

NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS
4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 3
8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE
11. SEWERS INSTALLED WITHIN PROPERTIES ARE USUALLY PLACED 1.2m FROM ERF BOUNDARY UNLESS OTHERWISE SPECIFIED
12. SEWERS INSTALLED WITHIN ROAD RESERVE BOUNDARY MUST BE POSITIONED IN ACCORDANCE WITH THE APPLICABLE SERVICES LAYOUT DRAWING

PARTICULAR

1. STEP IRONS TO BE COPOLYMER POLYPROPYLENE ENCAPSULED 12mm HIGH TENSILE STEEL BAR, "CALCAMITE" OR SIMILAR
2. TYPICAL VALUES FOR H
H = 50 - 75mm WITHIN ERVEN & ROAD RESERVES
= 250mm LOW COST HOUSING DEVELOPMENTS & UNDEFINED ROADWAYS
= 500mm OPEN VELD OR ROAD RESERVES WHERE POSITION OF MANHOLES CAN BE CONCEALED BY LONG GRASS OR OTHER GROWTH
3. CONCRETE SECTIONS MUST BE FIXED WITH AN APPROVED EPOXY SEALER SUCH AS EPIDERMIX 344 OR PROSTRUCT 687

MANHOLE COVERS AND FRAMES
SANS 50124 (SABS EN 124)

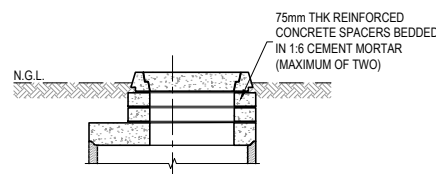
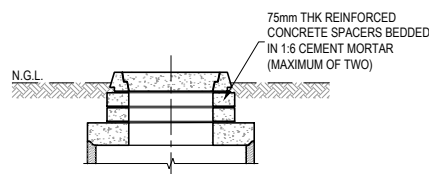
POSITION OF MANHOLE	FRAME AND COVER TYPE
CARRIAGEWAY	560mm Ø CLASS D400 POLYESTER RESIN
STREET RESERVE	560mm Ø CLASS B125 POLYESTER RESIN OR TYPE 4 CONCRETE REPLACEMENT
ERVEN	560mm Ø CLASS B125 POLYESTER RESIN OR TYPE 4 CONCRETE REPLACEMENT
GENERAL	ONLY 560mm Ø, CLASS D400 POLYESTER RESIN MAY BE USED FOR SEWERS 300mm Ø AND LARGER

NOTE : CAST IRON COVERS AND FRAMES ARE USED ONLY WITH WRITTEN INSTRUCTIONS FROM THE ENGINEER

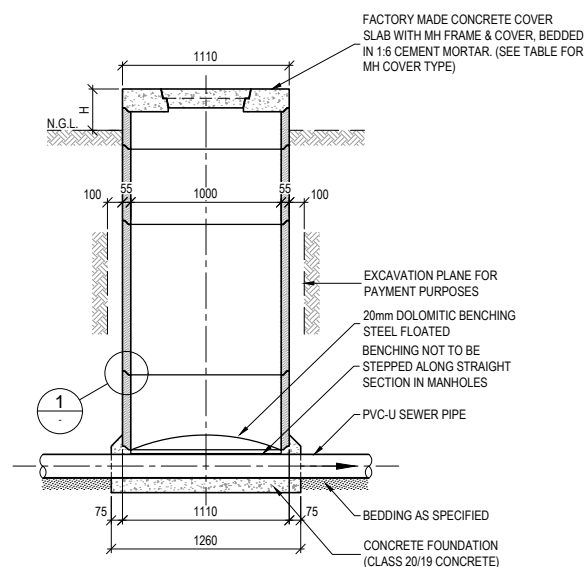
MANHOLE CHAMBER SIZES

NOMINAL Ø (mm)	USAGE
1000	150 ND PIPES WITH STRAIGHT THROUGH MANHOLES UP TO 1.25m DEEP
1250	BENDS IN MANHOLES, LARGER PIPES & MANHOLES BETWEEN 1.25m & 3.0m DEEP
1500	LARGER PIPES & MANHOLES DEEPER THAN 3.0 m

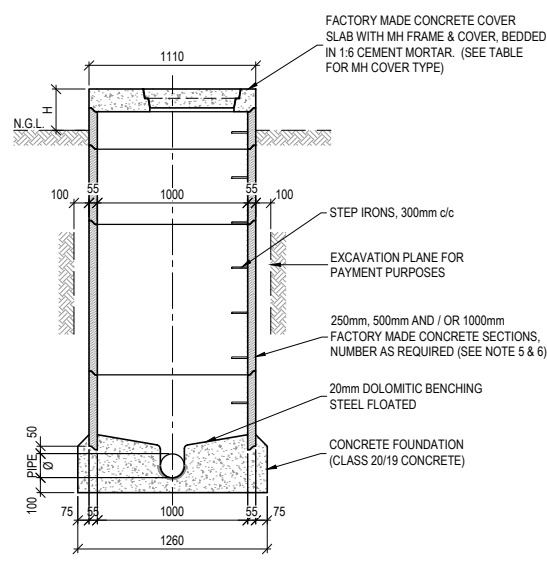
NOTE : MANHOLE CHAMBER SIZES TO BE APPROVED BY THE EXECUTIVE DIRECTOR : WATER AND SANITATION



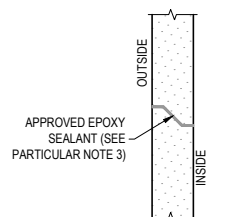
ALTERNATIVE LAYOUT WITH SPACERS



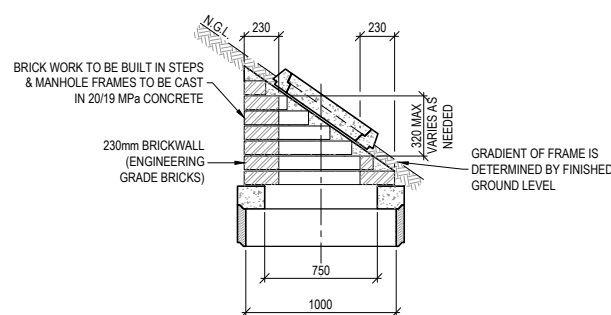
SECTION A
SCALE 1:25



SECTION B
SCALE 1:25

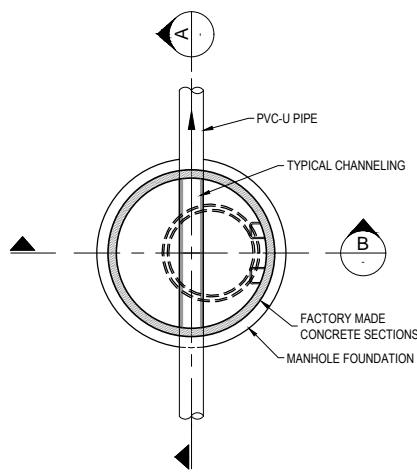


DETAIL 1
SCALE 1:5



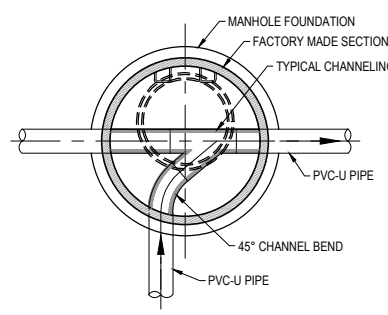
TYPICAL SECTION
SCALE 1:25

BUILT IN MANHOLE FRAME AT FINISHED SLOPED SIDEWALKS (WITH WRITTEN PERMISSION FROM THE ENGINEER ONLY)



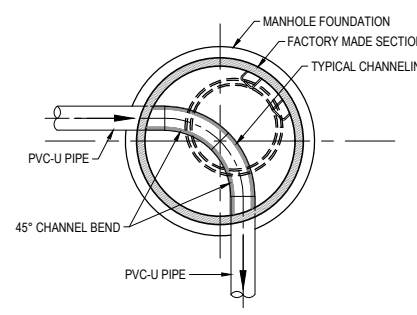
PLAN
SCALE 1:25

(TYPICAL EXAMPLE OF THROUGH CONNECTION IN MANHOLE)



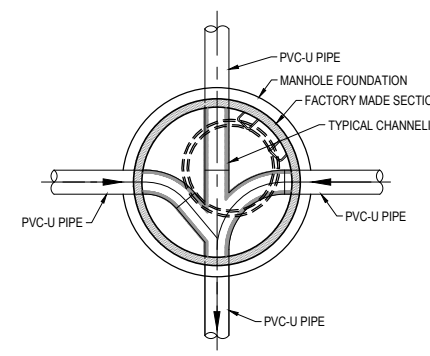
PLAN
SCALE 1:25

(TYPICAL EXAMPLE OF 90° CONNECTION IN MANHOLE)



PLAN
SCALE 1:25

(TYPICAL EXAMPLE OF 90° BEND IN MANHOLE)



PLAN
SCALE 1:25

(TYPICAL EXAMPLE OF SIDE CONNECTIONS IN MANHOLE)

TYPICAL MANHOLE LAYOUTS SHOWING POSITIONS OF MANHOLE FRAME, STEPS & CHANNELING



CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING(ACTING)				
NAME: E.J VICTOR	Prof. Reg. No.	SIGNATURE	DATE	JAN 2017
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
NAME:	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME:	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: BULK WATER				
NAME:	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME:	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
NAME:	Prof. Reg. No.	SIGNATURE	DATE	

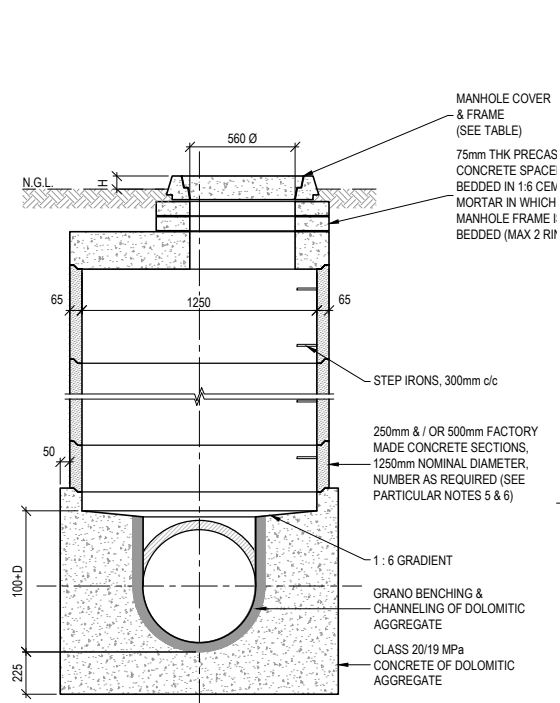
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
DRAWN	
NAME: M. M. BURGER	Prof. Reg. No:
SIGNATURE:	DATE: MARCH 2016
CHECKED	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F HILDER	Prof. Reg. No: 880539
SIGNATURE:	DATE: JAN 2017

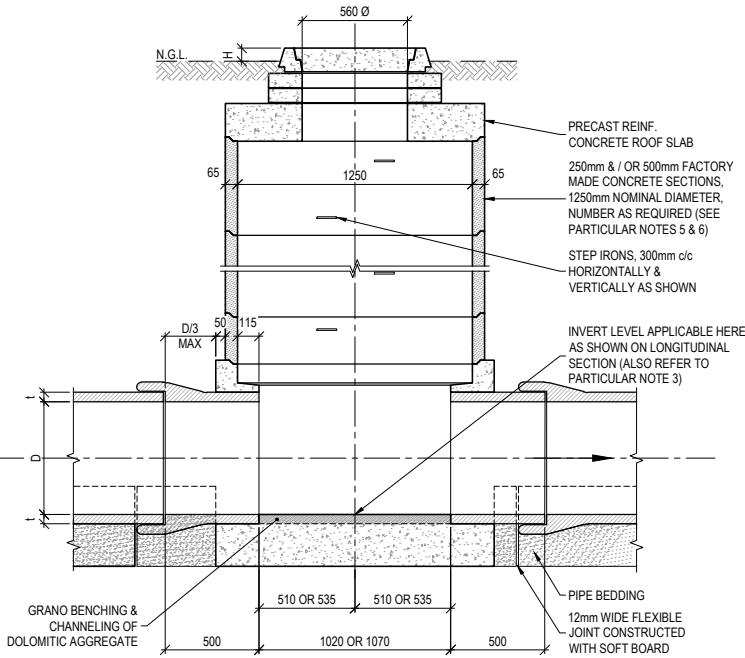
CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	1 OF 1
PAPER SIZE	A1
SCALE	1:100
DATE	20.01.2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
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PROJECT ENGINEER OF COT:			
NAME:	Pr Eng.	Prof Reg No:	
SIGNATURE:		DATE:	
INSPECTOR OF WORKS OF COT:			
NAME:	Pr Eng.	Prof Reg No:	
SIGNATURE:		DATE:	

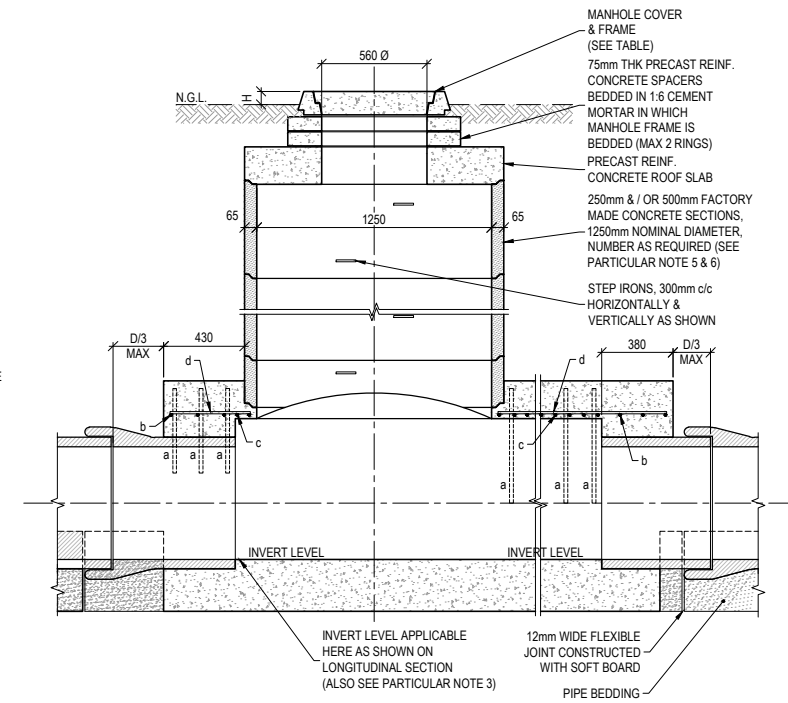
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DESCRIPTION OF PROJECT:	STANDARD DRAWING : MANHOLE DETAILS FOR SEWER PIPES UP TO 300mm NOMINAL DIAMETER
WBS No. :	
COT DRAWING NUMBER:	7515-S203



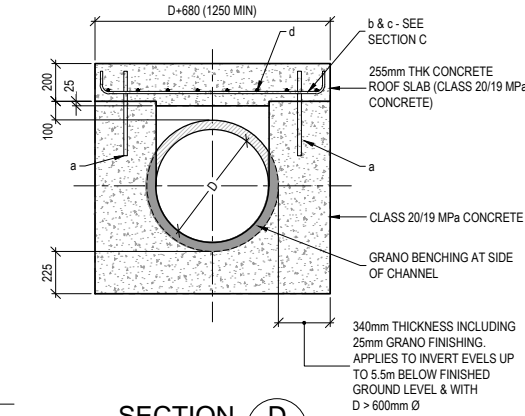
SECTION A
SCALE 1:20



SECTION B
SCALE 1:20



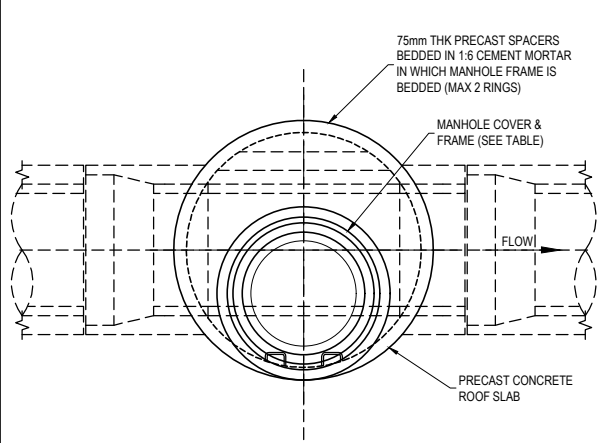
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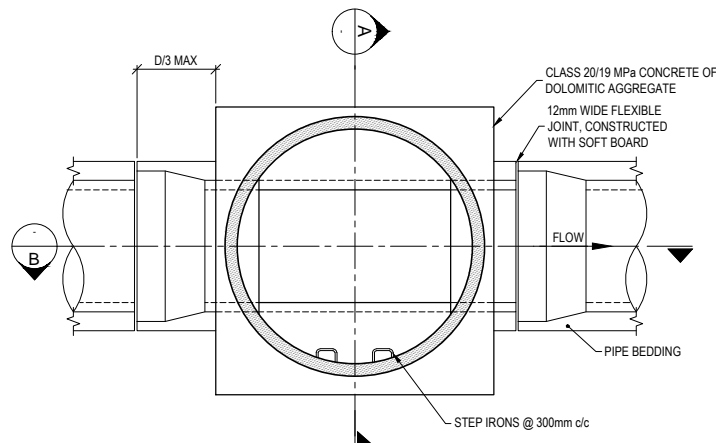
SECTION D
SCALE 1:20

DESCRIPTION OF REBAR (AS SHOWN IN SECTION C & D):
 a = Y20 @ 150 VERT, 450mm LONG
 b = Y12 @ 150 - B1, BENT AS SHOWN IN SECTION D
 c = Y12 @ 75 - B1, AS SHOWN IN SECTION C
 d = Y12 @ 150 - B2, DISTRIBUTION BARS

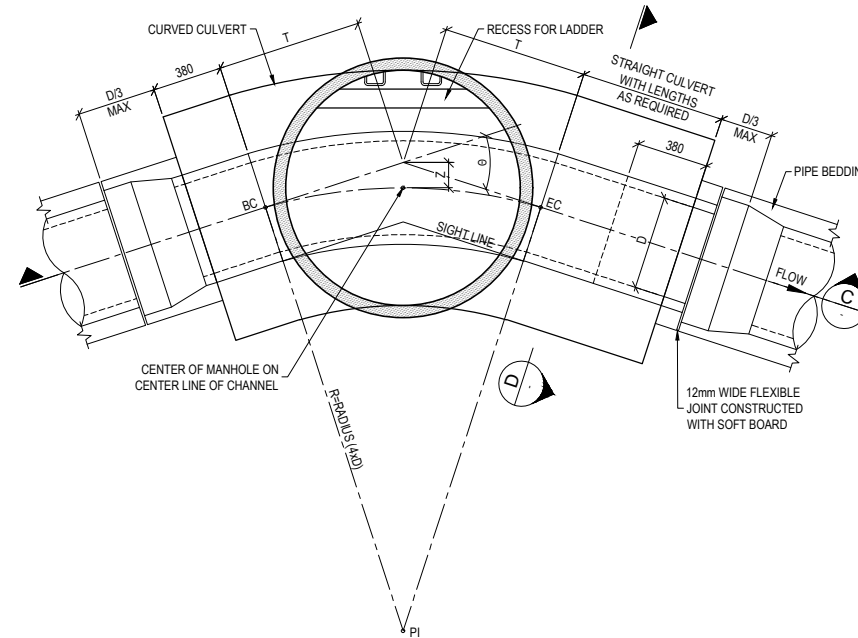
CONCRETE COVER = 40mm



PLAN - MANHOLE COVER & FRAME
SCALE 1:20



PLAN - ROOF SLAB REMOVED
SCALE 1:20



TYPICAL SETTING-OUT DETAIL
ROOF SLAB REMOVED
SCALE 1:20

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PARTICULAR

- CONCRETE FOR MANHOLES TO BE OF DOLOMITIC ORIGIN
- CHANNELING & BENCHING IN MANHOLES & CULVERT SECTIONS TO BE OF GRANOLITHIC CONCRETE & MUST BE CONSTRUCTED WITH A FINAL THICKNESS OF 25mm FOR CHANNELING & 50mm FOR BENCHING
- THE INVERT LEVELS AS SHOWN ON LONGITUDINAL SECTIONS REFER TO THE BC & EC OF THE CURVED CULVERT SECTION
- CONCRETE COVER TO ALL REBAR TO BE 40mm MINIMUM
- CONCRETE SECTIONS MUST BE FIXED WITH AN APPROVED EPOXY SEALER SUCH AS EPIDERMIX 344 OR PROSTRUCT 687
- FACTORY MADE MANHOLE SECTIONS TO BE IN ACCORDANCE WITH SANS 1294
- NO PART OF THE MANHOLE MAY BE FINISHED OFF WITH CEMENT WASH OR MORTAR
- TWO MANHOLE ACCESS SHAFTS MAY BE INSTRUCTED BY THE ENGINEER, ONE AT EACH END OF CULVERT SECTION
- ENGINEER TO PROVIDE BENDING SCHEDULES FOR THE REINFORCEMENT
- THE ROOF SLAB SHALL NOT BE FIXED TO THE RINGS WITH EPOXY BUT SHALL BE REMOVABLE FOR CLEANING PURPOSES. IT SHALL THEREFOR HAVE LIFTING LUGS CAST IN
- TYPICAL VALUES FOR H
 H = 50 - 75mm WITHIN ERVEN & ROAD RESERVES
 = 250mm LOW COST HOUSING DEVELOPMENTS & UNDEFINED ROADWAYS
 = 500mm OPEN VELD OR ROAD RESERVES WHERE POSITION OF MANHOLES CAN BE CONCEALED BY LONG GRASS OR OTHER GROWTH
- STEP IRONS TO BE COPOLYMER POLYPROPYLENE ENCAPSULATED 12mm HIGH TENSILE STEEL BAR, "CALAMITE" OR SIMILAR APPROVED

ABBREVIATIONS:
 BC = BEGINNING OF CURVE
 EC = END OF CURVE
 T = TANGENT LENGTH
 B = LENGTH OF CURVE (BC TO EC)
 PI = POINT OF INTERSECTION

MANHOLE COVERS AND FRAMES	
SANS 50124 (SABS EN 124)	
POSITION OF MANHOLE	FRAME AND COVER TYPE
CARRIAGEWAY	560mm Ø CLASS D400 POLYESTER RESIN
STREET RESERVE	560mm Ø CLASS B125 POLYESTER RESIN OR TYPE 4 CONCRETE REPLACEMENT
ERVEN	560mm Ø CLASS B125 POLYESTER RESIN OR TYPE 4 CONCRETE REPLACEMENT
GENERAL	ONLY 560mm Ø, CLASS D400 POLYESTER RESIN MAY BE USED FOR SEWERS 300mm Ø AND LARGER

NOTE: CAST IRON COVERS AND FRAMES ARE USED ONLY WITH WRITTEN INSTRUCTIONS FROM THE ENGINEER

MANHOLE CHAMBER SIZES	
NOMINAL Ø (mm)	USAGE
1250	STRAIGHT THROUGH MANHOLES
1500	LARGER PIPES, BENDS IN MANHOLES & MANHOLES DEEPER THAN 3.0 m

NOTE: MANHOLE CHAMBER SIZES TO BE APPROVED BY THE EXECUTIVE DIRECTOR: WATER AND SANITATION



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

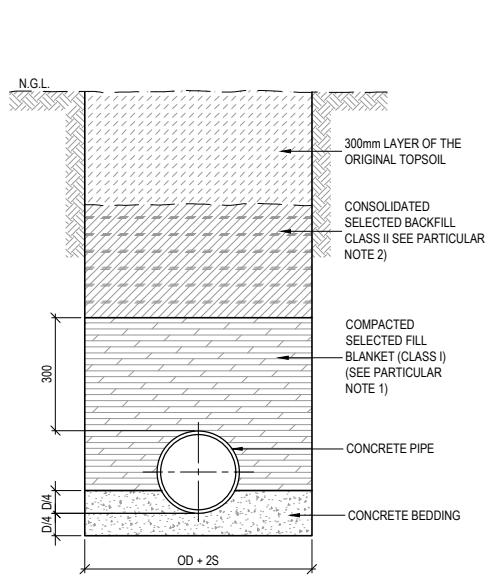
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME: Pr Eng.	Prof. Reg. No.:
SIGNATURE:	DATE:
DRAWN	
NAME: M. M. BURGER	Prof. Reg. No.:
SIGNATURE:	DATE: MARCH 2016
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NAME: Pr Eng.	Prof. Reg. No.:
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DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No.:
SIGNATURE:	DATE: JAN 2017

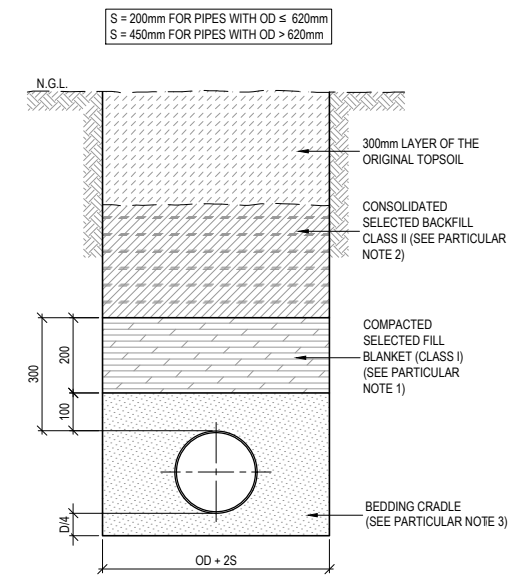
CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	1 OF 1
PAPER SIZE	A1
SCALE	1:100
DATE	20.01.2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
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CONCEPT DRAWING	TENDER DRAWING	APPROVED CONSTRUCTION DRAWING	AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME:	Prof. Reg. No.:	DATE:	
INSPECTOR OF WORKS OF COT:			
NAME:	Prof. Reg. No.:	DATE:	

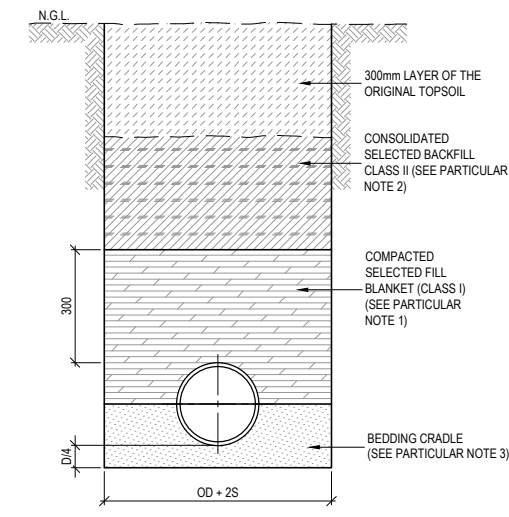
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	STANDARD DRAWING : MANHOLE DETAILS FOR SEWER PIPES LARGER THAN 300mm
WBS No. :	
COT DRAWING NUMBER:	7515-S204



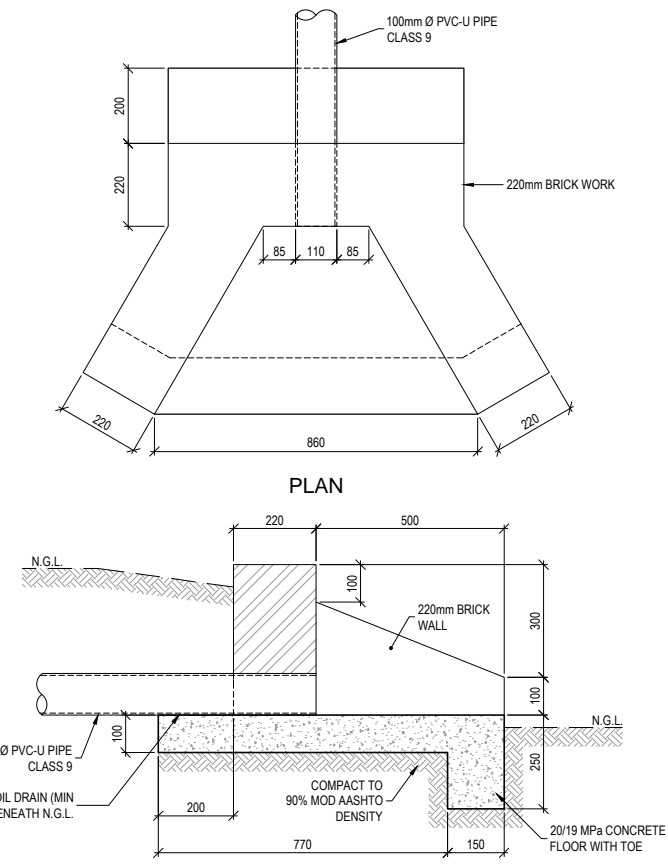
CLASS A BEDDING FOR RIGID PIPE LINE
SCALE 1:10



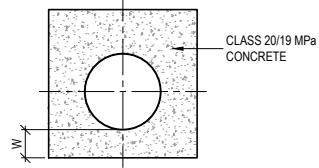
CLASS B BEDDING FOR FLEXIBLE PIPE LINE
SCALE 1:10



CLASS B BEDDING FOR RIGID PIPE LINE
SCALE 1:10

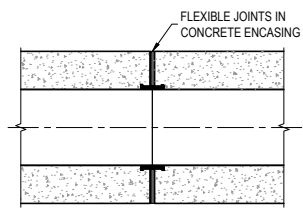


OUTLET STRUCTURE FOR SUB-SOIL DRAINS
SCALE 1:10



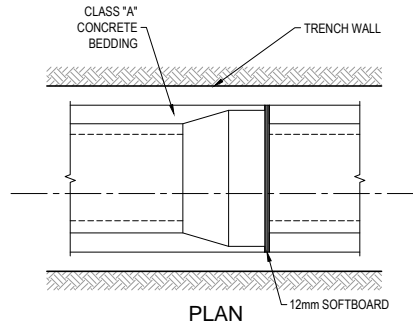
CROSS SECTION

CONCRETE ENCASING -
W = 100mm FOR PIPES ≤ 225mm NOMINAL DIAMETER
W = 150mm FOR PIPES BETWEEN 225mm & 525mm
W = D/4 FOR PIPES ≥ 600mm NOMINAL DIAMETER

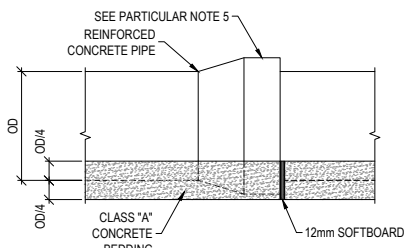


LONG SECTION

PIPE ENCASING DETAIL
SCALE 1:10

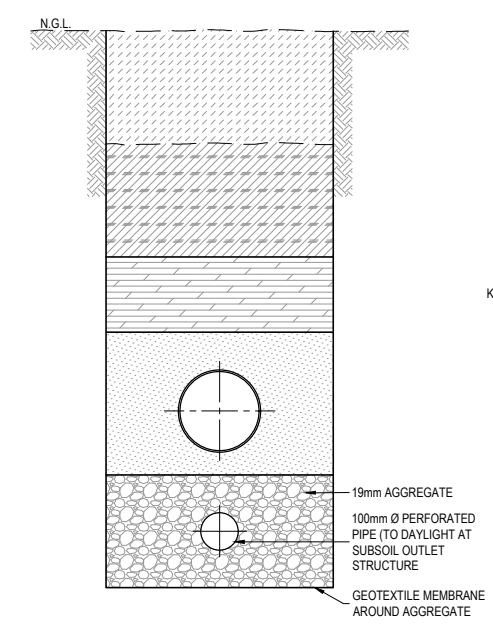
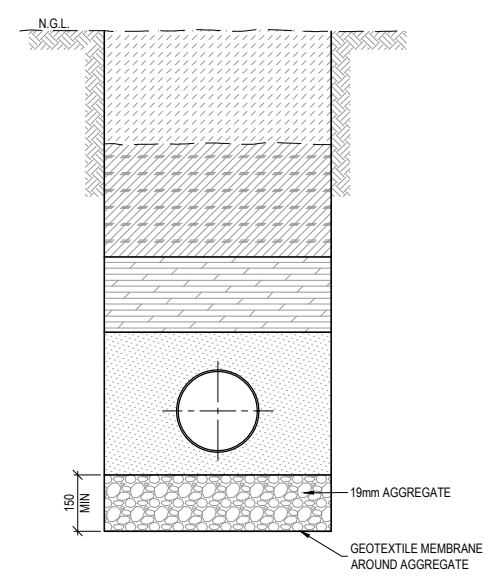


PLAN

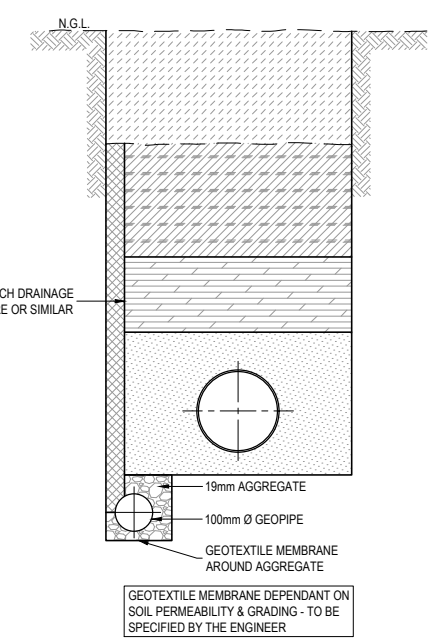


SIDE ELEVATION

CLASS "A" BEDDING DETAIL
SCALE 1:10



TYPICAL SUBSURFACE DRAINS
SCALE 1:10



GEOTEXTILE MEMBRANE DEPENDANT ON SOIL PERMEABILITY & GRADING - TO BE SPECIFIED BY THE ENGINEER

NOTES AND SPECIFICATIONS

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- PARTICULAR**
1. SELECTED BACKFILL CLASS I : IMPLIES APPROVED SELECTED MATERIAL FROM TRENCH EXCAVATION, FREE FROM STONES AND WITH AN OPTIMUM MOISTURE CONTENT
 2. SELECTED BACKFILL CLASS II : IMPLIES SELECTED BACKFILL FROM TRENCH EXCAVATION, WHICH SHALL NOT CONTAIN ANY STONES LARGER THAN 150mm Ø
 3. CLASS B BEDDING CRADLE SHALL CONSIST OF AN APPROVED SELECTED GRAVEL MATERIAL WITH A PI NOT EXCEEDING 6, FREE FROM STONES EXCEEDING 20mm, ORGANIC MATTER & LUMPS OF CLAY
 4. CLASS A BEDDING / ENCASING CONCRETE BETWEEN JOINTS SHALL BE POURED IN ONE CONTINUOUS OPERATION USING CLASS 20/19 MPa CONCRETE
 5. FLEXIBLE JOINTS MUST BE PROVIDED AT EACH PIPE JOINT IN A CLASS A CONCRETE BEDDING / ENCASING, WITH A 12mm THK SOFTBOARD PLACED VERTICALLY FOR THE ENTIRE CONCRETE AREA. PIPE JOINTS MUST BE SEALED WITH WET CLAY TO PREVENT SLUSH FROM PENETRATING THE JOINT
 6. EXCEPT FOR THE 300mm BACKFILL ON THE TOP OF THE PIPE, THE BALANCE OF THE TRENCH MAY BE BACKFILLED WHEN THE CLASS A BEDDING / ENCASING HAS OBTAINED THE COMPRESSIVE STRENGTH OF 15 MPa



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E J VICTOR			JAN 2017	
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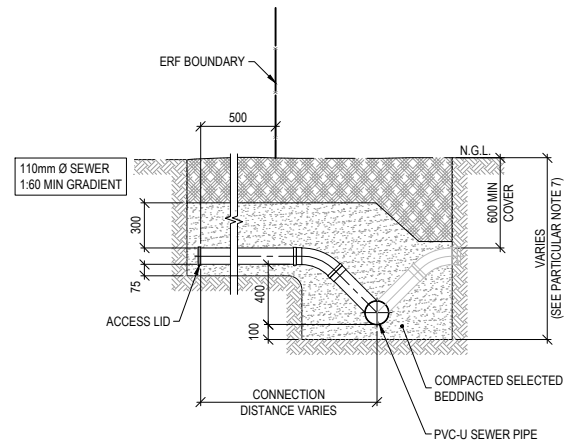
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME: R. P. ANSLE	Prof. Reg. No. 810370
SIGNATURE:	DATE: MARCH 2016
DRAWN	
NAME: M. M. BURGER	Prof. Reg. No. 315-02
SIGNATURE:	DATE: MARCH 2016
CHECKED	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:
INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No. 880539
SIGNATURE:	DATE: JAN 2017

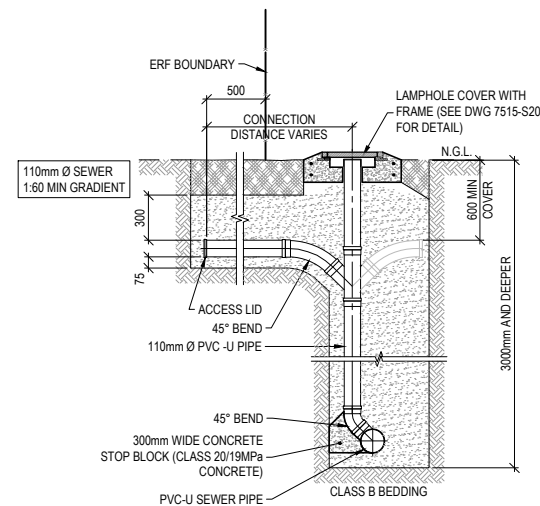
CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	1 OF 1
PAPER SIZE	A1
SCALE	1:100
DATE	20.01.2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
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CONCEPT DRAWING	TENDER DRAWING	APPROVED CONSTRUCTION DRAWING	AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME:	Prof. Reg. No.:	DATE:	
INSPECTOR OF WORKS OF COT:			
NAME:	Prof. Reg. No.:	DATE:	

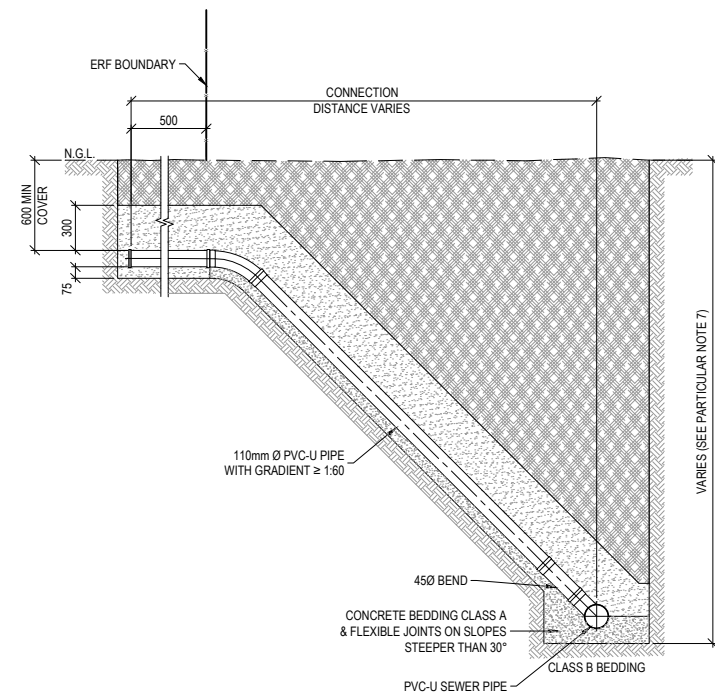
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DESCRIPTION OF PROJECT:	STANDARD DRAWING : SEWER PIPE TRENCHES AND BEDDING DETAILS
WBS No. :	
COT DRAWING NUMBER:	7515-S205



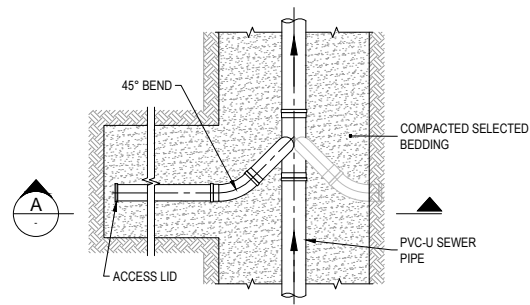
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SCALE 1:25



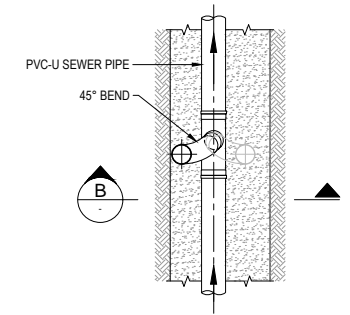
SECTION B
SCALE 1:25



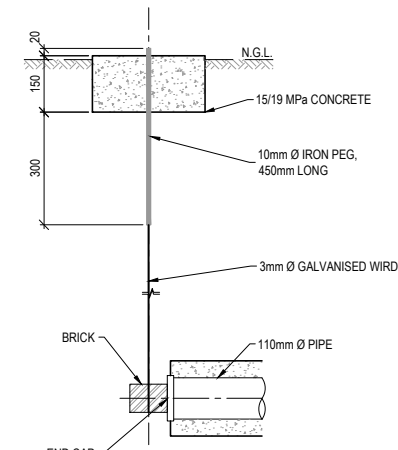
SECTION C
HOUSE CONNECTION TYPE C
SCALE 1:25



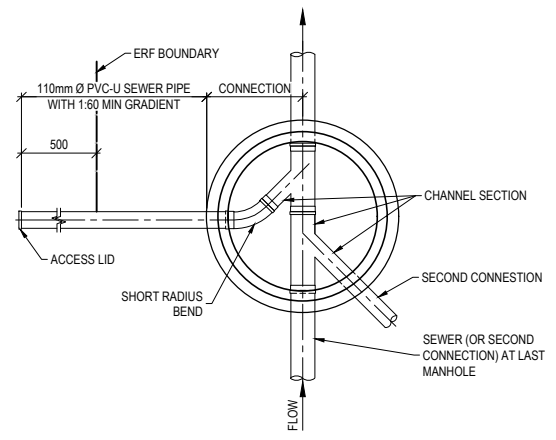
PLAN A
PLAN - HOUSE CONNECTION TYPE A
SCALE 1:25



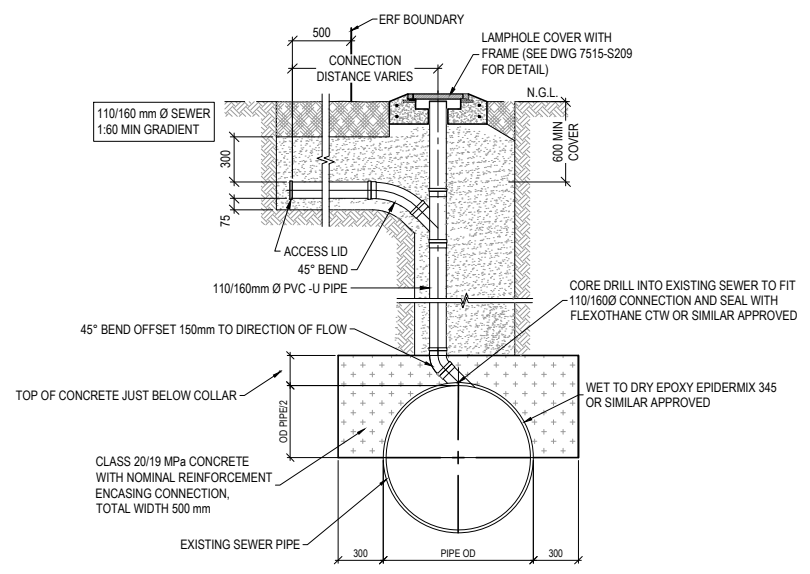
PLAN B
HOUSE CONNECTION TYPE B
SCALE 1:25



SECTION
HOUSE CONNECTION MARKER BLOCK
SCALE 1:20



PLAN D
HOUSE CONNECTION TYPE D
SCALE 1:25
(CONNECTION AT MANHOLE)



TYPICAL SECTION SHOWING DETAIL OF HOUSE CONNECTION ONTO SEWERS LARGER THAN 300 mm Ø
SCALE 1:25

NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS
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8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH DETERMINED ON SITE
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11. SEWERS INSTALLED WITHIN THE ROAD RESERVE BOUNDARY MUST BE POSITIONED IN ACCORDANCE WITH THE APPLICABLE SERVICES LAYOUT DRAWING

PARTICULAR

1. HOUSE CONNECTION TYPE A IS BUILT WHERE SEWER IS SHALLOWER THAN 3.0m AND IS GENERALLY USED
2. HOUSE CONNECTION TYPE B IS BUILT WHERE SEWER IS DEEPER THAN 3.0m
3. HOUSE CONNECTION TYPE C IS ONLY TO BE BUILT ON WRITTEN INSTRUCTION FROM THE ENGINEER
4. HOUSE CONNECTION TYPE B IS ALSO BUILT WHERE SEWER IS SITUATED UNDER CARRIAGEWAY AND DEEPER THAN 3.0m
5. IN CASES WHERE SEWER UNDER CARRIAGEWAY IS SHALLOWER THAN 3.0m, TYPE A OR TYPE C HOUSE CONNECTION IS TO BE BUILT
6. HOUSE CONNECTION TYPE D IS BUILT WHERE HOUSE CONNECTION AND MANHOLE POSITION COINCIDE
7. MINIMUM COVER FOR MAIN SEWER IS 1000mm
8. PVC PIPES AND FITTINGS SHALL COMPLY WITH SANS 1601 FOR STIFFNESS CLASS 400 PIPES
9. POLYESTER RESIN LAMPHOLE COVER AND FRAME TO BE IN ACCORDANCE WITH SANS 50124 (SABS EN124)
10. CONNECTION FOR LARGE RESIDENTIAL BUSINESS AND INDUSTRIAL STANDS MUST BE 160mm Ø



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

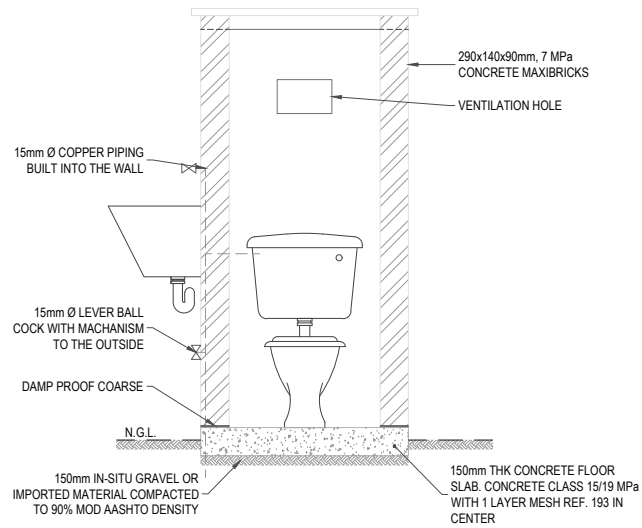
WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

CONSULTANT DETAIL	
Prof. Reg. No.	
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SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

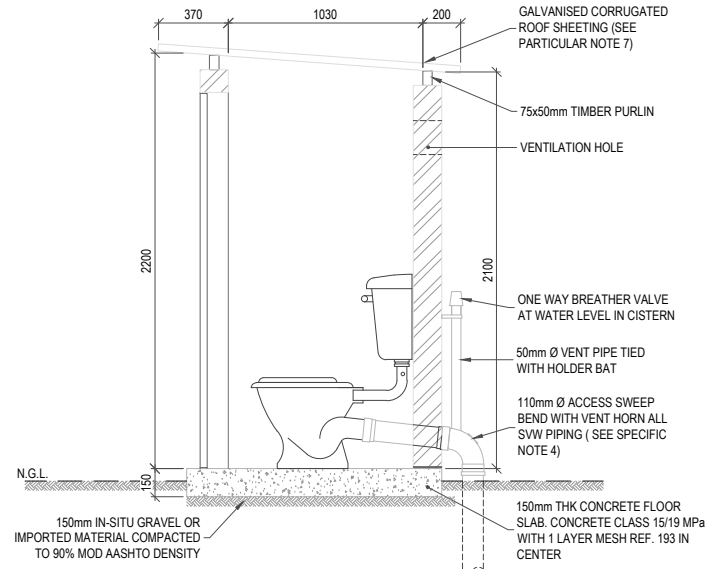
DESIGNED	
NAME:	Pr Eng. Prof Reg No.:
SIGNATURE:	DATE:
DRAWN	
NAME: M. M. BURGER	Prof. Reg. No.:
SIGNATURE:	DATE: MARCH 2016
CHECKED	
NAME:	Pr Eng. Prof Reg No.:
SIGNATURE:	DATE:
INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No.:
SIGNATURE:	DATE: JAN 2017

PROJECT STATUS	
RECEIVED SIGN WHEN APPLICABLE	
CONCEPT DRAWING	TENDER DRAWING
APPROVED CONSTRUCTION DRAWING	AS BUILT DRAWING
PROJECT ENGINEER OF COT:	
NAME:	Pr Eng. Prof Reg No.:
SIGNATURE:	DATE:
INSPECTOR OF WORKS OF COT:	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:

