NEW BRUNSWICK CONCRETE

Materials & Concrete Mixes

Concrete mix types, rebar, wire mesh, sealers, admixtures, and material selection for NB climate conditions

23 Expert Answers from Concrete IQ

newbrunswickconcrete.com/construction-brain

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Q1

What's the difference between 25 MPa and 30 MPa concrete and which should be specified for an exposed driveway in Saint John that sees constant freeze-thaw and heavy salt?

For an exposed driveway in Saint John facing constant freeze-thaw cycles and heavy road salt, specify 30 MPa air-entrained concrete — the higher strength provides better durability against NB's punishing Maritime conditions, and the air entrainment is absolutely mandatory for freeze-thaw resistance.

The difference between 25 MPa and 30 MPa concrete lies in compressive strength and durability. **25 MPa concrete** (roughly 3,600 PSI) reaches 25 megapascals of compressive strength after 28 days of curing, while **30 MPa concrete** (roughly 4,350 PSI) is significantly stronger. More importantly for Saint John driveways, higher-strength concrete has a denser matrix with fewer capillary pores, making it more resistant to water penetration, salt infiltration, and freeze-thaw damage.

Saint John's coastal location creates some of the most aggressive conditions for concrete in New Brunswick. The city experiences 150+ freeze-thaw cycles annually, plus salt air from the Bay of Fundy that accelerates carbonation and chloride penetration. Your driveway will be exposed to road salt from November through April — not just from municipal plowing, but from salt-laden slush splashing off vehicles. This combination of freeze-thaw cycling and chloride exposure is devastating to concrete that isn't properly specified.

For your Saint John driveway, specify 30 MPa air-entrained concrete with 4-7% air content. The air entrainment creates billions of microscopic air bubbles that give freezing water room to expand without fracturing the concrete matrix — this is non-negotiable for any exterior concrete in NB. The 30 MPa strength provides a denser, less permeable surface that better resists salt penetration and surface scaling. Budget $200-$250 per cubic yard delivered versus $180-$220 for standard 25 MPa mix — the extra $20-$30 per yard extends your driveway's service life from 15-20 years to 30-40 years in Saint John conditions.

Additional protection is essential beyond the concrete mix itself. Apply a quality penetrating sealer (silane/siloxane) within the first year and reapply every 2-3 years. This repels water and salt without changing the appearance. Avoid using rock salt for winter de-icing — use sand for traction or calcium magnesium acetate if you must use a chemical de-icer, and only after the concrete has cured for a full year.

Hire a professional for this pour. A driveway requires proper gravel base preparation, reinforcement with welded wire mesh, correct finishing within a narrow time window, and proper control joint placement every 8-10 feet. The consequences of mistakes — cracking, spalling, premature failure — are permanent and expensive to repair. Saint John's aggressive conditions leave no margin for error in concrete specification or placement.

Need help finding a professional concrete contractor? New Brunswick Concrete can match you with experienced Saint John area contractors who understand Maritime concrete requirements and can specify the right mix for your specific site conditions.

Q2

How does the water-to-cement ratio affect the long-term durability of a concrete driveway in Atlantic Canada?

The water-to-cement ratio is the single most critical factor determining how long your concrete driveway will survive Atlantic Canada's brutal freeze-thaw cycles. A properly designed mix with a 0.45 water-to-cement ratio can last 30-40 years in New Brunswick conditions, while a high-water mix (0.60+) may start failing within 5-7 years.

Why Water Content Matters So Much in NB

Every gallon of excess water in your concrete mix creates thousands of microscopic pores and capillaries throughout the hardened concrete. In New Brunswick's Maritime climate, with 150+ freeze-thaw cycles annually, water penetrates these pores, freezes, and expands by 9%. This relentless expansion-contraction cycle is what causes the surface scaling, spalling, and deterioration you see on poorly mixed driveways after just a few winters.

Lower water-to-cement ratios produce denser, less permeable concrete that resists water penetration. **For NB driveways, specify a maximum 0.45 water-to-cement ratio** — this typically translates to 32 MPa (4,500 PSI) concrete with 4-5 inch slump for workability. Higher strength concrete costs only $20-30 more per cubic yard but can double or triple the service life of your driveway.

The Temptation to Add Water

The biggest mistake happens at the jobsite when crews add water to make stiff concrete easier to work with. Every extra gallon of water per cubic yard reduces compressive strength by 200-300 PSI and dramatically increases permeability. What seems like a small adjustment to improve workability creates a driveway that will start deteriorating within 3-5 years instead of lasting decades.

Coastal and Salt Considerations

If you're in coastal New Brunswick (Saint John, Shediac, Bathurst), salt air compounds the water penetration problem through chloride attack. The combination of high water-to-cement ratios and salt exposure accelerates concrete deterioration exponentially. Coastal driveways should use even lower water-to-cement ratios (0.40-0.42)

and incorporate supplementary cementing materials like fly ash or slag to improve long-term durability.

Practical Specifications for Your Project

When ordering ready-mix for your NB driveway, specify "32 MPa air-entrained concrete with maximum 0.45 water-to-cement ratio and 4-inch slump." If the concrete arrives too stiff to work easily, use a water reducer admixture rather than adding water. The ready-mix plant can add plasticizers that improve workability without compromising strength or durability.

When to Hire a Professional

Managing water-to-cement ratios, slump, and workability while placing and finishing a driveway requires experience and timing. A concrete contractor understands how to work with properly proportioned mixes and has the tools and crew to handle stiffer concrete efficiently. For a project that should last 30+ years in NB conditions, professional placement of correctly specified concrete is worth the investment.

Need help finding a professional concrete contractor? New Brunswick Concrete can match you with experienced local professionals who understand Maritime concrete requirements.

Q3

What water-to-cement ratio should a contractor be using for exterior flatwork in Moncton to resist freeze-thaw deterioration over time?

For exterior flatwork in Moncton, contractors should use a maximum water-to-cement ratio of 0.45 (preferably 0.40-0.42) with mandatory air entrainment to resist New Brunswick's punishing freeze-thaw cycles.

The water-to-cement ratio is critical for durability in Maritime conditions because excess water creates a porous concrete matrix that allows moisture penetration — and moisture is what destroys concrete during Moncton's 150+ annual freeze-thaw cycles. When water trapped in concrete pores freezes, it expands by 9%, creating internal pressure that gradually fractures the concrete from within.

A 0.45 w/c ratio produces concrete with approximately 4,000-5,000 PSI compressive strength and significantly reduced permeability compared to higher ratios. Many contractors default to 0.50-0.55 ratios because the concrete flows easier and finishes faster, but this convenience comes at the cost of long-term durability. In Moncton's climate, the difference between a 0.45 and 0.55 w/c ratio can mean 25-30 years of service life versus 8-12 years before significant spalling and surface deterioration occurs.

