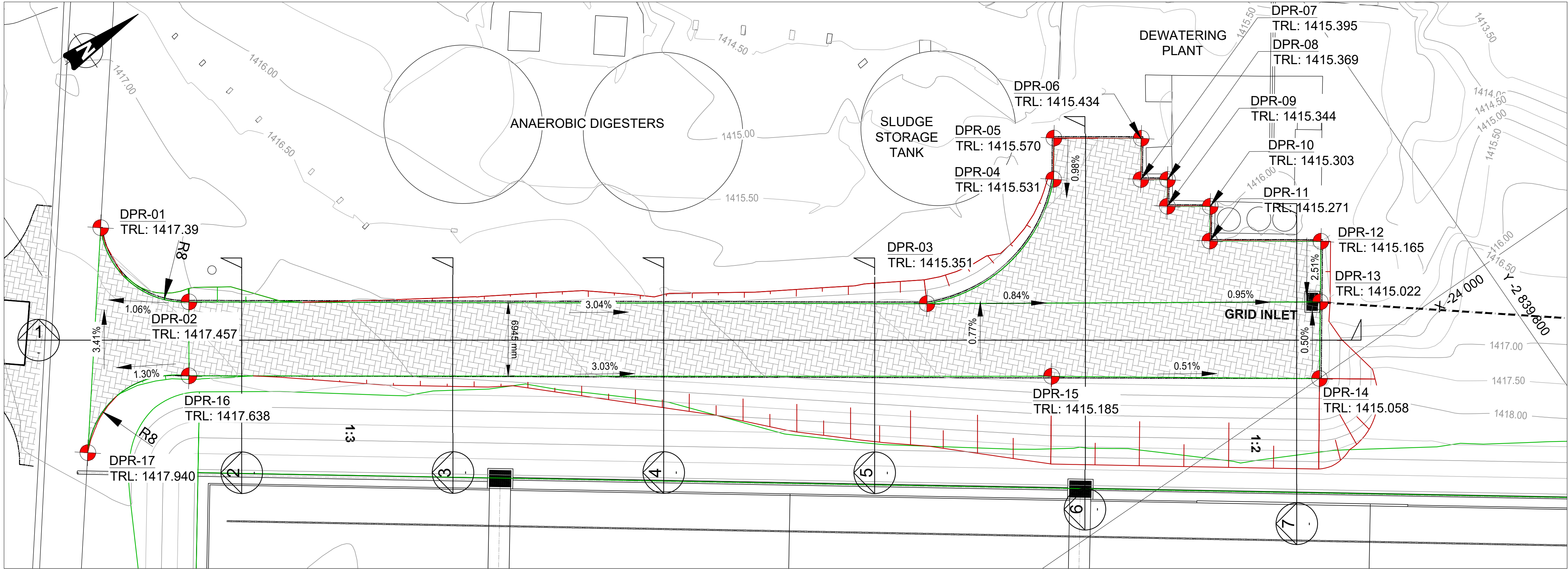
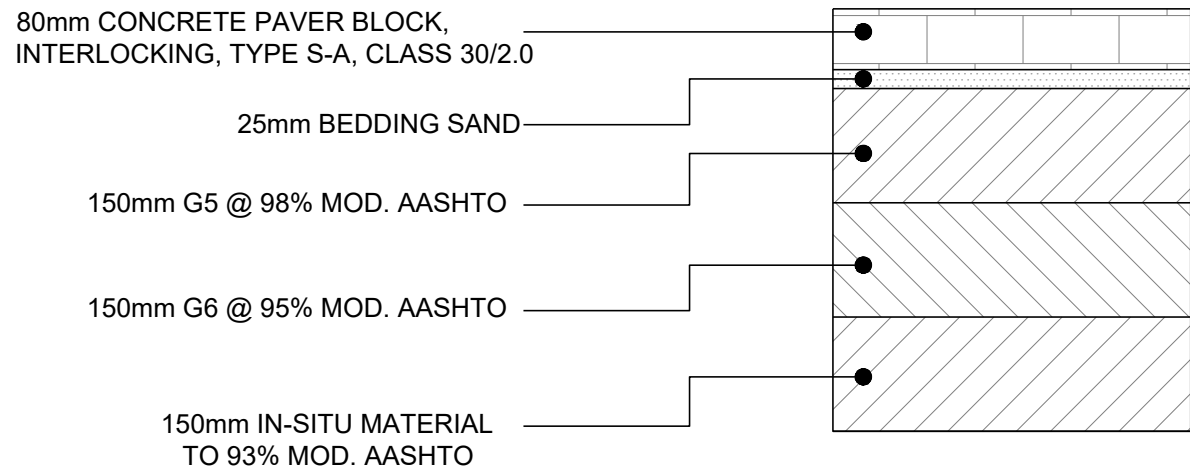
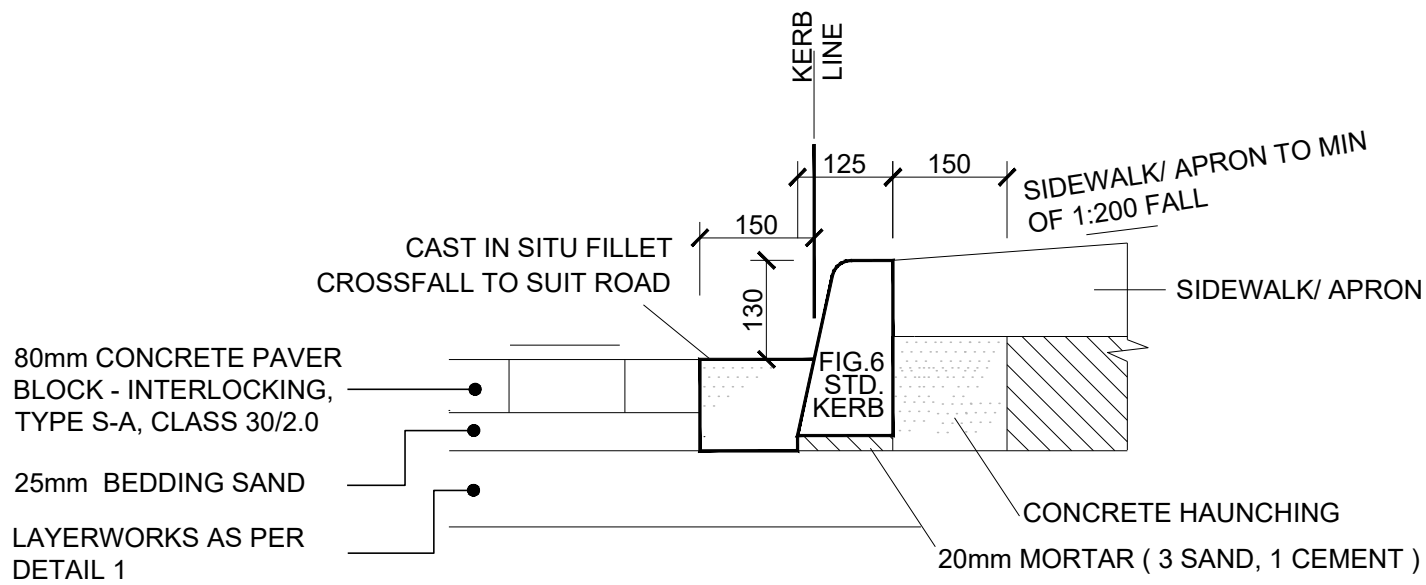




PLAN  
SCALE 1:250



ACCESS ROAD LAYERWORKS  
DETAIL 1  
SCALE 1:10



KERBING  
DETAIL 2  
SCALE 1:10

| COORDINATE LIST                          |           |             |
|------------------------------------------|-----------|-------------|
| Lo29                                     |           |             |
| DEWATERING PLANT ACCESS ROAD SETTING OUT |           |             |
| POINT                                    | Y-COORD   | X-COORD     |
| CONST:                                   |           |             |
| DPR1                                     | 24077.144 | 2839906.129 |
| DPR2                                     | 24066.603 | 2839903.210 |
| DPR3                                     | 24026.879 | 2839845.634 |
| DPR4                                     | 24029.808 | 2839829.076 |
| DPR5                                     | 24033.001 | 2839826.835 |
| DPR6                                     | 24028.290 | 2839820.008 |
| DPR7                                     | 24025.107 | 2839822.262 |
| DPR8                                     | 24023.671 | 2839820.182 |
| DPR9                                     | 24021.598 | 2839821.636 |
| DPR10                                    | 24019.286 | 2839818.286 |
| DPR11                                    | 24016.602 | 2839820.174 |
| DPR12                                    | 24010.620 | 2839811.503 |
| DPR13                                    | 24005.929 | 2839814.796 |
| DPR14                                    | 23999.979 | 2839818.973 |
| DPR15                                    | 24014.526 | 2839839.791 |
| DPR16                                    | 24060.834 | 2839907.148 |
| DPR17                                    | 24060.257 | 2839919.200 |

NOTES:

- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CoT CTMM CIVIL ENGINEERING WORKS STANDARD SPECIFICATION, 2005 AND SANS 1200. WHERE THE TWO SPECIFICATIONS CONTRADICT ONE ANOTHER, THE CoT CTMM SPECIFICATION MUST TAKE PRECEDENCE.
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- CONTRACTOR TO LIAISE WITH THE CITY OF TSHWANE MUNICIPALITY W.R.T THE REINSTATEMENT OF ROAD SURFACING AND SIDEWALKS.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:  
7.1. 2300082-08-81-C-200-BULK EARTHWORKS LAYOUT  
7.2. 2300082-08-81-C-101-DEWATERING PLANT ACCESS ROAD SECTIONS.

EARTHWORKS

- REMOVE ALL VEGETATION AND ROOTS.
- REMOVE TOP SOIL TO AN APPROXIMATE DEPTH OF 150mm.
- REMOVE UNSUITABLE SUBGRADE MATERIALS AS ORDERED BY THE ENGINEER, ALL IN ACCORDANCE WITH CTMM SERIES 2, SECTION 203.
- DENSITY TESTS TO BE UNDERTAKEN BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO PLACING CONSECUTIVE LAYERS.
- ALL FINISHED FLOOR LEVELS TO BE VERIFIED WITH SLUDGE DRYING BED DRAWINGS.
- CUT & FILL SLOPES OF 1:3 ARE TO BE GRASSED.
- CUT & FILL SLOPES OF 1:2 ARE TO BE GRASSED OR RETAINED WITH SEGMENTED BLOCK PAVERS WHERE OTHERWISE INDICATED ON DRAWINGS.
- ALL VERTICAL RETAINING WALLS ARE INDICATIVE AND FINAL POSITIONS, AND DETAILS WILL BE AS PER STRUCTURAL ENGINEER'S DESIGN.

KERBING

- ALL KERBS AND CHANNELS TO BE 25MPa STRENGTH CONCRETE.
- THE SURFACES OF THE CAST IN SITU CHANNEL/FILLET ARE TO HAVE A STEEL FLOAT FINISH.
- WHERE KERB RADIUS IS LESS THAN 25m THE KERB LENGTH SHALL BE 300mm WHERE THE KERB RADIUS IS LESS THAN 2m.
- PRECAST KERB ARE TO BE LAID WITH A 13mm GAP BETWEEN KERBS, WHICH SHALL THEN BE FILLED WITH A CEMENT MORTAR.
- THE CONCRETE MIX DESIGN IS TO BE APPROVED BY THE ENGINEER.
- EXPANSION JOINTS ARE TO BE FORMED AT 8.0m INTERVALS ON STRAIGHTS AND 2.0m INTERVALS WHERE THE KERB RADIUS IS LESS THAN 50m.
- FIG 6 STD KERB WITH CAST IN SITU CHANNEL/ FILLET.

LEGEND :

- CONTOURS
- PROPOSED SEWER
- STORMWATER PIPE
- GI01 GRID INLET
- BARRIER KERB
- BARRIER KERB & CHANNEL
- 150 x 150mm CHANNEL
- SEGEMENTED BLOCK PAVING
- SETTING OUT POINT
- CUT
- FILL

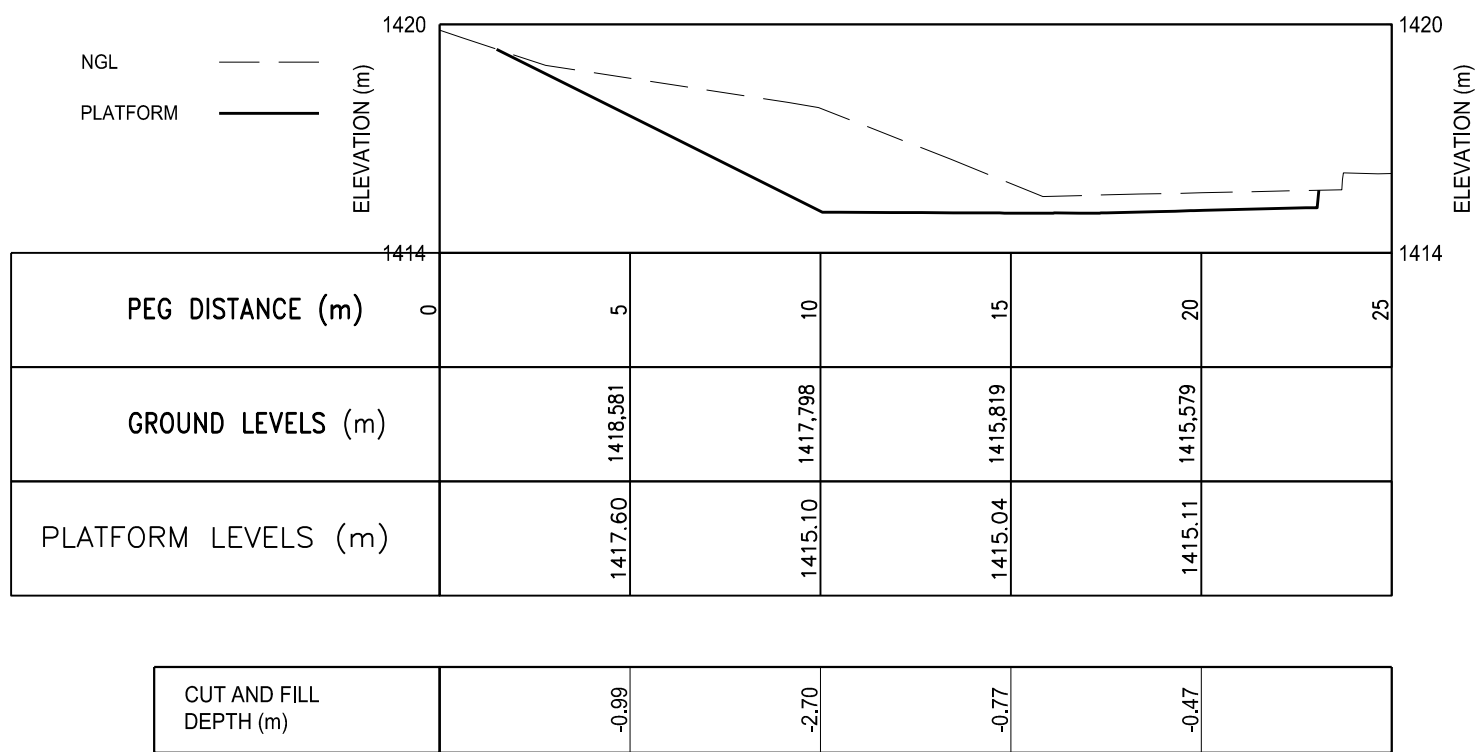
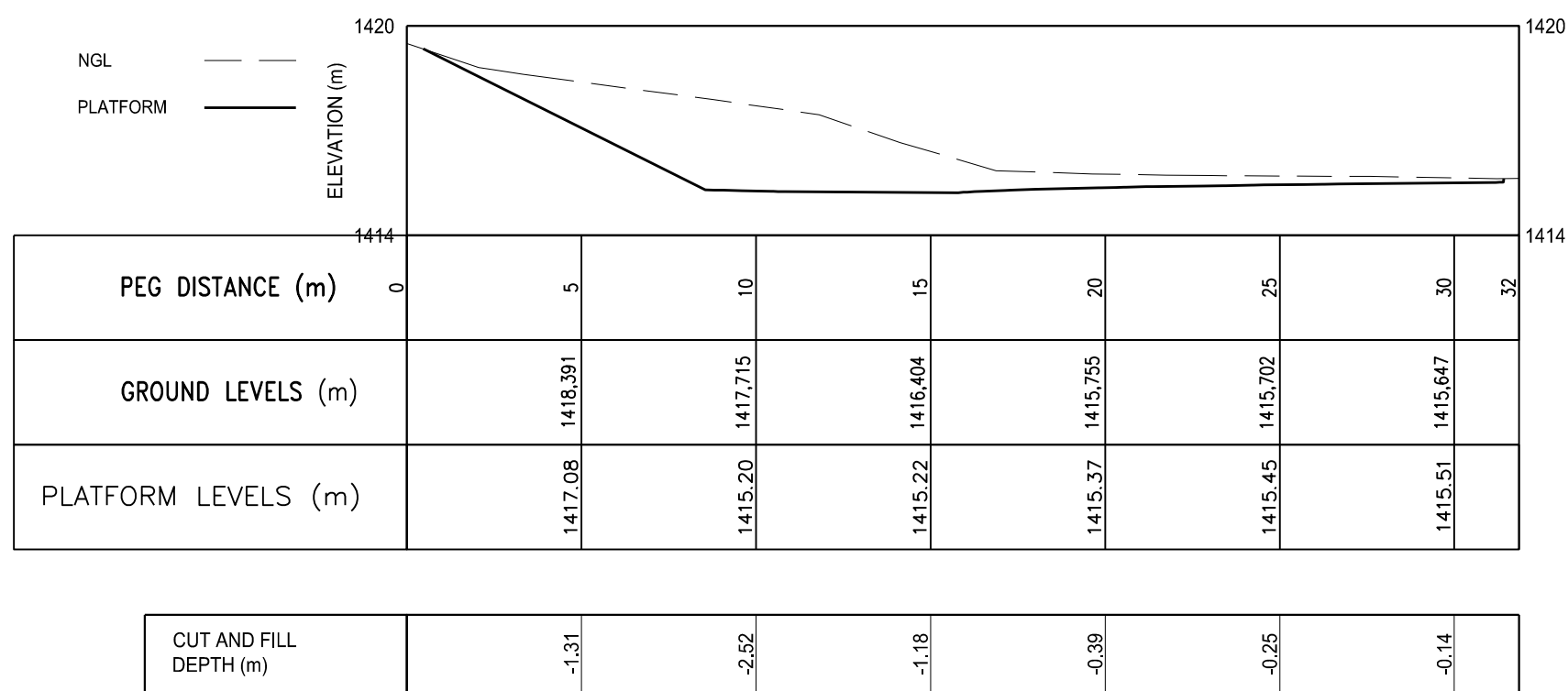
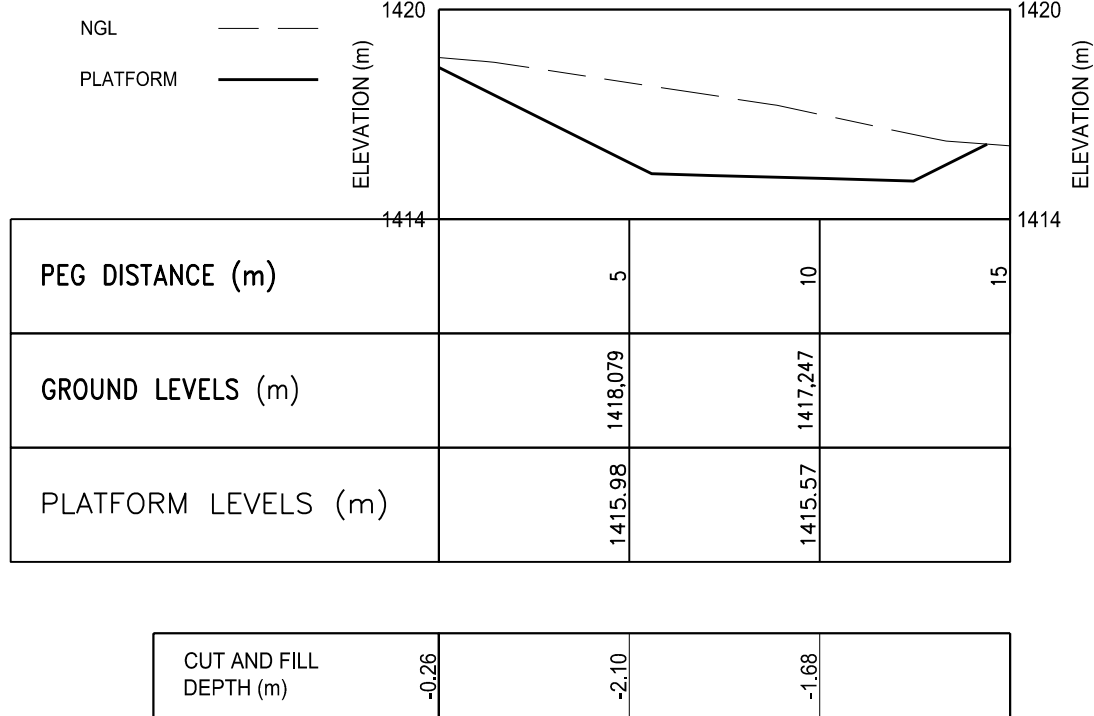
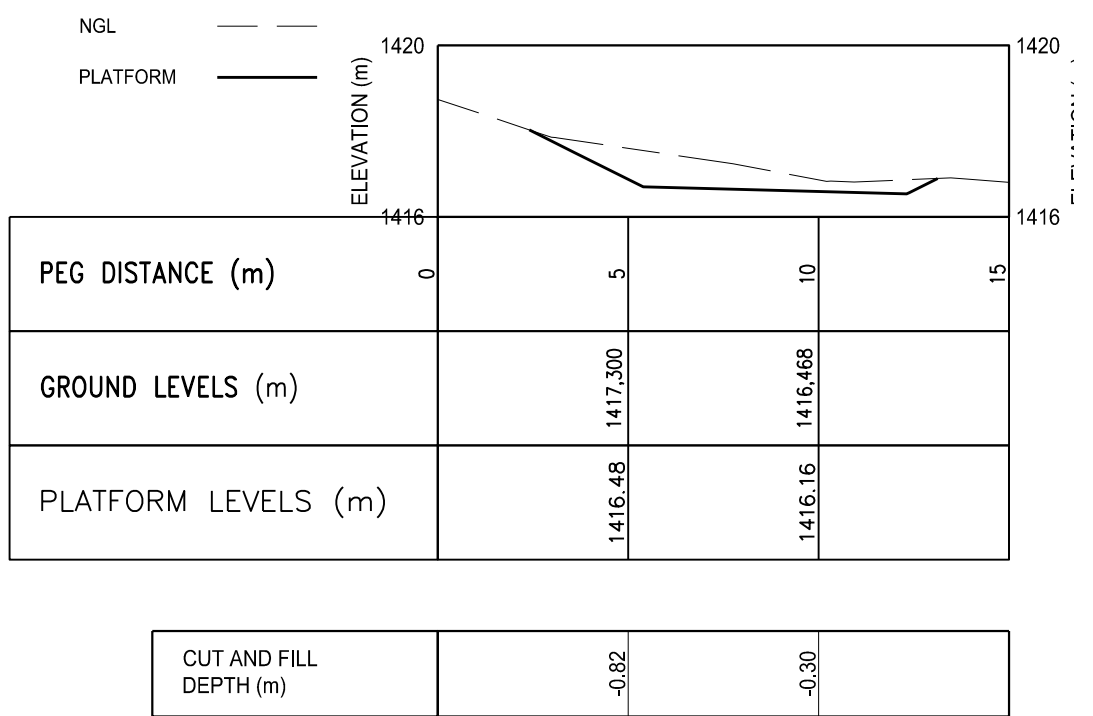
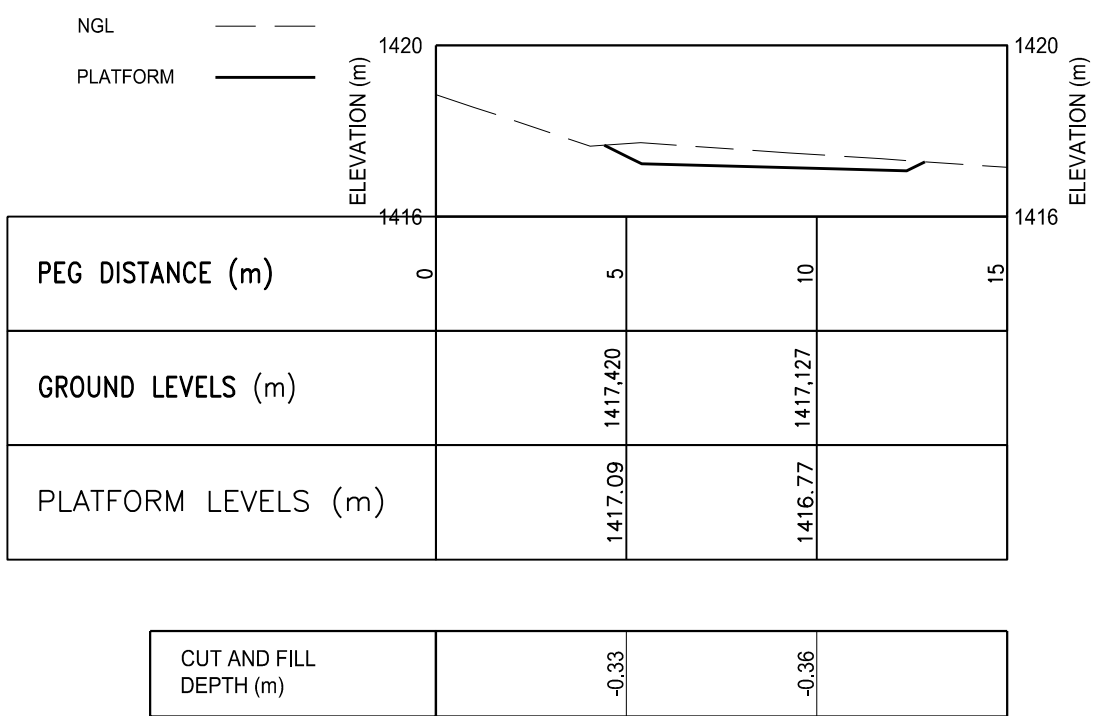
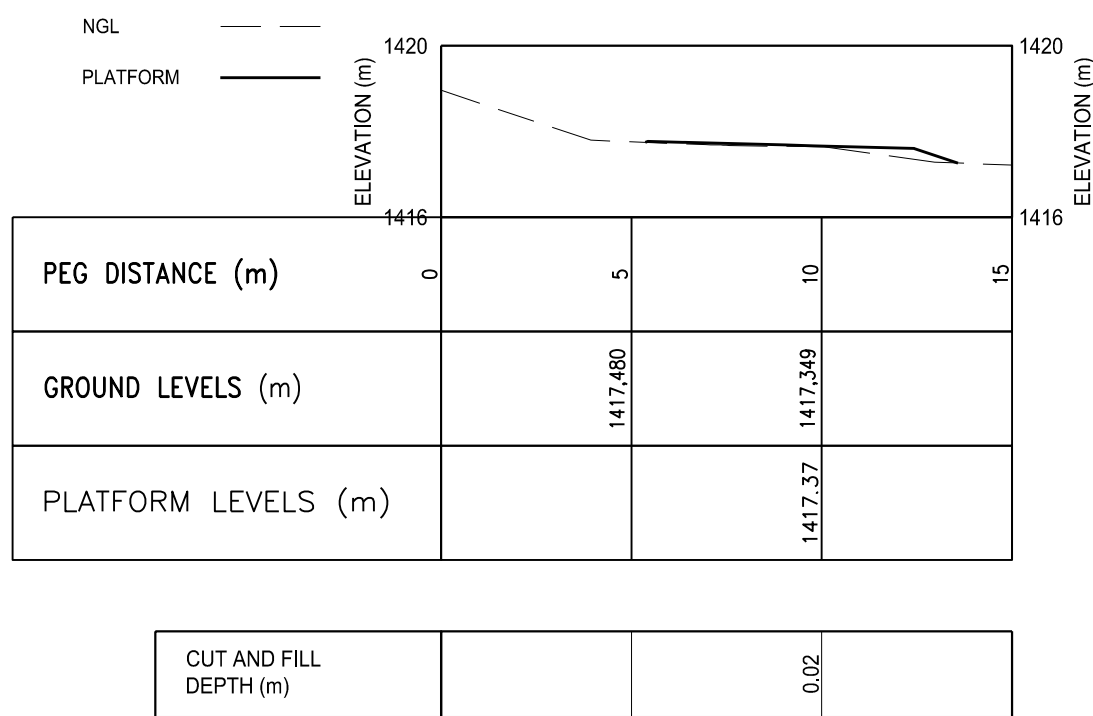
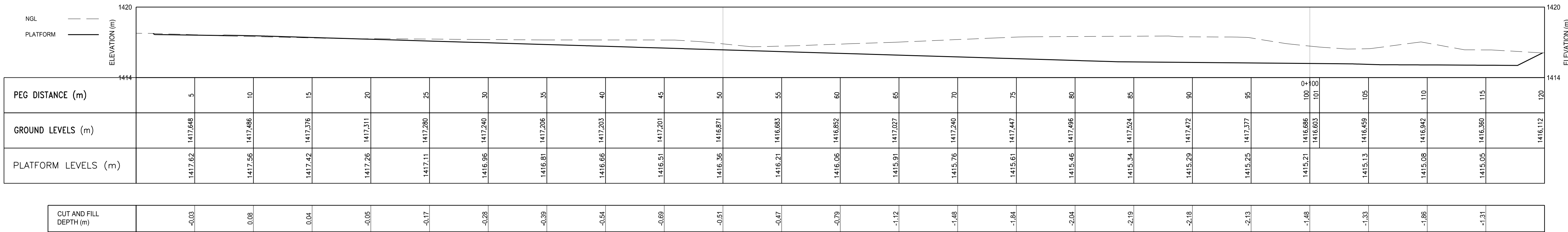
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|------------------------------------------------------------------|-----------------------------------------|--|--|------------------------------------|--------------------------------------------------------------------------------------|--|--|------------------------------------|------------------------------------|--|--|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------|--|----------------------|--|
| <br><b>CITY OF TSHWANE</b><br>WATER AND SANITATION<br>DEPARTMENT | <b>AMENDMENTS</b>                       |  |  |                                    | <b>WATER AND SANITATION</b><br>FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE |  |  |                                    | <b>CONSULTANT DETAIL</b>           |  |  |                                                                        | <b>DESIGNED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |              | <b>CONTRACT</b><br>No: _____<br>PROJECT No: _____<br>SHEET No: _____<br>PAPER SIZE: A1<br>SCALE: _____<br>DATE: _____ |                                                                        | <b>PROJECT STATUS</b><br>RECEIVED SIGN WHEN APPLICABLE<br>CONCEPT DRAWING TENDER DRAWING APPROVED CONSTRUCTION DRAWING AS BUILT DRAWING<br>PROJECT ENGINEER OF COT: NAME: _____ Pr Eng. Prof Reg No: _____<br>INSPECTOR OF WORKS OF COT: NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                           |                                                   |  | LOCATION OF PROJECT: |  |
|                                                                  | NR DATE APPROVED DESCRIPTION PAR        |  |  |                                    | DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT                         |  |  |                                    | NAME Prof. Reg. No. SIGNATURE DATE |  |  |                                                                        | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                    |              | PROJECT No: _____                                                                                                     |                                                                        | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                                                                                                                                                                                                                                  |                           | DESCRIPTION OF PROJECT:                           |  |                      |  |
|                                                                  | A 2025-07-24 AJW ISSUED FOR INFORMATION |  |  |                                    | REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                                                |  |  |                                    | NAME Prof. Reg. No. SIGNATURE DATE |  |  |                                                                        | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                    |              | SHEET No: _____                                                                                                       |                                                                        | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                                                                                                                                                                                                                                  |                           | UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT |  |                      |  |
|                                                                  | B 2026-02-12 AJW ISSUED FOR INFORMATION |  |  |                                    | DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT                             |  |  |                                    | NAME Prof. Reg. No. SIGNATURE DATE |  |  |                                                                        | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                    |              | PAPER SIZE: A1                                                                                                        |                                                                        | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                                                                                                                                                                                                                                  |                           | DEWATERING PLANT ACCESS ROAD LAYOUT & DETAILS     |  |                      |  |
|                                                                  |                                         |  |  | DIRECTOR: BULK WATER               |                                                                                      |  |  | NAME Prof. Reg. No. SIGNATURE DATE |                                    |  |  | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                                                                                           | SCALE: _____ |                                                                                                                       | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                                                                                                                                                                                                                                                                                                         | WBS No. : _____           |                                                   |  |                      |  |
|                                                                  |                                         |  |  | DIRECTOR: INFRASTRUCTURE PROVISION |                                                                                      |  |  | NAME Prof. Reg. No. SIGNATURE DATE |                                    |  |  | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                                                                                           | DATE: _____  |                                                                                                                       | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                                                                                                                                                                                                                                                                                                         | COT DRAWING NUMBER: _____ |                                                   |  |                      |  |
|                                                                  |                                         |  |  | DIRECTOR: WASTE WATER TREATMENT    |                                                                                      |  |  | NAME Prof. Reg. No. SIGNATURE DATE |                                    |  |  | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                                                                                           |              |                                                                                                                       |                                                                        |                                                                                                                                                                                                                                                                                                         |                           |                                                   |  |                      |  |
|                                                                  |                                         |  |  | NAME Prof. Reg. No. SIGNATURE DATE |                                                                                      |  |  | NAME Prof. Reg. No. SIGNATURE DATE |                                    |  |  | NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                                                                                           |              |                                                                                                                       |                                                                        |                                                                                                                                                                                                                                                                                                         |                           |                                                   |  |                      |  |

