

TECHNICAL SITE SURVEY ACCEPTANCE CERTIFICATE (TSSAC)

a) Greenfield✓	b) Rooftop	c) 3 <sup>rd</sup> Party	d) MTN Existing (Antenna Upgrade)	e) DAS
f) Minor RF Upgrade		g) Logical Upgrade Only (Hardware must have previously been accepted by MTN Regional CPG)		

*Tick the appropriate block*

Site Name	Zustersstroom					
Site ID	X100301			Project Number		
Region ( <i>tick the appropriate block</i> )	E Cape	Central	Gauteng S	Gauteng N	Northern✓	KZN W Cape
Turnkey Contractor( <i>tick the appropriate block</i> )	Ericsson		Huawei✓			ZTE

This is to certify that the following Network Element Stream has been surveyed according to the BTS Site Specification Document Number MTN SA TI/01/1001 September 2014 Issue 10 Rev 1 and Transmission Specification Number MTN SA TI/06/1001Tx Issue 6 rev 2, Civil Aviation requirements and all Municipal bylaws and regulations, whilst all security elements have been considered.

The following documents have been attached:

Site Plan (if applicable)	360 degree Panoramic Photos
Tower Loading Application Form (Where additional/New Antennas have been added to existing MTN towers)	

Network Element Stream	Tick Applicable	BTS Type	Transmission Type (MW or Fibre)
2G Sectorisation (900/1800)			
2G Capacity Upgrade			
3G Capacity Upgrade			
2G Macro Site	✓		
3G U2100 Macro Site	✓		
3G U900 Macro Site	✓		
IBS (DAS)			
Low Profile & Gated Com (2G,3G)			
LTE	✓		
LTE Capacity Upgrade			
Transmission Upgrade			
Modernisation / Swap			

<sup>R1</sup> Site Drawings Approved  Antenna Changes have been updated in the MTN Antenna Database and have been approved for installation

TK Turnkey Representative (OEM)	MTN Radio & Planning (Regional) (a, b, c, d, e only)		MTN SA Representative (Regional) (a, b, c, d, e only)	
	Accept	Reject	Accept	Reject
Name:	Name: H. du Toit		Name: M.C. SOUBERT	
Date:	Date: 2017/08/21		Date: 2017-8-21	
Signature:	Signature: [Signature]		Signature: [Signature]	





1 h 12 min (113 km)

Via N4

Fastest route, the usual traffic  
 ▲ This route has tolls



1269 Pretorius St  
 Hatfield, Pretoria, 0028

↓ Head west on Pretorius St/M2/N4 toward Duncan St/M7  
 140 m

↙ Use the left lane to turn left at the 1st cross street onto Duncan St/M7  
 130 m

↙ Use the left 2 lanes to turn left onto Francis Baard St/M2/N4  
 Continue to follow N4  
 Partial toll road

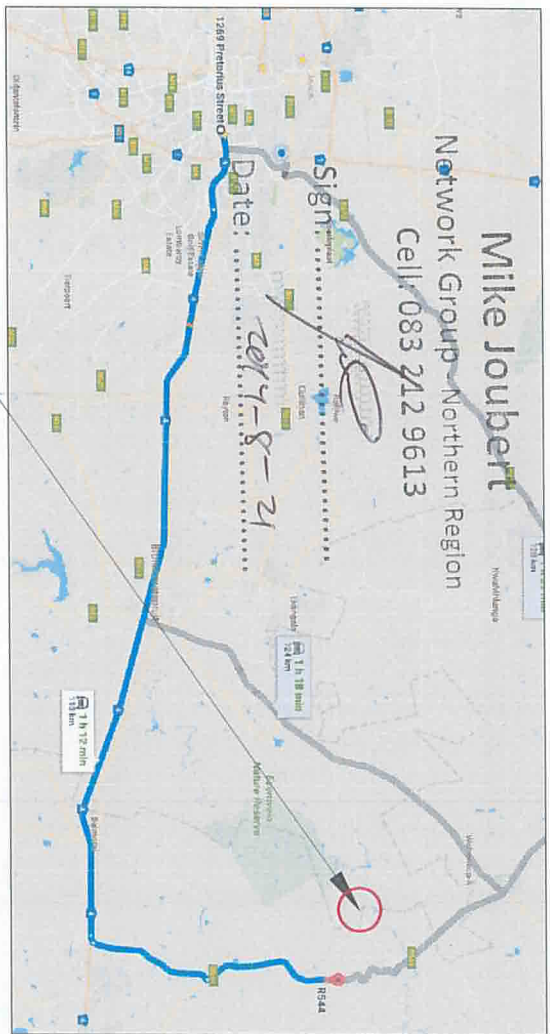
9.1 km  
 Keep right to stay on N4  
 Toll road

77.0 km  
 Take exit 86 toward R104/Highveld/Wakefield/Kromdraai  
 750 m

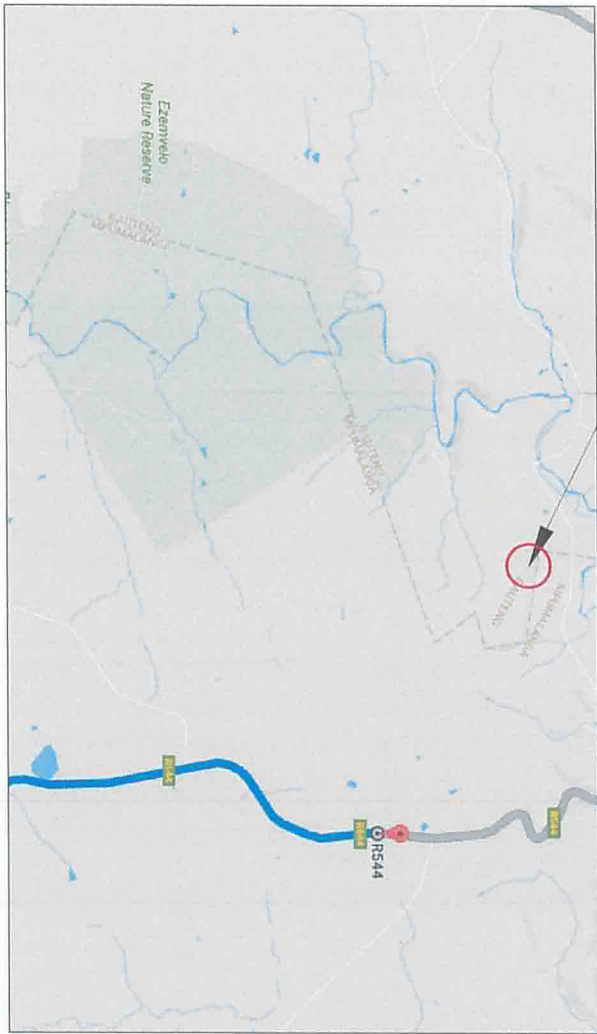
↙ Turn left  
 12.9 km

↙ Turn left onto R544  
 Destination will be on the right  
 13.2 km

R544



MTN SITE LOCATION



DIMENSIONS VERIFIED ON SITE  
 BEFORE COMMENCEMENT OF ANY WORK.  
 DRAWINGS MUST NOT BE SCALED.  
 ONLY FIGURED DIMENSIONS USED.

Scale: NTS  
 TYPICAL LOCATION PLAN  
 SHEET 1 OF 16  
 Drawing Reference: 80  
 REV: 1

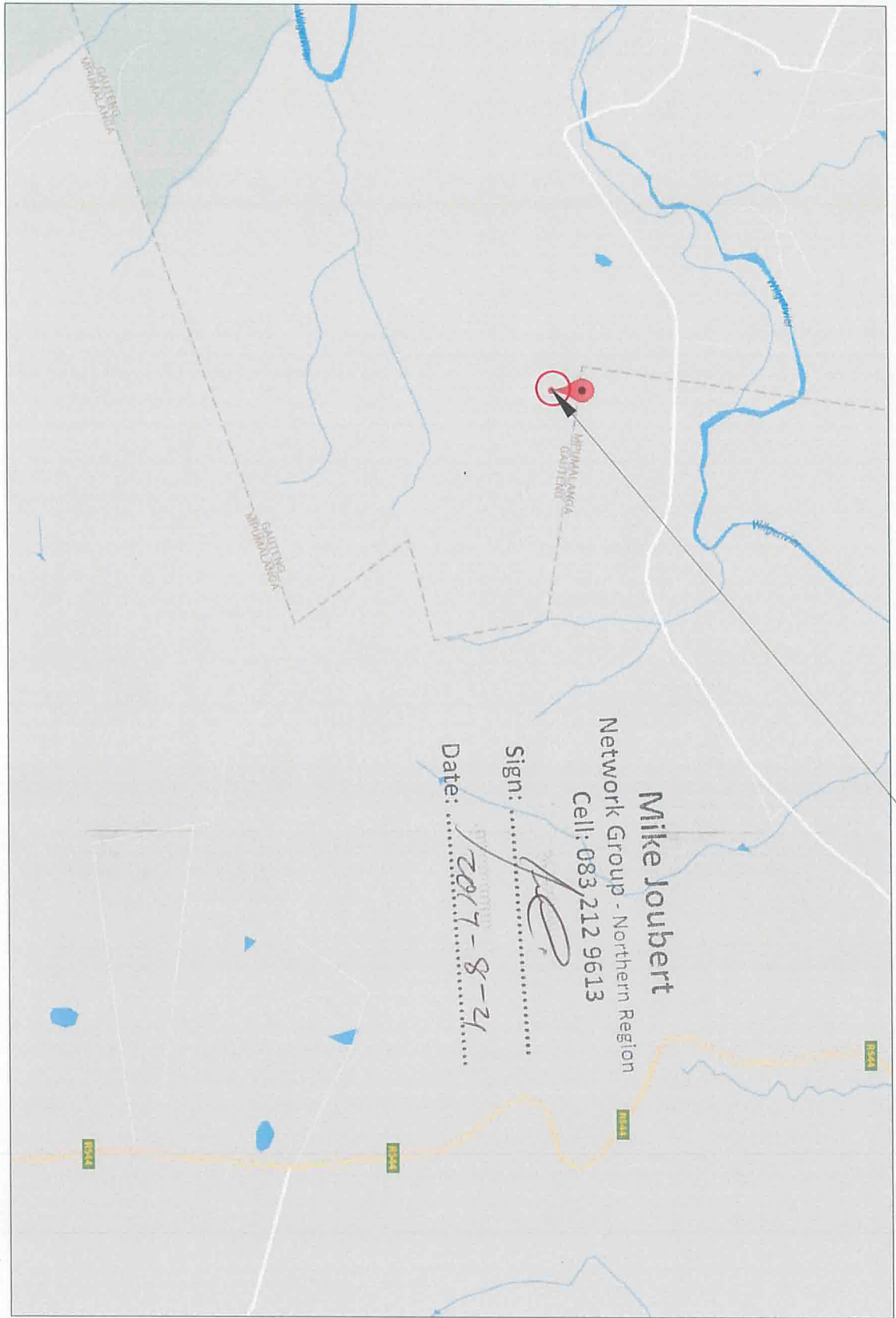
NO	DATE	DESCRIPTION
1	25/07/17	ISSUED FOR PROPOSAL

