

New Jersey Library Buildings: Greening . Maintaining . Sustaining

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Architects – Planners

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Certified Sustainable Building Advisor

USGBC – LEED Trained

Roof Consultants Institute Member

Working towards a sustainable future!

Greening . Maintaining . Sustaining 11/6/2009 #1

Creative, Responsible, Cost Effective, Efficient, Sustainable.....A Balanced Design Approach

1918 - P.L. Fowler Co.

1918 - Micklewright & Mountford

1966 - Micklewright & Mountford, Hamnett, Bouman & Blanche, P.A.

1972 - Hamnett Bouman & Blanche, P.A.

1975 - Bouman Blanche Faridy, P.A.

1982 - Bouman Blanche Faridy Thorne, P.A.

1983 - Bouman Blanche Faridy Thorne Maddish, P.A.

1984 - Faridy Thorne Maddish, P.C.

1990 - Faridy Thorne Fraytak, P.C.

2000 - *Faridy Veisz Fraytak, P.C.*

Our Firms 91 Year History



10 Library Projects Under NJ State Library Grant Program, over 35 Municipal / County Libraries & hundreds of Educational Library Facilities



NJ State Library Experience



Presentation Agenda....

- ▶ Introduction
- ▶ Demystifying **Green**
- ▶ The Team / Design Process – Charrette
- ▶ Operating Budget Vs Municipal/Co. Capital Projects
- ▶ Building Envelope & Grounds
- ▶ Building Interior (Movable / Fixed Equipment)
- ▶ Value Engineering & Quality Control
- ▶ Questions & Answers

What does it mean to be Sustainable/**Green**?

- ▶ Holistic way of thinking about....well – EVERYTHING!
- ▶ Fundamentals focused on overall reduction of ENERGY!
 - Power – Electricity, Fossil Fuels, Human Energy
(TRANSPORTATION)
 - Conservation – “Waste not – Want not”
 - Environmental – Preservation of Natural Resources (Water, Trees, Soils / Landscape, Air, etc.) – Do no harm!
 - Embodied Energy – Adaptive Reuse, Recycling, Re-Tasking
 - Improved Building Indoor Environmental Quality – lighting/natural lighting, air quality (building materials, chemical reduction, fresh, psychological benefits)
- ▶ Just because we can do something does not mean we should do something!
 - ▶ Think Globally *and* Locally!

What does it mean to be Sustainable/**Green**?

- ▶ **TRANSPORTATION & ENERGY** – Everything we do daily is dependent on these factors:
 - Personal Transportation
 - Business/Commercial/Industrial
 - Delivery of Books, Services and Supplies (to and from suppliers, branches, library distribution / collection points)
 - Refuse (trash, recycled materials, organic materials)
 - Lawn Care
 - Building Materials and Construction Waste
- ▶ Combine, Reduce and Select Local, Regional or National over Global



How do we Judge Sustainable / Green?

- ▶ US Green Building Council – Leadership in Energy and Environmental Design (LEED)
- ▶ Green Globes
- ▶ Energy Star
- ▶ KGBI – Keystone Green Building Initiative
- ▶ American Society of Heating, Refrigeration and Air Conditioning – ASHRAE
- ▶ Smart Communities Network: Green Buildings Rating Systems
- ▶ International Institute for Energy Conservation – IIEC – Energy Rated
- ▶ Energy Efficiency Rating System (Canada)



USGBC – LEED Rating System Category

- ▶ Launched 8/98 LEED V1.0
- ▶ LEED 2009 V3.0 – 100 Base Points
- ▶ Sustainable Sites – 26 Points
- ▶ Water Efficiency – 10 Points
- ▶ Energy and Atmosphere – 35 Points
- ▶ Materials and Resources – 14 Points
- ▶ Indoor Environmental Quality – 15 Points
- ▶ Innovation in Design – 6 Points
- ▶ Regional Priority – 4 Points



USGBC – LEED Rating System Category

LEED 2009 V3.0

- ▶ Certified 40–49 Points
 - ▶ Silver 50–59 Points
 - ▶ Gold 60–79 Points
 - ▶ Platinum 80 Points and above
-
- ▶ LEED NC – New Construction
 - ▶ LEED EB – Existing Buildings (Operations & Maintenance)
 - ▶ LEED for Schools, Neighborhood Development, Core & Shell, Retail, Healthcare, Homes & Commercial Interiors



