CONTRACT NUMBER: JW14402
CONSTRUCTION OF 2,5ML WATER TOWER & PUMP STATION
AT FOREST HILL, JOHANNESBURG-SOUTH

CONSULTANT

TRI-M CONSULTING ENGINEERS

WEWORK

155 WEST STREET

SANDOWN, SANDTON

JOHANNESBURG

EMPLOYER

65 NTEMI PILISO STREET

NEWTOWN

JOHANNESBURG

2107

Tel: 011 688 1400

VOLUME 4 -TENDER DRAWINGS

AUGUST 2024

CONSULTING ENGINEERS:	DESIGNED	P. S. Botha	05/08/2024
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	05/08/2024
WEWORK 155 WEST STREET SANDTON, JOHANNESBURG	CHECKED	P. S. BOTHA	05/08/2024
	APPROVED BY: P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.		
CLIENT POSTAL ADRESS: JOHANNESBURG WATER P O BOX 61542 MARSHALLTOWN 2107	CHECKED		
		SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
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JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

LOCALITY PLAN

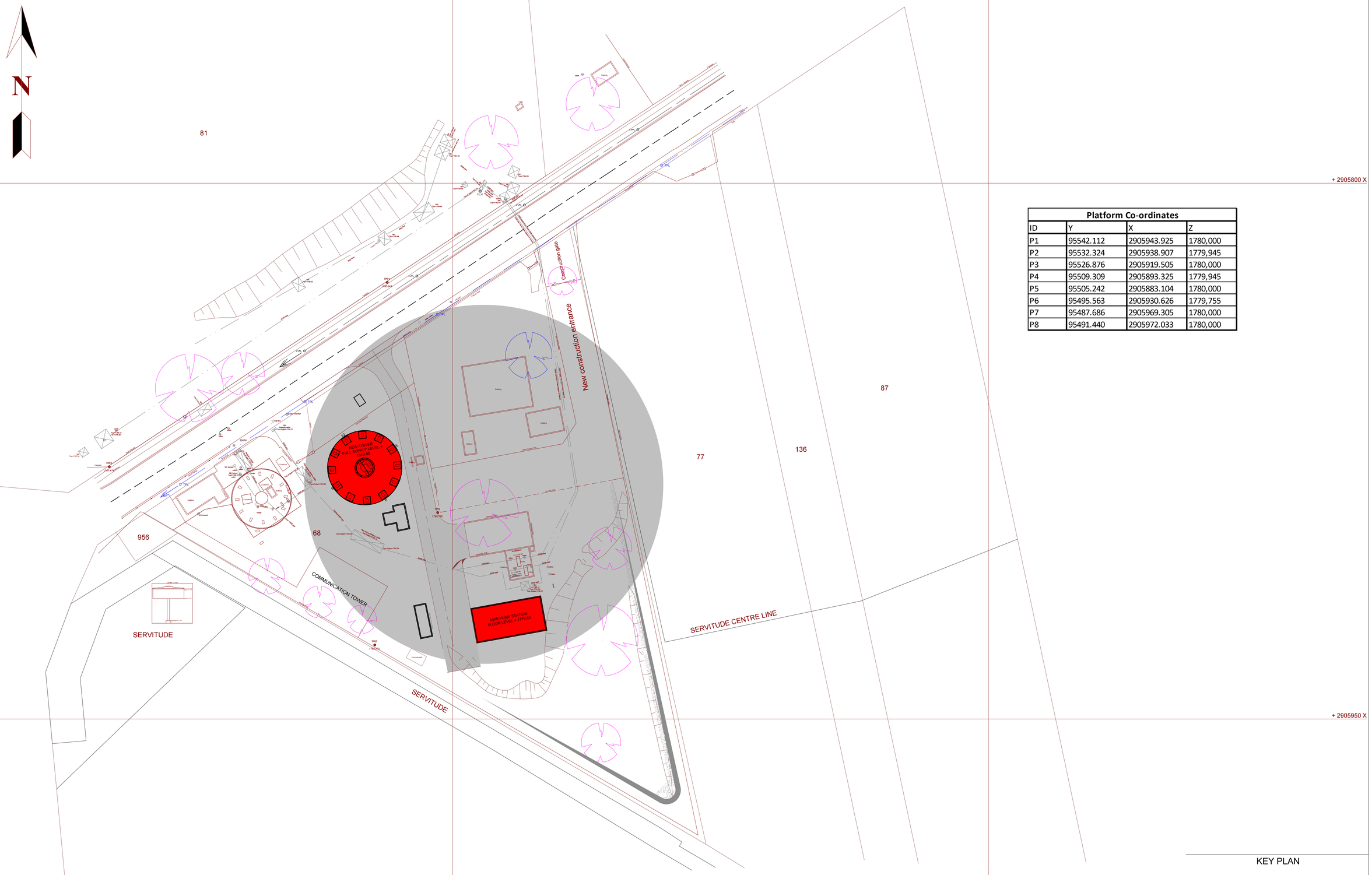
SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE
PROJECT SURVEYOR:		CHECKED			
		APPROVED BY:			
DATE:			SIGNATURE	DATE	
CCTV INFORMATION		APPROVAL BY JW PLANNING			
CCTV COMPANY:		CHECKED			
		APPROVED BY:			
DATE:			SIGNATURE	DATE	

REV:	DESCRIPTION	DATE:
0	TENDER PURPOSES	05/08/2024

JW14402	0	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET 1	OF	1	
ORIGINAL PAGE SIZE				

FILE No.

TURFFONTEIN 100 IR



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P6	95495.563	2905930.626	1779,755
P7	95487.686	2905969.305	1780,000
P8	95491.440	2905972.033	1780,000

KEY PLAN

CONSULTING ENGINEERS

TRI-M CONSULTING ENGINEERS

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155 WEST STREET,
SANDTON,
JOHANNESBURG.

CLIENT POSTAL ADDRESS:
P O Box 61542
MATSHALLTOWN
2107

DESIGNED	P. S. Botha		
DRAWN	J. Nel		
CHECKED	P. S. Botha		
APPROVED BY:			
P. S. Botha	SIGNATURE	DATE	
ECSA REG. No.	730401		
CHECKED			
	SIGNATURE	DATE	

Johannesburg Water

PHYSICAL ADDRESS:
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NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY

NEW WATER TOWER & PUMP STATION

GENERAL SITE PLAN

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE
CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

SCALE		AMENDMENTS	
1: 500	REV:	DESCRIPTION	DATE:

SCALE - 1 : 500

JW14402 — CONTRACT No.

S01 — DRAWING No.

0 — REV.

A1 — ORIGINAL PAGE SIZE

SHEET 1 OF 7

FILE No.

RIFLE RANGE ROAD

956

68

COMMUNICATION TOWER

SERVITUDE

77

136

87

Construction gate

New construction entrance

Connect to existing bypass

Connect to existing reticulation

Valve chamber

New 500mmØ to tower 1

New Elec cable

Elec cable

New 700Ø suction pipe

New 700Ø pump line to towers

NEW PUMP STATION
FLOOR LEVEL
= 1779.80

JB 1
IL = 80.00

JB 2
IL = 79.50

JB 3
IL = 78.00

JB 4

JB 5

JB 6

450Ø/75D

300Ø/75D

KEY PLAN

CONSULTING ENGINEERS	DESIGNED	P. S. Botha	
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	
WEWORK, 155 WEST STREET, SANDTON, JOHANNESBURG.	CHECKED	P. S. Botha	
	APPROVED BY: P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.	730401	
CLIENT POSTAL ADDRESS: P O Box 61542 MATSHALLTOWN 2107	CHECKED		
		SIGNATURE	DATE

PHYSICAL ADDRESS:
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NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY

NEW WATER TOWER & PUMP STATION

GENERAL SERVICES LAYOUT

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 250	REV:	DESCRIPTION	DATE:
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

SCALE - 1 : 250

JW14402 — PROJECT No.

S02 — DRAWING No.

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A1 — ORIGINAL PAGE SIZE

SHEET 2 OF 7

FILE No.

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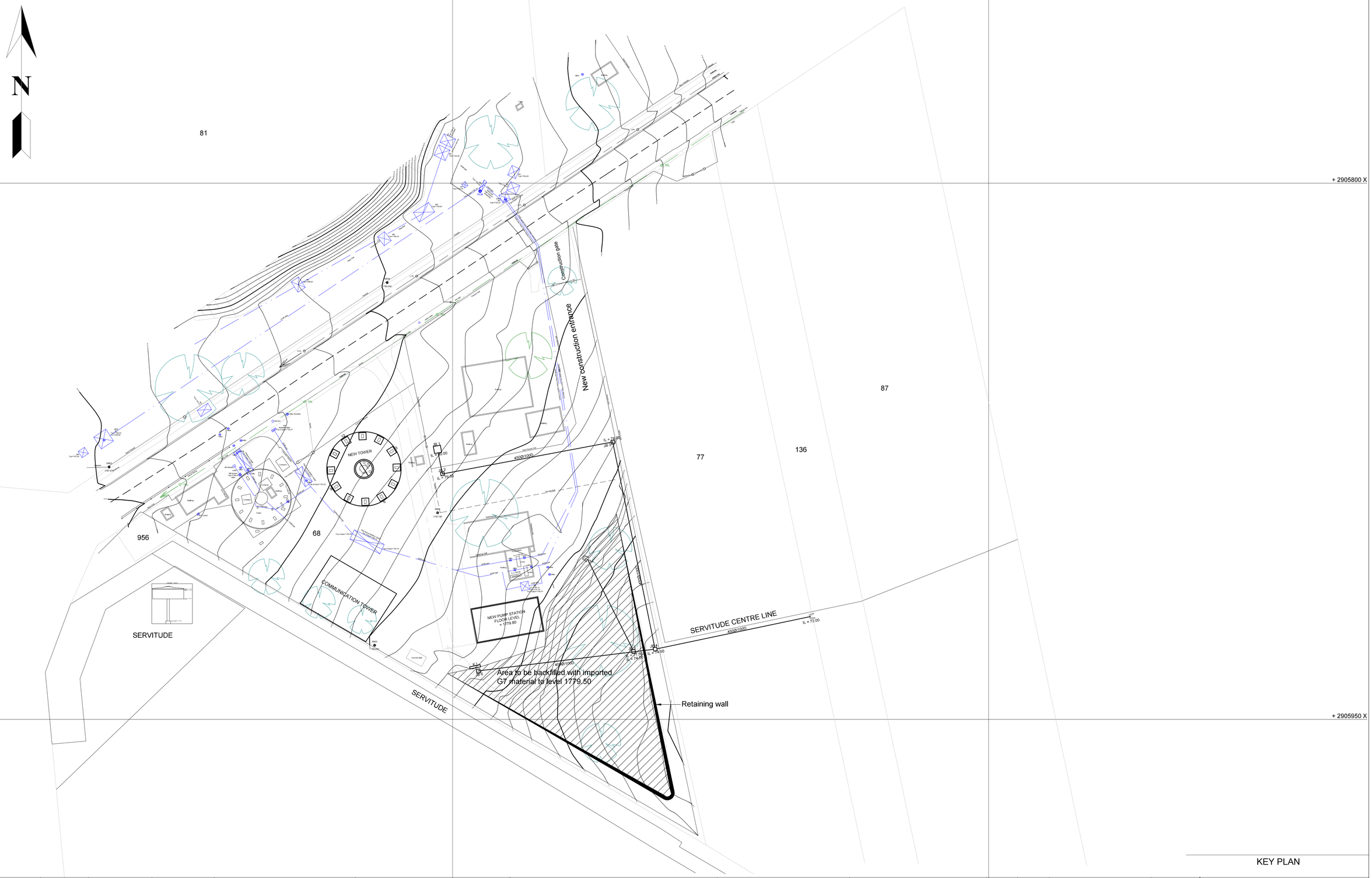

KEY PLAN

CONSULTING ENGINEERS	DESIGNED	P. S. Botha	.
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	.
WEWORK 155 WEST STREET, SANDTON, JOHANNESBURG.	CHECKED	P. S. Botha	.
	APPROVED BY:		.
	P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.	730401	
CLIENT POSTAL ADDRESS: P O Box 61542 MATSHALLTOWN 2107	CHECKED		
		SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESS:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY

NEW WATER TOWER & PUMP STATION

BULK EATHWORKS AND SITE PREPARATIONS

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE
CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
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DATE:			SIGNATURE	DATE

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JW14402 — CONTRACT No.

S03 — DRAWING No.

0 — REV.

A1 — ORIGINAL PAGE SIZE

SHEET 3 OF 7

FILE No.

TURFFONTEIN 100 IR

KEY PLAN

CONSULTING ENGINEERS

TRI-M CONSULTING ENGINEERS

WEWORK,
155 WEST STREET,
SANDTON,
JOHANNESBURG.

CLIENT POSTAL ADDRESS:
P O Box 61542
MATSHALLTOWN
2107

DESIGNED	P. S. Botha	
DRAWN	J. Nel	
CHECKED	P. S. Botha	
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.	730401	
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESS:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY

NEW WATER TOWER & PUMP STATION

ROAD LAYOUT

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE
CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

SCALE		AMENDMENTS	
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CONTRACT No.	DRAWING No.		REV.	
A1	SHEET 4	OF	7	
ORIGINAL PAGE SIZE				

FILE No.

TURFFONTEIN 100 IR

KEY PLAN

CONSULTING ENGINEERS TRI-M CONSULTING ENGINEERS WEWORK, 155 WEST STREET, SANDTON, JOHANNESBURG.	DESIGNED	P. S. Botha	
	DRAWN	J. Nel	
	CHECKED	P. S. Botha	
	APPROVED BY: P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.	730401	
CLIENT POSTAL ADDRESS: P O Box 61542 MATSHALLTOWN 2107	CHECKED		
		SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESS:
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NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY

NEW WATER TOWER & PUMP STATION

STORMWATER LAYOUT

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE
CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
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SCALE - 1 : 500

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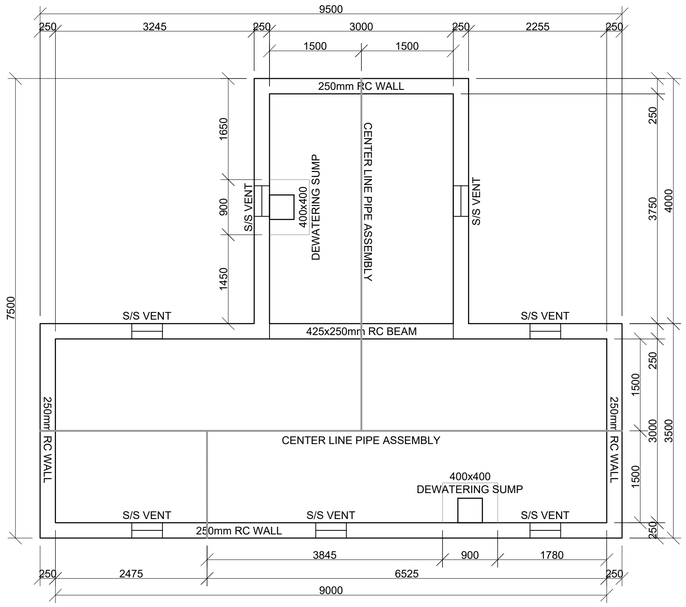

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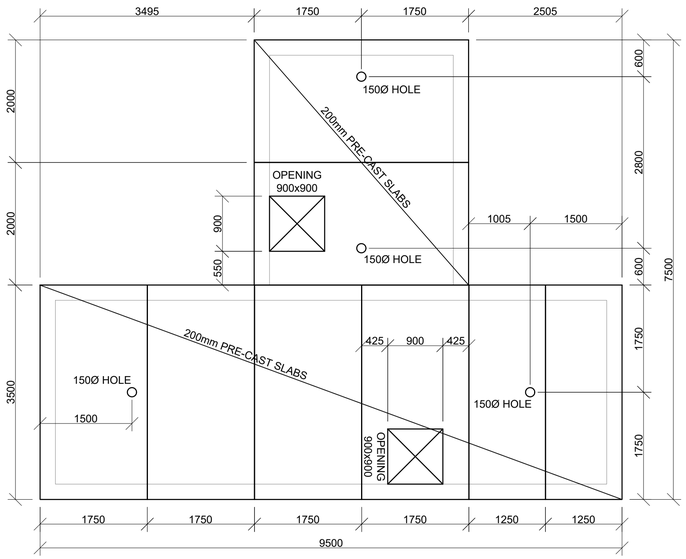

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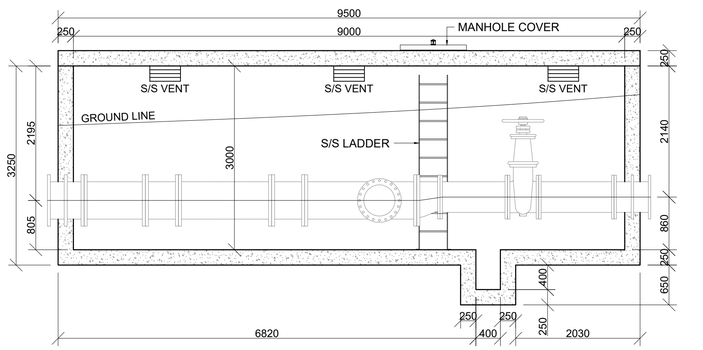
RETICULATION CHAMBER



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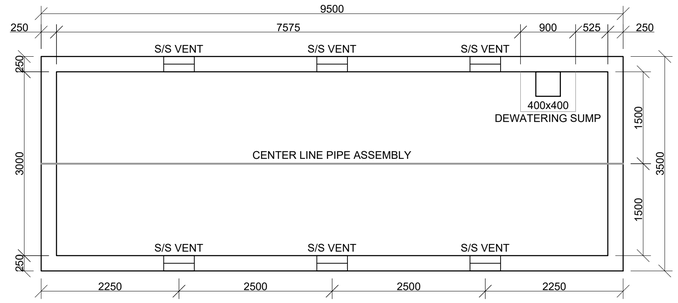

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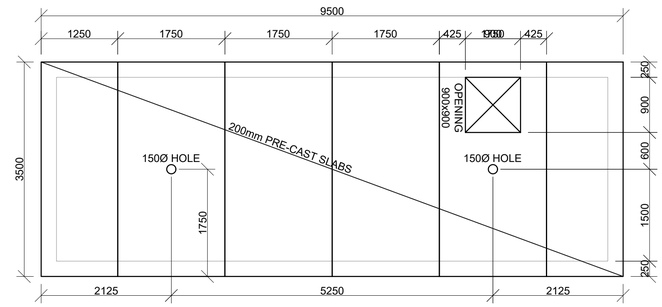

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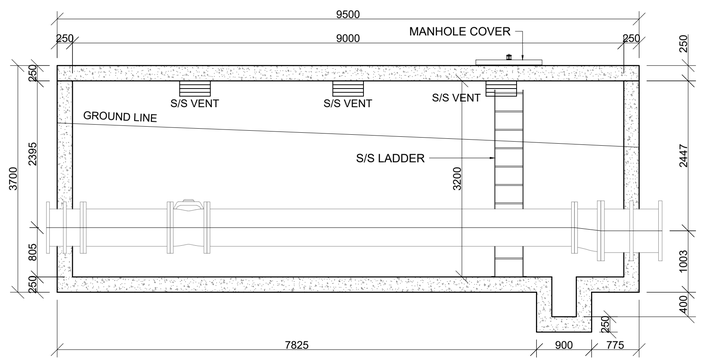

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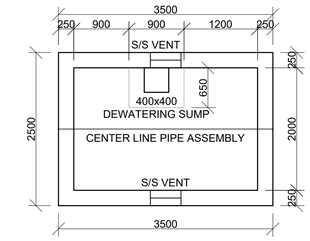
METER CHAMBER



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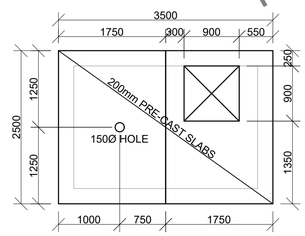

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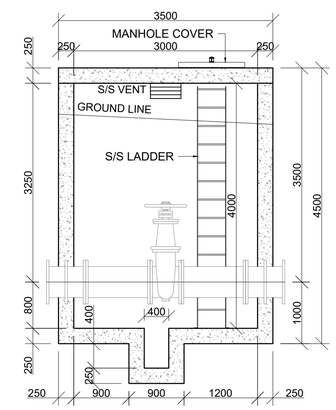

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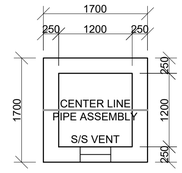
OUTLET CHAMBER



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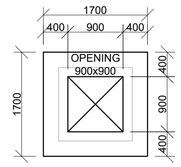

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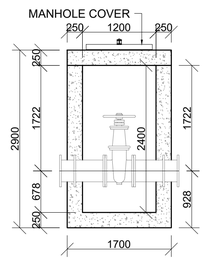

SECTION

BYPASS MANHOLE

FOR TENDER ONLY

1. GENERAL NOTES

1.1 The copyright on this dwg, including the design and details shown hereon, is reserved by the Consulting Engineers.

1.2 No scaling of dimensions from drawings allowed.

1.3 All dimensions and levels are to be verified on site by the contractor before commencing any work.

2. EARTHWORKS NOTES

2.1 All excavations to follow SANS 10400 PART G: Excavations

2.2 Lateral support and shoring of deep excavations to be designed and certified by a professional

2.3 Compacted fill in layers not exceeding 150mm to 97% MOD AASHTO

2.4 Approved insecticide & weedkiller to SABS spec. Code 0124 to sides and under foundations, surface-beds & paving. 10 year underwritten guarantee in favour of client supplied by specialist contractor.

2.5 All foundation excavations to be approved by the Engineer prior to placement of any concrete

2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

3.1 All reinforced concrete to be vibrated

3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

4. REINFORCEMENT NOTES

4.1 Reinforcement detailing based on SANS 10144

4.2 Minimum lapping of reinforcement: 50 x smaller diameter
All laps to be staggered

4.3 Reinforcement to be securely wired at all intersections

4.4 Reinforcement must be formed around, and as close as allowed to holes, and must not be cut
All holes and voids to be checked and approved by the Engineer prior to the placement of any concrete

4.5 Mild steel (R) to comply with SABS 920 type A - Grade 3
High tensile steel (Y) to comply SABS 920 type C - Grade 1

4.6 Bending dimensions in accordance with sans 282:2011
Dimensions are all outside dimensions
Dimension d must allways be greater than 2 x bar dia.
Radius of all bends are standard unless r is given

4.7 All reinforcement to be checked and approved by the Engineer prior to the placement of any concrete
Any reinforcing not inspected before concrete is poured will not be signed off by VBL

4.8 Reinforcement abbreviations:
BW - Both Ways
EF - Each Face
NF - Near Face
FF - Far Face
EW - Each Way
SF - Side Face
T1 - Highest of top layers
T2 - Second highest of top layers
B1 - Lowest of bottom layers
B2 - Second lowest of bottom layers
ALT - Alternative
ABR - Alternative Bar Reversed

5. STRUCTURAL STEEL NOTES

5.1 All steel to be of grade 300WA

5.2 All bolts to be grade 8.8 unless noted

5.3 All welds to be 6mm fillet welds unless noted

5.4 No site welding shall be permitted without the prior consent of the Engineer

5.5 All holes to be drilled, NO flame cutting allowed

5.6 All steelwork to be painted within 6 hours after cleaning with one coat red oxide

5.7 Engineer to inspect manufactured steel components prior to delivery to site

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
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P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
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JOHANNESBURG

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FAX: (011) 688-1529

Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

MANHOLES AND CHAMBERS
CONCRETE LAYOUTS

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25
		APPROVED BY:			
DATE:			SIGNATURE	DATE	
CCTV INFORMATION		APPROVAL BY JW PLANNING			
CCTV COMPANY:		CHECKED			
		APPROVED BY:			
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REV:	AMENDMENTS	DATE:
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CONTRACT NUMBER	DRAWING No.	REV.
JW14402	S06 -	0

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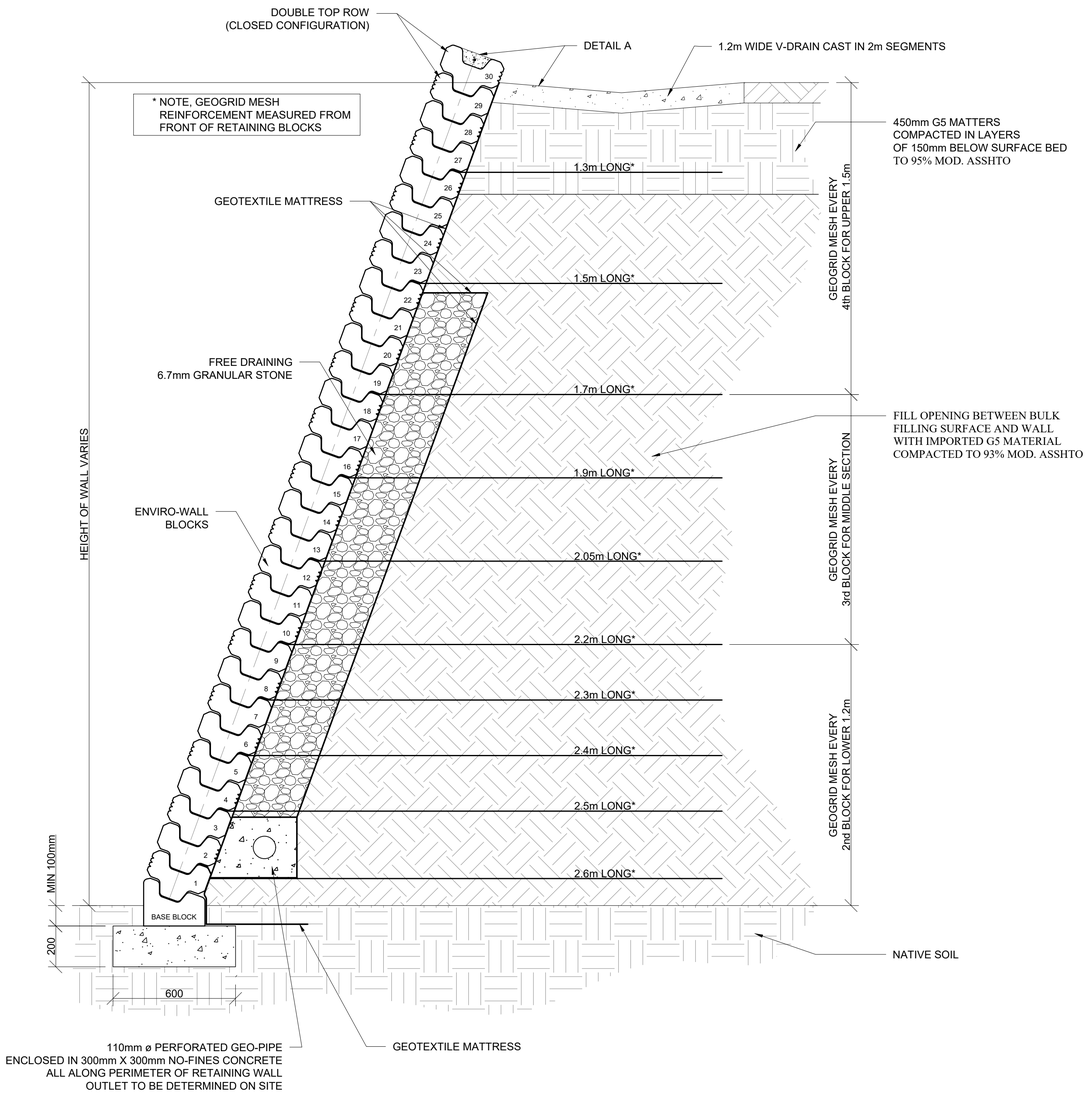
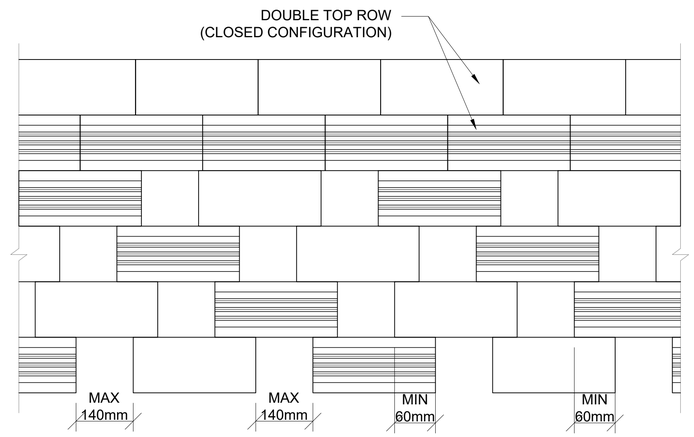


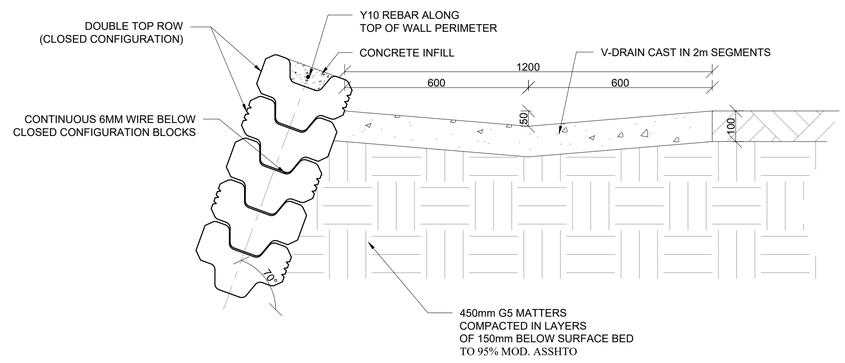
ENVIRO-WALL TYPICAL SECTION

SCALE 1:15



ENVIRO-WALL TYPICAL SECTION

NTS



DETAIL A

SCALE 1:10

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3.4.7 Columns.....35MPa

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3.5.1 Base bottom.....75mm
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3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

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B1 - Lowest of bottom layers
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ALT - Alternative
ABR - Alternative Bar Reversed

FOR TENDER ONLY

CONSULTING ENGINEERS:	DESIGNED	P. S. Botha	05/08/2024
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	05/08/2024
WEWORK	CHECKED	P. S. BOTHA	05/08/2024
155 WEST STREET	APPROVED BY:		
SANDTON, JOHANNESBURG	P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.		
CLIENT POSTAL ADRESS:	CHECKED		
JOHANNESBURG WATER			
P O BOX 61542			
MARSHALLTOWN		SIGNATURE	DATE
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TEL: (011) 688-1400

FAX: (011) 688-1529

Turffontein Corridors of Freedom

Water Upgrade

Foresthill Tower and Pump station

PUMP STATION
RETAINING WALL DETAILS

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE	REV:	AMENDMENTS	DATE:
PROJECT SURVEYOR:		CHECKED			1: 75; 1: 25	0	DESCRIPTION	
		APPROVED BY:					TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	S07	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET 1	OF	1	
ORIGINAL PAGE SIZE				

FILE No.

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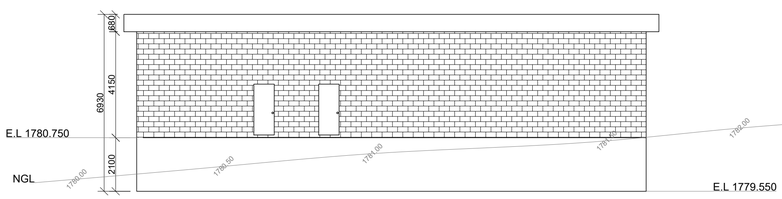
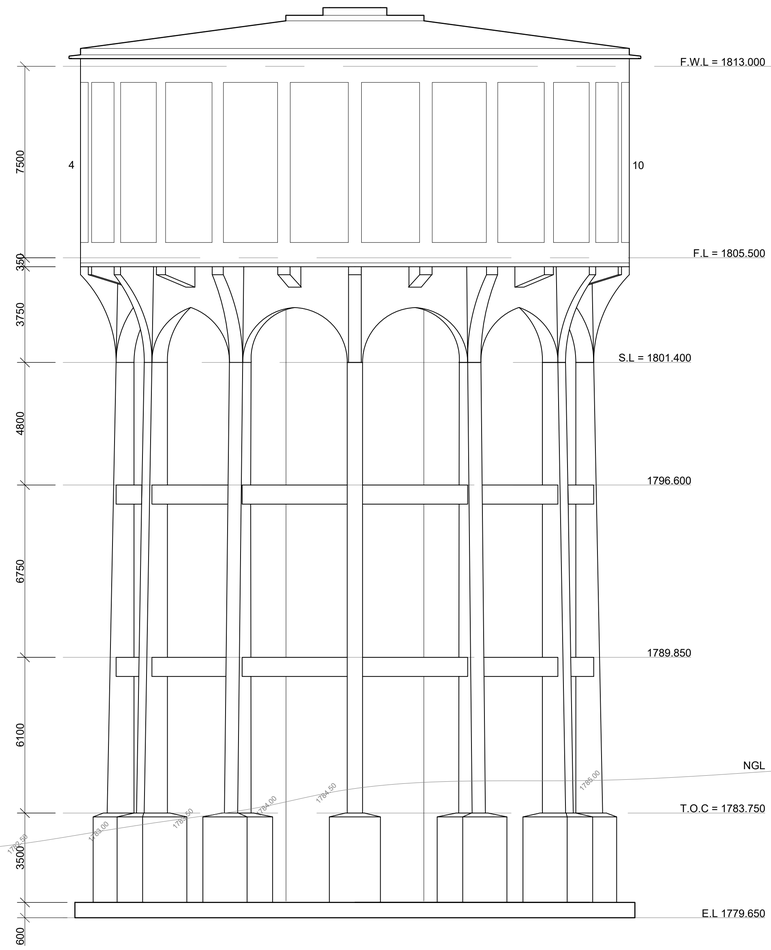


NEW PUMP STATION
SCALE 1:120



NEW TOWER
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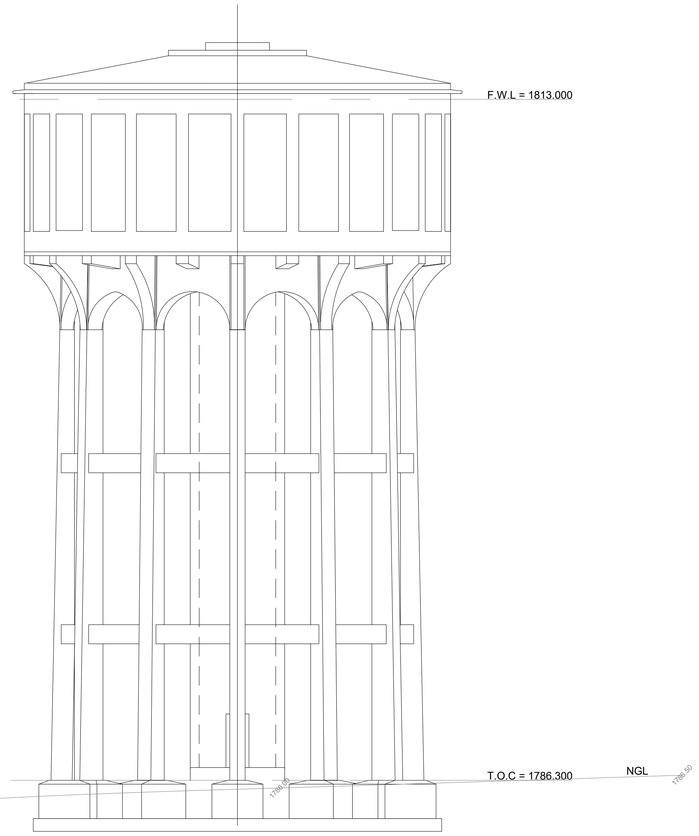

OLD TOWER
SCALE 1:120

CONSULTING ENGINEERS:	DESIGNED	P. S. Botha	05/08/2024
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	05/08/2024
WEWORK	CHECKED	P. S. BOTHA	05/08/2024
155 WEST STREET	APPROVED BY:		
SANDTON, JOHANNESBURG	P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.		
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JOHANNESBURG WATER			
P O BOX 61542			
MARSHALLTOWN		SIGNATURE	DATE
2107			

Johannesburg Water

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JOHANNESBURG

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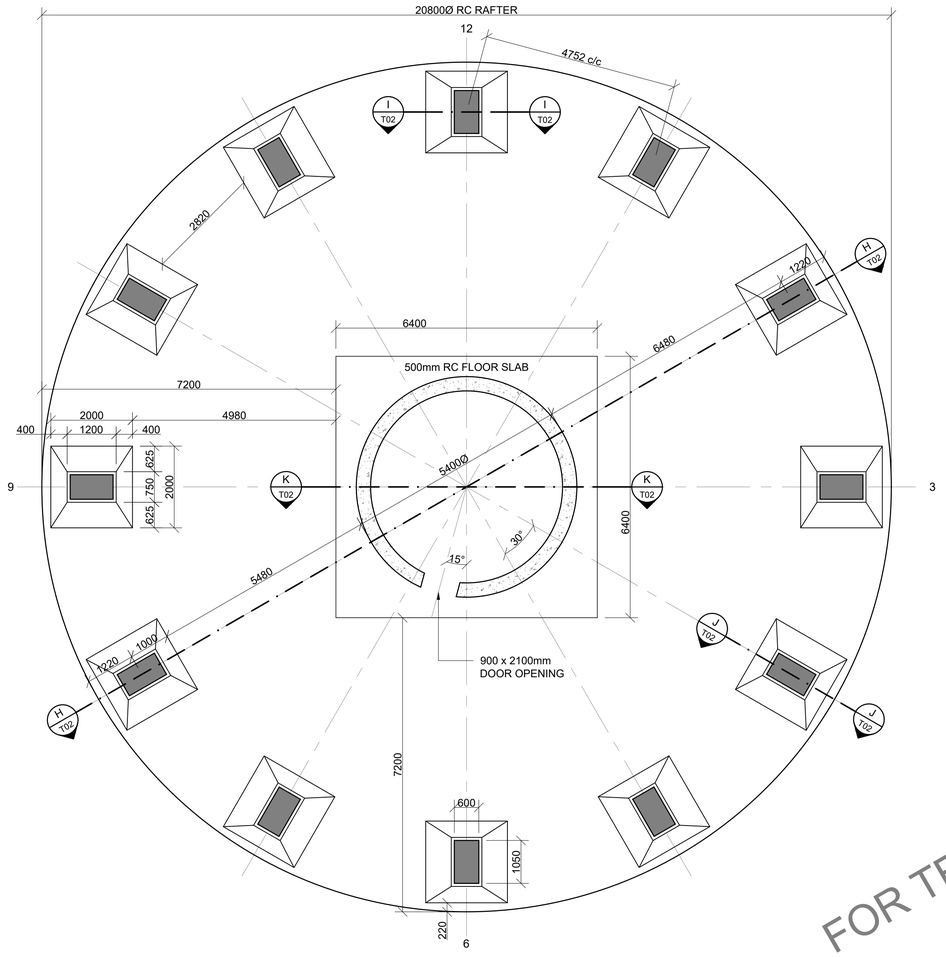
Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

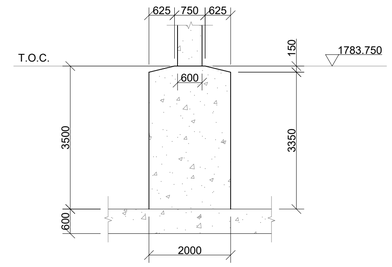
GENERAL ELEVATION

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1:120	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

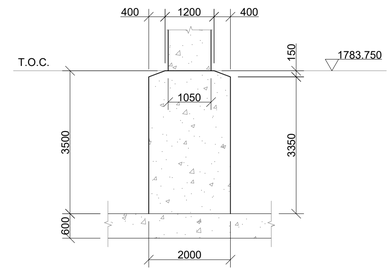
JW14402 — CONTRACT NUMBER
T01 — DRAWING No.
0 — REV.
A1 — ORIGINAL PAGE SIZE
SHEET 1 OF 1
FILE No.



FOUNDATION PLAN
SCALE 1:75



SECTION I-I
SCALE 1:75



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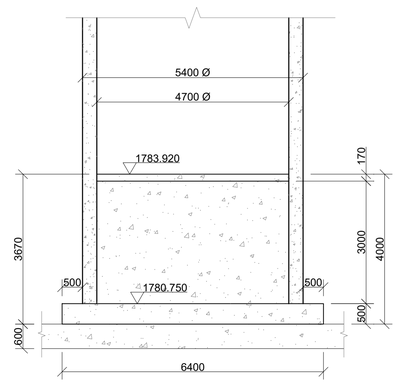
SCALE 1:75



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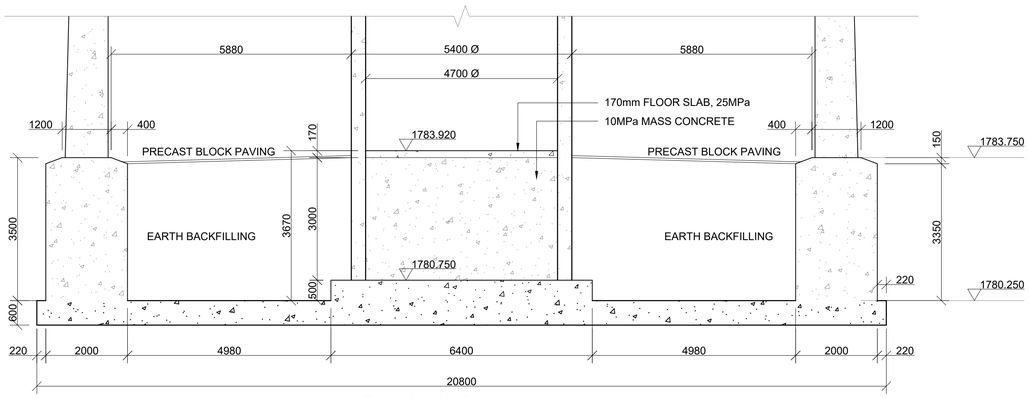

SECTION H-H
SCALE 1:75

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1. GENERAL NOTES

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2. EARTHWORKS NOTES

2.1 All excavations to follow SANS 10400 PART G: Excavations

2.2 Lateral support and shoring of deep excavations to be designed and certified by a professional

2.3 Compacted fill in layers not exceeding 150mm to 97% MOD AASHTO

2.4 Approved insecticide & weedkiller to SABS spec. Code 0124 to sides and under foundations, surface-beds & paving. 10 year underwritten guarantee in favour of client supplied by specialist contractor.

