

PW344/2017



public works

Department:  
Public Works  
REPUBLIC OF SOUTH AFRICA

**VOLUME 3**

**TYPICAL ENGINEERING  
DETAILS**

**APPROPRIATE DEVELOPMENT OF INFRASTRUCTURE ON  
DOLOMITE:  
MANUAL FOR CONSULTANTS**

**STANDARD SPECIFICATIONS APPLICABLE TO DOLOMITE  
STABILITY INVESTIGATIONS (DSI) AND THE PLANNING,  
ENGINEERING REQUIREMENTS AND MANAGEMENT OF  
DEVELOPMENT ON DOLOMITE LAND**

Directorate: Civil & Structural Engineering  
Dolomite Risk Management Unit  
Ndinaye Building 5031  
188 Schoeman Street  
Pretoria

**AUGUST 2017**

# **VOLUME 3 : TYPICAL ENGINEERING DETAILS**

1. Water Details
2. Sewer Drainage Details
3. Stormwater Details
4. Road Details
5. Paving Details
6. Sinkhole Details
7. Survey Beacon Details
8. Cable Details

# WATER DETAILS

## WATER DETAILS: LIST OF DRAWINGS

DT 01/W	FIRE HYDRANT TYPE 1
DT 02/W	FIRE HYDRANT TYPE 2
DT 03/W	FIRE HYDRANT LAYOUT FROM OVERHEAD WATERMAIN. TYPE 3
DT 04/W	DETAIL OF FIRE HYDRANT KEY
DT 05/W	DETAIL OF HDPE WATERPIPING NEXT TO BUILDINGS.
DT 06/W	OPEN PIPE DUCT IN ROAD AND WALKWAYS WITH STANDARD RECTANGULAR, HORIZONTAL GRATING COVER.
DT 07/W	COLUMN, SUPPORT, BRACKETS AND FOUNDATION DETAILS FOR OVERHEAD WATER RETICULATION.
DT 08/W	PIPE BRACKET TO SECURE WATERPIPING TO BUILDINGS.
DT 11-1/W	CONCRETE VALVE BOX DETAILS.
DT 11-2/W	TYPICAL PIPE SCHEDULE SHEET
DT 11-3/W	VALVE BOX DETAILS FOR ISOLATING VALVE
DT 11-4/W	CONCRETE VALVE BOX DETAILS FOR ZONE METER
DT 11-5/W	CONCRETE VALVE BOX DETAILS FOR ZONE METER
DT 12/W	JUNCTION OF HDPE PIPE IN SIDEWALL
DT 16/W	CONCRETE VALVE BOX TYPE 2
DT 17/W	CONCRETE VALVE BOX TYPE 3
DT 19/W	EXISTING MANHOLE INLET OVER EXISTING SERVICE DUCT
DT 20/W	NEW WATER CONNECTION TO BUILDING OVER EXISTING SERVICE
DT 21/W	NEW WATER CONNECTION TO BUILDING
DT 24/W	CONCRETE VALVE BOX
DT 26/W	CONCRETE MANHOLE DETAILS
DT 27/W	CONCRETE MANHOLE DETAILS
DT 28/W	TYPICAL BOOSTER CONNECTION IN HDPE CHAMBER
DT 28-1/W	PLAN OF HDPE BOOSTER CHAMBER
DT 28-2/W	PLAN OF TYPICAL HDPE JUNCTION MANHOLE
DT 29/W	TYPICAL FIRE HYDRANT IN HDPE CHAMBER
DT 29-1/W	PLAN OF FIRE HYDRANT CHAMBER - IN LINE TYPE
DT 29-2/W	PLAN OF FIRE HYDRANT CHAMBER - ANGLED TYPE
DT 30/W	TYPICAL DETAILS OF PREFABRICATED HDPE CHAMBERS
DT 31/W	ROOF AND ACCESS COVER OF HDPE MANHOLE OVER TRAFFIC AREAS
DT 32/W	TYPICAL DETAILS OF SLEEVE PIPE SYSTEM AND ACCESS POINTS



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departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
WATER:  
WATER DETAILS  
LIST OF DRAWINGS.

scale

N.A.

date

30-09-2017

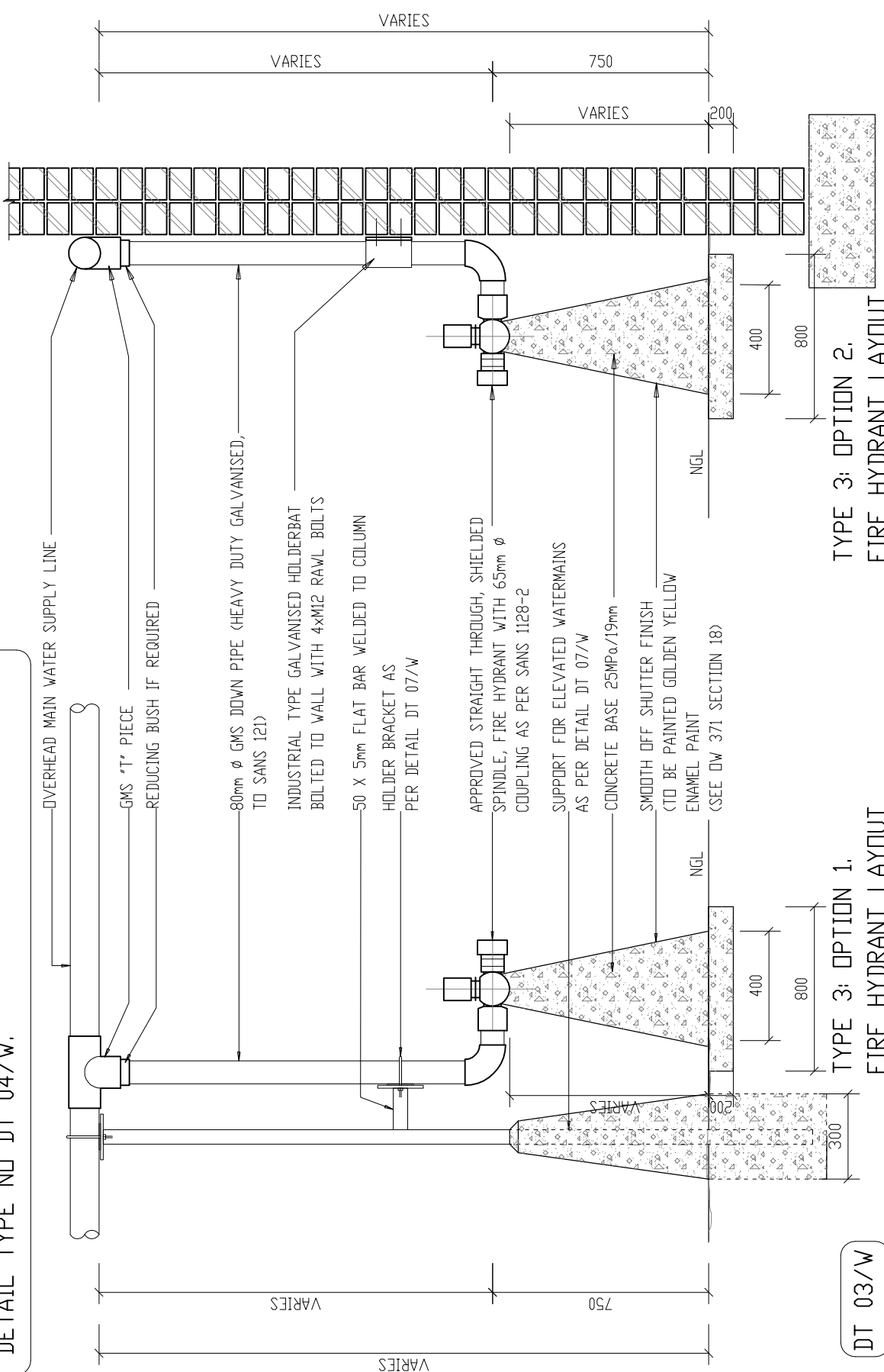
drawing number / type number

TYPE NO DT 00/W





**NOTE:**  
 -COMPLETE UNIT TO BE HOT DIPPED GALVANISED  
 -AFTER MANUFACTURING. (SANS 32/SANS 121) HEAVY DUTY  
 -SUPPLY EACH SITE WITH THREE HYDRANT KEYS AS PER  
 DETAIL TYPE NO DT 04/W.



DT 03/W

TYPE 3: OPTION 2.  
 FIRE HYDRANT LAYOUT  
 AGAINST BUILDING

TYPE 3: OPTION 1.  
 FIRE HYDRANT LAYOUT  
 FROM OVERHEAD WATERMAIN



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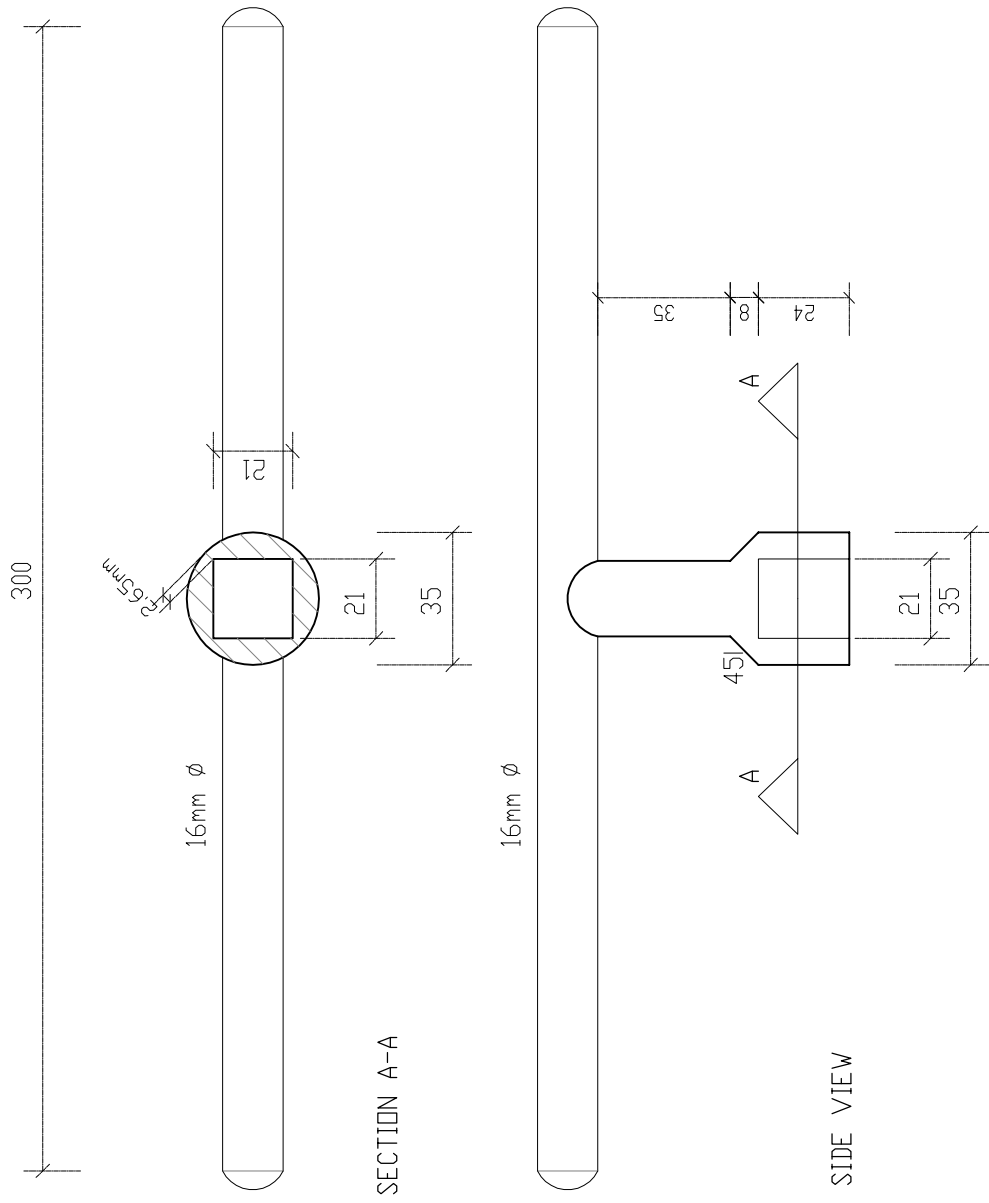
title  
 WATER:  
 FIRE HYDRANT LAYOUT  
 FROM OVERHEAD WATERMAIN.  
 TYPE 3.  
 (DIAGRAMMATIC)

scale  
 1 : 20

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 03/W

**NOTE:**  
 -COMPLETE UNIT TO BE HOT DIPPED  
 GALVANIZED AFTER MANUFACTURING  
 HEAVY DUTY(SANS 32 / SANS 121).



DT 04W



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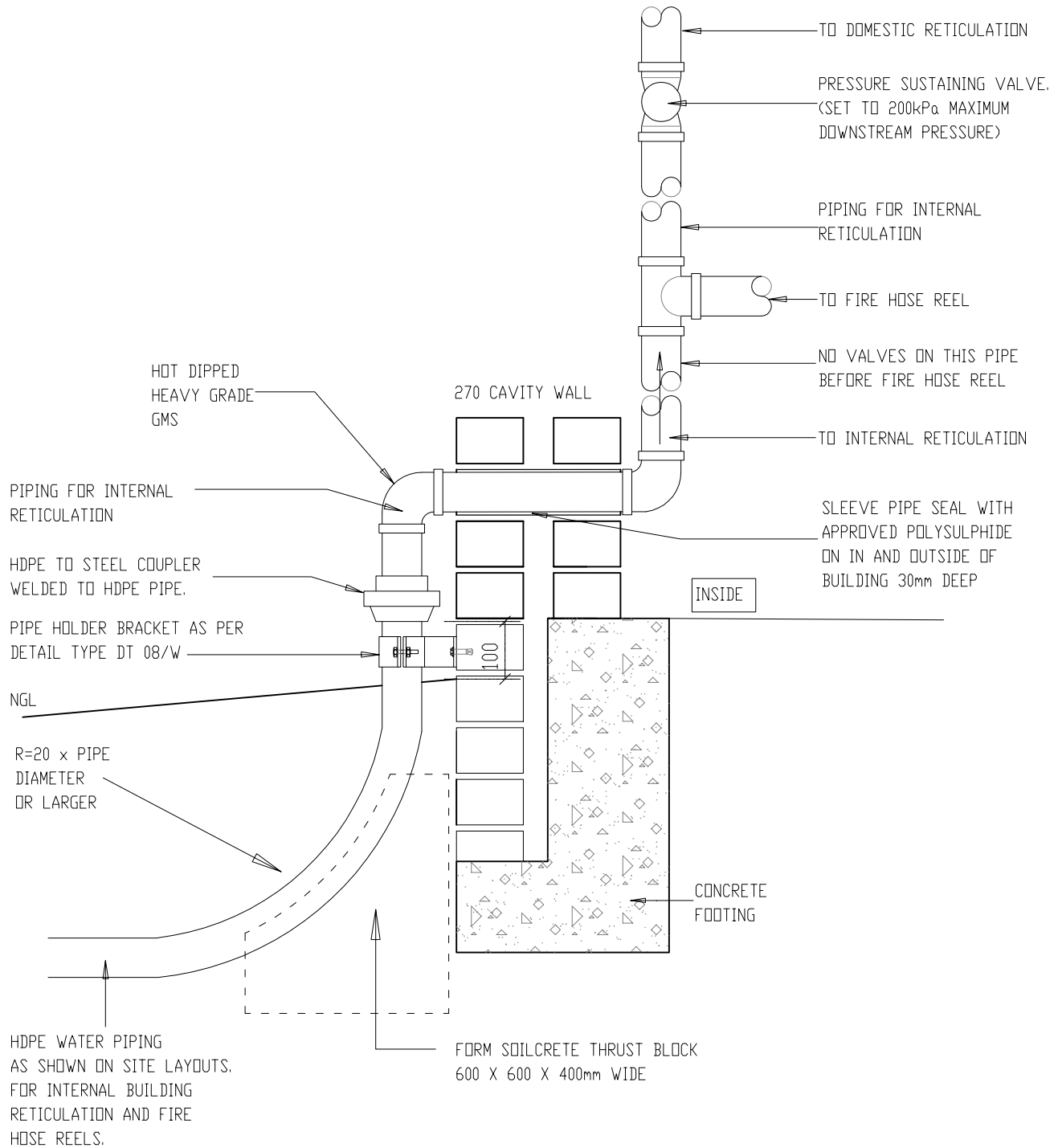
departmental  
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 FOR DOLOMITIC SOILS.

title  
 WATER:  
 DETAIL OF FIRE  
 HYDRANT KEY.  
 (DIAGRAMMATIC)

scale  
 1 : 2

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 04/W



DETAIL OF HDPE WATERPIPING  
(UP TO 63mm $\square$ ) NEXT TO BUILDINGS.

DT 05/W



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title  
WATER:  
DETAIL OF HDPE  
WATERPIPING NEXT  
TO BUILDINGS.  
(DIAGRAMMATIC)

scale  
1 : 10

date  
30-09-2017

drawing number / type number  
TYPE NO DT 05/W





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FOR DOLOMITIC SOILS.

title  
WATER:  
OPEN PIPE DUCT IN ROAD  
AND WALKWAYS WITH  
STANDARD RECTANGULAR  
HORIZONTAL GRATING COVER  
(DIAGRAMMATIC)

scale  
1 : 10

date  
30-09-2017

drawing number / type number  
TYPE NO DT 06/W

NOTE:  
-COMPLETE UNIT TO BE HOT DIPPED  
GALVANIZED AFTER MANUFACTURING  
HEAVY DUTY (SANS 32 / SANS 121).  
-ALLOW FOR WATER DRAINAGE  
FROM DUCT TO STORMWATER  
SYSTEM

RECTANGULAR CATWALK TYPE HORIZONTAL  
STEEL GRATING TRENCH COVER (HEAVY DUTY)  
EDGE AND CROSS BARS 40 X 4.5mm  
LONGITUDINAL BARS 25 X 4.5mm  
GRATING TO BE HOT DIPPED  
GALVANISED AFTER MANUFACTURING  
GRATING TO BE "BANDED".

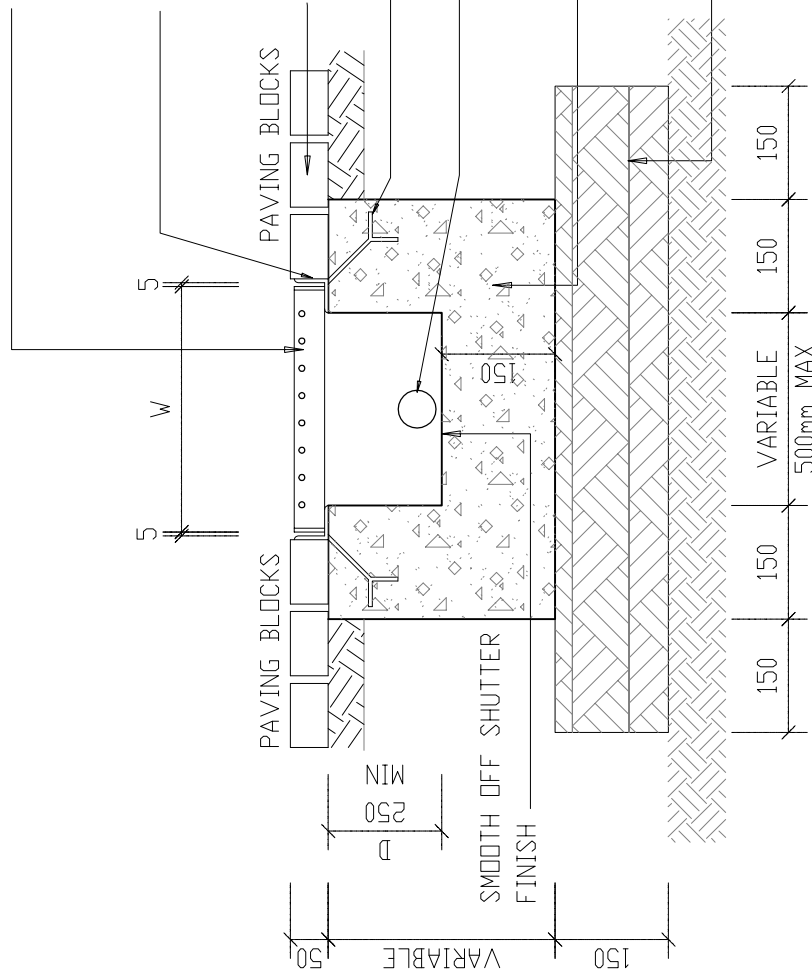
45X45mmX5mm HOT DIPPED GALVANISED  
ANGLE IRON TO SEAT GRATING,  
WITH TIE BACK BAR.

50mm THICK PAVING BLOCKS  
75 x 25 x 5mm FLAT IRON  
ANCHOR IN CONCRETE

GMS PIPE

30 MPa / 19mm CONCRETE

COMPACT TO 95% OF MOD AASHTO  
MAXIMUM DRY DENSITY AT OPTIMUM  
MOISTURE CONTENT.



DT 06/W



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FOR DOLOMITIC SOILS.

title  
WATER:  
COLUMN, SUPPORT,  
BRACKETS AND FOUNDATION  
DETAILS FOR OVERHEAD  
WATER RETICULATION.  
(DIAGRAMMATIC)

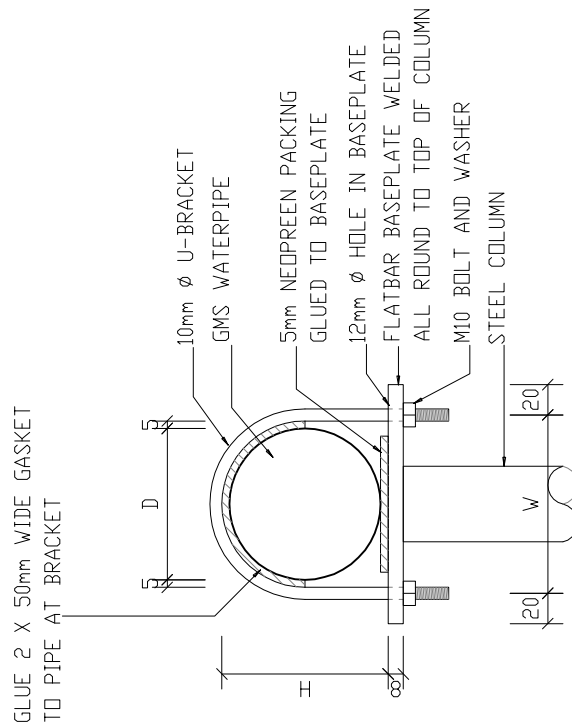
scale  
1:5 & 1:20

date  
30-09-2017

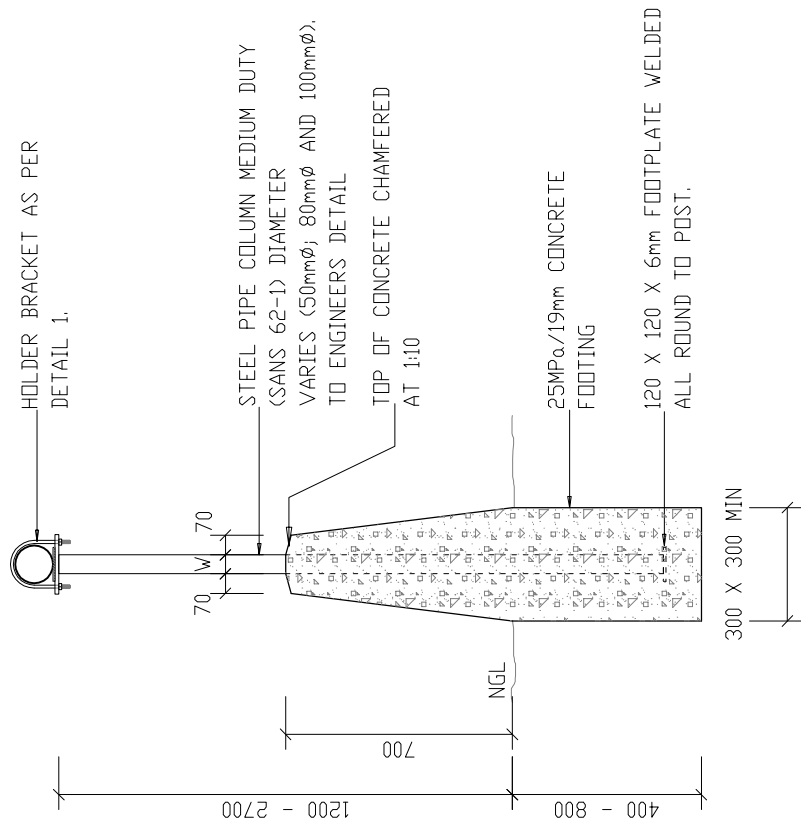
drawing number / type number  
TYPE NO DT 07/W

**NOTE:**

-COMPLETE UNIT TO BE HOT DIPPED  
GALVANIZED AFTER MANUFACTURING  
HEAVY DUTY(SANS 32 / SANS 121).  
-W AND D TO ENGINEERS DETAIL  
FOR COLUMN AND PIPE SIZE  
SYSTEM



DETAIL 1:  
TOP HOLDER BRACKET FOR  
OVERHEAD WATER RETICULATION.  
SCALE 1:5

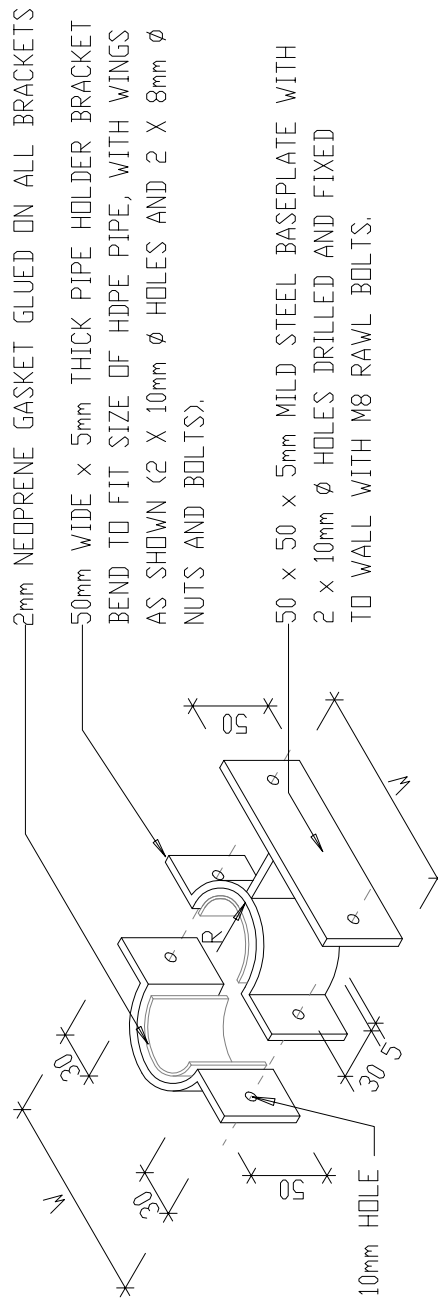


OVERHEAD WATERPIPE  
SUPPORT STAYS.  
SCALE 1:20

DT 07/W

NOTE:

- COMPLETE UNIT TO BE HOT DIPPED GALVANIZED AFTER MANUFACTURING HEAVY DUTY (SANS 32 / SANS 121).
- BRACKET SUITABLE FOR PIPE SIZE UP TO 63mm $\phi$ .



R = PIPE DIAMETER (OD) + 2mm  
W = R + 72mm



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title  
WATER:  
PIPE BRACKET TO SECURE  
WATERPIPING TO  
BUILDINGS.  
(DIAGRAMMATIC)

scale  
1 : 5

date  
30-09-2017

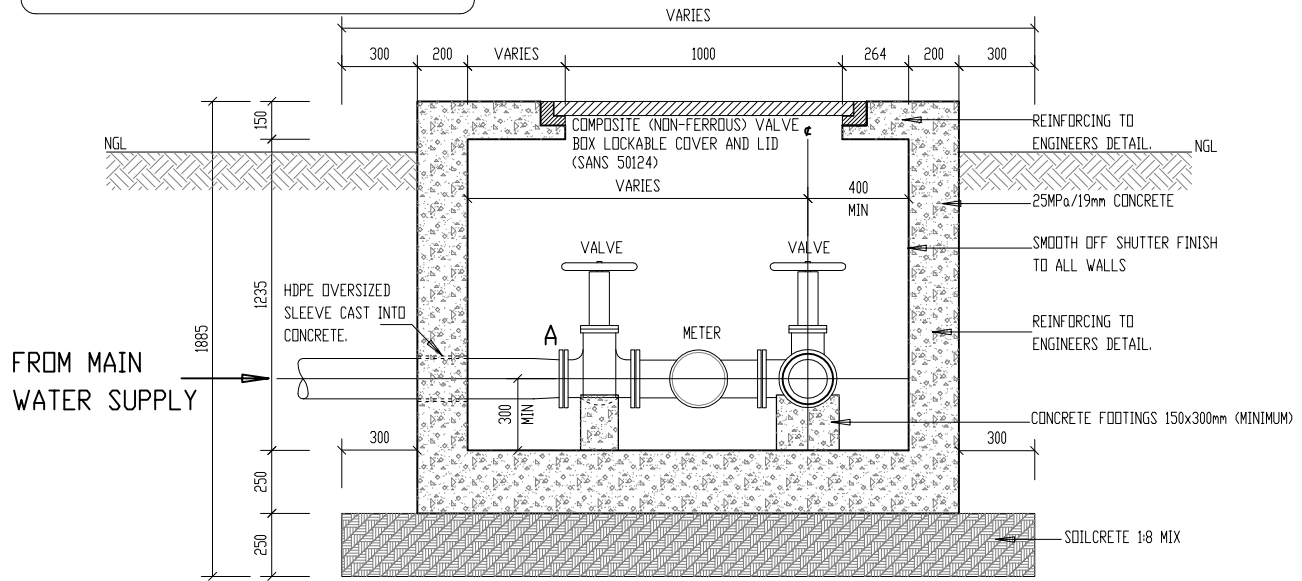
drawing number / type number  
TYPE NO DT 08/W

DT 08/W

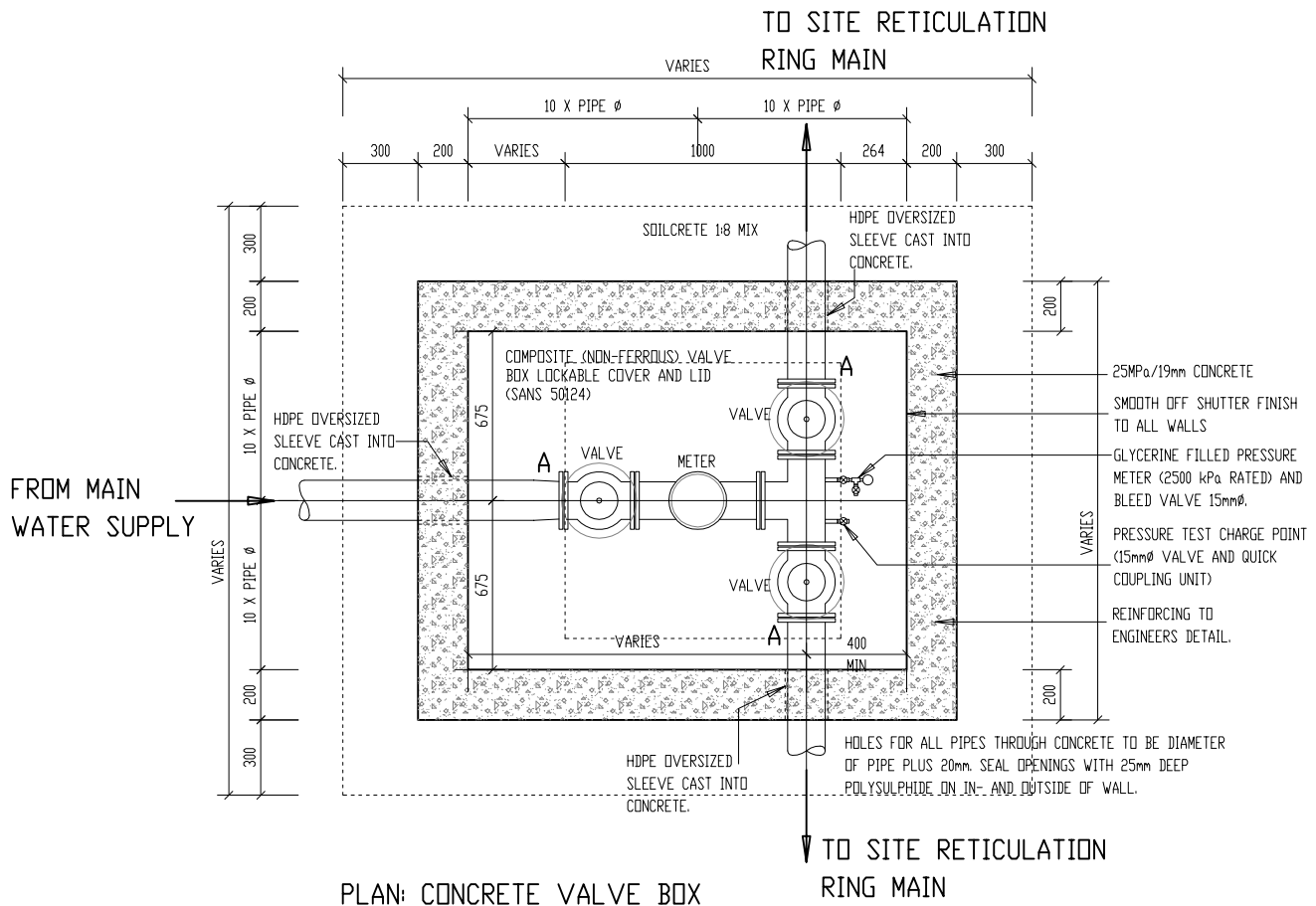
**NOTE:**

- FOR PIPE SCHEDULE FORMAT SEE  
DETAIL TYPE NO DT 11(2)/W
- ALL VALVES TO BE RIGHT  
HAND CLOSING.

A = STUB AND FLANGE WELDED TO HDPE PIPE  
AND FLANGE ADAPTORS TO PIPE END AND VALVE  
AS WELL AS VJ (STEPPED IF NEEDED) COUPLING  
IN BETWEEN TO LOOSEN FITTINGS IN VALVE BOX  
ALL FITTINGS TO BE NUMBERED P1,P2 ETC.  
AND INDICATED IN PIPE SCHEDULE.



SECTION: CONCRETE VALVE BOX



PLAN: CONCRETE VALVE BOX

TO SITE RETICULATION  
RING MAIN



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FOR DOLOMITIC SOILS.

title  
WATER:  
CONCRETE VALVE BOX  
DETAILS.  
(DIAGRAMMATIC)

scale  
1 : 30

date  
30-09-2017

drawing number / type number  
TYPE NO DT 11-1/W



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
WATER:  
TYPICAL PIPE SCHEDULE  
SHEET.  
(DIAGRAMMATIC)

scale  
N.A.

date  
30-09-2017

drawing number / type number  
TYPE NO DT 11-2/W

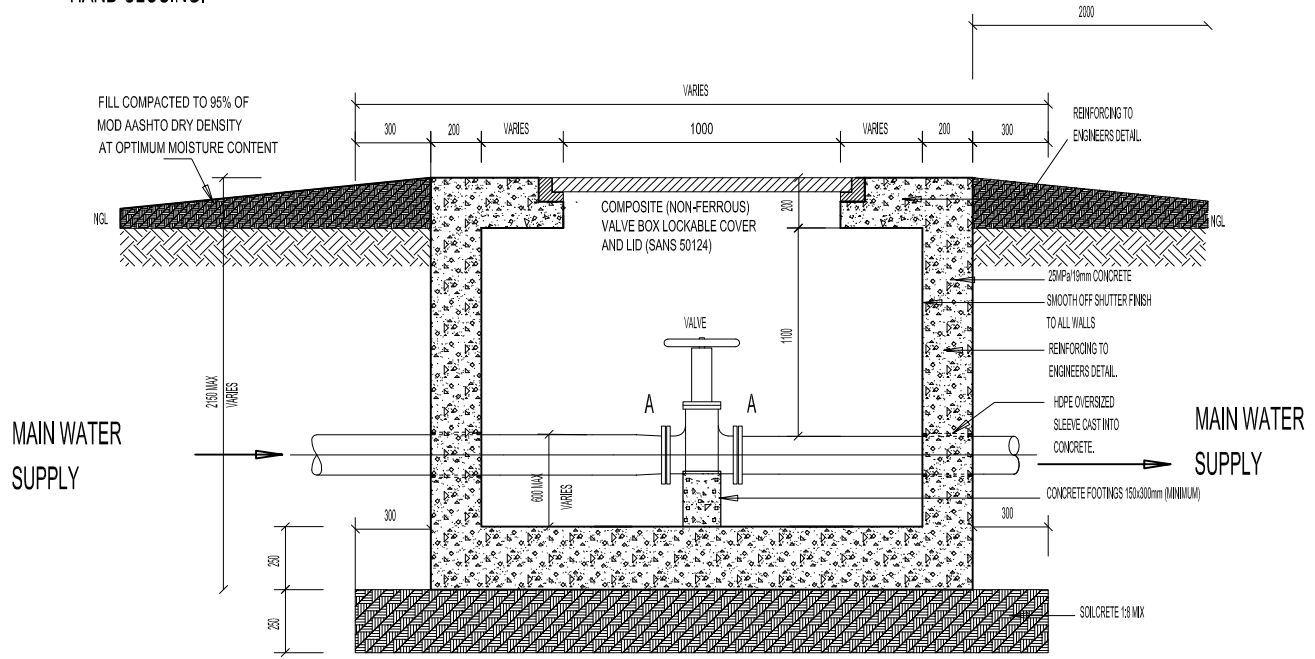
PIPE MARK OR FITTING	NUMBER	DIAMETER	DESCRIPTION	MATERIALS	SABS (SPEC)	CLASS	DRILLING TABLE	THREAD SIZE
P1								
P2								
P3								
P4								
P5								
P6								
P7								
P8								
P9								
P10								
P11								
P12								
P13								
P14								
P15								
P16								
P17								
P18								
P19								
P20								
P21								
P22								

TYPICAL PIPE SCHEDULE SHEET.

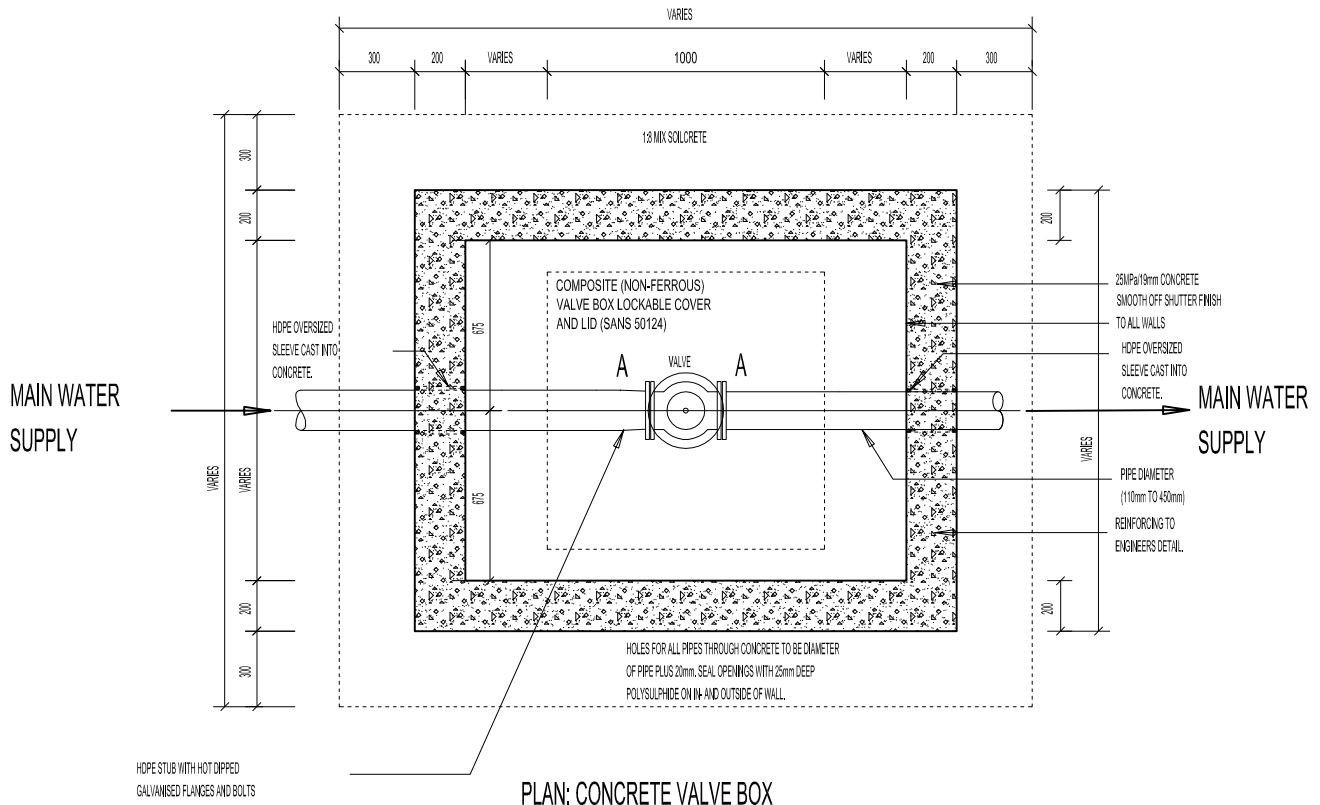
NOTE:

-ALL VALVES TO BE RIGHT  
HAND CLOSING.

A = STUB AND FLANGE WELDED TO HDPE PIPE



SECTION: CONCRETE VALVE BOX



PLAN: CONCRETE VALVE BOX



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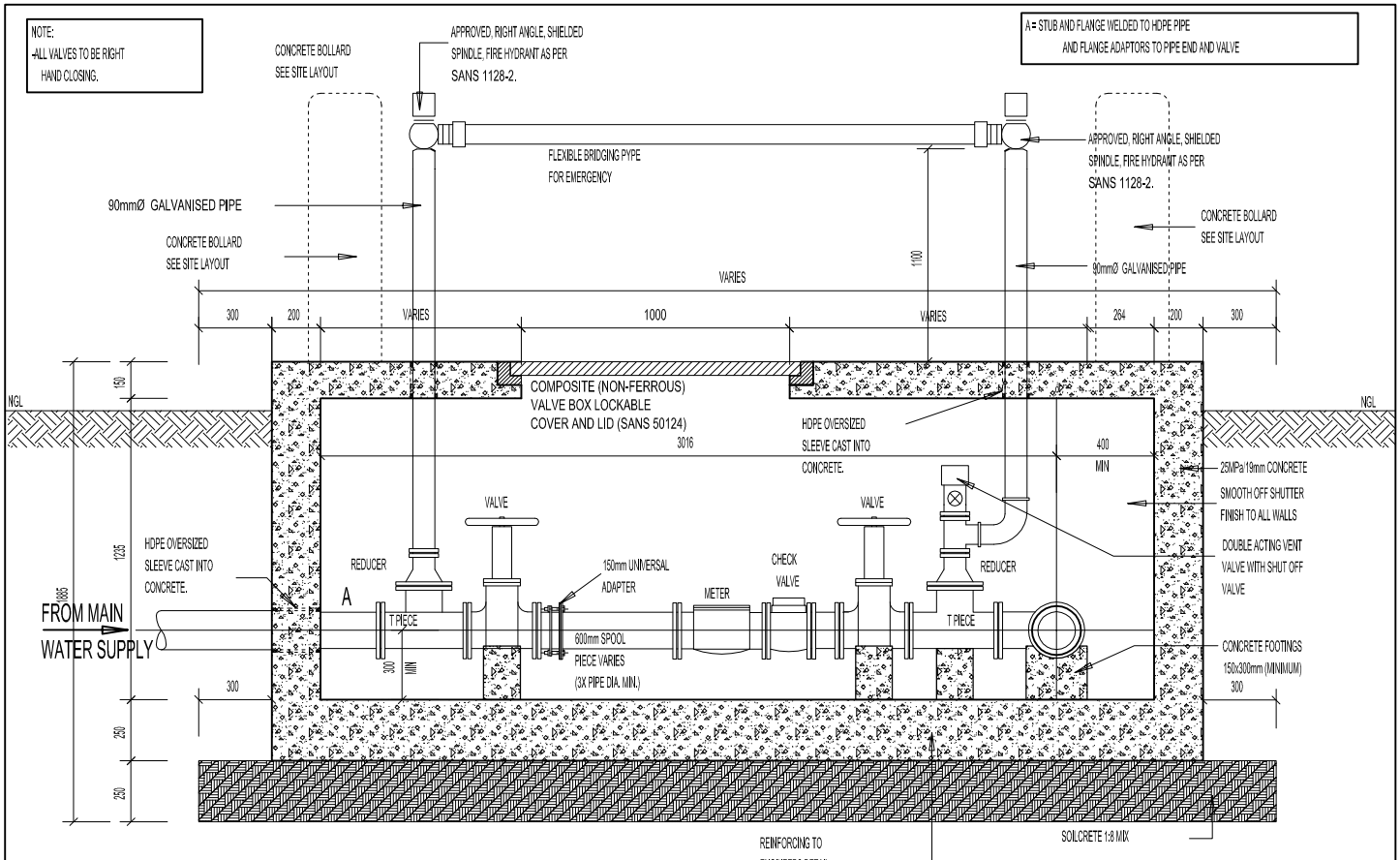
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
WATER:  
CONCRETE VALVE BOX  
DETAILS FOR ISOLATING  
VALVE ON BULK SYSTEM.  
(DIAGRAMMATIC)

scale  
1:30

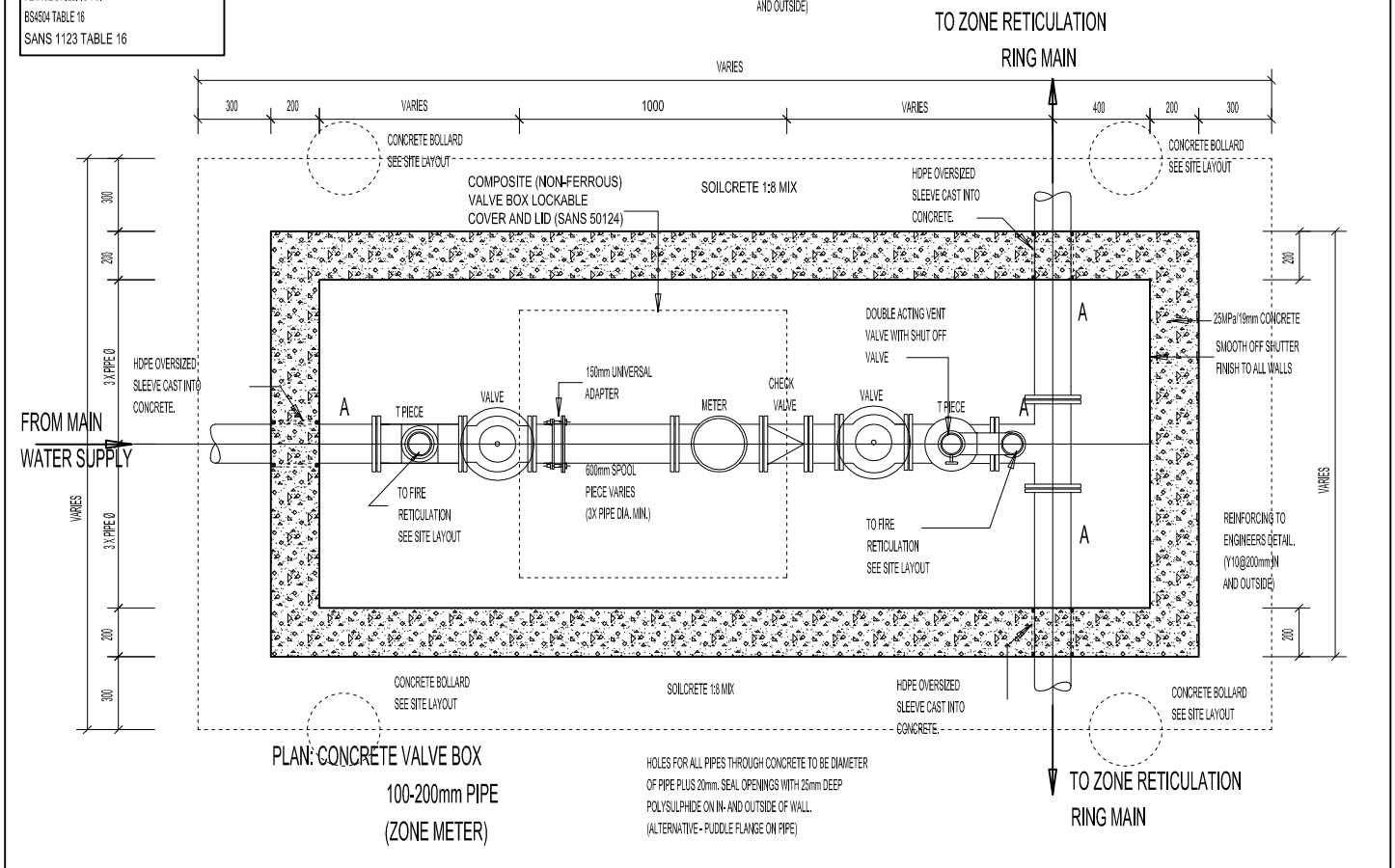
date  
30-09-2017

drawing number / type number  
TYPE NO DT 11-3/W




SECTION: CONCRETE VALVE BOX

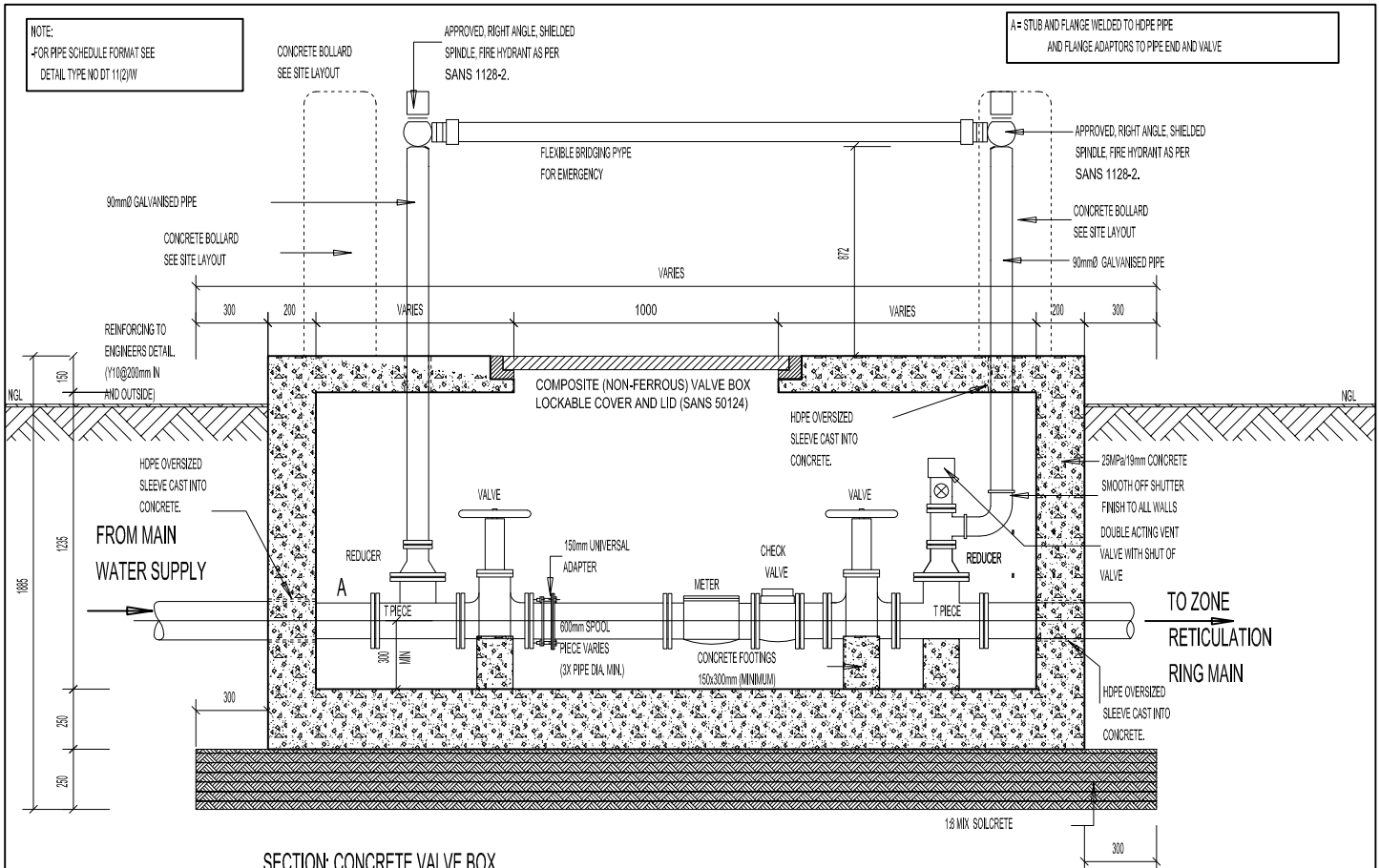
FLANGE DRILLING TO:  
BS4594 TABLE 16  
SANS 1123 TABLE 16



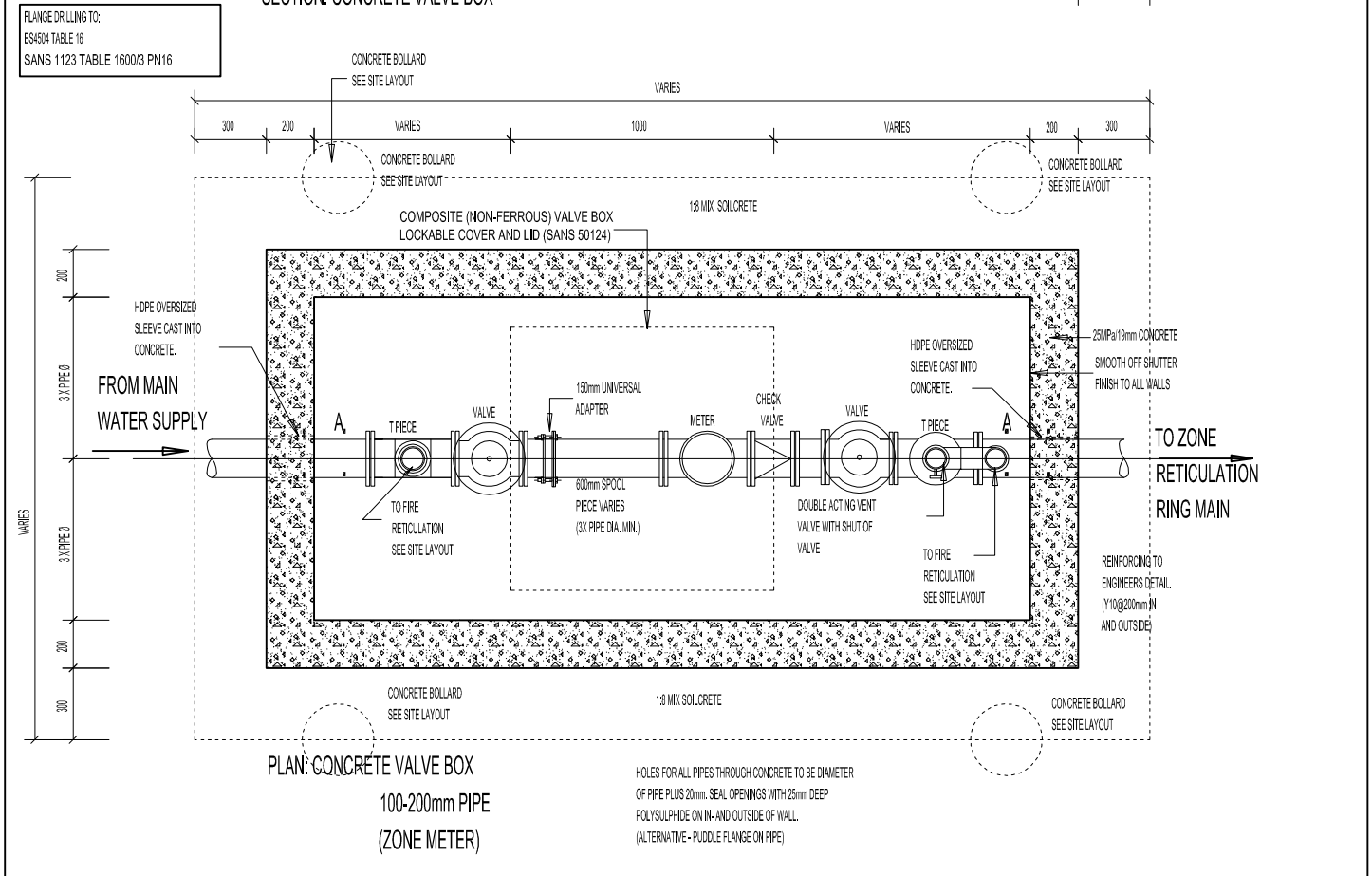
PLAN: CONCRETE VALVE BOX  
100-200mm PIPE  
(ZONE METER)

HOLES FOR ALL PIPES THROUGH CONCRETE TO BE DIAMETER OF PIPE PLUS 20mm. SEAL OPENINGS WITH 25mm DEEP POLYSULPHIDE ON IN- AND OUTSIDE OF WALL. (ALTERNATIVE - PUDDLE FLANGE ON PIPE)

 <p>DEPARTMENT OF PUBLIC WORKS Private Bag X65 Pretoria 0001 Tel (012) 337 2000</p>	<p>departmental DIAGRAMMATIC CIVIL ENGINEERING DETAILS FOR DOLOMITIC SOILS.</p>	<p>title WATER: CONCRETE VALVE BOX DETAILS (DIAGRAMMATIC) ZONE METER</p>	<p>scale 1:30</p>	<p>date 30-09-2017</p>
			<p>drawing number / type number TYPE NO DT 11-4/W</p>	



SECTION: CONCRETE VALVE BOX




PLAN: CONCRETE VALVE BOX  
100-200mm PIPE  
(ZONE METER)

Holes for all pipes through concrete to be diameter of pipe plus 20mm. SEAL OPENINGS WITH 25mm DEEP POLYSULPHIDE ON IN- AND OUTSIDE OF WALL. (ALTERNATIVE - PUDDLE FLANGE ON PIPE)

NOTE:  
FOR PIPE SCHEDULE FORMAT SEE  
DETAIL TYPE NO DT 11/2/W

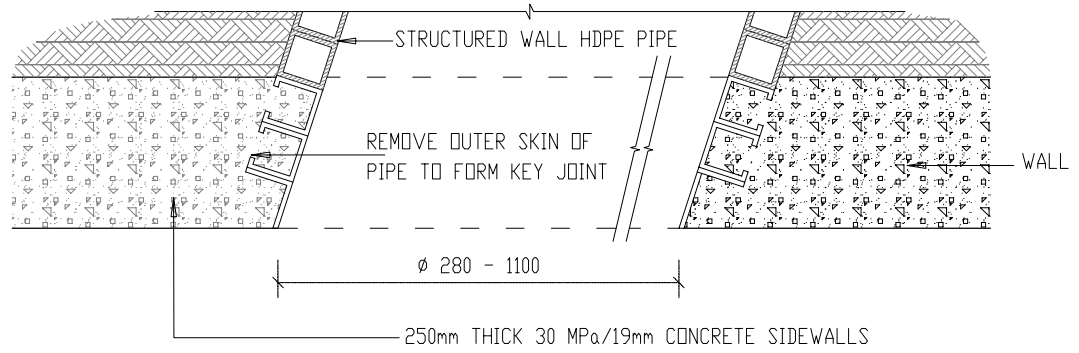
A= STUB AND FLANGE WELDED TO HDPE PIPE  
AND FLANGE ADAPTORS TO PIPE END AND VALVE

FLANGE DRILLING TO:  
BS4594 TABLE 16  
SANS 1123 TABLE 1600/3 PN16

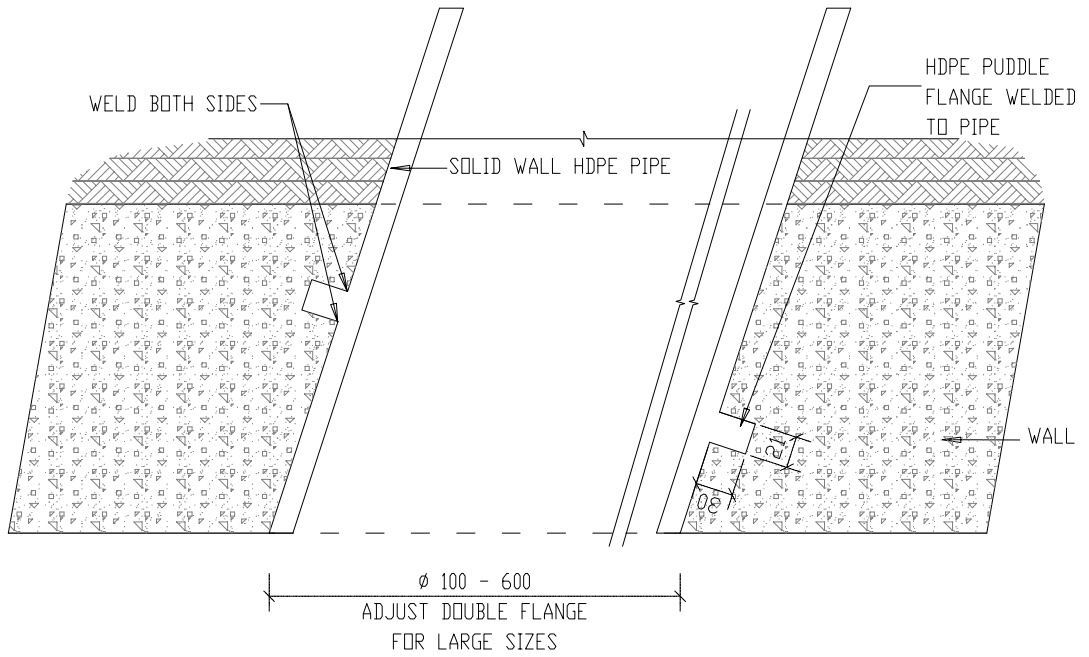
 <p>DEPARTMENT OF PUBLIC WORKS Private Bag X65 Pretoria 0001 Tel (012) 337 2000</p>	<p>departmental DIAGRAMMATIC CIVIL ENGINEERING DETAILS FOR DOLOMITIC SOILS.</p>	<p>title WATER: CONCRETE VALVE BOX DETAILS (DIAGRAMMATIC) ZONE METER</p>	<p>scale 1:30</p>	<p>date 30-09-2017</p>
			<p>drawing number / type number TYPE NO DT 11-5/W</p>	



NOTE:  
 DETAIL APPLICABLE TO WATER,  
 SEWER AND STORMWATER



DETAIL 1:  
 JUNCTION OF STRUCTURED WALL  
 HDPE PIPE IN CONCRETE SIDEWALL.