Public Library Dynamic: Operating Budget Vs Municipal/Co. Capital Funds

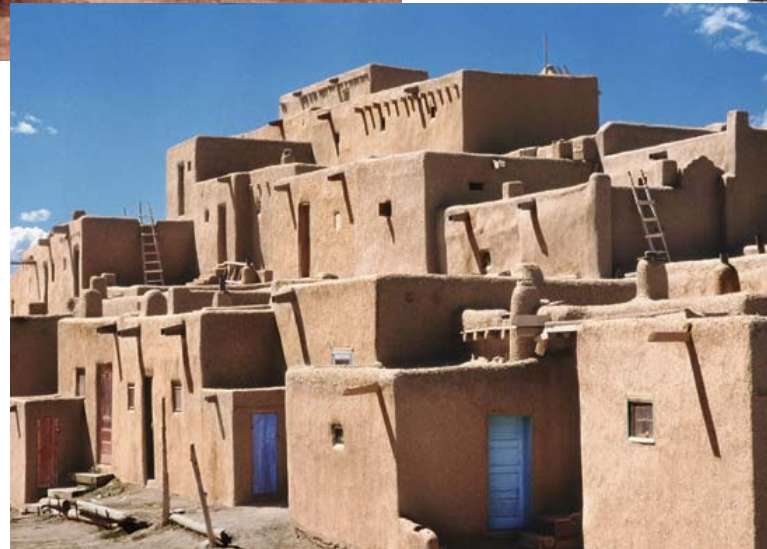
Operating Budget

- ▶ Personnel
- ▶ Utility Costs
- ▶ Maintenance ?
- ▶ Movable Furniture & Equipment
- ▶ Finish Upgrades (carpeting, painting)

Municipal/Co. Capital Projects Budget

- ▶ Capital Improvements
- ▶ Renovations, Additions,
- ▶ New Construction
- ▶ Major Building Infrastructure Rehabilitation or Replacement
- ▶ Roof Replacement
- ▶ Building Envelope Improvements: Windows, Doors

Fundamentals – Taos Pueblo, N.M.



Professional Services



• Basic Professional Services in AIA B-101 Standard Form of Agreement Between Owner & Architect

- Phase IA, B, C - Pre-Design Services:
Site Selection, Programming, Concept / Studies
- Phase ID, II, III, IV, V
- Schematic Design – 15%
- Design Development – 20%
- Contract Documents – 40%
- Bidding / Negotiations – 5%
- Construction Administration – 20%
- On-Site Observations 1-2 x / week, Conduct bi-weekly project meetings, minutes, process contractor submittals, payment application & Project Close-out

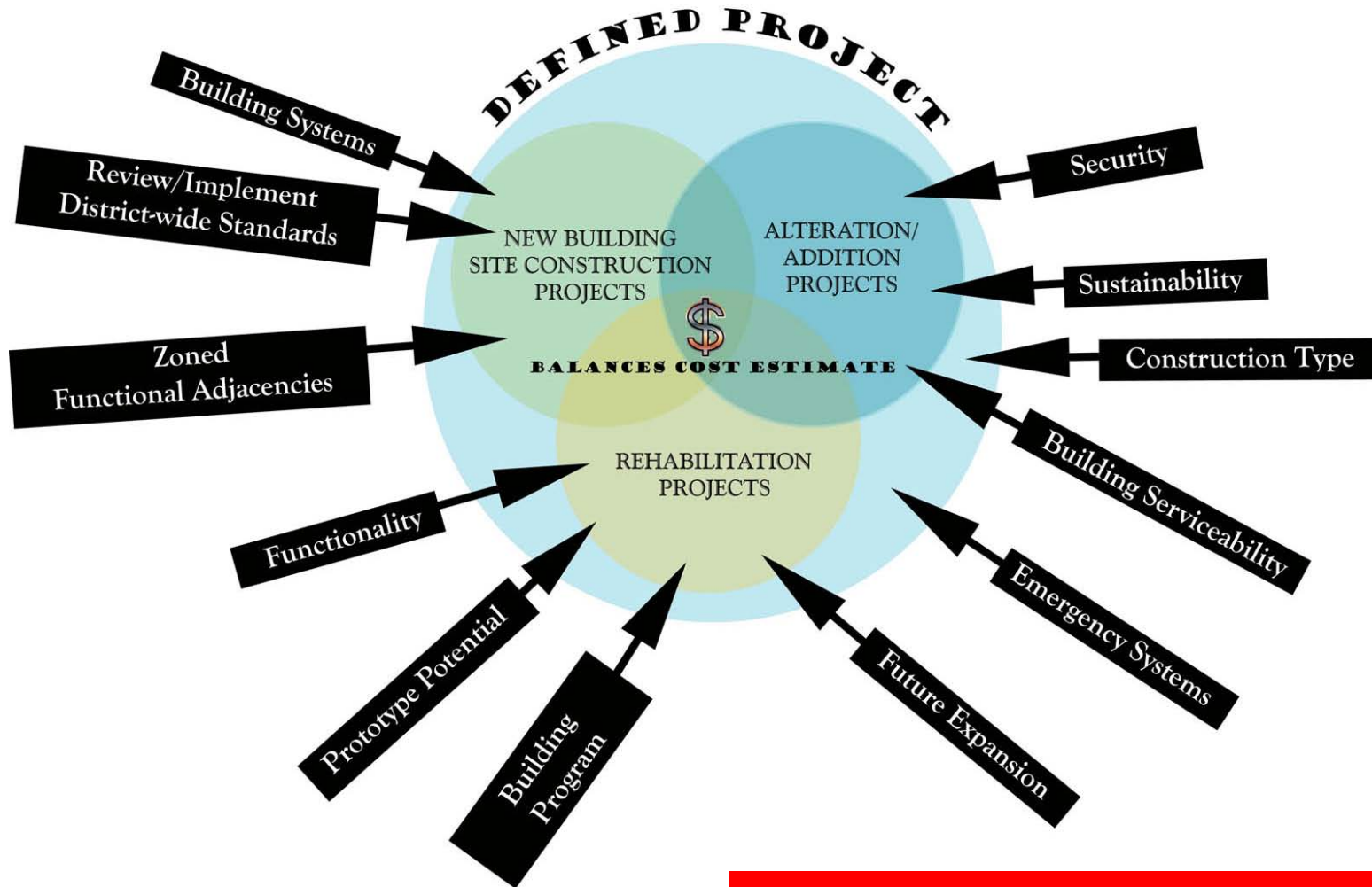
Project Approach (AIA B-101 Basic Professional Services)



