

NEW BRUNSWICK BASEMENTS

Underpinning & Lowering

Basement underpinning, lowering, dig-out excavation, bench footings, increasing ceiling height, and headroom solutions for NB homes

14 Expert Answers from Basement IQ

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How does the presence of a high seasonal water table in Riverview and Quispamsis affect the design and cost of a basement underpinning project?

High seasonal water tables in Riverview and Quispamsis significantly complicate basement underpinning projects, typically adding \$15,000-\$30,000 to costs and requiring specialized dewatering systems and waterproofing measures that must be designed around spring water table fluctuations.

The Petitcodiac River valley where Riverview and Quispamsis sit creates particularly challenging conditions for underpinning work. Both communities are built on river valley soils with naturally high water tables that can rise dramatically during spring snowmelt and heavy rain periods. When you're digging 4-6 feet deeper than the existing foundation to create new footings, you're often excavating directly into the seasonal high water table zone.

Dewatering Requirements and Timing

Underpinning in these areas typically requires continuous dewatering systems during excavation. Expect to install multiple sump pumps and potentially a wellpoint dewatering system, which can add \$5,000-\$12,000 to project costs. The work must be carefully timed — ideally starting in late June through August when water tables are at their lowest. Starting underpinning work during spring thaw (March-May) in Riverview or Quispamsis is asking for trouble, as you'll be fighting constant groundwater infiltration that can undermine the new concrete work and destabilize the existing foundation.

Enhanced Waterproofing Systems

The high water table means your new basement walls will face significant hydrostatic pressure year-round. Standard damp-proofing won't cut it — you'll need a full exterior waterproofing membrane system with drainage board, plus an interior drainage system connecting to a sump pump. This comprehensive waterproofing typically adds \$8,000-\$15,000 to underpinning costs compared to drier locations. The new footings also require proper drainage tile installation and connection to storm systems, which can be complicated by municipal drainage requirements in both communities.

Soil Stability Considerations

River valley soils in this area tend to be silty clay with poor bearing capacity when saturated. Your structural engineer may require larger footings or even helical piers to achieve adequate bearing capacity, especially if underpinning during wetter periods. Soil testing is essential and may reveal the need for engineered fill or stabilization measures that can add \$3,000-\$8,000 to the project.

Practical Project Management

Work with contractors experienced in high water table underpinning — this isn't typical basement work. The excavation must be done in small sections to maintain foundation stability, and each section needs immediate concrete placement before groundwater can undermine the work. Expect the project timeline to extend 2-4 weeks longer than standard underpinning due to dewatering requirements and weather dependencies.

Municipal Considerations

Both Riverview and Quispamsis have specific requirements for foundation drainage connections and may require engineered drawings for underpinning projects near their storm systems. Factor in additional permit review time and potential infrastructure connection fees.

The total cost premium for underpinning in high water table areas like Riverview and Quispamsis typically runs 40-60% above standard underpinning costs, but the investment in proper dewatering and waterproofing is essential for long-term success. Cutting corners on water management will lead to foundation settlement, basement flooding, and potentially catastrophic structural problems.

Need help finding an underpinning contractor experienced with high water table conditions? New Brunswick Basements can match you with specialists familiar with Riverview and Quispamsis soil conditions.

Q2

How do helical pile systems compare to traditional underpinning for stabilizing a sinking foundation in the Kennebecasis Valley?

Helical piles offer faster installation and less disruption than traditional underpinning, but both systems can effectively stabilize sinking foundations in the Kennebecasis Valley's challenging clay soils. The choice depends on your specific soil conditions, access constraints, and budget.

Traditional Underpinning in Kennebecasis Valley Conditions

Traditional underpinning involves excavating beneath the existing foundation in sections and pouring new concrete footings that extend deeper below the frost line. In the Kennebecasis Valley, this means digging through the area's notorious heavy clay soils that retain moisture and can shift seasonally. The clay provides excellent bearing capacity once you reach undisturbed soil, but the excavation process is labor-intensive and weather-dependent.

The traditional approach typically costs \$200-\$400 per linear foot in the Kennebecasis Valley, with total projects ranging from \$15,000-\$40,000 depending on foundation perimeter and depth required. However, the heavy clay soils make hand-digging extremely difficult, often requiring mechanical excavation equipment that may not fit in tight

basement spaces. Weather delays are common since clay becomes unworkable when wet, and spring thaw conditions can halt work for weeks.

Helical Pile Advantages in Clay Soils

Helical piles (also called screw piles) are steel shafts with helical plates that are screwed into the ground until they reach stable bearing soil or bedrock. In the Kennebecasis Valley, this typically means penetrating 8-15 feet through the clay layer to reach the underlying glacial till or bedrock that provides reliable support.

The installation process is much faster—typically 1-2 days versus 1-2 weeks for traditional underpinning. Helical piles can be installed year-round since they don't require excavation, making them ideal for emergency foundation repairs during New Brunswick's unpredictable spring thaw season. The equipment is compact enough to access most basement spaces, and there's minimal disruption to landscaping or existing structures.

Cost and Performance Comparison

Helical pile systems typically cost \$300-\$500 per linear foot installed in the Kennebecasis Valley, making them 20-30% more expensive than traditional underpinning initially. However, when you factor in the faster installation, reduced weather delays, and minimal site restoration, the total project cost often becomes comparable.

