



ZIMBABWE IDAI RECOVERY PROJECT

ENGINEERING DESIGN FOR REHABILITATION OF
COMMUNITY ACCESS FEEDER ROADS

CHIMANIMANI AND CHIPINGE, ZIMBABWE

TECHNICAL DRAWINGS

February 2022

1. CEMENT:

A. SETTING TIME:

FINAL SETTING TIME: NOT GREATER THAN 2.5 HOURS

CHARACTERISTIC COMPRESSIVE STRENGTH FOR CONCRETE (STANDARD CUBE)

28 DAYS: 35N/mm² FOR SHELVERTS

28 DAYS: 35N/mm² FOR CULVERTS

2. REINFORCEMENT:

SPLICES IN REINFORCEMENT SHALL BE MADE ONLY AS AUTHORISED BY THE ENGINEER

SPLICES IN REINFORCEMENT AT POINTS OF MAXIMUM STRESS IN SLABS SHOULD BE AVOIDED

LAP LENGTHS WILL BE:

i) 800mm FOR 16 DIA. DEFORMED BAR WITHOUT HOOKS, 600mm FOR 12 DIA. BAR WITHOUT HOOKS AND 30 DIA FOR ALL WITH STANDARD HOOKS

B. ALL REBAR SHALL BE FREE FROM OIL, DIRT, GREASE OR RUST

C. HOOKS SHALL BE 12D FOR ALL REBAR SIZES.

3. CONCRETE:

A. FOR VERTICAL MEMBER, FOUNDATION SLAB, DECK SLAB 28DAY STANDARD CHARACTERISTIC STRENGTH FOR CONCRETE SHOULD BE C35.

B. ALL AGGREGATES SHALL BE FREE FROM DUST/DIRT AND SHALL NOT BE FLAKY OR HAVE FISSURES

4. MINIMUM COVER TO REINFORCEMENT:

i) FOR ALL STRUCTURES = 50mm, TOP BAR, BOTTOM BAR & SIDES

5. ALL CONCRETE SHALL BE WELL VIBRATED USING MACHINE APPROVED BY THE UNOPS ENGINEER IN CHARGE

6. DIMENSIONS SHALL NOT BE SCALED, WRITTEN DIMENSIONS ONLY SHALL BE USED

7. CONSTRUCTION JOINTS SHALL BE PROVIDED AS SHOWN, EVERY 6m AND ADDITIONALLY AS DIRECTED BY THE UNOPS ENGINEER IN CHARGE

8. ALL GABION AND WING WALLS SHALL BE FOUNDED 500mm BELOW NATURAL GROUND LEVEL

8. ALL GABION BOXES SHALL BE MADE GALVANISED WIRE MESH

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GENERAL REQUIREMENTS FOR THE CONSTRUCTION OF DRAINAGE STRUCTURES

1. MINIMUM DEPTH OF FILL FOR ALL STRUCTURES TO BE 150mm, FOR SHELVERTS MINIMUM DEPTH OF FILL SHALL BE 500MM.
2. SIDE DRAIN DIMENSIONS TO BE CONFIRMED ON SITE.
3. DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SHOWN.
4. GEOTECHNICAL CONDITIONS; 250KPa MINIMUM ASSUMED BEARING CAPACITY.
5. 75mm DIA. WEEP HOLES FOR ALL WING WALLS SHALL BE PLACED AT 1m CENTERS BOTH HORIZONTALLY AND VERTICALLY, 75mm DIA WEEP HOLES FOR ALL HEAD WALLS SHALL BE PLACED AT 1m CENTERS HORIZONTALLY.
6. ALL HEAD WALLS AND WING WALLS SHALL BE MASONRY WITH 1:3 MORTAR MIX.
7. BACKFILL SOIL SHALL BE SELECTED GRAVEL MATERIAL COMPACTED TO AT LEAST 93% ModAASHTO.
8. MINIMUM COVER TO REINFORCEMENT SHALL BE 50mm.
9. SLOPE FOR ALL DRAINAGE STRUCTURES SHALL BE 1:200.
10. 75MM THICK BLINDING CONCRETE, 20MPa SHALL BE PLACED FOR ALL CUT OFF WALLS AND THE MORTAR MIX FOR THE MASONRY SHALL BE 1:3.
11. ALL STREAM/RIVER EMBARKMENTS SHALL BE PROTECTED USING GABION BASKETS ON EITHER SIDE IF WING WALLS.
12. DEEP EXCAVATIONS DEPEND ON SITE CONDITIONS, EXCAVATIONS SHALL BE DONE UP TO STABLE SOIL CONDITIONS.
13. ALL PIPE CULVERTS SHALL BE PRECAST REINFORCED CONCRETE STORMWATER PIPES OF CLASS 40D.
14. ALL SHELVERTS SHALL BE PRECAST REINFORCED CONCRETE SHELVERTS AS PER MANUFACTURER'S DESIGN MANUAL.
15. ALL STRUCTURES SHALL BE CONSTRUCTED ON 75mm THICK 20MPa BLINDING CONCRETE.
16. S617 MESH WIRE IS 10mm GRADE 460MPa HIGH YIELD STEEL AT 200mm SPACING.
17. S193 MESH WIRE IS 6mm GRADE 460MPa HIGH YIELD STEEL AT 200mm SPACING.
18. FOR STONE MASONRY A MORTAR MIX OF 1:3 SHALL BE USED.
19. S888 MESH WIRE IS 12mm GRADE 460MPa HIGH YIELD STEEL AT 200mm SPACING.
20. NOTE THAT ALL PIPE DIAMETERS REFERRED TO ARE NOMINAL DIAMETERS.