Air entrainment is equally critical and non-negotiable for Moncton exterior work. The concrete should contain 4-7% entrained air — billions of microscopic air bubbles that give freezing water room to expand without fracturing the concrete matrix. A quality air-entrained mix with proper w/c ratio will resist freeze-thaw damage, while even the strongest concrete without air entrainment will fail within 3-7 years in New Brunswick conditions.

Practical specifications for your contractor: Order 32 MPa (4,500 PSI) air-entrained concrete with a maximum 0.45 w/c ratio and 4-6 inch slump for workability. The ready-mix plant should add air-entraining admixture to achieve 5-7% air content. Avoid adding water at the jobsite — if workability is poor, use a water-reducing admixture instead. This mix will cost $10-20 more per cubic yard than standard concrete but will last decades longer in Moncton's Maritime climate.

When to insist on professional expertise: Any contractor who doesn't understand w/c ratios, suggests adding water for workability, or dismisses air entrainment for exterior work lacks the knowledge for durable concrete in New Brunswick conditions. Quality contractors will specify these requirements automatically and can explain why they matter for your specific project.

Find experienced concrete contractors who understand Maritime durability requirements through the New Brunswick Construction Network directory.

Q4

Are fiber-reinforced concrete mixes worth the extra cost for residential patios in New Brunswick?

For most residential patios in New Brunswick, fiber-reinforced concrete is worth the modest extra cost — typically adding $15-$30 per cubic yard to your ready-mix order. While fibers don't replace structural reinforcement like rebar or wire mesh, they provide valuable benefits that align well with NB's challenging climate conditions.

Synthetic polypropylene fibers are the best choice for NB patios. These microscopic fibers (about the thickness of human hair) distribute throughout the concrete mix and provide several key advantages. Most importantly, they dramatically reduce plastic shrinkage cracking — those hairline surface cracks that appear in the first 24-48 hours as concrete loses moisture. In NB's variable spring and fall weather, when warm days and cool nights create rapid temperature swings, plastic shrinkage cracking is common. The fibers act like tiny reinforcing threads that hold the concrete together during this vulnerable early curing period.

NB's freeze-thaw cycles make fiber reinforcement particularly valuable. Once your patio experiences its first winter, any surface cracks become entry points for water infiltration. When that water freezes and expands through 150+ annual freeze-thaw cycles, small cracks gradually become larger cracks, leading to spalling and surface deterioration. By preventing many of these initial cracks from forming, fibers help maintain the concrete's surface integrity and extend its service life in Maritime conditions.

Fiber-reinforced concrete also improves impact resistance — helpful for patios that see furniture movement, dropped planters, or children's activities. The fibers won't prevent structural cracking from settlement or inadequate reinforcement, but they do make the surface more resilient to everyday wear and minor impacts.

Don't view fibers as a replacement for proper reinforcement. Your NB patio still needs welded wire mesh or rebar supported at mid-slab height, proper air entrainment for freeze-thaw resistance, and adequate thickness (minimum 4 inches). Think of fibers as an insurance policy that works alongside these essential elements. For a typical 200-square-foot patio requiring about 2.5 cubic yards of concrete, you're looking at roughly $40-$75 extra for fiber reinforcement — a small premium for the added protection.

Steel fibers are overkill for residential patios and cost $30-$50 more per cubic yard. Save steel fiber-reinforced concrete for industrial floors, driveways that see heavy truck traffic, or commercial applications where the extra cost is justified by extreme loading conditions.

When to hire a professional: While adding fibers to a concrete order is straightforward, patio construction involves proper excavation, base preparation, forming, reinforcement placement, and finishing — all within the narrow window before concrete sets. Most homeowners should hire a professional for patio pours, especially with NB's

short optimal pouring season from May through October.

Need help finding a professional concrete contractor for your patio project? New Brunswick Concrete can match you with local professionals who understand Maritime climate requirements and proper fiber-reinforced concrete specifications.

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Q5

Are there eco-friendly concrete alternatives suitable for a Fundy Bay cottage that minimize environmental impact on the shoreline?

Yes, there are several eco-friendly concrete alternatives well-suited for Fundy Bay cottage construction that reduce environmental impact while withstanding the Bay's extreme tidal conditions and salt exposure.

The Bay of Fundy's unique environment — with 50-foot tides, salt spray, and coastal erosion — demands materials that can handle both marine exposure and New Brunswick's 150+ annual freeze-thaw cycles. Traditional Portland cement concrete has a significant carbon footprint and can contribute to shoreline alkalinity changes, making sustainable alternatives particularly valuable for sensitive coastal areas.

Supplementary Cementitious Materials (SCMs) offer the most practical eco-friendly approach for Fundy cottage foundations and hardscaping. **Fly ash concrete** replaces 15-30% of Portland cement with recycled coal ash, reducing the carbon footprint by 20-25% while actually improving durability in marine environments. The finer particles create denser concrete that better resists salt water penetration — crucial for Fundy Bay's aggressive conditions. **Slag cement concrete** uses ground blast furnace slag to replace up to 50% of Portland cement, creating extremely durable concrete with lower permeability and better resistance to sulfate attack from seawater.

For cottage driveways and walkways, **permeable concrete** allows rainwater to filter through rather than creating runoff that carries sediment and pollutants to the Bay. This is particularly important given the Fundy's sensitive ecosystem and extreme tidal flushing. Permeable concrete uses little to no fine aggregate, creating interconnected voids that allow water infiltration rates of 3-8 gallons per square foot per minute. However, it requires annual maintenance to prevent clogging and may need replacement every 15-20 years versus 25-40 years for traditional concrete.

Recycled aggregate concrete incorporates crushed concrete from demolished structures, reducing quarry demand and construction waste. In the Fundy region, this often means using recycled concrete from Saint John area demolition projects. The recycled aggregate performs nearly identically to virgin stone but reduces the environmental impact of aggregate extraction. Specify that recycled aggregate meet CSA standards for chloride content — particularly important in marine environments.

Geopolymer concrete represents the most environmentally advanced option, using industrial byproducts like fly ash or slag activated with alkaline solutions instead of Portland cement. This can reduce carbon emissions by 60-80% compared to traditional concrete. However, geopolymer concrete is still emerging in the Maritime market, with limited local suppliers and higher costs — expect to pay 20-40% more than conventional concrete.

For **non-structural applications** like garden walls, fire pits, and decorative elements, consider **rammed earth** or **compressed earth blocks** using local Fundy clay soils. These require no cement and have minimal environmental impact, though they need protection from direct rain and salt spray. **Natural stone** from local NB quarries — particularly the region's sandstone and granite — provides zero-emission hardscaping that complements the coastal environment perfectly.

Critical considerations for Fundy Bay conditions: Any eco-friendly concrete must still include air entrainment (4-7% air content) for freeze-thaw resistance and should use low water-to-cement ratios (0.40 or lower) for marine durability. Apply penetrating sealers every 2-3 years regardless of the concrete type — salt spray and tidal moisture create some of Canada's most aggressive concrete exposure conditions.