Both systems provide excellent long-term stability in the valley's clay soils. Traditional underpinning creates a continuous concrete footing that distributes loads evenly, while helical piles transfer loads to deeper, more stable soil layers. Helical piles actually perform better in areas with ongoing settlement issues since they bypass the problematic clay layer entirely.

Kennebecasis Valley Specific Considerations

The valley's proximity to the Kennebecasis River means many properties have high seasonal water tables, particularly in spring. Traditional underpinning requires dewatering during excavation, which can be challenging and expensive. Helical piles avoid this issue entirely since no excavation is required.

Many homes in the Rothesay, Quispamsis, and Hampton areas were built in the 1960s-1980s on shallow foundations that don't extend below the frost line in the clay soils. Both underpinning methods can address this, but helical piles provide the added benefit of reaching much more stable bearing layers.

When to Choose Each Method

Choose traditional underpinning when you need to address multiple foundation issues simultaneously (waterproofing, insulation, height increase), have easy excavation access, and want the most cost-effective solution. Choose helical piles for emergency repairs, tight access situations, high water table conditions, or when you need the work completed quickly regardless of season.

Both require engineering assessment and building permits through the Regional Service Commission. Get quotes from contractors experienced with Kennebecasis Valley clay conditions—soil behavior varies significantly even within the same neighborhood.

Need help finding a foundation specialist familiar with Kennebecasis Valley conditions? New Brunswick Basements can match you with experienced contractors through the New Brunswick Construction Network.

Q3

What is basement underpinning and when is it necessary for a home in Saint John with low basement ceiling height?

Basement underpinning is the process of permanently lowering your basement floor by extending the existing foundation walls deeper into the ground, creating more headroom in a space that would otherwise be too short for comfortable living. For many Saint John homeowners with older homes, underpinning is the only way to transform a cramped, low-ceiling basement into a fully usable living space.

The process works by excavating beneath your existing foundation footings in carefully sequenced sections, pouring new concrete to extend the foundation wall downward, and then pouring a new basement floor slab at the lower elevation. This effectively deepens the basement by the desired amount, typically **12 to 24 inches**, bringing the ceiling height from a ducking-required 5 feet 10 inches up to a code-compliant **6 feet 5 inches or more**. The work must be done in small alternating sections, usually 3 to 4 feet at a time, to ensure the house above remains fully supported throughout the process.

Underpinning becomes necessary in Saint John when your existing basement ceiling height falls below the NB Building Code minimum of **6 feet 5 inches (1.95 metres)** for habitable space, measured from finished floor to finished ceiling. Many homes built in the **1960s through 1980s** across Saint John, particularly in neighbourhoods like Millidgeville, the North End, East Saint John, and Lancaster, were built with basements intended only for storage and mechanicals. These basements often have **5 feet 8 inches to 6 feet** of clearance from slab to joists, which becomes even less once you add flooring and ceiling materials.

Saint John presents some **unique challenges for underpinning** due to the city's heavy clay soils. Clay retains water, expands when wet, and contracts when dry, creating lateral pressure against foundation walls. During the underpinning process, these soil conditions require extra care with temporary shoring and dewatering. The excavation sequence must account for the fact that saturated clay does not hold its shape well in open excavation pits, so sections must be poured promptly. Spring is the worst time to underpin in Saint John because the water table rises dramatically during thaw, and the clay soils become saturated. Most experienced contractors will

schedule underpinning work between **late May and October** when soil conditions are most stable.

The cost for full basement underpinning in Saint John ranges from **\$30,000 to \$80,000+** depending on the depth increase, the foundation type (poured concrete is simpler than concrete block), and the soil and water conditions at your specific site. Concrete block foundations, which are common in Saint John homes from this era, require more careful handling because each block course must be properly tied into the new concrete extension below.

Before any underpinning project, you will need a **structural engineer's assessment and stamped drawings**, which run **\$1,500 to \$5,000** in the Saint John area. This is a non-negotiable requirement for your building permit. The engineer will evaluate your existing foundation, soil conditions, and the structural loads above to design a safe underpinning plan.

Underpinning is major structural work and is absolutely not a DIY project. If your Saint John home has a low basement that you want to convert into livable space, New Brunswick Basements can help you find contractors experienced with underpinning in Saint John's challenging clay soil conditions.

How much does it cost to underpin a full basement in Moncton to gain an extra two feet of headroom in 2026?

A full basement underpinning project in Moncton to gain an extra two feet of headroom will typically cost between \$45,000 and \$80,000+ in 2026, depending on the size of the basement, the foundation type, and site-specific soil and water conditions. This is one of the most expensive basement renovation projects you can undertake, but for many Moncton homeowners with older homes, it is the only path to a fully code-compliant finished basement.

The cost breaks down into several major components. **Engineering and permits** run \$2,000 to \$5,000 for stamped structural drawings and the building permit, which is required before any work begins. **Excavation and underpinning labour** is the largest single cost, typically \$30,000 to \$55,000 for a full basement (approximately 800 to 1,000 square feet of floor area). This includes the careful section-by-section excavation beneath existing footings, temporary shoring, forming, and pouring new concrete extensions on each wall, followed by excavating the interior to the new depth and pouring a new basement slab. **Waterproofing** at the new depth adds \$5,000 to \$12,000, including new interior drainage, a sump pump installation, and ensuring the weeping tile system extends to the new footing level. **Concrete and materials** account for \$8,000 to \$15,000 depending on the volume of concrete needed for wall extensions and the new slab.

