B STEEL SLEEVE

WIPED JOINTS

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1. GENERAL

1.01 This section covers the description and installation of the B Steel Sleeve used in conjunction with the B Lead Ring and B Lead Disc for enclosing splices in multiple tube coaxial cable.

1.02 This section is reissued to revise:

- List of materials and tools
- TC Mastic application
- Tapecoat 20 application.

Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 This sleeve is used in lieu of the extra strength lead sleeve reinforced with a B or C Sleeve Liner; however, when sheath openings are made in uncut cable for repairs or loading, it will be necessary to enclose the splice using a split lead sleeve with a two-piece C Sleeve Liner (Section 633-210-210).

1.04 ***The B Steel Sleeve is for use on buried splices only. It should not be used aerially or in underground plant.***

1.05 Successful use of the B Steel Sleeve depends entirely on proper application of the Tapecoat 20 and mastic as described in this section. Both Tapecoat 20 and mastic must be in intimate contact with all surfaces of the closure to prevent later corrosion and eventual failure of the B Steel Sleeve.

2. DESCRIPTION

B STEEL SLEEVE

2.01 The B Steel Sleeve (Fig. 1) consists of a steel tube equipped with a welded pressure fitting. The tube is 40 inches long and 6-3/4 inches inside diameter, weighs 30 pounds, and will withstand external crushing pressure up to 300 pounds per square inch (psi).

2.02 The tube has a tinned surface partially covered with factory applied Tapecoat 20 (bitumastic tape) for corrosion protection. A 1-inch wide coating of flux is applied to both ends to facilitate soldering to the lead ring.

B LEAD RING

2.03 The B Lead Ring (Fig. 2) is 1 inch wide, 7-5/8 inches outside diameter, and 6-1/8 inches inside diameter. It has a groove to fit over the end of the B Steel Sleeve and is solder-coated to facilitate the soldering operation.

B LEAD DISC

2.04 The B Lead Disc (Fig. 3) is 1 inch wide, 6-1/8 inches outside diameter, and 2-13/16 inches inside diameter. It fits over the cable inside the B Lead Ring.

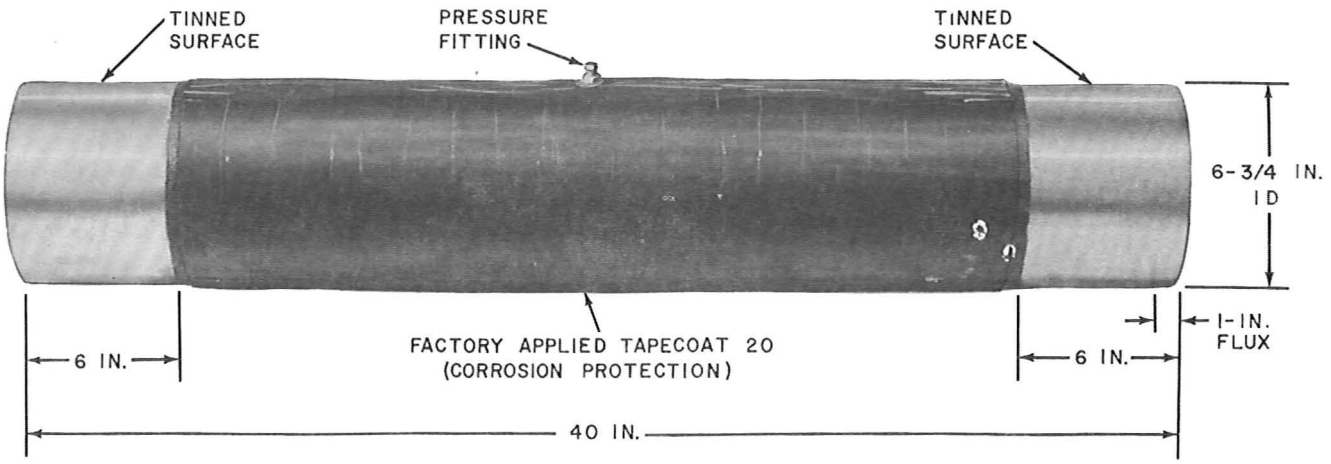

Fig. 1—B Steel Sleeve

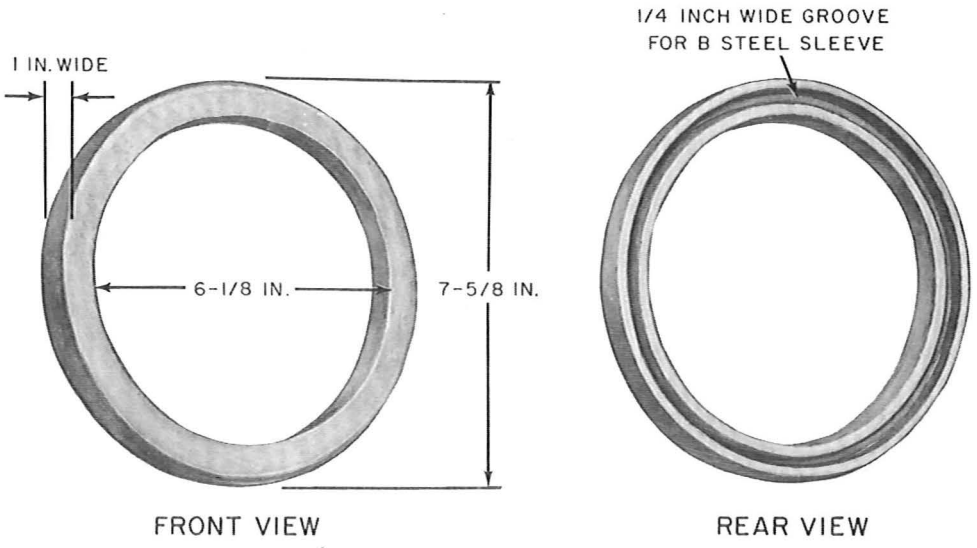

Fig. 2—B Lead Ring

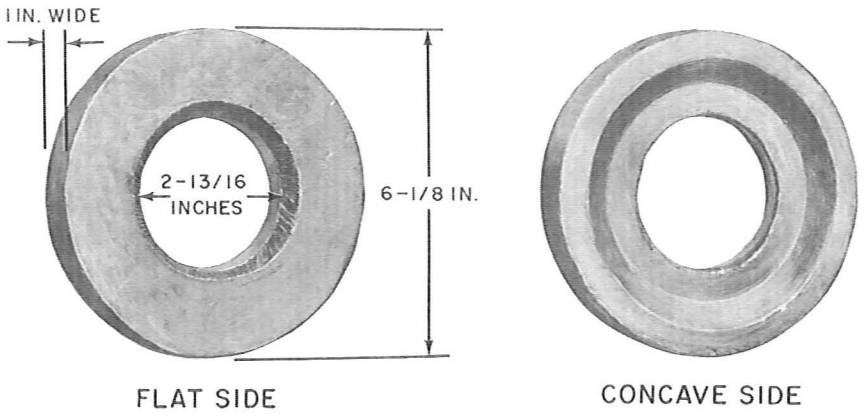

Fig. 3—B Lead Disc

3. MATERIALS AND TOOLS

3.01 The following materials and tools are required for applying corrosion protection to the B Steel Sleeve (Fig. 4).

(a) Tapecoat 20—a coal-tar coated bitumastic tape that can be cut or torn to the required length. The sizes used are as follows:

(1) 2-inch width by 75 feet long

(2) 12-inch width by 75 feet long.

(b) TC Mastic—An undercoating for use with Tapecoat 20 Tape. The TC Mastic is furnished in 1-gallon cans.

(c) No. 9 Pres-to-Lite Torch Stem or equivalent for use with F or G Torch or a Weldit propane torch (C68B torch body with No. 470 burner head or equivalent) for heating Tapecoat 20.

(d) Brushes—Inexpensive, disposable, 2 or 3 inches wide with a stiff bristle for applying TC Mastic. A suitable brush may be obtained from Western Electric as Brush-R1265.

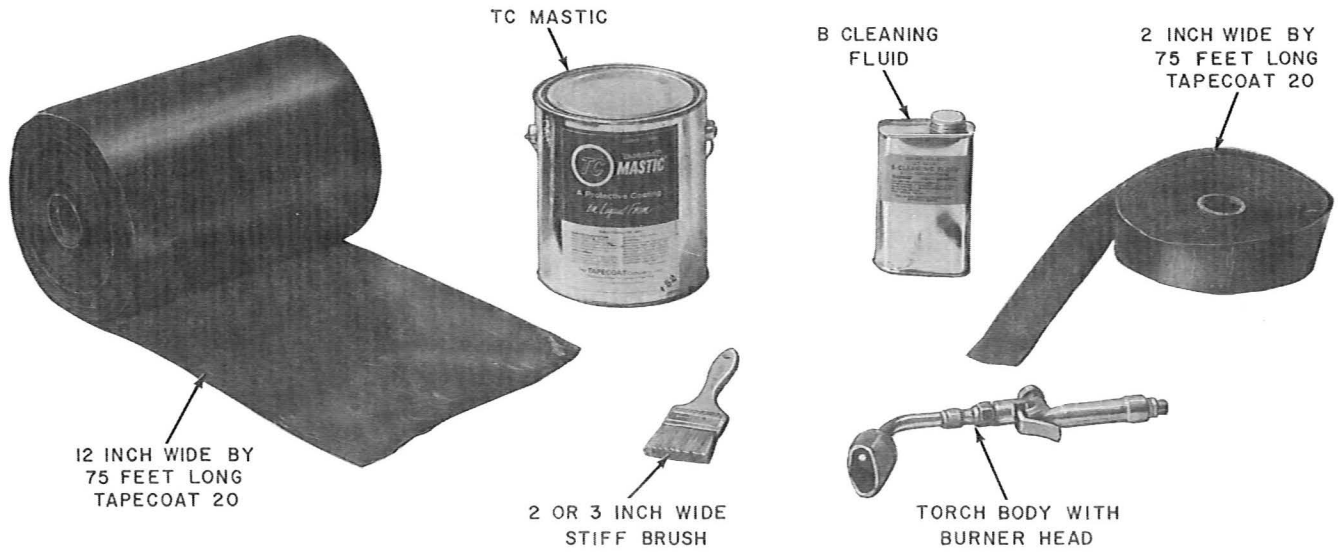

Fig. 4—Materials and Tools

(e) B Cleaning Fluid—For cleaning the bare metal of the B Steel Sleeve and lead sheath of the cable before applying the TC Mastic.

