

BUILD GREEN COMMITTEE REPORT

Challenges and Opportunities for Holy Cross

Presented to

Building Committee, Episcopal Church of the Holy Cross
Redmond, Washington

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With

Janet Brandt, Building Committee,
Bill Brown, External Consultant, Holy Cross

June 26, 2008

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Introduction

The Build Green Committee served at the request of the Building Committee in the Raising the Roof expansion at Holy Cross. Co-chaired by Roy Phillips and Kelvie Comer the committee met almost weekly for a month and a half to address its charges, define committee tasks, and to answer questions associated with the project.

In doing so, the group realized that in order to achieve our goals, a mission/vision statement was needed. With the assistance of an internal consultant, one was developed.

Finally, the Committee realizes that the work of this Build Green Committee has only started. What the Committee was charged with for this project is only a portion of what needs to be done for Holy Cross. The Conclusions and Recommendations include further suggestions. We are grateful for this opportunity to serve and are excited about this project.

Charge to Build Green Committee

This committee received its charge from the Building Committee Co-Chair, Janet Brandt. That charge follows:

The Build Green Committee's job is to research, analyze and recommend green building materials for use in remodeling and new construction of Holy Cross Church. Estimated cost for each recommendation should be included: Materials recommended can be either or interior or exterior use.

The committee should use Washington State green building codes standards adopted in 2005 for defining green materials. Manufacturers should be able to certify products to that standard. The committee should also prioritize its recommendations for The Building Committee.

Recommendations will be presented to the Building Committee in a meeting and with a written report ~~by end of January, 2009~~ by June 26, 2008.

Decisions on materials to be used will be made by the Building Committee and forwarded for final approval by Father Jim and The Holy Cross Vestry.

By May 6, 2008, the Building Committee formed and the group met Thursday, May 8, 2008.

Mission/Vision Statement

The Build Green Committee realized that no mission statement or philosophical framework shaped its structure. After checking with the Building Committee Co-Chair, the Committee decided that this must become one of the tasks of the committee in order to have that foundation for Build Green.

Bill Brown, a Holy Cross member and expert facilitator, served to assist the group in identifying a structure on which to build that framework. Using the Master Builders Association of King and Snohomish County, BuiltGreen Project Checklist - Remodeler, provided by Aaron Kassen, the group developed a mission statement for Holy Cross that will provide a foundation platform of environmental stewardship. The policy statement which follows was adopted by the committee on June 12, 2008.

Stewards of God's Creation at Holy Cross

In Genesis God brings forth the waters, earth, and all that is therein; God found the work of creation good. As Christians today, we are called to tend to God's glorious gifts of the skies, earth and waters for ourselves, each other and future generations.

Our mission, as stewards in this creation, at Holy Cross is to educate, integrate, and facilitate throughout our lives the spirit of wholeness and oneness with the creator and in the spirit of his son. Drawn together in principal and practice by the changes occurring on this earth to this planet, collectively we are committed to working toward an environmentally better world.

Our commitment, as a church is to open conversation about environmental stewardship and in doing so, to educate. Our challenge is to integrate the very best practices which are achievable for us and then to take as many of those to our own homes and businesses as appropriate. Finally, through living richly and abundantly, in the spirit of wholeness with Jesus Christ, we will facilitate and spread the love of God's creation and earth at Holy Cross by careful stewardship of these gifts.

Approved Build Green Committee 2008 06 12

Resources:

[Episcopal Theological Network](#)

[Healing Our Planet Earth Conference, Seattle, WA, April 2008](#), p. 6

[Environmental Stewardship Commission of the Diocese of Minnesota](#)

Toxicity Statement

In the spirit of *caritas* (caring) and the caring community here at Holy Cross, especially for the young ones under our care in the Nursery and Daycare, the Build Green Committee strongly recommends the following:

Use low-VOC (Volatile Organic Compound) /low-toxic interior paints and finishes (sealers, grouts, mortars, caulks, adhesives, stains, pigments and additives) for all surface and flooring areas.