PROJECT I No: SHEET No: REVISION	MTN K100301 1 A
SITE NAME:	ZUSTERSSTROOM
LAND ID:	X100301
WSS No.:	
OP/MONE/	
REF. No.:	
PROJECT No.:	
LATITUDE:	25°37'12.53"S
LONGITUDE:	29° 02'32.24"E
SITE ADDRESS:	OFF THE R544, ± 36.4km NORTH OF BALKMANN MPEWANA
SURVEY DATE:	17/07/17
RADIO ENGINEER:	
SITE SUPERVISOR:	LOUIS BOTHA
DRAWN BY:	JAN MALAN
DATE:	20/07/17
<b>TOWGCON CIVILS</b> (Pty) Ltd Tower Construction GAUTENG OFFICE: 730 LAVENDER ROAD, BEN ACCORD, GAUTENG REPUBLIC OF SOUTH AFRICA TEL: (+27)12 562 0454 FAX: (+27)12 562 0302 FREE STATE OFFICE: 78 STEIN STREET, HENNINGMAN REPUBLIC OF SOUTH AFRICA TEL: (+27)51 573 2129 FAX: (+27)51 559 9371 EMAIL ADDRESS: TOWGCON@TOWGCON.COM	
ALL WORK PERFORMED ACCORDING TO MTN B'S SITE INFRA-STRUCTURE SPECIFICATION ISSUE 10 REVISION 1, SEPTEMBER 2014	

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MTN SITE LOCATION



**Mike Joubert**  
 Network Group - Northern Region  
 Cell: 083 212 9613

Sign: *[Signature]*  
 Date: 2017-8-21



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SITE NAME:  
ZUSTERSHOORN  
 NUMBER:  
X100301  
 LAND ID:  
 WBS No.:

OP WORK:  
L

PROJECT No.:

LATITUDE: 29° 02'32.24"E

LONGITUDE: 29° 02'32.24"E

SITE ADDRESS:  
OFF THE R54  
± 35km NORTH OF EMALHEM  
MPEMALANGA

SURVEY DATE:  
17/07/17

RADIO ENGINEER:

SITE SUPERVISOR:  
LOUIS BOTHA

DRAWN BY:  
JAN MALAN

DATE:  
20/07/17



**TOWCON CIVILS** (Pty) Ltd  
 Tower Construction

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790 LANGER ROAD, BON ACCORD, GAUTENG  
REPUBLIC OF SOUTH AFRICA  
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FAX: (+27)12 562 0302

FREE STATE OFFICE:  
78 STEYN STREET, HENNINGMAN  
REPUBLIC OF SOUTH AFRICA  
TEL: (+27)31 573 2129  
FAX: (+27)31 559 9571

EMAIL ADDRESS: TOWCON@TOWCON.COM  
 ALL WORK PERFORMED ACCORDING  
 TO MTN B1'S SITE INFRA-  
 STRUCTURE SPECIFICATION ISSUE  
 10 REVISION 1 - SEPTEMBER 2014

PROJECT I No. SHEET No. REVISION  
 MIN X100301 2 A

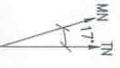
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Scale: NTS  
 Drawing Reference:  
 SITE LOCALITY MAP  
 SHEET 2 OF 16  
 REV: 1  
 80



MTN SITE LOCATION

SITE ORIENTATION OFFSET 17° MN



DIMENSIONS VERIFIED ON SITE BEFORE COMMENCEMENT OF ANY WORK. DRAWINGS MUST NOT BE SCALED. ONLY FIGURED DIMENSIONS USED.

Scale: NTS  
AERIAL PHOTO  
SHEET 3 OF 16  
REV. 1

Drawing Reference: 80

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SITE NAME:  
ZUSTERS ROOM  
I-NUMBER:  
X100301  
LAND ID:

WBS No.:

OP WORK:

REQ. No.:

PROJECT No.:

LATITUDE: 25°37'12.53"S

LONGITUDE: 29° 02'32.24"E

SITE ADDRESS:  
OFF THE R544  
± 35km NORTH OF EMALAHENI  
MPUMALANGA

SURVEY DATE:  
17/07/17

RADIO ENGINEER:

SITE SUPERVISOR:  
LOUIS BOTHA

DRAWN BY:  
JAN MALAN

DATE:  
20/07/17



**TOMWCON**  
CIVILS (Pty) Ltd  
Tower Construction

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REPUBLIC OF SOUTH AFRICA  
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FAX: (+27)12 562 0302

FREE STATE OFFICE:  
78 STERN STREET, HENNINGMAN  
REPUBLIC OF SOUTH AFRICA  
TEL: (+27)28 559 9571  
FAX: (+27)28 559 9571

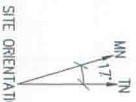
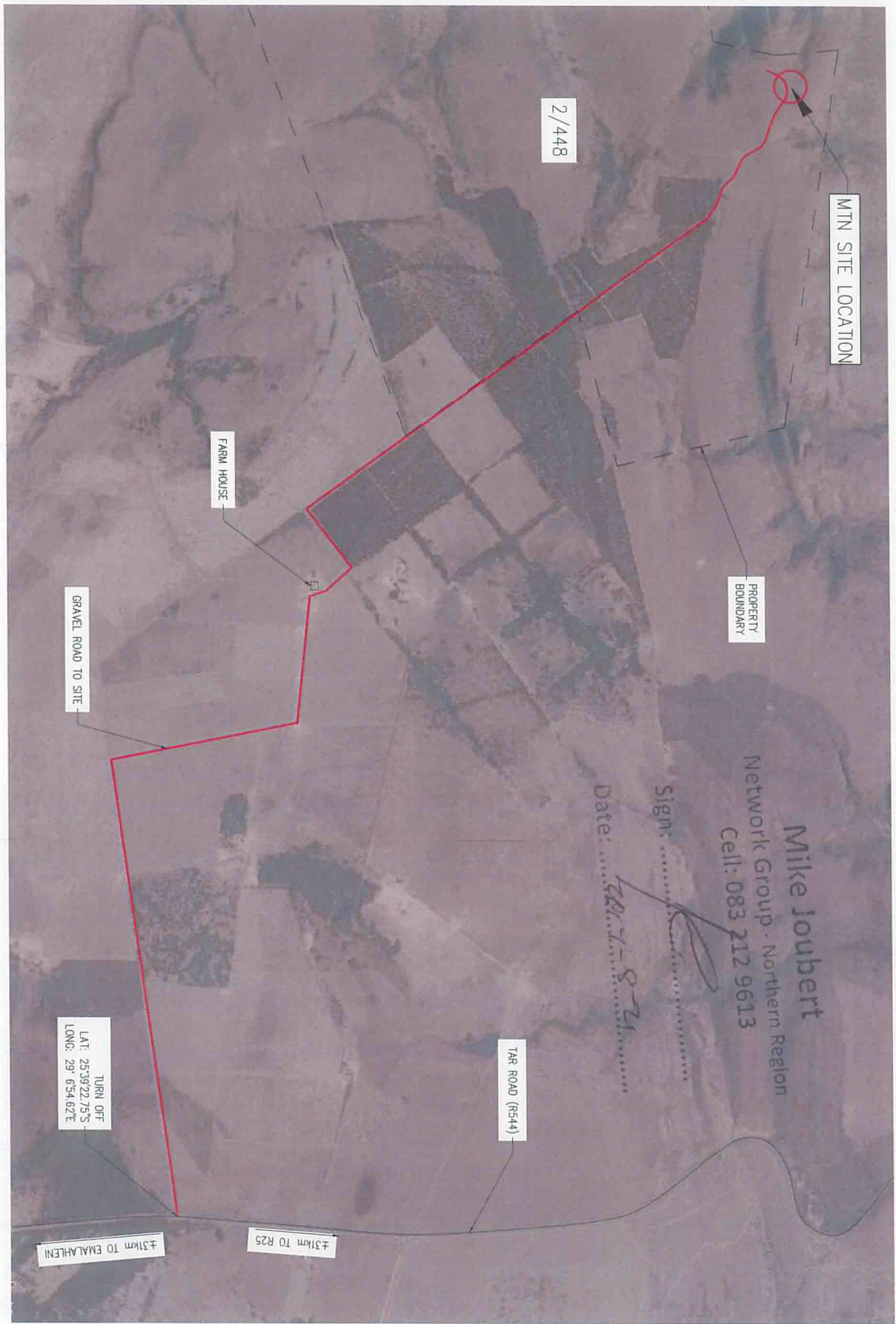
EMAIL ADDRESS: TOMWCON@GMAIL.COM

ALL WORK PERFORMED ACCORDING TO MTN BTS SITE INFRA-STRUCTURE SPECIFICATION ISSUE 10 REVISION 1, SEPTEMBER 2014

PROJECT I. No.	SHEET No.	REVISION
MTN	X100301	3
		A

NO	DATE	DESCRIPTION
1	25/07/17	ISSUED FOR PROPOSAL





SITE ORIENTATION OFFSET 177 MN

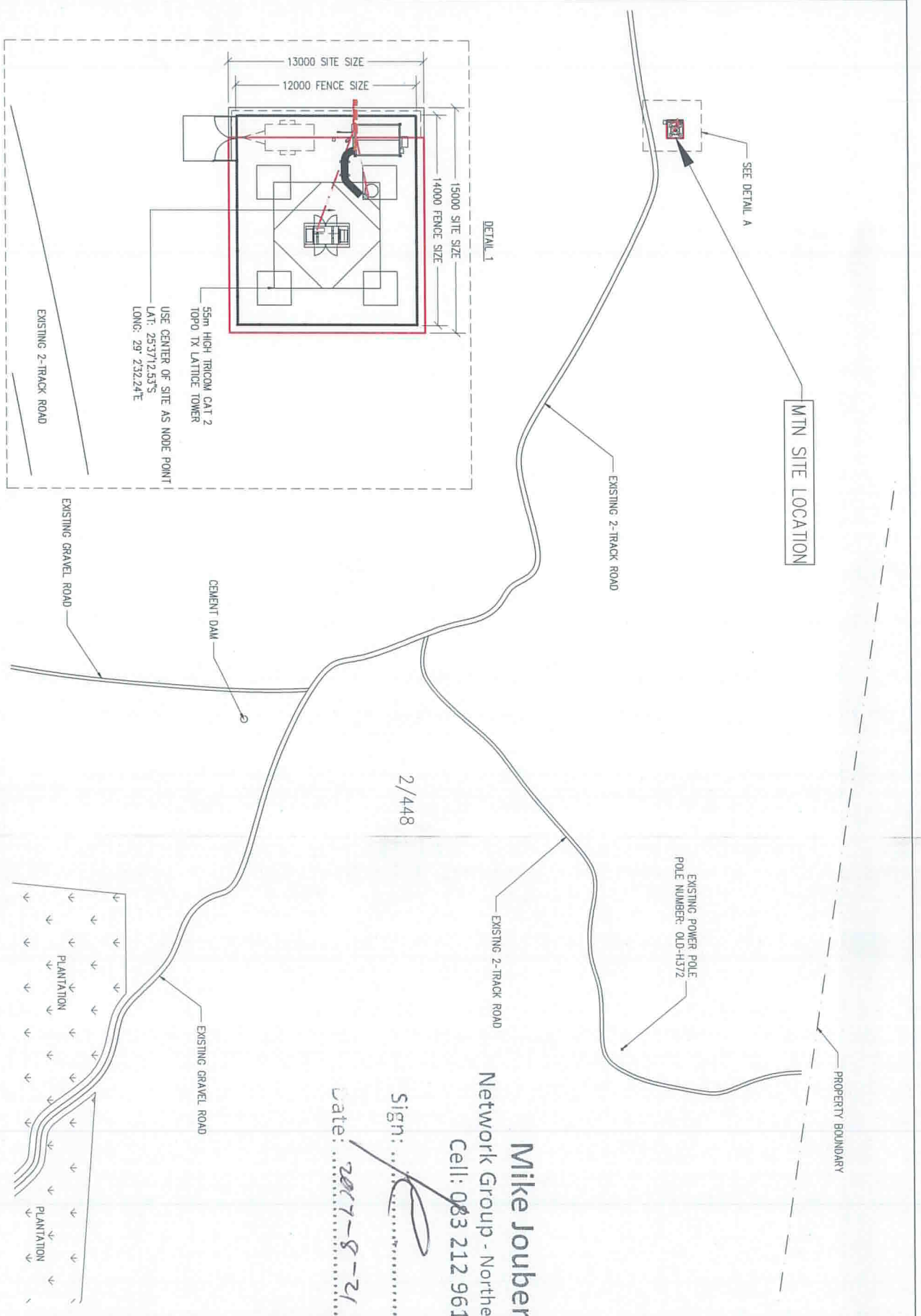
**NOTES:**  
 1. SAO TO ARRANGE ACCESS WITH LAND AFFAIRS.  
 2. INSTALL MTN LOCK AT CENTER GATE.  
 3. HAWEL TO APPLY FOR POWER CLOSER TO SITE.

