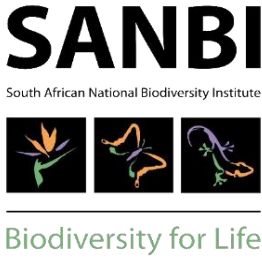


**Documentation Transmittal**  
**34398-02-001**

|                                                                                                                                                                                   |                    |   |                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---|-----------------------------------------------------------------------------------------------|
|  <p><b>SANBI</b><br/>South African National Biodiversity Institute<br/>Biodiversity for Life</p> | <b>Date</b>        | : | <b>21 October 2021</b>                                                                        |
|                                                                                                                                                                                   | <b>Company</b>     | : | <b>SANBI</b>                                                                                  |
|                                                                                                                                                                                   | <b>Attention</b>   | : | <b>Christopher Willis</b><br><a href="mailto:C.Willis@sanbi.org.za">C.Willis@sanbi.org.za</a> |
|                                                                                                                                                                                   | <b>Description</b> | : | <b>SANBI Projects - Mokopane Biodiversity Conservation Centre</b>                             |
|                                                                                                                                                                                   | <b>Project No</b>  | : | <b>34398-02</b>                                                                               |

|    |  |  | BVi                | Rev No | Issue For |   |   |   |   | Description             | Size                                           | Type: |          |
|----|--|--|--------------------|--------|-----------|---|---|---|---|-------------------------|------------------------------------------------|-------|----------|
|    |  |  |                    |        | A         | B | C | D | E |                         |                                                | Paper | OneDrive |
| 1  |  |  | 34398-02-100-01-01 | BB     | x         |   |   |   |   | GENERAL                 | SITE PLAN                                      | A1    |          |
| 2  |  |  | 34398-02-602-01-01 | BB     | x         |   |   |   |   | NEW LAPA                | GROUND FLOOR PLAN, SECTIONS AND SITE PLAN      | A1    |          |
| 3  |  |  | 34398-02-603-01-01 | BB     | x         |   |   |   |   | NEW LAPA                | ELEVATIONS                                     | A1    |          |
| 4  |  |  | 34398-02-605-01-01 | BB     | x         |   |   |   |   | NEW LAPA                | CEILING PLAN, WINDOW AND DOOR SCHEDULE         | A1    |          |
| 5  |  |  | 34398-02-611-01-01 | BB     | x         |   |   |   |   | NEW LAPA                | FINISHING SCHEDULE                             | A4    |          |
| 6  |  |  | 34398-02-611-01-02 | BB     | x         |   |   |   |   | NEW LAPA                | SANITARY SCHEDULE                              | A4    |          |
| 7  |  |  | 34398-02-602-03-01 | BB     | x         |   |   |   |   | EXISTING ABLUTION BLOCK | GROUND FLOOR PLAN , ELEVATIONS AND SECTIONS    | A1    |          |
| 8  |  |  | 34398-02-611-03-01 | BB     | x         |   |   |   |   | EXISTING ABLUTION BLOCK | FINISHING SCHEDULE                             | A4    |          |
| 9  |  |  | 34398-02-602-04-01 | BB     | x         |   |   |   |   | EXISTING GATE HOUSE     | GROUND FLOOR PLAN AND ELEVATIONS               | A1    |          |
| 10 |  |  | 34398-02-611-04-01 | BB     | x         |   |   |   |   | EXISTING GATE HOUSE     | FINISHING SCHEDULE                             | A4    |          |
| 11 |  |  | 34398-02-601-05-01 | BB     | x         |   |   |   |   | NEW VISITORS PARKING    | AND CARPORTS - LYOUT AND SECTION               | A1    |          |
| 12 |  |  | 34398-02-601-05-02 | BB     | x         |   |   |   |   | STAFF PARKING           | CAR PORT                                       | A1    |          |
| 13 |  |  | 34398-02-611-05-01 | BB     | x         |   |   |   |   | NEW VISITORS PARKING    | FINISHING SCHEDULE                             | A4    |          |
| 14 |  |  | 34398-02-611-05-02 | BB     | x         |   |   |   |   | STAFF PARKING           | FINISHING SCHEDULE                             | A4    |          |
| 15 |  |  | 34398-02-101-01-01 | BB     | x         |   |   |   |   | GENERAL                 | GENERAL SITE SERVICES LAYOUT                   | A1    |          |
| 16 |  |  | 34398-02-110-01-01 | BB     | x         |   |   |   |   | ROADS                   | NEW VISITORS PARKING LOT LAYOUT                | A1    |          |
| 17 |  |  | 34398-02-110-02-01 | BB     | x         |   |   |   |   | ROADS                   | NEW STAFF PARKING LOT LAYOUT                   | A1    |          |
| 18 |  |  | 34398-02-111-01-01 | BB     | x         |   |   |   |   | ROADS                   | NEW VISITORS PARKING LOT SECTIONS              | A1    |          |
| 19 |  |  | 34398-02-111-03-01 | BB     | x         |   |   |   |   | ROADS                   | ROAD SECTIONS                                  | A1    |          |
| 20 |  |  | 34398-02-120-01-01 | BB     | x         |   |   |   |   | STORMWATER              | STORMWATER LAYOUT                              | A1    |          |
| 21 |  |  | 34398-02-121-01-01 | BB     | x         |   |   |   |   | STORMWATER              | STORMWATER LAYOUT AND SECTIONS SHEET 1 OF 3    | A1    |          |
| 22 |  |  | 34398-02-121-01-02 | BB     | x         |   |   |   |   | STORMWATER              | STORMWATER LAYOUT AND SECTIONS SHEET 2 OF 3    | A1    |          |
| 23 |  |  | 34398-02-121-01-03 | BB     | x         |   |   |   |   | STORMWATER              | STORMWATER LAYOUT AND SECTIONS SHEET 3 OF 3    | A1    |          |
| 24 |  |  | 34398-02-123-01-01 | BB     | x         |   |   |   |   | STORMWATER              | STORMWATER CHANNELS SECTIONS                   | A1    |          |
| 25 |  |  | 34398-02-123-02-01 | BB     | x         |   |   |   |   | STORMWATER              | STORMWATER CATCHPIT DETAILS AND SECTIONS       | A1    |          |
| 26 |  |  | 34398-02-123-03-01 | BB     | x         |   |   |   |   | STORMWATER              | TYPICAL STORMWATER DETAILS                     | A1    |          |
| 27 |  |  | 34398-02-130-01-01 | BB     | x         |   |   |   |   | SEWER                   | SEWER GENERAL LAYOUT                           | A1    |          |
| 28 |  |  | 34398-02-133-01-01 | BB     | x         |   |   |   |   | SEWER                   | SEWER CONCRETE MANHOLE TYPICAL DETAILS         | A1    |          |
| 29 |  |  | 34398-02-140-01-01 | BB     | x         |   |   |   |   | WATER                   | WATER GENERAL LAYOUT                           | A1    |          |
| 30 |  |  | 34398-02-143-01-01 | BB     | x         |   |   |   |   | WATER                   | TYPICAL WATER DETAILS                          | A1    |          |
| 31 |  |  | 34398-02-143-01-02 | BB     | x         |   |   |   |   | WATER                   | POTABLE WATER HDPE PIPING THRUST BLOCK DETAILS | A1    |          |
| 32 |  |  | 34398-02-310-01-01 | AA     | x         |   |   |   |   | NEW LAPA                | GROUND FLOOR PLAN - ELECTRICAL POINTS          | A1    |          |
| 33 |  |  | 34398-02-325-01-01 | AA     | x         |   |   |   |   | NEW LAPA                | GROUND FLOOR PLAN - LIGHTING LAYOUT            | A1    |          |
| 34 |  |  | 34398-02-392-01-01 | AA     | x         |   |   |   |   | NEW LAPA                | GROUND FLOOR PLAN - SCHEMATIC LAOUT            | A1    |          |
| 35 |  |  | 34398-02-310-03-01 | AA     | x         |   |   |   |   | EXISTING ABLUTION BLOCK | GROUND FLOOR PLAN - ELECTRICAL POINTS          | A1    |          |
| 36 |  |  | 34398-02-325-03-01 | AA     | x         |   |   |   |   | EXISTING ABLUTION BLOCK | GROUND FLOOR PLAN - LIGHTING LAYOUT            | A1    |          |
| 37 |  |  | 34398-02-325-04-01 | AA     | x         |   |   |   |   | GATE HOUSE              | GROUND FLOOR PLAN - LIGHTING LAYOUT            | A1    |          |
| 38 |  |  | 34398-02-392-05-01 | AA     | x         |   |   |   |   | MAIN ENTRANCE           | DISTRIBUTION KIOSK - SCHEMATIC LAYOUT          | A1    |          |
| 39 |  |  | 34398-02-325-06-01 | AA     | x         |   |   |   |   | NEW CARPORT             | GROUND FLOOR PLAN - LIGHTING LAYOUT            | A1    |          |
| 40 |  |  | 34398-02-201-01-01 | AA     | x         |   |   |   |   | NEW LAPA                | FOUNDATION - LAYOUT AND SECTIONS               | A1    |          |
| 41 |  |  | 34398-02-201-02-01 | AA     | x         |   |   |   |   | NEW LAPA                | REINFORCEMENT - SECTION AND DETAILS            | A1    |          |
| 42 |  |  | 34398-02-202-01-01 | AA     | x         |   |   |   |   | NEW STONE WALL          | CONCRETE - LAYOUT AND SECTIONS                 | A1    |          |
| 43 |  |  | 34398-02-202-02-01 | AA     | x         |   |   |   |   | NEW STONE WALL          | REINFORCEMENT - LAYOUT AND SECTIONS            | A1    |          |
| 44 |  |  | 34398-02-203-01-01 | AA     | x         |   |   |   |   | EXISTING ABLUTION BLOCK | CRACK REPAIR DETAILS                           | A1    |          |
| 45 |  |  | 34398-02-205-01-01 | AA     | x         |   |   |   |   | STAFF PARKING           | LAYOUT AND SECTIONS                            | A1    |          |

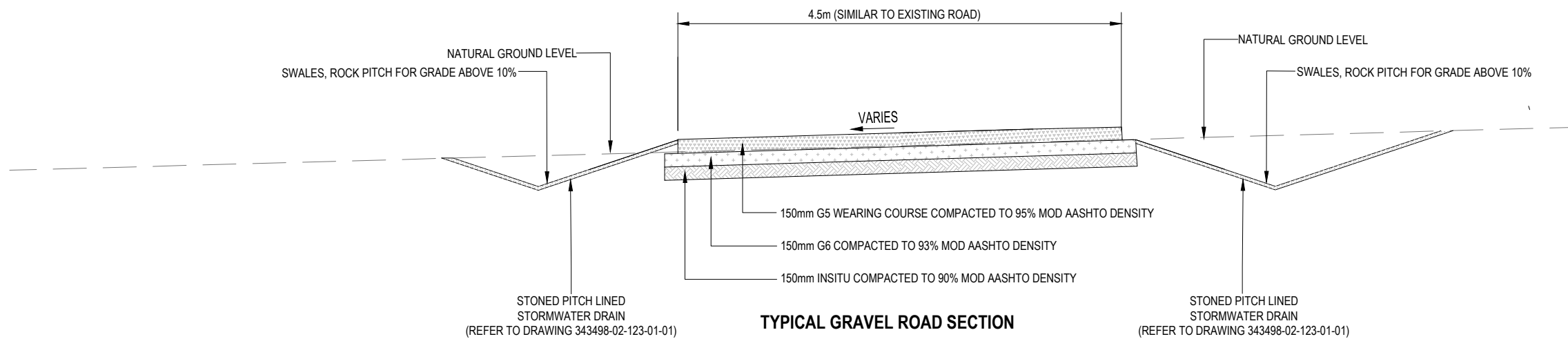
Please sign this Transmittal to signify receipt of the above.

|               |                    |
|---------------|--------------------|
| <b>Date</b> : | <b>Signature</b> : |
|---------------|--------------------|

**A - Issued for Tender Purposes**  
B - Issued for Review  
C - Issued for Approval

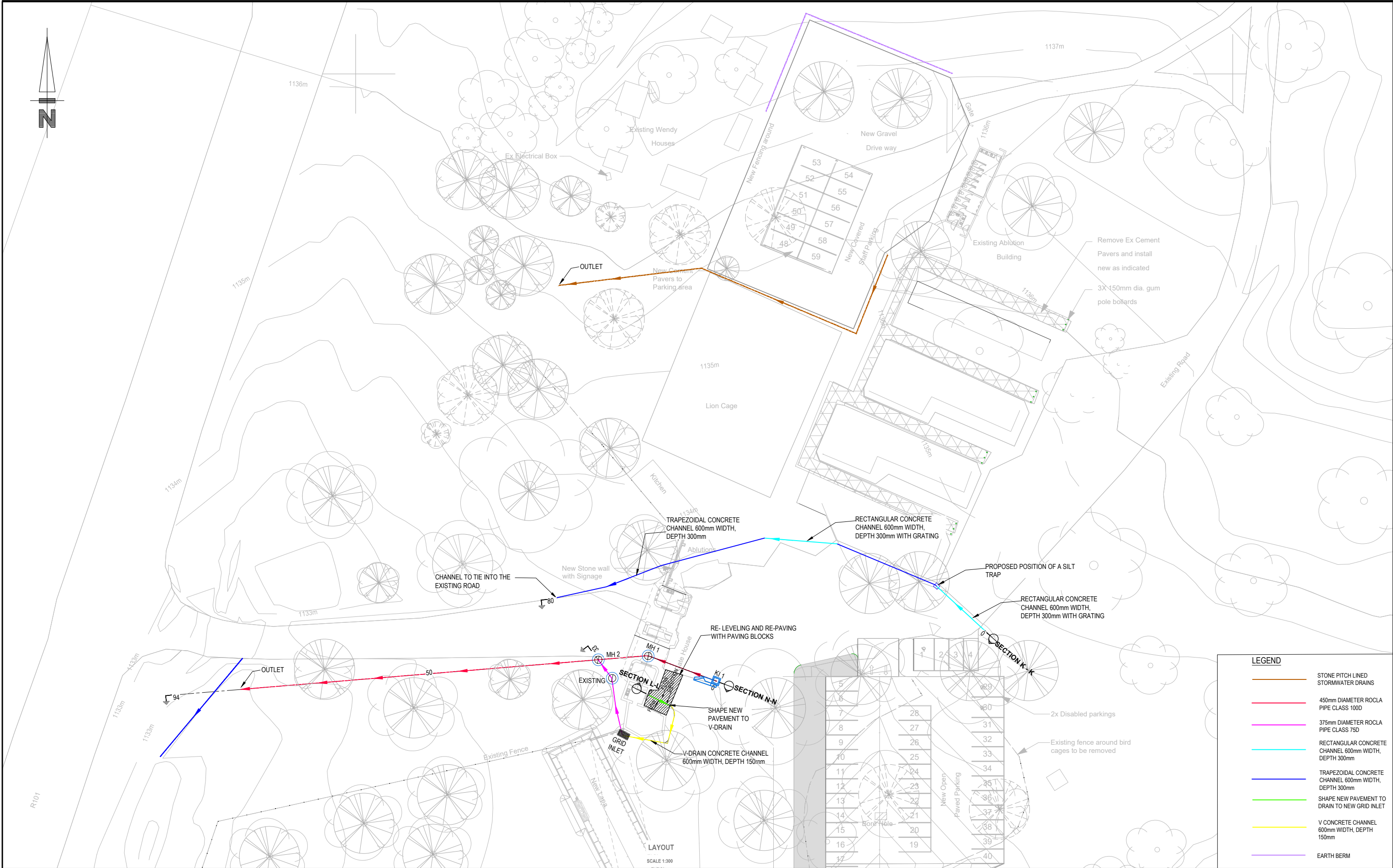
D - Approve for Construction  
E - Issued for As Built

|                   |                         |                        |
|-------------------|-------------------------|------------------------|
|                   | <b>Document Control</b> |                        |
| <b>Issued by:</b> | Roberto van der Lith    | <b>21 October 2021</b> |



TYPICAL GRAVEL ROAD SECTION

|                                                              |                    |                     |                              |  |                                 |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |           |                       |            |          |           |
|--------------------------------------------------------------|--------------------|---------------------|------------------------------|--|---------------------------------|---------|------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|-----------------------|------------|----------|-----------|
| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE | CLIENT PLAN NUMBER |                     | APPROVED BY COUNCIL / CLIENT |  | DATE                            | INITIAL | CODE | REVISION DESCRIPTION   | <div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div>SANBI</div><div>Biodiversity for Life</div><div>South African National Biodiversity Institute</div></div></div> <div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div>bvi</div><div>ENGINEERING<br/>PROCUREMENT<br/>MANAGEMENT</div></div><div>BVi Consulting Engineers Gauteng PTY ( Ltd )</div><div>Registration no. 199800032307</div><div>Visit or contact us online at <a href="http://www.bvigroup.co.za">www.bvigroup.co.za</a></div><div>PROVINCE OFFICE  E-MAIL</div><div>Gauteng Pretoria +27 12 940 1111 pta@bvigp.co.za</div></div> | PROJECT            |           | APPROVED BY BVI       |            |          |           |
|                                                              | ---                |                     |                              |  | 17-07-21                        | B.M.    | A    | ISSUED FOR INFORMATION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MOKOPANE           |           | ENGINEER/TECHNOLOGIST |            | REG. NO. | DATE      |
|                                                              | REFERENCE DRAWINGS |                     | CITY ENGINEER / CLIENT       |  | 07-10-21                        | B.M.    | B    | ISSUED FOR TENDER      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | DRAWING TITLE      |           | SCALE                 | AS SHOWN   | DRAWN    | M.A TEMBE |
|                                                              | NUMBER             | DRAWING DESCRIPTION | REG. NO.                     |  | DATE                            |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | DESIGNED           | M.A TEMBE | CHECKED               | B. MATYEKA |          |           |
|                                                              | 34398-02-123-01-01 | STORMWATER SECTIONS | AMENDMENTS CODE              |  |                                 |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PLAN NUMBER        |           | REV. NO.              | DATE SAVED |          |           |
|                                                              |                    |                     | A-Y / : REPORT/DESIGN/TENDER |  | A : BY CLIENT                   |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 34398-02-111-03-01 |           | B                     | 13/10/2021 |          |           |
|                                                              |                    |                     | 0-99 / : CONSTRUCTION        |  | B : BY ARCHITECT                |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MassiquinT         |           |                       |            |          |           |
|                                                              |                    |                     | Z / : AS BUILT               |  | C : BY MECHANICAL OR ELECTRICAL |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |           |                       |            |          |           |
|                                                              |                    |                     |                              |  | D : BY BVI                      |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |           |                       |            |          |           |
|                                                              |                    |                     |                              |  | E : BY OTHER ( )                |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |           |                       |            |          |           |

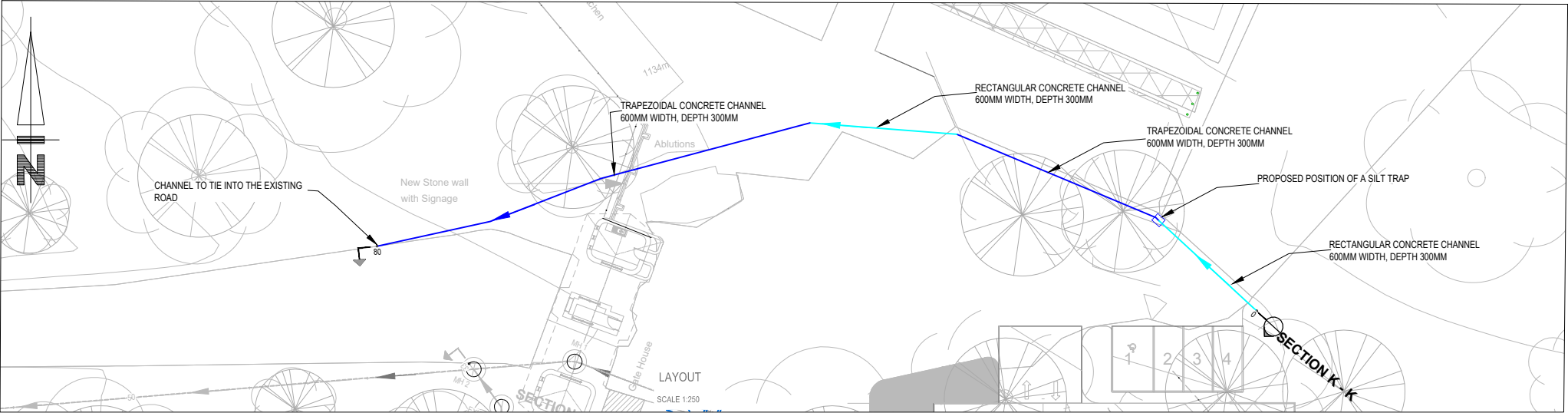


| LEGEND |                                                       |  |  |
|--------|-------------------------------------------------------|--|--|
|        | STONE PITCH LINED STORMWATER DRAINS                   |  |  |
|        | 450mm DIAMETER ROCLA PIPE CLASS 100D                  |  |  |
|        | 375mm DIAMETER ROCLA PIPE CLASS 75D                   |  |  |
|        | RECTANGULAR CONCRETE CHANNEL 600mm WIDTH, DEPTH 300mm |  |  |
|        | TRAPEZOIDAL CONCRETE CHANNEL 600mm WIDTH, DEPTH 300mm |  |  |
|        | SHAPE NEW PAVEMENT TO DRAIN TO NEW GRID INLET         |  |  |
|        | V CONCRETE CHANNEL 600mm WIDTH, DEPTH 150mm           |  |  |
|        | EARTH BERM                                            |  |  |

|                                                              |                    |                     |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------|--------------------|---------------------|------------------------------|--|----------------------------------|---------|------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE | CLIENT PLAN NUMBER |                     | APPROVED BY COUNCIL / CLIENT |  | DATE                             | INITIAL | CODE | REVISION DESCRIPTION   | <div><br/><b>SANBI</b><br/>Biodiversity for Life<br/>South African National Biodiversity Institute</div> <div><br/><b>bvvi</b> ENGINEERING<br/>PROCUREMENT<br/>MANAGEMENT<br/>BVvi Consulting Engineers Gauteng PTY ( Ltd )<br/><small>Registration no. 1986000020207</small><br/>Visit or contact us online at <a href="http://www.bvviigroup.co.za">www.bvviigroup.co.za</a><br/>PROVINCE OFFICE E-MAIL<br/>Gauteng Pretoria +27 12 940 1111 <a href="mailto:pta@bvvi.co.za">pta@bvvi.co.za</a></div> |
|                                                              | ---                |                     |                              |  | 05-08-21                         | F.S.    | A    | ISSUED FOR INFORMATION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  | 13-10-21                         | F.S.    | B    | ISSUED FOR TENDER      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              | REFERENCE DRAWINGS |                     | CITY ENGINEER / CLIENT       |  | REG. NO.                         |         | DATE |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              | NUMBER             | DRAWING DESCRIPTION |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              | ---                | ---                 |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     | AMENDMENTS CODE              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     | A-Y / : REPORT/DESIGN/TENDER |  | /A : BY CLIENT                   |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     | 0-99 / : CONSTRUCTION        |  | /B : BY ARCHITECT                |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     | Z / : AS BUILT               |  | /C : BY MECHANICAL OR ELECTRICAL |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  | /D : BY BVvi                     |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  | /E : BY OTHER ( )                |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                              |                    |                     |                              |  |                                  |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