PHASE I – CONCEPTUAL / SCHEMATIC DESIGN

- Program Development – Design Charrette
- Perform Preliminary Code Analysis
- Evaluate Feasibility of US GBC – LEED & Sustainable Design Principles
- Develop Alternative Building / Site Concept Design Studies
- Prepare “PRO” vs. “CON” Analysis
- Refine Selected Schematic Designs
- Coordinate with Building/Owner’s Team
- Project Budget & Schedule/Phasing

Design Paradigm.....



Interactive Cost Estimate Tool !

Conduct Design Charrette & Program Review

- ▶ **Library Administration / Board**
- ▶ **Department Heads**
- ▶ **Facilities Personnel**
- ▶ **Municipal / Co. Government**
- ▶ **Design Team**



- **Establishes Understanding of Project Parameters**
- **Promotes Ownership & Support Among Building Users**

- **Develop Final Program**
- **Discuss Building Components**
- **Review Space / Department adjacencies**
- **Explore Conceptual Design Options**
- **Evaluate Green Design Principles**
- **Develop Final Design**

Program – Sample Questionnaire

FARIDY VEISZ FRAYTAK, P.C.

ARCHITECTS - PLANNERS

1515 Lower Ferry Road, P.O. Box 7371, Trenton, New Jersey 08628-7371

PHONE: 609.883.7101

FAX: 609.883.2694

SPACE NUMBER	
DATE	
PREPARED BY	PERSONNEL
DEPARTMENT/ COMMITTEE	
DEPARTMENT HEAD/ SUPERVISOR	
FUNCTION (Describe Activities)	
NO. of OCCUPANTS (Present)	ADJACENCIES
NO. of OCCUPANTS (Projected - 5-10 years)	
REQUIRED ADJACENCIES	To other Personnel:
	To other Departments/ Committees:
PRESENT PROBLEMS WITH SPACE(S) USED	FUNCTION
EXPECTATIONS FROM NEW SPACES(S)	CRITICAL ISSUES

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SPECIAL NEEDS/ EQUIPMENT	ARCHITECTURAL (Special room conditions and finishes, natural light / control, door type / arrangement / access, outdoor access, level of security required, sound isolation / privacy, etc.):
	SPECIAL ARCHITECTURAL NEEDS
	BUILT-IN AND MOVABLE EQUIPMENT (List all existing equipment to be reused and/ or new movable and built-in equipment to be required. Include all specialty equipment required for intended space use: i.e.: copiers, training equipment, fire proof safe / files, safety equipment, etc.):
	BUILD IN – MOVABLE EQUIPMENT
	MECHANICAL/PLUMBING/ELECTRICAL REQUIREMENTS (List specialty requirements other than general space conditioning and power requirements, i.e.: special power needs, sink / water / hose bibs, special ventilation, indirect/ direct / ambient / task lighting / power switching, etc.):
	SPECIAL M.E.P NEEDS

Space Program Specifications (I.T. / Data / Communication Technology)

HAMILTON TOWNSHIP SCHOOL DISTRICT Additions and Alterations to the William Davies Middle School

Educational Specifications for 2-D Art Classroom - New

Number of Students:	24
Number of Instructors/Aides:	1 instructor, 1 aide (shared storage room of 300 sq. ft.)
Number of Similar Spaces:	1
Spatial Relationships:	The art instruction should be grouped together with other related arts where possible. The two art rooms are to be interconnected and accessible to one another. There should be a shared storage area.

Description of Instructional Activities

Multi-dimensional art classes: 2-D, digital art and design. The room should be flexible to permit varied individual and group activities simultaneously.