Moncton's **sandy and silty soils** offer both advantages and challenges for underpinning. The good news is that sandy soil is easier to excavate than the heavy clay found in Saint John, which can reduce labour time somewhat. The challenge is that sandy soil can shift and settle, particularly if water is introduced during excavation. An experienced underpinning contractor in Moncton will manage dewatering carefully and may need to compact or stabilize the soil at the new footing level before pouring.

A **two-foot depth increase** is on the deeper end of typical underpinning projects. Most underpinning in NB adds 12 to 18 inches, so a full 24-inch increase requires more concrete, more excavation, and a more complex engineering plan. The deeper you go, the more you must account for the **soil bearing capacity** at the new depth, which your structural engineer will evaluate during the assessment.

Factors that push costs higher in Moncton include concrete block foundations (more labour-intensive to underpin than poured concrete), high water table conditions (requiring active dewatering during construction), limited access for equipment around the home, and the presence of utilities or service connections that need to be rerouted. If your home has a forced-air furnace with ductwork running through the floor joists, some ductwork modifications may also be needed to accommodate the new ceiling height, adding \$2,000 to \$5,000 to the total.

The project typically takes **6 to 10 weeks** for a full basement in Moncton, and the best time to schedule is for a **late spring to early fall start** when soil conditions are most stable and concrete cures properly. Getting quotes by March or April positions you well for the construction season.

Always get **three or more quotes** for underpinning work, as NB pricing varies 30 to 40 percent between contractors for identical scope. Verify that each contractor carries proper liability insurance and WorkSafeNB coverage before signing. New Brunswick Basements can help match you with experienced underpinning contractors in the Moncton area for free estimates.

Q5

What are the different methods of basement underpinning and which is most common in New Brunswick homes?

The three main methods of basement underpinning are **traditional mass concrete underpinning (also called pit underpinning), screw pile or helical pier underpinning, and bench footing underpinning, with traditional mass concrete being by far the most common method used in New Brunswick homes.** Each method has different applications, costs, and suitability depending on your foundation type, soil conditions, and how much depth you need to gain.

Traditional mass concrete underpinning is the standard approach across NB and the method most local contractors are experienced with. The process involves excavating beneath your existing foundation footings in small alternating sections, typically 3 to 4 feet wide, one section at a time. Each excavated section is dug to the new desired depth, a footing is poured at the bottom, and then new concrete walls are poured or formed up to meet the existing foundation. Once that section has cured sufficiently (usually 48 to 72 hours minimum), the next section is excavated. This leapfrog pattern ensures the house above is always supported by undisturbed foundation on either side of the active work area. After all wall sections are extended, the full interior is excavated to the new depth and a new basement slab is poured. This method costs **\$30,000 to \$80,000+** for a full basement in NB and is the most proven approach for our soil conditions.

Screw pile (helical pier) underpinning uses steel piles that are mechanically screwed into the ground beside the existing foundation to transfer the building's load to deeper, more stable soil. This method is more commonly used for **foundation stabilization and settlement repair** rather than for gaining headroom. It can be combined with a lowered slab to create more basement height, but it does not extend the foundation walls themselves. Screw piles are useful in areas with poor bearing capacity near the surface, which can occur in some Moncton-area sandy soils and in Fredericton's river valley soils. However, for the primary goal of gaining headroom, screw piles alone do not

achieve the same result as traditional underpinning.

Bench footing underpinning (also called angle underpinning) is a partial approach where a new, deeper footing is poured at an angle from the base of the existing footing down to the new floor level, creating a sloped concrete bench along the perimeter walls. This method is less disruptive and less expensive than full underpinning, but it reduces the usable floor area because the bench takes up space along the walls. It is sometimes used when only a modest depth increase is needed (6 to 12 inches) and budget is a major constraint.

In New Brunswick, **traditional mass concrete underpinning dominates** for several practical reasons. NB's older housing stock from the 1960s through 1980s commonly features concrete block foundations with relatively shallow footings, and the most effective way to deepen these is the proven pit method. NB contractors have decades of experience with this technique across the province's varying soil types, from Saint John's heavy clay to Moncton's sandy loam to the rocky soils of northern NB. The method also naturally integrates with the waterproofing work that is essential in our Maritime climate, since the new deeper footings can include updated weeping tile and drainage systems.

Regardless of method, all underpinning in NB requires **stamped structural engineering drawings** and a building permit. This is major structural work that affects the entire load path of your home. If you are considering underpinning, New Brunswick Basements can match you with contractors experienced in the specific method best suited to your home and soil conditions.

Q6

How long does a full basement underpinning project take from start to finish in a typical Fredericton home?

A full basement underpinning project in a typical Fredericton home takes approximately 8 to 12 weeks from the start of excavation to the completion of the new basement slab, with the total timeline stretching to 12 to 16 weeks when you include the engineering, permitting, and planning phases upfront. This is not a project that can be rushed, and the sequential nature of the work means each phase must be completed before the next can begin.

The **pre-construction phase** alone takes 4 to 8 weeks. You begin with a structural engineering assessment, which takes 1 to 2 weeks to schedule and complete in the Fredericton area. The engineer then needs 2 to 3 weeks to produce stamped drawings that detail the underpinning sequence, footing sizes, concrete specifications, and temporary shoring requirements. With drawings in hand, you submit for a building permit through the City of Fredericton's building inspection department, which typically takes **1 to 3 weeks** for structural projects. During this

time, your contractor should be ordering materials, scheduling concrete deliveries, and planning the excavation sequence.