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2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

3.1 All reinforced concrete to be vibrated

3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

4. REINFORCEMENT NOTES

4.1 Reinforcement detailing based on SANS 10144

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All laps to be staggered

4.3 Reinforcement to be securely wired at all intersections

4.4 Reinforcement must be formed around, and as close as allowed to holes, and must not be cut
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High tensile steel (Y) to comply SABS 920 type C - Grade 1

4.6 Bending dimensions in accordance with sans 282:2011
Dimensions are all outside dimensions
Dimension d must allways be greater than 2 x bar dia.
Radius of all bends are standard unless r is given

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BW - Both Ways
EF - Each Face
NF - Near Face
FF - Far Face
EW - Each Way
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T1 - Highest of top layers
T2 - Second highest of top layers
B1 - Lowest of bottom layers
B2 - Second lowest of bottom layers
ALT - Alternative
ABR - Alternative Bar Reversed

CONSULTING ENGINEERS:
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WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
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NEWTOWN
JOHANNESBURG

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

FOUNDATION PLAN

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE	REV:	AMENDMENTS	DATE:
PROJECT SURVEYOR:		CHECKED			1:75	0	TENDER PURPOSES	05/08/2024
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	T02	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
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ORIGINAL PAGE SIZE				

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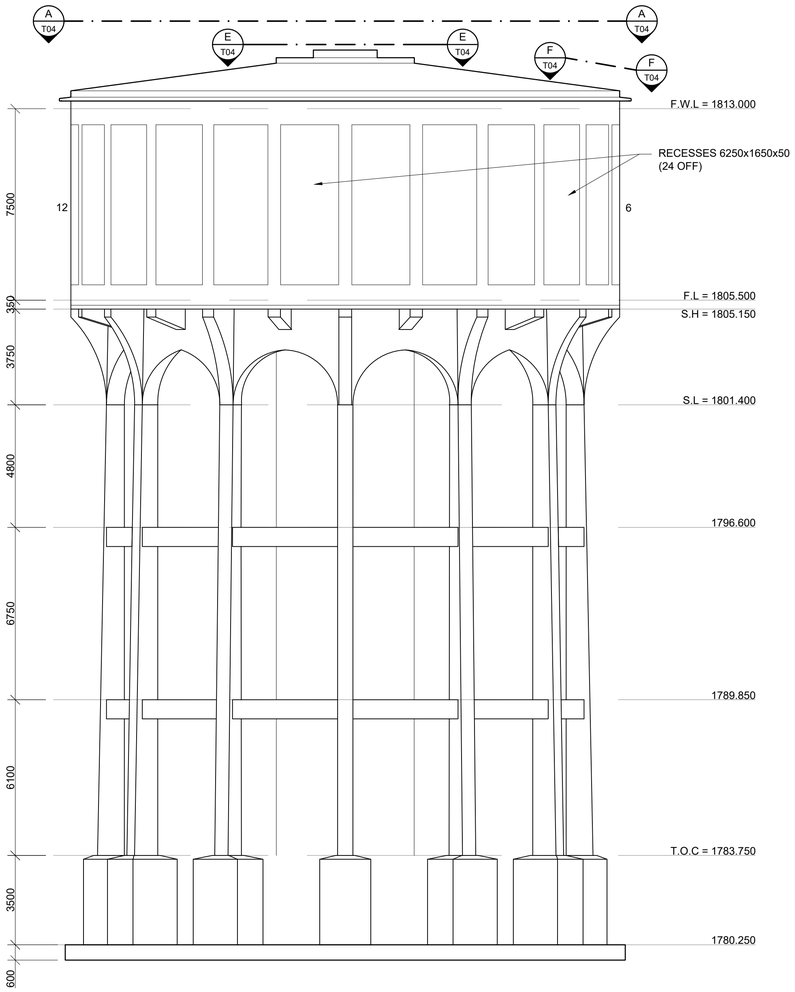
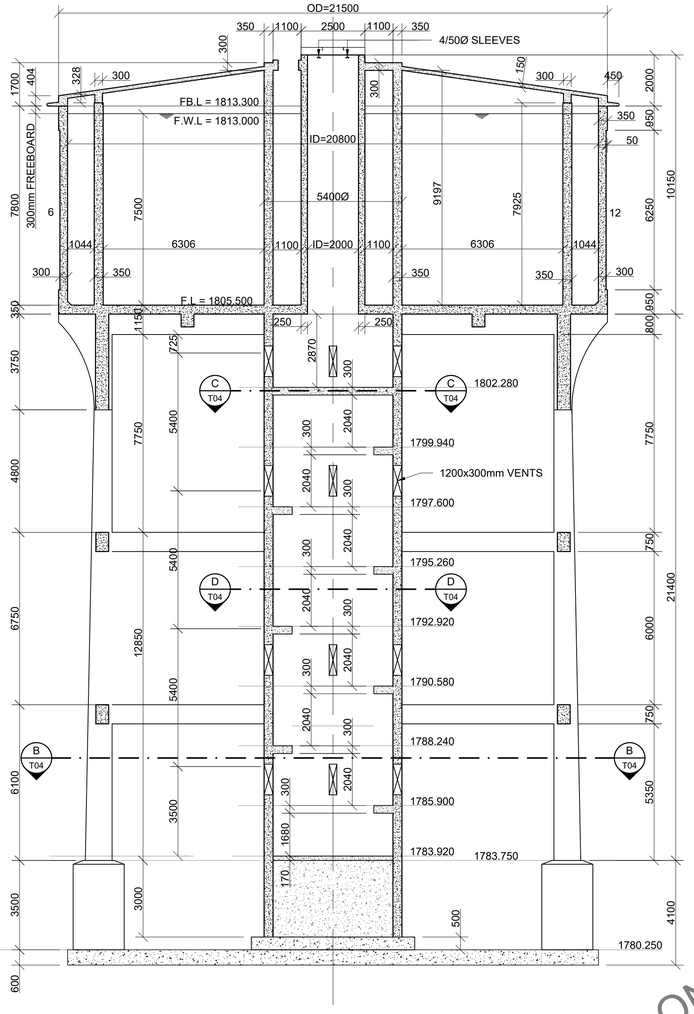


ELEVATION
SCALE 1:120



SECTION A-A
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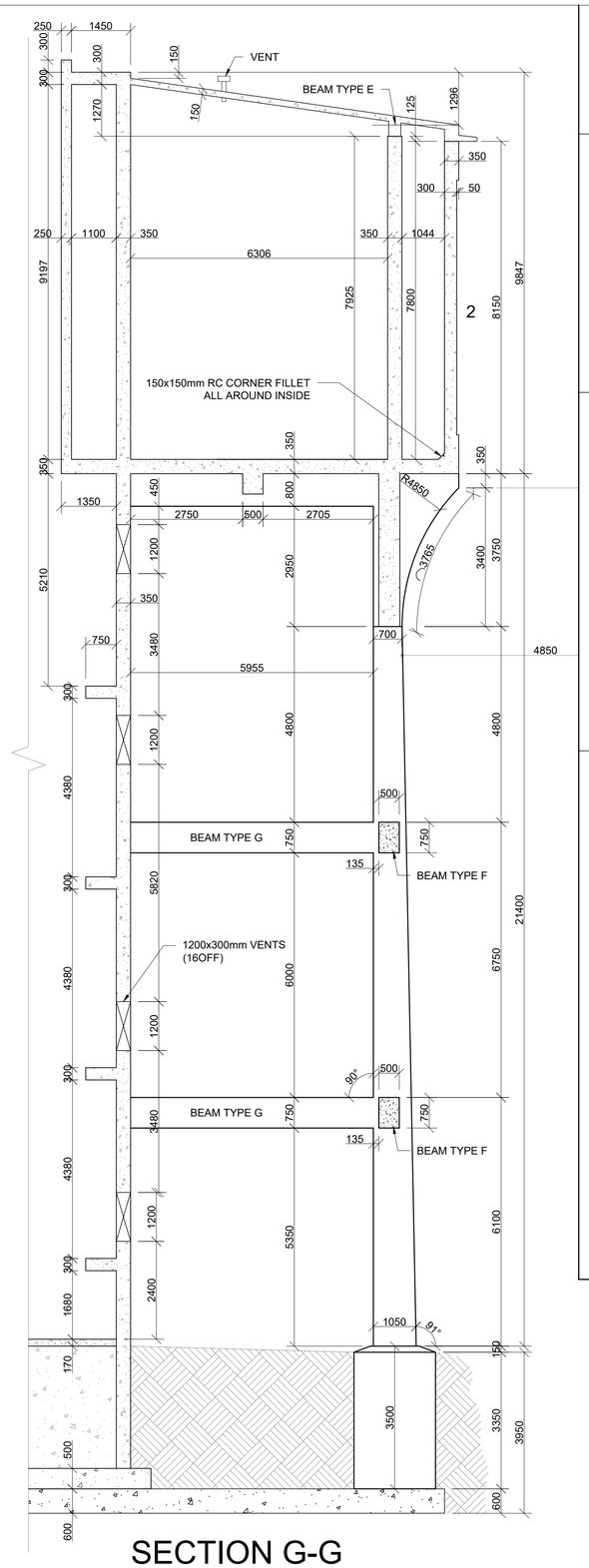

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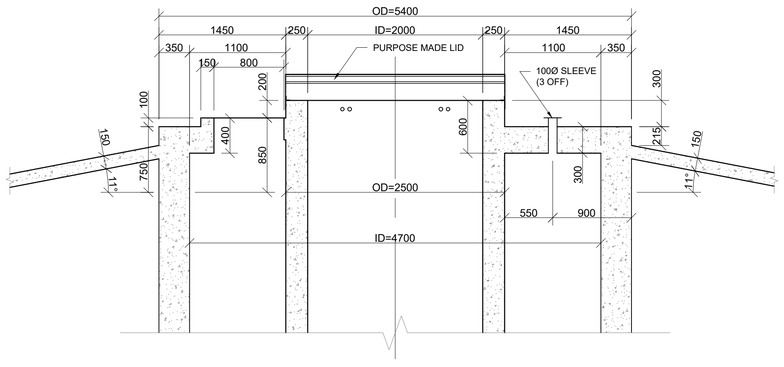
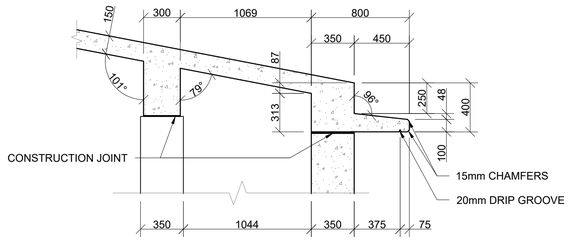
SCALE 1:75



PLAN SECTION E-E
SCALE 1:35



PLAN SECTION F-F
SCALE 1:35

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3.4.4 Surface Bed.....25MPa
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3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

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CONSULTING ENGINEERS:
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WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
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P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

ELEVATION AND SECTIONS

SURVEY INFORMATION		APPROVAL BY JW DEPOT		SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			REV:	DESCRIPTION	DATE:
		APPROVED BY:			0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE			
CCTV INFORMATION		APPROVAL BY JW PLANNING					
CCTV COMPANY:		CHECKED					
		APPROVED BY:					
DATE:			SIGNATURE	DATE			

JW14402	T03	-	0	
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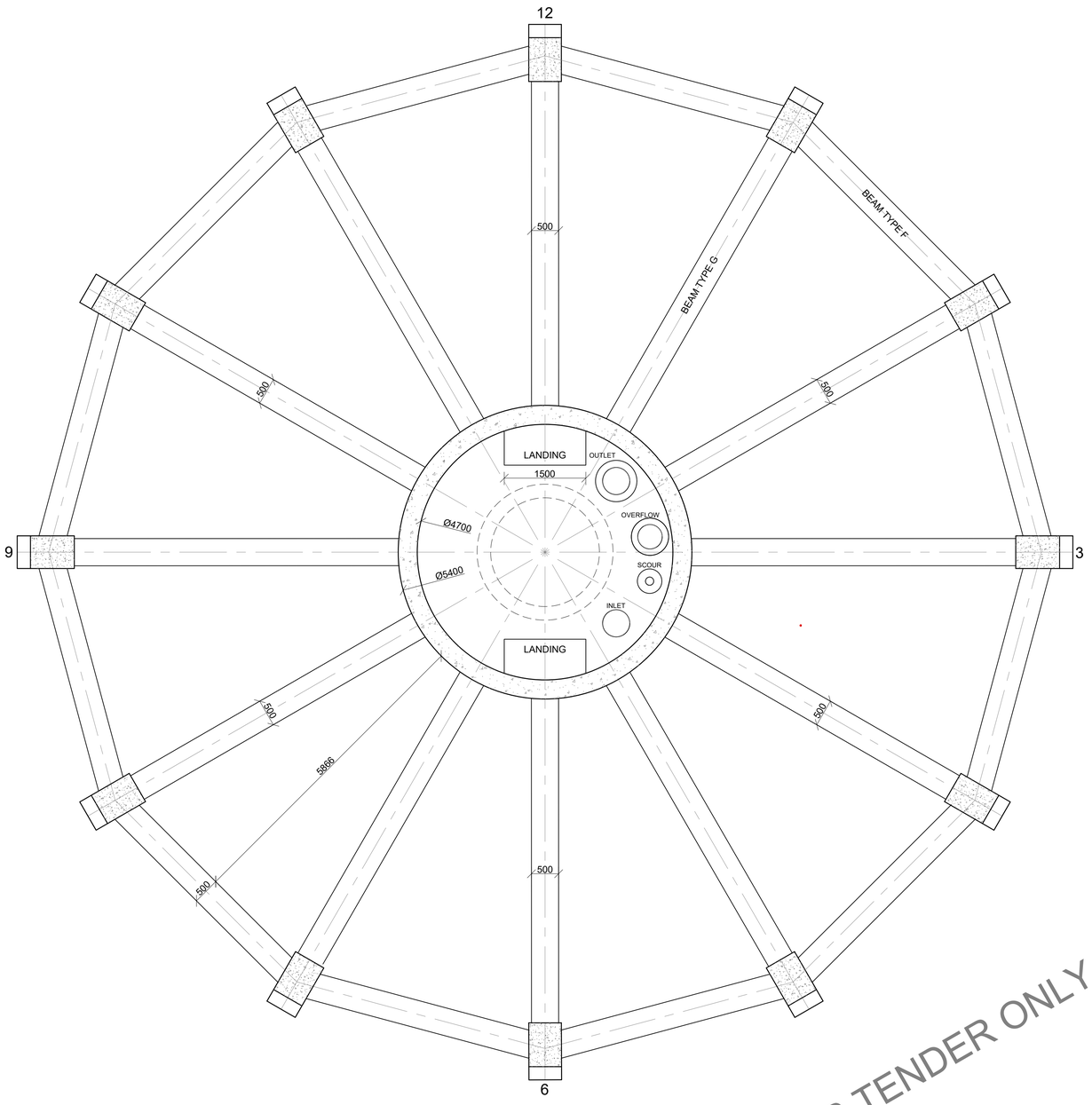

PLAN SECTION B-B
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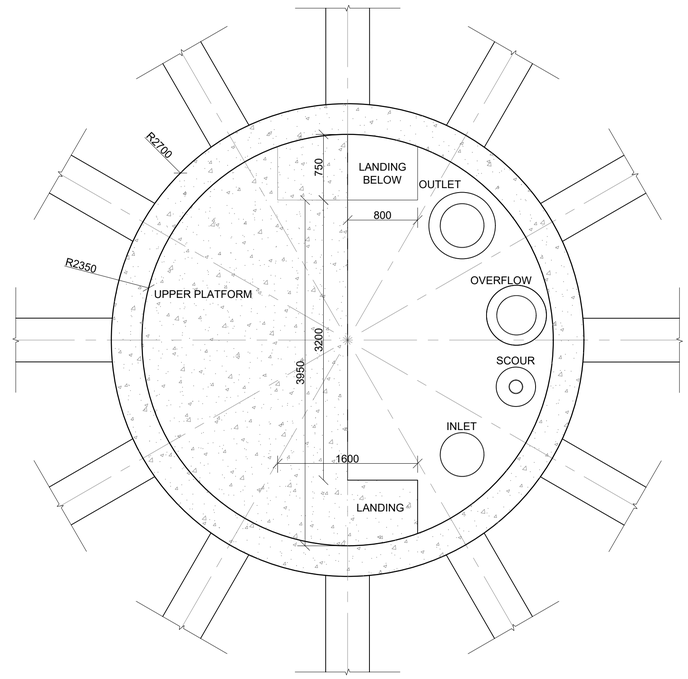

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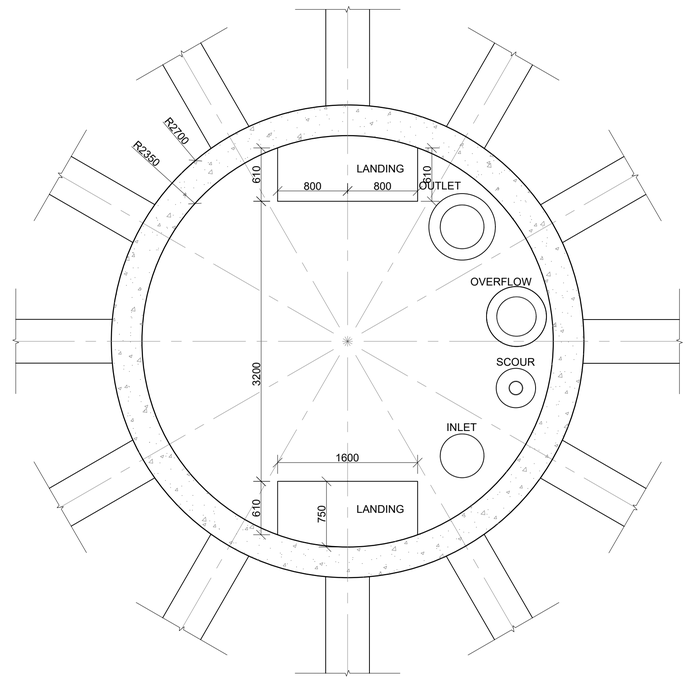
SCALE 1:35



PLAN SECTION D-D
SCALE 1:35

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3.4.1 Blinding.....15MPa
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3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
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WEWORK
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SANDTON, JOHANNESBURG

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

PLAN SECTIONS

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

SCALE: 1: 50; 1: 35

REV:	DESCRIPTION	DATE:
0	TENDER PURPOSES	05/08/2024

JW14402	T04 -	0
CONTRACT NUMBER	DRAWING No.	REV.
A1	SHEET 1	OF 1
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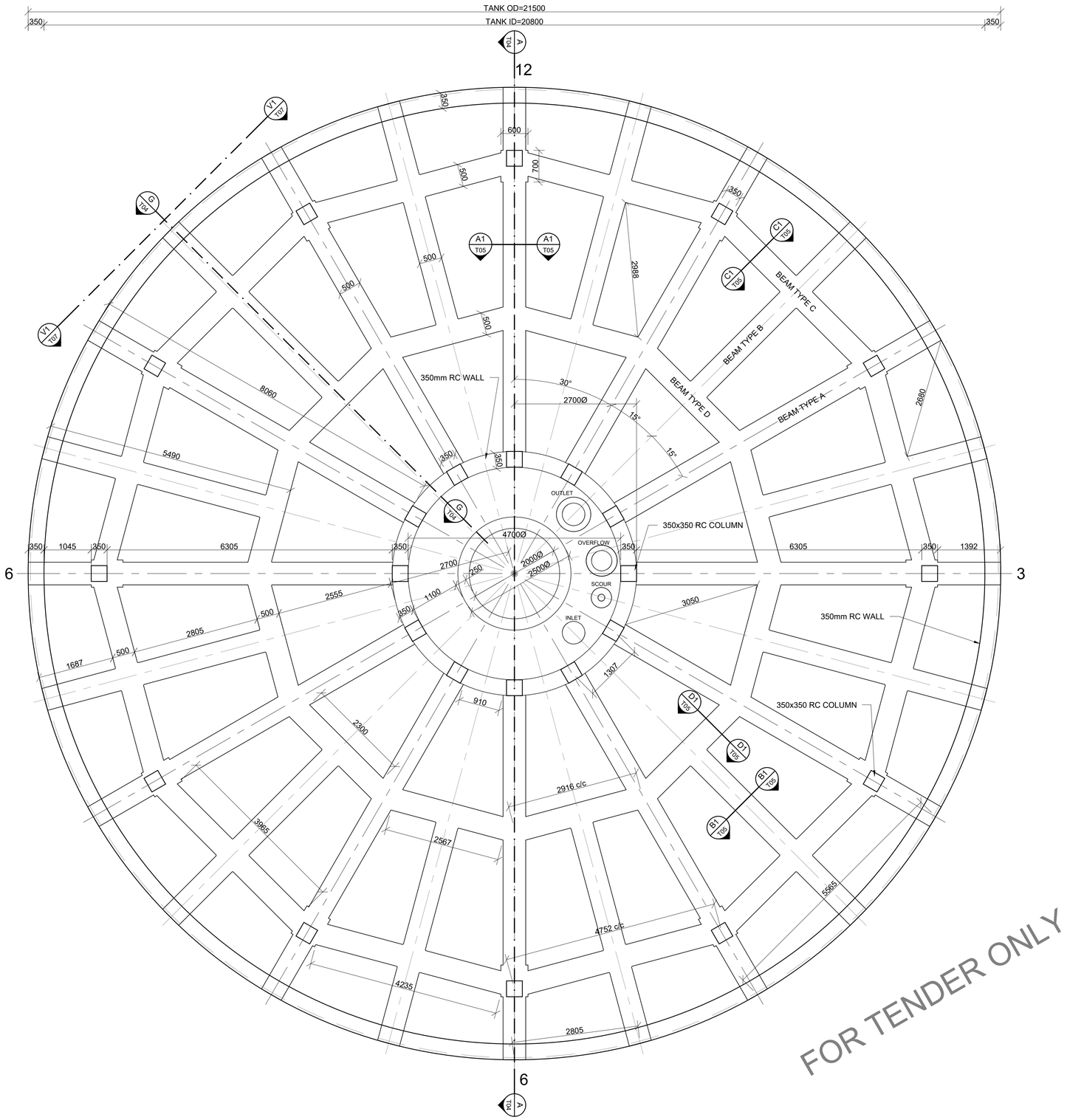

TANK FLOOR PLAN
SCALE 1:50

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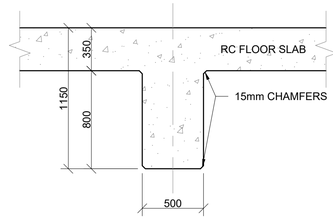

BEAM TYPE A
SECTION A1
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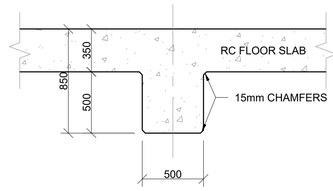

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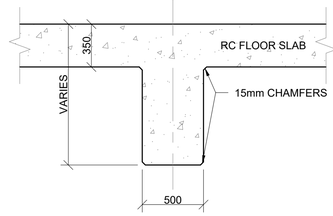

BEAM TYPE C
SECTION C1
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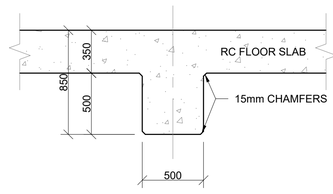

BEAM TYPE D
SECTION D1
SCALE 1:25

1. GENERAL NOTES

1.1 The copyright on this dwg, including the design and details shown hereon, is reserved by the Consulting Engineers.

1.2 No scaling of dimensions from drawings allowed.

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2. EARTHWORKS NOTES

2.1 All excavations to follow SANS 10400 PART G: Excavations

2.2 Lateral support and shoring of deep excavations to be designed and certified by a professional

2.3 Compacted fill in layers not exceeding 150mm to 97% MOD AASHTO

2.4 Approved insecticide & weedkiller to SABS spec. Code 0124 to sides and under foundations, surface-beds & paving. 10 year underwritten guarantee in favour of client supplied by specialist contractor.

2.5 All foundation excavations to be approved by the Engineer prior to placement of any concrete

2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

3.1 All reinforced concrete to be vibrated

3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

4. REINFORCEMENT NOTES

4.1 Reinforcement detailing based on SANS 10144

4.2 Minimum lapping of reinforcement: 50 x smaller diameter
All laps to be staggered

4.3 Reinforcement to be securely wired at all intersections

4.4 Reinforcement must be formed around, and as close as allowed to holes, and must not be cut
All holes and voids to be checked and approved by the Engineer prior to the placement of any concrete

4.5 Mild steel (R) to comply with SABS 920 type A - Grade 3
High tensile steel (Y) to comply SABS 920 type C - Grade 1

4.6 Bending dimensions in accordance with sans 282:2011
Dimensions are all outside dimensions
Dimension d must allways be greater than 2 x bar dia.
Radius of all bends are standard unless r is given

4.7 All reinforcement to be checked and approved by the Engineer prior to the placement of any concrete
Any reinforcing not inspected before concrete is poured will not be signed off by VBL

4.8 Reinforcement abbreviations:
BW - Both Ways
EF - Each Face
NF - Near Face
FF - Far Face
EW - Each Way
SF - Side Face
T1 - Highest of top layers
T2 - Second highest of top layers
B1 - Lowest of bottom layers
B2 - Second lowest of bottom layers
ALT - Alternative
ABR - Alternative Bar Reversed

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

TANK FLOOR PLAN

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
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		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	T05	-	0	
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A1	SHEET 1	OF	1	
ORIGINAL PAGE SIZE				

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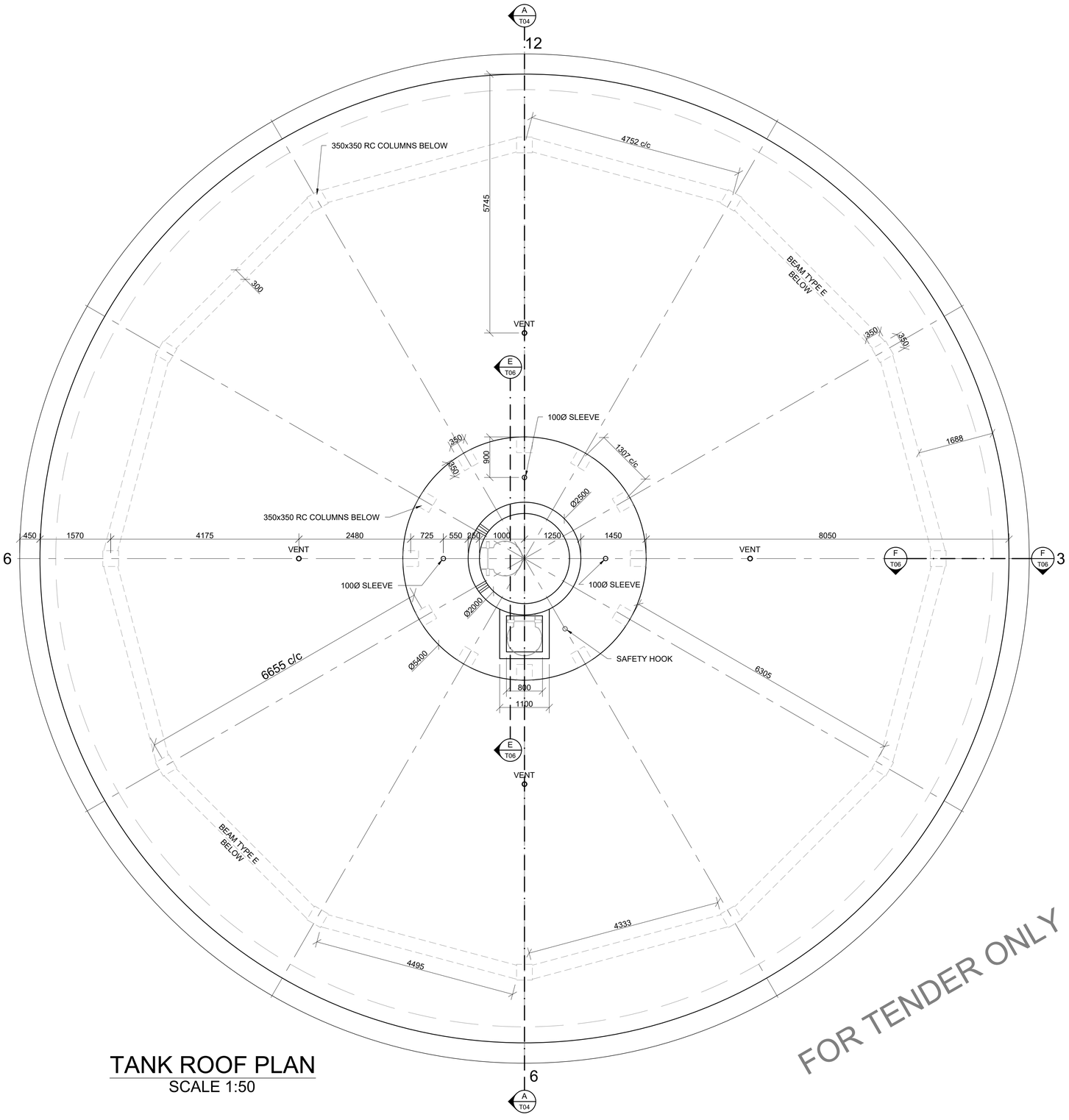
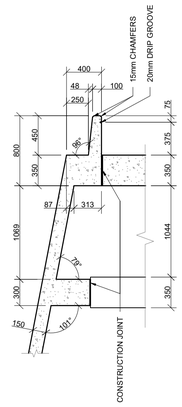


TANK ROOF PLAN
SCALE 1:50

FOR TENDER ONLY



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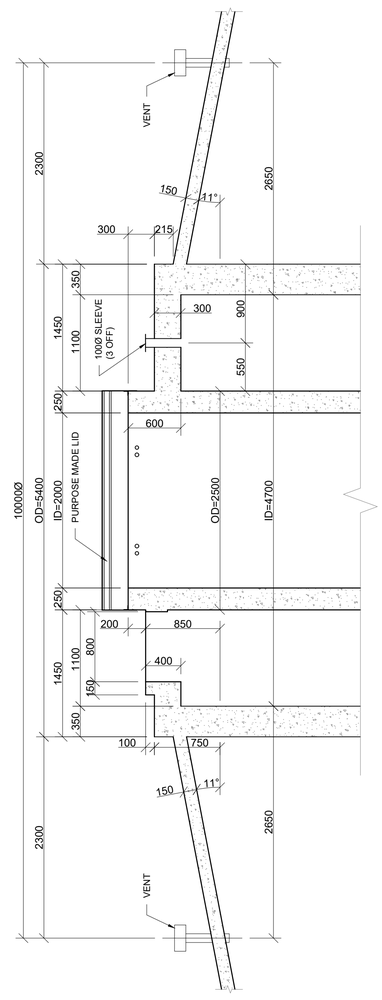

PLAN SECTION E-E
SCALE 1:35

1. GENERAL NOTES

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3. CONCRETE NOTES

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3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

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WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

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MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
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NEWTOWN
JOHANNESBURG

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

TANK ROOF PLAN

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

SCALE: 1: 50; 1: 35

REV:	DESCRIPTION	DATE:
0	TENDER PURPOSES	05/08/2024

JW14402	T06 -	0
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A1	SHEET 1	OF 1
ORIGINAL PAGE SIZE		

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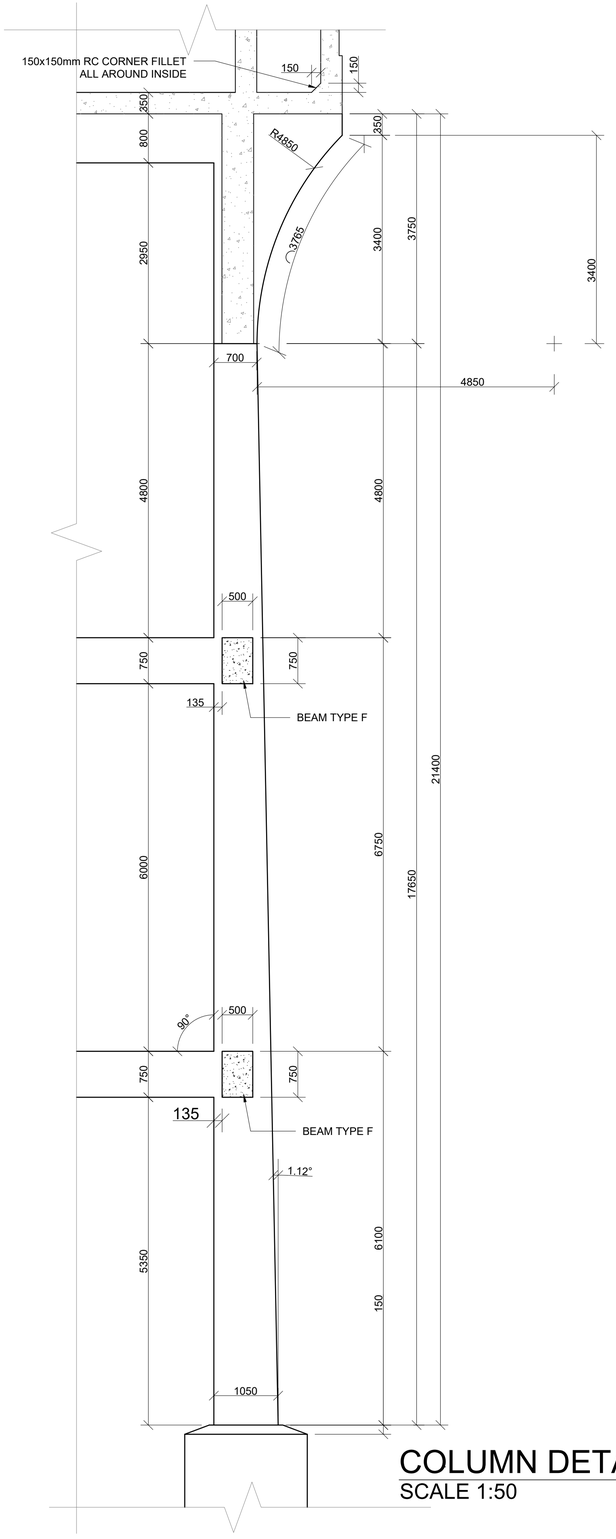

COLUMN DETAIL
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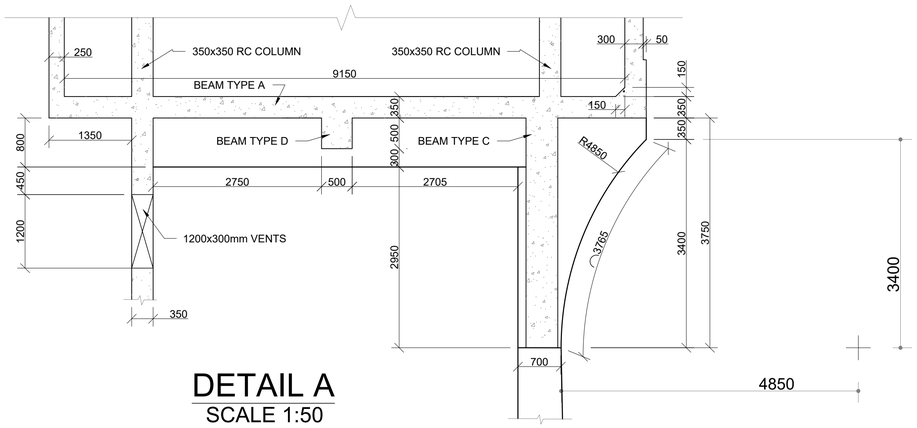

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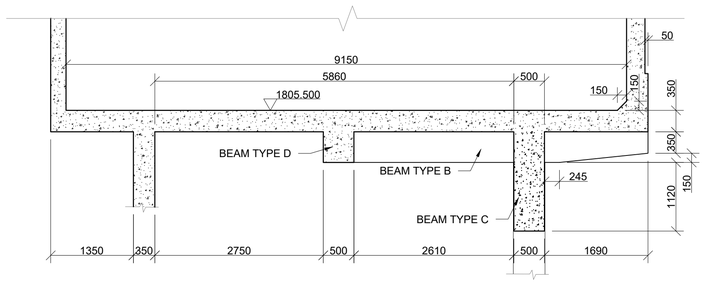

DETAIL B
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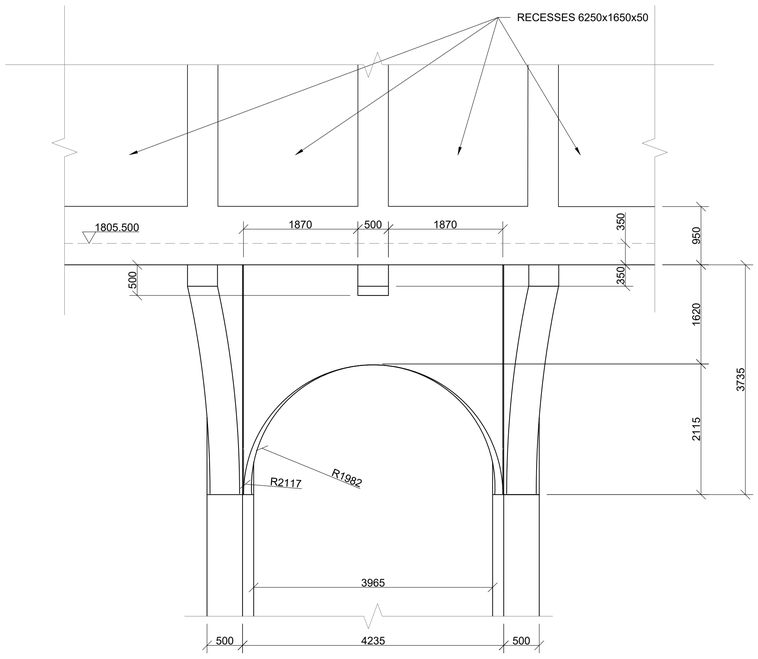

VIEW V1
SCALE 1:50

FOR TENDER ONLY

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CONSULTING ENGINEERS:
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DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

PHYSICAL ADDRESSES:
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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

GENERAL ARRANGEMENT DETAILS

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 50	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	T07	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET 1	OF	1	
ORIGINAL PAGE SIZE				

FILE No.

PUMP HOUSE

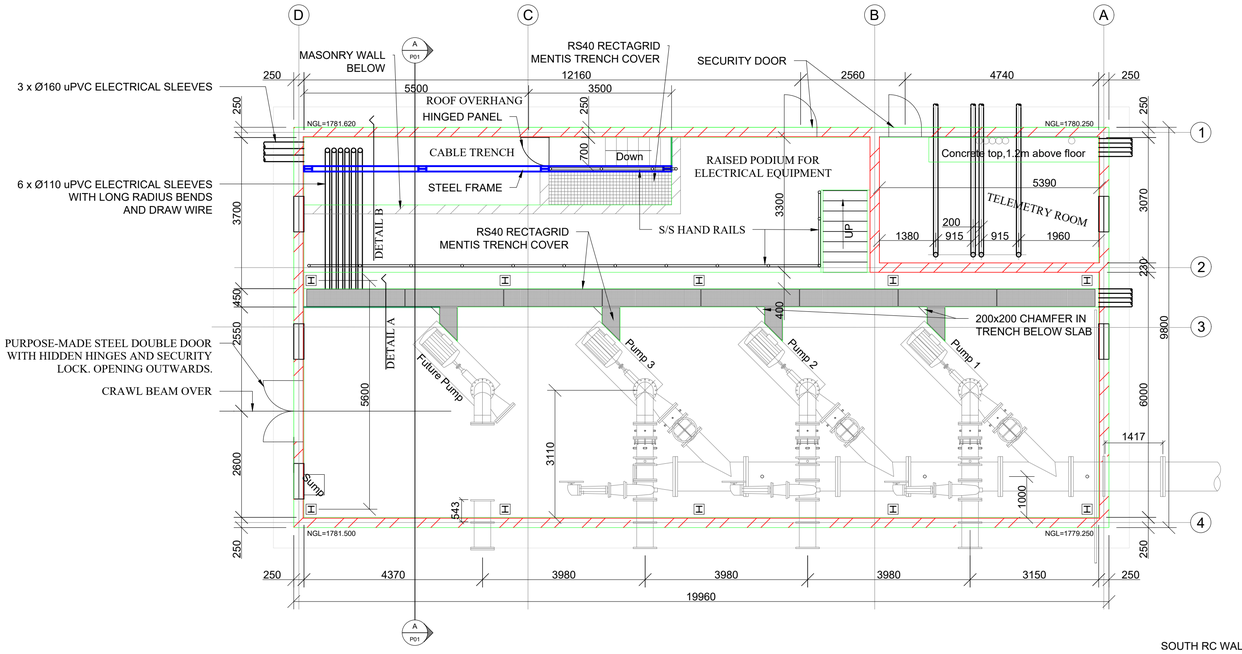
1. Security doors:
   "Strongdoor" security doors from SS304L x 4.5mm thick plate shall be manufactured with integrated frame. Doors shall have internal stiffeners, hidden hinges and security lock and shall be vandal proof.

2. Ventilation louvers:
   Vandal proof ventilation louvers from SS304L shall have large air flow area with double bent blades and fitted with stainless steel vermin proofing on onside.

3. Outside finishing:
   Facebrick to match existing buildings on site.

4. Inside finishing:
   Plastered and painted with low-gloss enamel.

5. Floor finish:
   Floor shall receive a steel float finish and have a 50mm fall towards sump and shall be painted with 2 layers epoxy-based floor paint.