When to hire a professional: Foundation work and structural concrete require experienced contractors familiar with both eco-friendly mixes and marine construction. The Bay of Fundy's extreme conditions leave no room for experimentation with unproven materials or techniques.

Need help finding a concrete professional experienced with sustainable materials and coastal construction? New Brunswick Concrete can match you with contractors familiar with eco-friendly options suitable for Fundy Bay's challenging environment.

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Q6

What is the difference between air-entrained and regular concrete?

Air-entrained concrete has billions of microscopic air bubbles intentionally introduced into the mix; regular (non-air-entrained) concrete does not. Those tiny bubbles — typically 4–7% of the mix volume — are the single most important feature protecting concrete from New Brunswick's relentless freeze-thaw cycles.

Here is the problem that air entrainment solves: concrete is not perfectly solid. It has microscopic pores and capillaries that absorb water. When that water freezes, it expands by about 9%. In a non-air-entrained concrete, there is nowhere for that expanding ice to go, so it fractures the concrete matrix from the inside. Do this 150+ times per year — which is typical for New Brunswick — and within 3–7 years you have spalling, scaling, and surface deterioration. The concrete surface flakes away in layers, exposing the aggregate, and the damage accelerates from there.

Air entrainment works by creating a network of tiny, closely-spaced air voids distributed throughout the concrete. When water in the pores begins to freeze and expand, it has somewhere to go — into the adjacent air void — without building up the hydraulic pressure that fractures the concrete. The result is concrete that survives freeze-thaw cycling without surface damage.

The technical difference is straightforward: air-entrained concrete uses a chemical admixture (an air-entraining agent) added at the ready-mix plant during batching. The mixer introduces the bubbles, and the plant controls the air content to hit the 4–7% target. You cannot reliably add air entrainment on-site — it must be specified when you order from the ready-mix plant.

In terms of strength, air entrainment reduces compressive strength slightly — roughly 200–300 PSI for every 1% of air added. A 3,500 PSI (25 MPa) mix with 6% air will be somewhat less strong than the same mix without air. For

most exterior flatwork applications in NB, this tradeoff is completely acceptable. The durability benefit enormously outweighs the minor strength reduction.

Regular concrete — without air entrainment — has its place: interior slabs, basement floors, slabs under cover that will never be exposed to freeze-thaw cycles or de-icing salt. For interior applications, non-air-entrained concrete is fine and costs a few dollars less per cubic yard.

For anything outdoors in New Brunswick — driveways, patios, sidewalks, steps, porches, exposed aggregate surfaces — always specify air-entrained concrete. It is the difference between a 5-year lifespan and a 30-year lifespan.

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Q7

Why is air-entrained concrete important in New Brunswick?

Air-entrained concrete is not optional in New Brunswick — it is the minimum specification for any concrete that will be exposed to weather. NB experiences approximately 150 freeze-thaw cycles per year, one of the highest rates in Canada, and non-air-entrained concrete simply does not survive this climate.

New Brunswick's Maritime location creates a uniquely punishing concrete environment. Temperatures fluctuate above and below freezing repeatedly throughout the winter, particularly in coastal areas and river valleys. It is not just the cold that damages concrete — it is the cycling. Every time water absorbed into the concrete's pore structure freezes, it expands by 9%, building hydraulic pressure within the concrete matrix. Every time it thaws, that pressure releases and new water is drawn in for the next cycle. Repeat 150 times a year and the internal cracking is cumulative and irreversible.

Salt makes it dramatically worse. NB roads are heavily treated with sodium chloride from November through April, and that salt-laden slush and spray reaches every driveway apron, front walkway, and patio near a road. De-icing salt lowers the freezing point of water, creating additional freeze-thaw cycles at the concrete surface at temperatures where the concrete itself would normally be safe. Salt also concentrates at the concrete surface as water evaporates, drawing moisture back into the pores repeatedly.

Air entrainment addresses this by distributing billions of microscopic air voids (typically 0.004–0.008 inches in diameter) throughout the concrete. These voids act as pressure relief valves — when freezing water expands in the capillaries, it migrates into the adjacent air void rather than fracturing the concrete matrix. The spacing factor (the average distance from any point in the paste to the nearest air void) is critical: properly air-entrained concrete has voids spaced every 0.008 inches or less.

The cost comparison is obvious: air-entrained ready-mix costs approximately $10–$20 more per cubic yard than standard mix in NB. A typical two-car driveway uses 7–9 cubic yards, so the premium is $70–$180 on a $6,000–$8,000 project. Non-air-entrained concrete on the same driveway will likely need to be replaced within 5–7 years as spalling and scaling destroy the surface. Air-entrained concrete, properly placed and sealed, will last 25–40 years.

When you receive quotes from concrete contractors in Moncton, Fredericton, Saint John, or anywhere else in New Brunswick, ask explicitly whether the mix includes air entrainment. Any contractor not specifying air-entrained mix for exterior flatwork is a red flag. New Brunswick Concrete can help you find contractors who specify the right materials from the start.

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Q8

What PSI concrete should I use for a driveway in NB?

For a driveway in New Brunswick, specify a minimum 4,000 PSI (approximately 28 MPa) air-entrained mix. Many experienced NB contractors default to 4,500 PSI (32 MPa) for driveways, and for good reason — the higher strength pairs with better durability in our freeze-thaw environment.

In Canadian concrete specifications, strength is typically expressed in megapascals (MPa) rather than PSI. The common equivalents you will hear from NB suppliers and contractors are 20 MPa (2,900 PSI), 25 MPa (3,600 PSI), and 32 MPa (4,600 PSI). For a driveway subject to vehicle loads, salt exposure, and 150+ annual freeze-thaw cycles, 25 MPa is the absolute minimum, and 32 MPa is what most quality NB contractors will specify.

PSI alone does not tell the whole story. The CSA A23.1 standard — which governs concrete in Canada — classifies concrete by exposure class based on the severity of conditions it will face. A NB driveway falls into Exposure Class C-1 (concrete exposed to freezing and thawing in a moist condition or to de-icing chemicals). The C-1 specification requires a minimum 32 MPa mix with 5–8% air content and a maximum water-to-cement ratio of 0.45. This is the proper specification, and it is more informative than PSI alone.

For driveways in coastal NB communities — Saint John, Shediac, Bathurst waterfront, Shippagan — salt air adds to the attack on the concrete surface. In these locations, 32 MPa minimum is strongly recommended, and the water-to-cement ratio is especially important because a denser, lower water ratio paste is more resistant to chloride penetration.

Here is what to tell your ready-mix supplier or concrete contractor:

- 32 MPa (4,600 PSI), air-entrained, 5–8% air content

- Maximum 0.45 water-to-cement ratio
- 100–125 mm (4–5 inch) slump
- Type GU (General Use) or Type HE (High Early) cement — HE for late-season pours

  For a standard two-car driveway (400–600 sq ft) at 5–6 inch thickness, you are looking at 6–9 cubic yards of ready-mix. At NB 2025–2026 pricing of $200–$240 per cubic yard for air-entrained 32 MPa mix, that is $1,200–$2,160 in materials alone. Total installed cost for a two-car driveway in NB typically ranges from $5,000–$9,000 depending on removal of the existing surface, base preparation, and finishing choices.

