

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G57.631.1
Issue 1, August, 1948
AT&T Co Standard

SUBMARINE CABLE SPLICING
ANCHORING SHORE ENDS

Contents	Page
1. General	1
2. Tools and Materials	1
3. Description of Cable Clamp	2
4. Layout of Cable at Shore End.....	2
5. Placing Cable Clamp	3
6. Placing Guy Rods	5
7. Anchoring Submarine Cable in Manhole	6
8. Anchoring Cable with Steel Chain	7

1. GENERAL

1.01 The instructions contained in this section cover methods of anchoring the shore ends of submarine and light wire armored cable.

2. TOOLS AND MATERIALS

2.01 The tools and materials listed below are required to anchor a cable using the B Submarine Cable Clamp.

2.02 Materials:

Cement, C	For protecting lead sheath at clamp.
Clamp, Cable Submarine, B (2, 3 or 4-inch)	See Paragraph 3.01 for the size of the clamp required.
Log, Anchor	Type 83 southern pine anchor log.
Paint, Asphalt, No. 2	
Rod, Guy, S (3/4 or 1-inch)	Use two 3/4-inch by 9-foot rods with 2-inch and 3-inch clamps and two 1-inch by 10-foot rods with 4-inch clamp.

Steel, Sheet, 24-gauge For protecting cable at clamp.
 Tape, CR, 2-inch For protecting lead sheath at clamp.
 Wire, Iron, Galvanized 109 For securing ends of armor wires.

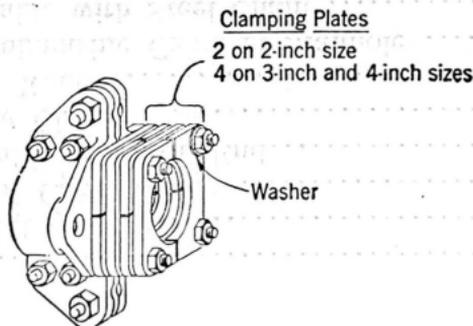
2.03 Tools:

Cutter, Bolt For cutting armor wires.
 Hacksaw, 32 Teeth per Inch For cutting armor wires. A fine tooth blade should be used.
 Wrenches For tightening 1/2 to 1-inch nuts on clamp and guy rods.

2.04 Commercial 5/8-inch BBB short link galvanized steel chain should be used when the cable is anchored as outlined in Part 8.

3. DESCRIPTION OF CABLE CLAMP

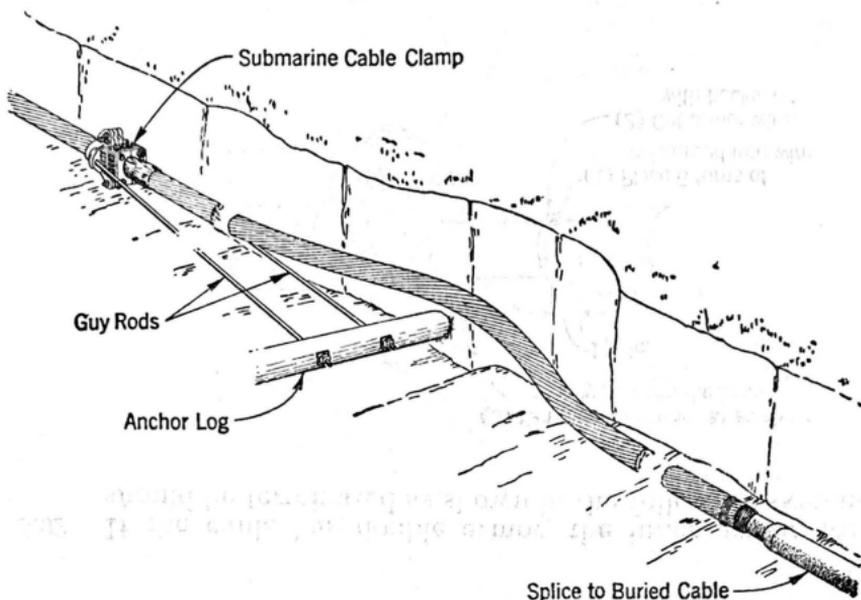
3.01 The B Submarine Cable Clamp, illustrated below, is available in three sizes. The sizes are designated 2-inch, 3-inch and 4-inch. The 2-inch size is for use in anchoring single armored cable and the 3-inch and 4-inch sizes can be used to anchor either single or double armored cable. The size clamp to be employed can be determined from the table.



