

ITEM 14646.13 M FORMED-IN CORRUGATED AUDIBLE ROADWAY DELINEATORS (FICARD)

Description. This work consists of forming regular patterns of depressions, termed Formed-In Corrugated Audible Roadway Delineators (FICARDs), into freshly placed concrete shoulders at the locations indicated on the contract documents or where directed by the Engineer, and to the widths and lengths required by these specifications.

Materials. None specified.

Construction Details. The method of installation shall be at the Contractor's option. Satisfactory installations have been obtained by the use of specially constructed manually-guided floats. Whatever the method used, the resulting impressions shall meet the following geometric requirements. Each impression shall have a corrugated cross-section with the trough axes aligned perpendicular to traffic. The depth of each trough shall be approximately 25 mm with a minimum depth of 19 mm. The pitch (distance between adjoining troughs) shall be approximately 125 mm. The width and length of each corrugated impression shall both be approximately 0.6 m, unless otherwise indicated on the plans. The normal spacing of the FICARDs shall be 1.2 m unless indicated otherwise on the plans. The spacing shall be reduced as necessary on either side of joints to ensure that the edge of any impression is no closer than 400 mm to the right of a transverse joint or 900 mm to the left of one as seen facing away from the road.

Where the shoulder joint is at the edge of traveled way, the impressions shall normally be formed-in starting 0.3 m beyond the shoulder joint. Where the shoulder joint is placed 0.6 m beyond the edge of traveled way, the impressions shall be formed with a minimum clearance of 100 mm beyond the joint. The forming and floating operations shall be done in such a manner as to minimize the formation of raised areas or ridges that will project up enough to interfere with snowplowing operation. The maximum allowable projection above the general plane of the shoulder shall be 9 mm. To help minimize the extrusion problem and promote drainage, the Contractor shall complete each FICARD by dragging the form or lute towards the outside of the shoulder for a distance of approximately 300 mm.

Prior to beginning full production work on the shoulders, the Contractor shall demonstrate to the Engineer the ability to achieve the desired indentations by constructing a 30 m representative length of the shoulder and forming in the required impressions.

Method of Measurement. The quantity of FICARD will be taken as the sum of the lengths in meters of the individual segments where they have been satisfactorily installed where indicated on the plans or where directed by the Engineer. Lengths will be measured along the inside edge of the shoulder from the center of the first impression in a segment to the center of the last impression in that segment. Where FICARDs are provided on more than one shoulder, lengths will be measured separately for each segment and added to the sum.

Basis of Payment. The unit price bid per meter shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

ITEM 14646.12 M FORMED-IN NARROW AUDIBLE ROADWAY DELINEATORS (FINARD)

Description. This work consists of forming regular patterns of depressions, termed Formed-In Narrow Audible Roadway Delineators (FINARDs), into freshly placed concrete shoulders at the locations indicated on the contract documents or where directed by the Engineer, and to the widths and lengths required by these specifications.

Materials. None specified.

Construction Details. The method of installation shall be at the Contractor's option. Satisfactory installations have been obtained by the use of specially constructed manually-guided floats. Whatever the method used, the resulting impressions shall meet the following geometric requirements.

Each impression shall have a semi-circular cross-section with a depth of 12 to 19 mm and a length, measured in the direction of traffic, of 170 to 190 mm. The width of the full depth impressions, measured perpendicular to traffic, shall be 400 mm unless specified otherwise on the plans. The center to center spacing of the FINARDs shall be 0.6 m, unless specified otherwise on the plans. The spacing shall be reduced as necessary on either side of joints to ensure that the edge of any impression is no closer than 400 mm to the right of a transverse joint or 900 mm to the left, when viewed looking away from the roadway.

The impressions shall normally be formed-in starting 0.3 m beyond the shoulder joint. Where the shoulder joint is placed 0.6 m beyond the edge of traveled way, the impressions shall be formed with a minimum clearance of 100 mm. The forming and/or floating operations shall be done in such a manner as to minimize the formation of raised areas or ridges that will project up enough to interfere with snowplowing operation. The maximum allowable projection above the general plane of the shoulder shall be 9 mm. After the form has been pressed in the appropriate depth, it shall be removed from the concrete by dragging it towards the outside of the shoulder. This movement should be sufficient to produce roughly a 300 mm long drainage taper.

Prior to beginning full production work on the shoulders, the Contractor shall demonstrate to the Engineer the ability to achieve the desired indentations by constructing a 30 m representative length of the shoulder and forming in the required impressions.

Method of Measurement. The quantity of FINARD will be taken as the sum of the lengths in meters of the individual segments where they have been satisfactorily installed where indicated on the plans or where directed by the Engineer. Lengths will be measured along the inside edge of the shoulder from the center of the first impression in a segment to the center of the last impression in that segment. Where FINARDs are provided on more than one shoulder, lengths will be measured separately for each segment and added to the sum.

Basis of Payment. The unit price bid per meter shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.