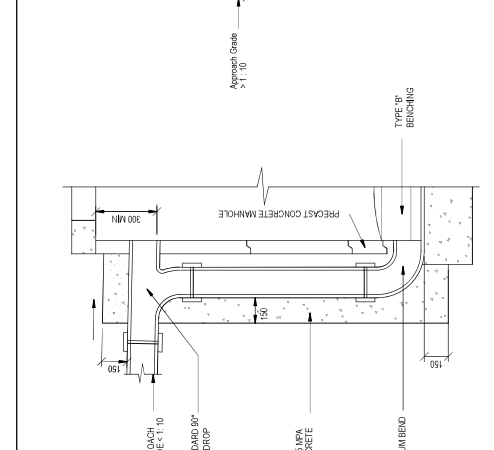
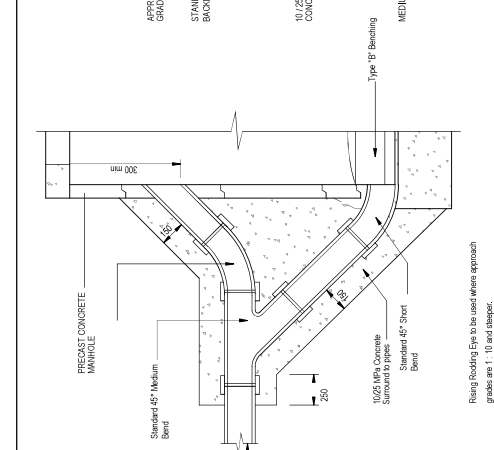


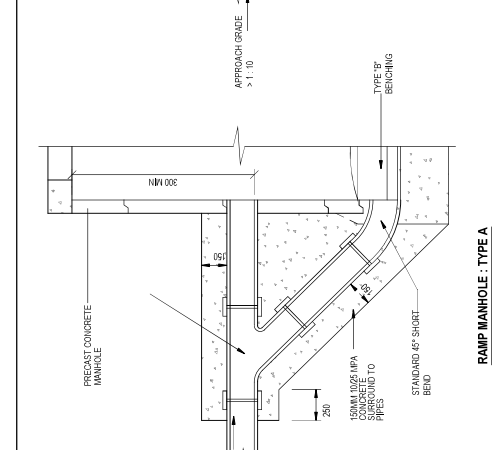
BACKDROP MANHOLE - TYPE B
FOR DROPS IN EXCESS OF 1000



BACKDROP MANHOLE - TYPE A
FOR DROPS IN EXCESS OF 1000



RAMP MANHOLE - TYPE B
FOR DROPS BETWEEN 500 AND 1000

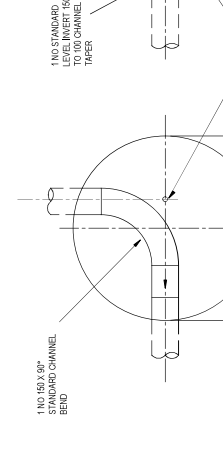
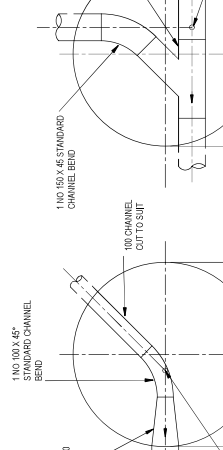
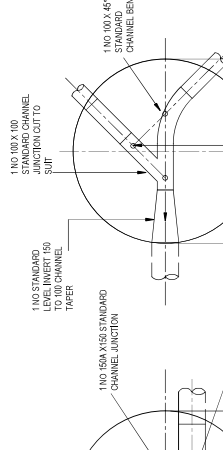
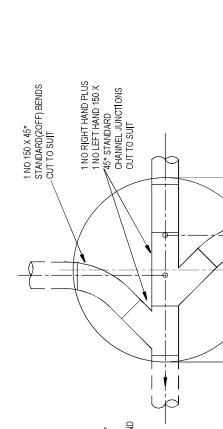


RAMP MANHOLE - TYPE A
FOR DROPS BETWEEN 500 AND 1000

HARRY GWALA DISTRICT MUNICIPALITY
40th STREET
PRIVALE EAG 2491
TEL: 083 848 8790
FAX: 083 848 1791

APPROVED ON BEHALF OF HARRY GWALA

CAPACITY:
DATE:
DRAWING No. HGRMB24MS02020



DARTING CONSULTING ENGINEERS (Pty) Ltd.
CONSULTING CIVIL & STRUCTURAL ENGINEERS
P.O. Box 65596
10th Floor
3910
Tel: 011-2560602
Fax: 011-2560603
Email: admin@darting.co.za

APPROVED ON BEHALF OF DARTING CONSULTING ENGINEERS

CAPACITY: DIRECTOR
DATE:
PROJECT

SEWER MANHOLE

8. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD FITTINGS FOR RAMP AND BACKDROP MANHOLES IN DRAWING NO. - HGRMB201

9. TO 7 PARTS SAND THOROUGHLY MIXED AND APPLIED TO CONCRETE SURFACES WHILE THE LATTER ARE STILL GREEN. REINFORCING SHALL BE ALL PRECAST MANHOLES SHALL NOT EXCEED 10m IN LENGTH AND THE ADJOINING PIPE SHALL NOT EXCEED 20m IN LENGTH. EVERY 10 P.C. PIPE BUILT INTO A MANHOLE SHALL HAVE CLEAN DRY REINFORCING BARS (REINFORCING BARS) RECOMMENDED BY PIPE MANUFACTURER USING SPECIAL P.C.CEMENT (HEMEL S.A.PTY. LTD. TANKET OR SIMILAR) TO ENSURE GOOD ADHESION TO CONCRETE. ALL JOINTS SHALL BE PROPERLY SEaled WITH BUTYL TAPE OR SIMILAR. SHALL BE USED.

1. ALL PRECAST CONCRETE MANHOLE COMPONENTS TO COMPLY WITH THE REQUIREMENTS OF S.A.S. 128 (WHERE APPLICABLE)

2. H.A.C. TO 2 PARTS SAND THOROUGHLY MIXED AND APPLIED TO CONCRETE SURFACES WHILE THE LATTER ARE STILL GREEN.

3. ALL PRECAST MANHOLES SHALL NOT EXCEED 10m IN LENGTH AND THE ADJOINING PIPE SHALL NOT EXCEED 20m IN LENGTH.

4. ALL P.C. PIPES BUILT INTO A MANHOLE SHALL HAVE CLEAN DRY REINFORCING BARS (REINFORCING BARS) RECOMMENDED BY PIPE MANUFACTURER USING SPECIAL P.C.CEMENT (HEMEL S.A.PTY. LTD. TANKET OR SIMILAR) TO ENSURE GOOD ADHESION TO CONCRETE.

5. PRE SPECIFICATIONS

5.1 P.C. PIPES TO BE HEAVY DUTY CLASS 24 SOLID WALL PIPES IN ACCORDANCE WITH SANS 798 SPECIFICATIONS

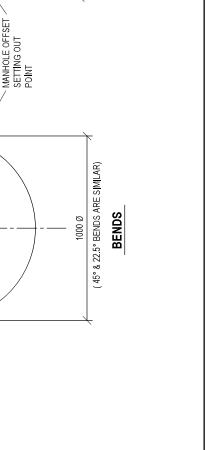
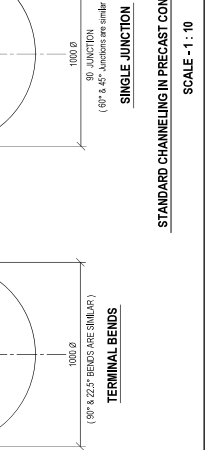
6.1 HEAVY DUTY CAST IRON MANHOLE COVERS AND FRAMES IN ACCORDANCE WITH SANS 558 TO BE USED IN ALL

6.2 HEAVY DUTY PRECAST MANHOLE COVERS AND FRAMES TO BE USED IN MAINWAYS AND VERTICES

6.3 ALL PRECAST MANHOLE COVERS AND FRAMES TO BE USED IN MAINWAYS AND VERTICES

7. THE MINIMUM COVER FOR ALL PRECAST MANHOLES AS FOLLOWS

7.1 ROADS = 1.2m
7.2 VERTICES = 1.0m
7.3 VERTICES = 0.8m



IXOPO SEWER UPGRADE: CONSTRUCTION OF BULK SEWER LINES AND PUMP STATION PHASE 1

STANDARD DETAILS

DROP MANHOLE, MANHOLE CHANELLING & TERMINAL MH DETAILS

DESIGNED: SK DATE: 1/11/2019
DRAWN: SK SHEET: 01
CHECKED: NQH ORIGINAL SHEET: A1
SCALE: AS SHOWN REV: A
DRAWING No: 1253 / 3202

1. ALL PRECAST CONCRETE MANHOLE COMPONENTS TO COMPLY WITH THE REQUIREMENTS OF S.A.S. 128 (WHERE APPLICABLE)

2. H.A.C. TO 2 PARTS SAND THOROUGHLY MIXED AND APPLIED TO CONCRETE SURFACES WHILE THE LATTER ARE STILL GREEN.

3. ALL PRECAST MANHOLES SHALL NOT EXCEED 10m IN LENGTH AND THE ADJOINING PIPE SHALL NOT EXCEED 20m IN LENGTH.

4. ALL P.C. PIPES BUILT INTO A MANHOLE SHALL HAVE CLEAN DRY REINFORCING BARS (REINFORCING BARS) RECOMMENDED BY PIPE MANUFACTURER USING SPECIAL P.C.CEMENT (HEMEL S.A.PTY. LTD. TANKET OR SIMILAR) TO ENSURE GOOD ADHESION TO CONCRETE.

5. PRE SPECIFICATIONS

5.1 P.C. PIPES TO BE HEAVY DUTY CLASS 24 SOLID WALL PIPES IN ACCORDANCE WITH SANS 798 SPECIFICATIONS

6.1 HEAVY DUTY CAST IRON MANHOLE COVERS AND FRAMES IN ACCORDANCE WITH SANS 558 TO BE USED IN ALL

6.2 HEAVY DUTY PRECAST MANHOLE COVERS AND FRAMES TO BE USED IN MAINWAYS AND VERTICES

6.3 ALL PRECAST MANHOLE COVERS AND FRAMES TO BE USED IN MAINWAYS AND VERTICES

7. THE MINIMUM COVER FOR ALL PRECAST MANHOLES AS FOLLOWS

7.1 ROADS = 1.2m
7.2 VERTICES = 1.0m
7.3 VERTICES = 0.8m

REV	DESCRIPTION	SK	DATE
A	FOR TENDER	SK	11/10/2019

HARRY GWALA DISTRICT MUNICIPALITY
 ALIMA STREET
 PRIVATE BAG 2491
 001 804 8700
 001 804 8701
 FAX: 001 804 1791

APPROVED ON BEHALF OF HARRY GWALA

CAPACITY:
 DATE:
 DRAWING No.:
 CONTRACT No.: HGM/2019/GM/020

TENDER

BY THE CONTRACTOR AS PER THE DRAWINGS AND SPECIFICATIONS OR MODIFICATION THEREOF OR ANY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTING CONSULTING ENGINEERS.

DARTING CONSULTING ENGINEERS (Pty) Ltd.
 CONSULTING CIVIL & STRUCTURAL ENGINEERS

P.O. Box 65596
 1016 Springbok
 7800

Tel: 011-2569000
 Fax: 011-2569001
 Email: admin@darting.co.za

APPROVED ON BEHALF OF DARTING CONSULTING ENGINEERS

CAPACITY: DIRECTOR
 DATE: 20/07/2014
 PROJECT: 2007/014

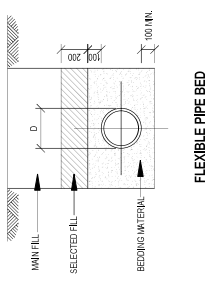
**IXOPO SEWER UPGRADE:
 CONSTRUCTION OF BULK
 SEWER LINES AND PUMP
 STATION
 PHASE 1**

STANDARD DETAILS

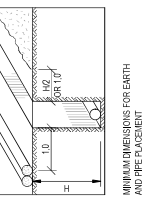
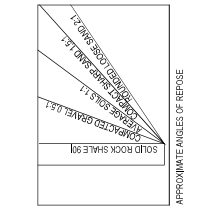
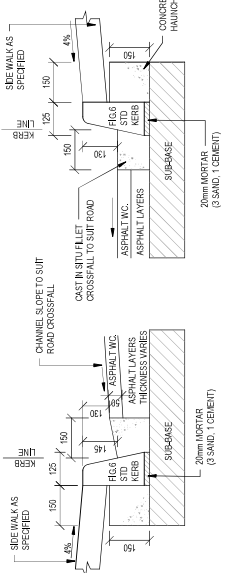
**ROAD INSTANTANEUM, BACKFILL,
 KERB & PIPE BEDDING DETAIL**

DESIGNED: SK DATE: 01/07/08
 DRAWN: SK SHEET: 01
 CHECKED: NQH ORIGINAL SHEET DATE: A1
 DRAWING No.: 1253/3204
 REVISED No.: 1253/3204

- PIPE BEDDING NOTES:**
- TRENCH WIDTH TO CONFORM TO STANDARD SPECIFICATION SABS 1000 (OR EARTHWORKS (PIPE TRENCHES)).
 - SELECTED GRANULAR MATERIAL TO BE COMPACTED TO 80% MOD-A-SHTO DENSITY IN MINIMUM 150mm LAYERS.
 - SELECTED PIPE MATERIAL TO BE COMPACTED TO 80% MOD-A-SHTO DENSITY IN MINIMUM 150mm LAYERS.
 - MANHOLE PERFORATED LAYERS TO BE COMPACTED TO 4) 80% MOD-A-SHTO DENSITY IN MINIMUM 150mm LAYERS. 4.2 80% MOD-A-SHTO DENSITY IN LAYERS NOT EXCEEDING 300mm. UNLESS OTHERWISE SPECIFIED. 4.3 80% MOD-A-SHTO DENSITY IN LAYERS NOT EXCEEDING 300mm. UNLESS OTHERWISE SPECIFIED.



