

2016 Exhibition of School
Planning and Architecture
Binghamton City School District
New MacArthur Elementary
School

Category: New Construction

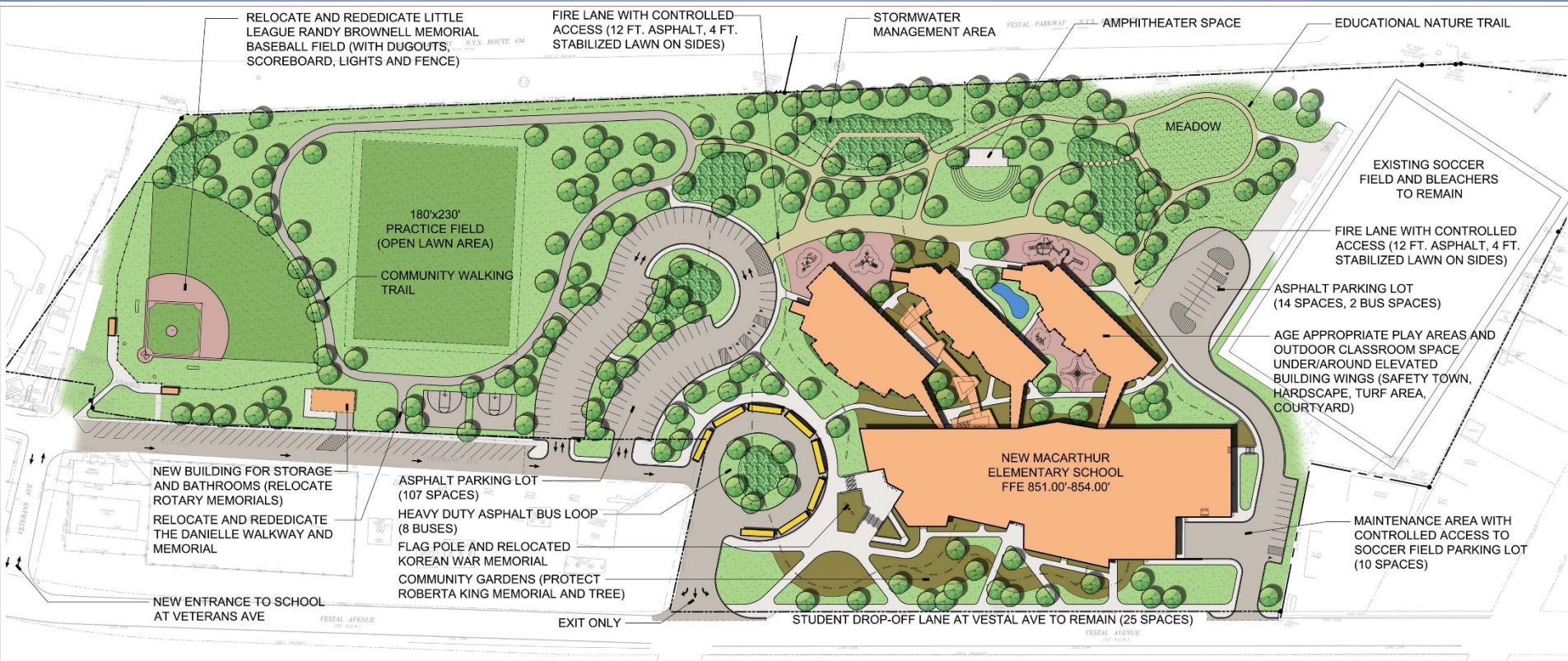
Binghamton City School District
Binghamton, New York

Binghamton City School District New MacArthur Elementary School



Binghamton City School District

New MacArthur Elementary School



SITE SCHEMATIC PLAN



Old MacArthur Elementary

After Tropical Storm Lee devastated the MacArthur School, all of us (owner, architects, engineers, FEMA, etc.) thought we would just demolish the existing structure, haul it away and throw it in a hole somewhere. But then as a group we stopped, thought and did not assume, and we realized that there was a lot of physical energy already invested in that building. We realized we were going to invest a lot more energy (and money) in hauling the building away, and we began to think of ways to repurpose as much as we could. We began to challenge each other and ask questions; what could be reused on the site for the new building? What could be used as it exists, like bricks or steel? What could be used for other purposes, like fill, or what could be saved as memories of the old MacArthur, like the bluestone from the old main entrance?



Courtesy of Bill Walsh

New MacArthur Elementary School

The new school restored a vital piece of the neighborhood fabric and allow the natural cycles of the river to engage and recede from the site. Larger program elements rest on a portion of the site raised above the new 500 year flood level while classroom wings float on columns above flood level. The design provides the building, students, and the community with a resilient solution to the seasonal fluctuations of the nearby river. The building is clad in locally sourced black locust and bluestone.

The site is designed to demonstrate and improve the natural habitat by using native plantings and employing permaculture principles. A nature trail links to the adjacent MacArthur Park providing opportunities to connect with nature and to understand the natural systems of the area. Rain and storm water from both the site and the surrounding neighborhood are slowed and absorbed using a variety of sustainable strategies including constructed wetlands, reed beds, rain gardens and impervious pavement. The design also lessens the flood displacement area of the site.



