PROPOSED RESIDENTIAL 3 DEVELOPMENT ON ERF 502, SANDRINGHAM

ROADS AND CIVIL ENGINEERING SERVICES

PRELIMINARY DESIGN REPORT

DATE	MARCH 2018
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CLIENT	WEINPROP INVESTMENTS

CESA

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		Signature			

PROPOSED RESIDENTIAL 3 DEVELOPMENT

ERF 502 SANDRINGHAM

ROADS AND CIVIL ENGINEERING SERVICES

PRELIMINARY DESIGN REPORT

1. INTRODUCTION

A Residential 3 development is proposed on Erf 502 Sandringham,

The development is zoned Residential 3 and will be rezoned Business 1 in order to include for a small area to be used for Retail. The development will comprise 57 Apartment units of average area 98 square meters and Retail area of 390 square meters.

The total area of the site is 4760 square meters and the density will be 120 Residential 3 units per hectare.

The project developers, Weinprop Investments, have appointed Consultauri (Pty) Ltd to attend to the design of the roads and civil engineering services for the development.

This report outlines the design parameters, standards and technical approach to be adopted for the access, roads, stormwater management, and sewer and water reticulation.

2. DESIGN AND CONSTRUCTION STANDARDS

The roads and civil engineering services for the development will be designed in accordance with the Guidelines for the Provision of Engineering Services and Amenities in Residential Township Development (Red Book) as issued by the National Housing Board.

The designs will also adhere to the guidelines and requirements of the Johannesburg Roads Agency and Johannesburg Water Limited.

3. LOCALITY AND TOPOGRAPHY

The development is situated on the south eastern corner of Anne Street and George Avenue, Sandringham, Johannesburg. Anne Street continues around the south western and southern boundary of the site.

The topography falls from north to south at an average gradient of approximately 7,5 percent.

4. TRAFFIC IMPACT ASSESSMENT AND ACCESS

Access to the development will be off Anne Street at the south eastern corner of the site.
The access will be 6m wide with barrier kerbs to a 6,5m radius bellmouth.

A traffic impact assessment for the development will be submitted by others under separate cover. Stacking distance and any additional lane widening requirements will be implemented in accordance with the recommendations of the approved assessment.

Pavement Structure:

The pavement classification of the access will be Category UC Class ES 0,3.
The actual pavement structure will comply with Category UB Class ES1 as follows:

30mm Asphalt Wearing Course
150mm G2 Graded Crushed Stone Base
150mm C4 Stabilised Subbase
Subgrade Layer(s) dependent on in-situ material classification and CBR

5. INTERNAL ROADS

The internal roads to the development will provide the standard minimum 12m parking module of a 7m wide access and 5m deep parking bay.

All roads will be kerbed on both sides with SABS Figure 3 pre-cast concrete barrier kerbs.

200mm insitu concrete channels will be provided against the kerb face on the low side of the road crossfall.

Pavement Structure:
The pavement classification of the internal roads will be Category UC Class ES 0,3. and the proposed pavement structure is as follows:

80mm Interlocking Block Paving
125mm C4 Stabilised Subbase
Subgrade Layer(s) dependant on insitu material classification and CBR

6. STORMWATER

The total area of the site is only 4760 square meters and no stormwater attenuation will be required.
Stormwater discharge from the development will be collected in stormwater inlets and piped to a municipal connection manhole at the south eastern corner of the site. The internal system will be designed to accommodate a 1:5 year storm.

As there is no existing municipal stormwater pipe at the connection position in Anne Street, a new stormwater outfall will be constructed. This outfall will be layed from the south eastern corner of the site to the nearest existing stormwater kerb inlet, at the corner of Anne Street and Elizabeth Avenue, over a distance of approximately 100 meters.

The outfall will be 450mm diameter Class 100D and will be positioned in the northern verge of the Anne Street road reserve.

7. WATER RETICULATION

Water Connection:

The water connection to the site will be from the existing 150mm diameter municipal reticulation main which runs along the western edge of the Anne Street road reserve.

