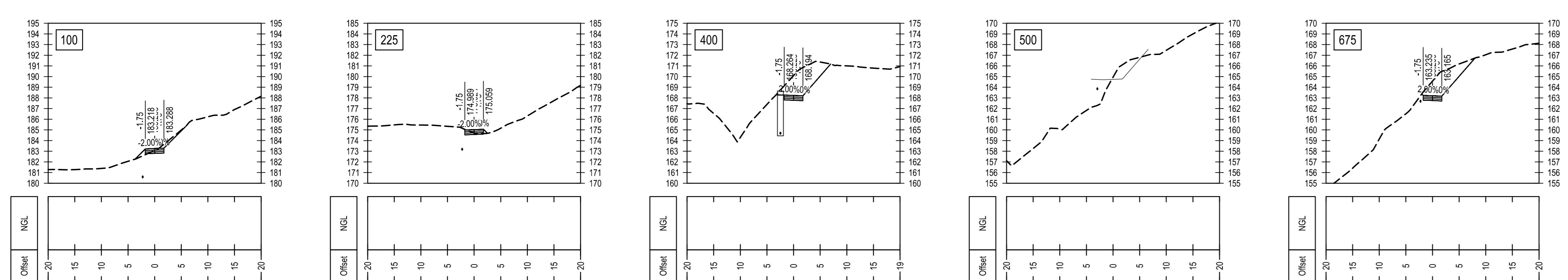
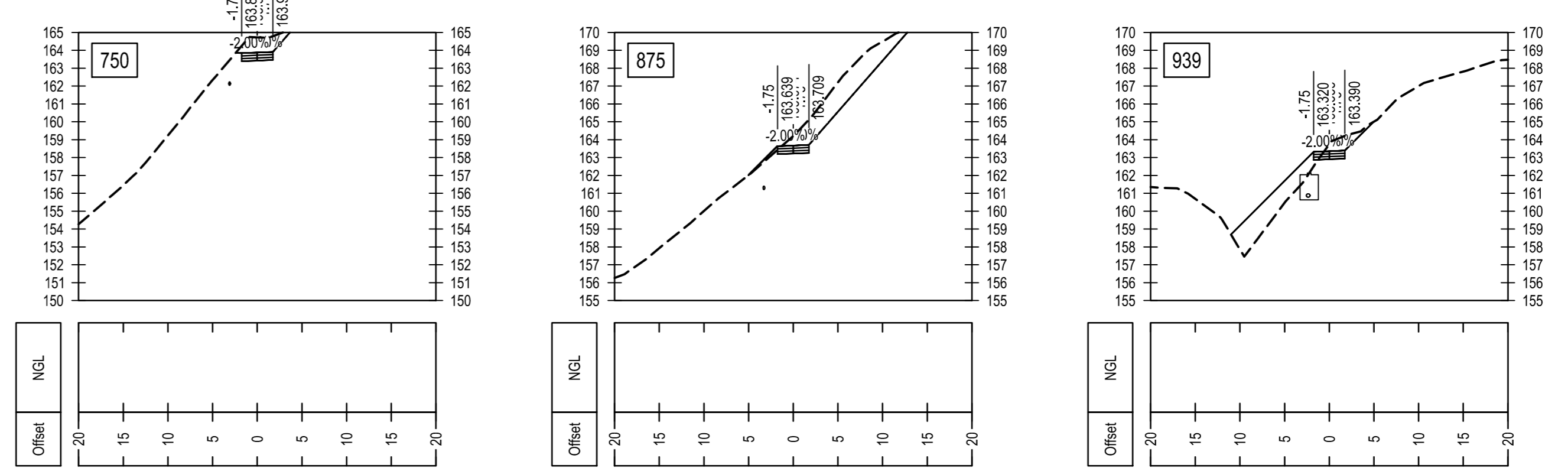
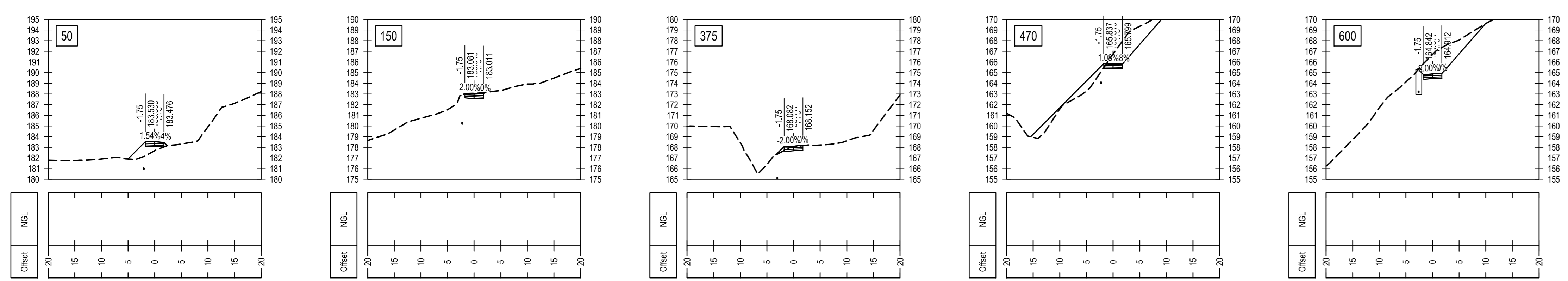
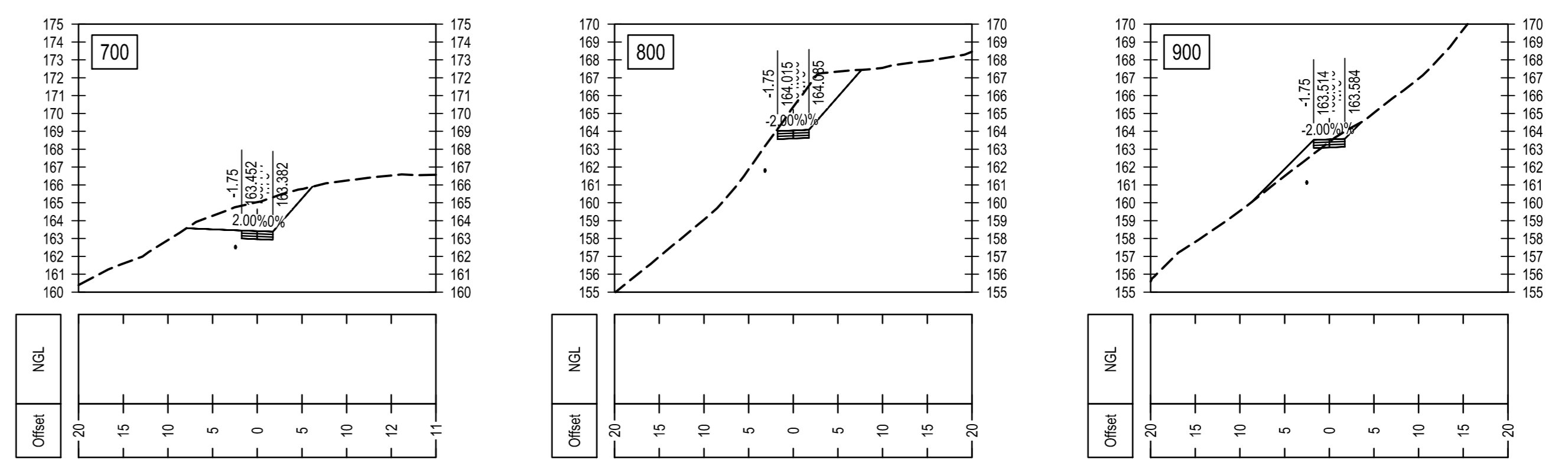
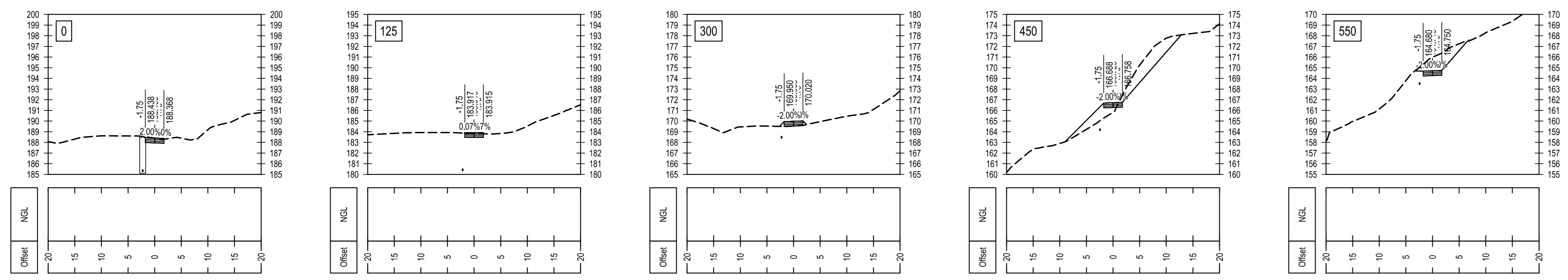


ROAD 1: CROSS SECTIONS



ROAD 2: CROSS SECTIONS

LEGEND

No	APPROVED	AMENDMENTS	DATE

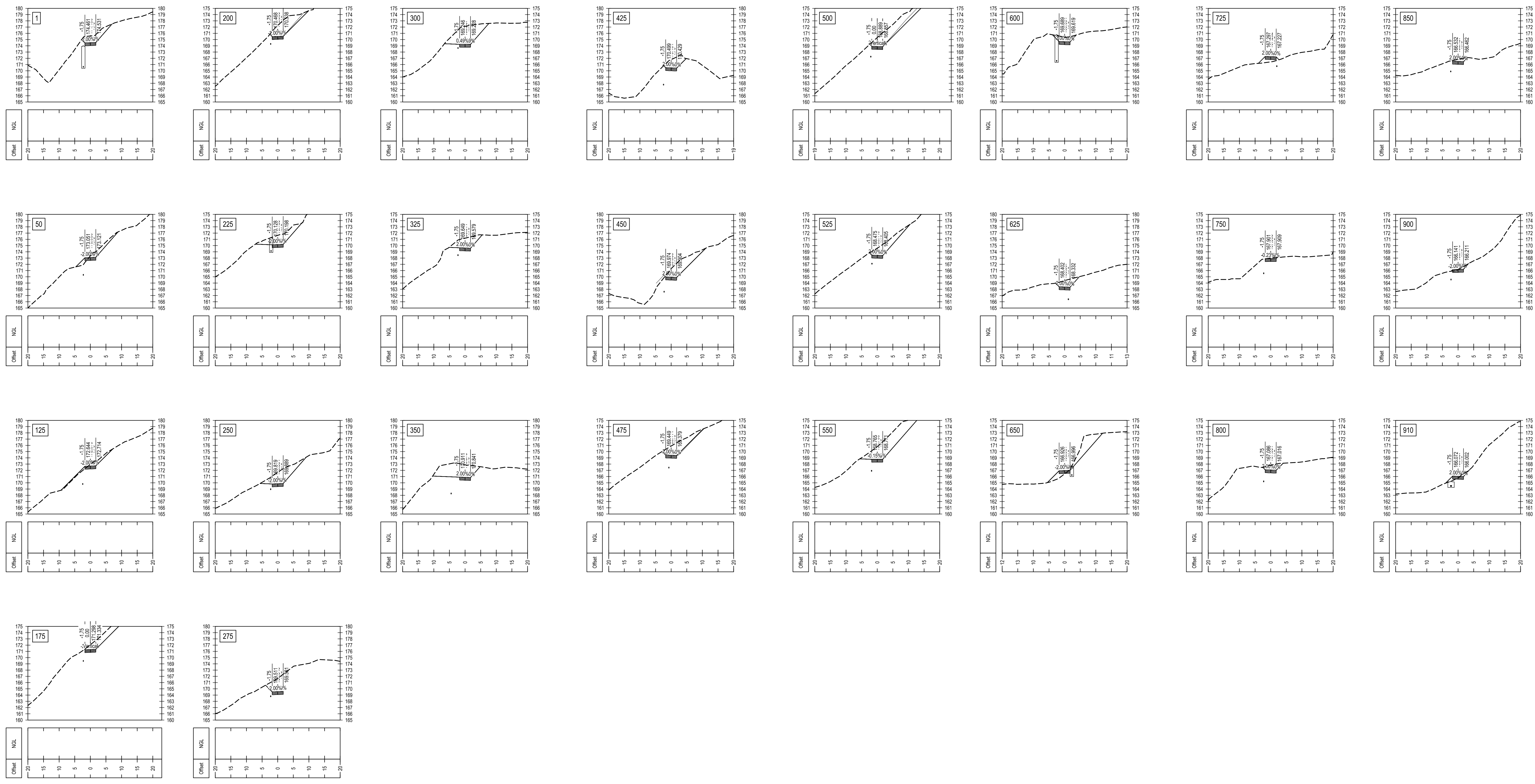
PO	KP	ISSUED FOR INFORMATION	20/11/2024
SURVEYED	-	-	-
DRAWN	S.KULU	28/11/2024	
DESIGNED	S.KULU	28/11/2024	
CHECKED	K.POTGIETER	28/11/2024	
APPROVED	FR REGISTRATION NO.	DATE	

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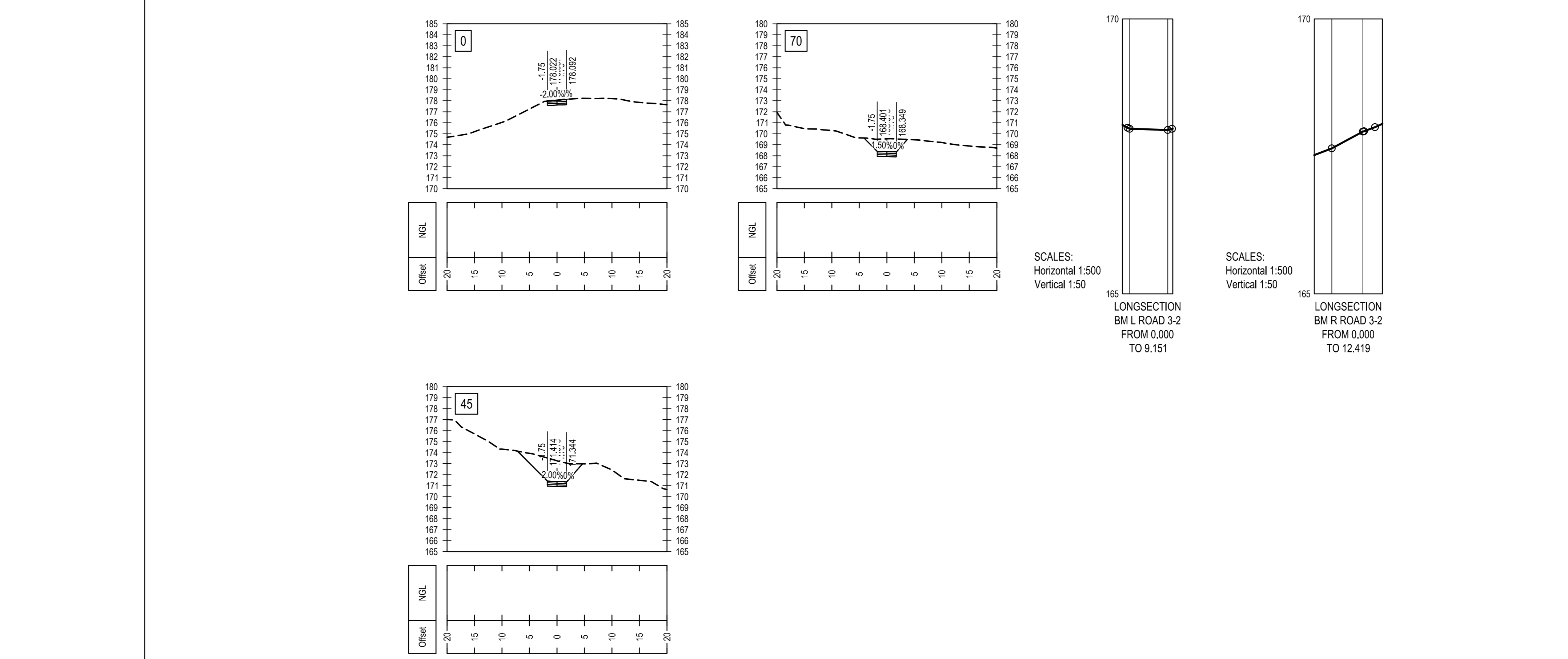
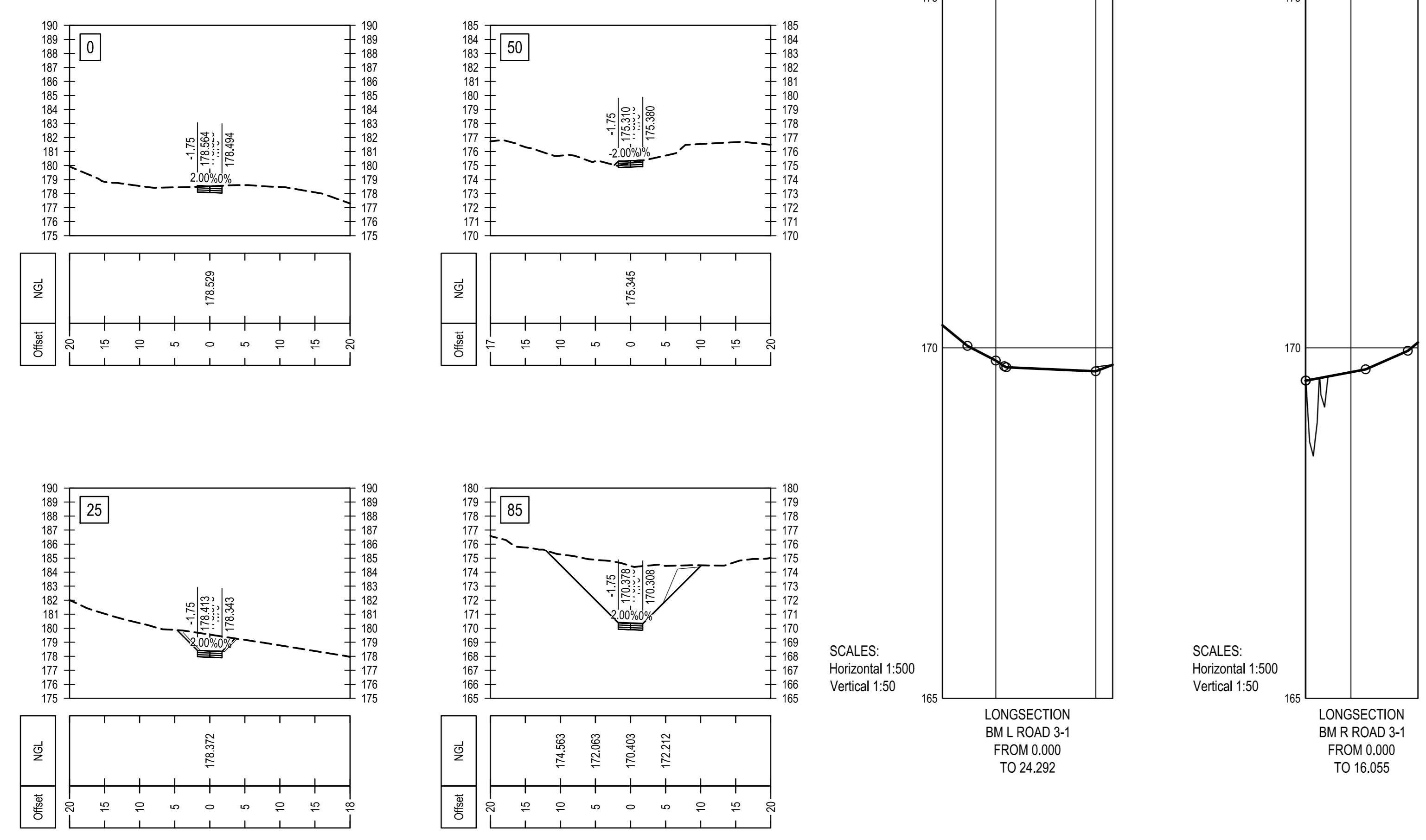


PROJECT TITLE  
**THEMBALETHU  
BULK SEWER PHASE 3 & 4:  
PORTION 2**

DRAWING TITLE	<b>ROAD 1 &amp; 2 CROSS SECTIONS</b>	
SCALE	SHEET SET	SHEET SIZE
1 : 500	SHEET 1 OF 2 SHEETS	A0
DRAWING No.	REVISION	
1762-RDS-005	P0	



ROAD 3: CROSS SECTIONS



**LEGEND**

No	APPROVED	AMENDMENTS	DATE

PO: KP ISSUED FOR INFORMATION 28/11/2024

SURVEYED: -

DRAWN: S.KULU 28/11/2024

DESIGNED: S.KULU 28/11/2024

CHECKED: K.POTGIETER 28/11/2024

APPROVED: [Signature]

PR REGISTRATION NO. DATE

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LUKHOZI CONSULTING ENGINEERS (PTY) LTD  
1ST FLOOR, OFFICE UNIT 1C,  
121 MITCHELL STREET, GEORGE CENTRAL,  
GEORGE, 6529

TEL: 044 200 4154  
EMAIL: g@lukhozi.co.za  
WEB: www.lukhozi.co.za

**GEORGE**  
LOCAL MUNICIPALITY

CLIENT

**THEMBALETHU  
BULK SEWER PHASE 3 & 4:  
PORTION 2**

DRAWING TITLE

**ROAD 3-1 & 3-2  
CROSS SECTIONS**

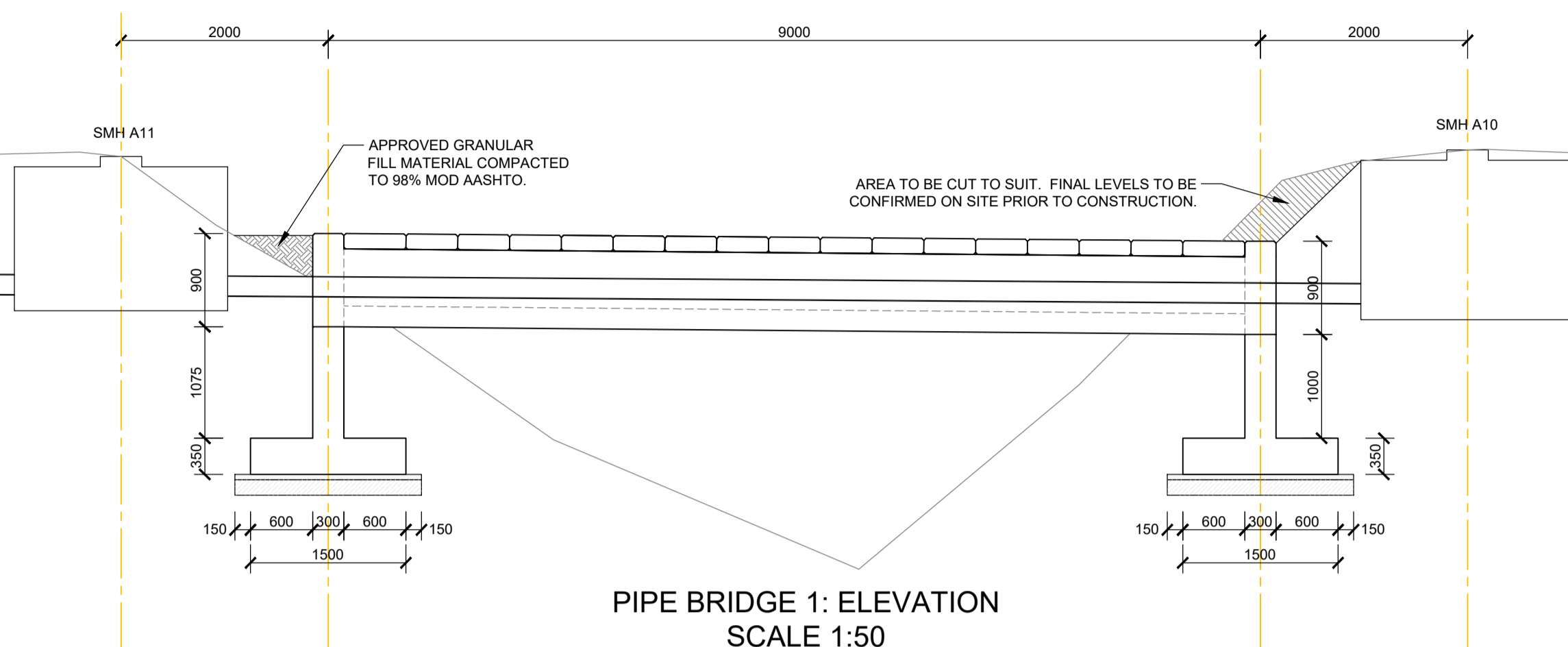
SCALE: 1:500 SHEET SET SHEET 2 OF 2 SHEETS SHEET SIZE A0

DRAWING NO. 1762-RDS-006 REVISION P0

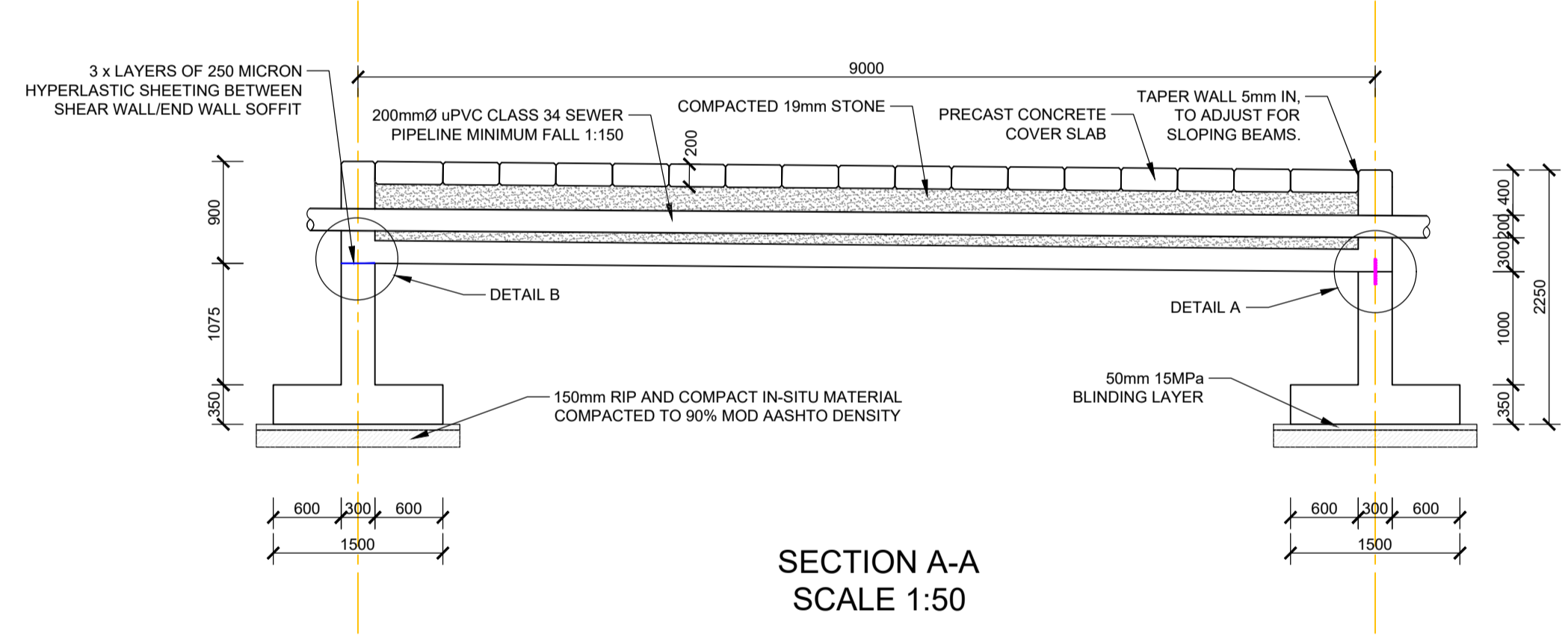
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**GENERAL NOTES**

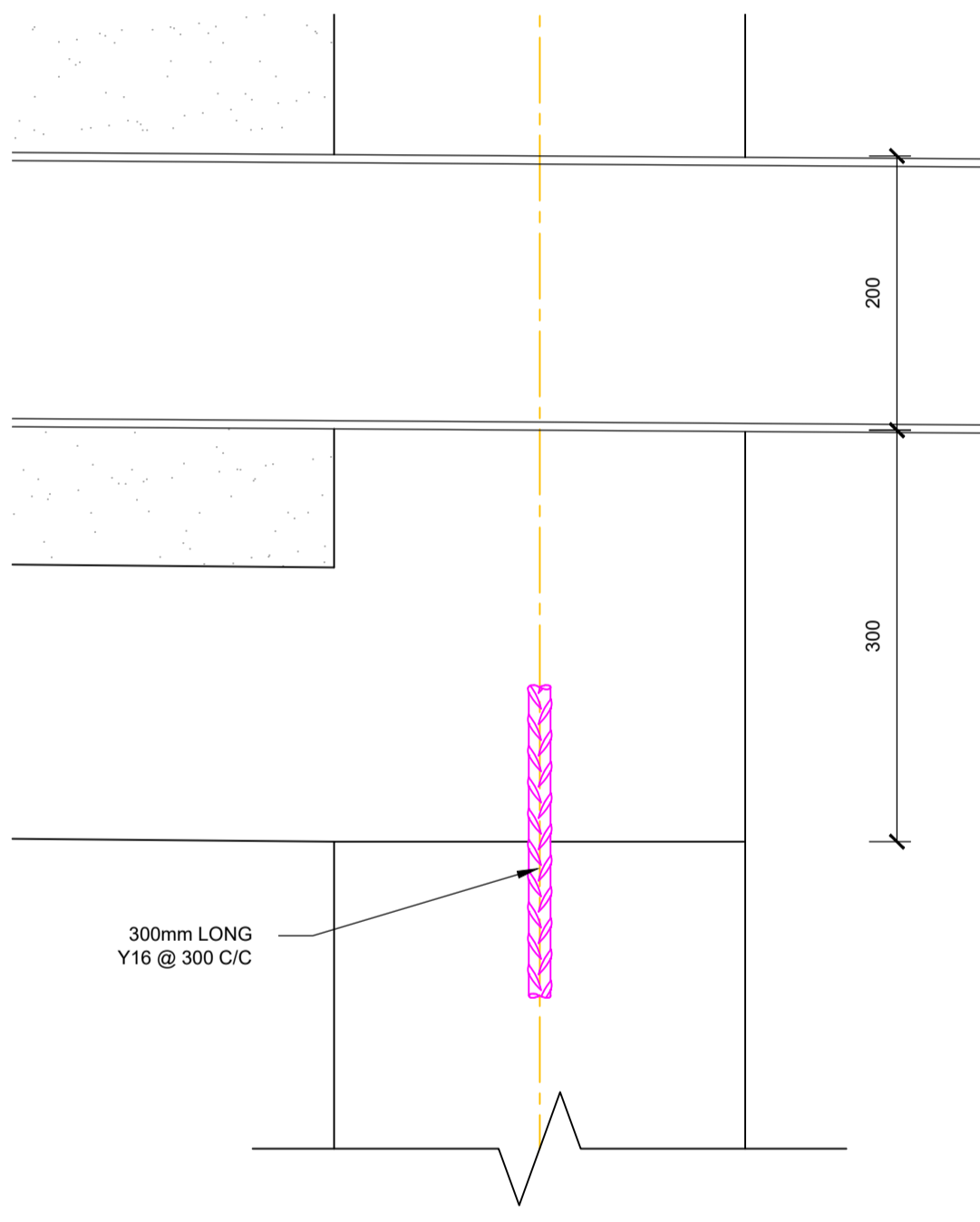
- CONCRETE STRENGTH
- |                      |                                 |
|----------------------|---------------------------------|
| (A) COVERSLAB.....   | 35 Mpa cube strength at 28 days |
| (B) U-BEAM.....      | 35 Mpa cube strength at 28 days |
| (C) SHEAR WALLS..... | 35 Mpa cube strength at 28 days |
| (D) PAD FOOTING..... | 35 Mpa cube strength at 28 days |
- CONCRETE COVER TO REINFORCING
- |                      |       |
|----------------------|-------|
| (A) COVERSLAB.....   | 30 mm |
| (B) U-BEAM.....      | 40 mm |
| (C) SHEAR WALLS..... | 50 mm |
| (D) PAD FOOTING..... | 50 mm |
- NOTE:
1. BEAM DEPTH INCLUDES SLAB THICKNESS
  2. CONTRACTOR IS TO MAINTAIN STEEL IN CORRECT POSITION AFTER PLACING AND DURING CONCRETING
  3. STONE, SAND AND CEMENT TO BE TO THE SATISFACTION OF THE CONSULTING ENGINEER.
  4. NO CONCRETE TO BE POURED UNTIL THE STEEL HAS BEEN INSPECTED BY THE CONSULTING ENGINEER.
  5. ANY BREAKS IN THE CONCRETE ARE TO BE MADE IN ACCORDANCE WITH THE ENGINEERS INSTRUCTIONS.
  6. NO STRUCTURAL ALTERATIONS TO BE MADE WITHOUT THE APPROVAL OF THE CONSULTING ENGINEER.
  7. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND THE CIVIL ENGINEERING DRAWINGS
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  9. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE WORK IS PUT IN HAND. ANY DISCREPANCY MUST IMMEDIATELY BE REPORTED TO THE ENGINEER.
  10. THIS DRAWING IS NOT TO BE SCALED.



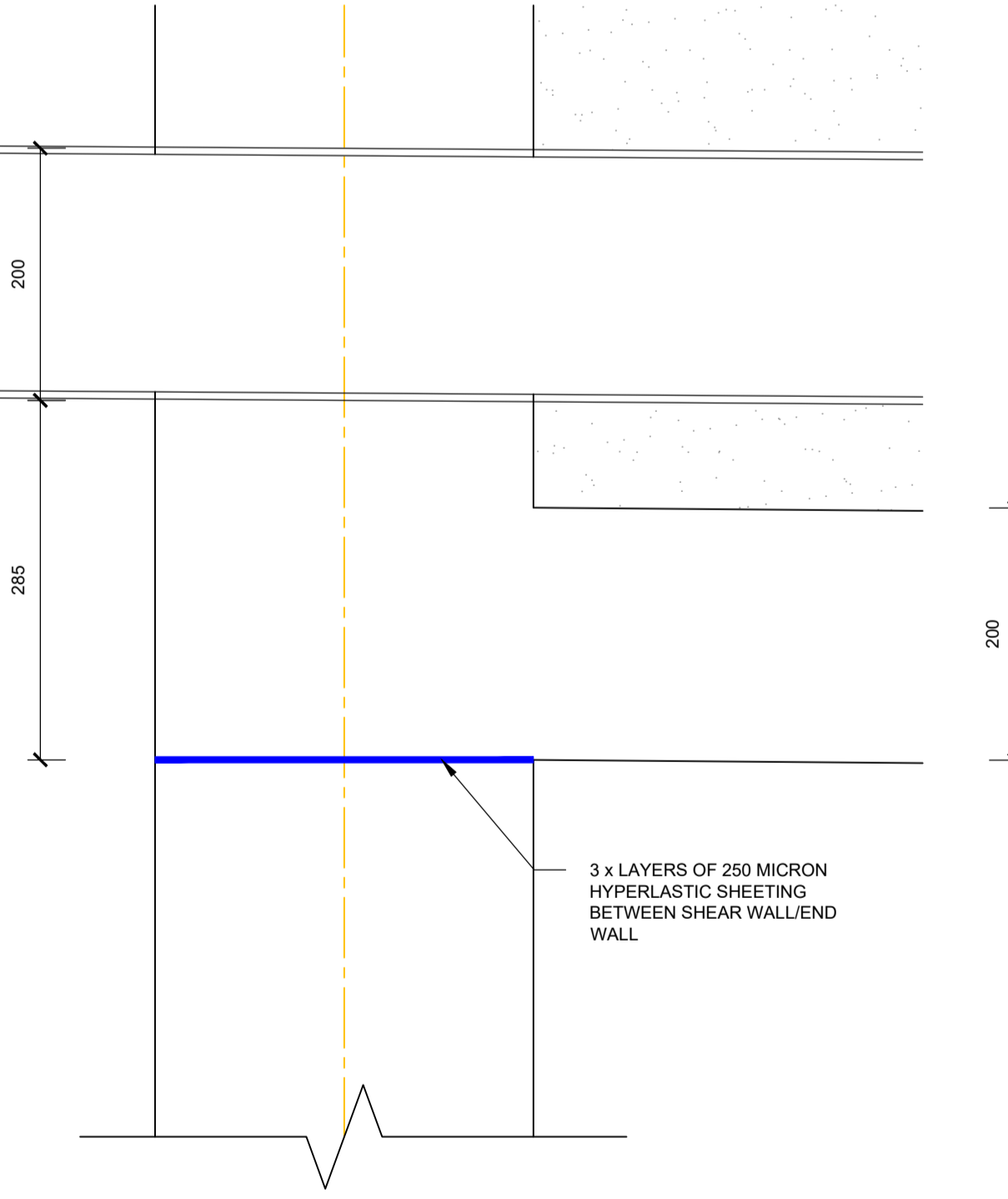
PIPE BRIDGE 1: ELEVATION  
SCALE 1:50



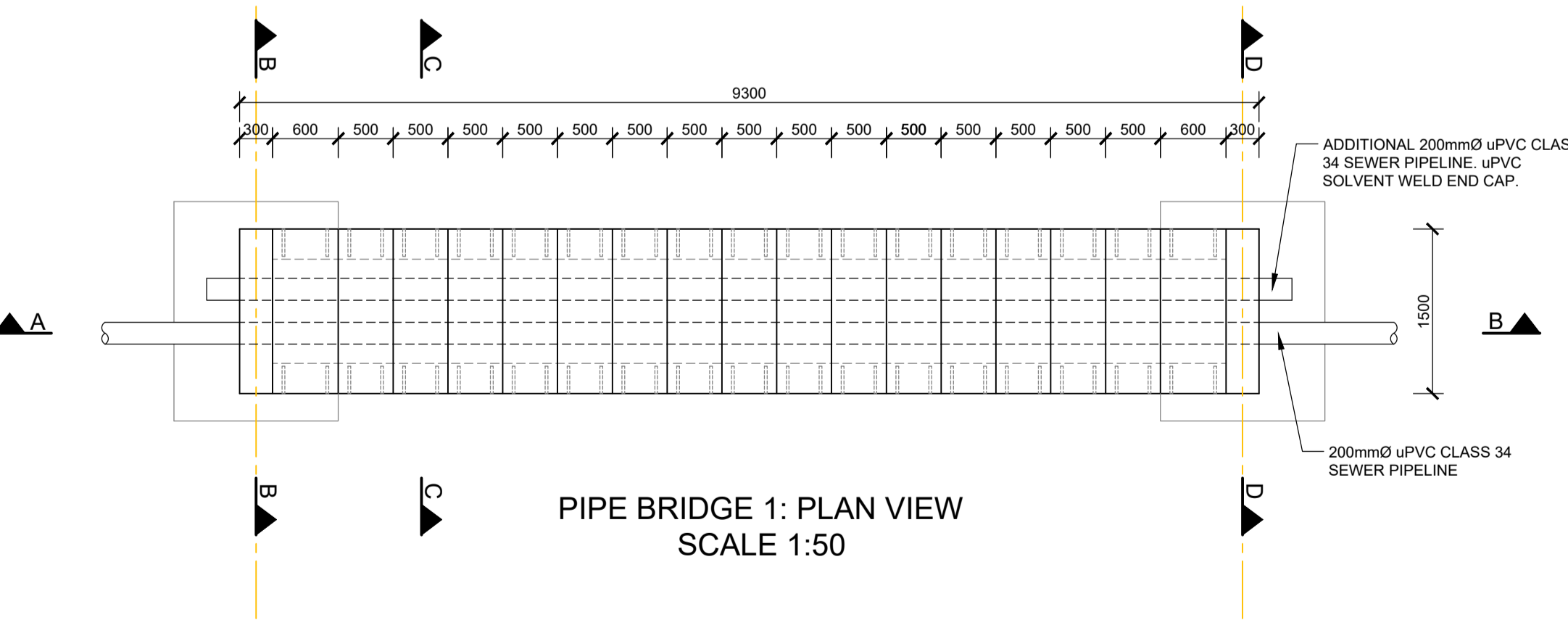
SECTION A-A  
SCALE 1:50



DETAIL A  
SCALE 1:5



DETAIL B  
SCALE 1:5



PIPE BRIDGE 1: PLAN VIEW  
SCALE 1:50

PERMISSIBLE DEVIATION SABS 1200 G6	
DEGREE OF ACCURACY III APPLICABLE TO ALL CONCRETE WHICH WILL BE PLASTERED OR TO RECEIVE BRICK CLADDING OR NOT VISIBLE TO THE PUBLIC EYE.	
DEGREE OF ACCURACY II	
DEGREE OF ACCURACY I	
ANY DEVIATIONS FROM FLATNESS OF SURFACE AND DEGREE OF ACCURACY SHALL BE IN ACCORDANCE WITH SABS 1200 G6, OF WHICH AN EXTRACT IS QUOTED BELOW. ALL EXPOSED CONCRETE SHALL BE IN ACCORDANCE WITH DEGREE OF ACCURACY I AS INDICATED ON THE DRAWINGS BY I (AS ALL SLAB SOFFITS ARE TO DEGREE OF ACCURACY I THEY ARE NOT IDENTIFIED SEPARATELY) OF PARTICULAR NOTE IS THE FOLLOWING:	
ITEM	I
4) ELEMENTS OR COMPONENTS ABOVE FOUNDATIONS (INCLUDING FLOOR SLABS)	
1) POSITION ON PLAN OF ANY EDGE OR SURFACE MEASURED FROM THE NEAREST GRID LINE OR AGREED CENTRE LINE.....	±5
2) LINEAR OTHER THAN CROSS-SECTION DIMENSIONS.....	±10
3) CROSS-SECTION DIMENSIONS.....	±5
4) LEVEL (DEVIATION FROM DESIGNED LEVEL WITH REFERENCE TO THE NEAREST TRANSFERRED DATUM (TD) OF THE UPPER OF LOWER SURFACE, AS MAY BE SPECIFIED, OF ANY SLAB OR OTHER ELEMENT OR COMPONENT).....	-10+0
5) VERTICALLY, PER METER OF HEIGHT.....	2
SUBJECT TO A MAXIMUM OF.....	30
6) OUT-OF-SQUARENESS OF A CORNER OR AN OPENING OF AN ELEMENT SUCH AS A COLUMN (SEE 6.1.2(C)) FOR SHORT SIDE OF LENGTH.....	±3
I) UP TO AND INCLUDING 0.5M.....	±10
II) OVER 0.5M UP TO AND INCLUDING 2 M.....	±15
III) OVER 2 M UP TO AND INCLUDING 4 M.....	±15
7) EXPOSED CONCRETE SURFACE:	
I) FLATNESS OF PLANE SURFACE.....	3
II) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	2
8) EXPOSED CONCRETE SURFACE TO BE PLASTERED:	
I) FLATNESS OF PLANE SURFACE.....	2
II) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	2

EXTREME CARE IS TO BE TAKEN TO AVOID REPAIR POST STRIPPING OF SHUTTERING. THESE AREAS ARE TO BE PROTECTED AGAINST DAMAGE DURING CONSTRUCTION.

