

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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DIAGRAMMATIC CIVIL
ENGINEERING DETAILS
FOR DOLOMITIC SOILS

project
STORMWATER:
DRAWING LIST.

scale

.

date

2017/09/30

drawing number / type number

TYPE NO DT 00/ST



title
STORMWATER: DUCT FOR ROADWAYS AND WALKWAYS

date
30-09-2017

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

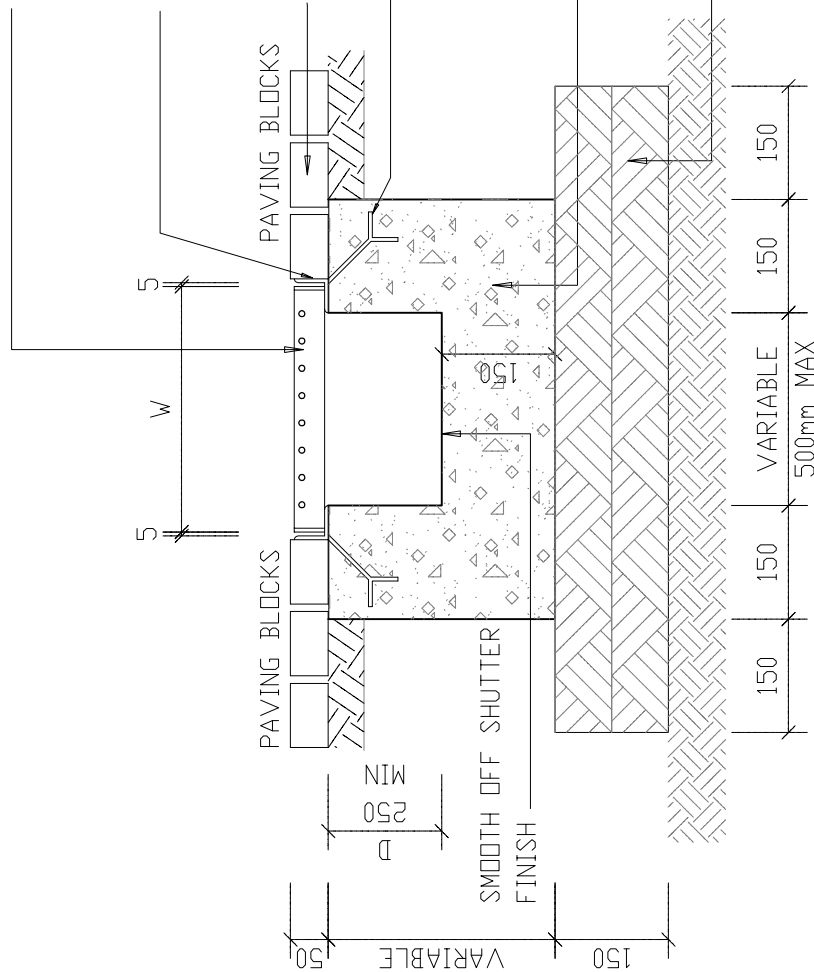
RECTANGULAR CATWALK TYPE HORIZONTAL
STEEL GRATING TRENCH COVER (HEAVY DUTY)
EDGE AND CROSS BARS 40 X 4.5mm
LONGITUDINAL BARS 25 X 4.5mm
GRATING TO BE HOT DIPPED
GALVANISED AFTER MANUFACTURING
GRATING TO BE "BANDED".

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

75 x 25 x 5mm FLAT IRON
ANCHOR IN CONCRETE

-30 MPa / 19mm CONCRETE

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



DT 01/ST



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

scale
1 : 10

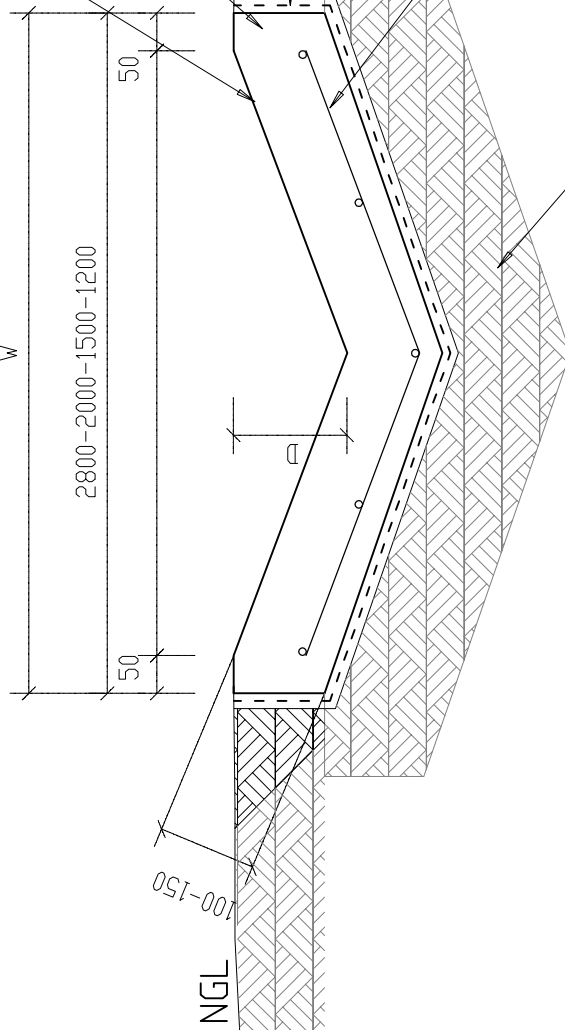
date
30-09-2017

drawing number / type number
TYPE NO DT 02/ST

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
JOINTED) SANS 952.

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

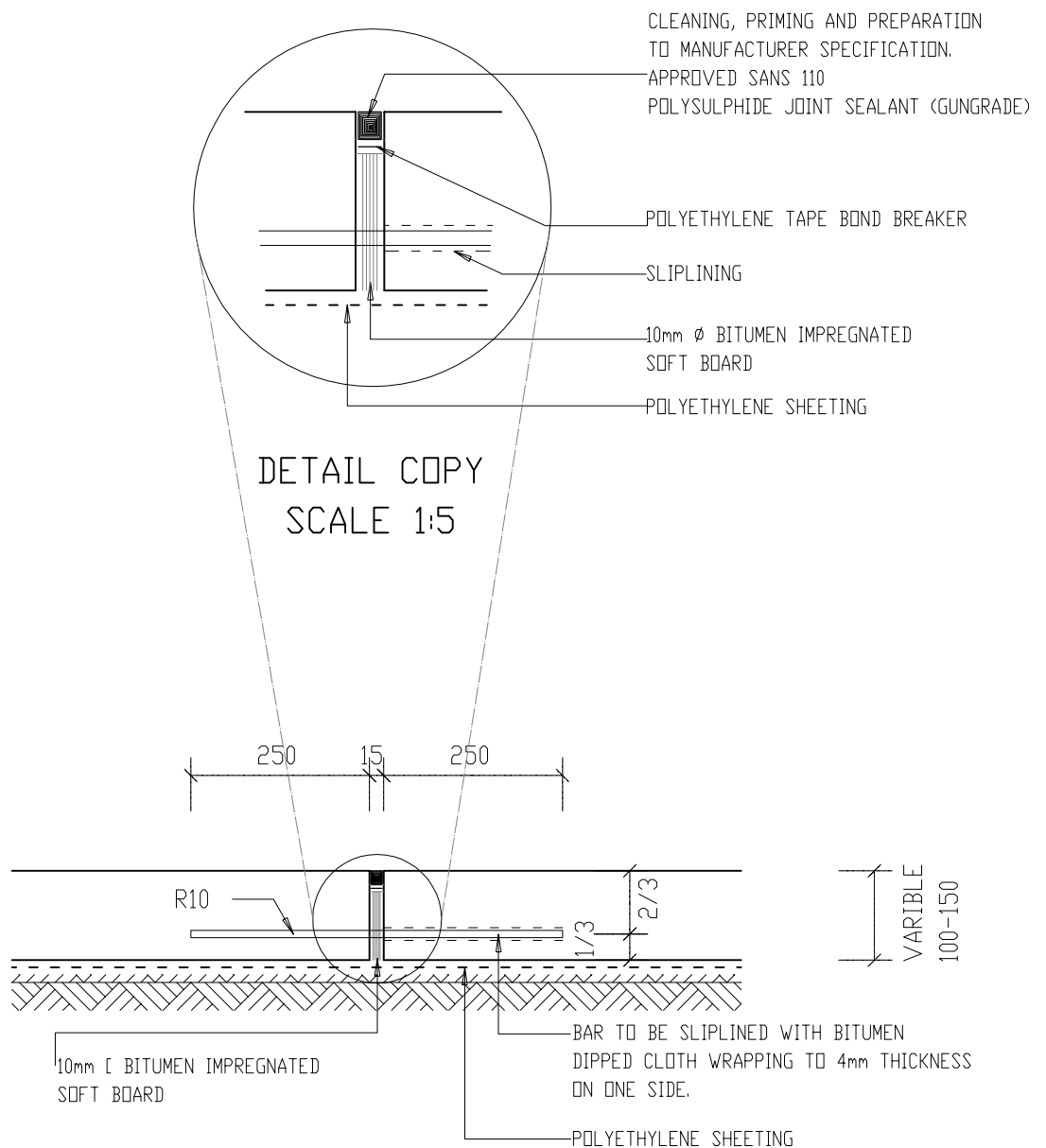
RIP AND RECOMPACT INSITU MATERIAL TO 95% OF
MOD AASHTO MAXIMUM DRY DENSITY AT OPTIMUM
MOISTURE CONTENT.

