GRANITE CURBS

URBAN LANDSCAPING PRODUCTS

POLYCOR
NATURAL STONE

Cover page photo : **CALÉDONIA™** granite curbs – Montréal, QC, CAN

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OUR **PROCESS**

QUARRIES

Our **CALEDONIA™** granite quarry in Rivière-à-Pierre, Québec, Canada, is in operation since 1885.

SLABS

The granite blocks are first sawn to desired width.

BLOCKS

Huge blocks of granite are extracted from these local quarries and then shipped to domestic production facilities.

INVENTORY

Polycor consistently maintains an inventory of over 200,000 meters of granite curbs allowing for the shortest lead times.

CURBS

With the addition of the newest plant focused solely on manufacturing granite curbs, Polycor now produces over 460,000 linear meters of curbing per year.

THE **BEST ECONOMICAL** CHOICE

PRESERVE THE ECONOMIC WEALTH OF URBAN HERITAGE WITH GRANITE CURBING

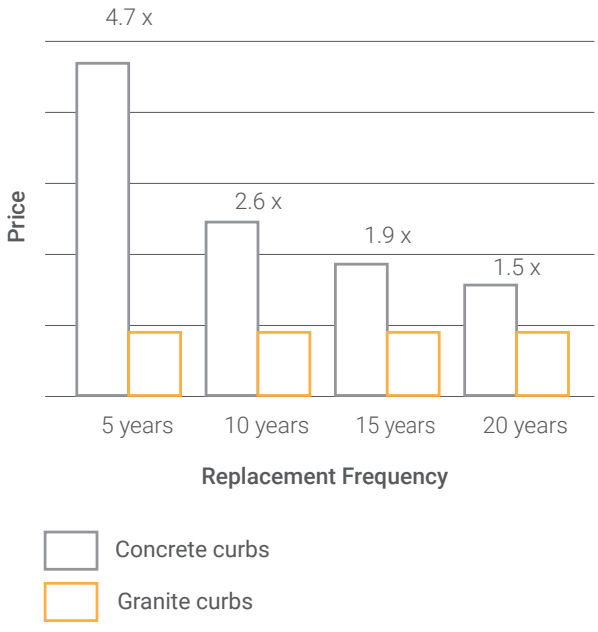
Concrete curbs

Granite curbs

CALEDONIA™ granite curbs offer multiple advantages:

- **An economic choice:** a wise investment in the medium and long term.
- **An enhancement of the urban landscape:** improves the aesthetics of public spaces.
- **Support for sustainable development:** strengthens cities' commitment to responsible growth.
- **Increased infrastructure durability:** significantly extends the lifespan of concrete sidewalks.
- **A polished city image:** reflects municipal pride in its infrastructure and avoids a neglected appearance.

COST COMPARED OVER 40 YEARS
Granite Curbs versus Cast-in-Place Concrete



Building for the long term reduces the overall cost of a project when the expenses of repair and replacement are factored into the equation. Since 1993, the Federal Highway Agency (FHWA) in the United States has required states participating in federal highway infrastructure programs to perform a life-cycle analysis to specify the most economical construction method over the long term. In this comparative analysis, granite is always the winner.

Three independent studies[1] have confirmed this assertion. The first two were carried out by the University of Massachusetts in Amherst, and the third by the Center for Industrial Research of Québec (CRIQ). In each case, the conclusion was the same: in civil engineering, granite is the most economical choice, when its service life is taken into account. These studies are available upon request.

The initial cost of concrete may be less expensive in the short term, but the advantage quickly fades and disappears after several years as maintenance costs begin to accrue. Whereas concrete curbs rapidly degrade and disintegrate, only to require replacement not long after installation, granite curbing will continue to perform over time.

