The aim of this project is to redefine the urban school and create an environment where individual students can acquire the skills necessary to become life-long learners, successful members of society, good stewards of the environment and responsible members of the global community.

The demands of the 21st century call for highly educated people to serve in our local and global economies. Professional degrees are becoming essential for the upward mobility of our society. Old models of education have proved to be stagnating to our education system as drop-out rates and rates of students attending college have remained consistent over the last few decades (Klonsky, 2008). Increasingly there is less and less room in our workforce for uneducated, or non-degree holding workers, which poses a challenge to the education system. A paradoxical shift is needed in the education system to meet the demands of the workforce and to provide the highly educated employees it requires.

Elementary and Secondary education plays a vital role in the overall education system as students are developing at rapid rates and learning essential skills that will be used later in their lives. Promoting healthy learning habits at a young age can foster life-long learning and provide a solid basis for their success in subsequent years, not only in school but life as well.

Small schools, small learning communities or ‘schools within schools’ can offer an environment that will promote the skills necessary for children to be successful in the 21st century. A 1989 study by the Chicago Panel on Public School Policy and Finance shows that school size, more so than classroom size and student-teacher ratios, can positively affect the learning outcome of students citing small schools as the second most significant factor in the achievement of students, following income level (Hess and Corsino, 1989). School size is the most important factor in defeating anonymity in schools at any stage; elementary, middle or high school age students. Small Schools, more so than larger schools, can foster stronger supportive relationships between children and adults including teachers, administration and more importantly parents.

Similarly, advances in behavioral and neurosciences are challenging traditional models of learning. Lancastrian and Ford Models of learning of the 19th and 20th centuries were based on the premise that learning is linear and the primary means of instruction was seminar based, with a teacher transmitting knowledge to the student (Nair and Fielding, 2007). However, over the course of the last two decades significant advances have been made in brain-based research including, but not limited to, Howard Gardner’s Multiple Intelligences Theory (Gardner, 1983). Brain-based research provides a unique set of challenges to the education system as multiple methods of instruction are being developed to provide optimal learning opportunities to students. Providing different methods of learning to students can create an environment that supports different learning styles of each student while still providing a challenging environment.

Gardner’s Multiple Intelligence theory takes this notion even further by suggesting that there are different ‘intelligences’ that everyone posses, yet some people are stronger in a few than others. For example a student may be strongest in the Linguistic and Musical Intelligences while another student may be stronger in Logical/Mathematical Intelligences than others (Gardner, 1983). Brain-based research provides a unique set of challenges to the education system as multiple methods of instruction are being developed to provide optimal learning opportunities to students. Providing different methods of learning to students can create an environment that supports different learning styles of each student while still providing a challenging environment.

The built environment of the school must support these different learning models and provide spaces where students of all ages and stages of development can be successful. Creating an environment where all students can be successful and where different models of learning can be applied is, in essence, creating a sustainable school. The term ‘sustainability’ is often connected to energy efficiency in architecture. However, sustainability can be applied to a variety of concepts in architectural design. Creating a learning environment that can sustain multiple modes of learning and that can be adaptable to future educational models ensures that the school will have a lasting presence in the community and will retain its importance as a place of learning for future generations. Using daylighting in classrooms is a sustainable strategy to reduce lighting loads in schools and aids in achieving greater energy efficiency and lower cooling loads. However, daylighting has also been shown to improve academic performance and overall well-being in students, providing society with better equipped learners. Incorporating outdoor spaces within the school not only allows the students access to the exterior, but can be used as a tool to teach environmental stewardship to the students. Sustainability will be a central concept to the school as a primary goal will be creating an environment that will be able to serve future generations and create good environmental stewards from all the students.

An Urban School for a New Generation of Learners.
To Develop my Project I will use the following methods:

1. Chicago Zoning and Building Codes:
   I will conduct an analysis of local zoning and code information to determine permitted uses, municipal requirements and life safety requirements.

2. Qualitative and Quantitative Research Methods:
   Using resources to understand the physical parameters of programmatic spaces and develop a clear qualitative description of the space.

3. Precedent Studies:
   Conduct case studies on educational buildings throughout the country to critically analyze what has been done.

4. Educational Paradigms and Brain-based Research:
   To research and analyze recent movements in educational teaching philosophy and brain-based research to aid in the overall concept and design of the school.

5. Site Analysis:
   To study and explore multiple factions of the site including the Lakeshore East Master Plan, local amenities, available transportation options, demographics and climate.

The goal of this project is to develop an educational facility that will create a successful learning environment for all its students, that will engage its context and maintain relevance for future generations.

• Active Learning:
  The school will provide a high quality learning environment, supportive of a variety of learning models, that will engage its students in the learning process through a hands-on learning approach.

• Personalization:
  The design will foster an environment where strong relationships between students and adults can be formed and sustained. An environment where all students have the opportunity to be known, challenged academically and held accountable for the success of one another.

• Community Connections:
  The design will provide opportunities to connect the school to the community while additionally preparing students to become successful members of society. The design will provide a welcoming environment for the engagement and involvement of the community, as well as utilizing local features and adjoining amenities.

• Environmental Responsibility:
  The design will embody the importance of environmental stewardship and create a sustaining element within the city.
Project Abstract

01.06 Project Development

Stakeholders are key to the success of any project. Some of the methods that could be used to engage stakeholders in this process are as follows:

• Community Meetings:
  Public meetings are the most efficient way of getting indirect and general stakeholders involved in a public project. Community involvement can aid in establishing an identity and a feeling of ownership over the project, making it an essential part of the community.

