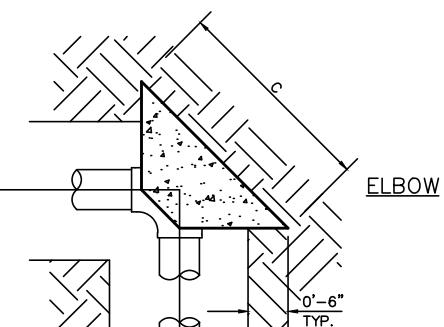
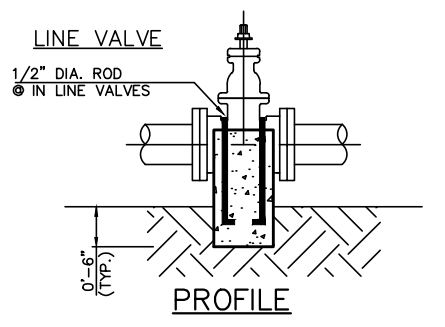
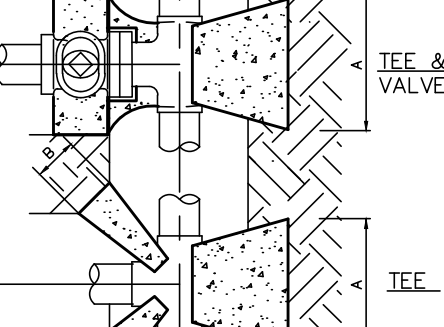
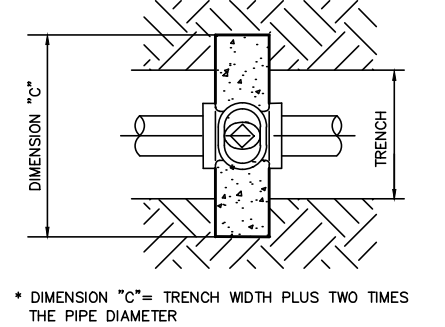
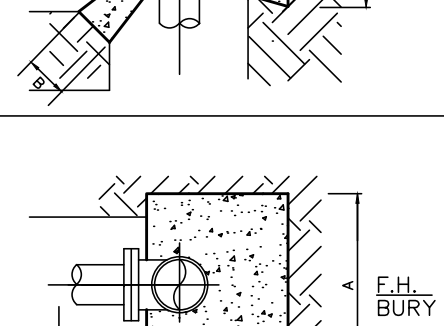
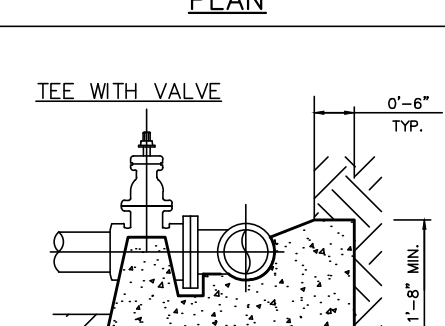
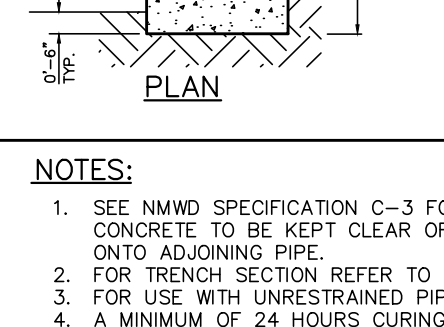


|  <p>ELBOW</p> |  <p>LINE VALVE 1/2" DIA. ROD 1/2" IN LINE VALVES PROFILE</p> | <table border="1"> <thead> <tr> <th rowspan="2">PIPE SIZE</th> <th rowspan="2">SOIL TYPE</th> <th rowspan="2">ALLOWABLE BEARING PRESSURE</th> <th colspan="5">REQUIRED DIMENSIONS IN INCHES</th> </tr> <tr> <th>TEES DEAD ENDS</th> <th>TEES CROSSES</th> <th>90° BEND</th> <th>45° BEND</th> <th>22.5° BEND</th> </tr> <tr> <th>IN</th> <th></th> <th>PSF</th> <th>A</th> <th>B</th> <th>C</th> <th>C</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>SOFT CLAY</td> <td>1000</td> <td>18</td> <td>13</td> <td>25</td> <td>14</td> <td>7</td> </tr> <tr> <td>4</td> <td>SAND</td> <td>2000</td> <td>9</td> <td>6</td> <td>13</td> <td>7</td> <td>4</td> </tr> <tr> <td>4</td> <td>SAND, GRAVEL & CLAY</td> <td>4000</td> <td>5</td> <td>3</td> <td>6</td> <td>3</td> <td>2</td> </tr> <tr> <td>4</td> <td>SHALE OR ROCK</td> <td>10000</td> <td>2</td> <td>1</td> <td>3</td> <td>1</td> <td>1</td> </tr> </tbody> </table> | PIPE SIZE | SOIL TYPE | ALLOWABLE BEARING PRESSURE | REQUIRED DIMENSIONS IN INCHES | | | | | TEES DEAD ENDS | TEES CROSSES | 90° BEND | 45° BEND | 22.5° BEND | IN | | PSF | A | B | C | C | C | 4 | SOFT CLAY | 1000 | 18 | 13 | 25 | 14 | 7 | 4 | SAND | 2000 | 9 | 6 | 13 | 7 | 4 | 4 | SAND, GRAVEL & CLAY | 4000 | 5 | 3 | 6 | 3 | 2 | 4 | SHALE OR ROCK | 10000 | 2 | 1 | 3 | 1 | 1 |
|--|---|--|-----------|------------|----------------------------|-------------------------------|-----------|----------------------------|-------------------------------|----|----------------|---------------------|----------|----------|------------|---------------------|-------|-----|----|---------------------|-------|----|----|---------------|-----------|------|----|---------------|-------|----|---|---|------|------|---|---|----|---|---|---|---------------------|------|---|---|---|---|---|---|---------------|-------|---|---|---|---|---|