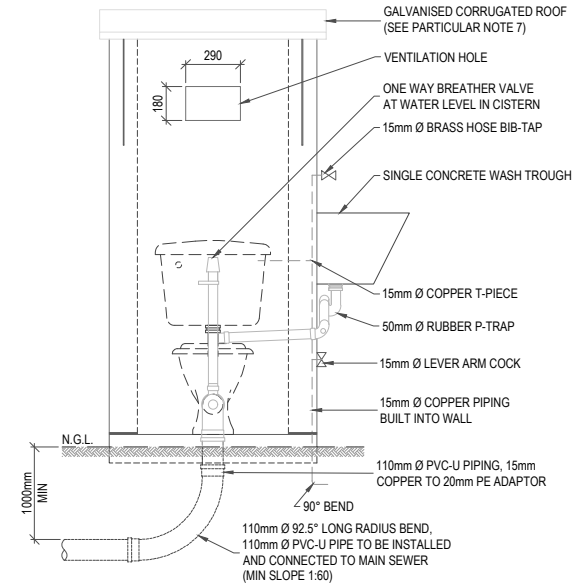
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DESCRIPTION OF PROJECT:	
STANDARD DRAWING : SEWER HOUSE CONNECTION DETAILS	
WBS No. :	
COT DRAWING NUMBER:	
7515-S206	



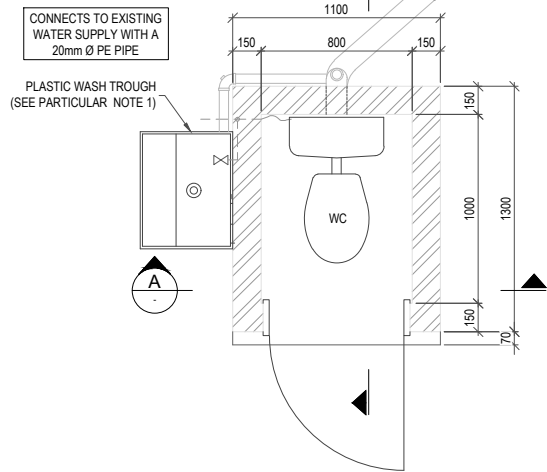
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SCALE 1:20



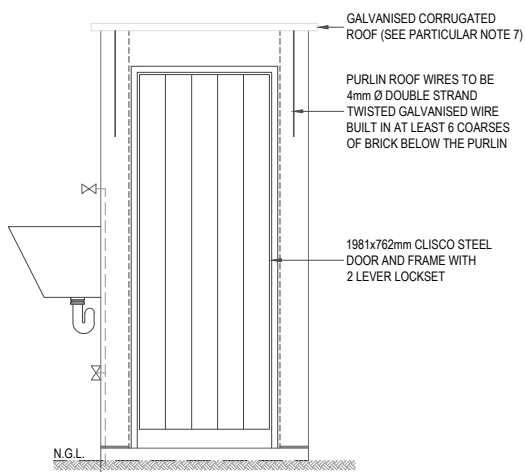
SECTION B
SCALE 1:20



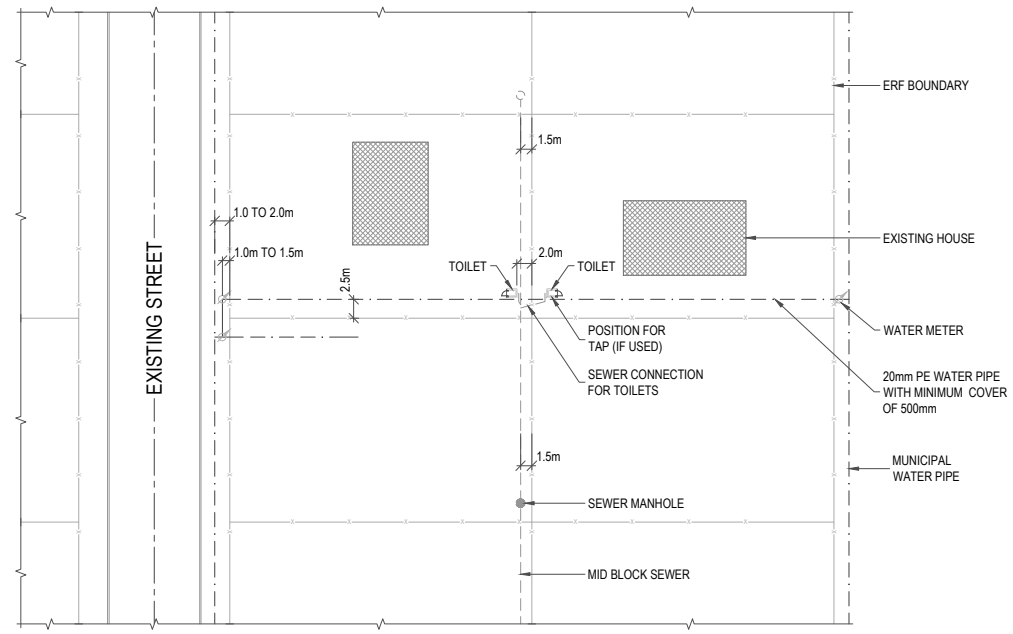
REAR ELEVATION
SCALE 1:20



PLAN
SCALE 1:20



FRONT ELEVATION
SCALE 1:20



TYPICAL SITE LAYOUT
SCALE 1:500

NOTES AND SPECIFICATIONS

GENERAL

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PARTICULAR

1. FIXING BOLTS FOR WASH TROUGH SHOULD NOT BE MORE THAN 30mm FROM CORNER OF METAL FRAME
2. THE 50mm HOLDER BAT SHOULD NOT BE MORE THAN 50mm BELOW THE VENT VALE
3. FIT THE WASTE WATER PIPE FROM THE WASH TROUGH TO THE SOIL PIPE. A 50 x 50mm PVC-U 95° JUNCTION SHOULD BE USED. CARE SHOULD BE TAKEN NOT TO INSTALL THE JUNCTION UPSIDE DOWN
4. THE 110mm Ø PIPE FROM THE TOILET PAN TO THE 110mm Ø VENT HORN BEND AND THE VERTICAL 110mm Ø PIPE DOWN TO THE 1/4 BEND BELOW GROUND SHOULD BE OF 110mm Ø SOIL VENT WASTE (SWW) PIPE (THE WHITE PIPE)
5. DAMP COURSE TO BE PLACED AT THE BOTTOM OF THE WALL
6. BRICK FORGE SHOULD BE PLACED BETWEEN THE BOTTOM THREE LAYERS AND REPEATED IN EVERY FOURTH LAYER ABOVE
7. 0.5mm FULL HARD GALVANISED STEEL ROOF SHEETING ON 75x50mm SA PINE GRADE 6 PURLINS ON EDGE ANCHORED 6 BRICK COURSES DEEP INTO BRICK WORK AT ALL FOUR CORNERS WITH TWO STRANDS OF 4mm GALVANISED STEEL WIRE OR GALVANISED LOOP IRON ACCORDING TO NBR SPECIFICATIONS. EXPOSED ENDS SHOULD BE TREATED WITH CREOSOTE
8. TAP STAND PIPE SHOULD BE 600mm ABOVE GROUND
9. THE FLUSHING LEVER OF THE CISTERN SHOULD BE ON THE SAME SIDE AS THE WATER INLET TO THE CISTERN



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING			
NAME	Prof Reg No	SIGNATURE	DATE
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
NAME	Prof Reg No	SIGNATURE	DATE
DIRECTOR: SYSTEM DEVELOPMENT			
NAME	Prof Reg No	SIGNATURE	DATE
DIRECTOR: BULK WATER			
NAME	Prof Reg No	SIGNATURE	DATE
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME	Prof Reg No	SIGNATURE	DATE
DIRECTOR: WASTE WATER TREATMENT			
NAME	Prof Reg No	SIGNATURE	DATE

CONSULTANT DETAIL	
Prof Reg No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
DRAWN	
NAME: M. M. BURGER	DATE: MARCH 2016
SIGNATURE:	DATE:
CHECKED	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
INFORMATION OFFICE CHECKED	
NAME:	DATE:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:

CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	1 OF
PAPER SIZE	A1
SCALE	1:100
DATE	20.01.2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
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PROJECT ENGINEER OF COT:			
NAME:	Pr Eng.	Prof Reg No:	DATE:
INSPECTOR OF WORKS OF COT:			
NAME:	Pr Eng.	Prof Reg No:	DATE:

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DESCRIPTION OF PROJECT:	STANDARD DRAWING : TOILET STRUCTURE
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COT DRAWING NUMBER:	7515-S207

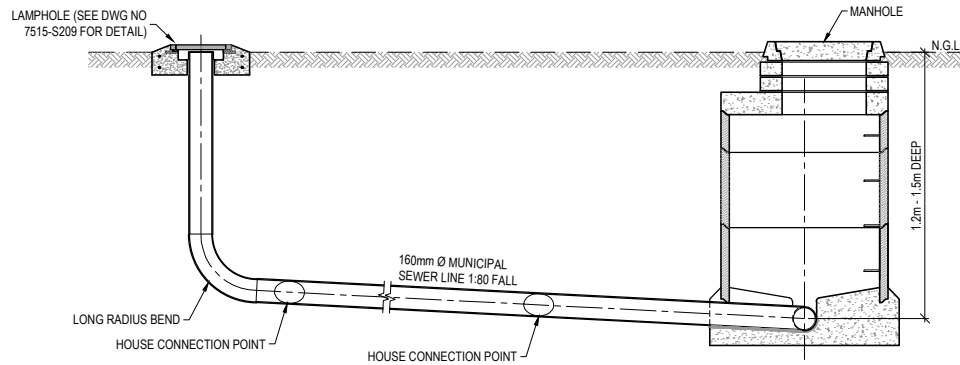
NOTES AND SPECIFICATIONS

GENERAL

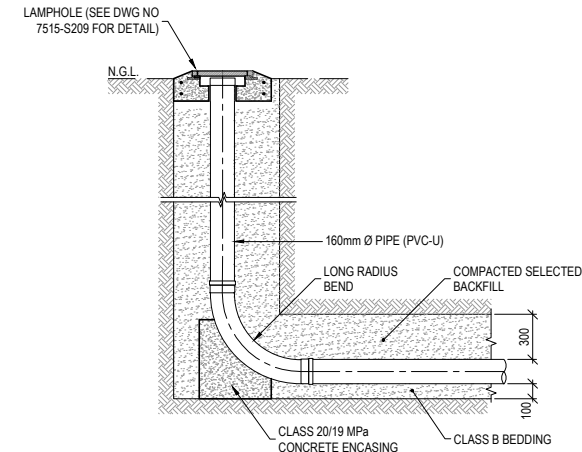
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PARTICULAR

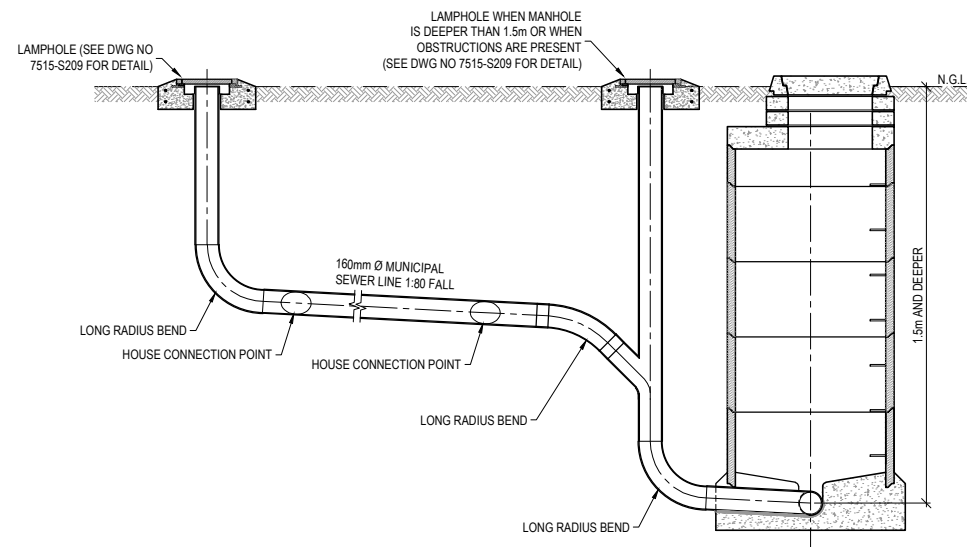
1. LH = LAMPHOLE
2. MAXIMUM 3 DWELLING UNITS ON NEW SEWER LINE
3. POLYESTER RESIN LAMPHOLE COVER AND FRAME IN ACCORDANCE WITH SANS 50124 (SABS EN124)



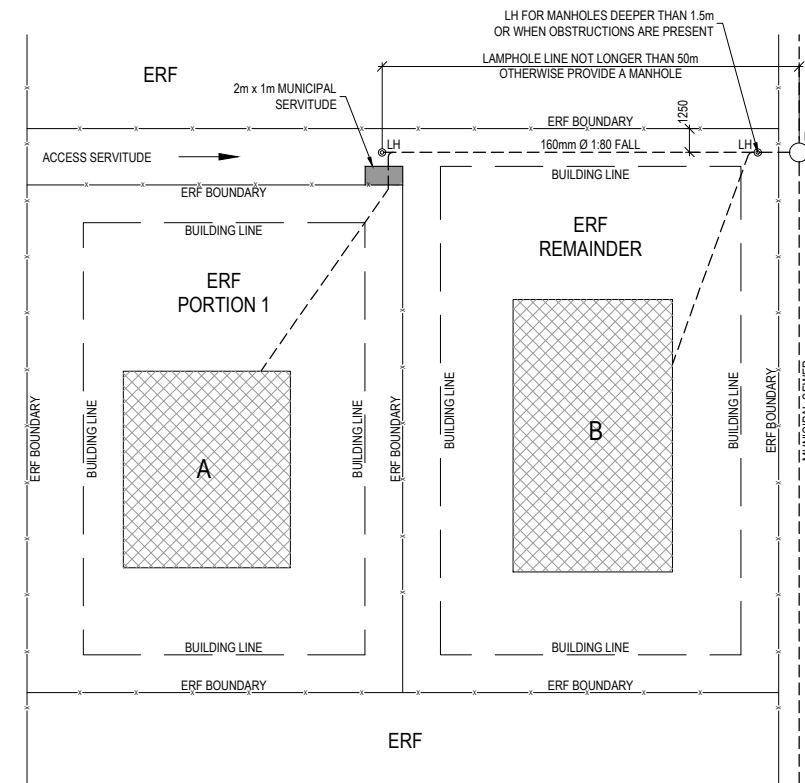
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SCALE 1:25



LAMPHOLE DETAIL
SCALE 1:25



SECTION - MANHOLES DEEPER THAN 1.5m
SCALE 1:25



TYPICAL PLAN LAYOUT
SCALE 1:200



P O BOX 1022
PRETORIA
0001
CITY OF TSHWANE
WATER AND SANITATION
DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

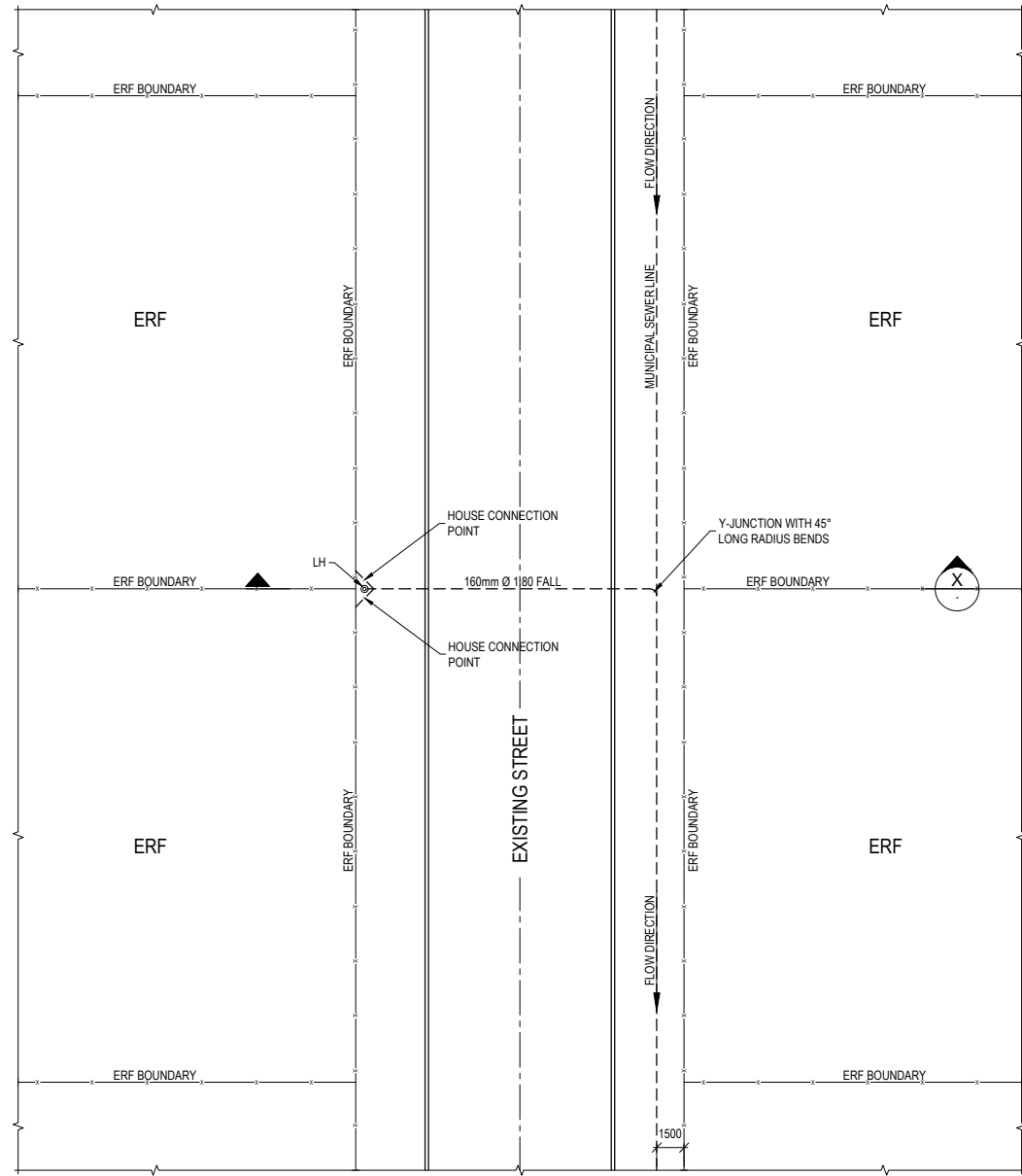
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
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NAME: M. M. BURGER	Prof. Reg. No:
SIGNATURE:	DATE: MARCH 2016
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INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No: 880539
SIGNATURE:	DATE: JAN 2017

CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	1 OF
PAPER SIZE	A1
SCALE	1:100
DATE	20.01.2016

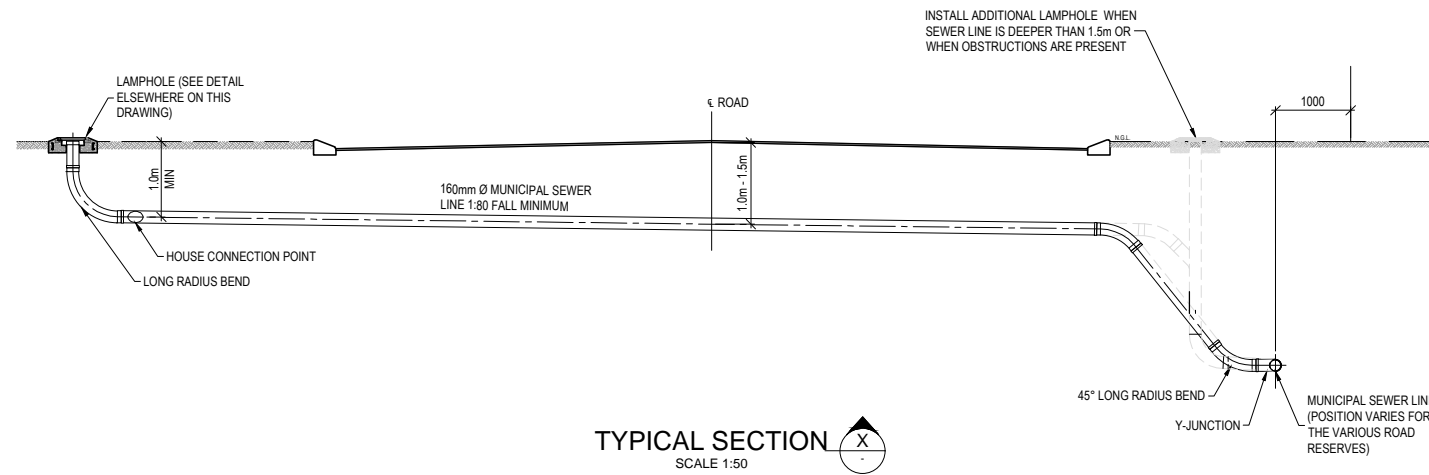
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RECEIVED SIGN WHEN APPLICABLE			
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CONCEPT DRAWING	TENDER DRAWING	APPROVED CONSTRUCTION DRAWING	AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME:	Pr Eng.	Prof Reg No:	
SIGNATURE:	DATE:		
INSPECTOR OF WORKS OF COT:			
NAME:	Pr Eng.	Prof Reg No:	
SIGNATURE:	DATE:		

LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	STANDARD DRAWING : TYPICAL SEWER LAYOUT FOR SUB-DIVISIONS
WBS No. :	
COT DRAWING NUMBER:	7515-S208



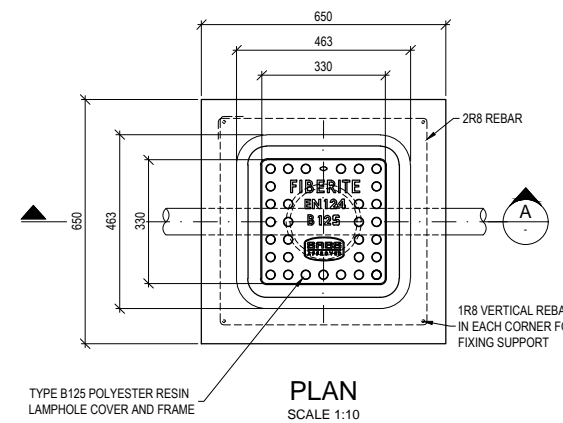
TYPICAL SEWER LAYOUT FOR ERVEN WITH NO MID-BLOCK SEWERS

SCALE 1:200



TYPICAL SECTION

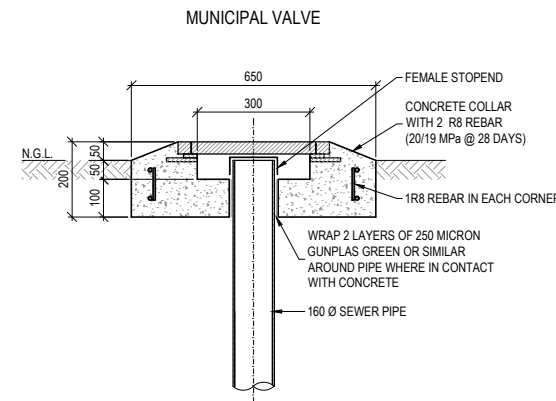
SCALE 1:50



PLAN

SCALE 1:10

BENDING SCHEDULE						
TYPE & SIZE	QTY	CUTTING LENGTH (mm)	SHAPE CODE	A (mm)	B (mm)	MASS (kg)
R8	2	2150	60	550	550	1.70
R8	4	85	20			0.14



SECTION A

SCALE 1:10

TYPICAL LAMPHOLE DETAIL

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PARTICULAR

1. LH = LAMPHOLE
2. MAXIMUM 3 DWELLING UNITS ON NEW SEWER LINE
3. TYPE B125 POLYESTER RESIN LAMPHOLE COVER AND FRAME IN ACCORDANCE WITH SANS 50124 (SABS EN124)



CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
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NAME:	Prof. Reg. No.	SIGNATURE	DATE:
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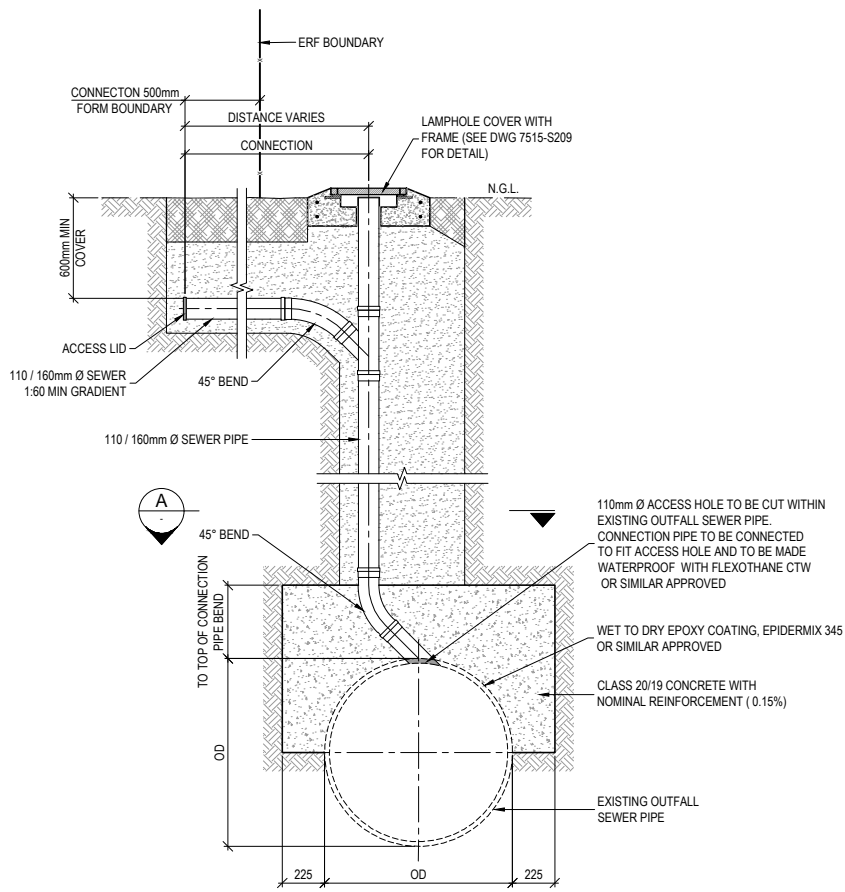
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CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME:	Pr Eng. Prof. Reg. No.
SIGNATURE:	DATE:
DRAWN	
NAME: M.M. BURGER	Prof. Reg. No.
SIGNATURE:	DATE: MARCH 2016
CHECKED	
NAME:	Pr Eng. Prof. Reg. No.
SIGNATURE:	DATE:
INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No.
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No. 880639
SIGNATURE:	DATE: JAN 2017

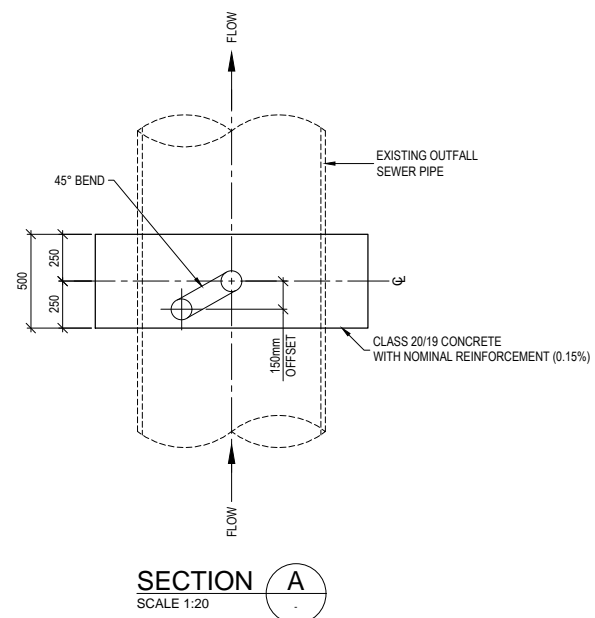
CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	1 OF 1
PAPER SIZE	A1
SCALE	1:100
DATE	20.01.2016

PROJECT STATUS	
RECEIVED SIGN WHEN APPLICABLE	
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<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
PROJECT ENGINEER OF COT:	
NAME:	Pr Eng. Prof. Reg. No.
SIGNATURE:	DATE:
INSPECTOR OF WORKS OF COT:	
NAME:	Prof. Reg. No.
SIGNATURE:	DATE:

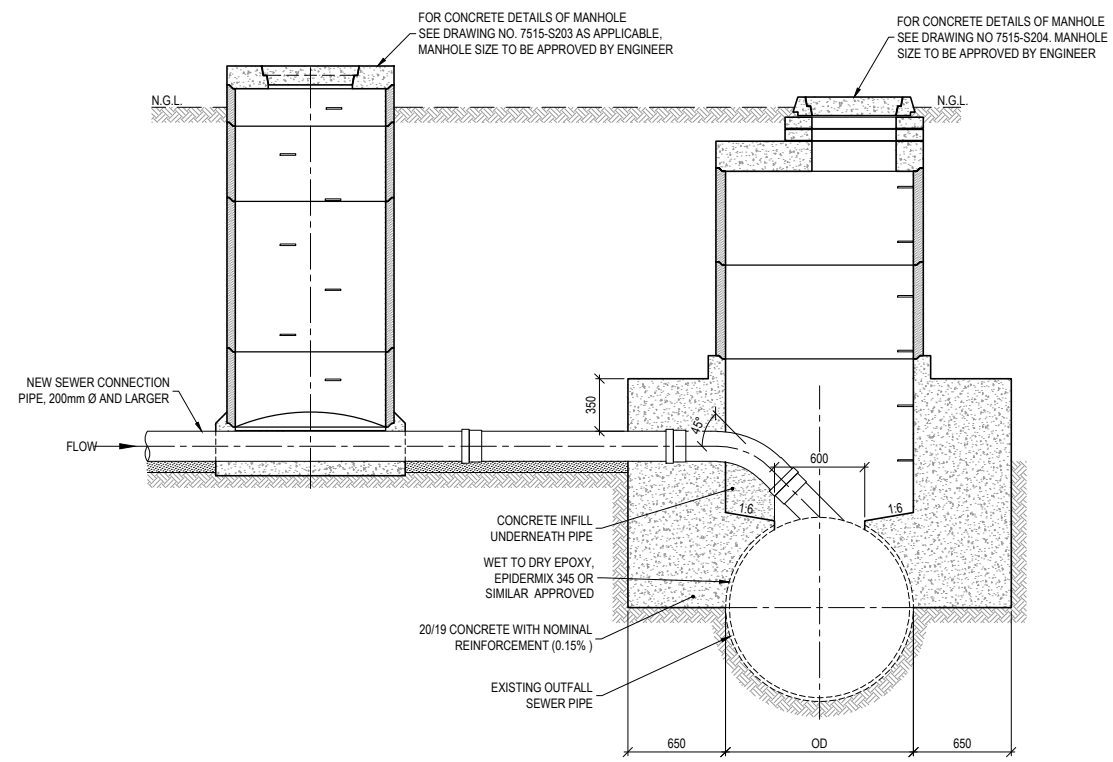
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DESCRIPTION OF PROJECT:	STANDARD DRAWING : LAMPHOLE DETAIL & SEWER LAYOUT FOR ERVEN WITH NO MID-BLOCK SEWERS
WBS No. :	
COT DRAWING NUMBER:	7515-S209



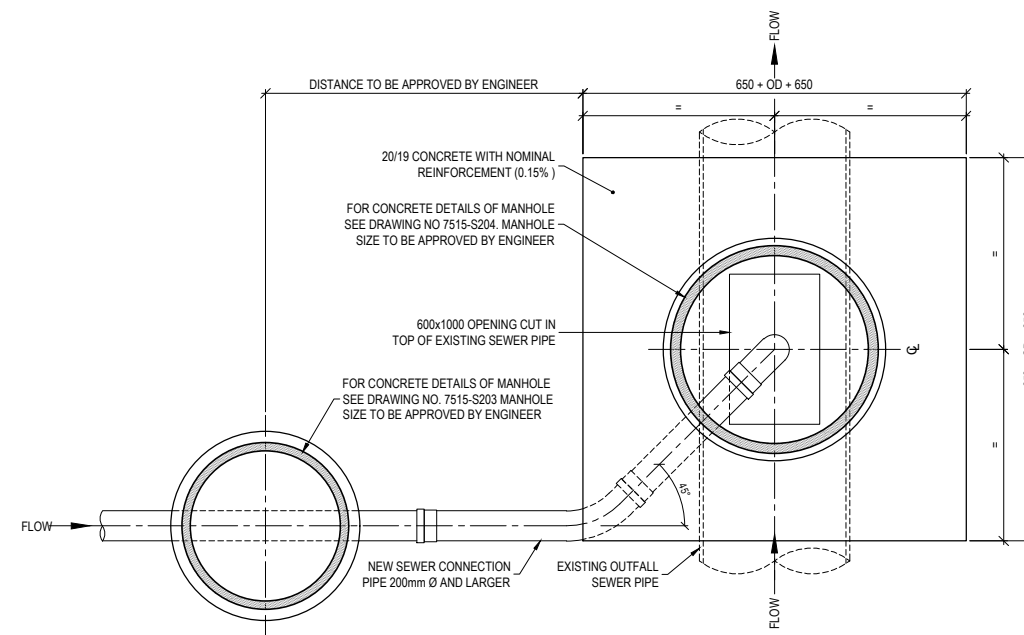
SECTION SHOWING DETAIL OF HOUSE CONNECTION INTO SEWERS LARGER THAN 300mm Ø
SCALE 1:20



110 / 160mm Ø CONNECTION TO OUTFALL SEWER PIPE



SECTION SHOWING TYPICAL DETAIL OF CONNECTION SEWER PIPE INTO OUTFALL SEWER PIPE
SCALE 1:25



PLAN SHOWING TYPICAL DETAIL OF CONNECTION SEWER PIPE INTO OUTFALL SEWER PIPE
SCALE 1:25

NOTES AND SPECIFICATIONS

GENERAL

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2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS
4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
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12. SEWERS INSTALLED WITHIN THE ROAD RESERVE BOUNDARY MUST BE POSITIONED IN ACCORDANCE WITH THE APPLICABLE SERVICES LAYOUT DRAWING



P O BOX 1022
PRETORIA
0001
CITY OF TSHWANE
WATER AND SANITATION
DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

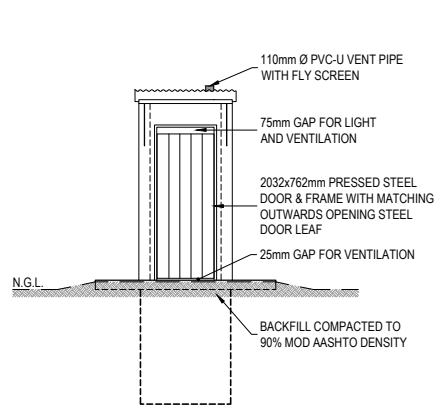
WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

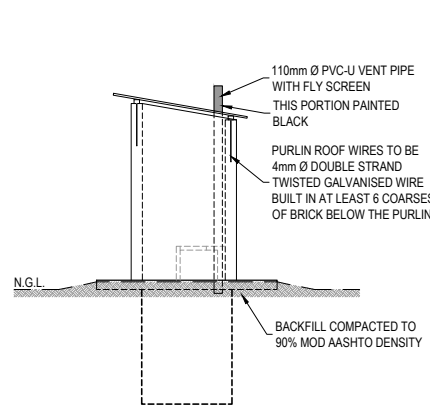
DESIGNED	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
DRAWN	
NAME: M. M. BURGER	Prof. Reg. No.
SIGNATURE:	DATE: NOVEMBER 2016
CHECKED	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No.
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No: 880639
SIGNATURE:	DATE: JAN 2017

PROJECT STATUS	
RECEIVED SIGN WHEN APPLICABLE	
CONCEPT DRAWING	TENDER DRAWING
APPROVED CONSTRUCTION DRAWING	AS BUILT DRAWING
PROJECT ENGINEER OF COT:	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
INSPECTOR OF WORKS OF COT:	
NAME:	Prof. Reg. No:
SIGNATURE:	DATE:

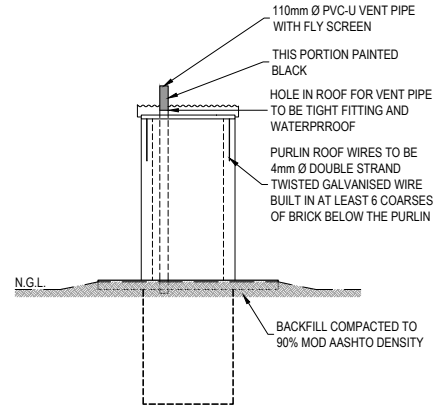
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	
STANDARD DRAWING : TYPICAL SEWER CONNECTIONS TO EXISTING OUTFALL SEWER	
WBS No. :	
COT DRAWING NUMBER:	7515-S210



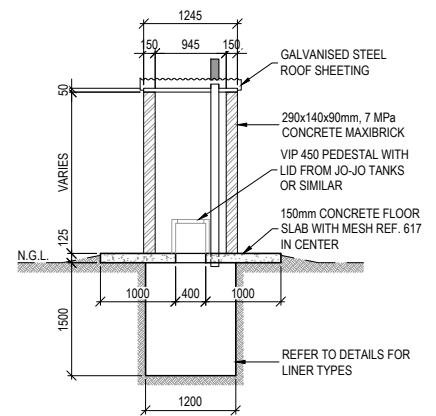
FRONT ELEVATION
SCALE 1:50



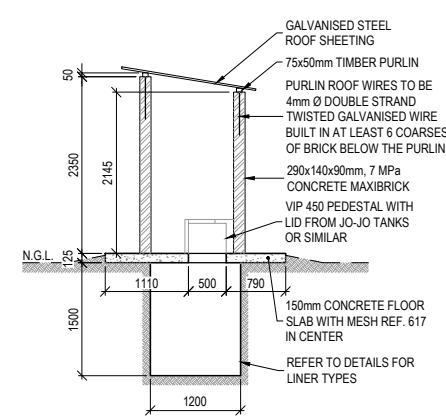
SIDE ELEVATION
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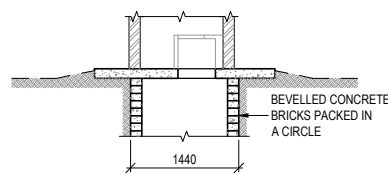
REAR ELEVATION
SCALE 1:50



SECTION A
SCALE 1:50

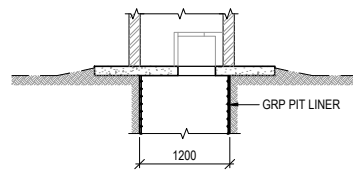


SECTION B
SCALE 1:50

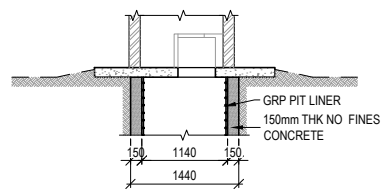


TYPE 1 LINER
SCALE 1:50

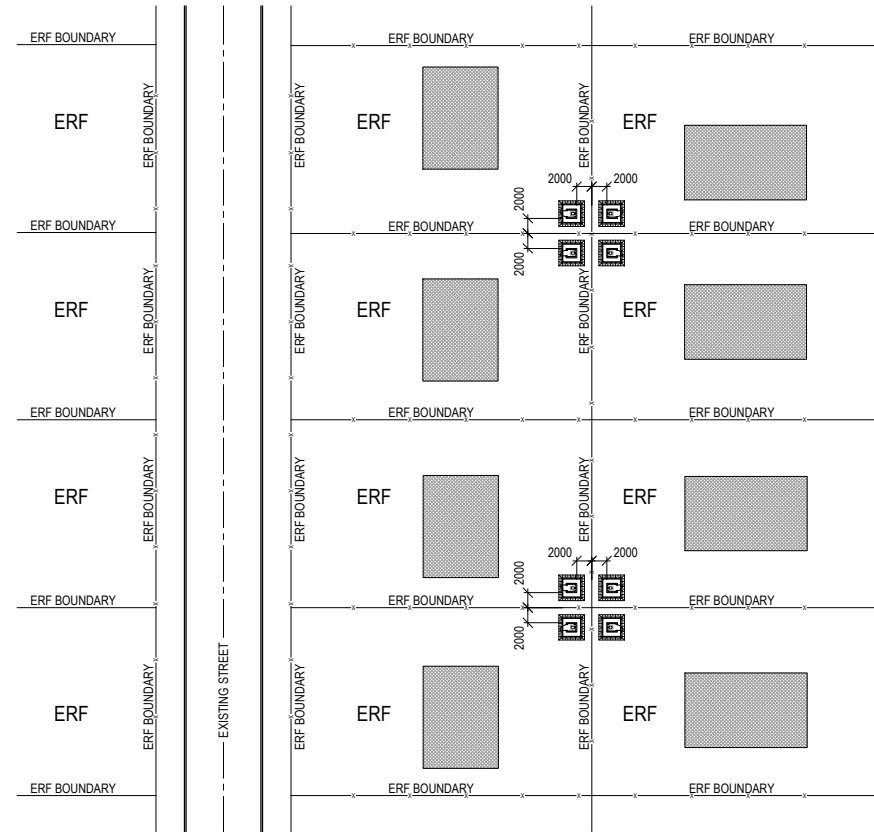
NOTE: PIT LINER TYPE TO BE DETERMINED ON SITE BY THE ENGINEER



TYPE 2 LINER
SCALE 1:50



TYPE 3 LINER
SCALE 1:50



TYPICAL PLAN LAYOUT
SCALE 1:200

PIT LATRINE BLOCK / BRICK SUPER STRUCTURE MATERIAL LIST	
CONCRETE MAXIBRICK OR BRICK WALL MINIMUM 150mm THICK (BAGGED FINISH)	9m ²
MORTAR (5 PARTS SAND, 1 PART CEMENT BY VOLUME)	
STANDARD PRESSED STEEL DOOR FRAME 2032x762mm (OUTWARD OPENING) ONE FACTORY COAT & 2 COATS OF ENAMEL PAINT	1 OFF
PRESSED STEEL DOOR, 100mm SHORTER THAN STANDARD (TO GIVE VENTILATION GAPS AS SHOWN ON DRAWING) ONE FACTORY COAT & 2 COATS OF ENAMEL PAINT	1 OFF
75x50mm PURLIN, SA PINE, 1245mm LONG	2 OFF
PURLIN ANCHORS - 4mm Ø DOUBLE STRAND TWISTED GALVANISED WIRE, 500mm LONG	4 OFF
0.5mm GALVANISED ROOF SHEETING, 1800mm LONG	2 SHEETS
ROOF SCREWS	6 OFF
2400x2400x125mm THK CONCRETE FLOOR SLAB WITH MESH REF. 617 & 8Y12 BARS, 820mm LONG	0.72m ²
110mm Ø VENTPIPE AND FLYSCREEN - KEMCLAD OR SIMILAR - TO FIT INTO FLOOR SLAB	1 OFF

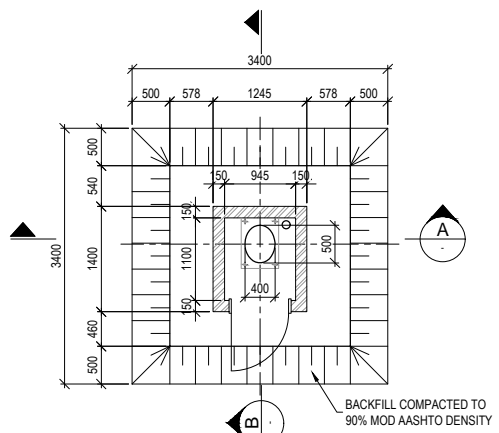
NOTES AND SPECIFICATIONS

GENERAL

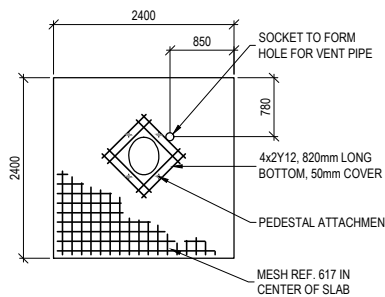
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PARTICULAR

- BRICKWORK TO BE IN ACCORDANCE WITH SANS 0164: PART 1-1980
- CLASS II MORTAR TO BE USED. (1 CEMENT CEM I : 5 SAND)
- BRICKS TO HAVE A CHARACTERISTIC COMPRESSIVE STRENGTH OF 9MPa.
- CONCRETE FOR SLABS TO BE CLASS 25/19 MPa
- IF MESH NEEDS TO BE SPLICED THEN USE A MINIMUM LAP LENGTH OF 500mm.
- CURE THE FLOOR SLAB CONCRETE FOR 5 DAYS
- DEGREE OF ACCURACY II SABS 1200
- DAMP COURSE TO BE PLACED AT THE BOTTOM OF THE WALLS
- BRICKFORCE SHOULD BE PLACED BETWEEN THE BOTTOM THREE LAYERS AND REPEATED IN EVERY FOURTH LAYER ABOVE
- 0.5mm FULL HARD GALVANISED STEEL ROOF SHEETING ON 75x50mm SA PINE GRADE 6 PURLINS ON EDGE ANCHORED IN 6 BRICK COURSES INTO BRICK WORK AT ALL FOUR CORNERS WITH 2 STRANDS OF 4mm Ø GALVANISED STEEL WIRE OR GALVANISED LOOP IRONS ACCORDING TO NBR SPECIFICATIONS. EXPOSED ENDS SHOULD BE TREATED WITH CREOSOTE



PLAN
SCALE 1:50



PLAN - FLOOR SLAB
SCALE 1:50



CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)				
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE	JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)				
NAME:	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
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NAME:	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
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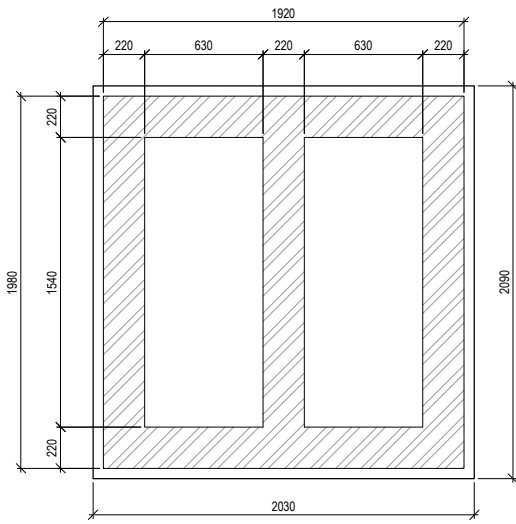
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME:	Pr Eng. Prof Reg No.:
SIGNATURE:	DATE:
DRAWN	
NAME: M. M. BURGER	Prof. Reg. No.:
SIGNATURE:	DATE: MARCH 2016
CHECKED	
NAME:	Pr Eng. Prof Reg No.:
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INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No.:
SIGNATURE:	DATE: JAN 2017

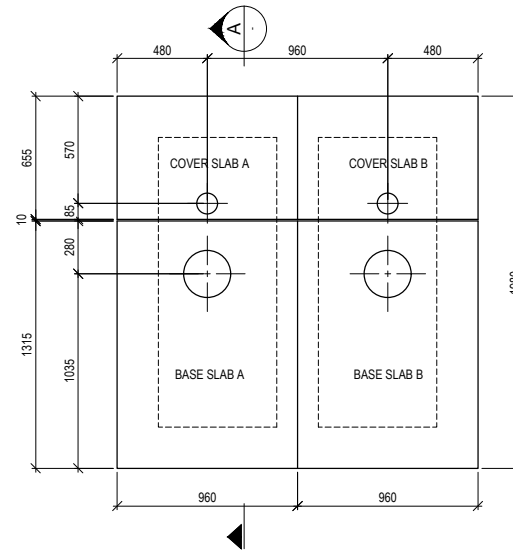
CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	1 OF 1
PAPER SIZE	A1
SCALE	1:100
DATE	20.01.2016

PROJECT STATUS	
RECEIVED SIGN WHEN APPLICABLE	
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<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
PROJECT ENGINEER OF COT:	
NAME:	Pr Eng. Prof Reg No.:
SIGNATURE:	DATE:
INSPECTOR OF WORKS OF COT:	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:

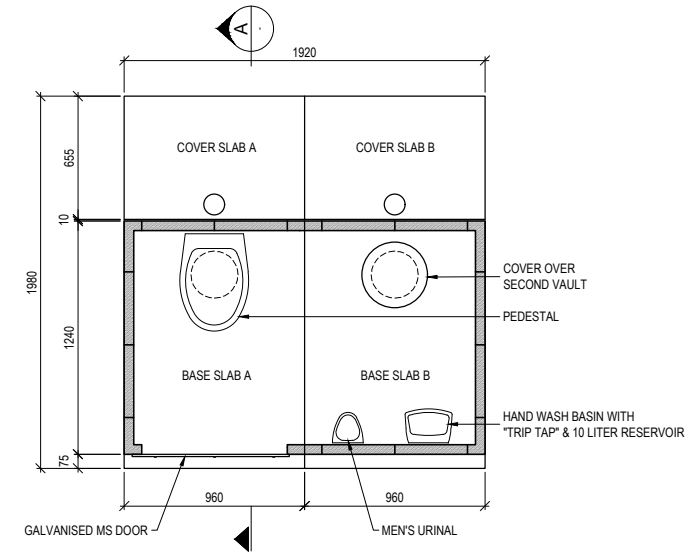
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	STANDARD DRAWING : TYPICAL PIT LATRINE STRUCTURE
WBS No. :	
COT DRAWING NUMBER:	7515-S211



