



1. The use of High Density Polyethylene Corrugated pipe A.O.S. N12 or Equal will be permitted as an acceptable alternative to reinforced concrete pipe. Pipe shall meet A.S.T.M. D-2321 and AASHTO M-254-921. Concrete floor and sections and inlet structures shall be required. Pipe must have smooth interior wall and is not to be used unless the Public Right-of-Way.

All concrete pipe or HDPE pipe shall be installed with o-ring rubber type gaskets per M.S.D. Standard Construction Specifications or Manufacturer.

2. In typical conditions the minimum trench width is determined by the size of the pipe and the ability to get compaction equipment between the pipe and the trench walls. The minimum trench width should not be less than the outside diameter plus 16 inches or the pipe outside diameter times 1.25 plus 12 inches, whichever is greater. High speed trenchers may enable satisfactory installation of pipe in narrower trenches. Poor soils conditions such as peat, muck, running sands, or expansive clays will require substantially wider backfill as well as deeper foundation and bedding. Trench width and foundation depth should be based on a thorough site investigation.

3. Backfill in the area up to the springline should be carefully placed and compacted to achieve a minimum E value of 1,000 psi as detailed in ASTM D2321. A minimum of 12" of backfill should be placed and compacted above the crown of the pipe. It is typical for trenches to be backfilled entirely with Type I or Type II material when under pavement.

4. Flexible pipe should never be installed in a concrete cradle, as one for rigid pipe in a Class A installation. This type of installation could create concentrated forces at the ends of the cradle when the pipe has deformed.



R-5050 Series Types SF, CF and FF Automatic Drainage Gates

Gates with Vertical Closure

STANDARD GATES: Furnished with vertical closure for maximum ease of operation.

GENERAL INFORMATION: Gates are made of cast iron. All moving parts operate on stainless steel hinge pins. Bearing surfaces are machined to 500 micron finish. The cover is hung with cast hinge pins. Bearing surfaces are machined to 500 micron finish. The cover is hung with cast hinge pins. Bearing surfaces are machined to 500 micron finish. The cover is hung with cast hinge pins.

Specify:

- Catalog number and diameter.
- Type SF, Type CF or Type FF.
- Aluminum covers when required.
- Other special requirements such as neoprene or bronze seat mounting or bronze bushings.

For applications with extreme head pressure, contact Product Engineering Dept. See page 3 for complete specifications or write for further information.

| Catalog Number | | Dimensions in inches | | | | | | | | | |
|----------------|-------------|----------------------|----|----|----|----|-----|----|---|-----|--|
| Type SF | Type CF | Type FF | A | B | C | D | E | F | N | S | |
| R-5050-SF6 | R-5050-CF6 | R-5050-FF6 | 7 | 11 | 13 | 11 | 3/4 | 7 | 4 | 5/8 | |
| R-5050-SF8 | R-5050-CF8 | R-5050-FF8 | 9 | 11 | 13 | 11 | 3/4 | 9 | 4 | 5/8 | |
| R-5050-SF10 | R-5050-CF10 | R-5050-FF10 | 11 | 13 | 15 | 13 | 3/4 | 11 | 4 | 5/8 | |
| R-5050-SF12 | R-5050-CF12 | R-5050-FF12 | 13 | 15 | 17 | 15 | 3/4 | 13 | 4 | 5/8 | |
| R-5050-SF15 | R-5050-CF15 | R-5050-FF15 | 16 | 19 | 21 | 19 | 3/4 | 16 | 4 | 5/8 | |
| R-5050-SF18 | R-5050-CF18 | R-5050-FF18 | 19 | 22 | 24 | 22 | 3/4 | 19 | 4 | 5/8 | |
| R-5050-SF20 | R-5050-CF20 | R-5050-FF20 | 22 | 25 | 27 | 25 | 3/4 | 22 | 4 | 5/8 | |
| R-5050-SF21 | R-5050-CF21 | R-5050-FF21 | 21 | 24 | 26 | 24 | 3/4 | 21 | 4 | 5/8 | |
| R-5050-SF24 | R-5050-CF24 | R-5050-FF24 | 25 | 28 | 30 | 28 | 3/4 | 25 | 4 | 5/8 | |
| R-5050-SF27 | R-5050-CF27 | R-5050-FF27 | 28 | 31 | 33 | 31 | 3/4 | 28 | 4 | 5/8 | |
| R-5050-SF30 | R-5050-CF30 | R-5050-FF30 | 30 | 34 | 36 | 34 | 3/4 | 30 | 4 | 5/8 | |
| R-5050-SF36 | R-5050-CF36 | R-5050-FF36 | 36 | 41 | 43 | 41 | 3/4 | 36 | 4 | 5/8 | |
| R-5050-SF42 | R-5050-CF42 | R-5050-FF42 | 42 | 47 | 49 | 47 | 3/4 | 42 | 4 | 5/8 | |
| R-5050-SF48 | R-5050-CF48 | R-5050-FF48 | 48 | 54 | 56 | 54 | 3/4 | 48 | 4 | 5/8 | |

**"N" and "S" Dimensions apply to Type SF and CF gates only—the Type FF Flange faced and drilled A.W.W.A. class 125 standard.