4. PRECAUTIONS

4.01 Exercise care to protect the surface of the B Steel Sleeve at all times. Any break in the tinned surface or in the tapecoat will greatly increase the possibility of corrosion.

4.02 Use only stearine treated wiping cloths and catch cloths during the wiping operation. Dry cloths tend to remove the tinned coating from the sleeve.

4.03 Use ***only B Cleaning Fluid*** for cleaning the bare metal surfaces of the sleeve, disc, ring, and bare lead sheath prior to the TC Mastic application. Kerosene and other solvents leave an oily film and the Mastic will not adhere to the sleeve.

4.04 Do not beat the lead ring down onto the B Steel Sleeve.

4.05 ***Do not card brush the steel sleeve and lead ring as they are solder-coated and carding will increase the possibilities for corrosion.***

4.06 Wear gloves when applying TC Mastic and Tapecoat to avoid getting coal tar on the hands. Since the gloves will be ruined for any other use, they should be saved for future Tapecoat applications. Exercise extreme caution when using the torch to avoid burns.

5. INSTALLATION

5.01 Prepare the sheath ends of the cable as outlined in Section 632-425-205.

5.02 Mark the lead sheath 4-1/2 inches from the end of the outer polyethylene jacket (Fig. 5) ***on one side of the splice opening.*** This mark will be used later to position the first B Lead Disc.

5.03 Clean the discs, then dress the disc to a snug fit in the ring. Then apply a coat of stearine.

Note: At valve pipe locations drill a hole in one of the lead discs to accommodate the valve pipe.

5.04 Position each of the rings so that the grooved sides are toward the splice, then slide them over the ends of the cable on either side of the opening. On one side slide the ring back from the sheath opening to allow sufficient room for placing the steel sleeve.

5.05 Slide the steel sleeve over whichever end of the cable is most convenient and away from the sheath opening (Fig. 6). ***Exercise care to protect both the solder-coated portion and the tape-coated portion of the steel sleeve during placing and splicing operations.***

5.06 Position each of the lead discs so that the flat sides are away from the splice, then slide them over the ends of the cable onto the lead sheath on either side of the opening. Exact positioning of the discs can be made when the splicing operation is completed.

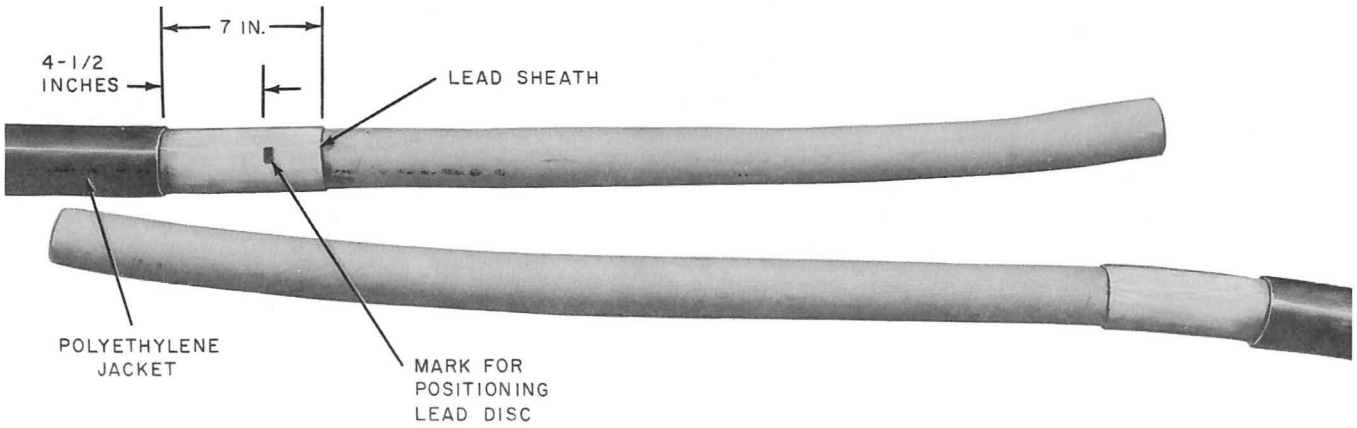

Fig. 5—Marked Lead Sheath

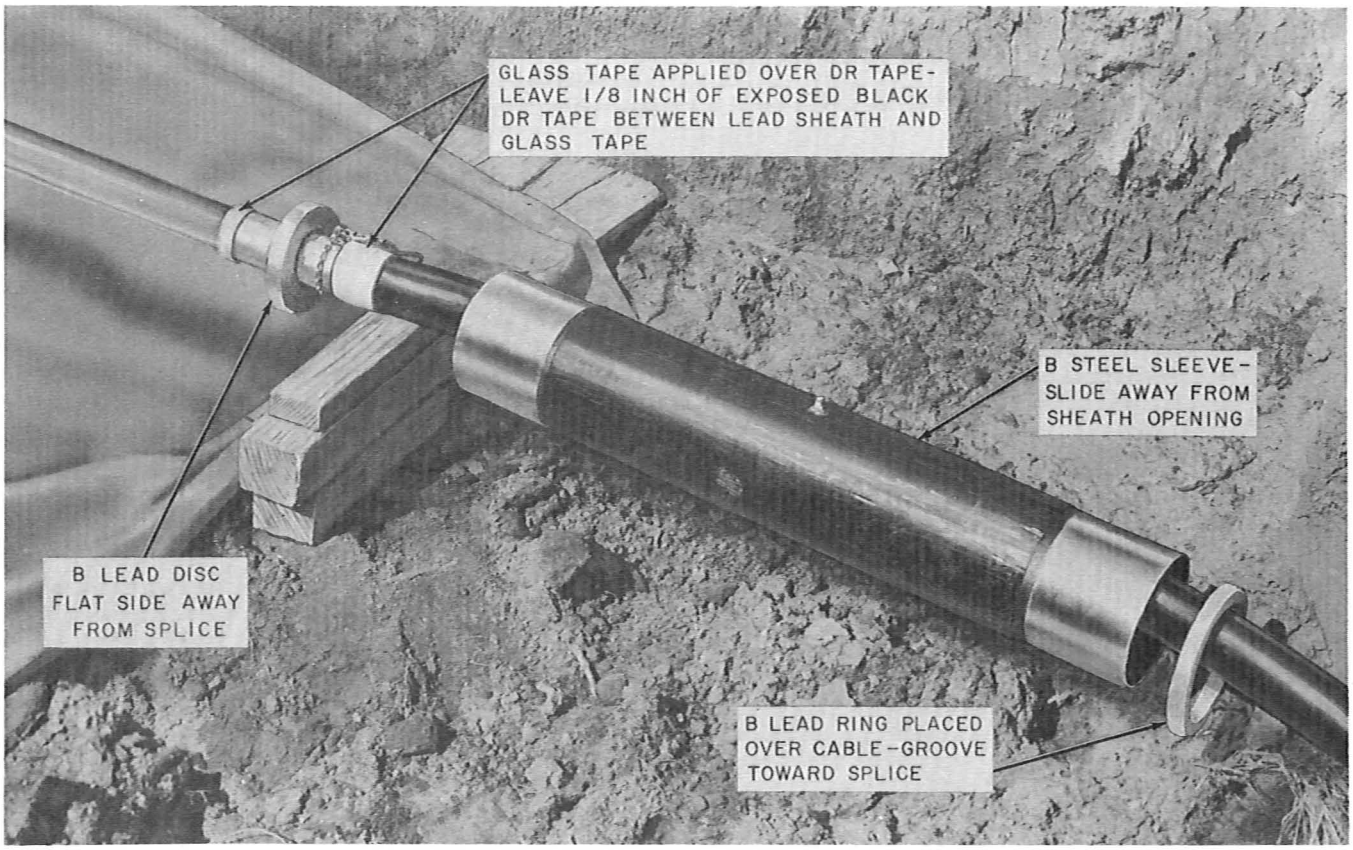

Fig. 6—Ring, Sleeve, and Disc Installed on Cable

6. ENCLOSING THE SPLICE

6.01 After the splicing operation is complete, as outlined in Section 632-425-205 build a collar approximately 1/4-inch high with five or six wraps of 3/8-inch wide plain cotton sleeving or 1/2-inch wide cotton tape on the splice side of the mark made in 5.02 (Fig. 7). The collar is used to position the lead disc and to prevent it from being pushed inside the lead ring during the wiping operation.

6.02 Slide the B Lead Disc into position on the cable already marked so that its concave face butts against the collar (Fig. 7).

6.03 From the top of the positioned lead disc, measure 39-3/4 inches across the splice and mark the lead sheath of the opposite cable (Fig. 7).

6.04 Build up a collar on the splice side of the mark made in 6.03 as outlined in 6.01.

6.05 Slide the B Lead Disc into position so that its concave face butts against the collar. The distance between the inside faces of the lead disc should be 39-1/2 inches.