No	APPROVED	AMENDMENTS	DATE
T1	SN	FOR TENDER PURPOSES ONLY	27/11/2024
T0	SN	FOR TENDER PURPOSES ONLY	04/10/2024

SURVEYED	-	-
DRAWN	S NOWALA	02/10/2024
DESIGNED	S NOWALA	02/10/2024
CHECKED	P SMIT	04/10/2024
APPROVED	PR REGISTRATION NO. 20160801 DATE: 27/11/2024	

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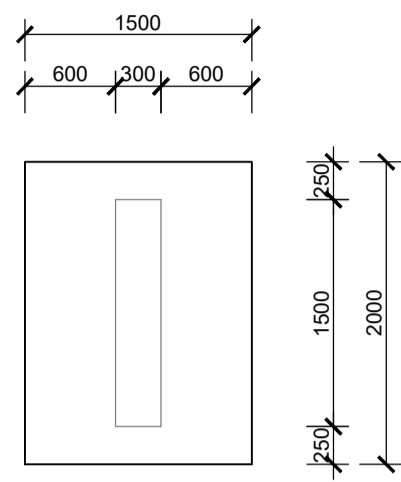
PROJECT TITLE

**THEMBALETHU  
BULK SEWER PHASE 3 & 4:  
PORTION 2**

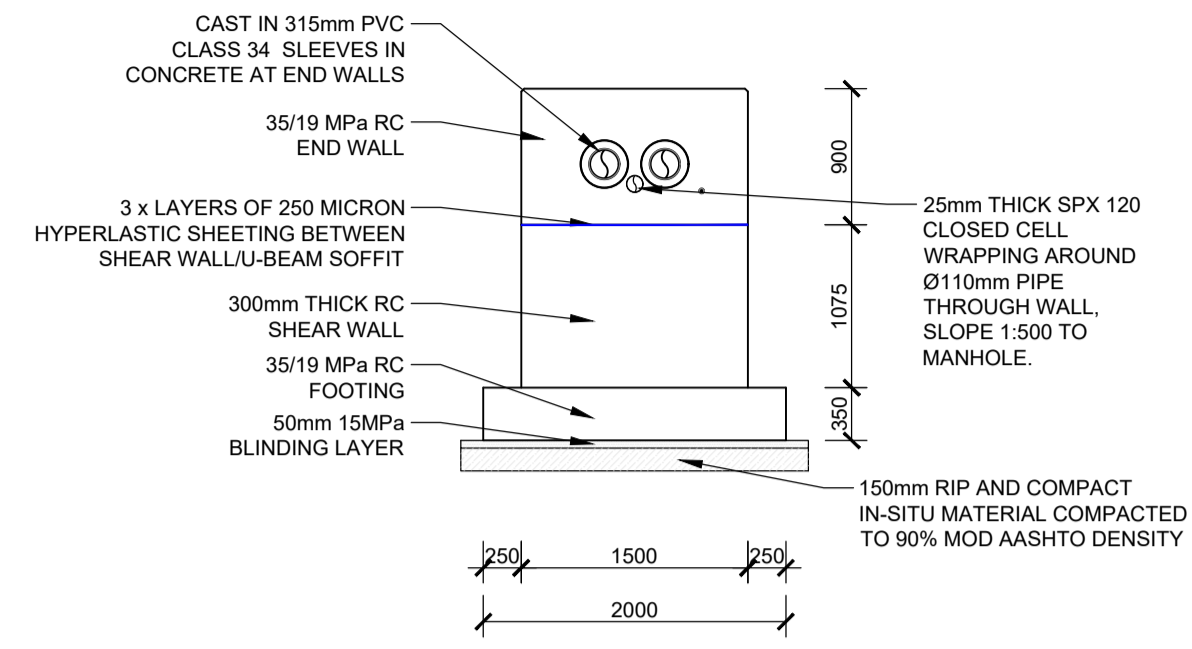
SCALE	SHEET SET	SHEET SIZE
AS SHOWN	SHEET 1 OF 1 SHEETS	A1
DRAWING No.	1762-S-001	REVISION
		T1

**GENERAL NOTES**

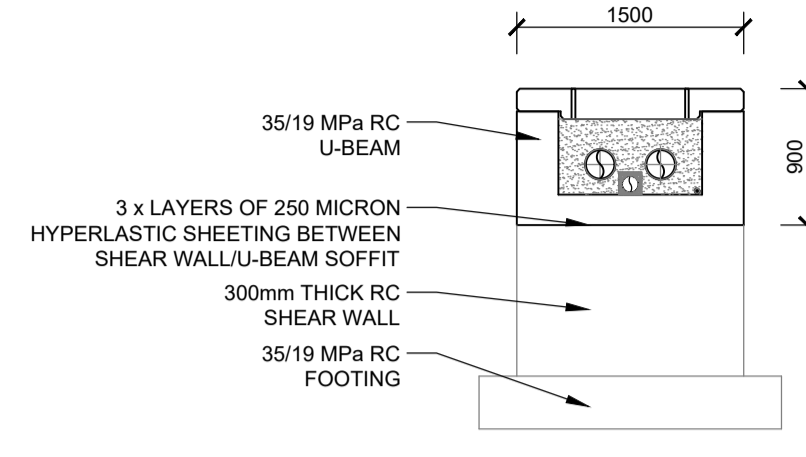
- CONCRETE STRENGTH
- |                      |                                 |
|----------------------|---------------------------------|
| (A) COVERSLAB.....   | 35 Mpa cube strength at 28 days |
| (B) U-BEAM.....      | 35 Mpa cube strength at 28 days |
| (C) SHEAR WALLS..... | 35 Mpa cube strength at 28 days |
| (D) PAD FOOTING..... | 35 Mpa cube strength at 28 days |
- CONCRETE COVER TO REINFORCING
- |                      |       |
|----------------------|-------|
| (A) COVERSLAB.....   | 30 mm |
| (B) U-BEAM.....      | 40 mm |
| (C) SHEAR WALLS..... | 50 mm |
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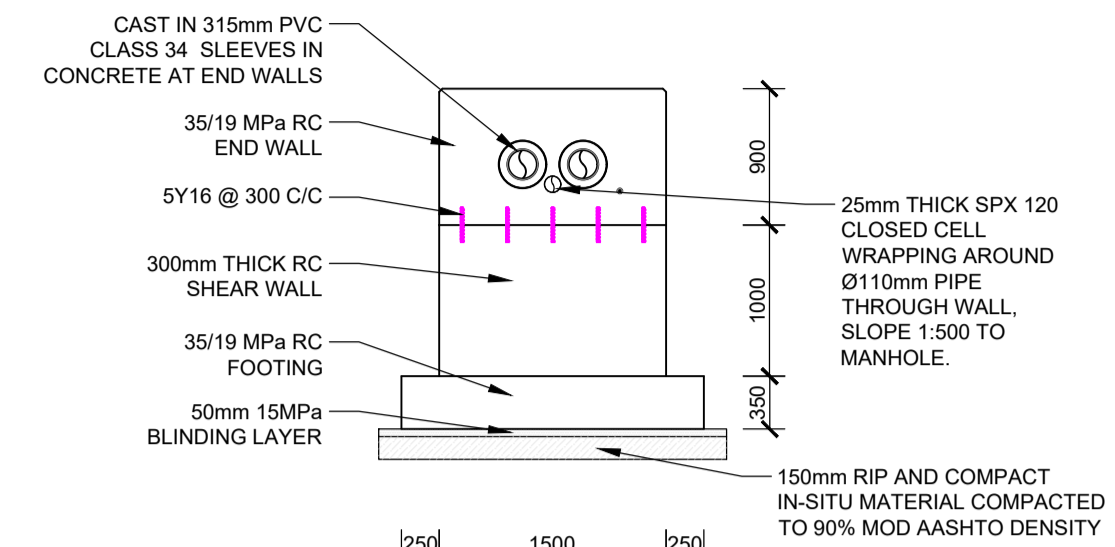
PIPE BRIDGE 1: PAD FOOTING  
SCALE 1:50



SECTION B-B  
SCALE 1:50

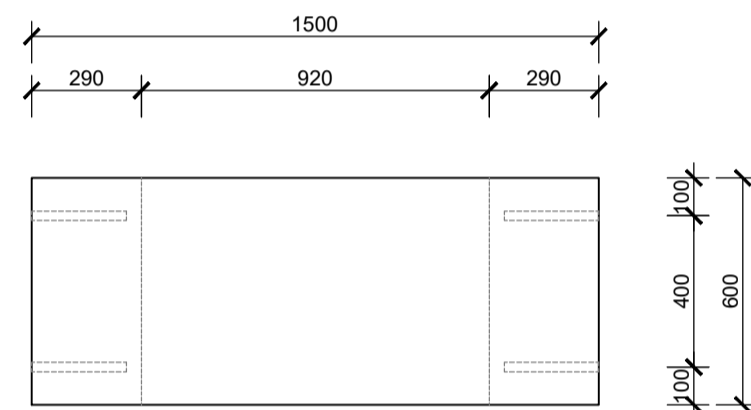


SECTION C-C  
SCALE 1:50

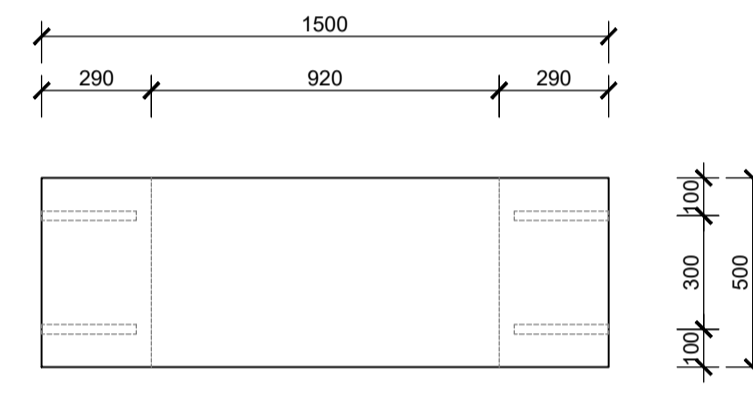


SECTION D-D  
SCALE 1:50

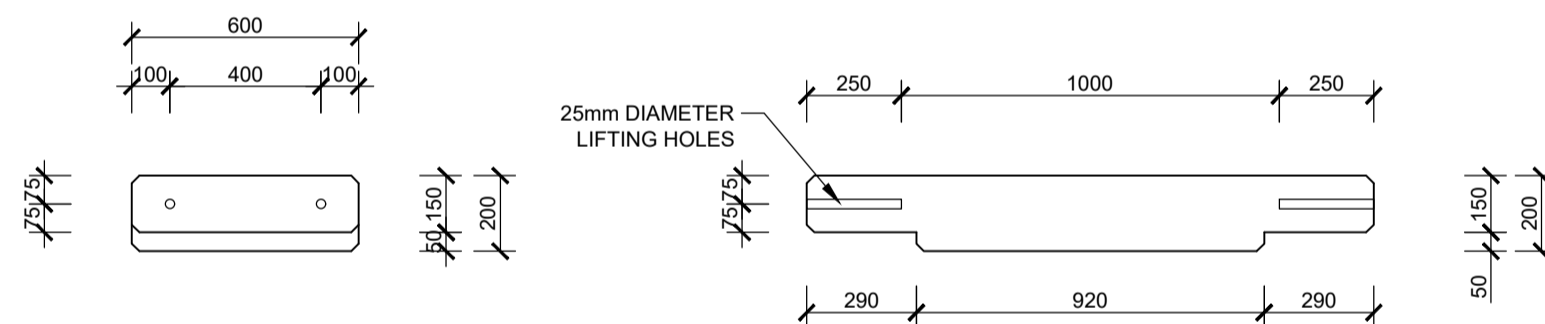
A MINIMUM 100 KPa BEARING CAPACITY IS REQUIRED IN THE IN-SITU LAYER AFTER RIP AND RE-COMPACTION. A DCP TEST REQUIRED PRIOR TO LAYER WORKS ABOVE. A PIONEER LAYER MAY BE REQUIRED IF EXISTING MATERIAL IS POOR.



PLAN VIEW



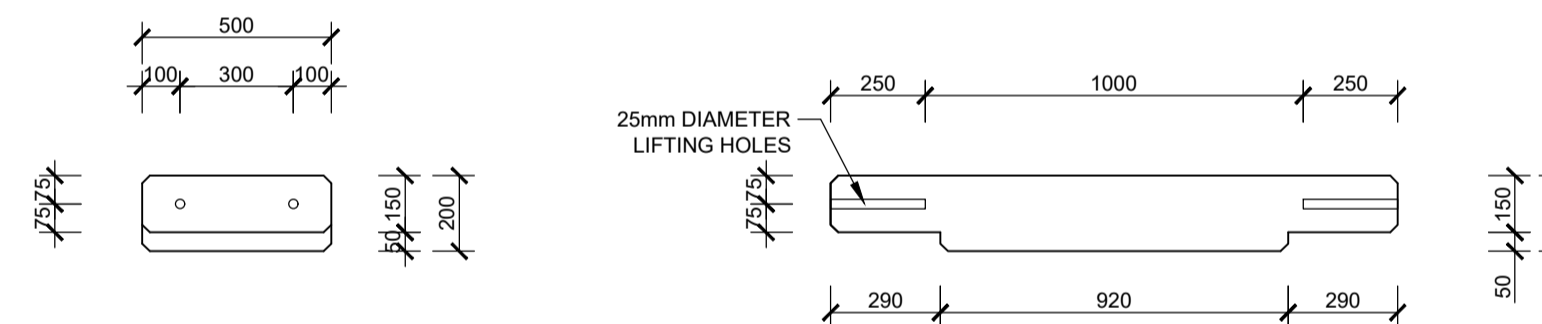
PLAN VIEW



FRONT ELEVATION

SIDE ELEVATION

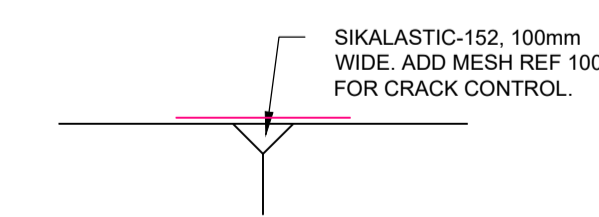
600mm WIDE PRECAST CONCRETE COVER SLAB (2 OFF)  
SCALE 1:20



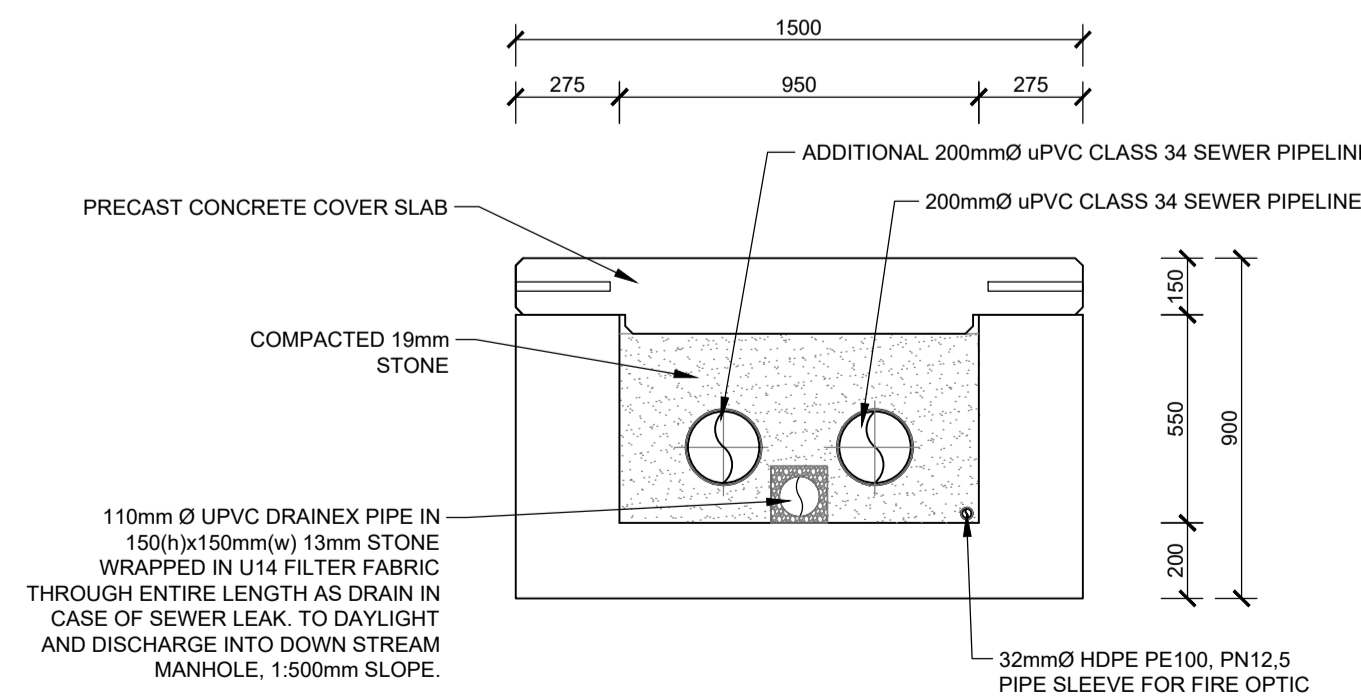
FRONT ELEVATION

SIDE ELEVATION

500mm WIDE PRECAST CONCRETE COVER SLAB (15 OFF)  
SCALE 1:20



JOINT SEALING DETAIL  
SCALE 1:5



U-BEAM DETAIL  
SCALE 1:20

PERMISSIBLE DEVIATION SABS 1200 G6	
DEGREE OF ACCURACY III	
APPLICABLE TO ALL CONCRETE BELOW A ROUND LEVEL.	
DEGREE OF ACCURACY II	
APPLICABLE TO ALL CONCRETE WHICH WILL BE PLASTERED OR TO RECEIVE BRICK CLADDING OR NOT VISIBLE TO THE PUBLIC EYE.	
DEGREE OF ACCURACY I	
ANY DEVIATIONS FROM FLATNESS OF SURFACE AND DEGREE OF ACCURACY SHALL BE IN ACCORDANCE WITH SABS 1200 G6, OF WHICH AN EXTRACT IS QUOTED BELOW. ALL EXPOSED CONCRETE SHALL BE IN ACCORDANCE WITH DEGREE OF ACCURACY I AS INDICATED ON THE DRAWINGS BY 'I' (AS ALL SLAB SOFFITS ARE TO DEGREE OF ACCURACY I THEY ARE NOT IDENTIFIED SEPARATELY) OF PARTICULAR NOTE IS THE FOLLOWING:	
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1) POSITION ON PLAN OF ANY EDGE OR SURFACE MEASURED FROM THE NEAREST GRID LINE OR AGREED CENTRE LINE.....	±5
2) LINEAR OTHER THAN CROSS-SECTION DIMENSIONS.....	±10
3) CROSS-SECTION DIMENSIONS.....	±5
4) LEVEL (DEVIATION FROM DESIGNED LEVEL WITH REFERENCE TO THE NEAREST TRANSFERRED DATUM (TD) OF THE UPPER OF LOWER SURFACE, AS MAY BE SPECIFIED, OF ANY SLAB OR OTHER ELEMENT OR COMPONENT).....	-10+0
5) VERTICALLY, PER METER OF HEIGHT.....	2
6) SUBJECT TO A MAXIMUM OF.....	30
7) OUT-OF-SQUARENESS OF A CORNER OR AN OPENING OF AN ELEMENT SUCH AS A COLUMN (SEE 1.2(C)) FOR SHORT SIDE OF LENGTH.....	±3
8) UP TO AND INCLUDING 0.5M.....	±10
9) OVER 0.5M UP TO AND INCLUDING 2 M.....	±15
10) OVER 2 M, UP TO AND INCLUDING 4 M.....	±15
7) EXPOSED CONCRETE SURFACE:	
i) FLATNESS OF PLANE SURFACE.....	3
ii) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	2
8) EXPOSED CONCRETE SURFACE TO BE PLASTERED:	
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ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO CONSTRUCTION.

No	APPROVED	AMENDMENTS	DATE
T1	SN	FOR TENDER PURPOSES ONLY	27/11/2024
T0	SN	FOR TENDER PURPOSES ONLY	04/10/2024

SURVEYED	-	-
DRAWN	S NOWALA	02/10/2024
DESIGNED	S NOWALA	02/10/2024
CHECKED	P SMIT	04/10/2024
APPROVED		

PR REGISTRATION NO. 20160801 DATE: 27/11/2024

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TEL: 044 050 4154  
EMAIL: greg@lukhozi.co.za  
WEB: www.lukhozi.co.za

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PROJECT TITLE

**THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2**

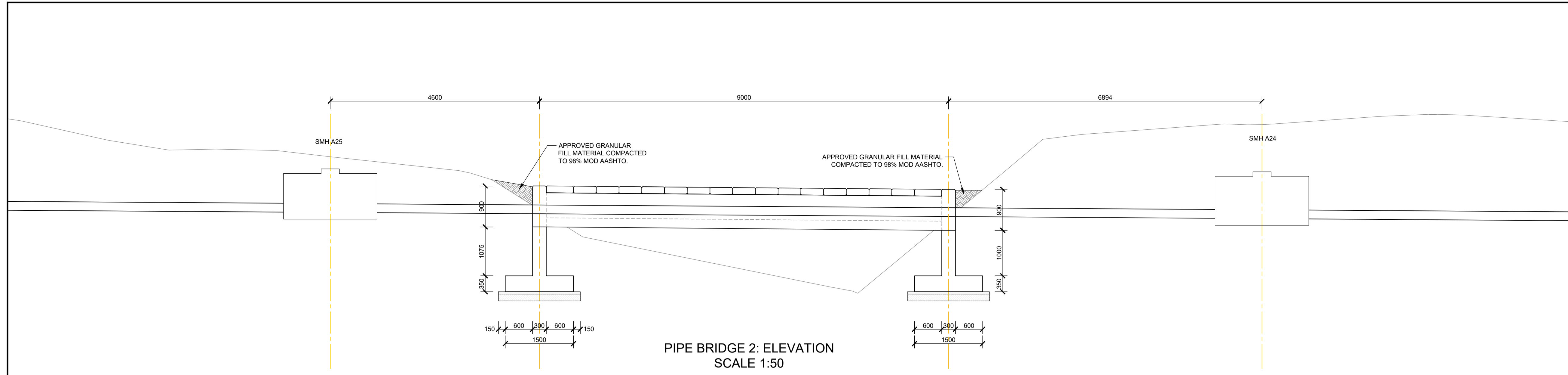
DRAWING TITLE

**MAIN STREAM CROSSINGS: SEWER PIPE BRIDGE 1: 2 OF 2**

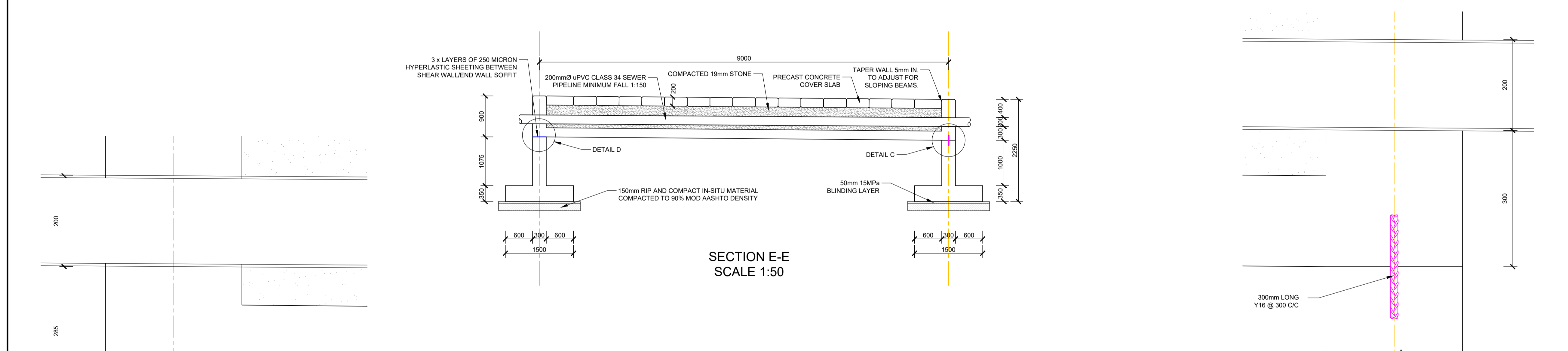
SCALE	SHEET SET	SHEET SIZE
AS SHOWN	SHEET 1 OF 1 SHEETS	A1
DRAWING No.	1762-S-002	REVISION
		T1

**GENERAL NOTES**

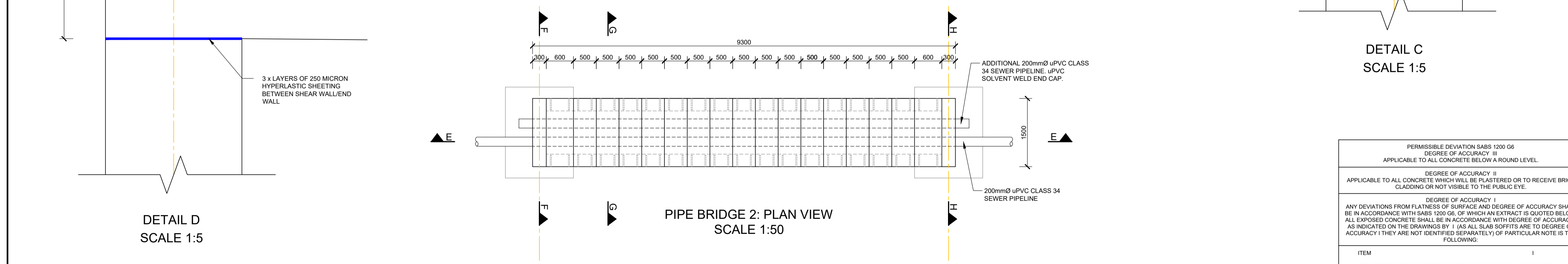
- CONCRETE STRENGTH
- |                      |                                 |
|----------------------|---------------------------------|
| (A) COVERSLAB.....   | 35 Mpa cube strength at 28 days |
| (B) U-BEAM.....      | 35 Mpa cube strength at 28 days |
| (C) SHEAR WALLS..... | 35 Mpa cube strength at 28 days |
| (D) PAD FOOTING..... | 35 Mpa cube strength at 28 days |
- CONCRETE COVER TO REINFORCING
- |                      |       |
|----------------------|-------|
| (A) COVERSLAB.....   | 30 mm |
| (B) U-BEAM.....      | 40 mm |
| (C) SHEAR WALLS..... | 50 mm |
| (D) PAD FOOTING..... | 50 mm |
- NOTE:
- BEAM DEPTH INCLUDES SLAB THICKNESS
  - CONTRACTOR IS TO MAINTAIN STEEL IN CORRECT POSITION AFTER PLACING AND DURING CONCRETING
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**PIPE BRIDGE 2: ELEVATION**  
SCALE 1:50



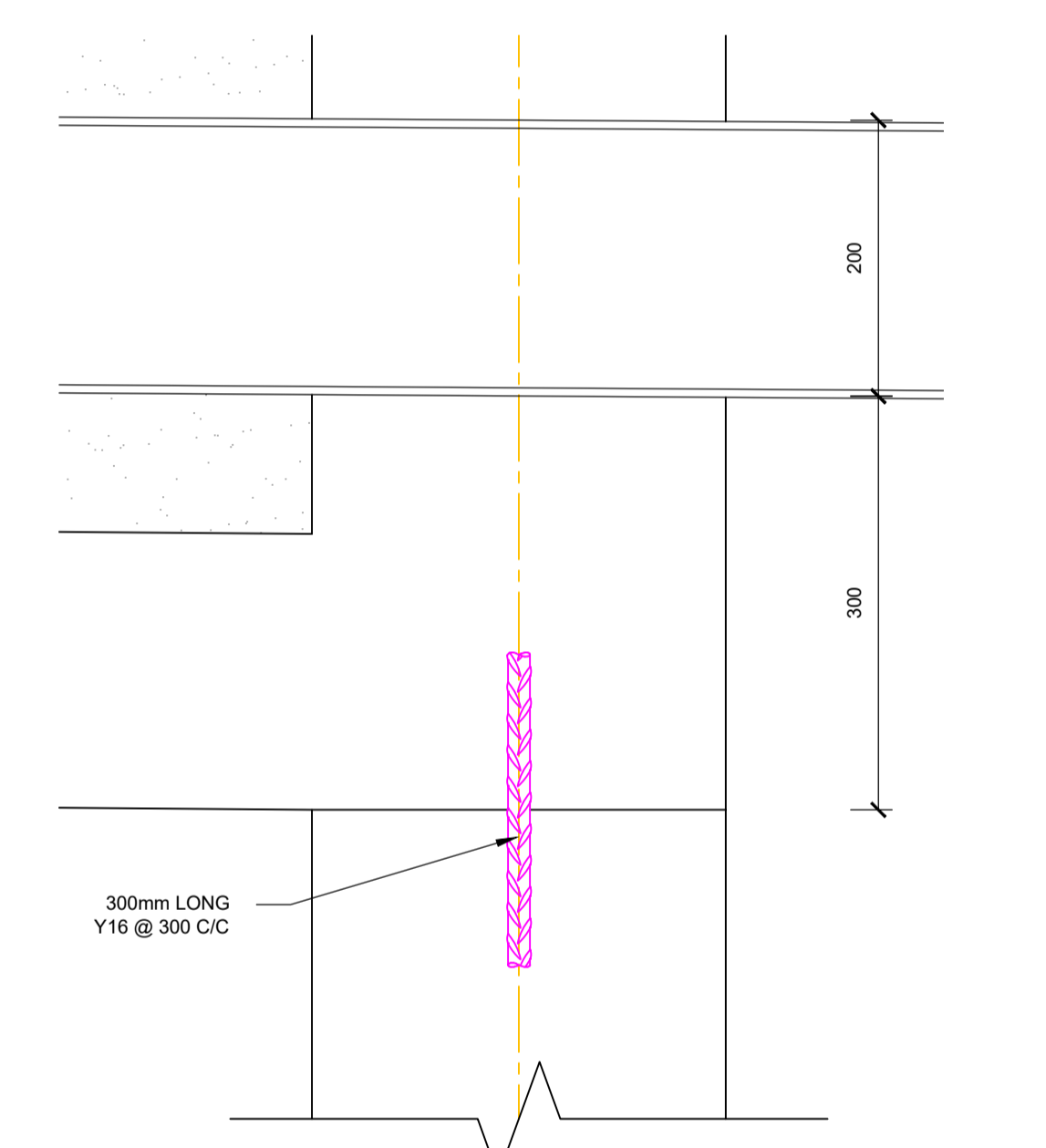
**SECTION E-E**  
SCALE 1:50



**PIPE BRIDGE 2: PLAN VIEW**  
SCALE 1:50



**DETAIL D**  
SCALE 1:5



**DETAIL C**  
SCALE 1:5

PERMISSIBLE DEVIATION SABS 1200 G6	
DEGREE OF ACCURACY III	
APPLICABLE TO ALL CONCRETE BELOW A ROUND LEVEL.	
DEGREE OF ACCURACY II	
APPLICABLE TO ALL CONCRETE WHICH WILL BE PLASTERED OR TO RECEIVE BRICK CLADDING OR NOT VISIBLE TO THE PUBLIC EYE.	
DEGREE OF ACCURACY I	
ANY DEVIATIONS FROM FLATNESS OF SURFACE AND DEGREE OF ACCURACY SHALL BE IN ACCORDANCE WITH SABS 1200 G6, OF WHICH AN EXTRACT IS QUOTED BELOW. ALL EXPOSED CONCRETE SHALL BE IN ACCORDANCE WITH DEGREE OF ACCURACY I AS INDICATED ON THE DRAWINGS BY 'I' (AS ALL SLAB SOFFITS ARE TO DEGREE OF ACCURACY I) THEY ARE NOT IDENTIFIED SEPARATELY) OF PARTICULAR NOTE IS THE FOLLOWING:	
ITEM	I
d) ELEMENTS OR COMPONENTS ABOVE FOUNDATIONS (INCLUDING FLOOR SLABS)	
1) POSITION ON PLAN OF ANY EDGE OR SURFACE MEASURED FROM THE NEAREST GRID LINE OR AGREED CENTRE LINE.....	±5
2) LINEAR OTHER THAN CROSS-SECTION DIMENSIONS.....	±10
3) CROSS-SECTION DIMENSIONS.....	±5
4) LEVEL (DEVIATION FROM DESIGNED LEVEL WITH REFERENCE TO THE NEAREST TRANSFERRED DATUM (TD) OF THE UPPER OF LOWER SURFACE, AS MAY BE SPECIFIED, OF ANY SLAB OR OTHER ELEMENT OR COMPONENT).....	-10+0
5) VERTICALLY, PER METER OF HEIGHT.....	2
SUBJECT TO A MAXIMUM OF.....	30
6) OUT-OF-SQUARENESS OF A CORNER OR AN OPENING OF AN ELEMENT SUCH AS A COLUMN (SEE 6.1.2(C)) FOR SHORT SIDE OF LENGTH.....	±3
i) UP TO AND INCLUDING 0.5M.....	±10
ii) OVER 0.5M UP TO AND INCLUDING 2 M.....	±15
iii) OVER 2 M UP TO AND INCLUDING 4 M.....	±15
7) EXPOSED CONCRETE SURFACE:	
i) FLATNESS OF PLANE SURFACE.....	3
ii) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	2
8) EXPOSED CONCRETE SURFACE TO BE PLASTERED:	
i) FLATNESS OF PLANE SURFACE.....	2
ii) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	2

EXTREME CARE IS TO BE TAKEN TO AVOID REPAIR POST STRIPPING OF SHUTTERING. THESE AREAS ARE TO BE PROTECTED AGAINST DAMAGE DURING CONSTRUCTION.