Use paints and finishes without cadmium or lead.

Use no formaldehyde or urea formaldehyde in any part of the construction or insulation.

As the new building addition is finished plan extra time for the building to air out of any toxins before allowing occupancy. Follow all the BuiltGreen guidelines for Health and Indoor Air Quality; see full report of Build Green member Diane Vanden Brook in APPENDIX B.

Adopted by Build Green Committee: 2008 06 19

Build Green Priorities

Horizon Scan:

Scanning our horizons for the next ten years this committee sees the following patterns in our worlds:

1. Significantly changing weather patterns – more wet, more cool, different patterns of wind and sun than previous decades and recorded weather;
2. Significantly rising energy costs; and
3. Significantly rising building costs.

Therefore we believe that this addition offers a unique opportunity to reduce potential toxic building materials; to be a step toward energy efficiency; to use heat from the sun when ever possible; to use abundant rain water for holding cisterns, as appropriate; to serve as a model in principle and practice for living and walking a path abundantly and reverently with each other in new ways with new models that say, “Yes, we can; and Build Green!”

Build Green Priorities:

1. Where there is a choice of building materials and cost is not an issue, BUILD GREEN.
2. Use the most *energy efficient* appropriate appliances, windows, and HVAC.
3. Use recycled building materials where possible and appropriate.
4. Choose local building materials as opposed to those which come any distance because of cost of fuel to deliver.

5. Most of all be sensible in building choices. Where research finds that products are not working, don't use them! Build for now and for the future. We seek to protect ourselves, our loved ones, and those who come after us.

Review of Built Green Project Check List and Implications for Holy Cross Building

The Built Green Project Check List for Remodelers is an initiative of the Master Builders Association of King and Snohomish County. The current check list can be found on-line at [this site](#); however, the list the Build Green Committee worked from is the most up-to-date and is still in revision (2008, June). As such this document is not yet available on-line. Therefore major sections are embedded within this report as a working document. A full copy is provided in Appendix A.

The Build Green Committee took the charge of the Building Committee and incorporated that charge into this report through the BuiltGreen Project Check List. The Committee accepted, by consensus, the Master Builder BuiltGreen Project Checklist as a goal worthy of attempting to meet. What we have not done explicitly is to cost out materials for two reasons: (1) costs are fluid; what an item may cost today, may dramatically change tomorrow. Secondly, what we know is that priorities change depending on circumstances, so in that understanding, and knowing that we do not yet have a general contractor yet, we provide our own environmental scan and priorities and strongly recommend that these be taken into consideration when making building decisions. When green materials can be used appropriately for a reasonable cost, they should be. Only in several instances did members of the committee make specific recommendations about materials.

A strong caveat must be raised here and very clearly stated: Again and again the builders and contractors on this committee spoke of the very high costs for building green. Both Jim Clarkson and Joe Trujillo clearly stated that building green can increase costs by 50 percent, if not more. Jim brought an example in building framing. Although some building materials may cost more, many green initiatives will not add significant costs to integrate into an overall plan. However, all is driven by budget.

Meanwhile, The Remodeler Project Checklist follows in detail, with attention especially to several major areas. Our goal is that Holy Cross plan for a 4-star project. In fact, if Holy Cross could work toward the 4-star project on the way to becoming a 5-star project that might be an appropriate goal. The Build Green Committee would like Holy Cross to be recognized for that success. And we would like to be able to promote Holy Cross as a Build Green church. It's another way that recognition of what we are doing can bring in new members to our congregation. And, that, "Yes, we can!" Attitude does make a difference.

Charged by the Building Committee to do the following in May, members of the committee have been engaged in a studying of topics related to this building project. We know more than we did when we started and know how much more there is to learn about building, being green, and this project! The

Master Builder BuiltGreen guidelines are similar to the [LEED guidelines](#) referred to in Public Law 5509 (2005) for High Performance Buildings; essentially these buildings meet specific standards where criteria are set allowing those who work inside to meet higher work performance standards. While part of this process takes place in several steps in the selection of materials phase, the architect ultimately works with the manufacturer to certify that products meet any green requirements. The BuiltGreen Guidelines focus on assessment, protection and safety, conservation, education, and environmental friendly processes.

