

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

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MANHOLE COVERS
REMOVING AND REPLACING

Part	Page
1. General	1
2. Safety Precautions	1
3. Removing Manhole Covers	2
Round Covers	2
Rectangular Covers	7
4. Replacing Manhole Covers	8
Round Covers	8
Rectangular Covers	10

1. GENERAL

1.01 These instructions describe the removal and replacement of manhole covers using the standard Manhole Cover Hooks. The wide variety of old style covers still in service precludes illustration of every type and, as a consequence, the instructions deal only with those more commonly encountered. In general, however, observation of the safety principles included herein should promote safe handling regardless of the type of cover involved.

2. SAFETY PRECAUTIONS

2.01 Before removing the cover of a manhole located in a traffic area or where an open manhole may be a hazard to pedestrians, place warning and guarding devices of such type and in such manner as to furnish adequate protection against accident. On completion of the work in a manhole, replace the cover before removing the guarding and warning devices. Appropriate methods for use in guarding open manholes under various conditions of exposure are included in G10.224.1.

2.02 Manhole covers are heavy and the precautions in the instructions for handling them should be carefully observed to avoid injury to the employee. Generally two men, each equipped with a Manhole Cover Hook, are required in removing the larger covers.

2.03 If snow, ice or other surface conditions make footing around the manhole opening insecure, clear the working area with shovel or broom. If this is impracticable, scatter

ashes, sand or other suitable material around the opening to ensure firm footing.

2.04 Do not use an open flame or salts to thaw ice around or over a cover. An open flame is hazardous because of the possibility of an explosion in the event a combustible mixture is present in the manhole. Salt solution seeping into the manhole may contribute to cable corrosion. To remove ice from a cover, use a hardened bronze cold chisel. A tool of this type will not strike sparks as might happen with a steel chisel.

2.05 Because of the hazard of sparks, never strike a seated cover directly with a steel or iron implement. To loosen a cover which does not lift readily, first make certain that it is not secured by a locking device. Then place a block of wood on the cover near the rim and strike it with a heavy hammer. Do this at several points around the circumference while another workman pries the cover with a bar or manhole hook inserted in one of the hook holes.

2.06 In moving covers always use manhole hooks; never place the hands under a cover for the purpose of moving it. All lifting should be done with the leg and arm muscles, not with the back. Pay particular attention to the position of the feet, always placing them so as to be clear in the event the cover should drop.

2.07 Ordinarily the cover should be left near the opening if it will not be a hazard to workmen, pedestrians or vehicles. Otherwise skid the cover to a safe location, providing a warning signal if such seems advisable.

3. REMOVING MANHOLE COVERS

3.01 After appropriate precautionary measures have been taken, the manhole cover may be removed, generally by two men working as described in the following paragraphs. Use the pair of hook holes on the side away from moving traffic, if practicable. Otherwise endeavor to move the cover in line with the direction in which traffic is moving. The object in removing the cover in this manner is that, in the event of hook slippage, any tendency to fall will be away from traffic rather than toward it. It also affords better observation of on-coming traffic while in the act of removing the cover.

Round Covers

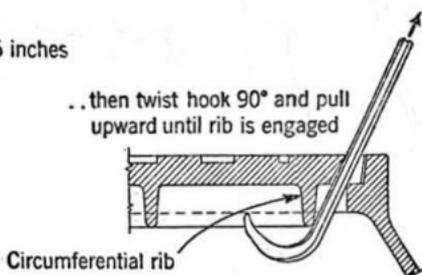
3.02 Round type manhole covers furnished with hook holes in the rim are removed as follows:

- (1) The manhole hook is entered with the shank in a position tangential to the cover until the hook end has passed below the outer circumferential reinforcing rib of the cover. The hook can then be turned and raised to engage the rib.



Insert point 4 or 5 inches
into opening...