DETAIL 2:  
 JUNCTION OF SOLID WALL HDPE  
 PIPE IN CONCRETE SIDEWALL



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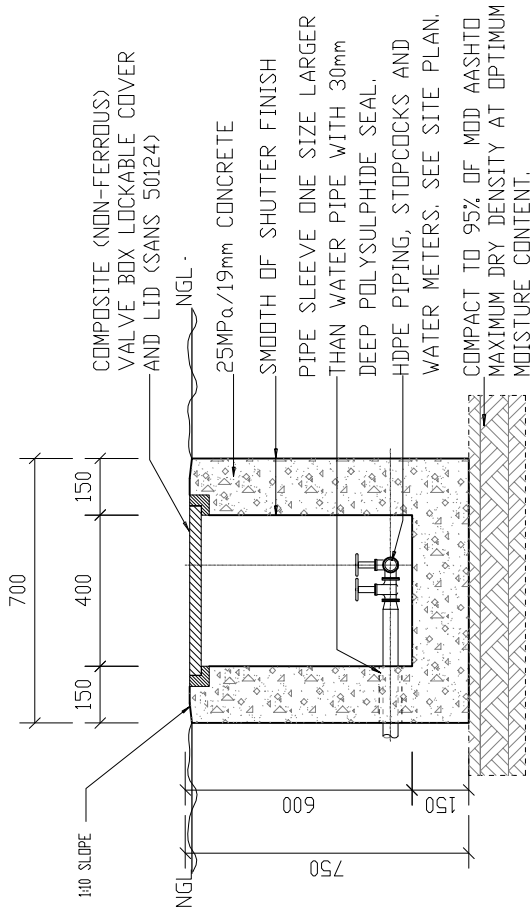
departmental  
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 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS.

title  
 WATER:  
 JUNCTION OF HDPE PIPE  
 IN SIDEWALL.  
 (DIAGRAMMATIC)

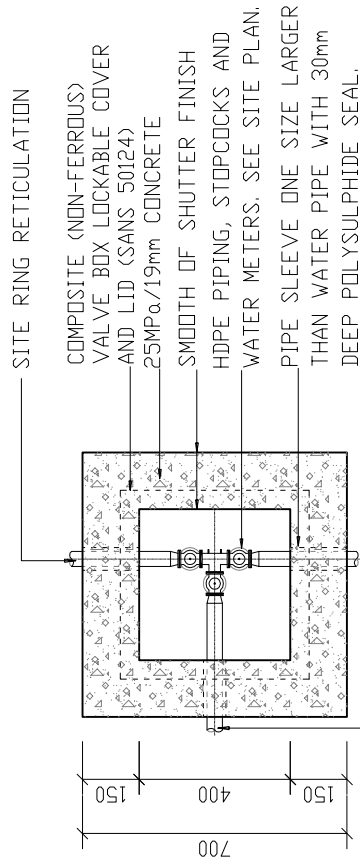
scale  
 N.A.

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 12/W



SECTION: CONCRETE VALVE BOX FOR CONNECTIONS TO BUILDINGS  
TYPE 2



CONNECTION TO BUILDING  
(SLEEVE IF REQUIRED)

PLAN: CONCRETE VALVE BOX FOR  
CONNECTIONS TO BUILDINGS  
TYPE 2

DT 16/W



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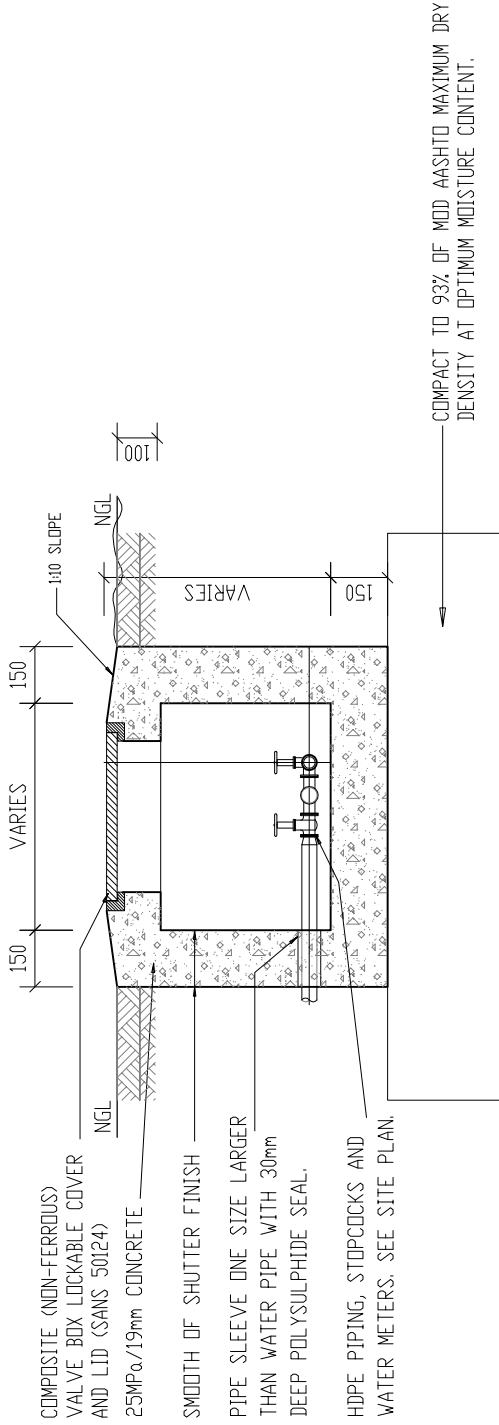
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
WATER:  
CONCRETE VALVE BOX.  
TYPE 2.  
(DIAGRAMMATIC)

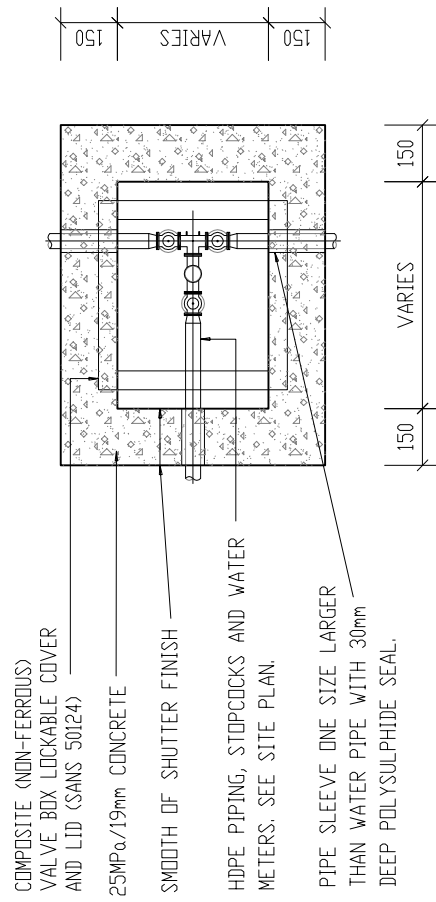
scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 16/W



SECTION: CONCRETE VALVE BOX FOR  
CONNECTION TO BUILDING  
TYPE 3



PLAN: CONCRETE VALVE BOX FOR  
CONNECTION TO BUILDING  
TYPE 3



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FOR DOLOMITIC SOILS.

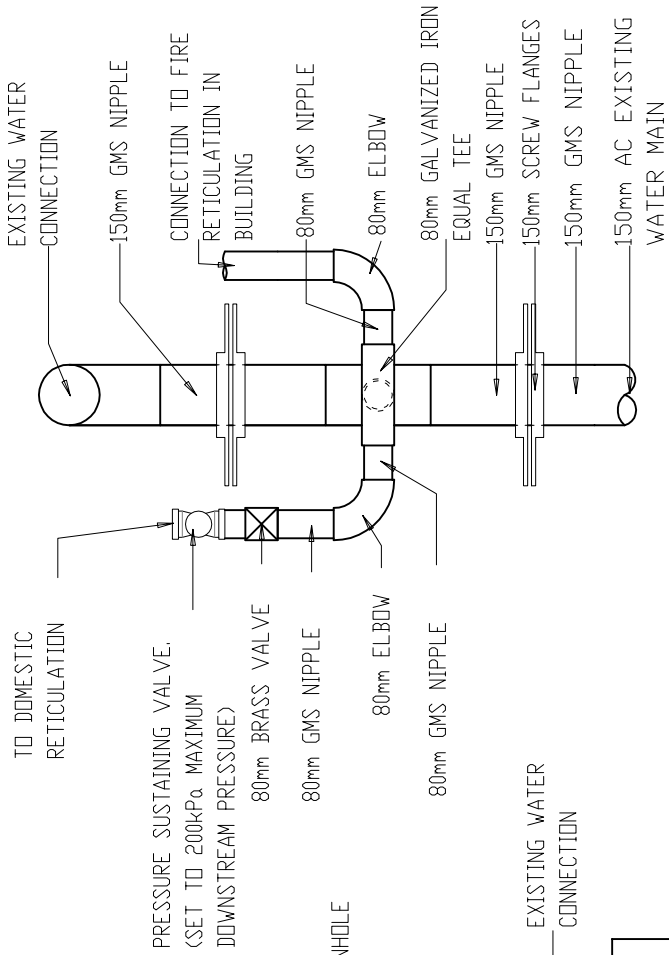
title  
WATER:  
CONCRETE VALVE BOX.  
TYPE 3.  
(DIAGRAMMATIC)

scale  
1 : 10

date  
30-09-2017

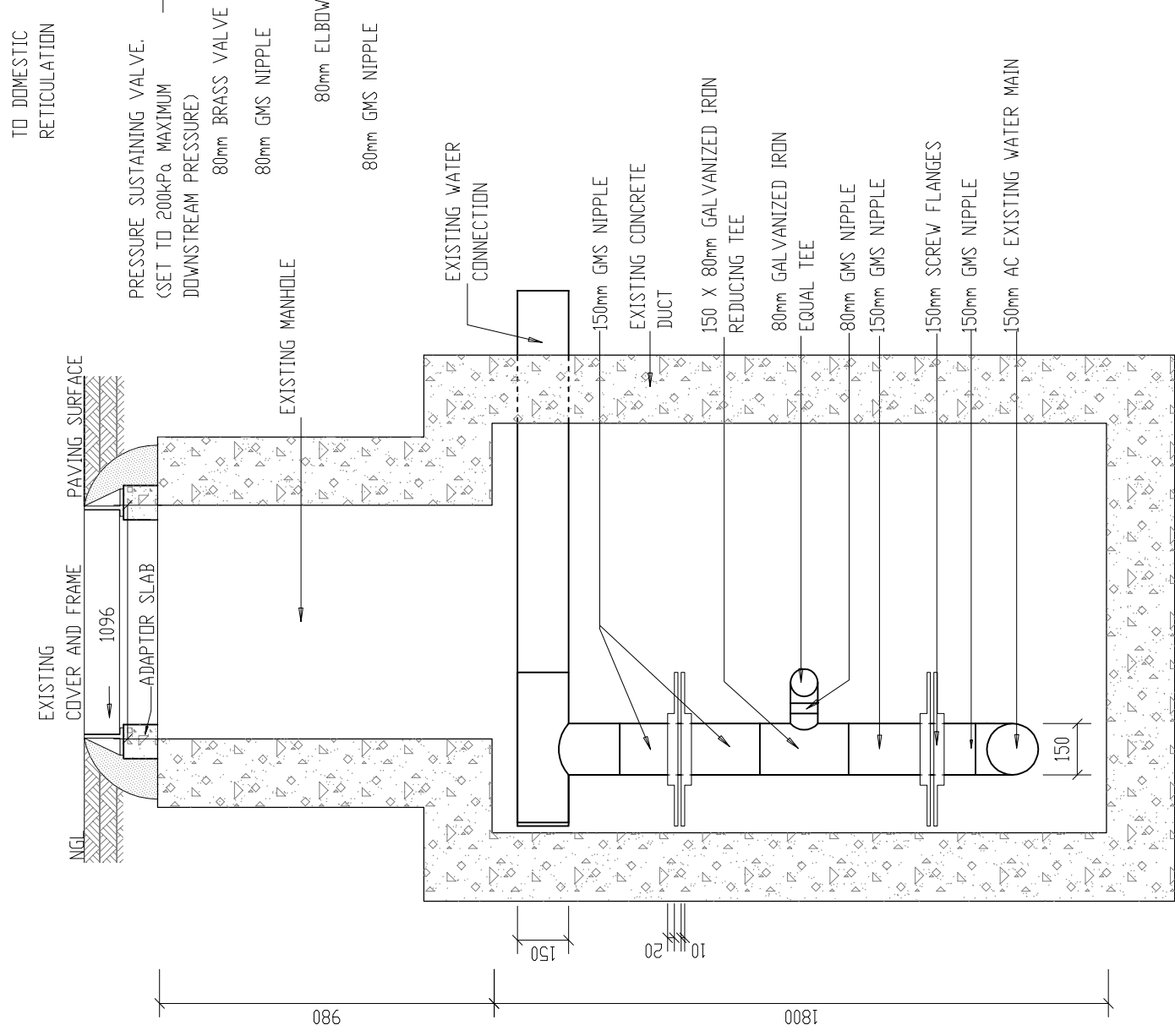
drawing number / type number  
TYPE NO DT 17/W

DT 17/W



FRONT VIEW

NOTE:  
 ALL PIPES TO BE HOT DIPPED  
 HEAVY-DUTY GALVANIZED TO  
 SANS 32 / SANS 121  
 AFTER MANUFACTURING AND  
 CUTTING SCREW THREADS,  
 TREAT JOINT WITH MASTIC  
 COMPOUND ACCORDING TO  
 MANUFACTURER'S SPECIFICATION



SIDE VIEW

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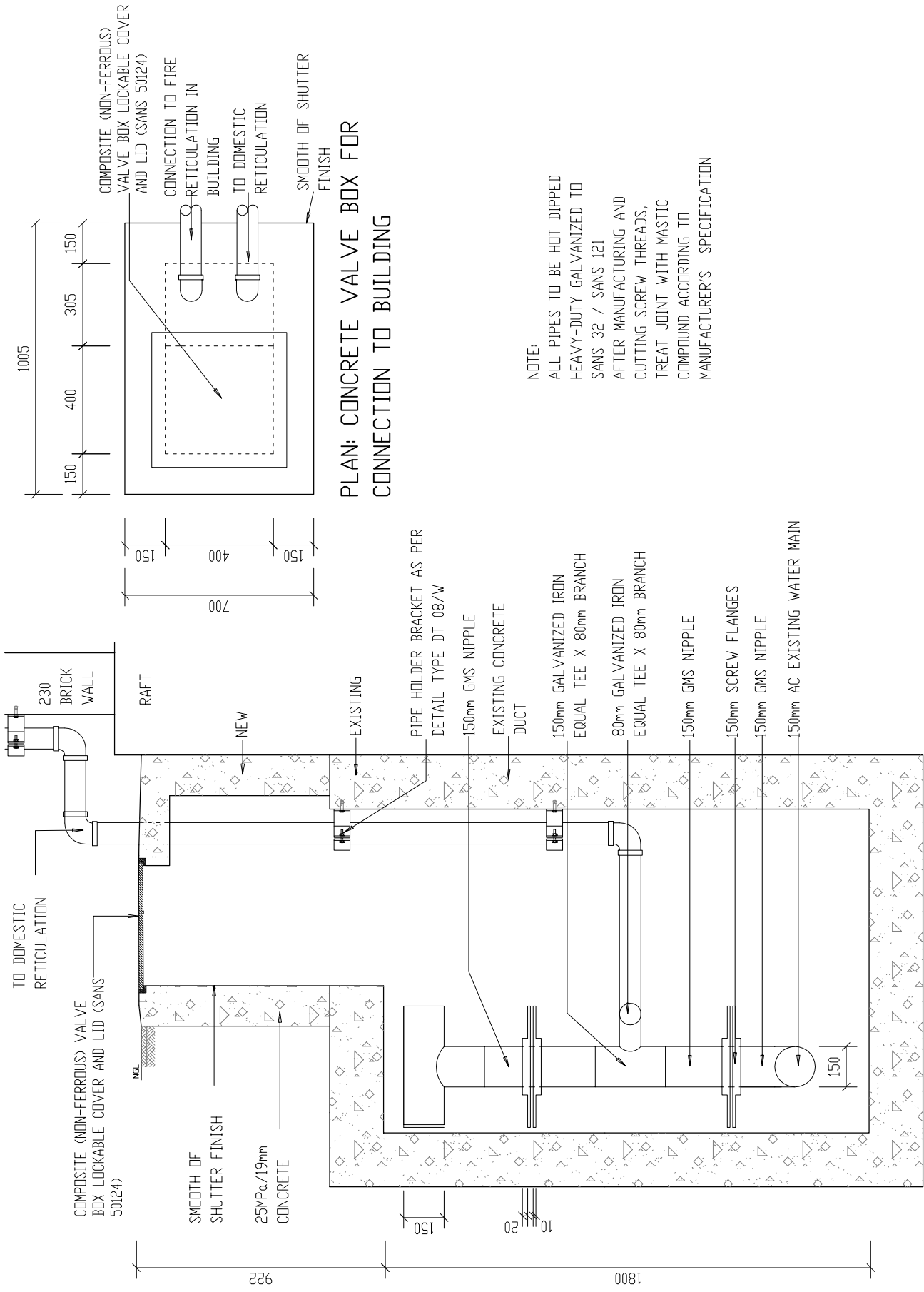
departmental  
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 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 WATER:  
 EXISTING MANHOLE INLET  
 OVER EXISTING SERVICE  
 DUCT (DIAGRAMMATIC)

scale  
 1:20

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 19/W



PLAN: CONCRETE VALVE BOX FOR CONNECTION TO BUILDING

SECTION: CONCRETE VALVE BOX FOR CONNECTION TO BUILDING

NOTE:  
 ALL PIPES TO BE HOT DIPPED  
 HEAVY-DUTY GALVANIZED TO  
 SANS 32 / SANS 121  
 AFTER MANUFACTURING AND  
 CUTTING SCREW THREADS,  
 TREAT JOINT WITH MASTIC  
 COMPOUND ACCORDING TO  
 MANUFACTURER'S SPECIFICATION

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 FOR DOLOMITIC SOILS

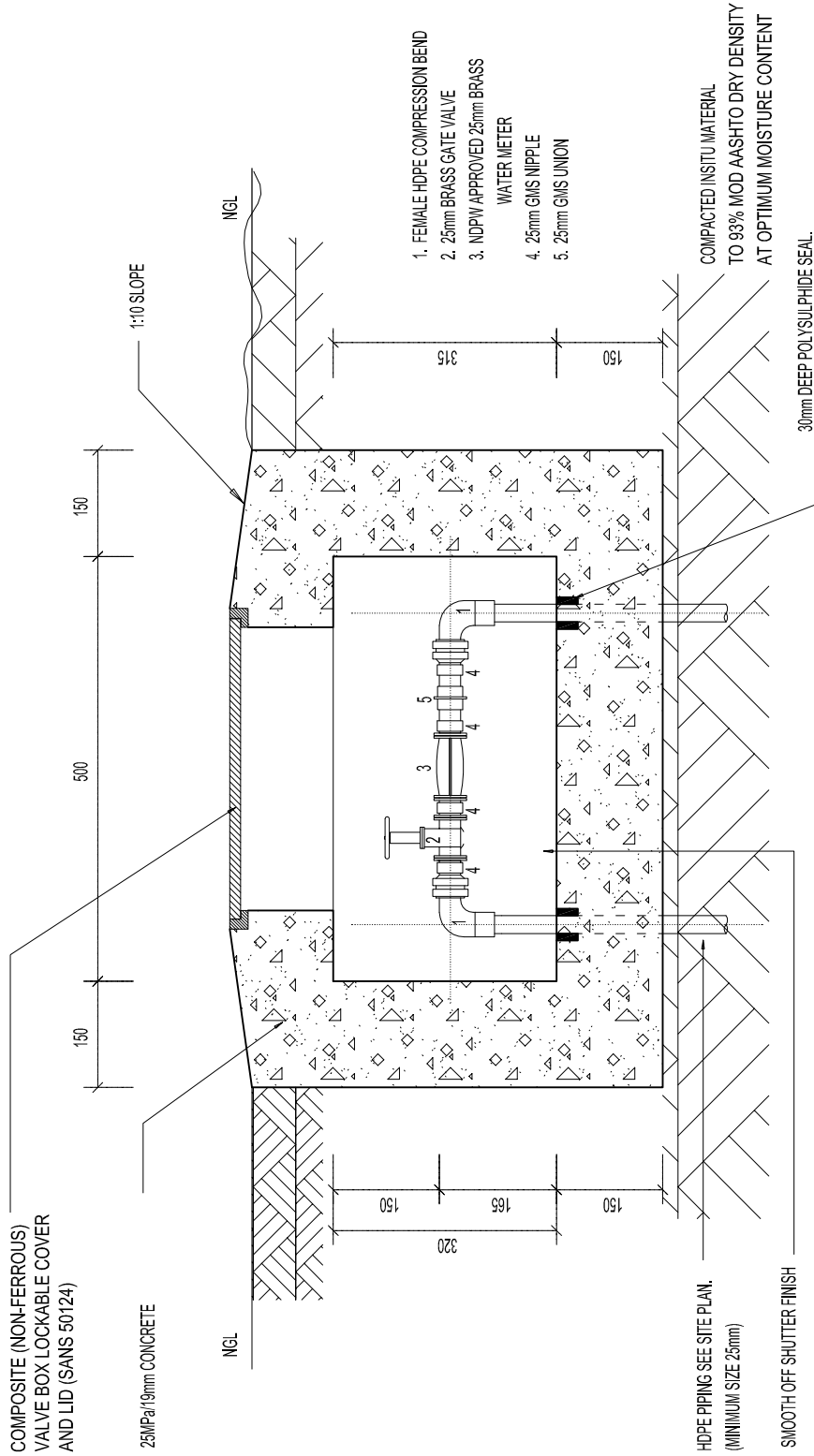
title  
 WATER:  
 NEW WATER CONNECTION TO  
 BUILDING OVER  
 EXISTING SERVICE  
 DUCT (DIAGRAMMATIC)

scale  
 1:20

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 20/W





SECTION: CONCRETE VALVE BOX FOR CONNECTION TO BUILDING

DT 24/W



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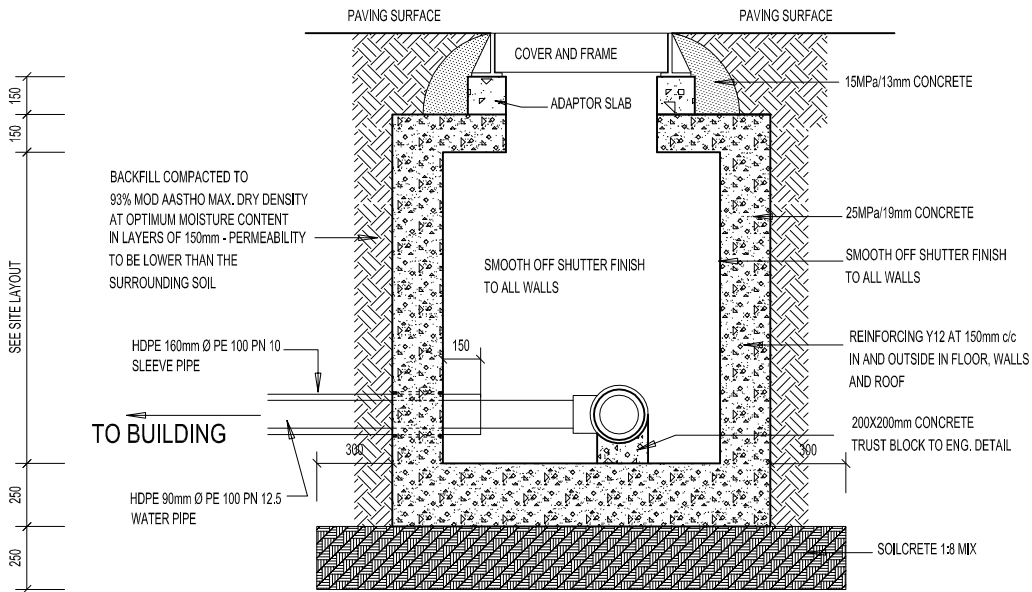
title  
 WATER:  
 CONCRETE VALVE BOX. (DIAGRAMMATIC)

scale  
 1:10

date  
 30-09-2017

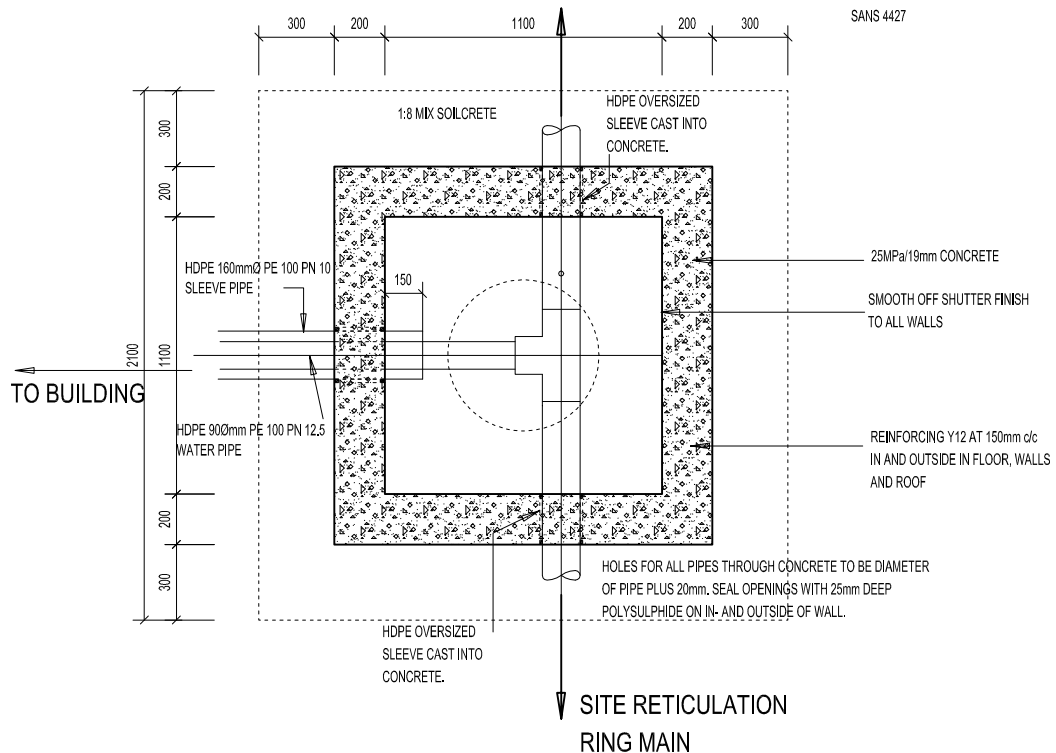
drawing number / type number  
 TYPE NO DT 24/W

HEAVY DUTY COMPOSITE (NON-FERROUS)  
COVER AND FRAME FOR ROADS (SANS 50124)



SECTION: CONCRETE WATER MANHOLE

SITE RETICULATION  
RING MAIN



PLAN: CONCRETE WATER MANHOLE

NOTE:

- uPVC PIPES TO COMPLY TO SANS 791
- SEWER PIPES TO BE HDPE PE100 PN10 SANS 4427
- WATER PIPES SMALLER THAN 63mm dia HDPE PE100 PN 16 SANS4427
- WATER PIPES BIGGER THAN 75mm dia HDPE PE100 PN 12.5 SANS 4427



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departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

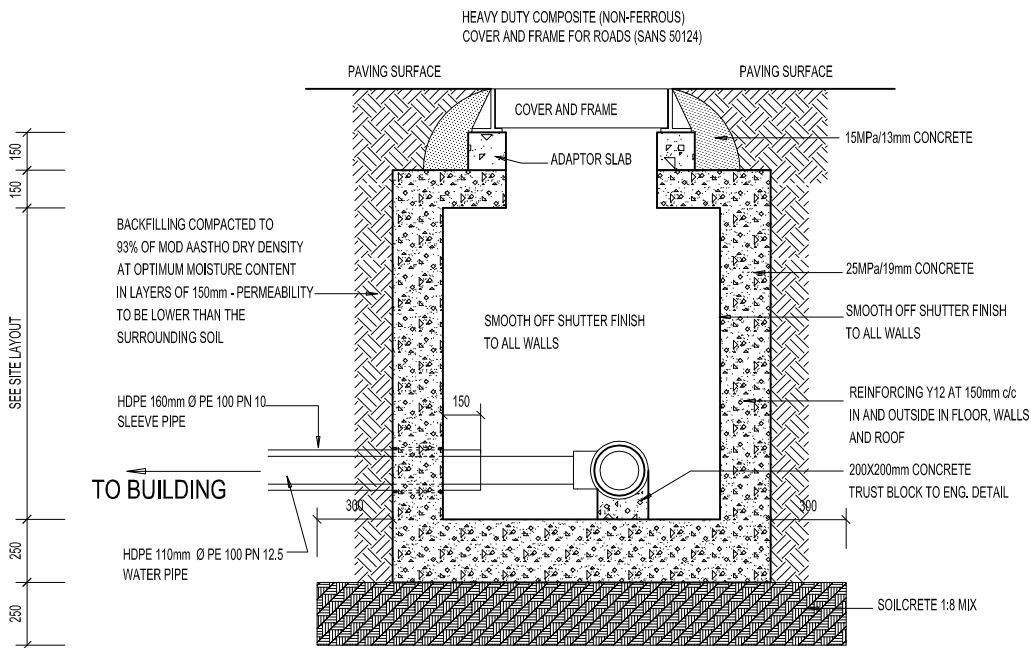
title  
WATER:  
CONCRETE MANHOLE  
DETAILS.  
(DIAGRAMMATIC)

scale  
1 : 30

date  
30-09-2017

drawing number / type number  
TYPE NO DT 26/W

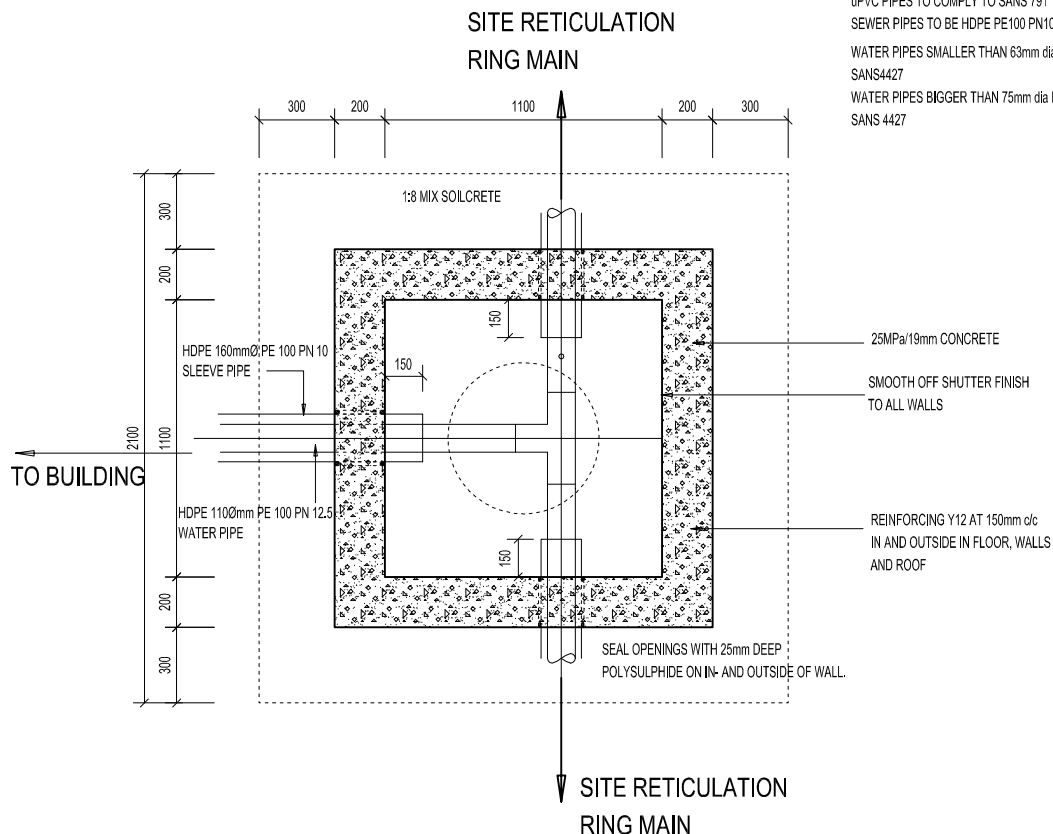




SECTION: CONCRETE WATER MANHOLE

NOTE:

- uPVC PIPES TO COMPLY TO SANS 791
- SEWER PIPES TO BE HDPE PE100 PN10 SANS 4427
- WATER PIPES SMALLER THAN 63mm dia HDPE PE100 PN 16 SANS4427
- WATER PIPES BIGGER THAN 75mm dia HDPE PE100 PN 12.5 SANS 4427



PLAN: CONCRETE WATER MANHOLE WITH HDPE PIPES



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
WATER:  
CONCRETE MANHOLE  
DETAILS.  
(DIAGRAMMATIC)

scale

1 : 30

date

30-09-2017

drawing number / type number

TYPE NO DT 27/W

**GENERAL NOTE:**

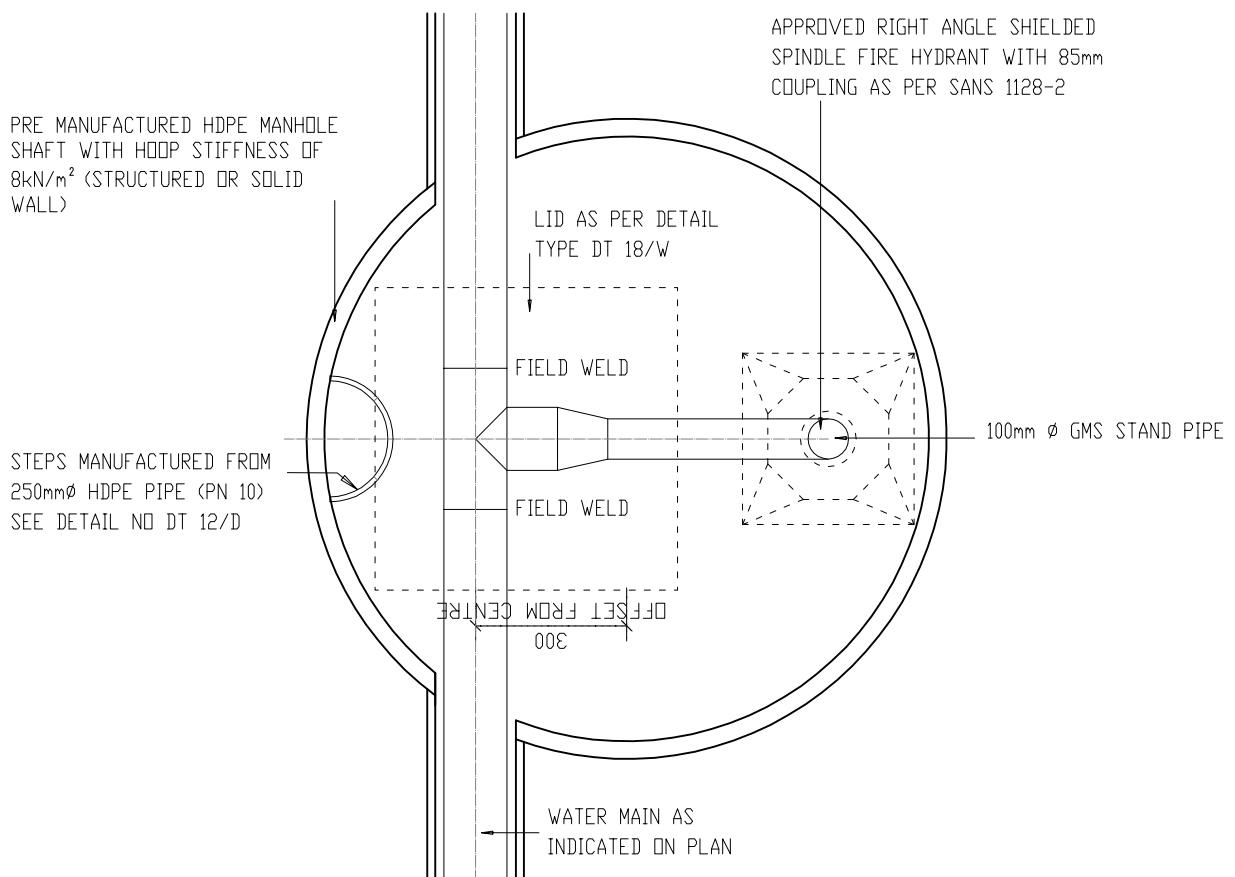
- ALL MATERIALS TO BE HDPE PE-100 AS PER SANS 4427
- HOOP STIFFNESS OF MANHOLE SHAFT TO BE  $8kN/m^2$

**GENERAL WELDING SPECIFICATION:**

- BUTT WELDING OF PIPES TO COMPLY TO SANS 10268-1.
- HOT GAS WELDING TO COMPLY TO SANS 10268-3
- HOT GAS EXTRUSION WELDING TO COMPLY TO SANS 10268-4

**OTHER RELEVANT MANUFACTURING STANDARDS:**

- SANS 10268-1
- SANS 10269
- SANS 10270
- SANS 1655
- SANS 1671-1



HDPE MANHOLE  
PLAN  
SCALE 1:15



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
PLAN OF HDPE BOOSTER  
CHAMBER

scale  
1 : 15

date  
30-09-2017

drawing number / type number  
TYPE NO DT 28-1/W

**GENERAL NOTE:**

- ALL MATERIALS TO BE HDPE PE-100 AS PER SANS 4427

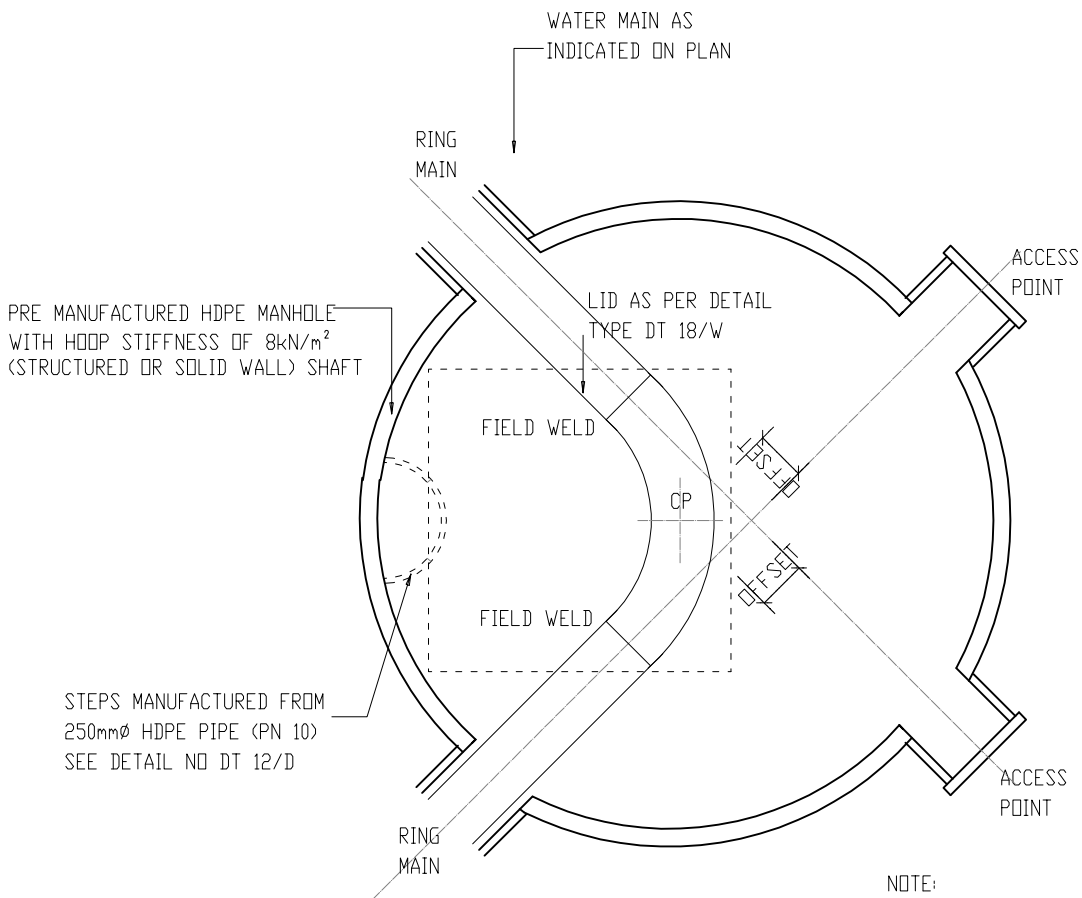
HOOP STIFFNESS OF MANHOLE SHAFT TO BE 8kN/m<sup>2</sup>

**OTHER RELEVANT MANUFACTURING STANDARDS:**

- SANS 10268-1
- SANS 10269
- SANS 10270
- SANS 1655
- SANS 1671-1

**GENERAL WELDING SPECIFICATION:**

- BUTT WELDING OF PIPES TO COMPLY TO SANS 10268-1
- HOT GAS WELDING TO COMPLY TO SANS 10268-3
- HOT GAS EXTRUSION WELDING TO COMPLY TO SANS 10268-4



**NOTE:**  
 125mmØ FITTINGS  
 30 RADIUS BENDS  
 90 DEGREES, 580 c/mm, OFFSET 250  
 45 DEGREES, 360 c/mm, OFFSET 200  
 TEE, 400 c/mm, OFFSET 100  
 90mmØ FITTINGS  
 30 RADIUS BENDS  
 90 DEGREES, 400 c/mm, OFFSET 250  
 45 DEGREES, 400 c/mm, OFFSET 200  
 TEE, 400 c/mm, OFFSET 100

**HDPE MANHOLE  
 PLAN  
 SCALE 1:15**



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 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 PLAN OF TYPICAL HDPE  
 JUNCTION MANHOLE

scale  
 1 : 15

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 28-2/W

**NOTE:**

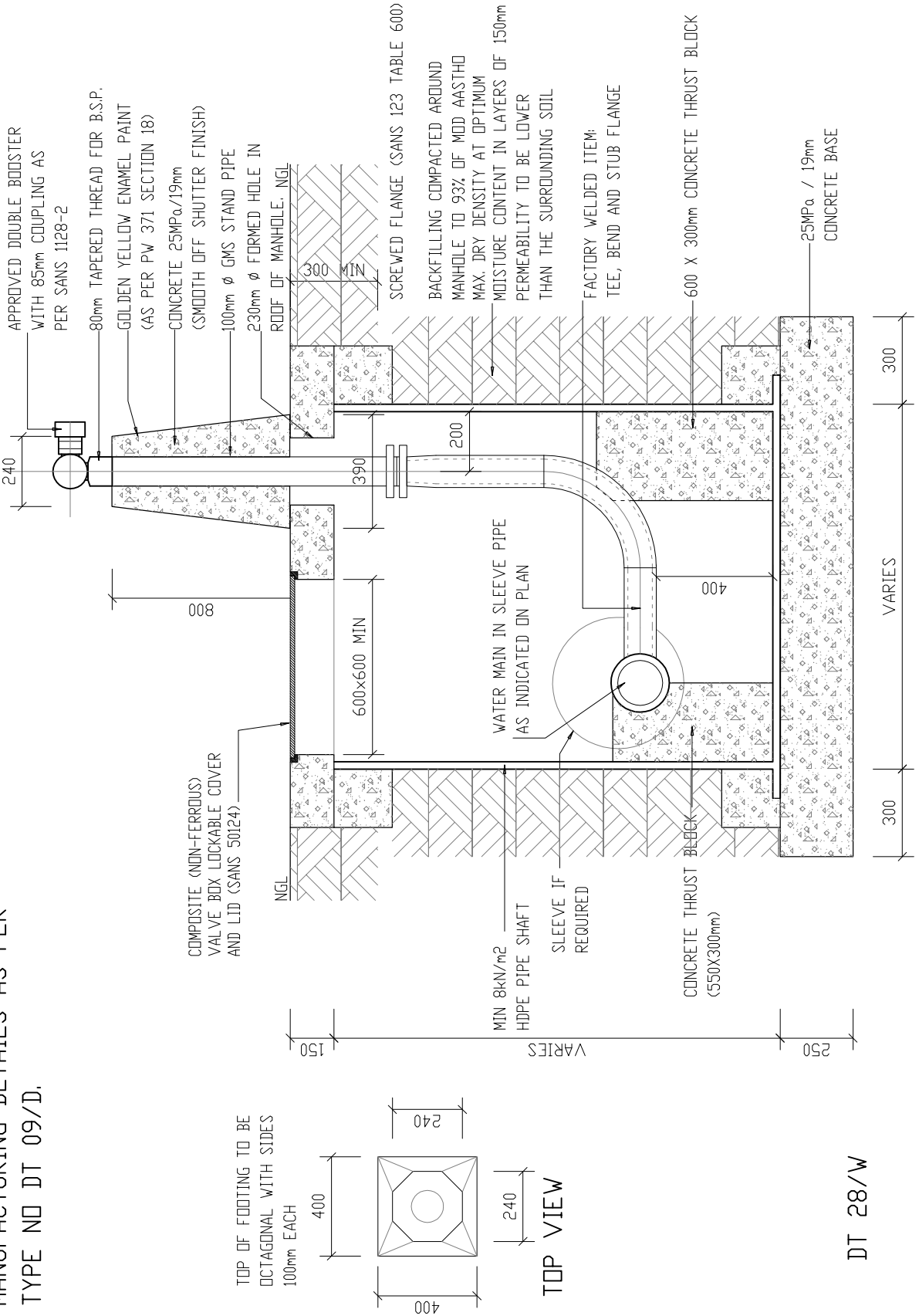
- BENCHING AND SPECIFICATION THEREOF SIMILAR AS PER DETAILS TYPE NO DT 05/D.
- MANUFACTURING DETAILS AS PER TYPE NO DT 09/D.

**PRECAST CONCRETE**

- ROOF SLAB (HEAVY DUTY) WITH:
  1. TYPE 1A (SANS 558) COVER AND FRAME FOR ROADS OR/
  2. HEAVY DUTY C.I. TYPE 4 (SANS 558) MANHOLE COVER AND FRAME WITH ONE ADAPTOR SLAB FOR PAVED OR OPEN AREAS.

**NOTE:**

- ALL HDPE CONNECTIONS TO BE ELECTRO-FUSION OR BUTT WELDED.
- SUPPLY EACH SITE WITH THREE HYDRANT KEYS
- AS PER DETAIL TYPE NO DT 04/W



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
WATER:  
TYPICAL BOOSTER  
CONNECTION IN  
HDPE CHAMBER  
(DIAGRAMMATIC)

scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 28/W

**GENERAL NOTE:**

- ALL MATERIALS TO BE HDPE  
PE-100 AS PER SANS 4427

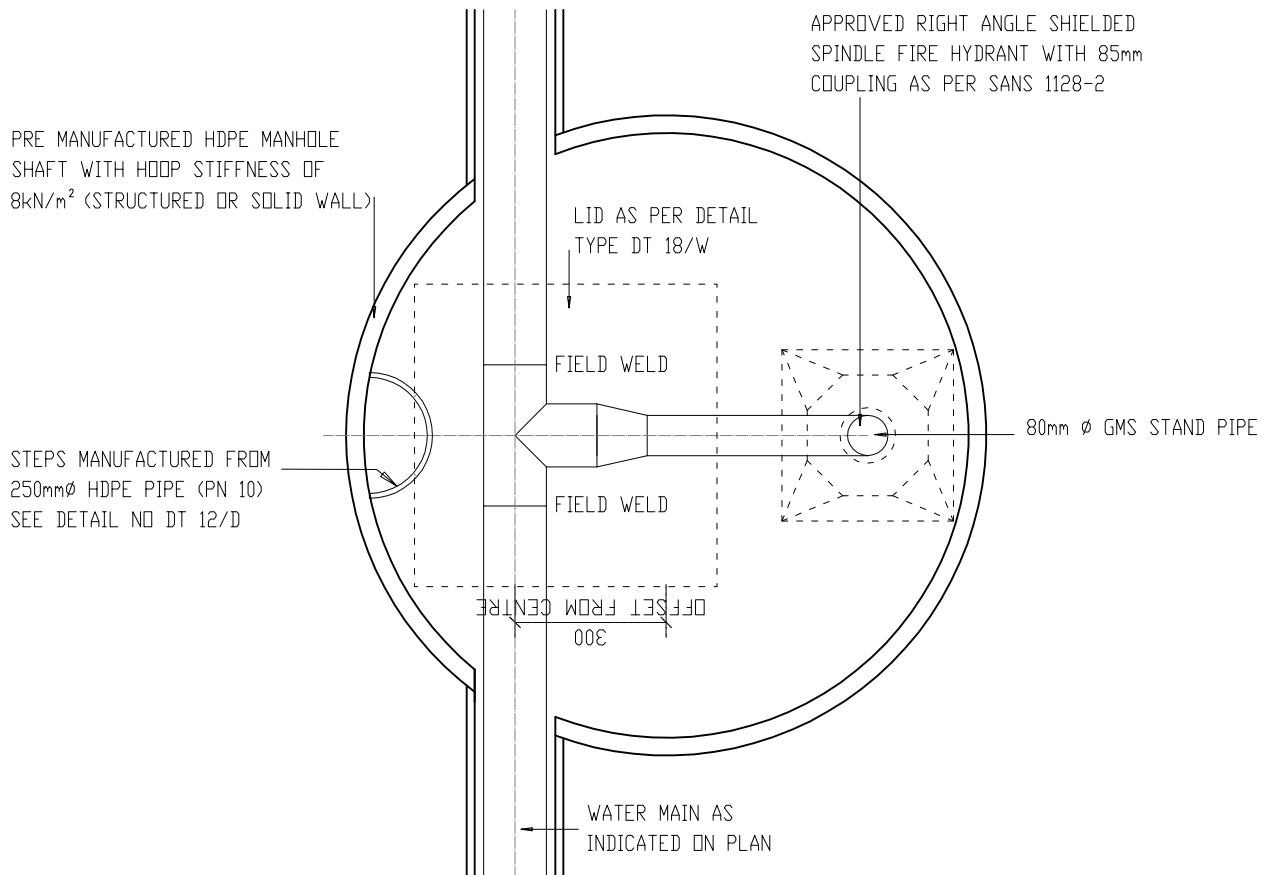
HOOP STIFFNESS OF MANHOLE  
SHAFT TO BE 8kN/m<sup>2</sup>

**OTHER RELEVANT  
MANUFACTURING STANDARDS:**

SANS 10268-1  
SANS 10269  
SANS 10270  
SANS 1655  
SANS 1671-1

**GENERAL WELDING SPECIFICATION:**

- BUTT WELDING OF PIPES TO COMPLY  
TO SANS 10268-1  
  
- HOT GAS WELDING TO COMPLY  
TO SANS 10268-3  
  
- HOT GAS EXTRUSION WELDING TO  
TO COMPLY TO SANS 10268-4



**HDPE MANHOLE  
PLAN  
SCALE 1:15**



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
PLAN OF FIRE  
HYDRANT CHAMBER  
IN LINE TYPE

scale  
1 : 15

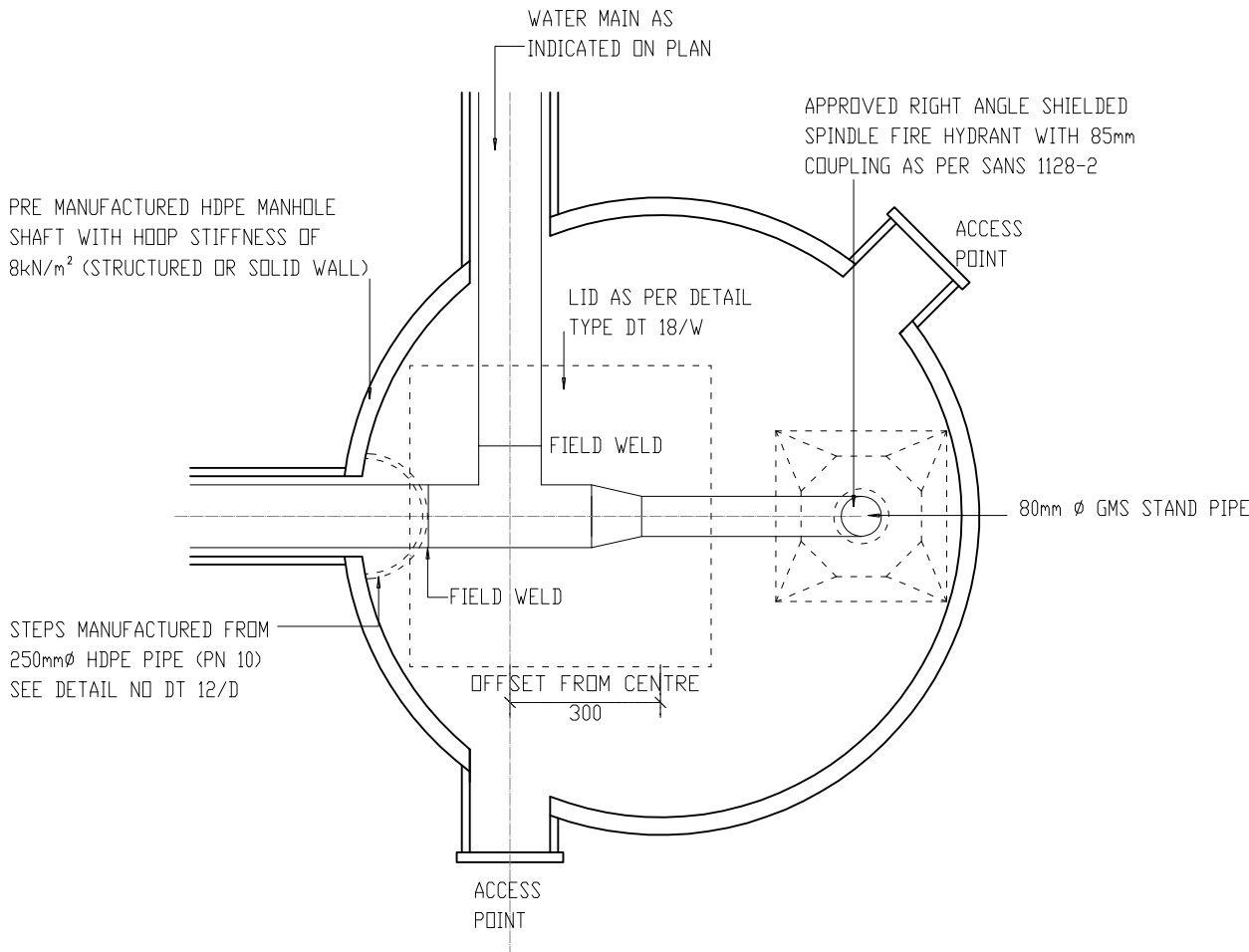
date  
30-09-2017

drawing number / type number  
TYPE NO DT 29-1/W


**GENERAL NOTE:**  
 - ALL MATERIALS TO BE HDPE PE-100 AS PER SANS 4427  
 HOOP STIFFNESS OF MANHOLE SHAFT TO BE 8kN/m<sup>2</sup>

**GENERAL WELDING SPECIFICATION:**  
 - BUTT WELDING OF PIPES TO COMPLY TO SANS 10268-1  
 - HOT GAS WELDING TO COMPLY TO SANS 10268-3  
 - HOT GAS EXTRUSION WELDING TO COMPLY TO SANS 10268-4.