PIPE BEDDING DETAILS
 N.T.S.



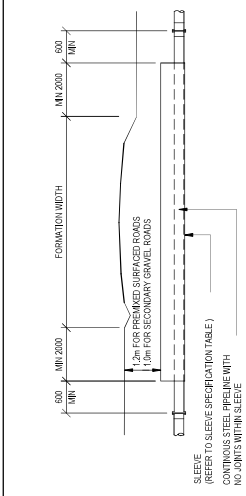
NOTES:

- MINIMUM DEPTH OF COVER WILL BE AS SHOWN ON THE SECTION DRAWING OR REFER TO REINSTATEMENT DETAILS (OR SEGMENTED PAVING) FOR UNREINFORCED SUBROUNDING GROUND OR 90% OF MOD ASHTO MINIMUM DENSITY, WHICHEVER IS THE GREATER.
- SEGMENTED PAVING.
- ALL AREAS UNDER SEGMENTED PAVING TO BE TREATED AS AREAS SUBJECT TO TRAFFIC LOAD AND DECK WITH AS PERMANENT SUBROUNDING (SEGMENTED PAVING).

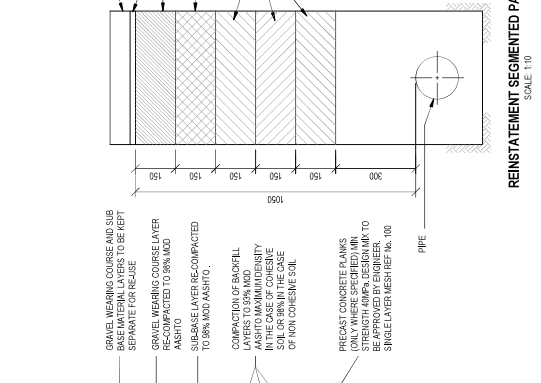
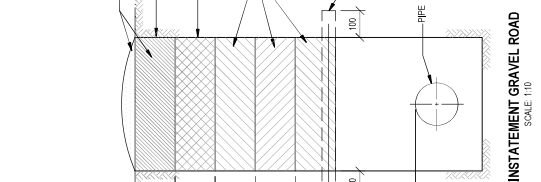
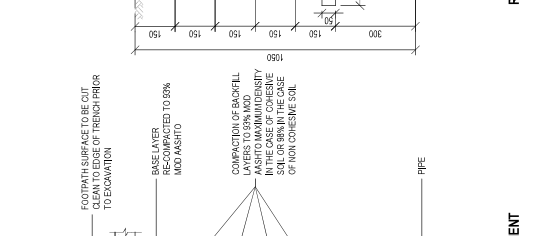
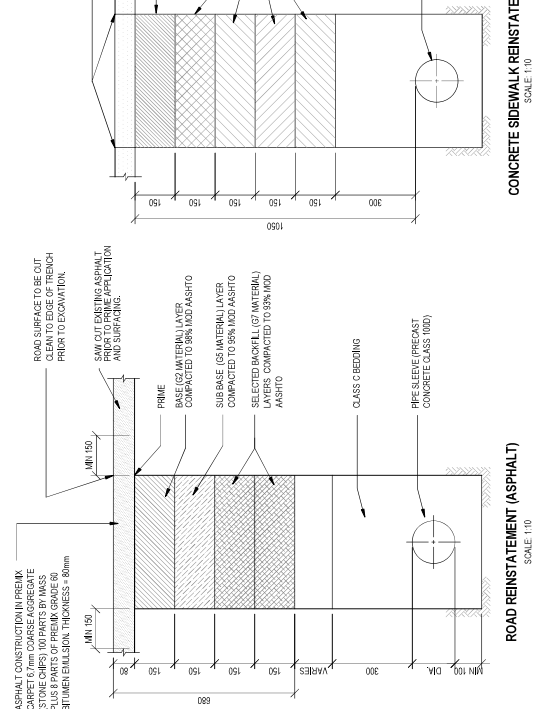
NOMINAL DIAMETER (mm)	MINIMUM BASE WIDTH W (mm)
COVER	OD+OUTSIDE DIAMETER
-	125 (DEPTH NOT EXCEEDING 1.5m)
125	OD + 600
150	OD + 600
200	OD + 1000
250	OD + 1000
300	OD + 1200

4. NO SIDE SLOPING PERMITTED WITHIN 300mm OF TOP OF PIPE SOFFIT

PIPE TRENCH AND BACKFILL DETAILS
 SCALE: 1:10



ROAD CROSSING DETAILS
 N.T.S.



- NOTES:**
- UNMANAGED SEGMENTED PAVING BLOCKS TO BE REUSED.
 - DRAWING GIVES MINIMUM SPECIFICATIONS OF MATERIALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ORIGINAL ROAD CONSTRUCTION DETAILS FOR REINSTATEMENT. IF MORE LAYERS HAVE BEEN CONSTRUCTED THAN SHOWN IN TYPICAL SECTION, ADDITION OF 2% CEMENT ASHTO TO THE EXISTING ASHTO LAYERS TO 80% MOD A-SHTO DENSITY IN THE CASE OF NON-COHERENT SOIL.
 - PRECAST CONCRETE PAVINGS (ONLY WHERE SPECIFIED) MINIMUM STRENGTH 40MPa DESIGN MIX TO BE SUBMITTED FOR APPROVAL BY THE ENGINEER. STABLE LAYER RESISTANCE No. 100

REV	DESCRIPTION	DATE
A	FOR TENDER	11/10/2019
B		
C		
D		
E		
F		
G		
H		
I		
J		
K		
L		
M		
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P		
Q		
R		
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W		
X		
Y		
Z		

TENDER

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HARRY GWALA DISTRICT MUNICIPALITY
 41 MAIN STREET
 PRIVATE BAG 5041
 2010
 TEL: 083 844 7700
 FAX: 083 844 7471



APPROVED ON BEHALF OF HARRY GWALA
 CAPACITY:
 DATE:
 DN DRAWING No.
 CONTRACT No.: HGNDS2020/02/20



DARTINGO CONSULTING ENGINEERS (PTY) LTD.
 CONSULTING CIVIL & STRUCTURAL ENGINEERS
 41 The Wood Road
 Pretoria 0001
 3610
 Tel: 011 251 4656
 Fax: 011 2469006
 Email: admin@dartingo.co.za

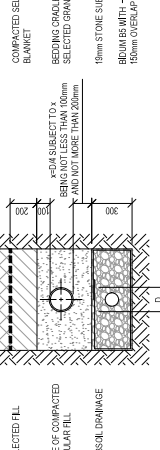
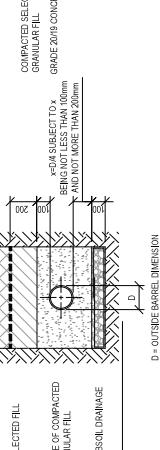
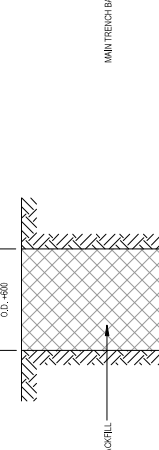
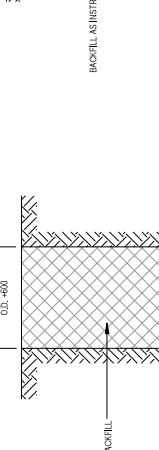
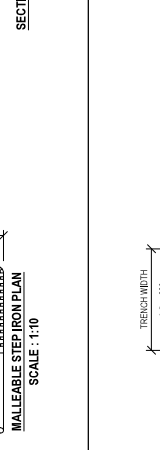
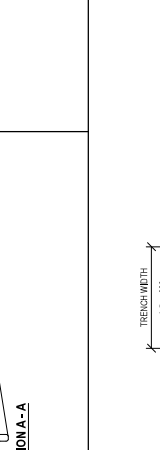
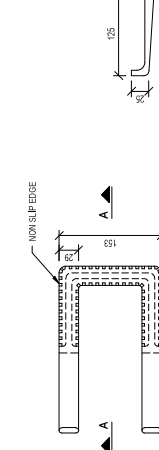
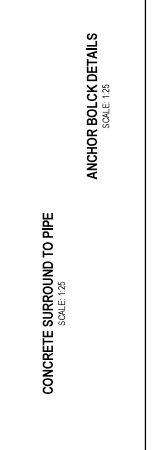
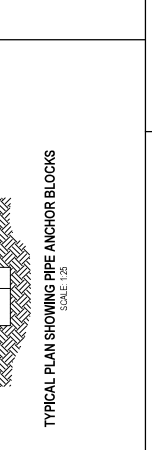
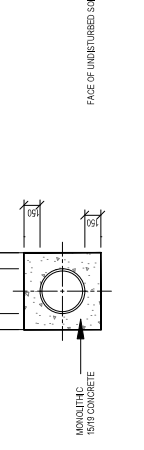
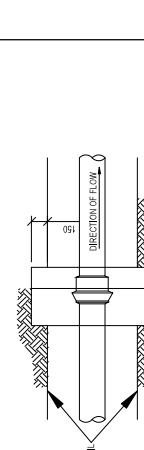
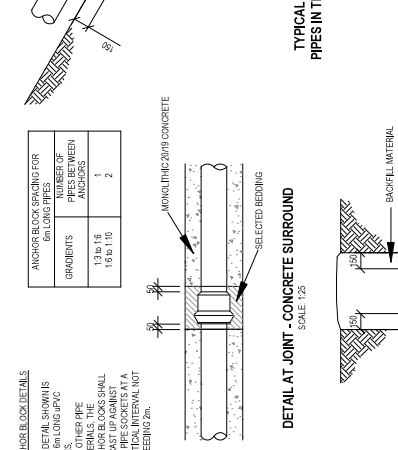
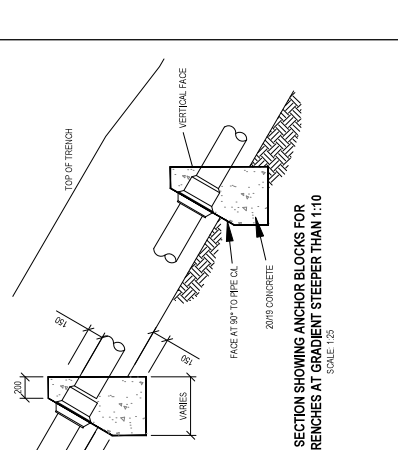
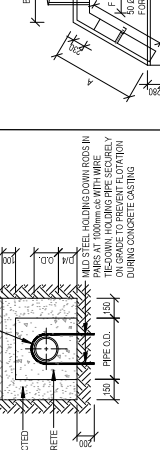
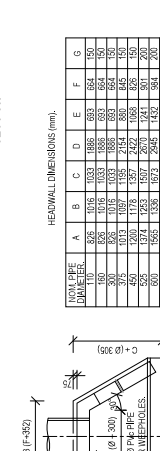
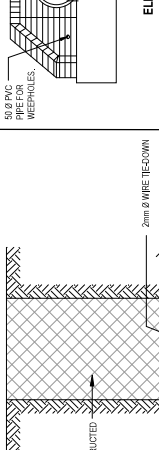
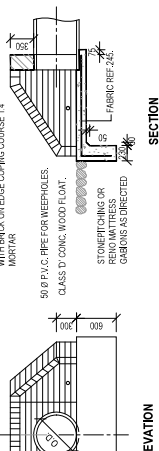
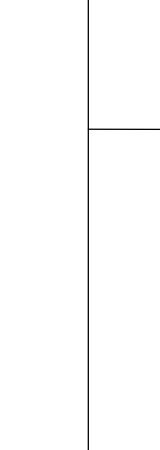
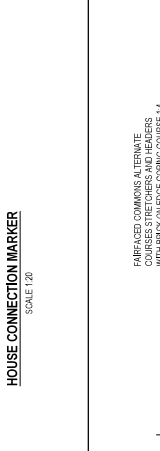
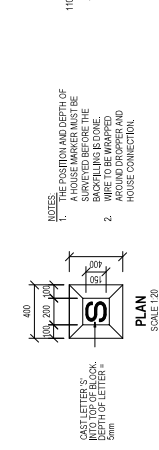
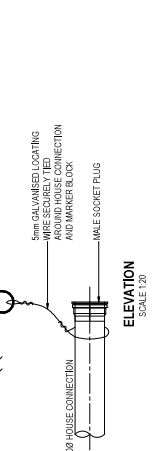
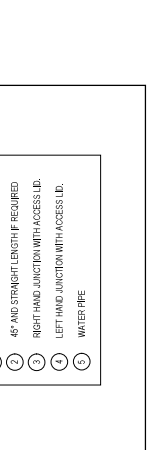
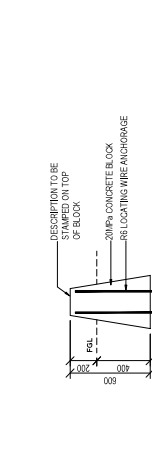
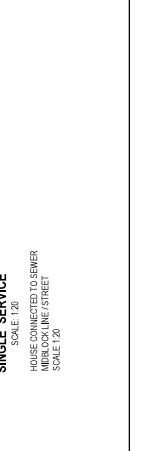
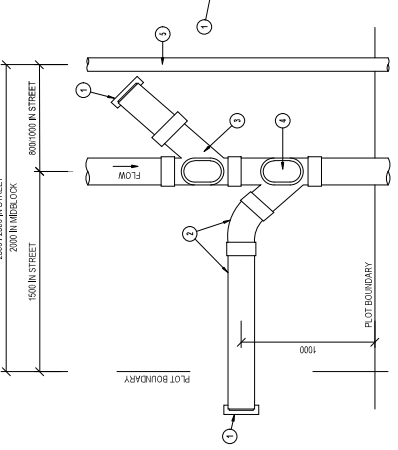
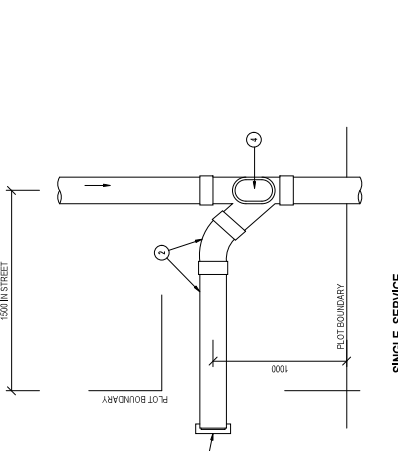
APPROVED ON BEHALF OF DARTINGO CONSULTING ENGINEERS
 CAPACITY: DIRECTOR
 DATE:
 P/N: 2009/014
 PROJECT:

**IKOPO SEWER UPGRADE:
 CONSTRUCTION OF BULK
 SEWER LINES AND PUMP
 STATION
 PHASE 1**

DRAWING TITLE
STANDARD DETAILS

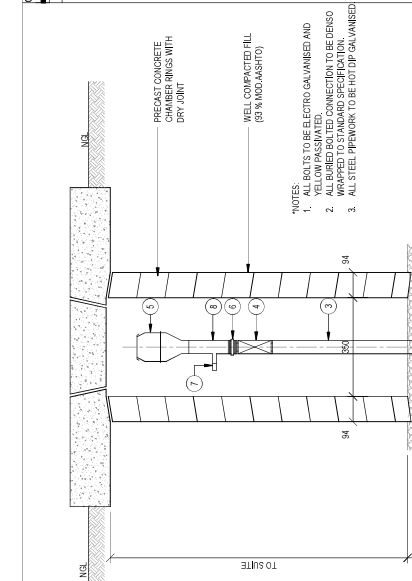
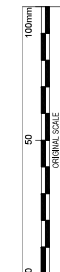
**ERF CONNECTIONS & MARKERS,
 ANCHOR BLOCKS, SUBSOIL,
 HEADWALL**

DESIGNED: SK DATE: 11/10/2019
 DRAWN: SK SHEET: 01
 CHECKED: NPH ORIGINAL SHEET SIZE: A1
 SCALE: AS SHOWN REV: A
 DRAWING No.: 1253 / 2020



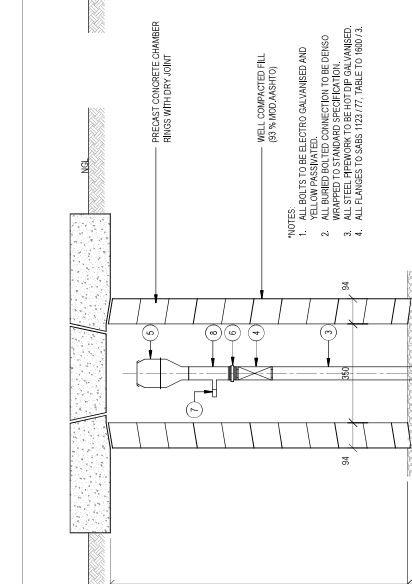
HEADWALL DETAILS
 SCALE: 1:50

NO.	A	B	C	D	E	F	G
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13	525	1015	1033	1855	693	654	150
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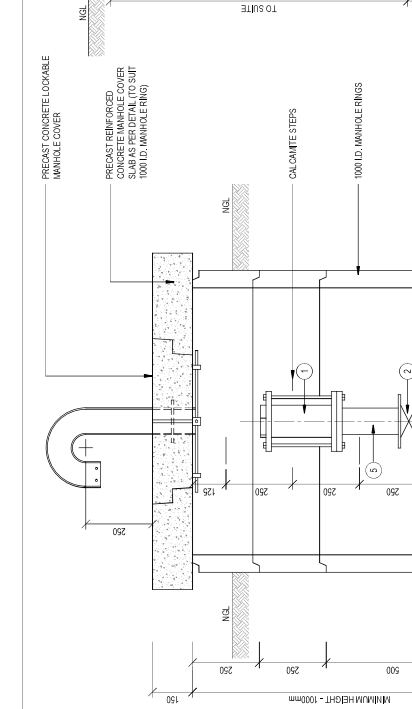
20mm AIR VALVE DETAILS
N.T.S.

ITEM	DESCRIPTION	No.
1	EQUAL TEE (MEASURED ELSEWHERE)	1
2	150mm BLANK FLANGE WITH 25mm Ø CENTRAL OPENING	1
3	25mm NOM Ø STEEL PIPE (ASTM A106) LENGTH TO SUIT, ONE END WELDED TO BLANK FLANGE AND ONE END BSP MALE	1
4	25mm NOM Ø BALL VALVE (BSP FEMALE BOTH ENDS)	1
5	25mm NOM Ø VENTOMAT RBX 160 OR SIMILAR	1
6	25mm Ø HEX NIPPLE	1
7	15mm SOLID PLUG	1
8	25mm x 15mm REDUCING TEE, FEMALE THREADED	1
9	CLIP/PC FLANGE ADAPTOR (MEASURED ELSEWHERE)	2



50mm AIR VALVE DETAILS
N.T.S.

ITEM	DESCRIPTION	No.
1	EQUAL TEE (MEASURED ELSEWHERE)	1
2	150mm BLANK FLANGE WITH 50mm Ø CENTRAL OPENING	1
3	50mm NOM Ø STEEL PIPE (ASTM A106) LENGTH TO SUIT, ONE END WELDED TO BLANK FLANGE AND ONE END BSP MALE	1
4	50mm NOM Ø BALL VALVE (BSP FEMALE BOTH ENDS)	1
5	50mm NOM Ø VENTOMAT RBX 160 OR SIMILAR	1
6	50mm Ø HEX NIPPLE	1
7	15mm SOLID PLUG	1
8	50mm x 15mm REDUCING TEE, FEMALE THREADED	1
9	CLIP/PC FLANGE ADAPTOR (MEASURED ELSEWHERE)	2



80mm AIR VALVE DETAILS
N.T.S.

ITEM	DESCRIPTION	No.
1	80mm Ø AIR VALVE, W/ BATTERY OPERATED, FLANGED	1
2	80mm Ø BUTTERFLY VALVE W/ WAFER TYPE, SUITABLE FOR TERMINAL MOUNTING	1
3	80mm Ø RIS SPOOL PIECE 200mm LONG, FLANGED BOTH ENDS (ONE END FLANGE TO SUIT FLANGED TEE)	1
4	EQUAL TEE PIECE (MEASURED ELSEWHERE)	1
5	80mm Ø RIS SPOOL PIECE 200mm LONG, FLANGED BOTH ENDS	1
6	CLIP/PC FLANGE ADAPTOR (MEASURED ELSEWHERE)	2

TENDER

IF ANY CORRECTIONS TO THIS DRAWING ARE MADE OR REPRODUCTION OR APPLICATION THEREOF MAY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTING CONSULTING ENGINEERS.

FOR TENDER

DATE: 11/10/19

BY: SK

DESCRIPTION: HARRY GWALA DISTRICT MUNICIPALITY

ADDRESS: 40 MAIN STREET, HARRY GWALA DISTRICT MUNICIPALITY, HARRY GWALA 5010

TEL: 083 84 8780

FAX: 083 84 1791

APPROVED ON BEHALF OF HARRY GWALA

FOR TENDER

DATE: 11/10/19

BY: SK

DESCRIPTION: HARRY GWALA DISTRICT MUNICIPALITY

ADDRESS: 40 MAIN STREET, HARRY GWALA DISTRICT MUNICIPALITY, HARRY GWALA 5010

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FOR TENDER

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APPROVED ON BEHALF OF HARRY GWALA



APPROVED ON BEHALF OF HARRY GWALA

APPROVED ON BEHALF OF HARRY GWALA

APPROVED ON BEHALF OF HARRY GWALA

DARTING CONSULTING ENGINEERS (Pty) Ltd.
CONSULTING CIVIL & STRUCTURAL ENGINEERS

P.O. Box 65596
1016 Midway Road
3610

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031-2569610
031-2569611
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031-2569647
031-2569648
031-2569649
031-2569650

EMAIL: admin@darting.co.za

APPROVED ON BEHALF OF DARTING CONSULTING ENGINEERS

CAPACITY: DIRECTOR

DATE: 2007/01/14

PROJECT: IXOPO SEWER UPGRADE: CONSTRUCTION OF BULK SEWER LINES AND PUMP STATION PHASE 1

APPROVED ON BEHALF OF DARTING CONSULTING ENGINEERS

CAPACITY: DIRECTOR

DATE: 2007/01/14

PROJECT: IXOPO SEWER UPGRADE: CONSTRUCTION OF BULK SEWER LINES AND PUMP STATION PHASE 1

APPROVED ON BEHALF OF DARTING CONSULTING ENGINEERS

CAPACITY: DIRECTOR

DATE: 2007/01/14

PROJECT: IXOPO SEWER UPGRADE: CONSTRUCTION OF BULK SEWER LINES AND PUMP STATION PHASE 1

APPROVED ON BEHALF OF DARTING CONSULTING ENGINEERS

CAPACITY: DIRECTOR

DATE: 2007/01/14

PROJECT: IXOPO SEWER UPGRADE: CONSTRUCTION OF BULK SEWER LINES AND PUMP STATION PHASE 1

IXOPO SEWER UPGRADE: CONSTRUCTION OF BULK SEWER LINES AND PUMP STATION PHASE 1

STANDARD DETAILS

AIRVALVE & PIPE MARKER DETAILS

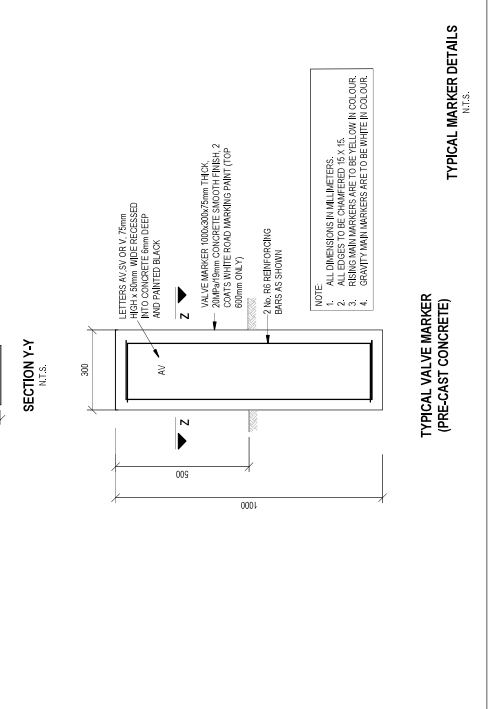
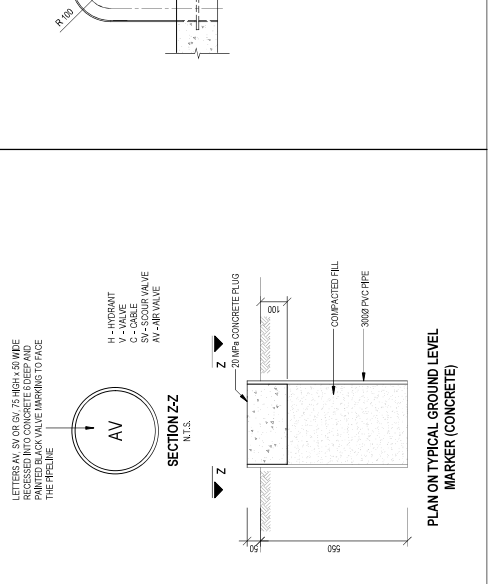
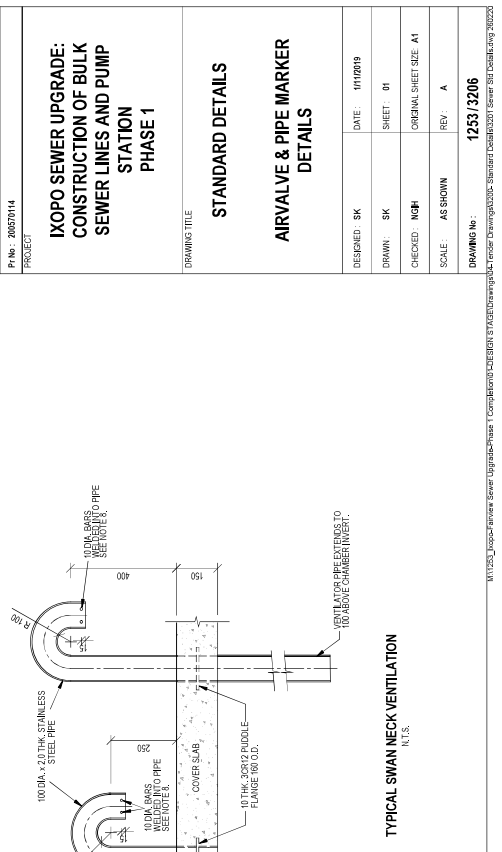
DESIGNED: SK
DATE: 11/10/19

DRAWN: SK
SHEET: 01

CHECKED: NGP
ORIGINAL SHEET SIZE: A1

SCALE: AS SHOWN
REV: A

DRAWING No.: 1253/3206



TENDER
 IN SOME CIRCUMSTANCES ERRORS IN THESE DRAWINGS MAY OCCUR OR REPRODUCTION OR APPLICATION THEREOF MAY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTINGO CONSULTING ENGINEERS.