NOTES

REVISION NOTES

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ISSUED FOR: DESIGN REVIEW

PROJECT: ZIMBABWE IDAI RECOVERY PROJECT



DONOR: THE WORLD BANK

DESIGNER AND IMPLEMENTER: UNITED NATIONS
OFFICE FOR PROJECT SERVICES

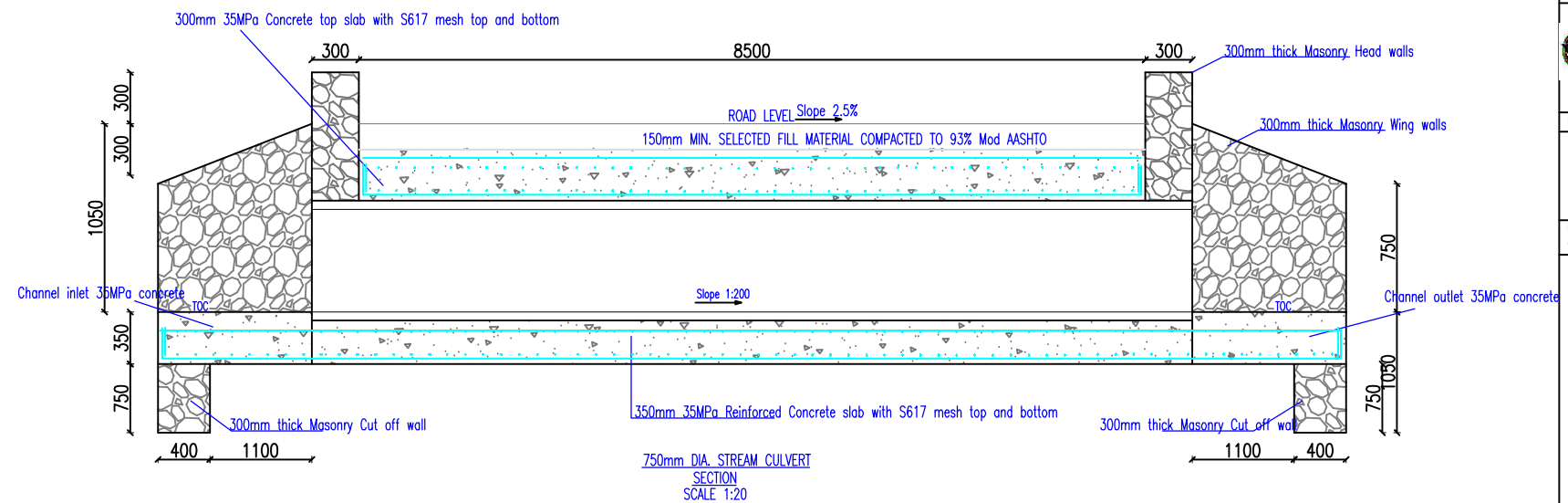
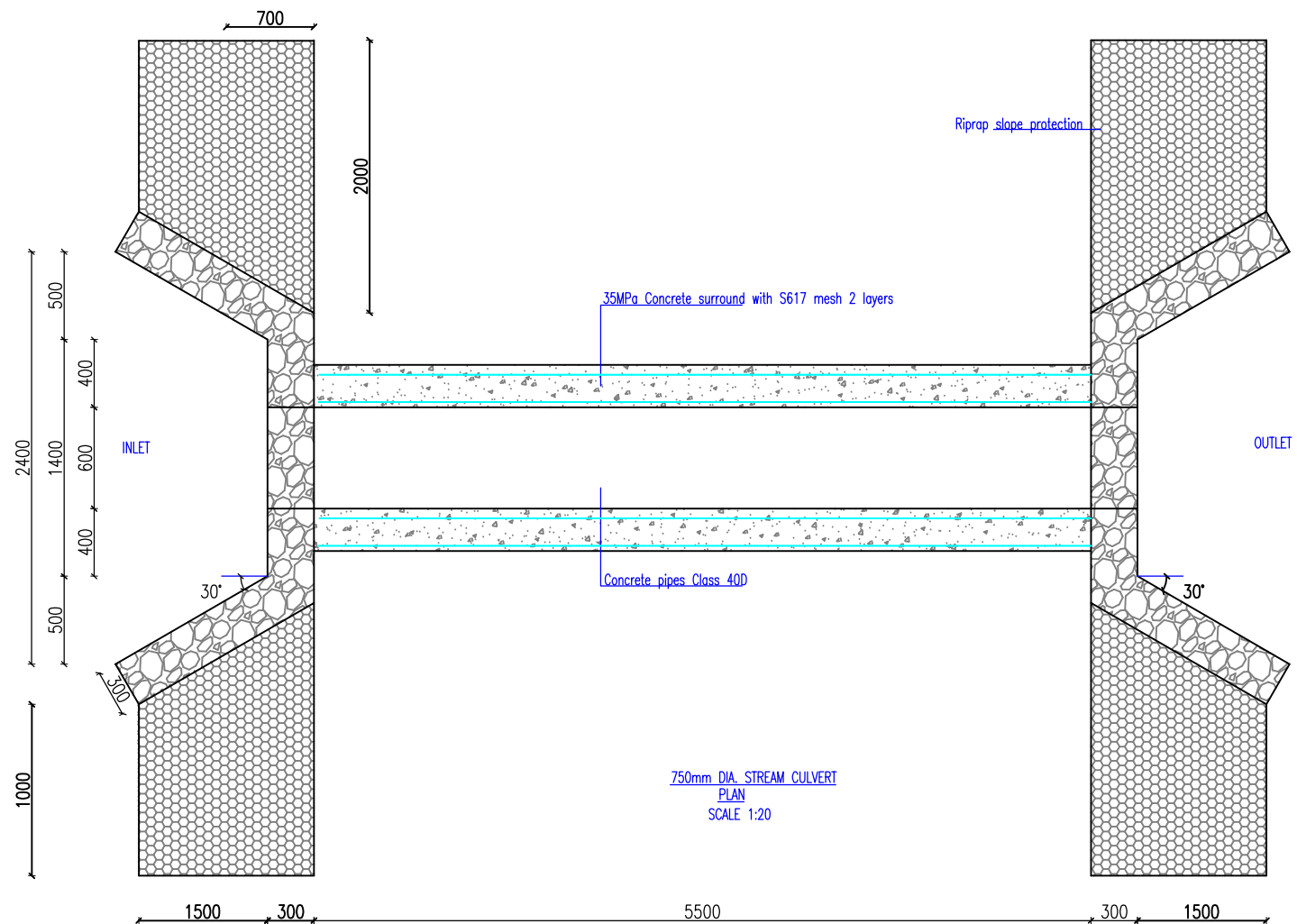
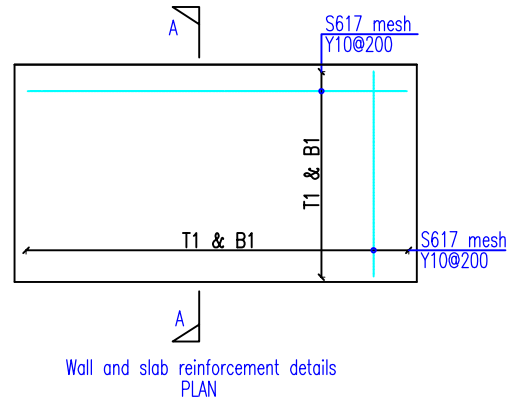
PROJECT