PLAN - PUMP HOUSE
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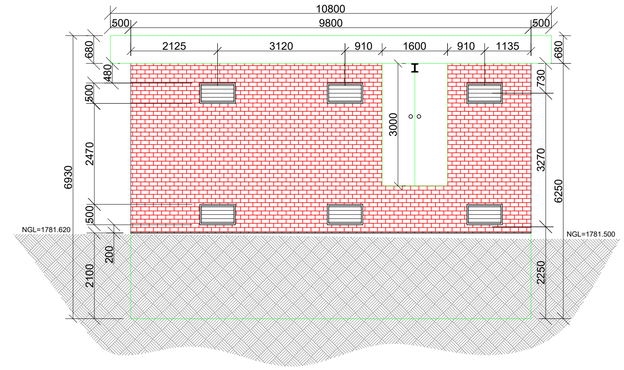
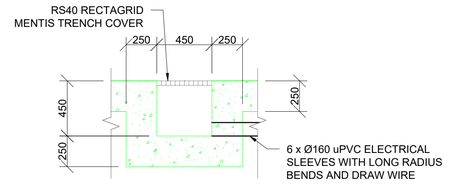


WEST ELEVATION
SCALE 1:75



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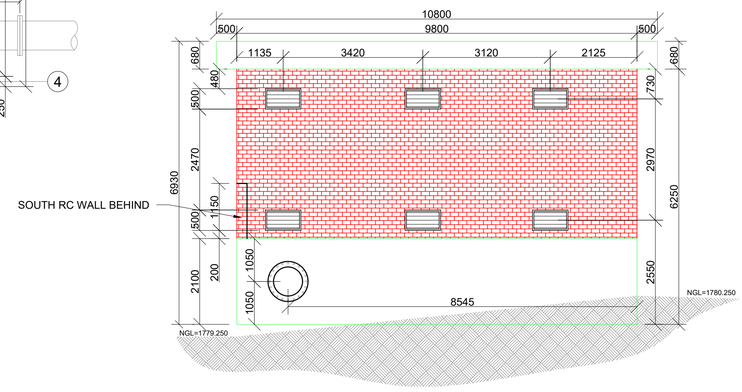
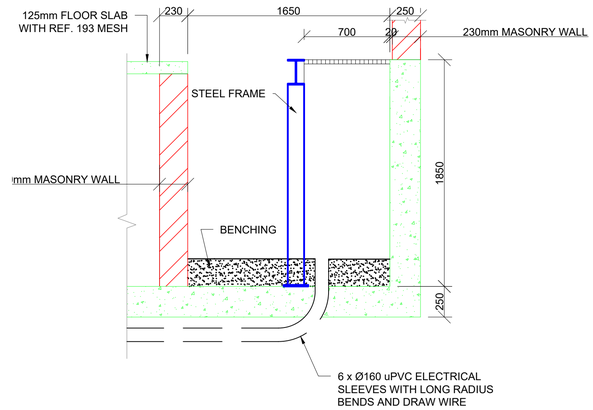


EAST ELEVATION
SCALE 1:75



DETAIL B
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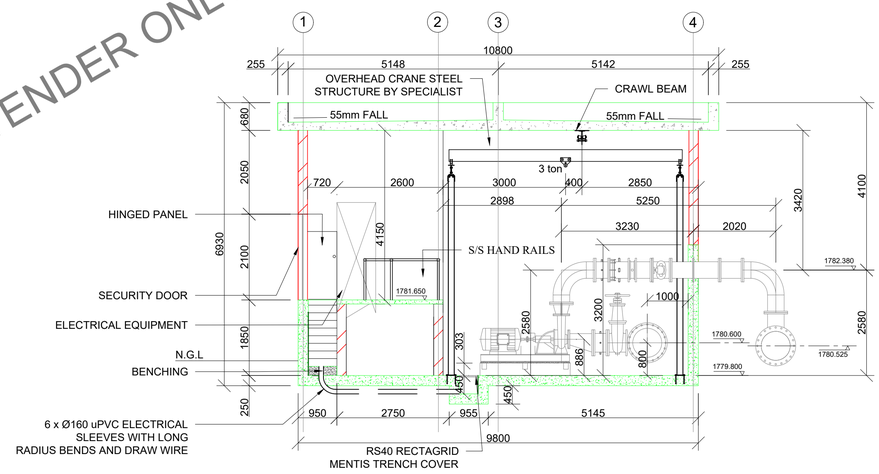
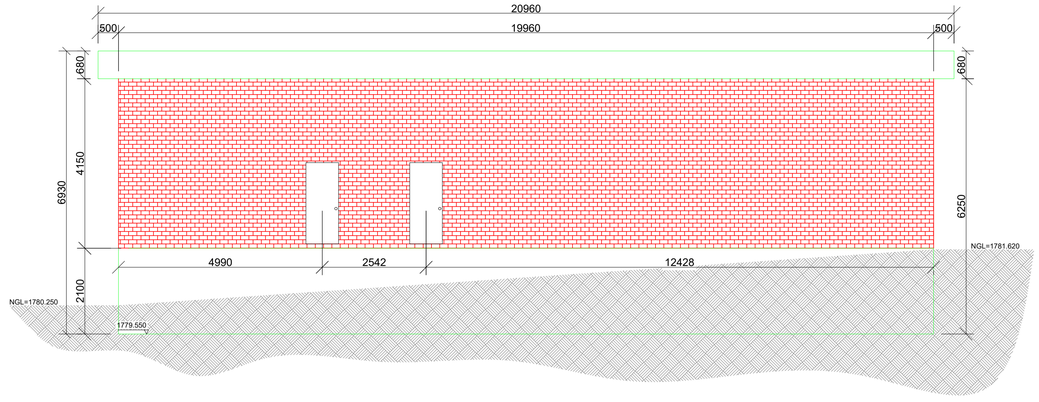
FOR TENDER ONLY



SECTION A-A
SCALE 1:75



NORTH ELEVATION
SCALE 1:75

CONSULTING ENGINEERS:	DESIGNED	P. S. Botha	05/08/2024
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	05/08/2024
WEWORK	CHECKED	P. S. BOTHA	05/08/2024
155 WEST STREET	APPROVED BY:		
SANDTON, JOHANNESBURG	P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.		
CLIENT POSTAL ADRESS:	CHECKED		
JOHANNESBURG WATER			
P O BOX 61542			
MARSHALLTOWN			
2107		SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
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NEWTOWN
JOHANNESBURG

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

PUMP STATION
PLAN, SECTION & ELEVATIONS

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 75; 1: 25	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	P01	-	0	
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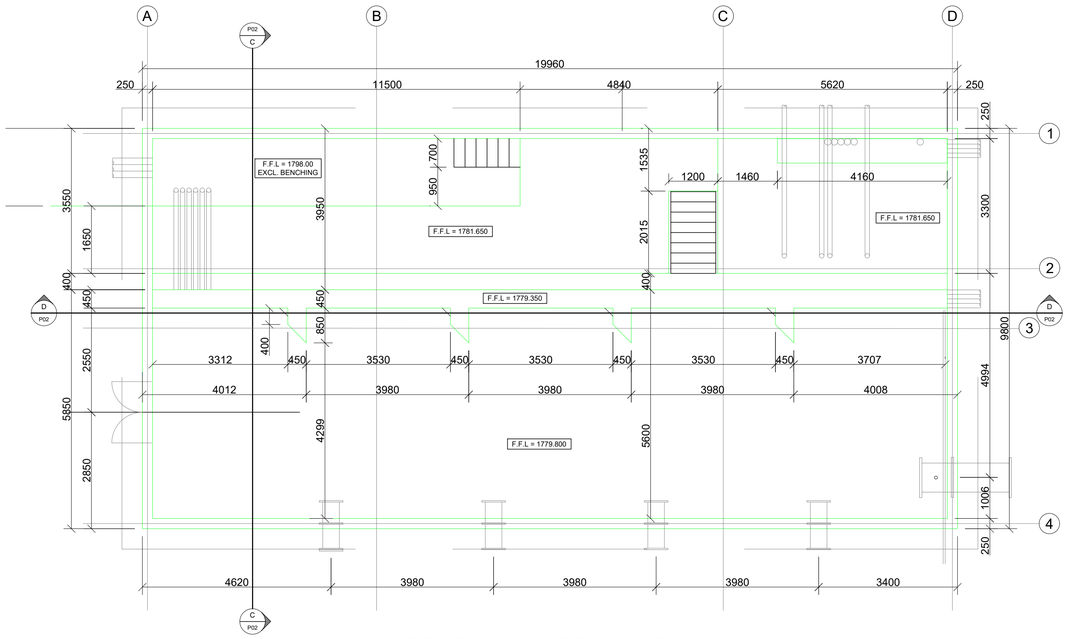

CONCRETE FLOOR LAYOUT
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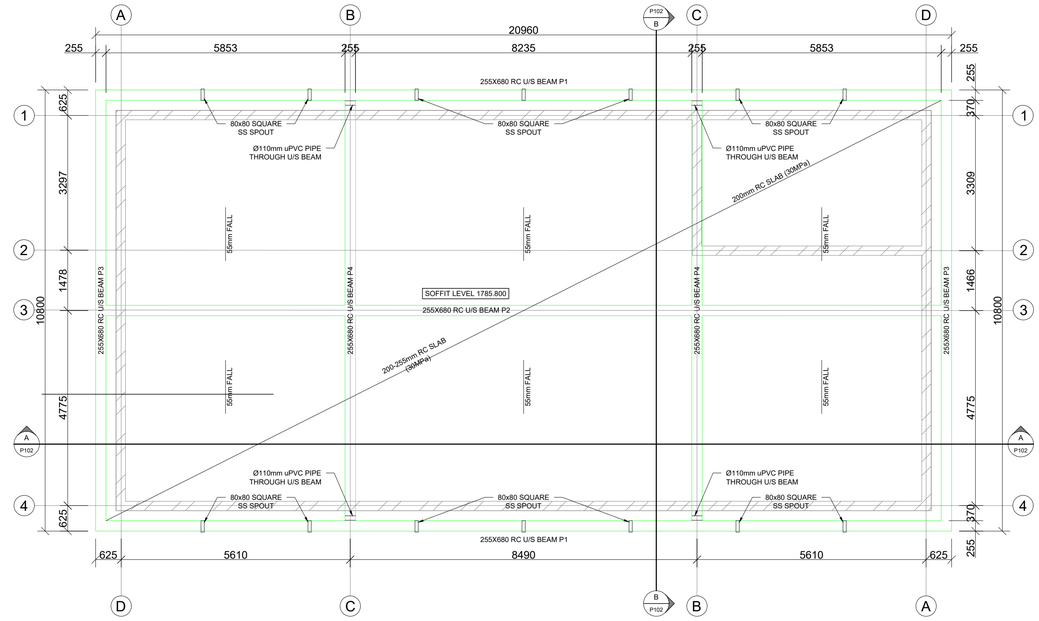
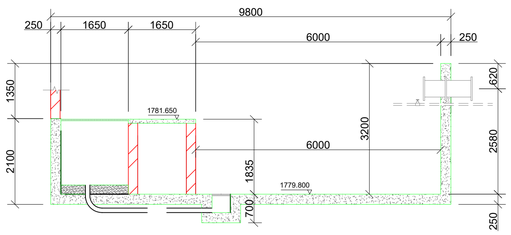


CONCRETE ROOF SLAB LAYOUT
SCALE 1:75

FOR TENDER ONLY



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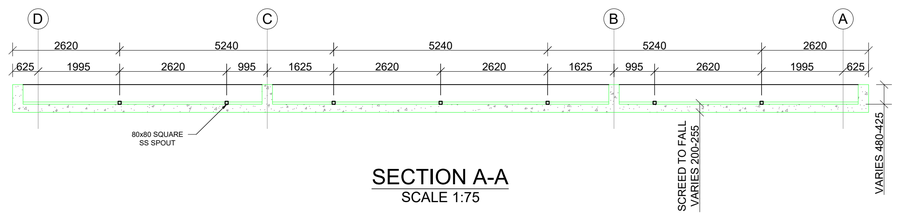

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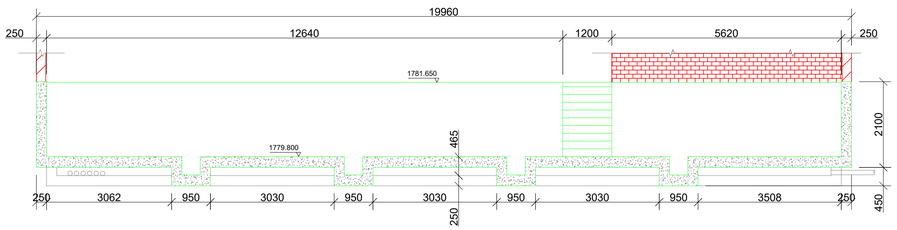

SECTION D-D
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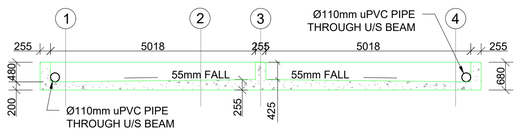

SECTION B-B
SCALE 1:75

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2.2 Lateral support and shoring of deep excavations to be designed and certified by a professional

2.3 Compacted fill in layers not exceeding 150mm to 97% MOD AASHTO

2.4 Approved insecticide & weedkiller to SABS spec. Code 0124 to sides and under foundations, surface-beds & paving. 10 year underwritten guarantee in favour of client supplied by specialist contractor.

2.5 All foundation excavations to be approved by the Engineer prior to placement of any concrete

2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

3.1 All reinforced concrete to be vibrated

3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

4. REINFORCEMENT NOTES

4.1 Reinforcement detailing based on SANS 10144

4.2 Minimum lapping of reinforcement: 50 x smaller diameter
All laps to be staggered

4.3 Reinforcement to be securely wired at all intersections

4.4 Reinforcement must be formed around, and as close as allowed to holes, and must not be cut
All holes and voids to be checked and approved by the Engineer prior to the placement of any concrete

4.5 Mild steel (R) to comply with SABS 920 type A - Grade 3
High tensile steel (Y) to comply SABS 920 type C - Grade 1

4.6 Bending dimensions in accordance with sans 282:2011
Dimensions are all outside dimensions
Dimension d must allways be greater than 2 x bar dia.
Radius of all bends are standard unless r is given

4.7 All reinforcement to be checked and approved by the Engineer prior to the placement of any concrete
Any reinforcing not inspected before concrete is poured will not be signed off by VBL

4.8 Reinforcement abbreviations:
BW - Both Ways
EF - Each Face
NF - Near Face
FF - Far Face
EW - Each Way
SF - Side Face
T1 - Highest of top layers
T2 - Second highest of top layers
B1 - Lowest of bottom layers
B2 - Second lowest of bottom layers
ALT - Alternative
ABR - Alternative Bar Reversed

5. STRUCTURAL STEEL NOTES

5.1 All steel to be of grade 300WA

5.2 All bolts to be grade 8.8 unless noted

5.3 All welds to be 6mm fillet welds unless noted

5.4 No site welding shall be permitted without the prior consent of the Engineer

5.5 All holes to be drilled, NO flame cutting allowed

5.6 All steelwork to be painted within 6 hours after cleaning with one coat red oxide

5.7 Engineer to inspect manufactured steel components prior to delivery to site

KEY PLAN
SCALE 1:75

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

PUMP STATION
CONCRETE DETAILS

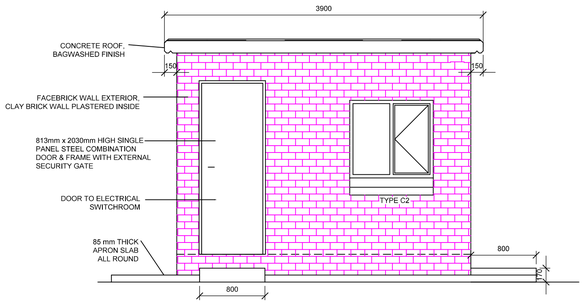
SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 75	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402 — CONTRACT NUMBER
P02 — DRAWING No.
0 — REV.
A1 — ORIGINAL PAGE SIZE
SHEET 1 OF 1
FILE No.

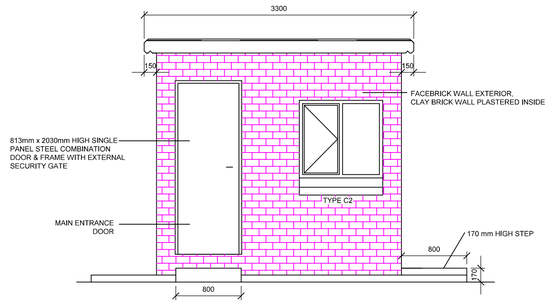
ELECTRICAL LEGEND

- DISTRIBUTION BOARD
- TELEPHONE OUTLET (BLANK)
- DOUBLE SOCKET OUTLET (FLUSH)
- 1 x 26W CEILING MOUNTED BULKHEAD
- WALL MOUNTED BULKHEAD
- MINIATURE FLOODLIGHT
- LIGHT SWITCH
- WALL MOUNTED PHOTOCELL
- 2 x 26W CFL BULKHEAD

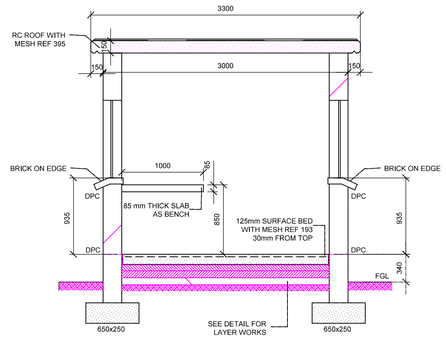
NOTE : ALL WIRING TO BE INSTALLED IN CONDUIT CHASED INTO WALLS



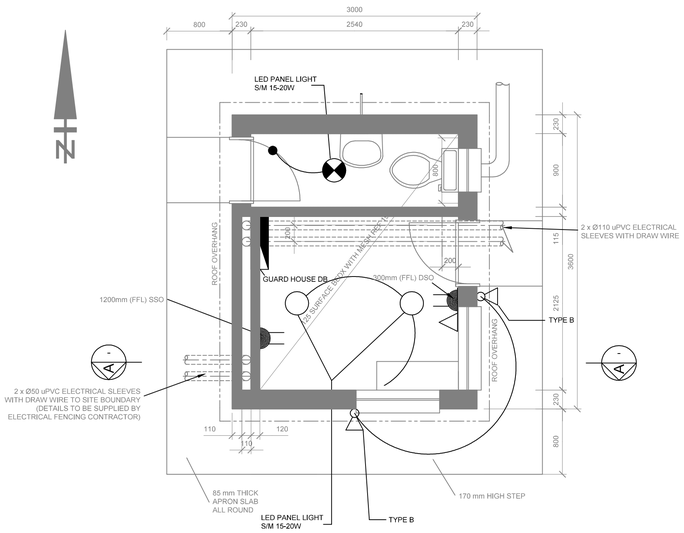
EAST ELEVATION
SCALE 1: 25



NORTH ELEVATION
SCALE 1: 25

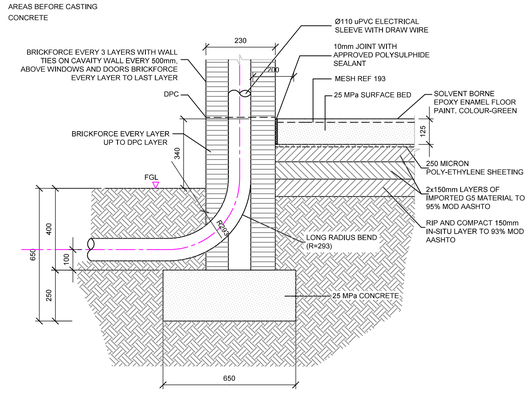


SECTION A
SCALE 1:25



FLOOR PLAN
SCALE 1: 25

NOTE:
APPLY WEED KILLER AND INSECTICIDE TO COMPACTED AREAS BEFORE CASTING CONCRETE



STRIP FOUNDATION DETAILS
SCALE 1: 10

KEY PLAN
SCALE : NTS

CONSULTING ENGINEERS	DESIGNED	P. S. Botha	.
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	.
MICHELANGELO TOWER	CHECKED	P. S. Botha	.
SUITE 2307, MAUDE STREET	APPROVED BY:		.
SANDTON, JOHANNESBURG	P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.	730401	
CLIENT POSTAL ADDRESS:	CHECKED		
P O Box 61542			
MATSHALLTOWN			
2107		SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESS:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400

FAX: (011) 688-1529

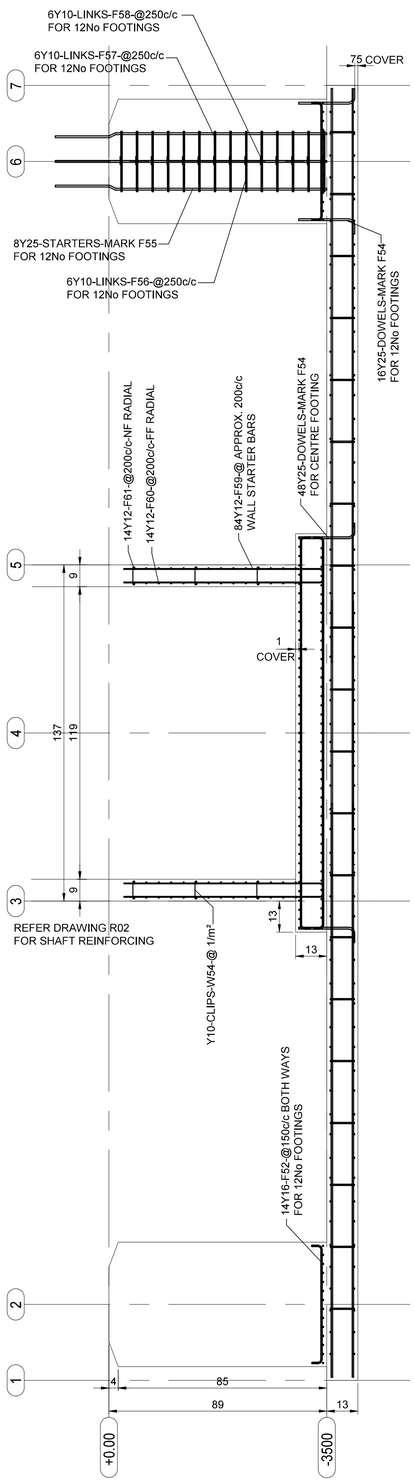
FOREST HILL WATER SUPPLY

NEW WATER TOWER & PUMP STATION

GUARD HOUSE

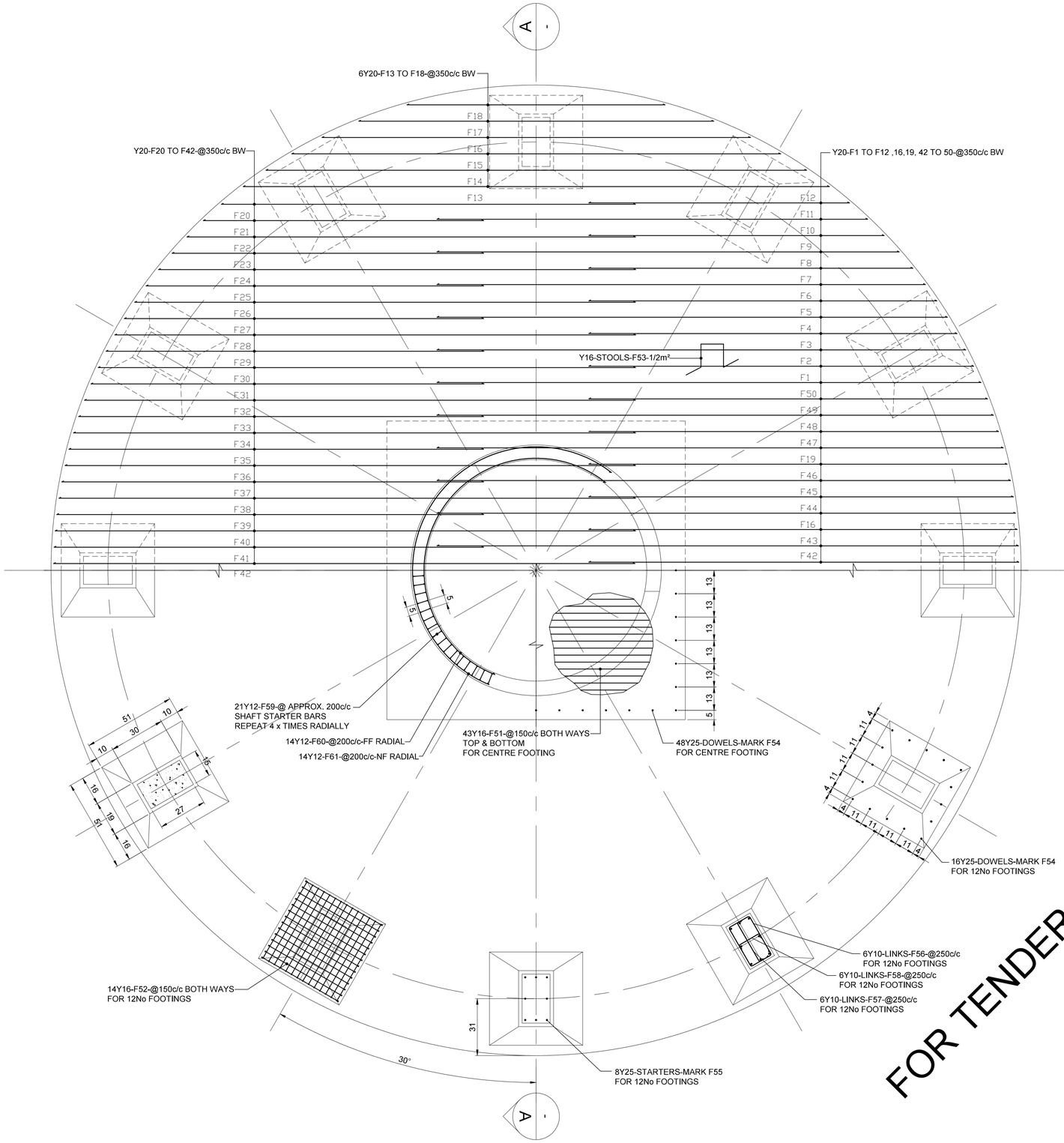
SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	REV:	DESCRIPTION	DATE:
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402 — PROJECT No.
P03 - 0 — DRAWING No. — REV.
A1 — ORIGINAL PAGE SIZE
SHEET 3 OF 3
FILE No.



SECTION A-A

SCALE 1:50



FOUNDATION LAYOUT

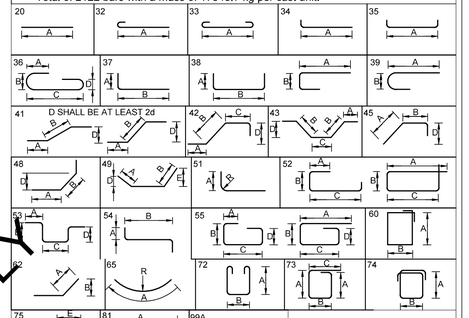
SCALE 1:50

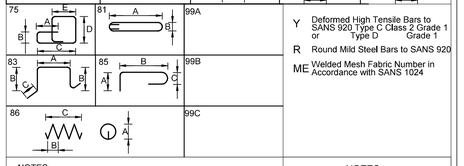
FOR TENDER ONLY

Reinforcing bending dimensions for shape codes (SANS 282)

	Type	Mark	No	Length	Shape	A	B	C	D	E	r	Mass each	All
FOUNDATION REINFORCING	Y20	F18	8	5530	20	5531						13.6	109.1
	Y20	F12	8	5580	20	5588						13.8	110.1
	Y20	F21	8	6010	20	6010						14.8	118.6
	Y20	F10	8	6330	20	6331						15.6	124.9
	Y20	F23	8	6670	20	6679						16.4	131.6
	Y20	F8	8	6940	20	6946						17.1	136.9
	Y20	F25	8	7230	20	7237						17.8	142.6
	Y20	F6	8	7460	20	7461						18.4	147.2
	Y20	F17	8	7610	20	7611						18.8	150.1
	Y20	F27	8	7700	20	7705						19.0	151.9
	Y20	F4	8	7890	20	7892						19.5	155.7
	Y20	F29	8	8100	20	8100						20.0	159.8
	Y20	F2	8	8250	20	8252						20.3	162.8
	Y20	F31	8	8420	20	8424						20.8	166.1
	Y20	F50	8	8540	20	8547						21.1	168.5
	Y20	F33	8	8680	20	8683						21.4	171.2
	Y20	F48	8	8780	20	8785						21.7	173.2
	Y20	F20	8	8870	20	8878						21.9	175.0
	Y20	F35	8	8890	20	8891						21.9	175.4
	Y20	F19	8	8960	20	8969						22.1	176.8
	Y20	F37	8	9040	20	9046						22.3	178.3
	Y20	F45	8	9100	20	9101						22.4	179.5
	Y20	F39	8	9150	20	9153						22.6	180.5
	Y20	F16	16	9180	20	9186						22.6	362.2
	Y20	F41	8	9210	20	9210						22.7	181.7
	Y20	F43	8	9220	20	9220						22.7	181.9
	Y20	F11	8	9230	20	9233						22.8	182.1
	Y20	F22	8	9610	20	9615						23.7	189.6
	Y20	F9	8	9900	20	9908						24.4	195.3
	Y20	F24	8	10230	20	10230						25.2	201.8
	Y20	F7	8	10470	20	10470						25.8	206.6
	Y20	F15	8	10480	20	10481						25.8	206.8
	Y20	F26	8	10730	20	10736						26.5	211.7
	Y20	F5	8	10940	20	10941						27.0	215.8
	Y20	F28	8	11160	20	11169						27.5	220.2
	Y20	F3	8	11330	20	11336						27.9	223.5
	Y20	F30	8	11520	20	11521						28.4	227.3
	Y20	F14	8	11590	20	11591						28.6	228.6
	Y20	F1	8	11660	20	11662						28.8	230.0
	Y20	F32	8	11810	20	11814						29.1	233.0
	Y20	F49	8	11920	20	11929						29.4	235.2
	Y20	F34	8	12040	20	12049						29.7	237.5
	Y20	F47	8	12130	20	12139						29.9	239.3
	Y20	F36	8	12230	20	12231						30.2	241.3
	Y20	F46	8	12290	20	12297						30.3	242.5
	Y20	F38	8	12360	20	12361						30.5	243.8
	Y20	F44	8	12400	20	12404						30.6	244.6
	Y20	F40	8	12440	20	12443						30.7	245.4
	Y20	F42	16	12460	20	12464						30.7	491.6
	Y20	F13	8	12560	20	12565						31.0	247.8
	Y25	F54	244	1070	34	247						4.1	1006.3
	Y10	F58	168	710	35	520						0.4	73.4
	Y10	F57	168	1160	35	970						0.7	120.1
	Y12	F59	84	6560	35	230						5.8	489.3
	Y16	F52	336	2130	35	1900						3.4	1130.0
	Y16	F51	172	6530	35	6300						10.3	1773.5
	Y25	F55	96	4650	41	1147	118		79			17.9	1720.4
	Y16	F53	214	1690	83	359	389	369				2.7	571.2
	Y10	F56	168	3090	60	970	520					1.9	319.7
	Y12	F60	28	8240	65	2395						7.3	204.9
	Y12	F61	28	9020	65	2641						8.0	224.3

Total of 2122 bars with a mass of 17545.7 kg per cast unit.





Y Deformed High Tensile Bars to SANS 920 Type C Class 2 Grade 1 or Type D Grade 1

R Round Mild Steel Bars to SANS 920

ME Welded Mesh Fabric Number in Accordance with SANS 1024

NOTES:
1. Use shape code 99 for all other shapes and a dimensioned sketch of the shape shall be given in the bar schedule
2. Radii of all bends are standard unless R is given in Bar Schedule
3. Dimensions are all external (outside dimensions)
4. All shapes are based on SANS 282 shape codes
5.All Splices must not be less than 40d

LEGEND

B1	Lowest of bottom layers
B2	Second lowest of bottom layers
T1	Highest of top layers
T2	Second highest of top layers
NF	Near Face
FF	Far Face
AT	Alternate

NOTES:
1) ALL CONCRETE TO BE 35MPa
2) MIN COVER TO REINFORCING =40mm: UNLESS NOTED OTHERWISE
3) DRAWING TO BE READ IN CONJUNCTION W CONCRETE LAYOUTS
4) LONGITUDINAL BARS TO HAVE LAP LENGTHS NOT LESS THAN 40D
5) ALL STEEL TO BE FIXED ON SITE
6) NO CONCRETE TO BE POURED UNTIL APPROVED BY THE ENGINEER
7) BACKFILLING TO BE COMPACTED 150mm MAX. PER LAYER

CONSULTING ENGINEERS
TRI-M CONSULTING ENGINEERS
LEGNUM PARK BUILDING
WATER MELON STREET
POLOKWANE

CLIENT
JOBURG WATER
17 HARRISON STREET
.

DESIGNED	K.K.	10-06-2017	
DRAWN	J.P.	10-06-2017	
CHECKED	K.K.	10-06-2017	
APPROVED BY: .	SIGNATURE	DATE	
ECSA REG. No.			
CHECKED			
	SIGNATURE	DATE	

17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY
NEW WATER TOWER & PUMP STATION

FOUNDATION
REINFORCING LAYOUT & DETAILS

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	REV:	DESCRIPTION	DATE:
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	R01	-	0
CONTRACT No.	DRAWING No.		REV.
A1	SHEET 1	OF	5
ORIGINAL PAGE SIZE			

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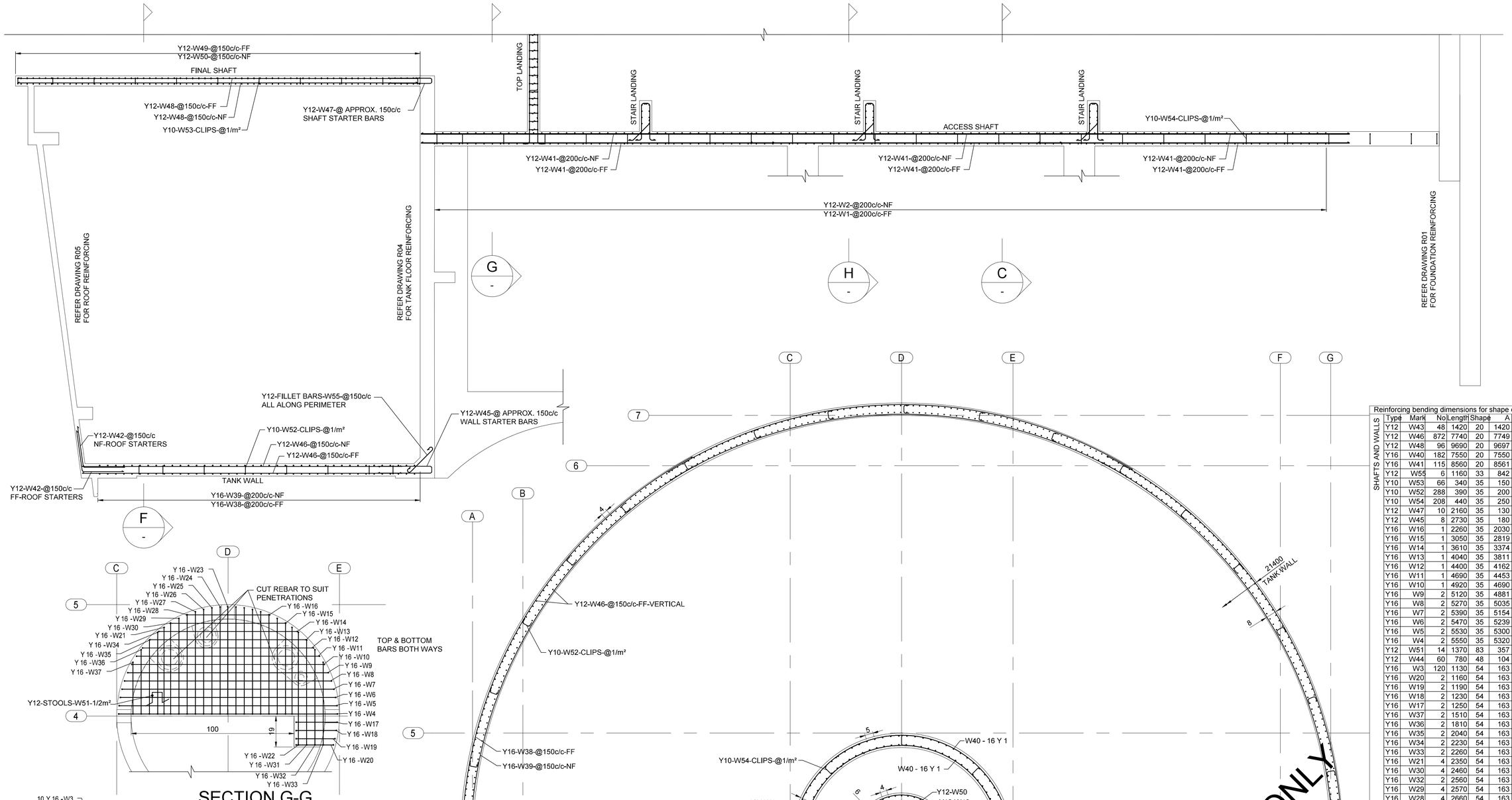
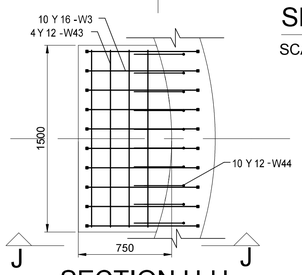


TYPICAL PARTIAL SECTION THROUGH TANK WALL & SHAFTS

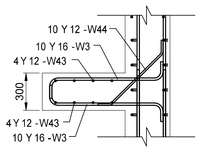
SECTION G-G

SCALE 1:50



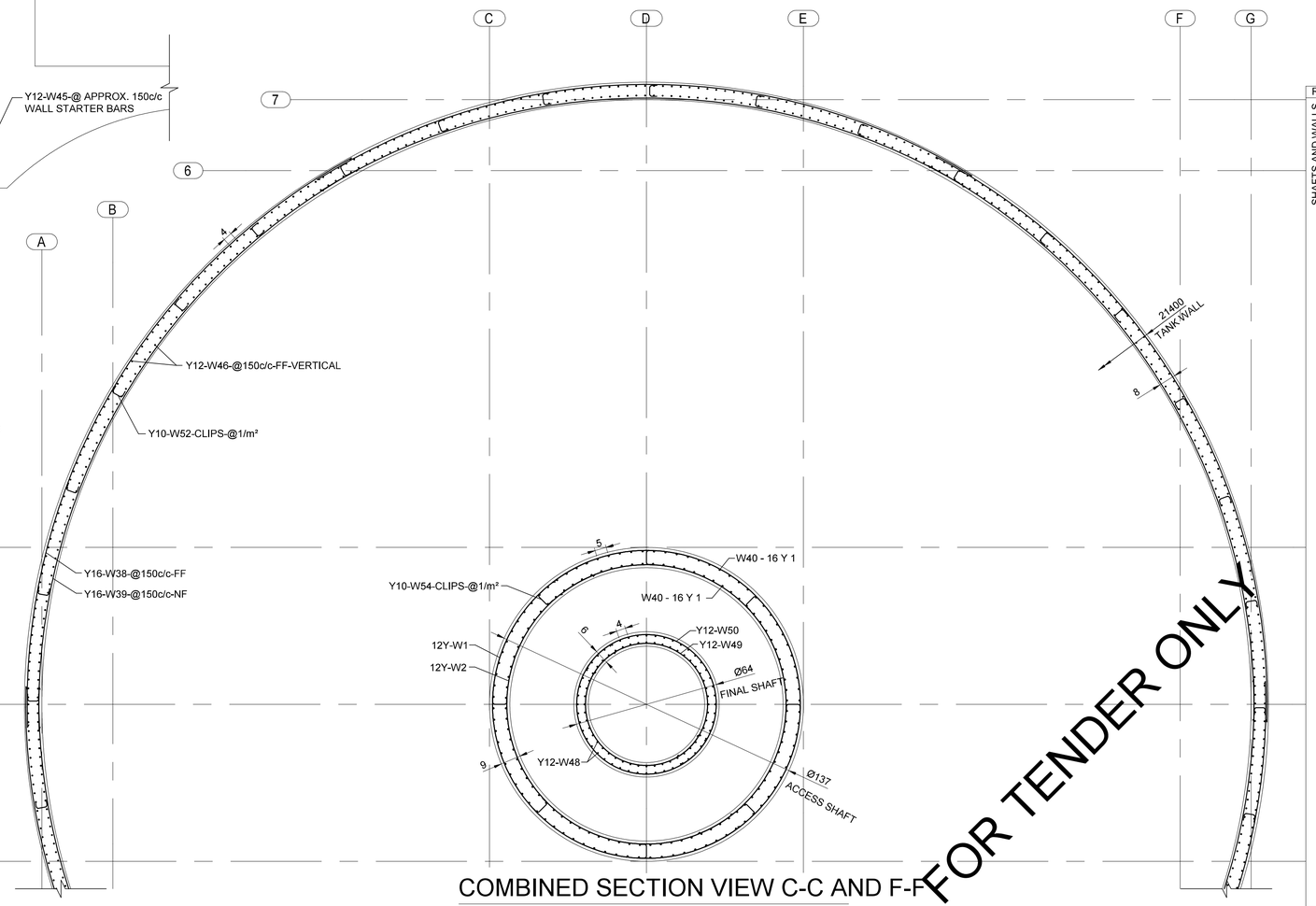
SECTION H-H

SCALE 1:25



SECTION J-J

SCALE 1:25



COMBINED SECTION VIEW C-C AND F-F

SCALE 1:50

FOR TENDER ONLY

Reinforcing bending dimensions for shape codes (SANS 282)

	Type	Mark	No	Length	Shape	A	B	C	D	E	r	Mass each	All
SHAFTS AND WALLS	Y12	W43	48	1420	20	1420						1.3	60.5
	Y12	W46	872	7740	20	7749						6.9	5993.3
	Y12	W48	96	9690	20	9697						8.6	826.1
	Y16	W40	182	7550	20	7550						11.9	2169.6
	Y16	W41	115	8560	20	8561						13.5	1554.3
	Y12	W55	6	1160	33	842						1.0	6.2
	Y10	W53	66	340	35	150						0.2	13.8
	Y10	W52	288	390	35	200						0.2	69.1
	Y10	W54	208	440	35	250						0.3	56.4
	Y12	W47	10	2160	35	130						1.9	19.2
	Y12	W45	8	2730	35	180						2.4	19.4
	Y16	W16	1	2260	35	2030						3.6	3.6
	Y16	W15	1	3050	35	2819						4.8	4.8
	Y16	W14	1	3610	35	3374						5.7	5.7
	Y16	W13	1	4040	35	3811						6.4	6.4
	Y16	W12	1	4400	35	4162						6.9	6.9
	Y16	W11	1	4690	35	4453						7.4	7.4
	Y16	W10	1	4920	35	4690						7.8	7.8
	Y16	W9	2	5120	35	4881						8.1	16.2
	Y16	W8	2	5270	35	5035						8.3	16.6
	Y16	W7	2	5390	35	5154						8.5	17.0
	Y16	W6	2	5470	35	5239						8.6	17.3
	Y16	W5	2	5530	35	5300						8.7	17.5
	Y16	W4	2	5550	35	5320						8.8	17.5
	Y12	W51	14	1370	83	357	215	364				1.2	17.0
	Y12	W44	60	780	48	104	587	413				0.7	41.6
	Y16	W3	120	1130	54	163	910					1.8	214.1
	Y16	W20	2	1160	54	163	923					1.8	3.7
	Y16	W19	2	1190	54	163	960					1.9	3.8
	Y16	W18	2	1230	54	163	994					1.9	3.9
	Y16	W17	2	1250	54	163	1013					2.0	3.9
	Y16	W37	2	1510	54	163	1271					2.4	4.8
	Y16	W36	2	1810	54	163	1575					2.9	5.7
	Y16	W35	2	2040	54	163	1809					3.2	6.4
	Y16	W34	2	2230	54	163	1996					3.5	7.0
	Y16	W33	2	2260	54	163	2021					3.6	7.1
	Y16	W21	4	2350	54	163	2116					3.7	14.8
	Y16	W30	4	2460	54	163	2223					3.9	15.5
	Y16	W32	2	2560	54	163	2325					4.0	8.1
	Y16	W29	4	2570	54	163	2334					4.1	16.2
	Y16	W28	4	2660	54	163	2424					4.2	16.8
	Y16	W27	4	2730	54	163	2496					4.3	17.2
	Y16	W26	4	2780	54	163	2551					4.4	17.6
	Y16	W31	2	2790	54	163	2559					4.4	8.8
	Y16	W25	4	2820	54	163	2589					4.5	17.8
	Y16	W23	2	2850	54	163	2620					4.5	9.0
	Y16	W24	4	2850	54	163	2611					4.5	18.0
	Y16	W22	2	2980	54	163	2746					4.7	9.4
	Y12	W42	20	1980	62	1007	999					1.8	35.2
	Y12	W49	132	3840	65	1043						3.4	450.1
	Y12	W50	132	4390	65	1193						3.9	514.5
	Y12	W2	218	8240	65	2395						7.3	1595.1
	Y12	W1	218	9020	65	2641						8.0	1746.2
	Y16	W39	241	11660	65	10605						18.4	4437.1
	Y16	W38	240	11860	65	10677						18.7	4494.5

Total of 3371 bars with a mass of 24693.6 kg per cast unit.

CONSULTING ENGINEERS
TRI-M CONSULTING ENGINEERS
LEGNUM PARK BUILDING
WATER MELON STREET
POLOKWANE

CLIENT
JOBURG WATER
17 HARRISON STREET
.

DESIGNED	K.K.	10-06-2017
DRAWN	J.P.	10-06-2017
CHECKED	K.K.	10-06-2017
APPROVED BY: .	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY
NEW WATER TOWER & PUMP STATION

TANK WALL & SHAFTS
REINFORCING LAYOUT

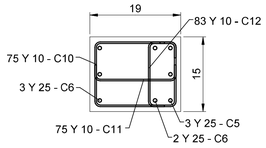
SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE
CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

SCALE: 1: 50; 1: 25

REV:	DESCRIPTION	DATE:

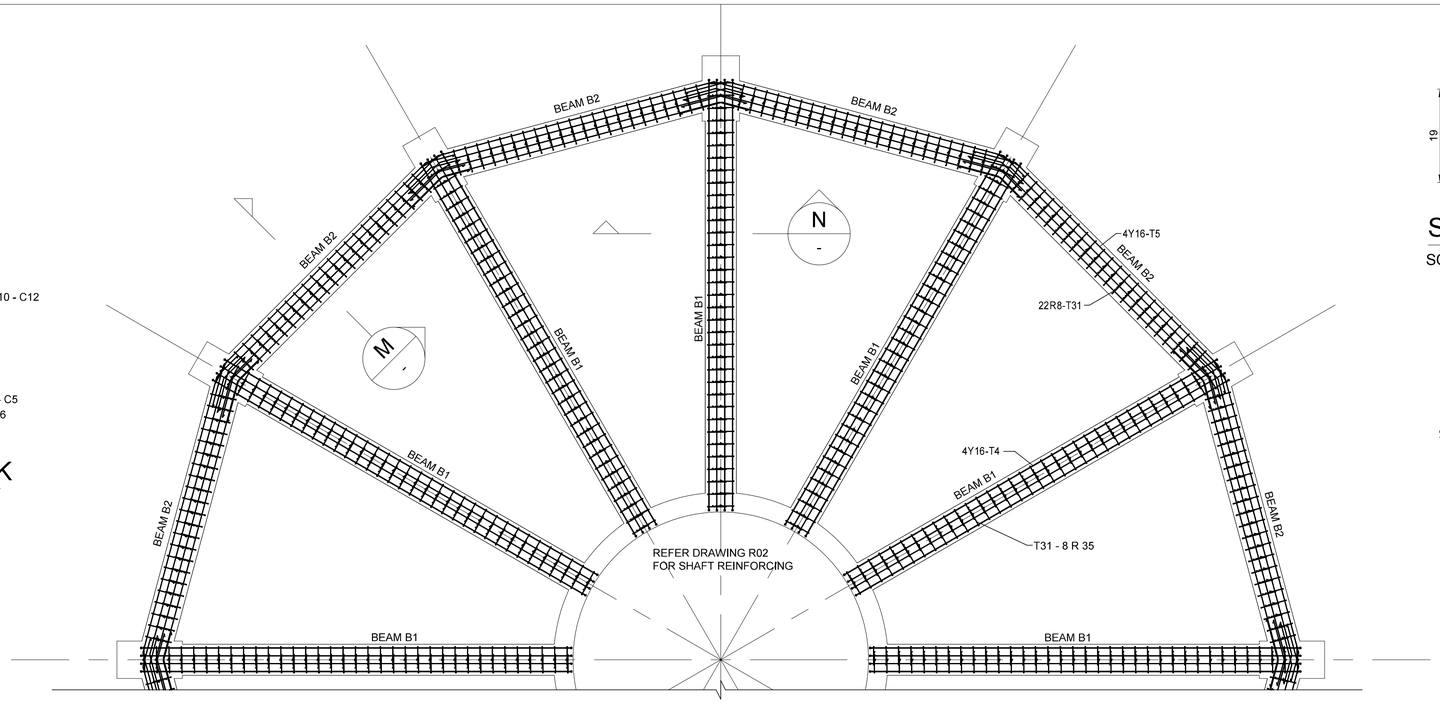
AMENDMENTS

JW14402 — CONTRACT No.
R02 — DRAWING No.
0 — REV.
A1 — ORIGINAL PAGE SIZE
SHEET 2 OF 5
FILE No.