BuiltGreen Project Checklist – Remodeler

REQUIRED - See Appendix A for Full Checklist

To achieve Four Star Requirements the initial programmatic requirements require meeting all requirements for One – Two – and Three-Star in addition to the Four-Star Requirement. Since these are all required, the Build Green Committee (BGC) recommends to the Building Committee that all these, through Section 1, be implemented fully, as appropriate for this project.

Should the Building Committee decide to go for the Five-Star BuiltGreen achievement, highlighted in yellow are points of potential significant additional cost.

ONE-STAR REQUIREMENTS (25 points minimum)				
TWO-STAR REQUIREMENTS (45 points minimum for small remodel; 60 points minimum for remodels that include an addition)				
THREE-STAR REQUIREMENTS (100 points minimum for remodel; 130 points minimum for remodels that include an addition)				
FOUR-STAR REQUIREMENTS (250 points minimum for remodel; 280 points minimum for remodels that include an addition)				
	required	Meet 3-Star requirements plus point minimum	★	
	required	3 rd party verification required (See reference)	★	
Site & Water	required	No zinc galvanized ridge caps, copper flashing or copper wires for moss prevention (See action item 2-39).	★	
Site & Water	required	Landscape with plants appropriate for site topography and soil types, emphasizing use of plants with low watering requirements [drought tolerant] (See action item 6-6).	★	
Site & Water	required	Select bathroom faucets an/or aerators that restrict flow to 1.10 gpm.	★	
Energy	required	Final project must perform 15% above energy code (action item??)	★	
IAQ	required	Use low toxic/low VOC paint on all major surfaces (except for PVA primer which is currently not available) (See action item 4-25)	★	
IAQ	required	Ventilate with box fans in windows blowing out (or Director approved alternative) during drywall sanding and new wet finish applications	★	
Materials	required	Practice waste prevention and recycling, and buy recycled products (kind of open??? - better credit item)	★	
IAQ	required	Choose one of the following:	★	
		Provide built in walk-off matt and shoe storage area	★	

IAQ		Use plywood and composites of exterior grade or with no added urea formaldehyde for interior uses	★	
IAQ		Develop a written healthy jobsite plan and educate workers on implementation (see handbook for more information and examples)	★	
IAQ		Use high efficiency pleated filter of MERV 12 or better, or HEPA	★	
IAQ		Install sealed combustion heating and hot water equipment	★	
FIVE-STAR REQUIREMENTS (400 points minimum for remodel; 430 points minimum for remodel that includes an addition)				
	required	Meet 4-Star requirements plus point minimum	★	
Site & Water	required	Amend disturbed soil with compost to a depth of 10 to 12 inches to restore soil environmental functions	★	
Site & Water	required	Use pervious materials for at least one-third of total area for driveways, walkways, and patios	★	
Site & Water	required	Limit use of turf grass to 25% of landscaped area	★	
Site & Water	required	Preserve existing native vegetation as landscaping	★	
Site & Water	required	Retain 30% of trees on site	★	
Energy	required	Minimum R-26 wall	★	
Energy	required	Maximum average U-value for all windows of .30.	★	
Energy	required	Advanced framing with double top plates	★	
Energy	required	Pre-wire for future PV	★	
Energy	required	75% minimum Energy Star light fixtures.	★	
Energy	required	<u>Alternate:</u> In Lieu of above energy requirements demonstrate home energy performance 30% beyond code per action item 3-1.	★	
IAQ	required	If there is an attached garage, air seal it from the house and exhaust with an automatic or timer controlled fan	★	
IAQ	required	Use plywood and composites of exterior grade or formaldehyde free (for interior use)	★	
Materials	required	Achieve a minimum recycling rate of 70% of waste by weight.	★	
Materials	required	Use a minimum of 10 materials with recycled content.	★	

SECTION ONE: CODES & REGULATIONS

All required for each star.