PROPOSED RURAL ROADS REHABILITATION

DRWG TITLE

GENERAL REQUIREMENTS FOR CONSTRUCTION

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CONSTRUCTION NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER RELEVANT ENGINEER'S DRAWINGS.

2.THIS DRAWING MUST NOT BE SCALED. USE ONLY WRITTEN OR CALCULATED DIMENSIONS.

3. MINIMUM DEPTH OF FILL FOR CULVERTS TO BE 150mm, FOR SHELVERTS 500MM.

4. SIDE DRAIN DIMENSIONS TO BE
CONFIRMED ON SITE.

5. DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SHOWN.

6. GEOTECHNICAL CONDITIONS; 250KPa
MINIMUM ASSUMED BEARING CAPACITY.

7. 75mm DIA. WEEP HOLES FOR ALL WING WALLS PLACED AT 1m CENTERS.

8. ALL HEAD WALLS AND WING WALLS SHALL BE MASONRY WITH 1:3 MORTAR MIX.

9. BACKFILL SOIL SHALL BE SELECTED MATERIAL COMPACTED TO AT LEAST 93% ModAASHTO.

10. COVER TO REINFORCEMENT SHALL BE 50mm.

11. SLOPE FOR ALL DRAINAGE STRUCTURES SHALL BE 1:200.

12. 50MM THICK BLINDING CONCRETE, 20MPa SHALL BE PLACED FOR ALL CUT OFF WALLS.

13. ALL STREAM/RIVER EMBARKMENTS SHALL BE PROTECTED USING GABION BASKETS ON EITHER SIDE IF WING WALLS, LENGTH SHALL BE DETERMINED DURING CONSTRUCTION.

