INSIGHTS · BUSINESS CASE TEARDOWN

CEMATRIX's climate revenue opportunity: culverts

An outsider's view of how to find and add value through climate analysis

TEARDOWN · BUILT FROM PUBLIC INFORMATION · NAMED COMPANY · GROWTH COMPANY, LISTED SUPPLIER

Peter Howard, Anti-Climatic Consulting Inc. · 9 November 2026

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1. Summary

- **Climate shifts.** We estimate that a culvert designed for the 1-in-25-year storm in Ontario now overtops about once every 12 years, and that by 2050 it will be about once every 9 years. This pattern is generally reflected across other jurisdictions globally: the IPCC (2021) finds heavy rainfall has become more frequent and intense across most land regions since the 1950s.
- **Road owners carry culvert ‘debt’.** About 3,300 of Ontario's roughly 11,400 structural culverts (3 m or more across; Statistics Canada, 2024) are estimated to fall below their design standard today, because they were sized on rainfall records that no longer describe the weather.
- **The market is real.** That shift drives climate-driven culvert spend in Ontario, across all suppliers, that builds from about C$29M in 2027 to about C$73M at its 2031 peak (range C$16M to C$315M), then settles near C$56M a year.

- **CEMATRIX has a growing opportunity in markets already served.** We model CEMATRIX's climate-driven culvert revenue opportunity (base case) rising from about C$0.5M in 2027 to C$1.6M a year in Ontario at the 2031 peak, and about C$15M a year across North America at that peak (base case; a cross-check gives about C$8M; full range in Table 1). That is 17% (cross-check) to 33% (base case) of FY2025 revenue.
- **What we'd do next.** A 90-day program to sharpen the model to local conditions, work with MTO and municipalities on specifications, and build a municipal sales package that turns this analysis into contracts.

2. Purpose: climate analysis as a value lens

Most climate analysis is written about risk: what a hotter, wetter world will cost. The same data and methods also show where demand is moving. For companies that sell into infrastructure, some of that demand is here now, and growing. It just isn't labelled as climate.

This paper works through one example, with a focus on Ontario, Canada, but where the lessons are applicable across North America. It asks a simple question: how much culvert work does changing rainfall patterns create, and how much of it could one company win? We chose culverts because the mechanism is direct, the engineering standards are public and the asset data is available. We chose CEMATRIX because it is a growing, listed supplier whose products fit that work, and whose current public materials do not yet mention the opportunity.

The method is deliberately plain. We used public data, set every assumption out in a Low / Base / High range, and flagged every input as sourced or estimated. The goal is not a precise forecast. The goal is to show the size of the opportunity, what drives it, and what a board would need to know to act on it.

3. CEMATRIX: why climate value may be overlooked

The company. CEMATRIX (TSX: CEMX) makes and places cellular concrete: a light, pumpable, foamed concrete used as lightweight fill, for pipe and culvert abandonment, for tunnel grout and as insulation. FY2025 revenue was C$45.1M, up 27%, with adjusted EBITDA (a non-GAAP measure) of C$8.3M. It operates in Canada through CEMATRIX (Canada) Inc. and in the US through three subsidiaries: CEMATRIX (USA) Inc., MixOnSite USA, Inc. and Pacific International Grout Co. In 2024, 78% of revenue came from the US (C$27.5M of C$35.4M; FY2024 consolidated financial statements, Note 28).

What CEMATRIX says drives demand. In its 2025 MD&A, management names two market drivers: acceptance of cellular concrete by the engineering community, provincial and state transportation departments and project owners, and the availability of capital for government-funded infrastructure. The MD&A does not mention climate change; weather appears mainly as a seasonal constraint on construction, and once as a supply-chain risk. Yet its examples of infrastructure work include protecting permafrost under buildings, utilities, roads and runways,

and replacing soils subject to frost or permafrost conditions: work that a warming climate makes more necessary.

Why the climate value may be overlooked. These are observations, not criticisms of the company or management.

1. **Climate-driven work arrives under other labels.** An owner replacing an undersized culvert records it as asset renewal. A washout gets recorded as emergency repair. Neither is tagged "climate", so the supplier doesn't see it as such.
2. **Customers aren't required to upgrade.** Ontario's asset management regulation (O. Reg. 588/17) requires municipalities to consider climate vulnerabilities. But the service level it sets for culverts is a condition index, not flood capacity. A culvert can be in good condition and still too small.
3. **Climate is usually treated as a disclosure topic.** For most mid-sized companies, climate sits with risk and reporting, not with sales and strategy.

4. How climate change creates culvert work

The cause-and-effect chain:

1. Warmer air holds more moisture.
2. Short, intense rainfall gets heavier, by about 7% per °C of warming, the scaling ClimateData.ca applies to design rainfall (IDF) curves, following ECCC's recommended method.
3. The 25, 50 or 100-year design storm comes more often.
4. More culverts overtop, fall below standard or need upsizing.

