UTILITY POLICY NO. 2016-1

CRITERIA FOR RAISING UTILITY MANHOLE RIMS IN PREPARATION FOR PAVING PROJECTS

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Purpose and Scope:
The purpose of this policy is to establish criteria for raising utility manhole rims in preparation for MaineDOT paving projects. Common methods for raising manhole rims include removing and resetting manhole frames with brick and mortar, removing and resetting manhole frames using flat, doughnut-shaped composite risers to raise the base of the manhole frame, and using ring inserts of various heights and materials set into the existing manhole frame. This policy discusses when and where these methods may or may not be used, material requirements, and other construction considerations.

Standard Manhole Raising Method:
In accordance with Standard Specification 604.04, Altering, Adjusting, and Rebuilding Catch Basins and Manholes, the standard method for raising manholes is to excavate, remove and reset the entire manhole top frame. This is typically accomplished by using brick and mortar to establish slope and grade, or breaking up the existing brick and mortar and rebuilding to the new slope and grade. The final construction step is backfilling and paving around the manhole frame.

The standard manhole raising method is one of two best methods in terms of long term stable construction and may be used at all locations on state and state-aid highways. This method may also be used along any highway corridor under any legal speed limit without restriction.

Raising Manholes Using Composite Risers:
A new method incorporating flat doughnut-shaped composite risers fastened to the top of the concrete cone and bottom of the manhole frame has recently been used in construction. Composite risers constructed in this manner and location are fastened with some form of epoxy. This method typically involves excavating and removing the manhole frame, placing and fixing the composite riser in place with epoxy in accordance with the manufacturer's recommendations, and resetting the manhole frame over the composite riser. The final construction step is backfilling and paving around the manhole frame.

Raising manholes with Composite Risers is the second of the two best methods that result in long term stable construction and may be used at all locations on state and state-aid highways. This method may also be used along any highway corridor under any legal speed limit without restriction.

Raising Manholes Using Ring Inserts:
A common construction practice to raise manholes is to use ring inserts placed inside the existing manhole frame top. The ring inserts are available in both metal and composite materials. The advantages of this method are that the rings come in different heights and their use can minimize construction requirements and time.

However, there also are disadvantages with this method which, based on MaineDOT experience with ring inserts, requires the Department to restrict their use in some cases. The use of manhole ring inserts may, or may not, be allowed in accordance with the following requirements:

1) Materials
   i. Standard Detail 604(18) requires that all utility structures (manholes, gate valve boxes, vault covers, etc.) meet ASTM A48, Standard Specifications for Gray Iron Castings. ***Therefore all ring inserts must be made of iron.***
   ii. Ring inserts should not be welded to the manhole frame because the cast iron frame will become brittle and fail prematurely.
   iii. Ring inserts shall be fastened to the manhole frame using liquid steel epoxy such as Loctite Fixmaster Steel Liquid or equivalent. The epoxy shall be installed in accordance with the manufacturer's recommendations.

2) Where Ring Inserts May/May Not Be Used
   i. MaineDOT may, at its sole discretion, allow the use of a single manhole ring insert to raise manholes on state and state-aid highways. ***Multiple ring inserts will not be allowed.*** The single ring insert may be any height up to a maximum of 2 inches tall.
   ii. ***Manhole ring inserts may not be used along state and state-aid highway sections where the speed limit is 40 miles per hour or more.*** The standard brick and mortar or flat composite risers beneath the frame and cover must be used at these locations.

3) Construction Requirements For The Use of Iron Manhole Ring Inserts
   i. Wherever iron ring inserts are used to raise manhole top elevations, the rings must be fastened to the existing manhole frame using liquid steel epoxy as described above. The liquid steel material shall be placed evenly around the entire manhole frame before placing the ring insert. ***Unbonded ring inserts will not be allowed.*** If the manufacturer's recommended construction practices result in loose or unacceptable manhole cover restraint, one of the other methods above (standard manhole raising or composite risers) must be used.

4) Responsibility for Repair of Manhole Frame and Ring Inserts
   The Utility Owner is responsible for the maintenance of manhole frames and any ring inserts used to adjust slope and grade.

5) MaineDOT Rights and Authority Reserved
   MaineDOT reserves the right at its sole discretion to use manhole ring inserts to adjust manhole frames to slope and grade if and when it is deemed in the best interest of the of the traveling public, whether at a location allowed under this policy or not.