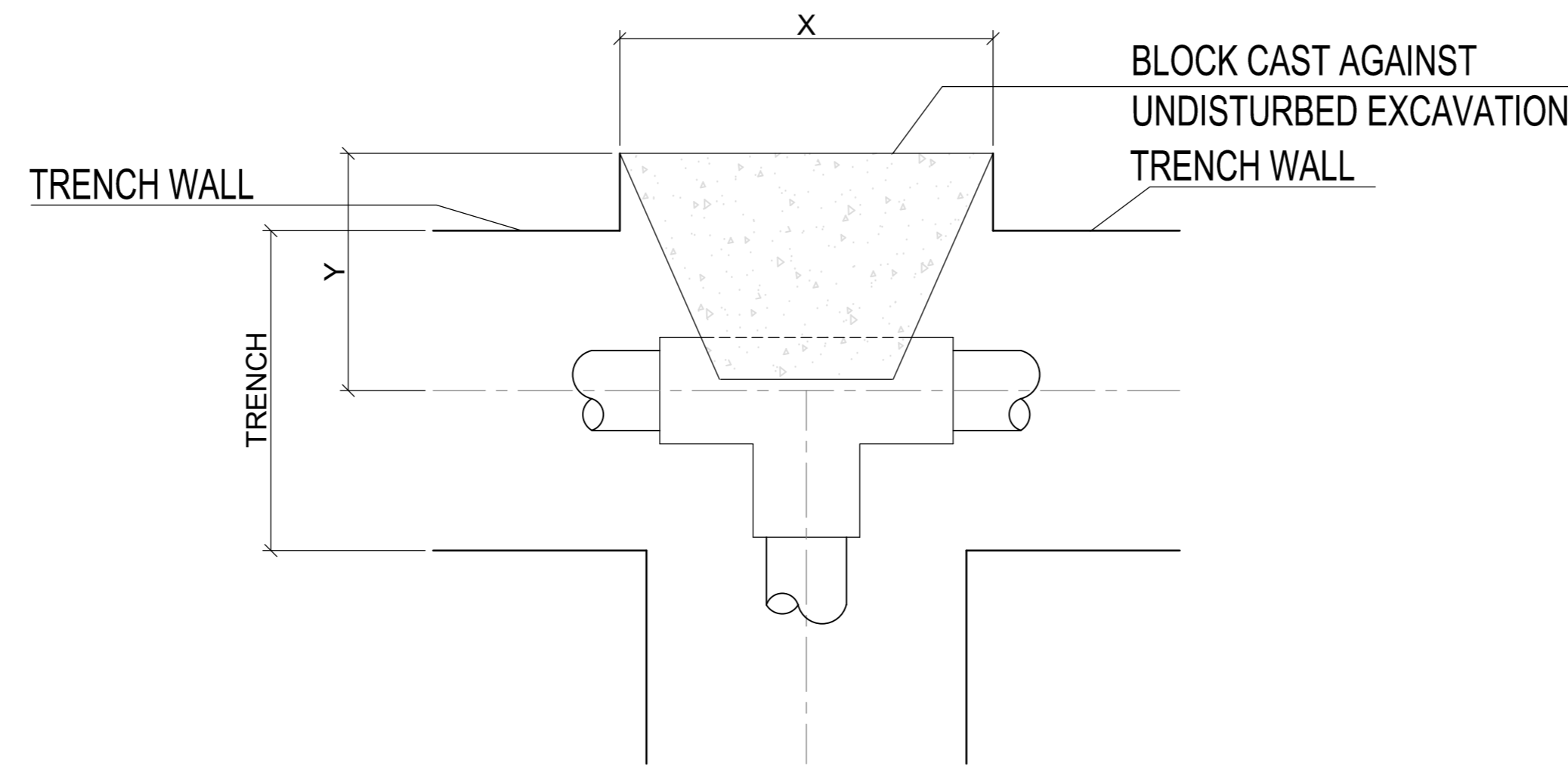


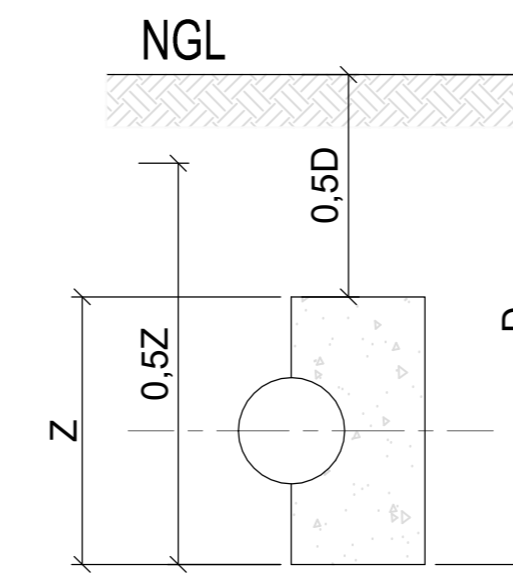
**THRUST BLOCK FOR 45° BEND**  
SCALE 1:30

NOMINAL PIPE DIAMETER ø (mm)	AREA REQUIRED m <sup>2</sup>	DIMENSIONS (mm)				AREA PROVIDED m <sup>2</sup>	VOL (m <sup>3</sup> )
		D	Z	X	Y		
75	0.061	800	400	450	225	0.180	0.040
100	0.109	1 000	500	500	250	0.250	0.060
150	0.245	1 000	500	1000	500	0.500	0.250
200	0.435	1 200	600	1400	700	0.840	0.590
250	0.680	1 300	650	2000	1000	1.300	1.300
300	0.979	1 400	700	2600	1300	1.820	2.370
300+	SEE NOTE 5						



**THRUST BLOCK FOR TEE-PIECE**  
SCALE 1:30

NOMINAL PIPE DIAMETER ø (mm)	AREA REQUIRED m <sup>2</sup>	DIMENSIONS (mm)				AREA PROVIDED m <sup>2</sup>	VOL (m <sup>3</sup> )
		D	Z	X	Y		
75	0.080	800	400	400	200	0.160	0.032
100	0.141	1 000	500	500	250	0.250	0.063
150	0.318	1 000	500	700	350	0.350	0.123
200	0.565	1 200	600	1000	500	0.600	0.300
250	0.883	1 300	650	1400	700	0.910	0.637