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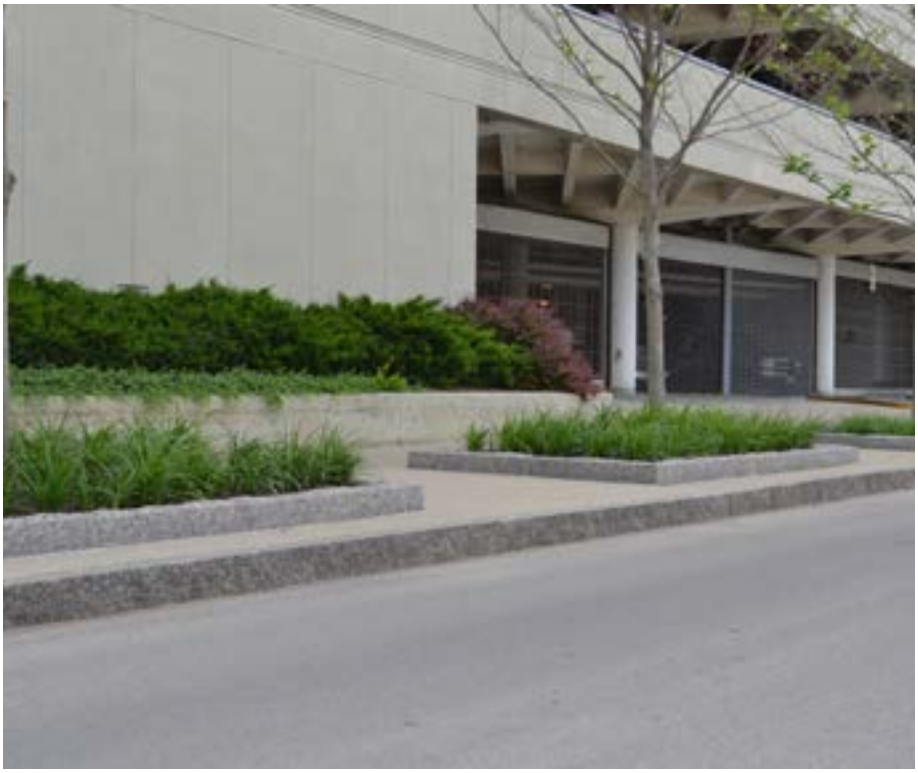
1. **"Lifecycle Cost Comparaison: Granite and Precast Curbing"**, Department of Civil Engineering, University of Massachusetts at Amherst, 1991.

   "Structural Analysis Comparaison: Granite and Precast Curbing", Department of Civil Engineering, University of Massachusetts at Amherst, 1991.

   "Mise à jour d'une étude portant sur l'analyse économique de différents types de bordures de rues", Québec Industrial Research Center (CRIQ), 2012.



CALEDONIA™ granite curbs – LC River South, Columbus, OH, USA

Split face finish

THE **MOST SUSTAINABLE** SOLUTION

Concrete curbs

Granite curbs

ADVANTAGES OF GRANITE

Here are the advantages to consider when purchasing granite curbs:

- Resistance to freeze-thaw cycles
- Resistance to de-icing salts
- Exceptional lifespan: over 100 years
- Resistance to impacts and abrasion
- Negligible water absorption
- Unlimited reusability
- A natural and ecological construction material
- Consistent quality: impervious to temperature variations, human errors, and mixing defects

Moreover, granite generates no waste during refurbishment work, unlike concrete curbs that must be crushed and transported off-site, resulting in additional costs and increased landfill waste.

COMPARISION OF PHYSICAL PROPERTIES

	CONCRETE	GRANITE
Compressive strength	30 to 40 MPa	168.4 MPa
Absorption	5%	0.18%
Lifespan	10 to 20 years	+ 100 years
Reusable	No	Yes

Curbs dating from 1885 in Parloir Street – Québec, QC, CAN

Did you know that as far back as the late 19th century Québec City installed granite curbs on its streets, extracted from Polycor's Rivière-à-Pierre quarry in Québec's Portneuf region. These curbs, still in place today, are in excellent condition despite the countless mechanical, chemical and thermal impacts to which they have been subjected over the years.

This durability proves that granite is not just aesthetically pleasing, but it lasts indefinitely. Unlike cast-in-place concrete curbs which have to be broken and disposed of during urban redevelopment, granite curbs can simply be removed and reinstalled.

Early 20th-century curbs on boulevard Charest – Québec, QC, CAN

During the refurbishment of Charest Boulevard in Québec, **CALÉDONIA™** granite curbs, installed over a century ago, are still in place. They have only been reinstalled a handful of times since they were first set.

Granite guarantees considerable savings. It enriches both the environment with its natural beauty and social heritage with its outstanding durability.

