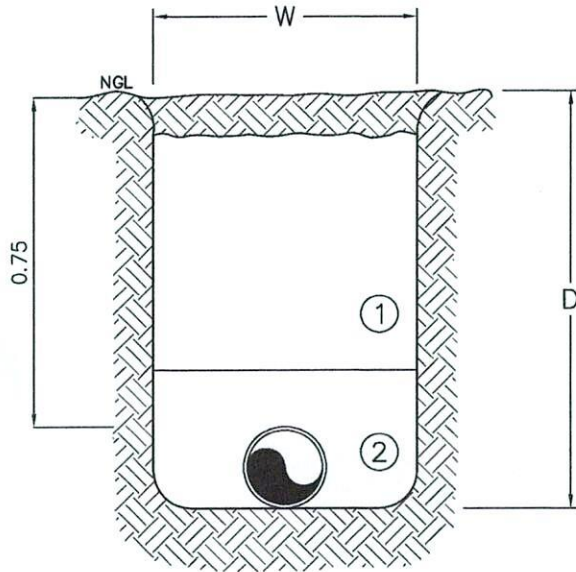
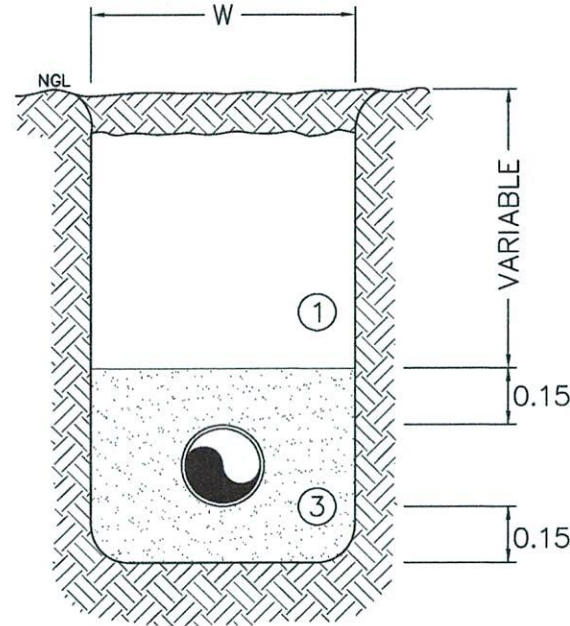




NORMAL INSTALLATION  
WHERE SAND BEDDING  
BACKFILL NOT REQUIRED



IN ROCK OR WHEN  
ORDERED BY ENGINEER

| TABLE OF TRENCH DIMENSIONS (IN METERS) |                   |                   |           |
|----------------------------------------|-------------------|-------------------|-----------|
| Pipe Diameter (mm)                     | Minimum Width (W) | Maximum Width (W) | Depth (D) |
| 50mmø                                  | 0.20              | 0.30              | 0.60      |
| 75mmø                                  | 0.20              | 0.30              | 0.90      |
| 100mmø                                 | 0.40              | 0.70              | 0.95      |
| 150mmø                                 | 0.45              | 0.75              | 1.00      |
| 200mmø                                 | 0.50              | 0.80              | 1.05      |

LEGEND:

1. COMPACTED SELECTED NATIVE MATERIAL BACKFILL (SEE SPEC.)
2. COMPACTED SELECTED NATIVE MATERIAL IN 0.15 LAYERS (SEE SPEC.)
3. APPROVED SAND BEDDING & BACKFILL HAND PLACED AND COMPACTED.
4. PAYMENT FOR ANY RESURFACING WILL BE BASED ON MAXIMUM TRENCH WIDTHS PER SIZE PIPE SHOWN.

NOTE:

ALL DIMENSIONS IN METERS EXCEPT WHERE OTHERWISE SHOWN.