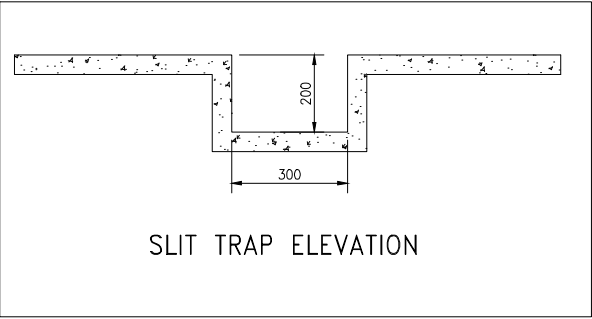
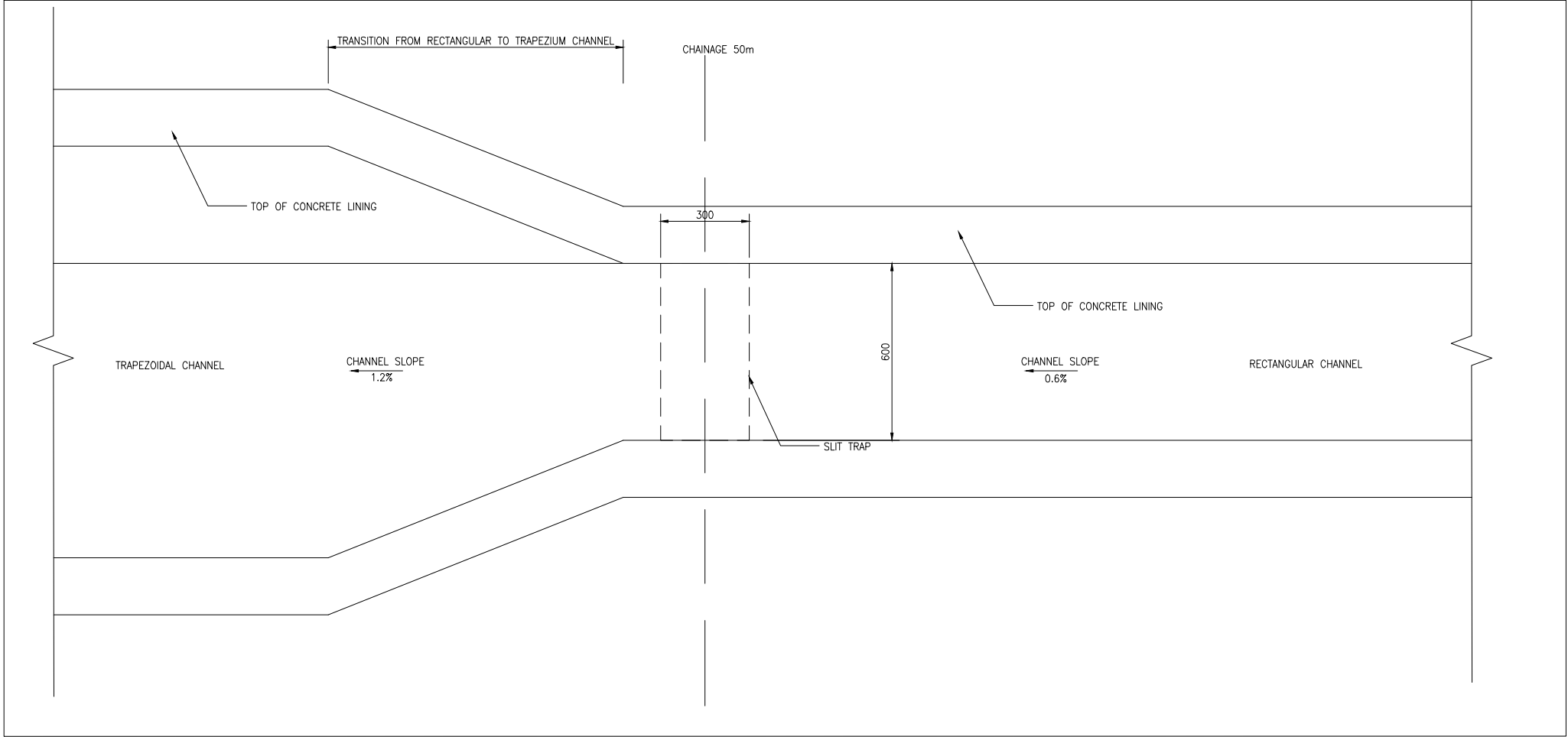
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| PROJECT           |  | APPROVED BY BVvi      |           |               |                           |
| MOKOPANE          |  | ENGINEER/TECHNOLOGIST |           | REG. NO. DATE |                           |
| DRAWING TITLE     |  | SCALE                 | AS SHOWN  | DRAWN         | M.A TEMBE                 |
| STORMWATER LAYOUT |  | DESIGNED              | M.A TEMBE | CHECKED       | B. MATYEKA                |
|                   |  | PLAN NUMBER           |           | REV. NO.      | DATE SAVED                |
|                   |  | 34398-00-120-01-01    |           | B             | 19/10/2021<br>MassiquiniT |

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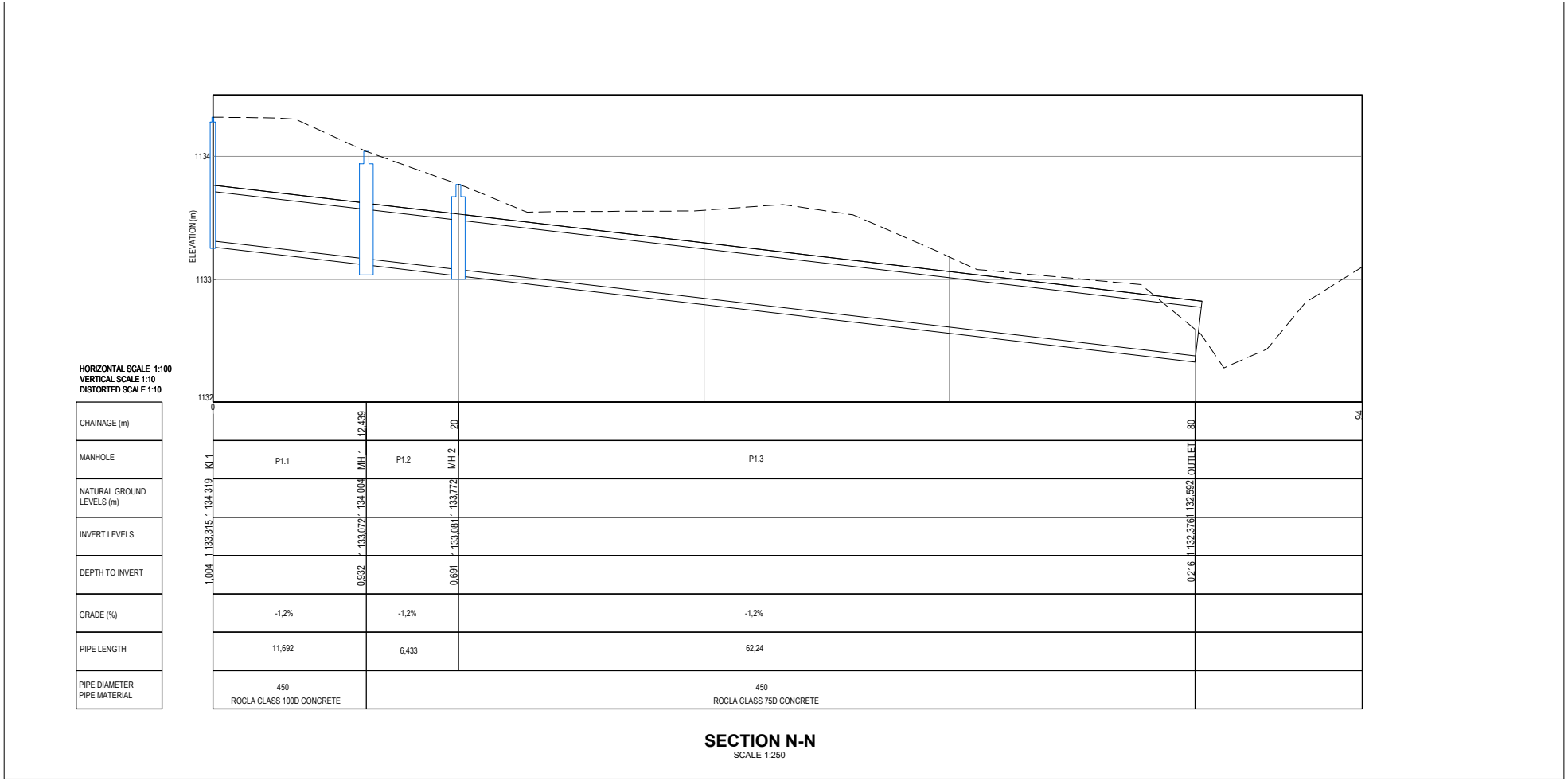
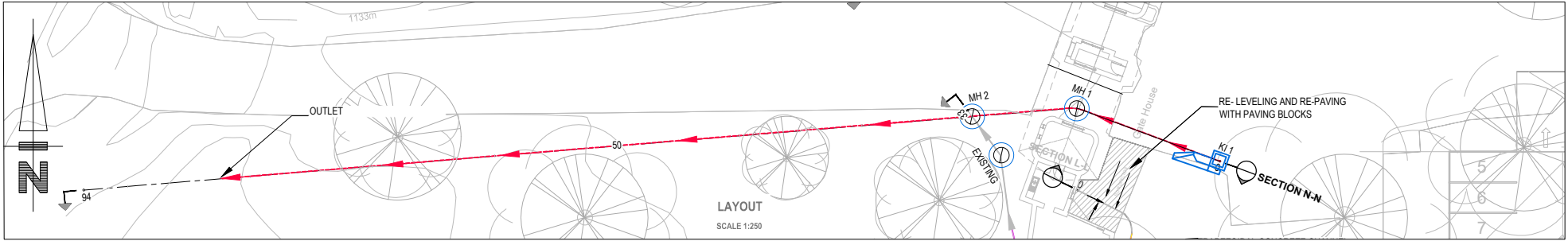
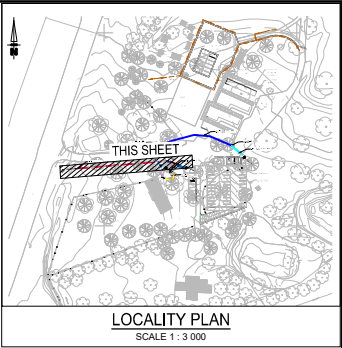


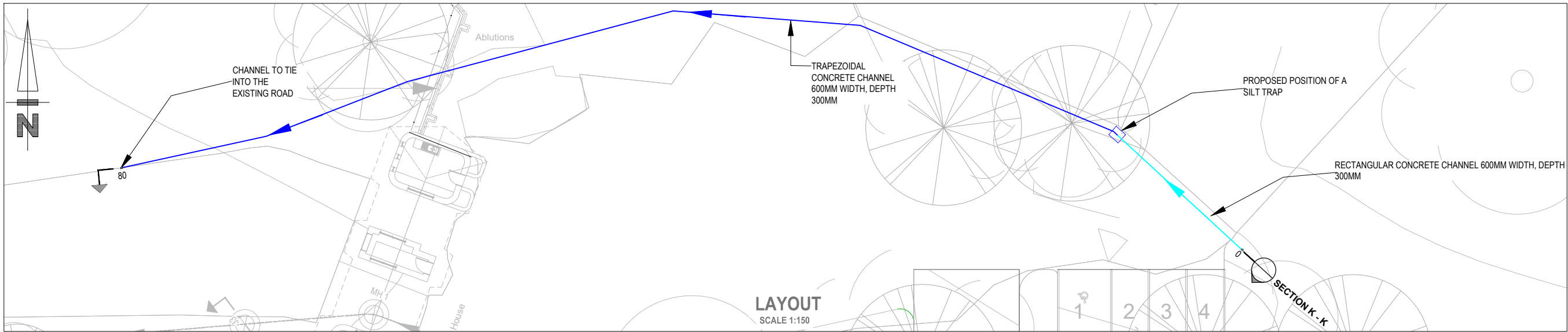
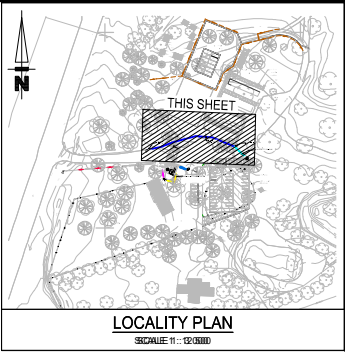
LEGEND

- RECTANGULAR CONCRETE CHANNEL 600MM WIDTH, DEPTH 300MM
- TRAPEZOIDAL CONCRETE CHANNEL 600MM WIDTH, DEPTH 300MM



|                                                              |                    |                     |                              |  |          |         |      |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |     |                       |                   |             |  |           |  |            |  |            |  |
|--------------------------------------------------------------|--------------------|---------------------|------------------------------|--|----------|---------|------|------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----|-----------------------|-------------------|-------------|--|-----------|--|------------|--|------------|--|
| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE | CLIENT PLAN NUMBER |                     | APPROVED BY COUNCIL / CLIENT |  | DATE     | INITIAL | CODE | REVISION DESCRIPTION   | CLIENT | <div><div>CESA<br/>GREEN BUILDING COUNCIL<br/>ESTABLISHED 2009/2010</div></div> <div><div><b>SANBI</b><br/>Biodiversity for Life<br/>South African National Biodiversity Institute</div></div> <div><div>ENGINEERING<br/>PROCUREMENT<br/>MANAGEMENT</div></div> <div><div>BVI Consulting Engineers Gauteng PTY ( Ltd )</div><div>Registration no. 1998/000020/PT</div><div><div>Visit or contact us online at <a href="http://www.bvigroup.co.za">www.bvigroup.co.za</a></div><div><div>PROVINCE OFFICE</div><div>  +27 12 940 1111  E-MAIL</div></div><div><div><a href="mailto:pla@bvigp.co.za">pla@bvigp.co.za</a></div></div></div></div> | PROJECT  |     | APPROVED BY BVI       |                   |             |  |           |  |            |  |            |  |
|                                                              | ---                |                     |                              |  | 15-09-21 | B.M     | A    | ISSUED FOR INFORMATION |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | MOKOPANE |     | ENGINEER/TECHNOLOGIST |                   | REG. NO.    |  | DATE      |  |            |  |            |  |
|                                                              | REFERENCE DRAWINGS |                     | CITY ENGINEER / CLIENT       |  | REG. NO. |         | DATE |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 07-10-21 | B.M | B                     | ISSUED FOR TENDER | SCALE       |  | AS SHOWN  |  | DRAWN      |  | M.A TEMBE  |  |
|                                                              | NUMBER             | DRAWING DESCRIPTION |                              |  |          |         |      |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |     |                       |                   | DESIGNED    |  | M.A TEMBE |  | CHECKED    |  | B. MATYEKA |  |
|                                                              | 34398-02-123-01-01 | STORMWATER SECTION  |                              |  |          |         |      |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |     |                       |                   | PLAN NUMBER |  | REV. NO.  |  | DATE SAVED |  |            |  |
|                                                              |                    |                     |                              |  |          |         |      |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |     |                       |                   |             |  |           |  |            |  |            |  |
|                                                              |                    |                     |                              |  |          |         |      |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |     |                       |                   |             |  |           |  |            |  |            |  |
|                                                              |                    |                     |                              |  |          |         |      |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |     |                       |                   |             |  |           |  |            |  |            |  |
|                                                              |                    |                     |                              |  |          |         |      |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |     |                       |                   |             |  |           |  |            |  |            |  |
|                                                              |                    |                     |                              |  |          |         |      |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |     |                       |                   |             |  |           |  |            |  |            |  |

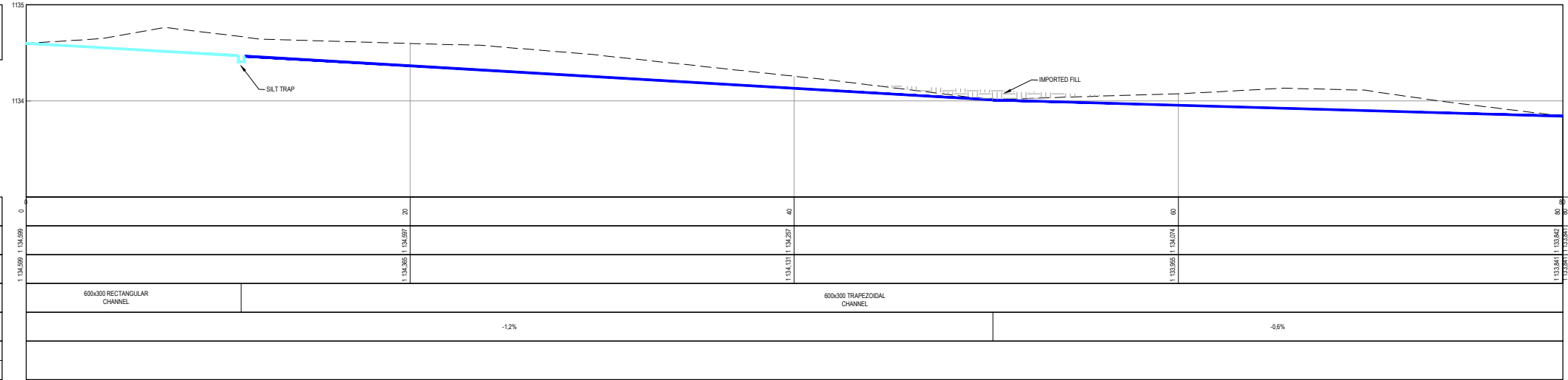




| LEGEND |                       |
|--------|-----------------------|
|        | NATURAL GROUND LEVELS |
|        | CHANNEL               |
|        | CHANNEL               |

HORIZONTAL SCALE 1:100  
VERTICAL SCALE 1:20  
DISTORTED SCALE 1:5

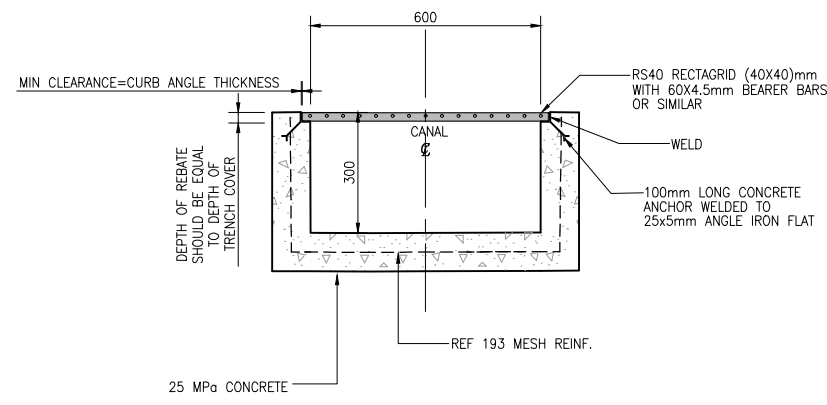
| CHAINAGE (m)                |                             |
|-----------------------------|-----------------------------|
| 0                           | 20                          |
| NATURAL GROUND LEVELS (m)   |                             |
| 1134.599                    | 1134.597                    |
| INVERT LEVELS               |                             |
| 1134.599                    | 1134.597                    |
| CHANNEL DETAILS             |                             |
| 600x300 RECTANGULAR CHANNEL | 600x300 TRAPEZOIDAL CHANNEL |
| GRADE (%)                   |                             |
| -1.2%                       | -0.6%                       |
| HYDRAULICS                  |                             |
| DESIGN                      | Q (m³/s)                    |
| MAX                         | V (m/s)                     |