GRANITE
MANUFACTURING

CALEDONIA™ GRANITE

Granite, a crystalline rock, forms from a heterogeneous mixture of quartz, feldspar, and biotite, with its color primarily derived from the dominant feldspar mineral.

Although there are several varieties of granite, they don't all offer the strength and durability required for certain demanding urban applications.

Because of its exceptional strength, **CALEDONIA™** granite has been recognized around the world for over a century as one of the finest materials for street curbs, bridge piers, retaining walls, pavers and street furniture.

Polycor curbs made of **CALEDONIA™** granite have been quarried since 1885 at Polycor's Rivière-à-Pierre quarry, in Québec.

This 900 million year old rock formation produces exceptional granite that is homogeneous, uniform and of sound quality and durability.

CALEDONIA™ granite on Québec Bridge pillars – Québec, QC, CAN

PHYSICAL RESISTANCE

Physical characteristics of **CALEDONIA™**:

- Compressive strength: 168.4 MPa
- Modulus of rupture: 11.7 MPa
- Water absorption (% mass): 0.18%
- Density: 2705 kg/m3

CALEDONIA™ granite

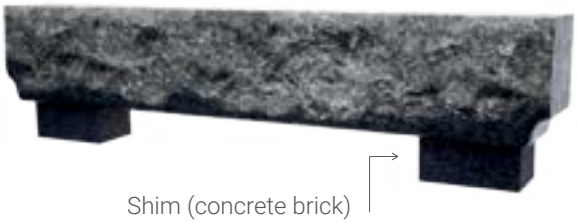
POLYCOR CURB

Top and bottom are sawn. The ends are sawn and broken with clearance at the bottom. The front and back are split, allowing better adhesion to the concrete behind the curb. Unlike a sawn curb, the split front of the curb will not be chipped by impacts from snow plows or other vehicular traffic. The result: fast, precise, aesthetic and economical installation.

Production tolerances:

- Length: variable - 1 meter minimum
- Height: ± 5 mm
- Width: ± 5 mm
- Exposed bump finish: + 12% | - 6% of height
- Joint squareness: 90° ± 1.5

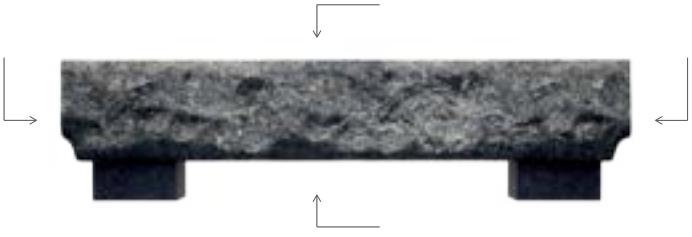
POLYCOR CURBS FINISHES



Shim (concrete brick)

Split face sides to preserve the natural aesthetic of the **CALEDONIA™** granite

Top, bottom, and ends sawn square for easy leveling and precise jointing without mortar



STANDARD INVENTORY
DIMENSIONS

CURB DIMENSIONS

The most common standard size is 150 mm wide x 305mm high (200mm for low curbs). The top, bottom, and ends of these curbs will be sawn while the front and back will be guillotined.

STRAIGHT CURBS

Polycor maintains a consistent inventory of straight curbs with lengths ranging from 1m to 3.5m. The length are variable to maximize the raw material from the quarry and thus optimize the cost of these curbs.

CURVED CURBS

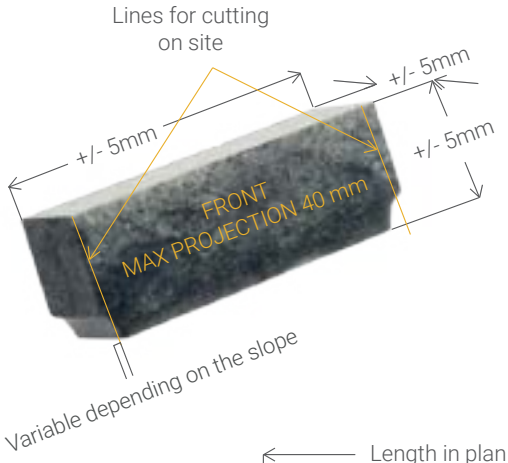
For curved curbs, we have a list of standard radii allowing quick delivery to the site. Note that most of these standard radiuses are always available in inventory. It is also possible to produce non-standard radii, requiring a slight manufacturing delay depending on the time of year.