• Focus Groups:
  Focus groups are typically comprised of the direct stakeholders of the project. All of the direct stakeholders listed in the graph are essential to the operations of the building thus making their input fundamental to the success of the facility.
### 02.01 Program Summary

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
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<tbody>
<tr>
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<td>02.02.02 Learning Community B</td>
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<td>02.04 Shared Spaces</td>
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<td>02.05 Exterior Program</td>
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### 02.02 Learning Community A

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Description</th>
<th>Qty</th>
<th># Students</th>
<th>Total Students</th>
<th>SF/Person</th>
<th># Staff</th>
<th>SF/Room</th>
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</thead>
<tbody>
<tr>
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<td>Boys’ Restroom</td>
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<td>100</td>
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<tr>
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<tr>
<td>02.02.3 Learning Studio</td>
<td>Collaboration Area</td>
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<td>120</td>
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<tr>
<td>02.02.4 Learning Studio</td>
<td>Teacher’s Retreat</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02.02.5 Learning Studio</td>
<td>Breakout Area</td>
<td>2</td>
<td>250</td>
<td>250</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

**Total for Learning Community A**:
- Students: 240
- Staff: 8
- SF/Person: 12400

### 02.03 Learning Community B

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Description</th>
<th>Qty</th>
<th># Students</th>
<th>Total Students</th>
<th>SF/Person</th>
<th># Staff</th>
<th>SF/Room</th>
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</thead>
<tbody>
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<td>50</td>
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<tr>
<td>02.03.5 Learning Studio</td>
<td>Breakout Area</td>
<td>2</td>
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</table>

**Total for Learning Community B**:
- Students: 240
- Staff: 8
- SF/Person: 12400

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**Notes**

- The program summary includes details on the total number of students, the total program area, and the area breakdown for each section.
- The shared spaces section lists various facilities such as study areas, libraries, and gyms, each with a total area contribution.
- The exterior program section highlights areas such as learning terraces and circulation, totaling 13600 square feet.
- Each learning community section details the number of students, staff, and the space utilization per person, providing a comprehensive overview of the educational environment.
02.03.1 Learning Studio

Number of Students: 30
Sq Ft Per Student: 35 sf
Total Sq Ft: 1050 sf

02.03.1.1 Break-out Area

100 sf
Total Sq Ft: 1050 sf

Description:
The Learning Studios is the heart of each of the small learning communities. The studios will provide an environment that will support multiple models of learning such as traditional methods of instruction, differentiated instruction, cooperative learning and the flexibility to adapt to future models of learning. Each of the studios will include a breakout area that will support small and large group work including student to student and student to teacher interaction. Natural lighting will be an important design consideration in every studio as natural lighting has been shown to improve academic achievement levels amongst students. Each studio will open onto the central collaboration space which will promote multiple age group and inter-class collaboration.

02.03.2 Collaboration Area

Number of Students: 120
Sq Ft Per Student: 15 sf
Total Sq Ft: 1800 sf

Description:
The Collaboration area is the center of each learning community. This area will provide an environment that will promote inter-class collaboration. Research indicates that students who are able to interact with children of different ages and development stages can enhance academic achievement through peer group learning. Additionally the collaboration area provides a place outside the studios where learning can take place promoting the idea that learning can occur throughout the school and not just in designated rooms. A variety of spaces will be incorporated into the area to promote collaboration including group computer work stations, group seating areas, space for large group interaction and individual contemplation. Each collaboration area will be adjacent to both the Creativity Labs as well as the exterior learning center promoting a greater connection between indoor/outdoor spaces.

(a) - From Chicago Public Schools
**Teacher’s Retreat**

**Total Sq Ft:** 400 sf

**Description:**
The Teacher’s Retreat offers a place within each learning community to support the needs of the teachers. The space will provide storage for teacher materials and personal belongings. The room will also feature a small work station, copiers and will serve as a break area for teachers. The retreat will also function as an area for teacher collaboration to take place through the incorporation of a small meeting table. The room will include a degree of transparency that will aid in creating a greater connection between the students and teachers, as well as allowing for teacher-student supervision.

**- 50 sq. ft. provided per teacher per floor**

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**Restrooms**

| 02.03.4.1 | Boy’s Restroom: 250 sf |
| 02.03.4.2 | Girl’s Restroom: 250 sf |
| **Total Sq Ft:** | 500 sf |

**Description:**
Each Learning Community will feature its own student restroom facilities with fixtures scaled to the size of the children occupying the space. For security purposes the entrance and lavatories will remain ‘open’ to the corridor to allow for student supervision, yet allowing for necessary privacy needed for restroom facilities.

**- One Boys, One Girls Restroom provided per floor**
### 02.04 Shared Spaces

<table>
<thead>
<tr>
<th>Space</th>
<th>Qty</th>
<th>SF</th>
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<tr>
<td>Melody Lab</td>
<td>1</td>
<td>60</td>
<td>Number of Students: 60 Brings together Music and Drama disciplines.</td>
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<tr>
<td>Large Practice Room</td>
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<td>200</td>
<td></td>
</tr>
<tr>
<td>Small Practice Room</td>
<td>4</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>Storage Area</td>
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<td>200</td>
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</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>1760</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The Melody Lab is intended to be a space where children can experiment with their Musical Intelligences (Gardner, 1983). The melody lab is a space that will be utilized by all Learning Communities and where collaboration between the Learning Communities can occur. The Music Lab will be located adjacent to a performance area where children can exhibit their musical and other performance abilities to other members of the school and the greater community. The Lab will also feature functional storage areas for musical instruments and other storage needs for the performance area.
02.04.2 Multi-Media Area

Number of Students: 60
Sq Ft per Student: 30 sf
Total Sq Ft: 1800 sf

02.04.2.1 Media Office
Total Sq Ft: 100 sf

02.04.2.2 Media Storage
Total Sq Ft: 200 sf

**Description:**
The Media Center will serve as a central component of the learning community as a place where multiple forms of media are stored and shared. Additionally, the center will integrate ‘cave spaces’ and ‘campfire spaces’ (Prakash and Fielding, 2007) that will promote large group interaction and provide space for individual contemplation. The center will house book stacks and computer stations and will also include support spaces such as a librarian’s office and storage room for media.

