CALGARY CONSTRUCTION NETWORK

How-To Guides

Step-by-step guides and instructions for renovation projects

6 Expert Answers from Construction Brain

calgaryconstructionnetwork.com/construction-brain

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Q1

What's involved in running electrical to a detached workshop on acreage 150 feet from main house?

Running electrical to a detached workshop 150 feet from your main house requires a 200A or 100A subpanel installation with underground cable, electrical permits from your municipality, and inspections by certified Safety Codes Officers. This is major electrical work that must be performed by a licensed electrician in Alberta.

The project involves several key components that make it more complex than typical residential electrical work. **Underground cable installation** is the most practical approach for a 150-foot run to minimize visual impact and protect the wiring. Your electrician will typically use direct-burial cable (TECK cable) or run NMWU cable through underground conduit, buried at least 18 inches deep per Alberta Building Code requirements. The cable size depends on your workshop's electrical needs – 100A service requires #2 AWG copper or #1/0 aluminum, while 200A service needs much larger conductors.

Electrical load calculation determines the service size needed for your workshop. A basic workshop with lighting, outlets, and small tools might only need 60-100A service, while a workshop with welders, large machinery, electric heat, or EV charging could require 200A service. Your electrician will calculate the load based on your intended use. The **main panel upgrade** at your house may also be necessary if your existing panel doesn't have capacity for the additional subpanel breaker – many older Alberta homes have 100A service that may need upgrading to 200A.

In Greater Calgary's acreage areas, you'll need to consider **frost depth requirements** – all underground electrical must be below the 4+ foot frost line or installed in conduit with proper protection. The **trenching work** can be significant, especially in our expansive clay soils, and becomes much more expensive if you encounter rock or need to cross driveways or landscaping. Many contractors use trenching machines, but hand-digging may be required near existing utilities or structures.

Permit and inspection requirements are strict for this type of installation. You'll need an electrical permit from your local municipality (City of Calgary, Rocky View County, or other jurisdiction), and the work requires multiple inspections: rough-in inspection before backfilling the trench, and final inspection after the subpanel and workshop wiring are complete. Only licensed electricians can pull electrical permits in Alberta, and all work must be inspected by accredited Safety Codes Officers.

Cost expectations for a 150-foot underground run typically range from $8,000-$15,000 for 100A service, or $12,000-$20,000+ for 200A service, including trenching, cable, subpanel, permits, and labor. Factors affecting price include cable size, trenching difficulty, main panel upgrades needed, and workshop electrical requirements. Rocky

or clay soil conditions common on Calgary-area acreages can increase trenching costs significantly.

Professional guidance is essential – this isn't DIY territory. Improper electrical installation can cause fires, electrocution, or insurance issues. The underground cable sizing, grounding requirements, and panel connections must meet Alberta Building Code specifications. Additionally, if your workshop will have gas appliances, you'll need separate permits for gas line installation by a licensed gas fitter.

Next steps: Contact a licensed electrician for a site assessment and load calculation. They'll determine the optimal cable route, service size needed, and whether your main panel needs upgrading. Get quotes from multiple contractors, ensure they're properly licensed and insured, and verify they'll handle all permit applications and inspections. Browse licensed electrical contractors in our Calgary Construction Network directory to find qualified professionals for your acreage electrical project.

Find a Electrical Contractor

Calgary Construction Network connects you with experienced contractors in the directory:

- The Stair Shoppe ?
- Universal Slate International Inc. ?
- The Honest Electrician Inc. ?

Browse all contractors ?

Q2

Should we replace our 20-year-old furnace now or wait until it dies — efficiency savings vs upfront cost?

With a 20-year-old furnace in Calgary, you're approaching the decision point where proactive replacement often makes more financial sense than waiting for failure, especially given our extreme winter climate where furnace reliability is critical.

Your furnace is entering the final third of its typical 20-25 year lifespan, and the efficiency gap between 2004 technology and today's high-efficiency units is substantial. A 20-year-old furnace likely operates at 80-85% AFUE (Annual Fuel Utilization Efficiency), while new high-efficiency models required by the Alberta Building Code operate at 96%+ AFUE. In Calgary's climate where your furnace runs 6+ months per year, that 11-16% efficiency improvement translates to meaningful savings on natural gas bills.

Financial considerations favor replacement now rather than emergency replacement later. A planned replacement allows you to shop for deals, claim available rebates, and avoid the premium pricing that comes with emergency service calls during Calgary's brutal winter months. Emergency furnace replacement in January often costs 20-30% more due to urgent service premiums and limited contractor availability. Current costs for high-efficiency furnace replacement in Greater Calgary range from $4,500-$7,500 for a standard home, depending on size, brand, and installation complexity.

