

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

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AT&T Co. Prov. Std.

SUBMARINE CABLE

GENERAL

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1. GENERAL

1.01 These instructions outline the procedures for the installation of submarine cables. Details not given in these instructions shall conform to the requirements of the standard practices covering the particular class of work.

2. PERMITS

2.01 Permits from the municipal authorities and owners of private property shall, if required, be secured before the work is started.

2.02 Permission must be obtained from the War Department of the United States Government for placing submarine cables across any of the navigable waters of the United States. All requirements of the government as well as of the local authorities must be rigidly adhered to.

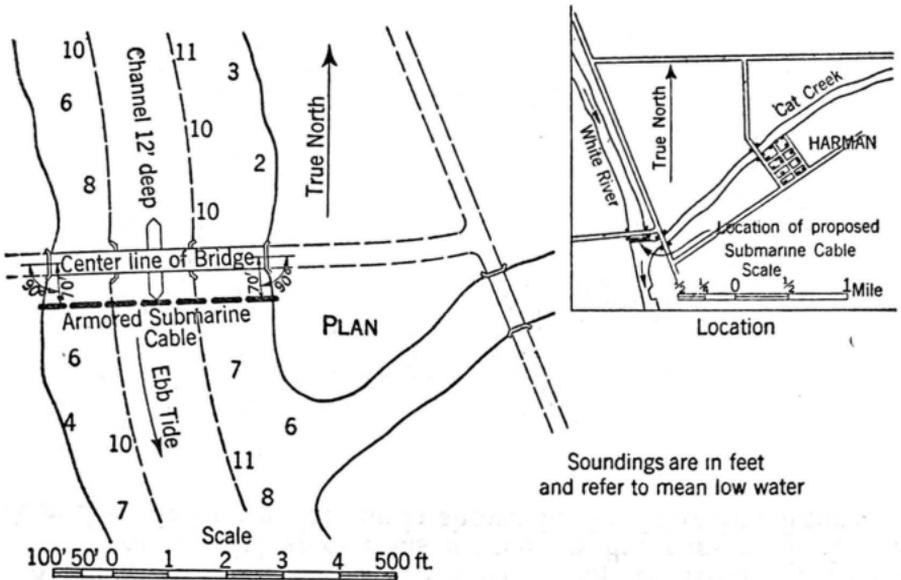
2.03 Application for permits to place submarine cables across navigable waters should be addressed to the District Engineer, United States Army, of the district in which the work is to be done. The address of the district engineer to whom the application should be sent and also the rules for

making an application may be obtained from any district engineer or the Chief Engineer, United States Army, Washington, D. C.

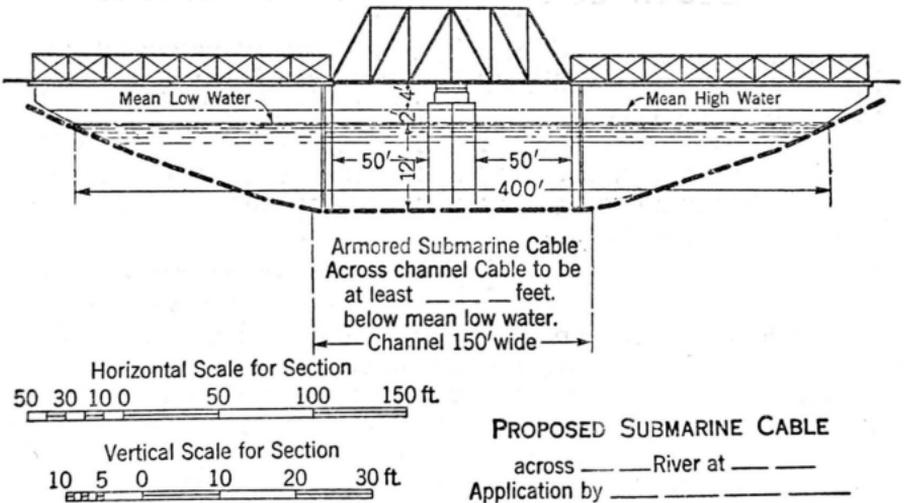
2.04 If there is any question regarding the possibility of the stream being developed for navigation the question should be brought to the attention of the district engineer who can give information as to the probable future arrangements at the crossing.

2.05 It is desirable to keep the written matter and drawings which make up the application down to a minimum and drawings should not be so large as to require folding to conform with standard letter size. The drawings should show only that which is essential to the permit and such related matters as are necessary to show the location and the extent of the work with its relation to navigation. A typical drawing showing the essential features of an application for a permit to place a submarine cable is shown in the following figure.