02.04.3 The Commons

Number of Students: 180
Sq Ft per Student: 15.5 sf
Total Sq Ft: 2790 sf

02.03.2.1 Kitchen
Total Sq Ft: 300 sf

02.03.2.2 Office
Total Sq Ft: 100 sf

02.03.1.3 Storage Area
Total Sq Ft: 300 sf

**Description:**
The commons will be included in the shared spaces of the school, serving all of the learning communities. The space will allow for subdivision into smaller dining café’s that will support the more intimate and personalized atmosphere of the school. The dining café’s are essentially a social space where children can experiment with their inter-personal skills by allowing multiple learning communities to interact. The commons will also feature movable furniture that will allow for a flexible space within the school that can accommodate performance and gathering spaces for the larger school as well as serve community functions. The commons area will be located adjacent to the performance area and support spaces such as the kitchen and storage areas.
02.04.4 GYMNASIUM
Total Sq Ft: 8700 sf

- 02.04.2.1 Retractable Seating 700sf
- 02.04.2.2 Boys Locker Room 1100sf
- 02.04.2.3 Girls Locker Room 1100sf
- 02.04.2.4 Offices (2) 500
- 02.04.2.5 Storage Area: 500 sf

Total Sq Ft: 12600 sf
02.04.5 **Multipurpose Spaces**

| Activity Room: 2200 sf | Meeting Rooms (2): 3600 sf | Total Sq Ft: 5800 sf |

**Description:**
The multipurpose spaces will serve as areas that can be utilized by both the school and the Boys and Girls Clubs. They can serve as additional collaboration areas during school hours and meeting rooms at night.

02.04.6 **Central Administration**

| Greeting Area: 300 sf | Reception/Admin: 400 sf | Meeting Room: 200 sf | Total Sq Ft: 900 sf |

**Description:**
The central administration and greeting area serves as the central command center for the greater school and support area for the smaller Learning Communities. The area serves as the primary entrance for visitors and functions and will incorporate a waiting, reception area, central administration and a meeting room that can additionally serve community functions. A welcoming environment will encourage parent and community involvement within the greater school while a level of transparency will allow the central command center to provide monitoring of all users of the building for security purposes. The central command center will also be located adjacent to student services such as guidance rooms and the health center.
**02.04.7  STUDENT SUPPORT**

- **02.04.7.1 Guidance Office:** (2) 120 sf
- **02.04.7.2 Wellness Center:** 350 sf
- **02.04.7.3 Wellness Office:** 100 sf
- **Total Sq Ft:** 690 sf

**DESCRIPTION:**

The wellness center will serve a vital function by providing basic services to children who are feeling ill or in need of medical attention. The wellness center will be located in an area adjacent to the central administration area, centrally located within the school, and shared by all learning communities. The center will also include a small office for an on-site nurse and storage areas for children’s medical supplies.

The guidance offices will also serve as a shared component of the school and be located near the central administration area and wellness center. The guidance offices will provide a variety of counseling services for the students of the greater school. Each office will include a small group meeting area that will promote peer conflict resolution as well as providing necessary space for individual counseling.

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**02.04.8 BUILDING SUPPORT**

- **02.04.8.1 Building Storage/Mechanical Room:** 2200 sf
- **02.04.8.2 Building Engineer's Office:** 100 sf
- **02.04.8.3 Building Networking Room:** 350 sf
- **Total Sq Ft:** 2650 sf

**DESCRIPTION:**

Building support areas provide space for essential building system functionality. This area will include an office for on-site building engineer, building storage, mechanical room and a central networking room for building technological systems.
Pre-Design 03

Case Studies and research are an integral part to understanding any building typology. The case studies in the following section show examples of what has been done with educational facilities in recent years. Each project includes the basic project data and a brief design overview. Additionally each project includes a ‘Project Relevance’ section that will address certain aspects of the design that could be relevant to this particular project.

As case studies show what has been done while research can offer insight into what can be done. One of the most prevalent resources that will be incorporated into the design is the 25 Design Patterns outlined in The Language of School Design: Design Patterns for 21st Century Schools by Prakash Nair and Randall Fielding. These 25 Design Patterns are identified below and will be used to analyze the case studies as well as an organizing element for the design principles in this project.

Design Patterns:
1 - Classrooms, Learning Studios, Advisories and Small Learning Communities
2 - Welcoming Entry
3 - Student Display Space
4 - Home Base and Individual Storage
5 - Science Labs, Art Labs and Life Skills Area
6 - Art, Music, Performance
7 - Physical Fitness
8 - Casual Eating Areas
9 - Transparency
10 - Interior/Exterior Vistas
11 - Dispersed Technology
12 - Indoor/Outdoor Connection
13 - Soft Seating
14 - Flexible Spaces
15 - Campfire Space
16 - Watering Hole
17 - Cave Space
18 - Designing for Multiple Intelligences
19 - Daylight and Solar Energy
20 - Natural Ventilation
21 - Learning, Lighting and Color
22 - Sustainable Elements and 3D Textbook
23 - Local Signature
24 - Connected to the Community
25 - Bringing it All Together
03.01.1 Alpharetta High School

Location: Alpharetta, GA  
Architects: Perkins + Will  
Owner: Fulton County Public Schools  
Completion Date: 2004  
Sq Ft: 333,000 sf  
Students: 1850  
Site: 74 Acres  
Cost: $35 mil (building), $12.4 mil (Site)

03.01.1.1 Design Overview:
• The design features a “school within a school” concept that includes 3 classroom wings, or “houses”, served by a core group of teachers allowing teachers to interact with students for their entire high school education.
• Each of the houses connects to an open linear spine that has the buildings shared facilities including: media center, café, administration, art, music and athletics.
• Sustainable features include the use of daylighting, recycled building materials and storm water management through shallow rain gardens.

03.01.1.2 Project Relevance:
• The design of the Houses supports a variety of organizational models making them flexible for different learning and teaching models.
• Art rooms feature large semi-transparent overhead doors that open into a gallery, or student display space.

03.01.1.3 Design Patterns:
1, 3, 4, 5, 6, 7, 9, 14, 18, 19, 22
03.01.2 Benjamin Franklin Elementary School

Location: Kirkland, WA   Architects: Mahlum Architects
Owner: Lake Washington School District   Completion Date: August 2005
Sq Ft: 56,800 s.f.   Students: 450
Grades: K-6   Cost: $10.3 million

03.01.2.1 Design Overview:
• The design of the school uses small learning communities that feature access to natural light, ventilation and are clustered around a central multi-purpose area.
• Ventilation is supplied through louvers through natural convection and exhausted through operable windows and the use of chimneys. All rooms are naturally ventilated and no mechanical systems were used in the construction of the school which aided in lower construction costs and overall operational costs of the facility.

03.01.2.2 Project Relevance:
• Further emphasis is placed on the integration of nature into the design by incorporating outdoor learning areas adjacent to indoor learning areas. The outdoor area features a small creek that is fed by water collected from the roof.
• Small classroom clusters are centered around multipurpose spaces that offer teaching flexibility and options for collaboration.