| | | | | | | PIPE SIZE | SOIL TYPE | ALLOWABLE BEARING PRESSURE | REQUIRED DIMENSIONS IN INCHES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEES DEAD ENDS | TEES CROSSES | 90° BEND | 45° BEND | 22.5° BEND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IN | | PSF | A | B | C | C | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | SOFT CLAY | 1000 | 18 | 13 | 25 | 14 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | SAND | 2000 | 9 | 6 | 13 | 7 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | SAND, GRAVEL & CLAY | 4000 | 5 | 3 | 6 | 3 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | SHALE OR ROCK | 10000 | 2 | 1 | 3 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>TEE & VALVE</p> |  <p>PLAN</p> <p>* DIMENSION "C" = TRENCH WIDTH PLUS TWO TIMES THE PIPE DIAMETER</p> | <table border="1"> <tbody> <tr> <td>6</td> <td>SOFT CLAY</td> <td>1000</td> <td>41</td> <td>29</td> <td>57</td> <td>31</td> <td>16</td> </tr> <tr> <td>6</td> <td>SAND</td> <td>2000</td> <td>20</td> <td>14</td> <td>29</td> <td>16</td> <td>8</td> </tr> <tr> <td>6</td> <td>SAND, GRAVEL & CLAY</td> <td>4000</td> <td>10</td> <td>7</td> <td>14</td> <td>8</td> <td>4</td> </tr> <tr> <td>6</td> <td>SHALE OR ROCK</td> <td>10000</td> <td>4</td> <td>3</td> <td>6</td> <td>3</td> <td>2</td> </tr> </tbody> </table> | 6 | SOFT CLAY | 1000 | 41 | 29 | 57 | 31 | 16 | 6 | SAND | 2000 | 20 | 14 | 29 | 16 | 8 | 6 | SAND, GRAVEL & CLAY | 4000 | 10 | 7 | 14 | 8 | 4 | 6 | SHALE OR ROCK | 10000 | 4 | 3 | 6 | 3 | 2 | | | | | | | | | | | | | | | | | | | | | |
| | | | 6 | SOFT CLAY | 1000 | 41 | 29 | 57 | 31 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | SAND | 2000 | 20 | 14 | 29 | 16 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | SAND, GRAVEL & CLAY | 4000 | 10 | 7 | 14 | 8 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | SHALE OR ROCK | 10000 | 4 | 3 | 6 | 3 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>TEE</p> |  <p>TEE WITH VALVE</p> | <table border="1"> <tbody> <tr> <td>8</td> <td>SAND</td> <td>2000</td> <td>36</td> <td>25</td> <td>51</td> <td>28</td> <td>14</td> </tr> <tr> <td>8</td> <td>SAND, GRAVEL & CLAY</td> <td>4000</td> <td>18</td> <td>13</td> <td>25</td> <td>14</td> <td>7</td> </tr> <tr> <td>8</td> <td>SHALE OR ROCK</td> <td>10000</td> <td>7</td> <td>5</td> <td>10</td> <td>3</td> <td>3</td> </tr> </tbody> </table> | 8 | SAND | 2000 | 36 | 25 | 51 | 28 | 14 | 8 | SAND, GRAVEL & CLAY | 4000 | 18 | 13 | 25 | 14 | 7 | 8 | SHALE OR ROCK | 10000 | 7 | 5 | 10 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 8 | SAND | 2000 | 36 | 25 | 51 | 28 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | SAND, GRAVEL & CLAY | 4000 | 18 | 13 | 25 | 14 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | SHALE OR ROCK | 10000 | 7 | 5 | 10 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>F.H. BURY</p> | <p>PROFILE</p> | <table border="1"> <tbody> <tr> <td>10</td> <td>SAND</td> <td>2000</td> <td>56</td> <td>40</td> <td>80</td> <td>43</td> <td>22</td> </tr> <tr> <td>10</td> <td>SAND, GRAVEL & CLAY</td> <td>4000</td> <td>28</td> <td>20</td> <td>40</td> <td>22</td> <td>11</td> </tr> <tr> <td>10</td> <td>SHALE OR ROCK</td> <td>10000</td> <td>11</td> <td>8</td> <td>16</td> <td>9</td> <td>4</td> </tr> </tbody> </table> | 10 | SAND | 2000 | 56 | 40 | 80 | 43 | 22 | 10 | SAND, GRAVEL & CLAY | 4000 | 28 | 20 | 40 | 22 | 11 | 10 | SHALE OR ROCK | 10000 | 11 | 8 | 16 | 9 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 10 | SAND | 2000 | 56 | 40 | 80 | 43 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | SAND, GRAVEL & CLAY | 4000 | 28 | 20 | 40 | 22 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | SHALE OR ROCK | 10000 | 11 | 8 | 16 | 9 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <tbody> <tr> <td>12</td> <td>SAND</td> <td>2000</td> <td>81</td> <td>57</td> <td>115</td> <td>62</td> <td>32</td> </tr> <tr> <td>12</td> <td>SAND, GRAVEL & CLAY</td> <td>4000</td> <td>41</td> <td>29</td> <td>57</td> <td>31</td> <td>16</td> </tr> <tr> <td>12</td> <td>SHALE OR ROCK</td> <td>10000</td> <td>16</td> <td>11</td> <td>23</td> <td>12</td> <td>6</td> </tr> </tbody> </table> | | | | | 12 | SAND | 2000 | 81 | 57 | 115 | 62 | 32 | 12 | SAND, GRAVEL & CLAY | 4000 | 41 | 29 | 57 | 31 | 16 | 12 | SHALE OR ROCK | 10000 | 16 | 11 | 23 | 12 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | SAND | 2000 | 81 | 57 | 115 | 62 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | SAND, GRAVEL & CLAY | 4000 | 41 | 29 | 57 | 31 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | SHALE OR ROCK | 10000 | 16 | 11 | 23 | 12 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <tbody> <tr> <td>14</td> <td>SAND, GRAVEL & CLAY</td> <td>4000</td> <td>55</td> <td>39</td> <td>78</td> <td>42</td> <td>22</td> </tr> <tr> <td>14</td> <td>SHALE OR ROCK</td> <td>10000</td> <td>22</td> <td>16</td> <td>31</td> <td>17</td> <td>9</td> </tr> </tbody> </table> | | | | | 14 | SAND, GRAVEL & CLAY | 4000 | 55 | 