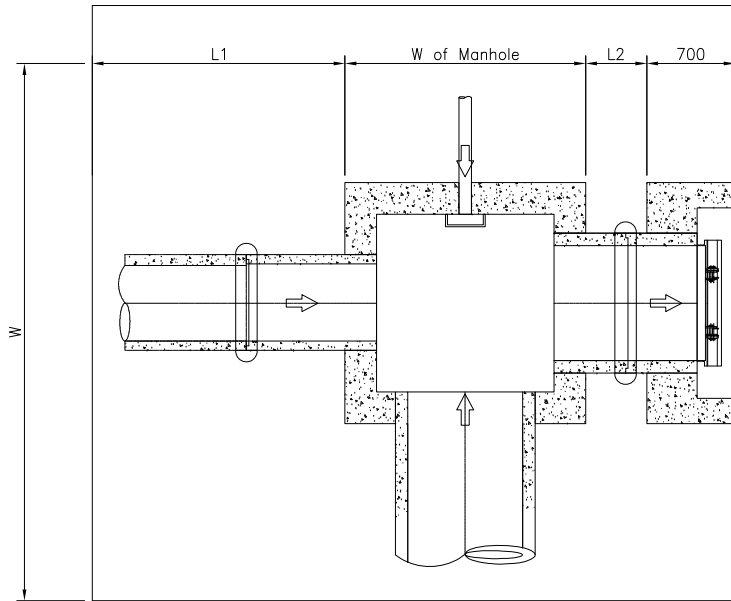
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-------------------------|--------------------|---------|----------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.91 | | L=2.32 | 3 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=0.91 | L=2.32 | 0.1 | 0.21 | m ³ |
| 3. Conc. Collar | D1=1.110m | A1=0.97 | 0.17 | 0.12 | m ³ |
| | D2=1.290m | A2=1.31 | Qty=2 | | |
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=2.83 | 1 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=.150m | | | 0 | pc |
| 3. U - Ditch | | | | | |
| Bottom | W=0.50 L=0.10 | 0.05 | 8.82 | 0.44 | m ³ |
| Wall | W=0.42 L=8.78 | 3.69 | 0.1 | 0.37 | m ³ |
| Top | W=0.50 L=0.10 | 0.05 | 8.778 | 0.44 | m ³ |
| Conc. Bedding | W=.500m L=.100m | 0.05 | 8.82 | 0.44 | m ³ |



2 PROFILE
 SCALE B

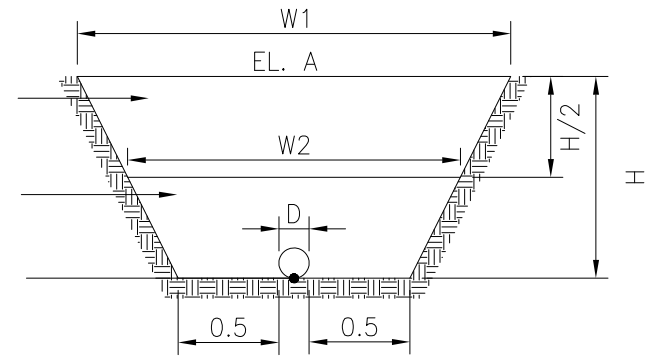
| | | |
|---|-------------------------------|------------------------------|
| Clearing (Manhole 175) | | |
| L1 | 2.366 m | |
| W of Manhole | 1.91 m | A=36.60 m² |
| L2 | 0.534 m | |
| W | 6.642 m | |
| Clearing (Manhole 174E.34) | | |
| W | 5.265 m | A=23.46 m² |
| L | 4.455 m | |
| Clearing (Collector 174E.34 - 175) | | |
| W | 2.6655 m | A=6.17 m² |
| L | 2.315 m | |
| Clearing (Collector 175.1 - 175) | | |
| W | 1.551 m | A=4.31 m² |
| L | 2.777 m | |
| Clearing (U - Ditch 174E.31 - 174E.33) | | |
| W | 2.072 m | A=18.19 m² |
| L | 8.778 m | |
| (Collector Pipe) Downstream 174E.34 - 175 | | |
| Do | 1.11 m | Excavation |
| Di | 0.91 m | A=1.34 m ² |
| tpipe | 0.1 m | Backfill Zone B |
| H | 0.559 m | A=0.26 m ² |
| EL. A | 13.87 m | Backfill Zone C |
| EL. B | 13.511 m | A=0.10 m ² |
| W | 2.669 m | |
| (Collector Pipe) Upstream | | |
| Do | 1.11 m | Excavation |
| Di | 0.91 m | A=1.32 m ² |
| tpipe | 0.1 m | Backfill Zone B |
| H | 0.552 m | A=0.25 m ² |
| EL. A | 13.87 m | Backfill Zone C |
| EL. B | 13.518 m | A=0.09 m ² |
| W | 2.662 m | |
| (Collector PVC) Downstream 175.1 - 175 | | |
| D | 0.15 m | Excavation |
| W1 | 1.57 m | A=0.57 m ² |
| W2 | 1.36 m | Backfill Zone B |
| H | 0.419 m | A=0.25 m ² |
| H/2 | 0.2095 m | Backfill Zone C |
| EL. A | 13.87 m | A=0.31 m ² |
| EL. B | 13.451 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 1.53 m | A=0.51 m ² |
| W2 | 1.34 m | Backfill Zone B |
| H | 0.383 m | A=0.22 m ² |
| H/2 | 0.1915 m | Backfill Zone C |
| EL. A | 13.87 m | A=0.28 m ² |
| EL. B | 13.487 m | |
| (U - Ditch) Downstream 147E.31 - 174E.33 | | |
| d | 0.344 m | Excavation |
| D | 0.494 m | A=0.91 m ² |
| D/2 | 0.247 m | Backfill Zone B |
| W1 | 2.094 m | A=0.30 m ² |
| W2 | 1.847 m | Backfill Zone C |
| EL. A | 13.87 m | A=0.36 m ² |
| EL. B | 13.526 m | |
| (U - Ditch) Upstream | | |
| d | 0.3 m | Excavation |
| D | 0.45 m | A=0.82 m ² |
| D/2 | 0.225 m | Backfill Zone B |
| W1 | 2.05 m | A=0.27 m ² |
| W2 | 1.825 m | Backfill Zone C |
| EL. A | 13.87 m | A=0.32 m ² |
| EL. B | 13.57 m | |
| Collector Pipe 174E.34 - 175 | | |
| Excavation | Volume | |
| Backfill Zone B | 3.079831 m³ | |
| Backfill Zone C | 0.584624 m³ | |
| | 0.226693 m³ | |
| Collector PVC 175.1 - 175 | | |
| Excavation | Volume | |
| Backfill Zone B | 1.534422 m³ | |
| Backfill Zone C | 0.660107 m³ | |
| | 0.82426 m³ | |
| U - Ditch 174E.31 - 174E 33 | | |
| Excavation | Volume | |
| Backfill Zone B | 7.647114 m³ | |
| Backfill Zone C | 2.492259 m³ | |
| | 3.02878 m³ | |



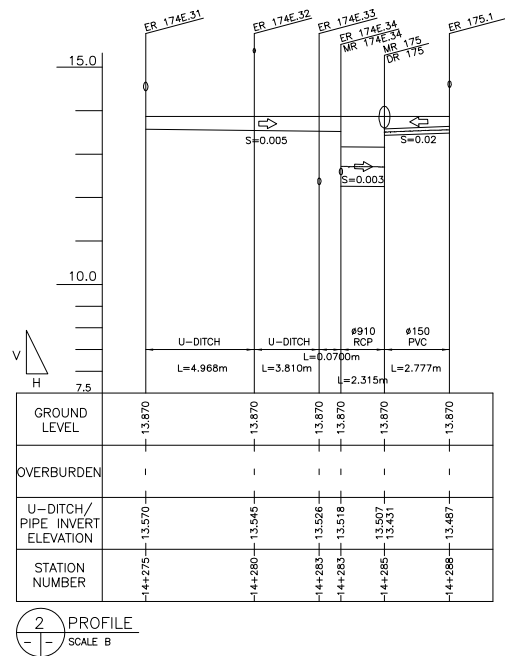
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.725

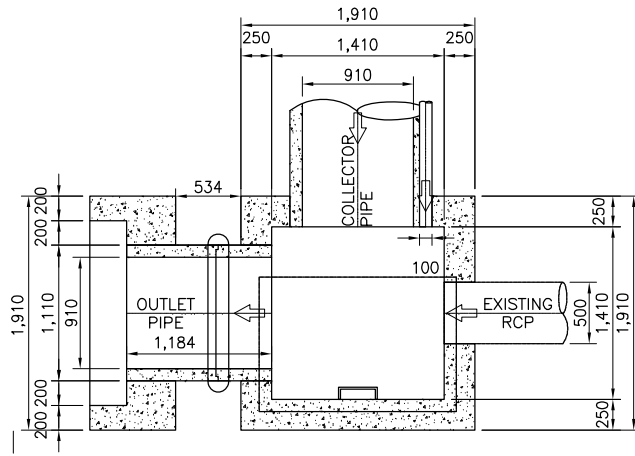


QUANTITIES OF MANHOLE

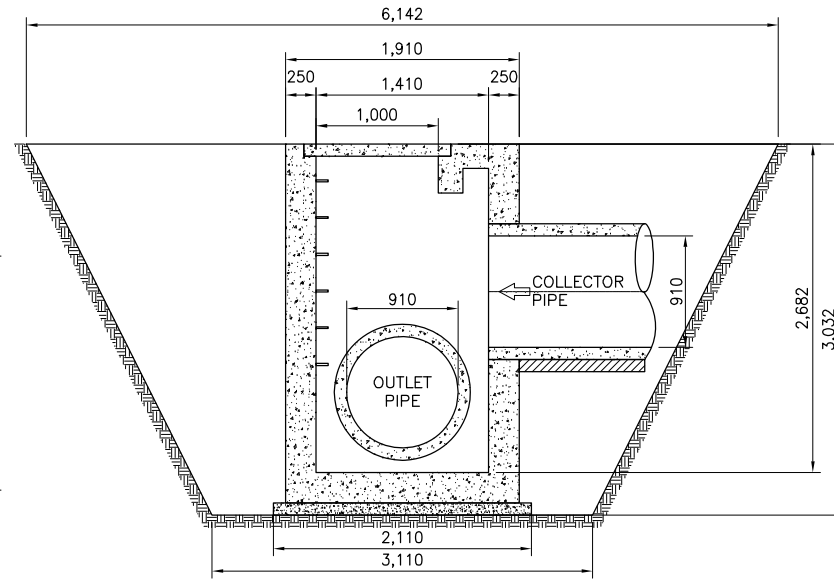
Manhole No.: MR 177

Location: 14 + 319

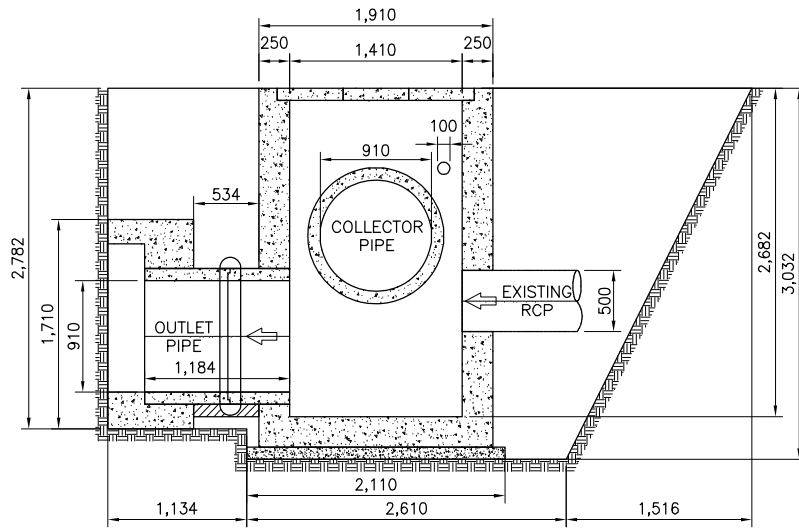
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=13.37 | 4.63 | 61.83 | |
| | | | | 61.83 | m ³ |
| 2. Lev. Concrete | W=2.11 L=2.11 | 4.45 | 0.1 | 0.45 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.91 | 4.28 | 0.25 | 1.07 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.91 Win=1.41 Lin=1.41 | Aout=3.65 Ain=1.99 Anet=1.66 | 2.682 | 4.452 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.63 | 0.31 | 0.25 | 0.08 | |
| Pipe hole on Wall C | DiaB=1.11 | 0.98 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.89 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.61 | 1.771 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.059274 | m3 |
| 12. Backfill | | | | 51.53 | m3 |



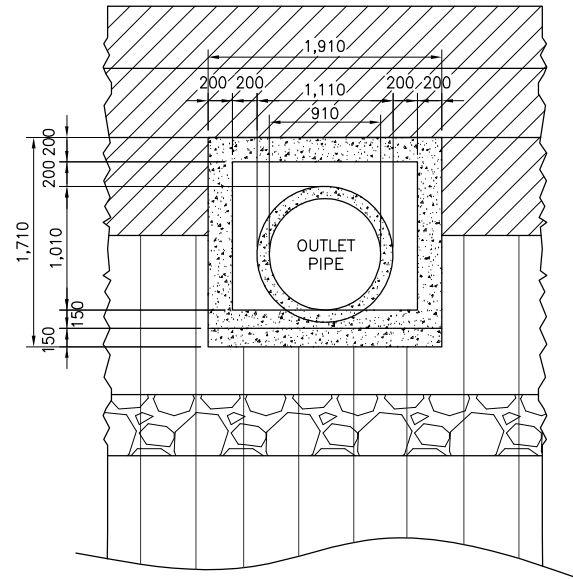
1 PLAN
SCALE A



3 SECTION (MR177)
SCALE A



2 SECTION
SCALE A



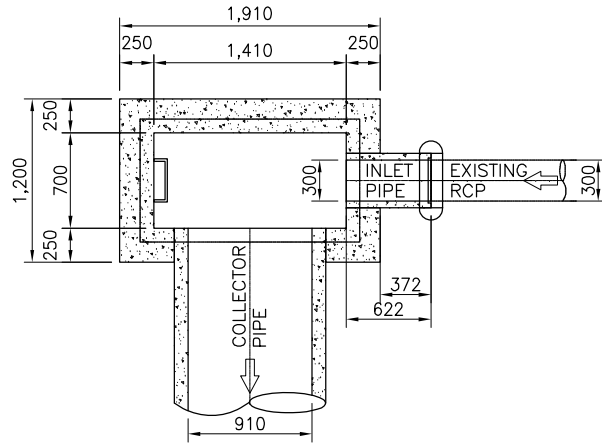
4 ELEVATION
SCALE A

QUANTITIES OF MANHOLE

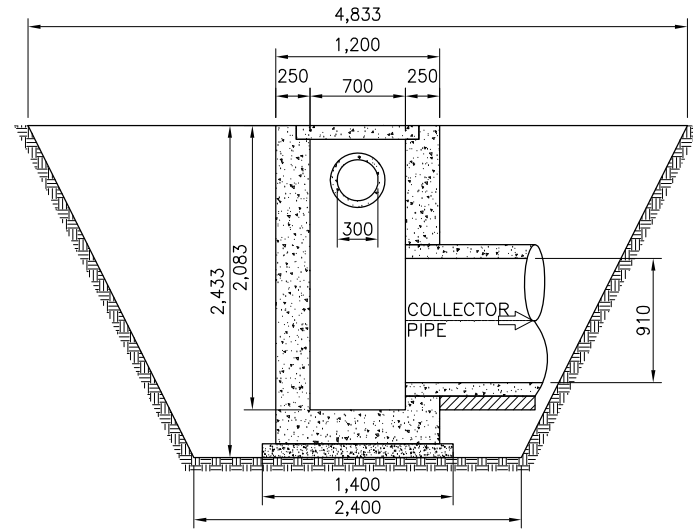
Manhole No.: MR 176

Location: 14 + 303

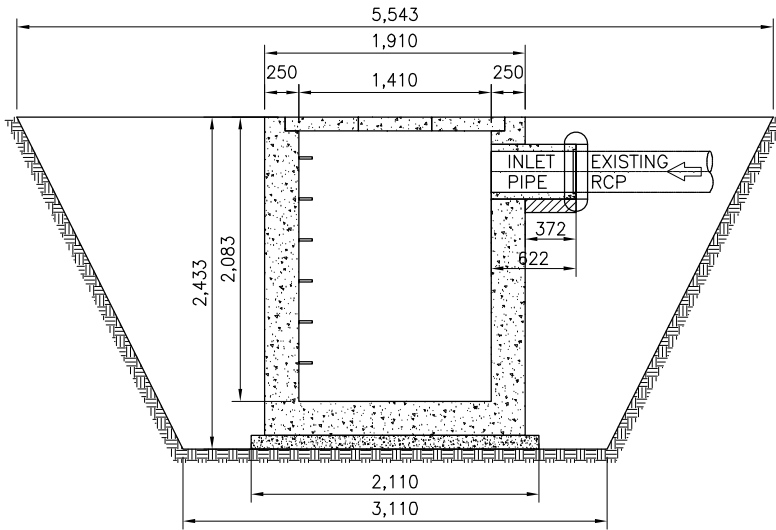
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=10.53 | 3.62 | 38.07 | |
| | | | | 38.07 | m ³ m ³ |
| 2. Lev. Concrete | W=2.11 L=1.40 | 2.95 | 0.1 | 0.30 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.20 | 2.29 | 0.25 | 0.57 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.20 Win=1.41 Lin=.70 | Aout=2.29 Ain=0.99 Anet=1.31 | 2.083 | 2.718 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 2.44 | m ³ |
| 5. Conc. Cover | L=0.90 W=1.61 | 1.449 | 0.1 | 0.14 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Inlet Pipe | Dia=.300m | L=0.62 | | 1 | pc |
| 8. Conc. Collar (Inlet Pipe) | D1=.400m D2=.580m | A1=0.13 A2=0.26 Anet=0.14 | 0.17 Qty=1 | 0.02355252 | m ³ |
| 9. Conc. Bedding (Inlet Pipe) | Dia=.400m | L=0.37 | | 0.01488 | m ³ |
| 10. Backfill | | | | 31.72 | m ³ |



4 PLAN
SCALE A



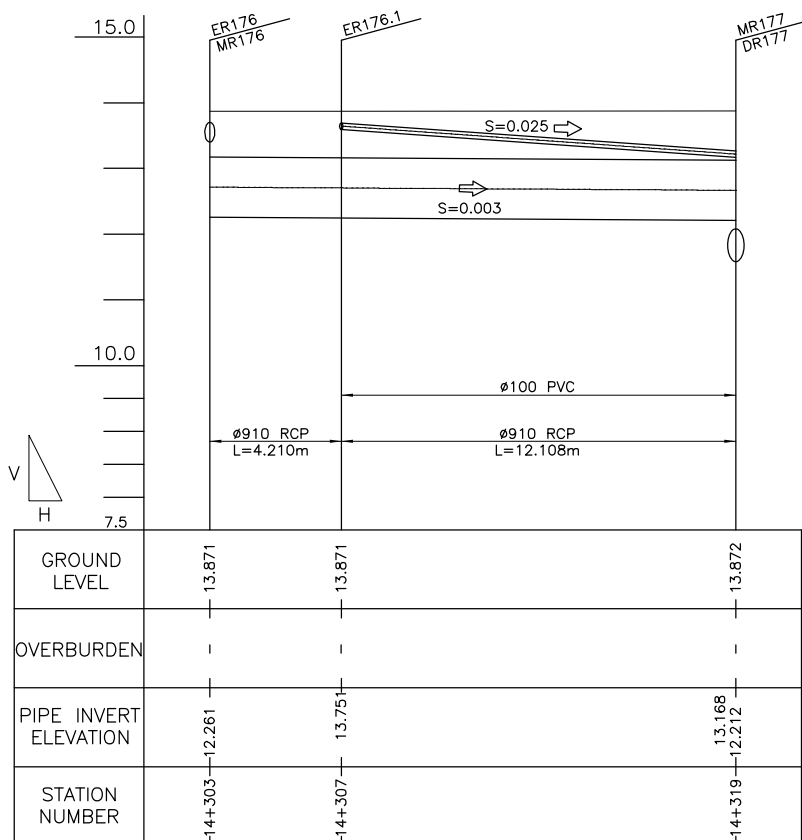
6 SECTION (MR176)
SCALE C



5 SECTION
SCALE A

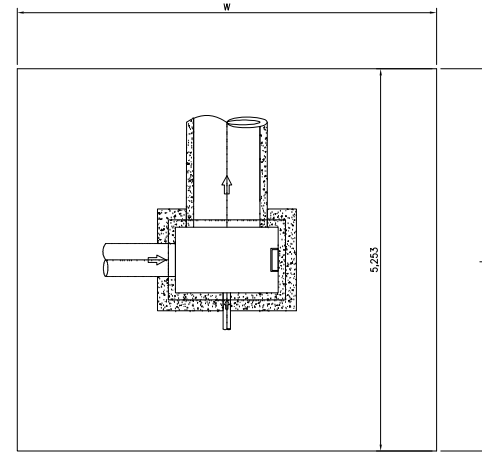
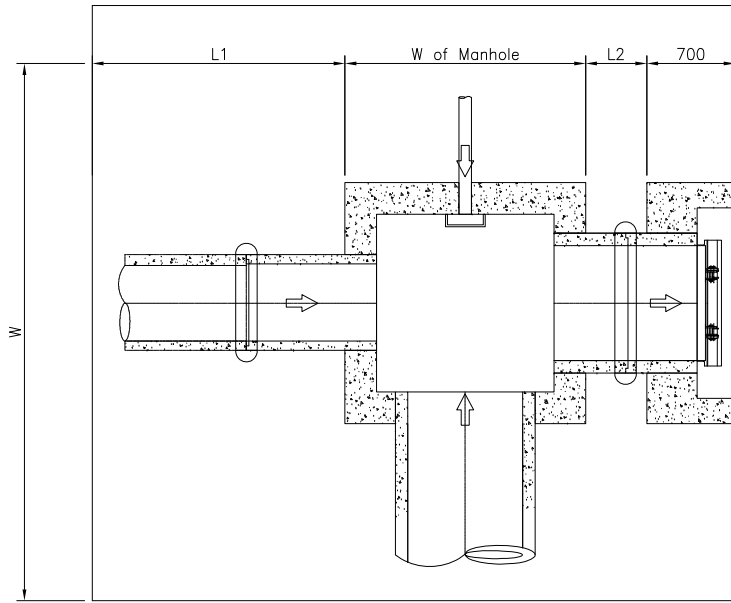
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|------------------------|---------------------------------|--------------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.91 | | L=16.37 | 17 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=0.91 | L=16.37 | 0.1 | 1.49 | m ³ |
| 3. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=16 | 0.92 | m3 |
| 1. Collector Pipe (PVC) | Dia=0.10 | | L=12.41 | 5 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.10 | | | 4 | pc |
| 4. Formworks | | | | 16.89 | m ³ |

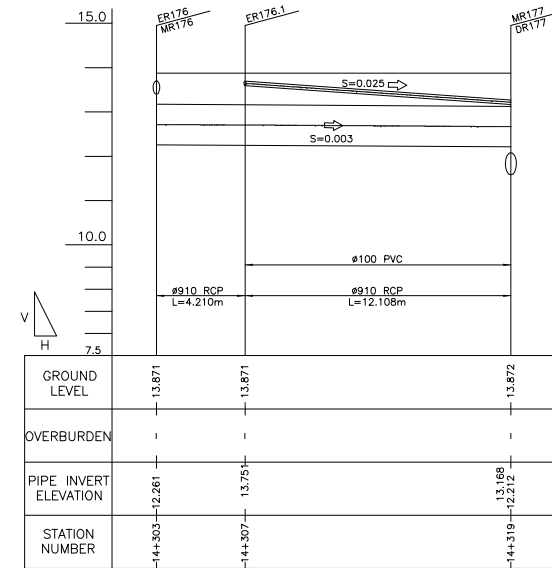
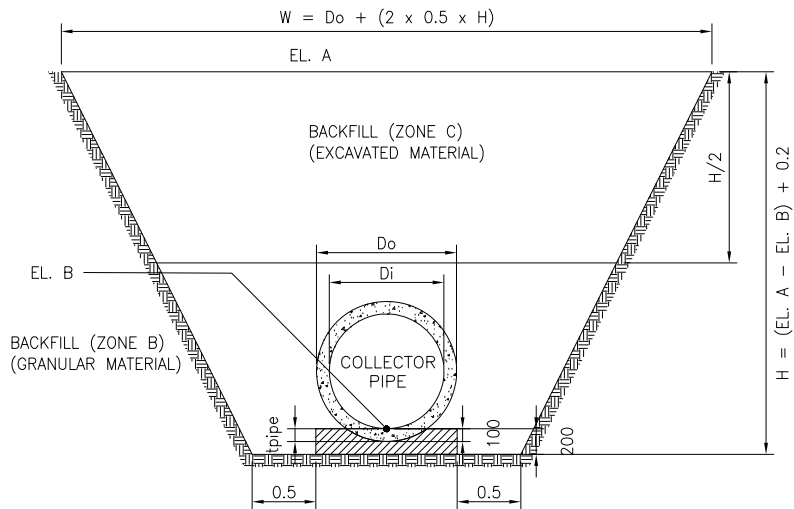


2 PROFILE
 SCALE B

| | | |
|--------------------------------|-------------------------------|------------------------------|
| Clearing (Manhole 177) | | |
| L1 | 2.116 m | |
| W of Manhole | 1.91 m | A=32.31 m² |
| L2 | 0.534 m | |
| W | 6.142 m | |
| Clearing (Manhole 176) | | |
| W | 5.543 m | A=26.79 m² |
| L | 4.833 m | |
| Clearing (Collector 176 - 177) | | |
| W | 3.945 m | A=27.28 m² |
| L | 6.914 m | |
| (Collector Pipe) Downstream | 176 - 177 | Excavation |
| Do | 1.11 m | A=5.65 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.21 m ² |
| H | 1.86 m | Backfill Zone C |
| EL. A | 13.872 m | A=1.88 m ² |
| EL. B | 12.212 m | |
| W | 3.97 m | |
| (Collector Pipe) Upstream | | Excavation |
| Do | 1.11 m | A=5.46 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.13 m ² |
| H | 1.81 m | Backfill Zone C |
| EL. A | 13.871 m | A=1.82 m ² |
| EL. B | 12.261 m | |
| W | 3.92 m | |
| Collector Pipe 176 - 177 | Volume | |
| Excavation | 90.93111 m³ | |
| Backfill Zone B | 19.01 m³ | |
| Backfill Zone C | 30.24 m³ | |



3.732



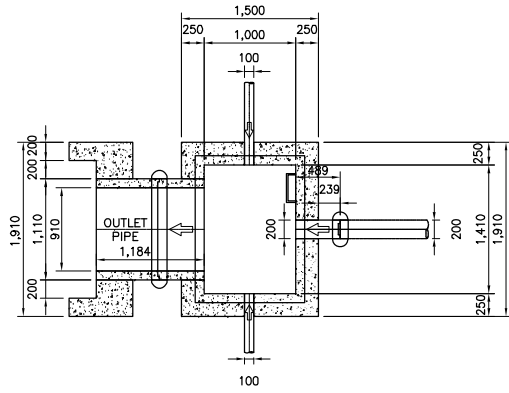
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

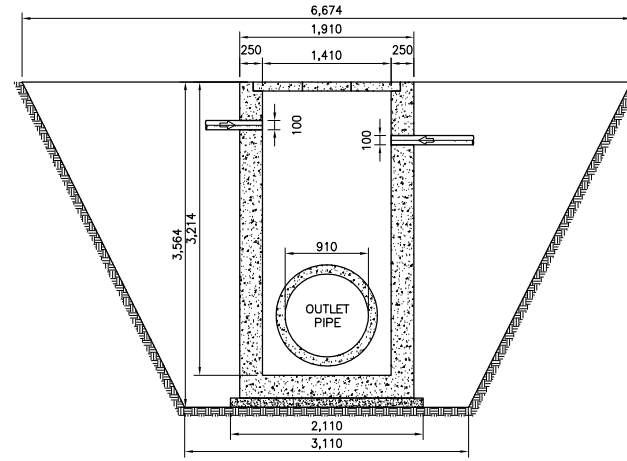
Manhole No.: MR 177.2

Location: 14 + 351

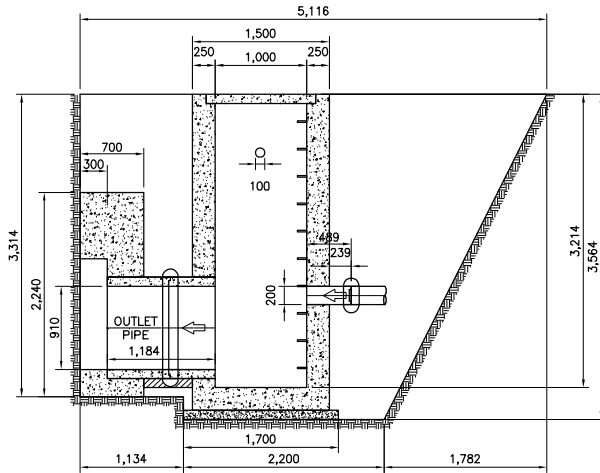
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=14.77 | 4.89 | 72.28 | |
| | | | | 72.28 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.214 | 4.676 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.30 | 0.07 | 0.25 | 0.02 | |
| Pipe hole on Wall C | DiaB=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.41 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.24 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=4.28 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.99 0.55 0.39 2.06 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.18 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.53 | | 0.059274 | m ³ |
| 12. Inlet Pipe | Dia=.200m | L=0.49 | | 1 | pc |
| 13. Conc. Collar (Inlet Pipe) | D1=.300m D2=.480m | A1=0.07 A2=0.18 Anet=0.11 | 0.17 Qty=1 | 0.018745883 | m ³ |
| 14. Conc. Bedding (Inlet Pipe) | Dia=.300m | L=0.24 | | 0.00717 | m ³ |
| 15. Backfill | | | | 60.23 | m ³ |



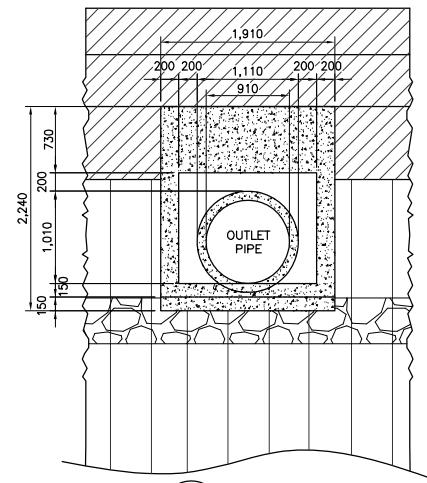
1 PLAN
SCALE A



3 SECTION
SCALE A



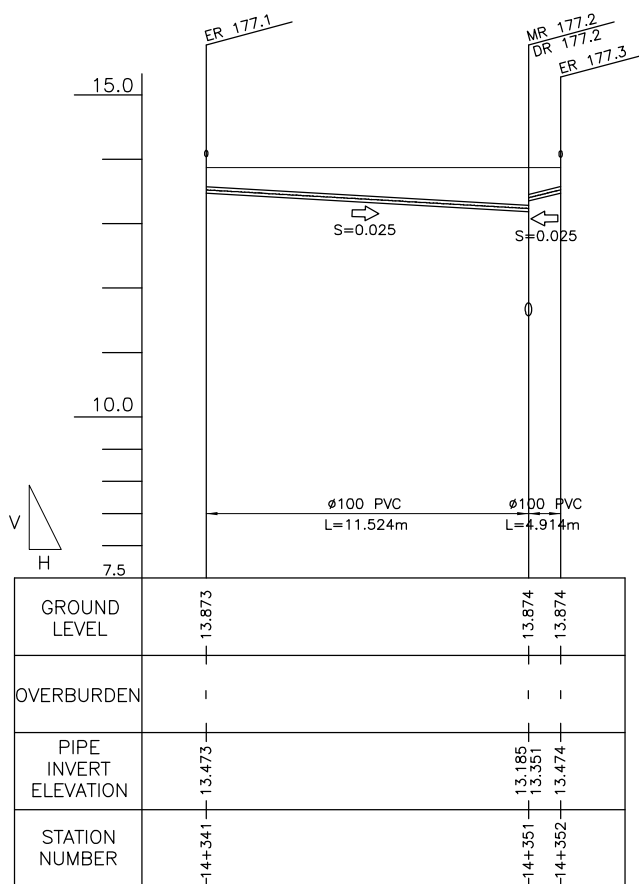
2 SECTION
SCALE A



4 ELEVATION
SCALE A

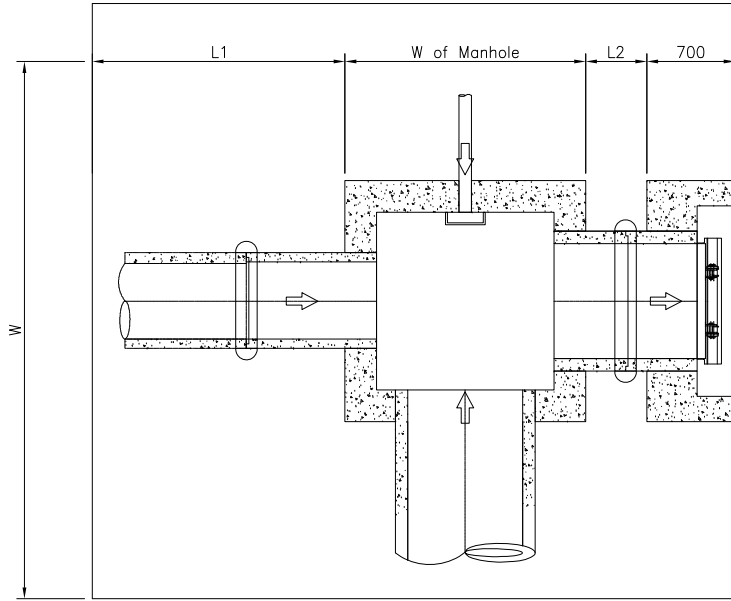
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.10 | | L=16.85 | 6 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.10 | | | 4 | pc |



2 PROFILE
 SCALE B

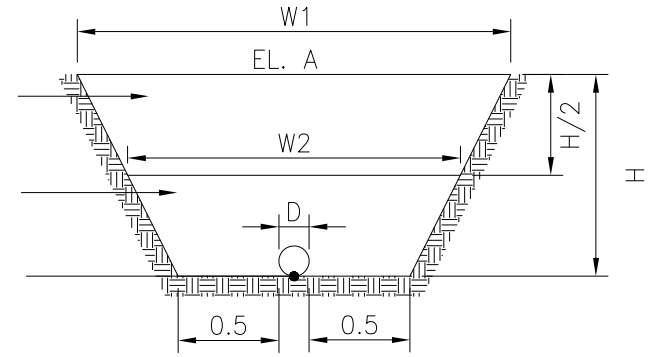
| | | |
|--|-------------------------------|------------------------------|
| Clearing (Manhole 177.2) | | |
| L1 | 2.382 m | |
| W of Manhole | 1.5 m | A=34.14 m² |
| L2 | 0.534 m | |
| W | 6.674 m | |
| Clearing (Collector 177.1 - 177.2) | | |
| W | 1.6445 m | A=18.95 m² |
| L | 11.524 m | |
| Clearing (Collector 177.3 - 177.2) | | |
| W | 1.5615 m | A=7.67 m² |
| L | 4.914 m | |
| (Collector PVC) Downstream 177.1 - 177.2 | | |
| D | 0.1 m | Excavation |
| W1 | 1.79 m | A=1.00 m ² |
| W2 | 1.44 m | Backfill Zone B |
| H | 0.689 m | A=0.43 m ² |
| H/2 | 0.3445 m | Backfill Zone C |
| EL. A | 13.874 m | A=0.56 m ² |
| EL. B | 13.185 m | |
| (Collector PVC) Upstream | | |
| D | 0.1 m | Excavation |
| W1 | 1.50 m | A=0.52 m ² |
| W2 | 1.30 m | Backfill Zone B |
| H | 0.4 m | A=0.23 m ² |
| H/2 | 0.2 m | Backfill Zone C |
| EL. A | 13.873 m | A=0.28 m ² |
| EL. B | 13.473 m | |
| (Collector PVC) Downstream 177.3 - 177.2 | | |
| D | 0.1 m | Excavation |
| W1 | 1.62 m | A=0.71 m ² |
| W2 | 1.36 m | Backfill Zone B |
| H | 0.523 m | A=0.31 m ² |
| H/2 | 0.2615 m | Backfill Zone C |
| EL. A | 13.874 m | A=0.39 m ² |
| EL. B | 13.351 m | |
| (Collector PVC) Upstream | | |
| D | 0.1 m | Excavation |
| W1 | 1.50 m | A=0.52 m ² |
| W2 | 1.30 m | Backfill Zone B |
| H | 0.4 m | A=0.23 m ² |
| H/2 | 0.2 m | Backfill Zone C |
| EL. A | 13.874 m | A=0.28 m ² |
| EL. B | 13.474 m | |
| Collector PVC 177.1 - 177.2 Volume | | |
| Excavation | 8.949204 m³ | |
| Backfill Zone B | 3.913243 m³ | |
| Backfill Zone C | 4.943189 m³ | |
| Collector PVC 177.3 - 177.2 Volume | | |
| Excavation | 3.102862 m³ | |
| Backfill Zone B | 1.375395 m³ | |
| Backfill Zone C | 1.687907 m³ | |



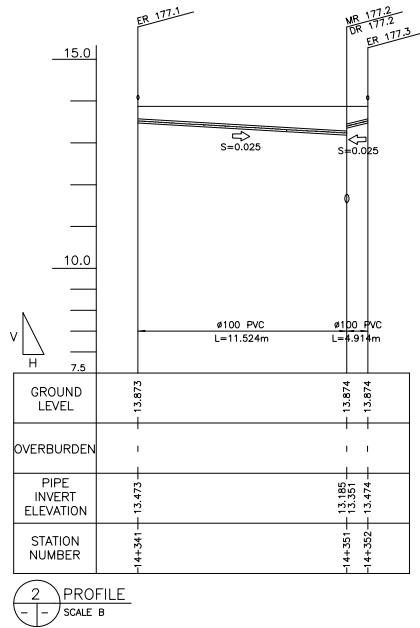
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.737

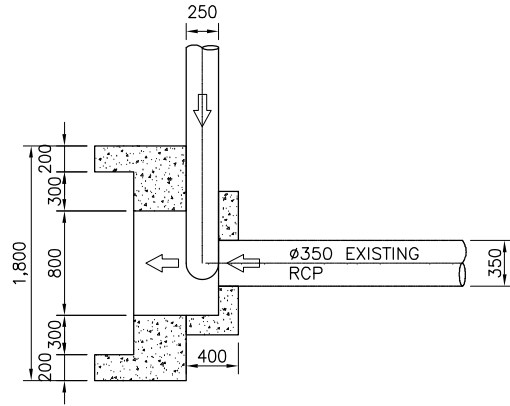


QUANTITIES OF MANHOLE

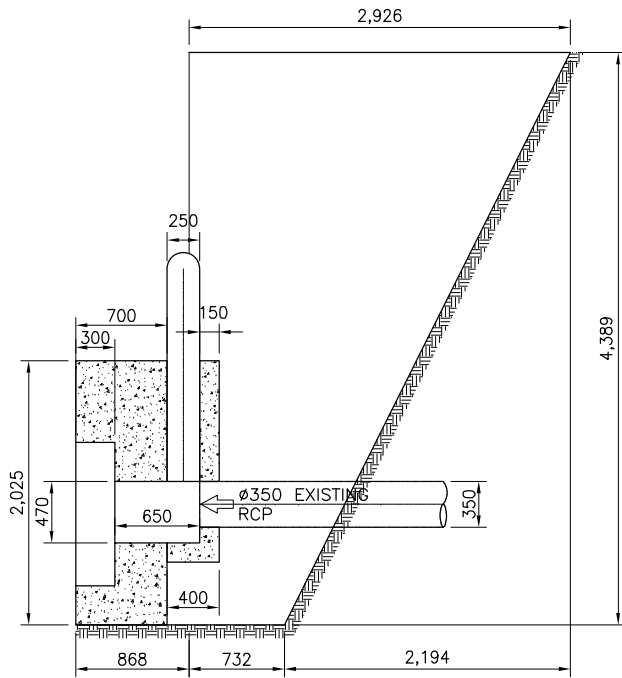
Manhole No.: MR 178

Location: 14 + 382

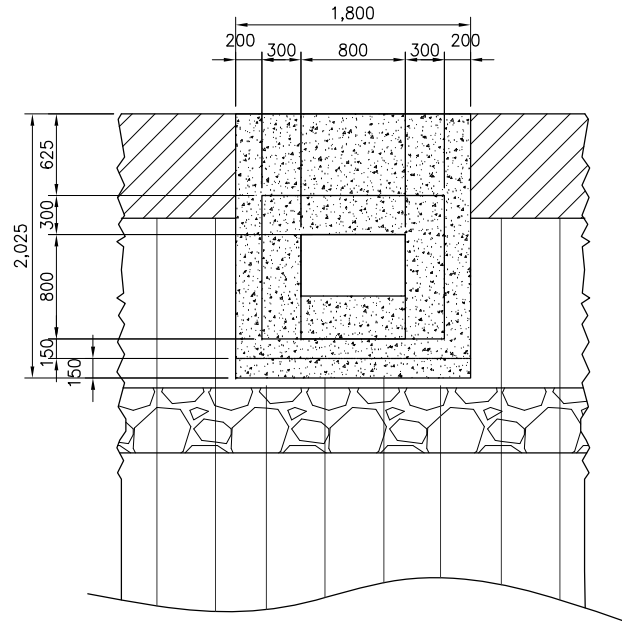
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-----------------------|---|--|----------------------------|------------------------------|----------------|
| 1. Excavation | | A1=9.79 | 3.99 | 39.09 | |
| | | | | 39.09 | m ³ |
| 2. Conc. Mouth | Wout=1.80 Lout=2.03 Win=1.40 Lin=1.10 DiaD=0.47 | Ain=3.65 Aout=1.54 Apipe=.38 | 1.1 0.3 0.65 | 4.01 0.46 0.24 | |
| | | | | 0.95 | m3 |
| 3. Backfill | | | | 32.57 | m3 |



1 PLAN
SCALE A



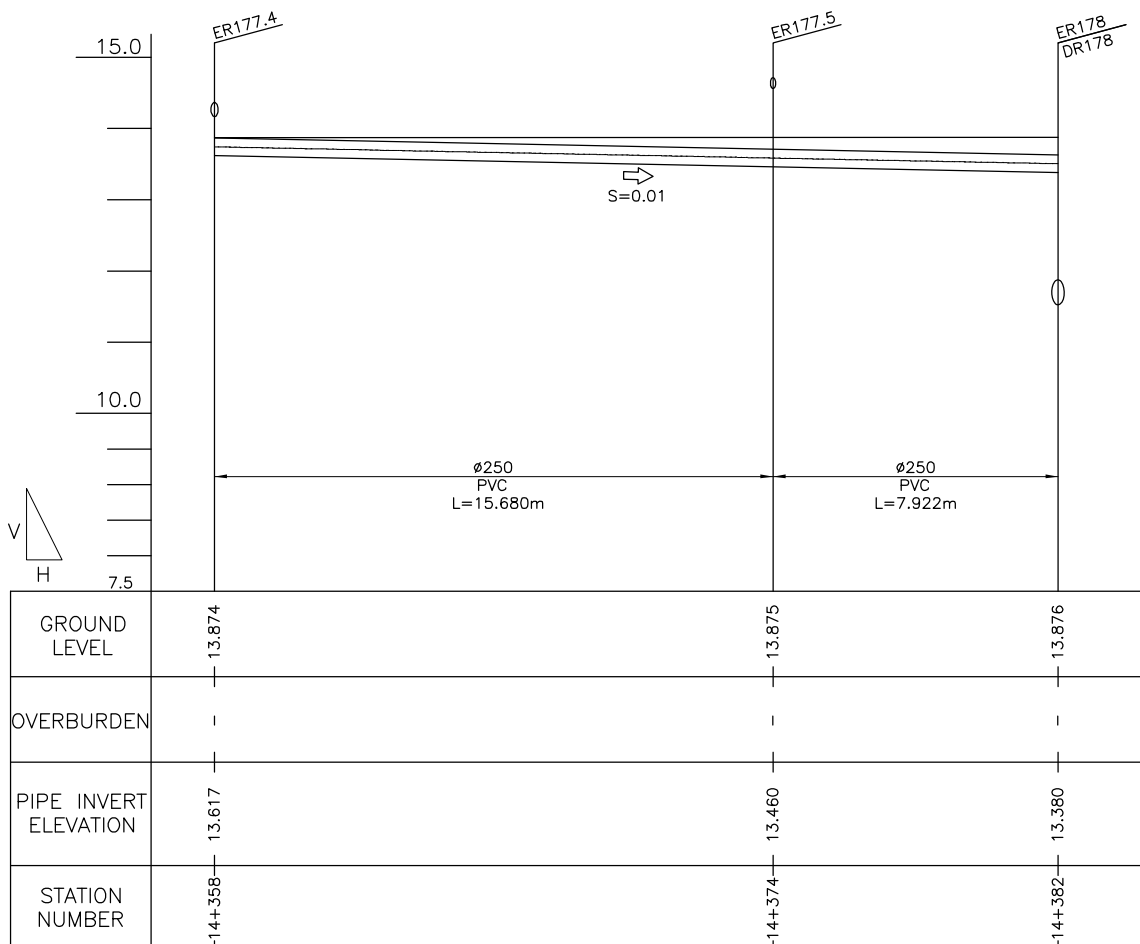
2 SECTION
SCALE A



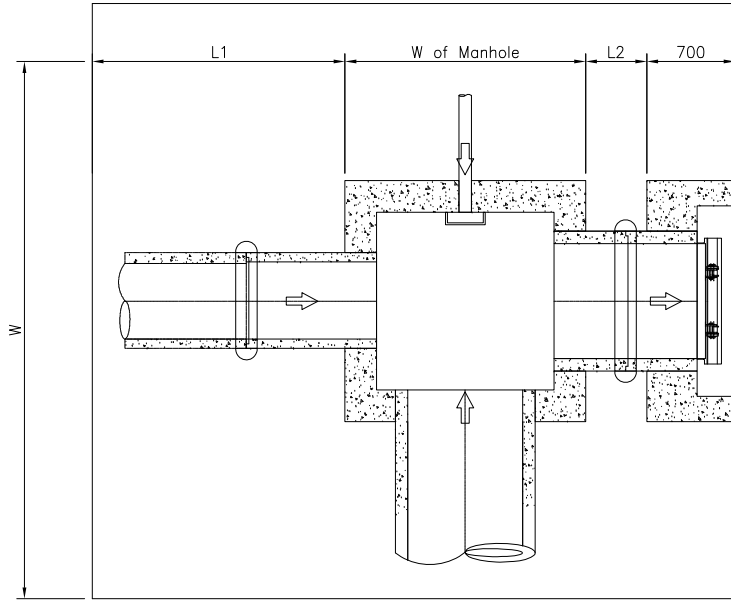
3 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.25 | | L=23.84 | 4 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.25 | | | 3 | pc |



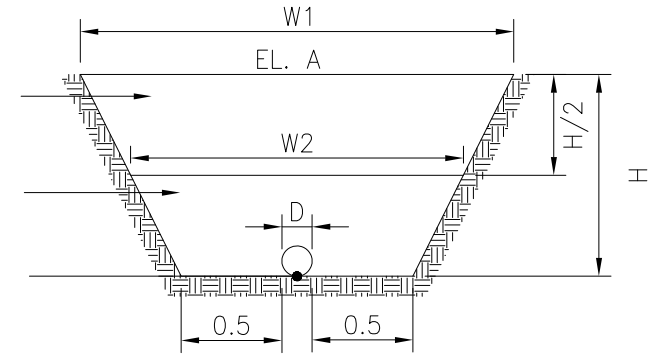
| | | |
|----------------------------------|-------------------------------|------------------------------|
| Clearing (Outlet 178) | | |
| W | 2.926 m | |
| L | 6.189 m | A=18.11 m² |
| | | |
| Clearing (Collector 177.4 - 178) | | |
| W | 1.6265 m | |
| L | 23.602 m | A=38.39 m² |
| | | |
| (Collector PVC) Downstream | 177.4 - 178 | |
| D | 0.25 m | Excavation |
| W1 | 1.75 m | A=0.74 m ² |
| W2 | 1.50 m | Backfill Zone B |
| H | 0.496 m | A=0.29 m ² |
| H/2 | 0.248 m | Backfill Zone C |
| EL. A | 13.876 m | A=0.40 m ² |
| EL. B | 13.38 m | |
| | | |
| (Collector PVC) Upstream | | |
| D | 0.25 m | Excavation |
| W1 | 1.51 m | A=0.35 m ² |
| W2 | 1.38 m | Backfill Zone B |
| H | 0.257 m | A=0.12 m ² |
| H/2 | 0.1285 m | Backfill Zone C |
| EL. A | 13.874 m | A=0.19 m ² |
| EL. B | 13.617 m | |
| | | |
| Collector PVC 177.4 - 178 | Volume | |
| Excavation | 13.07852 m³ | |
| Backfill Zone B | 4.904176 m³ | |
| Backfill Zone C | 7.004199 m³ | |



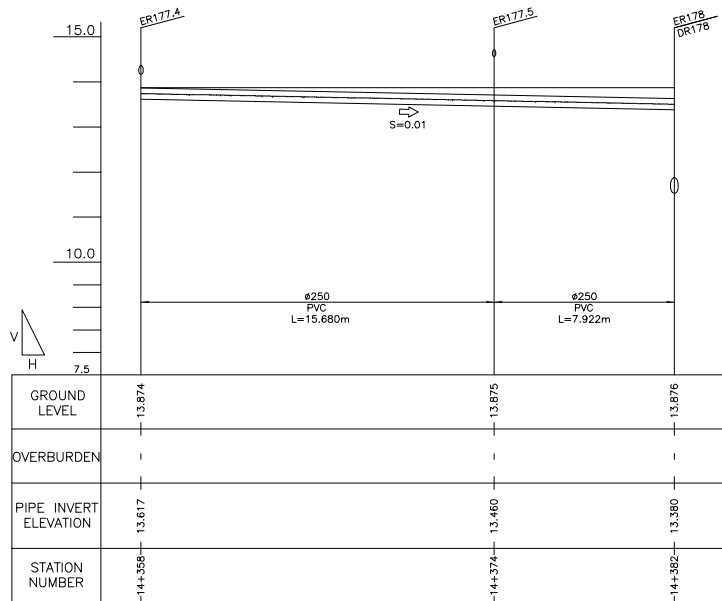
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

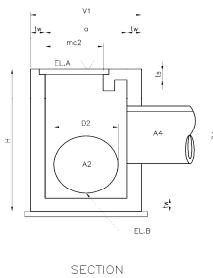
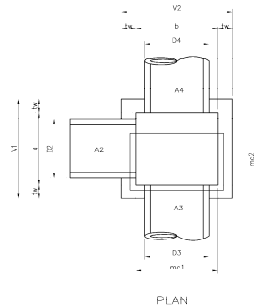
EL. B
COLLECTOR PVC



3.742



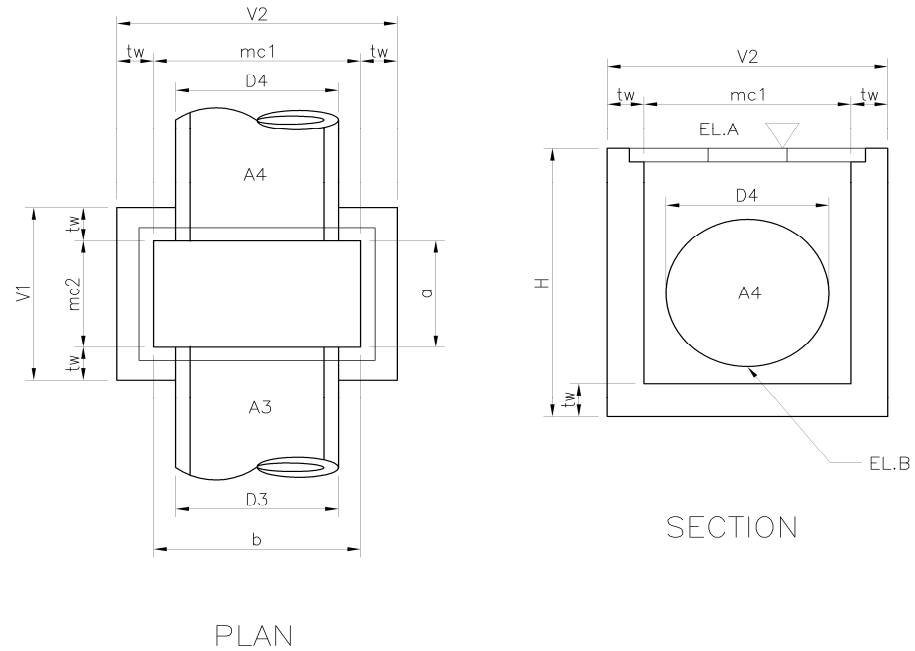
| QUANTITIES OF MANHOLE | | | | | | | | | | | | | | | | | | |
|-----------------------|-------|-------|------|------|------|------|------|------|------|------|------|----------------|----------------|----------------|------|------|------|---|
| Manhole No. | El A | El B | tw | ts | mc1 | mc2 | D2 | D3 | D4 | V1 | V2 | A2 | A3 | A4 | H | a | b | |
| | m | m | m | m | m | m | m | m | m | m | m | m ² | m ² | m ² | m | m | m | m |
| ML 97.2 | 13.19 | 10.99 | 0.25 | 0.00 | 0.70 | 1.41 | 1.11 | 0.40 | 0.40 | 1.91 | 1.20 | 0.97 | 0.13 | 0.13 | 2.65 | 1.41 | 0.70 | |
| ML 97.5 | 13.94 | 12.05 | 0.25 | 0.00 | 1.00 | 1.00 | 0.40 | 0.00 | 0.00 | 1.50 | 1.50 | 0.13 | 0.00 | 0.00 | 2.34 | 1.00 | 1.00 | |
| ML 97.6 | 13.19 | 10.67 | 0.25 | 0.00 | 0.60 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.10 | 0.97 | 0.00 | 0.00 | 2.97 | 1.41 | 0.60 | |
| ML 97.8 | 13.20 | 10.70 | 0.25 | 0.00 | 0.70 | 1.41 | 1.11 | 0.40 | 0.00 | 1.91 | 1.20 | 0.97 | 0.13 | 0.00 | 2.96 | 1.41 | 0.70 | |
| ML 97.10 | 13.20 | 12.05 | 0.25 | 0.00 | 0.60 | 0.70 | 0.40 | 0.00 | 0.00 | 1.20 | 1.10 | 0.13 | 0.00 | 0.00 | 1.60 | 0.70 | 0.60 | |
| ML 113.12 | 13.84 | 10.79 | 0.25 | 0.20 | 1.00 | 1.40 | 1.11 | 1.05 | 0.00 | 1.90 | 1.91 | 0.97 | 1.10 | 0.00 | 3.51 | 1.40 | 1.41 | |
| ML 113.19 | 13.84 | 10.60 | 0.25 | 0.20 | 1.00 | 1.40 | 1.11 | 1.05 | 1.05 | 1.90 | 1.91 | 0.97 | 1.10 | 1.10 | 3.69 | 1.40 | 1.41 | |
| ML 113.26 | 13.85 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.30 | 0.97 | 0.00 | 0.00 | 2.91 | 1.41 | 0.80 | |
| ML 113.27 | 14.00 | 11.39 | 0.25 | 0.00 | 0.80 | 1.67 | 1.11 | 0.00 | 0.00 | 2.17 | 1.30 | 0.97 | 0.00 | 0.00 | 3.06 | 1.67 | 0.80 | |
| ML 113A | 13.85 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.30 | 0.97 | 0.00 | 0.00 | 2.91 | 1.41 | 0.80 | |
| ML 113B.4 | 13.85 | 10.70 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.30 | 0.97 | 0.00 | 0.00 | 3.60 | 1.41 | 0.80 | |
| ML 113B.9 | 13.85 | 10.91 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.30 | 0.97 | 0.00 | 0.00 | 3.39 | 1.41 | 0.80 | |
| ML 113B.10 | 13.93 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.40 | 0.00 | 1.91 | 1.30 | 0.97 | 0.13 | 0.00 | 2.99 | 1.41 | 0.80 | |
| ML 113B.12 | 14.86 | 11.39 | 0.30 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 2.01 | 1.60 | 0.97 | 0.00 | 0.00 | 3.97 | 1.41 | 1.00 | |
| ML 113C | 14.86 | 11.39 | 0.30 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 2.01 | 1.60 | 0.97 | 0.00 | 0.00 | 3.97 | 1.41 | 1.00 | |
| ML 113D | 14.86 | 11.18 | 0.30 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 2.01 | 1.60 | 0.97 | 0.00 | 0.00 | 4.18 | 1.41 | 1.00 | |
| ML 113E | 14.86 | 11.23 | 0.30 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 2.01 | 1.60 | 0.97 | 0.00 | 0.00 | 4.13 | 1.41 | 1.00 | |
| ML 113F | 14.86 | 11.39 | 0.30 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 2.01 | 1.60 | 0.97 | 0.00 | 0.00 | 3.97 | 1.41 | 1.00 | |
| ML 113F.3 | 14.86 | 11.39 | 0.30 | 0.20 | 1.00 | 1.40 | 1.11 | 0.80 | 0.00 | 2.00 | 2.01 | 0.97 | 0.64 | 0.00 | 3.97 | 1.40 | 1.41 | |
| ML 117E.17 | 14.86 | 10.84 | 0.30 | 0.20 | 1.00 | 1.40 | 1.11 | 0.00 | 0.80 | 2.00 | 2.01 | 0.97 | 0.00 | 0.64 | 4.52 | 1.40 | 1.41 | |
| ML 113F.28 | 13.84 | 10.60 | 0.25 | 0.20 | 1.00 | 1.40 | 1.11 | 0.80 | 0.80 | 1.90 | 1.91 | 0.97 | 0.64 | 0.64 | 3.69 | 1.40 | 1.41 | |
| ML 113F.38 | 14.87 | 11.09 | 0.30 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 2.01 | 1.60 | 0.97 | 0.00 | 0.00 | 4.28 | 1.41 | 1.00 | |
| MR 117.3 | 13.68 | 10.77 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.30 | 0.00 | 1.91 | 1.50 | 0.97 | 0.07 | 0.00 | 3.36 | 1.41 | 1.00 | |
| MR 117.5 | 13.68 | 11.24 | 0.25 | 0.00 | 0.60 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.10 | 0.97 | 0.00 | 0.00 | 2.89 | 1.41 | 0.60 | |
| MR 117.6 | 13.68 | 11.39 | 0.25 | 0.00 | 0.60 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.10 | 0.97 | 0.00 | 0.00 | 2.74 | 1.41 | 0.60 | |
| MR 117.9 | 13.69 | 10.68 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.46 | 1.41 | 1.00 | |
| MR 117.10 | 13.69 | 10.47 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.67 | 1.41 | 1.00 | |
| MR 117.12 | 13.69 | 10.80 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.59 | 0.00 | 1.91 | 1.50 | 0.97 | 0.27 | 0.00 | 3.34 | 1.41 | 1.00 | |
| MR 117B.6 | 13.71 | 11.28 | 0.25 | 0.00 | 1.00 | 1.00 | 1.11 | 0.25 | 0.00 | 1.50 | 1.50 | 0.97 | 0.05 | 0.00 | 2.89 | 1.00 | 1.00 | |
| MR 117B.13 | 13.71 | 11.60 | 0.25 | 0.00 | 0.60 | 1.00 | 0.20 | 0.00 | 0.00 | 1.50 | 1.10 | 0.03 | 0.00 | 0.00 | 2.57 | 1.00 | 0.60 | |
| MR 117C.8 | 13.72 | 11.39 | 0.25 | 0.00 | 0.60 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.10 | 0.97 | 0.00 | 0.00 | 2.78 | 1.41 | 0.60 | |
| MR 170.1 | 13.83 | 11.39 | 0.25 | 0.00 | 0.60 | 1.41 | 1.11 | 0.67 | 0.00 | 1.91 | 1.10 | 0.97 | 0.35 | 0.00 | 2.89 | 1.41 | 0.60 | |
| MR 171 | 13.83 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.30 | 0.97 | 0.00 | 0.00 | 2.89 | 1.41 | 0.80 | |
| MR 172 | 13.84 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.40 | 0.00 | 1.91 | 1.30 | 0.97 | 0.13 | 0.00 | 2.90 | 1.41 | 0.80 | |
| MR 172.6 | 13.84 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.30 | 0.97 | 0.00 | 0.00 | 2.90 | 1.41 | 0.80 | |
| MR 173A | 13.84 | 11.39 | 0.25 | 0.20 | 1.00 | 1.00 | 1.11 | 1.11 | 0.00 | 1.60 | 3.72 | 0.97 | 0.97 | 0.00 | 2.90 | 1.10 | 3.22 | |
| MR 173A.2 | 13.84 | 10.40 | 0.30 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 2.01 | 1.40 | 0.97 | 0.00 | 0.00 | 3.94 | 1.41 | 0.80 | |
| MR 173A.25 | 13.85 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.40 | 0.00 | 1.91 | 1.30 | 0.97 | 0.13 | 0.00 | 2.91 | 1.41 | 0.80 | |
| MR 174 | 13.85 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.40 | 0.00 | 1.91 | 1.30 | 0.97 | 0.13 | 0.00 | 2.91 | 1.41 | 0.80 | |
| MR 174.9 | 13.85 | 10.75 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 1.11 | 0.00 | 1.91 | 1.91 | 0.97 | 0.97 | 0.00 | 3.55 | 1.41 | 1.41 | |
| MR 174C.1 | 14.18 | 11.27 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 0.00 | 1.11 | 1.91 | 1.91 | 0.97 | 0.00 | 0.97 | 3.36 | 1.41 | 1.41 | |
| MR 174C.3 | 13.85 | 11.39 | 0.25 | 0.00 | 0.60 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.10 | 0.97 | 0.00 | 0.00 | 2.91 | 1.41 | 0.60 | |
| MR 174C.7 | 13.86 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.30 | 0.97 | 0.00 | 0.00 | 2.92 | 1.41 | 0.80 | |
| MR 174C.14 | 13.86 | 11.39 | 0.25 | 0.20 | 1.00 | 1.40 | 1.11 | 0.80 | 0.00 | 1.90 | 1.91 | 0.97 | 0.64 | 0.00 | 2.92 | 1.40 | 1.41 | |
| MR 174E | 13.86 | 11.39 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 0.80 | 0.80 | 1.90 | 1.91 | 0.97 | 0.64 | 0.64 | 2.92 | 1.40 | 1.41 | |
| MR 174E.12 | 13.86 | 11.39 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 0.00 | 0.80 | 1.90 | 1.91 | 0.97 | 0.00 | 0.64 | 2.92 | 1.40 | 1.41 | |
| MR 174E.28 | 14.81 | 11.39 | 0.30 | 0.20 | 1.00 | 1.00 | 1.11 | 0.00 | 0.00 | 1.60 | 2.01 | 0.97 | 0.00 | 0.00 | 3.92 | 1.00 | 1.41 | |
| MR 175 | 14.18 | 11.39 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 0.67 | 1.11 | 1.91 | 1.91 | 0.97 | 0.35 | 0.97 | 3.24 | 1.41 | 1.41 | |
| MR 177 | 13.87 | 11.39 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 0.00 | 1.11 | 1.91 | 1.91 | 0.97 | 0.00 | 0.97 | 2.93 | 1.41 | 1.41 | |
| MR 177.2 | 13.87 | 10.86 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.46 | 1.41 | 1.00 | |



QUANTITIES OF MANHOLE

| Manhole No. | Area Outside Face | | | Area Inside Face | | MANHOLE | | | LEVELING | | COVER | |
|-------------|---------------------|---------------------|----------|---------------------|---------------------|-------------------|----------------------|---------------------|-------------------|-------------------|----------|---------------|
| | Front and Rear slab | Left and Right slab | Top Slab | Front and Rear slab | Left and Right slab | Area of Formworks | Volume of Supporting | Area of Scaffolding | Area of Formworks | Area of Formworks | Concrete | Reinforcement |
| | m2 | m2 | m2 | m2 | m2 | m2 | m3 | m2 | m2 | m2 | m3 | kg |
| ML 97.2 | 3.71 | 10.12 | 0.00 | 3.36 | 6.77 | 22.74 | 0.00 | 16.48 | 0.70 | 0.50 | 0.14 | 20.87 |
| ML 97.5 | 4.69 | 7.03 | 0.00 | 4.19 | 4.19 | 19.97 | 0.00 | 14.06 | 0.68 | 0.48 | 0.14 | 20.74 |
| ML 97.6 | 3.57 | 11.35 | 0.00 | 3.27 | 7.67 | 24.89 | 0.00 | 17.89 | 0.68 | 0.48 | 0.13 | 18.55 |
| ML 97.8 | 4.14 | 11.29 | 0.00 | 3.79 | 7.63 | 25.75 | 0.00 | 18.38 | 0.70 | 0.50 | 0.14 | 20.87 |
| ML 97.10 | 1.92 | 3.84 | 0.00 | 1.62 | 1.89 | 9.14 | 0.00 | 0.00 | 0.54 | 0.34 | 0.07 | 10.37 |
| ML 113.12 | 9.89 | 13.32 | 0.57 | 8.62 | 8.56 | 38.89 | 1.75 | 26.72 | 0.84 | 0.56 | 0.19 | 27.65 |
| ML 113.19 | 10.42 | 14.04 | 0.57 | 9.15 | 9.08 | 40.09 | 1.86 | 28.15 | 0.84 | 0.56 | 0.19 | 27.65 |
| ML 113.26 | 4.65 | 11.11 | 0.00 | 4.25 | 7.50 | 26.55 | 0.00 | 18.68 | 0.72 | 0.52 | 0.16 | 23.18 |
| ML 113.27 | 4.90 | 13.28 | 0.00 | 4.50 | 9.39 | 31.10 | 0.00 | 21.24 | 0.77 | 0.57 | 0.19 | 26.93 |
| ML 113A | 4.66 | 11.12 | 0.00 | 4.26 | 7.50 | 26.56 | 0.00 | 18.68 | 0.72 | 0.52 | 0.16 | 23.18 |
| ML 113B.4 | 5.76 | 13.76 | 0.00 | 5.36 | 9.45 | 33.37 | 0.00 | 23.12 | 0.72 | 0.52 | 0.16 | 23.18 |
| ML 113B.9 | 5.43 | 12.96 | 0.00 | 5.03 | 8.86 | 31.31 | 0.00 | 21.78 | 0.72 | 0.52 | 0.16 | 23.18 |
| ML 113B.10 | 4.79 | 11.44 | 0.00 | 4.39 | 7.74 | 27.26 | 0.00 | 19.22 | 0.72 | 0.52 | 0.16 | 23.18 |
| ML 113B.12 | 7.93 | 15.94 | 0.00 | 7.33 | 10.34 | 40.57 | 0.00 | 28.63 | 0.80 | 0.56 | 0.19 | 27.82 |
| ML 113C | 7.93 | 15.94 | 0.00 | 7.33 | 10.34 | 40.57 | 0.00 | 28.63 | 0.80 | 0.56 | 0.19 | 27.82 |
| ML 113D | 8.36 | 16.80 | 0.00 | 7.76 | 10.94 | 42.88 | 0.00 | 30.17 | 0.80 | 0.56 | 0.19 | 27.82 |
| ML 113E | 8.26 | 16.60 | 0.00 | 7.66 | 10.80 | 42.36 | 0.00 | 29.82 | 0.80 | 0.56 | 0.19 | 27.82 |
| ML 113F | 7.94 | 15.95 | 0.00 | 7.34 | 10.34 | 40.60 | 0.00 | 28.65 | 0.80 | 0.56 | 0.19 | 27.82 |
| ML 113F.3 | 11.20 | 15.88 | 0.57 | 9.79 | 9.72 | 45.54 | 1.99 | 31.84 | 0.88 | 0.56 | 0.19 | 27.65 |
| ML 117F.17 | 12.76 | 18.10 | 0.57 | 11.35 | 11.27 | 52.43 | 2.31 | 36.28 | 0.88 | 0.56 | 0.19 | 27.65 |
| ML 113F.28 | 10.42 | 14.04 | 0.57 | 9.15 | 9.08 | 41.01 | 1.86 | 28.15 | 0.84 | 0.56 | 0.19 | 27.65 |
| ML 113F.38 | 8.56 | 17.21 | 0.00 | 7.96 | 11.23 | 44.00 | 0.00 | 30.92 | 0.80 | 0.56 | 0.19 | 27.82 |
| MR 117.3 | 6.72 | 12.83 | 0.00 | 6.22 | 8.76 | 33.49 | 0.00 | 22.90 | 0.76 | 0.56 | 0.19 | 27.82 |
| MR 117.5 | 3.46 | 11.02 | 0.00 | 3.16 | 7.43 | 24.12 | 0.00 | 17.37 | 0.68 | 0.48 | 0.13 | 18.55 |
| MR 117.6 | 3.29 | 10.47 | 0.00 | 2.99 | 7.02 | 22.80 | 0.00 | 16.49 | 0.68 | 0.48 | 0.13 | 18.55 |
| MR 117.9 | 6.91 | 13.21 | 0.00 | 6.41 | 9.04 | 34.61 | 0.00 | 23.58 | 0.76 | 0.56 | 0.19 | 27.82 |
| MR 117.10 | 7.33 | 14.00 | 0.00 | 6.83 | 9.63 | 36.82 | 0.00 | 25.00 | 0.76 | 0.56 | 0.19 | 27.82 |
| MR 117.12 | 6.69 | 12.77 | 0.00 | 6.19 | 8.72 | 33.13 | 0.00 | 22.80 | 0.76 | 0.56 | 0.19 | 27.82 |
| MR 117B.6 | 5.77 | 8.66 | 0.00 | 5.27 | 5.27 | 23.97 | 0.00 | 17.32 | 0.68 | 0.48 | 0.14 | 20.74 |
| MR 117B.13 | 3.08 | 7.70 | 0.00 | 2.78 | 4.63 | 18.15 | 0.00 | 13.34 | 0.60 | 0.40 | 0.10 | 13.82 |
| MR 117.C.8 | 3.34 | 10.63 | 0.00 | 3.04 | 7.15 | 23.19 | 0.00 | 16.76 | 0.68 | 0.48 | 0.13 | 18.55 |
| MR 170.1 | 3.47 | 11.04 | 0.00 | 3.17 | 7.44 | 23.80 | 0.00 | 17.40 | 0.68 | 0.48 | 0.13 | 18.55 |
| MR 171 | 4.63 | 11.05 | 0.00 | 4.23 | 7.45 | 26.38 | 0.00 | 18.57 | 0.72 | 0.52 | 0.16 | 23.18 |
| MR 172 | 4.63 | 11.06 | 0.00 | 4.23 | 7.46 | 26.30 | 0.00 | 18.59 | 0.72 | 0.52 | 0.16 | 23.18 |
| MR 172.6 | 4.64 | 11.07 | 0.00 | 4.24 | 7.47 | 26.44 | 0.00 | 18.61 | 0.72 | 0.52 | 0.16 | 23.18 |
| MR 173A | 18.68 | 9.28 | 2.54 | 15.78 | 5.39 | 49.73 | 5.98 | 30.86 | 1.14 | 0.48 | 0.14 | 20.74 |
| MR 173A.2 | 6.31 | 15.84 | 0.00 | 5.83 | 10.27 | 37.27 | 0.00 | 26.88 | 0.76 | 0.52 | 0.16 | 23.18 |
| MR 173A.25 | 4.66 | 11.13 | 0.00 | 4.26 | 7.51 | 26.48 | 0.00 | 18.71 | 0.72 | 0.52 | 0.16 | 23.18 |
| MR 174 | 4.65 | 11.10 | 0.00 | 4.25 | 7.49 | 26.40 | 0.00 | 18.66 | 0.72 | 0.52 | 0.16 | 23.18 |
| MR 174.9 | 10.01 | 13.56 | 0.58 | 8.74 | 8.74 | 39.71 | 1.79 | 27.13 | 0.84 | 0.56 | 0.19 | 27.82 |
| MR 174C.1 | 9.47 | 12.82 | 0.58 | 8.20 | 8.20 | 37.33 | 1.68 | 25.65 | 0.84 | 0.56 | 0.19 | 27.82 |
| MR 174C.3 | 3.49 | 11.12 | 0.00 | 3.19 | 7.51 | 24.35 | 0.00 | 17.53 | 0.68 | 0.48 | 0.13 | 18.55 |
| MR 174C.7 | 4.66 | 11.14 | 0.00 | 4.26 | 7.52 | 26.61 | 0.00 | 18.71 | 0.72 | 0.52 | 0.16 | 23.18 |
| MR 174C.14 | 8.23 | 11.09 | 0.57 | 6.96 | 6.91 | 32.17 | 1.42 | 22.24 | 0.84 | 0.56 | 0.19 | 27.65 |
| MR 174E | 8.23 | 11.10 | 0.56 | 6.97 | 6.92 | 31.53 | 1.42 | 22.25 | 0.84 | 0.56 | 0.19 | 27.82 |
| MR 174E.12 | 8.24 | 11.11 | 0.56 | 6.97 | 6.92 | 32.20 | 1.42 | 22.27 | 0.84 | 0.56 | 0.19 | 27.82 |
| MR 174E.28 | 11.04 | 12.53 | 0.41 | 9.63 | 6.83 | 39.47 | 1.40 | 28.27 | 0.80 | 0.48 | 0.14 | 20.74 |
| MR 175 | 9.12 | 12.36 | 0.58 | 7.85 | 7.85 | 35.48 | 1.61 | 24.72 | 0.84 | 0.56 | 0.19 | 27.82 |
| MR 177 | 8.27 | 11.20 | 0.58 | 7.00 | 7.00 | 32.11 | 1.43 | 22.40 | 0.84 | 0.56 | 0.19 | 27.82 |
| MR 177.2 | 6.93 | 13.23 | 0.00 | 6.43 | 9.06 | 34.68 | 0.00 | 23.62 | 0.76 | 0.56 | 0.19 | 27.82 |

