STANDARD DRAWINGS
1. HEAVY BONDED CONCRETE, GROUT SEAL AROUND OUTSIDE OF BASE AND FIRST RISER UNIT SHALL BE CAST MONOLITHICALLY FOR 6'-L.D. LIFTSTATIONS; LARGER DIAMETER STATIONS SHALL HAVE PROVISIONS TO ENSURE WATER TIGHT JOINT BETWEEN BASE AND FIRST RISER, SUCH AS A WATER STOP OR TONGUE AND GROOVE JOINT.

2. ALL PENETRATIONS THROUGH LIFTSTATION WALLS SHALL BE SEALED WITH A NON-SHRINKING GROUT, EMBECO OR APPROVED EQUAL.

3. ANCHOR BOLTS SHALL BE TYPE 304 STAINLESS STEEL. "J" BOLTS SET 6" INTO CONCRETE. "J" BOLTS SHALL BE HOOKED UNDER REINFORCING STEEL.

4. 6" LAYER OF CONCRETE SHALL BE Poured AFTER CENTER LINE OF ACCESS COVER IS DETERMINED. CONTRACTOR SHALL SET ANCHOR BOLT LOCATION 13" OFF CENTER LINE OF ACCESS COVER. SUMP SHALL BE SHAPED PER PUMP MANUFACTURES REQUIREMENTS.

5. VENT PIPE TO BE FLANGED BY PLAIN END 4" CLASS 53 DUCTILE IRON, WITH TWO 4" 90 DEGREE DUCTILE IRON BENDS TO BE INSTALLED AS SHOWN ON STANDARD DRAWING. COURSE STAINLESS STEEL SCREEN TO BE PLACED OVER OPEN END OF LAST 90° FLANGE. ALL NUTS, BOLTS AND WASHERS USED TO CONSTRUCT WET WELL VENT SHALL BE TYPE 304 STAINLESS STEEL. WET WELL VENT TO BE PAINTED AS PER VALVE VAULT PIPING SPECIFICATIONS STATED IN SUB-SECTION X. 10

6.  

<table>
<thead>
<tr>
<th>STATION DIAMETER</th>
<th>MINIMUMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONCRETE THICKNESS</td>
</tr>
<tr>
<td></td>
<td>WALL</td>
</tr>
<tr>
<td>6'</td>
<td>8&quot;</td>
</tr>
<tr>
<td>8'</td>
<td>9&quot;</td>
</tr>
<tr>
<td>10'</td>
<td>10&quot;</td>
</tr>
</tbody>
</table>

7. DOORS ON WET WELL AND VALVE VAULT TO BE GROUNDED. GROUND ROD TO BE 25 OHM OR LESS - #4 BARE WIRE COPPER GROUND.

---

NOTES

REPRISS

FEBRUARY 98

CITY OF MELBOURNE

UTILITIES ADMINISTRATION

N.T.S.

SCALE: N.T.S.

DRAWN BY: N.D.W.

SIGN BY: T.H.

EDITED: LS-1
## Minimum Length (FT) to Be Restrained on Each Side of Fitting(s)

<table>
<thead>
<tr>
<th>FITTINGS</th>
<th>PIPE SIZE</th>
<th>6&quot;</th>
<th>8&quot;</th>
<th>10&quot;</th>
<th>12&quot;</th>
<th>16&quot;</th>
<th>20&quot;</th>
<th>24&quot;</th>
<th>30&quot;</th>
<th>36&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 BEND</td>
<td></td>
<td>44(51)</td>
<td>57(66)</td>
<td>60(78)</td>
<td>78(92)</td>
<td>99(116)</td>
<td>119(137)</td>
<td>137(158)</td>
<td>161(185)</td>
<td>183(210)</td>
</tr>
<tr>
<td>45 BEND</td>
<td></td>
<td>18(21)</td>
<td>24(29)</td>
<td>29(33)</td>
<td>33(36)</td>
<td>42(46)</td>
<td>50(57)</td>
<td>67(77)</td>
<td>77(87)</td>
<td></td>
</tr>
<tr>
<td>22.5 BEND</td>
<td></td>
<td>9(11)</td>
<td>12(14)</td>
<td>14(17)</td>
<td>17(18)</td>
<td>21(24)</td>
<td>24(29)</td>
<td>27(32)</td>
<td>33(38)</td>
<td>38(42)</td>
</tr>
<tr>
<td>11.25 BEND</td>
<td></td>
<td>5(6)</td>
<td>6(8)</td>
<td>8(9)</td>
<td>9(9)</td>
<td>11(12)</td>
<td>12(14)</td>
<td>14(17)</td>
<td>17(20)</td>
<td>18(21)</td>
</tr>
<tr>
<td>BRANCH OF TEE</td>
<td></td>
<td>42(56)</td>
<td>69(99)</td>
<td>92(131)</td>
<td>116(165)</td>
<td>161(230)</td>
<td>204(291)</td>
<td>245(348)</td>
<td>300(428)</td>
<td>353(503)</td>
</tr>
<tr>
<td>DEAD END</td>
<td></td>
<td>82(131)</td>
<td>120(171)</td>
<td>143(204)</td>
<td>168(239)</td>
<td>213(305)</td>
<td>257(366)</td>
<td>299(425)</td>
<td>354(507)</td>
<td>408(582)</td>
</tr>
</tbody>
</table>