03.01.2.3 Design Patterns:
1, 2, 3, 4, 5, 7, 8, 10, 11, 12, 14, 18, 19, 20, 21, 22, 23, 24
03.01.3 Burr Elementary School

Location: Fairfield, CT
Owner: Town of Fairfield
Architects: Skidmore, Owings & Merril, LLP
Completion Date: 2004
Sq Ft: 69,000 s.f.
Students: 500
Site: 15.5 acres
Grades: K-5
Cost: $14.6 million

03.01.3.1 Design Overview:
- The school was constructed to serve growing areas of the community and is located in a wetland preserve.
- The design approach uses a standard square, or box, that has more organic elements cut out from the form to produce outdoor areas.
- The interior courts supply daylight to the interior spaces of the building.

03.01.3.2 Project Relevance:
- The design integrates many secure outdoor areas into the center of the building. These outdoor courtyards supply areas for casual eating and indoor/outdoor vistas within the school.
- The building was designed to preserve the natural wetlands that are located on the site. The building makes as little impact on the site using a very compact design.

03.01.3.3 Design Patterns:
2, 8, 9, 10, 14, 19, 20, 22, 23, 24
03.01.4 The Business Academy, Bexley
Location: London, UK
Owner: Garrard Education Trust
Students: 1350
Site: 33 acres
Grades: K-12

03.01.4.1 Design Overview:
• One of the first purpose-built, privately funded independent state schools in Europe.
• The design approach is based on the 3E’s from the philosophy of schools regeneration company, which supports transparent, open and compact spaces that encourage interaction of all users of the facility.
• The exterior of the building features a double layer of glazing and shading louvers which help to reduce heat gains in the warmer months.

03.01.4.2 Project Relevance:
• The design focuses on three courtyards focused on business, art and technology. The courtyard spaces provide a visual linkage between teaching and common areas throughout the facility.
• Movable partitions in the classrooms allow for ultimate user flexibility within the spaces.
• A large mural in the courtyard display’s photos of each of the students helping to create an identity for the school.

03.01.4.3 Design Patterns:
3, 5, 6, 9, 10, 11, 12, 14, 19, 22
03.01.5  **Carl Bolle Elementary School**  
Location: Berlin, Germany  
Architects: DieBaupiloten  
Owner: Jahn, Mack und Partner  
Completion Date: 2008  
Grades: K-6

**03.01.5.1 Design Overview:**
- Bolle Elementary school was a renovation of an existing building in which the architects involved students in design workshops and eventually lead to the story of the ‘Spy with the Shimmering Cloak’ as the storyboard for the design.
- The storyboard was translated into an exploratory learning corridor that features small alcoves, climbing walls, a student display space, the exploration of the color spectrum and acoustics through the Listening Wall.

**03.01.5.2 Project Relevance:**
- The design focuses on three courtyards focused on business, art and technology. The courtyard spaces provide a visual linkage between teaching and common areas throughout the facility.
- Movable partitions in the classrooms allow for ultimate user flexibility within the spaces.
- A large mural in the courtyard display’s photos of each of the students helping to create an identity for the school.

**03.01.5.3 Design Patterns:**
3, 5, 6, 9, 10, 11, 12, 14, 19, 22
03.01.6 Clackamas High School
Location: Clackamas, Oregon
Owner: North Clackamas School District
Architects: BOORA Architects
Completion Date: 2002
Sq Ft: 265,355 s.f.
Students: 1800
Site: 42 acres
Grades: 9-12
Cost: $30 million

03.01.6.1 Design Overview:
• The building features 4 two story academic nodes that are connected by the common spaces of the library, administration, arts and physical education facilities.
• Windows, skylights and light shelves provide natural lighting into over 90% of interior spaces in addition to occupancy and light sensors that further help to reduce energy consumption. Solatubes are integrated into the casework at the second story allowing additional light to be funneled into the lower floors.
• First high school to received LEED Silver certification

03.01.6.2 Project Relevance:
• The academic nodes help students identify with different parts of the school, creating a sense of ownership.
• The school fully integrates sustainability into the design creating a 3D textbook that students can learn and relate to.

03.01.6.3 Design Patterns:
1, 2, 3, 5, 6, 7, 9, 11, 12, 19, 20, 22, 23
03.01.7 Fossil Ridge High School
Location: Fort Collins, CO  
Owner: Poudre School District  
Architects: RB+B Architects  
Completion Date: 2004  
Completion Date: 2004  
Sq Ft: 296,375 s.f.  
Students: 1,800  
Grades: 9-12  
Cost: $38.5 Million

03.01.7.1 Design Overview:
• The design of the school incorporates innovative technologies, while falling within the same price range as similar high schools in the region.
• External shades and PV sunshades (5.2 kilowatts) control the amount of direct light into the space, while also producing energy. A water pond on the site collects and stores rainwater reducing water runoff into nearby areas. A case study of the performance of fossil ridge has shown a savings of $271,791 in energy and $27,852 in water savings allowing these funds to be redirected into the classrooms.

03.01.7.2 Project Relevance:
• Three learning communities housing 600 students each that are attached to a central courtyard. A large common area at the center of the design serves as a hub of interaction for the school.
• The design of the school integrates a variety of small spaces including soft seating areas, campfire spaces and impromptu meeting and socializing areas.
• The building fully integrates both active and passive sustainable strategies into the design, making it a learning tool.

03.01.7.3 Design Patterns:
2, 8, 9, 10, 11, 12, 13, 14, 15, 19, 20, 22, 23, 24
03.01.8 Lick-Wilmerding High School

Location: San Francisco, CA
Architects: Pfau Architecture, Ltd.
Owner: Lick-Wilmerding High School
Completion Date: 1997
Sq Ft: 26,000 s.f.
Students: 380
Grades: 9-12
Cost: $11.5 million

03.01.8.1 Design Overview:
• The project was an addition to an existing private school in the San Francisco area. The site features numerous building around a central gathering space in a campus-like atmosphere.
• Different buildings are dedicated to different functions and each building has its own architectural expression.
• The campus design is very sustainable taking advantage of the bay area climate and location.

03.01.8.2 Project Relevance:
• Multi level exterior space allows for a variety of interactions to occur both between students and the environment.
• A variety of hard and soft seating areas are used throughout the site to promote interaction between students.