NOTES:

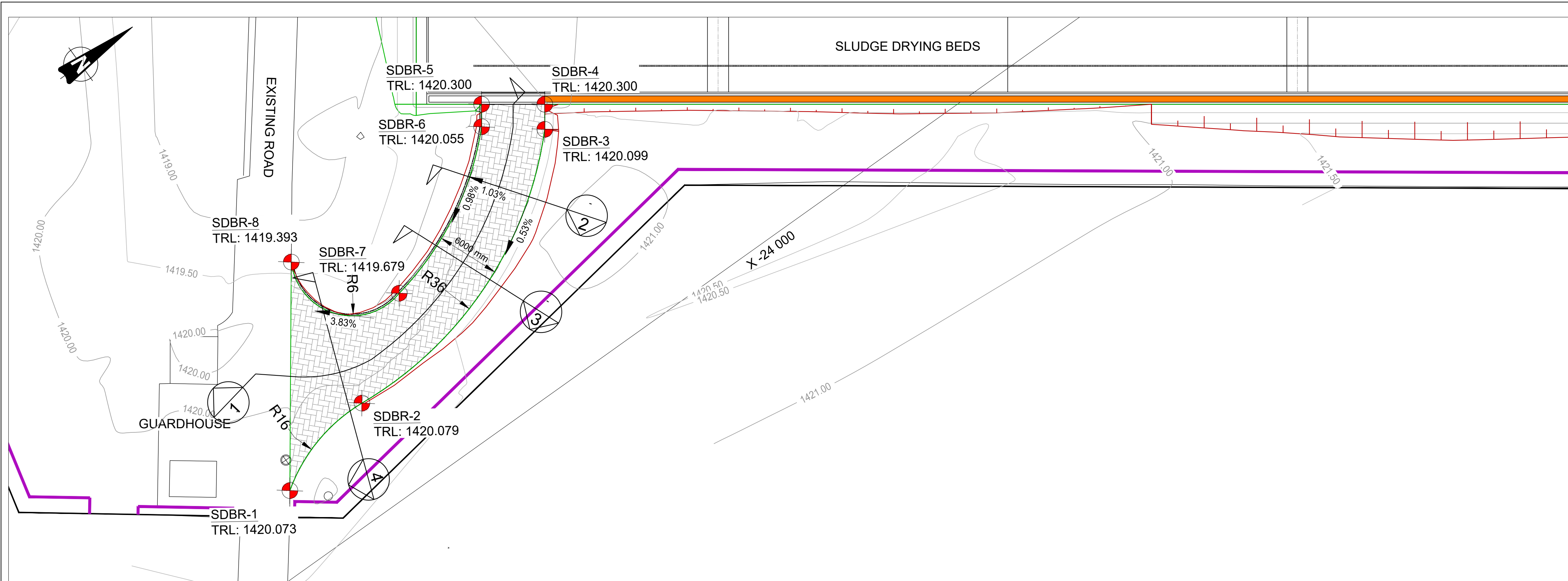
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7.1. 2300082-08-81-C-200-BULK EARTHWORKS LAYOUT  
7.2. 2300082-08-81-C-100-DEWATERING PLANT ACCESS ROAD

EARTHWORKS:

8. REMOVE ALL VEGETATION AND ROOTS.
9. REMOVE TOP SOIL TO AN APPROXIMATE DEPTH OF 150mm.
10. REMOVE UNSUITABLE SUBGRADE MATERIALS AS ORDERED BY THE ENGINEER, ALL IN ACCORDANCE WITH CTMM SERIES 2, SECTION 203.
11. DENSITY TESTS TO BE UNDERTAKEN BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO PLACING CONSECUTIVE LAYERS.
12. ALL FINISHED FLOOR LEVELS TO BE VERIFIED WITH SLUDGE DRYING BED DRAWINGS.
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17. WHERE KERB RADIUS IS LESS THAN 25m THE KERB LENGTH SHALL BE 300mm WHERE THE KERB RADIUS IS LESS THAN 2m.
18. PRECAST KERB ARE TO BE LAID WITH A 13mm GAP BETWEEN KERBS, WHICH SHALL THEN BE FILLED WITH A CEMENT MORTAR.
19. THE CONCRETE MIX DESIGN IS TO BE APPROVED BY THE ENGINEER.
20. EXPANSION JOINTS ARE TO BE FORMED AT 8.0m INTERVALS ON STRAIGHTS AND 2.0m INTERVAS WHERE THE KERB RADIUS IS LESS THAN 50m.
21. FIG 6 STD KERB WITH CAST IN SITU CHANNEL/ FILLET.



|                                                                                                                                                     |                   |      |          |                                                                                      |                                 |                                                              |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                             |                                                                                           |                   |                                                                                                                                                                                  |                                                        |                                                   |                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|----------|--------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------|----------------------------|
| <br><b>CITY OF TSHWANE</b><br>WATER AND SANITATION<br>DEPARTMENT | <b>AMENDMENTS</b> |      |          | <b>WATER AND SANITATION</b><br>FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE |                                 |                                                              | <b>CONSULTANT DETAIL</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                             | <b>DESIGNED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                   | CONTRACT No: _____                                                                                                                                                               | <b>PROJECT STATUS</b><br>RECEIVED SIGN WHEN APPLICABLE |                                                   | LOCATION OF PROJECT: _____ |
|                                                                                                                                                     | NR                | DATE | APPROVED | DESCRIPTION                                                                          | PAR                             | DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT | NAME _____ Prof. Reg. No. _____ SIGNATURE _____ DATE _____ |   <br><small>HEAD OFFICE: 203 Wilch Hazel Avenue, Highveld Technopark, Centurion, 0157, SA<br/>P.O. Box 68735, Highveld, 0169, South Africa<br/>Tel: +27 (0)12 685 9900 / Fax: +27 (0)12 685 1886 / www.nakogroup.com</small> | <b>DRAWN</b><br>NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                              |                                                                                           | PROJECT No: _____ | <input type="radio"/> CONCEPT DRAWING <input checked="" type="radio"/> TENDER DRAWING <input type="radio"/> APPROVED CONSTRUCTION DRAWING <input type="radio"/> AS BUILT DRAWING |                                                        | DESCRIPTION OF PROJECT: _____                     |                            |
|                                                                                                                                                     |                   |      |          | ISSUED FOR TENDER                                                                    |                                 | DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT     | NAME _____ Prof. Reg. No. _____ SIGNATURE _____ DATE _____ |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>CHECKED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                    |                                                                                           | SHEET No: _____   | PROJECT ENGINEER OF COT: _____                                                                                                                                                   |                                                        | UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT |                            |
|                                                                                                                                                     |                   |      |          |                                                                                      |                                 | DIRECTOR: BULK WATER                                         | NAME _____ Prof. Reg. No. _____ SIGNATURE _____ DATE _____ |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>INFORMATION OFFICE CHECKED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                                                                                           | PAPER SIZE: _____ | INSPECTOR OF WORKS OF COT: _____                                                                                                                                                 |                                                        | DEWATERING PLANT ACCESS SECTIONS                  |                            |
|                                                                                                                                                     |                   |      |          |                                                                                      |                                 | DIRECTOR: INFRASTRUCTURE PROVISION                           | NAME _____ Prof. Reg. No. _____ SIGNATURE _____ DATE _____ |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>DESIGN OFFICE APPROVAL</b><br>NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____             |                                                                                           | A1                | NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                                                                                                                   |                                                        | WBS No. : _____                                   |                            |
|                                                                                                                                                     |                   |      |          |                                                                                      | DIRECTOR: WASTE WATER TREATMENT | NAME _____ Prof. Reg. No. _____ SIGNATURE _____ DATE _____   | CONSULTANT DRAWING NUMBER:<br><b>2300082-08-81-C-101</b>   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                             | SCALE: _____                                                                              |                   |                                                                                                                                                                                  | COT DRAWING NUMBER: _____                              |                                                   |                            |
|                                                                                                                                                     |                   |      |          |                                                                                      |                                 | NAME _____ Prof. Reg. No. _____ SIGNATURE _____ DATE _____   |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                             | DATE: _____                                                                               |                   |                                                                                                                                                                                  |                                                        |                                                   |                            |



PLAN  
SCALE 1:250

|                      |                          |          |                           |          |          |          |          |          |                           |                     |
|----------------------|--------------------------|----------|---------------------------|----------|----------|----------|----------|----------|---------------------------|---------------------|
|                      |                          |          |                           |          |          |          |          |          |                           |                     |
| PEG DISTANCE (m)     | 0                        | 5        | 10                        | 15       | 20       | 25       | 30       | 35       | 40                        |                     |
| GROUND LEVELS (m)    |                          | 1419.994 | 1420.004                  | 1420.162 | 1420.425 | 1420.641 | 1420.618 | 1420.597 | 1420.550                  |                     |
| DESIGN LEVELS (m)    |                          | 1419.952 | 1419.925                  | 1419.955 | 1420.005 | 1420.030 | 1420.055 | 1420.075 | 1420.100                  |                     |
| HORIZONTAL ALIGNMENT | STRAIGHT<br>219° 32' 30" | 1419.952 | ECC<br>11.313<br>1419.925 | 1419.955 | 1420.005 | 1420.030 | 1420.055 | 1420.075 | ECC<br>11.313<br>1420.100 | STRAIGHT<br>30° 20" |

SECTION 1  
HOR SCALE 1:200  
VER SCALE 1:200

|                        |   |          |          |          |          |          |  |  |  |  |
|------------------------|---|----------|----------|----------|----------|----------|--|--|--|--|
|                        |   |          |          |          |          |          |  |  |  |  |
| PEG DISTANCE (m)       | 0 | 2        | 4        | 6        | 8        | 10       |  |  |  |  |
| GROUND LEVELS (m)      |   | 1420.874 | 1420.895 | 1420.916 | 1420.933 | 1420.953 |  |  |  |  |
| PLATFORM LEVELS (m)    |   | 1420.10  | 1420.07  | 1420.05  | 1420.04  | 1420.04  |  |  |  |  |
| CUT AND FILL DEPTH (m) |   | -0.77    | -0.62    | -0.47    | -0.31    |          |  |  |  |  |

SECTION 2  
HOR SCALE 1:200  
VER SCALE 1:200

|                        |   |          |          |          |          |         |  |  |  |  |
|------------------------|---|----------|----------|----------|----------|---------|--|--|--|--|
|                        |   |          |          |          |          |         |  |  |  |  |
| PEG DISTANCE (m)       | 0 | 2        | 4        | 6        | 8        | 10      |  |  |  |  |
| GROUND LEVELS (m)      |   | 1420.699 | 1420.644 | 1420.513 | 1420.254 | 1419.96 |  |  |  |  |
| PLATFORM LEVELS (m)    |   | 1420.10  | 1420.05  | 1420.00  | 1419.96  | 1419.96 |  |  |  |  |
| CUT AND FILL DEPTH (m) |   | -0.80    | -0.80    | -0.51    | -0.29    |         |  |  |  |  |

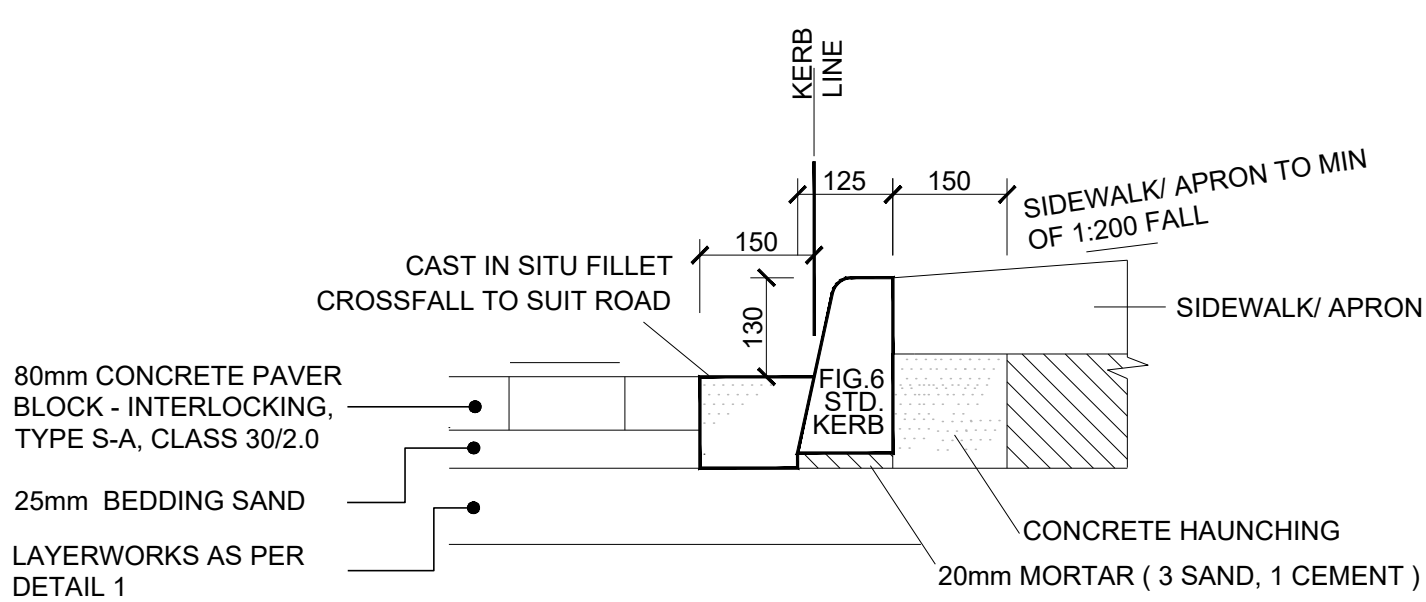
SECTION 3  
HOR SCALE 1:200  
VER SCALE 1:200

|                        |   |          |          |          |          |          |          |          |          |  |  |  |  |  |  |
|------------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|--|--|--|--|--|--|
|                        |   |          |          |          |          |          |          |          |          |  |  |  |  |  |  |
| PEG DISTANCE (m)       | 0 | 2        | 4        | 6        | 8        | 10       | 12       | 14       | 15       |  |  |  |  |  |  |
| GROUND LEVELS (m)      |   | 1420.161 | 1420.083 | 1419.993 | 1419.929 | 1419.872 | 1419.802 | 1419.677 | 1419.677 |  |  |  |  |  |  |
| PLATFORM LEVELS (m)    |   | 1420.05  | 1419.97  | 1419.88  | 1419.79  | 1419.67  | 1419.67  | 1419.67  | 1419.67  |  |  |  |  |  |  |
| CUT AND FILL DEPTH (m) |   | -0.03    | -0.02    | -0.05    | -0.08    | -0.14    |          |          |          |  |  |  |  |  |  |

SECTION 4  
HOR SCALE 1:200  
VER SCALE 1:200

|                                                                  |  |
|------------------------------------------------------------------|--|
| 80mm CONCRETE PAVER BLOCK, INTERLOCKING, TYPE S-A, CLOASS 30/2.0 |  |
| 25mm BEDDING SAND                                                |  |
| 150mm G5 @ 98% MOD. AASHTO                                       |  |
| 150mm G6 @ 95% MOD. AASHTO                                       |  |
| 150mm IN-SITU MATERIAL TO 93% MOD. AASHTO                        |  |

ACCESS ROAD LAYERWORKS  
DETAIL 1  
SCALE 1:10



KERBING  
DETAIL 2  
SCALE 1:10

LEGEND :

|  |                        |  |                            |
|--|------------------------|--|----------------------------|
|  | CONTOURS               |  | PROPOSED ELECTRIC FENCE    |
|  | PROPOSED SEWER         |  | STORMWATER CUT-OFF CHANNEL |
|  | STORMWATER PIPE        |  |                            |
|  | G101                   |  |                            |
|  | BARRIER KERB           |  |                            |
|  | BARRIER KERB & CHANNEL |  |                            |
|  | 150 x 150mm CHANNEL    |  |                            |
|  | SEGMENTED BLOCK PAVING |  |                            |
|  | SETTING OUT POINT      |  |                            |
|  | CUT                    |  |                            |
|  | FILL                   |  |                            |

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- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CoT CTMM CIVIL ENGINEERING WORKS STANDARD SPECIFICATION, 2005 AND SANS 1200. WHERE THE TWO SPECIFICATIONS CONTRADICT ONE ANOTHER, THE CoT CTMM SPECIFICATION MUST TAKE PRECEDENCE.
- SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1200 A - 5.7, SAFETY.
- THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROXIMATE AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
- THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
- A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE WORKS TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR PRIOR TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
- CONTRACTOR TO LIAISE WITH THE CITY OF TSHWANE MUNICIPALITY W.R.T THE REINSTATEMENT OF ROAD SURFACING AND SIDEWALKS.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:  
7.1. 2300082-08-81-C-200-BULK EARTHWORKS LAYOUT

EARTHWORKS:

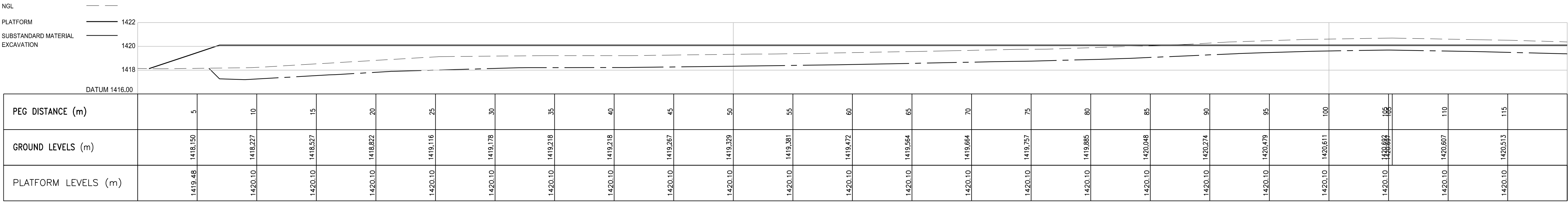
- REMOVE ALL VEGETATION AND ROOTS.
- REMOVE TOP SOIL TO AN APPROXIMATE DEPTH OF 150mm.
- REMOVE UNSUITABLE SUBGRADE MATERIALS AS ORDERED BY THE ENGINEER, ALL IN ACCORDANCE WITH CTMM SERIES 2, SECTION 203.
- DENSITY TESTS TO BE UNDERTAKEN BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO PLACING CONSECUTIVE LAYERS.
- ALL FINISHED FLOOR LEVELS TO BE VERIFIED WITH SLUDGE DRYING BED DRAWINGS.
- CUT & FILL SLOPES OF 1:3 ARE TO BE GRASSED OR RETAINED WITH SEGMENTED RETAINING BLOCKS WHERE OTHERWISE INDICATED ON DRAWINGS.
- ALL VERTICAL RETAINING WALLS ARE INDICATIVE AND FINAL POSITIONS, AND DETAILS WILL BE AS PER STRUCTURAL ENGINEER'S DESIGN.

