

## **GUIDANCE FOR CIRCULAR SAW-CUT AND RELATED PAVING REQUIREMENTS FOR MANHOLE TOPS AND UTILITY COVERS**

**Description:** This work shall consist of adjusting all manhole/utility frames and covers to final grade after completion of final paving. This work shall also consist of circular saw cutting, removing and properly disposing of bituminous concrete pavement, regrading and recompacting the existing granular material, cleaning and application of tack coat on all vertical surfaces, placement of Hot-Mix Asphalt (HMA) at the same thickness as surrounding pavement (minimum 6 inches) and application of hot rubberized joint and crack seal to the entire joint where new pavement meets existing pavement to produce a sealed bond between both. The manhole/utility covers to be adjusted shall be as shown on the Plans, or as directed by the Permit Inspector.

Manhole/Utility frame and cover work shall include the furnishing of new frames and covers, when necessary, to provide flush installation of frame, cover, and bituminous concrete pavement. The use of metal extension rings or precast concrete grade rings is not permitted only if approved by the Permit Inspector. The work shall comply with the utility specifications, details, and approved materials for frames and covers.

**Materials:** Materials shall meet the following requirements:

1. Brick Units: Brick units shall meet ASTM C32, Grade MS.
2. Mortar: Mortar shall be in accordance with FORM 818, Article M.11.04.
3. Plastic Shims: Solid plastic shims shall not exceed a 0.75-inch thickness and shall be made of polypropylene, high-impact polystyrene, or ABS.
4. Frame and Cover: Frame and cover shall be procured from an approved vendor of the respective utility.
5. Bituminous Concrete and Tack Coat: Bituminous concrete and tack coat shall meet the requirements of Section M.04 and shall consist of the following:
  - a. HMA S0.25, S0.375; HMA S0.5 when requested by the Contractor and approved by the Permit Inspector. All HMA shall be Traffic Level 2.
  - b. Material for tack coat and hot rubberized joint & crack sealant.
6. Processed Aggregate Base: Processed aggregate base shall meet the requirements of FORM 818, Article M.05.01.

**Equipment:**

The suggested equipment shall be sized for working within the excavated areas and shall include the following:

1. Compaction Devices: A jumping jack and small plate compactor capable of compacting granular material and bituminous concrete placed around the manhole and manhole frame. Utility covers since of a smaller diameter compaction method and devices must approved by the Permit Inspector.

2. Jack Hammer: A jack hammer with sufficient power to break away and dislodge pavement materials from the existing frame so that it can be removed or reset.
3. Concrete Mixer: A concrete mixer with sufficient power and capacity to mix all mortar needed.
4. Generator: A generator with sufficient power to operate tools such as compaction devices, jack hammers, and mixers.
5. Water Tank: A water tank with sufficient capacity for all mortar mixing for at least a single work shift (if applicable).
6. Metal Detector: A metal detector capable of identifying the location of a manhole/utility cover up to a depth of 18 inches below the pavement surface.
7. Debris Blanket: A debris blanket equipped with a rope and necessary hardware for both lowering into the manhole and retrieval from the manhole. The debris blanket shall be of sufficient size and strength to protect the interior of manhole/utility cover from falling debris during work operations.
8. Hydraulic Loader: A hydraulic loader with sufficient power and stability to perform pavement saw cutting and lifting operations. The loader shall have a minimum 30 gallons/minute hydraulic flow rate. The loader shall be equipped with tracks to maintain stability during all operations. Non-tracked hydraulic loaders and backhoes will be allowed by the Engineer only when equipped with outriggers or another approved stabilization device.
9. Hydraulic Circular Saw Attachment: For manholes a hydraulic circular saw compatible with the hydraulic loader. The saw must be equipped with carbide cutters and have the ability to perform circular cuts through existing asphalt and concrete pavement. A minimum of two circular saws shall be provided. One circular saw shall have a diameter of 48 inches. A second circular saw shall have a diameter of 60 inches. Both circular saws shall be capable of cutting to a depth of up to 28 inches. For smaller utility covers a hydraulic or electric saw shall be used with enough power to accomplish the required work according to the plans and/or provided detail guide sheets. A 20-inch or approved diameter circular saw to remove the pavement around the existing smaller diameter utility cover shall be used to perform the necessary work.
10. Lifting Device: A lifting device that can be attached to the hydraulic loader that is of sufficient size and strength to safely remove and replace the manhole/utility frame and cover.