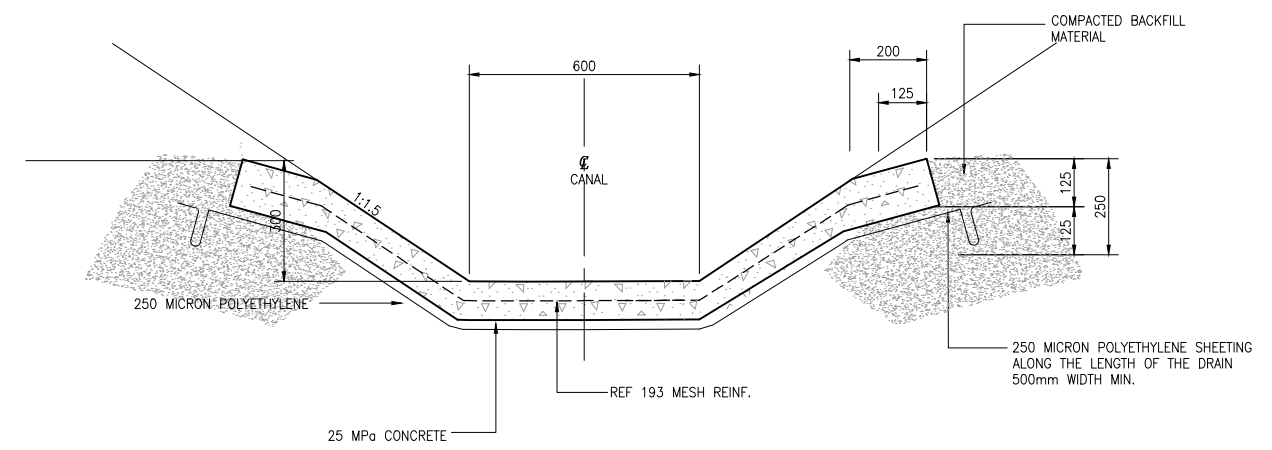
SECTION K-K  
SCALE 1:150

|                                                              |                    |                              |                                  |  |          |         |          |                        |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                    |                       |          |                           |           |
|--------------------------------------------------------------|--------------------|------------------------------|----------------------------------|--|----------|---------|----------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------|-----------------------|----------|---------------------------|-----------|
| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE | CLIENT PLAN NUMBER |                              | APPROVED BY COUNCIL / CLIENT     |  | DATE     | INITIAL | CODE     | REVISION DESCRIPTION   | CLIENT                                                                                                                                          | <br><b>SANBI</b><br>Biodiversity for Life<br>South African National Biodiversity Institute | <br>ENGINEERING<br>PROCUREMENT<br>MANAGEMENT<br>BVI Consulting Engineers Gauteng PTY ( Ltd )<br>Registration no. 1998/00322/07<br>Visit or contact us online at <a href="http://www.bvigroup.co.za">www.bvigroup.co.za</a><br>PROVINCE: Gauteng OFFICE: Pretoria +27 12 940 1111 E-MAIL: <a href="mailto:pta@bvigp.co.za">pta@bvigp.co.za</a> | PROJECT  |                    | APPROVED BY BVI       |          |                           |           |
|                                                              | ---                |                              |                                  |  | 08-09-21 | B.M     | A        | ISSUED FOR INFORMATION | <br>GREEN BUILDING COUNCIL<br>REGISTERED ENVIRONMENTALISTS |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    | MOKOPANE |                    | ENGINEER/TECHNOLOGIST |          | REG. NO.                  | DATE      |
|                                                              | REFERENCE DRAWINGS |                              | CITY ENGINEER / CLIENT           |  | REG. NO. | DATE    | 07-10-21 | B.M                    |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    | B        | ISSUED FOR TENDER  | SCALE                 | AS SHOWN | DRAWN                     | M.A TEMBE |
|                                                              | NUMBER             | DRAWING DESCRIPTION          |                                  |  |          |         |          |                        |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |          | DESIGNED           | M.A TEMBE             | CHECKED  | B. MATYEKA                |           |
|                                                              | ---                | ---                          |                                  |  |          |         |          |                        |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |          | PLAN NUMBER        |                       | REV. NO. | DATE SAVED                |           |
|                                                              |                    |                              | AMENDMENTS CODE                  |  |          |         |          |                        |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |          | 34398-02-121-01-03 |                       | B        | 13/10/2021<br>Massiquinit |           |
|                                                              |                    | A-Y / : REPORT/DESIGN/TENDER | /A : BY CLIENT                   |  |          |         |          |                        |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                    |                       |          |                           |           |
|                                                              |                    | 0-99 / : CONSTRUCTION        | /B : BY ARCHITECT                |  |          |         |          |                        |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                    |                       |          |                           |           |
|                                                              |                    | Z / : AS BUILT               | /C : BY MECHANICAL OR ELECTRICAL |  |          |         |          |                        |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                    |                       |          |                           |           |
|                                                              |                    |                              | /D : BY BVI                      |  |          |         |          |                        |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                    |                       |          |                           |           |
|                                                              |                    | /E : BY OTHER ( )            |                                  |  |          |         |          |                        |                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                    |                       |          |                           |           |

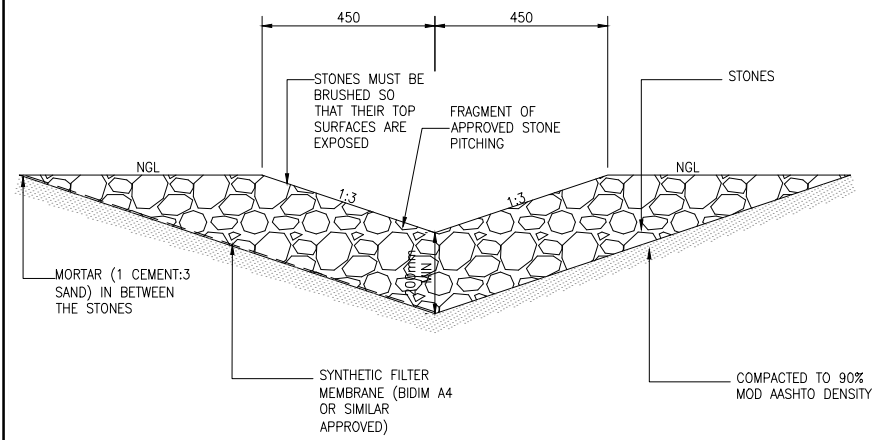
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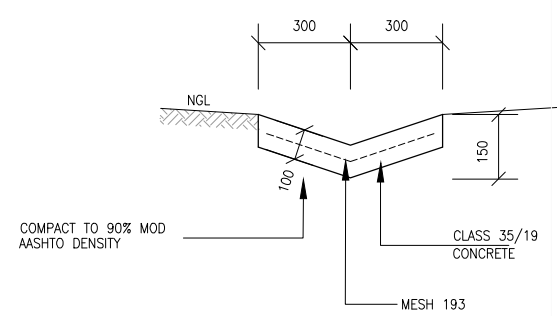
TYPICAL RECTANGULAR CHANNEL DETAIL  
(FOR NON-TRAFFIC AREAS)  
(200 mm THICK CONCRETE FOR TRAFFIC AREAS)  
SCALE 1 : 10



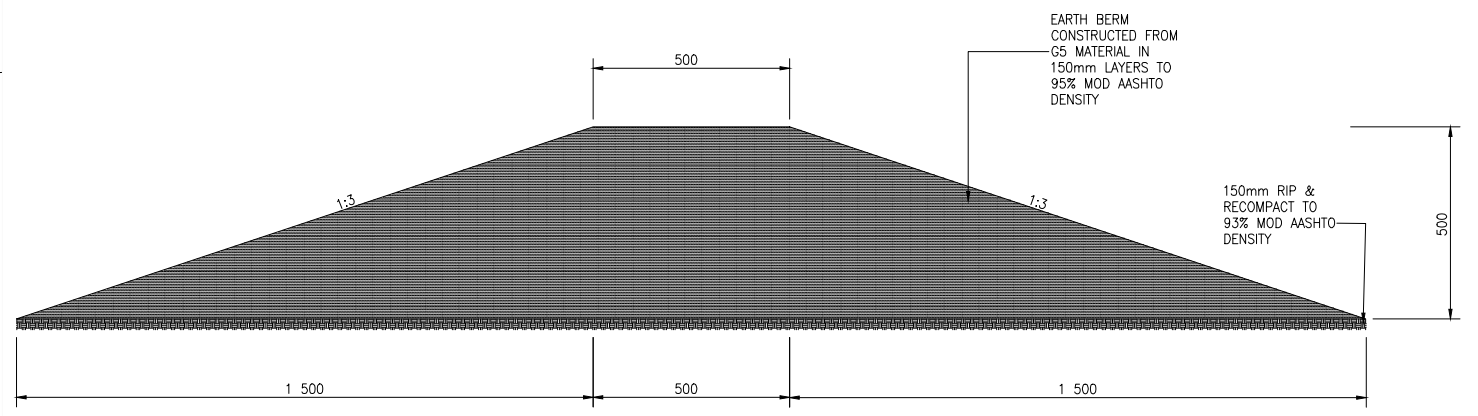
TYPICAL TRAPEZIUM CHANNEL DETAIL  
(FOR NON-TRAFFIC AREAS)  
(200 mm THICK CONCRETE FOR TRAFFIC AREAS)  
SCALE 1 : 10



GROUTED STONE PITCHING  
SCALE 1 : 10

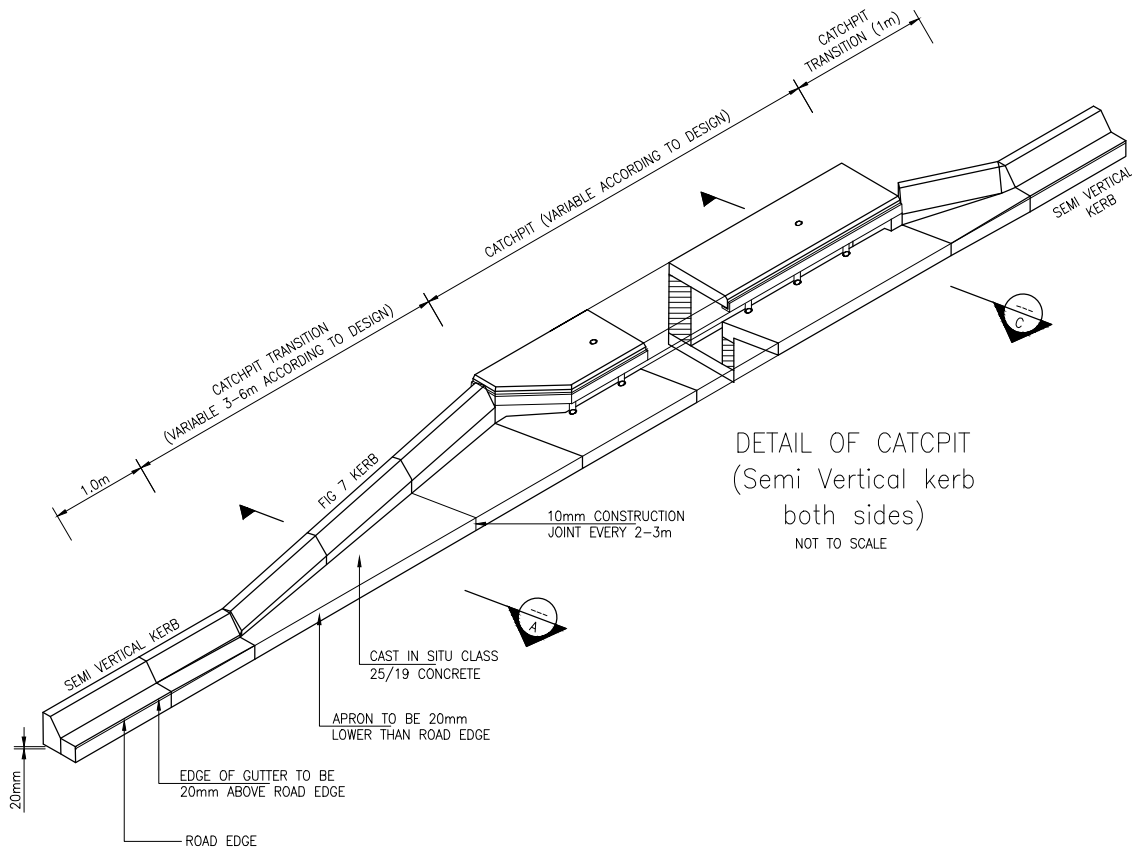


TYPICAL STORMWATER CONCRETE  
V-CHANNEL - TYPE 25  
SCALE 1 : 25



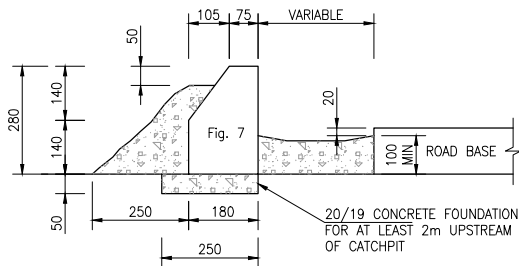
TYPICAL EARTH BERM  
SCALE 1 : 10

| CLIENT PLAN NUMBER                                           |  | APPROVED BY COUNCIL / CLIENT         |  | DATE     | INITIAL | CODE | REVISION DESCRIPTION   | CLIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | PROJECT            |  | APPROVED BY BVI                     |  |  |  |
|--------------------------------------------------------------|--|--------------------------------------|--|----------|---------|------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|--|-------------------------------------|--|--|--|
| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE |  | ---                                  |  | 17-08-21 | B.M     | A    | ISSUED FOR INFORMATION | <div><div>SANBI</div><div>Biodiversity for Life</div><div>South African National Biodiversity Institute</div></div> <div><div>bvi</div><div>ENGINEERING<br/>PROCUREMENT<br/>MANAGEMENT</div><div>BVi Consulting Engineers Gauteng PTY ( Ltd )</div><div>Registration no. 1998/0002207</div><div>Visit or contact us online at <a href="http://www.bvigroup.co.za">www.bvigroup.co.za</a></div><div>PROVINCE Gauteng OFFICE Pretoria +27 12 940 1111 E-MAIL <a href="mailto:pto@bvigp.co.za">pto@bvigp.co.za</a></div></div> <div><div>CESA</div><div>GREEN BUILDING COUNCIL</div><div>REGISTERED ENGINEER</div></div> |  | MOKOPANE           |  | ENGINEER/TECHNOLOGIST REG. NO. DATE |  |  |  |
| REFERENCE DRAWINGS                                           |  | CITY ENGINEER / CLIENT REG. NO. DATE |  | 07-10-21 | B.M     | B    | ISSUED FOR TENDER      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | DRAWING TITLE      |  | SCALE AS SHOWN DRAWN M.A TEMBE      |  |  |  |
| NUMBER DRAWING DESCRIPTION                                   |  | AMENDMENTS CODE                      |  |          |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | DESIGNED M.A TEMBE |  | CHECKED B. MATYEKA                  |  |  |  |
| ---                                                          |  | A-Y / : REPORT/DESIGN/TENDER         |  |          |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | PLAN NUMBER        |  | REV. NO. DATE SAVED                 |  |  |  |
|                                                              |  | O-99 / : CONSTRUCTION                |  |          |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | 34398-02-123-01-01 |  | B 19/10/2021                        |  |  |  |
|                                                              |  | Z / : AS BUILT                       |  |          |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                    |  | MassiquiniT A1                      |  |  |  |
|                                                              |  | /A : BY CLIENT                       |  |          |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                    |  |                                     |  |  |  |
|                                                              |  | /B : BY ARCHITECT                    |  |          |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                    |  |                                     |  |  |  |
|                                                              |  | /C : BY MECHANICAL OR ELECTRICAL     |  |          |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                    |  |                                     |  |  |  |
|                                                              |  | /D : BY BVI                          |  |          |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                    |  |                                     |  |  |  |
|                                                              |  | /E : BY OTHER ( )                    |  |          |         |      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                    |  |                                     |  |  |  |

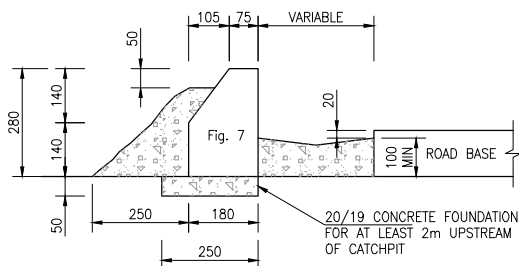


DETAIL OF CATCPIT  
(Semi Vertical kerb  
both sides)  
NOT TO SCALE

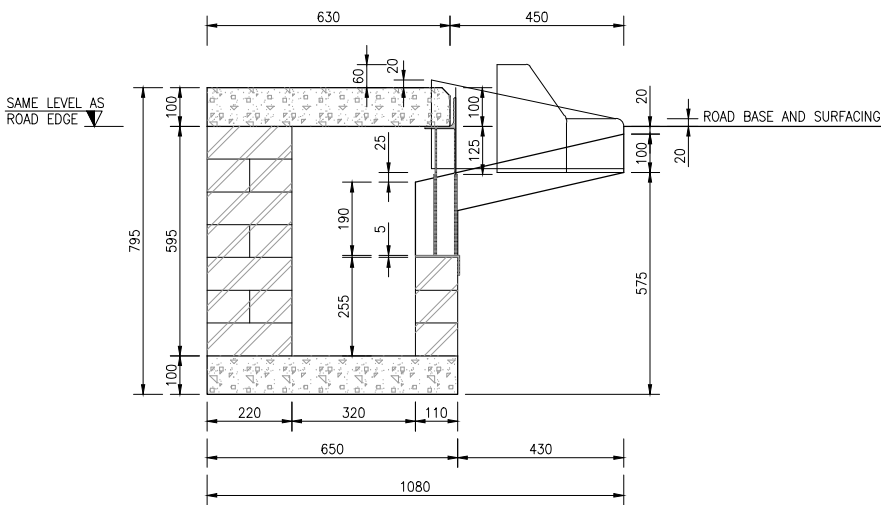
- NOTES:
1. PERMISSION MUST BE OBTAINED FROM THE ENGINEER AS WELL AS FROM THE ROADS AND STORMWATER DINISION IF ANY OTHER CATCHPIT TYPE IS PROPOSED.
  2. 'SILT TRAP CATCHPITS' WILL BE SPECIFIED BY THE ENGINEER IN AREAS SUBJECT TO SILTATION. 'SILT TRAP CATCHPITS' WILL BE CONSTRUCTED BY LOWERING THE CATCHPIT FLOOR WITH ONE BRICK LAYER AND CONSTRUCTING A 170MM HIGH DOUBLE BRICK WALL AT THE CATCHPIT OUTLET. THE WALL MUST NOT BE CONSTRUCTED TO THE WALLS OF THE CATCHPIT BUT A 10MM SLOT MUST BE FORMED ON EACH SIDE TO ENSURE WATER SEEPING THROUGH INTO THE JUNCTION BOX AFTER A STORM. THE OTHER LEVELS AND DIMENSIONS OF THE CATCHPIT REMAIN THE SAME.
  3. 'SILT TRAP CATCHPIT' WILL BE MEASURED SEPARATELY FROM THE OTHER CATCHPITS AND INDICATED AS SUCH IN THE SCHEDULE OF QUANTITIES.



SECTION B  
SCALE 1 : 10

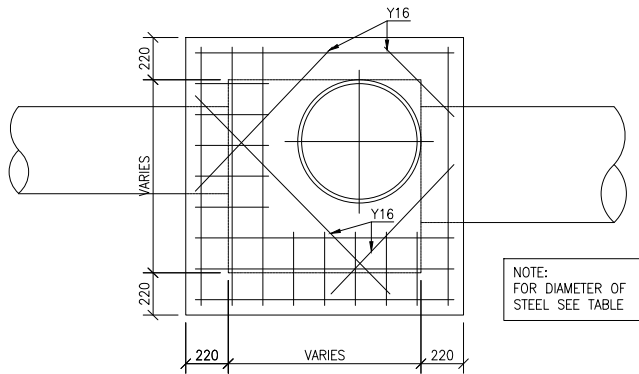


SECTION A  
SCALE 1 : 10

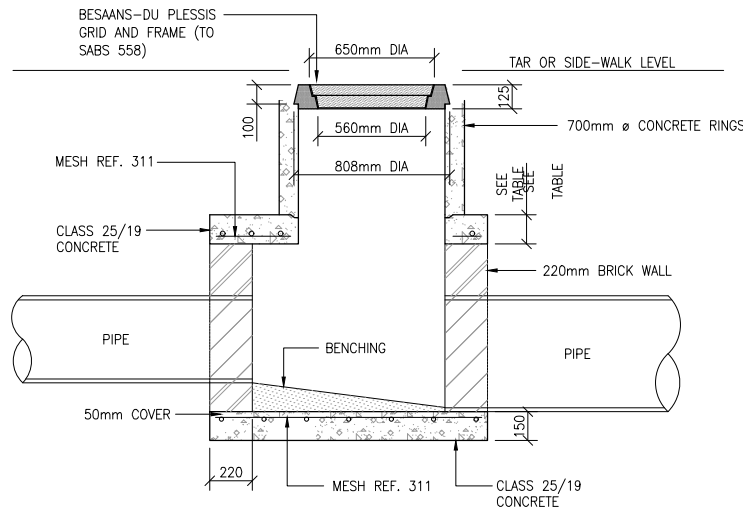
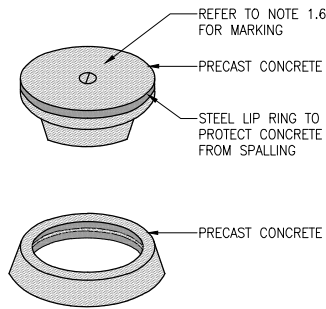


SECTION C  
SCALE 1 : 10

| NOTES / LEGEND                                                                                                                                                                                                                          |                        |                               |                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------|---------------------------|
| DO NOT SCALE<br>IF IN DOUBT, REFER TO DRAWING OFFICE                                                                                                                                                                                    |                        |                               |                           |
| CLIENT PLAN NUMBER                                                                                                                                                                                                                      |                        |                               |                           |
| REFERENCE DRAWINGS                                                                                                                                                                                                                      |                        |                               |                           |
| NUMBER                                                                                                                                                                                                                                  | REVISION               | DRAWING DESCRIPTION           |                           |
|                                                                                                                                                                                                                                         |                        |                               |                           |
|                                                                                                                                                                                                                                         |                        |                               |                           |
|                                                                                                                                                                                                                                         |                        |                               |                           |
|                                                                                                                                                                                                                                         |                        |                               |                           |
| APPROVED BY COUNCIL / CLIENT                                                                                                                                                                                                            |                        |                               |                           |
| CITY ENGINEER / CLIENT                                                                                                                                                                                                                  |                        | REG. NO.                      | DATE                      |
| AMENDMENTS CODE                                                                                                                                                                                                                         |                        |                               |                           |
| A-Y                                                                                                                                                                                                                                     | : REPORT/DESIGN/TENDER | /A : BY CLIENT                |                           |
| 0-99                                                                                                                                                                                                                                    | : CONSTRUCTION         | /B : BY ARCHITECT             |                           |
| Z                                                                                                                                                                                                                                       | : AS BUILT             | /C : BY MECHANICAL/ELECTRICAL |                           |
|                                                                                                                                                                                                                                         |                        | /D : BY BVI                   |                           |
|                                                                                                                                                                                                                                         |                        | /E : BY OTHER ( )             |                           |
| DATE                                                                                                                                                                                                                                    | INITIAL                | No./CODE                      | REVISION DESCRIPTION      |
|                                                                                                                                                                                                                                         |                        |                               |                           |
|                                                                                                                                                                                                                                         |                        |                               |                           |
| 07/10/2021                                                                                                                                                                                                                              | B.M                    | B                             | ISSUED FOR TENDER         |
| 09/09/2021                                                                                                                                                                                                                              | B.M                    | A                             | ISSUED FOR INFORMATION    |
| OFFICES                                                                                                                                                                                                                                 |                        |                               |                           |
| PROVINCE                                                                                                                                                                                                                                | OFFICE                 | (012) 349-0099                | E-MAIL                    |
| Gauteng                                                                                                                                                                                                                                 | Pretoria               |                               | pto@bvigp.co.za           |
| Free State                                                                                                                                                                                                                              | Bloemfontein           | (051) 447-2137                | bfo@bvifs.co.za           |
|                                                                                                                                                                                                                                         | Welkom                 | (057) 353-2499                | wel@bvifs.co.za           |
| Northern Cape                                                                                                                                                                                                                           | Upington               | (054) 337-6600                | up@bvinc.co.za            |
|                                                                                                                                                                                                                                         | Springbok              | (027) 712-9990                | spl@bvinc.co.za           |
| KwaZulu Natal                                                                                                                                                                                                                           | Durban                 | (031) 266-8382                | dnr@bvink.co.za           |
|                                                                                                                                                                                                                                         | Empangeni              | (035) 788-0230                | emp@bvink.co.za           |
| Eastern Cape                                                                                                                                                                                                                            | Port Elizabeth         | (041) 373-4343                | bvec@bvweb.co.za          |
| Western Cape                                                                                                                                                                                                                            | Cape Town              | (021) 527-7000                | cpt@bvirc.co.za           |
| Visit or contact us online at <a href="http://www.bvigroup.co.za">www.bvigroup.co.za</a>                                                                                                                                                |                        |                               |                           |
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| CLIENT                                                                                                                                                                                                                                  |                        |                               |                           |
| <br>SANBI<br>Biodiversity for Life<br>South African National Biodiversity Institute                                                                |                        |                               |                           |
| PROJECT                                                                                                                                                                                                                                 |                        |                               |                           |
| MOKOPANE                                                                                                                                                                                                                                |                        |                               |                           |
| DRAWING TITLE                                                                                                                                                                                                                           |                        |                               |                           |
| STORMWATER<br>CATCHPIT DETAILS<br>AND<br>SECTIONS                                                                                                                                                                                       |                        |                               |                           |
| APPROVED BY BVI                                                                                                                                                                                                                         |                        |                               |                           |
| ENGINEER/TECHNOLOGIST                                                                                                                                                                                                                   |                        | REG. NO.                      | DATE                      |
| SCALE                                                                                                                                                                                                                                   | AS SHOWN               | DRAWN                         | M.A TEMBE                 |
| DESIGNED                                                                                                                                                                                                                                | M.A TEMBE              | CHECKED                       | B. MATYEKA                |
| PLAN NUMBER                                                                                                                                                                                                                             |                        | REVISION NO.                  | DATE SAVED                |
| 34398-02-123-02-01                                                                                                                                                                                                                      |                        | B                             | 13/10/2021<br>MossequiniT |