KERBING:

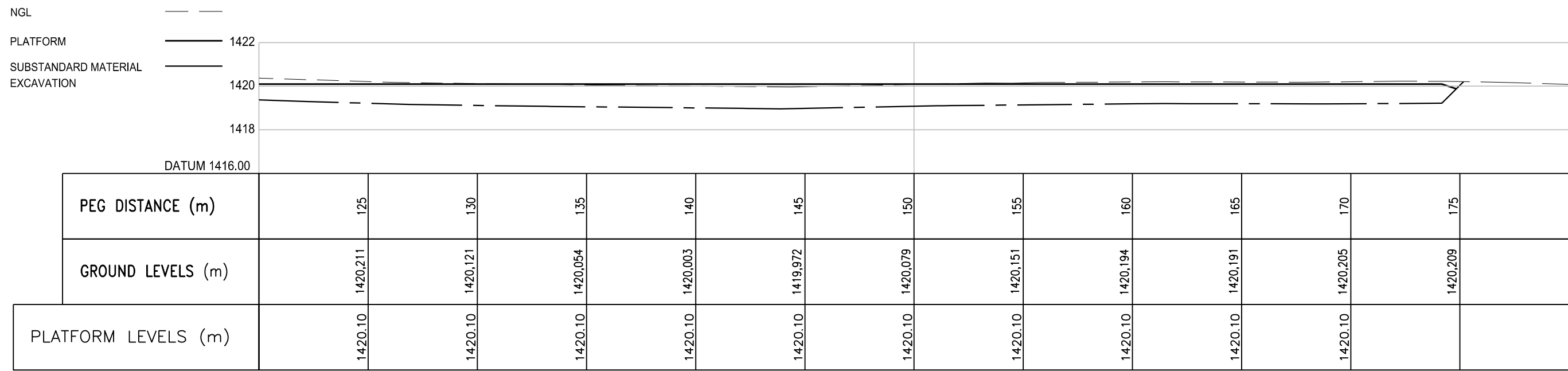
- ALL KERBS AND CHANNELS TO BE 25MPa STRENGTH CONCRETE.
- THE SURFACES OF THE CAST IN SITU CHANNEL/FILLET ARE TO HAVE A STEEL FLOAT FINISH.
- WHERE KERB RADIUS IS LESS THAN 25m THE KERB LENGTH SHALL BE 300mm WHERE THE KERB RADIUS IS LESS THAN 2m.
- PRECAST KERB ARE TO BE LAID WITH A 13mm GAP BETWEEN KERBS, WHICH SHALL THEN BE FILLED WITH A CEMENT MORTAR.
- THE CONCRETE MIX DESIGN IS TO BE APPROVED BY THE ENGINEER.
- EXPANSION JOINTS ARE TO BE FORMED AT 8.0m INTERVALS ON STRAIGHTS AND 2.0m INTERVALS WHERE THE KERB RADIUS IS LESS THAN 50m.
- FIG 6 STD KERB WITH CAST IN SITU CHANNEL/ FILLET.

|                                                                  |                   |            |          |                                                                                      |     |                                                              |                          |               |           |                                                                                           |                                                                                                             |  |                              |                          |  |                                                        |                                                           |  |                             |                                                            |  |  |
|------------------------------------------------------------------|-------------------|------------|----------|--------------------------------------------------------------------------------------|-----|--------------------------------------------------------------|--------------------------|---------------|-----------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--|------------------------------|--------------------------|--|--------------------------------------------------------|-----------------------------------------------------------|--|-----------------------------|------------------------------------------------------------|--|--|
| <br><b>CITY OF TSHWANE</b><br>WATER AND SANITATION<br>DEPARTMENT | <b>AMENDMENTS</b> |            |          | <b>WATER AND SANITATION</b><br>FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE |     |                                                              | <b>CONSULTANT DETAIL</b> |               |           | <b>DESIGNED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                                                                                                             |  | <b>CONTRACT</b><br>No: _____ |                          |  | <b>PROJECT STATUS</b><br>RECEIVED SIGN WHEN APPLICABLE |                                                           |  | <b>LOCATION OF PROJECT:</b> |                                                            |  |  |
|                                                                  | NR                | DATE       | APPROVED | DESCRIPTION                                                                          | PAR | DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                      | <b>DRAWN</b><br>NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                              |  |                              | <b>PROJECT No.</b>       |  |                                                        | <input type="radio"/> CONCEPT<br>DRAWING                  |  |                             | <b>DESCRIPTION OF PROJECT:</b>                             |  |  |
|                                                                  | A                 | 2025-07-24 | AJW      | ISSUED FOR INFORMATION                                                               |     | REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                        | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                      | <b>CHECKED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                    |  |                              | <b>SHEET No.</b>         |  |                                                        | <input checked="" type="radio"/> TENDER<br>DRAWING        |  |                             | <b>UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT</b>   |  |  |
|                                                                  |                   |            |          |                                                                                      |     | DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT     | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                      | <b>INFORMATION OFFICE CHECKED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |  |                              | <b>PAPER SIZE:</b><br>A1 |  |                                                        | <input type="radio"/> APPROVED<br>CONSTRUCTION<br>DRAWING |  |                             | <b>SLUDGE DRYING BEDS ACCESS ROAD LAYOUT &amp; DETAILS</b> |  |  |
|                                                                  |                   |            |          |                                                                                      |     | DIRECTOR: BULK WATER                                         | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                      | <b>DESIGN OFFICE APPROVAL</b><br>NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____             |  |                              | <b>SCALE:</b>            |  |                                                        | <b>PROJECT ENGINEER OF COT:</b>                           |  |                             | <b>WBS No. :</b>                                           |  |  |
|                                                                  |                   |            |          |                                                                                      |     | DIRECTOR: INFRASTRUCTURE PROVISION                           | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                      |                                                                                                             |  |                              | <b>DATE:</b>             |  |                                                        | <b>INSPECTOR OF WORKS OF COT:</b>                         |  |                             | <b>COT DRAWING NUMBER:</b>                                 |  |  |
|                                                                  |                   |            |          |                                                                                      |     | DIRECTOR: WASTE WATER TREATMENT                              | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                      |                                                                                                             |  |                              |                          |  |                                                        | <b>NAME: _____</b>                                        |  |                             | <b>Prof Reg No: _____</b>                                  |  |  |
|                                                                  |                   |            |          |                                                                                      |     | DIRECTOR: WASTE WATER TREATMENT                              | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                      |                                                                                                             |  |                              | <b>DATE: _____</b>       |  |                                                        | <b>SIGNATURE: _____</b>                                   |  |                             | <b>DATE: _____</b>                                         |  |  |



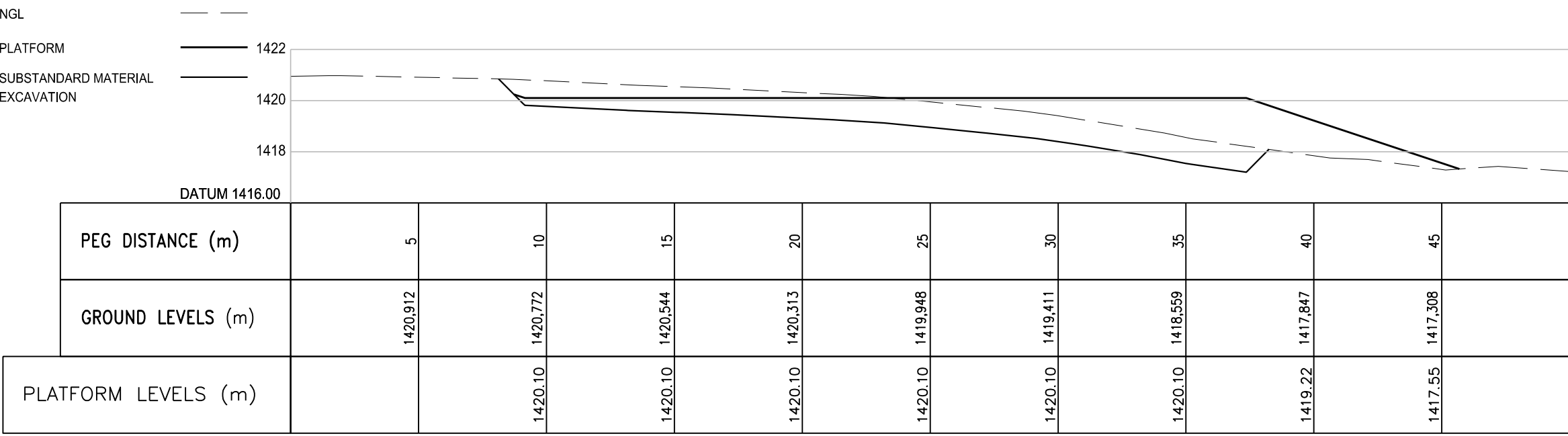


|                       |                        |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-----------------------|------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| SUB-STANDARD MATERIAL | CUT AND FILL DEPTH (m) |      |      | -0.97 | -0.99 | -1.00 | -1.12 | -1.04 | -1.01 | -1.00 | -1.00 | -1.00 | -0.99 | -1.00 | -1.00 | -0.99 | -1.00 | -0.98 | -0.99 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.02 | -1.00 |
|                       |                        |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| TO PLATFORM LEVEL.    | CUT AND FILL DEPTH (m) | 1.33 | 2.85 | 2.66  | 2.28  | 2.10  | 1.96  | 1.89  | 1.88  | 1.83  | 1.77  | 1.70  | 1.63  | 1.53  | 1.43  | 1.34  | 1.21  | 1.03  | 0.81  | 0.62  | 0.49  | 0.41  | 0.50  | 0.60  | 0.73  |       |
|                       |                        |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |



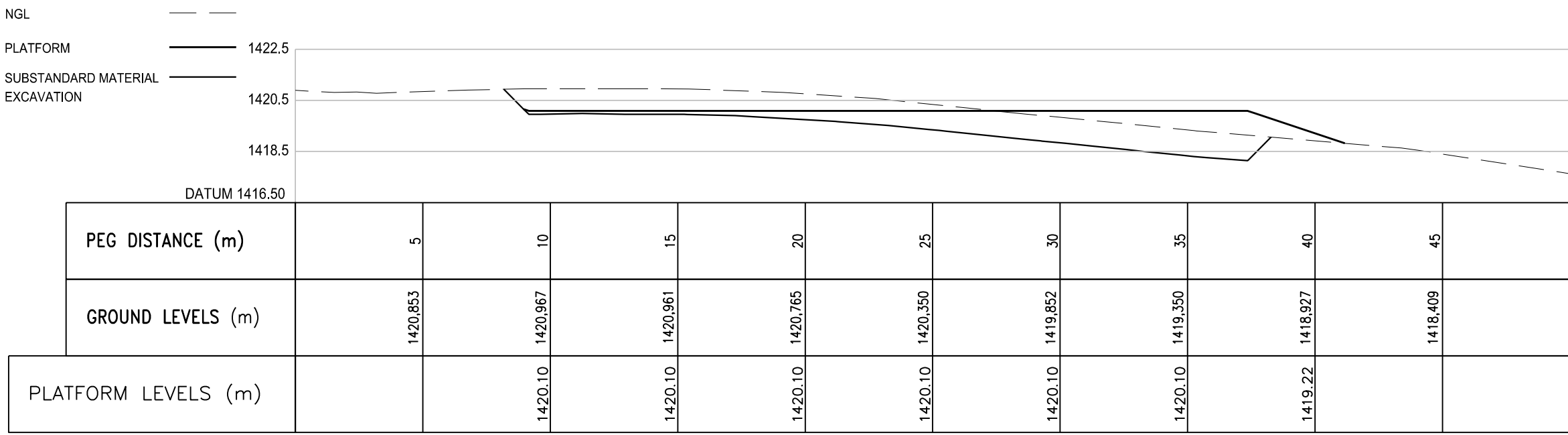
|                               |                        |       |       |       |       |       |       |       |       |       |       |       |       |  |  |
|-------------------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|
| SUB-STANDARD MATERIAL REMOVAL | CUT AND FILL DEPTH (m) | -1.00 | -0.99 | -1.00 | -1.00 | -1.00 | -0.99 | -1.00 | -1.01 | -1.00 | -1.00 | -1.01 | -0.16 |  |  |
|                               |                        |       |       |       |       |       |       |       |       |       |       |       |       |  |  |
| TO PLATFORM LEVEL             | CUT AND FILL DEPTH (m) | 0.73  | 0.88  | 0.88  | 1.04  | 1.09  | 1.11  | 1.02  | 0.98  | 0.91  | 0.90  | 0.90  |       |  |  |
|                               |                        |       |       |       |       |       |       |       |       |       |       |       |       |  |  |

SECTION A  
HOR SCALE 1:200  
VER SCALE 1:200



|                               |                        |  |       |       |       |       |       |       |      |      |  |
|-------------------------------|------------------------|--|-------|-------|-------|-------|-------|-------|------|------|--|
| SUB-STANDARD MATERIAL REMOVAL | CUT AND FILL DEPTH (m) |  | -1.00 | -1.00 | -1.00 | -1.00 | -1.02 | -1.01 |      |      |  |
|                               |                        |  |       |       |       |       |       |       |      |      |  |
| TO PLATFORM LEVEL             | CUT AND FILL DEPTH (m) |  | 0.33  | 0.66  | 0.79  | 1.15  | 1.71  | 2.56  | 1.37 | 0.24 |  |
|                               |                        |  |       |       |       |       |       |       |      |      |  |

SECTION C  
HOR SCALE 1:200  
VER SCALE 1:200



|                               |                        |  |       |       |       |       |       |       |      |  |  |
|-------------------------------|------------------------|--|-------|-------|-------|-------|-------|-------|------|--|--|
| SUB-STANDARD MATERIAL REMOVAL | CUT AND FILL DEPTH (m) |  | -0.99 | -1.00 | -1.01 | -1.00 | -1.00 | -1.01 |      |  |  |
|                               |                        |  |       |       |       |       |       |       |      |  |  |
| TO PLATFORM LEVEL             | CUT AND FILL DEPTH (m) |  | 0.13  | 0.14  | 0.95  | 0.75  | 1.26  | 1.76  | 0.29 |  |  |
|                               |                        |  |       |       |       |       |       |       |      |  |  |

SECTION D  
HOR SCALE 1:200  
VER SCALE 1:200

- NOTES:**
- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CoT CTMM CIVIL ENGINEERING WORKS STANDARD SPECIFICATION, 2005 AND SANS 1200. WHERE THE TWO SPECIFICATIONS CONTRADICT ONE ANOTHER, THE CoT CTMM SPECIFICATION MUST TAKE PRECEDENCE.
  - SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1200 A - 5.7, SAFETY.
  - THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROXIMATE AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
  - THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
  - A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE WORKS, TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR PRIOR TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
  - CONTRACTOR TO LIAISE WITH THE CITY OF TSHWANE MUNICIPALITY W.R.T THE REINSTATEMENT OF ROAD SURFACING AND SIDEWALKS.
  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:  
7.1. 2300082-08-81-C-200-BULK EARTHWORKS LAYOUT  
7.2. 2300082-08-81-C-202-BULK EARTHWORKS SECTIONS
- EARTHWORKS NOTES:
- REMOVE ALL VEGETATION AND ROOTS.
  - REMOVE TOP SOIL TO AN APPROXIMATE DEPTH OF 150mm.
  - REMOVE UNSUITABLE SUBGRADE MATERIALS AS ORDERED BY THE ENGINEER, ALL IN ACCORDANCE WITH CTMM SERIES 2, SECTION 203.
  - DENSITY TESTS TO BE UNDERTAKEN BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO PLACING CONSECUTIVE LAYERS.
  - ALL FINISHED FLOOR LEVELS TO BE VERIFIED WITH SLUDGE DRYING BED DRAWINGS.
  - CUT & FILL SLOPES OF 1:3 ARE TO BE GRASSED.
  - CUT & FILL SLOPES OF 1:2 ARE TO BE GRASSED OR RETAINED WITH SEGMENTED BLOCK PAVERS WHERE OTHERWISE INDICATED ON DRAWINGS.
  - ALL VERTICAL RETAINING WALLS ARE INDICATIVE AND FINAL POSITIONS, AND DETAILS WILL BE AS PER STRUCTURAL ENGINEER'S DESIGN.



CITY OF TSHWANE  
WATER AND SANITATION  
DEPARTMENT

| AMENDMENTS |            |          |                   | PAR |
|------------|------------|----------|-------------------|-----|
| NR         | DATE       | APPROVED | DESCRIPTION       |     |
| A          | 2025-10-09 | AJW      | ISSUED FOR TENDER |     |
|            |            |          |                   |     |
|            |            |          |                   |     |
|            |            |          |                   |     |
|            |            |          |                   |     |
|            |            |          |                   |     |
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|            |            |          |                   |     |
|            |            |          |                   |     |

| WATER AND SANITATION                                         |               |           |      |
|--------------------------------------------------------------|---------------|-----------|------|
| FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE        |               |           |      |
| DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                        |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT     |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: BULK WATER                                         |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: INFRASTRUCTURE PROVISION                           |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: WASTE WATER TREATMENT                              |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |

CONSULTANT DETAIL

**2 BLN** ENGINEERING  
HEAD OFFICE  
203 Wilch Hazel Avenue, Highveld Technopark, Centurion, 0157, SA  
P.O. Box 68735, Highveld, 0169, South Africa  
Tel: +27 (0)12 685 9900 / Fax: +27 (0)12 685 1886 / www.nakogroup.com

**NAKO** ILISO

HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

CONSULTANT DRAWING NUMBER:  
**2300082-08-81-C-201**

DESIGNED  
NAME: \_\_\_\_\_ Pr Eng. Prof Reg No: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

DRAWN  
NAME: \_\_\_\_\_ Prof Reg No: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

CHECKED  
NAME: \_\_\_\_\_ Pr Eng. Prof Reg No: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

INFORMATION OFFICE CHECKED  
NAME: \_\_\_\_\_ Pr Eng. Prof Reg No: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

DESIGN OFFICE APPROVAL  
NAME: \_\_\_\_\_ Prof Reg No: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

CONTRACT No: \_\_\_\_\_

PROJECT No: \_\_\_\_\_

SHEET No: \_\_\_\_\_

PAPER SIZE: A1

SCALE: \_\_\_\_\_

DATE: \_\_\_\_\_

PROJECT STATUS  
RECEIVED SIGN WHEN APPLICABLE

CONCEPT DRAWING TENDER DRAWING APPROVED CONSTRUCTION DRAWING AS BUILT DRAWING

PROJECT ENGINEER OF COT:  
NAME: \_\_\_\_\_ Pr Eng. Prof Reg No: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

INSPECTOR OF WORKS OF COT:  
NAME: \_\_\_\_\_ Prof Reg No: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

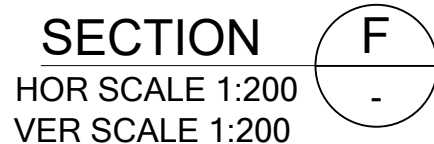
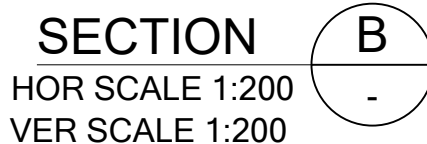
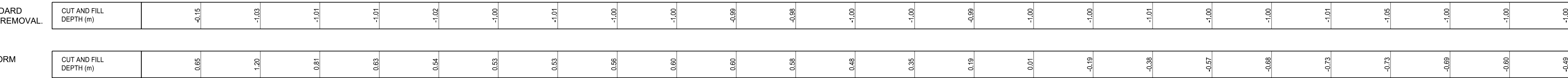
LOCATION OF PROJECT:

DESCRIPTION OF PROJECT:  
**UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT**

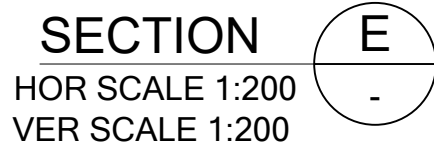
**SLUDGE DRYING BEDS BULK EARTHWORKS SECTIONS**

WBS No. : \_\_\_\_\_

COT DRAWING NUMBER: \_\_\_\_\_



8. REMOVE ALL VEGETATION AND ROOTS.
9. REMOVE TOP SOIL TO AN APPROXIMATE DEPTH OF 150mm.
10. REMOVE UNSUITABLE SUBGRADE MATERIALS AS ORDERED BY THE ENGINEER, ALL IN ACCORDANCE WITH CTMM SERIES 2, SECTION 203.
11. DENSITY TESTS TO BE UNDERTAKEN BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO PLACING CONSECUTIVE LAYERS.
12. ALL FINISHED FLOOR LEVELS TO BE VERIFIED WITH SLUDGE DRYING BED DRAWINGS.
13. CUT & FILL SLOPES OF 1:3 ARE TO BE GRASSED.
14. CUT & FILL SLOPES OF 1:2 ARE TO BE GRASSED OR RETAINED WITH SEGMENTED BLOCK PAVERS WHERE OTHERWISE INDICATED ON DRAWINGS.
15. ALL VERTICAL RETAINING WALLS ARE INDICATIVE AND FINAL POSITIONS, AND DETAILS WILL BE AS PER STRUCTURAL ENGINEER'S DESIGN.



REVISION



LEGEND :

- CONTOURS
- PROPOSED SLUDGE DRYING BED
- PROPOSED 1600 uPVC PIPE
- EXISTING FENCE
- PROPOSED ELECTRIC FENCE



CITY OF TSHWANE  
WATER AND SANITATION  
DEPARTMENT

| AMENDMENTS |      |          |             |     |
|------------|------|----------|-------------|-----|
| NR         | DATE | APPROVED | DESCRIPTION | PAR |
|            |      |          |             |     |
|            |      |          |             |     |
|            |      |          |             |     |
|            |      |          |             |     |
|            |      |          |             |     |
|            |      |          |             |     |
|            |      |          |             |     |

| WATER AND SANITATION                                         |               |           |      |
|--------------------------------------------------------------|---------------|-----------|------|
| FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE        |               |           |      |
| DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                        |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT     |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: BULK WATER                                         |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: INFRASTRUCTURE PROVISION                           |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: WASTE WATER TREATMENT                              |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |

CONSULTANT DETAIL



HEAD OFFICE  
203 Wilsch Hazel Avenue, Highveld Technopark, Centurion, 0157, SA  
P.O. Box 68726, Highveld, 0169, South Africa  
Tel: +27 (0)12 665 0900 / Fax: +27 (0)12 665 1886 / www.nakgroup.com

HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED  
ACCORDING TO NOTE 9 OF THE ABOVE. NOTES AND TO THE  
DRAWING

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
CONSULTANT DRAWING NUMBER:  
**2300082-08-81-C-300**

|                            |             |                    |
|----------------------------|-------------|--------------------|
| DESIGNED                   |             |                    |
| NAME: _____                | Pr Eng      | Prof Reg No: _____ |
| SIGNATURE: _____           | DATE: _____ |                    |
| DRAWN                      |             |                    |
| NAME: _____                | Pr Eng      | Prof Reg No: _____ |
| SIGNATURE: _____           | DATE: _____ |                    |
| CHECKED                    |             |                    |
| NAME: _____                | Pr Eng      | Prof Reg No: _____ |
| SIGNATURE: _____           | DATE: _____ |                    |
| INFORMATION OFFICE CHECKED |             |                    |
| NAME: _____                | Pr Eng      | Prof Reg No: _____ |
| SIGNATURE: _____           | DATE: _____ |                    |
| DESIGN OFFICE APPROVAL     |             |                    |
| NAME: _____                | Pr Eng      | Prof Reg No: _____ |
| SIGNATURE: _____           | DATE: _____ |                    |

|                    |
|--------------------|
| CONTRACT No: _____ |
| PROJECT No: _____  |
| SHEET No: _____    |
| PAPER SIZE: A1     |
| SCALE: _____       |
| DATE: _____        |

PROJECT STATUS

RECEIVED SIGN WHEN APPLICABLE

CONCEPT DRAWING TENDER DRAWING APPROVED DRAWING AS BUILT DRAWING

PROJECT ENGINEER OF COT:

NAME: \_\_\_\_\_ Pr Eng: \_\_\_\_\_ Prof Reg No: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

INSPECTOR OF WORKS OF COT:

NAME: \_\_\_\_\_ Pr Eng: \_\_\_\_\_ Prof Reg No: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

LOCATION OF PROJECT:

DESCRIPTION OF PROJECT:

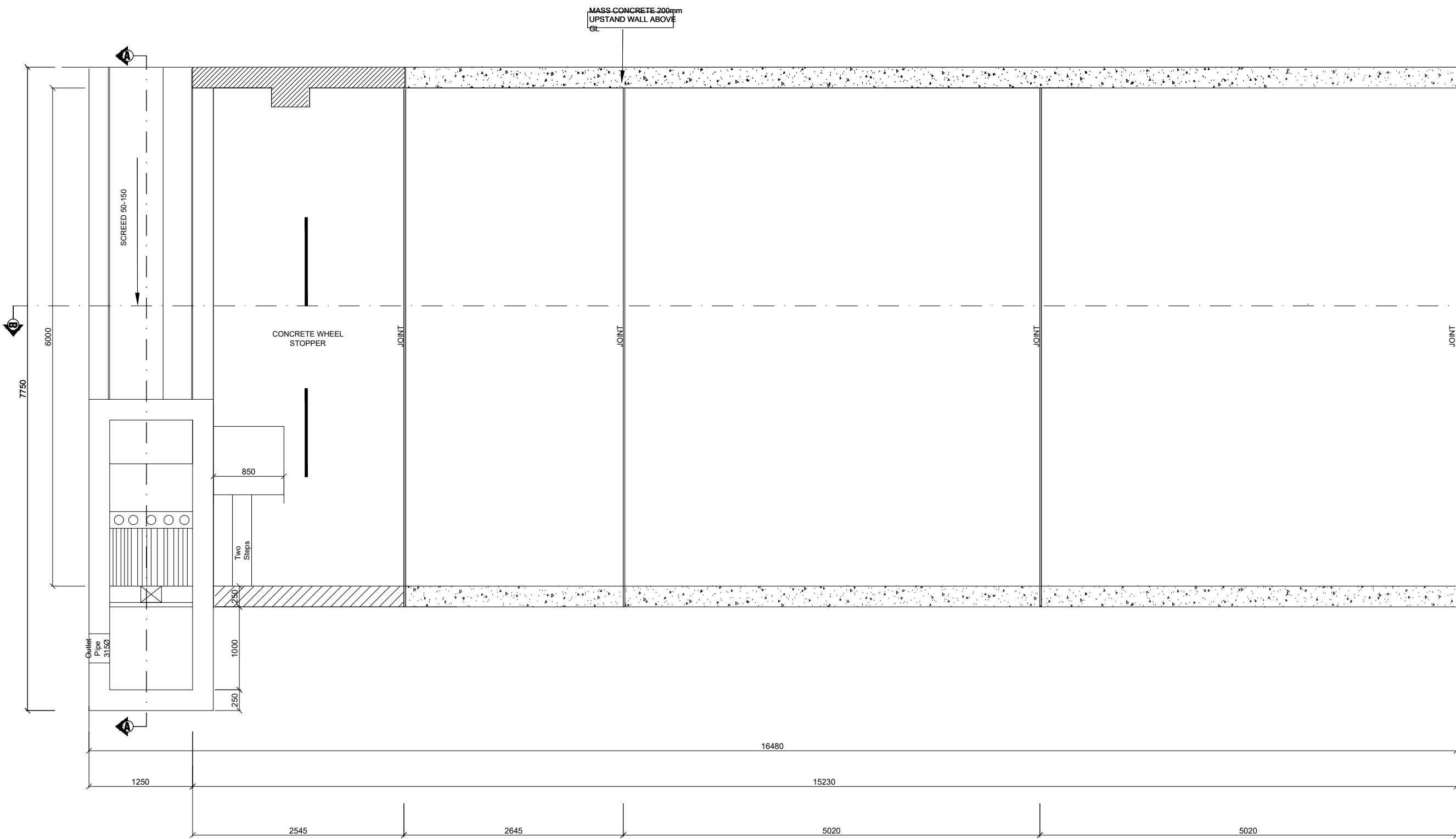
UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT

GENERAL LAYOUT

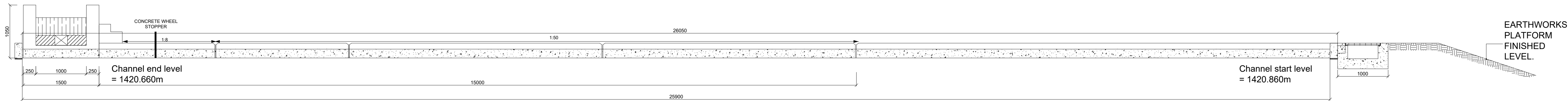
WBS No. :

COT DRAWING NUMBER:

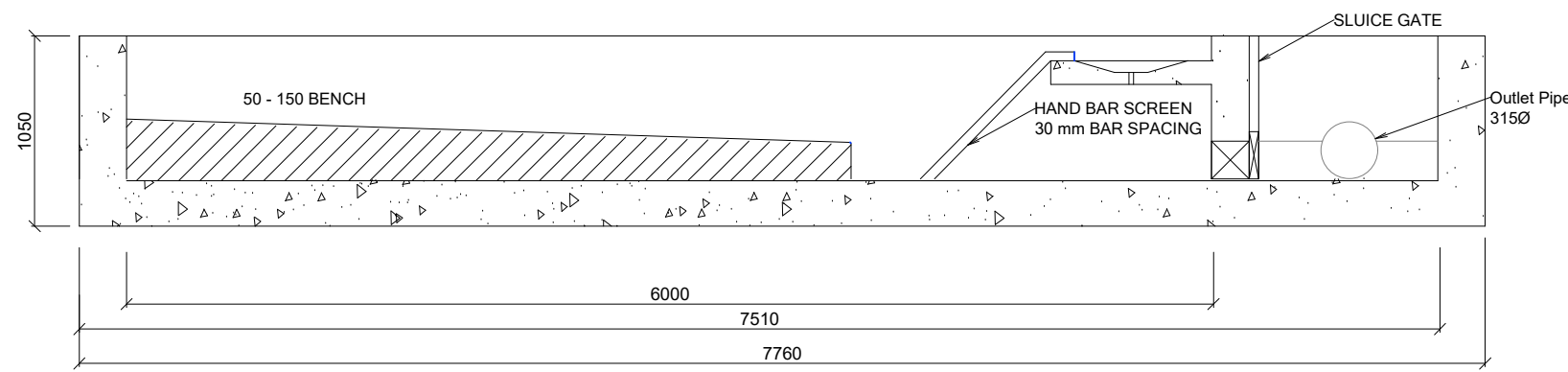




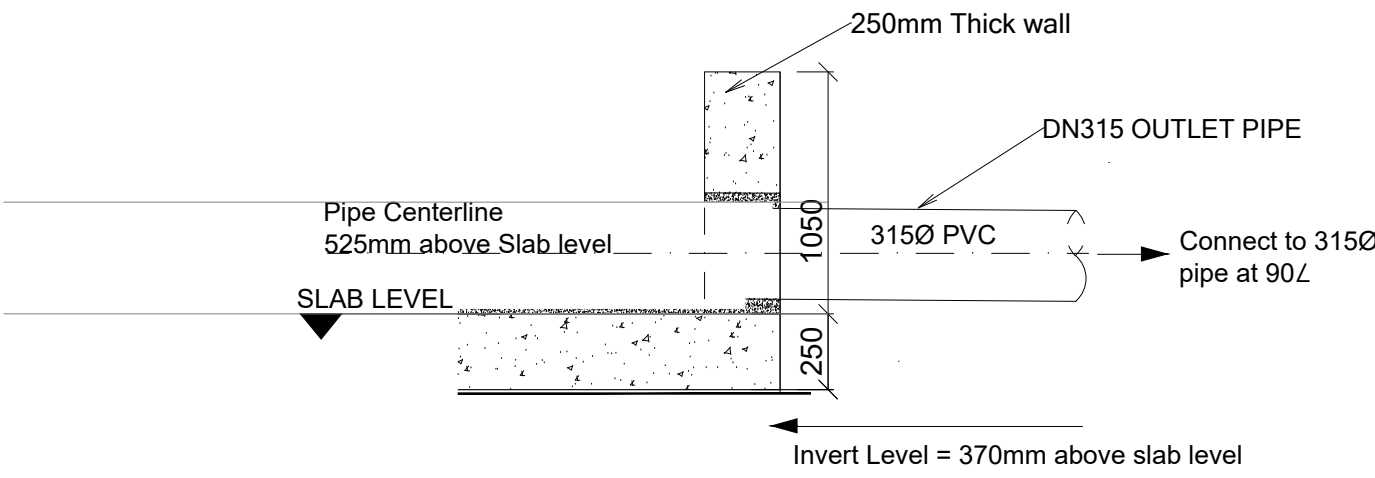
LAYOUT PLAN  
SCALE 1:50



SECTION B-B  
SCALE 1:25



SECTION A-A  
SCALE 1:25



OUTLET PIPE  
DETAILS  
SCALE 1:25

NOTES:

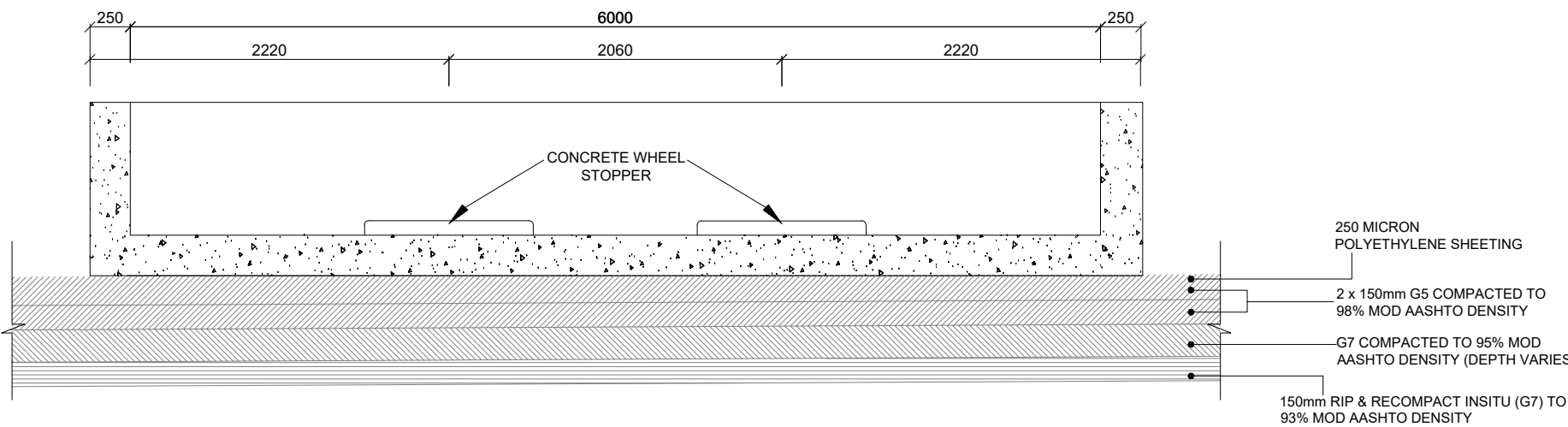
1. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CoT CTMM CIVIL ENGINEERING WORKS STANDARD SPECIFICATION, 2005 AND SANS 1200 WHERE THE TWO SPECIFICATIONS CONTRADICT ONE ANOTHER, THE CoT CTMM SPECIFICATION MUST TAKE PRECEDENCE.
2. SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1200 A - 5.7. SAFETY.
3. THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROXIMATE AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
4. THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
5. A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE WORKS, TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR PRIOR TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
6. CONTRACTOR TO LAISE WITH THE CITY OF TSHWANE MUNICIPALITY W.R.T THE REINSTATEMENT OF ROAD SURFACING AND SIDEWALKS.
7. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:
  - 7.1. 2300082-08-81-C-311-SLUDGE DRYING BEDS SECTIONS
  - 7.2. 2300082-08-81-C-312-SLUDGE DRYING BEDS SECTIONS
  - 7.2. 2300082-08-81-C-313-SLUDGE DRYING BEDS DETAILS
  - 7.3. 2300082-08-S-104 STRUCTURAL ENGINEERING STANDARD AND GENERAL NOTES

KERBING

8. ALL KERBS AND CHANNELS TO BE 30MPa STRENGTH CONCRETE.
9. PRECAST KERB ARE TO BE LAID WITH A 13mm GAP BETWEEN KERBS, WHICH SHALL THEN BE FILLED WITH A CEMENT MORTAR.
10. THE CONCRETE MIX DESIGN IS TO BE APPROVED BY THE ENGINEER.
11. EXPANSION JOINTS ARE TO BE FORMED AT 8.0m INTERVALS ON STRAIGHTS AND 2.0m INTERVALS WHERE THE KERB RADIUS IS LESS THAN 50m.
12. FIG.1 STD BARRIER KERBS SHALL BE USED.

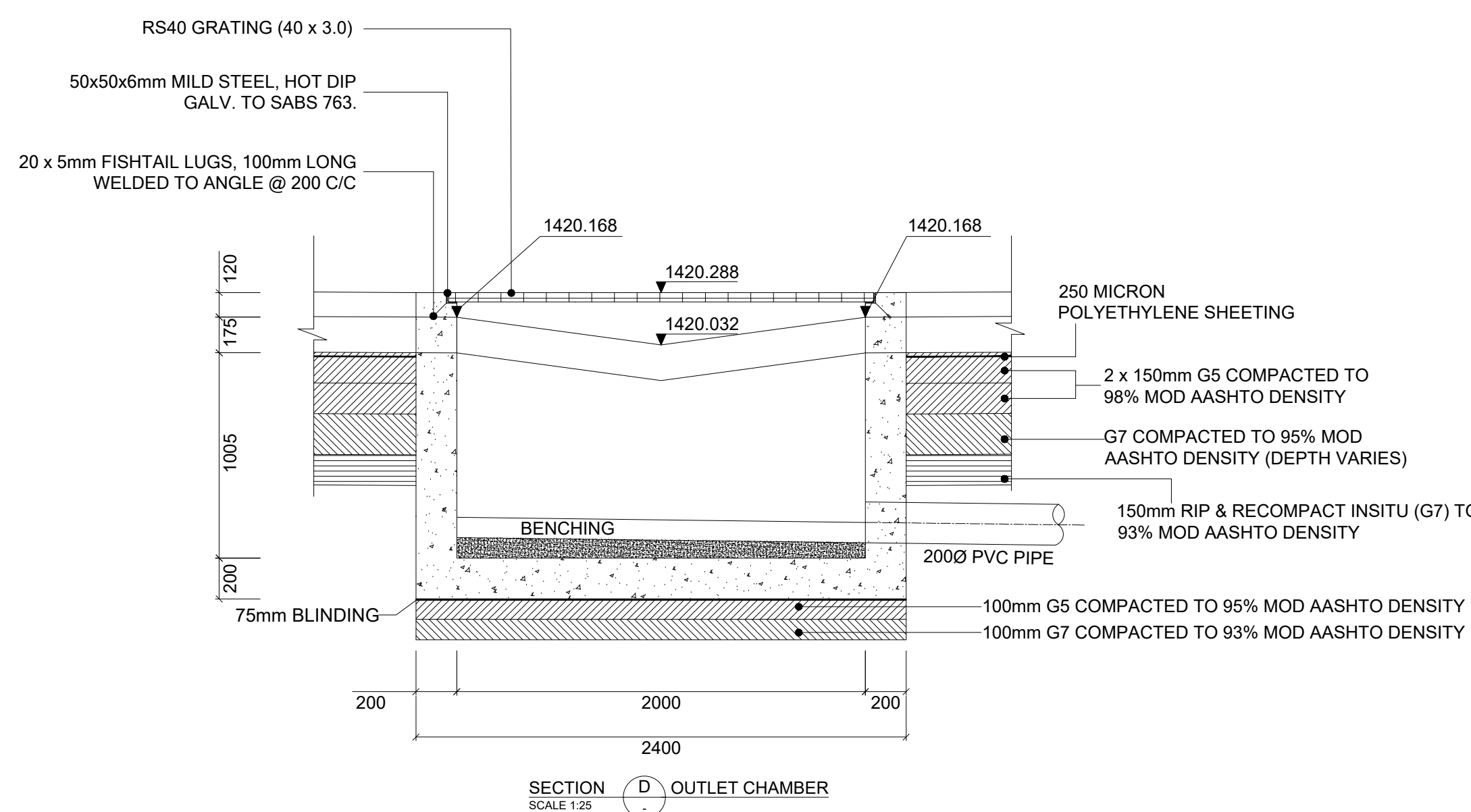
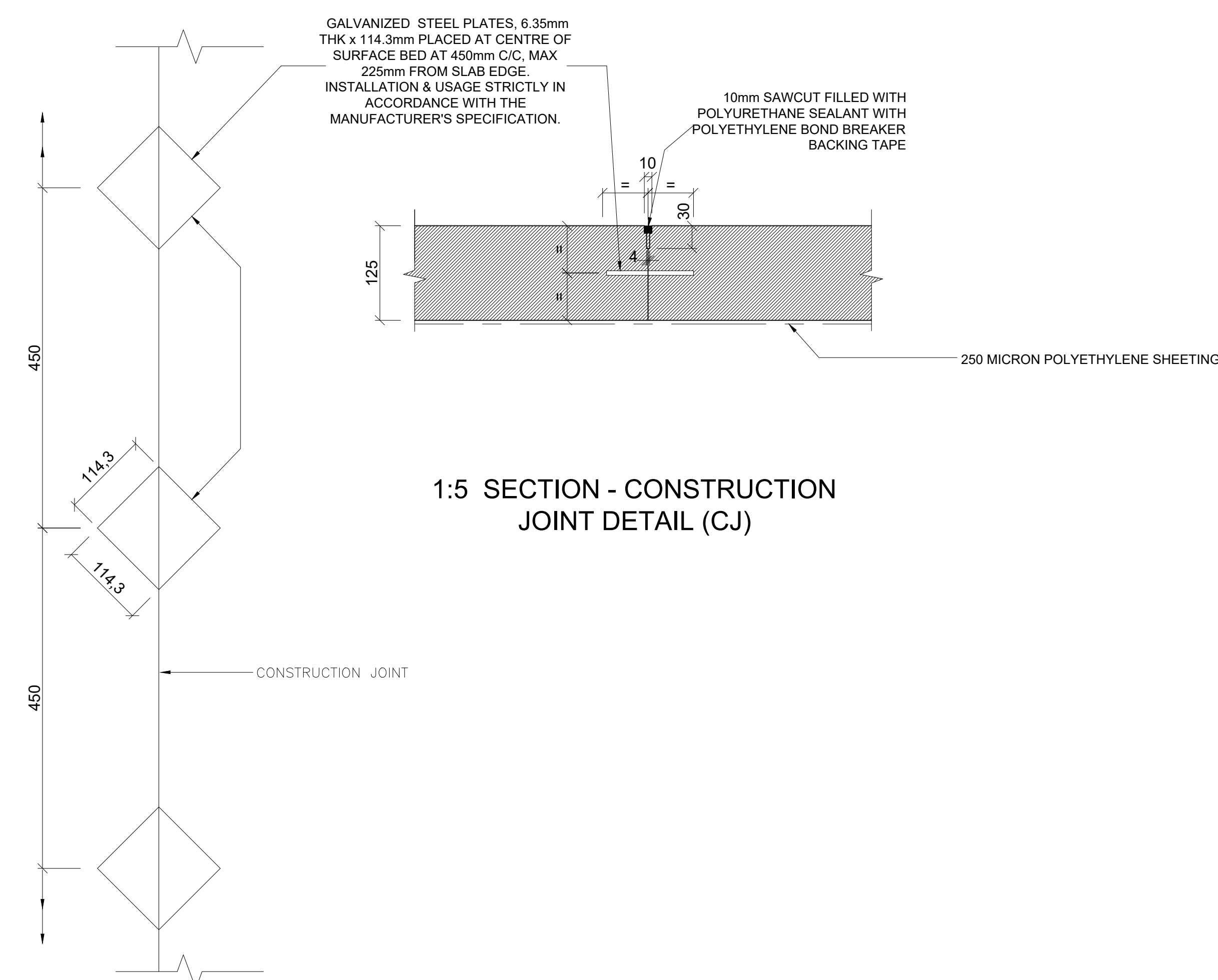
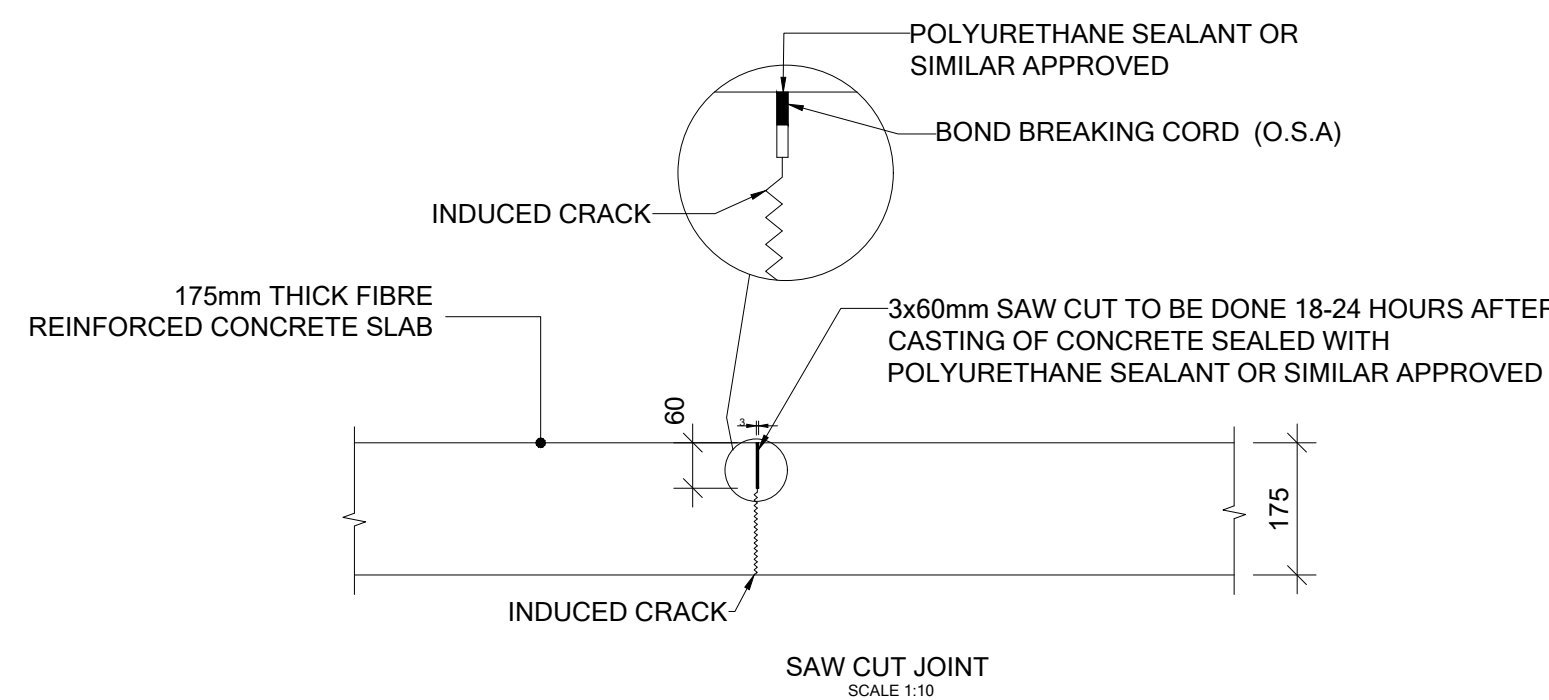
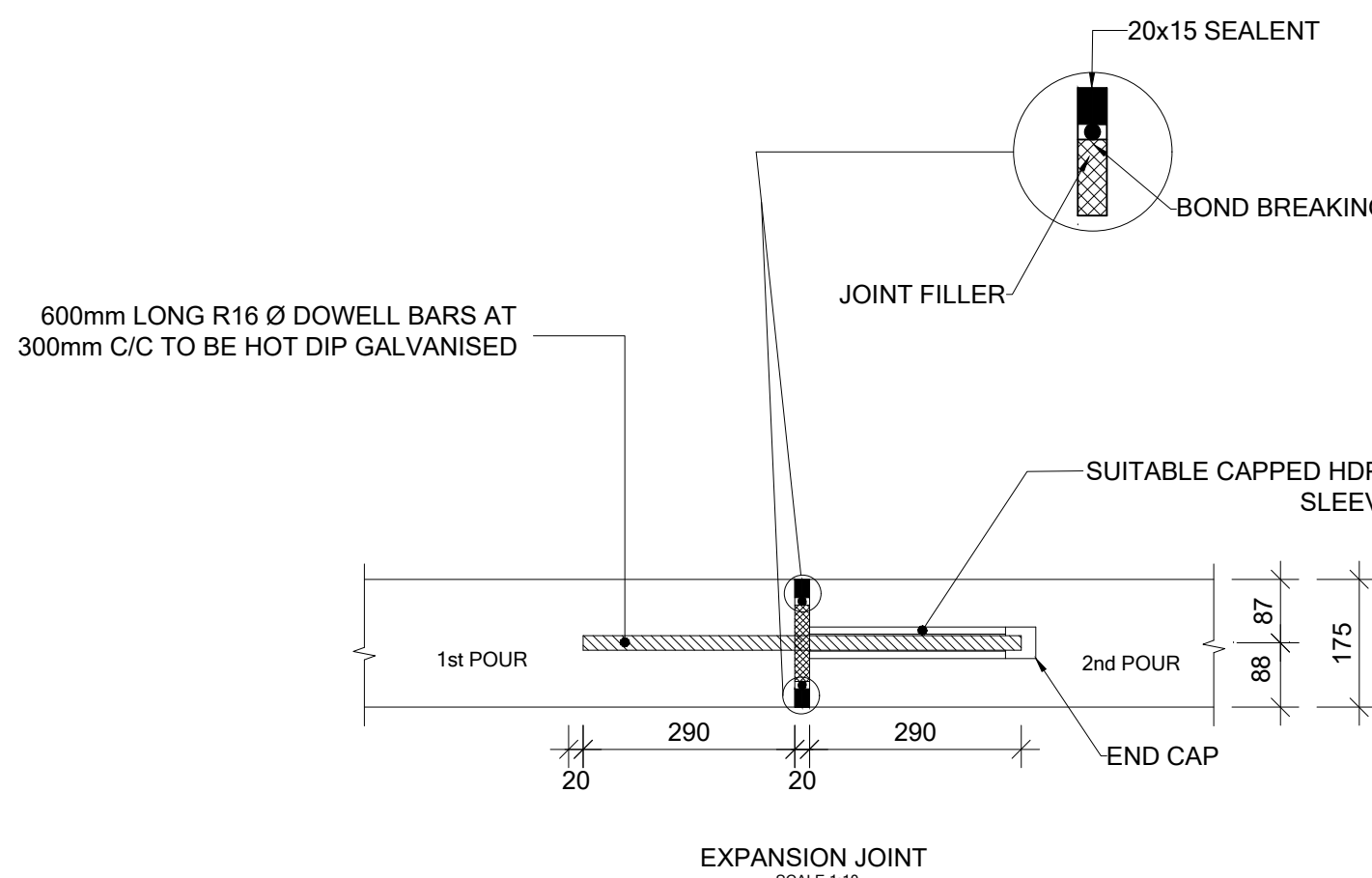
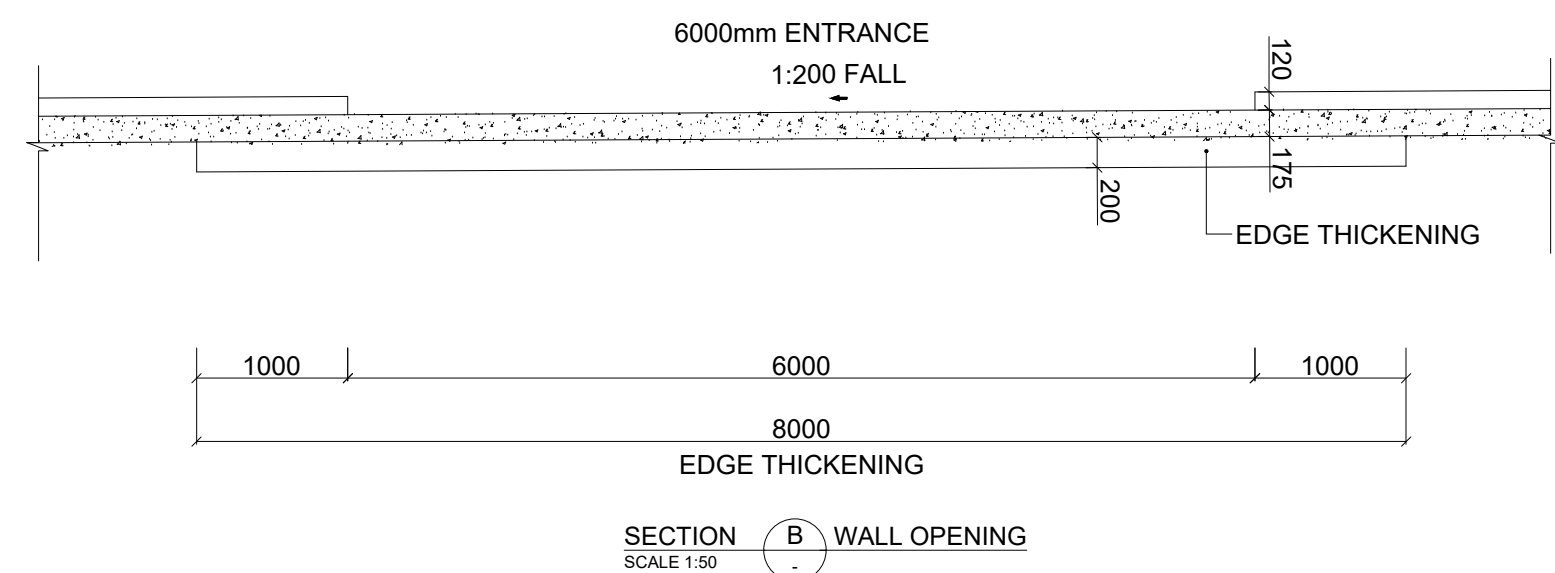
STORMWATER

13. CONCRETE STORMWATER CHANNELS:
  - 13.1. CONSTRUCTION JOINTS ARE TO BE PROVIDED AT 2m CENTRES.
  - 13.2. EXPANSION JOINTS ARE TO BE PROVIDED AT 8m CENTRES.