### Notes:

1. All fittings shall be restrained joint type unless otherwise indicated.
2. Install full length joints with total length equal to, or greater than the length shown in the table.
3. Where two or more fittings are together, use fitting which yields greatest length of restrained pipe.
4. In-line valves outside the limits of restrained joints from other fittings. Need not be restrained unless otherwise indicated.
5. Length of restrained joint piping for reducers, reducing tees, and vertical position fittings shall be designed on an individual basis, with design calculations for each being submitted for review.
6. Lengths shown in the table have been calculated in accordance with the procedure outlined in "Thrust Restraint Design for Ductile Iron Pipe" as published by DIPRA, with the following assumptions:
   - **Working Pressure:** 70 P.S.I.
   - **Design Pressure:** 150 P.S.I.
   - **Soil Designation:** Sand-Silt
   - **Laying Condition:** Type 2
7. For pipe encased in polyethylene, use values given in parentheses, or increase the given value by a factor of 1.2.

## Restrained Pipe Table

<table>
<thead>
<tr>
<th>REV.</th>
<th>REV.</th>
<th>R.O.H.</th>
<th>CITY OF MELBOURNE UTILITIES ADMINISTRATION</th>
<th>N.T.S.</th>
</tr>
</thead>
</table>
LIMITS OF SITE TO BE DEDICATED

TELEMETRY ANTENNA TO BE LOCATED WITHIN FENCED IN AREA.

CONTROL PANEL
(SEE DETAILS)

CHAIN LINK FENCE
PER SECTION

WET WELL

VALVE VAULT

GATE VALVE
OPER. NUT

20' MIN

5 MIN

10' MIN

REduced PRESSURE BACKFLOW PREVENTER W/ 3/4" HOSE BIB

CONCRETE OR ASPHALT DRIVEWAY

WATER METER

PUBLIC R/W

2-6' SWING GATES

WM

ALL NEW LIFTSTATIONS TO HAVE A MANHOLE WITHIN LIMITS OF FENCED-IN AREA TO ALLOW ISOLATION OF WELL DURING BY-PASS OPERATIONS. (MODEL: #230-AA-ORS 30" OPENING RING & COVER)

THIS DIMENSION SHALL BE EQUAL TO THE DEPTH OF THE WET WELL, AND MUST MEET ALL SETBACK REQUIREMENTS FOUND IN ARTICLE XVIII PARAGRAPH 26 CITY ZONING APPENDIX 'B'

TYPICAL LIFT STATION SITE PLAN

REVISED

FEBRUARY 98

CITY OF MELBOURNE

UTILITIES ADMINISTRATION

SCALE: N.T.S.

DRAWN BY: N.D.W.

SIGN. BY: T.H.

REVW. NO.: LS-3
NOTES:
1. ALL EXPOSED METAL SHALL BE COATED IN ACCORDANCE WITH SECTION L.9.4.
2. WET WELL AND VALVE VAULT SHALL BE COATED WITH COAL TAR INSIDE & OUT IN ACCORDANCE W/ SECTION L.0.50
3. BASE AND FIRST RISER UNIT SHALL BE CAST MONOLITHIC.
4. WALL PENETRATIONS IN WET WELL OR VALVE VAULT SHALL BE MADE WATERTIGHT W/ WALL SLEEVE OR NON-SHRINK GROUT.
5. THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN WET WELL.
6. WET WELL AND VALVE VAULT COVERS SHALL BE ALUMINUM WITH 316 S.S. HARDWARE AND LOCK SET.
7. FLEXIBLE COUPLING SHALL BE SLEEVE TYPE.
8. ALL HARDWARE IN WET WELL AND VALVE BOX SHALL BE STAINLESS STEEL.
9. EMERGENCY PUMP CONNECTION SHALL BE LOCATED NEXT TO ASPHALT ACCESS ROAD, SEE INDIVIDUAL PUMP STATION SITE PLANS FOR LOCATION.
10. SEE SPECIFICATION DRAWING FOR POTABLE WATER VALVE BOX * EXCEPTION: BOX LID PAINTED "GREEN" NOT BLUE."
LIFT STATION VALVE VAULT

CITY OF MELBOURNE
UTILITIES ADMINISTRATION

FEBRUARY 98

N.D.W. T.H.