6.06 Slide the B Steel Sleeve over the splice.

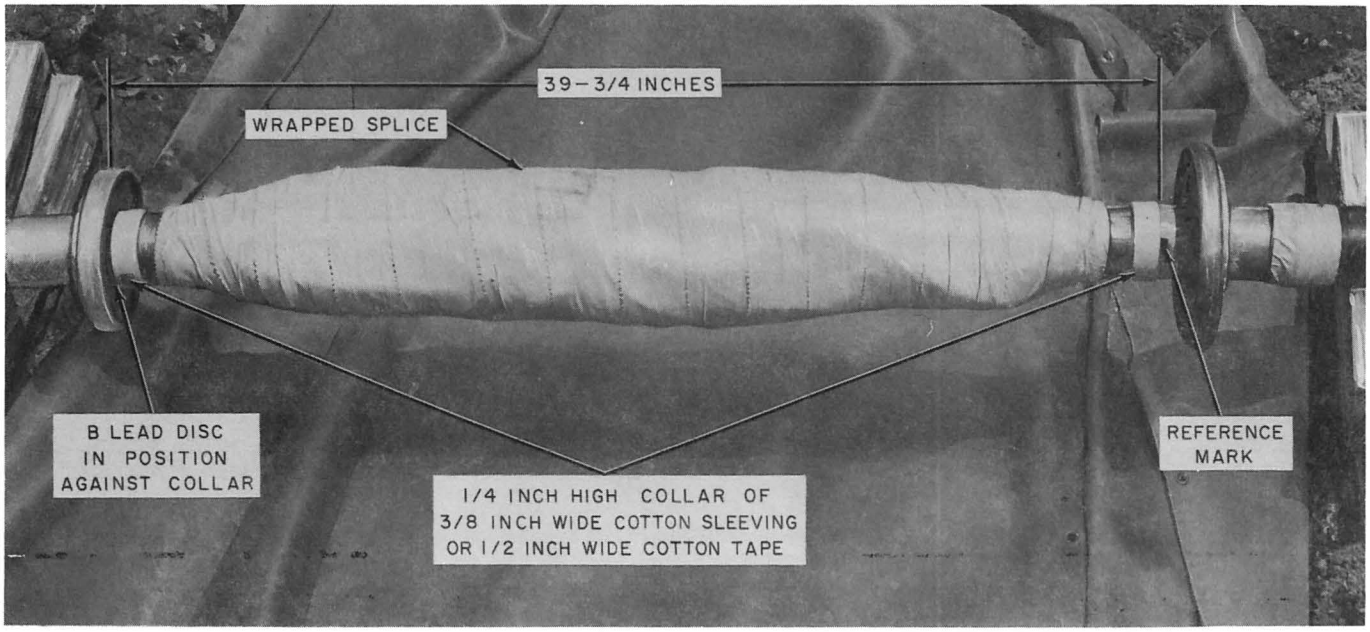

Fig. 7—Completed Splice

6.07 Slide the B Lead Ring over the B Lead Disc on one side of the splice. Position it approximately 1/4 inch from the flat face of the lead disc as shown in Fig. 8.

6.08 Tack solder the B Lead Ring to the B Lead Disc in three places on the outside faces. (Fig. 8)

6.09 Slide the B Steel Sleeve into the groove of the B Lead Ring.

6.10 Position the other B Lead Ring over the B Lead Disc on the opposite side of the splice and slide the B Lead Ring onto the B Steel Sleeve. Fig. 9 illustrates the B Steel Sleeve enclosing the splice.

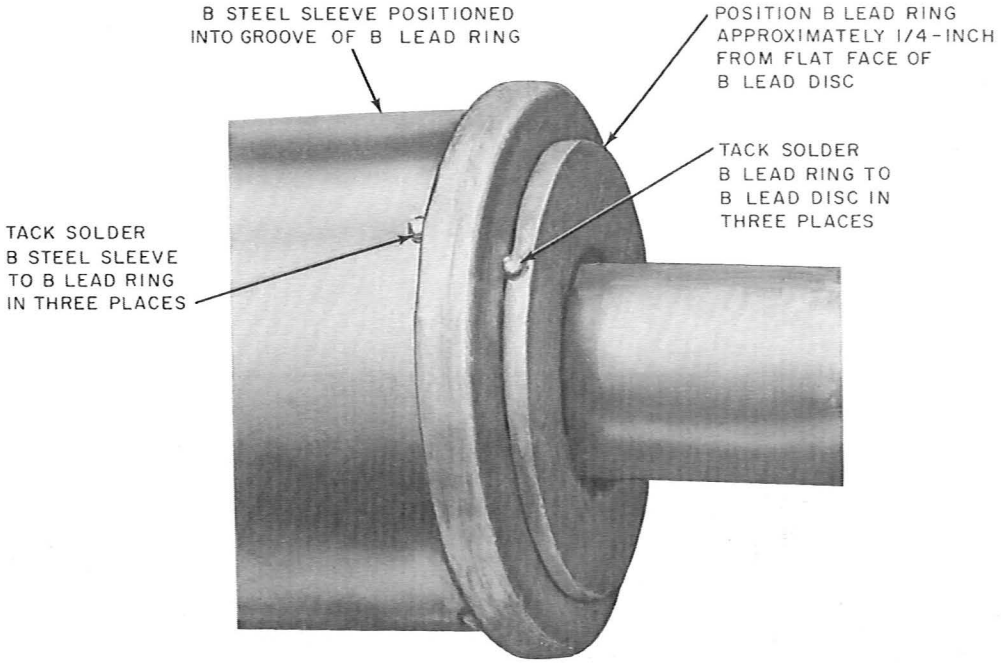

Fig. 8—Positioning B Lead Ring and B Steel Sleeve

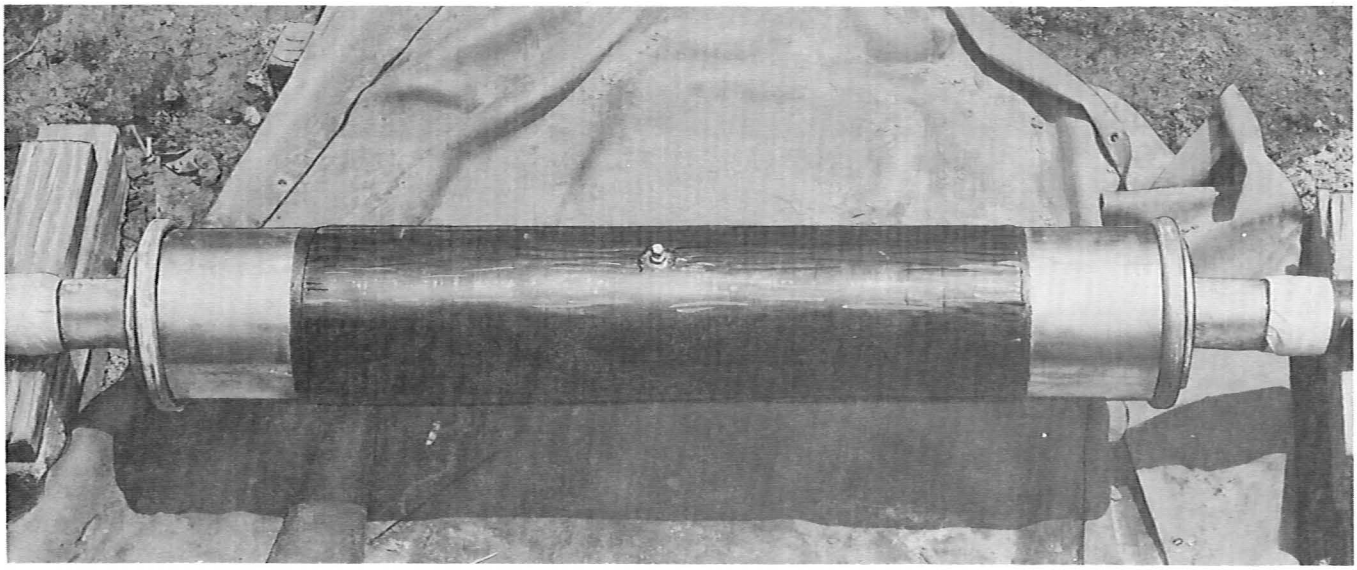

Fig. 9—Enclosed Splice

6.11 Tack solder the B Lead Ring to the B Lead Disc in three places. (Fig. 8)

6.12 Tack solder the B Lead Ring to the B Steel Sleeve in three places on each side of the splice (Fig. 8).

6.13 Caulk the space between the B Lead Ring and the B Lead Disc on both sides of the splice. ***Do not beat the B Lead Ring down onto the B Steel Sleeve.*** This will loosen the caulking between the lead rings and the lead disc and will also impede the flow of solder into the groove during the wiping operation. ***Do not caulk between the sheath and the disc.***

6.14 At valve pipe locations, prepare and install the valve pipe as follows.

(a) Remove 8 inches of outer jacket from valve pipe as shown in Fig. 10. When the valve pipe is equipped with rodent protection it will be necessary to remove the layer of corrugated steel and inner polyethylene jacket, then solder bond the corrugated steel to the lead.

(b) Card brush the lead then insert approximately two inches of the valve pipe into the hole drilled in the lead disc.