**OTHER RELEVANT MANUFACTURING STANDARDS:**  
 SANS 10268-1  
 SANS 10269  
 SANS 10270  
 SANS 1655  
 SANS 1671-1



**HDPE MANHOLE  
 PLAN  
 SCALE 1:15**

 <p><b>DEPARTMENT OF PUBLIC WORKS</b>          Private Bag X65          Pretoria          0001          Tel (012) 337 2000</p>	departmental DIAGRAMMATIC CIVIL ENGINEERING DETAILS FOR DOLOMITIC SOILS	title PLAN OF FIRE HYDRANT CHAMBER ANGLE TYPE	scale 1 : 15	date 30-09-2017
			drawing number / type number TYPE NO DT 29-2/W	

**NOTE:**

- BENCHING AND SPECIFICATION THEREOF SIMILAR AS PER DETAILS TYPE NO DT 05/D, TYPE NO DT 09/D, MANUFACTURING DETAILS AS PER TYPE NO DT 09/D.

**PRECAST CONCRETE**

- ROOF SLAB (HEAVY DUTY) WITH:
  1. TYPE 1A (SANS 558) COVER AND FRAME FOR ROADS OR/
  2. HEAVY DUTY COMPOSITE (NON-FERROUS) SANS 50124 MANHOLE COVER AND FRAME WITH ONE ADAPTOR SLAB FOR PAVED OR OPEN AREAS.

**NOTE:**

- ALL HDPE CONNECTIONS TO BE ELECTRO-FUSION OR BUTT WELDED.
- SUPPLY EACH SITE WITH THREE HYDRANT KEYS
- AS PER DETAIL TYPE NO DT 04/W

- APPROVED RIGHT ANGLE SHIELDED SPINDLE FIRE HYDRANT WITH 85mm COUPLING AS PER SANS 1128-2

80mm TAPERED THREAD FOR B.S.P.

GOLDEN YELLOW ENAMEL PAINT (AS PER PW 371 SECTION 18)

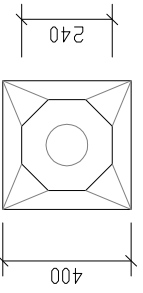
CONCRETE 25MPa/19mm (SMOOTH OFF SHUTTER FINISH)

80mm Ø GMS STAND PIPE

210mm Ø FORMED HOLE IN ROOF OF MANHOLE, NGL

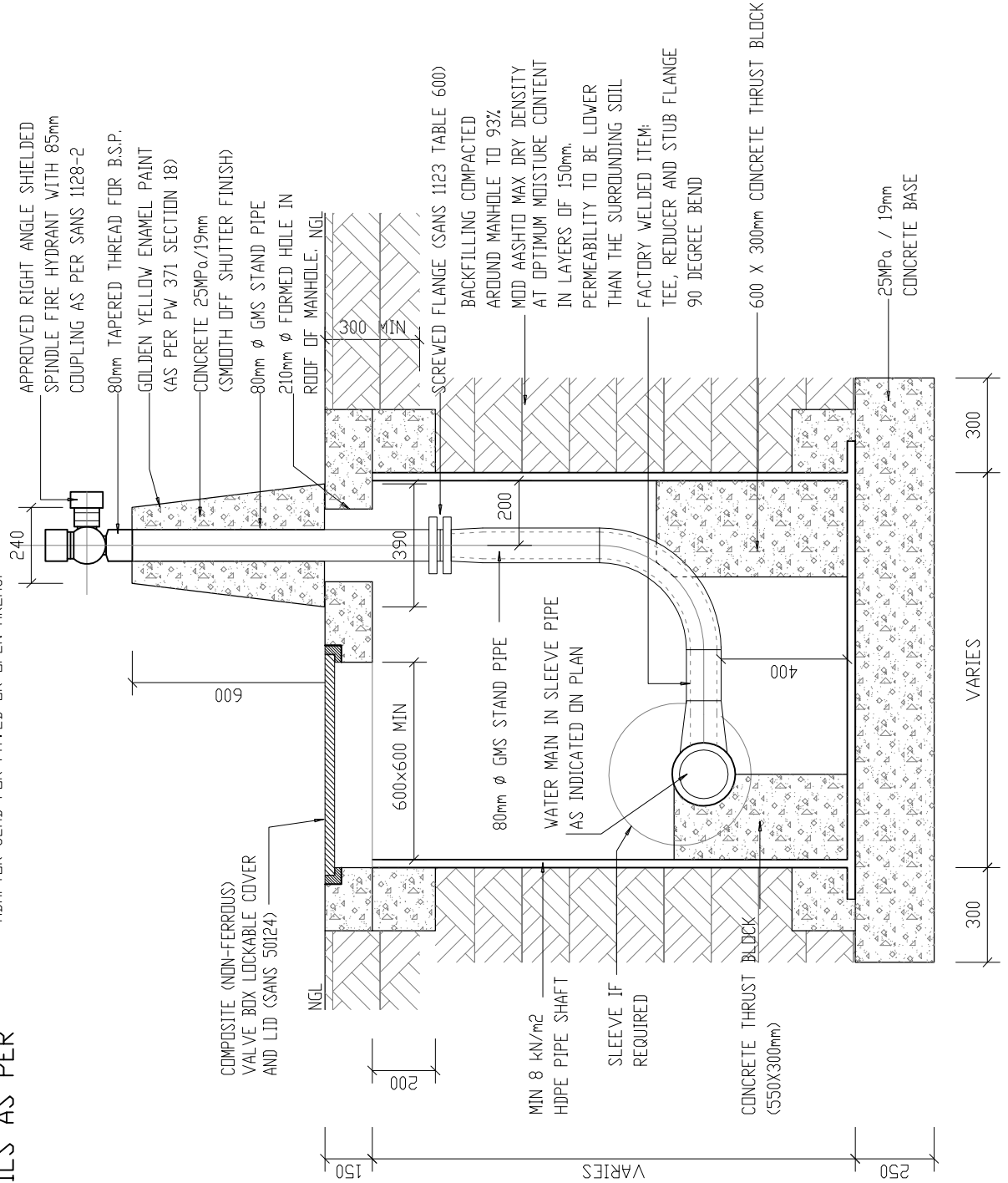
300

MIN



TOP OF FOOTING TO BE OCTAGONAL WITH SIDES 100mm EACH

**TOP VIEW**



COMPOSITE (NON-FERROUS) VALVE BOX LOCKABLE COVER AND LID (SANS 50124)

NGL

200

150

250

MIN 8 kN/m<sup>2</sup> HDPE PIPE SHAFT

SLEEVE IF REQUIRED

CONCRETE THRUST BLOCK (550X300mm)

80mm Ø GMS STAND PIPE

WATER MAIN IN SLEEVE PIPE AS INDICATED ON PLAN

200

390

600x600 MIN

600

240

VARIES

VARIES

VARIES

300

300

**DT 29/W**



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
WATER:  
TYPICAL FIRE  
HYDRANT IN  
HDPE CHAMBER  
(DIAGRAMMATIC)

scale  
1 : 20

date  
30-09-2017

drawing number / type number  
**TYPE NO DT 29/W**

**PRECAST CONCRETE**

ROOF SLAB (HEAVY DUTY) WITH:

1. TYPE 1A (SANS 558) COVER AND FRAME FOR ROADS OR/

2. HEAVY DUTY COMPOSITE (NON-FERROUS) SANS 50124

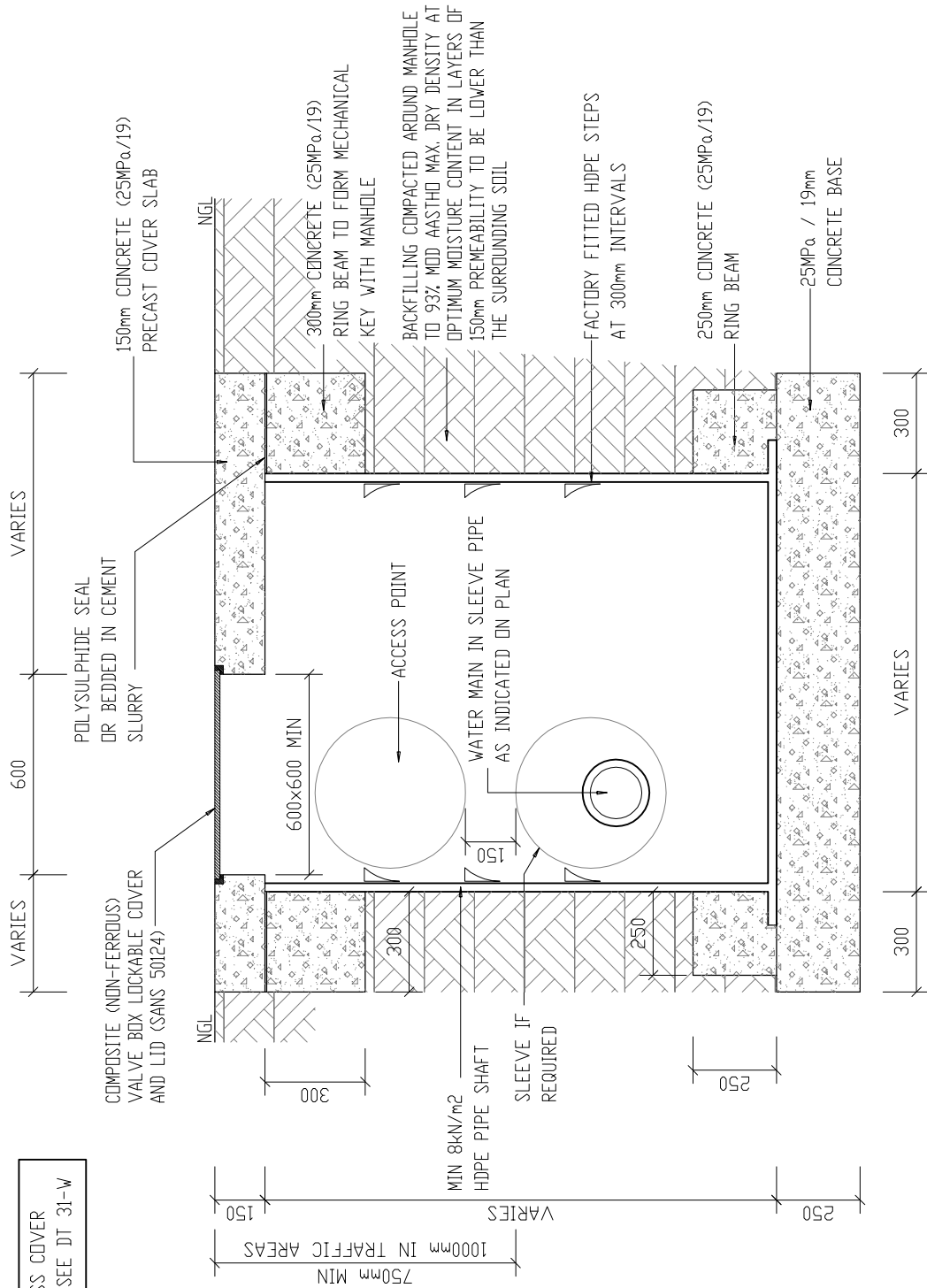
MANHOLE COVER AND FRAME WITH ONE

ADAPTOR SLAB FOR PAVED OR OPEN AREAS.

FOR ROOF AND ACCESS COVER  
IN SURFACED AREAS SEE DT 31-W

**NOTE:**

- BENCHING AND SPECIFICATION THEREOF SIMILAR AS PER DETAILS TYPE NO DT 05/D;
- MANUFACTURING DETAILS AS PER TYPE NO DT 09/D;



DT 30/W



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
WATER:  
TYPICAL DETAILS  
OF PREFABRICATED  
HDPE CHAMBERS  
(DIAGRAMMATIC)

scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 30/W



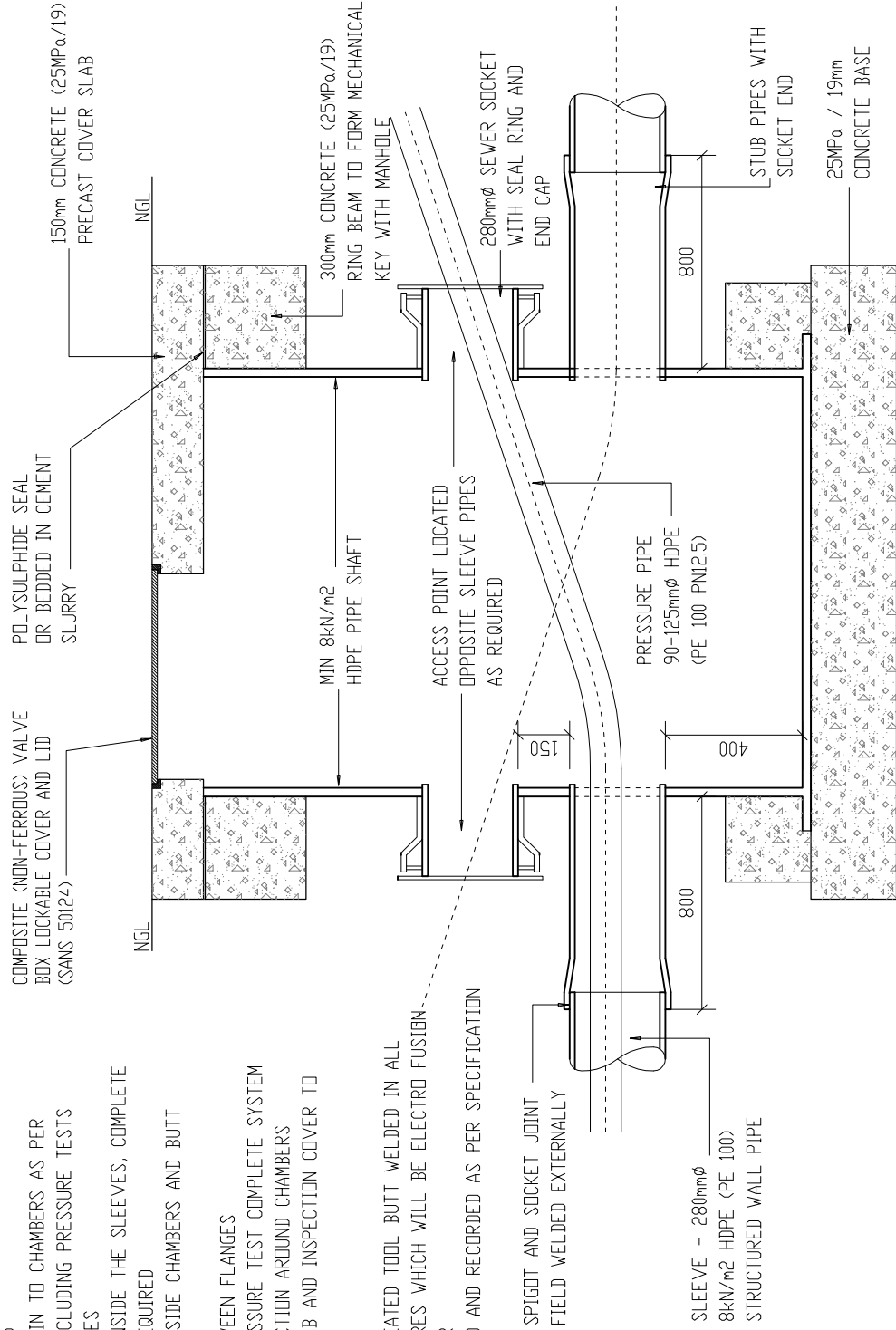


NOTE: INSTALLATION PROCEDURE FOR HDPE SLEEVE PIPE SYSTEM AND ACCESS POINTS

SLEEVE PIPE SYSTEM AND ACCESS POINTS

1. EXCAVATE FOR PIPE TRENCHES AND CHAMBERS
2. CONSTRUCT IN SITU CONCRETE BASES FOR CHAMBERS
3. SET MANHOLE ON BASE IN CEMENT SLURRY AND CONSTRUCT IN SITU CONCRETE ANCHOR RING
4. PREPARE BEDDING FOR SLEEVE PIPES WITH EVEN GRADE BETWEEN CHAMBERS TO ENSURE DRAINAGE (IF COMPLETELY LEVEL THEN CREATE A HIGH POINT MIDWAY BETWEEN TO PROVIDE 0.5% FALL EACH WAY)
5. INSTALL SLEEVE PIPES AND JOIN TO CHAMBERS AS PER STORMWATER SPECIFICATION INCLUDING PRESSURE TESTS BACKFILL AND COMPACT TRENCHES
7. INSERT THE PRESSURE PIPES INSIDE THE SLEEVES, COMPLETE WITH STUB FLANGES WHERE REQUIRED
8. LOCATE HDPE PIPE FITTINGS INSIDE CHAMBERS AND BUTT WELD IN PLACE
9. PRESSURE TEST SECTIONS BETWEEN FLANGES
10. INSTALL ALL FITTINGS AND PRESSURE TEST COMPLETE SYSTEM
11. COMPLETE BACKFILL AND COMPACTION AROUND CHAMBERS
12. INSTALL RING BEAM, COVER SLAB AND INSPECTION COVER TO COMPLETE THE CHAMBER

NOTE:  
PRESSURE PIPE JOINTS WILL BE HEATED TOOL BUTT WELDED IN ALL CASES, EXCEPT UNAVOIDABLE CLOSURES WHICH WILL BE ELECTRO FUSION WELDED AS APPROVED BY ENGINEER  
ALL WELDS ARE TO BE REFERENCED AND RECORDED AS PER SPECIFICATION



TYPICAL DETAILS OF SLEEVE PIPE SYSTEM AND ACCESS POINTS

DT 32/W



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
WATER:  
TYPICAL DETAILS  
OF SLEEVE PIPE SYSTEM  
AND ACCESS POINTS

scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 32/W

# SEWER DRAINAGE DETAILS.

- DT 01/D SEWER TRENCHING, BEDDING AND BACKFILLING DETAILS.
- DT 02/D SOILCRETE / CONCRETE PIPE PROTECTION
- DT 03/D HDPE JUNCTION CHAMBER TYPICAL CONNECTION TO ALL BUILDINGS.
- DT 04/D SECTION OF 900-1200mm $\phi$  MANHOLE ON MAIN SEWER LINE.
- DT 05/D SECTION OF HDPE JUNCTION CHAMBER IN OPEN AREAS
- DT 06/D CASTING OF CONCRETE SLABS OVER FLEXIBLE PIPES.
- DT 07/D PLAN AND ELEVATION FOR SURFACE MOUNTING OF SEWER PIPES TO EXISTING BUILDINGS.
- DT 08/D STANDARD HEAVY DUTY PRECAST CONCRETE ROOFMSLAB AND LID FOR HDPE MANHOLE.
- DT 08-1/D SEWER DRAINAGE : GENERAL DETAILS
- DT 08-2/D SEWER DRAINAGE : GENERAL DETAILS
- DT 09/D SEWER DRAINAGE : SHOWER PAN TO LEAK DETECTION MANHOLE.
- DT 09-1/D TYPICAL DETAILS OF SHOWER PAN AND LEAK DETECTION MANHOLE
- DT 10/D TYPICAL WELDING DETAILS FOR HDPE SEWER MANHOLE: SECTION A
- DT 11/D TYPICAL WELDING DETAILS FOR HDPE SEWER MANHOLE: SECTION B
- DT 12/D TYPICAL WELDING DETAILS FOR HDPE SEWER MANHOLE: SECTION C
- DT 13/D TYPICAL WELDING DETAILS FOR HDPE SEWER MANHOLE: SECTION C
- DT 14/D TRENCHING, BEDDING AND BACKFILLING DETAILS OVER EXISTING PIPES



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
SEWER DRAINAGE:  
DRAWING LIST.

scale

N.A.

date

30-09-2017

drawing number / type number

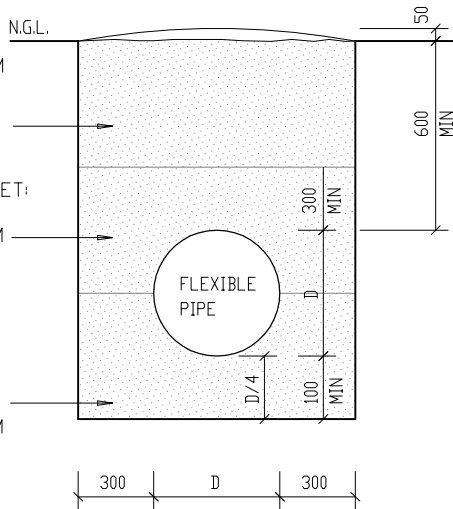
TYPE NO DT 00/D

**UNSURFACED AND UNTRAFFICKED AREAS**

COMPACTED SELECTED BACKFILL:  
 COMPACT TO 93% OF MOD AASHTO  
 MAXIMUM DRY DENSITY AT OPTIMUM  
 MOISTURE CONTENT.  
 MATERIAL TO SANS 1200 DB 3.5  
 (MAXIMUM AGGREGATE SIZE TO BE  
 63mm)

COMPACTED SELECTED FILL BLANKET:  
 COMPACT TO 93% OF MOD AASHTO  
 MAXIMUM DRY DENSITY AT OPTIMUM  
 MOISTURE CONTENT.  
 MATERIAL TO SANS 1200 LB 3.2  
 (MAXIMUM AGGREGATE SIZE TO BE  
 10mm)

COMPACTED SELECTED BEDDING:  
 COMPACT TO 93% OF MOD AASHTO  
 MAXIMUM DRY DENSITY AT OPTIMUM  
 MOISTURE CONTENT.  
 MATERIAL TO SANS 1200 LB 3.3  
 (MAXIMUM AGGREGATE SIZE TO BE  
 6mm)



**PAVING AND WALKWAYS**

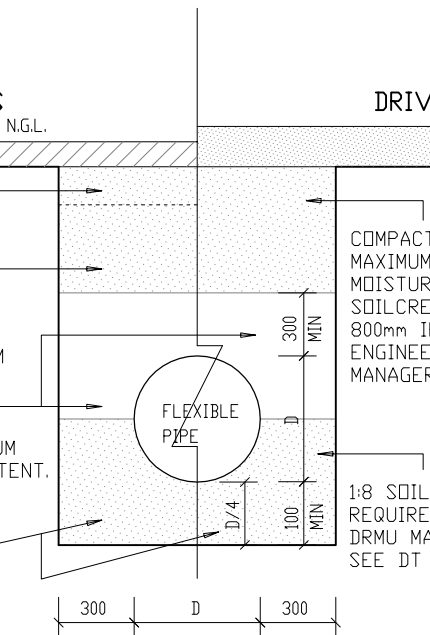
**DRIVEWAYS**

COMPACT TO 95% OF MOD AASHTO  
 MAXIMUM DRY DENSITY AT OPTIMUM  
 MOISTURE CONTENT. (LAST 150mm)

COMPACTED SELECTED BACKFILL:  
 COMPACT TO 93% OF MOD AASHTO  
 MAXIMUM DRY DENSITY AT OPTIMUM  
 MOISTURE CONTENT.  
 MATERIAL TO SANS 1200 DB 3.5 (MAXIMUM  
 AGGREGATE SIZE TO BE 63mm)

COMPACTED SELECTED FILL BLANKET:  
 COMPACT TO 93% OF MOD AASHTO MAXIMUM  
 DRY DENSITY AT OPTIMUM MOISTURE CONTENT.  
 MATERIAL TO SANS 1200 LB 3.2  
 (MAXIMUM AGGREGATE SIZE TO BE 10mm)

COMPACTED SELECTED BEDDING:  
 COMPACT TO 93% OF MOD AASHTO  
 MAXIMUM DRY DENSITY AT OPTIMUM  
 MOISTURE CONTENT.  
 MATERIAL TO SANS 1200 LB 3.3  
 (MAXIMUM AGGREGATE SIZE TO BE 6mm)



COMPACT TO 95% OF MOD AASHTO  
 MAXIMUM DRY DENSITY AT OPTIMUM  
 MOISTURE CONTENT AND/OR  
 SOILCRETE (1:8 MIX) MAX. FOR TOP  
 800mm IF SO REQUIRED, BY  
 ENGINEER AND APPROVED BY DRMU  
 MANAGER.

1:8 SOILCRETE IF SO  
 REQUIRED AND APPROVED BY  
 DRMU MANAGER.  
 SEE DT 02/D

**SEWER  
 TRENCHING, BEDDING AND  
 BACKFILLING DETAILS  
 SCALE 1:30**

**NOTE:**  
 ALL BEDDING SURROUND  
 AND BACKFILL MATERIALS  
 SHALL AFTER COMPACTION  
 BE LESS PERMEABLE THAN  
 THE IN-SITU SURROUNDING  
 SOIL

DT 01/D

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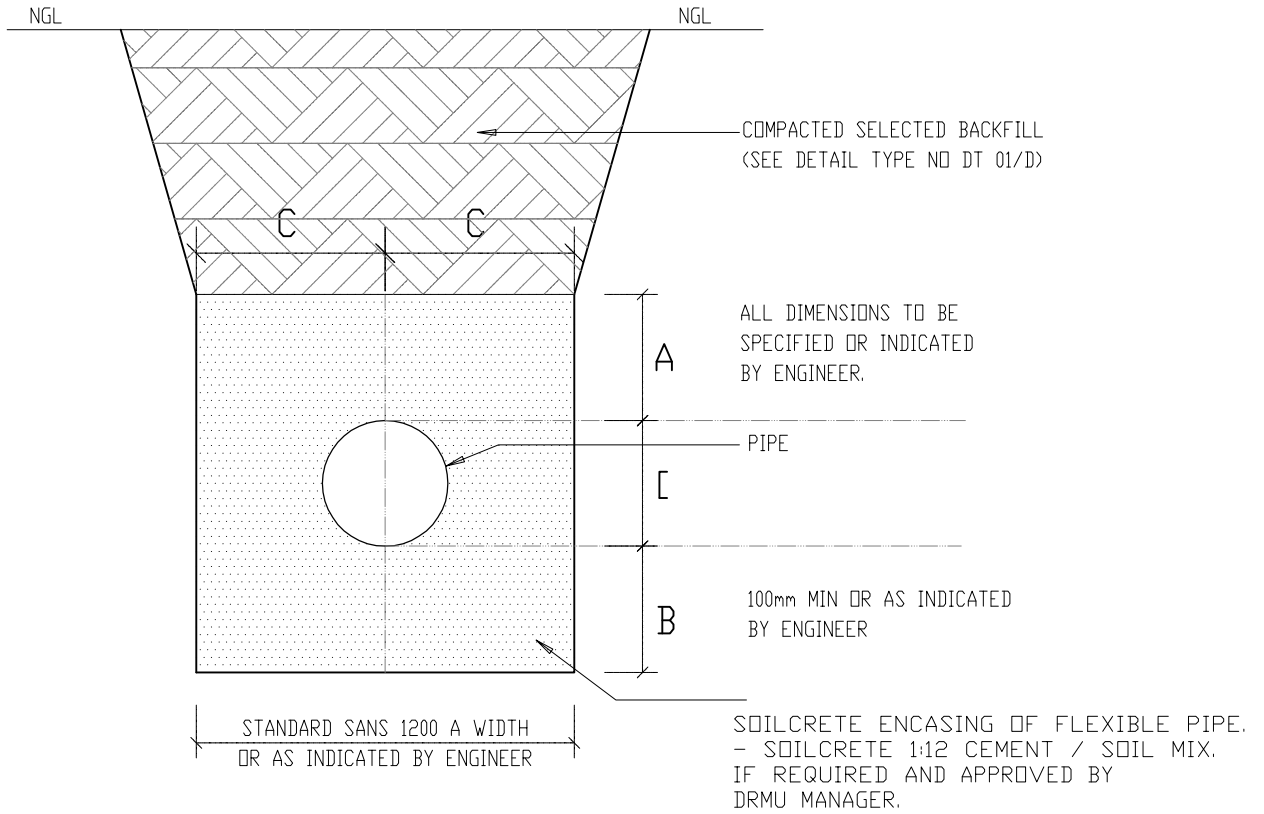
departmental  
 DIAGRAMMATIC CIVIL  
 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 SEWER DRAINAGE:  
 SEWER TRENCHING, BEDDING  
 AND BACKFILLING DETAILS  
 (DIAGRAMMATIC)

scale  
 1 : 30

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 01/D



SOILCRETE PIPE PROTECTION  
(SHALL ONLY BE USED IF REQUIRED  
AND APPROVED BY DRMU MANAGER).

NOTE:  
ALL BACKFILL MATERIALS SHALL  
AFTER COMPACTION BE LESS  
PERMEABLE THAN THE IN-SITU  
SURROUNDING SOIL.

DT 02/D



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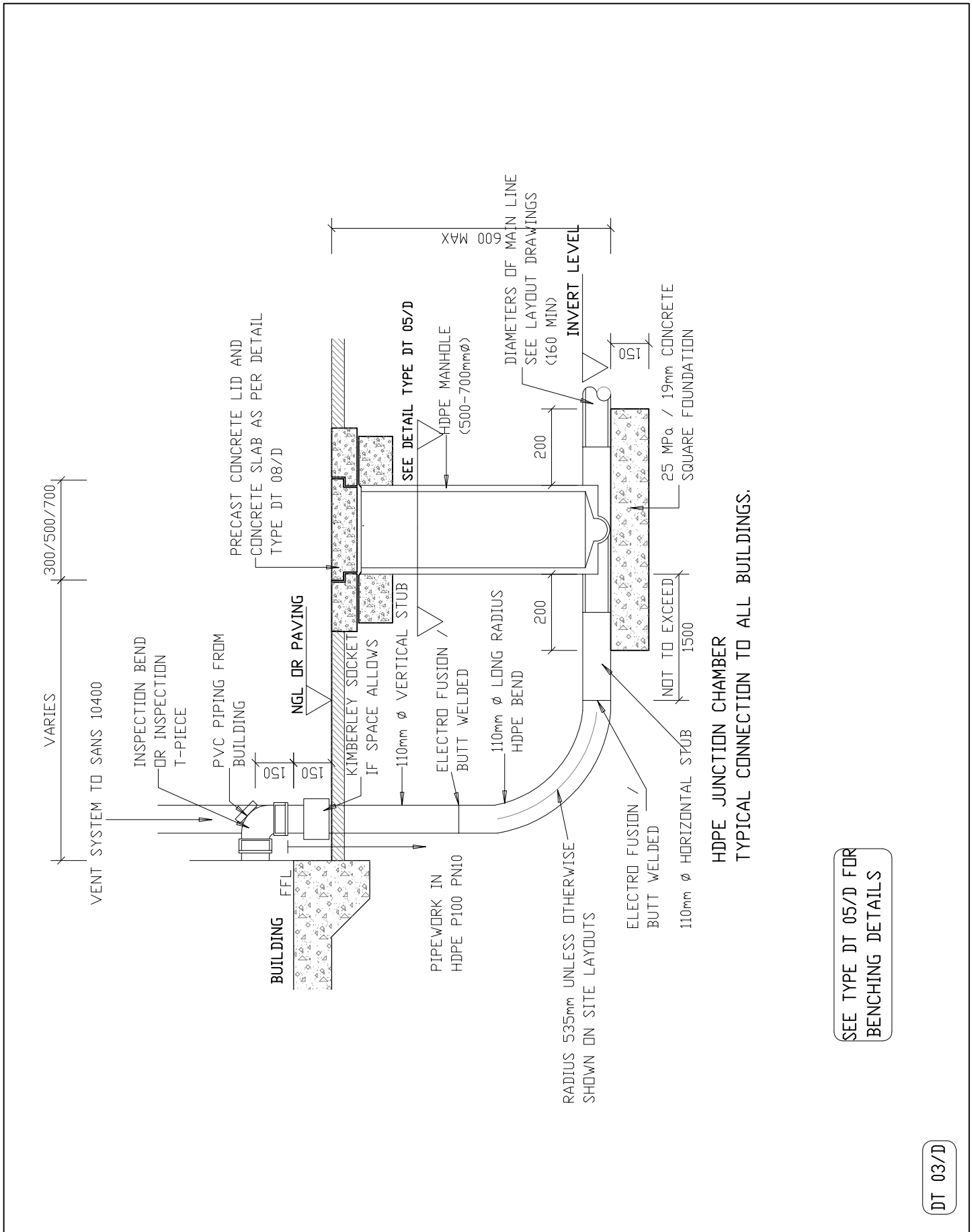
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
SEWER DRAINAGE:  
SOILCRETE / CONCRETE  
PIPE PROTECTION  
(DIAGRAMMATIC)

scale  
1 : 10

date  
30-09-2017

drawing number / type number  
TYPE NO DT 02/D



HDPE JUNCTION CHAMBER  
TYPICAL CONNECTION TO ALL BUILDINGS.

SEE TYPE DT 05/D FOR  
BENCHING DETAILS

DT 03/D

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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
SEWER DRAINAGE:  
HDPE JUNCTION CHAMBER  
TYPICAL CONNECTION TO  
ALL BUILDINGS.  
(DIAGRAMMATIC)

scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 03/D



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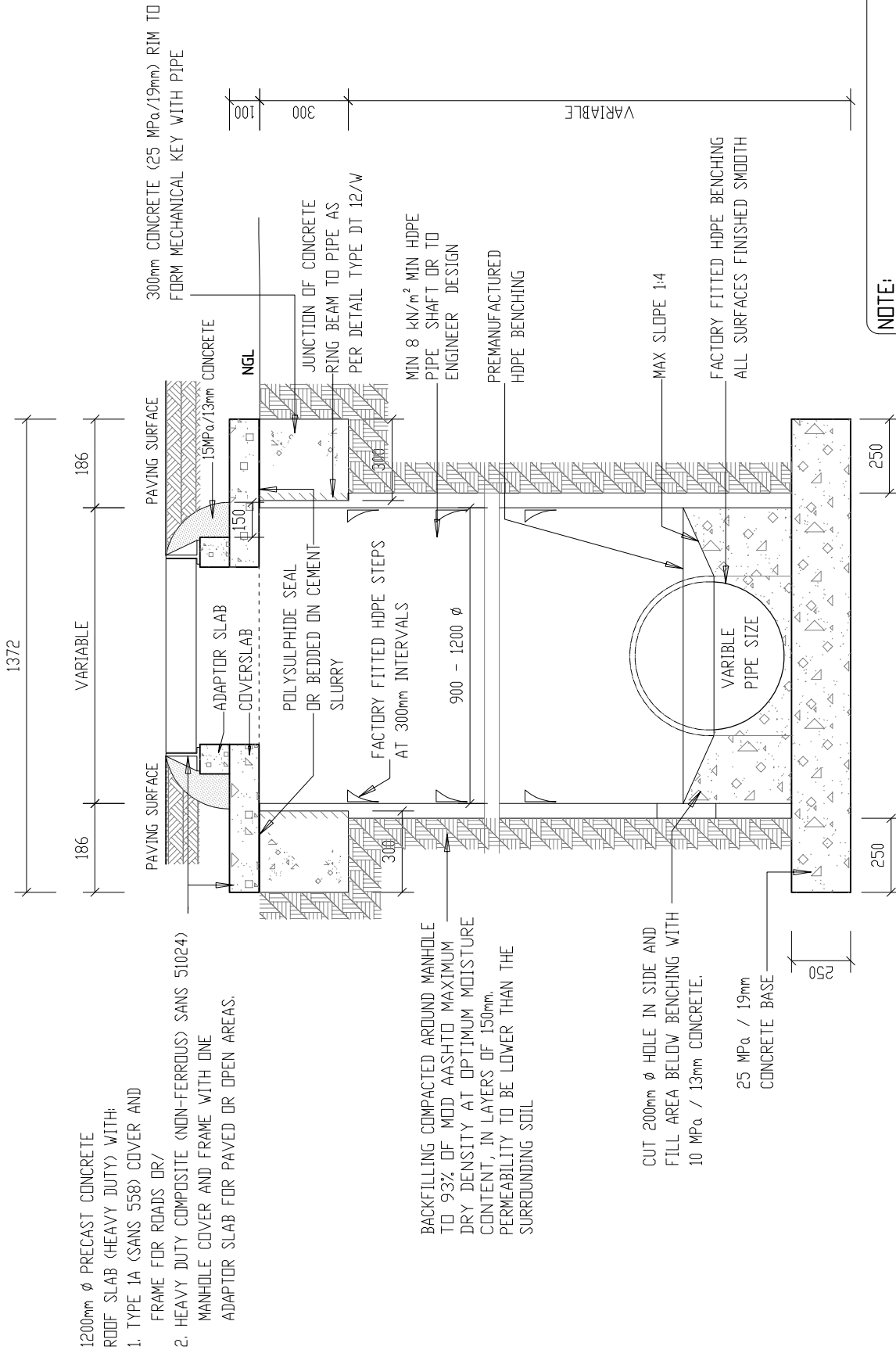
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
SEWER DRAINAGE:  
SECTION OF 900-1200mm  
MANHOLE ON MAIN  
SEWER LINE  
(DIAGRAMMATIC)

scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 04/D



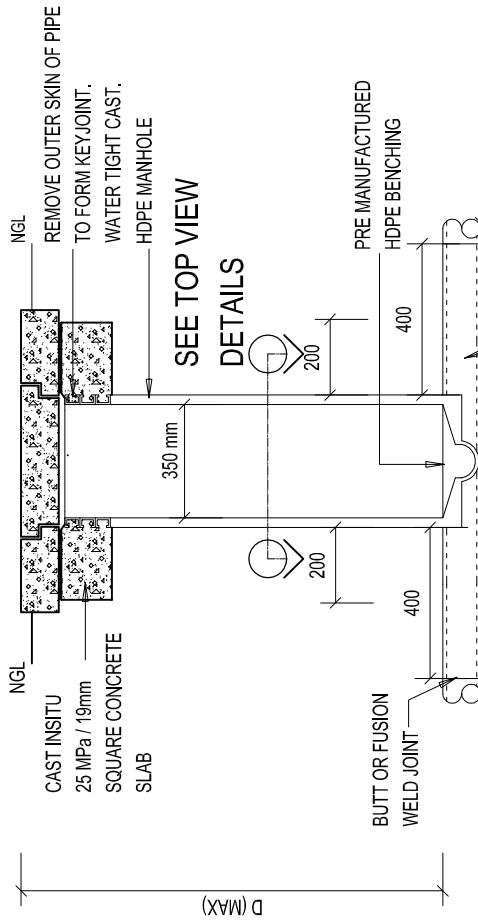
SECTION OF 900 - 1200mm  $\phi$   
MANHOLE ON MAIN SEWER LINE

DT 04/D

**NOTE:**

- ENGINEER TO SPECIFY MANHOLE SHAFT (MIN 8KN) AND ALL IN AND OUTLET SIZES AS WELL AS ANGLES.
- MANUFACTURING DETAILS AS PER TYPE NO DT 09/D.

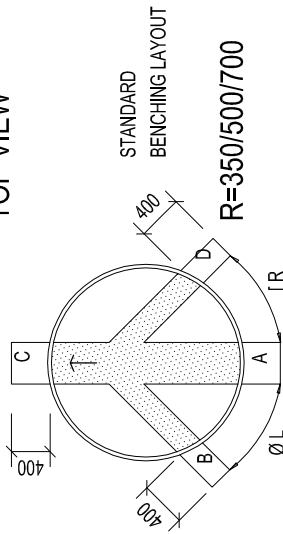
PRECAST LID AND COVER AS PER DETAIL TYPE DT 08/D



Ø mm	Dmm(MAX)
350	350
500	450
700	750

SECTION OF HDPE JUNCTION CHAMBER IN OPEN AREAS

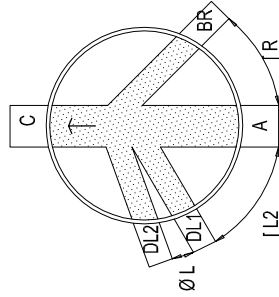
**TOP VIEW**



STANDARD BENCHING LAYOUT

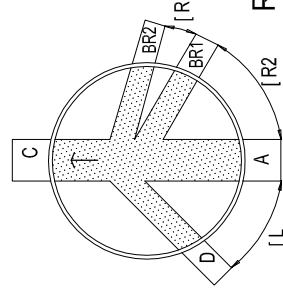
R=350/500/700

PURPOSE MADE BENCHING FOR DOUBLE LEFT JUNCTION MANHOLE



R=350/500/700

PURPOSE MADE BENCHING FOR DOUBLE RIGHT JUNCTION MANHOLE



R=350/500/700

DT 05/D



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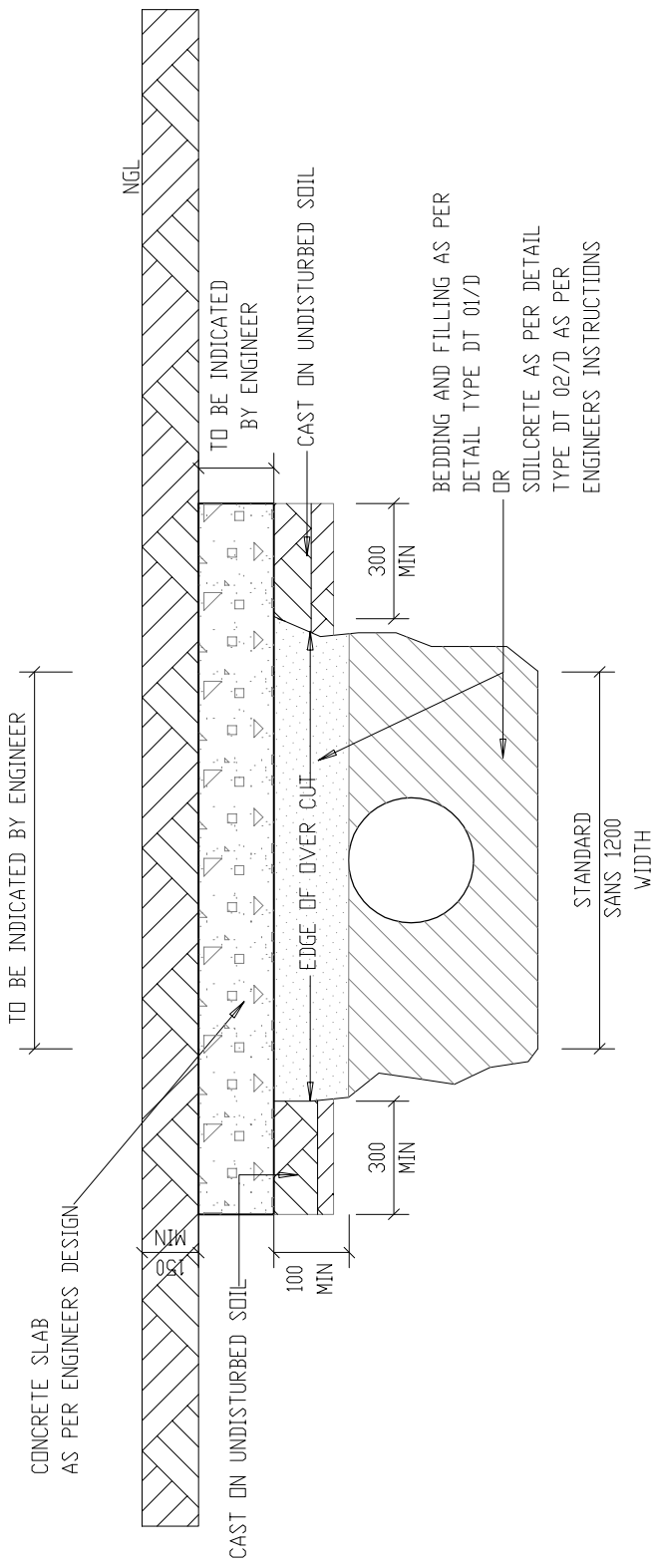
title  
SECTION OF  
HDPE JUNCTION  
CHAMBER IN OPEN  
AREAS  
(DIAGRAMMATIC)

scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 05/D





CASTING OF CONCRETE SLABS  
OVER FLEXIBLE PIPES

DT 06/D



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
DRAINAGE:  
CASTING OF CONCRETE  
SLABS OVER FLEXIBLE  
PIPES  
(DIAGRAMMATIC)

scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 06/D



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
SEWER DRAINAGE:  
PLAN AND ELEVATION FOR  
SURFACE MOUNTING OF  
SEWER PIPES TO EXISTING  
BUILDINGS.  
(DIAGRAMMATIC)

scale  
1 : 60

date  
30-09-2017

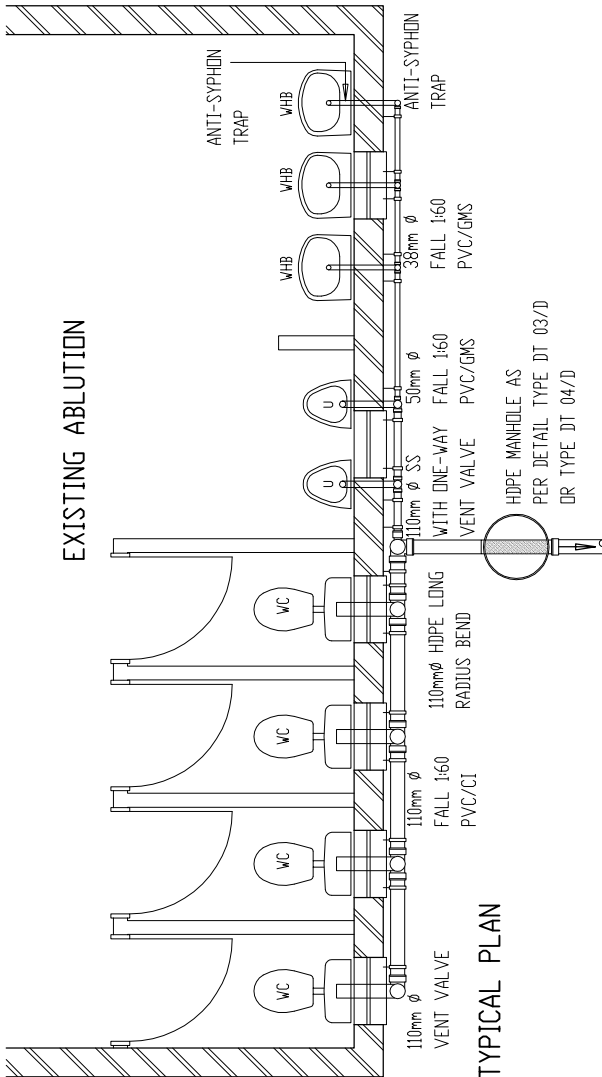
drawing number / type number  
TYPE NO DT 07/D

NOTE:  
DRAWING SHOWS TYPICAL UPGRADING  
FROM SUBSURFACE TO ABOVE GROUND  
LEVEL INSTALLATION

PIPE TYPE  
-ABOVE NGL:  
ALL PIPING IS uPVC WITH SPIGOT AND  
SOCKET JOINTS AS PER SANS 967  
FIX TO WALL WITH STANDARD ALUMINIUM  
HOLDER BATS (2 PER FITTING).

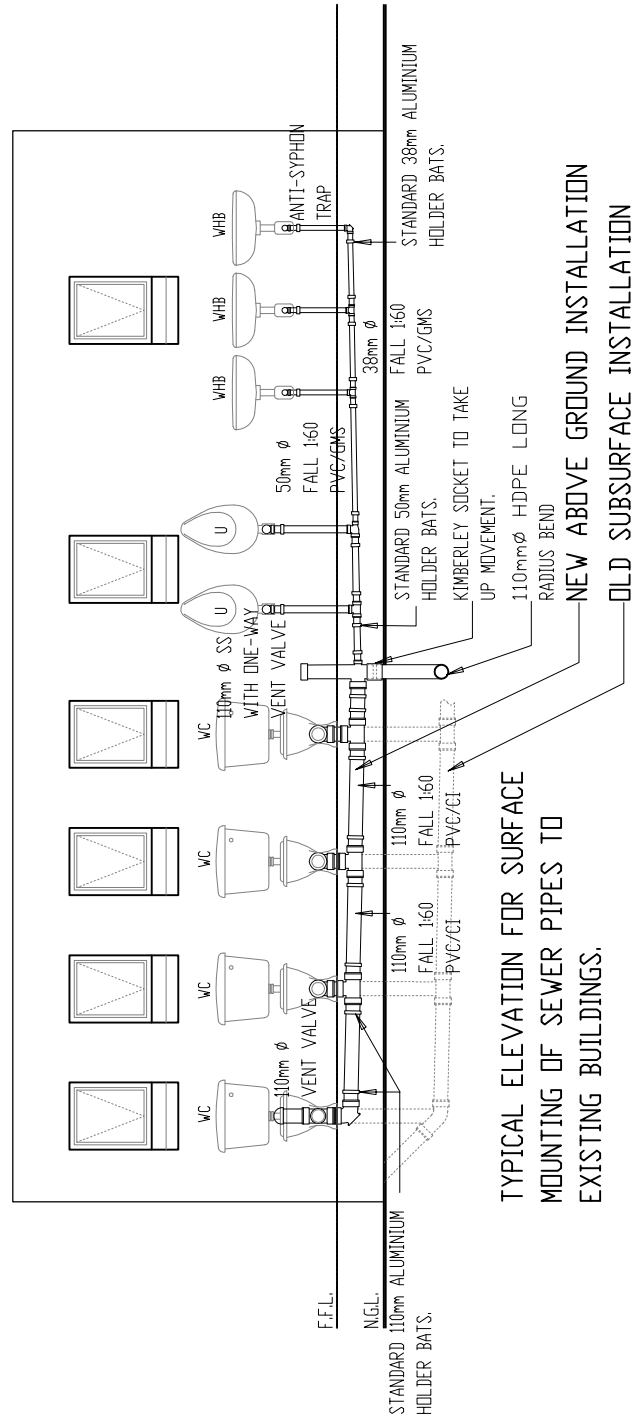
-BELOW NGL:  
ALL PIPING IN HDPE CLASS 6 AS PER  
SANS 533-4427  
PART II TYPE 4 WITH BUTT OR FUSION  
WELDED JOINTS.

### EXISTING ABLUTION



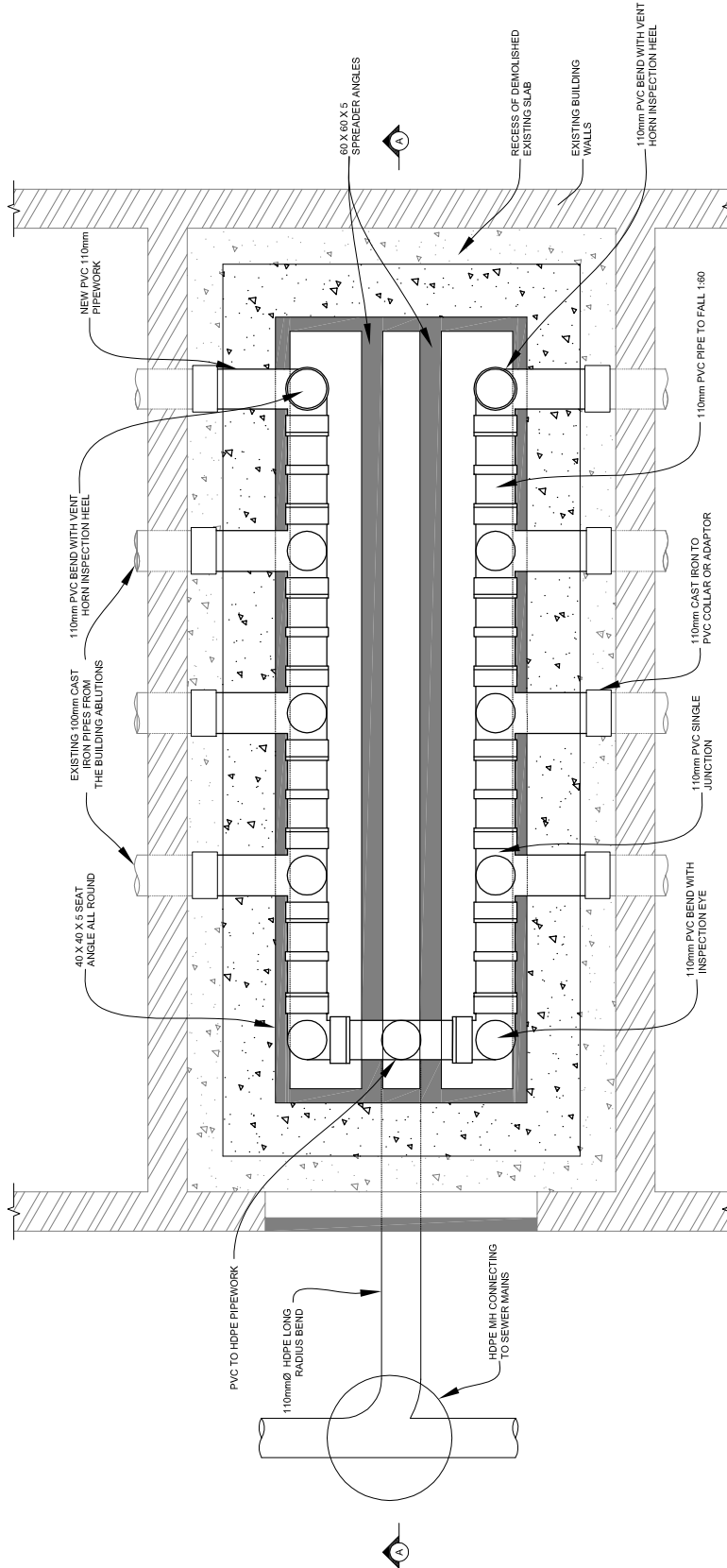
### TYPICAL PLAN

HDPE MANHOLE AS  
PER DETAIL TYPE DT 03/D  
OR TYPE DT 04/D  
TO MAIN OUTFALL SEWER  
(HDPE 160mm  $\phi$  MIN)



TYPICAL ELEVATION FOR SURFACE  
MOUNTING OF SEWER PIPES TO  
EXISTING BUILDINGS.