The **active underpinning work** follows a strict section-by-section process. For a typical Fredericton basement of 800 to 1,000 square feet, the foundation perimeter is divided into sections approximately 3 to 4 feet wide. Each section is excavated to the new depth, formed, poured with concrete, and allowed to cure before the adjacent section is opened. With cure times of **48 to 72 hours minimum** per section and a perimeter of roughly 120 to 130 linear feet, the wall underpinning alone takes **4 to 6 weeks**. Crews typically work on multiple non-adjacent sections simultaneously to keep the project moving, but the curing time is the controlling factor and cannot be shortcut.

Once all perimeter wall sections are extended, the **interior excavation** begins. The full interior soil is dug out to the new depth, hauled away, the subgrade is compacted, new drainage and plumbing rough-ins are installed, a gravel bed and vapour barrier are placed, and the new slab is poured. This phase takes approximately **2 to 3 weeks**. The new slab then needs adequate curing time before any finishing work begins on top of it.

Fredericton's **site conditions** can significantly affect the timeline. The mixed clay and loam soils along the Saint John River valley hold moisture and can become unstable during excavation, particularly if the project runs into a rainy period. If your home is near the river or in a low-lying area with a high water table, active dewatering may be needed throughout the project, which adds complexity but not necessarily calendar time. Fredericton's **frost depth of up to 1.5 metres** means underpinning work should not start before late May and ideally wraps up before October, giving concrete adequate warm-weather curing conditions.

Weather delays are realistic to expect. Budget an additional 1 to 2 weeks of contingency for rain days, unexpected soil conditions, or concrete delivery scheduling conflicts. Planning for a **June start** is ideal in Fredericton, as it gives you the full summer construction window to complete the work before fall temperatures drop.

During the underpinning process, you can typically remain living in the home, though it will be noisy and dusty. The structural engineer's plan ensures the house is safely supported at every stage. Get matched with experienced underpinning contractors through New Brunswick Basements to get accurate timelines for your specific Fredericton home.

What are the risks of underpinning a basement and what can go wrong during the process in a Saint John home?

Basement underpinning is the highest-risk renovation work you can do on a home, and Saint John's challenging soil and water conditions amplify several of those risks. Understanding what can go wrong helps you choose the right contractor, ask the right questions, and make sure proper safeguards are in place before the first shovel hits the ground.

The most serious risk is **structural settlement or movement of the house above**. Underpinning requires temporarily exposing sections of your foundation footing while the house loads are redistributed to adjacent, undisturbed sections. If too large a section is opened at once, if the excavation sequence deviates from the engineer's plan, or if adjacent soil gives way, the house above can shift. Even minor settlement can crack drywall, jam doors and windows, and damage finishes on upper floors. Severe settlement can cause structural failure. This risk is elevated in Saint John because of the city's **heavy clay soils**, which are prone to lateral movement when disturbed or when water content changes. Wet clay can slump into an open excavation pit, undermining the adjacent supported section.

Water infiltration during construction is a major concern in Saint John. The city's clay soils hold water against foundations and drain slowly. When you excavate below your existing footings, you may encounter the water table, and in Saint John, that water table rises significantly during spring thaw and after heavy rain events. If groundwater floods an open underpinning section before concrete can be poured and cured, it compromises the pour quality, weakens the new footing, and can destabilize the excavation walls. Active dewatering with sump pumps must be maintained throughout the project, and scheduling work during the **driest months (July through September)** minimizes this risk.

Soil bearing failure can occur if the soil at the new, deeper footing level cannot support the building loads. This is why a structural engineer must evaluate soil bearing capacity before the project begins. In some parts of Saint John, particularly near the harbour and in the lower South End, fill material from historical development can be encountered at depth, which has unpredictable bearing capacity. The engineer may recommend soil testing (geotechnical investigation) costing **\$1,500 to \$3,000** for sites with uncertain conditions.

Concrete curing problems arise if sections are loaded too soon or if temperatures drop below freezing before adequate curing. In Saint John's climate, any underpinning work done in late October or November risks frost damage to fresh concrete. Properly cured concrete needs temperatures above 10 degrees Celsius for at least 48 to 72 hours. Cold-weather concrete additives exist but add cost and complexity.

Other risks include **utility damage** (hitting water lines, sewer connections, or electrical conduit during excavation), **cracking of the existing foundation** if the underpinning sequence creates uneven stress, and **damage to neighbouring properties** if your home shares a party wall or is very close to an adjacent foundation.

To mitigate these risks, ensure your project has **stamped engineering drawings** from a licensed structural engineer familiar with Saint John soil conditions, hire a contractor with **proven underpinning experience and proper insurance** (minimum \$2 million liability), verify **WorkSafeNB coverage** for all workers on site, and confirm the contractor follows the engineer's prescribed excavation sequence exactly. Never hire the lowest bidder for underpinning without verifying their track record on similar projects. New Brunswick Basements can help you find contractors with documented underpinning experience in the Saint John area.

Q8

Do I need a structural engineer before underpinning my basement in New Brunswick and how much does the assessment cost?

Yes, a structural engineer's assessment and stamped drawings are absolutely required before underpinning your basement anywhere in New Brunswick. No municipality or Regional Service Commission in the province will issue a building permit for underpinning work without engineered drawings, and no reputable contractor will begin the work without them. This is not a recommendation; it is a mandatory step.

