

Massachusetts Department of Transportation – Highway Division
Standard Specifications for Highways and Bridges

Table M9.04.1-1: Standard Granite Curbstone Dimensions

Type	Minimum Length	Width at Top	Depth	Minimum Width at Bottom
VA1	6 ft	7 in	17 in. to 19 in.	4 in. (for $\frac{2}{3}$ length)
VA2	6 ft	7 in.	19 in. to 21 in.	4 in. (for $\frac{2}{3}$ length)
VA3	6 ft	6 in.	19 in. to 21 in.	4 in. (for $\frac{2}{3}$ length)
VA4	6 ft	6 in.	17 in. to 19 in.	4 in. (for $\frac{2}{3}$ length)
VA5	5 ft	6 in.	See Plans	5 in. (for $\frac{2}{3}$ length)
VB	3 ft	5 in.	15 in. to 17 in.	3 $\frac{1}{2}$ in. (for $\frac{2}{3}$ length)

Except for the 3 following conditions, 10% of the length of each type of VA curb installed on the project may consist of stones no more than 6 in. shorter than the length specified in either table.

1. Stones used in making closures may be as much as one third shorter than specified in either table, except that for VA5 the closure piece shall have a minimum length of 4 ft.
2. Stones used in making closures on bridge decks at paraffin joints may have one piece, no less than 4 ft between any two paraffin joints or between one paraffin joint and the end of the run of curbing.
3. On curves with radii greater than 100 ft but less than 500 ft, type VA stones may be 4 ft to not more than 6 ft in length.

Type VA stones to be set on a radius of 100 ft or less shall be cut to the required curvature and except for making closures shall be of minimum lengths as follows:

Table M9.04.1-2: Minimum Lengths of Curved Granite Curbstone

Radius	Minimum Length
50 ft to 100 ft	6 ft
25 ft to less than 50 ft	4.5 ft
Less than 25 ft	3 ft

Type VB stones to be set on a radius of 100 ft or less shall be cut to the required curvature.

All VB stones shall have a minimum length of 3 ft regardless of curvature.

The ends of all curved stones shall be cut on radial lines.

Finish

The finish and surface dimensions for the several types of curb shall conform to the following requirements:

A. Type VA Curb.

This type of curbstone shall have a top surface free from wind, shall be peen hammered or sawed to an approximately true plane, and shall have no projections or depressions greater than $\frac{1}{8}$ in. The front and back arris lines shall be pitched straight and true and there shall be no projection on the

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back surface for 3 in. down from the top which would exceed a batter of 4 in. in 1 ft, except on V A5 the back surface shall have no projection or depression greater than 1.5 in.

The front face shall be at right angles to the planes of the top and ends and shall be smooth quarry split, free from drill holes and with no projection of more than 1 in. and no depression of more than ½ in. measured from the vertical plane of the face through the arris or pitch line for a distance down from the top of 8 in. for types VA1 and VA4, 10 in. for VA2 and VA3, and the full depth of VA5. For the remaining distance there shall be no projection or depression greater than 1 in. measured in the same manner.

The ends of all stones shall be square with the planes of the top and face so that when the stones are placed end to end as closely as possible no space shall show in the joint at the top and face of more than ½ in. for the full width of the top and for 8 in. down on the face for Type VA1 and VA4, 10 in. for VA2 and VA3, and the full depth of VA5, after which the end may break back not over 8 in. from the plane of the joint. The arris formed by the intersection of the plane of the joint with the planes of the top and exposed faces shall have no variation from the plane of the top and exposed faces greater than ⅛ in.

B. Type VB Curb.

This type of curbstone shall have a top surface free from wind, shall be pointed, peen hammered or sawed to an approximately true plane and shall have no projections or depressions greater than 0.25 in. The front and back arris lines shall be pitched straight and true.

The front face shall be at right angles to the plane of the top, and shall be smooth quarry split, free from drill holes and with no projection of more than 1.5 in. and no depression greater than 1 in. measured from the vertical plane of the face through the arris or pitch lines for the full depth of the face.

The ends of all stones shall be square with the planes of the top and face so that when stones are placed end to end as closely as possible no space shall show in the joint in the top and face of more than ½ in. for the full width of the top and 8 in. down on the face after which the ends may break back not more than 1 ft from the plane of the joint. On pieces less than 4 ft in length, the ends shall not break back more than 9 in. The arris formed by the intersection of the plane of the joint with the planes of the top and exposed faces shall have no variation from the plane of the top and exposed faces greater than ⅛ in.