PLAN - PIT STRUCTURE
SCALE 1:20



PLAN - PRE-CAST FLOOR SLABS
SCALE 1:20



PLAN
SCALE 1:20

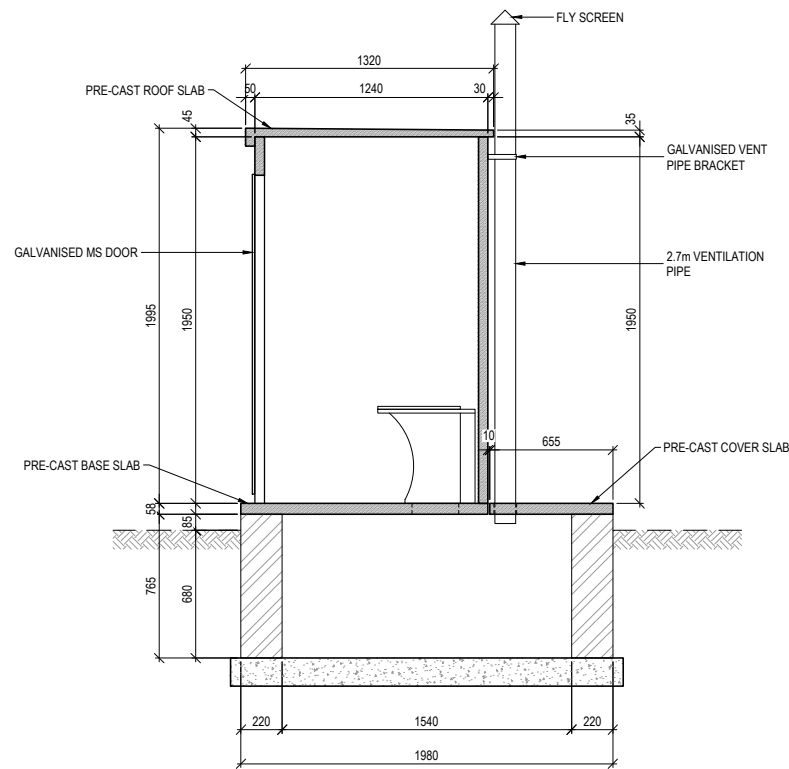
NOTES AND SPECIFICATIONS

GENERAL

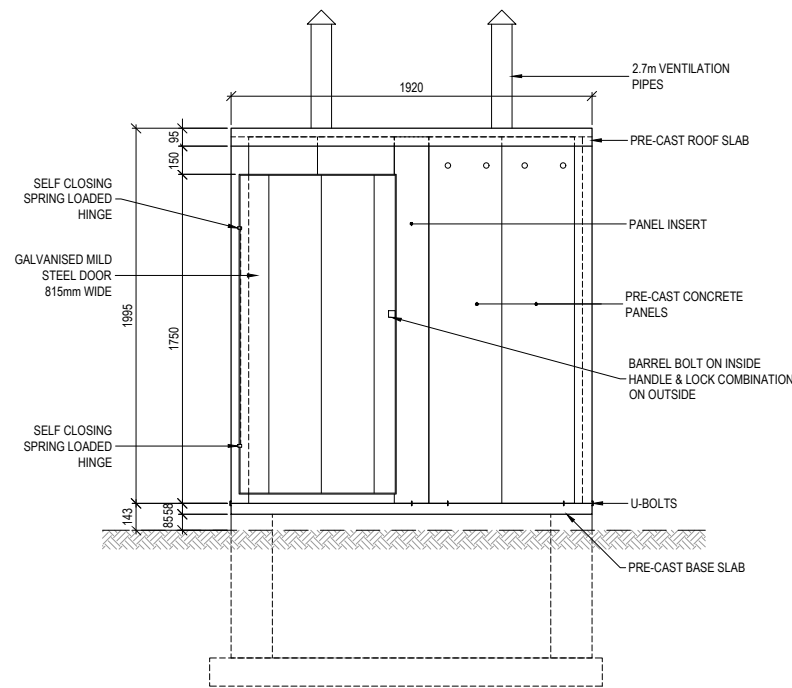
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PARTICULAR

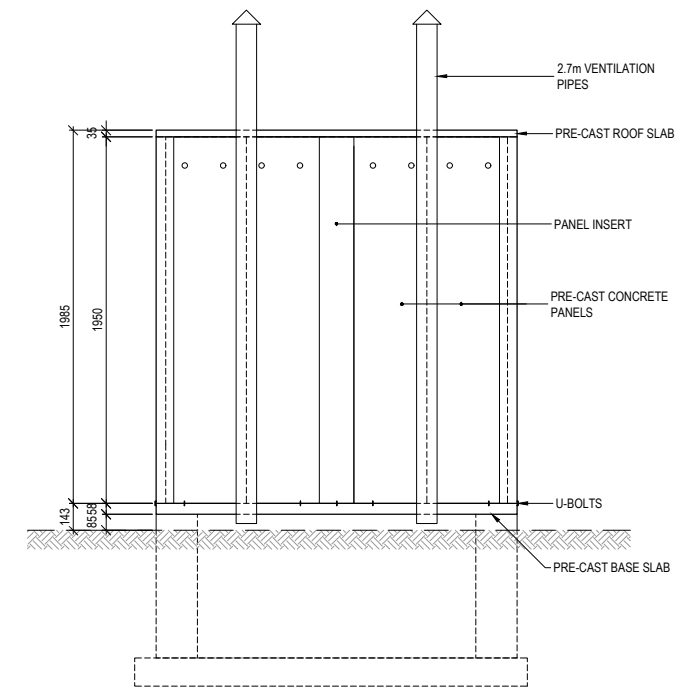
1. ONLY ONE PIT IS USED AT ANY ONE TIME, WHILE THE SEAT HOLE FOR THE OTHER PIT IS SEALED WITH A SUITABLE PLUG
2. FOR EMPTYING THE PIT, FULL LINING IS ESSENTIAL
3. CENTRAL DIVIDING WALL TO BE CONSTRUCTED WITH FULLY MORTARED JOINTS FOR FULL DEPTH
4. MIX FOR SLABS TO BE 1 CEMENT : 2 SAND : 2 STONE
5. SLABS TO BE REINFORCED WITH GRID OF 6mm BARS @ 200mm c/c SPACING
6. COVER TO REINFORCEMENT TO BE 40mm FROM BOTTOM OF SLAB
7. THE SEPARATE SLABS ARE SEALED TOGETHER WITH A WEAK MORTAR MIX
8. BRICK DIMENSIONS FOR PIT LINING TO BE 220x110x75, MIN 11 MPa
9. MORTAR JOINTS TO BE 10mm THICK, MORTAR CLASS III - 1 : 4 MIX
10. ROOF SLOPES AWAY FROM THE DOOR
11. STANDARD COMBINATION GALVANISED MILD STEEL DOOR WITH FRAME
12. URINAL CONNECTED TO SOAKAWAY WITH A 20mm Ø LDPE PIPE
13. 3mm THK STEEL PLATE TO BE USED FOR THE PLUG AS WELL AS THE PIT COVER. PIT COVER TO HAVE 25mm FLAT ON 3 SIDES



SECTION A
SCALE 1:20



FRONT ELEVATION
SCALE 1:20



BACK ELEVATION
SCALE 1:20



CITY OF TSHWANE
WATER AND SANITATION
DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
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DIRECTOR: BULK WATER			
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NAME:	Prof. Reg. No.	SIGNATURE	DATE:
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NAME:	Prof. Reg. No.	SIGNATURE	DATE:

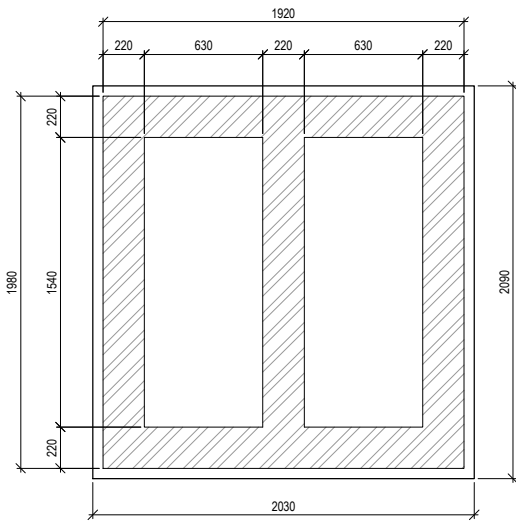
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME:	Pr Eng. Prof Reg No:
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DRAWN	
NAME: M. M. BURGER	Prof. Reg. No.
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DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No: 880539
SIGNATURE:	DATE: JAN 2017

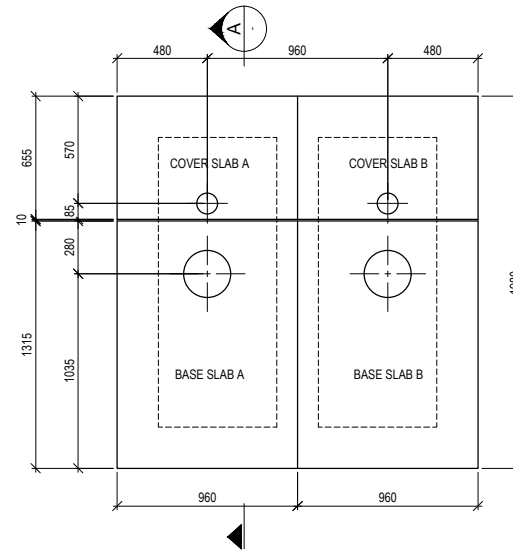
CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	1 OF
PAPER SIZE	A1
SCALE	1:100
DATE	20.01.2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
<input type="radio"/> CONCEPT DRAWING	<input type="radio"/> TENDER DRAWING	<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME:	Pr Eng.	Prof Reg No:	
SIGNATURE:	DATE:		
INSPECTOR OF WORKS OF COT:			
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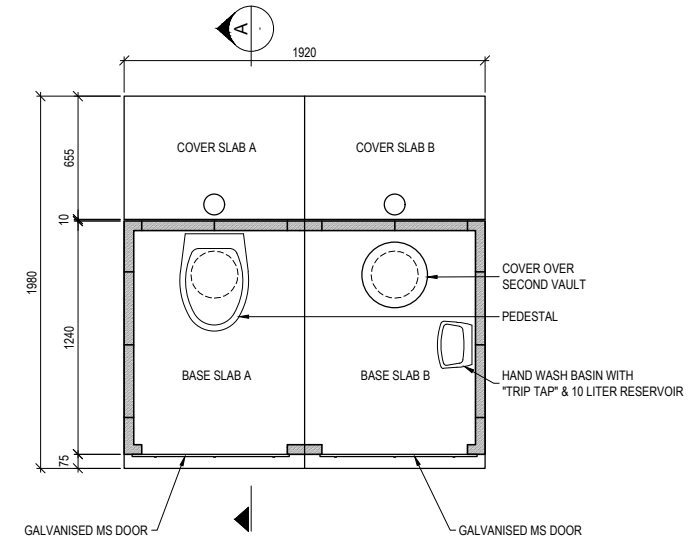
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	STANDARD DRAWING : TYPICAL D PUDS TOILET STRUCTURE
WBS No. :	
COT DRAWING NUMBER:	7515-S212



PLAN - PIT STRUCTURE
SCALE 1:20



PLAN - PRE-CAST FLOOR SLABS
SCALE 1:20



PLAN
SCALE 1:20

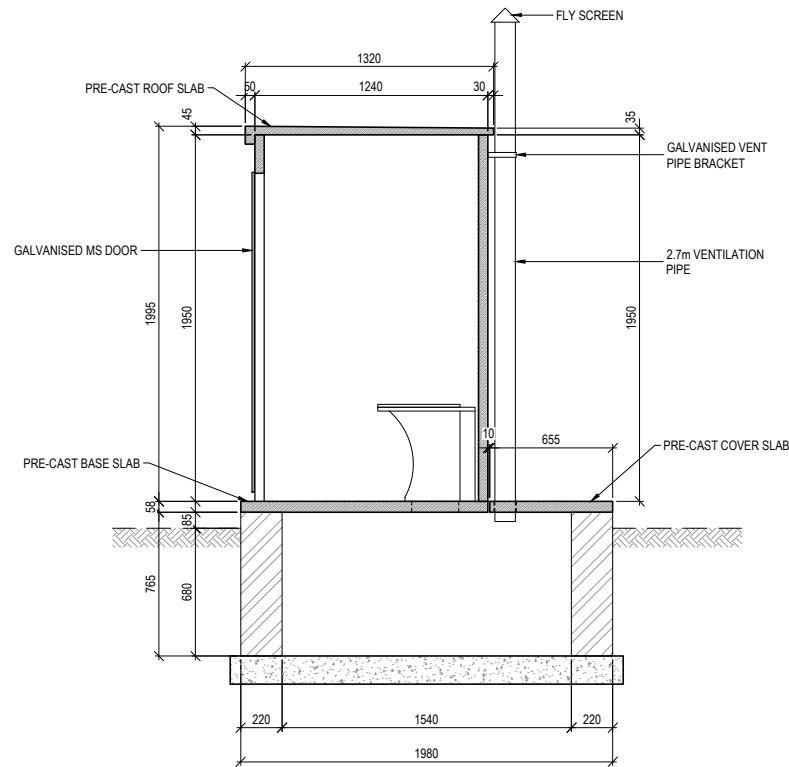
NOTES AND SPECIFICATIONS

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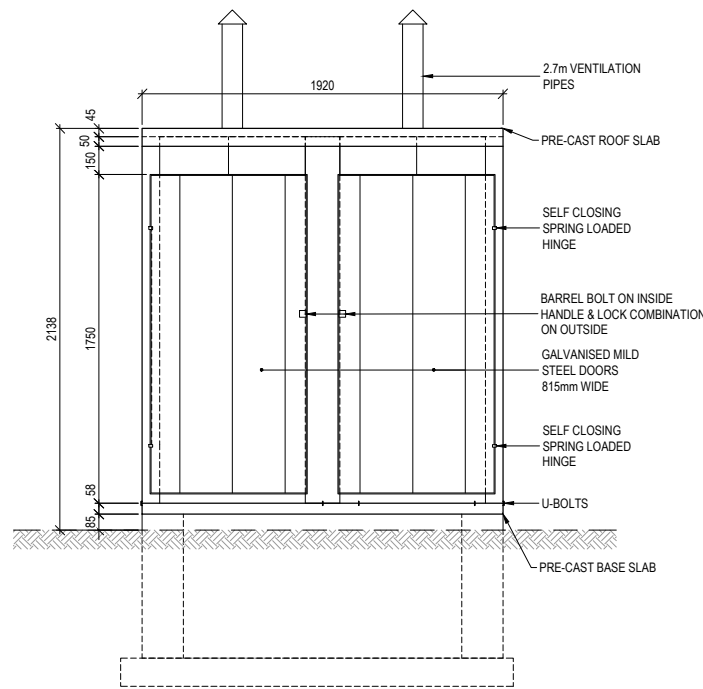
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10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE
11. SEWERS INSTALLED WITHIN PROPERTIES ARE USUALLY PLACED 1.2m FROM ERF BOUNDARY UNLESS OTHERWISE SPECIFIED
12. SEWERS INSTALLED WITHIN THE ROAD RESERVE BOUNDARY MUST BE POSITIONED IN ACCORDANCE WITH THE APPLICABLE SERVICES LAYOUT DRAWING

PARTICULAR

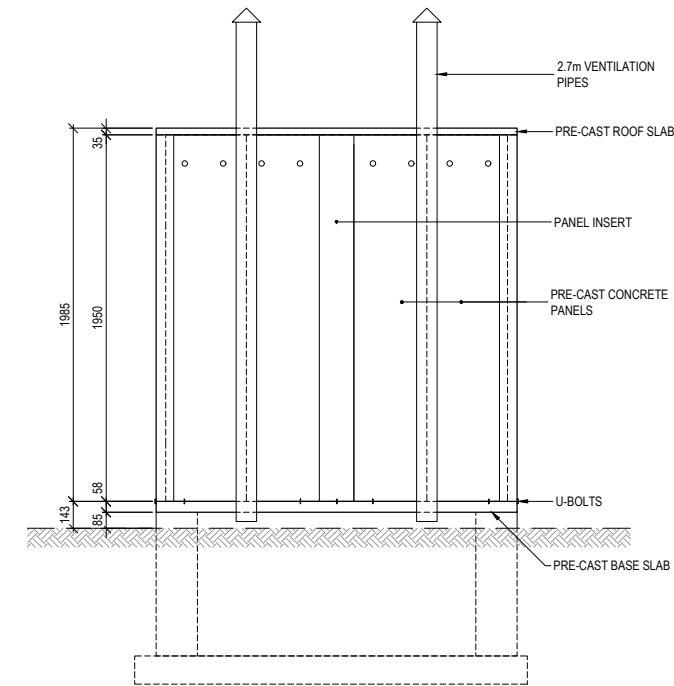
1. ONLY ONE PIT IS USED AT ANY ONE TIME, WHILE THE SEAT HOLE FOR THE OTHER PIT IS SEALED WITH A SUITABLE PLUG
2. FOR EMPTYING THE PIT, FULL LINING IS ESSENTIAL
3. CENTRAL DIVIDING WALL TO BE CONSTRUCTED WITH FULLY MORTARED JOINTS FOR FULL DEPTH
4. MIX FOR SLABS TO BE 1 CEMENT : 2 SAND : 2 STONE
5. SLABS TO BE REINFORCED WITH GRID OF 6mm BARS @ 200mm c/c SPACING
6. COVER TO REINFORCEMENT TO BE 40mm FROM BOTTOM OF SLAB
7. THE SEPARATE SLABS ARE SEALED TOGETHER WITH A WEAK MORTAR MIX
8. BRICK DIMENSIONS FOR PIT LINING TO BE 220x110x75, MIN 11 MPa
9. MORTAR JOINTS TO BE 10mm THICK, MORTAR CLASS III - 1 : 4 MIX
10. ROOF SLOPES AWAY FROM THE DOOR
11. STANDARD COMBINATION GALVANISED MILD STEEL DOOR WITH FRAME
12. URINAL CONNECTED TO SOAKAWAY WITH A 20mm Ø LDPE PIPE
13. 3mm THK STEEL PLATE TO BE USED FOR THE PLUG AS WELL AS THE PIT COVER. PIT COVER TO HAVE 25mm FLAT ON 3 SIDES



SECTION A
SCALE 1:20



FRONT ELEVATION
SCALE 1:20



BACK ELEVATION
SCALE 1:20



CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

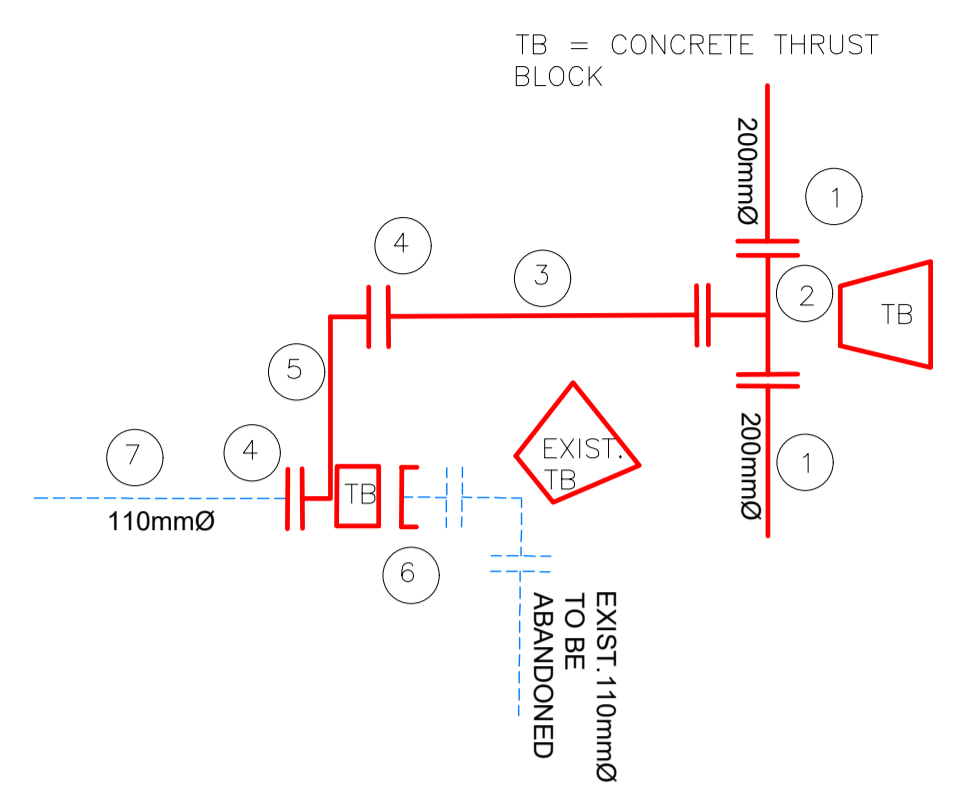
CONSULTANT DETAIL	
Prof. Reg. No.	DATE
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____	DATE: _____
DRAWN	NAME: M. M. BURGER
SIGNATURE: _____	DATE: MARCH 2016
CHECKED	NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____	DATE: _____
INFORMATION OFFICE CHECKED	NAME: _____
SIGNATURE: _____	DATE: _____
DESIGN OFFICE APPROVAL	NAME: T.F. HILDER Prof Reg No: 880539
SIGNATURE: _____	DATE: JAN 2017

CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	1 OF 1
PAPER SIZE	A1
SCALE	1:100
DATE	20.01.2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
<input type="radio"/> CONCEPT DRAWING	<input type="radio"/> TENDER DRAWING	<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME: _____	Pr Eng.	Prof Reg No: _____	DATE: _____
INSPECTOR OF WORKS OF COT:			
NAME: _____	Pr Eng.	Prof Reg No: _____	DATE: _____

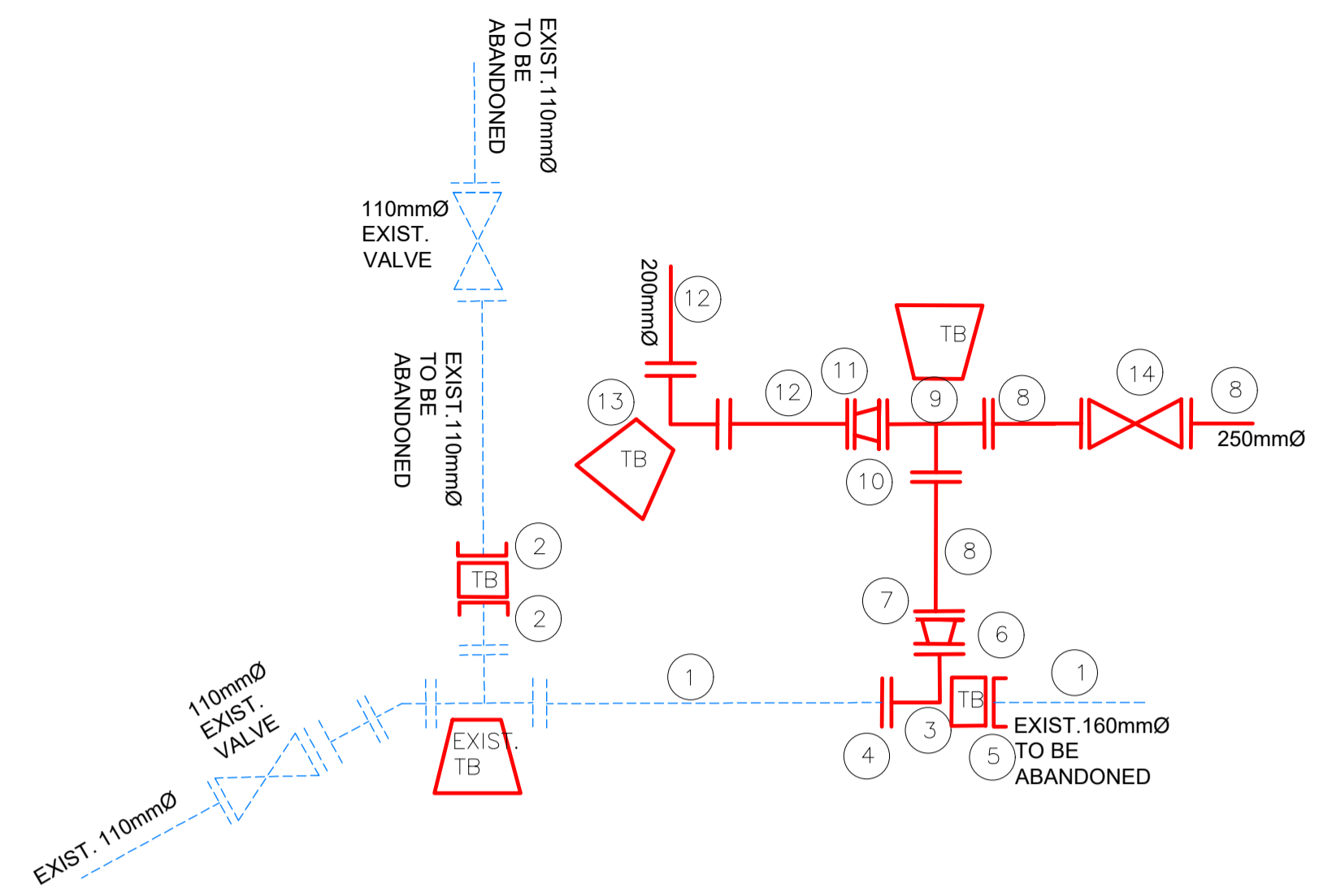
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	STANDARD DRAWING : TYPICAL D PUDS TOILET STRUCTURE FOR THE PHYSICAL DISABLED
WBS No. :	
COT DRAWING NUMBER:	7515-S213



NODE	DESCRIPTION (W173)	QUANTITY
1	200mmØ uPVC PIPE	
2	200mmØ x110mmØ SOCKETED REDUCING TEE	1
3	110mmØ uPVC PIPE	
4	110mmØ FLANGED ADAPTER	2
5	100mmØ FLANGED STEEL SPECIAL (MEASUREMENTS TO BE DETERMINED ON SITE BY CONTRACTOR BEFORE ORDERING FROM MANUFACTURE)	1
6	110mmØ END CAP	1
7	110mmØ EXIST. uPVC PIPE	

BE AWARE OF THE NOTES ON THE TITLEBLOCK

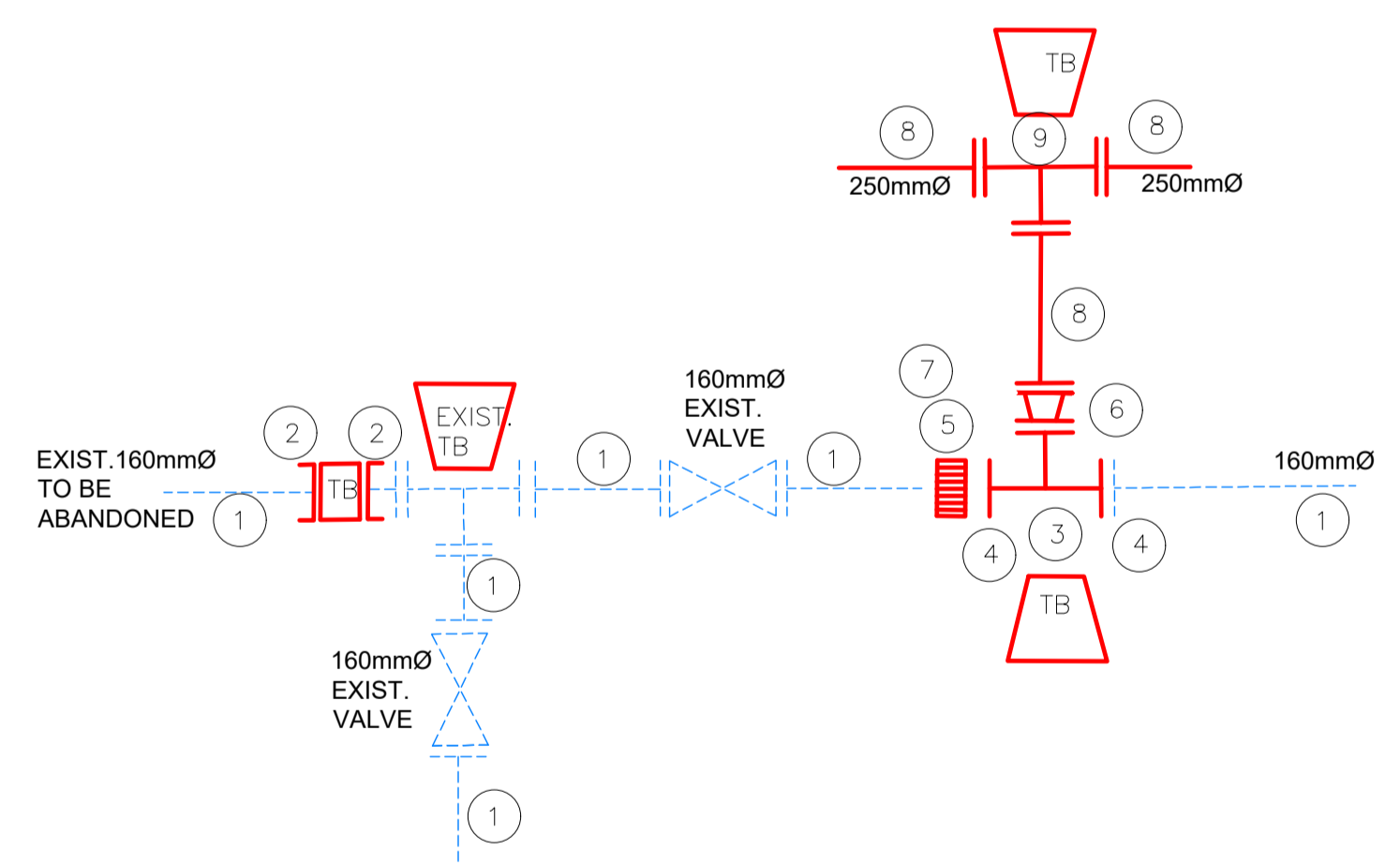
SCALE : NTS



NODE	DESCRIPTION (W207)	QUANTITY
1	160mmØ EXIST. uPVC PIPE	
2	110mmØ END CAP	2
3	160mmØ X 90° FLANGED BEND	1
4	160mmØ FLANGED ADAPTER	1
5	160mmØ END CAP	1
6	250mmØ X150mmØ FLANGED REDUCER	1
7	250mmØ FLANGED ADAPTER	1
8	250mmØ uPVC PIPE	
9	250mmØ FLANGED EQUAL TEE	1
10	250mmØ X200mmØ FLANGED REDUCER	1
11	200mmØ FLANGED ADAPTER	1
12	200mmØ uPVC PIPE	
13	200mmØ X 90° SOCKETED BEND	1
14	250mmØ FLANGED ISOLATION VALVE	1

BE AWARE OF THE NOTES ON THE TITLEBLOCK

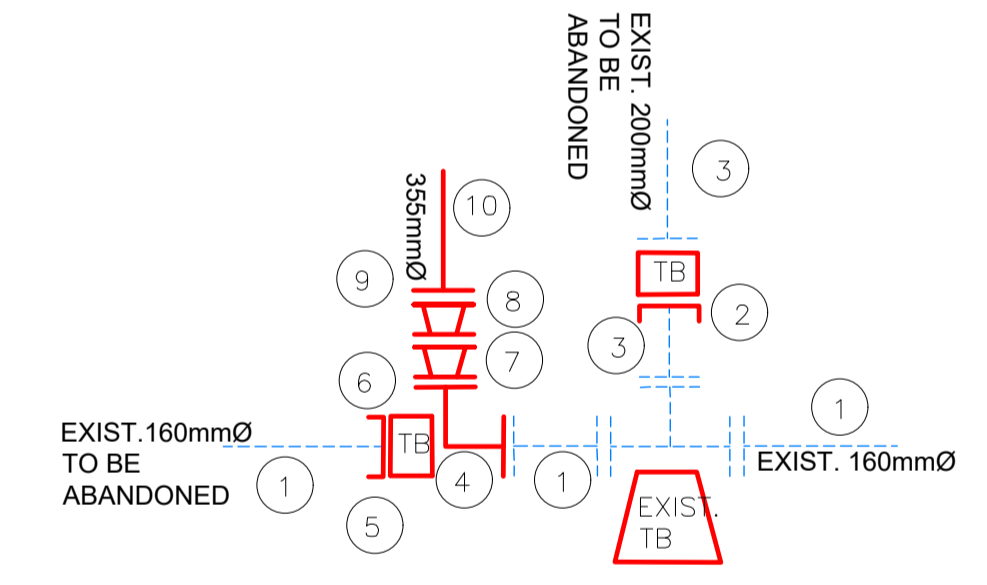
SCALE : NTS



NODE	DESCRIPTION (W18)	QUANTITY
1	160mmØ EXIST. uPVC PIPE	
2	160mmØ END CAP	2
3	160mmØ FLANGED EQUAL TEE	1
4	160mmØ FLANGED ADAPTER	2
5	160mmØ VJ COUPLING	1
6	250mmØ X150mmØ FLANGED REDUCER	1
7	250mmØ FLANGED ADAPTER	1
8	250mmØ uPVC PIPE	
9	250mmØ FLANGED EQUAL TEE	1

BE AWARE OF THE NOTES ON THE TITLEBLOCK

SCALE : NTS



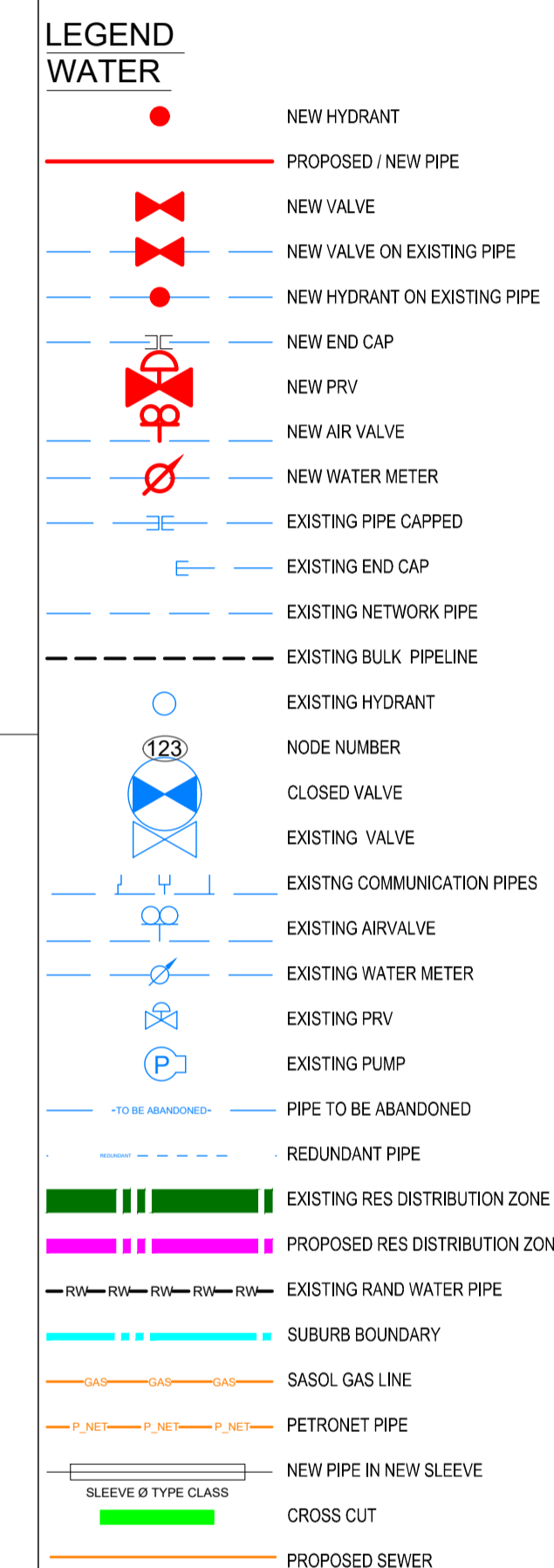
NODE	DESCRIPTION (W316)	QUANTITY
1	160mmØ EXIST. uPVC PIPE	
2	200mmØ END CAP	1
3	200mmØ EXIST. uPVC PIPE	
4	160mmØ X 90° SOCKETED BEND	1
5	160mmØ END CAP	1
6	160mmØ FLANGED ADAPTER	1
7	200mmØ X150mmØ FLANGED REDUCER	1
8	350mmØ X200mmØ FLANGED REDUCING TEE	1
9	350mmØ FLANGED ADAPTER	1
10	350mmØ uPVC PIPE	

BE AWARE OF THE NOTES ON THE TITLEBLOCK

SCALE : NTS

NOTES AND SPECIFICATIONS

- GENERAL**
- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
 - ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
 - DO NOT SCALE FROM THESE DRAWINGS.
 - ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
 - ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS.
 - THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE).
 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
 - THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.
 - THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.



When socketed fittings are placed close to flanged fittings, change to flanged to allow the connection to be more stable.



AMENDMENTS				
NR	DATE	APPROVED	DESCRIPTION	PAR
0	2-Oct-23		FOR CONSTRUCTION	

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING			
NAME	Prof. Reg. No.	SIGNATURE	DATE
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: SYSTEM DEVELOPMENT			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: BULK WATER			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: WASTE WATER TREATMENT			
NAME	Prof. Reg. No.	SIGNATURE	DATE

CONSULTANT DETAIL

IMBAWULA CIVIL PROJECTS

PLOT 70
1463 Tienie Street
Andson Ah
Zandfontein
Pretoria West
0183
Tel: 012 372 3708

I. THAMI TOM Prof. Reg. No. 2018300095
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE: [Signature] DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER: 2022-AND-W-04D01

DESIGNED
NAME: SAGWADI RINGANI Prof. Reg. No.:
SIGNATURE: DATE:

DRAWN
NAME: MOEMEDI MOTAI
SIGNATURE: DATE:

CHECKED
NAME: THAMI TOM Prof. Reg. No. 2018300095
SIGNATURE: DATE: 2-Oct-23

INFORMATION OFFICE CHECKED
NAME: Prof. Reg. No.:
SIGNATURE: DATE:

DESIGN OFFICE APPROVAL
NAME: Prof. Reg. No.:
SIGNATURE: DATE:

CONTRACT No.:

PROJECT No.:

SHEET No.:

PAPER SIZE: A1

SCALE:

DATE: 2-Oct-23

PROJECT STATUS

RECEIVED BY (WATER) APPROVAL

CITY OF TSHWANE

CONCEPT DRAWING TENDER DRAWING APPROVED FOR CONSTRUCTION DRAWING AS SHOWN

PROJECT ENGINEER of 2023-10-27

NAME: Prof. Reg. No.:
SIGNATURE: DATE:

INSPECTOR OF WORKS OF COT:
NAME: Prof. Reg. No.:
SIGNATURE: DATE:

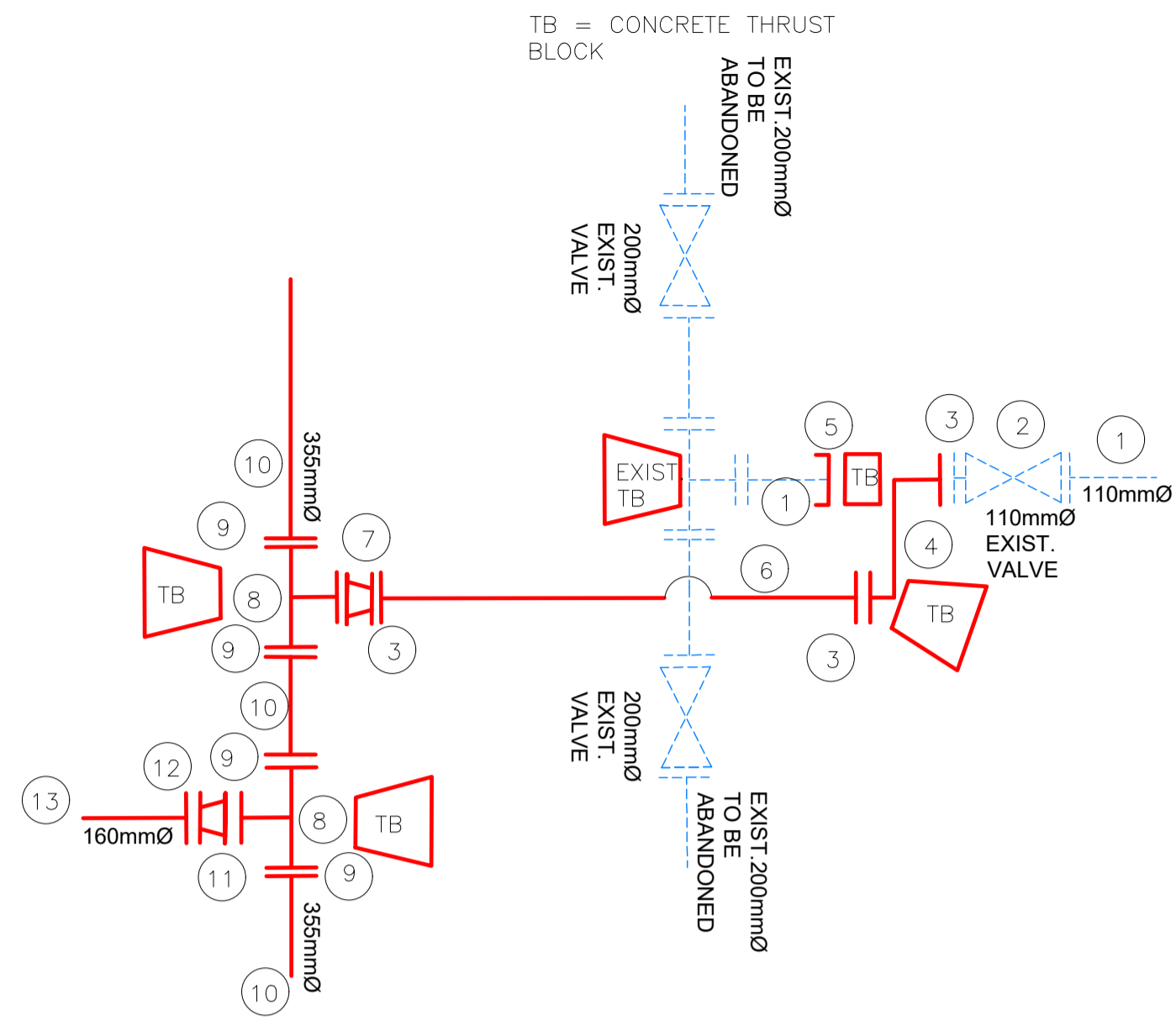
LOCATION OF PROJECT:
ANDEON EXT 37
ZANDFONTEIN 317-JR
REGION 3
WARD 55

DESCRIPTION OF PROJECT:
CONSTRUCTION OF SEWER SERVICES IN ANDEON EXT 37
SCHEMATIC CONNECTION DETAIL (1 OF 3)

WBS No.:

COT DRAWING NUMBER:

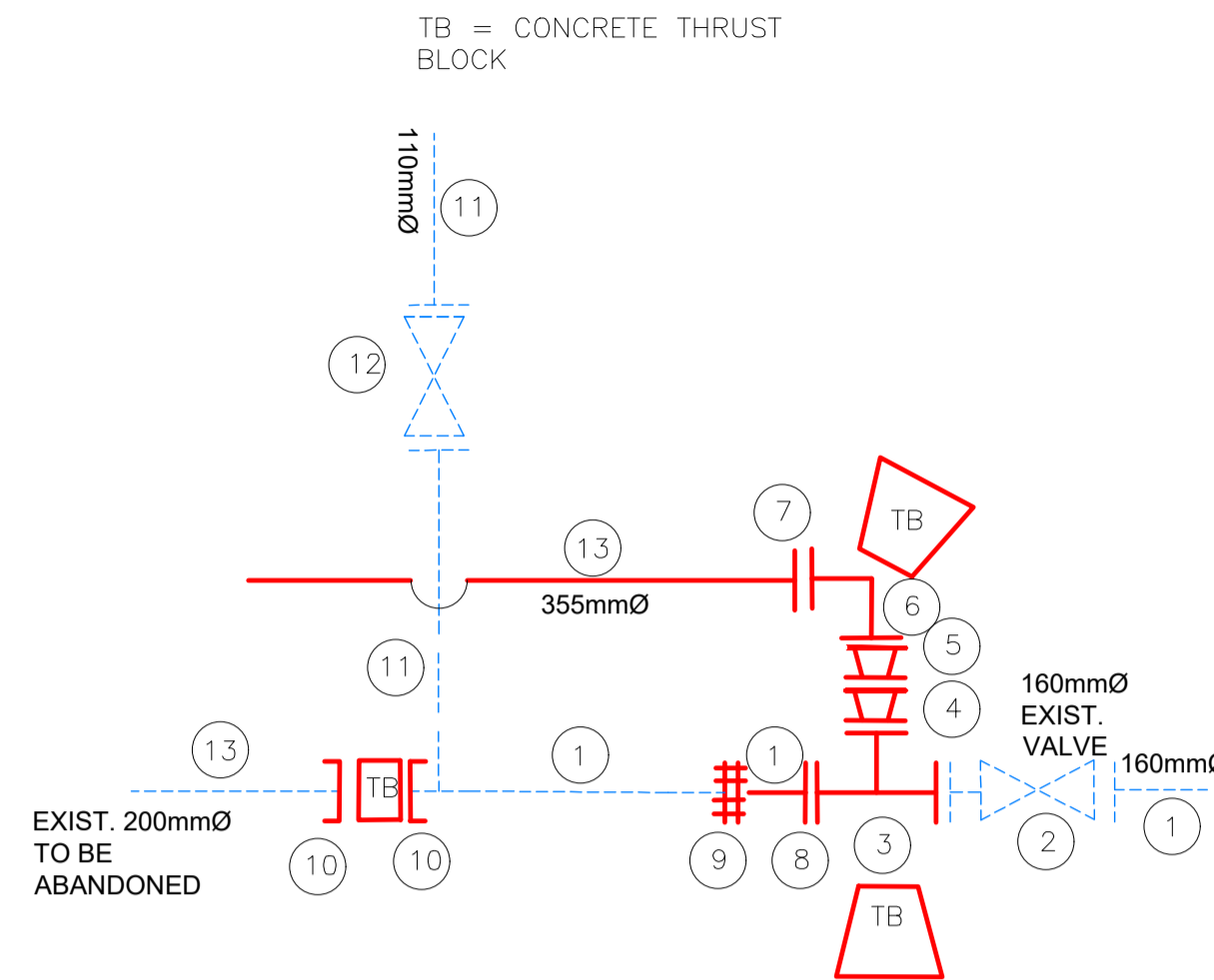
DESCRIPTION OF PROJECT:



SCALE : NTS

NODE	DESCRIPTION (W6)	QUANTITY
1	110mmØ EXIST. uPVC PIPE	
2	110mmØ EXIST. FLANGED ISOLATION VALVE	
3	110mmØ FLANGED ADAPTER	3
4	100mmØ FLANGED STEEL SPECIAL (MEASUREMENTS TO BE DETERMINED ON SITE BY CONTRACTOR BEFORE ORDERING FROM MANUFACTURE)	1
5	110mmØ END CAP	1
6	110mmØ uPVC PIPE	
7	200mmØ X100mmØ FLANGED REDUCER	1
8	350mmØ X200mmØ FLANGED REDUCING TEE	2
9	355mmØ FLANGED ADAPTER	4
10	355mmØ uPVC PIPE	
11	200mmØ X160mmØ FLANGED REDUCER	1
12	160mmØ FLANGED ADAPTER	1
13	160mmØ uPVC PIPE	

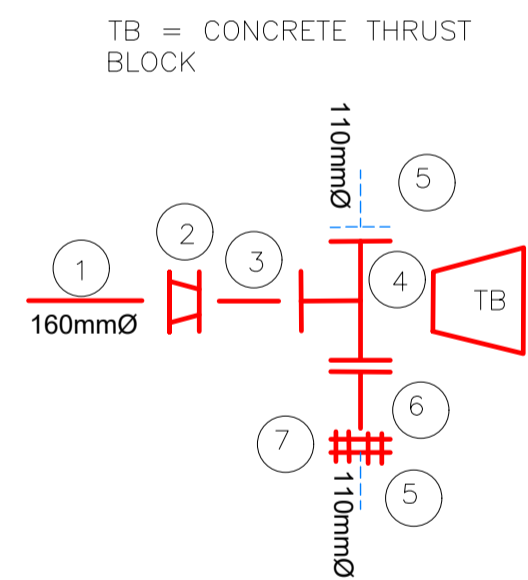
BE AWARE OF THE NOTES ON THE TITLEBLOCK



SCALE : NTS

NODE	DESCRIPTION (W309)	QUANTITY
1	160mmØ EXIST. uPVC PIPE	
2	160mmØ EXIST. FLANGED ISOLATION VALVE	
3	160mmØ FLANGED EQUAL TEE	1
4	200mmØ X150mmØ FLANGED REDUCER	1
5	350mmØ X200mmØ FLANGED REDUCER	1
6	350mmØ X 90° FLANGED STEEL BEND	1
7	355mmØ FLANGED ADAPTER	1
8	160mmØ FLANGED ADAPTER	1
9	160mmØ VJ COUPLING	1
10	200mmØ END CAP	2
11	110mmØ EXIST. uPVC PIPE	
12	110mmØ EXIST. FLANGED ISOLATION VALVE	
13	200mmØ EXIST. uPVC PIPE	

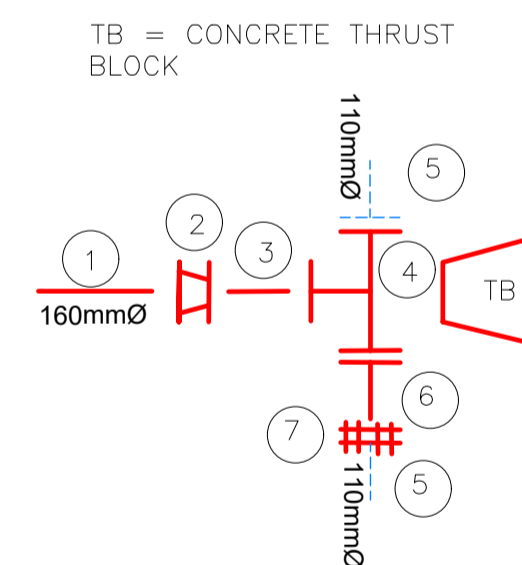
BE AWARE OF THE NOTES ON THE TITLEBLOCK



SCALE : NTS

NODE	DESCRIPTION (W218)	QUANTITY
1	160mmØ uPVC PIPE	
2	160mmØ X110mmØ REDUCER SOCKETED	1
3	160mmØ uPVC PIPE	
4	110mmØ SOCKETED EQUAL TEE	1
5	110mmØ uPVC EXISTING PIPE	
6	110mmØ uPVC PIPE	
7	110mmØ VJ COUPLING	1

BE AWARE OF THE NOTES ON THE TITLEBLOCK



SCALE : NTS

NODE	DESCRIPTION (W365)	QUANTITY
1	160mmØ uPVC PIPE	
2	160mmØ X110mmØ REDUCER SOCKETED	1
3	160mmØ uPVC PIPE	
4	110mmØ SOCKETED EQUAL TEE	1
5	110mmØ uPVC EXISTING PIPE	
6	110mmØ uPVC PIPE	
7	110mmØ VJ COUPLING	1

BE AWARE OF THE NOTES ON THE TITLEBLOCK

NOTES AND SPECIFICATIONS

- GENERAL**
- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
 - DO NOT SCALE FROM THESE DRAWINGS.
 - ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
 - ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS.
 - THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE).
 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
 - THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.
 - THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

- LEGEND**
- WATER**
- NEW HYDRANT
 - PROPOSED / NEW PIPE
 - NEW VALVE
 - NEW VALVE ON EXISTING PIPE
 - NEW HYDRANT ON EXISTING PIPE
 - NEW END CAP
 - NEW PRV
 - NEW AIR VALVE
 - NEW WATER METER
 - EXISTING PIPE CAPPED
 - EXISTING END CAP
 - EXISTING NETWORK PIPE
 - EXISTING BULK PIPELINE
 - EXISTING HYDRANT
 - NODE NUMBER
 - CLOSED VALVE
 - EXISTING VALVE
 - EXISTING COMMUNICATION PIPES
 - EXISTING AIRVALVE
 - EXISTING WATER METER
 - EXISTING PRV
 - EXISTING PUMP
 - PIPE TO BE ABANDONED
 - REDUNDANT PIPE
 - EXISTING RES DISTRIBUTION ZONE
 - PROPOSED RES DISTRIBUTION ZONE
 - EXISTING RAND WATER PIPE
 - SUBURB BOUNDARY
 - SASOL GAS LINE
 - PETRONET PIPE
 - NEW PIPE IN NEW SLEEVE
 - CROSS CUT
 - PROPOSED SEWER

When socketed fittings are placed close to flanged fittings, change to flanged to allow the connection to be more stable.