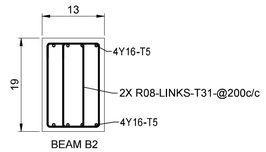
SECTION K-K

SCALE 1:25



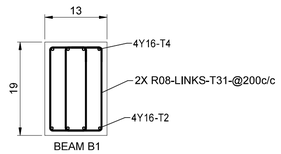
SECTION L-L

SCALE 1:25



SECTION M-M

SCALE 1:25

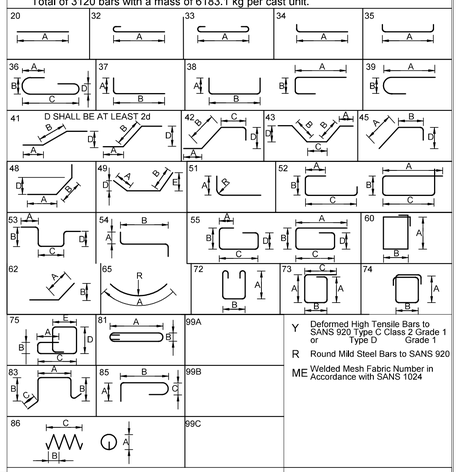


SECTION N-N

SCALE 1:25

Reinforcing bending dimensions for shape codes (SANS 282)

	Type	Mark	No	Length	Shape	A	B	C	D	E	r	Mass each	All
COLUMN REINFORCING	Y16	C0	48	8220	20	8226						13.0	623.0
	Y16	C1	48	9250	20	9256						14.6	701.1
	Y25	C6	60	8860	34	247						34.1	2048.8
	Y10	C12	996	710	35	520						0.4	435.3
	Y10	C11	900	1160	35	969						0.7	643.5
	Y16	C22	96	2110	41	998	116		69			3.3	319.9
	Y25	C2	48	7630	41	1147	118		79			29.4	1411.5
	Y25	C4	72	7630	41	1147	118		79			29.4	2117.2
	Y25	C3	72	7630	49	6381	1147		2777	539		29.4	2117.2
	Y25	C5	36	8840	49	5545	299		2205	288		34.1	1226.5
	Y10	C2	1152	1190	60	270	270					0.7	844.4
	Y10	C10	900	2360	60	608	520					1.5	1308.6
	Y10	C19	12	2430	60	640	520					1.5	18.0
	Y10	C20	12	2630	60	739	520					1.6	19.4
	Y10	C21	12	2820	60	838	520					1.7	20.8
	Y10	C13	12	3020	60	937	520					1.9	22.3
	Y10	C14	12	3220	60	1036	520					2.0	23.8
	Y10	C15	12	3420	60	1136	520					2.1	25.3
	Y10	C16	12	3620	60	1235	520					2.2	26.8
	Y10	C17	12	3820	60	1334	520					2.4	28.2
	Y10	C18	12	4010	60	1433	520					2.5	29.6
	Total of 4536 bars with a mass of 14011.2 kg per cast unit.												
BEAMS	Y16	T2	96	7160	35	6931						11.3	1085.4
	Y16	T4	96	7160	35	6931						11.3	1085.4
	Y16	T5	192	5780	49	484	708		258	370		9.1	1752.4
	R 8	T31	2736	2090	60	675	295					0.8	2259.9
	Total of 3120 bars with a mass of 6183.1 kg per cast unit.												



Y Deformed High Tensile Bars to SANS 920 Type C Class 2 Grade 1 or Type D Grade 1

R Round Mild Steel Bars to SANS 920

ME Welded Mesh Fabric Number in Accordance with SANS 1024

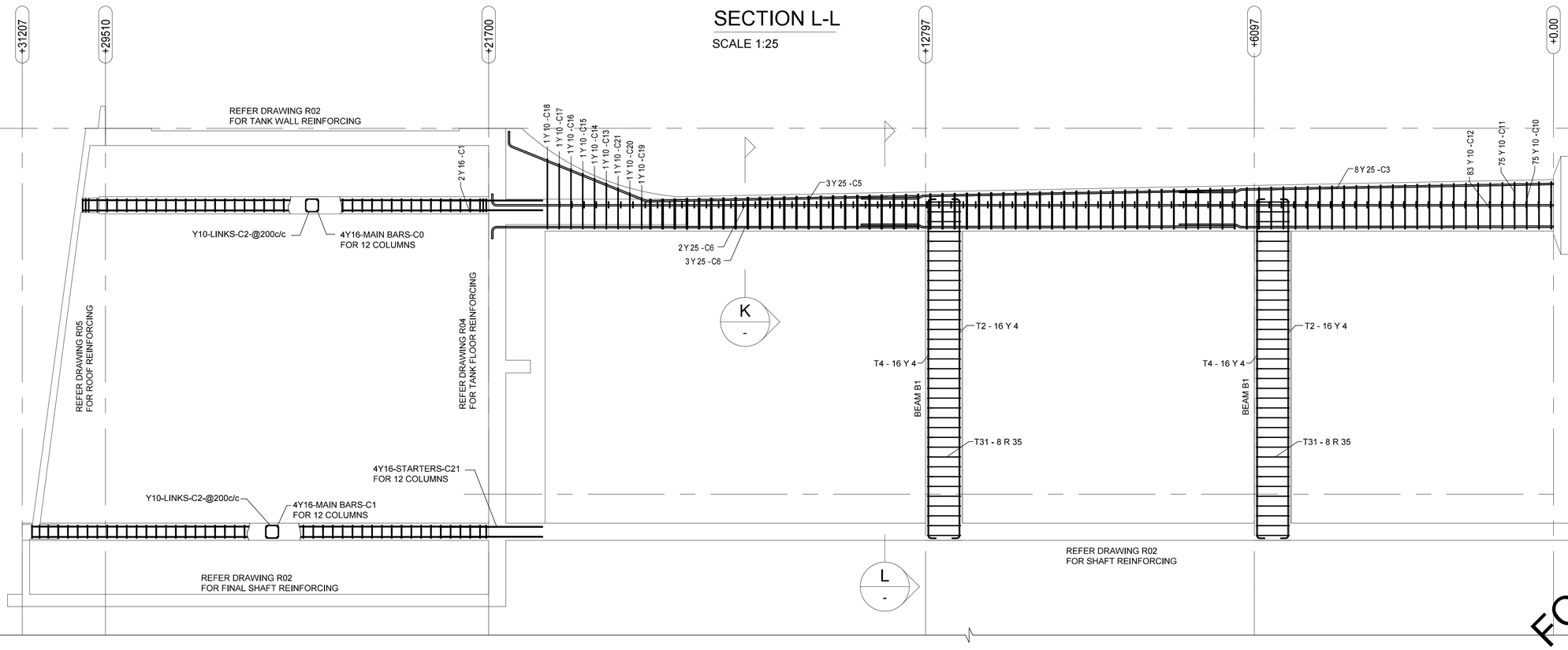
NOTES:
1. Use shape code 99 for all other shapes and a dimensioned sketch of the shape shall be given in the bar schedule
2. Radii of all bends are standard unless R is given in Bar Schedule
3. Dimensions are all external (outside dimensions)
4. All shapes are based on SANS 282 shape codes
5.All Splices must not be less than 40d

LEGEND

B1	Lowest of bottom layers
B2	Second lowest of bottom layers
T1	Highest of top layers
T2	Second highest of top layers
NF	Near Face
FF	Far Face
AT	Alternate

NOTES:

1) ALL CONCRETE TO BE 35MPa
2) MIN COVER TO REINFORCING =40mm; UNLESS NOTED OTHERWISE
3) DRAWING TO BE READ IN CONJUNCTION WITH CONCRETE LAYOUTS
4) LONGITUDINAL BARS TO HAVE LAP LENGTHS NOT LESS THAN 40D
5) ALL STEEL TO BE FIXED ON SITE
6) NO CONCRETE TO BE POURED UNTIL APPROVED BY THE ENGINEER
7) BACKFILLING TO BE COMPACTED 150mm MAX. PER LAYER



FOR TENDER ONLY

TYPICAL PARTIAL SECTION THROUGH TANK WALL & SHAFTS

CONSULTING ENGINEERS	DESIGNED	K.K.	10-06-2017
TRI-M CONSULTING ENGINEERS	DRAWN	J.P.	10-06-2017
LEGNUM PARK BUILDING	CHECKED	K.K.	10-06-2017
WATER MELON STREET	APPROVED BY:	SIGNATURE	DATE
POLOKWANE	ECSA REG. No.		
CLIENT	CHECKED		
JOBURG WATER			
17 HARRISON STREET		SIGNATURE	DATE

17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY
NEW WATER TOWER & PUMP STATION

COLUMNS & GENERAL REINFORCING DETAILS

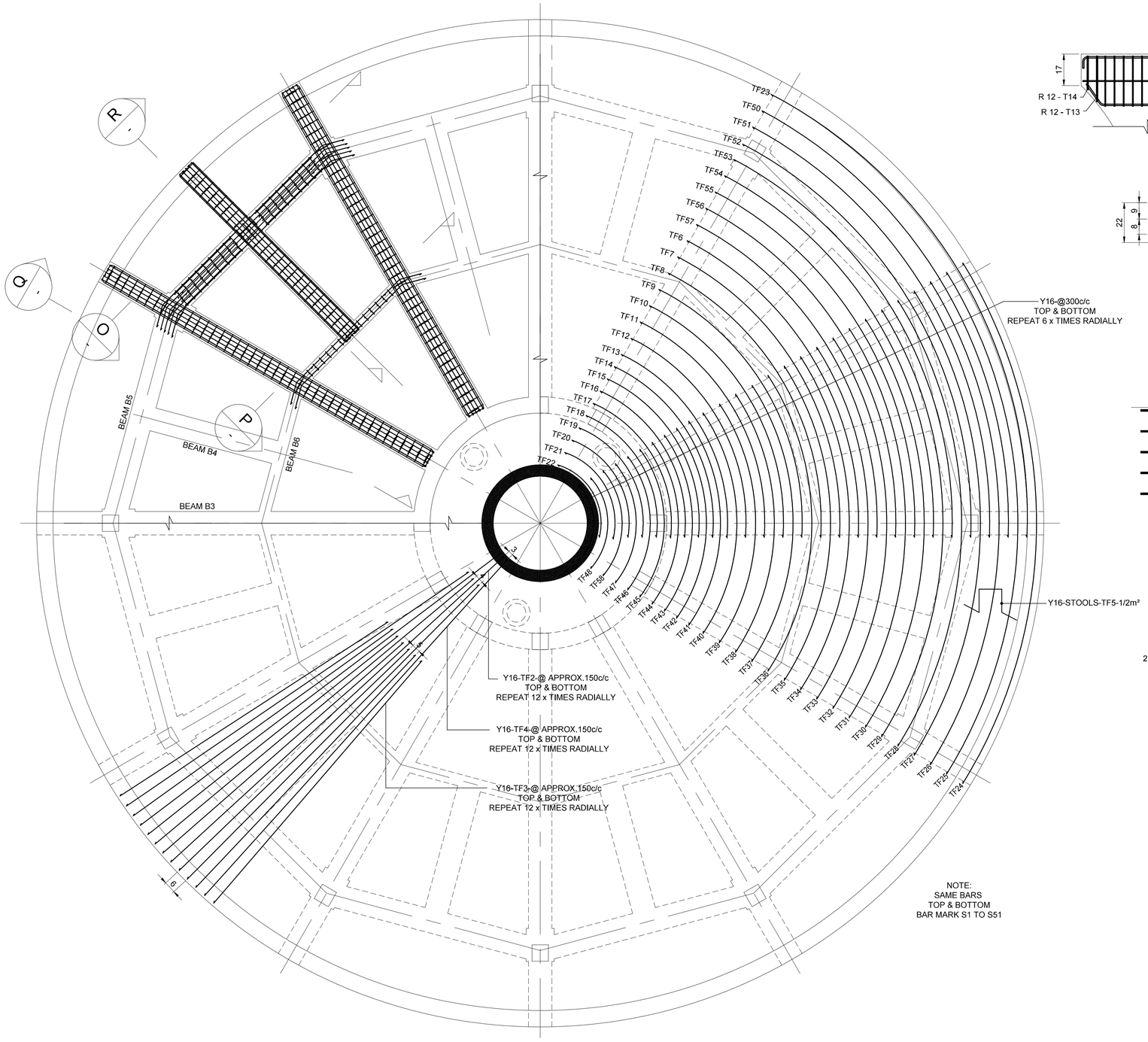
SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

SCALE		AMENDMENTS	
1: 50; 1: 25	REV:	DESCRIPTION	DATE:

JW14402	R03	-	0
CONTRACT No.	DRAWING No.		REV.
A1	SHEET 3	OF	5
ORIGINAL PAGE SIZE			

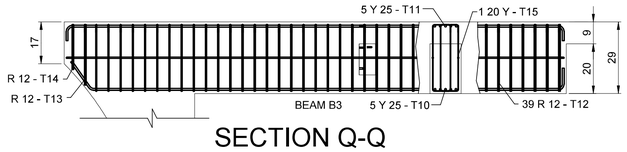
FILE No.



NOTE:
SAME BARS
TOP & BOTTOM
BAR MARK S1 TO S51

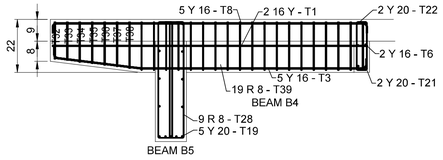
TANK FLOOR REINFORCING LAYOUT

SCALE 1:50



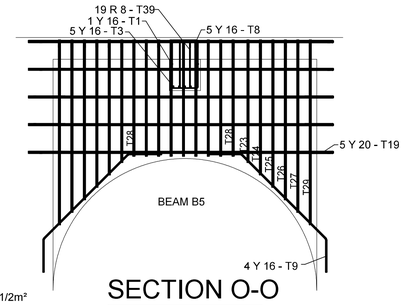
SECTION Q-Q

SCALE 1:50



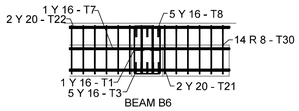
SECTION R-R

SCALE 1:50



SECTION O-O

SCALE 1:50

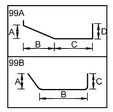


SECTION P-P

SCALE 1:50

Reinforcing bending dimensions for shape codes (SANS 282)

	Type	Mark	No	Length	Shape	A	B	C	D	E	r	Mass each	All
TANK FLOOR	Y16	TF1	132	6820	20	6828						10.8	1421.5
	Y16	TF3	132	6820	20	6820						10.8	1421.5
	Y16	TF4	132	8850	20	8853						14.0	1844.6
	Y16	TF2	132	9650	20	9657						15.2	2011.3
	Y16	TF5	212	1390	83	359	239	369				2.2	465.3
	Y16	TF49	12	1800	65	1151						2.8	34.1
	Y16	TF22	12	1960	65	1290						3.1	37.1
	Y16	TF48	12	2110	65	1458						3.3	40.0
	Y16	TF21	12	2310	65	1583						3.6	43.8
	Y16	TF58	12	2430	65	1740						3.8	46.0
	Y16	TF20	12	2590	65	1890						4.1	49.1
	Y16	TF47	12	2740	65	2040						4.3	51.9
	Y16	TF19	12	2900	65	2190						4.6	54.9
	Y16	TF46	12	3060	65	2340						4.8	58.0
	Y16	TF18	12	3210	65	2490						5.1	60.8
	Y16	TF45	12	3370	65	2640						5.3	63.9
	Y16	TF17	12	3540	65	2798						5.6	67.1
	Y16	TF44	12	3690	65	2940						5.8	69.9
	Y16	TF16	12	3840	65	3091						6.1	72.8
	Y16	TF43	12	4000	65	3240						6.3	75.8
	Y16	TF15	12	4160	65	3378						6.6	78.8
	Y16	TF42	12	4310	65	3540						6.8	81.7
	Y16	TF14	12	4470	65	3680						7.1	84.7
	Y16	TF41	12	4630	65	3840						7.3	87.7
	Y16	TF13	12	4800	65	3998						7.6	90.9
	Y16	TF40	12	4990	65	4190						7.9	94.5
	Y16	TF12	12	5200	65	4375						8.2	98.5
	Y16	TF39	12	5400	65	4585						8.5	102.3
	Y16	TF11	12	5620	65	4778						8.9	106.5
	Y16	TF38	12	5830	65	4990						9.2	110.5
	Y16	TF10	12	6040	65	5174						9.5	114.4
	Y16	TF37	12	6230	65	5383						9.8	118.0
	Y16	TF9	12	6460	65	5574						10.2	122.4
	Y16	TF36	12	6670	65	5790						10.5	126.4
	Y16	TF8	12	6880	65	5990						10.9	130.4
	Y16	TF35	12	7090	65	6190						11.2	134.3
	Y16	TF7	12	7300	65	6390						11.5	138.3
	Y16	TF34	12	7510	65	6590						11.9	142.3
	Y16	TF6	12	7720	65	6790						12.2	146.3
	Y16	TF33	12	7930	65	6990						12.5	150.3
	Y16	TF57	12	8130	65	7177						12.8	154.0
	Y16	TF32	12	8340	65	7390						13.2	158.0
	Y16	TF56	12	8550	65	7573						13.5	162.0
	Y16	TF31	12	8760	65	7790						13.8	166.0
	Y16	TF55	12	8970	65	7990						14.2	170.0
	Y16	TF30	12	9180	65	8190						14.5	173.9
	Y16	TF54	12	9390	65	8390						14.8	177.9
	Y16	TF29	12	9600	65	8590						15.2	181.9
	Y16	TF53	12	9810	65	8790						15.5	185.9
	Y16	TF28	12	10020	65	8990						15.8	189.9
	Y16	TF52	12	10230	65	9113						16.2	193.8
	Y16	TF27	12	10440	65	9390						16.5	197.8
	Y16	TF51	12	10650	65	9590						16.8	201.8
	Y16	TF26	12	10860	65	9790						17.1	205.8
	Y16	TF50	12	11070	65	9990						17.5	209.8
	Y16	TF25	12	11280	65	10190						17.8	213.7
	Y16	TF23	12	11510	65	10203						18.2	218.1
	Y16	TF24	12	11700	65	10590						18.5	221.7
Total of 1376 bars with a mass of 13630.8 kg per cast unit.													
TANK FLOOR BEAMS	Y16	T1	24	5290	35	5059						8.4	200.5
	Y16	T8	60	5290	35	5059						8.4	501.2
	Y20	T15	24	8270	35	7996						20.4	489.5
	Y25	T11	60	8350	35	7997						32.2	1930.9
	Y16	T9	96	2680	48	534	1639	1159				4.2	406.3
	Y16	T6	12	4070	49	519	519		276	276		6.4	77.1
	Y16	T7	12	4070	49	485	485		259	259		6.4	77.1
	Y20	T22	24	4070	49	485	485		262	262		10.0	240.9
	Y20	T21	24	4080	49	520	520		280	280		10.1	241.5
	Y20	T19	60	5650	49	520	520		280	280		13.9	836.0
	Y20	T17	24	5670	49	503	503		271	271		14.0	335.6
	Y20	T20	24	5720	49	503	503		271	271		14.1	338.5
	Y20	T18	24	5760	49	503	503		271	271		14.2	340.9
	Y20	T16	60	5780	49	485	485		262	262		14.3	855.2
	R 8	T32	24	1930	60	595	295					0.8	18.3
	R 8	T33	24	1970	60	615	295					0.8	18.7
	R 8	T34	24	2030	60	645	295					0.8	19.2
	R 8	T30	168	2040	60	775	170					0.8	135.4
	R 8	T35	24	2070	60	665	295					0.8	19.6
	R 8	T36	24	2130	60	695	295					0.8	20.2
	R 8	T37	24	2170	60	715	295					0.9	20.6
	R 8	T38	24	2230	60	745	295					0.9	21.1
	R 8	T39	456	2290	60	775	295					0.9	412.7
	R 8	T28	216	4340	60	1865	230					1.7	370.2
	R 8	T23	48	4540	60	1965	230					1.8	86.1
	R 8	T24	48	4940	60	2165	230					2.0	93.6
	R 8	T25	48	5340	60	2365	230					2.1	101.2
	R 8	T26	48	5740	60	2565	230					2.3	108.8
	R 8	T27	48	6140	60	2765	230					2.4	116.4
	R 8	T29	48	6540	60	2965	230					2.6	124.0
	R12	T14	24	2160	60	725	295					1.9	46.0
	R12	T13	24	2660	60	975	295					2.4	56.7
	R12	T12	936	2860	60	1075	295					2.5	2377.4
	Y16	T3	60	5320	99A	170	1390	3625	150			8.4	504.0
	Y25	T10	60	8420	99B	450	7588	340				32.5	1947.1
Total of 2928 bars with a mass of 13488.4 kg per cast unit.													



FOR TENDER ONLY

CONSULTING ENGINEERS	DESIGNED	K.K.	10-06-2017
TRI-M CONSULTING ENGINEERS	DRAWN	J.P.	10-06-2017
LEGNUM PARK BUILDING	CHECKED	K.K.	10-06-2017
WATER MELON STREET	APPROVED BY:	SIGNATURE	DATE
POLOKWANE	ECSA REG. No.		
CLIENT	CHECKED		
JOBURG WATER			
17 HARRISON STREET		SIGNATURE	DATE

17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY
NEW WATER TOWER & PUMP STATION

TANK FLOOR SLAB & BEAMS
REINFORCING LAYOUT

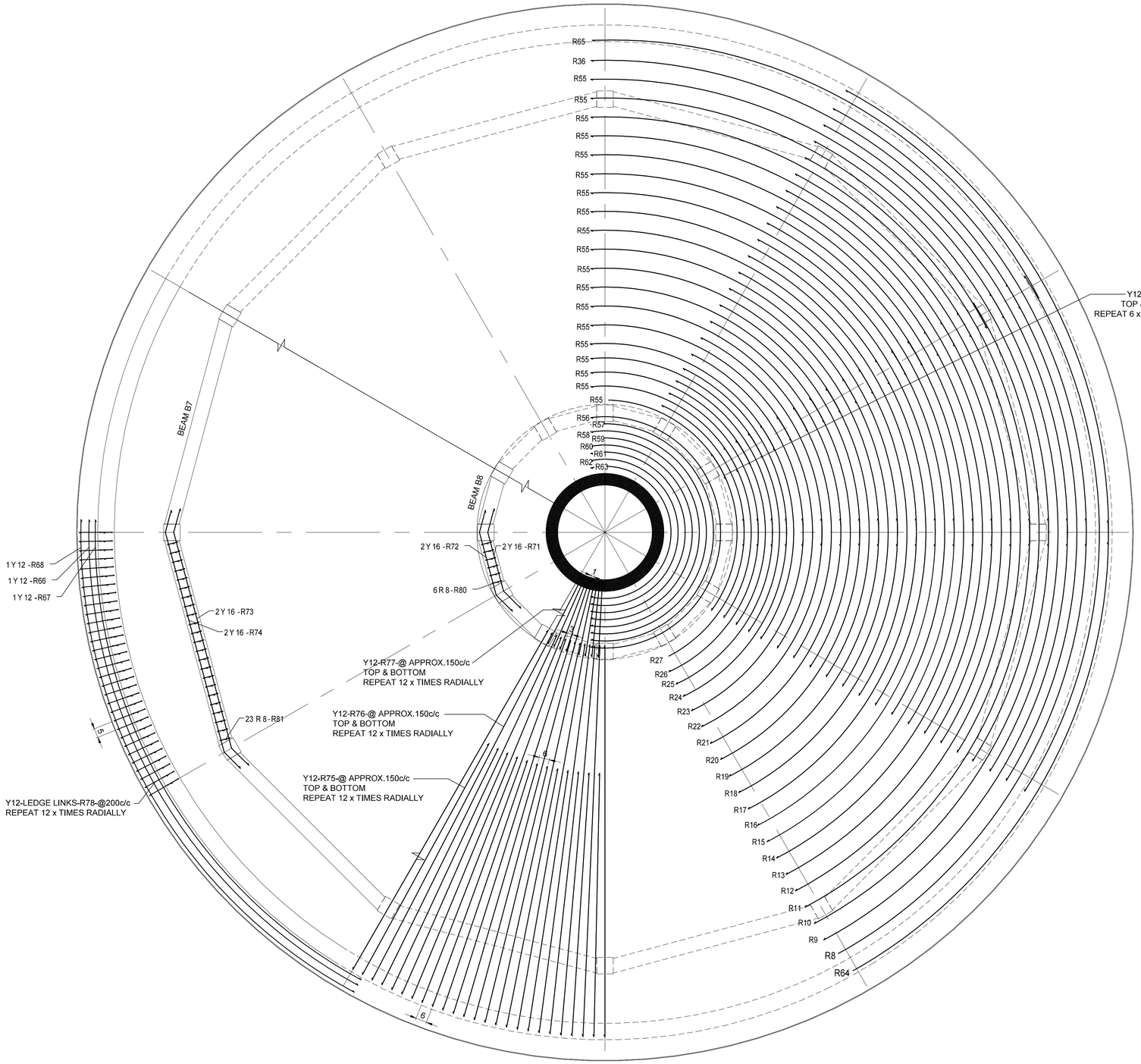
SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE	AMENDMENTS		DATE:
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	DESCRIPTION		
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	R04	0
CONTRACT No.	DRAWING No.	REV.

A1 — ORIGINAL PAGE SIZE

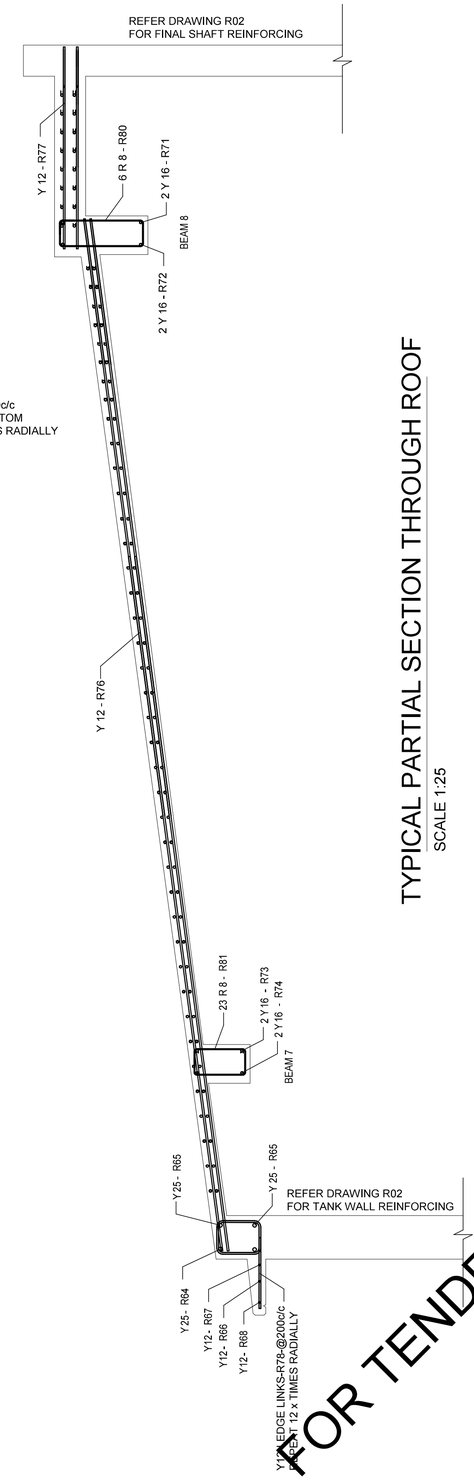
SHEET 4 OF 5

FILE No.



TANK ROOF REINFORCING LAYOUT

SCALE 1:50



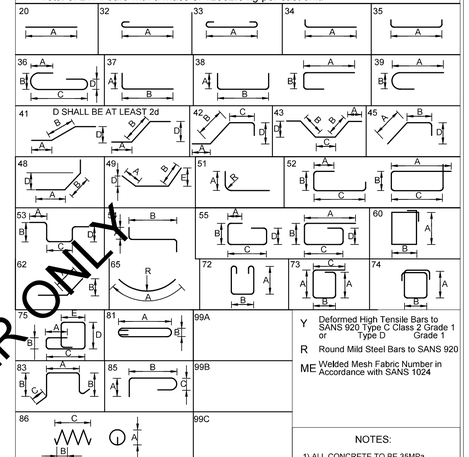
TYPICAL PARTIAL SECTION THROUGH ROOF

SCALE 1:25

Reinforcing bending dimensions for shape codes (SANS 282)

	Type	Mark	No	Length	Shape	A	B	C	D	E	r	Mass each	All
TANK ROOF	Y12	R77	240	1600	20	1600						1.4	341.0
	Y12	R75	288	5620	20	5628						5.0	1437.4
	Y12	R76	286	8350	20	8358						7.4	2120.7
	Y12	R79	2	8360	20	8360						7.4	14.8
	Y16	R71	24	2310	49	519	519		276	276		3.6	87.5
	Y16	R72	24	2340	49	485	485		259	259		3.7	88.7
	Y16	R73	24	5760	49	519	519		276	276		9.1	218.3
	Y16	R74	24	5780	49	485	485		259	259		9.1	219.0
	R 8	R81	276	1420	60	415	220					0.6	154.8
	R 8	R80	72	1940	60	675	220					0.8	55.2
	Y12	R67	6	11830	65	10770						10.5	63.0
	Y12	R66	6	11980	65	10900						10.6	63.8
	Y12	R68	6	12160	65	11070						10.8	64.8
	Y16	R55	12	3540	65	2798						5.6	67.1
	Y16	R27	12	3690	65	2940						5.8	69.9
	Y16	R54	12	3840	65	3091						6.1	72.8
	Y16	R26	12	4000	65	3240						6.3	75.8
	Y16	R53	12	4160	65	3378						6.6	78.8
	Y16	R25	12	4310	65	3540						6.8	81.7
	Y16	R52	12	4470	65	3680						7.1	84.7
	Y16	R24	12	4630	65	3840						7.3	87.7
	Y16	R51	12	4800	65	3998						7.6	90.9
	Y16	R23	12	4990	65	4190						7.9	94.5
	Y16	R63	4	5000	65	1390						7.9	31.6
	Y16	R50	12	5200	65	4375						8.2	98.5
	Y16	R22	12	5400	65	4585						8.5	102.3
	Y16	R62	4	5470	65	1540						8.6	34.5
	Y16	R49	12	5620	65	4778						8.9	106.5
	Y16	R21	12	5830	65	4990						9.2	110.5
	Y16	R61	4	5940	65	1690						9.4	37.5
	Y16	R48	12	6040	65	5174						9.5	114.4
	Y16	R20	12	6230	65	5383						9.8	118.0
	Y16	R60	4	6410	65	1840						10.1	40.5
	Y16	R47	12	6460	65	5574						10.2	122.4
	Y16	R19	12	6670	65	5790						10.5	126.4
	Y16	R46	12	6880	65	5990						10.9	130.4
	Y16	R59	4	6880	65	1990						10.9	43.5
	Y16	R18	12	7090	65	6190						11.2	134.3
	Y16	R45	12	7300	65	6390						11.5	138.3
	Y16	R58	4	7350	65	2140						11.6	46.4
	Y16	R17	12	7510	65	6590						11.9	142.3
	Y16	R44	12	7720	65	6790						12.2	146.3
	Y16	R57	4	7820	65	2290						12.3	49.4
	Y16	R16	12	7930	65	6990						12.5	150.3
	Y16	R43	12	8130	65	7177						12.8	154.0
	Y16	R56	4	8290	65	2440						13.1	52.4
	Y16	R15	12	8340	65	7390						13.2	158.0
	Y16	R42	12	8550	65	7573						13.5	162.0
	Y16	R14	12	8760	65	7790						13.8	166.0
	Y16	R41	12	8970	65	7990						14.2	170.0
	Y16	R13	12	9180	65	8190						14.5	173.9
	Y16	R40	12	9390	65	8390						14.8	177.9
	Y16	R12	12	9600	65	8590						15.2	181.9
	Y16	R39	12	9810	65	8790						15.5	185.9
	Y16	R11	12	10020	65	8990						15.8	189.9
	Y16	R38	12	10230	65	9113						16.2	193.8
	Y16	R10	12	10440	65	9390						16.5	197.8
	Y16	R37	12	10650	65	9590						16.8	201.8
	Y16	R9	12	10860	65	9790						17.1	205.8
	Y16	R36	12	11070	65	9990						17.5	209.8
	Y16	R8	12	11280	65	10190						17.8	213.7
	Y25	R65	12	11510	65	10198						44.4	532.3
	Y25	R64	12	11700	65	10585						45.1	541.1
	Y12	R78	360	1680	73	353	270			705		1.5	537.1

Total of 2174 bars with a mass of 12362.6 kg per cast unit.



FOR TENDER ONLY

Y Deformed High Tensile Bars to SANS 920 Type C Class 2 Grade 1 or Type D Grade 1

R Round Mild Steel Bars to SANS 920

ME Welded Mesh Fabric Number in Accordance with SANS 1024

NOTES:
1. Use shape code 99 for all other shapes and a dimensioned sketch of the shape shall be given in the bar schedule
2. Radii of all bends are standard unless R is given in Bar Schedule
3. Dimensions are all external (outside dimensions)
4. All shapes are based on SANS 282 shape codes
5.All Splices must not be less than 40d

LEGEND
B1 Lowest of bottom layers
B2 Second lowest of bottom layers
T1 Highest of top layers
T2 Second highest of top layers
NF Near Face
FF Far Face
AT Alternate

NOTES:
1) ALL CONCRETE TO BE 35MPa
2) MIN COVER TO REINFORCING =40mm; UNLESS NOTED OTHERWISE
3) DRAWING TO BE READ IN CONJUNCTION WITH CONCRETE LAYOUTS
4) LONGITUDINAL BARS TO HAVE LAP LENGTHS NOT LESS THAN 40D
5) ALL STEEL TO BE FIXED ON SITE
6) NO CONCRETE TO BE POURED UNTIL APPROVED BY THE ENGINEER
7) BACKFILLING TO BE COMPACTED 150mm MAX. PER LAYER

CONSULTING ENGINEERS
TRI-M CONSULTING ENGINEERS
LEGNUM PARK BUILDING
WATER MELON STREET
POLOKWANE

DESIGNED	K.K.	10-06-2017	
DRAWN	J.P.	10-06-2017	
CHECKED	K.K.	10-06-2017	
APPROVED BY:	SIGNATURE	DATE	
ECSA REG. No.			
CHECKED			
	SIGNATURE	DATE	

CLIENT
JOBURG WATER
17 HARRISON STREET

17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400

FAX: (011) 688-1529

FOREST HILL WATER SUPPLY
NEW WATER TOWER & PUMP STATION

TANK ROOF SLAB
REINFORCING LAYOUT

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE
CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

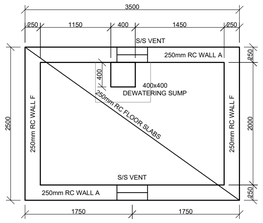
SCALE: 1: 50; 1: 25

REV:	AMENDMENTS DESCRIPTION	DATE:

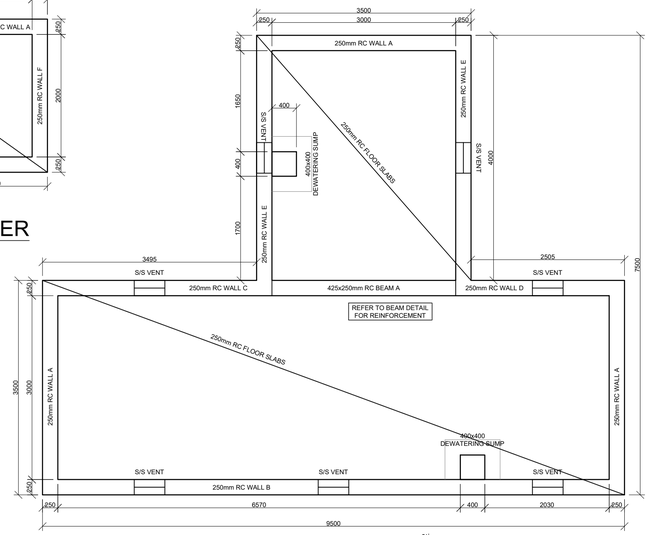
CONTRACT No.	DRAWING No.	REV.
JW14402	R05	0

ORIGINAL PAGE SIZE: A1 — SHEET 5 OF 5

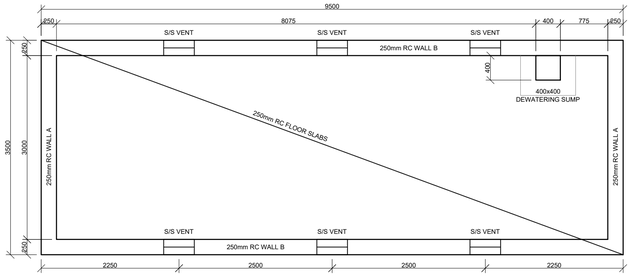
FILE No.



OUTLET CHAMBER SLAB LAYOUT
SCALE 1:50



METER CHAMBER PLAN LAYOUT
SCALE 1:50



RETICULATION CHAMBER PLAN LAYOUT
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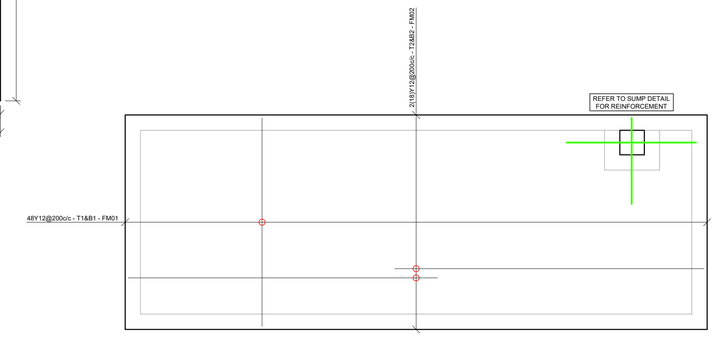
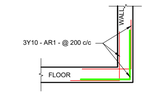
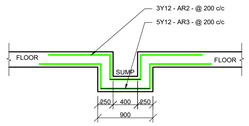


RETICULATION CHAMBER FLOOR REBAR
SCALE 1:50



FLOOR TO WALL REINFORCEMENT DETAIL
SCALE 1:50



SUMP REINFORCEMENT DETAIL
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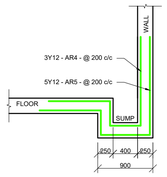

SUMP REINFORCEMENT DETAIL
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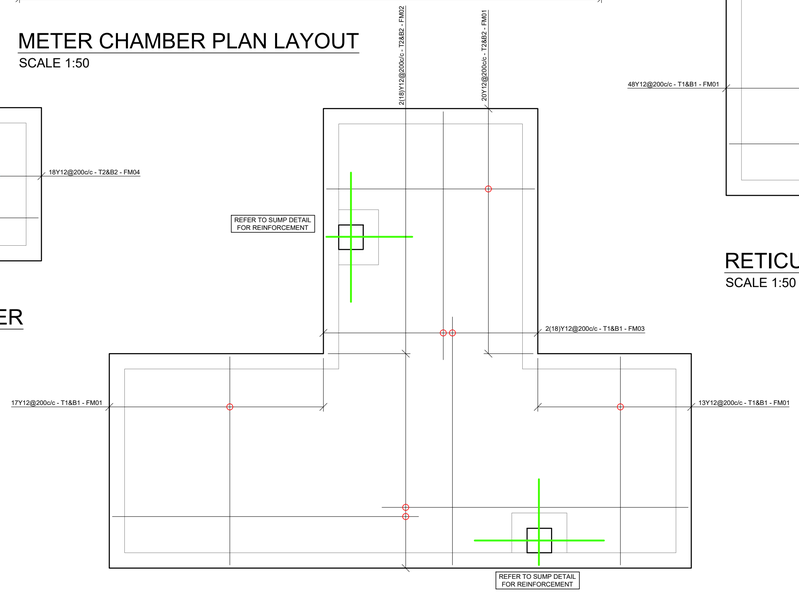
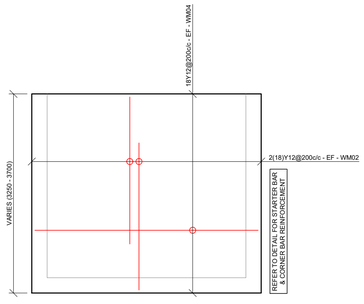
ADDITIONAL CORNER BARS ON ALL INSIDE CORNERS
SCALE 1:50



OUTLET CHAMBER FLOOR REBAR
SCALE 1:50

METER CHAMBER FLOOR REBAR
SCALE 1:50



WALL TYPE C REBAR
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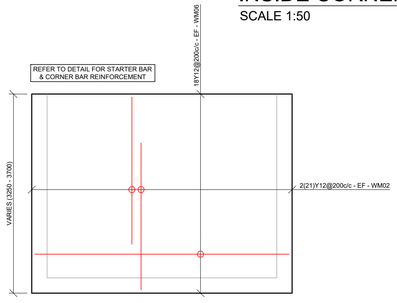

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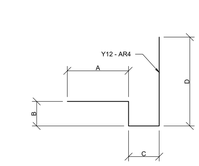

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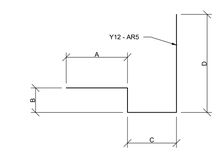

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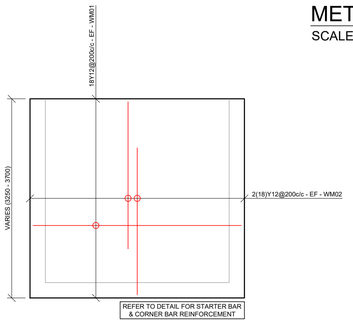

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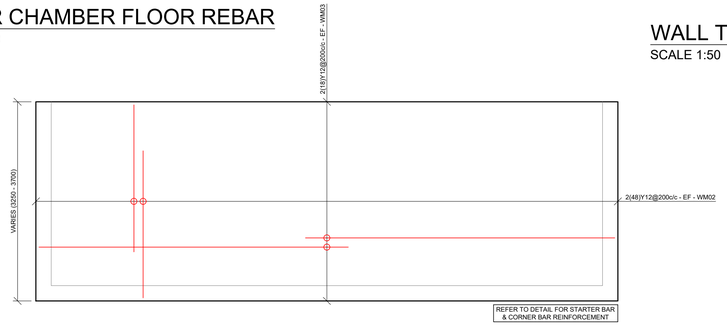

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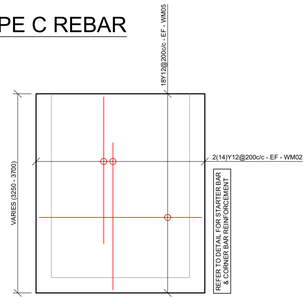

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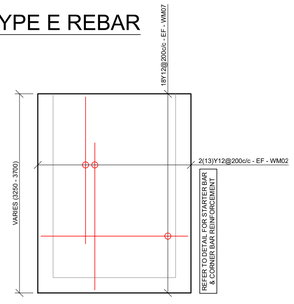

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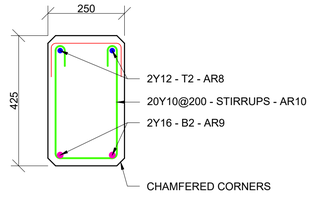


BEAM A REINFORCEMENT
SCALE 1:10

1. GENERAL NOTES

1.1 The copyright on this dwg, including the design and details shown hereon, is reserved by the Consulting Engineers.

1.2 No scaling of dimensions from drawings allowed.

1.3 All dimensions and levels are to be verified on site by the contractor before commencing any work.

2. EARTHWORKS NOTES

2.1 All excavations to follow SANS 10400 PART G: Excavations

2.2 Lateral support and shoring of deep excavations to be designed and certified by a professional

2.3 Compacted fill in layers not exceeding 150mm to 97% MOD AASHTO

2.4 Approved insecticide & weedkiller to SABS spec. Code 0124 to sides and under foundations, surface-beds & paving. 10 year underwritten guarantee in favour of client supplied by specialist contractor.