Underpinning directly affects the structural integrity of your entire home. You are excavating beneath the footings that carry the full weight of the building, temporarily redistributing those loads, and creating new, deeper foundation elements that must safely support everything above for decades to come. A structural engineer designs the underpinning sequence (which sections to excavate and in what order), specifies the new footing dimensions and concrete strength, calculates temporary shoring requirements, and accounts for the specific soil conditions at your site. Without this engineering, you are gambling with the structural safety of your home and the safety of everyone working inside the excavation.

The cost for a structural engineering assessment and stamped underpinning drawings in New Brunswick typically ranges from **\$1,500 to \$5,000**, depending on the complexity of the project and the specific conditions of your home.

A **basic assessment and drawings** for a straightforward underpinning project on a poured concrete foundation with standard soil conditions runs **\$1,500 to \$2,500**. This includes a site visit to inspect the existing foundation, review the building loads, measure the current basement dimensions, and produce drawings showing the excavation sequence, new footing specifications, and shoring requirements.

A **more complex project** involving concrete block foundations, significant depth increases (18 to 24 inches), homes on sloped sites, or properties with known soil challenges pushes engineering costs to the **\$2,500 to \$5,000** range. If the engineer determines that a **geotechnical investigation** (soil testing) is needed to confirm bearing capacity at the new depth, that adds another **\$1,500 to \$3,000**. Geotechnical work is more commonly recommended in areas with variable soil conditions, such as parts of **Saint John** (where fill material from historical development may exist at depth), **Fredericton** (river valley alluvial soils), and sites where the building history is unclear.

When selecting a structural engineer in NB, look for a **Professional Engineer (P.Eng.)** licensed by Engineers and Geoscientists New Brunswick (EGGNB). Most experienced basement contractors in the province have established relationships with structural engineers they have worked with on previous underpinning projects, and they can often recommend someone who understands the specific soil and foundation conditions in your area. Having the contractor and engineer communicate directly about the project scope saves time and ensures the engineering design is practical for the contractor to execute.

The engineering fee is a small fraction of the total underpinning cost of **\$30,000 to \$80,000+**, and it is the single most important investment in the project. It protects your home from structural damage, satisfies the permit requirements, and gives your contractor the precise plan they need to execute the work safely. Trying to save money by skipping engineering on an underpinning project is the most dangerous shortcut you can take in basement renovation.

If you are considering underpinning and need help finding experienced contractors who work with qualified structural engineers, New Brunswick Basements can match you with local professionals for free.

Q9

What is a bench footing and is it a cheaper alternative to full underpinning for gaining basement space in Moncton?

A **bench footing is a stepped concrete ledge poured inside your existing foundation wall, allowing you to lower the basement floor without excavating beneath the original footings.** Instead of digging under and extending the full foundation depth (traditional underpinning), a bench footing creates a sloped shelf of concrete along the perimeter walls, typically 12 to 24 inches wide at the base, that transfers the load of the existing footing down to the new, lower floor level.

The main appeal of bench footings in Moncton is cost. A full underpinning project on an average 800 to 1,000 square foot basement runs **\$30,000 to \$80,000+** depending on depth and soil conditions. A bench footing approach

to lower the floor typically costs **\$15,000 to \$40,000**, making it roughly 40 to 50 percent less expensive. The trade-off is usable space — those concrete benches eat into your floor area along every perimeter wall, reducing your finished square footage by 10 to 15 percent. In a basement that is already narrow, this can make a noticeable difference in how the room feels and how furniture fits.

In the Moncton and Dieppe area, bench footings work reasonably well because the sandy and silty soils drain better than the heavy clay found in Saint John, which means less hydrostatic pressure pushing against the new lower slab. However, Moncton's shifting sandy soils can settle unevenly, so a **structural engineer must design the bench footing system** to ensure load transfer is stable and does not cause differential settlement. This is not a DIY calculation — get it engineered.

When Bench Footings Make Sense

Bench footings are a good fit when you need to gain 12 to 24 inches of headroom and your existing footings are relatively shallow. Many 1960s to 1980s homes in Moncton have footings that sit only 3 to 4 feet below grade, leaving basement ceilings at an uncomfortable 6 feet or less. A bench footing lets you drop the slab enough to reach the **minimum 6 foot 5 inch ceiling height** required by the NB Building Code for habitable space, without the full expense and disruption of traditional underpinning.

If you need to gain more than 24 inches, bench footings become impractical because the benches themselves grow too wide and tall, consuming too much floor space. At that point, full underpinning is the better investment despite the higher cost.

Waterproofing is critical regardless of which method you choose. Lowering the floor brings you closer to the water table, and Moncton's spring thaw from March through May raises groundwater significantly. A new interior drainage system and sump pump with battery backup should be part of any floor-lowering project — budget an additional **\$3,000 to \$8,000** for this.

Before committing to either approach, have a structural engineer assess your foundation and a basement contractor evaluate the soil and water conditions at your property. The engineer's report typically costs **\$500 to \$1,500** and is money well spent — it determines whether bench footings will work for your specific home or whether full underpinning is the safer route. A building permit is required for either method in Moncton, and the city's building inspection department typically processes permits in 1 to 3 weeks.