03.01.8.3 Design Patterns:
2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 19, 20, 22, 23, 24
03.01.9 **Perspectives Charter School**

Location: Chicago, IL  
Architects: Perkins + Will  
Owner: Perspectives Charter School  
Completion Date:  
Sq Ft: 30,000 s.f.  
Students: 325  
Site: 1 acre  
Grades: 6-12  
Cost: $4.5 million

**03.01.9.1 Design Overview:**  
- The project is located on a compact urban site in Chicago, IL.  
- The school is comprised of students whose families primarily fall below the poverty line. The design approach was to create a ‘disciplined but intimate learning environment’.

**03.01.9.2 Project Relevance:**  
- The project is located in a compact urban site in Chicago and displays how a very modern building can respond to a primarily traditional area supplying a unique identity for the area.  
- The building has a distinct presence and welcoming entry making it an asset to the community.  
- The central multipurpose space serves a variety of functions and has become a center of activity and socialization in the school.

**03.01.9.3 Design Patterns:**  
2, 3, 5, 9, 10, 14, 16, 19, 23, 24
03.01.10 Rosa Parks Elementary School
Location: Redmond, WA
Architects: Mahlum Architects
Owner: Lake Washington School District
Completion Date: 2006
Sq Ft: 66,402 s.f.
Students: 550
Grades: K-6
Cost: $13.6 million

03.01.10.1 Design Overview:
• The building design reflects a “natural parks theme” that includes the use of sustainable design strategies, natural materials, nature trails, wetlands and parks responds to area.
• Interior spaces feature exposed structure in very natural finishes. The interior also features ample daylight through the use of interior and exterior glazing.

03.01.10.2 Project Relevance:
• Features small learning communities centered on a central multipurpose space allowing for flexible teaching styles. Each of the learning communities is directly adjacent to the exterior learning courtyards.
• There is a high level of transparency used in the corridors to help promote interaction and increase the availability of daylighting to interior spaces.
• The architecture of the building responds to its surrounding and creates a local signature and identity for the building.

03.01.10.3 Design Patterns:
1, 2, 3, 4, 5, 6, 7, 9, 10, 12, 14, 18, 19, 20, 22, 23
03.01.11 **Rosa Parks Elementary School**

Location: Portland, Oregon  
Architects: Dull Olson Weekes Architects  
Owner: N4C and Portland Public Schools  
Completion Date: August 2006  
Sq Ft: 66,863 s.f.  
Students: 575  
Grades: K-6  
Cost: $12.8 million

**Design Overview:**
- The building design is centered on a neighborhood model and integrating nature into the design. Bioswales treat and channel storm water on site while the use of native plants mitigates the needs for irrigation.
- The interior design incorporates natural light, reducing electrical consumption and increasing productivity of students. Low-VOC and recycled materials are used on interior finishes and the mechanical systems use a displacement ventilation system.

**Project Relevance:**
- The three R’s: reduce, reuse and recycle is fully integrated into the curriculum actively involving the students in creating a fully sustainable school.
- The school is located in New Columbia a low-income housing neighborhood and the school building also features a neighborhood boys and girls club allowing community involvement and further use of the building after school hours.
- The neighborhood model of the school is divided into four clusters each containing 125 students.

**Design Patterns:**
1, 2, 3, 4, 5, 6, 7, 9, 10, 12, 14, 19, 20, 22, 23
**03.01.12 Sidwell Friends Middle School**

**Location:** Washington, DC  
**Architects:** Kieran Timberlake Associates  
**Owner:** Sidwell Friends School  
**Completion Date:** September 2006  
**Sq Ft:** 39,000 s.f. addition, 72,500 s.f. total  
**Site:** 15 acres  
**Students:** 350  
**Grades:** 6-8

**03.01.12.1 Design Overview:**
- Full integration of natural and man-made systems that students can use as a building tool.
- Natural ventilation systems are augmented by mechanical assistance and reduce the need for artificial cooling.
- Natural lighting is used throughout the school and reclaimed wood louvers help to reduce solar penetration into the space, but still allow for maximum daylighting.
- PV panels and solar thermal technologies further reduce energy consumption.

**03.01.12.2 Project Relevance:**
- The central courtyard serves as constructed wetlands that help to reduce storm water runoff and additionally treats and recycles grey water within the building. Rainwater is collected at the roof and is stored in a biology pond that supports native habitats.
- The design fully integrates passive and active systems such as daylighting, natural ventilation, and water recycling.

**03.01.12.3 Design Patterns:**
- 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 19, 20, 23
03.01.13 WMEP Interdistrict Downtown School
Location: Minneapolis, MN
Owner: West Metro Education Program
Architects: Cunningham Group Architects, PA
Completion Date: 1999
Sq Ft: 102,500 s.f
Students: 600
Grades: K-12
Cost: $14.2 Million

06.01.13.1 Design Overview:
• Multicultural learning center that services 11 school districts.
• The school has partnered with businesses in the area to provide additional off-site learning areas such as sharing gym space with a local YMCA, using a local downtown Library, use of the MacPhail center for music for music and performing classes and teaming up with the school of education at St. Thomas University.
• Daylighting, natural ventilation and a solar wall-heating system are integrated into the design to reduce energy consumption.

06.01.13.2 Project Relevance:
• Features 6 school “houses” that divide up the K-12 years and each house features a communal activity spaces.
• The use of surrounding context for accessory spaces integrates the community into the design.
• The design incorporates a variety of cave and campfire spaces creating a very social and flexible design.

06.01.13.3 Design Patterns:
1, 2, 3, 4, 11, 13, 14, 15, 16, 19, 20, 22, 23, 24, 25
1803 - Fort Dearborn is established along the Chicago River and Lake Michigan.

1847 - Large portion of land to the east of downtown, bordering Lake Michigan is granted protection by the city and is named Lake Park. The Park was suffering from erosion and the Illinois Central Railroad agreed to build a breakwater to protect the area in exchange for an offshore train trestle.

1851 - Illinois Central is officially chartered by the Illinois General Assembly.

1852 - Illinois Central Railroad owns right-of-way through Lake Park to the Chicago River Rail Yards.

1871 - Great Chicago Fire. Lake Park becomes a impromptu landfill for fire debris.