14. ALL PIPES SHALL BE ACSEND 40D
STORMWATER PIPE OR SIMILAR APPROVED.

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PROJECT PHASE 1

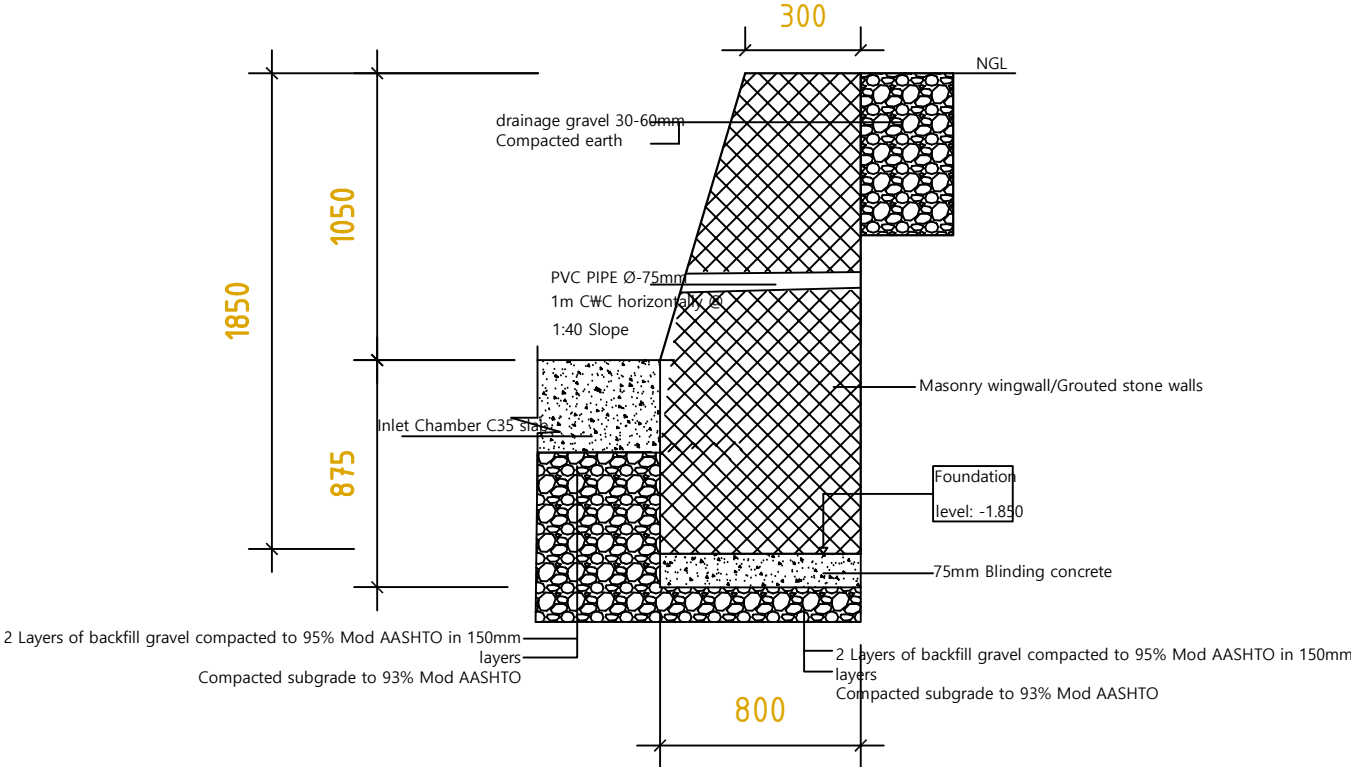
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STANDARD 750mm DIAMETER CULVERT DRAWINGS

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MASONRY WING WALLS



750 mm Culverts

NOTES

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2. THIS DRAWING MUST NOT BE SCALED. USE ONLY WRITTEN OR CALCULATED DIMENSIONS.
3. DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SHOWN.
4. GEOTECHNICAL CONDITIONS TO BE CONFIRMED ON SITE, 250KPa MINIMUM ASSUMED BEARING CAPACITY OF THE SUBGRADE.
5. THE SUBGRADE OF THE MASONRY WALL SHALL BE COMPACTED TO AT LEAST 93% Mod AASHTO, 2 LAYERS OF GRAVEL BACKFILL MATERIAL SHALL BE PLACED IN 150mm LAYERS AND COMPACTED TO 95% Mod AASHTO.
6. ALL CONCRETE SHALL BE OF 35MPa STRENGTH AT 28DAYS.
7. ALL REINFORCEMENT SHALL BE OF 460MPa STRENGTH.
8. THE WEEPHOLES SHALL BE PLACED AT CLEAR HEIGHT ABOVE GROUND LEVEL/3.

REVISION NOTES

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PROJECT

PROPOSED RURAL ROADS REHABILITATION

DRWG TITLE

STANDARD WING WALL DETAILS

Project No.:	SUB No.:	Stage:	Discipline:	Subject:	Seq No.:
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