

CONSTRUCTION OF MAKATHINI BLOCK 6A INFRASTRUCTURE

1. CONCRETE BUTTRESS WEIR OUTLET STRUCTURE
2. AGRICULTURAL INFIELD SUBSURFACE DRAINAGE
3. 2 x VEHICLE CULVERT CROSSINGS
4. REMEDIAL REPAIRS TO EXISTING CONCRETE STORMWATER CANAL

TENDER BOOK OF DRAWINGS - DRAWING LIST:

| DRAWING NUMBER | DRAWING DISCRPTION | REVISION |
|---------------------|---|----------|
| KZNDARD/MAK/BL6/000 | Cover page | |
| KZNDARD/MAK/BL6/001 | Locality Map | T0 |
| KZNDARD/MAK/BL6/002 | Site Map | T0 |
| KZNDARD/MAK/BL6/003 | Subsurface Drainage - System Layout | T0 |
| KZNDARD/MAK/BL6/004 | Subsurface Drainage - Typical sections | T0 |
| KZNDARD/MAK/BL6/005 | Subsurface Drainage - General Notes | T0 |
| KZNDARD/MAK/BL6/006 | Subsurface Drainage - Envelope Material Notes | T0 |
| KZNDARD/MAK/BL6/007 | Subsurface Drainage - Manholes Detail | T0 |
| KZNDARD/MAK/BL6/008 | Subsurface Drainage - Excavation Detail | T0 |
| KZNDARD/MAK/BL6/009 | Subsurface Drainage - Construction Guidelines | T0 |
| KZNDARD/MAK/BL6/010 | Storm Water Canal - Drainage Pipe Junction & Remedial Works | T0 |
| KZNDARD/MAK/BL6/011 | Storm Water Canal - Vehicle Crossing - 1 | T0 |
| KZNDARD/MAK/BL6/012 | Storm Water Canal - Vehicle Crossing - 2 | T0 |
| KZNDARD/MAK/BL6/013 | Remedial Works - Existing Concrete Storm Water Canal | T0 |
| KZNDARD/MAK/BL6/014 | Outlet Structure - Buttress Weir (part 1) | T0 |
| KZNDARD/MAK/BL6/015 | Outlet Structure - Buttress Weir (part 2) | T0 |

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Notes & Reference drawings

| No. | Description | |
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| Amendment | | |
| No. | Date | Checked By |
| | Nov 2019 | JM Van Der Merwe |

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Project :