M9.04.2: Granite Edgestone

The stones for the several types of edging shall be cut to the dimensions given in Table M9.04.2-1.

Table M9.04.2-1: Granite Edgestone Dimensions

	Type SA	Type SB	Type SC
Minimum Length	3 ft	2 ft	1 ft
Maximum Length	6 ft	6 ft	6 ft
Thickness	5 in. to 8 in.	3 in. to 6 in.	3 in. to 6 in.
Width of Face	12 in.	11 in. to 13 in.	11 in. to 13 in.

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When the edging is used on a curve of 160 ft radius or less the length shall be as directed by the Engineer except that where the edging is to be set on a radius of 10 ft the maximum length shall be 1 ft.

Finish.

Type SA Edging.

The exposed face shall be smooth quarry split to an approximately true plane having no projections or depressions which will cause over 1 in. to show between a 2-ft straight-edge and the face when the straightedge is placed as closely as possible on any part of the face.

If projections on the face are more than that specified they shall be dressed off. The top and bottom lines of the face shall be pitched off to a straight line and shall not show over 0.5 in. between stone and straightedge when straight-edge is placed along the entire length of the top and bottom lines and when viewed from a direction at right angles to the plane of the face, and for the top line only not over $\frac{1}{2}$ in. when viewed from a direction in the plane of the face. The ends shall be square to the length at the face and so cut that when placed end to end as closely as possible no space shall show in the joint at the face of over $\frac{3}{4}$ in., except that where the edging is to be used on a curve having a radius of 10 ft or less the ends of the stones shall be so cut as to provide a finished joint at the face of not more than $\frac{1}{2}$ in. The arris formed by the intersection of the plane of the face with the plane of the end joint shall not vary from the plane of the face or the plane of the joint more than $\frac{1}{4}$ in. Drill holes may show on the exposed face but only along the bottom edge. The sides shall not be broken under the square more than 4 in. and the side adjacent to the grass shall not project over 1 in.

Type SB Edging.

The exposed face shall be smooth quarry split to an approximately true plane having no projections or depressions which will cause over 1 in. to show between a 2 ft straight-edge and the face when the straight-edge is placed as closely as possible on any part of the face.

If projections on the face are more than that specified they shall be dressed off. The top and bottom lines of the face shall be pitched off to a straight line and shall not show over 1 in. between stone and straight-edge when straight-edge is placed along the entire length of the top and bottom lines and when viewed from a direction at right angles to the plane of the face, and for the top line only not over 1 in. when viewed from a direction in the plane of the face. The ends shall be square to the length at the face and so cut that when placed end to end as closely as possible, no space shall show in the joint at the face of over 1.5 in., except that where the edging is to be used on a curve having a radius of 10 ft or less the ends of the stones shall be so cut as to provide a finished joint at the face section of not more than $\frac{1}{2}$ in. The arris formed by the intersection of the plane of the face with the plane of the end joint shall not vary from the plane of the face more than $\frac{1}{4}$ in. Drill holes not more than 3.5 in. in length and $\frac{1}{2}$ in. in depth will be permitted. The sides shall not be broken under the square more than 4 in. and the side adjacent to the grass shall not project over 1 in.

Type SC Edging.

The exposed face shall be smooth quarry split to an approximately true plane having no projections or depressions which will cause over $\frac{1}{2}$ in. to show between a 2 ft straight-edge and the face when the straightedge is placed as closely as possible on any part of the face. If projections on the face are more than that specified they shall be dressed off. The top and bottom lines of the face shall be

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pitched off to a straight line and shall not show over 1 in. between stone and straight-edge when straight-edge is placed along the entire length of top and bottom lines and when viewed from a direction at right angles to the plane of the face, and for the top line only, not over 1 in. when viewed from a direction in the plane of the face. The ends shall be square to the length at the face and so cut that when placed end to end as closely as possible no space shall show in the joint at the face of over 1.5 in., except that where the edging is to be used on a curve having a radius of 10 ft or less the ends of the stones shall be so cut as to provide a finished joint at the face of not more than $\frac{1}{2}$ in. The arris formed by the intersection of the plane of the face with the plane of the end joint shall not vary from the plane of the face more than $\frac{1}{4}$ in. Drill holes not more than 3.5 in. in length and $\frac{1}{2}$ in. in depth will be permitted. The sides shall not be broken under the square more than 4 in. and the side adjacent to the grass shall not project over 1 in.