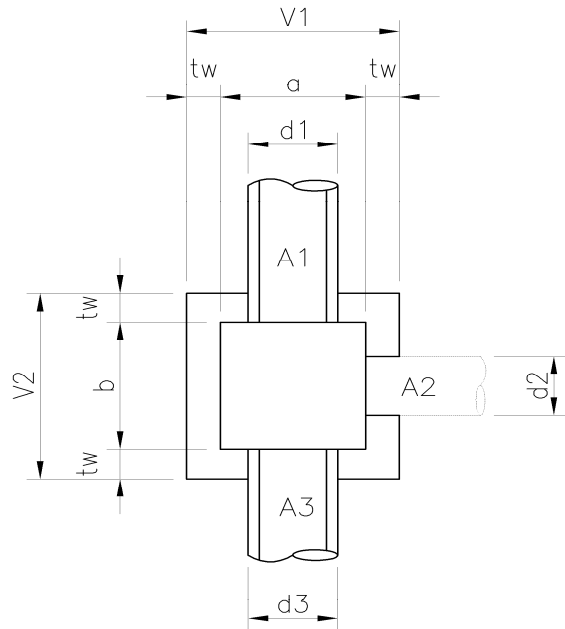
| QUANTITIES OF JUNCTION MANHOLE | | | | | | | | | | | | | | | |
|--------------------------------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Manhole No. | El. A | El. B | tw | ts | mc1 | mc2 | D3 | D4 | V1 | V2 | A3 | A4 | H | a | b |
| | m | m | m | m | m | m | m | m | m | m | m2 | m2 | m | m | m |
| ML 97.1 | 13.19 | 11.75 | 0.25 | 0.00 | 0.70 | 0.70 | 0.40 | 0.00 | 1.20 | 1.20 | 0.13 | 0.00 | 1.89 | 0.70 | 0.70 |
| ML 97.3 | 13.19 | 11.57 | 0.25 | 0.00 | 0.70 | 0.70 | 0.00 | 0.40 | 1.20 | 1.20 | 0.00 | 0.13 | 2.07 | 0.70 | 0.70 |
| ML 97.4 | 13.19 | 11.54 | 0.25 | 0.00 | 0.70 | 0.70 | 0.40 | 0.40 | 1.20 | 1.20 | 0.13 | 0.13 | 2.10 | 0.70 | 0.70 |
| ML 97.9 | 13.77 | 11.89 | 0.25 | 0.00 | 0.70 | 0.70 | 0.00 | 0.40 | 1.20 | 1.20 | 0.00 | 0.13 | 2.33 | 0.70 | 0.70 |
| ML 113F.9 | 14.86 | 12.61 | 0.25 | 0.00 | 1.40 | 0.60 | 0.00 | 1.00 | 1.10 | 1.90 | 0.00 | 1.00 | 2.70 | 0.60 | 1.40 |
| ML 113F.10 | 14.86 | 11.70 | 0.25 | 0.00 | 1.40 | 0.60 | 1.00 | 0.00 | 1.10 | 1.90 | 1.00 | 0.00 | 3.61 | 0.60 | 1.40 |
| ML 113F.20 | 14.87 | 12.86 | 0.25 | 0.00 | 1.40 | 0.82 | 1.00 | 0.00 | 1.32 | 1.90 | 1.00 | 0.00 | 2.46 | 0.82 | 1.40 |
| ML 113F.34 | 14.87 | 12.34 | 0.25 | 0.00 | 1.40 | 0.70 | 0.00 | 1.00 | 1.20 | 1.90 | 0.00 | 1.00 | 2.98 | 0.70 | 1.40 |
| MR 174.11 | 13.85 | 12.24 | 0.25 | 0.00 | 1.41 | 0.94 | 0.00 | 1.11 | 1.44 | 1.91 | 0.00 | 0.97 | 2.06 | 0.94 | 1.41 |
| MR 174C | 14.18 | 12.28 | 0.25 | 0.00 | 1.41 | 1.00 | 1.11 | 0.00 | 1.50 | 1.91 | 0.97 | 0.00 | 2.35 | 1.00 | 1.41 |
| MR 174C.10 | 13.86 | 12.33 | 0.25 | 0.00 | 1.40 | 0.60 | 1.00 | 0.00 | 1.10 | 1.90 | 1.00 | 0.00 | 1.98 | 0.60 | 1.40 |
| MR 174C.16 | 13.86 | 12.21 | 0.25 | 0.00 | 1.40 | 0.60 | 1.00 | 0.00 | 1.10 | 1.90 | 1.00 | 0.00 | 2.10 | 0.60 | 1.40 |
| MR 174E.10 | 13.86 | 12.21 | 0.25 | 0.00 | 1.40 | 0.60 | 0.00 | 1.00 | 1.10 | 1.90 | 0.00 | 1.00 | 2.10 | 0.60 | 1.40 |
| MR 174E.26 | 13.87 | 12.33 | 0.25 | 0.00 | 1.40 | 0.60 | 0.00 | 1.00 | 1.10 | 1.90 | 0.00 | 1.00 | 1.98 | 0.60 | 1.40 |
| MR 174E.34 | 13.87 | 12.26 | 0.25 | 0.00 | 1.41 | 0.60 | 1.11 | 0.00 | 1.10 | 1.91 | 0.97 | 0.00 | 2.06 | 0.60 | 1.41 |
| MR 176 | 14.14 | 12.26 | 0.25 | 0.00 | 1.41 | 0.70 | 1.11 | 0.00 | 1.10 | 1.91 | 0.97 | 0.00 | 2.33 | 0.60 | 1.41 |



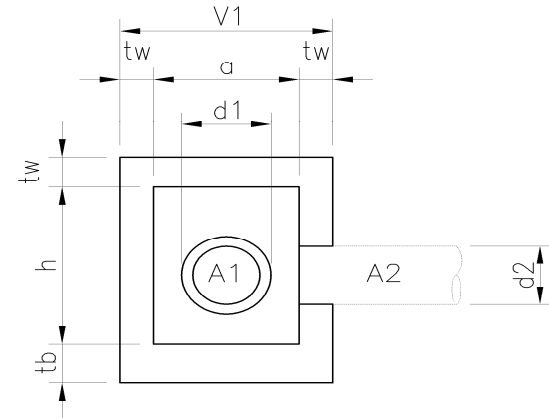
| QUANTITIES OF JUNCTION MANHOLE | | | | | | | | | | | | |
|--------------------------------|---------------------|---------------------|----------|---------------------|---------------------|-------------------|----------------------|---------------------|-------------------|-------------------|----------|---------------|
| Manhole No. | Area Outside Face | | | Area Inside Face | | MANHOLE | | | LEVELING | COVER | | |
| | Front and Rear slab | Left and Right slab | Top Slab | Front and Rear slab | Left and Right slab | Area of Formworks | Volume of Supporting | Area of Scaffolding | Area of Formworks | Area of Formworks | Concrete | Reinforcement |
| | m2 | m2 | m2 | m2 | m2 | m2 | m3 | m2 | m2 | m2 | m3 | kg |
| ML 97.1 | 4.54 | 4.54 | 0.00 | 2.30 | 2.30 | 13.55 | 0.00 | 0.00 | 0.56 | 0.36 | 0.08 | 11.66 |
| ML 97.3 | 4.96 | 4.96 | 0.00 | 2.54 | 2.54 | 14.88 | 0.00 | 9.92 | 0.56 | 0.36 | 0.08 | 11.66 |
| ML 97.4 | 5.04 | 5.04 | 0.00 | 2.59 | 2.59 | 15.00 | 0.00 | 10.08 | 0.56 | 0.36 | 0.08 | 11.66 |
| ML 97.9 | 5.59 | 5.59 | 0.00 | 2.91 | 2.91 | 16.87 | 0.00 | 11.17 | 0.56 | 0.36 | 0.08 | 11.66 |
| ML 113F.9 | 10.25 | 5.93 | 0.00 | 6.85 | 2.94 | 24.97 | 0.00 | 16.18 | 0.68 | 0.48 | 0.13 | 18.43 |
| ML 113F.10 | 13.71 | 7.94 | 0.00 | 9.41 | 4.03 | 34.09 | 0.00 | 21.65 | 0.68 | 0.48 | 0.13 | 18.43 |
| ML 113F.20 | 9.33 | 6.48 | 0.00 | 6.17 | 3.62 | 24.60 | 0.00 | 15.81 | 0.72 | 0.52 | 0.16 | 23.50 |
| ML 113F.34 | 11.31 | 7.14 | 0.00 | 7.64 | 3.82 | 28.91 | 0.00 | 18.46 | 0.70 | 0.50 | 0.14 | 20.74 |
| MR 174.11 | 7.87 | 5.93 | 0.00 | 5.10 | 3.40 | 21.34 | 0.00 | 13.80 | 0.75 | 0.55 | 0.18 | 26.43 |
| MR 174C | 8.97 | 7.04 | 0.00 | 5.92 | 4.20 | 25.16 | 0.00 | 16.01 | 0.76 | 0.56 | 0.19 | 27.82 |
| MR 174C.10 | 7.50 | 4.35 | 0.00 | 4.83 | 2.07 | 17.75 | 0.00 | 0.00 | 0.68 | 0.48 | 0.13 | 18.43 |
| MR 174C.16 | 7.98 | 4.62 | 0.00 | 5.18 | 2.22 | 19.00 | 0.00 | 12.60 | 0.68 | 0.48 | 0.13 | 18.43 |
| MR 174E.10 | 7.98 | 4.62 | 0.00 | 5.18 | 2.22 | 19.00 | 0.00 | 12.60 | 0.68 | 0.48 | 0.13 | 18.43 |
| MR 174E.26 | 7.53 | 4.36 | 0.00 | 4.85 | 2.08 | 17.81 | 0.00 | 0.00 | 0.68 | 0.48 | 0.13 | 18.43 |
| MR 174E.34 | 7.87 | 4.53 | 0.00 | 5.10 | 2.17 | 18.71 | 0.00 | 12.40 | 0.68 | 0.48 | 0.13 | 18.55 |
| MR 176 | 8.91 | 5.13 | -0.14 | 5.87 | 2.50 | 21.31 | 0.00 | 14.04 | 0.68 | 0.50 | 0.14 | 20.87 |

QUANTITIES IN JUNCTION BOX

| Junction Box No. | d1 | d2 | d3 | tw | tb | a | b | h | A1 | A2 | A3 | V1 | V2 |
|------------------|------|------|------|------|------|------|------|------|----------------|----------------|----------------|------|------|
| | m | m | m | m | m | m | m | m | m ² | m ² | m ² | m | m |
| JR 92A.7 | 0.40 | 0.25 | 0.00 | 0.15 | 0.20 | 0.70 | 0.70 | 0.80 | 0.13 | 0.05 | 0.00 | 1.00 | 1.00 |
| JR 117.7 | 0.15 | 0.15 | 0.00 | 0.15 | 0.20 | 0.60 | 0.60 | 0.55 | 0.02 | 0.02 | 0.00 | 0.90 | 0.90 |
| JR 117.12 | 0.59 | 0.59 | 0.00 | 0.15 | 0.20 | 0.90 | 0.90 | 0.86 | 0.27 | 0.27 | 0.00 | 1.20 | 1.20 |



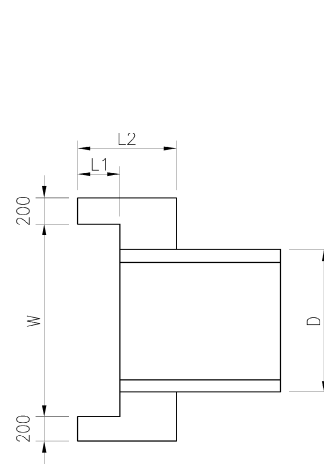
PLAN



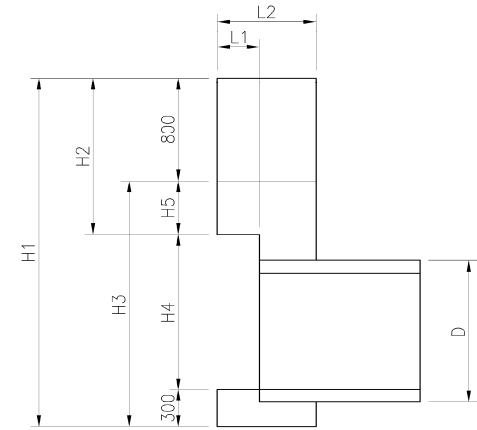
SECTION

| QUANTITIES IN JUNCTION BOX | | | | | | | | |
|----------------------------|---------------------|---------------------|----------|---------------------|---------------------|-------------------|----------------------|-------------------|
| Junction Box No. | Area Outside Face | | | Area Inside Face | | | | Leveling |
| | Front and Rear slab | Left and Right slab | Top Slab | Front and Rear slab | Left and Right slab | Area of Formworks | Volume of Supporting | Area of Formworks |
| | m2 | m2 | m2 | m2 | m2 | m2 | m3 | m2 |
| JR 92A.7 | 2.30 | 2.30 | 0.49 | 1.90 | 1.90 | 8.72 | 0.39 | 0.40 |
| JR 117.7 | 1.62 | 1.62 | 0.36 | 1.26 | 1.26 | 6.08 | 0.20 | 0.36 |
| JR 117.12 | 2.90 | 2.90 | 0.81 | 2.42 | 2.42 | 10.93 | 0.70 | 0.48 |

| QUANTITIES OF OUTLETS | | | | | | | | | | |
|-----------------------|------|------|------|------|------|------|------|------|------|--------------|
| Outlet No. | H1 | H2 | H3 | H4 | H5 | L1 | L2 | W | D | Area of Pipe |
| | m | m | m | m | m | m | m | m | m | m2 |
| DL 97.2 | 2.41 | 0.60 | 1.61 | 1.50 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 97.5 | 1.05 | 0.20 | 0.25 | 0.55 | 0.00 | 0.20 | 0.70 | 0.80 | 0.40 | 0.13 |
| DL 97.6 | 2.73 | 0.92 | 1.93 | 1.51 | 0.12 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 97.8 | 2.71 | 0.90 | 1.91 | 1.51 | 0.10 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 97.10 | 1.30 | 0.20 | 0.50 | 0.80 | 0.00 | 0.20 | 0.70 | 0.80 | 0.40 | 0.13 |
| DL 113.12 | 2.31 | 0.80 | 1.51 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113.19 | 2.50 | 0.99 | 1.70 | 1.21 | 0.19 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113.26 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113.27 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113A | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113B.4 | 2.40 | 0.89 | 1.60 | 1.21 | 0.09 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113B.9 | 2.19 | 0.68 | 1.39 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113B.10 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113B.12 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113C | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113D | 1.92 | 0.41 | 1.12 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113E | 1.87 | 0.36 | 1.07 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113F | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113F.3 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113F.17 | 2.26 | 0.75 | 1.46 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113F.28 | 2.50 | 0.99 | 1.70 | 1.21 | 0.19 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DL 113F.38 | 2.01 | 0.50 | 1.21 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 117.2 | 2.01 | 0.61 | 1.21 | 1.10 | 0.00 | 0.30 | 0.70 | 1.40 | 0.60 | 0.36 |
| DR 117.3 | 2.33 | 0.82 | 1.53 | 1.21 | 0.02 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 117.5 | 1.86 | 0.35 | 1.06 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 117.6 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 117.9 | 2.42 | 0.91 | 1.62 | 1.21 | 0.11 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 117.10 | 2.63 | 1.12 | 1.83 | 1.21 | 0.32 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 117.12 | 2.30 | 0.79 | 1.50 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 117B.6 | 1.82 | 1.02 | 1.02 | 0.50 | 0.22 | 0.30 | 0.70 | 0.70 | 0.30 | 0.07 |
| DR 117B.13 | 1.50 | 0.80 | 0.70 | 0.40 | 0.00 | 0.30 | 0.70 | 0.60 | 0.20 | 0.03 |
| DR 117C.8 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 170.1 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 171 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 172 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 172.6 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 173A | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 173A.2 | 2.70 | 1.19 | 1.90 | 1.21 | 0.39 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 173A.25 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 174 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 174.9 | 2.35 | 0.84 | 1.55 | 1.21 | 0.04 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 174C.1 | 1.83 | 0.32 | 1.03 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 174C.3 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 174C.7 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 174C.14 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 174E | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 174E.12 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 174E.28 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 175 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 177 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 177.2 | 2.24 | 0.73 | 1.44 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 178 | 2.03 | 0.63 | 1.23 | 1.10 | 0.00 | 0.30 | 0.70 | 1.40 | 0.80 | 0.50 |



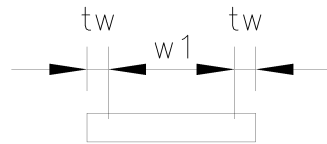
PLAN



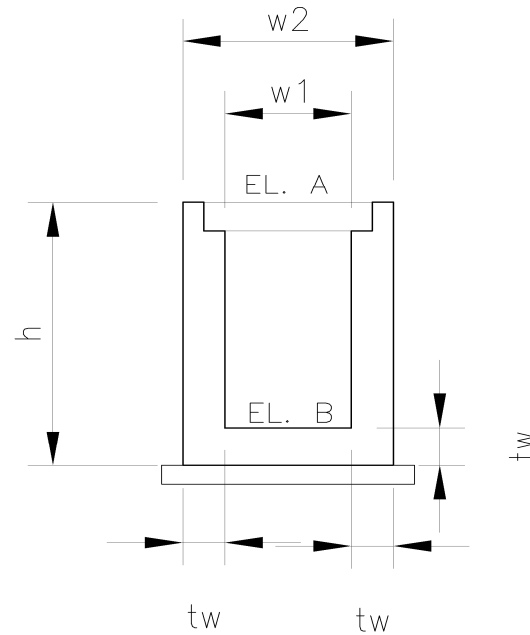
SECTION

| QUANTITIES OF OUTLETS | | | | | | | | | |
|-----------------------|-------------------|------------|-----------|-------------|-------------------|----------|-------------------|----------------------|---------------------|
| Outlet No. | Outside Face | | | Inside face | | Top Slab | Area of Formworks | Volume of Supporting | Area of Scaffolding |
| | Left & Right Side | Front side | Rear side | Front Side | Left & Right Side | | | | |
| | m2 | m2 | m2 | m2 | m2 | m2 | m2 | m3 | m2 |
| DL 97.2 | 2.25 | 1.05 | 3.63 | 1.30 | 0.90 | 0.45 | 9.59 | 0.68 | 9.20 |
| DL 97.5 | 0.35 | 0.48 | 1.13 | 0.31 | 0.22 | 0.16 | 2.66 | 0.09 | 0.00 |
| DL 97.6 | 2.70 | 1.22 | 4.25 | 1.31 | 0.91 | 0.45 | 10.84 | 0.68 | 10.43 |
| DL 97.8 | 2.67 | 1.20 | 4.20 | 1.31 | 0.91 | 0.45 | 10.74 | 0.68 | 10.33 |
| DL 97.10 | 0.70 | 0.58 | 1.43 | 0.51 | 0.32 | 0.16 | 3.71 | 0.13 | 0.00 |
| DL 113.12 | 2.12 | 1.02 | 3.45 | 0.86 | 0.73 | 0.45 | 8.62 | 0.55 | 8.83 |
| DL 113.19 | 2.38 | 1.15 | 3.81 | 0.86 | 0.73 | 0.45 | 9.37 | 0.55 | 9.55 |
| DL 113.26 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 113.27 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 113A | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 113B.4 | 2.24 | 1.08 | 3.62 | 0.86 | 0.73 | 0.45 | 8.97 | 0.55 | 9.17 |
| DL 113B.9 | 1.95 | 0.97 | 3.22 | 0.86 | 0.73 | 0.45 | 8.17 | 0.55 | 8.37 |
| DL 113B.10 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 113B.12 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 113C | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 113D | 1.57 | 0.86 | 2.70 | 0.86 | 0.73 | 0.45 | 7.17 | 0.55 | 0.00 |
| DL 113E | 1.50 | 0.84 | 2.61 | 0.86 | 0.73 | 0.45 | 6.99 | 0.55 | 0.00 |
| DL 113F | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 113F.3 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 113F.17 | 2.04 | 0.99 | 3.35 | 0.86 | 0.73 | 0.45 | 8.43 | 0.55 | 8.63 |
| DL 113F.28 | 2.38 | 1.15 | 3.81 | 0.86 | 0.73 | 0.45 | 9.37 | 0.55 | 9.55 |
| DL 113F.38 | 1.70 | 0.90 | 2.88 | 0.86 | 0.73 | 0.45 | 7.51 | 0.55 | 7.69 |
| DR 117.2 | 1.69 | 0.89 | 3.26 | 1.18 | 0.66 | 0.42 | 8.11 | 0.46 | 7.24 |
| DR 117.3 | 2.14 | 1.03 | 3.48 | 0.86 | 0.73 | 0.45 | 8.69 | 0.55 | 8.90 |
| DR 117.5 | 1.48 | 0.83 | 2.58 | 0.86 | 0.73 | 0.45 | 6.93 | 0.55 | 0.00 |
| DR 117.6 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 117.9 | 2.27 | 1.09 | 3.66 | 0.86 | 0.73 | 0.45 | 9.06 | 0.55 | 9.25 |
| DR 117.10 | 2.56 | 1.24 | 4.05 | 0.86 | 0.73 | 0.45 | 9.89 | 0.55 | 10.04 |
| DR 117.12 | 2.10 | 1.01 | 3.43 | 0.86 | 0.73 | 0.45 | 8.58 | 0.55 | 8.79 |
| DR 117B.6 | 1.43 | 0.89 | 1.93 | 0.28 | 0.30 | 0.21 | 5.04 | 0.11 | 0.00 |
| DR 117B.13 | 0.98 | 0.69 | 1.47 | 0.21 | 0.24 | 0.18 | 3.77 | 0.07 | 0.00 |
| DR 117C.8 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 170.1 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 171 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 172 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 172.6 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 173A | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 173A.2 | 2.66 | 1.29 | 4.19 | 0.86 | 0.73 | 0.45 | 10.17 | 0.55 | 10.31 |
| DR 173A.25 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 174 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 174.9 | 2.17 | 1.04 | 3.52 | 0.86 | 0.73 | 0.45 | 8.78 | 0.55 | 8.98 |
| DR 174C.1 | 1.44 | 0.82 | 2.53 | 0.86 | 0.73 | 0.45 | 6.84 | 0.55 | 0.00 |
| DR 174C.3 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 174C.7 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 174C.14 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 174E | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 174E.12 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 174E.28 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 175 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 177 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DR 177.2 | 2.02 | 0.99 | 3.31 | 0.86 | 0.73 | 0.45 | 8.35 | 0.55 | 8.56 |
| DR 178 | 1.72 | 0.90 | 3.14 | 1.04 | 0.66 | 0.42 | 7.87 | 0.46 | 7.29 |

| QUANTITIES IN U - DITCH | | | | | | | |
|-------------------------|-------|-------|------|------|------|-------|------|
| Outlet No. | El. A | El. B | h | w1 | tw | L | w2 |
| | m | m | m | m | m | m | m |
| DL 113B.4 | 13.85 | 12.93 | 1.03 | 0.30 | 0.10 | 29.19 | 0.50 |
| DR 171 | 13.83 | 13.15 | 0.79 | 0.30 | 0.10 | 32.87 | 0.50 |
| DR 172.6 | 13.84 | 13.35 | 0.58 | 0.30 | 0.10 | 4.39 | 0.50 |
| DR 173A | 13.84 | 13.05 | 0.89 | 0.30 | 0.10 | 24.00 | 0.50 |
| DR 173A.2 | 13.84 | 13.33 | 0.61 | 0.30 | 0.10 | 22.46 | 0.50 |
| DR 173A.25 | 13.85 | 12.93 | 1.02 | 0.30 | 0.10 | 50.12 | 0.50 |
| DR 174 | 13.85 | 13.17 | 0.78 | 0.30 | 0.10 | 26.10 | 0.50 |
| DR 174.9 | 13.85 | 13.00 | 0.95 | 0.30 | 0.10 | 20.79 | 0.50 |
| DR 174C.7 | 13.86 | 13.31 | 0.65 | 0.30 | 0.10 | 49.03 | 0.50 |
| DR 175 | 13.87 | 13.53 | 0.44 | 0.30 | 0.10 | 8.85 | 0.50 |



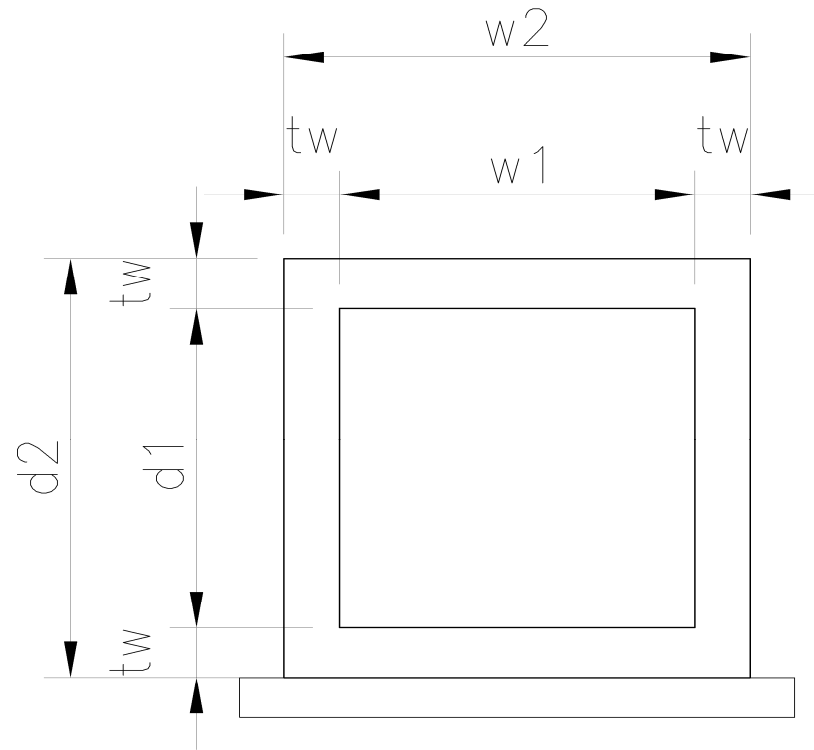
PRECAST CONCRETE
U - DITCH COVER



U DITCH TYPICAL SECTION

| QUANTITIES IN U - DITCH | | | | | | | | | | |
|-------------------------|--------------|-------------|-------------|-------------------|-------|----------|----------|---------------|----------|---------------|
| Outlet No. | Outside Face | | Inside Face | Area of Formworks | | | Cover | | U- ditch | |
| | Left & Right | Front &Rear | Front &Rear | U - Ditch | Cover | Leveling | Concrete | Reinforcement | Concrete | Reinforcement |
| | m2 | m2 | m2 | m2 | m2 | m2 | m3 | kg | m3 | kg |
| DL 113B.4 | 0.24 | 59.83 | 53.99 | 114.06 | 4.44 | 5.90 | 1.17 | 159.94 | 12.84 | 834.72 |
| DR 171 | 0.19 | 51.67 | 45.09 | 96.94 | 4.99 | 6.63 | 1.31 | 180.11 | 11.32 | 735.74 |
| DR 172.6 | 0.15 | 5.12 | 4.25 | 9.52 | 0.72 | 0.94 | 0.18 | 24.04 | 1.16 | 75.17 |
| DR 173A | 0.21 | 42.63 | 37.83 | 80.66 | 3.66 | 4.86 | 0.96 | 131.53 | 9.25 | 600.96 |
| DR 173A.2 | 0.15 | 27.31 | 22.82 | 50.28 | 3.43 | 4.55 | 0.90 | 123.08 | 6.14 | 398.84 |
| DR 173A.25 | 0.23 | 102.15 | 92.13 | 194.51 | 7.58 | 10.08 | 2.00 | 274.68 | 21.93 | 1425.73 |
| DR 174 | 0.19 | 40.46 | 35.24 | 75.89 | 3.98 | 5.28 | 1.04 | 143.05 | 8.88 | 576.90 |
| DR 174.9 | 0.22 | 39.42 | 35.26 | 74.90 | 3.18 | 4.22 | 0.83 | 113.93 | 8.51 | 553.00 |
| DR 174C.7 | 0.16 | 63.55 | 53.74 | 117.44 | 7.41 | 9.87 | 1.96 | 268.70 | 14.18 | 921.70 |
| DR 175 | 0.12 | 7.86 | 6.09 | 14.06 | 1.39 | 1.83 | 0.35 | 48.49 | 1.84 | 119.39 |

| QUANTITIES OF BOX CULVERT | | | | | | |
|---------------------------|------|------|------|-------|------|------|
| Outlet No. | w1 | d1 | tw | L | w2 | d2 |
| | m | m | m | m | m | m |
| DL 113.12 | 0.80 | 0.80 | 0.13 | 28.55 | 1.05 | 1.05 |
| DL 113.19 | 0.80 | 0.80 | 0.13 | 45.09 | 1.05 | 1.05 |
| DL 113F.3 | 0.80 | 0.80 | 0.13 | 21.00 | 1.05 | 1.05 |
| DL 113F.17 | 0.80 | 0.80 | 0.13 | 32.50 | 1.05 | 1.05 |
| DL 113F.28 | 0.80 | 0.80 | 0.13 | 48.70 | 1.05 | 1.05 |
| DR 174C | 0.80 | 0.80 | 0.13 | 35.97 | 1.05 | 1.05 |
| DR 174E | 0.80 | 0.80 | 0.13 | 55.05 | 1.05 | 1.05 |
| DR 174E.12 | 0.80 | 0.80 | 0.13 | 37.22 | 1.05 | 1.05 |



| QUANTITIES OF BOX CULVERT | | | | | | | | | | | | | |
|---------------------------|-------------------|-------------------|----------|-------------|-------------------|----------------------|----------|------------|---------------|-------------|----------|---------------|----------|
| Outlet No. | Outside Face | | | Inside Face | Box Culvert | | Leveling | Water Stop | Joint Sealant | Cork Filler | Concrete | Reinforcement | Backfill |
| | Left & Right Side | Front & Rear Side | Top Slab | | Area of Formworks | Volume of Supporting | | | | | | | |
| | m2 | m2 | m2 | | m2 | m3 | | | | | | | |
| DL 113.12 | 0.73 | 59.94 | 23.04 | 45.67 | 129.38 | 18.43 | 5.96 | 7.40 | 12.70 | 0.93 | 13.20 | 1188.19 | 42.14 |
| DL 113.19 | 0.73 | 94.70 | 36.27 | 72.15 | 203.84 | 29.02 | 9.27 | 14.80 | 25.40 | 1.85 | 20.86 | 1877.00 | 66.57 |
| DL 113F.3 | 0.73 | 44.09 | 17.00 | 33.60 | 95.41 | 13.60 | 4.45 | 7.40 | 12.70 | 0.93 | 9.71 | 874.00 | 31.00 |
| DL 113F.17 | 0.73 | 68.25 | 26.20 | 52.00 | 147.18 | 20.96 | 6.75 | 11.10 | 19.05 | 1.39 | 15.03 | 1352.81 | 47.98 |
| DL 113F.28 | 0.73 | 102.27 | 39.16 | 77.92 | 220.08 | 31.33 | 9.99 | 14.80 | 25.40 | 1.85 | 22.52 | 2027.22 | 71.90 |
| DR 174C | 0.73 | 75.55 | 28.98 | 57.56 | 162.81 | 23.18 | 7.44 | 11.10 | 19.05 | 1.39 | 16.64 | 1497.42 | 53.11 |
| DR 174E | 0.73 | 115.60 | 44.24 | 88.08 | 248.64 | 35.39 | 11.26 | 18.50 | 31.75 | 2.31 | 25.46 | 2291.33 | 81.26 |
| DR 174E.12 | 0.73 | 78.16 | 29.98 | 59.55 | 168.42 | 23.98 | 7.69 | 11.10 | 19.05 | 1.39 | 17.21 | 1549.32 | 54.95 |

| QUANTITIES IN PIPE BEDDING | | | | | | | | |
|----------------------------|-------------|------|------------|------|-----------|------|-----------|-------------------|
| Outlet No. | Outlet Pipe | | Inlet Pipe | | Collector | | Thickness | Area of Formworks |
| | L1 | W1 | L2 | W2 | L3 | W3 | | |
| | m | m | m | m | m | m | | |
| DL 97.2 | 2.67 | 1.11 | 0.00 | 0.00 | 20.60 | 0.40 | 0.10 | 4.96 |
| DL 97.5 | 1.41 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.36 |
| DL 97.6 | 2.54 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.73 |
| DL 97.8 | 2.54 | 1.11 | 0.00 | 0.00 | 6.91 | 0.40 | 0.10 | 2.19 |
| DL 97.10 | 1.99 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.48 |
| DL 113.12 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DL 113.19 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DL 113.26 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DL 113.27 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DL 113A | 0.53 | 1.11 | 0.32 | 0.40 | 0.00 | 0.00 | 0.10 | 0.47 |
| DL 113B.4 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DL 113B.9 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DL 113B.10 | 0.53 | 1.11 | 0.57 | 0.40 | 0.00 | 0.00 | 0.10 | 0.52 |
| DL 113B.12 | 1.03 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.43 |
| DL 113C | 1.03 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.43 |
| DL 113D | 1.03 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.43 |
| DL 113E | 1.03 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.43 |
| DL 113F | 1.03 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.43 |
| DL 113F.3 | 1.03 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.43 |
| DL 113F.17 | 1.04 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.43 |
| DL 113F.28 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DL 113F.38 | 1.03 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.43 |
| DR 117.2 | 0.39 | 0.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.23 |
| DR 117.3 | 0.44 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.31 |
| DR 117.5 | 0.44 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.31 |
| DR 117.6 | 0.44 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.31 |
| DR 117.9 | 0.80 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.38 |
| DR 117.10 | 0.44 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.31 |
| DR 117.12 | 0.80 | 1.11 | 0.92 | 0.59 | 8.66 | 0.59 | 0.10 | 2.53 |
| DR 117B.6 | 1.97 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.47 |
| DR 117B.13 | 0.46 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.13 |
| DR 117C.8 | 0.46 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.31 |
| DR 170.1 | 1.35 | 1.11 | 0.75 | 0.66 | 0.00 | 0.00 | 0.10 | 0.77 |
| DR 171 | 1.35 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.49 |
| DR 172 | 1.35 | 1.11 | 0.43 | 0.40 | 0.00 | 0.00 | 0.10 | 0.66 |
| DR 172.6 | 1.35 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.49 |
| DR 173A | 1.20 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.92 |
| DR 173A.2 | 1.35 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.49 |
| DR 173A.25 | 0.52 | 1.11 | 0.56 | 0.40 | 0.00 | 0.00 | 0.10 | 0.52 |
| DR 174 | 0.53 | 1.11 | 0.30 | 0.40 | 0.00 | 0.00 | 0.10 | 0.47 |
| DR 174.9 | 0.53 | 1.11 | 0.00 | 0.00 | 3.09 | 1.11 | 0.10 | 1.17 |
| DR 174C.1 | 2.07 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.64 |
| DR 174C.3 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DR 174C.3 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DR 174C.7 | 0.53 | 1.11 | 0.30 | 0.40 | 0.00 | 0.00 | 0.10 | 0.47 |
| DR 174C.14 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DR 174E | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DR 174E.12 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DR 174E.28 | 1.48 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.52 |
| DR 175 | 0.53 | 1.11 | 1.07 | 0.66 | 2.32 | 1.11 | 0.10 | 1.36 |
| DR 177 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DR 177.2 | 0.53 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |

Left Bank STA 15+236 - 16+564

| BQ No. | Name of Item | Unit | Qty. |
|---------------------------------|--|--------------|----------|
| BILL No. 4 - EARTH WORKS | | | |
| 4.8/1 | Excavation for manholes and junction manholes | | |
| | Excavation | Cu.m. | 1,023.76 |
| | Clearing and grubbing | Sq.m. | 991.42 |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 679.84 |
| | Clearing and Grubbing | Sq.m. | 961.15 |
| 4.8/1-2 | Excavation for junction manholes (junction pits) | Cu.m. | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 343.92 |
| | Clearing and Grubbing | Sq.m. | 30.27 |
| 4.8/2 | Excavation for pipe culverts | | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 322.78 |
| | Clearing and Grubbing | Sq.m. | 319.30 |
| 4.8/3 | Excavation for other structure | | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 137.75 |
| | Clearing and Grubbing | Sq.m. | 245.75 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 101.57 |
| 4.16/1 | Random backfill | Cu.m. | 771.55 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 771.55 |
| 4.16/1-1 | Random backfill for manholes | Cu.m. | |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 522.10 |
| 4.16/1-2 | Random backfill for junction manholes (junction pits) | Cu.m. | |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 249.45 |
| 4.17/1 | Zone B pipe backfill | Cu.m. | 119.25 |
| | Sand Fill, in Small Area: V<100 cu.m. | Cu.m. | 119.25 |
| 4.17/2 | Zone C pipe backfill (excavated material) | Cu.m. | 263.26 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 263.26 |
| 4.5/31-A | Temporary Removal and reinstallation of existing fences | L.m. | 93.42 |
| | Temporary removal of existing fences (for manhole) | L.m. | 58.20 |
| | Tempoary removal of existing fences (for collector pipe) | L.m. | 35.21 |
| | Reinstallation of existing fences (for manhole) | L.m. | 58.20 |
| | Reinstallation of existing fences (for collector pipe) | L.m. | 35.21 |
| 4.5/48-A | Demolition and removal of existing revetment | L.m. | 390.83 |
| | Demolition and removal of existing revetment (for manhole) | L.m. | 166.97 |
| | Demolition and removal of existing revetment (for collector pipe) | L.m. | 223.86 |
| 4.5/50-A | Demolition and restoration of existing CHB wall | L.m. | 317.42 |
| | Temporary removal of existing fences (for manhole) | L.m. | 119.72 |
| | Tempoary removal of existing fences (for collector pipe) | L.m. | 197.70 |
| 4.5/51-A | Temporary Removal and reinstallation of existing steel handrail | L.m. | 0.00 |
| | Temporary removal of existing steel handrail (for manhole) | L.m. | 0.00 |
| | Tempoary removal of existing steel handrail (for collector pipe) | L.m. | 0.00 |
| | Reinstallation of existing steel handrail (for manhole) | L.m. | 0.00 |
| | Reinstallation of existing steel handrail (for collector pipe) | L.m. | 0.00 |
| 4.5/52-A | Restoration of existing revetment | L.m. | 0.00 |
| | Temporary removal of existing revetment (for manhole) | L.m. | 0.00 |
| | Tempoary removal of existing revetment (for collector pipe) | L.m. | 0.00 |
| BILL No. 5 - CONCRETE | | | |
| 5.11/1 | Reinforcement Grade 275 | Ton | 19.05 |
| | Ladder Rung (16mm dia-Grade 40) in Manholes | Kg | 213.08 |
| | Ladder Rung (16mm dia-Grade 40) in Junction Manholes | Kg | 107.01 |
| | Reinforcement (16mm dia-Grade 275) in U - ditch | Kg | 2,613.09 |
| | Reinforcement (16mm dia-Grade 275) in box culvert | Kg | 0.00 |
| 5.16/1 | Precast concrete manhole and junction boxes covers | Cu.m. | 4.30 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 13.45 |
| | Reinforcement | Ton | 0.62 |
| 5.16/2 | Precast concrete U-ditch covers | Cu.m. | 5.59 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 21.33 |
| | Reinforcement | Ton | 0.77 |
| 5.22/1 | Concrete in manholes, junction boxes and outlets | Cu.m. | 179.03 |
| 5.22/1-1 | Concrete in manholes | Cu.m. | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 108.79 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 806.00 |
| | Staging/Scaffolding Work | Sq.m. | 555.44 |
| | Supporting/Scaffolding Work | Cu.m. | 19.65 |

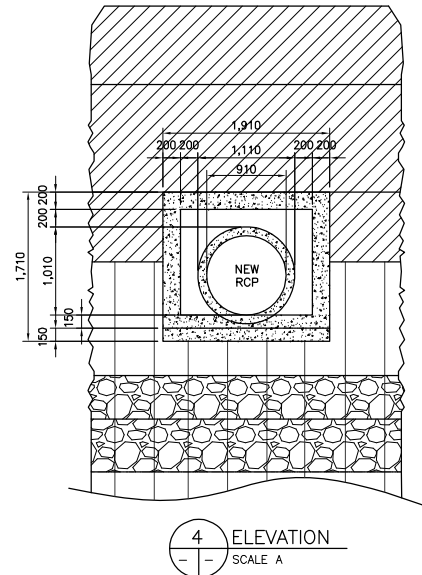
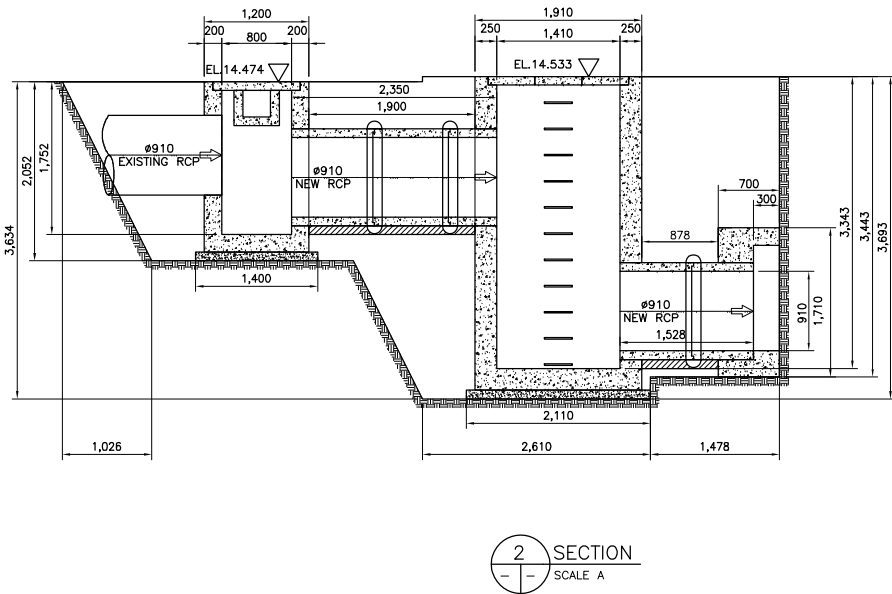
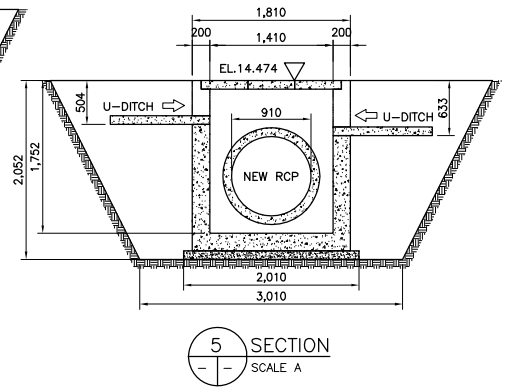
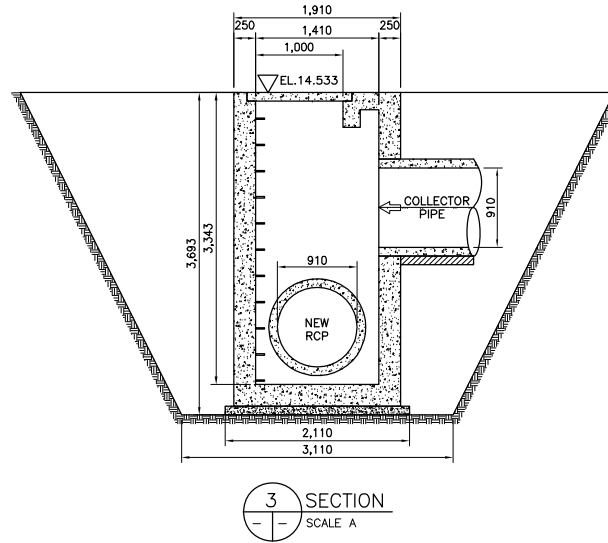
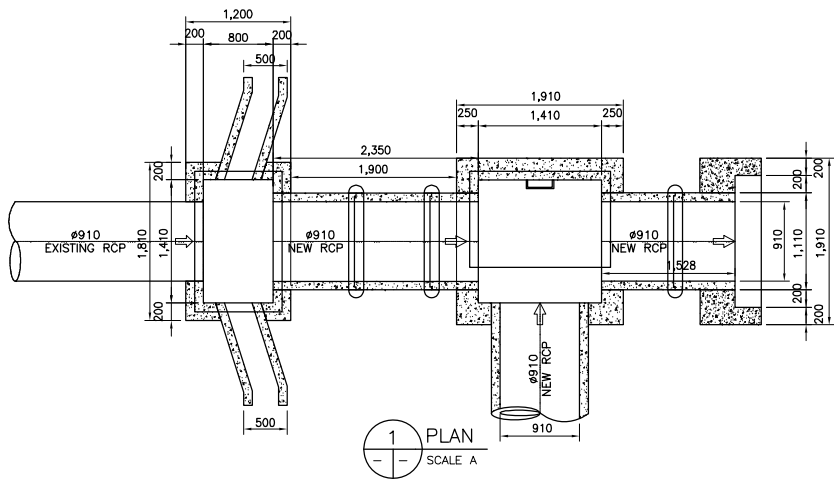
| BQ No. | Name of Item | Unit | Qty. |
|------------------------------|---|-------|--------|
| 5.22/1-2 | Concrete in junction manholes (junction pits) | Cu.m. | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 37.52 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 46.07 |
| | Staging/Scaffolding Work | Sq.m. | 29.72 |
| | Supporting/Scaffolding Work | Cu.m. | 0.00 |
| 5.22/1-3 | Concrete in outlets | Cu.m. | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 32.73 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 157.68 |
| | Staging/Scaffolding Work | Sq.m. | 41.77 |
| | Supporting/Scaffolding Work | Cu.m. | 12.70 |
| 5.22/16 | Concrete in U-Ditches | Cu.m. | 40.20 |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 40.20 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 333.05 |
| 5.22/2 | Concrete for pipe bedding | Cu.m. | 2.33 |
| | Concrete Work for Massive Concrete, Class-B, Manpower Placing | Cu.m. | 2.33 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 17.37 |
| 5.23/1 | Levelling concrete | Cu.m. | 11.77 |
| | Concrete Work for Leveling Concrete, Class-F, Concrete Pump Placing | Cu.m. | 11.77 |
| | Formwork for Leveling Concrete, Class-F | Sq.m. | 48.33 |
| BILL No. 8 - DRAINAGE | | | |
| 8.4/1 | Reinforced concrete pipe – 300 mm dia. | L.m. | |
| | Installation of RC Pipe Culvert, 300mm (12") Dia. | L.m. | 4.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.05 |
| 8.4/2 | Reinforced concrete pipe – 460 mm dia. | L.m. | |
| | Installation of RC Pipe Culvert, 460mm (18") Dia. | L.m. | 23.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.39 |
| 8.4/5 | Reinforced concrete pipe – 760 mm dia. | L.m. | |
| | Installation of RC Pipe Culvert, 760mm (30") Dia. | L.m. | 3.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.08 |
| 8.4/6 | Reinforced concrete pipe – 910 mm dia. | L.m. | |
| | Installation of RC Pipe Culvert, 910mm (36") Dia. | L.m. | 105.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 4.56 |
| 8.4/7 | Reinforced concrete pipe – 1,070 mm dia. | L.m. | |
| | Installation of RC Pipe Culvert, 1070mm (42") Dia. | L.m. | 8.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.40 |
| 8.9/2 | PVC drainage pipes - 100mm dia. | | |
| | Installation of PVC Pipe, 100mm (4") Dia. X 6m | ea | 4.00 |
| | Coupling for PVC Joint | ea | 2.00 |
| 8.9/3 | PVC drainage pipes - 150mm dia. | | |
| | Installation of PVC Pipe, 150mm (6") Dia. X 6m | ea | 14.00 |
| | Coupling for PVC Joint | ea | 10.00 |
| 8.9/4 | PVC drainage pipes - 200mm dia. | | |
| | Installation of PVC Pipe, 200mm (8") Dia. X 6m | ea | 9.00 |
| | Coupling for PVC Joint | ea | 7.00 |

QUANTITIES OF MANHOLE

Manhole No.: ML 126

Location: 15 + 358

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|--|--|---|--|-------------------------------|
| 1. Excavation | | A1=5.09 A2=9.64 A3=2.25 A4=5.79 | 4.96 4.96 4.04 4.04 | 25.22 47.77 9.08 23.37 105.44 | m ³ |
| 2. Lev. Concrete (Manhole) | W=2.11 L=2.11 | 4.45 | 0.1 | 0.45 | m ³ |
| 3. Bottom Slab (Manhole) | W=1.91 L=1.91 | 3.65 | 0.25 | 0.91 | m ³ |
| 4. Wall Manhole Minus Pipe hole on Wall A Pipe hole on Wall B Pipe hole on Wall C Pipe hole on Wall D Net Wall Vol. | Wout=1.91 Lout=1.91 Win=1.41 Lin=1.41 DiaA=1.11 DiaB=1.11 DiaC=0.00 DiaD=1.11 | Aout=3.65 Ain=1.99 Anet=1.66 0.97 0.97 0.00 0.97 | 0.25 0.25 0.25 0.25 3.343 | 0.24 0.24 0.00 0.24 5.549 4.82 | m ³ |
| 5. Conc. Cover (Manhole) | L=1.10 W=1.61 | 1.771 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung (Manhole) | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.53 | | 2 | pc |
| 10. Conc. Collar (Outlet Pipe) | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.88 | | 0.097458 | m ³ |
| 12. Backfill | | | | 87.87 | m ³ |



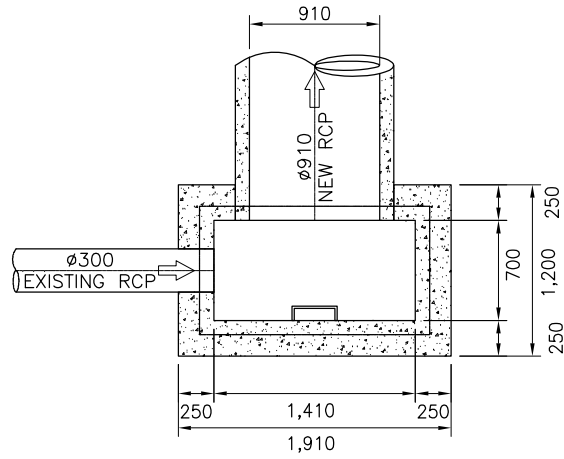
3.759

QUANTITIES OF MANHOLE

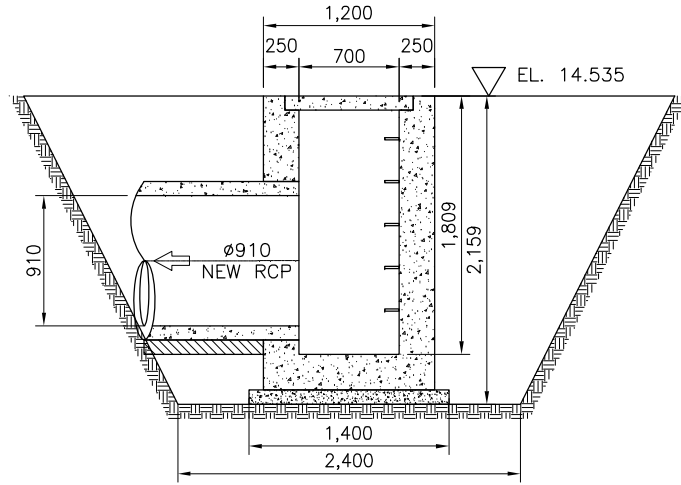
Manhole No.: ML 127

Location: 15 + 380

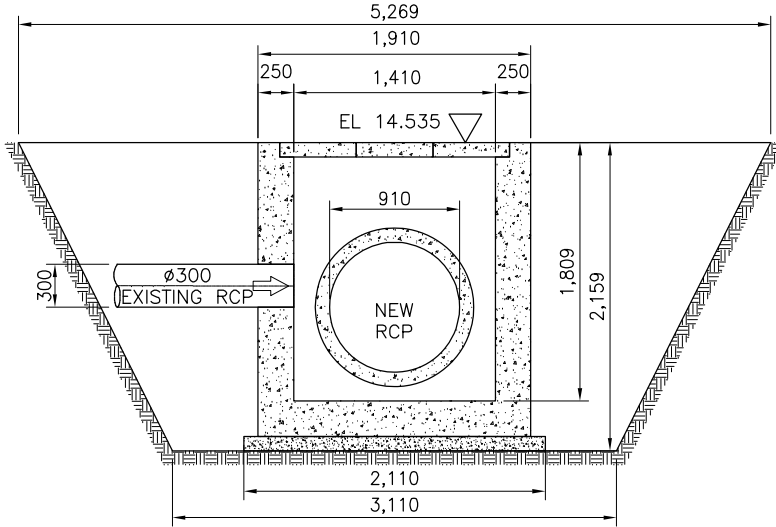
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|----------------------------------|
| 1. Excavation | | A1=9.05 | 3.48 | 31.47 | |
| | | | | 31.47 | m ³ m ³ |
| 2. Lev. Concrete | W=2.11 L=1.40 | 2.95 | 0.1 | 0.30 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.20 | 2.29 | 0.25 | 0.57 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.20 Win=1.41 Lin=.70 | Aout=2.29 Ain=0.99 Anet=1.31 | 1.809 | 2.361 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 2.09 | m ³ |
| 5. Conc. Cover | L=0.90 W=1.61 | 1.449 | 0.1 | 0.14 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Backfill | | | | 26.23 | m ³ |



3 PLAN
SCALE C



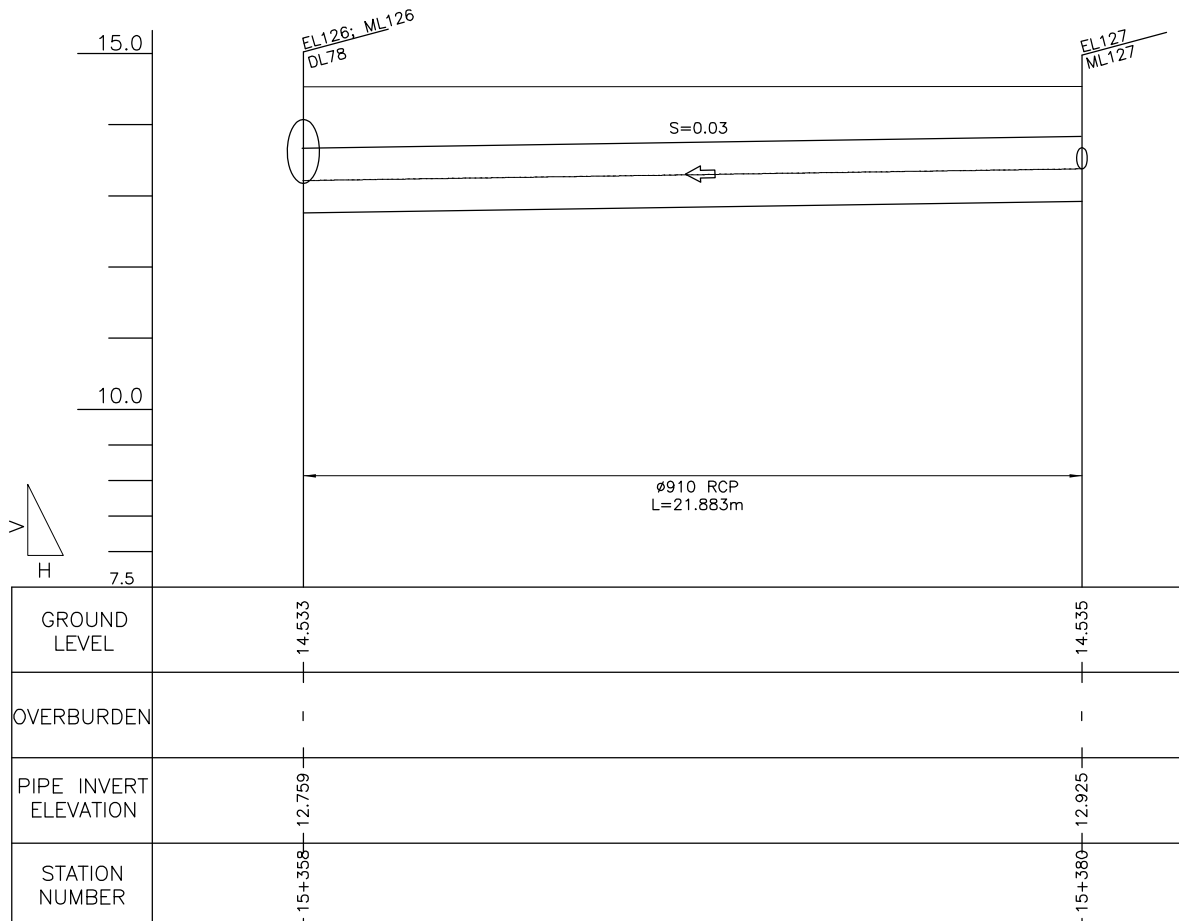
5 SECTION
SCALE C



4 SECTION
SCALE C

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|-----------|-----------|----------------|---------------|----------------|
| 1. Collector Pipe (Rcp) | Dia=0.91 | | L=22.54 | 23 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=0.91 | L=22.54 | 0.1 | 2.05 | m ³ |
| 3. Conc. Collar | D1=1.110m | A1=0.97 | 0.17 | 1.27 | m ³ |
| | D2=1.290m | A2=1.31 | | | |
| | | Anet=0.34 | Qty=22 | | |
| 4. Formworks | | | | 23.24 | m ³ |



| | | |
|-------------------------|---------|-------------------------------|
| Clearing (Manhole 126) | | |
| L1 | 1.626 m | |
| W of Junction Manhole | 1.2 m | A1=27.81 m ² |
| L2 | 1.9 m | A2=20.89 m ² |
| W of Manhole | 1.91 m | At=48.70 m² |
| L3 | 0.878 m | |
| W1 | 6.803 m | |
| W2 | 5.062 m | |

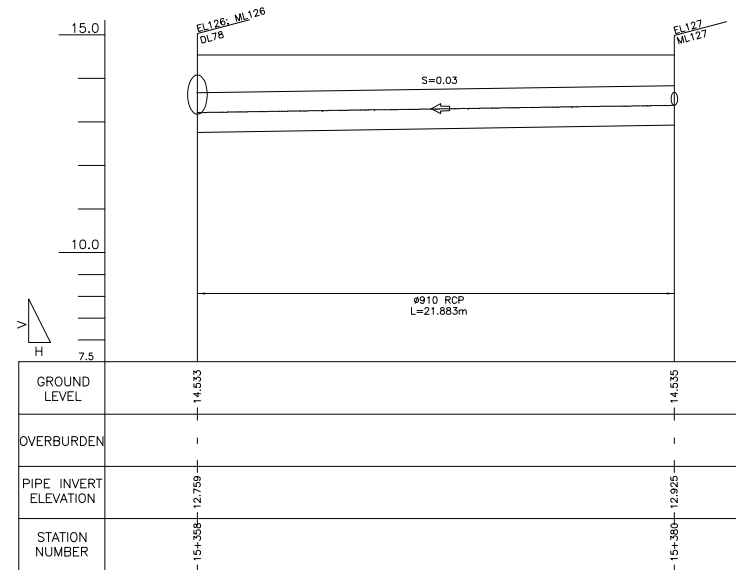
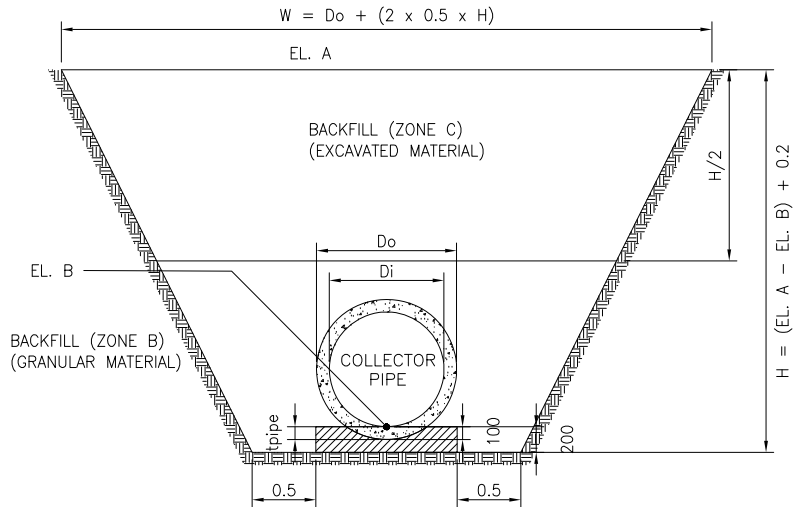
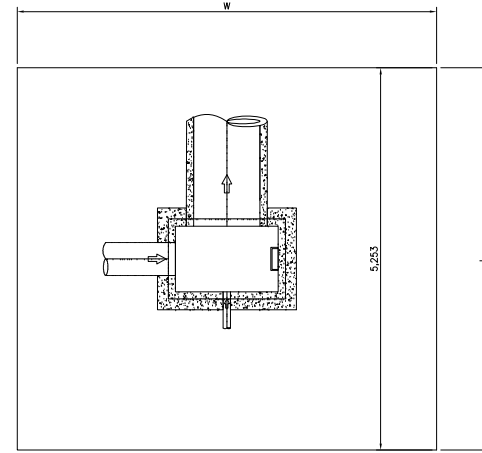
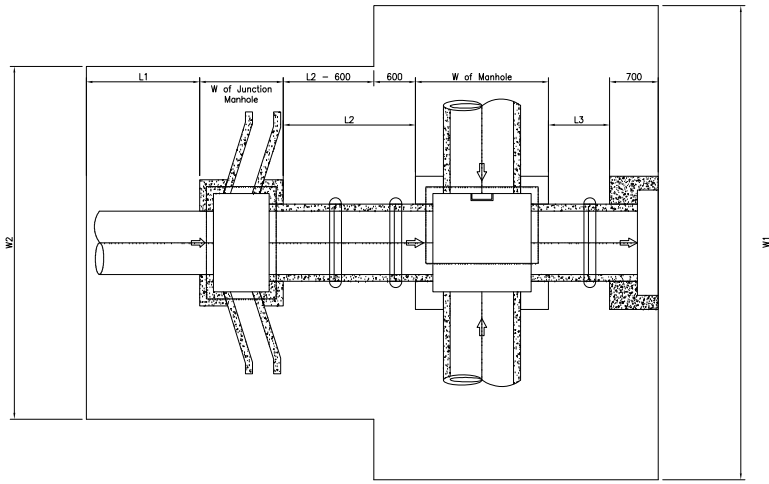
| | | |
|------------------------|---------|------------------------------|
| Clearing (Manhole 127) | | |
| W | 5.269 m | A=24.02 m² |
| L | 4.559 m | |

| | | |
|--------------------------------|----------|------------------------------|
| Clearing (Collector 127 - 126) | | |
| W | 4.002 m | A=87.58 m² |
| L | 21.883 m | |

| | | |
|-----------------------------|-----------|-----------------------|
| (Collector Pipe) Downstream | 127 - 126 | Excavation |
| Do | 1.11 m | A=6.11 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.38 m ² |
| H | 1.974 m | Backfill Zone C |
| EL. A | 14.533 m | A=2.02 m ² |
| EL. B | 12.759 m | |
| W | 4.084 m | |

| | | |
|---------------------------|----------|-----------------------|
| (Collector Pipe) Upstream | | Excavation |
| Do | 1.11 m | A=5.46 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.13 m ² |
| H | 1.81 m | Backfill Zone C |
| EL. A | 14.535 m | A=1.82 m ² |
| EL. B | 12.925 m | |
| W | 3.92 m | |

| | |
|-----------------|------------------------------|
| Collector Pipe | Volume |
| Excavation | 130.398 m³ |
| Backfill Zone B | 28.28 m³ |
| Backfill Zone C | 43.26 m³ |

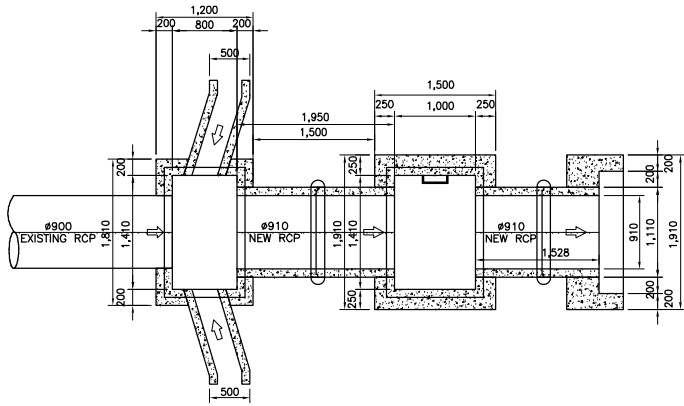


QUANTITIES OF MANHOLE

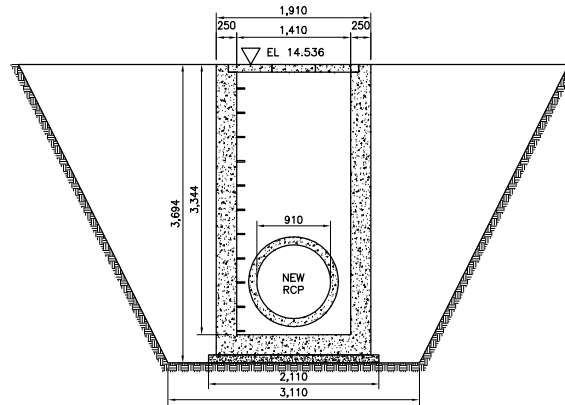
Manhole No.: ML 128

Location: 15 + 402

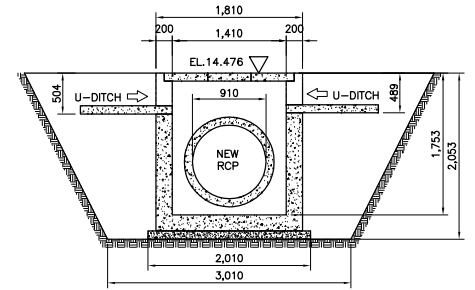
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|---|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=5.09 A2=7.58 A3=2.25 A3=4.87 | 4.96 4.96 4.04 4.04 | 25.23 37.56 9.09 19.65 91.53 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.344 | 4.866 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.50 | 0.28 | 0.25 | 0.07 | |
| Pipe hole on Wall B | DiaB=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall C | DiaC=0.50 | 0.27 | 0.25 | 0.07 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.24 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.53 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.88 | | 0.097458 | m ³ |
| 12. Backfill | | | | 76.28 | m ³ |