PLAN

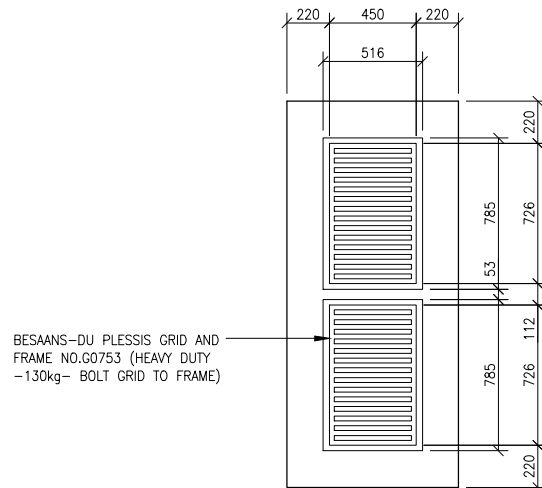


SECTION

| UPPER CONCRETE SLAB |               |                |            |           |               |
|---------------------|---------------|----------------|------------|-----------|---------------|
| TYPE                | INTERNAL SIZE | SLAB THICKNESS | STEEL DIA. | PIPE SIZE | STEEL SPACING |
| A                   | 1000x1000     | 150            | Y16        | 450-900   | 170           |
| B                   | 1500x1500     | 180            | Y16        | 900-1500  | 140           |
| C                   | 1800x1800     | 200            | Y16        | 1500-1800 | 120           |

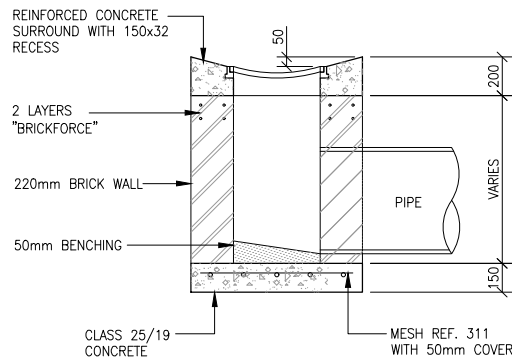
STORMWATER MANHOLE

SCALE 1 : 20



PLAN

BESAANS-DU PLESSIS GRID AND FRAME NO.G0753 (HEAVY DUTY -130kg- BOLT GRID TO FRAME)



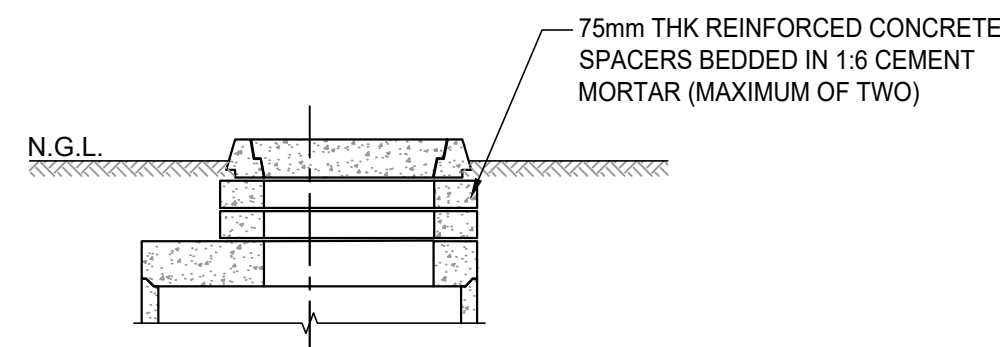
SECTION

DETAIL OF HEAVY DUTY GRID INLET

SCALE 1 : 20

| NOTES / LEGEND                                                                                                                                                                                                                             |                |                                                                                                          |                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------|------------------------|
| DO NOT SCALE<br>IF IN DOUBT, REFER TO DRAWING OFFICE                                                                                                                                                                                       |                |                                                                                                          |                        |
| CLIENT PLAN NUMBER                                                                                                                                                                                                                         |                |                                                                                                          |                        |
| REFERENCE DRAWINGS                                                                                                                                                                                                                         |                |                                                                                                          |                        |
| NUMBER                                                                                                                                                                                                                                     | REVISION       | DRAWING DESCRIPTION                                                                                      |                        |
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|                                                                                                                                                                                                                                            |                |                                                                                                          |                        |
|                                                                                                                                                                                                                                            |                |                                                                                                          |                        |
| APPROVED BY COUNCIL / CLIENT                                                                                                                                                                                                               |                |                                                                                                          |                        |
| CITY ENGINEER / CLIENT                                                                                                                                                                                                                     |                | REG. NO.                                                                                                 | DATE                   |
| AMENDMENTS CODE                                                                                                                                                                                                                            |                |                                                                                                          |                        |
| A-Y / : REPORT/DESIGN/TENDER<br>0-99 / : CONSTRUCTION<br>Z / : AS BUILT                                                                                                                                                                    |                | /A : BY CLIENT<br>/B : BY ARCHITECT<br>/C : BY MECHANICAL/ELECTRICAL<br>/D : BY BVI<br>/E : BY OTHER ( ) |                        |
| DATE                                                                                                                                                                                                                                       | INITIAL        | No./CODE                                                                                                 | REVISION DESCRIPTION   |
|                                                                                                                                                                                                                                            |                |                                                                                                          |                        |
|                                                                                                                                                                                                                                            |                |                                                                                                          |                        |
|                                                                                                                                                                                                                                            |                |                                                                                                          |                        |
| 07/10/2021                                                                                                                                                                                                                                 | B.M            | B                                                                                                        | ISSUED FOR TENDER      |
| 08/09/2021                                                                                                                                                                                                                                 | B.M            | A                                                                                                        | ISSUED FOR INFORMATION |
| OFFICES                                                                                                                                                                                                                                    |                |                                                                                                          |                        |
| PROVINCE                                                                                                                                                                                                                                   | OFFICE         | E-MAIL                                                                                                   |                        |
| Gauteng                                                                                                                                                                                                                                    | Pretoria       | (012) 349-0099                                                                                           | pto@bvigp.co.za        |
| Free State                                                                                                                                                                                                                                 | Bloemfontein   | (051) 447-2137                                                                                           | bfo@bvifs.co.za        |
|                                                                                                                                                                                                                                            | Wellkom        | (057) 353-2499                                                                                           | wel@bvifs.co.za        |
| Northern Cape                                                                                                                                                                                                                              | Upington       | (054) 337-6600                                                                                           | upi@bvinc.co.za        |
|                                                                                                                                                                                                                                            | Springbok      | (027) 712-9990                                                                                           | spl@bvinc.co.za        |
| KwaZulu Natal                                                                                                                                                                                                                              | Durban         | (031) 266-8382                                                                                           | dbn@bvink.co.za        |
|                                                                                                                                                                                                                                            | Empangeni      | (035) 788-0230                                                                                           | emp@bvink.co.za        |
| Eastern Cape                                                                                                                                                                                                                               | Port Elizabeth | (041) 373-4343                                                                                           | bvec@bvweb.co.za       |
| Western Cape                                                                                                                                                                                                                               | Cape Town      | (021) 527-7000                                                                                           | cpt@bvirc.co.za        |
| Visit or contact us online at <a href="http://www.bvigroup.co.za">www.bvigroup.co.za</a>                                                                                                                                                   |                |                                                                                                          |                        |
|  <b>bvi</b><br>CONSULTING ENGINEERS<br>Civil, Structural & Electrical Engineers, Environmental & Project Management<br>Registration no. 1996/00032107 |                |                                                                                                          |                        |
| CLIENT                                                                                                                                                                                                                                     |                |                                                                                                          |                        |
|  <b>SANBI</b><br>Biodiversity for Life<br>South African National Biodiversity Institute                                                               |                |                                                                                                          |                        |
| PROJECT                                                                                                                                                                                                                                    |                |                                                                                                          |                        |
| MOKOPANE                                                                                                                                                                                                                                   |                |                                                                                                          |                        |
| DRAWING TITLE                                                                                                                                                                                                                              |                |                                                                                                          |                        |
| TYPICAL STORMWATER DETAIL                                                                                                                                                                                                                  |                |                                                                                                          |                        |
| APPROVED BY BVI                                                                                                                                                                                                                            |                |                                                                                                          |                        |
| ENGINEER/TECHNOLOGIST                                                                                                                                                                                                                      |                | REG. NO.                                                                                                 | DATE                   |
| SCALE                                                                                                                                                                                                                                      | AS SHOWN       | DRAWN                                                                                                    | M.A TEMBE              |
| DESIGNED                                                                                                                                                                                                                                   | M.A TEMBE      | CHECKED                                                                                                  | B. MATYEKA             |
| PLAN NUMBER                                                                                                                                                                                                                                | REVISION NO.   | DATE SAVED                                                                                               |                        |
| 34398-02-123-03-01                                                                                                                                                                                                                         | B              | 07/10/2021<br>MossiquiniT                                                                                |                        |





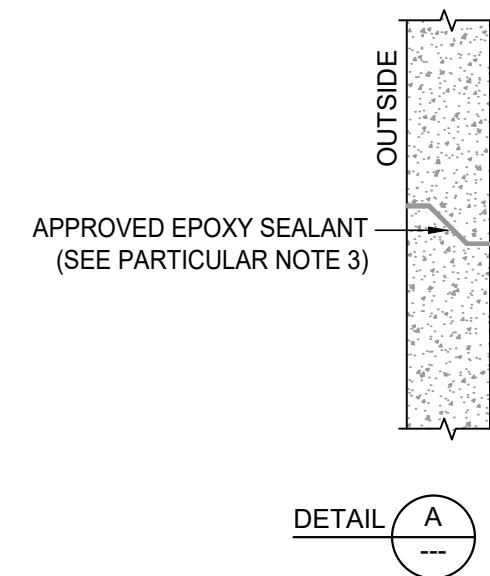
The image contains two technical drawings of manhole structures, labeled 'MANHOLE' and 'MANHOLE WITH STEP IRON'.

**MANHOLE (Left):**

- Top Section:** Shows a cross-section of the manhole with a total width of 1110. The top is covered by a 'FACTORY MADE CONCRETE COVER SLAB WITH MH FRAME & COVER, BEDDED IN 1:6 CEMENT MORTAR. (SEE TABLE FOR MH COVER TYPE)'. The height from the ground level (N.G.L.) to the top of the cover is labeled 'H'.
- Side View:** Shows the manhole structure with a total height of 1260. The width is 1110. The structure is composed of '250mm, 500mm AND / OR 1000mm FACTORY MADE CONCRETE SECTIONS, NUMBER AS REQUIRED'. The bottom is a '20mm DOLOMITIC BENCHING STEEL FLOATED' section. The manhole is installed in a 'PVC-U SEWER PIPE' with a 'BEDDING AS SPECIFIED'.
- Labels:** 'EXCAVATION PLANE FOR PAYMENT PURPOSES', 'SEE DETAIL 1'.

**MANHOLE WITH STEP IRON (Right):**

- Top Section:** Similar to the standard manhole, but with a 'STEP IRONS, 300mm c/c' (center-to-center) feature. The top is covered by a 'FACTORY MADE CONCRETE COVER SLAB WITH MH FRAME & COVER, BEDDED IN 1:6 CEMENT MORTAR. (SEE TABLE FOR MH COVER TYPE)'. The height from the ground level (N.G.L.) to the top of the cover is labeled 'H'.
- Side View:** Shows the manhole structure with a total height of 1260. The width is 1110. The structure is composed of '250mm, 500mm AND / OR 1000mm FACTORY MADE CONCRETE SECTIONS, NUMBER AS REQUIRED'. The bottom is a '20mm DOLOMITIC BENCHING STEEL FLOATED' section. The manhole is installed in a 'CONCRETE FOUNDATION (CLASS 20/19 CONCRETE)' with a 'BASE OF TRENCH'.
- Labels:** 'EXCAVATION PLANE FOR PAYMENT PURPOSES'.



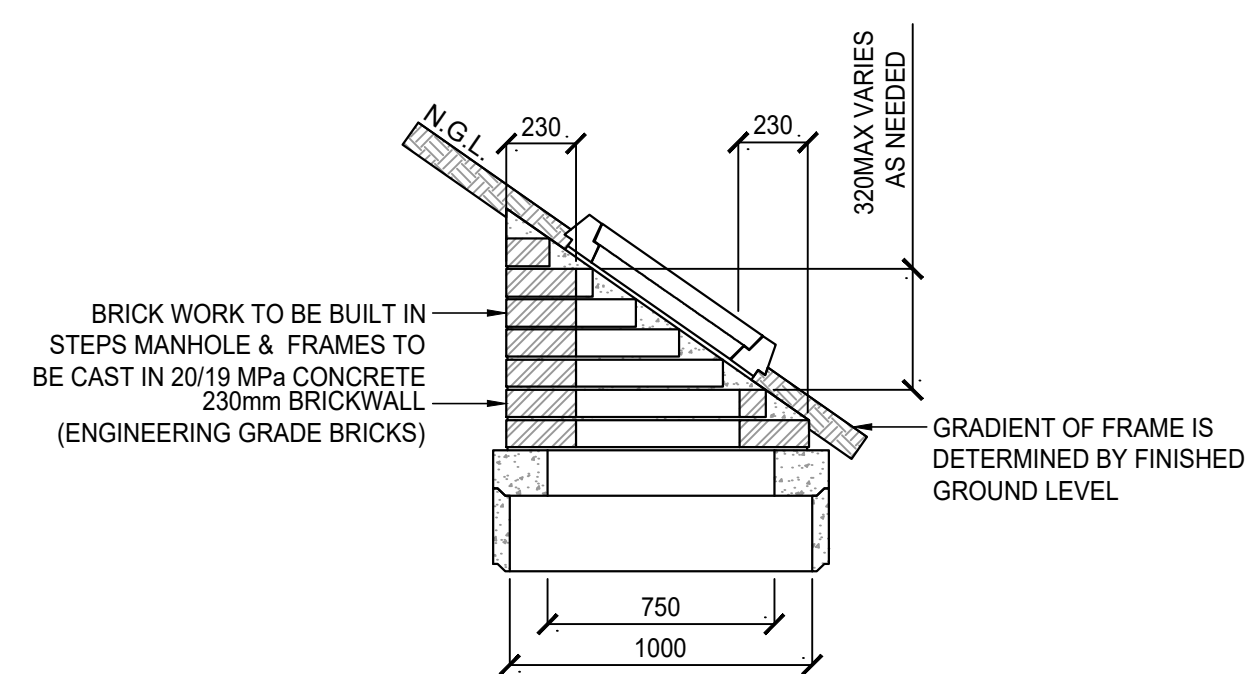
| MANHOLE COVERS AND FRAMES |                                                                      |
|---------------------------|----------------------------------------------------------------------|
| SANS 50124 (SABS EN 124)  |                                                                      |
| POSITION OF MANHOLE       | FRAME AND COVER TYPE                                                 |
| ERVEN                     | 560mm Ø CLASS B125 POLYESTER RESIN OR TYPE 4 CONCRETE REPLACEMENT    |
| MANHOLE CHAMBER SIZES     |                                                                      |
| NOMINAL Ø (mm)            | USAGE                                                                |
| 1000                      | 150 ND PIPES WITH STRAIGHT THROUGH MANHOLES UP TO 1.25m DEEP         |
| 1250                      | BENDS IN MANHOLES, LARGER PIPES & MANHOLES BETWEEN 1.25m & 3.0m DEEP |
| 1500                      | LARGER PIPES & MANHOLES DEEPER THAN 3.0 m                            |

SECTION A

SCALE 1:25

SECTION B

SCALE 1:25



## TYPICAL SECTION

Diagram illustrating the manhole foundation structure, showing a cross-section of the concrete foundation and the internal components:

- TYPICAL CHANNELLING
- PVC-U SEWER PIPE
- FACTORY MADE CONCRETE SECTIONS
- MANHOLE FOUNDATION
- 45° CHANNEL BEND

## PLAN

The drawing illustrates the construction of a manhole. The central plan view shows a circular structure with concentric layers. Labels with leader lines identify the following components from the center outwards:
 

- PVC-U SEWER PIPE
- TYPICAL CHANNELING
- FACTORY MADE CONCRETE SECTION
- MANHOLE FOUNDATION

 Surrounding the plan view are four cross-sections:
 

- Section A (top and bottom): Shows a vertical cut through the manhole, revealing the internal structure and the foundation.
- Section B (left and right): Shows a horizontal cut through the manhole, illustrating the width and the internal components.

## PLAN

Diagram illustrating the connection between a PVC-U sewer pipe and a manhole foundation. The diagram shows a cross-section of the manhole structure, including the manhole foundation, factory-made concrete sections, and the typical channeling for the PVC-U sewer pipe.

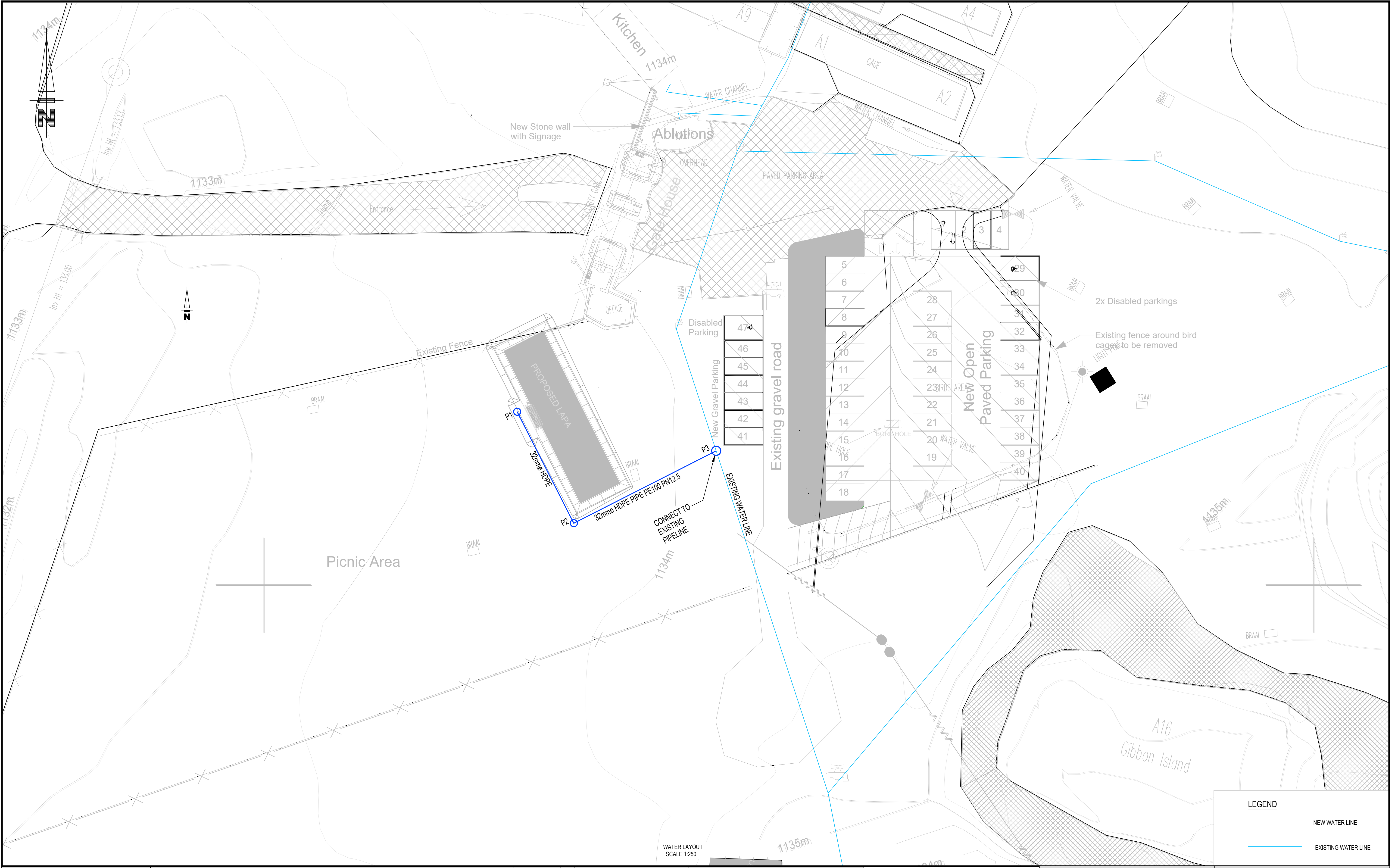
## PLAN

A cross-sectional diagram of a manhole foundation. It shows a central vertical pipe labeled 'PVC-U SEWER PIPE' surrounded by a circular 'MANHOLE FOUNDATION'. The foundation is composed of 'FACTORY MADE CONCRETE SECTIONS' separated by joints. Arrows point to these joints, with one label indicating 'TYPICAL CHANNELING' occurring at the connections. The diagram illustrates the structural components and potential water infiltration points at the pipe-to-foundation interface.