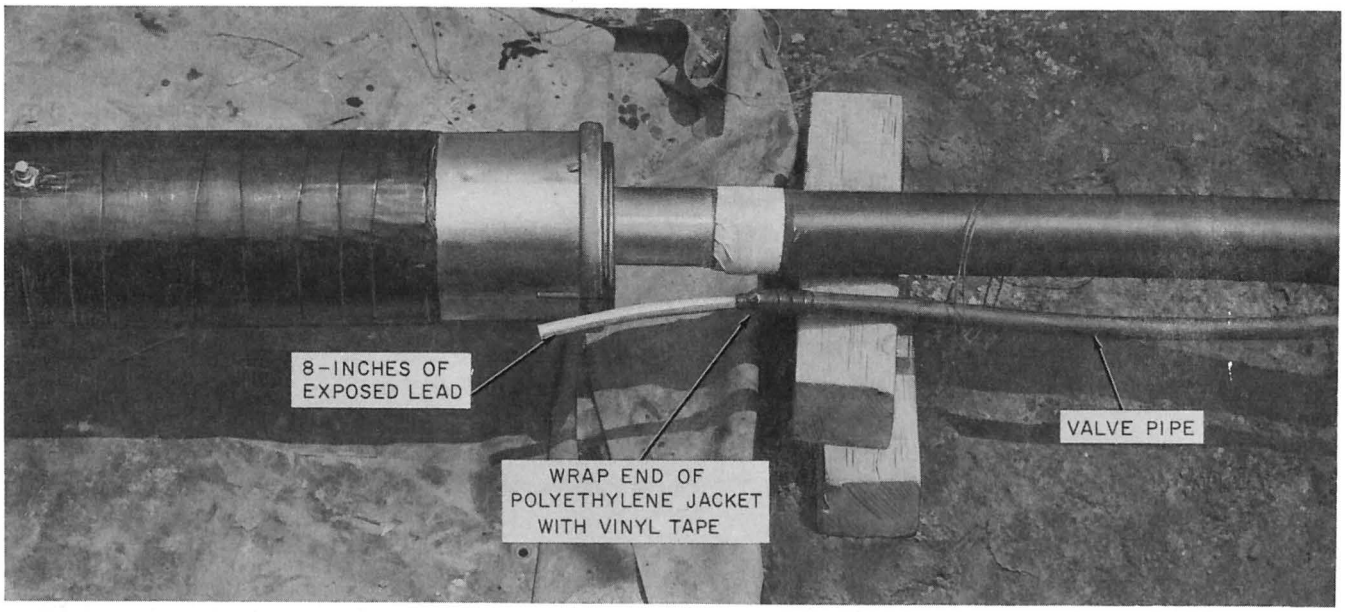

Fig. 10—Prepared Valve Pipe

7. WIPING JOINTS

7.01 ***Caution must be observed to prevent burning or melting the tinned surface on the steel sleeve and the thin lead area around the lead ring. The wiping metal should be no hotter than necessary and should only be poured over the lead disc.***

7.02 Apply pasters to the B Steel Sleeve and lead sheath to check the flow of wiping metal. (Fig. 11) ***Ensure that the pasters do not overlap the factory-applied corrosion protection.***

7.03 Remove plug from pressure fitting to prevent build up of heat inside the closure.

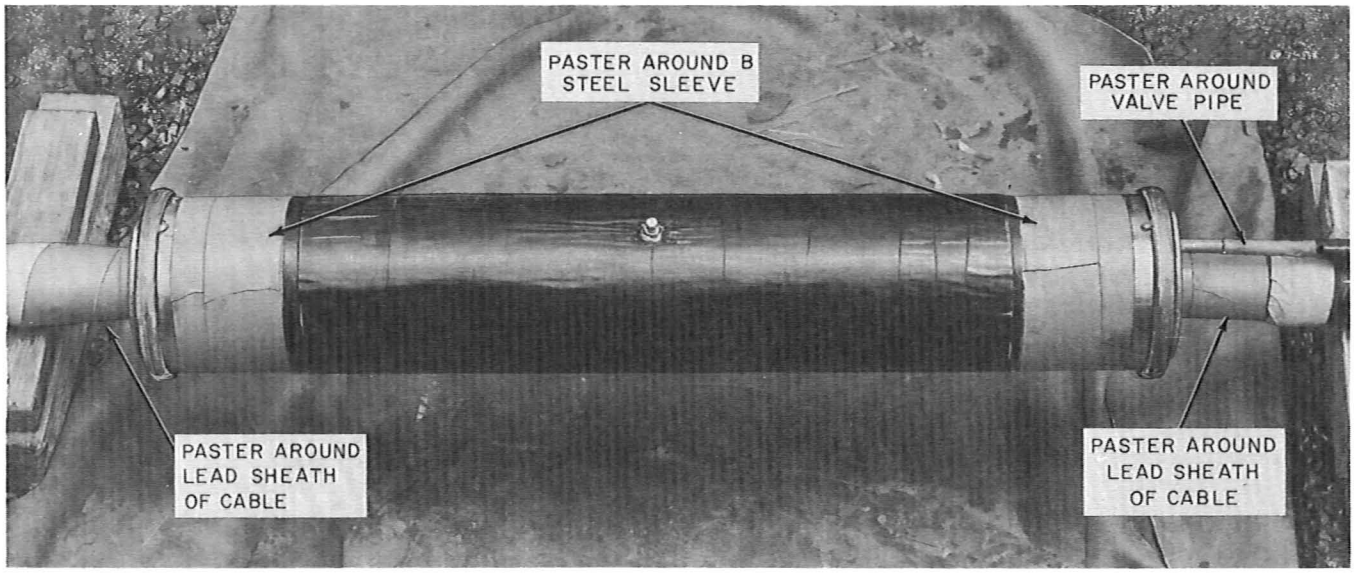

Fig. 11—Pasters Applied to Sleeve

7.04 Build up a small solder fillet around the entire circumference (Fig. 12) between:

(a) B Steel Sleeve and the B Lead Ring

(b) B Lead Disc and the B Lead Ring

(c) B Lead Disc and the cable sheath.

Note: Do not overwipe the pasters.

7.05 Finish the soldered fillets and the faces of the discs and rings with a coating of C Sealing Solder. ***Do not use waste to wipe the C Sealing Solder. The waste leaves strings and creates a wick.***

7.06 Carefully peel the pasters off the steel sleeve without damaging the tinned surface of the sleeve. ***Do not scrape the pasters off with a knife or other sharp objects since any break in the tinned surface will increase the possibility of corrosion.*** If necessary pressure testing solution may be used to soften and remove the pasters.

Fig. 12—Building up Solder Fillet

8. FLASH TESTING

8.01 Allow sleeve to cool then flash test the closure by applying pressure of 10 pounds until a back pressure of 6 to 8 pounds is obtained.

8.02 Apply a solution of ***E Pressure Testing Solution*** to the closure and cables entering the sleeve as shown in Fig. 13. Check the closure for leaks indicated by bubbles. If there are no leaks replace plug in pressure fitting.

8.03 If leaks occur, release the pressure, apply pasters as outlined in 7.02, and rewipe the joints; then repeat the flash test.

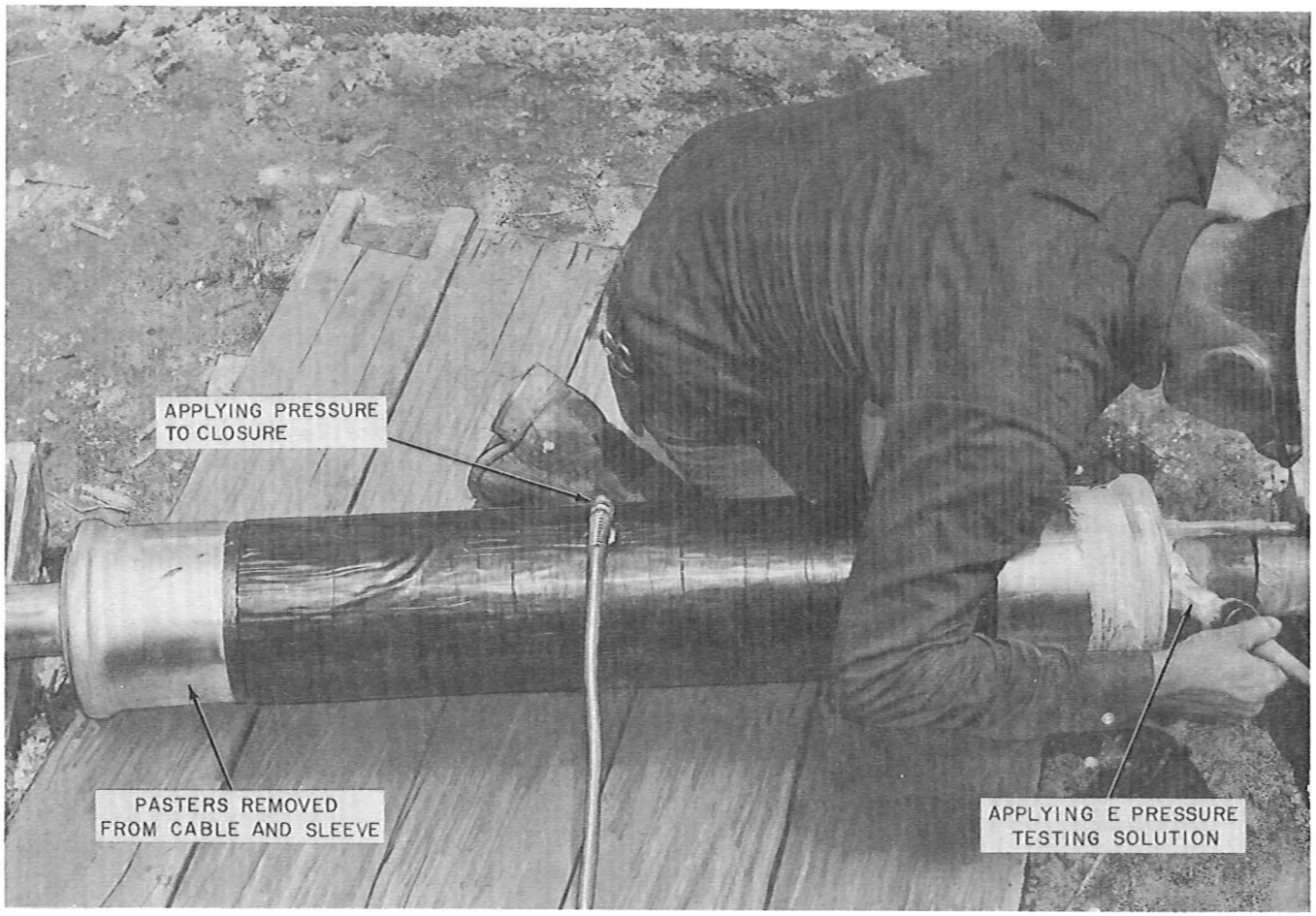

Fig. 13—Flash Testing Closure

9. CORROSION PROTECTION

SURFACE PREPARATION

9.01 Using B Cleaning Fluid and a ***clean*** cloth, clean the bare exposed metal of the sleeve, the lead ring, the lead disc, and the lead cable sheath to remove oil, pressure testing solution, stearine, or other foreign matter prior to the application of TC Mastic.