REV. A FOR TENDER SK. H1102019
 DESCRIPTION DATE
HARRY GWALA DISTRICT MUNICIPALITY
 ANIMA STREET
 PRIVATE BAG 2491
 3001
 TEL: 088 848 8790
 3001
 FAX: 088 848 1791



APPROVED ON BEHALF OF HARRY GWALA
 CAPACITY:
 DATE:
 DRAWING No. HCGMB20020020

DARTINGO CONSULTING ENGINEERS (Pty) Ltd.
 CONSULTING CIVIL & STRUCTURAL ENGINEERS

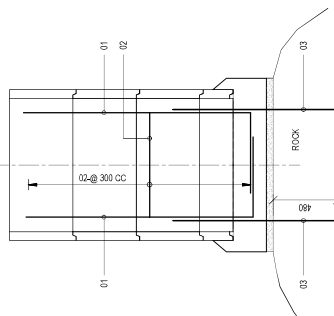
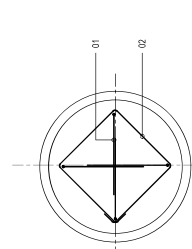
P. O. Box 65596
 1016
 2008
 3010
 Tel: 011-2569060
 1016
 2008
 Email: admin@dartingo.co.za

APPROVED ON BEHALF OF DARTINGO CONSULTING ENGINEERS
 CAPACITY: DIRECTOR
 DATE:
 P/No: 200207114
 PROJECT

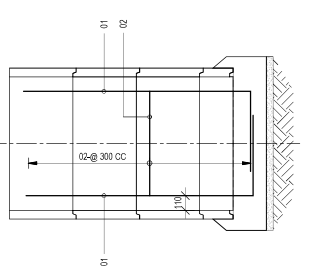
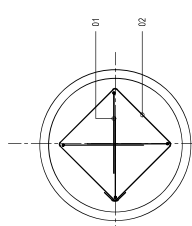
**IXOPO SEWER UPGRADE:
 CONSTRUCTION OF BULK
 SEWER LINES AND PUMP
 STATION
 PHASE 1**

STANDARD DETAILS
PIPE SUPPORT DETAIL

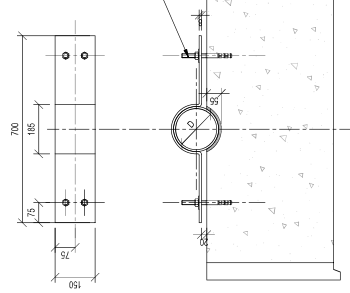
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 DRAWN: SK SHEET: 01
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 SCALE: AS SHOWN REV: A
 DRAWING No: **1253/3207**



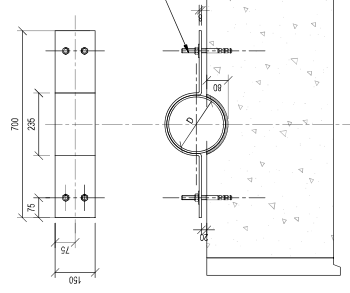
150mm Ø PIPE DETAILS
SCALE: 1:10



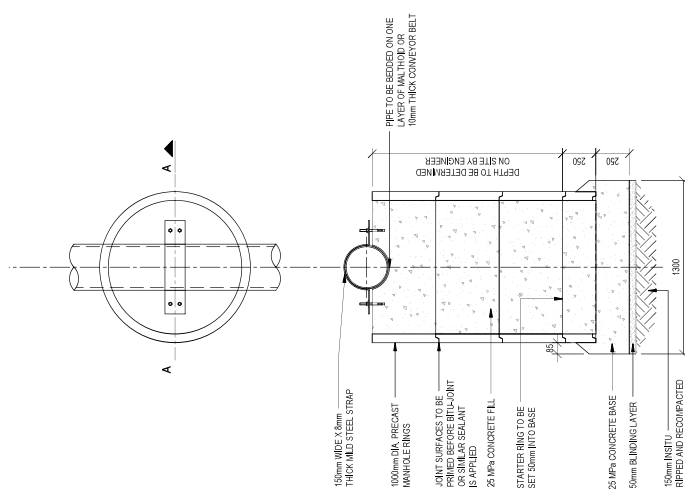
200mm Ø PIPE DETAILS
SCALE: 1:10



150mm Ø PIPE DETAILS
SCALE: 1:10

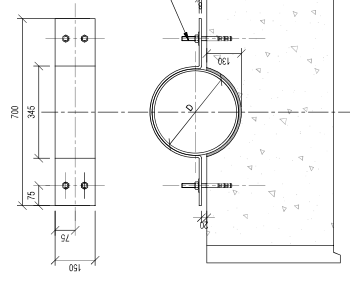


200mm Ø PIPE DETAILS
SCALE: 1:10



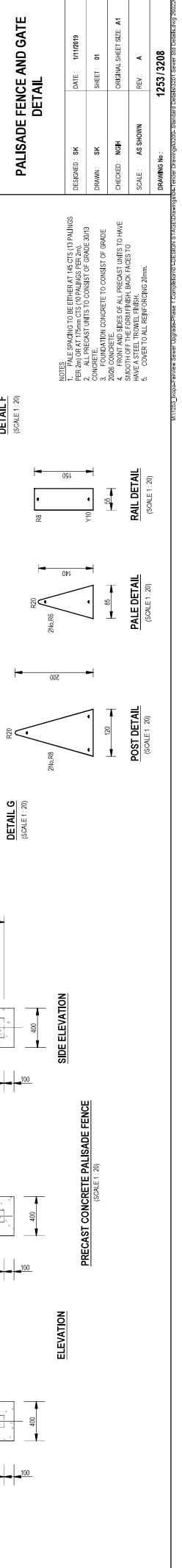
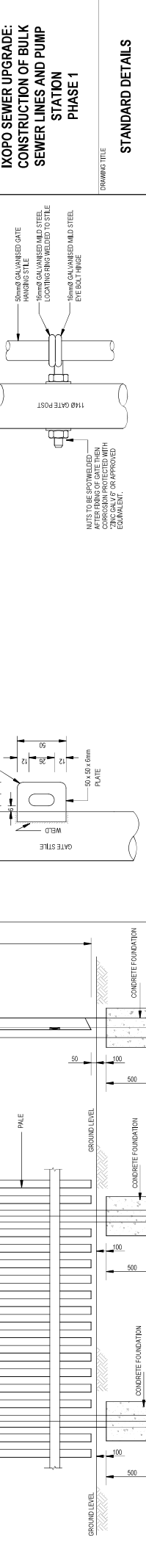
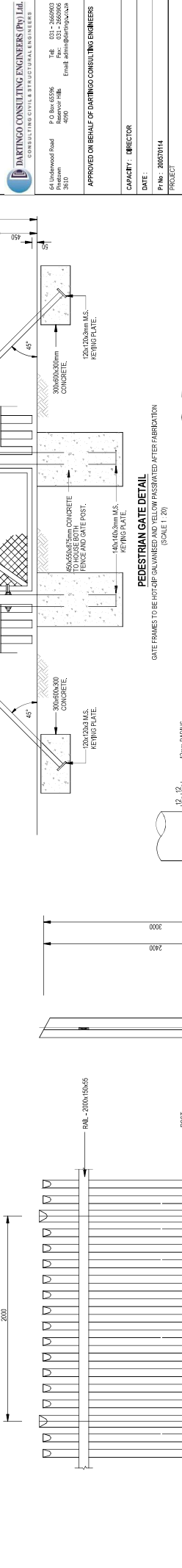
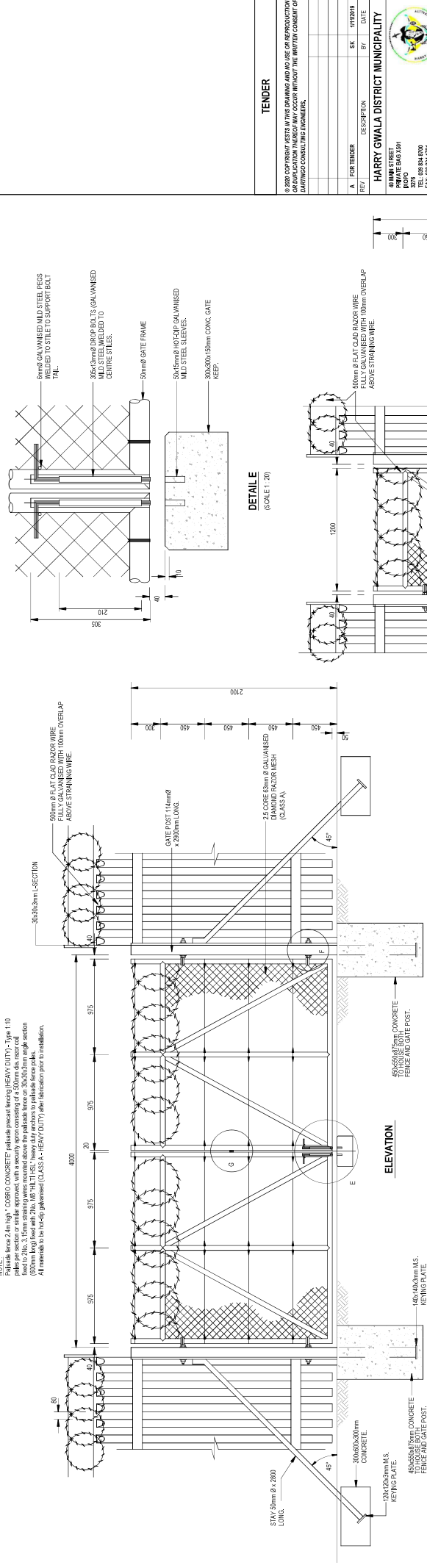
**PIPE SUPPORT DETAILS
 SECTION A-A**
SCALE: 1:20

NOTES:
 ALL PIPES ON PIPE STANDS ARE TO BE FLANGED

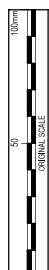


315mm Ø PIPE DETAILS
SCALE: 1:10

NOTE: Use of 2 nos. 4mm² COBOD SANGRETS (precast concrete fence fixing) is required. The 1:10 slope section or similar, approved with a security from consisting of 450mm dia, cast steel pale sections or similar, spaced with a security from consisting of 450mm dia, cast steel pale sections mounted above the palisade fence on 30x30x3mm angle section fixed to 20x3, 15mm stanchions mounted above the palisade fence on 30x30x3mm angle section. (60mm high) fixed with 20x3, 15mm (1/2") LBS. Heavy duty anchors to palisade fence poles. All materials to be factory galvanneal (GALVALUME) (GALVALUME) (GALVALUME) (GALVALUME).



DESIGNED: SK DATE: 11/10/19
 DRAWN: SK SHEET: 01
 CHECKED: NQH ORIGINAL SHEET: A1
 SCALE: AS SHOWN
 DRAWING No: 1253/3208



TENDER
NO WORK CONTRACT LETTERS IN THIS DRAWING AND NO USE OR REPRODUCTION OR ADAPTATION THEREOF MAY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTINGO CONSULTING ENGINEERS.

REF: _____ SK: _____ BY: _____ DATE: _____
DESCRIPTION: _____
HARRY GWALA DISTRICT MUNICIPALITY
AUMI STREET
PRIVATE BAG 2681
DARTINGO
TEL: 083 848 8780
FAC: 083 848 1781
APPROVED ON BEHALF OF HARRY GWALA

CAPACITY: _____
DATE: _____
DW DRAWING NO. _____
CONTRACT NO. HG20180320020

DARTINGO CONSULTING ENGINEERS (Pty) Ltd.
CONSULTING CIVIL & STRUCTURAL ENGINEERS
P O Box 65596
Mogale City
1680
08337 4656
Tel: 011-2690902
Fax: 011-2690910
Email: admin@dartingo.co.za