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



EXPANSION JOINT IN CANAL

DT 04/ST



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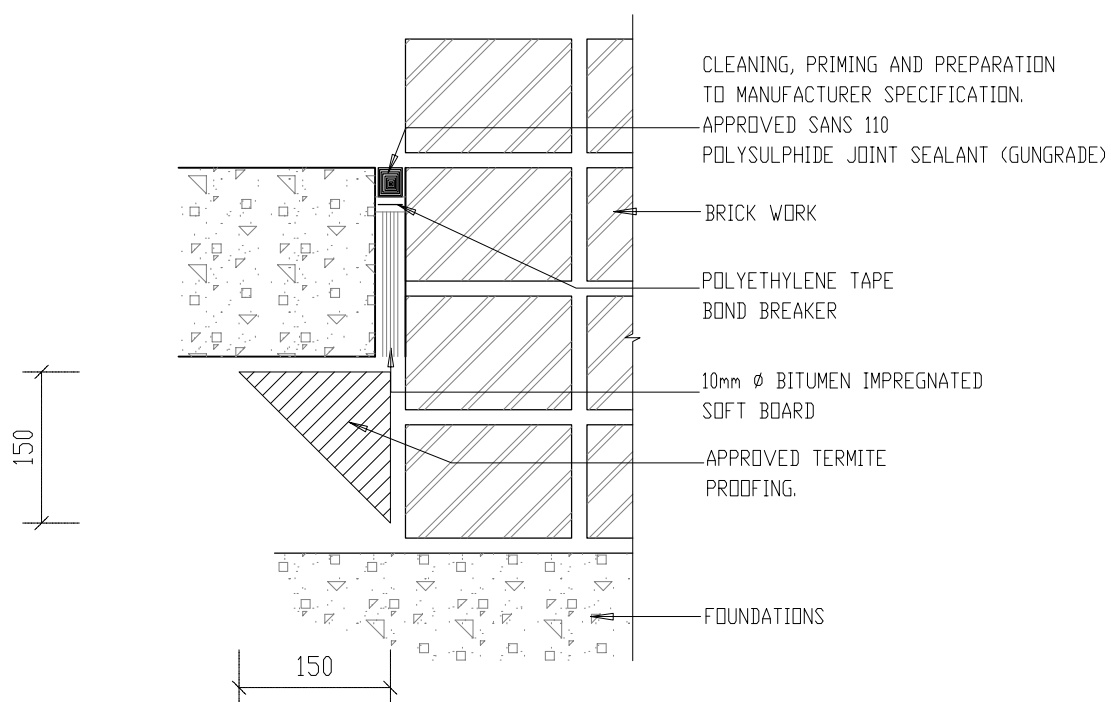
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ENGINEERING DETAILS
FOR DOLOMITIC SOILS

project
STORMWATER:
EXPANSION JOINT
IN CANAL
(DIAGRAMMATIC)

scale
1 : 10

date
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drawing number / type number
TYPE NO DT 04/ST



EXPANSION JOINT AGAINST BUILDING

DT 05/ST



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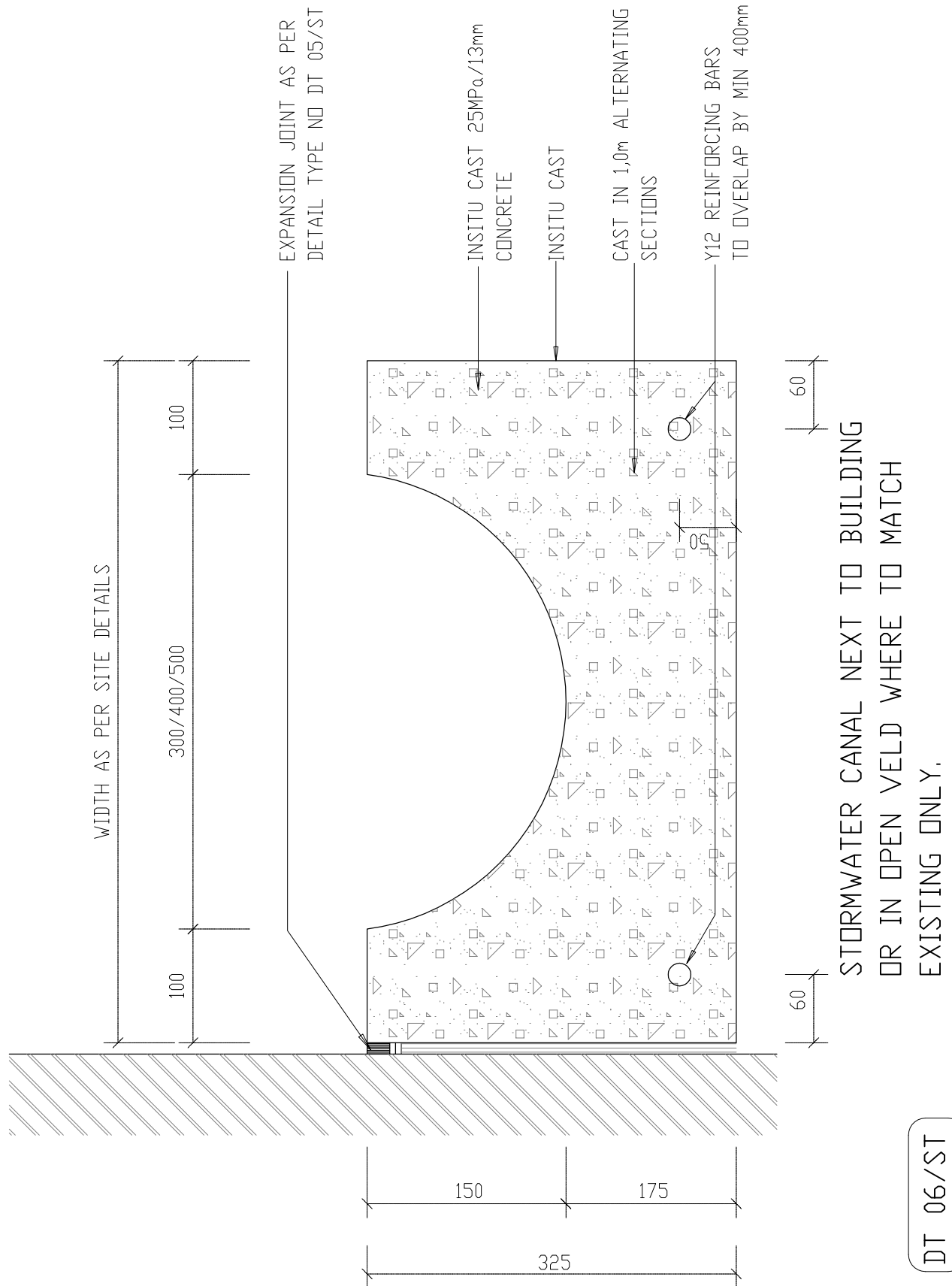
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FOR DOLOMITIC SOILS

title
STORMWATER:
EXPANSION JOINT AGAINST
BUILDING
(DIAGRAMMATIC)

scale
1 : 7.5

date
30-09-2017

drawing number / type number
TYPE NO DT 05/ST



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

scale
1 : 5

date
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drawing number / type number
TYPE NO DT 06/ST