SECTION TWO: SITE AND WATER

Site and Water Assessment Plan. Building Committee, Rector, Architect.

SITE PROTECTION

Protect Site's Natural Features

Preserve and protect landscaping and earth. Architect or General Contractor?

Protect Natural Processes On-Site

Protect and preserve earth and water. Landscape Committee; discussed use of old septic system for water use; may need system to move water from there if decision is made to implement use. Build in cisterns for water use into the overall building plan.

Impervious Surfaces

Impervious surfaces for parking, such as pavers with concrete which captures the oil are very appealing; the committee did not cost this out. If we can afford moving in this direction, this should be high on the budget priorities for walkways, patios and driveways.

The BGC did not support any type of vegetative roof (sod or otherwise); we have oral evidence from building contractors in the region who have built them, that they leak. At this point we cannot afford to be on the cutting edge.

Eliminate Water Pollutants	
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During Construction - Preserve and protect landscaping and earth. General contractor.

DESIGN ALTERNATIVES	
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Adding a public amenity such as a visually appealing garden make Holy Cross an attractive addition to the community! Landscape Committee & Architect.

WATER PROTECTION	
Outdoor Conservation	

Landscape Committee, Building Committee, Rector, Architect, General Contractor?

Indoor Conservation	
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Building Committee, Architect, General Contractor?

Eliminate Water Pollutants	
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Building Committee; Rector, Vestry, Need new committee (see Recommendations at end of this report)

ENVIRONMENTAL DESIGN CONCEPTS	
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Landscape Committee, Building Committee, Rector, Architect, General Contractor?
 One recommendation is for a dedicated circuit for plug in electric/hybrid car; we might want to consider additional plugs; we're a good size church and hybrids are only now coming into popularity.

Extra Credit for Site and Water	
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Building Committee, Rector, Architect, General Contractor?
 Integration – Is this the place for a windmill to bring the water up?

SECTION THREE: ENERGY EFFICIENCY	
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ENVELOPE	
Thermal Performance	

Architect.

BGC asked about skylights. Specifically in this section the recommendation is to **INSTALL NO SKYLIGHTS.**

Air Sealing	
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Architect, General Contractor.

Reduce Thermal Bridging	
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If the budget can afford additional insulation, the BGC recommends adding additional insulation in any outside walls and in ceilings.
 Fully insulate; use certified windows.
 Building Committee, Rector, Architect, General Contractor.

Solar Design Features	
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Use as appropriate; Building Committee, Rector, Architect, General Contractor.
 The BGC discussed the use of solar energy, especially solar panels. With energy costs expected to increase significantly; this should be on the agenda for the next building expansion. However, the Vestry may wish to explore costs prior to that time.

HEATING/COOLING	
Distribution	

NA; not part of our charge. However, 3-29, use of low toxic mastic in sealing ducts is part of our commitment to low or no toxicity.

Heating / Cooling	
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NA; not part of our charge.

Controls		
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NA; not part of our charge.

Heat Recovery		
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NA; not part of our charge.

WATER HEATING		
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Distribution		
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NA; not part of our charge. Some of the issues involving the hot water heater, such as insulation should be followed through by the Vestry Property Committee, as a matter of course, even if not part of building project. A tankless hot water heater might be worthy of exploration by the Property Committee of the Vestry.

Drainwater Heat Recovery		
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NA; not part of our charge.

LIGHTING		
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Natural Light		
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The use of natural lighting where ever possible makes sense by whatever means possible. BGC, Building Committee, Rector, Architect, General Contractor.

Efficient Lighting		
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Use LEDs in EXIT lighting, in closets; use motion detectors in bathrooms for lighting; use compact fluorescents as appropriate. Install timers; use solar energy for walkways and other outdoor lighting. BGC, Building Committee, Rector, Architect, General Contractor.