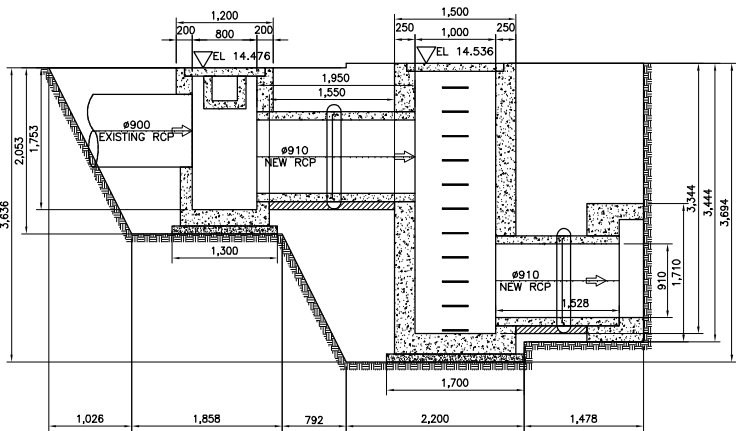
2 PLAN
SCALE A



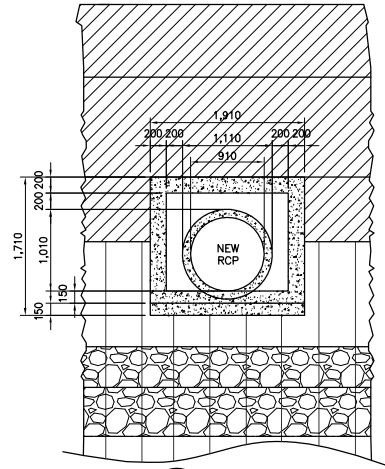
4 SECTION
SCALE A



5 SECTION
SCALE A



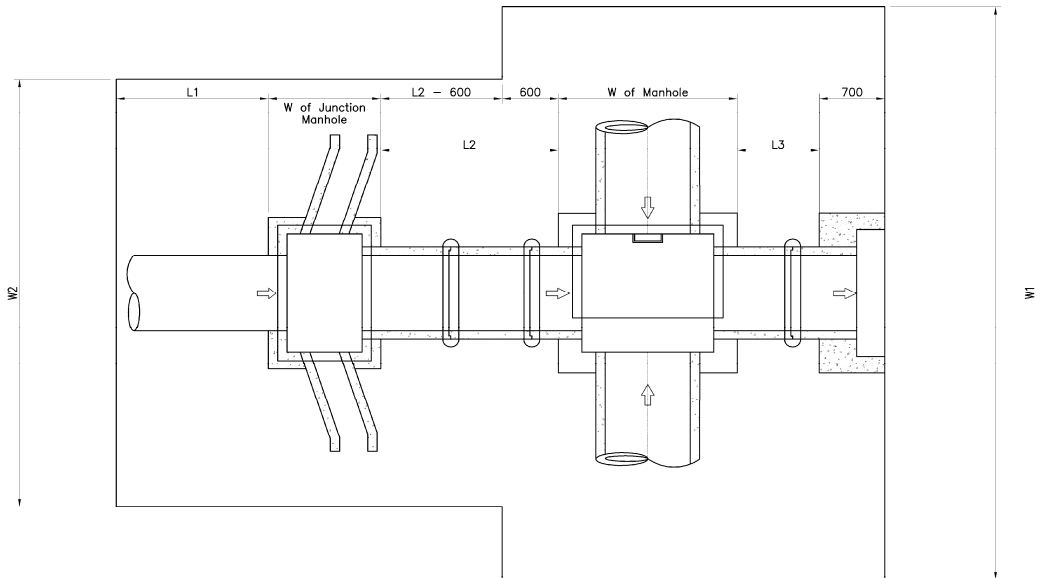
3 SECTION
SCALE A



5 ELEVATION
SCALE A

Clearing (Manhole 128)

| | | |
|-----------------------|----------|---|
| L1 | 1.4765 m | |
| W of Junction Manhole | 1.2 m | $A_m=25.03 \text{ m}^2$ |
| L2 | 1.55 m | $A_{jb}=18.36 \text{ m}^2$ |
| W of Manhole | 1.5 m | $A_t=43.39 \text{ m}^2$ |
| L3 | 0.878 m | |
| W1 | 6.804 m | |
| W2 | 5.063 m | |



QUANTITIES OF MANHOLE

Manhole No.: ML 129

Location: 15 + 455

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---------------------------|---|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.18 A2=6.80 A3=1.74 A4=5.68 | 4.81 4.81 4.04 4.04 | 20.10 32.69 7.00 22.90 82.69 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 3.11 | 0.25 | 0.78 | m ³ |
| 4. Wall Manhole | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 3.049 | 4.131 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.65 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.39 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.73 | | 0.080697 | m ³ |
| 12. Backfill | | | | 68.91 | m ³ |

Clearing (Manhole 129)

| | | |
|-----------------------|---------|-------------------------------|
| L1 | 1.625 m | |
| W of Junction Manhole | 1.2 m | Am=21.66 m ² |
| L2 | 1.7 m | Ajb=19.86 m ² |
| W of Manhole | 1.3 m | At=41.52 m² |
| L3 | 0.727 m | |
| W1 | 6.509 m | |
| W2 | 5.06 m | |

Clearing (U - Ditch 128.1 - 129)

| | | |
|---|----------|------------------------------|
| W | 2.1995 m | A=21.08 m² |
| L | 9.586 m | |

(U - Ditch) Downstera

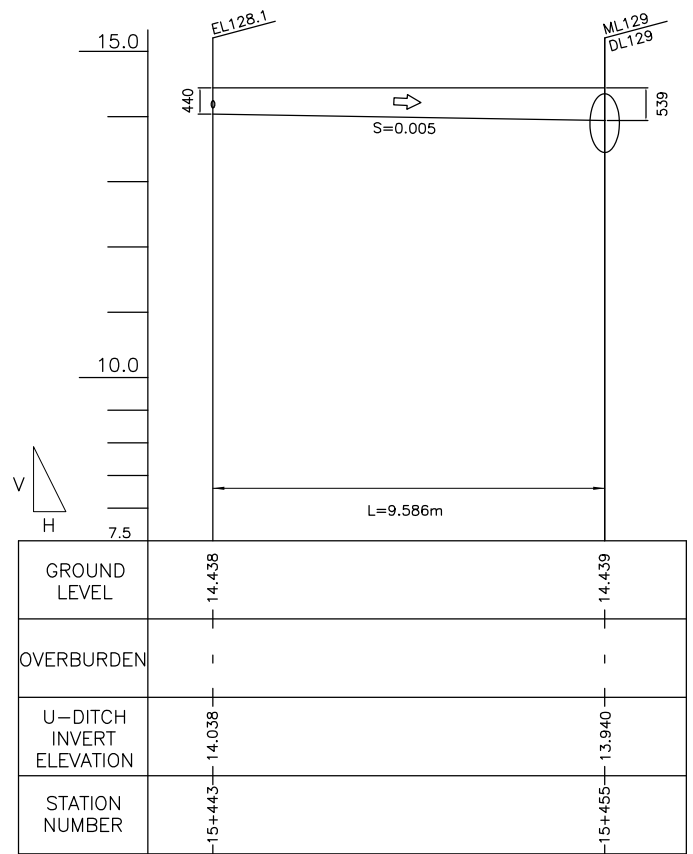
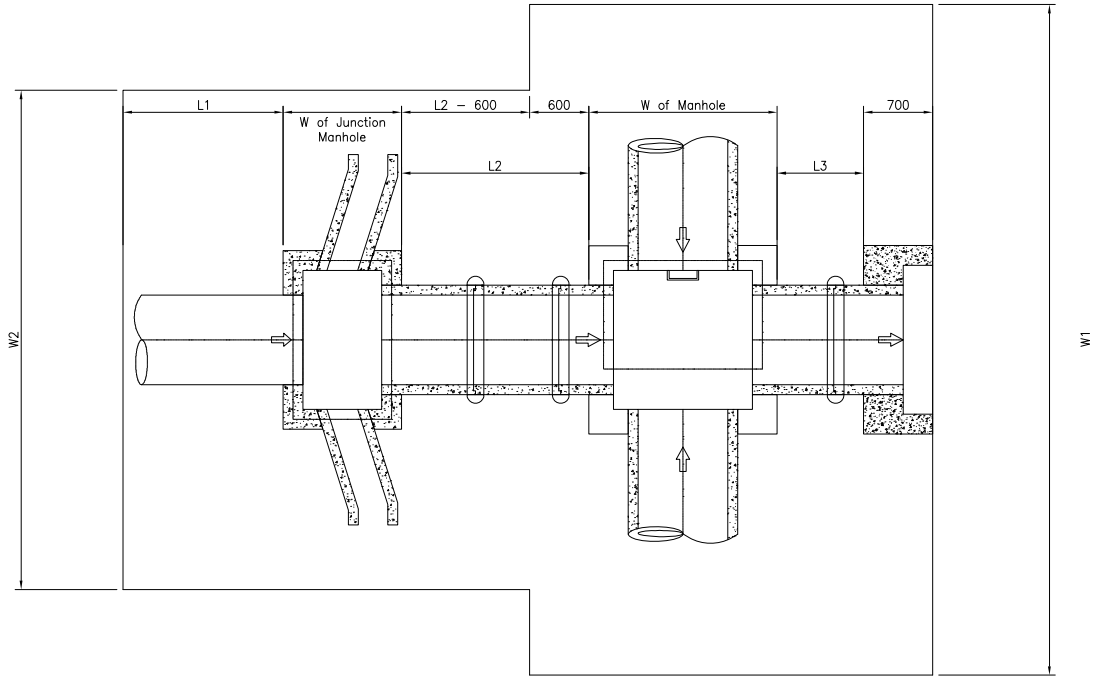
| | | | |
|-------|---------------|----------|-----------------------|
| d | 83.35 - 83.29 | 0.499 m | Excavation |
| D | | 0.649 m | A=1.25 m ² |
| D/2 | | 0.3245 m | Backfill Zone B |
| W1 | | 2.249 m | A=0.40 m ² |
| W2 | | 1.9245 m | Backfill Zone C |
| EL. A | | 14.439 m | A=0.51 m ² |
| EL. B | | 13.94 m | |

(U - Ditch) Upstream

| | | | |
|-------|--|----------|-----------------------|
| d | | 0.4 m | Excavation |
| D | | 0.55 m | A=1.03 m ² |
| D/2 | | 0.275 m | Backfill Zone B |
| W1 | | 2.15 m | A=0.34 m ² |
| W2 | | 1.875 m | Backfill Zone C |
| EL. A | | 14.438 m | A=0.42 m ² |
| EL. B | | 14.038 m | |

U - Ditch 83.35 - 83.29

| | |
|-----------------|-------------------------------|
| Excavation | 10.98389 m³ |
| Backfill Zone B | 3.564133 m³ |
| Backfill Zone C | 4.483813 m³ |



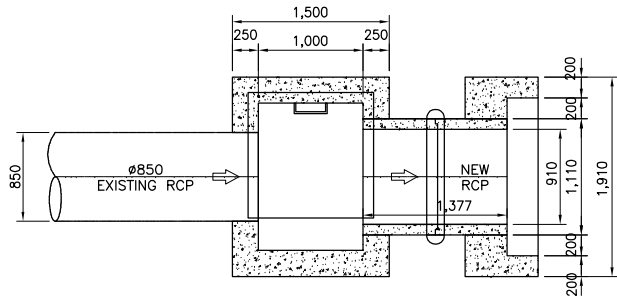
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

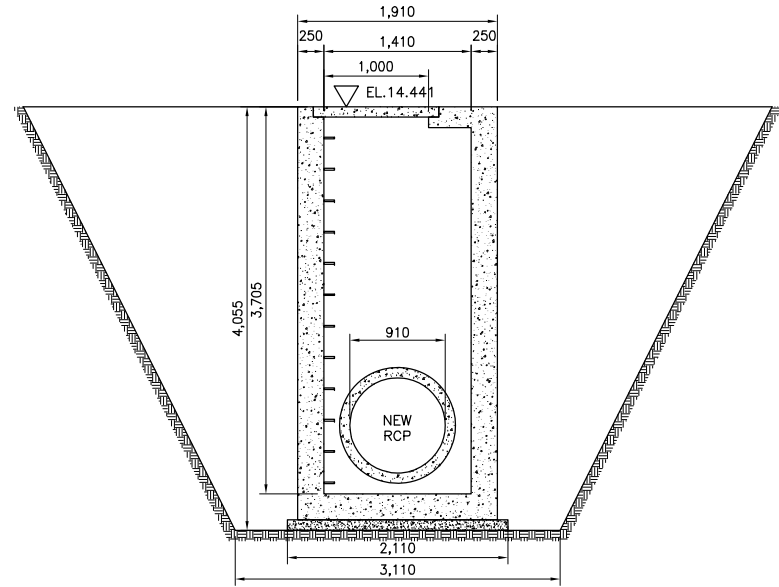
Manhole No.: ML 130

Location: 15 + 483

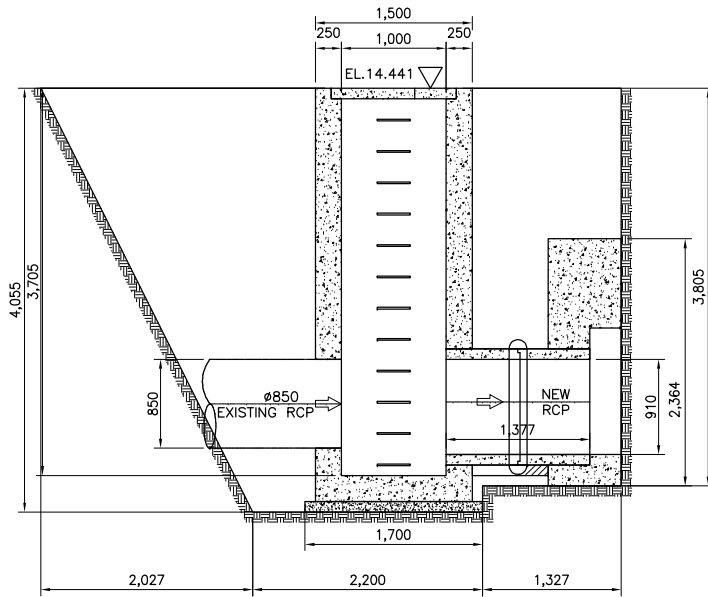
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|----------------------------|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=5.05 A2=13.03 | 5.14 5.14 | 25.94 66.95 | 92.89 m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.22 | 0.3 | 0.96 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 3.705 | 6.691 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=1.05 | 0.87 | 0.30 | 0.22 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.30 | 0.24 | |
| Net Wall Vol. | | | | 6.23 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=12 | 0.000201062 | | 0.000120637 0.95 11.36 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.36 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=4.52 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 3.16 0.55 0.39 2.23 | m3 |
| 9. Outlet Pipe | Dia=.910m | L=1.43 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m3 |
| 11. Conc. Bedding | Dia=1.110m | L=0.73 | | 0.080697 | m3 |
| 12. Backfill | | | | 77.40 | m3 |



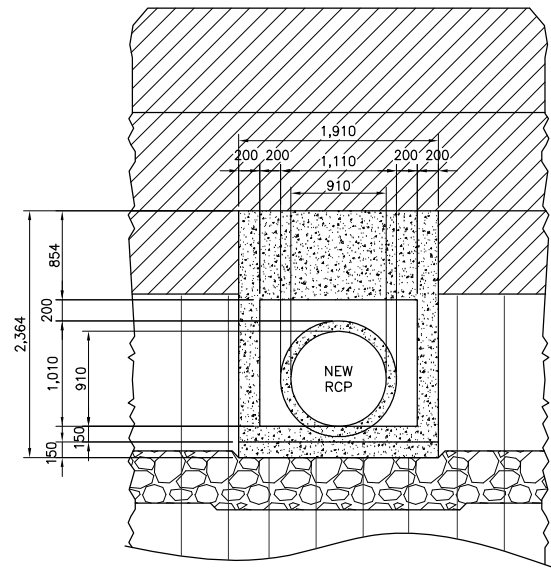
2 PLAN
SCALE B



4 SECTION
SCALE B



3 SECTION
SCALE B



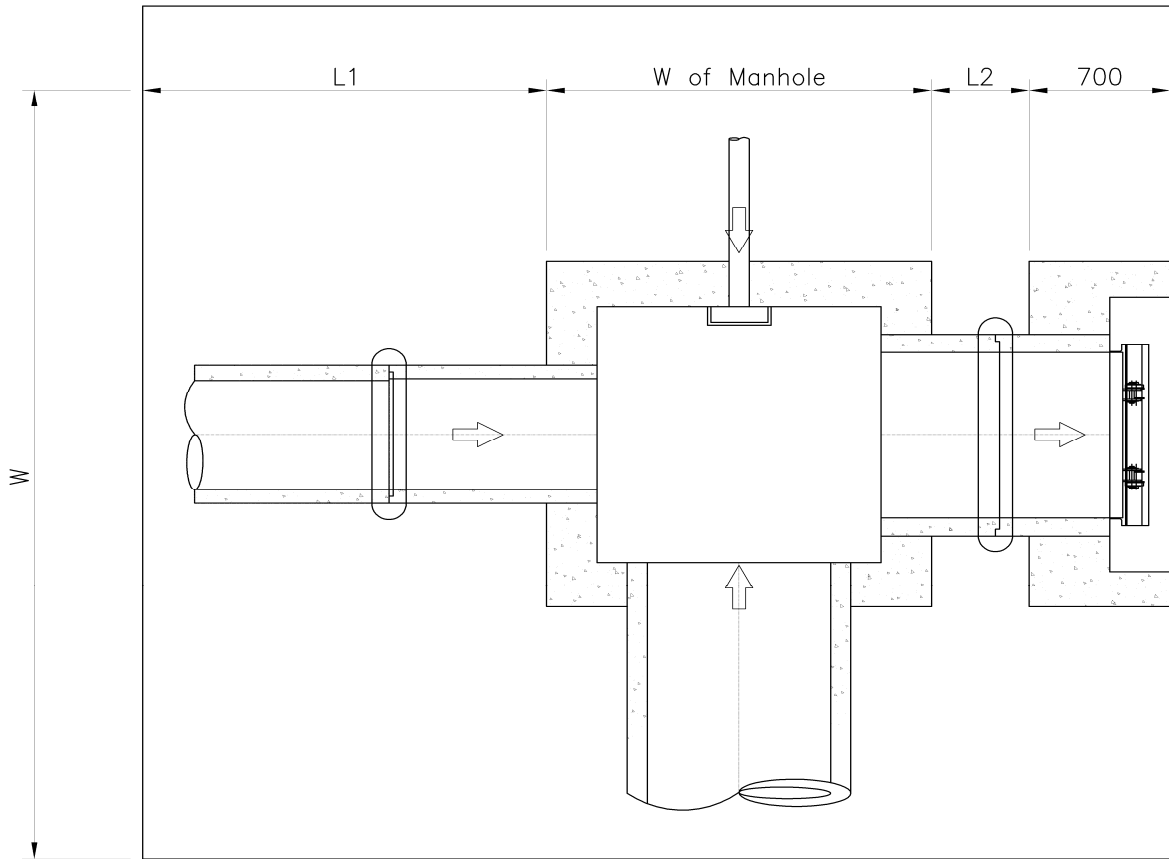
5 ELEVATION
SCALE B

3.774

Clearing (Manhole 130)

| | |
|--------------|----------|
| L1 | 2.6525 m |
| W of Manhole | 1.6 m |
| L2 | 0.727 m |
| W | 7.215 m |

A=40.98 m²



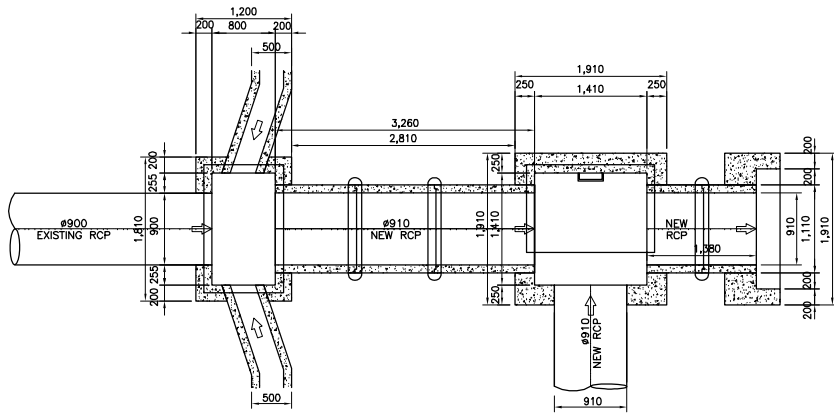
QUANTITIES OF MANHOLE

Manhole No.: ML 131

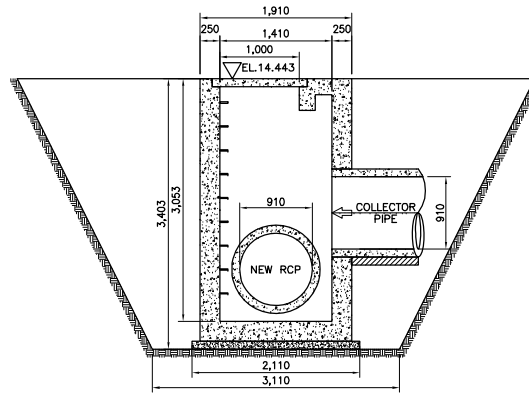
Location: 15 + 522

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---------------------------|---|--|------------------------------|--|-------------------------------|
| 1. Excavation | | A1=4.19 A2=8.88 A3=1.74 A3=7.95 | 4.81 4.81 4.04 4.04 | 20.18 42.73 7.02 32.07 102.00 | m ³ |
| 2. Lev. Concrete | W=2.11 L=2.11 | 4.45 | 0.1 | 0.45 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.91 | 4.28 | 0.25 | 1.07 | m ³ |
| 4. Wall Manhole | Wout=1.91 Lout=1.91 Win=1.41 Lin=1.41 | Aout=3.65 Ain=1.99 Anet=1.66 | 3.053 | 5.068 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=1.11 | 1.27 | 0.25 | 0.32 | |
| Pipe hole on Wall B | DiaB=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.24 | 0.25 | 0.06 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.21 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.61 | 1.771 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.38 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.73 | | 0.08103 | m ³ |
| 12. Backfill | | | | 85.00 | m ³ |

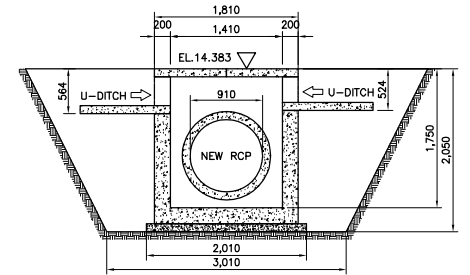
3.777



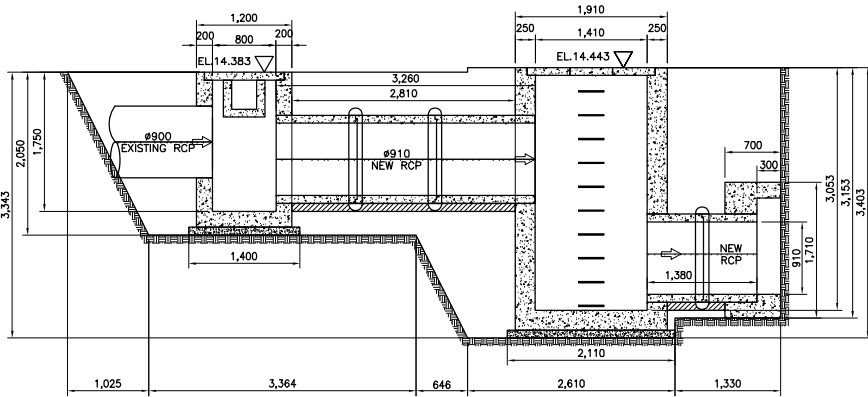
1 PLAN
SCALE B



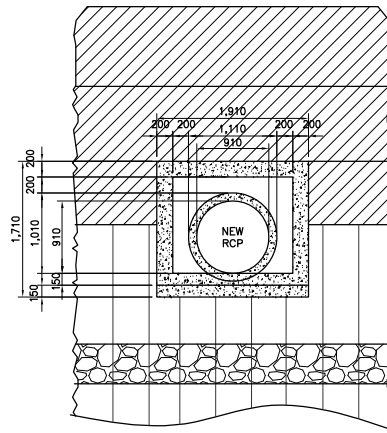
3 SECTION
SCALE B



5 SECTION
SCALE B



2 SECTION
SCALE A



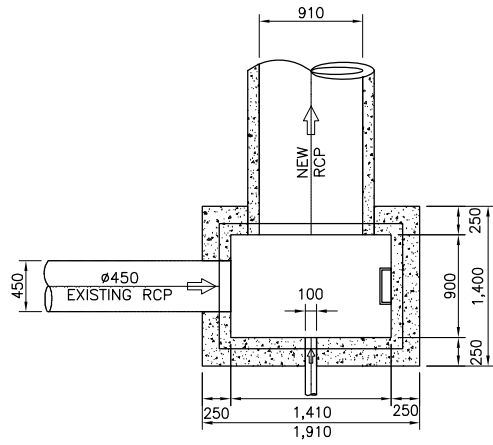
4 ELEVATION
SCALE B

QUANTITIES OF MANHOLE

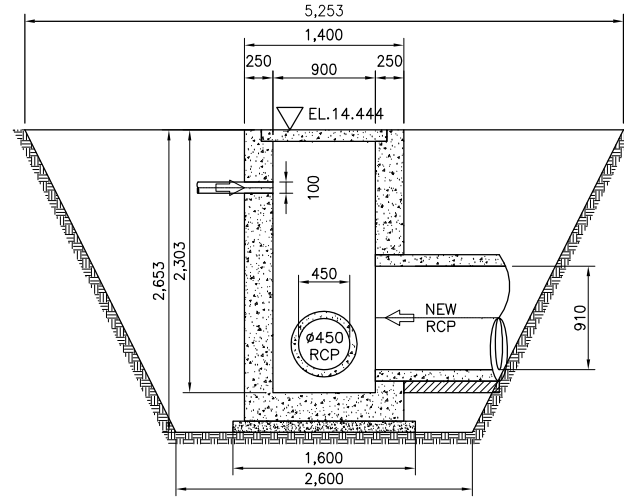
Manhole No.: ML 132

Location: 15 + 537

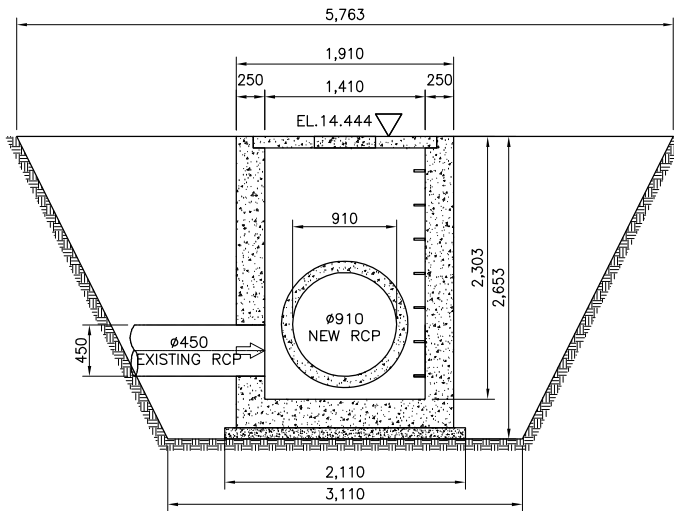
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|---------------------|----------------------------------|
| 1. Excavation | | A1=11.77 | 3.93 | 46.22 | |
| | | | | 46.22 | m ³ m ³ |
| 2. Lev. Concrete | W=2.11 L=1.60 | 3.38 | 0.1 | 0.34 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.40 | 2.67 | 0.25 | 0.67 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.40 Win=1.41 Lin=.90 | Aout=2.67 Ain=1.27 Anet=1.41 | 2.303 | 3.236 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.58 | 0.26 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 2.93 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.61 | 1.771 | 0.1 | 0.18 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=7 | 0.000201062 | | 0.000120637 0.95 | m ³ kg/pc |
| | | | | 6.63 | kg |
| 7. Backfill | | | | 38.51 | m ³ |



3 PARTIAL PLAN OF MANHOLE (ML132)
SCALE A



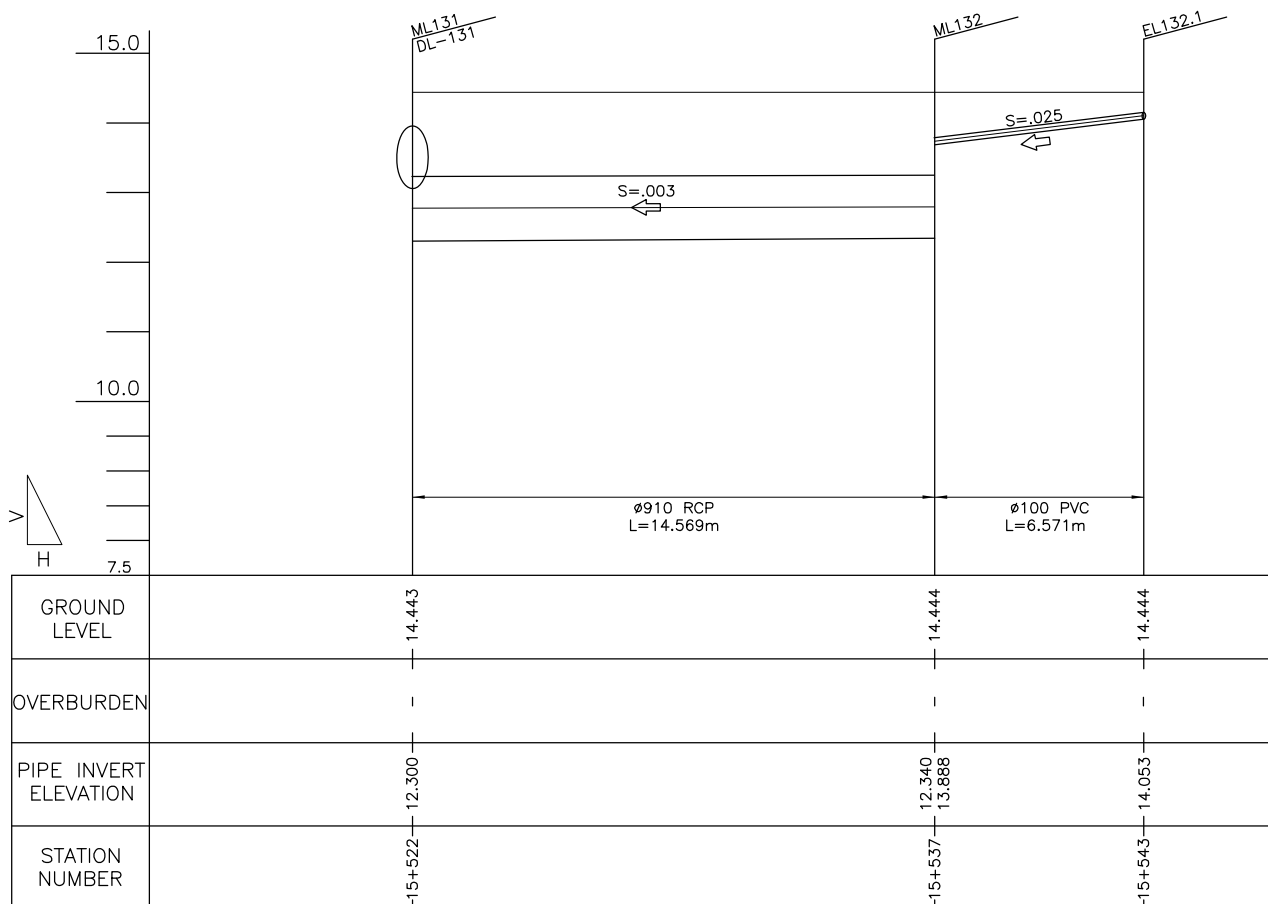
3 SECTION
SCALE A



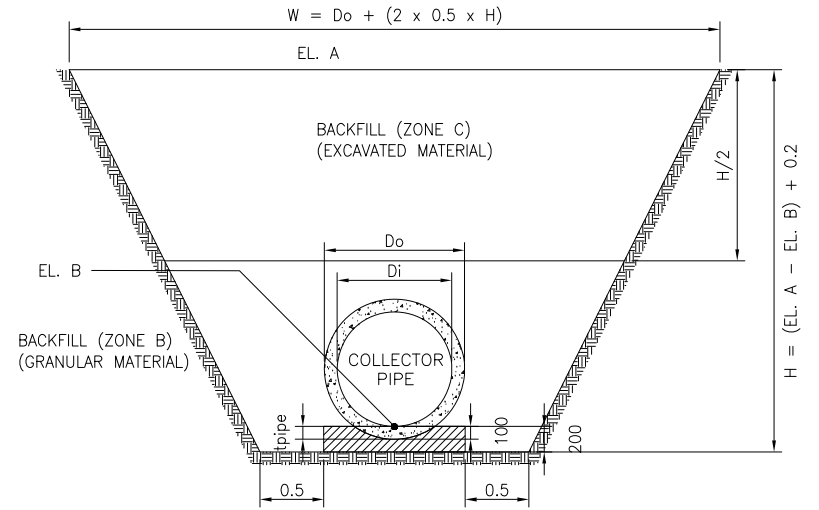
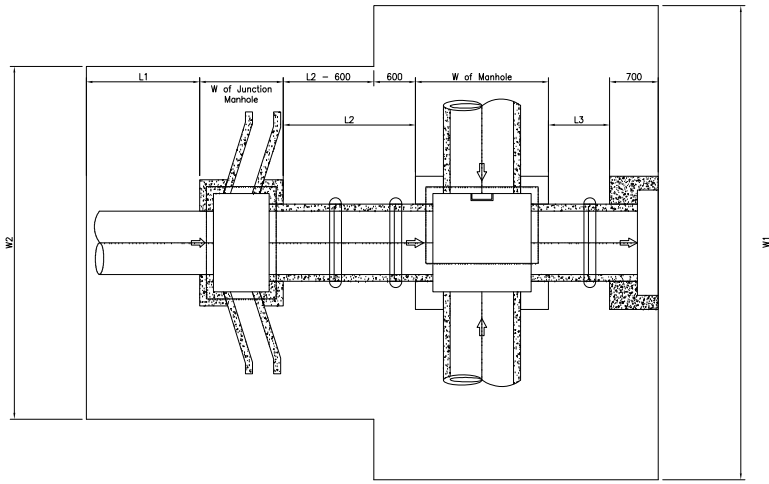
2 SECTION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|-----------|-----------|----------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.91 | | L=14.61 | 15 | pc |
| | | | | | |
| Collector Pipe (PVC) | Dia=0.10 | | L=6.74 | 2 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=0.91 | L=14.61 | 0.1 | 1.33 | m ³ |
| 3. Conc. Collar | D1=1.110m | A1=0.97 | 0.17 | 0.81 | m ³ |
| | D2=1.290m | A2=1.31 | | | |
| | | Anet=0.34 | Qty=14 | | |
| 4. PVC coupling | Dia=0.10 | | | 1 | pc |
| 5. Formworks | | | | 14.96 | m ³ |



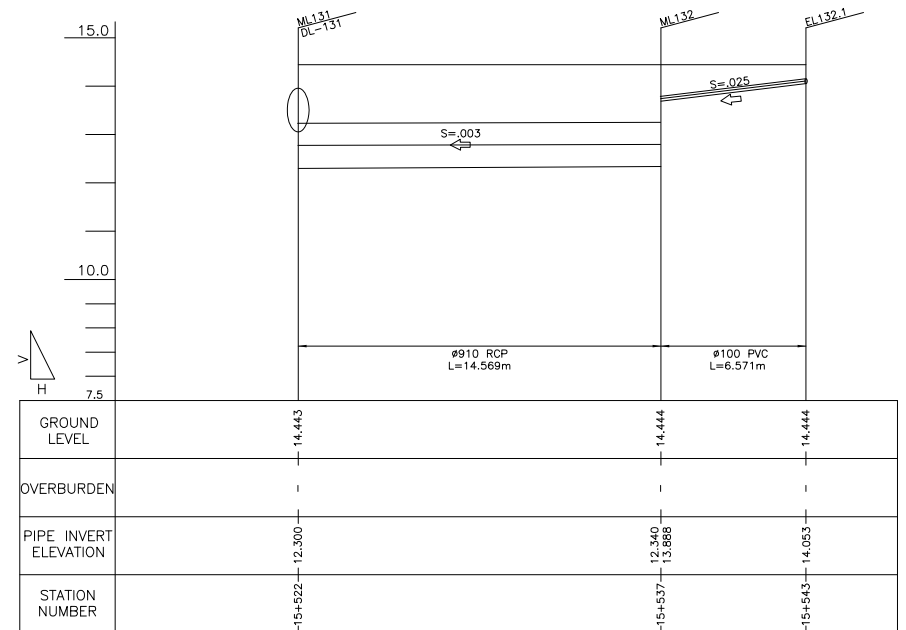
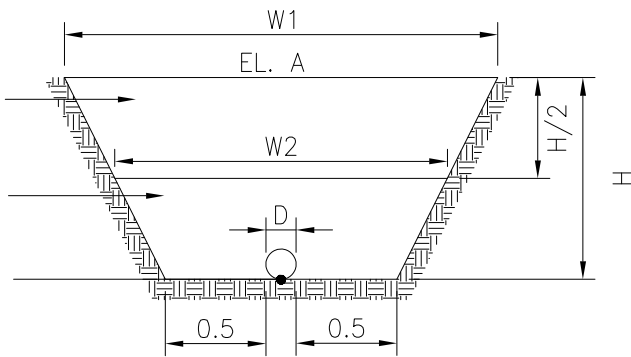
| | | |
|----------------------------------|-------------------------------|-------------------------------|
| Clearing (Manhole 131) | | |
| L1 | 1.625 m | |
| W of Junction Manhole | 1.2 m | A1=25.66 m ² |
| L2 | 3.26 m | A2=27.75 m ² |
| W of Manhole | 1.91 m | At=53.42 m² |
| L3 | 0.73 m | |
| W1 | 6.513 m | |
| W2 | 5.06 m | |
| Clearing (Manhole 132) | | |
| W | 5.763 m | A=30.27 m² |
| L | 5.253 m | |
| Clearing (Collector 132 - 131) | | |
| W | 4.4335 m | A=64.59 m² |
| L | 14.569 m | |
| Clearing (Collector 132.1 - 132) | | |
| W | 1.5735 m | A=10.34 m² |
| L | 6.571 m | |
| (Collector Pipe) Downstream | 132 - 131 | Excavation |
| Do | 1.11 m | A=7.69 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.97 m ² |
| H | 2.343 m | Backfill Zone C |
| EL. A | 14.443 m | A=2.51 m ² |
| EL. B | 12.3 m | |
| W | 4.453 m | |
| (Collector Pipe) Upstream | | Excavation |
| Do | 1.11 m | A=7.52 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.90 m ² |
| H | 2.304 m | Backfill Zone C |
| EL. A | 14.444 m | A=2.45 m ² |
| EL. B | 12.34 m | |
| W | 4.414 m | |
| (Collector PVC) Downstream | 132.1 - 132 | Excavation |
| D | 0.1 m | A=0.77 m ² |
| W1 | 1.66 m | Backfill Zone B |
| W2 | 1.38 m | A=0.34 m ² |
| H | 0.556 m | Backfill Zone C |
| H/2 | 0.278 m | A=0.42 m ² |
| EL. A | 14.444 m | |
| EL. B | 13.888 m | |
| (Collector PVC) Upstream | | Excavation |
| D | 0.1 m | A=0.51 m ² |
| W1 | 1.49 m | Backfill Zone B |
| W2 | 1.30 m | A=0.23 m ² |
| H | 0.391 m | Backfill Zone C |
| H/2 | 0.1955 m | A=0.27 m ² |
| EL. A | 14.444 m | |
| EL. B | 14.053 m | |
| Collector Pipe 132 - 131 | Volume | |
| Excavation | 111.0873 m³ | |
| Backfill Zone B | 28.29725 m³ | |
| Backfill Zone C | 36.25998 m³ | |
| Collector PVC 132.1 - 132 | Volume | |
| Excavation | 4.286021 m³ | |
| Backfill Zone B | 1.895623 m³ | |
| Backfill Zone C | 2.337499 m³ | |



BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC

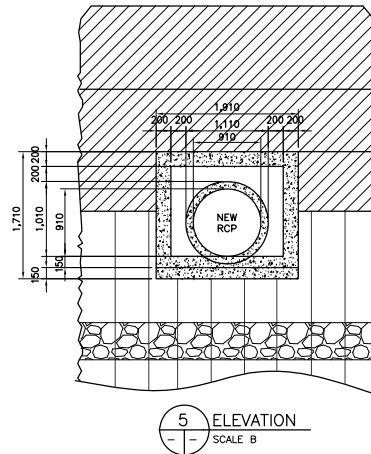
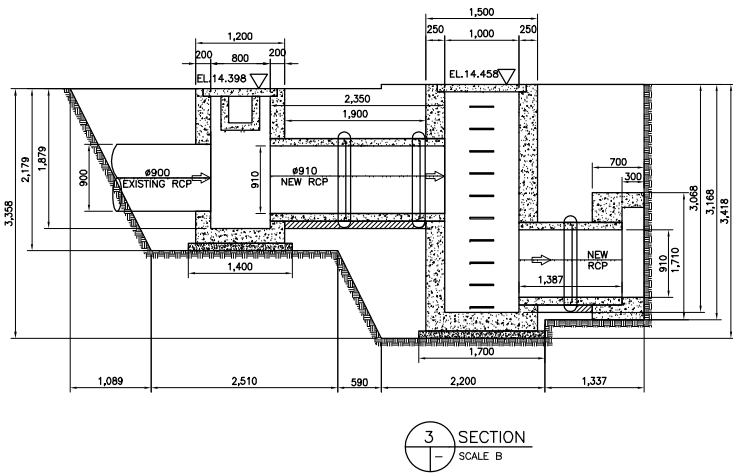
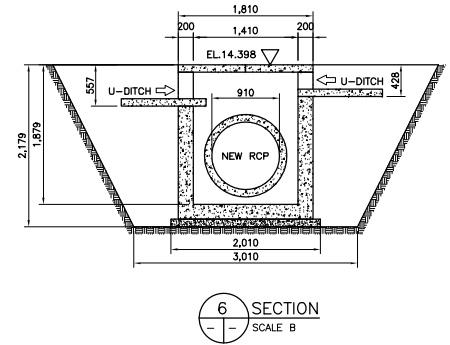
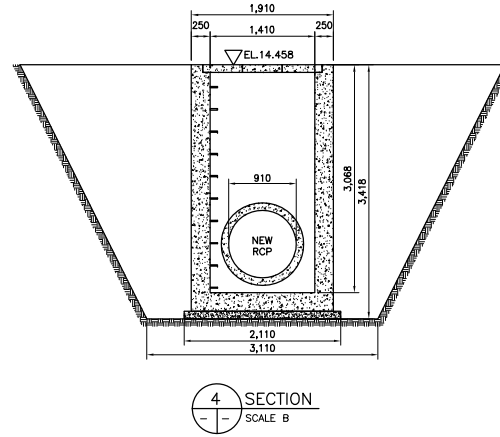
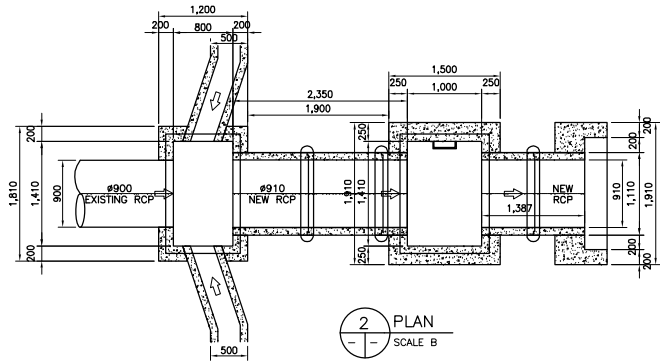


QUANTITIES OF MANHOLE

Manhole No.: ML 133A

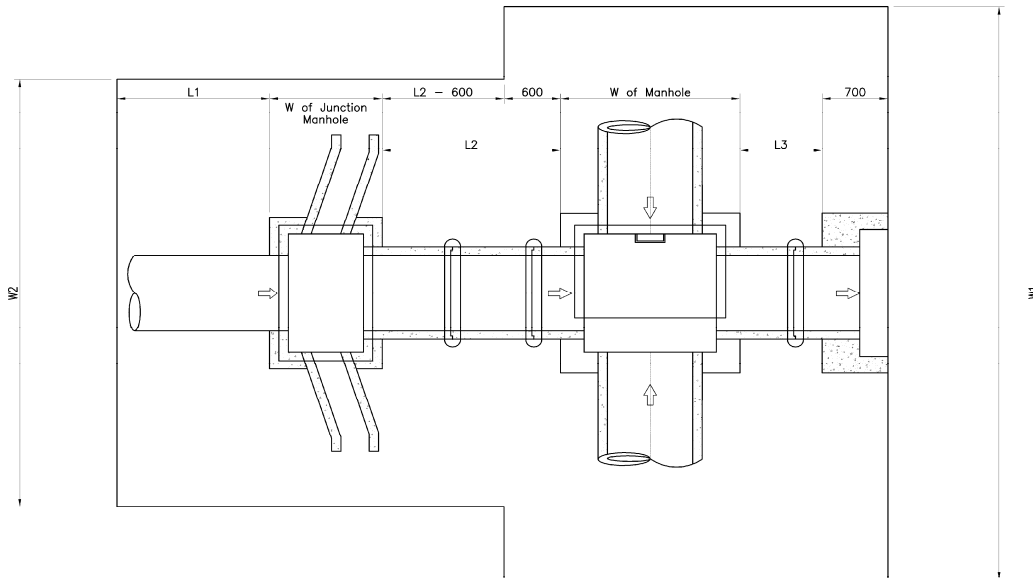
Location: 15 + 779

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|---|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.24 A2=7.52 A3=1.63 A4=6.66 | 4.82 4.82 4.10 4.10 | 20.41 36.24 6.70 27.29 90.63 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.068 | 4.464 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.91 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.39 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.74 | | 0.081807 | m ³ |
| 12. Backfill | | | | 75.52 | m ³ |



Clearing (Manhole 133A)

| | | |
|-----------------------|----------|---|
| L1 | 1.6895 m | |
| W of Junction Manhole | 1.2 m | $A_m=23.09 \text{ m}^2$ |
| L2 | 1.9 m | $A_{jb}=21.74 \text{ m}^2$ |
| W of Manhole | 1.5 m | $A_t=44.83 \text{ m}^2$ |
| L3 | 0.737 m | |
| W1 | 6.528 m | |
| W2 | 5.189 m | |

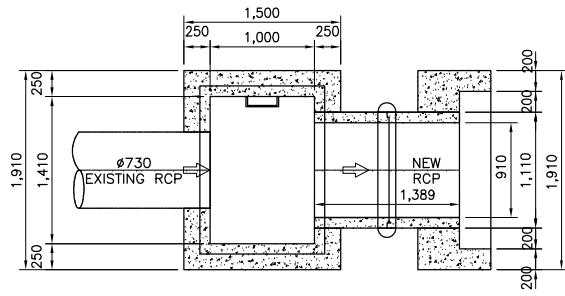


QUANTITIES OF MANHOLE

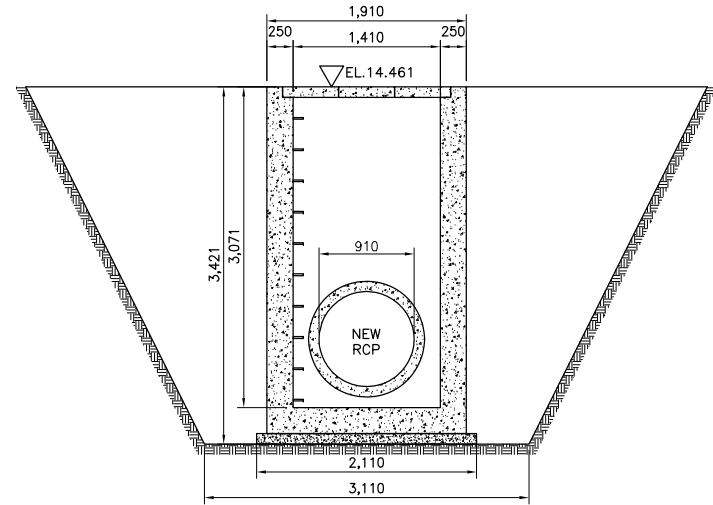
Manhole No.: ML 133B

Location: 15 + 829

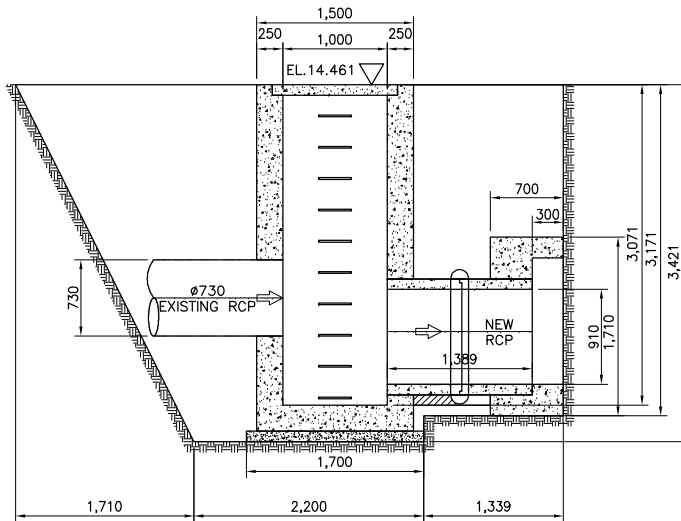
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.25 A2=10.45 | 4.82 4.82 | 20.47 50.38 | 70.85 m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 3.50 | 0.25 | 0.87 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.071 | 4.468 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=0.91 | 0.64 | 0.25 | 0.16 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.99 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.39 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.74 | | 0.082029 | m ³ |
| 12. Backfill | | | | 59.04 | m ³ |



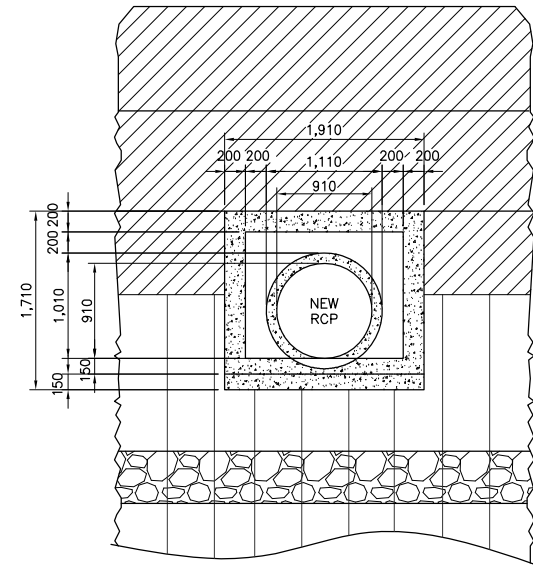
2 PLAN
SCALE B



4 SECTION
SCALE B



3 SECTION
SCALE B

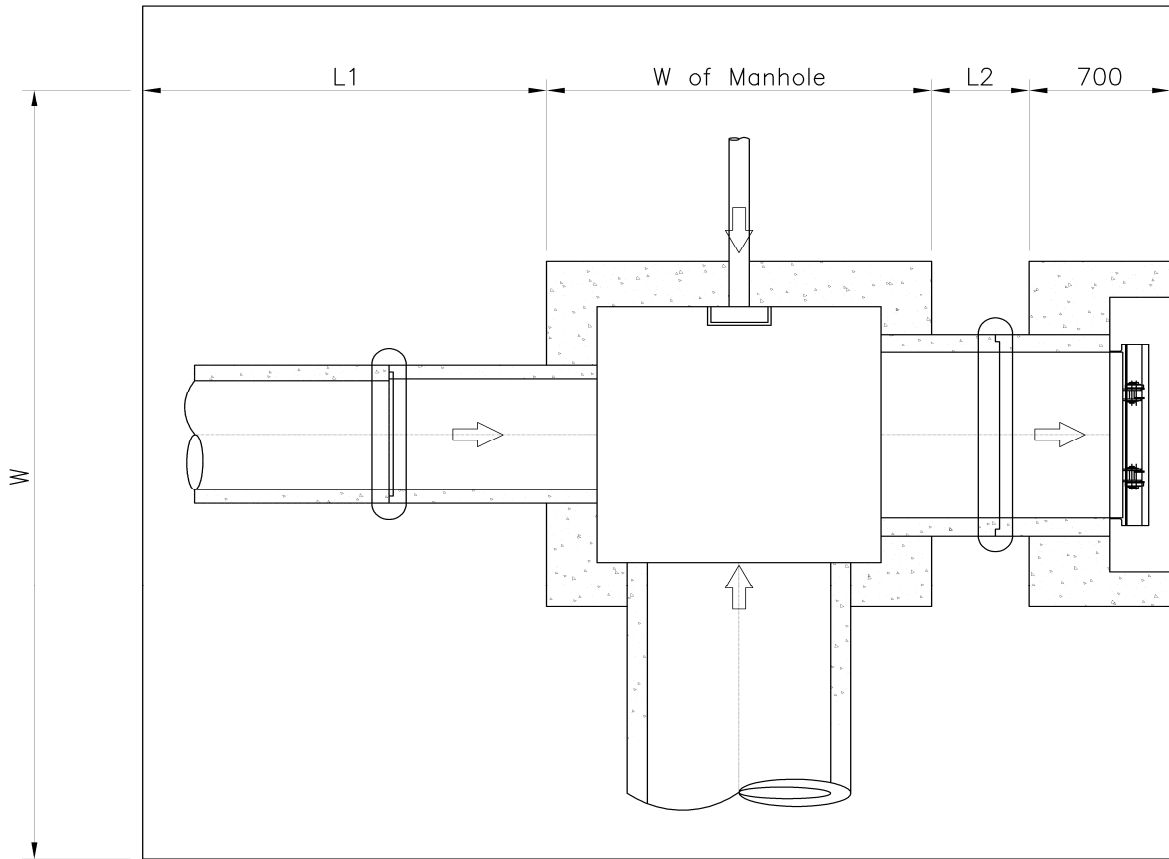


5 ELEVATION
SCALE B

Clearing (Manhole 133B)

| | |
|--------------|----------|
| L1 | 2.3105 m |
| W of Manhole | 1.5 m |
| L2 | 0.739 m |
| W | 6.531 m |

A=34.28 m²

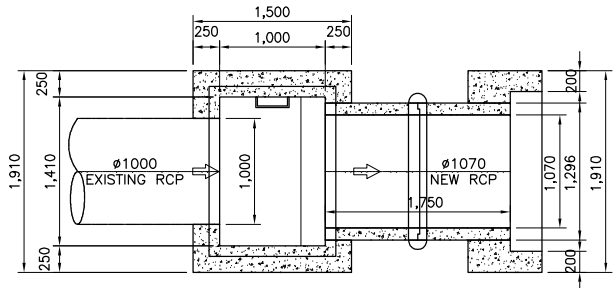


QUANTITIES OF MANHOLE

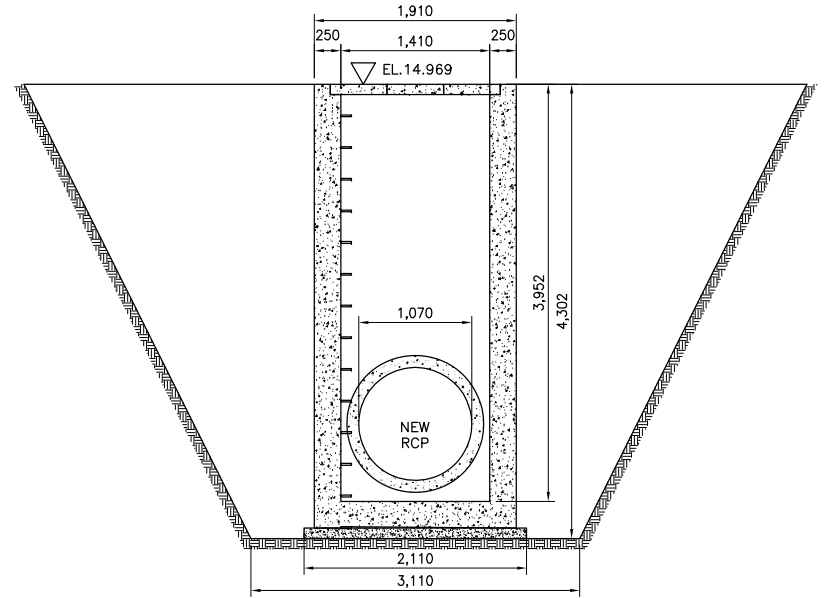
Manhole No.: ML 133C.4

Location: 15 + 966

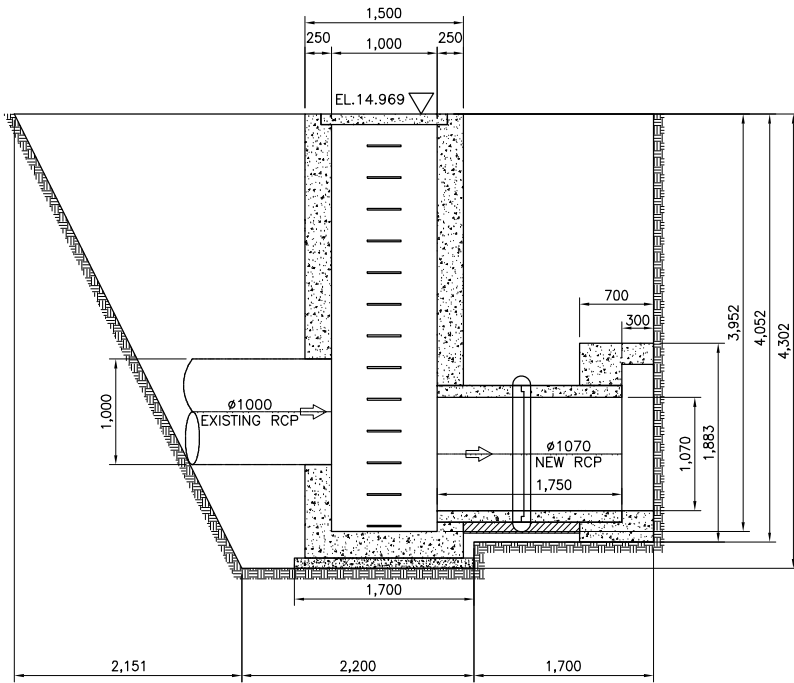
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|---|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=6.89 A2=14.09 | 5.26 5.26 | 36.24 74.13 | 110.37 m ³ |
| 2. Lev. Concrete | W=1.80 L=2.40 | 4.32 | 0.1 | 0.43 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.20 | 3.52 | 0.3 | 1.06 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.60 Lout=2.20 Win=1.00 Lin=1.60 | Aout=3.52 Ain=1.60 Anet=1.92 | 3.954 | 7.592 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=1.23 | 1.18 | 0.30 | 0.30 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.30 | 1.32 | 0.30 | 0.33 | |
| Net Wall Vol. | | | | 6.97 | m ³ |
| 5. Conc. Cover | L=1.81 W=1.20 | 2.172 | 0.1 | 0.22 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=13 | 0.000201062 | | 0.000120637 0.95 12.31 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.88 Win=1.51 Lin=1.38 DiaD=1.30 | Ain=3.60 Aout=2.09 Apipe=1.32 | 0.7 0.3 0.4 | 2.52 0.63 0.53 1.36 | m ³ |
| 9. Outlet Pipe | Dia=1.070m | L=1.80 | | 2 | pc |
| 10. Concrete Collar | D1=1.296m D2=1.476m | A1=1.32 A2=1.71 Anet=0.39 | 0.17 Qty=1 | 0.066619985 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.296m | L=1.10 | | 0.14256 | m ³ |
| 12. Backfill | | | | 91.98 | m ³ |



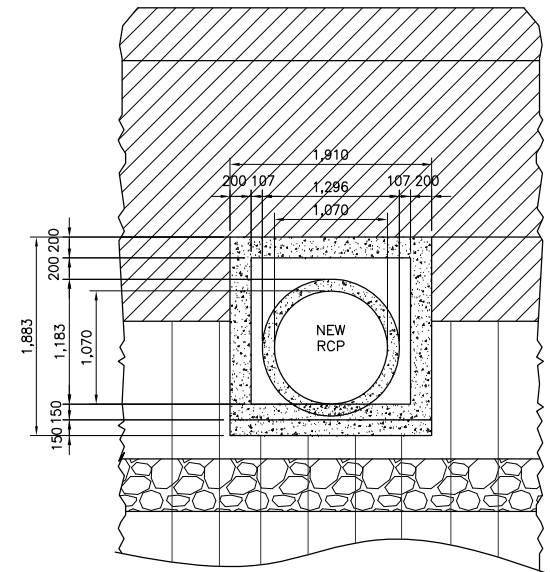
2 PLAN
SCALE B



4 SECTION
SCALE B



3 SECTION
SCALE B



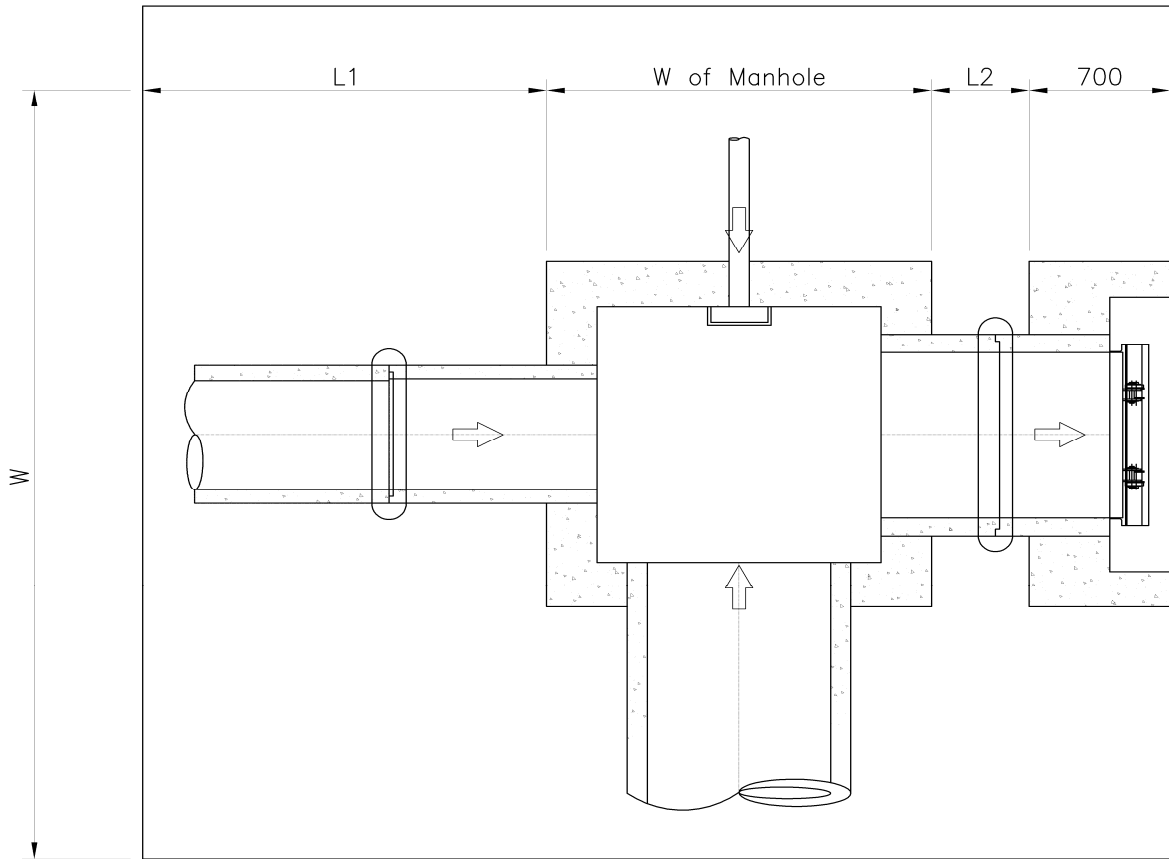
5 ELEVATION
SCALE B

3.790

Clearing (Manhole 133C.4)

| | |
|--------------|---------|
| L1 | 2.777 m |
| W of Manhole | 1.6 m |
| L2 | 1.1 m |
| W | 7.464 m |

A=46.11 m²

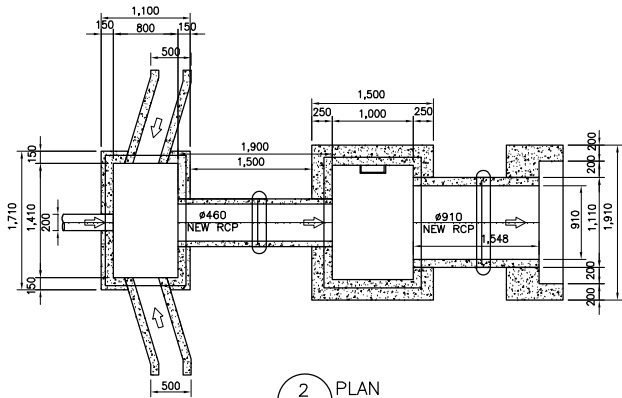


QUANTITIES OF MANHOLE

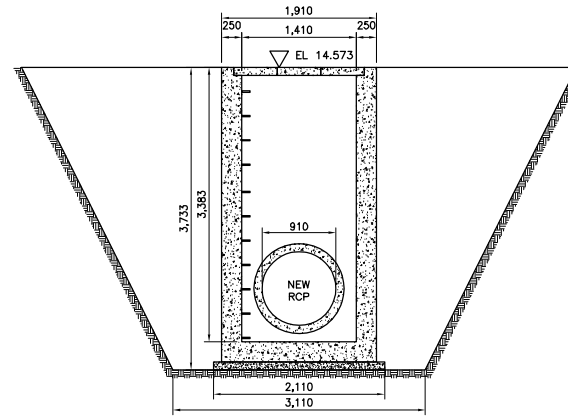
Manhole No.: ML 133C.5

Location: 16 + 030

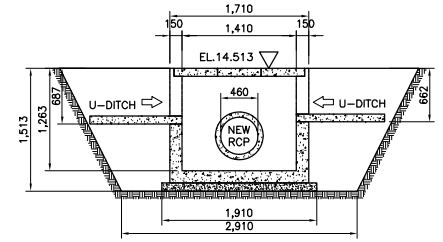
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|---|--|------------------------------|--|-------------------------------|
| 1. Excavation | | A1=5.22 A2=8.21 A3=2.80 A4=2.87 | 4.98 4.98 3.67 3.67 | 25.97 40.88 10.27 10.53 87.64 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 3.50 | 0.25 | 0.87 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.383 | 4.922 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=0.59 | 0.27 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.54 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.20 | 1.32 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.00020106 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.55 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.90 | | 0.099678 | m ³ |
| 12. Backfill | | | | 73.04 | m ³ |