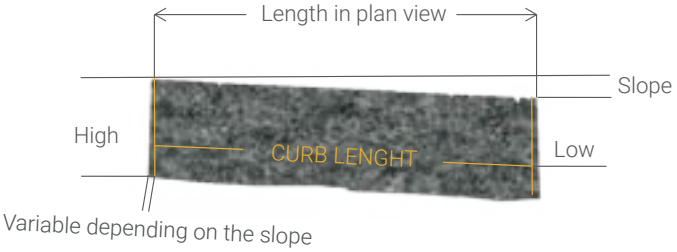
STANDARDS RADIUSES	
R1m	R7m
R1.5m	R7.5m
R2m	R8m
R2.5m	R9m
R3m	R10m
R3.5m	R12m
R4m	R15m
R4.5m	R17.5m
R5m	R20m
R6m	

TRANSITION CURBS

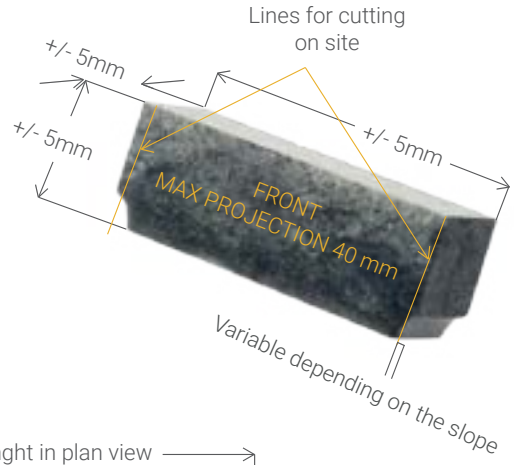
To transition from a high curb to a low curb, we offer transition curbs called “tip-down”. These curbs require two slight cuts on site and are inclined from the high curb to the low curb. These curbs generally have a fixed length of 1m or 1.5m.

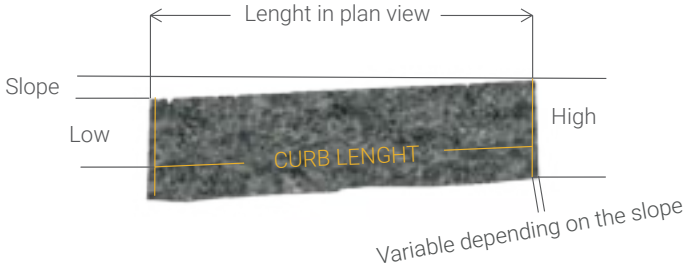
CUTTING DETAILS FOR LEFT TRANSITION





CUTTING DETAIL FOR RIGHT TRANSITION





GRANITE
INSTALLATION

EASE OF INSTALLATION

Polycor curbs are specially designed for quick and efficient installation. No mortar is required between sections, and their sawn top and bottom allow easy leveling and perfect alignment with the adjacent sidewalk. It is recommended to install curbs with a minimum length of 1m for straight sections and 500mm for curved sections (curved curbs can be shorter depending on the radius to be produced).

PREPARATION

Before beginning installation, make sure the subgrade is well-drained and compacted, and that it respects the indicated levels and layouts.

Start by laying a 6” (150 mm) layer of 0-3/4” (0-20 mm) crushed stone and compacting it to 95% of its density.

Level the base course to the required height to allow installation of the curb and its supporting shims.

The crushed stone base course is mechanically compacted to a density of 95%.

LAYING THE CURBS

Concrete wedges on which the granite curb will rest.

Place the curbs on two shims (concrete or granite bricks). The shims allow rapid levelling, while forming a void which will later be filled with concrete backfill.

Ensure not to deviate more than 1/4” (6 mm) from the alignment and levels shown on the drawings.

Install curbs end-to-end with closed joints. Mortar grouting is neither necessary nor recommended, as it will degrade over time.

For heavy-duty installations, use the anchoring system with embedded rebar.

The sawn ends allow for easy jointing of the curbs, eliminating the need for mortar grouting.

CONCRETE BACKFILL

As the curbs are being installed, pour a concrete bed of 20 MPa to consolidate curbs laterally, while filling the void between the spacers.