**MAKATHINI BLOCK 6A
SUBSURFACE DRAINAGE**

Drawing description

DRAWING LIST

Scale

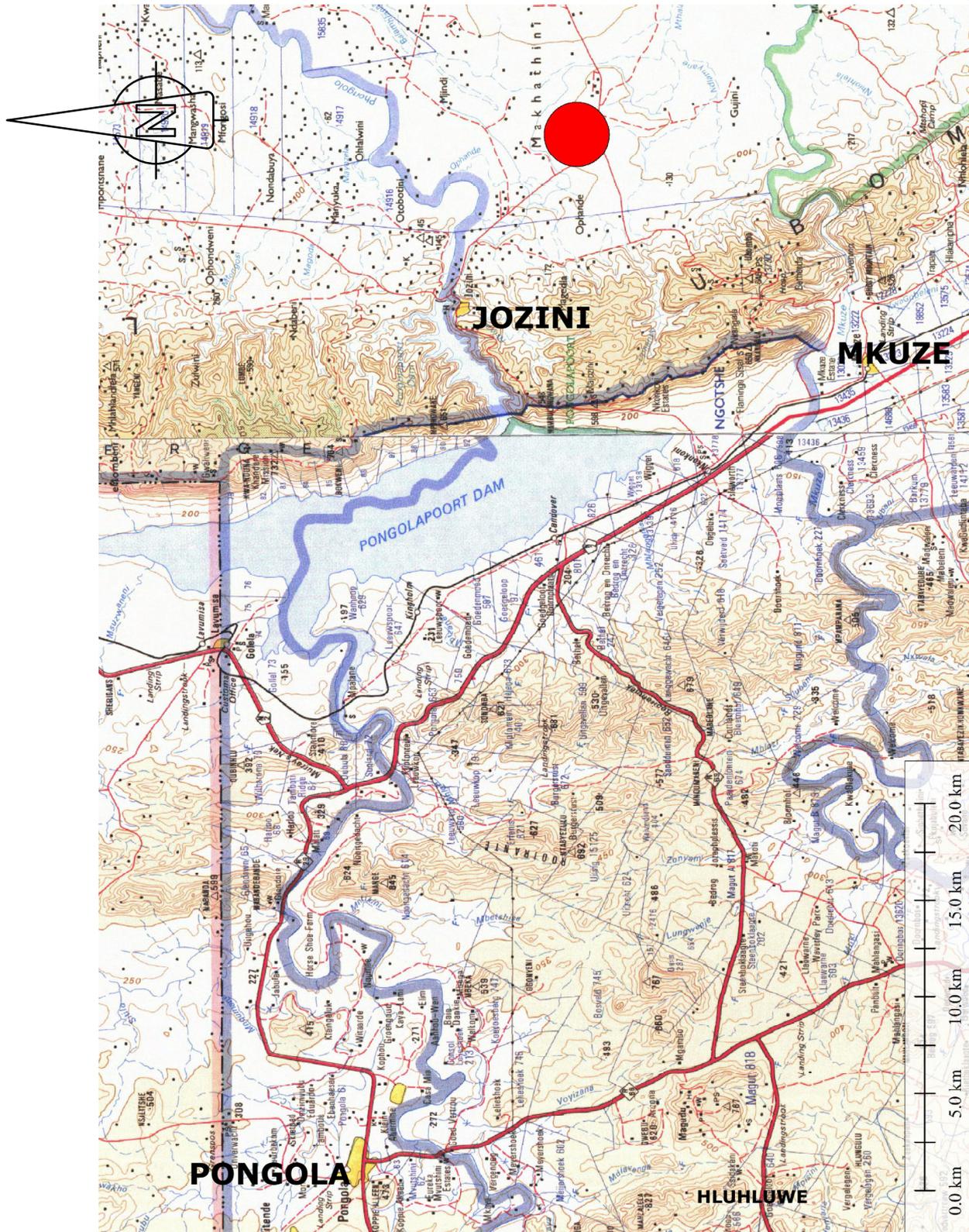
NTS

Date

20/01/2020

Drawing number

KZNDARD/MAK/BL6/000



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Project :

**MAKATHINI BLOCK 6A
SUBSURFACE DRAINAGE**

Drawing description

LOCALITY MAP

Scale

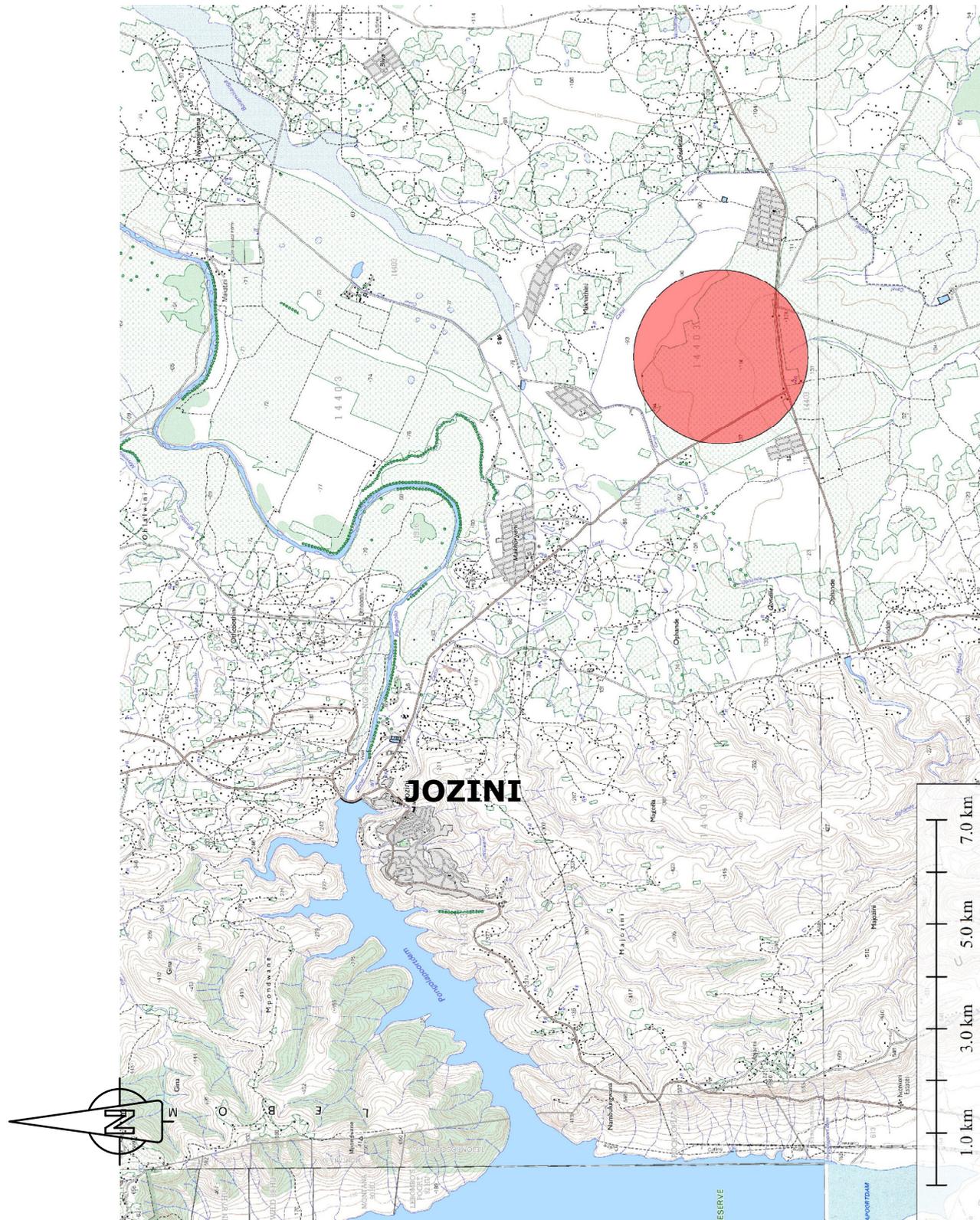
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KZNDARD/MAK/BL6/001