2.5 All foundation excavations to be approved by the Engineer prior to placement of any concrete

2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

3.1 All reinforced concrete to be vibrated

3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

4. REINFORCEMENT NOTES

4.1 Reinforcement detailing based on SANS 10144

4.2 Minimum lapping of reinforcement: 50 x smaller diameter
All laps to be staggered

4.3 Reinforcement to be securely wired at all intersections

4.4 Reinforcement must be formed around, and as close as allowed to holes, and must not be cut
All holes and voids to be checked and approved by the Engineer prior to the placement of any concrete

4.5 Mild steel (R) to comply with SABS 920 type A - Grade 3
High tensile steel (Y) to comply SABS 920 type C - Grade 1

4.6 Bending dimensions in accordance with sans 282:2011
Dimensions are all outside dimensions
Dimension d must allways be greater than 2 x bar dia.
Radius of all bends are standard unless r is given

4.7 All reinforcement to be checked and approved by the Engineer prior to the placement of any concrete
Any reinforcing not inspected before concrete is poured will not be signed off by VBL

4.8 Reinforcement abbreviations:
BW - Both Ways
EF - Each Face
NF - Near Face
FF - Far Face
EW - Each Way
SF - Side Face
T1 - Highest of top layers
T2 - Second highest of top layers
B1 - Lowest of bottom layers
B2 - Second lowest of bottom layers
ALT - Alternative
ABR - Alternative Bar Reversed

5. STRUCTURAL STEEL NOTES

5.1 All steel to be of grade 300WA

5.2 All bolts to be grade 8.8 unless noted

5.3 All welds to be 6mm fillet welds unless noted

5.4 No site welding shall be permitted without the prior consent of the Engineer

5.5 All holes to be drilled, NO flame cutting allowed

5.6 All steelwork to be painted within 6 hours after cleaning with one coat red oxide

5.7 Engineer to inspect manufactured steel components prior to delivery to site

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

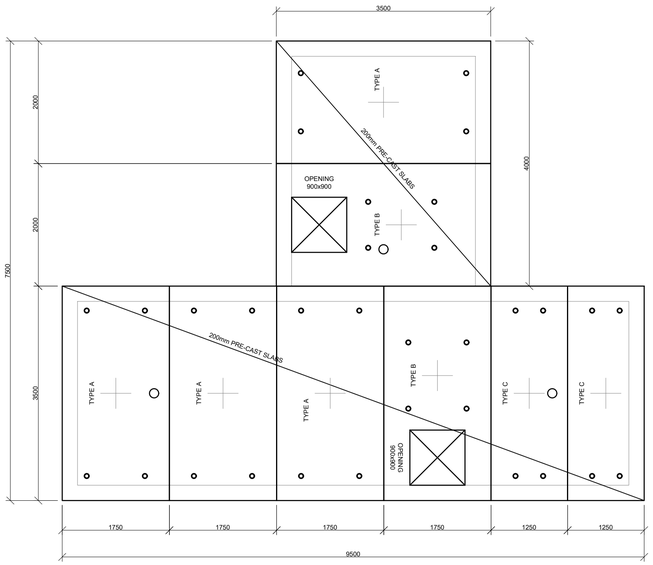
CHAMBER FLOOR AND WALL REINFORCEMENT LAYOUTS

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25
		APPROVED BY:			
DATE:			SIGNATURE	DATE	
CCTV INFORMATION		APPROVAL BY JW PLANNING			
CCTV COMPANY:		CHECKED			
		APPROVED BY:			
DATE:			SIGNATURE	DATE	

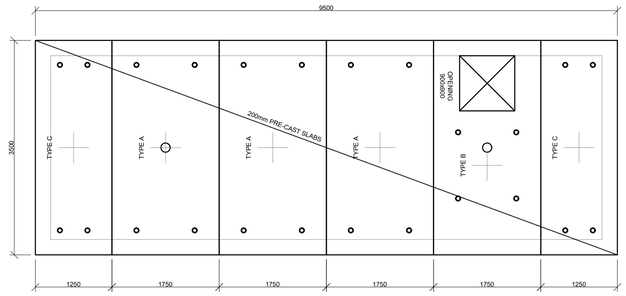
REV:	DESCRIPTION	DATE:
0	TENDER PURPOSES	05/08/2024

AMENDMENTS

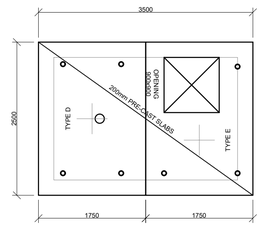
JW14402 — CONTRACT NUMBER
R06 - 0 — DRAWING No. — REV.
A1 — ORIGINAL PAGE SIZE
SHEET 1 OF 1
FILE No.



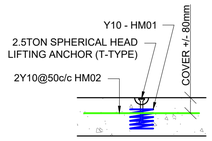
METER CHAMBER SLAB LAYOUT
SCALE 1:50



RETICULATION CHAMBER SLAB LAYOUT
SCALE 1:50



OUTLET CHAMBER SLAB LAYOUT
SCALE 1:50



DETAIL A
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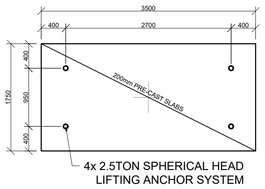

7 OFF LID TYPE A CONCRETE LAYOUT
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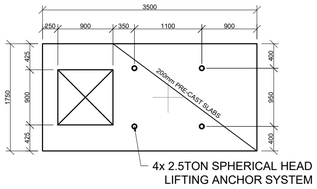

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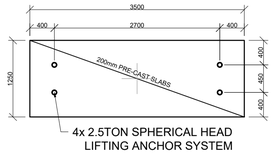

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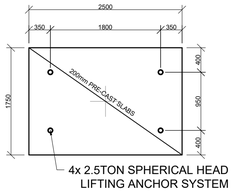

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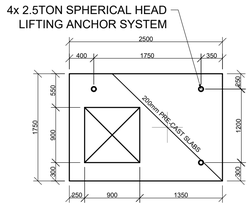

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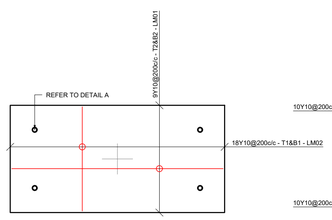

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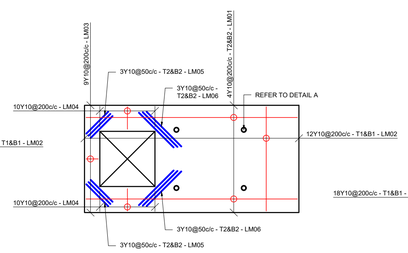
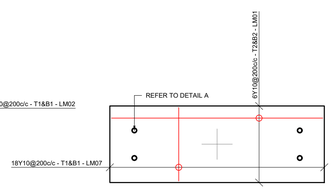


3 OFF LID TYPE B CONCRETE LAYOUT
SCALE 1:50



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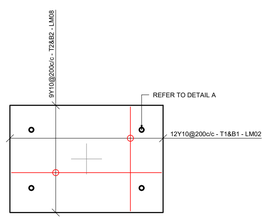
SCALE 1:50



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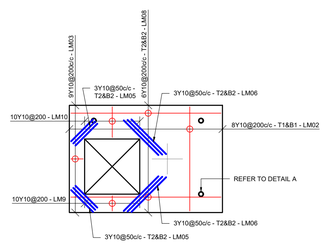

1 OFF LID TYPE C CONCRETE LAYOUT
SCALE 1:50

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2.4 Approved insecticide & weedkiller to SABS spec. Code 0124 to sides and under foundations, surface-beds & paving. 10 year underwritten guarantee in favour of client supplied by specialist contractor.

2.5 All foundation excavations to be approved by the Engineer prior to placement of any concrete

2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

3.1 All reinforced concrete to be vibrated

3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

4. REINFORCEMENT NOTES

4.1 Reinforcement detailing based on SANS 10144

4.2 Minimum lapping of reinforcement: 50 x smaller diameter
All laps to be staggered

4.3 Reinforcement to be securely wired at all intersections

4.4 Reinforcement must be formed around, and as close as allowed to holes, and must not be cut
All holes and voids to be checked and approved by the Engineer prior to the placement of any concrete

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High tensile steel (Y) to comply SABS 920 type C - Grade 1

4.6 Bending dimensions in accordance with sans 282:2011
Dimensions are all outside dimensions
Dimension d must allways be greater than 2 x bar dia.
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Any reinforcing not inspected before concrete is poured will not be signed off by VBL

4.8 Reinforcement abbreviations:
BW - Both Ways
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NF - Near Face
FF - Far Face
EW - Each Way
SF - Side Face
T1 - Highest of top layers
T2 - Second highest of top layers
B1 - Lowest of bottom layers
B2 - Second lowest of bottom layers
ALT - Alternative
ABR - Alternative Bar Reversed

5. STRUCTURAL STEEL NOTES

5.1 All steel to be of grade 300WA

5.2 All bolts to be grade 8.8 unless noted

5.3 All welds to be 6mm fillet welds unless noted

5.4 No site welding shall be permitted without the prior consent of the Engineer

5.5 All holes to be drilled, NO flame cutting allowed

5.6 All steelwork to be painted within 6 hours after cleaning with one coat red oxide

5.7 Engineer to inspect manufactured steel components prior to delivery to site

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

CHAMBER LID
REINFORCEMENT LAYOUTS

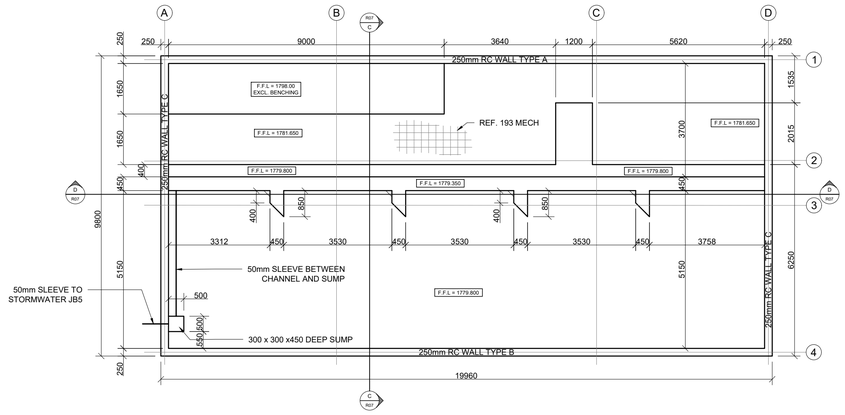
SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

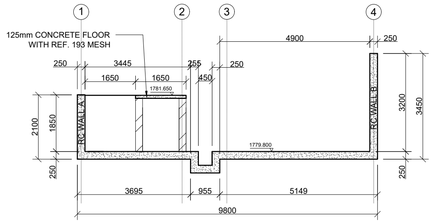
SCALE		AMENDMENTS	
1: 50; 1: 25	REV:	DESCRIPTION	DATE:
	0	TENDER PURPOSES	05/08/2024

JW14402	R07	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET	1	OF	1
ORIGINAL PAGE SIZE				

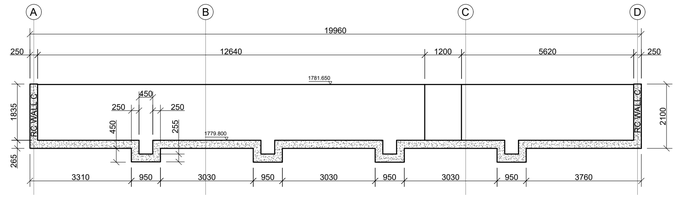
FILE No.



CONCRETE FLOOR LAYOUT
SCALE 1:100



SECTION C-C
SCALE 1:100



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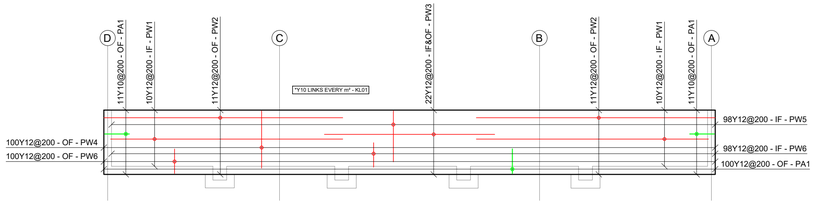
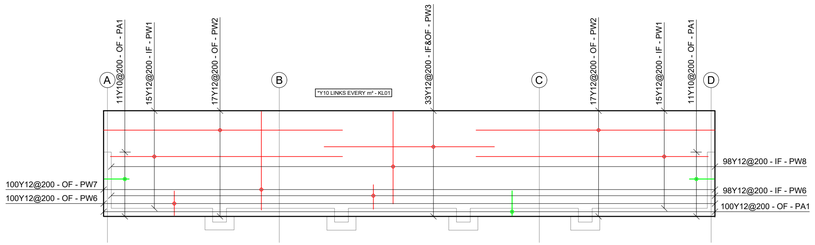
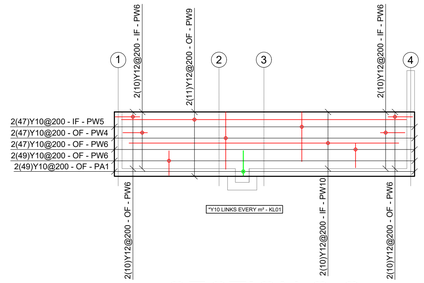


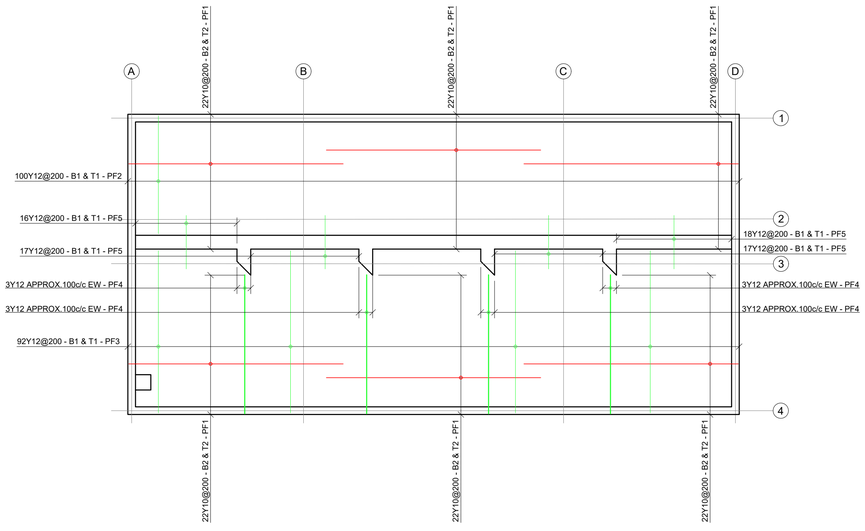
WALL TYPE A REBAR
SCALE 1:100



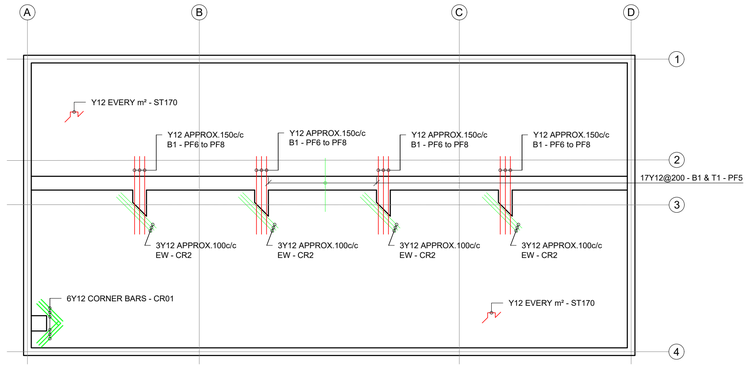
WALL TYPE A REBAR
SCALE 1:100



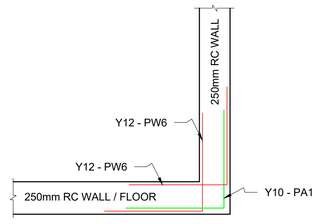
SECTION C-C
SCALE 1:100



FLOOR BOTTOM & TOP REBAR LAYOUT
SCALE 1:100



FLOOR BOTTOM & TOP REBAR LAYOUT
SCALE 1:100



TYPICAL CORNER REBAR DETAIL
SCALE 1:25

FOR TENDER ONLY

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MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

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JOHANNESBURG

TEL: (011) 688-1400
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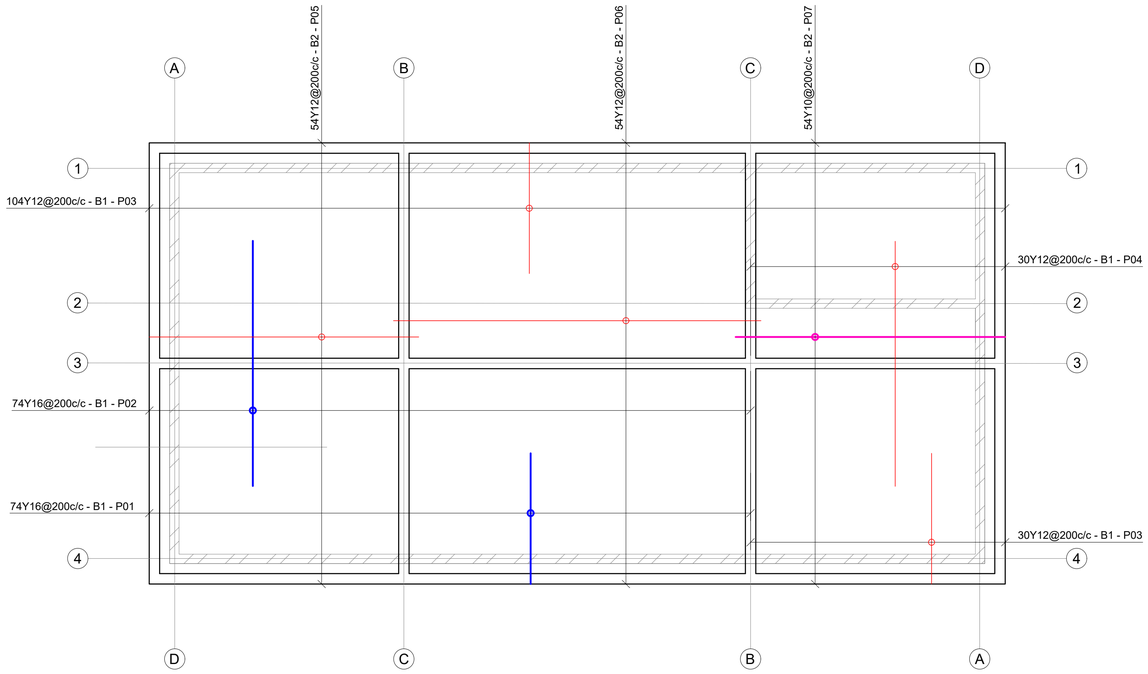
Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

REINFORCEMENT DETAILS - PUMP STATION
FLOOR & WALL REINFORCEMENT LAYOUT

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE
CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

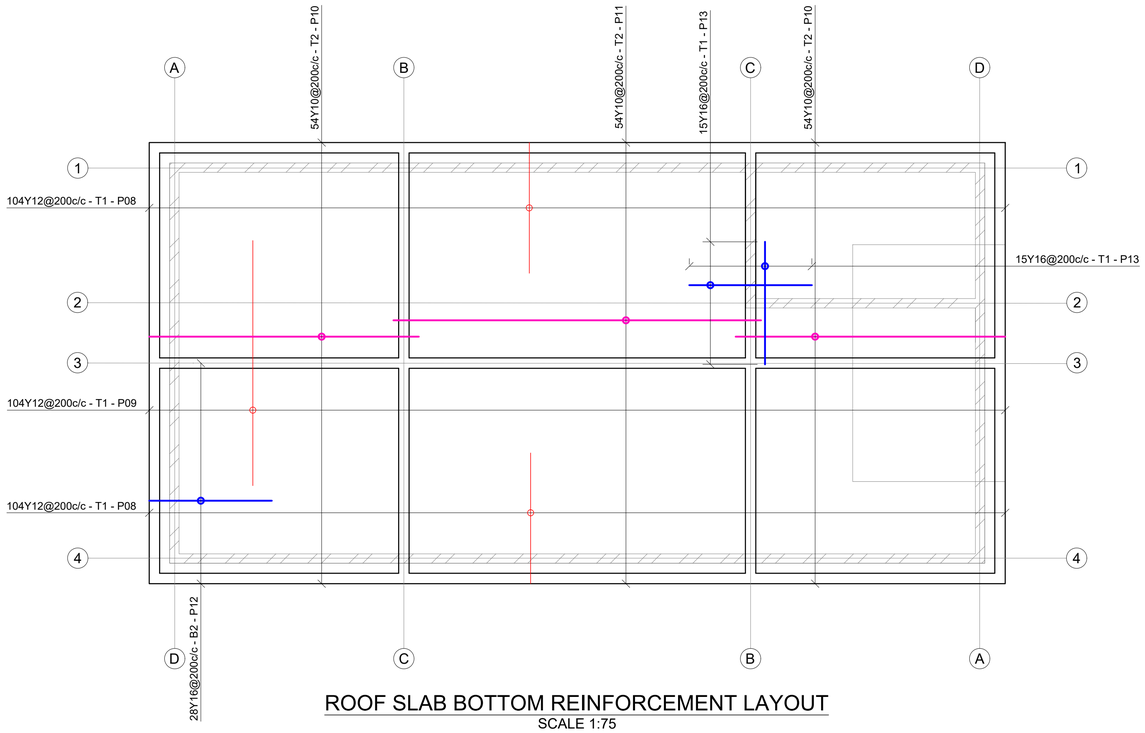
SCALE		AMENDMENTS	
1: 75	REV:	DESCRIPTION	DATE:
	0	TENDER PURPOSES	05/08/2024

JW14402 — CONTRACT NUMBER
R08 - 0 — DRAWING No. — REV.
A1 — ORIGINAL PAGE SIZE
SHEET 1 OF 1
FILE No.



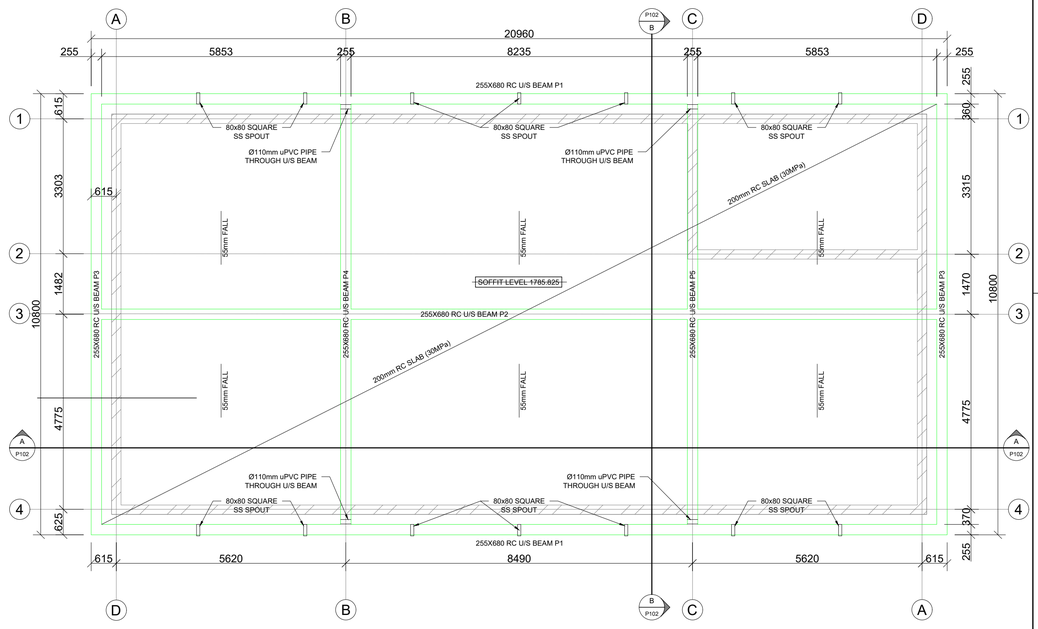
ROOF SLAB BOTTOM REINFORCEMENT LAYOUT

SCALE 1:75



ROOF SLAB BOTTOM REINFORCEMENT LAYOUT

SCALE 1:75



CONCRETE ROOF SLAB LAYOUT

SCALE 1:75

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FOR TENDER ONLY

CONSULTING ENGINEERS:	DESIGNED	P. S. Botha	05/08/2024
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	05/08/2024
WEWORK	CHECKED	P. S. BOTHA	05/08/2024
155 WEST STREET	APPROVED BY:		
SANDTON, JOHANNESBURG	P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.		
CLIENT POSTAL ADRESS:	CHECKED		
JOHANNESBURG WATER			
P O BOX 61542			
MARSHALLTOWN		SIGNATURE	DATE
2107			

Johannesburg Water

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Turffontein Corridors of Freedom

Water Upgrade

Foresthill Tower and Pump station

REINFORCEMENT DETAILS - PUMP STATION
ROOF SLAB REINFORCEMENT LAYOUT

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 75	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402 — CONTRACT NUMBER

R09 - 0 — DRAWING No. — REV.

A1 — ORIGINAL PAGE SIZE

SHEET 1 OF 1

FILE No.

MEMBER	No OF	BARS PER MEMB	DIA	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
WALL A	1	20	Y12	7600	20	PW1	20	(7600)				
		22	Y12	7800	22	PW2	20	(7800)				
		21	Y12	5550	21	PW3	20	(5550)				
		100	Y12	2000	100	PW4	34	1865				
		98	Y12	1650	98	PW5	20	(1665)				
		198	Y12	1600	198	PW6	37	800	(800)			
		122	Y10	1600	122	PA1	37	800	(800)			
WALL B	1	30	Y12	7600	30	PW1	20	(7600)				
		34	Y12	7800	34	PW2	20	(7800)				
		32	Y12	5550	32	PW3	20	(5550)				
		198	Y12	1600	198	PW6	37	800	(800)			
		100	Y12	3300	100	PW7	34	3200				
		98	Y12	3100	98	PW8	34	3000				
		122	Y10	1600	122	PA1	37	800	(800)			
WALL B	2	47	Y12	2000	94	PW4	34	1865				
		47	Y12	1650	94	PW5	20	(1665)				
		116	Y12	1600	232	PW6	37	800	(800)			
		100	Y12	9400	200	PW9	34	9300				
		98	Y12	8900	196	PW10	34	8800				
		49	Y10	1600	98	PA1	37	800	(800)			
LINKS	1	170	Y10	350	170	LK1	38	100	170	(100)		
FLOOR SLAB	1	176	Y10	7000	176	PF1	20	(7000)				
		100	Y12	4050	100	PF2	35	3850				
		92	Y12	5500	92	PF3	35	5300				
		12	Y12	4750	12	PF4	35	4535				
		85	Y12	2200	85	PF5	53	600	280	550	280	(600)
		4	Y12	2650	4	PF6	53	600	280	1010	280	(600)
		4	Y12	2850	4	PF7	53	600	280	1175	280	(600)
		4	Y12	3000	4	PF8	53	600	280	1340	280	(600)
		6	Y12	1000	6	CR1	20	(1000)				
		6	Y12	1800	6	CR2	35	1600				
STOOLS	1	210	Y12	1000	210	ST170	83	250	170	250	(250)	

	8	10	12	16	20	25	32	40	TOT
R									
Y		1134	7542						8675
TOT		1134	7542						8675

Date	2024/08/08
Det by	jn
Ref Dwg	R07
Job No	JW14402
Revision	0
Schedule No	FLOOR & WALL

Water Upgrade - Foresthill
Pump Station
Floor & Wall Reinforcement

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
BOT	1	74	Y16	3250	74	P01	37	100	(3200)			
		74	Y16	6000	74	P02	20	(6000)				
		134	Y12	3300	134	P03	37	100	(3200)			
		30	Y12	6000	30	P04	20	(6000)				
		54	Y12	6700	54	P05	37	100	(6600)			
		54	Y12	9000	54	P06	20	(9000)				
		54	Y10	6700	54	P07	37	100	(6600)			
TOP	1	208	Y12	3300	208	P08	37	100	(3200)			
		104	Y12	6000	104	P09	20	(6000)				
		108	Y10	6700	108	P10	37	100	(6600)			
		54	Y10	9000	54	P11	20	(9000)				
		28	Y16	3600	28	P12	38	100	3450	(100)		
		30	Y16	3500	30	P13	38	100	3350	(100)		

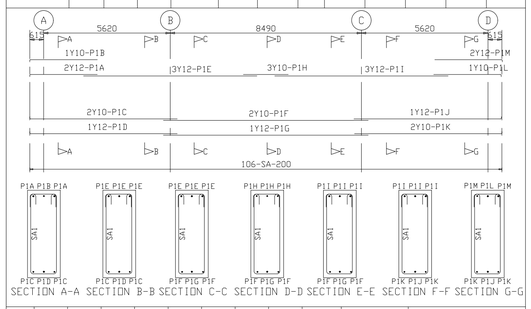
	8	10	12	16	20	25	32	40	TOT
R									
Y		969	2468	1405					4842
TOT		969	2468	1405					4842

Date	2024/08/05
Det. by	JN
Ref Dwg	P201
Job No	2012
Revision	0
Schedule No	PUMP ROOF SLAB

FOREST HILL WATER SUPPLY
PUMP STATION
ROOF SLAB REINFORCEMENT

FOR TENDER ONLY

MEMBER	No OF	BARS PER MEMB	DIA	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
BEAM P1	2	2	Y12	3100	4	P1A	37	100	(3000)			
		1	Y10	3100	2	P1B	37	100	(3000)			
		2	Y10	6650	4	P1C	37	100	(6550)			
		1	Y12	6650	2	P1D	37	100	(6550)			
		3	Y12	7700	6	P1E	20	(7700)				
		2	Y10	9100	4	P1F	20	(9100)				
		1	Y12	9100	2	P1G	20	(9100)				
		3	Y10	2000	6	P1H	20	(2000)				
		3	Y12	7700	6	P1I	20	(7700)				
		1	Y12	6650	2	P1J	37	100	(6550)			
		2	Y10	6650	4	P1K	37	100	(6550)			
		1	Y10	3100	2	P1L	37	100	(3000)			
		2	Y12	3100	4	P1M	37	100	(3000)			
		106	R8	1600	212	SA1	72	620	200			
		106	R8	400	212	SA2	38	100	200	(100)		

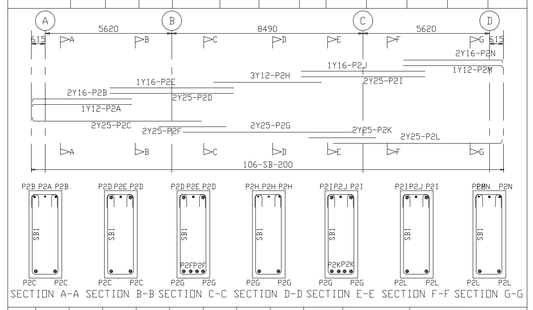


	8	10	12	16	20	25	32	40	TOT
R	167								167
Y		70	144						214
TOT	167	70	144						381

Date	2024/08/05
Det by	JN
Ref Dwg	P201
Job No	2012
Revision	0
Schedule No	BEAM P1

FOREST HILL WATER SUPPLY
PUMP STATION
ROOF SLAB BEAM REINFORCEMENT

MEMBER	No OF	BARS PER MEMB	DIA	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
BEAM P2	1	1	Y12	4500	1	P2A	37	100	(4400)			
		2	Y16	4500	2	P2B	37	120	(4400)			
		2	Y25	7650	2	P2C	37	180	(7500)			
		2	Y25	5500	2	P2D	20	(5500)				
		1	Y16	5500	1	P2E	20	(5500)				
		2	Y25	3000	2	P2F	20	(3000)				
		2	Y25	7500	2	P2G	20	(7500)				
		3	Y12	4800	3	P2H	20	(4800)				
		2	Y25	5500	2	P2I	20	(5500)				
		1	Y16	5500	1	P2J	20	(5500)				
		2	Y25	3000	2	P2K	20	(3000)				
		2	Y25	7650	2	P2L	37	180	(7500)			
		1	Y12	4500	1	P2M	37	100	(4400)			
		2	Y16	4500	2	P2N	37	120	(4400)			
		106	R10	1650	106	SB1	72	620	200			
		106	R10	350	106	SB2	38	100	200	(100)		

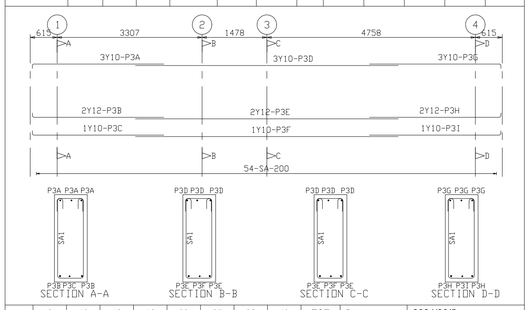


	8	10	12	16	20	25	32	40	TOT
R		131							131
Y			21	46		307			373
TOT		131	21	46		307			504

Date	2024/08/05
Det by	JN
Ref Dwg	P201
Job No	2012
Revision	0
Schedule No	BEAM P2

FOREST HILL WATER SUPPLY
PUMP STATION
ROOF SLAB BEAM REINFORCEMENT

MEMBER	No OF	BARS PER MEMB	DIA	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
BEAM P3	2	3	Y10	3100	6	P3A	37	100	(3000)			
		2	Y12	3100	4	P3B	37	100	(3000)			
		1	Y10	3100	2	P3C	37	100	(3000)			
		3	Y10	6000	6	P3D	20	(6000)				
		2	Y12	6000	4	P3E	20	(6000)				
		1	Y10	6000	2	P3F	20	(6000)				
		3	Y10	3100	6	P3G	37	100	(3000)			
		2	Y12	3100	4	P3H	37	100	(3000)			
		1	Y10	3100	2	P3I	37	100	(3000)			
		54	R8	1600	108	SA1	72	620	200			
		54	R8	400	108	SA2	38	100	200	(100)		

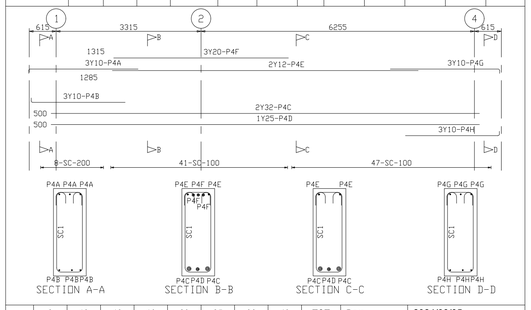


	8	10	12	16	20	25	32	40	TOT
R	85								85
Y		60	43						103
TOT	85	60	43						189

Date	2024/08/5
Det by	JN
Ref Dwg	P201
Job No	2012
Revision	0
Schedule No	BEAM P3

FOREST HILL WATER SUPPLY
PUMP STATION
ROOF SLAB BEAM REINFORCEMENT

MEMBER	No OF	BARS PER MEMB	DIA	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
BEAM P4	2	3	Y10	2600	6	P4A	37	100	(2500)			
		3	Y10	2250	6	P4B	37	100	(2150)			
		2	Y32	9800	4	P4C	20	(9800)				
		1	Y25	9800	2	P4D	20	(9800)				
		2	Y12	7000	4	P4E	20	(7000)				
		3	Y20	4000	6	P4F	20	(4000)				
		3	Y10	2600	6	P4G	37	100	(2500)			
		3	Y10	2250	6	P4H	37	100	(2150)			
		96	Y10	1650	192	SC1	72	620	200			
		96	Y10	350	192	SC2	38	100	200	(100)		

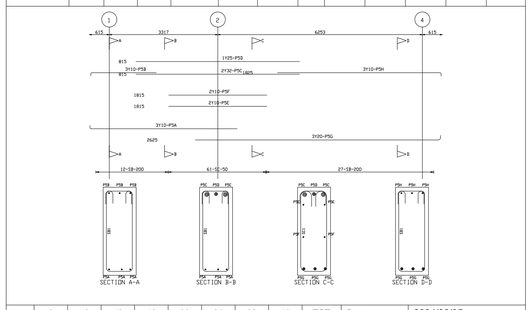


	8	10	12	16	20	25	32	40	TOT
R									
Y		273	25		59	76	247		680
TOT		273	25		59	76	247		680

Date	2024/08/05
Det by	JN
Ref Dwg	P201
Job No	2012
Revision	0
Schedule No	BEAM P4

FOREST HILL WATER SUPPLY
PUMP STATION
ROOF SLAB BEAM REINFORCEMENT

MEMBER	No OF	BARS PER MEMB	DIA	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
BEAM P5	1	3	Y10	4600	3	P5A	37	100	(4500)			
		3	Y10	2100	3	P5B	37	100	(2000)			
		2	Y32	5000	2	P5C	20	(5000)				
		1	Y25	5000	1	P5D	20	(5000)				
		2	Y10	3000	2	P5E	20	(3000)				
		2	Y10	3000	2	P5F	20	(3000)				
		3	Y20	7600	3	P5G	37	140	(7500)			
		3	Y10	5100	3	P5H	37	100	(5000)			
		39	R10	1650	39	SB1	72	620	200			
		39	R10	350	39	SB2	38	100	200	(100)		
		61	Y12	1700	61	SC1	72	620	200			
		61	Y12	350	61	SC2	38	100	200	(100)		



	8	10	12	16	20	25	32	40	TOT
R		48							48
Y		29	111		56	19	63		279
TOT		77	111		56	19	63		327

Date	2024/08/05
Det by	JN
Ref Dwg	P201
Job No	2012
Revision	0
Schedule No	BEAM P5

FOREST HILL WATER SUPPLY
PUMP STATION
ROOF SLAB BEAM REINFORCEMENT

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
FLOOR	1	225	Y12	3600	225	FM1	35	3400				
		145	Y12	5150	145	FM2	34	5050				
		72	Y12	4150	72	FM3	34	4050				
		26	Y12	2600	26	FM4	35	2400				
STOOLS	1	100	Y12	800	100	FM5	83	250	125	200	(200)	
WALL	1	252	Y12	3600	252	WM1	35	3400				
A-F		1480	Y12	2500	1480	WM2	34	2400				
B		216	Y12	5150	216	WM3	34	5050				
C		36	Y12	3850	36	WM4	35	3640				
D		36	Y12	2850	36	WM5	35	2650				
E		72	Y12	4350	72	WM6	35	4150				
F		72	Y12	2600	72	WM7	35	2400				
CORNER	1	905	Y10	1000	905	AR1	37	500	(500)			
SUMP	4	3	Y12	2900	12	AR2	53	800	400	500	400	(900)
		5	Y12	3200	20	AR3	53	800	400	800	400	(900)
99A	4	3	Y12	2900	12	AR4	99	800	400	500	1000	
99B	4	5	Y12	3200	20	AR5	99	800	400	800	1100	
ADD	1	600	Y10	1200	600	AR6	37	600	(600)			
CLIPS	1	300	Y10	350	300	AR7	35	125				
BEAM A	1	2	Y12	4200	2	AR8	35	4000				
		2	Y16	4250	2	AR9	35	4000				
		20	Y10	900	20	AR10	72	165	350			
		20	Y10	400	20	AR10	35	165				
LID	1	198	Y10	3600	198	LM1	35	3400				
		348	Y10	1900	348	LM2	35	1700				
		36	Y10	700	36	LM3	60	150	125			
		120	Y10	550	120	LM4	35	350				
		72	Y10	500	72	LM5	20	(500)				
		72	Y10	800	72	LM6	20	(800)				
		36	Y10	1400	36	LM7	35	1200				
		30	Y10	2600	30	LM8	35	2400				
		10	Y10	800	10	LM9	60	200	125			
		20	Y10	700	20	LM10	35	500				
STOOLS	1	100	Y12	800	100	LM11	83	250	125	200	(200)	

	8	10	12	16	20	25	32	40	TOT
R									
Y		2136	7769	13					9919
TOT		2136	7769	13					9919

Date	2024/08/05
Det. by	JN
Ref Dwg	R07 & R08
Job No	JW14402
Revision	0
Schedule No	CHAMBER

Foresthill Tower and Pump station
Water Upgrade
CHAMBER REINFORCEMENT

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

PUMP STATION & CHAMBERS
REINFORCEMENT SCHEDULES

SURVEY INFORMATION	
PROJECT SURVEYOR:	
DATE:	

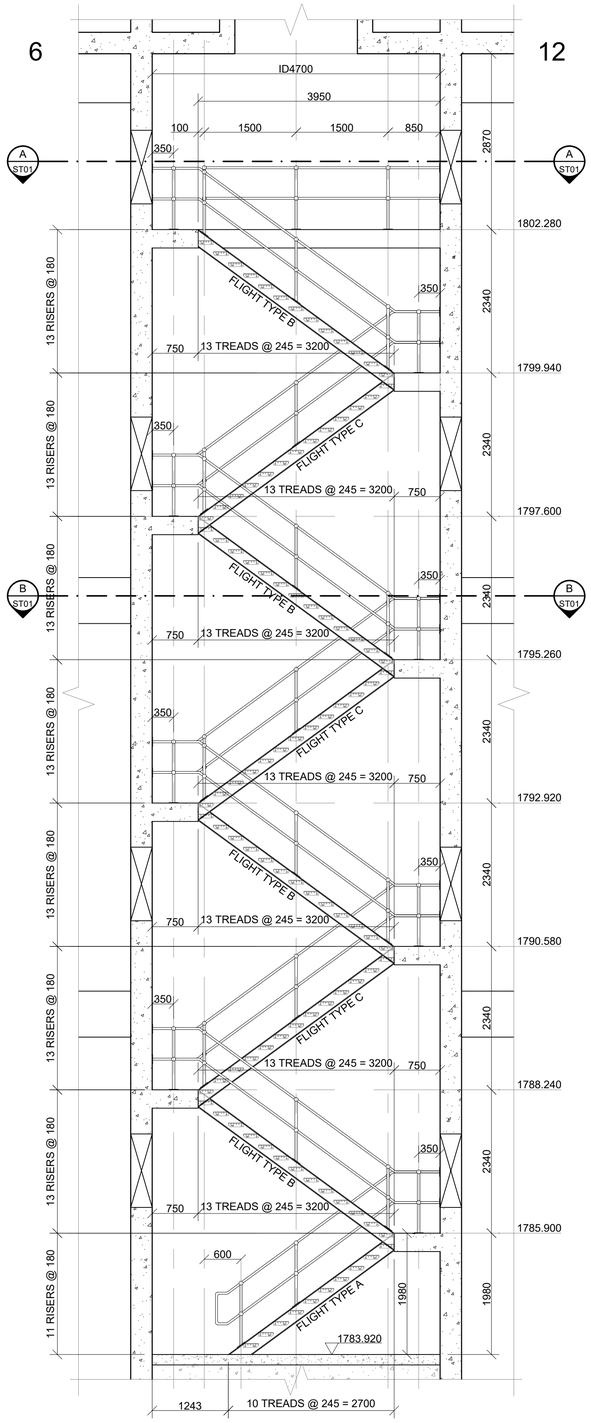
CCTV INFORMATION	
CCTV COMPANY:	
DATE:	

APPROVAL BY JW DEPOT		
CHECKED		
APPROVED BY:		
	SIGNATURE	DATE

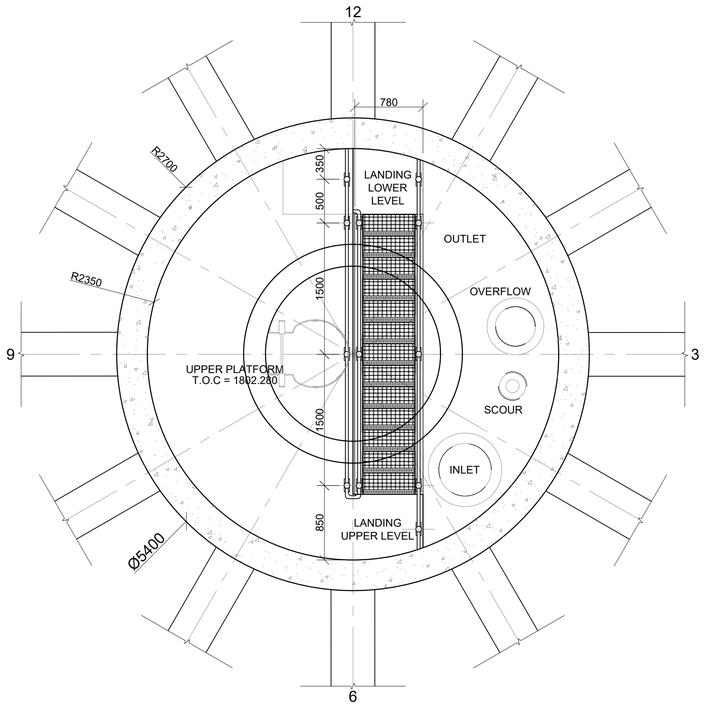
APPROVAL BY JW PLANNING		
CHECKED		
APPROVED BY:		
	SIGNATURE	DATE

SCALE	REV:	AMENDMENTS DESCRIPTION	DATE:
1: 75	0	TENDER PURPOSES	05/08/2024

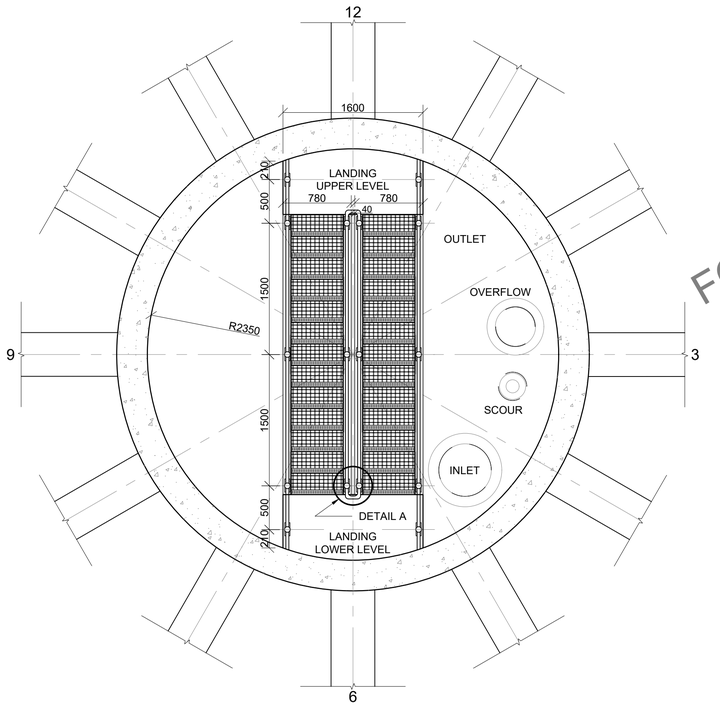
JW14402 — CONTRACT NUMBER
R10 - 0 — DRAWING No. — REV.
A1 — ORIGINAL PAGE SIZE
SHEET 1 OF 1
FILE No.