Clamp Size Designation	Diameter of Cable Over Armor Wires
2-inch	2 inches or smaller
3-inch	2 to 3 inches
4-inch	3 to 4 inches

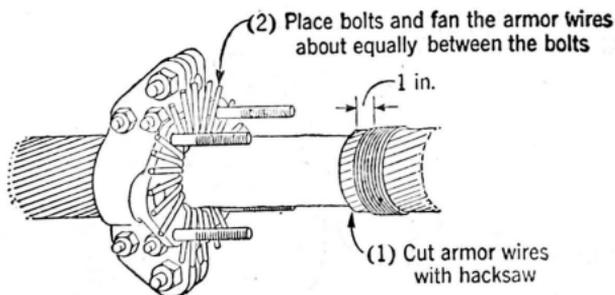
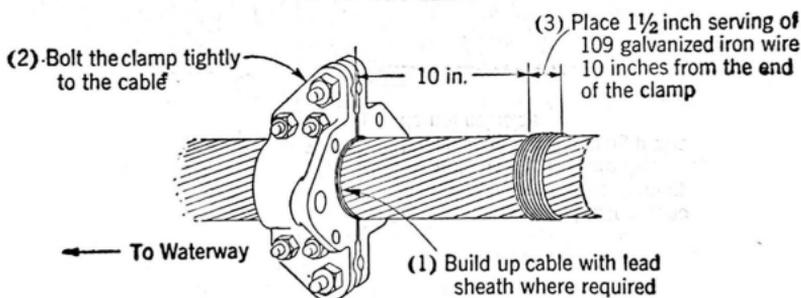
4. LAYOUT OF CABLE AT SHORE END

4.01 The general arrangement in anchoring the shore end of a wire armored cable using the submarine cable clamp and two guy rods is illustrated in the following sketch which shows the condition where a wire armored cable is spliced direct to a buried cable.

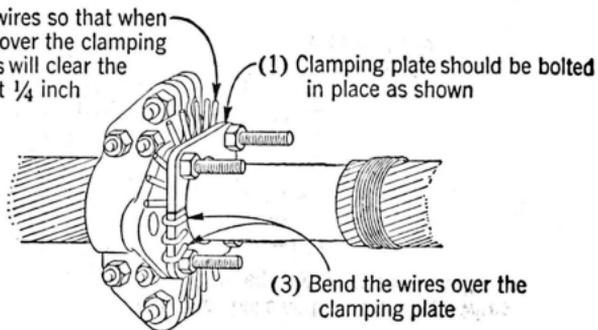


5. PLACING CABLE CLAMP

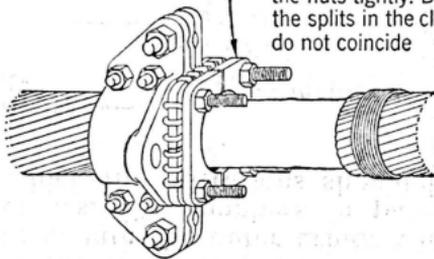
5.01 Attach the clamp to the cable at the specified location and terminate the outer armor wires, as shown in the following sketches. The numbers in parenthesis indicate the sequence in which the operations should be done.