No	APPROVED	AMENDMENTS	DATE
T1	SN	FOR TENDER PURPOSES ONLY	27/11/2024
T0	SN	FOR TENDER PURPOSES ONLY	04/10/2024

SURVEYED	-	-
DRAWN	S NOWALA	02/10/2024
DESIGNED	S NOWALA	02/10/2024
CHECKED	P SMIT	04/10/2024
APPROVED		
PR REGISTRATION NO. 20160801		DATE: 27/11/2024

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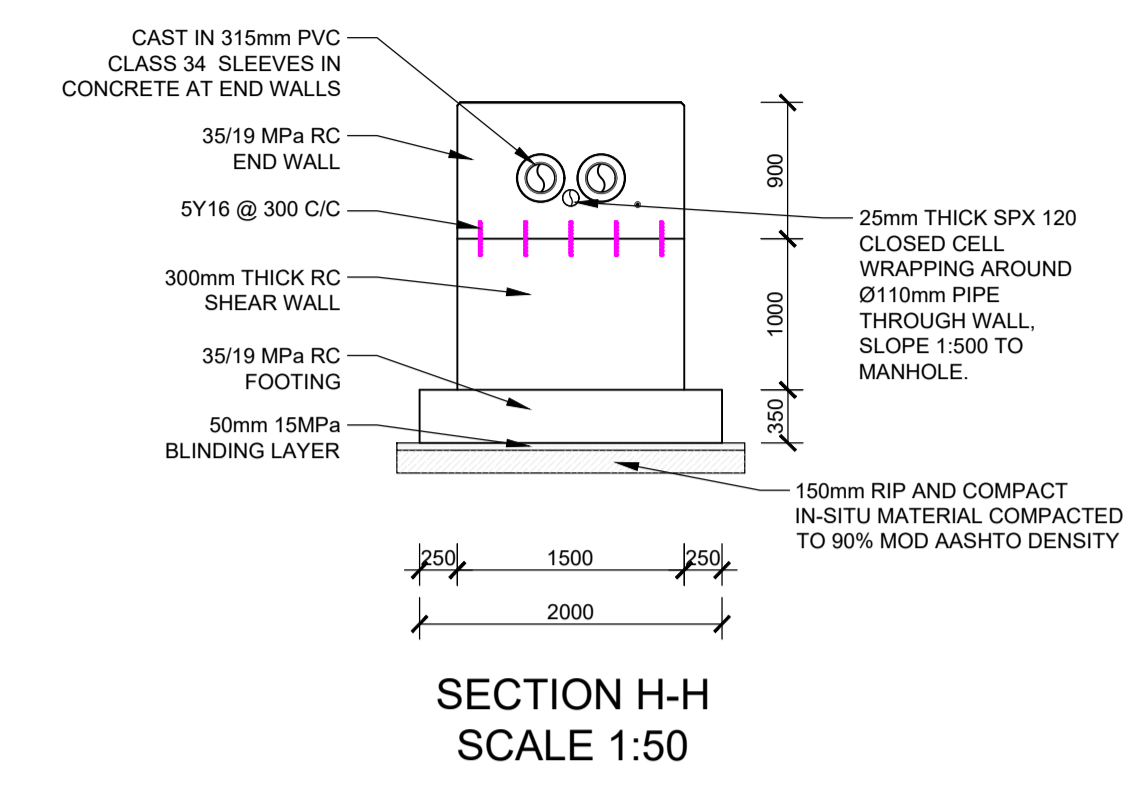
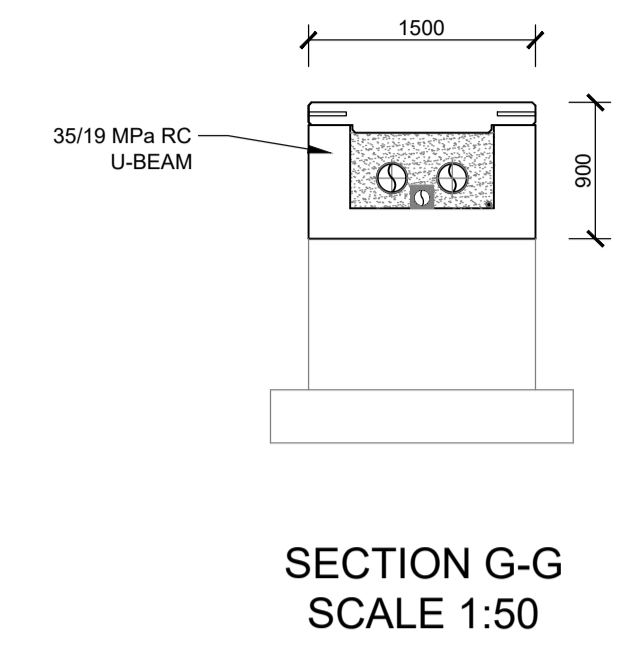
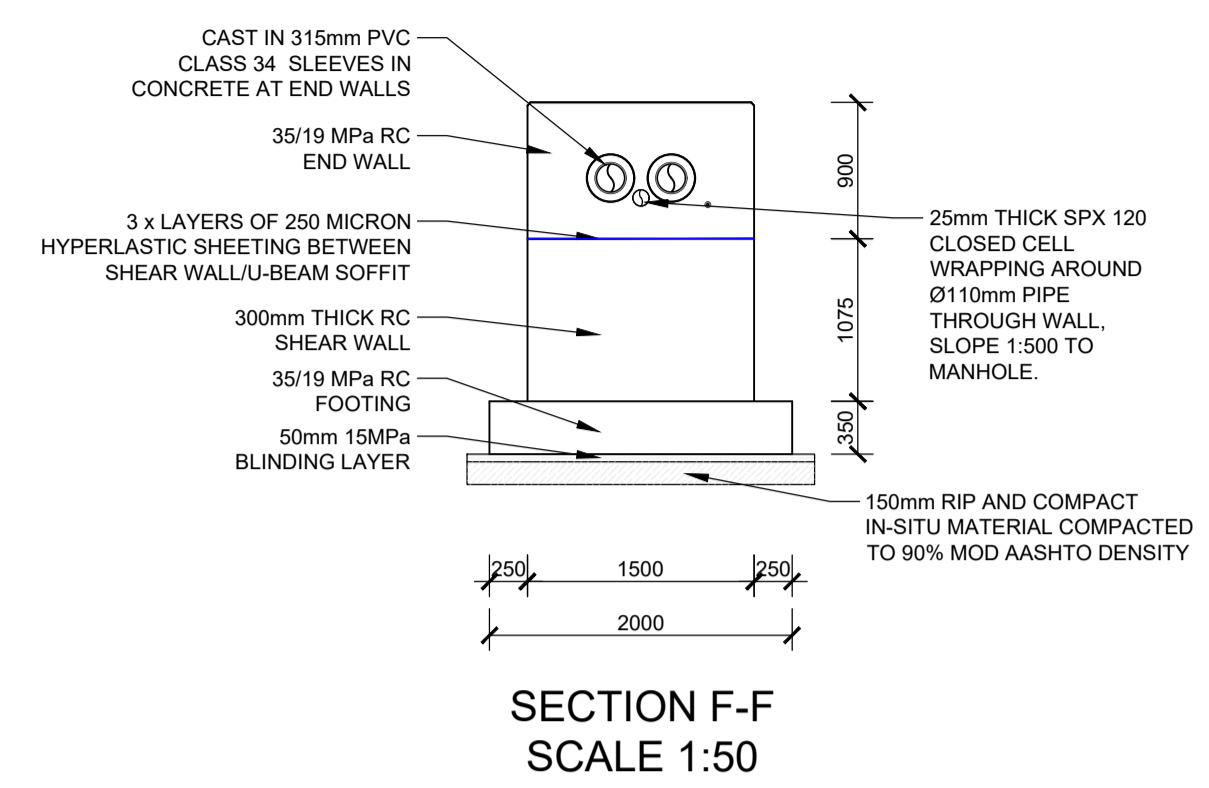
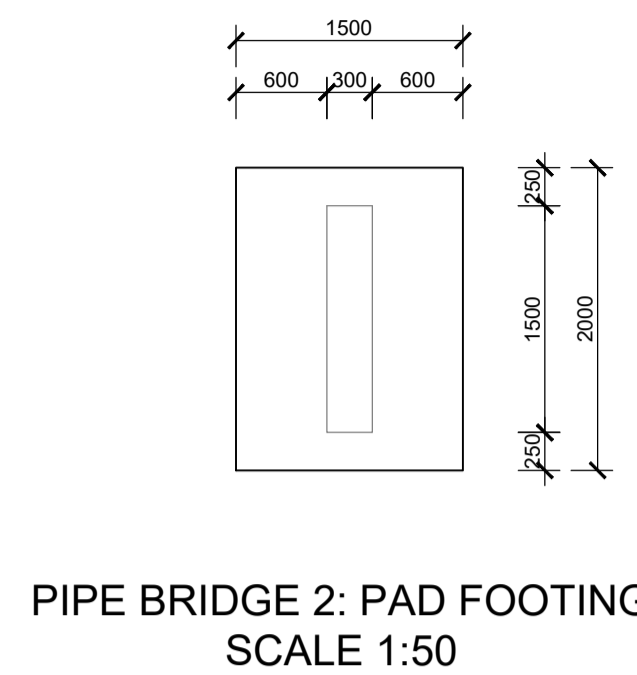
PROJECT TITLE

**THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2**

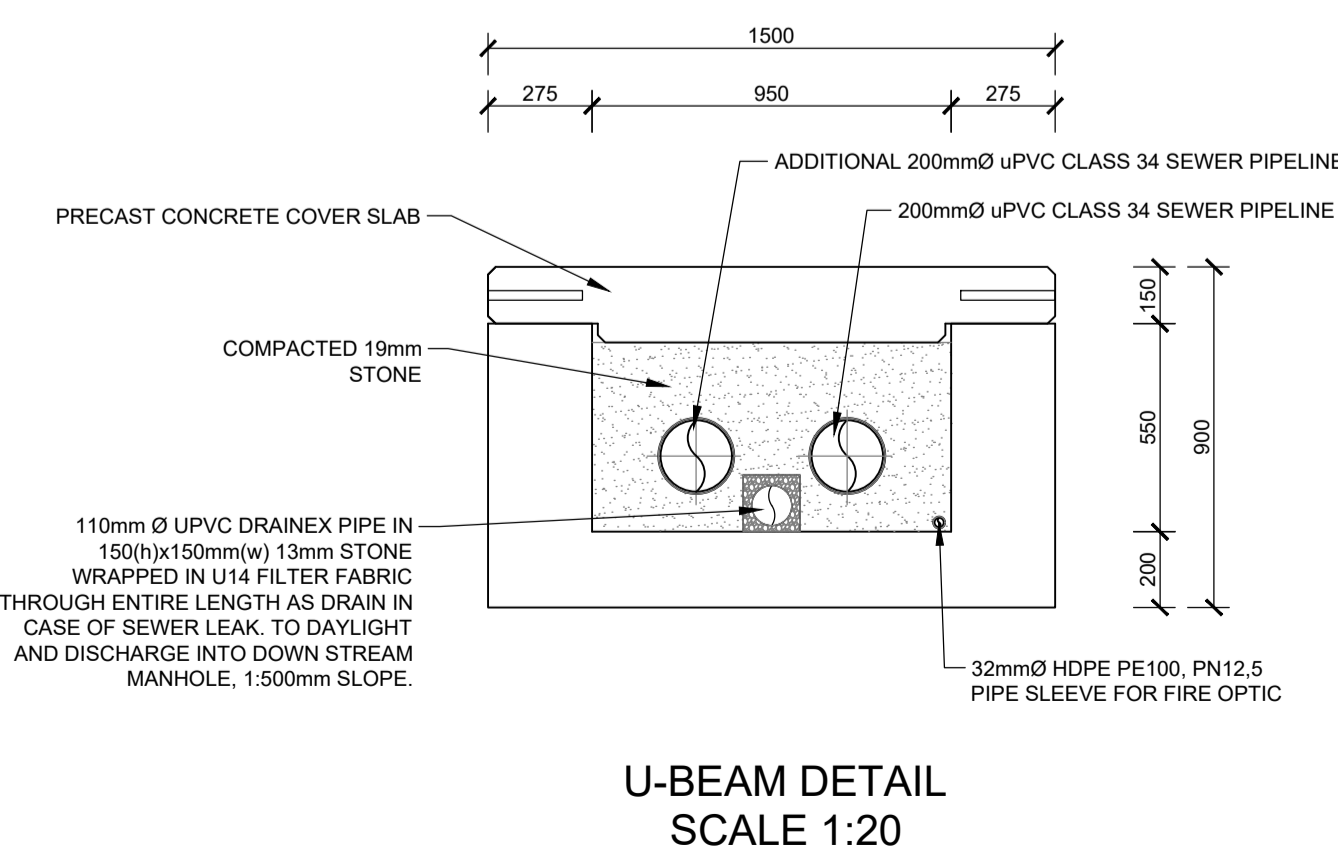
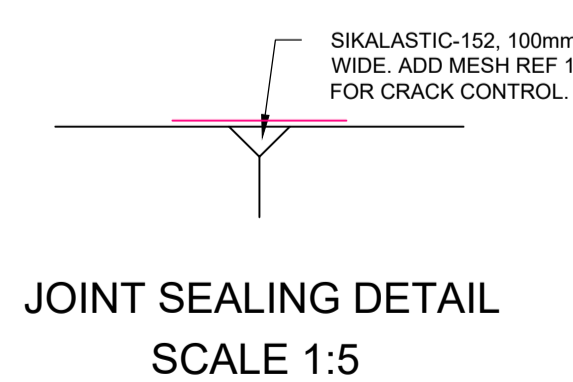
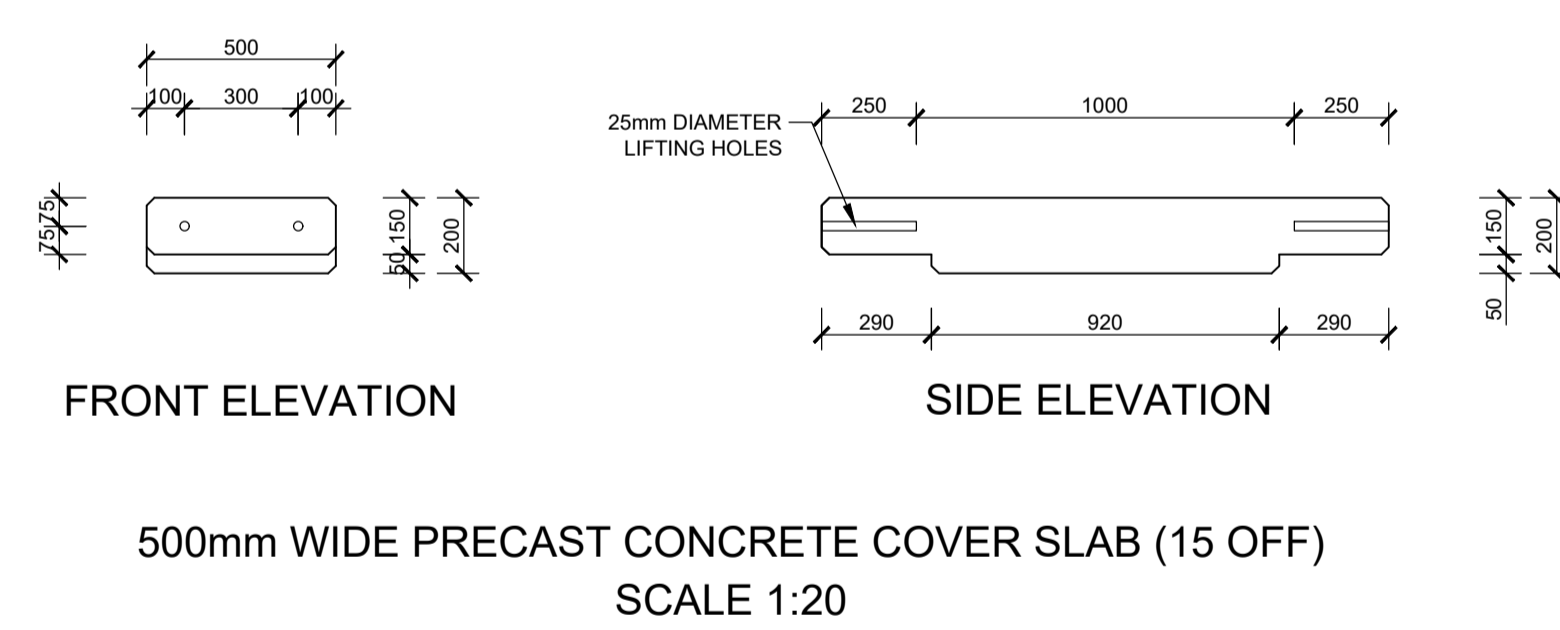
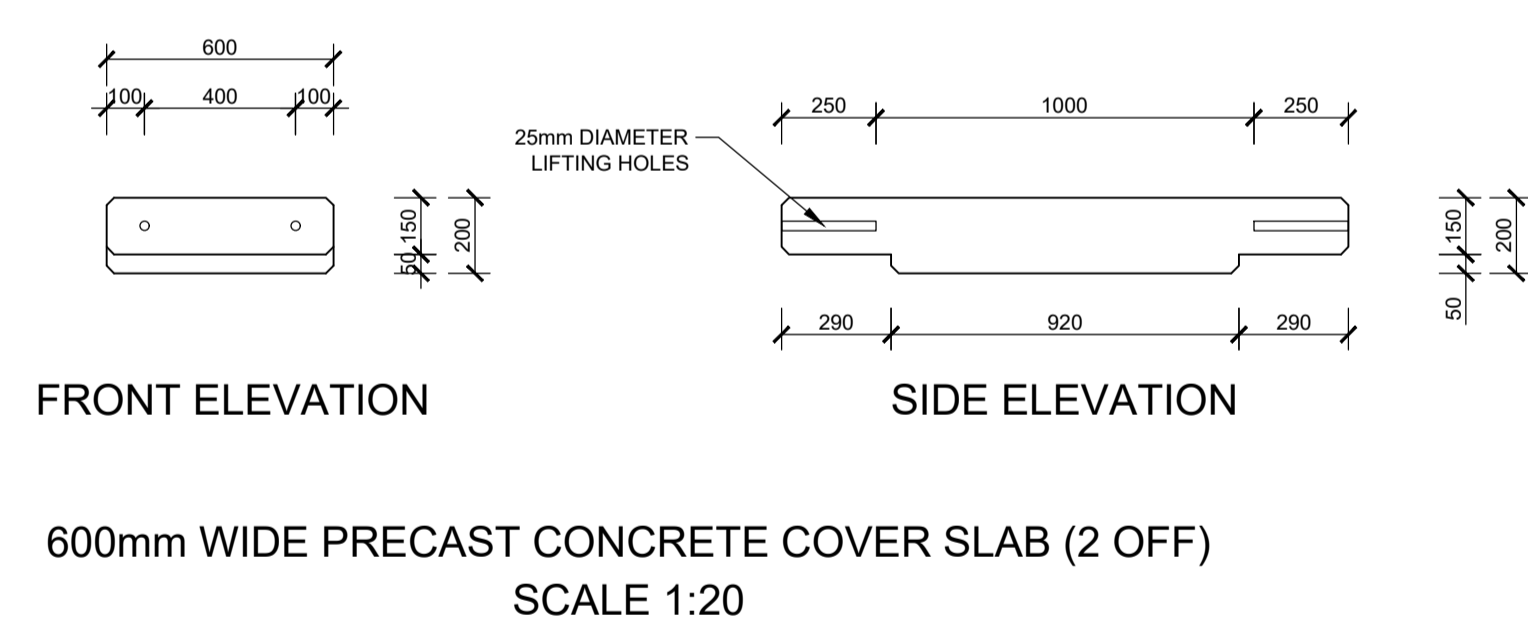
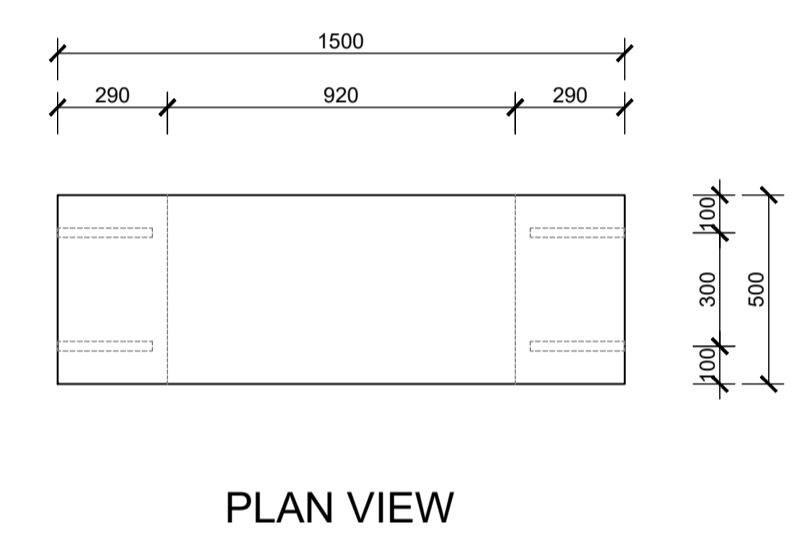
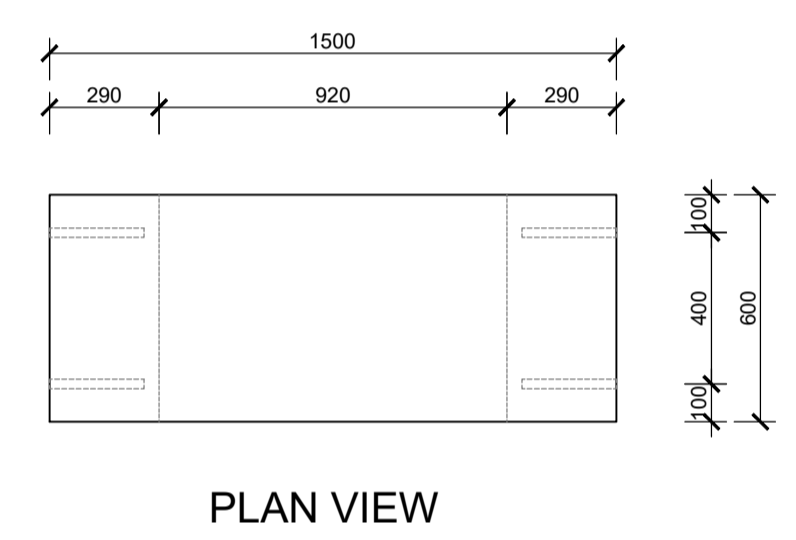
SCALE	SHEET SET	SHEET SIZE
AS SHOWN	SHEET 1 OF 1 SHEETS	A1
DRAWING No.	1762-S-003	REVISION
		T1

**GENERAL NOTES**

- CONCRETE STRENGTH**
- |                      |                                 |
|----------------------|---------------------------------|
| (A) COVERSLAB.....   | 35 Mpa cube strength at 28 days |
| (B) U-BEAM.....      | 35 Mpa cube strength at 28 days |
| (C) SHEAR WALLS..... | 35 Mpa cube strength at 28 days |
| (D) PAD FOOTING..... | 35 Mpa cube strength at 28 days |
- CONCRETE COVER TO REINFORCING**
- |                      |       |
|----------------------|-------|
| (A) COVERSLAB.....   | 30 mm |
| (B) U-BEAM.....      | 40 mm |
| (C) SHEAR WALLS..... | 50 mm |
| (D) PAD FOOTING..... | 50 mm |
- NOTE:**
1. BEAM DEPTH INCLUDES SLAB THICKNESS
  2. CONTRACTOR IS TO MAINTAIN STEEL IN CORRECT POSITION AFTER PLACING AND DURING CONCRETING
  3. STONE, SAND AND CEMENT TO BE TO THE SATISFACTION OF THE CONSULTING ENGINEER.
  4. NO CONCRETE TO BE POURED UNTIL THE STEEL HAS BEEN INSPECTED BY THE CONSULTING ENGINEER.
  5. ANY BREAKS IN THE CONCRETE ARE TO BE MADE IN ACCORDANCE WITH THE ENGINEERS INSTRUCTIONS.
  6. NO STRUCTURAL ALTERATIONS TO BE MADE WITHOUT THE APPROVAL OF THE CONSULTING ENGINEER.
  7. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND THE CIVIL ENGINEERING DRAWINGS
  8. THE DESIGN ON THIS DRAWING REMAINS THE PROPERTY OF LUKHOZI CONSULTING ENGINEERS - COPYRIGHT IS RESERVED.
  9. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE WORK IS PUT IN HAND. ANY DISCREPANCY MUST IMMEDIATELY BE REPORTED TO THE ENGINEER.
  10. THIS DRAWING IS NOT TO BE SCALED.



A MINIMUM 100 KPa BEARING CAPACITY IS REQUIRED IN THE IN-SITU LAYER AFTER RIP AND RE-COMPACTION. A DCP TEST REQUIRED PRIOR TO LAYER WORKS ABOVE. A PIONEER LAYER MAY BE REQUIRED IF EXISTING MATERIAL IS POOR.



PERMISSIBLE DEVIATION SABS 1200 G6	
DEGREE OF ACCURACY III	
APPLICABLE TO ALL CONCRETE BELOW A ROUND LEVEL.	
DEGREE OF ACCURACY II	
APPLICABLE TO ALL CONCRETE WHICH WILL BE PLASTERED OR TO RECEIVE BRICK CLADDING OR NOT VISIBLE TO THE PUBLIC EYE.	
DEGREE OF ACCURACY I	
ANY DEVIATIONS FROM FLATNESS OF SURFACE AND DEGREE OF ACCURACY SHALL BE IN ACCORDANCE WITH SABS 1200 G6, OF WHICH AN EXTRACT IS QUOTED BELOW. ALL EXPOSED CONCRETE SHALL BE IN ACCORDANCE WITH DEGREE OF ACCURACY I AS INDICATED ON THE DRAWINGS BY 1 (AS ALL SLAB SOFFITS ARE TO DEGREE OF ACCURACY I). THEY ARE NOT IDENTIFIED SEPARATELY IN PARTICULAR NOTE IS THE FOLLOWING:	
ITEM	I
4) ELEMENTS OR COMPONENTS ABOVE FOUNDATIONS (INCLUDING FLOOR SLABS)	
1) POSITION ON PLAN OF ANY EDGE OR SURFACE MEASURED FROM THE NEAREST GRID LINE OR AGREED CENTRE LINE.....	±5
2) LINEAR OTHER THAN CROSS-SECTION DIMENSIONS.....	±10
3) CROSS-SECTION DIMENSIONS.....	±5
4) LEVEL (DEVIATION FROM DESIGNED LEVEL WITH REFERENCE TO THE NEAREST TRANSFERRED DATUM (TD) OF THE UPPER OF LOWER SURFACE, AS MAY BE SPECIFIED, OF ANY SLAB OR OTHER ELEMENT OR COMPONENT).....	-10+0
5) VERTICALLY, PER METER OF HEIGHT.....	2
6) OUT-OF-SQUARENESS OF A CORNER OR AN OPENING OF AN ELEMENT SUCH AS A COLUMN (SEE 1.2(C)) FOR SHORT SIDE OF LENGTH.....	±3
i) UP TO AND INCLUDING 0.5M.....	±10
ii) OVER 0.5M UP TO AND INCLUDING 2 M.....	±15
7) EXPOSED CONCRETE SURFACE:	
i) FLATNESS OF PLANE SURFACE.....	3
ii) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	2
8) EXPOSED CONCRETE SURFACE TO BE PLASTERED:	
i) FLATNESS OF PLANE SURFACE.....	·
ii) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	·
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ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO CONSTRUCTION.

No	APPROVED	AMENDMENTS	DATE
T1	SN	FOR TENDER PURPOSES ONLY	27/11/2024
T0	SN	FOR TENDER PURPOSES ONLY	04/10/2024
SURVEYED - -			
DRAWN S NOWALA 02/10/2024			
DESIGNED S NOWALA 02/10/2024			
CHECKED P SMIT 04/10/2024			
APPROVED			
PR REGISTRATION NO. 20160801 DATE: 27/11/2024			

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 TEL 044 050 4154  
 EMAIL greg@lukhozi.co.za  
 WEB www.lukhozi.co.za

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 THE CITY FOR ALL REASONS

PROJECT TITLE  
**THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2**

DRAWING TITLE  
**MAIN STREAM CROSSINGS: SEWER PIPE BRIDGE 2: 2 OF 2**

SCALE	SHEET SET	SHEET SIZE
AS SHOWN	SHEET 1 OF 1 SHEETS	A1
DRAWING No.	1762-S-004	REVISION T1

No	APPROVED	AMENDMENTS	DATE
T1	SN	FOR TENDER PURPOSES ONLY	27/11/2024
T0	SN	FOR TENDER PURPOSES ONLY	04/10/2024

SURVEYED	-	-
DRAWN	S NOWALA	02/10/2024
DESIGNED	S NOWALA	02/10/2024
CHECKED	P SMIT	04/10/2024
APPROVED	PR REGISTRATION NO. 20160801      DATE: 27/11/2024	

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 GEORGE  
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 EMAIL: gkg@lukhozi.co.za  
 WEB: www.lukhozi.co.za

**CLIENT**  
  
**THEMBALETHU**  
**BULK SEWER PHASE 3 & 4:**  
**PORTION 2**

**DRAWING TITLE**  
**MAIN STREAM CROSSINGS:**  
**SEWER PIPE BRIDGE 3: 1 OF 3**

SCALE	SHEET SET	SHEET SIZE
AS SHOWN	SHEET 1 OF 1 SHEETS	A1
DRAWING No.	1762-S-005	REVISION
		T1

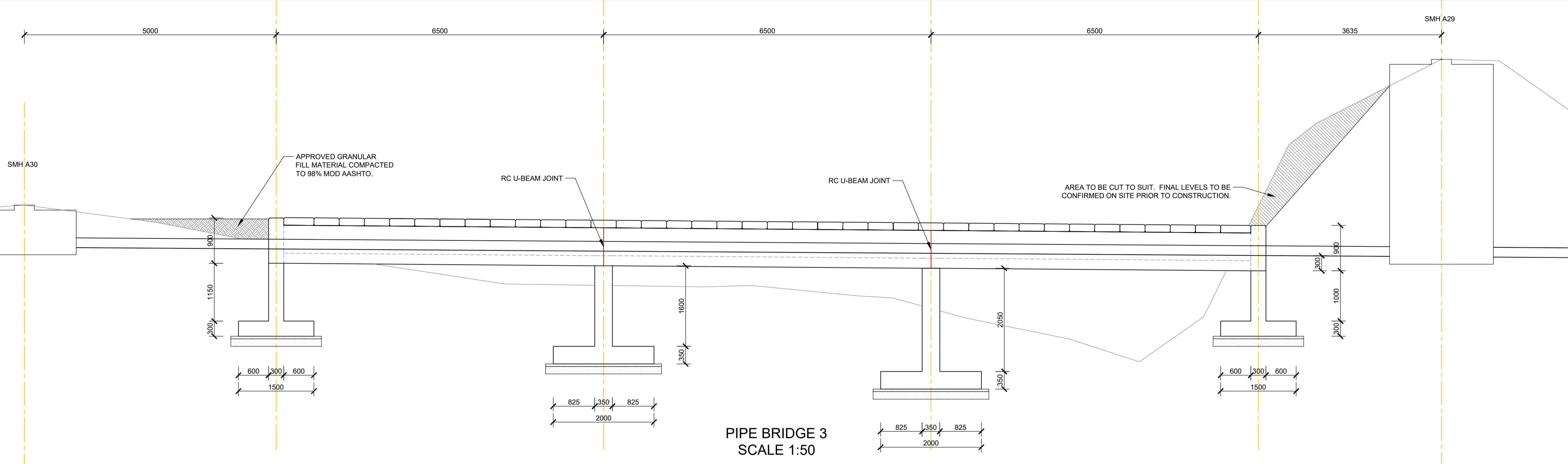
**GENERAL NOTES**

<b>CONCRETE STRENGTH</b>	
(A) COVERSLAB.....	35 Mpa cube strength at 28 days
(B) U-BEAM.....	35 Mpa cube strength at 28 days
(C) SHEAR WALLS.....	35 Mpa cube strength at 28 days
(D) PAD FOOTING.....	35 Mpa cube strength at 28 days

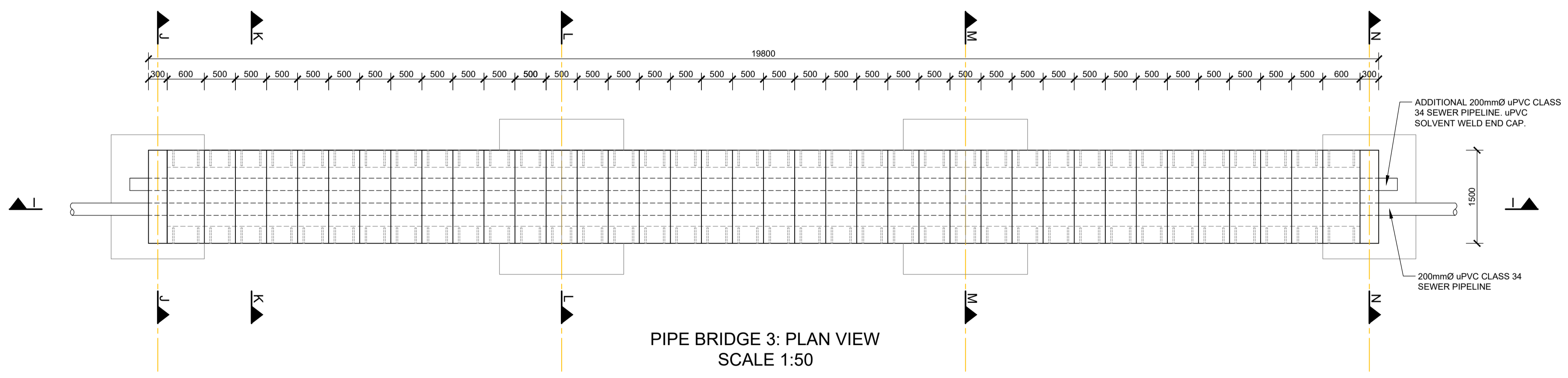
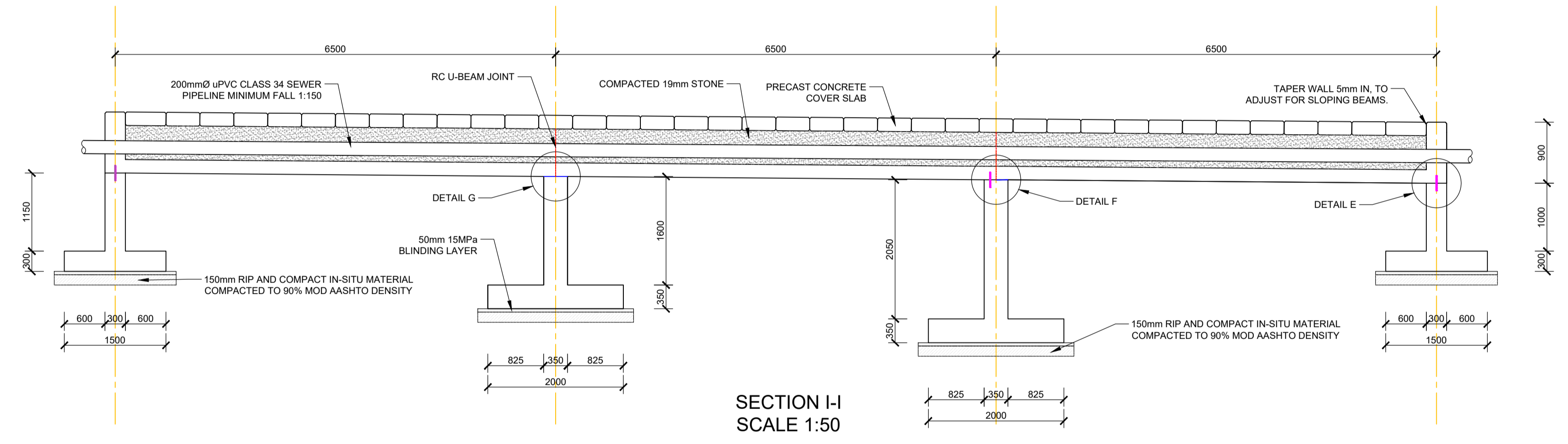
  

<b>CONCRETE COVER TO REINFORCING</b>	
(A) COVERSLAB.....	30 mm
(B) U-BEAM.....	40 mm
(C) SHEAR WALLS.....	50 mm
(D) PAD FOOTING.....	50 mm

- NOTE:**
1. BEAM DEPTH INCLUDES SLAB THICKNESS
  2. CONTRACTOR IS TO MAINTAIN STEEL IN CORRECT POSITION AFTER PLACING AND DURING CONCRETING
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ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO CONSTRUCTION.



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**PERMISSIBLE DEVIATION SABS 1200 G6**  
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 APPLICABLE TO ALL CONCRETE BELOW A ROUND LEVEL.

**DEGREE OF ACCURACY II**  
 APPLICABLE TO ALL CONCRETE WHICH WILL BE PLASTERED OR TO RECEIVE BRICK CLADDING OR NOT VISIBLE TO THE PUBLIC EYE.

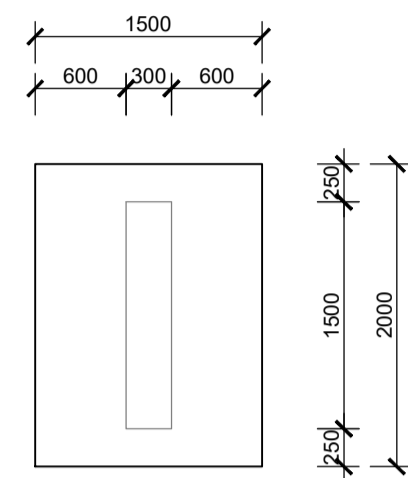
**DEGREE OF ACCURACY I**  
 ANY DEVIATIONS FROM FLATNESS OF SURFACE AND DEGREE OF ACCURACY SHALL BE IN ACCORDANCE WITH SABS 1200 G6. OF WHICH AN EXTRACT IS QUOTED BELOW. ALL EXPOSED CONCRETE SHALL BE IN ACCORDANCE WITH DEGREE OF ACCURACY I AS INDICATED ON THE DRAWINGS BY I (AS ALL SLAB SOFFITS ARE TO DEGREE OF ACCURACY I THEY ARE NOT IDENTIFIED SEPARATELY) OF PARTICULAR NOTE IS THE FOLLOWING:

ITEM	I
4) ELEMENTS OR COMPONENTS ABOVE FOUNDATIONS (INCLUDING FLOOR SLABS)	
1) POSITION ON PLAN OF ANY EDGE OR SURFACE MEASURED FROM THE NEAREST GRID LINE OR AGREED CENTRE LINE.....	+5
2) LINEAR (OTHER THAN CROSS-SECTION) DIMENSIONS.....	+10
3) CROSS-SECTION DIMENSIONS.....	+5
4) LEVEL (DEVIATION FROM DESIGNED LEVEL WITH REFERENCE TO THE NEAREST TRANSFERRED DATUM (TD) OF THE UPPER OF LOWER SURFACE, AS MAY BE SPECIFIED, OF ANY SLAB OR OTHER ELEMENT OR COMPONENT).....	+10+0
5) VERTICALLY, PER METER OF HEIGHT.....	2
6) SUBJECT TO A MAXIMUM OF.....	30
6) OUT-OF-SQUARENESS OF A CORNER OR AN OPENING OF AN ELEMENT SUCH AS A COLUMN (SEE S 1200) FOR SHORT SIDE OF LENGTH.....	+3
I) UP TO AND INCLUDING 0.5M.....	+10
II) OVER 0.5M UP TO AND INCLUDING 2 M.....	+15
7) EXPOSED CONCRETE SURFACE:	
I) FLATNESS OF PLANE SURFACE.....	3
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II) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	.