Reliability becomes critical in Calgary where winter temperatures regularly hit -30°C. A furnace failure during a cold snap isn't just uncomfortable—it's potentially dangerous and can lead to frozen pipes, flooding, and thousands in water damage. Twenty-year-old furnaces are also more likely to have parts availability issues, as manufacturers typically discontinue parts after 15-20 years. Heat exchangers, control boards, and gas valves become expensive to replace and may require special ordering.

Energy efficiency rebates are currently available through the Canada Greener Homes Grant program, offering up to $1,000 for qualifying high-efficiency furnaces (96%+ AFUE). You'll need before-and-after EnerGuide evaluations, but the rebate combined with annual gas savings can significantly improve your payback period. Many Calgary homeowners also upgrade to smart thermostats during furnace replacement, which can provide additional 5-10% savings through better scheduling and zoning.

Consider upgrading your entire system while you're at it. Many 20-year-old homes have undersized ductwork, poor air sealing, or inadequate insulation that reduces efficiency. A comprehensive HVAC assessment can identify opportunities to improve comfort and efficiency beyond just the furnace replacement. Some homeowners also explore dual-fuel systems, pairing a high-efficiency gas furnace with a cold-climate heat pump for shoulder season efficiency.

Next steps: Get quotes from multiple licensed HVAC contractors for high-efficiency replacement, schedule an EnerGuide evaluation to qualify for rebates, and factor in your current furnace's repair history. If you've had multiple service calls recently or notice uneven heating, declining efficiency, or unusual noises, replacement now makes clear financial sense. Browse verified HVAC contractors in our Calgary Construction Network directory to get competitive quotes and ensure proper installation.

Find a Hvac Contractor

Calgary Construction Network connects you with experienced contractors in the directory:

- Action Furnace ?
- Keystone Exteriors ?

- Aurora Electrical Technologies ?

Browse all contractors ?

Q3

What's the deal with impact-resistant shingles — are they worth the extra cost in calgary's hail belt?

Impact-resistant shingles are absolutely worth the investment in Calgary — you're in Canada's most active hail belt, and severe storms can destroy a standard roof in minutes. Given Calgary's history of devastating hailstorms (2020 storm caused $1.3 billion in damage, 2010 storm hit $400 million), the extra upfront cost pays for itself through reduced insurance claims and longer roof life.

Class 4 impact-resistant shingles are the gold standard, designed to withstand 2-inch hailstones dropped from 20 feet without cracking or losing granules. In Calgary's market, expect to pay **$200-$400 per square** (100 sq ft) more than standard architectural shingles — so roughly $2,000-$4,000 extra on a typical 1,500 sq ft roof. Standard architectural shingles run $350-$550 per square installed, while Class 4 impact-resistant versions cost $550-$950 per square.

The **insurance benefits alone** make them worthwhile. Many insurers offer 5-15% discounts on premiums for Class 4 shingles, and you'll avoid the hassle and deductible costs of frequent hail damage claims. More importantly, repeated claims can lead to policy cancellation or non-renewal — a serious problem in Alberta's challenging insurance market. Some of Calgary's most hail-prone areas (southwest communities like Aspen Woods, Springbank Hill, and Discovery Ridge) see storms almost annually.

Durability advantages extend beyond hail protection. Calgary's extreme temperature swings from chinooks create brutal freeze-thaw cycles that crack standard shingles. Impact-resistant shingles use modified asphalt and reinforced mats that handle thermal expansion better. While standard shingles last 15-20 years in Calgary's harsh climate, quality impact-resistant shingles can reach 25-30 years with proper installation.

Popular brands performing well in Alberta include GAF Timberline ArmorShield II, IKO Nordic IR, and Owens Corning Duration Storm. All carry Class 4 UL 2218 ratings and come with enhanced warranties. Your contractor should verify the specific products qualify for insurance discounts with your provider.

Installation considerations are crucial — impact resistance only works with proper installation. Use certified installers familiar with Alberta Building Code requirements for wind uplift (Calgary's chinook winds exceed 100 km/h regularly). Ensure adequate ventilation and ice dam protection, as even the best shingles fail without proper attic

ventilation in Calgary's climate.

Next steps: Get quotes from roofing contractors experienced with Class 4 installations, contact your insurance provider to confirm premium discounts, and schedule installation during Calgary's optimal roofing season (May through September). The peace of mind during storm season makes the investment worthwhile for most Calgary homeowners.

Find a General Contractors Contractor

Calgary Construction Network connects you with experienced contractors in the directory:

- SOILWORX Septic ?
- Hi-Landers Exterior Contracting Company ?
- Premium Built Structures ?

Browse all contractors ?

Q4

Insulating a detached garage for year-round workshop in cochrane — spray foam or batt insulation for -30 winters?

For a year-round workshop in Cochrane's brutal -30°C winters, spray foam insulation is your best bet for creating a truly comfortable workspace, though the higher upfront cost means batt insulation with careful air sealing can work if done properly.