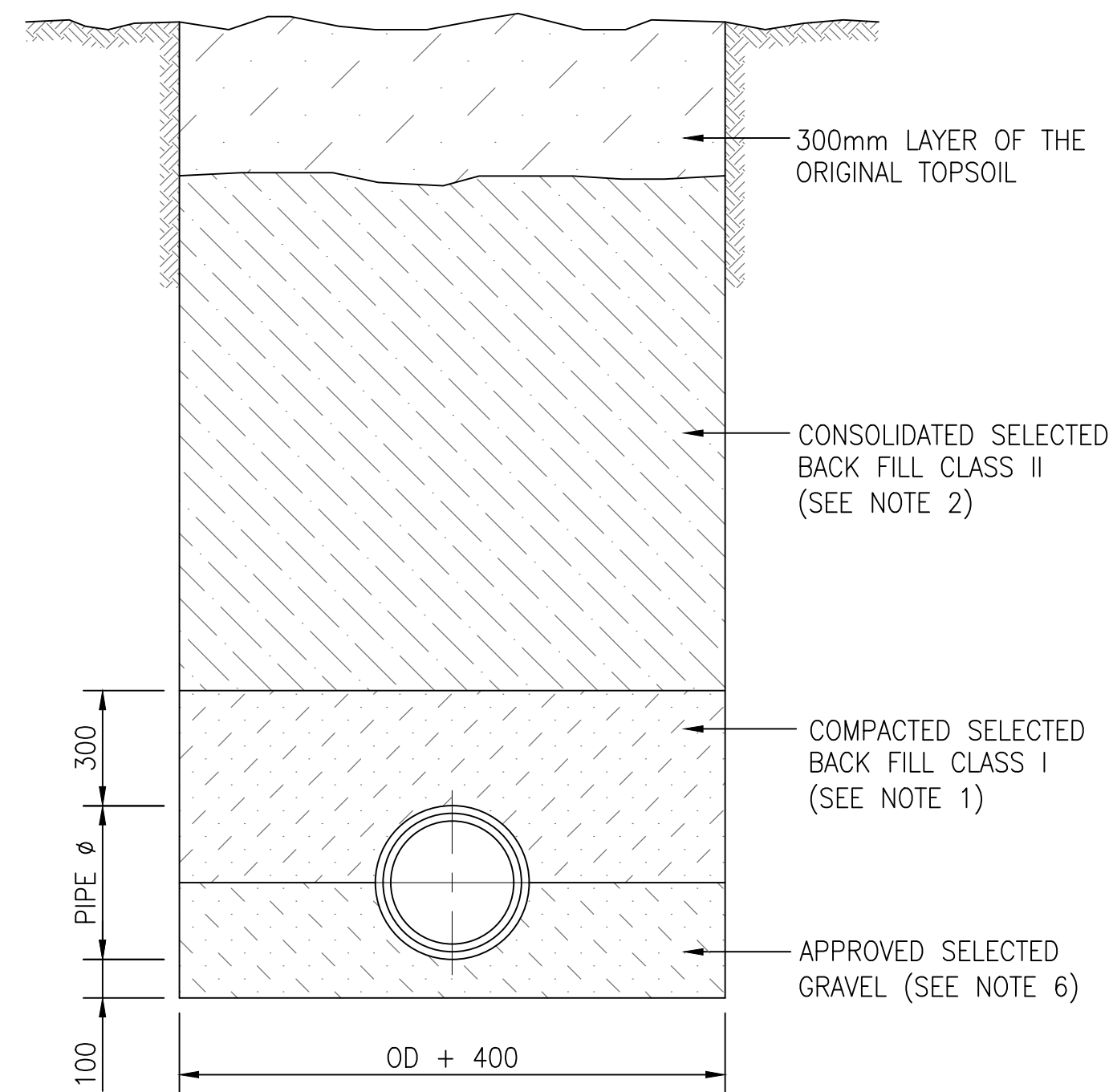
## PLAN

SCALE 1 : 25  
(TYPICAL EXAMPLE OF SIDE CONNECTIONS IN MANHOLE)

|                                                              |  |  |  |  |  |                      |  |              |        |                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE |  |  |  |  |  | 09-06-21<br>07-10-21 |  | B.M.<br>B.M. | A<br>B | ISSUED FOR CLIENT REVIEW<br>ISSUED FOR TENDER |  | <div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div></div> <div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div> <div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div> 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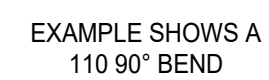
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| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE | CLIENT PLAN NUMBER |                     | APPROVED BY COUNCIL / CLIENT     |  | DATE     | INITIAL | CODE | REVISION DESCRIPTION     | CLIENT | <div><div><div>CESA</div><div>GREEN BUILDING COUNCIL</div><div>MEMBER ORGANISATION - 001</div></div><div><div>bvi</div><div>ENGINEERING<br/>PROCUREMENT<br/>MANAGEMENT</div><div>BVI Consulting Engineers Gauteng PTY ( Ltd )</div><div>Registration no. 1998/000322/07</div></div><div><div>Visit or contact us online at <a href="http://www.bvigroup.co.za">www.bvigroup.co.za</a></div><div>PROVINCE OFFICE E-MAIL</div><div>Gauteng Pretoria +27 12 940 1111 pto@bvigp.co.za</div></div></div> | PROJECT            |  | APPROVED BY BVI       |            |          |             |
|                                                              | ---                |                     |                                  |  | 09-06-21 | B.M.    | A    | ISSUED FOR CLIENT REVIEW |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MOKOPANE           |  | ENGINEER/TECHNOLOGIST |            | REG. NO. | DATE        |
|                                                              | REFERENCE DRAWINGS |                     | CITY ENGINEER / CLIENT           |  | 07-10-21 | B.M.    | B    | ISSUED FOR TENDER        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | DRAWING TITLE      |  | SCALE                 | AS SHOWN   | DRAWN    | B. MATYEKA  |
|                                                              | NUMBER             | DRAWING DESCRIPTION | AMENDMENTS CODE                  |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | WATER LAYOUT       |  | DESIGNED              | B. MATYEKA | CHECKED  | F.C.A SMITH |
|                                                              | ---                | ---                 |                                  |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PLAN NUMBER        |  | REV. NO.              |            | REV. NO. | DATE SAVED  |
|                                                              |                    |                     | A-Y / : REPORT/DESIGN/TENDER     |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 34398-00-140-01-01 |  |                       |            | B        | 13/10/2021  |
|                                                              |                    |                     | 0-99 / : CONSTRUCTION            |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |  |                       |            |          | BoitumeloM  |
|                                                              |                    |                     | Z / : AS BUILT                   |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |  |                       |            |          | A1          |
|                                                              |                    |                     | /A : BY CLIENT                   |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |  |                       |            |          |             |
|                                                              |                    |                     | /B : BY ARCHITECT                |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |  |                       |            |          |             |
|                                                              |                    |                     | /C : BY MECHANICAL OR ELECTRICAL |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |  |                       |            |          |             |
|                                                              |                    |                     | /D : BY BVI                      |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |  |                       |            |          |             |
|                                                              |                    |                     | /E : BY OTHER ( )                |  |          |         |      |                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |  |                       |            |          |             |



CLASS "B" BEDDING  
SELECTED BACK FILL BEDDING FOR  
uPVC AND HDPE PIPES

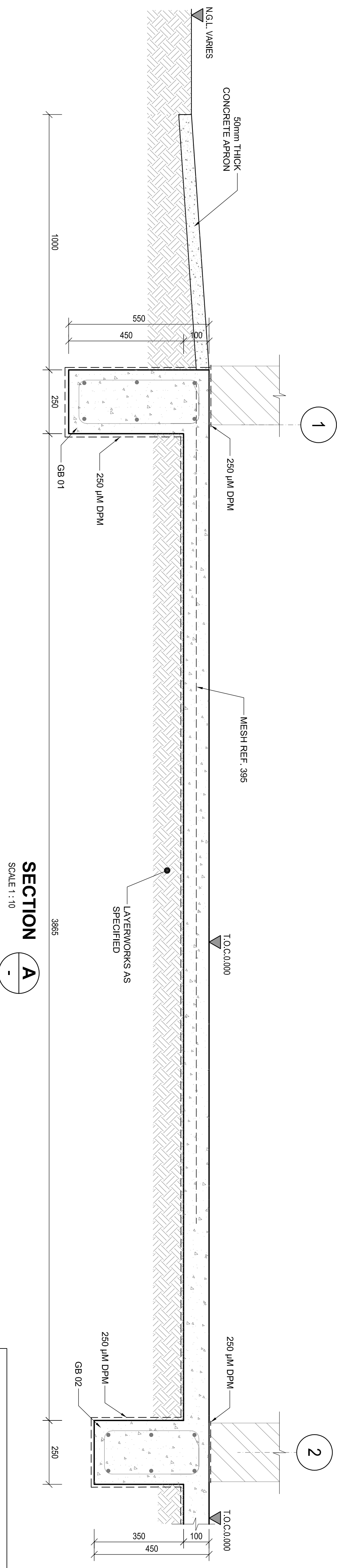
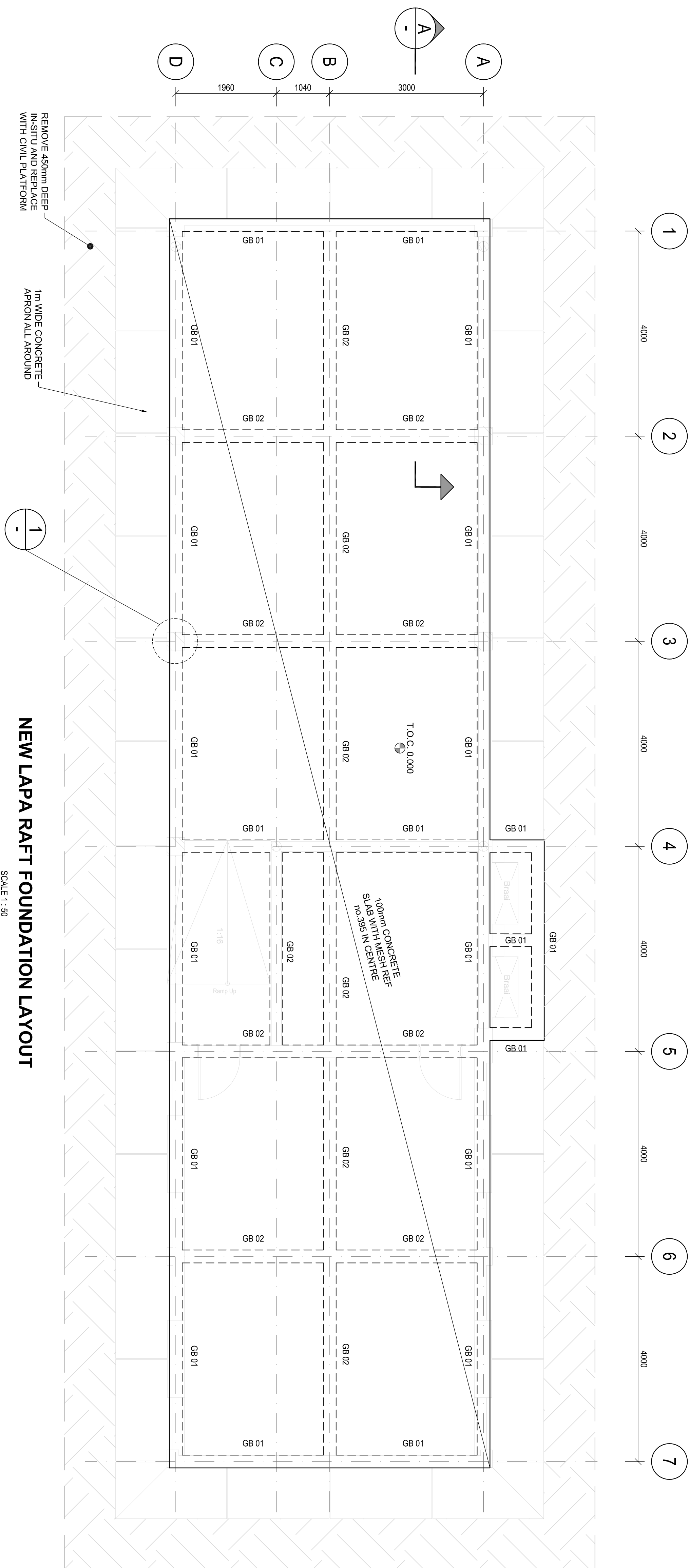
- NOTES :
- BACK FILLING OF TRENCH EXCAVATIONS
1. SELECTED BACK FILL CLASS I – IMPLIES APPROVED SELECTED MATERIAL FROM TRENCH EXCAVATION, FREE FROM STONES AND WITH A OPTIMUM MOISTURE CONTENT.
  2. SELECTED BACK FILL CLASS II – IMPLIES SELECTED BACK FILL FROM THE TRENCH EXCAVATION, WHICH SHALL NOT CONTAIN ANY STONES LARGER THAN 150mm Ø.
  3. CLASS "A" BEDDING/ ENCASING CONCRETE BETWEEN JOINTS SHALL BE CARRIED OUT IN ONE CONTINUOUS OPERATION USING CLASS 20/19 CONCRETE.
  4. FLEXIBLE JOINTS MUST BE PROVIDED, AT EACH PIPE JOINT IN A CLASS "A" CONCRETE BEDDING/ENCASING, WITH A 12mm THICK SOFT BOARD PLACED VERTICALLY FOR THE ENTIRE CONCRETE AREA. PIPE JOINTS MUST BE SEALED WITH WET CLAY TO PREVENT SLUSH FROM PENETRATING THE JOINT.
  5. EXCEPT FOR THE 300mm BACK FILL ON TOP OF THE PIPE THE BALANCE OF THE TRENCH MAY BE BACK FILLED WHEN THE CLASS "A" BEDDING/ENCASING HAS OBTAINED A COMPRESSIVE STRENGTH OF 15 MPa.
  6. APPROVED SELECTED GRAVEL MATERIAL WITH A PI NOT EXCEEDING 6, FREE FROM STONES EXCEEDING 20mm, ORGANIC MATTER AND LUMPS OF CLAY.

|                                                              |  |  |                            |  |  |                                   |  |  |              |  |  |        |  |  |                                               |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |
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| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE |  |  |                            |  |  | 09-06-21<br>07-10-21              |  |  | B.M.<br>B.M. |  |  | A<br>B |  |  | ISSUED FOR CLIENT REVIEW<br>ISSUED FOR TENDER |  |  | <div><div>SANBI</div><div>Biodiversity for Life</div><div>South African National Biodiversity Institute</div></div> <div><div></div><div><div>CESA</div><div>GREEN BUILDING COUNCIL</div><div>MEMBER ORGANISATION 3803</div></div><div><div></div><div>ENGINEERING<br/>PROCUREMENT<br/>MANAGEMENT</div><div>BvI Consulting Engineers Gauteng PTY ( Ltd )</div><div>Registration no. 19865000320207</div><div>Visit or contact us online at <a href="http://www.bvigroup.co.za">www.bvigroup.co.za</a></div><div>PROVINCE OFFICE E-MAIL<br/>Gauteng Pretoria +27 12 940 1111 pta@bvlgp.co.za</div></div></div> |  |  |
|                                                              |  |  | CITY ENGINEER / CLIENT     |  |  | REG. NO.                          |  |  | DATE         |  |  |        |  |  |                                               |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |
|                                                              |  |  | AMENDMENTS CODE            |  |  |                                   |  |  |              |  |  |        |  |  |                                               |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |
|                                                              |  |  | A-Y : REPORT/DESIGN/TENDER |  |  | I/A : BY CLIENT                   |  |  |              |  |  |        |  |  |                                               |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |
|                                                              |  |  | 00-99 / : CONSTRUCTION     |  |  | I/B : BY ARCHITECT                |  |  |              |  |  |        |  |  |                                               |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |
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98-02-143-01-02-RB.dwg

PURPOSE AS AFORESAID.



## TYPICAL RAFT SECTION

**SECTION**  
SCALE 1 : 10

**A**

**-**

## LEGEND

|                                         |                    |
|-----------------------------------------|--------------------|
| GB01 : GROUND BEAM TYPE 1:              | 250mm X 550mm DEEF |
| GB02 : GROUND BEAM TYPE 2:              | 250mm X 450mm DEEF |
| M.J : 10mm MOVEMENT JOINT IN BRICK WALL |                    |

1. ALL BRICK WALLS TO BE OF SOLID HARD BURNED CLAY BRICKS WITH A COMPRESSIVE STRENGTH OF NOT LESS THAN 14MPa.
2. IN A CLASS II WORK AREA WITH A 25 DAY COMPREHENSIVE STRENGTH OF SHAPE AS SPECIFIED IN SUBS 004 PART 1-1987 BRICKS TO BE CHOICE FOR MASONRY.
3. MINIMUM DIAMETER OF BRICKCORNER =  $2\phi_{min}$ .
4. MINIMUM STRENGTH = 485N/mm<sup>2</sup>.
5. LAP LENGTH = 400mm.
6. BRICKS TO BE LAYED IN THE FIRST LAYER, LAYERS OF BRICKCORNER ON STRIP FOOTINGS. THEREAFTER TO BE PLACED IN EVERY 4TH LAYER. PLACE BRICKCORNER IN THE FIRST 5 LAYERS OF BRICKWORK OVER ALL WINDOW AND DOOR OPENINGS. LAP OF ALL BRICKCORNER TO ARCHITECTS DRAWINGS.
7. DRYOUT OF PLACED ON SHAPE BEFORE TO LAYING BRICKWORK.

**CONCRETE NOTES :**

1. CONCRETE GRADE: 30 MPa/19mm.
2. CONCRETE SURFACE TO BE FINISHED WITH 30MM THICK 1:4 SMOOTH CEMENT SAND SCREED
3. The Contractor shall adhere to the following codes during construction as applicable:
  - SANS 2001 Construction Works:
  - Part CC1: Concrete Works (Structural)
  - Part CC2: Concrete Works (Minor Works)
  - Part GC1: Installation of Glazing in Window and Door Frames
  - Part CM1: Masonry Walling
  - Part CS1: Structural Steelwork
  - Part CS2: Structural Steelwork (Flooring)
  - Part CS3: Structural Timber Work (Roofing)
  - Part EM1: Cement Plaster

SANS 10155 Accuracy in buildings

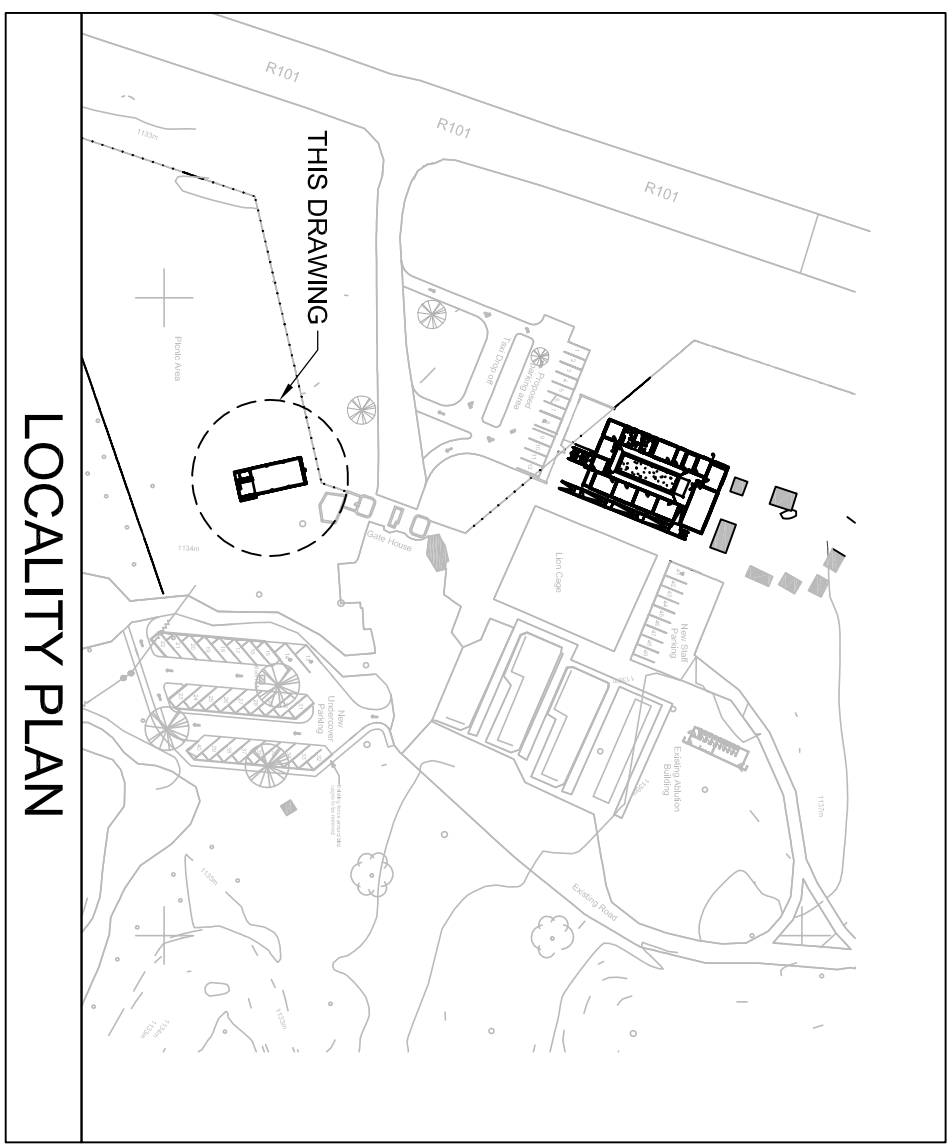
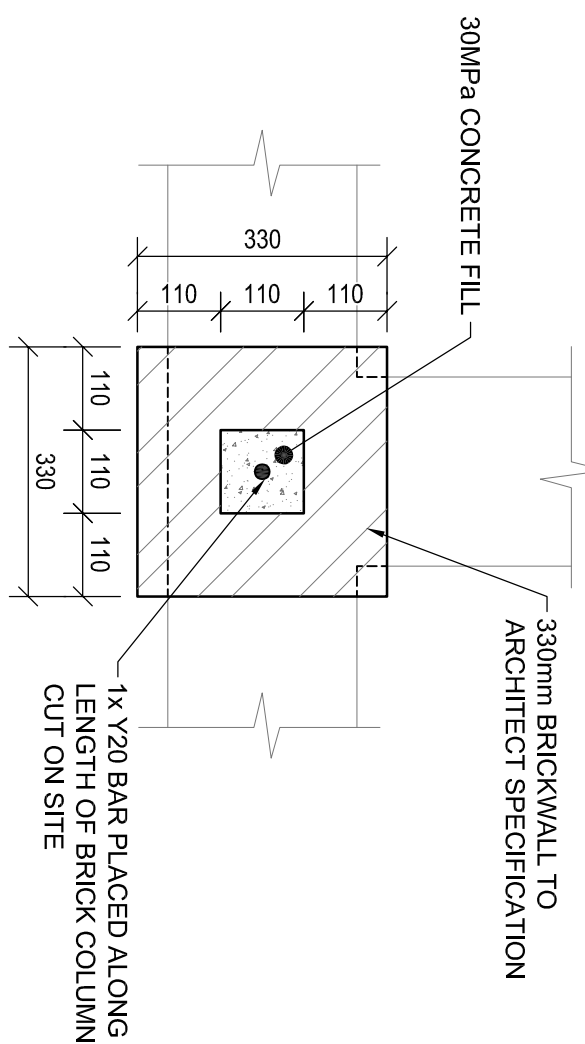
Grade II permissible deviation (tolerance shall apply unless otherwise noted).