Appliances		
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Use Energy Star Appliances as appropriate. Kitchen Committee, BGC, Building Committee, Rector, Architect, General Contractor

EFFICIENT DESIGN		
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Building Committee, Rector, Architect.

ALTERNATIVE ENERGY		
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As appropriate; Building Committee, Rector, Architect, General Contractor.

Extra Credit for Energy Efficiency		
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SECTION 4: HEALTH AND INDOOR AIR QUALITY		
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OVERALL		
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Sensitize, Educate, and Ameliorate. Build Green, Building Committee, Rector, Architect, General Contractor.

JOB-SITE OPERATIONS		
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Educate, protect, and ameliorate on-site. General Contractor.

LAYOUT AND MATERIAL SELECTION		
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Toxicity – especially critical component for BGC! BGC, Building Committee, Rector, Architect, General Contractor.

MOISTURE CONTROL		
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Pre-installation and installation. Building Committee, Rector, Architect, General Contractor.

AIR DISTRIBUTION AND FILTRATION
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Building Committee, Rector, Architect, General Contractor.

HVAC EQUIPMENT

Building Committee, Rector, Architect, General Contractor.

Health and Indoor Air Quality

Toxicity is a critical issue for the BGC. Building Committee, Rector, Architect, General Contractor.

Extra Credit for Health and Indoor Air Quality

Building Committee, Rector, Architect, General Contractor.

SECTION FIVE: MATERIALS EFFICIENCY

OVERALL

General Contractor.

JOBSITE OPERATIONS

Reduce

General Contractor.

Reuse

General Contractor, Building Committee, Vestry.

Recycle

Source Separation Recycling

General Contractor, Building Committee, Vestry.

Commingle Recycling

General Contractor, Building Committee, Vestry.

DESIGN AND MATERIAL SELECTION

Overall

For all Design and Material Selection – recyclable materials as appropriate; use materials that will last 50 years, if possible (longer, if possible – think about the great cathedrals of England and Europe, simplicity lasts longer). Building Committee, Rector, Architect, General Contractor.

Framing

Foundation

Sub-Floor

Doors

Finish Floor

Interior Walls

Exterior Walls

Windows

Cabinetry and Trim

Roof

Insulation

Other Exterior

Recycling		
Extra Credit for Materials Efficiency		

Response to Architect Questions

Highest priority questions:

Any proposed alteration to the architecture or structure such as:

1. Skylights Operable windows in the place of mechanical ventilation –

From what the committee determined the results on skylights are mixed in terms of energy performance. While the light source is excellent, that may be outweighed by energy inefficiency. The committee did not vote positively or negatively.

Collectively we love light, especially given our overcast and rain in the Northwest. The BGC is concerned that the BuiltGreen guidelines do not support skylights. However, we could find no rationale for not having skylights beyond lack of energy efficiency; several attempts were made to reach the BuiltGreen head at the Master Builders Association of King County. That failed. Skylights which bring in sunshine and which do not let energy escape, seem reasonable, but this committee did not have the expertise or the tools to make those judgments.

Operable windows seem reasonable (see this research report from the University of California at Berkeley (<http://www.cbe.berkeley.edu/research/briefs-opwindows.htm>) and offer individuals more choices over personal comfort which makes them happier over time. We do not recommend specific systems.

Lighting

<http://www1.eere.energy.gov/buildings/commercial/lighting.html>

2. Roof garden or sod –

The consensus of the Build Green Committee was that this technology was still too new; with leaky roofs reported by the General Contractors who installed sod roofs within this region, we believe that these will be very expensive to repair and replant. Our recommendation is NO, at this time.

Green Roof Tops

<http://www.epa.gov/hiri/strategies/greenroofs.html>

<http://www.greenroofs.org/boston/index.php?page=ballardwin>

<http://edis.ifas.ufl.edu/EP240>

3. Energy Efficient Lighting-be sure to coordinate with the Worship Center Team so that energy concerns do not conflict with worship and liturgical concerns. Fluorescent lighting does not have the same dimming capabilities as incandescent. I will have to prepare a lighting plan that meets the energy code, but there are some allowances for what are considered stage or performance areas (which includes the sanctuary /altar area).