CITY OF TSHWANE
WATER AND SANITATION
DEPARTMENT

AMENDMENTS				
NR	DATE	APPROVED	DESCRIPTION	PAR
0	2-Oct-23		FOR CONSTRUCTION	

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: BULK WATER				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	

CONSULTANT DETAIL

IMBAWULA CIVIL PROJECTS

Plot 70
1463 Tienie Street
Andson Ah
Zandfontein
Pretoria West
0183
Tel: 012 372 3708

I, **THAMI TOM** Prof. Reg. No. 2018300095
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE: [Signature] DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER: 2022-AND-W-04D02

DESIGNED
NAME: SAGWADI RINGANI Prof. Reg. No.:
SIGNATURE: DATE:

DRAWN
NAME: MOEMEDI MOTAI
SIGNATURE: DATE:

CHECKED
NAME: THAMI TOM Prof. Reg. No. 2018300095
SIGNATURE: DATE: 2-Oct-23

INFORMATION OFFICE CHECKED
NAME: Prof. Reg. No.:
SIGNATURE: DATE:

DESIGN OFFICE APPROVAL
NAME: Prof. Reg. No.:
SIGNATURE: DATE:

CONTRACT
No.:

PROJECT
No.:

SHEET
No.:

PAPER SIZE:
A1

SCALE:

DATE:
2-Oct-23

PROJECT STATUS

RECEIVED SIGN WHEN APPLICABLE

CONCEPT DRAWING TENDER DRAWING APPROVED FOR CONSTRUCTION AS BUILT

PROJECT ENGINEER OF COT: [Signature]

INSPECTOR OF WORKS OF COT: [Signature]

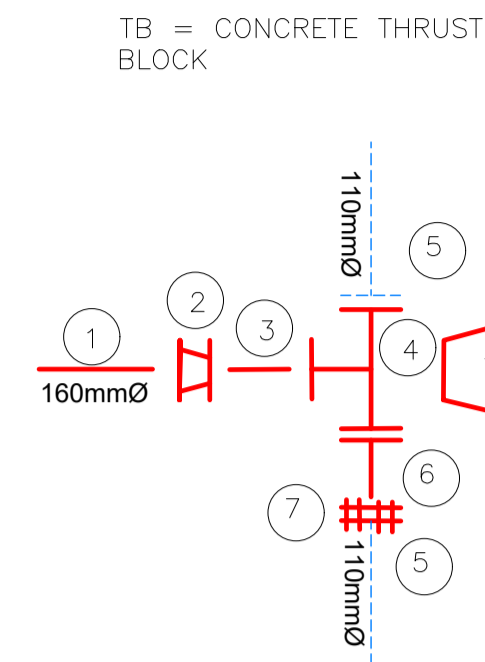
LOCATION OF PROJECT:
ANDEON EXT 37
ZANDFONTEIN 317-JR
REGION 3
WARD 55

DESCRIPTION OF PROJECT:
CONSTRUCTION OF SEWER SERVICES IN ANDEON EXT 37
SCHEMATIC CONNECTION DETAIL (2 OF 3)

WBS No.:

COT DRAWING NUMBER:

DESCRIPTION OF PROJECT:



NODE	DESCRIPTION (W335)	QUANTITY
1	160mmØ uPVC PIPE	
2	160mmØ X110mmØ REDUCER SOCKETED	1
3	160mmØ uPVC PIPE	
4	110mmØ SOCKETED EQUAL TEE	1
5	110mmØ uPVC EXISTING PIPE	
6	110mmØ uPVC PIPE	
7	110mmØ VJ COUPLING	1

BE AWARE OF THE NOTES ON THE TITLEBLOCK

SCALE : NTS

NOTES AND SPECIFICATIONS

- GENERAL**
- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
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 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND

WATER

	NEW HYDRANT
	PROPOSED / NEW PIPE
	NEW VALVE
	NEW VALVE ON EXISTING PIPE
	NEW HYDRANT ON EXISTING PIPE
	NEW END CAP
	NEW PRV
	NEW AIR VALVE
	NEW WATER METER
	EXISTING PIPE CAPPED
	EXISTING END CAP
	EXISTING NETWORK PIPE
	EXISTING BULK PIPELINE
	EXISTING HYDRANT
	NODE NUMBER
	CLOSED VALVE
	EXISTING VALVE
	EXISTING COMMUNICATION PIPES
	EXISTING AIRVALVE
	EXISTING WATER METER
	EXISTING PRV
	EXISTING PUMP
	PIPE TO BE ABANDONED
	REDUNDANT PIPE
	EXISTING RES DISTRIBUTION ZONE
	PROPOSED RES DISTRIBUTION ZONE
	EXISTING RAND WATER PIPE
	SUBURB BOUNDARY
	SASOL GAS LINE
	PETRONET PIPE
	NEW PIPE IN NEW SLEEVE
	CROSS CUT
	PROPOSED SEWER

When socketed fittings are placed close to flanged fittings, change to flanged to allow the connection to be more stable.



CITY OF TSHWANE
WATER AND SANITATION
DEPARTMENT

AMENDMENTS				
NR	DATE	APPROVED	DESCRIPTION	PAR
0	2-Oct-23		FOR CONSTRUCTION	

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING			
NAME	Prof. Reg. No.	SIGNATURE	DATE
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: SYSTEM DEVELOPMENT			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: BULK WATER			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: WASTE WATER TREATMENT			
NAME	Prof. Reg. No.	SIGNATURE	DATE

CONSULTANT DETAIL

IMBAWULA CIVIL PROJECTS

PLOT 70
1463 Tienie Street
Anderson Ah
Zandfontein
Pretoria West
0183
Tel: 012 372 3708

I. THAMI TOM Prof. Reg. No. 2018300095
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING

SIGNATURE: DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER: 2022-AND-W-04D0.3

DESIGNED	
NAME: SAGWADI RINGANI	Prof. Reg. No.:
SIGNATURE:	DATE:
DRAWN	
NAME: MOEMEDI MOTAI	Prof. Reg. No.:
SIGNATURE:	DATE:
CHECKED	
NAME: THAMI TOM	Prof. Reg. No. 2018300095
SIGNATURE:	DATE: 2-Oct-23
INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:

CONTRACT	
No.:	
PROJECT No.	
SHEET No.	
PAPER SIZE:	
A1	
SCALE:	
DATE:	
2-06-23	

PROJECT STATUS

RECEIVED SIGN WHEN APPLICABLE

CITY OF TSHWANE

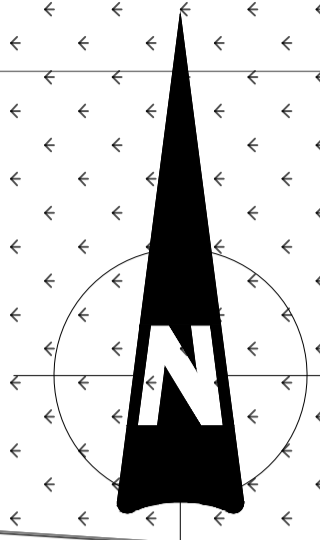
CONCEPT DRAWING TENDER DRAWING APPROVED FOR CONSTRUCTION DRAWING AS BUILT DRAWING

PROJECT ENGINEER of COT: DATE: 2023-10-27

INSPECTOR OF WORKS of COT:

LOCATION OF PROJECT: ANDEON EXT 37 ZANDFONTEIN 317-JR REGION 3 WARD 55	DESCRIPTION OF PROJECT: CONSTRUCTION OF SEWER SERVICES IN ANDEON EXT 37 SCHEMATIC CONNECTION DETAIL (3 OF 3)
WBS No.:	
COT DRAWING NUMBER:	
DESCRIPTION OF PROJECT:	

ANDEON X37

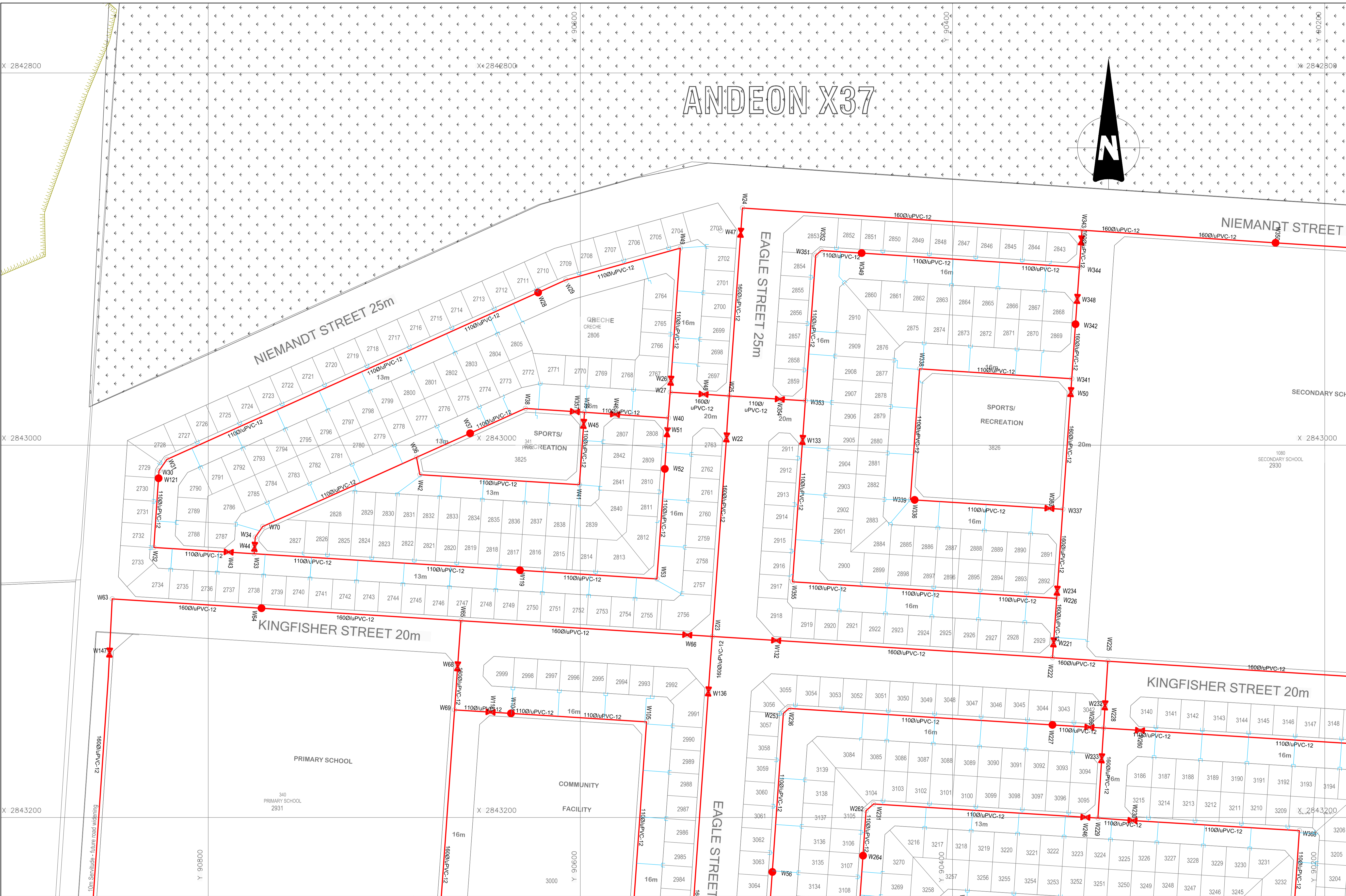


NOTES AND SPECIFICATIONS

- GENERAL**
- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
 - DO NOT SCALE FROM THESE DRAWINGS. ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
 - ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS.
 - THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE).
 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
 - THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.
 - THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND

- WATER**
- NEW HYDRANT
 - PROPOSED / NEW PIPE
 - NEW VALVE
 - NEW VALVE ON EXISTING PIPE
 - NEW HYDRANT ON EXISTING PIPE
 - NEW END CAP
 - NEW PRV
 - NEW AIR VALVE
 - NEW WATER METER
 - EXISTING PIPE CAPPED
 - EXISTING END CAP
 - EXISTING NETWORK PIPE
 - EXISTING BULK PIPELINE
 - EXISTING HYDRANT
 - NODE NUMBER
 - CLOSED VALVE
 - EXISTING VALVE
 - EXISTING COMMUNICATION PIPES
 - EXISTING AIRVALVE
 - EXISTING WATER METER
 - EXISTING PRV
 - EXISTING PUMP
 - PIPE TO BE ABANDONED
 - REDUNDANT PIPE
 - EXISTING RES DISTRIBUTION ZONE
 - PROPOSED RES DISTRIBUTION ZONE
 - EXISTING RAND WATER PIPE
 - SUBURB BOUNDARY
 - SASOL GAS LINE
 - PETRONET PIPE
 - NEW PIPE IN NEW SLEEVE
 - CROSS CUT
 - PROPOSED SEWER



CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

PO BOX 1022
PRETORIA
0001

AMENDMENTS			
NR	DATE	APPROVED	DESCRIPTION
0	2-Oct-23		FOR CONSTRUCTION

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING			
NAME	Prof. Reg. No.	SIGNATURE	DATE
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: SYSTEM DEVELOPMENT			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: BULK WATER			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: WASTE WATER TREATMENT			
NAME	Prof. Reg. No.	SIGNATURE	DATE

CONSULTANT DETAIL

IMBAWULA
CIVIL PROJECTS

PLOT 70
1463 Tienie Street
Andon Ah
Zandfontein
Pretoria West
0183
Tel: 012 372 3708

THAMI TOM
Prof. Reg. No. 2018300095
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE: _____ DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER:
2022-AND-W-04U01

DESIGNED	
NAME: SAGWADI RINGANI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DRAWN	
NAME: MOEMEDI MOTAI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
CHECKED	
NAME: THAMI TOM	Prof. Reg. No. 2018300095
SIGNATURE: _____	DATE: 2-Oct-23
INFORMATION OFFICE CHECKED	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DESIGN OFFICE APPROVAL	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____

CONTRACT	
No.:	_____
PROJECT No.	
PROJECT No.:	_____
SHEET No.	
SHEET No.:	1 OF 6
PAPER SIZE:	
PAPER SIZE:	A1
SCALE:	
SCALE:	1:1 000
DATE:	
DATE:	2-Oct-23

PROJECT STATUS

RECEIVED SIGN WHEN APPLICABLE

CONCEPT DRAWING: _____
TEMPERATURE AS BUILT DRAWING: _____
CIVIL WORK: _____
AS BUILT DRAWING: _____

PROJECT ENGINEER OF COT: _____
NAME: _____ Prof. Reg. No.: _____
SIGNATURE: _____ DATE: _____

INSPECTOR OF WORKS OF COT: _____
NAME: _____ Prof. Reg. No.: _____
SIGNATURE: _____ DATE: _____

LOCATION OF PROJECT:	
ANDEON EXT 37 ZANDFONTEIN 317-JR REGION 3 WARD 55	
DESCRIPTION OF PROJECT:	
CONSTRUCTION OF WATER SERVICES IN ANDEON EXT 37 WATER LAYOUT (1 OF 6)	
WBS No.:	_____
COT DRAWING NUMBER:	
DESCRIPTION OF PROJECT:	

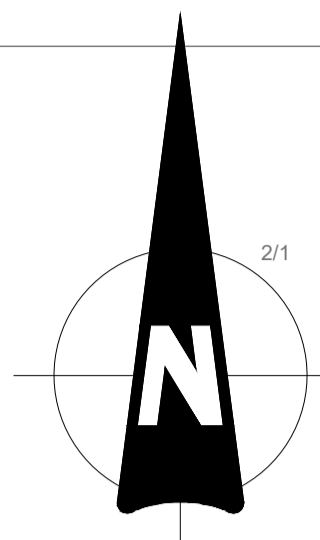
NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
2. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
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9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND

- WATER**
- NEW HYDRANT
 - PROPOSED / NEW PIPE
 - NEW VALVE
 - NEW VALVE ON EXISTING PIPE
 - NEW HYDRANT ON EXISTING PIPE
 - NEW END CAP
 - NEW PRV
 - NEW AIR VALVE
 - NEW WATER METER
 - EXISTING PIPE CAPPED
 - EXISTING END CAP
 - EXISTING NETWORK PIPE
 - EXISTING BULK PIPELINE
 - EXISTING HYDRANT
 - EXISTING VALVE
 - EXISTING VALVE
 - EXISTING COMMUNICATION PIPES
 - EXISTING AIRVALVE
 - EXISTING WATER METER
 - EXISTING PRV
 - EXISTING PUMP
 - PIPE TO BE ABANDONED
 - REDUNDANT PIPE
 - EXISTING RES DISTRIBUTION ZONE
 - PROPOSED RES DISTRIBUTION ZONE
 - EXISTING RAND WATER PIPE
 - SUBURB BOUNDARY
 - SASOL GAS LINE
 - PETRONET PIPE
 - NEW PIPE IN NEW SLEEVE
 - CROSS CUT
 - PROPOSED SEWER



CONNECT THE PROPOSED 1600 uPVC PIPE TO THE EXISTING 1100 uPVC PIPE

CONNECT THE PROPOSED 1600 uPVC PIPE TO THE EXISTING 1100 uPVC PIPE

CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

PO BOX 1022
PRETORIA
0001

AMENDMENTS		
NR	DATE	APPROVED
0	2-Oct-23	FOR CONSTRUCTION

WATER AND SANITATION		
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE		
DIRECTOR: WATER AND SANITATION - PLANNING		
NAME	Prof. Reg. No.	SIGNATURE DATE
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)		
NAME	Prof. Reg. No.	SIGNATURE DATE
DIRECTOR: SYSTEM DEVELOPMENT		
NAME	Prof. Reg. No.	SIGNATURE DATE
DIRECTOR: BULK WATER		
NAME	Prof. Reg. No.	SIGNATURE DATE
DIRECTOR: INFRASTRUCTURE PROVISION		
NAME	Prof. Reg. No.	SIGNATURE DATE
DIRECTOR: WASTE WATER TREATMENT		
NAME	Prof. Reg. No.	SIGNATURE DATE

CONSULTANT DETAIL

Plot 70
1463 Tienie Street
Anderson Ab
Zandfontein
Pretoria West
0183
Tel: 012 372 3708

IMBAWULA
CIVIL PROJECTS

1. **THAMI TOM** Prof. Reg. No. 2018300095
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE: _____ DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER:
2022-AND-W-04U02

DESIGNED	
NAME: SAGWADI RINGANI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DRAWN	
NAME: MOEMEDI MOTAI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
CHECKED	
NAME: THAMI TOM	Prof. Reg. No. 2018300095
SIGNATURE: _____	DATE: 2-Oct-23
INFORMATION OFFICE CHECKED	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DESIGN OFFICE APPROVAL	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____

CONTRACT	
No.:	_____
PROJECT	
No.:	_____
SHEET	
No.:	2 OF 6
PAPER SIZE:	
A1	
SCALE:	
1:1 000	
DATE:	
2-Oct-23	

PROJECT STATUS

RECEIVED SIGN WHEN APPLICABLE

CITY OF TSHWANE

CONCEPT DRAWING TENDER DRAWING APPROVED FOR CONSTRUCTION DRAWING

PROJECT ENGINEER OF COT: _____

2023-10-27

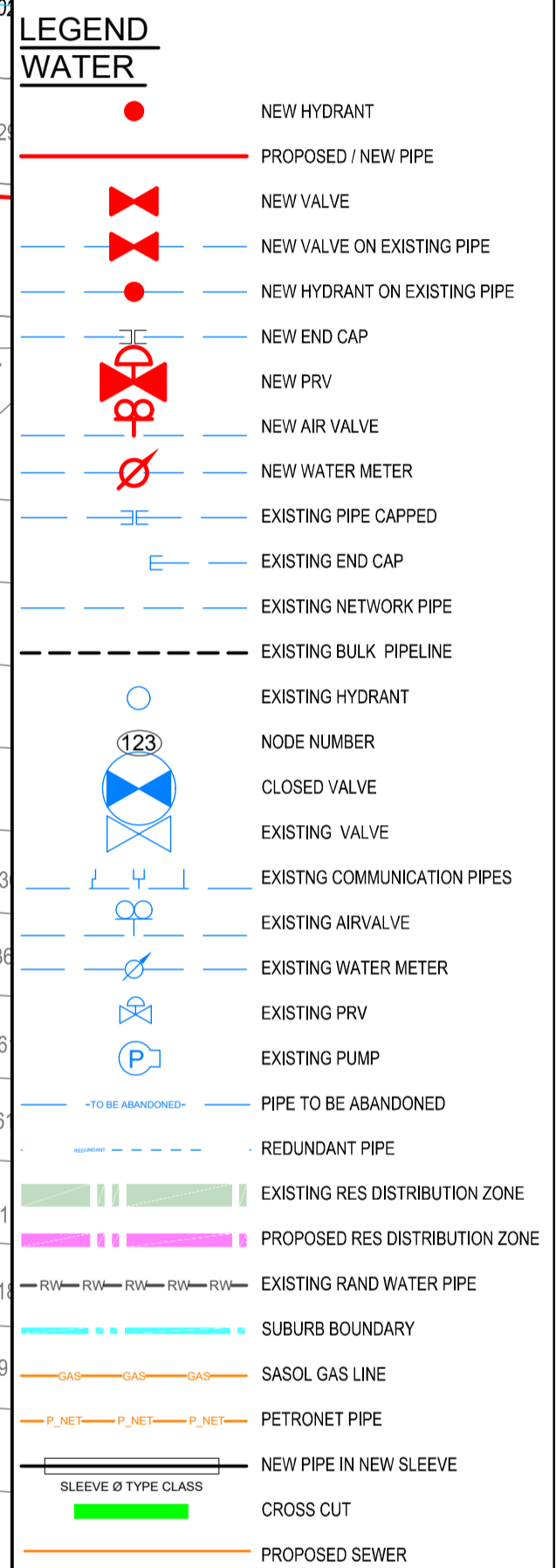
INSPECTOR OF WORKS OF COT AND SANITATION: _____

LOCATION OF PROJECT:	
ANDEON EXT 37	ZANDOFONTEIN 317-JR
REGION 3	WARD 55
DESCRIPTION OF PROJECT:	
CONSTRUCTION OF WATER SERVICES IN ANDEON EXT 37	WATER LAYOUT (2 OF 6)
WBS No.:	
_____	_____
COT DRAWING NUMBER:	
_____	_____
DESCRIPTION OF PROJECT:	
_____	_____

ANDEON X37



- ### NOTES AND SPECIFICATIONS
- #### GENERAL
- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
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 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.



CITY OF TSHWANE
WATER AND SANITATION
DEPARTMENT

PO BOX 1022
PRETORIA
0001

AMENDMENTS				
NR	DATE	APPROVED	DESCRIPTION	PAR
0	2-Oct-23		FOR CONSTRUCTION	

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: BULK WATER				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	

CONSULTANT DETAIL

IMBAWULA
CIVIL PROJECTS

PLOT 70
1463 Tienie Street
Andon Ab
Zandfontein
Pretoria West
0183
Tel: 912 372 3708

THAMI TOM Prof. Reg. No. 2018300095
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE: _____ DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER:
2022-AND-W-04U03

DESIGNED		DRAWN		CHECKED		INFORMATION OFFICE CHECKED		DESIGN OFFICE APPROVAL	
NAME: SAGWADI RINGANI	Prof. Reg. No.:	NAME: MOEMEDI MOTAI	DATE:	NAME: THAMI TOM	Prof. Reg. No. 2018300095	NAME:	DATE:	NAME:	DATE:
SIGNATURE: _____	DATE:	SIGNATURE: _____	DATE:	SIGNATURE: _____	DATE: 2-Oct-23	SIGNATURE: _____	DATE:	SIGNATURE: _____	DATE:

PROJECT STATUS

CONTRACT No.:

PROJECT No.:

SHEET No. 3 OF 6

PAPER SIZE: A1

SCALE: 1:1 000

DATE: 2-Oct-23

CITY OF TSHWANE
RECEIVED SIGN WHEN APPLICABLE
PROJECT ENGINEER OF COT: 2023-10-27
INSPECTOR OF WORKS OF COT: 2023-10-27

LOCATION OF PROJECT: ANDEON EXT 37 ZANDFONTEIN 317-JR REGION 3 WARD 55	DESCRIPTION OF PROJECT: CONSTRUCTION OF WATER SERVICES IN ANDEON EXT 37 WATER LAYOUT (3 OF 6)
WBS No.:	COT DRAWING NUMBER: DESCRIPTION OF PROJECT:

NOTES AND SPECIFICATIONS

- GENERAL**
1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
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 10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND

- WATER**
- NEW HYDRANT
 - PROPOSED / NEW PIPE
 - NEW VALVE
 - NEW VALVE ON EXISTING PIPE
 - NEW HYDRANT ON EXISTING PIPE
 - NEW END CAP
 - NEW PRV
 - NEW AIR VALVE
 - NEW WATER METER
 - EXISTING PIPE CAPPED
 - EXISTING END CAP
 - EXISTING NETWORK PIPE
 - EXISTING BULK PIPELINE
 - EXISTING HYDRANT
 - NODE NUMBER
 - CLOSED VALVE
 - EXISTING VALVE
 - EXISTING COMMUNICATION PIPES
 - EXISTING AIRVALVE
 - EXISTING WATER METER
 - EXISTING PRV
 - EXISTING PUMP
 - PIPE TO BE ABANDONED
 - REDUNDANT PIPE
 - EXISTING RES DISTRIBUTION ZONE
 - PROPOSED RES DISTRIBUTION ZONE
 - EXISTING RAND WATER PIPE
 - SUBURB BOUNDARY
 - SASOL GAS LINE
 - PETRONET PIPE
 - NEW PIPE IN NEW SLEEVE
 - CROSS CUT
 - PROPOSED SEWER



CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

PO BOX 1022
 PRETORIA
 0001

AMENDMENTS			
NR	DATE	APPROVED	DESCRIPTION
0	2-Oct-23		FOR CONSTRUCTION

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING			
NAME	Prof. Reg. No.	SIGNATURE	DATE
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
DIRECTOR: SYSTEM DEVELOPMENT			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: BULK WATER			
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME	Prof. Reg. No.	SIGNATURE	DATE
DIRECTOR: WASTE WATER TREATMENT			
NAME	Prof. Reg. No.	SIGNATURE	DATE

CONSULTANT DETAIL

IMBAWULA
 CIVIL PROJECTS

PLOT 70
 1463 Tienie Street
 Andon Ah
 Zandfontein
 Pretoria West
 0183
 Tel: 012 372 3708

1. **THAMI TOM** Prof. Reg. No. 2018300095
 HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE: _____ DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER:
 2022-AND-W-04U04

DESIGNED	
NAME: SAGWADI RINGANI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DRAWN	
NAME: MOEMEDI MOTAI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
CHECKED	
NAME: THAMI TOM	Prof. Reg. No. 2018300095
SIGNATURE: _____	DATE: 2-Oct-23
INFORMATION OFFICE CHECKED	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DESIGN OFFICE APPROVAL	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____

CONTRACT	
No.:	
PROJECT No.	
SHEET No.	
4 OF 6	
PAPER SIZE:	
A1	
SCALE:	
1:1 000	
DATE:	
2-Oct-23	

PROJECT STATUS

RECEIVED SIGN WHEN APPLICABLE

CONCEPT DRAWING: _____

TENDER DRAWING: _____

APPROVED TO BE SUBMITTED FOR CONSTRUCTION: _____

PROJECT ENGINEER OF COT: **THAMI TOM**

NAME: _____

Prof. Reg. No. 2018300095

DATE: 2023-10-27

INSPECTOR OF WORKS OF COT AND SANITATION: _____

NAME: _____

Prof. Reg. No. _____

DATE: _____

LOCATION OF PROJECT:	
ANDEON EXT 37	
ZANDFONTEIN 317-JR	
REGION 3	
WARD 55	
DESCRIPTION OF PROJECT:	
CONSTRUCTION OF WATER SERVICES IN ANDEON EXT 37	
WATER LAYOUT (4 OF 6)	
WBS No.:	
COT DRAWING NUMBER:	
DESCRIPTION OF PROJECT:	



NOTES AND SPECIFICATIONS

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 9. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND

- WATER**
- NEW HYDRANT
 - PROPOSED / NEW PIPE
 - NEW VALVE
 - NEW VALVE ON EXISTING PIPE
 - NEW HYDRANT ON EXISTING PIPE
 - NEW END CAP
 - NEW PRV
 - NEW AIR VALVE
 - NEW WATER METER
 - EXISTING PIPE CAPPED
 - EXISTING END CAP
 - EXISTING NETWORK PIPE
 - EXISTING BULK PIPELINE
 - EXISTING HYDRANT
 - NODE NUMBER
 - CLOSED VALVE
 - EXISTING VALVE
 - EXISTING COMMUNICATION PIPES
 - EXISTING AIRVALVE
 - EXISTING WATER METER
 - EXISTING PRV
 - EXISTING PUMP
 - PIPE TO BE ABANDONED
 - REDUNDANT PIPE
 - EXISTING RES DISTRIBUTION ZONE
 - PROPOSED RES DISTRIBUTION ZONE
 - EXISTING RAND WATER PIPE
 - SUBURB BOUNDARY
 - SASOL GAS LINE
 - PETRONET PIPE
 - NEW PIPE IN NEW SLEEVE
 - CROSS CUT
 - PROPOSED SEWER

CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

PO BOX 1022
PRETORIA
0001

AMENDMENTS				
NR	DATE	APPROVED	DESCRIPTION	PAR
0	2-Oct-23	APPROVED	FOR CONSTRUCTION	

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: BULK WATER				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	

CONSULTANT DETAIL

Plot 70
1463 Tienie Street
Anderson Ah
Zandfontein
Pretoria West
0183
Tel: 012 372 3708

THAMI TOM Prof. Reg. No. 2018300095
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE: _____ DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER: 2022-AND-W-04U05

DESIGNED	
NAME: SAGWADI RINGANI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DRAWN	
NAME: MOEMEDI MOTAI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
CHECKED	
NAME: THAMI TOM	Prof. Reg. No. 2018300095
SIGNATURE: _____	DATE: 2-Oct-23
INFORMATION OFFICE CHECKED	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DESIGN OFFICE APPROVAL	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____

CONTRACT	
No.:	
PROJECT	
No.:	
SHEET No.:	5 OF 6
PAPER SIZE:	A1
SCALE:	1:1 000
DATE:	2-Oct-23

PROJECT STATUS

RECEIVED SIGN WHEN APPLICABLE

CONCEPT DRAWING: _____

TENDER DRAWING: _____

APPROVED FOR CONSTRUCTION DRAWING: _____

PROJECT ENGINEER OF COT: _____

NAME: _____

SIGNATURE: _____

INSPECTOR OF WORKS OF COT: _____

NAME: _____

SIGNATURE: _____

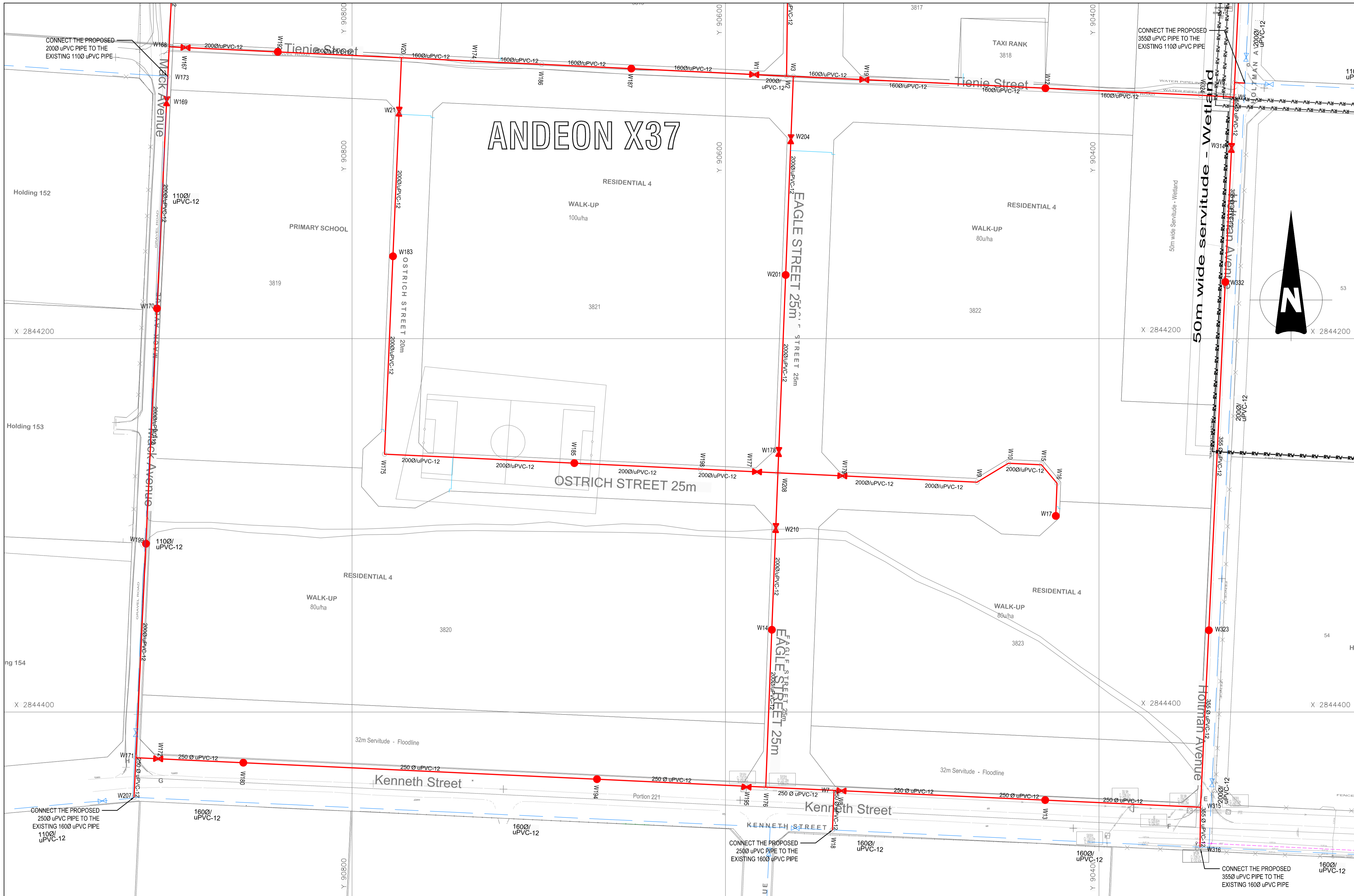
DATE: 2023-10-27

LOCATION OF PROJECT:
ANDEON EXT 37
ZANDFONTEIN 317-JR
REGION 3
WARD 55

DESCRIPTION OF PROJECT:
CONSTRUCTION OF WATER SERVICES IN ANDEON EXT 37
WATER LAYOUT (5 OF 6)

WBS No.:

COT DRAWING NUMBER:
DESCRIPTION OF PROJECT:



NOTES AND SPECIFICATIONS

GENERAL

- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
- ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
- DO NOT SCALE FROM THESE DRAWINGS.
- ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
- ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS.
- THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE).
- THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
- THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.
- THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
- FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND

WATER

- NEW HYDRANT
- PROPOSED / NEW PIPE
- NEW VALVE
- NEW VALVE ON EXISTING PIPE
- NEW HYDRANT ON EXISTING PIPE
- NEW END CAP
- NEW PRV
- NEW AIR VALVE
- NEW WATER METER
- EXISTING PIPE CAPPED
- EXISTING END CAP
- EXISTING NETWORK PIPE
- EXISTING BULK PIPELINE
- EXISTING HYDRANT
- EXISTING HYDRANT
- NODE NUMBER
- CLOSED VALVE
- EXISTING VALVE
- EXISTING COMMUNICATION PIPES
- EXISTING AIRVALVE
- EXISTING WATER METER
- EXISTING PRV
- EXISTING PUMP
- PIPE TO BE ABANDONED
- REDUNDANT PIPE
- EXISTING RES DISTRIBUTION ZONE
- PROPOSED RES DISTRIBUTION ZONE
- EXISTING RAND WATER PIPE
- SUBURB BOUNDARY
- SASOL GAS LINE
- PETRONET PIPE
- NEW PIPE IN NEW SLEEVE
- SLEEVE & TYPE CLASS
- CROSS CUT
- PROPOSED SEWER

CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

PO BOX 1022
PRETORIA
0001

AMENDMENTS				
NR	DATE	APPROVED	DESCRIPTION	PAR
0	2-Oct-23		FOR CONSTRUCTION	

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: BULK WATER				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	

CONSULTANT DETAIL

IMBAWULA
CIVIL PROJECTS

Plot 70
1463 Tienie Street
Andon Ab
Zandfontein
Pretoria West
0183
Tel: 012 372 3708

I. THAMI TOM Prof. Reg. No. 2018300095
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE: _____ DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER:
2022-AND-W-04U06

DESIGNED	
NAME: SAGWADI RINGANI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DRAWN	
NAME: MOEMEDI MOTAI	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
CHECKED	
NAME: THAMI TOM	Prof. Reg. No. 2018300095
SIGNATURE: _____	DATE: 2-Oct-23
INFORMATION OFFICE CHECKED	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DESIGN OFFICE APPROVAL	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____

CONTRACT No.:	
PROJECT No.:	
SHEET No.:	6 OF 6
PAPER SIZE:	A1
SCALE:	1:1 000
DATE:	2-Oct-23

PROJECT STATUS

RECEIVED SIGN WHEN APPLICABLE

CITY OF TSHWANE

CONCEPT DRAWING APPROVED FOR CONSTRUCTION

PROJECT ENGINEER OF WORKS: **2023-10-27**

INSPECTOR OF WORKS OF COT: _____

LOCATION OF PROJECT: ANDEON EXT 37 ZANDFONTEIN 317-JR REGION 3 WARD 55	DESCRIPTION OF PROJECT: CONSTRUCTION OF WATER SERVICES IN ANDEON EXT 37 WATER LAYOUT (6 OF 6)
WBS No.:	
COT DRAWING NUMBER:	
DESCRIPTION OF PROJECT:	

Andeon Ext 37 Co-ordinates Table			
NODE	Y	X	BEND
1	-90,584.631	-2,844,058.513	200mm Ø ISOLATION VALVE
2	-90,567.310	-2,844,059.396	200 X 200mm Ø EQUAL TEE
3	-90,563.678	-2,844,059.562	200 X 200mm Ø EQUAL TEE 200 x 160mm Ø REDUCER
5	-90,327.738	-2,844,070.663	355 X 355mm Ø EQUAL TEE 355 x 250mm Ø REDUCER 250 x 160mm Ø REDUCER
6	-90,321.857	-2,844,063.142	355 X 355mm Ø EQUAL TEE 355 x 250mm Ø REDUCER 250 x 110mm Ø REDUCER
7	-90,541.907	-2,844,442.026	250 x 250mm Ø EQUAL TEE
8	-90,538.159	-2,844,442.367	250mm Ø ISOLATION VALVE
9	-90,465.309	-2,844,276.926	200mm Ø 45° BEND
10	-90,448.588	-2,844,266.769	200mm Ø 45° BEND
11	-90514.755	-2843535.78	110mm Ø ISOLATION VALVE
12	-90,428.737	-2,844,065.887	160mm Ø FIRE HYDRANT
13	-90,428.864	-2,844,447.193	250mm Ø FIRE HYDRANT
14	-90,575.174	-2,844,355.984	200mm Ø FIRE HYDRANT
15	-90,430.772	-2,844,267.612	200mm Ø 45° BEND
16	-90,422.501	-2,844,277.468	200mm Ø 45° BEND
17	-90,423.181	-2,844,294.996	200mm Ø FIRE HYDRANT
18	-90,542.727	-2,844,463.173	CONNECT TO EXISTING
19	-90,525.686	-2,844,061.297	160mm Ø ISOLATION VALVE
20	-90,773.545	-2,844,049.568	200 x 200mm Ø EQUAL TEE 200 x 160mm Ø REDUCER
21	-90,774.771	-2,844,078.426	200mm Ø ISOLATION VALVE
22	-90,521.417	-2,842,995.786	160mm Ø ISOLATION VALVE
23	-90,529.121	-2,843,102.718	160 x 160mm Ø EQUAL TEE 160 x 160mm Ø EQUAL TEE
24	-90,512.858	-2,842,872.558	160mm Ø 90° BEND
25	-90,519.991	-2,842,973.501	160 x 160mm Ø EQUAL TEE 160 x 160mm Ø EQUAL TEE 160 x 110mm Ø REDUCER
26	-90,551.342	-2,842,965.298	110mm Ø ISOLATION VALVE
27	-90,551.749	-2,842,971.513	160 x 160mm Ø EQUAL TEE 160 x 110mm Ø REDUCER 160 x 110mm Ø REDUCER
28	-90,622.798	-2,842,917.955	110mm Ø FIRE HYDRANT
29	-90,607.836	-2,842,911.229	110mm Ø 11.25° BEND
30	-90,826.432	-2,843,013.711	110mm Ø 22.5° BEND 110mm Ø 11.25° BEND
31	-90,822.170	-2,843,007.582	110mm Ø 22.5° BEND 110mm Ø 11.25° BEND
32	-90,829.198	-2,843,054.874	110mm Ø 90° BEND
33	-90,775.303	-2,843,058.248	110 x 110mm Ø EQUAL TEE
34	-90,774.709	-2,843,049.405	110mm Ø 22.5° BEND 110mm Ø 11.25° BEND
36	-90,688.045	-2,843,006.493	110 x 110mm Ø EQUAL TEE 110mm Ø 11.25° BEND
37	-90,659.288	-2,842,993.566	110mm Ø FIRE HYDRANT
38	-90,629.549	-2,842,980.196	110mm Ø 22.5° BEND
39	-90,597.802	-2,842,982.268	110 x 110mm Ø EQUAL TEE
40	-90,552.749	-2,842,985.348	110 x 110mm Ø EQUAL TEE
41	-90,600.551	-2,843,021.164	110mm Ø 90° BEND
42	-90,686.211	-2,843,015.801	110mm Ø 90° BEND 110mm Ø 11.25° BEND
43	-90,712.214	-2,843,062.198	110mm Ø ISOLATION VALVE
44	90,775.318	-2,843,054.546	110mm Ø ISOLATION VALVE
45	-90,598.133	-2,842,988.597	110mm Ø ISOLATION VALVE
46	-90,581.316	-2,842,983.380	110mm Ø ISOLATION VALVE
47	-90,513.761	-2,842,885.905	160mm Ø ISOLATION VALVE
48	-90,533.778	-2,842,972.592	160mm Ø ISOLATION VALVE
49	-90,546.272	-2,842,894.093	110mm Ø 22.5° BEND 110mm Ø 90° BEND
50	-90,547.456	-2,842,971.538	160mm Ø ISOLATION VALVE
51	-90,553.200	-2,842,991.580	110mm Ø ISOLATION VALVE
52	-90,554.697	-2,843,012.765	110mm Ø FIRE HYDRANT
53	-90,558.870	-2,843,071.799	110mm Ø 90° BEND

Andeon Ext 37 Co-ordinates Table			
NODE	Y	X	BEND
55	-90,548.607	-2,843,378.462	160 x 160mm Ø EQUAL TEE
56	-90,496.883	-2,843,229.280	110mm Ø FIRE HYDRANT
57	-90,936.085	-2,843,327.738	160mm Ø ISOLATION VALVE
58	-90,562.883	-2,843,377.568	160mm Ø ISOLATION VALVE
59	-90,551.722	-2,843,378.267	160 x 160mm Ø EQUAL TEE
61	-90,869.389	-2,843,358.378	160 x 160mm Ø EQUAL TEE
62	-90,854.558	-2,843,359.538	160mm Ø ISOLATION VALVE
63	-90,851.600	-2,843,082.529	160mm Ø 90° BEND
64	-90,771.389	-2,843,087.545	160mm Ø FIRE HYDRANT
65	-90,664.232	-2,843,094.259	160 x 160mm Ø EQUAL TEE
66	-90,542.567	-2,843,102.107	160mm Ø ISOLATION VALVE
68	-90,665.966	-2,843,118.792	160mm Ø ISOLATION VALVE
69	-90,667.616	-2,843,142.141	160 x 160mm Ø EQUAL TEE 160 x 110mm Ø REDUCER 110mm Ø 22.5° BEND 110mm Ø 11.25° BEND
70	-90,770.710	-2,843,043.655	110mm Ø ISOLATION VALVE
71	-90,764.682	-2,843,440.881	160mm Ø ISOLATION VALVE
72	-90,759.746	-2,843,365.243	160 x 160mm Ø EQUAL TEE
74	-90,761.362	-2,843,393.324	160mm Ø ISOLATION VALVE
75	-90,762.160	-2,843,401.162	160 x 160mm Ø EQUAL TEE 160 x 160mm Ø EQUAL TEE 160 x 110mm Ø REDUCER 160 x 110mm Ø REDUCER
76	-90,765.368	-2,843,448.917	160 x 160mm Ø EQUAL TEE 160 x 110mm Ø REDUCER 160 x 110mm Ø REDUCER
77	-90,827.095	-2,843,397.097	110mm Ø FIRE HYDRANT
78	-90,632.694	-2,843,474.330	110mm Ø ISOLATION VALVE
79	-90,598.367	-2,843,623.480	110mm Ø 90° BEND
81	-90,583.435	-2,843,412.228	110mm Ø 90° BEND
82	-90,749.816	-2,843,449.891	110 x 110mm Ø EQUAL TEE
83	-90,695.920	-2,843,453.265	110 x 110mm Ø EQUAL TEE
84	-90,631.491	-2,843,457.299	110mm Ø 90° BEND
86	-90,477.183	-2,843,525.375	110mm Ø ISOLATION VALVE
87	-90,704.259	-2,843,571.276	110 x 110mm Ø EQUAL TEE
88	-90,639.851	-2,843,575.603	110mm Ø 90° BEND
89	-90,699.584	-2,843,505.112	110mm Ø FIRE HYDRANT
90	-90,800.003	-2,843,446.760	110mm Ø 90° BEND
91	-90,801.123	-2,843,463.637	110mm Ø ISOLATION VALVE
92	-90,804.884	-2,843,519.414	110 x 110mm Ø EQUAL TEE
93	-90,754.966	-2,843,522.767	110mm Ø 90° BEND
94	-90,751.730	-2,843,476.978	110mm Ø ISOLATION VALVE
95	-90,807.901	-2,843,564.312	110mm Ø 90° BEND
96	-90,729.230	-2,843,569.598	110 x 110mm Ø EQUAL TEE
97	-90,732.246	-2,843,614.497	110mm Ø ISOLATION VALVE
98	-90,835.461	-2,843,282.350	110mm Ø 90° BEND
99	-90,838.746	-2,843,331.240	110mm Ø 90° BEND
100	-90,811.800	-2,843,332.927	110mm Ø FIRE HYDRANT
101	-90,575.047	-2,843,298.654	110 x 110mm Ø EQUAL TEE
102	-90,578.501	-2,843,347.533	110mm Ø 90° BEND
103	-90,677.734	-2,843,284.383	160mm Ø ISOLATION VALVE
104	-90,637.345	-2,843,144.031	110mm Ø FIRE HYDRANT
105	-90,564.443	-2,843,148.600	110mm Ø 90° BEND
106	-90,572.427	-2,843,261.577	110mm Ø FIRE HYDRANT
108	-90807.343	-2,843,556.014	110mm Ø ISOLATION VALVE
109	-90,731.619	-2,843,606.556	110mm Ø ISOLATION VALVE
110	-90,838.348	2,843,323.870	110mm Ø ISOLATION VALVE
111	-90,586.770	-2,843,459.408	110mm Ø FIRE HYDRANT
112	-90,703.977	-2,843,567.270	110mm Ø ISOLATION VALVE
113	-90,864.824	-2,843,585.127	110mm Ø FIRE HYDRANT
114	-90,635.697	-2,843,516.819	110mm Ø FIRE HYDRANT
115	-90,697.119	-2,843,470.226	110mm Ø ISOLATION VALVE
116	-90,803.706	-2,843,501.879	110mm Ø FIRE HYDRANT