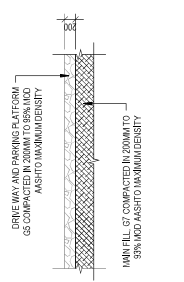
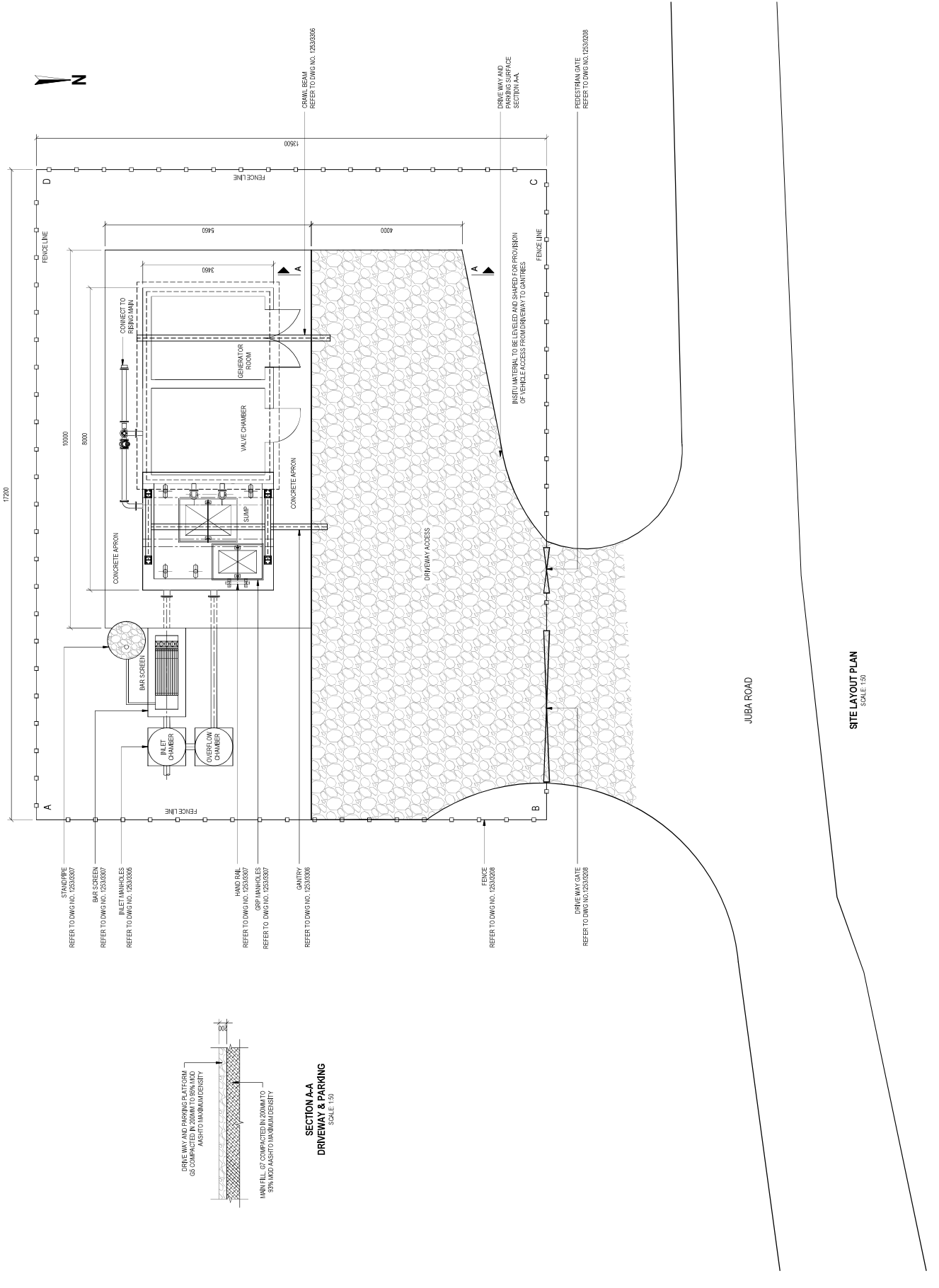
APPROVED ON BEHALF OF DARTINGO CONSULTING ENGINEERS
CAPACITY: DIRECTOR
DATE: _____
P1 No: 2002070114
PROJECT:

**IXOPO SEWER UPGRADE;
CONSTRUCTION OF BULK
SEWER LINES AND PUMP
STATION
PHASE 1**

DRAWING TITLE
**PUMP STATION - BUILDING &
MECHANICAL**

SITE LAYOUT PLAN

DESIGNED - SK	DATE	17/11/2019
DRAWN - SK	SHEET	01
CHECKED - NQJ	ORIGINAL SHEET	A1
SCALE - AS SHOWN	REV	A
DRAWING NO. - 1253/3301		





TENDER

NO WORK CONTRACTS SET IN THIS DRAWING AND NO USE OR REPRODUCTION OR ADAPTATION THEREOF MAY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTING CONSULTING ENGINEERS.

REV.	DESCRIPTION	SK	DATE
A	FOR TENDER	SK	11/10/19

HARRY GWALA DISTRICT MUNICIPALITY

ALUMA STREET
PRIVILEGE 2451
7901
3000
TEL: 081 846 8780
FAX: 081 846 1791

APPROVED ON BEHALF OF HARRY GWALA

CAPACITY:

DATE:

DRAWING No. HG08MBHSDM0200

DARTING CONSULTING ENGINEERS (Pty) Ltd.
CONSULTING CIVIL & STRUCTURAL ENGINEERS

P.O. Box 65596
Midrand 1685
2009
Tel: 011-2596902
Fax: 011-2596900
Email: admin@darting.co.za

APPROVED ON BEHALF OF DARTING CONSULTING ENGINEERS

CAPACITY: DIRECTOR
DATE: _____
P1 No: 200579114

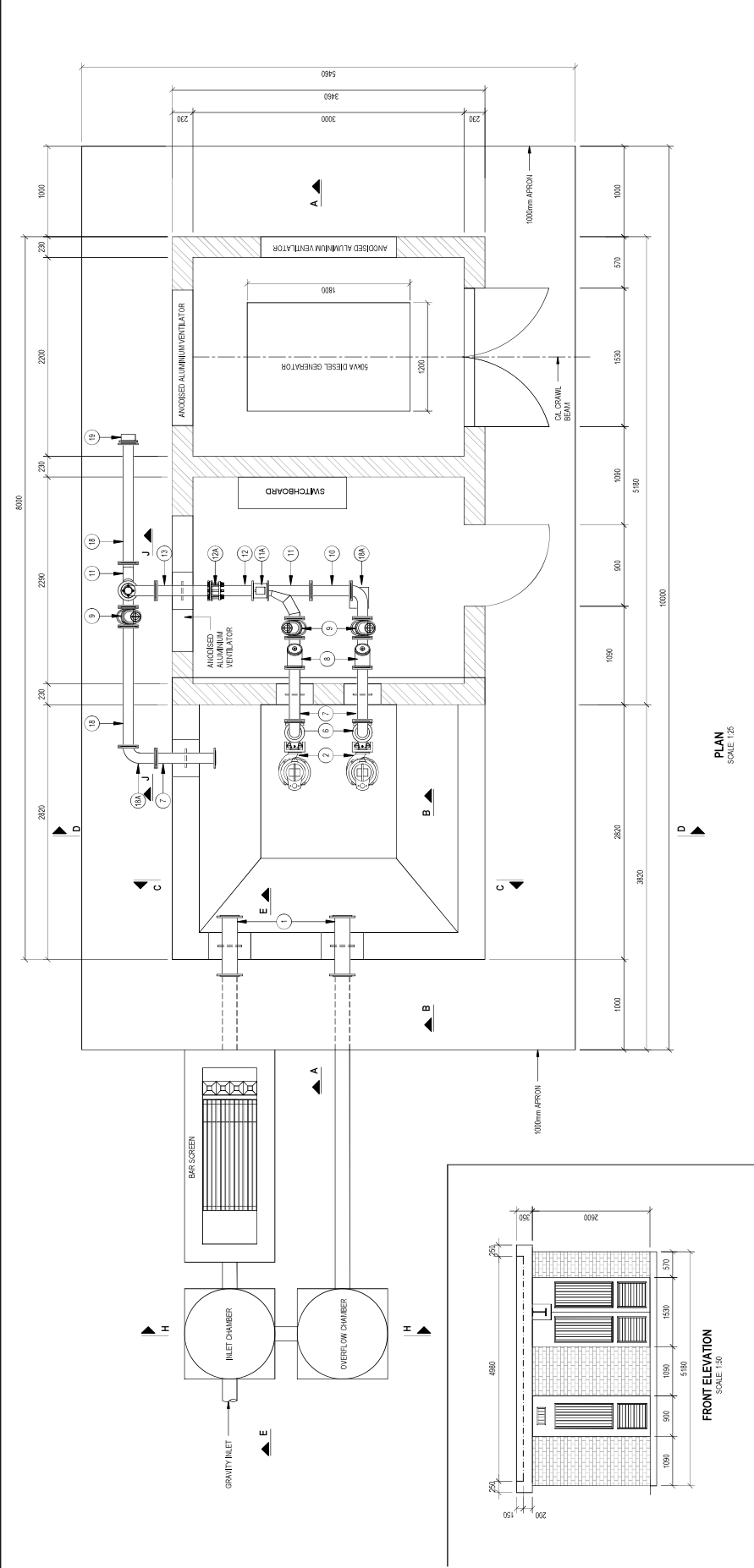
PROJECT

**IXOPO SEWER UPGRADE:
CONSTRUCTION OF BULK
SEWER LINES AND PUMP
STATION
PHASE 1**

DRAWING TITLE
**PUMP STATION - BUILDING &
MECHANICAL**

**PIPE LAYOUT PLAN AND PUMP
HOUSE ELEVATIONS**

DESIGNED: SK	DATE: 11/10/19
DRAWN: SK	SHEET: 01
CHECKED: NGH	ORIGINAL SHEET NO: A1
SCALE: AS SHOWN	REV: A
DRAWING No: 1253/3302	

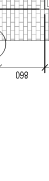
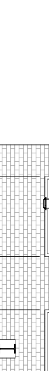


GENERAL NOTES:

1. WALLS: FACEBRICK, STRETCHER BOND.
2. 50mm BLINDING LAYER CLASS 15/19.
3. CONCRETE
- 3.1. COVER CONCRETE CLASS: 30/19.
- 3.2. WALLS CORNERS TO HAVE 20mm x 20mm CHAMFER.
- 3.3. CHAMFER.
- 3.4. ONLY FOUR ENDS TO BE FORMED AS CONSTRUCTION UNITS.
- 3.5. ISOLATION JOINTS, SOFT BOARD TO BE PLACED AT JOINTS AND BE FORMED WITH 100mm DRP BEHIND IT.
- 3.6. ISOLATION JOINTS, SOFT BOARD TO BE PLACED BEHIND IT BEHIND WITH GRAY POLYURETHANE SEALANT.
- 3.7. CONCRETE SURFACES TO BE TREATED WITH COUPLING COMPOUND.
4. 9mm GALVANIZED BRICK FORSE EVERY 4th COURSE WITH GALVANIZED BUTTERFLY FEES AT 1m CO BOTH WAYS.
5. CHIMNEYS TO BE LAG IN BRICK, COVERED IN COURSE WITH 100mm LAG MAT WITH 10mm CONCRETE SORBED OF MIN 30mm THICKNESS.
6. PIPE FITTINGS TO SUIT PUMPS INSTALLED.
7. APRON SLAB AROUND BUILDING 100mm WIDE AND 75mm DEEP WITH CONSTRUCTION JOINTS @ 2m AND 150mm GANG.

DOORS:

1. ALL TRANSOMERS AND DOORS TO BE SET DRIED GALVANIZED STEEL DOUBLE LEAF DOOR AND FRAME.
- 1.1. 37M HIGH AET 1.5M WIDE
- 1.2. LOWERS TO BE TYPED WITH A TOTAL LOUVE
- 1.3. DOORS TO HAVE EIGHT HEAVY DUTY HINGES (4 PER DOOR).
- 1.4. ALL DOORS TO HAVE 20mm CHAMFER WITH OUTSIDE HEAVY DUTY PAD AT 15mm FROM DOOR.
- 1.5. FRAMES TO SUIT 200MM BRICK WALL THICKNESS AND OUTWARD OPENING.
- 1.6. ENGINEER FOR APPROVAL. DOOR DETAILS TO BE SUBMITTED WITH LIFTING POINT OF CORNER BEAM AND PUMPS.





TENDER

IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK THE DRAWINGS AND TO USE OR REPRODUCTION OR APPLICATION THEREOF MAY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTINGO CONSULTING ENGINEERS.

REV	DESCRIPTION	SK	DATE
A	FOR TENDER	SK	11/10/2019

HARRY GWALA DISTRICT MUNICIPALITY
 ALUMA STREET
 PHOLEMANG 2491
 TEL: 083 848 8780
 FAX: 083 84 1791



APPROVED ON BEHALF OF HARRY GWALA

CAPACITY:
 DATE:
 DRAWING No. HGBM2491SDM020

APPROVED ON BEHALF OF DARTINGO CONSULTING ENGINEERS

DARTINGO CONSULTING ENGINEERS (Pty) Ltd.
 CONSULTING CIVIL & STRUCTURAL ENGINEERS

P.O. Box 65596
 1016 Springbok
 7801
 Tel: 031-2560902
 Fax: 031-2560903
 Email: admin@dartingo.co.za