Special Features Required

Architectural

- Readily cleanable and resilient flooring
- Accessible to storage room shared by both art rooms and equipped with open shelving of various depth and flat storage
- Indirect natural light with room darkening capabilities
- Student computer area shared by both art rooms with at least (12) stations and/or at least (6) stations in each individual art room; anti-static carpet in this area

Built-in/Moveable Equipment

- Teacher demonstration table
- Teacher wardrobe with lock
- (2) tall storage cabinets with locks
- Base and wall cabinets with counter top
- Adjustable book shelves for text
- Bins for student belongings
- Student portfolio storage are (enough for 6 classes)
- Oversized books storage with lock and glass windows for room library
- 16' of chalkboard in front of room

Revised

Educational Specifications Pg. 26 William Davies Middle School FVF #3317
(rev.1.31.03)(rev.10.10.03)(rev.12.16.03)(rev.12.19.03)

- DMB in the computer area
- Bulletin boards
- Tack stripping
- Teacher desk, chair
- Work tables for 24 students (storage area under tables)
- Wall or ceiling hung projection screen
- Adjustable student stools with backs
- Lighting control for still life set ups
- Handicap work table
- Oversized flat files for storage of large paper and prints
- (1) drying rack for wet projects

Mechanical/Electrical

- Multiple sinks in student work area
- solid inceptors and clean outs in all sinks
- Individual climate control
- Computerized teaching station
- wall or ceiling hung projection screen
- Ample ventilation and air quality control (dust, fumes, and waste)
- Wall clock, intercom, and bell/tone system with hand set
- Floor outlet for overhead/projector cart

AV/Technology Required:

Telephone: 1
 Student Computer Drops: 6 / 12 *
 Teacher Computer Drops: 1
 Printer Stations: black and white / color
 Ceiling mounted L.C.D. Projection: Yes, with 8x8 remote controlled screen - connection to PC, VCR, Cable TV
 TV Monitors - Wall Mounted: Ceiling Mounted:
 CATV: LCD
 TV monitor - LCD

* (6) in individual room, (12) in a shared room - networked

Educational Specifications Pg. 27 William Davies Middle School FVF #3317
(rev.1.31.03)(rev.10.10.03)(rev.12.16.03)(rev.12.19.03)

Exploring Sustainable Design Principles

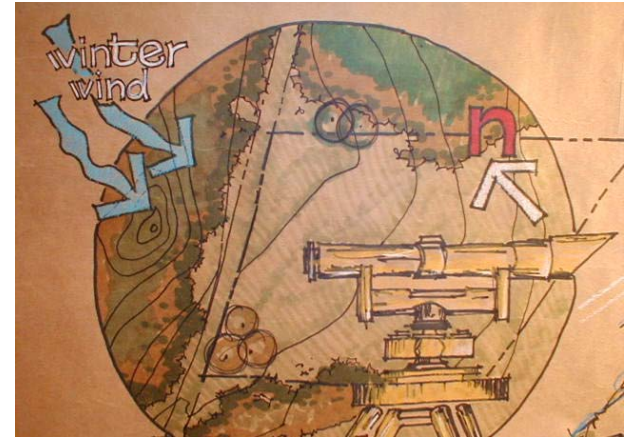


*Ground Water Source
Geothermal Heat Pump
Systems*



Site Design Considerations

- ▶ Consideration of Alternate Locations
- ▶ Planning / Zoning / Codes
- ▶ Storm Water Management
- ▶ Site Utilities
- ▶ Safety and Security – FEMA
- ▶ Segregation of Vehicular Traffic
- ▶ Parking (Public, Staff)
- ▶ Compliance with ADA
- ▶ Landscape Design – Indigenous Species, Low Maintenance
- ▶ Future Expansion
- ▶ Environmental Constraints
- ▶ Endangered Species
- ▶ Water Quality Basins, Rain Gardens, Rain Harvesting
- ▶ Master Planning



Site Plan Analysis



Solar PV Siliconized Crystalline Panels – Ballasted or Structural Attachment

Solar cells convert sunlight to electricity with the special properties of semi conducting materials.



FVF has Solar PV applications in design / construction on 14 public buildings in NJ with array sizes from 50 KW to 600 KW.

NJ Office of Clean Energy Incentives

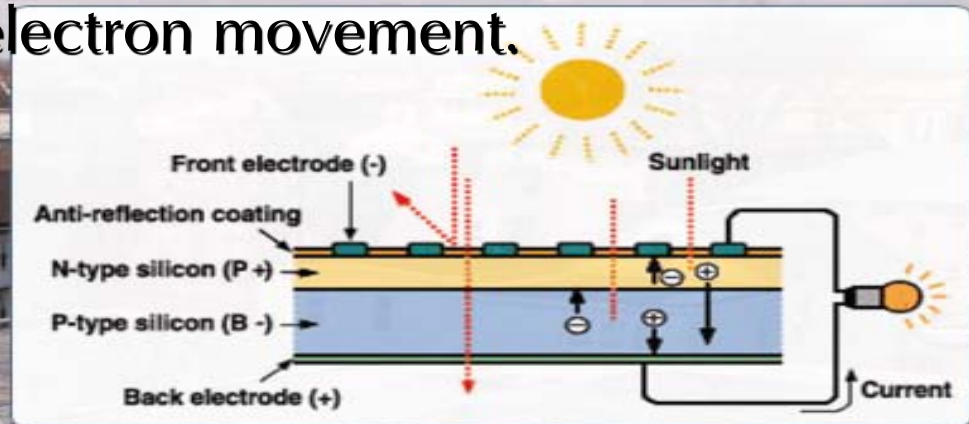
REIP Grants for 50KW Systems

(Renewable Energy Incentive Program)



How Solar Cells Work

Photons from the sun shine on the solar cell. The photons actually penetrate into the silicon and randomly strike silicon atoms. When a photon strikes a silicon atom, it ionizes the atom, giving all its energy to an outer electron and allowing the outer electron to break free of the atom. The photon disappears from the universe and all its energy is now in the form of direct electron movement.