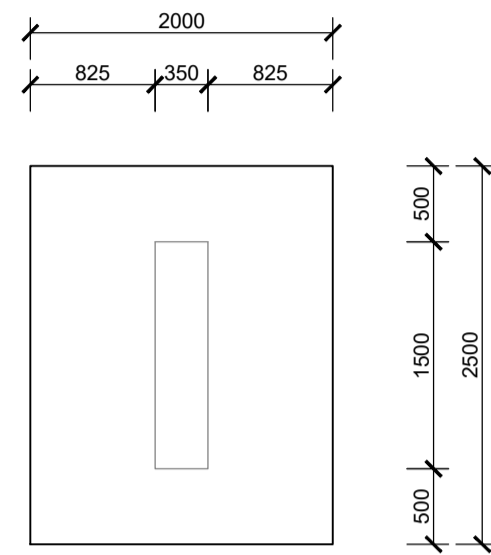
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**GENERAL NOTES**

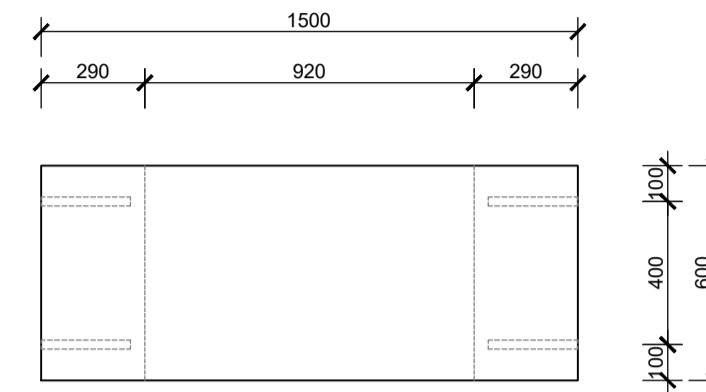
- CONCRETE STRENGTH
- |                      |                                 |
|----------------------|---------------------------------|
| (A) COVERSLAB.....   | 35 Mpa cube strength at 28 days |
| (B) U-BEAM.....      | 35 Mpa cube strength at 28 days |
| (C) SHEAR WALLS..... | 35 Mpa cube strength at 28 days |
| (D) PAD FOOTING..... | 35 Mpa cube strength at 28 days |
- CONCRETE COVER TO REINFORCING
- |                      |       |
|----------------------|-------|
| (A) COVERSLAB.....   | 30 mm |
| (B) U-BEAM.....      | 40 mm |
| (C) SHEAR WALLS..... | 50 mm |
| (D) PAD FOOTING..... | 50 mm |
- NOTE:
1. BEAM DEPTH INCLUDES SLAB THICKNESS
  2. CONTRACTOR IS TO MAINTAIN STEEL IN CORRECT POSITION AFTER PLACING AND DURING CONCRETING
  3. STONE, SAND AND CEMENT TO BE TO THE SATISFACTION OF THE CONSULTING ENGINEER.
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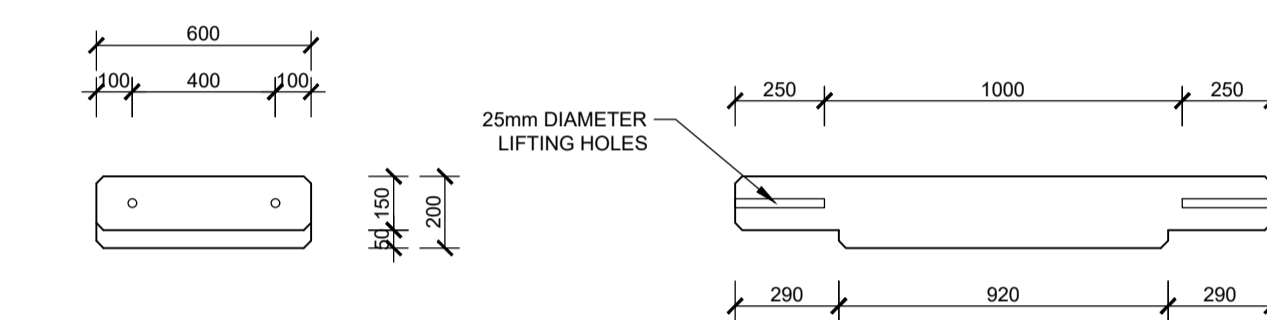
PIPE BRIDGE 3: PAD FOOTING 01  
SCALE 1:50



PIPE BRIDGE 3: PAD FOOTING 02  
SCALE 1:50



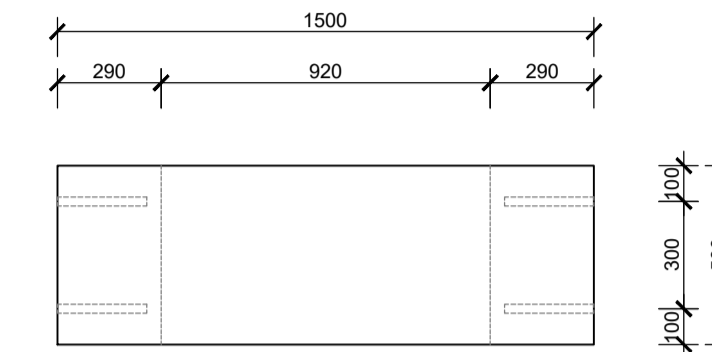
PLAN VIEW



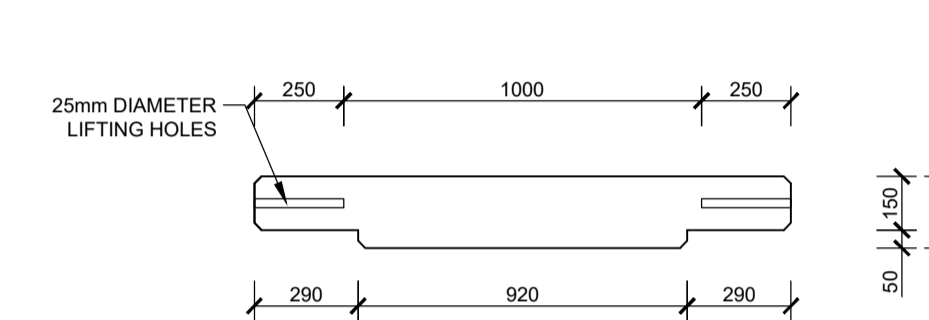
FRONT ELEVATION

SIDE ELEVATION

600mm WIDE PRECAST CONCRETE COVER SLAB (2 OFF)  
SCALE 1:20



PLAN VIEW

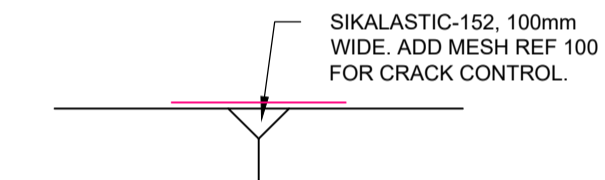


FRONT ELEVATION

SIDE ELEVATION

500mm WIDE PRECAST CONCRETE COVER SLAB (37 OFF)  
SCALE 1:20

ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO CONSTRUCTION.



JOINT SEALING DETAIL  
SCALE 1:5

No	APPROVED	AMENDMENTS	DATE
T1	SN	FOR TENDER PURPOSES ONLY	27/11/2024
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SURVEYED	-	-
DRAWN	S NOWALA	02/10/2024
DESIGNED	S NOWALA	02/10/2024
CHECKED	P SMIT	04/10/2024
APPROVED	PR REGISTRATION NO. 20160801 DATE: 27/11/2024	

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TEL 044 050 4154  
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WEB www.lukhozi.co.za



PROJECT TITLE  
**THEMBALETHU  
BULK SEWER PHASE 3 & 4:  
PORTION 2**

DRAWING TITLE  
**MAIN STREAM CROSSINGS:  
SEWER PIPE BRIDGE 3: 2 OF 3**

SCALE	SHEET SET	SHEET SIZE
AS SHOWN	SHEET 1 OF 1 SHEETS	A1
DRAWING No.	1762-S-006	REVISION
		T1

A MINIMUM 100 KPa BEARING CAPACITY IS REQUIRED IN THE IN-SITU LAYER AFTER RIP AND RE-COMPACTION. A DCP TEST REQUIRED PRIOR TO LAYER WORKS ABOVE. A PIONEER LAYER MAY BE REQUIRED IF EXISTING MATERIAL IS POOR.

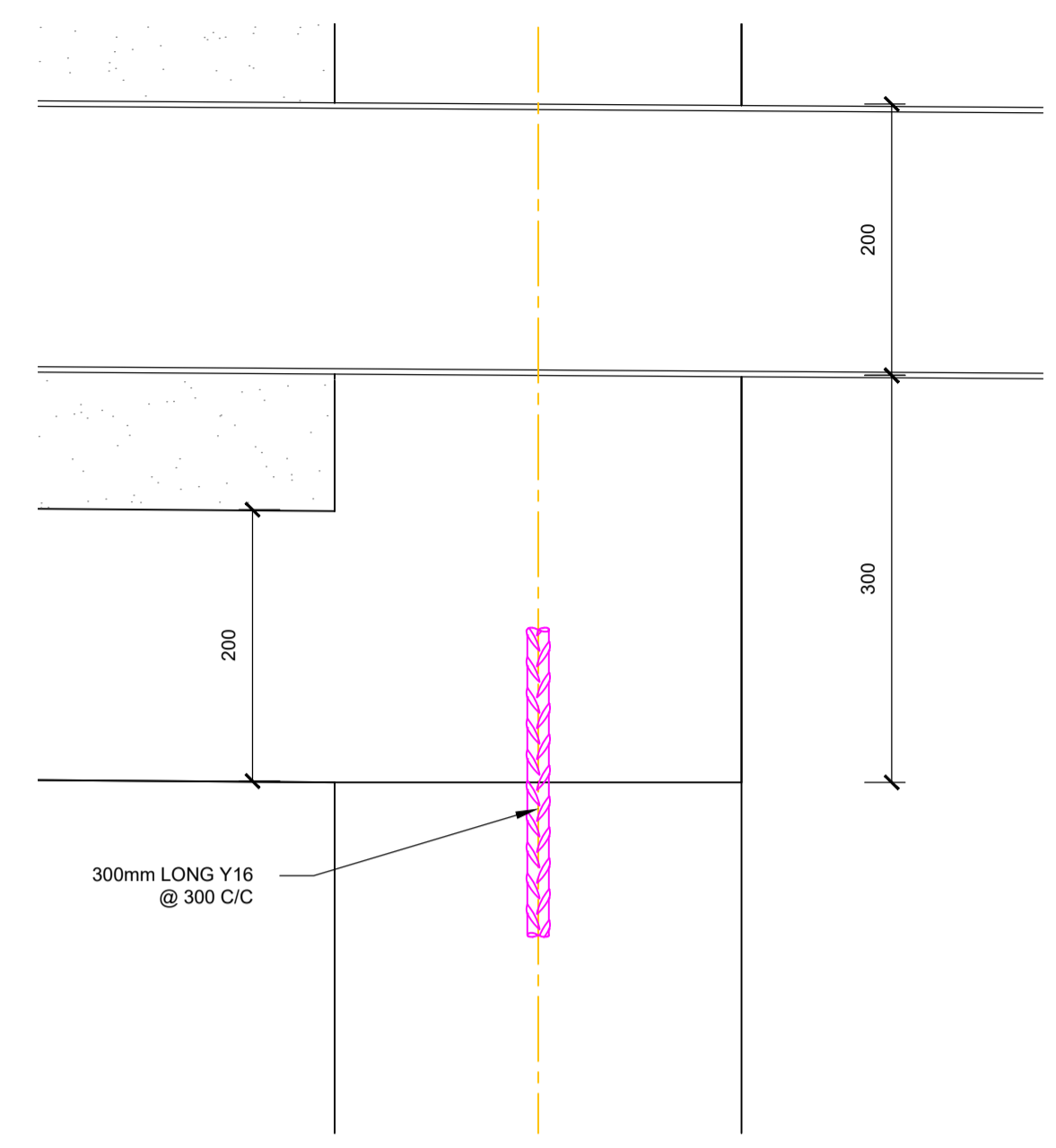
PERMISSIBLE DEVIATION SABS 1200 G6	
DEGREE OF ACCURACY III	
APPLICABLE TO ALL CONCRETE BELOW A ROUND LEVEL.	
DEGREE OF ACCURACY II	
APPLICABLE TO ALL CONCRETE WHICH WILL BE PLASTERED OR TO RECEIVE BRICK CLADDING OR NOT VISIBLE TO THE PUBLIC EYE.	
DEGREE OF ACCURACY I	
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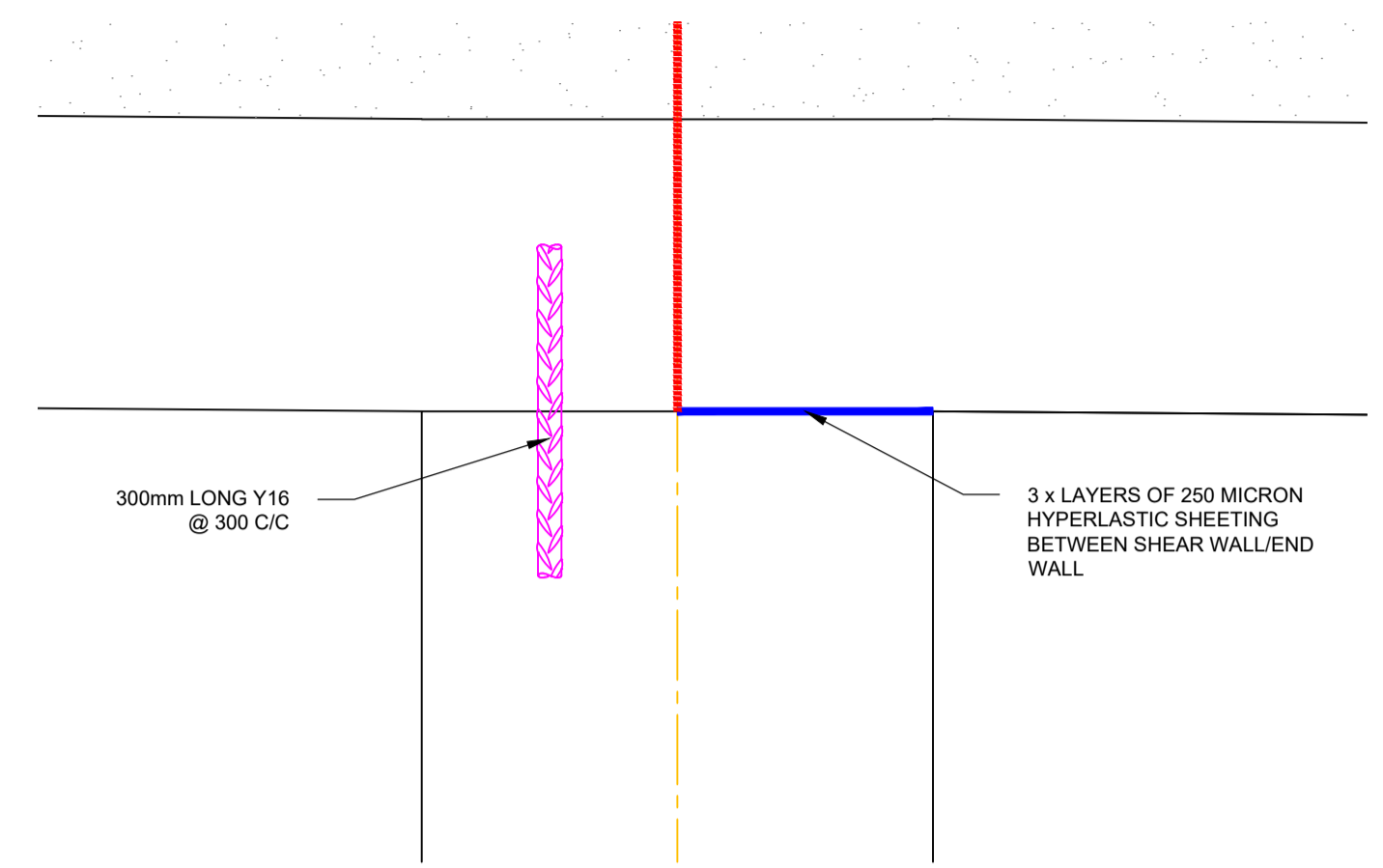
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**GENERAL NOTES**

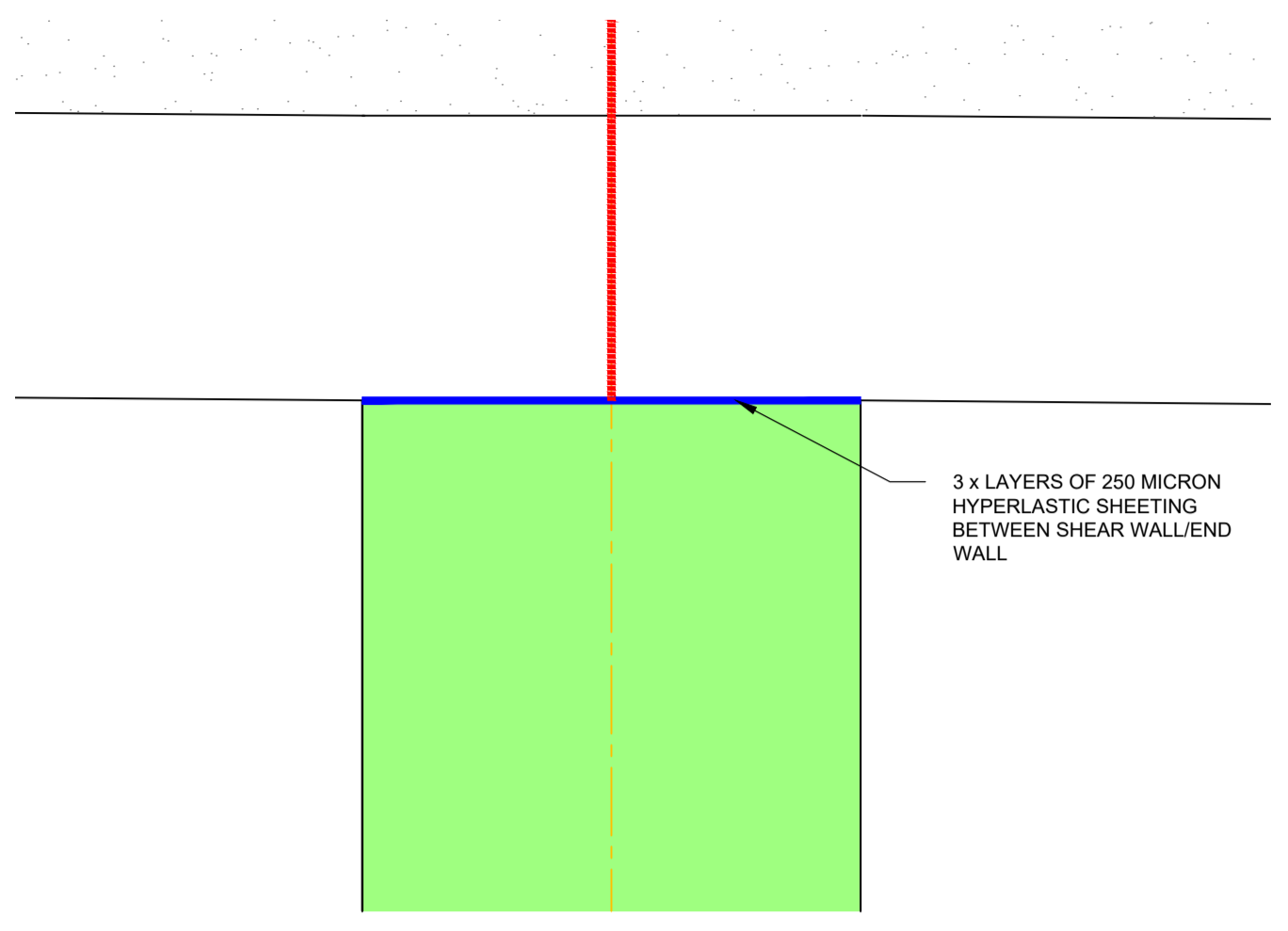
- CONCRETE STRENGTH
- |                      |                                 |
|----------------------|---------------------------------|
| (A) COVERSLAB.....   | 35 Mpa cube strength at 28 days |
| (B) U-BEAM.....      | 35 Mpa cube strength at 28 days |
| (C) SHEAR WALLS..... | 35 Mpa cube strength at 28 days |
| (D) PAD FOOTING..... | 35 Mpa cube strength at 28 days |
- CONCRETE COVER TO REINFORCING
- |                      |       |
|----------------------|-------|
| (A) COVERSLAB.....   | 30 mm |
| (B) U-BEAM.....      | 40 mm |
| (C) SHEAR WALLS..... | 50 mm |
| (D) PAD FOOTING..... | 50 mm |
- NOTE:
- BEAM DEPTH INCLUDES SLAB THICKNESS
  - CONTRACTOR IS TO MAINTAIN STEEL IN CORRECT POSITION AFTER PLACING AND DURING CONCRETING
  - STONE, SAND AND CEMENT TO BE TO THE SATISFACTION OF THE CONSULTING ENGINEER.
  - NO CONCRETE TO BE POURED UNTIL THE STEEL HAS BEEN INSPECTED BY THE CONSULTING ENGINEER.
  - ANY BREAKS IN THE CONCRETE ARE TO BE MADE IN ACCORDANCE WITH THE ENGINEERS INSTRUCTIONS.
  - NO STRUCTURAL ALTERATIONS TO BE MADE WITHOUT THE APPROVAL OF THE CONSULTING ENGINEER.
  - ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND THE CIVIL ENGINEERING DRAWINGS
  - THE DESIGN ON THIS DRAWING REMAINS THE PROPERTY OF LUKHOZI CONSULTING ENGINEERS - COPYRIGHT IS RESERVED.
  - ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE WORK IS PUT IN HAND. ANY DISCREPANCY MUST IMMEDIATELY BE REPORTED TO THE ENGINEER.
  - THIS DRAWING IS NOT TO BE SCALED.



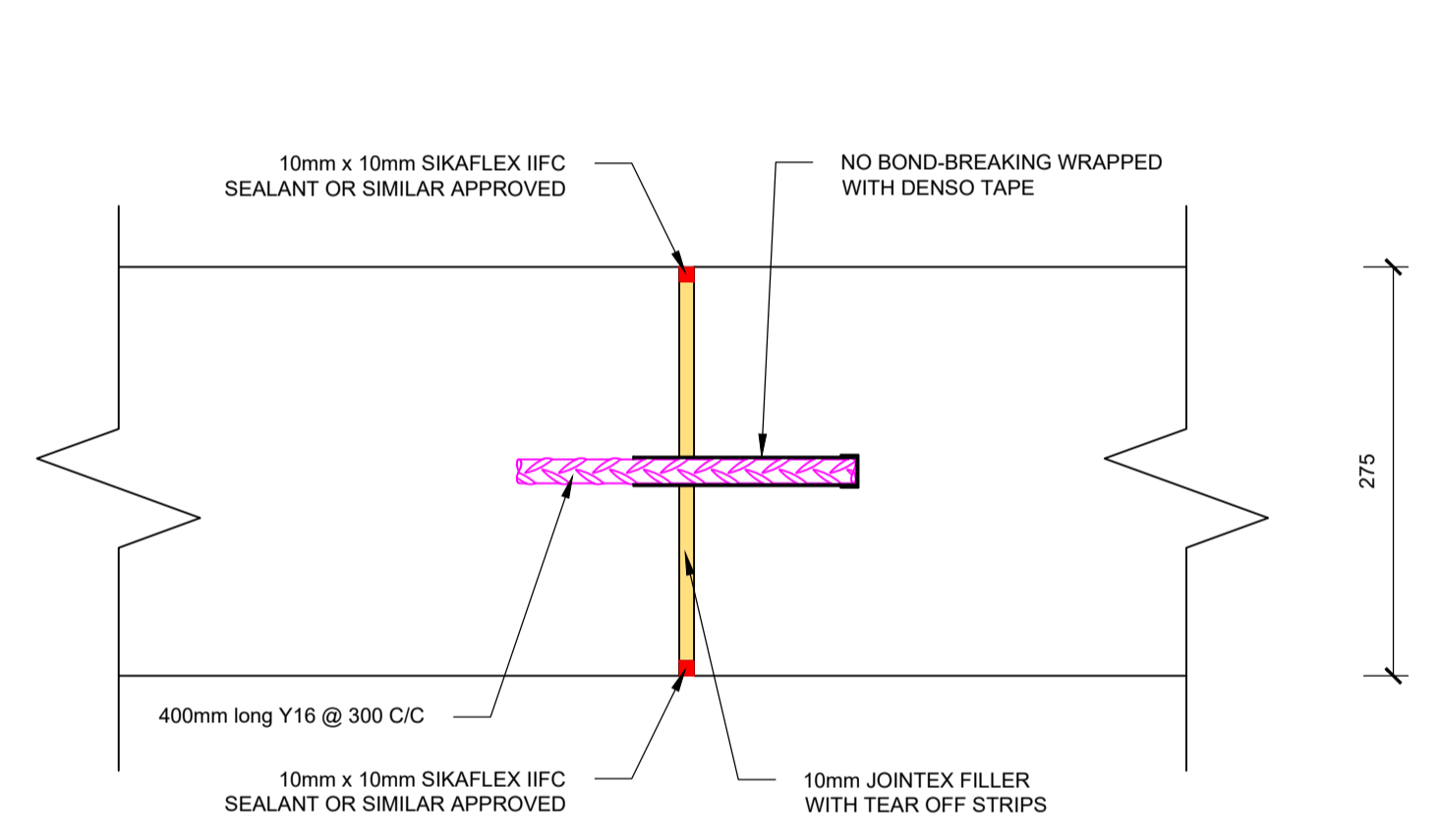
**DETAIL E  
SCALE 1:5**



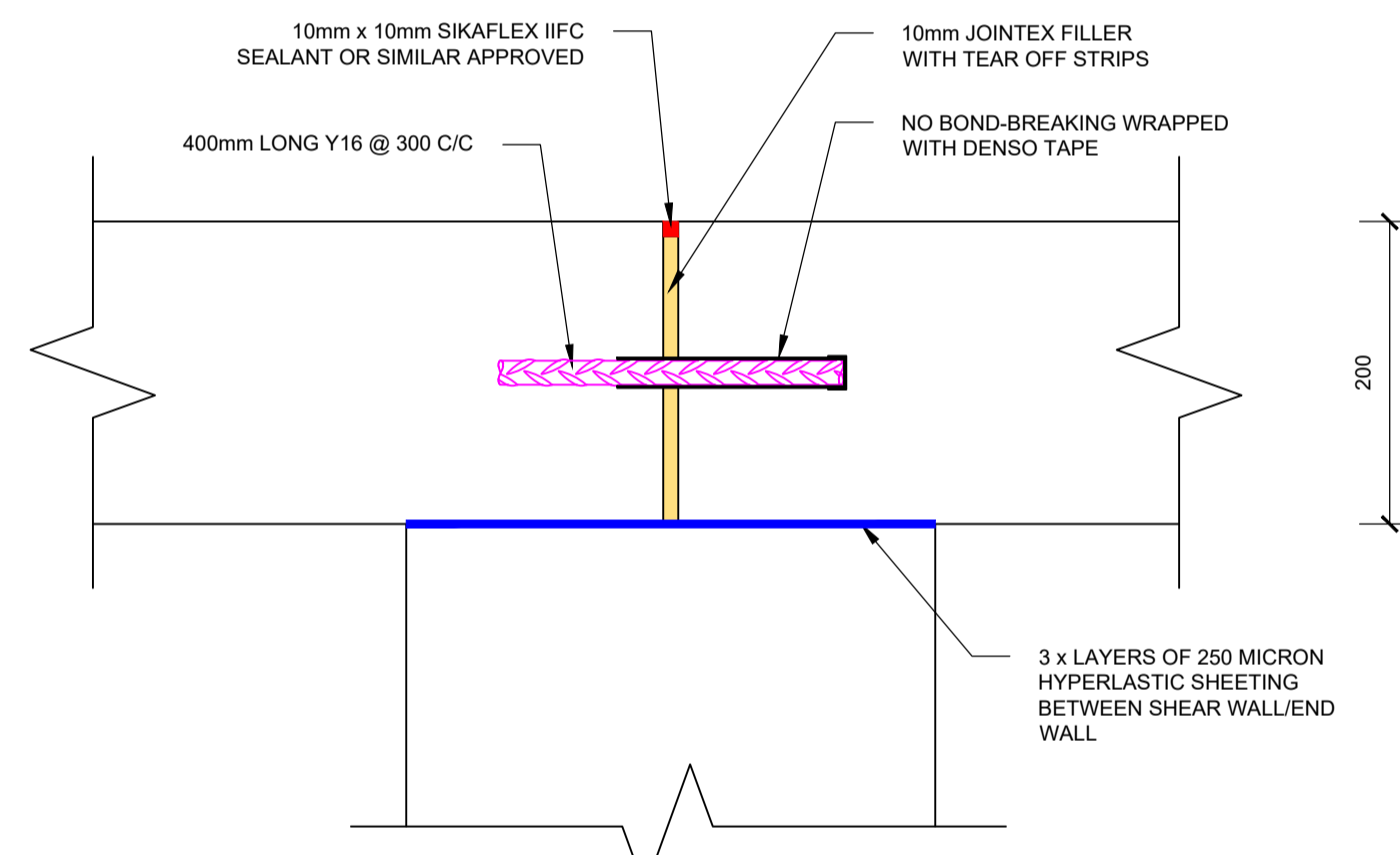
**DETAIL F  
SCALE 1:5**



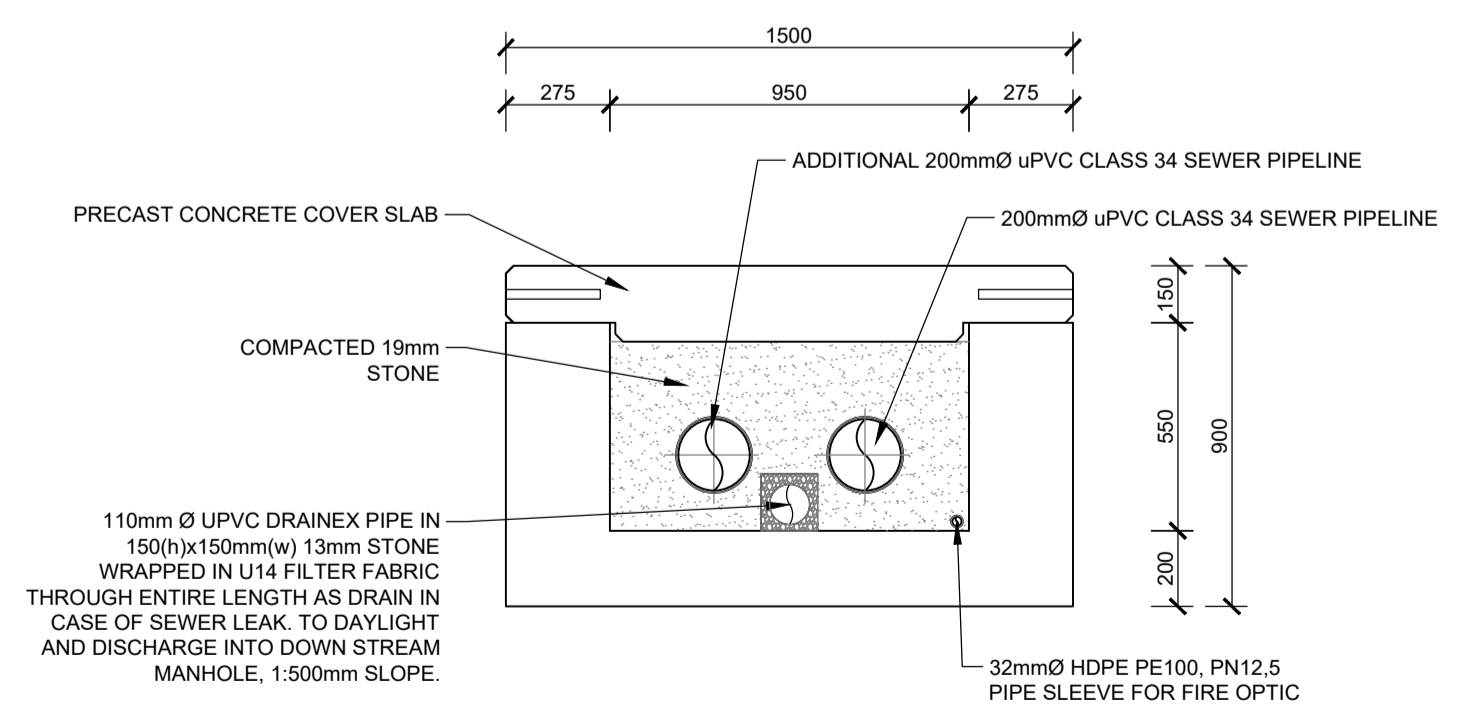
**DETAIL G  
SCALE 1:5**



**U-BEAM WALL JOINT DETAIL  
SCALE 1:5**



**U-BEAM SLAB JOINT DETAIL  
SCALE 1:5**



**U-BEAM DETAIL  
SCALE 1:20**

**ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO CONSTRUCTION.**

PERMISSIBLE DEVIATION SABS 1200 G6	
DEGREE OF ACCURACY III	
APPLICABLE TO ALL CONCRETE BELOW A ROUND LEVEL.	
DEGREE OF ACCURACY II	
APPLICABLE TO ALL CONCRETE WHICH WILL BE PLASTERED OR TO RECEIVE BRICK CLADDING OR NOT VISIBLE TO THE PUBLIC EYE.	
DEGREE OF ACCURACY I	
ANY DEVIATIONS FROM FLATNESS OF SURFACE AND DEGREE OF ACCURACY SHALL BE IN ACCORDANCE WITH SABS 1200 G6. OF WHICH AN EXTRACT IS QUOTED BELOW. ALL EXPOSED CONCRETE SHALL BE IN ACCORDANCE WITH DEGREE OF ACCURACY I AS INDICATED ON THE DRAWINGS BY I (AS ALL SLAB SOFFITS ARE TO DEGREE OF ACCURACY I THEY ARE NOT IDENTIFIED SEPARATELY) OF PARTICULAR NOTE IS THE FOLLOWING:	
ITEM	I
4) ELEMENTS OR COMPONENTS ABOVE FOUNDATIONS (INCLUDING FLOOR SLABS)	
1) POSITION ON PLAN OF ANY EDGE OR SURFACE MEASURED FROM THE NEAREST GRID LINE OR AGREED CENTRE LINE.....	±5
2) LINEAR (OTHER THAN CROSS-SECTION) DIMENSIONS.....	±10
3) CROSS-SECTION DIMENSIONS.....	±5
4) LEVEL (DEVIATION FROM DESIGNED LEVEL WITH REFERENCE TO THE NEAREST TRANSFERRED DATUM (TD) OF THE UPPER OF LOWER SURFACE, AS MAY BE SPECIFIED, OF ANY SLAB OR OTHER ELEMENT OR COMPONENT).....	-10+0
5) VERTICALLY, PER METER OF HEIGHT.....	2
SUBJECT TO A MAXIMUM OF.....	30
6) OUT-OF-SQUARENESS OF A CORNER OR AN OPENING OF AN ELEMENT SUCH AS A COLUMN (SEE S 1200) FOR SHORT SIDE OF LENGTH	
I) UP TO AND INCLUDING 0.5M.....	±3
II) OVER 0.5M UP TO AND INCLUDING 2 M.....	±10
III) OVER 2 M UP TO AND INCLUDING 4 M.....	±15
7) EXPOSED CONCRETE SURFACE:	
I) FLATNESS OF PLANE SURFACE.....	3
II) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	2
8) EXPOSED CONCRETE SURFACE TO BE PLASTERED:	
I) FLATNESS OF PLANE SURFACE.....	.
II) ABRUPT CHANGES IN A CONTINUOUS SURFACE.....	.
EXTREME CARE IS TO BE TAKEN TO AVOID REPAIR POST STRIPPING OF SHUTTERING. THESE AREAS ARE TO BE PROTECTED AGAINST DAMAGE DURING CONSTRUCTION	

No	APPROVED	AMENDMENTS	DATE
T1	SN	FOR TENDER PURPOSES ONLY	27/11/2024
T0	SN	FOR TENDER PURPOSES ONLY	04/10/2024

SURVEYED	-	-
DRAWN	S NOWALA	02/10/2024
DESIGNED	S NOWALA	02/10/2024
CHECKED	P SMIT	04/10/2024
APPROVED	PR REGISTRATION NO. 20160801 DATE: 27/11/2024	

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**LUKHOZI**

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GEORGE

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WEB www.lukhozi.co.za

CLIENT

PROJECT TITLE

**THEMBALETHU  
BULK SEWER PHASE 3 & 4:  
PORTION 2**

DRAWING TITLE

**MAIN STREAM CROSSINGS:  
SEWER PIPE BRIDGE 3: 3 OF 3**

SCALE	SHEET SET	SHEET SIZE
AS SHOWN	SHEET 1 OF 1 SHEETS	A1
DRAWING No.	1762-S-007	REVISION
		T1



**LEGEND**

EXISTING SERVICES	
	TOP OF BANK
	SEWER PIPELINE
	SEWER PIPELINE FROM GEORGE GIS
	STORMWATER PIPELINE
	SEWER MANHOLE
	FENCE LINE
	GATE
	BENCHMARK
	TEMPORARY HOUSING

PROPOSED SERVICES	
	SEWER PIPELINE
	SEWER MANHOLE

No.	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023

SURVEYED	-	-
DRAWN	S KULU	NOV 2023
DESIGNED	S KULU, K POTGIETER	NOV 2023
CHECKED	K POTGIETER	NOV 2023

APPROVED		PR REGISTRATION NO. 201770064	DATE: 2024/07/03
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 TEL: 044 058 8159  
 EMAIL: g@lukhozi.co.za  
 WWW: www.lukhozi.co.za

CLIENT  
  
**GEORGE**  
 LOCAL MUNICIPALITY

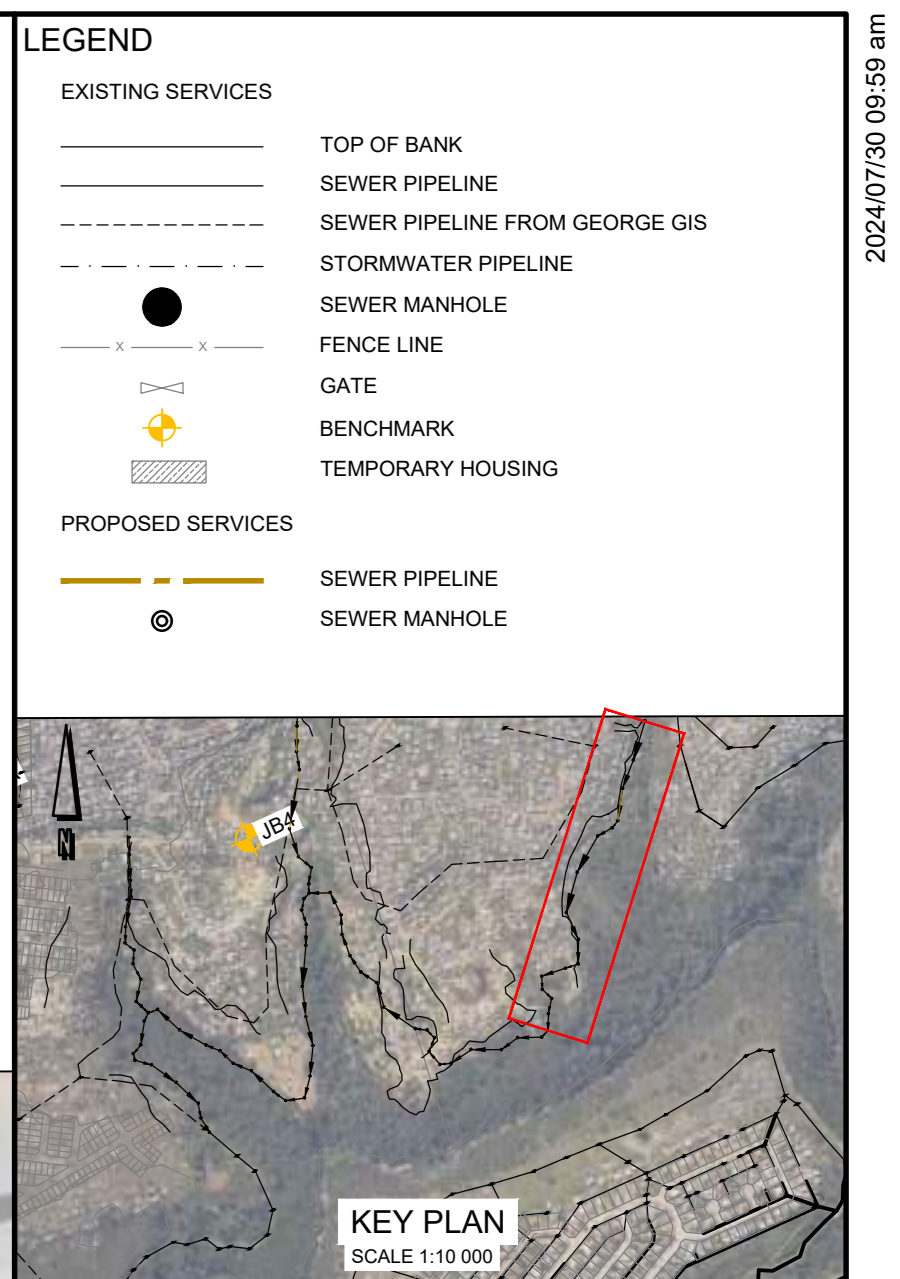
PROJECT TITLE	THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2		
DRAWING TITLE	PORTION 2 BULK SEWER KEY PLAN		
SCALE	SHEET SET	SHEET SIZE	REVISION
AS SHOWN	SHEET 1 OF 1 SHEETS	A0	P1
DRAWING No.	1762-SEW-002		

LAYOUT PLAN  
 SCALE 1:1000

P:\GIS\1762 Thembaletu Bulk Sewer Phase 3 and 4\Design & Drawings\GIS Sewer\1762-SEW-17\Thembaletu Portion 2 Layout.dwg 2024/07/03 09:56 AM



- GENERAL NOTES:**
1. SURVEY COORDINATE SYSTEM: L023 HARTBEESTHEK 04.
  2. ALL CONSTRUCTION WORK TO BE IN ACCORDANCE WITH THE RELEVANT SANS 1200 SPECIFICATIONS FOR CIVIL ENGINEERING CONSTRUCTION AS AMENDED BY THE SCOPE OF WORKS.
  3. ANY CONSTRUCTION DETAILS NOT SHOWN ON THE DRAWINGS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE MUNICIPAL STANDARD DETAILS.
  4. ALL SEWER CONNECTIONS TO BE 20mm SFC CLASS 34, UNLESS OTHERWISE SHOWN OR REQUIRED.
  5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL LEVELS AND DIMENSIONS ON SITE PRIOR TO COMMENCING WITH ANY EXCAVATIONS.
  6. THE EXACT POSITIONS AND LEVELS OF ALL EXISTING SERVICES TO BE DETERMINED BY HAND EXCAVATION OR APPROVED LOCATION SERVICE BEFORE COMMENCING WITH CONSTRUCTION.
  7. THE ENGINEER IS TO BE CALLED TO INSPECT ALL TRENCHES PRIOR TO ANY BACKFILL.
  8. ALL MATERIAL TESTS FOR ALL CONSTRUCTION WORKS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
  9. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.
  10. REFER TO DRAWING NO. 1762-GEN-001 FOR THE PHASE LOCALITY PLAN.
  11. REFER TO DRAWING NO. 1762-GEN-002 FOR EXISTING SERVICES LAYOUT.
  12. REFER TO DRAWING NO. 1762-SEW-010 FOR SEWER TYPICAL DETAILS.
  13. ALL SEWER GRAVITY PIPES TO BE 200mm HEAVY DUTY CLASS 34 FOR SEWER BULK COLLECTOR, UNLESS OTHERWISE SHOWN OR REQUIRED.
  14. SEWER MANHOLES ARE TO BE CONSTRUCTED USING 1.0m DIAMETER PRECAST RINGS TO DEPTHS IN ACCORDANCE WITH THE DESIGNS & DRAWINGS. MANHOLES DEEPER THAN 1.5m WILL BE REDUCED TO 0.75m WIDTH AT A DEPTH OF 1.5m. FOR DEPTHS GREATER THAN 4.0m TO A MAX. OF 6m DEEP BOTTOM PRECAST RING DIAMETER SHALL BE INCREASED TO 1.50m DIAMETER.
  15. FINISHED COVER LEVELS:  
 CARRIAGEWAYS - COVER TO BE FLUSH WITH THE FINISHED ROAD SURFACE.  
 ROAD RESERVE - COVER TO BE 50mm ABOVE THE FINISHED GROUND LEVEL.  
 OPEN SPACES - COVER TO BE 50mm ABOVE FINISHED GROUND LEVEL.