**SITE ACCESS:**  
 CONTACT PERSON: RUBEN  
 TELEPHONE NUMBER: 083 288 9302  
 TELEPHONE NUMBER: 012 656 0848  
 ACCESS DAYS: TBA

**DIMENSIONS VERIFIED ON SITE BEFORE COMMENCEMENT OF ANY WORK. DRAWINGS MUST NOT BE SCALED. ONLY FIGURED DIMENSIONS USED.**

Scale: NTS  
 SITE PLAN  
 SHEET 4 OF 16  
 Drawing Reference: 80  
 REV: 1

PROJECT I T No. SHEET No. REVISION	
MTN	X100301 4 A
DESCRIPTION	ISSUED FOR PROPOSAL
NO	DATE
1	25/07/17
 	
<b>TOWGON CIVILS</b> (Pty) Ltd Tower Construction GAITHERS OFFICE: 750 TAMBOR ROAD, 90M ACCORD, GAITHERS REPUBLIC OF SOUTH AFRICA TEL: (+27) 21 520 7100 FAX: (+27) 21 562 0302 FREE STATE OFFICE: 78 STEIN STREET, HENNINGHAM HENNINGHAM, FREE STATE TEL: (+27) 521 573 2128 FAX: (+27) 521 559 9571 EMAIL ADDRESS: TOWGONCIVILS@GMAIL.COM	
ALL WORK PERFORMED ACCORDING TO MTN BTS SITE INFRA-STRUCTURE SPECIFICATION, ISSUE 10 REVISION 1, SEPTEMBER 2014	
SITE SUPERVISOR:	LOUIS BOTHA
DRAWN BY:	JAN MALAN
DATE:	20/07/17
SURVEY DATE:	17/07/17
RADIO ENGINEER:	
SITE ADDRESS:	± 36.4km NORTH OF EMALAHLEN APRIMALANGA
LONGITUDE:	29° 02'32.24"E
LATITUDE:	25°37'12.53"S
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MTN SITE LOCATION

SEE DETAIL A

EXISTING 2-TRACK ROAD

EXISTING 2-TRACK ROAD

2/448

EXISTING POWER POLE  
POLE NUMBER: QUD-H372

PROPERTY BOUNDARY

CEMENT DAM

EXISTING GRAVEL ROAD

EXISTING GRAVEL ROAD

PLANTATION

PLANTATION

EXISTING 2-TRACK ROAD



SITE ORIENTATION OFFSET 17° MN

**Mike Joubert**  
Network Group - Northern Region  
Cell: 083 212 9618  
BOUIS BOTHA

Sign: *[Signature]*  
Date: 2017-8-21

SITE NAME:	ZUSTERSSTROOM
E-NUMBER:	X100301
LAND ID:	
WBS No.:	
OP/MONIE/	
REF. No.:	
PROJECT No.:	
LATITUDE:	25°37'12.53"S
LONGITUDE:	29° 02'32.24"E
SITE ADDRESS:	OFF THE R514 ± 36.4km NORTH OF BALKWATER AFRIKAWAAL
SURVEY DATE:	17/07/17
RADIO ENGINEER:	

DRAWN BY:	JAN MALAN
DATE:	20/07/17
MTN	HUAWEI

**TOWGCON CIVILS** (Pty) Ltd  
Tower Construction  
GAUTENG OFFICE: 750 LAVENDER ROAD, BIN ACCORD, GAUTENG  
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FAX: (+27)12 562 0302  
FREE STATE OFFICE: 78 STEIN STREET, HENNINGMAN  
REPUBLIC OF SOUTH AFRICA  
TEL: (+27)261 599 5971  
FAX: (+27)261 599 5971  
EMAIL ADDRESS: TOWCONCIVILS@GMAIL.COM

PROJECT I No. SHEET No. REVISION			
M/N	X10030	5	A

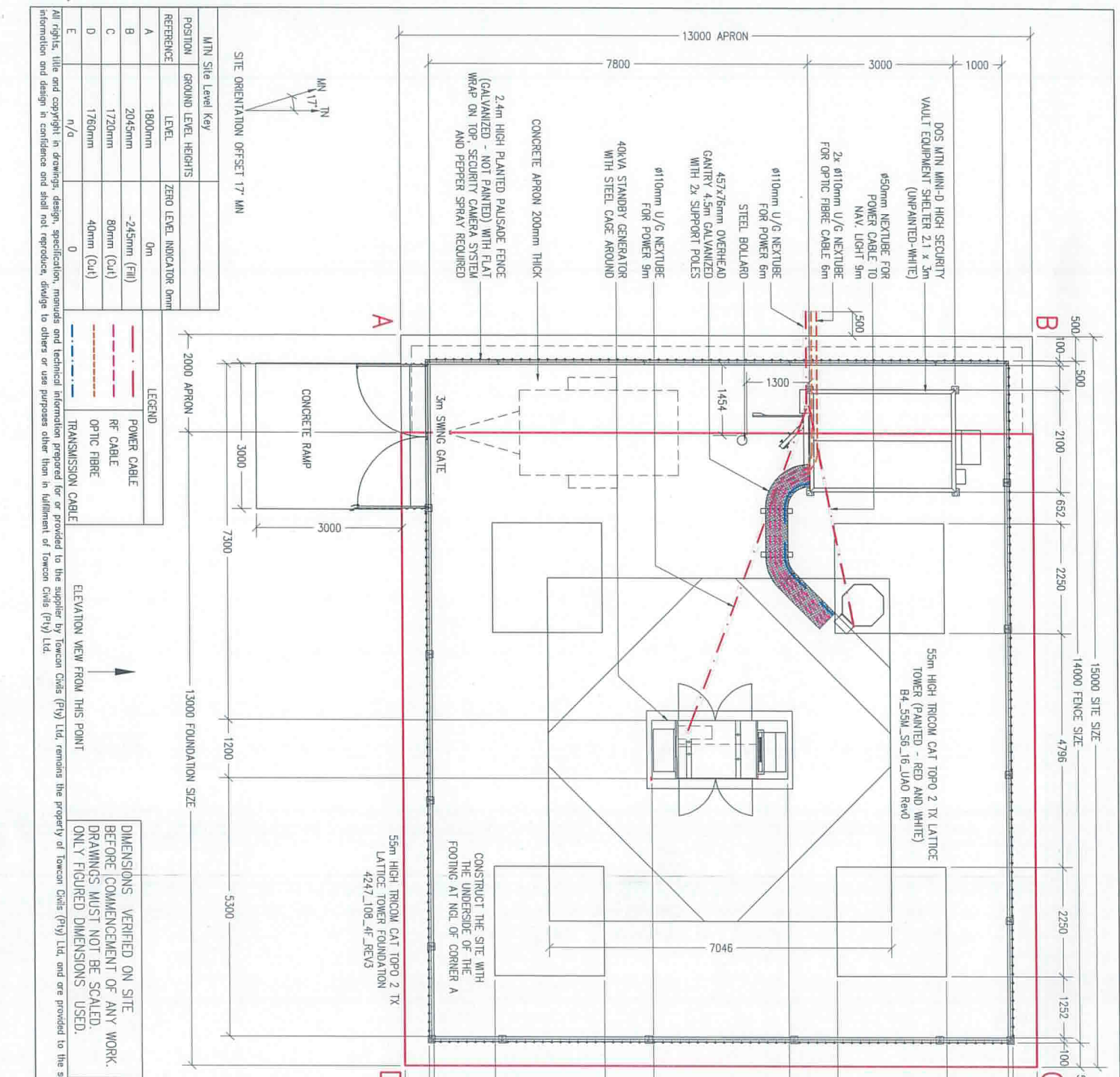
DIMENSIONS VERIFIED ON SITE BEFORE COMMENCEMENT OF ANY WORK. DRAWINGS MUST NOT BE SCALED. ONLY FIGURED DIMENSIONS USED.	Scale: NTS	Drawing Reference:
	SITE PLAN	80
	SHEET 5 OF 16	REV. 1

**SITE ACCESS:**  
CONTACT PERSON: RUBEN  
TELEPHONE NUMBER: 083 288 9302  
TELEPHONE NUMBER: 012 656 9848  
ACCESS DAYS: TBA

**NOTES:**  
1. SAO TO ARRANGE ACCESS WITH LAND AFFAIRS.  
2. INSTALL WITH LOCK AT CENTER GATE.  
3. HUMAN TO APPLY FOR POWER CLOSER TO SITE.