300	1.272	1 400	700	1900	950	1.330	1.264
300+	SEE NOTE 5						



**TYPICAL SECTION**  
SCALE 1:30

**CONCRETE THRUST BLOCKS**

- 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 150kPa.
  - \* UNSUBMERGED CONDITIONS.
  - \* MAXIMUM INTERNAL PIPE PRESSURE OF 18 Bar.
- IF THE CONTRACTOR IS NOT IN A POSITION TO IDENTIFY THE ABOVE CONDITIONS, USE SHALL BE MADE OF AN ENGINEERING GEOLOGIST OR ENGINEER. IN ALL OTHER CONDITIONS THE ACTUAL INSITU BEARING PRESSURE SHALL BE CALCULATED AND THE THRUST BLOCK DESIGNED BY THE ENGINEER.
- USE 10 MPa CONCRETE.
- HALF THE DEPTH OF THE THRUST BLOCK TO BE PLACED BELOW THE PIPE AXIS.
- KEEP CONCRETE AWAY FROM THE COUPLINGS & THE PIPE JOINTS.
- THRUST BLOCKS FOR PIPE Ø LARGER THAN 300mm & HIGHER TEST PRESSURES THAN 18 BAR SHALL BE DESIGNED BY THE ENGINEER.
- THRUST BLOCKS AT PUDDLE FLANGES SHALL BE REINFORCED & DESIGNED BY THE ENGINEER.