WHEEL STOPPER  
SCALE 1:25

|                                                           |            |      |          |             |                                                                               |                                                                                                                           |  |  |                   |                                                                                                                                                                                                           |  |  |          |                                                                             |  |  |          |                                                                             |  |  |                |                                              |  |  |                      |                                                                                                                             |  |  |  |
|-----------------------------------------------------------|------------|------|----------|-------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--|--|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|----------|-----------------------------------------------------------------------------|--|--|----------|-----------------------------------------------------------------------------|--|--|----------------|----------------------------------------------|--|--|----------------------|-----------------------------------------------------------------------------------------------------------------------------|--|--|--|
| <br>CITY OF TSHWANE<br>WATER AND SANITATION<br>DEPARTMENT | AMENDMENTS |      |          |             | WATER AND SANITATION<br>FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE |                                                                                                                           |  |  | CONSULTANT DETAIL |                                                                                                                                                                                                           |  |  | DESIGNED |                                                                             |  |  | CONTRACT |                                                                             |  |  | PROJECT STATUS |                                              |  |  | LOCATION OF PROJECT: |                                                                                                                             |  |  |  |
|                                                           | NR         | DATE | APPROVED | DESCRIPTION | PAR                                                                           | DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT                                                              |  |  |                   | 2BLN ENGINEERING                                                                                                                                                                                          |  |  |          | NAME: _____ Pr Eng _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |  |  |          | PROJECT No. _____                                                           |  |  |                | RECEIVED SIGN WHEN APPLICABLE                |  |  |                      | DESCRIPTION OF PROJECT:<br><b>UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT<br/>TANKER DROP-OFF PLAN &amp; SECTIONS</b> |  |  |  |
|                                                           |            |      |          |             |                                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____<br>REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                    |  |  |                   | HEAD OFFICE<br>203 Wilsch Hazel Avenue, Highveld Technopark, Centurion, 0157, SA<br>P.O. Box 68735, Highveld, 0169, South Africa<br>Tel: +27 (0)12 665 0900 / Fax: +27 (0)12 665 1886 / www.nakogroup.com |  |  |          | NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____              |  |  |          | PROJECT ENGINEER of COT:                                                    |  |  |                | WBS No. : _____<br>COT DRAWING NUMBER: _____ |  |  |                      |                                                                                                                             |  |  |  |
|                                                           |            |      |          |             |                                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____<br>DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT |  |  |                   | HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED<br>ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE<br>DRAWING                                                                                 |  |  |          | NAME: _____ Pr Eng _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |  |  |          | INSPECTOR OF WORKS OF COT:                                                  |  |  |                |                                              |  |  |                      |                                                                                                                             |  |  |  |
|                                                           |            |      |          |             |                                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____<br>DIRECTOR: BULK WATER                                     |  |  |                   | CONSULTANT DRAWING NUMBER:<br><b>2300082-08-81-C-301</b>                                                                                                                                                  |  |  |          | NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____              |  |  |          | NAME: _____ Pr Eng _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |  |  |                |                                              |  |  |                      |                                                                                                                             |  |  |  |



**NOTES:**

1. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH 'GST CDM CIVIL ENGINEERING WORKS STANDARD SPECIFICATION, 2005 AND SANS 1200, WHERE THE TWO SPECIFICATIONS CONTRADICT ONE ANOTHER, THE 'GST' CDM SPECIFICATION SHALL TAKE PRECEDENCE.
2. SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1200 A 1.5.7, SPECIFIC.
3. THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROVED AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
4. THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
5. A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE WORKS, TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR AND NOT TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
6. CONTRACTOR TO LIAISE WITH THE CITY OF TSHWANE MUNICIPALITY FOR THE REINSTATEMENT OF ROAD SURFACING AND SIDEWALKS.
7. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:
  - 1. 2100000-08000-01-01-01 SLUDGE DRYING BEDS SECTIONS
  - 2. 2100000-08000-01-01-02 SLUDGE DRYING BEDS SECTIONS
  - 3. 2100000-08000-01-01-03 SLUDGE DRYING BEDS DETAILS
  - 4. 2100000-08000-01-01-04 STRUCTURAL ENGINEERING STANDARD AND GENERAL NOTES

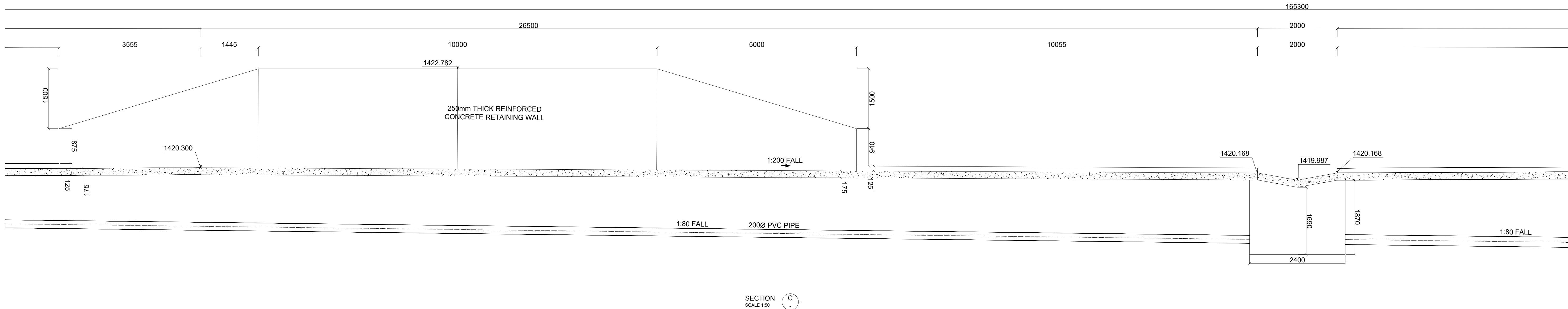
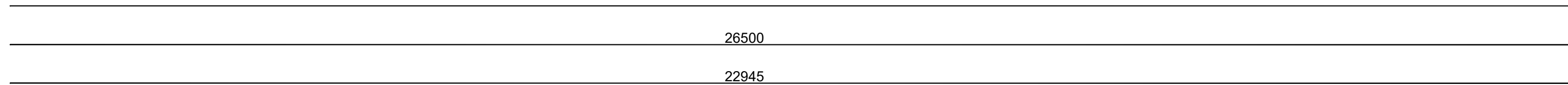
**KERBING**

1. ALL KERBS AND CHANNELS TO BE 300mm STRENGTH CONCRETE.
2. PRECAST KERB IS TO BE Laid WITH A 13mm GAP BETWEEN KERBS, WHICH SHALL THEN FILLED WITH A CEMENT MORTAR.
3. THE CONCRETE MIX DESIGN IS TO BE APPROVED BY THE ENGINEER.
4. EXPANSION JOINTS ARE TO BE FORMED AT 20m INTERVALS ON STRAIGHTS AND 20m INTERVALS WHERE THE KERB RADIUS IS LESS THAN 50m.
5. 12mm ST BARRIER KERBS SHALL BE USED.

**STORMWATER**

1. CONCRETE STORMWATER CHANNELS.
2. EXPANSION JOINTS ARE TO BE PROVIDED AT 3m INTERVALS.
3. EXPANSION JOINTS ARE TO BE PROVIDED AT 8m INTERVALS.

| <div><p>CITY OF TSHWANE<br/>Water and Sanitation<br/>PO BOX 1022<br/>PRETORIA<br/>0001</p></div> <div>CITY OF TSHWANE<br/>WATER AND SANITATION<br/>DEPARTMENT</div> | AMENDMENTS |            |          |                   |     | WATER AND SANITATION<br>FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE                                         |  |  |  | CONSULTANT DETAIL                                                                                                                                                                                       |  |                        |  | DESIGNED<br>Pr Eng: _____ Prof Reg No: _____ |  | CONTRACT<br>No: _____     | PROJECT STATUS<br>RECEIVED SIGN WHEN APPLICABLE |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  | LOCATION OF PROJECT: _____ |                               |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|----------|-------------------|-----|-----------------------------------------------------------------------------------------------------------------------|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|----------------------------------------------|--|---------------------------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|----------------------------|-------------------------------|--|--|--|
|                                                                                                                                                                                                                                                        | NR         | DATE       | APPROVED | DESCRIPTION       | PAR | DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT                                                          |  |  |  | <div><div><div>2</div><div>BLN</div><div>ENGINEERING GROUP</div></div><div><div></div><div>ILISO</div></div></div> |  |                        |  | NAME: _____<br>SIGNATURE: _____ DATE: _____  |  | PROJECT No. _____         |                                                 | <div><div><div></div><div></div><div></div><div></div></div></div> |  |  |                            | DESCRIPTION OF PROJECT: _____ |  |  |  |
|                                                                                                                                                                                                                                                        | A          | 2025-10-10 | RM       | ISSUED FOR TENDER |     | NAME _____ Prof. Reg. No _____ SIGNATURE _____ DATE _____<br>REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                    |  |  |  | HEAD OFFICE<br>203 Welch Hazel Avenue, Highveld Technopark, Centurion 0157, SA<br>P.O. Box 68732, Highveld, 0160, South Africa<br>Tel: +27 (0)12 685 0900 / Fax: +27 (0)12 665 1886 / www.nakogroup.com |  |                        |  | NAME: _____<br>SIGNATURE: _____ DATE: _____  |  | SHEET No. _____           |                                                 | PROJECT ENGINEER OF COT: _____                                                                                                                                                                                                                                                                                                                                                                                         |  |  |                            |                               |  |  |  |
|                                                                                                                                                                                                                                                        | B          | 2026-02-10 | RM       | ISSUED FOR TENDER |     | NAME _____ Prof. Reg. No _____ SIGNATURE _____ DATE _____<br>DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT |  |  |  | HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED<br>ACCORDING TO NOTE 9 OF THE ABOVE. NOTES AND TO THE<br>DRAWING                                                                              |  |                        |  | NAME: _____<br>SIGNATURE: _____ DATE: _____  |  | PAPER SIZE: _____<br>A1   |                                                 | SLUDGE DRYING BEDS PLAN & SECTIONS                                                                                                                                                                                                                                                                                                                                                                                     |  |  |                            |                               |  |  |  |
|                                                                                                                                                                                                                                                        |            |            |          |                   |     | NAME _____ Prof. Reg. No _____ SIGNATURE _____ DATE _____<br>DIRECTOR: BULK WATER                                     |  |  |  | CONSULTANT DRAWING NUMBER:<br>2300082-08-81-C-310                                                                                                                                                       |  |                        |  | NAME: _____<br>SIGNATURE: _____ DATE: _____  |  | SCALE: _____              |                                                 | INSPECTOR OF WORKS OF COT: _____                                                                                                                                                                                                                                                                                                                                                                                       |  |  |                            |                               |  |  |  |
|                                                                                                                                                                                                                                                        |            |            |          |                   |     | NAME _____ Prof. Reg. No _____ SIGNATURE _____ DATE _____<br>DIRECTOR: INFRASTRUCTURE PROVISION                       |  |  |  | SIGNATURE _____ DATE _____                                                                                                                                                                              |  | DESIGN OFFICE APPROVAL |  | DATE: _____                                  |  | WBS No. : _____           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |                            |                               |  |  |  |
|                                                                                                                                                                                                                                                        |            |            |          |                   |     | NAME _____ Prof. Reg. No _____ SIGNATURE _____ DATE _____<br>DIRECTOR: WASTE WATER TREATMENT                          |  |  |  | B<br>REVISION                                                                                                                                                                                           |  |                        |  |                                              |  | COT DRAWING NUMBER: _____ |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |                            |                               |  |  |  |
|                                                                                                                                                                                                                                                        |            |            |          |                   |     | NAME _____ Prof. Reg. No _____ SIGNATURE _____ DATE _____                                                             |  |  |  |                                                                                                                                                                                                         |  |                        |  |                                              |  |                           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |                            |                               |  |  |  |
|                                                                                                                                                                                                                                                        |            |            |          |                   |     |                                                                                                                       |  |  |  |                                                                                                                                                                                                         |  |                        |  |                                              |  |                           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |                            |                               |  |  |  |
|                                                                                                                                                                                                                                                        |            |            |          |                   |     |                                                                                                                       |  |  |  |                                                                                                                                                                                                         |  |                        |  |                                              |  |                           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |                            |                               |  |  |  |



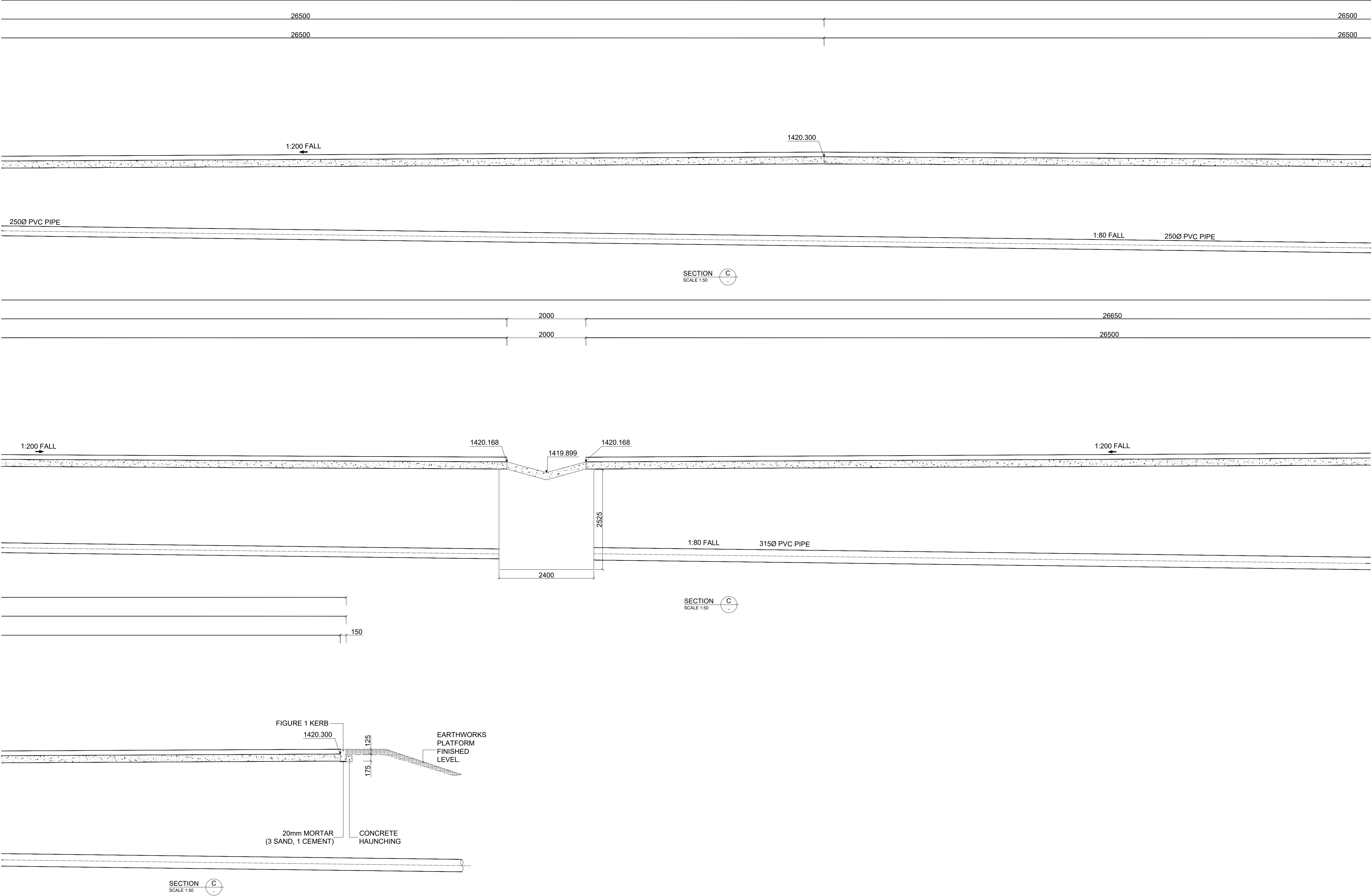
13. CONCRETE STORMWATER CHANNELS:
- 13.1. CONSTRUCTION JOINTS ARE TO BE PROVIDED AT 2m CENTRES.
- 13.2. EXPANSION JOINTS ARE TO BE PROVIDED AT 8m CENTRES.

| <h1 style="text-align: center;">WATER AND SANITATION</h1> <p style="text-align: center;">FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE</p> |                |           |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|------|
| DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT                                                                                       |                |           |      |
| NAME                                                                                                                                               | Prof. Reg. No. | SIGNATURE | DATE |
| REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                                                                                                              |                |           |      |
| NAME                                                                                                                                               | Prof. Reg. No. | SIGNATURE | DATE |
| DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT                                                                                           |                |           |      |
| NAME                                                                                                                                               | Prof. Reg. No. | SIGNATURE | DATE |
| DIRECTOR: BULK WATER                                                                                                                               |                |           |      |
| NAME                                                                                                                                               | Prof. Reg. No. | SIGNATURE | DATE |
| DIRECTOR: INFRASTRUCTURE PROVISION                                                                                                                 |                |           |      |
| NAME                                                                                                                                               | Prof. Reg. No. | SIGNATURE | DATE |
| DIRECTOR: WASTE WATER TREATMENT                                                                                                                    |                |           |      |
| NAME                                                                                                                                               | Prof. Reg. No. | SIGNATURE | DATE |

|                                   |                                  |
|-----------------------------------|----------------------------------|
| <b>DESIGNED</b>                   |                                  |
| NAME: _____                       | Pr Eng. _____ Prof Reg No: _____ |
| SIGNATURE: _____                  | DATE: _____                      |
| <b>DRAWN</b>                      |                                  |
| NAME: _____                       | Prof Reg No: _____               |
| SIGNATURE: _____                  | DATE: _____                      |
| <b>CHECKED</b>                    |                                  |
| NAME: _____                       | Pr Eng. _____ Prof Reg No: _____ |
| SIGNATURE: _____                  | DATE: _____                      |
| <b>INFORMATION OFFICE CHECKED</b> |                                  |
| NAME: _____                       | Pr Eng. _____ Prof Reg No: _____ |
| SIGNATURE: _____                  | DATE: _____                      |
| <b>DESIGN OFFICE APPROVAL</b>     |                                  |
| NAME: _____                       | Prof Reg No: _____               |
| SIGNATURE: _____                  | DATE: _____                      |

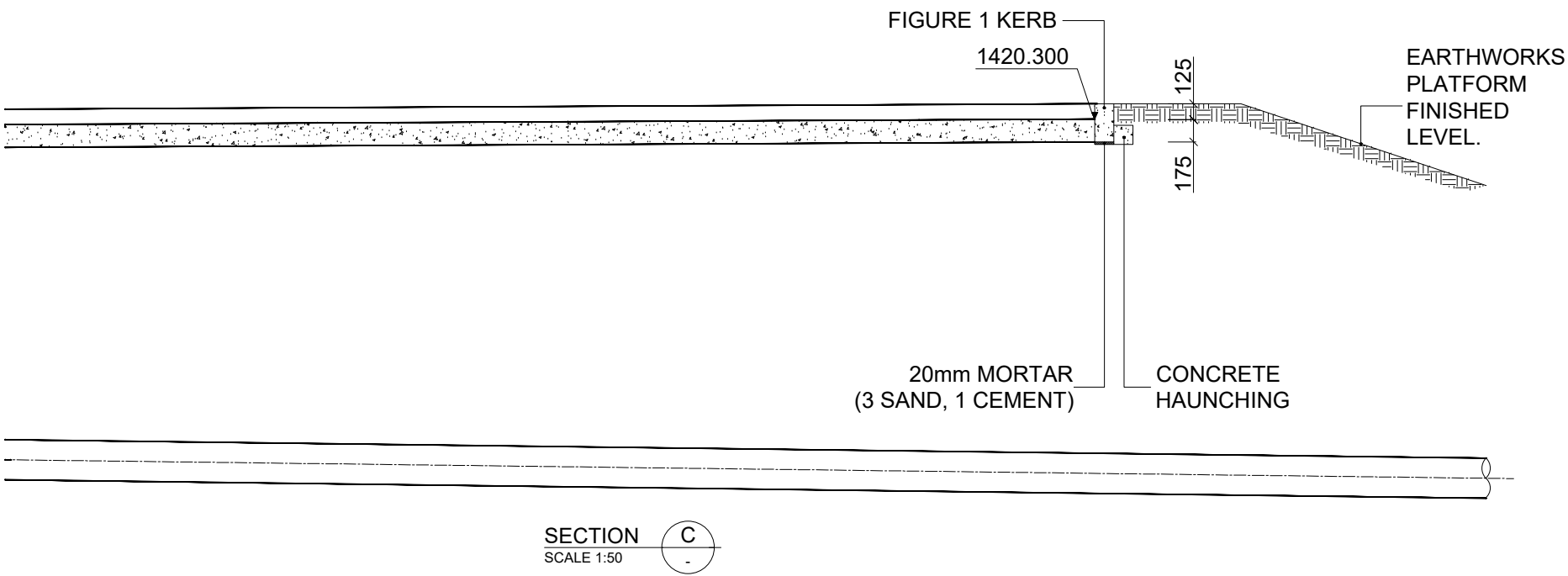
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|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <h1 style="margin: 0;">PROJECT STATUS</h1> <p style="margin: 0;">RECEIVED SIGN WHEN APPLICABLE</p>                  |                                                                                                                    |                                                                                                                                       |                                                                                                                      |
| <br><b>CONCEPT<br/>DRAWING</b> | <br><b>TENDER<br/>DRAWING</b> | <br><b>APPROVED<br/>CONSTRUCTION<br/>DRAWING</b> | <br><b>AS BUILT<br/>DRAWING</b> |
| <b>PROJECT ENGINEER of COT:</b>                                                                                     |                                                                                                                    |                                                                                                                                       |                                                                                                                      |
| NAME: _____                                                                                                         |                                                                                                                    | Pr Eng. _____                                                                                                                         |                                                                                                                      |
| NAME: _____                                                                                                         |                                                                                                                    | Prof Reg No: _____                                                                                                                    |                                                                                                                      |
| SIGNATURE: _____                                                                                                    |                                                                                                                    | DATE: _____                                                                                                                           |                                                                                                                      |
| <b>INSPECTOR OF WORKS of COT:</b>                                                                                   |                                                                                                                    |                                                                                                                                       |                                                                                                                      |
| NAME: _____                                                                                                         |                                                                                                                    | Prof Reg No: _____                                                                                                                    |                                                                                                                      |
| SIGNATURE: _____                                                                                                    |                                                                                                                    | DATE: _____                                                                                                                           |                                                                                                                      |

|                                                   |       |
|---------------------------------------------------|-------|
| LOCATION OF PROJECT:                              |       |
| DESCRIPTION OF PROJECT:                           |       |
| UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT |       |
| SLUDGE DRYING BEDS SECTIONS                       |       |
| WBS No. :                                         | _____ |
| COT DRAWING NUMBER:                               | _____ |

