



**NOTES:**

1. RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM D2321 AND THE MANUFACTURER'S INSTALLATION GUIDELINES.
2. A NON-WOVEN GEOTEXTILE FILTER FABRIC OR OTHER MEASURES SHOULD BE TAKEN TO PREVENT NATIVE SOIL FROM MIGRATING INTO THE INITIAL BACKFILL MATERIAL, WHEN REQUIRED.
3. **SUB-GRADE:** TRENCH BOTTOMS WITH UNSTABLE OR UNYIELDING MATERIAL SHALL BE EXCAVATED TO A DEPTH DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE MATERIAL. FOR UNSTABLE MATERIALS, GEOTEXTILE MAY BE USED TO STABILIZE THE TRENCH BOTTOM, IF DIRECTED BY THE ENGINEER.
4. **FOUNDATION:** SUITABLE MATERIAL SHALL BE CLASS I OR II, AS SPECIFIED BY ASTM D2321. MINIMUM FOUNDATION BEDDING THICKNESS SHALL BE 4" [100mm] FOR PIPE DIAMETER UP TO 36" [900mm] DIAMETER, 6" [150mm] FOR 42" [1000mm], 48" [1200mm], AND 60" [1500mm] DIAMETER.
5. **INITIAL BACKFILL:** SUITABLE MATERIAL SHALL BE CLASS I OR II, AS SPECIFIED BY ASTM D2321. COMPACTION AND BACKFILL LIFTS SHALL BE IN ACCORDANCE WITH ASTM D2321. INITIAL BACKFILL SHALL EXTEND TO NOT LESS THAN 6" [150mm]) ABOVE THE TOP OF THE PIPE.
6. **MINIMUM COVER:** FOR UP TO H-25 TRAFFIC APPLICATIONS A MINIMUM OF 12" [300mm] FOR PIPE DIAMETER UP TO 36" [900mm] DIAMETER, 15" [380mm] FOR 42" [1000mm] AND 18" [450mm] FOR 48" [1200mm] AND 60" [1500mm] DIAMETER. MINIMUM COVER, V, SHALL BE MEASURED FROM THE TOP OF THE PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO THE TOP OF RIGID PAVEMENT. ADDITIONAL COVER MAY BE REQUIRED FOR CONSTRUCTION LOADS, VEHICLES OVER 25T [23MT], OR TO PREVENT FLOATATION.
7. **FINAL BACKFILL:** SUITABLE MATERIALS DIRECTED BY THE ENGINEER SHALL BE USED IN LANDSCAPE OR NON-TRAFFIC APPLICATIONS. FOR AREAS SUBJECTED TO TRAFFIC A HIGHER DEGREE OF COMPACTION IS REQUIRED AND A SEPARATION LAYER OF NON-WOVEN GEOTEXTILE MAY BE REQUIRED. COMPACTION LEVELS AND/OR GEOTEXTILE MAY BE SPECIFIED AT THE DISCRETION OF THE DESIGN ENGINEER.

| NOMINAL I.D. | APPROX O.D.    | MIN. DISTANCE TO SIDE WALL "X" | *SPACING "M" | MIN. COVER "V" |
|--------------|----------------|--------------------------------|--------------|----------------|
| 12" [300mm]  | 14.5" [360mm]  | 8" [200mm]                     | 9" [231mm]   | 12" [300mm]    |
| 15" [375mm]  | 17.7" [440mm]  | 8" [200mm]                     | 11" [282mm]  | 12" [300mm]    |
| 18" [450mm]  | 21.5" [538mm]  | 9" [225mm]                     | 14" [353mm]  | 12" [300mm]    |
| 24" [600mm]  | 28.1" [716mm]  | 10" [250mm]                    | 19" [483mm]  | 12" [300mm]    |
| 30" [750mm]  | 34.7" [881mm]  | 18" [450mm]                    | 20" [518mm]  | 12" [300mm]    |
| 36" [900mm]  | 40.6" [1031mm] | 18" [450mm]                    | 21" [531mm]  | 12" [300mm]    |
| 42" [1050mm] | 47.5" [1207mm] | 18" [450mm]                    | 23" [592mm]  | 15" [375mm]    |
| 48" [1200mm] | 54.1" [1374mm] | 18" [450mm]                    | 23" [577mm]  | 18" [450mm]    |
| 60" [1500mm] | 66.8" [1697mm] | 18" [450mm]                    | 27" [696mm]  | 18" [450mm]    |

\*MINIMUM SPACING "M" MEASURED FROM OUTSIDE DIAMETERS

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|---|-----------------|-------------------------|--|
| TITLE: RETENTION/DETENTION SYSTEM CROSS SECTION |                 |                         |  |
| DRAWN BY: SLE                                   | DATE: 21-JUN-19 | DRAWING NUMBER: D-5-101 |  |
| SCALE: NTS                                      | SHEET: 1 OF 1   |                         |  |