TC Mastic Application

9.02 Using the torch, heat the exposed metal areas of the sleeve and cable until it is warm to touch (Fig. 14) then flash the surface of the factory-applied Tapecoat 20 with the torch for a distance of 6 inches in from each end. This removes the protective polyester film so that an overlapping layer of Tapecoat to be applied will adhere. The polyester film is removed when the glossy finish disappears. If the Tapecoat 20 ignites, excessive heat is being applied.

9.03 Using a 2- or 3-inch stiff bristle brush, apply the TC Mastic vigorously as shown in Fig. 14 to ***all exposed*** metal from the glass tape on each side of the cable to the factory-applied Tapecoat on the sleeve. Immediately apply an additional coat of Mastic in a conventional manner to form a smooth continuous coating. In cold weather Mastic should be kept warm before application to speed drying time. ***A complete coating of Mastic is essential for complete corrosion protection.*** Fig. 15 illustrates TC Mastic applied to all bare surfaces.

9.04 Allow the Mastic to dry for a ***minimum of 15 minutes*** before starting application of the Tapecoat 20.

TAPECOAT 20 APPLICATION

9.05 Tapecoat 20 is applied by heating the coating side of the tape and placing it on the surface to be protected. One surface of the tapecoat is protected by a polyester film which becomes an outer protective wrapping over the completed application; and serves as a separator between layers in a roll. ***However, on areas of the Tapecoat which are to be overlapped, the polyester film must be removed by flashing with a torch. If this is not done, the two layers of Tapecoat will not adhere, causing eventual corrosion problems. The Tapecoat will not bond to the polyester film.***

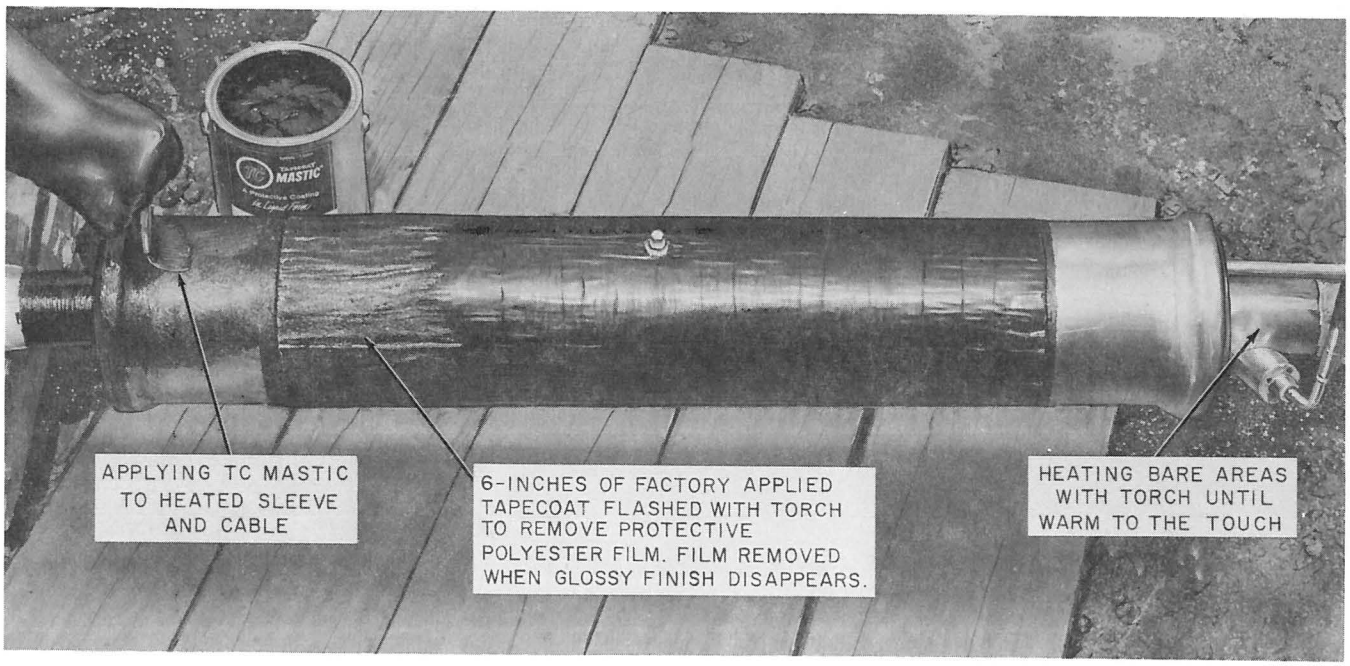

Fig. 14—Applying TC Mastic

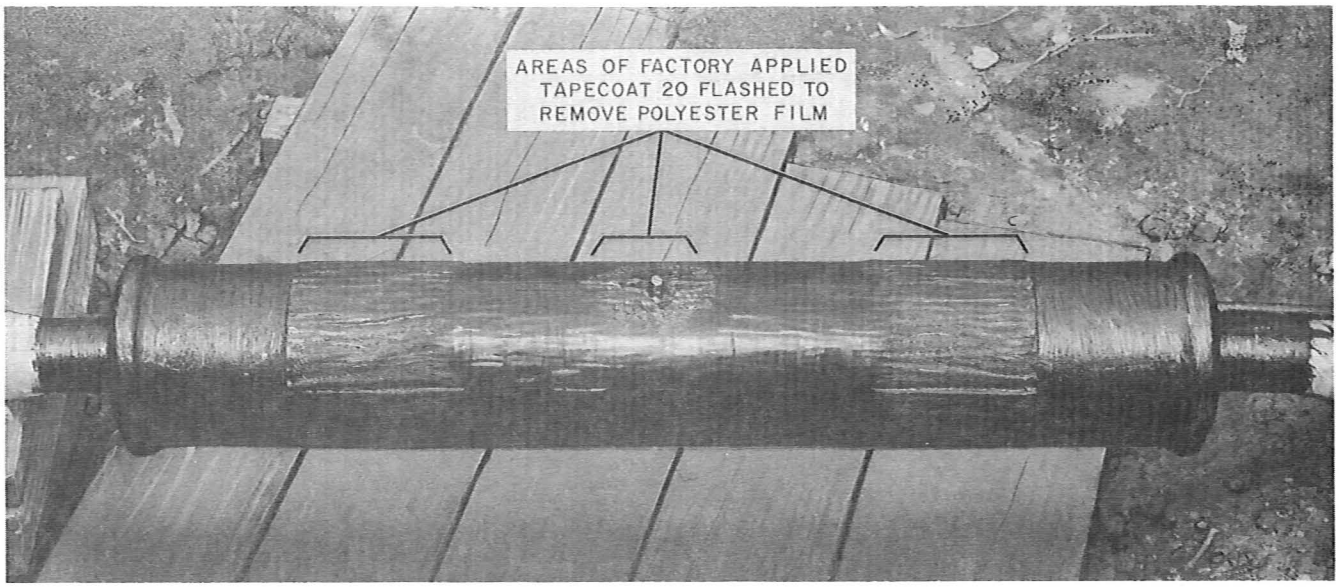

Fig. 15—TC Mastic Applied to all Bare Metal Surfaces of Sleeve and Cable

9.06 Heat and apply one wrap of 12-inch wide Tapecoat 20 around each end of the sleeve as shown in Fig. 16. Apply only enough heat to soften the Tapecoat; do not allow it to ignite and burn. One edge of the Tapecoat should butt up against the fillet between sleeve and ring. ***Extra care must be taken when wrapping the tape to prevent wrinkles and voids at the fillet between the lead ring and steel sleeve, since these can cause corrosion paths.***

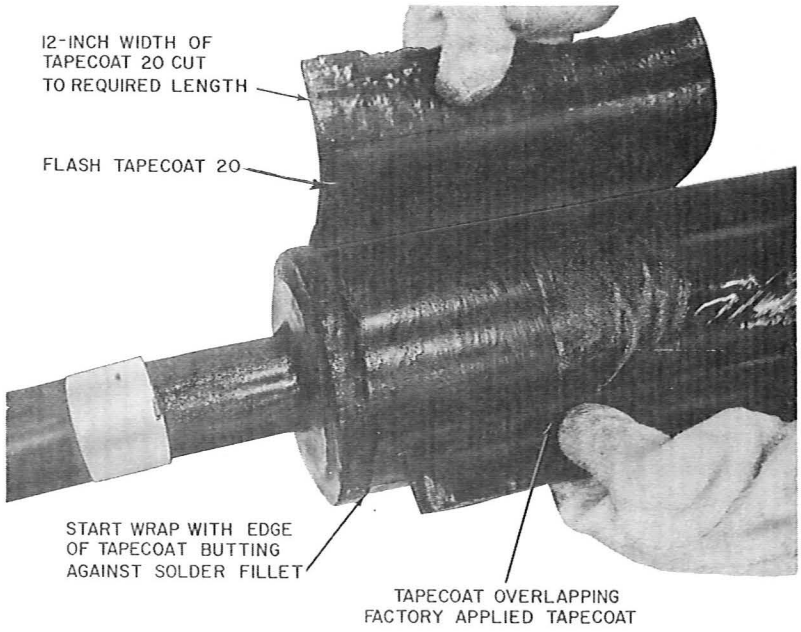

Fig. 16—Wrapping Steel Sleeve

9.07 Using a 12-inch width of Tapecoat 20, heat and wrap one layer over the lead ring, lead disc, lead sheath, and glass tape on the cable sheath at each end of the splice as follows:

(a) Remove polyester film from the surface of the previously applied Tapecoat for a distance of 2 inches in from its edge nearest the lead ring.