Andeon Ext 37 Co-ordinates Table			
NODE	Y	X	BEND
117	-90,678.219	-2,843,292.194	160 x 160mm Ø EQUAL TEE 160 x 110mm Ø REDUCER 160 x 110mm Ø REDUCER
118	90,648.249	-2,843,145.618	110mm Ø ISOLATION VALVE
119	-90,632.500	-2,843,067.179	110mm Ø FIRE HYDRANT
121	-90,853.641	-2,843,124.364	110mm Ø FIRE HYDRANT
122	-90,826.702	-2,843,017.723	110mm Ø FIRE HYDRANT
123	-90,766.946	-2,843,335.735	110mm Ø STRAIGHT
124	-90,847.323	-2,843,395.830	110mm Ø 45° BEND
125	-90,852.406	-2,843,400.293	110mm Ø 45° BEND
127	-90,866.188	-2,843,605.498	110mm Ø 90° BEND
128	-90,671.110	-2,843,618.591	110mm Ø FIRE HYDRANT
130	-90,518.937	-2,843,593.449	110mm Ø FIRE HYDRANT
131	-90,584.368	-2,843,425.435	110mm Ø ISOLATION VALVE
132	-90,494.790	-2,843,104.982	160mm Ø ISOLATION VALVE
133	-90,480.556	-2,842,997.103	110mm Ø ISOLATION VALVE
136	-90,531.200	-2,843,132.250	160mm Ø ISOLATION VALVE
138	-90,564.010	-2,843,801.335	200mm Ø ISOLATION VALVE
140	-90,863.104	-2,843,262.699	160mm Ø STRAIGHT
144	-90,516.486	-2,843,380.473	160mm Ø ISOLATION VALVE
145	-90,769.811	-2,843,400.787	110mm Ø ISOLATION VALVE
146	-90,887.834	-2,843,633.181	160mm Ø ISOLATION VALVE
147	-90,853.069	-2,843,111.269	160mm Ø ISOLATION VALVE
148	-90,879.159	-2,843,644.768	450 x 450mm Ø EQUAL TEE 450 x 300mm Ø REDUCER 300 x 200mm Ø REDUCER
149	-90,715.280	-2,843,615.585	110mm Ø ISOLATION VALVE
150	-90,576.459	-2,843,650.092	450 x 450mm Ø EQUAL TEE 450 x 300mm Ø REDUCER 300 x 160mm Ø REDUCER 450 x 400mm Ø REDUCER 400mm Ø 11.25° BEND
151	-90,578.906	-2,843,658.806	450mm Ø 90° BEND 450mm Ø 11.25° BEND
152	-90,583.049	-2,843,658.612	450 x 450mm Ø EQUAL TEE 450 x 300mm Ø REDUCER 300 x 200mm Ø REDUCER
154	-90,445.224	-2,843,572.181	110mm Ø FIRE HYDRANT
155	-90,563.939	-2,843,799.338	200mm Ø 22.5° BEND 200mm Ø 11.25° BEND
156	-90,566.233	-2,843,976.308	200mm Ø FIRE HYDRANT
160	-90,583.051	-2,843,773.438	200mm Ø 22.5° BEND 200mm Ø 11.25° BEND
161	-90,588.349	-2,843,771.976	200mm Ø 90° BEND
162	-91,287.243	-2,843,625.688	CONNECTION TO RESERVOIR
164	-90,888.582	-2,843,644.327	450 x 450mm Ø EQUAL TEE 450 x 300mm Ø REDUCER 300 x 160mm Ø REDUCER
165	-90,569.071	-2,843,623.782	160mm Ø 11.25° BEND
167	-90,889.281	-2,844,044.004	200mm Ø ISOLATION VALVE
168	-90,897.869	-2,844,043.698	200 x 200mm Ø EQUAL TEE
169	-90,899.174	-2,844,071.508	200mm Ø ISOLATION VALVE
170	-90,904.424	-2,844,183.449	200mm Ø FIRE HYDRANT
171	-90,915.729	-2,844,424.476	250 x 250mm Ø EQUAL TEE 250 x 200mm Ø REDUCER
172	-90,903.776	-2,844,425.035	250mm Ø ISOLATION VALVE
173	-90,898.731	-2,844,059.529	CONNECT TO EXISTING
174	-90,735.584	-2,844,051.304	160mm Ø STRAIGHT
175	-90,782.569	-2,844,261.921	200mm Ø 90° BEND
176	-90,578.441	-2,844,440.237	250 x 250mm Ø EQUAL TEE 250 x 200mm Ø REDUCER
177	-90,583.129	-2,844,271.584	200mm Ø ISOLATION VALVE
178	-90,571.709	-2,844,260.700	200mm Ø ISOLATION VALVE
179	-90,537.446	-2,844,273.745	200mm Ø ISOLATION VALVE
180	-90,858.240	-2,844,427.163	250mm Ø FIRE HYDRANT
183	-90,778.065	-2,844,155.930	200mm Ø FIRE HYDRANT

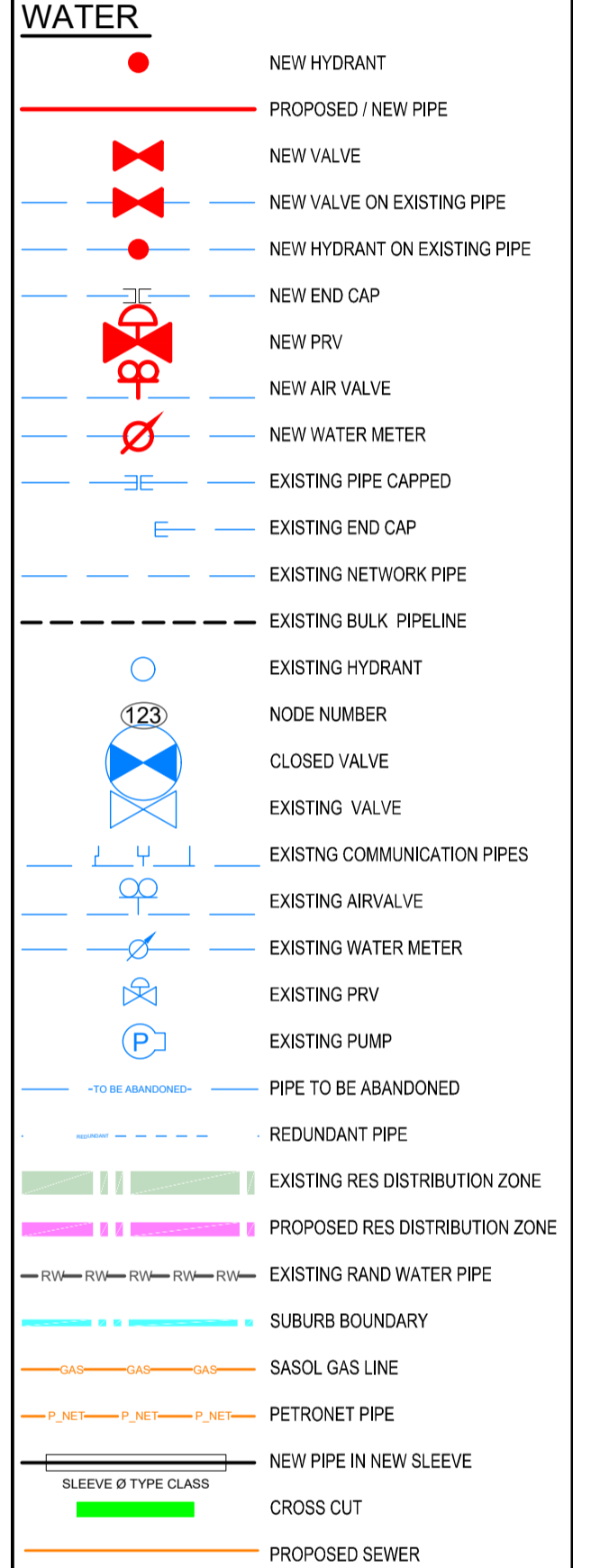
Andeon Ext 37 Co-ordinates Table			
NODE	Y	X	BEND
185	-90,681.007	-2,844,266.724	200mm Ø FIRE HYDRANT
186	-90,698.454	-2,844,053.064	160mm Ø STRAIGHT
187	-90,650.441	-2,844,055.401	160mm Ø FIRE HYDRANT
188	-90,894.466	-2,843,644.123	450mm Ø ISOLATION VALVE
189	-90,884.127	-2,843,751.279	200mm Ø ISOLATION VALVE
190	-90,895.185	-2,843,986.473	200mm Ø ISOLATION VALVE
192	-90,839.776	-2,844,046.446	200mm Ø FIRE HYDRANT
194	-90,668.819	-2,844,436.014	250mm Ø FIRE HYDRANT
195	-90,589.054	-2,844,439.742	250mm Ø ISOLATION VALVE
198	-90,613.500	-2,844,269.917	200mm Ø STRAIGHT
199	-90,910.331	-2,844,309.391	200mm Ø ISOLATION VALVE
201	-90,567.775	-2,844,165.204	200mm Ø ISOLATION VALVE
202	-90,885.353	-2,843,776.843	200mm Ø FIRE HYDRANT
203	-90,585.726	-2,843,658.519	450mm Ø ISOLATION VALVE
204	-90,564.922	-2,844,091.641	200mm Ø ISOLATION VALVE
207	-90,916.724	-2,844,445.696	CONNECTION TO EXISTING
208	-90,595.309	-2,844,270.777	200 x 200mm Ø EQUAL TEE 200 x 200mm Ø EQUAL TEE
210	-90,573.058	-2,844,301.442	200mm Ø ISOLATION VALVE
213	-90,200.689	-2,843,371.188	110mm Ø FIRE HYDRANT
214	-90,179.953	-2,843,372.486	110mm Ø 90° BEND
215	-90,240.275	-2,843,433.836	110mm Ø ISOLATION VALVE
216	-90,334.189	-2,843,428.137	110mm Ø ISOLATION VALVE
217	-90,160.555	-2,843,402.773	160mm Ø ISOLATION VALVE
218	-90,132.046	-2,843,404.543	CONNECT TO EXISTING
221	-90,345.678	-2,843,105.901	160mm Ø ISOLATION VALVE
222	-90,346.246	-2,843,114.163	160mm Ø EQUAL TEE
225	-90,316.576	-2,843,116.026	160mm Ø EQUAL TEE
226	-90,344.051	-2,843,082.242	160 x 160mm Ø EQUAL TEE 160 x 110mm Ø REDUCER
227	-90,346.366	-2,843,150.220	110mm Ø IS

NOTES AND SPECIFICATIONS

GENERAL

- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
- DO NOT SCALE FROM THESE DRAWINGS. ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
- ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS.
- THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE).
- THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
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- THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
- FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND



Andeen Ext 37 Co-ordinates Table			
NODE	Y	X	BEND
260	-90,299.297	-2,843,153.410	110mmØ ISOLATION VALVE
261	-90,416.683	-2,843,308.799	110mmØ ISOLATION VALVE
262	-90,446.514	-2,843,196.317	110mmØ 45° BEND
264	-90,448.148	-2,843,220.476	110mmØ FIRE HYDRANT
265	-90,334.273	-2,843,313.728	160mmØ FIRE HYDRANT
266	-90,326.479	-2,843,151.705	110mmØ ISOLATION VALVE
267	-90,686.212	-2,843,291.717	110mmØ ISOLATION VALVE
268	-90,656.871	-2,843,293.715	110mmØ ISOLATION VALVE
269	-90,400.253	-2,843,387.750	160 x 160mmØ EQUAL TEE
270	-90,356.701	-2,843,471.635	160 x 160mmØ EQUAL TEE 160 x 110mmØ REDUCER
271	-90,358.001	-2,843,494.129	160mm Ø ISOLATION VALVE
272	-90,360.005	-2,843,524.401	160mmØ EQUAL TEE
274	-90,367.266	-2,843,640.376	160 x 160mmØ EQUAL TEE 160 x 110mmØ REDUCER
275	-90,368.021	-2,843,523.875	160mm Ø ISOLATION VALVE
276	-90,343.493	-2,843,578.732	110mmØ ISOLATION VALVE
277	-90,329.818	-2,843,473.318	160 x 160mmØ EQUAL TEE 160 x 110mmØ REDUCER
278	-90,279.585	-2,843,476.463	110 x 110mmØ EQUAL TEE
279	-90,362.812	-2,843,569.465	160mm Ø ISOLATION VALVE
280	-90,459.084	-2,843,518.198	110 x 110mmØ EQUAL TEE
281	-90,411.976	-2,843,519.274	110mmØ FIRE HYDRANT
282	-90,358.527	-2,843,502.528	160mmØ FIRE HYDRANT
283	-90,286.848	-2,843,582.092	110 x 110mmØ EQUAL TEE
284	-90,283.250	-2,843,529.759	110mmØ FIRE HYDRANT
285	-90,455.702	-2,843,420.229	110mmØ FIRE HYDRANT
286	-90,358.780	-2,843,425.764	110mmØ ISOLATION VALVE
287	-90,462.396	-2,843,571.101	110mmØ 90° BEND
288	-90,363.317	-2,843,577.304	160 x 160mmØ EQUAL TEE 160 x 110mmØ REDUCER
289	-90,351.640	-2,843,390.794	160 x 160mmØ EQUAL TEE
291	-90,353.025	-2,843,412.922	160mm Ø ISOLATION VALVE
292	-90,353.889	-2,843,426.723	160 x 160mmØ EQUAL TEE 160 x 110mmØ REDUCER
293	-90,506.552	-2,843,420.011	110mmØ 45° BEND
294	-90,503.517	-2,843,417.355	110mmØ 45° BEND
295	-90,173.933	-2,843,283.984	110mmØ ISOLATION VALVE
296	-90,513.833	-2,843,523.075	110 x 110mmØ EQUAL TEE
297	-90,521.172	-2,843,626.909	110mmØ 45° BEND
298	-90,518.552	-2,843,629.923	110mmØ 45° BEND
299	-90,363.466	-2,843,471.440	110mmØ ISOLATION VALVE
300	-90,455.781	-2,843,465.432	110mmØ 90° BEND
301	-90,459.602	-2,843,526.478	110 x 110mmØ EQUAL TEE
303	-90,434.464	-2,843,466.647	110mmØ FIRE HYDRANT
304	-90,553.721	-2,843,408.529	160mm Ø ISOLATION VALVE
306	-90,308.799	-2,843,668.395	400 x 400mmØ EQUAL TEE 400 x 355mmØ REDUCER
307	-90,180.570	-2,843,677.212	355mmØ ISOLATION VALVE
308	-90,135.225	-2,843,680.462	355mmØ 90° BEND
309	-90,136.036	-2,843,692.430	CONNECT TO EXISTING
310	-90,195.192	-2,843,652.260	160mm Ø ISOLATION VALVE
311	-90,192.452	-2,843,652.449	110mmØ 90° BEND
312	-90,323.229	-2,843,643.417	110mmØ FIRE HYDRANT
314	-90,329.140	-2,844,097.840	355mmØ ISOLATION VALVE
315	-90,345.644	-2,844,450.997	160 x 160mmØ EQUAL TEE 160 x 110mmØ REDUCER

Andeen Ext 37 Co-ordinates Table			
NODE	Y	X	BEND
316	-90,345.932	-2,844,472.369	CONNECT TO EXISTING
318	-90,566.484	-2,843,995.646	200mmØ STRAIGHT
319	-90,318.452	-2,843,873.421	355mmØ FIRE HYDRANT
323	-90,341.183	-2,844,356.240	355mmØ FIRE HYDRANT
324	-90,345.654	-2,844,069.675	160mmØ STRAIGHT
325	-90,533.959	-2,843,652.916	400mm Ø ISOLATION VALVE
327	-90,315.172	-2,843,804.849	355mm Ø ISOLATION VALVE
328	-90,314.715	-2,843,794.041	355mmØ STRAIGHT
330	-90,150.799	-2,843,679.402	355mmØ STRAIGHT
331	-90,144.526	-2,843,679.839	355mmØ STRAIGHT
332	-90,332.402	-2,844,169.714	355mmØ FIRE HYDRANT
333	-90,129.704	-2,842,897.560	160mm Ø ISOLATION VALVE
334	-90,250.111	-2,843,318.997	110mmØ ISOLATION VALVE
335	-90,097.704	-2,842,899.648	CONNECT TO EXISTING
336	-90,420.436	-2,843,029.352	110mmØ FIRE HYDRANT
337	-90,340.758	-2,843,034.354	160 x 160mmØ EQUAL TEE 160 x 110mmØ REDUCER
338	-90,417.710	-2,842,958.937	110mmØ 90° BEND
339	-90,422.676	-2,843,029.225	110mmØ 90° BEND
341	-90,335.939	-2,842,964.273	160 x 160mmØ EQUAL TEE 160 x 110mmØ REDUCER
342	-90,333.923	-2,842,934.948	160mmØ FIRE HYDRANT
343	-90,330.451	-2,842,884.461	160 x 160mmØ EQUAL TEE
344	-90,331.823	-2,842,904.414	160 x 160mmØ EQUAL TEE 160 x 110mmØ REDUCER
345	-90,273.577	-2,843,317.759	110mmØ ISOLATION VALVE
348	-90,333.070	-2,842,921.491	160mm Ø ISOLATION VALVE
349	-90,448.839	-2,842,896.778	110mmØ FIRE HYDRANT
350	-90,226.460	-2,842,891.237	160mmØ FIRE HYDRANT
351	-90,473.554	-2,842,898.008	110mmØ 45° BEND
352	-90,470.524	-2,842,895.363	110mmØ 45° BEND
353	-90,479.069	-2,842,976.063	110 x 110mmØ EQUAL TEE
354	-90,492.820	-2,842,975.246	110mmØ ISOLATION VALVE
355	-90,485.945	-2,843,073.358	CONNECT TO EXISTING
357	-90,603.065	-2,842,981.878	110mmØ ISOLATION VALVE
359	-90,574.517	-2,843,291.156	110mmØ ISOLATION VALVE
361	-90,211.168	-2,843,399.587	160mm Ø ISOLATION VALVE
362	-90,265.938	-2,843,311.024	110mmØ ISOLATION VALVE
363	-90,347.931	-2,843,034.135	110mmØ ISOLATION VALVE
364	-90,142.037	-2,843,127.103	160mm Ø ISOLATION VALVE
365	-90,113.234	-2,843,128.797	CONNECT TO EXISTING
367	-90,165.434	-2,843,161.560	110mmØ 90° BEND
368	-90,213.671	-2,843,207.047	110mmØ 90° BEND
369	-90,216.185	-2,843,244.869	110mmØ FIRE HYDRANT
370	-90,169.126	-2,843,215.203	110mmØ FIRE HYDRANT
371	-90,399.998	-2,843,303.289	110mmØ ISOLATION VALVE
372	-90,241.935	-2,843,584.903	110mmØ 90° BEND
373	-90,286.585	-2,843,574.415	110mmØ ISOLATION VALVE
374	-90,234.672	-2,843,479.275	110mmØ 90° BEND
375	-90,236.996	-2,843,518.519	110mmØ FIRE HYDRANT
376	-90,180.504	-2,843,437.579	110mmØ 45° BEND
377	-90,177.883	-2,843,440.568	110mmØ 45° BEND
378	-90371.500	-2,843,576.792	110mmØ ISOLATION VALVE
379	-90,186.270	-2,843,562.543	110mmØ FIRE HYDRANT
381	-90,171.976	-2,843,259.952	110mmØ ISOLATION VALVE
382	-90,172.711	-2,843,267.284	110 x 110mmØ EQUAL TEE
383	-90,217.605	-2,843,264.194	110 x 110mmØ EQUAL TEE
384	-90,221.501	-2,843,320.789	110mmØ 90° BEND
385	-90,262.304	-2,843,258.267	110mmØ 90° BEND

AMENDMENTS				
NR	DATE	APPROVED	DESCRIPTION	PAR
0	2-Oct-23		FOR CONSTRUCTION	

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: BULK WATER				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	

CONSULTANT DETAIL

IMBAWULA CIVIL PROJECTS

PLOT 70
1463 Tienie Street
Andon Ah
Zandfontein
Pretoria West
0183
Tel: 012 372 3708

THAMI TOM Prof. Reg. No. 2018300095
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING.

SIGNATURE: _____ DATE: 2-Oct-23

CONSULTANT DRAWING NUMBER: 2022-AND-W-04U08

DESIGNED
NAME: SAGWADI RINGANI Prof. Reg. No. _____
SIGNATURE: _____ DATE: _____

DRAWN
NAME: MOEMEDI MOTAI
SIGNATURE: _____ DATE: _____

CHECKED
NAME: THAMI TOM Prof. Reg. No. 2018300095
SIGNATURE: _____ DATE: 2-Oct-23

INFORMATION OFFICE CHECKED
NAME: _____ Prof. Reg. No. _____
SIGNATURE: _____ DATE: _____

DESIGN OFFICE APPROVAL
NAME: _____ Prof. Reg. No. _____
SIGNATURE: _____ DATE: _____

CONTRACT No.: _____

PROJECT No.: _____

SHEET No.: 2 OF 2

PAPER SIZE: A1

SCALE: _____

DATE: 2-Oct-23

PROJECT STATUS

RECORDED SIGN WHEN APPLICABLE

CONCEPT DRAWING

APPROVED FOR CONSTRUCTION DRAWING

AS BUILT DRAWING

PROJECT ENGINEER OF COT: 2023-10-27

NAME: _____ Prof. Reg. No. _____
SIGNATURE: _____ DATE: _____

INSPECTOR OF WORKS OF COT:
NAME: _____ Prof. Reg. No. _____
SIGNATURE: _____ DATE: _____

LOCATION OF PROJECT:
ANDEON EXT 37
ZANDFONTEIN 317-JR
REGION 3
WARD 55

DESCRIPTION OF PROJECT:
CONSTRUCTION OF WATER SERVICES IN ANDEON EXT 37
CO-ORDINATES TABLE (2 OF 2)

WBS No.: _____

COT DRAWING NUMBER: _____

DESCRIPTION OF PROJECT: _____

CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

PO BOX 1022
PRETORIA
0001

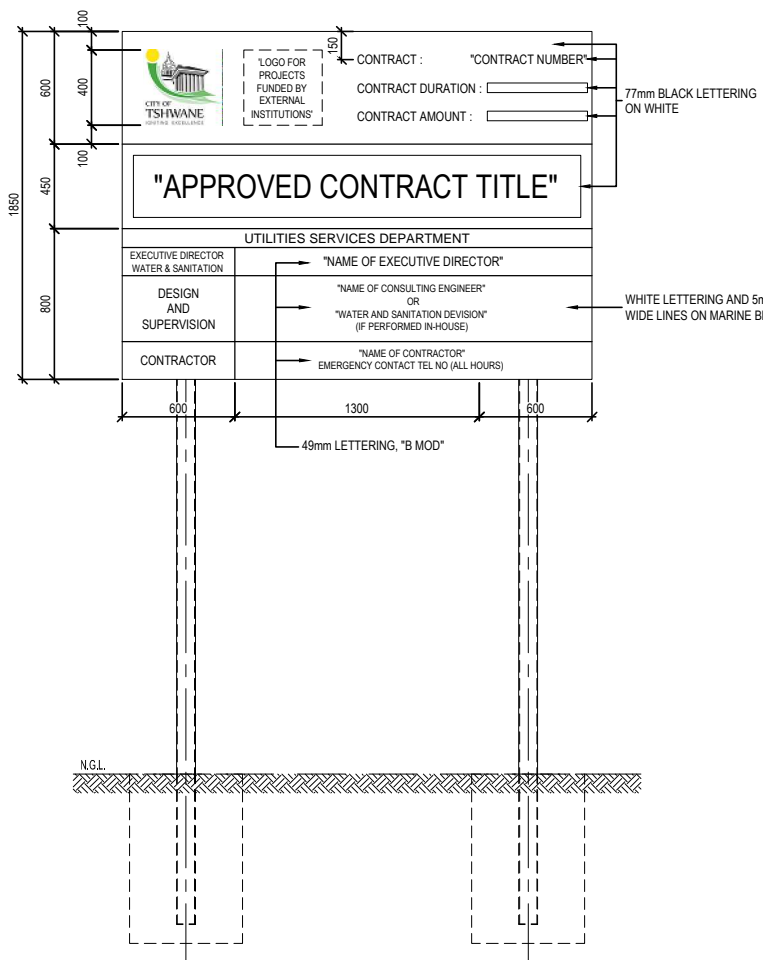
NOTES AND SPECIFICATIONS

GENERAL

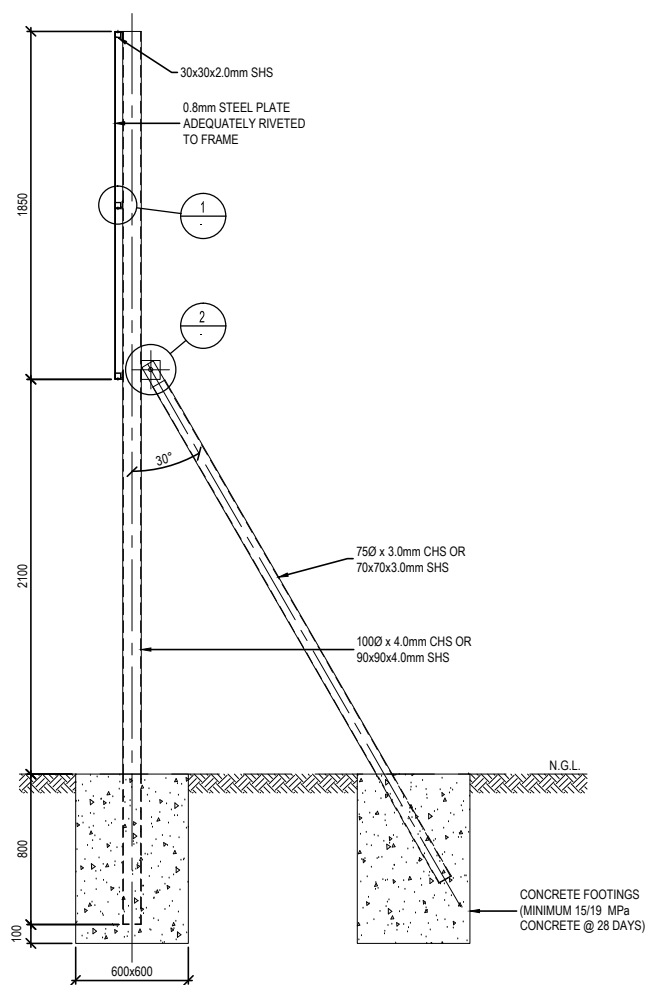
1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS
4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

PARTICULAR

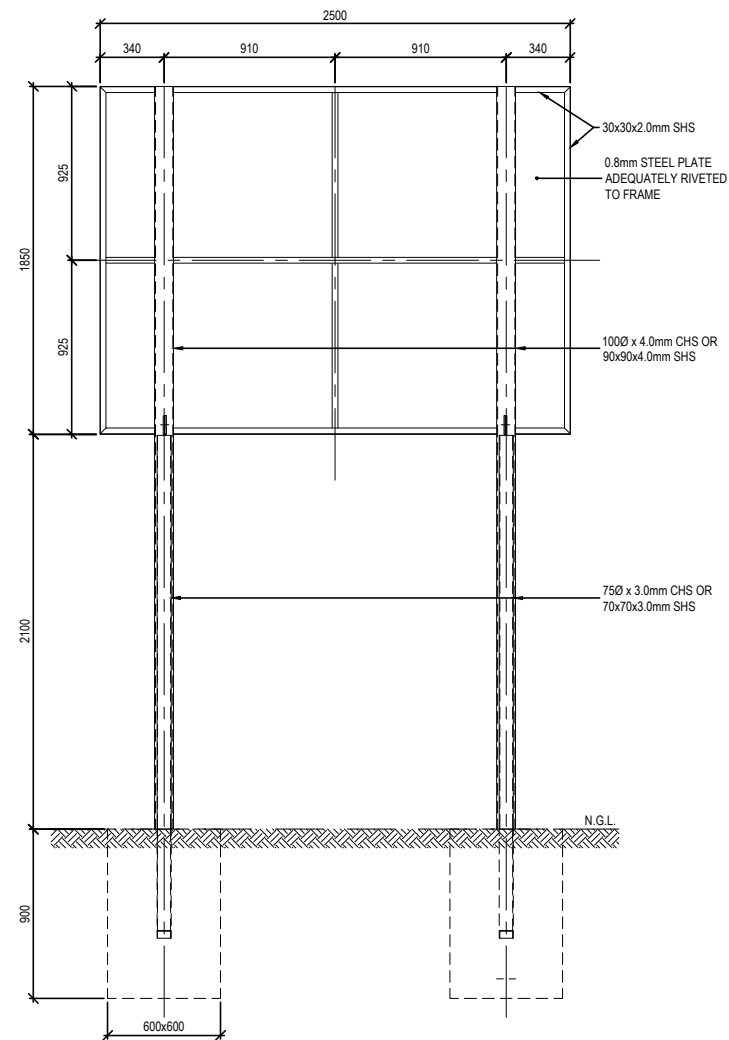
1. ALL PAINTS TO HAVE GLOSS ENAMEL FINISH AND COMPLY WITH SANS 1519-2
2. ALL WHITE AREAS AND LETTERING TO BE OFF-WHITE IN COLOUR. OFF-WHITE TO BE MADE UP BY ADDING 0.4g BLACK AND 0.4g RED PAINT TO ONE LITER PURE WHITE PAINT
3. COLOUR OF PAINT TO CONFORM TO BS 2000 No. 0013
4. ALL LETTERING TO BE DONE ACCORDING TO THE PROVISION OF THE LATEST EDITION OF THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY ROAD TRAFFIC SIGN MANUAL
5. ALL LETTERING ARE 49mm DIN 1451 PART 2 STYLE "B MOD" UNLESS OTHERWISE INDICATED



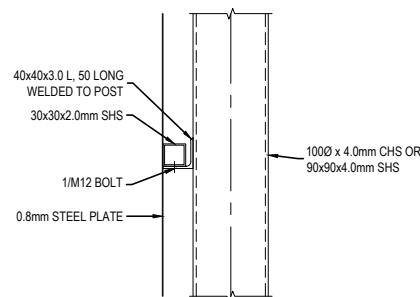
FRONT ELEVATION
SCALE 1:20



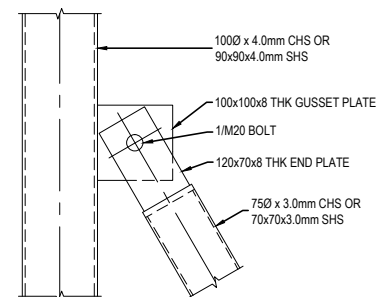
TYPICAL SECTION
SCALE 1:20



BACK ELEVATION
SCALE 1:20



DETAIL 1
SCALE 1:5



DETAIL 2
SCALE 1:5

NOTE :
ALL WELDS TO BE 6mm FILLET WELD ALL AROUND UNLESS OTHERWISE SPECIFIED



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR
1	JULY 17		CHANGE OF DEPARTMENTAL NAME	

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: BULK WATER				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
NAME	Prof. Reg. No.	SIGNATURE	DATE	

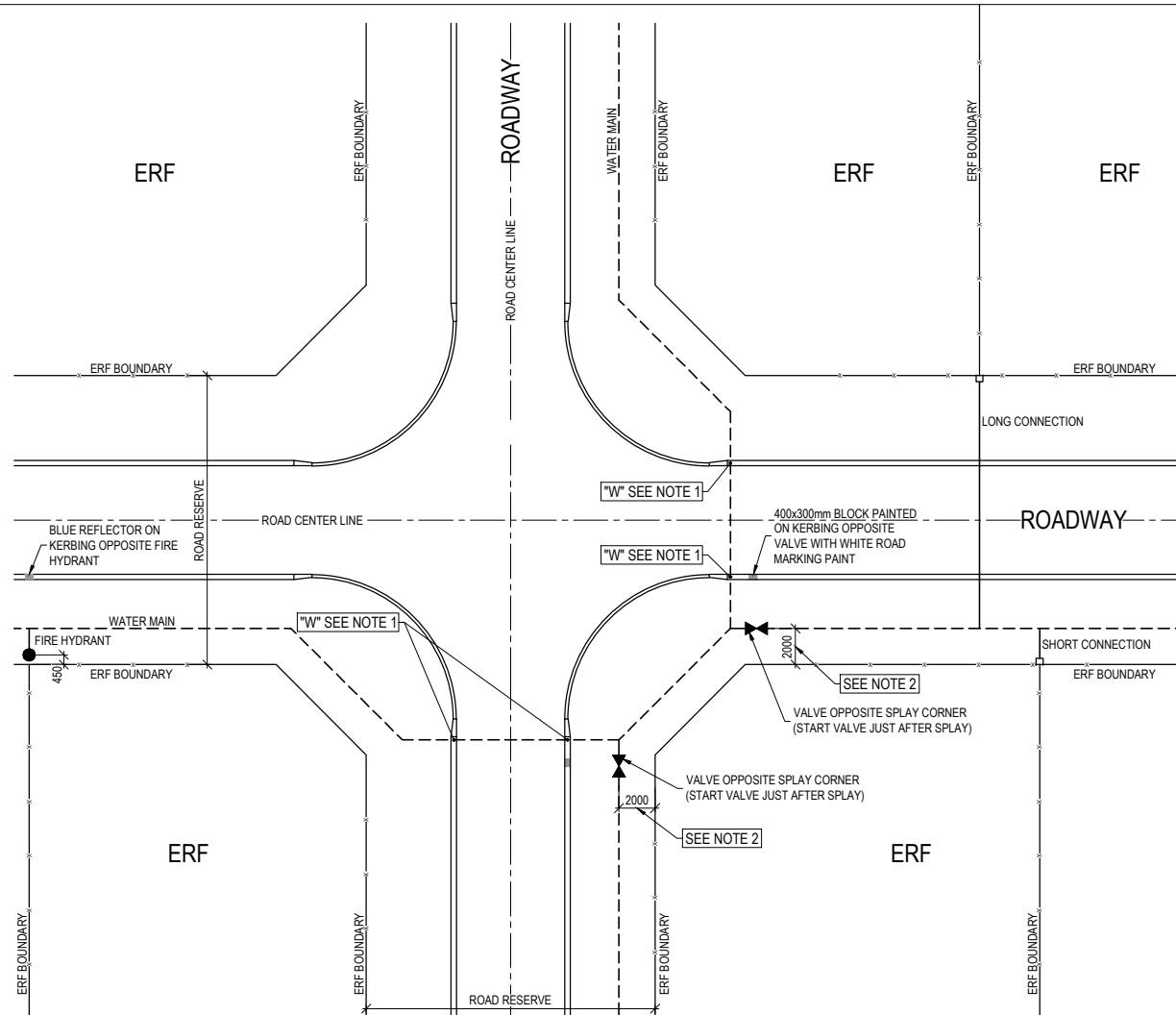
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME: _____ Pr Eng. Prof Reg No: _____	SIGNATURE: _____ DATE: _____
DRAWN	
NAME: M. M. BURGER	SIGNATURE: _____ DATE: JANUARY 2016
CHECKED	
NAME: _____ Pr Eng. Prof Reg No: _____	SIGNATURE: _____ DATE: _____
INFORMATION OFFICE CHECKED	
NAME: _____	SIGNATURE: _____ DATE: _____
DESIGN OFFICE APPROVAL	
NAME: _____ Pr Eng. Prof Reg No: _____	SIGNATURE: _____ DATE: _____

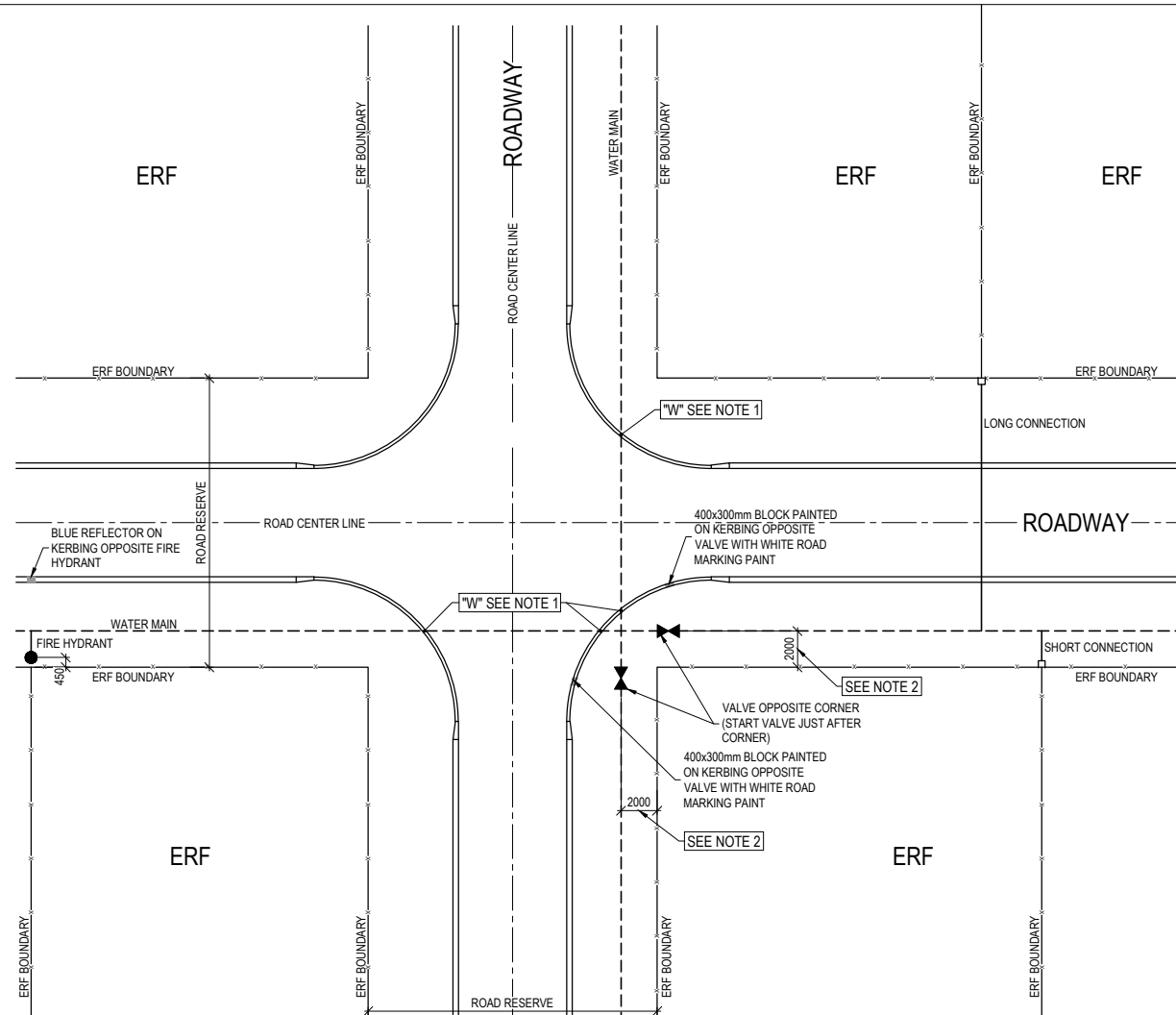
CONTRACT No.	---
PROJECT No.	---
SHEET No.	---
PAPER SIZE	A1
SCALE	AS SHOWN
DATE	JAN 2016

PROJECT STATUS	
RECEIVED SIGN WHEN APPLICABLE	
<input type="radio"/> CONCEPT DRAWING	<input type="radio"/> TENDER DRAWING
<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
PROJECT ENGINEER of COT:	
NAME: _____ Pr Eng. Prof Reg No: _____	SIGNATURE: _____ DATE: _____
INSPECTOR OF WORKS of COT:	
NAME: _____ Pr Eng. Prof Reg No: _____	SIGNATURE: _____ DATE: _____

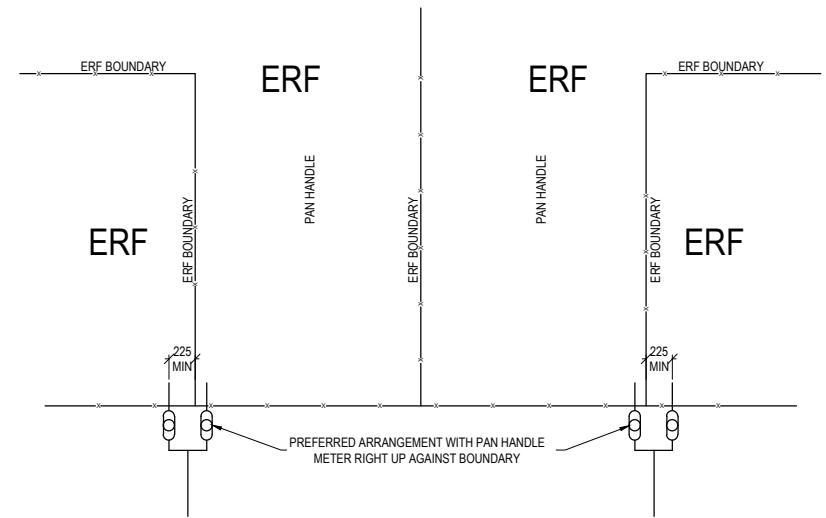
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	
CONTRACT NAME BOARD	
WBS No. :	
COT DRAWING NUMBER:	7515-W201



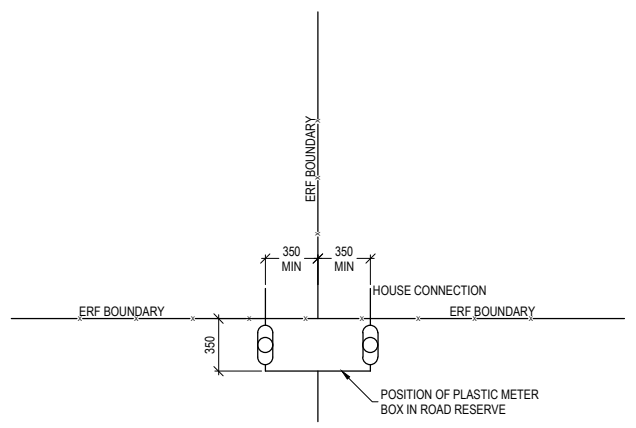
ALTERNATIVE 1 : WITH SPLAYS
SCALE 1:200



ALTERNATIVE 2 : NO SPLAYS
SCALE 1:200



POSITION OF METER BOXES IN PAN HANDLES



NORMAL POSITION OF METER BOXES
(REFER TO DWG 7515-W206)

- NOTES AND SPECIFICATIONS**
- GENERAL**
1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
 2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
 3. DO NOT SCALE FROM THESE DRAWINGS
 4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
 5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
 6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
 7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
 8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
 9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
 10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

- PARTICULAR**
1. THE LETTER 'W' IS TO BE FORMED IN THE CONCRETE KERB OF ALL NEW ROADS (REFER TO DWG. NO. 7515-W211) TO INDICATE THE POSITION OF WATER RETICULATION PIPE LINES
 2. WHEN ROAD RESERVE IS LESS THAN 13m, WATER PIPES ARE PLACED 0.75m FROM ROAD RESERVE BOUNDARY



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____
DIRECTOR: SYSTEM DEVELOPMENT			
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____
DIRECTOR: BULK WATER			
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____
DIRECTOR: WASTE WATER TREATMENT			
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____

CONSULTANT DETAIL	
Prof. Reg. No. _____	DATE _____
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE _____	DATE _____
CONSULTANT DRAWING NUMBER: _____	

DESIGNED	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DRAWN	
NAME: M. M. BURGER	Prof. Reg. No. _____
SIGNATURE: _____	DATE: JANUARY 2016
CHECKED	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
INFORMATION OFFICE CHECKED	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No. 880539
SIGNATURE: _____	DATE: JAN 2017

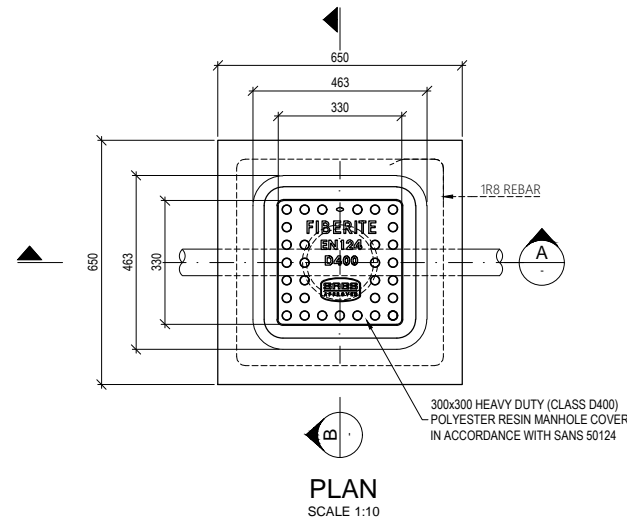
PROJECT STATUS	
RECEIVED SIGN WHEN APPLICABLE	
CONCEPT DRAWING	TENDER DRAWING
APPROVED CONSTRUCTION DRAWING	AS BUILT DRAWING
PROJECT ENGINEER OF COT:	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____
INSPECTOR OF WORKS OF COT:	
NAME: _____	Prof. Reg. No. _____
SIGNATURE: _____	DATE: _____

LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	
STANDARD DRAWING: PLACING OF HYDRANTS, VALVES, HOUSE CONNECTIONS & MARKERS	
WBS No. :	
COT DRAWING NUMBER:	7515-W202

TYPE B - SPECIAL :

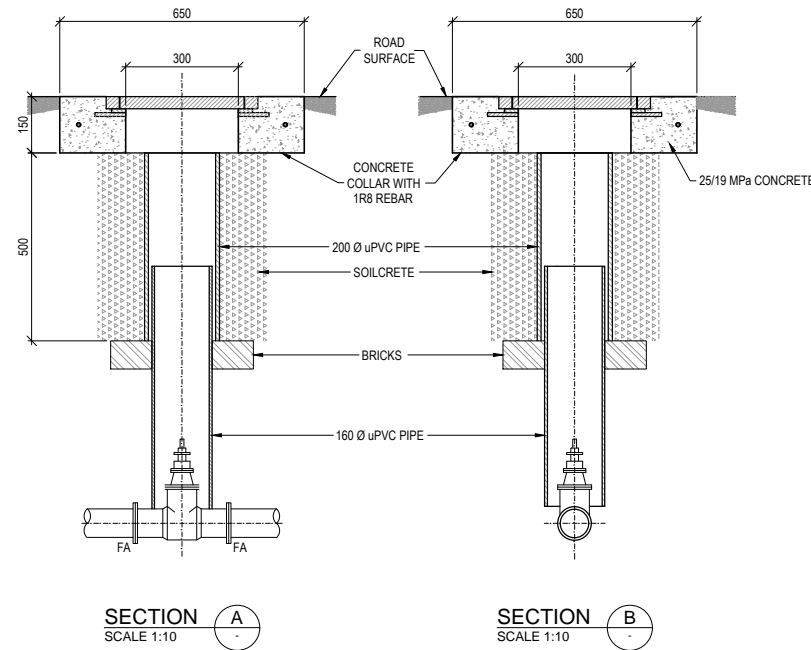
ONLY TO BE USED FOR :