Spray foam delivers superior performance for heated garage workshops because it creates both insulation and an air barrier in one application. Closed-cell spray foam provides R-6 to R-7 per inch, meaning 3-4 inches gives you R-18 to R-28 — excellent for Calgary's extreme temperature swings and chinook cycles. More importantly, spray foam eliminates air leakage, which is responsible for 25-40% of heat loss in typical buildings. In an unheated garage conversion, eliminating drafts makes the difference between a comfortable 18°C workspace and a miserable 5°C space that costs a fortune to heat.

Batt insulation can work but requires meticulous installation to achieve similar performance. You'll need R-20 to R-24 in walls (2x6 construction with R-20 batts or 2x4 walls with R-12 batts plus rigid foam) and R-40+ in the ceiling. The critical factor is air sealing — every gap, crack, and penetration must be sealed with acoustical sealant or expanding foam before installing batts. Add a continuous vapor barrier on the warm side, carefully sealed at all joints and penetrations. This approach costs 40-60% less than spray foam but requires skilled installation to avoid thermal bridging and air leaks.

Cochrane's climate demands extra attention to moisture control in heated garage spaces. The temperature differential between your heated workshop and the -30°C exterior creates serious condensation potential. Spray foam eliminates condensation within wall cavities, while batt insulation requires perfect vapor barrier installation. Consider adding mechanical ventilation (HRV or bathroom exhaust fan) to manage humidity from your body heat, coffee pot, and any wet vehicles you bring inside.

Professional installation is worth considering for spray foam — expect $3.50-$6.00 per square foot installed in the Calgary area, with higher costs for small projects. Quality spray foam contractors will ensure proper thickness and coverage. DIY spray foam kits exist but achieving consistent coverage and proper thickness requires experience. For batt insulation, skilled DIYers can achieve good results, but air sealing is absolutely critical — one unsealed electrical box or gap at the top plate can reduce your effective insulation by 20-30%.

Don't forget the concrete slab — an uninsulated concrete floor will suck heat out of your space and stay uncomfortably cold. Add 2 inches of rigid foam insulation under a floating subfloor, or install in-floor radiant heating if your budget allows. Cochrane's frost depth exceeds 4 feet, so that concrete slab extends deep into frozen ground all winter.

Contact the Town of Cochrane (403-851-2500) about building permits — converting an unheated garage to heated workshop space typically requires electrical, insulation, and heating permits. Browse verified insulation contractors in our Calgary Construction Network directory who serve Cochrane and can assess your specific garage construction and heating plans.

Find a Insulation Contractor

Calgary Construction Network connects you with experienced contractors in the directory:

- True North Overhead Doors ?
- Elite Exteriors Pro ?
- Always Affordable Locksmiths ?

Browse all contractors ?

Q5

How do I install a well and septic system on raw land in Rocky View County? What is the permits process?

Installing a well and septic system on raw land in Rocky View County requires multiple permits, professional contractors, and coordination between Rocky View County and Alberta Health Services. This is a complex process that typically takes 2-4 months and costs $25,000-$50,000+ depending on soil conditions, depth to water, and system size.

Rocky View County Permit Process

Rocky View County handles the overall development permits and building permits for your property. You'll need to contact them at 403-230-1401 or visit rockyview.ca to start the process. The County will require a development permit for any new dwelling and associated infrastructure. For raw land development, you'll typically need a site plan showing the proposed location of your home, well, septic system, and access road. The County enforces setback requirements between wells, septic systems, and property lines - typically 30 meters between well and septic, with additional setbacks from property boundaries.

Well Installation and Permits

Well drilling in Alberta requires a licensed water well contractor registered with the Alberta Water Well Drilling Association (AWWDA). The contractor must obtain a Water Act approval from Alberta Environment and Parks before drilling. You cannot drill a well yourself - this must be done by a licensed professional. The well contractor will handle the permit application, but you'll need to provide property details and intended water use. Typical residential wells in Rocky View County range from 50-300 feet deep, with costs of $8,000-$20,000 depending on depth and pump requirements. The contractor must submit completion reports to Alberta Environment within 30 days of finishing the well.

Septic System Design and Approval

Septic systems in Rocky View County fall under Alberta Health Services (AHS) jurisdiction through the Private Sewage Systems Standard of Practice. You'll need a qualified Professional Engineer or Professional Technologist to design your septic system based on a detailed soil assessment (percolation test and soil profile). The design must account for your home's bedroom count, soil conditions, groundwater levels, and proximity to water sources. AHS Environmental Public Health office in Airdrie (403-943-2288) handles the approval process. The soil assessment alone costs $1,500-$3,000, and the engineered design adds another $2,000-$4,000.

