REPUBLIC OF KENYA
NORTHERN WATER SERVICES BOARD

DESIGN REVIEW AND CONSTRUCTION SUPERVISION OF YAMO DAM

CONTRACT No.

TENDER DOCUMENTS VOLUME 2:
CONSTRUCTION DRAWINGS

APRIL 2017
GENERAL DRAWINGS
EMBANKMENT DRAWINGS
NOTES

Client:
NORTHERN WATER SERVICE BOARD
P.O. BOX 495-70100
GARISSA

Project:
DESIGN REVIEW AND CONSTRUCTION SUPERVISION OF YAMO DAM PHASE A: DESIGN REVIEW

DESIGN CONSULTANT:
Runji & Partners Consulting Engineers and Planners Ltd
3, Swamivara Road (Off Ngingo Road)
P.O. Box 90581-00202 Nairobi
Tel: (254) 2417-1434

Drawing Title:
DAM CROSS SECTIONS

Designed by: ADDS
Drawn by: JFD
Checked by: ADDS
Approved by: RY
Date: APRIL, 2017
Drawing No:
WISDN/CC/FA/124/009
Scale: 1:500
NOTES

1. The diameter of the holes shall be 3.5mm.
2. The pipe shall be Class E-PVC - perforated.

Instrumentation drawings are provisional except location and number to be advised by the specialized subcontractor.

Client:
NORTHERN WATER SERVICE BOARD
P.O. BOX 495-70100
GARissa

Project:
DESIGN REVIEW AND CONSTRUCTION SUPERVISION OF YAMO DAM

PHASE A: DESIGN REVIEW

DESIGN CONSULTANT:
Runji & Partners
Consulting Engineers and Planners Ltd.
1. Hurling Road, Off Spring Road
P.O. Box 20282 Nairobi
Tel: 202-277709

Drawing Title: SEEPAGE MEASUREMENT DETAILS

Designed by: ADBS
Drawn by: JBO
Checked by: ADBS
Approved by: JAN
Date: APRIL, 2017

Drawing No: DB/843

AS SHOWN
SPILLWAY CHANNEL
SPILLWAY LAYOUT

NOTES
1) Contraction points to be at every 10% longitudinally and transversely.
2) Under drain to run along all the contraction points and eventually to evacuate downstream through the longitudinal joint.
3) Mid slope reinforcement bars 6 S. 4440
4) All steel reinforcement may be approved by the structural Engineer before casting.
5) Dimensions are in Millimeters (MM) Unless noted otherwise.
6) Elevations are in feet.

<table>
<thead>
<tr>
<th>REVISIONS</th>
<th>DATE</th>
<th>APPROVED</th>
</tr>
</thead>
</table>

Client:
NORTHERN WATER SERVICE BOARD
P.O. BOX 495-70100
GARISSA

SIGN: DATE: TECHNICAL MANAGER
SIGN: DATE:

REVISIONS: DATE: APPROVED

PROJECT:
DESIGN REVIEW AND CONSTRUCTION SUPERVISION OF YAMO DAM
PHASE: A DESIGN REVIEW
DESIGN CONSULTANT:
Runji & Partners Consulting Engineers and Planners Ltd.
P.O. BOX 931-50100 Mombasa
Tel: 020-371-371

Drawing Title:
SPILLWAY LAYOUT & PROFILE

Designed by: ADMS
Drawn by: BMG
Checked by: ADMS
Approved by: BN
Date: APRIL, 2017