- MAINTENANCE WITHIN ROADWAY
- FIRE HYDRANT CONNECTIONS LARGER THAN 200 Ø
- OR IF SPECIFIED BY ENGINEER



BENDING SCHEDULE						
TYPE & SIZE	QTY	CUTTING LENGTH (mm)	SHAPE CODE	A (mm)	B (mm)	MASS (kg)
R8	1	2150	60	550	550	0.85

PLAN
SCALE 1:10



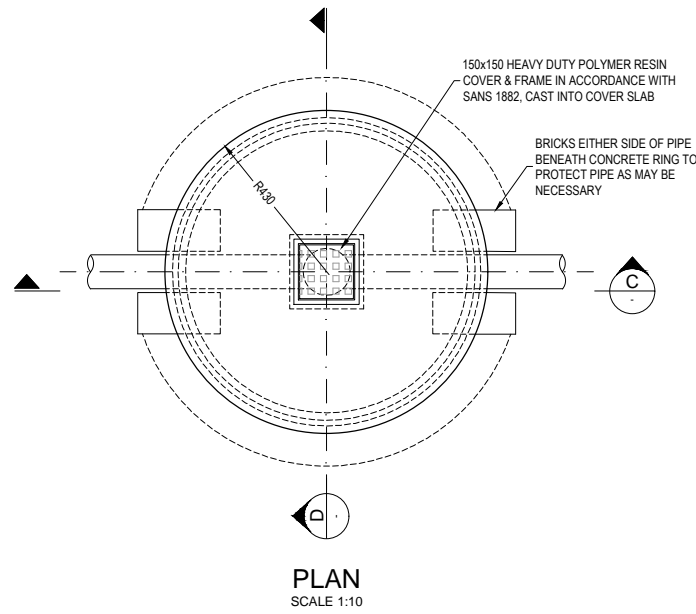
SECTION A
SCALE 1:10

SECTION B
SCALE 1:10

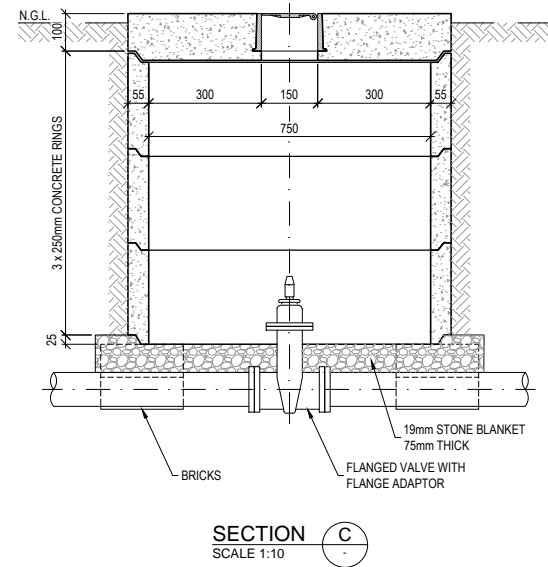
POLYESTER RESIN VALVE CHAMBER

TYPE A - STANDARD :

FOR USE WITHIN SIDE WALKS



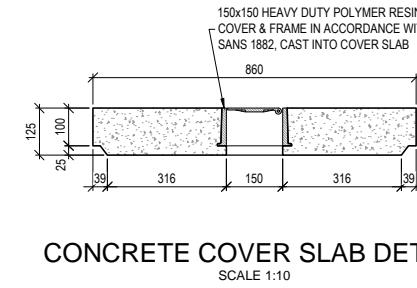
PLAN
SCALE 1:10



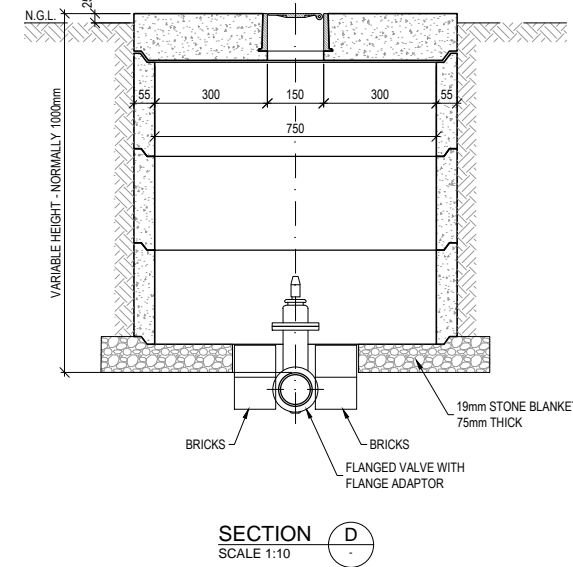
SECTION C
SCALE 1:10

CONCRETE RING VALVE CHAMBER

PRE-CAST CONCRETE VALVE CHAMBER RINGS			
INNER Ø (mm)	EFFECTIVE LENGTH (mm)	WALL THICKNESS (mm)	OUTER Ø (mm)
750	250, 500, 1000	55	860



CONCRETE COVER SLAB DETAIL
SCALE 1:10



SECTION D
SCALE 1:10

NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS
4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

PARTICULAR

1. PAINT 400x300mm BLOCK ON KERBING OPPOSITE VALVE WITH WHITE ROAD MARKING PAINT
2. ALL RSV VALVES TO BE FLANGED NON RISING SPINDLE, ANTI-CLOCKWISE CLOSING WITH CAP TOP
3. STEEL PIPES MUST BE WRAPPED WITH CANUSA-CPS WRAPID TAPE
4. STAINLESS STEEL BOLTS & NUTS TO BE USED
5. MANHOLE COVER SPECIFICATIONS :
 - WITHIN ROADWAY : CLASS D400 MANHOLE COVER IN ACCORDANCE WITH SANS 50124, POLYESTER RESIN OR SIMILAR
 - WITHIN SIDEWALK : HEAVY DUTY COVER & FRAME IN ACCORDANCE WITH SANS 1882, POLYMER RESIN OR SIMILAR



CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

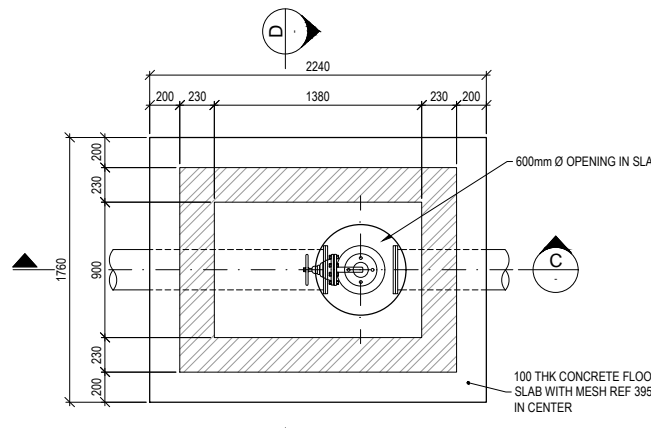
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER: 0	

DESIGNED	
NAME: Pr Eng.	Prof. Reg. No.:
SIGNATURE:	DATE:
DRAWN	
NAME: M. M. BURGER	Prof. Reg. No.:
SIGNATURE:	DATE: JANUARY 2016
CHECKED	
NAME: Pr Eng.	Prof. Reg. No.:
SIGNATURE:	DATE:
INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No.:
SIGNATURE:	DATE: JAN 2017

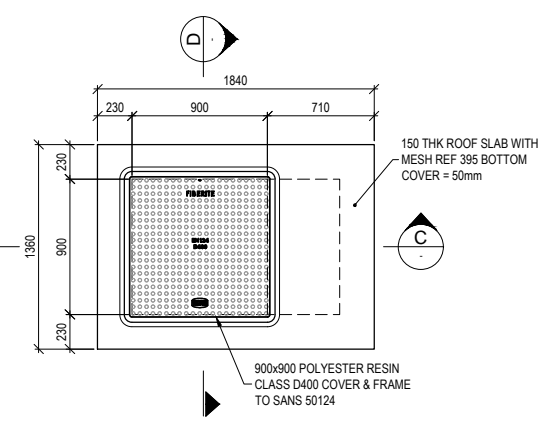
CONTRACT No.	315-02
PROJECT No.	315-02
SHEET No.	-
PAPER SIZE	A1
SCALE	-
DATE	JAN 2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
<input type="radio"/> CONCEPT DRAWING	<input type="radio"/> TENDER DRAWING	<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME:	Prof. Reg. No.:	DATE:	
INSPECTOR OF WORKS OF COT:			
NAME:	Prof. Reg. No.:	DATE:	

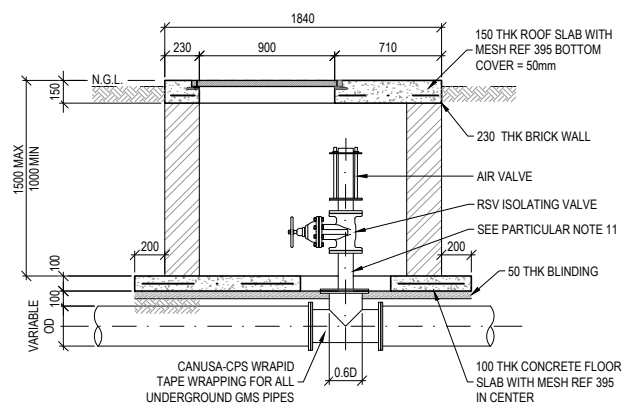
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	STANDARD DRAWING: VALVE CHAMBERS
WBS No. :	
COT DRAWING NUMBER:	7515-W203



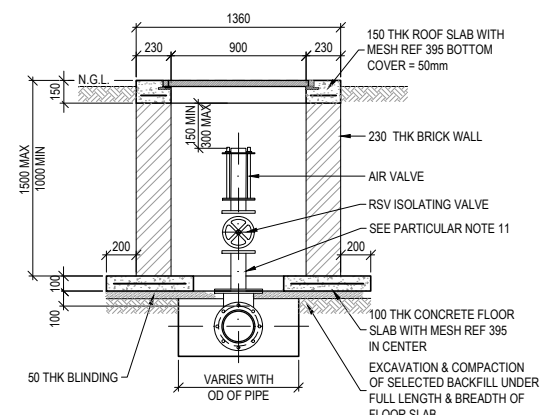
PLAN - FLOOR SLAB
SCALE 1:25



PLAN - ROOF SLAB
SCALE 1:25

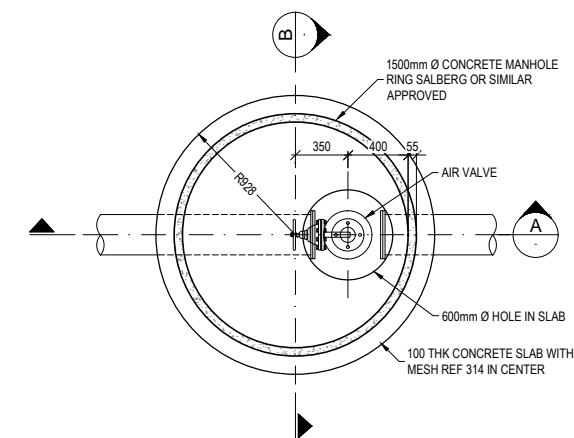


SECTION C
SCALE 1:25

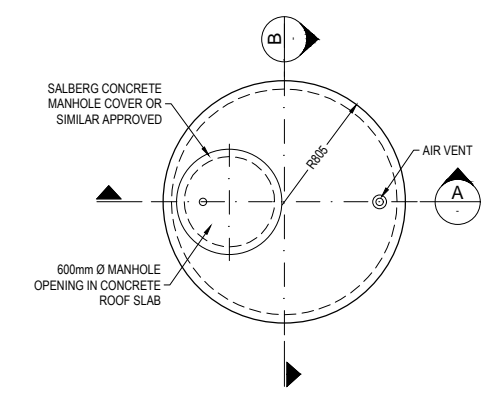


SECTION D
SCALE 1:25

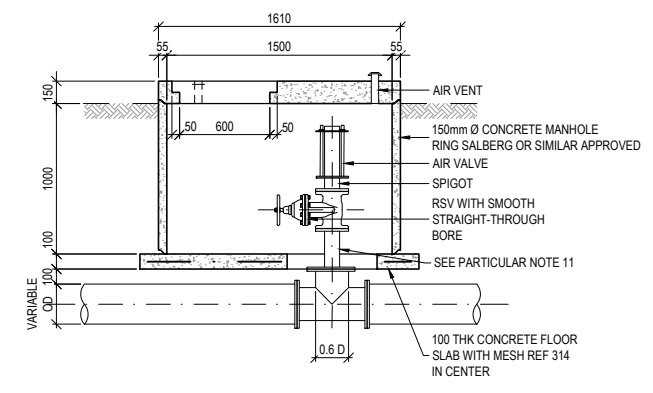
ONLY FOR MAINTENANCE OR IF DIRECTED BY ENGINEER



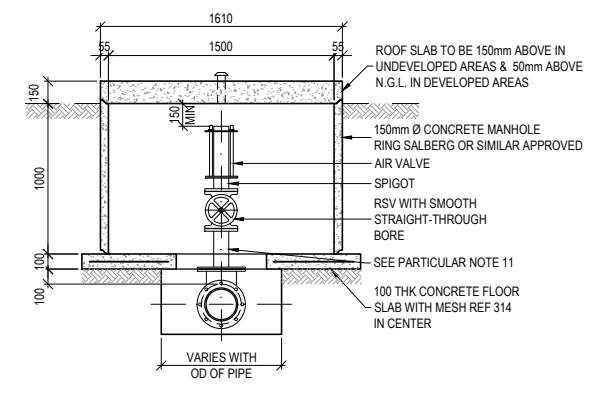
PLAN - FLOOR SLAB
SCALE 1:25



PLAN - ROOF SLAB
SCALE 1:25



SECTION A
SCALE 1:25



SECTION B
SCALE 1:25

FOR ALL NEW AIR VALVE CHAMBERS

NOTES AND SPECIFICATIONS

- GENERAL**
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 - ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
 - DO NOT SCALE FROM THESE DRAWINGS
 - ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
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 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
 - THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
 - THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

- PARTICULAR**
- BRICKWORK TO BE IN ACCORDANCE WITH SANS 0164 - PART 1 - 1980
 - CLASS II MORTAR TO BE USED (1 CEMENT CEM 1 : 3 SAND)
 - BRICKS TO HAVE A CHARACTERISTIC COMPRESSIVE STRENGTH OF 14MPa
 - CONCRETE FOR SLABS TO BE CLASS 25/19
 - MESH REF. 395 IN CENTER OF FLOOR SLABS
 - MIN LAP LENGTH OF MESH = 500mm
 - THE VALVE CHAMBER LID IS TO BE DESIGNED TO CARRY EXTERNAL VEHICLE LOADS
 - THE Ø OF THE BRANCH TO BE APPROXIMATELY 0.6 x OD OF THE PIPE
 - BRANCH LENGTH TO BE (0.5 x OD OF THE PIPE + 350mm) FROM SIDE OF PIPE
 - BRANCH TO BE FLANGED & DRILLED TO SABS 1123 TABLE 1600/3
 - SPACER BETWEEN BRANCH FLANGE & VALVE TO BE MADE UP BY 200mm LONG STUB, MOUNTED IN CENTER OF SPECIAL FLANGE (BRANCH NB) WITH STUB (AIR VALVE NB) FLANGED & DRILLED TO SABS 1123 TABLE 1600/3
 - SEE DRAWING 7515-W209 FOR DETAILS OF AIRVENT



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)				
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017	
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____	
DIRECTOR: BULK WATER				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____	
DIRECTOR: WASTE WATER TREATMENT				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE: _____	

CONSULTANT DETAIL

Prof. Reg. No. _____
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING

SIGNATURE: _____ DATE: _____

CONSULTANT DRAWING NUMBER: _____

DESIGNED
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

DRAWN
NAME: M. M. BURGER
SIGNATURE: _____ DATE: FEBRUARY 2016

CHECKED
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

INFORMATION OFFICE CHECKED
NAME: _____
SIGNATURE: _____ DATE: _____

DESIGN OFFICE APPROVAL
NAME: T.F. HILDER
Prof Reg No: 580539
SIGNATURE: _____ DATE: JAN 2017

CONTRACT No. _____
PROJECT No. _____
SHEET No. _____
PAPER SIZE A1
SCALE AS SHOWN
DATE FEB 2016

PROJECT STATUS
RECEIVED SIGN WHEN APPLICABLE

CONCEPT DRAWING TENDER DRAWING APPROVED CONSTRUCTION DRAWING AS BUILT DRAWING

PROJECT ENGINEER OF COT:
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

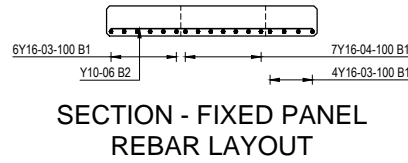
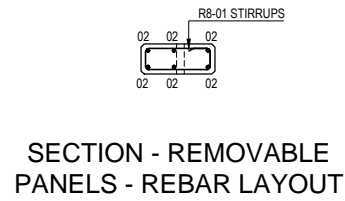
INSPECTOR OF WORKS OF COT:
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

LOCATION OF PROJECT: _____

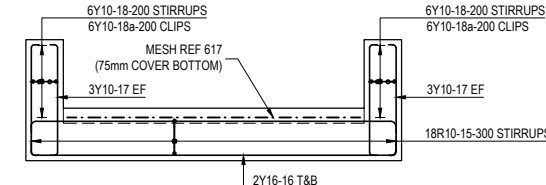
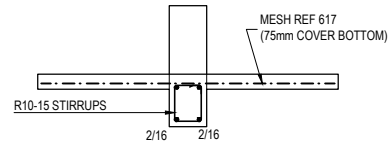
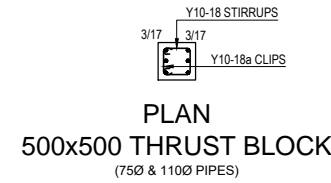
DESCRIPTION OF PROJECT: **STANDARD DRAWING : AIR VALVE CHAMBERS**

WBS No. : _____

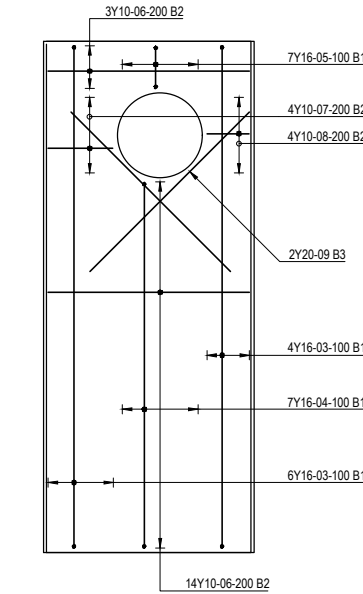
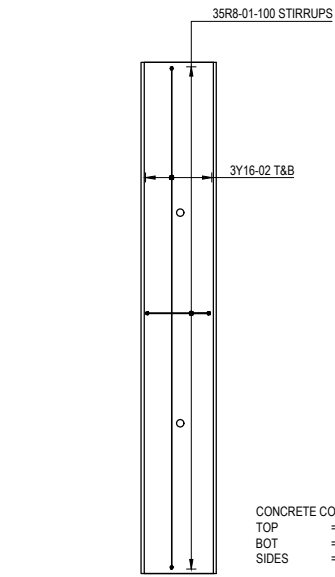
COT DRAWING NUMBER: **7515-W204**



CONCRETE COVER OVER REBAR:
 TOP = 75mm
 BOT = 75mm
 SIDES = 75mm



MEMBER	NO OF	NO BARS	DIA	BAR BARK	TOTAL	LENGTH	SC	A	B	C	D	E/R	kg
500x500 BEAM	1	18	R10	15	18	1800	60	470	350				20
	1	4	Y16	16	4	5100	38	160	4850				32
500x500 THRUST BLOCK	2	6	Y10	17	12	1600	38	100	1460				12
	2	6	Y10	18a	12	550	35	350					11
700x500 BEAM	1	19	R10	19	19	2200	60	470	550				26
	1	19	R8	20	19	1500	60	470	210				11
	1	8	Y16	21	8	5500	38	160	5250				69
700x700 THRUST BLOCK	2	7	Y12	22	14	1900	72	550	550				24
	2	21	Y12	23	42	750	35	550					28
1000x500 BEAM	2	9	Y12	24	24	1750	38	120	1540				37
	1	21	R10	25	21	2800	60	470	850				36
1000x1000 THRUST BLOCK	1	42	R10	26	42	1500	60	470	200				39
	1	12	Y16	27	12	6100	38	160	5850				116
	2	9	Y12	28	18	2800	72	850	850				45
	2	27	Y12	29	54	1050	35	850					50
	2	28	Y12	30	56	2000	38	200	1650				99
	6	8	10	12	16	20	25	32	40	TOTAL			132
R		11	121										516
Y			25	274	217								649
TOTAL		11	146	274	217								

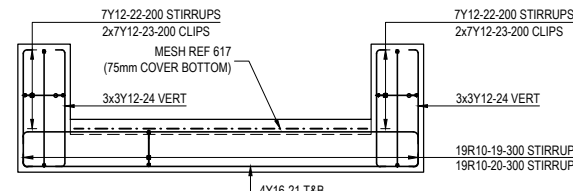
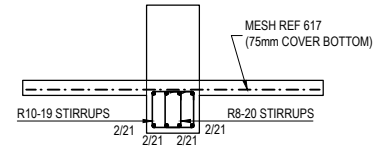
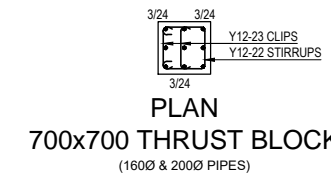


CONCRETE COVER OVER REBAR:
 TOP = 30mm
 BOT = 30mm
 SIDES = 30mm

CROSS SECTION - 500x500 BEAM 500x500 THRUST BLOCK (750 & 1100 PIPES)

LONG SECTION - 500x500 BEAM 500x500 THRUST BLOCK (1600 & 2000 PIPES)

CONCRETE COVER OVER REBAR:
 TOP = 75mm
 BOT = 75mm
 SIDES = 75mm



CROSS SECTION - 700x500 BEAM 700x700 THRUST BLOCK (1600 & 2000 PIPES)

LONG SECTION - 700x500 BEAM 700x700 THRUST BLOCK (1600 & 2000 PIPES)

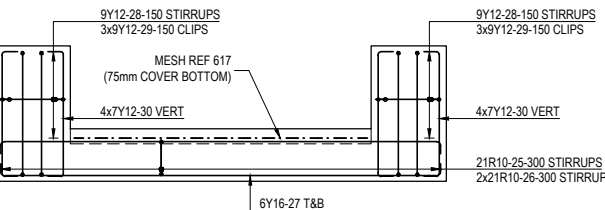
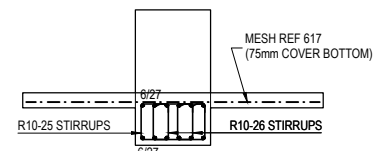
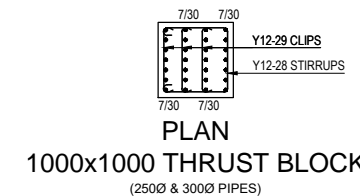
NOTE:
 MINIMUM SPLICE ON Y16 = 1000mm
 ALL HOOKS = 100mm

PLAN - REMOVABLE PANELS REBAR LAYOUT (4 NO OFF)

PLAN - FIXED PANEL REBAR LAYOUT (1 NO OFF)

MEMBER	NO OF	NO BARS	DIA	BAR BARK	TOTAL	LENGTH	SC	A	B	C	D	E/R	kg
FIXED PANEL	1	10	Y16	03	10	3600	35	3340					57
	1	7	Y16	04	7	2700	35	2430					30
	1	7	Y16	05	7	550	35	280					6
	1	17	Y10	06	17	1350	20	1340					14
	1	4	Y10	07	4	450	20	430					1
	1	4	Y10	08	4	300	20	280					1
	1	2	Y20	09	2	1500	20	1500					7
REMOVABLE PANELS	4	35	R8	01	140	1300	60	140	420				72
	4	6	Y16	02	24	3600	35	3340					136
R	6	8	10	12	16	20	25	32	40	TOTAL			72
Y			16			229	7						253
TOTAL		72	16			229	7						324

CONCRETE COVER OVER REBAR:
 TOP = 75mm
 BOT = 75mm
 SIDES = 5mm



CROSS SECTION - 1000x500 BEAM 1000x1000 THRUST BLOCK (2500 & 3000 PIPES)

LONG SECTION - 1000x500 BEAM 1000x1000 THRUST BLOCK (2500 & 3000 PIPES)

NOTES AND SPECIFICATIONS

GENERAL

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- THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
- THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
- FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

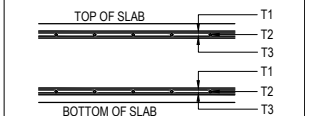
PARTICULAR

- CHAMBERS FOR PIPES LARGER THAN 300 Ø AND / OR A HIGHER TEST PRESSURE THAN 18 BAR SHALL BE DESIGNED BY THE ENGINEER

ABBREVIATIONS FOR REBAR DETAILING:

- T - TOP
- B - BOTTOM
- EF - EACH FACE
- Y - HIGH YIELD STEEL
- R - MILD STEEL

STEEL FIXING LEGEND:



CITY OF TSHWANE
 WATER AND SANITATION DEPARTMENT

NO	DATE	APPROVED	DESCRIPTION	PAR

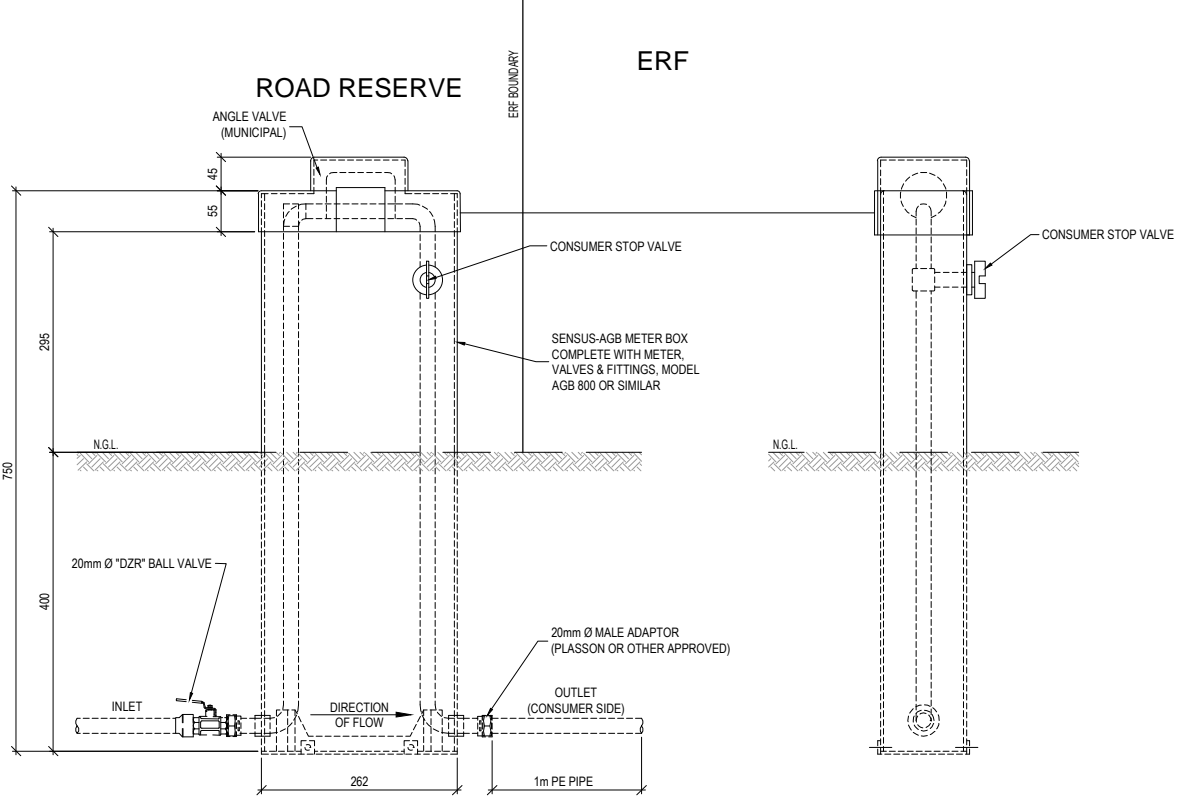
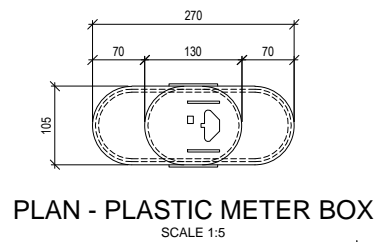
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)		NAME: _____	Prof. Reg. No. _____	SIGNATURE: _____	DATE: JAN 2017
E.J. VICTOR					
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)					
DIRECTOR: SYSTEM DEVELOPMENT		NAME: _____	Prof. Reg. No. _____	SIGNATURE: _____	DATE: _____
DIRECTOR: BULK WATER		NAME: _____	Prof. Reg. No. _____	SIGNATURE: _____	DATE: _____
DIRECTOR: INFRASTRUCTURE PROVISION		NAME: _____	Prof. Reg. No. _____	SIGNATURE: _____	DATE: _____
DIRECTOR: WASTE WATER TREATMENT		NAME: _____	Prof. Reg. No. _____	SIGNATURE: _____	DATE: _____
CONSULTANT DRAWING NUMBER: _____					

DESIGNED		NAME: R.P. AINSLIE	Pr Eng.	Prof Reg No: 810370
DRAWN		NAME: M.M. BURGER	Pr Eng.	Prof Reg No: _____
CHECKED		NAME: _____	Pr Eng.	Prof Reg No: _____
INFORMATION OFFICE CHECKED		NAME: _____	Pr Eng.	Prof Reg No: _____
DESIGN OFFICE APPROVAL		NAME: T.F. HILDER	Prof Reg No: 880539	SIGNATURE: _____
DATE: JAN 2016				

CONCEPT DRAWING	TENDER DRAWING	APPROVED CONSTRUCTION DRAWING	AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME: _____ Pr Eng. Prof Reg No: _____			
SIGNATURE: _____ DATE: _____			
INSPECTOR OF WORKS OF COT:			
NAME: _____ Pr Eng. Prof Reg No: _____			
SIGNATURE: _____ DATE: _____			

PROJECT No. _____	SHEET No. _____	PAPER SIZE A1	SCALE _____	DATE JAN 2016
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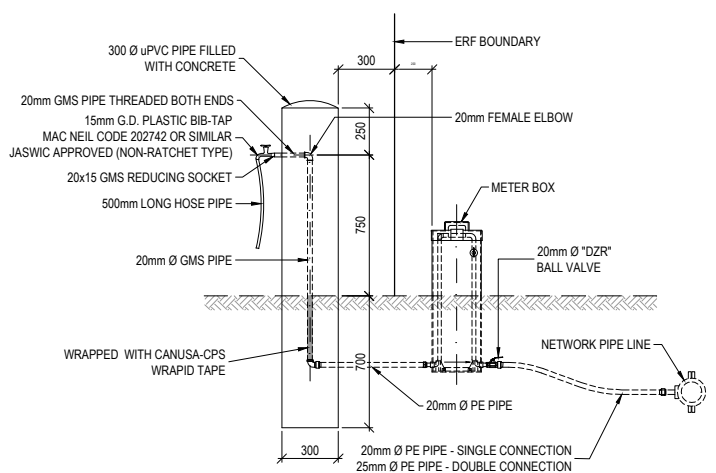
LOCATION OF PROJECT: _____	DESCRIPTION OF PROJECT: STANDARD DRAWING: BRICKWORK VALVE CHAMBER (MAX 3.4m o/a) REBAR DETAIL & BENDING SCHEDULE
WBS No. : _____	COT DRAWING NUMBER: 7515-W205



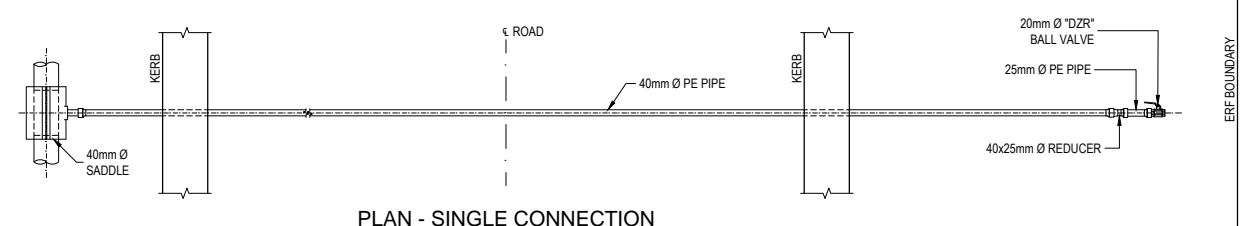
ELEVATION - PLASTIC METER BOX
SCALE 1:5

SECTION - PLASTIC METER BOX
SCALE 1:5

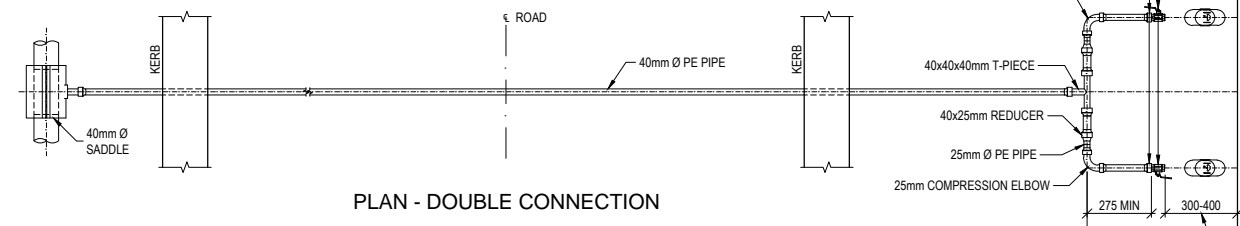
FOR USE WITH 20mm Ø PIPES FOR ALL NEW DOMESTIC CONNECTIONS



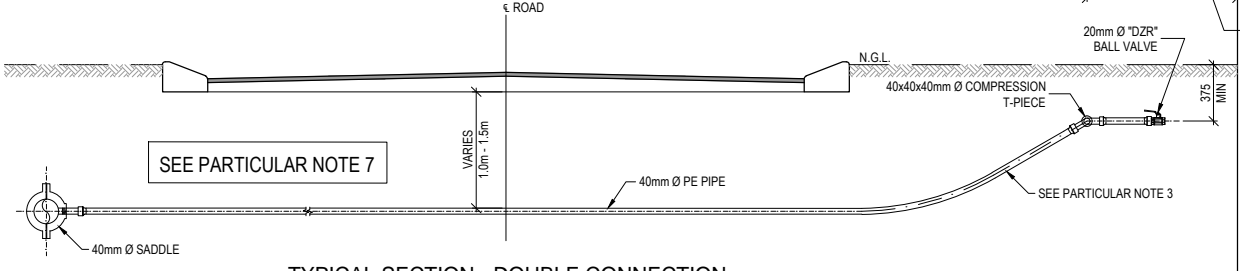
STAND PIPE WITH WATER METER FOR INDIVIDUAL LOW COST HOUSING STANDS
SCALE 1:25



PLAN - SINGLE CONNECTION

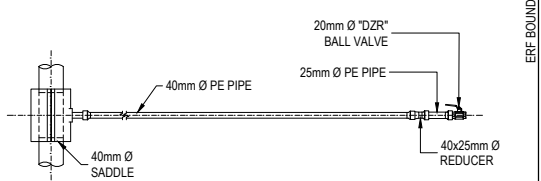


PLAN - DOUBLE CONNECTION

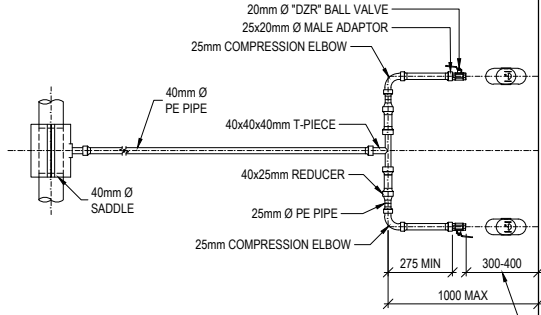


TYPICAL SECTION - DOUBLE CONNECTION

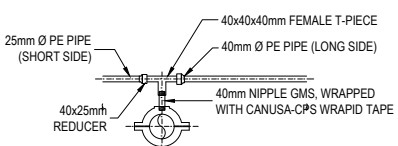
LONG ERF CONNECTIONS
SCALE 1:25



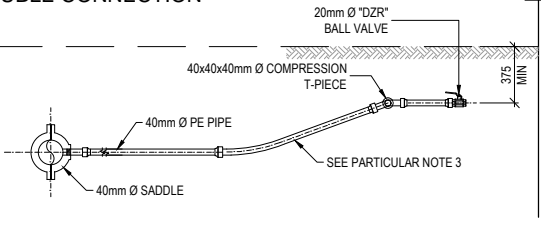
PLAN - SINGLE CONNECTION



PLAN - DOUBLE CONNECTION



LONG SHORT COMBINATION DETAIL
SCALE 1:25



TYPICAL SECTION DOUBLE CONNECTION

SHORT ERF CONNECTIONS
SCALE 1:25

NOTES AND SPECIFICATIONS

- GENERAL**
1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
 2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
 3. DO NOT SCALE FROM THESE DRAWINGS
 4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
 5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
 6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
 7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
 8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
 9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
 10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

- PARTICULAR**
1. ALL PIPES & FITTINGS SHALL COMPLY WITH THE 'SCHEDULE OF APPROVAL PIPES & FITTINGS' AS COMPILED BY THE DEPARTMENT OF WATER AND SANITATION FROM TIME TO TIME

NO SO CALLED LOW DENSITY AGRICULTURAL PIPES ARE ACCEPTABLE

2. 1m COVER ON PIPES CROSSING ROADS
3. TRANSITION OF PIPE DEPTH FROM 1m TO 0.375m TO BE OVER A LENGTH OF 3m (1:5 GRADIENT) TO PRECLUDE ANY KINKS IN PIPE. IF SIDEWALK IS TOO NARROW, APPROPRIATE BENDS SHALL BE USED
4. DISTANCE BETWEEN METER BOXES MAY BE INCREASED ON SITE DEPENDING ON WHETHER AN ELECTRIC METER BOX OR TELKOM KIOSK IS TO BE INSTALLED BETWEEN CONNECTIONS
5. 90N MASS HOUSING PROJECTS, OR IF APPROVED BY THE ENGINEER, 40mm Ø & 25mm Ø PIPES MAY BE REPLACED BY 25mm Ø & 20mm Ø PIPES RESPECTIVELY, USING APPROPRIATE FITTINGS
6. VALVES MUST BE ISO OR SABS APPROVED, OR JASWIC ACCEPTED & LISTED
7. ROAD CROSSING DRILLED WHERE POSSIBLE, OTHERWISE ENGINEER MUST APPROVE OPEN TRENCH CROSSING. SEE DRAWING 7515-W211 FOR TRENCHING AND BACKFILL DETAILS.



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

CONSULTANT DETAIL

Prof. Reg. No. _____
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING

SIGNATURE: _____ DATE: _____

CONSULTANT DRAWING NUMBER: _____

DESIGNED
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

DRAWN
NAME: M. M. BURGER
SIGNATURE: _____ DATE: JANUARY 2016

CHECKED
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

INFORMATION OFFICE CHECKED
NAME: _____
SIGNATURE: _____ DATE: _____

DESIGN OFFICE APPROVAL
NAME: T.F. HILDER Prof Reg No: 880539
SIGNATURE: _____ DATE: JAN 2017

CONTRACT No.		PROJECT STATUS			
-		RECEIVED SIGN WHEN APPLICABLE			
PROJECT No.	-	<input type="radio"/> CONCEPT DRAWING	<input type="radio"/> TENDER DRAWING	<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
SHEET No.	-	PROJECT ENGINEER OF COT:			
PAPER SIZE	A1	NAME: _____ Pr Eng. Prof Reg No: _____	SIGNATURE: _____ DATE: _____		
SCALE	AS SHOWN	INSPECTOR OF WORKS OF COT:			
DATE	JAN 2016	NAME: _____ Prof Reg No: _____	SIGNATURE: _____ DATE: _____		

LOCATION OF PROJECT: _____

DESCRIPTION OF PROJECT:
**STANDARD DRAWING:
PLASTIC METER BOX AND
WATER COMMUNICATION PIPES**

WBS No.: _____

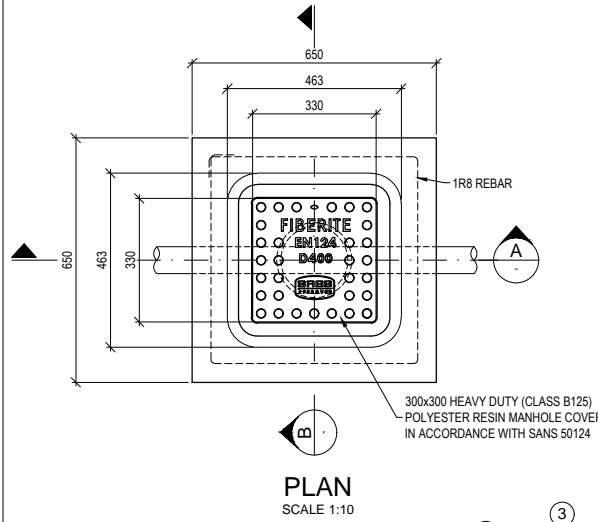
COT DRAWING NUMBER: **7515-W206**

No.	ITEM DESCRIPTION	WATER CONNECTION SIZES (mm)				
		400 METER	500 METER	800 METER	1000 METER	1500 METER
1	ELBOWS, GALV.	500	800	1000	1500	SEE PARTICULAR NOTE 7
2	VALVE	-	RSV 800	RSV 1000	RSV 1500	
3	REDUCING BUSH	50-400	80-500	100-800	150-1000	
4	NIPPLE	400	500	800	1000	
5	WATER METER	400	500	800	1000	
6	PIPE, GALV.	500	800	1000	1500	
7	CANUSA-CPS WRAPID TAPE	YES	YES	YES	YES	
8	CONCRETE VALVE BOX	NO	YES	YES	YES	
9	ANCHOR BLOCKS	YES	YES	YES	YES	
10	WHEEL VALVE	YES-U/S ONLY	800-D/S ONLY	1000-D/S ONLY	NO	
11	SCREWED FLANGE	400	500	800	1000	
12	STEEL PIPE WITH PUDDLE FLANGE & ANCHOR BLOCK	NO	800	1000	1500	
13	STRAINER	800	1000	1500	2000	

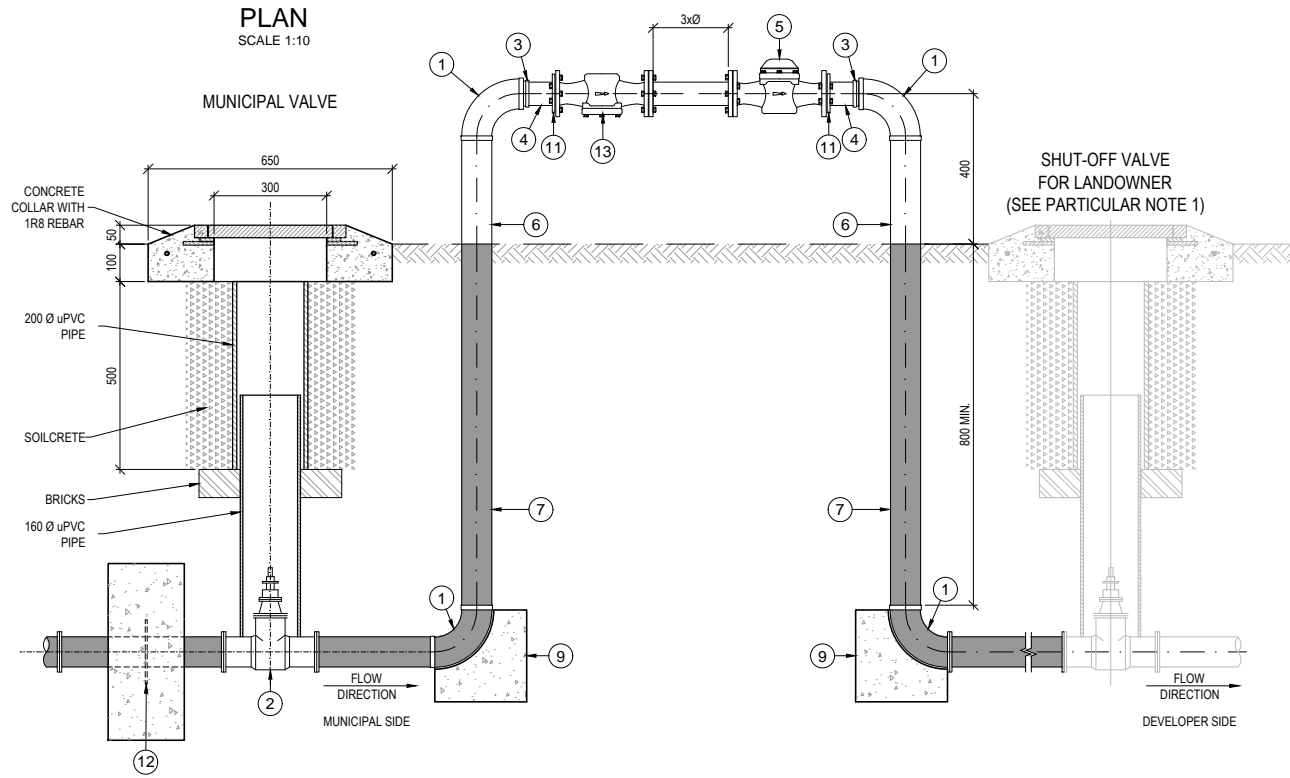
NOTE ON STRAINERS

- PREFERRED POSITION IS AS SHOWN ON THE DRAWING.
- IN THE EVENT OF THIS NOT BEEN POSSIBLE, THE STRAINER SHALL BE INSTALLED BELOW GROUND BETWEEN THE UNDERGROUND VALVE AND THE UPSTAND METER, IN A CONCRETE RING VALVE-CHAMBER.
- SEE DRAWING 7515-W203 FOR DETAIL OF CONCRETE RING VALVE CHAMBER.

