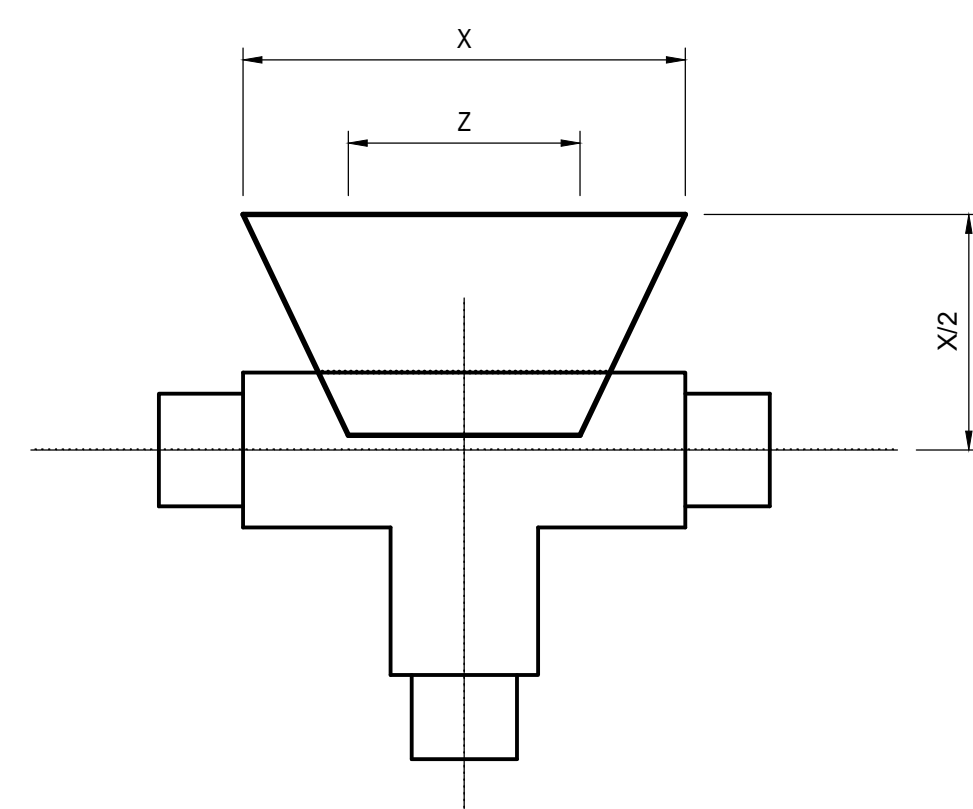
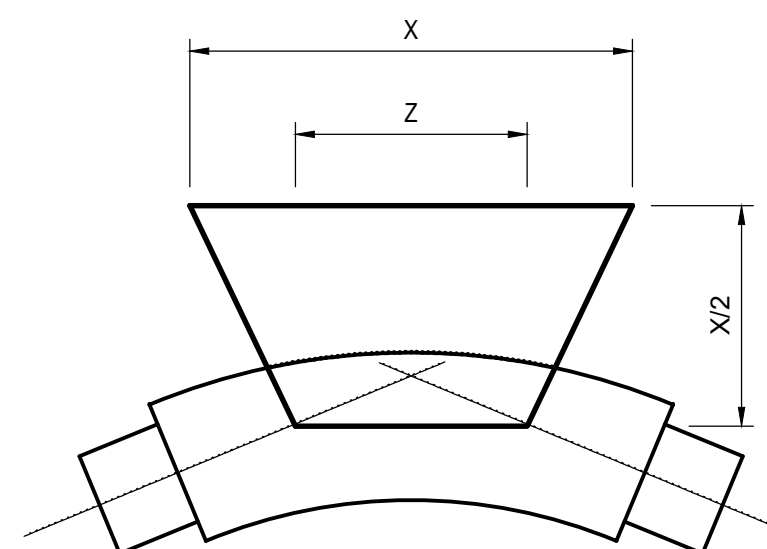