That creates three streams of spending:

SPENDING	WHAT HAPPENS	WHERE CELLULAR CONCRETE FITS
1. Emergency repair	Overtopping erodes the embankment or undermines the culvert, and it must be repaired	Lightweight backfill in rebuilds
2. Proactive upgrades	Owners replace culverts that were sized on old rainfall records before they fail	Lightweight backfill; filling the old culvert when the new one is built beside it
3. Upsizing at scheduled replacement	MTO's draft drainage standard (Nov 2023) would require new culverts to handle rainfall at the end of their design life, so replacements get bigger	Lightweight backfill on bigger jobs

5. Ontario results

We modelled Ontario's roughly 11,400 structural culverts (Statistics Canada, 2024): about 2,060 owned by MTO and the rest by municipalities and other local bodies. We used Toronto warming projections (City of Toronto, 2024), ECCC rainfall frequency data and MTO's design standards.

Results are against a stable-climate baseline. The High case stacks every high estimate at once: it is an outer bound, not a scenario. Its CEMATRIX figures (up to C$99M a year in Ontario alone, more than the company's total FY2025 revenue) show how far the stacked assumptions reach; they are not a revenue estimate.

Table 1. Ontario, climate-driven culvert work (C$M a year unless stated)

	LOW	BASE	HIGH
Structural culverts (count)	9,200	11,400	11,600
Effective return period of a 1-in-25-year culvert, 2027 / 2050 (years)	13 / 10	12 / 9	10 / 7
Culverts below standard because of warming, 2027 (count)	1,200	3,300	7,400
Climate-driven culvert spend, all suppliers, 2027	6	29	150
Climate-driven culvert spend, all suppliers, peak year	16 (2036)	73 (2031)	315 (2029)
Climate-driven culvert spend, all suppliers, 2050	15	56	102
CEMATRIX climate-driven revenue opportunity, 2027	0.02	0.5	37
CEMATRIX climate-driven revenue opportunity, peak year	0.06	1.6	99
CEMATRIX climate-driven revenue opportunity, 2050	0.05	1.1	20

Table 2. Base case spend: ongoing run-rate and one-time catch-up (C$M a year)

CHANNEL	2027	2031 (PEAK)	2050
Emergency repair	9.2	9.9	12.1
Proactive upgrades keeping pace with new shortfalls	11.3	30.3	32.1
Upsizing at scheduled replacement	8.8	8.8	8.8
Run-rate subtotal	29.4	49.1	53.0
Catch-up: clearing the backlog	0.0	23.9	2.6
Total	29.4	73.0	55.6

Two points stand out.

- **The money is in planned work, not emergencies.** Proactive upgrades are about two-thirds of climate-driven spend to 2050. Spend has two parts. A one-time catch-up clears the backlog of culverts sized on 1980s rainfall records; it builds as owners ramp up and peaks around 2031. An ongoing run-rate covers emergencies, upsizing and the roughly 75 culverts a year that newly fall below standard; it grows from about C$29M in 2027 to C$53M by 2050. In 2027 owners are still ramping up and replace fewer culverts than newly fall below standard, so the catch-up has not yet started.
- **CEMATRIX's slice is modest in Ontario.** About C$1.6M a year at the 2031 peak in the base case, split between lightweight backfill (C$0.88M) and filling old culverts left in place (C$0.73M).

6. Scaling to North America

We scaled Ontario's results per culvert to the rest of Canada and seven US regions. Each region was adjusted for three things:

- **Projected warming** relative to Ontario, from the US Fourth National Climate Assessment. The Southeast warms about 17% less than Ontario's neighbours; the Midwest about 3% more.
- **Construction costs**, within ±20% of Ontario.
- **CEMATRIX's market share**: 60% to 95% in Canada, where its 2025 MD&A reports no other high-volume competitor, and 3% to 20% in the US.

Table 3. Base case by region, 2031 peak year (C$M a year)

REGION	CLIMATE-DRIVEN CULVERT SPEND (ALL SUPPLIERS)	CEMATRIX REVENUE
Ontario	73	1.6
Rest of Canada	160	3.4
US Midwest	1,063	2.9
US Southeast	878	2.4
US Great Plains South	595	1.6
US Northeast	501	1.4
US Southwest	308	0.8
US Great Plains North	215	0.6
US Northwest	123	0.3
North America	3,917	15.0

In the base case, the opportunity is about C$15M a year across North America at the 2031 peak. A cross-check that scales from CEMATRIX's own revenue gives about C$8M, though it relies on an assumed 80/20 split between US and Canadian revenue, close to the 2024 actual of 78/22. The gap comes almost entirely from the number of US culverts, which no source counts directly.

7. Conclusions and next steps for the board

Conclusions

1. **The opportunity is real but modest in Canada, and larger in the US.** In Canada CEMATRIX already has most of the market, but the market is small. In the US the market is far larger, but CEMATRIX's share is small.
2. **The value depends on levers CEMATRIX can influence.** That means getting cellular fill specified for abandoned structural culverts, encouraging replacement methods that build the new culvert beside the old one, and building evidence at structural scale.

3. **Calling this climate work could open new budgets.** Resilience funding, such as the US PROTECT program, is set aside for making transportation more resilient to extreme weather, though its future funding is at risk in the current US reauthorization. Work that is pitched as routine renewal doesn't draw on it.