DT 07/D



PLAN:INTERNAL SERVICES DUCT SHOWING TYPICAL CONNECTION DETAIL TO BUILDINGS

SCALE: 1:20



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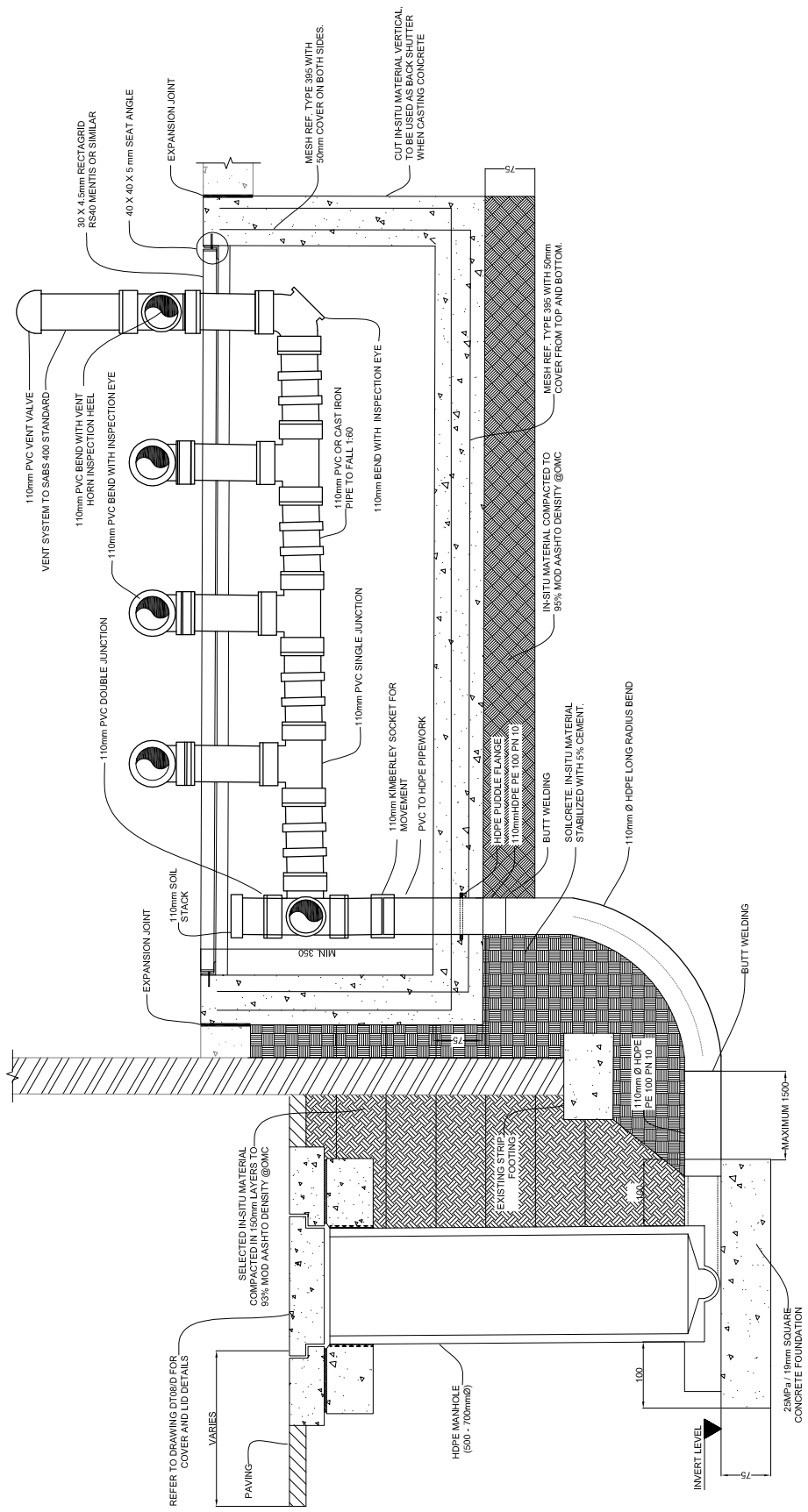
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
.SEWER DRAINAGE:  
GENERAL DETAILS

scale  
AS SHOWN

date  
30-09-2017

drawing number / type number  
TYPE NO DT 08-1/D



SECTION A-A: JUNCTION CHAMBER UNDERNEATH PAVED AREAS AND TYPICAL CONNECTION DETAIL TO BUILDINGS  
SCALE: 1:20



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

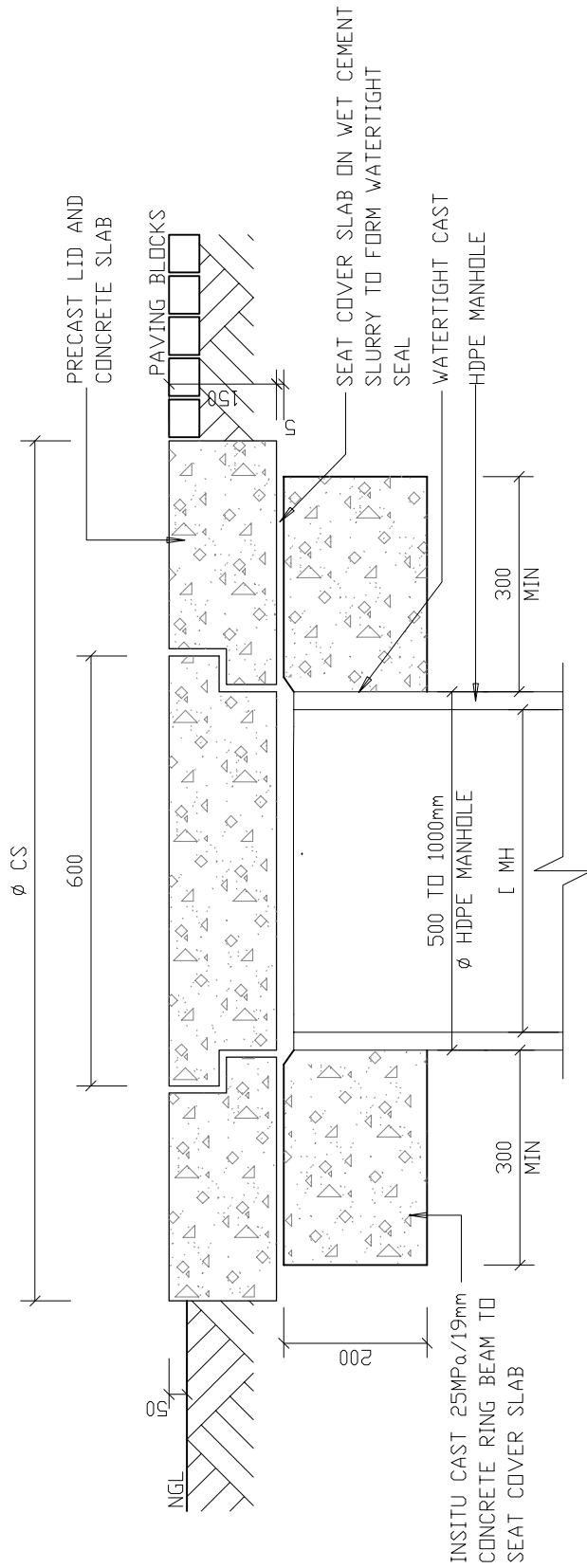
title  
.SEWER DRAINAGE:  
GENERAL DETAILS

scale  
AS SHOWN

date  
30-09-2017

drawing number / type number  
TYPE NO DT 08-2/D

∅ MH	∅ CS
500mm	900mm
700mm	1050mm
900-1000mm	1200mm



STANDARD HEAVY DUTY PRECAST CONCRETE LID AND COVER SLAB FOR HDPE MANHOLES (1200mm OD)

DT 08/D



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
.SEWER DRAINAGE:  
STANDARD HEAVY DUTY  
PRECAST CONCRETE  
ROOFSLAB AND LID FOR  
HDPE MANHOLE  
(DIAGRAMMATIC)

scale  
1 : 10

date  
30-09-2017

drawing number / type number  
TYPE NO DT 08/D





**GENERAL NOTE:**

- ALL MATERIALS TO BE HDPE PE-100 AS PER SANS 4427
- HOOP STIFFNESS OF MANHOLE SHAFT TO BE  $8\text{kN/m}^2$

**OTHER RELEVANT MANUFACTURING STANDARDS:**

- SANS 10268-1
- SANS 10269
- SANS 10270
- SANS 1655
- SANS 1671-1

**GENERAL WELDING SPECIFICATION:**

- BUTT WELDING OF PIPES TO COMPLY SANS 10268-1
- HOT GAS WELDING TO COMPLY SANS 10268-3
- HOT GAS EXTRUSION WELDING TO COMPLY TO SANS 10268-4

**GENERAL FINISHING NOTE:**

- F1- REMOVE FILLER EXPULSION AND FINISH WELD SMOOTH WITH PIPE SURFACE.
- F2- REMOVE FILLER EXPULSION AND FINISH WELD WITH SMOOTH ROUNDED EDGE.
- F3- FINISH PIPE WITH SMOOTH ROUNDED EDGE.
- F4- REMOVE INTERNAL WELDING BEAD.

**WELDING NOTATION FOR JOINTS**

SEE SANS 10270

PAR 5 AS WELL AS ANNEX A.

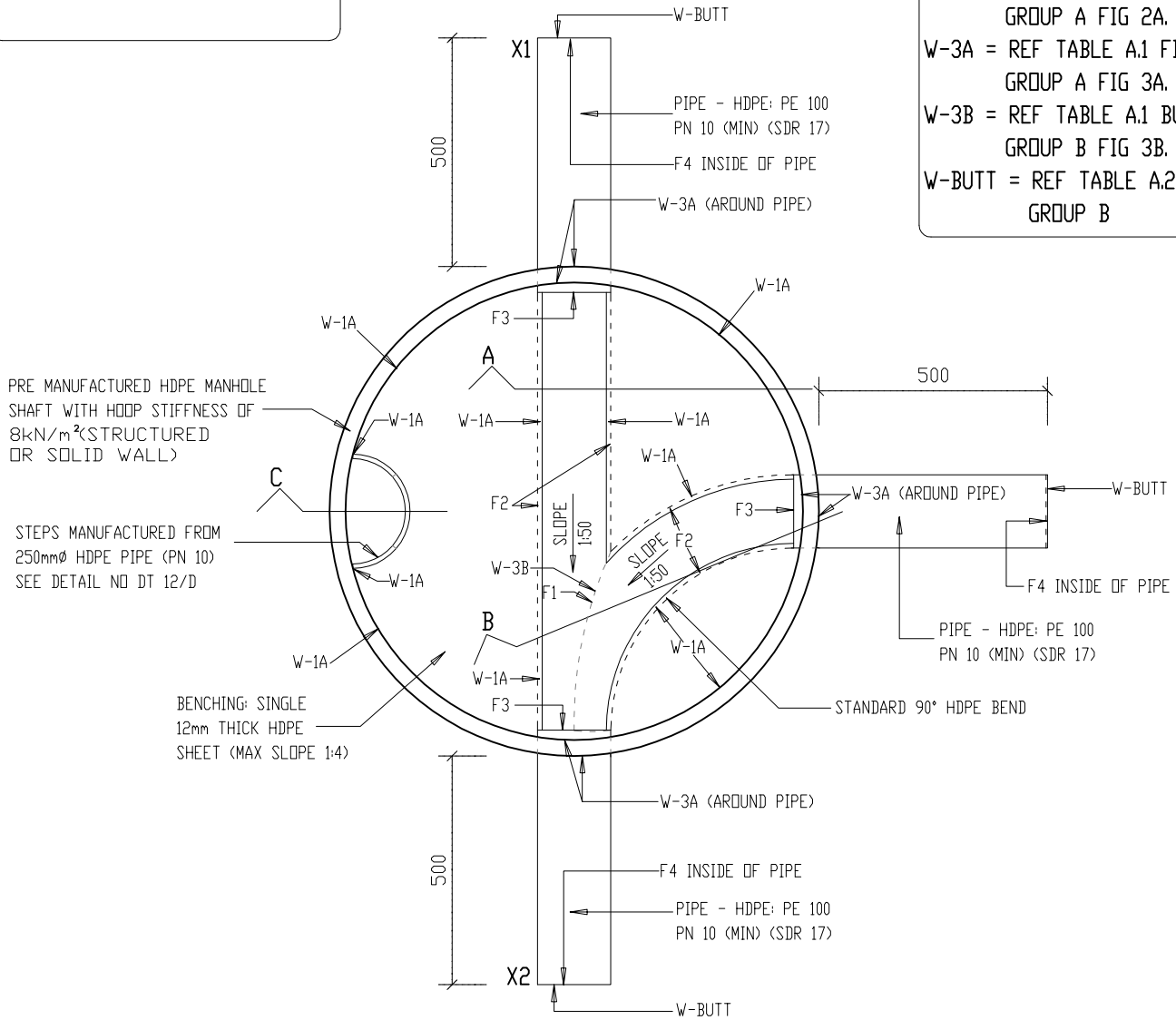
W-1A = REF TABLE A.1 FILLET GROUP A FIG 1A.

W-2A = REF TABLE A.1 FILLET GROUP A FIG 2A.

W-3A = REF TABLE A.1 FILLET GROUP A FIG 3A.

W-3B = REF TABLE A.1 BUTT GROUP B FIG 3B.

W-BUTT = REF TABLE A.2 BUTT GROUP B



PRE MANUFACTURED HDPE MANHOLE SHAFT WITH HOOP STIFFNESS OF  $8\text{kN/m}^2$  (STRUCTURED OR SOLID WALL)

STEPS MANUFACTURED FROM 250mm $\varnothing$  HDPE PIPE (PN 10) SEE DETAIL NO DT 12/D

BENCHING: SINGLE 12mm THICK HDPE SHEET (MAX SLOPE 1:4)

**HDPE MANHOLE PLAN**  
SCALE 1:15

X1 TO X2 IS A SINGLE LENGTH PIPE WITH SECTION REMOVED TO FORM CHANNEL

SECTION A: SEE DT 12/D  
SECTION B: SEE DT 13/D  
SECTION C: SEE DT 14/D

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FOR DOLOMITIC SOILS

title  
TYPICAL WELDING  
DETAILS FOR  
HDPE SEWER MANHOLE:  
PLAN

scale  
1 : 15

date  
30-09-2017

drawing number / type number  
TYPE NO DT 10/D



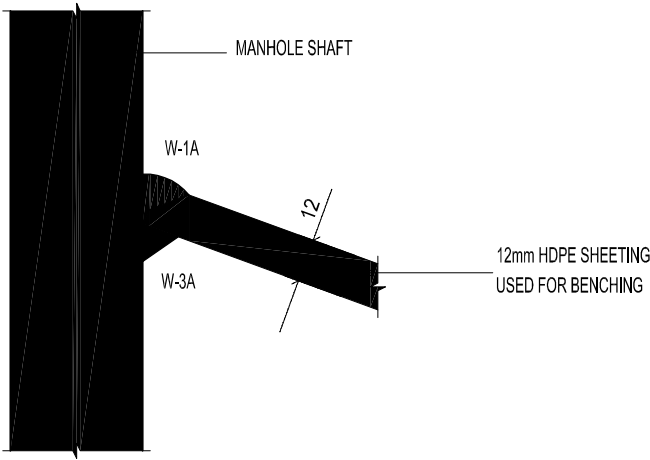
**GENERAL NOTE:**  
 - ALL MATERIALS TO BE HDPE  
 PE-100 AS PER SANS 4427  
 HOOP STIFFNESS OF MANHOLE  
 SHAFT TO BE 8kN/m<sup>2</sup>

**GENERAL WELDING SPECIFICATION:**  
 - BUTT WELDING OF PIPES TO COMPLY  
 TO SANS 10268-1  
 - HOT GAS WELDING TO COMPLY  
 TO SANS 10268-3  
 - HOT GAS EXTRUSION WELDING TO  
 COMPLY TO SANS 10268-4

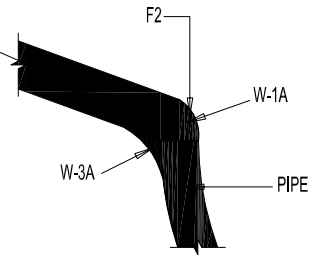
**GENERAL FINISHING NOTE:**  
 F1- REMOVE FILLER EXPULSION AND  
 FINISH WELD SMOOTH WITH PIPE SURFACE.  
 F2- REMOVE FILLER EXPULSION AND  
 FINISH WELD WITH SMOOTH ROUNDED EDGE.  
 F3- FINISH PIPE WITH SMOOTH ROUNDED EDGE.  
 F4- REMOVE INTERNAL WELDING BEAD.

**OTHER RELEVANT  
 MANUFACTURING STANDARDS:**  
 SANS 10268-1  
 SANS 10269  
 SANS 10270  
 SANS 1655  
 SANS 1671-1

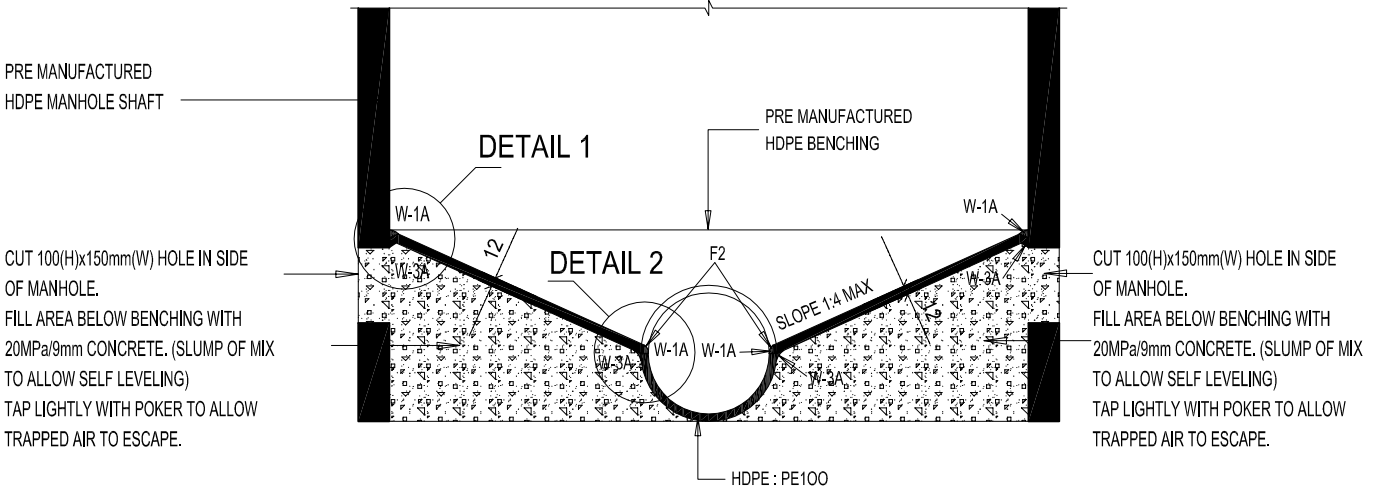
**WELDING NOTATION FOR JOINTS  
 SEE SANS 10270  
 PAR 5 AS WELL AS ANNEX A.**  
 W-1A = REF TABLE A.1 FILLET  
 GROUP A FIG 1A.  
 W-2A = REF TABLE A.1 FILLET  
 GROUP A FIG 2A.  
 W-3A = REF TABLE A.1 FILLET  
 GROUP A FIG 3A.  
 W-3B = REF TABLE A.1 BUTT  
 GROUP B FIG 3B.  
 W-BUTT = REF TABLE A.2 BUTT  
 GROUP B



**DETAIL 1  
 SCALE 1:2**



**DETAIL 2  
 SCALE 1:2**



**SECTION A  
 SCALE 1:10**

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title  
 TYPICAL WELDING  
 DETAILS FOR  
 HDPE SEWER MANHOLE:  
 SECTION A

scale  
 AS SHOWN

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 11/D

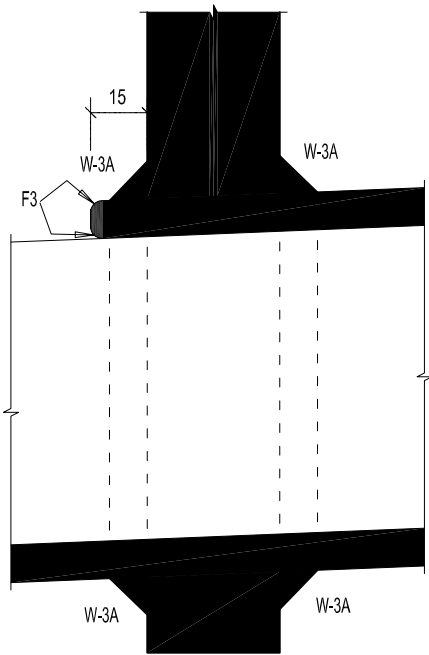
**GENERAL NOTE:**  
 - ALL MATERIALS TO BE HDPE  
 PE-100 AS PER SANS 4427  
 HOOP STIFFNESS OF MANHOLE  
 SHAFT TO BE 8kN/m<sup>2</sup>

**GENERAL WELDING SPECIFICATION:**  
 - BUTT WELDING OF PIPES TO COMPLY  
 TO SANS 10268-1  
 - HOT GAS WELDING TO COMPLY  
 TO SANS 10268-3  
 - HOT GAS EXTRUSION WELDING TO  
 COMPLY TO SANS 10268-4

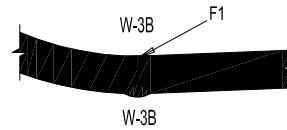
**GENERAL FINISHING NOTE:**  
 F1- REMOVE FILLER EXPULSION AND  
 FINISH WELD SMOOTH WITH PIPE SURFACE.  
 F2- REMOVE FILLER EXPULSION AND  
 FINISH WELD WITH SMOOTH ROUNDED EDGE.  
 F3- FINISH PIPE WITH SMOOTH ROUNDED EDGE.  
 F4- REMOVE INTERNAL WELDING BEAD.

**OTHER RELEVANT  
 MANUFACTURING STANDARDS:**  
 SANS 10268-1  
 SANS 10269  
 SANS 10270  
 SANS 1655  
 SANS 1671-1

**WELDING NOTATION FOR JOINTS**  
 SEE SANS 10270  
 PAR 5 AS WELL AS ANNEX A.  
 W-1A = REF TABLE A.1 FILLET  
 GROUP A FIG 1A.  
 W-2A = REF TABLE A.1 FILLET  
 GROUP A FIG 2A.  
 W-3A = REF TABLE A.1 FILLET  
 GROUP A FIG 3A.  
 W-3B = REF TABLE A.1 BUTT  
 GROUP B FIG 3B.  
 W-BUTT = REF TABLE A.2 BUTT  
 GROUP B

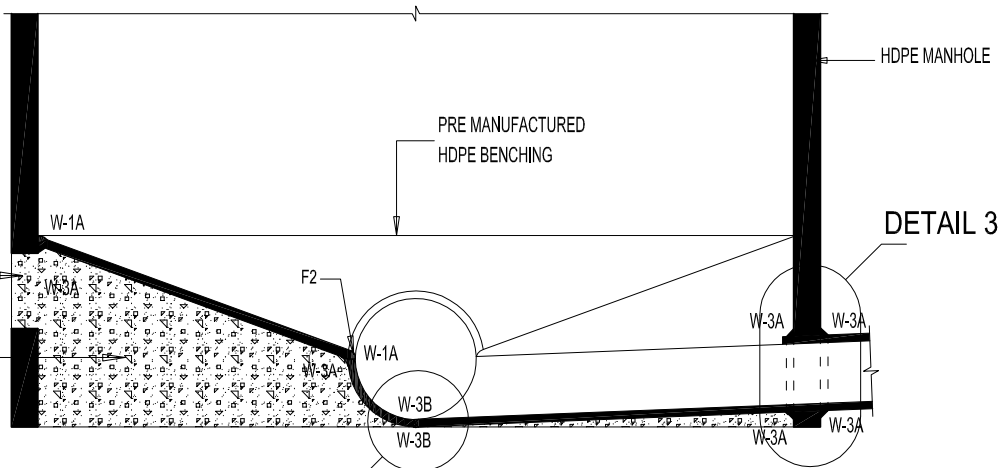


**DETAIL 3**  
**SCALE 1:2**



**DETAIL 4**  
**SCALE 1:2**

CUT 100(H)x150mm(W) HOLE  
 IN SIDE OF MANHOLE.  
 FILL AREA BELOW BENCHING  
 WITH 20MPa/9mm CONCRETE.  
 (SLUMP OF MIX TO ALLOW SELF  
 LEVELING) TAP LIGHTLY WITH  
 POKER TO ALLOW TRAPPED AIR  
 TO ESCAPE.



**SECTION B**  
**SCALE 1:10**

**DETAIL 4**



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 FOR DOLOMITIC SOILS

title  
 TYPICAL WELDING  
 DETAILS FOR  
 HDPE SEWER MANHOLE:  
 SECTION B

scale  
 AS SHOWN

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 12/D

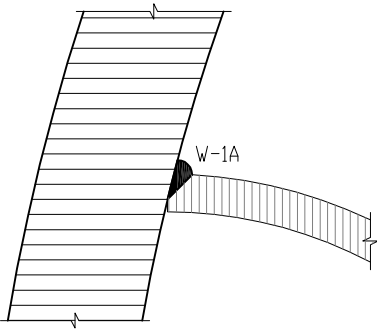
**GENERAL NOTE:**  
 - ALL MATERIALS TO BE HDPE PE-100 AS PER SANS 4427  
 HOOP STIFFNESS OF MANHOLE SHAFT TO BE 8kN/m<sup>2</sup>

**OTHER RELEVANT MANUFACTURING STANDARDS:**  
 SANS 10268-1  
 SANS 10269  
 SANS 10270  
 SANS 1655  
 SANS 1671-1

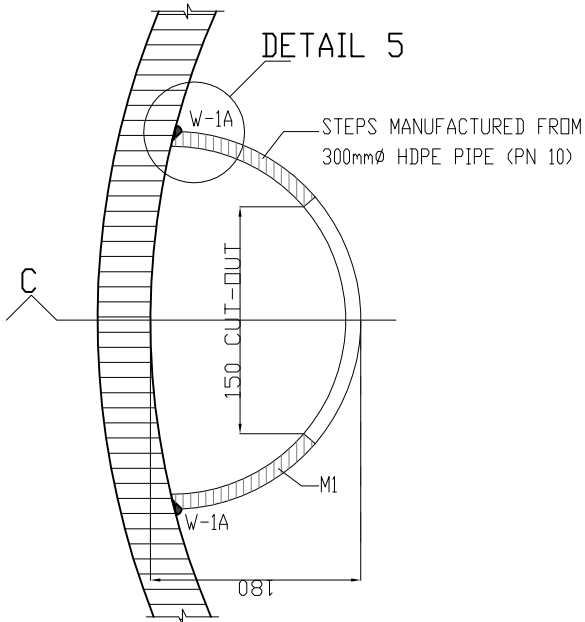
**GENERAL WELDING SPECIFICATION:**  
 - BUTT WELDING OF PIPES TO COMPLY TO SANS 10268-1  
 - HOT GAS WELDING TO COMPLY TO SANS 10268-3  
 - HOT GAS EXTRUSION WELDING TO COMPLY TO SANS 10268-4

**GENERAL FINISHING NOTE:**  
 F1- REMOVE FILLER EXPULSION AND FINISH WELD SMOOTH WITH PIPE SURFACE.  
 F2- REMOVE FILLER EXPULSION AND FINISH WELD WITH SMOOTH ROUNDED EDGE.  
 F3- FINISH PIPE WITH SMOOTH ROUNDED EDGE.  
 F4- REMOVE INTERNAL WELDING BEAD.

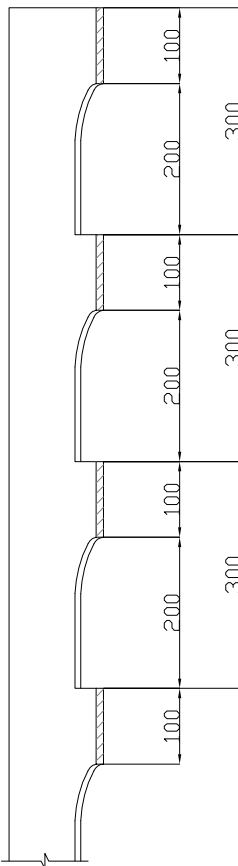
**WELDING NOTATION FOR JOINTS**  
 SEE SANS 10270  
 PAR 5 AS WELL AS ANNEX A.  
 W-1A = REF TABLE A.1 FILLET GROUP A FIG 1A.  
 W-2A = REF TABLE A.1 FILLET GROUP A FIG 2A.  
 W-3A = REF TABLE A.1 FILLET GROUP A FIG 3A.  
 W-3B = REF TABLE A.1 BUTT GROUP B FIG 3B.  
 W-BUTT = REF TABLE A.2 BUTT GROUP B



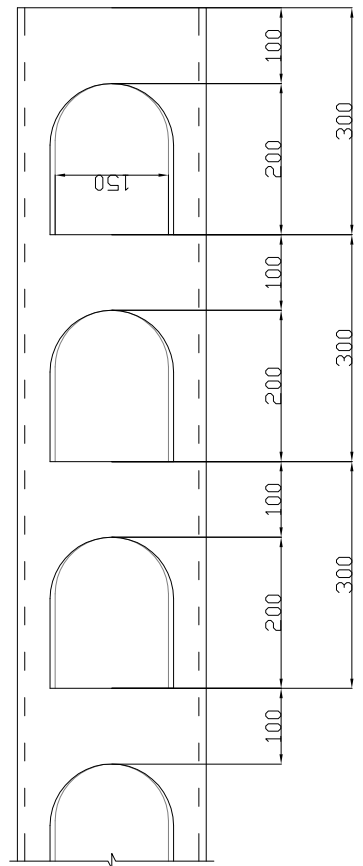
DETAIL 5  
 SCALE 1:2



HDPE STEPS IN MANHOLE  
 PLAN  
 SCALE 1:5



SECTION C  
 SCALE 1:10



ELEVATION OF STEPS  
 SCALE 1:10



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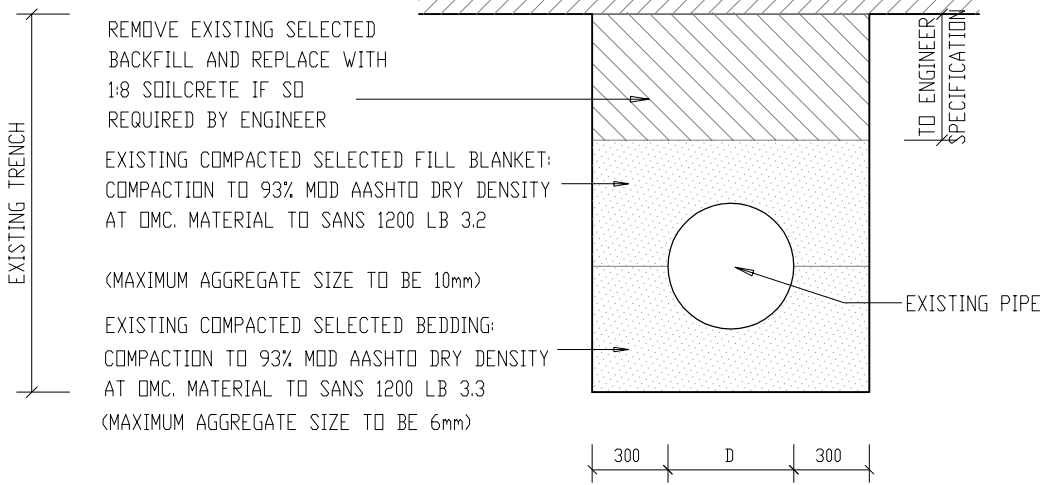
title  
 TYPICAL WELDING  
 DETAILS FOR  
 HDPE SEWER MANHOLE:  
 SECTION C

scale  
 AS SHOWN

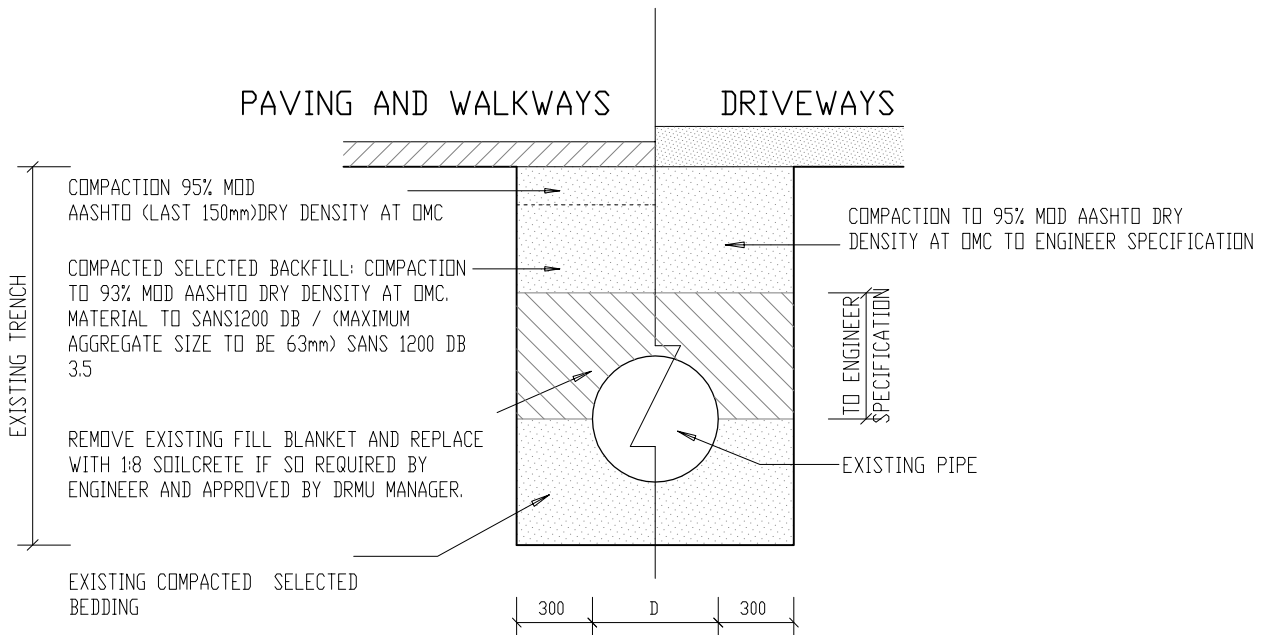
date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 13/D

### DRIVEWAYS AND WALKWAYS



### PAVING AND WALKWAYS DRIVEWAYS



TRENCHING, BEDDING AND BACKFILLING DETAILS OVER EXISTING PIPES  
SCALE 1:30

NOTE:  
ALL BEDDING SURROUND AND BACKFILL MATERIALS SHALL AFTER COMPACTION BE LESS PERMEABLE THAN THE IN-SITU SURROUNDING SOIL

DT 14/D



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FOR DOLOMITIC SOILS

title  
TRENCHING, BEDDING  
AND BACKFILLING DETAILS  
OVER EXISTING PIPES  
(DIAGRAMMATIC)

scale  
1 : 30

date  
30-09-2017

drawing number / type number  
TYPE NO DT 14/D

# STORMWATER DETAILS

## STORMWATER DETAILS: LIST OF DRAWINGS

- DT 01/ST STORMWATER DUCT FOR ROADWAYS AND WALKWAYS.
- DT 02/ST STORMWATER CANAL IN AREAS WITH VEHICLE TRAFFIC.
- DT 03/ST DETAIL OF EXIT OF SEWER PIPES AT STORMWATER CANAL NEXT TO BUILDINGS.
- DT 04/ST EXPANSION JOINT IN CANAL.
- DT 05/ST EXPANSION JOINT AGAINST BUILDING
- DT 06/ST STORMWATER CANAL NEXT TO BUILDING OR IN OPEN VELD WHERE TO MATCH EXISTING ONLY.
- DT 07/ST (SECTION) LARGE STORMWATER CANAL
- DT 09/ST (SECTION) TYPICAL COVERED STORMWATER CANAL
- DT 10/ST FLOOR EXPANSION JOINT DETAIL
- DT 11/ST CONSTRUCTION JOINT DETAIL - TYPE 1
- DT 12/ST CONSTRUCTION JOINT DETAIL - TYPE 2
- DT 13/ST CONSTRUCTION JOINT DETAIL - TYPE 3
- DT 16/ST(1) (PLAN) SPILLING BASIN - TYPE 1
- DT 16/ST(2) SECTION THROUGH SPILLING BASIN - TYPE 1
- DT 16/ST(3) SECTION THROUGH SPILLING BASIN - TYPE 1
- DT 17/ST PLAN AND SECTION SPILLING BASIN - TYPE 2
- DT 19/ST STORMWATER INLET OVER MANHOLE
- DT 20/ST TYPICAL WELDING DETAILS FOR HDPE STORMWATER MANHOLE: PLAN
- DT 21/ST TYPICAL WELDING DETAILS FOR HDPE STORMWATER MANHOLE: SECTION A
- DT 22/ST TYPICAL WELDING DETAILS FOR HDPE STORMWATER MANHOLE: SECTION B
- DT 23/ST TYPICAL WELDING DETAILS FOR HDPE STORMWATER MANHOLE: SECTION C
- DT 24/ST GRID INLET NEXT TO RUNWAYS AND TAXIWAYS
- DT 25/ST DUCT FOR ROADWAYS AND WALKWAYS
- DT 26/ST CANAL IN AREAS WITH NO VEHICLE TRAFFIC



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FOR DOLOMITIC SOILS

project  
STORMWATER:  
DRAWING LIST.

scale

.

date

2017/09/30

drawing number / type number

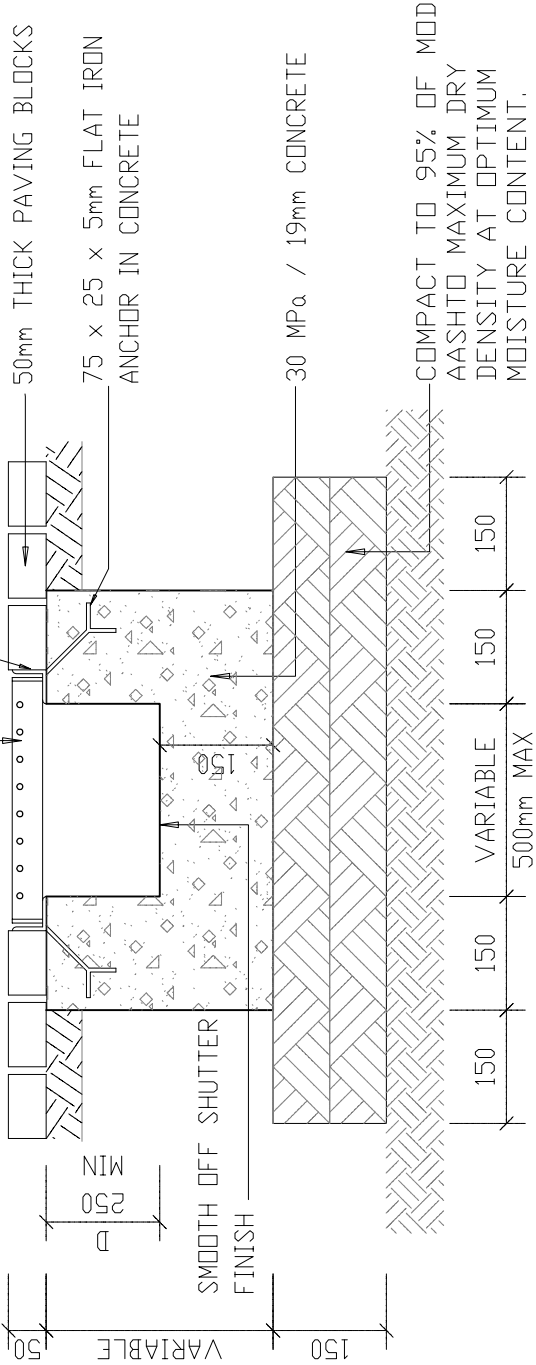
TYPE NO DT 00/ST

**NOTE:**

- COMPLETE UNIT TO BE HOT DIPPED GALVANIZED AFTER MANUFACTURING (SANS 121 HEAVY DUTY).
- ALLOW FOR WATER DRAINAGE FROM DUCT TO STORMWATER SYSTEM

RECTANGULAR CATWALK TYPE HORIZONTAL STEEL GRATING TRENCH COVER (HEAVY DUTY) EDGE AND CROSS BARS 40 X 4.5mm LONGITUDINAL BARS 25 X 4.5mm GRATING TO BE HOT DIPPED GALVANISED AFTER MANUFACTURING GRATING TO BE "BANDED".

45X45mmX5mm HOT DIPPED GALVANIZED ANGLE IRON TO SEAT GRATING, WITH TIE BACK BAR.



DT 01/ST



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FOR DOLOMITIC SOILS.

title  
STORMWATER:  
DUCT FOR ROADWAYS  
AND WALKWAYS

scale  
1 : 10

date  
30-09-2017

drawing number / type number  
TYPE NO DT 01/ST



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
STORMWATER:  
CANAL IN AREAS WITH  
VEHICLE TRAFFIC  
(DIAGRAMMATIC)

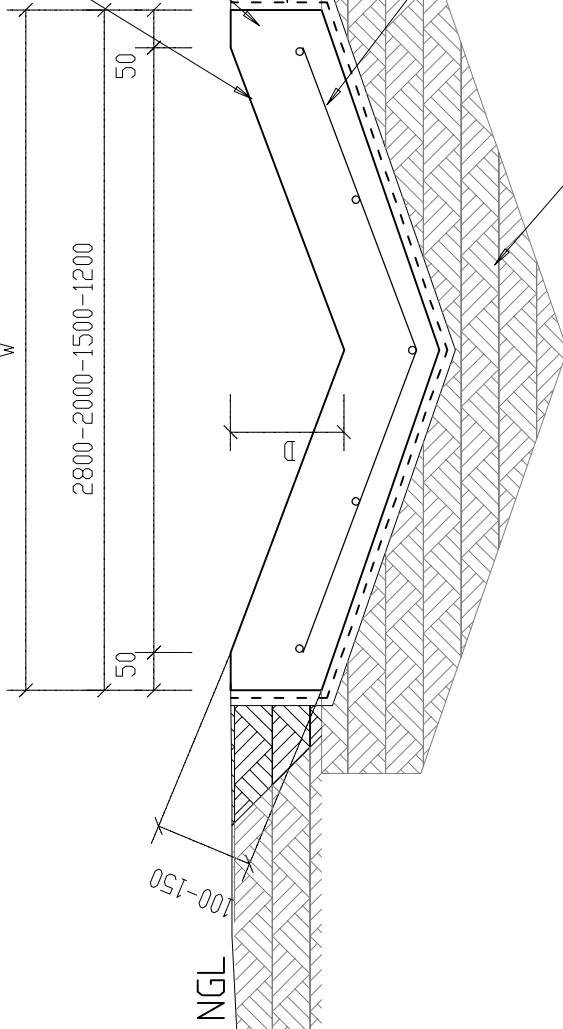
scale  
1 : 10

date  
30-09-2017

drawing number / type number  
TYPE NO DT 02/ST

2800 = 300mm DEEP (MAX)  
2000 = 200mm DEEP (MAX)  
1500 = 150mm DEEP (MAX)  
1200 = 150mm DEEP (MAX)

W



STEEL FLOATED SURFACE FINISH  
ACCURACY OF CONCRETE SURFACE  
DEGREE II (BROOM DRAG IF  
REQUIRED)

CONCRETE 25 MPa / 19mm (SANS 1200 G 5.5.1.7)

RECOMPACT DISTURBED SOIL TO 95% MOD  
AASHTO DENSITY AT OPTIMUM MOISTURE  
CONTENT.

250 MICRON POLYETHYLENE  
SHEETING (MECHANICALLY  
JOINED) SANS 952.

REF.617 STEEL MESH (SANS 1047)  
CONTINUOUS OVER CONSTRUCTION JOINTS.  
REINFORCING TO OVERLAP BY 400mm.

RIP AND RECOMPACT INSITU MATERIAL TO 95% OF  
MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM  
MOISTURE CONTENT.

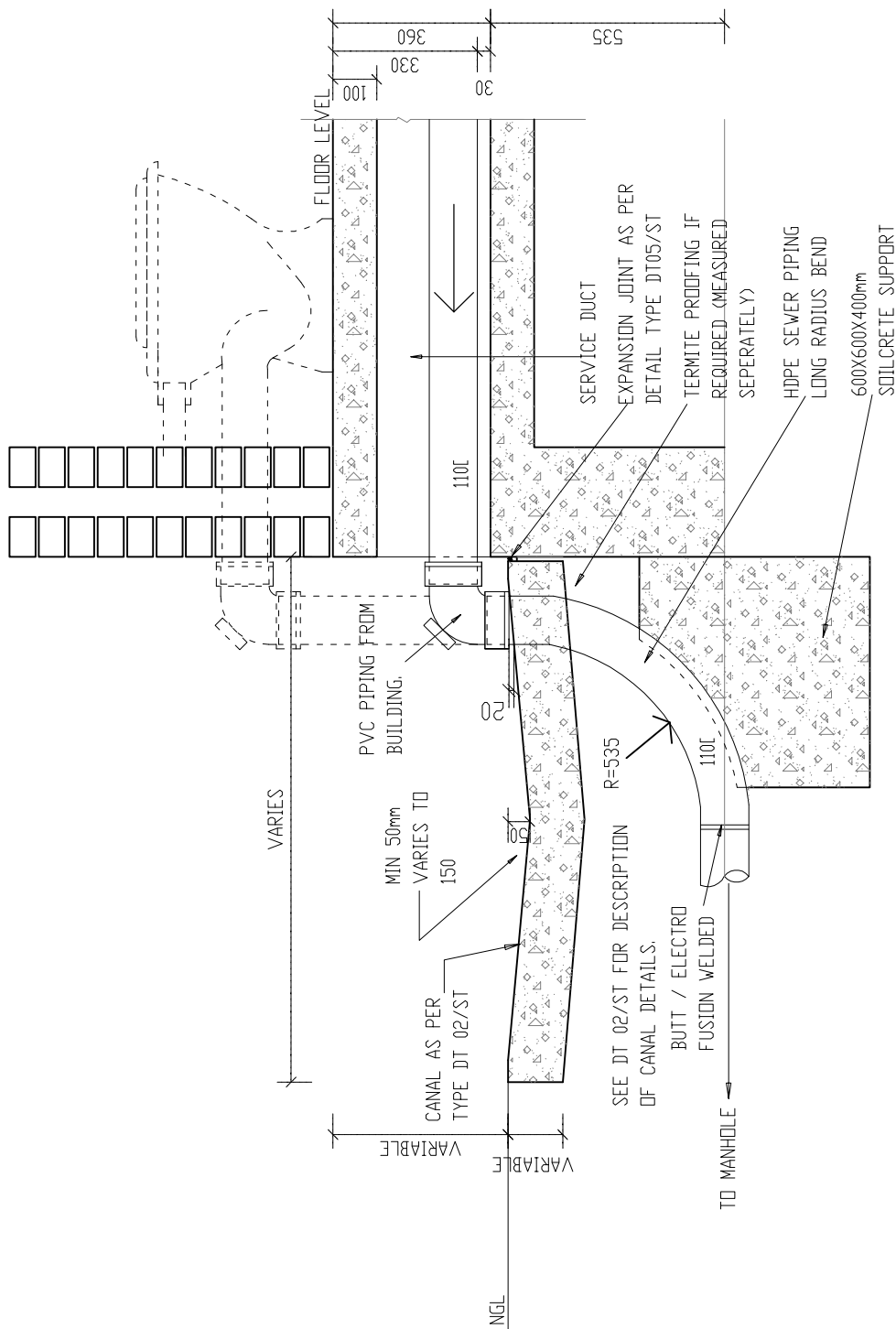
CAST IN ALTERNATIVE SECTIONS  
1,5m LONG WITH EXPANSION JOINTS  
AT 18m. SEE STANDARD DETAIL FOR  
EXPANSION JOINT - TYPE NO DT 04/S

NOTE:

1. D - VARIABLE FROM 50mm TO INDICATED  
MAXIMUM DEPTH.
2. STEEL REINFORCING TO BE REF. 395 IN  
AREAS WITH NO VEHICLE TRAFFIC.
3. EXPANSION JOINT BETWEEN CANAL AND  
WALL ONLY IF INDICATED.

STORMWATER CANAL IN AREAS WITH  
VEHICLE TRAFFIC

DT 02/ST



DETAIL OF EXIT SEWER PIPES AND STORMWATER  
CANAL NEXT TO BUILDINGS.

DT 03/ST



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

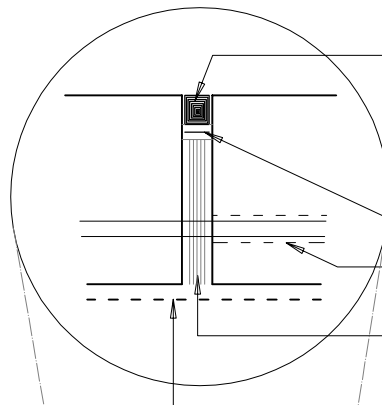
title  
STORMWATER:  
DETAIL OF EXIT OF SEWER  
PIPES AT STORMWATER  
CANAL NEXT TO BUILDINGS.  
(DIAGRAMMATIC)

scale  
1 : 15

date  
30-09-2017

drawing number / type number  
TYPE NO DT 03/ST





CLEANING, PRIMING AND PREPARATION  
TO MANUFACTURER SPECIFICATION.  
APPROVED SANS 110  
POLYSULPHIDE JOINT SEALANT (GUNGRADE)

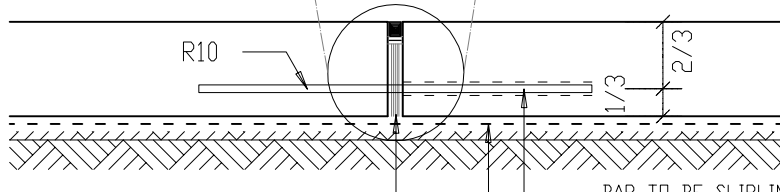
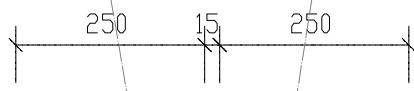
POLYETHYLENE TAPE BOND BREAKER

SLIPLINING

10mm Ø BITUMEN IMPREGNATED  
SOFT BOARD

POLYETHYLENE SHEETING

DETAIL COPY  
SCALE 1:5



VARIABLE  
100-150

10mm [ BITUMEN IMPREGNATED  
SOFT BOARD

BAR TO BE SLIPLINED WITH BITUMEN  
DIPPED CLOTH WRAPPING TO 4mm THICKNESS  
ON ONE SIDE.

POLYETHYLENE SHEETING

EXPANSION JOINT  
IN CANAL

DT 04/ST



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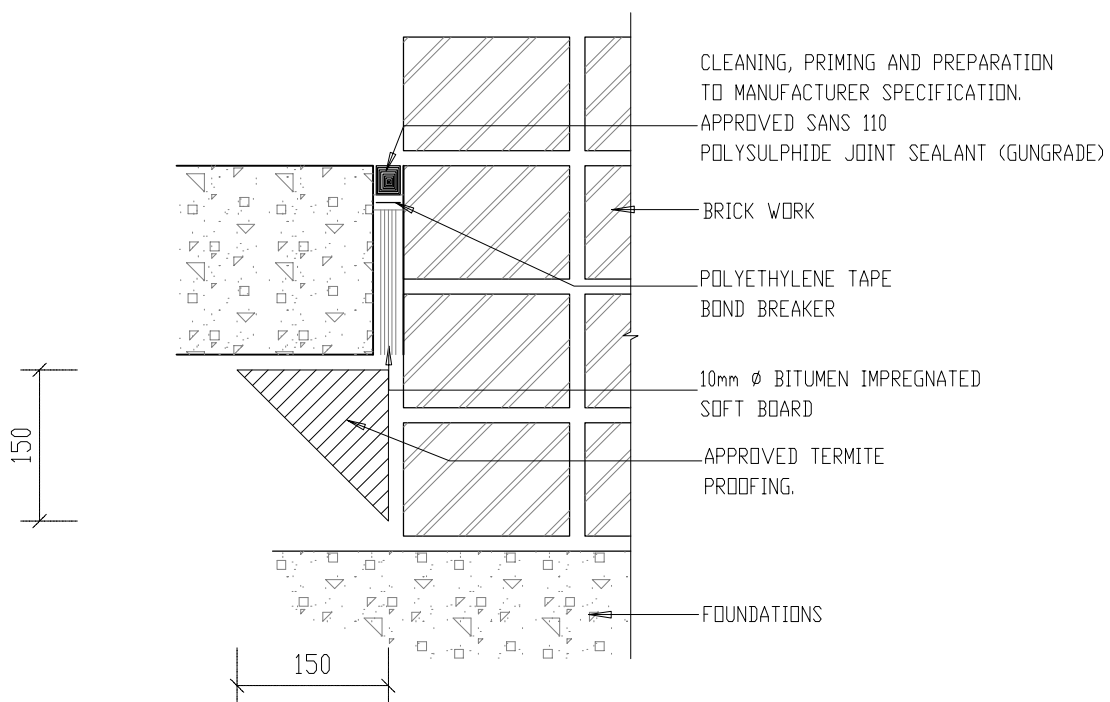
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

project  
STORMWATER:  
EXPANSION JOINT  
IN CANAL  
(DIAGRAMMATIC)

scale  
1 : 10

date  
30-09-2017

drawing number / type number  
TYPE NO DT 04/ST



EXPANSION JOINT AGAINST BUILDING

DT 05/ST



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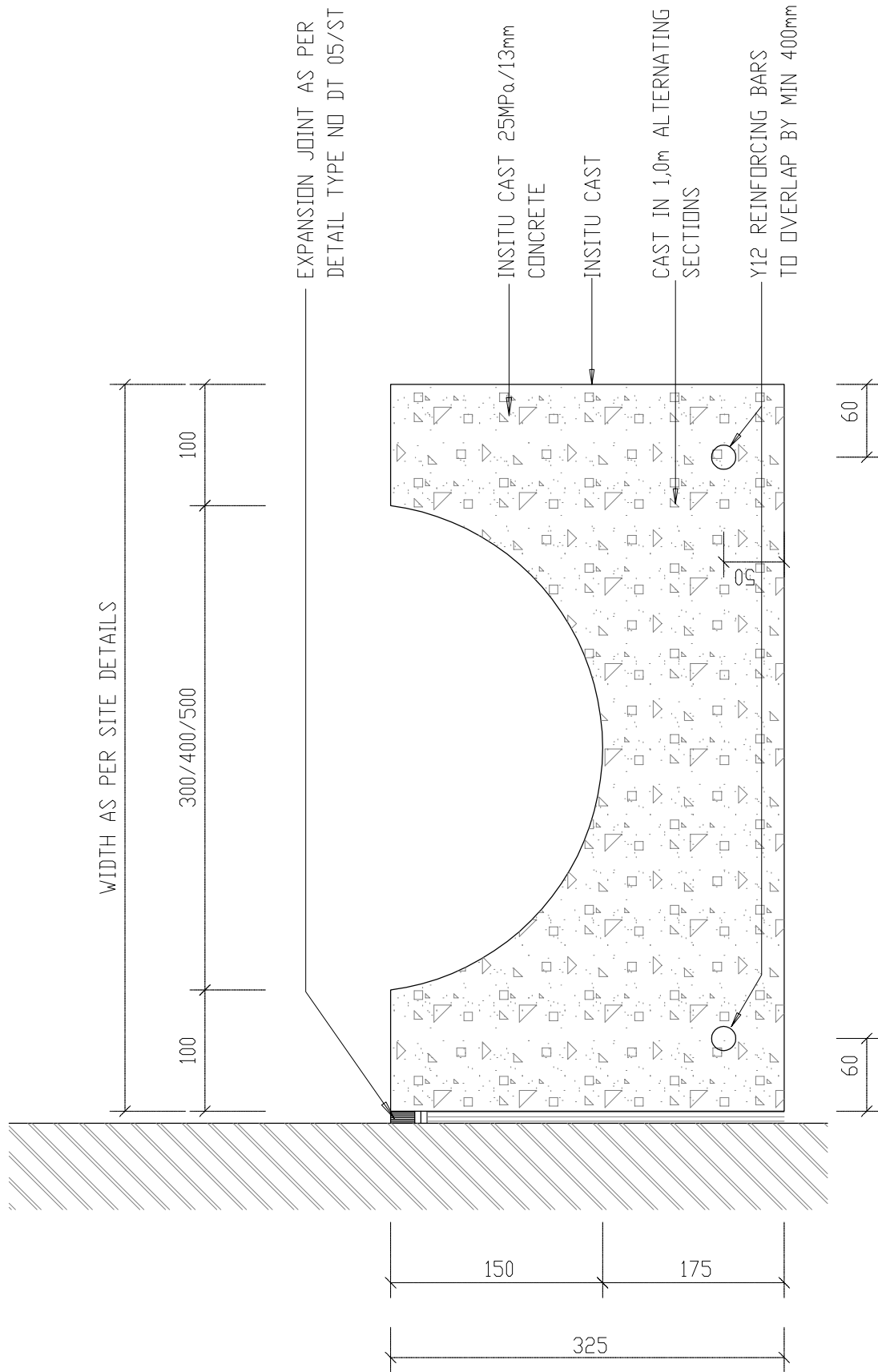
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
STORMWATER:  
EXPANSION JOINT AGAINST  
BUILDING  
(DIAGRAMMATIC)

scale  
1 : 7.5

date  
30-09-2017

drawing number / type number  
TYPE NO DT 05/ST



STORMWATER CANAL NEXT TO BUILDING  
OR IN OPEN VELD WHERE TO MATCH  
EXISTING ONLY.