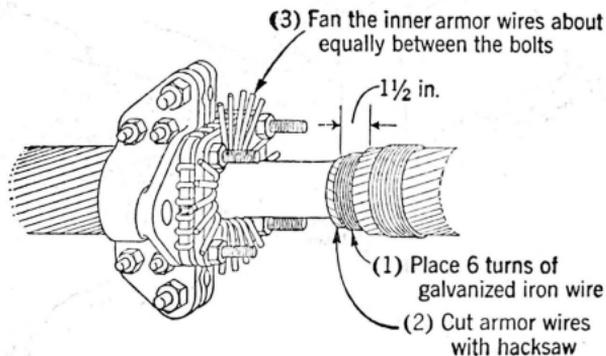
- (2) Cut the armor wires so that when they are bent over the clamping plate, the ends will clear the cable by about $\frac{1}{4}$ inch



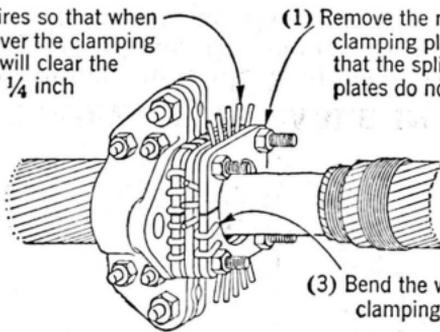
- Remove the nuts and bolt second clamping plate in place, turning the nuts tightly. Be sure that the splits in the clamping plates do not coincide



5.02 If the cable has double armor, the inner armor wires should be terminated as shown in the following sketches.

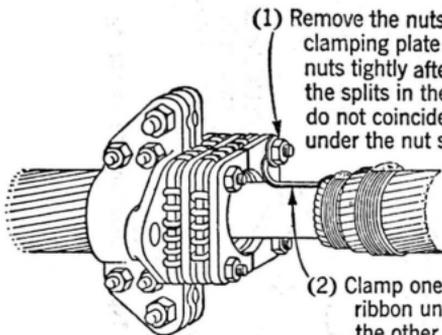


- (2) Cut the armor wires so that when they are bent over the clamping plate, the ends will clear the cable by about $\frac{1}{4}$ inch



- (1) Remove the nuts and bolt third clamping plate in place. Be sure that the splits in the clamping plates do not coincide

- (3) Bend the wires over the clamping plate



- (1) Remove the nuts and bolt the fourth clamping plate in place, turning the nuts tightly after making sure that the splits in the clamping rings do not coincide. Place a washer under the nut shown

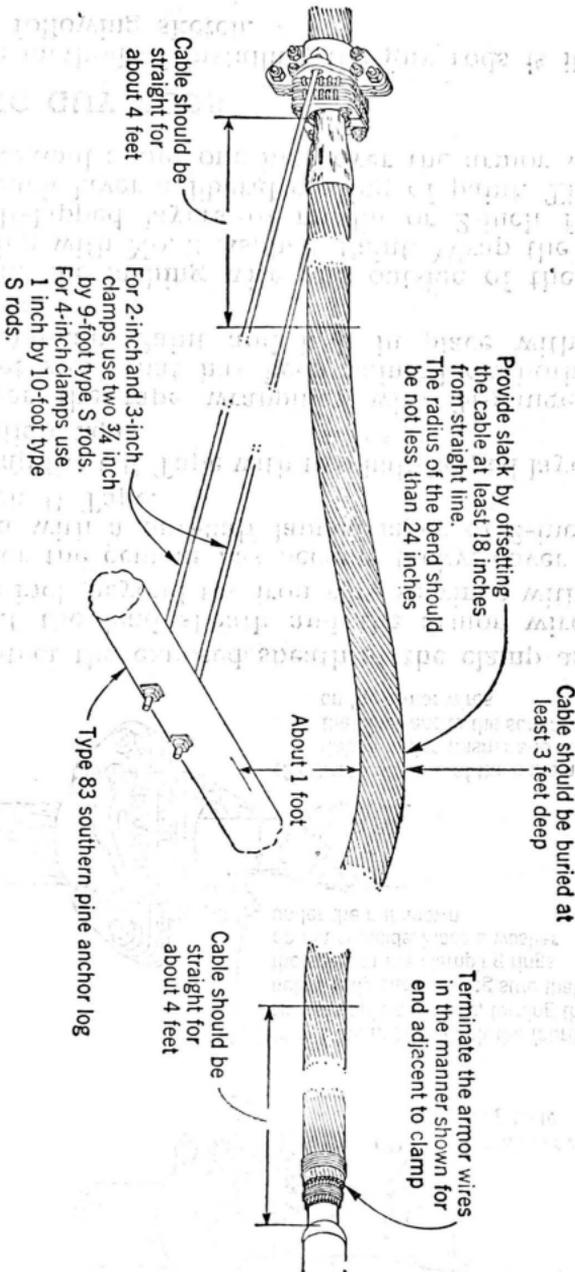
- (2) Clamp one end of the bonding ribbon under washer and solder the other end to the servings on the armor wires