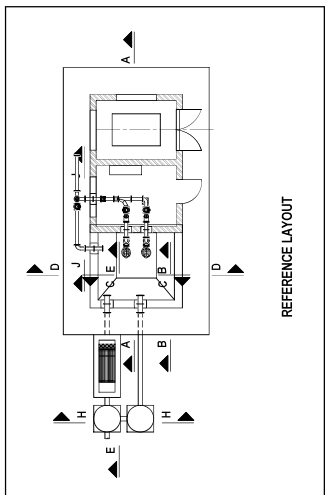
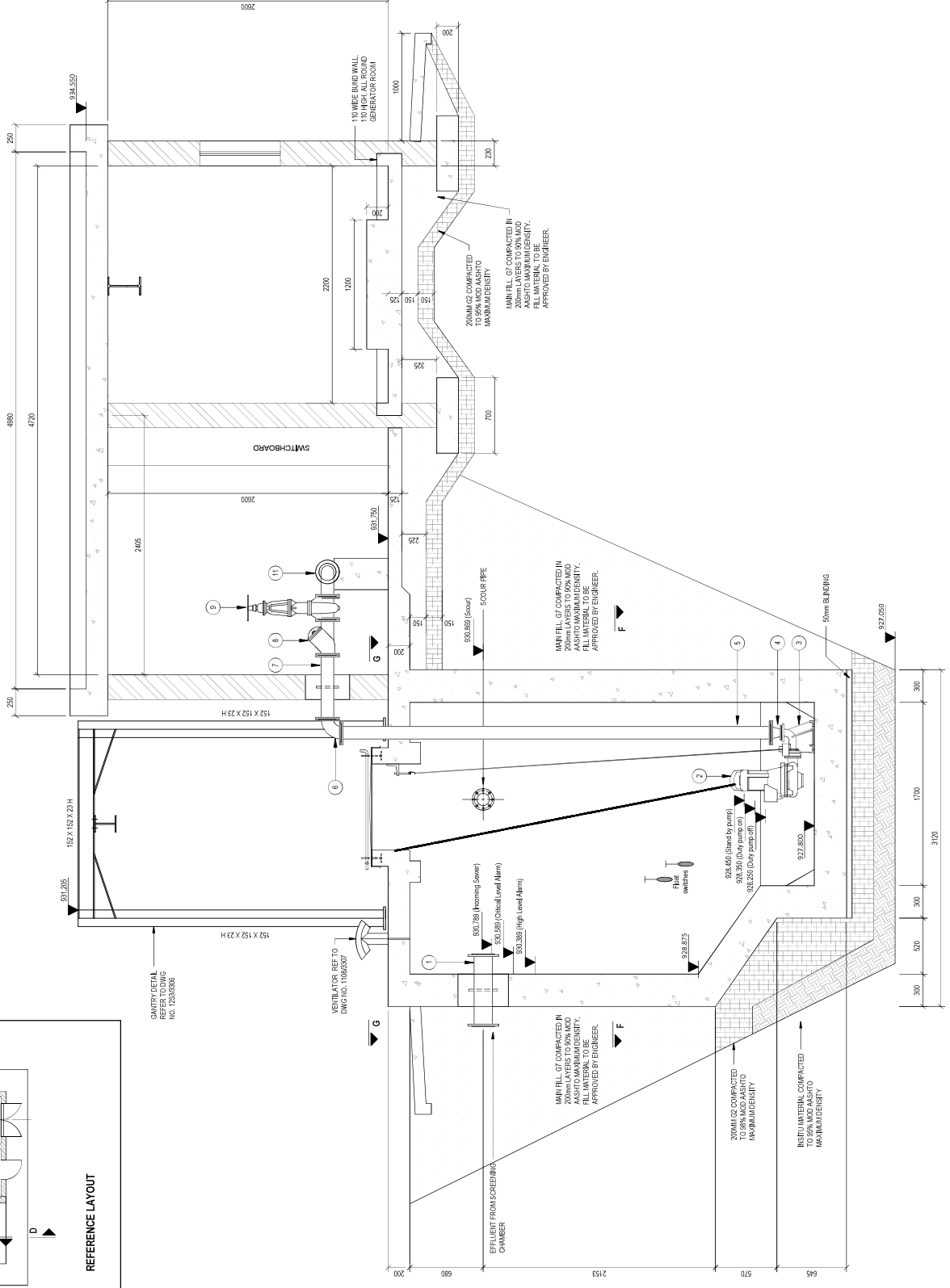
PROJECT: IXOPO SEWER UPGRADE: CONSTRUCTION OF BULK SEWER LINES AND PUMP STATION PHASE 1

CAPACITY: DIRECTOR
 DATE:
 PROJECT: 2002/01/14

DRAWING TITLE: PUMP STATION - BUILDING & MECHANICAL

SECTION A-A

DESIGNED: SK	DATE: 11/10/2019
DRAWN: SK	SHEET: 01
CHECKED: NGH	ORIGINAL SHEET: A1
SCALE: AS SHOWN	REV: A
DRAWING No.:	1253/3303



REFERENCE LAYOUT

GANTRY DETAIL
 REF: DWG 1101.11063307
 NSL 1253/3303

VENTILATOR REF TO
 DWG 1101.11063307

MAIN FILL OF COMPACTED
 200mm LAYERS TO 95% MGD
 ASHTO MAXIMUM DENSITY.
 APPROVED BY ENGINEER.

MAIN FILL OF COMPACTED IN
 200mm LAYERS TO 95% MGD
 ASHTO MAXIMUM DENSITY.
 APPROVED BY ENGINEER.

MAIN FILL OF COMPACTED IN
 200mm LAYERS TO 95% MGD
 ASHTO MAXIMUM DENSITY.
 APPROVED BY ENGINEER.

SECTION A-A
 SCALE: 1:20

TENDER

IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK THE DRAWINGS AND USE OR REPRODUCTION OR ADAPTATION THEREOF MAY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTINGO CONSULTING ENGINEERS.

REV	DESCRIPTION	SK	DATE
A	FOR TENDER	SK	11/10/19

HARRY GWALA DISTRICT MUNICIPALITY
 ALMA STREET
 PHOENIX 4013
 TEL: 083 84 8790
 FAX: 083 84 1791



APPROVED ON BEHALF OF HARRY GWALA

CAPACITY:
 DATE:
 DRAWING No. _____
 CONTRACT No. HGM/MS/2019/020



DARTINGO CONSULTING ENGINEERS (Pty) Ltd.
 CONSULTING CIVIL & STRUCTURAL ENGINEERS
 P.O. Box 65596
 1st Floor, 100017th
 3610
 Tel: 031-2569002
 Email: admin@dartingo.co.za

APPROVED ON BEHALF OF DARTINGO CONSULTING ENGINEERS

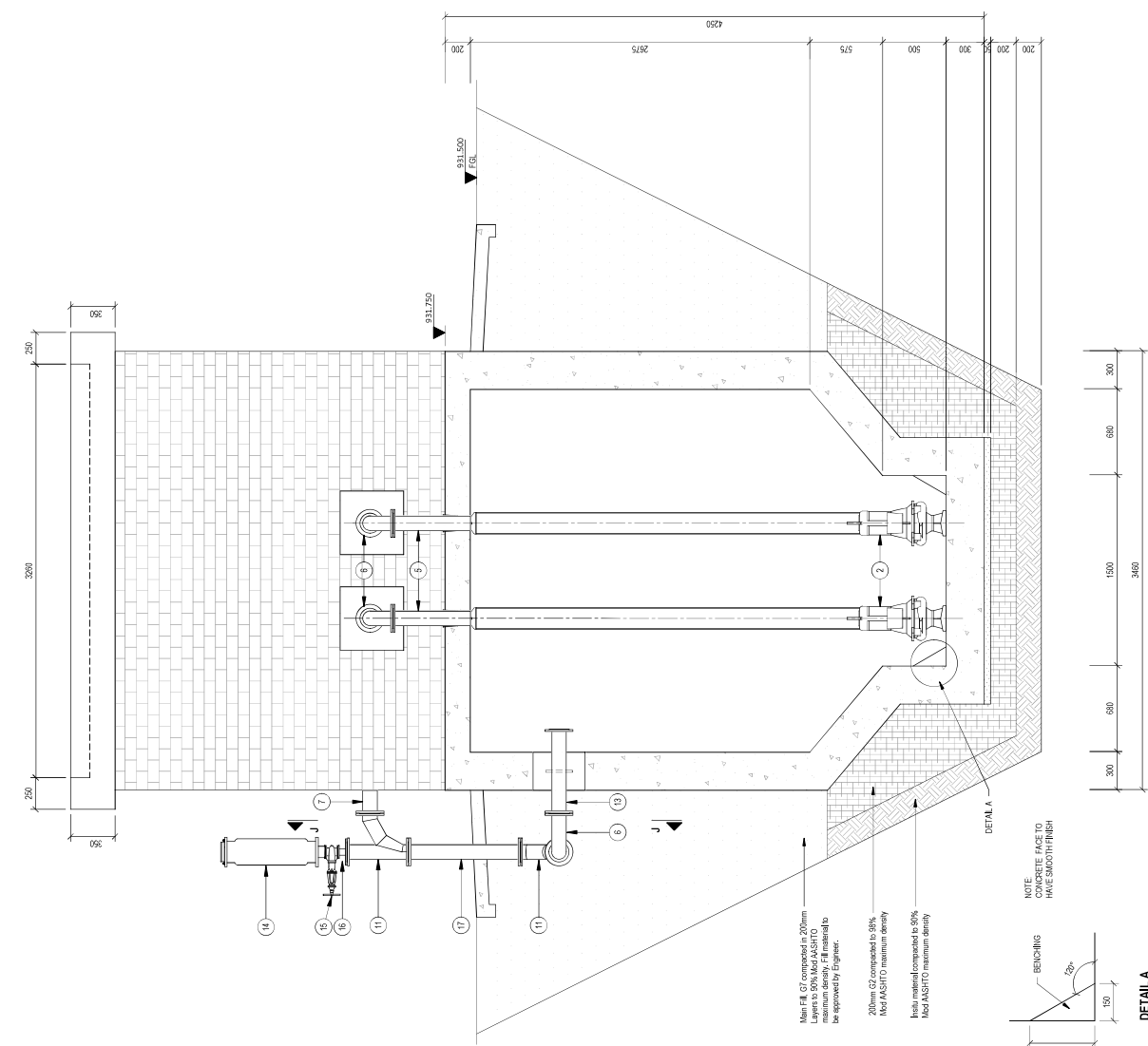
CAPACITY: DIRECTOR
 DATE:
 PROJECT No.: 200579114

**IXOPO SEWER UPGRADE:
 CONSTRUCTION OF BULK
 SEWER LINES AND PUMP
 STATION
 PHASE 1**

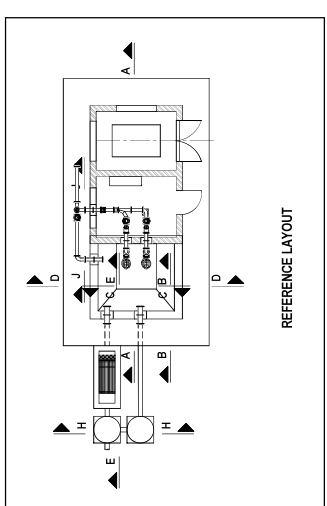
**PUMP STATION - BUILDING &
 MECHANICAL**

SECTIONS B-B AND D-D

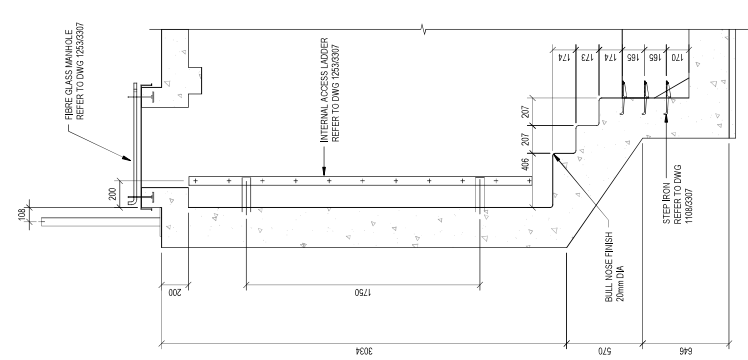
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DRAWN: SK	SHEET: 01
CHECKED: NGH	ORIGINAL SHEET SIZE: A1
SCALE: AS SHOWN	REV: A
DRAWING No.: 1253/3304	




SECTIONAL ELEVATION D-D
 SCALE: 1:20



REFERENCE LAYOUT



SECTION B-B
 SCALE: 1:20

TENDER	
IN VIEW CONTRACT SETS IN THIS DRAWING AND NO USE OR REPRODUCTION OR PUBLICATION THEREOF MAY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTINGO CONSULTING ENGINEERS.	
REV	DESCRIPTION
A	FOR TENDER
SK	DATE
BY	11/10/19
HARRY GWALA DISTRICT MUNICIPALITY ALIMA STREET PRIVATE BAG 2491 FIC 300 TEL 088 848 870 FAX 088 84 1761	
APPROVED ON BEHALF OF HARRY GWALA	
CAPACITY:	
DATE:	
DW DRAWING No.	
CONTRACT No. HG180824GSDW020	
	
P.O. Box 65596 4th Floor, 111 5010 Tel: 011-2506900 Fax: 011-2506901 Email: admin@dartingo.co.za	
APPROVED ON BEHALF OF DARTINGO CONSULTING ENGINEERS	
CAPACITY: DIRECTOR	
DATE:	
PROJECT:	

**IXOPO SEWER UPGRADE:
CONSTRUCTION OF BULK
SEWER LINES AND PUMP
STATION
PHASE 1**

**PUMP STATION - BUILDING &
MECHANICAL**

**SECTIONS C-C E-E F-F G-G AND
H-H**

DESIGNED: SK	DATE: 11/10/19
DRAWN: SK	SHEET: 01
CHECKED: NGH	ORIGINAL SHEET NO: A1
SCALE: AS SHOWN	REV: A
DRAWING No:	1253/3305

