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Welcome to the Sheep River Library

The building you are now standing in a highly energy efficient building. The intent when planning and designing this new library was to create a structure that is efficient and sustainable for decades to come. The building isn't just considered energy efficient because the architect or planner said so – an independent third party certification program called LEED (Leadership in Energy and Environmental Design.) This program is a internationally accepted and understood building rating system.

In the case of the library, the goal is to achieve a “Silver” level accreditation. This accreditation will be confirmed in the next couple of months after an extensive review and performance of the building have been put through a thorough examination. In the mean time the library is considered a “LEED Certified Candidate.”

LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health:

- Sustainable site development
- Water efficiency
- Energy efficiency
- Materials selection
- Indoor environmental quality

The following components that will included in this script can be rearranged in order that you see fit and makes the most logical sense with the tour route.

Car Pooling

Carpooling reduces the costs involved in car travel by sharing journey expenses such as fuel and car rental between the people

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travelling.

Carpooling is also seen as a more environmentally friendly and sustainable way to travel as sharing journeys reduces carbon that can then be used for green space. The Sheep River Library has also accommodated those patrons who prefer to ride their bikes with on-site bicycle racks.

ERV (Energy Recovery Ventilation)

When freezing or sweltering outside, it is expensive to heat or cool the air inside a building. Many existing buildings lack the ability to heat and cool enough air to improve indoor air quality to acceptable modern standards.

An ERV allows some of the moisture in the more humid air stream (usually the stale air in winter and the fresh air in summer) to be transferred to the air stream, which is dryer. This transfer of moisture — called enthalpy transfer — occurs with very little mixing of the two air streams.

Benefits of ERV systems in the Sheep River Library:

- ✓ Provide an energy-efficient means to exhaust indoor pollutants to improve indoor air quality.
- ✓ Maintain a continuous supply of fresh, filtered, and tempered outdoor air throughout the library.
- ✓ Control excess indoor humidity when outdoor humidity levels are lower.
- ✓ Recover heat from the exhaust air in winter.
- ✓ Cool incoming air in summer when the library is air-conditioned

Plumbing

The sinks, toilets and urinals are high efficiency fixtures, which conserve water, for example: The urinal is on a motion sensor, granting a savings of 88% over a standard 1.0-gallon per flush

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system. The eco flush dual toilet system provides the means of saving water, you may use the partial flush 1.1 gallon / 4 liters of water to discharge the liquid waste and the full flush to provide 1.6 gallons / 6 liters of water to thoroughly clean the toilet bowl of solid waste. At the library there are many elements to conserve water. To further ensure the conservation of water, the women's and men's restroom sinks have been connected to a hot water loop to constantly circulate hot water to make sure it is always available. All faucets are on a motion sensor to ensure they are not left to run.

Radiant In-Floor Heating

Radiant floor heating is a method of heating your home by applying heat underneath or within the floor. Comparable to warming yourself in the sun, this type of heating warms objects as opposed to raising the temperature of the air.

Hydronic radiant floor heating is a system of plastic or metal tubes/pipes laid within a floor that carries hot water into specific rooms or "zones", dispersing the heat through the floor surface.

The cooler water returns to the heat source where it is reheated and sent out again in what is known as a "closed-loop system". The pipes can be encased in a concrete slab; pipe spacing, water temperature, flow rate and floor covering determine the heat output.

The type of tubing used in the library is a new leak-resistant, non-toxic, high temperature, flexible piping called cross-linked polyethylene (PEX). PEX is durable tubing that doesn't become brittle over time and isn't affected by aggressive concrete additives or water conditions.

The building envelope design and installation involves the extensive use of polystyrene insulation. This includes below the

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concrete to minimize thermal energy that can be lost to the earth below the concrete.

Radiant floor heating provides even, comfortable, warmth, as there is less air movement with this type of system.

Triple Pane, Low-E Windows

The library has energy efficient glass with a Low-E coating made from two layers of thermal protection PLUS a third pane of Low-E glass. Low-E coatings block the sun's harmful UV rays, helping to prevent fade damage to the library's carpet, furniture and window treatments.

In addition, the library will also enjoy these window features:

- Triple pane windows help reduce outside noise.
- Low-E windows can block up to 97% of the sun's UV rays to help protect from fade damage.
 - In the winter, it reflects heat back into the room, keeping the area warmer
 - In the summer, Low-E glass reflects heat away from the room, keeping it cooler.

Argon

This colorless gas is denser than air. It is inserted between the panes of glass to provide extra insulation from the heat and cold.

Standing Seam Metal Roof

The library has different metal panels running in a vertical position on the roof deck. Each metal panel consists of two seams that vertically stand up and are crimped to seal the joints and keep the elements such as wind, rain, etc. from penetrating.

Standing seam roofs are elegant in their style, and feature a four-

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way interlock to insure the outside elements do not penetrate.

Hardie Board Siding

The exterior of the library is prefinished siding is produced from wood fiber, resin, and wax fused under pressure. This engineered wood siding is highly stable, as well as highly resistant to moisture. It also helps optimize our forests' yield by making the most of technological advances. In short, it does more with less...naturally. easy maintenance products with all the beauty and nobility of wood.

ICF Blocks Provide Better Sustainable Design

RECYCLED MATERIALS - ICF is manufactured from 100% recycled polypropylene and steel.

BUILDING DURABILITY – ICF Blocks offer a structure built out of concrete, one of the most durable and energy efficient building materials, resulting in buildings that stand the test of time. Building with ICF also offers maximum safety in high wind areas due to its high impact resistance.

WASTE REDUCTION – ICF offers unique technological ICF Block design, which creates less waste during the construction process, sending less waste to our landfills. *All waste is 100% recyclable.

MOLD RESISTANT- ICF Forms have been laboratory tested and will not support mold growth.

ENERGY PERFORMANCE - ICF Blocks significantly reduce the amount of carbon emissions, due to the structures high-energy efficiency levels, reducing the amount of fossil fuels needed for heating and cooling reducing your carbon footprint.

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IMPROVED INDOOR AIR QUALITY – NUDURA eliminates air gaps, minimizing the potential formation of mold growth and draft paths. The end result is an airtight structure that enables building mechanical systems to heat, cool and ventilate the ICF block structure more efficiently, creating a healthier living and working environment for building occupants

(Standard Insulation: Most buildings have R-40 Attic R-20 Exterior walls)

2lb Spray Foam Insulation

Spray Foam Characteristics

- Zero Ozone Depletion Substance
- Made from Recycled Plastics & Soya Based Oils
- Environmentally Friendly & Ecological Insulation
- Will Dramatically Lower Energy Consumption
- Healthier, Cleaner In-Home Environment
- Certified Material for use as Air Barrier, Vapor

Barrier, and Insulation

By inhibiting heat flow and helping create air barriers, plastic-building products can help save heating and cooling energy in the library over time. This lessens the environmental ‘footprint’ of the building.

R-Value is a measure of thermal resistance used in the building and construction industry. The larger the number, the longer it takes for the energy to be transferred. The industry standard for a commercial building is R-value 20. The R-value for 2lb spray foam as it is installed in the library is R-40, approximately, 2 times more efficient.