5.03 Protect the exposed sheath at the clamp as follows:

- (1) Coat the lead sheath and the armor wires to about one inch beyond the iron wire servings with C Cement.
- (2) After the cement has become tacky, cover the painted area with a one-half lapped layer of 2-inch CR Tape or 2-inch B Tape.
- (3) Wrap the CR Tape with two half-lapped layers of 2-inch friction tape.
- (4) Cover the tape wrappings with 24-gauge galvanized sheet steel that has been painted on both sides with No. 2 Asphalt Paint and lash in place with galvanized iron wire.
- (5) Paint the lashing wire and outside of the sheet steel casing with No. 2 Asphalt Paint. Wrap the casing with two half-lapped layers of muslin or 2-inch friction tape giving each layer a liberal coating of paint. The wrapping should extend about one inch over the armor wires.

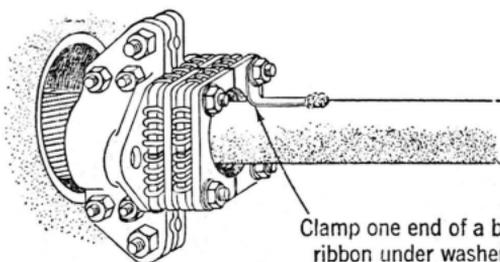
6. PLACING GUY RODS

6.01 The method of installing the guy rods is illustrated in the following sketch.



7. ANCHORING SUBMARINE CABLE IN MANHOLE

7.01 When a submarine cable is spliced to an underground cable in a manhole, the cable clamp can be used to anchor the submarine cable, as shown in the following sketch.

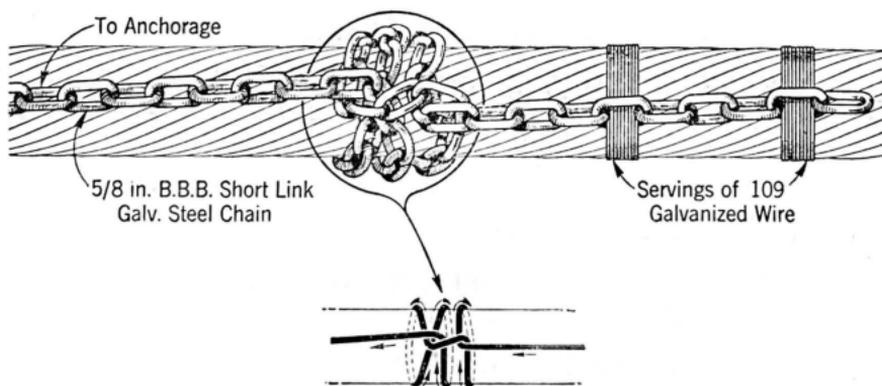


Clamp one end of a bonding ribbon under washer and solder the other end to the sheath

8. ANCHORING CABLE WITH STEEL CHAIN

8.01 Where the chain method of anchoring is specified, commercial 5/8-inch BBB short link galvanized steel chain should be used. One end of the chain should be attached to the cable as outlined below, and the other to a pole, piles or eye bolt embedded in the masonry of a bridge pier or retaining wall.

8.02 The chain should be attached to the cable by means of a hitch leaving a free end of about 12 inches which should be lashed securely to the cable with galvanized iron wire. The chain should then be passed around the pole, piles or passed through eye bolts and where practicable, the second end should be brought back and attached to the cable in the same manner as the first end. The method of attaching the chain to the cable is shown in the following figure.



8.03 When the shore end is landed on a dock, the cable should be anchored as near the bottom of the dock as practicable in order to prevent likelihood of injury to the cable by passing boats.