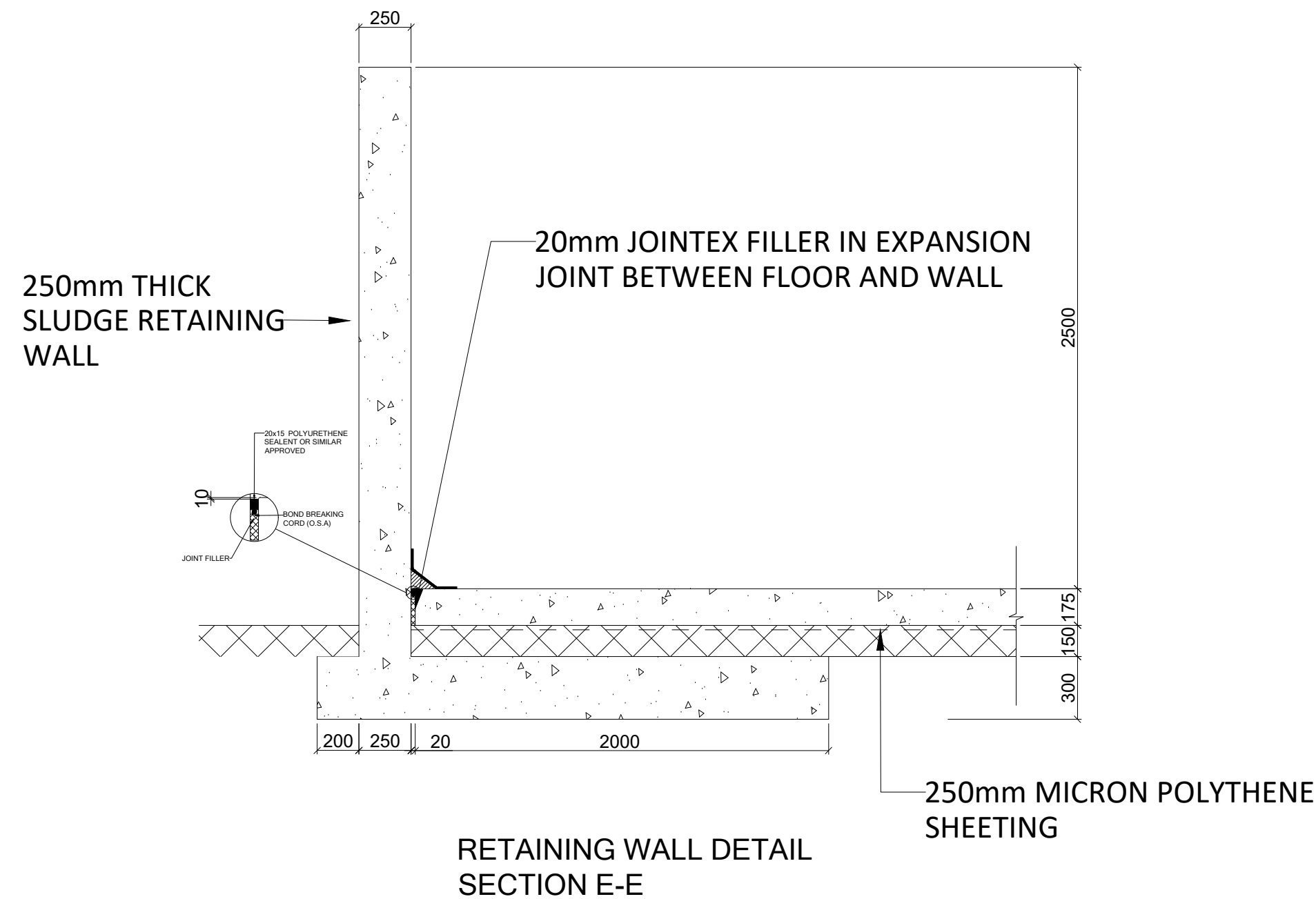
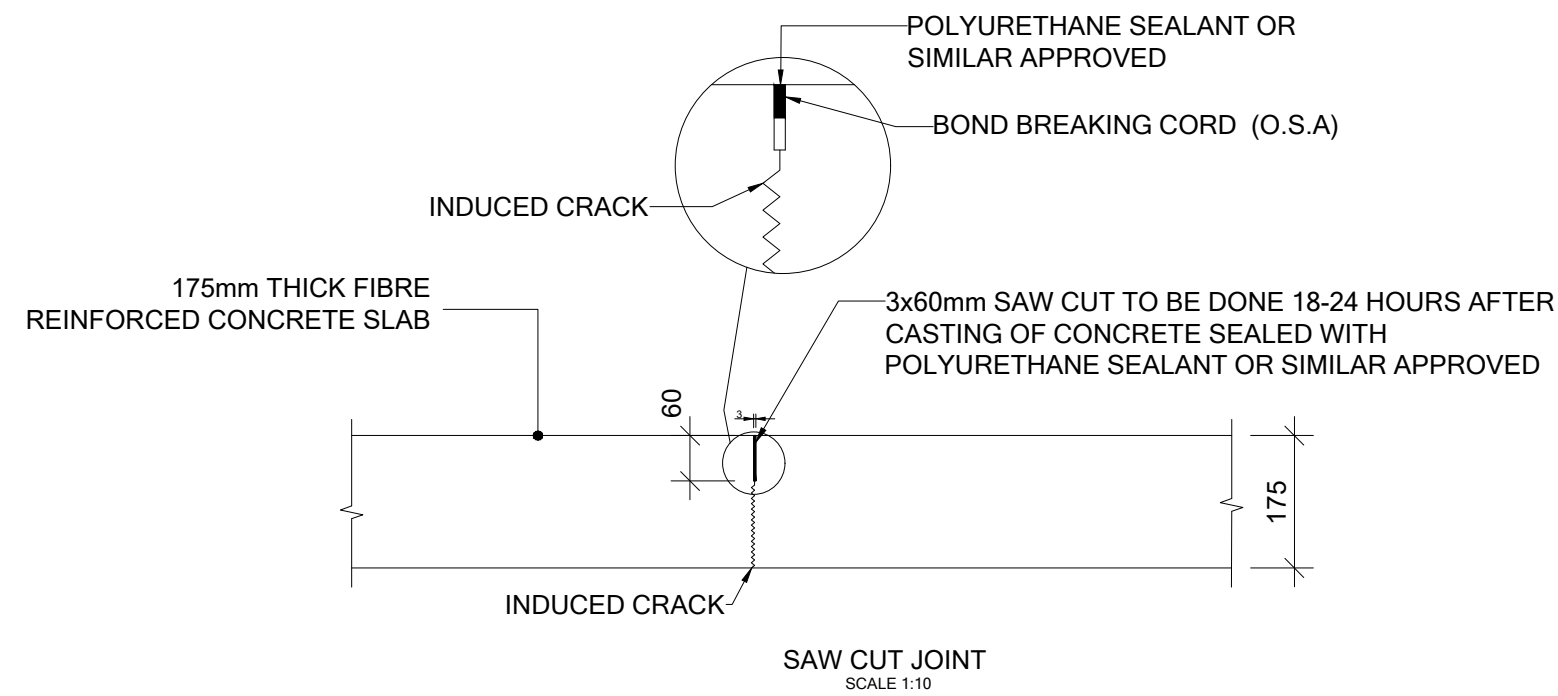
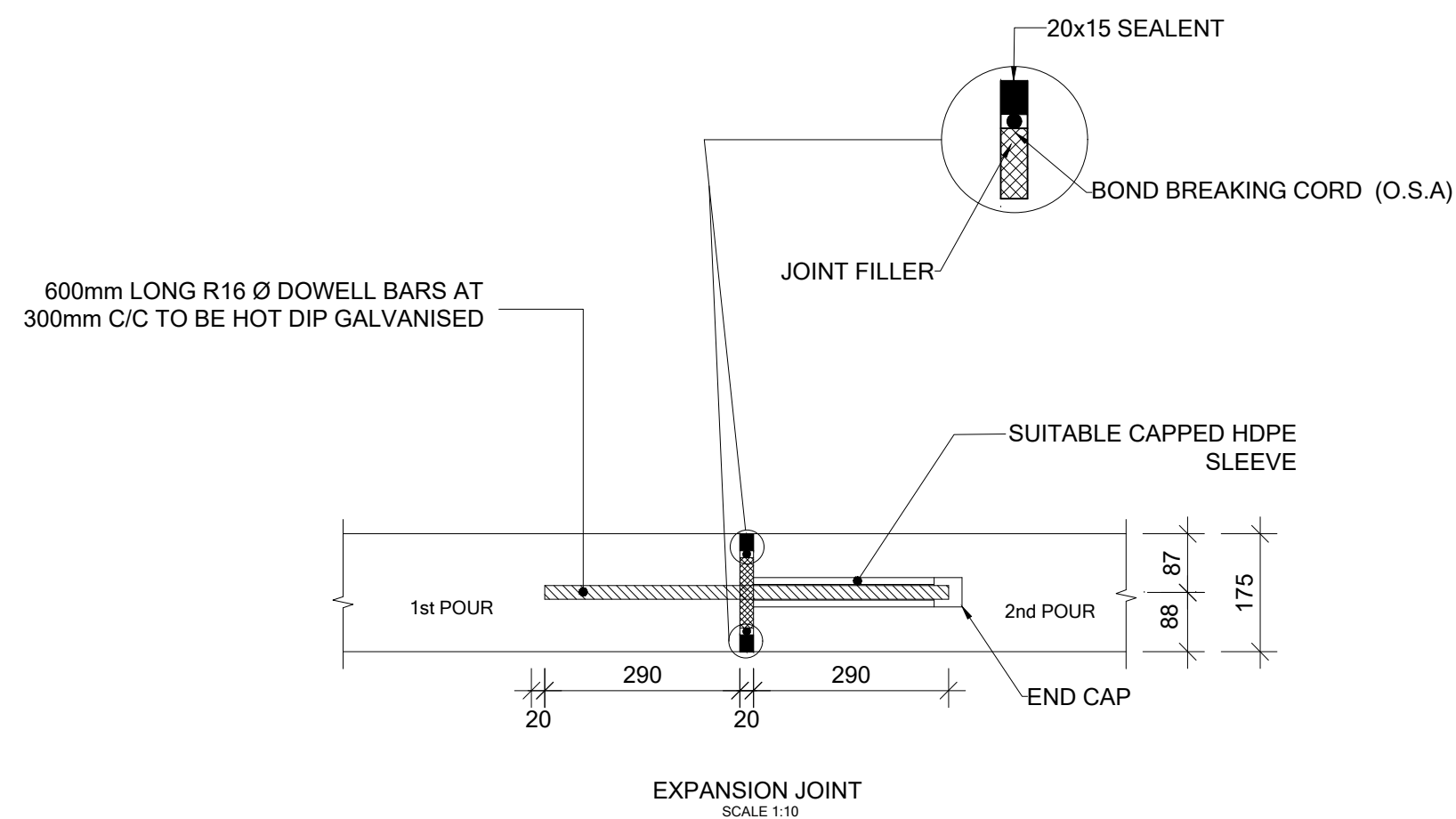
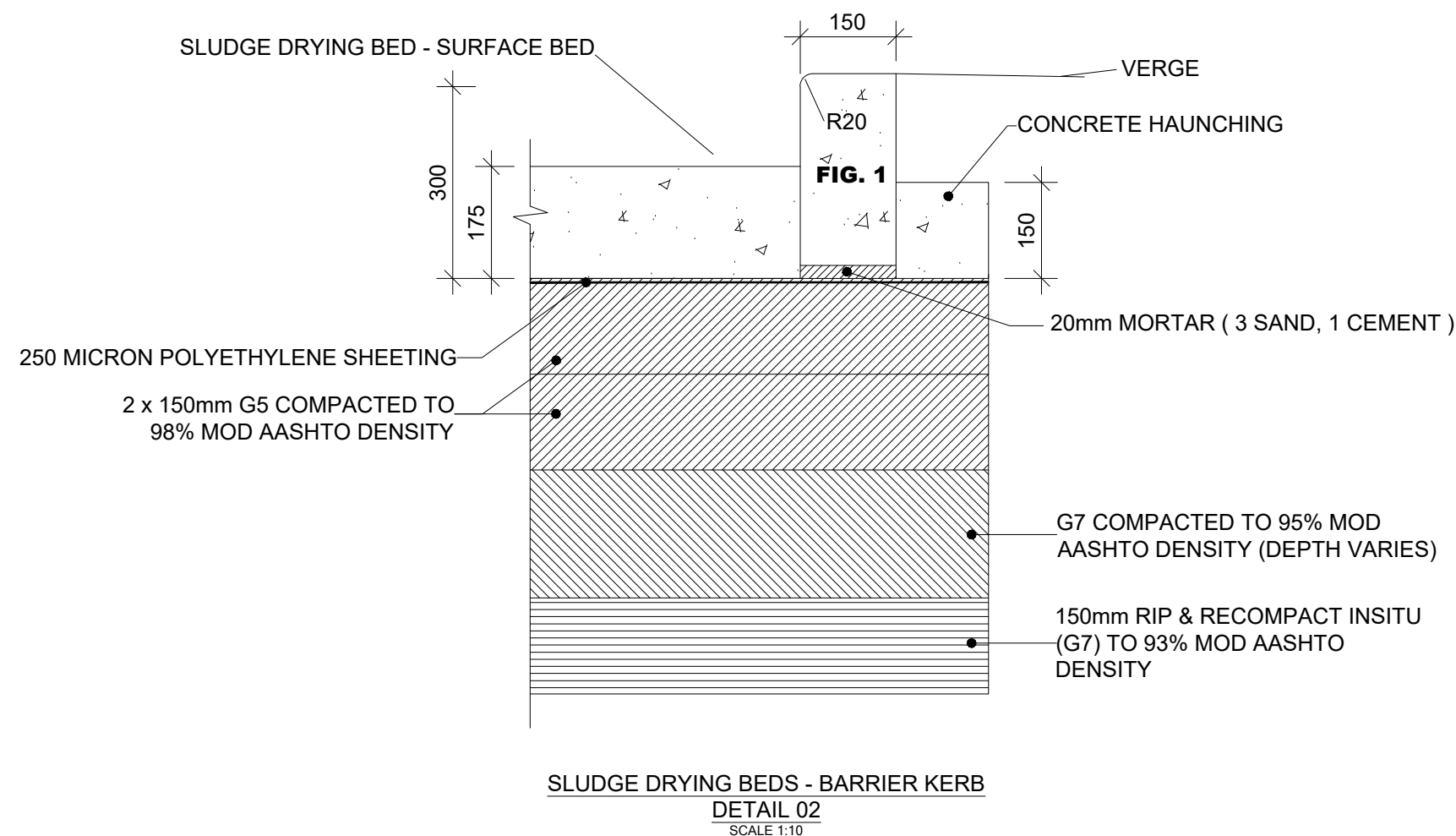
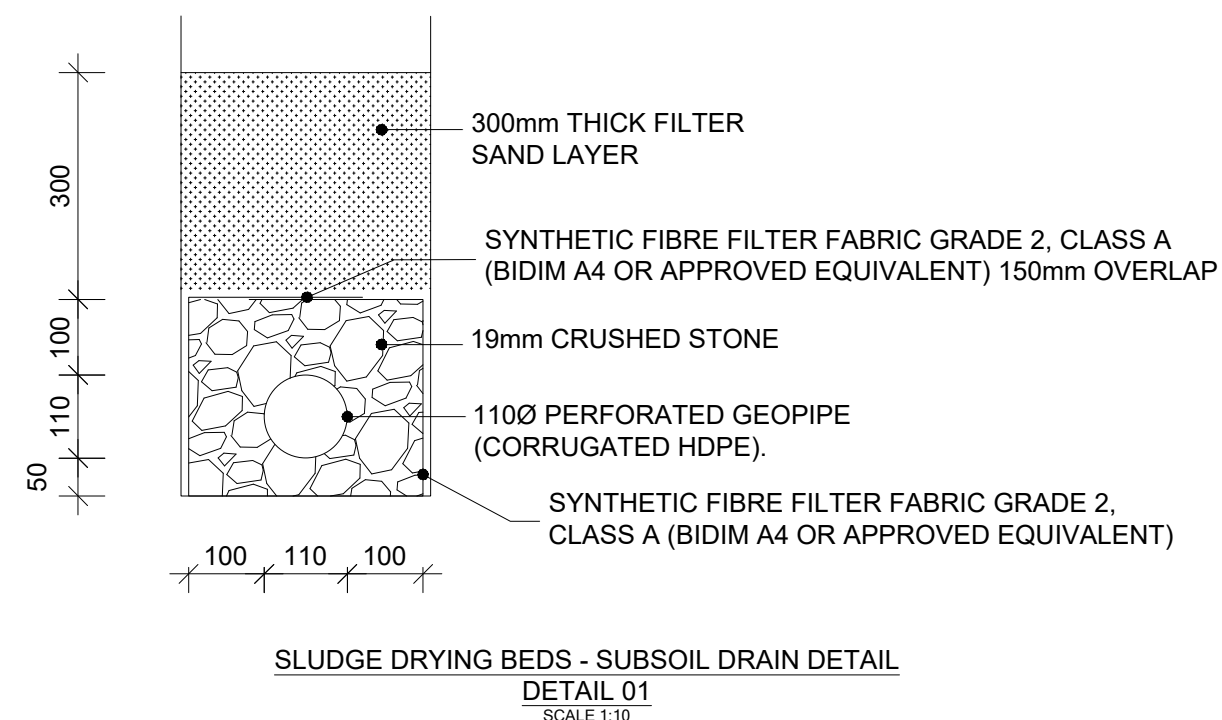
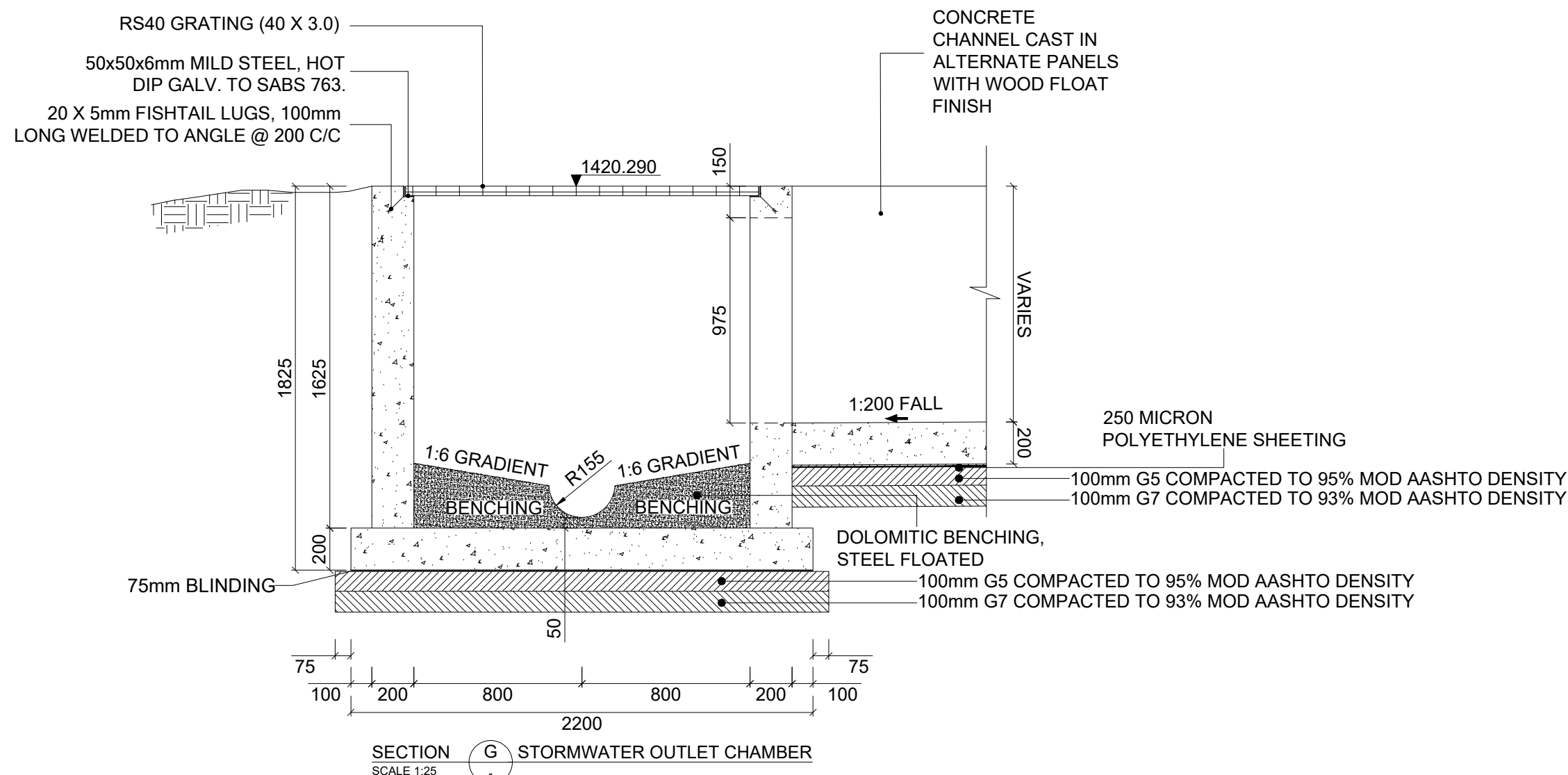
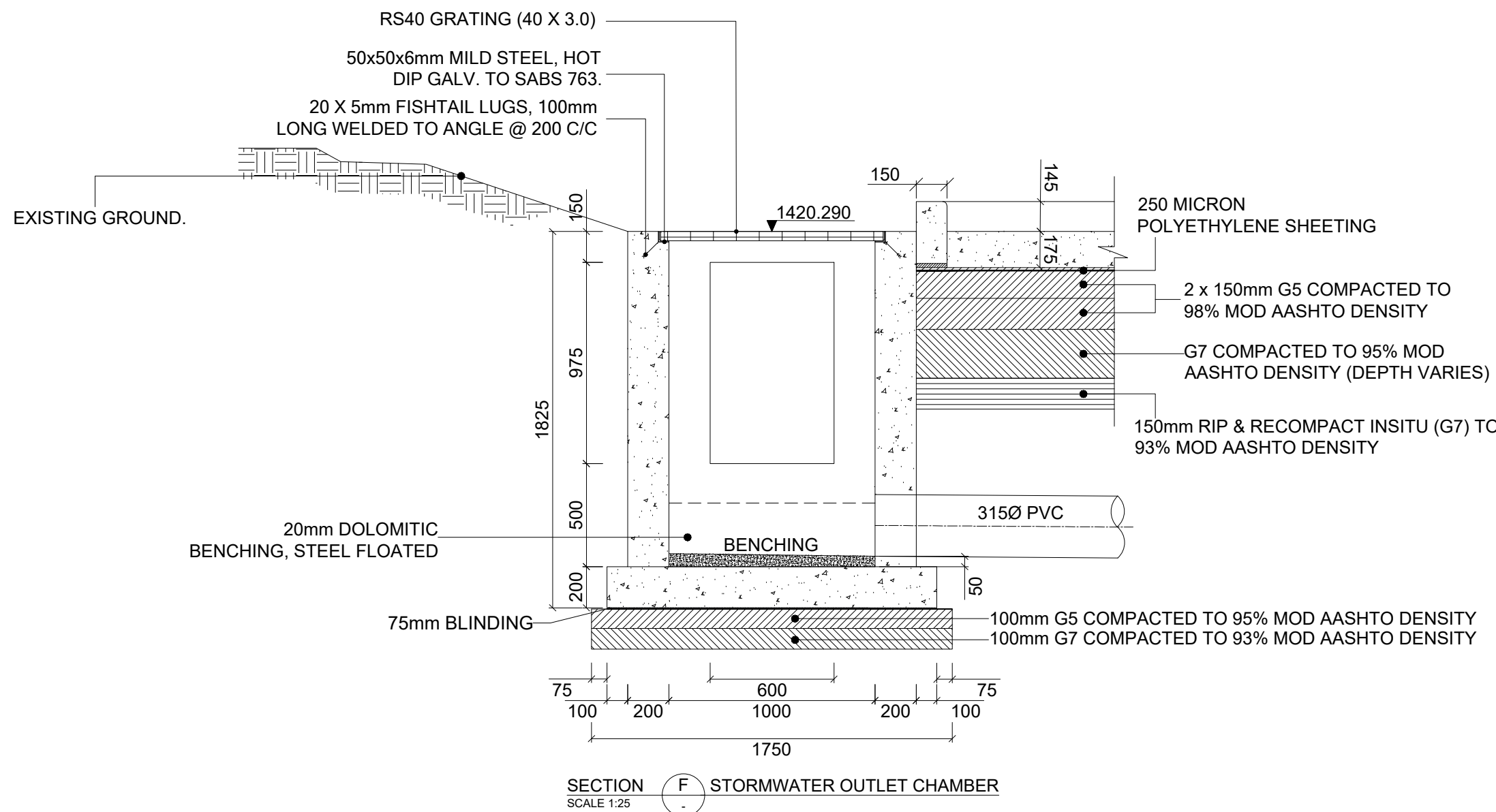


NOTES:

1. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CoT CTMM CIVIL ENGINEERING WORKS STANDARD SPECIFICATION, 2005 AND SANS 1200 WHERE THE TWO SPECIFICATIONS CONTRADICT ONE ANOTHER, THE CoT CTMM SPECIFICATION MUST TAKE PRECEDENCE.
2. SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1200 A - 5.7, SAFETY.
3. THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROXIMATE AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
4. THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
5. A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE WORKS, TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR PRIOR TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
6. CONTRACTOR TO LIAISE WITH THE CITY OF TSHWANE MUNICIPALITY W.R.T THE REINSTATEMENT OF ROAD SURFACING AND SIDEWALKS.
7. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS.
  - 7.1. 2300082-08-81-C-310-SLUDGE DRYING BEDS PLAN & SECTIONS
  - 7.2. 2300082-08-81-C-311-SLUDGE DRYING BEDS SECTIONS
  - 7.3. 2300082-08-81-C-313-SLUDGE DRYING BEDS DETAILS
  - 7.4. 2300082-08-S-104 STRUCTURAL ENGINEERING STANDARD AND GENERAL NOTES
8. ALL KERBS AND CHANNELS TO BE 30MPa STRENGTH CONCRETE.
9. PRECAST KERB ARE TO BE LAID WITH A 13mm GAP BETWEEN KERBS, WHICH SHALL THEN BE FILLED WITH A CEMENT MORTAR.
10. THE CONCRETE MIX DESIGN IS TO BE APPROVED BY THE ENGINEER.
11. EXPANSION JOINTS ARE TO BE FORMED AT 8.0m INTERVALS ON STRAIGHTS AND 2.0m INTERVAS WHERE THE KERB RADIUS IS LESS THAN 50m.
12. FIG.1 STD BARRIER KERBS SHALL BE USED.
13. CONCRETE STORMWATER CHANNELS:
  - 13.1. CONSTRUCTION JOINTS ARE TO BE PROVIDED AT 2m CENTRES.
  - 13.2. EXPANSION JOINTS ARE TO BE PROVIDED AT 8m CENTRES.



| <br>CITY OF TSHWANE<br>WATER AND SANITATION<br>DEPARTMENT | AMENDMENTS |            |          |                   | WATER AND SANITATION<br>FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE |                                                              |                     |                 | CONSULTANT DETAIL |                                                          |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                       | DESIGNED        |                    | CONTRACT No:            | PROJECT STATUS<br>RECEIVED SIGN WHEN APPLICABLE |                   |                                       |  | LOCATION OF PROJECT:                            |                                                     |                                        |                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|----------|-------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------|-----------------|-------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------|--------------------|-------------------------|-------------------------------------------------|-------------------|---------------------------------------|--|-------------------------------------------------|-----------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------|
|                                                                                                                                              | NR         | DATE       | APPROVED | DESCRIPTION       | PAR                                                                           | DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT |                     |                 |                   |                                                          |  <br>HEAD OFFICE<br>203 Witch Hazel Avenue, Highveld Technopark, Centurion, 0157, SA<br>P.O. Box 68735, Highveld, 0169, South Africa<br>Tel: +27 (0)12 685 0900 / Fax: +27 (0)12 665 1886 / www.nakogroup.com |                                                                                       | NAME: _____     | Prof Reg No: _____ | _____                   | _____                                           | PROJECT No. _____ | <input type="radio"/> CONCEPT DRAWING |  | <input checked="" type="radio"/> TENDER DRAWING | <input type="radio"/> APPROVED CONSTRUCTION DRAWING | <input type="radio"/> AS BUILT DRAWING | UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT<br><br>SLUDGE DRYING BEDS SECTIONS & DETAILS |
|                                                                                                                                              | A          | 2025-10-10 | RM       | ISSUED FOR TENDER |                                                                               | NAME _____                                                   | Prof. Reg. No _____ | SIGNATURE _____ | DATE _____        | REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                    |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                       | NAME _____      | Prof Reg No: _____ | _____                   | _____                                           | SHEET No. _____   | PROJECT ENGINEER of COT: _____        |  |                                                 |                                                     |                                        |                                                                                                |
|                                                                                                                                              |            |            |          |                   |                                                                               | NAME _____                                                   | Prof. Reg. No _____ | SIGNATURE _____ | DATE _____        | DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT | NAME _____                                                                                                                                                                                                                                                                                                                                                                              | Prof. Reg. No _____                                                                   | SIGNATURE _____ | DATE _____         | PAPER SIZE: _____       | NAME: _____ Prof Eng. _____ Prof Reg No: _____  |                   |                                       |  |                                                 |                                                     |                                        |                                                                                                |
|                                                                                                                                              |            |            |          |                   |                                                                               | NAME _____                                                   | Prof. Reg. No _____ | SIGNATURE _____ | DATE _____        | DIRECTOR: BULK WATER                                     | NAME _____                                                                                                                                                                                                                                                                                                                                                                              | Prof. Reg. No _____                                                                   | SIGNATURE _____ | DATE _____         | SCALE: _____            | INSPECTOR OF WORKS of COT: _____                |                   |                                       |  |                                                 |                                                     |                                        |                                                                                                |
|                                                                                                                                              |            |            |          |                   |                                                                               | NAME _____                                                   | Prof. Reg. No _____ | SIGNATURE _____ | DATE _____        | DIRECTOR: INFRASTRUCTURE PROVISION                       | NAME _____                                                                                                                                                                                                                                                                                                                                                                              | Prof. Reg. No _____                                                                   | SIGNATURE _____ | DATE _____         | DATE: _____             | NAME: _____ Prof Reg No: _____                  |                   |                                       |  |                                                 |                                                     |                                        |                                                                                                |
|                                                                                                                                              |            |            |          |                   |                                                                               | NAME _____                                                   | Prof. Reg. No _____ | SIGNATURE _____ | DATE _____        | DIRECTOR: WASTE WATER TREATMENT                          | NAME _____                                                                                                                                                                                                                                                                                                                                                                              | Prof. Reg. No _____                                                                   | SIGNATURE _____ | DATE _____         |                         | NAME: _____ DATE: _____                         |                   |                                       |  |                                                 |                                                     |                                        |                                                                                                |
|                                                                                                                                              |            |            |          |                   |                                                                               | NAME _____                                                   | Prof. Reg. No _____ | SIGNATURE _____ | DATE _____        |                                                          | NAME _____                                                                                                                                                                                                                                                                                                                                                                              | Prof. Reg. No _____                                                                   | SIGNATURE _____ | DATE _____         |                         | NAME: _____ DATE: _____                         |                   |                                       |  |                                                 |                                                     |                                        |                                                                                                |
|                                                                                                                                              |            |            |          |                   |                                                                               | NAME _____                                                   | Prof. Reg. No _____ | SIGNATURE _____ | DATE _____        |                                                          | NAME _____                                                                                                                                                                                                                                                                                                                                                                              | Prof. Reg. No _____                                                                   | SIGNATURE _____ | DATE _____         |                         | NAME: _____ DATE: _____                         |                   |                                       |  |                                                 |                                                     |                                        |                                                                                                |
|                                                                                                                                              |            |            |          |                   |                                                                               | NAME _____                                                   | Prof. Reg. No _____ | SIGNATURE _____ | DATE _____        |                                                          | NAME _____                                                                                                                                                                                                                                                                                                                                                                              | Prof. Reg. No _____                                                                   | SIGNATURE _____ | DATE _____         |                         | NAME: _____ DATE: _____                         |                   |                                       |  |                                                 |                                                     |                                        |                                                                                                |
|                                                                                                                                              |            |            |          |                   | NAME _____                                                                    | Prof. Reg. No _____                                          | SIGNATURE _____     | DATE _____      |                   | NAME _____                                               | Prof. Reg. No _____                                                                                                                                                                                                                                                                                                                                                                     | SIGNATURE _____                                                                       | DATE _____      |                    | NAME: _____ DATE: _____ |                                                 |                   |                                       |  |                                                 |                                                     |                                        |                                                                                                |
|                                                                                                                                              |            |            |          |                   |                                                                               |                                                              |                     |                 |                   | CONSULTANT DRAWING NUMBER:<br><b>2300082-08-81-C-312</b> |                                                                                                                                                                                                                                                                                                                                                                                         |  |                 |                    |                         |                                                 |                   |                                       |  |                                                 |                                                     |                                        |                                                                                                |



## NOTES:

- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH COT CTMM CIVIL ENGINEERING WORKS STANDARD SPECIFICATION, 2005 AND SANS 1200 WHERE THE TWO SPECIFICATIONS CONTRADICT ONE ANOTHER, THE COT CTMM SPECIFICATION MUST TAKE PRECEDENCE.
- SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1200 A - 5.7. SAFETY.
- THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROXIMATE AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
- THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
- A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE WORKS, TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR PRIOR TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
- CONTRACTOR TO LIAISE WITH THE CITY OF TSHWANE MUNICIPALITY W.R.T THE REINSTATEMENT OF ROAD SURFACING AND SIDEWALKS.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:
  - 2300082-08-81-C-310-SLUDGE DRYING BEDS PLAN & SECTIONS
  - 2300082-08-81-C-311-SLUDGE DRYING BEDS SECTIONS
  - 2300082-08-81-C-312-SLUDGE DRYING BEDS SECTIONS
  - 2300082-08-S-104 STRUCTURAL ENGINEERING STANDARD AND GENERAL NOTES
- KERBING
  - ALL KERBS AND CHANNELS TO BE 30MPa STRENGTH CONCRETE.
  - PRECAST KERB ARE TO BE LAID WITH A 13mm GAP BETWEEN KERBS, WHICH SHALL THEN BE FILLED WITH A CEMENT MORTAR.
  - THE CONCRETE MIX DESIGN IS TO BE APPROVED BY THE ENGINEER.
  - EXPANSION JOINTS ARE TO BE FORMED AT 8.0m INTERVALS ON STRAIGHTS AND 2.0m INTERVALS WHERE THE KERB RADIUS IS LESS THAN 50m.
  - FIG.1 STD BARRIER KERBS SHALL BE USED.
- STORMWATER
  - CONCRETE STORMWATER CHANNELS:
    - CONSTRUCTION JOINTS ARE TO BE PROVIDED AT 2m CENTRES.
    - EXPANSION JOINTS ARE TO BE PROVIDED AT 8m CENTRES.