DRAWINGS TITLE

PUMP STATION - BUILDING & MECHANICAL

SECTIONS C-C E-E F-F G-G AND H-H

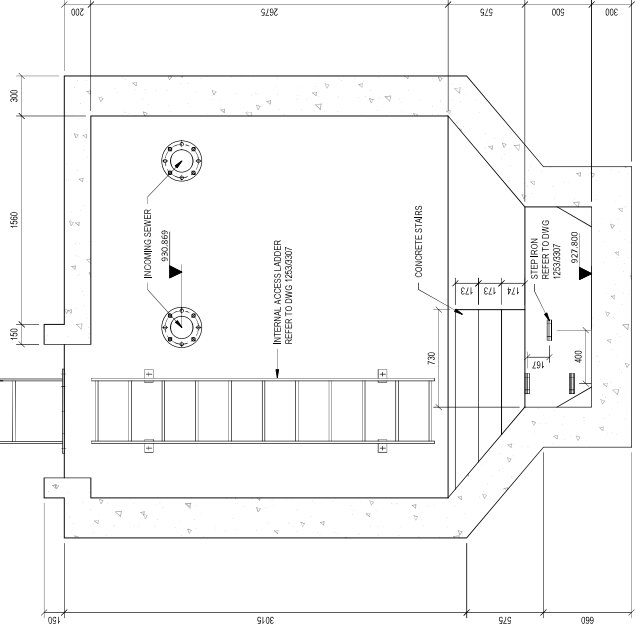
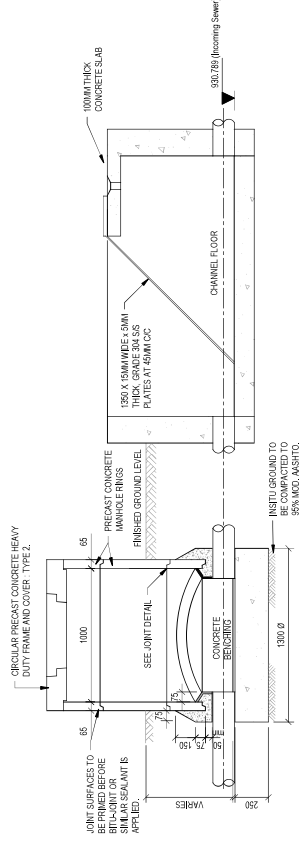
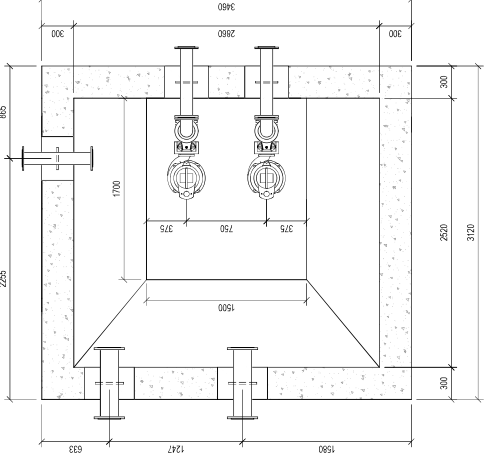
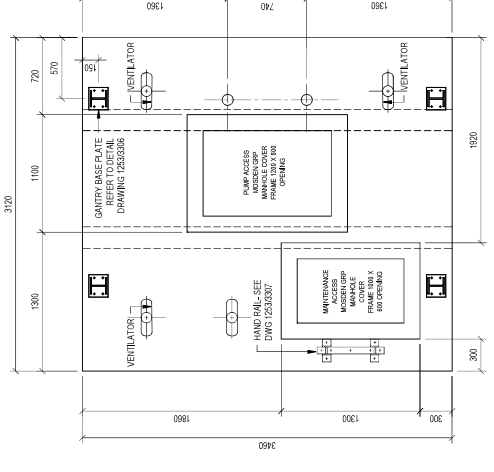
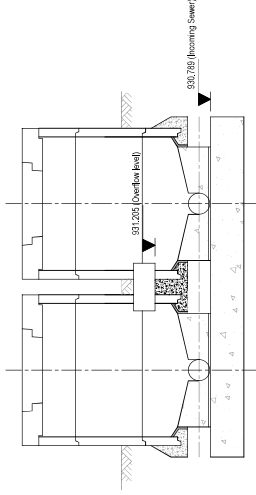
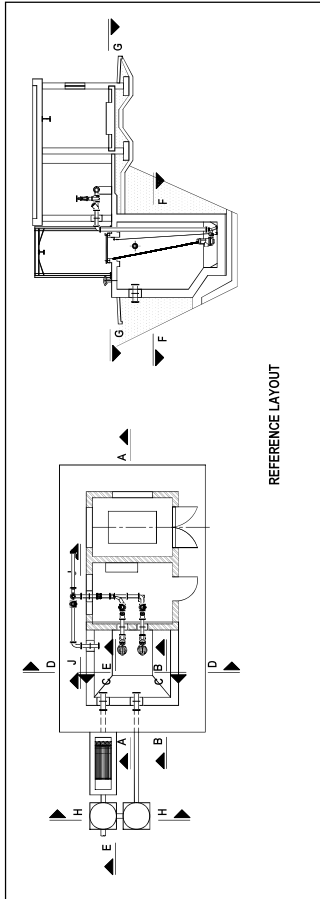
DESIGNED: SK DATE: 11/10/19

DRAWN: SK SHEET: 01

CHECKED: NGH ORIGINAL SHEET NO: A1

SCALE: AS SHOWN REV: A

DRAWING No: 1253/3305



50
100mm
ORIGINAL SCALE

TENDER

NO WORK COMMENCEMENT AT THIS DRAWING AND NO USE OR REPRODUCTION OR ADAPTATION THEREOF OR ANY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTINGO CONSULTING ENGINEERS.

REV.	DESCRIPTION	SK	BY	DATE
A	FOR TENDER	SK	BY	11/10/19

HARRY GWALA DISTRICT MUNICIPALITY

ALUMA STREET
PRIVALE ROAD 5051
020
7600
TEL 083 846 8790
FAX 083 846 1791

APPROVED ON BEHALF OF HARRY GWALA

CAPACITY:
DATE:
DRAWING No. HCGEM2HSDM0230
CONTRACT No. HCGEM2HSDM0230

DARTINGO CONSULTING ENGINEERS (Pty) Ltd.
CONSULTING CIVIL & STRUCTURAL ENGINEERS

P.O. Box 65596
1515
SUNNINGDALE
2009
Tel: 021-2969062
Fax: 021-2969067
Email: admin@dartingo.co.za

APPROVED ON BEHALF OF DARTINGO CONSULTING ENGINEERS

CAPACITY: DIRECTOR
DATE:
PROJECT

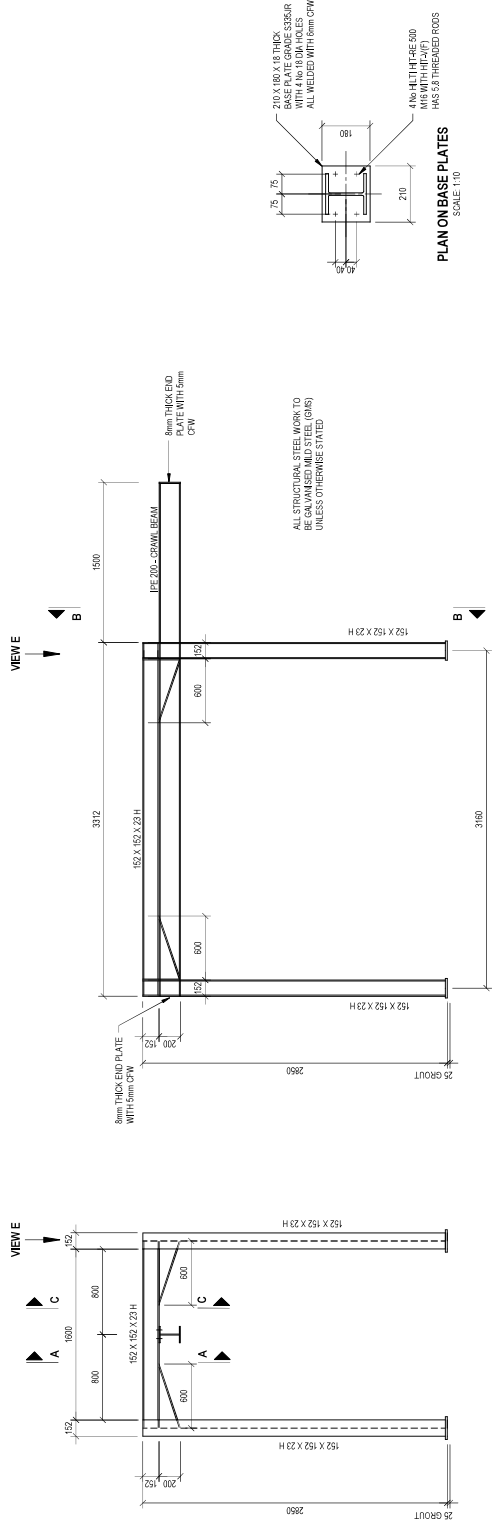
Pi No: 2002/1414

**IXOPO SEWER UPGRADE:
CONSTRUCTION OF BULK
SEWER LINES AND PUMP
STATION
PHASE 1**

**PUMP STATION - BUILDING &
MECHANICAL**

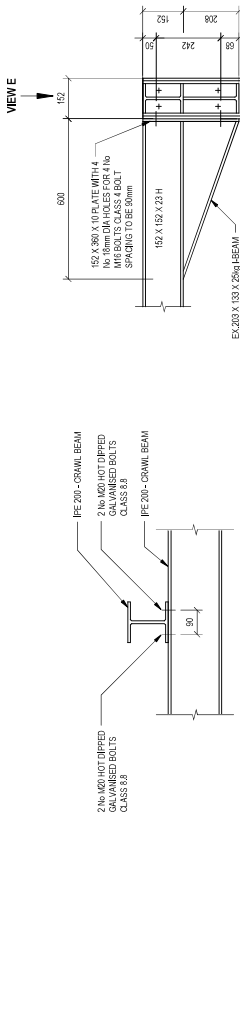
**STRUCTURAL STEEL GANTRY &
CRAWL BEAM DETAILS**

DESIGNED - SK	DATE: 11/10/19
DRAWN - SK	SHEET: 01
CHECKED - NGH	ORIGINAL SHEET NO: A1
SCALE: AS SHOWN	REV: A
DRAWING No: 1253/3306	



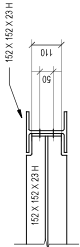
SECTION B-B
SCALE 1:25

SIDE ELEVATION
SCALE 1:25

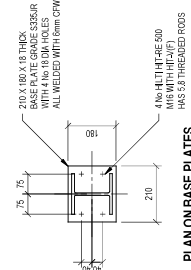


**SECTION A-A
AT CRAWL BEAM SUPPORT POINTS**
SCALE 1:10

ELEVATION C-C
SCALE 1:10

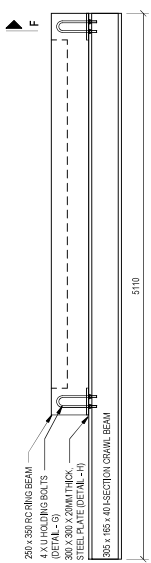


PLAN VIEW
SCALE 1:10

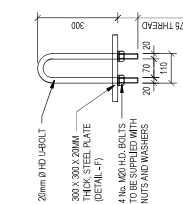


PLAN ON BASE PLATES
SCALE 1:10

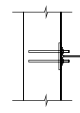
STRUCTURAL STEEL GANTRY DETAIL



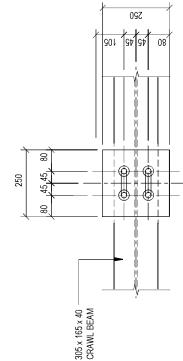
ELEVATION OF CRAWL BEAM
SCALE 1:25



**DETAIL G
F1 HOLDING BOLTS**
SCALE 1:10

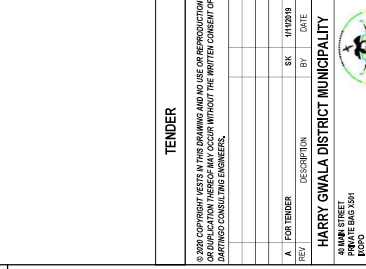
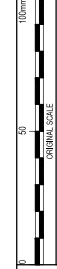


SECTION F-F
SCALE 1:25



**DETAIL H
STEEL BEAM**
SCALE 1:10

CRAWL BEAM IN GENERATOR ROOM



TENDER

NO WORK CONTRACT LETTER IN THIS DRAWING AND NO USE OR REPRODUCTION OR APPLICATION THEREOF MAY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTING CONSULTING ENGINEERS.

REV	DESCRIPTION	DATE	BY
A	FOR TENDER	11/10/19	SK

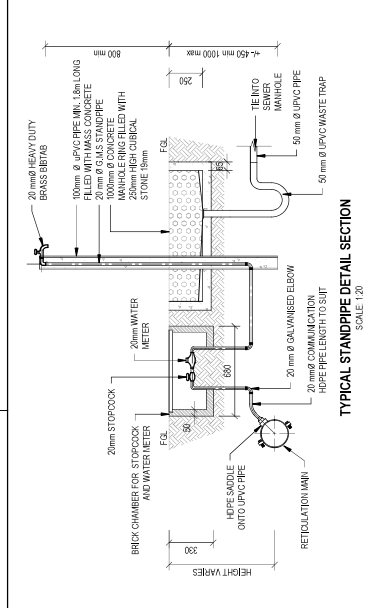
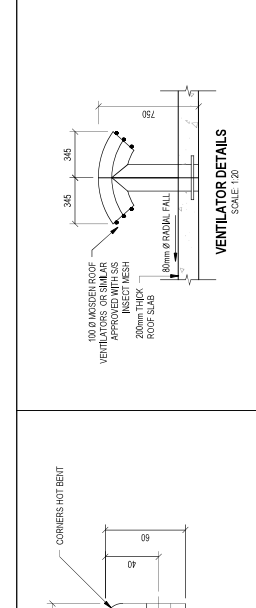
HARRY GWALA DISTRICT MUNICIPALITY
ALUMA STREET
PRIVATE BAG 3491
HARRY GWALA
TEL: 083 848 8790
FAX: 083 848 1791

APPROVED ON BEHALF OF HARRY GWALA

DARTING CONSULTING ENGINEERS (Pty) Ltd.
CONSULTING CIVIL & STRUCTURAL ENGINEERS
P.O. Box 65596
1016 Midway Rd
1600
Tel: 011-2569600
Fax: 011-2569601
Email: admin@darting.co.za