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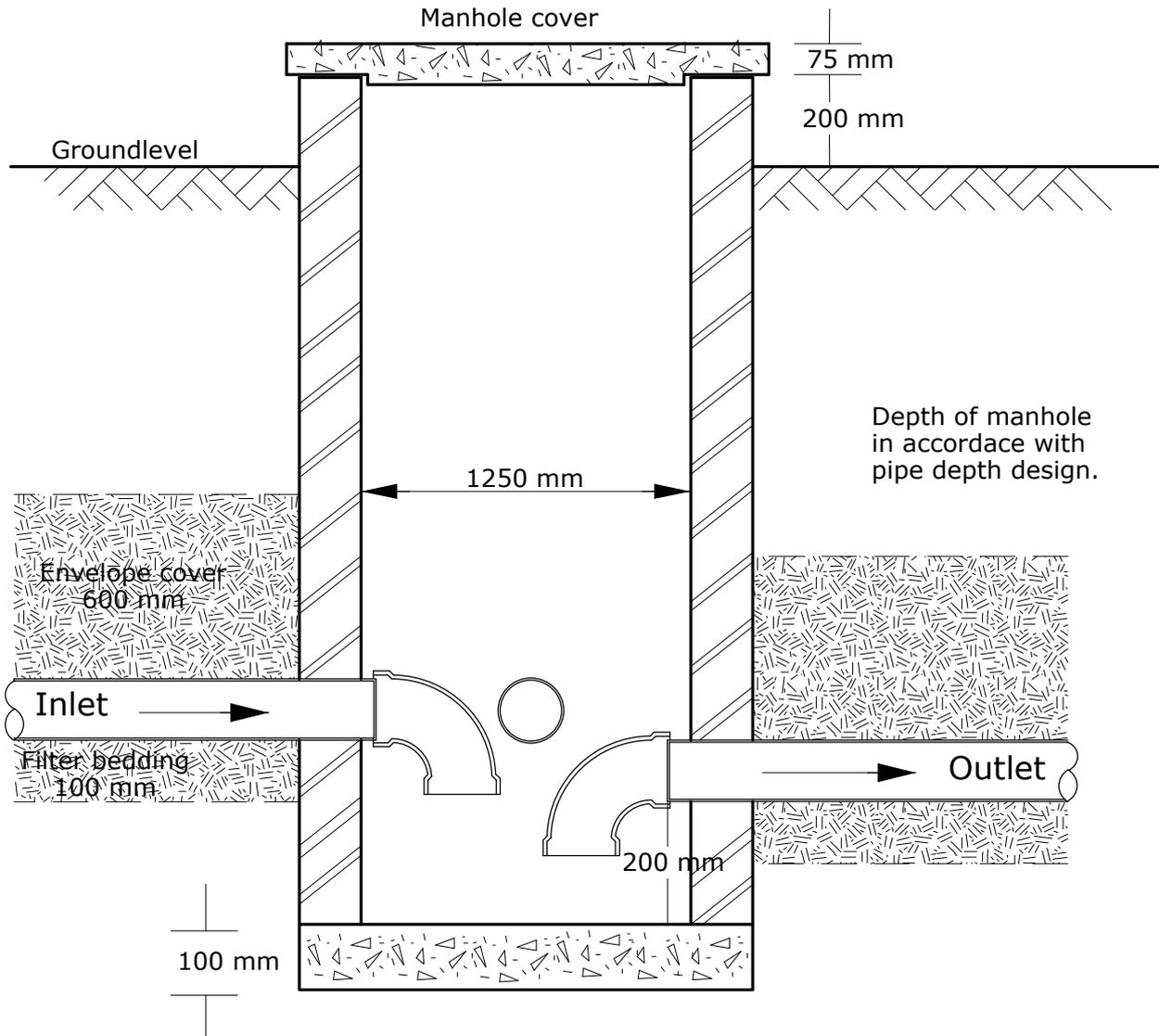
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Project :
MAKATHINI BLOCK 6A
SUBSURFACE DRAINAGE
 Drawing description
SITE MAP

Scale: NTS
 Date: _____
 Drawing number: KZNDARD/MAK/BL6/002



Manhole detail
(not to scale)

Check the slope and depth of the pipe at regular intervals. Due to the extent and nature of these works, regular intermediate inspections needs to be arranged. No excavation should be backfilled without the verification and inspection of the required filtermaterial cover by the Resident project Engineer. Regular maintenance should be done on the system after installation completion. Written consent is required from the authority / land user concerned to authorise you to lay the pipeline(s) within arrable lands , infield roads, canals or other fixed structures.