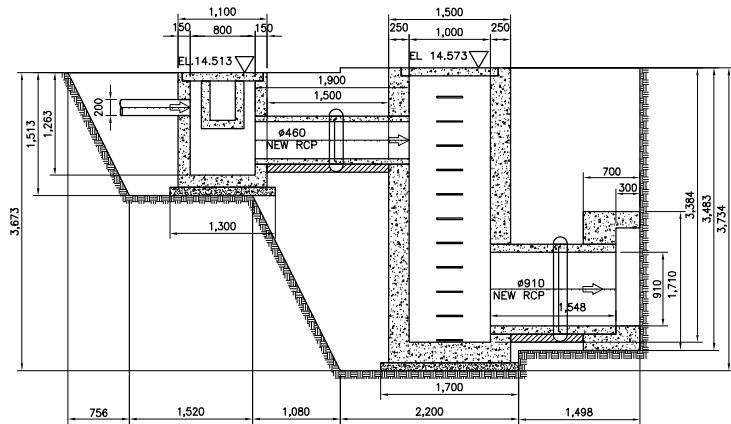
2 PLAN
SCALE A



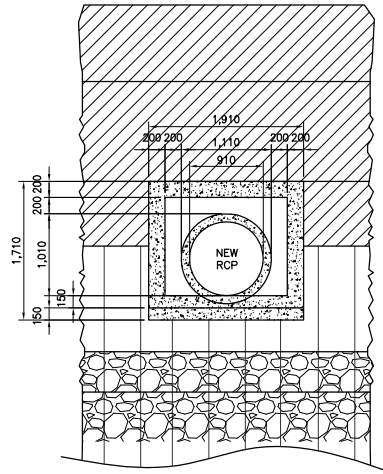
4 SECTION
SCALE A



6 SECTION
SCALE A



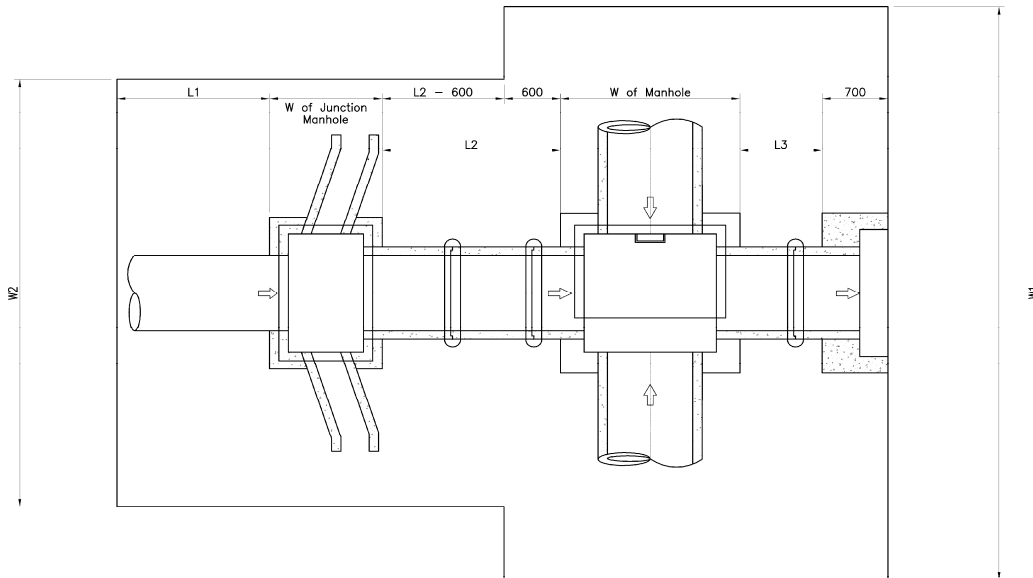
3 SECTION
SCALE A



5 ELEVATION
SCALE A

Clearing (Manhole 133C.5)

| | | |
|-----------------------|----------|---|
| L1 | 1.3565 m | |
| W of Junction Manhole | 1.1 m | $A_m=25.31 \text{ m}^2$ |
| L2 | 1.5 m | $A_{jb}=14.85 \text{ m}^2$ |
| W of Manhole | 1.5 m | $A_t=40.15 \text{ m}^2$ |
| L3 | 0.898 m | |
| W1 | 6.843 m | |
| W2 | 4.423 m | |



QUANTITIES OF MANHOLE

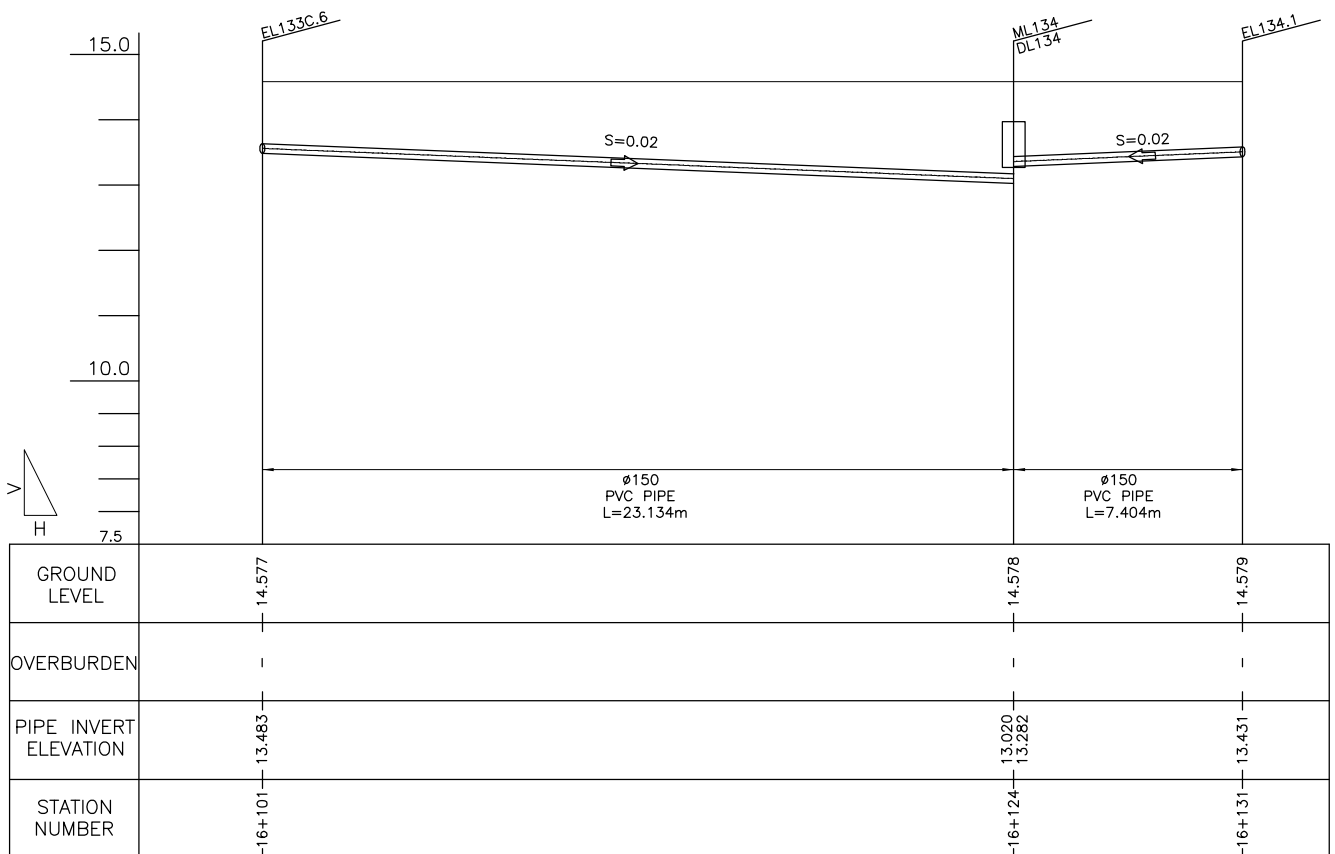
Manhole No.: ML 134

Location: 16 + 124

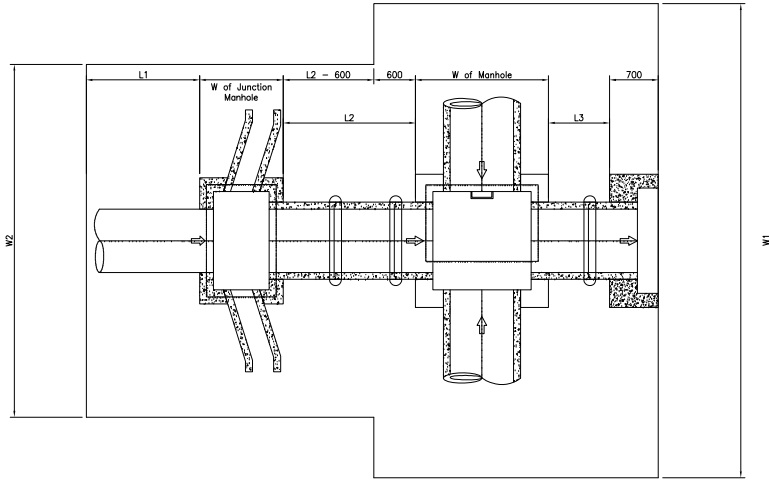
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---------------------------|---|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=5.23 A2=8.22 A3=2.37 A4=5.55 | 4.98 4.98 4.06 4.06 | 26.04 40.93 9.63 22.55 99.16 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 3.50 | 0.25 | 0.87 | m ³ |
| 4. Wall Manhole | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.387 | 4.928 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.17 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=0.70 | 0.49 | 0.25 | 0.12 | |
| Pipe hole on Wall C | DiaC=0.15 | 0.17 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.30 | 1.32 | 0.25 | 0.33 | |
| Net Wall Vol. | | | | 4.39 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.20 | 1.32 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=2.10 Lout=1.89 Win=1.70 Lin=1.39 DiaD=1.11 | Ain=3.96 Aout=2.35 Apipe=.97 | 0.7 0.3 0.4 | 2.77 0.71 0.39 1.68 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.55 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.296m | L=0.90 | | 0.11664 | m ³ |
| 12. Backfill | | | | 82.63 | m ³ |

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=31.15 | 6 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.15 | | | 4 | pc |



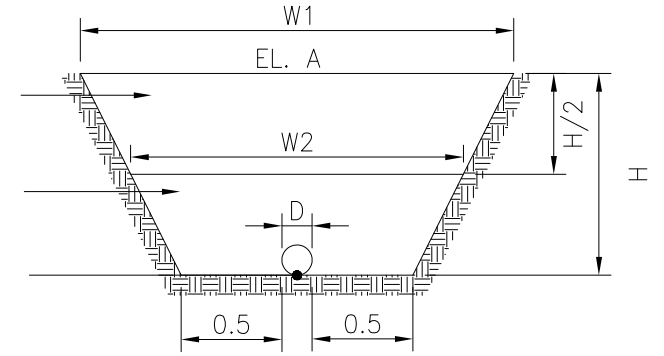
| | | |
|---------------------------------------|-------------------------------|-------------------------------|
| Clearing (Manhole 134) | | |
| L1 | 1.652 m | |
| W of Junction Manhole | 1.227 m | A1=25.33 m ² |
| L2 | 2.15 m | A2=22.65 m ² |
| W of Manhole | 1.5 m | At=47.98 m² |
| L3 | 0.9 m | |
| W1 | 6.847 m | |
| W2 | 5.114 m | |
| Clearing (Collector 133C.6 - 134) | | |
| W | 2.476 m | A=57.28 m² |
| L | 23.134 m | |
| Clearing (Collector 134.1 - 134) | | |
| W | 2.372 m | A=17.56 m² |
| L | 7.404 m | |
| (Collector PVC) Downstream 133C.6-134 | | |
| D | 0.15 m | Excavation |
| W1 | 2.71 m | A=3.01 m ² |
| W2 | 1.93 m | Backfill Zone B |
| H | 1.558 m | A=1.18 m ² |
| H/2 | 0.779 m | Backfill Zone C |
| EL. A | 14.578 m | A=1.81 m ² |
| EL. B | 13.02 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 2.24 m | A=1.86 m ² |
| W2 | 1.70 m | Backfill Zone B |
| H | 1.094 m | A=0.76 m ² |
| H/2 | 0.547 m | Backfill Zone C |
| EL. A | 14.577 m | A=1.08 m ² |
| EL. B | 13.483 m | |
| (Collector PVC) Downstream 134.1-134 | | |
| D | 0.15 m | Excavation |
| W1 | 2.45 m | A=2.33 m ² |
| W2 | 1.80 m | Backfill Zone B |
| H | 1.296 m | A=0.94 m ² |
| H/2 | 0.648 m | Backfill Zone C |
| EL. A | 14.578 m | A=1.38 m ² |
| EL. B | 13.282 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 2.30 m | A=1.98 m ² |
| W2 | 1.72 m | Backfill Zone B |
| H | 1.148 m | A=0.81 m ² |
| H/2 | 0.574 m | Backfill Zone C |
| EL. A | 14.579 m | A=1.15 m ² |
| EL. B | 13.431 m | |
| Collector PVC 133C.6-134 Volume | | |
| Excavation | 57.36235 m³ | |
| Backfill Zone B | 22.91924 m³ | |
| Backfill Zone C | 34.02612 m³ | |
| Collector PVC 134.1-134 Volume | | |
| Excavation | 16.27232 m³ | |
| Backfill Zone B | 6.587857 m³ | |
| Backfill Zone C | 9.551002 m³ | |



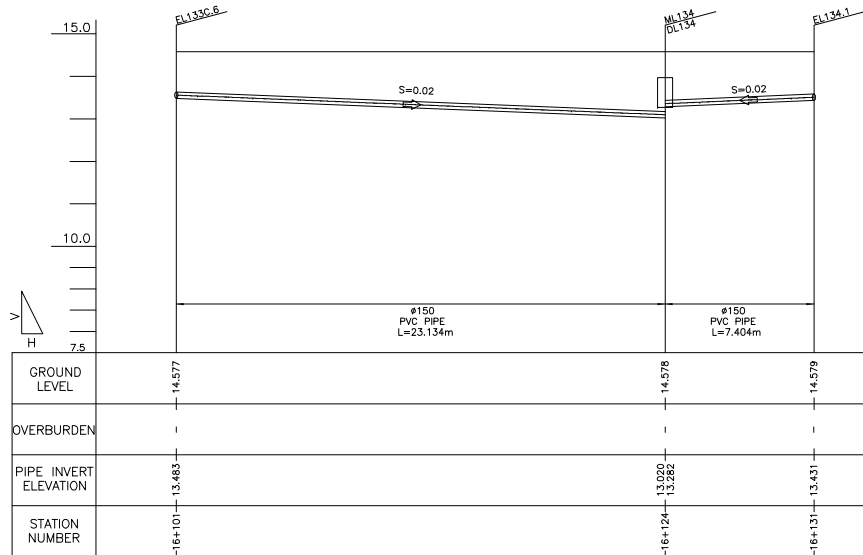
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.799

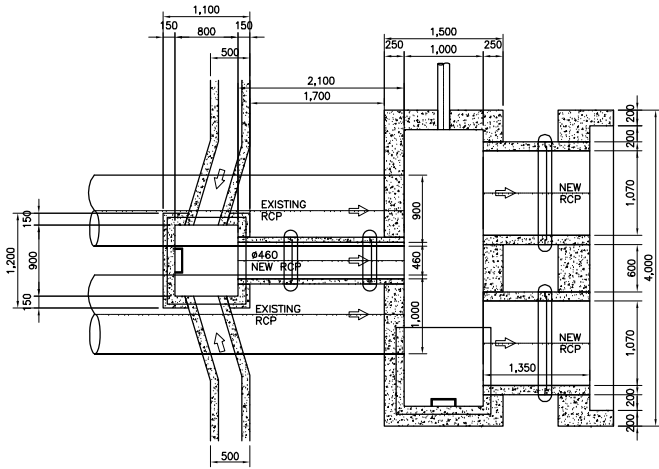


QUANTITIES OF MANHOLE

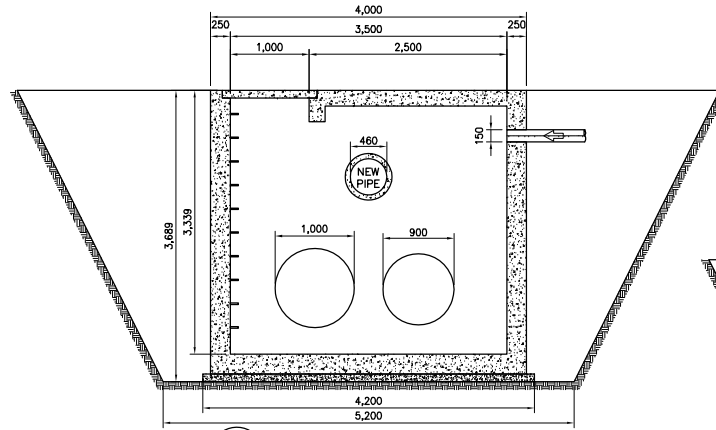
Manhole No.: ML 134.5

Location: 16 + 203

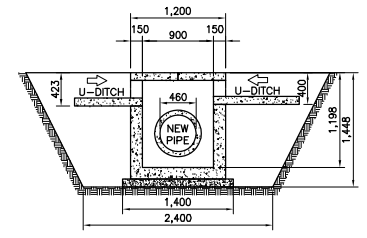
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---------------------------|---|---|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.47 A2=8.12 A3=2.30 A4=3.19 | 4.98 4.98 4.06 4.06 | 22.26 40.40 9.35 12.97 84.98 | m ³ |
| 2. Lev. Concrete | W=1.80 L=4.30 | 7.74 | 0.1 | 0.77 | m ³ |
| 3. Bottom Slab | W=1.60 L=4.10 | 11.81 | 0.3 | 3.54 | m ³ |
| 4. Wall Manhole | Wout=1.60 Lout=4.10 Win=1.00 Lin=3.50 | Aout=6.56 Ain=3.50 Anet=3.06 | 3.339 | 10.217 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.30 | 0.04 | |
| Pipe hole on Wall B | DiaB=0.59 | 2.42 | 0.30 | 0.60 | |
| Pipe hole on Wall C | DiaC=0.15 | 0.17 | 0.30 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.30 | 1.32 | 0.30 | 0.33 | |
| Net Wall Vol. | | | | 9.20 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.20 | 1.32 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=4.00 Lout=2.06 Win=3.60 Lin=1.39 DiaD=1.30 | Ain=8.22 Aout=4.99 Apipe=2.64 | 0.7 0.3 0.4 | 5.76 1.50 1.06 3.21 | m ³ |
| 9. Outlet Pipe | Dia=1.070m | L=1.40 | | 4 | pc |
| 10. Conc. Collar | D1=1.296m D2=1.476m | A1=1.32 A2=1.71 Anet=0.39 | 0.17 Qty=2 | 0.133239971 | m ³ |
| 11. Conc. Bedding | Dia=1.296m | L=1.40 | | 0.18144 | m ³ |
| 12. Backfill | | | | 70.82 | m ³ |



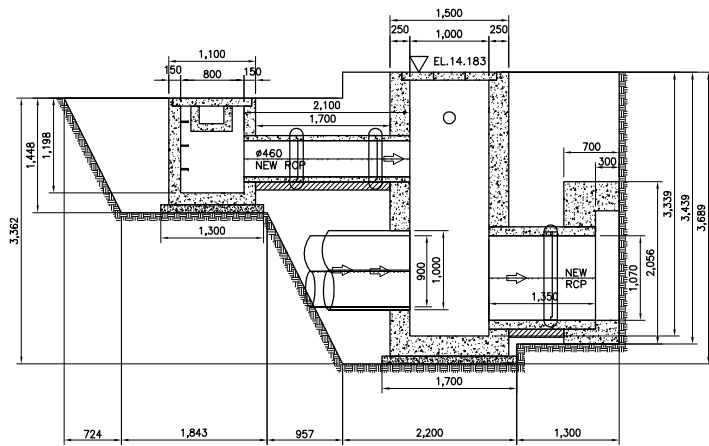
1 PLAN
SCALE A



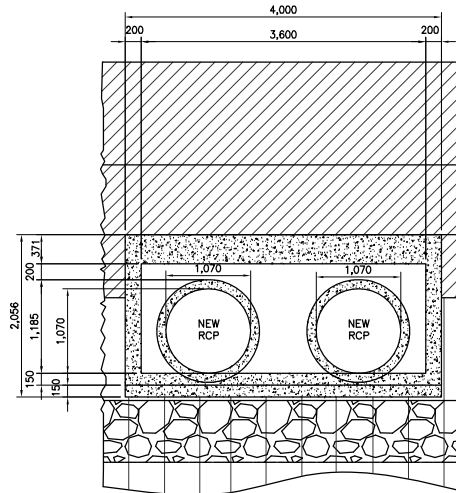
3 SECTION
SCALE A



4 SECTION (JB134.5)
SCALE A



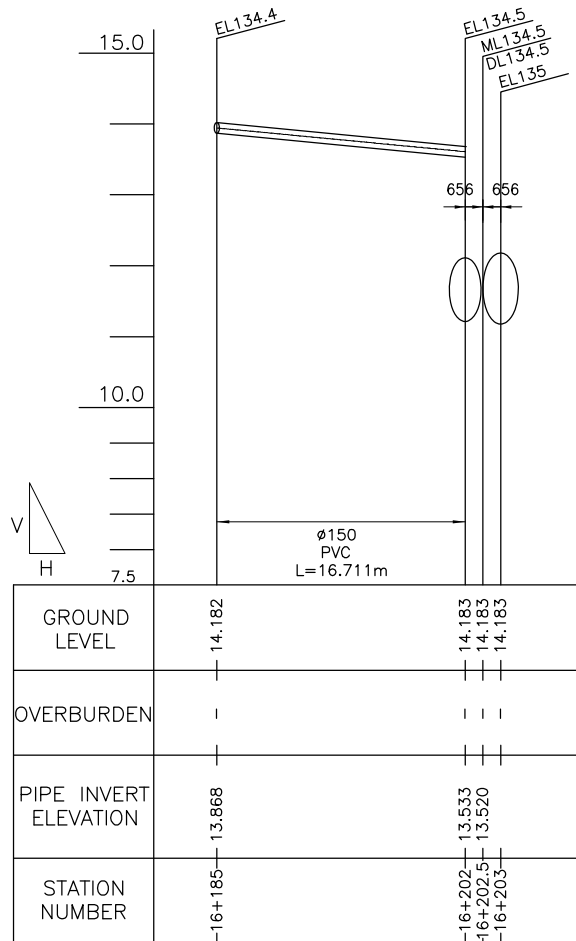
2 SECTION
SCALE A



5 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=17.05 | 3 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.15 | | | 2 | pc |



Clearing (Manhole 134.5)

| | | |
|-----------------------|---------|-------------------------------|
| L1 | 1.324 m | |
| W of Junction Manhole | 1.1 m | A1=31.11 m ² |
| L2 | 2.1 m | A2=15.10 m ² |
| W of Manhole | 1.5 m | At=46.21 m² |
| L3 | 0.7 m | |
| W1 | 8.889 m | |
| W2 | 3.848 m | |

Clearing (Collector 134.4 - 134.5)

| | | |
|---|----------|------------------------------|
| W | 1.632 m | A=27.27 m² |
| L | 16.711 m | |

(Collector PVC) Downstream 134.4-134.5

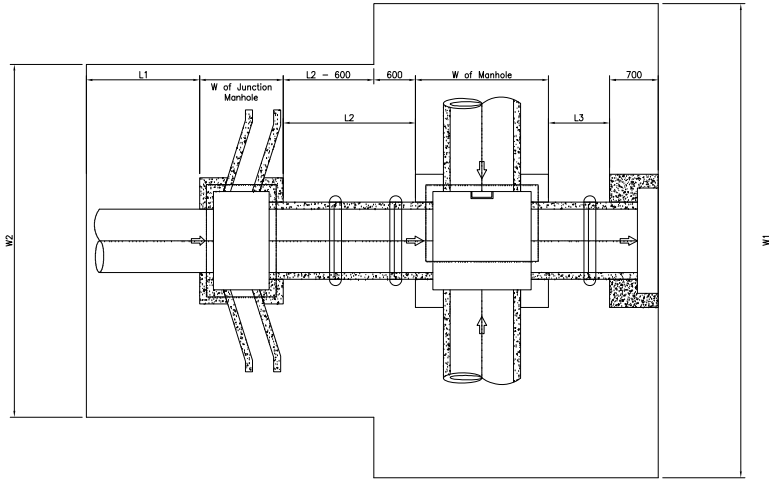
| | | |
|-------|----------|-----------------------|
| D | 0.15 m | Excavation |
| W1 | 1.80 m | A=0.96 m ² |
| W2 | 1.48 m | Backfill Zone B |
| H | 0.65 m | A=0.41 m ² |
| H/2 | 0.325 m | Backfill Zone C |
| EL. A | 14.183 m | A=0.53 m ² |
| EL. B | 13.533 m | |

(Collector PVC) Upstream

| | | |
|-------|----------|-----------------------|
| D | 0.15 m | Excavation |
| W1 | 1.46 m | A=0.41 m ² |
| W2 | 1.31 m | Backfill Zone B |
| H | 0.314 m | A=0.18 m ² |
| H/2 | 0.157 m | Backfill Zone C |
| EL. A | 14.182 m | A=0.22 m ² |
| EL. B | 13.868 m | |

Collector PVC 133C.6-134

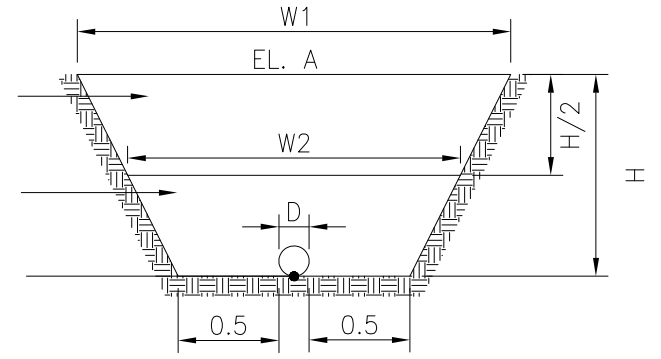
| | |
|-----------------|-------------------------------|
| Volume | |
| Excavation | 11.66871 m³ |
| Backfill Zone B | 4.978006 m³ |
| Backfill Zone C | 6.389494 m³ |



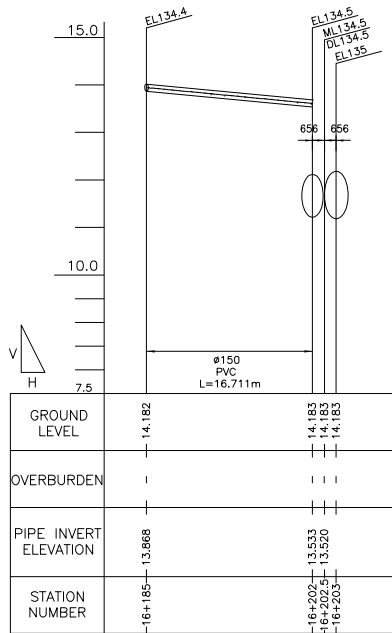
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.804

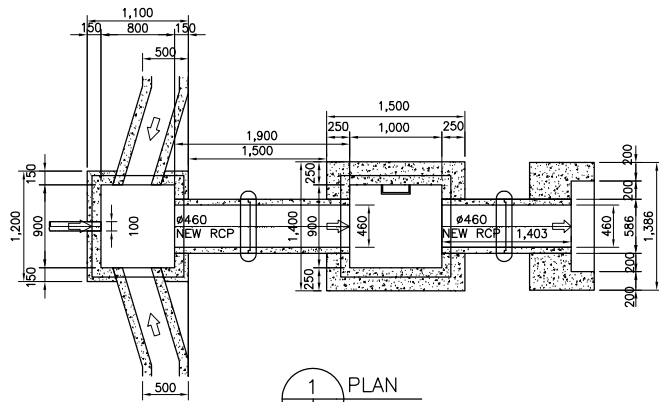


QUANTITIES OF MANHOLE

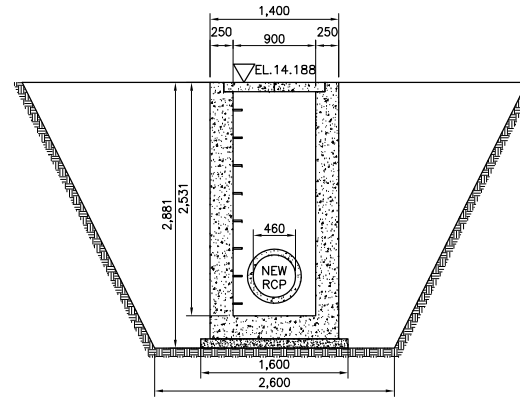
Manhole No.: ML 135.11

Location: 16 + 281

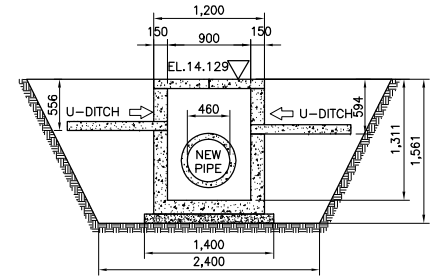
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|--|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.43 A2=6.34 A3=1.45 A4=3.65 | 4.04 4.04 3.18 3.18 | 13.85 25.61 4.61 11.60 55.67 | m ³ |
| 2. Lev. Concrete | W=1.70 L=1.60 | 2.72 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.40 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.40 Win=1.00 Lin=.90 | Aout=2.10 Ain=0.90 Anet=1.20 | 2.511 | 3.013 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=0.59 | 0.27 | 0.25 | 0.07 | |
| Net Wall Vol. | | | | 2.87 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.20 | 1.32 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.39 Lout=1.24 Win=0.99 Lin=.72 DiaD=0.59 | Ain=1.72 Aout=0.71 Apipe=.27 | 0.7 0.25 0.45 | 1.21 0.18 0.12 0.91 | m ³ |
| 9. Outlet Pipe | Dia=.460m | L=1.40 | | 2 | pc |
| 10. Conc. Collar | D1=.586m D2=.766m | A1=0.27 A2=0.46 Anet=0.19 | 0.17 Qty=1 | 0.032492864 | m ³ |
| 12. Conc. Bedding | Dia=.590m | L=0.70 | | 0.041477 | m ³ |
| 14. Backfill | | | | 46.39 | m ³ |



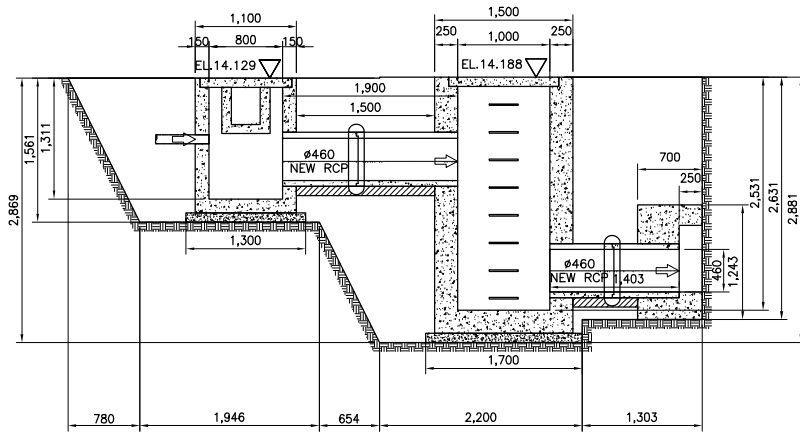
1 PLAN
SCALE A



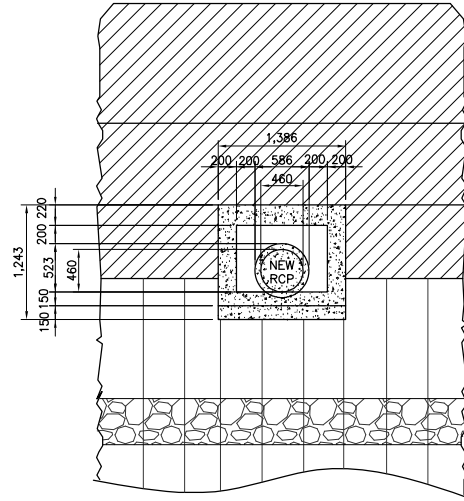
3 SECTION
SCALE B



5 SECTION
SCALE B



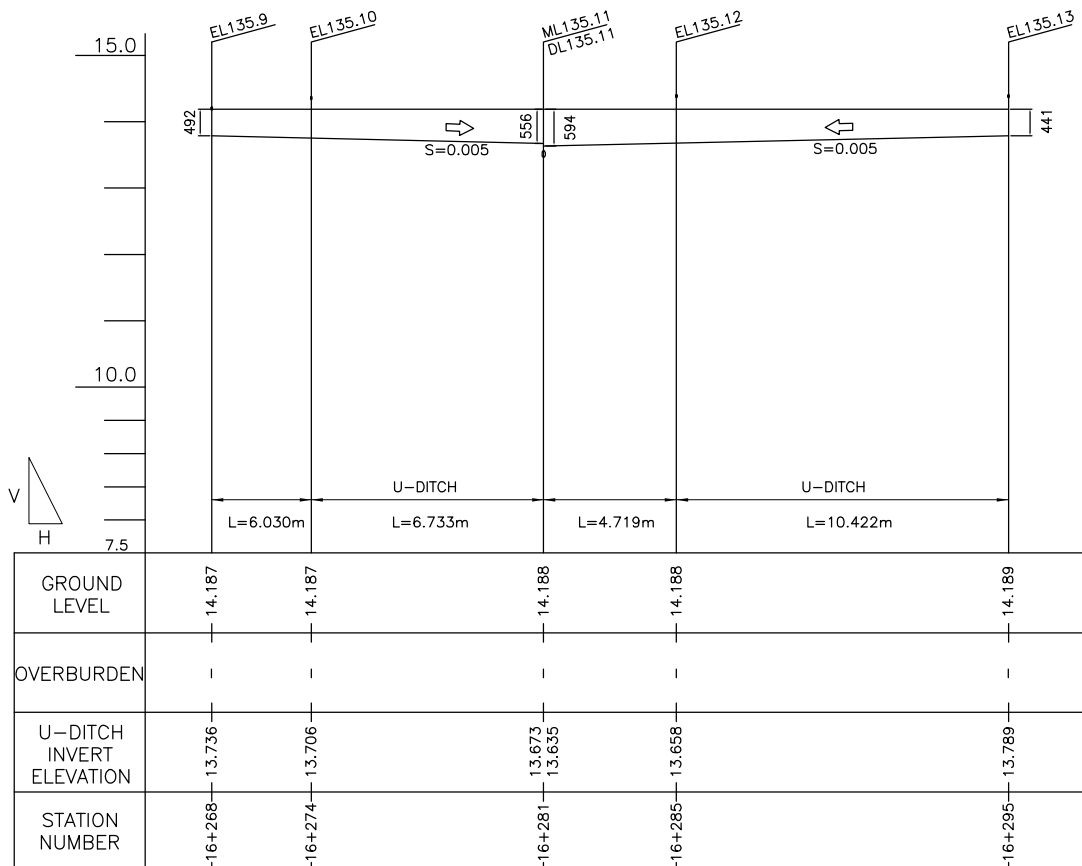
2 SECTION
SCALE B



4 ELEVATION
SCALE B

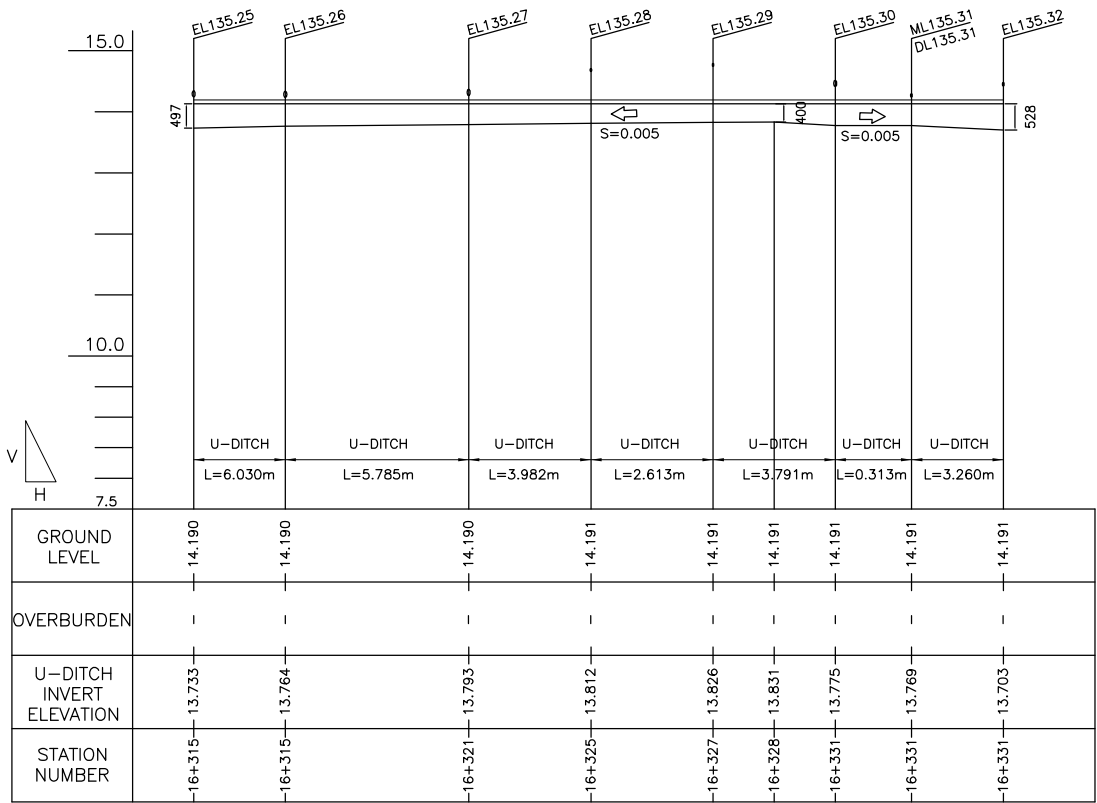
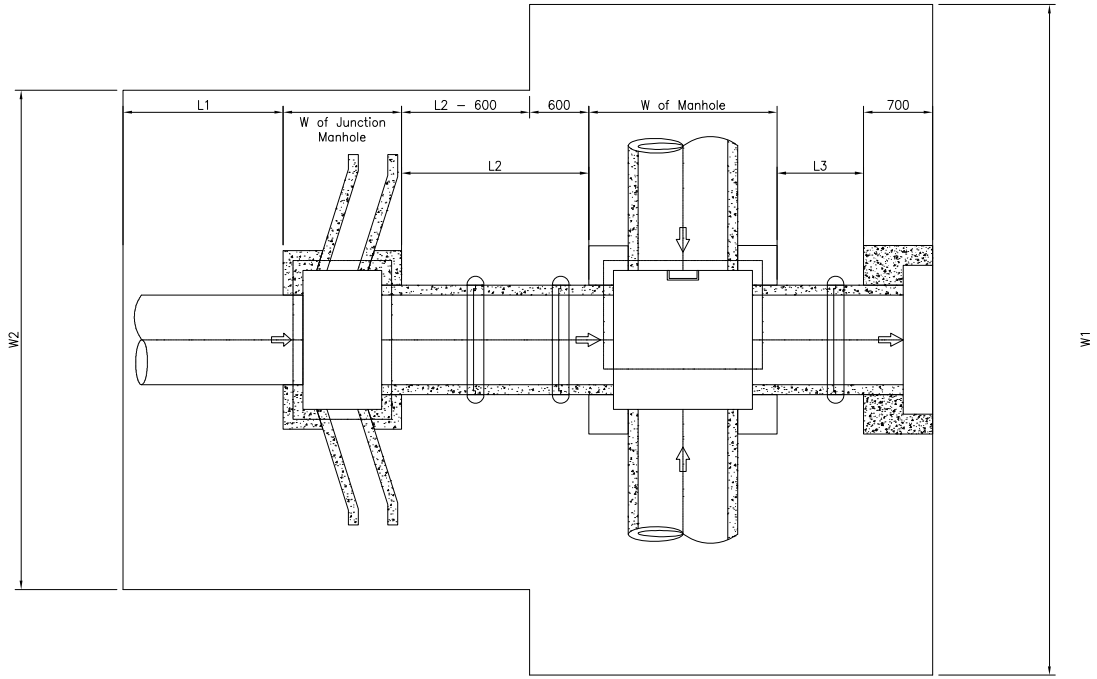
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|---------------------|----------------------|------------|----------------|---------------|----------------|
| 1. U - Ditch | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 28.04352 | 1.402176 | m ³ |
| Wall | W=.524m L=12.763m | 14.5232795 | 0.1 | 1.45232795 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 27.904 | 1.3952 | m ³ |
| 2. Formworks | | | | 29.75 | m3 |



2 PROFILE
 SCALE B

| | | |
|--|-------------------------------|-------------------------------|
| Clearing (Manhole 135.31) | | |
| L1 | 1.4565 m | |
| W of Junction Manhole | 1.1 m | Am=20.85 m ² |
| L2 | 1.5 m | Ajb=14.22 m ² |
| W of Manhole | 1.5 m | At=35.07 m² |
| L3 | 0.704 m | |
| W1 | 5.951 m | |
| W2 | 4.113 m | |
| Clearing (U - Ditch 135.30 - 135.32) | | |
| W | 2.174 m | A=7.77 m² |
| L | 3.573 m | |
| Clearing (U - Ditch 135.30 - 135.25) | | |
| W | 2.1585 m | A=47.92 m² |
| L | 22.201 m | |
| (U - Ditch) Downstream 135.30 - 135.32 | | |
| d | 0.488 m | Excavation |
| D | 0.638 m | A=1.22 m ² |
| D/2 | 0.319 m | Backfill Zone B |
| W1 | 2.238 m | A=0.40 m ² |
| W2 | 1.919 m | Backfill Zone C |
| EL. A | 14.191 m | A=0.50 m ² |
| EL. B | 13.703 m | |
| (U - Ditch) Upstream | | |
| d | 0.36 m | Excavation |
| D | 0.51 m | A=0.95 m ² |
| D/2 | 0.255 m | Backfill Zone B |
| W1 | 2.11 m | A=0.31 m ² |
| W2 | 1.855 m | Backfill Zone C |
| EL. A | 14.191 m | A=0.38 m ² |
| EL. B | 13.831 m | |
| (U - Ditch) Downstream 135.30 - 135.25 | | |
| d | 0.457 m | Excavation |
| D | 0.607 m | A=1.16 m ² |
| D/2 | 0.3035 m | Backfill Zone B |
| W1 | 2.207 m | A=0.37 m ² |
| W2 | 1.9035 m | Backfill Zone C |
| EL. A | 14.19 m | A=0.47 m ² |
| EL. B | 13.733 m | |
| (U - Ditch) Upstream | | |
| d | 0.36 m | Excavation |
| D | 0.51 m | A=0.95 m ² |
| D/2 | 0.255 m | Backfill Zone B |
| W1 | 2.11 m | A=0.31 m ² |
| W2 | 1.855 m | Backfill Zone C |
| EL. A | 14.191 m | A=0.38 m ² |
| EL. B | 13.831 m | |
| U - Ditch 135.30 - 135.32 | | |
| Excavation | 3.896756 m³ | |
| Backfill Zone B | 1.265408 m³ | |
| Backfill Zone C | 1.582816 m³ | |
| U - Ditch 135.30 - 135.25 | | |
| Excavation | 23.44405 m³ | |
| Backfill Zone B | 7.618642 m³ | |
| Backfill Zone C | 9.483225 m³ | |



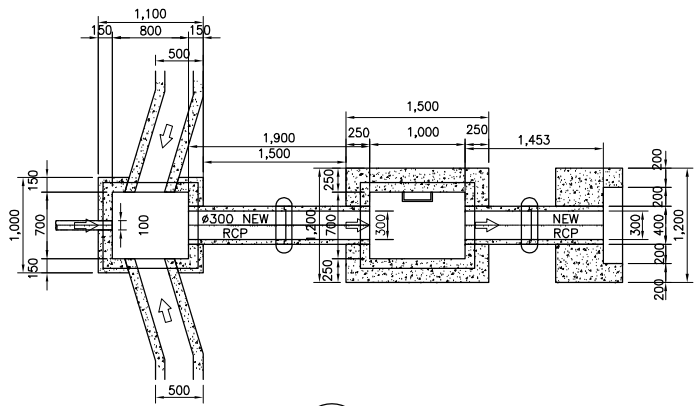
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

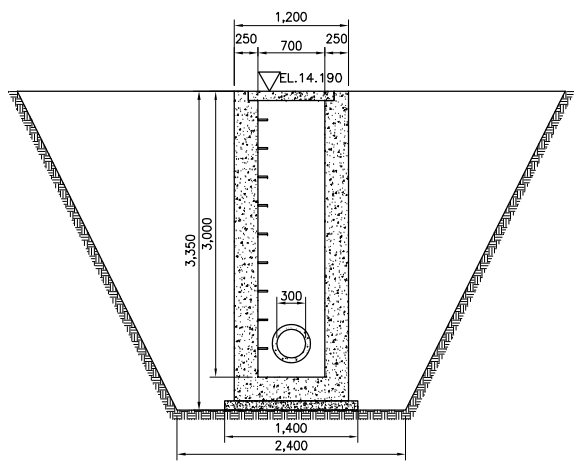
Manhole No.: ML 135.22

Location: 16 + 309

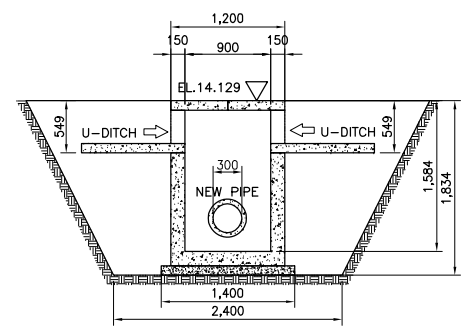
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|--|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.04 A2=7.37 A3=1.86 A4=4.27 | 4.08 4.08 3.32 3.32 | 16.46 30.03 6.19 14.18 66.86 | m ³ |
| 2. Lev. Concrete | W=1.70 L=1.60 | 2.72 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.40 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.40 Win=1.00 Lin=.90 | Aout=2.10 Ain=0.90 Anet=1.20 | 2.515 | 3.018 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=0.59 | 0.27 | 0.25 | 0.07 | |
| Net Wall Vol. | | | | 2.87 | m ³ |
| 5. Conc. Cover | L=0.90 W=1.20 | 1.08 | 0.1 | 0.11 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.20 Lout=1.71 Win=0.80 Lin=.55 DiaD=0.40 | Ain=2.05 Aout=0.44 Apipe=.13 | 0.7 0.2 0.5 | 1.44 0.09 0.06 1.29 | m ³ |
| 9. Outlet Pipe | Dia=.460m | L=1.45 | | 2 | pc |
| 10. Conc. Collar | D1=.590m D2=.770m | A1=0.27 A2=0.47 Anet=0.19 | 0.17 Qty=1 | 0.03268513 | m ³ |
| 11. Conc. Bedding | Dia=.000m Dia=.590m | L=0.70 | | 0 | m ³ |
| 12. Backfill | 3 | | | 55.71 | m ³ |



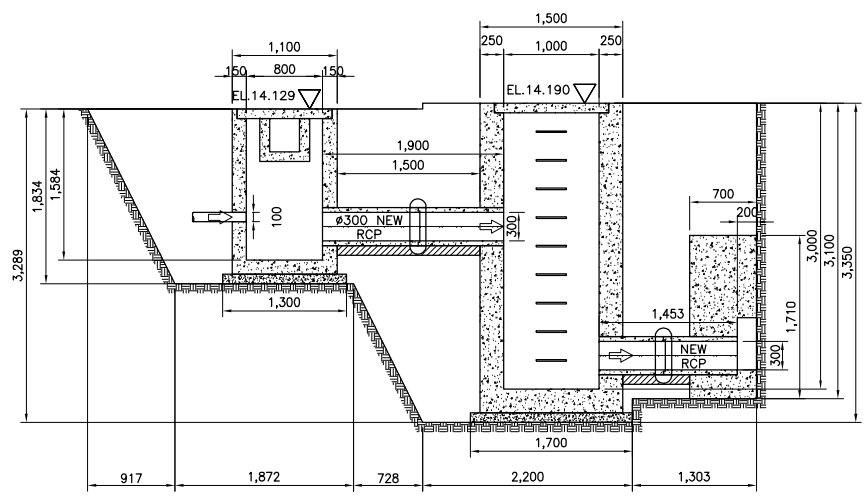
1 PLAN
SCALE A



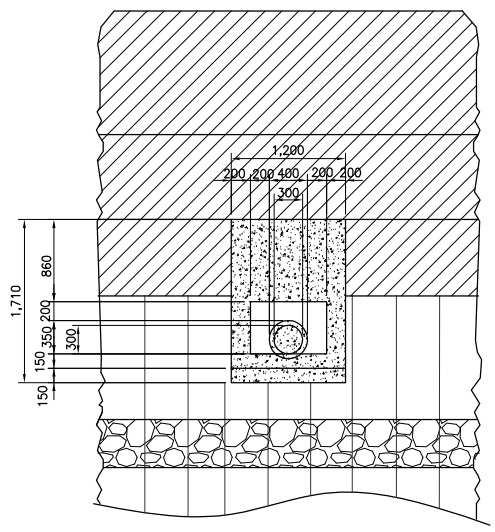
3 SECTION
SCALE B



5 SECTION
SCALE B



2 SECTION
SCALE B

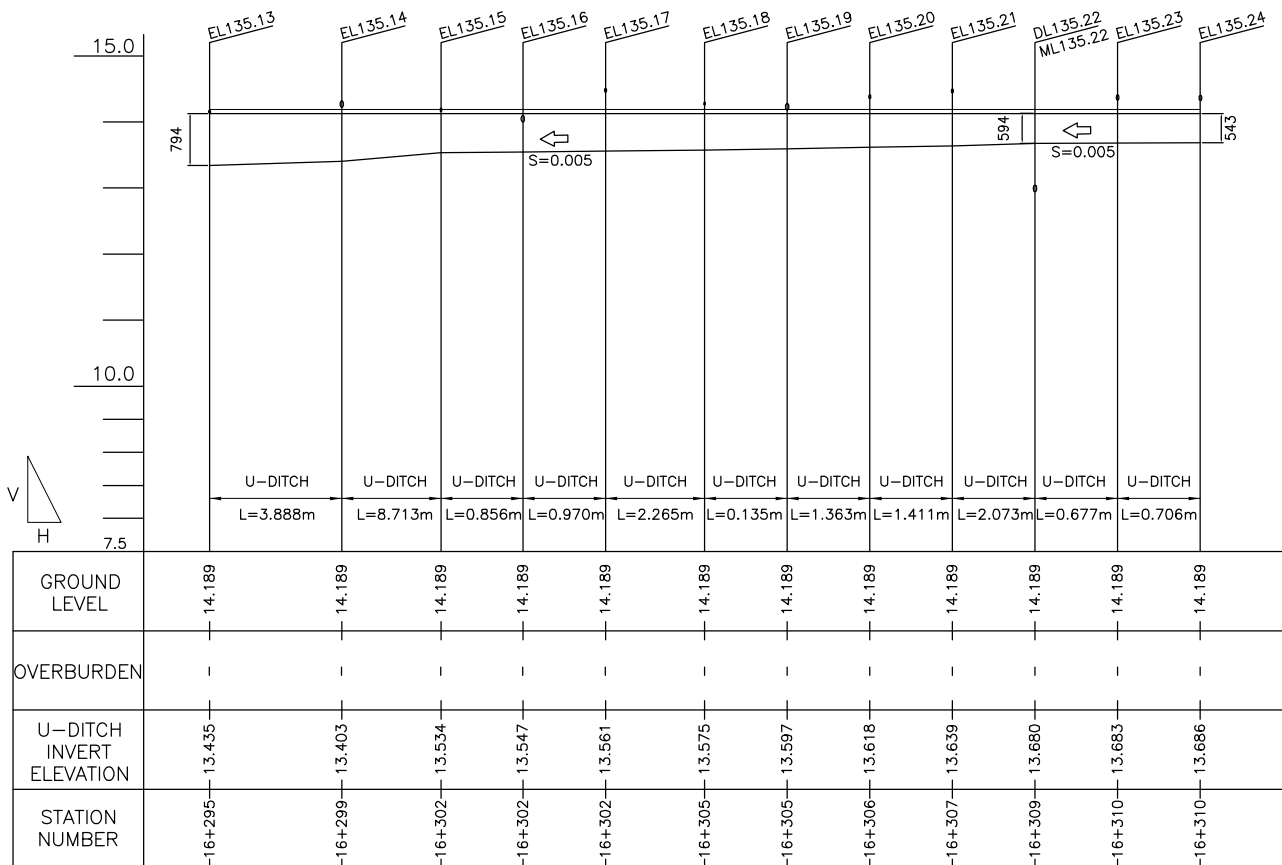


4 ELEVATION
SCALE B

3.811

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|---------------------|---------------------|-------|----------------|---------------|----------------|
| 1. U - Ditch | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 23.172285 | 1.16 | m ³ |
| Wall | W=.569m L=1.383m | 15.83 | 0.1 | 1.58 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 23.057 | 1.15 | m ³ |
| 2. Formworks | | | | 27.26 | m3 |



2 PROFILE
SCALE B

Clearing (Manhole 135.22)

| | | |
|-----------------------|---------|-------------------------------|
| L1 | 1.517 m | |
| W of Junction Manhole | 1.1 m | Am=20.14 m ² |
| L2 | 1.5 m | Ajb=14.89 m ² |
| W of Manhole | 1.5 m | At=35.03 m² |
| L3 | 0.703 m | |
| W1 | 5.75 m | |
| W2 | 4.234 m | |

Clearing (U - Ditch 135.24 - 135.13)

| | | |
|---|----------|------------------------------|
| W | 2.3785 m | A=54.84 m² |
| L | 23.057 m | |

(U - Ditch) Downstream 135.24 - 135.13

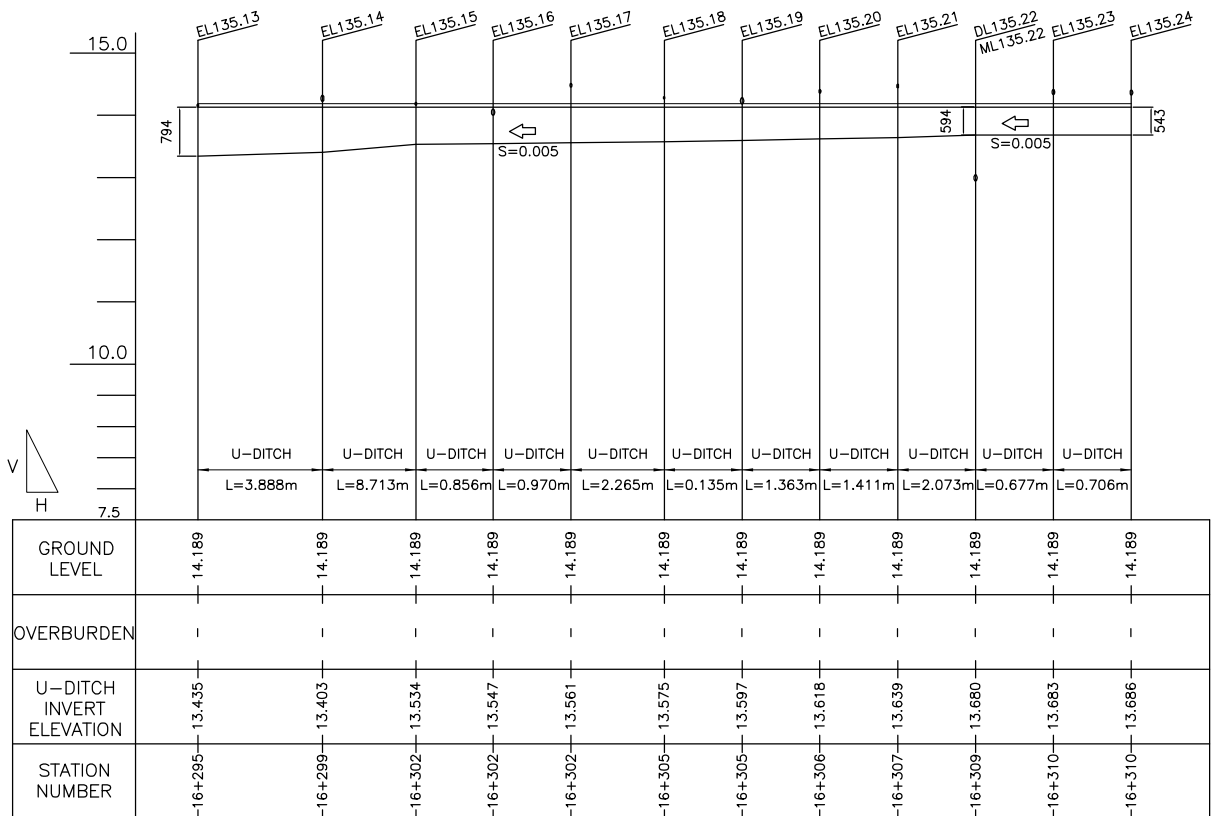
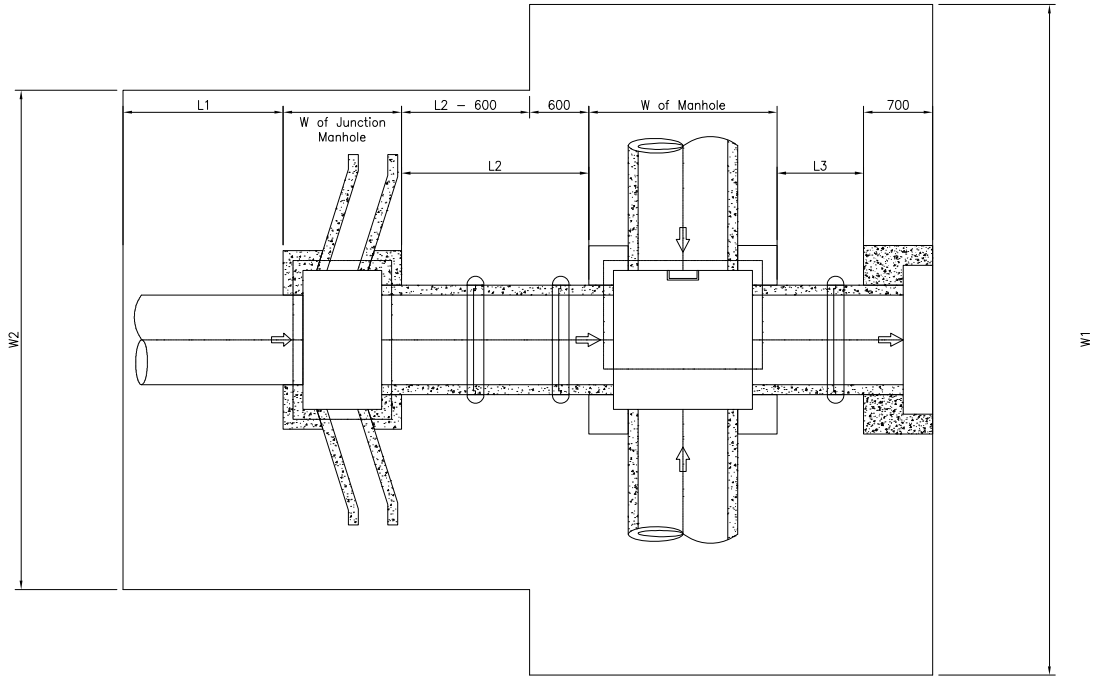
| | | |
|-------|----------|-----------------------|
| d | 0.754 m | Excavation |
| D | 0.904 m | A=1.86 m ² |
| D/2 | 0.452 m | Backfill Zone B |
| W1 | 2.504 m | A=0.59 m ² |
| W2 | 2.052 m | Backfill Zone C |
| EL. A | 14.189 m | A=0.80 m ² |
| EL. B | 13.435 m | |

(U - Ditch) Upstream

| | | |
|-------|----------|-----------------------|
| d | 0.503 m | Excavation |
| D | 0.653 m | A=1.26 m ² |
| D/2 | 0.3265 m | Backfill Zone B |
| W1 | 2.253 m | A=0.41 m ² |
| W2 | 1.9265 m | Backfill Zone C |
| EL. A | 14.189 m | A=0.52 m ² |
| EL. B | 13.686 m | |

U - Ditch 135.24 - 135.13

| | |
|-----------------|-------------------------------|
| Excavation | 36.06781 m³ |
| Backfill Zone B | 11.60703 m³ |
| Backfill Zone C | 15.3251 m³ |



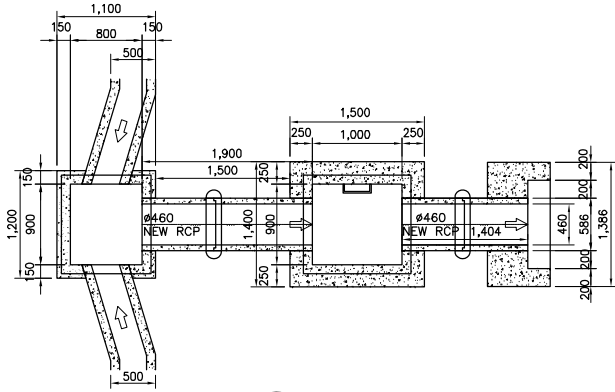
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

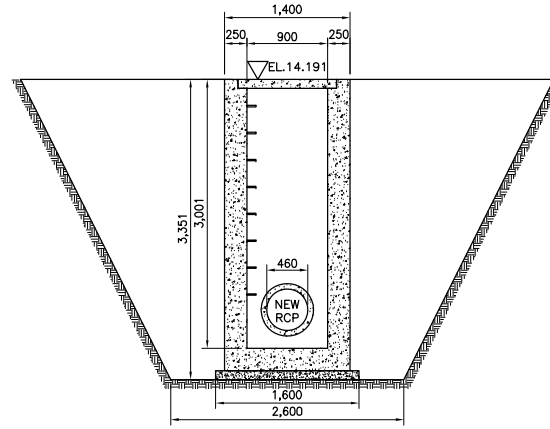
Manhole No.: ML 135.31

Location: 16 + 331

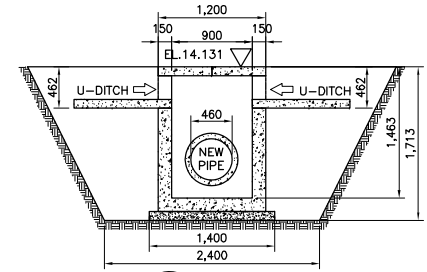
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|--|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.04 A2=7.37 A3=1.97 A4=3.84 | 4.28 4.28 3.26 3.26 | 17.29 31.52 6.43 12.49 67.73 | m ³ |
| 2. Lev. Concrete | W=1.70 L=1.60 | 2.72 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.40 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.40 Win=1.00 Lin=.90 | Aout=2.10 Ain=0.90 Anet=1.20 | 2.514 | 3.017 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.59 | 0.27 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.59 | 0.27 | 0.25 | 0.07 | |
| Net Wall Vol. | | | | 2.88 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.20 | 1.32 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.39 Lout=1.71 Win=0.99 Lin=.72 DiaD=0.59 | Ain=2.37 Aout=0.71 Apipe=.27 | 0.7 0.2 0.5 | 1.66 0.14 0.13 1.38 | m ³ |
| 9. Outlet Pipe | Dia=.460m | L=1.40 | | 2 | pc |
| 10. Conc. Collar | D1=.586m D2=.766m | A1=0.27 A2=0.46 Anet=0.19 | 0.17 Qty=1 | 0.032492864 | m ³ |
| 11. Conc. Bedding | Dia=.590m | L=0.70 | | 0.041536 | m ³ |
| 12. Backfill | | | | 56.44 | m ³ |



1 PLAN
SCALE A

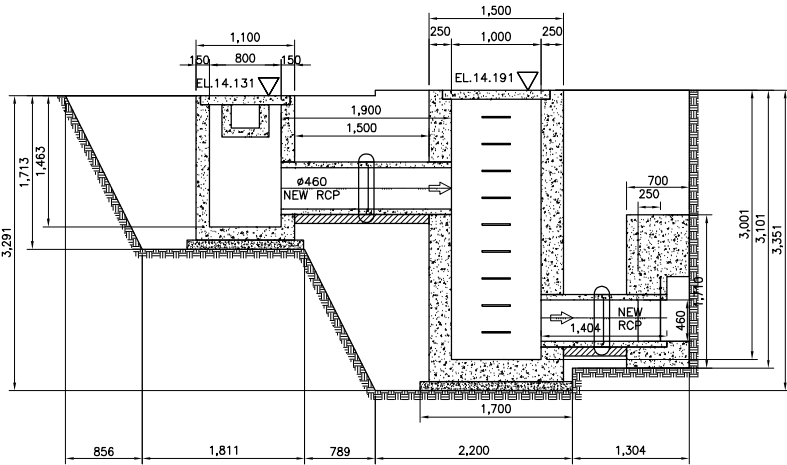


3 SECTION
SCALE B

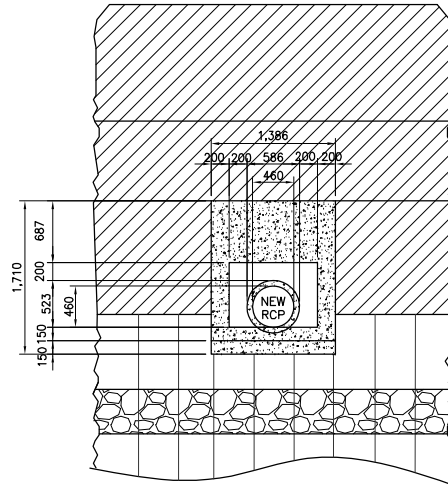


5 SECTION
SCALE B

3 816



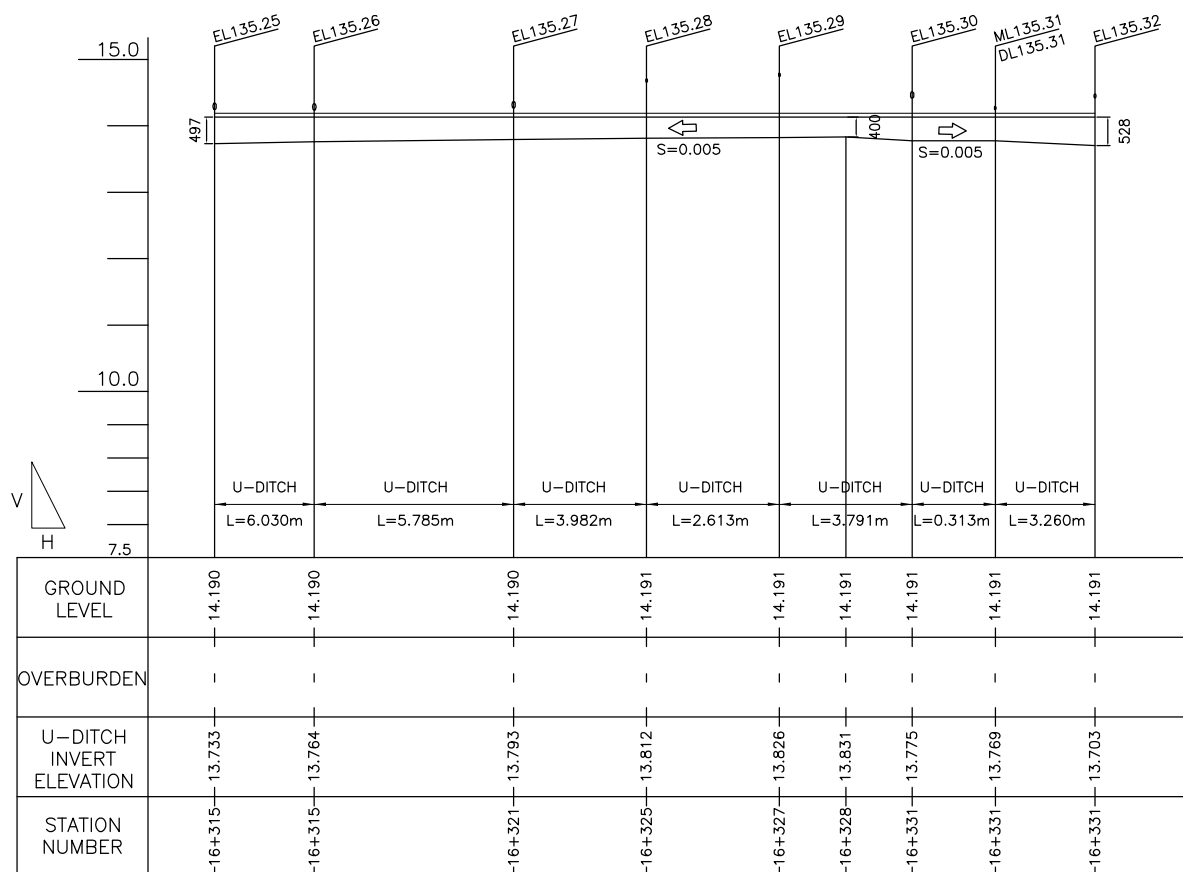
2 SECTION
SCALE B



4 ELEVATION
SCALE B

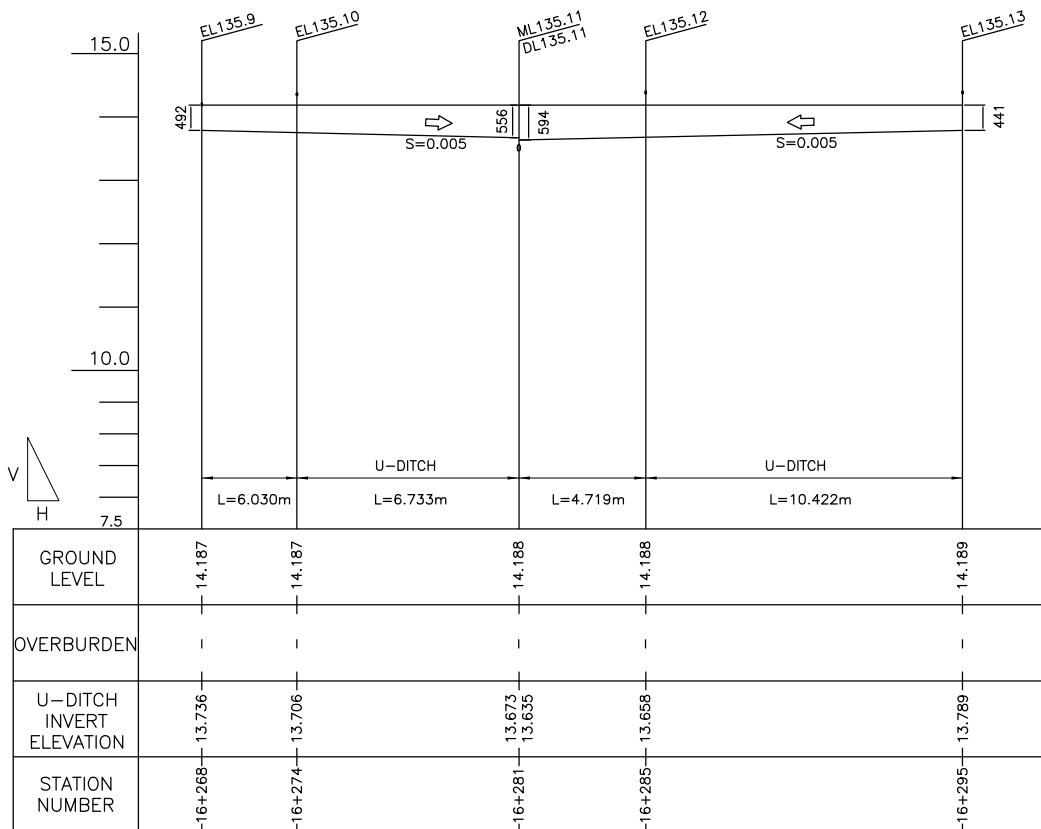
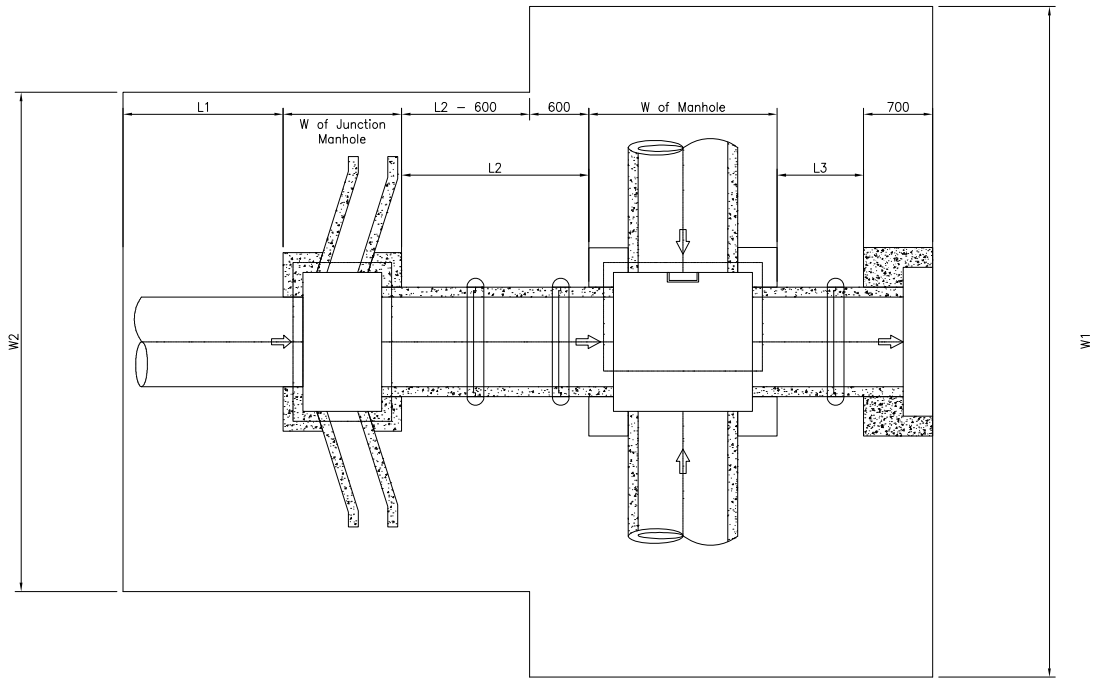
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|---------------------|---------------------|-------|----------------|---------------|----------------|
| 1. U - Ditch | | | | | |
| Bottom | W=.500m L=.100m | 0.05 | 25.90 | 1.30 | m ³ |
| Wall | W=.449m L=20.31m | 11.64 | 0.1 | 1.16 | m ³ |
| Top | W=.500m L=.100m | 0.05 | 25.774 | 1.29 | m ³ |
| 2. Formworks | | | | 26.24 | m3 |