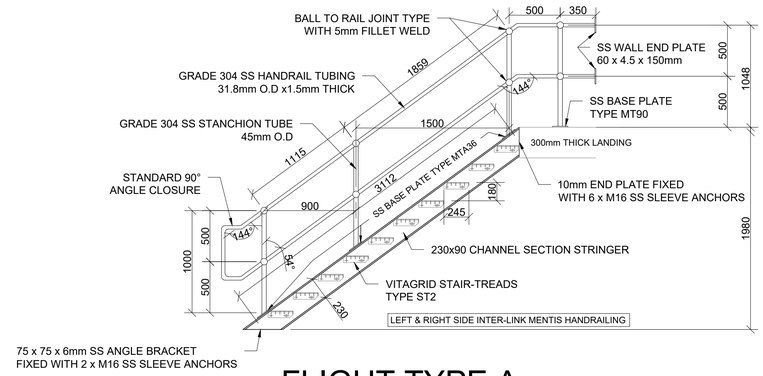
STAIR DETAIL ON SECTION A-A
SCALE 1:50



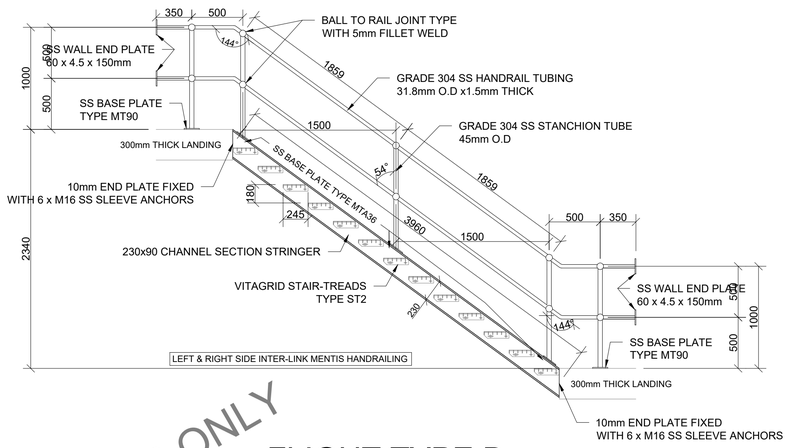
PLAN SECTION A-A
SCALE 1:35



PLAN SECTION B-B
SCALE 1:35



FLIGHT TYPE A
SCALE 1:30



FLIGHT TYPE B
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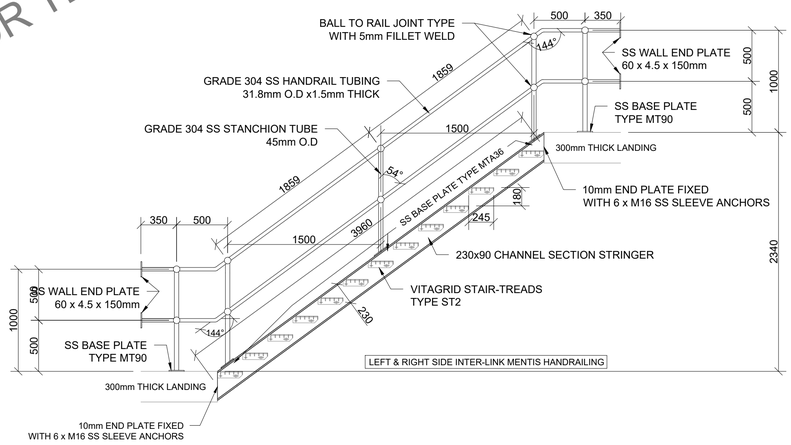
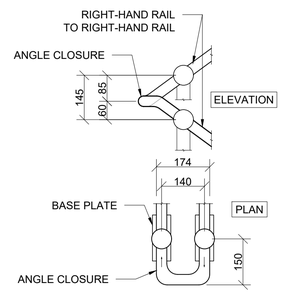


FLIGHT TYPE C
SCALE 1:30



DETAIL A
SCALE 1:10

FOR TENDER ONLY

1. GENERAL NOTES

1.1 The copyright on this dwg, including the design and details shown hereon, is reserved by the Consulting Engineers.

1.2 No scaling of dimensions from drawings allowed.

1.3 All dimensions and levels are to be verified on site by the contractor before commencing any work.

2. EARTHWORKS NOTES

2.1 All excavations to follow SANS 10400 PART G: Excavations

2.2 Lateral support and shoring of deep excavations to be designed and certified by a professional

2.3 Compacted fill in layers not exceeding 150mm to 97% MOD AASHTO

2.4 Approved insecticide & weedkiller to SABS spec. Code 0124 to sides and under foundations, surface-beds & paving. 10 year underwritten guarantee in favour of client supplied by specialist contractor.

2.5 All foundation excavations to be approved by the Engineer prior to placement of any concrete

2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

3.1 All reinforced concrete to be vibrated

3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

4. STRUCTURAL STEEL NOTES

4.1 All steel to be of grade 300WA

4.2 All bolts to be grade 8.8 unless noted

4.3 All welds to be 6mm fillet welds unless noted

4.4 No site welding shall be permitted without the prior consent of the Engineer

4.5 All holes to be drilled, NO flame cutting allowed

4.6 All steelwork to be painted within 6 hours after cleaning with one coat red oxide

4.7 Engineer to inspect manufactured steel components prior to delivery to site

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

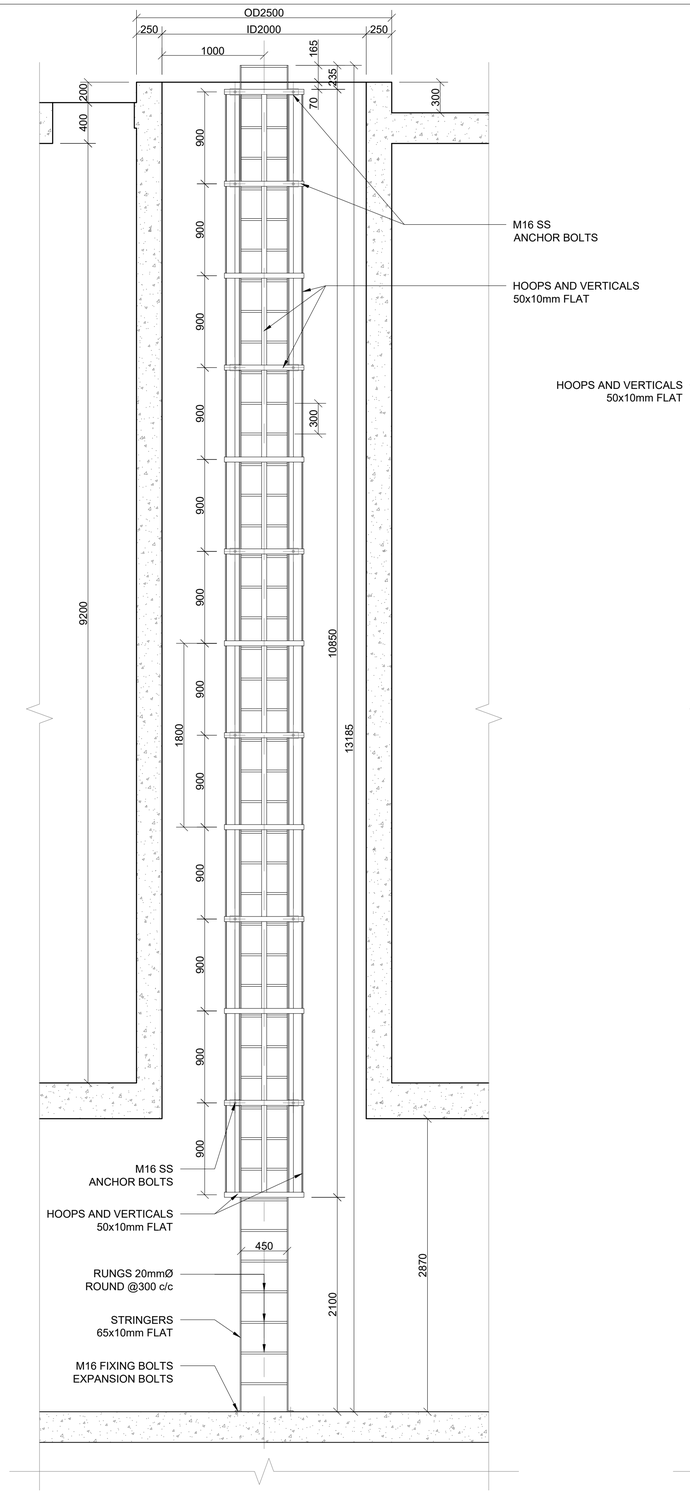
Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

STEEL STAIRCASE TO TOWER

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 35	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

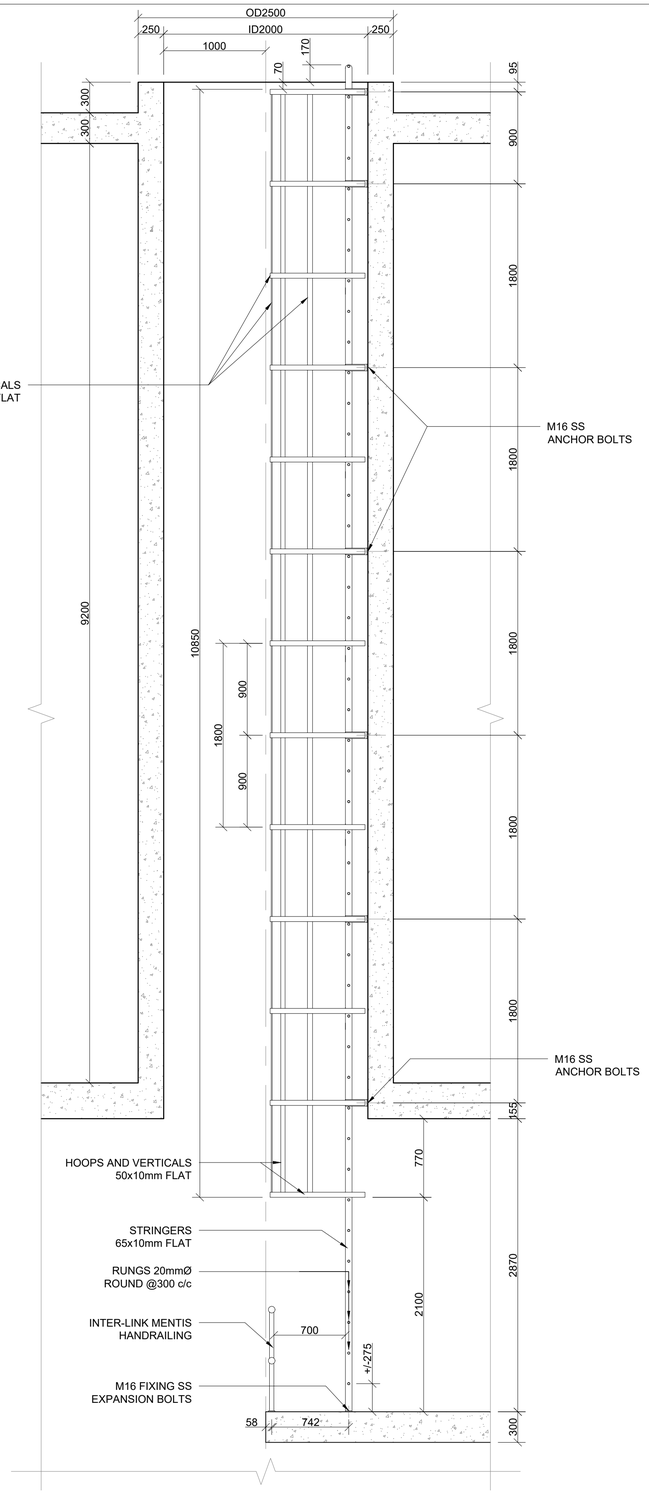
JW14402	ST01	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET	1	OF	1
ORIGINAL PAGE SIZE				

FILE No.



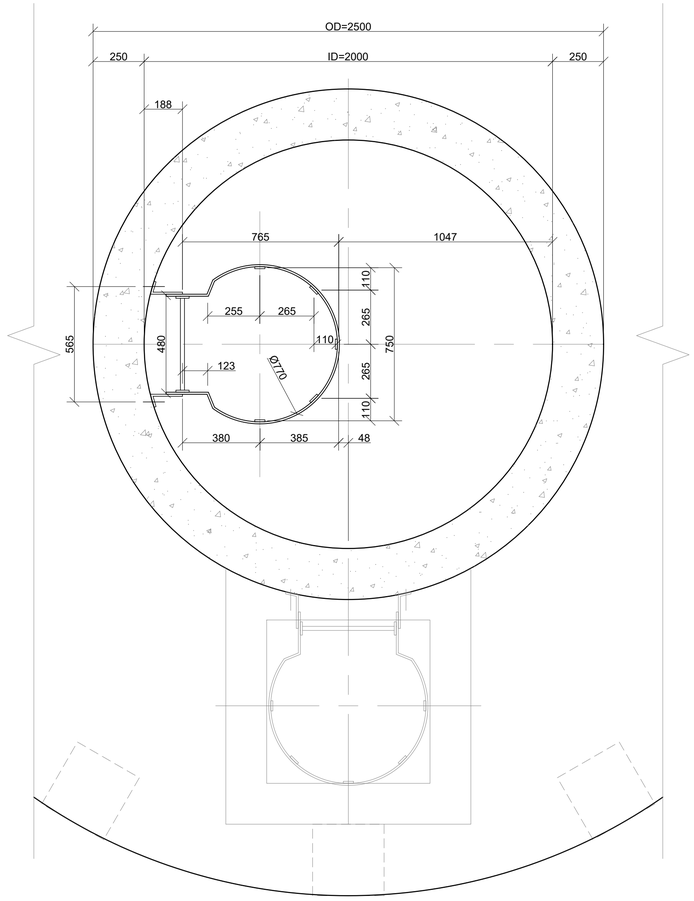
FRONT ELEVATION ON SECTION A-A

SCALE 1:30



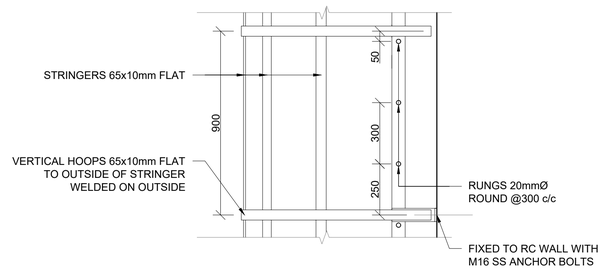
SIDE ELEVATION

SCALE 1:30



TANK SHAFT LADDER LAYOUT

SCALE 1:15



CAGE DETAIL

SCALE 1:15

FOR TENDER ONLY

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2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

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3.2 All column corners to receive chamfers

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3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

4. STRUCTURAL STEEL NOTES

4.1 All steel to be of grade 300WA

4.2 All bolts to be grade 8.8 unless noted

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4.7 Engineer to inspect manufactured steel components prior to delivery to site

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

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FAX: (011) 688-1529

Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

CAT LADDER TO TOWER ROOF

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 30; 1: 15	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

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CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET 1	OF	1	
ORIGINAL PAGE SIZE				

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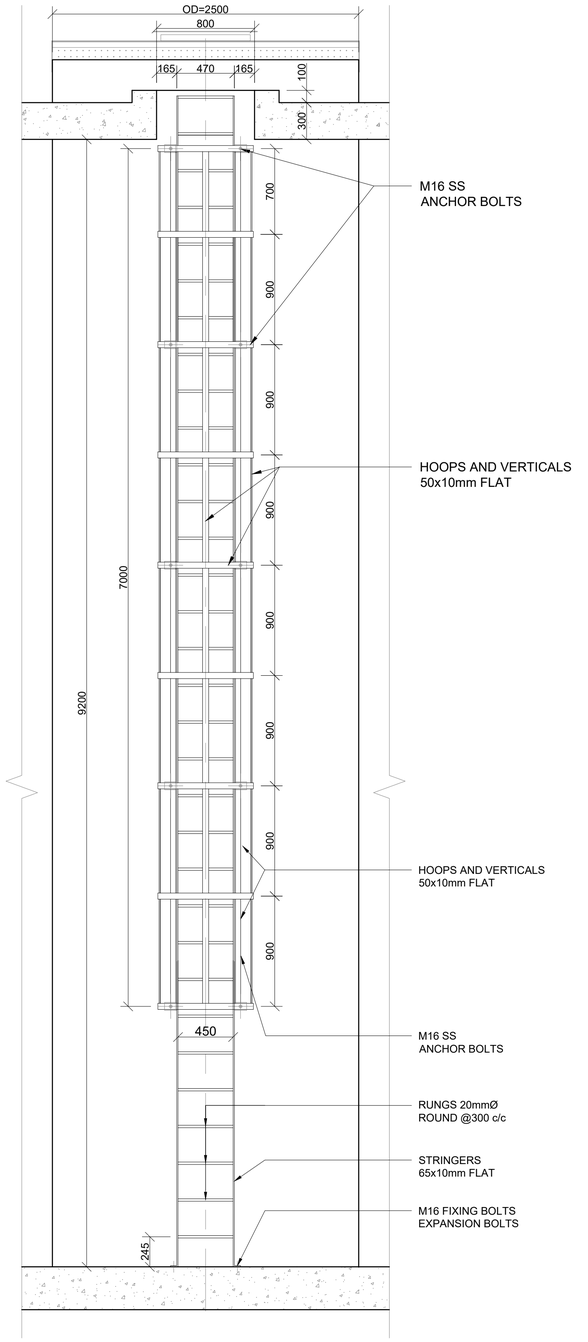
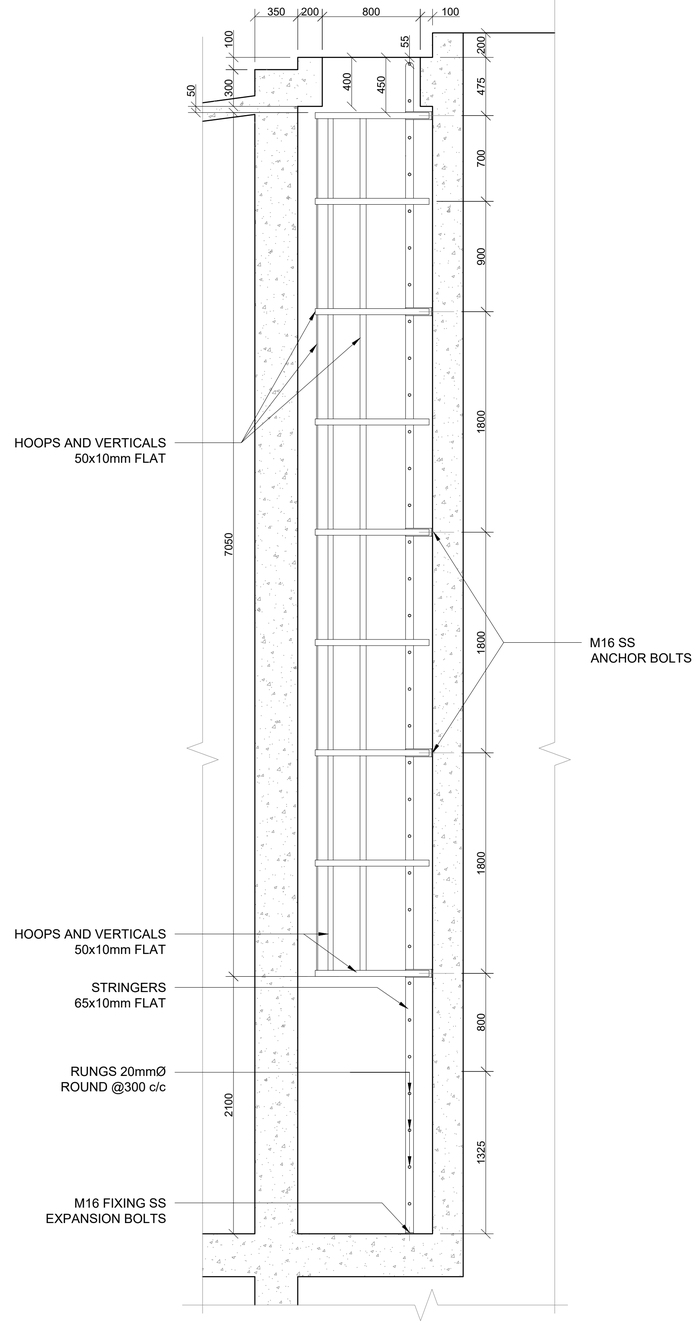


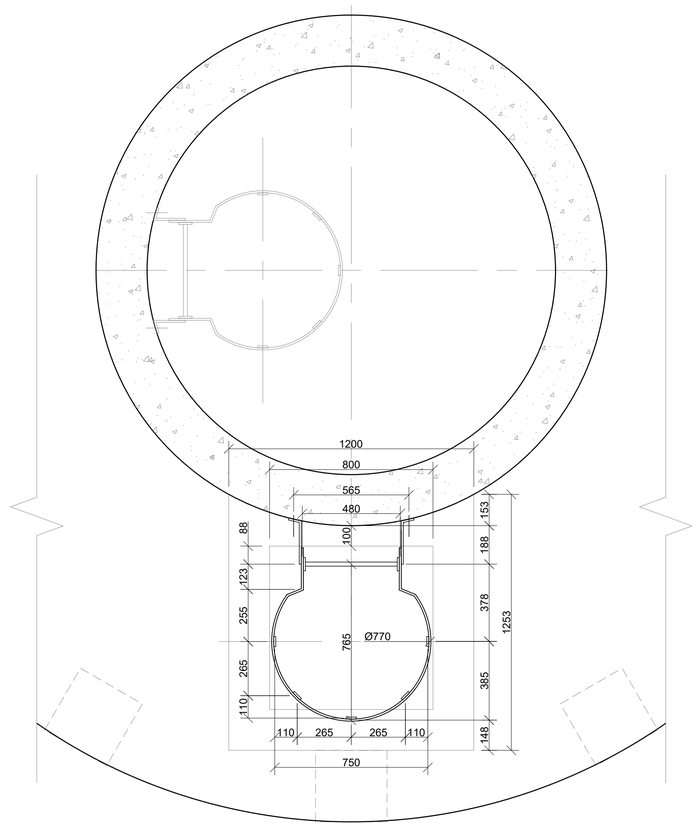
FRONT ELEVATION

SCALE 1:25



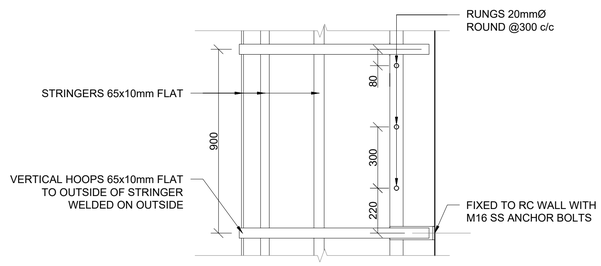
SIDE ELEVATION ON SECTION A-A

SCALE 1:25



TANK ACCESS LADDER LAYOUT

SCALE 1:15



CAGE DETAIL

SCALE 1:15

FOR TENDER ONLY

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2.5 All foundation excavations to be approved by the Engineer prior to placement of any concrete

2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

3.1 All reinforced concrete to be vibrated

3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

CAT LADDER INTO TOWER TANK

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE	REV:	AMENDMENTS	DATE:
PROJECT SURVEYOR:		CHECKED			1: 30; 1: 15	0	TENDER PURPOSES	05/08/2024
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
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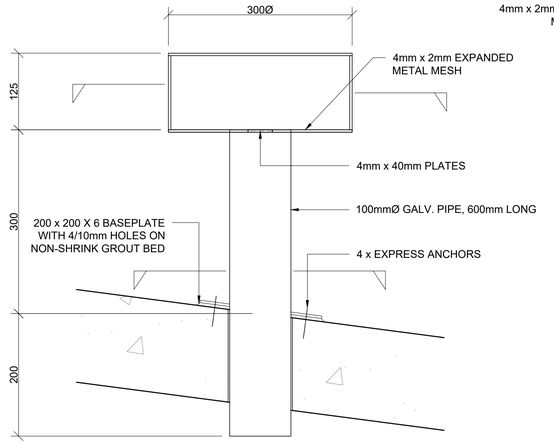

ELEVATION
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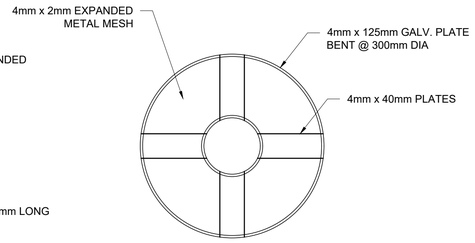

SECTION A-A
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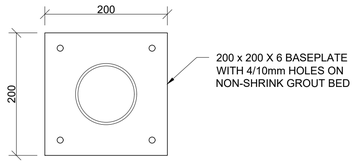

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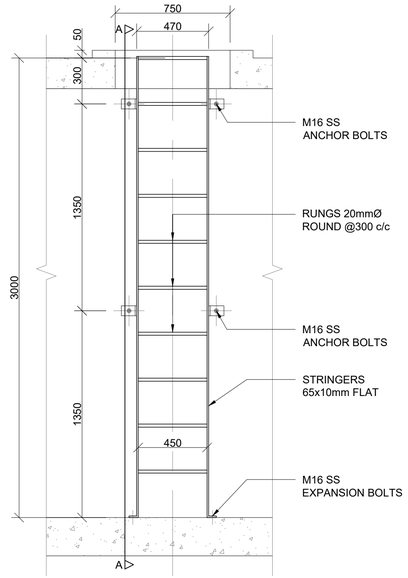
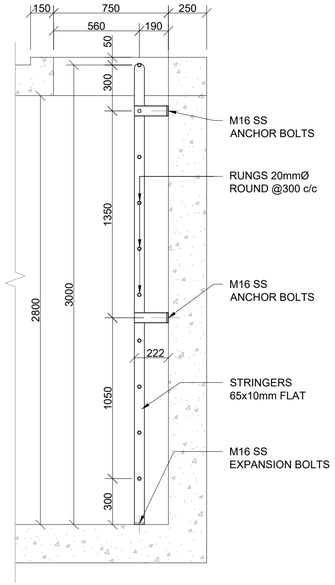
ROOF VENTILATOR



CHAMBER LADDER A (4 OFF)
SCALE 1:20



SECTION A-A
SCALE 1:20

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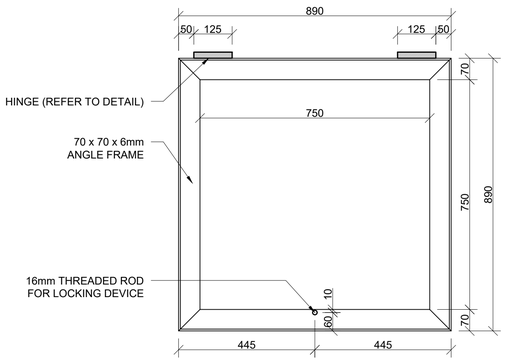

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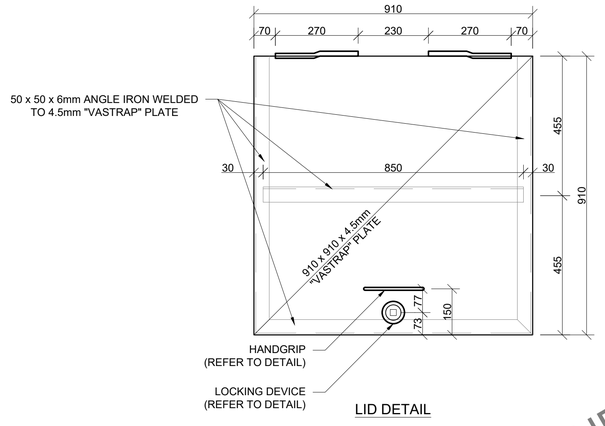

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CHAMBER ACCESS LID (4OFF)
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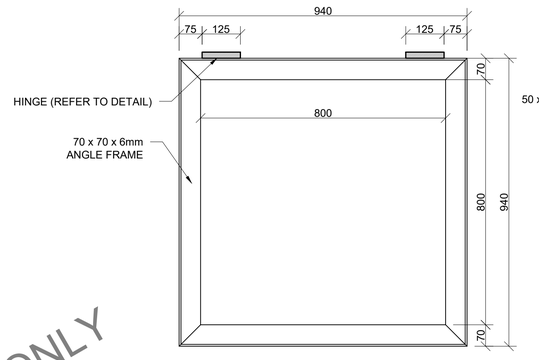
FOR TENDER ONLY



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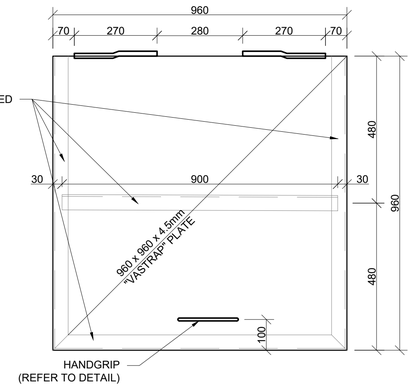

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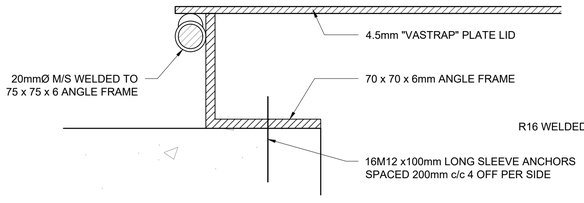

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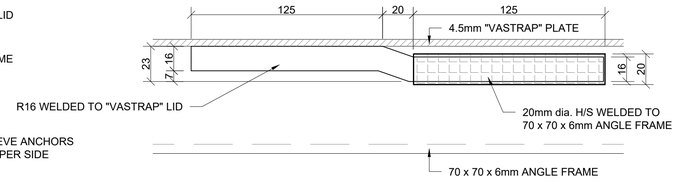

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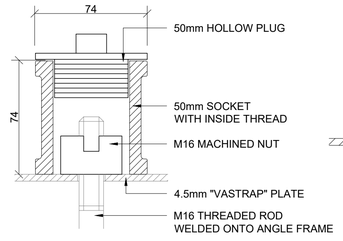

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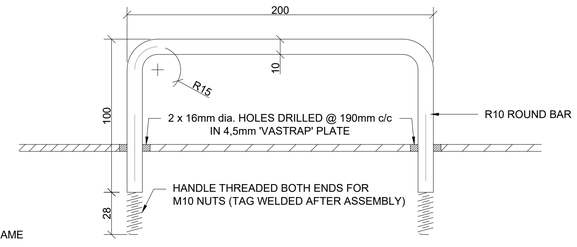

HANDGRIP DETAIL
SCALE 1:2

CONSULTING ENGINEERS: TRI-M CONSULTING ENGINEERS, WEWORK, 155 WEST STREET, SANDTON, JOHANNESBURG	DESIGNED	P. S. Botha	05/08/2024
	DRAWN	J. Nel	05/08/2024
	CHECKED	P. S. BOTHA	05/08/2024
	APPROVED BY: P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.		
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		SIGNATURE	DATE

Johannesburg Water

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65 NTEMI PILISO STREET
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JOHANNESBURG

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

G.A STEEL WORK ITEMS, PART A
COVERS, LADDERS & VENTILATION

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 30; 1: 15	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
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CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
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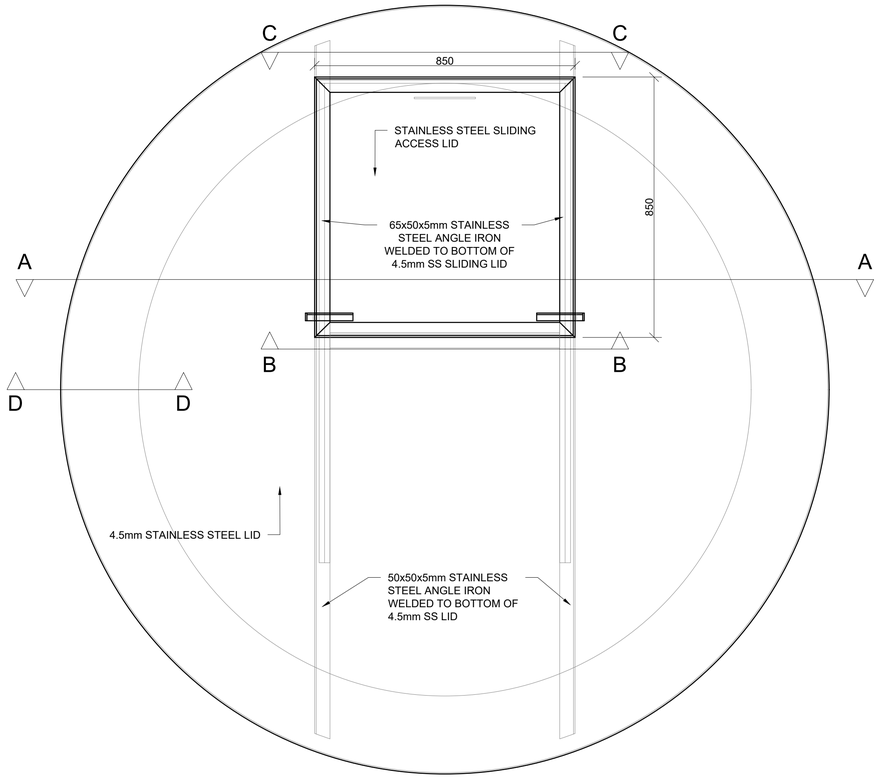

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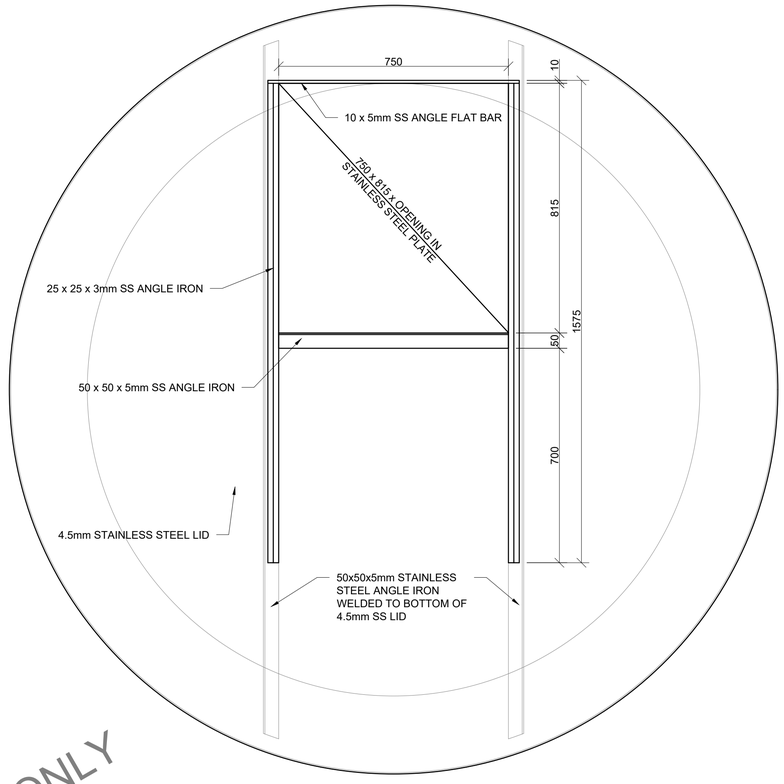

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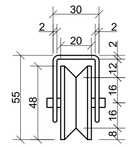

NYLON V-GROOVE TRACK ROLLER
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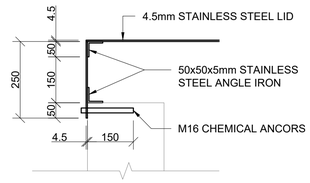

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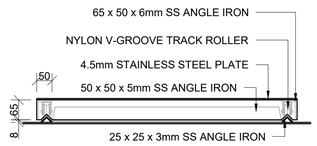
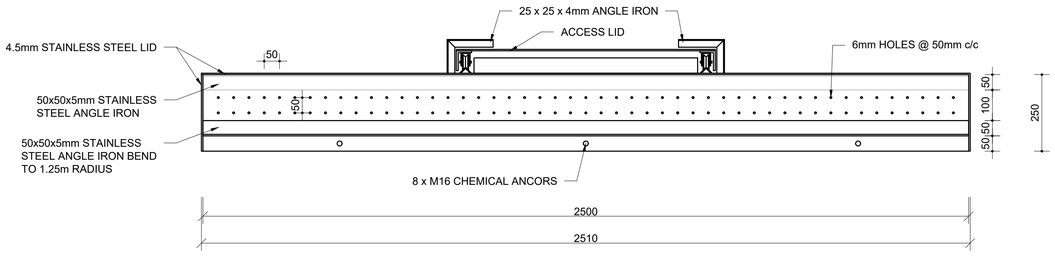
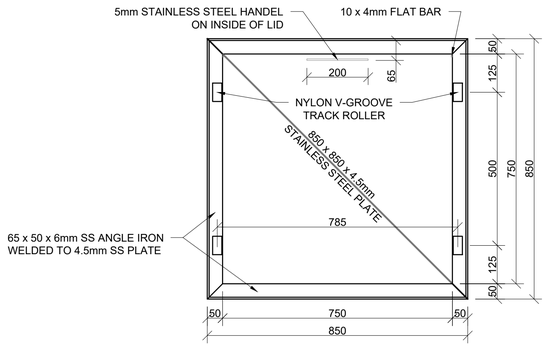


SECTION B-B DETAIL
SCALE 1:10

FOR TENDER ONLY



SECTION A-A
SCALE 1:10



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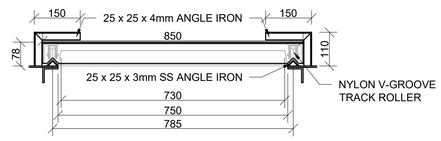

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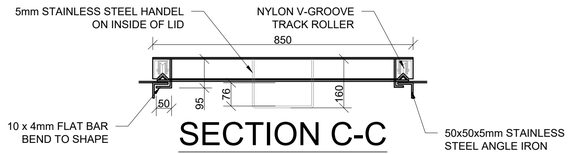

SECTION C-C
SCALE 1:10

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MARSHALLTOWN
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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

G.A STEEL WORK ITEMS, PART B
ACCESS SHAFT FRAME & COVER

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 30; 1: 15	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
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JW14402	ST05	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET 1	OF	1	
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FILE No.