REVISED

SCALE: N.T.S.

REV.

2- #4 @ 12" O.C.E.W.

30° MINIMUM COVER

STAINLESS STEEL CRATING

2" DRAIN PIPE WITH TRAP

CHECK VALVE
M.J. SLEEVE

12" MIN.

8" VALVE

EMERGENCY CONNECTION
BALL VALVE & CAM LOCK

INFLUENT

STAINLESS 1/4" BALL VALVE W/ PRESSURE GAUGE & SNUBBER.

ALUMINUM 48" X 48" LOCKING DOUBLE DOOR (SEE NOTE 7)

6'-6" MINIMUM AS REQUIRED

3/4" TO 1" BEDDING ROCK

12" MIN.

12" MIN.

12" MIN.

12" MIN.

12" MIN.
NOTE: REPLACEMENT SERVICE PIPE SHALL HAVE A CURB STOP ATTACHED UNTIL BACTERIOLOGICAL TESTS ARE SATISFACTORY, THEN CONNECT CURB STOP TO EXISTING METER. AFTER EXAMINATION OF METERS THOSE DETERMINED TO BE REPLACED SHALL BE REPLACED BY CITY FORCES.

NOTE "A"
ALL PIPE AND FITTINGS SHALL BE SWEATED COPPER OR THREADED BRASS, FROM WATER METER TO THE POINT WHERE THE 90° BEND MEETS THE CUSTOMERS SERVICE LINE UNDERGROUND.

NOTE "B"
BACKFLOW PREVENTER TO BE LOCATED NO LESS THAN 12" DOWNSTREAM FROM WATER METER, AND NO MORE THAN 24" INCHES.

TYPE OF BACKFLOW PREVENTER TO BE BASED ON DEGREE OF HAZARD. THIS IS TO BE DETERMINED BY THE CITY OF MELBOURNE WATER & SEWER ADMINISTRATOR. DEVICES TO BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURES INSTRUCTIONS! BACKFLOW PREVENTOR AND ASSOCIATED PIPING TO BE MAINTAINED BY CUSTOMER.
NOTES:
1. MANHOLE SHOWN IS FOR SEWER SIZE 8" THRU 24".
2. DROP CONNECTIONS ARE REQUIRED WHENEVER INFLECT OF INFLECT SEWER IS
   24" OR MORE ABOVE THE INVERT OF THE MANHOLE. SEE MANHOLE CONNECTION DETAILS.
3. APPROVED CONCENTRIC CONE DESIGN MAY BE USED AS AN ALTERNATIVE.
4. MANHOLE WALL THICKNESS, INSIDE DIAMETER, AND ACCESS OPENING SIZE WILL VARY DEPENDING ON MANHOLE DEPTH;
   AND THE SIZE OF THE ACCOMPANYING PIPE. MINIMUM WALL THICKNESS OF 5" ON ALL MANHOLES WITH DEPTH OF 12".
   OR LESS, AND 8" ON ALL MANHOLES WITH DEPTH GREATER THAN 12". DEPTH IS MEASURED FROM FINISHED GRADE.

STANDARD SANITARY MANHOLE DETAIL

FEBRUARY 98
CITY OF MELBOURNE
UTILITIES ADMINISTRATION

N.D.W.  T.H.

N.T.S.  LS-12
SPECIAL DETAIL FOR 24" DIA PIPE AND LARGER

NOTES:
1. DROP PIPE AND FITTINGS SHALL BE OF EQUAL SIZE AND MATERIAL AS THE INFLUENT SEWER.
2. AN OUTSIDE DROP CONNECTION SHALL BE REQUIRED FOR ALL INFLUENT WHICH HAVE AN INVERT 2 FEET OR MORE ABOVE THE MANHOLE INVERT.

DETAIL—MANHOLE CONNECTIONS
N.T.S.
NOTES (TOPS, FRAMES, AND COVERS)

1. ALL STEEL BARS SHALL HAVE 1 1/4" MINIMUM COVER UNLESS OTHERWISE SHOWN AND SHALL BE HOOKED WHERE INDICATED.

2. MANHOLE TOP TYPE 7 SLABS SHALL BE OF CLASS I CONCRETE AS SPECIFIED IN ASTM C-476. STEEL BARS SHOWN FOR CONCRETE SHALL BE OF ACCOUNTED FOR MANHOLE.