- GENERAL NOTES:**
- THIS DESIGN WAS ENGINEERED BY:  
SEA PROJECTS AND ENGINEERING (PTY) LTD
- ALL MATERIALS AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS PROJECT SPECIFICATIONS.
  - ALL DIMENSIONS IN MILLIMETERS.
  - ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
  - ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR MUNICIPAL CIVIL ENGINEERING WORKS.
  - FINAL POSITION TO BE DETERMINED ON SITE.
  - ALL CONCRETE MIXES TO BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
  - EXCAVATIONS TO BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
  - ALL MASS CONCRETE TO BE 15MPa/19 UNLESS STATED OTHERWISE BY THE ENGINEER.
  - BENCHING SHALL BE FINISHED WITH A 20mm DOLOMITIC LAYER PLACED WHILE CONCRETE IS STILL GREEN AND STEEL FLOAT TO SMOOTH FINISHED.
  - BACKFILL TO BE DONE WITH G5 MATERIAL COMPACTED IN LAYERS OF 150mm THICK TO 95% MDD ASHTO AT OMC.
  - CHANNELING MUST BE BUILT WITH GLAZED EARTHENWARE OR FIBRE CEMENT CHANNEL RECESSED INTO CONCRETE FOUNDATION.
  - EXCAVATION PRIOR TO TRENCH EXCAVATIONS AND CONFIRM LEVELS.
  - COMPACTION OF BEDDING MATERIAL AROUND PIPE TO BE DONE WITH SPECIAL CARE.
  - ALL PIPES TO BE PRESSURE TESTED TESTED AFTER COMPLETION.

**LEGEND**

▲ Benchmarks	⊕ Sign Post	■ Concrete Paving	— Culvert
⊙ Electric Pole	⊕ Steel Pole	■ Brick Paving	— Drain
⊕ Sign Board	⊕ Staircase	■ Tarmacadam	— Top of pipe
⊕ Fibre Manhole	⊕ Water Valve	■ Dust Road	— Fence
⊕ Lamp Post	⊕ Valve Manhole	■ Driveway	— Wall
⊕ Fire Hydrant	⊕ Bolted	■ Railway	— Bottom Kerb
⊕ Tree	⊕ Wooden Pole	■ Top Kerb	— Minor Contour
⊕ Water Meter	⊕ Water Tank	⊕ Gate	— Major Contour
⊕ Sewer Manhole	⊕ Insert Level	⊕ Electric Box	
⊕ Unknown Manhole	⊕ Stormwater Manhole		
⊕ Rock			

**DESIGN COORDINATOR APPROVAL:**

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

**PROJECT MANAGER APPROVAL:**

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

**CLIENT APPROVAL:**

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

**REVISIONS**

NO.	DATE	DESCRIPTION	BY:	CHK:	APPR.:
A	28/05/2026	ISSUED FOR TENDER	C.K.	M.R.	S.N.

DESIGNED:	DRAWN:	CHECKED:	APPROVED:	DATE:	SCALE:
M.R	C.K	M.R	S.N	29/05/2026	N.T.S

**CLIENT:**

**Maquassi Hills Local Municipality**

MAQUASSI HILLS LOCAL MUNICIPALITY  
Private Bag X3  
19 Krugger Street  
Wolmaranstad  
2630

