Brown is the new Green: The Prats, Pitfalls and Benefits of building schools on brownfield sites

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- Site designer of over 325 projects for 42 public school systems
- Specializing in sustainable site design
- Environmental education
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Why build schools on brownfield sites?

*It’s an investment ...*
- Usually in urban or neglected communities
- Higher needs kids live there
Why build schools on brownfield sites?

In fast-growing areas …

- No greenfield sites left
  - Crossing county lines
- Those that are available are overpriced
- Infrastructure may not be available
Why build schools on brownfield sites?

The “feel good” factor …
- Cleaning up a toxic site
- Stimulating economic investment in stagnate communities

“If you build it, they will come.”
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Moore Square Magnet Middle School Site
Downtown Raleigh, NC
Predevelopment Aerial

- High crime area
- Limited home ownership
- Abandoned buildings/blocks
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Moore Square Magnet Middle School Site

Current Aerial
• Redevelopment
  • Public spaces
  • High Density Mixed Use
  • Medical Clinic
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Now for the *prats*…

- **Do your homework!**
  - We knew about the contaminated soils
  - We knew about the hypodermic needles
  - What we didn’t know
    
    bit us…

Moore Square Magnet
Middle School Site
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Now for the prats…

This is an excavator.

It weighs 40,000 lbs.

or

[Images of elephants]
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Now for the prats...

The site had been a landfill in the 1920’s.

- Methane explosion
- Requiring permanent methane ventilation piping
- Significant mediation costs

Contamination concerns keep Exploris school from Raleigh Moore ...
Feb 28, 2014 - Downtown’s Exploris Middle School plans to add an elementary school this ... But when city staffers described soil contamination at the property this week, ... flowing underground from the Moore Square Magnet Middle School property ... from the N.C. Museum of Natural Sciences to the Raleigh City Farm.

300 block of South Wilmington Street 1926
State Archives and records
Now for the *benefits*…

- Ample infrastructure was already in place
  - Utilities
  - Gridded road network to reduce negative impacts
  - Sidewalks
  - Innovative stormwater management

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Stormwater Detention
Now for the benefits…

A thriving school.
A thriving neighborhood.

(Recognized as the 1st school to win an EPA Smart Growth Award in the Country)
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Why Zoning and Land Use Still Matter

- Light industrial versus heavy industrial
- Schools and manufacturing don’t mix well – ask any zoning officer
- What the neighbors do on their property DOES matter.

Lufkin Road Middle School

- Adaptive reuse of a former light manufacturing facility
- Soil contamination/remediation required but low costs compared to building on a greenfield
Why Zoning and Land Use Still Matter

• Special use permit required (Public Hearing)
• Major opposition from adjacent businesses

• Safety concerns
  • Trucks conflicting with cars
  • Risk assessments and insurance increases
  • School evacuation plans in the event of a manufacturing emergency
  • Concern about being labeled the “bad guy”

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Lufkin Road Middle School
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Why Zoning and Land Use Still Matter
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The Public Perception of Health Risks
• Indoor and outdoor air quality matters … on green fields too!
• Happy feet are hard to find
• Increased conflicts between cars and trucks

Excerpt from CDC Exhale Technical Brief

Part 2: Outdoor Sources of Asthma Triggers

Rationale for this Strategy (Part 2)
• Strong evidence links outdoor air pollutants (e.g., from vehicle exhaust, factory emissions, or smoke) to increased asthma-related ED visits and hospitalizations.186, 187, 188
• Children with asthma can be especially vulnerable to negative health effects caused by air pollution.189, 190
• Interventions to reduce outdoor air pollution can improve asthma control and be cost-saving for communities.191,192
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Doing your homework!

Roanoke Rapids
High School – Stadium Complex

• Acquisition of the former
  Patterson Mill Site
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Roanoke Rapids High School – Stadium Complex

- Knowing the history is important
- What was OK in 1930 is NOT OK in 2019

- Testing for the right things:
  - Water Quality (Laterally too)
  - Air Quality
  - Soil Contamination
  - Aging Infrastructure
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Roanoke Rapids
High School – Stadium Complex
• The Challenges
  • Capping the site (Stadium and Light footings)
  • Hauling away dirt too expensive
  • Stormwater management challenging
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**Roanoke Rapids High School – Stadium Complex**

- **The Justification**
  - Prime real estate adjacent to a land locked high school
  - A community with a textile past and an understanding of the environmental consequences
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Vernon Malone College and Career Academy
• Adaptive Reuse
  • Former Coca Cola Bottling Company
  • Economically Challenged Area
  • Heavy Industrial Area adjacent to Interstate 40 in downtown Raleigh
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Vernon Malone College
and Career Academy
• Choosing the right partners and programs
• Operating 24-7
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Vernon Malone College and Career Academy
• Transforming an eyesore
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Vernon Malone College and Career Academy

• Brown IS the new Green
Every success story has a cautionary tale

• You only THINK you know what’s underground
• Don’t move the problem, solve the problem
Every cautionary tale has a success story

• Know the user, build the facility for them
• If you build it right, they will come
• Find partners to reduce risk and increase success
Knowing when the price is right

- When existing infrastructure is designed to support school uses
  - Water/Sewer/Gas/Fiber Optic
  - Existing road infrastructure
  - When the site and existing buildings can meet or EXCEED school program
  - When the land and building renovation costs DO NOT exceed the cost for a new school
- If the costs are higher, the following criteria are considered
  - The location is in a critical target area where no other sites are available
  - Adjacency to other school uses is important
  - The land has sentimental value
The cost of clean up

- The Geotech is your friend
- Do not cut costs on site investigations
  - Borings
  - Soil Tests
  - Water Quality Tests in the building AND on the site
  - Air Quality Tests
  - Noise Tests if adjacent to manufacturing or highways
Lessons to teach and lessons to learn

- Tell the story
- Develop STEM and STEAM programs that compliment the site
Lessons to teach and lessons to learn

• Tell the story
• Develop STEM and STEAM programs that compliment the site