A connection off the municipal main of maximum 100mm diameter will be required. The actual size will be determined by the fire protection requirements.

The proposed connection is indicated on attached Drawing No. **0927 200 SER 001**

Internal Reticulation:

The internal water pipes will remain the property of the development and will not be taken over by Johannesburg Water. The domestic internal water reticulation system will be of Class 10 HDPE pipes of up to 80mm diameter. Minimum cover to watermains will be 800mm.

The reticulation system will be designed to provide for a minimum residual head of 24m under peak domestic flow conditions, and 15m under peak domestic plus fire flow conditions.

Construction of all watermains and connections will be in accordance with Johannesburg Water and SABS 1200 specifications.

Water Demand:

Based on the anticipated areas and projected demand rates, the average daily demand for the development will be as follows:

Water demand as per Johannesburg Water Guideline Clause 7.1.1 Table 2::

57 Residential 3 Units @ 800 liters per day per unit -	Ave.Daily Demand:	45,6 kl

Business and Commercial: 390m2 Commercial Units @1650 litres per day per 500m2	Ave. Daily Demand	1,3 kl
	Total Ave Daily Demand	46,9kl

Based on a peak factor of 4 the maximum peak flow demand will be 2,2 litres per second.

Impact on Capacity:

The connection to the development will be off an existing 150mm ring main, which connects to a 300mm main in close proximity to the site in George Avenue. The Johannesburg Water data base indicates that the area is served by the Randjieslaagte reservoir and the static head at the connection position is approximately 55m. The peak flow in the 150mm main is indicated as 21,5 litres per second at a velocity of only 1,2m per second and a peak flow residual head of 49m.. The peak demand from the development will therefore have no negative impact on the surrounding municipal water reticulation system

8. SEWER RETICULATION

Sewer Connection:

Application will be made to Johannesburg Water for a new 100mm diameter sewer connection. This connection will be off the existing 150mm sewer in the Anne street road reserve, adjacent to the south west corner of the site.

The existing connection is indicated on attached Drawing No. **0927 200 SER 001**

Internal Reticulation:

The internal sewer pipes will remain the property of the development and will not be taken over by Johannesburg Water.

The internal sewer reticulation system will be of 110mm Maincore or similar UPVC sewer pipes with minimum hoop stiffness of 400kPa. Manholes will be of precast concrete ring structures, in accordance with SABS 1200D standards. Manholes will be provided at a maximum of 80 meter intervals.

Minimum cover to sewers will be 1200mm under roadways and 800mm elsewhere.

Construction of all sewers, connections and manholes will be in accordance with Johannesburg Water and SABS 1200 specifications.

Sewerage Discharge:

Based on the anticipated areas and projected demand rates, the average daily demand for the development will be as follows:

Sewerage discharge as per Johannesburg Water Guideline Clause 8.1.1 Table 10:

57 Residential 3 Units @ 700 liters per day per unit -	Ave.Daily Discharge:	39,9 kl
390m2 Commercial Units @1200 litres per day per 500m2	Ave. Daily Discharge	0,94 kl
	Total Ave Daily Discharge	40,84kl

Based on a peak factor of 2,5 the maximum peak flow demand will be 1,18 litres per second.

Impact on Capacity:

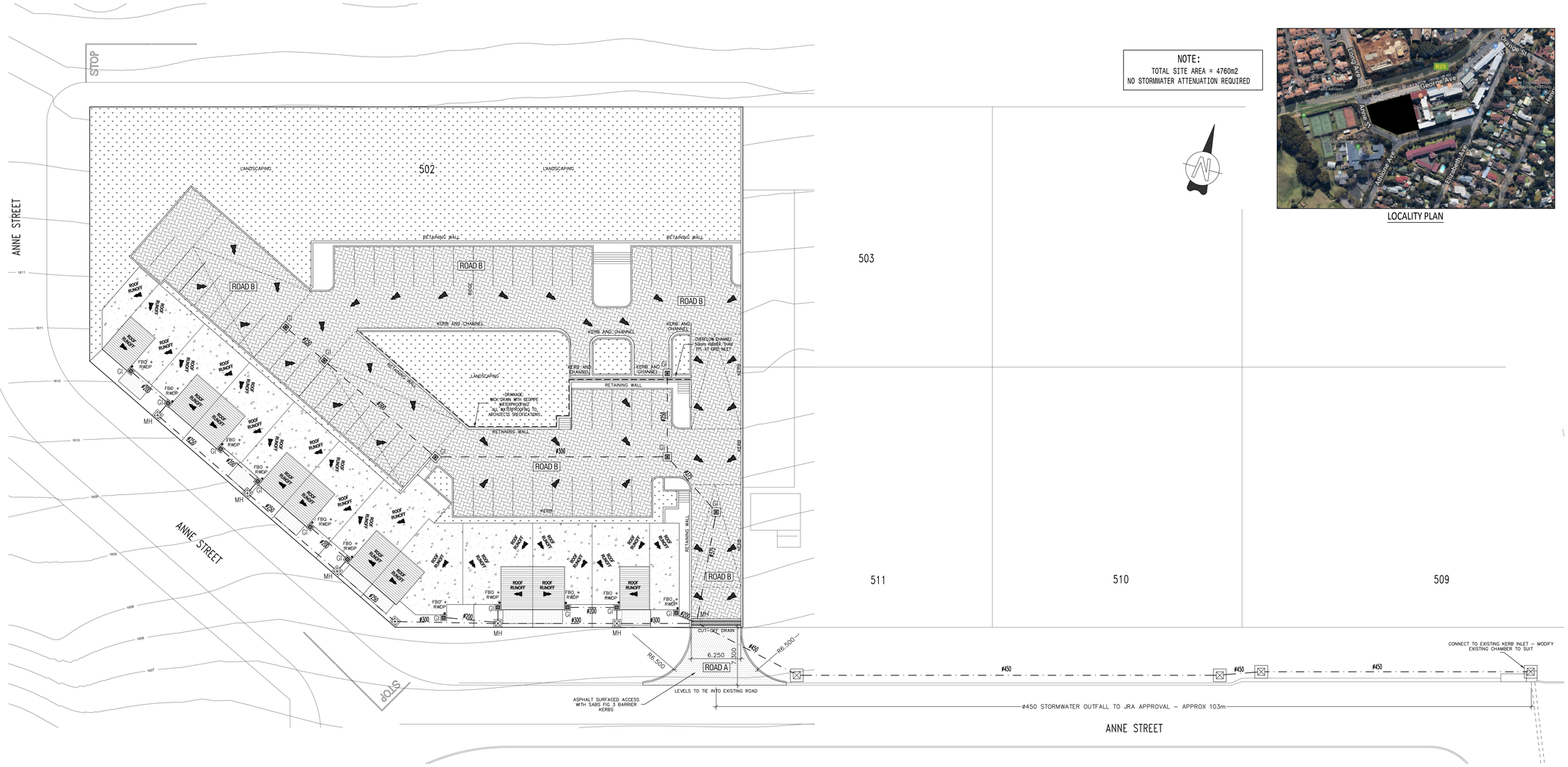
The site sewer connection will be off an existing 150mm diameter collector sewer main. The peak flow from the development represents less than 2,5% of the estimated flow capacity of this main at the point of the connection, and the impact on the sewerage infrastructure downstream of the development is therefore insignificant.

9. ATTACHMENTS:

Dwg 0927 200 SW 001 :Proposed Access and Stormwater Layout
Dwg 0927 200 SER 001 :Proposed Water and Sewer Connections

Prepared By:

R. M. Smith Pr Eng.
Director



NOTE:
TOTAL SITE AREA = 4760m2
NO STORMWATER ATTENUATION REQUIRED

LOCALITY PLAN

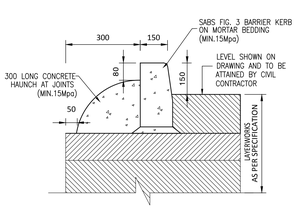
NOTES : ROADS

1. ROAD SETTING OUT TO BE IN ACCORDANCE WITH THE DIMENSIONS AND COORDINATES INDICATED ON DRAWING.
2. ALL IMPORTED MATERIAL TO BE TO SPECIFICATION. MATERIAL CLASSIFICATION, CBR AND UCS TESTS TO BE PROVIDED.
3. KERBING, LAYERWORKS AND SURFACING TO BE CONSTRUCTED TO SABS 1200 SPECIFICATIONS. LEVEL TOLERANCES SHALL BE TO DEGREE OF ACCURACY II.
4. ALL ROAD LEVEL INDICATED EQUALS FINISHED ROAD SURFACE LEVELS.
5. COMPACTION TESTS: TESTING OF COMPACTION AND MATERIALS SHALL BE UNDERTAKEN AT THE FOLLOWING RATES OF FREQUENCY:

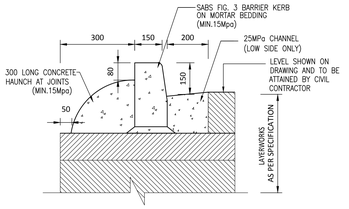
FIELD DENSITY TESTING:	1 TEST FOR EVERY 200m² FOR EACH LAYER. A MINIMUM OF 3 TESTS SHALL BE TAKEN PER LOT OR DAYS WORK. CALIBRATION OF TESTING EQUIPMENT MUST BE CERTIFIED BY AN INDEPENDENT LABORATORY.
MOD AASHTO DENSITY: MATERIAL	3 TESTS FOR EVERY 500 CUBIC METERS OF SIMILAR
NATURAL CBR AND INDICATOR TESTS: SIMILAR MATERIAL	1 TEST FOR EVERY 500 CUBIC METERS OF

NOTES : STORMWATER

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH SABS 1200 SPECIFICATIONS.
2. ALL CONCRETE STORMWATER PIPES TO BE OGEE JOINTS NETLON WRAPPED, CLASS 100D UNDER ROAD SURFACE, CLASS 75D ELSWHERE.UNLESS OTHERWISE SHOWN
3. PIPE BEDDING TO BE TO SABS 1200 LB1 – CLASS C
4. ALL KERB INLETS AND MANHOLES TO BE STANDARD PROJECT DETAILS.
5. CONTRACTOR TO ACQUIRE ALL NECESSARY WAYLEAVES PRIOR TO CONSTRUCTION OF EXTERNAL WORKS.



TYPICAL KERB DETAIL (WITHOUT CHANNEL)

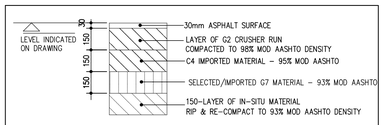


TYPICAL KERB DETAIL WITH CHANNEL)

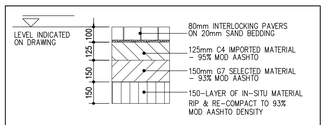
KERB DETAIL WITH CHANNEL AND WITHOUT CHANNEL

LEGEND:

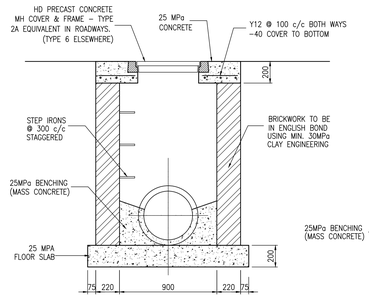
- SABS FIG 3 BARRIER KERB
- SABS FIG 3 BARRIER KERB AND CHANNEL
- PROPOSED STORMWATER PIPES
- STORMWATER MANHOLE — MH
- ASPHALT SURFACE (ROAD A)
- PAVING SURFACE (ROAD B) 80mm BLOCK PAVING
- RIDGE LINES