CALAMBA WATER DISTRICT  
ENGINEERING  
PLANNING AND DESIGN DIVISION

SHEET TITLE:

TYPICAL TRENCH DETAILS

REVISION

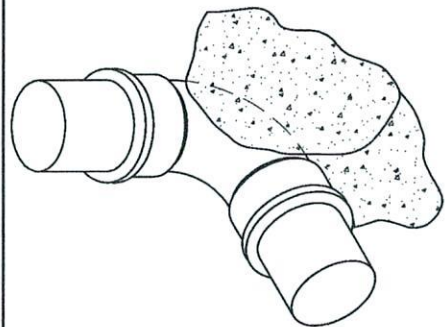
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|-----|------|---------|-------------|----------|
|     |      |         |             |          |
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DATE:

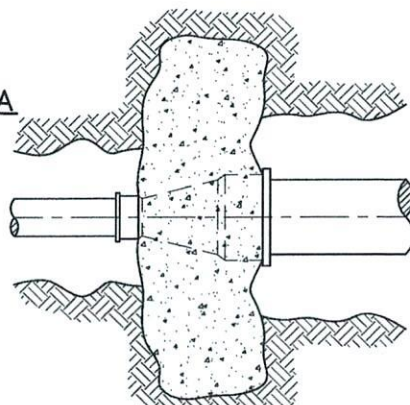
06/29/2026

SHEET NO.

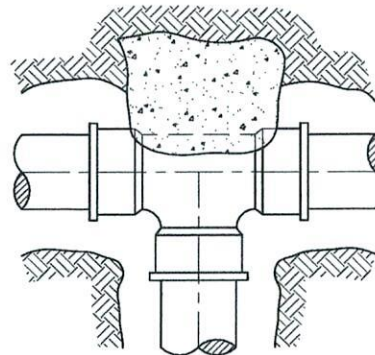
SD-1



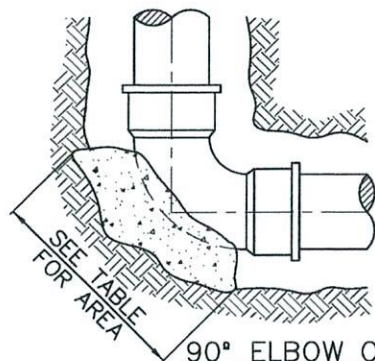
ISOMETRY OF  
THRUST BLOCK AREA



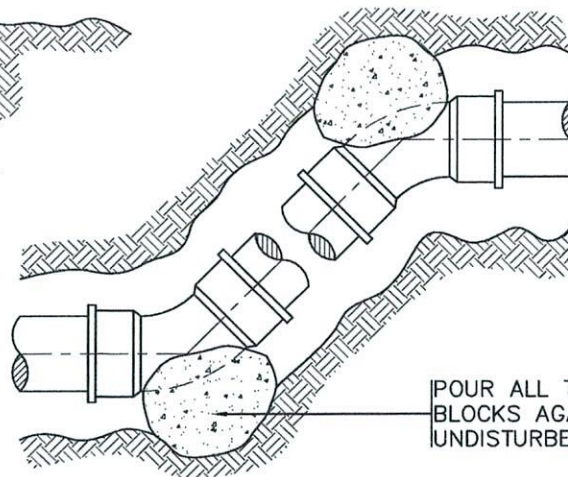
REDUCER



TEE



90° ELBOW OR BEND



OFFSETS AND BEND

POUR ALL THRUST  
BLOCKS AGAINST  
UNDISTURBED SOIL

TABLE OF MINIMUM THRUST BLOCK AREA IN SQ. M.

| PIPE SIZE<br>(mm) | TEE &<br>DEAD END | 90° BEND | 45° BEND | 22½°<br>BEND |
|-------------------|-------------------|----------|----------|--------------|
| 75                | 0.05              | 0.07     | 0.04     | 0.02         |
| 100               | 0.09              | 0.12     | 0.07     | 0.04         |
| 150               | 0.20              | 0.28     | 0.15     | 0.08         |
| 200               | 0.35              | 0.50     | 0.27     | 0.14         |