DT 06/ST



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

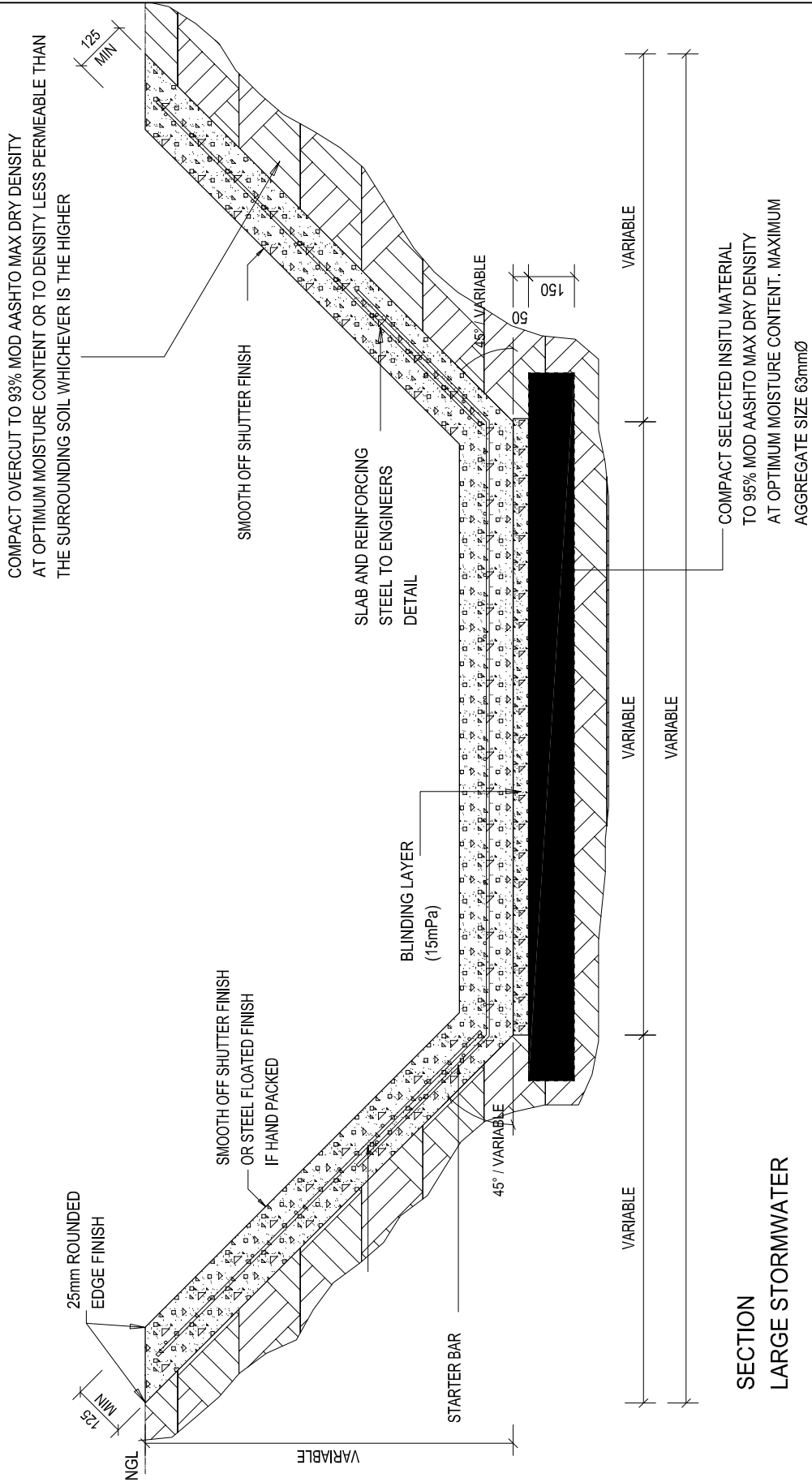
title  
STORMWATER:  
STORMWATER CANAL NEXT  
TO BUILDING OR IN OPEN  
VELD WHERE TO MATCH  
EXISTING ONLY.  
(DIAGRAMMATIC)

scale  
1 : 5

date  
30-09-2017

drawing number / type number  
TYPE NO DT 06/ST

NOTE:  
 CONCRETE LINING HAND FORMED  
 OR CAST AGAINST SMOOTH FORMWORK.  
 FOR JOINT DETAILS SEE DETAIL  
 TYPE DT 10/ST, DT 11/ST



SECTION  
 LARGE STORMWATER

DT 07/ST



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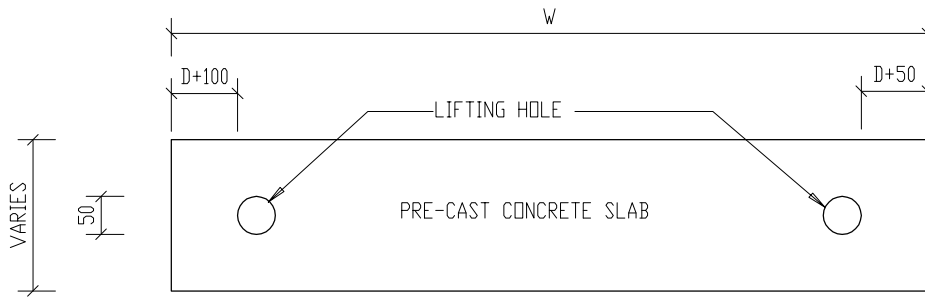
departmental  
 DIAGRAMMATIC CIVIL  
 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 STORMWATER:  
 (SECTION)  
 LARGE STORMWATER CANAL.  
 (DIAGRAMMATIC)

scale  
 1 : 20

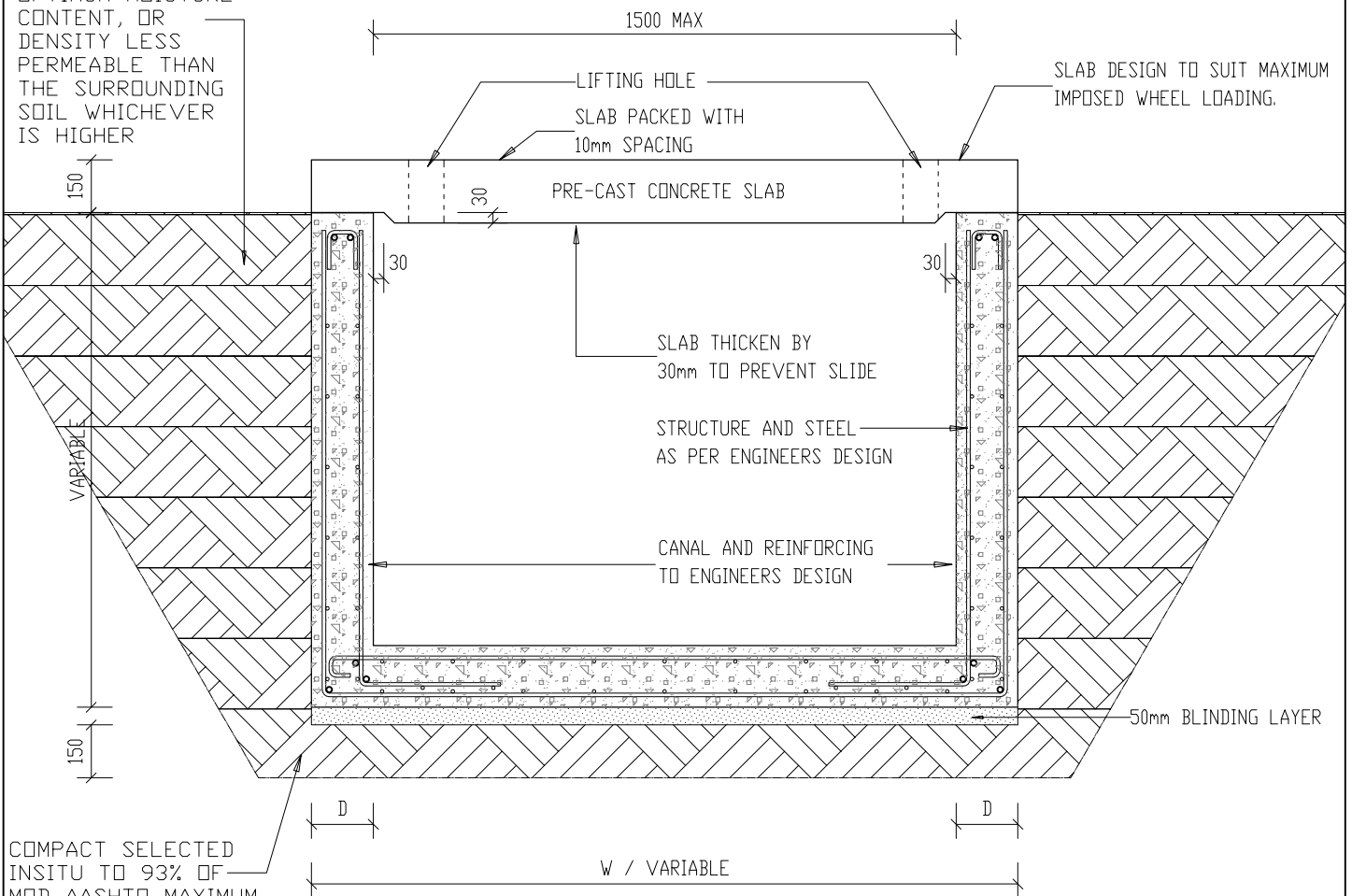
date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 07/ST



PRE-CAST CONCRETE SLAB  
TO ENGINEERS DESIGN.  
(NOT TO EXCEED 350kg)

COMPACT BACKFILL  
IN LAYERS OF  
150mm MINIMUM TO  
93% OF MOD  
AASHTO MAXIMUM  
DRY DENSITY AT  
OPTIMUM MOISTURE  
CONTENT, OR  
DENSITY LESS  
PERMEABLE THAN  
THE SURROUNDING  
SOIL WHICHEVER  
IS HIGHER



SLAB DESIGN TO SUIT MAXIMUM  
IMPOSED WHEEL LOADING.

SLAB THICKEN BY  
30mm TO PREVENT SLIDE

STRUCTURE AND STEEL  
AS PER ENGINEERS DESIGN

CANAL AND REINFORCING  
TO ENGINEERS DESIGN

50mm BLINDING LAYER

COMPACT SELECTED  
INSITU TO 93% OF  
MOD AASHTO MAXIMUM  
DRY DENSITY AT  
OPTIMUM MOISTURE  
CONTENT. MAXIMUM  
AGGREGATE SIZE  
63mm $\phi$

TYPICAL COVERED STORMWATER CANAL

DT 09/ST



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
STORMWATER:  
(SECTION)  
TYPICAL COVERED  
STORMWATER CANAL.  
(DIAGRAMMATIC)

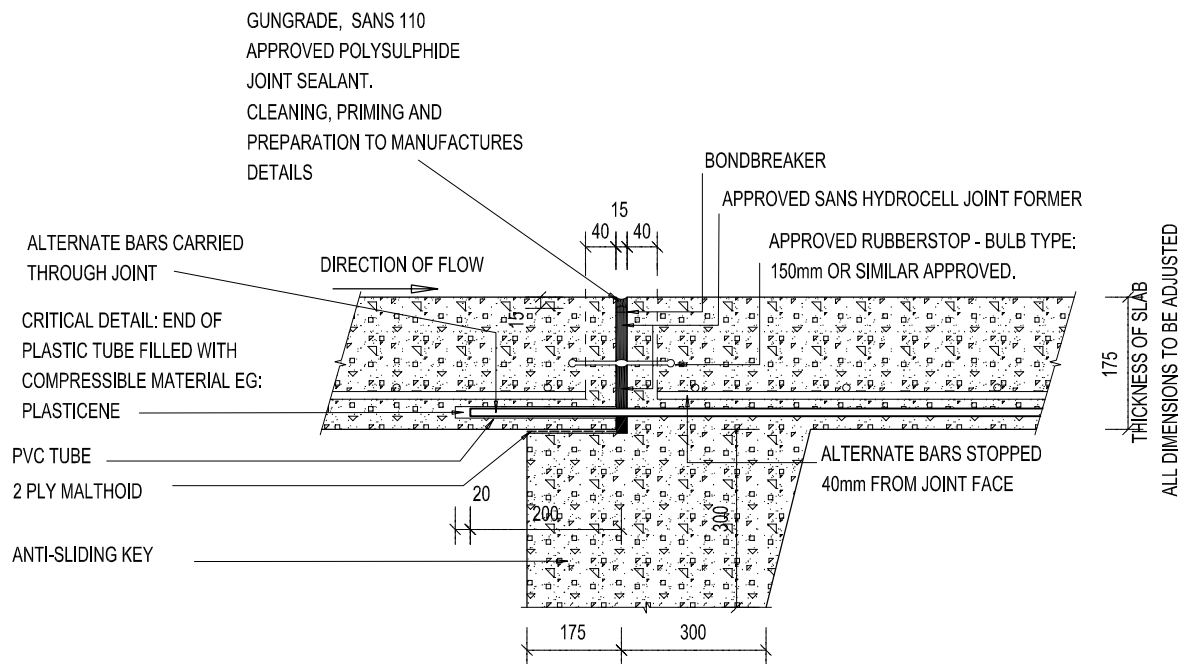
scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 09/ST

NOTE:  
 DIMENSIONS TO BE ADJUSTED  
 IN ACCORDANCE WITH  
 CANAL FLOORSLAB THICKNESS.

SLIDING KEY REINFORCING AND  
 DEPTH TO ENGINEERS DESIGN



STORMWATER CANAL  
 FLOOR EXPANSION JOINT.

DT 10/ST



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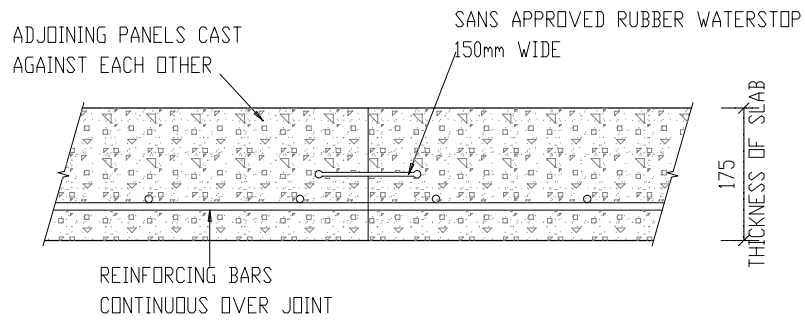
departmental  
 DIAGRAMMATIC CIVIL  
 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 STORMWATER:  
 FLOOR EXPANSION  
 JOINT DETAIL  
 (DIAGRAMMATIC)

scale  
 1 : 10.

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 10/ST



STORMWATER CANAL  
CONSTRUCTION JOINT - TYPE 1

DT 11/ST



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

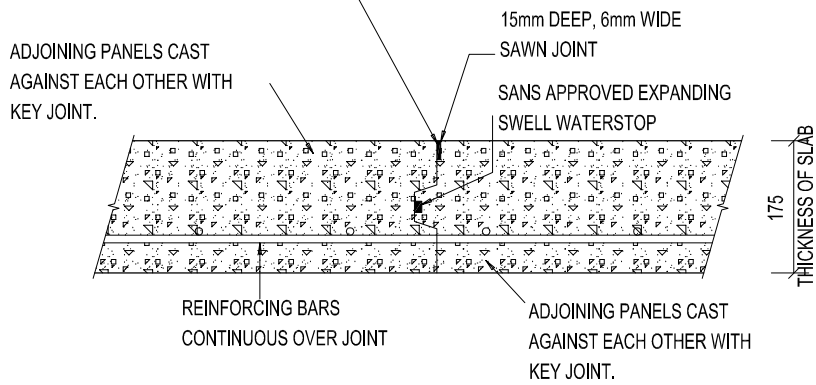
title  
STORMWATER:  
CONSTRUCTION JOINT  
- TYPE 1  
(DIAGRAMMATIC)

scale  
1 : 10

date  
30-09-2017


drawing number / type number  
TYPE NO DT 11/ST

GUNGRADE, SANS 110  
 APPROVED POLYSULPHIDE JOINT SEALANT.  
 CLEANING, PRIMING AND PREPARATION  
 TO MANUFACTURES DETAILS.

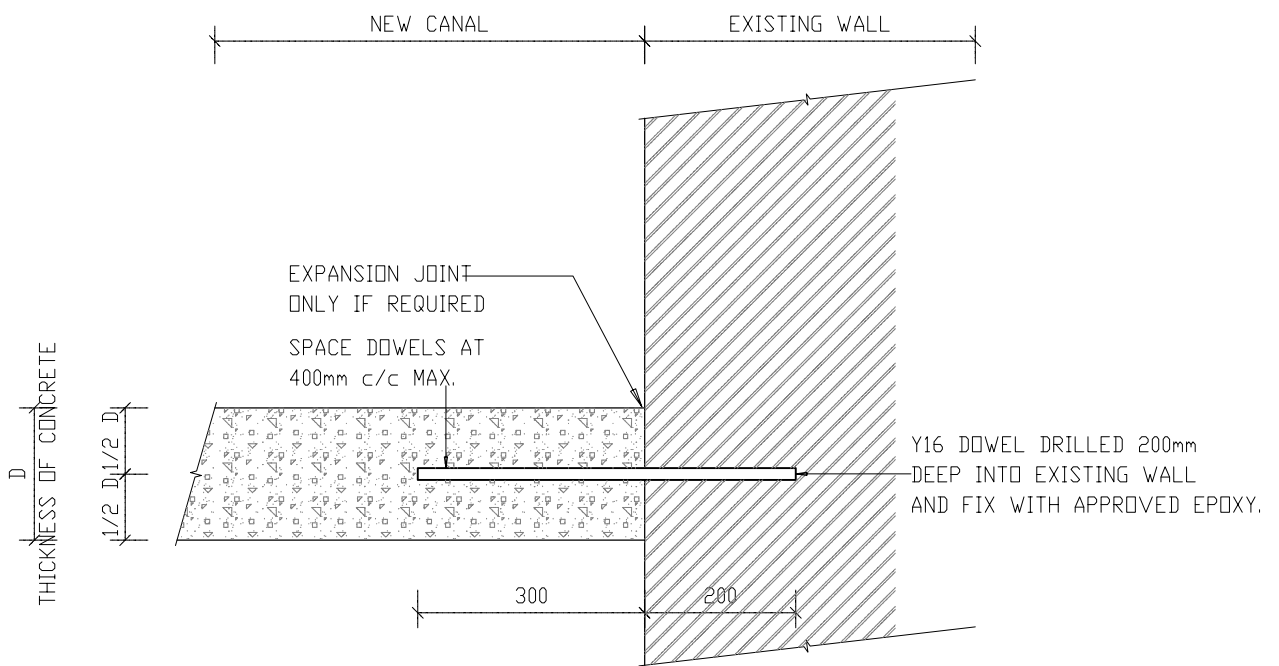


**STORMWATER CANAL  
 CONSTRUCTION JOINT - TYPE 2**

DT 12/ST

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			<p>drawing number / type number</p> <p>TYPE NO DT 12/ST</p>	





STORMWATER CANAL  
CONSTRUCTION JOINT - TYPE 3

DT 13/ST



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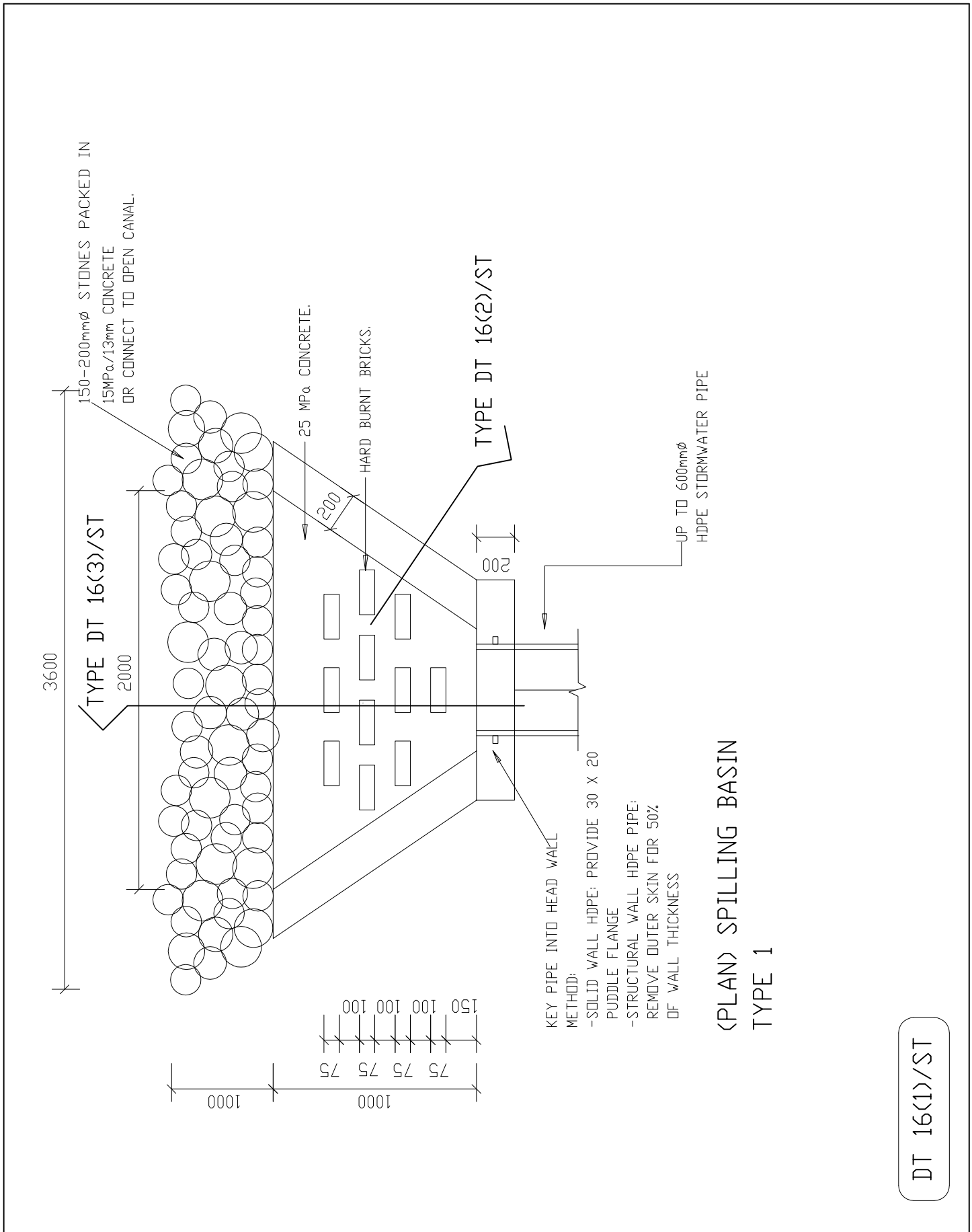
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
STORMWATER:  
STORMWATER CANAL  
CONSTRUCTION JOINT  
- TYPE 3  
(DIAGRAMMATIC)

scale  
1 : 10

date  
30-09-2017

drawing number / type number  
TYPE NO DT 13/ST



(PLAN) SPILLING BASIN  
TYPE 1

DT 16(1)/ST



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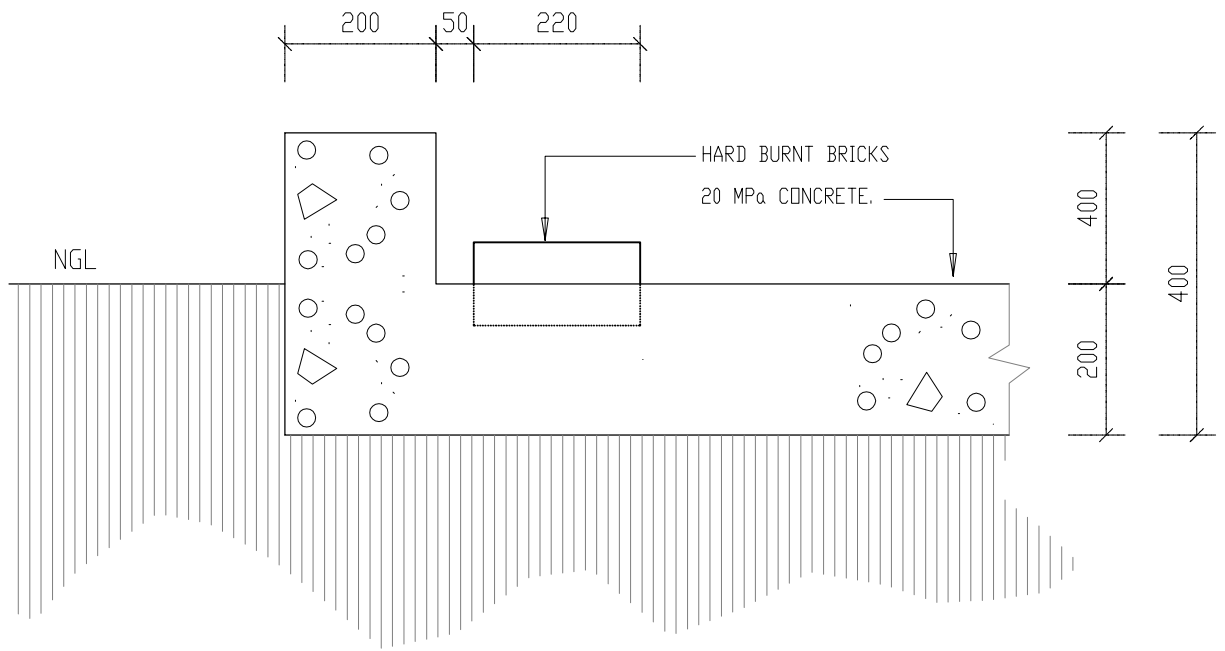
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
STORMWATER:  
(PLAN) SPILLING BASIN  
TYPE 1  
(DIAGRAMMATIC)

scale  
1 : 30

date  
30-09-2017

drawing number / type number  
TYPE NO DT16(1)/ST



SECTION THROUGH SPILLING BASIN TYPE 1

DT 16(2)/ST



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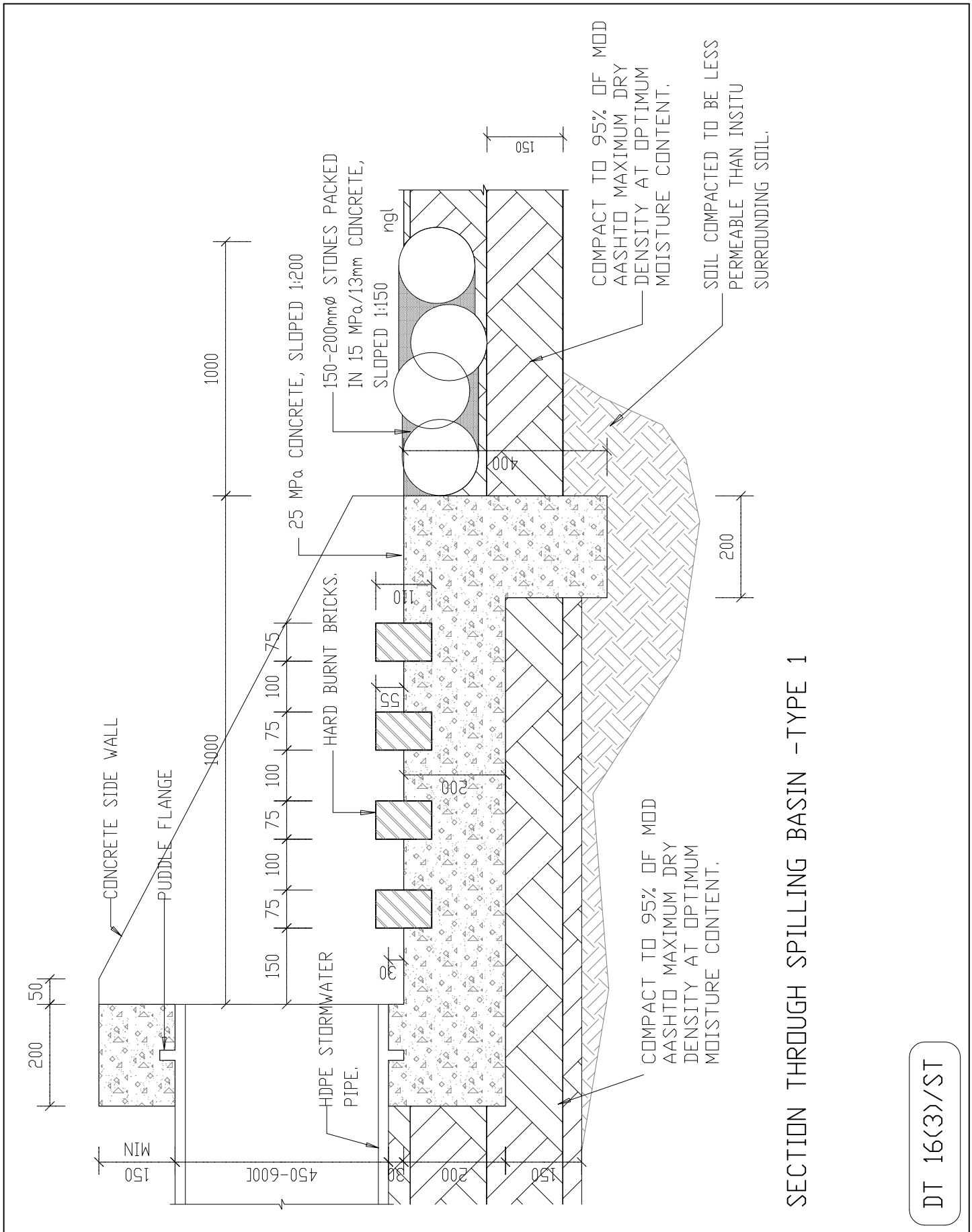
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

project  
STORMWATER:  
SECTION THROUGH  
SPILLING BASIN  
TYPE 1  
(DIAGRAMMATIC)

scale  
1 : 10


date  
30-09-2017

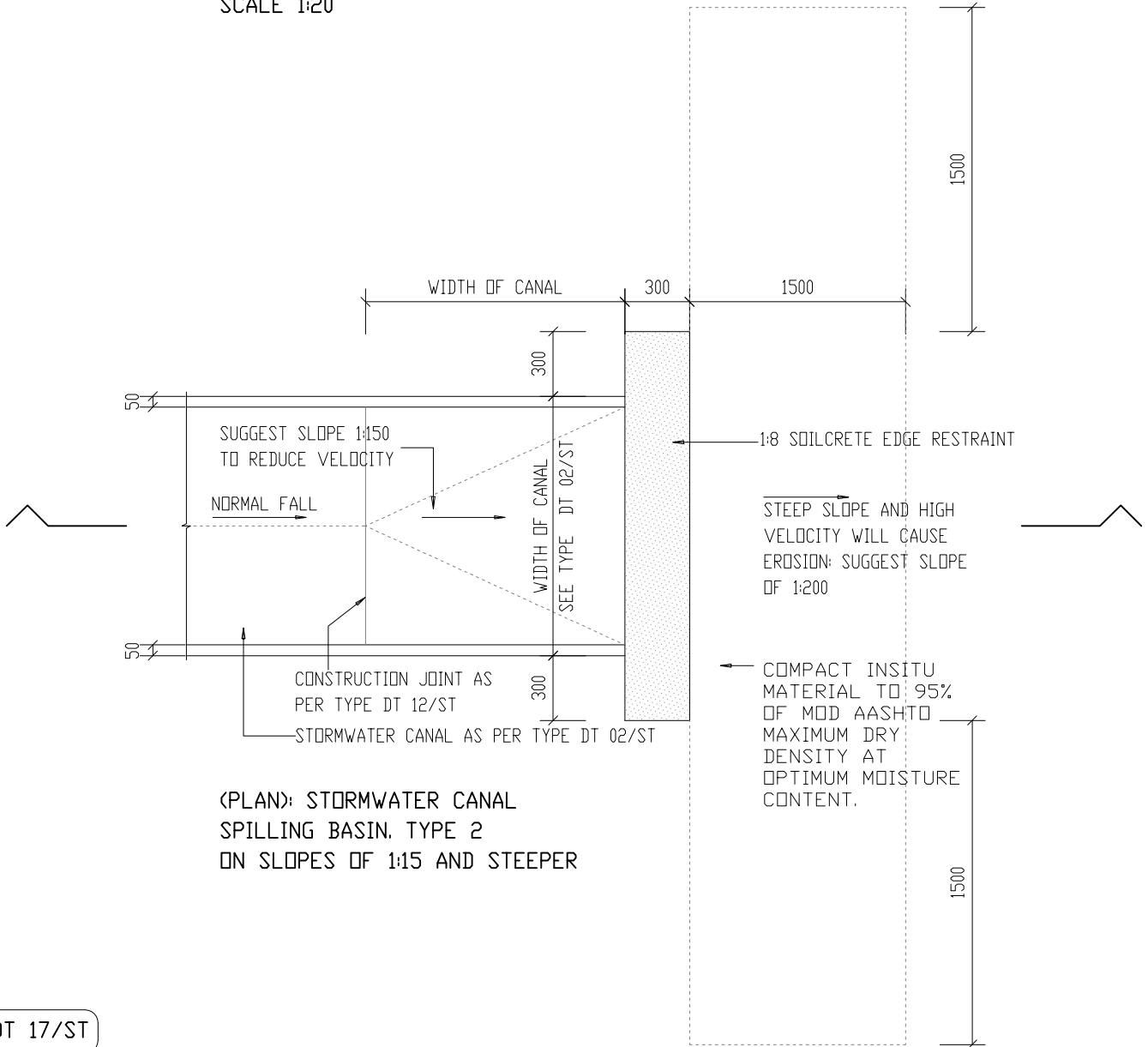
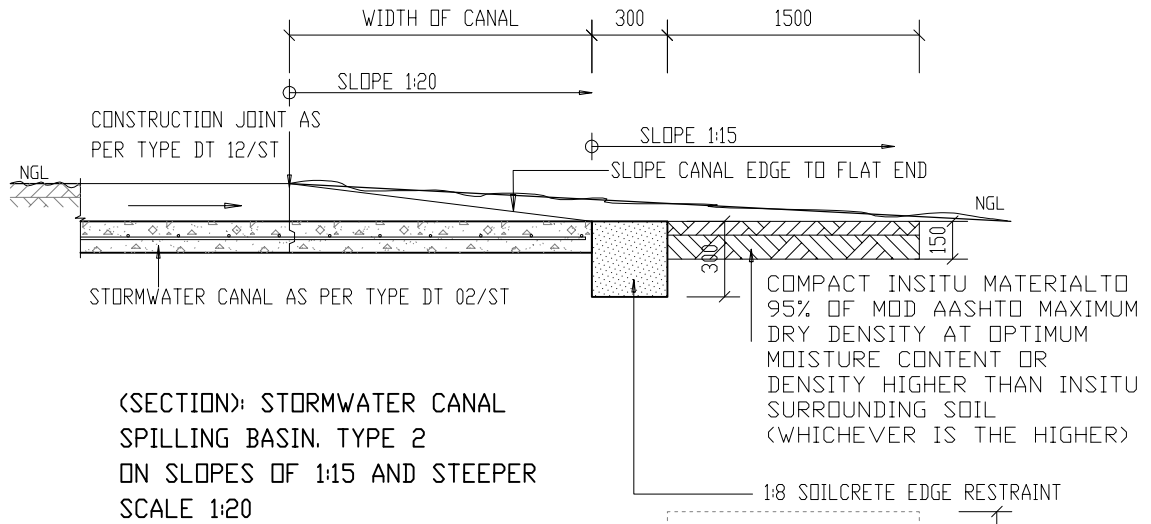
drawing number / type number  
TYPE NO DT 16(2)/ST



SECTION THROUGH SPILLING BASIN - TYPE 1

DT 16(3)/ST

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			<p>drawing number / type number TYPE NO DT 16(3)/ST</p>	



DT 17/ST



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Tel (012) 337 2000

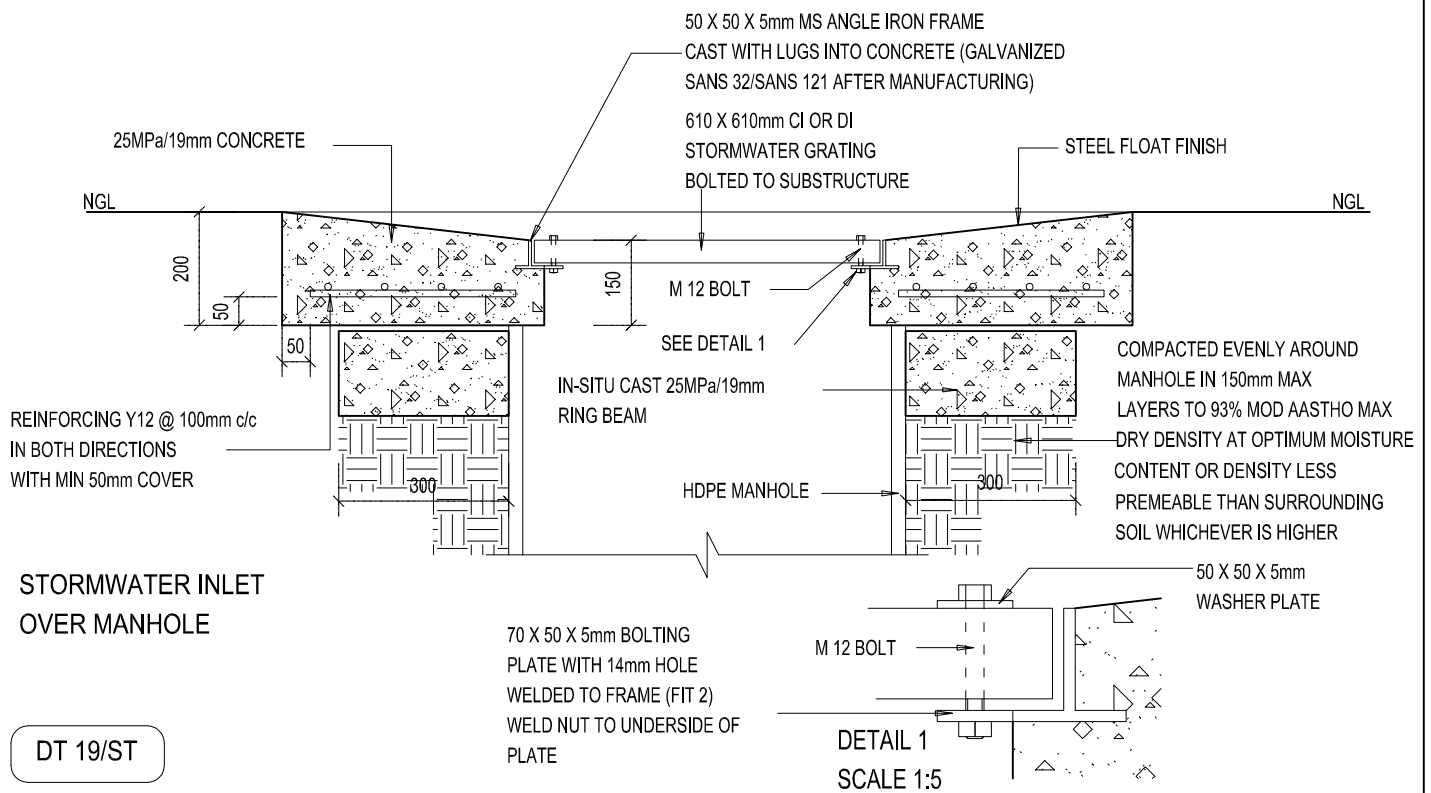
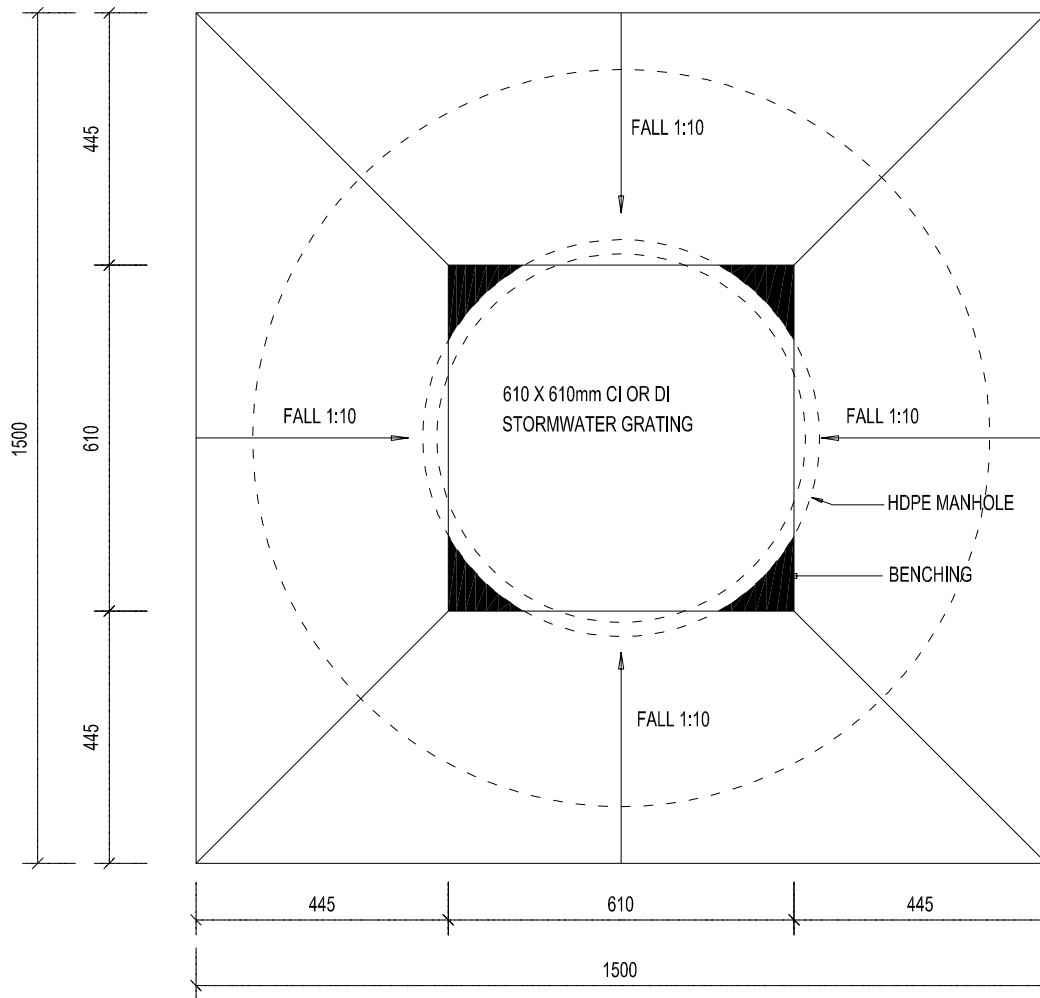
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
STORMWATER:  
PLAN & SECTION OF  
STORMWATER CANAL  
SPILLING BASIN,  
TYPE 2  
(DIAGRAMMATIC)

scale  
1 : 30

date  
30-09-2017

drawing number / type number  
TYPE NO DT 17/ST



DT 19/ST

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departmental  
**DIAGRAMMATIC CIVIL ENGINEERING DETAILS FOR DOLOMITIC SOILS**

title  
**STORMWATER: INLET OVER MANHOLE (DIAGRAMMATIC)**

scale  
**1:10 / 1:5**

date  
**2017/09/30**

drawing number / type number  
**TYPE NO DT 19/ST**

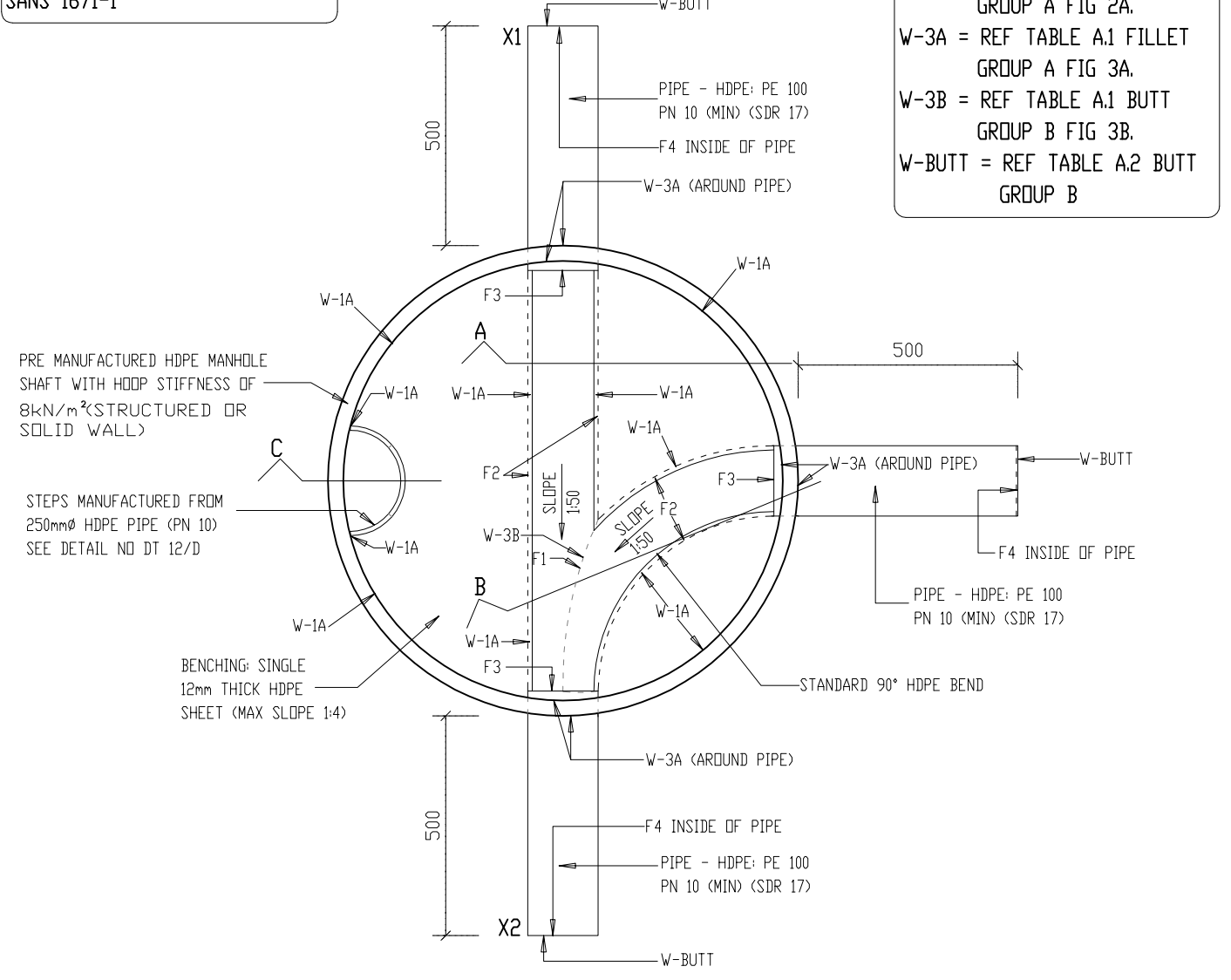
**GENERAL NOTE:**  
 - ALL MATERIALS TO BE HDPE PE-100 AS PER SANS 4427  
 HOOP STIFFNESS OF MANHOLE SHAFT TO BE 8kN/m'

**GENERAL WELDING SPECIFICATION:**  
 - BUTT WELDING OF PIPES TO COMPLY TO SANS 10268-1  
 - HOT GAS WELDING TO COMPLY TO SANS 10268-3  
 - HOT GAS EXTRUSION WELDING TO COMPLY TO SANS 10268-4.

**GENERAL FINISHING NOTE:**  
 F1- REMOVE FILLER EXPULSION AND FINISH WELD SMOOTH WITH PIPE SURFACE.  
 F2- REMOVE FILLER EXPULSION AND FINISH WELD WITH SMOOTH ROUNDED EDGE.  
 F3- FINISH PIPE WITH SMOOTH ROUNDED EDGE.  
 F4- REMOVE INTERNAL WELDING BEAD.

**OTHER RELEVANT MANUFACTURING STANDARDS:**  
 SANS 10268-1  
 SANS 10269  
 SANS 10270  
 SANS 1269  
 SANS 1655  
 SANS 1671-1

**WELDING NOTATION FOR JOINTS**  
 SEE SANS 10270  
 PAR 5 AS WELL AS ANNEX A.  
 W-1A = REF TABLE A.1 FILLET GROUP A FIG 1A.  
 W-2A = REF TABLE A.1 FILLET GROUP A FIG 2A.  
 W-3A = REF TABLE A.1 FILLET GROUP A FIG 3A.  
 W-3B = REF TABLE A.1 BUTT GROUP B FIG 3B.  
 W-BUTT = REF TABLE A.2 BUTT GROUP B



X1 TO X2 IS A SINGLE LENGTH PIPE WITH SECTION REMOVED TO FORM CHANNEL

**HDPE MANHOLE PLAN**  
 SCALE 1:15

SECTION A: SEE DT 21/ST  
 SECTION B: SEE DT 22/ST  
 SECTION C: SEE DT 23/ST

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 DIAGRAMMATIC CIVIL  
 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 TYPICAL WELDING DETAILS  
 FOR HDPE STORMWATER  
 MANHOLE:  
 PLAN

scale  
 1 : 15

date  
 30-09-2017

drawing number / type number  
 TYPE NO DT 20/ST

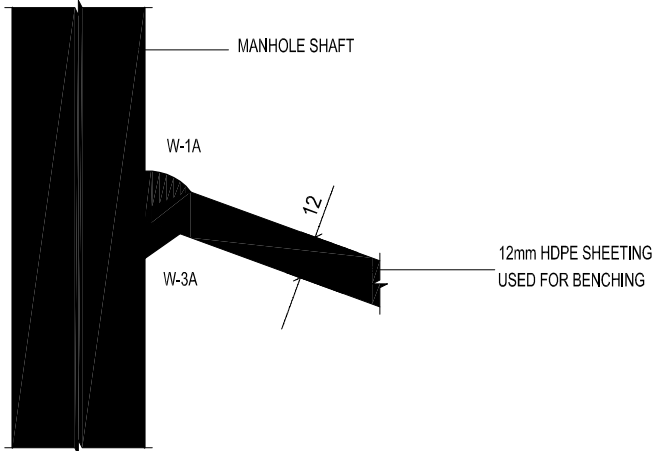
**GENERAL NOTE:**  
 - ALL MATERIALS TO BE HDPE PE-100 AS PER SANS 4427  
  
 HOOP STIFFNESS OF MANHOLE SHAFT TO BE 8kN/m<sup>2</sup>

**GENERAL WELDING SPECIFICATION:**  
 - BUTT WELDING OF PIPES TO COMPLY TO SANS 10268-1  
  
 - HOT GAS WELDING TO COMPLY TO SANS 10268-3  
  
 - HOT GAS EXTRUSION WELDING TO COMPLY TO SANS 10268-4

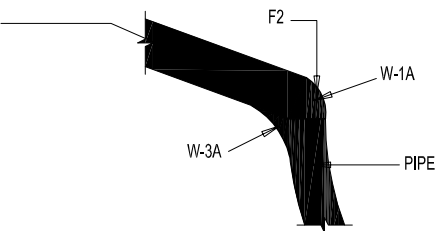
**GENERAL FINISHING NOTE:**  
 F1- REMOVE FILLER EXPULSION AND FINISH WELD SMOOTH WITH PIPE SURFACE.  
 F2- REMOVE FILLER EXPULSION AND FINISH WELD WITH SMOOTH ROUNDED EDGE.  
 F3- FINISH PIPE WITH SMOOTH ROUNDED EDGE.  
 F4- REMOVE INTERNAL WELDING BEAD.

**OTHER RELEVANT MANUFACTURING STANDARDS:**  
 SANS 10268-1  
 SANS 10269  
 SANS 10270  
 SANS 1655  
 SANS 1671-1

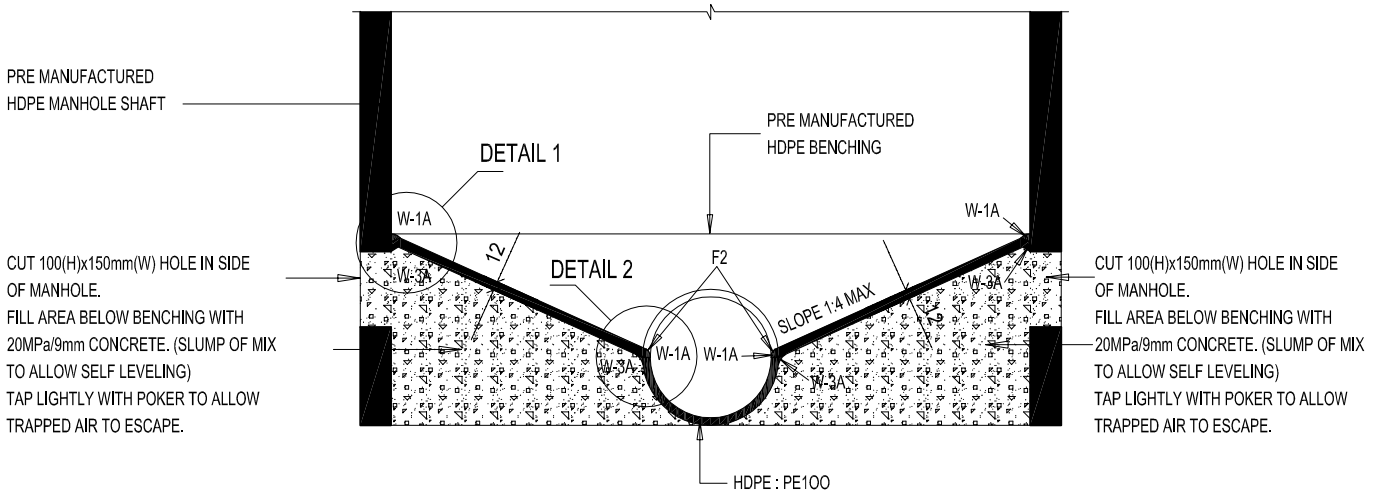
**WELDING NOTATION FOR JOINTS**  
 SEE SANS 10270  
 PAR 5 AS WELL AS ANNEX A.  
 W-1A = REF TABLE A.1 FILLET GROUP A FIG 1A.  
 W-2A = REF TABLE A.1 FILLET GROUP A FIG 2A.  
 W-3A = REF TABLE A.1 FILLET GROUP A FIG 3A.  
 W-3B = REF TABLE A.1 BUTT GROUP B FIG 3B.  
 W-BUTT = REF TABLE A.2 BUTT GROUP B




DETAIL 1  
 SCALE 1:2



DETAIL 2  
 SCALE 1:2



SECTION A  
 SCALE 1:10

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			<p>drawing number / type number  <b>TYPE NO DT 21/ST</b></p>	



**GENERAL NOTE:**

- ALL MATERIALS TO BE HDPE  
PE-100 AS PER SANS 4427

HOOP STIFFNESS OF MANHOLE  
SHAFT TO BE 8kN/m<sup>2</sup>

**OTHER RELEVANT**

**MANUFACTURING STANDARDS:**

- SANS 10268-1
- SANS 10269
- SANS 10270
- SANS 1655
- SANS 1671-1

**GENERAL WELDING SPECIFICATION:**

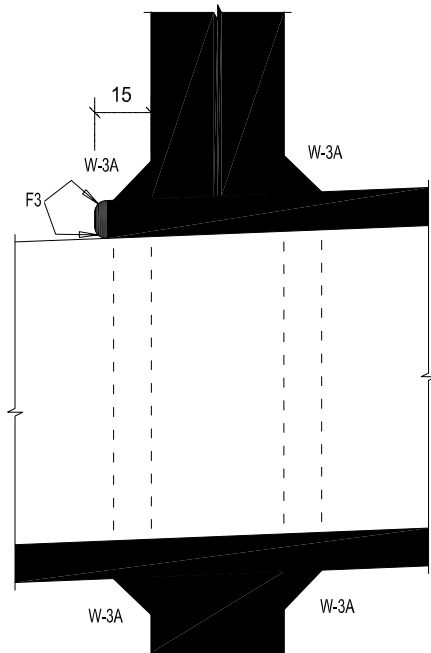
- BUTT WELDING OF PIPES TO COMPLY TO SANS 10268-1
- HOT GAS WELDING TO COMPLY TO SANS 10268-3
- HOT GAS EXTRUSION WELDING TO COMPLY TO SANS 10268-4

**GENERAL FINISHING NOTE:**

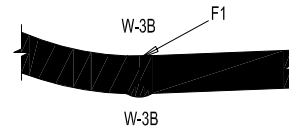
- F1- REMOVE FILLER EXPULSION AND FINISH WELD SMOOTH WITH PIPE SURFACE.
- F2- REMOVE FILLER EXPULSION AND FINISH WELD WITH SMOOTH ROUNDED EDGE.
- F3- FINISH PIPE WITH SMOOTH ROUNDED EDGE.
- F4- REMOVE INTERNAL WELDING BEAD.

**WELDING NOTATION FOR JOINTS**

SEE SANS 10270  
PAR 5 AS WELL AS ANNEX A.  
W-1A = REF TABLE A.1 FILLET GROUP A FIG 1A.  
W-2A = REF TABLE A.1 FILLET GROUP A FIG 2A.  
W-3A = REF TABLE A.1 FILLET GROUP A FIG 3A.  
W-3B = REF TABLE A.1 BUTT GROUP B FIG 3B.  
W-BUTT = REF TABLE A.2 BUTT GROUP B

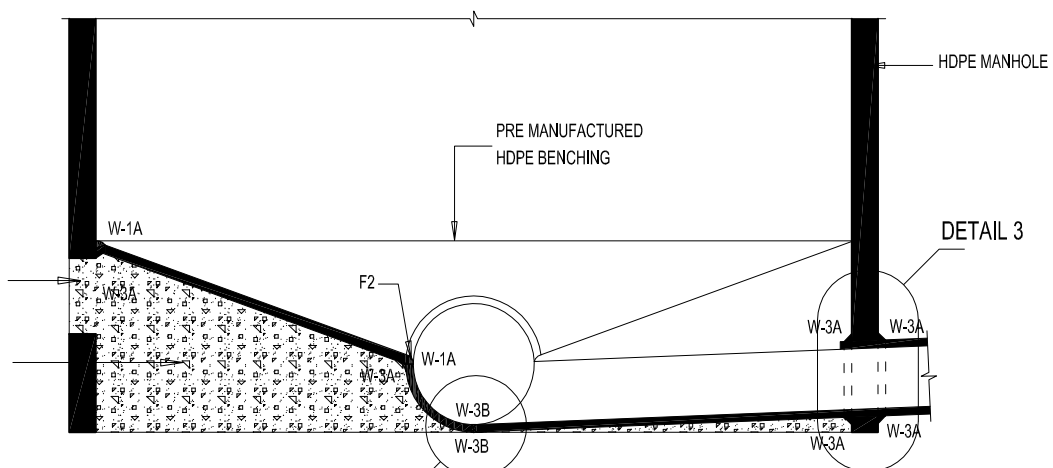


DETAIL 3  
SCALE 1:2




DETAIL 4  
SCALE 1:2

CUT 100(H)x150mm(W) HOLE IN SIDE OF MANHOLE. FILL AREA BELOW BENCHING WITH 20MPa/9mm CONCRETE. (SLUMP OF MIX TO ALLOW SELF LEVELING) TAP LIGHTLY WITH POKER TO ALLOW TRAPPED AIR TO ESCAPE.



SECTION B  
SCALE 1:10

DETAIL 4

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	<p>drawing number / type number TYPE NO DT 22/ST</p>			

**GENERAL NOTE:**

- ALL MATERIALS TO BE HDPE  
PE-100 AS PER SANS 4427

HOOP STIFFNESS OF MANHOLE  
SHAFT TO BE 8kN/m<sup>2</sup>

**OTHER RELEVANT**

**MANUFACTURING STANDARDS:**

SANS 10268-1

SANS 10269

SANS 10270

SANS 1655

SANS 1671-1

**GENERAL WELDING SPECIFICATION:**

- BUTT WELDING OF PIPES TO COMPLY  
TO SANS 10268-1

- HOT GAS WELDING TO COMPLY  
TO SANS 10268-3

- HOT GAS EXTRUSION WELDING TO  
COMPLY TO SANS 10268-4

**GENERAL FINISHING NOTE:**

- F1- REMOVE FILLER EXPULSION AND  
FINISH WELD SMOOTH WITH PIPE SURFACE.
- F2- REMOVE FILLER EXPULSION AND  
FINISH WELD WITH SMOOTH ROUNDED EDGE.
- F3- FINISH PIPE WITH SMOOTH ROUNDED EDGE.
- F4- REMOVE INTERNAL WELDING BEAD.

**WELDING NOTATION FOR JOINTS**

SEE SANS 10270

PAR 5 AS WELL AS ANNEX A.