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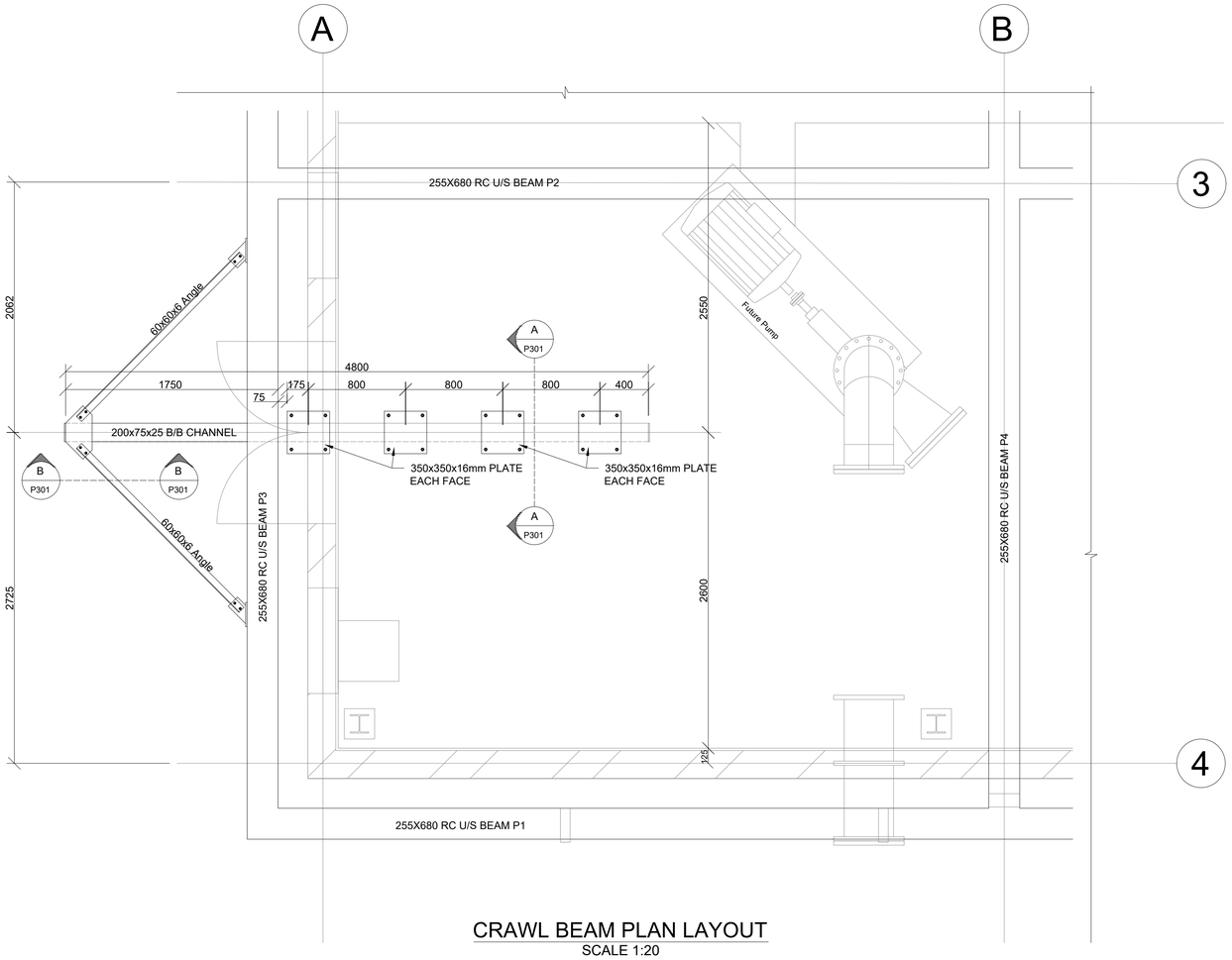

CRAWL BEAM PLAN LAYOUT
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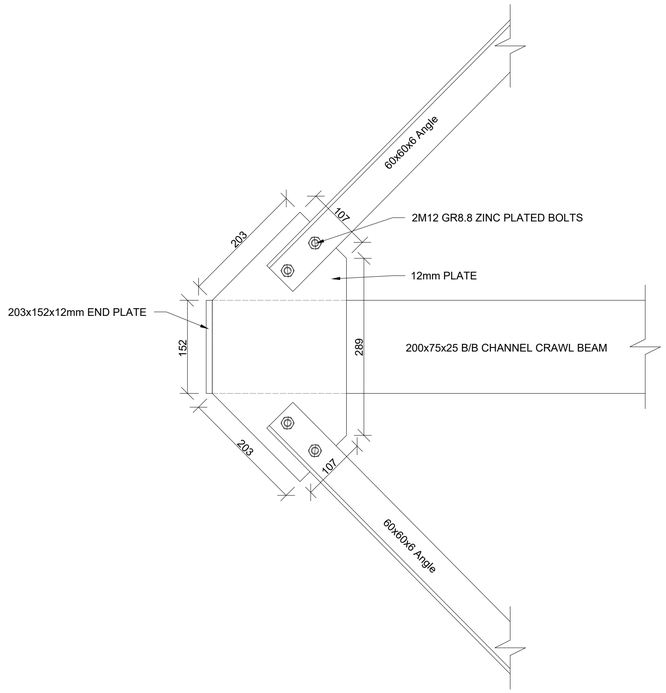
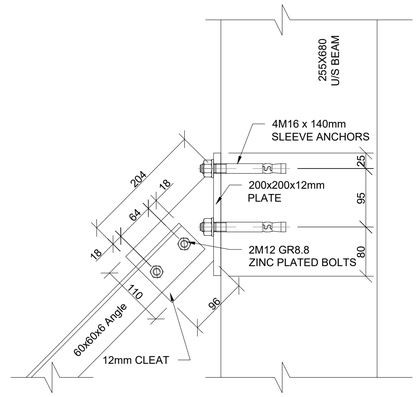
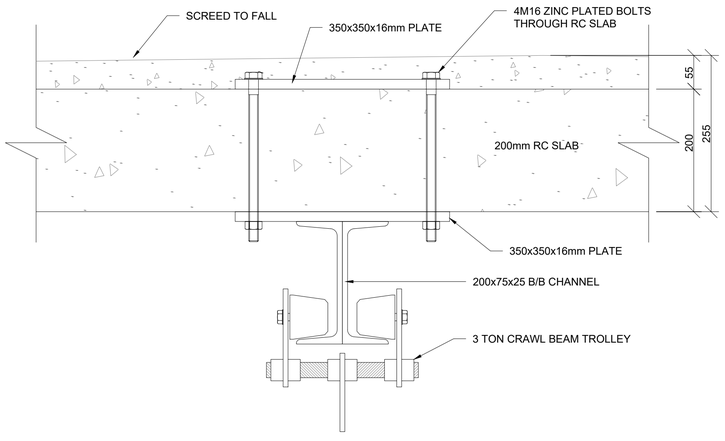


CRAWLER BEAM FROND END DETAIL
SCALE 1:5

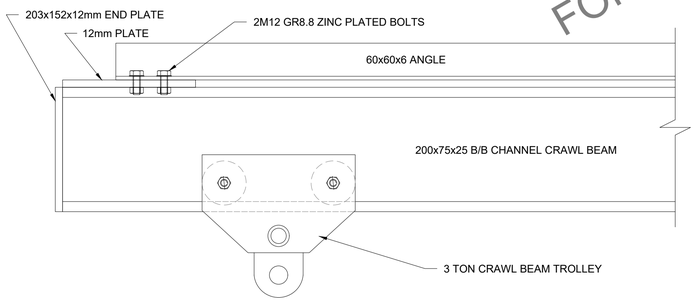


BRACING PLATE CONNECTION
SCALE 1:5

FOR TENDER ONLY



SECTION A-A
SCALE 1:5



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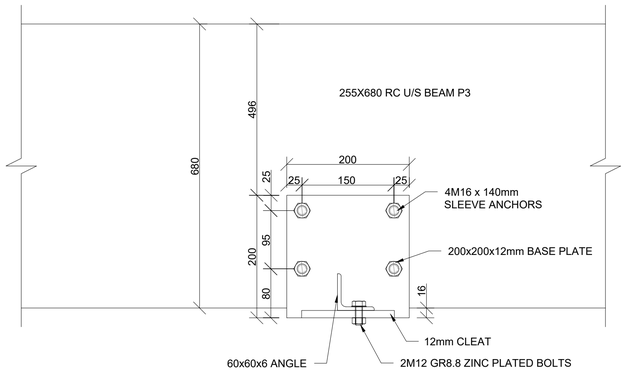

BRACING PLATE CONNECTION DETAIL
SCALE 1:5

CONSULTING ENGINEERS: TRI-M CONSULTING ENGINEERS, WEWORK, 155 WEST STREET, SANDTON, JOHANNESBURG	DESIGNED	P. S. Botha	05/08/2024
	DRAWN	J. Nel	05/08/2024
	CHECKED	P. S. BOTHA	05/08/2024
	APPROVED BY: P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.		
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		SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

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FAX: (011) 688-1529

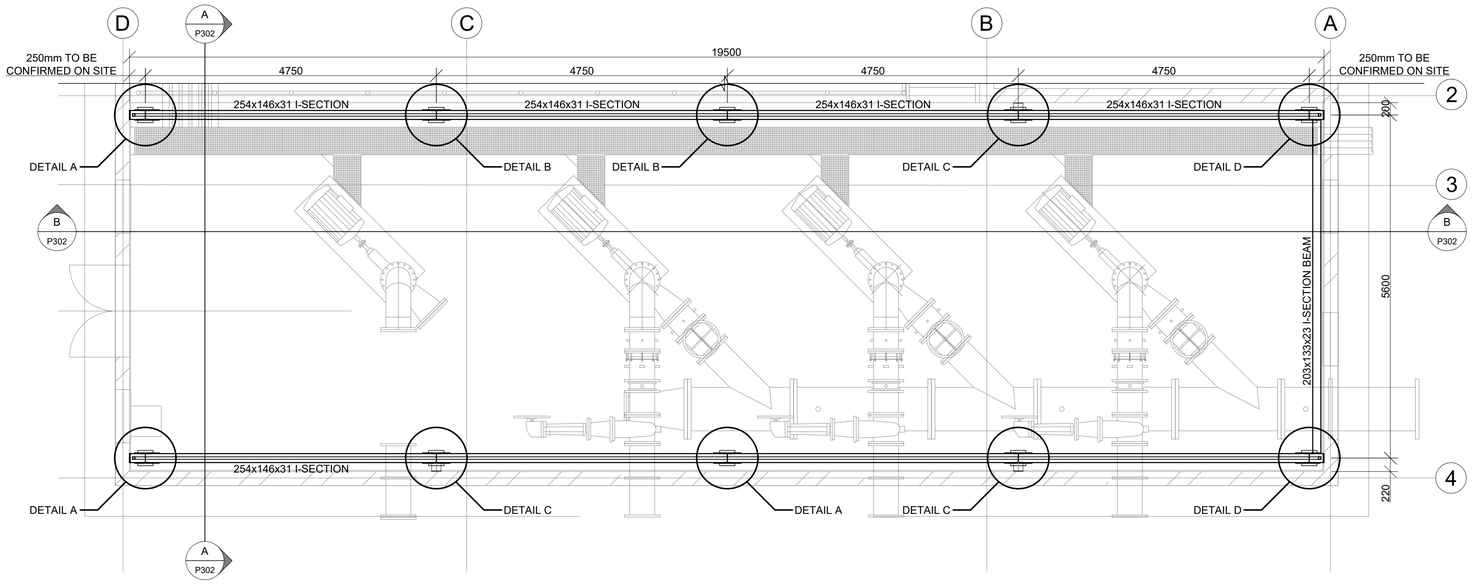
Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

STEEL WORK - PUMP STATION
CRAWLER BEAM DETAILS

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE
CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

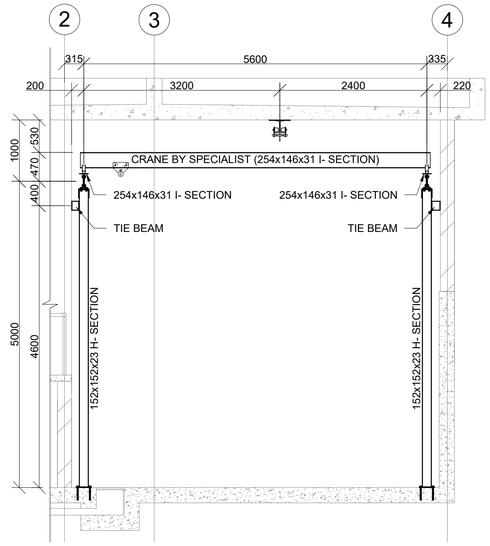
SCALE	REV:	AMENDMENTS	DATE:
1: 75	0	TENDER PURPOSES	05/08/2024

JW14402	CONTRACT NUMBER	ST06 - 0	DRAWING No. REV.
A1	ORIGINAL PAGE SIZE	SHEET 1 OF 1	
FILE No.			



PLAN - PUMP HOUSE

SCALE 1:50



SECTION A-A

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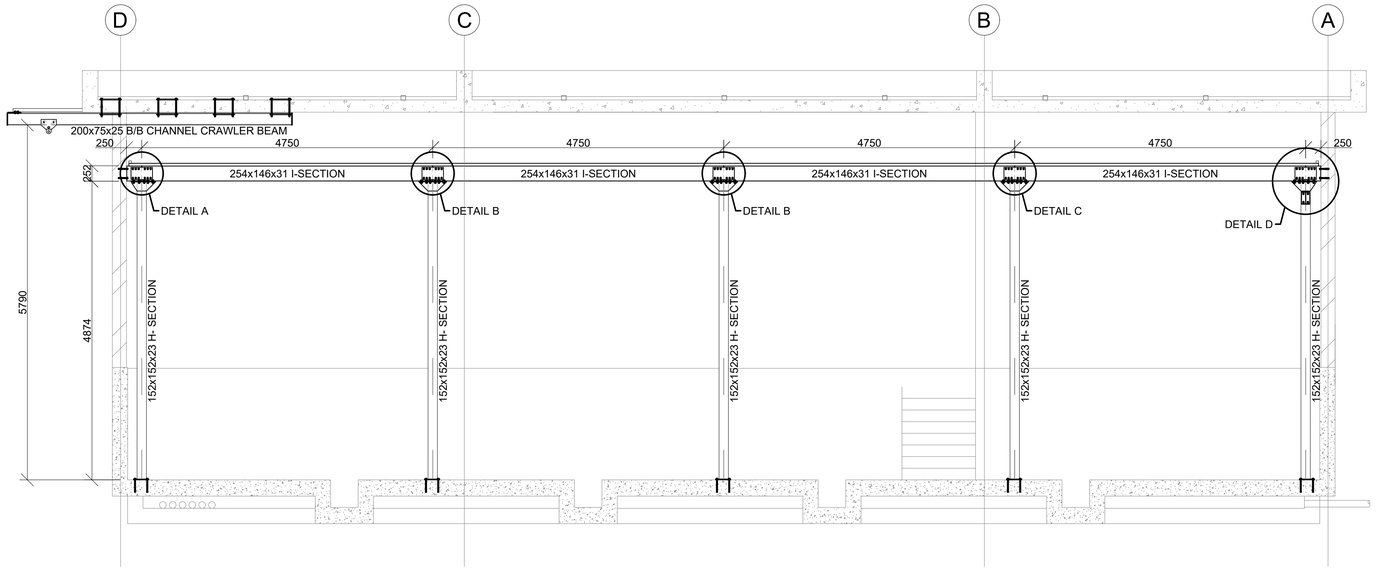

PLAN - PUMP HOUSE

SCALE 1:50

FOR TENDER ONLY

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2. EARTHWORKS NOTES

2.1 All excavations to follow SANS 10400 PART G: Excavations

2.2 Lateral support and shoring of deep excavations to be designed and certified by a professional

2.3 Compacted fill in layers not exceeding 150mm to 97% MOD AASHTO

2.4 Approved insecticide & weedkiller to SABS spec. Code 0124 to sides and under foundations, surface-beds & paving. 10 year underwritten guarantee in favour of client supplied by specialist contractor.

2.5 All foundation excavations to be approved by the Engineer prior to placement of any concrete

2.6 Min. ground bearing pressure - 150kPa

3. CONCRETE NOTES

3.1 All reinforced concrete to be vibrated

3.2 All column corners to receive chamfers

3.3 Half bricks or building debris may not be used as rebar spacers

3.4 Concrete Cube strength at 28 days
3.4.1 Blinding.....15MPa
3.4.2 Bases.....25MPa
3.4.3 Strip Footings.....25MPa
3.4.4 Surface Bed.....25MPa
3.4.5 1st & 2nd floors.....30MPa
3.4.6 Roof Slab.....30MPa
3.4.7 Columns.....35MPa

3.5 Concrete cover to reinforcement measured to stirrups
3.5.1 Base bottom.....75mm
3.5.2 Base sides.....50mm
3.5.3 Columns.....40mm
3.5.4 Beams.....30mm
3.5.5 Suspended slabs.....25mm

3.6 Proposed mix designs to be approved by the engineer prior to placement of any concrete

4. REINFORCEMENT NOTES

4.1 Reinforcement detailing based on SANS 10144

4.2 Minimum lapping of reinforcement: 50 x smaller diameter
All laps to be staggered

4.3 Reinforcement to be securely wired at all intersections

4.4 Reinforcement must be formed around, and as close as allowed to holes, and must not be cut
All holes and voids to be checked and approved by the Engineer prior to the placement of any concrete

4.5 Mild steel (R) to comply with SABS 920 type A - Grade 3
High tensile steel (Y) to comply SABS 920 type C - Grade 1

4.6 Bending dimensions in accordance with sans 282:2011
Dimensions are all outside dimensions
Dimension d must allways be greater than 2 x bar dia.
Radius of all bends are standard unless r is given

4.7 All reinforcement to be checked and approved by the Engineer prior to the placement of any concrete
Any reinforcing not inspected before concrete is poured will not be signed off by VBL

4.8 Reinforcement abbreviations:
BW - Both Ways
EF - Each Face
NF - Near Face
FF - Far Face
EW - Each Way
SF - Side Face
T1 - Highest of top layers
T2 - Second highest of top layers
B1 - Lowest of bottom layers
B2 - Second lowest of bottom layers
ALT - Alternative
ABR - Alternative Bar Reversed

5. STRUCTURAL STEEL NOTES

5.1 All steel to be of grade 300WA

5.2 All bolts to be grade 8.8 unless noted

5.3 All welds to be 6mm fillet welds unless noted

5.4 No site welding shall be permitted without the prior consent of the Engineer

5.5 All holes to be drilled, NO flame cutting allowed

5.6 All steelwork to be painted within 6 hours after cleaning with one coat red oxide

5.7 Engineer to inspect manufactured steel components prior to delivery to site

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
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155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
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P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

STEEL WORK - PUMP STATION
GANTRY CRANE STRUCTURE LAYOUT

SURVEY INFORMATION		APPROVAL BY JW DEPOT		
PROJECT SURVEYOR:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE
CCTV INFORMATION		APPROVAL BY JW PLANNING		
CCTV COMPANY:		CHECKED		
		APPROVED BY:		
DATE:			SIGNATURE	DATE

SCALE	REV:	AMENDMENTS	DATE:
1: 75	0	TENDER PURPOSES	05/08/2024

JW14402 — CONTRACT NUMBER
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A1 — ORIGINAL PAGE SIZE
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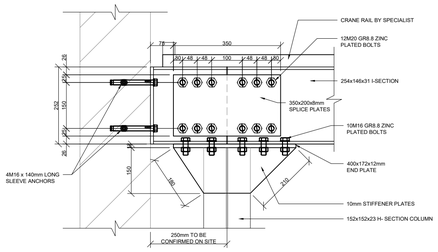
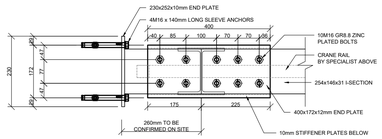
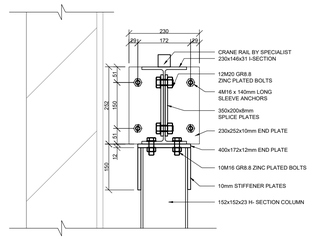


SIDE VIEW



TOP VIEW



FRONT VIEW

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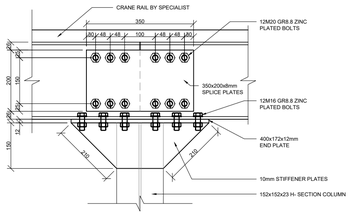

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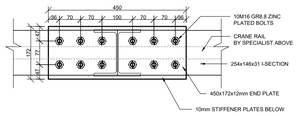

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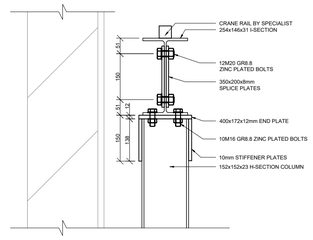

FRONT VIEW

COLUMN CONNECTION DETAIL B
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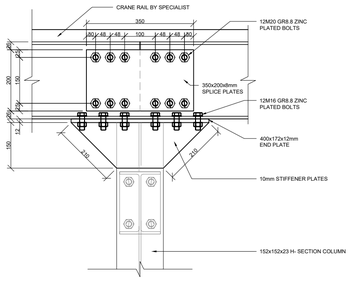

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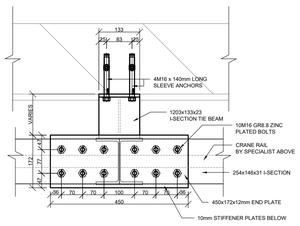

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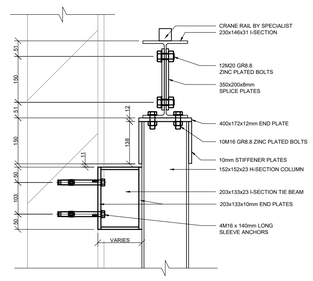

FRONT VIEW

COLUMN CONNECTION DETAIL C
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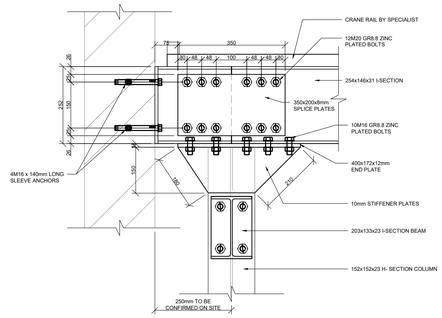

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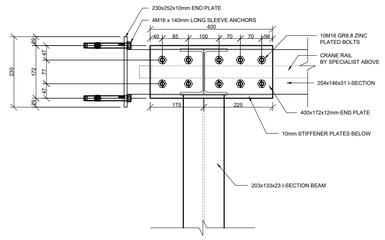

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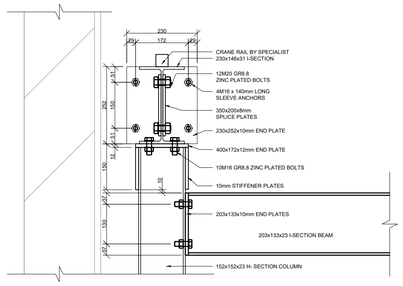
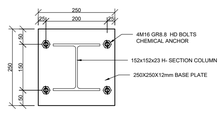
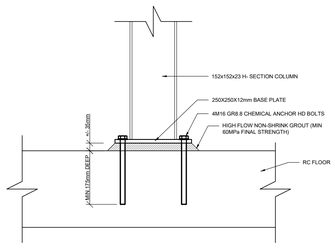


FRONT VIEW

CONNECTION DETAIL D
SCALE 1:5



COLUMN BASE PLATE DETAIL
SCALE 1:5



COLUMN TO FLOOR CONNECTION DETAIL
SCALE 1:5

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WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

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65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

STEEL WORK - PUMP STATION
GANTRY CRANE CONFECTION DETAILS

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 75	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	ST08	-	0	
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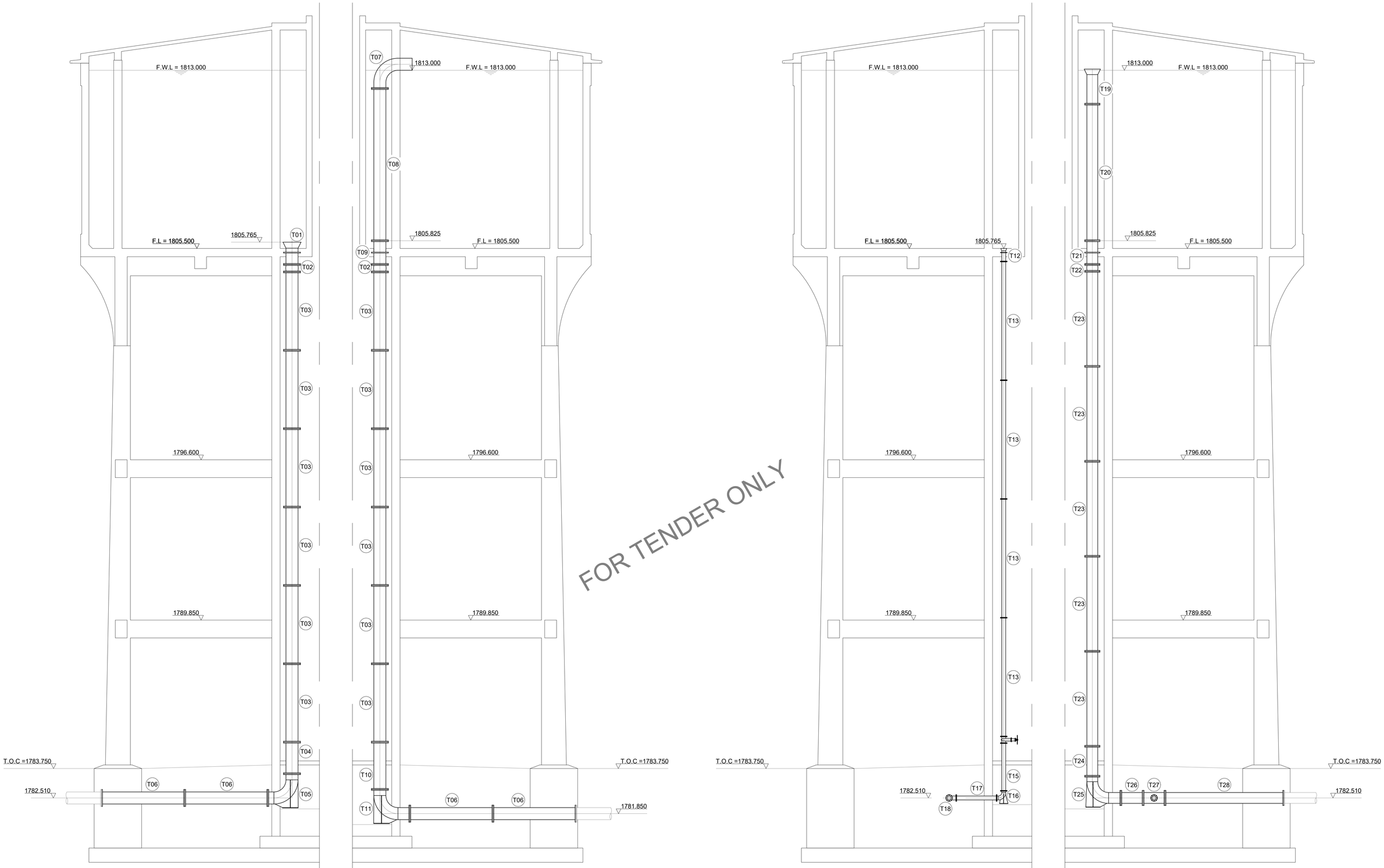

FOR TENDER ONLY

500mmØ OUTLET
SCALE 1:75

500mmØ INLET
SCALE 1:75

150mmØ SCOUR
SCALE 1:75

450mmØ OVERFLOW
SCALE 1:75

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
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APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

WATER TOWER
PIPE WORK TO TOWERS (1)

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE	REV:	AMENDMENTS	DATE:
PROJECT SURVEYOR:		CHECKED			1: 75	0	TENDER PURPOSES	05/08/2024
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
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DATE:			SIGNATURE	DATE				

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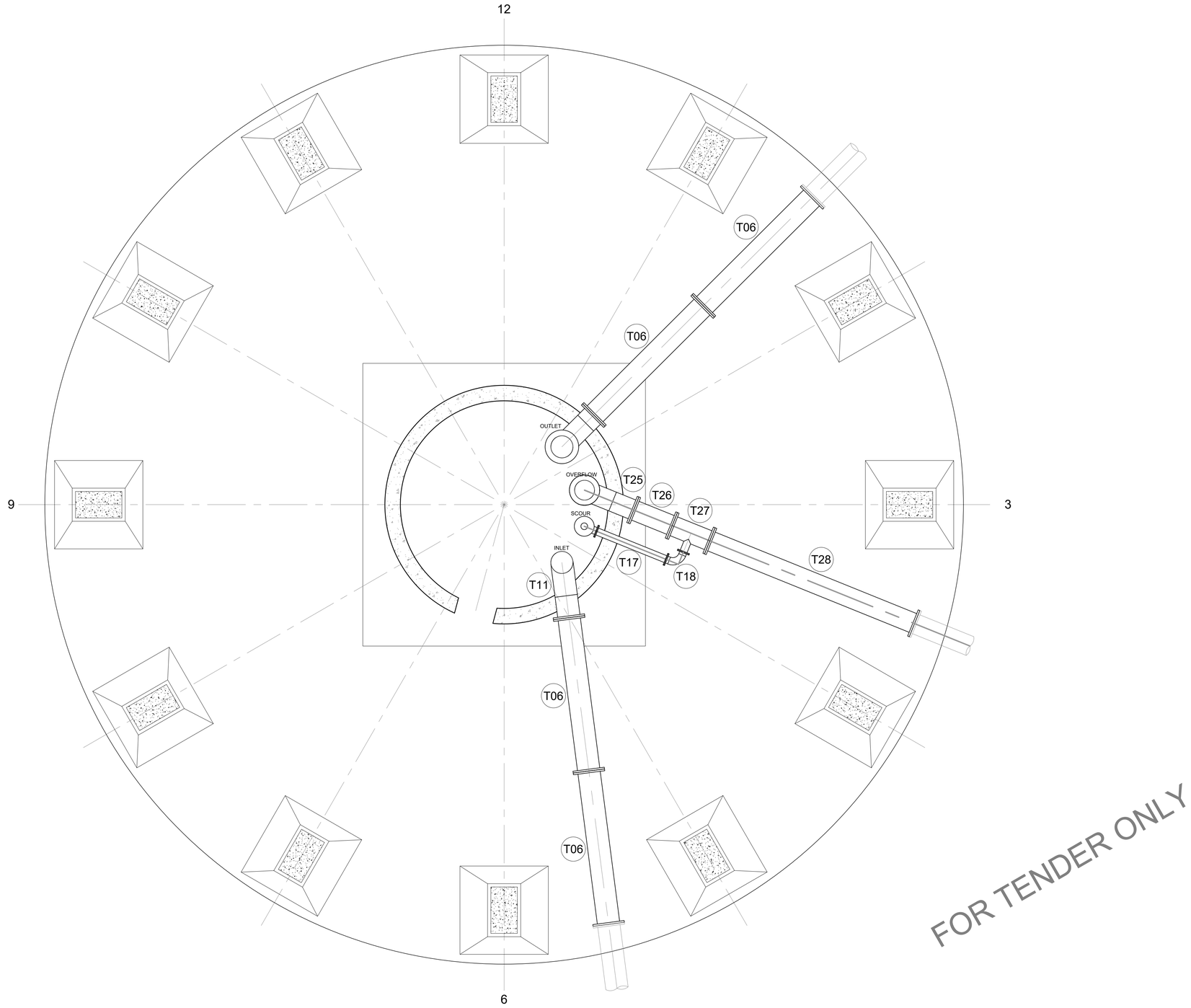

TOWER PIPE LAYOUT

SCALE 1:50

CONSULTING ENGINEERS:	DESIGNED	P. S. Botha	05/08/2024
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	05/08/2024
WEWORK 155 WEST STREET SANDTON, JOHANNESBURG	CHECKED	P. S. BOTHA	05/08/2024
	APPROVED BY: P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.		
CLIENT POSTAL ADRESS: JOHANNESBURG WATER P O BOX 61542 MARSHALLTOWN 2107	CHECKED		
		SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
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NEWTOWN
JOHANNESBURG

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Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

WATER TOWER
PIPE WORK TO TOWERS (2)

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 75	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
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JW14402	W02	-	0	
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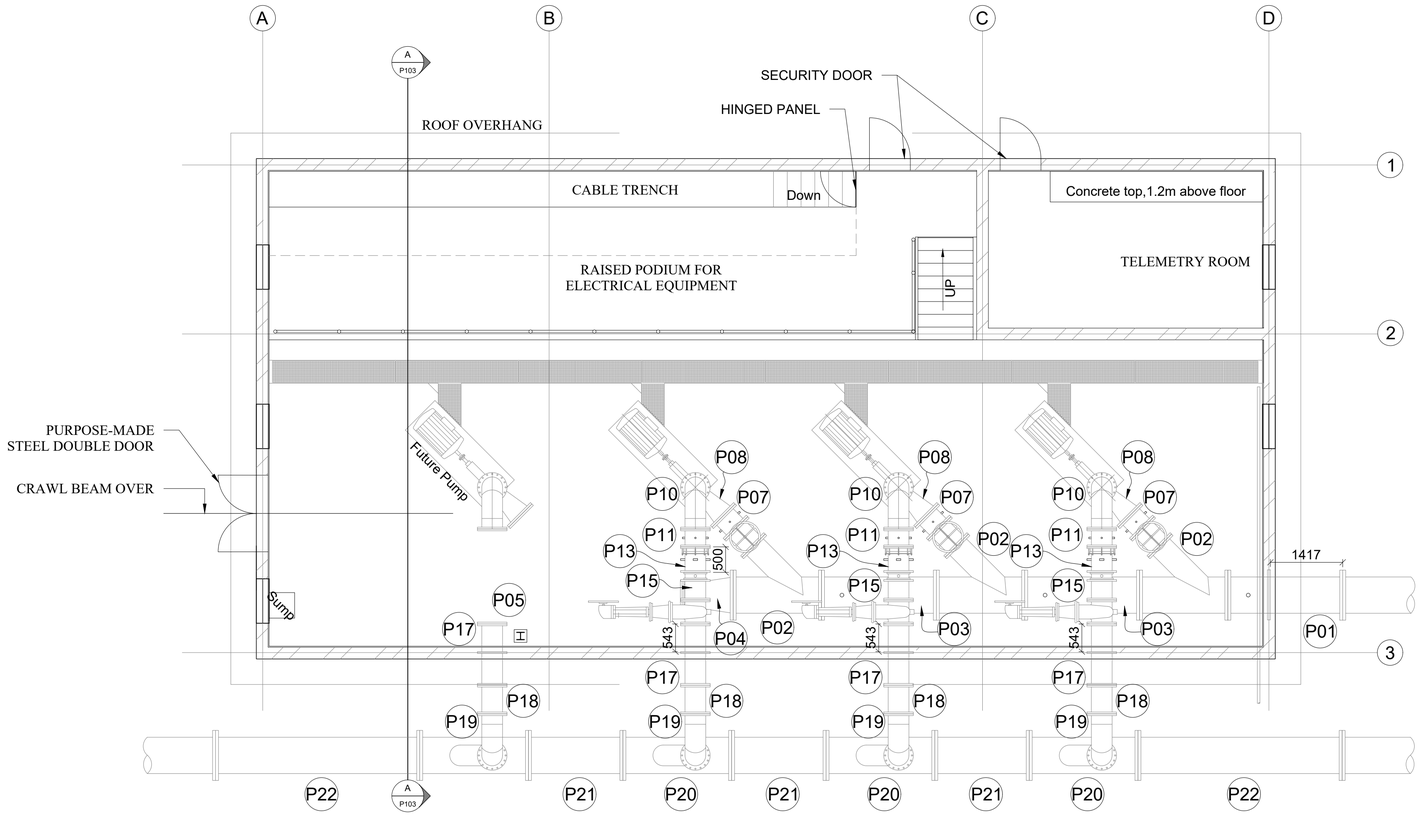
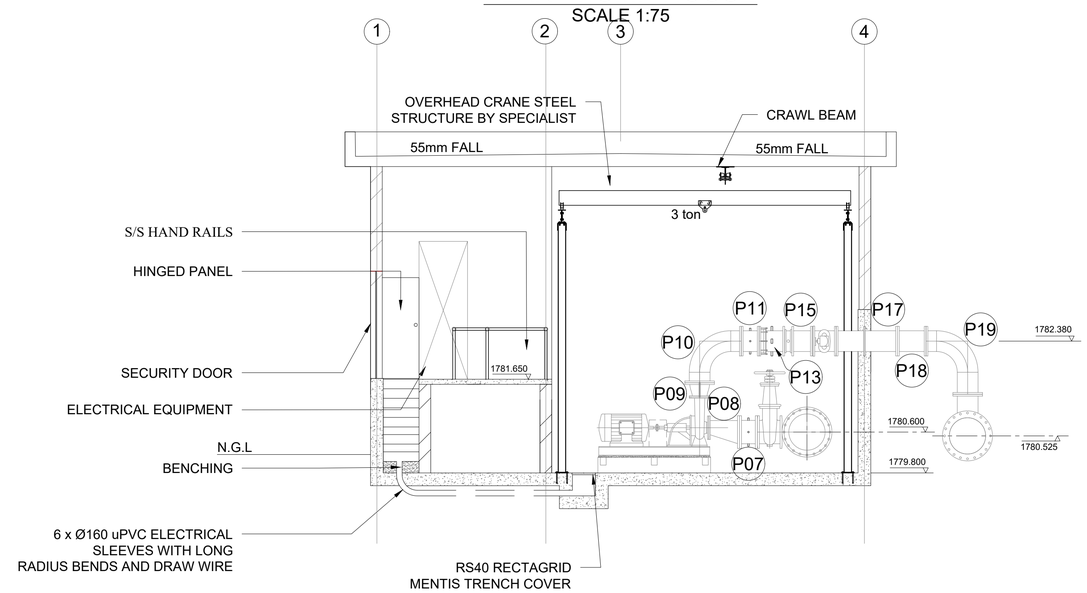


PLAN - PUMP HOUSE

SCALE 1:75



SECTION A-A

SCALE 1:75

FOR TENDER ONLY

CONSULTING ENGINEERS:	DESIGNED	P. S. Botha	05/08/2024
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	05/08/2024
WEWORK	CHECKED	P. S. BOTHA	05/08/2024
155 WEST STREET	APPROVED BY:		
SANDTON, JOHANNESBURG	P. S. Botha	SIGNATURE	DATE
	ECSA REG. No.		
CLIENT POSTAL ADRESS:	CHECKED		
JOHANNESBURG WATER			
P O BOX 61542			
MARSHALLTOWN		SIGNATURE	DATE
2107			

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400

FAX: (011) 688-1529

Turffontein Corridors of Freedom

Water Upgrade

Foresthill Tower and Pump station

PIPE WORK
PIPE WORK TO PUMP STATION

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 75	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	W03	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET	1	OF	1
ORIGINAL PAGE SIZE				

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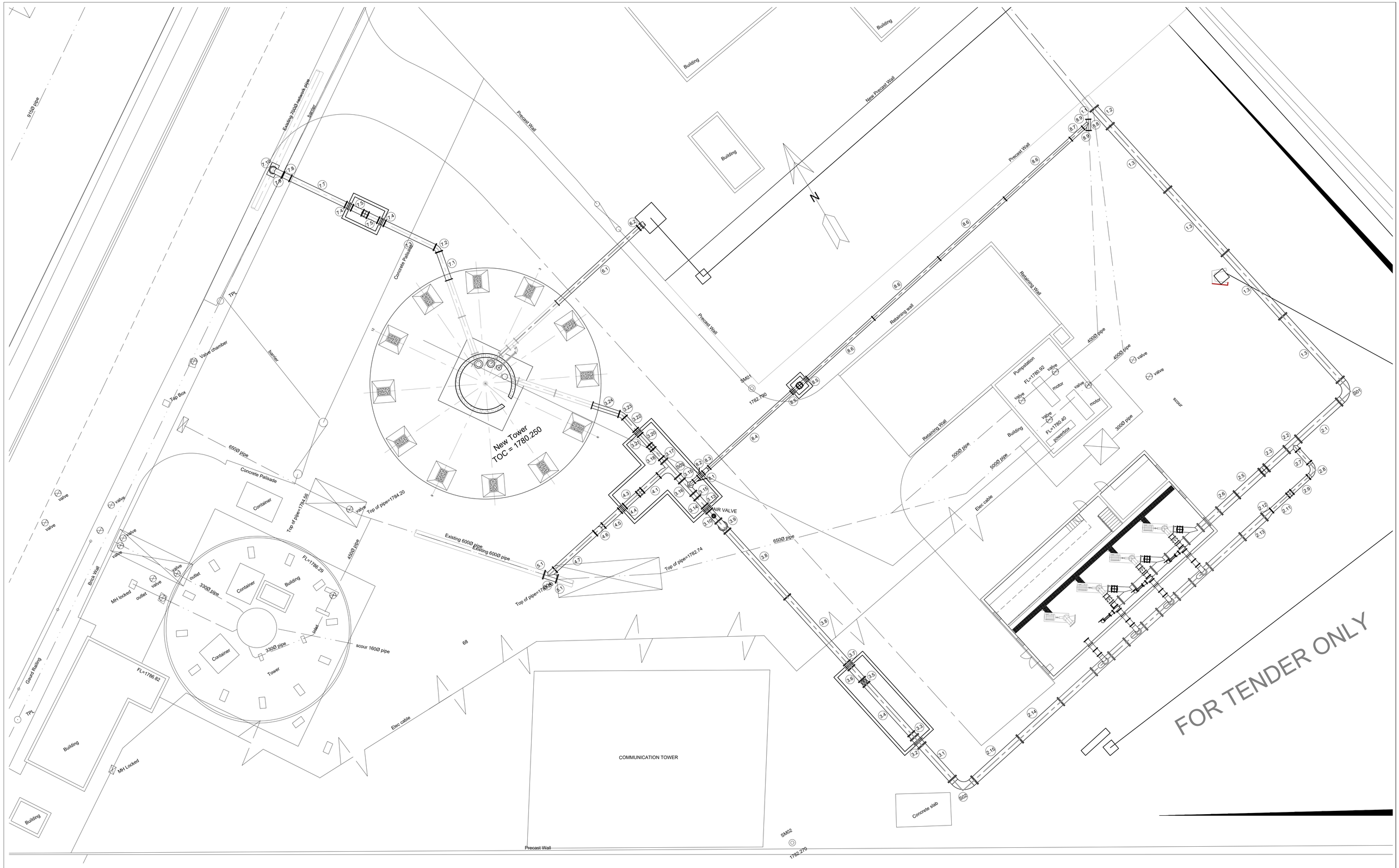

CONSULTING ENGINEERS:	DESIGNED	P. S. Botha	05/08/2024
TRI-M CONSULTING ENGINEERS	DRAWN	J. Nel	05/08/2024
WEWORK	CHECKED	P. S. BOTHA	05/08/2024
155 WEST STREET	APPROVED BY:		
SANDTON, JOHANNESBURG	P. S. Botha	SIGNATURE	DATE
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CLIENT POSTAL ADRESS:	CHECKED		
JOHANNESBURG WATER			
P O BOX 61542			
MARSHALLTOWN		SIGNATURE	DATE
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Turffontein Corridors of Freedom

Water Upgrade

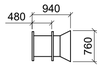
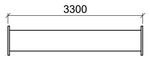
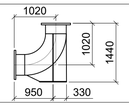
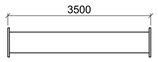
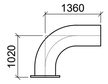
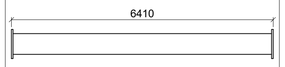
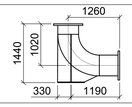
Foresthill Tower and Pump station

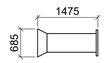
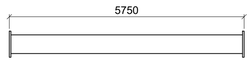
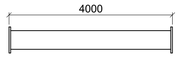
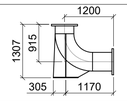
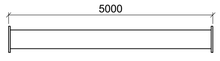
SITE WORKS
PIPE WORK TO SITE WORKS

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	W04	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET 1	OF	1	
ORIGINAL PAGE SIZE				

FILE No.