One copy of each of these codes shall be kept on site and shall be made available to the Engineer on request.

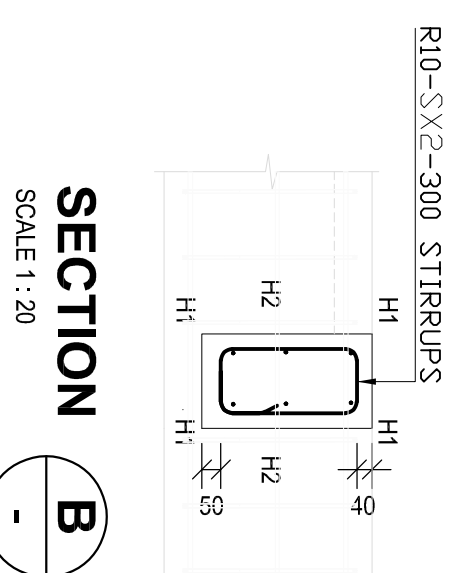
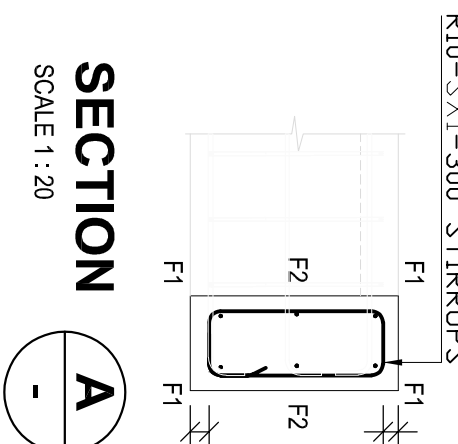
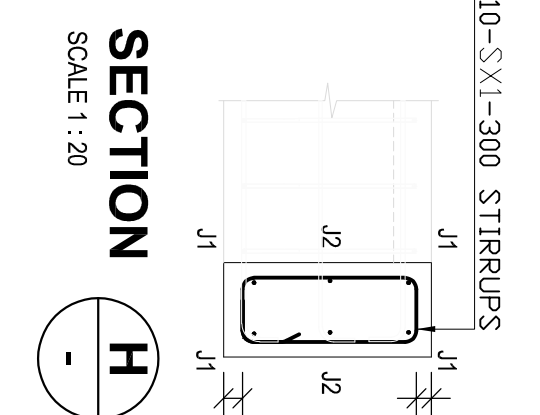
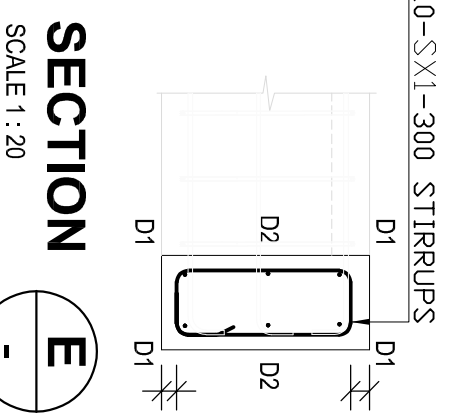
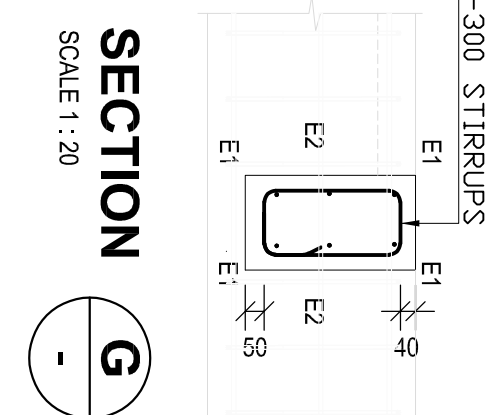
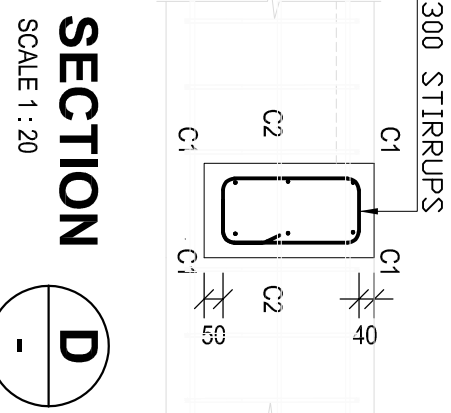
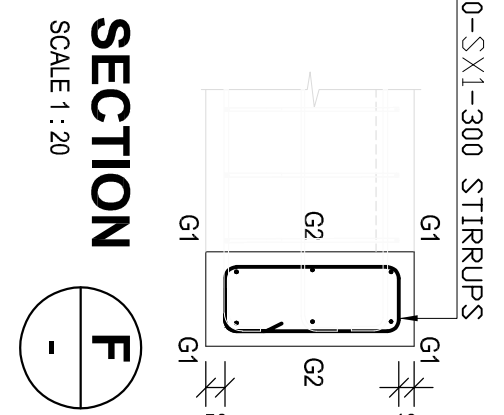
**DETAIL**  
SCALE 1 : 5



**BRICK COLUMN DETAIL (6 No. OFF)**

[illegible]

R10-SX1-300 STIRRUPS



MESH REF 395 = 160m<sup>2</sup>

|     |     |  |
|-----|-----|--|
| 258 | 915 |  |
|-----|-----|--|

CONCRETE GRADE : 30 MPa

APPROVED BY BVI

**DO NOT SCALE DRAWING**  
- IN DOUBT, REFER TO DRAWING OFFICE

[illegible]

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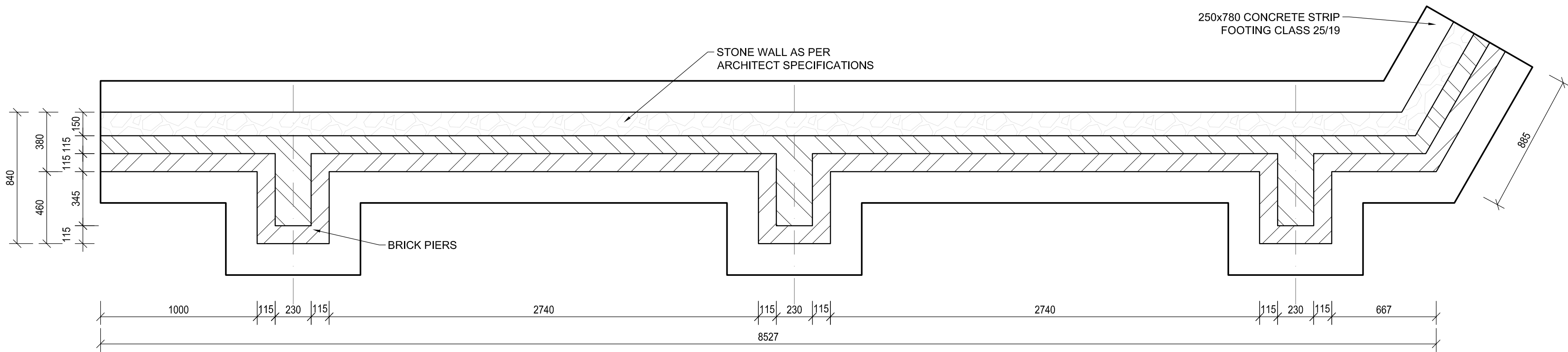


Mokopane

|                    |         |          |                             |      |  |
|--------------------|---------|----------|-----------------------------|------|--|
| ARCHITECT          |         | REG. NO. |                             | DATE |  |
| SCALE              | 1 : 100 | DRAWN    | A.M                         |      |  |
| DESIGNED           | A.M     | CHECKED  | S.R                         |      |  |
| PLAN NUMBER        |         | REV. NO. | DATE SAVED                  |      |  |
| 34398-02-201-02-01 |         | 0A       | 2024-06-09<br>Desmond Brown |      |  |

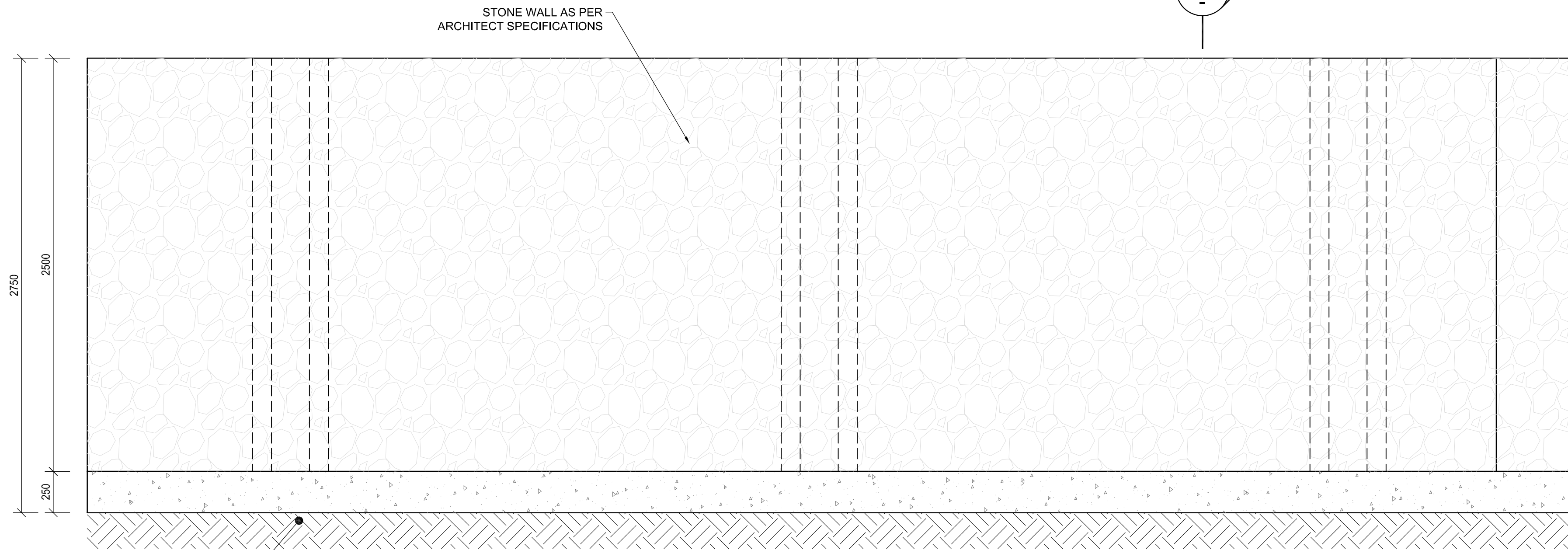
**ZULS ARCHITECTURAL CONSULTING (Pty) Ltd** PROJECTS/BA28 – SANBI Projects/BA28  
Mokoneane Rio Diversiv Central/Baviti/Mokoneane - Office Block n

BVI SHALL NOT BE LIABLE (EITHER IN CONTRACT OR IN DELICT) TO THE CLIENT OR ANY OTHER PARTY WHATSOEVER AS A RESULT OF THE UNAUTHORIZED USE OF BVI'S DESIGN DRAWINGS, AND THE CLIENT HEREBY INDEMNIFIES BVI AGAINST ANY CLAIM WHICH MAY BE MADE AGAINST BVI BY ANY PARTY WHATSOEVER IN ANY WAY ARISING OUT OF THE UNAUTHORIZED USE OF SUCH DOCUMENTATION FOR SUCH OTHER PURPOSE AS AFORESAID.



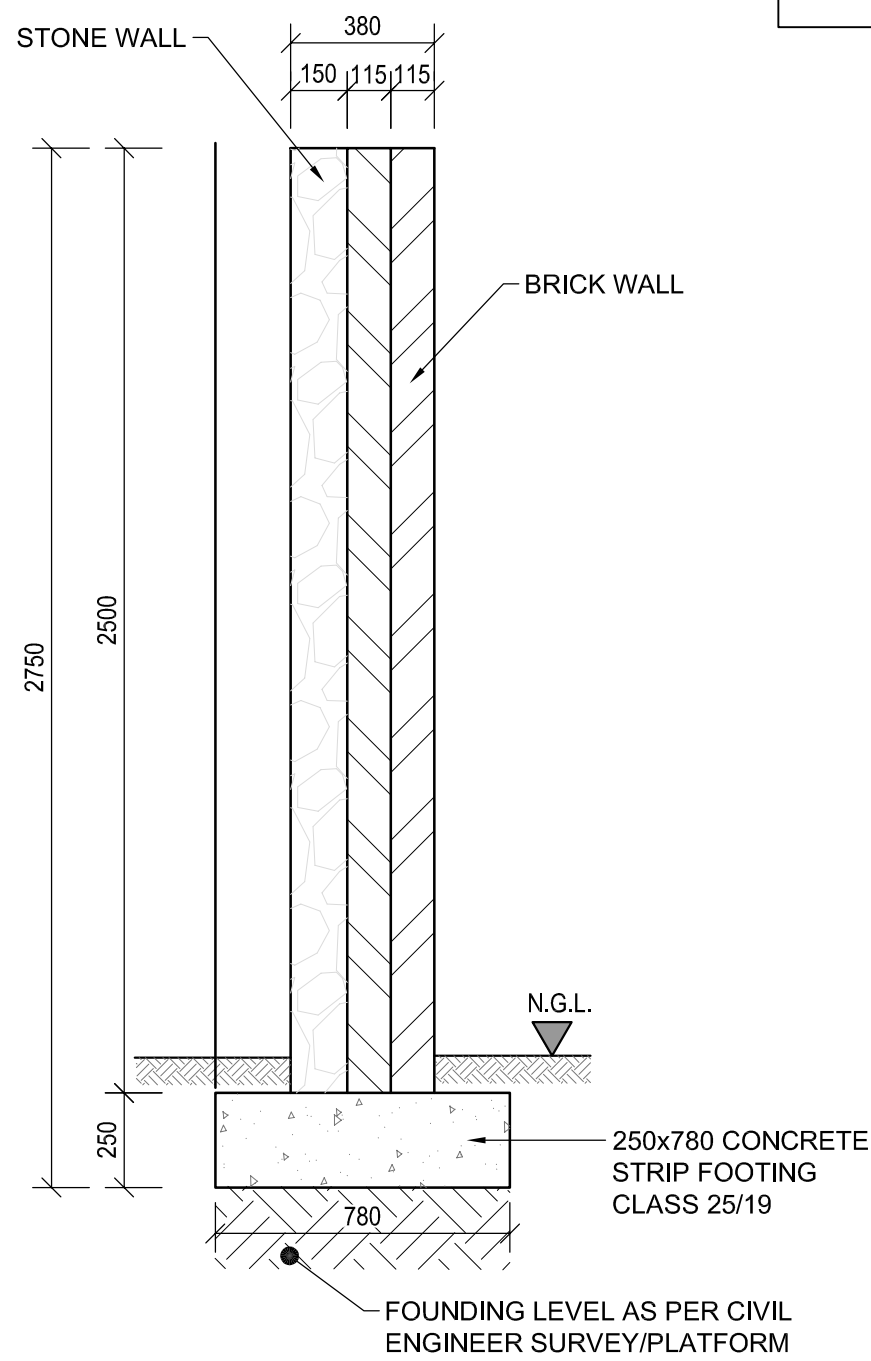
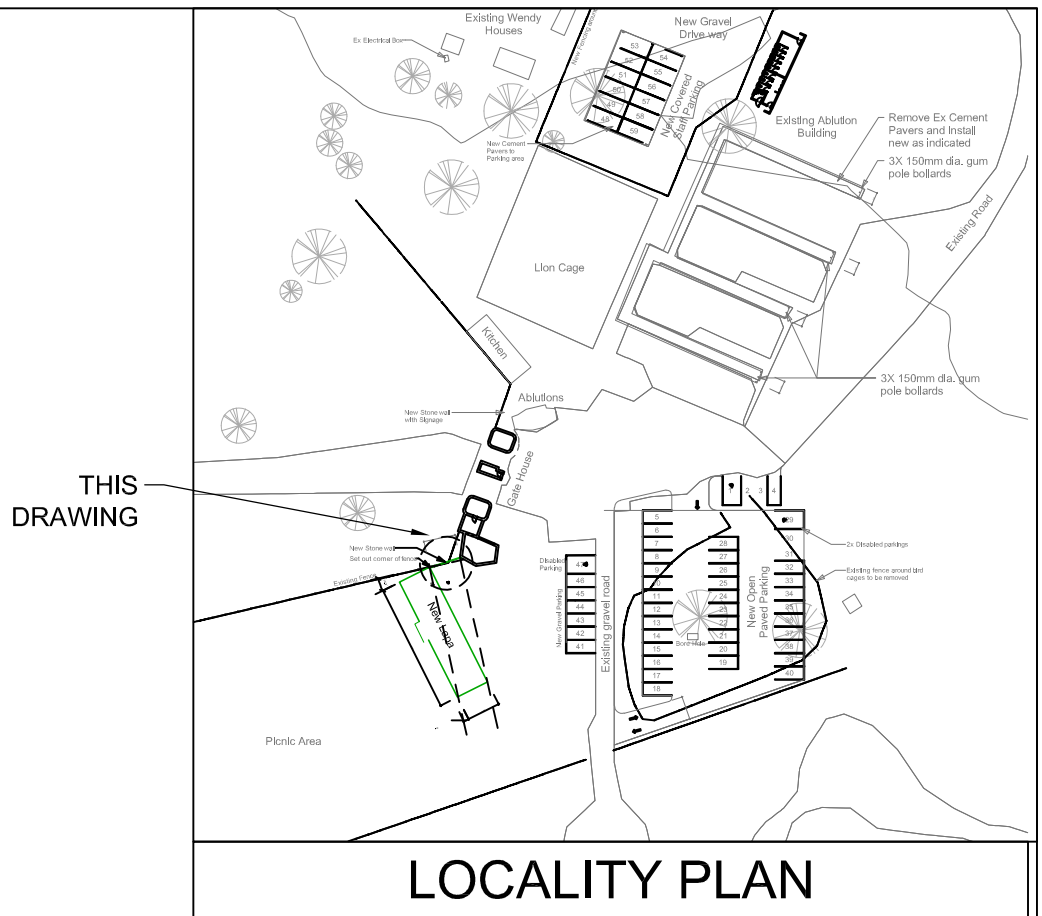
NEW STONEWALL PLAN

SCALE 1 : 50



NEW STONEWALL ELEVATION

SCALE 1 : 20



SECTION A

SCALE 1 : 20

FOUNDING LEVEL AS PER CIVIL  
ENGINEER SURVEY/PLATFORM

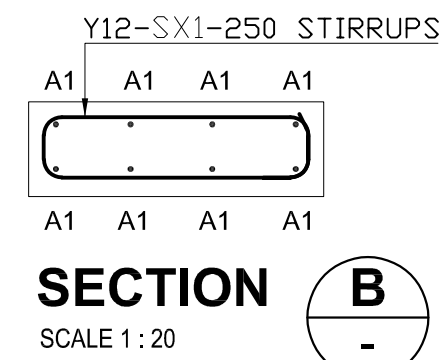
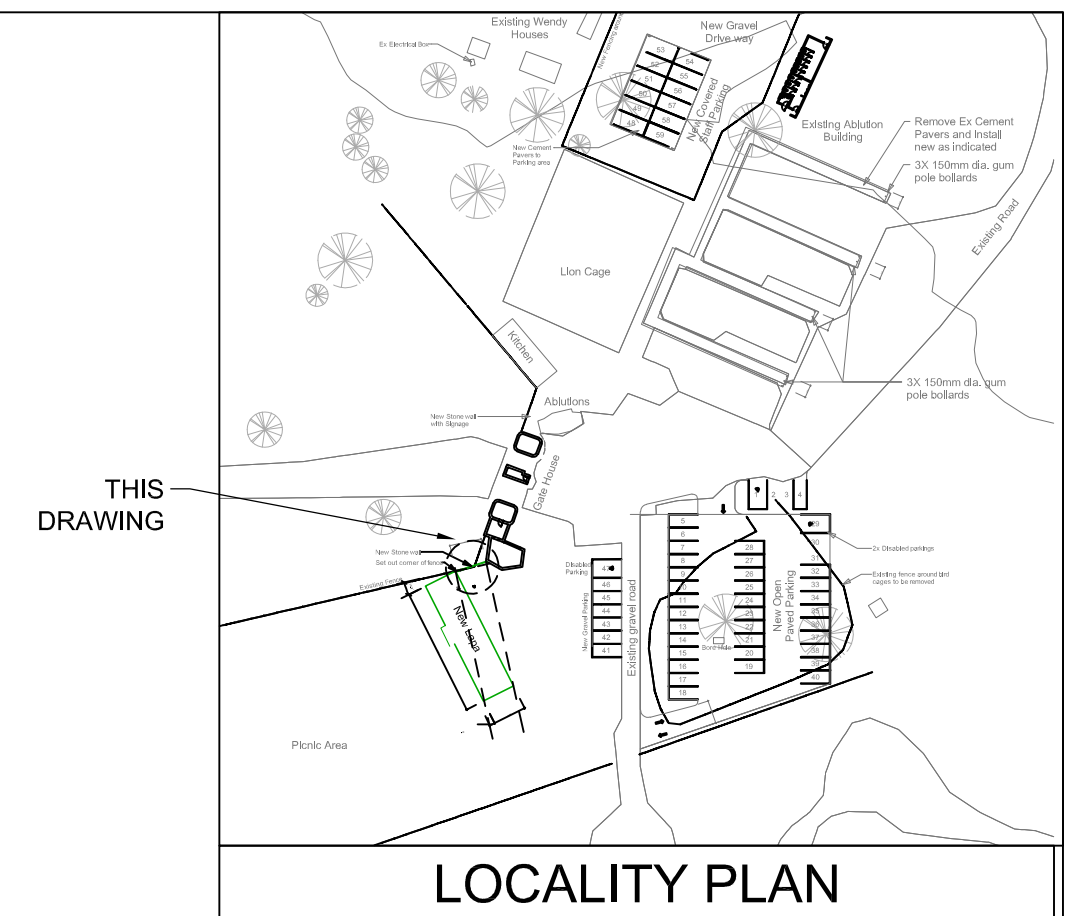
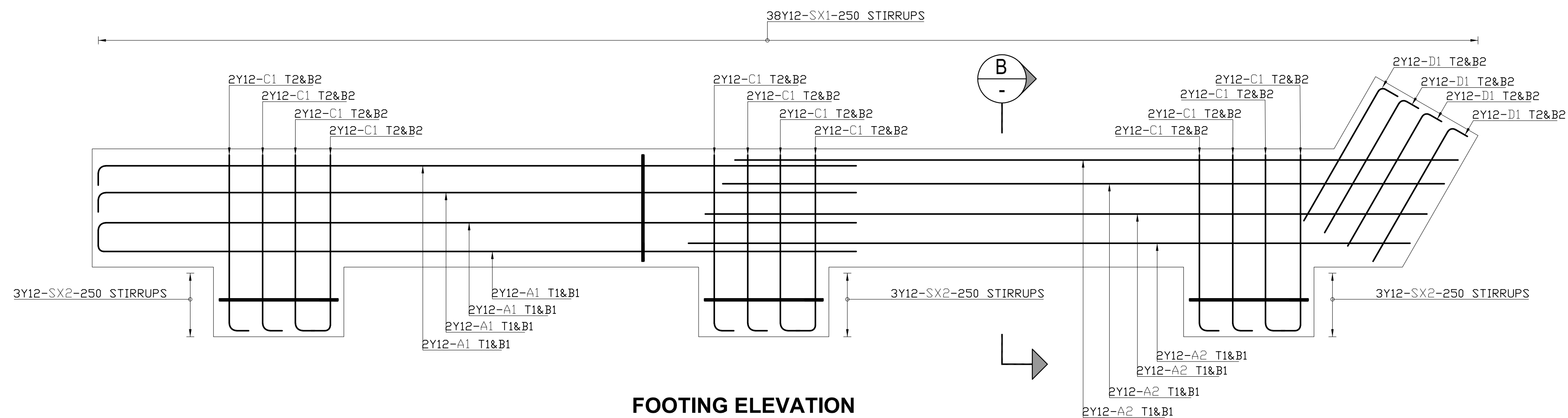
CONCRETE COVER:  
TOP : 40mm  
BOTTOM : 50mm  
SIDES : 40mm  
  
LAP LENGTH:  
MINIMUM 50Ø  
12mmØ BARS = 600mm  
16mmØ BARS = 800mm  
  
CONCRETE GRADE : 30 MPa

CONCRETE NOTES :

- CONCRETE GRADE: 30 MPa/19mm.
- CONCRETE SURFACE TO BE FINISHED WITH 30MM THICK 1:4 SMOOTH CEMENT SAND SCREED
- The Contractor shall adhere to the following codes during construction as applicable:  
SANS 2001 Construction Works:  
Part CC1: Concrete Works (Structural)  
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Part CT1: Structural Timberwork (Flooring)  
Part CT2: Structural Timberwork (Roofing)  
Part EM1: Cement Plaster  
  
SANS 10155 Accuracy in Buildings  
Grade II permissible deviation / tolerance shall apply unless otherwise noted.  
One copy of each of these codes shall be kept on site and shall be made available to The Engineer on request.