(b) Start the wrap on the steel sleeve, Fig. 17 overlapping the previously placed Tapecoat by at least 2 inches. ***Be sure the polyester film is removed from area to be overlapped.***

(c) Flash the inside of the Tapecoat 20 as shown in Fig. 18

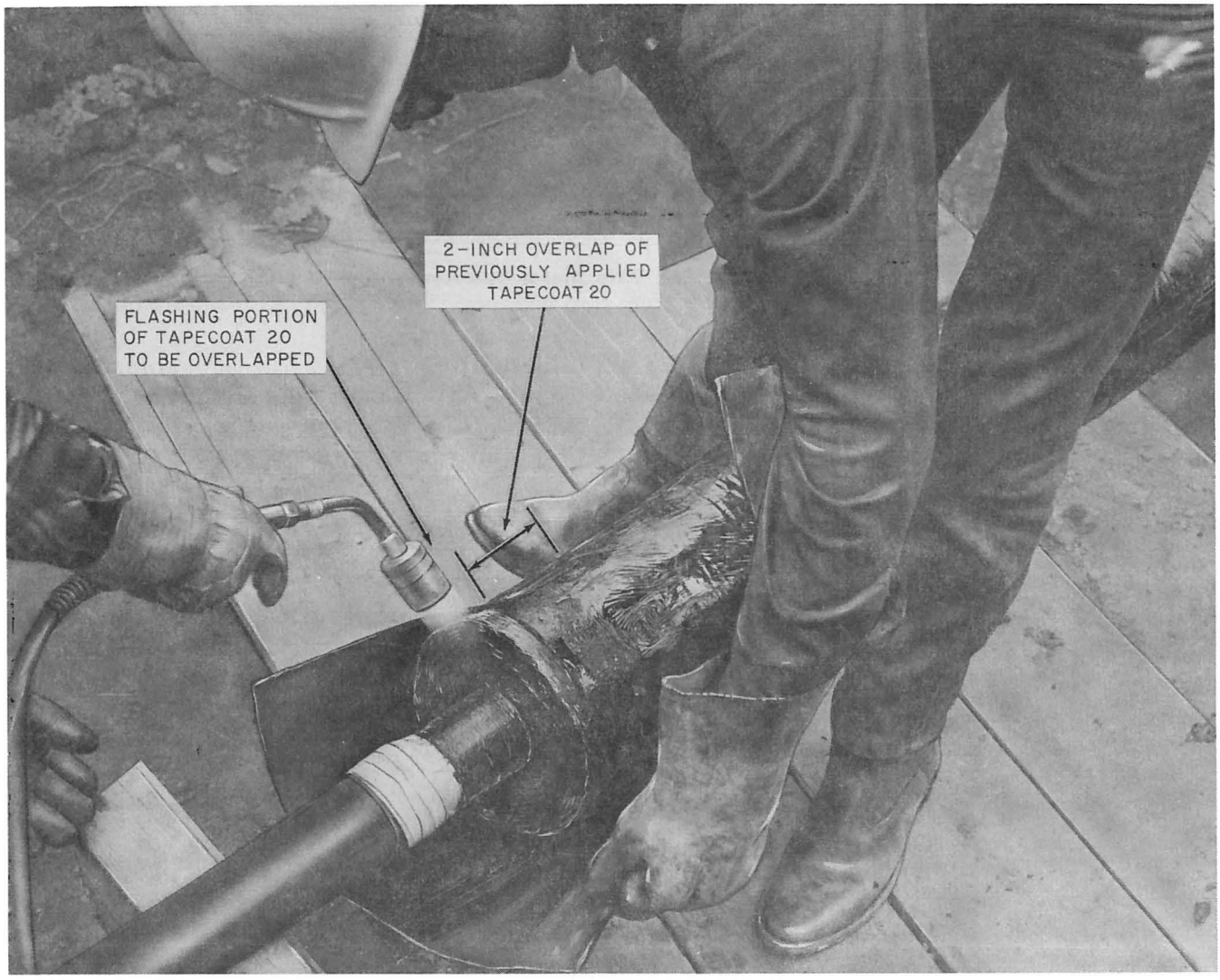

Fig. 17—Applying Tapecoat 20

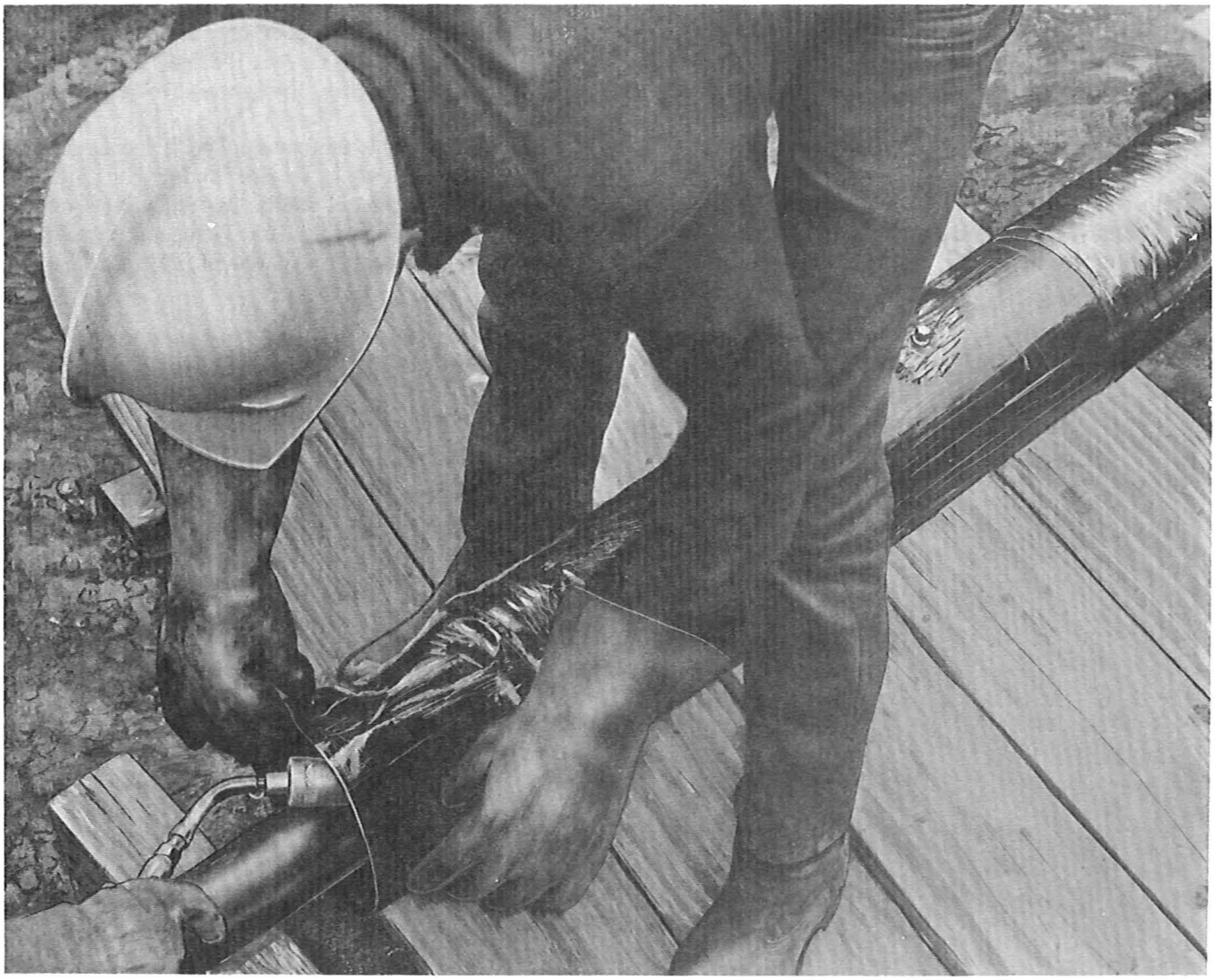

Fig. 18—Flashing Inside of Tape Coat 20

(d) Starting at the lead ring work the wrap down over the lead ring, lead disc, lead cable sheath, and glass tape. Do not extend the wrap onto the polyethylene jacket. Use a twisting motion to bring Tapecoat into close contact with both disc and sheath. (Fig. 19)

(e) Remove the polyester film covering on the entire surface of this piece of Tapecoat 20 from the end plates on each side of the splice to the glass tape.

(f) Using a 2-inch width of Tapecoat 20, heat and wrap the 12-inch layer of Tapecoat 20 starting as near the end plate as possible and continuing onto the glass tape making sure to cover all exposed lead sheaths. (Fig. 20) ***The polyester film will have to be removed from the portion of this tape that is overlapped.***

9.08 Heat a 4 X 4 inch piece of Tapecoat 20, and cover the pressure fitting. ***Be sure the polyester film is flashed off the adjacent area before covering the pressure fitting.***

9.09 Inspect the factory-applied Tapecoat on the steel sleeve. If the underlying metal is exposed or Tapecoat badly dented, flash off the polyester film covering the Tapecoat in the area of damage and apply a patch of Tapecoat.