Free Electricity From the Sun

The DC current is taken from the solar cells and manipulated into an AC waveform through an inverter. Inverters sense the voltage and frequency of the AC systems that they are attached to and begin to “push” current against that system.



Inverters come in many shapes and sizes for all types of environments.

Holistic Approach to Sustainable Building Design



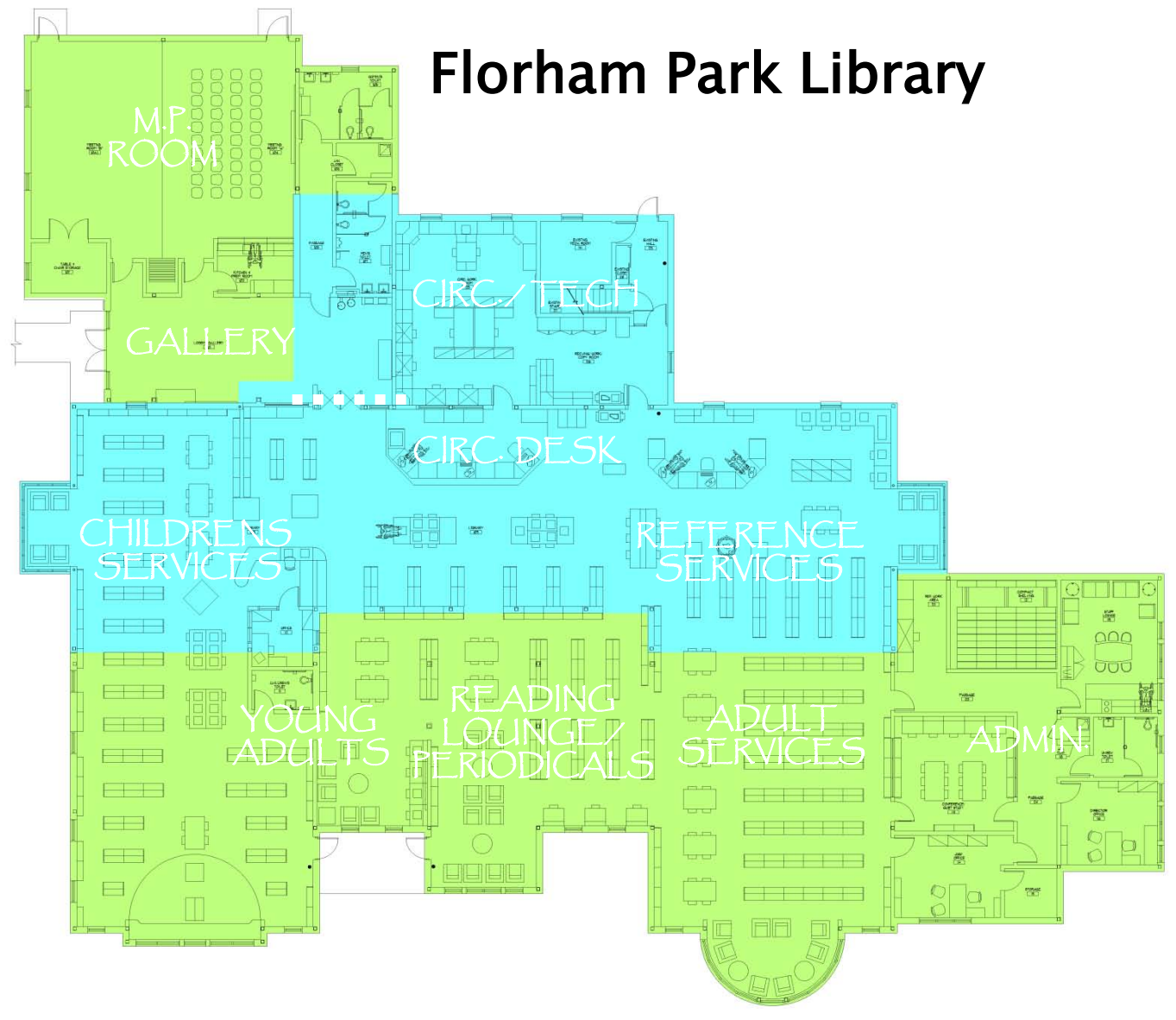
Academic Building



Work with What you Have!

- ▶ Maintenance – Cleaning Agents
- ▶ HVAC – Filter Replacement and Maintenance
- ▶ Automatic Temperature Controls
- ▶ Replace Obsolete HVAC Equipment – Higher Efficiency, Clean Energy Utility Co. Incentives
- ▶ HVAC Equipment Commissioning
- ▶ Energy Audit – Building Envelope, HVAC & Plumbing, Electrical Equipment, Air Infiltration, (Windows / Doors)
- ▶ Consolidate Hours of Operations, Segregate Building Functions and Equipment
- ▶ Install Air Curtains / Vestibules

Florham Park Library



Work with What you Have!