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Q9

Rebar vs wire mesh for a concrete driveway in New Brunswick — which is better?

For a residential concrete driveway in New Brunswick, rebar (#10M on 18-inch centres) is the better choice — it provides stronger crack control and holds slab sections together more effectively if cracking does occur. Wire mesh is common and far cheaper, but rebar delivers meaningfully better performance for the conditions NB driveways face.

Let's be clear about what reinforcement does in a concrete slab: it does not prevent cracking. Concrete shrinks as it cures and moves with temperature swings, and it will crack regardless of what is inside it. Reinforcement holds the cracked sections together so they do not separate, shift, or become a trip hazard. It also controls how cracks propagate — keeping them tighter and less likely to allow water infiltration.

Wire mesh (typically 6×6 W1.4/W1.4 or 6×6 10/10) is the traditional budget option. It is inexpensive — $3–$5 per 4×8 sheet — and widely used. The problem is installation: mesh must be supported at mid-slab height on wire chairs ($0.25–$0.75 each) throughout the pour. The common practice of laying mesh on the ground and pulling it up during the pour is notoriously unreliable. Studies show this results in mesh sitting near the bottom of the slab in most cases, where it does almost nothing for crack control in the tension zone at the mid-slab height. If your contractor proposes mesh but will not install it on proper chairs, the mesh is largely ineffective.

Rebar (#10M, 3/8-inch diameter) on 16–18 inch centres in both directions is the upgrade worth considering for NB driveways. Rebar is easier to place correctly on chairs and stays in position during the pour. The additional cost for a 500 sq ft driveway is typically $200–$400 in materials and modest extra labour — a reasonable investment given that the driveway itself costs $5,000–$9,000. For a driveway that will see heavy vehicles (trucks, RVs, frequent delivery traffic), rebar is the clear choice.

Fibre reinforcement is a useful supplement but not a replacement for either rebar or mesh. Synthetic (polypropylene) fibres added to the mix reduce plastic shrinkage cracking while the concrete is still setting, but they do not provide the structural crack control that steel reinforcement does after the concrete has hardened.

If budget is the primary concern and your driveway will only see passenger vehicles, properly installed wire mesh on chairs is acceptable. If you want the best long-term performance from your NB driveway, specify rebar.

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Q10

What is fibre-reinforced concrete and should I use it in NB?

Fibre-reinforced concrete has small fibres — typically synthetic polypropylene or steel — mixed directly into the concrete batch to improve certain performance characteristics. In New Brunswick, fibre reinforcement is a useful upgrade for flatwork, but it is a supplement to — not a replacement for — conventional steel reinforcement.

The most common type used in residential NB concrete is **synthetic fibre (polypropylene).** The ready-mix plant adds small fibre bundles (typically 12–19 mm long) to the batch at a rate of about 0.9 kg per cubic metre. The fibres distribute randomly throughout the mix and do two important things: they reduce plastic shrinkage cracking (the surface cracks that form in the first few hours after placement while the concrete is still plastic), and they improve impact resistance and toughness in the hardened concrete. Synthetic fibre typically adds $15–$30 per cubic yard to the mix cost.

Steel fibre is less common in residential work but used in commercial floors, industrial slabs, and applications requiring high toughness and crack control. Steel fibres are heavier, harder on finishing equipment, and cost $30–$50 more per cubic yard. They are more effective than synthetic fibres at controlling cracks after hardening, but the finishing difficulty makes them less practical for typical NB residential patios and driveways.

Should you use fibre in NB? For driveways, patios, garage floors, and sidewalks, synthetic fibre is a worthwhile low-cost upgrade. It helps manage the surface cracking that is especially common during hot, dry summers when moisture evaporates quickly from fresh concrete — a real issue on August pours in Moncton or Fredericton. The fibres reduce the surface cobwebbing that homeowners sometimes see on new concrete.

However — and this is critical — **fibre does not replace rebar or wire mesh.** The fibres are too short and too randomly oriented to provide the structural tensile reinforcement that holds cracked slab sections together. You still need properly placed rebar or mesh at mid-slab height. Think of fibre as improving the concrete matrix itself, while rebar and mesh work as the structural skeleton.

For foundation walls, retaining walls, and structural slabs, conventional rebar is always required regardless of whether fibre is also added.

The bottom line: specify fibre as an add-on for flatwork if your budget allows. It improves surface quality and reduces early cracking. But never let a contractor talk you into fibre as a reason to skip the rebar or mesh.

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Q11

What type of concrete sealer is best for NB driveways?

A penetrating silane/siloxane sealer is the best choice for concrete driveways in New Brunswick. It protects the concrete from the inside without changing its appearance, resists the damage from de-icing salt and freeze-thaw cycling, and lasts 2–4 years between reapplications.

New Brunswick driveways face a specific combination of attacks that makes sealer selection important: 150+ annual freeze-thaw cycles, heavy road salt exposure from November through April, and the general moisture load of a Maritime climate. The wrong sealer can fail, peel, or trap moisture — making things worse rather than better.

Penetrating sealers (silane, siloxane, or silane-siloxane blends) work by chemically bonding with the concrete below the surface and creating a hydrophobic barrier in the pores. Water beads up and runs off rather than being absorbed. Salt solutions cannot penetrate deeply enough to cause freeze-thaw damage at the surface. The concrete looks the same — no sheen, no colour change — just protected. Cost is $40–$80 per gallon, covering 150–300 sq ft depending on how porous the concrete is. A typical two-car driveway takes 2–4 gallons. Reapplication every 2–3 years is standard in NB conditions.

Acrylic film-forming sealers leave a surface coating — either matte or glossy — that enhances the appearance of the concrete. They are popular on stamped and decorative concrete because they bring out colour and add shine. The problem on NB driveways is durability: acrylic sealers sit on top of the concrete surface and are vulnerable to peeling, flaking, and wear from vehicle traffic and freeze-thaw movement. They typically need reapplication annually on driveways. They are better suited to covered patios and decorative surfaces than high-traffic driveways in a Maritime climate.

Epoxy and polyurea coatings are designed for garage floors — they are film-forming coatings that bond very well to properly prepared concrete. They are not appropriate for exterior driveways because they are not UV-stable (they yellow and chalk), and the concrete expansion-contraction movement outdoors will cause coating

delamination.

Timing matters. New concrete should cure for a minimum of 28 days before sealer application. Some contractors recommend waiting a full year before applying penetrating sealer to allow any efflorescence (white calcium deposits that leach out of new concrete) to dissipate. At minimum, apply a penetrating sealer before your concrete faces its first NB winter. Do not skip this step — it is the single most impactful maintenance investment you can make in the longevity of your driveway.

Get matched with a concrete contractor who includes sealer application as part of the project package through New Brunswick Concrete.