... then twist hook 90° and pull
upward until rib is engaged



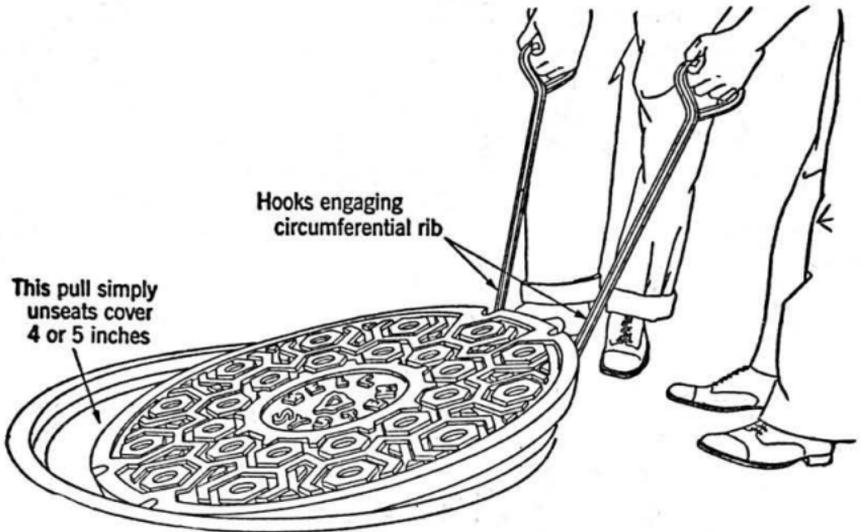
(2) If the hook holes are too small to permit entering the manhole covers far enough to engage the reinforcing rib, use the point of one hook to pry the cover at the hook hole and raise it while the second hook is entered far enough to engage the rib. Then hold the cover with this hook while the first hook is being engaged. Be sure that the hooks are engaged with the rib before starting the pull.



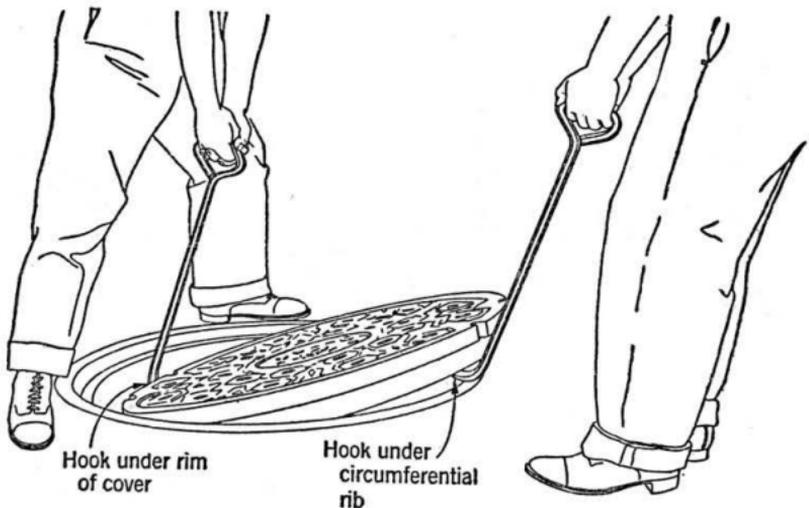
Knees
slightly
bent

Obtain secure footing
and place feet solidly
in position to lift
with leg muscles