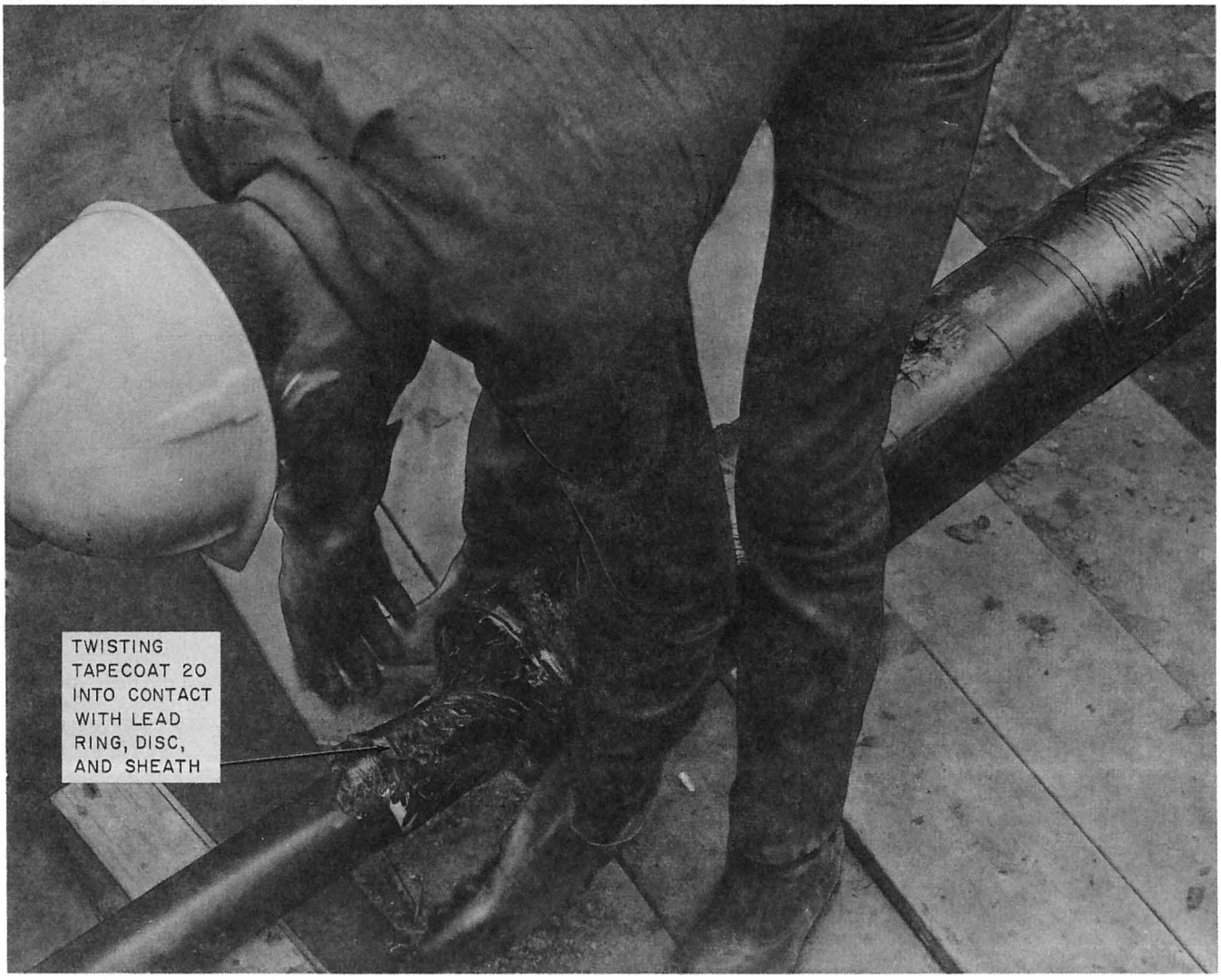

Fig. 19—Working Wrap Down Over Lead Ring, Lead Disc, Lead Cable Sheath, and Glass Tape

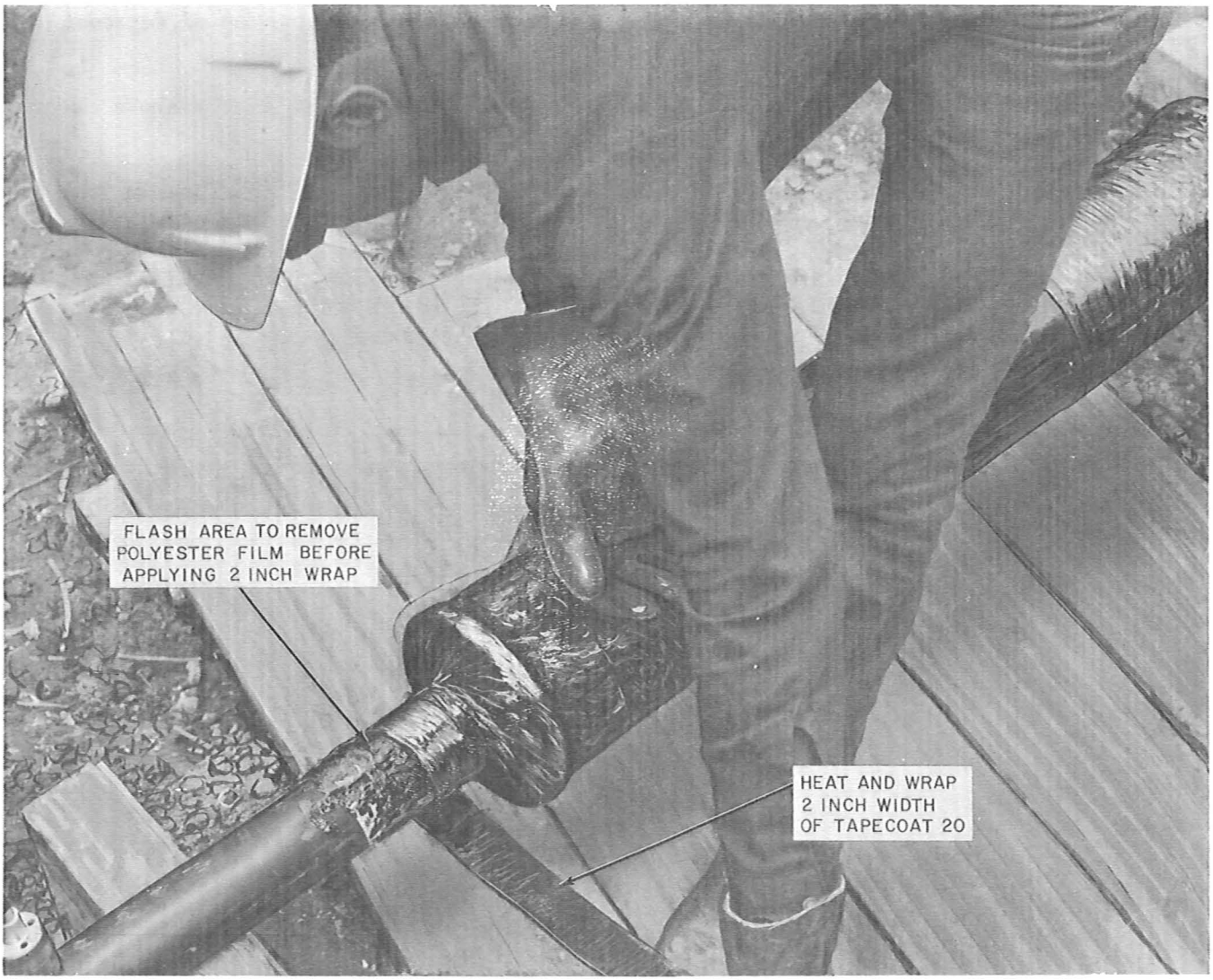

Fig. 20—Applying Two-Inch Wrap of Tapecoat 20

APPLICATION OF TC MASTIC AND TAPECOAT 20 TO B STEEL SLEEVE CONTAINING VALVE PIPE

9.10 Prepare and apply Tapecoat 20 to the sleeve as outlined in 9.02 through 9.06.

9.11 Insert a 2-inch width of Tapecoat 20 between the cable and valve pipe (Fig. 21) on the lead end plate. Press the Tapecoat down firmly against the end plate and extend over the end plate onto the Tapecoat applied in 9.10.

9.12 Heat and wrap one layer of a 12-inch width of Tapecoat 20 over the lead ring, lead disc, lead sheath, and glass tape on the cable sheath at the valve pipe end of the splice as follows:

(a) Start the wrap on the steel sleeve, overlapping the previously placed Tapecoat by at least 2 inches. ***Ensure all polyester film has been removed from the portion of Tapecoat to be overlapped.***

(b) Slit the Tapecoat directly above the valve pipe.

(c) Wrap each corner of Tapecoat under the valve pipe and onto the cable. (Fig. 22)

(d) Using a 2-inch width of Tapecoat 20, wrap the 12-inch width of Tapecoat 20 as outlined in 9.07(e) and (f).