## GENERAL NOTES:

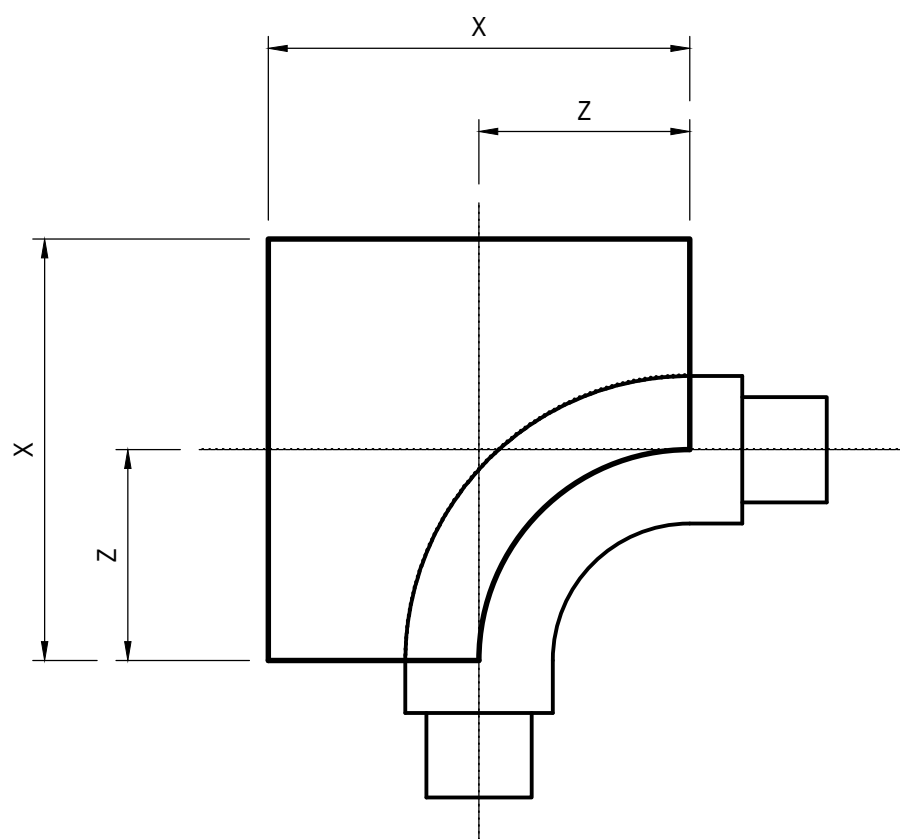
1. DRAWINGS MUST NOT BE SCALED.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE GENERAL NOTES DRAWINGS AND ALL PROJECT SPECIFICATIONS.
3. ACCORDING TO THE COPYRIGHT ACT (ACT No 98 OF 1978) NO PART OF THIS DOCUMENT MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WHATSOEVER INCLUDING MECHANICAL/ELECTRONIC, PHOTOCOPYING, MICROFILMING OR ANY OTHER SYSTEM OF INFORMATION STORAGE WITHOUT WRITTEN PERMISSION OF ZUTARI.



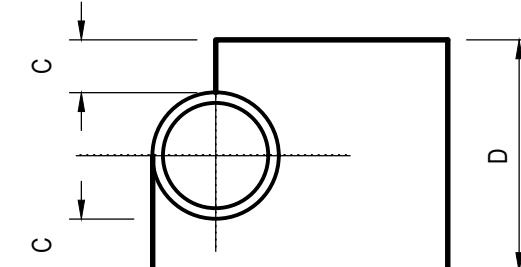
T - PIECE AND END CAP



22.5° AND 45° BENDS



90° BEND

TYPICAL  
CROSS-SECTION

## NOTES:

1. THRUST BLOCKS TO BE SYMMETRICAL TO THE CENTRELINES OF THE PIPES AND FITTINGS.
2. ALL ADDITIONAL EXCAVATION REQUIRED FOR THE CASTING OF THRUST BLOCKS IS REGARDED AS TRENCH EXCAVATION. THE RATES SHOULD INCLUDE THESE COSTS.
3. THRUST BLOCKS TO BE CAST AGAINST UNDISTURBED EARTH.
4. ALL THRUST BLOCKS CONCRETE TO BE CLASS 25MPa/19mm.