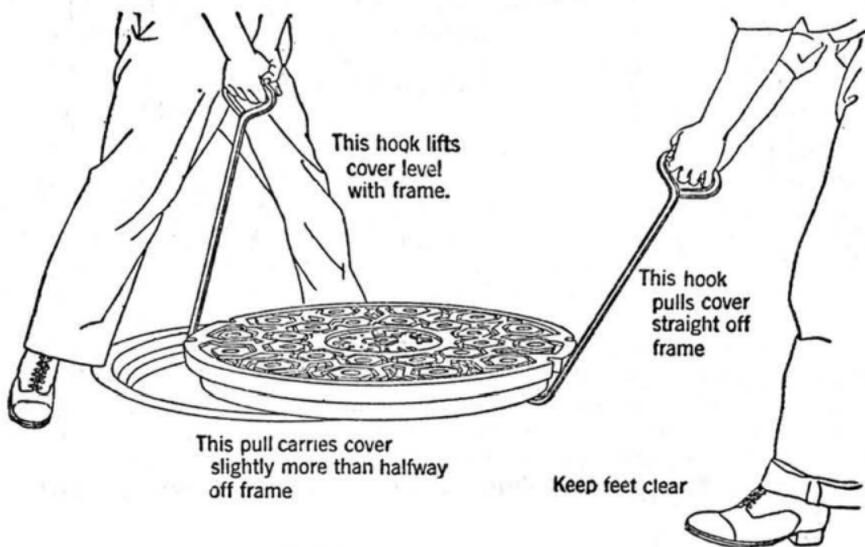
- (3) The cover should then be unseated approximately 4 inches by the two men pulling with their manhole hooks.



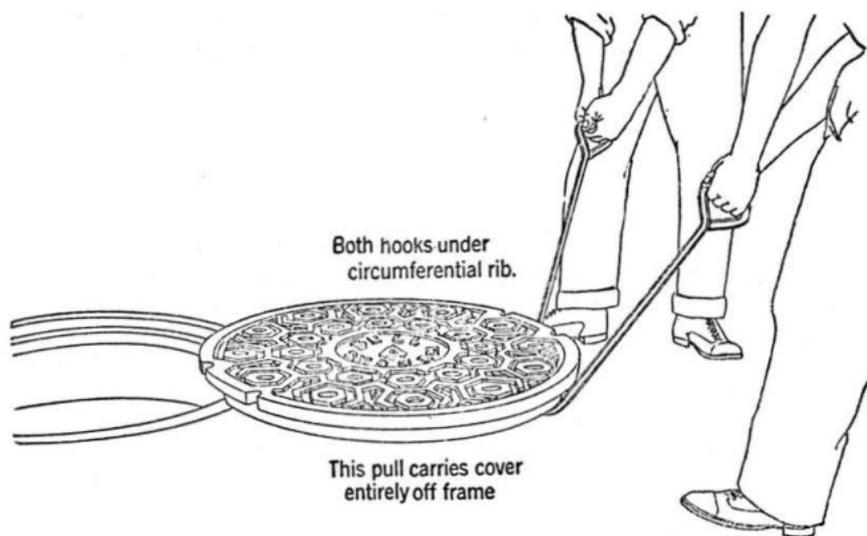
- (4) While one workman holds the cover in the position shown in the foregoing, the other workman releases his manhole hook, moves around to the opposite side and, while facing the first man, engages his hook under the rim of the cover as shown.



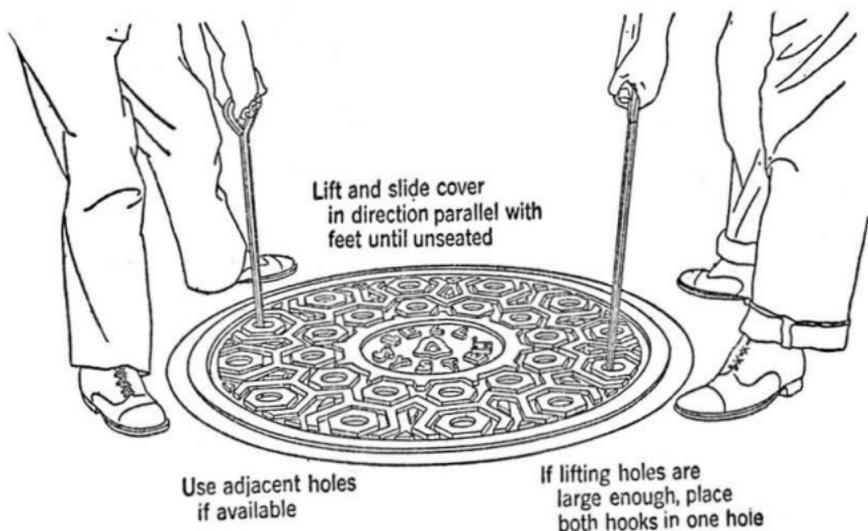
(5) The man in the original position now pulls while the other lifts his side of the cover level with the rim of the frame and also assists in pulling to the extent permitted by his position. The pull should be directly off the frame. Any attempt to swing the cover by other than a direct pull may cause the manhole hooks to slip. It is not necessary that this pull carry the cover completely clear of the frame, only that less than half its weight be left overhanging the opening at the completion of the pull.