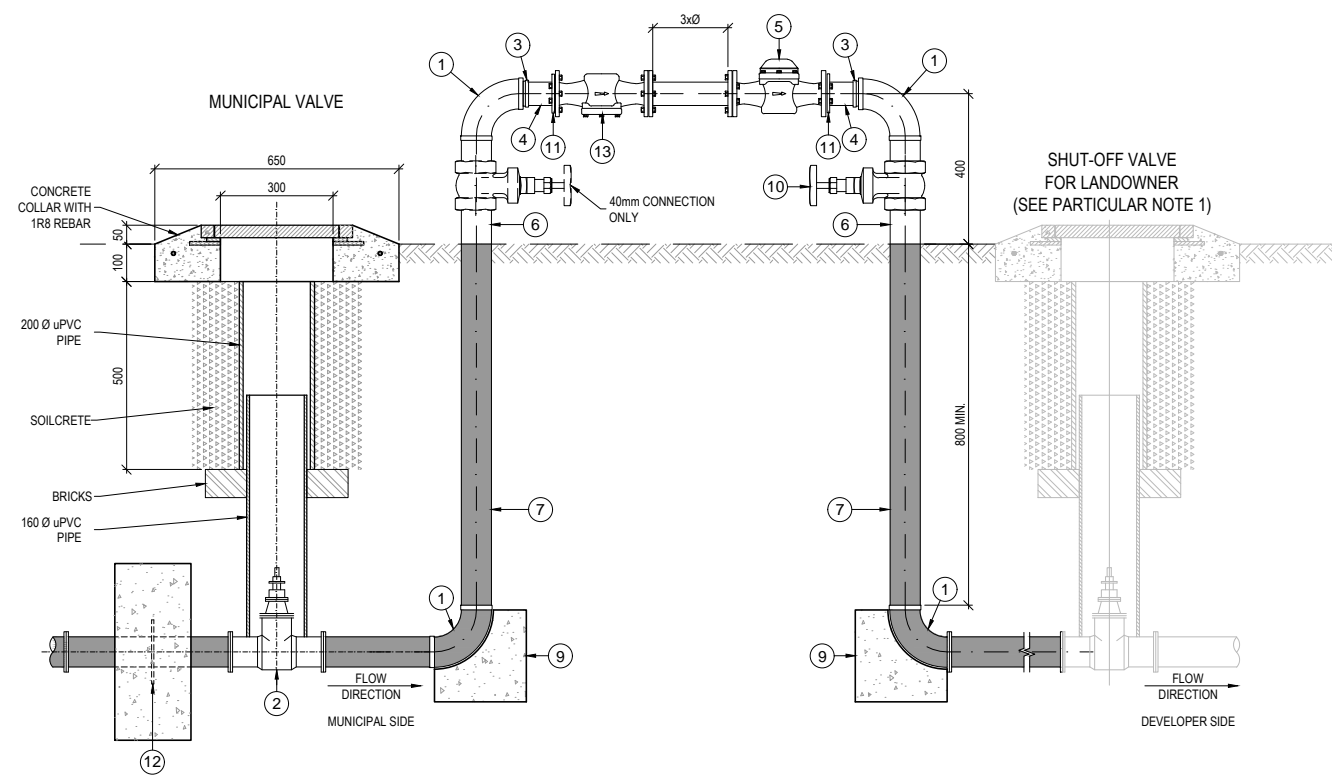
BENDING SCHEDULE						
TYPE & SIZE	QTY	CUTTING LENGTH (mm)	SHAPE CODE	A (mm)	B (mm)	MASS (kg)
R8	1	2150	60	550	550	0.85



PLAN
SCALE 1:10



WATER METER CONNECTION WITH STRAINER FOR PIPES > 100mm Ø
ALTERNATIVE A
SCALE 1:10



WATER METER CONNECTION WITH STRAINER FOR PIPES FROM 50mm Ø - 100mm Ø
ALTERNATIVE B
SCALE 1:10

NOTES AND SPECIFICATIONS

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PARTICULAR

- IN TERMS OF COT-BYLAWS, EVERY LANDOWNER SHALL INSTALL A DOWNSTREAM SHUT-OFF VALVE
- PLACE WATER METER PARALLEL TO PROPERTY BOUNDARY
- CONCRETE STRENGTH FOR COLLAR TO BE 20 MPa (28 DAYS)
- CONCRETE COVER TO BE 50mm TOP, BOTTOM & SIDES
- WHERE UNDERGROUND VALVE BOX IS PLACED IN THE ROAD OR PAVEMENT, THE TOP OF THE CONCRETE COLLAR SHALL BE FLAT & A CLASS D400 COVER SHALL BE USED IN ACCORDANCE WITH SANS 50124
- FOR 200 Ø & LARGER CONNECTIONS (METER SIZE 150 Ø & LARGER) SPECIAL ARRANGEMENTS TO BE MADE WITH WATER & SANITATION DIVISION
- ONLY PIPES & FITTINGS APPROVED BY THE DEPARTMENT OF WATER AND SANITATION FROM TIME TO TIME SHALL BE USED



CITY OF TSHWANE
WATER AND SANITATION
DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

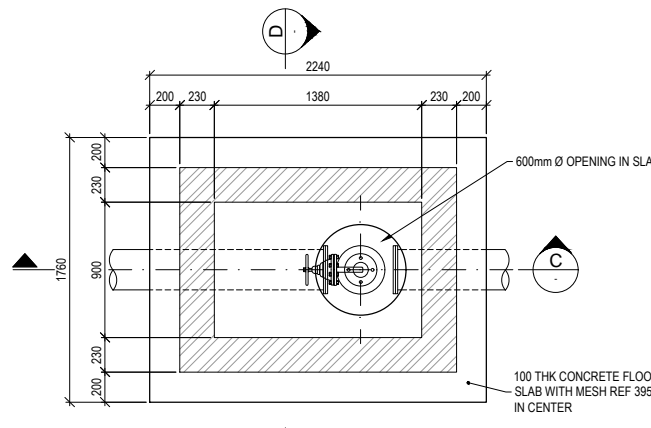
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME: Pr Eng.	Prof. Reg. No.:
SIGNATURE:	DATE:
DRAWN	
NAME: M. M. BURGER	Prof. Reg. No.:
SIGNATURE:	DATE: FEBRUARY 2016
CHECKED	
NAME: Pr Eng.	Prof. Reg. No.:
SIGNATURE:	DATE:
INFORMATION OFFICE CHECKED	
NAME:	Prof. Reg. No.:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof. Reg. No.:
SIGNATURE:	DATE: JAN 2017

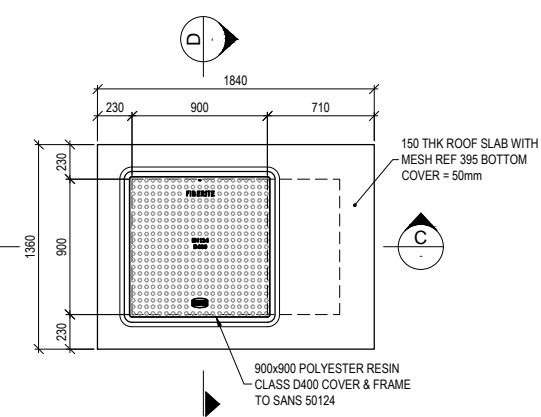
CONTRACT No.	
PROJECT No.	
SHEET No.	
PAPER SIZE	A1
SCALE	AS SHOWN
DATE	FEB 2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
<input type="radio"/> CONCEPT DRAWING	<input type="radio"/> TENDER DRAWING	<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME:	Prof. Reg. No.:	DATE:	
INSPECTOR OF WORKS OF COT:			
NAME:	Prof. Reg. No.:	DATE:	

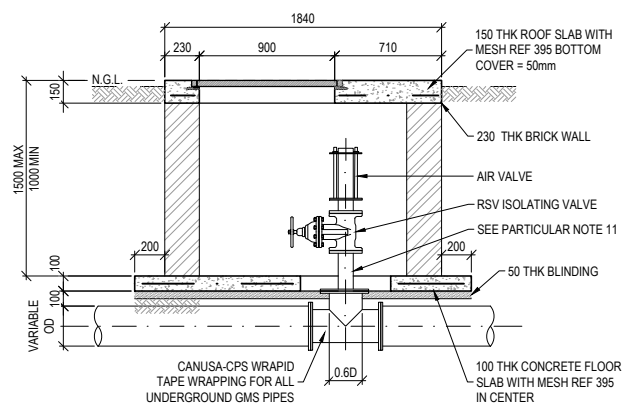
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	STANDARD DRAWING: WATER METER DETAIL WITH STRAINER FOR COMMERCIAL & GROUP HOUSING DEVELOPMENTS
WBS No.:	
COT DRAWING NUMBER:	7515-W207



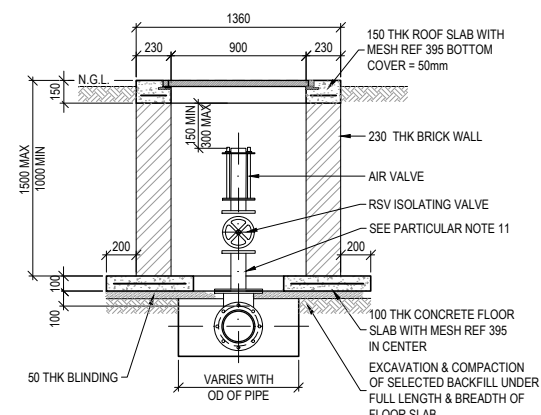
PLAN - FLOOR SLAB
SCALE 1:25



PLAN - ROOF SLAB
SCALE 1:25

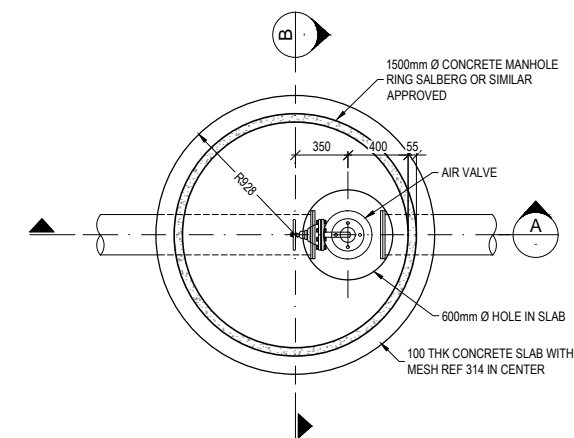


SECTION C
SCALE 1:25

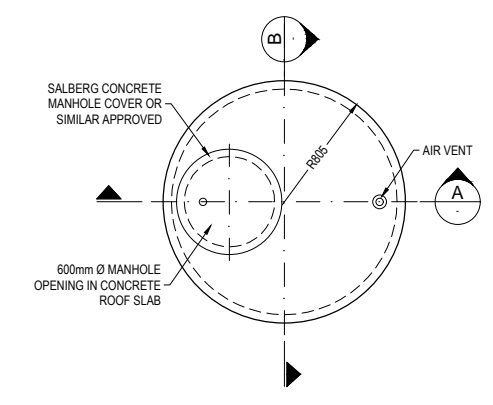


SECTION D
SCALE 1:25

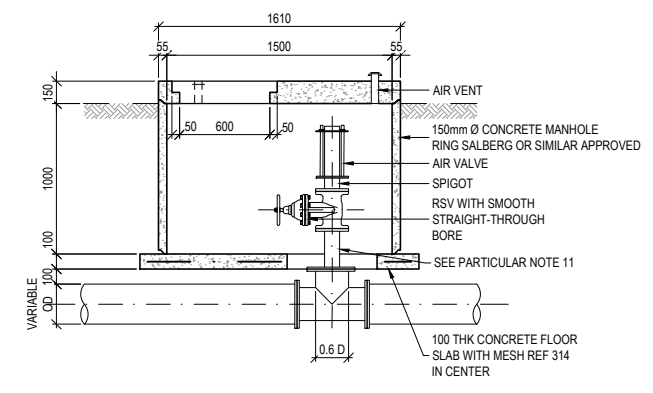
ONLY FOR MAINTENANCE OR IF DIRECTED BY ENGINEER



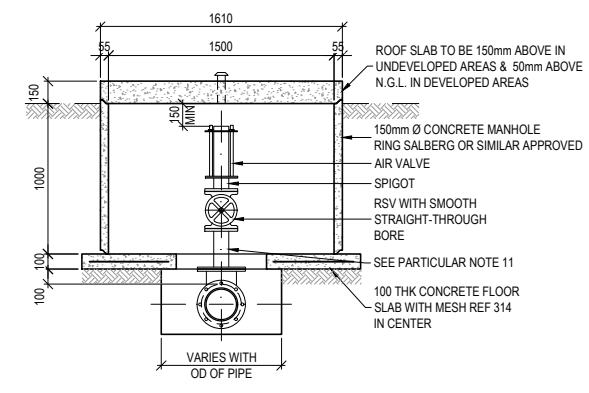
PLAN - FLOOR SLAB
SCALE 1:25



PLAN - ROOF SLAB
SCALE 1:25



SECTION A
SCALE 1:25



SECTION B
SCALE 1:25

FOR ALL NEW AIR VALVE CHAMBERS

NOTES AND SPECIFICATIONS

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 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

- PARTICULAR**
- BRICKWORK TO BE IN ACCORDANCE WITH SANS 0164 - PART 1 - 1980
 - CLASS II MORTAR TO BE USED (1 CEMENT CEM 1 : 3 SAND)
 - BRICKS TO HAVE A CHARACTERISTIC COMPRESSIVE STRENGTH OF 14MPa
 - CONCRETE FOR SLABS TO BE CLASS 25/19
 - MESH REF. 395 IN CENTER OF FLOOR SLABS
 - MIN LAP LENGTH OF MESH = 500mm
 - THE VALVE CHAMBER LID IS TO BE DESIGNED TO CARRY EXTERNAL VEHICLE LOADS
 - THE Ø OF THE BRANCH TO BE APPROXIMATELY 0.6 x OD OF THE PIPE
 - BRANCH LENGTH TO BE (0.5 x OD OF THE PIPE + 350mm) FROM SIDE OF PIPE
 - BRANCH TO BE FLANGED & DRILLED TO SABS 1123 TABLE 1600/3
 - SPACER BETWEEN BRANCH FLANGE & VALVE TO BE MADE UP BY 200mm LONG STUB, MOUNTED IN CENTER OF SPECIAL FLANGE (BRANCH NB) WITH STUB (AIR VALVE NB) FLANGED & DRILLED TO SABS 1123 TABLE 1600/3
 - SEE DRAWING 7515-W209 FOR DETAILS OF AIRVENT



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)				
NAME: E J VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017	
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	
DIRECTOR: BULK WATER				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	
DIRECTOR: WASTE WATER TREATMENT				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	

CONSULTANT DETAIL

Prof. Reg. No. _____
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING

SIGNATURE: _____ DATE: _____

CONSULTANT DRAWING NUMBER: _____

DESIGNED
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

DRAWN
NAME: M. M. BURGER
SIGNATURE: _____ DATE: FEBRUARY 2016

CHECKED
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

INFORMATION OFFICE CHECKED
NAME: _____
SIGNATURE: _____ DATE: _____

DESIGN OFFICE APPROVAL
NAME: T. E. HILDER Prof Reg No: 880539
SIGNATURE: _____ DATE: JAN 2017

CONTRACT No. _____
PROJECT No. _____
SHEET No. _____
PAPER SIZE A1
SCALE AS SHOWN
DATE FEB 2016

PROJECT STATUS
RECEIVED SIGN WHEN APPLICABLE

CONCEPT DRAWING TENDER DRAWING APPROVED CONSTRUCTION DRAWING AS BUILT DRAWING

PROJECT ENGINEER OF COT:
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

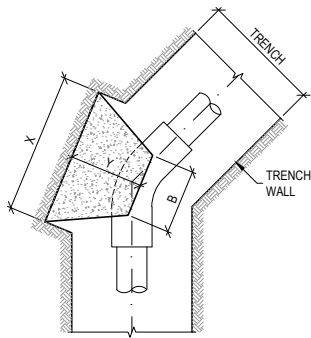
INSPECTOR OF WORKS OF COT:
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

LOCATION OF PROJECT: _____

DESCRIPTION OF PROJECT: **STANDARD DRAWING : AIR VALVE CHAMBERS**

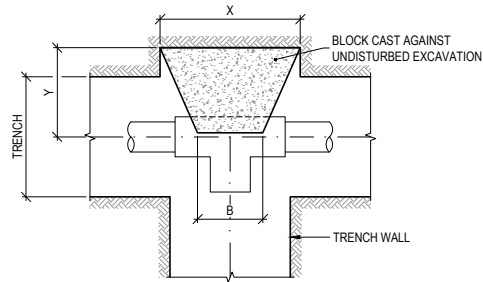
WBS No. : _____

COT DRAWING NUMBER: **7515-W209**



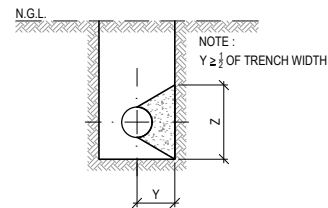
THRUST BLOCK FOR 45° BEND
SCALE 1:25

NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)				AREA PROVIDED (m²)	VOL (m³)
		B	Z	X	Y		
75	0.061	0.300	0.400	0.400	0.350	0.160	0.049
110	0.109	0.300	0.500	0.500	0.375	0.250	0.075
160	0.245	0.300	0.500	0.500	0.400	0.250	0.080
200	0.435	0.300	0.600	0.800	0.400	0.480	0.132
250	0.680	0.350	0.650	1.100	0.450	0.715	0.212
300	0.979	0.400	0.700	1.400	0.500	0.980	0.315
> 300	SEE PARTICULAR NOTE 5						

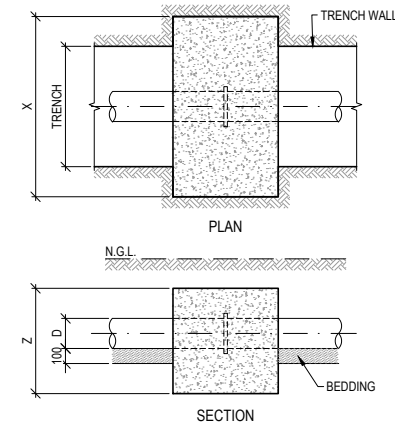


THRUST BLOCK FOR TEE-PIECE
SCALE 1:25

NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)				AREA PROVIDED (m²)	VOL (m³)
		B	Z	X	Y		
75	0.079	0.150	0.400	0.400	0.350	0.160	0.039
110	0.141	0.200	0.500	0.500	0.375	0.250	0.066
160	0.318	0.300	0.500	0.700	0.400	0.350	0.100
200	0.565	0.300	0.600	1.000	0.400	0.600	0.156
250	0.833	0.350	0.650	1.400	0.450	0.910	0.256
300	1.272	0.400	0.700	1.900	0.500	1.330	0.403
> 300	SEE PARTICULAR NOTE 5						



TYPICAL SECTION FOR 22.5° & 45° BEND
SCALE 1:25



THRUST BLOCK FOR PUDDLE FLANGE
SCALE 1:25

NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	TRENCH WIDTH (m)	DIMENSIONS (m)			AREA PROVIDED (m²)	VOL (m³)
			X	Y	Z		
75	0.078	0.475	0.875	0.500	0.575	0.410	0.250
110	0.139	0.500	0.900	0.500	0.600	0.420	0.270
160	0.312	0.550	0.950	0.700	0.650	0.450	0.420
200	0.555	0.600	1.000	0.700	0.900	0.740	0.610
250	0.867	0.650	1.250	1.000	0.950	0.950	1.140
300	1.250	0.700	1.500	1.000	1.000	1.250	1.430
> 300	SEE PARTICULAR NOTE 5						

NOTES AND SPECIFICATIONS

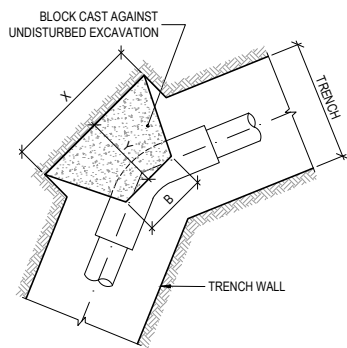
GENERAL

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10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

PARTICULAR

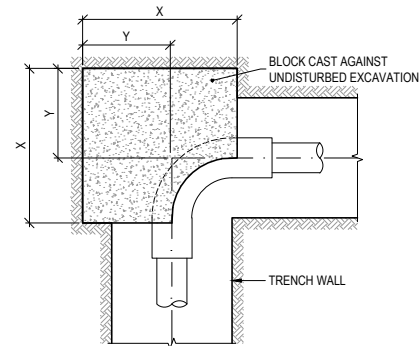
CONCRETE THRUST BLOCKS

1. THRUST BLOCK DIMENSIONS ON THIS DRAWING ARE ONLY APPLICABLE UNDER THE FOLLOWING CONDITIONS:
 - UNDISTURBED SAND-GROUND MIXTURES OR DENSE UNIFORM SAND WITH A BEARING CAPACITY OF AT LEAST 150 kPa
 - UNSATURATED CONDITIONS
 - MAXIMUM INTERNAL PIPE PRESSURE OF 18 BAR IF THE CONTRACTOR IS NOT IN A POSITION TO IDENTIFY THE ABOVE CONDITIONS. AN ENGINEERING GEOLOGIST OR AN ENGINEER MUST BE CONSULTED. IN ALL OTHER CONDITIONS THE ACTUAL IN-SITU BEARING PRESSURE SHALL BE CALCULATED AND THE THRUST BLOCK DESIGNED BY THE ENGINEER.
2. CONCRETE PUDDLE FLANGES - 25/19
OTHER - 15/19
3. HALF THE DEPTH OF THE THRUST BLOCK TO BE PLACED BELOW THE PIPE AXIS
4. KEEP CONCRETE AWAY FROM THE COUPLINGS & THE PIPE JOINTS
5. THRUST BLOCKS FOR PIPE Ø LARGER THAN 300mm Ø & HIGHER TEST PRESSURE THAN 18 BAR SHALL BE DESIGNED BY THE ENGINEER



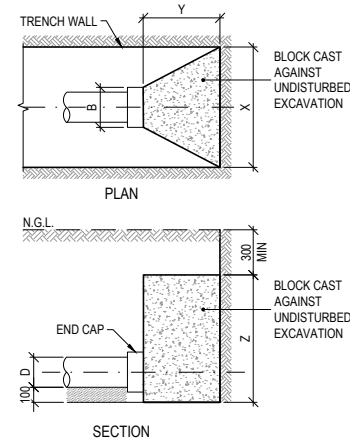
THRUST BLOCK FOR 22.5° BEND
SCALE 1:25

NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)				AREA PROVIDED (m²)	VOL (m³)
		B	Z	X	Y		
75	0.031	0.300	0.400	0.400	0.350	0.160	0.049
110	0.055	0.300	0.500	0.500	0.375	0.250	0.075
160	0.124	0.300	0.500	0.500	0.400	0.250	0.080
200	0.220	0.300	0.600	0.600	0.400	0.360	0.108
250	0.344	0.350	0.650	0.650	0.450	0.423	0.146
300	0.496	0.400	0.700	0.800	0.500	0.560	0.210
> 300	SEE PARTICULAR NOTE 5						



THRUST BLOCK FOR 90° BEND
SCALE 1:25

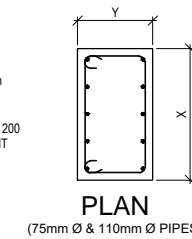
NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)			AREA PROVIDED (m²)	VOL (m³)
		Z	X	Y		
75	0.078	0.400	0.350	0.350	0.140	0.049
110	0.139	0.500	0.380	0.375	0.190	0.072
160	0.314	0.500	0.650	0.400	0.330	0.211
200	0.576	0.600	1.000	0.400	0.600	0.600
250	0.871	0.650	1.400	0.450	0.910	1.274
300	1.225	0.700	1.800	0.500	1.260	2.268
> 300	SEE PARTICULAR NOTE 5					



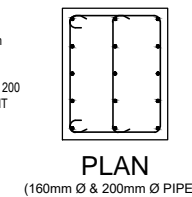
THRUST BLOCK FOR DEAD END
SCALE 1:25

NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)				AREA PROVIDED (m²)	VOL (m³)
		B	Z	X	Y		
75	0.078	0.075	0.300	0.475*	0.200	0.140	0.017
110	0.139	0.100	0.300	0.500*	0.200	0.150	0.018
160	0.312	0.150	0.600	0.550*	0.200	0.330	0.063
200	0.555	0.200	0.650	0.600*	0.200	0.570	0.076
250	0.867	0.250	0.700	1.250	0.500	0.880	0.263
300	1.248	0.300	0.750	1.700	0.700	1.280	0.525
> 300	SEE PARTICULAR NOTE 5 * = TRENCH WIDTH						

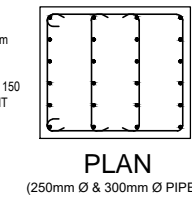
THRUST BLOCK THICKNESS = 500mm
CONCRETE CLASS = 25MPa
HORIZONTAL REBAR = Y10 @ 200
VERTICAL REBAR = 2 LAYERS Y10 @ 200
75mm COVER OVER REINFORCEMENT



THRUST BLOCK THICKNESS = 700mm
CONCRETE CLASS = 25MPa
HORIZONTAL REBAR = Y12 @ 200
VERTICAL REBAR = 3 LAYERS Y12 @ 200
75mm COVER OVER REINFORCEMENT



THRUST BLOCK THICKNESS = 1000mm
CONCRETE CLASS = 25MPa
HORIZONTAL REBAR = Y12 @ 150
VERTICAL REBAR = 4 LAYERS Y12 @ 150
75mm COVER OVER REINFORCEMENT



REINFORCEMENT DETAILS FOR PUDDLE FLANGE THRUST BLOCKS



CITY OF TSHWANE
WATER AND SANITATION DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)				
NAME: E J VICTOR	Prof. Reg. No.	SIGNATURE	DATE	JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	_____
DIRECTOR: SYSTEM DEVELOPMENT				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	_____
DIRECTOR: BULK WATER				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	_____
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	_____
DIRECTOR: WASTE WATER TREATMENT				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	_____
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	_____

CONSULTANT DETAIL	
DESIGNED	NAME: R.PAINSLIE Pr Eng. Prof Reg No: 810370 SIGNATURE: _____ DATE: FEBRUARY 2016
DRAWN	NAME: M. M. BURGER SIGNATURE: _____ DATE: FEBRUARY 2016
CHECKED	NAME: _____ Pr Eng. Prof Reg No: _____ SIGNATURE: _____ DATE: _____
INFORMATION OFFICE CHECKED	NAME: _____ SIGNATURE: _____ DATE: _____
DESIGN OFFICE APPROVAL	NAME: T.F. HILDER Prof Reg No: 880539 SIGNATURE: _____ DATE: JAN 2017
CONSULTANT DRAWING NUMBER: _____	

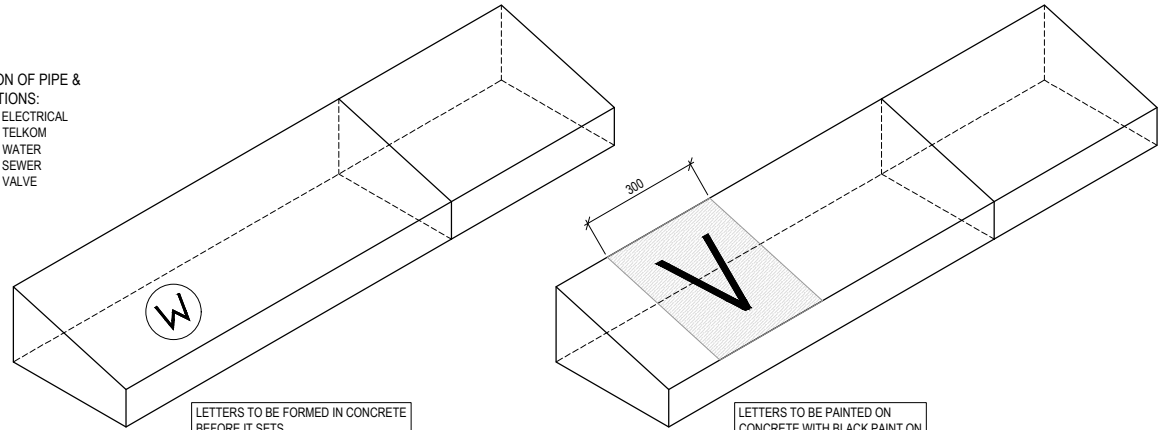
DESIGNED	
NAME: R.PAINSLIE Pr Eng. Prof Reg No: 810370	DATE: FEBRUARY 2016
DRAWN	
NAME: M. M. BURGER	DATE: FEBRUARY 2016
CHECKED	
NAME: _____ Pr Eng. Prof Reg No: _____	DATE: _____
INFORMATION OFFICE CHECKED	
NAME: _____	DATE: _____
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER Prof Reg No: 880539	DATE: JAN 2017

CONTRACT No.	
PROJECT No.	
SHEET No.	
PAPER SIZE	
A1	
SCALE	
AS SHOWN	
DATE	
FEB 2016	

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
<input type="radio"/> CONCEPT DRAWING	<input type="radio"/> TENDER DRAWING	<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME: _____ Pr Eng. Prof Reg No: _____	DATE: _____	NAME: _____ Pr Eng. Prof Reg No: _____	DATE: _____
INSPECTOR OF WORKS OF COT:			
NAME: _____ Pr Eng. Prof Reg No: _____	DATE: _____	NAME: _____ Pr Eng. Prof Reg No: _____	DATE: _____

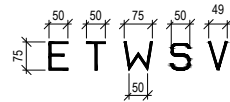
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	
STANDARD DRAWING : THRUST BLOCKS	
WBS No. :	
COT DRAWING NUMBER:	
	7515-W210

IDENTIFICATION OF PIPE & SLEEVE POSITIONS:
 E = ELECTRICAL
 T = TELKOM
 W = WATER
 S = SEWER
 V = VALVE

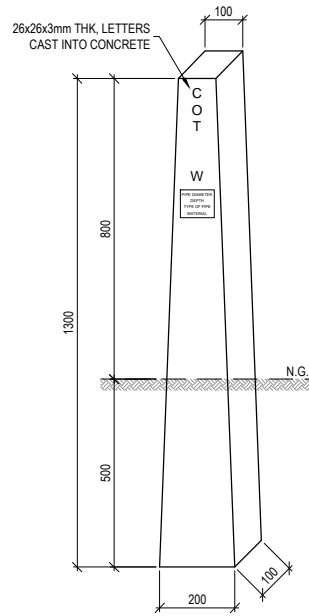


LETTERS TO BE FORMED IN CONCRETE BEFORE IT SETS
 LETTERS TO BE 5mm WIDE & DEEP

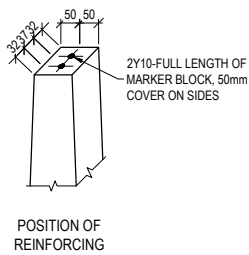
LETTERS TO BE PAINTED ON CONCRETE WITH BLACK PAINT ON WHITE PAINTED BACK GROUND (ROAD MARKING PAINT)



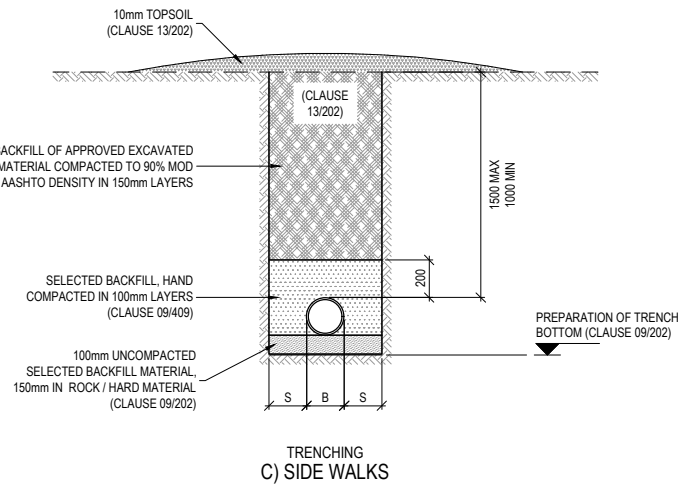
MARKERS ON CONCRETE KERBS
 SCALE 1:10



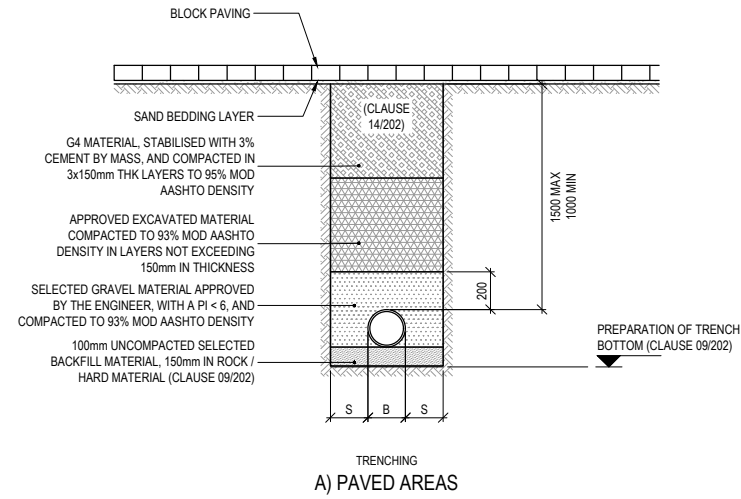
ENLARGED DETAIL OF INFORMATION REQUIRED ON ENGRAVED PLATE



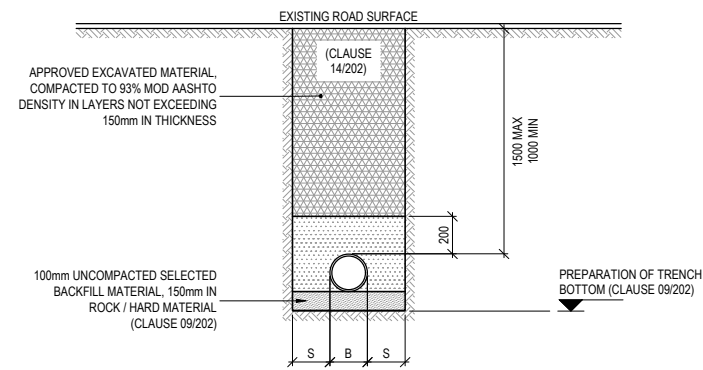
CONCRETE MARKER BLOCK
 SCALE 1:10



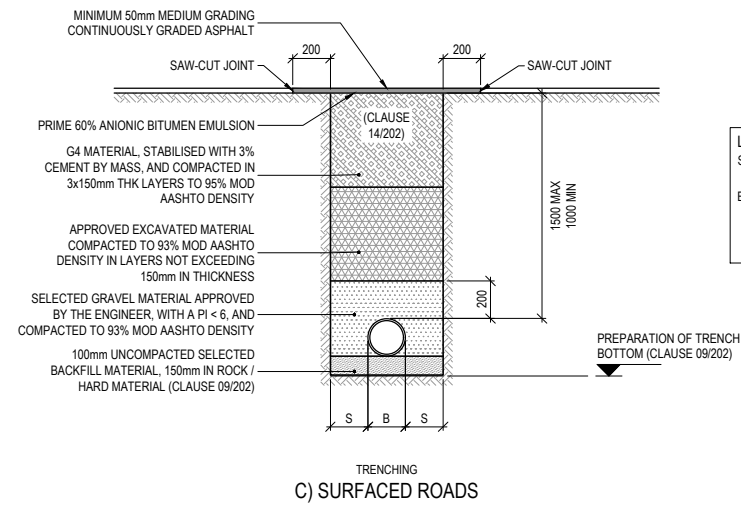
TYPICAL BEDDING & BACKFILL DETAILS FOR WATER PIPES
 SCALE 1:20



TRENCHING
 A) PAVED AREAS



TRENCHING
 B) GRAVEL ROADS



TRENCHING
 C) SURFACED ROADS

LEGEND:
 S = WORKING SPACE EACH SIDE OF PIPE, MIN 200mm (CLAUSE 04.01/202)
 B = OD OF PIPE (CLAUSE 00/999) - REFERENCE IN STANDARD SPECIFICATION (CLAUSE NUMBER / SECTION NUMBER)

NOTES AND SPECIFICATIONS

GENERAL

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2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS
4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE



CITY OF TSHWANE
 WATER AND SANITATION DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

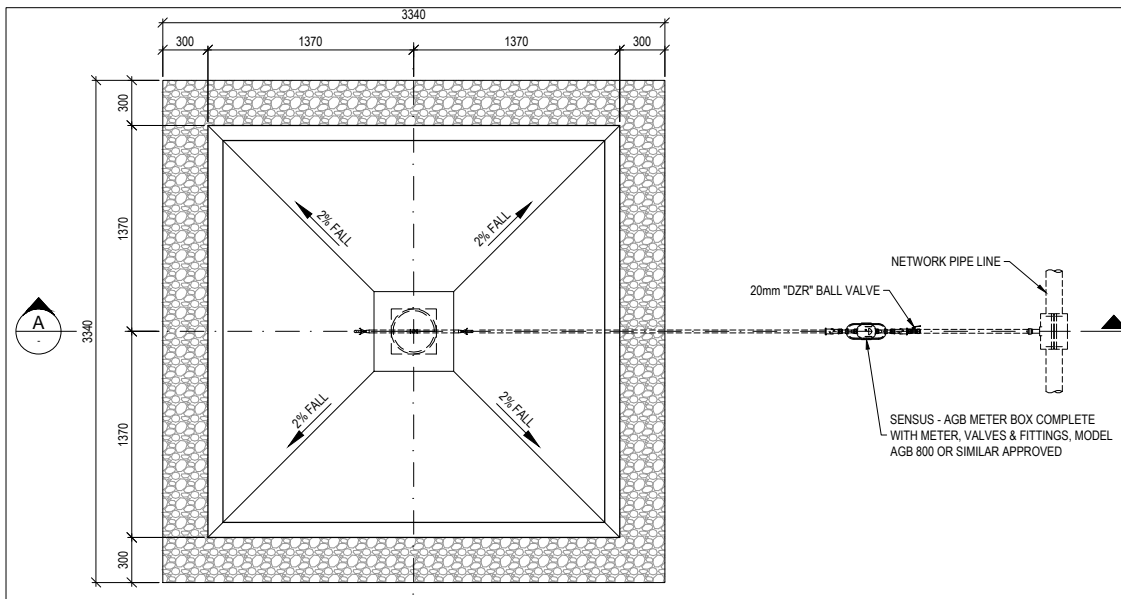
CONSULTANT DETAIL	
Prof. Reg. No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
DRAWN	
NAME: M. M. BURGER	DATE: FEBRUARY 2016
SIGNATURE:	DATE:
CHECKED	
NAME:	Pr Eng. Prof Reg No:
SIGNATURE:	DATE:
INFORMATION OFFICE CHECKED	
NAME:	DATE:
SIGNATURE:	DATE:
DESIGN OFFICE APPROVAL	
NAME: T.F. HILDER	Prof Reg No: 880539
SIGNATURE:	DATE: JAN 2017

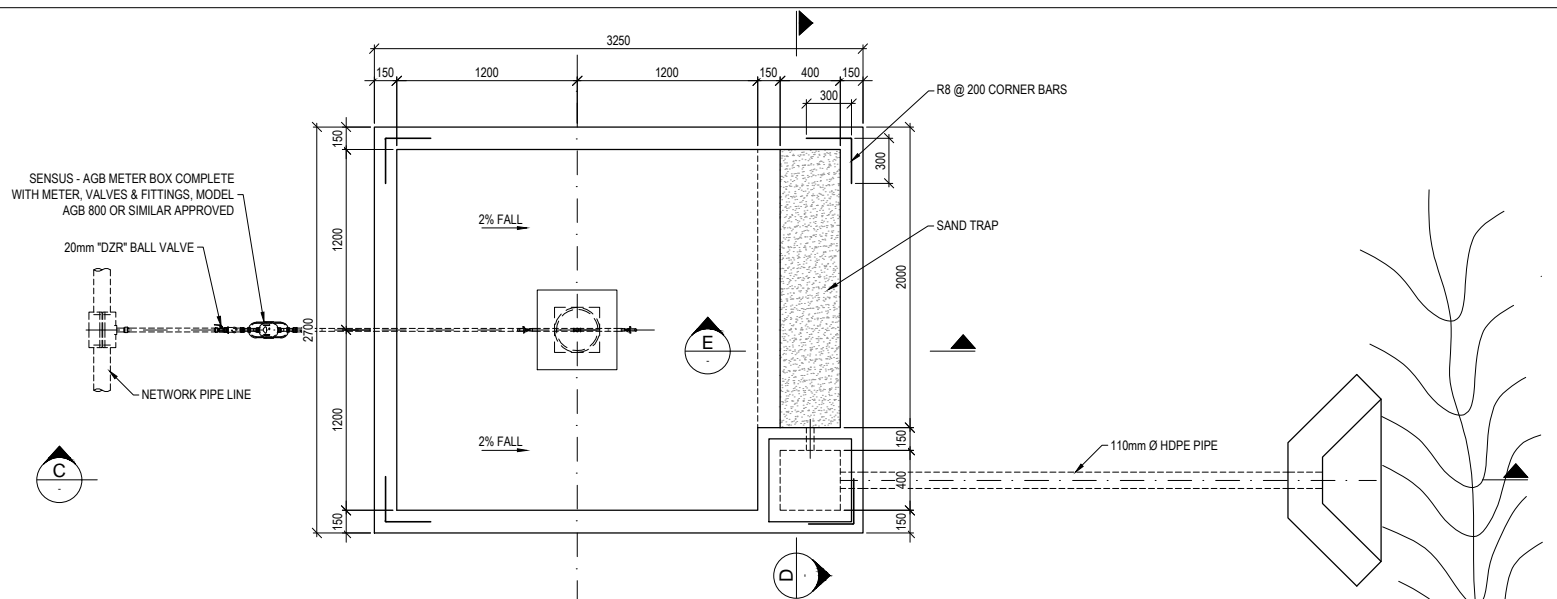
CONTRACT No.	
PROJECT No.	
SHEET No.	
PAPER SIZE	A1
SCALE	AS SHOWN
DATE	FEB 2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONCEPT DRAWING	TENDER DRAWING	APPROVED CONSTRUCTION DRAWING	AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME:	Pr Eng.	Prof Reg No:	DATE:
INSPECTOR OF WORKS OF COT:			
NAME:	Prof Reg No:	DATE:	

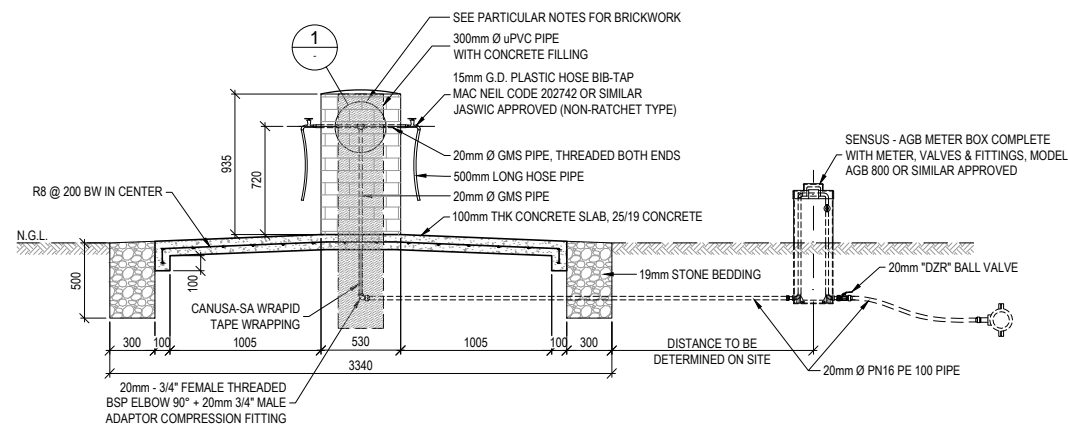
LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	STANDARD DRAWING : MARKERS, TYPICAL BEDDING AND BACKFILL DETAILS FOR WATER PIPES
WBS No. :	
COT DRAWING NUMBER:	7515-W211



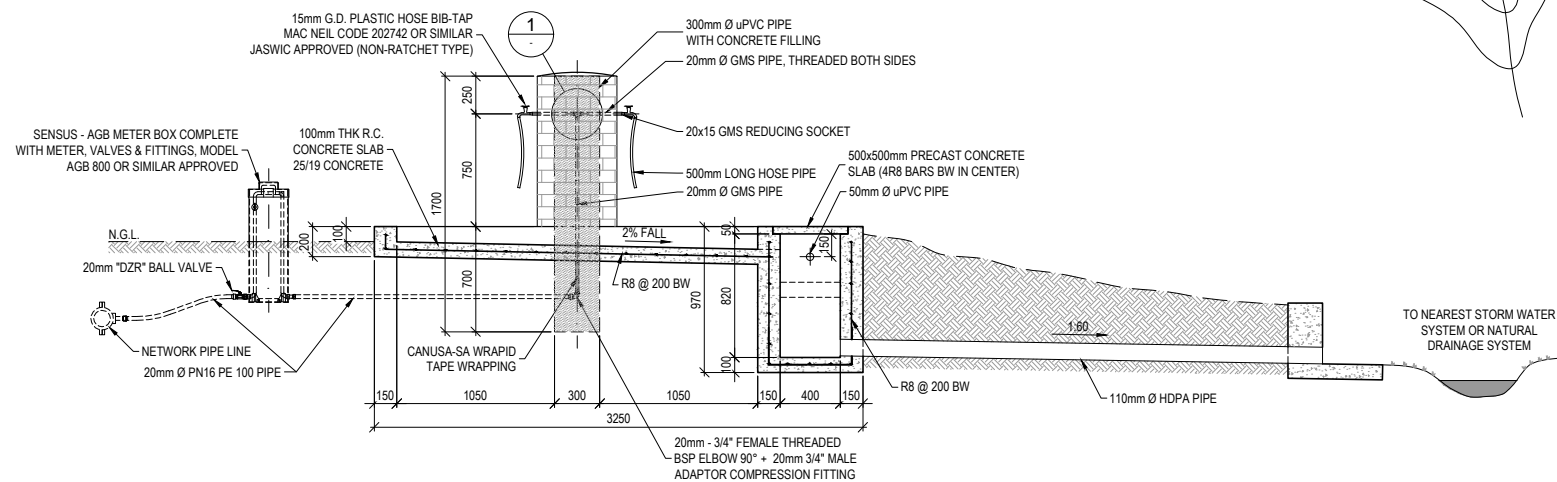
PLAN VIEW OF STAND PIPE
SCALE 1:25



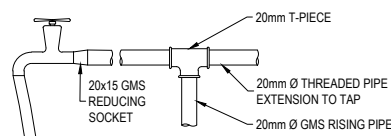
PLAN VIEW OF STAND PIPE
SCALE 1:25



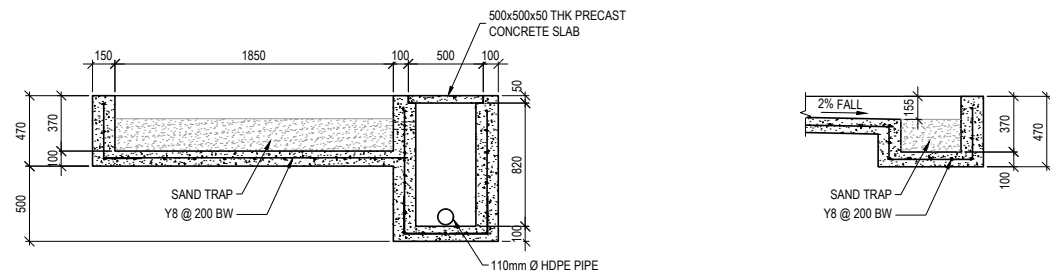
SECTION A
SCALE 1:25



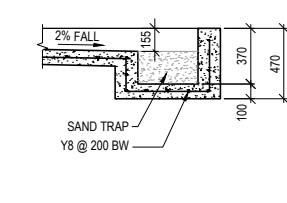
SECTION C
SCALE 1:25



DETAIL 1
SCALE 1:5



SECTION D
SCALE 1:25



SECTION E
SCALE 1:25

NOTES AND SPECIFICATIONS

- GENERAL**
1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
 2. ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
 3. DO NOT SCALE FROM THESE DRAWINGS
 4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
 5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
 6. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
 7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
 8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
 9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
 10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

- PARTICULAR**
1. STEEL PIPES & FITTINGS BELOW GROUND SHALL BE WRAPPED WITH CANUSA-CPS WRAPID TAPE OR SIMILAR APPROVED.
 2. CONCRETE :
 - 25/19 MPa OR
 - MIX CONCRETE 1 CEMENT : 2 RIVER SAND : 3 STONE (19mm)
 - USE JUST ENOUGH WATER TO MAKE MIX WORKABLE
 - USE EITHER GRADE 32.5 OR 42.5 CEMENT
 3. REINFORCEMENT :
 - USE R8 BARS CUT TO SUIT ON SITE
 - PLACE REBAR IN CENTER OF 100mm & 150mm THK CONCRETE ELEMENTS
 - MIN LAP LENGTH - 300mm
 4. BRICKWORK :
 - IN ACCORDANCE WITH SANS 0164 : PART 1 - 1980
 - CLASS II MORTAR TO BE USED (1 CEMENT (CEM1) : 5 SAND)
 - BRICKS TO HAVE A CHARACTERISTIC COMPRESSIVE STRENGTH OF 14 MPa



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)				
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017	
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	
DIRECTOR: BULK WATER				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	
DIRECTOR: WASTE WATER TREATMENT				
NAME:	Prof. Reg. No.	SIGNATURE	DATE:	

CONSULTANT DETAIL

Prof. Reg. No. _____
 HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING
 SIGNATURE: _____ DATE: _____

CONSULTANT DRAWING NUMBER: _____

DESIGNED
 NAME: _____ Pr Eng. Prof. Reg. No.: _____
 SIGNATURE: _____ DATE: _____

DRAWN
 NAME: M. M. BURGER
 SIGNATURE: _____ DATE: FEBRUARY 2016

CHECKED
 NAME: _____ Pr Eng. Prof. Reg. No.: _____
 SIGNATURE: _____ DATE: _____

INFORMATION OFFICE CHECKED
 NAME: _____
 SIGNATURE: _____ DATE: _____

DESIGN OFFICE APPROVAL
 NAME: T.F. HILDER Prof. Reg. No.: 880539
 SIGNATURE: _____ DATE: JAN 2017

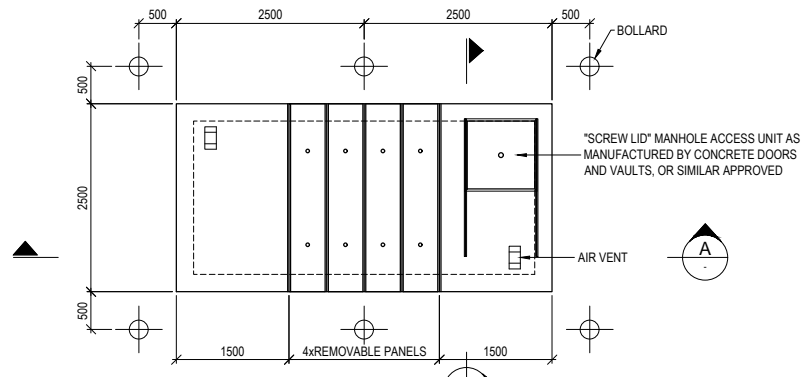
CONTRACT No.		PROJECT STATUS			
-		RECEIVED SIGN WHEN APPLICABLE			
PROJECT No.	-	<input type="radio"/> CONCEPT DRAWING	<input type="radio"/> TENDER DRAWING	<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
SHEET No.	-	PROJECT ENGINEER OF COT:			
PAPER SIZE	A1	NAME: _____ Pr Eng. Prof. Reg. No.: _____	SIGNATURE: _____ DATE: _____		
SCALE	AS SHOWN	INSPECTOR OF WORKS OF COT:			
DATE	FEB 2016	NAME: _____ Pr Eng. Prof. Reg. No.: _____	SIGNATURE: _____ DATE: _____		

LOCATION OF PROJECT: _____

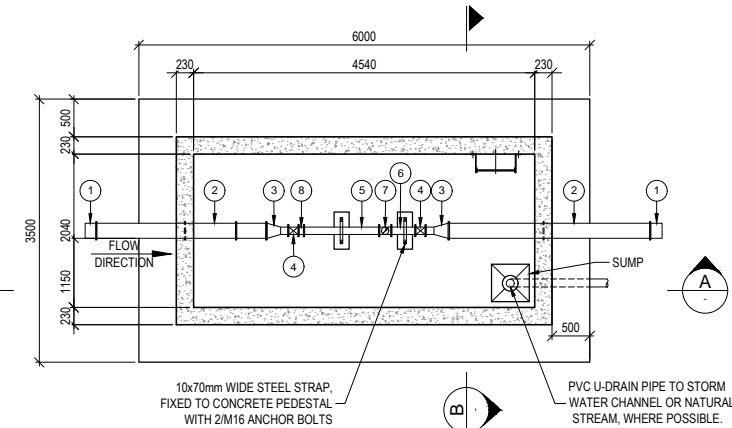
DESCRIPTION OF PROJECT:
**STANDARD DRAWING :
 MULTIPLE STAND PIPES WITH WATER METER
 (ONLY FOR LOW WATER PRESSURE)**

