

CABLE SPLICING - UNDERGROUND  
CABLE ARRANGEMENT IN MANHOLES

NOTES CONCERNING THIS ADDENDUM

This addendum has been reissued to provide new information relative to the racking position of cables in manholes due to the additional space required for large mechanical splice cases used on underground cables, and provides a minor change in the method to be used to support lead sleeve splices where sagging may occur.

The following Paragraphs should be marked "See Addendum" and treated as indicated:

Paragraphs 1. 03 through 1. 11	- Added
Paragraph 2. 03	- Replaced
Paragraph 2. 04	- Added
Paragraph 3. 01	- Supplemented
Paragraph 4. 01	- Supplemented

1. GENERAL

1.03 Racking Space

- (a) A minimum space of 15 inches shall be maintained between the manhole floor and the center of the bottom cable, and 21 inches between the roof of the manhole and the center of the top main cable for racking stub and lateral cables.
- (b) In loading manholes the bottom cable should be racked approximately 46 inches above the floor.

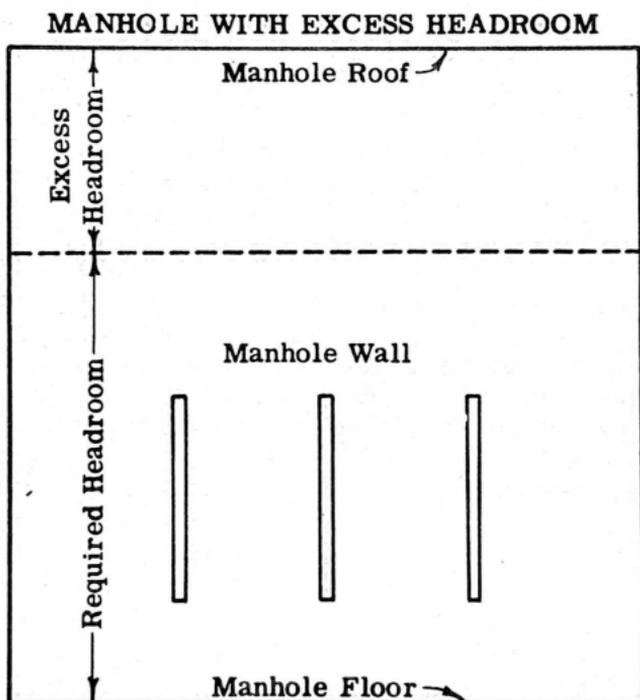
(c) Where sufficient wall space is available, cables in manholes will usually be racked on centers vertically, where either single or double racking is employed, using the following spacing:

Staggered splices	7 1/2 inches*
Non-Staggered splices	9 inches*

\*Loading splices should generally be racked at 10 1/2 inches on centers vertically.

#### 1.04 Racking Position

In general, cable racking positions shall be figured from the roof of the manhole downward regardless of the type or size of the manhole. Where manholes with excess headroom are involved, the position of the top main cable should be determined with reference to the required headroom only (see sketch). To determine required headroom see G43.110.1, Manholes - General.



#### 1.05 Ducts Entering at Different Levels

Where the main conduit structures enter the manhole at different levels the cable should be so arranged that an equal amount of the required bending will be introduced at each end, except in

cases where existing cables have already established a different pattern. When the difference between the vertical midpoint of the two main conduit structures exceeds 3 feet, the matter shall be referred to the supervisor for consideration.

#### 1.06 Difference in Number of Ducts

Where there is a difference between the number of ducts in the two main conduit structures entering the manhole, the cable racking positions should be determined with reference to the end containing the larger number of ducts.

#### 1.07 Three Wide Duct Structure

Where a three-wide duct structure enters the manhole, consecutive cables from the center ducts should be racked on opposite walls. The cable from the top center duct should occupy a top racking position and the cable from the lowest center duct a bottom racking position. Facing in the direction of the C.O., the cable from the top center duct should be racked on the left wall of the manhole. The cables from center ducts in the upper half of the duct structure should be racked above the cables from adjacent outside ducts, and in the lower half of the duct structure, below the cables from adjacent outside ducts.

#### 1.08 Three Rack Manhole

In a three rack manhole, staggered bay splicing is to be preferred to center rack splicing. However, where limited bending space exists it may be advisable to center rack for splices in all cables in order to reduce the severity of the bends, even though the established pattern in the manhole may be staggered-bay splicing.