NOTES:

1. ABOVE AREAS BASED ON AN ASSUMED SOIL BEARING PRESSURE OF 96 kPa (2000 psf).
2. REDUCE OR INCREASE AREAS PROPORTIONATELY TO SUIT ACTUAL FIELD CONDITIONS UPON APPROVAL OF ENGINEER.
3. CONCRETE FOR THRUST BLOCK SHALL BE 13.8 MPa (2000 psi).
4. ALL CONCRETE SHALL BE POURED TO AVOID INTERFERENCE WITH JOINTS.
5. THRUST BLOCKS NOT REQUIRED ON STEEL PIPELINE WITH WELDED OR FLANGE JOINTS OR ON SOLVENT WELDED PVC PIPE.
6. WHERE PIPE CONNECTS TO A FITTING IN A STEEL PIPELINE SHALL BE BLOCKED AS SHOWN HEREON.
7. BEARING AREAS BASED ON INTERNAL PRESSURE OF 106m (150psi).

CALAMBA WATER DISTRICT  
ENGINEERING  
PLANNING AND DESIGN DIVISION

SHEET TITLE:  
HORIZONTAL CONCRETE THRUST  
BLOCKS

REVISION

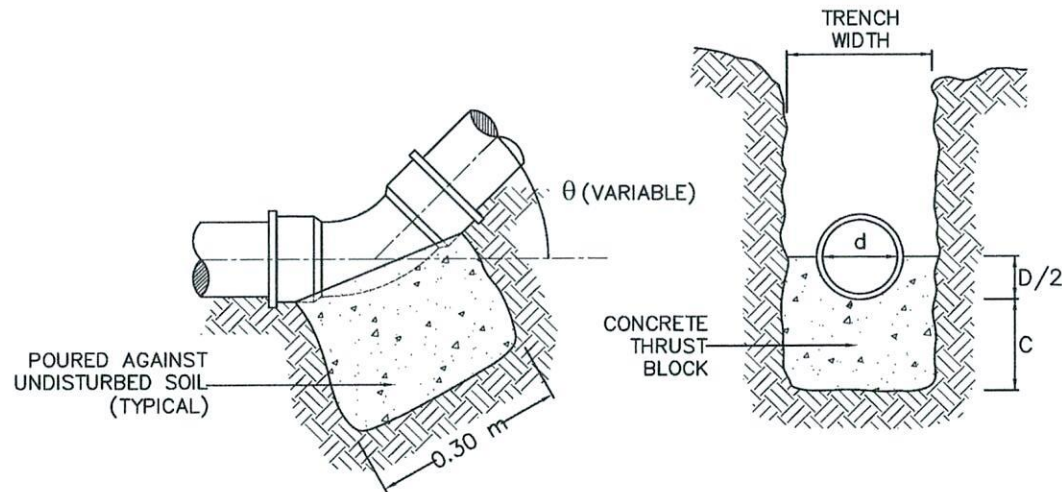
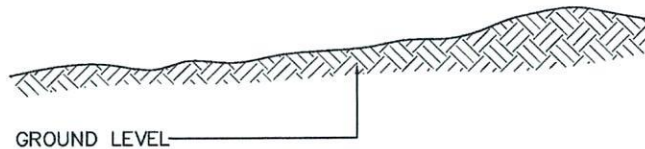
| NO. | DATE | INITIAL | DESCRIPTION | APPROVED |
|-----|------|---------|-------------|----------|
|     |      |         |             |          |
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DATE:

06/29/2026

SHEET NO.