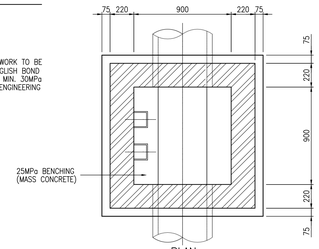
EARTHWORKS SPECIFICATION
THUS: ROAD A



EARTHWORKS SPECIFICATION
THUS: ROAD B

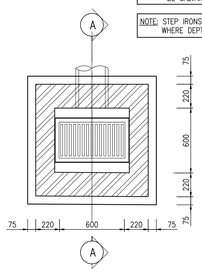


SECTION
STORMWATER MANHOLE DETAIL

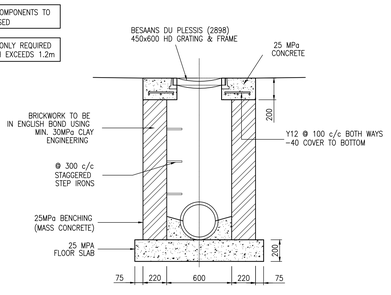


PLAN
STORMWATER MANHOLE DETAIL

NOTE: ALL STEEL COMPONENTS TO BE GALVANISED
NOTE: STEP IRONS ONLY REQUIRED WHERE DEPTH EXCEEDS 1.2m



PLAN
600 X 450 GRID INLET DETAIL



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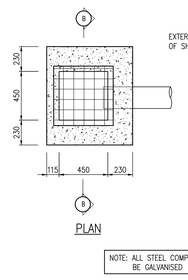
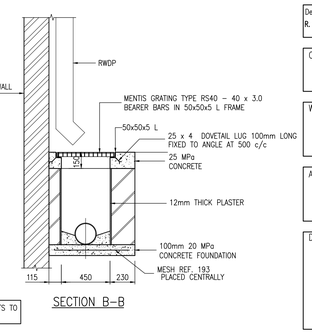
600 X 450 GRID INLET DETAIL



PLAN

NOTE: ALL STEEL COMPONENTS TO BE GALVANISED



SECTION B–B

450 X 450 RWDP GRID INLET DETAIL

PROJECT No.	AREA	DISP.	DWG. No.	REV.
0927	200	SW	001	A

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Drawing No.	Reference

Rev	Date	Description	By	Chk'd	App'd
A	2018 03 23	ISSUED FOR INFORMATION	MDP	RMS	MJP

Designed	Drawn	Checked	Approved	Date	Scale
R. SMITH	S. JONES	L. ALLEN	M. PHILLIPS	2018 03 25	1:200