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15000 SITE SIZE  
14000 FENCE SIZE 4796  
13000 FOUNDATION/SITE SIZE

5000  
2100  
652  
2250  
1252  
1000  
500

7800  
3000  
1000

13000 APRON

2.4m HIGH PLANTED PALISADE FENCE (GALVANIZED - NOT PAINTED) WITH FLAT WRAP ON TOP SECURITY CAMERA SYSTEM AND PEPPER SPRAY REQUIRED

CONCRETE APRON 200mm THICK

40kVA STANDBY GENERATOR WITH STEEL CAGE AROUND

Ø110mm U/G NEXTUBE FOR POWER 6m

457x26mm OVERHEAD GANTRY 4.3m GALVANIZED WITH 2x SUPPORT POLES

STEEL BOLLARD

Ø110mm U/G NEXTUBE FOR POWER 6m

Ø50mm NEXTUBE FOR POWER CABLE TO NAVY LIGHT 9m

2x Ø110mm U/G NEXTUBE FOR OPTIC FIBRE CABLE 6m

1500

3m SWING GATE

1454

1300

55m HIGH TRICOM CAT TOPO 2 TX LATTICE TOWER (PAINTED - RED AND WHITE) B4\_55M\_S8\_16\_UAO RevD

7046

CONSTRUCT THE SITE WITH THE UNDERSIDE OF THE FOOTING AT NGL OF CORNER A

55m HIGH TRICOM CAT TOPO 2 TX LATTICE TOWER FOUNDATION 4247\_108\_4F\_REV3

3000  
3000  
7300

2000 APRON

13000 FOUNDATION SIZE

1200  
5300

4500  
2800  
4500  
1352  
100  
500

12000 FENCE SIZE

13000 FOUNDATION/SITE SIZE

Mike Joubert  
Network Group - Northern  
Cell: 083 212 9613  
Date: 2017-8-21

**MTN** **HUAWEI**

**TOWCON CIVILS** (Pty) Ltd  
Tower Construction  
Gauteng Office: 230 LAVENDER ROAD, BRN ACP2800, GAUTENG  
Tel: (011) 42712 569 0454  
Tel: (011) 42712 569 0454  
Fax: (011) 42712 562 0302

FREE STATE OFFICE: RHEINSMAN  
R3 816N, SPANHOUTFRENCH  
TEL: (42757) 512 2128  
FAX: (42786) 559 9571

EMAIL ADDRESS: TOWCON@SIRMAIL.COM

NOTES:  
1.SAO TO ARRANGE ACCESS WITH LAND AFFAIRS.  
2.INSTALL MTN LOCK AT CENTER GATE.  
3.HUAMEI TO APPLY FOR POWER CLOSER TO SITE

SITE ACCESS:  
CONTACT PERSON: RUBEN  
TELEPHONE NUMBER: 083 298 9302  
TELEPHONE NUMBER: 012 656 0846  
ACCESS DAVS: TBA

Scale: NTS  
Drawing Reference: 80  
BTS LAYOUT SHEET 6 OF 16  
REV 1

NO. DATE  
1 25/07/17  
ISSUED FOR PROPOSAL

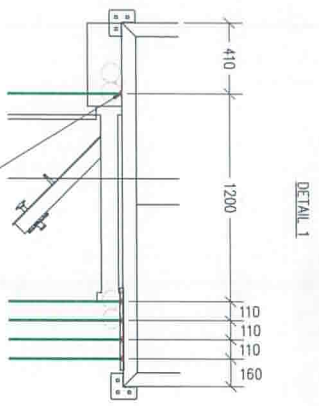
PROJECT I No: SHEET No: REVISION  
MTN X10030 6 A

SITE NAME: ZUSTERSTROOM  
I-NUMBER: X100301  
LAND ID:   
WBS No:   
OP/WORK/ REF No:   
PROJECT No:   
LATITUDE: 25°37'12.53"S  
LONGITUDE: 29° 02'32.24"E  
SITE ADDRESS: OFF THE R54, ± 36.4km NORTH OF BEMALLEN MPMALANCA  
SURVEY DATE: 17/07/17  
RADIO ENGINEER:   
SITE SUPERVISOR: LOUIS BOTHA  
DRAWN BY: JAN MALAN  
DATE: 20/07/17

ALL WORK PERFORMED ACCORDING TO MTN BTS SITE INFRA-STRUCTURE SPECIFICATION ISSUE 10 REVISION 1, SEPTEMBER 2014

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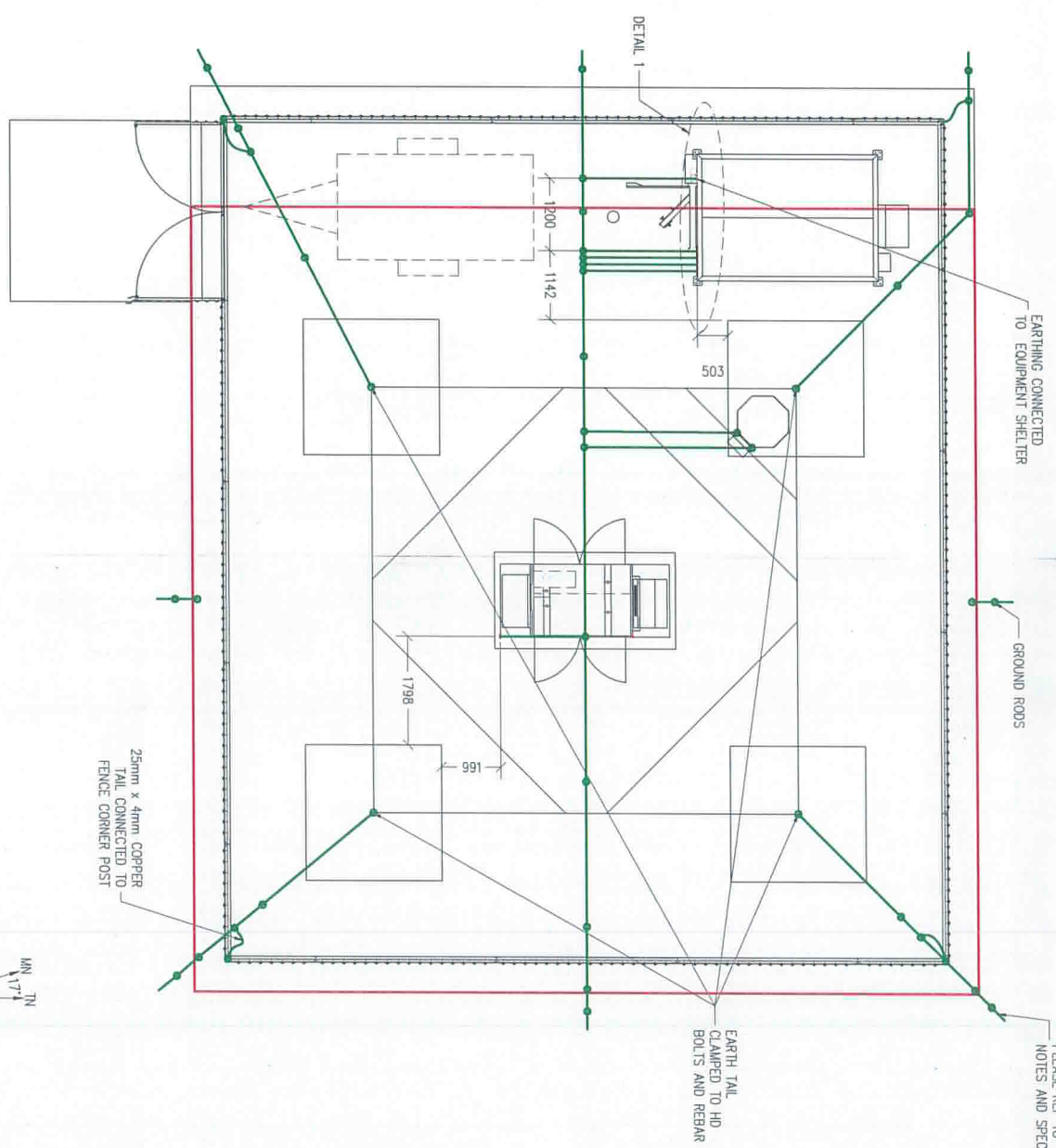




**Mike Joubert**  
 Network Group - Northern Region  
 Cell: 083 212 9613

Sign: *[Signature]*  
 Date: 2017-8-21

**SITE ADDRESS:**  
 CONTACT PERSON: RUBEN  
 TELEPHONE NUMBER: 083 288 9302  
 TELEPHONE NUMBER: 012 656 0948  
 ACCESS DMS: TBA



Scale: NTS  
 Drawing Reference: 80  
 NO. DATE  
 1 25/07/17  
 ISSUED FOR PROPOSAL

PROJECT I. No: SHEET No: REVISION	
MTN	X10030 7 A
ALL WORK PERFORMED ACCORDING TO MTN BTS SITE INFRA-STRUCTURE SPECIFICATION 2014 TO REVISION 1, SEPTEMBER 2014 EMAIL ADDRESS: TOWCON@TOWCON.COM FREE STATE OFFICE: 78 STEIN STREET, HENNERMAN REPUBLIC OF SOUTH AFRICA TEL: (+27) 529 2029 FAX: (+27) 529 5971 GAUTENG OFFICE: 720 LAVENDER ROAD, BUN ACCORD, GAUTENG REPUBLIC OF SOUTH AFRICA TEL: (+27) 562 0454 FAX: (+27) 562 0302 Tower Construction <b>TOWCON CIVILS</b> (Pty) Ltd HUAWEI MTN SURVEY DATE: 17/07/17 RADIO ENGINEER: SITE SUPERVISOR: LOUIS BOTHA DRAWN BY: JAN MALAN DATE: 20/07/17 OFF THE R54 ± 36,4km NORTH OF EMALAHLEN MPUMALANGA SITE ADDRESS: LONGITUDE: 29° 02'32.24"E LATITUDE: 25°37'12.53"S PROJECT No.: REF. No.: OP/MONE/ WBS No.: LAND ID: I-NUMBER: X100301 ZUSTERSROOM SITE NAME: ZUSTERSROOM PLEASE REF TO NOTES AND SPEC	

NOTES:  
 1.5M TO ARRANGE ACCESS WITH LAND AFFAIRS.  
 2. INSTALL MTN LOCK AT CENTER GATE.  
 3. HAWME TO APPLY FOR POWER CLOSER TO SITE.

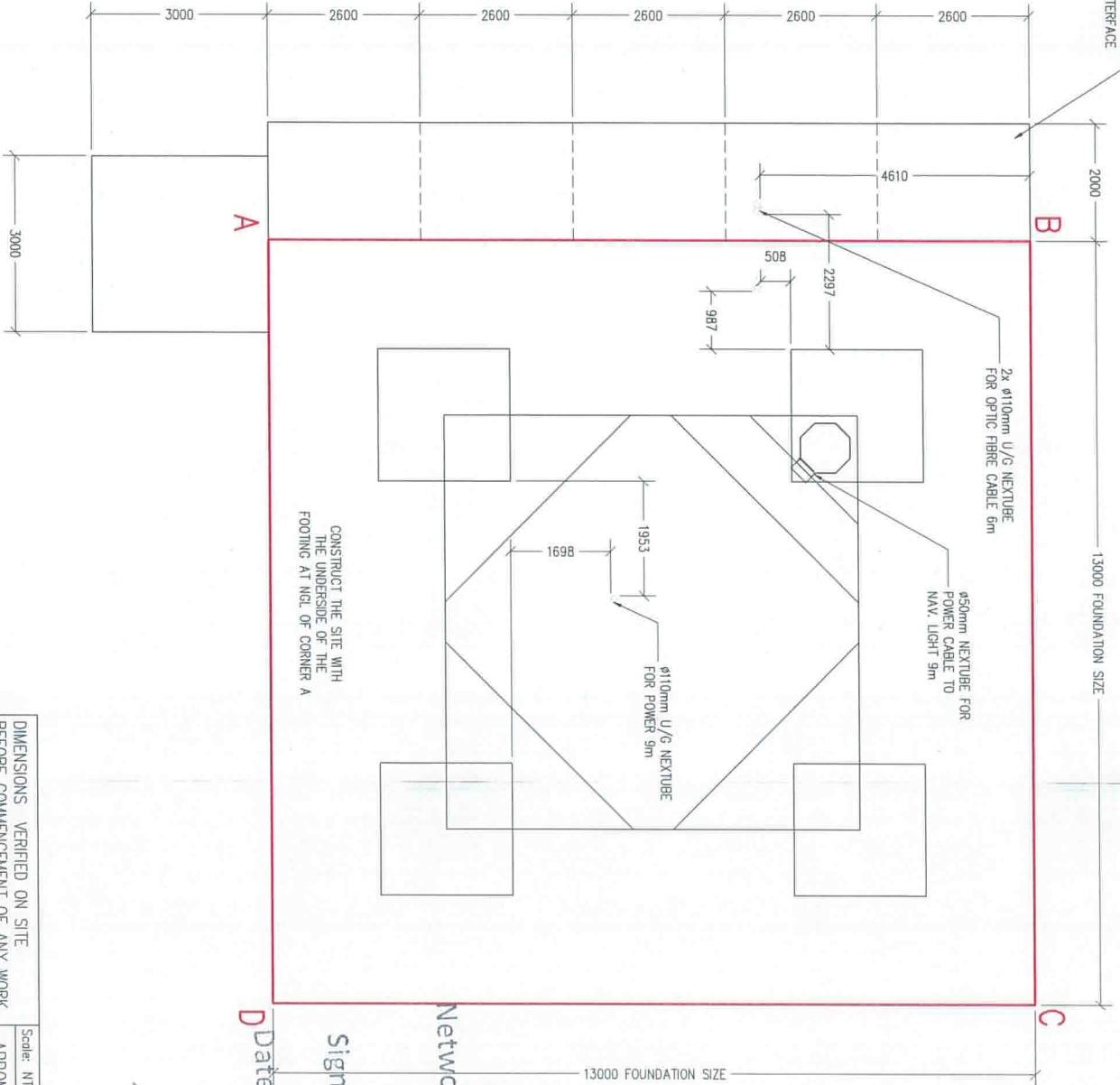
THE TAILS EXITING THE TOP OF THE FOUNDATION FOR CONNECTION TO THE EQUIPMENT HOUSINGS) OR CAT LADDER (WHEN APPLICABLE) MUST PROTRUDE A MINIMUM 450mm ABOVE THE MAST FOUNDATION OR GROUND COVER