- ▶ Lighting Evaluation / Replacement – Change out old T-12 Lamps; Replace with T5 or T5HO with electronic ballast
- ▶ Change Incandescent Bulbs to Compact Fluorescent Bulbs and Flood Lamps
- ▶ LED Fixtures (2x2, 2x4 in development now)
- ▶ LED Screw-in Lamps for Long Burn Lights (Display Cases, High Locations and High Power Use First)
- ▶ Vending Machines, Appliances –Reduce, or Replace with Energy Star Appliances

Work with What you Have!

- ▶ Copier Leases
- ▶ Reduces waste
- ▶ Improved Energy Efficiency
- ▶ Reduces Transportation Costs



Solid ink waste vs. laser waste

Cartridge-free solid ink is a true consumable; no empty toner cartridges to dispose or recycle. The ColorQube™ 9200 series produces 90 percent less packaging waste than a comparable laser device.



Solid Ink 88 lbs	Laser 815 lbs
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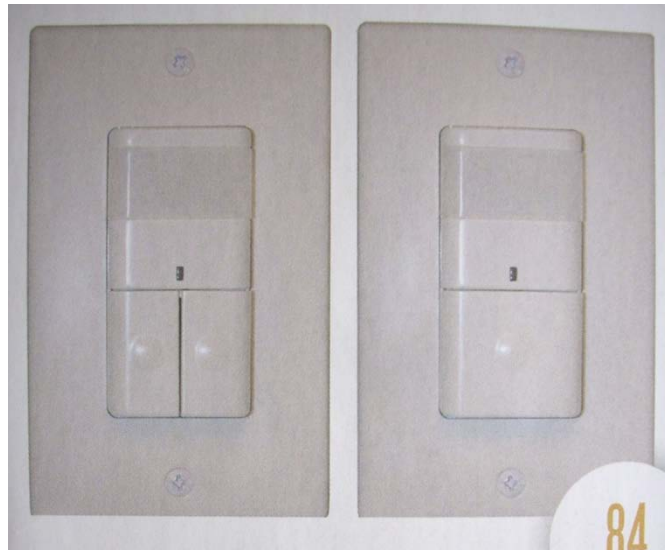
Total waste produced from printing 22,000 pages per month for 4 years.



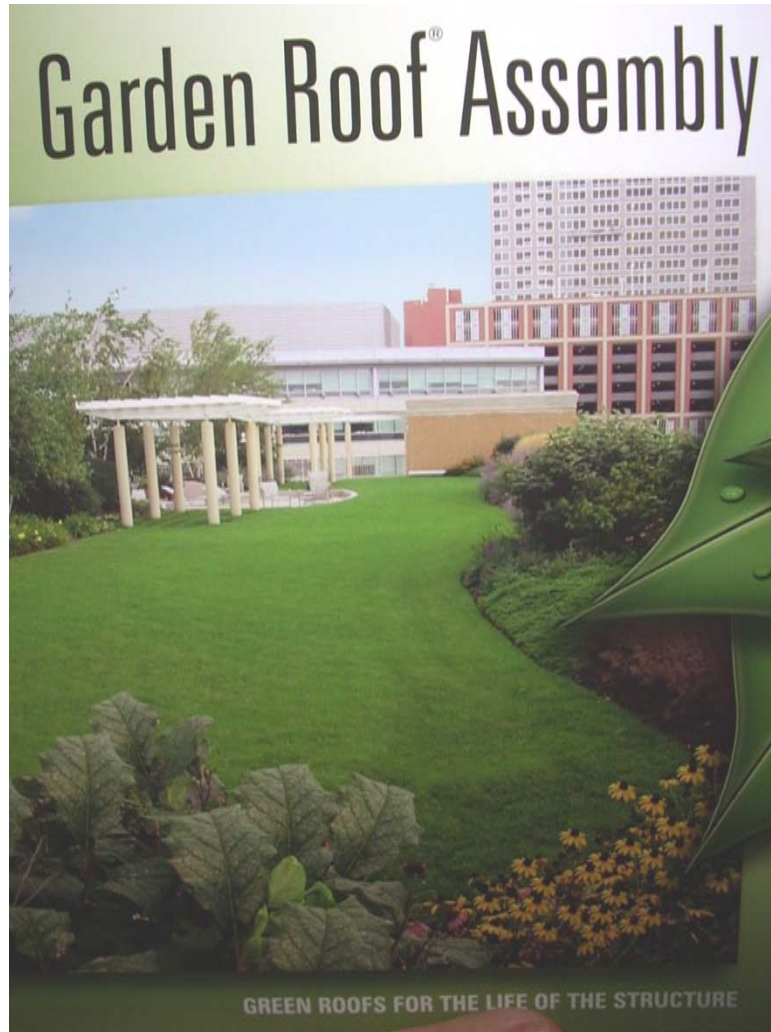
Work with What you Have!