Installation Requirements and Inspections

Once approved, septic installation must be done by a contractor licensed and working under City permits. The installer needs permits from Rocky View County's Safety Codes Officers for the installation. Multiple inspections are required: excavation inspection before backfilling, final inspection before system activation, and sometimes mid-installation inspections for complex systems. The septic contractor coordinates these inspections, but delays can occur during busy seasons. Installation costs typically range from $15,000-$35,000 for conventional systems, with advanced treatment units costing significantly more in challenging soil conditions.

Timeline and Coordination Challenges

The biggest challenge is coordinating multiple approval bodies and contractors. Start with Rocky View County's development permit process while simultaneously beginning your soil assessment for the septic design. Well drilling can often proceed in parallel once you have the Water Act approval. However, you cannot install the septic system until you have an approved design from AHS and permits from Rocky View County. Budget 8-16 weeks for the entire approval and installation process, with potential delays during spring construction season when contractors and inspectors are busiest.

Next Steps

Contact Rocky View County first to discuss your development plans and confirm zoning allows residential development. Simultaneously, engage a qualified engineer or technologist for your septic soil assessment - this is often the longest part of the approval process. Get quotes from licensed well drillers and septic installers early, as

good contractors book months in advance. Remember that both your well and septic system will need ongoing maintenance and periodic inspections to remain compliant with Alberta regulations.

Find a General Contractors Contractor

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- Amar Homes Inc ?
- Premium Built Structures ?
- New Earth Waste Services Ltd ?

Browse all contractors ?

Q6

How do you properly insulate around new windows in a Chinook zone without creating condensation problems in the walls?

Proper window insulation in Calgary's Chinook zone requires a careful balance of air sealing, vapor control, and thermal bridging prevention to handle our extreme temperature swings without trapping moisture in wall cavities.

Calgary's notorious Chinook winds create unique challenges for window installations. When temperatures swing from -25°C to +10°C in a matter of hours, the rapid freeze-thaw cycles can drive moisture into wall assemblies and create condensation problems that lead to mold, rot, and structural damage. The key is creating a robust thermal and moisture barrier system around your new windows.

Air Sealing is Critical Start with a continuous air barrier using high-quality window and door spray foam or backer rod with polyurethane sealant. The gap between your window frame and rough opening should be filled completely, but avoid over-expanding foam that can bow the frame. Use low-expansion foam specifically designed for windows, or have your installer use a two-part spray foam system. The air seal must be continuous - any gaps will allow warm, humid indoor air to hit cold surfaces and condense.

Vapor Barrier Placement In Alberta's cold climate, the vapor barrier goes on the warm (interior) side of the insulation. When insulating around windows, you need to maintain this vapor barrier continuity. Use 6-mil polyethylene vapor barrier that overlaps the window frame by at least 6 inches, sealed with acoustical sealant or

vapor barrier tape. Never place vapor barrier on both sides of the insulation - this creates a "double vapor barrier" that can trap moisture. The exterior should be vapor permeable to allow any moisture to escape outward.

Insulation Strategy Use closed-cell spray foam in the immediate window opening (first 2-3 inches from the frame) for maximum air sealing and thermal performance. Behind that, you can use batt insulation, but ensure it's properly cut and fitted without compression or gaps. Blown-in cellulose or fiberglass can work well for irregular spaces. The goal is R-20+ wall assemblies to meet current Alberta Building Code requirements and handle our temperature extremes.

Thermal Bridging Prevention Calgary's temperature swings make thermal bridging a serious concern. Metal window frames conduct cold directly into the wall assembly. Consider thermally-broken window frames (fiberglass, vinyl, or wood-clad) rather than straight aluminum. Install rigid foam insulation (1-2 inches of XPS or polyiso) as a thermal break between the window frame and the structural framing where possible.

Exterior Weather Barrier Install a proper weather-resistant barrier (house wrap or building paper) that's sealed around the window opening. In Calgary's climate, use a high-performance house wrap rated for extreme temperature cycling. Flash the window properly with self-adhering membrane at the sill and integrate it with your wall's moisture management system. The exterior cladding should have a ventilation gap to allow moisture to escape.

Professional Installation Recommended Window installation in Calgary's climate zone requires expertise with air sealing, flashing, and thermal bridging details. Improper installation can lead to ice dams, condensation problems, and premature failure. Most window manufacturers void warranties for DIY installation. A qualified installer will understand Alberta Building Code requirements and local climate challenges.

Next Steps Have your window installation done by a professional who understands Calgary's climate challenges and can provide proper air sealing, insulation, and flashing details. Ensure they pull the required building permit and have the work inspected. Find experienced window installers in our Calgary Construction Network directory who understand Chinook zone requirements and can deliver a moisture-safe installation.

Find a Windows Doors Contractor

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- A Green Future ?
- Elite Exteriors Pro ?
- Aurora Electrical Technologies ?

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