LEGEND  
 CLAMPED CONNECTION  
 1200 x 16mm ROUND EARTH ROD  
 EARTHING 25x3mm COPPER RIBBON TAPE

Dimensional verification note: DIMENSIONS VERIFIED ON SITE BEFORE COMMENCEMENT OF ANY WORK. DRAWINGS MUST NOT BE SCALED. ONLY FIGURED DIMENSIONS USED.

Information and design in confidence and shall not, reproduce, divulge to others or use purposes other than in fulfillment of Towercon Civils (Pty) Ltd.

PROVIDE MESH REF. 395 STRIPS IN THE APRON SLAB WALL/BACKFILL INTERFACE



SITE ORIENTATION OFFSET 17° MN

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Scale: NTS  
 APRON LAYOUT  
 SHEET 8 OF 16  
 REV: 1

Drawing Reference: 80

NO	DATE	DESCRIPTION
1	25/07/17	ISSUED FOR PROPOSAL

PROJECT: T No: SHEET No: REVISION  
 MTN X10030 B A

ALL WORK PERFORMED ACCORDING TO MTN BTS SITE INFRA-STRUCTURE SPECIFICATION ISSUE 10 REVISION 1, SEPTEMBER 2014

FREE STATE OFFICE:  
 78 STEIN STREET, HEIKENMAN  
 REPUBLIC OF SOUTH AFRICA  
 TEL: (+27) 360 559 5971  
 FAX: (+27) 360 559 5971  
 EMAIL ADDRESS: TOWCONCIVILS@GMAIL.COM

GAUTENG OFFICE:  
 730 LANGBOER ROAD, BOVA ACCORD, GAUTENG  
 REPUBLIC OF SOUTH AFRICA  
 TEL: (+27) 12 562 0454  
 FAX: (+27) 12 562 0392

**TOWCON CIVILS** (Pty) Ltd  
 Tower Construction

**MTN** **HUAWEI**

DATE: 20/07/17

SURVEY DATE: 17/07/17  
 RADIO ENGINEER:  
 SITE SUPERVISOR: LOUIS BOTHA  
 DRAWN BY: JAN MALAN

SITE ADDRESS: OFF THE R54 ± 36.4km NORTH OF EMALAHLENI MPUMALANGA

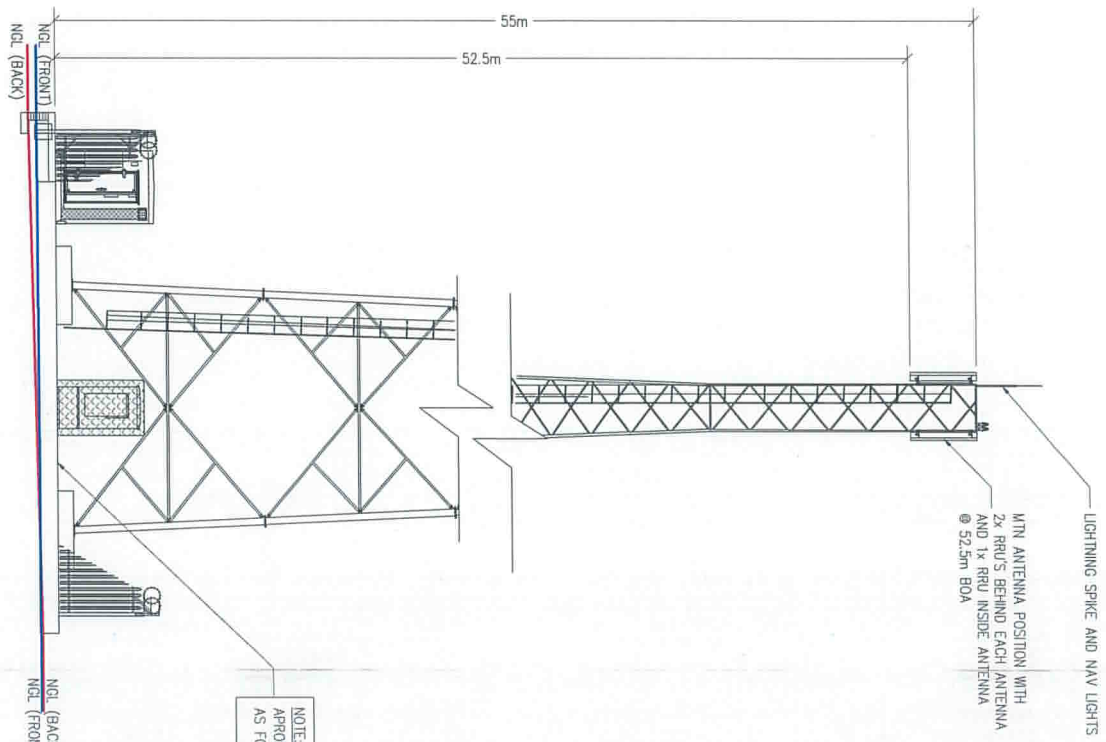
PROJECT No: REF No: OP/ANON/L  
 LATITUDE: 25°37'12.53"S  
 LONGITUDE: 29° 02'32.24"E

SITE NAME: ZUSTERS TROOM  
 T-NUMBER: X100301  
 LAND ID:  
 MBS No:

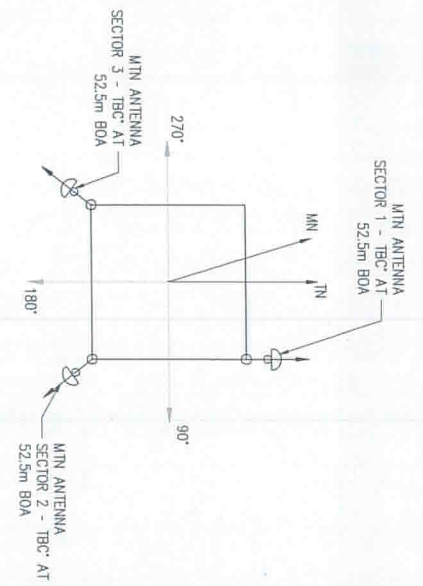
Mike Joubert  
 Network Group - Northern Region  
 Cell: 083 212 9613  
 Sign: .....  
 Date: 20.7.17



RF CONFIGURATIONS	
SECTOR	
1	FOR RF CONFIGURATIONS: PLEASE REFER TO THE MTN PROJECT CATALOGUE
2	LD - TECHNOLOGIES
3	



ELEVATION VIEW



ANTENNA CONFIGURATION

Network Group - Northern Region  
**Mike Joubert**  
 Cell: 083 212 9613

Sign: *[Signature]*  
 Date: 2017-08-21

NOTE:  
 APRONS SAME LEVEL  
 AS FOUNDATION

DIMENSIONS VERIFIED ON SITE BEFORE COMMENCEMENT OF ANY WORK. DRAWINGS MUST NOT BE SCALED. ONLY FIGURED DIMENSIONS USED.	Scale: NTS	Drawing Reference: 80
	ELEVATION	
	SHEET 9 OF 16	REV: 1

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SITE NAME:	ZUSTERSTROOM
I-NUMBER:	X100301
LAND ID:	
WBS No:	
OP/ZONE/	
RFQ No:	
PROJECT No:	
LATITUDE:	25°37'12.53"S
LONGITUDE:	29° 02'32.24"E
SITE ADDRESS:	OFF THE R34, 4.55km NORTH OF EMALAHEN MPMALANGA
SURVEY DATE:	17/07/17
RADIO ENGINEER:	
SITE SUPERVISOR:	LOUIS BOTHA
DRAWN BY:	JAN MALAN
DATE:	20/07/17