(6) While the man on the pulling side still has his manhole hook engaged, the other workman moves around and engages his hook under the reinforcing rib. The men then assume positions so that the cover can be skidded between them and, with feet spread, pull the cover clear of the frame. Both men then pull the cover to a location where it will not interfere with work operations or be a hazard to vehicular or pedestrian traffic. The hooks are then disengaged and placed out of the way.



3.03 **Other round type covers** may have lifting holes in the surface of the cover instead of notches in the rim. When removing covers of this type insert the manhole hooks in the holes and lift to unseat the cover about 4 inches. One hook is then engaged with the reinforcing rib on the underside of the cover to hold the cover unseated. Thereafter, proceed as in 3.02 (4) and succeeding paragraphs.

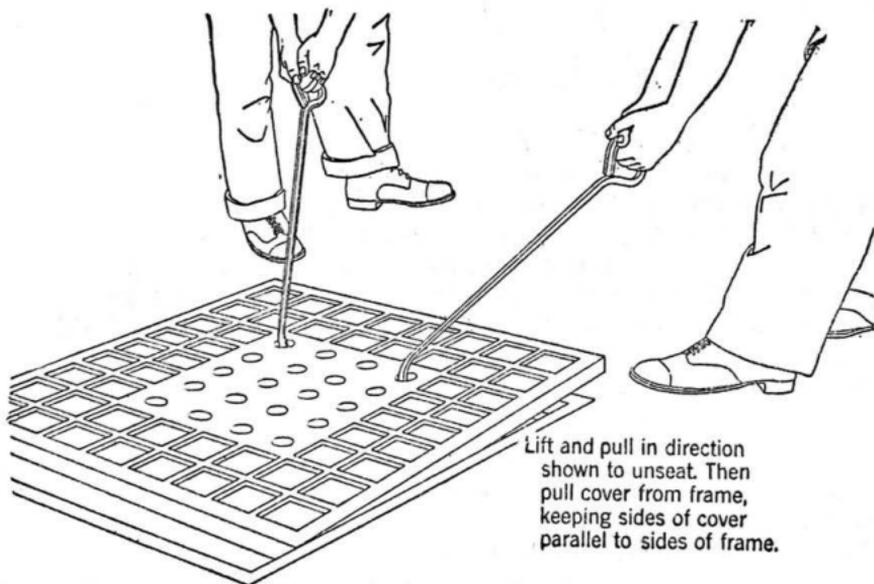


3.04 The Type R cover has one hook slot in the surface of the cover approximately 4 inches in from the rim. This cover can be removed by one workman by inserting a manhole hook in the slot, lifting, and sliding the cover from the frame.

3.05 The inner covers of manhole frames so equipped are removed by unlocking and removing the padlock from the locking bar screw, if one is used, removing the saddle plate and loosening the locking bar screw. The screw can be turned with the point of the Manhole Cover Hook or any suitable tool. When the locking bar is free, disengage it from the locking bar catches and remove it. The inner cover can then be lifted out, using two manhole hooks to engage either the handles or the hook holes in the ribs of the cover.