1893 - The Art Institute of Chicago is constructed in Lake Park.

1901 - City transfers Lake Park to the South Parks Commission, which officially changes the name to Grant Park.

1909 - Daniel Burnham’s Plan for Chicago.

1909 - Construction of the Field Museum begins, as part of Burnham’s 1909 plan for Chicago for a network of open space and civic buildings.

1911 - Final improvements are made to the overall structure of the Park under federal relief funding.

1924 - City transfers Lake Park to the South Parks Commission, which officially changes the name to Grant Park.

1934 - Final improvements are made to the overall structure of the Park under federal relief funding.

1901 - City transfers Lake Park to the South Parks Commission, which officially changes the name to Grant Park.

1909 - Daniel Burnham’s Plan for Chicago.

1909 - Construction of the Field Museum begins, as part of Burnham’s 1909 plan for Chicago for a network of open space and civic buildings.

1911 - Final improvements are made to the overall structure of the Park under federal relief funding.

1924 - Final improvements are made to the overall structure of the Park under federal relief funding.
1945 – Illinois Central sells airspace rights north of Randolph

1951 – Construction begins on the Chicago Pedway System

1994 – Metro Golf at Illinois Center, a 9-hole golf course, operates at the old Illinois Central Rail Yards


2005 – Construction of the Park at Lakeshore East, the Lancaster and the Shoreham complete the first phases of construction on Lake Shore East

2013 – Estimated completion date for Lake Shore East Development
03.03 Context Maps
03.03.3 Points of Interest

03.03.4 Cultural Attractions
The master plan for the Lakeshore East Development was designed by SOM and developed by Magellan Development Group, LLC. The development sits on a 28-acre site located in the northeastern area of the Loop in downtown Chicago, IL. The site includes a variety of live, work and play areas including a large 6-acre park at the center of the development. The first tower, the Lancaster, was completed in 2005 and tentative completion for the remainder of the development is scheduled for 2011. The completed $4 billion development will include the following features:

- 40% open space including a 6-acre botanical park
- 4,950 residences
- 2.2 million gross square feet of commercial space
- 1,500 hotel rooms
- Up to 770,000 square feet of retail, including a 100,000 square foot Village Market Center

Architectural Team:

- Skidmore, Owings & Merrill
- Loewenberg Architects
- DeStefano + Partners
- Solomon Cordwell Buenz & Associates
- The Steinberg Group
- The Office of James Burnett
- Site Design Group
- Studio Gang Architects
03.04.1 **The Lancaster**  
201 N Westshore Dr, Chicago, IL  
Luxury Condominium Tower  
Architects: Skidmore Owings & Merrill and Loewenberg + Associates.  
- Completion Date: 2005  
- Stories: 29  
- Units: 209  

The Lancaster features over 200 luxury condo units, a 2500 sq foot 24-hour fitness center, a private club room and a rooftop sun deck. During the summer the Lancaster also features a Farmer’s Market every Sunday.

03.04.2 **The Shoreham**  
400 E. South Water Street, Chicago, IL  
Luxury Condominium Tower including rental units and retail space  
Architects: Loewenberg + Associates.  
- Completion Date: 2005  
- Square Feet: 765,000 sf  
- Stories: 46  
- Units: 548  
- Parking Spaces: 373 cars  
- Retail Space: 11,000 sf  

The Shoreham was the first tower constructed to include residential rental units in the development. The Shoreham includes a Life Fitness™ fitness facility, business center, game room, sky garden, café, outdoor pool and spa.

03.04.3 **The Regatta**  
420 E. Waterside Drive, Chicago, IL  
Luxury Condominium Tower  
Design Architects: DeStefano + Partners Inc.  
Architect of Record: Loewenberg Architects  
- Completion Date: 2006  
- Square Feet: 675,000 sf  
- Stories: 44  
- Units: 325  
- Parking Spaces: 342 cars  
- Retail Space: 8,600 sf  

The Regatta is a luxury condo tower that features an indoor swimming pool, a rooftop garden and theatre room.
340 on the Park
400 E. Randolph Street, Chicago, IL
Luxury Condominium Tower, LEED Certified
Architects: Solomon Cordwell Buenz & Associates
Completion Date: 2007
Square Feet: 1 mill. s.f.
Stories: 42
Units: 344
Parking Spaces: 470 cars
Retail Space: 4,160 sf

340 on the Park was Chicago’s first ecologically designed (LEED Certified) high-rise tower. It houses over 300 residential condominium units and includes a wintergarden, club room, fitness center, pool and spa.

The Chandler
400 E. Waterside Drive, Chicago, IL
Luxury Condominium Tower
Design Architects: DeStefano + Partners, Inc.
Architect of Record: Loewenberg Architects
Completion Date: 2007
Stories: 35
Units: 304
Parking Spaces: 340 cars
Retail Space: 10,000 sf

The Chandler has distinct views of the river and lake Michigan to the east and houses a signature Shore Club. It also features a media room, private party room, fitness facility, concierge service, an indoor rooftop pool with two landscaped decks.

The Tides
360 East South Water Street, Chicago, IL
Luxury Rental Tower
Architects: Loewenberg + Associates, Inc.
Completion Date: 2008
Stories: 51
Units: 608
Parking Spaces: 373 cars
Retail Space: 11,000 sf

The Tides is the second all-rental tower in the Lakeshore East development and includes amenities such as a gym, business center, game room, café, outdoor pool and spa.
3.04.7 **Aqua**  
225 N. Columbus Drive  
Chicago, IL  
Luxury condominium, rental and hotel tower

Design Architect: Studio Gang Architects  
Architect of Record: Loewenberg Architects

Completion Date: 2009  
Square Feet: 1,987,000 sf  
Stories: 82  
Units: 264 Condominiums, 476 Rental Apartments, 210 Hotel Rooms  
Parking Spaces: 1,360 cars  
Retail Space: 17,536 sf, 5,968 sf in Pedway System

Aqua features over 100,000 sf of indoor and outdoor recreation facilities. The design of the tower is emphasized by its unique balcony designs that allows each unit to have its own connection to the outdoors.