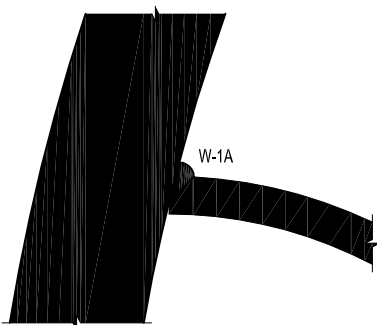
W-1A = REF TABLE A.1 FILLET  
GROUP A FIG 1A.

W-2A = REF TABLE A.1 FILLET  
GROUP A FIG 2A.

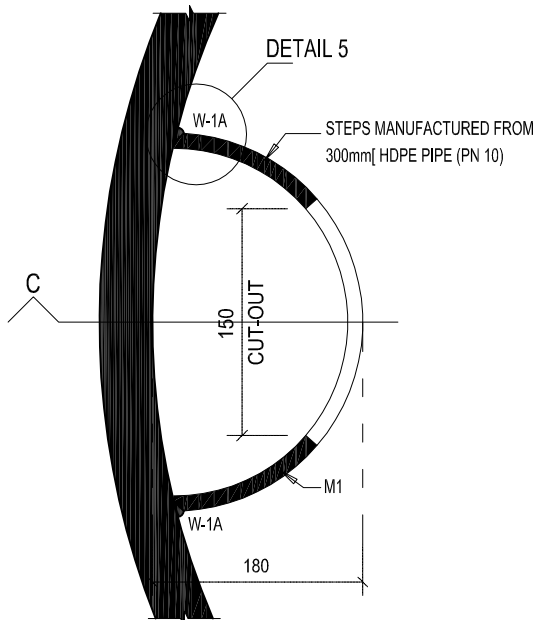
W-3A = REF TABLE A.1 FILLET  
GROUP A FIG 3A.

W-3B = REF TABLE A.1 BUTT  
GROUP B FIG 3B.

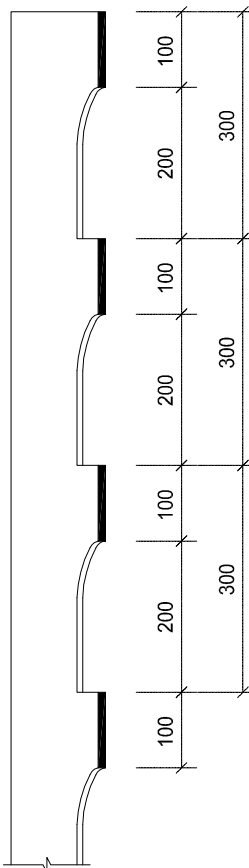
W-BUTT = REF TABLE A.2 BUTT  
GROUP B



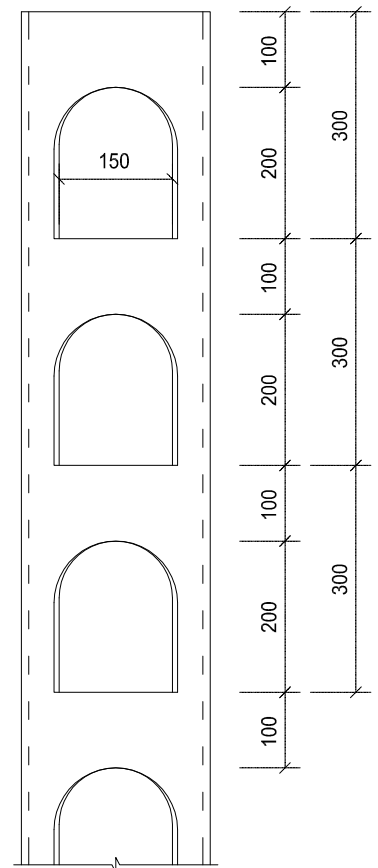
DETAIL 5  
SCALE 1:2



HDPE STEPS IN MANHOLE  
PLAN  
SCALE 1:5



SECTION C  
SCALE 1:10



ELEVATION OF STEPS  
SCALE 1:10



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

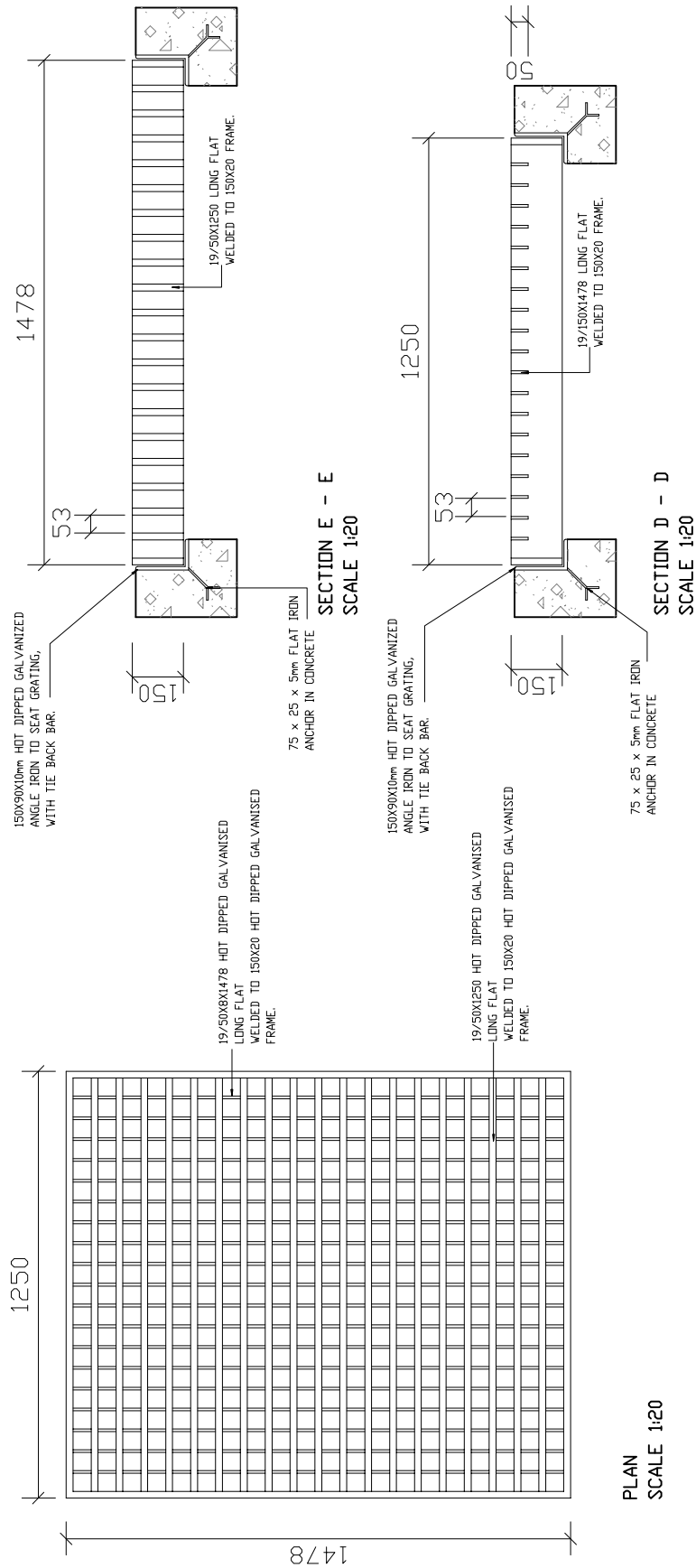
title  
TYPICAL WELDING DETAILS  
FOR HDPE STORMWATER  
MANHOLE:  
SECTION C

scale  
AS SHOWN

date  
30-09-2017

drawing number / type number  
TYPE NO DT 23/ST

- NOTES TO ALL STEEL WORK:
1. ALL STEEL SHALL BE GRADE 300W TO SANS 1431
  2. ALL WELDS TO BE 6mm SOLID DOUBLE FILLET WELD
  3. ALL WELDING SHALL COMPLY WITH SANS 10044
  4. ALL STEELWORK SHALL BE HOT-DIPPED GALVANISED (250 MICRON) ACCORDING TO THE STANDARDISED SPECIFICATION (SANS 32)



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T.M. Sokutu

departmental

project  
STORMWATER:  
GRID INLET NEXT TO  
RUNWAYS &  
TAXIWAYS.

scale

1:20.

date

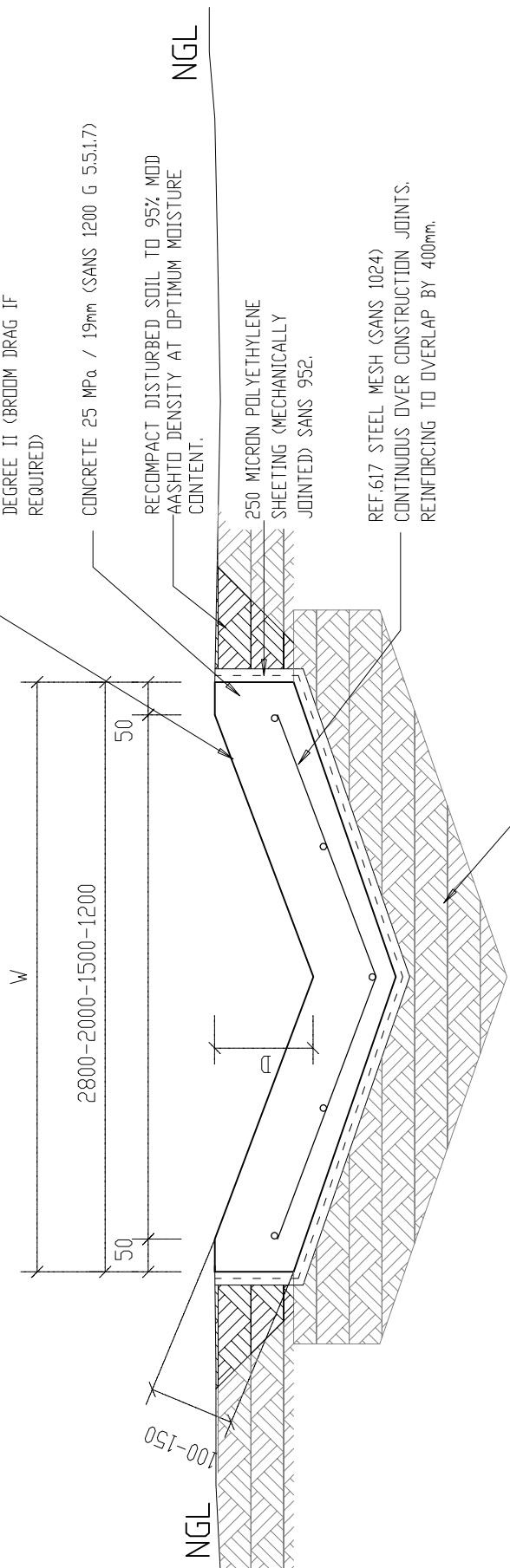
30-09-2017

drawing number / type number

TYPE NO DT 24/ST



- 2800 = 300mm DEEP (MAX)
- 2000 = 200mm DEEP (MAX)
- 1500 = 150mm DEEP (MAX)
- 1200 = 150mm DEEP (MAX)



RIP AND RECOMPACT INSITU MATERIAL TO 95% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.

CAST IN ALTERNATIVE SECTIONS 1.5m LONG WITH EXPANSION JOINTS AT 18m. SEE STANDARD DETAIL FOR EXPANSION JOINT - TYPE NO DT 04/ST

- NOTE:
1. D - VARIABLE FROM 50mm TO INDICATED MAXIMUM DEPTH.
  2. STEEL REINFORCING TO BE REF. 617 IN AREAS WITH VEHICLE TRAFFIC.
  3. EXPANSION JOINT BETWEEN CANAL AND WALL ONLY IF INDICATED.

STORMWATER CANAL IN AREAS WITH NO VEHICLE TRAFFIC

DT 26/ST



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title  
STORMWATER:  
CANAL IN AREAS WITH  
NO VEHICLE TRAFFIC  
(DIAGRAMMATIC)

scale  
1 : 10

date  
30-09-2017

drawing number / type number  
TYPE NO DT 26/ST

# ROADS DETAILS

## ROAD DETAILS: LIST OF DRAWINGS

DT 01/R	ROAD AND PAVEMENT DETAILS
DT 02/R	ROAD AND PAVEMENT DETAILS
DT 03/R	ROAD AND PAVEMENT DETAILS
DT 04/R	EARTHWORKS ON PAVEMENT
DT 05/R	GUARDRAIL
DT 06/R	GUARDRAIL DETAILS
DT 07/R	GUARDRAIL DETAILS



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ENGINEERING DETAILS  
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title  
DRAWING LIST

scale  
.

date  
30-09-2017

drawing number / type number

TYPE NO DT 01/R



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
ROAD AND PAVEMENT  
DETAILS  
(DIAGRAMMATIC)

scale  
1 : 50

date  
2017/09/30

drawing number / type number  
TYPE NO DT 01/R

**LAYER 01  
BASE  
SANS 1200 MF**

3.3.2 CONSTRUCT A BASE LAYER OF 150mm GRADED CRUSHER STONE FROM COMMERCIAL OFF-SITE SOURCES. AND COMPACT TO 98% MOD AASHTO DENSITY AT OPTIMUM MOISTURE CONTENT..

**LAYER 02  
SUBBASE  
SANS 1200 ME**

3.2.1 CONSTRUCT 150mm THICK SUBBASE FROM MATERIAL FROM COMMERCIAL OFF-SITE SOURCES. COMPACT TO 95% MOD AASHTO DENSITY AT OPTIMUM MOISTURE CONTENT. ALTERNATIVE - SUBBASE FROM CEMENT (DPC) STABILISED (2%) GRAVEL FROM SITE EXCAVATIONS.

**LAYERS 03 & 04 & 05  
EARTH WORKS (SUBGRADE)  
SANS 1200 DM**

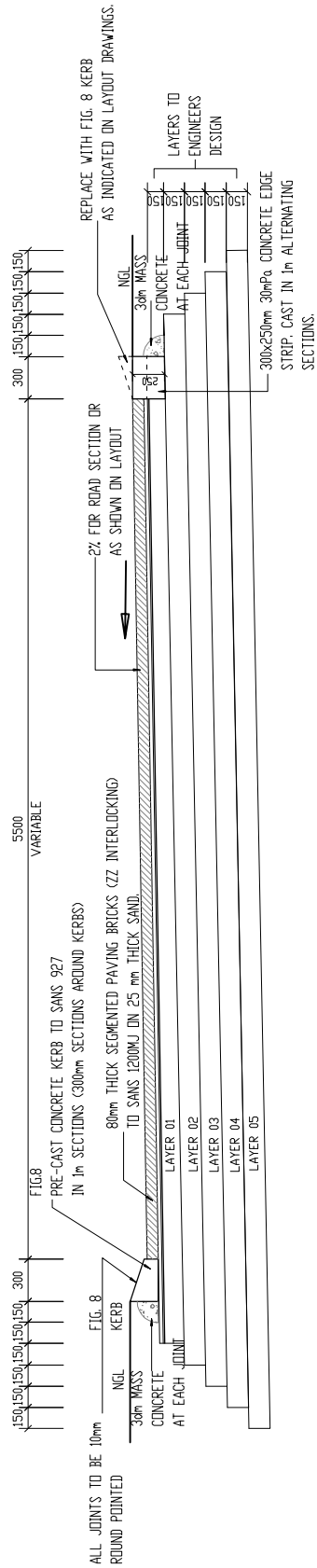
5.2.3.3 ROAD-BED TREATMENT - LAYER 05  
RIP TO 150mm DEPTH THE IN-SITU MATERIAL OF AREA AND COMPACT TO 93% MOD AASHTO DRY DENSITY AT OPTIMUM MOISTURE CONTENT.  
  
3.2.3 SELECTED LAYER  
CONSTRUCT 150mm SELECTED LAYERS FROM EXCAVATION STOCKPILE AND COMPACT TO 93% MOD AASHTO DRY DENSITY AT OPTIMUM MOISTURE CONTENT.

**ASPHALT SURFACING  
SANS 1200 MH**

3.1 PRIME COAT  
APPLY A COAT OF TAR PRIME GRADE RTH 3/12P AT NOMINAL RATE OF 0.8 l/m<sup>2</sup>.  
  
5.5 PREMIX  
PREMIX WEARING COURSE OF CONTINUOUSLY GRADED ASPHALT (TPA-MEDIUM) USING 80/100 BITUMEN BINDER (SMOOTHNESS ACCURACY II i.to. CLAUSE 6.3.6) FOR THICKNESS 30mm.

**SEGMENTED BRICK PAVING  
SANS 1200 MJ**

3.1.2 (a) 80mm ZZ INTERLOCKING BRICKS (\* 25MPa), TOP EDGES CHAMFERED, LAID IN HERRING BONE PATTERN.  
\* TO ENGINEERS DESIGN DEPENDING ON WHEEL LOAD.  
3.3 BRICKS LAID ON 25mm COMPACTED THICKNESS WELL GRADED BEDDING SAND.



**ROAD AND PAVEMENT DETAILS**

DT 01/R



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
ROAD AND PAVEMENT  
DETAILS  
(DIAGRAMMATIC)

scale  
1 : 50

date  
2017/09/30

drawing number / type number  
TYPE NO DT 02/R

**LAYER 01  
BASE  
SANS 1200 MF**

3.3.2 CONSTRUCT A BASE LAYER OF 150mm GRADED CRUSHER STONE FROM COMMERCIAL OFF-SITE SOURCES. COMPACT TO 98% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.

**ASPHALT SURFACING**

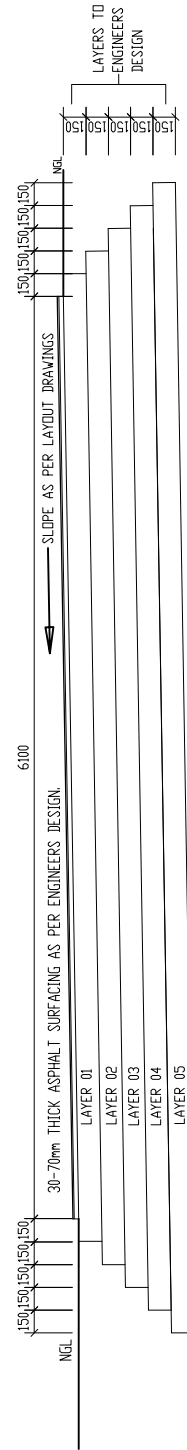
**SANS 1200 MH**  
3.1 PRIME COAT  
APPLY A COAT OF TAR PRIME GRADE RTH 3/12P AT NOMINAL RATE OF 0.8 l/m<sup>2</sup>.  
5.5 PREMIX  
PREMIX WEARING COURSE OF CONTINUOUSLY GRADED ASPHALT (TPA-MEDIUM) USING 80/100 BITUMEN BINDER (SMOOTHNESS ACCURACY II i.t.o. CLAUSE 6.3.6) FOR THICKNESS 30mm.

**LAYER 02  
SUBBASE  
SANS 1200 ME**

3.2.1 CONSTRUCT 150mm THICK SUBBASE FROM MATERIAL FROM COMMERCIAL OFF-SITE SOURCES. COMPACT TO 95% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.  
ALTERNATIVE - SUBBASE FROM CEMENT (CPC) STABILISED (2%) GRAVEL FROM SITE EXCAVATIONS.

**LAYERS 03 & 04 & 05  
EARTH WORKS (SUBGRADE)  
SANS 1200 DM**

5.2.3.3 ROAD-BED TREATMENT - LAYER 05  
RIP TO 150mm DEPTH THE INSITU MATERIAL OF AREA AND COMPACT TO 93% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.  
3.2.3 SELECTED LAYER  
CONSTRUCT 150mm SELECTED LAYERS FROM EXCAVATION STOCKPILE AND COMPACT TO 93% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.  
FOR TYPE (REF TRH4)  
G7 - LAYER 04  
G5 - LAYER 03



**ROAD AND PAVEMENT DETAILS**

DT 02/R





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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
ROAD AND PAVEMENT  
DETAILS  
(DIAGRAMMATIC)

scale  
1 : 50

date  
2017/09/30

drawing number / type number  
TYPE NO DT 03/R

**LAYER 01  
BASE  
SANS 1200 MF**

3.3.2 CONSTRUCT A BASE LAYER OF 150mm GRADED CRUSHER STONE FROM COMMERCIAL OFF-SITE SOURCES. COMPACT TO 98% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.

**ASPHALT SURFACING**

**SANS 1200 MH**

3.1 PRIME COAT  
APPLY A COAT OF TAR PRIME GRADE RTH 3/12P AT NOMINAL RATE OF 0.8 l/m<sup>2</sup>.

5.5 PREMIX  
PREMIX WEARING COURSE OF CONTINUOUSLY GRADED ASPHALT (TPA-MEDIUM) USING 80/100 BITUMEN BINDER (SMOOTHNESS ACCURACY II i.t.o. CLAUSE 6.3.6) FOR THICKNESS 30mm.

**LAYER 02  
SUBBASE  
SANS 1200 ME**

3.2.1 CONSTRUCT 150mm THICK SUBBASE FROM MATERIAL FROM COMMERCIAL OFF-SITE SOURCES. COMPACT TO 95% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.  
ALTERNATIVE - SUBBASE FROM CEMENT (DPC) STABILISED (2%) GRAVEL FROM SITE EXCAVATIONS.

**SEGMENTED BRICK PAVING**

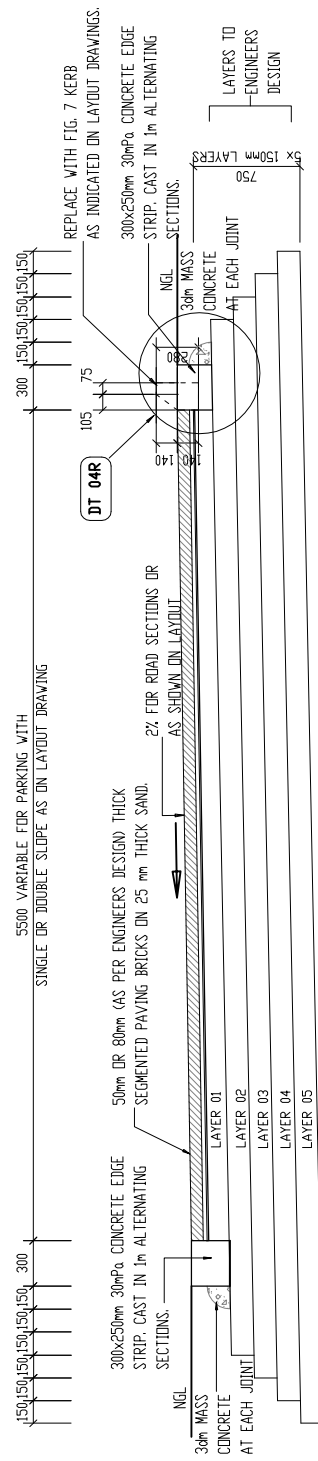
**SANS 1200 MJ**

3.1.2 (a) 80mm ZZ INTERLOCKING BRICKS (30MPa), TOP EDGES CHAMFERED, LAID IN HERRING BONE PATTERN.  
3.3 BRICKS LAID ON 25mm COMPACTED THICKNESS WELL GRADED BEDDING SAND.

**LAYERS 03 & 04 & 05  
EARTH WORKS (SUBGRADE)  
SANS 1200 DM**

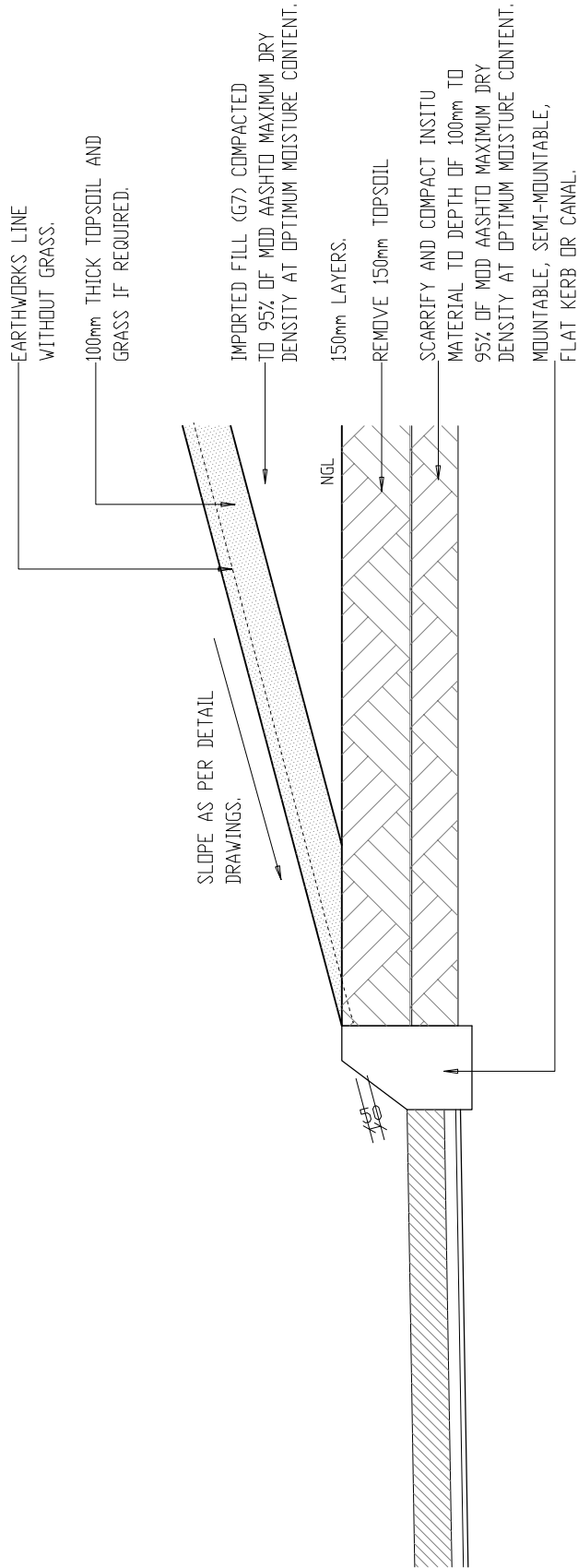
5.2.3.3 ROAD-BED TREATMENT - LAYER 05  
RIP TO 150mm DEPTH THE INSITU MATERIAL OF AREA AND COMPACT TO 93% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.

3.2.3 SELECTED LAYER  
CONSTRUCT 150mm SELECTED LAYERS FROM EXCAVATION STOCKPILE AND COMPACT TO 93% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.  
FOR TYPE (REF TRH4)  
G7 - LAYER 04  
G5 - LAYER 03



**ROAD AND PAVEMENT DETAILS**

DT 03/R



EARTHWORKS ON PAVEMENT

DT 04/R



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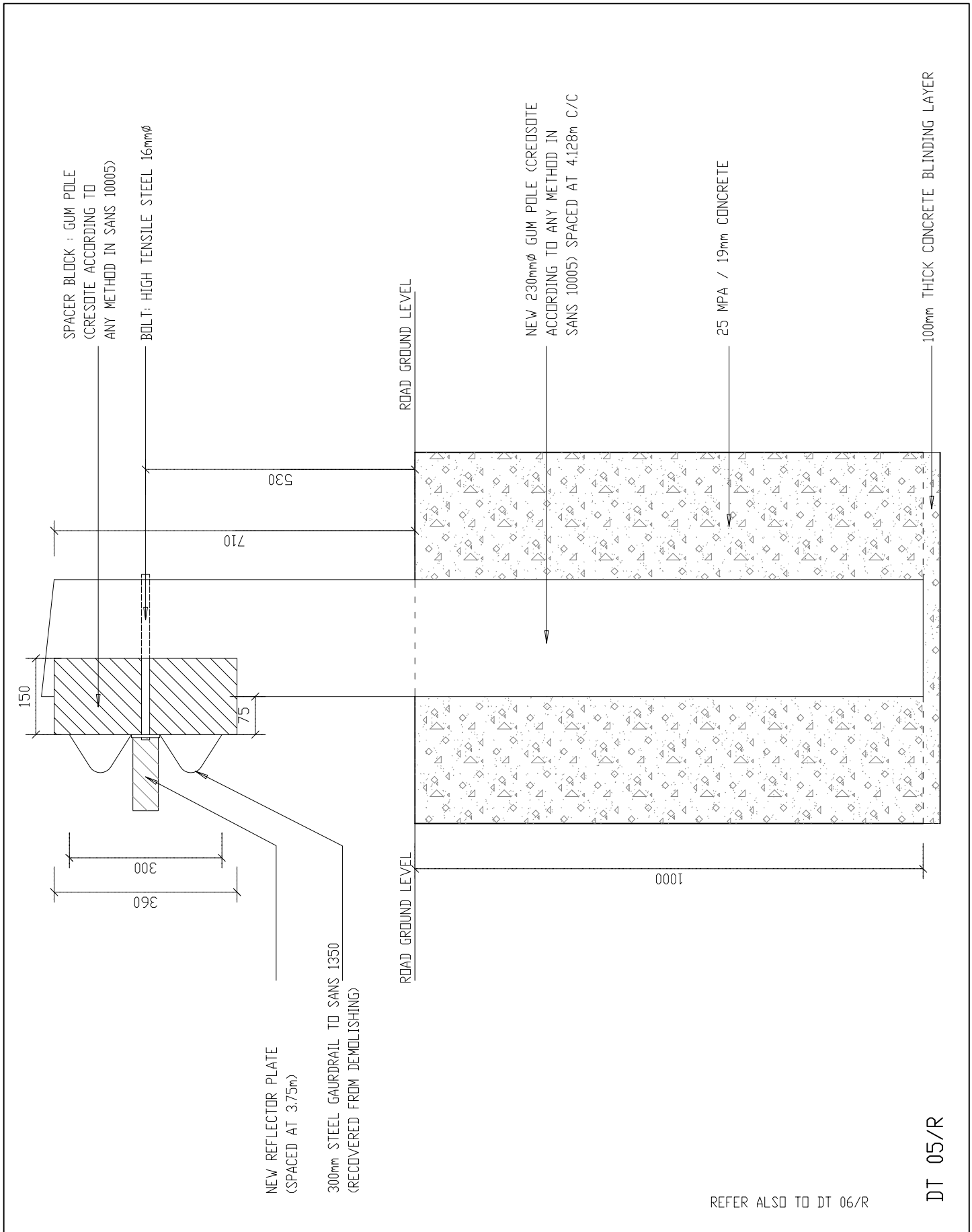
departmental  
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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
EARTHWORKS ON PAVEMENT  
(DIAGRAMMATIC)

scale  
1 : 30

date  
2017/09/30

drawing number / type number  
TYPE NO DT 04/R



NEW REFLECTOR PLATE  
(SPACED AT 3.75m)

300mm STEEL GAURDRAIL TO SANS 1350  
(RECOVERED FROM DEMOLISHING)

REFER ALSO TO DT 06/R

DT 05/R



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
GAURDRAIL

scale  
1 : 10

date  
2017/09/30

drawing number / type number  
TYPE NO DT 05/R



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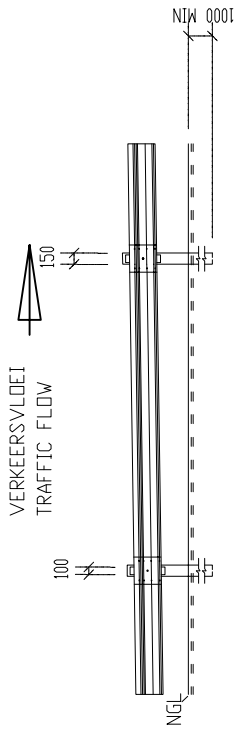
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
GUARDRAIL DETAILS

scale  
1 : 10

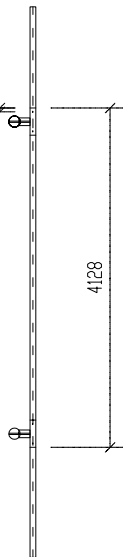
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2017/09/30

drawing number / type number  
TYPE NO DT 06/R

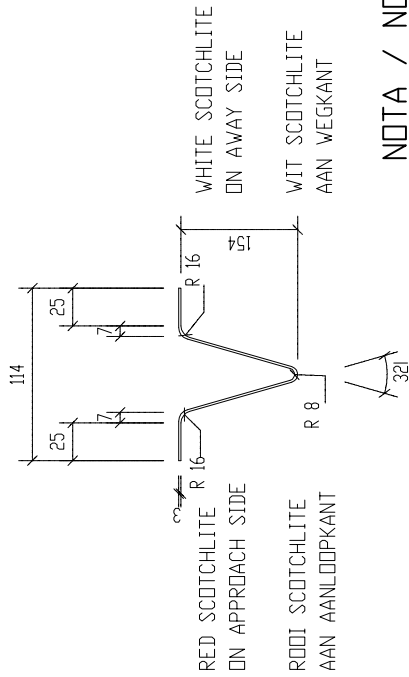


SKRAMRELING: VOORAANSIG  
GUARDRAIL: FRONT ELEVATION

SKAAL / SCALE 1:100



SKRAMRELING: PLAN  
GUARDRAIL: PLAN



NOTA / NOTE

EEN WEEKAAKTER IN DIE MIDDLE VAN ELKE  
TWEDE LENGTE VAN 3.75m



RIVET POSITION  
KLINKNAEL POSISIE

VOORAANSIG

FRONT ELEVATION

SKAAL / SCALE 1:10

GUARD RAILS ARE REQUIRED IN THE FOLLOWING CASES

- 1 WHERE THE FILL IS MORE THAN 4m WITH NO RECOVERY AREA
- 2 WHERE WATER NEXT TO THE ROAD FORMATION IS MORE THAN 1.5m
- 3 AT ALL BRIDGES
- 4 ON THE OUTSIDE OF CURVES WITH RADII LESS THAN 300M WITHOUT RECOVERY AREA
- 5 WHERE OBSTRUCTION ARE LESS THAN 1m FROM THE SHOULDER BRAKE POINT
- 6 WHERE AN OBSTRUCTION APPEARS TO BE MORE DANGEROUS THAN A GUARDRAIL WOULD BE

NOTE :

BEFORE GUARDRAILS MAY BE ERECTED APPROVAL MUST BE OBTAINED FROM THE DIRECTOR OF ROADS

SKRAMRELINGS WORD IN DIE VOLGENDE GEVALLE OPGERIG

- 1 WAAR DIE PAD IN N HOER OPVULLING AS 4m, EN SONDER HERSTEL AREA IS
- 2 WAAR WATER LANGS DIE PADFORMASIE DIEPER AS 1.5m IS
- 3 BY ALLE BRUE
- 4 AAN DIE BUTTE KANT DRAAIE MET STRALE KLEINER AS 300m EN SONDER HERSTEL AREAS
- 5 WAAR VERSPERRINGS NADER AS 1M VANAF DIE SKOUER - KNAPPUNT VOORKOM
- 6 WAAR DIT LYK OF DIE VERSPERRING OP SIGSELF GE - VAARLIKER AS 'N SKRAMRELING SOU WEEES

NOTA :

GOEDKEURING MOET VAN DIE DIREKTEUR VAN PAALIE VERKRY WORD VOORDAT SKRAMRELINGS OPGERIG MAG WORD



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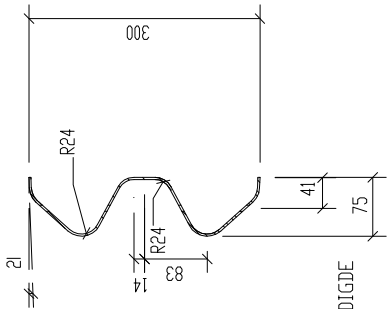
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
GUARDRAIL DETAILS

scale  
1 : 10

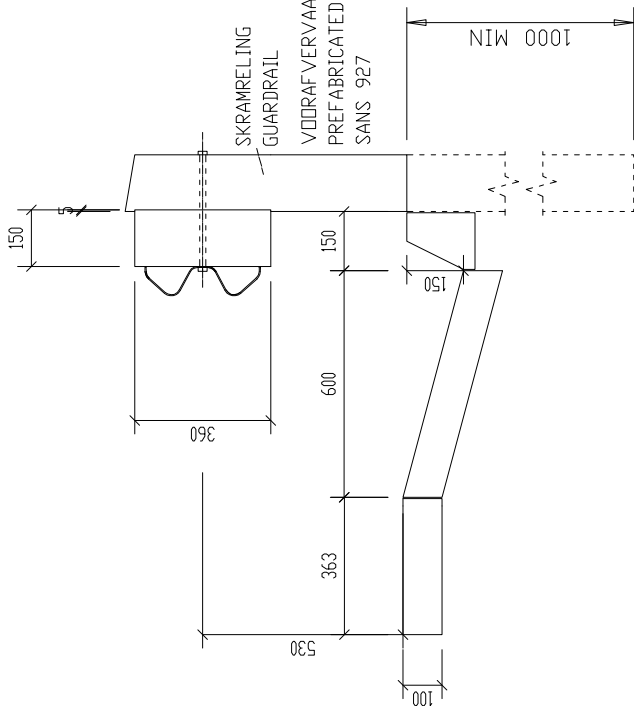
date  
2017/09/30

drawing number / type number  
TYPE NO DT 07/R



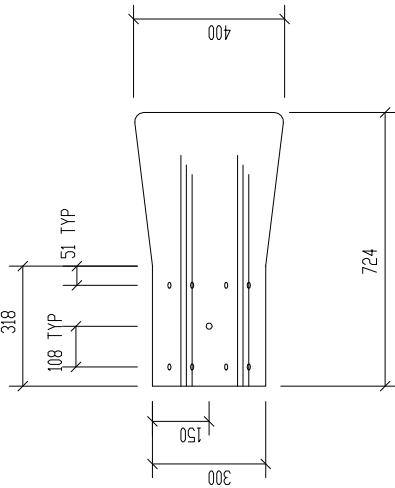
DWARS SNIT VAN SKRAMRELING  
CROSS-SECTION OF GUARDRAIL

SKAAL / SCALE 1:40



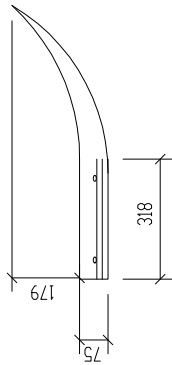
DETAIL VAN BETONGEUT  
DETAIL OF CONCRETE DRAIN

SKAAL / SCALE 1:20



VOORAANSIG: ENTVLERK  
FRONT ELEVATION END WING

SKAAL / SCALE 1:20



PLAN: ENTVLERK  
PLAN: END WING

SKAAL / SCALE 1:20

SPECIFICATIONS

- 1 BOLT HIGH TENSILE STEEL 16mm
- 2 WASHER STEEL SPRING 10MM THICK
- 3 SPACER BLOCK GUM OR PINE TRATED WITH CREDSOTE ACCORDING TO ANY METHOD IN SANS 10005
- 4 POLE 150mm - 230mm GUM OR PINE TREATED WITH CREDSOTE ACCORDING TO ANY METHOD IN SANS 10005
- 5 ALL GUARDRAILS SHALL BE GALVANIZED AS SPECIFIED (NDT TO BE PAINTED)


SPESIFIKASIES

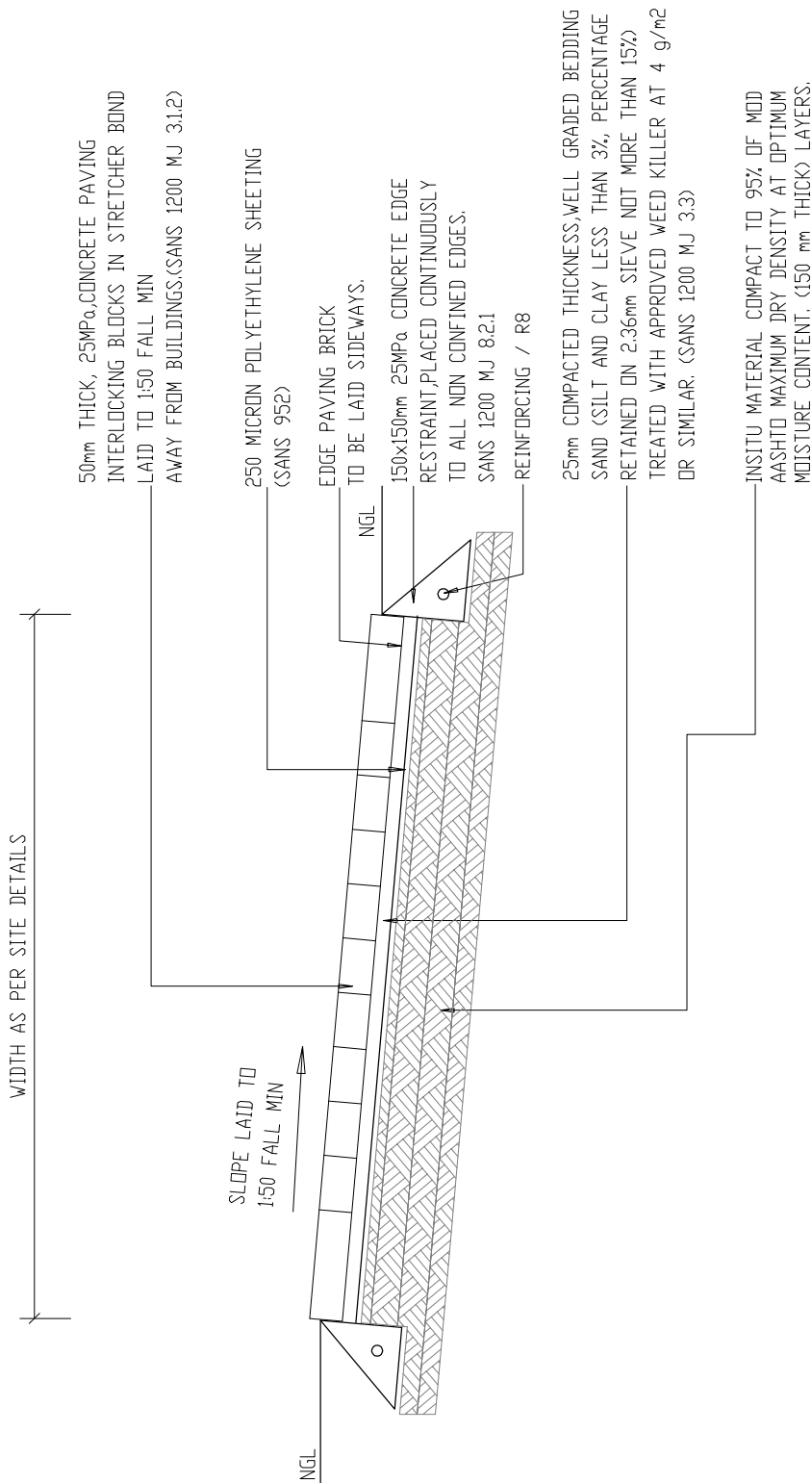
- 1 BOUT HOOGSPANNINGSTAAL 16mm
- 2 WASTER STAAL VEER 10MM DIK
- 3 SPASIEERBLOK BLOEKOM OF DENNE HOUT MET KREDSOOT BEHANDEL VOLGENS ENIGE METODE VAN SANS 10005
- 4 PAAL 150mm TOT 230mm BLOEKOM OF DENNEHOUT MET KREDSOOT BEHANDEL VOLGENS ENIGE METODE VAN SANS 10005
- 5 ALLE SKRAMRELINGS MOET GEGALVANISEERD WEES SOOS GESPEFIFISEER (NIE GEVERF NIE)

# PAVING DETAILS

## PAVING DETAILS: LIST OF DRAWINGS

- DT 01/P STANDARD LAYER WORK FOR 50mm BRICK PAVED WALKWAYS.
- DT 02/P STANDARD PAVING AROUND BUILDINGS
- DT 03/P STANDARD EDGE STRIPS FOR BRICK PAVED WALKWAYS.
- DT 04/P UNREINFORCED CONCRETE PAVEMENT SLAB NEXT TO BUILDINGS.
- DT 05/P UNREINFORCED CONCRETE PAVEMENT SLAB NEXT TO BUILDING AND ROADS.
- DT 06/P CONCRETE PAVEMENT SLAB WITH EDGE THICKENING.
- DT 07/P CONCRETE PAVEMENT SLAB WITH PEBBLE STONES (DIAGRAMATIC)
- DT 08/P PAVING BLOCKS ON RAFT FOUNDATION (DIAGRAMATIC)
- DT 09/P PAVING BLOCKS ON RAFT FOUNDATION (DIAGRAMATIC)

 <p><b>DEPARTMENT OF PUBLIC WORKS</b> Private Bag X65 Pretoria 0001 Tel (012) 337 2000</p>	departmental DIAGRAMMATIC CIVIL ENGINEERING DETAILS FOR DOLOMITIC SOILS	title DRAWING LIST.	scale	date 30-09-2017
			drawing number / type number TYPE NO DT 00/P	



STANDARD LAYERWORK FOR 50mm BRICK PAVED WALKWAYS

DT 01/P



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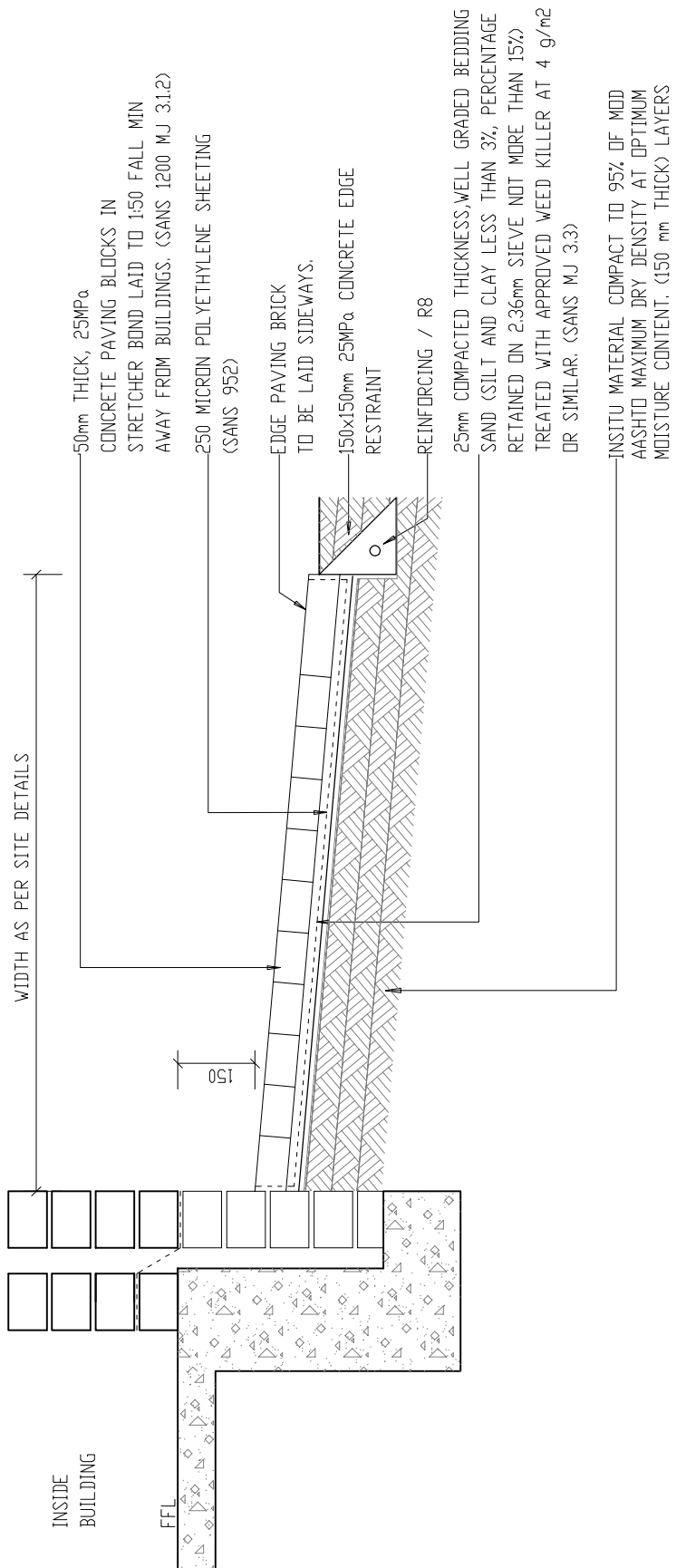
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
STANDARD LAYERWORK  
FOR 50mm BRICK PAVED  
WALKWAYS  
(DIAGRAMMATIC)

scale  
1 : 20

date  
2017/09/30

drawing number / type number  
TYPE NO DT 01/P



STANDARD PAVING AROUND BUILDINGS

DT 02/P



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
STANDARD PAVING AROUND  
BUILDINGS  
(DIAGRAMMATIC)

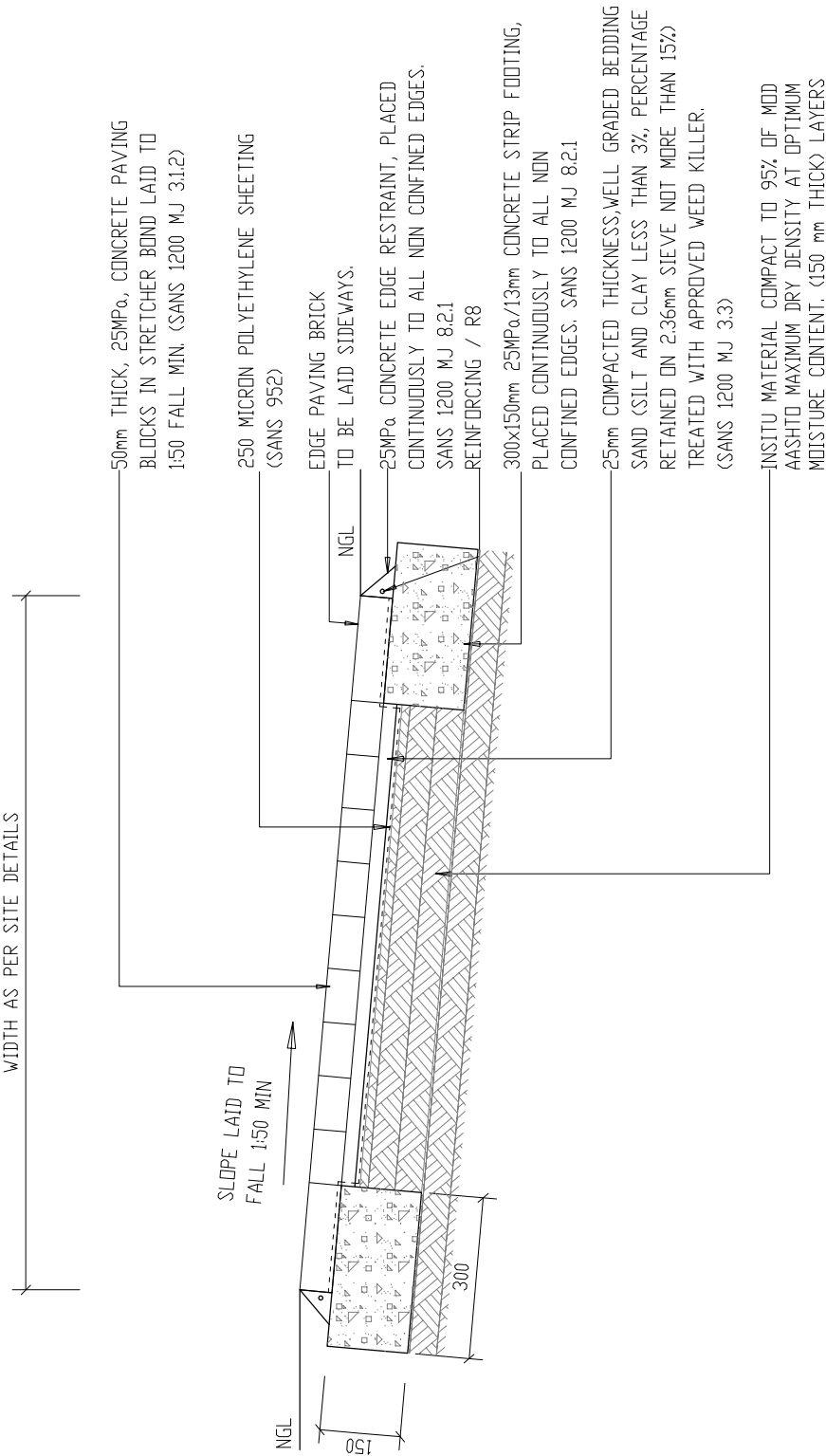
scale  
1 : 20

date  
2017/09/30

drawing number / type number  
TYPE NO DT 02/P



WIDTH AS PER SITE DETAILS



50mm THICK, 25MPa, CONCRETE PAVING BLOCKS IN STRETCHER BOND LAID TO 1:50 FALL MIN. (SANS 1200 MJ 3.1.2)

250 MICRON POLYETHYLENE SHEETING (SANS 952)

EDGE PAVING BRICK TO BE LAID SIDEWAYS.

25MPa CONCRETE EDGE RESTRAINT, PLACED CONTINUOUSLY TO ALL NON CONFINED EDGES. SANS 1200 MJ 8.2.1 REINFORCING / R8

300x150mm 25MPa/13mm CONCRETE STRIP FOOTING, PLACED CONTINUOUSLY TO ALL NON CONFINED EDGES. SANS 1200 MJ 8.2.1

25mm COMPACTED THICKNESS, WELL GRADED BEDDING SAND (SILT AND CLAY LESS THAN 3%, PERCENTAGE RETAINED ON 2.36mm SIEVE NOT MORE THAN 15%) TREATED WITH APPROVED WEED KILLER. (SANS 1200 MJ 3.3)

INSITU MATERIAL COMPACT TO 95% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT. (150 mm THICK) LAYERS

STANDARD EDGE STRIPS FOR BRICK PAVED WALKWAYS

DT 03/P



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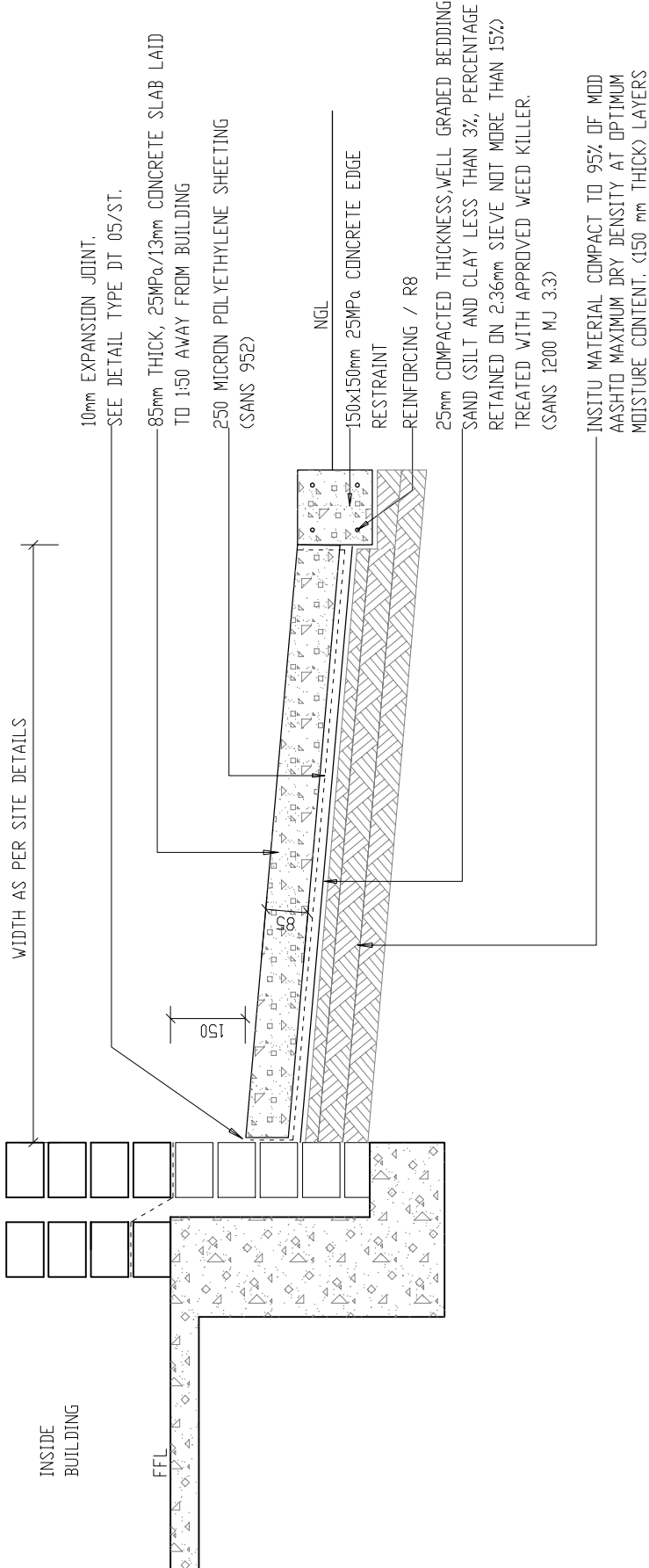
title  
STANDARD EDGE STRIPS  
FOR BRICK PAVED WALKWAYS  
(DIAGRAMMATIC)

scale  
1 : 20

date  
2017/09/30

drawing number / type number  
TYPE NO DT 03/P

USE DETAIL FOR: 1. NEXT TO BUILDINGS  
 2. UNCONFINED WALKWAYS  
 (PLACE EDGE STRIP BOTH SIDES)



UNREINFORCED CONCRETE PAVEMENT SLAB  
 NEXT TO BUILDINGS.