Rectangular Covers

3.06 In removing rectangular type covers, two workmen should insert their manhole hooks in the vent holes located along the narrow edge of the cover on the side toward which they wish to pull the cover. Both workmen then lift and pull slightly toward themselves to unseat the cover. Having unseated the cover, they then pull from the narrow side and remove the cover from the frame. In removing a rectangular cover, care should be exercised to keep the edges of the cover parallel to the sides of the frame while sliding the cover along the frame seat in order to avoid dropping the cover into the manhole.



Lift and pull in direction shown to unseat. Then pull cover from frame, keeping sides of cover parallel to sides of frame.

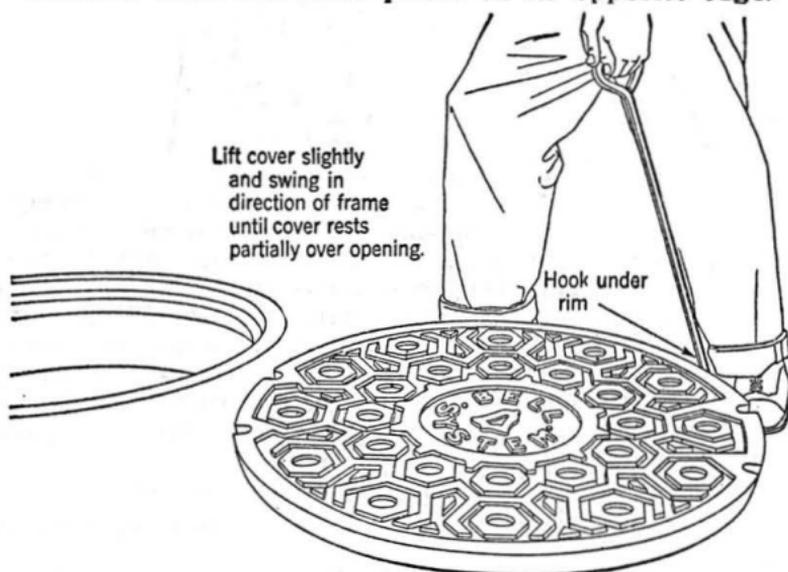
4. REPLACING MANHOLE COVERS

4.01 Remove all loose material from the frame seat and from the sides and seat of the cover so that the cover will rest evenly in the frame. The Manhole Cover Hook or other suitable tool can be used for this purpose.

Round Covers

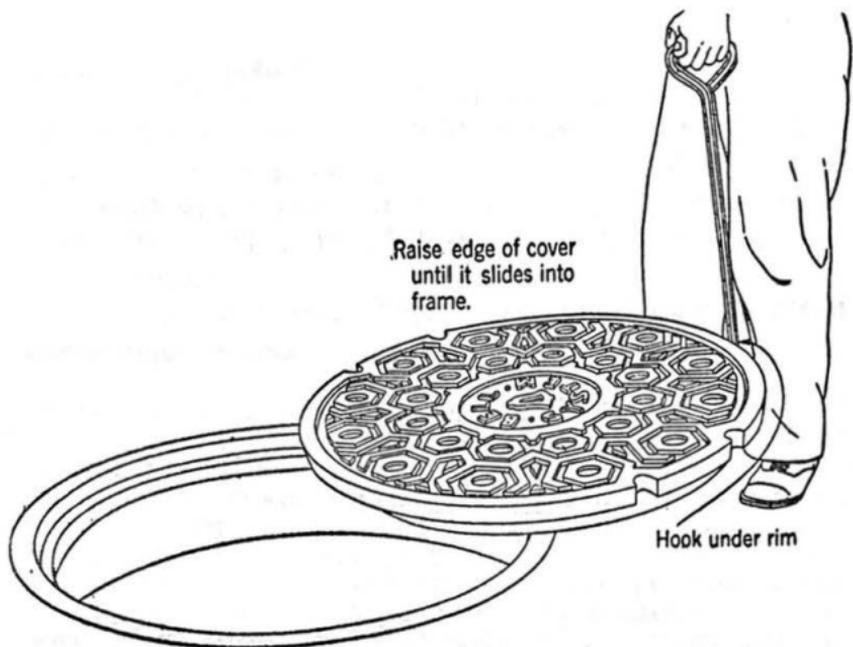
4.02 If the cover has been left near the manhole opening, it can be replaced generally by one workman as follows:

- (1) Stand slightly over the cover while facing approximately at right angles to the line on which the cover is to be moved and with feet spread well apart.
- (2) Place the point of the manhole hook under the rim of the cover, lift slightly and swing the cover toward the manhole while the cover pivots on its opposite edge.

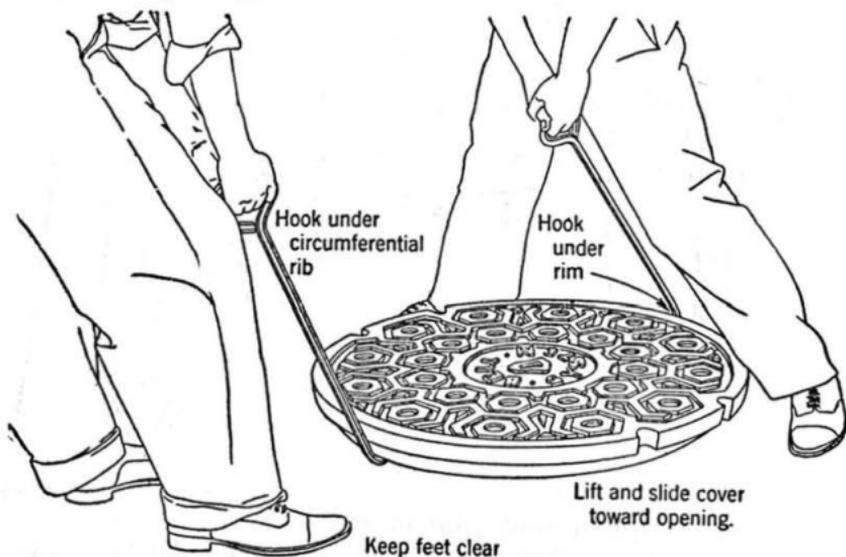


- (3) Change to the opposite side and repeat until the cover rests partially over the opening of the manhole.
- (4) Place the hook under the rim of the cover at the point farthest from the opening and lift until the cover slides onto its seat.

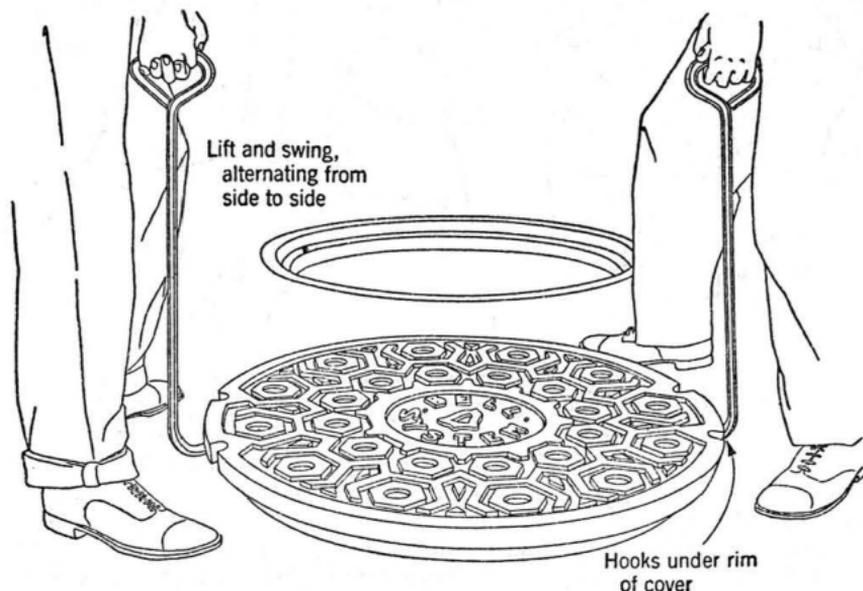
Note: When replacing the outer cover of a frame fitted with a locking bar and screw do not allow the cover to strike the locking bar screw in sliding the cover into the opening. A heavy blow may break the screw or otherwise render it unfit for use. The forward edge of the cover should be guided with a hook, if necessary, until it has cleared the screw.