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Q12

How much concrete do I need for a 20x20 foot patio slab?

A 20×20 foot patio slab at 4 inches thick requires approximately 5 cubic yards of concrete. Here is the full calculation and what it means for your NB project.

The formula is straightforward: Length × Width × Thickness (all in feet), then divide by 27 to convert cubic feet to cubic yards.

20 ft × 20 ft × 0.33 ft (4 inches) = 133.3 cubic feet ÷ 27 = **4.94 cubic yards**, rounded to 5 cubic yards.

Always order 5–10% extra to account for ground irregularities, spillage, and the fact that you never want to run short mid-pour. For this slab, ordering **5.5 cubic yards** is prudent. Running out of concrete with a partially finished slab is a serious problem — a cold joint formed between the first and second pours creates a weak plane and is

highly visible.

Thickness considerations for NB: A 4-inch (100 mm) slab is the minimum for a residential patio that will only see foot traffic. If you anticipate any vehicle access, lawn tractors, or heavy loads, go to 5 inches, which increases your volume to about 6.2 cubic yards. NB's frost heave makes thin slabs (3 inches or less) especially risky — the soil movement combined with a weak slab is a recipe for cracking in the first few seasons.

Cost estimate for a 20×20 patio in NB (2025–2026): Air-entrained ready-mix at 32 MPa runs $200–$240 per cubic yard delivered in the Moncton, Fredericton, and Saint John areas. For 5.5 cubic yards, that is $1,100–$1,320 in materials. **Note:** Ready-mix suppliers typically charge a short-load surcharge of $75–$150 for orders under 4 cubic yards — 5.5 yards avoids that extra cost. Labour, base preparation (6 inches of compacted gravel), forming, finishing, and sealer brings the total installed cost for a 400 sq ft patio to roughly **$4,000–$7,500** depending on finish type.

For DIY volume estimating, use this quick formula: multiply square footage by the thickness in inches, then divide by 12. That gives cubic feet. Divide by 27 for cubic yards. For a different size patio — say 12×16 feet at 4 inches — the math is: 192 sq ft × 4 ÷ 12 = 64 cubic feet ÷ 27 = 2.4 cubic yards. At that volume, you are paying the short-load surcharge, which makes bagged concrete worth considering for very small jobs.

Need help finding a contractor for your NB patio? New Brunswick Concrete can match you with local professionals for a free estimate.

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Q13

What is the correct slump for concrete in NB flatwork?

The correct slump for concrete flatwork in New Brunswick — driveways, patios, sidewalks, and garage floors — is 100–125 mm (4–5 inches). This range provides good workability for placing and finishing while maintaining the low water-to-cement ratio required for durable NB concrete.

Slump is a measure of concrete consistency and workability — how readily it flows and responds to finishing. The slump test is simple: fresh concrete is placed in a cone-shaped mould, the cone is lifted, and the distance the concrete slumps downward is measured. More slump means more fluid and workable; less slump means stiffer and drier.

Why slump matters for durability: The relationship between slump, water content, and concrete strength is direct. Higher slump generally means more water in the mix. Every litre of extra water added per cubic metre of concrete reduces compressive strength by roughly 5 MPa and increases shrinkage cracking. In NB's freeze-thaw environment, a weaker, more porous concrete fails faster — spalling, scaling, and cracking within a few years instead of decades.

The most common and damaging mistake on NB concrete pours is adding water to the truck at the jobsite to increase slump because the concrete seems stiff and hard to work. This practice — called re-tempering — is tempting but destructive. If you need more workability without adding water, the right solution is to specify a **water-reducing admixture (plasticizer)** at the batch plant. Plasticizers allow a 125–150 mm slump at the same water content as a 100 mm slump mix — better workability with no strength penalty.

Slump can decrease in transit. Ready-mix trucks leaving a plant in Moncton, Fredericton, or Saint John at 125 mm slump may arrive at your site with 100 mm slump, particularly on a hot July day or a long drive. This is normal and acceptable. Do not let the driver add water to compensate. If slump has dropped significantly below 75 mm and the concrete is genuinely difficult to place, discuss options with the plant — but the answer is not water at the jobsite.

For foundation walls and columns where the concrete must flow around dense rebar cages, a higher slump (150 mm / 6 inches) is sometimes specified, but this requires using a superplasticizer to achieve the slump without excess water.

Always confirm the required slump with your concrete contractor when reviewing the mix design. It is a basic quality-control checkpoint that serious contractors discuss as a matter of course.

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Q14

Should I use high-early strength concrete for a late fall pour in NB?

Yes — for any pour in October or November in New Brunswick, high-early strength concrete (Type HE or 32+ MPa) is strongly recommended. It gains strength faster than standard mixes, reducing the window during which the concrete is vulnerable to freezing — which is the primary risk in late-season NB pours.

Standard concrete (Type GU, General Use) follows a predictable strength gain curve: roughly 70% of 28-day strength by 7 days, 85% by 14 days, 100% by 28 days. In NB fall conditions — cool nights, short days, temperatures trending toward freezing — every day of slower strength gain is an additional day of risk. If the concrete freezes before it reaches approximately 3.5 MPa (500 PSI), permanent damage occurs: the ice crystals physically disrupt the hydrating cement paste, and the concrete never reaches its design strength.

High-early strength mix achieves 70% of its 28-day strength in 3 days rather than 7. It gets there through finer-ground cement (Type HE portland cement) that hydrates faster, or through higher cement content, or both. The 28-day strength may be the same as a standard mix — the advantage is faster early-strength gain, which closes the vulnerability window quickly. High-early mix costs $210–$260 per cubic yard in NB versus $190–$240 for standard air-entrained mix.

High-early strength alone is not sufficient for cold weather pours. It is one tool in the cold weather concrete toolkit. For late-fall pours in NB, a complete cold weather protection plan includes:

- **Heated mixing water** at the batch plant — NB ready-mix plants typically begin heating water in October as temperatures drop

- **Calcium chloride accelerating admixture** (up to 2% by weight of cement) to accelerate setting and strength gain — discuss this with your contractor
- **Insulating blankets** over the fresh concrete immediately after finishing — keep the slab above 10°C for a minimum of 7 days
- **Temperature monitoring** — simple thermometer checks under the blanket twice daily to ensure the concrete is staying warm enough
- **Avoid placing on frozen subgrade** — the cold from below can draw heat out of the slab faster than blankets can replenish it

  For November pours in northern NB (Bathurst, Miramichi, Edmundston), even this protection level may be insufficient without a heated enclosure. The cost of a cold-weather pour — insulating blankets, heated enclosures, accelerating admixtures, temperature monitoring — can add 25–40% to the overall project cost. If the work can reasonably wait until May, that is usually the better decision for both quality and budget.

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Q15

What is the difference between 25 MPa and 32 MPa concrete?