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Project :

**MAKATHINI BLOCK 6A
SUBSURFACE DRAINAGE**

Drawing description

MANHOLE DETAIL

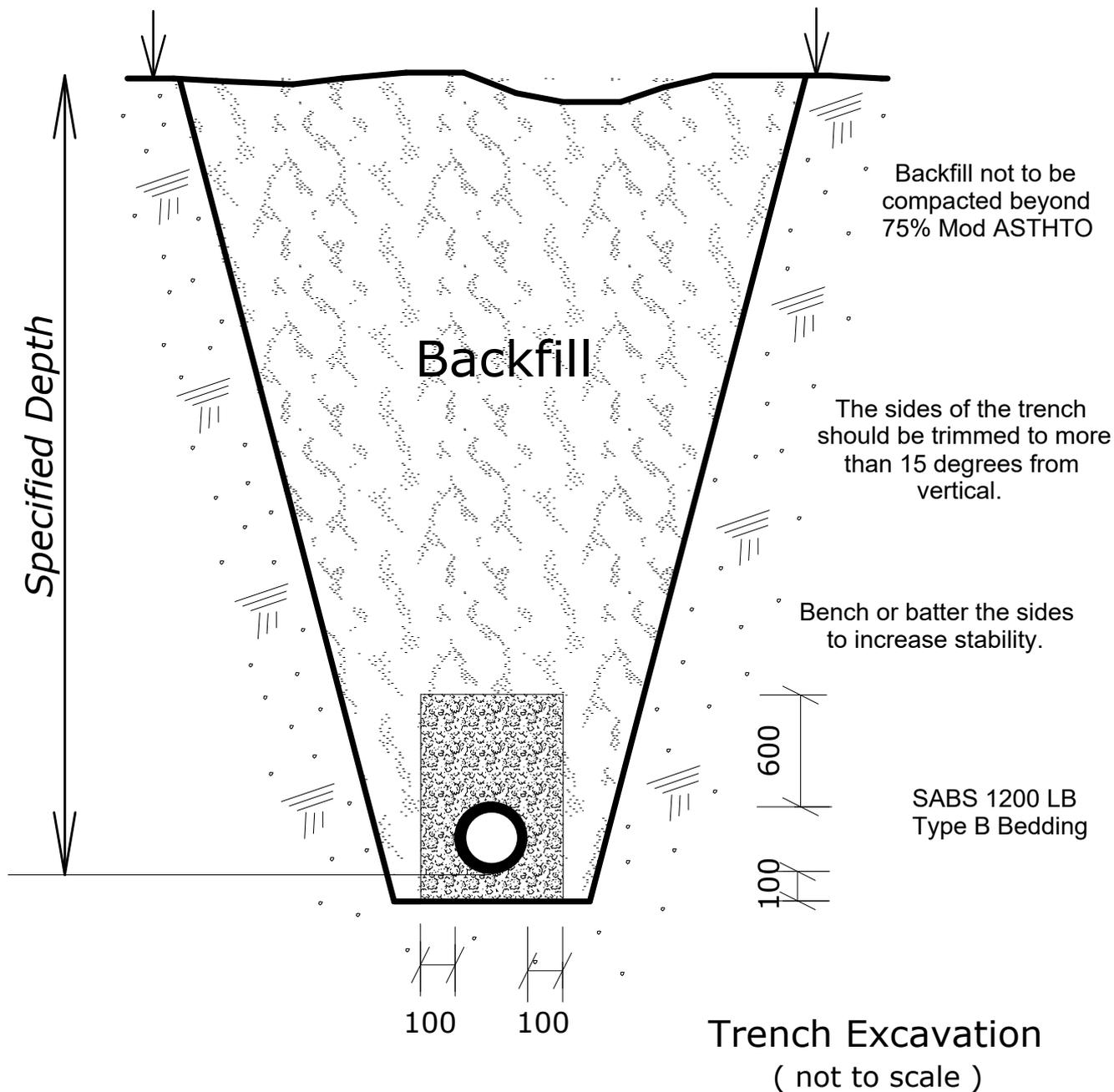
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Date

Drawing number

KZNDARD/MAK/BL6/007



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| No. | Date |
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Checked By
JM Van Der Merwe
Nov 2019

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Project :

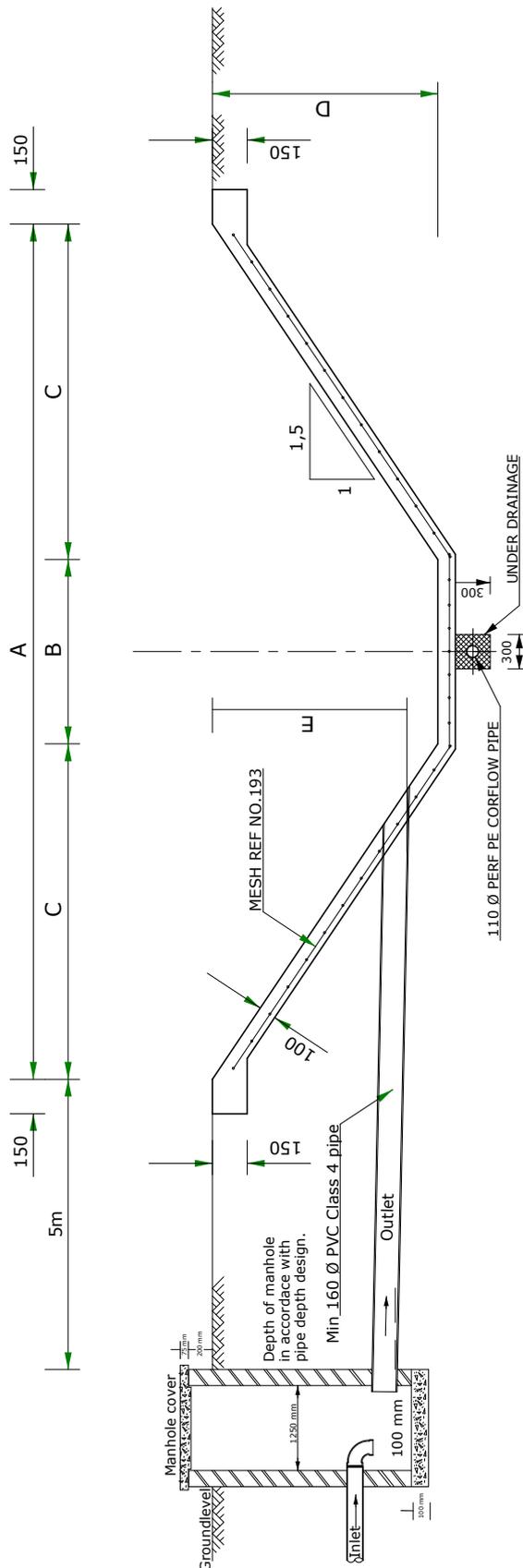
**MAKATHINI BLOCK 6A
SUBSURFACE DRAINAGE**