If you are exploring options for gaining headroom in your Moncton basement, New Brunswick Basements can match you with local contractors experienced in both bench footings and full underpinning — free of charge.

Can I live in my house during a basement underpinning project or do I need to move out temporarily in Fredericton?

You can usually stay in your home during basement underpinning, but there will be periods of significant disruption that may make temporary relocation practical, especially if you have young children, elderly family members, or pets. The answer depends on the scope of the project, how your home's mechanicals are arranged, and your tolerance for dust, noise, and limited access to parts of your house.

Underpinning is done in sections — contractors excavate and pour concrete beneath your existing footings one segment at a time, typically in 3 to 5 foot wide sections. This staged approach means your foundation is never fully unsupported, and the house remains structurally safe to occupy throughout the project. A qualified structural engineer will have designed the sequence to maintain stability at every stage. Most Fredericton underpinning projects take **4 to 8 weeks** depending on the basement size and depth of the new footings.

The practical challenges of living in the house are what push many families to move out for at least part of the project. **Noise levels are intense** — jackhammering the existing slab, excavating soil, and pouring concrete generate construction noise that starts early in the morning and continues throughout the workday. Dust is another major issue. Even with plastic barriers and dust containment, fine concrete and soil dust migrates through the house. If anyone in your household has asthma or respiratory sensitivities, this is a real concern.

Mechanical System Disruptions

Your furnace, hot water tank, electrical panel, and plumbing drains are almost certainly in the basement. During underpinning, contractors need to work around and sometimes temporarily disconnect these systems. In Fredericton's climate, this matters enormously. If your project runs into **late fall or early winter**, losing heat for even a day or two is not just uncomfortable — it risks frozen pipes. Most contractors will plan around this, but expect periods where your furnace or water heater is temporarily shut down.

Plumbing drains that run under the slab will be exposed and potentially rerouted as the floor is excavated. You may lose use of basement plumbing fixtures for days or weeks at a time. If your only bathroom is on the main floor, this is manageable. If your main bathroom is in the basement, you have a problem.

Fredericton-specific timing matters. The best window for underpinning in the Fredericton area is **May through October** when the ground is unfrozen and the water table is more predictable. The mixed clay and loam soils along the Saint John River valley can hold significant moisture, so spring thaw (March through May) adds complexity — contractors may need extra dewatering, which means more pump noise and hoses running through the house.

If you decide to stay, set up a clean living zone on the upper floors with plastic sheeting sealing the basement stairwell. Run a **HEPA air purifier** on the main floor. Plan to eat out or use a temporary kitchen setup since dust will be pervasive. If you have pets, consider boarding them during the noisiest phases.

Many Fredericton families find a middle ground — they stay for most of the project but move out for the most disruptive week, typically when the slab is being broken up and excavated. A week at a local hotel or with family runs **\$700 to \$1,500** and can save considerable stress.

Underpinning requires a building permit in Fredericton and engineered drawings from a structural engineer. The city's building inspection department handles permits and will require inspections at key stages. Budget **\$30,000 to \$80,000+** for the underpinning itself, and factor in temporary living costs if you choose to relocate. Get matched with experienced underpinning contractors through New Brunswick Basements for free estimates on your Fredericton project.

Q11

How does the high water table in parts of Moncton and Dieppe affect the feasibility of basement underpinning?

A high water table does not make underpinning impossible in Moncton and Dieppe, but it significantly increases the complexity, cost, and risk of the project. The sandy and silty soils in the Greater Moncton area drain better than Saint John's heavy clay, but they also allow groundwater to move freely, which means water can flood an excavation quickly once you dig below the existing water table level.

When contractors underpin a foundation, they excavate beneath the existing footings to pour new, deeper concrete sections. If the water table sits at or above the depth you are trying to reach, that excavation fills with water as fast as it is dug out. This requires **continuous dewatering** — running pumps throughout the excavation and concrete pouring process to keep the work area dry enough for proper concrete placement. Concrete poured into standing water will not cure properly and will have compromised structural integrity, which defeats the entire purpose of underpinning.

In parts of Moncton and Dieppe, the seasonal water table can rise dramatically during **spring thaw from March through May**. Even areas that seem dry in summer may have a water table only 3 to 4 feet below grade during peak spring melt. This is critical because underpinning typically lowers footings by 3 to 5 feet, putting the new footing depth right in the zone where seasonal groundwater fluctuates. A geotechnical investigation — which involves drilling test holes and monitoring water levels over time — is essential before committing to underpinning in

these areas. This investigation costs **\$2,000 to \$5,000** but saves you from discovering water problems mid-project.

What High Water Tables Mean for Your Budget

Dewatering adds **\$3,000 to \$10,000** or more to an underpinning project depending on the volume of water and duration of pumping required. Beyond dewatering during construction, your finished basement will need a robust permanent waterproofing system — interior drainage channels, a high-capacity sump pump with battery backup, and possibly an exterior waterproofing membrane. In high water table areas of Dieppe, where development has been rapid and stormwater management is still catching up to growth, hydrostatic pressure against basement walls and floors is a year-round concern, not just a spring problem.

The total cost of underpinning in a high water table area of Moncton or Dieppe can run **\$45,000 to \$90,000+** once you factor in geotechnical investigation, dewatering, the underpinning itself, and the permanent waterproofing system. Compare this to the **\$30,000 to \$80,000** range for a standard underpinning project in drier conditions.