3.04.8 **The Parkhomes**  
Park at Lakeshore East  
Chicago, IL  
Luxury Townhouses

Design Architect: The Steinberg Group  
Architect of Record: Loewenberg Architects

Completion Date: 2009  
Square Feet: 133,000 sf  
Units: 25  
Parking Spaces: 40 cars  
Retail Space: 11,000 sf

The Parkhomes are custom designed townhomes that offer several plans ranging from 2,900 to 3,900 sf of living space. Rooftop terraces and a connection to the 6-acre shared park offers a unique connection to the outdoors.
03.05 Demographic Overview

Population: 8,450 people
Population Density: 16,838 people/sq mile
Total Households: 5,152 households
Total Family Households: 1,627 households
Avg. Household Size: 1.64 people/household
Avg. Family Size: 2.41 people/household
Avg. Resident Age: 46 years
Avg. Household Income: $93,973
Cost of Living Index: 125.9 (high, over 100 national average)
Ave. Property Value: $532,169

03.05.1 Neighborhood Profile

Household Size

Marital Status

Ethnic Distribution

Gender

* all data from http://www.city-data.com/zips/60601.html
**Household Composition**

- Non-Family Households: 4,129
- Family Households: 6,227

**Family Composition**

- Marital status: 64%
- Family status: 36%

**Educational Attainment**

- Less than 9th grade: 4%
- Some College, no degree: 9%
- Associate Degree: 19%
- Bachelor’s Degree: 87%
- Graduate Degree: 1%

**Age Distribution**

- 5 to 9 Years: 1,114
- 10 to 14 Years: 2,177
- 15 to 20 Years: 1,157
- 21 to 24 Years: 81
- 25 to 34 Years: 829
- 35 to 44 Years: 1,355
- 45 to 54 Years: 1,549
- 55 to 59 Years: 631
- 60 to 64 Years: 217
- 65 to 74 Years: 558
- 75 to 84 Years: 217
- 85+: 358

**Household Income**

- Less than $15,000: 13%
- $15,000 to $24,999: 47%
- $25,000 to $34,999: 11%
- $35,000 to $49,999: 10%
- $50,000 to $74,999: 14%
- $75,000 to $99,999: 9%
- $100,000 to $149,999: 5%
- $150,000 to $249,999: 15%
- $250,000 to $500,000: 7%
- $500,000+: 2%

**Family Income**

- Less than $15,000: 18
- $15,000 to $24,999: 167
- $25,000 to $34,999: 216
- $35,000 to $49,999: 256
- $50,000 to $74,999: 178
- $75,000 to $99,999: 177
- $100,000 to $149,999: 41
- $150,000 to $249,999: 25
- $250,000 to $500,000: 10
- $500,000+: 4

**Poverty Status**

- Families in poverty with children under 18: 38
- Families Below Poverty Level: 262
- Families in poverty: 1,961
- Families with female householder only: 1,401
- Families Below Poverty: 519
- Families with female householder: 1,497

**Demographic Details**

- Population 25 years and over: 40
- Male: 56
- Female: 55
- Married-Couple: 631
- Female Householder only: 1185
- Some College, no degree: 1355
- Bachelors Degree: 1762
- Associate Degree: 1762
- High School Graduate (or GED): 32%
- 9th to 12th grade, no diploma: 68%
- Less than 9th grade: 3%
- G: 907
- 75 to 84 Years: 1401
- 65 to 74 Years: 1549
- 55 to 59 Years: 631
- 45 to 54 Years: 1549
- 35 to 44 Years: 1355
- 25 to 34 Years: 829
- 21 to 24 Years: 81
- 15 to 20 Years: 115
- 10 to 14 Years: 172
- 5 to 9 Years: 130
- > 5 Years: 442

**Family Households**

- Family Households: 19%
- Non-Family Households: 85%

**Program**

- Pre-Design
- Resources
- Renderings
- Plans
- Concept
- Design
- Program
- Abstract
03.05.2 Employment, Transportation and Housing

### Occupation

- Retail Trade
- Wholesale Trade
- Manufacturing
- Professional, Scientific and Technical Services
- Construction
- Financial, Insurance, Real Estate, Rental and Leasing
- Information
- Transportation, Warehousing and Utilities
- Electric, Gas and Sanitary Services
- Management, Professional and Related Occupations
- Sales and Office Occupations
- Health Occupations
- Education
- Arts, Entertainment, Recreation, Accommodation and Food Service
- Other Services (Except Public Administration)

### Industry

- Primary Industries
- Manufacturing
- Construction
- Wholesale Trade
- Retail Trade
- Transportation and Material Moving

### Mode of Transportation

- Worked at Home
- Other Means
- Walked
- Bicycles
- Other

### Travel Time to Work

- Under 5 minutes
- 5 to 9 minutes
- 10 to 14 minutes
- 15 to 19 minutes
- 20 to 24 minutes
- 25 to 29 minutes
- 30 to 34 minutes
- 35 to 39 minutes
- 40 to 44 minutes
- 45 to 59 minutes
- 60 to 89 minutes
- 90 minutes or more

### Employment Status

- Never Worked
- Not in Labor Force
- Unemployed
- Employed

### Vehicles Available

- None
- 1 Vehicle
- 2 Vehicles
- 3 or more Vehicles

### Employment

- No.
- Employment Status
- Occupation
- Industry
- Mode of Transportation
- Travel Time to Work
- Vehicles Available
**Housing Tenure**

- Owner-Occupied
  - 1939 or earlier
  - 1940 to 1959
  - 1960 to 1969
  - 1970 to 1979
  - 1990 to 1994
  - 1995 to 1998
  - 1999 to Present
- Renter-Occupied
  - 1939 or earlier
  - 1940 to 1959
  - 1960 to 1969
  - 1970 to 1979
  - 1990 to 1994
  - 1995 to 1998
  - 1999 to Present

**Age of Housing Units**

- 1939 or earlier
- 1940 to 1959
- 1960 to 1969
- 1970 to 1979
- 1990 to 1994
- 1995 to 1998
- 1999 to Present

**Property Value**

- $100,000 to $199,999
- $200,000 to $299,999
- $300,000 to $499,999
- $500,000 to $999,999
- $1,000,000 to $1,499,999
- $1,500,000 to $1,999,999
- $2,000,000 or more

**Rent Paid per Unit**

- $399 or less
- $400 to $599
- $600 to $799
- $800 to $899
- $900 to $999
- $1,000 to $1,249
- $1,250 to $1,499
- $1,500 to $1,999
- $2,000 or more