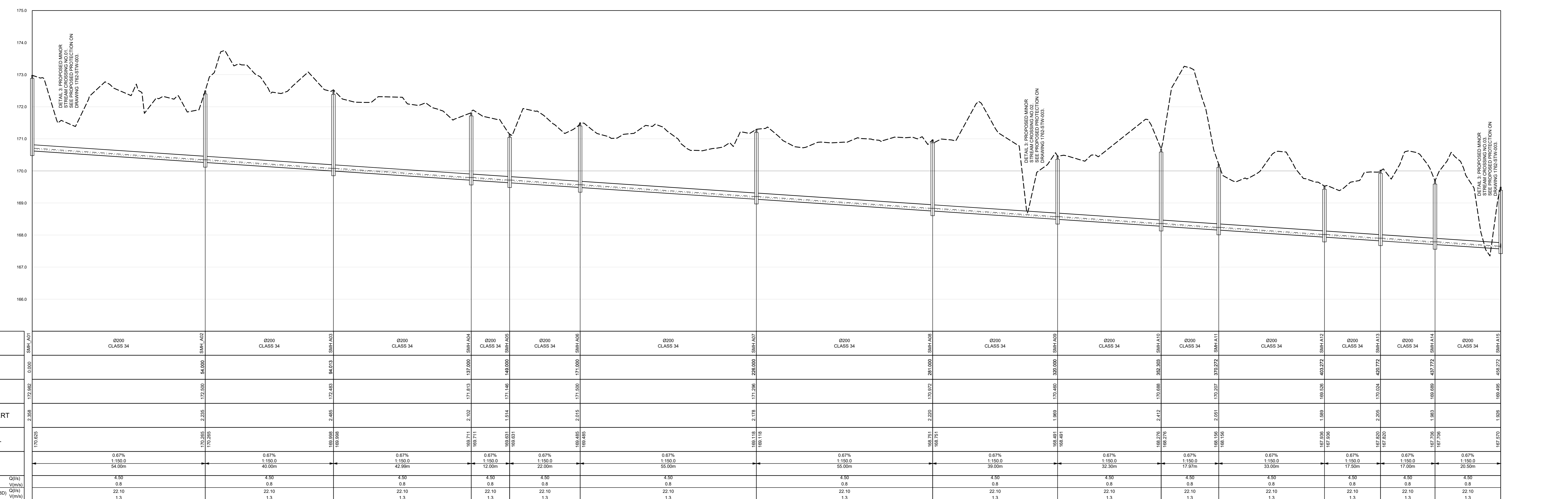


No	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023

SURVEYED	-	-
DRAWN	S KULU	NOV 2023
DESIGNED	S KULU, K POTGIETER	NOV 2023
CHECKED	K POTGIETER	NOV 2023
APPROVED		PR REGISTRATION NO. 201770064 DATE: 2024/07/30

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 WWW: www.lukhozi.co.za

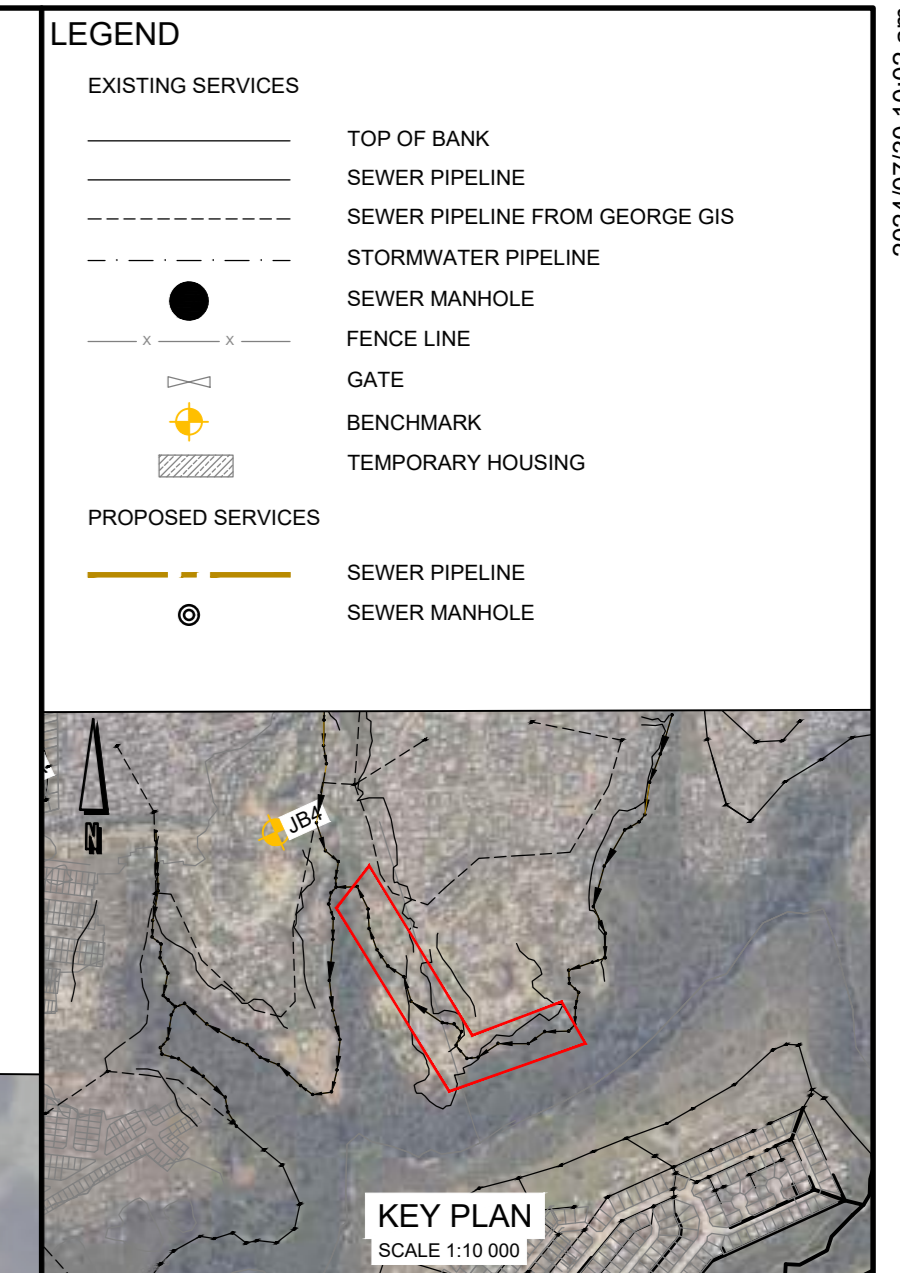
**GEORGE LOCAL MUNICIPALITY**  
  
 PROJECT TITLE: **THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2**  
 DRAWING TITLE: **PORTION 2 BULK SEWER LAYOUT PLAN SMH A01 - SMH A15**  
 SCALE: AS SHOWN SHEET SHEET 1 OF 7 SHEETS SHEET SIZE: A0  
 DRAWING No.: 1762-SEW-003 REVISION: P1



SCALES:  
 Horizontal 1:500  
 Vertical 1:50  
 DATUM 165.000m MSL



- GENERAL NOTES:**
1. SURVEY COORDINATE SYSTEM: L02J-NARTREESTHOEK SA.
  2. ALL CONSTRUCTION WORK TO BE IN ACCORDANCE WITH THE RELEVANT SANS 1200 SPECIFICATIONS FOR CIVIL ENGINEERING CONSTRUCTION AS AMENDED BY THE SCOPE OF WORKS.
  3. ANY CONSTRUCTION DETAILS NOT SHOWN ON THE DRAWINGS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE MUNICIPAL STANDARD DETAILS.
  4. ALL SEWER CONNECTIONS TO BE 215mm SFC CLASS 34, UNLESS OTHERWISE SHOWN OR REQUIRED.
  5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL LEVELS AND DIMENSIONS ON SITE PRIOR TO COMMENCING WITH ANY EXCAVATIONS.
  6. THE EXACT POSITIONS AND LEVELS OF ALL EXISTING SERVICES TO BE DETERMINED BY HAND EXCAVATION OR APPROVED LOCATION DEVICE BEFORE COMMENCING WITH CONSTRUCTION.
  7. THE ENGINEER IS TO BE CALLED TO INSPECT ALL TRENCHES PRIOR TO ANY BACKFILL.
  8. ALL MATERIAL TESTS FOR ALL CONSTRUCTION WORKS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
  9. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.
  10. REFER TO DRAWING NO. 1762-GEN-001 FOR THE PHASE LOCALITY PLAN.
  11. REFER TO DRAWING NO. 1762-GEN-002 FOR EXISTING SERVICES LAYOUT.
  12. REFER TO DRAWING NO. 1762-GEN-010 FOR SEWER TYPICAL DETAILS.
  13. ALL SEWER GRAVITY PIPES TO BE 200mm HEAVY DUTY CLASS 34 FOR SEWER BULK COLLECTOR, UNLESS OTHERWISE SHOWN OR REQUIRED.
  14. SEWER MANHOLES ARE TO BE CONSTRUCTED USING 1.0m DIAMETER PRECAST RINGS TO DEPTHS IN ACCORDANCE WITH THE DESIGNS & DRAWINGS. MANHOLES DEEPER THAN 1.5m WILL BE REDUCED TO 0.75m WIDTH AT A DEPTH OF 1.5m. FOR DEPTHS GREATER THAN 4.0m TO A MAX. OF 6m DEEP BOTTOM PRECAST RING DIAMETER SHALL BE INCREASED TO 1.25m DIAMETER.
  15. FINISHED COVER LEVELS - COVER TO BE FLUSH WITH THE FINISHED ROAD SURFACE. ROAD RESERVE - COVER TO BE 50mm ABOVE THE FINISHED GROUND LEVEL. OPEN SPACES - COVER TO BE 50mm ABOVE FINISHED GROUND LEVEL.



No	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023

NO	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023

PH REGISTRATION NO: 201770064 DATE: 2024/07/30

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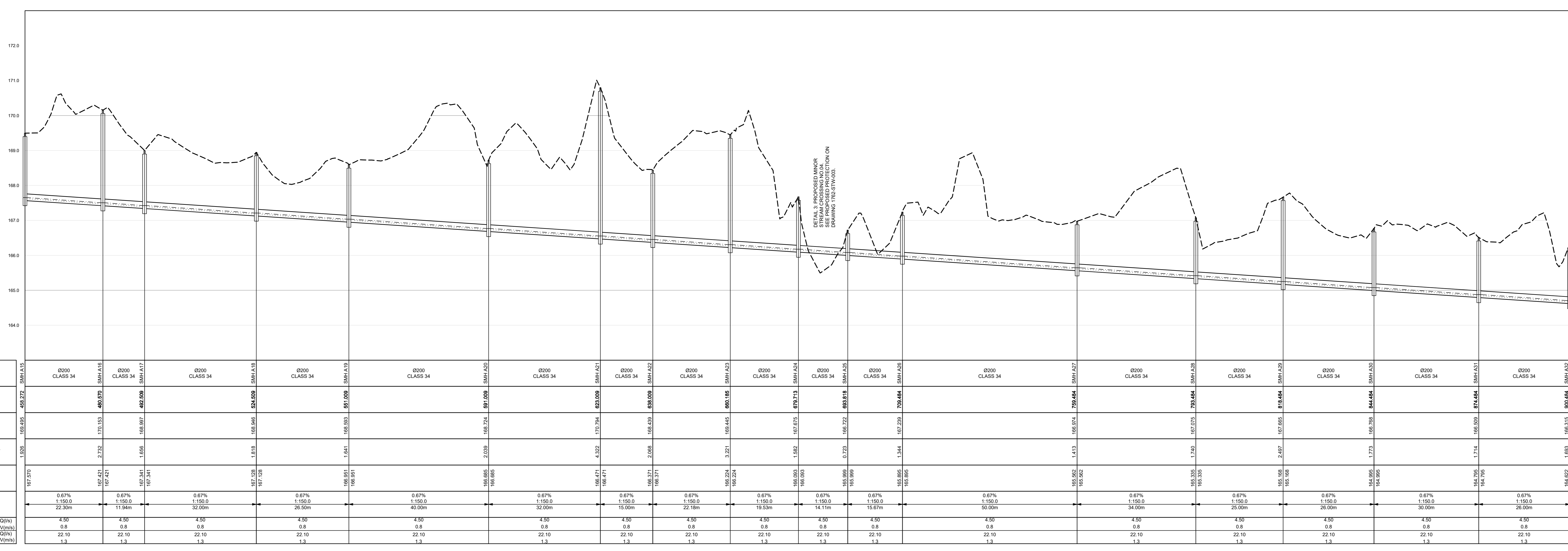


**PROJECT TITLE**  
THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2

**DRAWING TITLE**  
PORTION 2 BULK SEWER LAYOUT PLAN  
SMH A15 - SMH A32

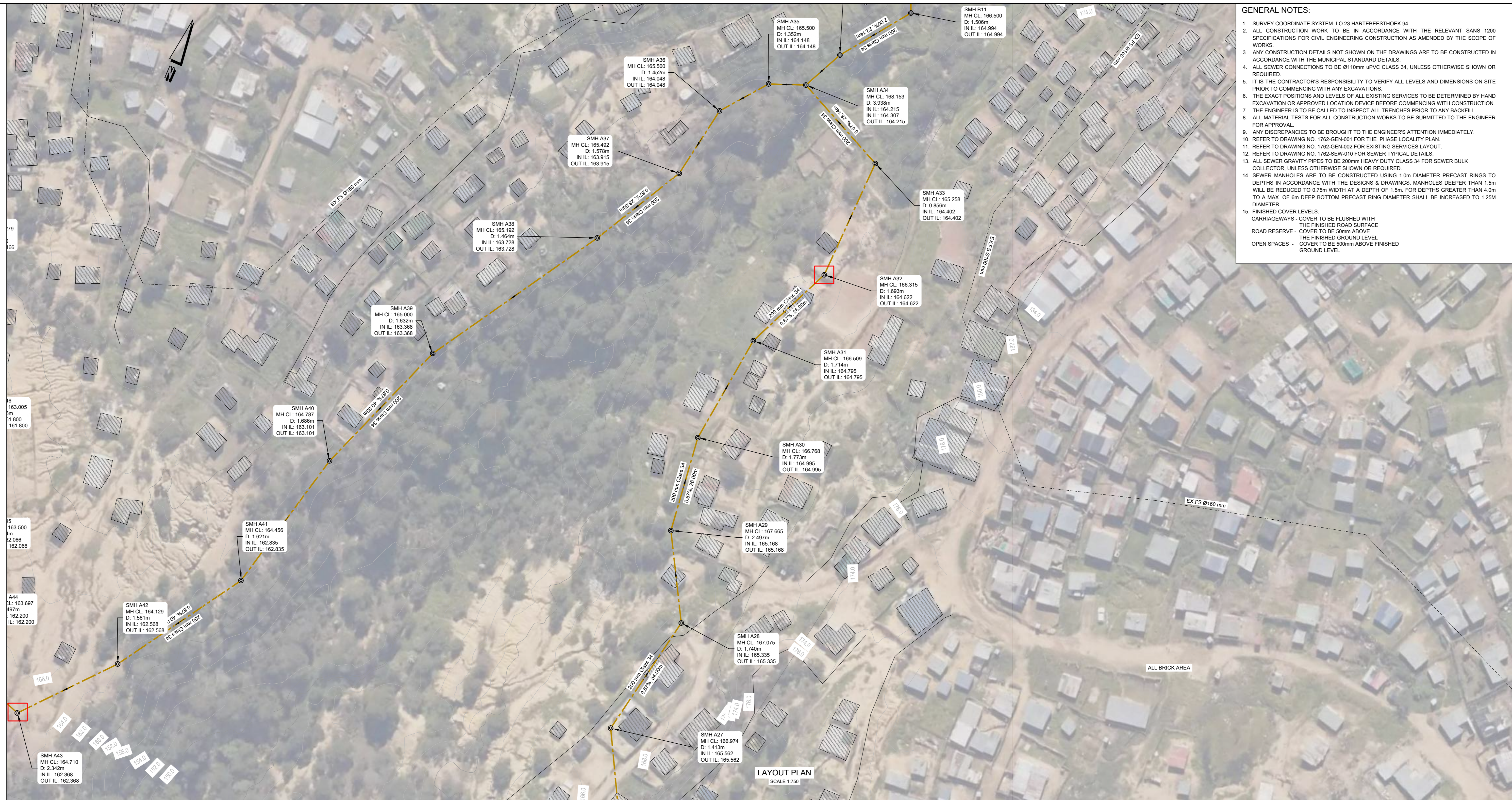
SCALE	SHEET NO.	SHEET SIZE
AS SHOWN	SHEET 2 OF 7 SHEETS	A0

**DRAWING NO.** 1762-SEW-004 **REVISION** P1

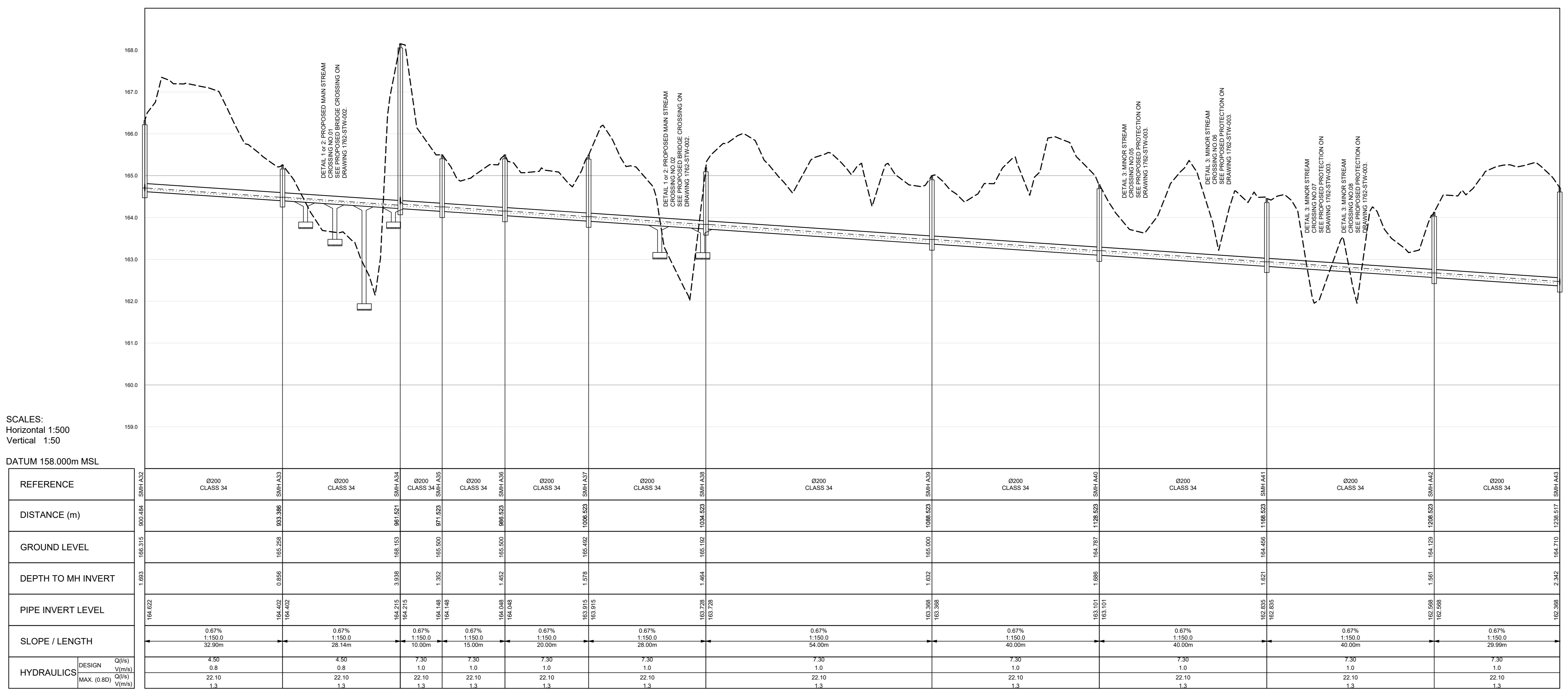
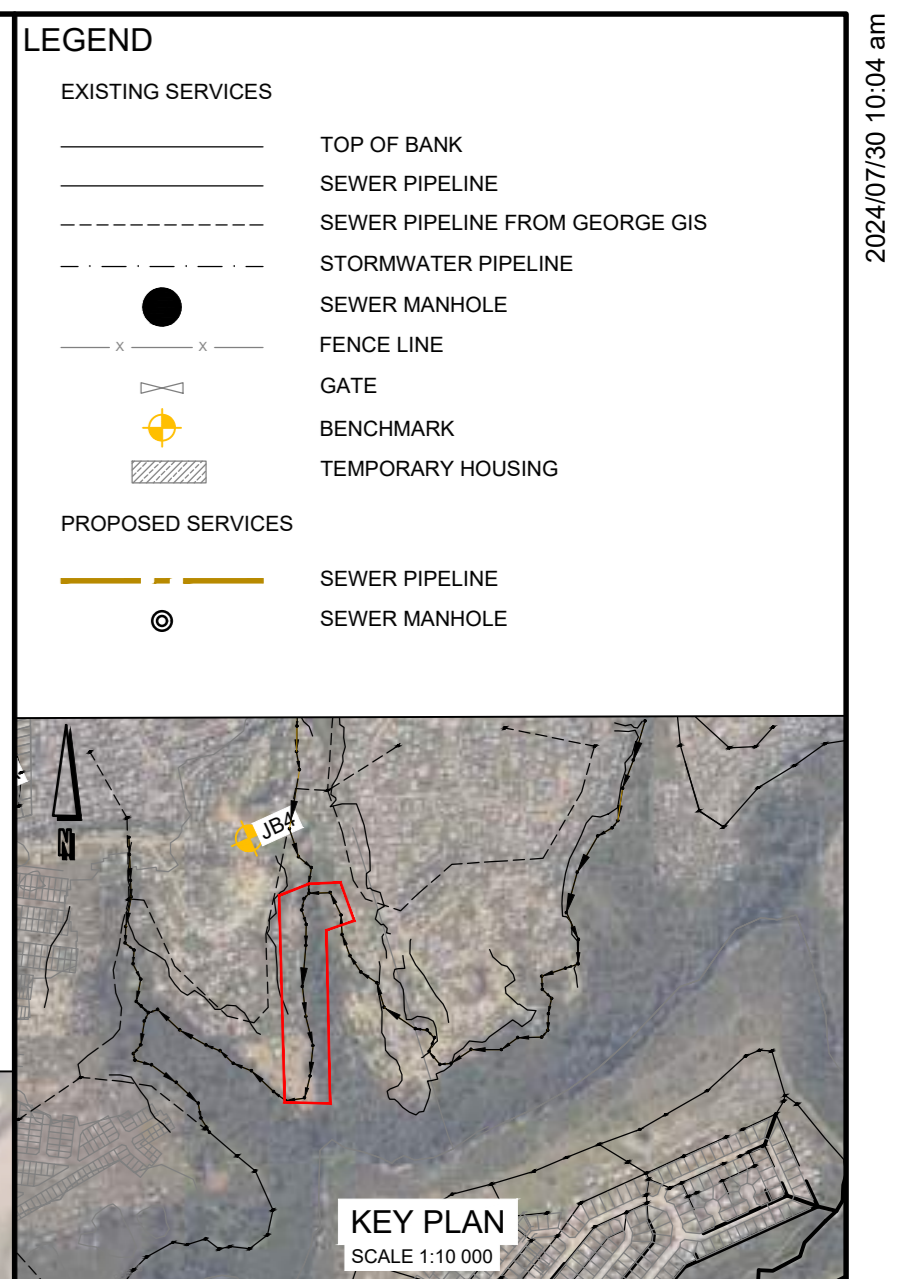


**SCALES:**  
Horizontal 1:500  
Vertical 1:50

**DATUM** 163.00m MSL



- GENERAL NOTES:**
- SURVEY COORDINATE SYSTEM: L023-NARTHEESTHOEK 04.
  - ALL CONSTRUCTION WORK TO BE IN ACCORDANCE WITH THE RELEVANT SANS 1200 SPECIFICATIONS FOR CIVIL ENGINEERING CONSTRUCTION AS AMENDED BY THE SCOPE OF WORKS.
  - ANY CONSTRUCTION DETAILS NOT SHOWN ON THE DRAWINGS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE MUNICIPAL STANDARD DETAILS.
  - ALL SEWER CONNECTIONS TO BE 215mm SFCV CLASS 34, UNLESS OTHERWISE SHOWN OR REQUIRED.
  - IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL LEVELS AND DIMENSIONS ON SITE PRIOR TO COMMENCING WITH ANY EXCAVATIONS.
  - THE EXACT POSITIONS AND LEVELS OF ALL EXISTING SERVICES TO BE DETERMINED BY HAND EXCAVATION OR APPROVED LOCATION SERVICE BEFORE COMMENCING WITH CONSTRUCTION.
  - THE ENGINEER IS TO BE CALLED TO INSPECT ALL TRENCHES PRIOR TO ANY BACKFILL.
  - ALL MATERIALS TESTS FOR ALL CONSTRUCTION WORKS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
  - ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.
  - REFER TO DRAWING NO. 1762-GEN002 FOR THE PHASE LOCALITY PLAN.
  - REFER TO DRAWING NO. 1762-GEN002 FOR EXISTING SERVICES LAYOUT.
  - REFER TO DRAWING NO. 1762-SEW-010 FOR SEWER TYPICAL DETAILS.
  - ALL SEWER GRAVITY PIPES TO BE 200mm HEAVY DUTY CLASS 34 FOR SEWER BULK COLLECTOR, UNLESS OTHERWISE SHOWN OR REQUIRED.
  - SEWER MANHOLES ARE TO BE CONSTRUCTED USING 1.0m DIAMETER PRECAST RINGS TO DEPTHS IN ACCORDANCE WITH THE DESIGNS & DRAWINGS. MANHOLES DEEPER THAN 1.5m WILL BE REDUCED TO 0.75m WIDTH AT A DEPTH OF 1.5m. FOR DEPTHS GREATER THAN 4.0m TO A MAX. OF 6m DEEP BOTTOM PRECAST RING DIAMETER SHALL BE INCREASED TO 1.25m DIAMETER.
  - FINISHED COVER LEVELS:
    - CARRIAGEWAYS - COVER TO BE FLUSH WITH THE FINISHED ROAD SURFACE.
    - ROAD RESERVE - COVER TO BE 50mm ABOVE.
    - OPEN SPACES - COVER TO BE 50mm ABOVE FINISHED GROUND LEVEL.



SCALES:  
Horizontal 1:500  
Vertical 1:50

DATUM 158.00m MSL

REFERENCE	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34	0200 CLASS 34
DISTANCE (m)	000.00	000.00	000.00	000.00	000.00	000.00	000.00	000.00	000.00	000.00	000.00	000.00	000.00	000.00	000.00
GROUND LEVEL	166.402	166.298	166.215	166.148	166.085	166.028	165.975	165.925	165.875	165.825	165.775	165.725	165.675	165.625	165.575
DEPTH TO MH INVERT	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
PIPE INVERT LEVEL	166.402	166.298	166.215	166.148	166.085	166.028	165.975	165.925	165.875	165.825	165.775	165.725	165.675	165.625	165.575
SLOPE / LENGTH	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0	0.67% 1:150.0
HYDRAULICS	DESIGN Q(m³/s)	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
	MAX. (0.85) Q(m³/s)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	22.10	22.10	22.10	22.10	22.10	22.10	22.10	22.10	22.10	22.10	22.10	22.10	22.10	22.10	22.10
	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3

No	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023

SURVEYED: -

DRAWN: S KULU, K POTGIETER NOV 2023

DESIGNED: S KULU, K POTGIETER NOV 2023

CHECKED: K POTGIETER NOV 2023

APPROVED: PR REGISTRATION NO: 201770064 DATE: 2024/07/30

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**GEORGE**  
THE CITY OF LOCAL GOVERNMENTS  
**GEORGE LOCAL MUNICIPALITY**

PROJECT TITLE:  
**THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2**

DRAWING TITLE:  
**PORTION 2 BULK SEWER LAYOUT PLAN SMH A32 - SMH A43**

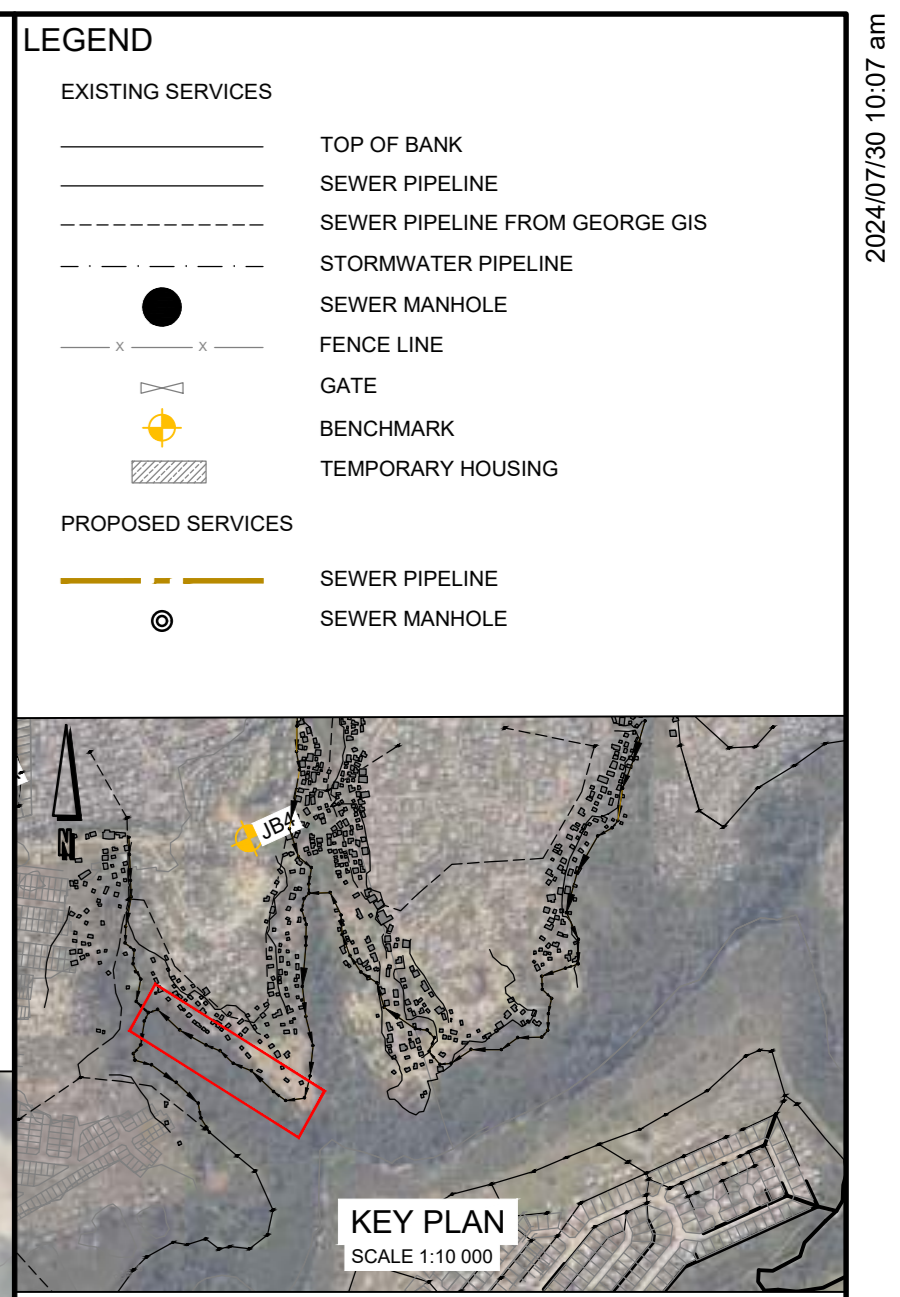
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DRAWING No.: 1762-SEW-005 REVISION: P1

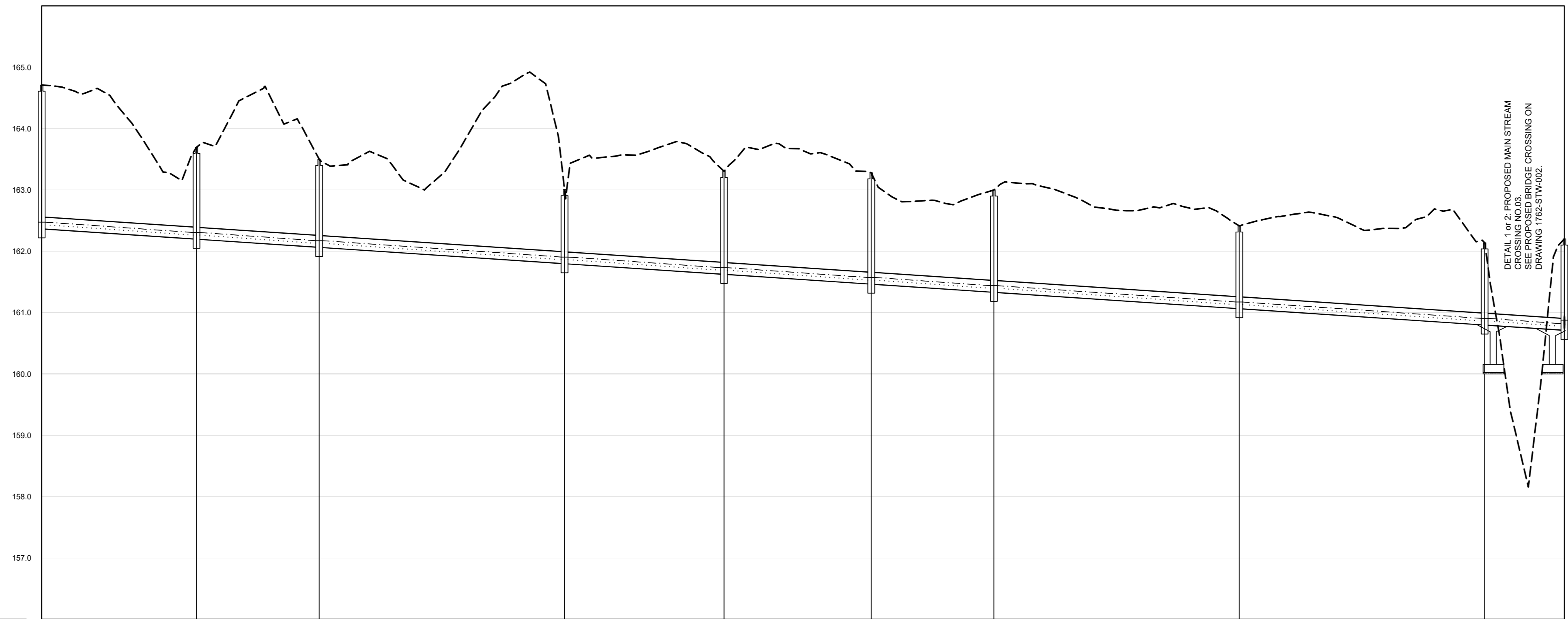
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- GENERAL NOTES:**
1. SURVEY COORDINATE SYSTEM: L0 23 NARTHEESTHOEK 04.
  2. ALL CONSTRUCTION WORK TO BE IN ACCORDANCE WITH THE RELEVANT SANS 1200 SPECIFICATIONS FOR CIVIL ENGINEERING CONSTRUCTION AS AMENDED BY THE SCOPE OF WORKS.
  3. ANY CONSTRUCTION DETAILS NOT SHOWN ON THE DRAWINGS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE MUNICIPAL STANDARD DETAILS.
  4. ALL SEWER CONNECTIONS TO BE Ø150mm SFC CLASS 34, UNLESS OTHERWISE SHOWN OR REQUIRED.
  5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL LEVELS AND DIMENSIONS ON SITE PRIOR TO COMMENCING WITH ANY EXCAVATIONS.
  6. THE EXACT POSITIONS AND LEVELS OF ALL EXISTING SERVICES TO BE DETERMINED BY HAND EXCAVATION OR APPROVED LOCATION SERVICE BEFORE COMMENCING WITH CONSTRUCTION.
  7. THE ENGINEER IS TO BE CALLED TO INSPECT ALL TRENCHES PRIOR TO ANY BACKFILL.
  8. ALL MATERIAL TESTS FOR ALL CONSTRUCTION WORKS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
  9. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.
  10. REFER TO DRAWING NO. 1762-GEN-001 FOR THE PHASE LOCALITY PLAN.
  11. REFER TO DRAWING NO. 1762-GEN-002 FOR EXISTING SERVICES LAYOUT.
  12. REFER TO DRAWING NO. 1762-GEN-010 FOR SEWER TYPICAL DETAILS.
  13. ALL SEWER GRAVITY PIPES TO BE 200mm HEAVY DUTY CLASS 34 FOR SEWER BULK COLLECTOR, UNLESS OTHERWISE SHOWN OR REQUIRED.
  14. SEWER MANHOLES ARE TO BE CONSTRUCTED USING 1.0m DIAMETER PRECAST RINGS TO DEPTHS IN ACCORDANCE WITH THE DESIGNS & DRAWINGS. MANHOLES DEEPER THAN 1.5m WILL BE REDUCED TO 0.75m WIDTH AT A DEPTH OF 1.5m. FOR DEPTHS GREATER THAN 4.0m TO A MAX. OF 6m DEEP BOTTOM PRECAST RING DIAMETER SHALL BE INCREASED TO 1.25m DIAMETER.
  15. FINISHED COVER LEVELS - COVER TO BE FLUSHED WITH THE FINISHED ROAD SURFACE. ROAD RESERVE - COVER TO BE 50mm ABOVE THE FINISHED GROUND LEVEL. OPEN SPACES - COVER TO BE 50mm ABOVE FINISHED GROUND LEVEL.