90-day steps

1. **Refine the rainfall and culvert model to local conditions.** Replace provincial and regional averages with station-level rainfall projections and local culvert inventories. This will show where rainfall has shifted most and where the opportunity is concentrated.
2. **Build a municipal culvert climate package, possibly with an engineering firm, to approach and sell to municipalities.** The package would include:
   - **Climate screening.** Rainfall modelling that flags culverts likely to be stressed, ranked by how far rainfall has shifted between the data each culvert was designed on and conditions expected over the next five years.
   - **Condition assessment.** Current condition from existing inspection records (OSIM in Ontario), checked in the field where needed.
   - **A five-year plan.** Which culverts to replace or upgrade, and when, combining condition and rainfall shift.
   - **The savings case.** The cost of upgrading now compared with emergency repair: repair costs, emergency premiums, detours and closures, damage to the road, and liability, at the municipality's own discount rate.

One point should be made candidly. Replacing a culvert decades early brings forward almost its full cost in present-value terms. So the savings case has to be built culvert by culvert, using municipal discount rates (PSPC used 4% in its 2023 culvert program) and the real costs of failure. It cannot be a blanket claim. Done that way, it gives councils a defensible reason to act, and gives CEMATRIX a seat at the table before the specification is written.

3. **Build a reference project at structural scale.** One well-documented abandonment fill or lightweight backfill job on a culvert of 3 m or more would be worth more than any brochure.
4. **Seek a standard specification for filling abandoned structural culverts in Ontario.** The provincial standard (OPSS 510) covers abandoned pipes only up to 1,200 mm, so each structural job needs its own special provision. That is a hurdle on every sale. CEMATRIX's 2025 MD&A calls continued product acceptance by the engineering community, transportation departments and project owners the most important primary driver of its sales growth.
5. **Tag climate-driven work in the pipeline, and consider disclosing it.** Track which jobs are driven by rainfall change. A short note in the MD&A would let investors see a growth driver the company currently reports under other names.

Where to focus

Geographies

- **US Midwest:** the largest climate-driven culvert spend (about C$1.1B a year) and the fastest warming of the seven contiguous US regions.
- **US Southeast:** the second-largest spend (about C$0.9B a year), and CEMATRIX already works in North Carolina (project start announced July 2025).
- **US Great Plains South:** Texas has the largest bridge stock in the US (about 57,000 structures).
- **Ontario and the rest of Canada:** CEMATRIX is the only high-volume supplier, according to its 2025 MD&A, and Ontario's public data makes it the natural place to pilot the municipal package.

Sectors and customers

- **Municipalities and counties with steel culverts.** These are the target buyers for the package: many culverts, thin engineering resources and growing exposure.
- **State transportation departments and provincial ministries.** They hold the largest culverts and have access to resilience funding.
- **Adjacent areas (not modelled here).** Coastal resilience, northern and permafrost infrastructure, and flood embankments all use the same products, and climate shifts each of them in the same direction.

Appendix

Table A1. Key inputs

INPUT	BASE	RANGE	BASIS
Spare design capacity in existing culverts (headroom above the design flow)	Spread evenly from 0 to 30%	0–20% to 0–40%	Estimate. Designers round up to the next standard size and add freeboard; no survey of actual headroom exists
Pace of proactive replacement: years to clear the backlog of culverts below standard	25 years	15–40	Estimate. Nothing in Ontario regulation forces hydraulic upgrades, which points to slow uptake
Share of replacements built beside the old culvert, which leaves the old one to be filled	10%	5–20%	Estimate from nine Ontario and BC projects: one left in place and filled, five removed
US culverts of 3 m and over	about 620,000	259,000–926,000	Derived two ways: Ontario's culvert density applied to US road length, and the US bridge inventory grossed up for smaller culverts. No direct count exists
CEMATRIX's share of US culvert work	10%	3–20%	Estimate. CEMATRIX's 2025 MD&A reports a significant number of US competitors, some in the high-volume market; established competitors include Aerix Industries and Cell-Crete

The High case stacks every high estimate at once. It is an outer bound, not a scenario.

Method in brief. Ontario structural culverts were grouped by the size of flood each can carry, using a published hydraulic survey of 315 crossings as a proxy (Connecticut, 2018). The stock is Statistics Canada's 2024 count of public culverts 3 m or more in diameter (11,449; range 9,221 to 11,565). Rainfall intensity was scaled at about 7% per °C of projected Toronto warming under a moderate emissions pathway (SSP2-4.5). New overtopping odds were read from historical rainfall frequency data (ECCC, Port Colborne). Three spend channels were modelled: emergency repair, proactive replacement of culverts pushed below standard, and upsizing at scheduled replacement. CEMATRIX's revenue was estimated from the share of that work suited to cellular concrete, the volumes involved and an installed price per cubic metre. Owners were assumed to reach full replacement pace over five years (range three to ten). Results were projected from 2027 to 2050 in constant dollars. North America was scaled from Ontario per culvert, adjusted for regional warming, cost and market share.

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Read online: www.anticlimatic.ca/insights/cematrix-culverts