2 PROFILE
 SCALE B

| | | |
|--|-------------------------------|-------------------------------|
| Clearing (Manhole 135.11) | | |
| L1 | 1.3805 m | |
| W of Junction Manhole | 1.1 m | Am=19.20 m ² |
| L2 | 1.5 m | Ajb=13.39 m ² |
| W of Manhole | 1.5 m | At=32.59 m² |
| L3 | 0.703 m | |
| W1 | 5.481 m | |
| W2 | 3.961 m | |
| Clearing (U - Ditch 135.9 - 135.11) | | |
| W | 2.233 m | A=28.50 m² |
| L | 12.763 m | |
| Clearing (U - Ditch 135.13 - 135.11) | | |
| W | 2.2265 m | A=33.71 m² |
| L | 15.141 m | |
| (U - Ditch) Downstream 135.9 - 135.11 | | |
| d | 0.515 m | Excavation |
| D | 0.665 m | A=1.29 m ² |
| D/2 | 0.3325 m | Backfill Zone B |
| W1 | 2.265 m | A=0.42 m ² |
| W2 | 1.9325 m | Backfill Zone C |
| EL. A | 14.188 m | A=0.53 m ² |
| EL. B | 13.673 m | |
| (U - Ditch) Upstream | | |
| d | 0.451 m | Excavation |
| D | 0.601 m | A=1.14 m ² |
| D/2 | 0.3005 m | Backfill Zone B |
| W1 | 2.201 m | A=0.37 m ² |
| W2 | 1.9005 m | Backfill Zone C |
| EL. A | 14.187 m | A=0.47 m ² |
| EL. B | 13.736 m | |
| (U - Ditch) Downstream 135.13 - 135.11 | | |
| d | 0.553 m | Excavation |
| D | 0.703 m | A=1.37 m ² |
| D/2 | 0.3515 m | Backfill Zone B |
| W1 | 2.303 m | A=0.44 m ² |
| W2 | 1.9515 m | Backfill Zone C |
| EL. A | 14.188 m | A=0.57 m ² |
| EL. B | 13.635 m | |
| (U - Ditch) Upstream | | |
| d | 0.4 m | Excavation |
| D | 0.55 m | A=1.03 m ² |
| D/2 | 0.275 m | Backfill Zone B |
| W1 | 2.15 m | A=0.34 m ² |
| W2 | 1.875 m | Backfill Zone C |
| EL. A | 14.189 m | A=0.42 m ² |
| EL. B | 13.789 m | |
| U - Ditch 135.9 - 135.11 | | |
| Excavation | 15.56735 m³ | |
| Backfill Zone B | 5.045609 m³ | |
| Backfill Zone C | 6.397918 m³ | |
| U - Ditch 135.13 - 135.11 | | |
| Excavation | 18.28405 m³ | |
| Backfill Zone B | 5.924918 m³ | |
| Backfill Zone C | 7.516412 m³ | |



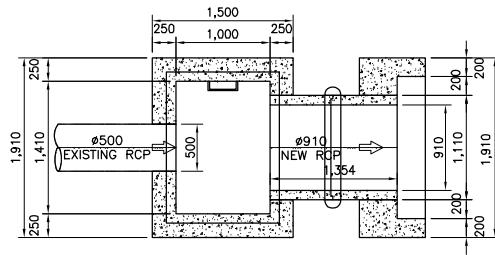
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

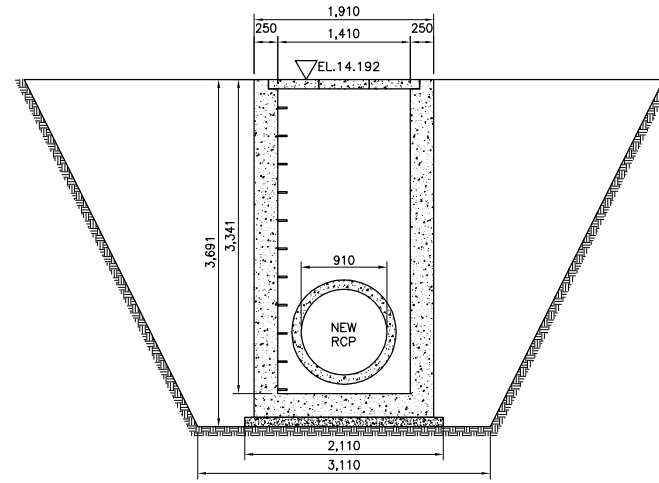
Manhole No.: ML 135.33

Location: 16 + 348

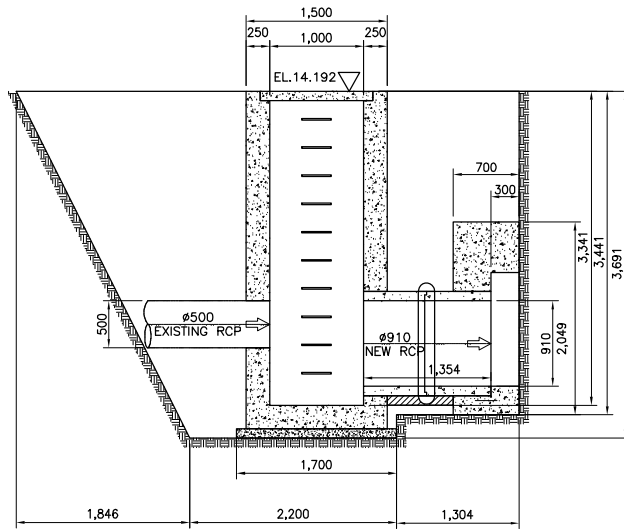
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.49 A2=11.53 | 4.96 4.96 | 22.24 57.12 | 79.36 m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.341 | 4.861 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.64 | 0.32 | 0.25 | 0.08 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.54 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=2.05 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.91 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.74 0.55 0.39 1.80 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.35 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.70 | | 0.078144 | m ³ |
| 12. Backfill | | | | 66.13 | m ³ |



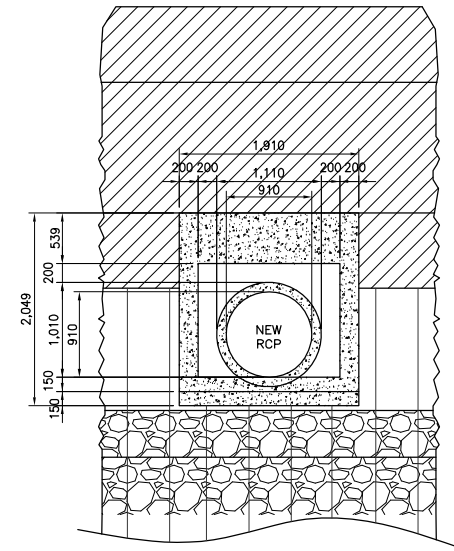
2 PLAN
SCALE A



4 SECTION
SCALE A



3 SECTION
SCALE A



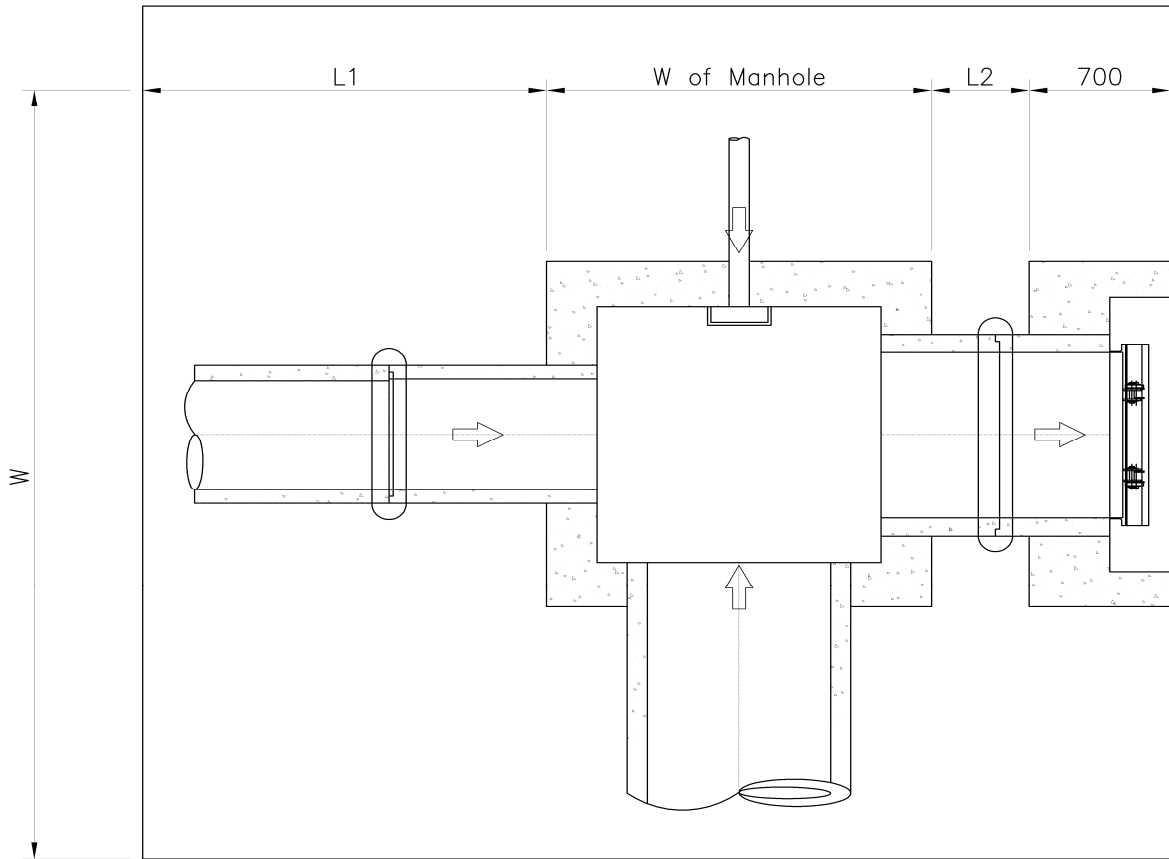
5 ELEVATION
SCALE A

3.821

Clearing (Manhole 135.33)

| | |
|--------------|----------|
| L1 | 2.4455 m |
| W of Manhole | 1.5 m |
| L2 | 0.704 m |
| W | 6.801 m |

A=36.38 m²



QUANTITIES OF MANHOLE

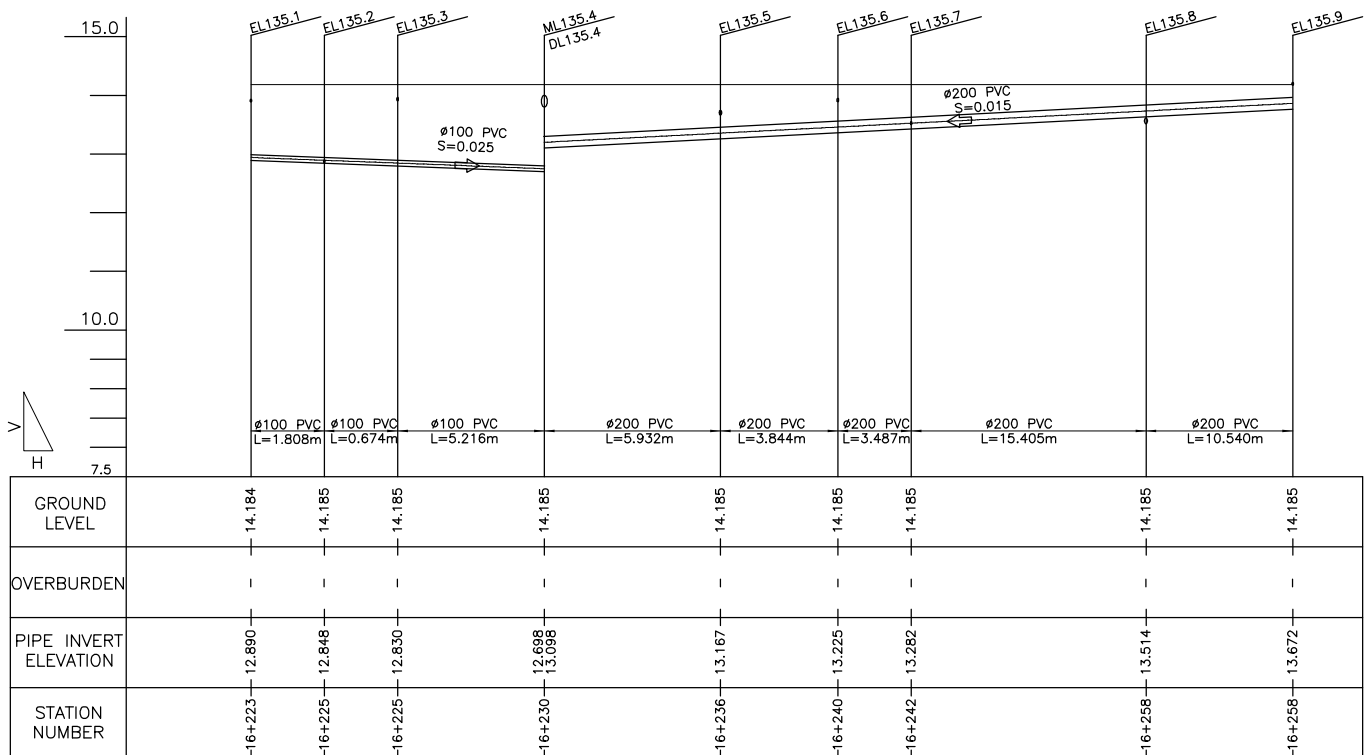
Manhole No.: ML 135.4

Location: 16 + 230

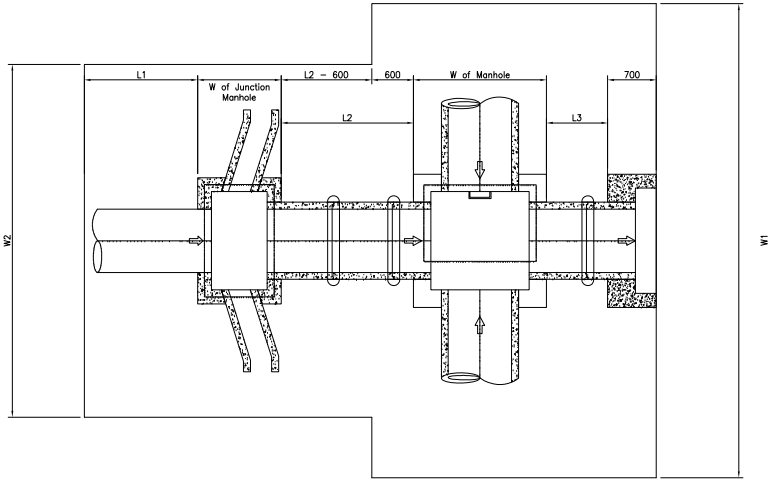
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---------------------------|---|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.02 A2=7.36 A3=2.18 A4=3.32 | 4.78 4.78 3.03 3.03 | 19.24 35.19 6.59 10.05 71.08 | m ³ |
| 2. Lev. Concrete | W=1.80 L=2.21 | 3.98 | 0.1 | 0.40 | m ³ |
| 3. Bottom Slab | W=1.60 L=2.01 | 3.85 | 0.25 | 0.96 | m ³ |
| 4. Wall Manhole | Wout=1.60 Lout=2.01 Win=1.00 Lin=1.41 | Aout=3.22 Ain=1.41 Anet=1.81 | 2.995 | 5.409 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.20 | 0.18 | 0.25 | 0.05 | |
| Pipe hole on Wall B | DiaB=0.59 | 0.27 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=0.10 | 0.16 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 5.01 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.20 | 1.32 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.35 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.70 | | 0.0777 | m ³ |
| 12. Backfill | | | | 59.23 | m ³ |

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.20 | | L=39.80 | 7 | pc |
| | | | | | |
| 1. Collector Pipe (PVC) | Dia=0.10 | | L=7.89 | 2 | pc |
| | | | | | |
| 2. PVC coupling | Dia=0.20 | | | 6 | pc |



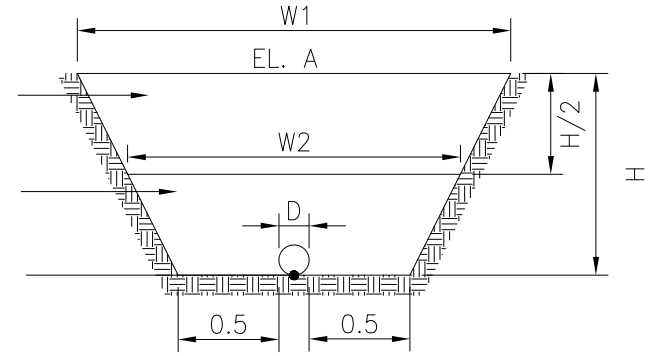
| | | |
|--|-------------------------------|-------------------------------|
| Clearing (Manhole 135.4) | | |
| L1 | 1.3875 m | |
| W of Junction Manhole | 1.1 m | A1=22.59 m ² |
| L2 | 1.9 m | A2=14.45 m ² |
| W of Manhole | 1.5 m | At=37.04 m² |
| L3 | 0.7 m | |
| W1 | 6.455 m | |
| W2 | 3.815 m | |
| Clearing (Collector 135.1 - 135.4) | | |
| W | 2.4905 m | A=19.17 m² |
| L | 7.698 m | |
| Clearing (Collector 135.9 - 135.4) | | |
| W | 2 m | A=78.42 m² |
| L | 39.208 m | |
| (Collector PVC) Downstream 135.1-135.4 | | |
| D | 0.1 m | Excavation |
| W1 | 2.59 m | A=2.74 m ² |
| W2 | 1.84 m | Backfill Zone B |
| H | 1.487 m | A=1.09 m ² |
| H/2 | 0.7435 m | Backfill Zone C |
| EL. A | 14.185 m | A=1.65 m ² |
| EL. B | 12.698 m | |
| (Collector PVC) Upstream | | |
| D | 0.1 m | Excavation |
| W1 | 2.39 m | A=2.26 m ² |
| W2 | 1.75 m | Backfill Zone B |
| H | 1.294 m | A=0.91 m ² |
| H/2 | 0.647 m | Backfill Zone C |
| EL. A | 14.184 m | A=1.34 m ² |
| EL. B | 12.89 m | |
| (Collector PVC) Downstream 135.9-135.4 | | |
| D | 0.2 m | Excavation |
| W1 | 2.29 m | A=1.90 m ² |
| W2 | 1.74 m | Backfill Zone B |
| H | 1.087 m | A=0.77 m ² |
| H/2 | 0.5435 m | Backfill Zone C |
| EL. A | 14.185 m | A=1.10 m ² |
| EL. B | 13.098 m | |
| (Collector PVC) Upstream | | |
| D | 0.2 m | Excavation |
| W1 | 1.71 m | A=0.75 m ² |
| W2 | 1.46 m | Backfill Zone B |
| H | 0.513 m | A=0.31 m ² |
| H/2 | 0.2565 m | Backfill Zone C |
| EL. A | 14.185 m | A=0.41 m ² |
| EL. B | 13.672 m | |
| Collector PVC 135.1-135.4 Volume | | |
| Excavation | 19.73363 m³ | |
| Backfill Zone B | 7.888646 m³ | |
| Backfill Zone C | 11.78301 m³ | |
| Collector PVC 135.9-135.4 Volume | | |
| Excavation | 52.57802 m³ | |
| Backfill Zone B | 21.44534 m³ | |
| Backfill Zone C | 29.88244 m³ | |



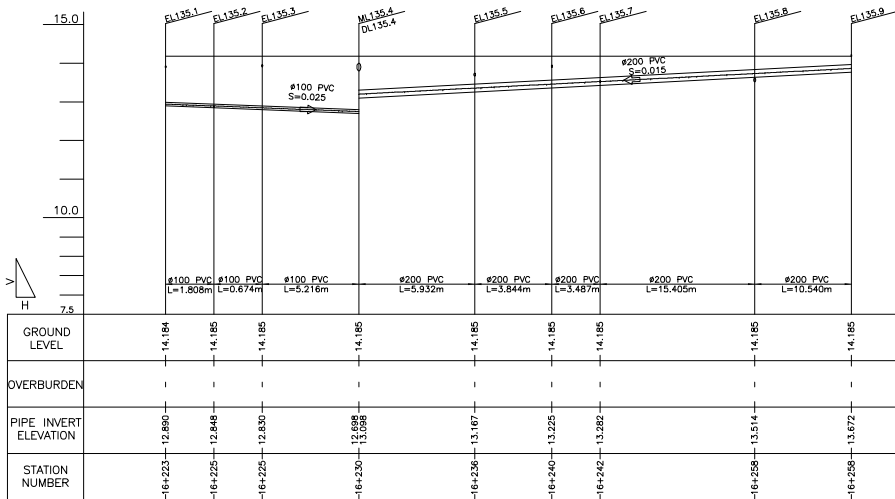
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.827

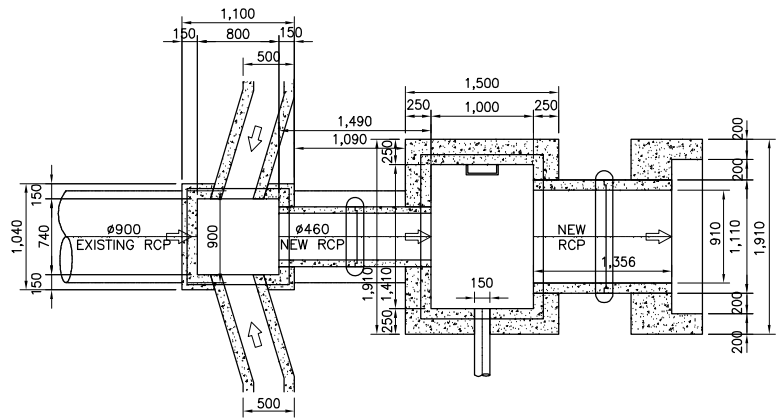


QUANTITIES OF MANHOLE

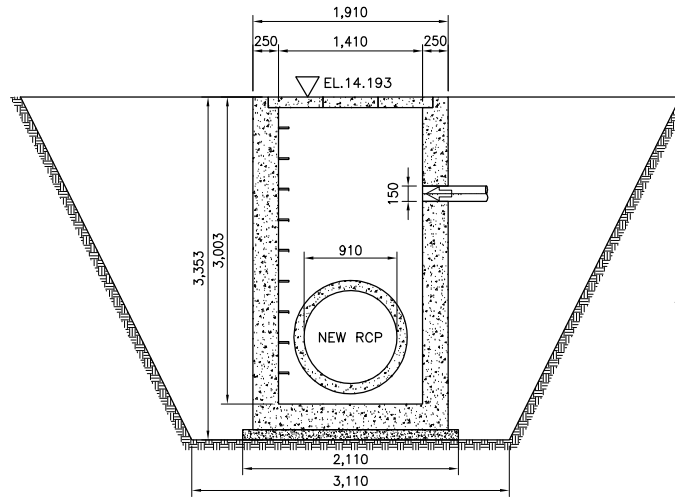
Manhole No.: ML 136

Location: 16 + 362

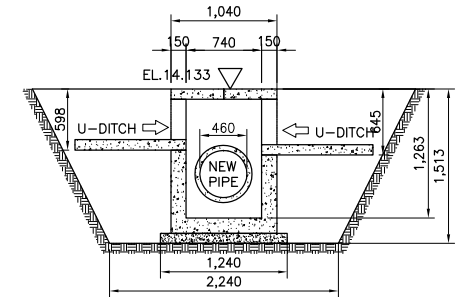
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|---|--|------------------------------|--|-------------------------------|
| 1. Excavation | | A1=4.05 A2=7.38 A3=2.14 A4=2.54 | 4.79 4.79 3.00 3.00 | 19.38 35.31 6.41 7.61 68.71 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.003 | 4.369 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.15 | 0.17 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=1.10 | 0.95 | 0.25 | 0.24 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.81 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.25 0.45 | 2.29 0.46 0.44 1.39 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.36 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.71 | | 0.078366 | m ³ |
| 12. Backfill | | | | 57.26 | m ³ |



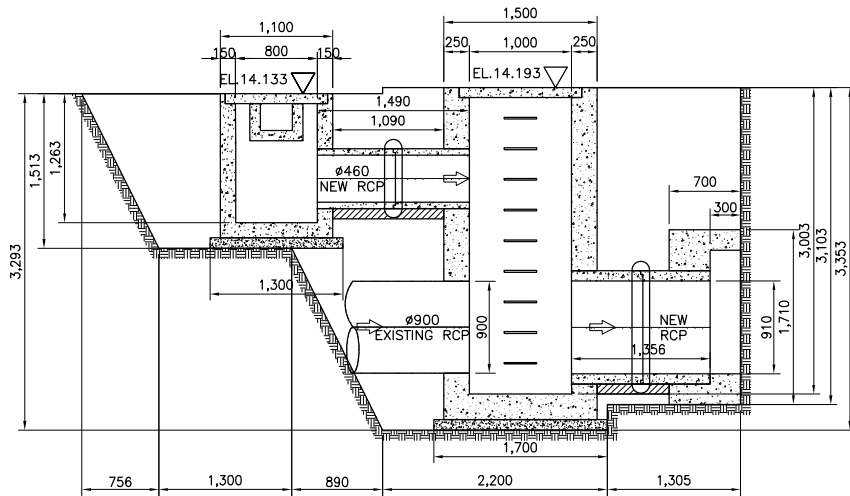
1 PLAN



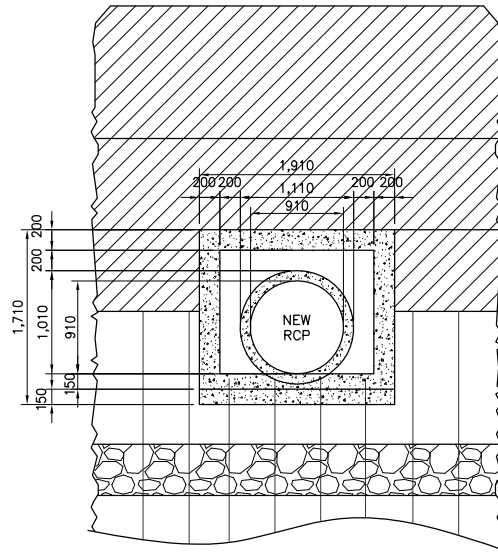
3 SECTION
SCALE B



5 SECTION
SCALE B



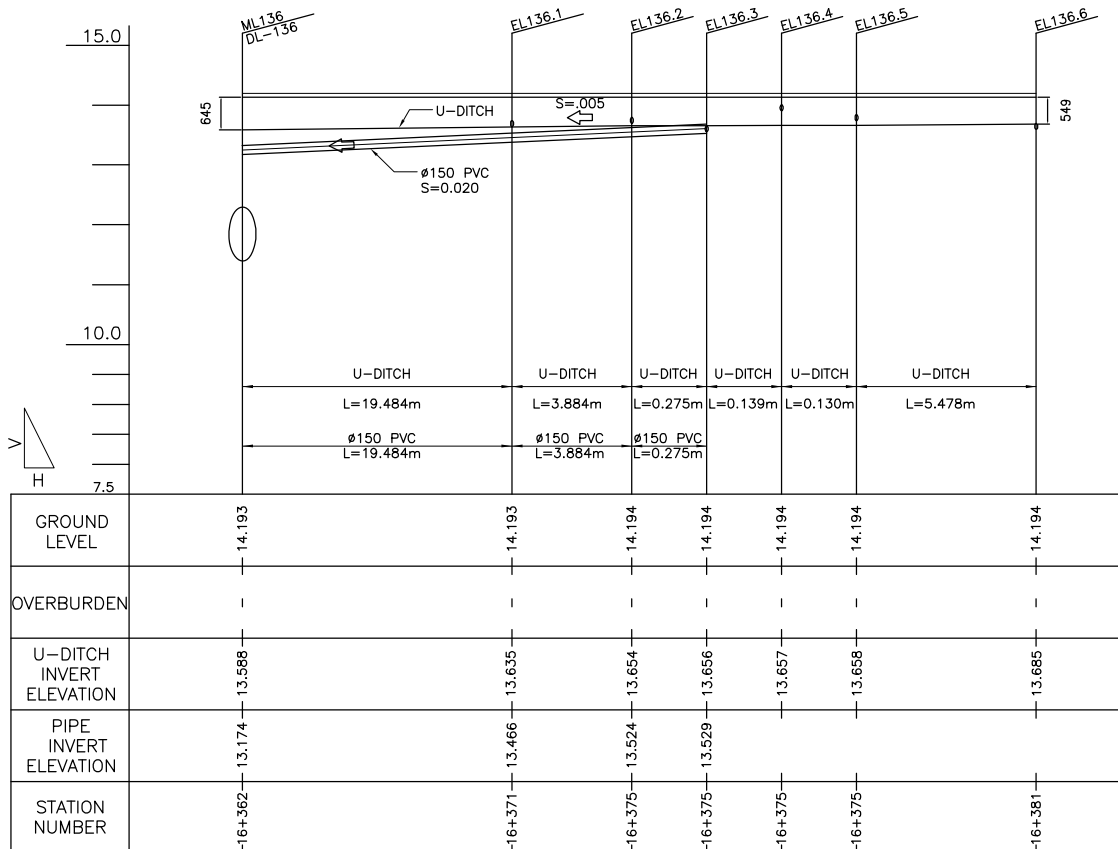
2 SECTION
SCALE A



4 ELEVATION
SCALE B

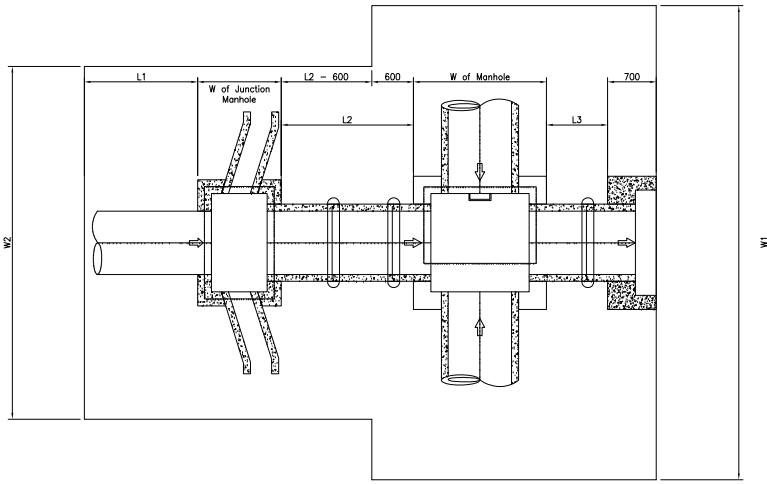
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|-------------------|-------|----------------|---------------|----------------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=24.12 | 5 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=.150m | | | 4 | pc |
| 3. U - Ditch | | | | | |
| Bottom | W=0.50 L=0.10 | 0.05 | 29.54 | 1.48 | m ³ |
| Wall | W=0.60 L=29.39 | 17.55 | 0.1 | 1.75 | m ³ |
| Top | W=0.50 L=0.10 | 0.05 | 29.39 | 1.47 | m ³ |
| 2. Formworks | | | | 32.91 | m3 |



2 PROFILE
SCALE B

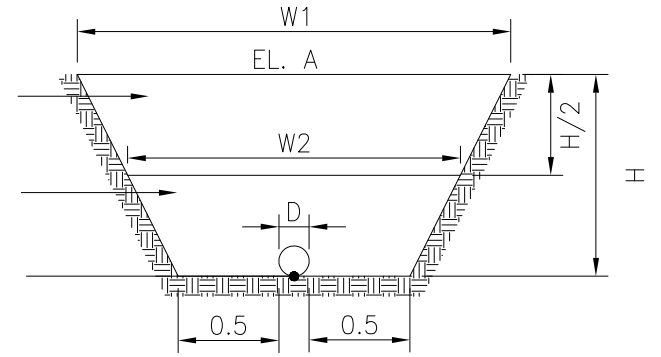
| | | |
|--|-------------------------------|-------------------------------|
| Clearing (Manhole 136) | | |
| L1 | 1.3565 m | |
| W of Junction Manhole | 1.1 m | Am=22.66 m ² |
| L2 | 1.09 m | Ajb=11.06 m ² |
| W of Manhole | 1.5 m | At=33.72 m² |
| L3 | 0.706 m | |
| W1 | 6.463 m | |
| W2 | 3.753 m | |
| Clearing (Collector 136.3 - 136) | | |
| W | 1.992 m | A=47.10 m² |
| L | 23.643 m | |
| Clearing (U - Ditch 136.6 - 136.3) | | |
| W | 2.2735 m | A=13.07 m² |
| L | 5.747 m | |
| (Collector PVC) Downstream 136.3 - 136 | | |
| D | 0.15 m | Excavation |
| W1 | 2.17 m | A=1.69 m ² |
| W2 | 1.66 m | Backfill Zone B |
| H | 1.019 m | A=0.70 m ² |
| H/2 | 0.5095 m | Backfill Zone C |
| EL. A | 14.193 m | A=0.62 m ² |
| EL. B | 13.174 m | |
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 1.82 m | A=0.99 m ² |
| W2 | 1.48 m | Backfill Zone B |
| H | 0.665 m | A=0.42 m ² |
| H/2 | 0.3325 m | Backfill Zone C |
| EL. A | 14.194 m | A=0.20 m ² |
| EL. B | 13.529 m | |
| (U - Ditch) Downsteram 136.6 - 136.3 | | |
| d | 0.538 m | Excavation |
| D | 0.688 m | A=1.34 m ² |
| D/2 | 0.344 m | Backfill Zone B |
| W1 | 2.288 m | A=0.43 m ² |
| W2 | 1.944 m | Backfill Zone C |
| EL. A | 14.194 m | A=0.56 m ² |
| EL. B | 13.656 m | |
| (U - Ditch) Upstream | | |
| d | 0.509 m | Excavation |
| D | 0.659 m | A=1.27 m ² |
| D/2 | 0.3295 m | Backfill Zone B |
| W1 | 2.259 m | A=0.41 m ² |
| W2 | 1.9295 m | Backfill Zone C |
| EL. A | 14.194 m | A=0.53 m ² |
| EL. B | 13.685 m | |
| Collector PVC 136.3 - 136 Volume | | |
| Excavation | 32.27779 m³ | |
| Backfill Zone B | 13.48113 m³ | |
| Backfill Zone C | 9.911857 m³ | |
| U - Ditch 136.6 - 136.3 | | |
| Excavation | 7.534482 m³ | |
| Backfill Zone B | 2.438236 m³ | |
| Backfill Zone C | 3.122389 m³ | |



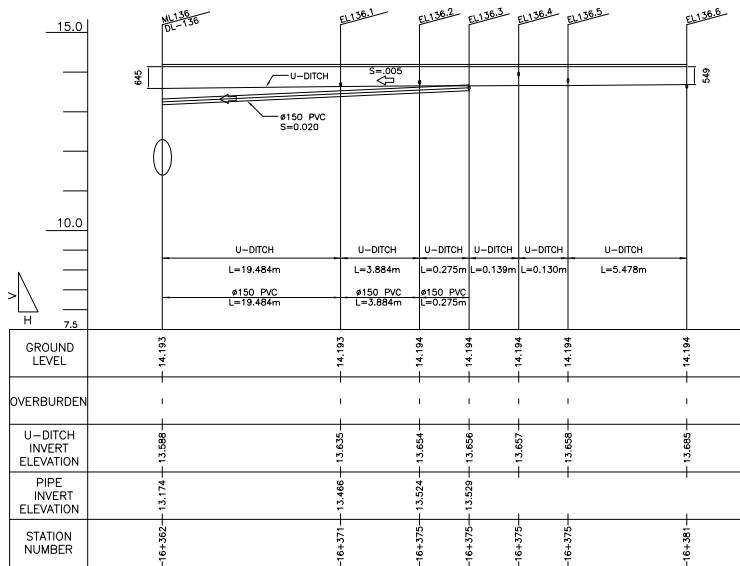
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.832



2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

Manhole No.: ML 136.7

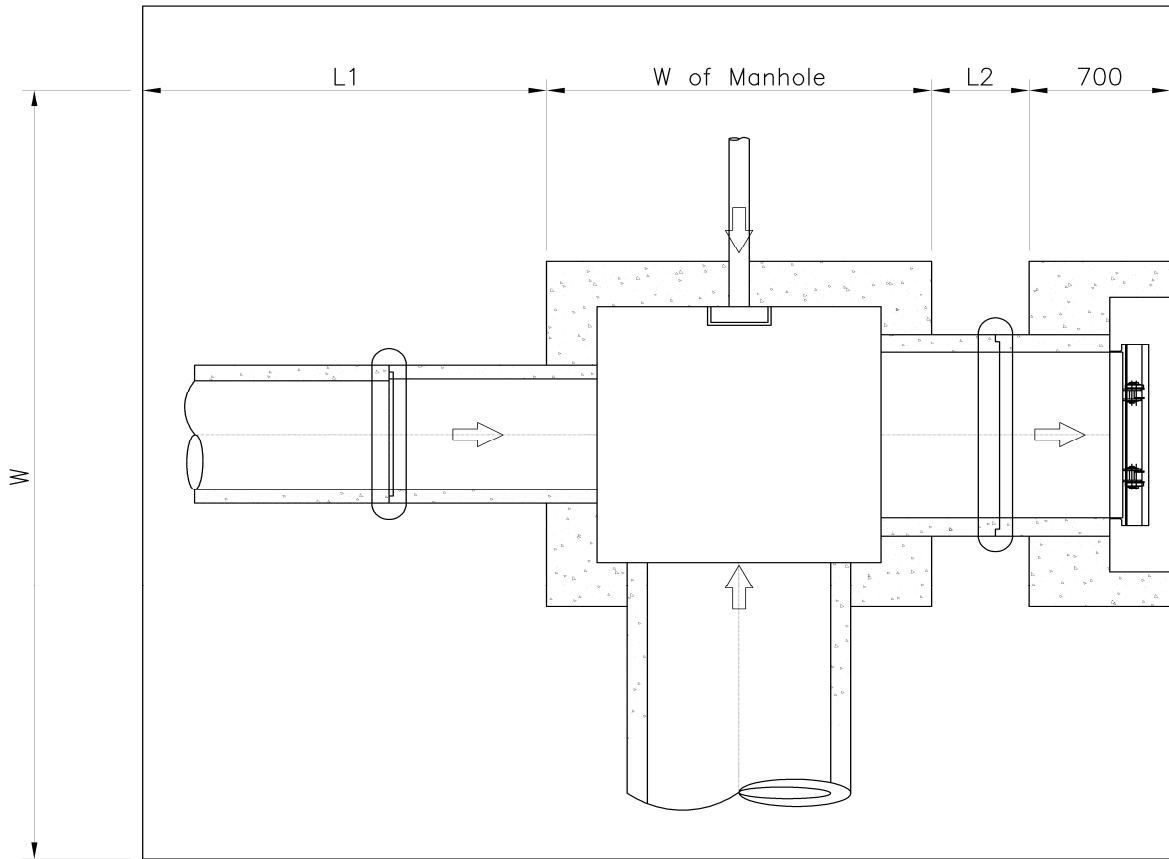
Location: 16 +409

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|--|--|-----------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.19 A2=6.67 | 3.65 3.65 | 11.65 24.33 | 35.99 m ³ |
| 2. Lev. Concrete | W=1.70 L=1.60 | 2.72 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.40 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.40 Win=1.00 Lin=.90 | Aout=2.10 Ain=0.90 Anet=1.20 | 2.346 | 2.815 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.10 | 0.01 | 0.25 | 0.00 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.40 | 0.13 | 0.25 | 0.03 | |
| Net Wall Vol. | | | | 2.78 | m ³ |
| 5. Conc. Cover | L=1.10 W=1.20 | 1.32 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=7 | 0.000201062 | | 0.000120637 0.95 6.63 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.39 Lout=1.23 Win=0.99 Lin=.72 DiaD=0.59 | Ain=1.70 Aout=0.72 Apipe=.27 | 0.7 0.25 0.45 | 1.19 0.18 0.12 0.89 | m ³ |
| 9. Outlet Pipe | Dia=.460m | L=1.46 | | 2 | pc |
| 10. Concrete Collar | D1=.590m D2=.770m | A1=0.27 A2=0.47 Anet=0.19 | 0.17 Qty=1 | 0.03268513 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=.590m | L=0.71 | | 0.041654 | m ³ |
| 12. Backfill | | | | 29.99 | m ³ |

Clearing (Manhole 136.7)

| | |
|--------------|---------|
| L1 | 1.948 m |
| W of Manhole | 1.1 m |
| L2 | 0.706 m |
| W | 4.996 m |

A=22.25 m²

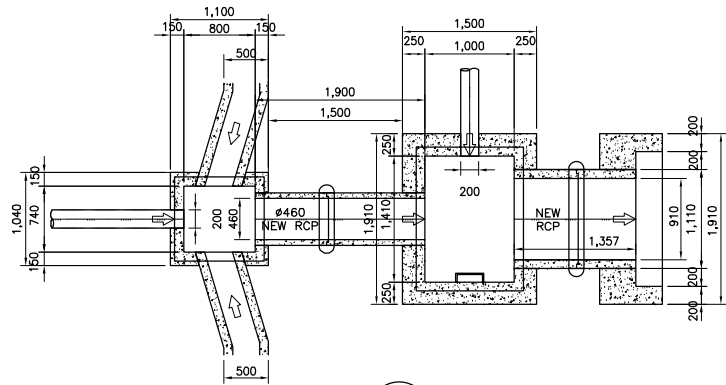


QUANTITIES OF MANHOLE

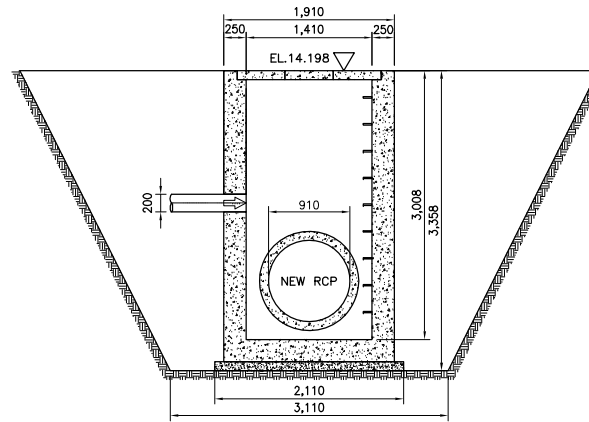
Manhole No.: ML 136.8

Location: 16 + 460

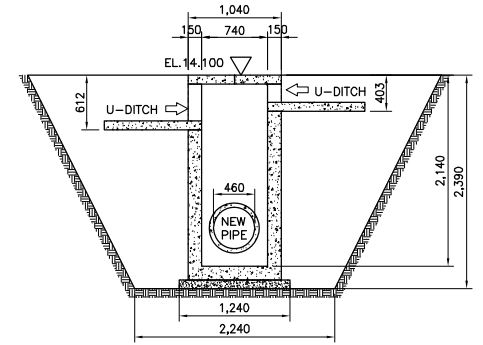
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|---|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.06 A2=7.39 A3=1.23 A4=6.60 | 4.79 4.79 3.44 3.44 | 19.45 35.38 4.22 22.68 81.73 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 3.008 | 4.377 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=0.30 | 0.07 | 0.25 | 0.02 | |
| Pipe hole on Wall C | DiaC=0.20 | 0.18 | 0.25 | 0.05 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.03 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.36 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.71 | | 0.078477 | m ³ |
| 12. Backfill | | | | 68.11 | m ³ |



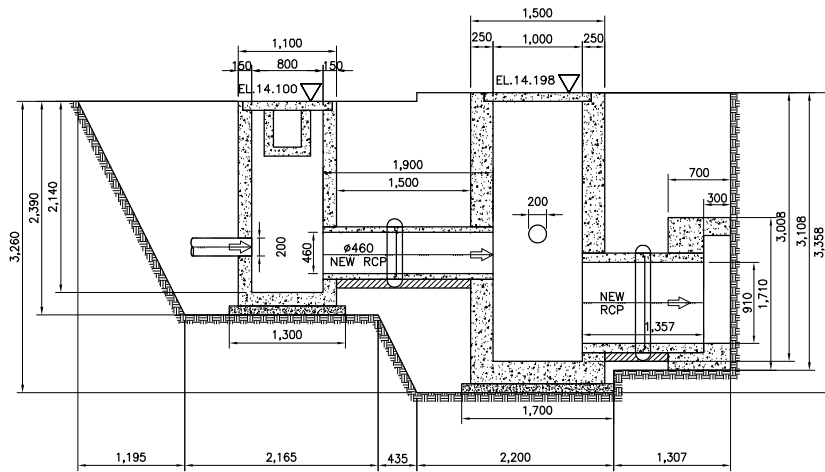
1 PLAN
SCALE B



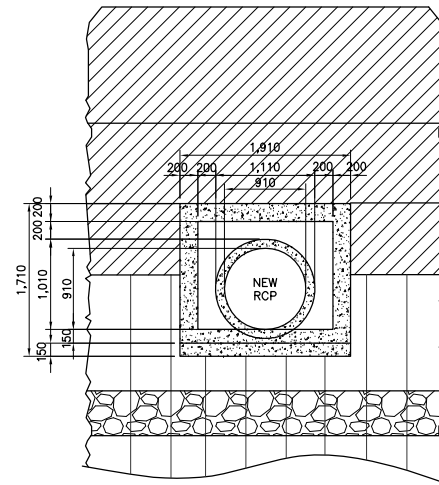
3 SECTION
SCALE B



5 SECTION
SCALE B



2 SECTION
SCALE B

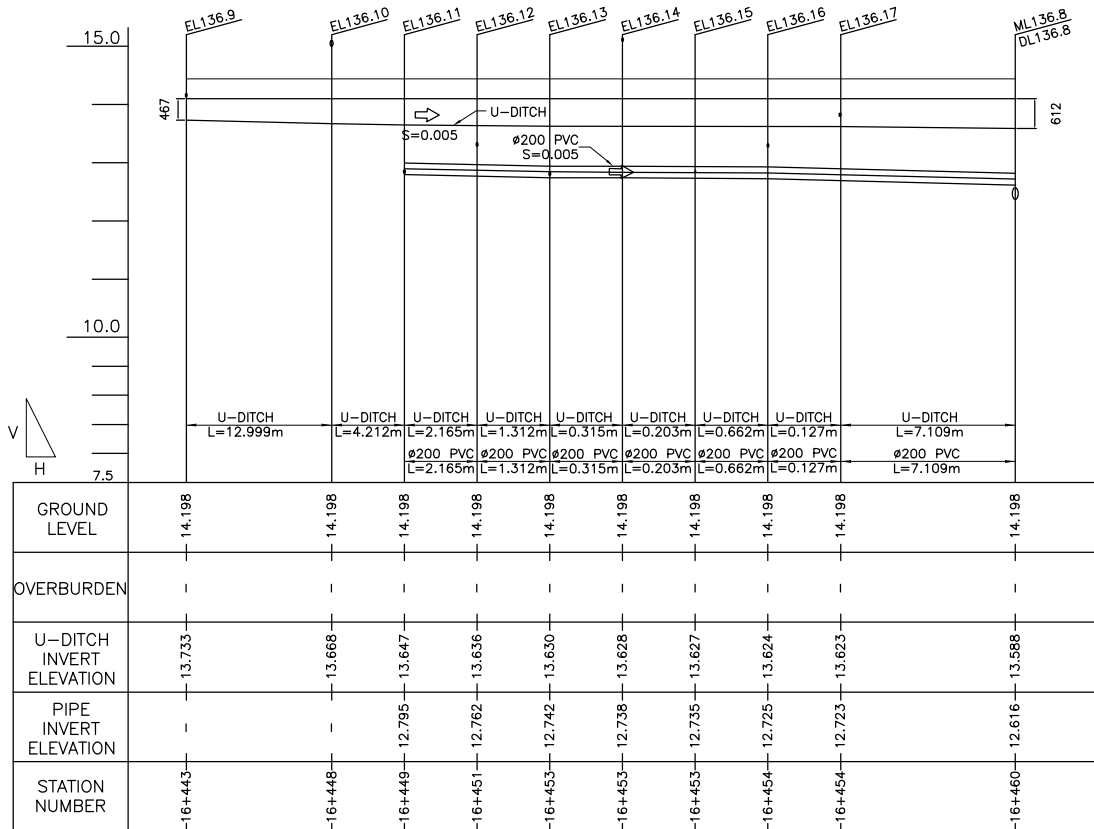


4 ELEVATION
SCALE B

3.837

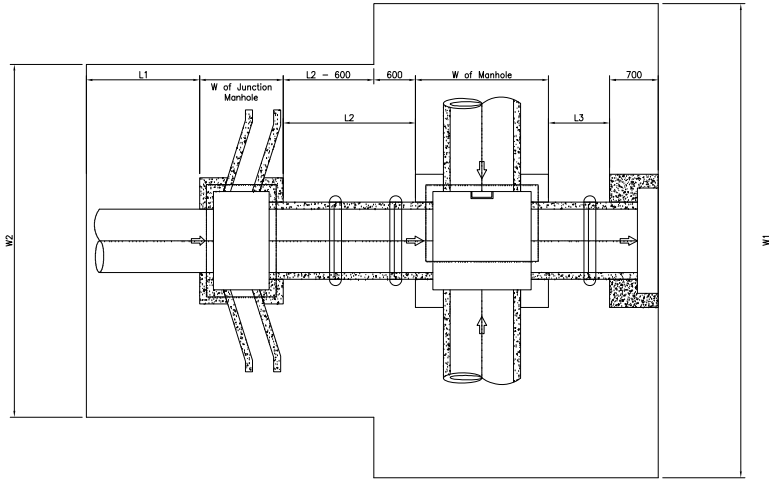
QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|-------------------|-------|----------------|---------------|----------------|
| 1. Collector Pipe (PVC) | Dia=0.20 | | L=11.95 | 2 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=.200m | | | 1 | pc |
| 3. U - Ditch | | | | | |
| Bottom | W=0.50 L=0.10 | 0.05 | 29.25 | 1.46 | m ³ |
| Wall | W=0.54 L=29.10 | 15.70 | 0.1 | 1.57 | m ³ |
| Top | W=0.50 L=0.10 | 0.05 | 29.104 | 1.46 | m ³ |
| 2. Formworks | | | | 31.41 | m3 |



2 PROFILE
 SCALE B

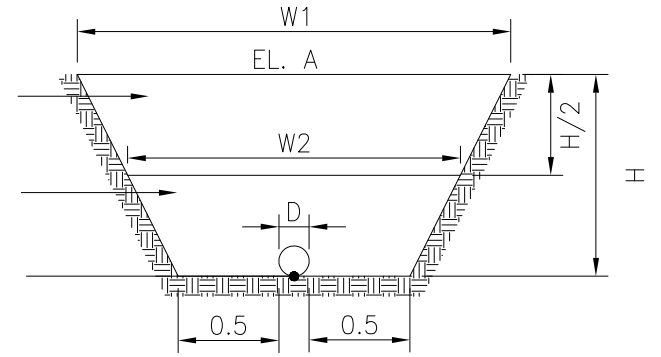
| | | |
|---|-------------------------------|-------------------------------|
| Clearing (Manhole 136.8) | | |
| L1 | 1.795 m | |
| W of Junction Manhole | 1.1 m | Am=22.68 m ² |
| L2 | 1.5 m | Ajb=17.57 m ² |
| W of Manhole | 1.5 m | At=40.25 m² |
| L3 | 0.707 m | |
| W1 | 6.468 m | |
| W2 | 4.63 m | |
| Clearing (Collector 136.11 - 136.8) | | |
| W | 2.6925 m | A=32.02 m² |
| L | 11.893 m | |
| Clearing (U - Ditch 136.9 - 136.11) | | |
| W | 2.258 m | A=38.86 m² |
| L | 17.211 m | |
| (Collector PVC) Downstream 136.11 - 136.8 | | |
| D | 0.2 m | Excavation |
| W1 | 2.78 m | A=3.15 m ² |
| W2 | 1.99 m | Backfill Zone B |
| H | 1.582 m | A=1.23 m ² |
| H/2 | 0.791 m | Backfill Zone C |
| EL. A | 14.198 m | A=1.55 m ² |
| EL. B | 12.616 m | |
| (Collector PVC) Upstream | | |
| D | 0.2 m | Excavation |
| W1 | 2.60 m | A=2.67 m ² |
| W2 | 1.90 m | Backfill Zone B |
| H | 1.403 m | A=1.06 m ² |
| H/2 | 0.7015 m | Backfill Zone C |
| EL. A | 14.198 m | A=1.27 m ² |
| EL. B | 12.795 m | |
| (U - Ditch) Downsteram 136.9 - 136.11 | | |
| d | 0.551 m | Excavation |
| D | 0.701 m | A=1.37 m ² |
| D/2 | 0.3505 m | Backfill Zone B |
| W1 | 2.301 m | A=0.44 m ² |
| W2 | 1.9505 m | Backfill Zone C |
| EL. A | 14.198 m | A=0.57 m ² |
| EL. B | 13.647 m | |
| (U - Ditch) Upstream | | |
| d | 0.465 m | Excavation |
| D | 0.615 m | A=1.17 m ² |
| D/2 | 0.3075 m | Backfill Zone B |
| W1 | 2.215 m | A=0.38 m ² |
| W2 | 1.9075 m | Backfill Zone C |
| EL. A | 14.198 m | A=0.48 m ² |
| EL. B | 13.733 m | |
| Collector PVC 136.11 - 136.8 Volume | | |
| Excavation | 34.76713 m³ | |
| Backfill Zone B | 13.668 m³ | |
| Backfill Zone C | 16.88988 m³ | |
| U - Ditch 136.9 - 136.11 | | |
| Excavation | 21.97083 m³ | |
| Backfill Zone B | 7.113442 m³ | |
| Backfill Zone C | 9.080173 m³ | |



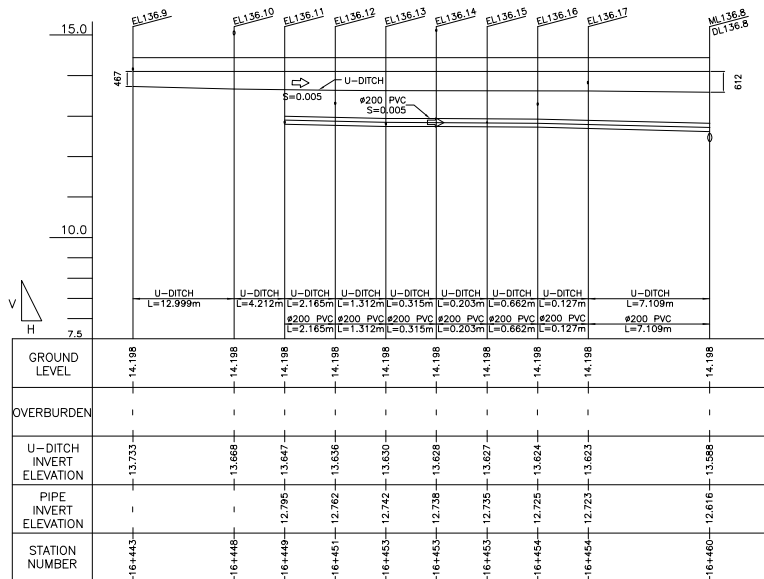
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.840



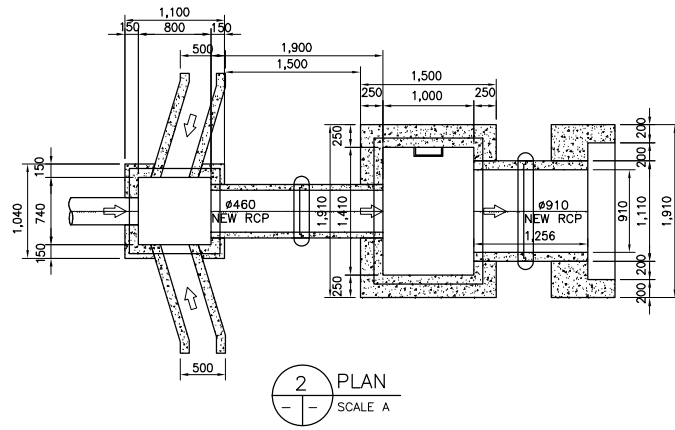
2 PROFILE
SCALE B

QUANTITIES OF MANHOLE

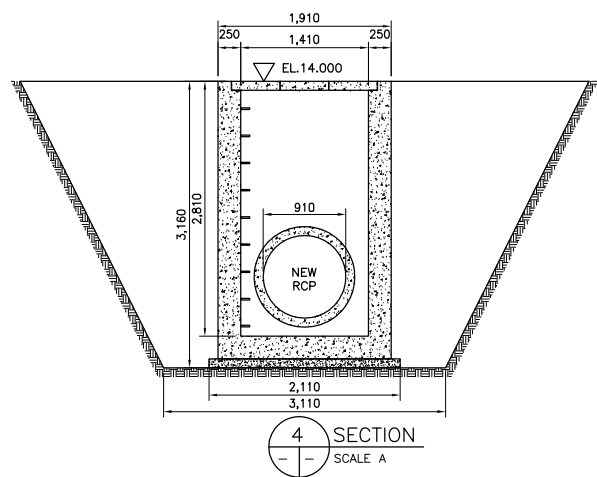
Manhole No.: ML 137

Location: 16 +498

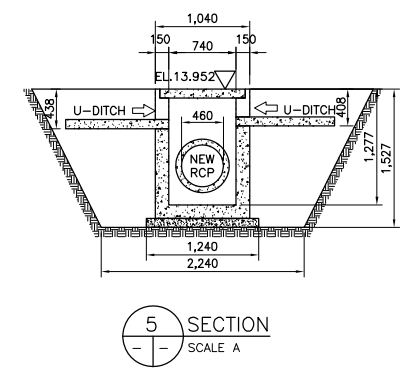
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|---|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.51 A2=6.95 A3=1.84 A4=3.34 | 4.69 4.69 3.00 3.00 | 16.46 32.60 5.52 10.04 64.63 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 2.810 | 4.089 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.74 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.26 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.61 | | 0.067266 | m ³ |
| 12. Backfill | | | | 53.86 | m ³ |



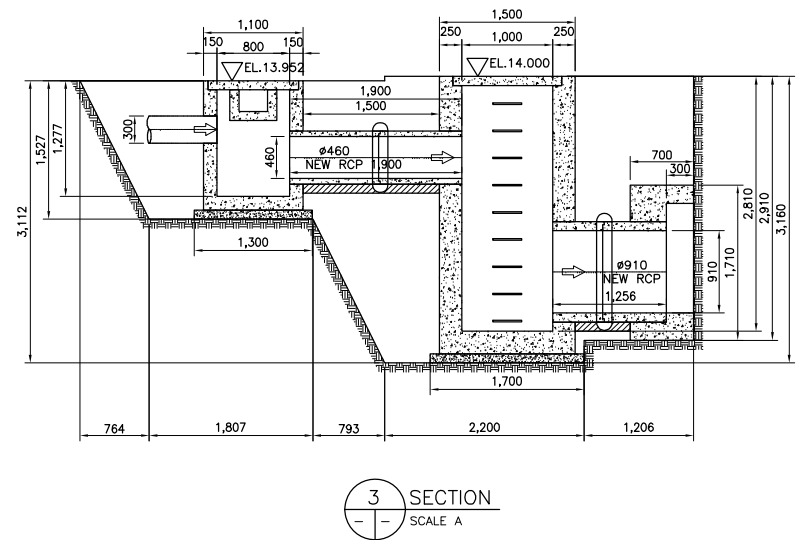
2 PLAN
SCALE A



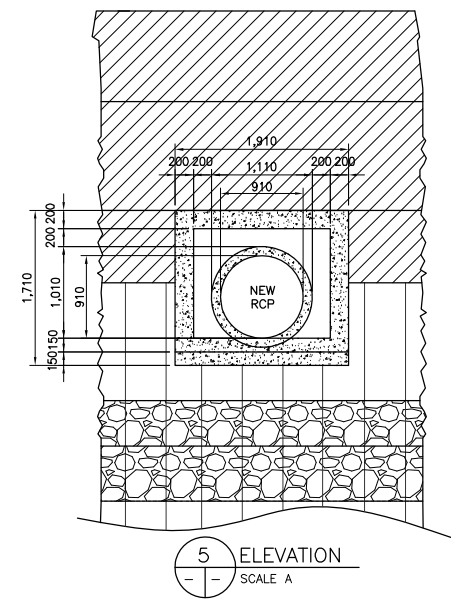
4 SECTION
SCALE A



5 SECTION
SCALE A



3 SECTION
SCALE A

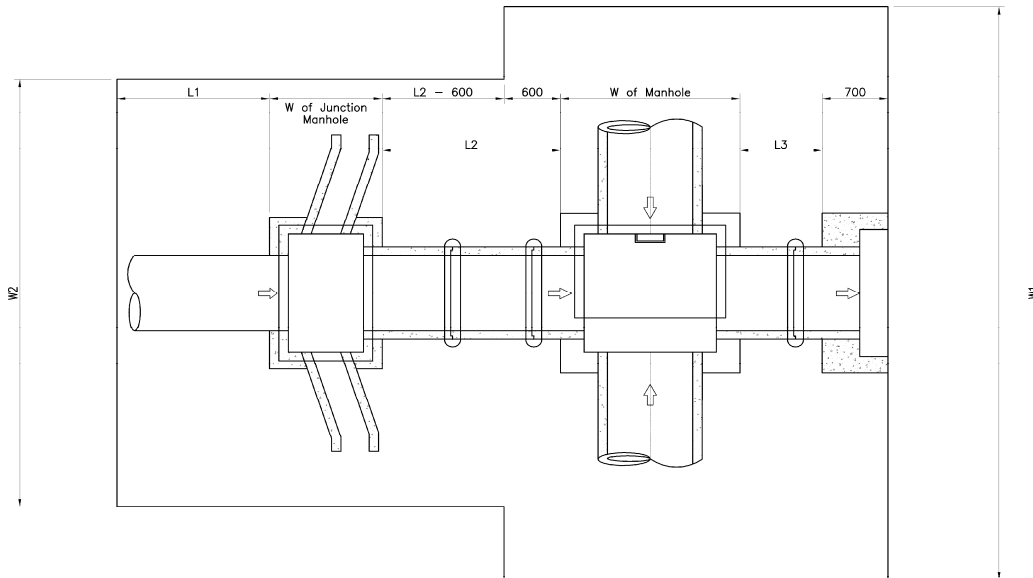


5 ELEVATION
SCALE A

3.842

Clearing (Manhole 137)

| | | |
|-----------------------|----------|---|
| L1 | 1.3635 m | |
| W of Junction Manhole | 1.1 m | $A_m=21.36 \text{ m}^2$ |
| L2 | 1.5 m | $A_{jb}=12.67 \text{ m}^2$ |
| W of Manhole | 1.5 m | $A_t=34.03 \text{ m}^2$ |
| L3 | 0.606 m | |
| W1 | 6.27 m | |
| W2 | 3.767 m | |

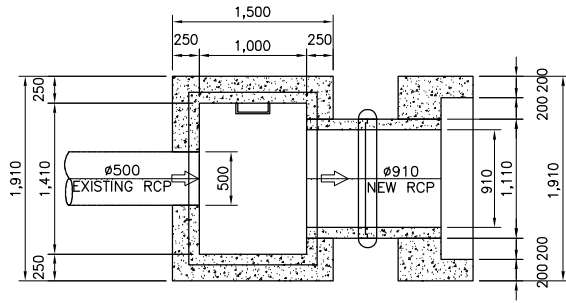


QUANTITIES OF MANHOLE

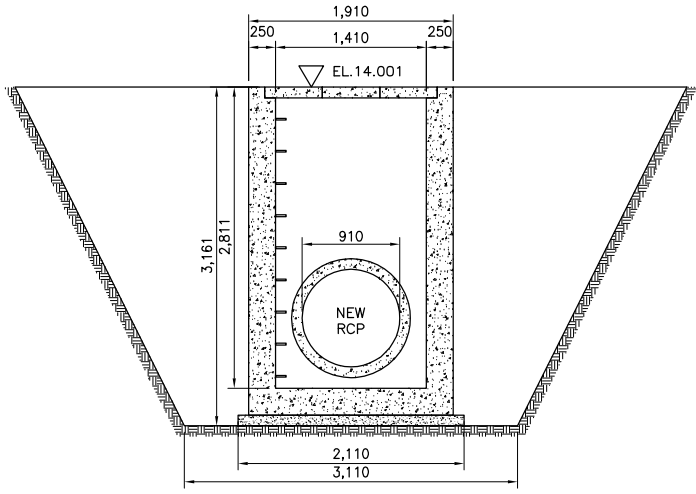
Manhole No.: ML 138

Location: 16 + 510

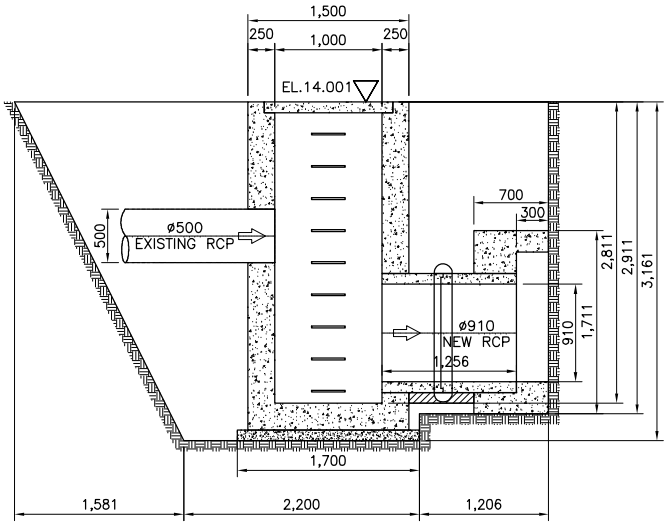
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.51 A2=9.44 | 4.69 4.69 | 16.47 44.27 | 60.73 m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 2.811 | 4.090 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.64 | 0.32 | 0.25 | 0.08 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.77 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.26 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.61 | | 0.067266 | m ³ |
| 12. Backfill | | | | 50.61 | m ³ |