For curbs without lateral support or solid backfill (as in the case of medians), bring the concrete up against the side(s) of the curb. The aim is to create a solid side fill with a slope equal to the setting angle of the concrete.

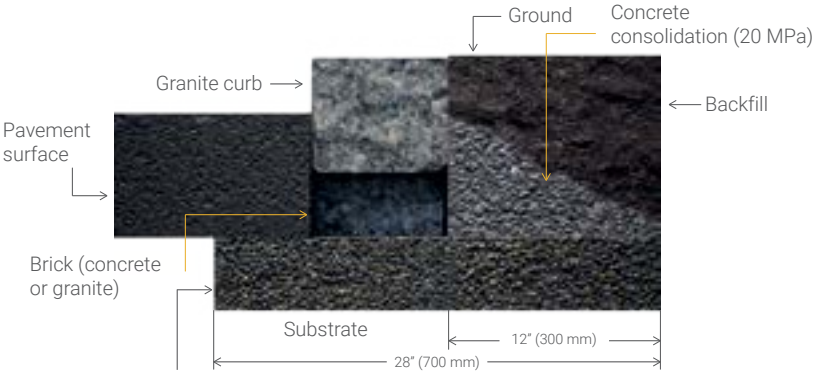
Curbs with anchoring system to sidewalk.

A lean concrete of 20 MPa is poured in place to consolidate the curbs.

PROTECTION

Protect the curbs and allow the concrete to cure for at least 48 hours before beginning any adjacent paving or concrete work.

SECTION VIEW OF GRANITE CURBING



6" (150 mm) thick gravel bed compacted to 95%

TYPICAL
SPECIFICATION

Scan this QR Code to download the BNQ 2520-110 norm related to granite curbs.

CALEDONIA™ GRANITE CURBS

PART 1 – GENERAL INFORMATION

1.1 Related sections

1. Infrastructure work: section [ ]

2. Asphalt concrete surfacing: section [ ]

3. Concrete sidewalks: section [ ]

4. Granite pavers and slabs: section [ ]

1.2 Documents to be submitted

1. Submit manufacturer's data sheet for granite curbs.

PART 2 – PRODCUTS

2.1 Materials

1. Granite: **CALEDONIA™** granite, extracted from Polycor quarry, Rivière-à-Pierre, Québec, Canada, sound and homogeneous with no visible defects, no cracks, conforming to the following requirements:

- Compressive strength: 168.4 MPa
- Modulus of rupture: 11.7 MPa
- Water absorption: 0.18% of the mass
- Density: 2,705 kg/m3

2. Gravel: stone aggregate, 0-3/4" (0-20 mm), approved by [Architect] [Engineer].

3. Leveling blocks: concrete or granite bricks, 2-1/4" (57 mm) x 3-5/8" (92 mm) X 7-5/8" (195 mm). Bricks in good condition that have been rejected for minor defects in appearance may be used.

4. Bars for anchoring curbs: notched reinforcing steel bars, [1/2” (12 mm)] [5/8” (15 mm)] diameter, conforming to CAN/CSA-G30.18 standards, bent in a V shape to form a hook.

5. Anchor bar grout: 100% solid (solvent-free), moisture-insensitive, two-part structural epoxy resin conforming to ASTM C881.

6. Concrete backfill: compliant with the following requirements:

- Compressive strength: 20 MPa minimum after 28 days
- Modulus of rupture: 4 MPa minimum after 28 days
- Cement content: minimum 220 kg/m3
- Water/cement ratio: maximum 0.75
- Coarse aggregate: 0-3/4” (0-20 mm)
- Air content: 5 to 8%
- Slump: 80 mm

2.2 Granite curb production

1. Shape curbs to obtain sections with straight edges and no chipping, in compliance with the following requirements:

- Width and height: 127 x 305 mm or 152 x 305 mm or 152 x 350 mm
- Minimum length: 1 m for the straight edge, 500 mm for the curved edge
- Maximum length: 3.5 m

2. Production tolerance:

- Height: ± 5 mm
- Width: ± 5 mm
- Exposed bump finish: less than 18% of the height projection

  For the visible part, i.e., the portion above the watercourse, the maximum measured amplitude must be +40 mm (bump) and -20 mm (dip). The amplitude of the bumps and dips must be measured using a square placed level with the surface of the curb to be checked.