11. Debris Shield: A debris shield of sufficient size to surround the area of saw cutting. The shield shall be of sufficient height and strength to protect passing vehicles and pedestrians from debris.
12. Hand Tools: Hand tools of sufficient variety to complete all steps of the work, including clean up, excavation, and disposal.
13. 10-foot Straightedge: A Contractor-supplied straightedge per Section 4.06.

**Reset Manhole/Utility Cover:** The reset manhole/utility cover operation shall proceed in accordance with the requirements of the "Maintenance and Protection of Traffic" and "Prosecution and Progress" specifications in the "STANDARDS".

Until frames and covers are set, manhole/utility covers and tops must be kept properly covered to exclude persons, animals, debris, and foreign substances, to the satisfaction of the Permit Inspector.

The Contractor shall use either the 48-inch or 60-inch diameter circular saw to cut and remove the pavement around the existing manhole centered about the casting. For smaller utility covers the Contractor shall use a 20-inch or approved diameter circular saw to remove the pavement around the existing utility cover. Prior to saw cutting, a debris shield shall be placed around the sawcut limits, and debris blanket shall be placed within the manhole. The debris shield and blanket shall remain in use during the entire manhole reset process.

The Contractor shall excavate the area and remove the frame from the existing mortar bed (if applicable). Once the frame, rings, top, and all debris have been removed, the walls or sides of the structure shall be rebuilt by adding or removing brick masonry as necessary to reset the frame and cover to the final grade. There shall be a minimum of two courses of brick mortared in place, not to exceed 18 inches in height, directly under the manhole frame. Plastic shims may be used in addition to brick and mortar when approved by the Permit Inspector. Use of metal extension rings or precast concrete grade rings is not permitted.

All excavated materials shall be properly disposed of by the end of the work shift in accordance with the "STANDARDS", Article 1.10.03.

The existing manhole/utility cover frame and cover shall be inspected, and any existing metal extension ring(s) removed. The Contractor shall confirm the frame and cover will be flush when coupled. If the frame and cover are not flush or are otherwise defective, they shall be replaced with a new frame and cover, to the satisfaction of the Permit Inspector.

The manhole frame shall be set in a full mortar bed and shall match the profile and cross slope of the surrounding pavement surface. The final installation shall be flush with the top of the casting and even with the finished pavement surface (including thin surface

treatments) to within a minus 0.5-inch tolerance below the roadway surface, and the cover shall be even with the top of frame. Manholes/Utility covers set above the elevation of the final roadway surface will not be accepted. Manholes/Utility covers shall be replaced and set to grade approved by the Permit Inspector.

**Pavement Restoration:** Pavement shall be restored to the full depth of excavation as follows:

Regrade the existing granular material at the bottom of excavation and recompact the material with a minimum of 4 passes using the compaction devices. The Permit Inspector will inspect the compacted area and may direct additional passes.

Place and compact processed aggregate base to be even with the bottom of the existing bituminous concrete pavement (maintaining a minimum of 6 inches from the top of existing pavement). Compaction of the granular base material shall meet the density requirements of Article 3.04.03.

The cut sides/walls of the excavated area shall be wiped or swept clean. Material for tack coat shall be applied covering the entire area of all vertical faces and allowed to cure or break prior to having any new asphalt placed.

HMA S0.25 or S0.375 shall be placed in lifts for the smaller utility gate covers. HMA S0.5 shall be placed in lifts for the larger manhole covers, and the final lift shall be placed according to the detail. Pavement placement shall be in accordance with Sub article 4.06.03-6 of the Standard Specifications. It is expected that placement of HMA will require hand work or a combination of equipment and hand work methods and tools to achieve the required results. The Contractor shall confirm that all patch material placed is uniform in appearance without segregation.

The Contractor shall apply hot rubberized joint and crack seal to the entire joint where new pavement meets existing pavement to produce a sealed bond between both.

The Contractor shall confirm that the surface elevation of the finished pavement matches the elevation of the surrounding pavement surface and structures to within 0.25 inch using the 10-foot straightedge.