- ▶ Leased Equipment & Furnishings & Finishes
- ▶ Lease Purchase Service
- ▶ How Water Heaters (Size, Type, Peak Loads, Demand Service)
- ▶ Replace Faucets, Fixtures for Water Reduction
- ▶ Reduce Irrigation – Reduce Lawn Care:
 - Rain Gardens to Improve Pervious Coverage
 - Rain Water Harvesting – Collect from Roof Drains and use for Irrigation
 - Re-plant with Indigenous Plants – Drought Tolerant

Efficient Devices



Vegetative Roof Design



Water Efficient Devices



Hot Water Flash Heaters

Hot In A Flash

The Pronto! Tankless Water Heater from Rheem delivers a continuous supply of 100 to 140 degrees Fahrenheit water at a flow rate as high as 7.4 gallons per minute. The tankless gas water heater, RTG-74, has no standing pilot light and no storage tank. The RTG-74 is available in four different models, including indoor and outdoor versions that are powered by either natural gas or LP. Contact www.rheem.com or **Circle 239**.



Solar Shading



MEET EXPECTATIONS WITHOUT COMPROMISE



You can rely on Sherwin-Williams to help you meet your green coating specifications and satisfy all your quality expectations. And to help you identify our environmentally preferable coatings that provide maximum performance, we've developed the GreenSmart symbol. Products carrying this mark meet our highest standards for air quality, VOC emissions, life cycle cost efficiency, durability, color, and coverage. So with GreenSmart, you'll never have to compromise to meet all your requirements.

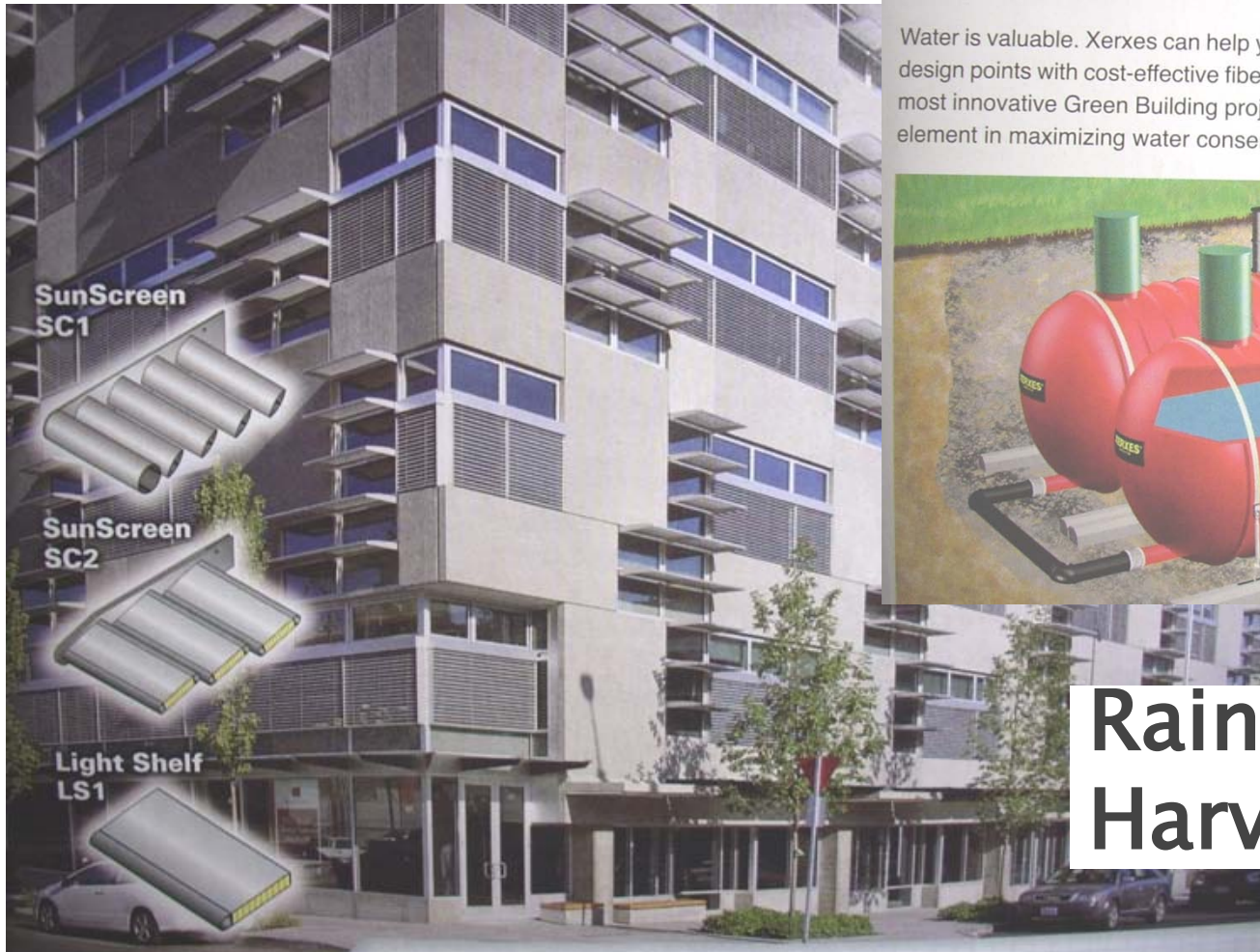


See your Sherwin-Williams Architectural Account Executive or call our Architect & Designer Answerline at 1-800-321-8194.