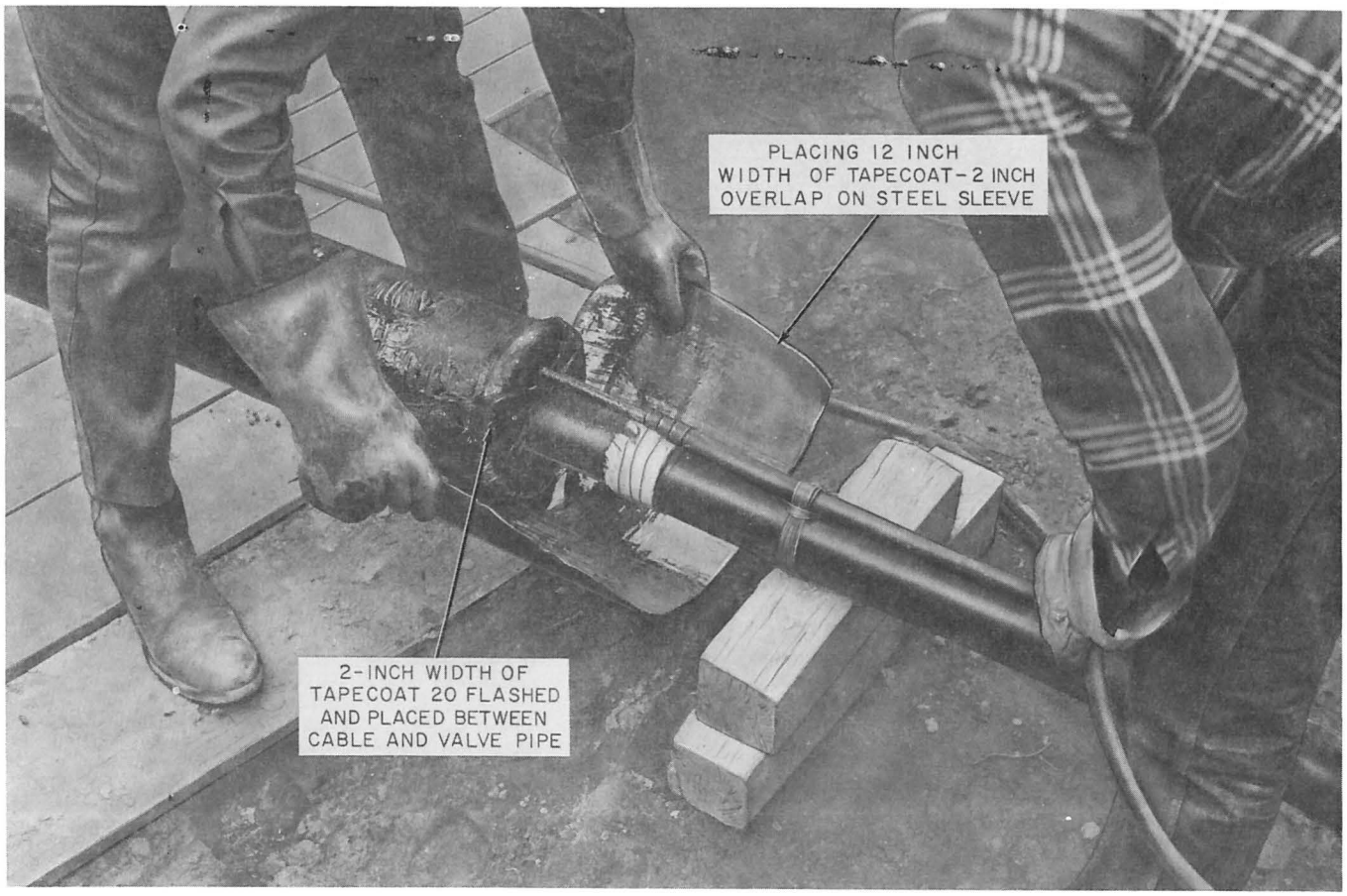

Fig. 21—Applying Tapecoat 20 to Valve Pipe End of B Steel Sleeve

Fig. 22—Wrapping Tapecoat 20 Around Cable

(e) Spiral wrap the valve pipe with a 2-inch width of Tapecoat 20, starting at the end plate and continue over the exposed metal portion of the valve pipe. (Fig. 23)

Fig. 23—Wrapping Valve Pipe

10. MECHANICAL PROTECTION

10.01 Apply the same mechanical protection to the completed splice as that normally used on the extra strength lead sleeve reinforced with the B Sleeve Liner (Fig. 24).

11. OPENING COMPLETED SPLICE

11.01 Slit and peel off the field-applied Tapecoat at each end of the closure.

11.02 Soften the Mastic coating by flashing with a torch and remove as much as possible with a wood paddle by scraping, then remove the remaining Mastic with a B Cleaning Fluid soaked rag. Do not scrape or cut the Tapecoat or Mastic from the steel sleeve.

11.03 Open each end of the splice by heating the solder fillets joining the B Lead Ring to the B Steel Sleeve and B Lead Disc with a torch. ***Do not heat the fillet between the lead disc and the cable sheath because it is not necessary or desirable to loosen the lead disc from the cable sheath.*** When the solder between the ring and the disc softens, strike the ring to separate it from the disc. Remove any excess solder from the disc.

11.04 Cut, remove, and discard both B Lead Rings, then slip the sleeve away from opening.

11.05 If it becomes necessary to remove the B Steel Sleeve due to extensive corrosion or damage, obtain a Black and Decker No. 8 Heavy Duty Nibbler and remove the sleeve as follows:

> ***Caution: The nibbler will produce a hot spark, and consequently, the same restrictions to its use in manholes and splice pits apply as do the restriction to open flames.***

(a) Remove Tapecoat and Mastic from area around lead rings and down to the bare metal on two longitudinal strips at least one-inch wide, extending the full length of the steel sleeve and separated by approximately 90 degrees. These strips must be clean to prevent clogging the nibbler.

(b) Separate the B Lead Rings from the sleeve by unwiping the B Lead Ring at each end of the sleeve.

(c) Slip the sleeve completely away from the sheath opening or as far away as practical.

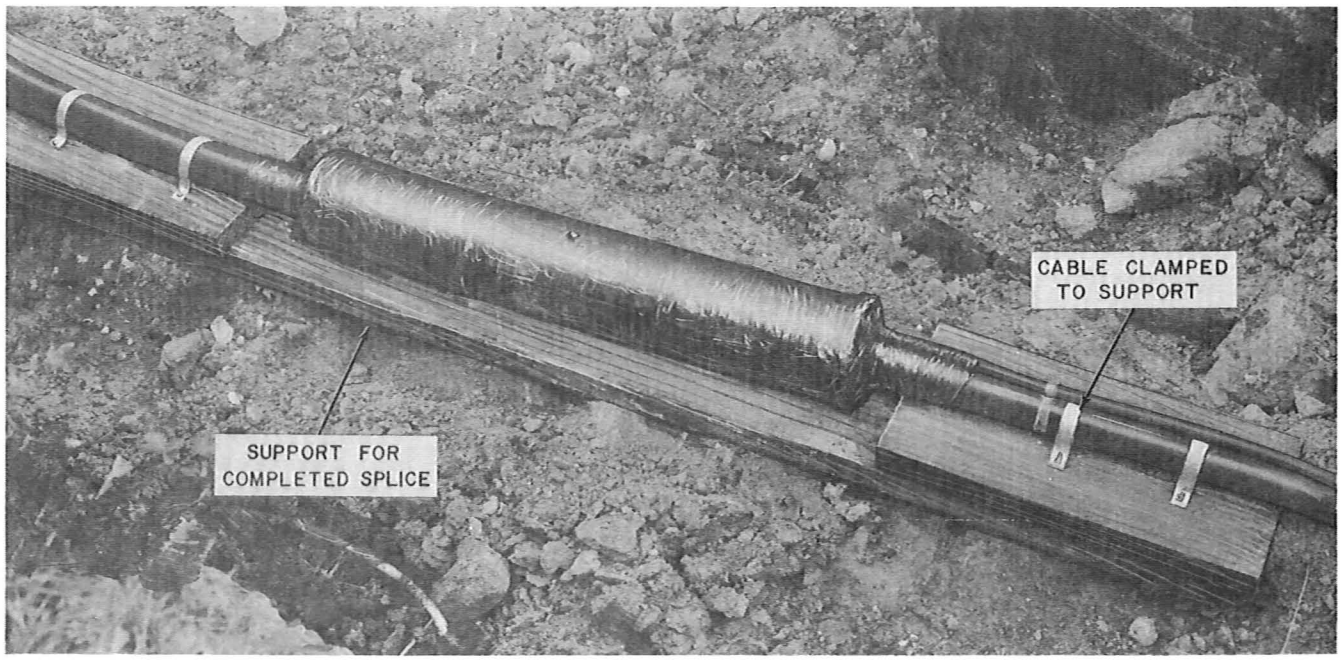

Fig. 24—Completed Splice

(d) Place a temporary bond across the sheath opening as outlined in Section 638-300-200.

(e) Cover the sheath opening with a clean canvas or other suitable material while the remainder of the job is in progress. This will keep foreign matter out of the splice.

(f) Clamp the steel sleeve in such a manner as to hold it rigid and out of contact with the cable.

(g) Using the nibbler, make two longitudinal cuts along the sleeve in the locations previously cleaned in (a), then remove the sleeve.

11.06 Enclose the splice using a split lead sleeve reinforced with a C Sleeve Liner as described in Section 633-210-210.

12. RECLOSING SPLICE

12.01 Make diagonal cuts through the top of two B Lead Rings as shown in Fig. 25.

12.02 Open the rings by grasping on each side of the cut and spread by pushing and pulling until the opening is large enough to fit around the cable sheath. ***Do not pull the two sides of the cut apart because this will permanently deform the ring.***

12.03 Slide the B Lead Rings over the cable sheath and reshape them.

12.04 Position the B Lead Rings and B Steel Sleeve over the B Lead Disc. The diagonal cut in the ring should be located at the top of the closure (12 o'clock).

12.05 Tighten the rings on both sides of the splice by applying C Split Sleeve Clamps.

12.06 Tack solder the diagonal cuts in the top of the lead rings and remove the C Split Sleeve Clamps.

12.07 Caulk the fillet between the B Lead Ring and the B Lead Disc on both sides of the splice.

12.08 Rewipe the splice, flash test, and apply corrosion protection as outlined in Parts 7, 8, and 9.

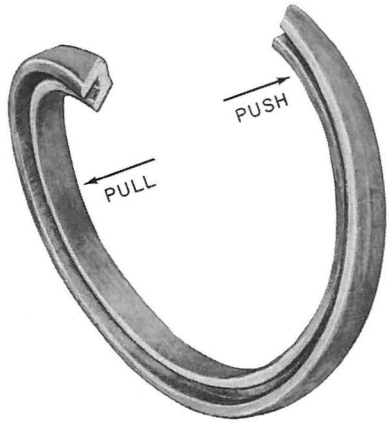

Fig. 25—Split B Lead Ring