There are situations where underpinning may not be the best use of your money. If the water table is consistently within 2 to 3 feet of your existing slab, lowering the basement further puts you in a perpetual battle against water. In these cases, alternatives worth considering include **bench footings** (which lower the floor without going as deep), raising the house and building a new foundation (extreme but sometimes practical for smaller homes), or simply optimizing the existing basement height by using a thinner floor assembly and lower-profile mechanical installations.

Timing is everything. If you do proceed with underpinning in the Moncton-Dieppe area, schedule the excavation and concrete work for **July through September** when the water table is at its lowest. Avoid starting during or immediately after spring thaw. Your structural engineer and geotechnical consultant should both sign off on the feasibility before a single shovel hits the ground.

A building permit is required, and the City of Moncton's building inspection department will want to see engineered drawings that account for the water table conditions. Need help finding contractors experienced with high water table underpinning? New Brunswick Basements can match you with qualified professionals for free estimates.

Q12

What permits and engineering approvals are required before starting a basement underpinning project in New Brunswick?

Basement underpinning in New Brunswick requires both a building permit and stamped structural engineering drawings — no exceptions. Underpinning modifies the load-bearing foundation of your home, which

is the most structurally critical element of the entire building. No municipality in NB will allow this work without professional engineering oversight and proper permitting.

The first step is hiring a **licensed structural engineer** (P.Eng.) registered with Engineers and Geoscientists New Brunswick (EGGNB). The engineer will assess your existing foundation, soil conditions, the depth of your current footings, and the structural loads your foundation carries. They will then produce stamped engineering drawings that specify the underpinning method, sequence of excavation (which sections to dig and pour first), concrete specifications, reinforcing steel requirements, and the final depth of the new footings. This engineering work typically costs **\$2,000 to \$5,000** depending on the complexity of your home and whether a geotechnical investigation is also required.

A **geotechnical investigation** is strongly recommended and may be required by your engineer, especially in areas with challenging soil conditions. In Saint John's heavy clay soils, Moncton's shifting sandy ground, or Fredericton's river valley clay and loam, understanding what is beneath your footings is critical for designing a safe underpinning system. A geotechnical report involves drilling test holes, analyzing soil bearing capacity, and assessing groundwater levels. Budget **\$2,000 to \$5,000** for this work.

The Permit Process

With stamped engineering drawings in hand, you apply for a **building permit** from your local authority. In Fredericton, Moncton, and Saint John, this is the city's building inspection department, and permits are typically processed in **1 to 3 weeks**. In rural areas of NB, permits are handled by Regional Service Commissions (RSCs), which can take **2 to 5 weeks** for processing. Permit fees for structural work of this scope generally run **\$150 to \$500** depending on the municipality and project value.

Your permit application will need to include the stamped engineering drawings, a site plan, a description of the proposed work, and the contractor's information. Some municipalities may also require proof of the contractor's liability insurance and WorkSafeNB coverage.

Multiple inspections are required during the project. The typical inspection sequence for underpinning includes an excavation inspection (before concrete is poured in each section), a reinforcing steel inspection, a concrete pour inspection, and a final inspection once the work is complete. Your contractor must schedule these inspections with the building department and cannot proceed to the next stage without passing each one. Failing to get inspections — or worse, closing up work before an inspector signs off — is a code violation that can result in orders to tear out and redo the work.

If your underpinning project also involves **plumbing changes** (rerouting drains under the slab, adding a bathroom rough-in), you will need a separate plumbing permit. Similarly, any new electrical circuits require an electrical permit. These are separate applications with their own inspection requirements.

One critical point that catches many NB homeowners off guard: your contractor must be the one pulling the permits, or you must pull them as the homeowner-builder. If a contractor tells you permits are not needed for underpinning, or suggests you skip them to save time and money, walk away immediately. This is the most structurally significant work you can do to a home, and unpermitted underpinning creates serious problems for insurance claims, resale, and most importantly, the safety of everyone living in the house.

Before starting, verify your contractor carries adequate liability insurance and is registered with **WorkSafeNB**. New Brunswick Basements can connect you with qualified underpinning contractors who handle the full permit process — get matched for free.

Is underpinning worth the cost compared to just lowering the basement floor in a Saint John home with shallow footings?

Whether underpinning or floor lowering is the better investment depends on how much headroom you need to gain and how deep your existing footings sit relative to the new floor level you want. In Saint John, where many homes from the 1950s through 1980s have shallow footings and basement ceilings under 6 feet, this is one of the most common renovation decisions homeowners face.

Floor lowering (also called slab lowering or benching) involves breaking out the existing concrete slab, excavating the soil underneath, and pouring a new slab at a lower elevation. This works well when your existing footings extend deep enough that the new floor level stays **above the bottom of the footings**. If you only need to gain 6 to 12 inches of headroom, floor lowering is often sufficient and costs **\$10,000 to \$25,000** for an average Saint John basement. The footings remain untouched, which means less structural risk and a simpler project overall.

Underpinning becomes necessary when you need to lower the floor below the existing footing depth. If your Saint John home has footings that are only 12 to 18 inches below the current slab — common in older construction — and you need to gain 18 to 30 inches of headroom, you cannot simply dig below the footings without supporting them. That is exactly what underpinning does: it extends the foundation depth in carefully sequenced sections so the footings end up deeper than the new floor. This is a significantly larger project, costing **\$30,000 to \$80,000+** and requiring stamped engineering drawings, a building permit, and a geotechnical investigation.