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

scale
1 : 20

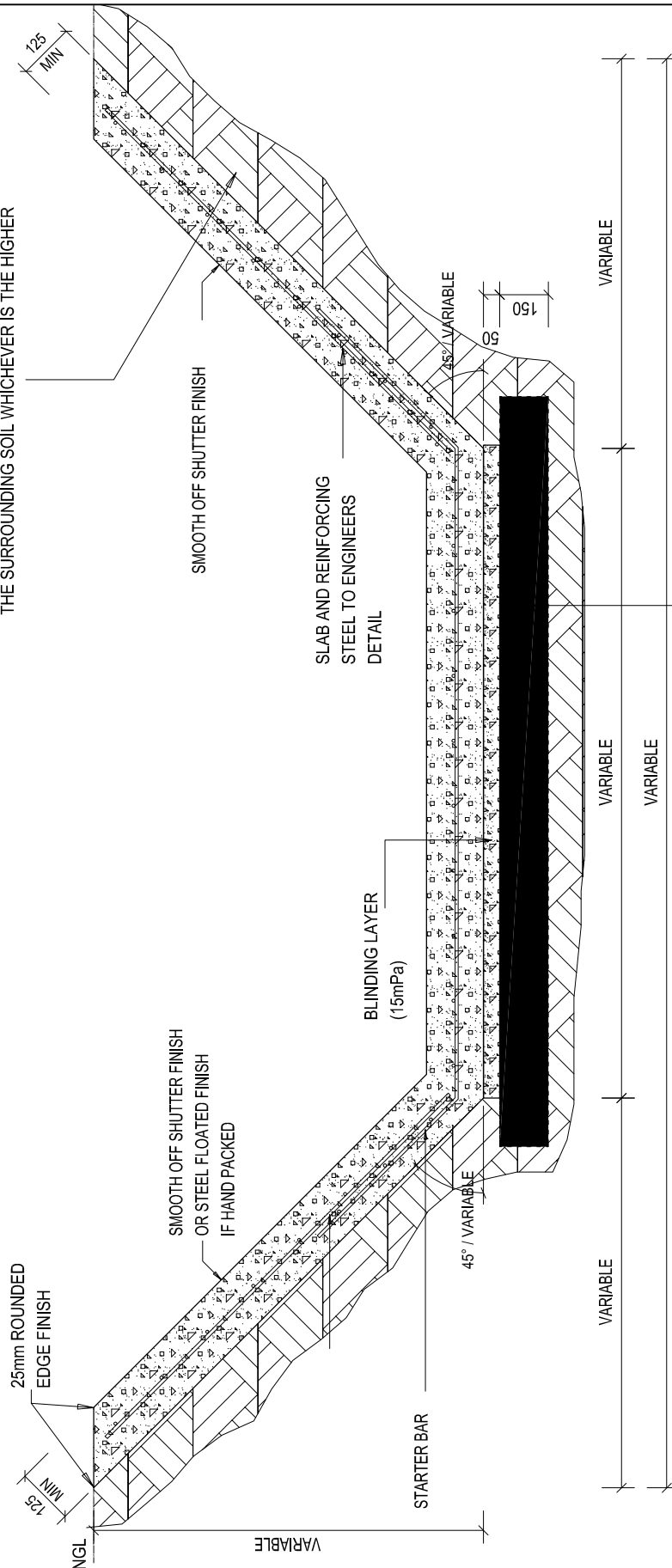
date
30-09-2017

drawing number / type number
TYPE NO DT 07/ST

NOTE:

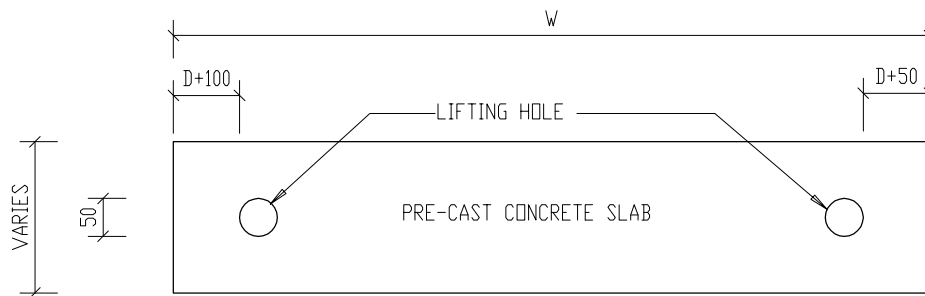
CONCRETE LINING HAND FORMED
OR CAST AGAINST SMOOTH FORMWORK.
FOR JOINT DETAILS SEE DETAIL
TYPE DT 10/ST, DT 11/ST

COMPACT OVERCUT TO 93% MOD AASHTO MAX DRY DENSITY
AT OPTIMUM MOISTURE CONTENT OR TO DENSITY LESS PERMEABLE THAN
THE SURROUNDING SOIL WHICHEVER IS THE HIGHER



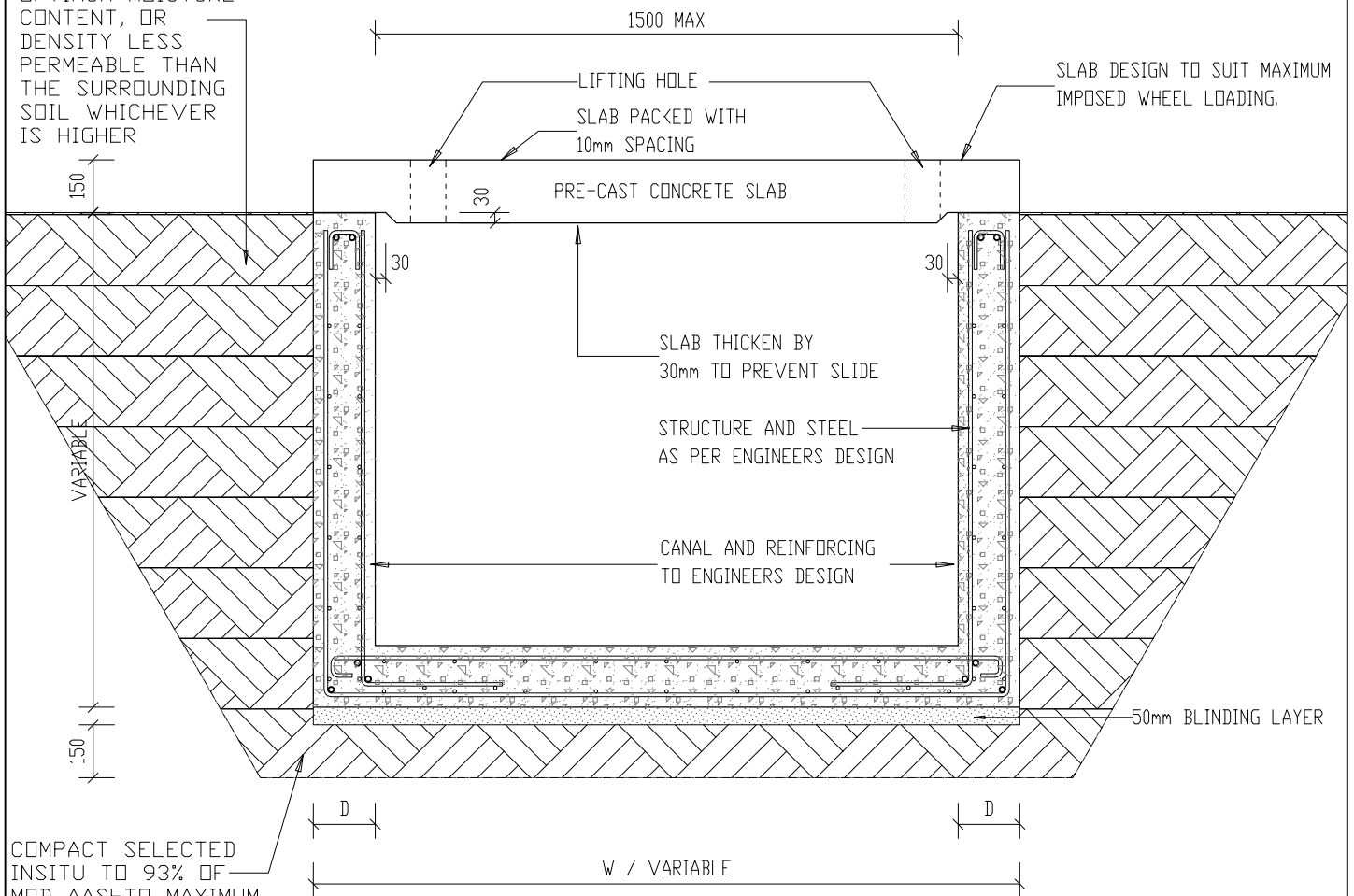
SECTION
LARGE STORMWATER

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



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

TYPICAL COVERED STORMWATER CANAL

DT 09/ST



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

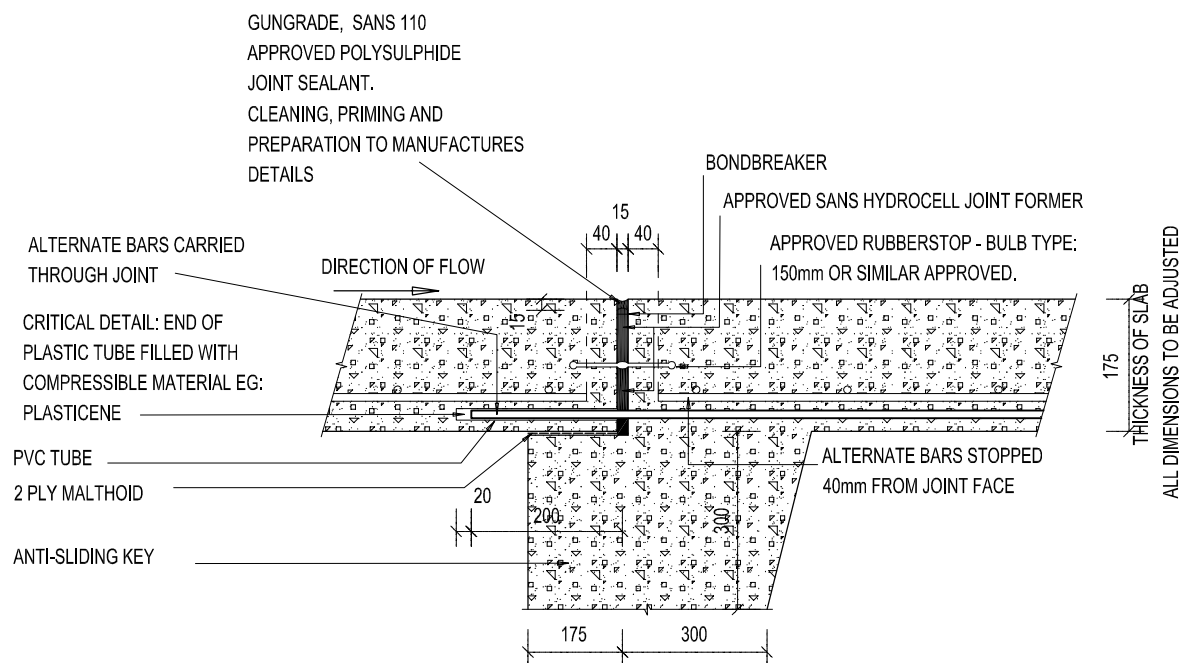
scale
1 : 20

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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FOR DOLOMITIC SOILS

