

Boreable Multi-Gard® Product Specification

PART 1 GENERAL

1.01 SECTION INCLUDES

This specification covers pre-lubricated multiple cell raceway systems for the installation of voice, data, video and other low voltage cabling. This system will be designed to meet the rigorous requirements of horizontal directional drilling for datacom applications. All necessary fittings and accessories shall be provided by the same manufacturer as the raceway system to satisfy warranty requirements.

1.02 REFERENCES

- A. Raceway and fittings shall be approved for the use with horizontal directional drilling.
- B. NEMA TC 6&8-1999 PVC Plastic Utilities Duct for Underground Installation.

1.03 SYSTEM DESCRIPTION

Each raceway section will be manufactured in standard twenty-foot lengths for easy handling in tight boring conditions. Raceway design must incorporate a watertight seal and locking ring that enables fast, cement free assembly. Each section of raceway will be belled on one end with two grooves machined into the inside diameter (ID) of the bell and with a groove and chamfer machined into the outside diameter (OD) of the spigot end. Raceway must contain a lubricated triple-lobed gasket factory installed in the bell end of the pipe to seal up to 75 psi with a 65' bend radius. Each raceway section will be available in 3 and 4 way multicell configuration.

PART 2 PRODUCT

2.01 ACCEPTABLE MANUFACTURERS

- A. Prime Conduit, Inc.
- B. Other manufacturers may be considered equal provided they meet all performance, dimensional, and material requirements specified after evaluation and signed engineer approval.

2.02 MATERIALS

- A. Raceway will be engineered with PVC compound offering superior strength and flexibility when compared to standard Schedule 40 PVC.
- B. Each length of raceway will incorporate a seal, locking ring, coupling body, spacers, PVC innerducts, and end caps.
- C. Each raceway section will be belled on one end with two grooves machined into the inside diameter (ID) of the bell and with a groove and chamfer machined into the outside diameter (OD) of the spigot end.

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- D. Raceway will contain a lubricated triple-lobed gasket factory installed in the bell end of pipe to prevent ground water, boring lubricants, and other contaminants from entering pipe. Raceway shall contain air pressure of up to 75 PSI with a safety factor of 2 at the tightest bend radius of 65 feet.
- E. The smallest bend radius for raceway will be 65 feet.
- F. Nylon locking straps will secure the connection between two pieces of raceway without need of cement.
- G. Raceway outerduct will be gray in color and sunlight resistant.
- H. PVC innerducts shall be made from PVC compound which meets cell classification PVC 12254 A, B, or C as defined in ASTM D1784. This requirement insures innerduct stiffness to avoid crushing ends of innerduct during assembly.
- I. One white innerduct shall be provided under the print line stating, "Install This Side Up" to insure proper alignment. Other innerducts shall be grey. This requirement also allows for multi-cell system to be assembled from two different directions without concern for innerduct color-coding misalignment from mirror effect.
- J. Dimensions for innerduct shall be maximum 1.19" I.D. and maximum 1.315" O.D. for 4-cell and maximum 1.51" I.D. and maximum 1.66" O.D. for 3-cell.
- K. All innerducts shall be pre-lubricated to increase pulling distance capabilities and reduce risk of damaging cable by reducing the coefficient of friction to levels set forth in the performance section of this specification.
- L. A non-cemented spacer system shall hold the 4-cell innerducts in a square configuration and the 3-cell system in a triangle configuration.

2.03 FITTINGS

Schedule 40 fittings shall be used with the multi-cell raceway system. Schedule 40 fittings shall be easily attached using standard PVC cement. Manufacturer shall make available all necessary fittings and accessories.

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PART 3 PERFORMANCE REQUIREMENTS

3.01 TENSILE LOADING WITH BEND RADIUS

Raceway shall be rated up to 5,000 pounds for 4" sizes, respectively, based on laboratory testing where it was pre-bent in a special fixture to a 65' radius and it was then pulled to failure. The loads were recorded, averaged, and a safety factor was used for the final rating.

3.02 TYPICAL CRUSH LBS. @ 30% DEFLECTION - 4" - 1,075 lbs.

3.03 SEAL PRESSURE RATING (PSI) - 75 PSI

PART 4 ASSEMBLY

The trenchless raceway system shall be designed for easy assembly without the need of PVC cement and installed in a manner as described below.

4.01 STEPS

1. Position raceway with the print line facing up.
2. Remove nylon-locking strap and set it aside.
3. Seal off lead end to keep out drilling fluid.
4. Attach 4" Kellems Grip over lead end.

Note: Internal pulling eye cannot be used due to innerduct interference.

5. The installer should use appropriate instrumentation to insure the maximum pull rating is not exceeded.
6. Take the next piece of boreable multi-cell raceway and insert spigot end into belled end of the first piece until the insertion line is no longer visible.

Note: Innerducts need to be aligned before insertion.

7. Slide nylon locking strap into slot on the side of the bell. Push the strap in completely.
8. Repeat with remaining sections as space allows.
9. Pull into bored hole. Terminate into manholes.
10. Raceway is now ready for duct proofing and cable installation.

END OF SPECIFICATION