Saint John's Soil Complicates Things

Saint John's **heavy clay soils** add a layer of complexity to both approaches. Clay holds water against foundations, expands when wet, and contracts when dry. This creates lateral pressure on foundation walls and can cause differential settlement if excavation disturbs the soil bearing beneath the footings. For floor lowering, the clay means you absolutely need robust interior drainage and a sump pump with battery backup — hydrostatic pressure will push water up through the new slab if drainage is inadequate. Budget an additional **\$3,000 to \$8,000** for waterproofing with either approach.

For underpinning in Saint John's clay, the geotechnical investigation is not optional — it is essential. The engineer needs to know the clay's bearing capacity at the new footing depth and how groundwater interacts with the clay layer. Clay soils in Saint John are notoriously slow to drain, so dewatering during construction can be prolonged and expensive.

Making the Decision

The NB Building Code requires a minimum **6 foot 5 inch ceiling height** for habitable basement space. Measure your current ceiling height from the existing slab to the bottom of the floor joists. If you need to gain 12 inches or less and your footings are reasonably deep, floor lowering is almost certainly the better value — it costs less, involves less structural risk, and can be completed in **2 to 4 weeks** versus 4 to 8 weeks for underpinning.

If you need to gain more than 12 inches, or if your footings are extremely shallow (common in Saint John's older housing stock), underpinning is likely unavoidable. In this case, the investment often makes sense because the added ceiling height transforms an unusable basement into legitimate living space, adding significant square footage and value to your home.

Get a structural engineer's assessment before committing to either path — the **\$500 to \$1,500** for their evaluation saves you from choosing the wrong approach. New Brunswick Basements can match you with contractors experienced in both floor lowering and underpinning in the Saint John area, free of charge.

Q14

What is the difference between traditional mass pour underpinning and push pier underpinning for New Brunswick homes?

Traditional mass pour underpinning and push pier underpinning are fundamentally different approaches to deepening or stabilizing a foundation, and the right choice for your New Brunswick home depends on whether you are trying to gain headroom, fix a settling foundation, or both.

Traditional mass pour underpinning (also called pit underpinning) is the most common method used in NB for gaining basement headroom. The process involves excavating beneath the existing footings in carefully sequenced sections — typically 3 to 5 feet wide — and pouring new concrete to extend the foundation depth. Each section must cure before the adjacent section is excavated, so the work progresses around the perimeter in a planned sequence designed by a structural engineer. This method physically deepens your entire foundation, allowing you to lower the basement floor and gain usable ceiling height. It is labour-intensive, time-consuming (typically **4 to 8 weeks**), and costs **\$30,000 to \$80,000+** depending on the basement size and depth gained.

Push pier underpinning (also called resistance piers or hydraulic push piers) is a different technology designed primarily for **foundation stabilization and lifting**, not for gaining headroom. Steel pier sections are hydraulically driven through brackets mounted to the existing footing, pushing down through unstable soil until they reach load-bearing bedrock or a competent soil stratum. The piers then transfer the weight of the house to this deeper, stable layer. Push piers can also lift a settled foundation back toward its original position. Installation is faster — often **1 to**

3 days — and less invasive than mass pour, with minimal excavation. Costs typically run **\$1,500 to \$3,000 per pier**, with most homes requiring 6 to 12 piers for a total of **\$10,000 to \$35,000**.

Which Method Suits NB Conditions?

For most New Brunswick homeowners looking to **finish their basement and gain headroom**, traditional mass pour underpinning is the appropriate method. Push piers do not lower your floor or increase ceiling height — they stabilize and potentially lift the existing foundation. If your basement ceiling is 5 foot 8 inches and you need 6 foot 5 inches (the NB Building Code minimum for habitable space), push piers will not help.

Push piers are the right solution when your foundation is **settling, cracking, or shifting** — problems that do occur in New Brunswick, particularly in Moncton's sandy and silty soils where differential settlement is common, and in Fredericton's river valley where clay soils can shrink and swell seasonally. If you have stair-step cracks in block walls, doors that no longer close properly, or visible tilting of the foundation, push piers address the root cause by anchoring your home to stable ground below the problem soil layer.

In Saint John, where heavy clay soils create both drainage and settlement challenges, some homeowners need both approaches — push piers to stabilize a settling section of foundation, followed by mass pour underpinning in stable sections to gain headroom. This combined approach is expensive but addresses both problems comprehensively.

NB's frost depth (1.2 metres in southern NB, 1.5 metres in northern NB) matters for both methods. Mass pour underpinning extends footings well below frost depth, which is inherently good for long-term stability. Push piers are driven to bedrock or refusal depth, which is always below frost, so frost heave is not a concern with properly installed piers.

Both methods require **stamped structural engineering drawings and a building permit** in New Brunswick. A geotechnical investigation is strongly recommended for either approach, especially in areas with variable soil conditions. The engineer's assessment will determine which method — or combination — is right for your specific foundation and soil conditions.

Need help finding contractors who specialize in foundation underpinning? New Brunswick Basements can match you with experienced professionals across the province for free estimates.

Disclaimer: This guide is provided for informational purposes only by New Brunswick Basements. It does not constitute professional advice. Always consult qualified, licensed contractors and your local building authority before starting any basement renovation project. Information is current as of March 29, 2026 and may change. Visit newbrunswickbasements.com for the latest answers.