TYPICAL DRAWING TO ACCOMPANY APPLICATION FOR A PERMIT TO PLACE
SUBMARINE CABLES ACROSS NAVIGABLE WATERS OF THE UNITED STATES



ENLARGED SECTION SHOWING GRADE OF PROPOSED CABLE



3. EXCAVATING

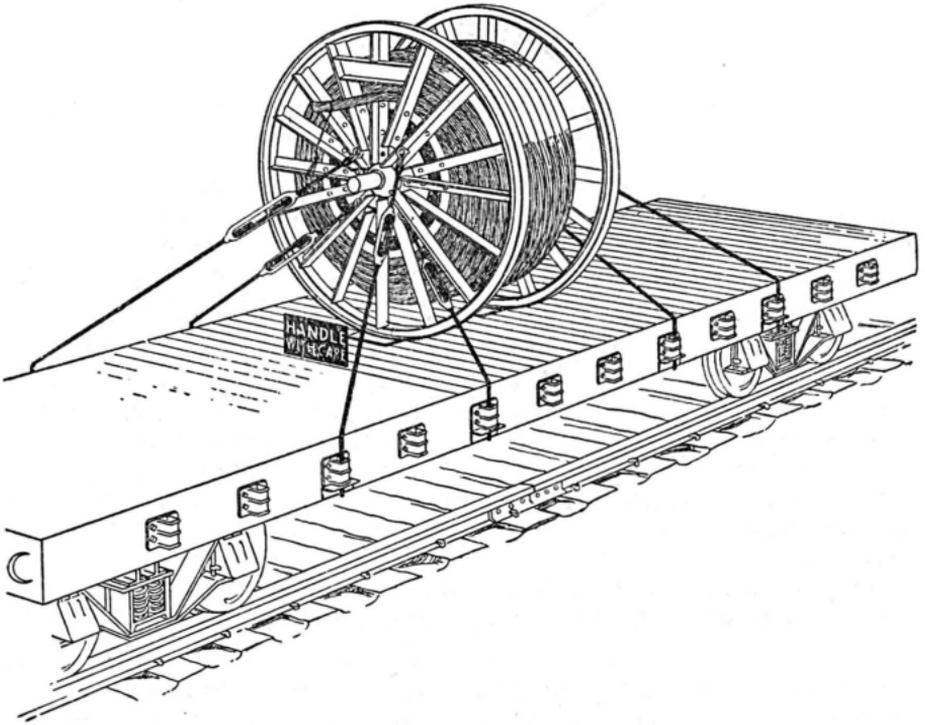
3.01 Where any part of the route taken by the cable is subject to dredging, such as in the channels of some navigable streams, a trench should be dredged beneath the normal bed of the stream at such depth as to avoid the likelihood of having the cable damaged by subsequent dredging operations. The cable should be traced by a diver if there is any question as to whether a portion of it is not in the trench. In cases where any part of the route will be across sand bars or shallow water, the cable should be placed in a trench of sufficient depth to minimize the likelihood of its being damaged by ice or debris.

3.02 Care should be taken in excavating to ensure that piling or wharves are not undermined or weakened. The excavating may be done by a dredge, sand pump, hydraulic jet or other means adaptable to the conditions.

3.03 In cases where the waterway is not subject to dredging operations, the cable may be laid directly on the bottom, provided, of course, there will be no likelihood of its being damaged by ice or debris.

4. SHIPPING ARRANGEMENTS FOR CABLE

4.01 Submarine cables are usually shipped from the factor on special steel reels loaded on flat cars or in boats. A reel loaded on a flat car is shown in the following figure.



4.02 The types, sizes and weights of submarine cable reels (without cable) are shown in the following table.

STANDARD SUBMARINE CABLE REELS

Reel Number	Diameter of Drum (Inches)	Width of Drum (Inches)	Overall Diameter of Reel (Inches)	Approximate Weight of Reel (Pounds)
481	42	40	84	1012
482	48	53	96	2241
483	48	80	96	4636
484	48	107	96	5701
485	48	134	96	6342

Note:-

All reels, except the No. 481 are equipped with a spindle bar.
For the No. 481 Reel use 3 in. double extra strong pipe
3 1/2 in. O. D.

4.03 Arrangements should be made to ship the cable to a destination at which adequate facilities will be available for handling the reels and cable as outlined in the succeeding paragraph.

5. HANDLING CABLE AT DESTINATION

5.01 When the cable will be laid from a boat or barge, it is desirable that the freight car be switched to a track on a wharf or dock so that the cable can be placed on the boat with the minimum amount of labor. If the shipping reels are to be loaded onto the boat or barge, it is desirable to have available a crane of adequate lifting capacity on the dock for raising the cable reels and placing them on the supports. In some cases the boat used for laying the cable may be equipped with a mast, boom and winch suitable for this purpose so that the provision of a crane will not be necessary. Where equipment of this nature will not be available at the dock, jacks should be provided on which the reels can be mounted.

5.02 Where conditions will permit, the cable may be placed by pulling it across the waterway with a winch line so that the use of a boat will not be required. In such cases it is desirable, if possible, to place the car on a railroad siding near the location of the crossing so that the cable can be pulled from the reel mounted on jacks on the car.

5.03 Where a railroad siding is not available in the vicinity of the crossing, or where the reel has been delivered by boat, the cable may be hauled from the freight car or wharf to the job by means of a truck similar to that employed for handling heavy blocks of stone or safes or on low platform trailers. In such cases where a crane is not available for transferring the cable reel to the truck, skids and tackle should be provided for loading the reel from the car or wharf onto the truck and unloading from the truck.

6. CABLE CROSSING SIGNS

6.01 When a submarine cable is placed across a navigable waterway, signs should be placed near the points where the cable enters the water, to indicate the presence and approximate position of the cable.

6.02 So far as practicable, it is desirable to provide signs of such size that the lettering on them can be read from the ship channel. This, of course, will not be feasible in the case of very wide waterways, and in such cases the sign should be sufficiently large to attract attention even though the lettering cannot be read from the channel without the aid of glasses.

6.03 The general appearance and wording of such signs is illustrated below.

**CABLE CROSSING
DO NOT ANCHOR**