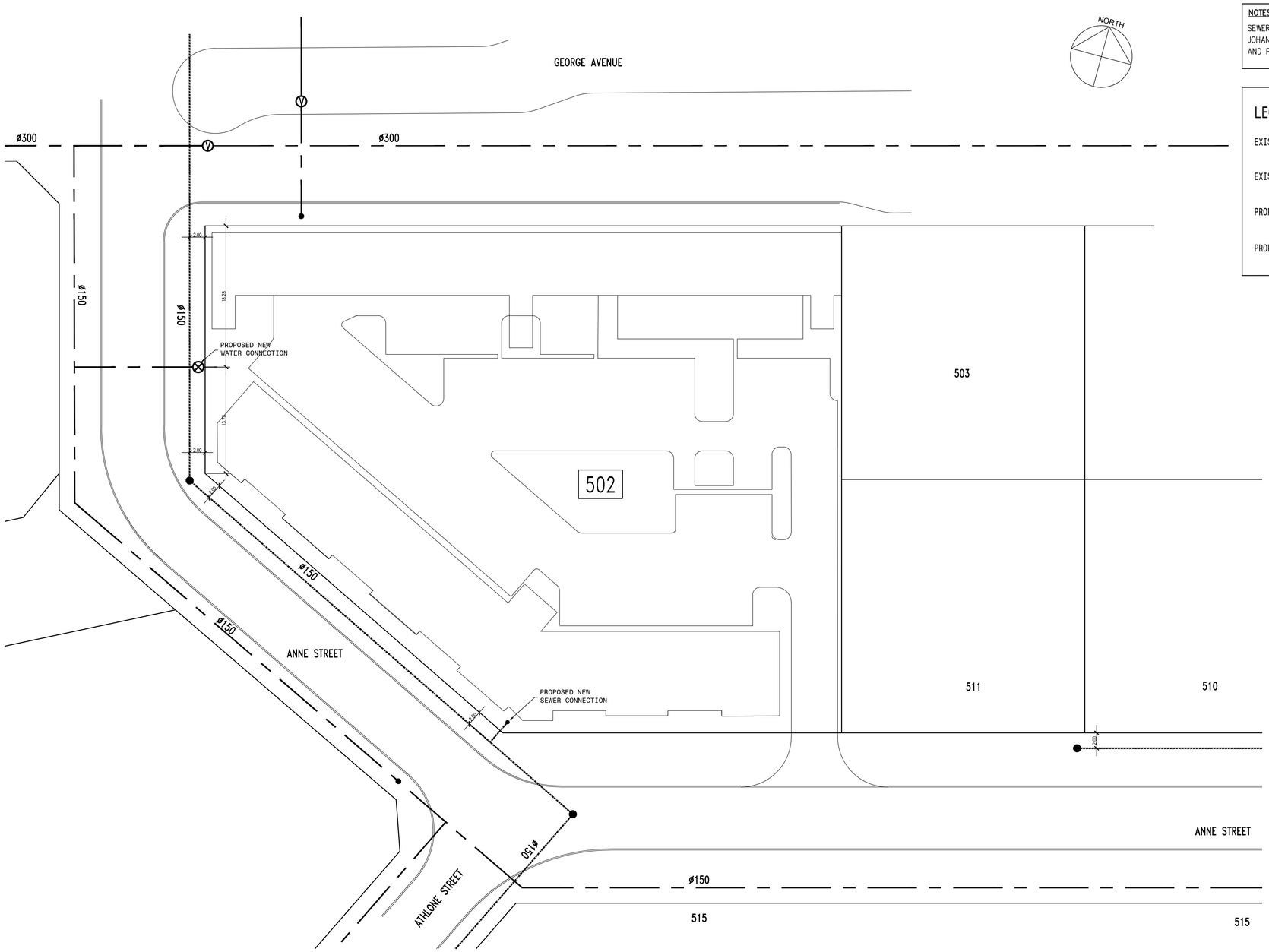
Contract No.
0927 - OAKWOOD TERRACES

Works
PROPOSED RESIDENTIAL 3 DEVELOPMENT

Area
(200) - OAKWOOD TERRACES
ERF 502 SANDRINGHAM

Drawing Title
EXTERNAL WORKS
ROADS AND STORMWATER LAYOUT AND DETAILS

PROJECT No.	AREA	DISP.	DWG. No.	REV.
0927	200	SW	001	A



NOTES :

SEWER AND WATER CONNECTIONS TO BE INSTALLED BY JOHANNESBURG WATER ON RECEIPT OF APPLICATION BY DEVELOPER AND PAYMENT OF CONNECTION FEES

LEGEND

- EXISTING MUNICIPAL WATERMAIN — GV — FH
- EXISTING MUNICIPAL SEWER
- PROPOSED SEWER CONNECTION
- PROPOSED WATER CONNECTION

PROJECT No.	AREA	DISP.	DWG. No.	REV.
0927	200	SER	001	A

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ARCHITECT

NOTES

Drawing No.	Reference

Rev	Date	Description	By	Chk'd	App'd
			LA	RMS	MJP
A	2018 03 15	ISSUED FOR INFORMATION	SAJ	RMS	MJP

Designed	Drawn	Checked	Approved	Date	Scale
RMS	SAJ	RMS	MJP	2018 MARCH	1: 250

Client
-

Works
ERF 502 SANDRINGHAM

Area
(200) - SITE GENERAL

Drawing Title
PROPOSED SEWER AND WATER CONNECTIONS
PLANS SECTIONS AND DETAILS

PROJECT No.	AREA	DISP.	DWG. No.	REV.
0927	200	SER	001	A