title

STORMWATER:
FLOOR EXPANSION
JOINT DETAIL
(DIAGRAMMATIC)

scale

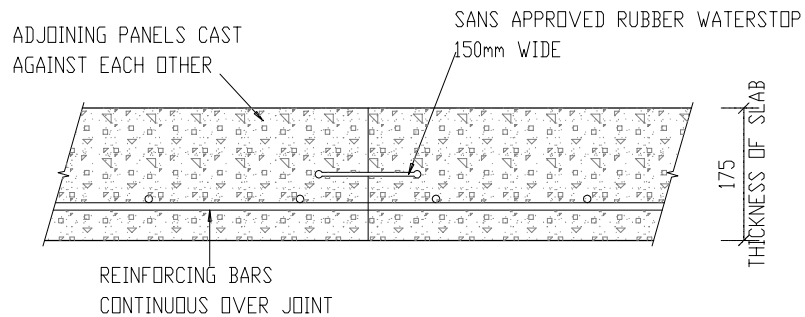
1 : 10.

date

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drawing number / type number

TYPE NO DT 10/ST



STORMWATER CANAL CONSTRUCTION JOINT - TYPE 1

DT 11/ST



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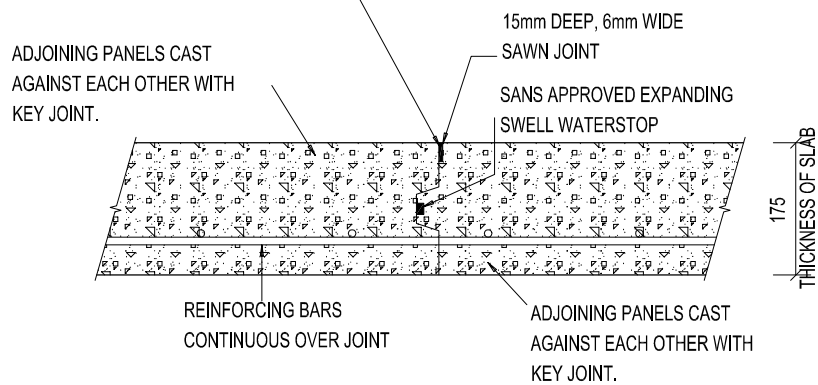
title
STORMWATER:
CONSTRUCTION JOINT
- TYPE 1
(DIAGRAMMATIC)

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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title

STORMWATER:
 CANAL CONSTRUCTION
 JOINT - TYPE 2
 (DIAGRAMMATIC)

scale

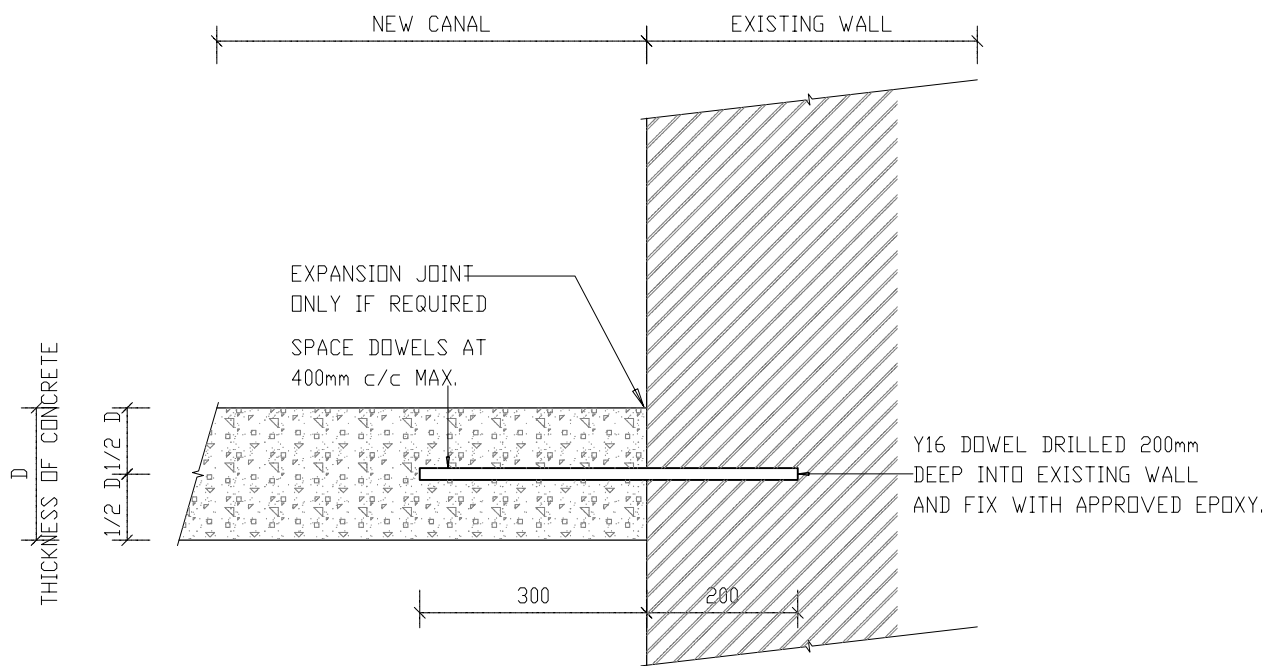
1 : 10

date

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drawing number / type number

TYPE NO DT 12/ST



STORMWATER CANAL
CONSTRUCTION JOINT - TYPE 3

DT 13/ST



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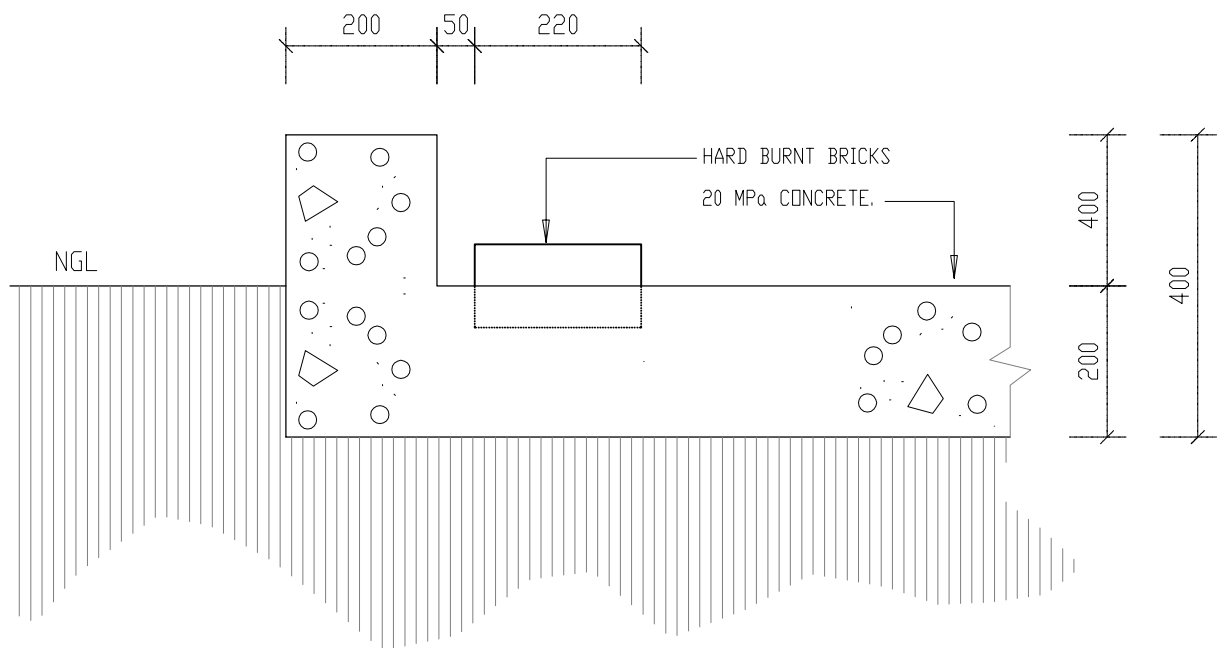
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title
STORMWATER:
STORMWATER CANAL
CONSTRUCTION JOINT
- TYPE 3
(DIAGRAMMATIC)