Drawing description

EXCAVATION DETAIL

| | | |
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| Scale | NTS | Date |
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| Drawing number | KZNDARD/MAK/BL6/008 |
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TYPICAL CROSS SECTION OF DRAINAGE CANAL

DRAINAGE CANAL NOTES :

1. ONE PAIR OF WEEP HOLES SHALL BE PROVIDED AT EACH PANEL OF THE DRAINAGE CANAL.
2. INDIVIDUAL PANEL WIDTH 2,5 METER.
3. INSITU CASTED CONCRETE CLASS 25/19. 300kg SM/m³
4. BACKFILL SHALL BE COMPACTED TO A DENSITY OF 95% PROCTOR, MOISTURE CONTENT WITHIN + 1% AND -3% OF THE OPTIMUM SHALL BE MAINTAINED DURING CONSTRUCTION.
5. WELDED STEEL MESH REF.193 (ACCORDING TO SABS 1024/74) MINIMUM COVER 40mm.
6. LAP LENGTH = 40 x DIA. UNLESS OTHERWISE INDICATED.

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| Amendment | |
| No. | Date |
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| Nov 2019 <i>JM Van Der Merwe</i> | |

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Project :

**MAKATHINI BLOCK 6A
SUBSURFACE DRAINAGE**

Drawing description

**Existing Storm Water Canal
Drainage Pipe Junction**

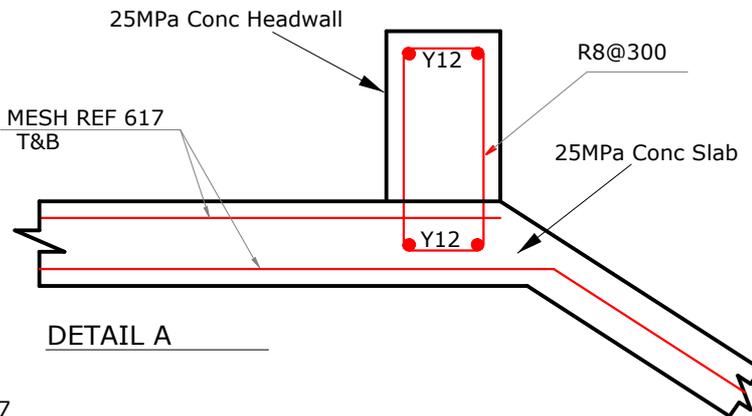
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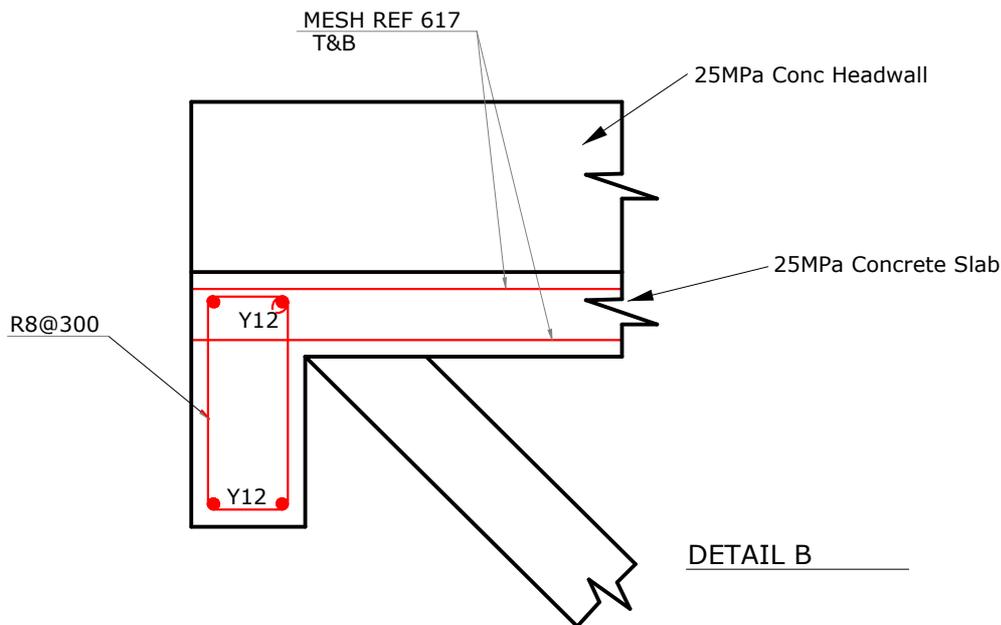
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Drawing number