  When the measured amplitude is non-compliant, four additional measurements must be taken to obtain five results. The measurements must be taken on the curb at a minimum distance of 100 mm from each other. To be deemed compliant, the curb must meet the amplitude requirement for four out of the five measurements.

- Joint squareness: 90°, ± 1.5°.

3. Surface finish:

- 127 x 305 mm and 150 x 305 mm: sawn top and bottom
- 150 x 350 mm: burnt top and sawn bottom
- Front, back: guillotined
- Ends: sawn with clearance at the bottom

4. Curves: supply and shape curved edges according to radius and arc indicated.

5. Other elements: also supply all transitions, shaved curbs for entrances and required nosing, quality and finish similar to regular curbs.

6. Anchoring system: where indicated, provide curbs drilled to accept [1/2" - 12 mm] [5/8" - 15 mm] diameter V-shaped anchoring bars (rebar). Drill the holes at a 45-degree angle with a minimum spacing of 1 meter, with no fewer than 2 holes per curb.

PART 3 - EXECUTION

3.1 Infrastructure

1. Infrastructure must comply with indicated layouts, profiles and levels and must have been approved by [Architect] [Engineer].

2. Ensure soil is drained and compacted to 95% of its density before beginning installation.

3.2 Base course under curbs

1. Spread a 6" (150 mm) thick layer of 0-3/4" (0-20 mm) gravel and mechanically compact to 95% of its density.

2. Adjust the level of the gravel layer to allow subsequent installation of the curbs with their support shims, while respecting the finished levels indicated.

3.3 Laying the curbs

1. Place each curb on two support blocks (bricks). Adjust shims so as not to deviate more than 1/4" (6 mm) from indicated finished lines and levels.

2. Add each curb section, ensuring that joints are tightly closed.

3.4 Installation of anchor bars

1. When installing granite curbs in front of a poured concrete sidewalk, the contractor must place an anchor in the curb to prevent any displacement relative to the sidewalk. A minimum of two anchor points per curb section is required, with a maximum spacing of 1 meter between these points or between a point and the end of the curb. These anchor points must be fixed at least 200 mm from the end of the curb.

2. The anchoring must be done with a 10M rebar, ribbed or threaded, treated with epoxy or galvanized, and bent as indicated on the corresponding plan.

3. When the anchor holes have not been drilled at the factory, it is recommended that the contractor use a template to ensure compliance with the standard plans.

4. The anchoring of the rebar to the granite curb must be done using a structural adhesive made of epoxy resin such as “Sikadur Injection Gel Fast Set” from Sika, or “HYT-HY10” from Hilti.

5. To ensure good adhesion, proper cleaning of the holes, according to the adhesive supplier’s recommendations, must be carried out before applying the glue.

6. The anchors must be installed before the concrete sidewalk is poured, and the setting must be fully completed before this pouring.

3.5 Concrete backfill

1. During installation, pour 20 MPa lean concrete under the curbs. Fill the gaps between the bricks.

2. Where the curb is not supported by a solid sidewalk or roadway, raise the concrete against the back of the curb to form an embankment with an angle equal to that of the set concrete.

3.6 Protection

1. Allow concrete backfill to harden for at least 48 hours before continuing adjacent development work.


CALEDONIA™
JAY WHITE™
STANSTEAD GREY™
CONCORD GRAY™
WOODBURY GRAY™
BARRE GRAY™
Quarries
Plants

The quarries indicated on the map are where Polycor extracts granite for curb manufacturing. The identified factories are those that produce these curbs.

To discover the locations of all our other varieties of natural stones, please visit our website.

For any questions about our granite curbs, please contact your local representative.
Scan this QR code to find your expert.

POLYCOR

NATURAL STONE

Polycor Inc. products are natural. Subtle variations in color and texture do occur and are part of what makes natural stone unique and attractive. We cannot guarantee an exact match to any of the photographic images contained in this brochure. Polycor Inc.'s continuing attention to product improvement may result in product specifications, technical information, and availability being subject to change without notice.

polycor.com

Contact Us

Our natural stones are quarried and processed in Canada, France and USA.