SD-2



ELEVATION

SECTION

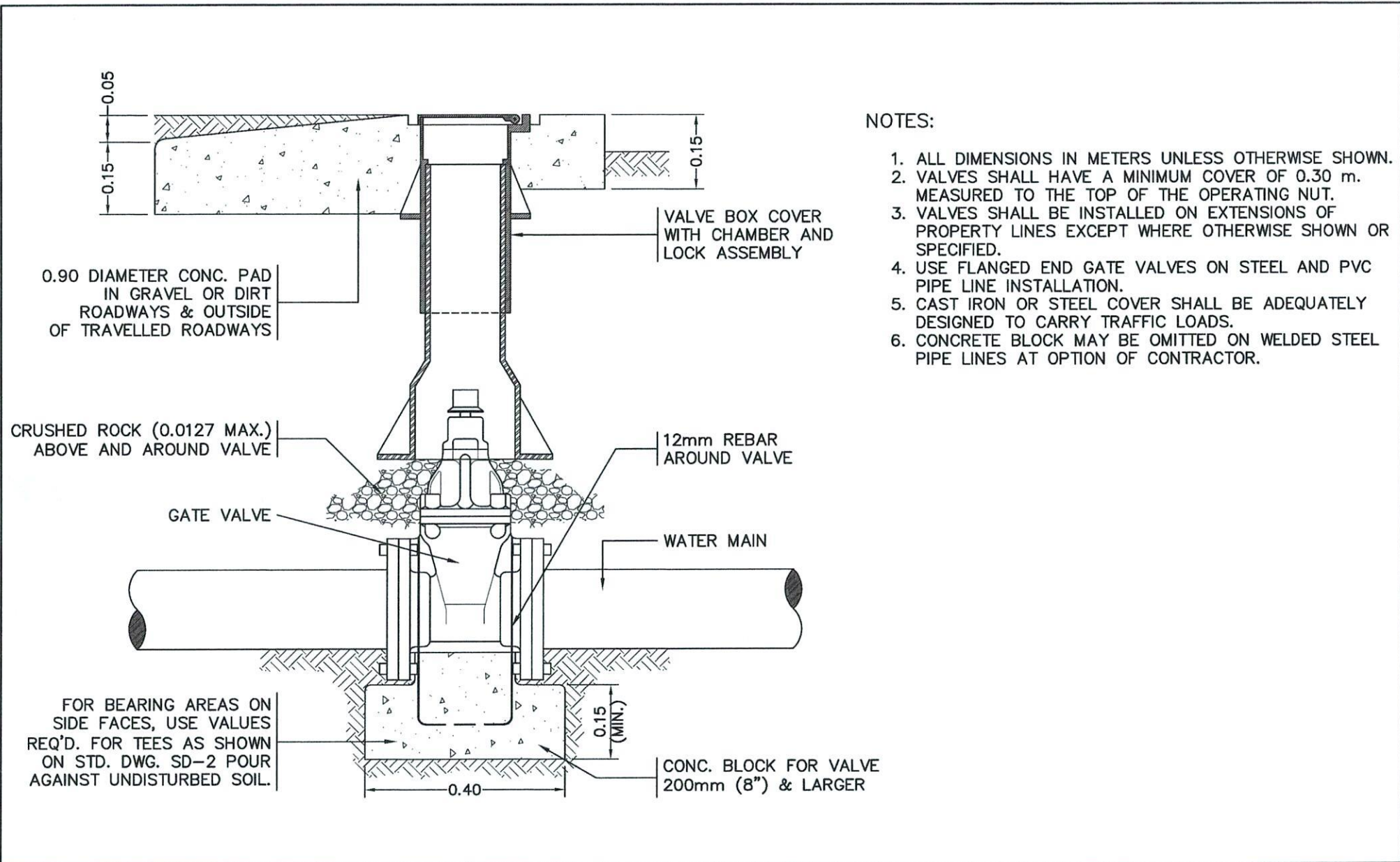
| TABLE OF MINIMUM THRUST BLOCK DIMENSIONS FOR<br>PIPE SIZES 75mmø TO 200mmø |        |                                         |          |           |
|----------------------------------------------------------------------------|--------|-----------------------------------------|----------|-----------|
| PIPE SIZE                                                                  | "C"    | THRUST BLOCK BEARING AREAS<br>IN SQ. M. |          |           |
| mm                                                                         | meters | 90° BEND                                | 45° BEND | 22½° BEND |
| 75 & 100                                                                   | 0.25   | 0.14                                    | 0.12     | *         |
| 150                                                                        | 0.25   | 0.31                                    | 0.17     | 0.12      |
| 200                                                                        | 0.25   | 0.54                                    | 0.30     | 0.15      |