39 | 78 | 42 | 22 | 14 | SHALE OR ROCK | 10000 | 22 | 16 | 31 | 17 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | SAND, GRAVEL & CLAY | 4000 | 55 | 39 | 78 | 42 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | SHALE OR ROCK | 10000 | 22 | 16 | 31 | 17 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <tbody> <tr> <td>16</td> <td>SAND, GRAVEL & CLAY</td> <td>4000</td> <td>72</td> <td>51</td> <td>102</td> <td>55</td> <td>28</td> </tr> <tr> <td>16</td> <td>SHALE OR ROCK</td> <td>10000</td> <td>29</td> <td>20</td> <td>41</td> <td>22</td> <td>11</td> </tr> </tbody> </table> | | | | | 16 | SAND, GRAVEL & CLAY | 4000 | 72 | 51 | 102 | 55 | 28 | 16 | SHALE OR ROCK | 10000 | 29 | 20 | 41 | 22 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | SAND, GRAVEL & CLAY | 4000 | 72 | 51 | 102 | 55 | 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | SHALE OR ROCK | 10000 | 29 | 20 | 41 | 22 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <tbody> <tr> <td>18</td> <td>SAND, GRAVEL & CLAY</td> <td>4000</td> <td>91</td> <td>64</td> <td>129</td> <td>70</td> <td>36</td> </tr> <tr> <td>18</td> <td>SHALE OR ROCK</td> <td>10000</td> <td>36</td> <td>26</td> <td>52</td> <td>28</td> <td>14</td> </tr> </tbody> </table> | | | | | 18 | SAND, GRAVEL & CLAY | 4000 | 91 | 64 | 129 | 70 | 36 | 18 | SHALE OR ROCK | 10000 | 36 | 26 | 52 | 28 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | SAND, GRAVEL & CLAY | 4000 | 91 | 64 | 129 | 70 | 36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | SHALE OR ROCK | 10000 | 36 | 26 | 52 | 28 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>THRUST BLOCK BEARING AREAS BASED ON STATIC PRESSURE OF 150 PSI</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

NOTES:

1. SEE NMWD SPECIFICATION C-3 FOR CONCRETE REQUIREMENTS. PLACE CONCRETE AGAINST UNDISTURBED SOIL. ALL CONCRETE TO BE KEPT CLEAR OF VALVE AND FITTING ENDS FOR REPAIR REMOVAL. CONCRETE SHALL NOT EXTEND ONTO ADJOINING PIPE.
2. FOR TRENCH SECTION REFER TO NMWD STD NO 1.
3. FOR USE WITH UNRESTRAINED PIPE.
4. A MINIMUM OF 24 HOURS CURING TIME REQUIRED FOR CONCRETE THRUST BLOCKS BEFORE ANY WATER IS INTRODUCED INTO THE PIPELINE. A MINIMUM OF 3 DAYS CURING TIME IS REQUIRED PRIOR TO PRESSURE TESTING.
5. WRAP EXPOSED REBAR WITH TAPE.



CONCRETE THRUST BLOCKING

| APPROVED | DATE | REV | STD NO |
|----------|--------|-----|--------|
| | 8/2/02 | 1 | 3 |