The BGC supports the recommendations of the Worship Committee be followed for the Sanctuary.

The BGC also supports the following recommendations:

The use of natural lighting where ever possible;

Use LEDs in EXIT lighting, in closets; use motion detectors in bathrooms for lighting; use compact fluorescents as appropriate.

The US Department of Energy found that spectrally enhanced lighting, using florescent bulbs with brighter light enhances light with an approximate 20 – 46% savings in energy costs; these might be explored as options in appropriate areas of the kitchen, offices, childcare facilities, and offices.

Install thermostats with timers; use solar energy for walkways and other outdoor lighting.

RESOURCES:

http://www1.eere.energy.gov/buildings/sel_economics_validation_study.html

<http://www.netl.doe.gov/ssl/usingLeds/index.htm>

4. Super insulation, making the new walls thicker than normal

If resources are available to make the new walls thicker than normal, the BGC recommends doing so. Conserving energy will be a continuing priority for all of us in the future. This will be a budgetary decision to be determined. The cost will have to be estimated out. This committee did not do that. While several of us read in this area, none of us have special expertise.

5. Higher performance windows with lower u-values

The Department of Energy reports that windows can lose less energy through windows with gas between 2 panels than tightly insulated walls, “

Heat loss through windows is the largest single energy-related aspect of window performance. Although development of low-e coatings and gas fills has been a key DOE program success, there are still significant opportunities to reduce energy associated with winter heat loss by addressing glazing properties as well as the sash/frame combination.

Gas-filled, low-e glazings have substantially reduced the energy impacts of windows over standard double glazing (R2 - >R4). Further improvements in the insulating value of window systems for new and retrofit applications are possible and beneficial, up to values of R10. An R10 window will have less annual heat loss than a highly insulating wall, even in northern U.S. climates.

http://www1.eere.energy.gov/buildings/windows_technology.html#heatloss

Where high performance windows with lower u-values can be used, they should be used. Again, we understand that all these recommendations have budgetary implications.

Recommendations and Conclusions

Recommendations to the Building Committee

1. Accept the Stewardship Statement and recommend to the Vestry with or without amendment for further implementation with a standing committee.
2. Accept the consensus of the Build Green Committee for Holy Cross to support the recommendation to go forward and seek Four-Star Status as a BuiltGreen Organization using Landscaping as our highlight feature.
3. The highest priority this committee has is for low or no toxicity in paints, finishes, and floor coverings along with insulation and in wood /wood composition products. The health, safety and welfare of our members takes precedence.
4. Energy efficiency and light seem to be tied together – abundant light coupled with effective energy use go together. How this is implemented with operable windows, moveable door/windows is up to the Building Committee, Rector, Architect.
5. Make energy efficiency a priority with this addition in every way possible; integrate systems.

Conclusions

1. Building Green does not always cost more; but it may cost significantly more depending on the resources used in various aspects of the building process.
2. We live in a dramatically changing world; this process allows us to respond in new ways to those changes.

APPENDIX A

BUILT GREEN PROJECT CHECKLIST

Master Builders Association of King and Snohomish Counties, WA

April 2008

APPENDIX B

HEALTH AND INDOOR AIR QUALITY

Reducing toxins in the new addition at Church of the Holy Cross, especially for our children is what drove me to be a part of the Build Green Committee. Below are areas from the Master Builders Built Green Checklist that I believe we can reasonably support in the expansion of the Church of the Holy Cross in the area of toxic-free indoor air quality.

- I. Overall – 4 points possible. (Follow on committee responsibility)
 - a. Provide “homeowners” with maintenance checklists (furnace filters, under the fridge, etc.). 4 points.

