



## MEMORANDUM

To: Doug Bencks  
From: Christopher J. Lizotte AIA, NCARB, LEED AP  
Project: Durham Public Library  
Pages: 3  
Date: 5/26/11

### *SUSTAINABILITY FEATURES & GOALS*

#### Site:

- An existing site and building will be developed, instead of an undisturbed parcel.
- Site disturbance will be minimized and the front yard will remain largely unchanged.
- Library will be located close to downtown, the middle school, and within ½ mile of existing public transportation, including buses and trains.
- Storm water runoff will be treated by promoting infiltration through the use of a rain garden.
- Existing wetlands will not be disturbed and the Town's wetland buffer will be maintained and upgraded.
- Provide amenities such as covered bicycle racks.
- Exterior lighting design will minimize light pollution.
- Provide preferred parking for low-emitting and fuel efficient vehicles.
- Provide preferred parking for carpools or vanpools.

#### Water Efficiency:

- Landscaping will be drought resistant.
- No irrigation system.
- Water efficient plumbing fixtures.
- Foam flush toilets, to offset water demands, will be investigated.

#### Energy:

- Provide thorough energy modeling consistent with LEED and other sustainability design standards.
- Provide a tight and well insulated building. A blower door test will be performed to ensure a tight envelope.
- Day lighting will minimize electrical lighting needs.
- Light sensors will increase electrical lighting efficiency.





- High efficiency heating & cooling system with the goal of being 30% better than the energy code.
- Utilize VRF (variable refrigerant flow) heat pumps. Heat pumps use electrical energy very efficiently to provide both heating and cooling. This system offers a number of advantages compared to more traditional systems.
  - Provide heating, cooling, heat recovery and humidity control.
  - Do not use fossil fuels on site, and do not require boilers, furnaces, chimneys or fuel storage.
  - VRF systems have very few components, which means reduced maintenance costs. There are no boilers to tune, chimneys to clean, pumps to rebuild, or pipes to leak. Require no regular maintenance other than filter changes.
  - Are extremely quiet.
  - Provide the efficiency benefits of a “geothermal” ground source heat pump system without the high cost, complexity or wells.
  - Are easier to integrate into new or existing construction than conventional systems.
  - Provide a thermostat in every room, for optimum comfort and energy conservation.
  - Are less expensive to install and to operate than a conventional heating and air conditioning system.
  - The annual COP, coefficient of performance, in the heating mode is around 2.3 to 3.0 which means that up to three kW of heat are provided for one kW of electricity.
- Solar panels, to offset electrical demands, will be investigated.
- Building is located and designed for increased passive solar gain due to south facing glass and courtyard.
- Building commissioning will verify that energy related systems are installed and calibrated to perform with maximum efficiency.
- Provide operable windows for swing seasons.

#### Materials:

- Existing house will be reused.
- The pine trees that have to be removed will be used as woodwork within the Library.
- Construction waste will be recycled.
- Interior finishes will be selected and detailed for durability and easy maintenance as well as for recycled content.
- Provide regional materials where possible.





Air Quality:

- No smoking in the building.
- Provide a construction air quality plan.
- A high efficiency mechanical ventilation system will include energy recovery ventilators that use the air being exhausted to either preheat or precool the intake air, depending on the time of year.
- Low-emitting building materials will be used throughout.
- Provide operable windows for swing seasons.