\* – THRUST BLOCK NOT REQUIRED

NOTES:

1. ABOVE AREAS BASED ON AN ASSUMED SOIL BEARING PRESSURE 96 kPa (2000 psf).
2. REDUCE OR INCREASE AREAS PROPORTIONATELY TO SUIT ACTUAL FIELD CONDITIONS UPON APPROVAL OF ENGINEER.
3. CONCRETE FOR THRUST BLOCK SHALL BE 13.8 MPa (2000 psi).
4. THRUST BLOCKS NOT REQUIRED ON STEEL PIPELINES WITH WELDED OR FLANGED JOINTS OR ON SOLVENT WELDED PVC PIPE.
5. WHERE PIPE CONNECTS TO A FITTING ON A STEEL PIPE LINE THE STEEL PIPELINE SHALL BE BLOCKED AS SHOWN HEREON.
6. BEARING AREAS BASED ON INTERNAL PRESSURE OF 106 m (150 psi).

|                                                                       |                                                                          |          |      |         |             |          |                     |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------|----------|------|---------|-------------|----------|---------------------|
| CALAMBA WATER DISTRICT<br>ENGINEERING<br>PLANNING AND DESIGN DIVISION | SHEET TITLE:<br><br>VERTICAL CONCRETE THRUST<br>BLOCKS (DOWNWARD THRUST) | REVISION |      |         |             |          | DATE:<br>06/29/2026 |
|                                                                       |                                                                          | NO.      | DATE | INITIAL | DESCRIPTION | APPROVED | SHEET NO.<br>SD-3   |
|                                                                       |                                                                          |          |      |         |             |          |                     |
|                                                                       |                                                                          |          |      |         |             |          |                     |



NOTES:

1. ALL DIMENSIONS IN METERS UNLESS OTHERWISE SHOWN.
2. VALVES SHALL HAVE A MINIMUM COVER OF 0.30 m. MEASURED TO THE TOP OF THE OPERATING NUT.
3. VALVES SHALL BE INSTALLED ON EXTENSIONS OF PROPERTY LINES EXCEPT WHERE OTHERWISE SHOWN OR SPECIFIED.
4. USE FLANGED END GATE VALVES ON STEEL AND PVC PIPE LINE INSTALLATION.
5. CAST IRON OR STEEL COVER SHALL BE ADEQUATELY DESIGNED TO CARRY TRAFFIC LOADS.
6. CONCRETE BLOCK MAY BE OMITTED ON WELDED STEEL PIPE LINES AT OPTION OF CONTRACTOR.

|                                                                       |                                                          |          |      |         |             |          |             |
|-----------------------------------------------------------------------|----------------------------------------------------------|----------|------|---------|-------------|----------|-------------|
| CALAMBA WATER DISTRICT<br>ENGINEERING<br>PLANNING AND DESIGN DIVISION | SHEET TITLE:<br><b>INSTALLATION OF BURIED GATE VALVE</b> | REVISION |      |         |             |          | DATE:       |
|                                                                       |                                                          | NO.      | DATE | INITIAL | DESCRIPTION | APPROVED | 06/29/2026  |
|                                                                       |                                                          |          |      |         |             |          | SHEET NO.   |
|                                                                       |                                                          |          |      |         |             |          | <b>SD-4</b> |