**CITY OF TSHWANE**  
WATER AND SANITATION  
DEPARTMENT

| AMENDMENTS |            |          |                   |     |
|------------|------------|----------|-------------------|-----|
| NR         | DATE       | APPROVED | DESCRIPTION       | PAR |
| A          | 2025-10-10 | RM       | ISSUED FOR TENDER |     |
| B          | 2026-02-10 | RM       | ISSUED FOR TENDER |     |

| WATER AND SANITATION                                         |               |           |      |
|--------------------------------------------------------------|---------------|-----------|------|
| FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE        |               |           |      |
| DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                        |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT     |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: BULK WATER                                         |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: INFRASTRUCTURE PROVISION                           |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |
| DIRECTOR: WASTE WATER TREATMENT                              |               |           |      |
| NAME                                                         | Prof. Reg. No | SIGNATURE | DATE |

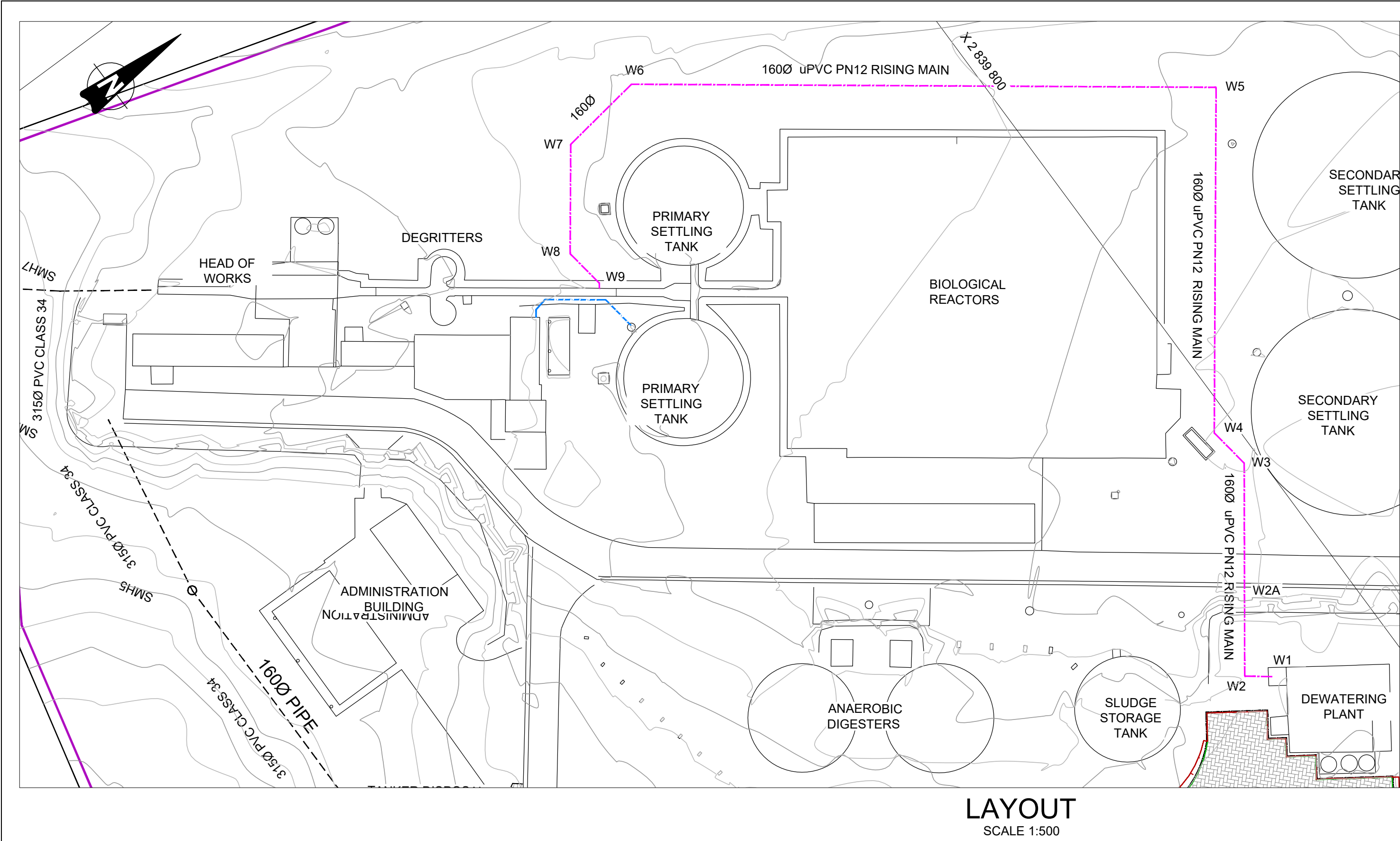
| CONSULTANT DETAIL                                                                                                                                                                        |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|                                                                                                                                                                                          |      |
| 203 Wits Hazel Avenue, Highveld Technopark, Centurion, 0157, SA<br>P.O. Box 68735, Highveld, 0169, South Africa<br>Tel: +27 (0)12 665 0900 / Fax: +27 (0)12 665 1886 / www.nakogroup.com |      |
| I HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED<br>ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE<br>DRAWING                                                              |      |
| SIGNATURE                                                                                                                                                                                | DATE |
| CONSULTANT DRAWING NUMBER: 2300082-08-81-C-313                                                                                                                                           |      |

| DESIGNED                   |                      |
|----------------------------|----------------------|
| NAME:                      | Pr Eng. Prof Reg No: |
| SIGNATURE:                 | DATE:                |
| DRAWN                      |                      |
| NAME:                      | Pr Eng. Prof Reg No: |
| SIGNATURE:                 | DATE:                |
| CHECKED                    |                      |
| NAME:                      | Pr Eng. Prof Reg No: |
| SIGNATURE:                 | DATE:                |
| INFORMATION OFFICE CHECKED |                      |
| NAME:                      | Pr Eng. Prof Reg No: |
| SIGNATURE:                 | DATE:                |
| DESIGN OFFICE APPROVAL     |                      |
| NAME:                      | Pr Eng. Prof Reg No: |
| SIGNATURE:                 | DATE:                |

|              |    |
|--------------|----|
| CONTRACT No: |    |
| PROJECT No:  |    |
| SHEET No:    |    |
| PAPER SIZE:  | A1 |
| SCALE:       |    |
| DATE:        |    |

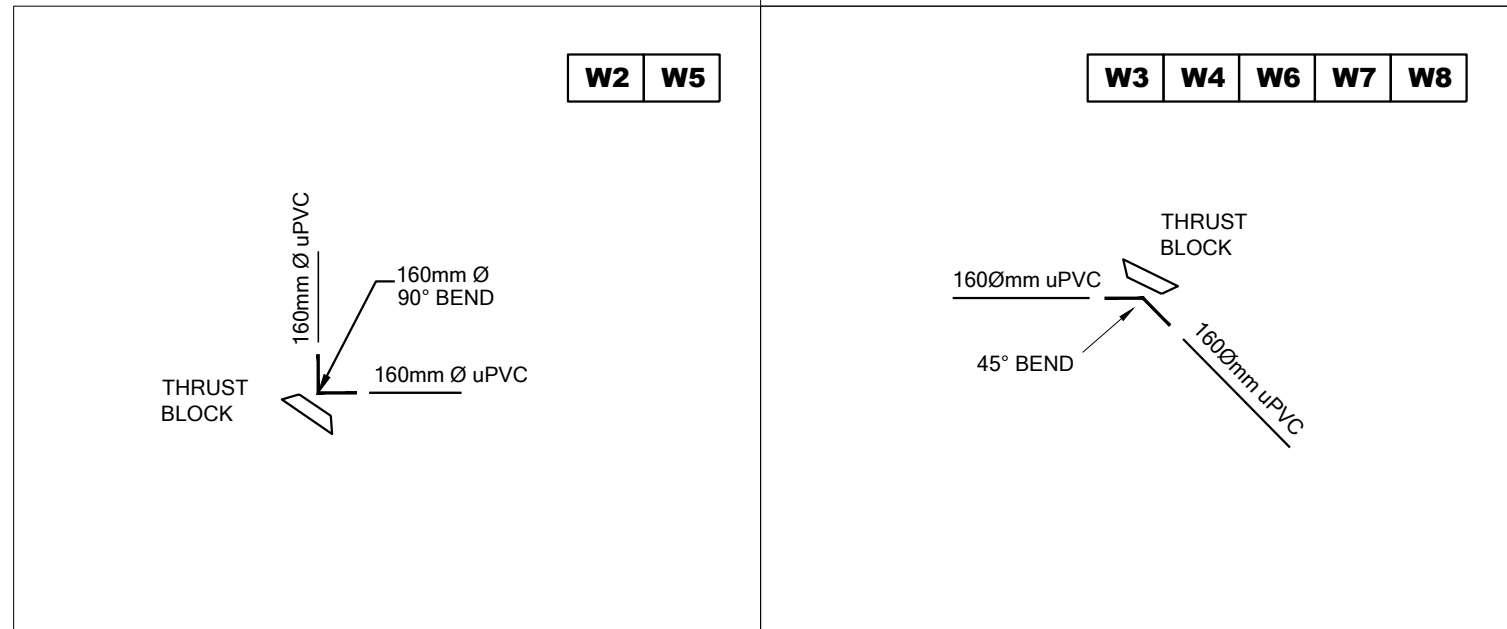
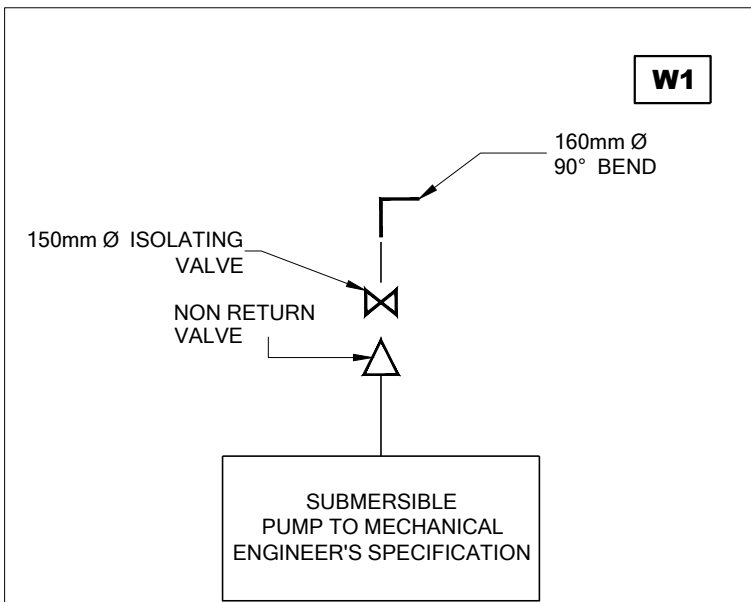
| PROJECT STATUS                |                      |
|-------------------------------|----------------------|
| RECEIVED SIGN WHEN APPLICABLE |                      |
| CONCEPT DRAWING               | TENDER DRAWING       |
| APPROVED DRAWING              | AS BUILT DRAWING     |
| PROJECT ENGINEER OF COT:      |                      |
| NAME:                         | Pr Eng. Prof Reg No: |
| SIGNATURE:                    | DATE:                |
| INSPECTOR OF WORKS OF COT:    |                      |
| NAME:                         | Pr Eng. Prof Reg No: |
| SIGNATURE:                    | DATE:                |

|                                                   |  |
|---------------------------------------------------|--|
| LOCATION OF PROJECT:                              |  |
| DESCRIPTION OF PROJECT:                           |  |
| UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT |  |
| SLUDGE DRYING BEDS SECTIONS & DETAILS             |  |
| WBS No. :                                         |  |
| COT DRAWING NUMBER:                               |  |

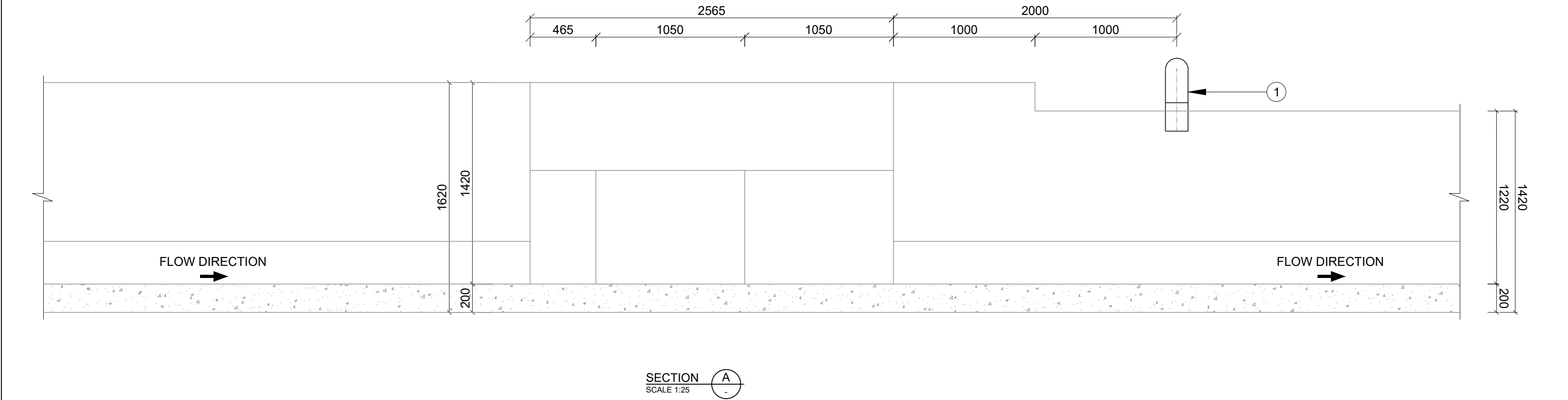
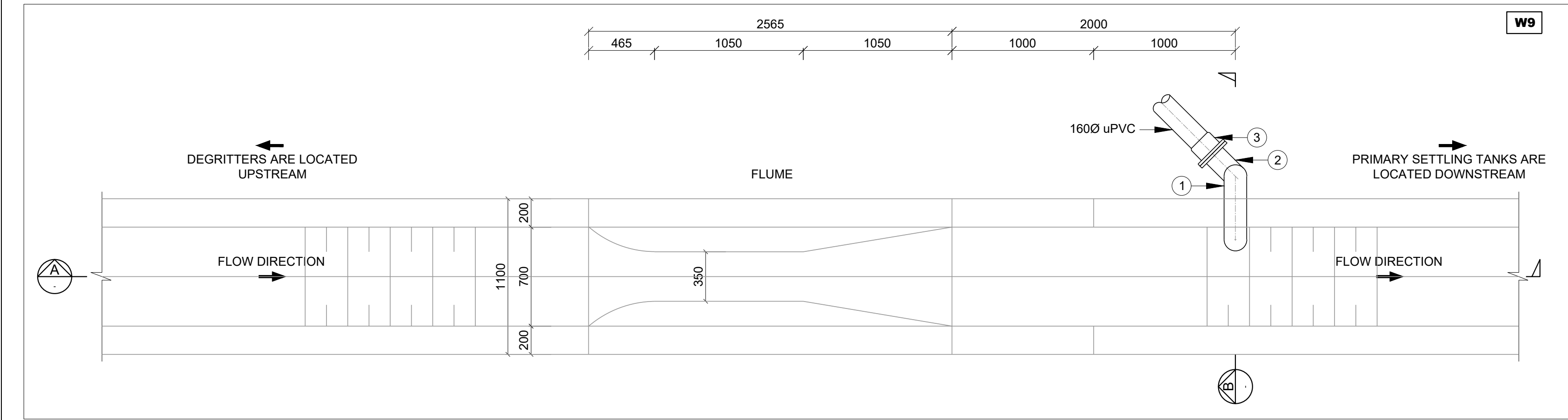


| FILTRATE PIPE SCHEDULE |                       |     |                       |                        |                                                                                                                                                                                                     |        |
|------------------------|-----------------------|-----|-----------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| ITEM                   | NOMINAL DIAMETER (mm) | QTY | PRESSURE RATING (BAR) | FLANGE DRILLING        | DESCRIPTION                                                                                                                                                                                         | SKETCH |
| 1                      | 150                   | 1   | 10                    | SANS 1123 TABLE 1000/3 | 304 STAINLESS STEEL STRAIGHT PIPE, ONE END FREE & THE OTHER END WELDED TO 180° LONG RADIUS BEND. OTHER END OF BEND WELDED TO 304 STAINLESS STEEL STRAIGHT PIPE. OTHER END OF STRAIGHT PIPE FLANGED. |        |
| 2                      | 150                   | 1   | 16                    | SANS 1123 TABLE 1000/3 | 304 STAINLESS STEEL FLANGED 90° BEND.                                                                                                                                                               |        |
| 3                      | 150/160               | 1   | 16                    | SANS 1123 TABLE 1000/3 | STEEL TO PVC FLANGED ADAPTOR.                                                                                                                                                                       |        |

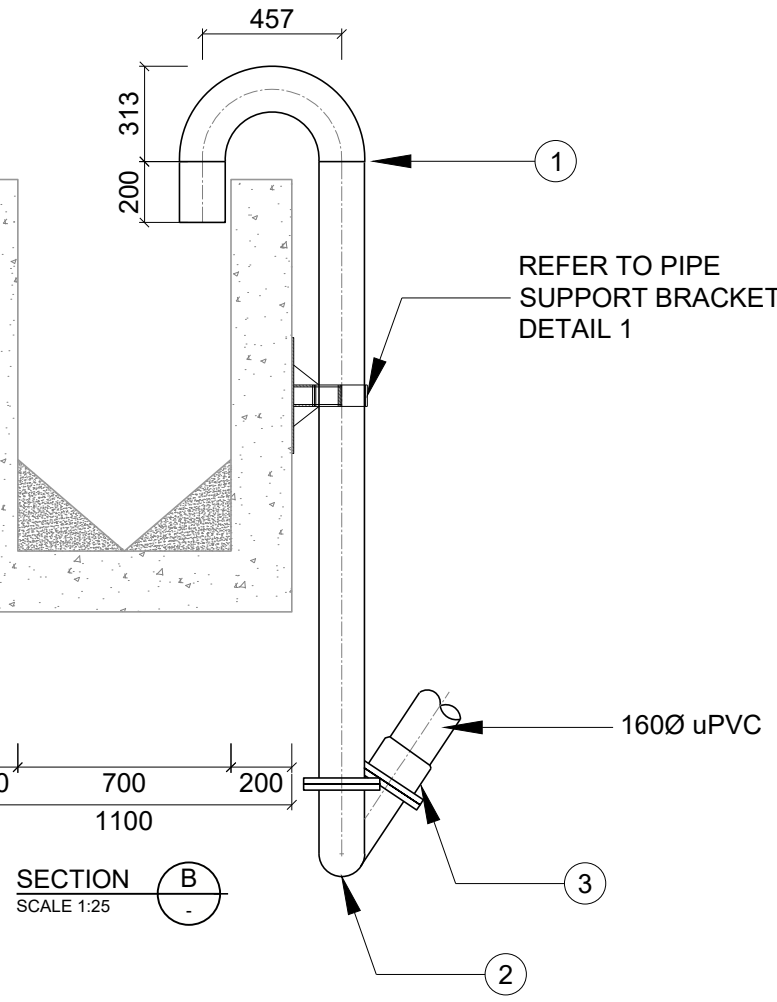
| COORDINATE LIST                  |           |             |
|----------------------------------|-----------|-------------|
| Lo29                             |           |             |
| FILTRATE RISING MAIN SETTING OUT |           |             |
| POINT                            | Y-COORD   | X-COORD     |
| CONST:                           |           |             |
| W1                               | 24031.991 | 2839816.997 |
| W2                               | 24033.998 | 2839819.594 |
| W2A                              | 24043.662 | 2839819.594 |
| W3                               | 24057.720 | 2839812.480 |
| W4                               | 24063.553 | 2839802.970 |
| W5                               | 24101.834 | 2839774.329 |
| W6                               | 24150.306 | 2839839.115 |
| W7                               | 24148.620 | 2839850.818 |
| W8                               | 24136.504 | 2839859.884 |
| W9                               | 24130.292 | 2839859.459 |



CONNECTION DETAILS  
SCALE NTS



SECTION A  
SCALE 1:25



PIPE SUPPORT BRACKET  
DETAIL 1  
SCALE 1:25

## NOTES:

- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CoT CTMM CIVIL ENGINEERING WORKS STANDARD SPECIFICATION, 2005 AND SANS 1200. WHERE THE TWO SPECIFICATIONS CONTRADICT ONE ANOTHER, THE CoT CTMM SPECIFICATION MUST TAKE PRECEDENCE.
- SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1200 A - 5.7, SAFETY.
- THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROXIMATE AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
- THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
- A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE WORKS, TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR PRIOR TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
- CONTRACTOR TO LAISE WITH THE CITY OF TSHWANE MUNICIPALITY W.R.T THE REINSTATEMENT OF ROAD SURFACING AND SIDEWALKS.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:
  - 2300082-08-81-C-401-FILTRATE RISING MAIN LONG SECTION.
  - 7515-W210-THRUST BLOCKS STANDARD DETAILS
  - 7515-S205-PIPE BEDDING STANDARD DETAILS

## SEWER

- COVER TO ALL RISING MAINS:
  - IN SIDEWALK & OPEN SPACES - MIN. 0.75m; MAX 1.25m
  - IN ROADWAY - MIN. 1.00m; MAX 1.25m
- ALL RISING MAINS 63mmØ AND UNDER TO BE HDPE ISO-SANS 4427 PE100, PN10. 75mmØ AND ABOVE TO BE UPVC PN9.
- ALL VALVES TO BE ANTI-CLOCKWISE CLOSING CLASS 16 STAINLESS STEEL WEDGE TYPE GATE VALVE WITH NON-RISING SPINDLE.
- THRUST BLOCK DESIGN TO COT STANDARD DRAWING 7515-W210.
- RISING MAINS TO BE TESTED UNDER ENGINEERS AND WATER DIVISIONS SUPERVISION PRIOR TO CONNECTION TO EXISTING WATER MAIN.

## STEEL PIPEWORK & FITTINGS

- ALL STEEL PIPEWORK THAT ARE UNDERGROUND (BOTH FLANGES AND STRAIGHT PIPES) MUST BE DENSO WRAPPED.
- VALVES AND COUPLINGS TO BE STAINLESS STEEL.
- SHOP DRAWINGS OF ALL THE PIPEWORK TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING ANY MATERIAL.
- ALL FLANGES TO BE SUPPLIED WITH STAINLESS STEEL BOLTS AND NUTS AND WRAPPED IN DENSO AS APPROVED BY THE ENGINEER.

## LEGEND :

|  |                           |
|--|---------------------------|
|  | CONTOURS                  |
|  | PROPOSED SEWER            |
|  | FILTRATE RISING MAIN PIPE |
|  | PROPOSED ELECTRIC FENCE   |
|  | BARRIER KERB              |
|  | BARRIER KERB & CHANNEL    |
|  | 150 x 150mm CHANNEL       |
|  | SEGMENTED BLOCK PAVING    |
|  | CUT                       |
|  | FILL                      |
|  | SCUM RISING MAIN          |

|                                                                  |                   |            |          |                                                                                      |     |                                                              |                          |               |           |                                                        |                            |                                        |                      |                                                   |  |
|------------------------------------------------------------------|-------------------|------------|----------|--------------------------------------------------------------------------------------|-----|--------------------------------------------------------------|--------------------------|---------------|-----------|--------------------------------------------------------|----------------------------|----------------------------------------|----------------------|---------------------------------------------------|--|
| <br><b>CITY OF TSHWANE</b><br>WATER AND SANITATION<br>DEPARTMENT | <b>AMENDMENTS</b> |            |          | <b>WATER AND SANITATION</b><br>FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE |     |                                                              | <b>CONSULTANT DETAIL</b> |               |           | <b>PROJECT STATUS</b><br>RECEIVED SIGN WHEN APPLICABLE |                            |                                        | LOCATION OF PROJECT: |                                                   |  |
|                                                                  | NR                | DATE       | APPROVED | DESCRIPTION                                                                          | PAR | DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                   | DESIGNED                   | NAME: _____ Pr Eng. Prof Reg No: _____ | CONTRACT No: _____   | DESCRIPTION OF PROJECT:                           |  |
|                                                                  | A                 | 2025-10-09 | AJW      | ISSUED FOR TENDER                                                                    |     | REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                        | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                   | DRAWN                      | NAME: _____ Prof Reg No: _____         | PROJECT No: _____    | UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT |  |
|                                                                  | B                 | 2026-02-10 | AJW      | ISSUED FOR TENDER                                                                    |     | DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT     | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                   | CHECKED                    | NAME: _____ Pr Eng. Prof Reg No: _____ | SHEET No: _____      | FILTRATE RISING MAIN LAYOUT & DETAILS             |  |
|                                                                  |                   |            |          |                                                                                      |     | DIRECTOR: BULK WATER                                         | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                   | INFORMATION OFFICE CHECKED | NAME: _____ Pr Eng. Prof Reg No: _____ | PAPER SIZE: A1       | WBS No. : _____                                   |  |
|                                                                  |                   |            |          |                                                                                      |     | DIRECTOR: INFRASTRUCTURE PROVISION                           | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                   | DESIGN OFFICE APPROVAL     | NAME: _____ Prof Reg No: _____         | SCALE: _____         | COT DRAWING NUMBER: _____                         |  |
|                                                                  |                   |            |          |                                                                                      |     | DIRECTOR: WASTE WATER TREATMENT                              | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                   | REVISION                   | NAME: _____ Prof Reg No: _____         | DATE: _____          |                                                   |  |
|                                                                  |                   |            |          |                                                                                      |     |                                                              | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                   |                            | NAME: _____ Prof Reg No: _____         | DATE: _____          |                                                   |  |

4. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CoT CTTM CIVIL ENGINEERING WORKS STANDARD SPECIFICATION, 2005 AND 2006, WHERE THE TWO SPECIFICATIONS CONTRADICT ONE ANOTHER, THE CoT CTTM SPECIFICATION MUST TAKE PRECEDENCE.
5. SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1201-5.7, SAFETY.
6. THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROXIMATE AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
7. THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
8. A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE DISCREPANCIES TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR PRIOR TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
9. CONTRACTOR TO LIAISE WITH THE CITY OF TSHWANE MUNICIPALITY W.R.T THE REINSTATEMENT OF ROAD SURFACING AND SIDEWALKS.
10. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:
  - 7.1. 7515-2025-PIPE C-400-FILTRATE RISING MAIN LAYOUT
  - 7.2. 7515-W210-THRUST BLOCKS STANDARD DETAILS
  - 7.3. 7515-5205-PIPE BEDDING STANDARD DETAILS

- COVER TO ALL RISING MAINS :
  - 8.1. IN SIDEWALK & OPEN SPACES - MIN. 0.75m; MAX 1.25m
  - 8.2. IN ROADWAY - MIN. 1.00m; MAX 1.25m
- ALL RISING MAINS 63mmØ AND UNDER TO BE HDPE ISO SANS 4427 PE100, PN10. 75mmØ AND ABOVE TO BE APPROV. PNG.
- ALL VALVES TO BE ANTI-CLOCKWISE CLOSING CLASS 16, STAINLESS STEEL WEDGE TYPE GATE VALVE WITH NON-RISING SPINDLE.
11. THRUST BLOCK DESIGN TO COT STANDARD DRAWING 7515-W210.
12. RISING MAINS TO BE TESTED UNDER ENGINEERS AND WATER DIVISIONS SUPERVISION PRIOR TO CONNECTION TO EXISTING WATER MAIN.