WBS No. : _____

COT DRAWING NUMBER: **7515-W212**



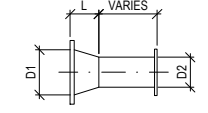
PLAN - ROOF SLAB
SCALE 1:25



PLAN - FLOOR SLAB
SCALE 1:25

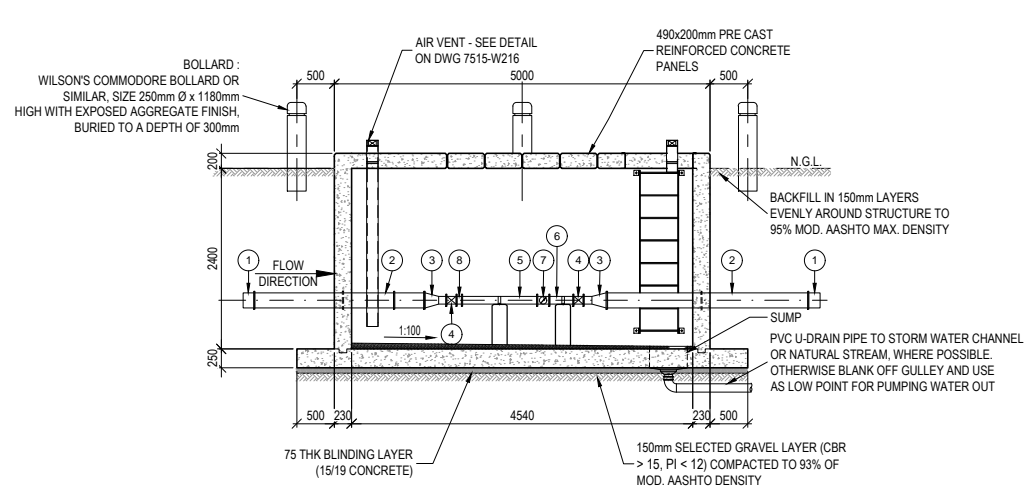
NOTE:
FOR CHAMBER CONSTRUCTION
SEE DRAWING NO 7515-VC207 & 208

TYPICAL STEEL PIPE FITTINGS ITEM LIST (300 ND PIPE LINE WITH 1600 kPa MAX. WORKING PRESSURE USED AS AN EXAMPLE)			
ITEM NO	DESCRIPTION	NO OFF	DIMENSIONS
1	300 Ø FLANGE ADAPTOR PIPE, FLANGED TO SABS 1123 - 1600/3	2	
2	300 Ø x 1860mm LONG STEEL PIPE WITH PUDDLE FLANGE, BOTH ENDS FLANGED SABS 1123 - 1600/3	2	
3	300 Ø x 100 Ø STEEL REDUCER, BOTH ENDS FLANGED SABS 1123 - 1600/3	2	
4	150 Ø RSV GATE VALVE (PN25) WITH HAND WHEEL AND ANTI-CLOCKWISE CLOSING TO SABS 664. BOTH ENDS FLANGED TO SABS 1123 - 1600/3	2	
5	150 Ø STEEL STRAIGHT, BOTH ENDS FLANGED TO SABS 1123 - 1600/3	1	
6	150 Ø STEEL STRAIGHT, BOTH ENDS FLANGED TO SABS 1123 - 1600/3	1	
7	150 Ø TURBINE WATER METER (AS APPROVED) PN16. BOTH ENDS FLANGED TO SABS 1123 - 1600/3	1	
8	150 Ø VIKING JOHNSON DISMANTLING JOINT (OR SIMILAR APPROVED) PN16. BOTH ENDS FLANGED TO SABS 1123 - 1600/3	1	

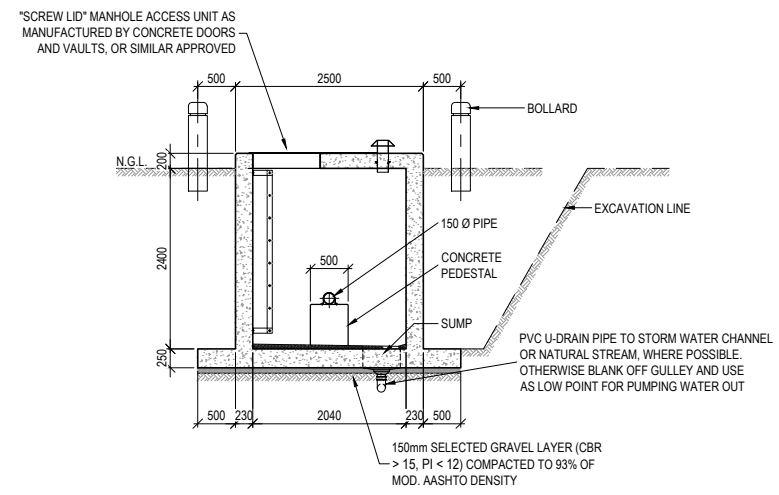


DETAIL - REDUCERS

REDUCER SIZE TABLE				
D1		D2		L
NOMINAL DIA (mm)	OUTSIDE DIA (mm)	NOMINAL DIA (mm)	LENGTH (mm)	
200	219.1	100-150	180	
250	273.1	150-200	205	
300	323.9	150-250	230	
350	355.6	200-300	255	
400	406.4	300-350	280	
450	457	300-450	305	
500	508	350-500	330	
550	559	400-550	355	
600	610	400-600	380	
650	660	450-650	405	
700	711	500-700	430	
750	762	550-750	460	
800	813	600-800	485	
850	864	600-850	510	
900	914	150-150	535	



SECTION A
SCALE 1:50



SECTION B
SCALE 1:50

NOTES AND SPECIFICATIONS

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 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE
- PARTICULAR**
- THIS DRAWING SHOWS THE TYPICAL LAYOUT OF THE PIPING AND FITTINGS REQUIREMENT FOR A ZONAL WATER METER CHAMBER
 - EACH INDIVIDUAL CHAMBER SHALL BE PROPERLY DESIGNED BY A COMPETENT PERSON
 - PRV CHAMBERS SHALL BE APPROVED BY THE EXECUTIVE DIRECTOR - WATER & SANITATION BEFORE CONSTRUCTION
 - REFER TO DRAWING 7515-W216 FOR DETAILS OF LOCKING BAR, ACCESS MANHOLE & AIR VENT
 - AIR VALVES TO BE PLACED ON DOWN STREAM OF REDUCED PIPEWORK DEPENDING ON TOPOGRAPHY
 - LENGTHS OF REDUCERS ACCORDING TO TABLE
 - CHAMBERS FOR PIPES LARGER THAN 300mm Ø AND / OR A HIGHER PRESSURE THAN 18 BAR SHALL BE DESIGNED BY THE ENGINEER



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING) E.J VICTOR				
NAME	Prof. Reg. No	SIGNATURE	DATE	
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)				
NAME	Prof. Reg. No	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME	Prof. Reg. No	SIGNATURE	DATE	
DIRECTOR: BULK WATER				
NAME	Prof. Reg. No	SIGNATURE	DATE	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME	Prof. Reg. No	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
NAME	Prof. Reg. No	SIGNATURE	DATE	

CONSULTANT DETAIL

Prof Reg No. _____
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING

SIGNATURE _____ DATE _____

CONSULTANT DRAWING NUMBER: _____

DESIGNED
NAME: R. P. ANSLIE Pr Eng. Prof Reg No: 810370
SIGNATURE: _____ DATE: FEBRUARY 2016

DRAWN
NAME: M. M. BURGER
SIGNATURE: _____ DATE: FEBRUARY 2016

CHECKED
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

INFORMATION OFFICE CHECKED
NAME: _____
SIGNATURE: _____ DATE: _____

DESIGN OFFICE APPROVAL
NAME: T.F. HILDER
SIGNATURE: _____ DATE: JAN 2017

CONTRACT No. _____
PROJECT No. _____
SHEET No. _____
PAPER SIZE A1
SCALE AS SHOWN
DATE FEB 2016

PROJECT STATUS
RECEIVED SIGN WHEN APPLICABLE

CONCEPT DRAWING TENDER DRAWING APPROVED CONSTRUCTION DRAWING AS BUILT DRAWING

PROJECT ENGINEER OF COT:
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

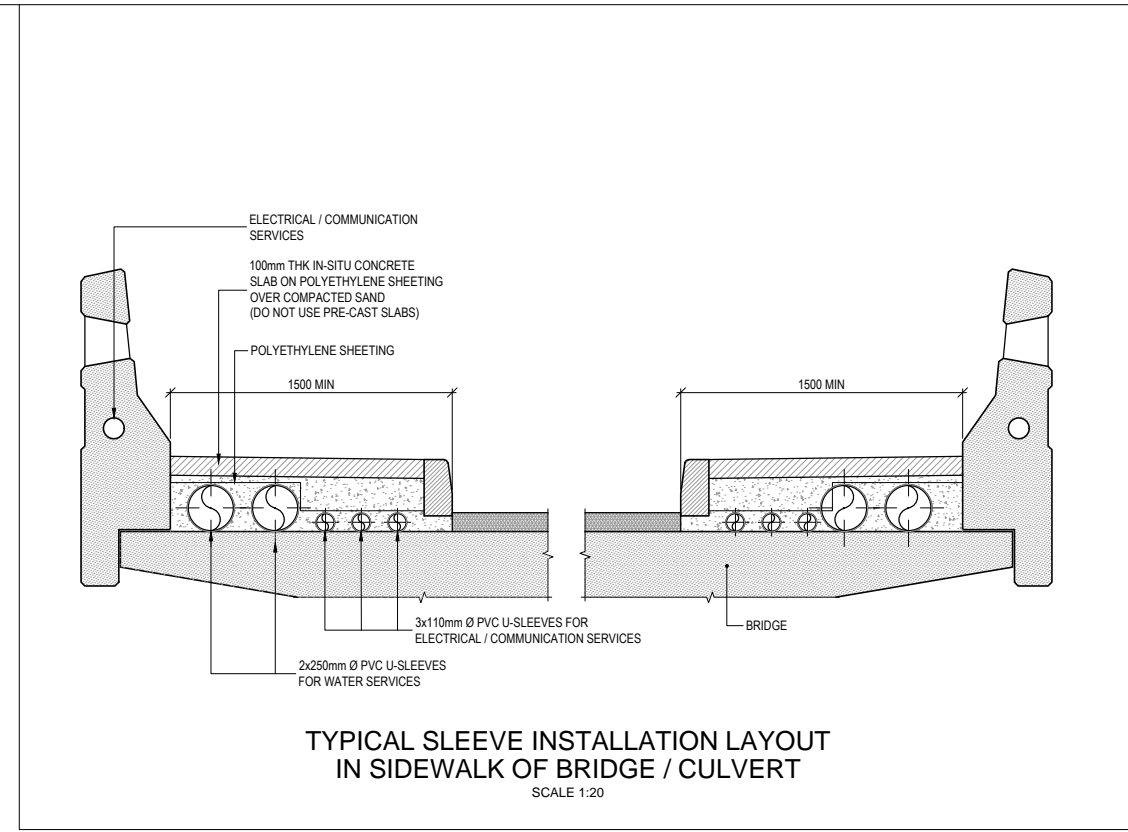
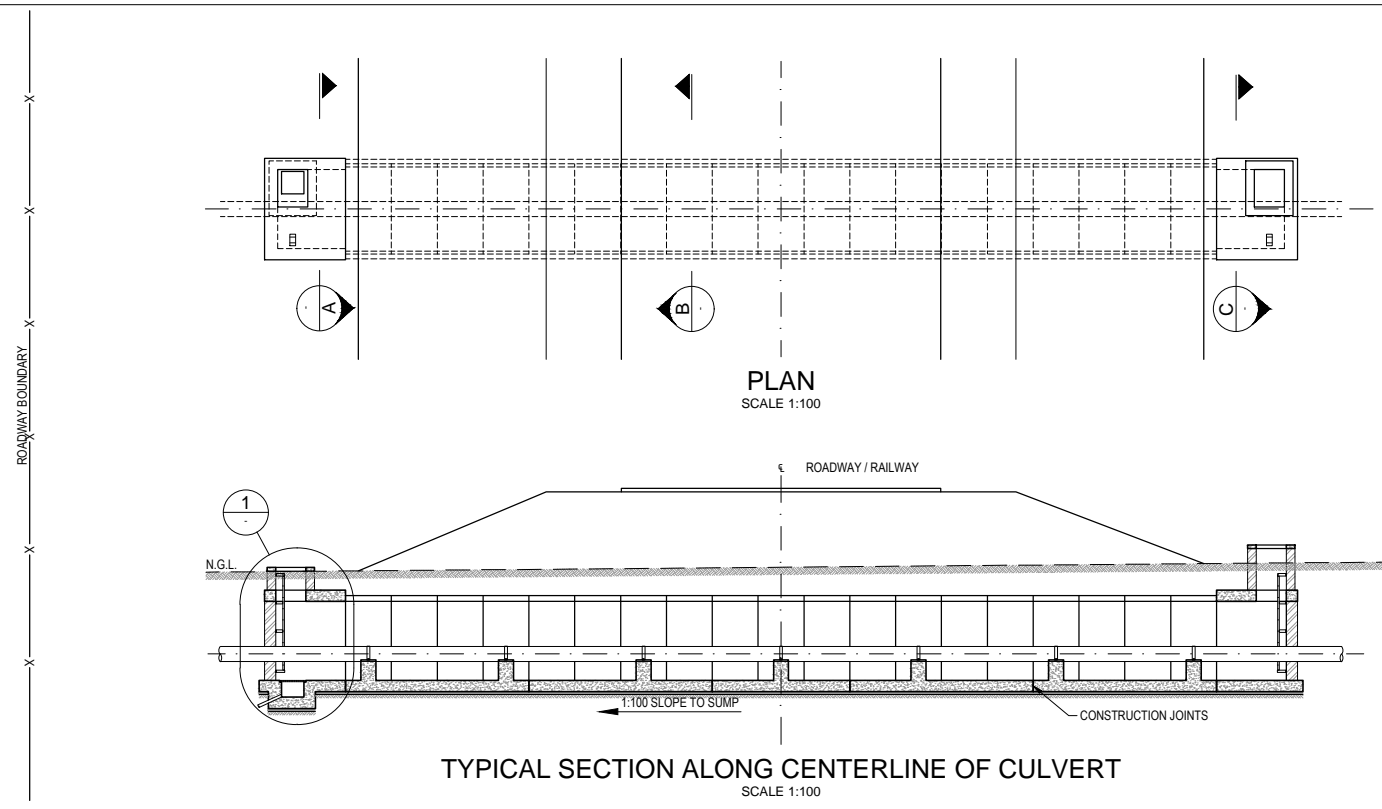
INSPECTOR OF WORKS OF COT:
NAME: _____ Pr Eng. Prof Reg No: _____
SIGNATURE: _____ DATE: _____

LOCATION OF PROJECT: _____

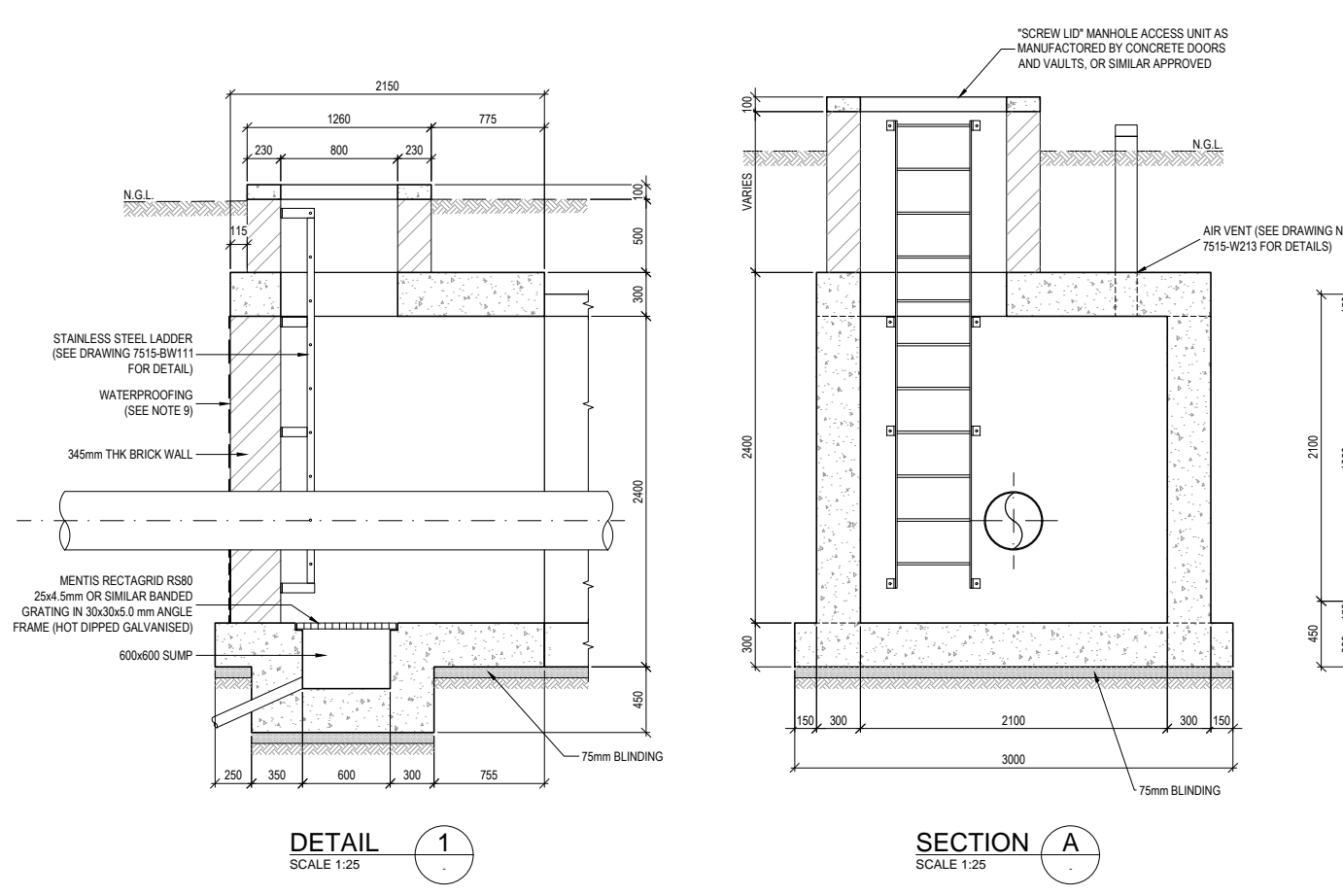
DESCRIPTION OF PROJECT:
**STANDARD DRAWING :
TYPICAL LAYOUT FOR ZONAL
WATER METER CHAMBERS**

WBS No. : _____

COT DRAWING NUMBER: **7515-W213**

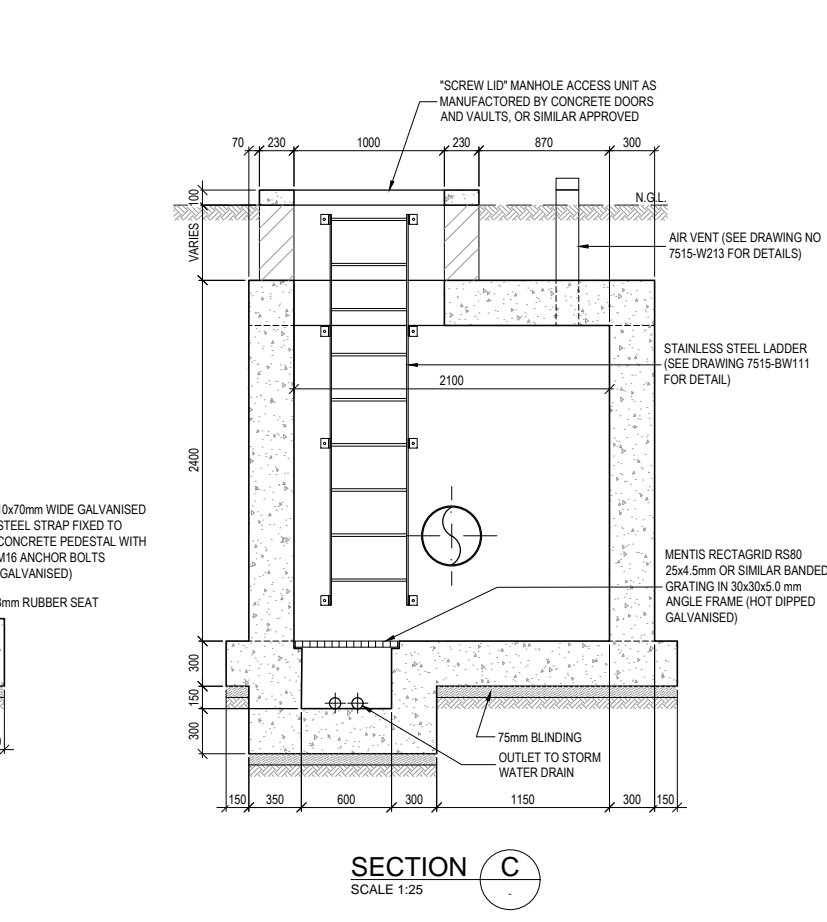
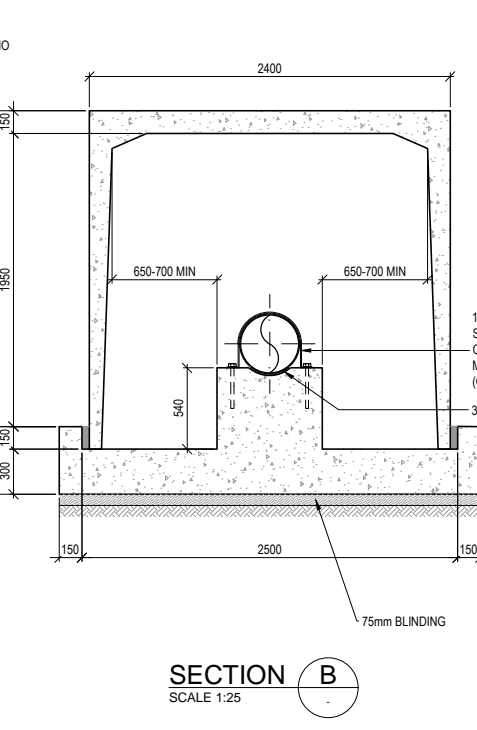


- NOTES AND SPECIFICATIONS**
- GENERAL**
- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
 - ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
 - DO NOT SCALE FROM THESE DRAWINGS
 - ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
 - ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
 - THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
 - THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE
- PARTICULAR**
- SERVICE DUCTS
 - SERVICE DUCTS MAY BE EITHER SAND FILLED VOIDS COVERED BY IN-SITU CONCRETE SLABS, WITH OR WITHOUT INDIVIDUAL DUCTS FOR SERVICES, OR SOLID CONCRETE SIDEWALKS WITH DUCTS
 - IF THE PROVISION OF SERVICES IS UNLIKELY, SAND FILLED VOIDS SHALL BE USED
 - PRECAST PAVING SLABS OR BLOCKS SHALL NOT BE USED
 - CAST IN-SITU CONCRETE (MIN 20/19 MPa) OVER OVER SLEEVES IN ALTERNATE PANELS, MAXIMUM 2m WIDE



NOTE:

- TYPICAL LAYOUT FOR 2.1 x 2.1m RECTANGULAR CULVERT - DIMENSIONS VARY FOR OTHER SIZES AND TYPES
- THIS IS ONLY A SCHEMATIC LAYOUT TO SHOW WHAT IS REQUIRED. A DETAILED DESIGN MUST BE EXECUTED BY A PROFESSIONAL ENGINEER.



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION				
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE				
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)				
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE	JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: SYSTEM DEVELOPMENT				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: BULK WATER				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: INFRASTRUCTURE PROVISION				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	
DIRECTOR: WASTE WATER TREATMENT				
NAME: _____	Prof. Reg. No.	SIGNATURE	DATE	

CONSULTANT DETAIL

Prof Reg No. _____
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING

SIGNATURE _____ DATE _____

CONSULTANT DRAWING NUMBER: _____

DESIGNED
NAME: _____ Pr Eng. Prof Reg No.: _____
SIGNATURE: _____ DATE: _____

DRAWN
NAME: M. M. BURGER
SIGNATURE: _____ DATE: FEBRUARY 2016

CHECKED
NAME: _____ Pr Eng. Prof Reg No.: _____
SIGNATURE: _____ DATE: _____

INFORMATION OFFICE CHECKED
NAME: _____
SIGNATURE: _____ DATE: _____

DESIGN OFFICE APPROVAL
NAME: T.F. HILDER Prof Reg No.: 880539
SIGNATURE: _____ DATE: JAN 2017

CONTRACT No. _____

PROJECT No. _____

SHEET No. _____

PAPER SIZE A1

SCALE AS SHOWN

DATE FEB 2016

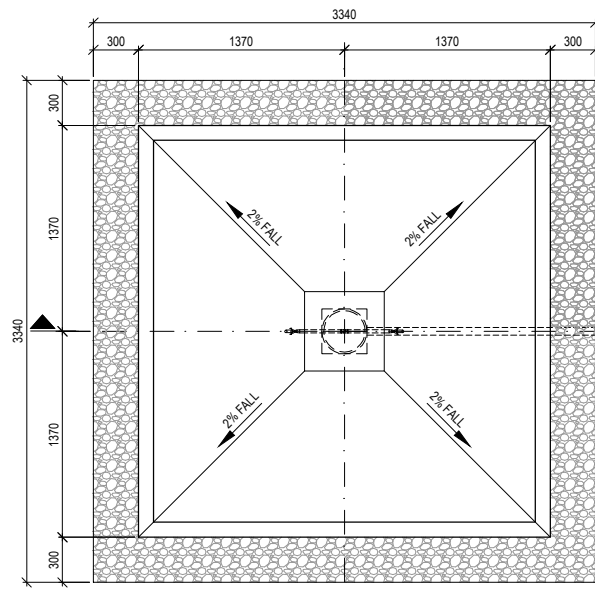
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RECEIVED SIGN WHEN APPLICABLE			
<input type="radio"/> CONCEPT DRAWING	<input type="radio"/> TENDER DRAWING	<input type="radio"/> APPROVED CONSTRUCTION DRAWING	<input type="radio"/> AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME: _____	Pr Eng.	Prof Reg No.: _____	DATE: _____
INSPECTOR OF WORKS OF COT:			
NAME: _____	Prof Reg No.: _____	DATE: _____	

LOCATION OF PROJECT: _____

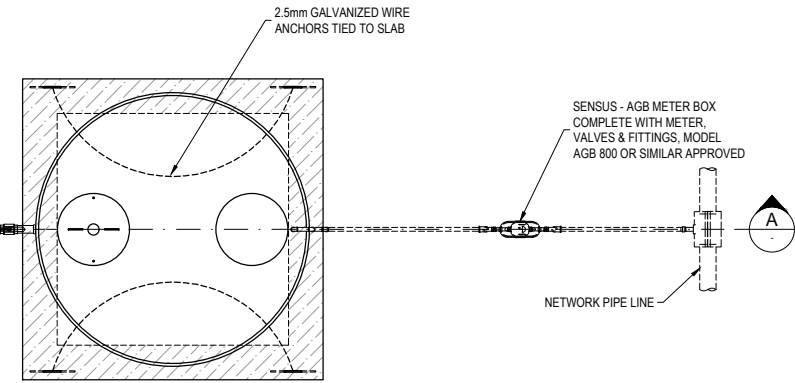
DESCRIPTION OF PROJECT: **STANDARD DRAWING : SLEEVES & CULVERTS FOR PIPE CROSSINGS AT BRIDGES, ROADS & RAILWAY LINES**

WBS No. : _____

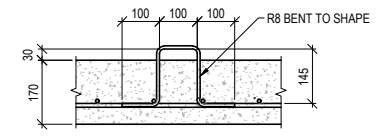
COT DRAWING NUMBER: **7515-W214**



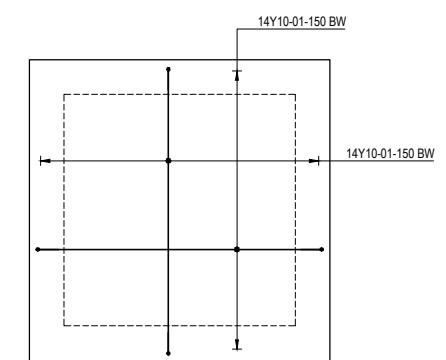
PLAN VIEW OF STAND PIPE
SCALE 1:25



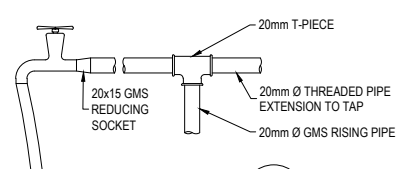
SECTION - SLAB REBAR DETAIL



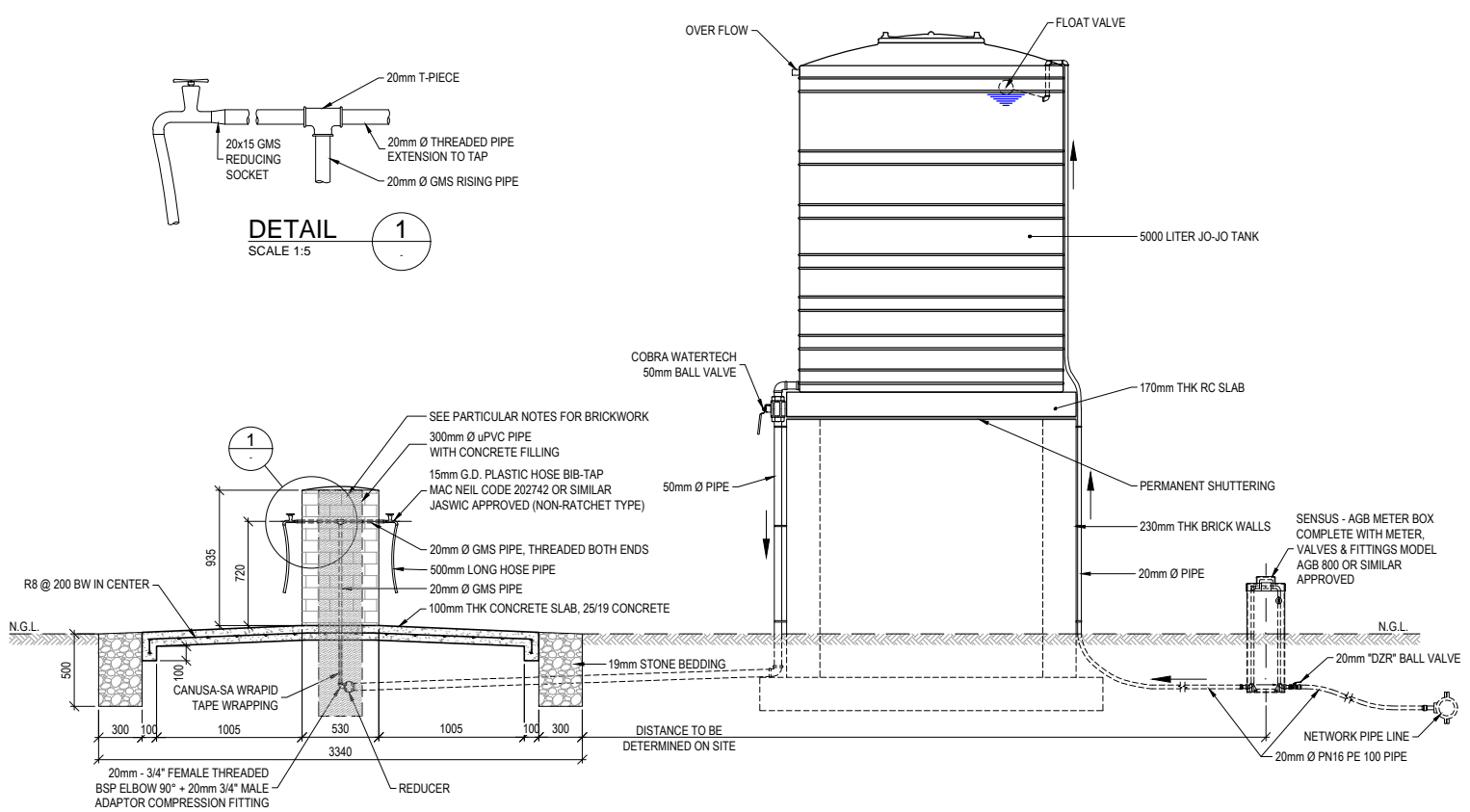
ANCHOR DETAIL
SCALE 1:10



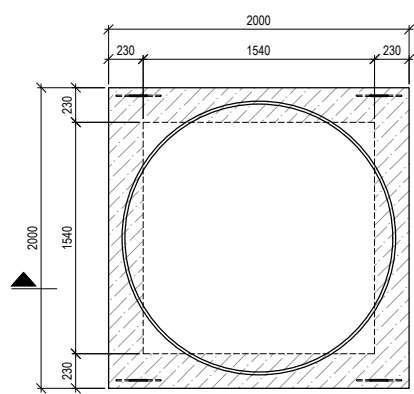
PLAN - SLAB REBAR DETAIL



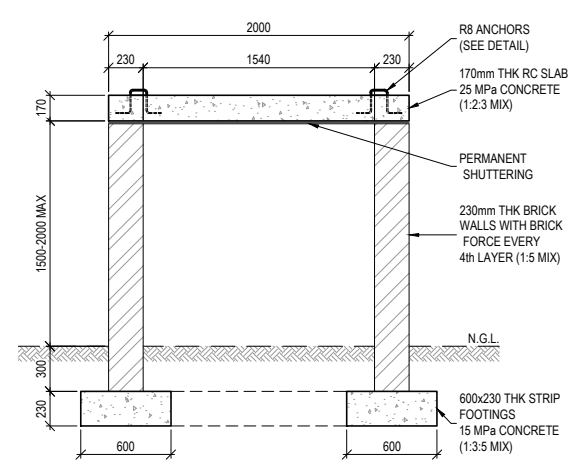
DETAIL 1
SCALE 1:5



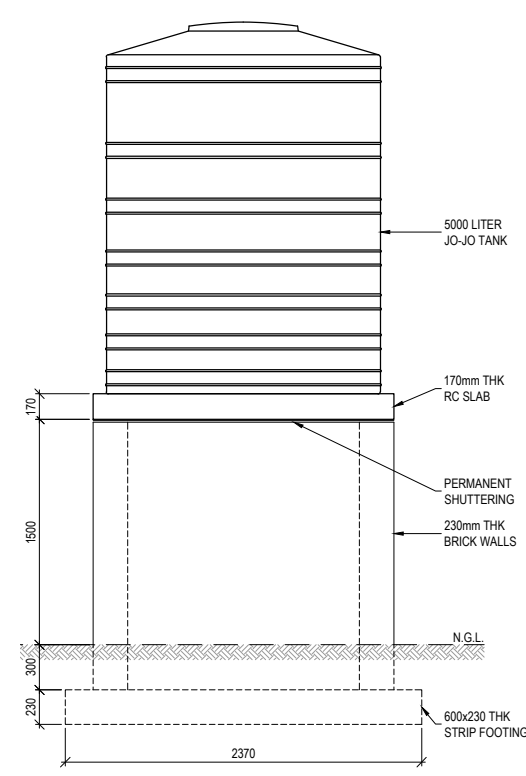
SECTION A
SCALE 1:25



PLAN - TANK STAND
SCALE 1:25



SECTION B
SCALE 1:25



ELEVATION - TANK STAND
SCALE 1:25

MEMBER	NO OF	NO BARS	DIA	BAR BARK	TOTAL	LENGTH	SC	A	B	C	D	E/R	kg
170 THK SLAB	1	28	Y10	01	28	2300	55	150	80	1910	80		40
R	6	8	10	12	16	20	25	32	40				TOTAL
Y			40										40
TOTAL			40										40

NOTES AND SPECIFICATIONS

- GENERAL**
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 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
 - THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
 - THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
 - FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

- PARTICULAR**
- STEEL PIPES & FITTINGS BELOW GROUND SHALL BE WRAPPED WITH CANUSA-CPS WRAP TAPE OR SIMILAR APPROVED
 - CONCRETE:
 - 25/19 MPa OR
 - MIX CONCRETE 1 CEMENT CEM : 2 RIVER SAND : 3 STONE (19mm)
 - USE JUST ENOUGH WATER TO MAKE MIX WORKABLE
 - USE EITHER GRADE 32.5 OR 42.5 CEMENT
 - BRICKWORK:
 - IN ACCORDANCE WITH SANS 0164 : PART 1 - 1980
 - CLASS II MORTAR TO BE USED (1 CEMENT (CEM 1) : 5 SAND)
 - BRICKS TO HAVE A CHARACTERISTIC COMPRESSIVE STRENGTH OF 14 MPa

CONSTRUCTION MANAGEMENT AND USE OF DRAWINGS :

- CONSTRUCTION MANAGEMENT :**
- THE COUNCIL SHALL APPOINT OR PROVIDE AN APPROPRIATELY QUALIFIED & EXPERIENCED FOREMAN, TO MANAGE & SUPERVISE THE CONSTRUCTION OF THE VALVE CHAMBER SHOWN ON THESE CONSTRUCTION DRAWINGS.
 - THE FOREMAN SHALL STUDY, INTERPRET & APPLY THE DETAILS & INSTRUCTIONS PROVIDED ON THE DRAWINGS, WHILST AT THE SAME TIME SUPERVISE THE CONSTRUCTION OF THE WORKS ON A DAILY BASIS.
 - NO DEVIATION FROM THE DRAWING DETAILS AND INSTRUCTIONS ARE PERMITTED.
 - SHOULD THE FOREMAN HAVE QUESTIONS ABOUT THE DRAWINGS OR CONSTRUCTION, HE SHOULD CONTACT THE COUNCIL'S ENGINEER IN CHARGE OF THE PROJECT.

- STRUCTURAL DESIGN :**
- THE DESIGN OF THE STRUCTURE DEPICTED ON THE DRAWING, IS A STANDARD DESIGN PERFORMED BY THE CONSULTING ENGINEER FOR THE COUNCIL, TO BE USED ON AN INDETERMINATE NUMBER AND LOCATION OF SITES. AS SUCH THE CONSULTING ENGINEER CANNOT TAKE ANY RESPONSIBILITY FOR THE DESIGN OF THE STRUCTURES.

- CONSTRUCTION MONITORING :**
- AS THE CONSULTING ENGINEER HAS NOT BEEN APPOINTED TO PERFORM THE CONSTRUCTION MONITORING DUTIES, HE CANNOT TAKE ANY RESPONSIBILITY FOR THE SUCCESSFUL AND CORRECT EXECUTION OF THE WORKS ACCORDING TO THE CONSTRUCTION DRAWINGS.
 - THE FULL RESPONSIBILITY FOR SUPERVISING THE EXECUTION OF THE WORKS LIES WITH THE FOREMAN OF THE PROJECT.

- DESIGN CRITERIA :**
- SOIL DENSITY = 1800kg/m³
 - SOIL K-ACTIVE = 0,4
 - MAX. WATER TABLE = 1,0m BELOW NGL
 - TANK LOADING = 5000 LITER JO-JO TANK MAX.
 - SAFE BEARING PRESSURE OF GROUND > 100kPa



AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

CONSULTANT DETAIL

Prof Reg No. _____
HEREBY CERTIFY THAT THE SERVICES WILL/HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING

SIGNATURE _____ DATE _____

CONSULTANT DRAWING NUMBER: _____

DESIGNED
NAME: R.P. ANSLIE Pr Eng. Prof Reg No. 810370
SIGNATURE: _____ DATE: FEBRUARY 2016

DRAWN
NAME: M.M. BURGER
SIGNATURE: _____ DATE: FEBRUARY 2016

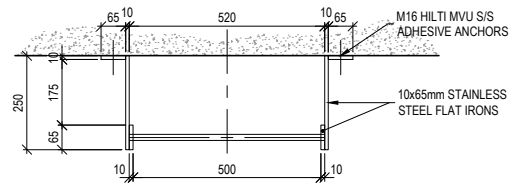
CHECKED
NAME: _____ Pr Eng. Prof Reg No. _____
SIGNATURE: _____ DATE: _____

INFORMATION OFFICE CHECKED
NAME: _____
SIGNATURE: _____ DATE: _____

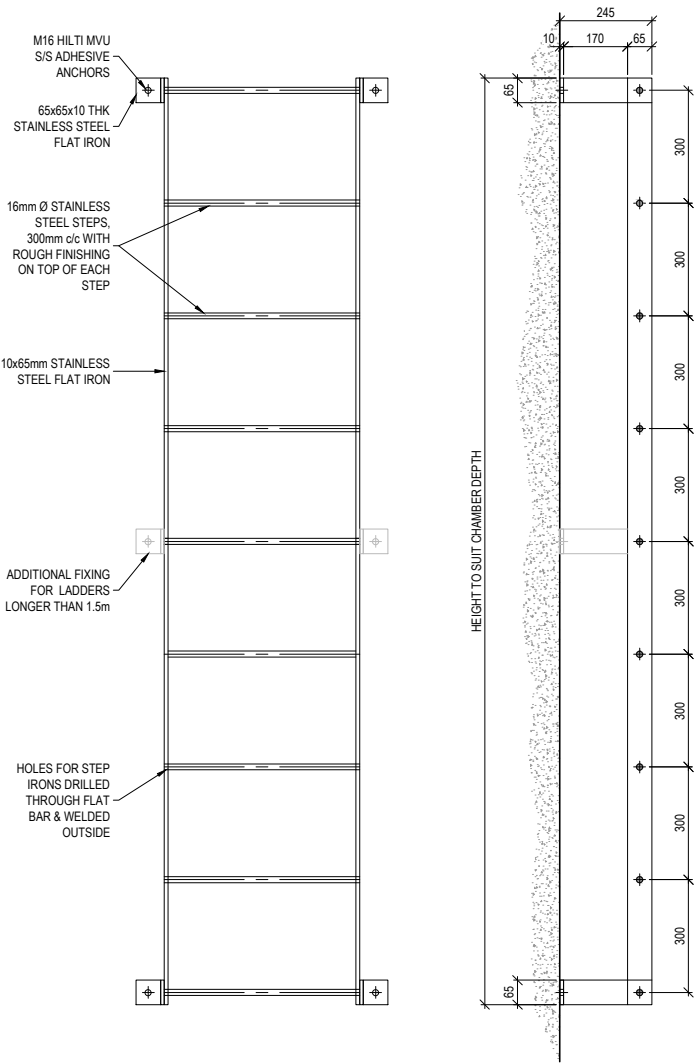
DESIGN OFFICE APPROVAL
NAME: T.F. HILDER Pr Eng. No. 880539
SIGNATURE: _____ DATE: JAN 2017

CONTRACT No.	PROJECT STATUS	LOCATION OF PROJECT:
	RECEIVED SIGN WHEN APPLICABLE	
PROJECT No.	CONCEPT DRAWING <input type="radio"/> TENDER DRAWING <input type="radio"/> APPROVED CONSTRUCTION DRAWING <input type="radio"/> AS BUILT DRAWING <input type="radio"/>	DESCRIPTION OF PROJECT:
SHEET No.	PROJECT ENGINEER of COT:	STANDARD DRAWING: STAND PIPE WITH WATER METER AND JO-JO WATER TANK
PAPER SIZE	NAME: _____ Pr Eng. Prof Reg No. _____ SIGNATURE: _____ DATE: _____	WBS No. :
SCALE	INSPECTOR OF WORKS of COT:	COT DRAWING NUMBER:
AS SHOWN	NAME: _____ Pr Eng. Prof Reg No. _____ SIGNATURE: _____ DATE: _____	7515-W215
DATE		
FEB 2016		





PLAN
SCALE 1:10

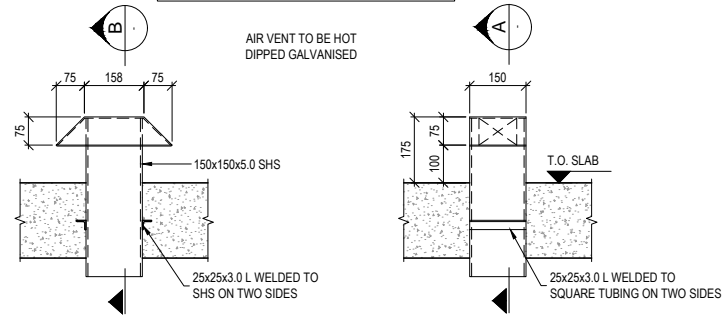


FRONT ELEVATION
SCALE 1:10

SECTION
SCALE 1:10

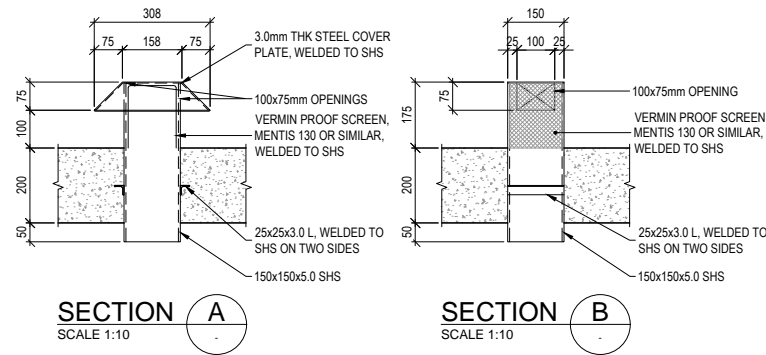
TYPICAL ACCESS LADDER FOR CHAMBERS

NOTE:
PROVIDE TWO AIR VENTS TO EACH VALVE CHAMBER
ONE SHORT AND ONE EXTENDED AS SHOWN ON
STANDARD VALVE CHAMBER DRAWINGS.



FRONT ELEVATION
SCALE 1:10

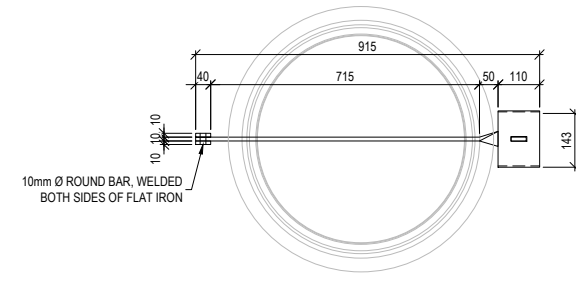
SIDE ELEVATION
SCALE 1:10



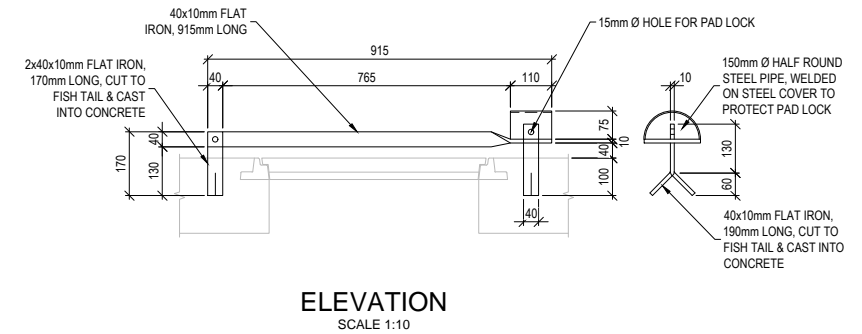
SECTION A
SCALE 1:10

SECTION B
SCALE 1:10

DETAIL - VERMIN PROOF AIR VENT



PLAN
SCALE 1:10



ELEVATION
SCALE 1:10

LOCKING DEVICE FOR ROUND ACCESS MANHOLE COVERS

NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
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3. DO NOT SCALE FROM THESE DRAWINGS
4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS (IF APPLICABLE)
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7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
8. THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE



P O BOX 1022
PRETORIA
0001
CITY OF TSHWANE
WATER AND SANITATION
DEPARTMENT

AMENDMENTS				
NO	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION			
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE			
DIRECTOR: WATER AND SANITATION - PLANNING (ACTING)			
NAME: E.J. VICTOR	Prof. Reg. No.	SIGNATURE	DATE: JAN 2017
REGIONAL DIRECTOR: (1, 2, 3, 4, 5, 6 or 7)			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: SYSTEM DEVELOPMENT			
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DIRECTOR: BULK WATER			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: INFRASTRUCTURE PROVISION			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
DIRECTOR: WASTE WATER TREATMENT			
NAME:	Prof. Reg. No.	SIGNATURE	DATE:
NAME:	Prof. Reg. No.	SIGNATURE	DATE:

CONSULTANT DETAIL	
Prof Reg No.	
HEREBY CERTIFY THAT THE SERVICES WILL HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING	
SIGNATURE	DATE
CONSULTANT DRAWING NUMBER:	

DESIGNED	NAME: Pr Eng. Prof Reg No:	SIGNATURE: DATE:
DRAWN	NAME: M. M. BURGER	SIGNATURE: DATE: FEBRUARY 2016
CHECKED	NAME: Pr Eng. Prof Reg No:	SIGNATURE: DATE:
INFORMATION OFFICE CHECKED	NAME:	SIGNATURE: DATE:
DESIGN OFFICE APPROVAL	NAME: T.F. HILDER	Prof Reg No: 880539
SIGNATURE: T.F. HILDER	DATE: JAN 2017	

CONTRACT No.	
PROJECT No.	
SHEET No.	
PAPER SIZE	A1
SCALE	AS SHOWN
DATE	FEB 2016

PROJECT STATUS			
RECEIVED SIGN WHEN APPLICABLE			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONCEPT DRAWING	TENDER DRAWING	APPROVED CONSTRUCTION DRAWING	AS BUILT DRAWING
PROJECT ENGINEER OF COT:			
NAME:	Pr Eng.	Prof Reg No:	DATE:
INSPECTOR OF WORKS OF COT:			
NAME:	Pr Eng.	Prof Reg No:	DATE:

LOCATION OF PROJECT:	
DESCRIPTION OF PROJECT:	STANDARD DRAWING : TYPICAL DETAILS
WBS No. :	
COT DRAWING NUMBER:	7515-W216