Program Space

In the aftermath of devastating flooding caused by Tropical Storm Lee and Hurricane Irene in 2011, the Binghamton City School District rebuilt the MacArthur Elementary School. The opportunity to build a new school allowed the District to rethink how elementary education should be delivered. The lessons from MacArthur are transferrable to other Districts.

On the first floor, the new building consists of more than 74,000 SF of “program space,” including 24 classrooms and other defined learning spaces clustered in three “pods.” The main building houses a multi-purpose auditorium/gymnasium and cafeteria. The design incorporates state-of-the-art technology in all applicable areas, inside and out. The westerly orientation of the pods and the face of the main building, for example, are intended to provide maximum exposure for the capture of solar energy.



“Third Space” Learning Areas

A key feature of the floor plan is a feature called “third space.” There are four main elements of “third space” incorporated throughout the building: the library reading area, the gym/cafeteria multi-use space, and the individual grade level space per floor at the end of each classroom pod. These are semi-open areas other than classrooms where children can mingle in non-traditional groups and settings.



Cafeteria

The building is organized with larger program elements (cafeteria, library, gym, etc.) sitting along higher ground to the southeast. These elements are above the newly established flood plain and relate in scale and articulation to the street and adjacent neighborhood. Three 2 -story classroom wings are raised on columns above the ground to allow the river to flood and recede naturally over time. The classroom wings are oriented to allow maximum daylight into the majority of the classrooms from the north and provide views of the ever changing river. This orientation allows optimal southern exposure for the photovoltaic panels on the roof.



Gymnasium

Locally sourced bluestone and black locust are the primary exterior materials, detailed to relate to the neighborhood and river sides of the building respectively. Development of interior spaces was influenced by student input that “learning takes place everywhere and all the time.” Informal collaborative areas and “in-between spaces” (third space) accommodate ever evolving pedagogy. Interior materials are simple, elegant and subtly color themed by grade level. The project is tracking for LEED Platinum certification.



New MacArthur Elementary School

In 2011, the existing MacArthur Elementary School was destroyed when the Chenango and Susquehanna Rivers flooded due to Tropical Storm Lee and Hurricane Irene. The school was the heart of a vibrant city neighborhood and served an ethnically, socioeconomically and racially diverse student population. The project goals were to redefine what an urban elementary school could be, restore and revitalize the surrounding neighborhood and create a deeply sustainable and resilient building and site.

Based on those early input sessions, MacArthur's design also honors the school's previous building and its traditions. The blue stone that composes part of the exterior is new, but of the same type used on the old building. The MacArthur sign, too, is original. A popular walking track has been re-imagined as a nature-surrounded walking path with the same quarter-mile distance. In the old building, students moved from storing their belongings in cubbies in third grade to lockers in fourth. Here, the rite of passage will continue with lockers in the fourth-grade wing.



Student Visioning

We held sessions grade by grade for kindergarten, first, second and third grades. These sessions included some brain warm-ups, storytelling and then students expressing their ideas in large drawings. We rolled out an 80 foot piece of paper on the ground and gave the students a statements to respond to. Pencils and crayons hit paper, and for 10 minutes the students drew their ideas. Then it was on to the next long sheet of paper and the next question. The three questions that we posed to the students were:

- If you could imagine a school anyway YOU want to, what would it look like?
- What does a living school look like?
- What is your favorite memory of MacArthur School?

The student engagement was important because the young students were the best resource for wider thinking and creativity. We found the youngest grades to be the most creative. We also got to see what school was through their eyes. Many fascinating discoveries occurred including the importance of “third spaces” and how much real learning takes place in those spaces.



The floor plan shows a long corridor at the top with four classrooms labeled 4th GRADE 405, 4th GRADE 406, 4th GRADE 407, and 4th GRADE 408. To the right of the classrooms are several utility and storage areas: TEACHER STORAGE (412), GLENN MOORE PHONE (409), 2 EV (408), G. REST (407), B. REST (406), and a STAIR (405). Below the classrooms is a CORRIDOR (404). At the bottom of the plan are two resource rooms: RESOURCE (4th GR CONSULT.) (403) and RESOURCE (4th GR READING) (402). A STAIR (401) is located on the far right side of the plan.



2nd Floor Plan



Exhibition of School Planning and Architecture

Project Data

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Other Firm:	Buro Happold
Project Role	Mechanical, Electrical, Plumbing, Structural Engineer
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Exhibition of School Planning and Architecture

Project Details

Project Name	Binghamton City School District New MacArthur Elementary School
City	Binghamton
State	New York
District Name	Binghamton City School District
Supt/President	Mr. Steven Deinhardt, Interim Superintendent
Occupancy Date	November 30, 2015
Grades Housed	Pre-K-5
Capacity(Students)	650
Site Size (acres)	16
Gross Area (sq. ft.)	129,000 SF
Per Occupant(pupil)	
gross/net please indicate	
Design and Build?	No
If yes, Total Cost:	
Includes:	
If no,	
Site Development:	\$6 million
Building Construction:	\$45 million (includes fixed equipment)
Fixed Equipment:	
Other:	
Total:	\$79.5 million (Project Cost)

visioning



board of education

- we will **respect** the energy of the site



staff

- we will **heal** our relationship with the river



students

- we will **create** a net zero fossil fuel building



community

- we will **teach**

- we will create a **safe** and welcoming place for students and the **community**