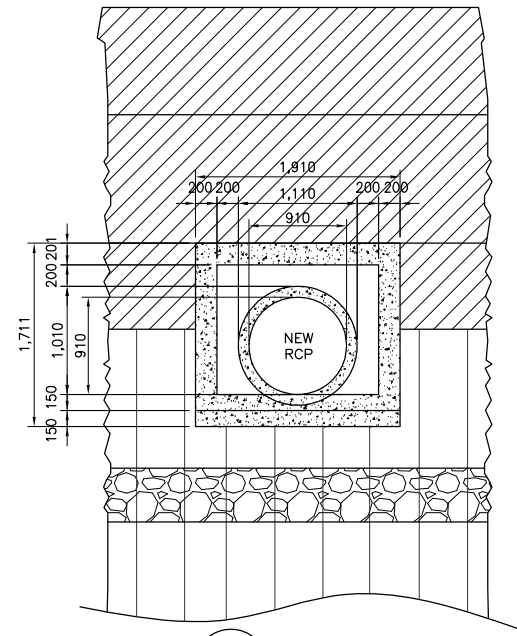
2 PLAN
SCALE A



4 SECTION
SCALE A



3 SECTION
SCALE A

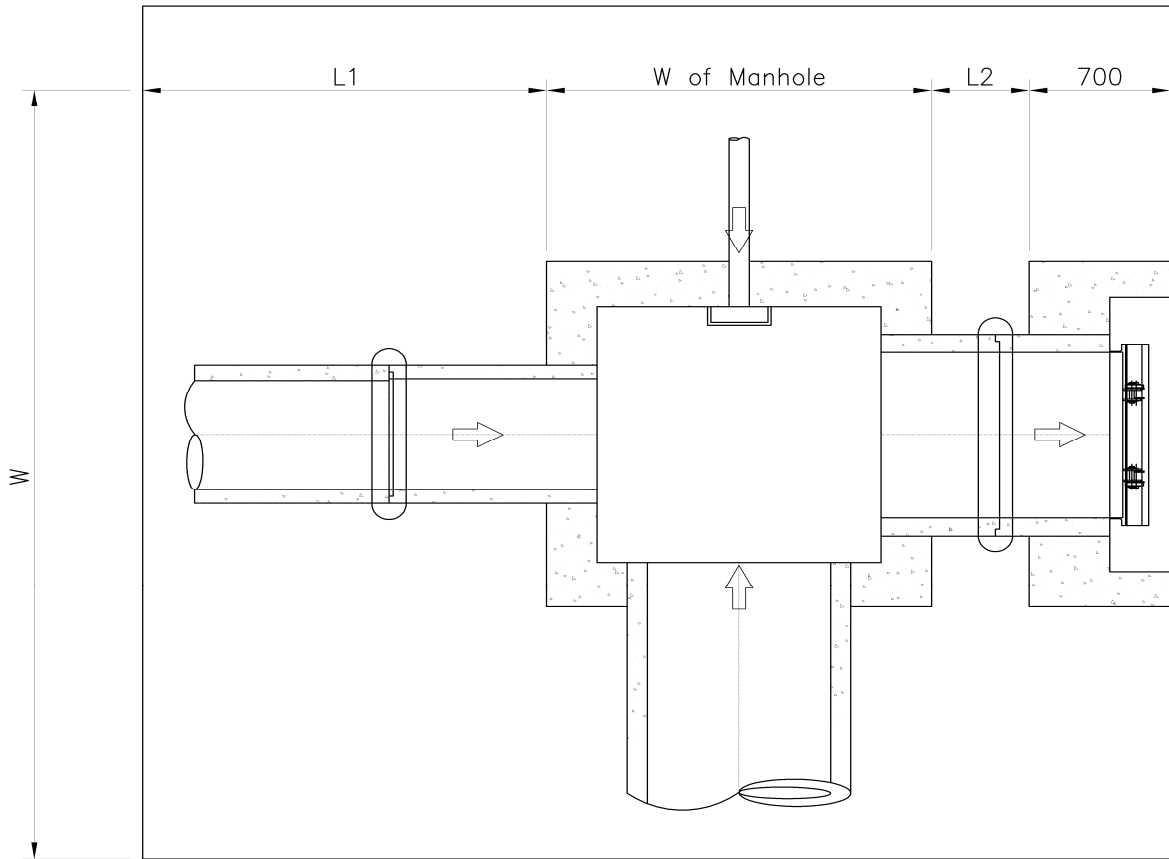


5 ELEVATION
SCALE A

Clearing (Manhole 138)

| | |
|--------------|----------|
| L1 | 2.1805 m |
| W of Manhole | 1.5 m |
| L2 | 0.606 m |
| W | 6.271 m |

A=31.27 m²

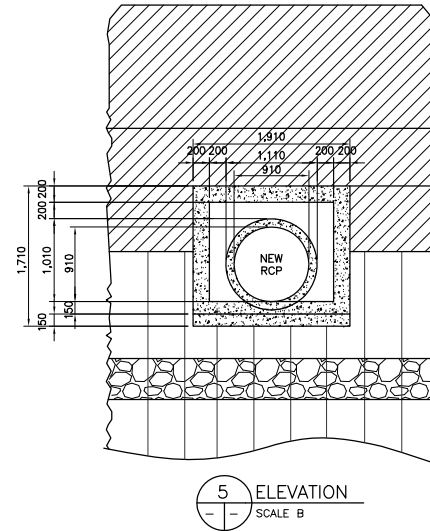
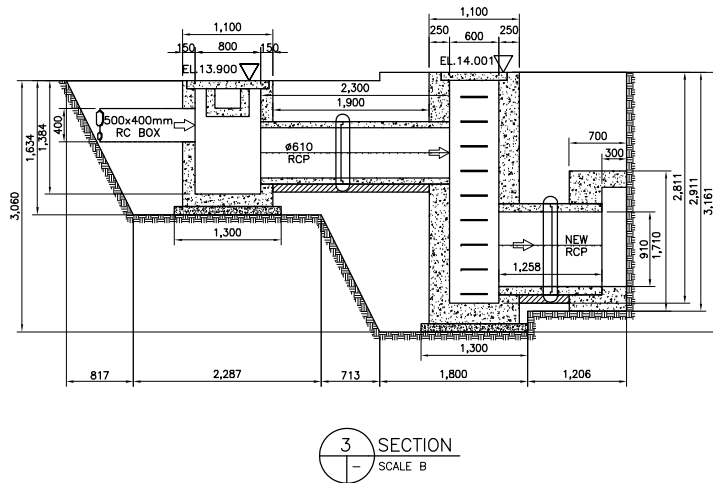
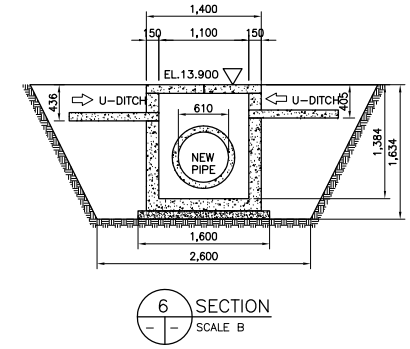
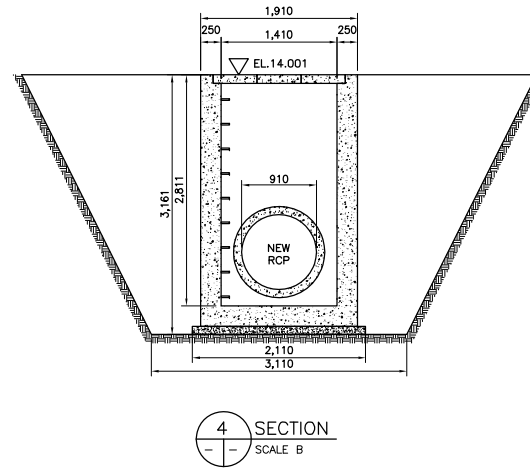
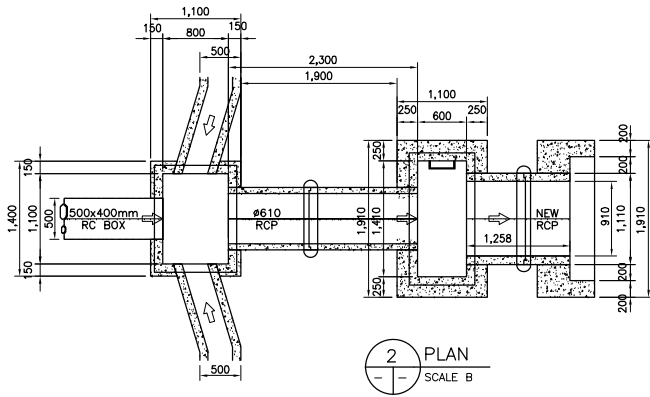


QUANTITIES OF MANHOLE

Manhole No.: ML 138.1

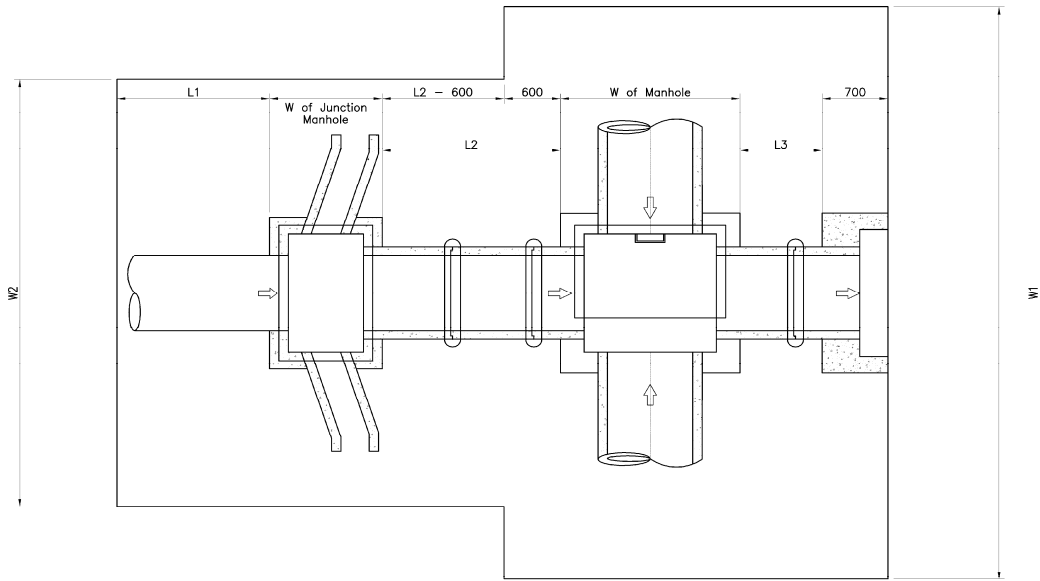
Location: 16 + 516

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|---|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.51 A2=5.69 A3=1.67 A4=2.87 | 4.98 4.98 3.67 3.67 | 17.47 28.32 6.14 10.53 62.45 | m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 2.811 | 3.809 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=0.50 | 0.20 | 0.25 | 0.05 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.44 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.26 | | 2 | pc |
| 10. Conc. Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding | Dia=1.110m | L=0.61 | | 0.067266 | m ³ |
| 12. Backfill | | | | 52.04 | m ³ |



Clearing (Manhole 138.1)

| | | |
|-----------------------|---------|---|
| L1 | 1.417 m | |
| W of Junction Manhole | 1.1 m | $A_m=18.85 \text{ m}^2$ |
| L2 | 1.9 m | $A_{jb}=16.16 \text{ m}^2$ |
| W of Manhole | 1.1 m | $A_t=35.01 \text{ m}^2$ |
| L3 | 0.606 m | |
| W1 | 6.271 m | |
| W2 | 4.234 m | |

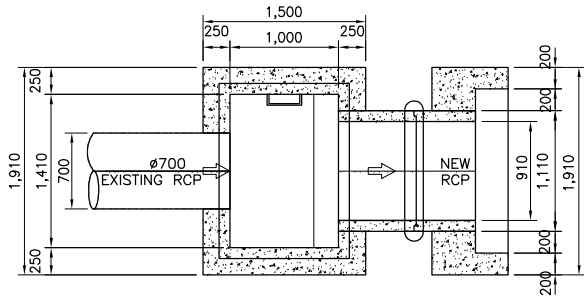


QUANTITIES OF MANHOLE

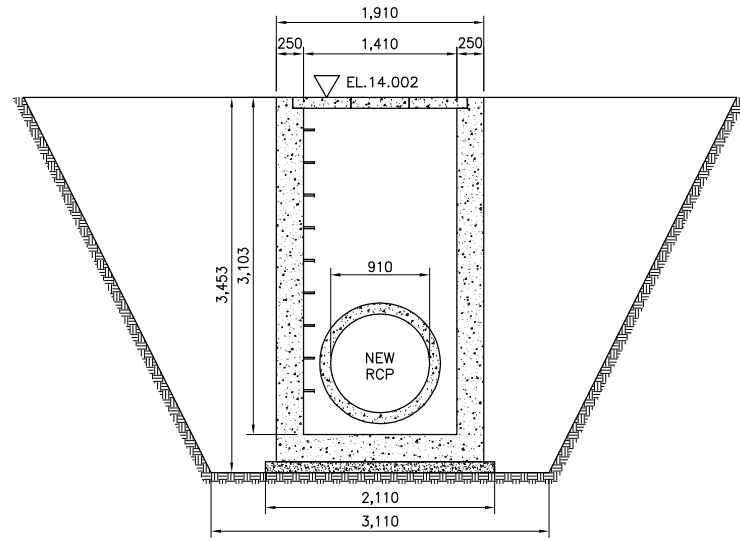
Manhole No.: ML 139

Location: 16 + 535

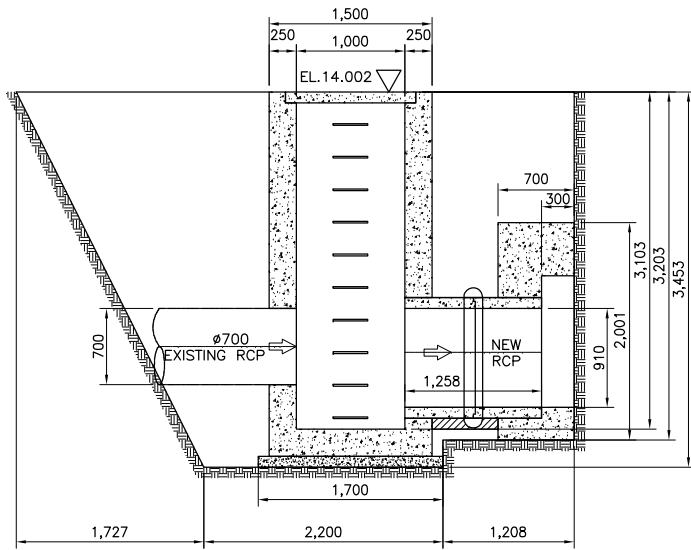
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|---|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.87 A2=10.58 | 4.69 4.69 | 18.15 49.62 | 67.77 m ³ |
| 2. Lev. Concrete | W=1.70 L=2.47 | 4.20 | 0.1 | 0.42 | m ³ |
| 3. Bottom Slab | W=1.50 L=2.27 | 3.41 | 0.25 | 0.85 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=2.27 Win=1.00 Lin=1.77 | Aout=3.41 Ain=1.77 Anet=1.64 | 3.103 | 5.073 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.88 | 0.60 | 0.25 | 0.15 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.68 | m ³ |
| 5. Conc. Cover | L=1.97 W=1.20 | 2.364 | 0.1 | 0.24 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=2.27 Lout=2.34 Win=1.87 Lin=1.55 DiaD=1.47 | Ain=5.30 Aout=2.89 Apipe=1.70 | 0.7 0.3 0.4 | 3.71 0.87 0.68 2.17 | m ³ |
| 9. Outlet Pipe | Dia=1.220m | L=1.26 | | 2 | pc |
| 10. Concrete Collar | D1=1.470m D2=1.650m | A1=1.70 A2=2.14 Anet=0.44 | 0.17 Qty=1 | 0.074983533 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.470m | L=0.61 | | 0.089376 | m ³ |
| 12. Backfill | | | | 56.47 | m ³ |



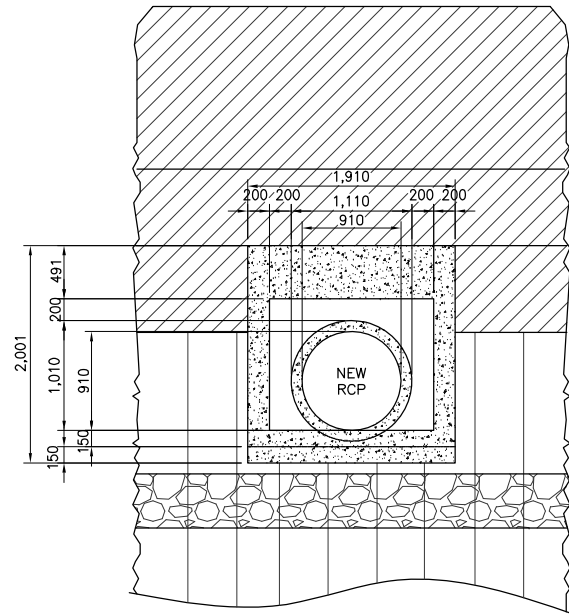
2 PLAN
SCALE B



4 SECTION
SCALE B



3 SECTION
SCALE B

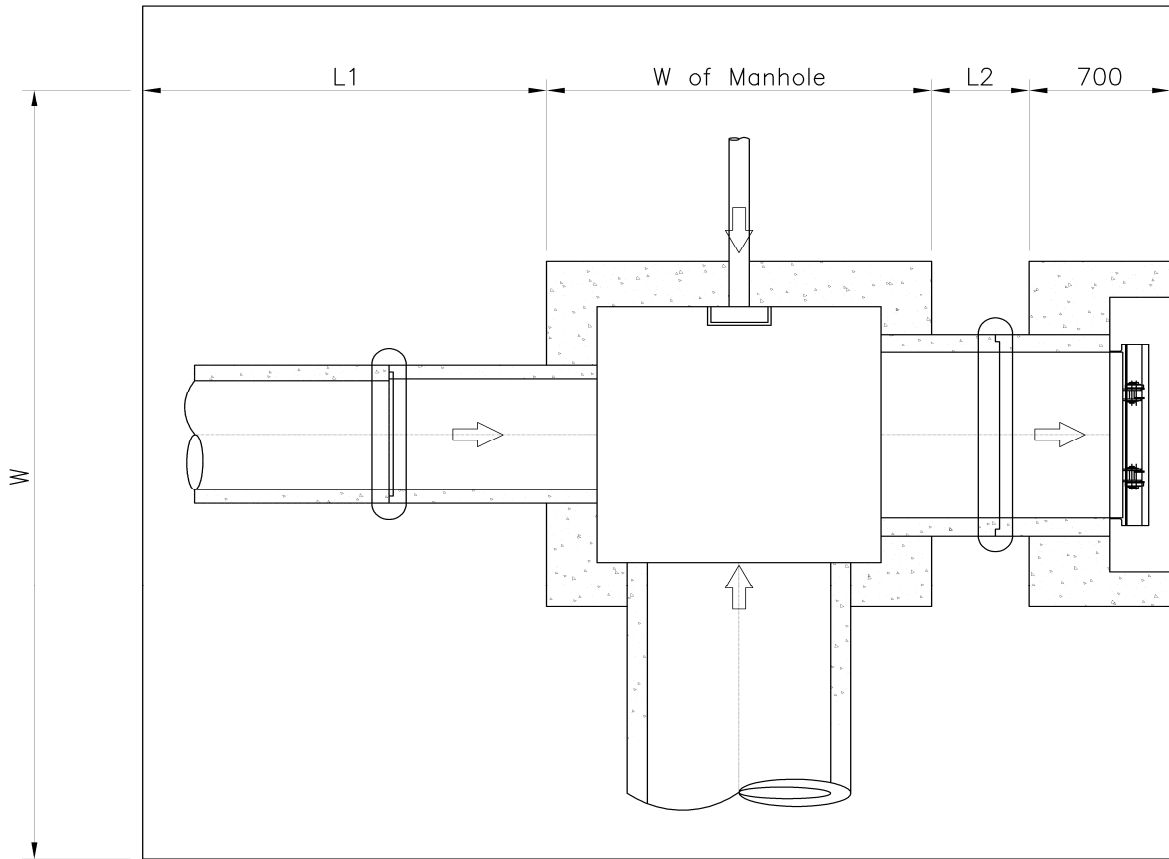


5 ELEVATION
SCALE B

Clearing (Manhole 139)

| | |
|--------------|---------|
| L1 | 2.494 m |
| W of Manhole | 1.5 m |
| L2 | 0.608 m |
| W | 6.898 m |

A=36.57 m²



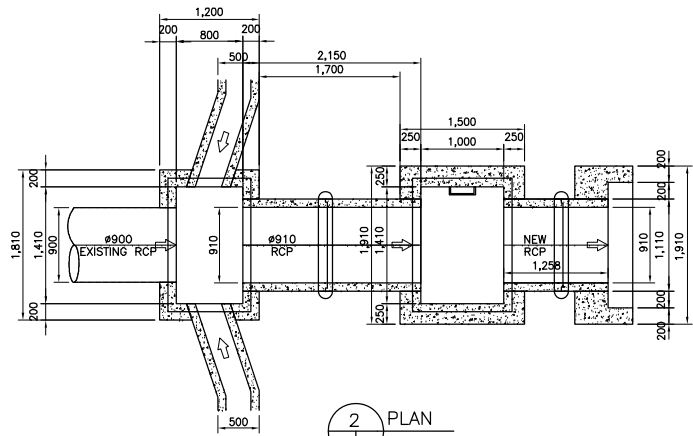
QUANTITIES OF MANHOLE

Manhole No.: ML 139A

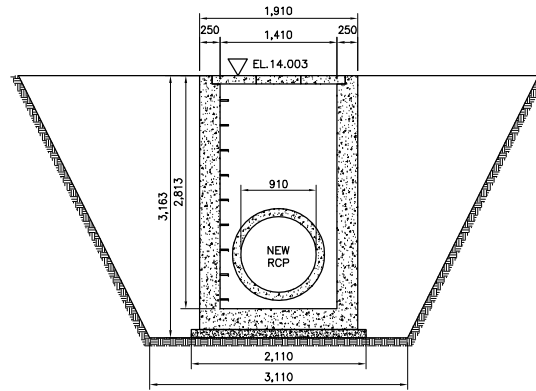
Location: 16 + 549

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--------------------------|---|--|------------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.52 A2=6.96 A3=0.38 A4=9.30 | 4.69 4.69 4.36 4.36 | 16.50 32.65 1.67 40.54 91.35 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 2.813 | 4.093 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall B | DiaB=1.10 | 0.95 | 0.25 | 0.24 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.15 | 0.25 | 0.04 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.54 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.3 0.4 | 2.29 0.55 0.39 1.35 | m ³ |
| 9. Outlet Pipe | Dia=1.070m | L=1.26 | | 2 | pc |
| 10. Conc. Collar | D1=1.296m D2=1.476m | A1=1.32 A2=1.71 Anet=0.39 | 0.17 Qty=1 | 0.066619985 | m ³ |
| 11. Conc. Bedding | Dia=1.296m | L=0.61 | | 0.0787968 | m ³ |
| 12. Backfill | | | | 76.13 | m ³ |

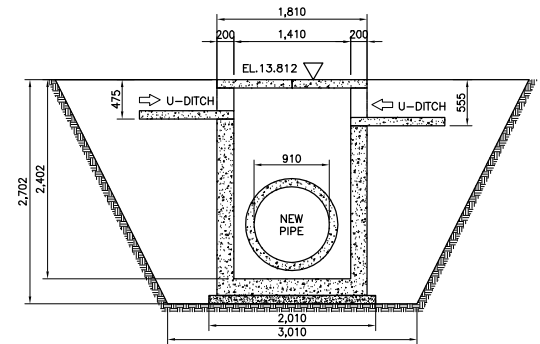
3.854



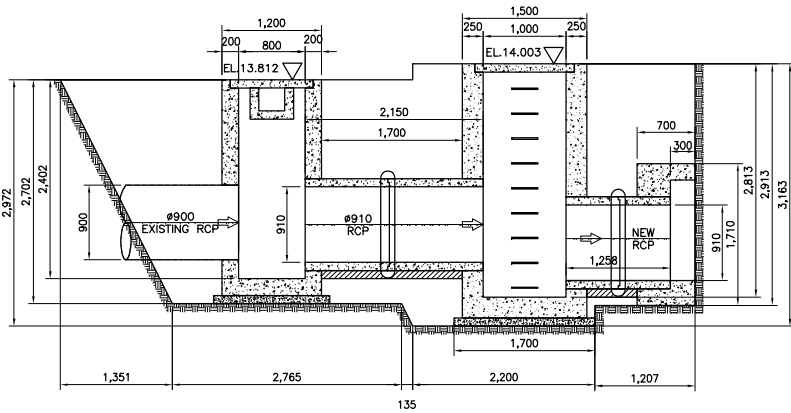
2 PLAN
SCALE B



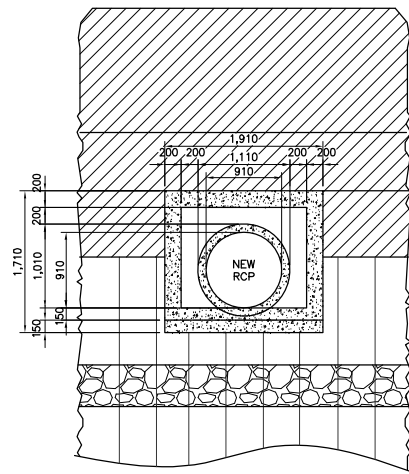
4 SECTION
SCALE B



6 SECTION
SCALE B



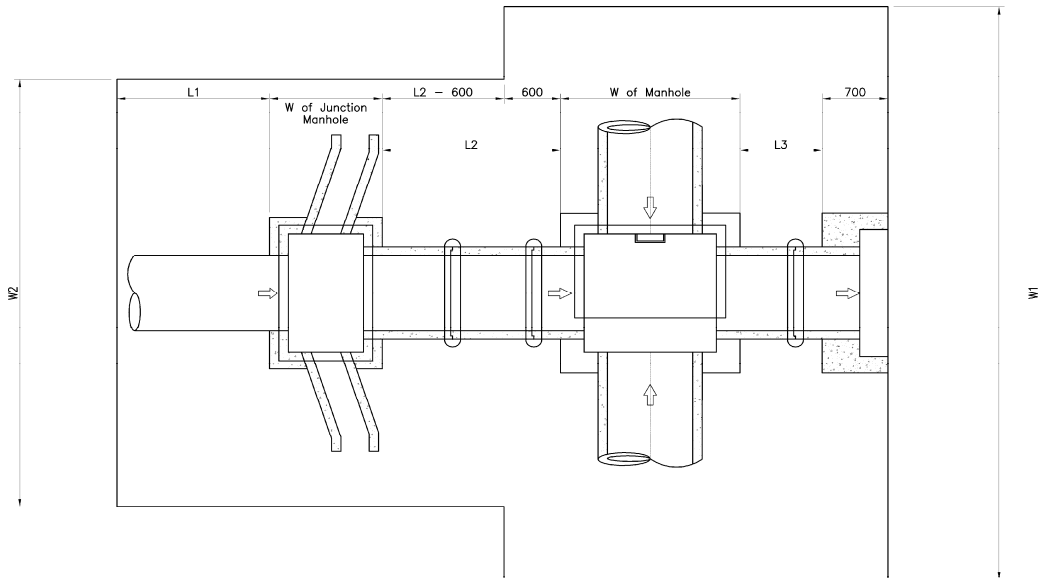
3 SECTION
SCALE B



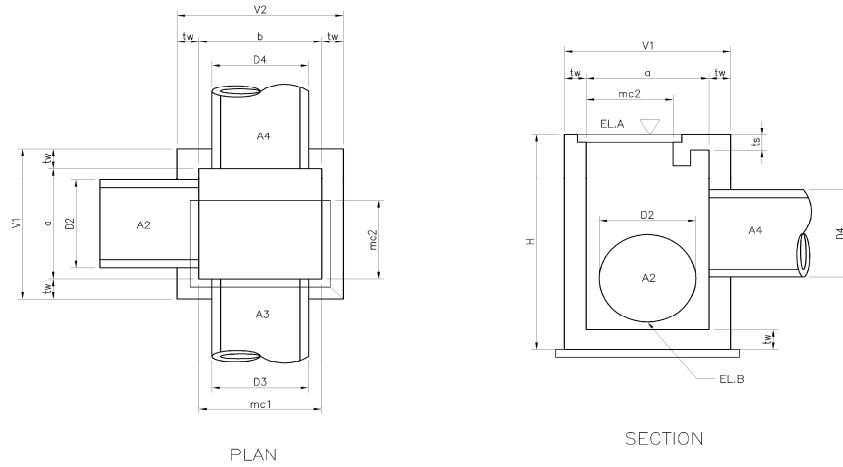
5 ELEVATION
SCALE B

Clearing (Manhole 139A)

| | | |
|-----------------------|---------|---|
| L1 | 1.951 m | |
| W of Junction Manhole | 1.2 m | $A_m=21.38 \text{ m}^2$ |
| L2 | 1.7 m | $A_{jb}=24.28 \text{ m}^2$ |
| W of Manhole | 1.5 m | $A_t=45.66 \text{ m}^2$ |
| L3 | 0.608 m | |
| W1 | 6.273 m | |
| W2 | 5.712 m | |



| QUANTITIES OF MANHOLE | | | | | | | | | | | | | | | | | |
|-----------------------|-------|-------|------|------|------|------|------|------|------|------|------|----------------|----------------|----------------|------|------|------|
| Manhole No. | EL. A | EL. B | tw | ts | mc1 | mc2 | D2 | D3 | D4 | V1 | V2 | A2 | A3 | A4 | H | a | b |
| | m | m | m | m | m | m | m | m | m | m | m | m ² | m ² | m ² | m | m | m |
| ML 126 | 14.53 | 11.39 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 1.11 | 0.00 | 1.91 | 1.91 | 0.97 | 0.97 | 0.00 | 3.59 | 1.41 | 1.41 |
| ML 128 | 14.54 | 11.39 | 0.25 | 0.20 | 1.00 | 1.00 | 1.11 | 0.00 | 0.00 | 1.50 | 1.91 | 0.97 | 0.00 | 0.00 | 3.60 | 1.00 | 1.41 |
| ML 129 | 14.44 | 11.59 | 0.25 | 0.20 | 1.00 | 0.80 | 1.11 | 1.11 | 0.00 | 1.30 | 1.91 | 0.97 | 0.97 | 0.00 | 3.30 | 0.80 | 1.41 |
| ML 130 | 14.44 | 10.94 | 0.30 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 2.01 | 1.60 | 0.97 | 0.00 | 0.00 | 4.01 | 1.41 | 1.00 |
| ML 131 | 14.44 | 11.59 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 1.11 | 0.00 | 1.91 | 1.91 | 0.97 | 0.97 | 0.00 | 3.30 | 1.41 | 1.41 |
| ML 133A | 14.46 | 11.59 | 0.25 | 0.20 | 1.00 | 1.00 | 1.11 | 0.00 | 0.00 | 1.50 | 1.91 | 0.97 | 0.00 | 0.00 | 3.32 | 1.00 | 1.41 |
| ML 133B | 14.46 | 11.59 | 0.25 | 0.20 | 1.00 | 1.00 | 1.11 | 0.00 | 0.00 | 1.50 | 1.91 | 0.97 | 0.00 | 0.00 | 3.32 | 1.00 | 1.41 |
| ML 133C.4 | 14.97 | 11.22 | 0.30 | 0.00 | 1.00 | 1.60 | 1.11 | 0.00 | 0.00 | 2.20 | 1.60 | 0.97 | 0.00 | 0.00 | 4.25 | 1.60 | 1.00 |
| ML 133C.5 | 14.57 | 11.39 | 0.25 | 0.20 | 1.00 | 1.00 | 1.11 | 0.00 | 0.00 | 1.50 | 1.91 | 0.97 | 0.00 | 0.00 | 3.63 | 1.00 | 1.41 |
| ML 134 | 14.58 | 11.39 | 0.25 | 0.20 | 1.00 | 1.00 | 1.11 | 0.00 | 0.00 | 1.50 | 1.91 | 0.97 | 0.00 | 0.00 | 3.64 | 1.00 | 1.41 |
| ML 134.5 | 14.18 | 11.04 | 0.30 | 0.20 | 1.00 | 1.00 | 1.30 | 0.00 | 0.00 | 1.60 | 4.10 | 2.65 | 0.00 | 0.00 | 3.64 | 1.00 | 3.50 |
| ML 135.4 | 14.19 | 11.39 | 0.25 | 0.20 | 1.00 | 1.00 | 1.11 | 0.00 | 0.00 | 1.50 | 1.91 | 0.97 | 0.00 | 0.00 | 3.25 | 1.00 | 1.41 |
| ML 135.11 | 14.19 | 11.88 | 0.25 | 0.00 | 1.00 | 0.90 | 0.59 | 0.00 | 0.00 | 1.40 | 1.50 | 0.27 | 0.00 | 0.00 | 2.76 | 0.90 | 1.00 |
| ML 135.22 | 14.19 | 11.88 | 0.25 | 0.00 | 1.00 | 0.90 | 0.59 | 0.00 | 0.00 | 1.40 | 1.50 | 0.27 | 0.00 | 0.00 | 2.77 | 0.90 | 1.00 |
| ML 135.31 | 14.19 | 11.88 | 0.25 | 0.00 | 1.00 | 0.90 | 0.59 | 0.00 | 0.00 | 1.40 | 1.50 | 0.27 | 0.00 | 0.00 | 2.76 | 0.90 | 1.00 |
| ML 135.33 | 14.19 | 11.05 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.59 | 1.41 | 1.00 |
| ML 136 | 14.19 | 11.39 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.25 | 1.41 | 1.00 |
| ML 136.7 | 14.20 | 11.88 | 0.25 | 0.00 | 1.00 | 1.00 | 0.59 | 0.00 | 0.00 | 1.50 | 1.50 | 0.27 | 0.00 | 0.00 | 2.77 | 1.00 | 1.00 |
| ML 136.8 | 14.20 | 11.39 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.26 | 1.41 | 1.00 |
| ML 137 | 14.00 | 11.39 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.06 | 1.41 | 1.00 |
| ML 138 | 14.00 | 11.39 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.06 | 1.41 | 1.00 |
| ML 138.1 | 14.00 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.30 | 0.97 | 0.00 | 0.00 | 3.06 | 1.41 | 0.80 |
| ML 139 | 14.00 | 11.31 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.14 | 1.41 | 1.00 |
| ML 139A | 14.00 | 11.39 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.06 | 1.41 | 1.00 |

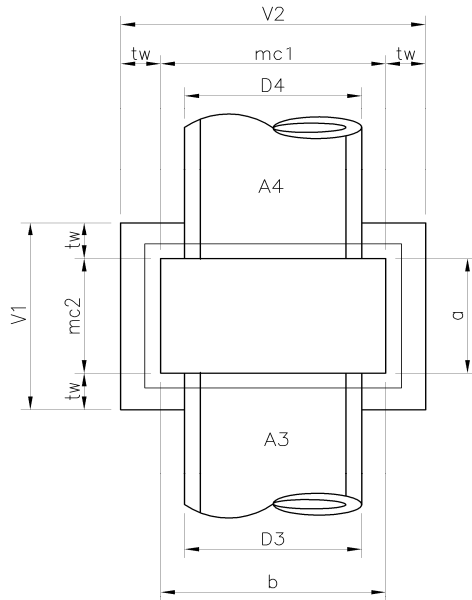


QUANTITIES OF MANHOLE

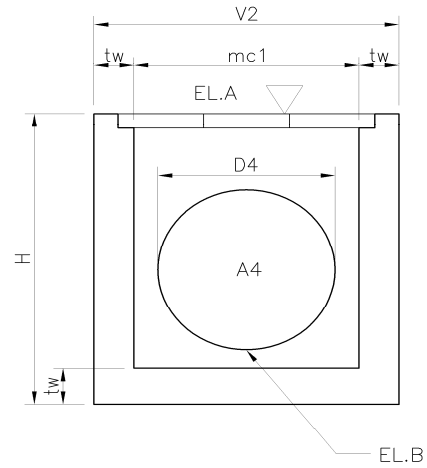
| Manhole No. | Area Outside Face | | | Area Inside Face | | MANHOLE | | | LEVELING | COVER | | |
|-------------|---------------------|---------------------|----------|---------------------|---------------------|-------------------|----------------------|---------------------|-------------------|-------------------|----------|---------------|
| | Front and Rear slab | Left and Right slab | Top Slab | Front and Rear slab | Left and Right slab | Area of Formworks | Volume of Supporting | Area of Scaffolding | Area of Formworks | Area of Formworks | Concrete | Reinforcement |
| | m2 | m2 | m2 | m2 | m2 | m2 | m3 | m2 | m2 | m2 | m3 | kg |
| ML 126 | 10.13 | 13.73 | 0.58 | 8.86 | 8.86 | 40.23 | 1.82 | 27.45 | 0.84 | 0.56 | 0.19 | 27.82 |
| ML 128 | 10.14 | 10.79 | 0.41 | 8.87 | 6.29 | 35.53 | 1.29 | 24.52 | 0.76 | 0.48 | 0.14 | 20.74 |
| ML 129 | 9.30 | 8.58 | 0.33 | 8.03 | 4.56 | 28.87 | 0.93 | 21.18 | 0.72 | 0.44 | 0.12 | 17.28 |
| ML 130 | 8.01 | 16.10 | 0.00 | 7.41 | 10.45 | 41.00 | 0.00 | 28.92 | 0.80 | 0.56 | 0.19 | 27.82 |
| ML 131 | 9.31 | 12.62 | 0.58 | 8.05 | 8.05 | 36.67 | 1.65 | 25.23 | 0.84 | 0.56 | 0.19 | 27.82 |
| ML 133A | 9.36 | 9.95 | 0.41 | 8.09 | 5.74 | 32.58 | 1.18 | 22.63 | 0.76 | 0.48 | 0.14 | 20.74 |
| ML 133B | 9.37 | 9.96 | 0.41 | 8.10 | 5.74 | 32.61 | 1.18 | 22.65 | 0.76 | 0.48 | 0.14 | 20.74 |
| ML 133C.4 | 8.51 | 18.72 | 0.00 | 7.91 | 12.65 | 46.82 | 0.00 | 32.33 | 0.84 | 0.60 | 0.22 | 31.10 |
| ML 133C.5 | 10.25 | 10.90 | 0.41 | 8.98 | 6.37 | 35.93 | 1.31 | 24.78 | 0.76 | 0.48 | 0.14 | 20.74 |
| ML 134 | 10.26 | 10.91 | 0.41 | 8.99 | 6.37 | 35.97 | 1.31 | 24.80 | 0.76 | 0.48 | 0.14 | 20.74 |
| ML 134.5 | 25.47 | 11.64 | 2.50 | 21.97 | 6.28 | 65.21 | 7.85 | 41.48 | 1.22 | 0.48 | 0.14 | 20.74 |
| ML 135.4 | 9.15 | 9.74 | 0.41 | 7.88 | 5.59 | 31.80 | 1.15 | 22.13 | 0.76 | 0.48 | 0.14 | 20.74 |
| ML 135.11 | 5.52 | 7.73 | 0.00 | 5.02 | 4.52 | 22.52 | 0.00 | 16.01 | 0.66 | 0.46 | 0.13 | 19.01 |
| ML 135.22 | 5.53 | 7.74 | 0.00 | 5.03 | 4.53 | 22.56 | 0.00 | 16.04 | 0.66 | 0.46 | 0.13 | 19.01 |
| ML 135.31 | 5.53 | 7.74 | 0.00 | 5.03 | 4.53 | 22.55 | 0.00 | 16.03 | 0.66 | 0.46 | 0.13 | 19.01 |
| ML 135.33 | 7.18 | 13.72 | 0.00 | 6.68 | 9.42 | 36.04 | 0.00 | 24.49 | 0.76 | 0.56 | 0.19 | 27.82 |
| ML 136 | 6.51 | 12.43 | 0.00 | 6.01 | 8.47 | 32.44 | 0.00 | 22.19 | 0.76 | 0.56 | 0.19 | 27.82 |
| ML 136.7 | 5.54 | 8.31 | 0.00 | 5.04 | 5.04 | 23.67 | 0.00 | 16.63 | 0.68 | 0.48 | 0.14 | 20.74 |
| ML 136.8 | 6.52 | 12.45 | 0.00 | 6.02 | 8.48 | 32.49 | 0.00 | 22.22 | 0.76 | 0.56 | 0.19 | 27.82 |
| ML 137 | 6.12 | 11.69 | 0.00 | 5.62 | 7.92 | 30.39 | 0.00 | 20.87 | 0.76 | 0.56 | 0.19 | 27.82 |
| ML 138 | 6.12 | 11.69 | 0.00 | 5.62 | 7.93 | 30.40 | 0.00 | 20.88 | 0.76 | 0.56 | 0.19 | 27.82 |
| ML 138.1 | 4.90 | 11.69 | 0.00 | 4.50 | 7.93 | 28.05 | 0.00 | 19.65 | 0.72 | 0.52 | 0.16 | 23.18 |
| ML 139 | 6.29 | 12.01 | 0.00 | 5.79 | 8.16 | 31.27 | 0.00 | 21.44 | 0.76 | 0.56 | 0.19 | 27.82 |
| ML 139A | 6.13 | 11.70 | 0.00 | 5.63 | 7.93 | 30.42 | 0.00 | 20.89 | 0.76 | 0.56 | 0.19 | 27.82 |

QUANTITIES OF JUNCTION MANHOLE

| Manhole No. | El. A | El. B | tw | ts | mc1 | mc2 | D3 | D4 | V1 | V2 | A3 | A4 | H | a | b |
|-------------|-------|-------|------|------|------|------|------|------|------|------|----------------|----------------|------|------|------|
| | m | m | m | m | m | m | m | m | m | m | m ² | m ² | m | m | m |
| ML 127 | 14.54 | 12.93 | 0.25 | 0.00 | 1.41 | 0.70 | 0.00 | 1.11 | 1.20 | 1.91 | 0.00 | 0.97 | 2.06 | 0.70 | 1.41 |
| ML 132 | 14.44 | 12.34 | 0.25 | 0.00 | 1.41 | 0.90 | 0.00 | 1.11 | 1.40 | 1.91 | 0.00 | 0.97 | 2.55 | 0.90 | 1.41 |



PLAN



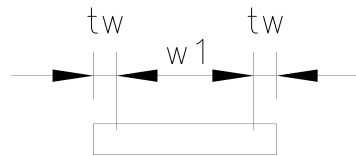
SECTION

| QUANTITIES OF JUNCTION MANHOLE | | | | | | | | | | | | |
|--------------------------------|---------------------|---------------------|----------|---------------------|---------------------|-------------------|----------------------|---------------------|-------------------|-------------------|----------|---------------|
| Manhole No. | Area Outside Face | | | Area Inside Face | | MANHOLE | | | LEVELING | COVER | | |
| | Front and Rear slab | Left and Right slab | Top Slab | Front and Rear slab | Left and Right slab | Area of Formworks | Volume of Supporting | Area of Scaffolding | Area of Formworks | Area of Formworks | Concrete | Reinforcement |
| | m2 | m2 | m2 | m2 | m2 | m2 | m3 | m2 | m2 | m2 | m3 | kg |
| ML 127 | 7.87 | 4.94 | 0.00 | 5.10 | 2.53 | 19.48 | 0.00 | 12.81 | 0.70 | 0.50 | 0.14 | 20.87 |
| ML 132 | 9.76 | 7.15 | 0.00 | 6.50 | 4.15 | 26.58 | 0.00 | 16.91 | 0.74 | 0.54 | 0.18 | 25.50 |

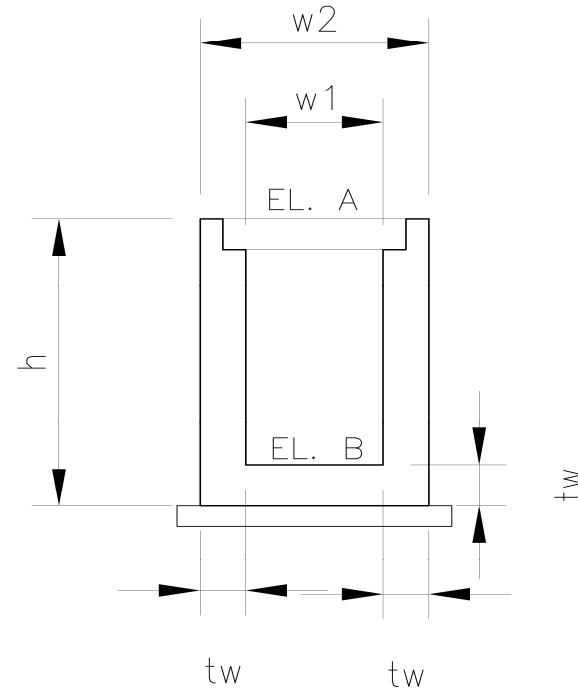
QUANTITIES OF OUTLETS

| Outlet No. | Outside Face | | | Inside face | | Top Slab | Area of Formworks | Volume of Supporting | Area of Scaffolding |
|------------|-------------------|------------|-----------|-------------|-------------------|----------|-------------------|----------------------|---------------------|
| | Left & Right Side | Front side | Rear side | Front Side | Left & Right Side | | | | |
| | m2 | m2 | m2 | m2 | m2 | | | | |
| DL 126 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 128 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 129 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 130 | 2.19 | 1.05 | 3.55 | 0.86 | 0.73 | 0.45 | 8.83 | 0.55 | 9.03 |
| DL 131 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 133A | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 133B | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 133C.4 | 1.52 | 0.84 | 2.63 | 1.03 | 0.83 | 0.51 | 7.36 | 0.71 | 0.00 |
| DL 133C.5 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 134 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 134.5 | 1.76 | 0.91 | 2.99 | 1.03 | 0.83 | 0.51 | 16.06 | 1.41 | 17.27 |
| DL 135.4 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 135.11 | 0.59 | 0.56 | 1.43 | 0.44 | 0.36 | 0.25 | 3.63 | 0.18 | 0.00 |
| DL 135.22 | 0.60 | 0.57 | 1.43 | 0.45 | 0.36 | 0.25 | 3.64 | 0.18 | 0.00 |
| DL 135.31 | 0.59 | 0.56 | 1.43 | 0.44 | 0.36 | 0.25 | 3.63 | 0.18 | 0.00 |
| DL 135.33 | 1.75 | 0.91 | 2.95 | 0.86 | 0.73 | 0.45 | 7.64 | 0.55 | 7.83 |
| DL 136 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 136.7 | 0.60 | 0.57 | 1.43 | 0.45 | 0.36 | 0.25 | 3.64 | 0.18 | 0.00 |
| DL 136.8 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 137 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 138 | 1.28 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.39 | 0.55 | 0.00 |
| DL 138.1 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |
| DL 139 | 1.68 | 0.89 | 2.85 | 0.86 | 0.73 | 0.45 | 7.46 | 0.55 | 7.64 |
| DL 139A | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 |

| QUANTITIES IN U - DITCH | | | | | | | |
|-------------------------|-------|-------|------|------|------|-------|------|
| Outlet No. | El. A | El. B | h | w1 | tw | L | w2 |
| | m | m | m | m | m | m | m |
| DL 129 | 14.44 | 13.92 | 0.62 | 0.30 | 0.10 | 9.59 | 0.50 |
| DL 135.11 | 14.19 | 13.64 | 0.65 | 0.30 | 0.10 | 27.90 | 0.50 |
| DL 135.22 | 14.19 | 13.68 | 0.61 | 0.30 | 0.10 | 18.06 | 0.50 |
| DL 135.31 | 14.19 | 13.77 | 0.52 | 0.30 | 0.10 | 25.77 | 0.50 |
| DL 136 | 14.19 | 13.59 | 0.71 | 0.30 | 0.10 | 29.39 | 0.50 |
| DL 136.8 | 14.20 | 13.59 | 0.71 | 0.30 | 0.10 | 29.10 | 0.50 |



PRECAST CONCRETE
U - DITCH COVER



U DITCH TYPICAL SECTION

| QUANTITIES IN U - DITCH | | | | | | | | | | |
|-------------------------|--------------|-------------|-------------|-------------------|-------|----------|----------|---------------|----------|---------------|
| Outlet No. | Outside Face | | Inside Face | Area of Formworks | | | Cover | | U- ditch | |
| | Left & Right | Front &Rear | Front &Rear | U - Ditch | Cover | Leveling | Concrete | Reinforcement | Concrete | Reinforcement |
| | m2 | m2 | m2 | m2 | m2 | m2 | m3 | kg | m3 | kg |
| DL 129 | 0.15 | 11.89 | 9.97 | 22.01 | 1.50 | 1.98 | 0.38 | 52.53 | 2.66 | 173.22 |
| DL 135.11 | 0.16 | 36.44 | 30.86 | 67.47 | 4.25 | 5.64 | 1.12 | 152.91 | 8.13 | 528.17 |
| DL 135.22 | 0.15 | 22.03 | 18.42 | 40.60 | 2.77 | 3.67 | 0.72 | 98.95 | 4.95 | 321.60 |
| DL 135.31 | 0.13 | 26.91 | 21.75 | 48.80 | 3.93 | 5.21 | 1.03 | 141.24 | 6.15 | 400.06 |
| DL 136 | 0.17 | 41.44 | 35.56 | 77.17 | 4.47 | 5.94 | 1.18 | 161.06 | 9.17 | 596.03 |
| DL 136.8 | 0.17 | 41.33 | 35.51 | 77.01 | 4.43 | 5.88 | 1.16 | 159.49 | 9.14 | 594.01 |

| QUANTITIES IN PIPE BEDDING | | | | | | | | |
|----------------------------|-------------|------|------------|------|-----------|------|-----------|-------------------|
| Outlet No. | Outlet Pipe | | Inlet Pipe | | Collector | | Thickness | Area of Formworks |
| | L1 | W1 | L2 | W2 | L3 | W3 | | |
| | m | m | m | m | m | m | | |
| DL 126 | 0.88 | 1.11 | 0.00 | 0.00 | 21.88 | 1.11 | 0.10 | 5.00 |
| DL 128 | 0.88 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.40 |
| DL 129 | 0.73 | 1.11 | 3.19 | 1.11 | 0.00 | 0.00 | 0.10 | 1.23 |
| DL 130 | 0.73 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.37 |
| DL 131 | 0.73 | 1.11 | 0.00 | 0.00 | 14.57 | 1.11 | 0.10 | 3.50 |
| DL 133A | 0.74 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.37 |
| DL 133B | 0.74 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.37 |
| DL 133C.4 | 1.10 | 1.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.44 |
| DL 133C.5 | 0.90 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.40 |
| DL 134 | 0.90 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.40 |
| DL 134.5 | 0.70 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.72 |
| DL 135.11 | 0.70 | 0.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.26 |
| DL 135.22 | 0.70 | 0.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.26 |
| DL 135.31 | 0.70 | 0.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.26 |
| DL 135.33 | 0.70 | 0.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.26 |
| DL 136 | 0.71 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.36 |
| DL 136.7 | 0.71 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.36 |
| DL 136.8 | 0.71 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.36 |
| DL 137 | 0.61 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.34 |
| DL 138 | 0.61 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.34 |
| DL 138.1 | 0.61 | 1.11 | 0.51 | 0.63 | 0.00 | 0.00 | 0.10 | 0.57 |
| DL 139 | 0.61 | 1.47 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.42 |
| DL 139A | 0.61 | 1.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.38 |

Right Bank STA 14+835 - 15+075

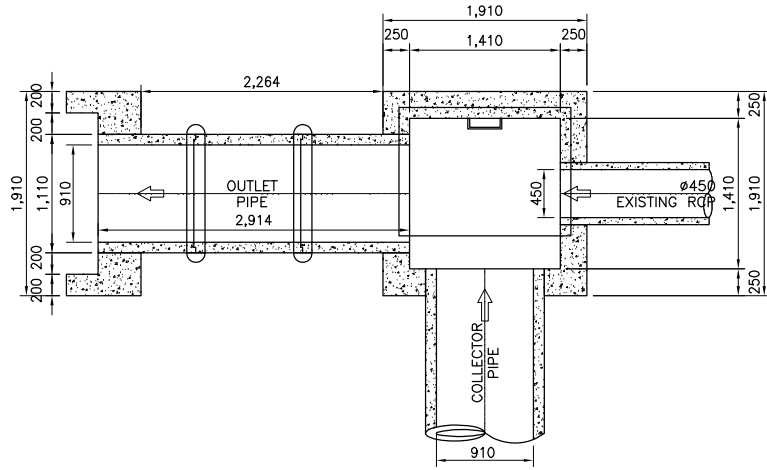
| BQ No. | Name of Item | Unit | Qty. |
|---|--|-------|--------|
| BILL No. 4 -EXCAVATION AND EARTH WORKS | | | |
| 4.8/1 | Excavation for manholes and junction manholes | | |
| | Excavation | Cu.m | 605.50 |
| | Clearing and Grubbing | Sq.m. | 532.55 |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 530.54 |
| | Clearing and Grubbing | Sq.m. | 442.48 |
| 4.8/1-2 | Excavation for junction manholes (junction pits) | Cu.m. | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 74.96 |
| | Clearing and Grubbing | Sq.m. | 90.07 |
| 4.8/2 | Excavation for pipe culverts | | |
| | Excavation, Small Amount: V<100 cu.m. | Cu.m. | 241.12 |
| | Clearing and Grubbing | Sq.m. | 191.90 |
| 4.16/1 | Random backfill | Cu.m. | 435.59 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 435.59 |
| 4.16/1-1 | Random backfill for manholes | Cu.m. | |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 380.07 |
| 4.16/1-2 | Random backfill for junction manholes (junction pits) | Cu.m. | |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 55.52 |
| 4.17/1 | Zone B pipe backfill | Cu.m. | 60.35 |
| | Sand Fill, in Small Area: V<100 cu.m. | Cu.m. | 60.35 |
| 4.17/2 | Zone C pipe backfill (excavated material) | Cu.m. | 85.44 |
| | Common/Random Backfill (with Excavated Material) | Cu.m. | 85.44 |
| 4.5/31-A | Temporary Removal and reinstallation of existing fences | L.m. | 39.14 |
| | Temporary removal of existing fences (for manhole) | L.m. | 22.42 |
| | Tempoary removal of existing fences (for collector pipe) | L.m. | 16.73 |
| | Reinstallation of existing fences (for manhole) | L.m. | 22.42 |
| | Reinstallation of existing fences (for collector pipe) | L.m. | 16.73 |
| 4.5/48-A | Demolition and removal of existing revetment | L.m. | 123.57 |
| | Demolition and removal of existing revetment (for manhole) | L.m. | 83.33 |
| | Demolition and removal of existing revetment (for collector pipe) | L.m. | 40.24 |
| 4.5/50-A | Demolition and restoration of existing CHB wall | L.m. | 58.28 |
| | Temporary removal of existing fences (for manhole) | L.m. | 34.76 |
| | Tempoary removal of existing fences (for collector pipe) | L.m. | 23.52 |
| 4.5/51-A | Temporary Removal and reinstallation of existing steel handrail | L.m. | 0.00 |
| | Temporary removal of existing steel handrail (for manhole) | L.m. | 0.00 |
| | Tempoary removal of existing steel handrail (for collector pipe) | L.m. | 0.00 |
| | Reinstallation of existing steel handrail (for manhole) | L.m. | 0.00 |
| | Reinstallation of existing steel handrail (for collector pipe) | L.m. | 0.00 |
| 4.5/52-A | Restoration of existing revetment | L.m. | 26.93 |
| | Temporary removal of existing revetment (for manhole) | L.m. | 26.93 |
| | Tempoary removal of existing revetment (for collector pipe) | L.m. | 0.00 |
| BILL No. 5 - CONCRETE | | | |
| 5.11/1 | Reinforcement Grade 275 | Ton | 8.08 |
| | Ladder Rung (16mm dia-Grade 40) in Manholes | Kg | 94.70 |
| | Ladder Rung (16mm dia-Grade 40) in Junction Manholes | Kg | 20.83 |
| | Reinforcement (16mm dia-Grade 275) in U - ditch | Kg | 0.00 |
| | Reinforcement (16mm dia-Grade 275) in box culvert | Kg | 0.00 |
| 5.16/1 | Precast concrete manhole and junction boxes covers | Cu.m. | 2.66 |
| | Formwork F2 (for Small Sized Structure) | Sq.m. | 7.49 |
| | Reinforcement | Ton | 0.38 |
| 5.22/1 | Concrete in manholes, junction boxes and outlets | Cu.m. | 88.54 |
| 5.22/1-1 | Concrete in manholes | Cu.m. | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 60.32 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 359.70 |
| | Staging/Scaffolding Work | Sq.m. | 249.82 |
| | Supporting/Scaffolding Work | Cu.m. | 3.33 |
| 5.22/1-2 | Concrete in junction manholes (junction pits) | Cu.m. | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 10.72 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 76.81 |
| | Staging/Scaffolding Work | Sq.m. | 49.70 |
| | Supporting/Scaffolding Work | Cu.m. | 0.00 |
| 5.22/1-3 | Concrete in outlets | Cu.m. | |
| | Concrete Work for Reinforced Concrete, Class-A, Manpower Placing | Cu.m. | 17.49 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 66.40 |
| | Staging/Scaffolding Work | Sq.m. | 10.02 |
| | Supporting/Scaffolding Work | Cu.m. | 5.80 |
| 5.22/2 | Concrete for pipe bedding | Cu.m. | 6.47 |
| | Concrete Work for Massive Concrete, Class-B, Manpower Placing | Cu.m. | 6.47 |
| | Formwork F2 (for Small Sized Structure) | sq.m. | 16.55 |
| 5.23/1 | Levelling concrete | Cu.m. | 5.37 |
| | Concrete Work for Leveling Concrete, Class-F, Concrete Pump Placing | Cu.m. | 5.37 |
| | Formwork for Leveling Concrete, Class-F | Sq.m. | 10.30 |
| BILL No. 8 - DRAINAGE | | | |
| 8.4/5 | Reinforced concrete pipe – 760 mm dia. | | |
| | Installation of RC Pipe Culvert, 760mm (30") Dia. | L.m. | 3.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 0.10 |
| 8.4/6 | Reinforced concrete pipe – 910 mm dia. | | |
| | Installation of RC Pipe Culvert, 910mm (36") Dia. | L.m. | 63.00 |
| | Cement Mortar (1:2) for Joint Collar of RC Pipe Culvert | Cu.m. | 3.15 |
| 8.9/3 | PVC drainage pipes - 150mm dia. | | |
| | Installation of PVC Pipe, 150mm (6") Dia. X 6m | ea | 4.00 |
| | Coupling for PVC Joint | ea | 3.00 |

QUANTITIES OF MANHOLE

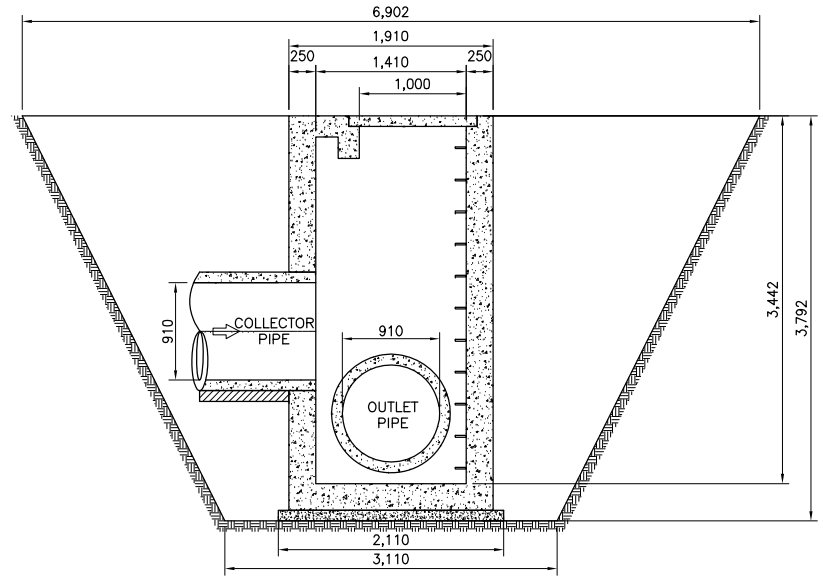
Manhole No.: MR 185

Location: 11 + 849

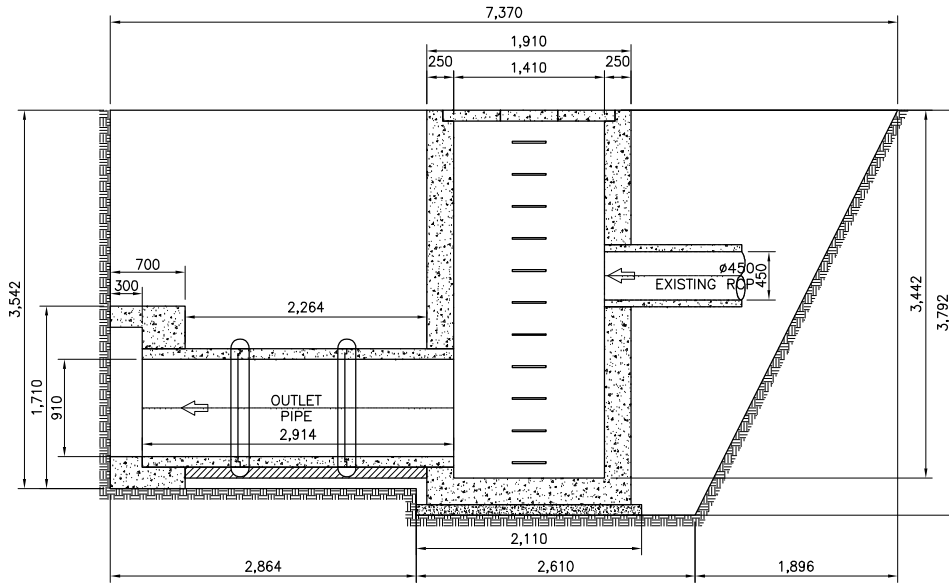
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=10.14 A2=13.49 | 5.01 5.01 | 50.78 67.54 | 118.32 m ³ |
| 2. Lev. Concrete | W=2.11 L=2.11 | 4.45 | 0.1 | 0.45 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.91 | 2.30 | 0.25 | 0.58 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.91 Win=1.41 Lin=1.41 | Aout=3.65 Ain=1.99 Anet=1.66 | 3.442 | 5.714 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.58 | 0.26 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 5.16 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.29 0.37 0.48 1.44 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=2.91 | | 3 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=2 | 0.115359282 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=2.26 | | 0.251304 | m ³ |
| 12. Backfill | | | | 98.60 | m ³ |



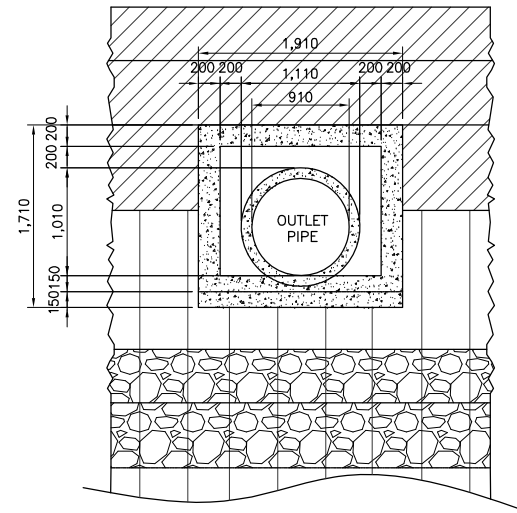
1 PLAN
SCALE B



3 SECTION
SCALE B



2 SECTION
SCALE B



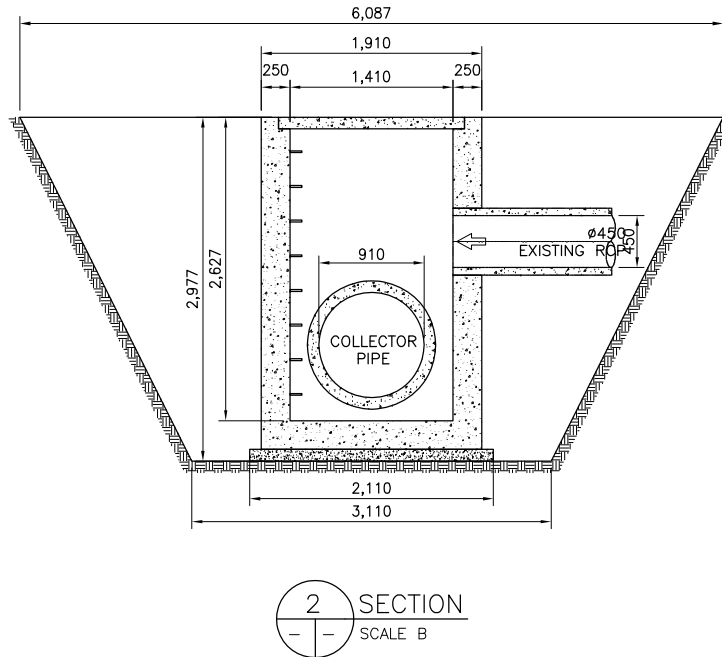
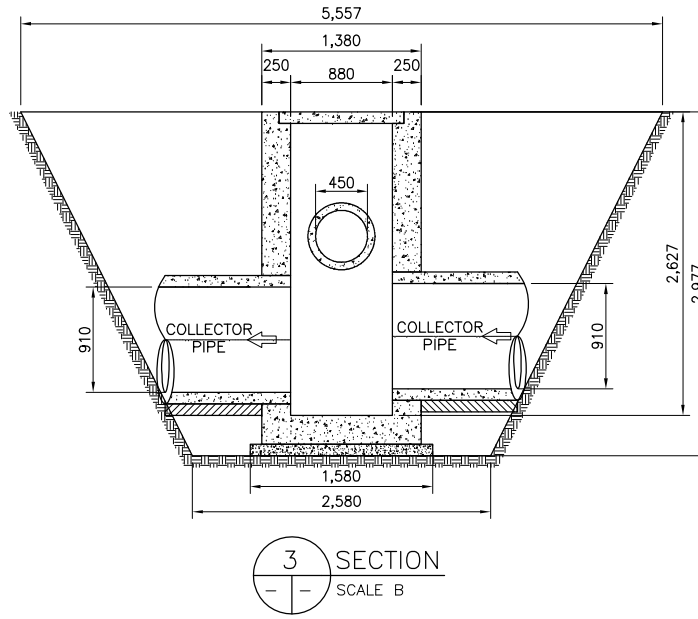
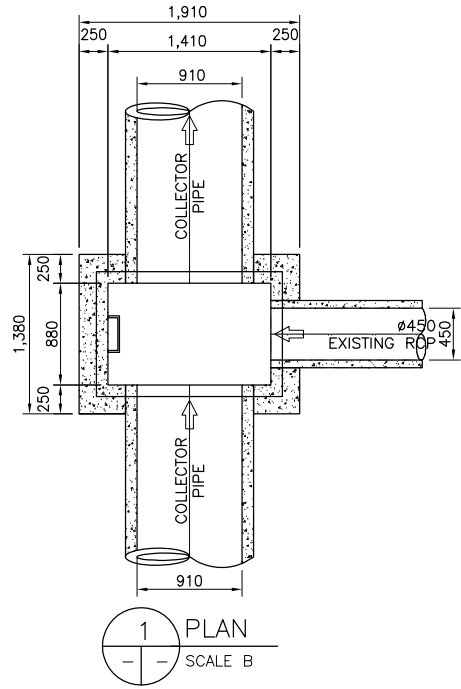
4 ELEVATION
SCALE B

QUANTITIES OF MANHOLE

Manhole No.: MR 186

Location: 11 + 864

| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|---------------|------------------------------------|-------------------------------|
| 1. Excavation | | A1=13.69 | 4.07 | 55.70 | |
| | | | | 55.70 | m ³ |
| 2. Lev. Concrete | W=2.11 L=1.58 | 3.33 | 0.1 | 0.33 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.38 | 2.64 | 0.25 | 0.66 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.38 Win=1.41 Lin=.88 | Aout=2.64 Ain=1.24 Anet=1.40 | 2.627 | 3.665 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall A | DiaB=0.58 | 0.26 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 3.12 | m ³ |
| 5. Conc. Cover | L=1.08 W=1.61 | 1.7388 | 0.1 | 0.17 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Backfill | | | | 46.41 | m3 |

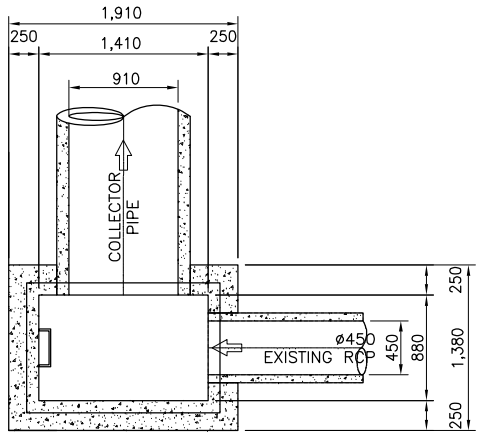


QUANTITIES OF MANHOLE

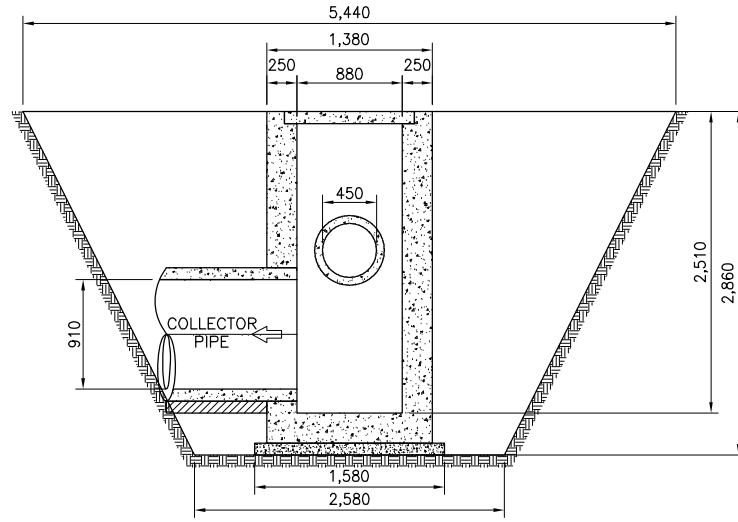
Manhole No.: MR 187

Location: 14 + 884

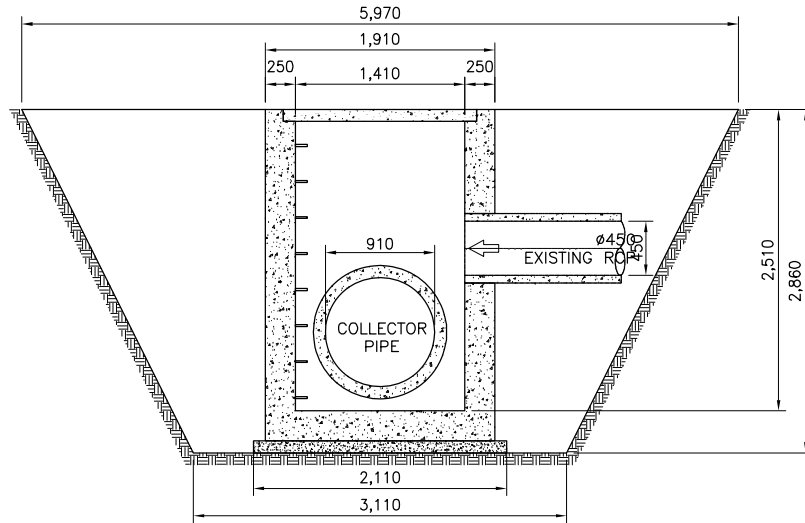
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|-------------------------------|
| 1. Excavation | | A1=12.98 | 4.01 | 52.07 | |
| | | | | 52.07 | m ³ |
| 2. Lev. Concrete | W=2.11 L=1.58 | 3.33 | 0.1 | 0.33 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.38 | 2.64 | 0.25 | 0.66 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.38 Win=1.41 Lin=.88 | Aout=2.64 Ain=1.24 Anet=1.40 | 2.510 | 3.501 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall A | DiaB=0.58 | 0.26 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 3.19 | m ³ |
| 5. Conc. Cover | L=1.08 W=1.61 | 1.7388 | 0.1 | 0.17 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=8 | 0.000201062 | | 0.000120637 0.95 7.58 | m ³ kg/pc kg |
| 7. Backfill | | | | 43.39 | m ³ |