scale
1 : 10

date
30-09-2017

drawing number / type number
TYPE NO DT 13/ST



SECTION THROUGH SPILLING BASIN TYPE 1

DT 16(2)/ST



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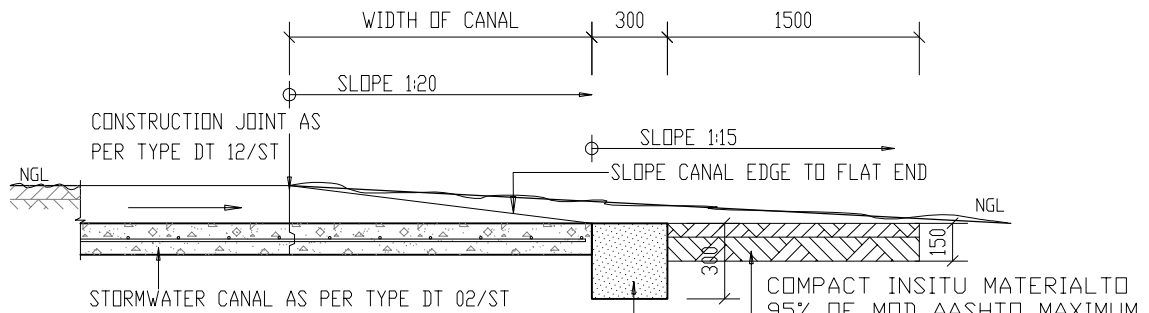
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project
STORMWATER:
SECTION THROUGH
SPILLING BASIN
TYPE 1
(DIAGRAMMATIC)

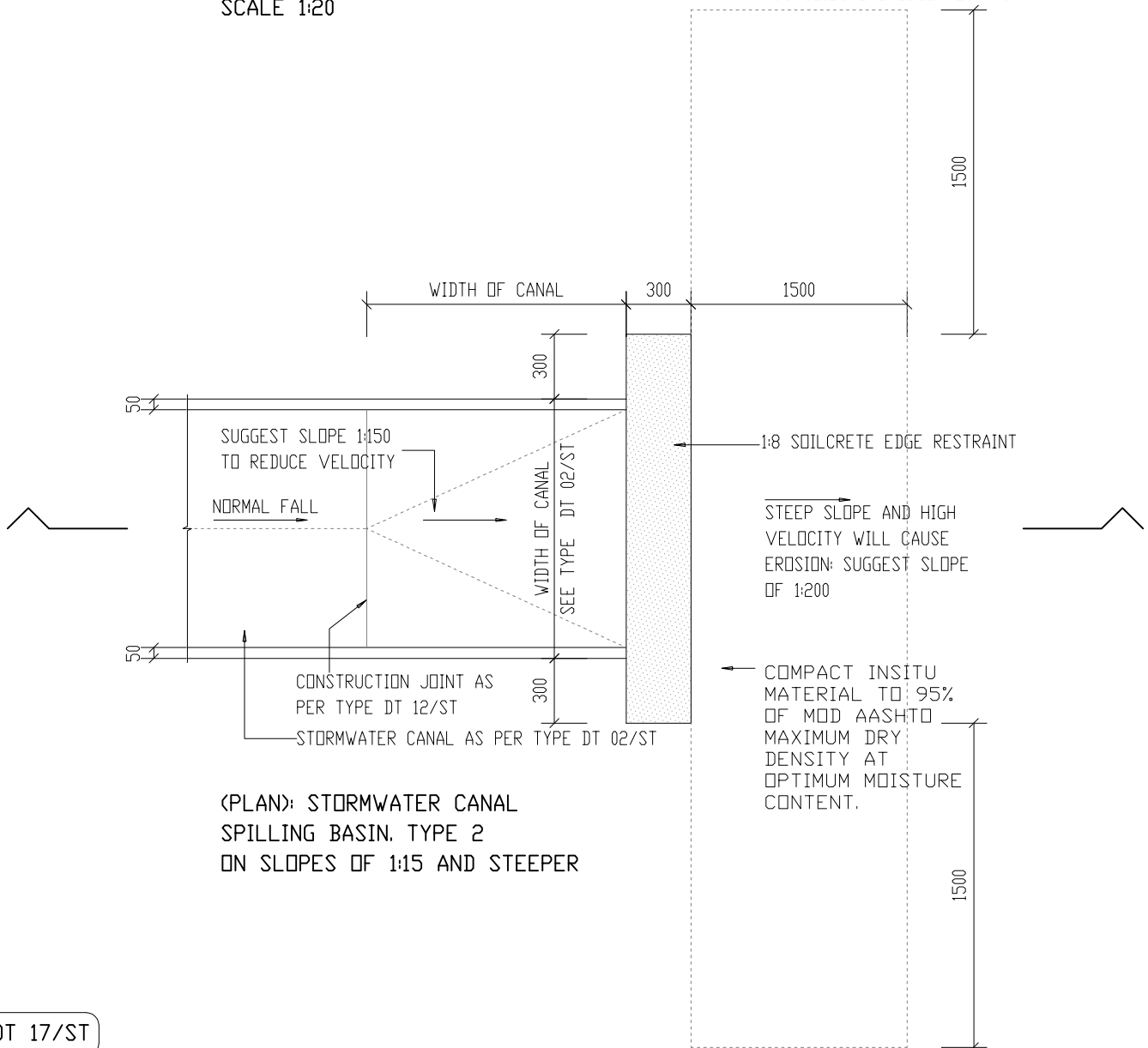
scale
1 : 10

date
30-09-2017

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



(SECTION): STORMWATER CANAL
SPILLING BASIN, TYPE 2
ON SLOPES OF 1:15 AND STEEPER
SCALE 1:20



(PLAN): STORMWATER CANAL
SPILLING BASIN, TYPE 2
ON SLOPES OF 1:15 AND STEEPER

DT 17/ST



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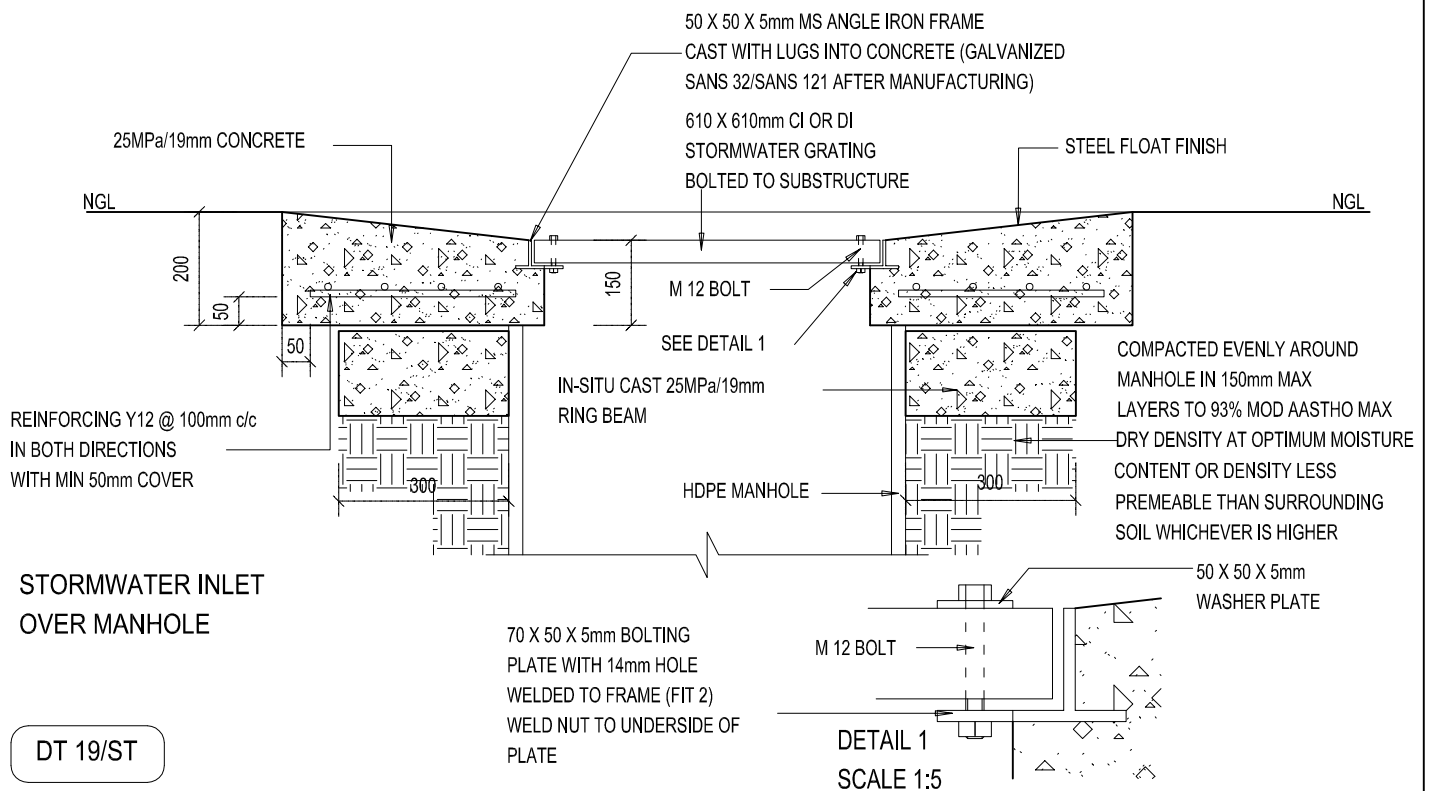
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ENGINEERING DETAILS
FOR DOLOMITIC SOILS

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



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title
STORMWATER: INLET OVER MANHOLE (DIAGRAMMATIC)

date

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 8 kN/m^2

OTHER RELEVANT

MANUFACTURING STANDARDS:

SANS 10268-1
SANS 10269
SANS 10270
SANS 1269
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.