**TOWGCON CIVILS** (Pty) Ltd  
 Tower Construction

GAUTENG OFFICE: 894 ACCORD, GAUTENG  
 201 LAMBER ROAD, BOKACHA  
 TEL: (+27) 11 562 0453  
 FAX: (+27) 11 562 0302

FREE STATE OFFICE:  
 78 STEIN STREET, HENGMAN  
 BASTERS, OUDTSHOORN  
 TEL: (+27) 523 2129  
 FAX: (+27) 529 9571

EMAIL ADDRESS: TOWCON@TOWCONMAIL.COM

PROJECT I No:	SHEET No:	REVISION
MTN	X100301	9 A
NO	DATE	DESCRIPTION
1	25/07/17	ISSUED FOR PROPOSAL

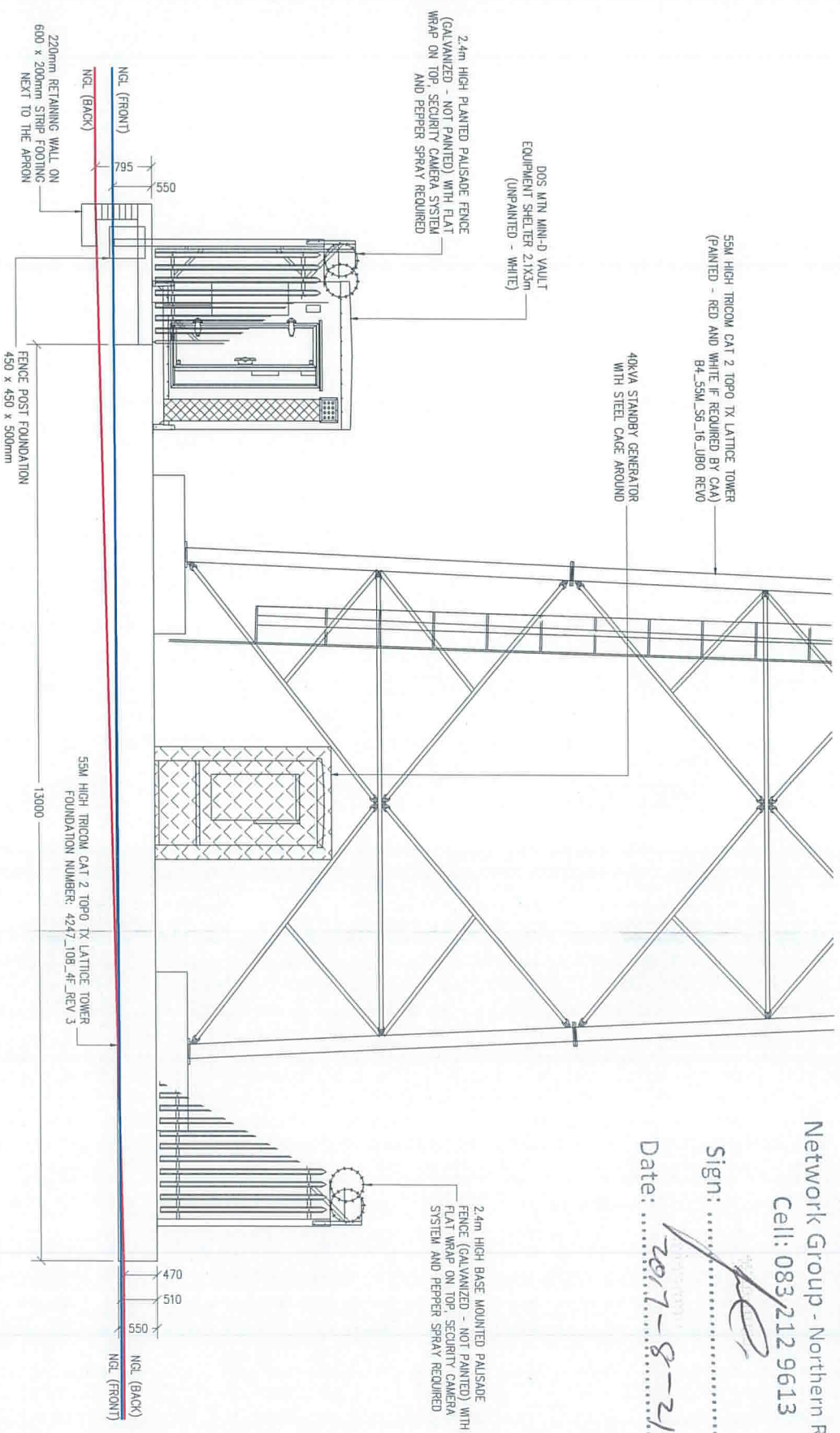
**Mike Joubert**

Network Group - Northern Region

Cell: 083212 9613

Sign: 

Date: 2017-8-21



ELEVATION VIEW

DIMENSIONS VERIFIED ON SITE BEFORE COMMENCEMENT OF ANY WORK. DRAWINGS MUST NOT BE SCALED. ONLY FIGURED DIMENSIONS USED.		Scale: NTS	Drawing Reference: 80
ELEVATION SHEET 10 OF 16		REV: 1	

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SITE NAME:	ZUSTERS ROOM
E-NUMBER:	X100301
LAND ID:	
MRS. No:	
REQ. No:	
PROJECT No:	
LONGITUDE:	29° 02'32.24"E
LATITUDE:	25°37'12.53"S
SITE ADDRESS:	OFF THE R544 ± 36.4km NORTH OF EKAMAHENI HP/MULANCA
SURVEY DATE:	17/07/17
RADIO ENGINEER:	
SITE SUPERVISOR:	LOUIS BOTHA
DRAWN BY:	JAN MALAN
DATE:	20/07/17



**TOWCON CIVILS** (Pty) Ltd  
Tower Construction  
GAITHERS OFFICE:  
750 LANGER ROAD, 8th ACCORD, GAITHERS  
REPUBLIC OF SOUTH AFRICA  
TEL: (+27) 21 422 2571  
FAX: (+27) 21 562 0302

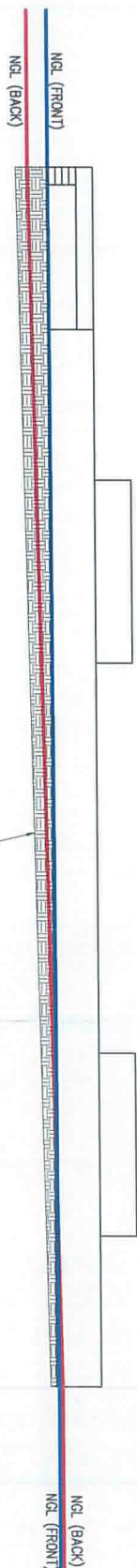
FREE STATE OFFICE:  
78 STEIN STREET, HANEMAN  
REPUBLIC OF SOUTH AFRICA  
TEL: (+27) 26 422 2571  
FAX: (+27) 26 559 9571

EMAIL ADDRESS: TOWCONCIVILS@GMAIL.COM  
ALL WORK PERFORMED ACCORDING TO MTN BTS SITE INFRA-STRUCTURE SPECIFICATION ISSUE 10 REVISION 1, SEPTEMBER 2014

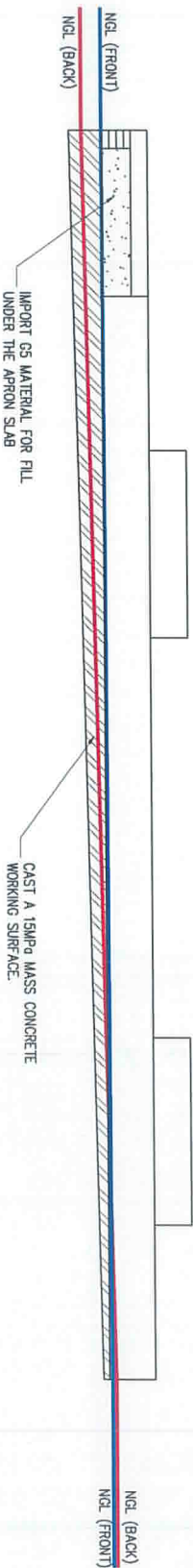
PROJECT I T No:	SHEET No:	REVISION
MTN	K100301	10 A
DESCRIPTION	ISSUED FOR PROPOSAL	
NO	DATE	
1	25/07/17	



EXCAVATION TO LEVEL SITE



BACKFILL TO LEVEL + FILL SITE





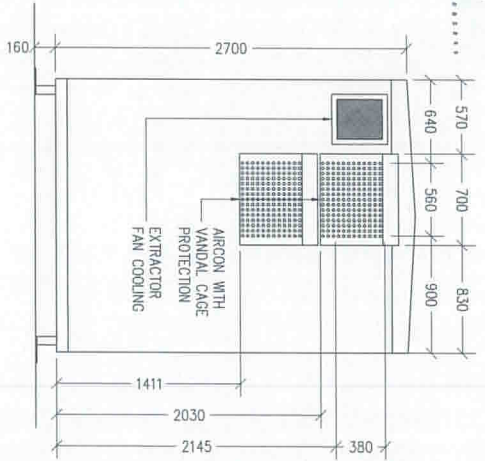
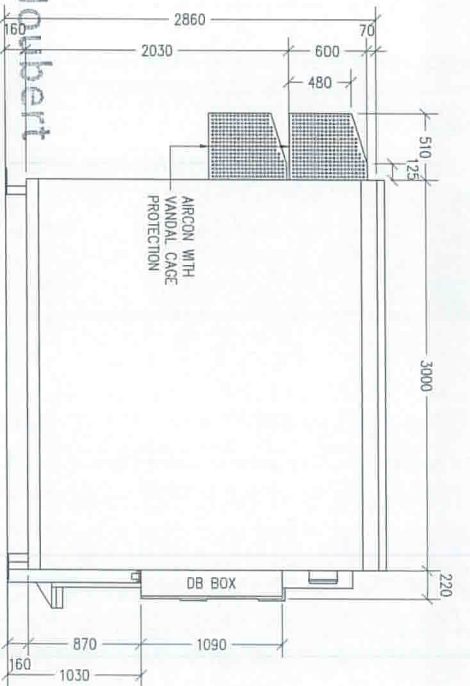
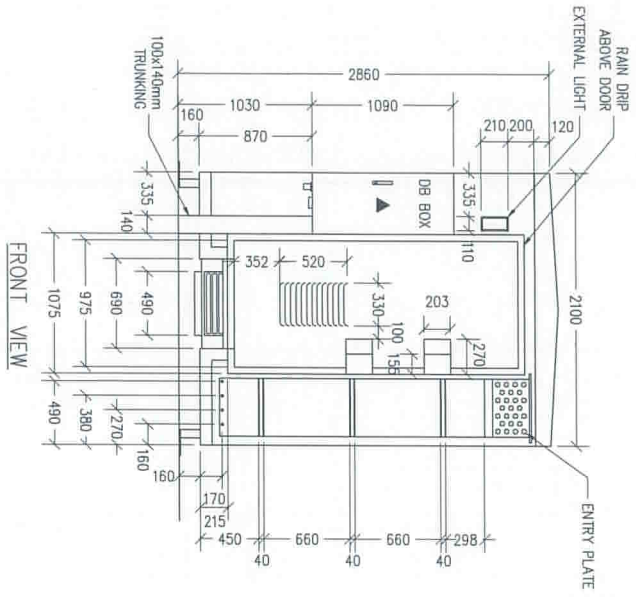
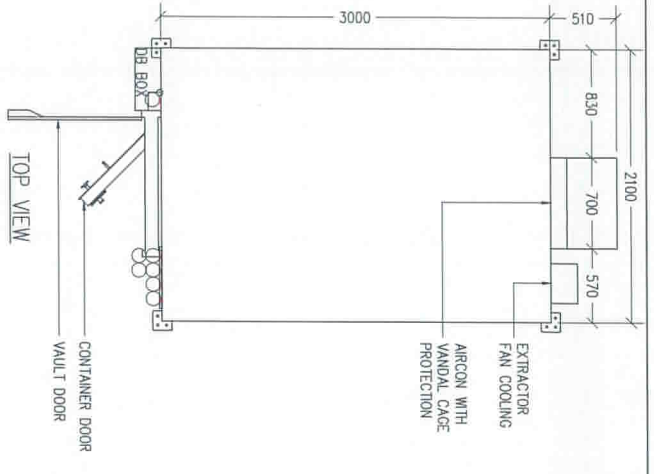
Mike Joubert  
 Network Group - Northern  
 Cell: 083 212 9613

Sign: *[Signature]*  
 Date: 2017-8-21

DIMENSIONS VERIFIED ON SITE BEFORE COMMENCEMENT OF ANY WORK. DRAWINGS MUST NOT BE SCALED, ONLY FIGURED DIMENSIONS USED.	
Scale: NTS	Drawing Reference: 80
EXCAVATION	SHEET 11 OF 16
REV: 1	