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BVI SHALL NOT BE LIABLE (EITHER IN CONTRACT OR IN DELICT) TO THE CLIENT OR ANY OTHER PARTY WHATSOEVER AS A RESULT OF THE UNAUTHORIZED USE OF BVI'S DESIGN DRAWINGS, AND THE CLIENT HEREBY INDEMNIFIES BVI AGAINST ANY CLAIM WHICH MAY BE MADE AGAINST BVI BY ANY PARTY WHATSOEVER IN ANY WAY ARISING OUT OF THE UNAUTHORIZED USE OF SUCH DOCUMENTATION FOR SUCH OTHER PURPOSES AS AFORESAID.



| MEMBER    | NO OF | NO BARS | DIA | CUT LENGTH | TOTAL | BAR MARK | SC | A      | B     | C | D | E/R | kg |
|-----------|-------|---------|-----|------------|-------|----------|----|--------|-------|---|---|-----|----|
| WALL BASE | 1     | 8       | Y12 | 5100       | 8     | A1       | 37 | 5000   | [120] |   |   |     | 36 |
|           | 1     | 8       | Y12 | 4750       | 8     | A2       | 20 | [4760] |       |   |   |     | 34 |
|           | 1     | 24      | Y12 | 1250       | 24    | C1       | 37 | 1160   | [120] |   |   |     | 27 |
|           | 1     | 8       | Y12 | 1100       | 8     | D1       | 37 | 1020   | [120] |   |   |     | 8  |
|           | 1     | 38      | Y12 | 1850       | 38    | SX1      | 60 | 700    | 160   |   |   |     | 62 |
|           | 1     | 9       | Y12 | 2000       | 9     | SX2      | 60 | 780    | 160   |   |   |     | 16 |

|       |   |   |    |     |    |    |    |    |    |       |
|-------|---|---|----|-----|----|----|----|----|----|-------|
|       | 6 | 8 | 10 | 12  | 16 | 20 | 25 | 32 | 40 | TOTAL |
| R     |   |   |    |     |    |    |    |    |    |       |
| Y     |   |   |    | 183 |    |    |    |    |    | 183   |
| TOTAL |   |   |    | 183 |    |    |    |    |    | 183   |

**CONCRETE COVER:**  
 TOP : 40mm  
 BOTTOM : 50mm  
 SIDES : 40mm

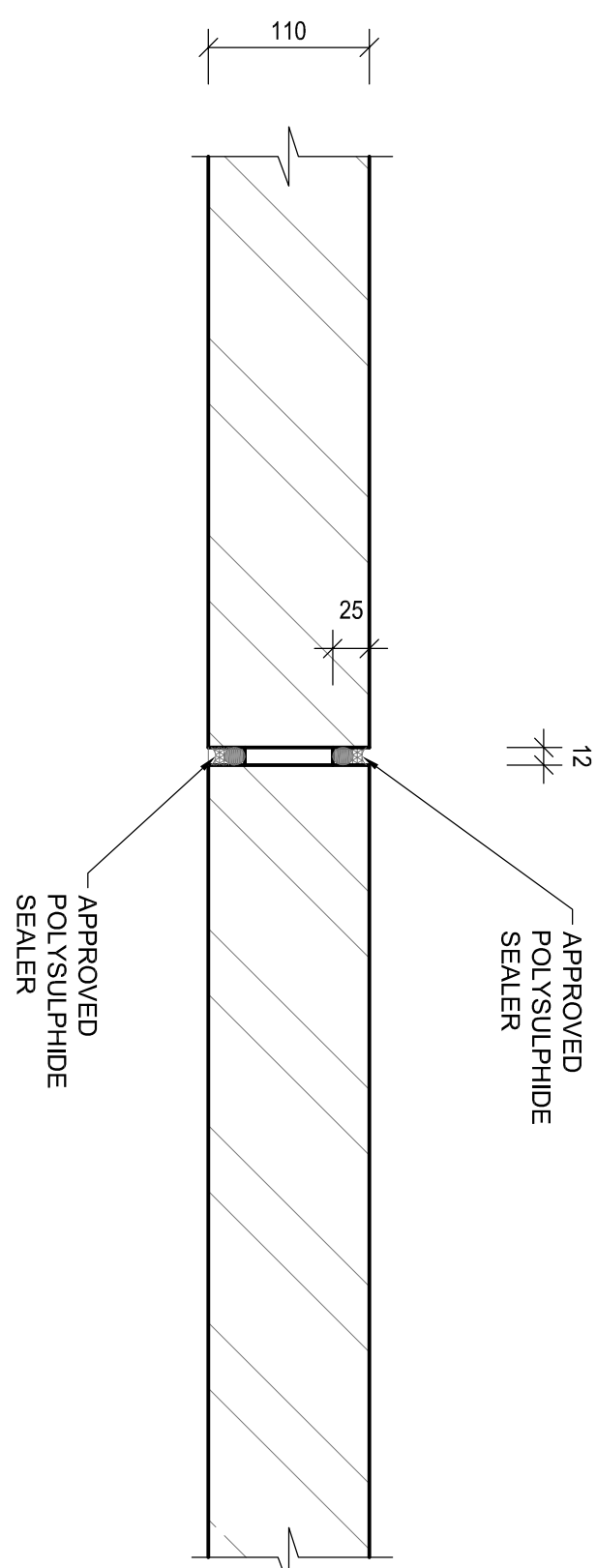
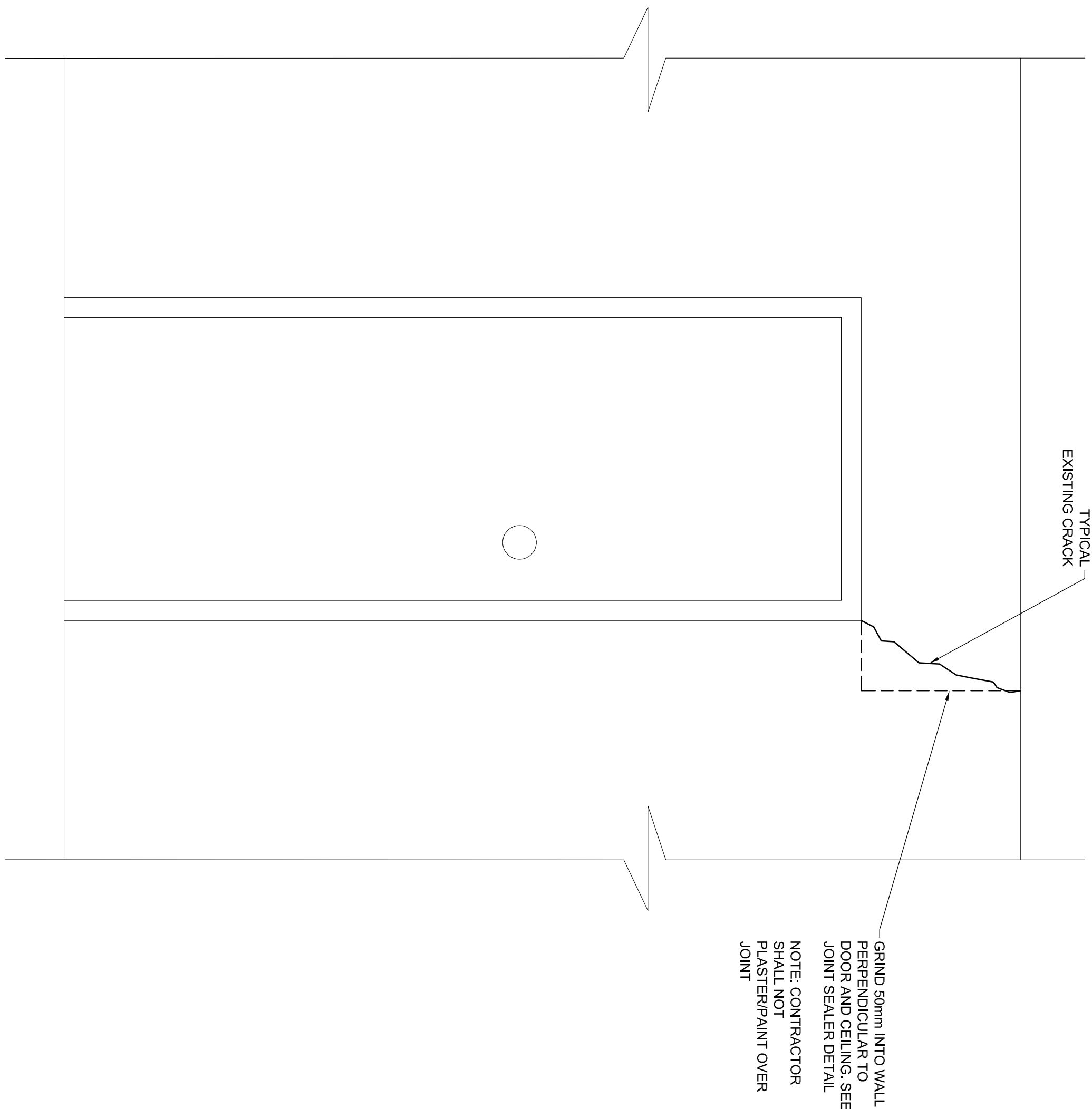
**LAP LENGTH:**  
 MINIMUM 50Ø  
 12mmØ BARS = 600mm  
 16mmØ BARS = 800mm

**CONCRETE GRADE : 30 MPa**

- CONCRETE NOTES :**
1. CONCRETE GRADE: 30 MPa/19mm.
  2. CONCRETE SURFACE TO BE FINISHED WITH 30MM THICK 1:4 SMOOTH CEMENT SAND SCREED
  3. The Contractor shall adhere to the following codes during construction as applicable:
    - SANS 2001 Construction Works:
    - Part CC1: Concrete Works (Structural)
    - Part CC2: Concrete Works (Minor Works)
    - Part CG1: Installation of Glazing in Window and Door Frames
    - Part CM1: Masonry Walling
    - Part CS1: Structural Steelwork
    - Part CT1: Structural Timberwork (Flooring)
    - Part CT2: Structural Timberwork (Roofing)
    - Part EM1: Cement Plaster
- SANS 10155 Accuracy in Buildings
- Grade II permissible deviation / tolerance shall apply unless otherwise noted.
- One copy of each of these codes shall be kept on site and shall be made available to The Engineer on request.

[illegible]

BVI SHALL NOT BE LIABLE (EITHER IN CONTRACT OR IN DELICT) TO THE CLIENT OR ANY OTHER PARTY WHATSOEVER AS A RESULT OF THE UNAUTHORIZED USE OF BVIS DESIGN DRAWINGS, AND THE CLIENT HEREBY INDEMNIFIES BVI AGAINST ANY CLAIM WHICH MAY BE MADE AGAINST BVI BY ANY PARTY WHATSOEVER IN ANY WAY ARISING OUT OF THE UNAUTHORIZED USE OF SUCH DOCUMENTATION FOR SUCH OTHER PURPOSES AS AFORESAID.



## JOINT SEALER DETAIL

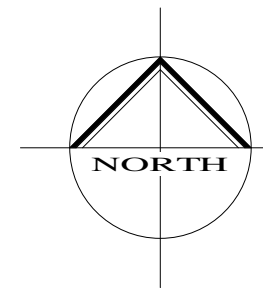
SCALE 1: 10

**TYPICAL CRACK ELEVATION**  
**2x No. OFF**

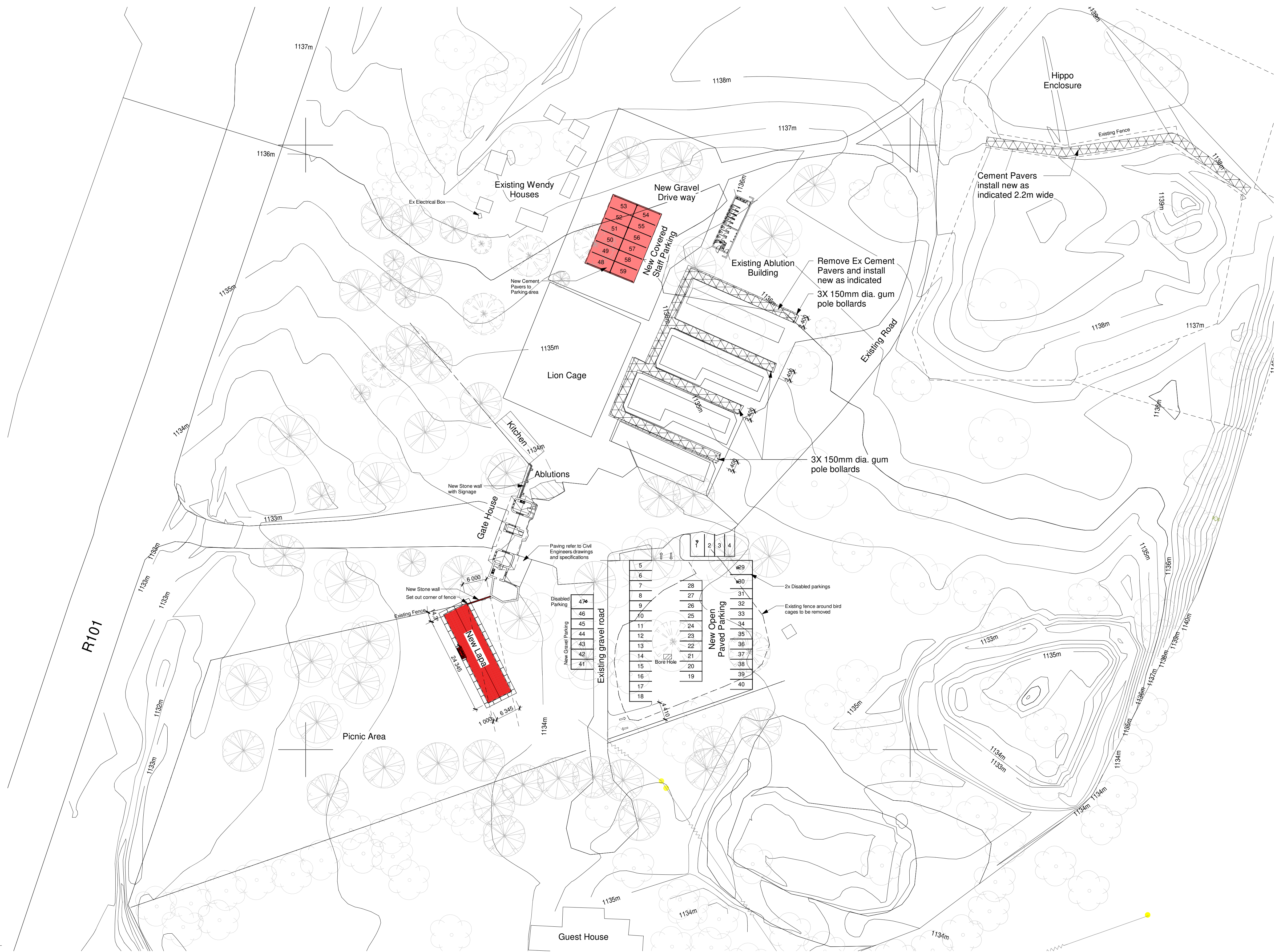
SCALE 1:10

[illegible]





Site Plan  
1 : 500



| CLIENT PLAN NUMBER                                           |  | APPROVED BY COUNCIL / CLIENT |                     | DATE                         | INITIAL | CODE     | REVISION DESCRIPTION | CLIENT |  | PROJECT                         |  | APPROVED BY BVI    |  |
|--------------------------------------------------------------|--|------------------------------|---------------------|------------------------------|---------|----------|----------------------|--------|--|---------------------------------|--|--------------------|--|
| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE |  | REFERENCE DRAWINGS           |                     | CITY ENGINEER / CLIENT       |         | REG. NO. |                      | DATE   |  | Mokopane - Bio Diversity Centre |  | ARCHITECT          |  |
|                                                              |  | NUMBER                       | DRAWING DESCRIPTION | AMENDMENTS CODE              |         | A        |                      | B      |  | DRAWING TITLE                   |  | REG. NO.           |  |
|                                                              |  |                              |                     | A Y / : REPORT/DESIGN/TENDER |         | B        |                      | C      |  | SITE PLAN                       |  | DATE               |  |
|                                                              |  |                              |                     | 00/99 / : CONSTRUCTION       |         | D        |                      | E      |  |                                 |  | DRAWN              |  |
|                                                              |  |                              |                     | Z / : AS BUILT               |         |          |                      |        |  |                                 |  | CHECKED            |  |
|                                                              |  |                              |                     |                              |         |          |                      |        |  |                                 |  | PLAN NUMBER        |  |
|                                                              |  |                              |                     |                              |         |          |                      |        |  |                                 |  | REV. NO.           |  |
|                                                              |  |                              |                     |                              |         |          |                      |        |  |                                 |  | DATE SAVED         |  |
|                                                              |  |                              |                     |                              |         |          |                      |        |  |                                 |  | 34398-02-100-01-01 |  |
|                                                              |  |                              |                     |                              |         |          |                      |        |  |                                 |  | B                  |  |
|                                                              |  |                              |                     |                              |         |          |                      |        |  |                                 |  | 2021-10-12         |  |
|                                                              |  |                              |                     |                              |         |          |                      |        |  |                                 |  | Desmond Brand      |  |
|                                                              |  |                              |                     |                              |         |          |                      |        |  |                                 |  | A1                 |  |





**ENGINEERING  
PROCUREMENT  
MANAGEMENT**

BVI Consulting Engineers Gauteng PTY ( Ltd )  
Registration no. 1986/00032207

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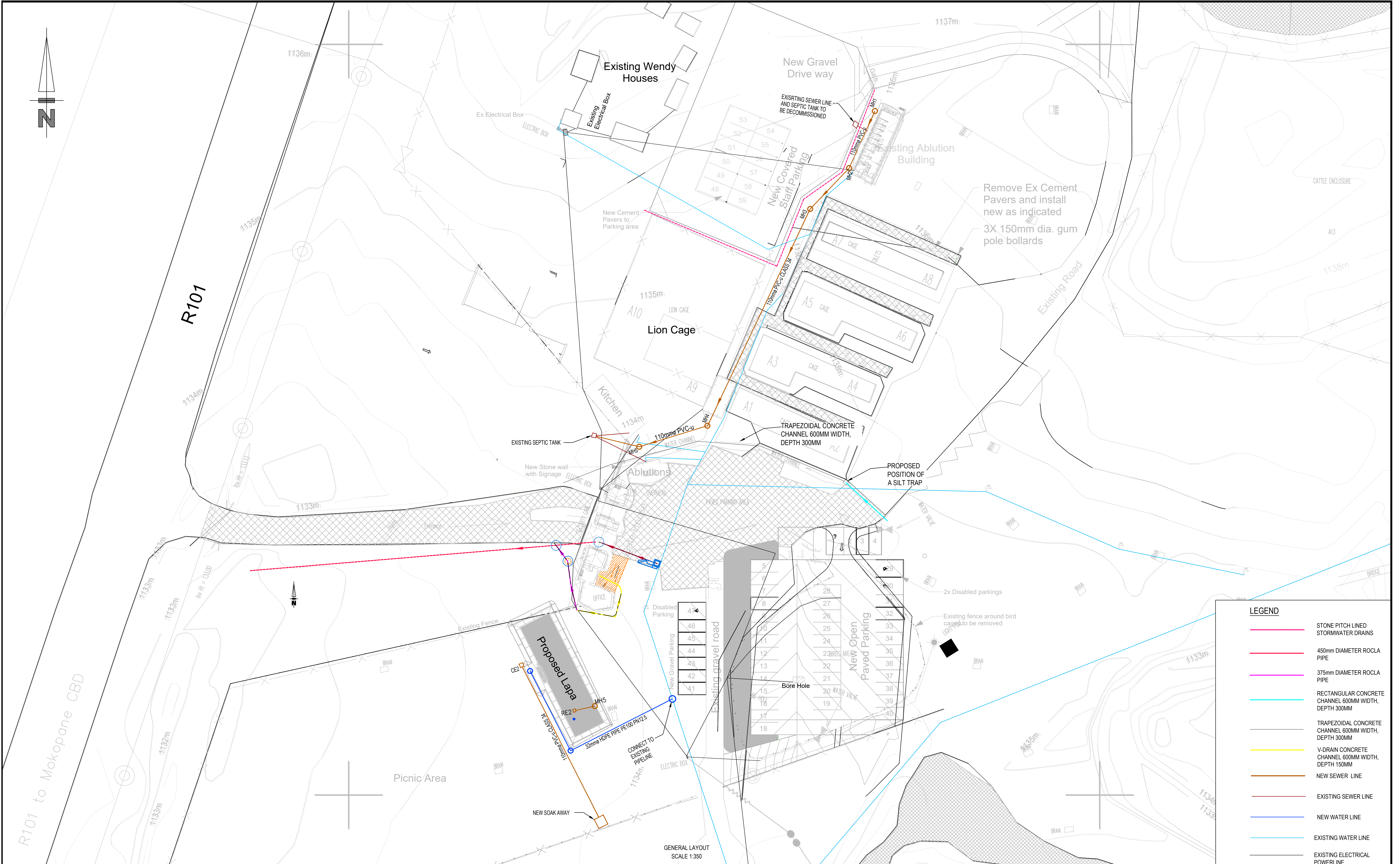
PROVINCE: Gauteng    OFFICE: Pretoria    E-MAIL: [pla@bvigp.co.za](mailto:pla@bvigp.co.za)    TEL: +27 12 940 1111