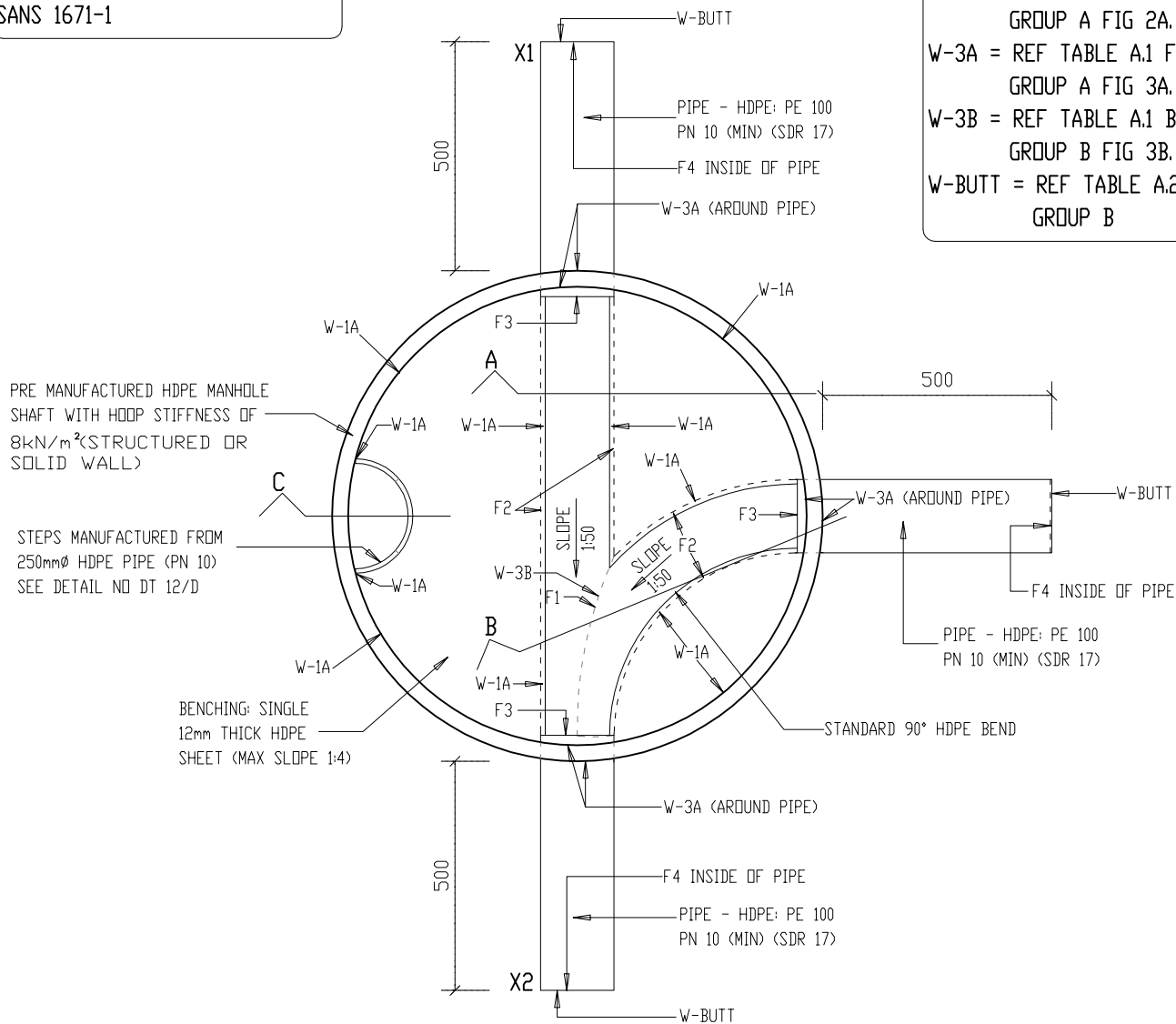
W-1A = REF TABLE A.1 FILLET GROUP A FIG 1A.

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



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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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/m²

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.

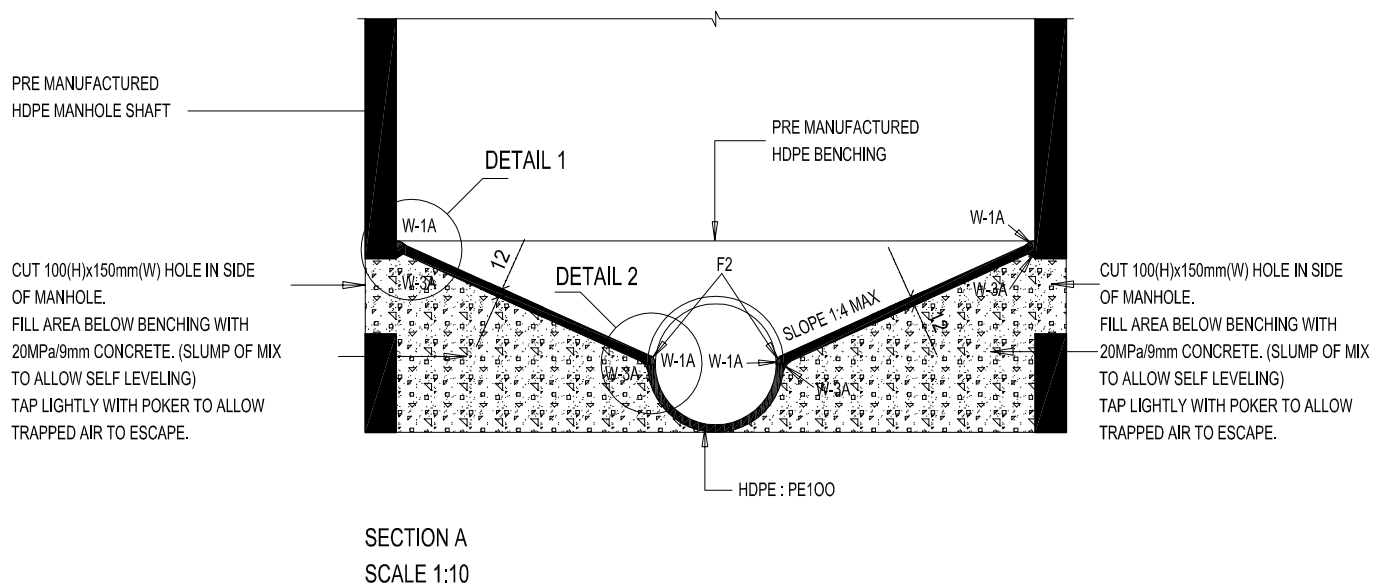
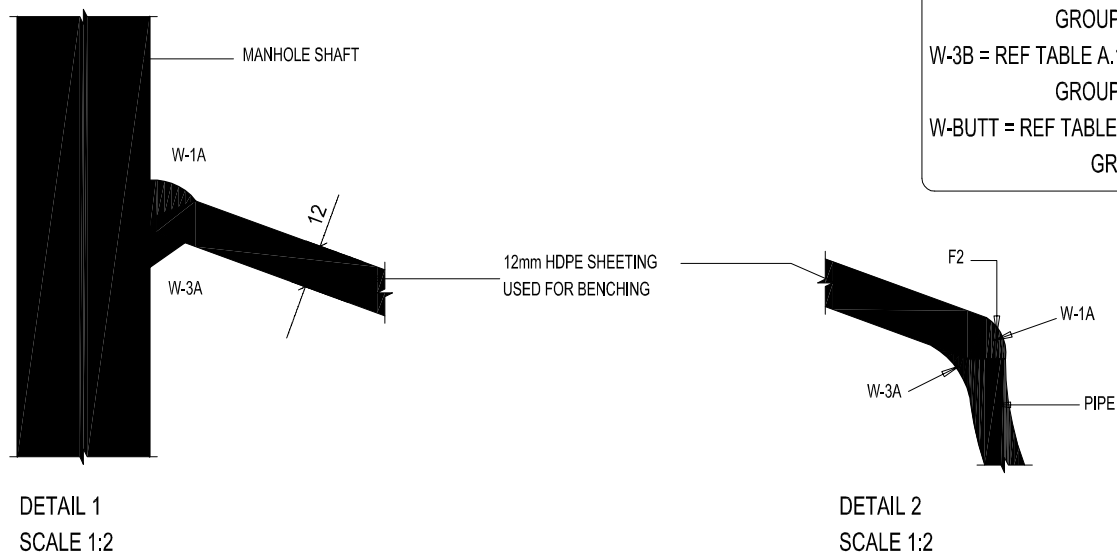
W-1A = REF TABLE A.1 FILLET
GROUP A FIG 1A.