DT 04/P



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 PUBLIC WORKS  
 Private Bag X65  
 Pretoria  
 0001  
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departmental  
 DIAGRAMMATIC CIVIL  
 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 UNREINFORCED CONCRETE  
 PAVEMENT SLAB  
 NEXT TO BUILDINGS.  
 (DIAGRAMMATIC)

scale  
 1 : 20

date  
 2017/09/30

drawing number / type number  
 TYPE NO DT 04/P



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

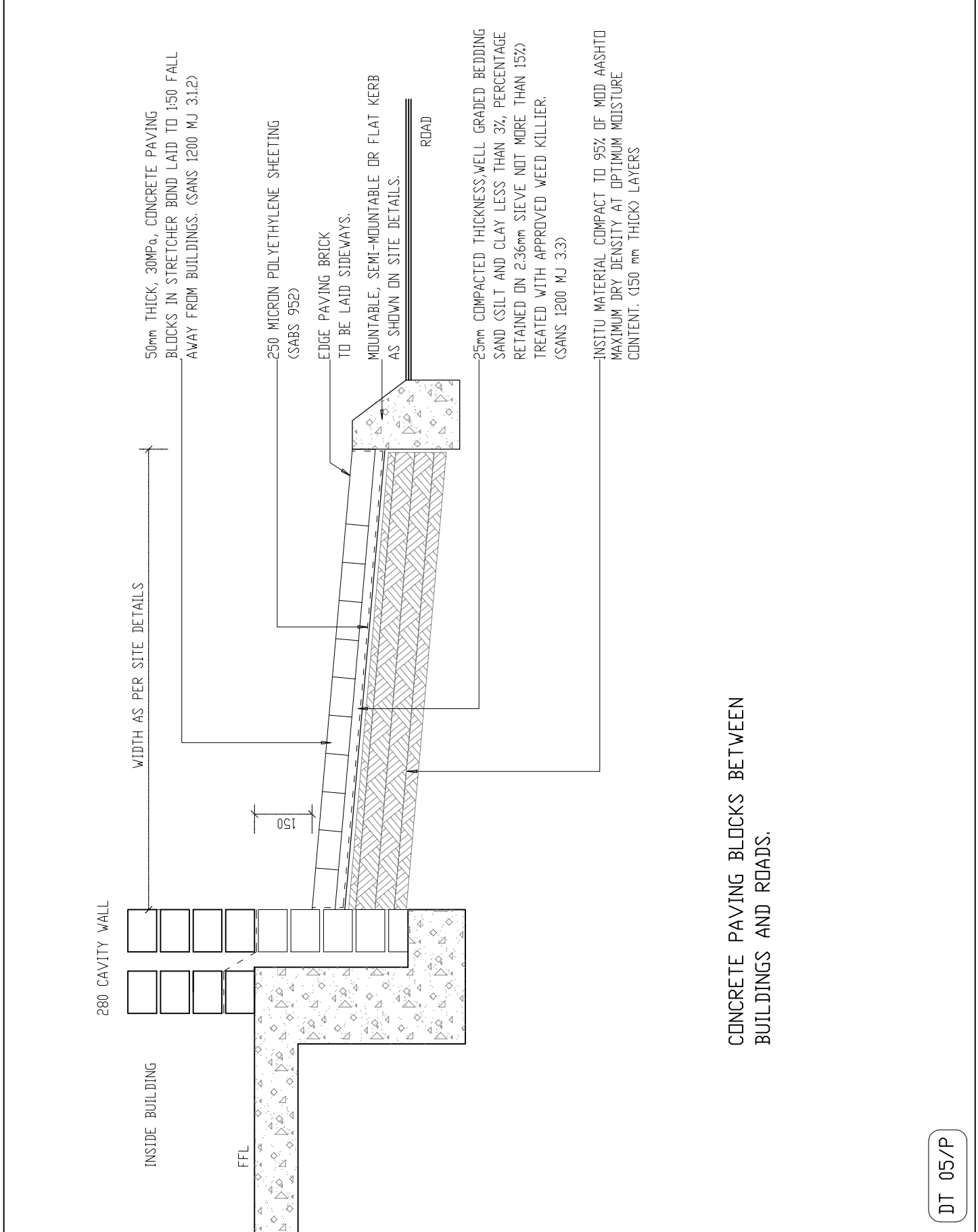
title  
UNREINFORCED CONCRETE  
PAVEMENT BETWEEN  
BUILDINGS AND ROADS.  
(DIAGRAMMATIC)

scale  
1 : 10

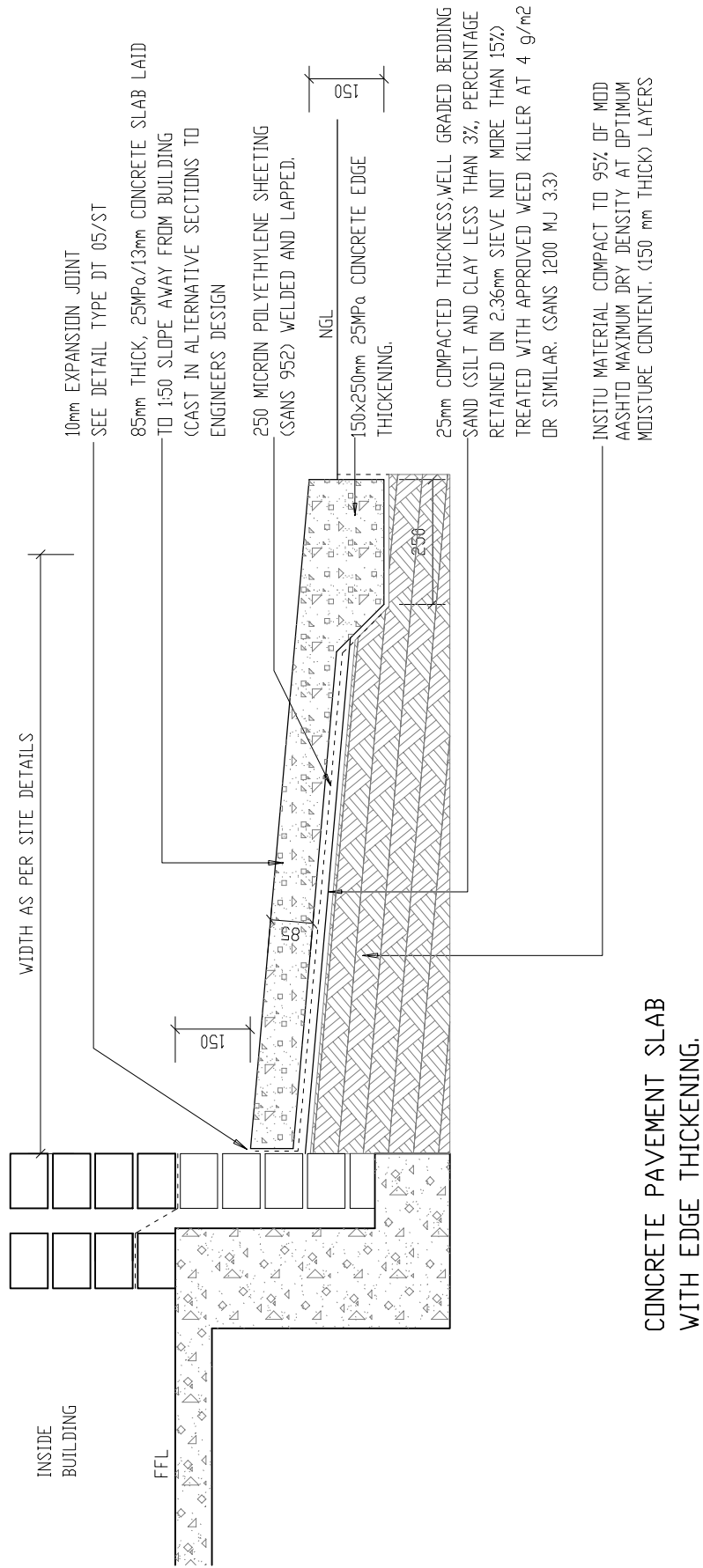
date  
2017/09/30

drawing number / type number  
TYPE NO DT 05/P

DT 05/P



USE DETAIL FOR: 1. NEXT TO BUILDINGS  
 2. UNCONFINED WALKWAYS  
 (PLACE EDGE STRIP BOTH SIDES)



DT 06/P



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 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 CONCRETE PAVEMENT  
 SLAB WITH EDGE  
 THICKENING.  
 (DIAGRAMMATIC)

scale  
 1 : 20

date  
 2017/09/30

drawing number / type number  
 TYPE NO DT 06/P



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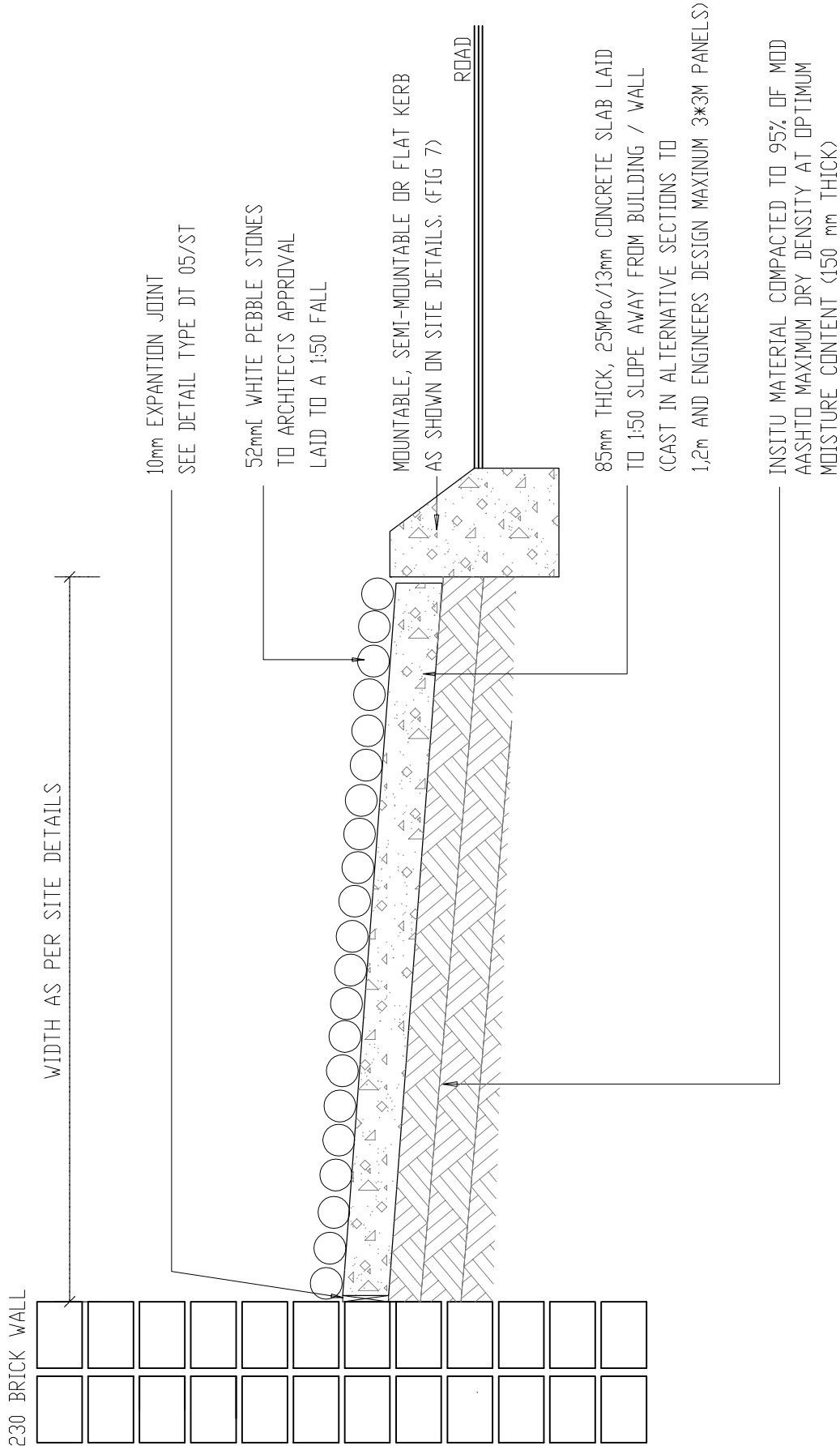
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
CONCRETE PAVEMENT  
WITH PEBBLE STONES  
(DIAGRAMMATIC)

scale  
1 : 10

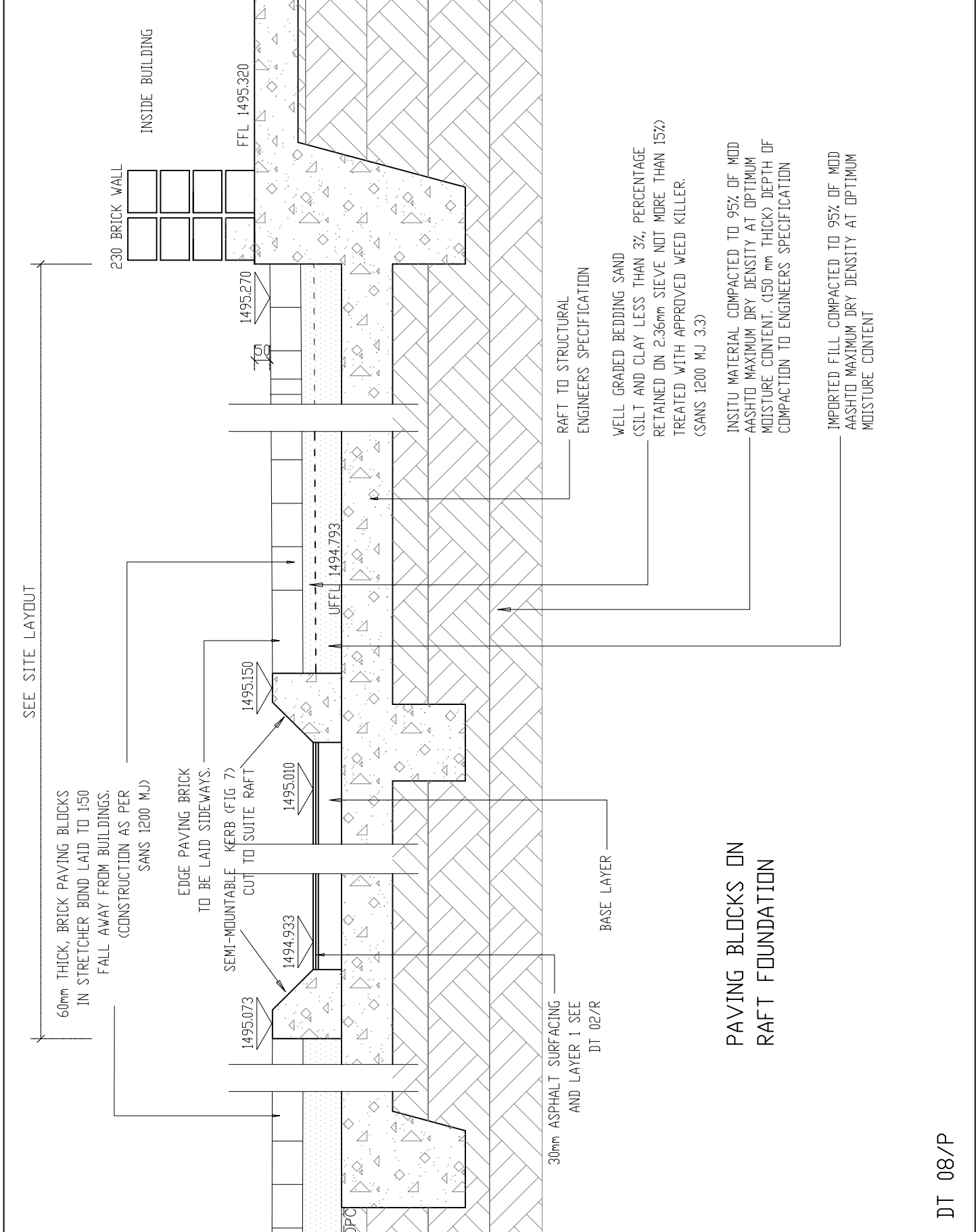
date  
2017/09/30

drawing number / type number  
TYPE NO DT 07/P



CONCRETE PAVEMENT  
WITH PEBBLE STONES

DT 07/P



DT 08/P



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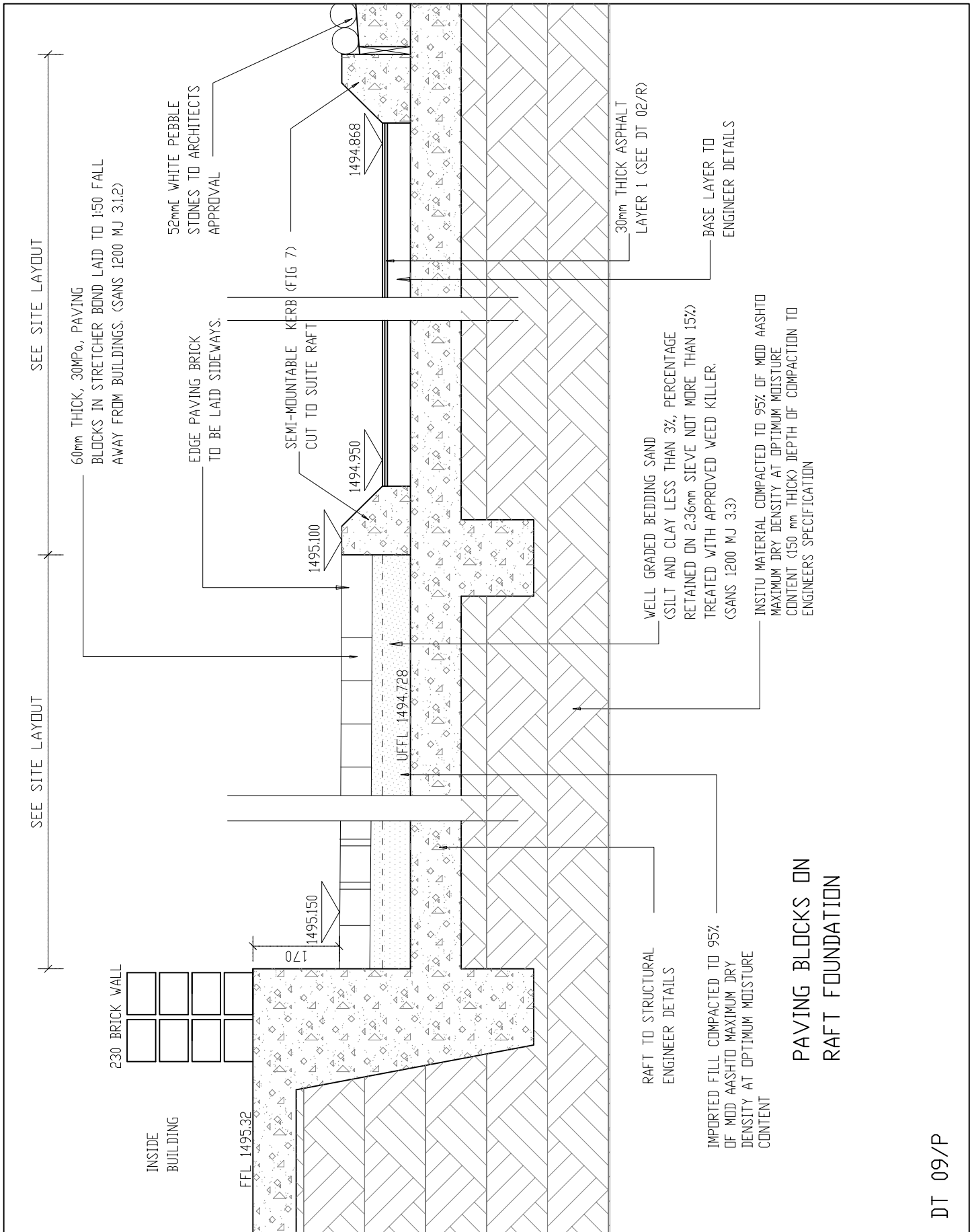
departmental  
 DIAGRAMMATIC CIVIL  
 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 PAVING BLOCKS ON  
 RAFT FOUNDATION.  
 (DIAGRAMMATIC)

scale  
 1 : 10

date  
 2017/09/30

drawing number / type number  
 TYPE NO DT 08/P



SEE SITE LAYOUT

SEE SITE LAYOUT

60mm THICK, 30MPa, PAVING BLOCKS IN STRETCHER BOND LAID TO 1:50 FALL AWAY FROM BUILDINGS. (SANS 1200 MJ 3.1.2)

52mm WHITE PEBBLE STONES TO ARCHITECTS APPROVAL

EDGE PAVING BRICK TO BE LAID SIDEWAYS.

SEMI-MOUNTABLE KERB (FIG 7) CUT TO SUITE RAFT

30mm THICK ASPHALT LAYER 1 (SEE DT 02/R)

BASE LAYER TO ENGINEER DETAILS

WELL GRADED BEDDING SAND (SILT AND CLAY LESS THAN 3%, PERCENTAGE RETAINED ON 2.36mm SIEVE NOT MORE THAN 15%) TREATED WITH APPROVED WEED KILLER. (SANS 1200 MJ 3.3)

INSITU MATERIAL COMPACTED TO 95% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT (150 mm THICK) DEPTH OF COMPACTION TO ENGINEERS SPECIFICATION

RAFT TO STRUCTURAL ENGINEER DETAILS

IMPORTED FILL COMPACTED TO 95% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT

PAVING BLOCKS ON RAFT FOUNDATION

DT 09/P



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
PAVING BLOCKS ON  
RAFT FOUNDATION.  
(DIAGRAMMATIC)

scale  
1 : 10

date  
2017/09/30

drawing number / type number  
TYPE NO DT 09/P

# SINKHOLE DETAILS

## SINKHOLE DETAILS: LIST OF DRAWINGS

DT 01/SH	SINKHOLE STABILISATION INVERTED FILTER METHOD.
DT 02/SH	SINKHOLE REHABILITATION SMALL TO LARGE COMPACTORS USED INVERTED FILTER METHOD.
DT 03/SH	SINKHOLE REHABILITATION DYNAMIC COMPACTION
DT 04/SH	DOLINE REHABILITATION DYNAMIC COMPACTION
DT 05/SH	DOLINE REHABILITATION CONVENTIONAL COMPACTION.
DT 06/SH	FILLING OF LOW LAYING AREAS (OPEN AREAS).
DT 07/SH	SETTING OUT GRID FOR DYNAMIC COMPACTION (PLAN)
DT 08/SH	EARTH WORKS TO IMPROVE STORMWATER DRAINAGE IN TRAFFICKED AREAS.



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
DRAWING LIST.

scale

.

date

30-09-2017

drawing number / type number

TYPE NO DT 00/SH





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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

project  
.SINKHOLE STABILISATION  
INVERTED FILTER METHOD  
(DIAGRAMMATIC)

scale  
1 : 60

date  
2017/09/30

drawing number / type number  
TYPE NO DT 01/SH

NOTE:  
PC AND PA REFER TO PARTICULAR SPECIFICATIONS.

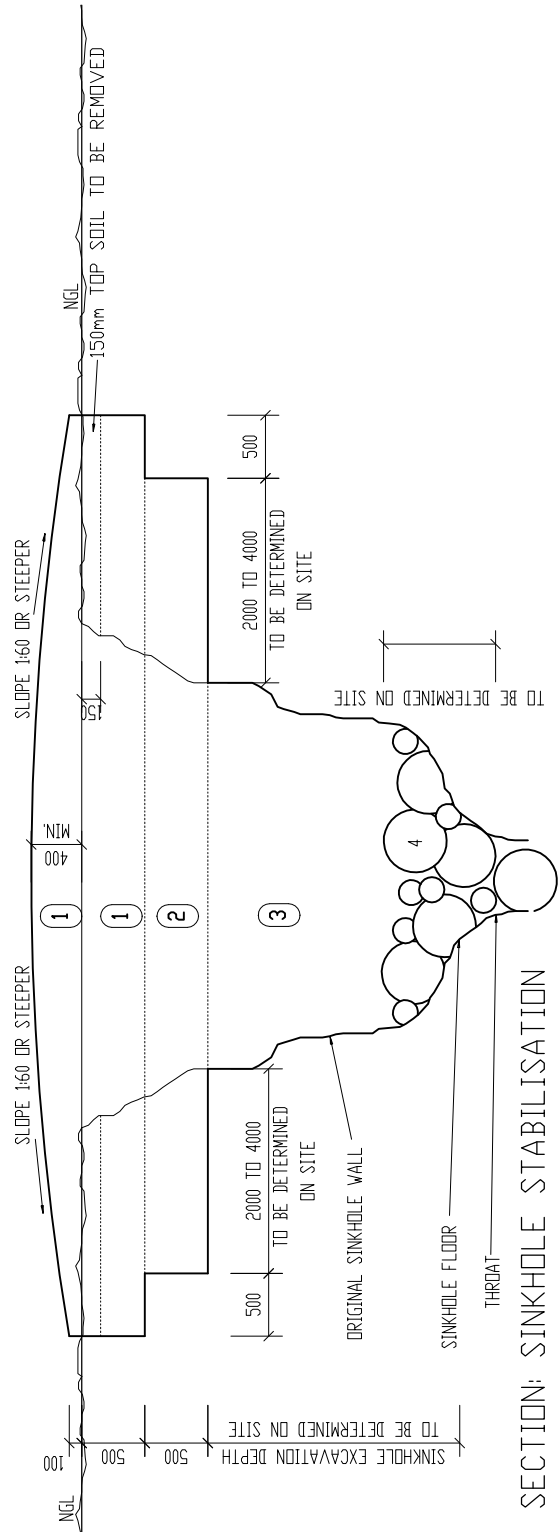
1. TOP SELECTED FILLING:
  - 150mm LAYERS COMPACTED WITH WALK BEHIND COMPACTOR (90mm) TO 95% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.
  - SILTY SAND OR CLAY (PARTICLE SIZE 1,55mm AND SMALLER)
2. LOWER SELECTED FILLING:
  - 150mm LAYERS COMPACTED WITH WALK BEHIND COMPACTOR (90mm) TO 95% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.
  - MAXIMUM COARSE MATERIAL SIZE NOT TO EXCEED 63mm IN DIAMETER.
3. BULK FILLING (UNCONTROLLED COMPACTION):
  - 200mm LAYERS COMPACTED WITH TAMPING OF 32 TON EXCAVATOR BUCKET OR SIMILAR.
  - MATERIAL TO BE TYPE G8 WITH MAXIMUM SIZE OF MATERIAL NOT EXCEEDING 125mm IN DIAMETER.
4. CHOKING OF SINKHOLE THROAT:
  - TYPE 1. BOULDERS OF 500mm  $\phi$  OR LARGER FOR OPEN THROAT.
  - TYPE 2. BOULDERS OR BUILDING RUBBLE UP TO 400mm  $\phi$  MIXED WITH 30% SOIL FINES.
  - COMPACT TYPE 1 AND TYPE 2 WITH EXCAVATOR BUCKET.
  - TYPE 3. REINFORCED CONCRETE SLAB (20MPa/19mm).
  - TYPE 4. PUMP 1:15 CEMENT:SOIL MIX INTO THROAT.
  - TYPE OF CHOKING TO BE DETERMINED BY ENGINEER AFTER EXCAVATION OF SINKHOLE FLOOR.

ENGINEER TO DETERMINE DISTANCES

PERSONNEL ENTERING THIS AREA TO BE STRAPPED INTO HARNESSES AND SAFETY ROPES SECURED AWAY FROM SINKHOLES

SAFE PARKING FOR EQUIPMENT TO BE DETERMINED ON SITE

SAFE PARKING FOR EQUIPMENT TO BE DETERMINED ON SITE



SECTION: SINKHOLE STABILISATION  
INVERTED FILTER METHOD

DT 01/SH







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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

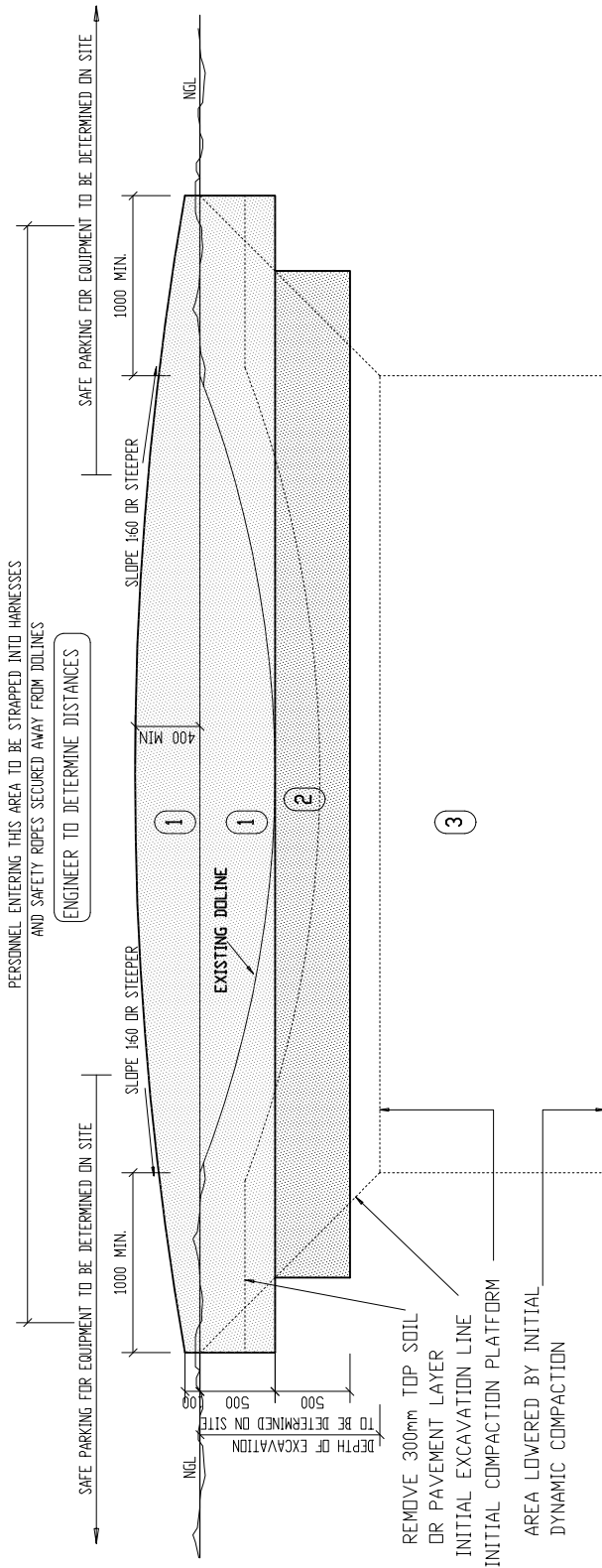
title  
DOLINE REHABILITATION  
DYNAMIC COMPACTION  
(DIAGRAMMATIC)

scale  
1 : 50

date  
2017/09/30

drawing number / type number  
TYPE NO DT 04/SH

DT 04/SH



SECTION:  
DOLINE REHABILITATION  
DYNAMIC COMPACTION

1. TOP SELECTED FILLING:
  - 150mm LAYERS COMPACTED TO 95% OF MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT.
  - SILTY SAND OR CLAY (PARTICLE SIZE 1,55mm AND SMALLER)
2. DYNAMIC COMPACTION FINISHING PLATFORM:
  - LAST 0,5m FILLED IN UNCOMPACTED LAYER COARSE MATERIAL, SIZE NOT TO EXCEED 63mm  $\phi$ .
  - DYNAMIC COMPACTION, CONSISTING OF PRIMARY, SECONDARY AND FINISHING COMPACTION.
3. DYNAMIC COMPACTION BULK FILLING:
  - FILL IN 3m UNCOMPACTED LAYERS OF TYPE G8 MATERIAL WITH MAXIMUM SIZE OF COARSE MATERIAL NOT EXCEEDING 125mm IN DIAMETER.
  - DYNAMIC COMPACTION, CONSISTING OF PRIMARY AND SECONDARY COMPACTION.

NOTE:  
IF PAVING IS TO BE RECONSTRUCTED OVER AREA,  
TOP LAYER SHALL BE OF SELECTED PAVING LAYERS.

NOTE:  
P.C. AND P.A. REFER TO PARTICULAR SPECIFICATION.



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
DOLINE REHABILITATION  
CONVENTIONAL COMPACTION  
(DIAGRAMMATIC)

scale  
1 : 50

date  
2017/09/30

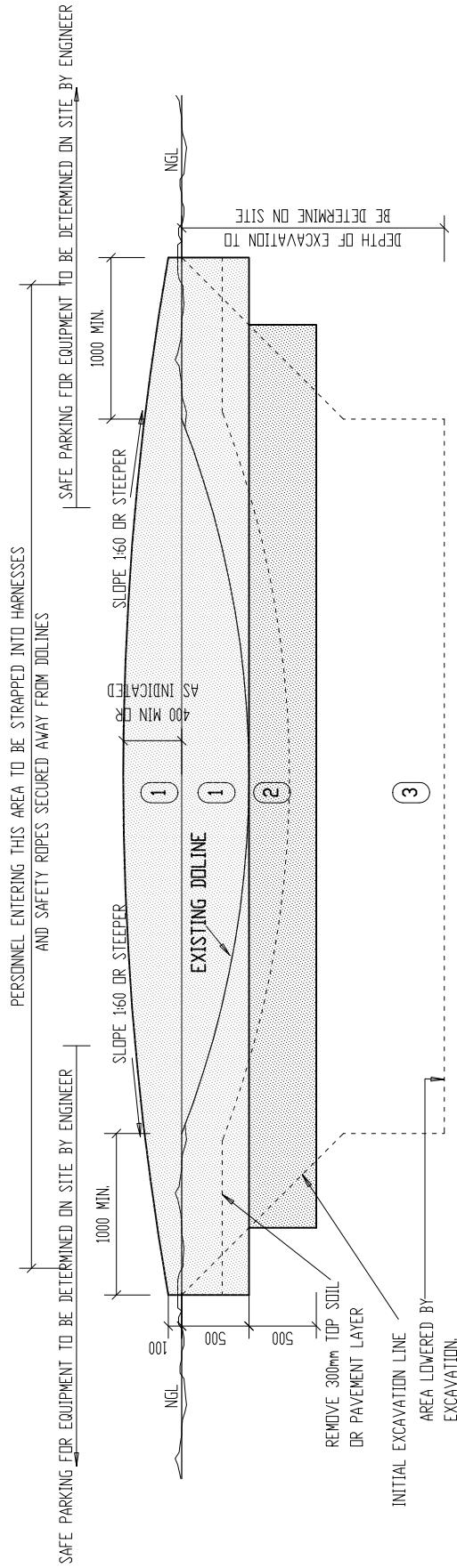
drawing number / type number  
TYPE NO DT 05/SH

1. TOP SELECTED FILLING:  
-150mm LAYERS COMPACTED TO 95% MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMAL MOISTURE CONTENT  
-SILTY SAND OR CLAY (PARTICLE SIZE 1,55mm AND SMALLER)
2. LOWER SELECTED FILLING:  
-150mm LAYERS COMPACTED TO 95% MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMAL MOISTURE CONTENT.  
-MAXIMUM COARSE MATERIAL SIZE NOT TO EXCEED 63mm IN DIAMETER.
3. BULK FILLING:  
-200mm LAYERS COMPACTED TO 93% MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMAL MOISTURE CONTENT OR A DENSITY LESS PREWEABLE THAN THE SURROUNDING SOIL WHICHEVER IS HIGHER.  
-MATERIAL TO BE TYPE G8 WITH MAXIMUM SIZE NOT EXCEEDING 125mm IN DIAMETER.

NOTE:  
IF PAVING IS TO BE RECONSTRUCTED OVER AREA,  
TOP LAYERS 1 SHALL BE OF SELECTED PAVING LAYERS.

NOTE:  
P.C. AND P.A. REFER TO PARTICULAR SPECIFICATION.

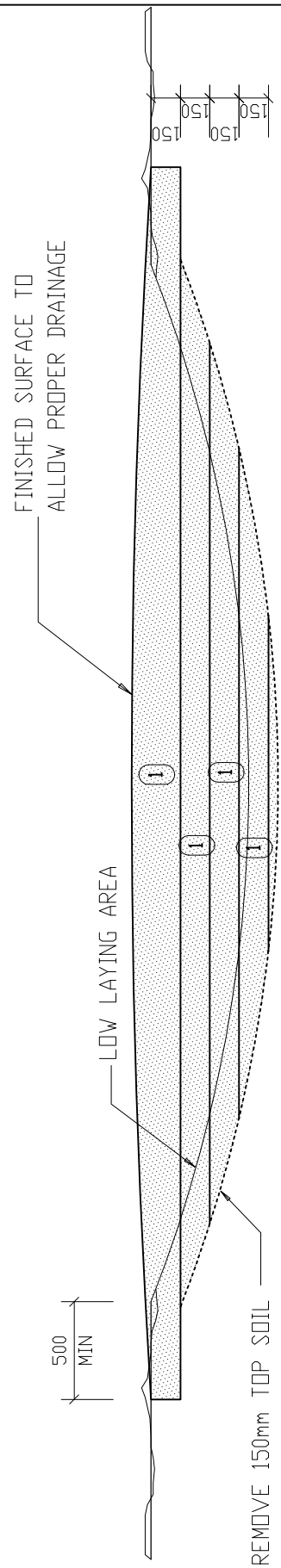
ENGINEER TO DETERMINE DISTANCE



SECTION: DOLINE REHABILITATION  
CONVENTIONAL COMPACTION

DT 05/SH

1. -150mm LAYERS COMPACTED TO 93% MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMAL MOISTURE CONTENT OR TO A DENSITY LESS PREMEABLE THAN THE SURROUNDING AREA WHICHEVER IS THE HIGHER.



SECTION:  
FILLING OF LOW LAYING AREAS  
(OPEN AREAS)

DT 06/SH



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
FILLING OF LOW LAYING  
AREAS (OPEN AREAS)  
(DIAGRAMMATIC)

scale  
1 : 30

date  
2017/09/30

drawing number / type number  
TYPE NO DT 06/SH



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

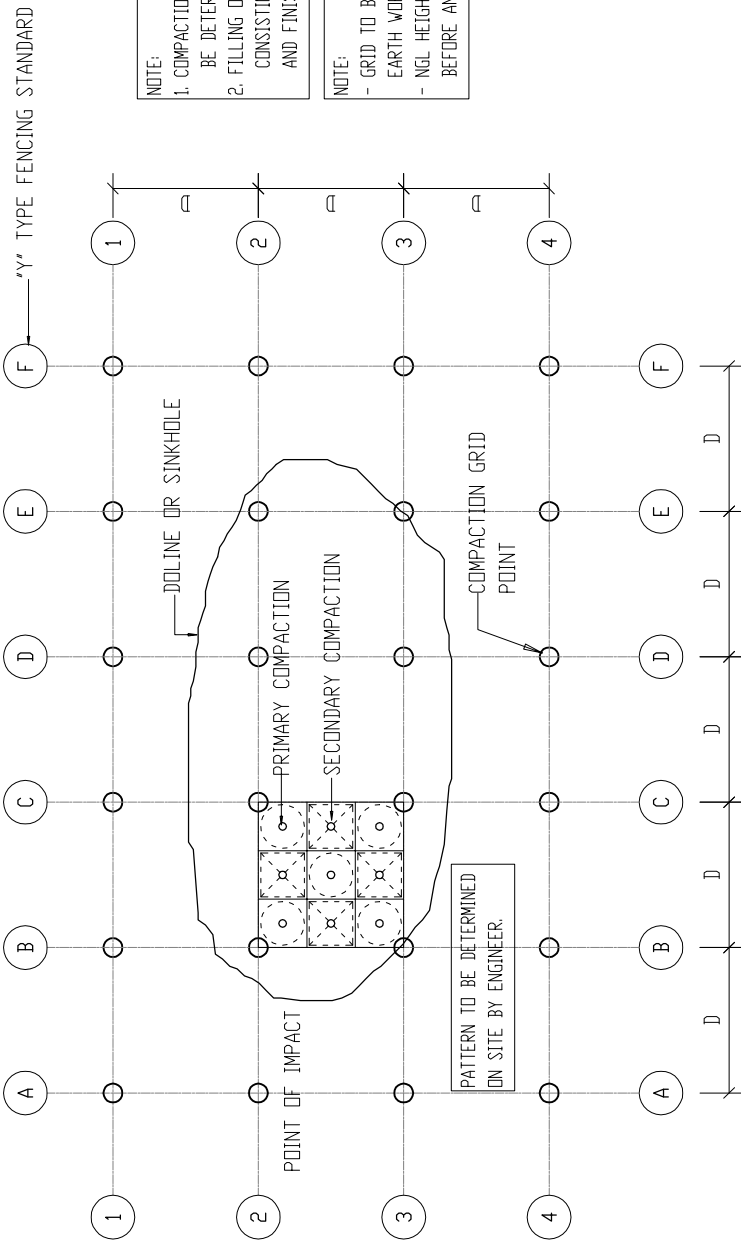
title  
SETTING OUT GRID FOR  
DYNAMIC COMPACTION  
(PLAN)  
(DIAGRAMMATIC)

scale  
1 : 260

date  
2017/09/30

drawing number / type number  
TYPE NO DT 07/SH

DT 07/SH



NOTE:  
1. COMPACTION FOOTPRINT SPACING (D) TO BE DETERMINED BY ENGINEER ON SITE.  
2. FILLING OF COMPACTION DEPRESSIONS CONSISTING OF PRIMARY, SECONDARY AND FINISHING COMPACTION.

NOTE:  
- GRID TO BE SET OUT BEFORE ANY EARTH WORKS COMMENCE.  
- NGL HEIGHTS TO BE RECORDED BEFORE AND AFTER COMPACTION.

SETTING OUT GRID FOR DYNAMIC COMPACTION (PLAN)

FIELD REPORT FOR EACH BLOCK						
GRID BLOCK REFERENCE NUMBER	PRIMARY COMPACTION		SECONDARY COMPACTION		FINISHING COMPACTION	
	NO. OF BLOWS	AVERAGE DEPTH	NO. OF BLOWS	AVERAGE DEPTH	NO. OF BLOWS	
2/3-B/C	18	1,6m	8	1,5m	26	
DROP HEIGHT	18m	1,6m	18m	1,5m		
2/3-B/C	14	1,4m	8	1,0m	22	
DROP HEIGHT	18m	1,4m	18m	1,0m		
2/3-B/C	12	1,2m	8	1,0m	20	
DROP HEIGHT	18m	1,2m	18m	1,0m		

EXAMPLE ONLY

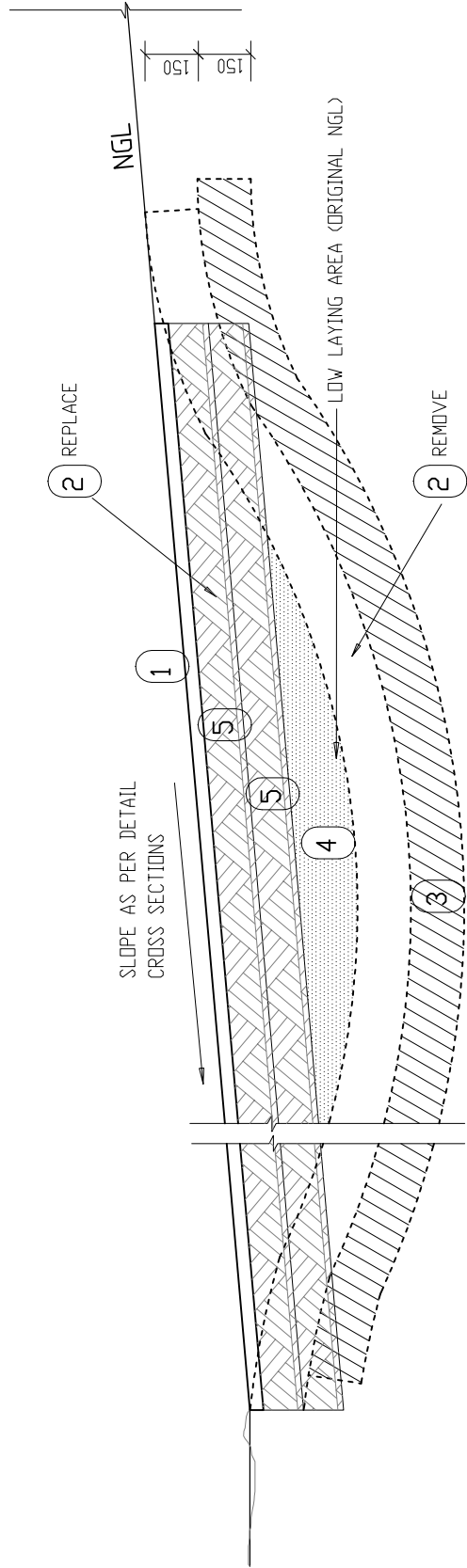
AVERAGE DEPTH = AVERAGE DEPTH OF MATERIAL OF ALL POINTS FROM NATURAL GROUND LEVEL OF IMPACT AFTER COMPLETION OF COMPACTION PHASE.

PPV	
AVERAGE	
MAXIMUM	

EXAMPLE ONLY

**NOTE 1:**  
**DUST CONTROL.**  
 ALL DISTURBED MATERIAL  
 OR SURFACES TO BE KEPT  
 SUFFICIENTLY MOIST TO  
 PREVENT DUST POLLUTION.

1. GRASS SEEDING AS PER SPECIFICATION OR REPLANT REMOVED GRASS.
2. ALTERNATIVE 1:  
 REMOVE TOPSOIL AND STOCKPILE. REPLACE TOPSOIL, LEVEL AND COMPACT TO 95% MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMAL MOISTURE CONTENT IN ONE 150mm THICK LAYER.
- ALTERNATIVE 2:  
 WINDROW 150mm TOPSOIL TO ONE SIDE, MAINTAIN, REDRESS, LEVEL AND COMPACT AS ABOVE.
3. RIP, SCARRIFY, GRADE TO EVEN SLOPE AND RECOMPACT 150mm INSITU MATERIAL TO 95% MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMAL MOISTURE CONTENT.
4. IMPORTED FILL COMPACTED TO 95% MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMAL MOISTURE CONTENT (MATERIAL TYPE PI > 14)
5. IMPORTED FILL COMPACTED TO 95% MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMAL MOISTURE CONTENT (MATERIAL TYPE G7 IN TERMS TRH 14)



EARTHWORKS TO IMPROVE STORMWATER  
 DRAINAGE IN TRAFFICKED AREAS.

DT 08/SH



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 DIAGRAMMATIC CIVIL  
 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 EARTHWORKS TO IMPROVE  
 STORM WATER DRAINAGE  
 IN TRAFFICKED AREAS  
 (DIAGRAMMATIC)

scale  
 1 : 20

date  
 2017/09/30

drawing number / type number  
 TYPE NO DT 08/SH



# SURVEY BEACON DETAILS

## SURVEY BEACON DETAILS: LIST OF DRAWINGS

- DT 01/SB SURVEY POINTS IN ROAD SURFACE..
- DT 02/SB CONTROL BEACON ON ROCK.
- DT 03/SB SURVEY POINT IN OPEN FIELD.
- DT 04/SB LEVELING PIN AGAINST BUILDING
- DT 05/SB SURVEY BASE STATION.
- DT 06/SB SURVEY POINT IN CONCRETE.



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
DRAWING LIST.

scale  
.

date

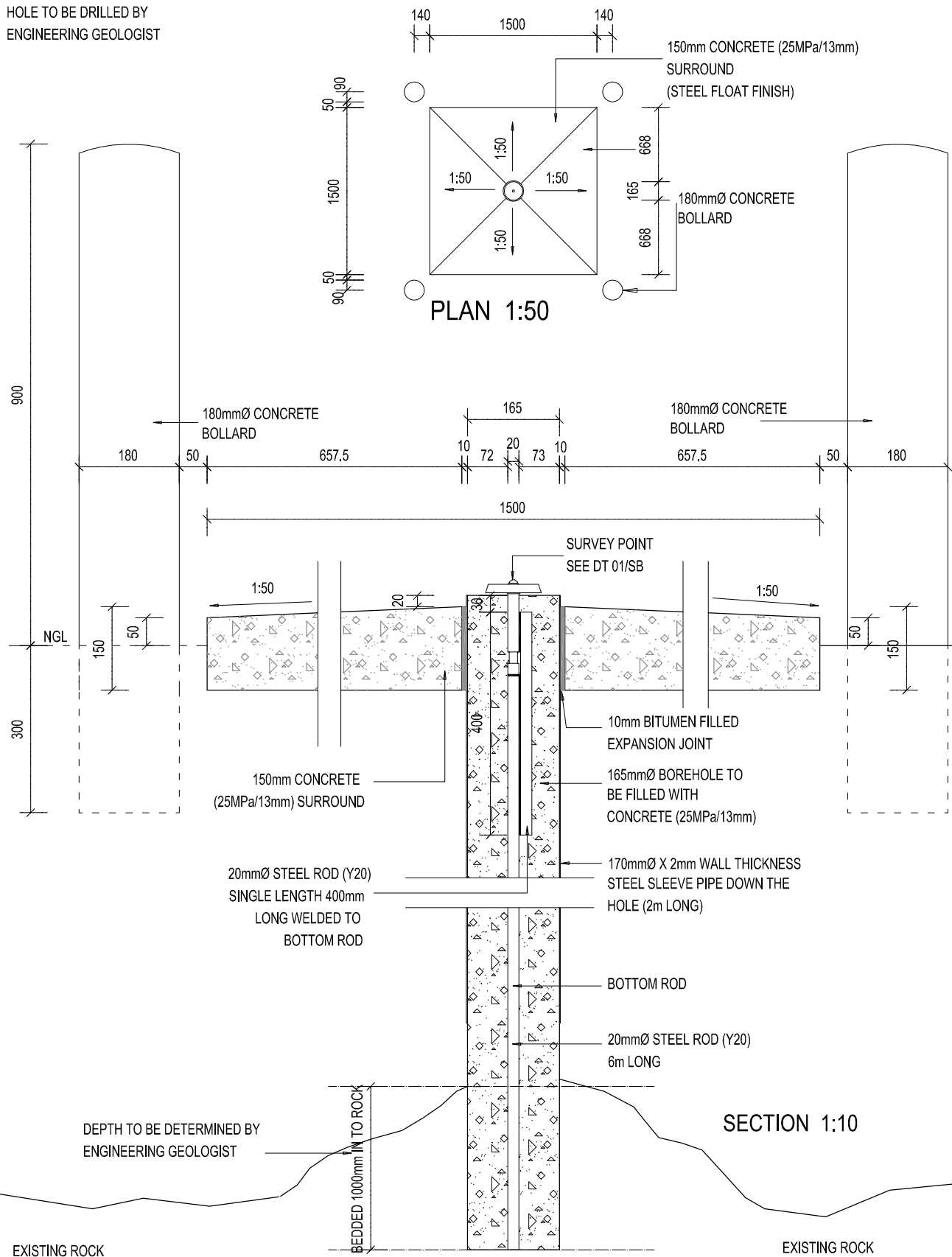
2017/09/30

drawing number / type number

TYPE NO DT 00/SB



NOTE:  
HOLE TO BE DRILLED BY  
ENGINEERING GEOLOGIST



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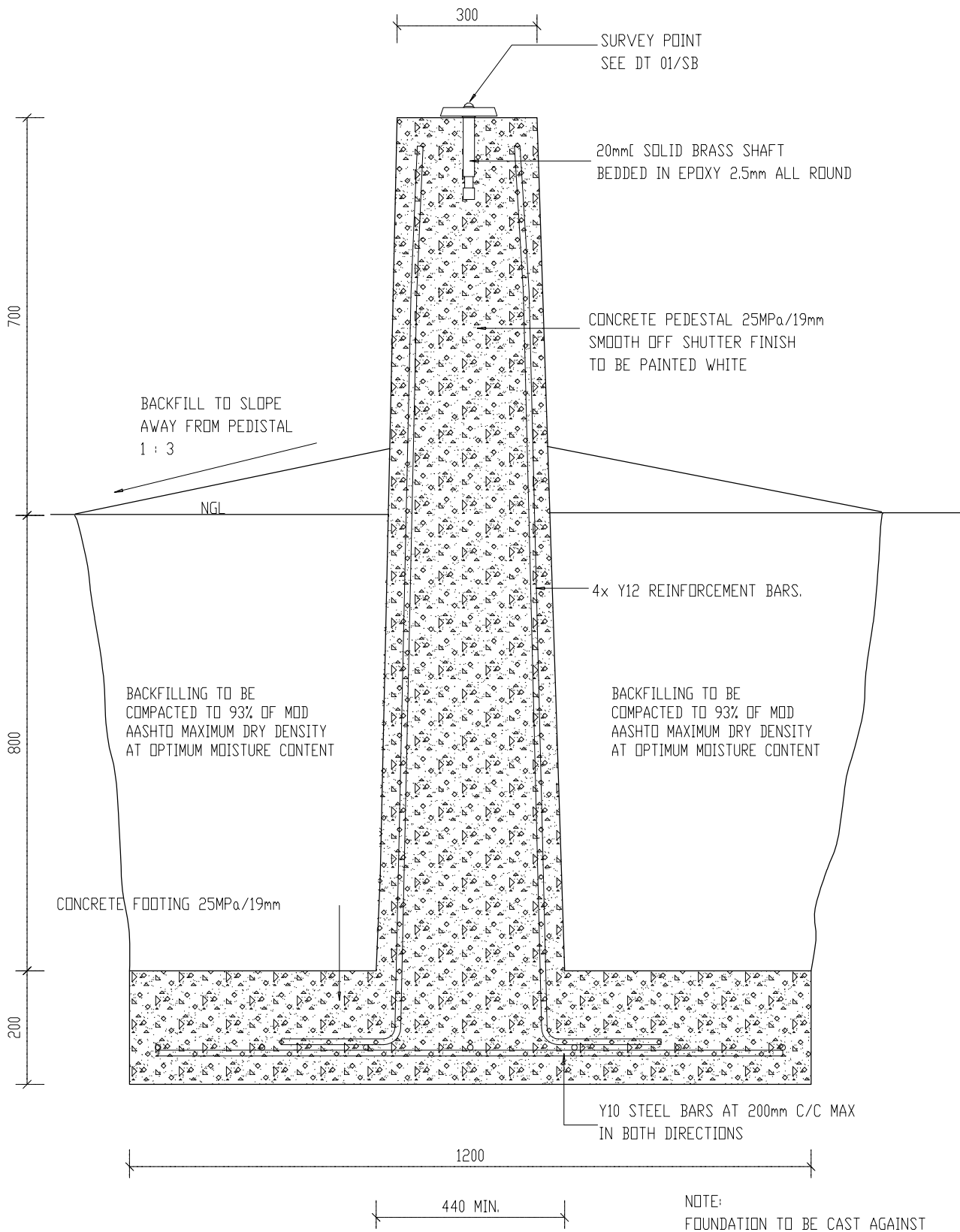
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
CONTROL BEACON  
ON ROCK


scale  
1:10  
1:50

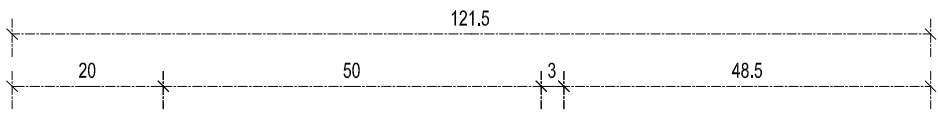
date  
2017/09/30

drawing number / type number  
TYPE NO DT 02/SB



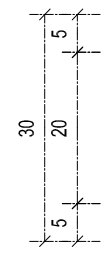
NOTE:  
 FOUNDATION TO BE CAST AGAINST  
 NATURAL UNDISTURBED SOIL TO  
 ENGINEERS APPROVAL

 <p>DEPARTMENT OF  <b>PUBLIC WORKS</b>          Private Bag X65          Pretoria          0001          Tel (012) 337 2000</p>	departmental DIAGRAMMATIC CIVIL ENGINEERING DETAILS FOR DOLOMITIC SOILS.	title SURVEY POINT IN OPEN FIELD	scale 1 : 5	date 2017/09/30
				drawing number / type number <b>TYPE NO DT 03/SB</b>



121.50mm LONG BY 20mmØ  
SOLID BRASS MACHINED  
LEVELING PIN

30mm MACHINED SOLID BRASS  
LEVELING POINT WITH  
ROUNDED EDGES



50mmØ X 3mm SOLID BRASS  
FLANGE WELDED TO PIN

EXISTING PLASTER

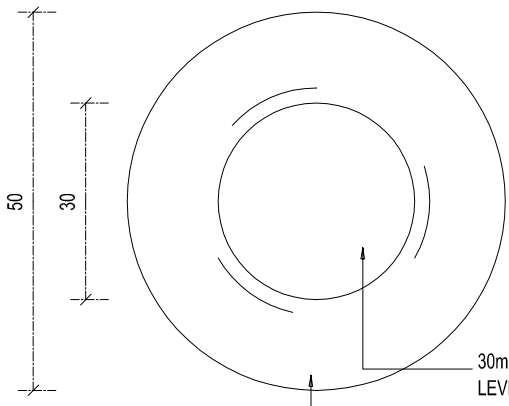
EXISTING BRICK  
WALL

4mm X 20mmØ MACHINED  
GROOVES CUT INTO PIN

HOLE DRILLED INTO BRICK WALL  
ALLOW FOR 3mm EPOXY ALL  
AROUND THE PIN

EXISTING BRICK  
WALL

EXISTING BRICK  
WALL



30mmØ MACHINED SOLID BRASS  
LEVELING POINT WITH  
ROUNDED EDGES

50mmØ X 3mm SOLID BRASS  
FLANGE WELDED TO PIN

**FRONT ELEVATION**  
**SCALE 1:1**



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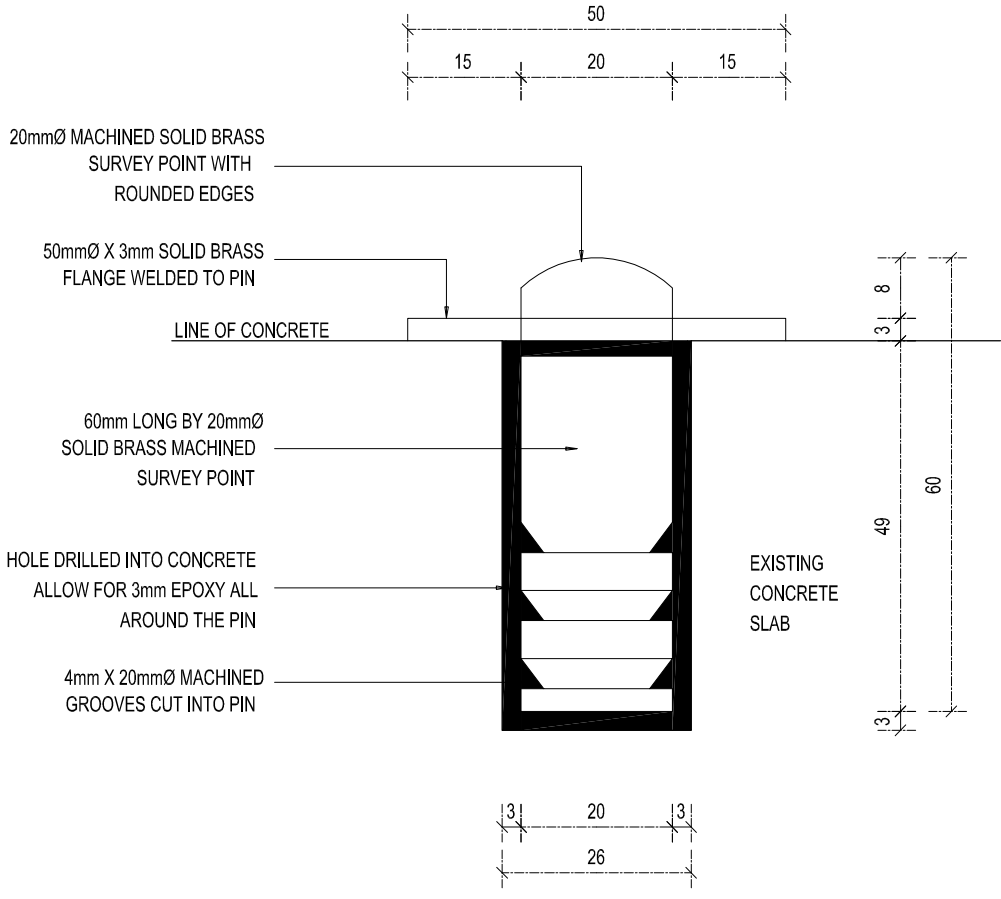
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.

title  
LEVELING PIN  
AGAINST BUILDING

scale  
1:1

date  
2017/09/30

drawing number / type number  
TYPE NO DT 04/SB



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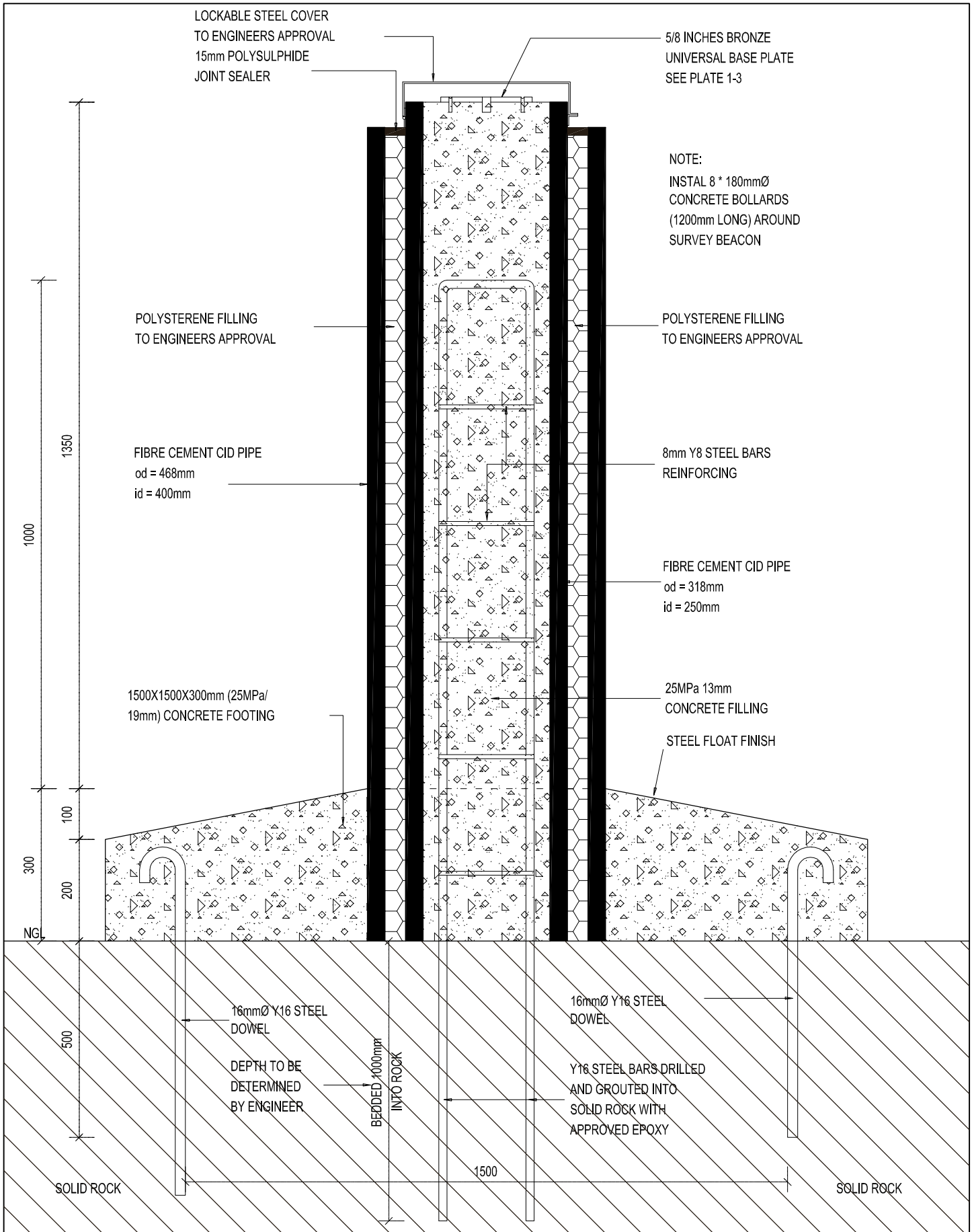
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS.


title  
SURVEY POINT  
IN CONCRETE

scale  
1:1

date  
2017/09/30

drawing number / type number  
TYPE NO DT 06/SB



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			<p>drawing number / type number</p> <p>TYPE NO DT 05/SB</p>	

# CABLE DETAILS

## CABLE DETAILS: LIST OF DRAWINGS

- DT 01/C TYPICAL DUCT DETAIL FOR CABLE SLEEVES UNDER DRIVEWAYS.
- DT 02/C TYPICAL MANHOLE FOR POWER AND DATA CABLES.
- DT 03/C TYPICAL DUCT DETAIL FOR CABLE SLEEVES UNDER WALKWAYS.
- DT 04/C STEEL LADDER IN MANHOLE DETAIL.
- DT 05/C SECTION OF 1000mm  $\varnothing$  HDPE MANHOLE.
- DT 06/C TYPICAL WELDING DETAILS FOR HDPE CABLE MANHOLE PLAN.
- DT 07/C TYPICAL WELDING DETAILS FOR HDPE CABLE MANHOLE SECTION C.
- DT 08/C TYPICAL WELDING DETAILS FOR HDPE CABLE MANHOLE.
- DT 09/C GENERAL DETAILS: CONCRETE SERVICE CHANNEL
- DT 09-1/C TYPICAL DETAILS: CONCRETE INSPECTION ACCESS POINT.
- DT 10/C TEMPORARY SLEEVE REPAIRS..