3 PLAN
SCALE B



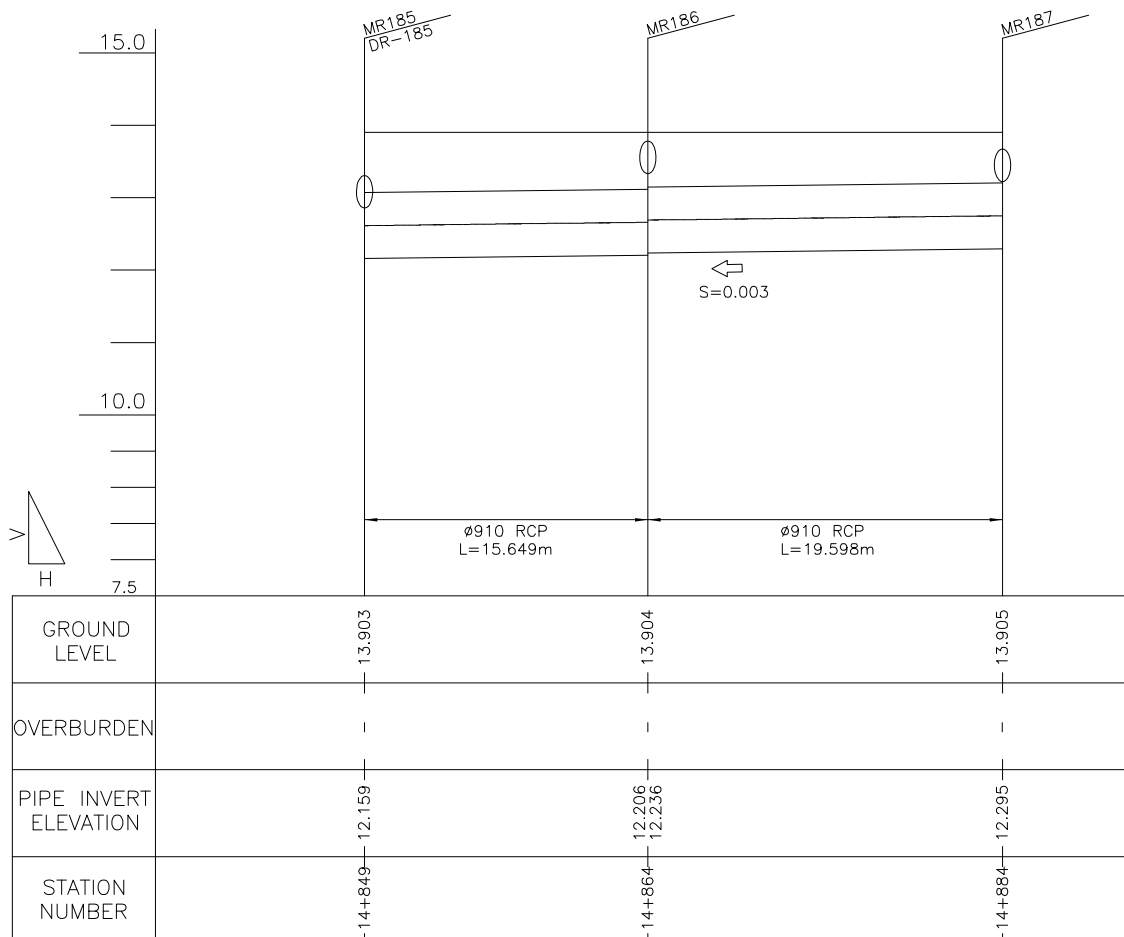
5 SECTION
SCALE B



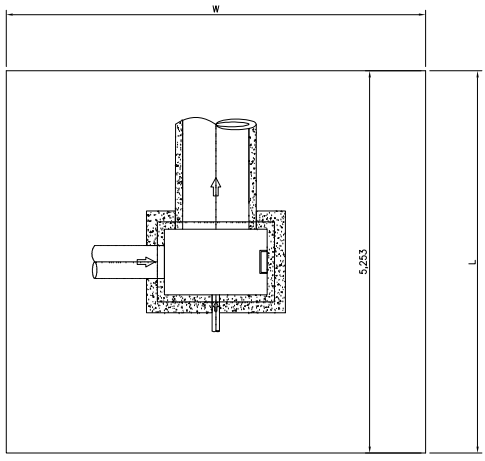
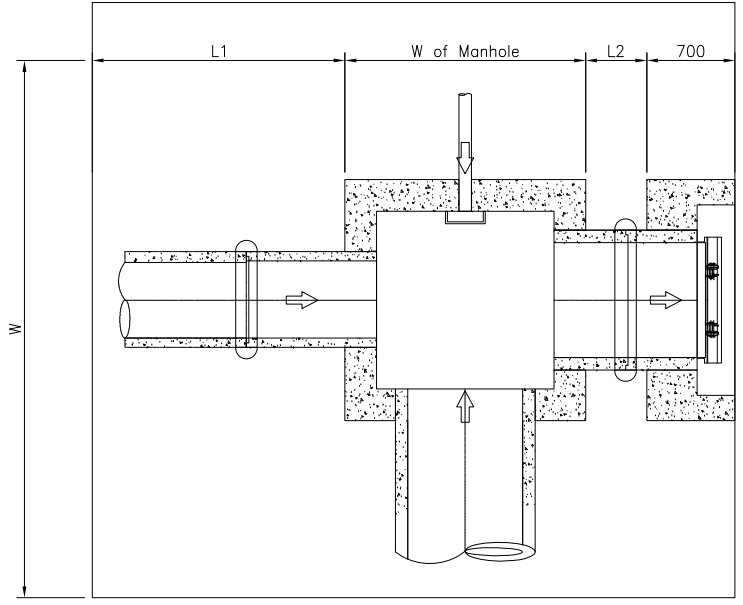
4 SECTION
SCALE B

QUANTITIES

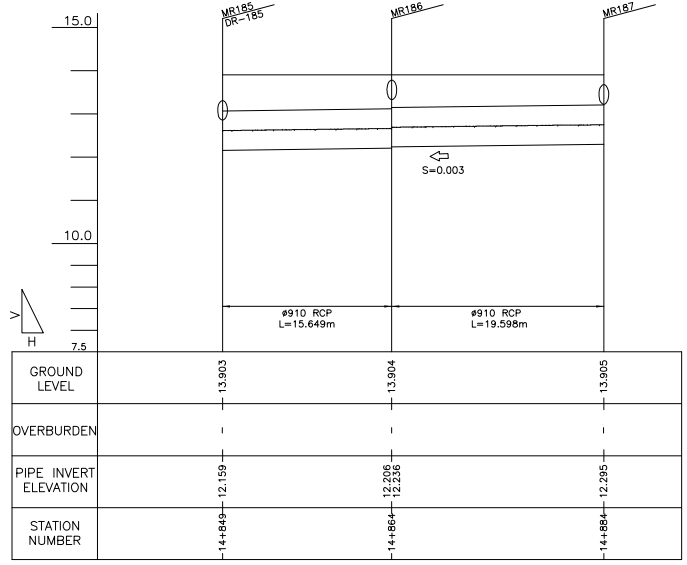
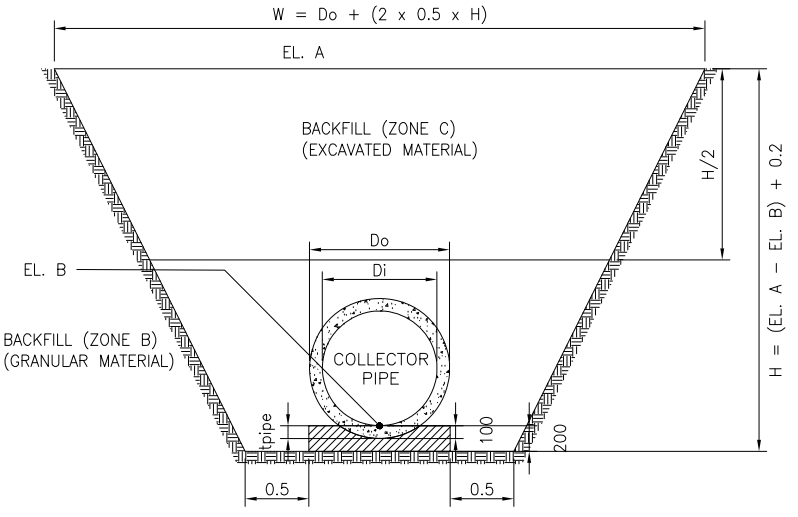
| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|-----------|-----------|----------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.91 | | L=35.35 | 36 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=1.11 | L=35.35 | 0.1 | 3.92 | m ³ |
| 3. Conc. Collar | D1=1.110m | A1=0.97 | 0.17 | 2.02 | m ³ |
| | D2=1.290m | A2=1.31 | | | |
| | | Anet=0.34 | Qty=35 | | |
| 4. Formworks | | | | 41.60 | m ³ |



| | | |
|---------------------------------------|-------------------------------|-------------------------------------|
| Clearing (Manhole 185) | | |
| L1 | 2.496 m | |
| W of Manhole | 1.91 m | A=50.87 m² |
| L2 | 2.264 m | |
| W | 6.902 m | |
| Clearing (Junction Manhole 186) | | |
| W | 6.087 m | A=33.83 m² |
| L | 5.557 m | |
| Clearing (Junction Manhole 187) | | |
| W | 5.97 m | A=32.48 m² |
| L | 5.44 m | |
| Clearing (Collector 187 - 186) | | |
| W | 3.949 m | A=77.39 m² |
| L | 19.598 m | |
| Clearing (Collector 186 - 185) | | |
| W | 3.676 m | A=57.53 m² |
| L | 15.649 m | |
| (Collector Pipe) Downstream 187 - 186 | | |
| Do | 1.11 m | Excavation A=5.69 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.22 m ² |
| H | 1.868 m | Backfill Zone C |
| EL. A | 13.904 m | A=1.89 m ² |
| EL. B | 12.236 m | |
| W | 3.978 m | |
| (Collector Pipe) Upstream | | |
| Do | 1.11 m | Excavation A=5.46 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.13 m ² |
| H | 1.81 m | Backfill Zone C |
| EL. A | 13.905 m | A=1.82 m ² |
| EL. B | 12.295 m | |
| W | 3.92 m | |
| (Collector Pipe) Downstream 186 - 185 | | |
| Do | 0.4 m | Excavation A=4.61 m ² |
| Di | 0.3 m | Backfill Zone B |
| tpipe | 0.05 m | A=1.63 m ² |
| H | 1.944 m | Backfill Zone C |
| EL. A | 13.903 m | A=1.64 m ² |
| EL. B | 12.159 m | |
| W | 3.344 m | |
| (Collector Pipe) Upstream | | |
| Do | 1.11 m | Excavation A=5.81 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.26 m ² |
| H | 1.898 m | Backfill Zone C |
| EL. A | 13.904 m | A=1.93 m ² |
| EL. B | 12.206 m | |
| W | 4.008 m | |
| Collector Pipe 187 - 186 | | |
| Excavation | Volume | |
| | 109.7396 m³ | |
| Backfill Zone B | 23.10933 m³ | |
| Backfill Zone C | 36.49013 m³ | |
| Collector Pipe 186 - 185 | | |
| Excavation | Volume | |
| | 81.75352 m³ | |
| Backfill Zone B | 22.6848 m³ | |
| Backfill Zone C | 27.97636 m³ | |



3.874

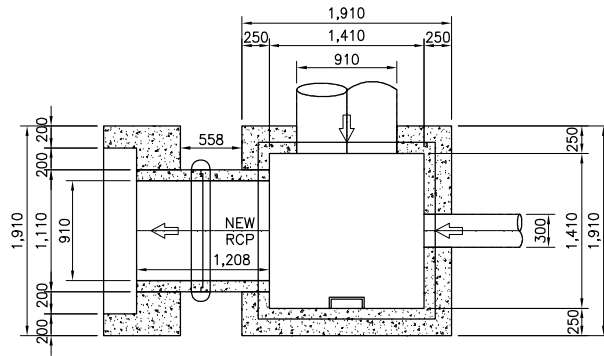


QUANTITIES OF MANHOLE

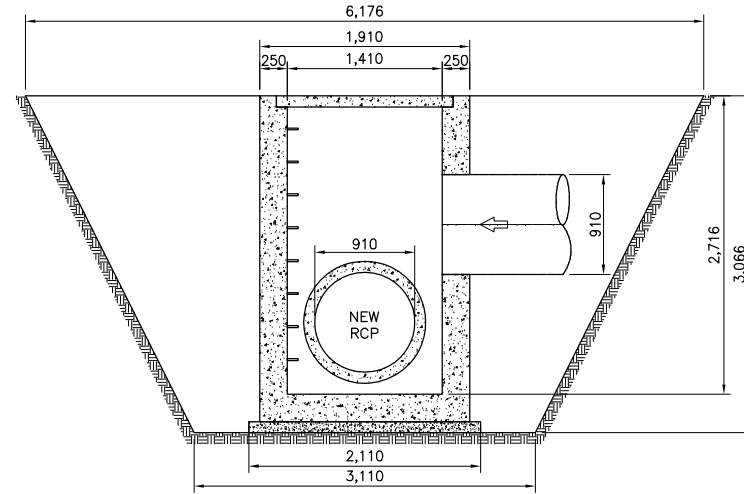
Manhole No.: MR 189

Location: 14 + 899

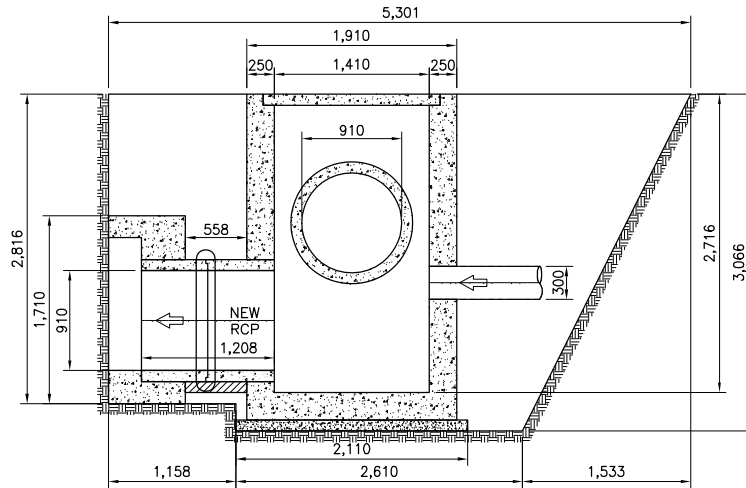
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.26 A2=10.35 | 4.64 4.64 | 15.14 48.07 | 63.21 m ³ |
| 2. Lev. Concrete | W=2.11 L=2.11 | 4.45 | 0.1 | 0.45 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.91 | 2.30 | 0.25 | 0.58 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.91 Win=1.41 Lin=1.41 | Aout=3.65 Ain=1.99 Anet=1.66 | 2.716 | 4.509 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.40 | 0.13 | 0.25 | 0.03 | |
| Pipe hole on Wall C | DiaC=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.99 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.29 0.37 0.48 1.44 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.21 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.56 | | 0.061938 | m ³ |
| 12. Backfill | | | | 52.67 | m ³ |



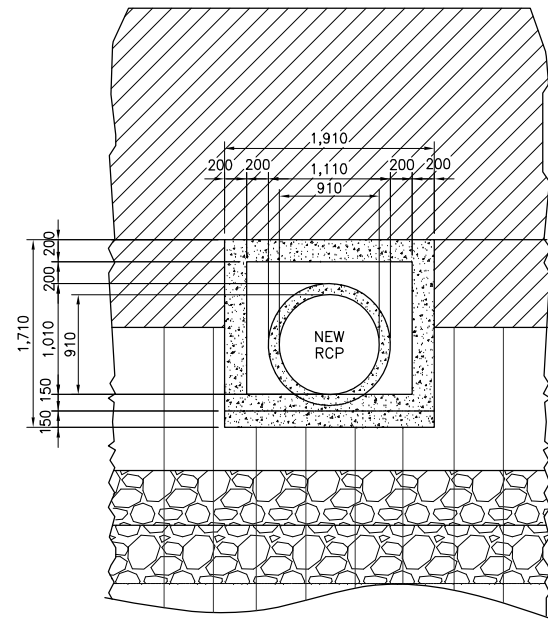
2 PLAN
SCALE B



4 SECTION(MR193B.1)
SCALE B



3 SECTION
SCALE B



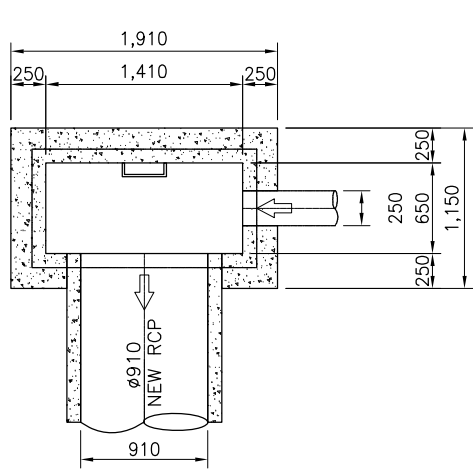
5 ELEVATION
SCALE B

QUANTITIES OF MANHOLE

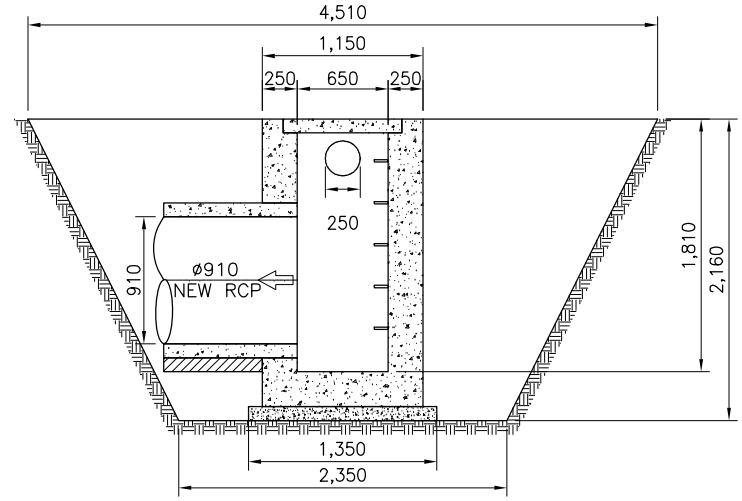
Manhole No.: MR 188

Location: 14 + 899

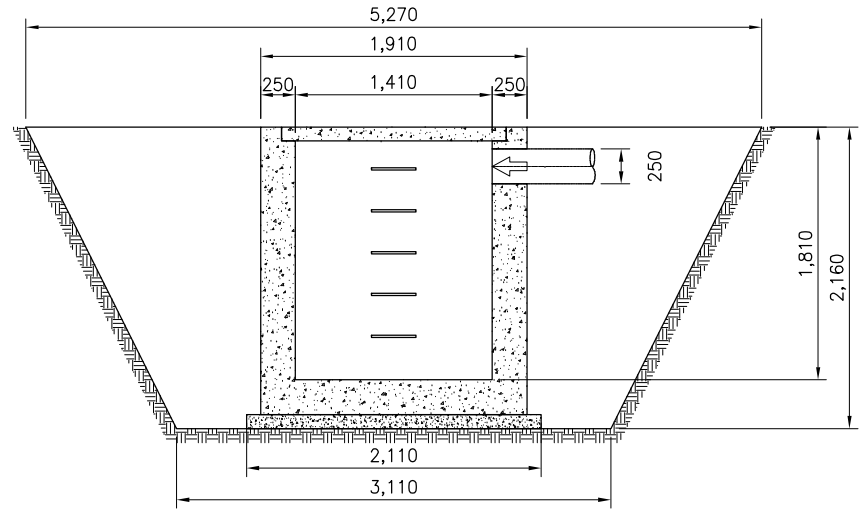
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|-------------------------|---|--|------------|------------------------------------|-------------------------------|
| 1. Excavation | | A1=9.05 | 3.43 | 31.04 | |
| | | | | 31.04 | m ³ |
| 2. Lev. Concrete | W=2.11 L=1.35 | 2.85 | 0.1 | 0.28 | m ³ |
| 3. Bottom Slab | W=1.91 L=1.15 | 2.20 | 0.25 | 0.55 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.91 Lout=1.15 Win=1.41 Lin=.65 | Aout=2.20 Ain=0.92 Anet=1.28 | 1.810 | 2.317 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall A | DiaB=0.25 | 0.05 | 0.25 | 0.01 | |
| Pipe hole on Wall C | DiaC=1.11 | 0.97 | 0.25 | 0.24 | |
| Pipe hole on Wall D | DiaD=0.00 | 0.00 | 0.25 | 0.00 | |
| Net Wall Vol. | | | | 2.06 | m ³ |
| 5. Conc. Cover | L=0.85 W=1.61 | 1.3685 | 0.1 | 0.14 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=6 | 0.000201062 | | 0.000120637 0.95 5.68 | m ³ kg/pc kg |
| 7. Backfill | | | | 25.87 | m ³ |



1 PLAN
SCALE B



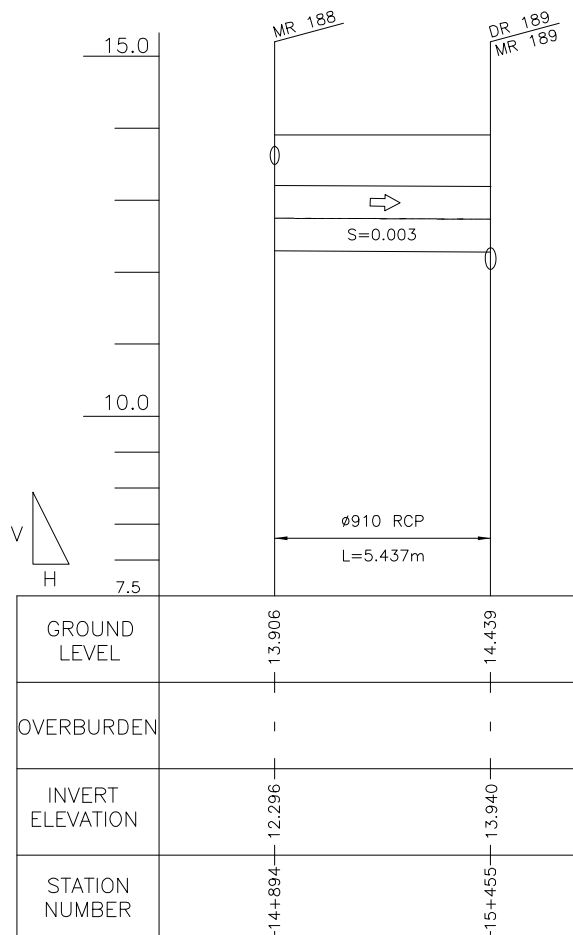
3 SECTION(MR188)
SCALE B



2 SECTION
SCALE B

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|-------------------------|-----------|-----------|----------------|---------------|----------------|
| 1. Collector Pipe (RCP) | Dia=0.91 | | L=5.45 | 6 | pc |
| | | | | | |
| 2. Conc. Bedding | Dia=1.11 | L=5.45 | 0.1 | 0.61 | m ³ |
| 3. Conc. Collar | D1=1.110m | A1=0.97 | 0.17 | 0.29 | m ³ |
| | D2=1.290m | A2=1.31 | | | |
| | | Anet=0.34 | Qty=5 | | |
| 4. Formworks | | | | 6.26 | m ³ |



Clearing (Manhole 189)

| | | |
|--------------|---------|------------------------------|
| L1 | 2.133 m | |
| W of Manhole | 1.91 m | A=32.74 m² |
| L2 | 0.558 m | |
| W | 6.176 m | |

Clearing (Junction Manhole 188)

| | | |
|---|--------|------------------------------|
| W | 5.27 m | A=23.77 m² |
| L | 4.51 m | |

Clearing (Collector 188 - 189)

| | | |
|---|---------|------------------------------|
| W | 3.928 m | A=21.36 m² |
| L | 5.437 m | |

(Collector Pipe) Downstream 188 - 189

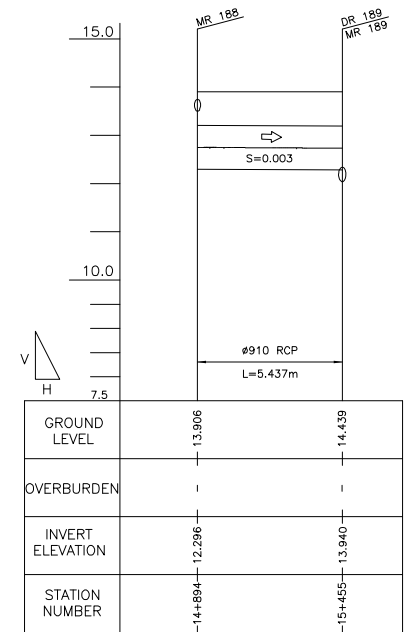
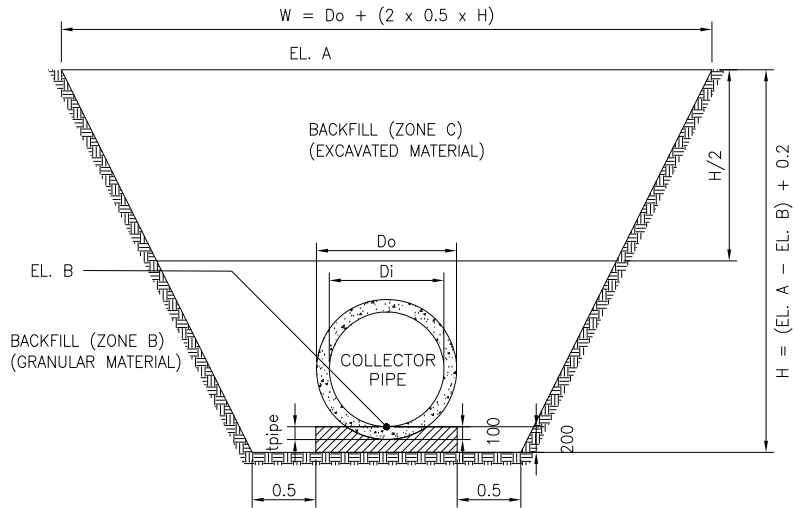
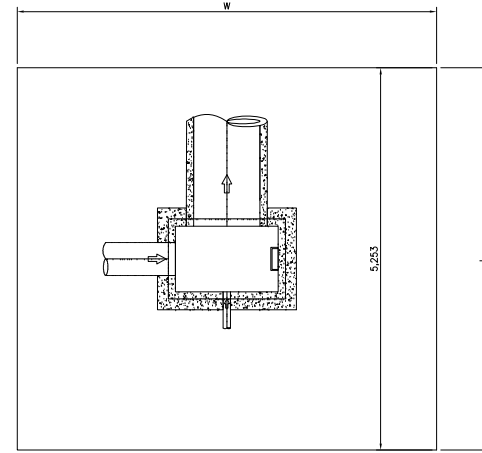
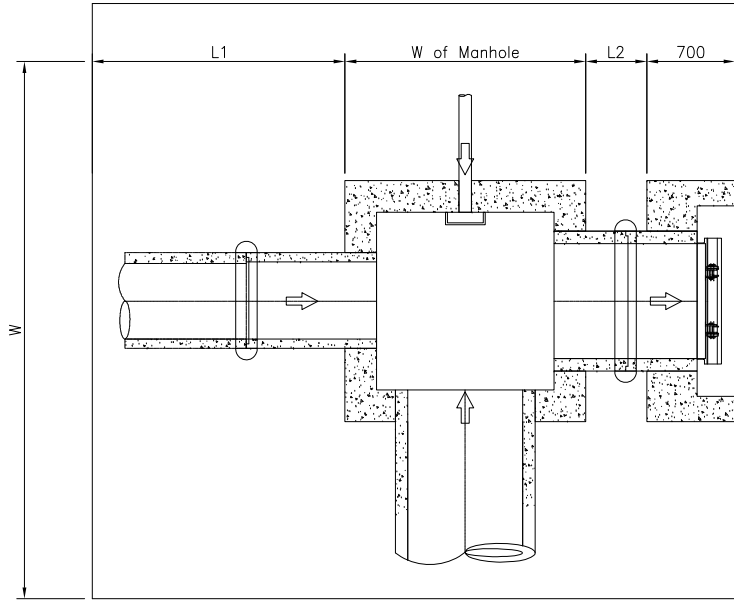
| | | |
|-------|----------|-------------------------------------|
| Do | 1.11 m | Excavation A=5.52 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.15 m ² |
| H | 1.826 m | Backfill Zone C |
| EL. A | 13.906 m | A=1.84 m ² |
| EL. B | 12.28 m | |
| W | 3.936 m | |

(Collector Pipe) Upstream

| | | |
|-------|----------|-------------------------------------|
| Do | 1.11 m | Excavation A=5.46 m ² |
| Di | 0.91 m | Backfill Zone B |
| tpipe | 0.1 m | A=1.13 m ² |
| H | 1.81 m | Backfill Zone C |
| EL. A | 13.906 m | A=1.82 m ² |
| EL. B | 12.296 m | |
| W | 3.92 m | |

Collector Pipe 188 - 189

| | |
|-----------------|-------------------------------|
| Excavation | 29.9309 m³ |
| Backfill Zone B | 6.224679 m³ |
| Backfill Zone C | 9.961255 m³ |

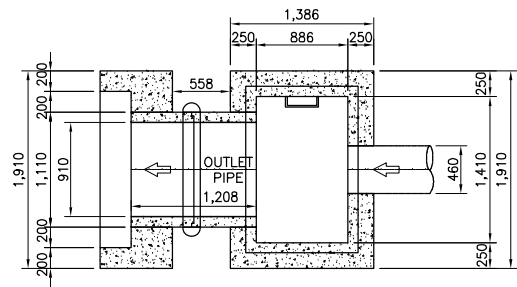


QUANTITIES OF MANHOLE

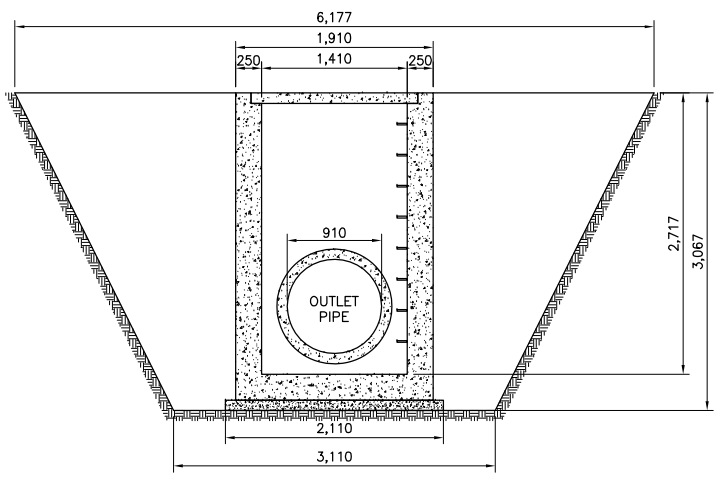
Manhole No.: MR 190

Location: 14 + 196

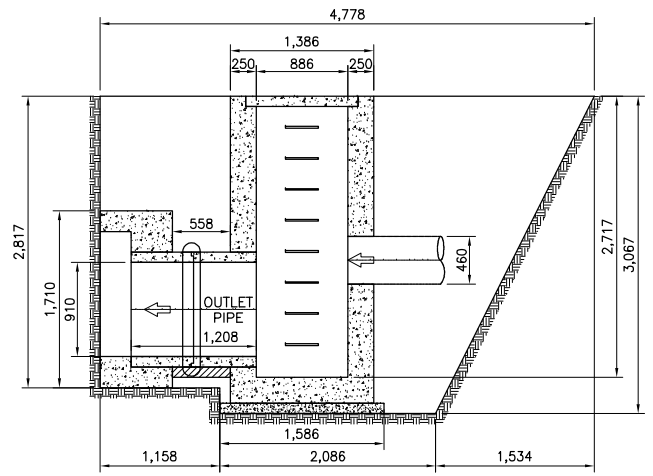
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.26 A2=8.75 | 4.64 4.64 | 15.15 40.63 | 55.77 m ³ |
| 2. Lev. Concrete | W=1.59 L=2.11 | 3.35 | 0.1 | 0.33 | m ³ |
| 3. Bottom Slab | W=1.39 L=1.91 | 2.65 | 0.25 | 0.66 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.39 Lout=1.91 Win=0.89 Lin=1.41 | Aout=2.65 Ain=1.25 Anet=1.40 | 2.717 | 3.798 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.59 | 0.27 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.49 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.09 | 1.74846 | 0.1 | 0.17 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.29 0.37 0.48 1.44 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.21 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.56 | | 0.061938 | m ³ |
| 12. Backfill | | | | 46.48 | m ³ |



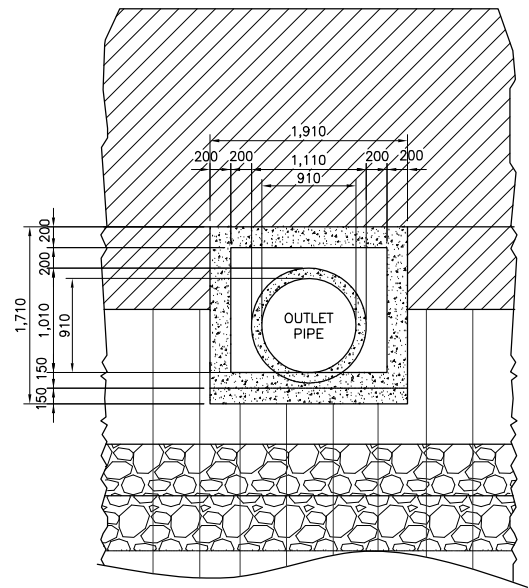
2 PLAN
SCALE B



4 SECTION(MR190)
SCALE B



3 SECTION
SCALE B

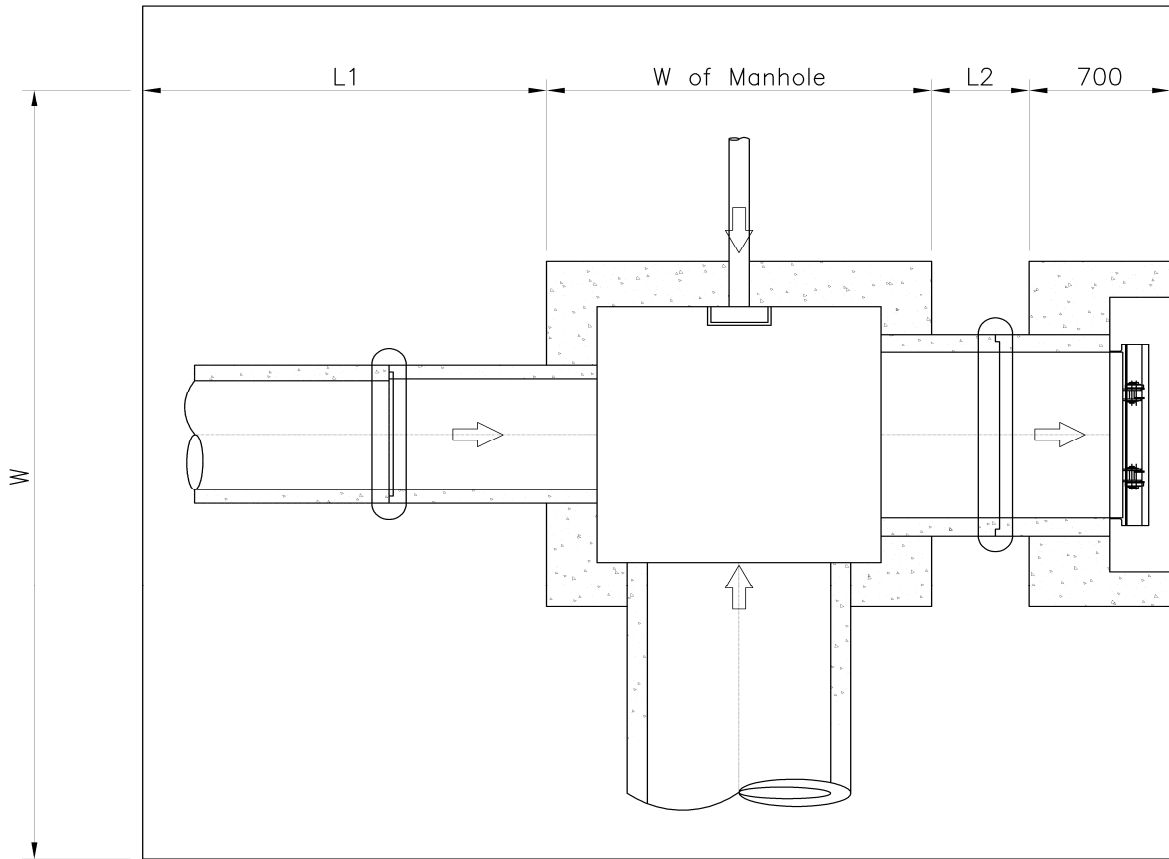


5 ELEVATION
SCALE B

Clearing (Manhole 190)

| | |
|--------------|----------|
| L1 | 2.1335 m |
| W of Manhole | 1.386 m |
| L2 | 0.558 m |
| W | 6.177 m |

A=29.51 m²

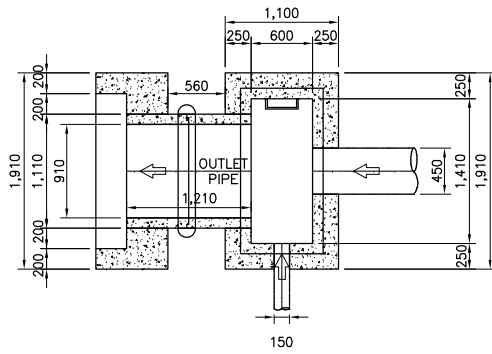


QUANTITIES OF MANHOLE

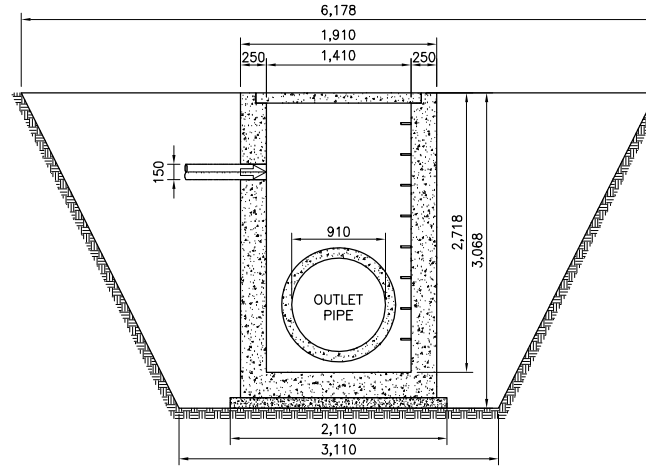
Manhole No.: MR 191

Location: 14 + 924

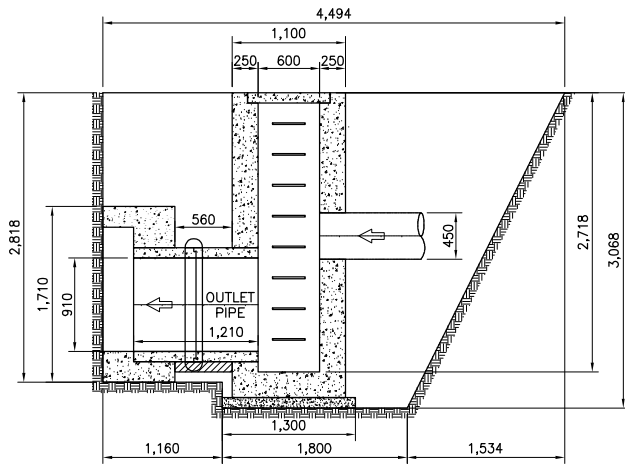
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.27 A2=7.88 | 4.64 4.64 | 15.18 36.57 | 51.75 m ³ |
| 2. Lev. Concrete | W=1.30 L=2.11 | 2.74 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.91 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.91 Win=0.60 Lin=1.41 | Aout=2.10 Ain=0.85 Anet=1.26 | 2.718 | 3.411 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.58 | 0.26 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=0.15 | 0.02 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.10 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.80 | 1.288 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.29 0.37 0.48 1.44 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.21 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.057679641 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.56 | | 0.06216 | m ³ |
| 12. Backfill | | | | 43.13 | m ³ |



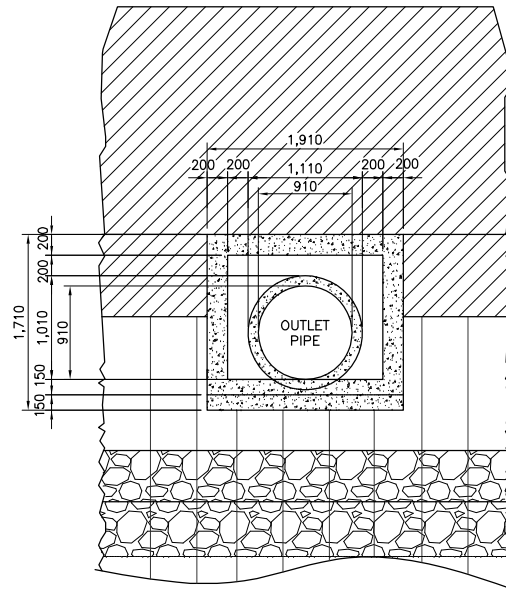
2 PLAN
SCALE A



4 SECTION(MR191)
SCALE A



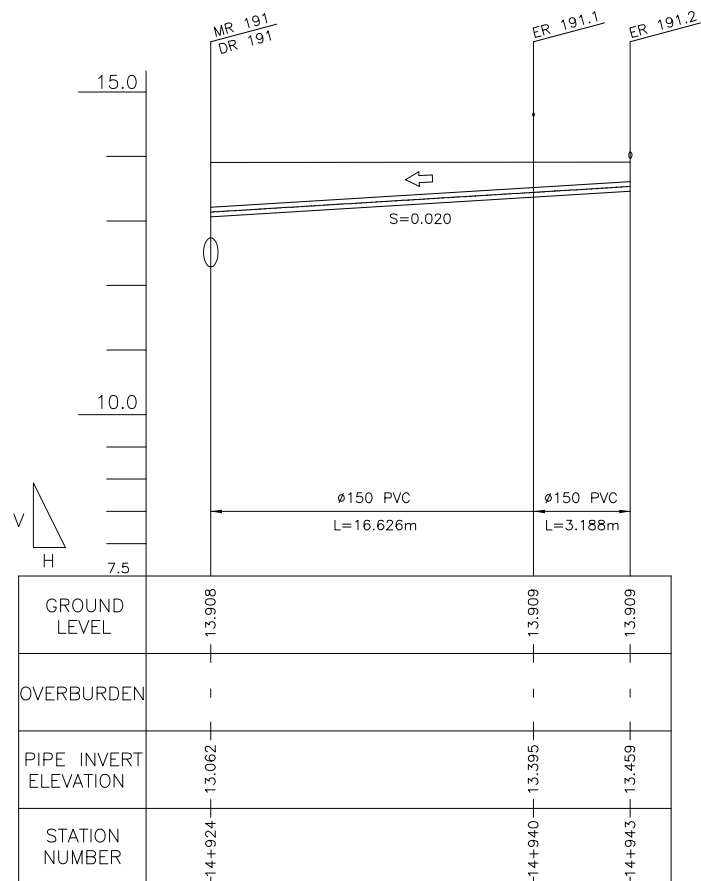
2 SECTION
SCALE A



5 ELEVATION
SCALE A

QUANTITIES

| Item | W or L | Area | Thkness/Length | Vol./Quantity | Unit |
|--------------------------------|----------|------|----------------|---------------|------|
| 1. Collector Pipe (PVC) | Dia=0.15 | | L=20.21 | 4 | pc |
| | | | | | |
| 2. PVC Coupling | Dia=0.15 | | | 3 | pc |



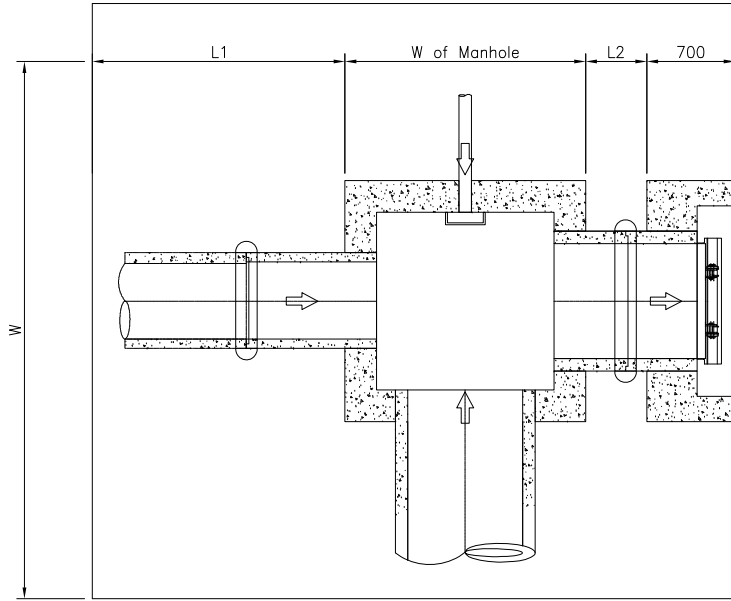
| | | |
|------------------------|---------|------------------------------|
| Clearing (Manhole 191) | | |
| L1 | 2.134 m | |
| W of Manhole | 1.1 m | A=27.76 m² |
| L2 | 0.56 m | |
| W | 6.178 m | |

| | | |
|---------------------------------|----------|------------------------------|
| Clearing (Clearing 191.2 - 191) | | |
| W | 1.798 m | A=35.63 m² |
| L | 19.814 m | |

| | | |
|----------------------------|-------------|-----------------------|
| (Collector PVC) Downstream | 191.2 - 191 | |
| D | 0.15 m | Excavation |
| W1 | 2.00 m | A=1.33 m ² |
| W2 | 1.57 m | Backfill Zone B |
| H | 0.846 m | A=0.56 m ² |
| H/2 | 0.423 m | Backfill Zone C |
| EL. A | 13.908 m | A=0.75 m ² |
| EL. B | 13.062 m | |

| | | |
|--------------------------|----------|-----------------------|
| (Collector PVC) Upstream | | |
| D | 0.15 m | Excavation |
| W1 | 1.60 m | A=0.62 m ² |
| W2 | 1.38 m | Backfill Zone B |
| H | 0.45 m | A=0.27 m ² |
| H/2 | 0.225 m | Backfill Zone C |
| EL. A | 13.909 m | A=0.33 m ² |
| EL. B | 13.459 m | |

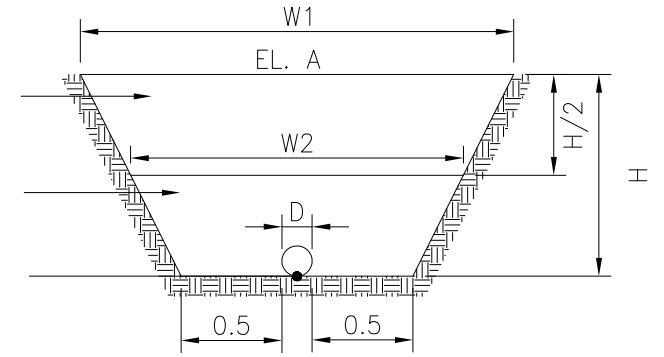
| | |
|---------------------------|-------------------------------|
| Collector PVC 191.2 - 191 | Volume |
| Excavation | 19.70005 m³ |
| Backfill Zone B | 8.333043 m³ |
| Backfill Zone C | 11.00986 m³ |



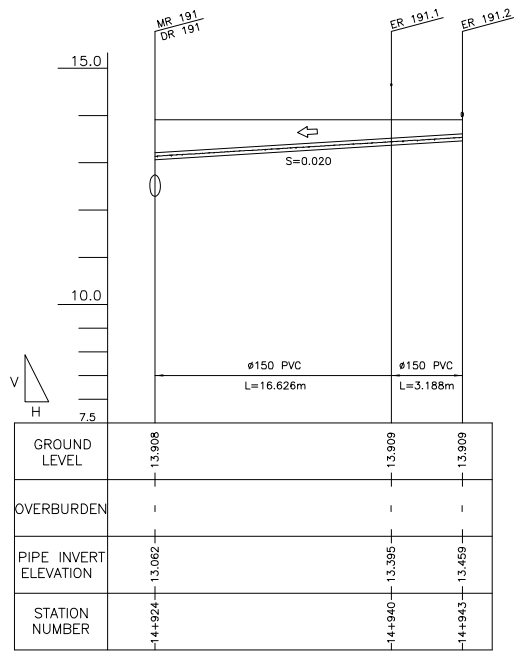
BACKFILL (ZONE C)
(EXCAVATED MATERIAL)

BACKFILL (ZONE B)
(GRANULAR MATERIAL)

EL. B
COLLECTOR PVC



3.889

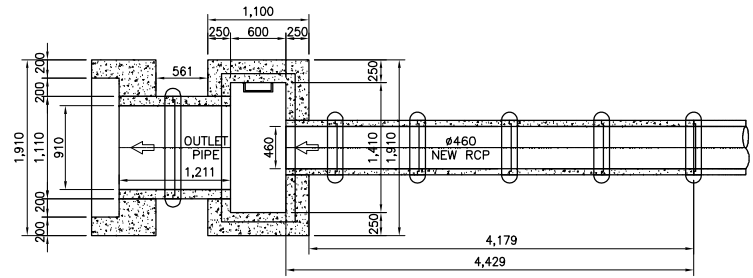


QUANTITIES OF MANHOLE

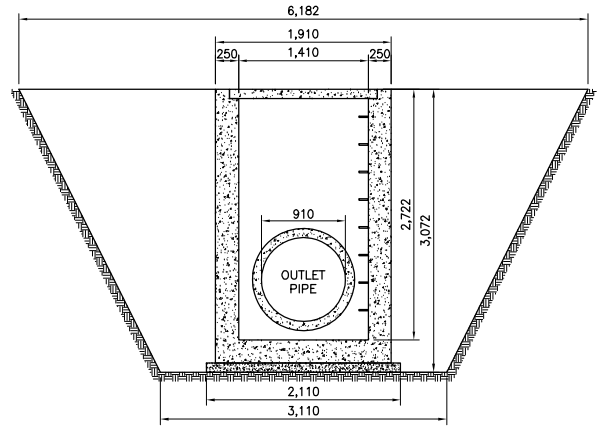
Manhole No.: MR 193A

Location: 15 + 015

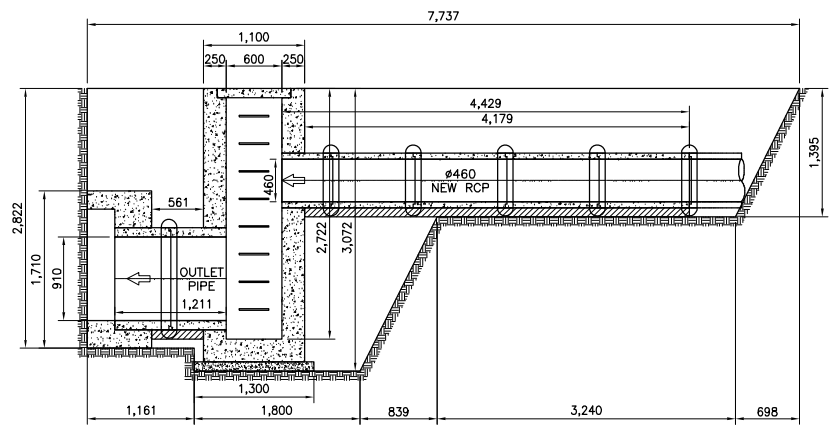
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.28 A2=7.07 A3=4.94 | 4.65 4.65 4.65 | 15.22 32.82 22.94 70.98 | m ³ |
| 2. Lev. Concrete | W=1.30 L=2.11 | 2.74 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.91 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.91 Win=0.60 Lin=1.41 | Aout=2.10 Ain=0.85 Anet=1.26 | 2.722 | 3.416 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.59 | 0.27 | 0.25 | 0.07 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.11 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.80 | 1.288 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.29 0.37 0.48 1.44 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.21 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.06 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.56 | | 0.06 | m ³ |
| 12. Inlet Pipe | Dia=.460m | L=4.43 | | 5 | pc |
| 13. Concrete Collar | D1=.586m D2=.766m | A1=0.27 A2=0.46 Anet=0.19 | 0.17 Qty=5 | 0.16 | m ³ |
| 14. Conc. Bedding (Inlet Pipe) | Dia=.586m | L=4.18 | | 0.24 | m ³ |
| 15. Backfill | | | | 59.15 | m ³ |



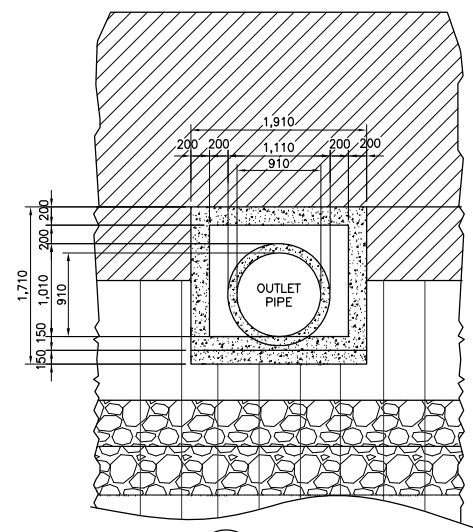
2 PLAN
SCALE B



4 SECTION(MR193A)
SCALE B



3 SECTION
SCALE B



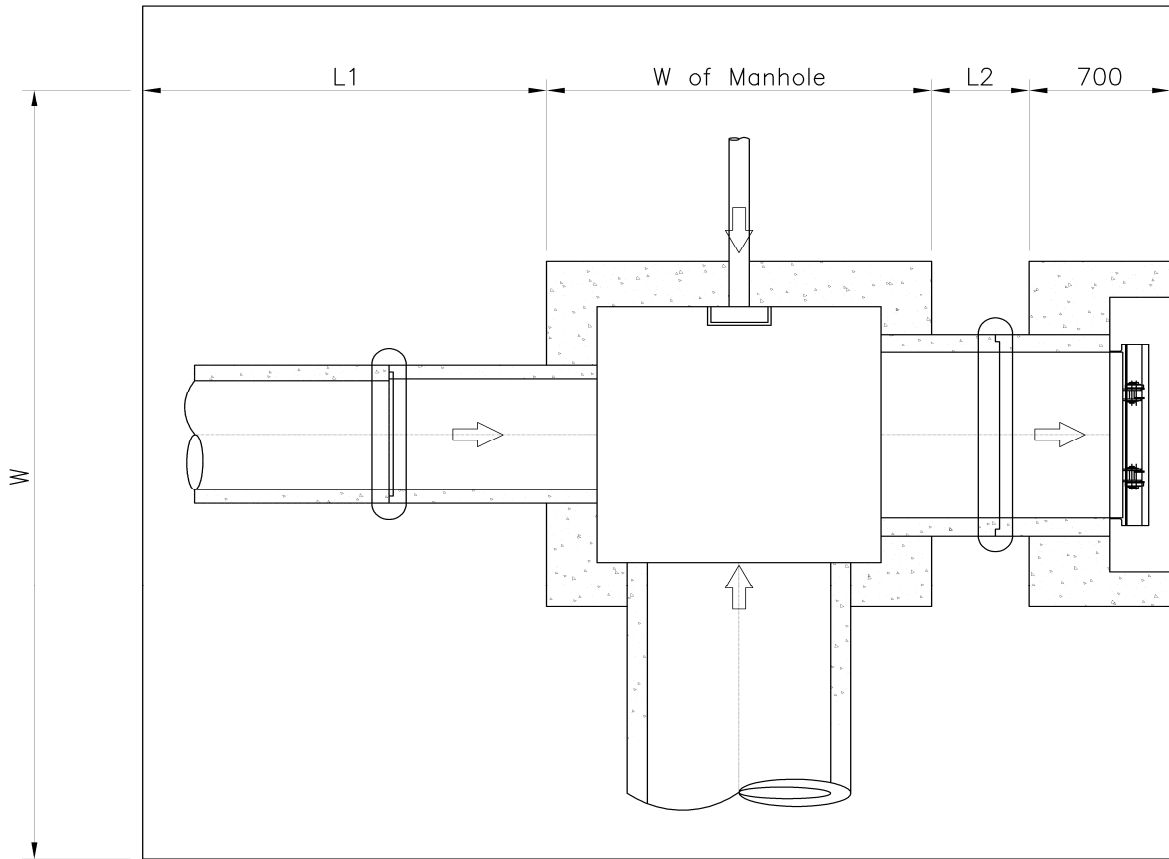
5 ELEVATION
SCALE B

3.891

Clearing (Manhole 193A)

| | |
|--------------|---------|
| L1 | 5.377 m |
| W of Manhole | 1.1 m |
| L2 | 0.561 m |
| W | 6.182 m |

A=47.83 m²

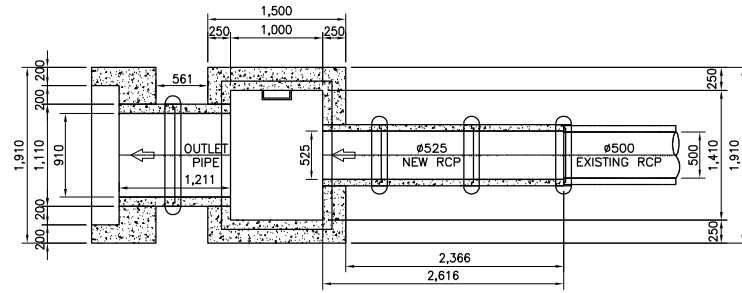


QUANTITIES OF MANHOLE

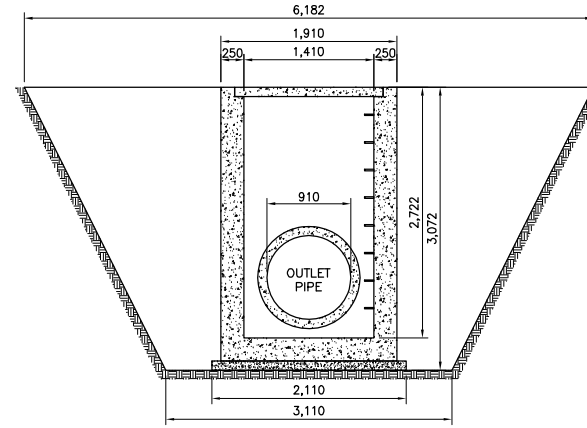
Manhole No.: MR 193B

Location: 15 + 020

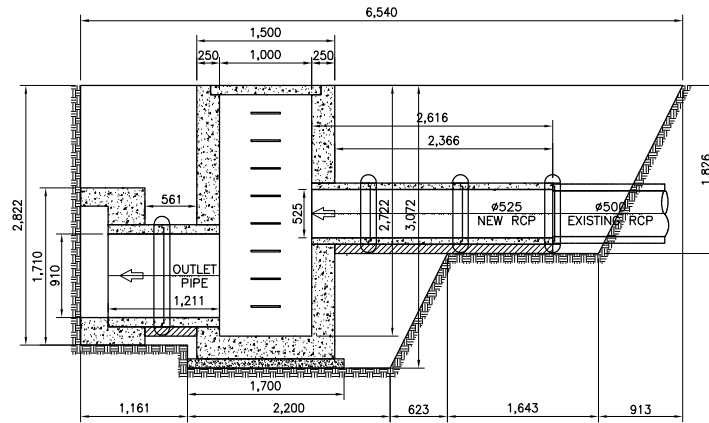
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.28 A2=8.28 A3=3.83 | 4.65 4.65 4.65 | 15.22 38.49 17.81 71.52 | m ³ |
| 2. Lev. Concrete | W=1.70 L=2.11 | 3.59 | 0.1 | 0.36 | m ³ |
| 3. Bottom Slab | W=1.50 L=1.91 | 2.87 | 0.25 | 0.72 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=1.91 Win=1.00 Lin=1.41 | Aout=2.87 Ain=1.41 Anet=1.46 | 2.722 | 3.961 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.66 | 0.35 | 0.25 | 0.09 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.63 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.20 | 1.932 | 0.1 | 0.19 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=9 | 0.000201062 | | 0.000120637 0.95 8.52 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.29 0.37 0.48 1.44 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.21 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.06 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.56 | | 0.06 | m ³ |
| 12. Inlet Pipe | Dia=.525m | L=2.62 | | 3 | pc |
| 13. Concrete Collar | D1=.663m D2=.843m | A1=0.35 A2=0.56 Anet=0.21 | 0.17 Qty=2 | 0.07 | m ³ |
| 14. Conc. Bedding (Inlet Pipe) | Dia=.663m | L=2.37 | | 0.16 | m ³ |
| 15. Backfill | | | | 59.60 | m ³ |



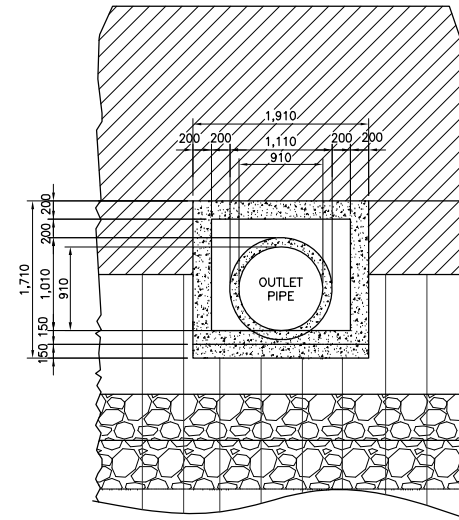
2 PLAN
SCALE B



4 SECTION(MR193B)
SCALE B



3 SECTION
SCALE B

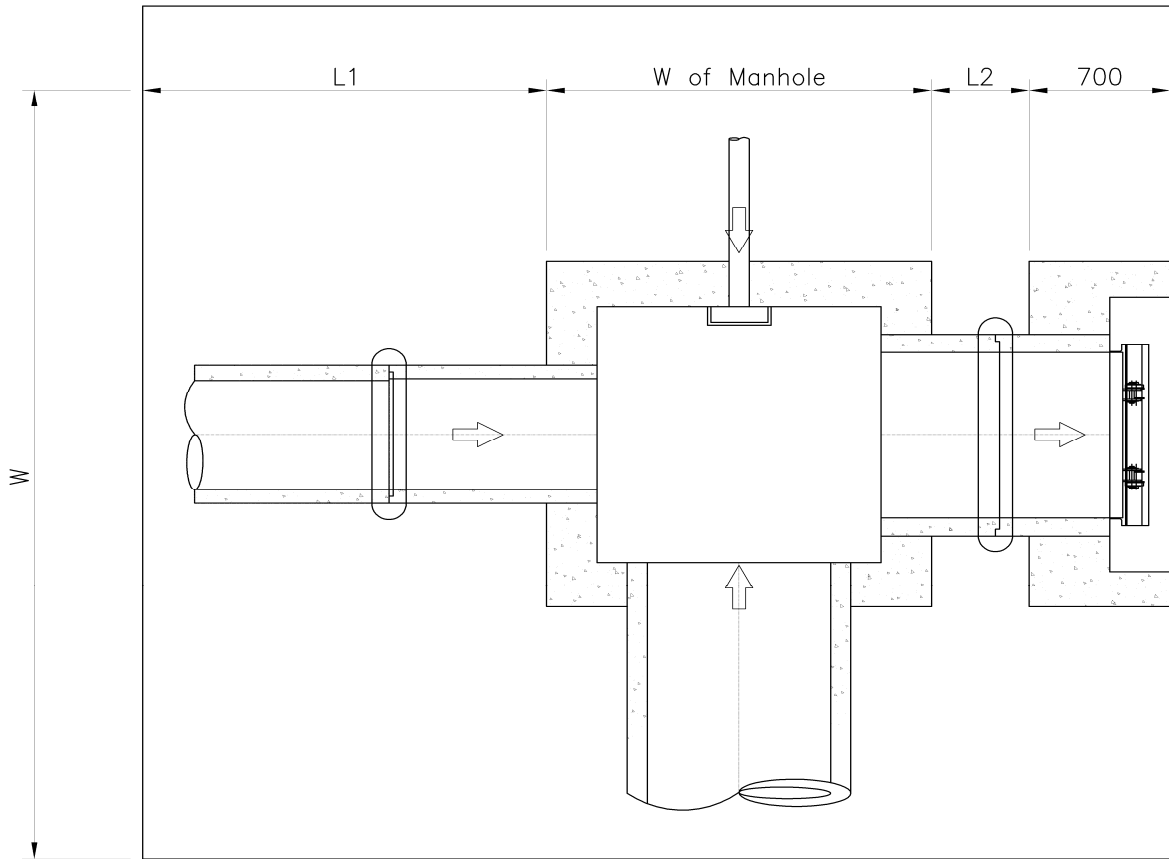


5 ELEVATION
SCALE B

Clearing (Manhole 193B)

| | |
|--------------|---------|
| L1 | 3.779 m |
| W of Manhole | 1.5 m |
| L2 | 0.561 m |
| W | 6.182 m |