25 MPa (approximately 3,600 PSI) and 32 MPa (approximately 4,600 PSI) are both standard ready-mix concrete strengths used in New Brunswick, but they serve different applications — and for most exterior concrete in NB, 32 MPa is the correct choice.

The number represents compressive strength: the load the concrete can bear per unit area before it fails, tested at 28 days. 32 MPa can handle 28% more compressive load than 25 MPa. But in NB residential concrete, the strength

difference is less important than the durability difference that comes along with it.

Higher MPa concrete is not just stronger — it is denser and less permeable. To achieve higher compressive strength, the mix uses a lower water-to-cement ratio (less water relative to cement). The result is a denser, less porous paste with smaller, more disconnected pores. Fewer and smaller pores mean less water absorption, which means less freeze-thaw damage, less salt penetration, and better long-term durability in NB conditions.

CSA A23.1, the Canadian standard for concrete materials, classifies NB driveways, patios, and sidewalks as **Exposure Class C-1** — concrete exposed to freeze-thaw cycles and de-icing chemicals. The minimum specification for C-1 exposure is 32 MPa with a 0.45 maximum water-to-cement ratio and 5–8% air content. A 25 MPa mix does not meet this exposure class specification.

When is 25 MPa appropriate?

- Interior basement floor slabs not exposed to weather
- Interior garage floor slabs with no salt exposure (less common in NB given salt-laden vehicles)
- Non-structural fill applications
- Some interior walls and columns in residential construction

When should you specify 32 MPa?

- Any exterior slab — driveways, patios, sidewalks, steps, porches, exposed aprons
- Foundation walls and footings
- Retaining walls
- Any concrete in coastal NB communities (Saint John, Shediac, Bathurst coastline)

In terms of cost, 32 MPa ready-mix in NB runs roughly $20–$30 more per cubic yard than 25 MPa. On a driveway using 8 cubic yards, that is a $160–$240 premium on a $6,000–$9,000 project. It is not a meaningful cost savings to downgrade — and the durability trade-off in NB's climate is severe. Stick with 32 MPa for all exterior concrete work.

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Q16

Can I use bagged concrete mix for a small patio in NB?

Bagged concrete mix works for very small projects — sonotube footings, fence posts, repair fills — but is not practical or economical for even a modest patio in New Brunswick. For anything larger than about 20 square feet, ready-mix is the better choice.

The math tells the story. Bagged concrete mix (Quikrete, Bomix, or similar) is sold at NB building supply stores in 30 kg bags for $5–$8 each. One 30 kg bag yields approximately 0.014 cubic metres (0.5 cubic feet) of concrete. A small patio — say 8×8 feet (64 sq ft) at 4 inches thick — requires roughly 0.8 cubic metres, or about 57 bags. At $6–$7 per bag, that is $340–$400 in materials alone. Ready-mix delivered to your Moncton, Fredericton, or Saint John address for the same volume costs $170–$210, including a short-load surcharge. And you have to mix every one of those 57 bags by hand or with a rented mixer.

For a true small project — a 4×4 foot landing, a single sonotube footing, a patch fill — bagged concrete is perfectly appropriate. One to five bags, a wheelbarrow, a mixing hoe, and an hour of your time. The convenience and no minimum order requirements make it ideal for tasks that do not justify calling a ready-mix truck.

One important limitation for NB homeowners: most bagged concrete mixes are not air-entrained. If you are mixing bags for a small exterior slab that will be exposed to NB winters, you are working with concrete that lacks the freeze-thaw protection that air entrainment provides. For a fence post footing below grade, this is inconsequential. For a small exposed landing, steps, or patio — even a small one — you are taking on the risk of surface spalling within a few winters.

Some suppliers carry or can order air-entrained bagged mixes. If you are mixing bags for an exposed exterior surface, ask specifically for an air-entrained product, or plan to apply a quality penetrating sealer and accept that the surface may have a shorter service life than a ready-mix air-entrained pour.

The practical threshold: if your project requires more than 10–15 bags, call a ready-mix plant. The minimum order charge ($75–$150 short-load surcharge) is offset by the time you save, the better concrete you get, and your arms not falling off. New Brunswick Concrete can help you find contractors who handle small pours without the full production mobilization cost.

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Q17

What is a concrete admixture and when should I use one in NB?

A concrete admixture is a chemical added to the mix — beyond cement, water, and aggregates — to modify the concrete's properties for specific conditions or performance goals. In New Brunswick, admixtures are practical tools for managing cold-weather pours, improving workability, accelerating or retarding set time, and extending durability.

The ready-mix plant adds admixtures during batching, though some (like calcium chloride in small quantities) can be added at the site. Here are the most relevant admixture types for NB concrete:

Accelerating admixtures speed up the hydration reaction and strength gain. The most common is calcium chloride (CaCl?), used at 1–2% by weight of cement. In NB, accelerators are most useful for late-season pours (October–November) when you need the concrete to reach handling strength before temperatures drop overnight. Non-chloride accelerators are used when chloride ions could cause corrosion of rebar — typically in structural and foundation applications. Note: calcium chloride is not recommended in reinforced concrete because it promotes rebar corrosion over time.

Water-reducing admixtures (plasticizers) allow a workable, flowing concrete at a lower water-to-cement ratio than would otherwise be possible. This is the right solution when a contractor needs better workability on a hot summer day in Moncton without adding water to the truck. Normal-range water reducers reduce water demand by 5–10%; high-range water reducers (superplasticizers) can achieve 15–30% water reduction. The result is concrete that flows like a higher-slump mix but has the durability of a stiff, dry mix.

Retarding admixtures slow the hydration reaction, giving the concrete more time before it stiffens. Useful in hot July and August weather in NB when high temperatures cause the concrete to set too quickly, reducing the finishing window. Also used for large pours where the work takes several hours.

Air-entraining admixtures are added at the batch plant to introduce the protective air bubble network essential for all exterior NB concrete. This is not optional — it is standard practice for any outdoor pour in New Brunswick.

Shrinkage-reducing admixtures (SRAs) reduce drying shrinkage and can be useful in flatwork where crack control is important. More common in commercial applications but available for residential work.

For most residential NB homeowners, the practical takeaway is: specify air-entrained mix as the baseline, ask for an accelerating admixture if pouring in cool fall weather, and trust your contractor to specify a plasticizer if workability is needed rather than adding water at the site. Admixtures are the professional's toolkit — knowing they exist helps you have informed conversations with your contractor.

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Q18

Penetrating sealer vs acrylic sealer for concrete in New Brunswick?

For most concrete surfaces in New Brunswick — driveways, sidewalks, exposed patios — a penetrating sealer (silane/siloxane) is the superior choice. Acrylic sealers have their place, but the demanding NB climate makes penetrating protection the better long-term investment for high-exposure surfaces.