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

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FOR DOLOMITIC SOILS

title
TYPICAL WELDING DETAILS
FOR HDPE STORMWATER
MANHOLE:
SECTION A

scale
AS SHOWN

date
2017/09/30

drawing number / type number
TYPE NO DT 21/ST

GENERAL NOTE:

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

HOOP STIFFNESS OF MANHOLE
SHAFT TO BE 8kN/m²

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.

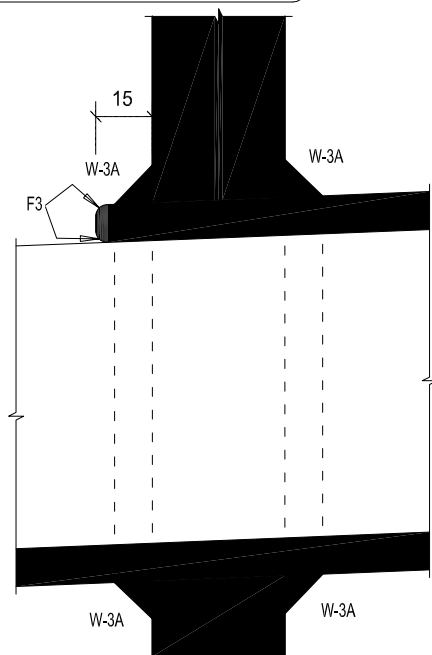
W-1A = REF TABLE A.1 FILLET
GROUP A FIG 1A.

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

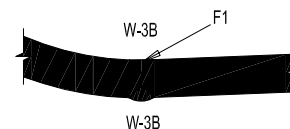
W-3A = REF TABLE A.1 FILLET
GROUP A FIG 3A.

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

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

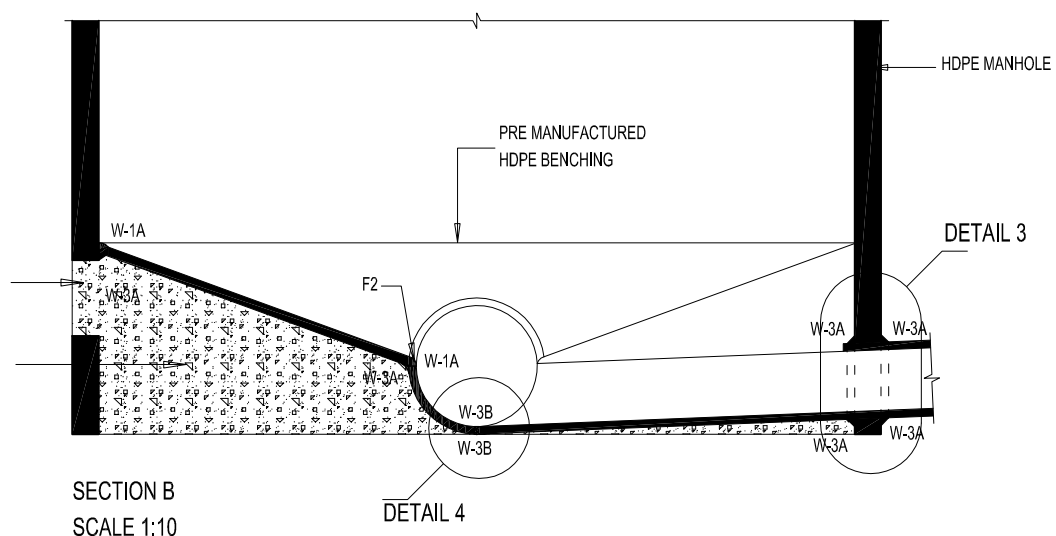


DETAIL 3
SCALE 1:2



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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title
TYPICAL WELDING DETAILS
FOR HDPE STORMWATER
MANHOLE:
SECTION B

scale
AS SHOWN

date
30-09-2017

drawing number / type number
TYPE NO DT 22/ST

GENERAL NOTE:

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

HOOP STIFFNESS OF MANHOLE
SHAFT TO BE 8kN/m²

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.

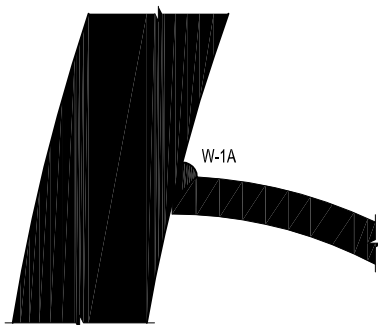
W-1A = REF TABLE A.1 FILLET
GROUP A FIG 1A.

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

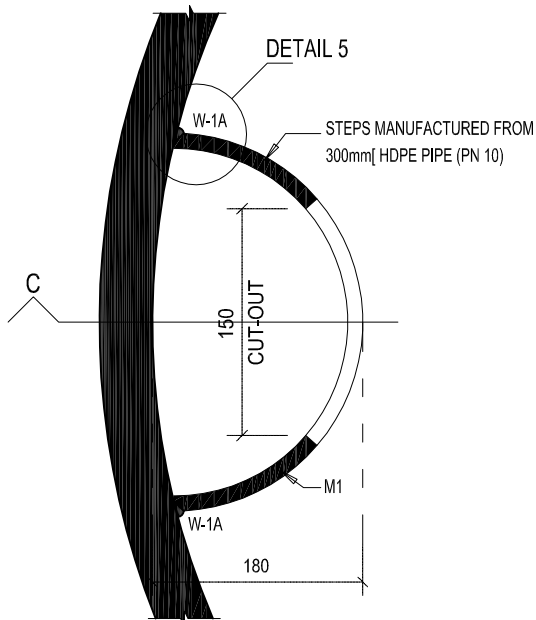
W-3A = REF TABLE A.1 FILLET
GROUP A FIG 3A.

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

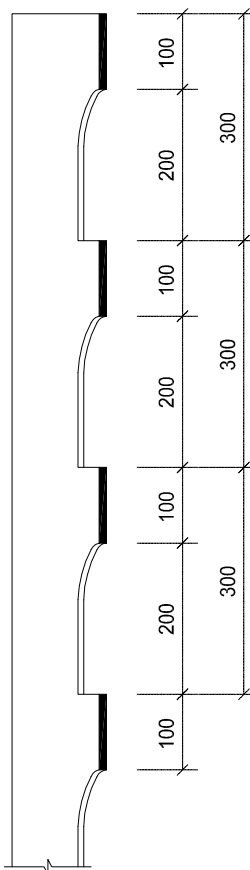
W-BUTT = REF TABLE A.2 BUTT
GROUP B



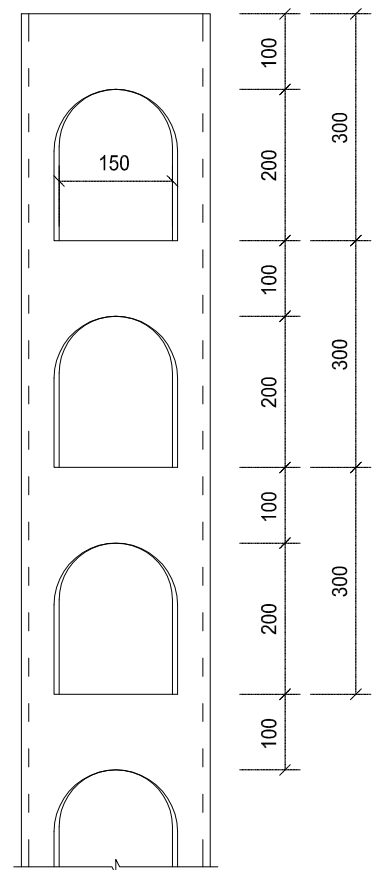
DETAIL 5
SCALE 1:2



HDPE STEPS IN MANHOLE
PLAN
SCALE 1:5



SECTION C
SCALE 1:10



ELEVATION OF STEPS
SCALE 1:10



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DIAGRAMMATIC CIVIL
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



