

- Water Standards -

Standard Number: **W118**

CHELAN COUNTY
PUBLIC UTILITY DISTRICT
Owned By The People We Serve



**POLYETHYLENE ENCASEMENT
SPECIFICATIONS**

Originator: **RCS**

Standards Approval:
Ron Slabaugh

Date: **3/12/2019**

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Rev #: Revision Description:

1 2019 UPDATES

- A. POLYETHYLENE TUBING SHALL BE MANUFACTURED IN THE USA.
- B. POLYETHYLENE ENCASEMENT SHALL BE V-BIO® ENHANCED 8-MIL LINEAR LOW-DENSITY POLYETHYLENE (LLDPE) FILM, IN TUBULAR FORM COMPOSED OF 100% VIRGIN MATERIAL, WITHOUT TEARS, BREAKS OR OTHER DEFECTS CONFORMING TO THE REQUIREMENTS OF ANSI/AWWA C105/A21.5 NATIONAL STANDARD FOR POLYETHYLENE ENCASEMENT FOR DUCTILE IRON PIPE SYSTEMS. ALL POLYETHYLENE FILM SHALL BE FROM THE SAME BATCH, WITH THE BATCH NUMBER PRINTED ON THE TUBING. POLYETHYLENE SHEET IS NOT AN ALLOWED SUBSTITUTE FOR POLYETHYLENE TUBE FOR INSTALLATION ON BURIED PIPE BARRELS. HOWEVER, POLYETHYLENE SHEET MATERIAL IS ALLOWED FOR WRAPPING VALVES AND FITTINGS, AND SHALL ALSO MEET THE REQUIREMENTS OF THIS SECTION.
- 1. RAW MATERIAL REQUIREMENTS:
 - a. GROUP 2 (LINEAR)
 - b. COLOR: BLACK, BLUE OR WHITE
 - c. DIELECTRIC STRENGTH: VOLUME RESISTIVITY, 1015 OHM-CM, MINIMUM
 - d. DENSITY: 0.910 TO 0.935 G/CM3
- 2. PHYSICAL PROPERTIES:
 - a. TENSILE STRENGTH: 3,600 PSI, MINIMUM
 - b. ELONGATION: 800 PERCENT, MINIMUM
 - c. DIELECTRIC STRENGTH: 800 V/MIL THICKNESS, MINIMUM PER ASTM D149
 - d. IMPACT RESISTANCE: 600 G, MINIMUM
 - e. THICKNESS: LOW-DENSITY POLYETHYLENE FILM MINIMUM THICKNESS OF 0.008-IN (8-MIL)
 - f. PROPAGATION TEAR RESISTANCE: 2,550 GF (GRAMS FORCE), MINIMUM PER ASTM D1922
 - g. SIZE AS DEFINED ON CONTRACT DRAWINGS.

INSTALLATION ON BURIED PIPE AND FITTINGS:

- A. INSTALL POLYETHYLENE WRAP PER ANSI/AWWA C105/A21.5 METHOD A, MODIFIED DIPRA METHOD FOR WET TRENCH CONDITIONS. CUT POLYETHYLENE TUBE 2- FEET LONGER THAN THE LENGTH OF PIPE TO RECEIVE THE ENCASEMENT. PROVIDE A 1-FOOT MINIMUM OVERLAP FOR EACH ADJACENT PIPE JOINT. PRIOR TO PLACING THE PIPE INTO THE TRENCH, RAISE THE PIPE SECTION WITH A FABRIC TYPE SLING OR PADDED CABLE, AND REMOVE ALL SOIL AND OTHER DEBRIS FROM THE PIPE EXTERIOR. SLIP THE POLYETHYLENE TUBE OVER THE SPIGOT END OF THE PIPE. BUNCH UP THE TUBE IN ACCORDION FASHION BETWEEN THE SPIGOT END AND THE SUPPORTING SLING HOLDING THE PIPE.
- B. PLACE THE PIPE ON BLOCKS WITH SLACKENED SLING IN PLACE SO THE POLYETHYLENE ENCASEMENT CAN BE SPREAD OVER THE ENTIRE BARREL OF THE PIPE.
- C. PULL THE LOOSE POLYETHYLENE TUBE ON THE PIPE SNUGLY AROUND THE PIPE BARREL. FOLD EXCESS MATERIAL OVER AT THE TOP OF THE PIPE AND SECURE THE FOLD WITH CIRCUMFERENTIALLY WRAPPED POLYETHYLENE TAPE AT 2-FOOT MAXIMUM INTERVALS ALONG THE LENGTH OF THE PIPE.
- D. LOWER THE PIPE SECTION INTO THE TRENCH AND SEAT THE SPIGOT END INTO THE BELL OF THE PREVIOUSLY INSTALLED PIPE. PROVIDE A SHALLOW HOLE IN THE PIPE BEDDING AT THE BELL TO FACILITATE THE JOINT OVERLAP. ENSURE SOIL OR BEDDING MATERIAL DOES NOT BECOME TRAPPED ON THE EXTERIOR OF THE PIPE BETWEEN THE PIPE AND THE POLYETHYLENE ENCASEMENT. IN ADDITION, ENSURE THAT SOIL OR BEDDING MATERIAL IS NOT ALLOWED TO ENTER THE PIPE INTERIOR.
- E. REMOVE THE SLING FROM THE PIPE LEAVING 1-FOOT OF BUNCHED UP POLYETHYLENE TUBE AT EACH END OF THE PIPE FOR JOINT OVERLAP.
- F. TO MAKE JOINT OVERLAP, PULL THE POLYETHYLENE TUBE FROM THE BELL END OF THE PREVIOUSLY LAID PIPE OVER SPIGOT END OF THE CURRENT PIPE AND FOLD THE TUBE AROUND THE PIPE THEN SECURE WITH THREE CIRCUMFERENTIAL WRAPS OF 2-INCH WIDE PLASTIC ADHESIVE TAPE OR PLASTIC TIE STRAP. THEN PULL THE BUNCHED UP POLYETHYLENE TUBE ON THE SPIGOT END OVER THE WRAPPED PIPE JOINT TO THE BELL END. FOLD POLYETHYLENE TUBE AND SECURE WITH TAPE AS PREVIOUSLY DESCRIBED.
- G. INSTALL THE NEXT SECTION OF PIPE IN THE SAME MANNER.
- H. WRAP ALL COPPER SERVICE LINES WITH PVC ADHESIVE TAPE, HALF LAPPED, FOR A MINIMUM OF THREE FEET FROM THE MAIN. WRAP ALL CORPORATION STOPS.

INSTALLATION ON BURIED VALVES AND FITTINGS:

WRAP VALVES AND FITTINGS BY PULLING THE BUNCHED UP POLYETHYLENE TUBE (WHERE INSTALLED) FROM THE ADJACENT PIPE OVER THE BELLS OR FLANGES OF THE VALVE OR FITTINGS. SECURE THE TUBE TO THE VALVE OR FITTING BODY WITH 2-INCH WIDE ADHESIVE TAPE WRAPPED AROUND THE BODY OF THE VALVE OR FITTING. THEN WRAP THE VALVE OR FITTING WITH THREE LAYERS OF 8-MIL FLAT SHEET POLYETHYLENE. PLACE THE SHEETS UNDER THE VALVE OR FITTING AND FOLD IN HALF. FOR VALVES, EXTEND THE SHEET TO THE VALVE STEM AND SECURE THE SHEET IN PLACE WITH 2-INCH ADHESIVE TAPE. SECURE THE SHEETS WITH TAPE AROUND THE VALVE STEM BELOW THE OPERATING NUT AND AROUND THE BARREL OF THE CONNECTING PIPE TO PREVENT THE ENTRANCE OF SOIL. FOR FITTINGS, WRAP AND OVERLAP THE ADJOINING PIPE A MINIMUM OF 1-FOOT AND SECURE IN PLACE WITH 2-INCH WIDE ADHESIVE TAPE. PLACE PRECAST THRUST BLOCKS, IF ANY, AFTER THE WRAP IS IN PLACE. REPAIRING POLYETHYLENE ENCASEMENT - ALL EFFORTS SHALL BE MADE TO INSTALL THE POLYETHYLENE ENCASEMENT FREE OF TEARS, BREAKS OR OTHER DEFECTS. POLYETHYLENE ENCASEMENT WITH EXCESSIVE HOLES SHALL REQUIRE REPLACEMENT OF THE DAMAGES SECTION AT THE DISTRICT'S DISCRETION. REPAIR MINOR RIPS AND TEARS IN THE INSTALLED POLYETHYLENE WITH PVC.