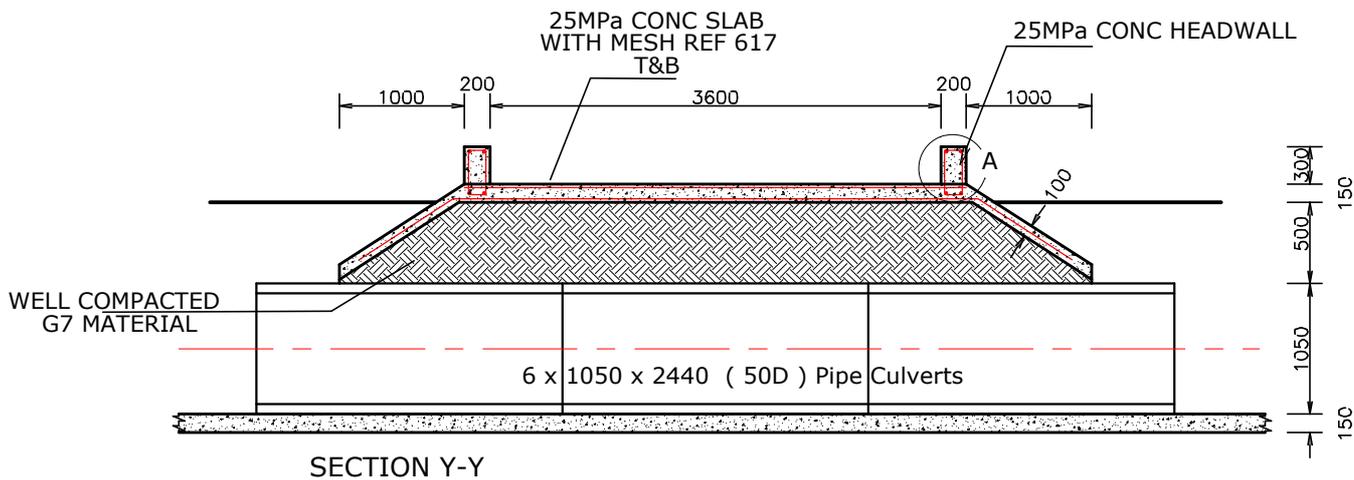
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DETAIL A



DETAIL B



SECTION Y-Y



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Project :

**MAKATHINI BLOCK 6A
SUBSURFACE DRAINAGE**

Drawing description

**Existing Storm Water Canal
Vehicle Crossing - 2**

Scale

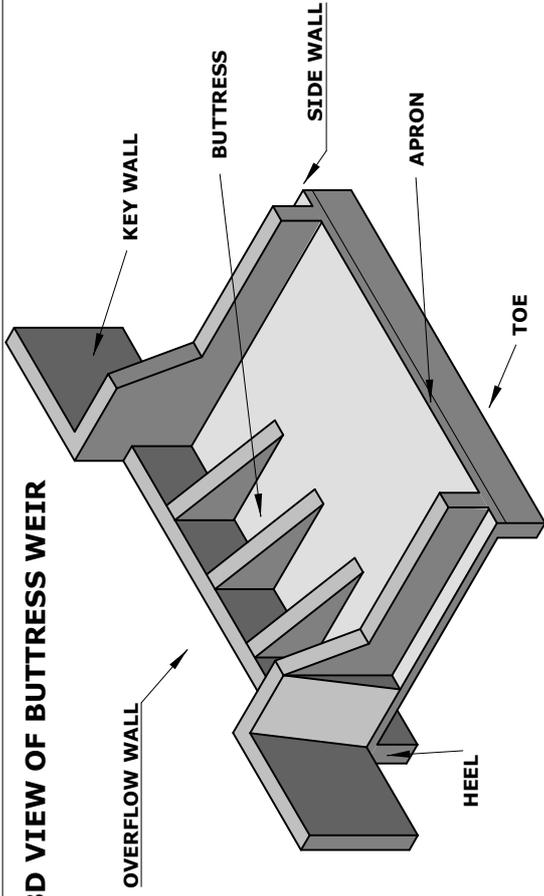
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Date

Drawing number

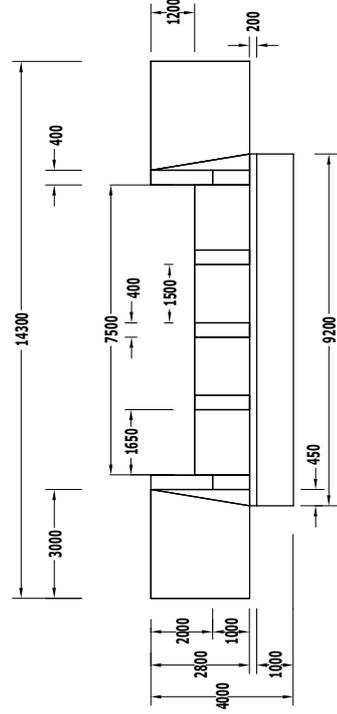
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3D VIEW OF BUTTRESS WEIR