Drawing No.
W1004\N527Y\A0001
Scale: 1:500
OUTLET WORKS WATER SUPPLY
PIPE WORK SCHEDULE

| ITEM No. | DESCRIPTION                                      | NO. |
|----------|--------------------------------------------------+----|
| 1        | 2500 DUCTILE IRON PIPEWORK FLANGED BELL MOUTH   | 5   |
| 2        | DOUBLE FLANGED STRAIGHT 1120mm LONG              | 5   |
| 3        | 2500 DOUBLE FLANGED BUTTERFLY VALVE              | 5   |
| 4        | 2500 ALL FLANGED RADIAL TEE                      | 1   |
| 5        | DOUBLE FLANGED STRAIGHT 2500mm LONG              | 4   |
| 6        | DOUBLE FLANGED STRAIGHT 2700mm LONG              | 1   |
| 7        | DOUBLE FLANGED 90° BUCKFORD BEND                 | 1   |
| 8        | 250mm BLANK FLANGE ADAPTED TO 75 DIA. VENT PIPE  | 1   |
| 9        | 75 DIA. GALVANIZED VENT PIPE 6.3 METRES LONG WITH UPVC COWL | 1   |
RIVER DIVERSION
HYDROPOWER
BUILDING
STANDARD DRAWINGS
TEMPORARY SLOPES IN SELF SUPPORTING ROCK

SUPPORT TYPE A

TYPICAL CROSS SECTION

INSTALL CIRCULAR CASINGS TO MINIMIZE INSTABLE BLOCKS AS DIRECTED BY THE ENGINEER

DRAINAGE HOLE WHERE SEEPAGE IS OBSERVED AS DIRECTED BY THE ENGINEER

3000

-2%

2.0

6.0

-6.0

3.0

1.0

3.0

6.0

9.0

DRAINAGE HOLE WITH SLULITED PVC PIPE DIAMETER 75mm LENGTH 3000 AT 6% BOITHWAYS

GROUTED BAR #12mm

LENGTH 5000 mm AT 3000 BOTHWAYS

NOTES:

1. DRAWING IS DIAGRAMATIC ONLY AND SHOULD NOT BE USED
2. THIS DRAWING APPLIES TO TEMPORARY SLOPES WHICH WILL NOT AFFECT THE PERMANENT WORKS AND ARE NOT TO INFLUENCE THE PERMANENT WORKS CONSTRUCTION
3. THE TEMPORARY BARRIERS MAY BE USED TO DIRECT OR REINFORCE THE EXCAVATION PROGRESS SUCH THAT NOT MORE THAN 45 DEGREES VERTICAL HEIGHT OF ROCK IS EXCAVATED AT ANY TIME
4. WHERE SEEPAGE IS OBSERVED, ADDITIONAL DRAINAGE HOLES SHALL BE INSTALLED AS DIRECTED OR APPROVED BY THE ENGINEER

TEMPORARY SLOPES IN ROCK REQUIRING SUPPORT

SUPPORT TYPE B

TYPICAL CROSS SECTION

GROUTED BAR #12mm

LENGTH 5000 mm AT 3000 BOTHWAYS

DRAINAGE HOLE WITH SLULITED PVC PIPE DIAMETER 75mm LENGTH 3000 AT 6% BOITHWAYS

GROUTED BAR #12mm

LENGTH 5000 mm AT 3000 BOTHWAYS

1.0

3.0

6.0

3000

-2%

2.0

6.0

-6.0

3.0

1.0

3.0

6.0

9.0

DRAINAGE HOLE WITH SLULITED PVC PIPE DIAMETER 75mm LENGTH 3000 AT 6% BOITHWAYS

LACEDSTEEL 7 mm diameter with wire

HIGH 5/30/50 mm OR STEEL FIBRE REINFORCEMENT

GROUTED BAR #12mm

LENGTH 5000 mm AT 3000 BOTHWAYS

2.0

6.0

-6.0

3.0

1.0

3.0

6.0

9.0

DRAINAGE HOLE WITH SLULITED PVC PIPE DIAMETER 75mm LENGTH 3000 AT 6% BOITHWAYS

LACEDSTEEL 7 mm diameter with wire

HIGH 5/30/50 mm OR STEEL FIBRE REINFORCEMENT

TEMPORARY SLOPES IN ROCK REQUIRING HEAVY SUPPORT

SUPPORT TYPE C

TYPICAL CROSS SECTION

GROUTED BAR #12mm

LENGTH 5000 mm AT 3000 BOTHWAYS

DRAINAGE HOLE WITH SLULITED PVC PIPE DIAMETER 75mm LENGTH 3000 AT 6% BOITHWAYS

LACEDSTEEL 7 mm diameter with wire

HIGH 5/30/50 mm OR STEEL FIBRE REINFORCEMENT

NOTES:

1. DRAWING IS DIAGRAMATIC ONLY AND SHOULD NOT BE USED
2. THIS DRAWING APPLIES TO TEMPORARY SLOPES WHICH WILL NOT AFFECT THE PERMANENT WORKS AND ARE NOT TO INFLUENCE THE PERMANENT WORKS CONSTRUCTION
3. THE TEMPORARY BARRIERS MAY BE USED TO DIRECT OR REINFORCE THE EXCAVATION PROGRESS SUCH THAT NOT MORE THAN 45 DEGREES VERTICAL HEIGHT OF ROCK IS EXCAVATED AT ANY TIME
4. WHERE SEEPAGE IS OBSERVED, ADDITIONAL DRAINAGE HOLES SHALL BE INSTALLED AS DIRECTED OR APPROVED BY THE ENGINEER
NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH GENERAL NOTES (DRAWING DESIGN).
2. ASSEMBLY OF BEARING PLATE AND BALL WASHERS SHALL ALLOW FOR MINIMUM VOLT.
3. SCREW Ø25mm, BOLT 25mm, BAR 25mm.
4. TENSIONED BAR TENDON INSTALLATION.
5. NORTHERN WATER SERVICES BOARD.
6. DURATION OF BOTH ERECTION AND INSTALLATION.
7. CEMENT GROUT.
8. PISTON ACTION.
9. REINFORCED CONCRETE.
10. DESIGN CONSULTANT:

TYPICAL ARRANGEMENT

GROUTED BAR
SCALE 1:40

ANCHOR PLATE
PLASTIC NIPPLE
ANCHOR NUT
ANCHOR PLATE
PLASTIC CAP
ANCHOR NIPPLE
DESIGN FREE LENGTH
VENT TUBE
THREAD BAR
SMOOTH SHEATHING
ANODIZED NIPPLE
INNER GRouting TUBE
Cement Grout
SEAMLESS BONDED LENGTH SPACER
GRouting CAP
Cement Grout
Cement Grout

TYPICAL ARRANGEMENT

TENSIONED BAR TENDON INSTALLATION
SCALE 1:40

NON-MERCH POLYPROPYLENE CABLE SHEATH 3.5MM DRAM AR AROUND PIPE LAYERED 20CM FIXED AROUND PIPE AT 300 CENTRES WITH PVC TAPES.
Cement Mortar Plug
Cement Mortar Plug
Cement Mortar Plug
TIGHT FIT PERFORATED JOINING COLLAR CAPABLE OF WITHSTANDING PULLOUT OF DRAINAGE PIPE.

TYPICAL ARRANGEMENT

DRILLED DRAINAGE HOLE WITH PERFORATED LINING INSTALLATION
SCALE 1:40

PROJECT:

DESIGN REVIEW AND CONSTRUCTION SUPERVISION OF YAGO DAM
PHASE A: DESIGN REVIEW

DESIGN CONSULTANT:

Runji & Partners Consulting Engineers and Partners Ltd.
G bât 2111, Jomo Kenyatta Ave.,
P.O. Box 20122, Nairobi
Tel: +254 781 722 806

DRAWING TITLE:

EXCAVATION REINFORCEMENT

Scale: As shown
HATCH COVER AND FRAME  
TYPE A (FOR FRAMES GREATER THAN 1500)  
N.T.S.

HATCH COVER AND FRAME  
TYPE B (FOR SPANS BETWEEN 500 AND 1500)  
N.T.S.

HATCH COVER AND FRAME  
TYPE C (FOR SPANS LESS THAN 500)  
N.T.S.