Low VOC Coatings

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Solar Shading



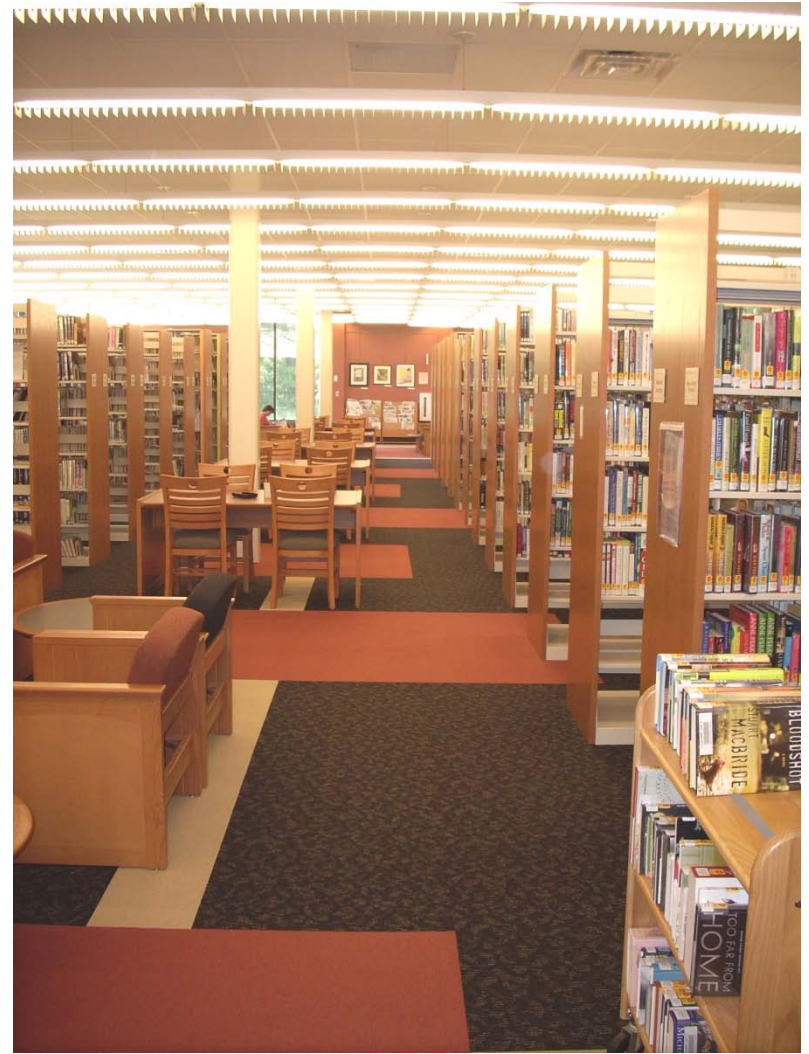
Storing Your Water Efficiently

Water is valuable. Xerxes can help you store it wisely while also earning LEED design points with cost-effective fiberglass underground tanks. Some of today's most innovative Green Building projects recognize that water storage is a key element in maximizing water conservation design possibilities.

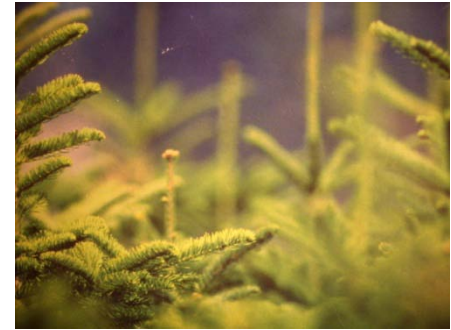


Rain Water Harvesting

Use Natural Daylight Harvesting with Sensors to Control Artificial Lighting - Hunterdon County Library Headquarters Expansion



We all want to be **Green** – Cautions & Recommendations



- ▶ Be realistic with expectations
- ▶ Be careful of media hype
- ▶ Not everything green is necessarily good
- ▶ Benefits may not always outweigh costs
- ▶ Pick the low hanging fruit first
- ▶ Create a master sustainability plan
- ▶ Get the support of staff and governing body
- ▶ Start at home (recycle, paper reduction, etc.)
- ▶ Plan, Plan, Plan and.....
- ▶ Consult with a qualified architectural design professional

Energy Audit Companies & References

- ▶ Green Tech Energy
(www.greentechenergy.com)
- ▶ United States Green Building Council
(www.USGBC.org)
- ▶ (Dome-tech Engineers)
(www.dometech.com)
- ▶ State Library Website
- ▶ www.fvfpc.com (Faridy Veisz Fraytak, P.C. – Sustainable Library Design Specialists)

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Thank you for your interest!

Working towards a sustainable future!