TEL: (018) 596 1068  
FAX: (018) 596 1555  
WEB: www.maquassihills.co.za

**PROJECT:**

REPLACEMENT OF ASBESTOS CEMENT BULK AND RETICULATION PIPELINES

**DRAWING TITLE:**

MAKWASSIE RETICULATION:  
TYPICAL DETAILS : ANCHOR BLOCKS

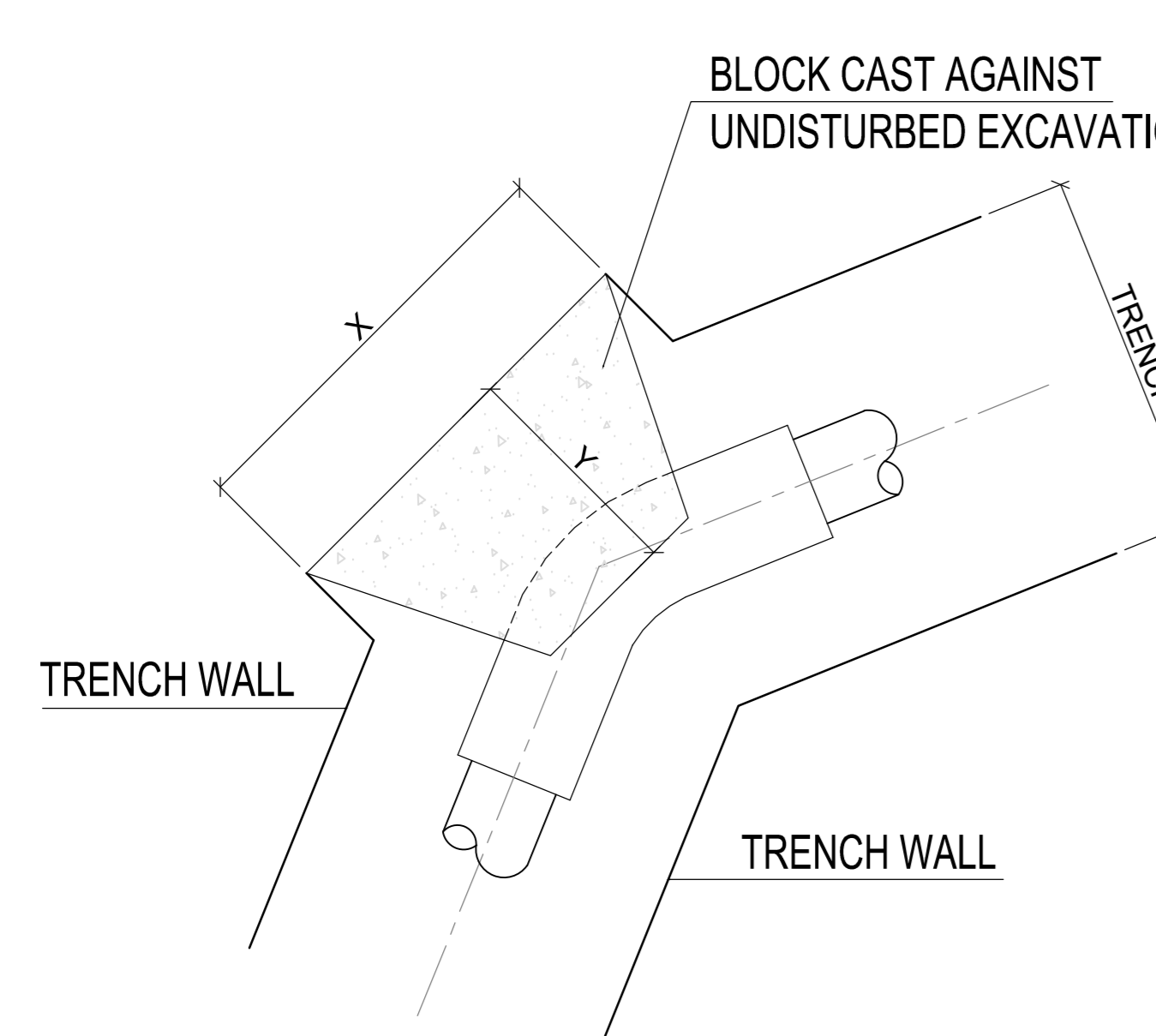
**CONSULTANTS:**

SEA PROJECTS AND ENGINEERING

7107 Rosewood Road  
Broadacres  
Gauteng  
2169

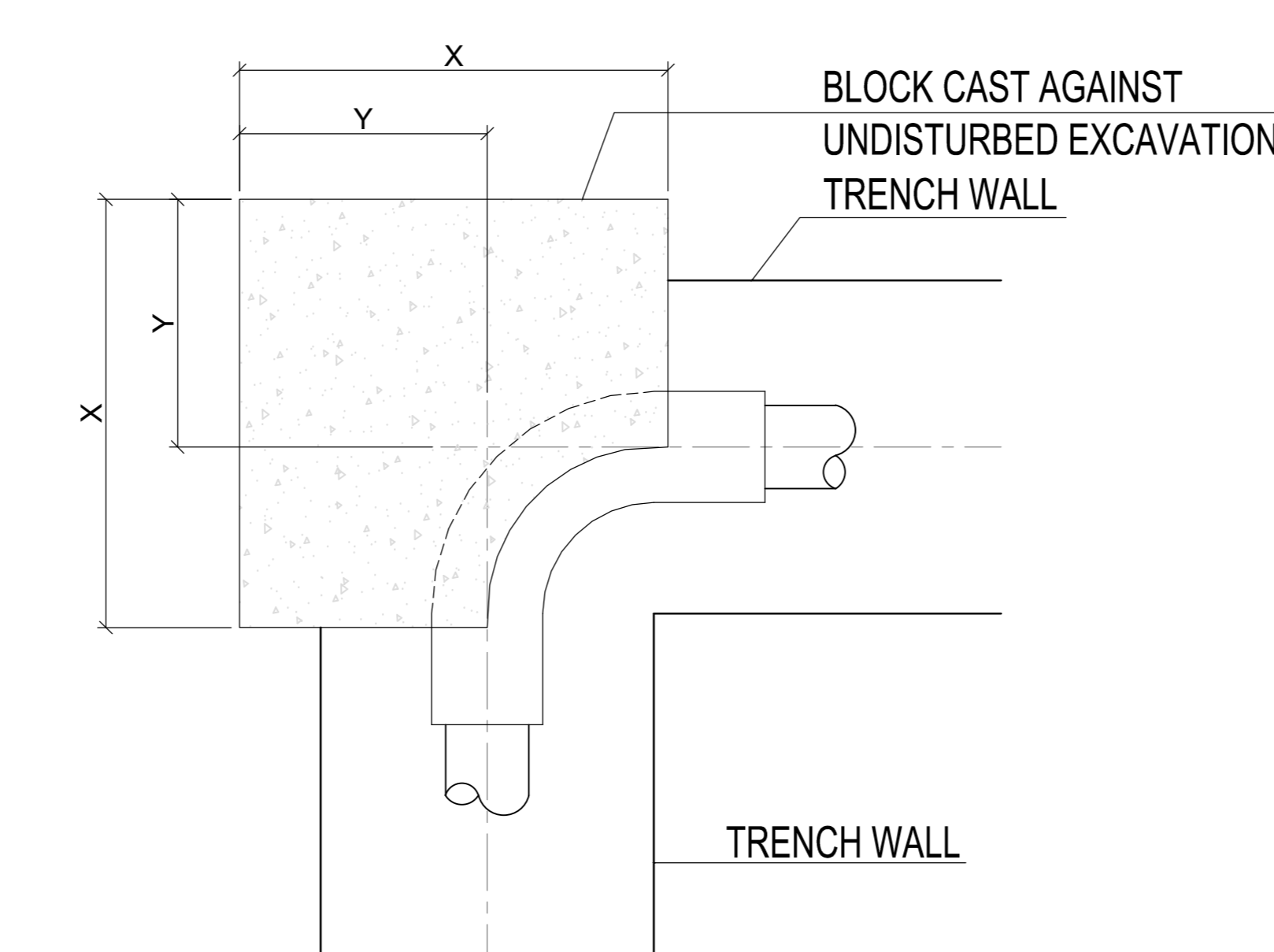
TEL NO. : +27(0) 10 143 1667  
EMAIL: seano@seaprojects.co.za

SIZE:	PROJECT NO.:	DRAWING NO.:	SHEET NO.:	REVISION:
A0	20241003	DRG-CIV-012	01	A



**THRUST BLOCK FOR 22½° BEND**  
SCALE 1:10

NOMINAL PIPE DIAMETER ø (mm)	AREA REQUIRED m <sup>2</sup>	DIMENSIONS (mm)				AREA PROVIDED m <sup>2</sup>	VOL (m <sup>3</sup> )
		D	Z	X	Y		
75	0.031	800	400	400	200	0.1600	0.032
100	0.055	1 000	500	500	250	0.2500	0.063
150	0.124	1 000	500	500	250	0.2500	0.063
200	0.220	1 200	600	600	300	0.3600	0.108
250	0.344	1 300	650	650	325	0.4225	0.137
300	0.496	1 400	700	800	400	0.5600	0.224
300+	SEE NOTE 5						



**THRUST BLOCK FOR 90° BEND**  
SCALE 1:30

NOMINAL PIPE DIAMETER ø (mm)	AREA REQUIRED m <sup>2</sup>	DIMENSIONS (mm)				AREA PROVIDED m <sup>2</sup>	VOL (m <sup>3</sup> )
		D	Z	X	Y		
75	0.113	800	400	450	225	0.18	0.065
100	0.201	1 000	500	500	250	0.25	0.100
150	0.451	1 000	500	1 000	500	0.50	0.402
200	0.803	1 200	600	1 400	700	0.84	0.945
250	1.254	1 300	650	2 000	1000	1.30	2.089
300	1.806	1 400	700	2 600	1 300	1.82	3.803
300+	SEE NOTE 5						