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SITE NAME: ZUSTERS ROOM	
JOB NUMBER: X100301	
LAND ID:	
WBS No:	
OP/MONE/L	
REQ. No:	
PROJECT No:	
LATITUDE: 25°37'12.53"S	
LONGITUDE: 29° 02'32.24"E	
SITE ADDRESS: OFF THE R544, ± 36.4km NORTH OF BAMBULENI MPUMALANGA	
SURVEY DATE: 12/07/17	
RADIO ENGINEER:	
SITE SUPERVISOR: LOUIS BOTHA	
DRAWN BY: JAN MALAN	
DATE: 20/07/17	
 	
<b>TOWCON CIVILS</b> (Pty) Ltd Tower Construction GAUTENG OFFICE: 720 LANGEBAAN ROAD, BAYVIEW, GAUTENG TEL: (+27) 11 272 2222 TEL: (+27) 11 562 0454 FAX: (+27) 11 562 0302 FREE STATE OFFICE: REPUBLIC OF SOUTH AFRICA TEL: (+27) 27 573 2128 FAX: (+27) 27 559 9571 EMAIL ADDRESS: TOWCONCIVILS@GMAIL.COM	
ALL WORK PERFORMED ACCORDING TO MTN BTS SITE INFRA-STRUCTURE SPECIFICATION ISSUE 10 REVISION 1, SEPTEMBER 2014	
PROJECT T No:	SHEET No: REVISION
MTN	X100301 11 A
DESCRIPTION: ISSUED FOR PROPOSAL	
NO	DATE
1	25/07/17



**Mike Joubert**  
 Network Group - Northern Region  
 Cell: 088 212 9613

Sign: *[Signature]*  
 Date: 2017-8-21

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DIMENSIONS VERIFIED ON SITE BEFORE COMMENCEMENT OF ANY WORK. DRAWINGS MUST NOT BE SCALED. ONLY FIGURED DIMENSIONS USED.		Scale: NTS	CONTAINER DETAIL SHEET 12 OF 16	Drawing Reference: 80	NO	DATE
				REV: 1	1	25/07/17
				PROJECT I No:	SHEET No:	REVISION
				MTN	K100301	12 A

SITE NAME: ZUSTERSTROOM	LAND ID: X100301	WSS No:	OP/MONE/L	REQ. No:	PROJECT No:	LATITUDE: 25°37'12.53"S	LONGITUDE: 29°02'32.24"E	SITE ADDRESS: OFF THE R514, ± 35 km NORTH OF EMALHLEN MPUMALANGA	SURVEY DATE: 17/07/17	RADIO ENGINEER: LOUIS BOTHA	SITE SUPERVISOR: JAN MALAN	DATE: 20/07/17
-------------------------	------------------	---------	-----------	----------	-------------	-------------------------	--------------------------	--	-----------------------	-----------------------------	----------------------------	----------------

**TOWGON CIVILS** (Pty) Ltd  
 Tower Construction  
 GAUTENG OFFICE: 730 LAVENDER ROAD, BIN ACCORD, GAUTENG REPUBLIC OF SOUTH AFRICA  
 TEL: (+27)12 562 0454  
 FAX: (+27)12 562 0302  
 FREE STATE OFFICE: 78 STEYN STREET, HENNEMAN REPUBLIC OF SOUTH AFRICA  
 TEL: (+27)27 573 2128  
 FAX: (+27)26 559 5571  
 EMAIL ADDRESS: TOWGONCIVILS@GMAIL.COM

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Scale: NTS  
PHOTOS  
SHEET 13 OF 16  
REV: 1

NO	DATE	DESCRIPTION
1	25/07/17	ISSUED FOR PROPOSAL

**Joubert**  
Network Group - Northern Region  
Cell: 083 212 9613  
Sign: .....  
Date: ..... 2017-8-21

SITE NAME: ZUSTERSTROOM  
E-NUMBER: X100301  
LAND ID:  
WBS No.:

OP/MON/E  
REQ. No.:

PROJECT No.:  
LATITUDE: 25°37'12.53"S  
LONGITUDE: 29° 02'32.24"E

SITE ADDRESS:  
OFF THE R544  
± 35.4km NORTH OF EMALALENI  
MPHALANGA

SURVEY DATE: 17/07/17  
RADIO ENGINEER:  
SITE SUPERVISOR: LOUIS BOTHA

DRAWN BY: JAN MALAN  
DATE: 20/07/17



**TOMWCON CIVILS** (Pty) Ltd  
Tower Construction

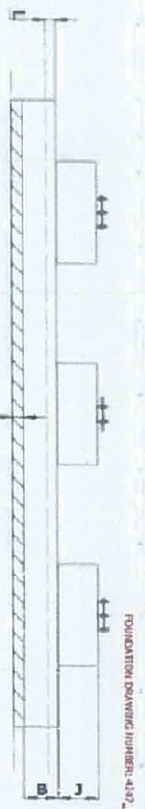
GAUTENG OFFICE: 729 LANIER ROAD, BON ACCORD, GAUTENG REPUBLIC OF SOUTH AFRICA  
TEL: (+27)12 962 0454  
FAX: (+27)12 962 0302

FREE STATE OFFICE: 78 STEIN STREET, HENNINGHAM REPUBLIC OF SOUTH AFRICA  
TEL: (+27)27 973 2128  
FAX: (+27)26 599 5971  
EMAIL ADDRESS: TOMWCON@SIGNAL.COM

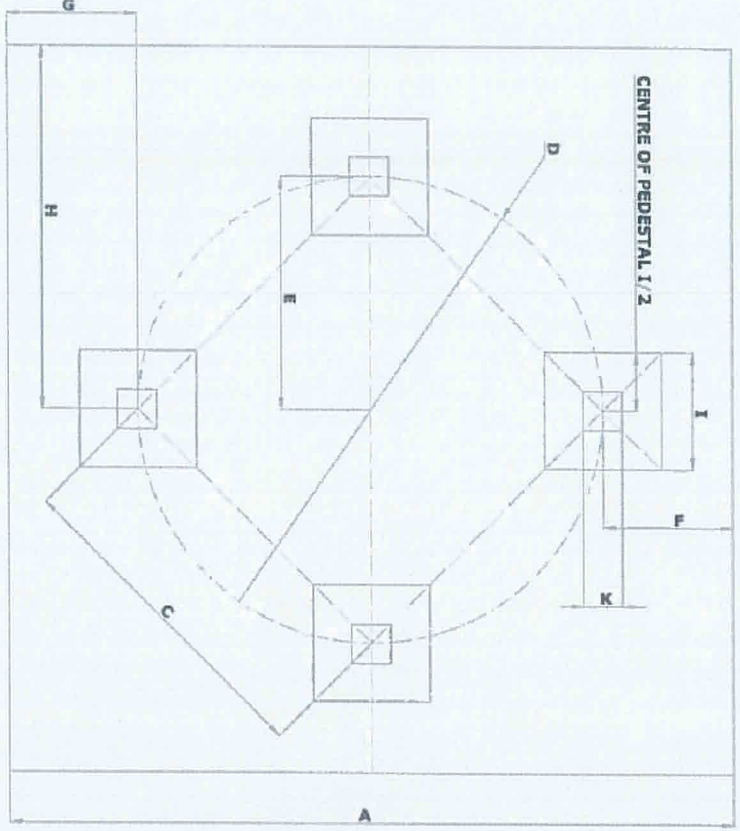
PROJECT: T No. SHEET No. REVISION  
MIN: X100301 13 A

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ELEVATION VIEW WITH TYPICAL HOLD DOWN BOLT LAYOUT



PLAN VIEW

- NOTES
1. CONCRETE COVER REINFORCING - 25 mm ON COULINGS AND SLABS
  2. ALL CONCRETE REBARS TO HAVE 25mm x 25mm SQUARE CHAMBERS
  3. CONCRETE TO ATTAIN A MINIMUM CURE CURING STRENGTH OF 25 N/m<sup>2</sup> AT 28 DAYS
  4. ALL GOING TO BE BY NON-SHIRT CONTRACT. ALL GOING TO BE CARRIED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND SPECIFICATIONS

Mike Joubert

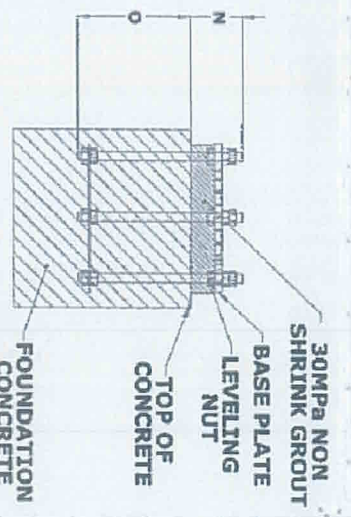
Network Group - Northern Region

Cell: 083 212 9613

Sign:



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TYPICAL HOLD DOWN BOLT ELEVATION WITH EMBEDMENT LENGTH WITH TEMPLATE DRAWING FOR BOLT COUNT

ITEM	DESCRIPTION	QUANTITY	UNIT
0	HEIGHT ABOVE SEA LEVEL (m)	0	m
2	TERRAIN CATEGORY	2	
250	GROUND DATION (m)	250	m
30	TOUR DESIGN LOADING (m <sup>2</sup> )	30	m <sup>2</sup>
64237	FILE NAME	64237_109_46_B4_55m_56_16_UB0	
64237	FOUNDATION TEMPLATE	64237_516_17_B_20	
12	STUB DRAWING	12	

SYMBOL	VALUE (mm)	UNIT
A	2500	
B	550	
C	704.6	
D	964.4	
E	482.2	
F	15.17	
G	15.17	
H	6200	
I	2256	
J	450	
K	600	
L	100	
M	20	
N	150	
O	850	

ITEM	DESCRIPTION	VALUE	UNIT
1	SOIL BEARING PRESSURE	59.8	kPa
2	CONCRETE BUILDING VOLUME	6.5	m <sup>3</sup>
3	EXCAVATION VOLUME	76.1	m <sup>3</sup>
4	CONCRETE VOLUME	102.1	m <sup>3</sup>
5	REBAR MASS	7747.8	kg

DATE: 20/07/17

PROJECT: 4247\_109\_46

DESCRIPTION: B4\_55m\_56\_16\_UB0

CLIENT: PEDestal PAD FOUNDATION (SUBMERGED)

SCALE: 1:100

SHEET: 1 OF 3

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Date: 20/07/17

SITE NAME: ZUSTERSROOM

LAND ID: X100301

WBS No.:

REQ. No.:

PROJECT No.:

LONGITUDE: 29° 02'32.24"E

SITE ADDRESS: OFF THE R54 ± 36 km NORTH OF BAKHLENH MPMALANCA

SURVEY DATE: 17/07/17

RADIO ENGINEER:

SITE SUPERVISOR: LOUIS BOTHA

DRAWN BY: JAN MALAN

DATE: 20/07/17



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ALL WORK PERFORMED ACCORDING TO MTN B1'S SITE INFRA STRUCTURE SPECIFICATION ISSUE 10 REVISION 1, SEPTEMBER 2014