**LAYOUT PLAN**  
SCALE 1:750



**SCALES:**  
Horizontal 1:500  
Vertical 1:50

**DATUM 156.000m MSL**

REFERENCE	SMH A43	SMH A44	SMH A45	SMH A46	SMH A47	SMH A48	SMH A49	SMH A50	SMH A51	SMH A52
DISTANCE (m)	0+00	0+200	0+400	0+600	0+800	1+000	1+200	1+400	1+600	1+800
GROUND LEVEL	162.110	163.027	163.126	163.500	163.279	163.000	162.413	162.136	162.106	162.201
DEPTH TO MH INVERT	2.332	1.497	1.434	1.236	1.877	1.813	1.667	1.338	1.488	1.488
PIPE INVERT LEVEL	162.298	162.200	162.298	162.264	161.402	161.466	161.333	160.800	160.618	160.713
SLOPE / LENGTH	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%
HYDRAULICS	DESIGN V <sub>max</sub> (0.85) 2.10	DESIGN V <sub>max</sub> (0.85) 2.10	DESIGN V <sub>max</sub> (0.85) 2.10	DESIGN V <sub>max</sub> (0.85) 2.10	DESIGN V <sub>max</sub> (0.85) 2.10	DESIGN V <sub>max</sub> (0.85) 2.10	DESIGN V <sub>max</sub> (0.85) 2.10	DESIGN V <sub>max</sub> (0.85) 2.10	DESIGN V <sub>max</sub> (0.85) 2.10	DESIGN V <sub>max</sub> (0.85) 2.10

No	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023

PR REGISTRATION NO. 201770094 DATE: 2024/07/30

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EMAIL: g@lukhozi.co.za  
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**PROJECT TITLE**  
THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2

**DRAWING TITLE**  
PORTION 2 BULK SEWER LAYOUT PLAN  
SMH A42 - SMH A52

**SCALE**  
AS SHOWN

**SHEET SET**  
SHEET 4 OF 7 SHEETS

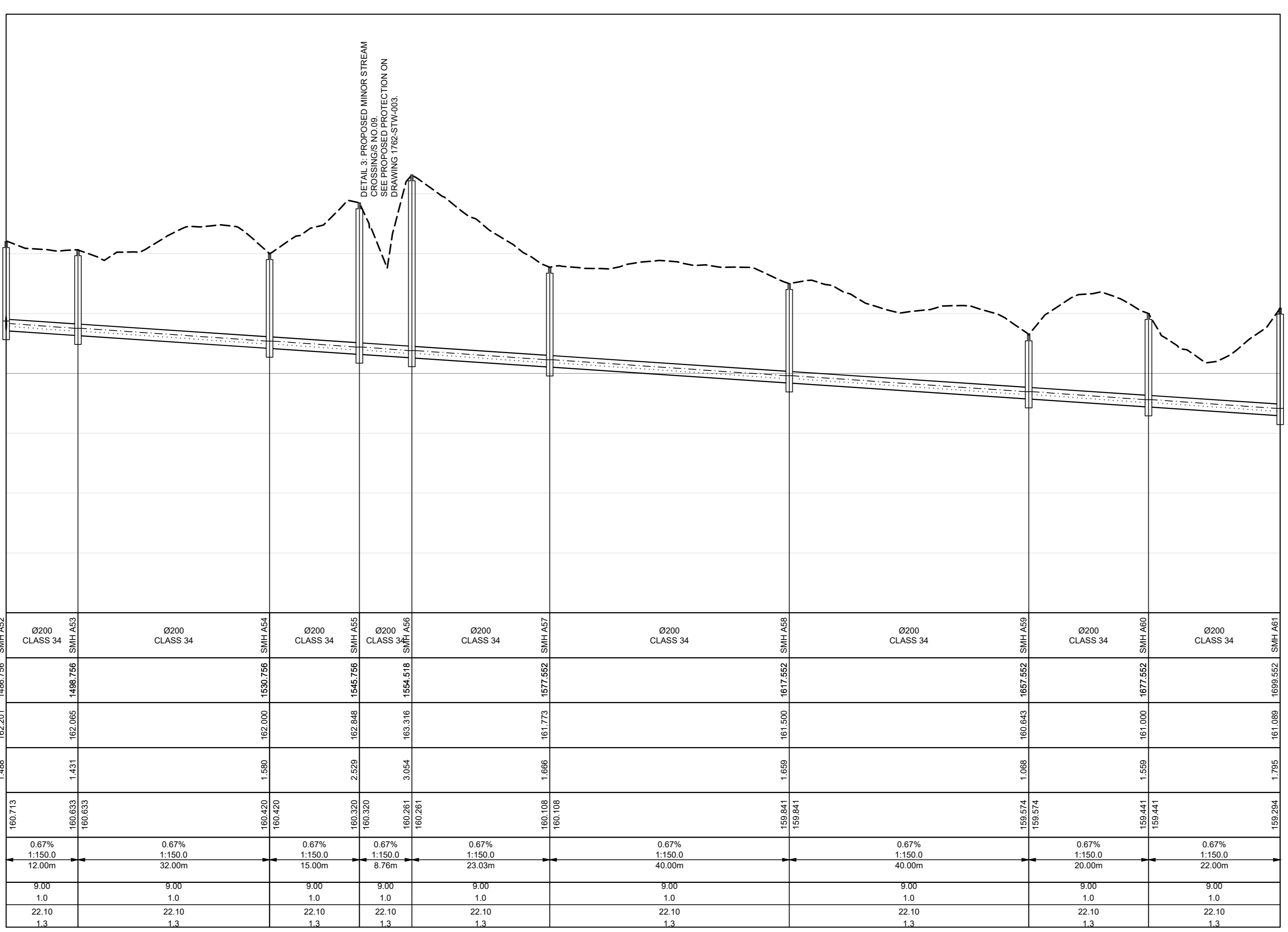
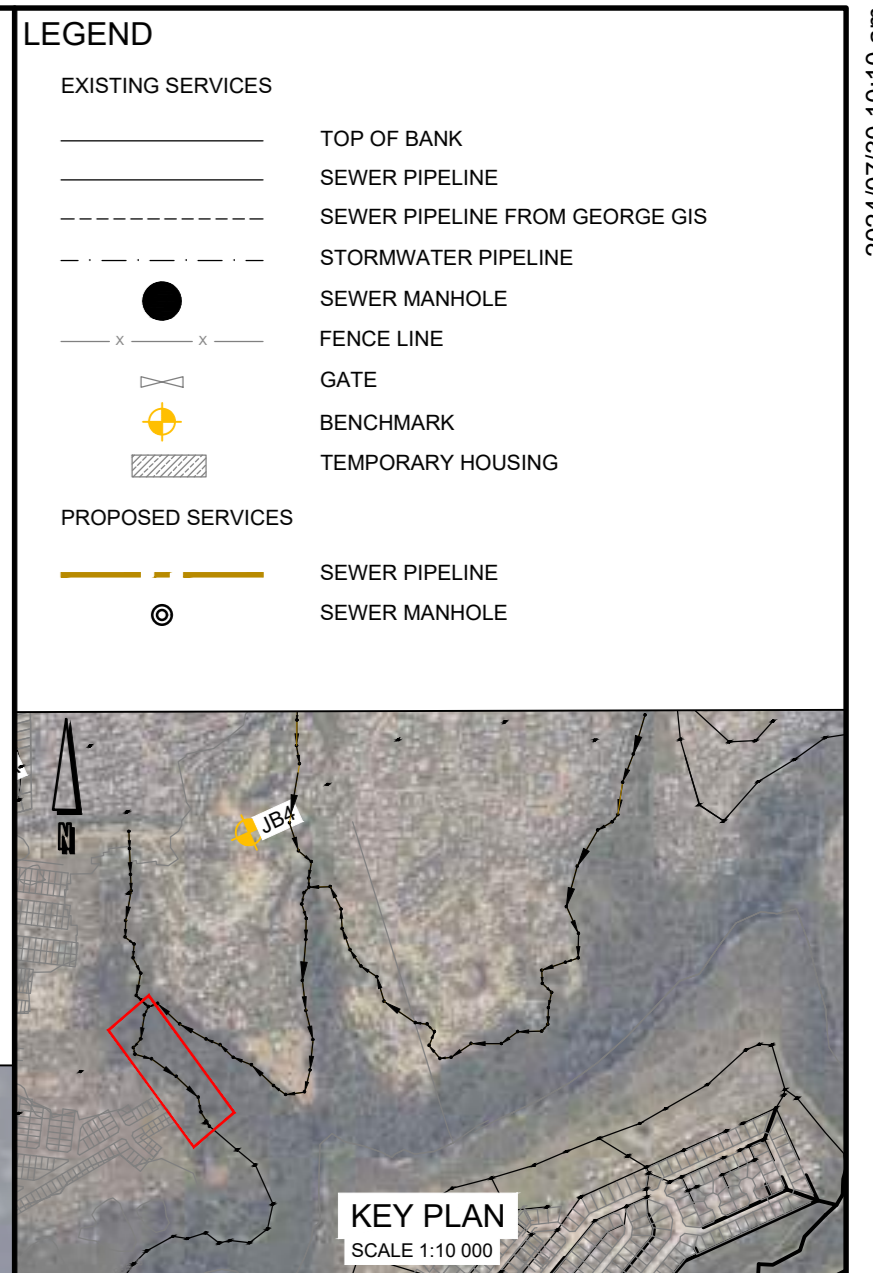
**SHEET NO**  
A0

**DRAWING No.**  
1762-SEW-006

**REVISION**  
P1



- GENERAL NOTES:**
1. SURVEY COORDINATE SYSTEM: L023-NARTERBESTHOEK 04.
  2. ALL CONSTRUCTION WORK TO BE IN ACCORDANCE WITH THE RELEVANT SANS 1200 SPECIFICATIONS FOR CIVIL ENGINEERING CONSTRUCTION AS AMENDED BY THE SCOPE OF WORKS.
  3. ANY CONSTRUCTION DETAILS NOT SHOWN ON THE DRAWINGS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE MUNICIPAL STANDARD DETAILS.
  4. ALL SEWER CONNECTIONS TO BE 210mm SFCV CLASS 34, UNLESS OTHERWISE SHOWN OR REQUIRED.
  5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL LEVELS AND DIMENSIONS ON SITE PRIOR TO COMMENCING WITH ANY EXCAVATIONS.
  6. THE EXACT POSITIONS AND LEVELS OF ALL EXISTING SERVICES TO BE DETERMINED BY HAND EXCAVATION OR APPROVED LOCATION DEVICE BEFORE COMMENCING WITH CONSTRUCTION.
  7. THE ENGINEER IS TO BE CALLED TO INSPECT ALL TRENCHES PRIOR TO ANY BACKFILL.
  8. ALL MATERIAL TESTS FOR ALL CONSTRUCTION WORKS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
  9. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.
  10. REFER TO DRAWING NO. 1762-GEN-001 FOR THE PHASE LOCALITY PLAN.
  11. REFER TO DRAWING NO. 1762-GEN-002 FOR EXISTING SERVICES LAYOUT.
  12. REFER TO DRAWING NO. 1762-SEW-010 FOR SEWER TYPICAL DETAILS.
  13. ALL SEWER GRAVITY PIPES TO BE 200mm HEAVY DUTY CLASS 34 FOR SEWER BULK COLLECTOR, UNLESS OTHERWISE SHOWN OR REQUIRED.
  14. SEWER MANHOLES ARE TO BE CONSTRUCTED USING 1.0m DIAMETER PRECAST RINGS TO DEPTHS IN ACCORDANCE WITH THE DESIGNS & DRAWINGS. MANHOLES DEEPER THAN 1.5m WILL BE REDUCED TO 0.75m WIDTH AT A DEPTH OF 1.5m. FOR DEPTHS GREATER THAN 4.0m TO A MAX. OF 6m DEEP BOTTOM PRECAST RING DIAMETER SHALL BE INCREASED TO 1.25m DIAMETER.
  15. FINISHED COVER LEVELS:
    - CARRIAGEWAYS - COVER TO BE FLUSHED WITH THE FINISHED ROAD SURFACE.
    - ROAD RESERVE - COVER TO BE 50mm ABOVE THE FINISHED GROUND LEVEL.
    - OPEN SPACES - COVER TO BE 50mm ABOVE FINISHED GROUND LEVEL.



**SCALES:**  
Horizontal 1:500  
Vertical 1:50

**DATUM 156.000m MSL**

REFERENCE	0+00 CLASS 34 SMH A52	0+20 CLASS 34 SMH A53	0+40 CLASS 34 SMH A54	0+60 CLASS 34 SMH A55	0+80 CLASS 34 SMH A56	1+00 CLASS 34 SMH A57	1+20 CLASS 34 SMH A58	1+40 CLASS 34 SMH A59	1+60 CLASS 34 SMH A60	1+80 CLASS 34 SMH A61
DISTANCE (m)	0.00	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00
GROUND LEVEL	160.713	160.653	160.600	160.550	160.500	160.450	160.400	160.350	160.300	160.250
DEPTH TO MH INVERT	1.080	1.431	1.880	2.329	2.778	3.227	3.676	4.125	4.574	5.023
PIPE INVERT LEVEL	159.633	159.219	158.720	158.221	157.722	157.223	156.724	156.225	155.726	155.227
SLOPE / LENGTH	0.67% 1:150.0 12.00m	0.67% 1:150.0 32.00m	0.67% 1:150.0 15.00m	0.67% 1:150.0 8.70m	0.67% 1:150.0 23.00m	0.67% 1:150.0 40.00m	0.67% 1:150.0 20.00m	0.67% 1:150.0 22.00m	0.67% 1:150.0 22.00m	0.67% 1:150.0 22.00m
HYDRAULICS	DESIGN Q(m³/s) 1.0	DESIGN Q(m³/s) 1.0	DESIGN Q(m³/s) 1.0	DESIGN Q(m³/s) 1.0	DESIGN Q(m³/s) 1.0	DESIGN Q(m³/s) 1.0	DESIGN Q(m³/s) 1.0	DESIGN Q(m³/s) 1.0	DESIGN Q(m³/s) 1.0	DESIGN Q(m³/s) 1.0
	MAX. (0.8) V(m/s) 1.3	MAX. (0.8) V(m/s) 1.3	MAX. (0.8) V(m/s) 1.3	MAX. (0.8) V(m/s) 1.3	MAX. (0.8) V(m/s) 1.3	MAX. (0.8) V(m/s) 1.3	MAX. (0.8) V(m/s) 1.3	MAX. (0.8) V(m/s) 1.3	MAX. (0.8) V(m/s) 1.3	MAX. (0.8) V(m/s) 1.3

No	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023
SURVEYED	-	-	-
DRAWN	S KULU		NOV 2023
DESIGNED	S KULU, K POTGIETER		NOV 2023
CHECKED	K POTGIETER		NOV 2023
APPROVED			
	PR REGISTRATION NO. 201770064	DATE: 2024/07/30	

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WEB: www.lukhozi.co.za

**GEORGE**  
THE CITY OF LOCAL GOVERNMENTS

**GEORGE LOCAL MUNICIPALITY**

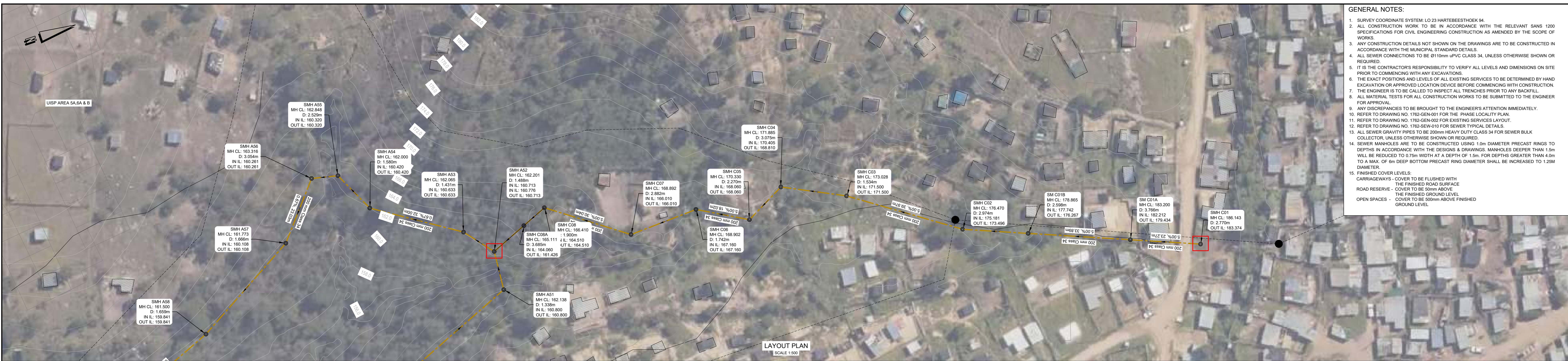
**PROJECT TITLE**  
THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2

**DRAWING TITLE**  
PORTION 2 BULK SEWER LAYOUT PLAN  
SMH A52 - SMH A61

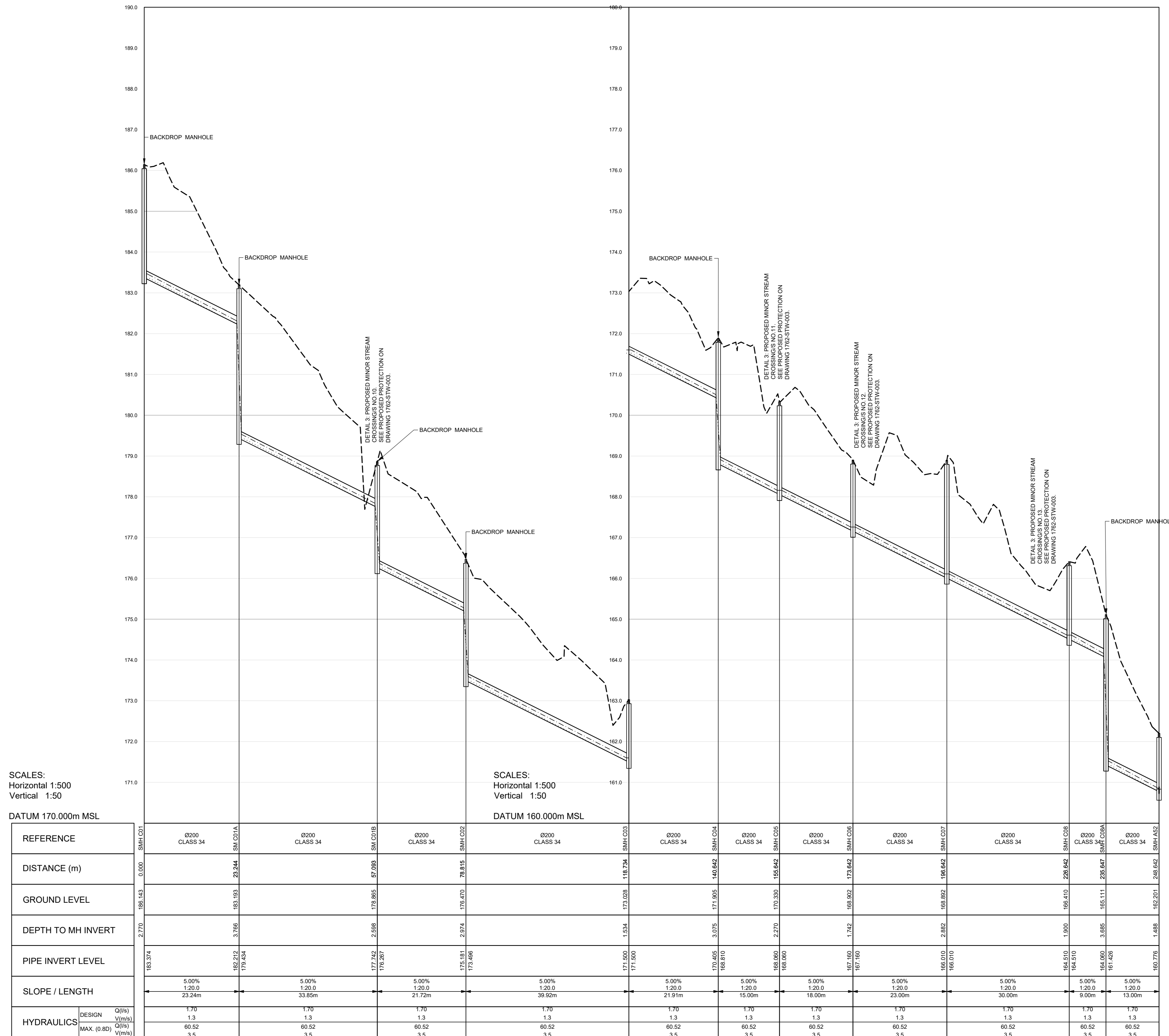
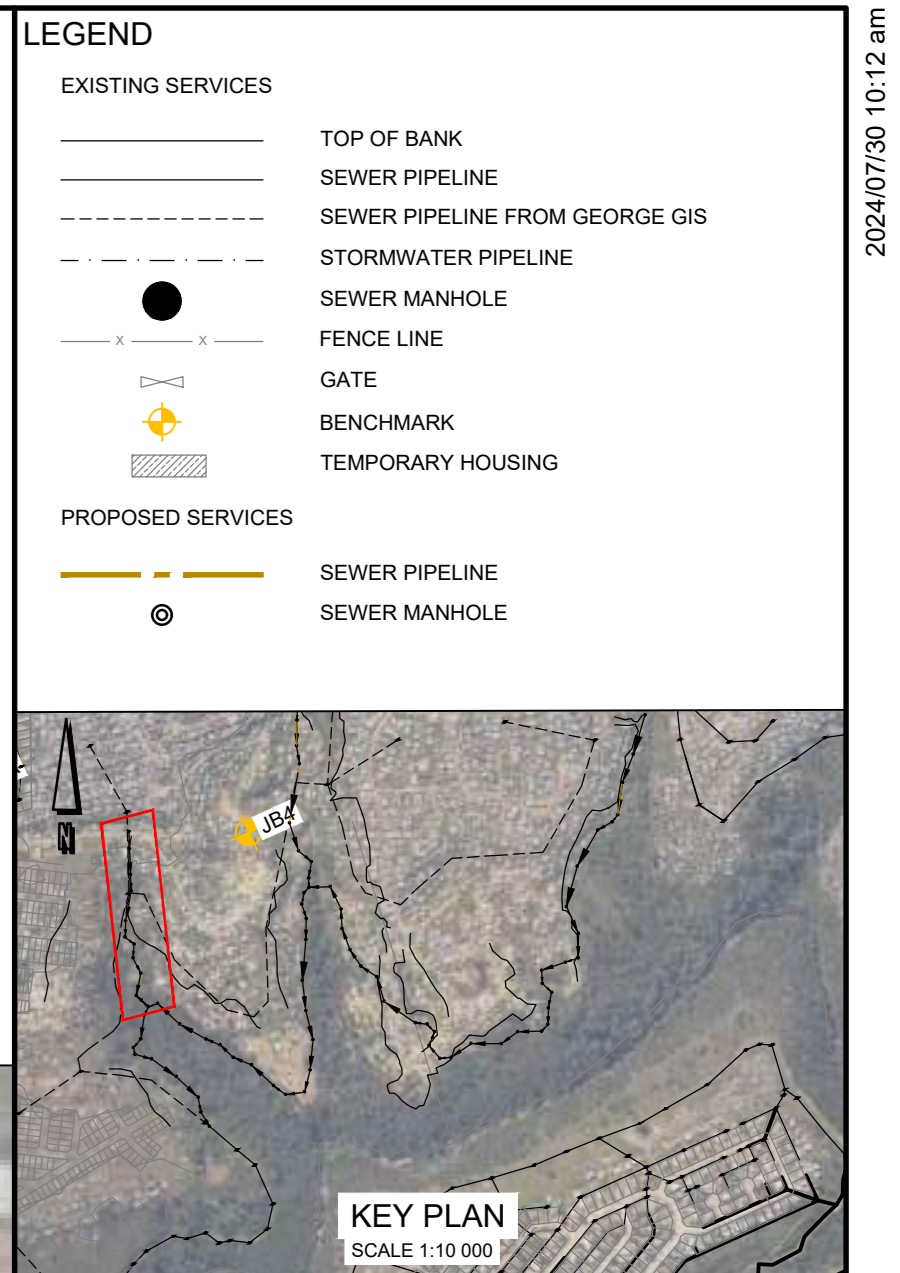
SCALE: AS SHOWN SHEET SET SHEET 5 OF 7 SHEETS SHEET NO: A0

DRAWING NO.: 1762-SEW-007 REVISION: P1

P:\051702 Thembaletu Bulk Sewer Phase 3 and 4 - Design - Drawings\05 Sewer\1762-SEW-003 Layout\2 Layout.dwg 2024/07/30 10:10 am



- GENERAL NOTES:**
- SURVEY COORDINATE SYSTEM: L023-NARTREESTRHOEK 04.
  - ALL CONSTRUCTION WORK TO BE IN ACCORDANCE WITH THE RELEVANT SANS 1200 SPECIFICATIONS FOR CIVIL ENGINEERING CONSTRUCTION AS AMENDED BY THE SCOPE OF WORKS.
  - ANY CONSTRUCTION DETAILS NOT SHOWN ON THE DRAWINGS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE MUNICIPAL STANDARD DETAILS.
  - ALL SEWER CONNECTIONS TO BE 200mm JFDV CLASS 34, UNLESS OTHERWISE SHOWN OR REQUIRED.
  - IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL LEVELS AND DIMENSIONS ON SITE PRIOR TO COMMENCING WITH ANY EXCAVATIONS.
  - THE EXACT POSITIONS AND LEVELS OF ALL EXISTING SERVICES TO BE DETERMINED BY HAND EXCAVATION OR APPROVED LOCATION DEVICE BEFORE COMMENCING WITH CONSTRUCTION.
  - THE ENGINEER IS TO BE CALLED TO INSPECT ALL TRENCHES PRIOR TO ANY BACKFILL.
  - ALL MATERIAL TESTS FOR ALL CONSTRUCTION WORKS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
  - ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.
  - REFER TO DRAWING NO. 1762-GEN-001 FOR THE PHASE LOCALITY PLAN.
  - REFER TO DRAWING NO. 1762-GEN-002 FOR EXISTING SERVICES LAYOUT.
  - REFER TO DRAWING NO. 1762-SEW-010 FOR SEWER TYPICAL DETAILS.
  - ALL SEWER GRAVITY PIPES TO BE 200mm HEAVY DUTY CLASS 34 FOR SEWER BULK COLLECTOR, UNLESS OTHERWISE SHOWN OR REQUIRED.
  - SEWER MANHOLES ARE TO BE CONSTRUCTED USING 1.0m DIAMETER PRECAST RINGS TO DEPTHS IN ACCORDANCE WITH THE DESIGNS & DRAWINGS. MANHOLES DEEPER THAN 1.5m WILL BE REDUCED TO 0.75m WIDTH AT A DEPTH OF 1.5m. FOR DEPTHS GREATER THAN 4.0m TO A MAX. OF 60 DEEP BOTTOM PRECAST RING DIAMETER SHALL BE INCREASED TO 1.25m DIAMETER.
  - FINISHED COVER LEVELS: CARRIAGEWAYS - COVER TO BE FLUSHED WITH THE FINISHED ROAD SURFACE. COVER TO BE 50mm ABOVE. ROAD RESERVE - THE FINISHED GROUND LEVEL. OPEN SPACES - COVER TO BE 50mm ABOVE FINISHED GROUND LEVEL.



No	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023

SURVEYED: -  
DRAWN: S KULU, K POTGIETER, NOV 2023  
DESIGNED: S KULU, K POTGIETER, NOV 2023  
CHECKED: K POTGIETER, NOV 2023

APPROVED: [Signature]  
PR REGISTRATION NO: 201770064, DATE: 2024/07/30

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WWW: www.lukhozi.co.za

**GEORGE**  
THE CITY OF LOCAL GOVERNMENTS

**GEORGE LOCAL MUNICIPALITY**

PROJECT TITLE: **THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2**

DRAWING TITLE: **PORTION 2 BULK SEWER LAYOUT PLAN LINE C**

SCALE: AS SHOWN, SHEET SET: SHEET 6 OF 7 SHEETS, SHEET NO: A0

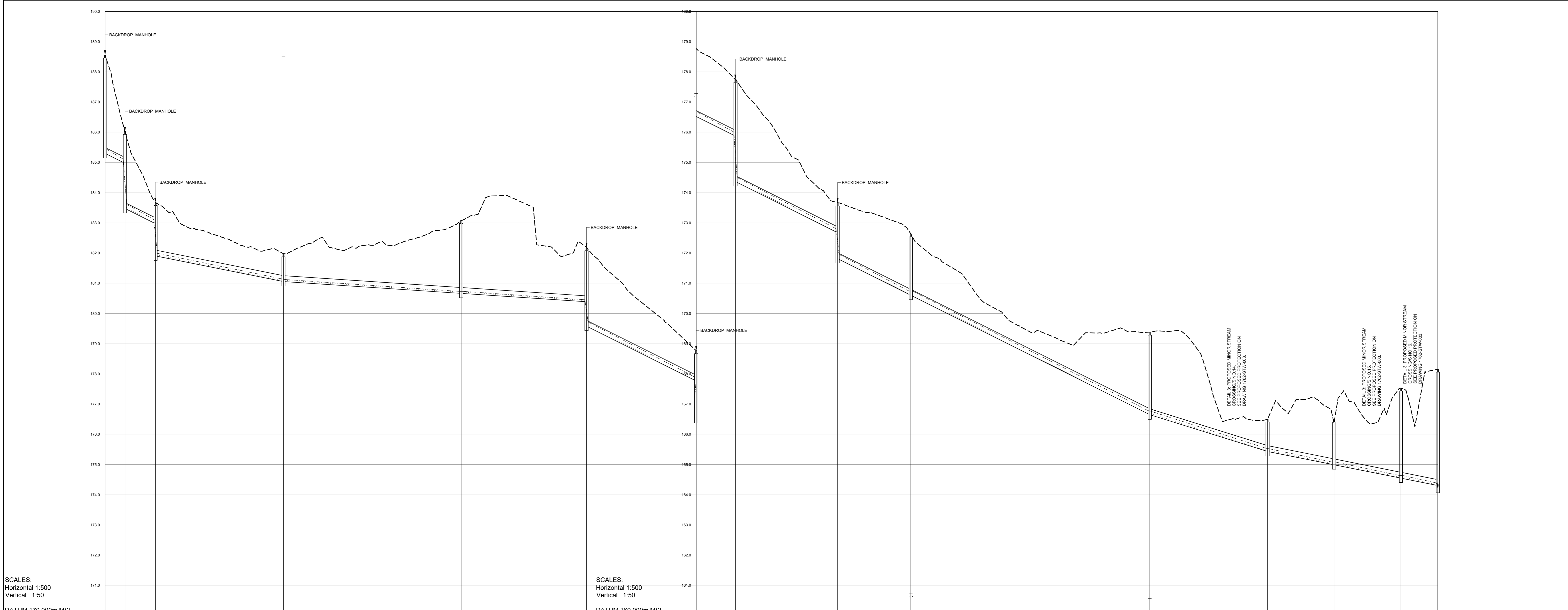
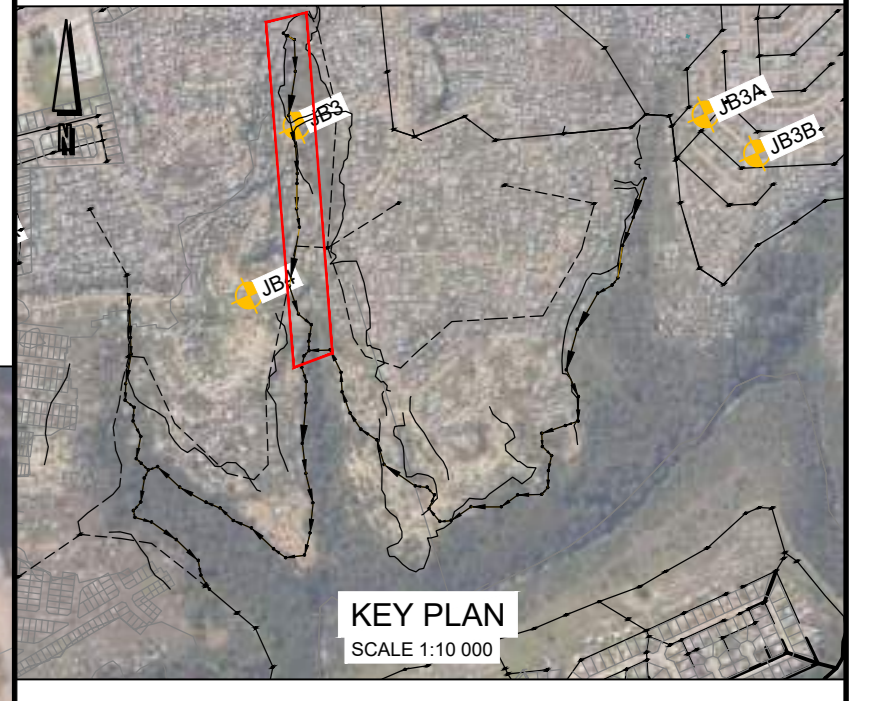
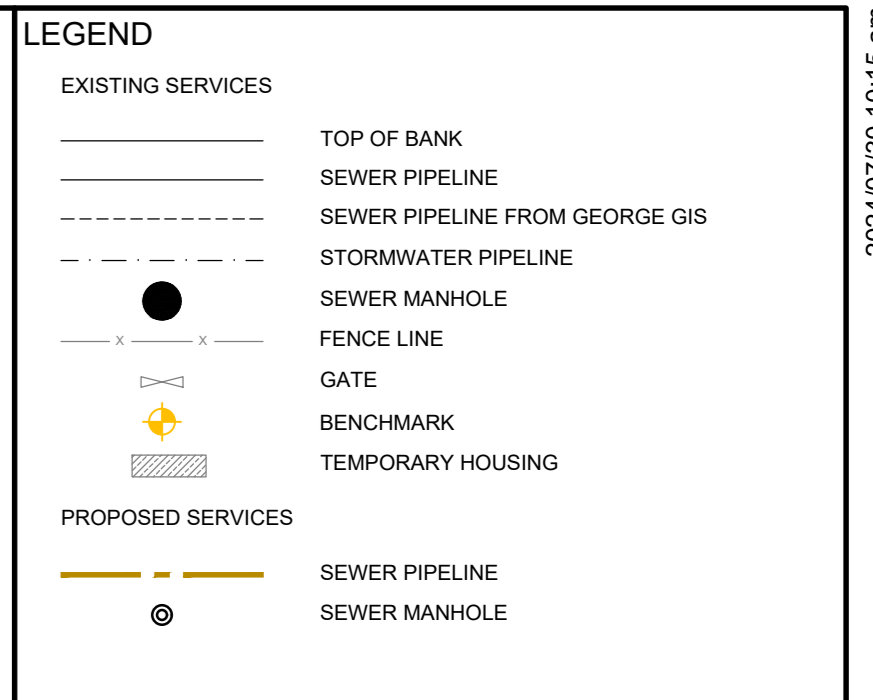
DRAWING No.: **1762-SEW-008**, REVISION: P1

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- GENERAL NOTES:**
1. SURVEY COORDINATE SYSTEM: L023/NARTERESTHOEK 04.
  2. ALL CONSTRUCTION WORK TO BE IN ACCORDANCE WITH THE RELEVANT SANS 1200 SPECIFICATIONS FOR CIVIL ENGINEERING CONSTRUCTION AS AMENDED BY THE SCOPE OF WORKS.
  3. ANY CONSTRUCTION DETAILS NOT SHOWN ON THE DRAWINGS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE MUNICIPAL STANDARD DETAILS.
  4. ALL SEWER CONNECTIONS TO BE 215mm JFDV CLASS 34, UNLESS OTHERWISE SHOWN OR REQUIRED.
  5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL LEVELS AND DIMENSIONS ON SITE PRIOR TO COMMENCING WITH ANY EXCAVATIONS.
  6. THE EXACT POSITIONS AND LEVELS OF ALL EXISTING SERVICES TO BE DETERMINED BY HAND EXCAVATION OR APPROVED LOCATION SERVICE BEFORE COMMENCING WITH CONSTRUCTION.
  7. THE ENGINEER IS TO BE CALLED TO INSPECT ALL TRENCHES PRIOR TO ANY BACKFILL.
  8. ALL MATERIAL TESTS FOR ALL CONSTRUCTION WORKS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
  9. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.
  10. REFER TO DRAWING NO. 1762-SEW-010 FOR THE PHASE LOCALITY PLAN.
  11. REFER TO DRAWING NO. 1762-GEN-002 FOR EXISTING SERVICES LAYOUT.
  12. REFER TO DRAWING NO. 1762-SEW-010 FOR SEWER TYPICAL DETAILS.
  13. ALL SEWER GRAVITY PIPES TO BE 200mm HEAVY DUTY CLASS 34 FOR SEWER BULK COLLECTOR, UNLESS OTHERWISE SHOWN OR REQUIRED.
  14. SEWER MANHOLES ARE TO BE CONSTRUCTED USING 1.0m DIAMETER PRECAST RINGS TO DEPTHS IN ACCORDANCE WITH THE DESIGNS & DRAWINGS. MANHOLES DEEPER THAN 4.5m WILL BE REDUCED TO 0.75m WIDTH AT A DEPTH OF 1.5m. FOR DEPTHS GREATER THAN 4.5m TO A MAX. OF 6m DEEP BOTTOM PRECAST RING DIAMETER SHALL BE INCREASED TO 1.25m DIAMETER.
  15. FINISHED COVER LEVELS: CARRIAGEWAYS - COVER TO BE FLUSHED WITH THE FINISHED ROAD SURFACE. ROAD RESERVE - COVER TO BE 50mm ABOVE THE FINISHED GROUND LEVEL. OPEN SPACES - COVER TO BE 50mm ABOVE FINISHED GROUND LEVEL.