#### 1.09 Cable Hooks

After the splice has been completed the cable shall be placed in its permanent racking position and supported with cable hooks at each cable rack. In some cases it may be necessary to provide a lead shim between the cable hook and the cable or sleeve in order to obtain proper alignment. The shim shall be made of scrap lead and held in place by passing a strip of lead sheathing around the shim and hook and securing to the under side of the cable hook.

### 1.10 Racks Mounted Flush to Wall

In existing manholes where the cable racks are mounted flush to the wall, the cables should be racked on 7-1/2 inch cable hooks.

### 1.11 Sleeve Support

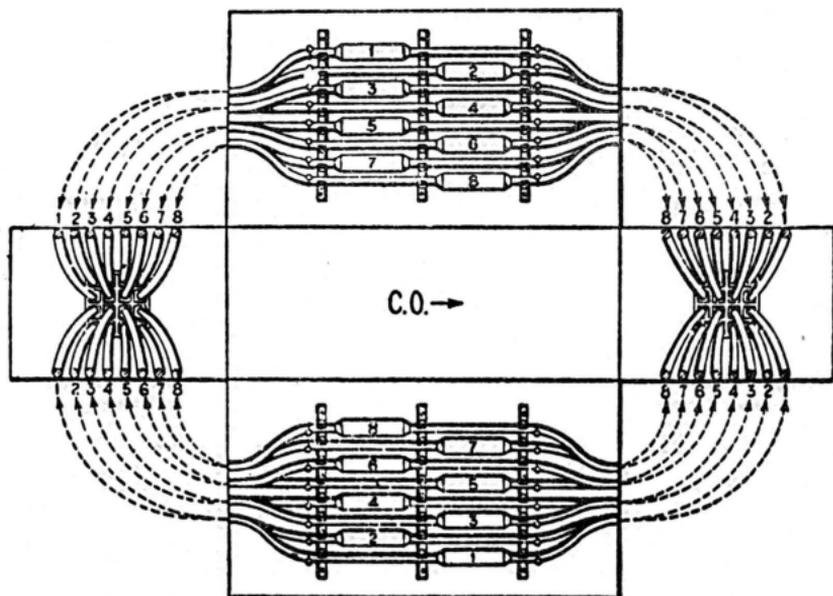
Where the distance between the cable racks, size of the cable and lead sleeve indicate that sagging of the splice may occur, the splice should be supported in the following manner.

(a) Place a length of 3/4 inch Galvanized Iron Pipe above and ← parallel to the lead sleeve to be supported, long enough to extend 1 inch beyond the cable hooks which will support the pipe. Cable hooks supporting the pipe should be placed in the same vertical position on the racks and in the position that will allow the lead sleeve to be supported as nearly as possible in its proper racking space.

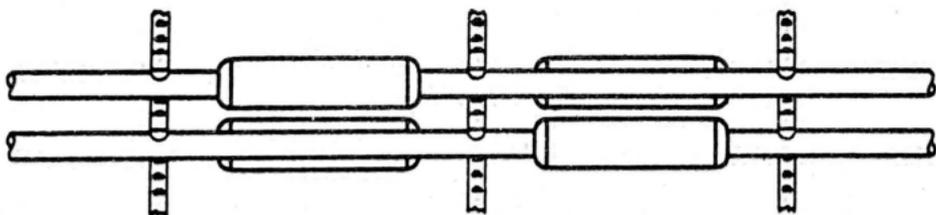
(b) Secure the lead sleeve to the pipe by placing two B Lashed Cable Supports approximately 1 inch from each wiped joint. The supports shall be placed with the first wrap around the pipe and three wraps around the lead sleeve and pipe. The supports should be placed tightly so that no space is left between the pipe and the lead sleeve. Place lead shims, as specified in Paragraph 1.09 of this addendum, on the cable hooks supporting the cable on either side of the lead sleeve, if required, in order to provide proper alignment and additional support for the cable and sleeve.

## 2. CABLE ARRANGEMENT

### 2.03 Single Racking - Staggered Splices



### 2.04 Double Racking - Staggered Splices



## 3. CABLE ARRANGEMENT - THREE-WAY MANHOLE

3.01 The paragraph references in the second sentence shall be changed to read Paragraphs 2.02 and 2.04.

## 4. CABLE ARRANGEMENT - FOUR-WAY MANHOLE

4.01 The paragraph reference in the second sentence shall be changed to read Paragraph 2.04.