The fundamental difference is how each product works. **Penetrating sealers** absorb into the concrete and chemically react with the calcium silicate compounds in the paste, creating a hydrophobic barrier within the pore structure. You cannot see it and it does not change the surface appearance — the concrete looks exactly the same. Water beads up and rolls off. Salt cannot penetrate to create freeze-thaw damage at the concrete surface. The protection is below the surface, so there is nothing to peel, flake, or wear off. Silane/siloxane blends cost $40–$80 per gallon, cover 150–300 sq ft, and should be reapplied every 2–4 years.

Acrylic sealers form a thin coating on top of the concrete surface. They enhance the appearance — adding a mild sheen on a matte acrylic, or a high gloss on a glossy product — and bring out the colour and texture of stamped or

exposed aggregate concrete. For decorative concrete where aesthetics matter, acrylic is attractive. The durability problem in NB is the coating itself: it sits on top and must contend with freeze-thaw movement in the concrete, vehicle tyres, snow shovels, and UV exposure. On driveways in Moncton or Fredericton, acrylic sealers typically need reapplication annually to maintain protection. They can also trap moisture beneath the coating, which accelerates spalling if applied too soon or over concrete with active moisture movement.

The practical recommendation for NB driveways and outdoor slabs: penetrating silane/siloxane sealer. Apply after 28 days of curing (some contractors prefer 90 days), on a dry day when temperatures are between 10°C and 25°C. Two thin coats are better than one heavy coat. Allow to dry completely before vehicle traffic.

Where acrylic sealers make sense in NB: covered patios and porches with no vehicle traffic, stamped concrete surfaces where colour enhancement is desired, interior garage floors where UV is not a concern. Even on stamped driveways, consider a penetrating sealer as the base coat with a light acrylic on top — the penetrating layer provides the freeze-thaw protection, the acrylic provides the enhanced appearance.

Never apply any sealer to concrete that is not fully cured, damp, or freshly cleaned. For optimal results, clean the surface with a concrete cleaner and rinse thoroughly before applying sealer. Your contractor can advise on timing and product selection.

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Q19

What type of rebar should be used in NB foundations?

For New Brunswick foundation work, standard 15M (metric #5, 5/8-inch diameter) Grade 400 deformed rebar is the most common specification — used for foundation walls, grade beams, and heavily loaded structural elements. 10M (metric #3, 3/8-inch) is used for lighter applications and tie bars. Epoxy-coated rebar is recommended in high-moisture or coastal environments.

Rebar in Canada is classified by bar diameter (10M, 15M, 20M) and yield strength grade (Grade 400 = 400 MPa yield strength is standard). Deformed rebar — the type with the ridges and bumps on the surface — bonds far better to concrete than plain smooth bar, and is required for all structural applications.

Foundation wall reinforcement in a typical NB residential home uses 15M vertical bars at 200–300 mm centres and 10M horizontal bars at 400–600 mm centres, depending on wall height, soil pressure, and the engineer's design. The specific spacing and sizing must be engineered — residential foundation plans should always be drawn or reviewed by a structural engineer or conform to prescriptive requirements in the NB Building Code for standard residential construction.

Why NB foundations need good reinforcement: Frost heave, hydrostatic pressure from spring thaw, and expansive clay soils (common in parts of the Moncton, Fredericton, and Miramichi areas) all place lateral loads on foundation walls. Adequate rebar prevents cracking, bowing, and wall movement. A foundation wall without proper reinforcement relies entirely on the concrete in tension — which is the concrete's weakest direction.

Corrosion is a real concern in NB foundations exposed to groundwater, particularly near the coast (Saint John waterfront, Shediac, Bathurst coast) or in areas with high water tables. Moisture diffuses through concrete over decades, eventually reaching the rebar and initiating corrosion. When rebar corrodes, it expands, cracking the surrounding concrete from the inside. Epoxy-coated rebar ($0.50–$1.00 per foot premium) or stainless steel rebar is a worthwhile investment in high-moisture foundation environments — especially for below-grade exterior walls that will be in contact with soil and groundwater for the life of the building.

Concrete cover over rebar is critical: CSA A23.1 requires a minimum of 50 mm (2 inches) of concrete cover over rebar in foundations and 75 mm (3 inches) in slabs on grade exposed to the ground. Insufficient cover allows moisture to reach the steel faster. Rebar chairs and spacers must be used to maintain cover during the pour — a detail worth verifying with your contractor.

For foundation rebar work in NB, always hire a qualified concrete contractor and ensure the design is engineered for your specific site conditions.

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Q20

How many bags of concrete do I need for a sonotube footing in NB?

The number of bags depends on the sonotube diameter and the depth of the footing — but for a typical NB deck post footing, plan on 3–6 bags of 30 kg premixed concrete per tube. Here is how to calculate it precisely for your project.

In New Brunswick, sonotube (cardboard tube) footings for decks, fences, and post structures must extend below the frost line — a minimum of **4 feet (1.2 metres) below grade** in southern NB (Moncton, Fredericton, Saint John, Riverview), and **4.5–5 feet (1.4–1.5 metres)** in northern NB (Bathurst, Miramichi, Campbellton). This frost depth requirement is more substantial than in most of Canada, and it means your sonotubes need to be long.

Volume calculation: The volume of a cylinder is ? × r² × h, where r is the radius and h is the height.

- **8-inch diameter sonotube, 4 feet deep:** ? × (0.33 ft)² × 4 ft = 1.37 cubic feet ÷ 0.5 (cubic feet per 30 kg bag) = **2.7 bags ? order 3 bags**
- **10-inch diameter sonotube, 4 feet deep:** ? × (0.42 ft)² × 4 ft = 2.18 cubic feet ? **4.4 bags ? order 5 bags**
- **12-inch diameter sonotube, 4 feet deep:** ? × (0.5 ft)² × 4 ft = 3.14 cubic feet ? **6.3 bags ? order 7 bags**
- **12-inch diameter sonotube, 4.5 feet deep (northern NB):** ? **7 bags**

  Always round up and buy an extra bag — you do not want to run short when the tube is half-filled.

  Bagged concrete for sonotubes is appropriate because the volume per footing is small, the pouring is intermittent (one tube at a time), and ready-mix truck minimums (typically 0.5–1 cubic metre) far exceed the quantity needed for a few footings. At $6–$8 per 30 kg bag, a 6-post deck project using 5 bags per tube runs $180–$240 in materials — straightforward DIY territory.

NB-specific note: tube diameter must be sized to support the load. For most residential decks, 10-inch or 12-inch tubes are typical; a structural engineer or your deck contractor can confirm the required diameter for your specific span and load. The bottom of the tube should sit on undisturbed native soil or properly compacted granular fill — never on organic soil, topsoil, or disturbed fill that could settle. Some NB contractors add a belled bottom (wider footing at the base) using a flared tube section for better load distribution.

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Q21

What is the water-to-cement ratio and why does it matter?

The water-to-cement ratio (w/c ratio) is the weight of water in a concrete mix divided by the weight of cement — and it is the single most important variable controlling concrete strength and durability. For NB exterior concrete, the maximum w/c ratio is 0.45 per CSA standards for freeze-thaw exposed concrete.