REFERENCE	SMH B01	SMH A37	SMH A38	SMH A39	SMH B10	SMH B11	SMH B12	SMH B13	SMH B14	SMH B15	SMH B16	SMH B17	SMH B18	SMH B19	SMH B20	SMH B21	SMH B22	SMH B23	SMH B24
DISTANCE (m)	0+000	0+089	0+148	0+192	0+272	0+351	0+430	0+509	0+588	0+667	0+746	0+825	0+904	0+983	1+062	1+141	1+220	1+299	1+378
GROUND LEVEL	188.524	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522	188.522
DEPTH TO MH INVERT	3.257	2.643	1.786	1.832	2.412	2.096	2.096	2.096	2.096	2.096	2.096	2.096	2.096	2.096	2.096	2.096	2.096	2.096	2.096
PIPE INVERT LEVEL	185.267	185.879	186.736	186.690	186.110	186.426	186.426	186.426	186.426	186.426	186.426	186.426	186.426	186.426	186.426	186.426	186.426	186.426	186.426
SLOPE / LENGTH	5.00%	5.00%	2.80	2.80	0.67%	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
HYDRAULICS	DESIGN Q(m³/s)	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200
	Q(m³/s)	15.500	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140	10.140
	MAX. (0.80) V(m/s)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4

No	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023

APPROVED: DATE: 2024/07/30

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**GEORGE**  
THE CITY OF LOCAL GOVERNMENTS  
**GEORGE LOCAL MUNICIPALITY**

**PROJECT TITLE**  
THEMBALETHU BULK SEWER PHASE 3 & 4: PORTION 2

**DRAWING TITLE**  
PORTION 2 BULK SEWER LAYOUT PLAN LINE B

**SCALE**  
AS SHOWN

**SHEET SET**  
SHEET 7 OF 7 SHEETS

**SHEET SIZE**  
A0

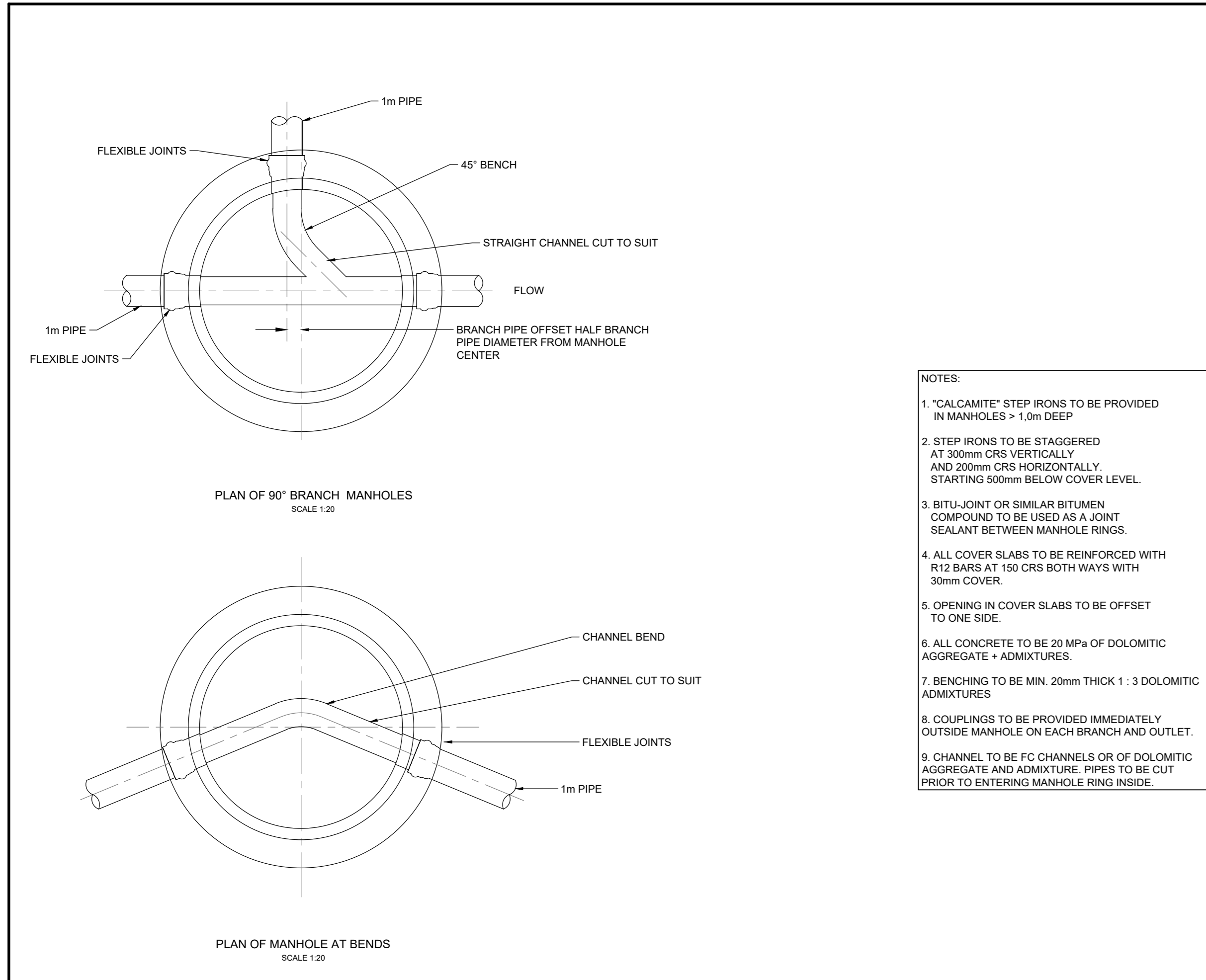
**REVISION**  
P1

SCALES:  
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Vertical 1:50

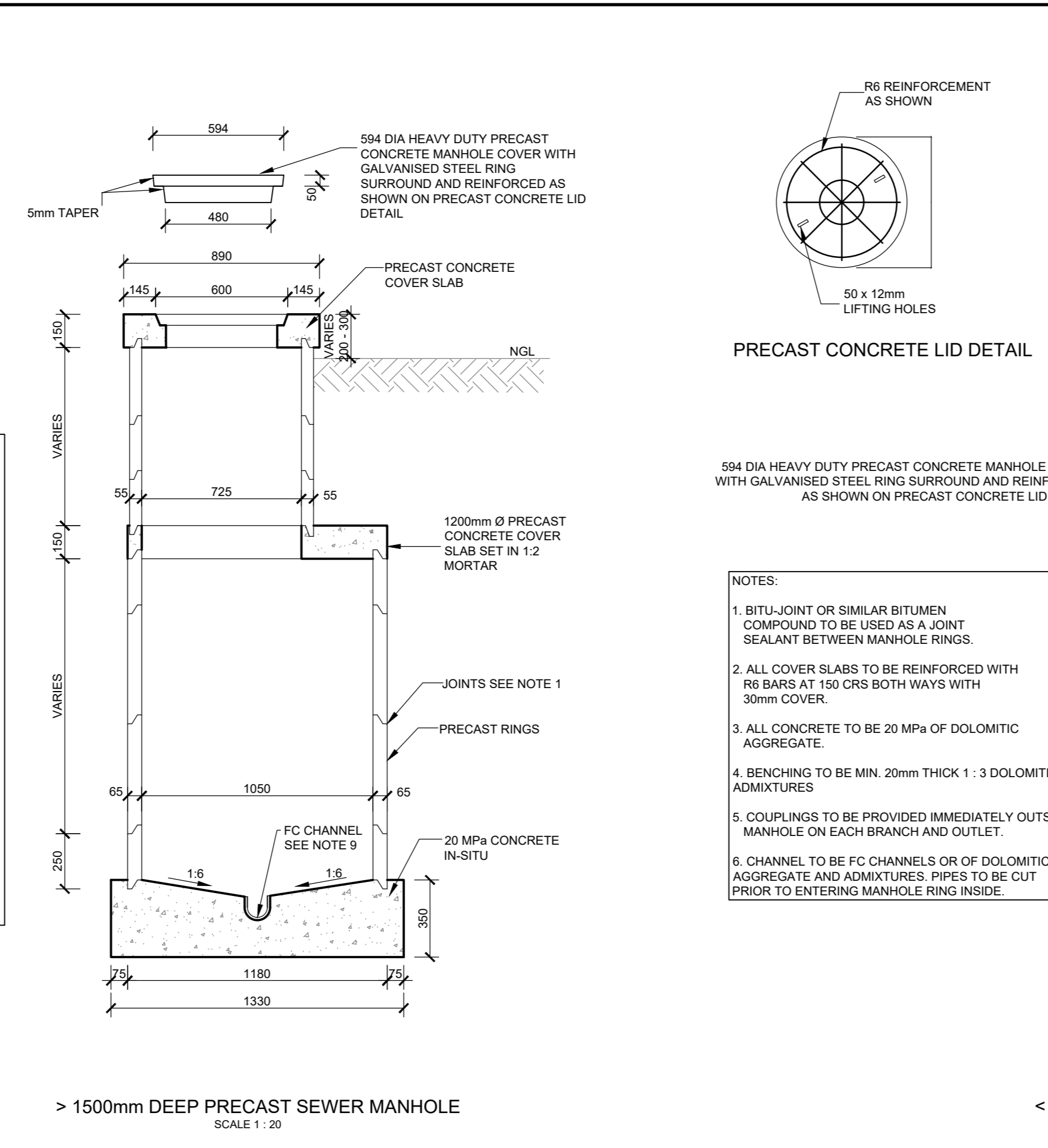
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SCALES:  
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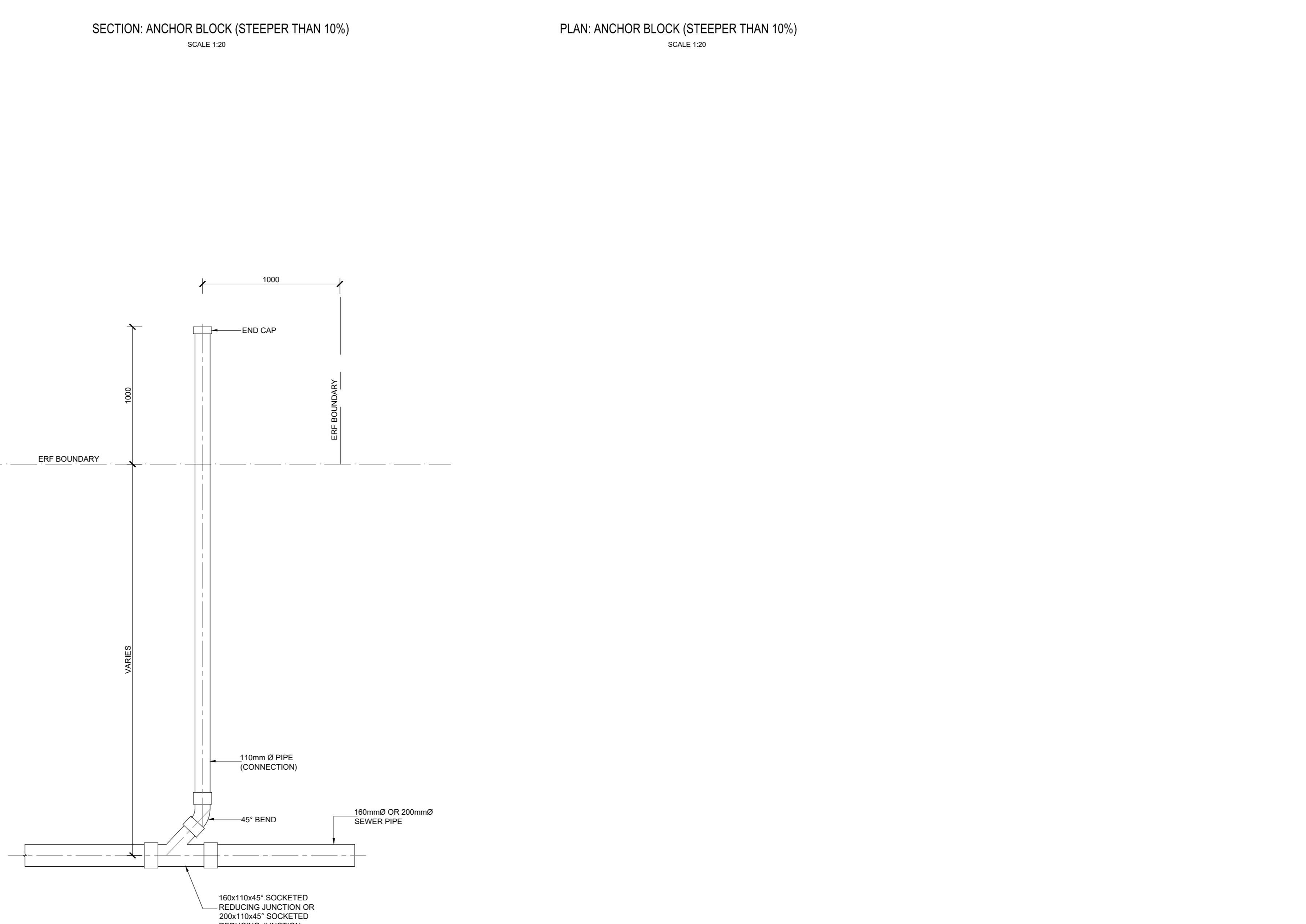
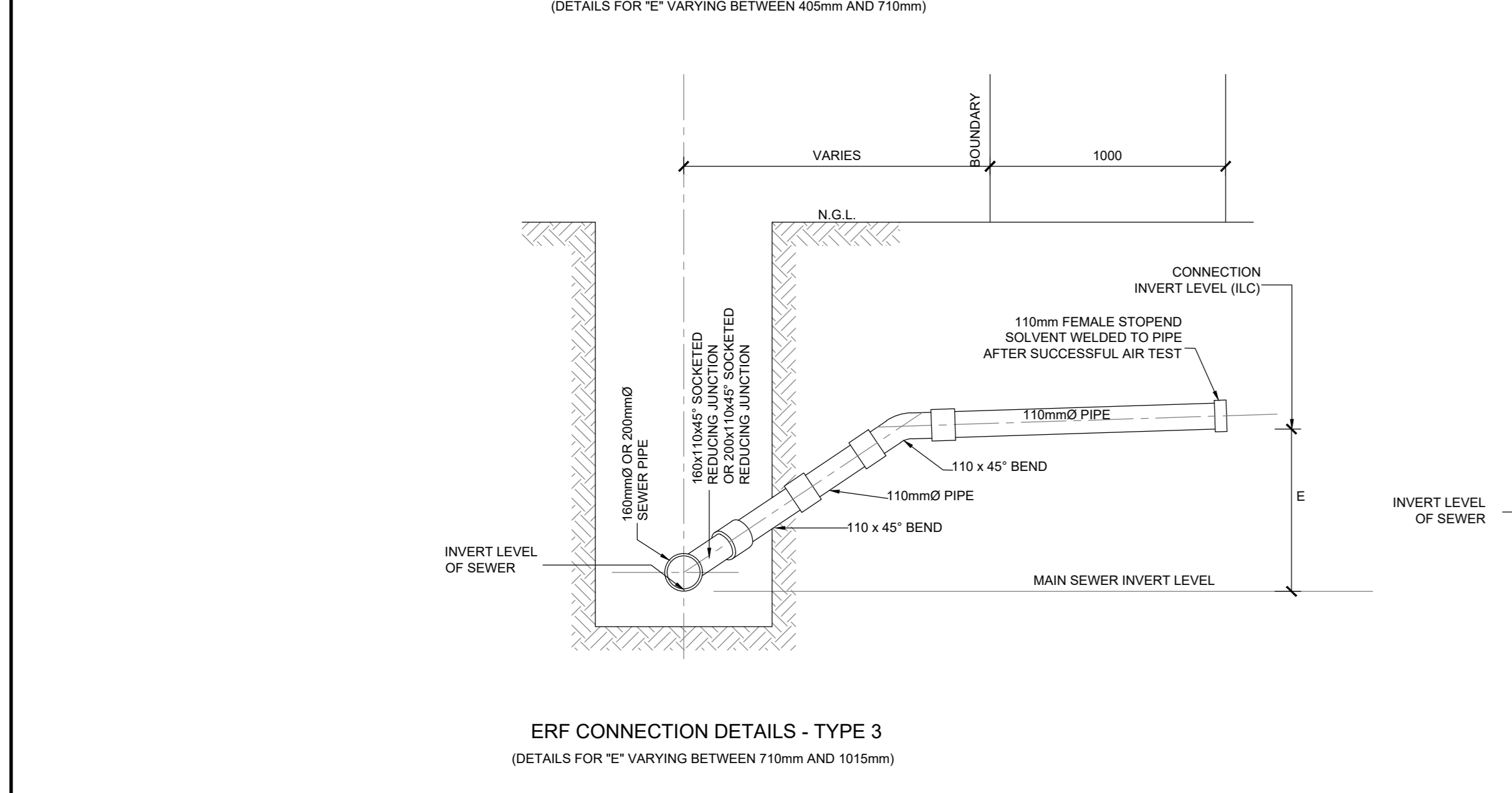
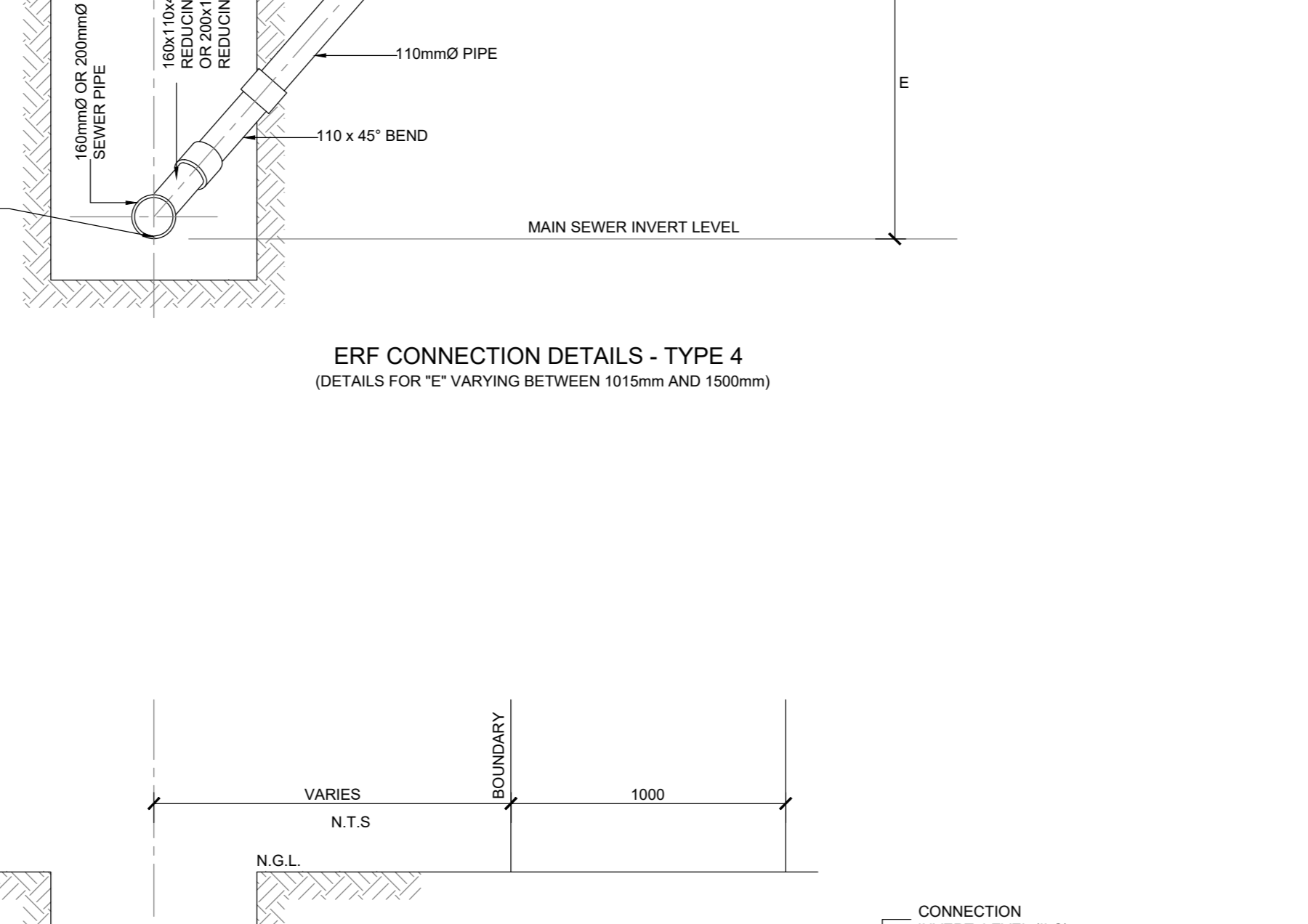
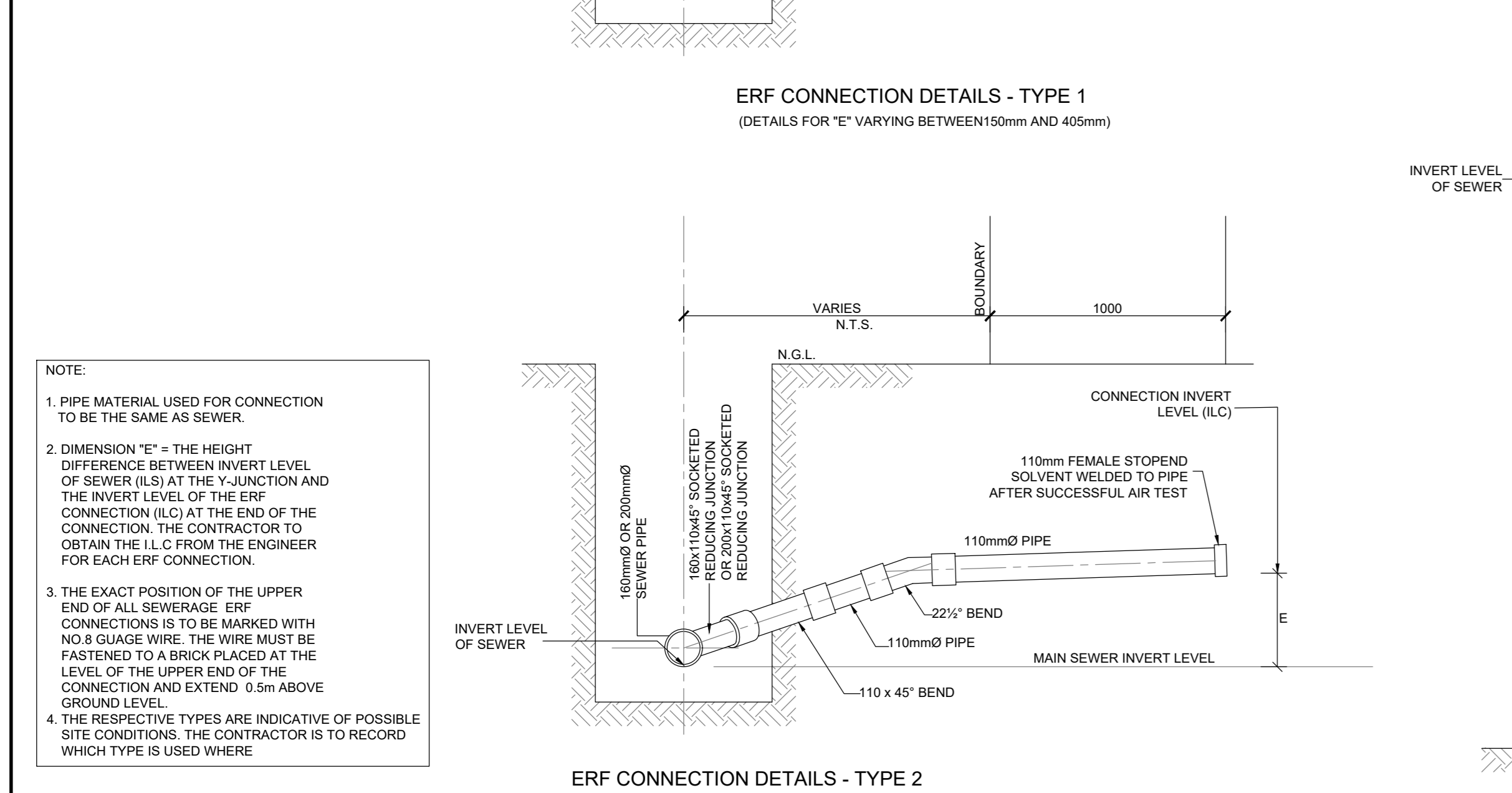
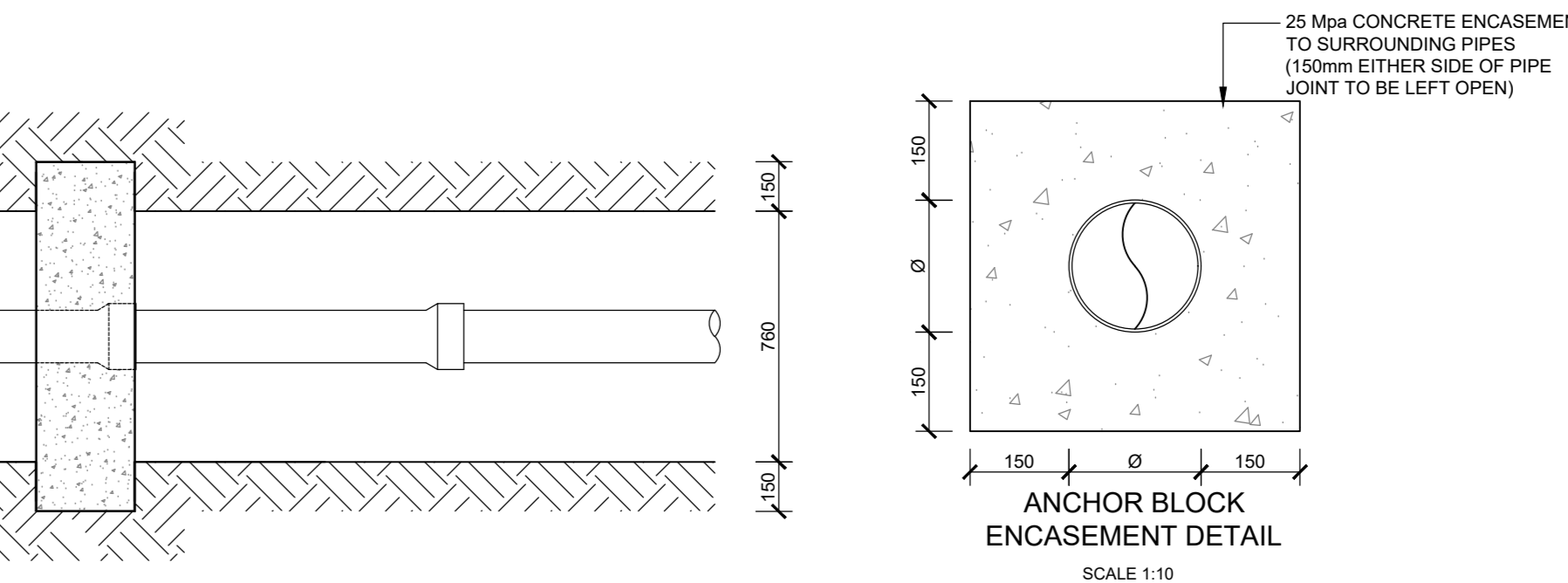
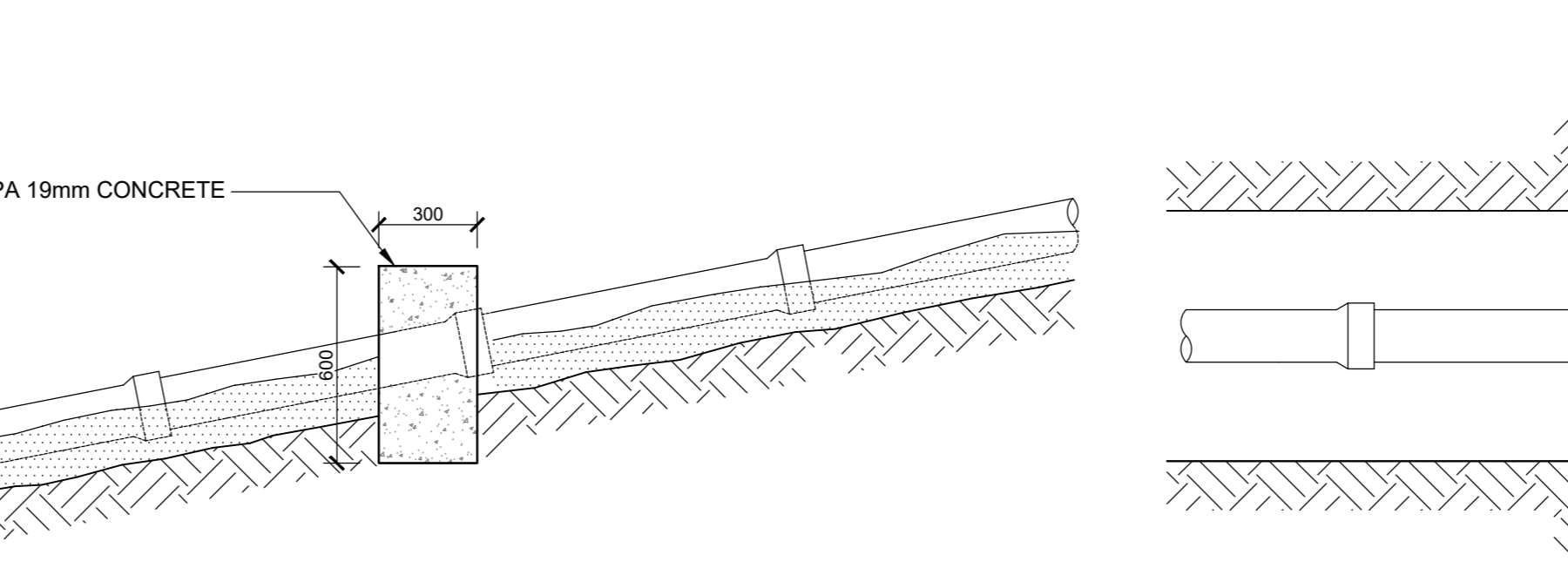
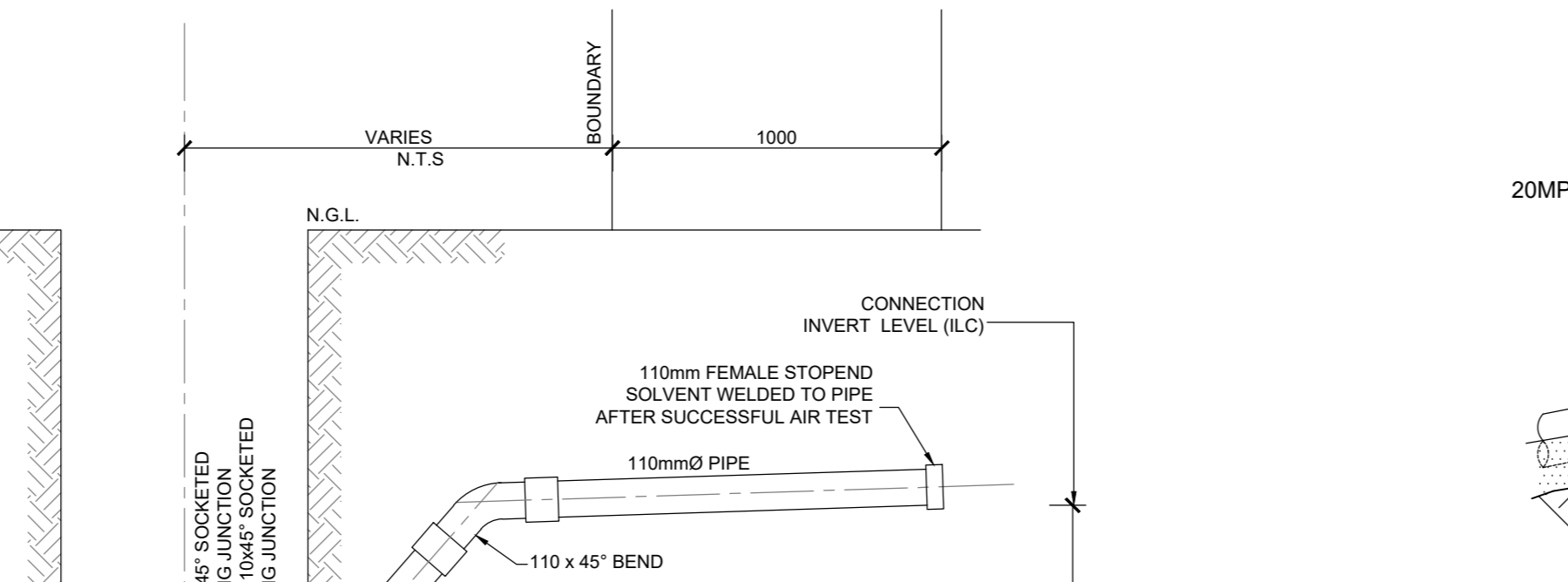
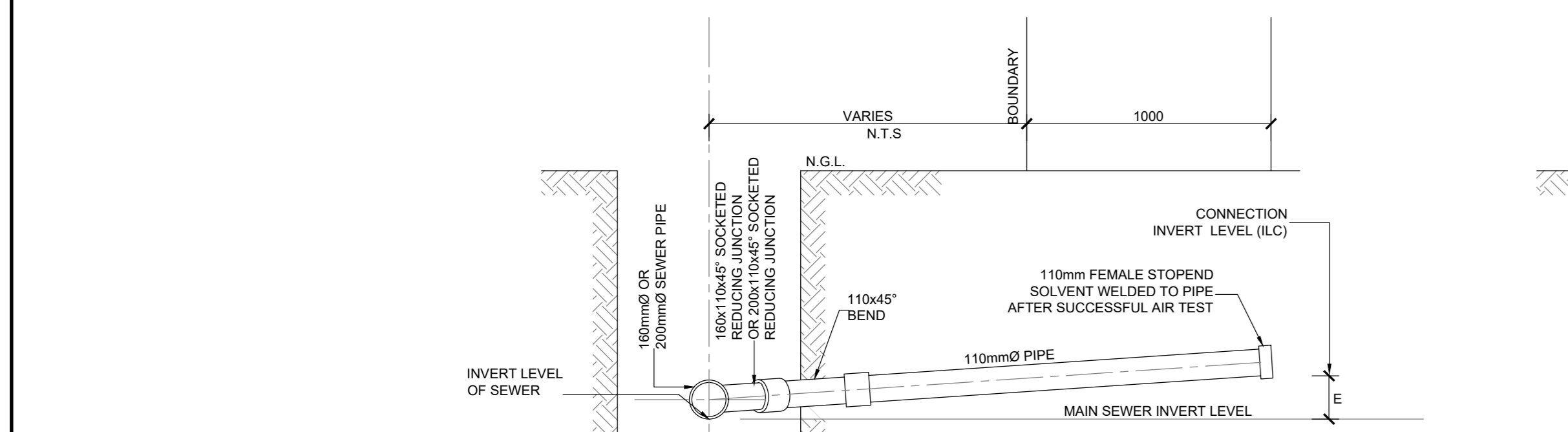
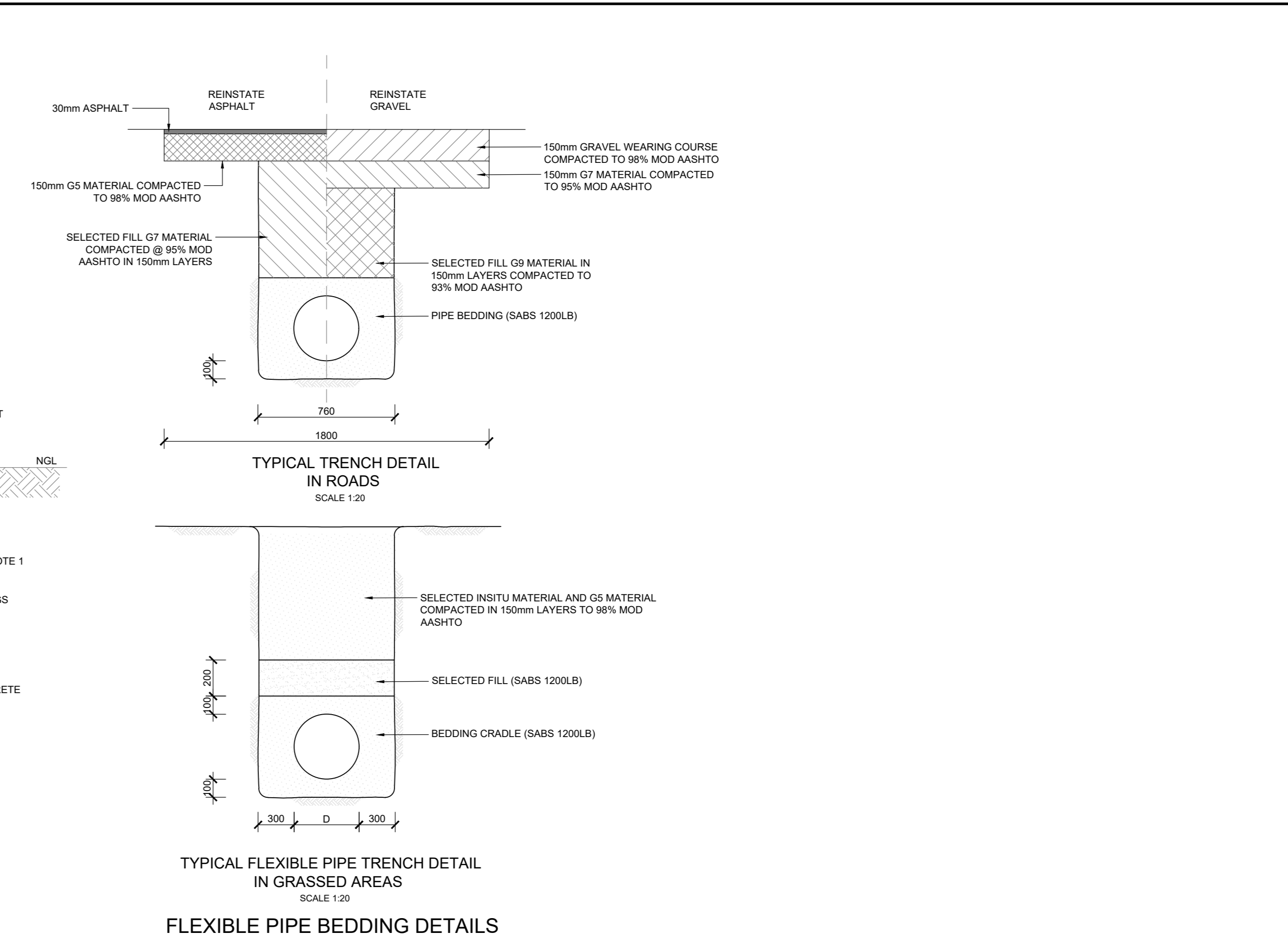
DATUM 160.000m MSL



- NOTES:
1. "CALAMITI" STEP IRONS TO BE PROVIDED IN MANHOLES - 1.0m DEEP
  2. STEP IRONS TO BE STAGGERED AT 300mm CRS VERTICALLY AND 200mm CRS HORIZONTALLY, STARTING 500mm BELOW COVER LEVEL.
  3. BITU-JOINT OR SIMILAR BITUMEN COMPOUND TO BE USED AS A JOINT SEALANT BETWEEN MANHOLE RINGS.
  4. ALL COVER SLABS TO BE REINFORCED WITH R12 BARS AT 150 CRS BOTH WAYS WITH 30mm COVER.
  5. OPENING IN COVER SLABS TO BE OFFSET TO ONE SIDE.
  6. ALL CONCRETE TO BE 20 MPa OF DOLOMITIC AGGREGATE + ADMIXTURES.
  7. BENCHING TO BE MIN. 20mm THICK 1:3 DOLOMITIC ADMIXTURES.
  8. COUPLINGS TO BE PROVIDED IMMEDIATELY OUTSIDE MANHOLE ON EACH BRANCH AND OUTLET.
  9. CHANNEL TO BE FC CHANNELS OR OF DOLOMITIC AGGREGATE AND ADMIXTURE. PIPES TO BE CUT PRIOR TO ENTERING MANHOLE RING INSIDE.



- NOTES:
1. BITU-JOINT OR SIMILAR BITUMEN COMPOUND TO BE USED AS A JOINT SEALANT BETWEEN MANHOLE RINGS.
  2. ALL COVER SLABS TO BE REINFORCED WITH R6 BARS AT 150 CRS BOTH WAYS WITH 30mm COVER.
  3. ALL CONCRETE TO BE 20 MPa OF DOLOMITIC AGGREGATE.
  4. BENCHING TO BE MIN. 20mm THICK 1:3 DOLOMITIC ADMIXTURES.
  5. COUPLINGS TO BE PROVIDED IMMEDIATELY OUTSIDE MANHOLE ON EACH BRANCH AND OUTLET.
  6. CHANNEL TO BE FC CHANNELS OR OF DOLOMITIC AGGREGATE AND ADMIXTURES. PIPES TO BE CUT PRIOR TO ENTERING MANHOLE RING INSIDE.