- II. Job-site Operations – 13-15 points possible (Builder responsibility)
 - a. Take measures during construction operations to avoid moisture problems later. 3-5 pts.
 - b. Protect exterior building components from water or moisture damage. 2 pts.
 - c. Provide weather protection for stored materials. 1 pt.
 - d. Effective ventilation with approved method after each new finish is applied. 3 pts.
 - e. No use of unvented combustion heaters during construction. 2 pts.
 - f. Clean ductwork and furnace thoroughly at job completion. 2 pts.

- III. Layout and Material Selection – 44-55 points possible (Builder responsibility with support from Holy Cross Building Committee)
 - a. Add no new carpet in addition/remodel. 5-15 pts.
 - i. If using carpet, then the following:
 1. Specify products are certified by third-party for good indoor air quality. 1 pt.
 2. Install by dry method. 2 pts.
 3. Install natural fiber carpet (jute – apparently smells and can rot/deteriorate, sisal, wool). 1 pt. Not sure how practical this is.
 4. Use pre-finished flooring. 1 pt.
 5. Do not install products with brominated flame retardant. 1 pt.
 - b. Use only low-VOC (Volatile Organic Compound)/low-toxic interior paints and finishes for all surface areas (including doors, windows, trim). 5 pts.
 - c. Use only low-VOC/low-toxic interior paints for large surface areas. 3 pts.
 - d. Use only paints and finishes without cadmium or lead. 1 pt.
 - e. Inside use only low-VOC, low-toxic, water-based, solvent-free sealers, grouts, mortars, caulks, adhesives, stains, pigments and additives for:
 - i. Tile & grout. 2 pts.
 - ii. Framing. 2 pts.
 - iii. Flooring. 4 pts.
 - iv. Plumbing. 2 pts.
 - v. HVAC. 2 pts.
 - vi. Insulation. 2 pts.
 - vii. Drywall. 2 pts.
 - f. Insulate with something other than fiberglass insulation. 4 pts.
 - i. Or if using fiberglass insulation, use formaldehyde-free or Greenguard Certified fiberglass insulation. 3 pts.

- g. Use plywood and composites of exterior grade or with no added urea formaldehyde for subfloor use. 3 pts.
- h. Install cabinets made with no added urea formaldehyde board and low-toxic finish. 4 pts.
- i. Use only shelving, window trims, door trim, base molding, etc with no added urea formaldehyde. 4 pts.

CONCLUSIONS

Much of the above is achievable and in several instances can be done less expensively than with conventional products (visit the Environmental Home Center in Seattle for much more information www.environmentalhomecenter.com or 206-682-7232). I also contacted Mallory Paint Store, Woodinville; Bellevue Paint and Decorating Center, Bellevue; and Redmond Carpet and Interiors, Redmond. For some of the above situations there are alternatives presented.

The section for carpets is complicated. We could choose to put in no carpet or choose carpet tiles or mod-carpet instead of wall-to-wall carpet in the classrooms. The carpet tiles are Green Certified and have an eco-friendly backing. There is no VOC and they have a longer life. They use pressure sensitive glue instead of bonding glue and can be switched around or replaced more easily (in case of spills or stains). The initial cost can be up to 15% higher, but over time it costs less to maintain them and since they can be replaced as needed, the whole room would not need replacing when the carpet is dirty, stained, etc. Ceramic tile in the entry way would be quieter than wood, according to Redmond Carpet & Interiors. Marmoleum is an all wood and linseed oil flooring which is Green Certified.

There are a couple of paints that could be used to support good indoor air quality. *Eco Spec* is a no-VOC, Green Guard Environmental Institute and Green Seal Certified paint. It is also LEED Certified. *Eco Spec* is available in latex flat, latex eggshell and semi-gloss enamel, in pastel and medium colors (darker colors do not comply with no or low-VOC). They also manufacture an interior primer that is low-VOC.

Aura paint is a low-VOC, waterborne paint which is a self-primer except on new drywall. *Aura* is a more expensive paint than *Eco Spec*. Environmental Home Center has additional paints that are low- or no-VOC.

Input provided by Diane Vanden Brook