**Housing Status**

- 1 Bedroom
- 2 Bedroom
- 3 Bedroom
- 4 Bedroom
- No Bedroom

**Bedrooms in Unit**

- 1 Bedroom
- 2 Bedroom
- 3 Bedroom
- 4 Bedroom
- No Bedroom

**Bedrooms in Owner Occupied**

- 1 Bedroom
- 2 Bedroom
- 3 Bedroom
- 4 Bedroom
- No Bedroom

**Bedrooms in Renter Occupied**

- 1 Bedroom
- 2 Bedroom
- 3 Bedroom
- 4 Bedroom
- No Bedroom
03.06 Annual Climate Analysis

- Average Temperature: 37.3°F
- Average Precipitation: 90.27" (30.7%)
- Average Snowfall: 18" (5%)
- Heating Degree Days: 830
- Cooling Degree Days: 9
- Average Dew Point: 37.3°F
- Wind Rose

January
- Average Temperature: 22°F
- Average Precipitation: 1.75" (5%)
- Average Snowfall: 14" (3%)
- Heating Degree Days: 830
- Cooling Degree Days: 9
- Average Dew Point: 37.3°F

February
- Average Temperature: 22°F
- Average Precipitation: 1.63" (5%)
- Average Snowfall: 18" (5%)
- Heating Degree Days: 830
- Cooling Degree Days: 9
- Average Dew Point: 37.3°F

March
- Average Temperature: 513°F
- Average Precipitation: 3.68" (47.8%)
- Average Snowfall: 0" (0%)
- Heating Degree Days: 513
- Cooling Degree Days: 36
- Average Dew Point: 37.3°F

April
- Average Temperature: 658°F
- Average Precipitation: 0" (0%)
- Average Snowfall: 36" (0%)
- Heating Degree Days: 36
- Cooling Degree Days: 0
- Average Dew Point: 37.3°F
04 Concept Design

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Lakeshore East is a **neighborhood** that lacks any **identity**, an interest that binds the residents together.

The intent of this project is to transform a neighborhood into a **community** and allow students to **engage**.

04.01 Concept

Following the research phase it was apparent that Lakeshore East is lacking any sense of a common identity, something that allows the residents to interact. The intent of this school is to become a catalyst for the transformation of a neighborhood into a community. This is accomplished in two ways: one by allowing the neighborhood to interact in the building by the addition of a Boys and Girls of America Club. The Boys and Girls club allows the school to be used after school hours, seven days a week. Thus the school becomes a community resource, something that can engage residents of the neighborhood and foster interaction. Secondly, to truly foster a sense of community the school is designed to serve the neighborhood, accommodating up to 600 students grades kindergarten through 12th grade. The intent of including all grades is to allow a collaborative environment within the school between different age groups. Additionally, the school will engage the neighborhood by establishing partnerships with community resources. The site is located in one of the most culturally rich areas of Chicago giving it access to a wealth of resources that can be employed by the school. The intent is that through these partnerships students will be able to engage in the resources of the city whether it be through partnerships at the Art Institute, Chicago Cultural Center, the Field Museum, or even through the use of public facilities such as the Pritzker Pavillion or Grant Park. Students will then be exposed to the cultural capital that the city posses and will foster a new generation of learners that will maintain a lifelong relationship with their community. The design for the school became about engaging the only community element in the development, the Park at Lakeshore East. The school extends beyond the traditional site boundaries to engage the community park, making it an essential element in the design.
04.02 Concept Sketches
04.03 Concept Models
04.04 Concept Diagrams

TOPOGRAPHY

- Upper Columbus: +0'
- Mid Columbus: -30'
- Park Level: -48'

Connection

Views

River Views

Lake Views
COMMUNITY RESOURCES
1. NAVY PIER
2. HARBOR
3. PRITZKER PAVILION
4. CULTURAL CENTER
5. CITY COLLEGES
6. GOVERNMENT CENTER
7. ART INSTITUTE
8. HAROLD WASHINGTON LIBRARY
9. GRANT PARK
10. MUSEUM CAMPUS

PROGRAM USAGE

PROGRAM DISTRIBUTION
05.01 SITE PLAN

1. Lakeshore East Community School
2. Lakeshore East Park
3. Aqua
4. Blue Cross Blue Shield
5. Chicago River
6. Lake Michigan
7. Millennium Park
1. Gymnasium
2. Storage
3. Locker Room
4. Meeting Room
5. Parking
6. Rec Room
7. Media
8. Collaboration Area
9. Mechanical
10. Entry/Commons Area
11. Administration
12. Classroom
13. Music Lab
14. Science Lab
15. Art Lab
1. Gymnasium
2. Storage
3. Meeting Room
4. Parking
5. Rec Room
6. Media
7. Collaboration Area
8. Mechanical
9. Entry/Commons Area
10. Administration
11. Classroom
12. Music Lab
13. Science Lab
14. Art Lab
Resources

Renderings

Plans

Concept

Pre Design

Program

Abstract

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**Park Level +2**

- **Upper Columbus**
  - Rooms 12, 13, 14, 15

- **Upper Columbus+1**
  - Rooms 8, 12, 12, 12, 12, 12, 12, 12

**Shared/Community Space**

**Classrooms**

**Administration/Student Services**

**Building Services**
05.04 Building Sections

Section C

Section B

Section A
05.05 Facade

- Curtain Wall System
- Community/Shared Spaces
- Park Views
- Entry
- Operable Panels
- Perforated Metal Mesh
- Collaboration Space
- Lake Views
- To Park

LaKE VIEwS
ENTRY
PARK VIEwS
CURTAIN WALl SYStEM
COMmUNITy/SHARED SPAcES
COLLABORATION SPACE
PERFORATED METAL MESH
TO PARK
FACADE SYSTEM: SOLID/VOID

OPERABLE PERFORATED METAL PANEL
ALUMINUM FRAME
CURTAIN WALL SYSTEM
MUSIC LAB - MILLENIUM PARK VIEW
COLLABORATION SPACE - PARK VIEWS
MASSING MODEL


07 IMAGE CREDITS


[27] www.citypass.com


[31] www.citypass.com


[34] chicago.timeout.com