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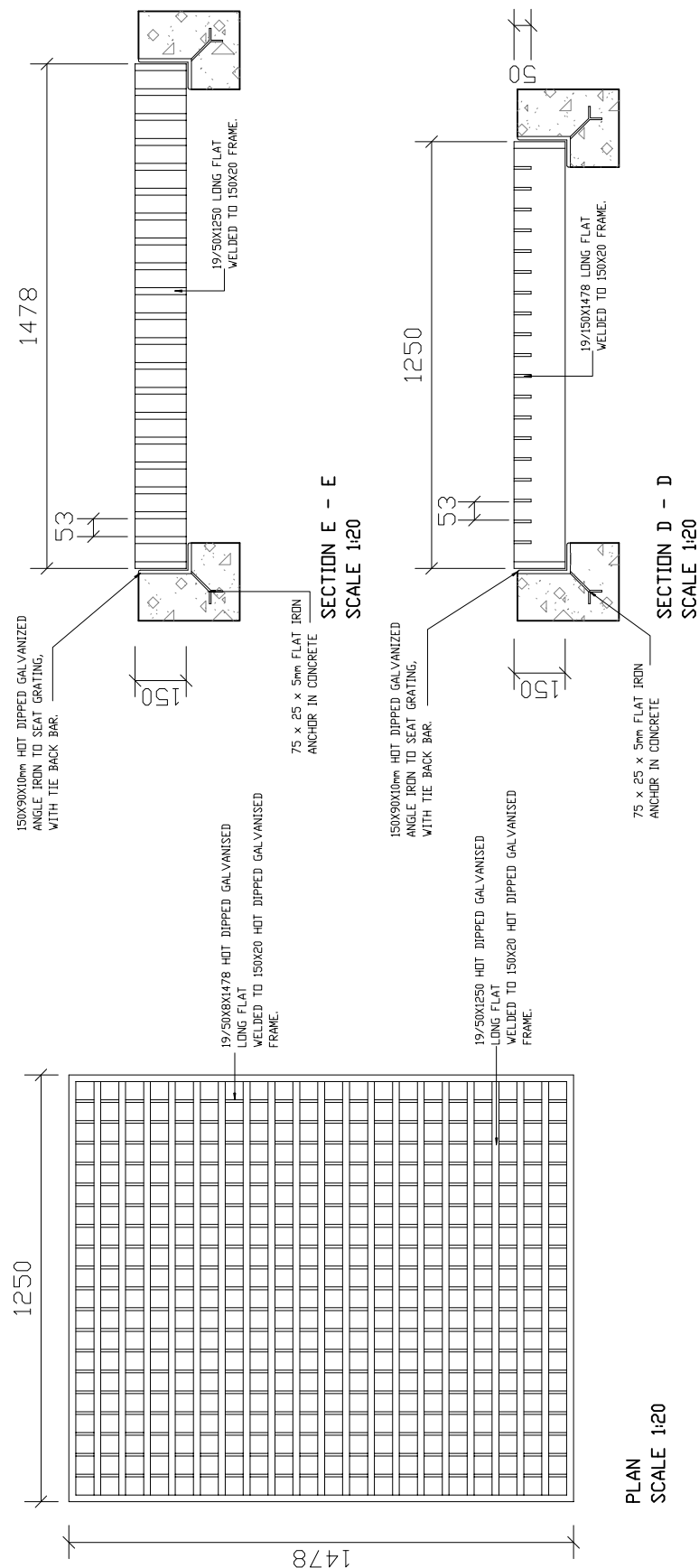
project
STORMWATER:
GRID INLET NEXT TO
RUNWAYS &
TAXIWAYS.

scale
1:20.

date
30-09-2017

drawing number / type number
TYPE NO DT 24/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)





title
STORMWATER:
DUCT FOR ROADWAYS
AND WALKWAYS

date
30-09-2017

drawing number / type number
TYPE NO DT 25/ST

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.

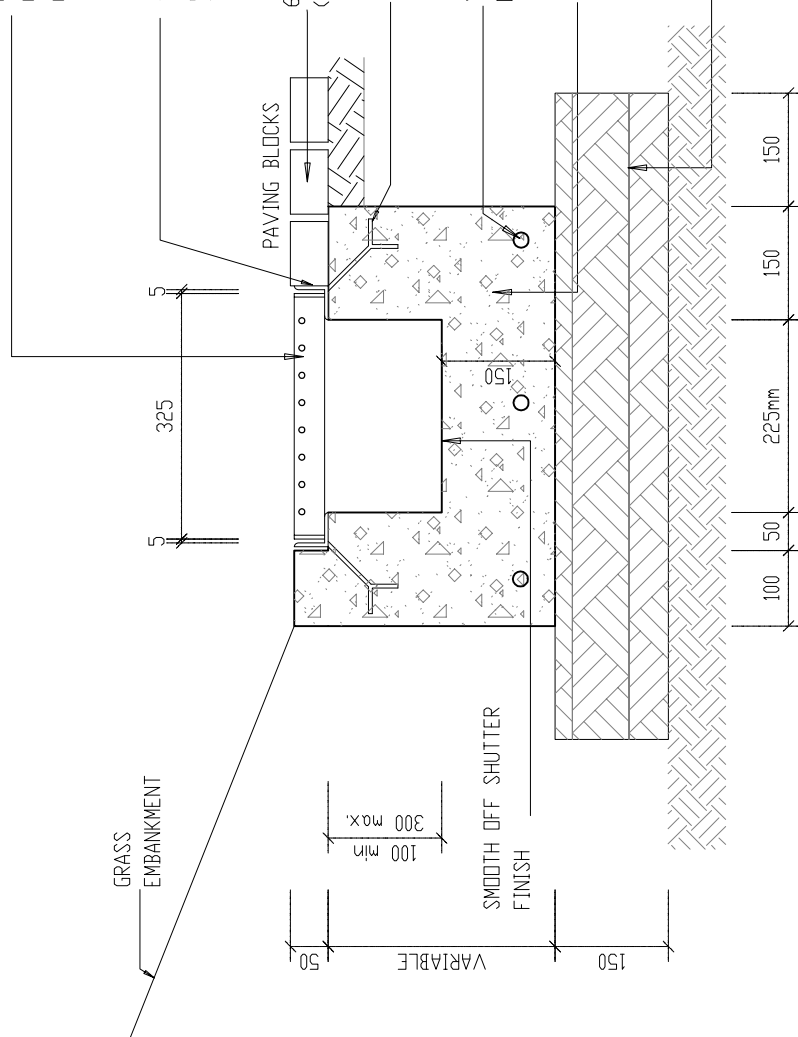
60mm THICK PAVING BLOCKS
TO ARCHITECTS SPECIFICATIONS)

75 x 25 x 5mm FLAT IRON
ANCHOR IN CONCRETE

Y 10 STEEL REINFORCING - CONTINUOUS
OVER JOINTS (LAPSTEEL 600mm)

30 MPa / 19mm CONCRETE

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



CAST IN 2^m ALTERNATIVE SECTIONS

DT 25/ST



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departmental
DIAGRAMMATIC CIVIL
ENGINEERING DETAILS
FOR DOLOMITIC SOILS

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

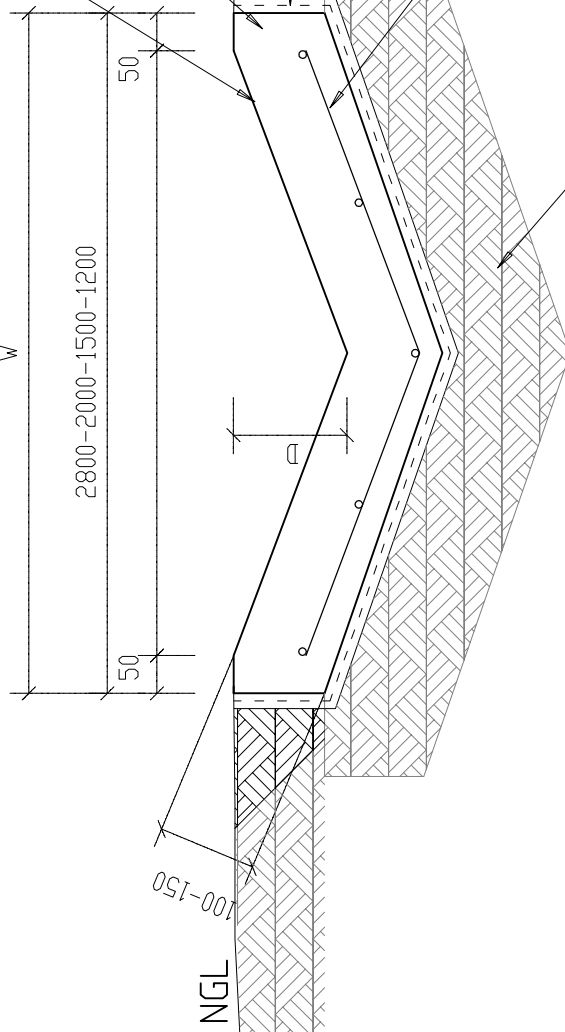
scale
1 : 10

date
30-09-2017

drawing number / type number
TYPE NO DT 26/ST

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

W



NGL

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
JOINTED) SANS 952.

REF. 617 STEEL MESH (SANS 1024)
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/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