4.03 If the cover has been left several feet or more from the manhole, it should be skidded to the opening by two workmen pulling with manhole hooks. One man engages the reinforcing rib preferably at one of the hook holes nearest the manhole opening. The other man engages his hook with the rim on the opposite side, whereupon both men lift and pull the cover toward the opening.



4.04 On reaching the opening the cover can be placed finally on the frame by one or both men handling the cover as described in 4.02.

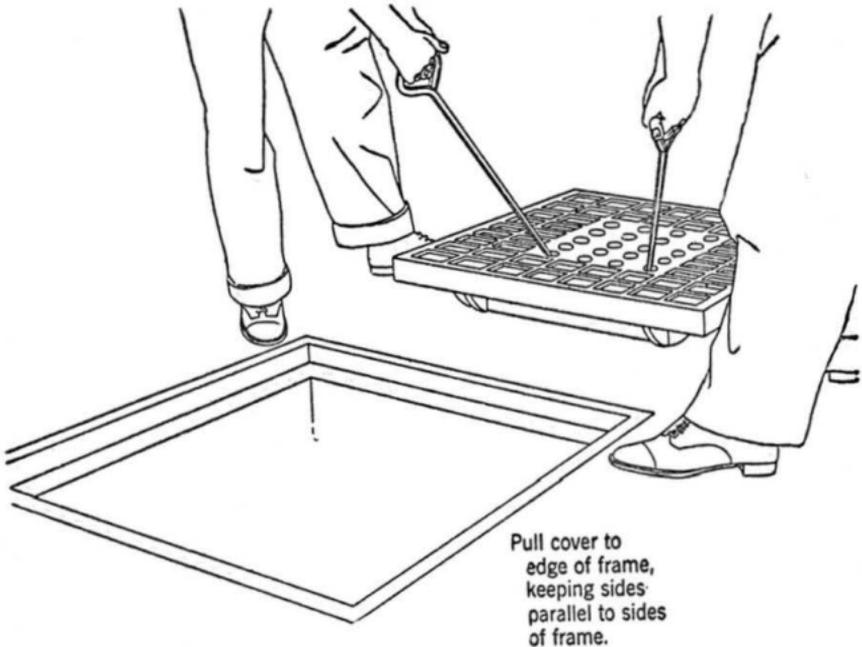


4.05 Inner covers should be inspected to see that the rubber gasket, if present, is clean and properly held by the retaining lug. Remove loose material from the inner cover lip and set the cover in place. Place the locking bar in the catches on either side of the frame and turn down the locking bar screw until the inner cover is firmly seated and the locking bar is secure in the catch at each end. Place the saddle plate over the screw and snap the padlock on the eye of the screw, if the cover is locked in this manner.

Rectangular Covers

4.06 To replace rectangular manhole covers, proceed as follows:

- (1) Place manhole hooks in the vent holes along the narrow edge of the cover on the side in the direction in which the cover is to be moved.
- (2) Pull the cover to the edge of the opening with the long sides of the cover approximately in line with the long sides of the frame.



- (3) The workmen then take positions, one on either side of the frame, and carefully work the forward end of the cover into the frame seat. Then the cover is slid along the frame seat while keeping the edges of the cover parallel to the sides of the frame at all times.
- (4) Both men should pull evenly on the cover until it is properly seated.

Caution: Extreme care should be exercised in replacing rectangular covers to prevent the cover from twisting and falling into the manhole.