ITEM No.	ITEM	DESCRIPTION	MATERIAL	NUMBER OF ITEMS	CORROSION PROTECTION	
					INT.	EXT.
T01		500Ø FLANGED BELLMOUTH WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
T02		500Ø EXPANSION JOINT COUPLING	MS	2	L - FBE	C - FBE
T03		500Ø PIPE, FLANGED BOTH ENDS	MS	12	L - FBE	C - FBE
T04		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
T05		500Ø LONG RADIUS FLANGED JIS B 2311-09 BEND WITH DUCKFOOT	MS	1	L - FBE	C - FBE
T06		500Ø PIPE, FLANGED BOTH ENDS	MS	4	L - FBE	C - FBE
T07		500Ø x 90° LONG RADIUS JIS B 2311-09 BEND ONE END FLANGED OTHER END PLAIN	MS	1	L - FBE	C - FBE
T08		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
T09		500Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
T10		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
T11		500Ø LONG RADIUS FLANGED JIS B 2311-09 BEND ONE END EXTENDED WITH DUCKFOOT	MS	1	L - FBE	C - FBE
T12		150Ø FLANGED BELLMOUTH WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
T13		150Ø PIPE, FLANGED BOTH ENDS	MS	4	L - FBE	C - FBE
T15		150Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE

ITEM No.	ITEM	DESCRIPTION	MATERIAL	NUMBER OF ITEMS	CORROSION PROTECTION	
					INT.	EXT.
T16		150Ø LONG RADIUS FLANGED JIS B 2311-09 BEND WITH DUCKFOOT	MS	1	L - FBE	C - FBE
T17		150Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
T18		150Ø LONG RADIUS FLANGED JIS B 2311-09 BEND	MS	1	L - FBE	C - FBE
T19		450Ø FLANGED BELLMOUTH WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
T20		450Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
T21		450Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
T22		450Ø EXPANSION JOINT COUPLING	MS	1	L - FBE	C - FBE
T23		450Ø PIPE, FLANGED BOTH ENDS	MS	5	L - FBE	C - FBE
T24		450Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
T25		450Ø LONG RADIUS FLANGED JIS B 2311-09 BEND ONE END EXTENDED WITH DUCKFOOT	MS	1	L - FBE	C - FBE
T26		450Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
T27		450Ø TO 150Ø FLANGED JIS B 2311-09 TEE	MS	1	L - FBE	C - FBE
T28		450Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE

CORROSION PROTECTIOM CODES
FACTORY APPLICATION

L - G	LINING	GALVANIZING
C - G	COATING	GALVANIZING
L - SFEP	LINING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
C - SFEP	COATING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
L - FBE	LINING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
C - FBE	COATING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
L - CM	LINING	CEMENT/MORTAR

ON SITE APPLICATION,
AFTER INSTALLATION

S - PE: POLYURETHANE EXTERNAL COATING (SANS 1217-TYPE 1C MATERIAL) (NO ENAMEL PAINT TO BE APPLIED ON PIPEWORK BURIED OR SUBMERGED IN WATER - ONLY ON EXPOSED PIPEWORK

S - TW: ALL UNDERGROUND BOLTED FLEXIBLE AND FLANGED COUPLINGS MUST BE PROTECTED WITH PETROLEUM MASTIC AND TAPE WRAPPING. ALL UNDERGROUND STEEL PIPES TO BE COATED WITH DENSO PRIMER D AND WRAPPED WITH DENSOCLAD 70 TAPE

MATERIAL LIST

SS304L : STAINLESS STEEL GRADE 304L

MS : MILD STEEL GRADE 300W

GMS : HOT-DIPPED GALVANIZED MILD STEEL

NOTE: FLANGED TO SABS 1123 TABLE 1600/3
* DIMENSION INDICATIVE. TO BE CONFIRMED ON SITE

FOR TENDER ONLY

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

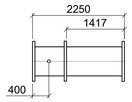
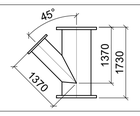
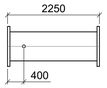
Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump Station

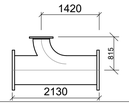
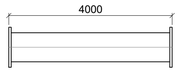
PIPE SCHEDULE (1)
PIPE WORK TO TOWER

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE	REV:	AMENDMENTS	DATE:
PROJECT SURVEYOR:		CHECKED			1: 75	0	TENDER PURPOSES	05/08/2024
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	W05	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET 1	OF	1	
ORIGINAL PAGE SIZE				

FILE No.

ITEM No.	ITEM	DESCRIPTION	MATERIAL	NUMBER OF ITEMS	CORROSION PROTECTION	
					INT.	EXT.
P01		700Ø FLANGED PIPE WITH PUDDLE FLANGE AND 50mm SOCKET	MS	1	L - FBE	C - FBE
P02		700mm x 450mm x 45° ECCENTRIC Y-PIECE	MS	3	L - FBE	C - FBE
P03		700Ø FLANGED PIPE WITH 50mm SOCKET	MS	2	L - FBE	C - FBE
P04		700Ø x 400Ø CONCENTRIC FLANGED LONG REDUCER	MS	1	L - FBE	C - FBE
P05		400Ø BLANC FLANGE	MS	2	L - FBE	C - FBE
P07		450Ø FLANGED PIPE WITH 3 x 50mm SOCKETS	MS	3	L - FBE	C - FBE
P08		450Ø x 300Ø ECCENTRIC FLANGED LONG REDUCER	MS	3	L - FBE	C - FBE
P09		400Ø x 250Ø CONCENTRIC FLANGED REDUCER	MS	3	L - FBE	C - FBE
P10		400Ø x 90° FLANGED LONG RADIUS JIS ELBOW.	MS	3	L - FBE	C - FBE
P11		400Ø FLANGED PIPE WITH 3 x 50mm SOCKETS	MS	3	L - FBE	C - FBE
P13		400Ø ONE-END FLANGED PIPE WITH No.4 80 x 60 x 6mm ANGLE CLEATS	MS	3	L - FBE	C - FBE
P14		400Ø FLANGED PIPE	MS	3	L - FBE	C - FBE
P17		400Ø FLANGED PIPE WITH PUDDLE FLANGE	MS	4	L - FBE	C - FBE

ITEM No.	ITEM	DESCRIPTION	MATERIAL	NUMBER OF ITEMS	CORROSION PROTECTION	
					INT.	EXT.
P18		400Ø FLANGED PIPE	MS	4	L - FBE	C - FBE
P19		400Ø x 90° FLANGED LONG RADIUS JIS ELBOW.	MS	4	L - FBE	C - FBE
P20		700mm x 400mm SWIFT T-PIECE	MS	4	L - FBE	C - FBE
P21		700Ø FLANGED PIPE	MS	3	L - FBE	C - FBE
P22		700Ø FLANGED PIPE	MS	2	L - FBE	C - FBE

CORROSION PROTECTIOM CODES
FACTORY APPLICATION

L - G	LINING	GALVANIZING
C - G	COATING	GALVANIZING
L - SFEP	LINING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
C - SFEP	COATING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
L - FBE	LINING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
C - FBE	COATING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
L - CM	LINING	CEMENT/MORTAR

ON SITE APPLICATION,
AFTER INSTALLATION

S - PE	POLYURETHANE EXTERNAL COATING (SANS 1217-TYPE 1C MATERIAL) (NO ENAMEL PAINT TO BE APPLIED ON PIPEWORK BURIED OR SUBMERGED IN WATER - ONLY ON EXPOSED PIPEWORK
S - TW	ALL UNDERGROUND BOLTED FLEXIBLE AND FLANGED COUPLINGS MUST BE PROTECTED WITH PETROLEUM MASTIC AND TAPE WRAPPING. ALL UNDERGROUND STEEL PIPES TO BE COATED WITH DENSO PRIMER D AND WRAPPED WITH DENSOCLAD 70 TAPE

MATERIAL LIST

SS304L : STAINLESS STEEL GRADE 304L

MS : MILD STEEL GRADE 300W

GMS : HOT-DIPPED GALVANIZED MILD STEEL

NOTE: FLANGED TO SABS 1123 TABLE 1600/3
* DIMENSION INDICATIVE. TO BE CONFIRMED ON SITE

FOR TENDER ONLY

CONSULTING ENGINEERS:
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WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
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JOHANNESBURG

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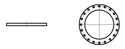
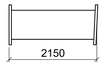
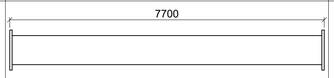
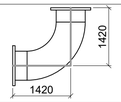
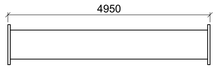
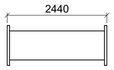
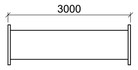
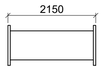
FAX: (011) 688-1529

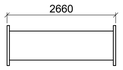
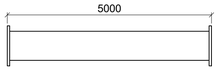
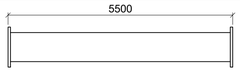
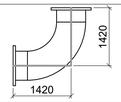
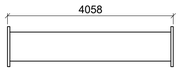
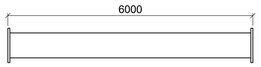
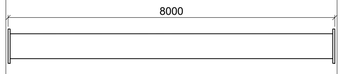
Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

PUMP STATION
PIPE SCHEDULE (2)

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402 — CONTRACT NUMBER
W06 - 0 — DRAWING No. — REV.
A1 — ORIGINAL PAGE SIZE
SHEET 1 OF 1
FILE No.

ITEM No.	ITEM	DESCRIPTION	MATERIAL	NUMBER OF ITEMS	CORROSION PROTECTION INT.	CORROSION PROTECTION EXT.
1.1		700Ø FLANGE WELDED SKEW ONTO EXISTING PIPE	MS	1	L - FBE	C - FBE
1.2		700Ø PIPE, FLANGED BOTH ENDS ONE SIDE WELDED SKEW TO MATCH DIRECTION OF EXISTING PIPE	MS	1	L - FBE	C - FBE
1.3		700Ø PIPE, FLANGED BOTH ENDS	MS	4	L - FBE	C - FBE
S01		700Ø LONG RADIUS FLANGED JIS B 2311-09 BEND	MS	1	L - FBE	C - FBE
2.1		700Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
2.2		700Ø TO 450Ø FLANGED JIS B 2311-09 TEE	MS	4	L - FBE	C - FBE
2.3		700Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
2.5		700Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
2.6		700Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
2.7		450Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
2.8		450Ø LONG RADIUS FLANGED JIS B 2311-09 BEND	MS	1	L - FBE	C - FBE
2.9		450Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
2.11		450Ø PIPE, FLANGED BOTH ENDS	MS	4	L - FBE	C - FBE
2.12		700Ø TO 450Ø ECCENTRIC FLANGED JIS B 2311-09 LONG REDUCER	MS	1	L - FBE	C - FBE

ITEM No.	ITEM	DESCRIPTION	MATERIAL	NUMBER OF ITEMS	CORROSION PROTECTION INT.	CORROSION PROTECTION EXT.
2.13		450Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
2.14		700Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
2.15		700Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
S02		700Ø LONG RADIUS FLANGED JIS B 2311-09 BEND	MS	1	L - FBE	C - FBE
3.1		700Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
3.2		700Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
3.3		700Ø TO 600Ø ECCENTRIC FLANGED JIS B 2311-09 REDUCER	MS	1	L - FBE	C - FBE
3.4		600Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
3.6		600Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
3.7		600Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
3.8		600Ø PIPE, FLANGED BOTH ENDS	MS	2	L - FBE	C - FBE
3.9		600Ø SHORT RADIUS FLANGED JIS B 2311-09 BEND	MS	2	L - FBE	C - FBE
3.10		600Ø TO 250Ø FLANGED JIS B 2311-09 TEE	MS	1	L - FBE	C - FBE
3.11		250Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE

CORROSION PROTECTIOM CODES
FACTORY APPLICATION

L - G	LINING	GALVANIZING
C - G	COATING	GALVANIZING
L - SFEP	LINING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
C - SFEP	COATING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
L - FBE	LINING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
C - FBE	COATING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
L - CM	LINING	CEMENT/MORTAR

ON SITE APPLICATION,
AFTER INSTALLATION

S - PE	POLYURETHANE EXTERNAL COATING (SANS 1217-TYPE 1C MATERIAL) (NO ENAMEL PAINT TO BE APPLIED ON PIPEWORK BURIED OR SUBMERGED IN WATER - ONLY ON EXPOSED PIPEWORK
S - TW	ALL UNDERGROUND BOLTED FLEXIBLE AND FLANGED COUPLINGS MUST BE PROTECTED WITH PETROLEUM MASTIC AND TAPE WRAPPING. ALL UNDERGROUND STEEL PIPES TO BE COATED WITH DENSO PRIMER D AND WRAPPED WITH DENSOCLAD 70 TAPE

MATERIAL LIST

SS304L : STAINLESS STEEL GRADE 304L

MS : MILD STEEL GRADE 300W

GMS : HOT-DIPPED GALVANIZED MILD STEEL

NOTE: FLANGED TO SABS 1123 TABLE 1600/3
* DIMENSION INDICATIVE. TO BE CONFIRMED ON SITE

FOR TENDER ONLY

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

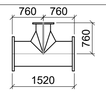
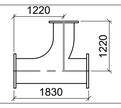
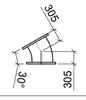
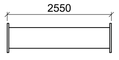
TEL: (011) 688-1400
FAX: (011) 688-1529

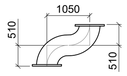
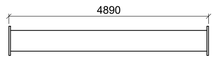
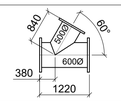
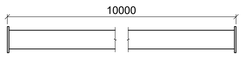
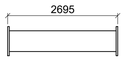
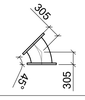
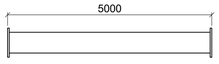
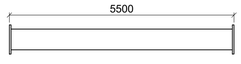
Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

SITE WORKS PART A
PIPE SCHEDULE (3)

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE	REV:	AMENDMENTS	DATE:
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	0	TENDER PURPOSES	05/08/2024
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402 — CONTRACT NUMBER
W07 - 0 — DRAWING No. — REV.
A1 — ORIGINAL PAGE SIZE
SHEET 1 OF 1
FILE No.

ITEM No.	ITEM	DESCRIPTION	MATERIAL	NUMBER OF ITEMS	CORROSION PROTECTION	
					INT.	EXT.
3.13		600Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
3.14		600Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
3.15		600Ø PIPE, FLANGED BOTH ENDS	MS	2	L - FBE	C - FBE
3.16		600mm x 350mm GUSSETTED T-PIECE	MS	1	L - FBE	C - FBE
S03		600mm x 500mm SWIFT T-PIECE	MS	1	L - FBE	C - FBE
3.17		600Ø TO 500Ø ECCENTRIC FLANGED JIS B 2311-09 REDUCER	MS	1	L - FBE	C - FBE
3.18		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
3.20		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
3.21		500Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
3.22		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
3.23		500Ø LONG RADIUS 30° BEND FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
3.24		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
4.1		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
4.3		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE

ITEM No.	ITEM	DESCRIPTION	MATERIAL	NUMBER OF ITEMS	CORROSION PROTECTION	
					INT.	EXT.
4.4		500Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
4.5		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
4.6		500Ø PURPOSE MADE Z-PIECE FROM 2 x SHORT RADIUS JIS B 2311-09	MS	1	L - FBE	C - FBE
4.7		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
S04		600Ø TO 500Ø x 60° ECCENTRIC Y-PIECE	MS	1	L - FBE	C - FBE
5.1		600Ø FLANGE WELDED ONTO EXISTING PIPE	MS	2	L - FBE	C - FBE
6.1		450Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
6.2		600Ø PIPE ONE END FLANGED OTHER END PLAIN WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
7.1		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
7.2		500Ø LONG RADIUS 45° BEND FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
7.3		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
7.4		500Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	2	L - FBE	C - FBE
7.5		500Ø PIPE, FLANGED BOTH ENDS	MS	2	L - FBE	C - FBE
7.7		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE

CORROSION PROTECTIOM CODES
FACTORY APPLICATION

L - G	LINING	GALVANIZING
C - G	COATING	GALVANIZING
L - SFEP	LINING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
C - SFEP	COATING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
L - FBE	LINING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
C - FBE	COATING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
L - CM	LINING	CEMENT/MORTAR

ON SITE APPLICATION,
AFTER INSTALLATION

S - PE	POLYURETHANE EXTERNAL COATING (SANS 1217-TYPE 1C MATERIAL) (NO ENAMEL PAINT TO BE APPLIED ON PIPEWORK BURIED OR SUBMERGED IN WATER - ONLY ON EXPOSED PIPEWORK
S - TW	ALL UNDERGROUND BOLTED FLEXIBLE AND FLANGED COUPLINGS MUST BE PROTECTED WITH PETROLEUM MASTIC AND TAPE WRAPPING. ALL UNDERGROUND STEEL PIPES TO BE COATED WITH DENSO PRIMER D AND WRAPPED WITH DENSOCLAD 70 TAPE

MATERIAL LIST

SS304L : STAINLESS STEEL GRADE 304L
MS : MILD STEEL GRADE 300W
GMS : HOT-DIPPED GALVANIZED MILD STEEL

NOTE: FLANGED TO SABS 1123 TABLE 1600/3
* DIMENSION INDICATIVE. TO BE CONFIRMED ON SITE

FOR TENDER ONLY

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

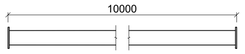
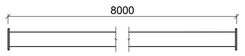
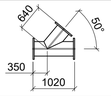
Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

SITE WORKS PART B
PIPE SCHEDULE (4)

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	REV:	DESCRIPTION	DATE:
		APPROVED BY:				0	TENDER PURPOSES	05/08/2024
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402	W08	-	0	
CONTRACT NUMBER	DRAWING No.		REV.	
A1	SHEET	1	OF	1
ORIGINAL PAGE SIZE				

FILE No.

ITEM No.	ITEM	DESCRIPTION	MATERIAL	NUMBER OF ITEMS	CORROSION PROTECTION	
					INT.	EXT.
7.8		500Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
7.9		500Ø LONG RADIUS FLANGED JIS B 2311-09 BEND	MS	1	L - FBE	C - FBE
7.10		500Ø PIPE FLANGED ONE END AND CURVED PLATE OTHER END TO FIT 700mm EXISTING PIPE	MS	1	L - FBE	C - FBE
8.1		350Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
8.2		350Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	1	L - FBE	C - FBE
8.3		350Ø PURPOSE MADE Z-PIECE FROM 2 x SHORT RADIUS JIS B 2311-09	MS	1	L - FBE	C - FBE
8.4		350Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
8.5		350Ø PIPE, FLANGED BOTH ENDS WITH PUDDLE FLANGE	MS	2	L - FBE	C - FBE
8.6		350Ø PIPE, FLANGED BOTH ENDS	MS	4	L - FBE	C - FBE
8.7		350Ø PIPE, FLANGED BOTH ENDS	MS	1	L - FBE	C - FBE
8.8		PURPOSE 350Ø x 50° ECCENTRIC Y-PIECE	MS	1	L - FBE	C - FBE
8.9		350Ø FLANGE WELDED ONTO EXISTING PIPE	MS	2	L - FBE	C - FBE
8.10						
8.11						

CORROSION PROTECTIOM CODES
FACTORY APPLICATION

L - G	LINING	GALVANIZING
C - G	COATING	GALVANIZING
L - SFEP	LINING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
C - SFEP	COATING	SOLVENT-FREE EPOXY PAINT (SANS 1217-TYPE 1B MATERIAL)
L - FBE	LINING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
C - FBE	COATING	FUSHION BONDED EPOXY (SANS 1217-TYPE 2A MATERIAL)
L - CM	LINING	CEMENT/MORTAR

ON SITE APPLICATION,
AFTER INSTALLATION

S - PE	POLYURETHANE EXTERNAL COATING (SANS 1217-TYPE 1C MATERIAL) (NO ENAMEL PAINT TO BE APPLIED ON PIPEWORK BURIED OR SUBMERGED IN WATER - ONLY ON EXPOSED PIPEWORK
S - TW	ALL UNDERGROUND BOLTED FLEXIBLE AND FLANGED COUPLINGS MUST BE PROTECTED WITH PETROLEUM MASTIC AND TAPE WRAPPING. ALL UNDERGROUND STEEL PIPES TO BE COATED WITH DENSO PRIMER D AND WRAPPED WITH DENSOCLAD 70 TAPE

MATERIAL LIST

SS304L	: STAINLESS STEEL GRADE 304L
MS	: MILD STEEL GRADE 300W
GMS	: HOT-DIPPED GALVANIZED MILD STEEL

NOTE: FLANGED TO SABS 1123 TABLE 1600/3
* DIMENSION INDICATIVE. TO BE CONFIRMED ON SITE

FOR TENDER ONLY

CONSULTING ENGINEERS:
TRI-M CONSULTING ENGINEERS
WEWORK
155 WEST STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADRESS:
JOHANNESBURG WATER
P O BOX 61542
MARSHALLTOWN
2107

DESIGNED	P. S. Botha	05/08/2024
DRAWN	J. Nel	05/08/2024
CHECKED	P. S. BOTHA	05/08/2024
APPROVED BY: P. S. Botha	SIGNATURE	DATE
ECSA REG. No.		
CHECKED		
	SIGNATURE	DATE

PHYSICAL ADDRESSES:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

Turffontein Corridors of Freedom
Water Upgrade
Foresthill Tower and Pump station

SITE WORKS PART C
PIPE SCHEDULE (5)

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE	REV:	AMENDMENTS	DATE:
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	0	TENDER PURPOSES	05/08/2024
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

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ORIGINAL PAGE SIZE				

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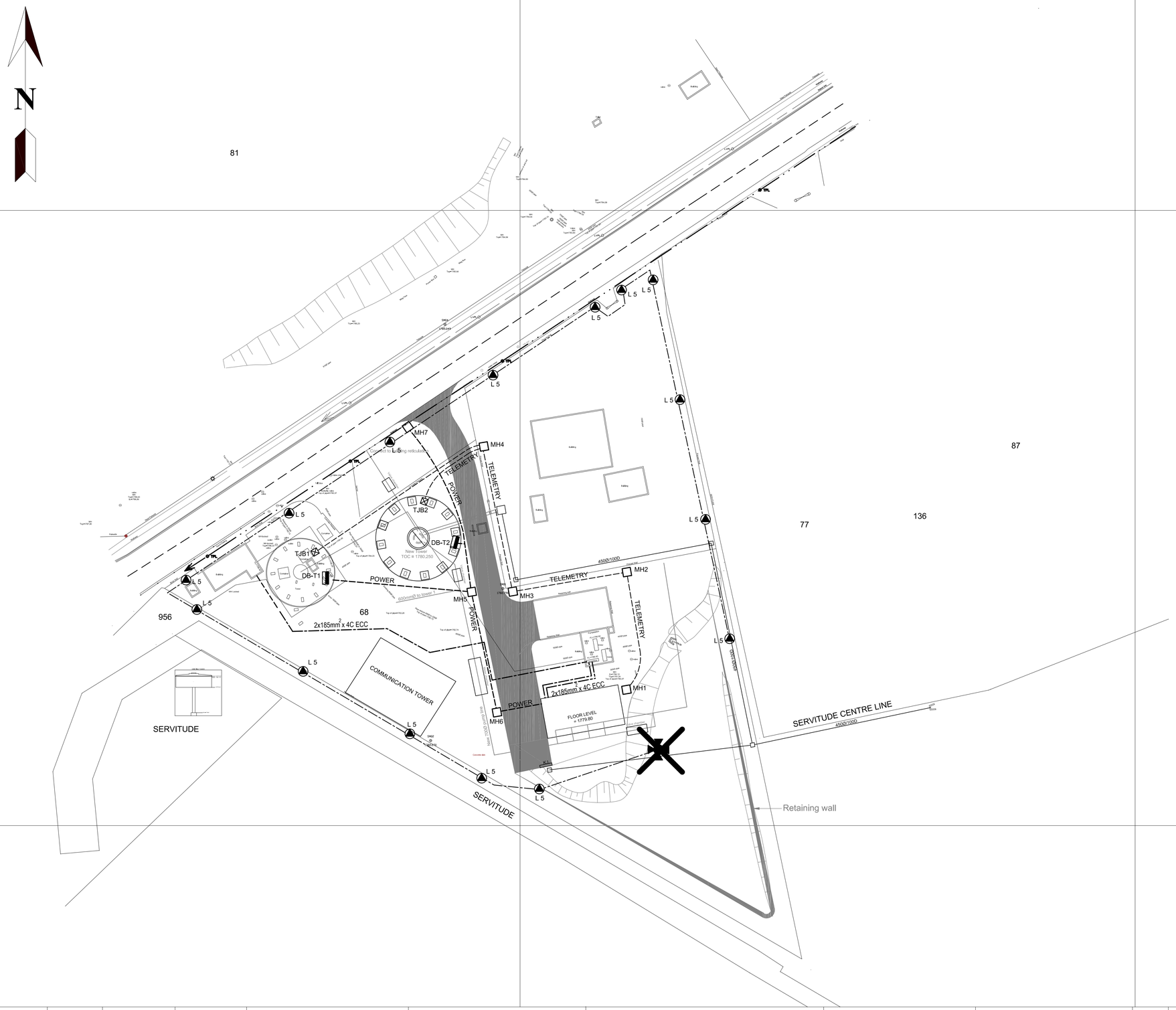

LV CABLE SCHEDULE			
FROM	TO	TO	BCEW
LV MAIN	GENERATOR C/O	2x185mm² x 4C ECC	
GEN C/0	MCC	2x185mm² x 4C ECC	
MCC	TOWER 1 POWER	6mm² x 3C	
MCC	TOWER 1 AVIATION LIGHTS	4mm² x 3C	
MCC	TOWER 2 POWER	6mm² x 3C	
MCC	TOWER 2 AVIATION LIGHTS	4mm² x 3C	
MCC	DB PUMP STATION	25mm² x 4C	16mm²
MCC	GUARD HOUSE	25mm² x 4C	

LEGEND

- 2x185mm² PVC/SWA/PVC ECC CABLE
- LV SUPPLY CABLE TO TOWERS
- DECABOND INSTRUMENTATION CABLE IN SLEEVES (AS PER SPECIFICATION)
- 6mm² x 4C PVC/SWA/PVC ECC STREETLIGHT CABLE
- DB TOWER (LIGHT & POWER)
- MANHOLE
- TELEMENTRY INSTRUMENT BOX TIB 1&2
- L 5 PERIMITER LIGHTING : 8M POLE BEKA LED LUME XP1-45W
- 20M HIGHMAST 6 x 200W LED

KEY PLAN
SCALE : 1:500

CONSULTING ENGINEERS
TRI-M CONSULTING ENGINEERS
MICHELANGELO TOWER
SUITE 2307, MAUDE STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADDRESS:
P O Box 61542
MATSHALLTOWN
2107

DESIGNED	P v RHYN	
DRAWN	DRAFTPLAN	
CHECKED	P. S. Botha	
APPROVED BY: P v RHYN	SIGNATURE	DATE
ECSA REG. No.	870119	
CHECKED		
	SIGNATURE	DATE

Johannesburg Water

PHYSICAL ADDRESS:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

FOREST HILL WATER SUPPLY
NEW WATER TOWER & PUMP STATION

GENERAL SITE PLAN

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	REV:	DESCRIPTION	DATE:
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

JW14402 — CONTRACT No.
EO1 — DRAWING No.
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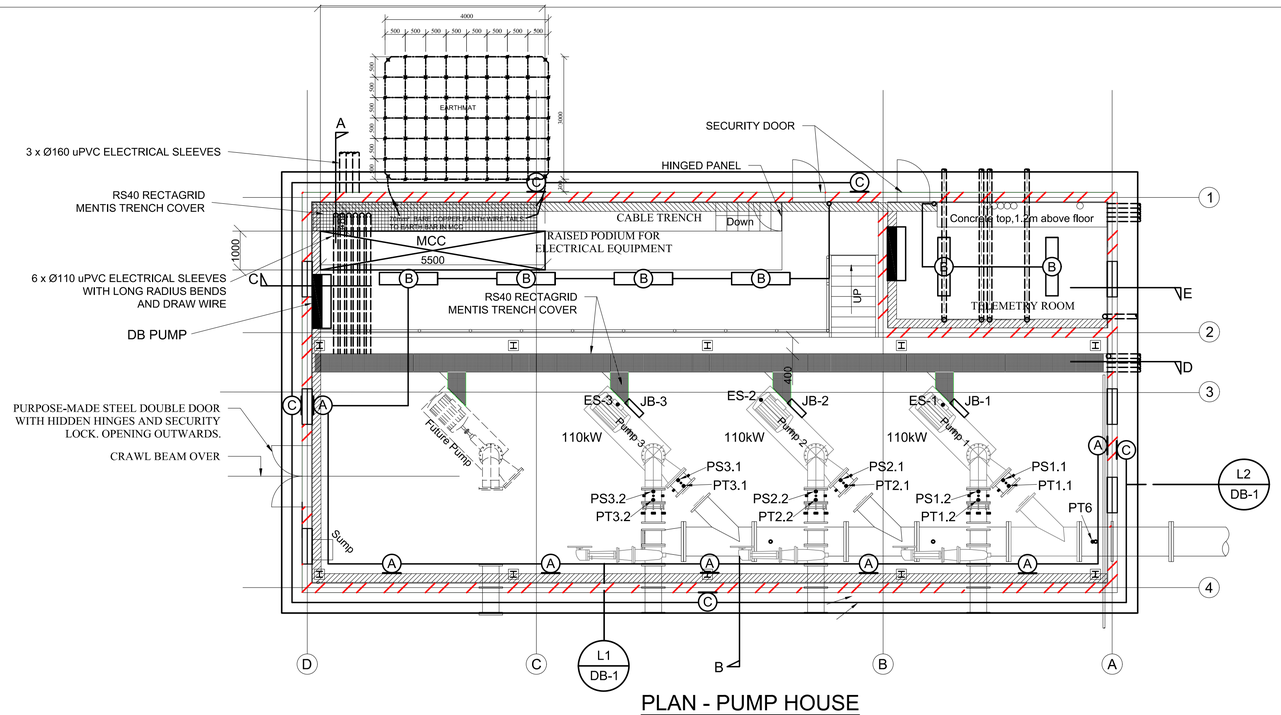
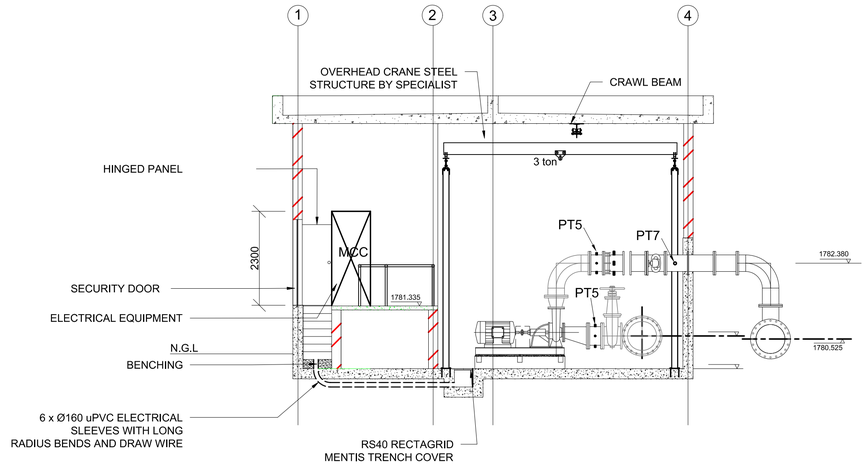
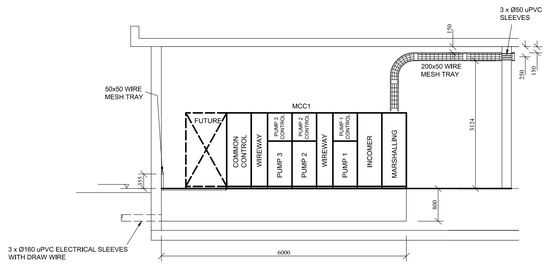
A1 — ORIGINAL PAGE SIZE
SHEET 1 OF 1
FILE No.



PLAN - PUMP HOUSE
SCALE 1:75



SECTION A-A
SCALE 1:75



SECTION C - C
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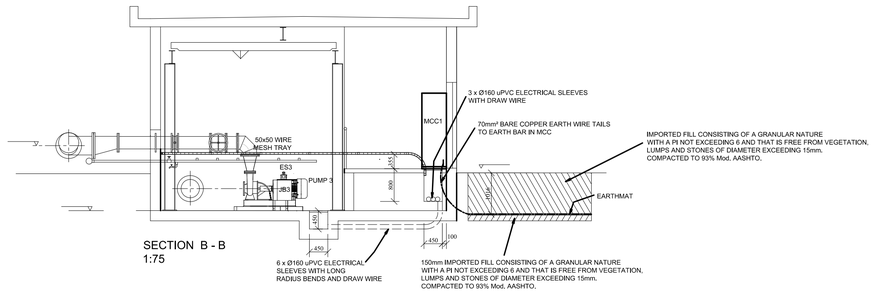

SECTION B - B
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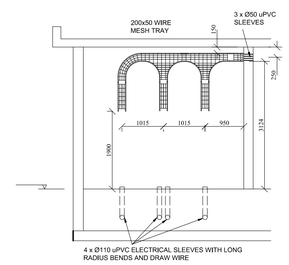
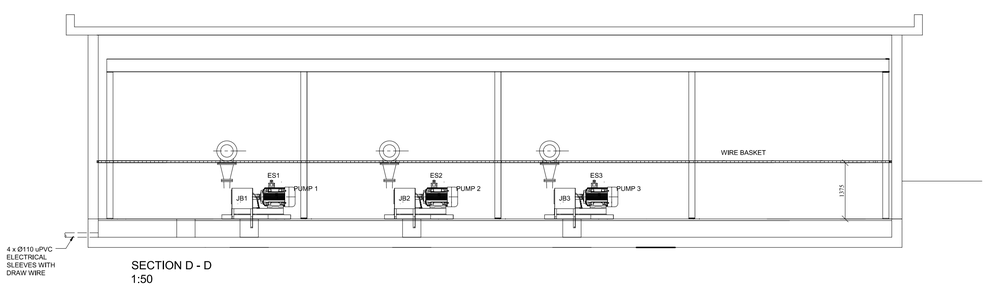


SECTION E- E : TELEMETRY ROOM
1:75



SECTION D - D
1:50

LEGEND:ELECTRICAL

- DISTRIBUTION BOARD
- JB — JUNCTION BOX
- A — WALL MOUNTED LED LIGHT
- B — 46W LED CORROSION PROOF IP65
- C — 55W IP65 LED NOVA BULKHEAD LIGHT
- WIRE BASKET

SCALE : SHOWN

CONSULTING ENGINEERS
TRI-M CONSULTING ENGINEERS
MICHELANGELO TOWER
SUITE 2307, MAUDE STREET
SANDTON, JOHANNESBURG

CLIENT POSTAL ADDRESS:
P O Box 61542
MATSHALLTOWN
2107

DESIGNED	P v RHYN		
DRAWN	DRAFTPLAN		
CHECKED	P. S. Botha		
APPROVED BY:			
P v RHYN	SIGNATURE	DATE	
ECSA REG. No.	870119		
CHECKED			
	SIGNATURE	DATE	

Johannesburg Water

PHYSICAL ADDRESS:
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG

TEL: (011) 688-1400
FAX: (011) 688-1529

FOREST HILL WATER SUPPLY
NEW WATER TOWER & PUMP STATION

PUMP STATION
ELECTRICALINSTALLATION

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			1: 50; 1: 25	REV:	DESCRIPTION	DATE:
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
DATE:			SIGNATURE	DATE				

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CONTRACT No.	DRAWING No.		REV.	
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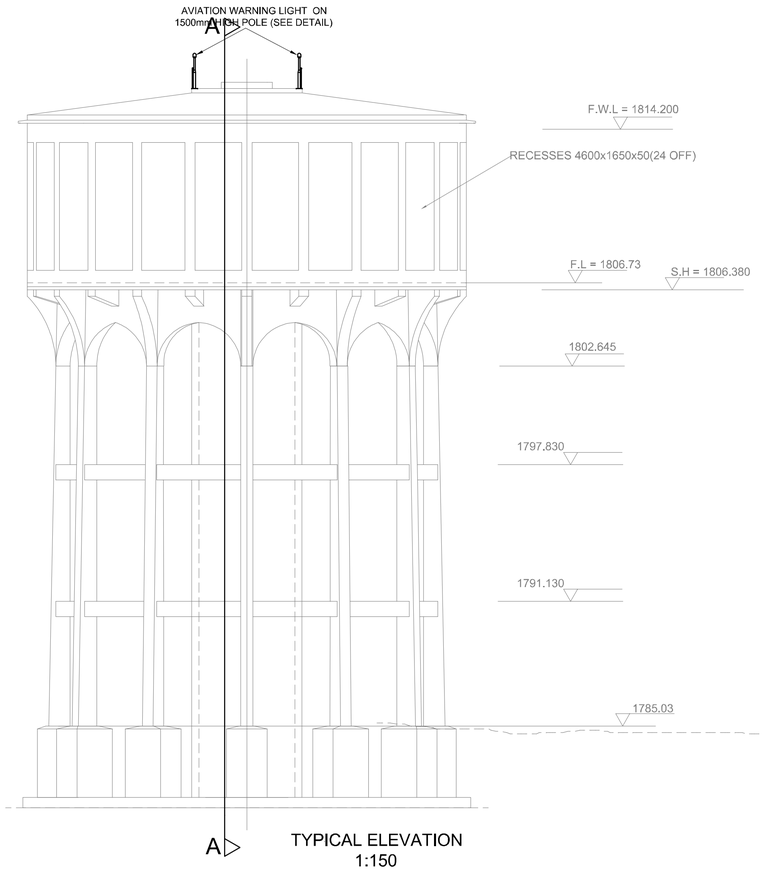
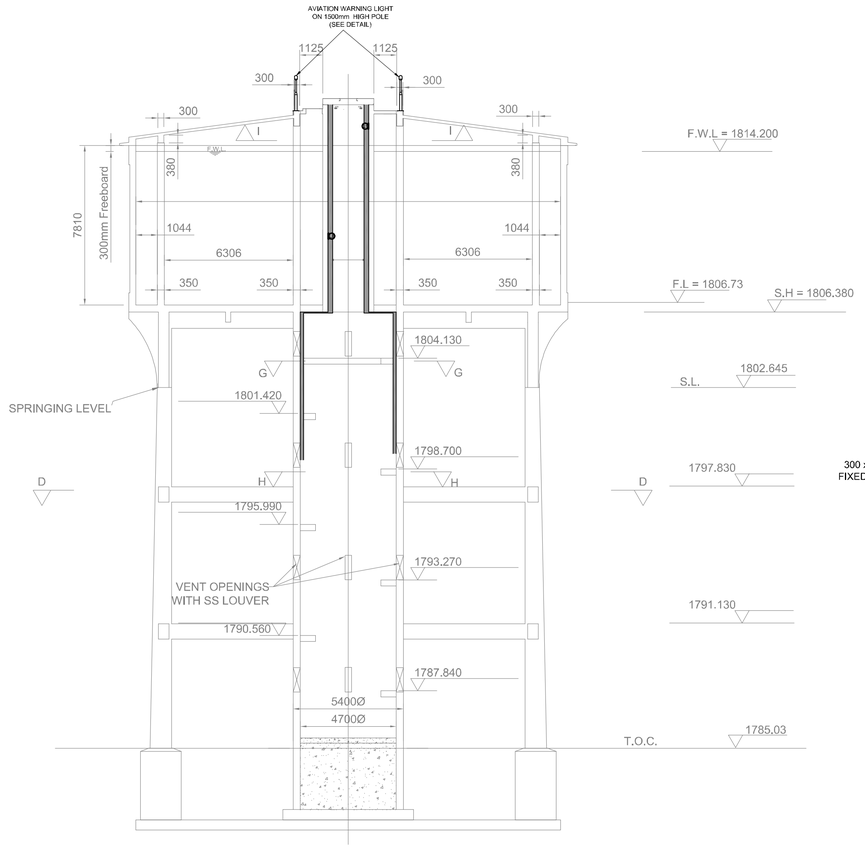


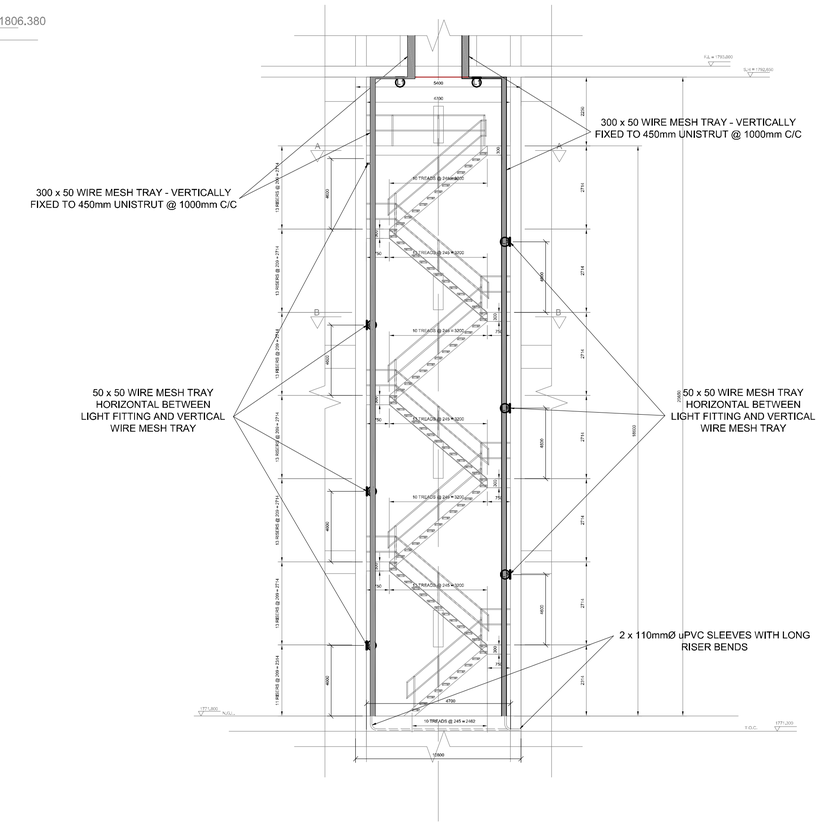
TYPICAL ELEVATION
1:150



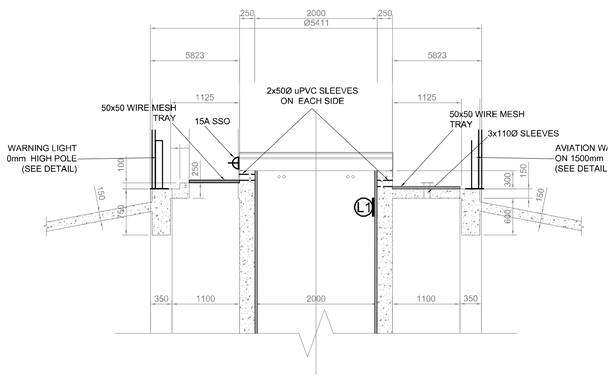
SECTION A-A
1:150

ELECTRICAL SYMBOLS

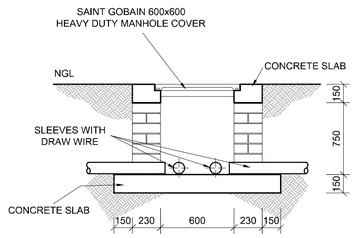
- BULKHEAD LIGHT FITTING
- WALL MOUNTED LIGHT FITTING
- LIGHT SWITCH
- 15A 3 PIN SSO
- SLEEVE PIPE
- WIRE MESH TRAY



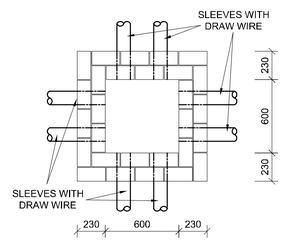
STAIR DETAIL ON SECTION A-A
1:100



SECTION I-I



Plan



Section

DETAIL OF 600x600 MANHOLE
NTS

CONSULTING ENGINEERS TRI-M CONSULTING ENGINEERS LEGNUM PARK BUILDING WATER MELON STREET POLOKWANE	DESIGNED	P van RHYN	
	DRAWN	DRAFTPLAN	
	CHECKED	P van RHYN	
	APPROVED BY:		
	TRI-M CONSULTING	SIGNATURE	DATE
	ECSA REG. No.	870119	
CLIENT JOBURG WATER 17 HARRISON STREET .	CHECKED		
		SIGNATURE	DATE

Johannesburg Water

17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400
FAX: (011) 688-1529

FORREST HILL WATER SUPPLY
NEW WATER TOWER & PUMP STATION

NEW WATER TOWER -
ELEVATION & SECTION
ELECTRICAL INSTALLATION

SURVEY INFORMATION		APPROVAL BY JW DEPOT			SCALE		AMENDMENTS	
PROJECT SURVEYOR:		CHECKED			SHOWN	REV:	DESCRIPTION	DATE:
		APPROVED BY:						
DATE:			SIGNATURE	DATE				
CCTV INFORMATION		APPROVAL BY JW PLANNING						
CCTV COMPANY:		CHECKED						
		APPROVED BY:						
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ORIGINAL PAGE SIZE				

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