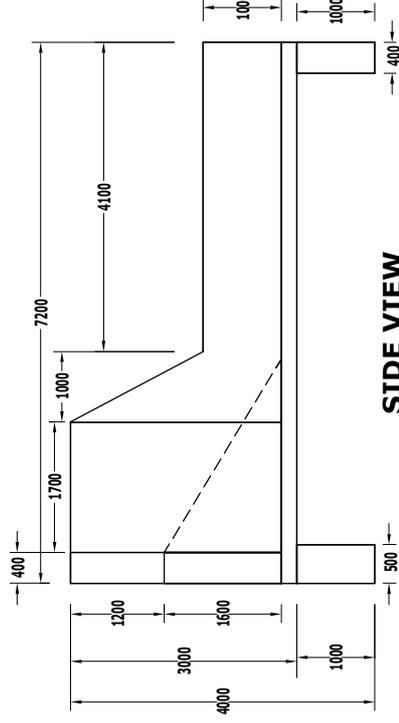


SPECIFICATION

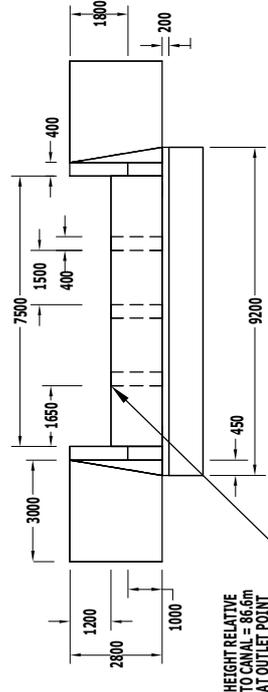
1. Concrete mix with a 30 MPa curing strength
2. Structure to be built according to plans and specifications
3. Backfill compacted to 90% Mod AASTO
4. Before casting of concrete the soil must be wetted thoroughly
5. Curing of structure must continue 7 days after casting
6. The Spillway and Key walls must be casted as a unit
7. The Toe, Apron and Heel must be casted as a unit
8. The Side walls and Buttress must be casted on top of the Apron
9. The Weir Structure to be Cast at the canal outlet



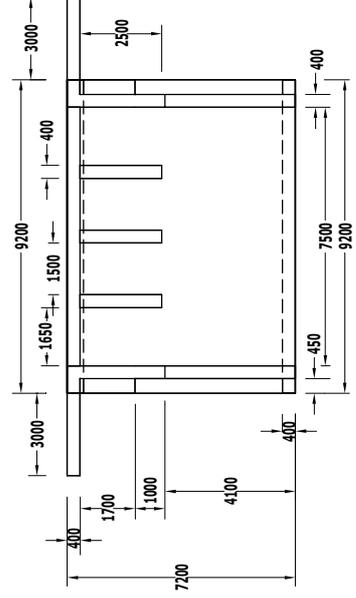
FRONT VIEW



SIDE VIEW



BACK VIEW



TOP VIEW

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BILL OF MATERIALS

| No.ITEM. | UNIT. | QUANTITY. |
|-------------------|----------------|-----------|
| 1. Overflow Wall | m ³ | 4.80 |
| 2. Key walls | m ³ | 6.72 |
| 3. Heel | m ³ | 4.60 |
| 4. Toe | m ³ | 3.68 |
| 5. Apron | m ³ | 13.25 |
| 6. Buttresses | m ³ | 6.00 |
| 7. Side walls | m ³ | 10.15 |
| 8. Total concrete | m ³ | 49.22 |



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No. _____
 Notes & Reference drawings
 Description _____

No. _____
 Date _____
 Contact Designed _____
 Drawn _____

Dec 2019
 T. Jassat JM Van Der Merwe

Project :-
 MAKATHINI BLOCK 6A
 STORMWATER CANAL OUTLET

Drawing description
BUTTRESS WEIR SPECIFICATION

Scale NTS
 Date 09/12/2019

Drawing number
 KZNDARD/MAK/BL6/014

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| BILL OF MATERIALS | | | |
|-------------------|------------------------------------|---------|------|
| ITEM. | UNIT. | No. | |
| 1. | 10mm 250mm C to C Weld Mesh Sheets | 6mx2,4m | 5 |
| 2. | SC 20 Steel Bars | m | 13,6 |
| 3. | 32mm PE Pipe | m | 17 |



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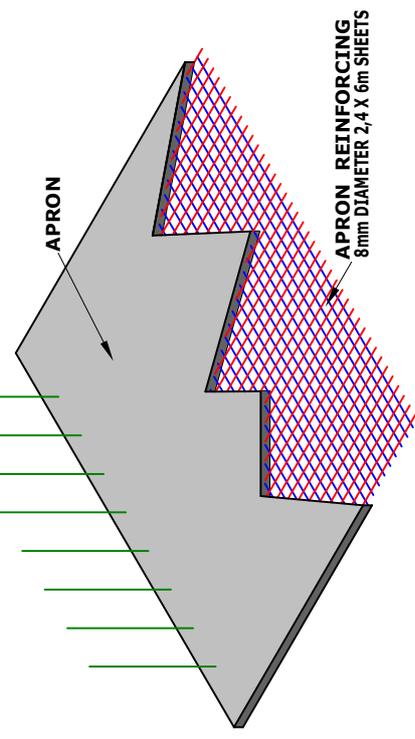
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| No. | Description |
| | Amendment |
| No. | Contact |
| Date | Designed |
| | Drawn |
| Dec 2019 | T. Jassat JM Van Der Merwe |