**GREEN BUILDING COUNCIL**  
MEMBER SINCE 2010/01/01

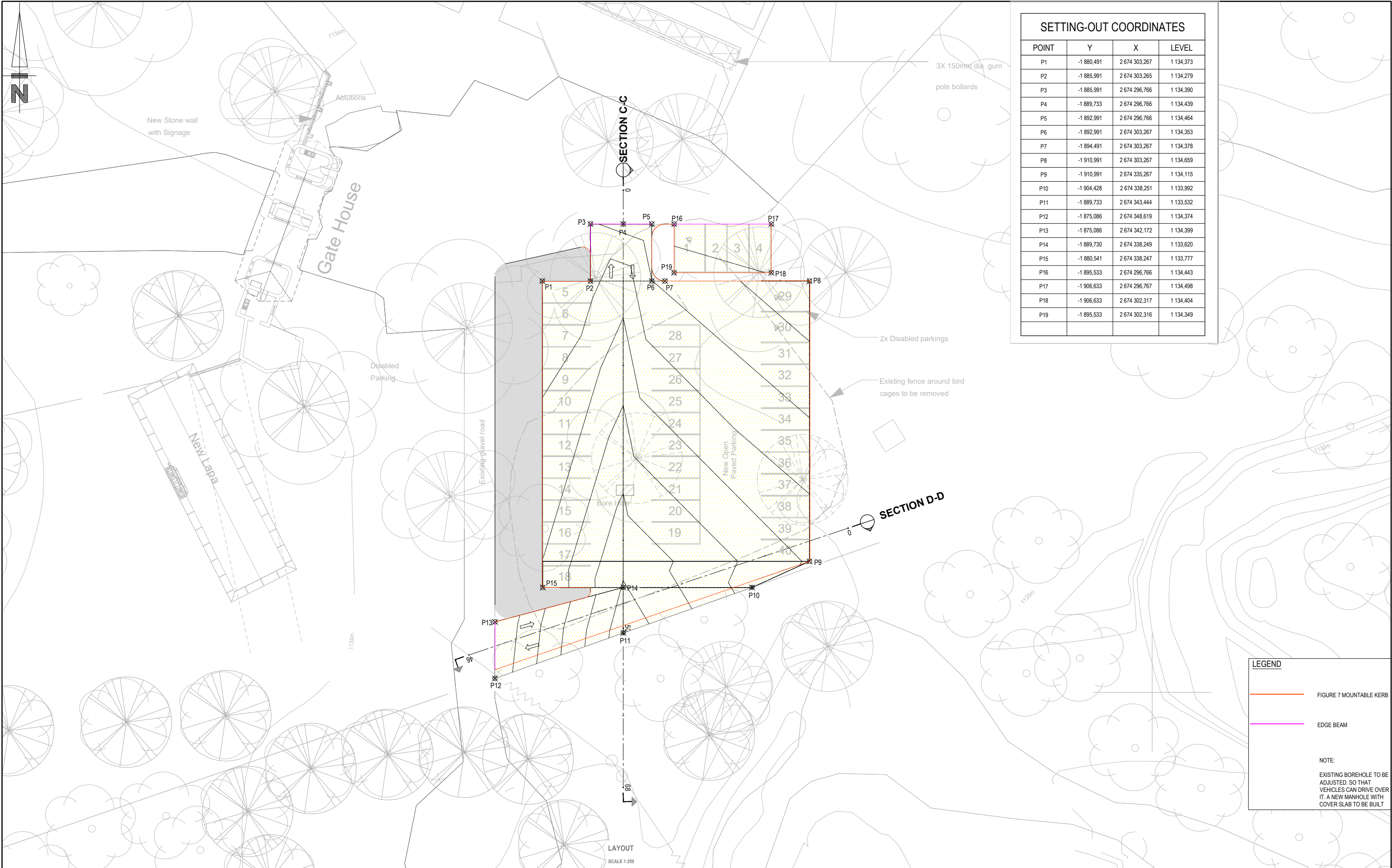
**Mokopane - Bio Diversity Centre**

**SITE PLAN**



| LEGEND |                                                       |  |  |
|--------|-------------------------------------------------------|--|--|
|        | STONE PITCH LINED STORMWATER DRAINS                   |  |  |
|        | 450mm DIAMETER ROCLA PIPE                             |  |  |
|        | 375mm DIAMETER ROCLA PIPE                             |  |  |
|        | RECTANGULAR CONCRETE CHANNEL 600MM WIDTH, DEPTH 300MM |  |  |
|        | TRAPEZOIDAL CONCRETE CHANNEL 600MM WIDTH, DEPTH 300MM |  |  |
|        | V-DRAIN CONCRETE CHANNEL 600MM WIDTH, DEPTH 150MM     |  |  |
|        | NEW SEWER LINE                                        |  |  |
|        | EXISTING SEWER LINE                                   |  |  |
|        | NEW WATER LINE                                        |  |  |
|        | EXISTING WATER LINE                                   |  |  |
|        | EXISTING ELECTRICAL POWERLINE                         |  |  |

|                                                              |                    |                     |                              |          |          |            |      |                          |                   |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                |               |                                     |          |             |            |
|--------------------------------------------------------------|--------------------|---------------------|------------------------------|----------|----------|------------|------|--------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------|----------|-------------|------------|
| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE | CLIENT PLAN NUMBER |                     | APPROVED BY COUNCIL / CLIENT |          | DATE     | INITIAL    | CODE | REVISION DESCRIPTION     | CLIENT            | <br>South African National Biodiversity Institute | <br>BVI Consulting Engineers Gauteng PTY ( Ltd )<br>Registration no. 199800032207<br><br>Visit or contact us online at <a href="http://www.bvigroup.co.za">www.bvigroup.co.za</a><br><br>PROVINCE OFFICE<br>Gauteng Pretoria +27 12 940 1111 pto@bvigp.co.za | <br>GREEN BUILDING COUNCIL<br>MEMBER ORGANISATION 001-001 | PROJECT       | APPROVED BY BVI                     |          |             |            |
|                                                              | ---                |                     | ---                          |          | 09-06-21 | B.M.       | A    | ISSUED FOR CLIENT REVIEW |                   |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                | MOKOPANE      | ENGINEER/TECHNOLOGIST REG. NO. DATE |          |             |            |
|                                                              | REFERENCE DRAWINGS |                     | CITY ENGINEER / CLIENT       | REG. NO. | DATE     | 07-10-21   | B.M. | B                        | ISSUED FOR TENDER |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                | DRAWING TITLE | SCALE                               | AS SHOWN | DRAWN       | B. MATYEKA |
|                                                              | NUMBER             | DRAWING DESCRIPTION |                              |          |          |            |      |                          |                   |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                | DESIGNED      | B. MATYEKA                          | CHECKED  | F.C.A SMITH |            |
|                                                              | ---                | ---                 | PLAN NUMBER                  |          | REV. NO. | DATE SAVED |      |                          |                   |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                |               |                                     |          |             |            |
|                                                              |                    |                     |                              |          |          |            |      |                          |                   |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                |               |                                     |          |             |            |
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DO NOT SCALE DRAWING  
IF IN DOUBT, REFER TO DRAWING OFFICE

| REFERENCE DRAWINGS |                           |
|--------------------|---------------------------|
| NUMBER             | DRAWING DESCRIPTION       |
| 34398-02-113-01-01 | TYPICAL ROAD KERB DETAILS |
|                    |                           |
|                    |                           |
|                    |                           |
|                    |                           |
|                    |                           |

APPROVED BY COUNCIL / CLIENT

| CITY ENGINEER / CLIENT | REG. NO. | DATE |
|------------------------|----------|------|
|                        |          |      |
|                        |          |      |
|                        |          |      |
|                        |          |      |
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AMENDMENTS CODE

| A-Y  | REPORT/DESIGN/TENDER | A                       | BY CLIENT                   |
|------|----------------------|-------------------------|-----------------------------|
| 0-99 | CONSTRUCTION         | B <td>BY ARCHITECT</td> | BY ARCHITECT                |
| Z    | AS BUILT             | C                       | BY MECHANICAL OR ELECTRICAL |
|      |                      | D                       | BY BVI                      |
|      |                      | E                       | BY OTHER ( )                |

21-09-21

B.M.

A

ISSUED FOR INFORMATION

05-10-21

B.M.

B

ISSUED FOR TENDER

**SANBI**  
Biodiversity for Life  
South African National Biodiversity Institute

**bvi**  
ENGINEERING  
PROCUREMENT  
MANAGEMENT  
BVi Consulting Engineers Gauteng PTY ( Ltd )  
Registration no. 1958900322017

PROVINCE

OFFICE

E-MAIL

Gauteng

Pretoria

+27 12 940 1111

pto@bvigp.co.za

MOKOPANE

DRAWING TITLE

NEW VISITORS PARKING  
LOT LAYOUT

APPROVED BY BVI

| ENGINEER/TECHNOLOGIST | REG. NO. | DATE |
|-----------------------|----------|------|
|                       |          |      |
|                       |          |      |
|                       |          |      |
|                       |          |      |

| SCALE       | AS SHOWN  | DRAWN   | M.A TEMBE  |
|-------------|-----------|---------|------------|
| DESIGNED    | M.A TEMBE | CHECKED | B. MATYEKA |
| PLAN NUMBER | REV. NO.  | DATE    | SAVED      |

34398-02-110-01-01

B

19/10/2021

Massiquini

A1



| SETTING-OUT COORDINATES |            |               |           |
|-------------------------|------------|---------------|-----------|
| POINT                   | Y          | X             | LEVEL     |
| P5                      | -1 903,492 | 2 674 204,897 | 1 136,501 |
| P6                      | -1 901,801 | 2 674 200,860 | 1 136,726 |
| P7                      | -1 888,728 | 2 674 195,490 | 1 137,147 |
| P8                      | -1 877,770 | 2 674 190,989 | 1 137,500 |
| P9                      | -1 860,288 | 2 674 233,538 | 1 135,619 |
| P10                     | -1 871,138 | 2 674 237,994 | 1 135,780 |
| P11                     | -1 885,272 | 2 674 243,788 | 1 135,989 |
| P12                     | -1 890,577 | 2 674 230,848 | 1 136,129 |
| P13                     | -1 898,232 | 2 674 225,369 | 1 136,223 |
| P14                     | -1 904,890 | 2 674 209,187 | 1 136,398 |
| P15                     | -1 904,192 | 2 674 207,041 | 1 136,450 |

DO NOT SCALE DRAWING  
IF IN DOUBT, REFER TO DRAWING OFFICE

| REFERENCE DRAWINGS |                     |
|--------------------|---------------------|
| NUMBER             | DRAWING DESCRIPTION |
| ---                | ---                 |
|                    |                     |
|                    |                     |
|                    |                     |
|                    |                     |
|                    |                     |

APPROVED BY COUNCIL / CLIENT

|          |      |   |                        |
|----------|------|---|------------------------|
| 17-07-21 | B.M. | A | ISSUED FOR INFORMATION |
| 07-10-21 | B.M. | B | ISSUED FOR TENDER      |
|          |      |   |                        |
|          |      |   |                        |
|          |      |   |                        |
|          |      |   |                        |



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MOKOPANE

DRAWING TITLE

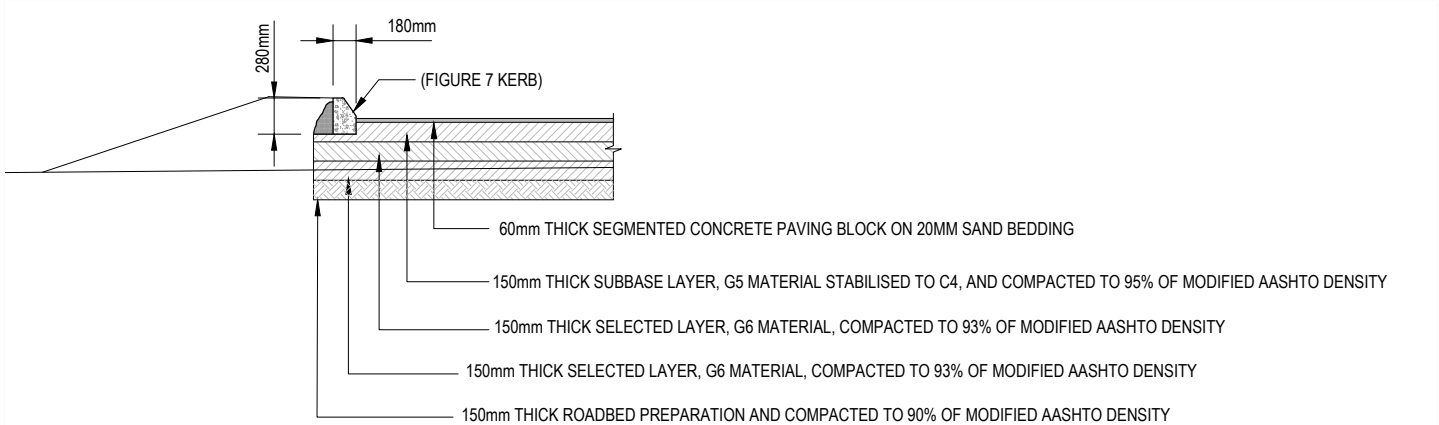
NEW STAFF PARKING LOT  
LAYOUT

APPROVED BY BVI

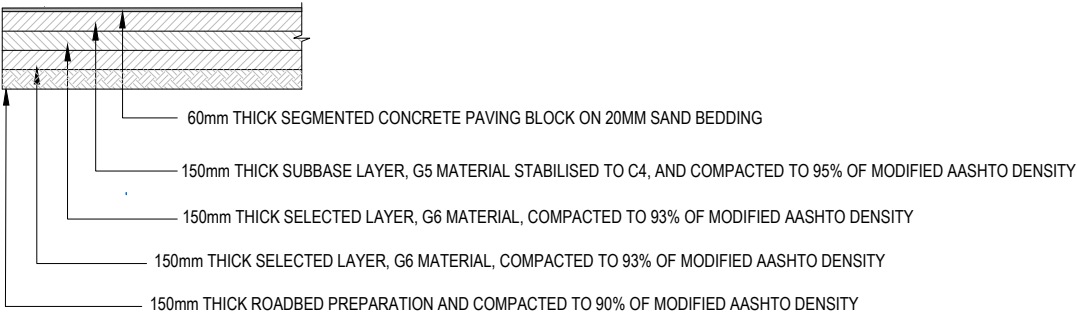
| ENGINEER/TECHNOLOGIST |           | REG. NO. | DATE                      |
|-----------------------|-----------|----------|---------------------------|
| SCALE                 | AS SHOWN  | DRAWN    | M.A TEMBE                 |
| DESIGNED              | M.A TEMBE | CHECKED  | B. MATYEKA                |
| PLAN NUMBER           |           | REV. NO. | DATE SAVED                |
| 34398-02-110-02-01    |           | B        | 19/10/2021<br>MassiquiniT |

A1

P:\34398-02\16 Drawings\16.4 Civil\110 - Roads\34398-02-110-02-01-RB.dwg



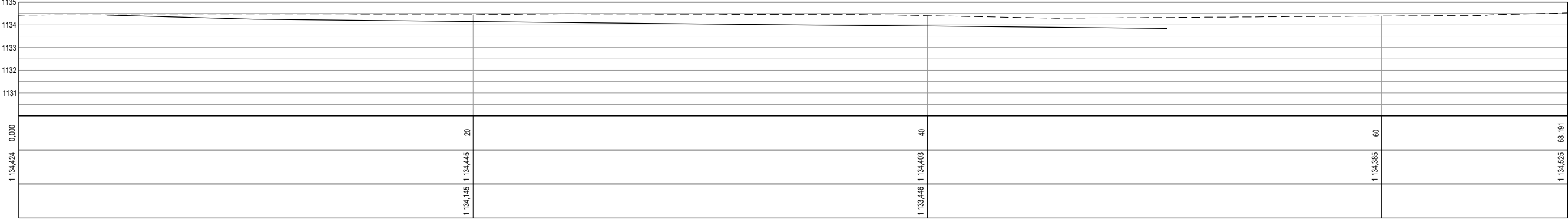
PAVEMENT DESIGN - PARKING AREAS



PAVEMENT DESIGN - WALK WAY

| LEGEND                    |
|---------------------------|
| --- NATURAL GROUND LEVELS |
| — FINAL ROAD LEVELS       |

| DISTANCE (m) |
|--------------|
| 0.000        |
| 1134.424     |
| 1134.424     |

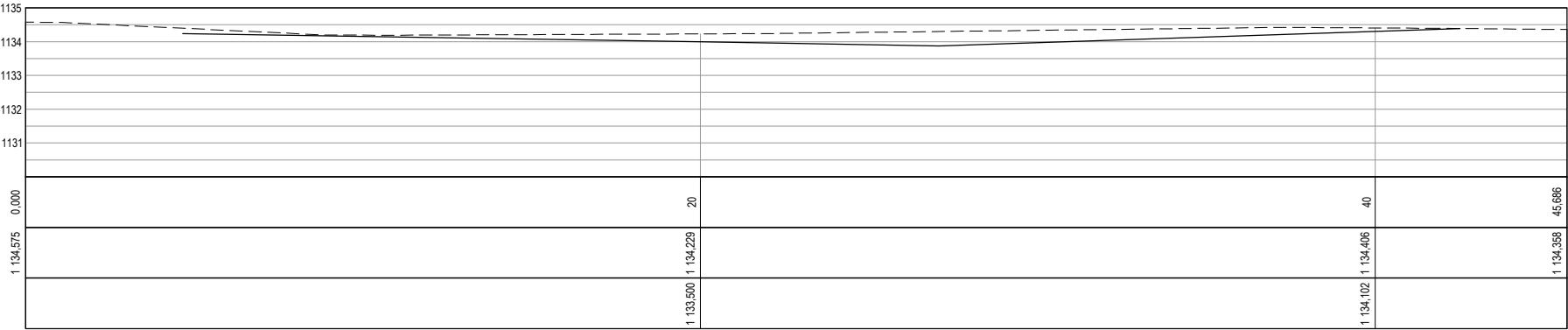


SECTION C-C

SCALE 1:100

| LEGEND                    |
|---------------------------|
| --- NATURAL GROUND LEVELS |
| — FINAL ROAD LEVELS       |

| DISTANCE (m) |
|--------------|
| 0.000        |
| 1134.575     |
| 1134.575     |



SECTION D-D

SCALE 1:100

|                                                              |  |                                      |  |                                        |  |                                                                                       |                                                                                                                                                                  |                                       |  |    |  |
|--------------------------------------------------------------|--|--------------------------------------|--|----------------------------------------|--|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--|----|--|
| DO NOT SCALE DRAWING<br>IF IN DOUBT, REFER TO DRAWING OFFICE |  | APPROVED BY COUNCIL / CLIENT         |  | 21-09-21 B.M. A ISSUED FOR INFORMATION |  |  | <br>GREEN BUILDING COUNCIL<br>SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE | APPROVED BY BVI                       |  |    |  |
| ---                                                          |  |                                      |  | 07-10-21 B.M. B ISSUED FOR TENDER      |  |                                                                                       |                                                                                                                                                                  | ENGINEER/TECHNOLOGIST REG. NO. DATE   |  |    |  |
| REFERENCE DRAWINGS                                           |  | CITY ENGINEER / CLIENT REG. NO. DATE |  |                                        |  |                                                                                       |                                                                                                                                                                  | SCALE AS SHOWN DRAWN M.A TEMBE        |  |    |  |
| NUMBER DRAWING DESCRIPTION                                   |  |                                      |  |                                        |  |                                                                                       |                                                                                                                                                                  | DESIGNED M.A TEMBE CHECKED B. MATYEKA |  |    |  |
| 34398-02-110-01-01 NEW VISITORS PARKING LOT LAYOUT           |  | AMENDMENTS CODE                      |  |                                        |  |                                                                                       |                                                                                                                                                                  | PLAN NUMBER REV. NO. DATE SAVED       |  |    |  |
|                                                              |  | A-Y / : REPORT/DESIGN/TENDER         |  | /A : BY CLIENT                         |  |                                                                                       |                                                                                                                                                                  | 34398-02-111-01-01 B 13/10/2021       |  | A1 |  |
|                                                              |  | 0-99 / : CONSTRUCTION                |  | /B : BY ARCHITECT                      |  |                                                                                       |                                                                                                                                                                  | MassiquiniT                           |  |    |  |
|                                                              |  | Z / : AS BUILT                       |  | /C : BY MECHANICAL OR ELECTRICAL       |  |                                                                                       |                                                                                                                                                                  |                                       |  |    |  |
|                                                              |  |                                      |  | /D : BY BVI                            |  |                                                                                       |                                                                                                                                                                  |                                       |  |    |  |
|                                                              |  |                                      |  | /E : BY OTHER ( )                      |  |                                                                                       |                                                                                                                                                                  |                                       |  |    |  |