

ENGINEERING DIRECTIVE

Patricia A. Leavenworth, P.E. (signature on Original)

CHIEF ENGINEER

Manholes and Catch Basins

This Engineering Directive reinforces MassDOT guidance and policies regarding the design, construction and maintenance of manholes, catch basins and roadway drainage systems, including MassHighway Engineering Directive E-09-003, Hook Lock Grates for Catch Basins, dated June 18, 2009. This Directive supersedes MassHighway Engineering Directive E-07-003, Drainage Structures, dated October 22, 2007.

This Directive also introduces new MassDOT requirements for the installation of bolt-down manhole cover assemblies in specific locations as part of specific construction projects or maintenance operations.

General Guidance

All manholes, catch basins and drainage systems shall be designed and constructed in accordance with the latest editions of MassDOT's *Project Development & Design Guide*, *Bridge Manual*, *Construction Standard Details*, *Standard Specifications for Highways and Bridges*, all relevant addenda, and all relevant directives and memoranda. In addition, MassDOT personnel and construction contractors shall adhere to all manufacturers' recommendations.

Catch basins and manholes shall be located outside of travel lanes or normal wheel paths whenever possible. Personnel shall pay special attention to temporary traffic patterns used during phased construction operations to ensure that catch basins and manholes are located outside of travel lanes or away from the normal wheel paths of motor vehicles.

MassDOT personnel and contractors shall ensure that all manholes and catch basins are set to the appropriate grades during all construction and maintenance operations and for completed conditions. All covers and grates shall be supplied by the same manufacturer that supplied each applicable frame, and all components shall be in accordance with MassDOT material standards and specifications.

The installation of drainage structure risers is prohibited on all MassDOT roadways and facilities. All manholes and catch basins that require adjustment shall be adjusted with bricks and mortar in accordance with MassDOT's construction standards and specifications. Only MassDOT approved materials and methods shall be allowed.

MassDOT personnel and contractors shall ensure through inspections, routine maintenance and other field activities that manholes and catch basins are in good functional condition, provide reasonable rideability and do not pose any known threat to human health and safety due to disrepair. The following conditions shall be corrected as soon as practical:

- Risers found on existing structures shall be removed and the structures adjusted to the appropriate height using bricks and mortar.
- Frames, grates and covers found to be broken, cracked or compromised shall be replaced.
- Structures found to be collapsed, weakened or compromised in any way shall be rebuilt in accordance with all relevant standards. This includes structures that contain covers or grates that do not sit firmly in their frames. Covers and grates that noticeably (by sight or sound) rock or shift when impacted by a motor vehicle shall be removed, cleaned (including the frame) and reset. Covers and grates that continue to rock or shift after this procedure shall be replaced immediately.

If corrective actions cannot be performed immediately due to material supplies, contractor availability, traffic conditions, etc., MassDOT personnel shall take all reasonable actions to protect the public from any potentially hazardous conditions until such corrective actions can be performed.

Bolt-Down Manhole Cover Assemblies

Effective immediately, bolt-down manhole cover assemblies (cover and frame) shall be installed in place of standard manhole cover assemblies on MassDOT roadways with a posted speed limit or posted advisory speed of 45 MPH or higher as part of all construction or maintenance operations that require new manholes or adjustment of existing manholes.

MassDOT bolt-down manhole cover assemblies shall consist of covers and frames that conform to the size, weight, material and load-carrying requirements in MassDOT Construction Standard Details E 202.6.0, E 202.7.0 and E 202.8.0, and are on the relevant MassDOT Qualified Construction Materials list. Some dimensions of bolt-down manhole covers and frames may vary slightly from those shown on the standard details to account for necessary bolt holes and fastening components.

Covers and frames shall be held securely together by bolting to threaded holes in the frame or to nuts or tumbler devices secured by the frame, by use of hooks attached to the cover or by any other means approved by MassDOT. Locking mechanisms that can only be unlocked with keys or special tools will not be allowed. Gaskets and other sealing devices will not be allowed.

MassDOT bolt-down manhole cover assemblies shall be fabricated and installed in accordance with contract requirements. Designers are responsible for ensuring that the necessary bid items and specifications are included in the contract documents for any projects on which the construction bids have not yet been opened.

For projects on which the construction bids have already been opened, Contractors are responsible for ensuring that all manhole cover assemblies still to be installed under the contract meet the requirements of this Directive. This may require an Extra Work Order.

MassDOT is responsible for ensuring that the requirements of this Engineering Directive are met for all types of manholes cover assemblies, including those that differ from the standard types referenced above.

MassDOT shall reinforce the requirement for bolt-down manhole cover assemblies by including appropriate language in any new Access Permits that may involve the installation or adjustment of manhole cover assemblies located on MassDOT roadways but owned by municipalities, private utility companies or other entities.