Project :
MAKATHINI BLOCK 6A
STORMWATER CANAL OUTLET
 Drawing description
BUTTRESS WEIR
REINFORCING

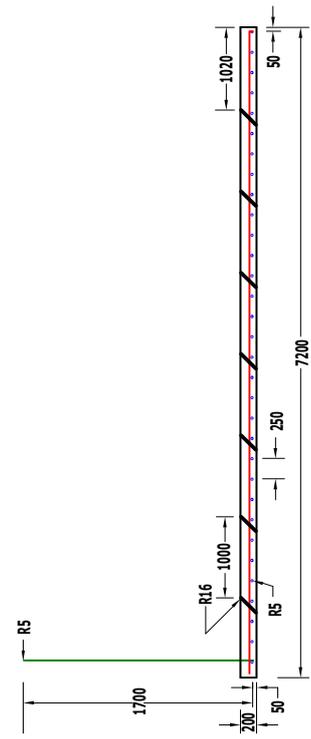
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SPECIFICATION

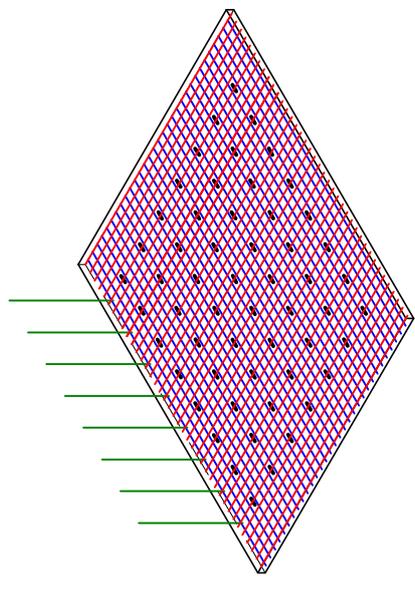
- Reinforcing in the Apron is Y10 Steel Mesh reinforcing with 250mm center to center configuration
- Reinforcing or binding material must at no stage have a concrete coverage less than 50mm
- Reinforcing in Apron must be placed 50mm from the bottom of the Apron
- The overlap must be bound together by binding wire at least 3 places
- On completion of the fastning process it must be ensured that all the binding wire is flattened against the reinforcing
- The pipe used must be 32mm Class 3 Poly Ethelene Pipe
- The pipe placing must be 1350mm from the Aprons side at a spacing of 1000mm center to center
- The pipes must be placed during the construction of the shuttering
- The pipes must be placed at an angle of 45 degrees slanting away from the buttresses
- Plastic or Concrete spacers must be used to ensure 50mm cover
- Pipes can be moved slightly (max 10mm) if conflicting with reinforcing positioning
- Overflow wall must have 32mm PE piping for seepage placed at 300mm from the bottom and side walls, and be spaced in a grid 1000mm center to center



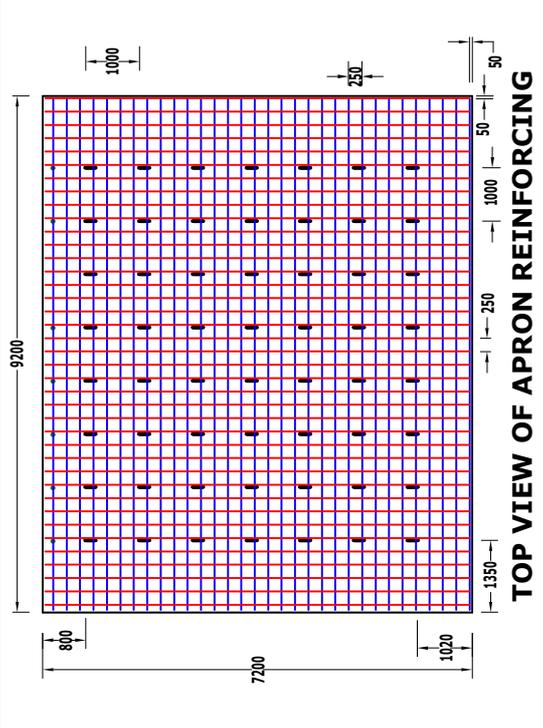
3D VIEW OF APRON REINFORCING



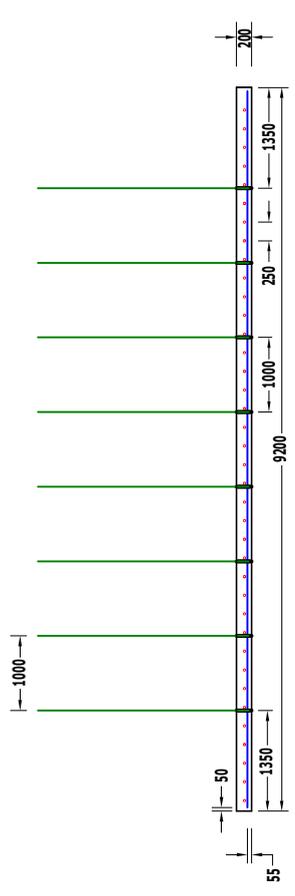
SIDE VIEW OF APRON REINFORCING



APRON WITH REINFORCING & PIPES



TOP VIEW OF APRON REINFORCING



FRONT VIEW OF APRON REINFORCING