| DIMENSIONS OF THRUST BLOCKS IN SOIL WITH<br>MAX.HOR. BEARING CAPACITY OF 55 kPa (SOFT CLAYS) |      |      |      |      |
|----------------------------------------------------------------------------------------------|------|------|------|------|
| PIPE DIA                                                                                     | X    | D    | Z    | C    |
| T-PIECE AND END CAP                                                                          |      |      |      |      |
| 350                                                                                          | 2400 | 1500 | 800  | 550  |
| 400                                                                                          | 2700 | 1700 | 900  | 650  |
| 450                                                                                          | 2900 | 2000 | 1000 | 750  |
| 500                                                                                          | 3200 | 2200 | 1100 | 850  |
| 600                                                                                          | 4000 | 2500 | 1300 | 950  |
| 700                                                                                          | 4900 | 2800 | 1600 | 1050 |
| 800                                                                                          | 5800 | 3100 | 1900 | 1150 |
| 900                                                                                          | 6700 | 3400 | 2200 | 1250 |
| 1000                                                                                         | 7600 | 3700 | 2500 | 1350 |
| 22.5° BEND                                                                                   |      |      |      |      |
| 350                                                                                          | 1200 | 1200 | 400  | 400  |
| 400                                                                                          | 1300 | 1300 | 400  | 450  |
| 450                                                                                          | 1500 | 1500 | 500  | 500  |
| 500                                                                                          | 1700 | 1600 | 600  | 550  |
| 600                                                                                          | 2200 | 1800 | 700  | 600  |
| 700                                                                                          | 2700 | 2000 | 900  | 650  |
| 800                                                                                          | 3200 | 2200 | 1100 | 700  |
| 900                                                                                          | 3700 | 2400 | 1200 | 750  |
| 1000                                                                                         | 4200 | 2600 | 1400 | 800  |
| 45° BEND                                                                                     |      |      |      |      |
| 350                                                                                          | 1900 | 1400 | 600  | 500  |
| 400                                                                                          | 2300 | 1500 | 800  | 550  |
| 450                                                                                          | 2600 | 1700 | 900  | 600  |
| 500                                                                                          | 3000 | 1800 | 1000 | 650  |
| 600                                                                                          | 3800 | 2000 | 1300 | 700  |
| 700                                                                                          | 4800 | 2200 | 1600 | 750  |
| 800                                                                                          | 5700 | 2400 | 1900 | 800  |
| 900                                                                                          | 6600 | 2600 | 2200 | 850  |
| 1000                                                                                         | 7600 | 2800 | 2500 | 900  |
| 90° BEND                                                                                     |      |      |      |      |
| 350                                                                                          | 2400 | 1500 | 800  | 550  |
| 400                                                                                          | 2700 | 1700 | 900  | 650  |
| 450                                                                                          | 2900 | 2000 | 1000 | 750  |
| 500                                                                                          | 3200 | 2200 | 1100 | 850  |
| 600                                                                                          | 4000 | 2500 | 1300 | 950  |
| 700                                                                                          | 4900 | 2800 | 1600 | 1050 |
| 800                                                                                          | 5800 | 3100 | 1900 | 1150 |
| 900                                                                                          | 6700 | 3400 | 2200 | 1250 |
| 1000                                                                                         | 7600 | 3700 | 2500 | 1350 |