PROJECT I No. SHEET No. REVISION

MTN X100301 14 A

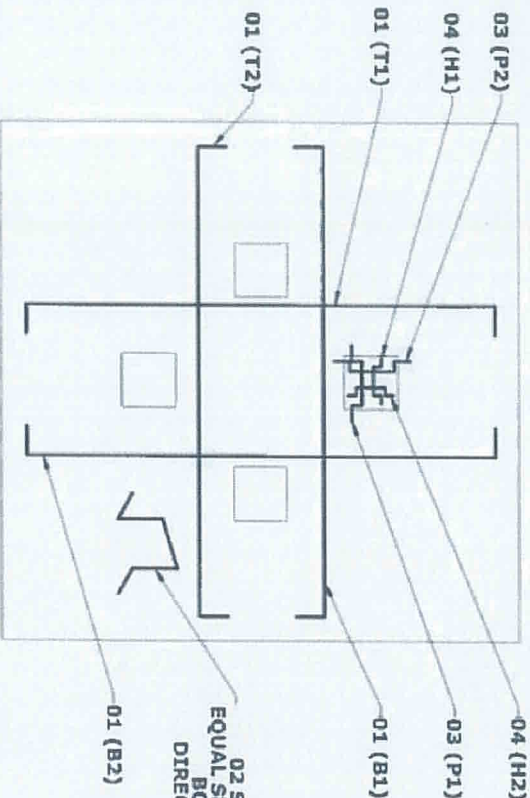
NO	DATE	DESCRIPTION
1	25/07/17	ISSUED FOR PROPOSAL

Scale: NTS

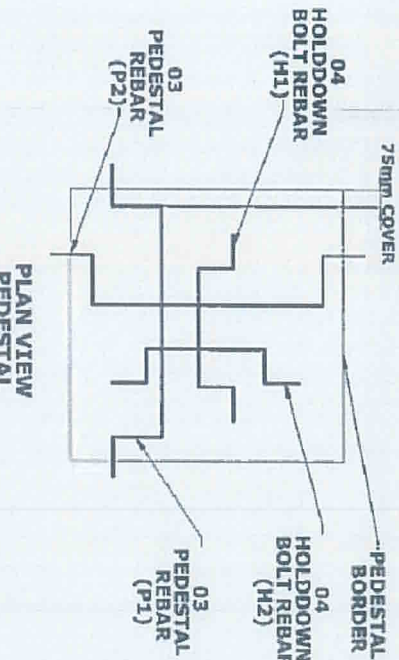
Drawing Reference: 80

FOUNDATION SHEET 14 OF 16

REV: 1

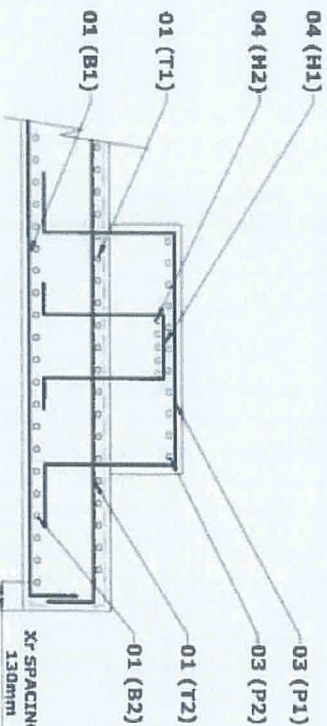


PLAN VIEW PAD WITH PEDESTALS



ALTERNATIVE REBAR DIAMETER SIZES (0441199) PLAN

Bundle	D <sub>1</sub> (mm)	D <sub>2</sub> (mm)	D <sub>3</sub> (mm)	D <sub>4</sub> (mm)	D <sub>5</sub> (mm)
1-Bar	32	25	20	16	10
2-Bar	25	20	16	12	8
3-Bar	20	16	12	10	5
4-Bar	16	12	10	8	



ELEVATION VIEW

HEIGHT	NO OF	REBAR	DIAMETER	CUTLENGTH	SPACING	CODE	A/E	B	C	D	REBARCOUNT	MASS	TOTAL MASS
01	200	Y	Ø20	13358	260	38	320	12850	280	60	32.7	6546.0	
02	144	Y	Ø12	1585	1000	83	455	320	300	36	1.4	201.6	
03	72	Y	Ø20	4137	260	53	300	810	2100	810	60	30.1	730.1
04	64	Y	Ø16	2694	167	53	300	770	700	770	48	4.2	270.1
<b>TOTAL</b>											<b>7717.8</b>		

NOTES

- (T1), (T2), (T1), (B1), (B2), (B3) refers to the order in which rebar is cutted respectively from the top and bottom of the concrete. i.e. (T1) is the first rebar noted from the top of the concrete where (B1) is noted the first rebar from the bottom.
- The numbering follows the most logical order from either side of view.
- Rebar Overlap must be as per the available length, use overlapping for rebar in the middle of the length and lap for rebar at ends and compressive reinforcement. Rebar's size, Spacing and length must be as per the design table.
- For alternative rebar diameters, please see Alternative Rebar Table.

Network Group - Northern Region

Cell: 083 212 9613

Sign: .....

Date: 2014-08-21



**IMPORTANT AND LEGISLATIVE**  
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PROJECT	B4_55m_56_16_UB0	
DRAWING TITLE	FOUNDATION REBAR SCHEDULE	
DATE	2014/08/21	SCALE
ISSUED BY	SCALE	DATE
APPROVED BY	SCALE	DATE
REVISION	SCALE	DATE
<b>2 OF 3</b>		

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NO	DATE	DESCRIPTION
1	25/07/17	ISSUED FOR PROPOSAL

SITE NAME: ZUSTERSTROOM  
I-NUMBER: X100301  
LAND ID: .....

WBS No: .....

OP/PHONE: .....

PROJECT No: .....

LATITUDE: 25°37'12.53"S  
LONGITUDE: 29° 02'32.24"E

SITE ADDRESS: OFF THE B54 ± 36.4km NORTH OF EMLALWEN WPMALANCA

SURVEY DATE: 17/07/17

RADIO ENGINEER: .....

SITE SUPERVISOR: LOUIS BOTHA

DRAWN BY: JAN MALAN

DATE: 20/07/17



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PROJECT I No: SHEET No: REVISION  
MIN X100301 14 A

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From: David Perry [ MTN South Africa ] [mailto:David.Perry@mtn.com]  
 Sent: Thursday, 04 May 2017 4:48 PM  
 To: jimmykempesa@gmail.com; towconcivils@gmail.com  
 Cc: David Perry [ MTN South Africa ]  
 Subject: FW: Tower rotation on foundation

Hi Jimmy

Please see the confirmation that the tower may be rotated as discussed.

This mail must form part of you build documentation pack and issued to the Pr Engineer for the Completion Build certificate.  
 Remember that you must obtain the In-Situ capacity certificate as well, which must reference this change and confirm the capacity in this location.

Many thanks

Kind Regards,

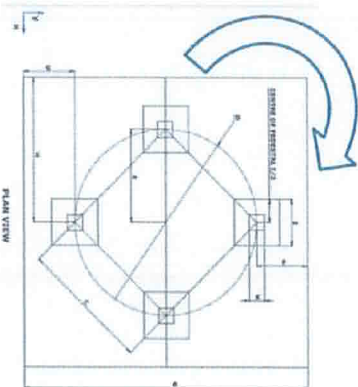
**David Perry**  
 Senior Specialist: Product Specifications and Quality

Tel: 083 212 0609  
 Cell: +27 83 212 0609  
[David.Perry@mtn.com](mailto:David.Perry@mtn.com)

From: Theo Venter [mailto:twenter@tricom.co.za]  
 Sent: Thursday, 04 May 2017 2:48 PM  
 To: David Perry [ MTN South Africa ] <David.Perry@mtn.com>  
 Cc: Udo Topka <Utopka@tricom.co.za>  
 Subject: Tower rotation on foundation

Hello Sir

We agree that the pedestal(s) on the slab may be rotated 45 degrees to sit parallel (square) to the slab sides and in the corner(s) of the slab.



**Mike Joubert**

Network Group - Northern Region  
 Cell: 083 212 9613

Sign: *[Signature]*

Date: 2017-05-04

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	FOUNDATION	80	1	25/07/17	ISSUED FOR PROPOSAL
	SHEET 14 OF 16	REV 1			

SITE NAME: ZUSTERSTROOM	I-NUMBER: X100301	LAND ID:	WBS No:	OP/MONE/	RFQ No:	PROJECT No:	LATITUDE: 25°37'12.53"S	LONGITUDE: 29° 02'32.24"E	SITE ADDRESS: OFF THE R54 ± 36.4km NORTH OF BAKWALEN MPUMALANGA	SURVEY DATE: 17/07/17	RADIO ENGINEER:	SITE SUPERVISOR: LOUIS BOTHA	DRAWN BY: JAN MALAN	DATE: 20/07/17
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# George Small Consult c.c

Reg. No: CK98/57340/23

**P.O.Box 1236  
Muldersdrift  
1747**

Tel: 083 397 9577  
Fax: 086 621 0124  
(george.small@3gi.co.za)

17 July 2017

## ENGINEER'S REPORT – GREENFIELD INSTALLATIONS – Revision 1

<b>Site ID:</b>	<b>X 100301</b>
<b>Site Name:</b>	<b>ZUSTERSTROOM</b>
<b>Site Co-ordinates:</b>	<b>S 25.620194      E 29.042289</b>
<b>Height above sea level:</b>	<b>1536</b>
<b>Artificial ground datum:</b>	<b>200+</b>
<b>Terrain category</b>	<b>B</b>

### Introduction

We have surveyed the proposed position of the site on 17 July 2017.  
The site is considered suitable for the proposed installation according to requirements of the MTN SA T1/01/1001 specification (Issue 10, Revision 1, dated September 2014)

### Mast description

55m Cat2 Topo TRSM 'Tricom' lattice mast  
Footing drawing number: 4247 108 4F Rev 3 (or latest audit number)  
Tower drawing number: β4 55m S6 16 UBO Rev 0 (or latest audit number)

### Site levels and storm water drainage

North-west (B) = 2045	North-east (C) = 1720
South-west (A) = 1800	South-east (D) = 1760

Construct the site with the underside of the footing at the NGL of the south-western corner of the site.

Construct 220 retaining walls on the mass concrete working surface cast on the cleared bedrock under the apron slab. Provide mesh ref. 395 strips in the apron slab over the retaining wall/backfill interface.

### Bearing capacity and soil type.

Visual observation revealed conglomerate sediment bedrock with a 300KPa+ bearing capacity.

Sign: .....  
Date: 2017-07-21

**Mike Joubert**  
Network Group - Northern Region  
Cell: 083 212 9613

**Proposed earthworks**

Break away the bedrock to level the construction platform surface and cast a 15MPa mass concrete working surface.

Cast an above ground footing and import G5 material for fill under the apron slab.

**Estimated earthworks quantities**

Earthworks must comply with the relevant items of SANS 1200 DA and the MTN specification.

Excavated and cleared areas must be ripped, scarified, wetted to optimum moisture content (OMC) and compacted to 93% MOD AASHTO density with 'whackers' prior to placement of fill or casting of concrete.

Fill material at OMC must be placed in layers and compacted with 'whackers' to 93% MOD AASHTO density such that the compacted layer thickness does not exceed 150mm.

No bulking factors (top soil = 1.35, imported fill = 1.25) have been included in the quantities below.

Break away bedrock and spoil	6m3
Cast 15MPa concrete working surface	12m3
Imported G5 fill	9m3

**Natural and artificial obstacles**

Nil.



**GP. SMALL (Pr. Eng. 820484)**

**Mike Joubert**  
 Network Group - Northern Region  
 Cell: 083 272 9613  
 Sign: .....  
 Date: ..... 2011-08-24