3. MANHOLE TOP TYPE 7 SLABS MAY BE CAST-IN-PLACE OR PRECAST CONSTRUCTION. THE OPTIONAL KEY IS FOR PRECAST TOPS AND IN LAY OF DOWELS. FRAME & SLAB OPENINGS ARE TO BE EMBOSSED OVER A JUNCTION BOX. FRAMES CAN BE ADJUSTED FROM ONE TO FOUR COURSES OF BRICK.

4. MANHOLE TOP TYPE 8 MAY BE OF CAST-IN-PLACE OR PRECAST CONCRETE OR BRICK CONSTRUCTION. FOR CONCRETE CONSTRUCTION, THE CONCRETE & STEEL REINFORCEMENT SHALL BE THE SAME AS THE SUPPORTING WALL UNIT. AN ECCENTRIC CONE MAY BE USED.

5. MANHOLE TOPS SHALL BE SECURED TO STRUCTURES BY OPTIONAL CONSTRUCTION JOINTS.

6. THE 212 LB. COVER IS TO BE USED FOR ALL FRAMES TYPES 1 & 2. AND IS THE REPLACEMENT COVER FOR ALL PREVIOUS FRAMES WITH 1 1/2" DEEP SEATS (TRAFFIC TYPE). THE 185 LB. COVER (NON-TRAFFIC TYPE), 1984 ROADWAY & TRAFFIC DESIGN STANDARDS INDEX NO. 201, IS THE replacement COVER FOR ALL EXISTING FRAMES WITH 1 1/2" DEEP SEATS. INSTALLATION OF FRAMES WITH 1 1/2" DEEP SEATS IS NOT PERMITTED. THE 185 LB. COVERS ARE TO BE PLACED IN EXISTING 1 1/2" DEEP SEATED FRAMES ONLY WHEN SPECIFICALLY CALLED FOR IN THE PLANS OR AS SPECIFICALLY DIRECTED BY THE ENGINEER.
ELEVATION 'A' 30" CLEARANCE RING & COVER

NOTES:
1. A MANHOLE RING & COVER TO HAVE 30" CLEAR OPENING AND "O" RING TYPE SEAL, MANUFACTURED AT THE FOUNDRY.
2. A MANHOLE RING & COVER TO BE U.S. FOUNDRY & MANUFACTURING CO. MODEL #230 - AA - ORS OR APPROVED EQUAL.

ELEVATION 'B' F.D.O.T. RING & COVER

NOTES:
1. B MANHOLE RING & COVER TO HAVE 24" CLEAR OPENING AND "O" RING TYPE SEAL, MANUFACTURED AT THE FOUNDRY.
2. B MANHOLE RING & COVER TO BE U.S. FOUNDRY & MANUFACTURING CO. MODEL #225 - AS - ORS OR APPROVED EQUAL.

ELEVATION 'C' RESIDENTIAL RING & COVER

NOTES:
1. C MANHOLE RING & COVER TO HAVE 24" CLEAR OPENING AND "O" RING TYPE SEAL, MANUFACTURED AT THE FOUNDRY.
2. C MANHOLE RING & COVER TO BE U.S. FOUNDRY AND MANUFACTURING CO. MODEL #170 - E - ORS OR APPROVED EQUAL.

STANDARD MANHOLE RING & COVER DETAILS

REVISED:

TO:
FEBRUARY 98
CITY OF MELBOURNE
N.T.S.

UTILITIES ADMINISTRATION

DRAWN:
N.D.W.

DESIGN:
T.H.

SCALE:

1:50

DRAWN
N.D.W.

SEAL:
LS-15

NED.
SUPPLEMENTAL FLOW METER SURGE PROTECTION IN S.S. CABINET
(on back of panel)

FLOW METER TO BE INSTALLED PER MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS

FLOW METER ENCLODED IN STAINLESS STEEL CABINET

PIPE TO BE RIDGED STEEL TO A POINT 18' BELOW GRADE, AND SIZED FOR FLOW METER PROBE CABLES OR METER PROBE FLEXIBLE CONDUIT.

LIFT STATION FLOW METER PANEL SET UP

REVISED:

FEBRUARY 98

CITY OF MELBOURNE

UTILITIES ADMINISTRATION

N.T.S.

DRAWN BY:
N.D.W.

SIGN. BY:
T.H.

SCALE:
N. T. S.

ENG.

MED.:
LS-16