- NOTE:
1. PIPE MATERIAL USED FOR CONNECTION TO BE THE SAME AS SEWER.
  2. DIMENSION "E" = THE HEIGHT DIFFERENCE BETWEEN INVERT LEVEL OF SEWER (ILS) AT THE V-JUNCTION AND THE INVERT LEVEL OF THE ERF CONNECTION (ILC) AT THE END OF THE CONNECTION. THE CONTRACTOR TO OBTAIN THE ILC FROM THE ENGINEER FOR EACH ERF CONNECTION.
  3. THE EXACT POSITION OF THE UPPER END OF ALL SEWERAGE ERF CONNECTIONS IS TO BE MARKED WITH NO.8 GAUGE WIRE. THE WIRE MUST BE FASTENED TO A BRICK PLACED AT THE LEVEL OF THE UPPER END OF THE CONNECTION AND EXTEND 0.5m ABOVE GROUND LEVEL.
  4. THE RESPECTIVE TYPES ARE INDICATIVE OF POSSIBLE SITE CONDITIONS. THE CONTRACTOR IS TO RECORD WHICH TYPE IS USED WHERE.

SEWER ERF CONNECTION DETAILS  
SCALE 1:20

No	APPROVED	AMENDMENTS	DATE
P2	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P1	KP	ISSUED FOR INFORMATION	APR 2024
P0	KP	ISSUED FOR INFORMATION	NOV 2023

SURVEYED: -  
DRAWN: C MBOMBELA OCT 2023  
DESIGNED: K POTGIETER, C MBOMBELA OCT 2023  
CHECKED: K POTGIETER OCT 2023

APPROVED: [Signature]  
PR REGISTRATION NO: 2017064 DATE: 2024/07/30

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**GEORGE**  
LOCAL MUNICIPALITY

PROJECT TITLE  
**THEMBALETHU BULK SEWER PHASE 3&4: PORTION 2**

DRAWING TITLE  
**TYPICAL SEWER DETAILS**

SCALE	SHEET SET	SHEET NO
AS SHOWN	SHEET 1 OF 1 SHEETS	A0

DRAWING No.	REVISION
1762-SEW-010	P2

**LEGEND:**

No	APPROVED	AMENDMENTS	DATE
P1	KP	AMENDMENTS FOR CONCEPT DESIGN	30/07/2024
P0	KP	ISSUED FOR INFORMATION	JUNE 2024
SURVEYED	-	-	-
DRAWN	T MOSIA		JUNE 2024
DESIGNED	K POTGIETER		JUNE 2024
CHECKED	K POTGIETER		JUNE 2024
APPROVED		PR REGISTRATION NO. 201770064	DATE: 2024/07/30

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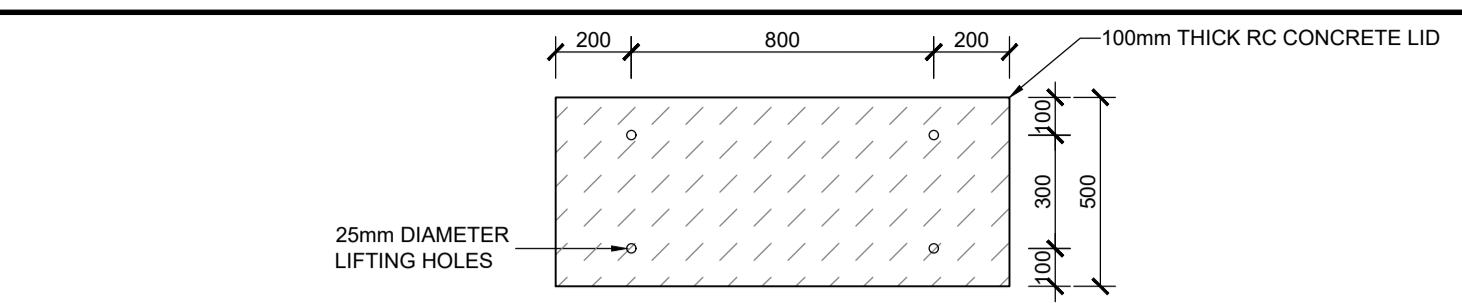
PROJECT TITLE

**THEMBALETHU  
BULK SEWER PHASE 3&4  
PORTION 2**

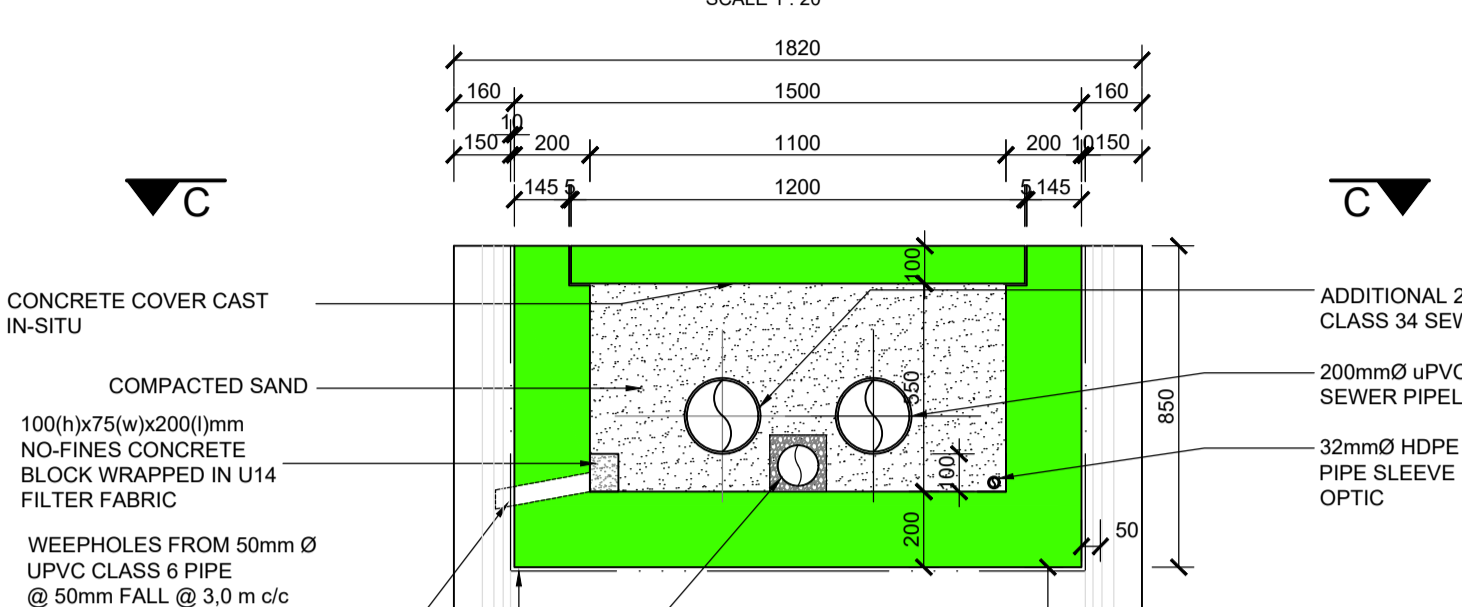
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**PORTION 2: MAIN STREAM  
CROSSINGS : SEWER PIPE BRIDGE  
DETAILS**

SCALE	SHEET SET	SHEET SIZE
AS SHOWN	SHEET 1 OF 1 SHEETS	A1
DRAWING No.	REVISION	
1762-STW-002	P1	

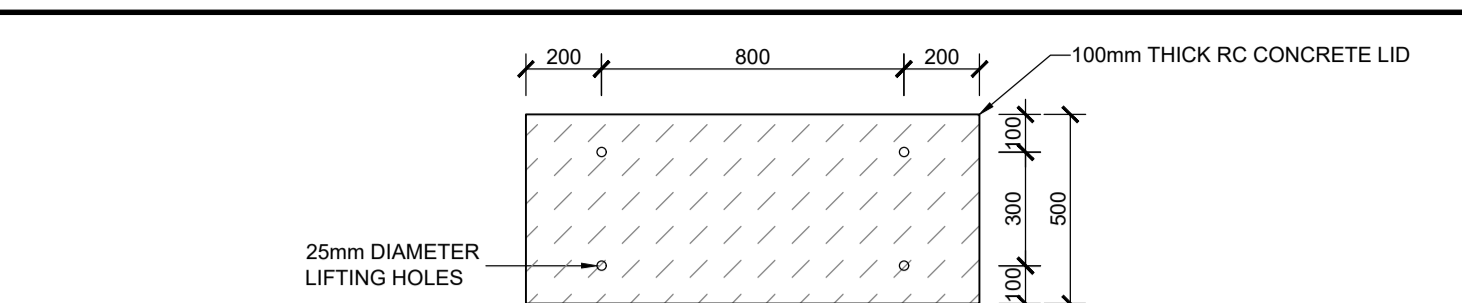
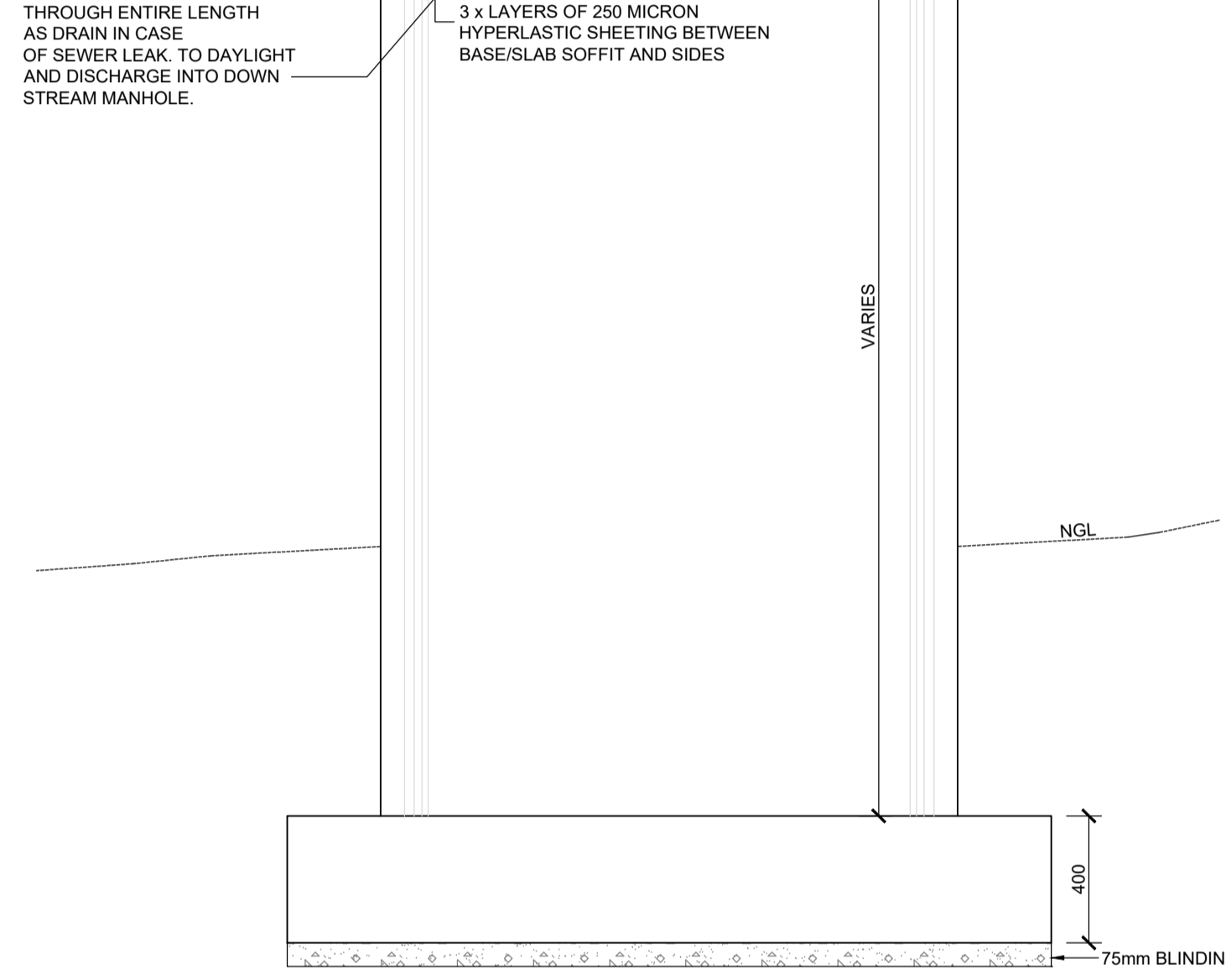


**PRECAST CONCRETE COVER SLAB**  
(PLAN VIEW)  
SCALE 1:20

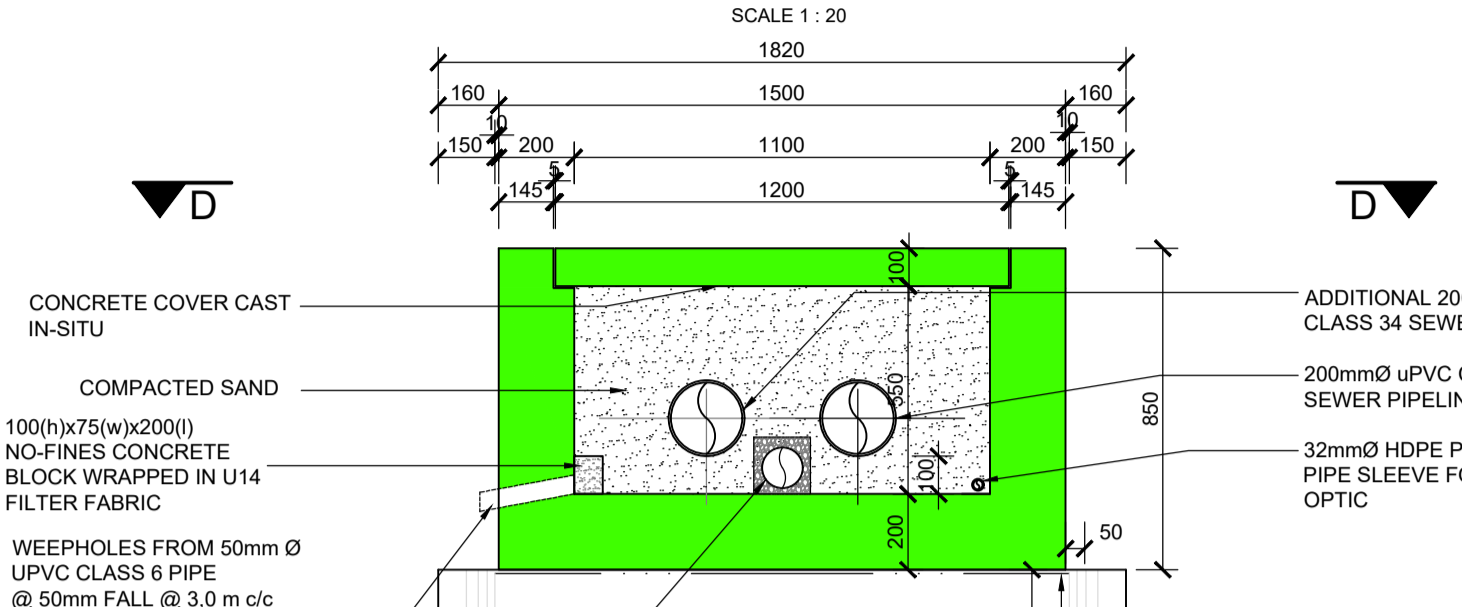


**SECTIONAL PLAN C-C THRU  
CONCRETE PIPE BRIDGE  
(WITHOUT COVER SLAB)**  
SCALE 1:20

**DETAIL 1 : PROPOSED PIPE BRIDGE  
TYPE 1A**  
SCALE 1:20

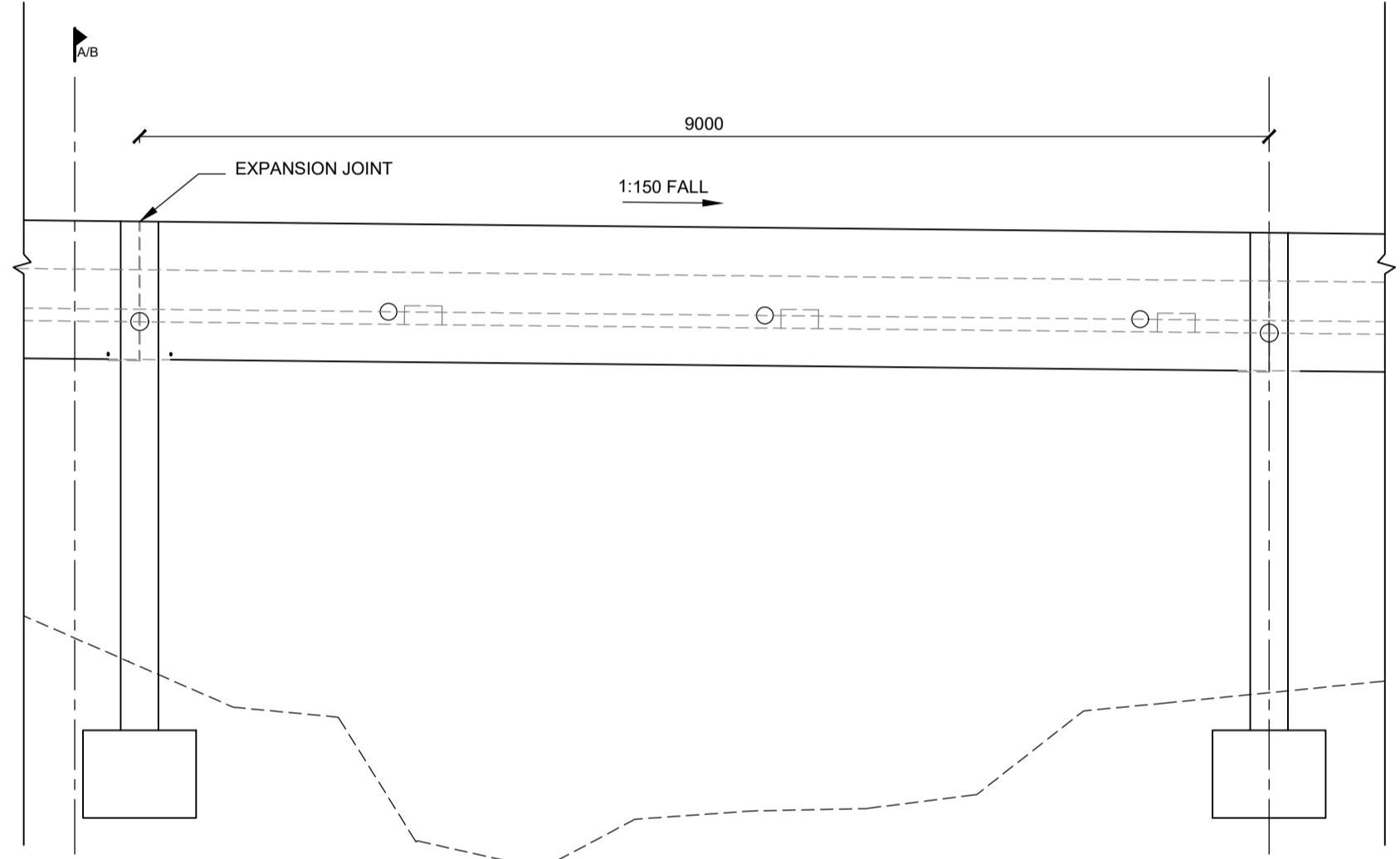
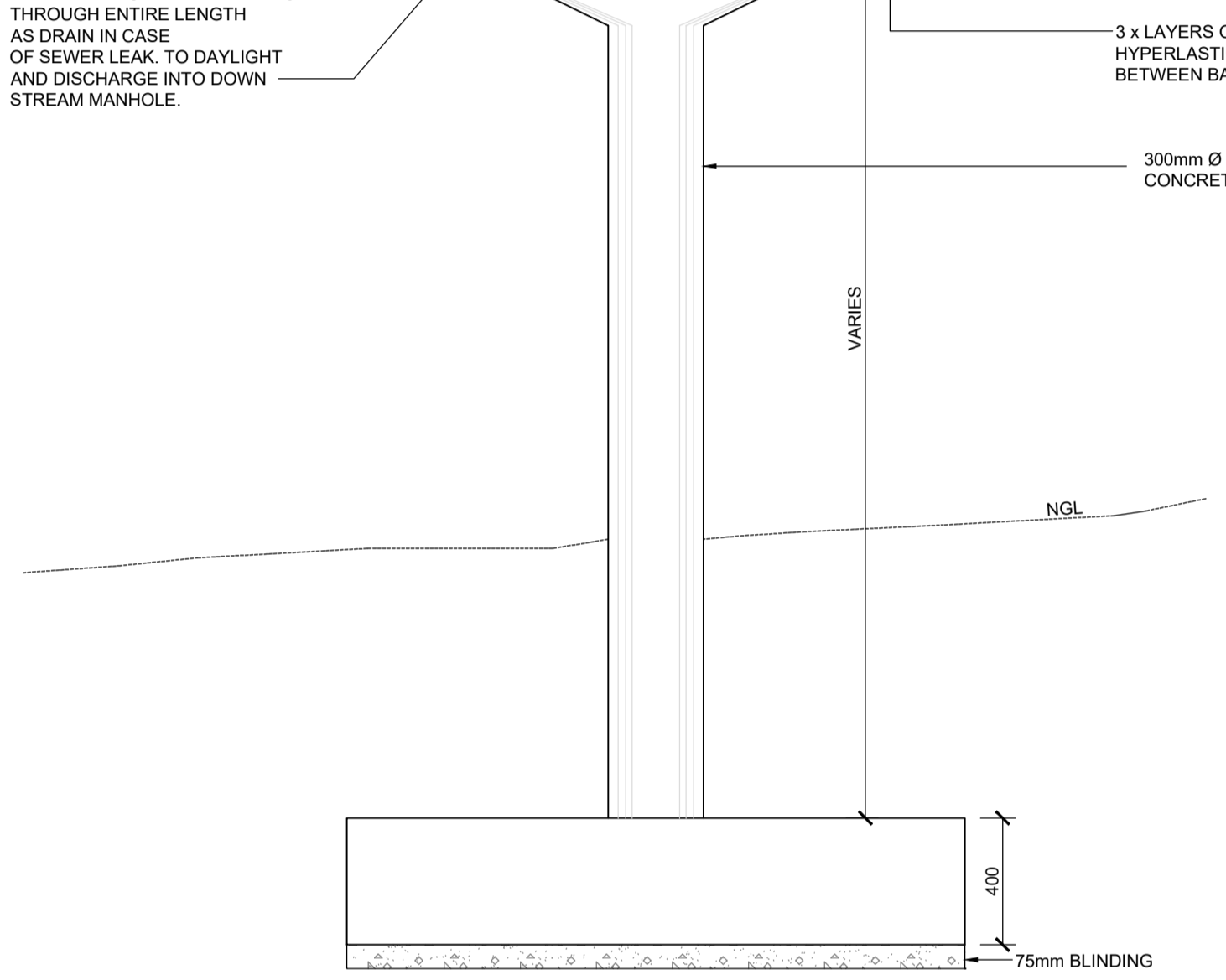


**PRECAST CONCRETE COVER SLAB**  
(PLAN VIEW)  
SCALE 1:20

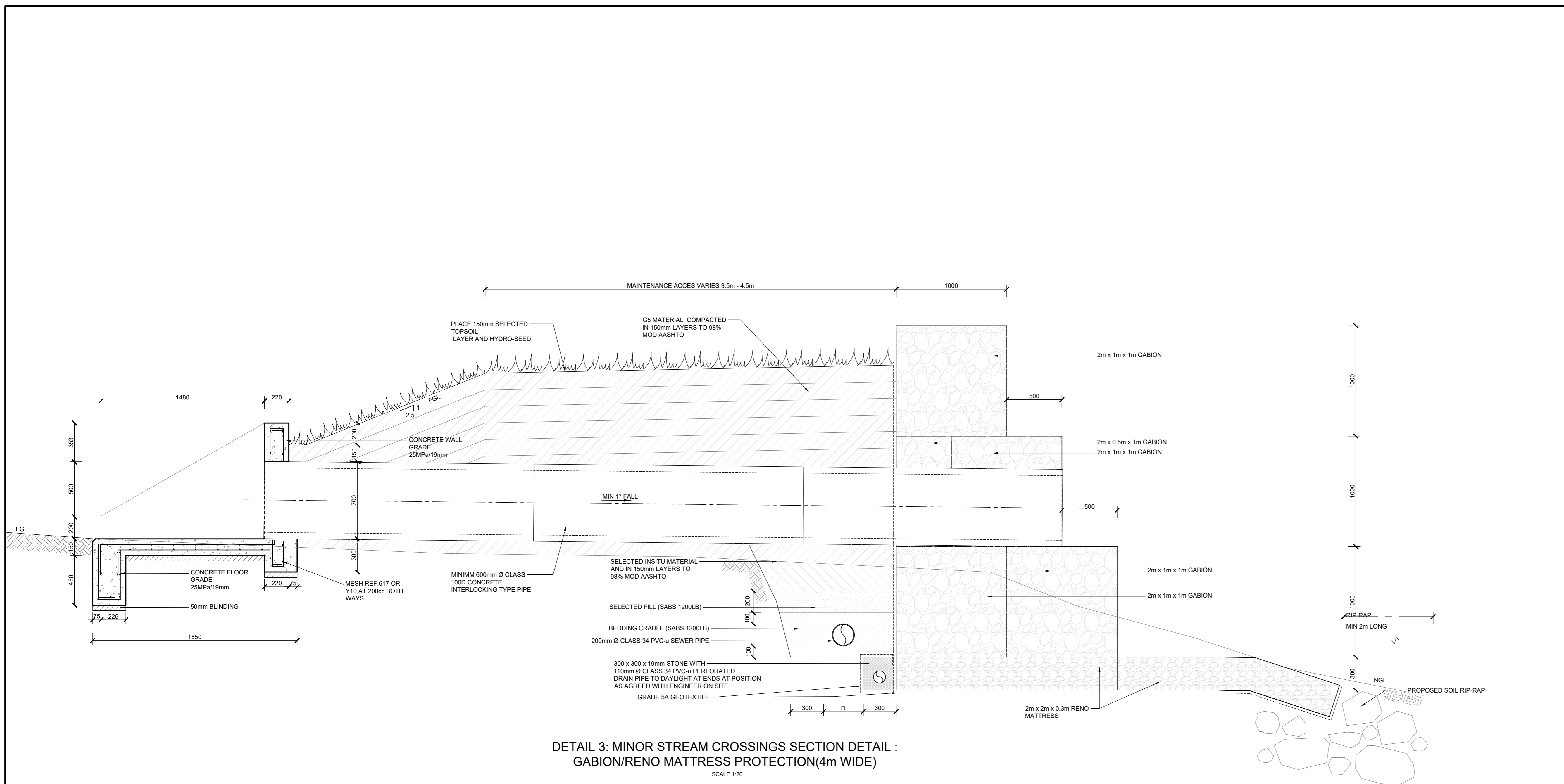


**SECTIONAL PLAN D-D THRU  
CONCRETE PIPE BRIDGE  
(WITHOUT COVER SLAB)**  
SCALE 1:20

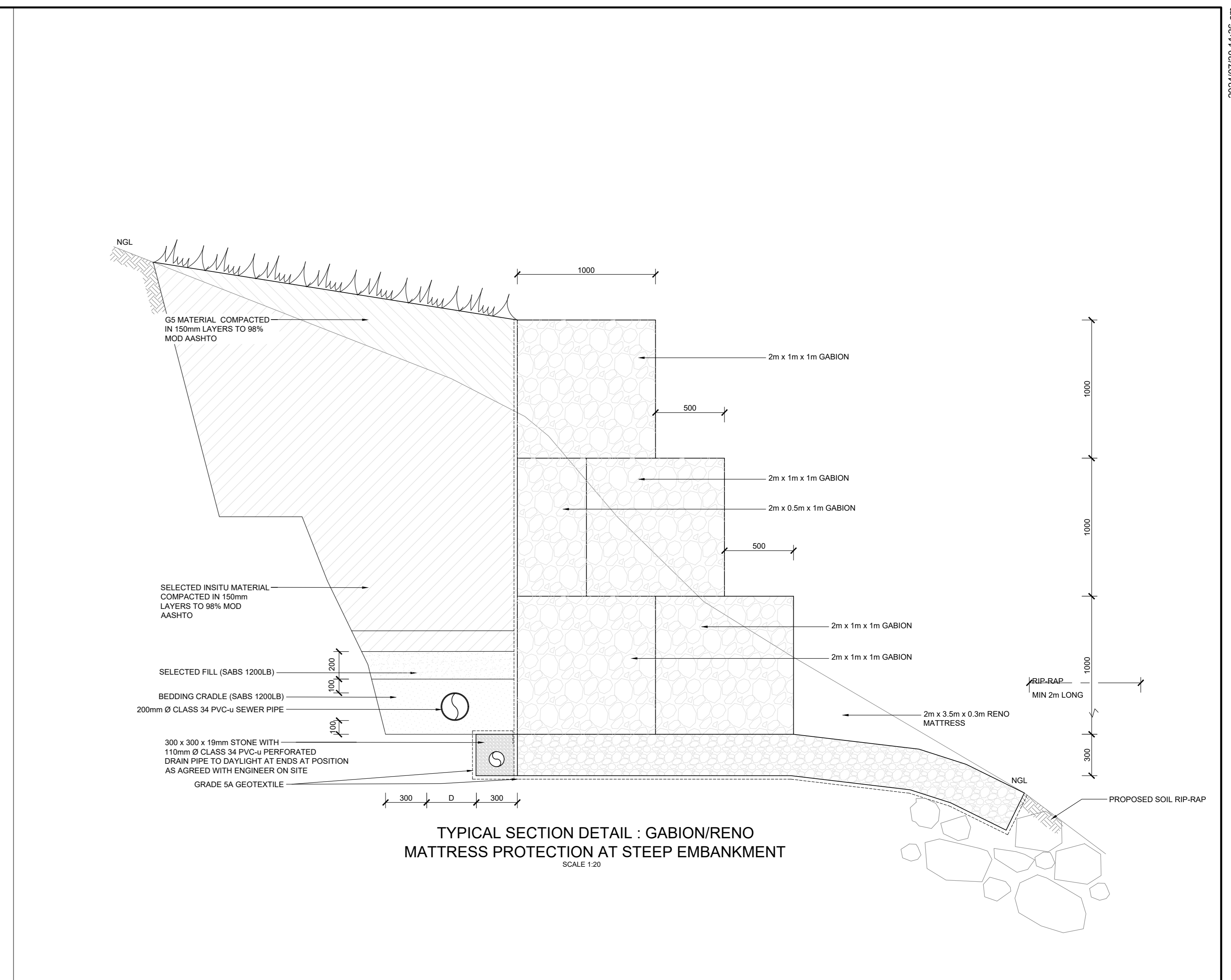
**DETAIL 2 : PROPOSED PIPE BRIDGE  
TYPE 1B**  
SCALE 1:20



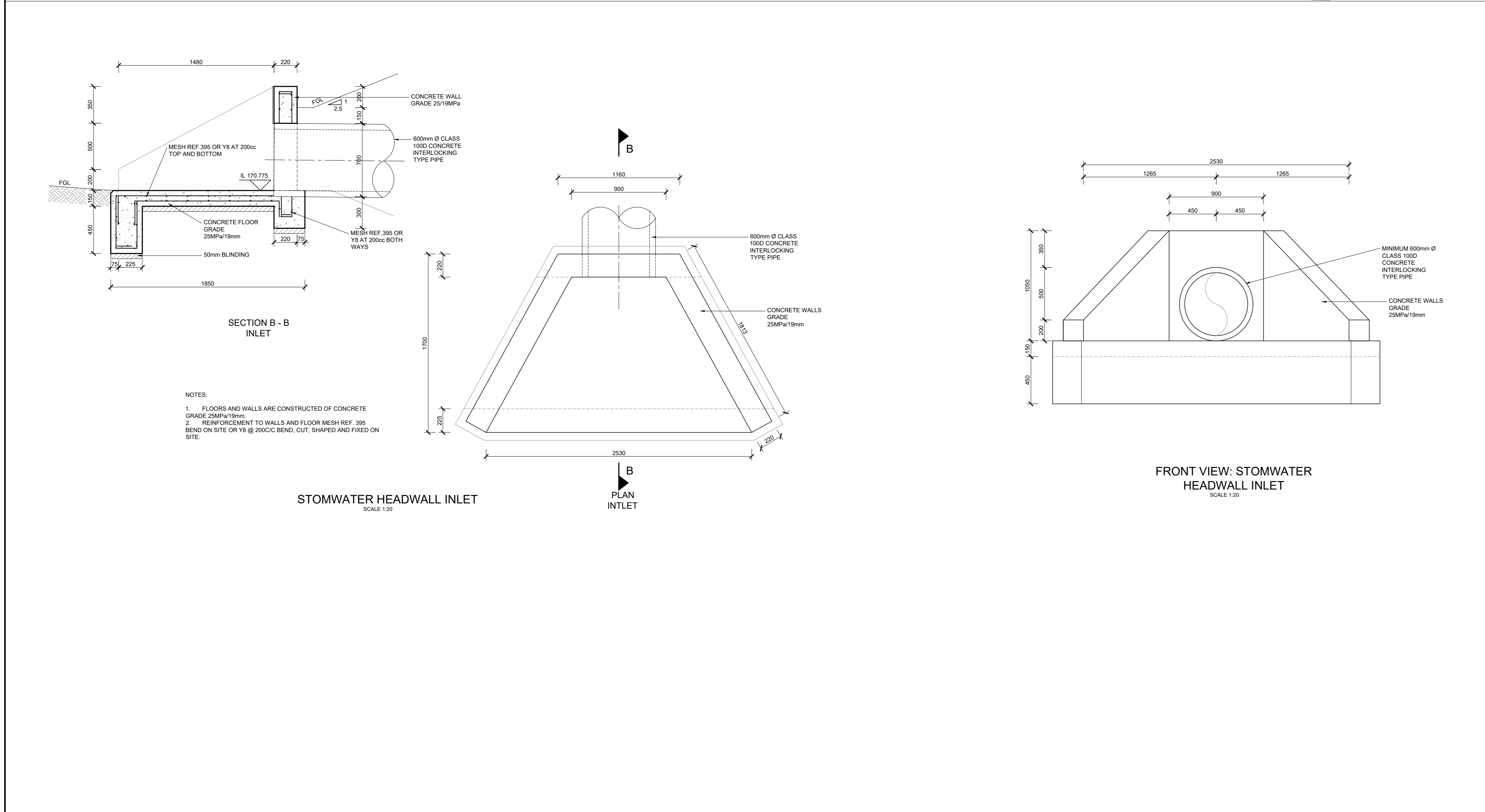
**DETAIL 1 or 2: MAIN STREAM CROSSING PIPE  
BRIDGE : SIDE VIEW**  
SCALE 1:50



DETAIL 3: MINOR STREAM CROSSINGS SECTION DETAIL :  
GABION/RENO MATTRESS PROTECTION(4m WIDE)  
SCALE 1:20

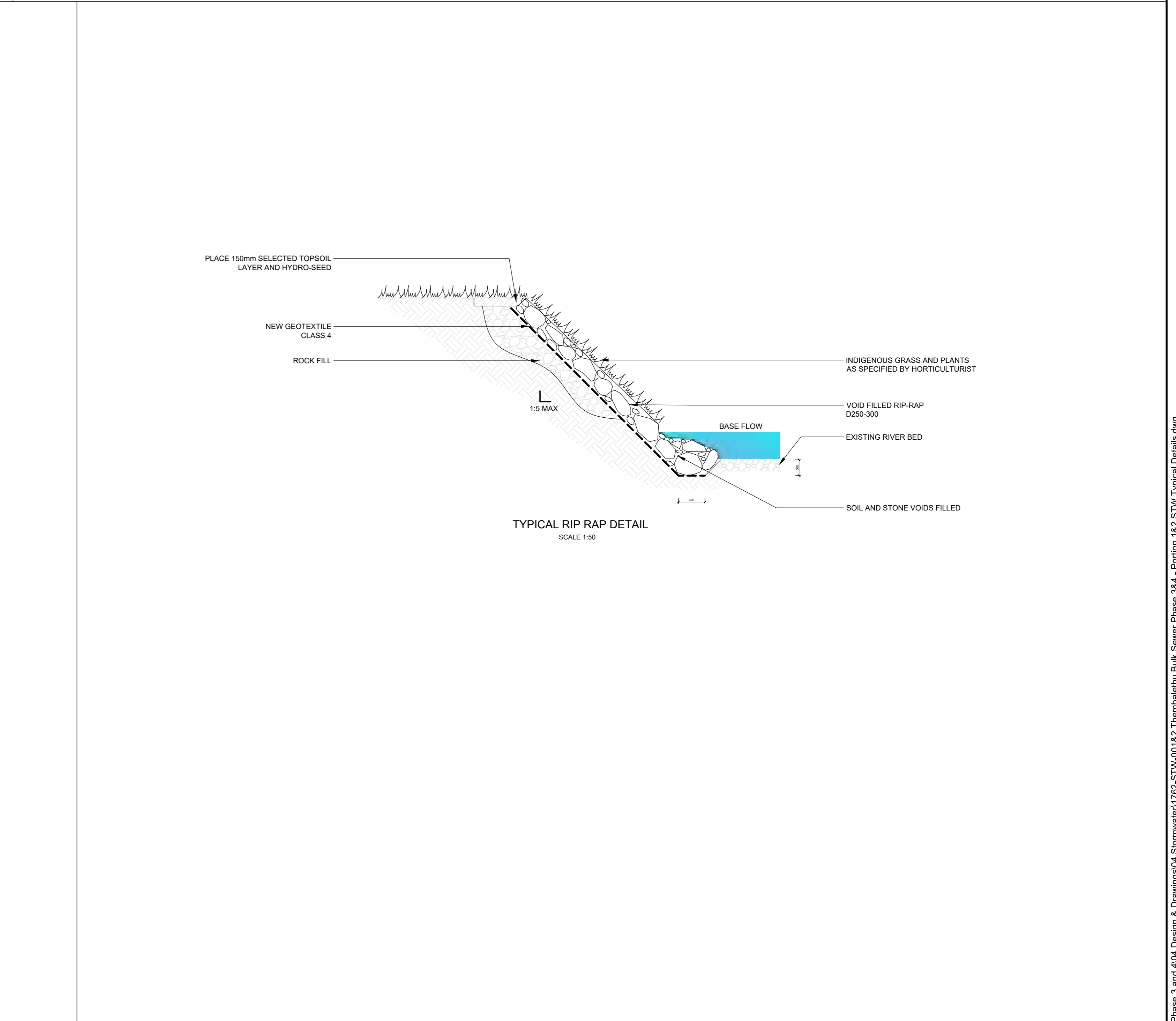


TYPICAL SECTION DETAIL : GABION/RENO  
MATTRESS PROTECTION AT STEEP EMBANKMENT  
SCALE 1:20



STORMWATER HEADWALL INLET  
SCALE 1:20

FRONT VIEW: STORMWATER  
HEADWALL INLET  
SCALE 1:20



TYPICAL RIP RAP DETAIL  
SCALE 1:20

No.	APPROVED	AMENDMENTS	DATE	SURVEYED	-	-
P0	KP	ISSUED FOR INFORMATION	30/07/2024	DRAWN	T.MOSIA	JUNE 2024
				DESIGNED	K.POTGIETER	APRIL 2024
				CHECKED	K.POTGIETER	JUNE 2024
				APPROVED		

No.	APPROVED	AMENDMENTS	DATE	SURVEYED	-	-
P0	KP	ISSUED FOR INFORMATION	30/07/2024	DRAWN	T.MOSIA	JUNE 2024
				DESIGNED	K.POTGIETER	APRIL 2024
				CHECKED	K.POTGIETER	JUNE 2024
				APPROVED		

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**GEORGE**  
LOCAL MUNICIPALITY

PROJECT TITLE  
**THEMBALETHU  
BULK SEWER PHASE 3&4  
PORTION 2**

DRAWING TITLE  
**POTION 2 : MINOR STREAM CROSSINGS  
AND STORMWATER DETAILS**

SCALE	SHEET SET	SHEET SIZE
AS SHOWN	SHEET 1 OF 1 SHEETS	A0
DRAWING NO.	1762-STW-003	REVISION P0

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