Here is the fundamental relationship: the less water relative to cement, the stronger and more durable the concrete. A 0.40 w/c ratio produces denser, stronger concrete than a 0.55 ratio. More water means more pores as the excess water that does not participate in hydration evaporates, leaving capillary voids behind. More pores mean more pathways for water, salt, and damaging ions to enter the concrete. In NB's freeze-thaw environment, this porosity directly determines how quickly the concrete surface deteriorates.

The CSA A23.1 standard specifies a maximum w/c ratio of 0.45 for **Exposure Class C-1** — which covers all NB exterior concrete exposed to freeze-thaw cycles and de-icing chemicals. Many quality NB contractors push lower, to 0.40, for driveways and high-exposure surfaces. The 32 MPa (4,600 PSI) air-entrained mix typically ordered for NB driveways is formulated at or near this ratio.

The critical jobsite problem: every time a driver or worker adds water to the ready-mix truck at the site, the w/c ratio increases. Adding just 5 litres of water per cubic metre increases the w/c ratio by approximately 0.05 — enough to meaningfully reduce strength and dramatically increase porosity. This is the most common way that properly specified concrete becomes improperly placed concrete. The concrete leaves the plant at the right specification and arrives on-site correct, then someone adds water to make it easier to work, and durability drops.

If the concrete seems too stiff to work at the correct slump, the solutions are:

- Contact the batch plant to discuss plasticizer addition (achieves better workability without water addition)
- Accept a slightly lower slump — concrete at 75–100 mm slump is more difficult to finish but produces better durability
- Work faster with more crew

  The w/c ratio also affects curing. Higher water content means more water is available for evaporation. On a hot, windy August day in Fredericton, a high-w/c mix loses surface moisture rapidly, increasing the risk of plastic shrinkage cracking. A properly low w/c ratio mix is less vulnerable to this.

  For homeowners overseeing a concrete project, asking the contractor 'what w/c ratio is specified in the mix design?' is a legitimate quality question. Any experienced NB contractor should be able to answer immediately.

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Q22

How many cubic yards of concrete do I need for a standard NB driveway?

A standard two-car concrete driveway in New Brunswick — approximately 20 feet wide by 40 feet long (800 square feet) at 5 inches thick — requires roughly 12.3 cubic yards of concrete. A more modest single-car driveway at 10 feet wide by 40 feet long (400 square feet) at the same thickness needs about 6.2 cubic yards.

The calculation is straightforward: length (feet) × width (feet) × thickness (feet) ÷ 27 = cubic yards. For thickness, convert inches to feet: 4 inches = 0.333 feet, 5 inches = 0.417 feet, 6 inches = 0.500 feet.

For a 20 × 40 driveway at 5 inches: 20 × 40 × 0.417 ÷ 27 = 12.3 cubic yards.

NB driveway thickness should be 5 to 6 inches minimum — not 4 inches. Here is why this matters for your volume calculation and your budget. The NB Building Code and sound concrete practice for vehicle traffic (passenger cars, light trucks, SUVs) calls for 5 inches as a minimum for a concrete driveway that will last. Four-inch driveways are common and may meet minimum code in some applications, but in New Brunswick's freeze-thaw climate, the extra inch of thickness adds significant resistance to cracking from frost heave and load. The incremental cost — perhaps one additional cubic yard for a typical driveway — is well worth it.

Always add 10% to your calculated volume when ordering ready-mix. This accounts for minor variations in sub-base height, spillage during placement, and the cost of not running short mid-pour. Running out of concrete during a pour forces a cold joint — a seam where fresh concrete meets concrete that has begun to set — which is a permanent weak point in the slab. It is significantly cheaper to order a half-yard more than you think you need than to deal with a cold joint or a second small delivery.

For a driveway with an attached apron that widens at the garage, a turnaround area, or any curved or irregular sections, sketch the shape and break it into rectangles or approximate shapes for your calculation. Your contractor will do this automatically, but if you are estimating for budgeting purposes, the rectangle method gives you a close approximation.

Your contractor will also account for:

- The concrete pump if one is needed (adds to labour cost but does not affect volume)
- Potential short-load surcharges if your volume falls below the 3 to 4 yard threshold where NB suppliers apply them — for the single-car driveway example above (6.2 yards), you are in a reasonable range; for a very small section, the surcharge matters

  Get your contractor to specify air-entrained mix at 25 to 32 MPa for your NB driveway — this is non-negotiable for durability in our climate.

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Q23

How do I calculate how much concrete I need for my project in NB?

The core calculation is simple: (length in feet × width in feet × thickness in feet) ÷ 27 = cubic yards. Divide by 27 because there are 27 cubic feet in one cubic yard, which is how ready-mix concrete is sold in Canada.

Convert your thickness from inches to feet before calculating: 4 inches = 0.333 feet, 5 inches = 0.417 feet, 6 inches = 0.500 feet. So a 20 × 30 foot patio at 4 inches thick is: 20 × 30 × 0.333 ÷ 27 = 7.4 cubic yards.

For irregular shapes, break the area into rectangles, triangles, or circles and calculate each section separately, then add them together. A triangle is 1/2 × base × height. A circle is 3.14159 × radius² (don't forget to convert radius to feet). An L-shaped driveway is just two rectangles added together.

For footings and walls, the same formula applies but you are dealing with a rectangular cross-section multiplied by the linear length. A 16-inch-wide by 10-inch-thick footing running 60 linear feet: (1.333 × 0.833 × 60) ÷ 27 = 2.5 cubic yards. Foundation walls add the wall height and width in the same way.

For sonotubes (cylindrical pier footings common for NB deck footings), the formula is: 3.14159 × radius² × depth ÷ 27. An 8-inch diameter sonotube (4-inch radius = 0.333 feet) poured to 5 feet depth: 3.14159 × (0.333)² × 5 ÷ 27 = 0.065 cubic yards each. Eight of these for a deck: 0.52 cubic yards — well under the short-load surcharge threshold, which means you are better off using bagged concrete for this application.

Always order 10% more than your calculated volume. This buffer covers variations in sub-base depth, minor spillage, and ensures you do not run short mid-pour. Running out of concrete during a pour is a serious problem —

the seam between fresh and partially set concrete (called a cold joint) is a permanent weakness in the slab. Over-ordering by one yard costs you $190 to $240 and the leftover can always be used for a small pad, extra footing depth, or patching — but running short mid-pour can cost significantly more in repairs.

NB thickness recommendations to factor into your calculation:

- Sidewalks and walkways: 4 inches minimum
- Patios: 4 inches minimum, 5 inches preferred
- Driveways: 5 inches minimum, 6 inches for truck traffic or heavy vehicles
- Garage floors: 4 to 5 inches
- Basement floors: 4 inches minimum

  Most NB ready-mix suppliers are happy to confirm your volume calculation when you call for pricing — give them the dimensions and they will calculate it for you. For projects over 3 yards, delivery pricing is per yard; for smaller orders, factor in the short-load surcharge of $75 to $150.

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