M9.04.4: Stone for Stone Masonry Walls

Stone for stone masonry walls shall consist of sound durable blasted or field stone free from seams, cracks and other structural defects and of an approved and satisfactory quality and shape.

The stone shall consist of angular blasted or field stones having straight edges without re-entrant angles. The faces shall be flat but not necessarily rectangular in shape.

Individual stone shall have, when set in the wall, no face dimension less than 8 in. Stretchers shall have a depth in the wall at least 1.5 times the rise, and a length on the face at least twice the rise. Headers shall have a length on the face at least equal to the rise. Headers shall hold in the heart of the wall the same size as shown on the face and shall extend at least 12 in. more than the stretchers into the backing.

M9.04.5: Granite Curb Inlets

The granite for curb inlet shall conform to M9.04.0: Curb and Edging. It shall have a horizontal bed and the top shall be free from wind. The stone shall be sawn or peen hammered on top and the front and back edges shall be pitched true to line. The back face for a distance of 3 in. down from the top shall have no projection greater than 1 in. The front face shall be straight split, free from drill holes, and it shall have no projection greater than 1 in or depression greater than 0.5 in. for a distance of 10 in. down from the top, and for the remaining distance there shall be no depression or projection greater than 1 in. The ends shall be squared with the top for the depth of the face finish and so cut that the curb inlet can be set with joints of not more than $\frac{1}{2}$ in.

The granite curb inlet shall be 6 ft in length $\pm \frac{1}{2}$ in., from 17 to 19 in. in depth, 6 in. wide at the top and at least 6 in. wide at the bottom.

Curb inlets to be set on a radius of 160 ft or less shall be cut to the curve required. The joints of all curved curb inlets shall be cut on radial lines.

A gutter mouth at least 3 in. in depth and at least 2 ft in length shall be cut in the front face of the stone as shown on the plans.

Granite curb inlets shall match the adjacent curbing in color.

M9.04.6: Granite Curb Corners

The granite for curb corners shall conform to M9.04.0: Curb and Edging and shall have horizontal beds. They shall match the adjacent curbing in size, color and quality. The front arris lines shall extend through one-quarter of a circle having a radius of 2 ft or 3 ft respectively for Type A or Type B Curb Corner. The back arris line shall be straight. The plane of back shall be normal to top.

M9.04.8: Granite Bounds

Granite bounds shall be of sound granite, the top and bottom faces parallel and the front and back shall be straight split. The bounds shall be cut to the dimensions shown on the plans and shall be plain or lettered as indicated on the plans or as directed.

The stone shall be pointed on the top and on three sides and hammer dressed on the face for a distance of not less than 12 in. below the top. The top shall be 6 in. square and shall have a drill hole in the center 1.5 in. in depth and $\frac{1}{2}$ in. in diameter, with the bottom somewhat flared.

M9.04.9: Dry Stone Masonry

Stone for dry stone masonry shall be hard and durable and free from seams or other imperfections and of an approved quality and shape. No stone shall be less than 6 in. in its least dimension. The stone shall be roughly square on joint beds and faces.

M9.05.0: Lumber and Wood Sheeting

Lumber and Wood Sheeting shall be sound Spruce, Douglas fir, white or yellow Lodgepole or Ponderosa pine, or western hemlock plank, planed on one side and either tongue and grooved or splined. Lumber sheeting shall not be less than nominal 4 in. thick. Wood sheeting shall not be less than nominal 2 in. thick.

M9.05.1: Wood Products

Timber shall conform to the requirements of AASHTO M 168, Wood Products, Structural Timber, Lumber, and Piling.

Preservative treatment shall meet the requirements of M9.05.5: Wood Preservatives.

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Preservative treatment shall meet the requirements of AASHTO M 133 and AWPA U1, except that only preservative materials meeting current EPA or DEP regulations will be allowed.

Certificates of compliance and certificates of inspection bearing the independent inspection agencies verification for each lot of wood must be presented before installation and contain the species of wood, the type of preservative, the retention rate and penetration of the preservative.

M9.05.6: Timber Piles

A. General Requirements.

Timber piles shall conform to the requirements of ASTM D25 and shall be cut from sound and live trees, preferable during the winter season. Piles shall be free from any defects which will impair their strength or usefulness for the purpose intended or that will prevent proper driving.