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
DRAWING LIST.

scale  
.

date  
2017/09/30

drawing number / type number

TYPE NO DT 00/C

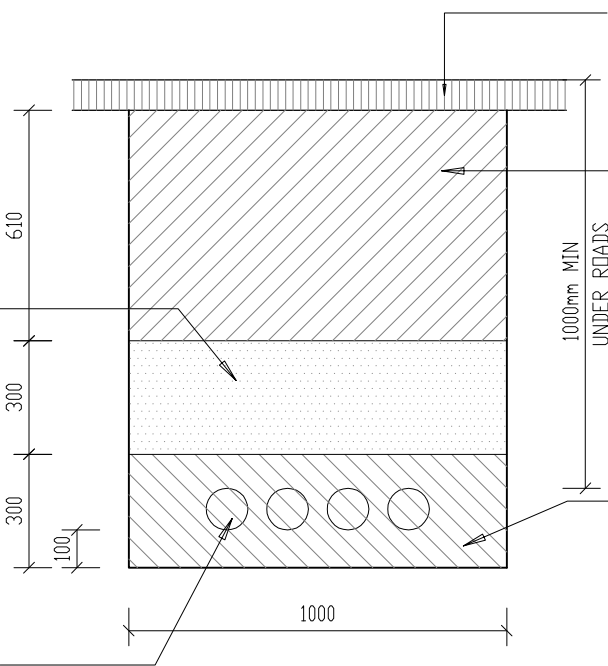


NOTE:  
SLEEVES PIPES TO BE HDPE PE100  
PN10 SANS 4427

SLEEVE SPACING APPROVAL  
  
DATE:  
SIGNED:  
ELECTRICAL ENGINEER

600mm MUST BE ALLOWED FOR  
BETWEEN POWER CABLES TRENCH  
AND DATA CABLES TRENCH

COMPACTED SELECTED FILL BLANKET  
COMPACTION TO 93% OF MOD AASTHO  
MAXIMUM DRY DENSITY AT OPTIMUM  
MOISTURE CONTENT MATERIAL TO SANS  
1200 LB 3.2 (MAXIMUM AGGREGATE  
SIZE TO BE 10mm) (PI 12-16)



CONCRETE PAVING BLOCKS/TAR  
SEE SITE LAYOUT ROAD LAYER  
WORKS AS NORMAL

COMPACTED SELECTED BACKFILL COMPACTION  
TO 95% OF MOD AASTHO MAXIMUM DRY  
DENSITY AT OPTIMUM MOISTURE CONTENT  
MATERIAL TO SANS 1200 DB 3.5 (MAXIMUM  
AGGREGATE SIZE TO BE 63mm)

COMPACTED SELECTED BEDDING COMPACTION  
TO 93% OF MOD AASTHO MAXIMUM DRY  
DENSITY AT OPTIMUM MOISTURE CONTENT  
MATERIAL TO SANS 1200 LB 3.3 (MAXIMUM  
AGGREGATE SIZE TO BE 6mm) (PI 12-16)

HDPE PE100 PN10  
SLEEVE PIPES FOR CABLES

TYPICAL DUCT DETAIL FOR  
CABLE SLEEVES UNDER DRIVEWAYS

SEE SANS 1200 LC  
FOR PIPE SPACING  
ALL DIMENSIONS TO BE  
SPECIFIED OR INDICATED  
BY ENGINEER.

MANUFACTURING NOTE:  
SLEEVE SPACING TO SUIT  
FUSION COUPLING - 50mm  
BETWEEN SLEEVES MINIMUM

NOTE:  
ALL BACKFILL MATERIALS SHALL  
AFTER COMPACTION BE LESS  
PERMEABLE THAN THE IN-SITU  
SURROUNDING SOIL.



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
TYPICAL DUCT DETAIL FOR  
CABLES SLEEVES UNDER  
DRIVEWAYS (DIAGRAMMATIC)

scale  
1 : 20

date  
2017/09/30

drawing number / type number  
TYPE NO DT 01/C

Holes for all pipes through concrete to be diameter plus 20mm. Seal openings with 25mm deep polysulphide on in and outside of wall.  
(Alternative puddle flange on pipe)

600mm $\phi$  (SANS 50124) Composite (Non-Ferrous) Manhole Cover and Frame for Roads (Heavy Duty) - Lockable see Engineers Specification

Smooth off shutter finish

25MP $\alpha$ /19mm Concrete Manhole

110mm $\phi$  HDPE PE100 PN10 Sleeve Pipes for Power Cables

Pipe Holder Bracket as per Detail Type DT 08/W 600mm/c max. for pipe spacing see SANS 10120

Backfilling compacted around manhole to 93% Mod Asstho Dry Density in layers of 150mm permeability to be lower than the surrounding soil

Note: All to comply to SANS 1200 LC  
Sleeve pipes smaller than 63mm  $\phi$  HDPE PE100 PN 10 SANS4427  
Sleeve pipes bigger than 75mm  $\phi$  HDPE PE100 PN 10 SANS 4427

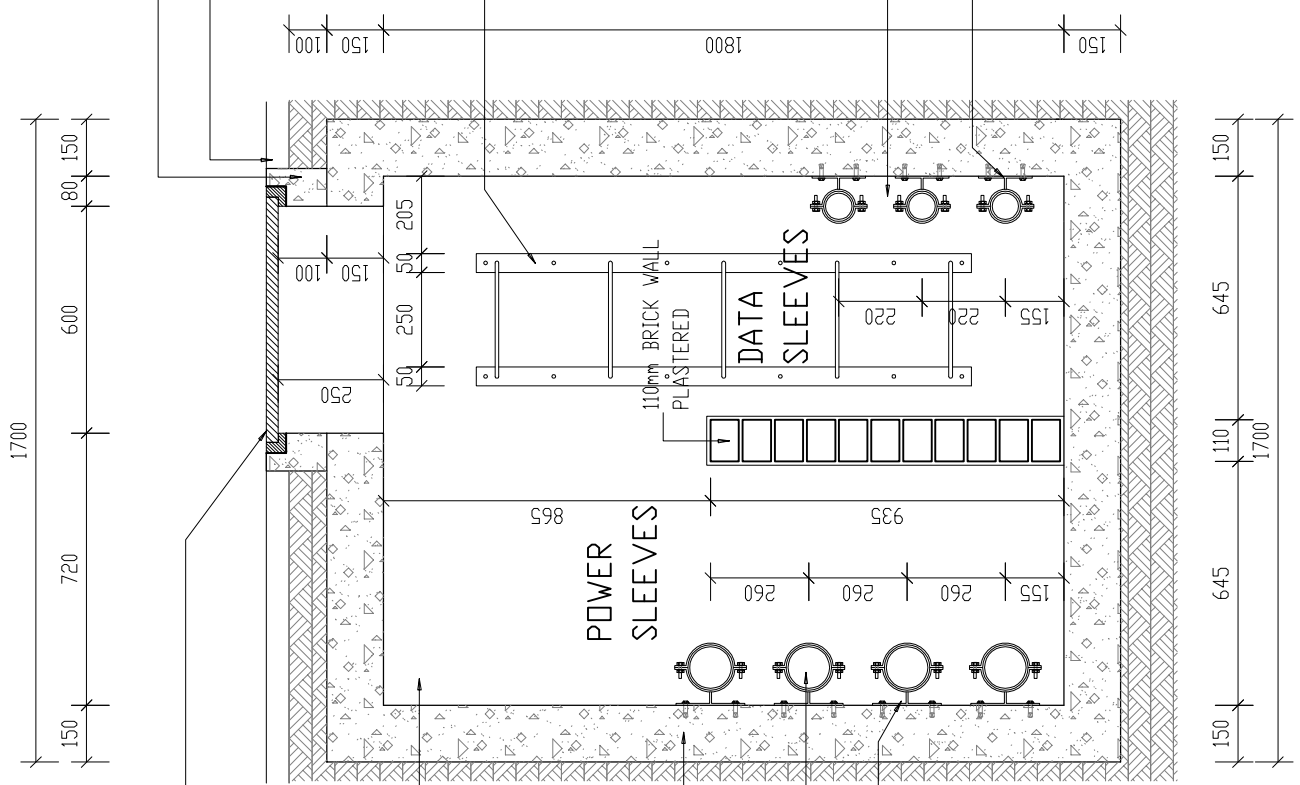
Adaptor slab  
Concrete paving blocks/tar see site layout

10mm $\phi$  steel bar to form step at 300mm/c welded to 50x5mm steel support bolted to wall with 10mm $\phi$  expansion bolts see DT 04/C hot dipped galvanised

Steel reinforcing to engineer specification ( $\gamma$ 10 @ 200mm in both directions) in and outside

75mm $\phi$  HDPE PE100 PN10 sleeve pipes for data cables

Pipe holder bracket as per detail type DT 08/W 600mm/c max. for pipe spacing see SANS 10120 LC



TYPICAL MANHOLE FOR  
POWER AND DATA SLEEVES  
(1700X1700X1800mm DEEP)



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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
CABLING  
MANHOLE FOR POWER  
AND DATA CABLES

scale  
1:20

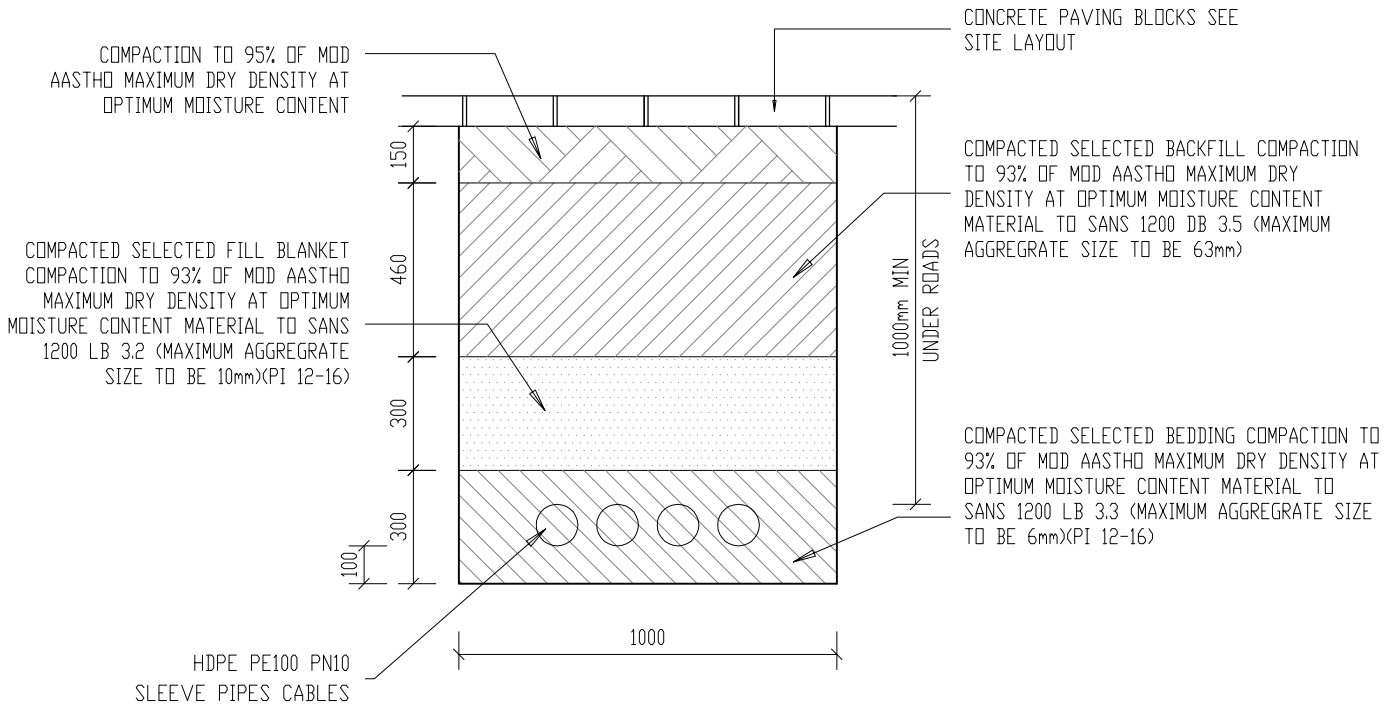
date  
30-09-2017

drawing number / type number  
TYPE NO DT 02/C

NOTE:  
SLEEVES PIPES TO BE HDPE PE100  
PN10 SANS 4427

SLEEVE SPACING APPROVAL  
  
DATE:  
SIGNED:  
ELECTRICAL ENGINEER

600mm MUST BE ALLOWED FOR  
BETWEEN POWER CABLES TRENCH  
AND DATA CABLES TRENCH




TYPICAL DUCT DETAIL FOR  
CABLE SLEEVES UNDER WALKWAYS

SEE SANS 1200 LC  
FOR PIPE SPACING

ALL DIMENSIONS TO BE  
SPECIFIED OR INDICATED  
BY ENGINEER.

MANUFACTURING NOTE:  
SLEEVE SPACING TO SUIT  
FUSION COUPLING - 50mm  
BETWEEN SLEEVES MINIMUM

NOTE:  
ALL BACKFILL MATERIALS SHALL  
AFTER COMPACTION BE LESS  
PERMEABLE THAN THE IN-SITU  
SURROUNDING SOIL.

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			<p>drawing number / type number TYPE NO DT 03/C</p>	



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DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
CABLING  
STEEL LADDER  
IN MANHOLE

scale  
1:20

date  
2017/09/30

drawing number / type number  
TYPE NO DT 04/C

NOTE: ALL TO COMPLY TO SANS 1200 LC  
SLEEVE PIPES SMALLER THAN 63mmØ HDPE  
PE100 PN 16 SANS4427  
SLEEVE PIPES BIGGER THAN 75mmØ HDPE  
PE100 PN 12.5 SANS 4427

HOLES FOR ALL PIPES THROUGH CONCRETE  
TO BE DIAMETER PLUS 20mm. SEAL OPENINGS  
WITH 25mm DEEP POLYSULPHIDE ON IN AND  
OUTSIDE OF WALL.  
(ALTERNATIVE PUDDLE FLANGE ON PIPE)

600mmØ TYPE 1A (SANS 558)  
MANHOLE COVER AND FRAME FOR ROADS  
(HEAVY DUTY) - LOCKABLE

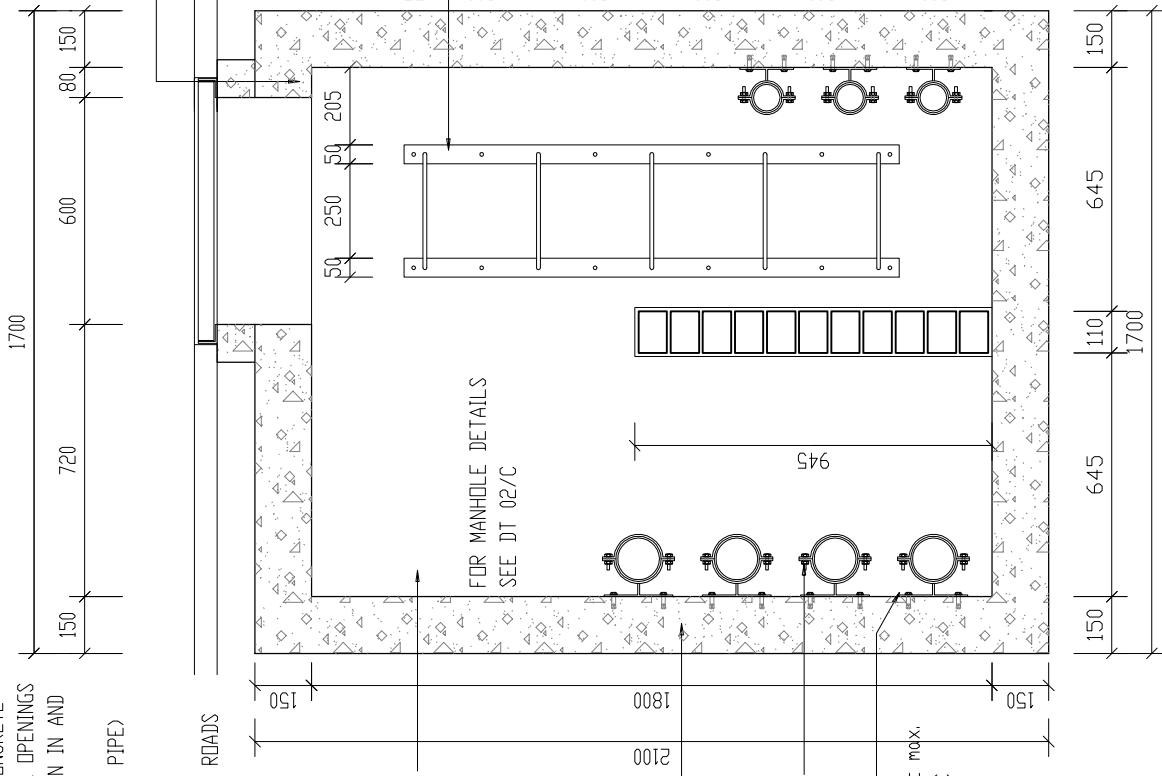
SMOOTH OFF  
SHUTTER FINISH

25MPa/19mm  
CONCRETE MANHOLE

110mmØ HDPE PE100 PN12.5  
SLEEVE PIPES FOR POWER  
CABLES

PIPE HOLDER BRACKET AS PER  
DETAIL TYPE DT 08/W 600mm/c max.  
FOR PIPE SPACING SEE SANS LC

BACKFILLING COMPACTED AROUND  
MANHOLE TO 93% OF MOD AASTHO  
MAXIMUM DRY DENSITY AT OPTIMUM  
MOISTURE CONTENT IN LAYERS OF  
150mm PERMEABILITY TO BE LOWER  
THAN THE SURROUNDING SOIL



TYPICAL LADDER FOR  
CABLE MANHOLE  
SCALE 1:20

TYPICAL MANHOLE FOR  
POWER AND DATA SLEEVES  
(1700X1700X1800mm DEEP)

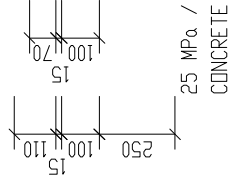
PLAN  
SCALE 1:5

**600mm MUST BE ALLOWED FOR BETWEEN POWER CABLES MANHOLE AND DATA CABLES MANHOLE**

- PRECAST CONCRETE ROOF SLAB (HEAVY DUTY) WITH:
1. TYPE 1A (SANS 558) COVER AND FRAME FOR ROADS OR/
  2. HEAVY DUTY COMPOSITE (NON-FERROUS) SANS 50124) MANHOLE COVER AND FRAME WITH ONE ADAPTOR SLAB FOR PAVED OR OPEN AREAS.

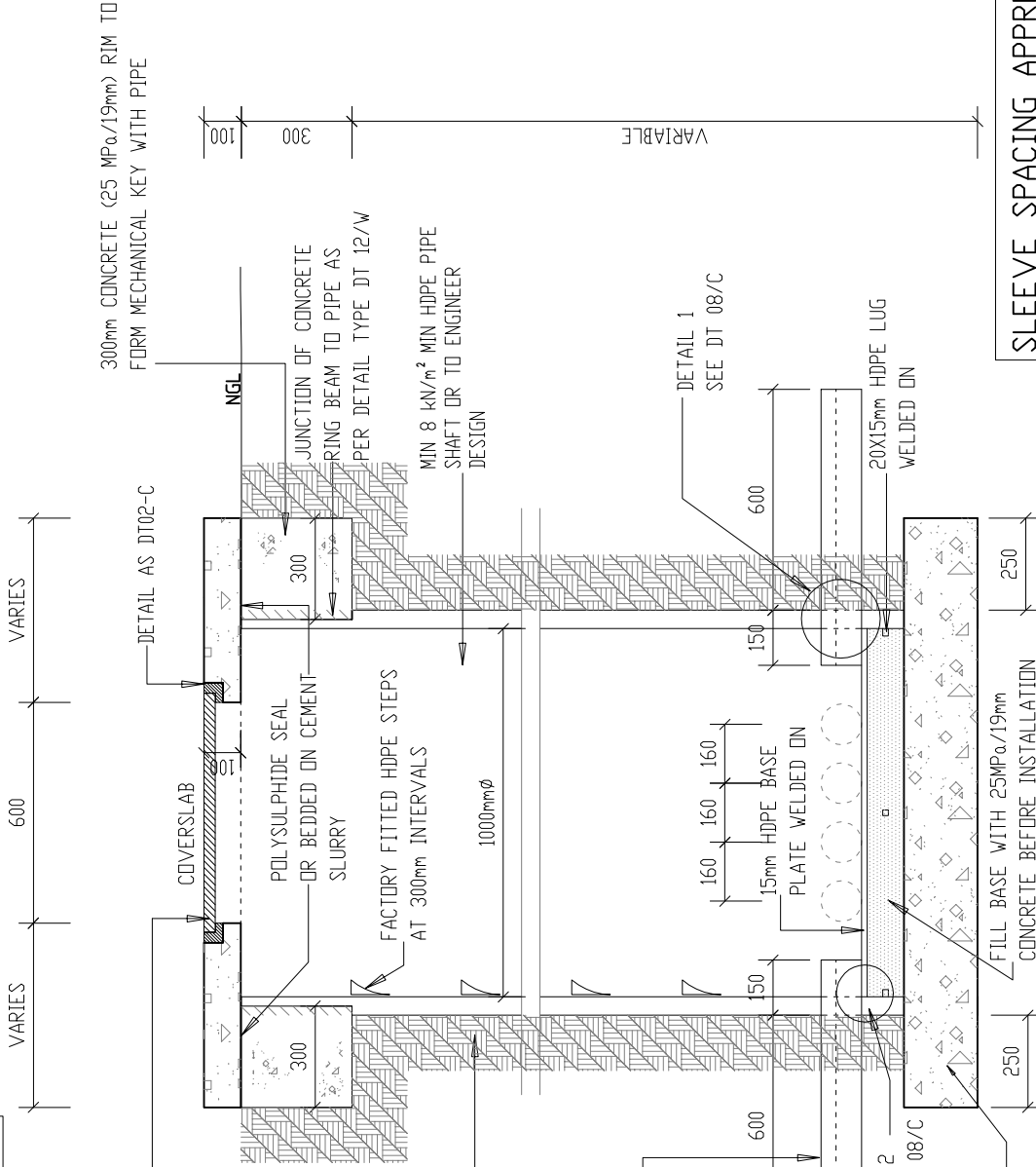
BACKFILLING COMPACTED AROUND MANHOLE TO 93% OF MOD AASTHO MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN LAYERS OF 150mm. PERMEABILITY TO BE LOWER THAN THE SURROUNDING SOIL

- 110mm $\phi$  PE100 PN10 HDPE SLEEVE PIPE FOR POWER CABLES TO BE LAID AT 160mm c/c MINIMUM
- 70mm $\phi$  PE100 PN10 HDPE SLEEVE PIPE FOR POWER CABLES TO BE LAID AT 120mm c/c MINIMUM



MANUFACTURING NOTE:  
SLEEVE SPACING TO SUIT FUSION COUPLING - 50mm BETWEEN SLEEVES MINIMUM

NOTE:  
- MANUFACTURING DETAILS AS PER TYPE NO DT 06/C.



**SECTION OF 1000mm  $\phi$  HDPE MANHOLE FOR DATA OR POWER CABLING**

NOTE:  
POWER AND DATA CABLES TO BE LAID IN SEPARATE MANHOLES

SLEEVE SPACING APPROVAL

DATE:  
SIGNED:  
ELECTRICAL ENGINEER

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ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
SECTION OF 1000mm $\phi$   
CABLE MANHOLE  
(DIAGRAMMATIC)

scale  
1 : 20

date  
30-09-2017

drawing number / type number  
TYPE NO DT 05/C

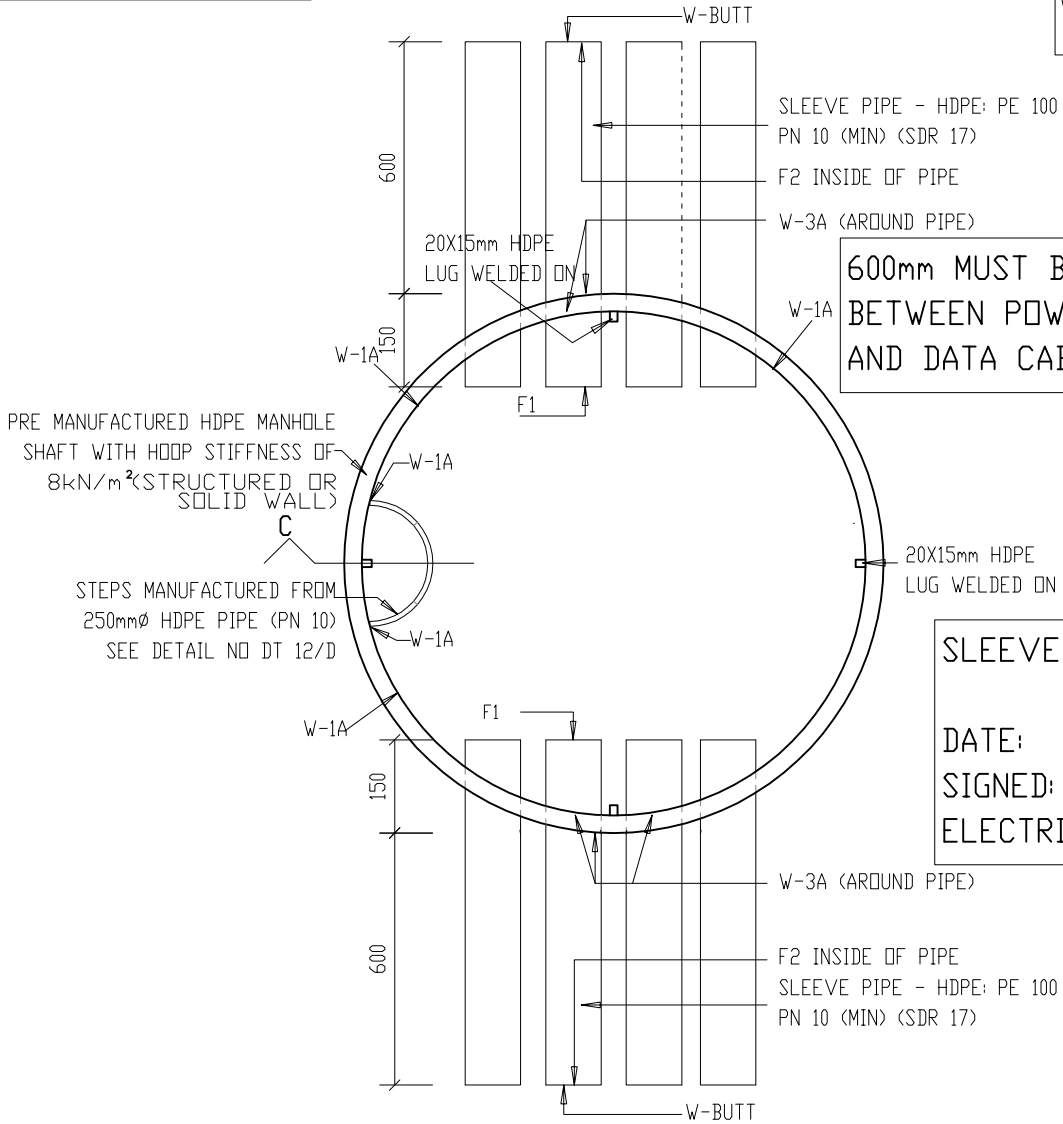
GENERAL NOTE:  
 - ALL MATERIALS TO BE HDPE PE-100 AS PER SANS 4427  
 SHAFT TO BE  $8\text{kN/m}^2$  HOOP STIFFNESS OF MANHOLE

OTHER RELEVANT MANUFACTURING STANDARDS:  
 SANS 10268-1  
 SANS 10269  
 SANS 10270  
 SANS 1655  
 SANS 1671-1

GENERAL WELDING SPECIFICATION:  
 - BUTT WELDING OF PIPES TO COMPLY TO SANS 10268-1 .  
 - HOT GAS WELDING TO COMPLY TO SANS 10268-3.  
 - HOT GAS EXTRUSION WELDING TO COMPLY TO SANS 10268-4.

GENERAL FINISHING NOTE:  
 F1- FINISH PIPE WITH SMOOTH ROUNDED EDGE.  
 F2- REMOVE INTERNAL WELDING BEAD.

WELDING NOTATION FOR JOINTS  
 SEE SANS 10270  
 PAR 5 AS WELL AS ANNEX A.  
 W-1A = REF TABLE A.1 FILLET GROUP A FIG 1A.  
 W-2A = REF TABLE A.1 FILLET GROUP A FIG 2A.  
 W-3A = REF TABLE A.1 FILLET GROUP A FIG 3A.  
 W-3B = REF TABLE A.1 BUTT GROUP B FIG 3B.  
 W-BUTT = REF TABLE A.2 BUTT GROUP B



600mm MUST BE ALLOWED FOR BETWEEN POWER CABLES MANHOLE AND DATA CABLES MANHOLE

SLEEVE SPACING APPROVAL  
 DATE:  
 SIGNED:  
 ELECTRICAL ENGINEER

MANUFACTURERS NOTE:  
 SLEEVE SPACING TO SUIT FUSION COUPLING - 50mm BETWEEN SLEEVES MINIMUM

1000mmØ HDPE MANHOLE FOR DATA OR POWER SLEEVES  
 SCALE 1:15

SECTION A: SEE DT 10/D  
 SECTION B: SEE DT 11/D  
 SECTION C: SEE DT 12/D

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title  
 TYPICAL WELDING DETAILS FOR HDPE CABLE MANHOLE: PLAN

scale  
 1 : 15

date  
 2017/09/30

drawing number / type number  
 TYPE NO DT 06/C

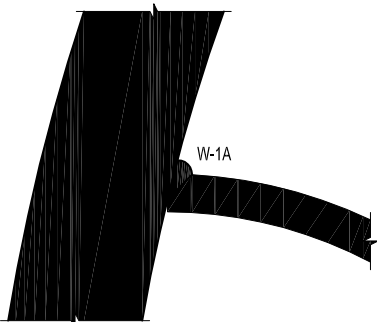
**GENERAL NOTE:**  
 - ALL MATERIALS TO BE HDPE  
 PE-100 AS PER SANS 4427  
  
 HOOP STIFFNESS OF MANHOLE  
 SHAFT TO BE 8kN/m<sup>2</sup>

**OTHER RELEVANT  
 MANUFACTURING STANDARDS:**  
 SANS 10268-1  
 SANS 10269  
 SANS 10270  
 SANS 1655  
 SANS 1671-1

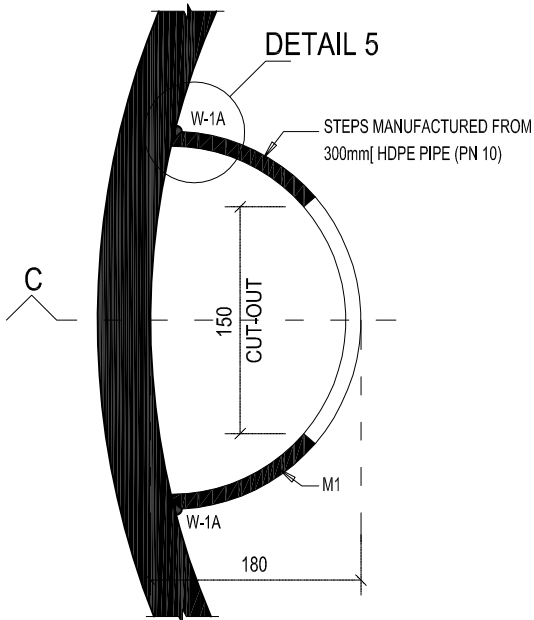
**GENERAL WELDING SPECIFICATION:**  
 - BUTT WELDING OF PIPES TO COMPLY  
 TO SANS 10268-1.  
  
 - HOT GAS WELDING TO COMPLY  
 TO SANS 10268-3.  
  
 - HOT GAS EXTRUSION WELDING TO  
 COMPLY TO SANS 10268-4.

**GENERAL FINISHING NOTE:**  
  
 F1- FINISH PIPE WITH SMOOTH ROUNDED EDGE.  
 F2- REMOVE INTERNAL WELDING BEAD.

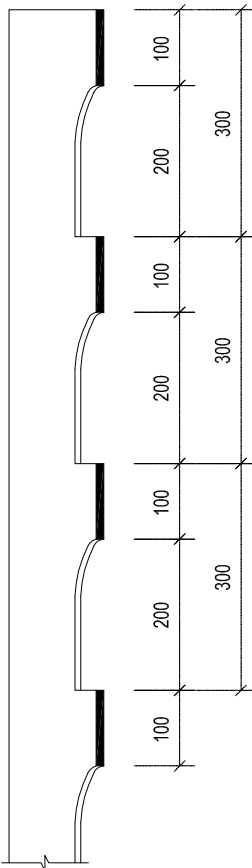
**WELDING NOTATION FOR JOINTS**  
 SEE SANS 10270  
 PAR 5 AS WELL AS ANNEX A.  
 W-1A = REF TABLE A.1 FILLET  
 GROUP A FIG 1A.  
 W-2A = REF TABLE A.1 FILLET  
 GROUP A FIG 2A.  
 W-3A = REF TABLE A.1 FILLET  
 GROUP A FIG 3A.  
 W-3B = REF TABLE A.1 BUTT  
 GROUP B FIG 3B.  
 W-BUTT = REF TABLE A.2 BUTT  
 GROUP B



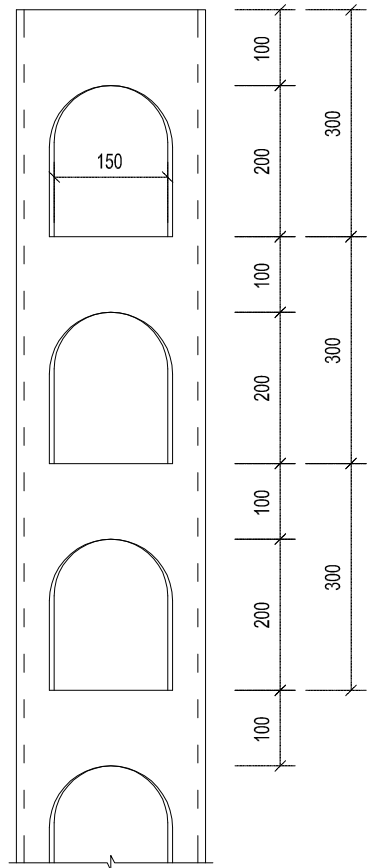
**DETAIL 5**  
**SCALE 1:2**



**HDPE STEPS IN MANHOLE  
 PLAN**  
**SCALE 1:5**



**SECTION C**  
**SCALE 1:10**



**ELEVATION OF STEPS**  
**SCALE 1:10**



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 ENGINEERING DETAILS  
 FOR DOLOMITIC SOILS

title  
 TYPICAL WELDING  
 DETAILS FOR  
 HDPE CABLE MANHOLE:  
 SECTION C

scale  
**AS SHOWN**

date  
**2017/09/30**

drawing number / type number  
**TYPE NO DT 07/C**

**GENERAL NOTE:**  
 - ALL MATERIALS TO BE HDPE  
 PE-100 AS PER SANS 4427

HOOP STIFFNESS OF MANHOLE  
 SHAFT TO BE 8kN/m<sup>2</sup>

**GENERAL WELDING SPECIFICATION:**  
 - BUTT WELDING OF PIPES TO COMPLY  
 TO SANS 10268-1.

- HOT GAS WELDING TO COMPLY  
 TO SANS 10268-3.

- HOT GAS EXTRUSION WELDING TO  
 COMPLY TO SANS 10268-4.

**GENERAL FINISHING NOTE:**

F1- FINISH PIPE WITH SMOOTH ROUNDED EDGE.  
 F2- REMOVE INTERNAL WELDING BEAD.

**OTHER RELEVANT  
 MANUFACTURING STANDARDS:**  
 SANS 10268-1  
 SANS 10269  
 SANS 10270

SANS 1655  
 SANS 1671-1

**WELDING NOTATION FOR JOINTS**  
 SEE SANS 10270  
 PAR 5 AS WELL AS ANNEX A.

W-1A = REF TABLE A.1 FILLET  
 GROUP A FIG 1A.

W-2A = REF TABLE A.1 FILLET  
 GROUP A FIG 2A.

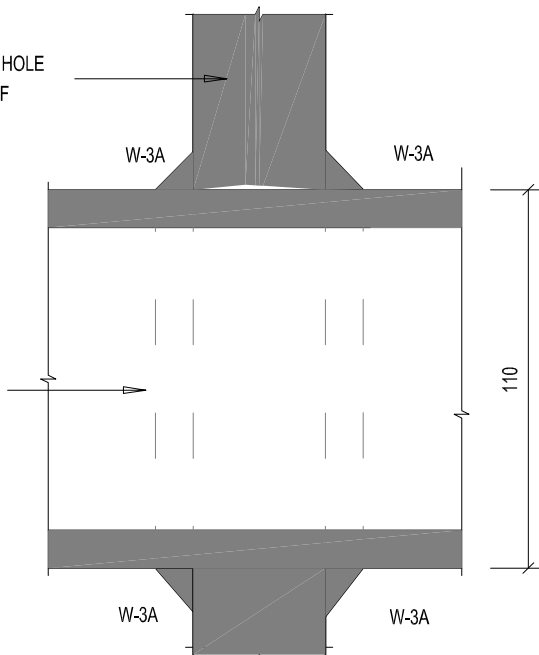
W-3A = REF TABLE A.1 FILLET  
 GROUP A FIG 3A.

W-3B = REF TABLE A.1 BUTT  
 GROUP B FIG 3B.

W-BUTT = REF TABLE A.2 BUTT  
 GROUP B

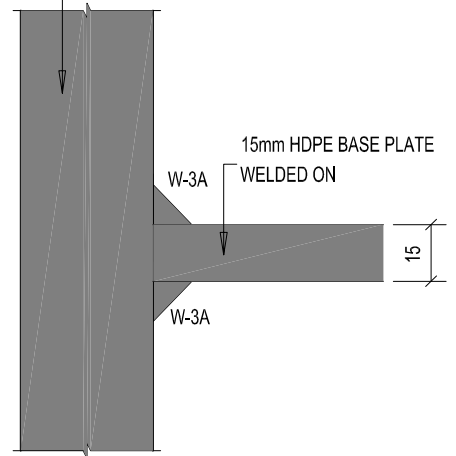
PRE MANUFACTURED HDPE MANHOLE  
 SHAFT WITH HOOP STIFFNESS OF  
 8KN/m<sup>2</sup> (STRUCTURED OR SOLID  
 WALL)

110mm[ HDPE PE100 PN10  
 SLEEVE PIPE FOR CABLES  
 TO BE LAID AT 160mm C/C  
 MINIMUM



**DETAIL 1**  
**SCALE 1:2**

PRE MANUFACTURED HDPE MANHOLE  
 SHAFT WITH HOOP STIFFNESS OF  
 8KN/m<sup>2</sup> (STRUCTURED OR SOLID  
 WALL)



**DETAIL 2**  
**SCALE 1:2**



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 FOR DOLOMITIC SOILS

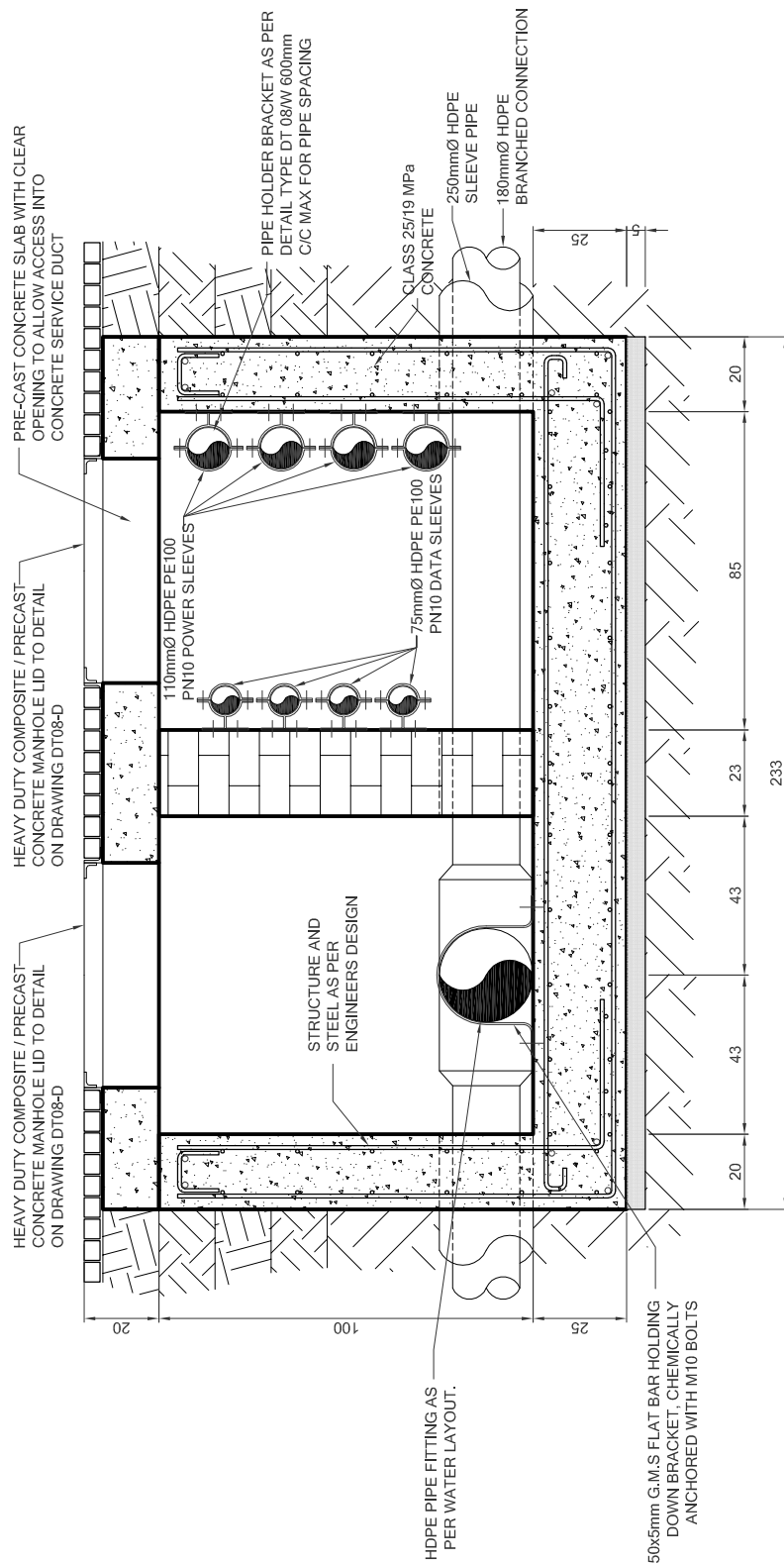
title  
 TYPICAL WELDING  
 DETAILS FOR  
 HDPE CABLE MANHOLE:

scale  
**AS SHOWN**

date  
 2017/09/30

drawing number / type number  
**TYPE NO DT 08/C**





WATER PIPE & ELECTRICAL CABLE INSPECTION ACCESS POINT

SCALE 1:20



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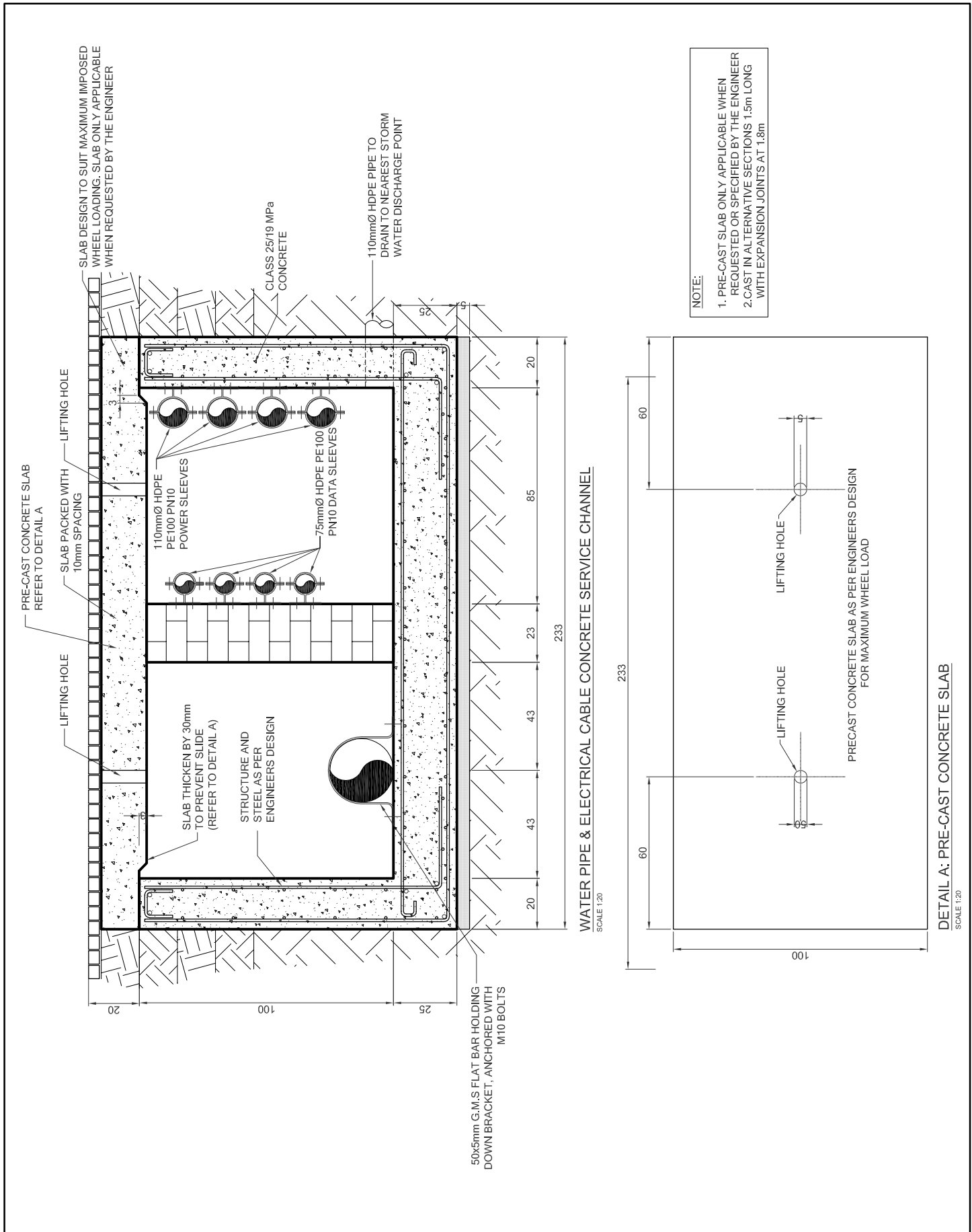
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
GENERAL DETAILS :  
CONCRETE SERVICE CHANNEL

scale  
AS SHOWN

date  
30-09-2017

drawing number / type number  
TYPE NO DT 09-1/C



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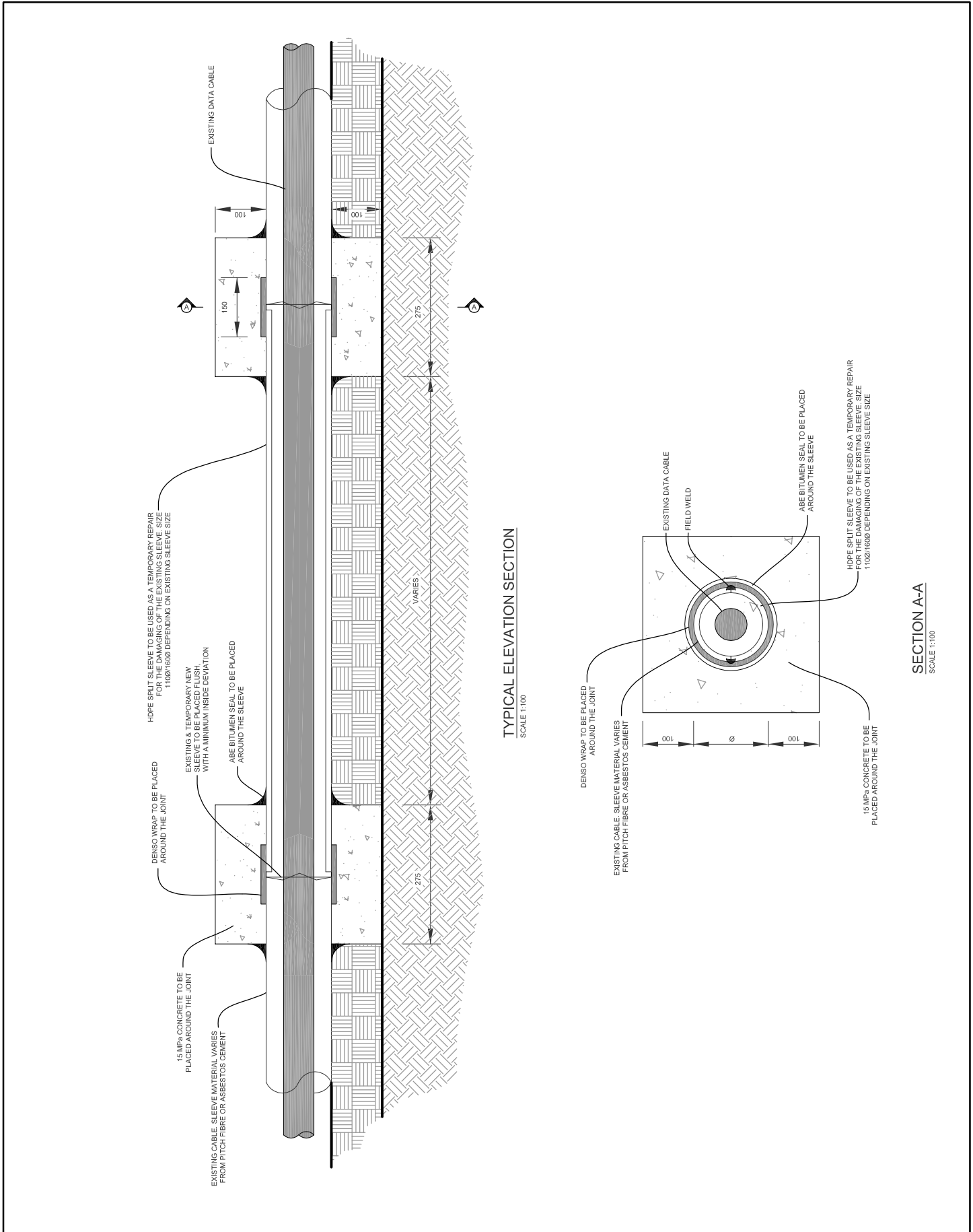
departmental  
DIAGRAMMATIC CIVIL  
ENGINEERING DETAILS  
FOR DOLOMITIC SOILS

title  
GENERAL DETAILS :  
CONCRETE SERVICE CHANNEL

scale  
AS SHOWN

date  
30-09-2017

drawing number / type number  
TYPE NO DT 09/C




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**DIAGRAMMATIC CIVIL ENGINEERING DETAILS FOR DOLOMITIC SOILS**

title  
**TEMPORARY SLEEVE REPAIRS**

scale  
**AS SHOWN**

date  
**30-09-2017**

drawing number / type number  
**TYPE NO DT 10/C**