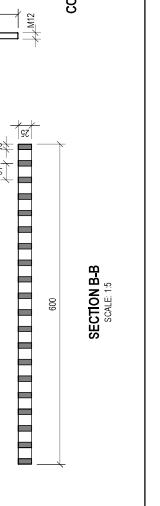
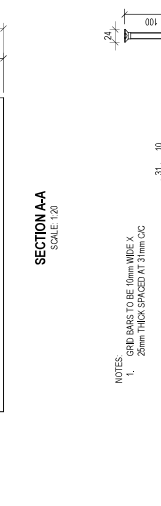
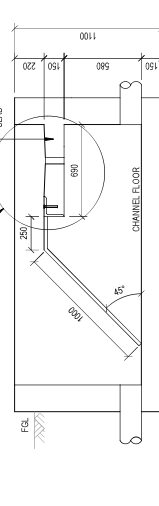
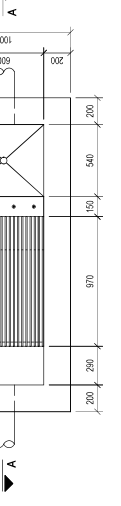
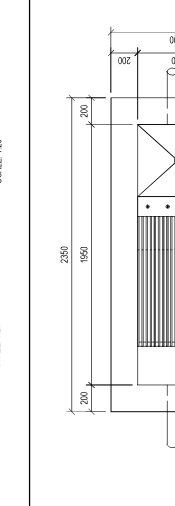
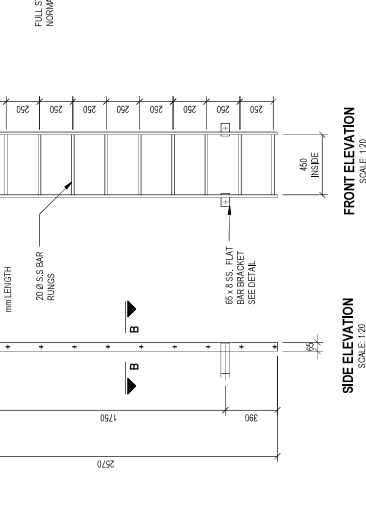
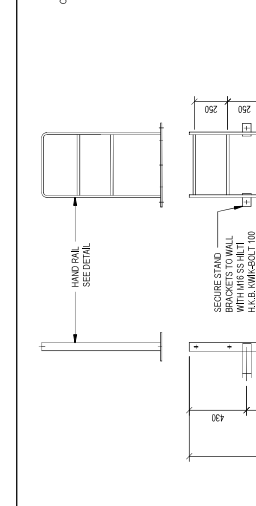
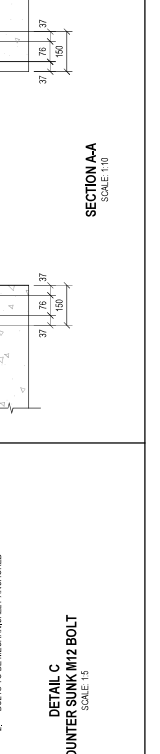
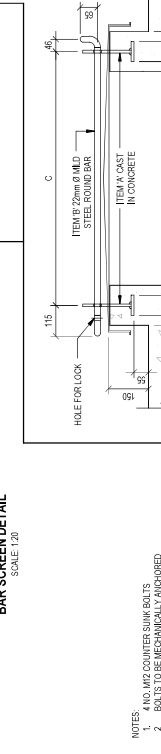
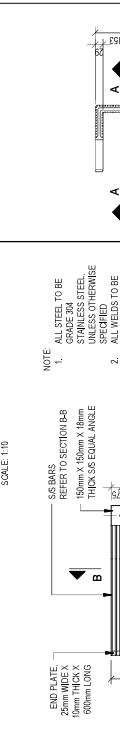
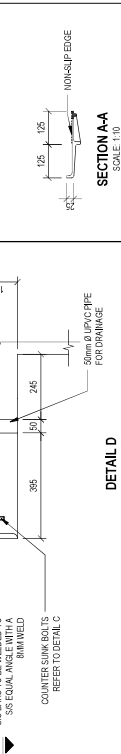
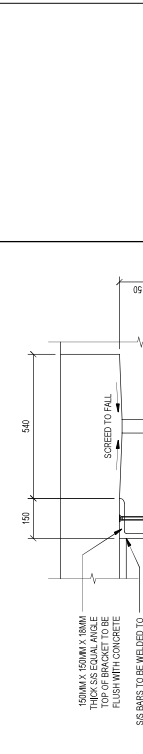
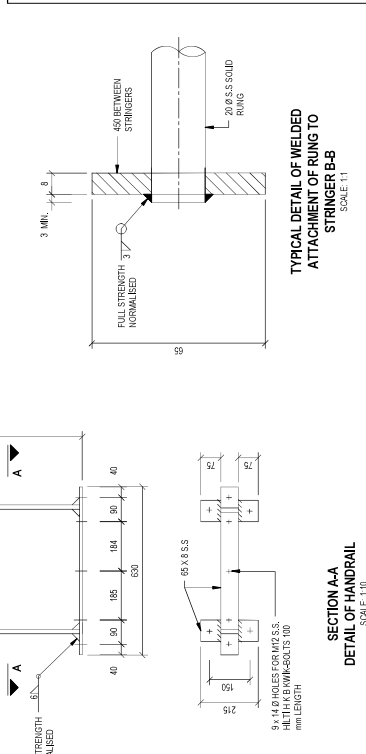
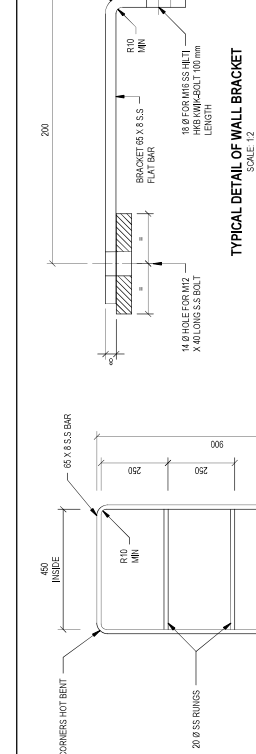
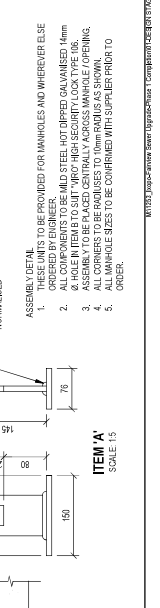
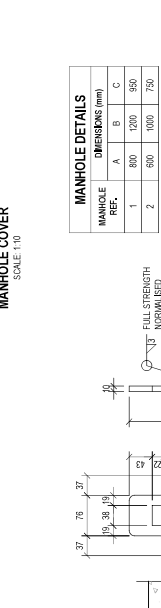
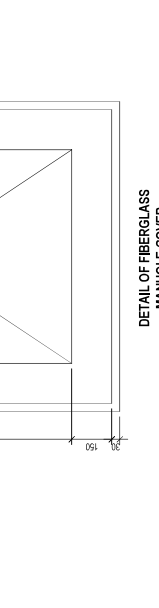
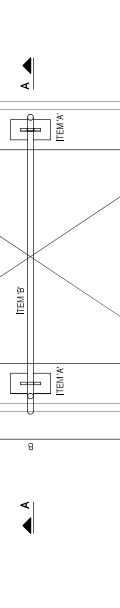
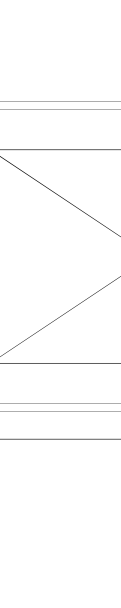
APPROVED ON BEHALF OF DARTING CONSULTING ENGINEERS

CAPACITY: _____
DATE: _____
DRAWING No. _____
CONTRACT No. HGMBSM20020



ASSEMBLY DETAILS TO BE PROVIDED FOR MANHOLES AND WHEREVER ELSE ORDERED BY ENGINEER.

- ALL COMPONENTS TO BE MILD STEEL NOT DIPPED GALVANIZED 4mm THICK UNLESS OTHERWISE SPECIFIED.
- ALL CORNERS TO BE ROUNDED CENTRALLY BY PRESS MANDREL OR BENDING.
- ALL CORNERS TO BE ROUNDED TO 10mm RADIUS AS SHOWN.
- ALL MANHOLE SIZES TO BE CONFIRMED WITH SUPPLIER PRIOR TO ORDER.



NOTES:
RELATING TO GENERAL ELECTRICAL INSTALLATION:
ALL DRAWINGS TO BE READ IN CONJUNCTION WITH LATEST DRAWINGS & ELECTRICAL SPECIFICATIONS
ELECTRICAL INSTALLATION TO COMPLY IN FULL TO STANDARDS AND SPECIFICATIONS:
THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR SETTING OUT PRIOR TO COMMENCING ANY ELECTRICAL WORK. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT IMMEDIATELY UPON COMMENCING OF ANY ELECTRICAL WORK. PLEASE NOTE ALL DIMENSIONS TO CENTRE OF FITTING EXCEPT WHERE OTHERWISE INDICATED
ALL DIMENSIONS TO BE CENTRE OF THE FITTING EXCEPT WHERE OTHERWISE STATED
SOCKET OUTLETS TO BE MOUNTED AT ~300mm A.F.F.L AND LIGHT SWITCHES AT +1400MM A.F.F.L. ALL DIMENSIONS TO CENTRE LINE UNLESS OTHERWISE INDICATED

POWER SCHEDULE

SYMBOL	DESCRIPTION
DB	Distribution Board
1x 16A, Reversed Single-Phase Standard SSO @ 300mm A.F.L. (Unless Shown Otherwise)	
2x 16A, Reversed Single-Phase Standard SSO @ 300mm A.F.L. (Unless Shown Otherwise)	
1x 16A, Reversed Single-Phase SSO (Surface Mounted)	
1x 16A, Reversed Standard Single-Phase SSO (Date Country)	
20A CP Isolator @ 7.200mm A.F.L. (Date @ 1.00)	
5-Pin Socket Outlet, Incl. Isolator (Rating As Shown)	
1x 16A SSO In Weatherproof Enclosure/On Box	
Single-Phase Power Unit	
Three-Phase Isolator	
Electrical Cable To Pumps	

TENDER

IN VIEW CONTRACTOR GETS IN THE DRAWING AND USE ON REPRODUCTION OR APPLICATION THEREOF ANY OCCUR WITHOUT THE WRITTEN CONSENT OF DARTING CONSULTING ENGINEERS.

SLEEVE SCHEDULE

SYMBOL	DESCRIPTION
—	100mm Sleeve

SWITCHBOARD SPECIFICATION

CONSTRUCTION	DESCRIPTION
Floor standing (over trench)	
Surface mounted	
Self-enclosed	
Fully recessed	
On concrete plinth	

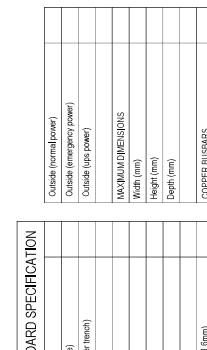
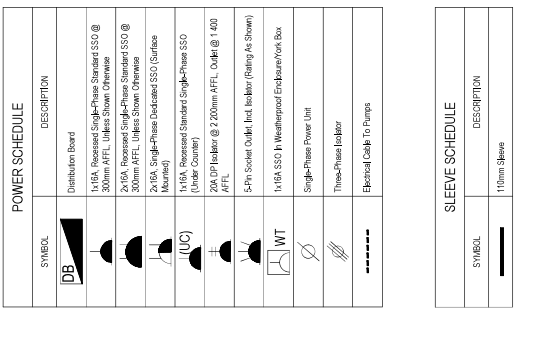
MAXIMUM DIMENSIONS

DESCRIPTION	UNIT
Width (mm)	
Height (mm)	
Depth (mm)	

INSIDE LABELLING

DESCRIPTION	UNIT
Engaged letters (designation)	
Engaged letters (numbers)	
Typed legends (titles)	
Cartholder on front panel	
Cartholder inside door	
Cartholder supply separately	

GENERAL NOTES:
1. ALLOW 20% SPARE CAPACITY FOR FUTURE
2. INSTALLATIONS TO COMPLY IN FULL TO LATEST SANS 1042 AND ALL APPLICABLE STANDARDS & SPECIFICATIONS
3. CONTRACTOR TO BALANCE LOAD EQUALLY OVER MULTIPHASE SUPPLY
4. ELECTRICAL WORK SHALL BE INSTALLED IN THE MEANS OF A FINISHED BUILDING PANELS, BY MEANS OF A FINISHED BUILDING PANELS.
5. TO BE OF DP FOR B3 CONSTRUCTION.



SCHEDULE

DESCRIPTION	ITEM
SWITCH-DISCONNECTOR	(Symbol)
CIRCUIT BREAKER	(Symbol)
EARTH LEAKAGE UNIT (NO OVERLOAD PROTECTION)	(Symbol)
EARTH LEAKAGE UNIT (WITH OVERLOAD PROTECTION)	(Symbol)
CONTACTOR	(Symbol)
BYPASS SWITCH	(Symbol)
WATTMETER	(Symbol)
FIREMAN SWITCH	(Symbol)
REMOTE STOP/START SWITCH CONTROL	(Symbol)
TIME SWITCH (BATTERY BACK-UP)	(Symbol)

LIGHTING SCHEDULE

DESCRIPTION	ITEM
IP65 Surface 2W CFL Bulbhead	(Symbol)
Floodlight with 2.0W CFLs on wall	(Symbol)
1200 IP 65 1x2W Surface Compact Flood	(Symbol)
1200 IP 65 2x2W Surface Compact Flood	(Symbol)
Occupancy Sensor	(Symbol)
Photo cell	(Symbol)
2x 16A, 1-way, recessed light switch @ 1200 AFPL	(Symbol)
3x 16A, 1-way, recessed light switch @ 1200 AFPL	(Symbol)
IP57 Street Light With 70W W Lamp on the Fero Glass Pole	(Symbol)

SWITCHBOARD SPECIFICATION

CONSTRUCTION	DESCRIPTION
Floor standing (over trench)	
Surface mounted	
Self-enclosed	
Fully recessed	
On concrete plinth	