**STEEL PIPEWORK & FITTINGS**

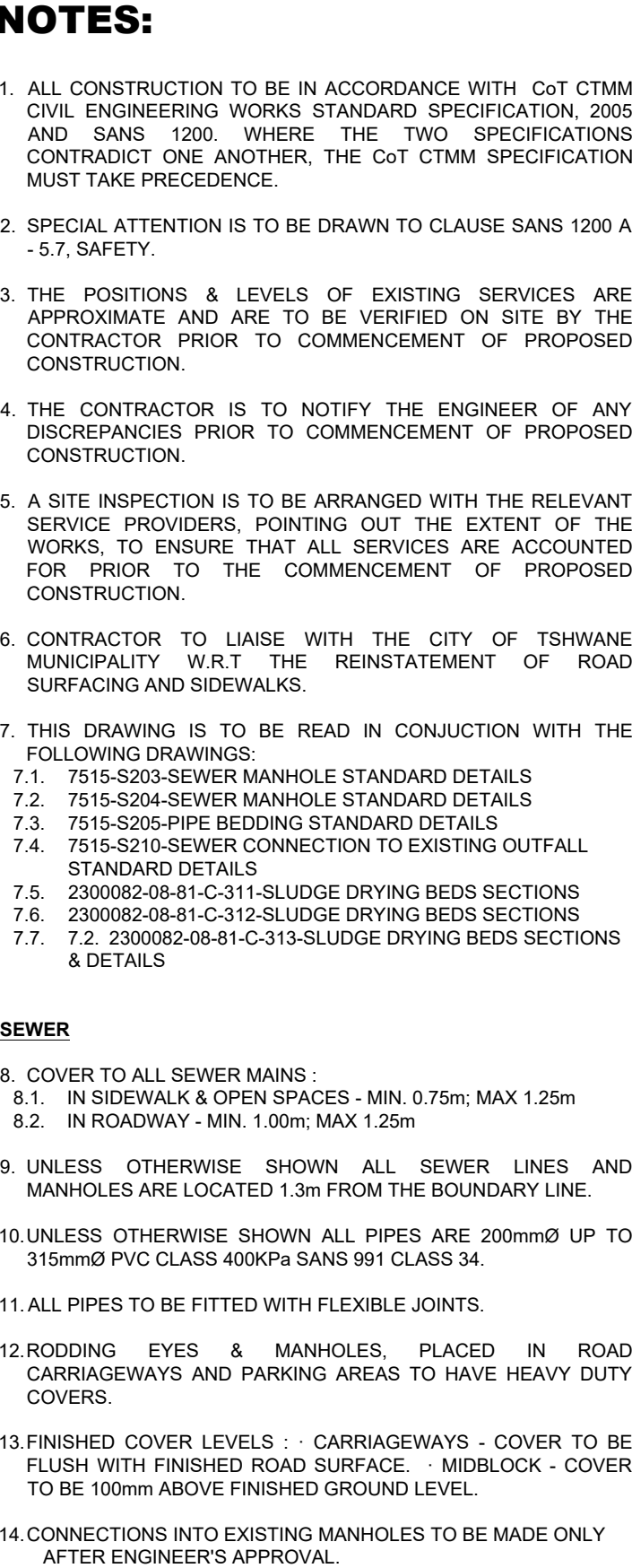
13. ALL STEEL PIPEWORK THAT ARE UNDERGROUND (BOTH FLANGES AND STRAIGHT PIPES) MUST BE DENS0 WRAPPED.
14. VALVES AND COUPLINGS TO BE STAINLESSS STEEL.
15. SHOP DRAWINGS OF ALL THE PIPEWORK TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING ANY MATERIAL.
16. ALL FLANGES TO BE SUPPLIED WITH STAINLESS STEEL BOLTS AND NUTS AND WRAPPED IN DENS0 AS APPROVED BY THE ENGINEER.

13. ALL STEEL PIPEWORK THAT ARE UNDERGROUND (BOTH FLANGES AND STRAIGHT PIPES) MUST BE DENSIO WRAPPED.
14. VALVES AND COUPLINGS TO BE STAINLESS STEEL.
15. SHOP DRAWINGS OF ALL THE PIPEWORK TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING ANY MATERIAL.
16. ALL FLANGES TO BE SUPPLIED WITH STAINLESS STEEL BOLTS AND NUTS AND WRAPPED IN DENSIO AS APPROVED BY THE ENGINEER.
- 17.



| CH      | Diameter1 (mm) | Diameter2 (mm) | Angle (Deg) |
|---------|----------------|----------------|-------------|
| 3.773   | 160            | 160            | 88.6        |
| 15.773  | 160            | 160            | 9.7         |
| 33.230  | 160            | 160            | 44.6        |
| 39.123  | 160            | 160            | 45.0        |
| 86.932  | 160            | 160            | 90.0        |
| 167.844 | 160            | 160            | 45.0        |
| 179.668 | 160            | 160            | 45.0        |
| 200.542 | 160            | 160            | 44.9        |

REVISION



## LEGEND :

|  |                            |
|--|----------------------------|
|  | CONTOURS                   |
|  | PROPOSED SEWER             |
|  | EXISTING SEWER             |
|  | PROPOSED ELECTRIC FENCE    |
|  | BARRIER KERB               |
|  | BARRIER KERB & CHANNEL     |
|  | STORMWATER CUT-OFF CHANNEL |
|  | SEGMENTED BLOCK PAVING     |
|  | CUT                        |
|  | FILL                       |

|                                                                                                                                                                                                                                              |            |            |          |                   |                                                                               |                                                               |  |  |                                                               |                                                                                                                                                                                                                                                                                                                                                                                               |  |  |                                |                                        |  |  |                                |                                |  |  |                                                 |                                                                                                                                                                                  |  |  |                            |                                                                                                                                                                |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|----------|-------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------|--|--|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--------------------------------|----------------------------------------|--|--|--------------------------------|--------------------------------|--|--|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
|  <p><b>CITY OF TSHWANE</b><br/>PO BOX 10222<br/>PRETORIA<br/>0001</p> <p><b>CITY OF TSHWANE</b><br/><b>WATER AND SANITATION</b><br/><b>DEPARTMENT</b></p> | AMENDMENTS |            |          |                   | WATER AND SANITATION<br>FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE |                                                               |  |  | CONSULTANT DETAIL                                             |                                                                                                                                                                                                                                                                                                                                                                                               |  |  | DESIGNED                       |                                        |  |  | CONTRACT No: _____             |                                |  |  | PROJECT STATUS<br>RECEIVED SIGN WHEN APPLICABLE |                                                                                                                                                                                  |  |  | LOCATION OF PROJECT: _____ |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              | NR         | DATE       | APPROVED | DESCRIPTION       | PAR                                                                           | DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT  |  |  |                                                               |   <p>HEAD OFFICE<br/>203 Mich Hazen Avenue, Highveld Technopark, Centurion, 0157, SA<br/>P.O. Box 68735, Highveld, 0169, South Africa<br/>Tel: +27 (0)12 685 0900 / Fax: +27 (0)12 685 1886 / www.nakogroup.com</p> |  |  |                                | NAME: _____ Pr Eng. Prof Reg No: _____ |  |  |                                | PROJECT No. _____              |  |  |                                                 | <input type="radio"/> CONCEPT DRAWING <input checked="" type="radio"/> TENDER DRAWING <input type="radio"/> APPROVED CONSTRUCTION DRAWING <input type="radio"/> AS BUILT DRAWING |  |  |                            | DESCRIPTION OF PROJECT:<br><br><b>UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT<br/>SLUDGE DRYING BEDS LEACHATE DRAINAGE PIPELINE LAYOUT &amp; DETAILS</b> |  |  |  |
|                                                                                                                                                                                                                                              | A          | 2025-07-24 | AJW      | ISSUED FOR TENDER |                                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____ |  |  |                                                               |                                                                                                                                                                                                                                                                                                                                                                                               |  |  |                                | NAME: _____ Prof Reg No: _____         |  |  |                                | SHEET No. _____                |  |  |                                                 | PROJECT ENGINEER of COT: NAME: _____ Pr Eng. Prof Reg No: _____                                                                                                                  |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              | B          | 2026-02-12 | AJW      | ISSUED FOR TENDER |                                                                               | REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                         |  |  |                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____                                                                                                                                                                                                                                                                                                                                 |  |  |                                | NAME: _____ Prof Reg No: _____         |  |  |                                | PAPER SIZE: _____              |  |  |                                                 | INSPECTOR OF WORKS of COT: NAME: _____ Pr Eng. Prof Reg No: _____                                                                                                                |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              |            |            |          |                   |                                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____ |  |  |                                                               | NAME: _____ Prof Reg No: _____                                                                                                                                                                                                                                                                                                                                                                |  |  |                                | SCALE: _____                           |  |  |                                | DATE: _____                    |  |  |                                                 | WBS No. : _____                                                                                                                                                                  |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              |            |            |          |                   |                                                                               | DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT      |  |  |                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____                                                                                                                                                                                                                                                                                                                                 |  |  |                                | NAME: _____ Prof Reg No: _____         |  |  |                                | DESIGN OFFICE APPROVAL         |  |  |                                                 | COT DRAWING NUMBER: _____                                                                                                                                                        |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              |            |            |          |                   |                                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____ |  |  |                                                               | NAME: _____ Prof Reg No: _____                                                                                                                                                                                                                                                                                                                                                                |  |  |                                | NAME: _____ Prof Reg No: _____         |  |  |                                | NAME: _____ Prof Reg No: _____ |  |  |                                                 | NAME: _____ Prof Reg No: _____                                                                                                                                                   |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              |            |            |          |                   |                                                                               | DIRECTOR: BULK WATER                                          |  |  |                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____                                                                                                                                                                                                                                                                                                                                 |  |  |                                | NAME: _____ Prof Reg No: _____         |  |  |                                | NAME: _____ Prof Reg No: _____ |  |  |                                                 | NAME: _____ Prof Reg No: _____                                                                                                                                                   |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              |            |            |          |                   |                                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____ |  |  |                                                               | NAME: _____ Prof Reg No: _____                                                                                                                                                                                                                                                                                                                                                                |  |  |                                | NAME: _____ Prof Reg No: _____         |  |  |                                | NAME: _____ Prof Reg No: _____ |  |  |                                                 | NAME: _____ Prof Reg No: _____                                                                                                                                                   |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              |            |            |          |                   |                                                                               | DIRECTOR: INFRASTRUCTURE PROVISION                            |  |  |                                                               | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____                                                                                                                                                                                                                                                                                                                                 |  |  |                                | NAME: _____ Prof Reg No: _____         |  |  |                                | NAME: _____ Prof Reg No: _____ |  |  |                                                 | NAME: _____ Prof Reg No: _____                                                                                                                                                   |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              |            |            |          |                   | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____                 |                                                               |  |  | NAME: _____ Prof Reg No: _____                                |                                                                                                                                                                                                                                                                                                                                                                                               |  |  | NAME: _____ Prof Reg No: _____ |                                        |  |  | NAME: _____ Prof Reg No: _____ |                                |  |  | NAME: _____ Prof Reg No: _____                  |                                                                                                                                                                                  |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              |            |            |          |                   | DIRECTOR: WASTE WATER TREATMENT                                               |                                                               |  |  | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____ |                                                                                                                                                                                                                                                                                                                                                                                               |  |  | NAME: _____ Prof Reg No: _____ |                                        |  |  | NAME: _____ Prof Reg No: _____ |                                |  |  | NAME: _____ Prof Reg No: _____                  |                                                                                                                                                                                  |  |  |                            |                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                                              |            |            |          |                   | NAME: _____ Prof. Reg. No. _____ SIGNATURE: _____ DATE: _____                 |                                                               |  |  | NAME: _____ Prof Reg No: _____                                |                                                                                                                                                                                                                                                                                                                                                                                               |  |  | NAME: _____ Prof Reg No: _____ |                                        |  |  | NAME: _____ Prof Reg No: _____ |                                |  |  | NAME: _____ Prof Reg No: _____                  |                                                                                                                                                                                  |  |  |                            |                                                                                                                                                                |  |  |  |



NOTES:

- GENERAL
1. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH SANS 1200 .
  2. SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1200A -5.7. SAFETY.
  3. THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROXIMATE AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
  4. THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
  5. A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE WORKS, TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR PRIOR TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
  6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE FOLLOWING DWGS:  
6.1. 2300082-08-81-C-500-SECURITY FENCE LAYOUT.

LEGEND :

- CONTOURS
- NEW SECURITY FENCE
- EXISTING FENCE
- KERB
- SEGEMENTED BLOCK PAVING
- CUT
- FILL

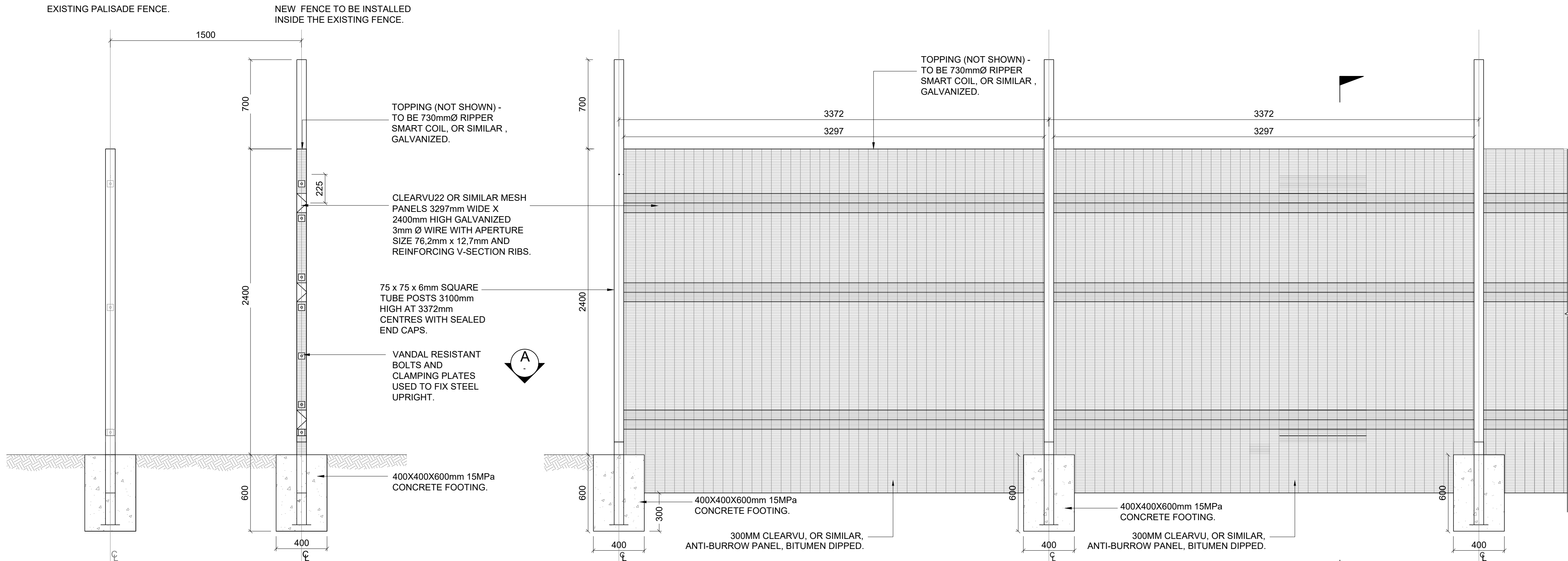
PLAN  
SCALE 1:500

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|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|----------|--------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------|--------------------------|---------------|-----------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--|------------------------------|----------------------------------------------------------------|-------------------------------------|--|---------------------------|------------------------------------------------------|--|--|
| <br><b>CITY OF TSHWANE</b><br>WATER AND SANITATION<br>DEPARTMENT | <b>AMENDMENTS</b> |            |          | <b>WATER AND SANITATION</b><br>FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE |                                    |                                                              | <b>CONSULTANT DETAIL</b> |               |           | <b>DESIGNED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                                  |                                                                                                             |  | <b>CONTRACT</b><br>No: _____ | <b>PROJECT STATUS</b><br>RECEIVED SIGN WHEN APPLICABLE         |                                     |  | LOCATION OF PROJECT:      |                                                      |  |  |
|                                                                                                                                                     | NR                | DATE       | APPROVED | DESCRIPTION                                                                          | PAR                                | DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                                                       | <b>DRAWN</b><br>NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                              |  |                              | PROJECT No.                                                    | CONCEPT<br>DRAWING                  |  |                           | DESCRIPTION OF PROJECT:                              |  |  |
|                                                                                                                                                     | A                 | 2025-02-19 | AJW      | ISSUE FOR TENDER                                                                     |                                    | REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                        | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                                                       | <b>CHECKED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____                    |  |                              | SHEET No.                                                      | TENDER<br>DRAWING                   |  |                           | UPGRADING OF EKANGALA WASTE WATER TREATMENT<br>PLANT |  |  |
|                                                                                                                                                     |                   |            |          |                                                                                      |                                    | DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT     | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                                                       | <b>INFORMATION OFFICE CHECKED</b><br>NAME: _____ Pr Eng. Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |  |                              | PAPER SIZE:<br>A1                                              | APPROVED<br>CONSTRUCTION<br>DRAWING |  |                           | SECURITY FENCE LAYOUT                                |  |  |
|                                                                                                                                                     |                   |            |          |                                                                                      |                                    | DIRECTOR: BULK WATER                                         | NAME                     | Prof. Reg. No | SIGNATURE | DATE                                                                                                                       | <b>DESIGN OFFICE APPROVAL</b><br>NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____             |  |                              | SCALE:                                                         | INSPECTOR OF WORKS of COT:          |  |                           | WBS No. : _____                                      |  |  |
|                                                                                                                                                     |                   |            |          |                                                                                      | DIRECTOR: INFRASTRUCTURE PROVISION | NAME                                                         | Prof. Reg. No            | SIGNATURE     | DATE      | HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED<br>ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE<br>DRAWING. |                                                                                                             |  | DATE:                        | NAME: _____ Prof Reg No: _____<br>SIGNATURE: _____ DATE: _____ |                                     |  | COT DRAWING NUMBER: _____ |                                                      |  |  |
|                                                                                                                                                     |                   |            |          |                                                                                      | DIRECTOR: WASTE WATER TREATMENT    | NAME                                                         | Prof. Reg. No            | SIGNATURE     | DATE      | CONSULTANT DRAWING NUMBER:<br>2300082-08-81-C-500                                                                          |                                                                                                             |  | REVISION                     |                                                                |                                     |  |                           |                                                      |  |  |

NOTES:

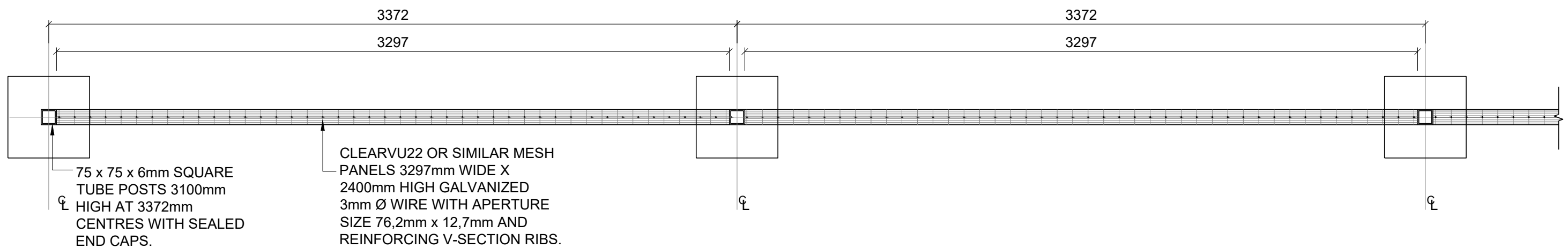
GENERAL

1. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH SANS 1200 .
2. SPECIAL ATTENTION IS TO BE DRAWN TO CLAUSE SANS 1200A -5.7. SAFETY.
3. THE POSITIONS & LEVELS OF EXISTING SERVICES ARE APPROXIMATE AND ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
4. THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION.
5. A SITE INSPECTION IS TO BE ARRANGED WITH THE RELEVANT SERVICE PROVIDERS, POINTING OUT THE EXTENT OF THE WORKS, TO ENSURE THAT ALL SERVICES ARE ACCOUNTED FOR PRIOR TO THE COMMENCEMENT OF PROPOSED CONSTRUCTION.
6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE FOLLOWING DWGS:  
6.1. 2300082-08-81-C-500-SECURITY FENCE LAYOUT.



SECTION B

FRONT ELEVATION



SECTION A



CITY OF TSHWANE  
WATER AND SANITATION  
DEPARTMENT

| AMENDMENTS |            |          |                       |     |
|------------|------------|----------|-----------------------|-----|
| NR         | DATE       | APPROVED | DESCRIPTION           | PAR |
| A          | 2025-10-09 | AJW      | ISSUE FOR INFORMATION |     |
|            |            |          |                       |     |
|            |            |          |                       |     |
|            |            |          |                       |     |
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|            |            |          |                       |     |

| WATER AND SANITATION                                         |                |           |      |  |
|--------------------------------------------------------------|----------------|-----------|------|--|
| FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE        |                |           |      |  |
| DIRECTOR: W&S INFRASTRUCTURE PLANNING AND SYSTEM DEVELOPMENT |                |           |      |  |
| NAME                                                         | Prof. Reg. No. | SIGNATURE | DATE |  |
| REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)                        |                |           |      |  |
| NAME                                                         | Prof. Reg. No. | SIGNATURE | DATE |  |
| DIRECTOR: WATER CONSERVATION AND WATER DEMAND MANAGEMENT     |                |           |      |  |
| NAME                                                         | Prof. Reg. No. | SIGNATURE | DATE |  |
| DIRECTOR: BULK WATER                                         |                |           |      |  |
| NAME                                                         | Prof. Reg. No. | SIGNATURE | DATE |  |
| DIRECTOR: INFRASTRUCTURE PROVISION                           |                |           |      |  |
| NAME                                                         | Prof. Reg. No. | SIGNATURE | DATE |  |
| DIRECTOR: WASTE WATER TREATMENT                              |                |           |      |  |
| NAME                                                         | Prof. Reg. No. | SIGNATURE | DATE |  |

| CONSULTANT DETAIL                                                                                                                                                                                        |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|                                |      |
| HEAD OFFICE<br>203 Witch Hazel Avenue, Highveld Technopark, Centurion, 0157, SA<br>P.O. Box 68735, Highveld, 0169, South Africa<br>Tel: +27 (0)12 685 0900 / Fax: +27 (0)12 685 1886 / www.nakogroup.com |      |
| Prof Reg Nr                                                                                                                                                                                              |      |
| HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.                                                                                     |      |
| SIGNATURE                                                                                                                                                                                                | DATE |
| CONSULTANT DRAWING NUMBER:<br>2300082-08-81-C-510                                                                                                                                                        |      |

| DESIGNED                   |                     |
|----------------------------|---------------------|
| NAME:                      | Pr Eng Prof Reg No: |
| SIGNATURE:                 | DATE:               |
| DRAWN                      |                     |
| NAME:                      | Prof Reg No:        |
| SIGNATURE:                 | DATE:               |
| CHECKED                    |                     |
| NAME:                      | Pr Eng Prof Reg No: |
| SIGNATURE:                 | DATE:               |
| INFORMATION OFFICE CHECKED |                     |
| NAME:                      | Pr Eng Prof Reg No: |
| SIGNATURE:                 | DATE:               |
| DESIGN OFFICE APPROVAL     |                     |
| NAME:                      | Prof Reg No:        |
| SIGNATURE:                 | DATE:               |

| CONTRACT No: |
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|              |
| PROJECT No:  |
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| SHEET No:    |
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| PAPER SIZE:  |
| A1           |
| SCALE:       |
|              |
| DATE:        |
|              |

| PROJECT STATUS                                      |                                                 |
|-----------------------------------------------------|-------------------------------------------------|
| RECEIVED SIGN WHEN APPLICABLE                       |                                                 |
| <input type="radio"/> CONCEPT DRAWING               | <input checked="" type="radio"/> TENDER DRAWING |
| <input type="radio"/> APPROVED CONSTRUCTION DRAWING | <input type="radio"/> AS BUILT DRAWING          |
| PROJECT ENGINEER of COT:                            |                                                 |
| NAME:                                               | Pr Eng Prof Reg No:                             |
| SIGNATURE:                                          | DATE:                                           |
| INSPECTOR OF WORKS of COT:                          |                                                 |
| NAME:                                               | Prof Reg No:                                    |
| SIGNATURE:                                          | DATE:                                           |

| LOCATION OF PROJECT:                              |           |
|---------------------------------------------------|-----------|
|                                                   |           |
| DESCRIPTION OF PROJECT:                           |           |
| UPGRADING OF EKANGALA WASTE WATER TREATMENT PLANT |           |
| SECURITY FENCE DETAILS                            |           |
| WBS No. :                                         | - - - - - |
| COT DRAWING NUMBER:                               | - - - - - |