A=40.43 m²

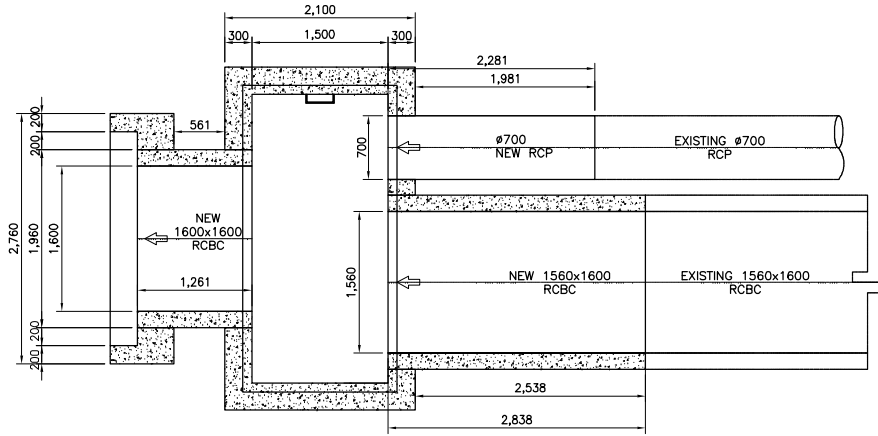


QUANTITIES OF MANHOLE

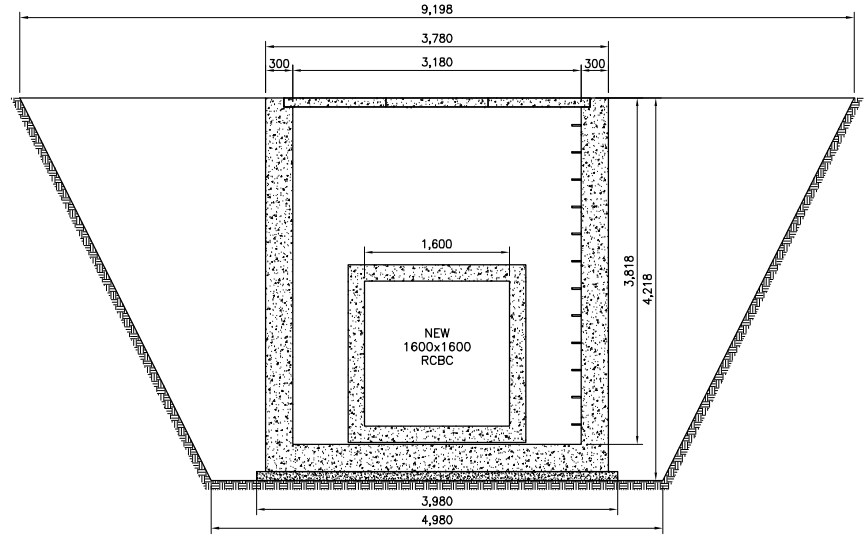
Manhole No.: MR 193C

Location: 15 + 025

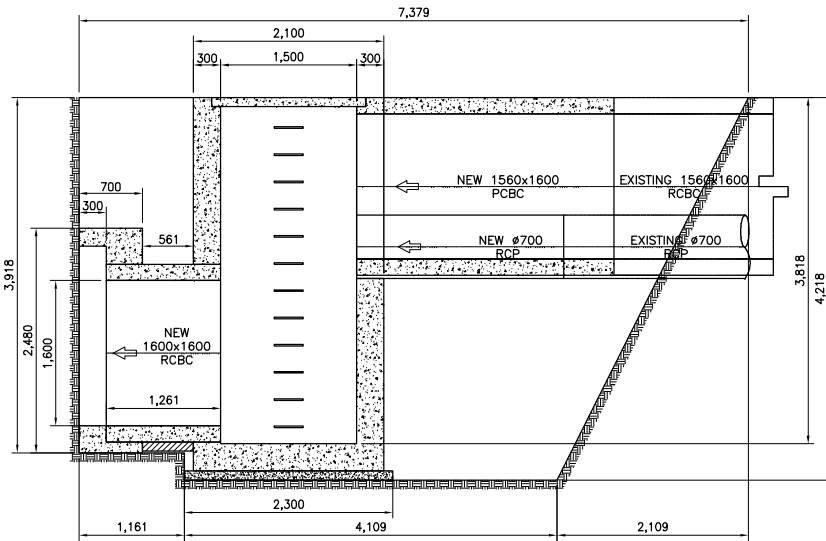
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|---|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=4.55 A2=21.78 | 7.09 7.09 | 32.25 154.40 | 186.64 m ³ |
| 2. Lev. Concrete | W=2.30 L=3.98 | 9.15 | 0.1 | 0.92 | m ³ |
| 3. Bottom Slab | W=2.10 L=3.78 | 7.94 | 0.3 | 2.38 | m ³ |
| 4. Wall Entire Wall | Wout=2.10 Lout=3.78 Win=1.50 Lin=3.18 | Aout=7.94 Ain=4.77 Anet=3.17 | 3.426 | 10.854 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.88 | 3.10 | 0.30 | 0.77 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.30 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.60 | 2.56 | 0.30 | 0.64 | |
| Net Wall Vol. | | | | 9.44 | m ³ |
| 5. Conc. Cover | L=1.20 W=1.70 | 2.04 | 0.1 | 0.20 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=2.76 Lout=2.48 Win=2.36 Lin=1.98 DiaD=1.60 | Ain=6.84 Aout=4.67 Apipe=2.56 | 0.7 0.2 0.5 | 4.79 0.93 1.28 2.58 | m ³ |
| 9. Outlet Pipe | D1=1.600m D2=1.960m | A1=2.56 A2=3.84 Anet=1.28 | 1.261 | 1.62 | m ³ |
| 10. Conc. Bedding (Outlet Pipe) | Dia=1.960m | L=0.56 | | 0.11 | m ³ |
| 11. Inlet Pipe | Dia=.760m | L=2.28 | | 3 | pc |
| 12. Concrete Collar | D1=.936m D2=1.116m | A1=0.69 A2=0.98 Anet=0.29 | 0.17 Qty=2 | 0.10 | m ³ |
| 13. Conc. Bedding (Inlet Pipe) | Dia=.936m | L=1.98 | | 0.19 | m ³ |
| 14. Inlet Box | D1=1.560m D2=1.920m | A1=2.50 A2=3.76 Anet=1.27 | 2.858 | 3.62 | m ³ |
| 15. Concrete Collar | D1=1.560m D2=1.920m | A1=2.50 A2=3.76 Anet=1.27 | 0.17 | 0.22 | m ³ |
| 16. Conc. Bedding (Inlet Box) | Dia=1.960m | L=2.54 | | 0.50 | m ³ |
| 17. Backfill | | | | 155.54 | m ³ |



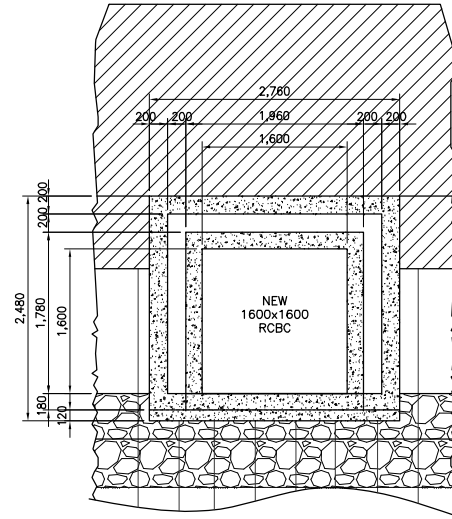
2 PLAN
SCALE B



4 SECTION(MR193C)
SCALE B



3 SECTION
SCALE B



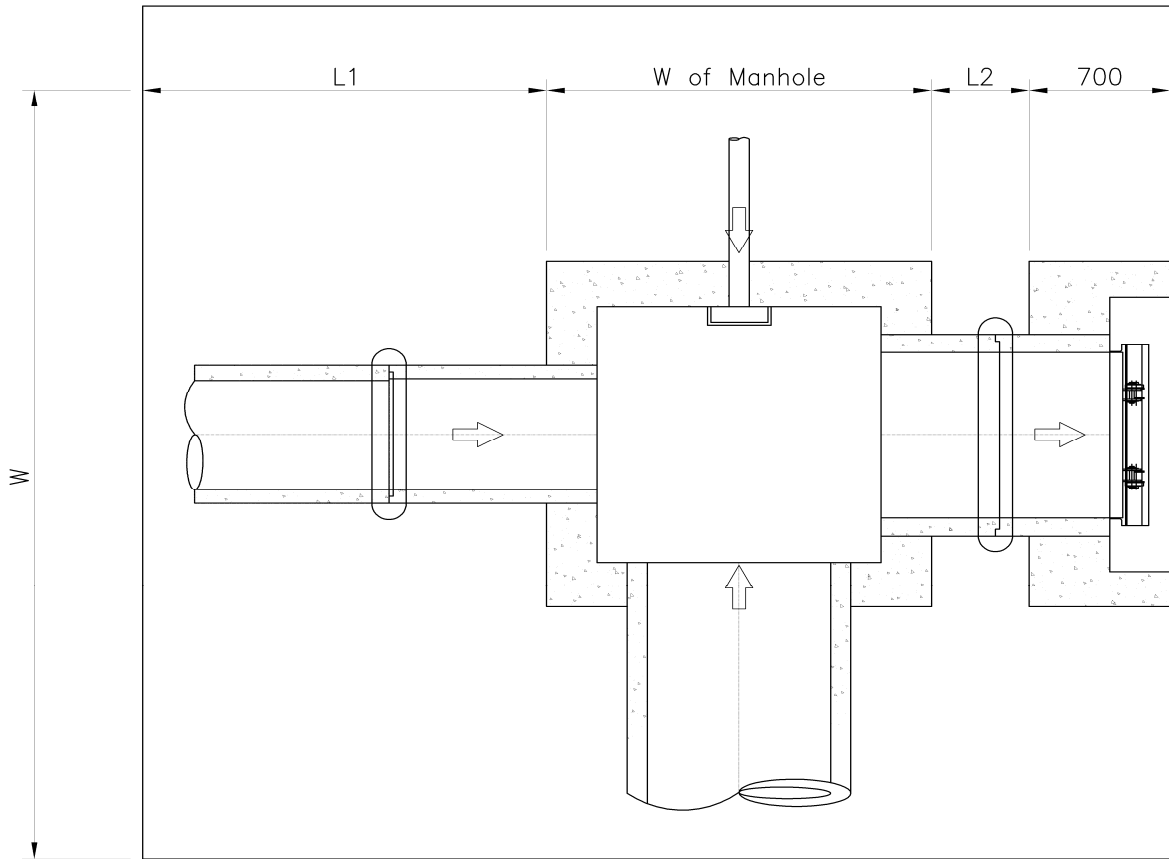
5 ELEVATION
SCALE B

3.897

Clearing (Manhole 193C)

| | |
|--------------|---------|
| L1 | 4.018 m |
| W of Manhole | 2.1 m |
| L2 | 0.561 m |
| W | 9.198 m |

A=67.87 m²

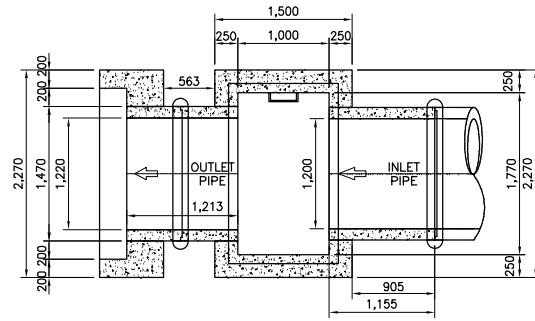


QUANTITIES OF MANHOLE

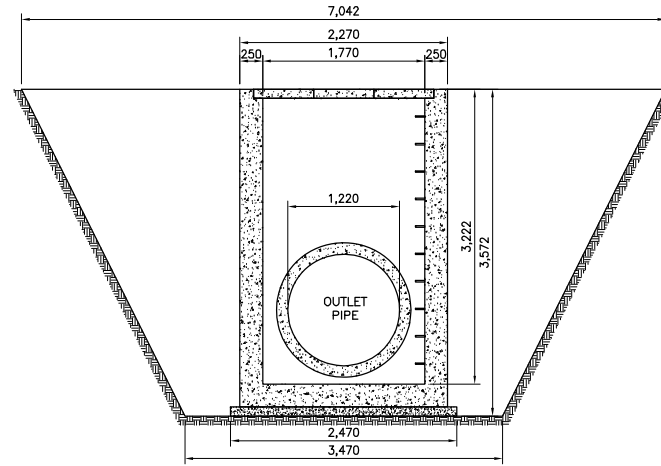
Manhole No.: MR 193C.1

Location: 15 + 041

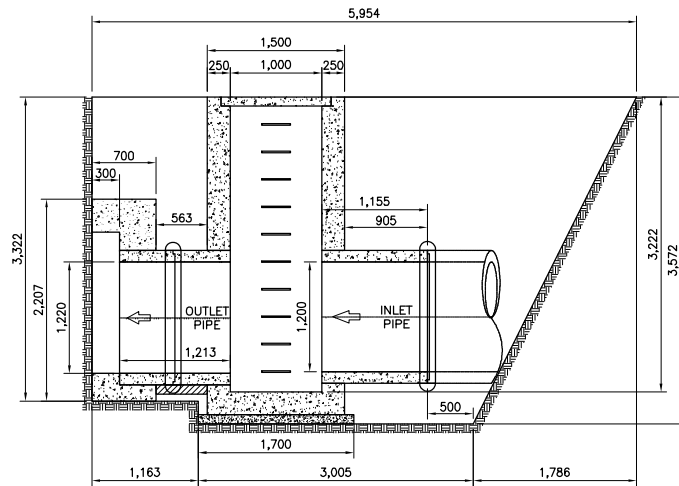
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|--|---|---|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=3.86 A2=13.92 | 5.26 5.26 | 20.31 73.18 | 93.49 m ³ |
| 2. Lev. Concrete | W=1.70 L=2.47 | 4.20 | 0.1 | 0.42 | m ³ |
| 3. Bottom Slab | W=1.50 L=2.27 | 3.41 | 0.25 | 0.85 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.50 Lout=2.27 Win=1.00 Lin=1.77 | Aout=3.41 Ain=1.77 Anet=1.64 | 3.222 | 5.268 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=1.45 | 1.65 | 0.25 | 0.41 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.47 | 1.70 | 0.25 | 0.42 | |
| Net Wall Vol. | | | | 4.43 | m ³ |
| 5. Conc. Cover | L=1.97 W=1.20 | 2.364 | 0.1 | 0.24 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=10 | 0.000201062 | | 0.000120637 0.95 9.47 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=2.21 Lout=2.21 Win=1.87 Lin=1.55 DiaD=1.47 | Ain=4.87 Aout=2.89 Apipe=1.70 | 0.7 0.2 0.5 | 3.41 0.58 0.85 1.98 | m ³ |
| 9. Outlet Pipe | Dia=1.220m | L=1.21 | | 2 | pc |
| 10. Concrete Collar | D1=1.470m D2=1.650m | A1=1.70 A2=2.14 Anet=0.44 | 0.17 Qty=1 | 0.07 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.470m | L=0.56 | | 0.08 | m ³ |
| 12. Inlet Pipe | Dia=1.220m | L=1.16 | | 2 | pc |
| 13. Concrete Collar | D1=1.470m D2=1.650m | A1=1.70 A2=2.14 Anet=0.44 | 0.17 Qty=2 | 0.15 | m ³ |
| 14. Conc. Bedding (Inlet Pipe) | Dia=1.470m | L=0.91 | | 0.13 | m ³ |
| 15. Backfill | | | | 77.91 | m ³ |



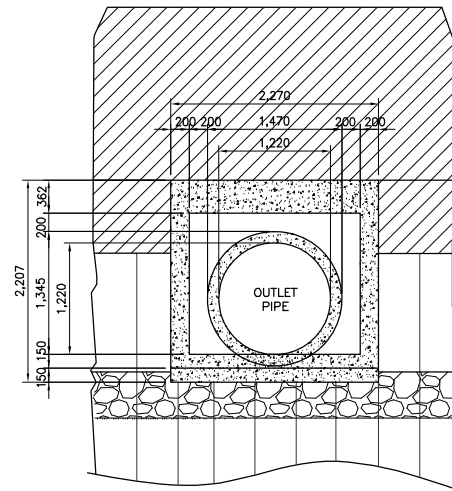
2 PLAN
SCALE B



4 SECTION (MR. 193C.1)
SCALE B



3 SECTION
SCALE B

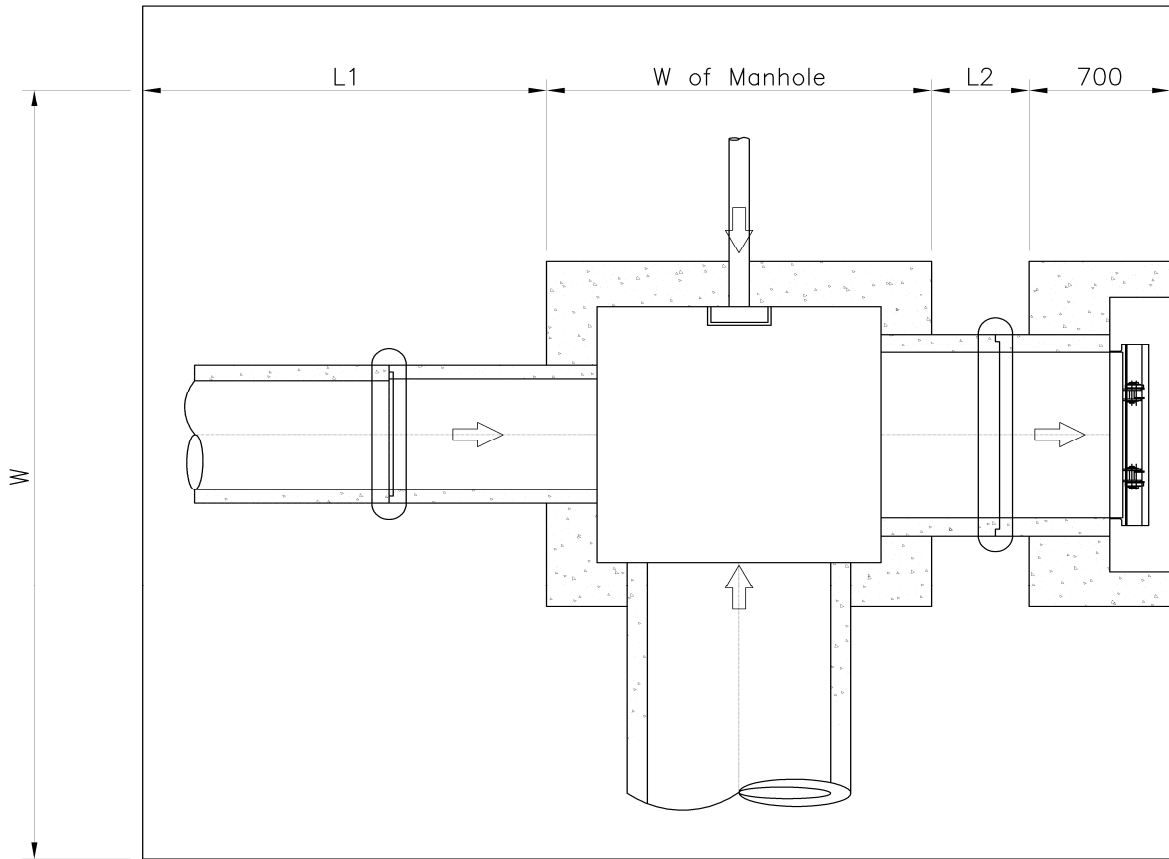


5 ELEVATION
SCALE B

Clearing (Manhole 193C.1)

| | |
|--------------|---------|
| L1 | 3.191 m |
| W of Manhole | 1.5 m |
| L2 | 0.563 m |
| W | 7.042 m |

A=41.93 m²

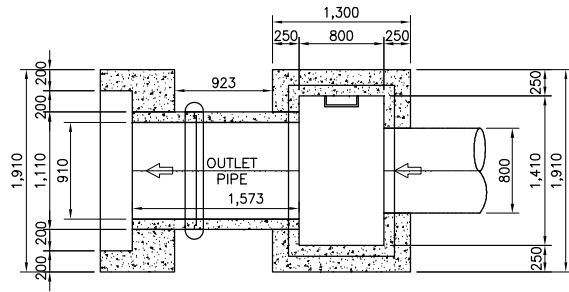


QUANTITIES OF MANHOLE

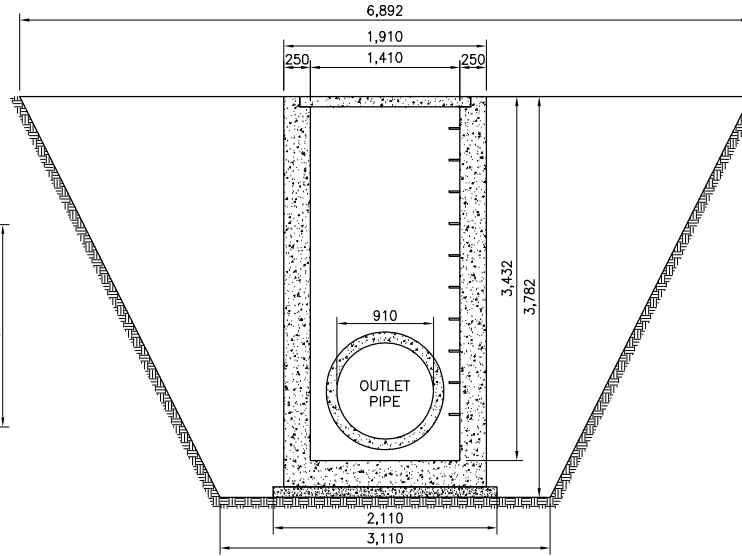
Manhole No.: MR 245.8

Location: 16 + 789

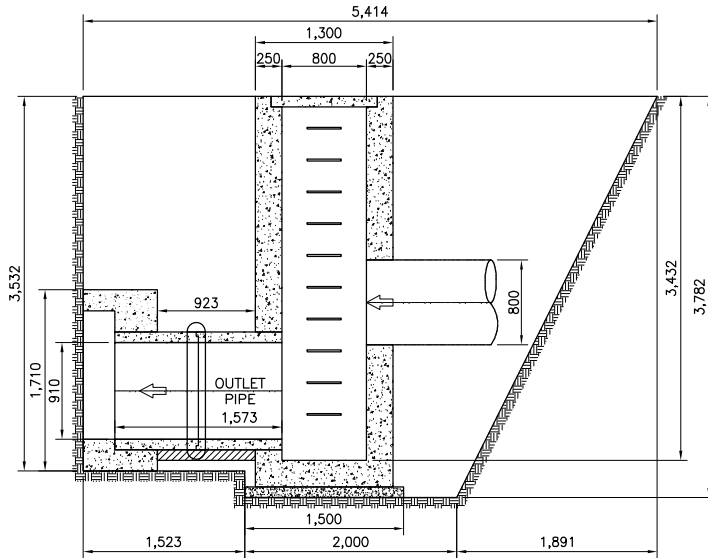
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=5.38 A2=11.14 | 5.00 5.00 | 26.90 55.71 | 82.61 m ³ |
| 2. Lev. Concrete | W=1.50 L=2.11 | 3.17 | 0.1 | 0.32 | m ³ |
| 3. Bottom Slab | W=1.30 L=1.91 | 2.48 | 0.25 | 0.62 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.30 Lout=1.91 Win=0.80 Lin=1.41 | Aout=2.48 Ain=1.13 Anet=1.36 | 3.432 | 4.650 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.98 | 0.75 | 0.25 | 0.19 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 4.22 | m ³ |
| 5. Conc. Cover | L=1.61 W=1.00 | 1.61 | 0.1 | 0.16 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.29 0.37 0.48 1.44 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.57 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.06 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.92 | | 0.10 | m ³ |
| 12. Backfill | | | | 68.84 | m ³ |



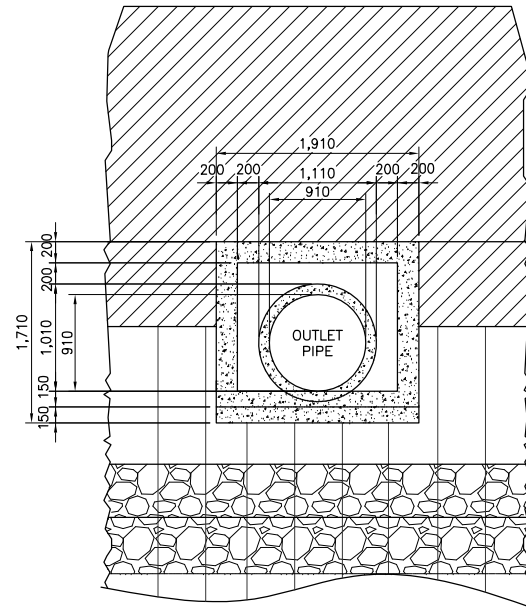
2 PLAN
SCALE B



4 SECTION(MR245.8)
SCALE B



3 SECTION
SCALE B

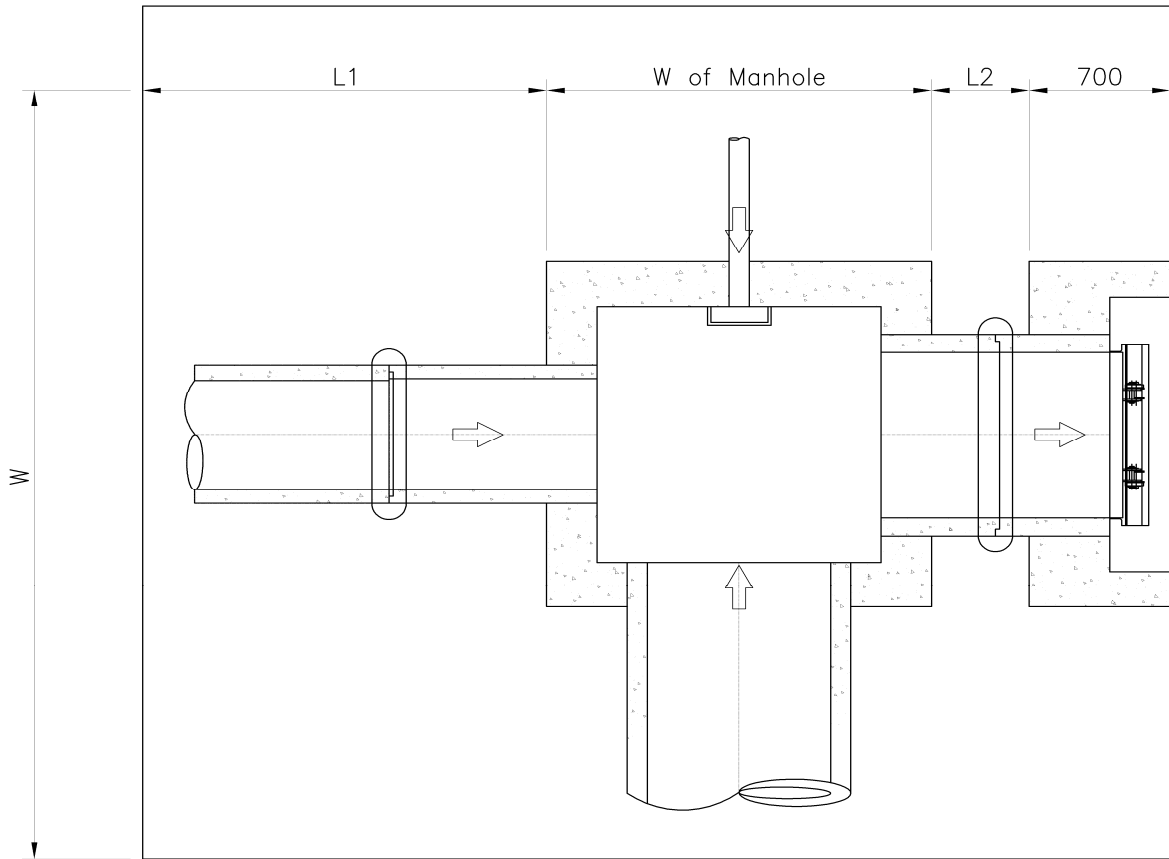


5 ELEVATION
SCALE B

Clearing (Manhole 245.8)

L1 2.491 m
W of Manhole 1.3 m
L2 0.923 m
W 6.892 m

A=37.31 m²

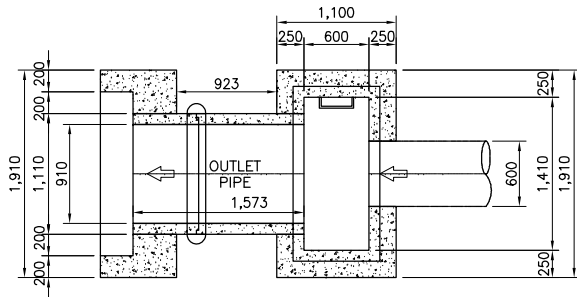


QUANTITIES OF MANHOLE

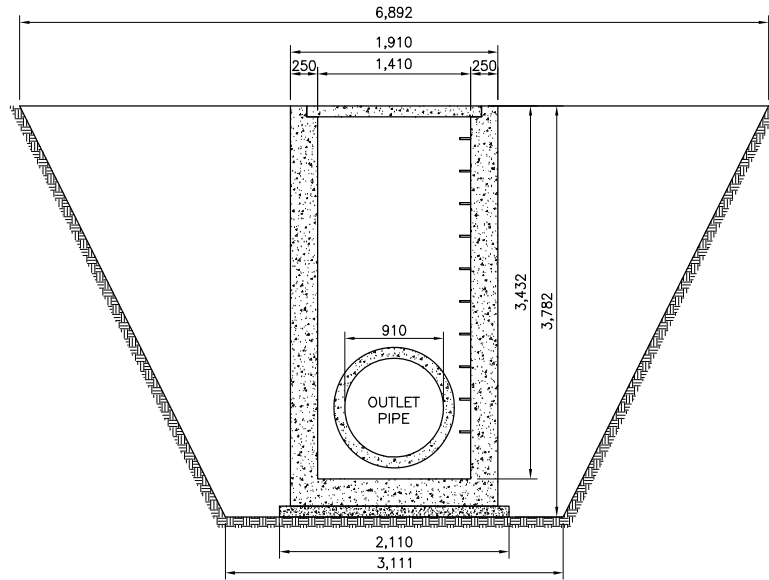
Manhole No.: MR 245.9

Location: 16 + 798

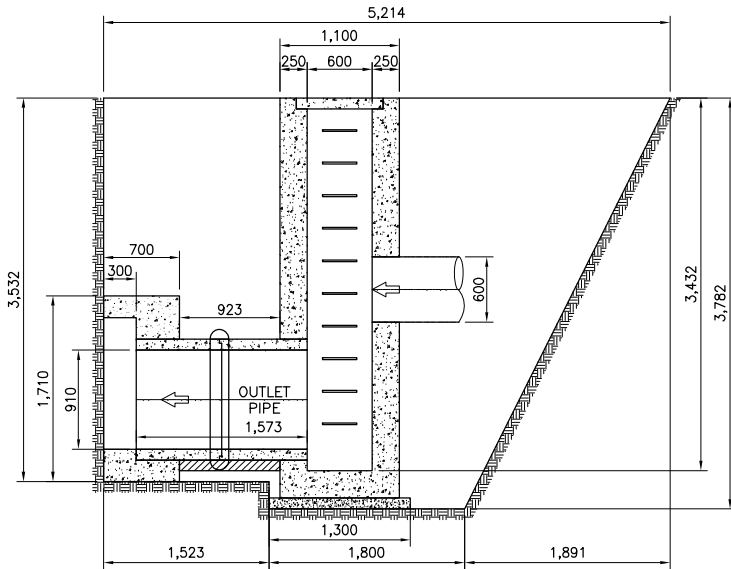
| Item | W or L | Area | Thkness/Ht | Vol./Wt. | Unit |
|---|---|--|---------------------------|---|-------------------------------|
| 1. Excavation | | A1=5.38 A2=10.38 | 5.00 5.00 | 26.90 51.93 | 78.83 m ³ |
| 2. Lev. Concrete | W=1.30 L=2.11 | 2.74 | 0.1 | 0.27 | m ³ |
| 3. Bottom Slab | W=1.10 L=1.91 | 2.10 | 0.25 | 0.53 | m ³ |
| 4. Wall | | | | | |
| Entire Wall | Wout=1.10 Lout=1.91 Win=0.60 Lin=1.41 | Aout=2.10 Ain=0.85 Anet=1.26 | 3.432 | 4.307 | m ³ |
| Minus | | | | | |
| Pipe hole on Wall A | DiaA=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall B | DiaB=0.75 | 0.44 | 0.25 | 0.11 | |
| Pipe hole on Wall C | DiaC=0.00 | 0.00 | 0.25 | 0.00 | |
| Pipe hole on Wall D | DiaD=1.11 | 0.97 | 0.25 | 0.24 | |
| Net Wall Vol. | | | | 3.95 | m ³ |
| 5. Conc. Cover | L=1.61 W=0.80 | 1.288 | 0.1 | 0.13 | m ³ |
| 6. Ladder Rung | L=0.60 Dia=.016m Qty=11 | 0.000201062 | | 0.000120637 0.95 10.42 | m ³ kg/pc kg |
| 7. Flapgate | | | | 0 | pc |
| 8. Conc. Mouth | Wout=1.91 Lout=1.71 Win=1.51 Lin=1.21 DiaD=1.11 | Ain=3.27 Aout=1.83 Apipe=.97 | 0.7 0.2 0.5 | 2.29 0.37 0.48 1.44 | m ³ |
| 9. Outlet Pipe | Dia=.910m | L=1.57 | | 2 | pc |
| 10. Concrete Collar | D1=1.110m D2=1.290m | A1=0.97 A2=1.31 Anet=0.34 | 0.17 Qty=1 | 0.06 | m ³ |
| 11. Conc. Bedding (Outlet Pipe) | Dia=1.110m | L=0.92 | | 0.10 | m ³ |
| 12. Backfill | | | | 65.69 | m ³ |



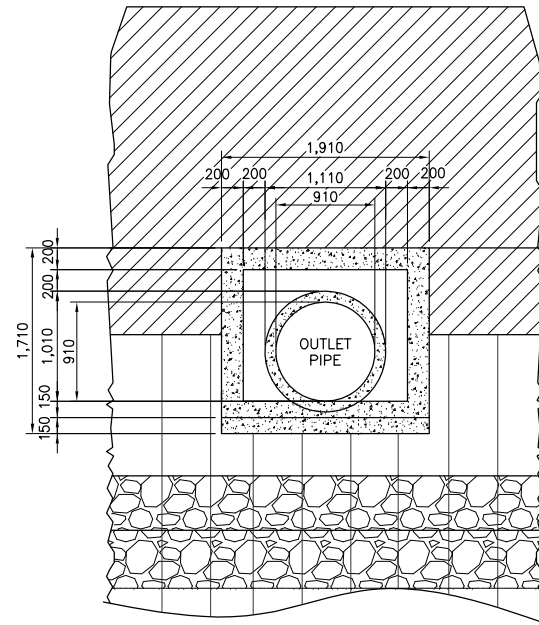
2 PLAN
SCALE B



4 SECTION(MR245.9)
SCALE B



3 SECTION
SCALE B

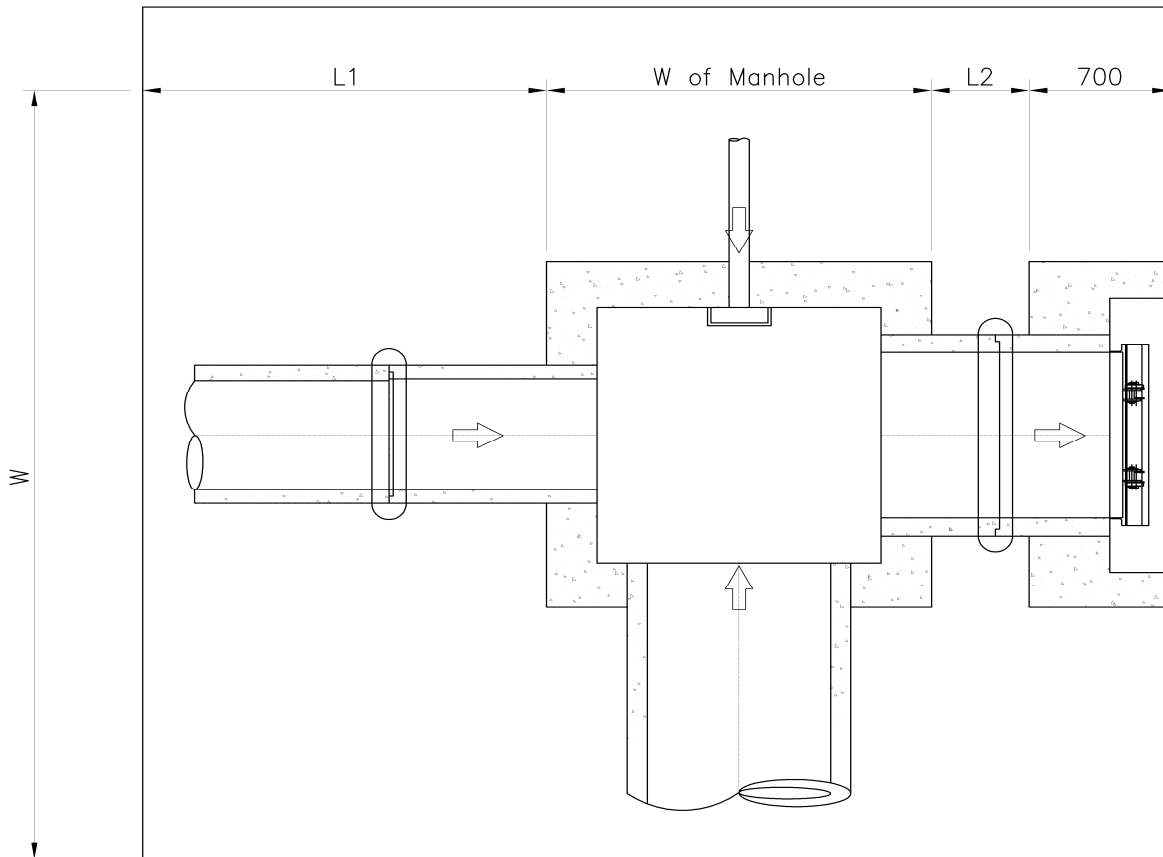


5 ELEVATION
SCALE B

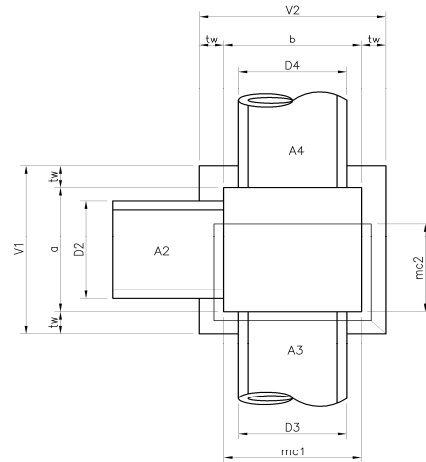
Clearing (Manhole 245.9)

| | |
|--------------|---------|
| L1 | 2.491 m |
| W of Manhole | 1.1 m |
| L2 | 0.923 m |
| W | 6.892 m |

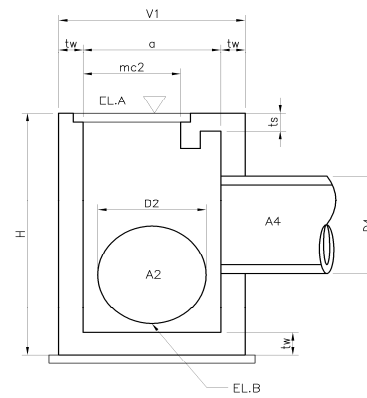
A=35.93 m²



| QUANTITIES OF MANHOLE | | | | | | | | | | | | | | | | | |
|-----------------------|-------|-------|------|------|------|------|------|------|------|------|------|----------------|----------------|----------------|------|------|------|
| Manhole No. | El. A | El. B | tw | ts | mc1 | mc2 | D2 | D3 | D4 | V1 | V2 | A2 | A3 | A4 | H | a | b |
| | m | m | m | m | m | m | m | m | m | m | m | m ² | m ² | m ² | m | m | m |
| MR 185 | 14.63 | 11.39 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 1.11 | 0.00 | 1.91 | 1.91 | 0.97 | 0.97 | 0.00 | 3.69 | 1.41 | 1.41 |
| MR 189 | 13.91 | 11.39 | 0.25 | 0.20 | 1.00 | 1.41 | 1.11 | 0.00 | 1.11 | 1.91 | 1.91 | 0.97 | 0.00 | 0.97 | 2.97 | 1.41 | 1.41 |
| MR 190 | 13.91 | 11.39 | 0.25 | 0.00 | 0.89 | 1.41 | 1.11 | 0.59 | 0.00 | 1.91 | 1.39 | 0.97 | 0.27 | 0.00 | 2.97 | 1.41 | 0.89 |
| MR 191 | 13.91 | 11.39 | 0.25 | 0.00 | 0.60 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.10 | 0.97 | 0.00 | 0.00 | 2.97 | 1.41 | 0.60 |
| MR 193A | 13.91 | 11.39 | 0.25 | 0.00 | 0.60 | 1.41 | 1.11 | 0.59 | 0.00 | 1.91 | 1.10 | 0.97 | 0.27 | 0.00 | 2.97 | 1.41 | 0.60 |
| MR 193B | 13.91 | 11.39 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.67 | 0.00 | 1.91 | 1.50 | 0.97 | 0.35 | 0.00 | 2.97 | 1.41 | 1.00 |
| MR 193C | 14.24 | 10.62 | 0.30 | 0.00 | 1.50 | 3.18 | 1.96 | 0.94 | 1.96 | 3.78 | 2.10 | 3.84 | 0.69 | 3.76 | 4.12 | 3.18 | 1.50 |
| MR 193C.1 | 13.92 | 10.89 | 0.25 | 0.00 | 1.00 | 1.77 | 1.47 | 1.45 | 0.00 | 2.27 | 1.50 | 1.70 | 1.65 | 0.00 | 3.47 | 1.77 | 1.00 |
| MR 245.8 | 14.62 | 11.39 | 0.25 | 0.00 | 0.80 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.30 | 0.97 | 0.00 | 0.00 | 3.68 | 1.41 | 0.80 |
| MR 245.9 | 14.62 | 11.39 | 0.25 | 0.00 | 1.00 | 1.41 | 1.11 | 0.00 | 0.00 | 1.91 | 1.50 | 0.97 | 0.00 | 0.00 | 3.68 | 1.41 | 1.00 |



PLAN

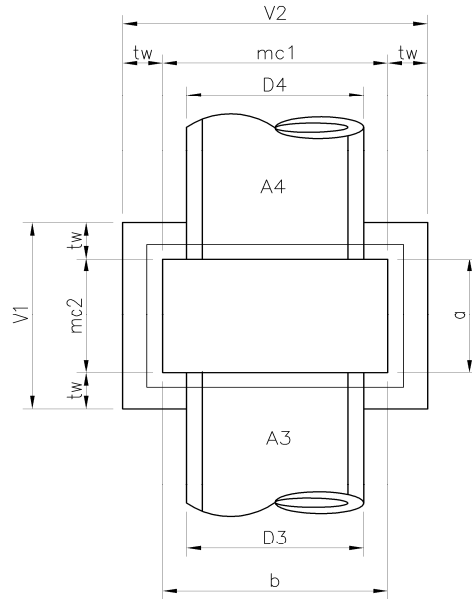


SECTION

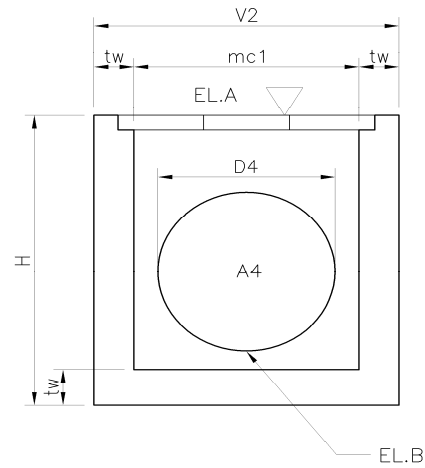
| QUANTITIES OF MANHOLE | | | | | | | | | | | | |
|-----------------------|---------------------|---------------------|----------|---------------------|---------------------|-------------------|----------------------|---------------------|-------------------|-------------------|----------|---------------|
| Manhole No. | Area Outside Face | | | Area Inside Face | | MANHOLE | | | LEVELING | COVER | | |
| | Front and Rear slab | Left and Right slab | Top Slab | Front and Rear slab | Left and Right slab | Area of Formworks | Volume of Supporting | Area of Scaffolding | Area of Formworks | Area of Formworks | Concrete | Reinforcement |
| | m2 | m2 | m2 | m2 | m2 | m2 | m3 | m2 | m2 | m2 | m3 | kg |
| MR 185 | 10.41 | 14.10 | 0.58 | 9.14 | 9.14 | 41.44 | 1.87 | 28.21 | 0.84 | 0.56 | 0.19 | 27.82 |
| MR 189 | 8.36 | 11.33 | 0.58 | 7.10 | 7.10 | 32.53 | 1.45 | 22.66 | 0.84 | 0.56 | 0.19 | 27.82 |
| MR 190 | 5.26 | 11.33 | 0.00 | 4.81 | 7.66 | 27.83 | 0.00 | 19.56 | 0.74 | 0.54 | 0.17 | 25.18 |
| MR 191 | 3.56 | 11.34 | 0.00 | 3.26 | 7.66 | 24.86 | 0.00 | 17.87 | 0.68 | 0.48 | 0.13 | 18.55 |
| MR 193A | 3.57 | 11.36 | 0.00 | 3.27 | 7.68 | 24.63 | 0.00 | 17.90 | 0.68 | 0.48 | 0.13 | 18.55 |
| MR 193B | 5.95 | 11.36 | 0.00 | 5.45 | 7.68 | 29.11 | 0.00 | 20.28 | 0.76 | 0.56 | 0.19 | 27.82 |
| MR 193C | 12.35 | 31.13 | 0.00 | 11.45 | 24.28 | 70.93 | 0.00 | 48.43 | 1.26 | 1.02 | 0.57 | 82.74 |
| MR 193C.1 | 6.94 | 15.76 | 0.00 | 6.44 | 11.41 | 37.21 | 0.00 | 26.18 | 0.83 | 0.63 | 0.24 | 34.04 |
| MR 245.8 | 5.89 | 14.07 | 0.00 | 5.49 | 9.68 | 34.16 | 0.00 | 23.64 | 0.72 | 0.52 | 0.16 | 23.18 |
| MR 245.9 | 7.36 | 14.07 | 0.00 | 6.86 | 9.68 | 37.00 | 0.00 | 25.11 | 0.76 | 0.56 | 0.19 | 27.82 |

QUANTITIES OF JUNCTION MANHOLE

| Manhole No. | El. A | El. B | tw | ts | mc1 | mc2 | D3 | D4 | V1 | V2 | A3 | A4 | H | a | b |
|-------------|-------|-------|------|------|------|------|------|------|------|------|----------------|----------------|------|------|------|
| | m | m | m | m | m | m | m | m | m | m | m ² | m ² | m | m | m |
| MR 186 | 14.63 | 12.21 | 0.25 | 0.00 | 1.41 | 0.88 | 1.11 | 1.11 | 1.38 | 1.91 | 0.97 | 0.97 | 2.88 | 0.88 | 1.41 |
| MR 187 | 14.61 | 12.30 | 0.25 | 0.00 | 1.41 | 0.88 | 0.00 | 1.11 | 1.38 | 1.91 | 0.00 | 0.97 | 2.76 | 0.88 | 1.41 |
| MR 188 | 13.91 | 12.30 | 0.25 | 0.00 | 1.41 | 0.65 | 1.11 | 0.00 | 1.15 | 1.91 | 0.97 | 0.00 | 2.06 | 0.65 | 1.41 |



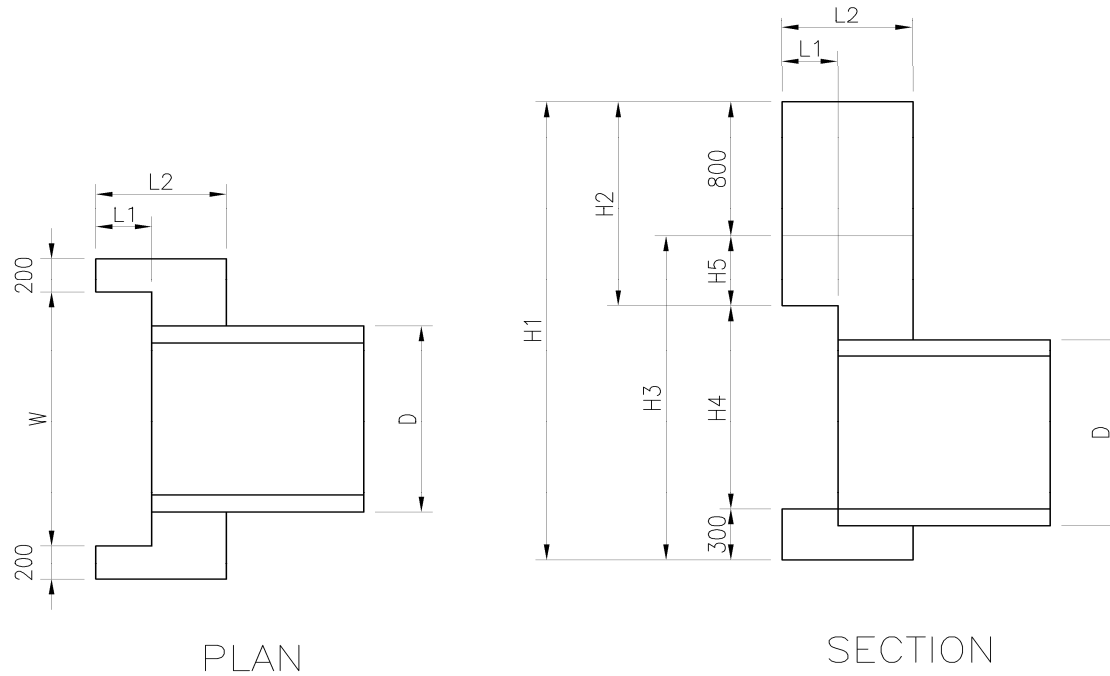
PLAN



SECTION

| QUANTITIES OF JUNCTION MANHOLE | | | | | | | | | | | | |
|--------------------------------|---------------------|---------------------|----------|---------------------|---------------------|-------------------|----------------------|---------------------|-------------------|-------------------|----------|---------------|
| Manhole No. | Area Outside Face | | | Area Inside Face | | MANHOLE | | | LEVELING | COVER | | |
| | Front and Rear slab | Left and Right slab | Top Slab | Front and Rear slab | Left and Right slab | Area of Formworks | Volume of Supporting | Area of Scaffolding | Area of Formworks | Area of Formworks | Concrete | Reinforcement |
| | m2 | m2 | m2 | m2 | m2 | m2 | m3 | m2 | m2 | m2 | m3 | kg |
| MR 186 | 10.99 | 7.94 | 0.00 | 7.41 | 4.62 | 29.03 | 0.00 | 18.93 | 0.74 | 0.54 | 0.17 | 25.04 |
| MR 187 | 10.54 | 7.62 | 0.00 | 7.08 | 4.42 | 28.69 | 0.00 | 18.16 | 0.74 | 0.54 | 0.17 | 25.04 |
| MR 188 | 7.87 | 4.74 | 0.00 | 5.10 | 2.35 | 19.10 | 0.00 | 12.61 | 0.69 | 0.49 | 0.14 | 19.71 |

| QUANTITIES OF OUTLETS | | | | | | | | | | |
|-----------------------|------|------|------|------|------|------|------|------|------|----------------|
| Outlet No. | H1 | H2 | H3 | H4 | H5 | L1 | L2 | W | D | Area of Pipe |
| | m | m | m | m | m | m | m | m | m | m ² |
| DR 185 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 189 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 190 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 191 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 193A | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 193B | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 193C | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 193C.1 | 2.21 | 0.36 | 1.41 | 1.55 | 0.00 | 0.30 | 0.70 | 1.87 | 1.47 | 1.70 |
| DR 245.8 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |
| DR 245.9 | 1.71 | 0.20 | 0.91 | 1.21 | 0.00 | 0.30 | 0.70 | 1.51 | 1.11 | 0.97 |



| QUANTITIES OF OUTLETS | | | | | | | | | | |
|-----------------------|-------------------|------------|-----------|-------------|-------------------|----------|-------------------|----------------------|---------------------|--|
| Outlet No. | Outside Face | | | Inside face | | | | | | |
| | Left & Right Side | Front side | Rear side | Front Side | Left & Right Side | Top Slab | Area of Formworks | Volume of Supporting | Area of Scaffolding | |
| | m2 | m2 | m2 | m2 | m2 | m2 | m2 | m3 | m2 | |
| DR 185 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 | |
| DR 189 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 | |
| DR 190 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 | |
| DR 191 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 | |
| DR 193A | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 | |
| DR 193B | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 | |
| DR 193C | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 | |
| DR 193C.1 | 1.97 | 0.97 | 3.31 | 1.19 | 0.93 | 0.56 | 8.94 | 0.87 | 10.02 | |
| DR 245.8 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 | |
| DR 245.9 | 1.27 | 0.77 | 2.30 | 0.86 | 0.73 | 0.45 | 6.38 | 0.55 | 0.00 | |

| QUANTITIES IN PIPE BEDDING | | | | | | | | |
|----------------------------|-------------|------|------------|------|-----------|------|-----------|-------------------|
| Outlet No. | Outlet Pipe | | Inlet Pipe | | Collector | | Thickness | Area of Formworks |
| | L1 | W1 | L2 | W2 | L3 | W3 | | |
| | m | m | m | m | m | m | | |
| DR 185 | 2.26 | 1.11 | 0.00 | 0.00 | 35.25 | 1.11 | 0.10 | 7.95 |
| DR 189 | 0.56 | 1.11 | 0.00 | 0.00 | 5.44 | 1.11 | 0.10 | 1.64 |
| DR 190 | 0.56 | 1.11 | 0.09 | 0.59 | 0.00 | 0.00 | 0.10 | 0.47 |
| DR 191 | 0.56 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.33 |
| DR 193A | 0.56 | 1.11 | 4.18 | 0.59 | 0.00 | 0.00 | 0.10 | 1.29 |
| DR 193B | 0.56 | 1.11 | 2.37 | 0.66 | 0.00 | 0.00 | 0.10 | 0.94 |
| DR 193C | 0.56 | 1.96 | 2.62 | 0.94 | 3.18 | 1.92 | 0.10 | 2.24 |
| DR 193C.1 | 0.56 | 1.47 | 0.91 | 1.45 | 0.00 | 0.00 | 0.10 | 0.88 |
| DR 245.8 | 0.92 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.41 |
| DR 245.9 | 0.92 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.41 |

QUANTITY FOR DEMOLITION AND RESTORATION

| OUTLET NO. | MANHOLE NO. | LENGTH OF DEMOLITION | | | | LENGTH OF RESTORATION | | | | LENGTH OF TEMPORARY WALL |
|-------------------------------|----------------|----------------------|-------------|--------------|---------------|-----------------------|-------------|--------------|---------------|--------------------------|
| | | REVETMENT | FENCE | WALL & FENCE | WALL/HANDRAIL | REVETMENT | FENCE | WALL & FENCE | WALL/HANDRAIL | |
| UPPER PASIG RIGHT BANK | | | | | | | | | | |
| DR 117.3 STA. 11 + 006 | MR 117.3 | 6.6 | | 6.6 | | | | 6.6 | | |
| | COLLECTOR PIPE | 6.9 | | 6.9 | | | | 6.9 | | |
| DR 117.5 STA. 11+ 046 | MR 117.5 | 6.1 | | 6.1 | | | | 6.1 | | |
| DR 117.6 STA. 11+ 048 | MR 117.6 | 6.0 | | 6.0 | | | | 6.0 | | |
| | COLLECTOR PIPE | 7.4 | | 7.4 | | | | 7.4 | | |
| DR 117.9 STA. 11 + 138 | MR 117.9 | 6.7 | | 6.7 | | | | 6.7 | | |
| | JR 117.7 | 4.5 | | 4.5 | | | | 4.5 | | |
| | COLLECTOR PIPE | 0.7 | | 0.7 | | | | 0.7 | | |
| DR 117.10 STA. 11 + 176 | MR 117.10 | 6.9 | | 6.9 | | | | 6.9 | | |
| DR 117.12 STA. 11 + 232 | DR 117.12 | 6.6 | | | 6.6 | | | | 6.6 | |
| | JR 117.13 | 5.2 | | | 5.2 | | | | 5.2 | |
| | COLLECTOR PIPE | 3.0 | | | 3.0 | | | | 3.0 | |
| DR 117B.13 STA. 11 + 638 | MR 117B.13 | 5.0 | | | | | | | | |
| | COLLECTOR PIPE | 0.3 | | | | | | | | |
| DR 170.1 STA. 13 + 604 | MR 170.1 | 6.1 | | | 6.1 | 6.1 | | | 6.1 | |
| | COLLECTOR PIPE | 5.0 | | | 5.0 | 5.0 | | | 5.0 | |
| DR 171 STA. 13 + 832 | MR 171 | 6.1 | | | 6.1 | 6.1 | | | 6.1 | |
| | COLLECTOR PIPE | 29.8 | | | 29.8 | 29.8 | | | 29.8 | |
| DR 172 STA. 13 + 707 | MR 172 | 6.1 | | | 6.1 | 6.1 | | | 6.1 | |
| | COLLECTOR PIPE | 19.6 | | | 19.6 | 19.6 | | | 19.6 | |
| DR 172.6 STA. 13 + 730 | MR 172.6 | 6.1 | | | 6.1 | 6.1 | | | 6.1 | |
| | COLLECTOR PIPE | 1.3 | | | 1.3 | 1.3 | | | 1.3 | |
| DR 173A STA. 13 + 776 | MR 173A | 6.1 | 6.1 | | 6.1 | 6.1 | 6.1 | | 6.1 | |
| | COLLECTOR PIPE | 20.9 | 20.9 | | 20.9 | 20.9 | 20.9 | | 20.9 | |
| DR 173A.2 STA. 13 + 784 | MR 173A.2 | 7.3 | | | 7.3 | 7.3 | | | 7.3 | |
| | COLLECTOR PIPE | 15.2 | | | 15.2 | 15.2 | | | 15.2 | |
| DR 173A.25 STA. 13 + 858 | MR 173A.25 | 6.1 | | | | | | | | |
| | COLLECTOR PIPE | 61.0 | | | | | | | | |
| DR 174 STA. 13 + 882 | MR 174 | 6.1 | | | | | | | | |
| | COLLECTOR PIPE | 28.9 | | | | | | | | |
| DR 174.9 STA. 13 + 917 | MR 174.9 | 6.8 | | | 6.8 | 6.8 | | | 6.8 | |
| | MR 174.11 | 4.8 | | | 4.8 | 4.8 | | | 4.8 | |
| | COLLECTOR PIPE | 15.9 | | | 15.9 | 15.9 | | | 15.9 | |
| DR 174C.1 STA. 13 + 955 | MR 174C.1 | 6.6 | | | | | | | | |
| | MR 174C | 5.1 | | | | | | | | |
| | COLLECTOR PIPE | 3.0 | | | | | | | | |
| DR 174C.3 STA. 13 + 969 | DR 174C.3 | 6.1 | | | | | | | | 6.1 |
| DR 174C.7 STA. 13 + 309 | MR 174C.7 | 6.1 | | | | | | | | 6.1 |
| | COLLECTOR PIPE | 42.9 | | | | | | | | 42.9 |
| DR 174C.14 STA. 14 + 093 | MR 174C.14 | 6.1 | | | | | | | | 6.1 |
| | MR 174C.10 | 4.6 | | | | | | | | 4.6 |
| | COLLECTOR PIPE | 30.6 | | | | | | | | 30.6 |
| DR 174E STA. 14 + 110 | MR 174E | 6.1 | | | | | | | | 6.1 |
| | MR 174E.16 | 4.7 | | | | | | | | 4.7 |
| | MR 174E.10 | 4.6 | | | | | | | | 4.6 |
| | COLLECTOR PIPE | 42.0 | | | | | | | | 42.0 |
| DR 174E.12 STA. 14 + 161 | MR 174E.12 | 6.2 | | | | | | | | 6.2 |
| | MR 174E.26 | 4.4 | | | | | | | | 4.4 |
| | COLLECTOR PIPE | 31.9 | | | | | | | | 31.9 |
| DR 174E.28 STA. 14 + 233 | MR 174E.28 | 7.2 | | | | | | | | 7.2 |
| DR 175 | MR 175 | 6.6 | | | 6.6 | 6.6 | | | 6.6 | |
| | COLLECTOR PIPE | 7.3 | | | 7.3 | 7.3 | | | 7.3 | |
| DR 177 STA. 14 + 319 | MR 177 | 6.1 | | | 6.1 | 6.1 | | | 6.1 | |
| | MR 176.1 | 4.8 | | | 4.8 | 4.8 | | | 4.8 | |
| | COLLECTOR PIPE | 10.8 | | | 10.8 | 10.8 | | | 10.8 | |
| DR 177.2 STA. 14 + 351 | MR 177.2 | 6.7 | | | 6.7 | 6.7 | | | 6.7 | |
| | COLLECTOR PIPE | 8.2 | | | 8.2 | 8.2 | | | 8.2 | |
| DR 178 STA. 14 + 382 | MR 178 | 6.2 | 6.2 | | 6.2 | 6.2 | 6.2 | | 6.2 | |
| | COLLECTOR PIPE | 20.5 | 20.5 | | 20.5 | 20.5 | 20.5 | | 20.5 | |
| DR 185 STA. 14 + 849 | MR 185 | 6.9 | | | 6.9 | 6.9 | | | 6.9 | |
| | MR 186 | 5.6 | | | 5.6 | 5.6 | | | 5.6 | |
| | MR 187 | 5.4 | | | 5.4 | 5.4 | | | 5.4 | |
| | COLLECTOR PIPE | 23.5 | | | 23.5 | 23.5 | | | 23.5 | |
| DR 189 STA. 14 + 899 | MR 189 | 6.2 | | | 6.2 | 6.2 | | | 6.2 | |
| | MR 188 | 4.5 | | | 4.5 | 4.5 | | | 4.5 | |
| DR 190 STA. 14 + 916 | MR 190 | 6.2 | | | 6.2 | 6.2 | | | 6.2 | |
| DR 191 STA. 14 + 924 | MR 191 | 6.2 | | | | | 6.2 | | | |
| | COLLECTOR PIPE | 16.7 | 16.7 | | | | 16.7 | | | |
| DR 193A STA. 15 + 012 | MR 193A | 6.2 | | | | | | | | |
| DR 193B STA. 15 + 020 | MR 193 B | 6.2 | | | | | | | | |
| DR 193C STA. 15 + 025 | MR 193 C | 9.2 | 9.2 | | | 9.2 | 9.2 | | | |
| DR 193C.1 STA. 15 + 041 | MR 193C.1 | 7.0 | 7.0 | | | 7.0 | 7.0 | | | |
| DR 245.8 STA. 16 + 789 | MR 245.8 | 6.9 | | | | | | | | 6.9 |
| DR 245.9 STA. 16 + 798 | MR 245.9 | 6.9 | | | | | | | | 6.9 |
| Subtotal | COLLECTOR PIPE | 453.5 | 58.2 | 14.9 | 181.2 | 154.7 | 58.2 | 14.9 | 181.2 | 147.4 |
| | MANHOLE | 296.8 | 34.7 | 36.6 | 126.4 | 106.7 | 34.7 | 36.6 | 126.4 | 70.1 |
| Total | | 750.3 | 92.9 | 51.6 | 307.6 | 261.4 | 92.9 | 51.6 | 307.6 | 217.5 |

| OUTLET NO. | MANHOLE NO. | LENGTH OF DEMOLITION | | | | LENGTH OF RESTORATION | | | | LENGTH OF TEMPORARY WALL |
|------------------------------|----------------|----------------------|-------|--------------|---------------|-----------------------|-------|--------------|---------------|--------------------------|
| | | REVETMENT | FENCE | WALL & FENCE | WALL/HANDRAIL | REVETMENT | FENCE | WALL & FENCE | WALL/HANDRAIL | |
| UPPER PASIG LEFT BANK | | | | | | | | | | |
| DL 97.2 STA. 11 + 512 | ML 97.2 | 5.9 | | | | | | | | |
| | ML 97.3 | 4.6 | | | | | | | | |
| | ML 97.4 | 4.6 | | | | | | | | |
| | ML 97.1 | 5.4 | | | | | | | | |
| | COLLECTOR PIPE | 9.7 | | | | | | | | |
| DL 97.5 STA. 11 + 529 | ML 97.5 | 5.1 | | | | | | | | |
| DL 97.6 STA. 11 + 550 | ML 97.6 | 6.2 | | | | | | | | |
| DL 97.8 STA. 11 + 581 | ML 97.8 | 6.2 | | | | | | | | |
| | ML 97.9 | 4.8 | | | | | | | | |
| | COLLECTOR PIPE | 1.4 | | | | | | | | |
| DL 97.10 STA. 11 + 618 | ML 97.10 | 4.1 | | | | | | | | |
| DL 113.12 STA. 13+845 | ML 113.12 | 6.7 | | | 6.7 | | | | 6.7 | |
| | ML 113.10 | 4.6 | | | 4.6 | | | | 4.6 | |
| | COLLECTOR PIPE | 27.6 | | | 27.6 | | | | 27.6 | |
| DL 113.19 STA. 13 + 886 | ML 113.19 | 6.9 | | | 6.9 | | | | 6.9 | |
| | ML 113.13 | 5.7 | | | | | | | 5.7 | 5.7 |
| | ML 113.25 | 5.5 | 5.5 | | | | | | 5.5 | 5.5 |
| | COLLECTOR PIPE | 40.0 | 14.7 | | 11.2 | | 14.7 | | 11.2 | 40.0 |
| DL 113.26 STA. 13 + 924 | ML 113.26 | 6.0 | | | | | | | | |
| DL 113.27 STA. 13 + 936 | ML 113.27 | 6.3 | | | | | | | | 6.3 |
| DL 113A STA. 13 + 947 | ML 113A | 6.1 | | | 6.1 | | | | 6.1 | |
| DL 113B.4 STA. 13 + 974 | ML 113B.4 | 7.4 | | | 7.4 | | | | 7.4 | |
| | COLLECTOR PIPE | 21.8 | | | 21.8 | | | | 21.8 | |
| DL 113B.9 STA. 13 + 997 | ML 113B.9 | 6.6 | | | 6.6 | | | | 6.6 | |

| | | | | | | | | | | |
|--------------------------|----------------|--------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|
| DL 113B.10 STA. 14 + 002 | ML 113B.10 | 6.2 | | | 6.2 | | | | 6.2 | |
| DL 113B.12 STA. 14 + 023 | ML 113B.12 | 7.3 | | | 7.3 | 7.3 | | | 7.3 | |
| DL 113C STA. 14 + 033 | ML 113C | 7.3 | | | 7.3 | 7.3 | | | 7.3 | |
| DL 113D STA. 14 + 044 | ML 113D | 7.5 | | 7.5 | | 7.5 | | 7.5 | | |
| | COLLECTOR PIPE | 5.5 | | 5.5 | | 5.5 | | 5.5 | | |
| DL 113E STA. 14 + 076 | ML 113E | 7.4 | | 3.7 | 3.7 | | | 3.7 | 3.7 | |
| DL 113F STA. 14 + 080 | ML 113F | 7.3 | | | 7.3 | | | | 7.3 | |
| DL 113F.17 STA. 14 + 176 | ML 113F.17 | 7.8 | | | 7.8 | | | | 7.8 | |
| | ML 113F.10 | 6.0 | | | 6.0 | | | | 6.0 | |
| | COLLECTOR PIPE | 21.7 | | | 21.7 | | | | 21.7 | |
| DL 113F.38 STA. 14 + 260 | ML 113F.38 | 7.6 | | | 7.6 | | | | 7.6 | |
| | COLLECTOR PIPE | 14.7 | | | 14.7 | | | | 14.7 | |
| DL 126 STA. 15 + 358 | ML 126 | 6.8 | 6.8 | | 6.8 | | 6.8 | | 6.8 | |
| | ML 127 | 4.6 | 4.6 | | 4.6 | | 4.6 | | 4.6 | |
| | COLLECTOR PIPE | 16.0 | 16.0 | | 16.0 | | 16.0 | | 16.0 | |
| DL 128 STA. 14 + 402 | ML 128 | 6.8 | 6.8 | | 6.8 | | 6.8 | | 6.8 | |
| DL 129 STA. 15 + 455 | ML 129 | 6.5 | 6.5 | | 6.5 | | 6.5 | | 6.5 | |
| | COLLECTOR PIPE | 6.6 | 6.6 | | 6.6 | | 6.6 | | 6.6 | |
| DL 130 STA. 15 483 | ML 130 | 7.2 | 7.2 | | 7.2 | | 7.2 | | 7.2 | 7.2 |
| DL 131 STA. 15 + 522 | ML 131 | 6.5 | 6.5 | | 6.5 | | 6.5 | | 6.5 | |
| | ML 132 | 5.3 | 5.3 | | 5.3 | | 5.3 | | 5.3 | |
| | COLLECTOR PIPE | 12.6 | 12.6 | | 12.6 | | 12.6 | | 12.6 | |
| DL 133A STA. 15 + 779 | ML 133A | 6.5 | | | | | | | 6.5 | |
| DL 133B STA. 15 + 829 | ML 133B | 6.5 | | | | | | | | |
| DL 133C.4 STA. 15 966 | ML 133C.4 | 7.8 | 7.8 | | | | 7.8 | | 7.8 | |
| DL 133C.5 STA. 16 + 030 | ML 133C.5 | 6.8 | 6.8 | | | | 6.8 | | 6.8 | |
| DL 134 STA. 16 + 124 | ML 134 | 6.8 | | | 6.8 | | | | 6.8 | |
| | COLLECTOR PIPE | 23.7 | | | 23.7 | | | | 23.7 | |
| DL 134.5 STA. 16 + 203 | ML 134.5 | 8.9 | | | 8.9 | | | | 8.9 | |
| | COLLECTOR PIPE | 12.9 | | | 12.9 | | | | 12.9 | |
| DL 135.4 STA. 16 + 230 | ML 135.4 | 6.5 | | | 6.5 | | | | 6.5 | |
| | COLLECTOR PIPE | 40.5 | | | 40.5 | | | | 40.5 | |
| DL 135.11 STA. 16 + 281 | ML 135.11 | 5.5 | | | 5.5 | | | | 5.5 | |
| | COLLECTOR PIPE | 22.4 | | | 22.4 | | | | 22.4 | |
| DL 135.22 STA. 16 + 309 | ML 135.22 | 5.8 | | | 5.8 | | | | 5.8 | |
| | COLLECTOR PIPE | 17.3 | | | 17.3 | | | | 17.3 | |
| DL 135.31 STA. 16 + 331 | ML 135.31 | 6.0 | | | 6.0 | | | | 6.0 | |
| | COLLECTOR PIPE | 19.8 | | | 19.8 | | | | 19.8 | |
| DL 135.33 STA. 16 + 348 | ML 135.33 | 6.8 | | | | | | | - | |
| DL 136 STA. 16 + 362 | ML 136 | 6.5 | | | 6.5 | | | | 6.5 | |
| | COLLECTOR PIPE | 26.2 | | | | | | | - | |
| DL 136.7 STA. 16 + 409 | ML 136.7 | 5.0 | | | 5.0 | | | | 5.0 | |
| DL 136.8 STA. 16 + 460 | ML 136.8 | 6.5 | | | 6.5 | | | | 6.5 | |
| | COLLECTOR PIPE | 25.9 | | | 25.9 | | | | 25.9 | |
| DL 137 STA. 16 + 498 | ML 137 | 6.3 | | | 6.3 | | | | 6.3 | |
| DL 138 STA. 16 + 510 | ML 138 | 6.3 | | | 6.3 | | | | 6.3 | |
| DL 138.1 STA. 16 + 516 | ML 138.1 | 6.3 | | | 6.3 | | | | 6.3 | |
| DL 139 STA. 16 + 535 | ML 139 | 6.5 | | | | | | | - | |
| DL 139A STA. 16 + 549 | ML 139A | 6.3 | | | | | | | - | |
| Subtotal | COLLECTOR PIPE | 366.2 | 49.9 | 5.5 | 294.6 | 5.5 | 49.9 | 5.5 | 294.6 | 40.0 |
| | MANHOLE | 340.0 | 63.7 | 11.2 | 211.3 | 22.0 | 58.2 | 11.2 | 243.6 | 24.6 |
| Total | | 706.2 | 113.6 | 16.7 | 505.8 | 27.6 | 108.1 | 16.7 | 538.1 | 64.6 |