| DIMENSIONS OF THRUST BLOCKS IN SOIL WITH<br>MAX.HOR. BEARING CAPACITY OF 150 kPa |      |      |      |      |
|----------------------------------------------------------------------------------|------|------|------|------|
| PIPE DIA                                                                         | X    | D    | Z    | C    |
| <u>T-PIECE AND END CAP</u>                                                       |      |      |      |      |
| 350                                                                              | 1000 | 1300 | 500  | 450  |
| 400                                                                              | 1100 | 1500 | 600  | 550  |
| 450                                                                              | 1200 | 1800 | 600  | 650  |
| 500                                                                              | 1300 | 2000 | 700  | 750  |
| 600                                                                              | 1600 | 2300 | 800  | 850  |
| 700                                                                              | 2000 | 2600 | 1000 | 950  |
| 800                                                                              | 2300 | 2900 | 1200 | 1050 |
| 900                                                                              | 2600 | 3200 | 1300 | 1150 |
| 1000                                                                             | 3000 | 3500 | 1500 | 1250 |
| <u>22.5° BEND</u>                                                                |      |      |      |      |
| 350                                                                              | 700  | 800  | 400  | 200  |
| 400                                                                              | 700  | 900  | 400  | 250  |
| 450                                                                              | 800  | 1100 | 400  | 300  |
| 500                                                                              | 800  | 1200 | 400  | 350  |
| 600                                                                              | 1000 | 1400 | 500  | 400  |
| 700                                                                              | 1200 | 1600 | 600  | 450  |
| 800                                                                              | 1400 | 1800 | 700  | 500  |
| 900                                                                              | 1600 | 2000 | 800  | 550  |
| 1000                                                                             | 1800 | 2200 | 900  | 600  |
| <u>45° BEND</u>                                                                  |      |      |      |      |
| 350                                                                              | 1000 | 1000 | 500  | 300  |
| 400                                                                              | 1100 | 1100 | 600  | 350  |
| 450                                                                              | 1300 | 1300 | 700  | 400  |
| 500                                                                              | 1400 | 1400 | 700  | 450  |
| 600                                                                              | 1800 | 1600 | 900  | 500  |
| 700                                                                              | 2100 | 1800 | 1100 | 550  |
| 800                                                                              | 2500 | 2000 | 1300 | 600  |
| 900                                                                              | 2900 | 2200 | 1500 | 650  |
| 1000                                                                             | 3300 | 2400 | 1700 | 700  |
| <u>90° BEND</u>                                                                  |      |      |      |      |
| 350                                                                              | 900  | 1400 | 500  | 500  |
| 400                                                                              | 1000 | 1600 | 500  | 600  |
| 450                                                                              | 1100 | 1900 | 600  | 700  |
| 500                                                                              | 1200 | 2100 | 600  | 800  |
| 600                                                                              | 1600 | 2400 | 800  | 900  |
| 700                                                                              | 1900 | 2700 | 1000 | 1000 |
| 800                                                                              | 2200 | 3000 | 1100 | 1100 |
| 900                                                                              | 2500 | 3300 | 1300 | 1200 |
| 1000                                                                             | 2900 | 3600 | 1500 | 1300 |

CONSULTING ENGINEERS

**ZUTARI**  
IMPACT. ENGINEERED.OXFORD CORNER  
JELICOE AVENUE  
ROSEBANK, JOHANNESBURG  
SOUTH AFRICA TEL: +27 11 214 4500

CLIENT

17 HARRISON STREET  
MARSHALLTOWN  
2107

|               |              |             |
|---------------|--------------|-------------|
| DESIGNED      | T. SHABALALA | AUGUST 2021 |
| DRAWN         | T. SHABALALA | AUGUST 2021 |
| CHECKED       | M. LUSUNZI   | AUGUST 2021 |
| APPROVED BY:  | C. KAN       | AUGUST 2021 |
|               | SIGNATURE    | DATE        |
| ECSA REG. No. |              |             |
| CHECKED BY:   |              |             |
|               | SIGNATURE    | DATE        |
| ECSA REG. No. |              |             |

17 HARRISON STREET  
MARSHALLTOWN  
2107TEL: (011) 688-1400  
FAX: (011) 688-1529**Joburg**

HALFWAY HOUSE WATER UPGRADE

THRUST BLOCK DETAILS

APPROVAL BY JW DEPOT

SCALE

AMENDMENTS

|                         |           |      |      |                   |         |
|-------------------------|-----------|------|------|-------------------|---------|
| CHECKED                 |           |      | REV: | DESCRIPTION       | DATE:   |
| APPROVED BY:            |           |      | T0   | ISSUED FOR TENDER | 10/2021 |
|                         | SIGNATURE | DATE |      |                   |         |
| APPROVAL BY JW PLANNING |           |      |      |                   |         |
| CHECKED                 |           |      |      |                   |         |
| APPROVED BY:            |           |      |      |                   |         |
|                         | SIGNATURE | DATE |      |                   |         |

DRAWING No.

|                    |       |                  |    |      |
|--------------------|-------|------------------|----|------|
| 111242             | -     | 0000-DRG-WW-0505 | -  | T0   |
| PROJECT No.        |       | DRAWING No.      |    | REV. |
| A0                 | SHEET | 1                | OF | 1    |
| ORIGINAL PAGE SIZE |       |                  |    |      |
| FILE No:           |       |                  |    |      |