1

Learning Objectives

1. Gain a better understanding of 21st Century School site design objectives, bringing overall improvement to future learning spaces
2. Learn site layout techniques to create more flexible and efficient school sites
3. Learn how to seamlessly blend interior and exterior education spaces for more appealing/engaging environments for teachers and students
4. Review and discuss project examples related to 21st Century School site design

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Why 21st Century School Sites?

- Feeds into the changing dynamics of education
- Creates seamless spaces between buildings and the outdoors
- Unlimited possibilities for learning environments
- Flexible and dynamic
- Provides a setting for curiosity, collaboration, and imagination
- Reflects natural processes that sustain our urban infrastructure

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Why 21st Century School Sites?

- Transforms barren asphalt and grass into vibrant environments
- Access to nature
- Creates sense of place
- Balances nature with technology
- Creates sense of ownership and reduces need for maintenance
- Promote healthier lifestyles through physical activities

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Approach To Effective 21st Century School Site Planning

1. Identify site constraints
2. Establish site program
3. Understand curriculum & teaching objectives
4. Dynamic collaboration with architect
5. Understand maintenance capabilities
6. Understand security protocols

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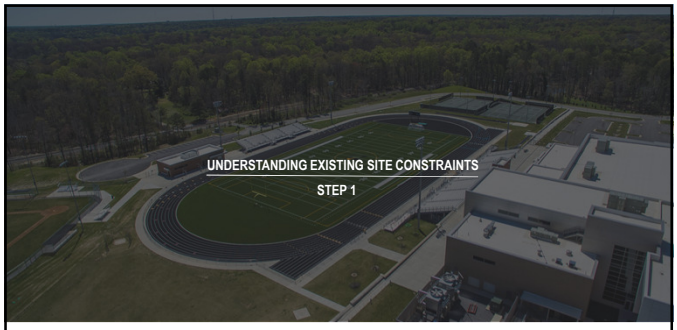

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Review of Existing Conditions - Physical

- Property boundary
- Topographic survey
- Location of existing site elements
  - Buildings
  - Hardscape elements
  - Utilities
- Historic features
  - Cemeteries
  - Significant trees (including canopy limits)
- Wetlands and other environmentally protected areas
- Floodplains
- Location of rights-of-way or easements
- Access locations from public roads

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Review of Existing Conditions - Regulatory

- Zoning category
  - Setbacks (to buildings and parking)
  - Building height restrictions
  - Open space requirements
  - Floor area ratios
  - Parking requirements
  - Streetscape requirements
  - Buffer requirements
- Zoning conditions
- Comprehensive plan
  - Land use, roads, utilities
  - Requirements to dedicate rights of way?

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Prepare a Base Map For The Site

- Include all physical constraints
- Identify all regulatory constraints
- At early stages of the project, may need to utilize primarily GIS or other readily available information
- Readability of the map is important for presentation to stakeholder groups
- Walk the site to verify information is reflective of actual conditions!
- Share base map with facility staff to verify accuracy and gather additional institutional knowledge information

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Site Constraints Map Example

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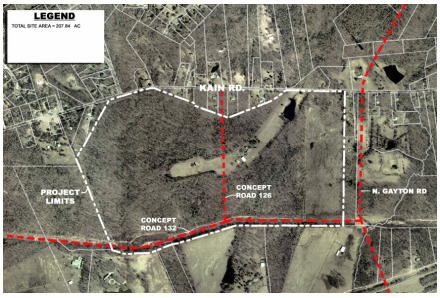
Site Constraints Map Example



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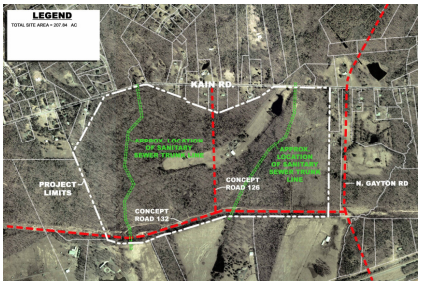

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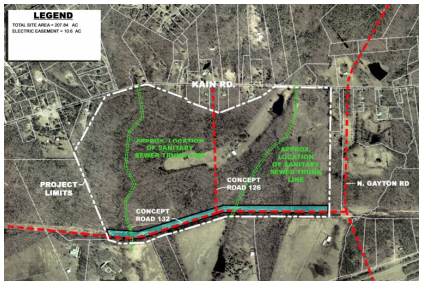

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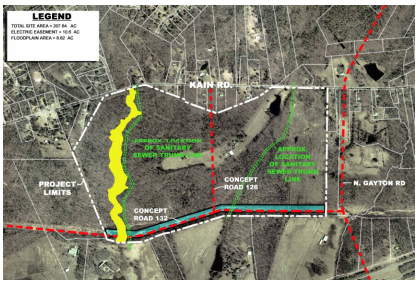

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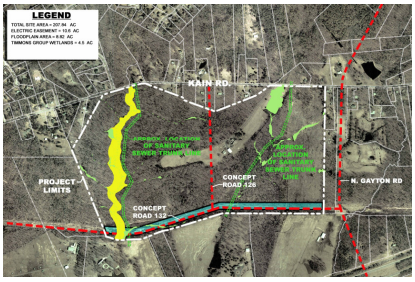
Site Constraints Map Example



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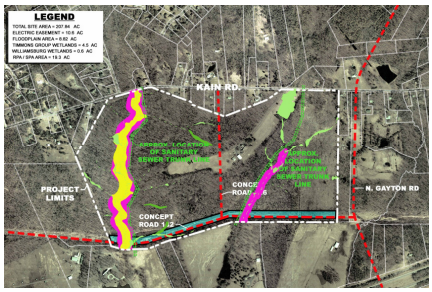

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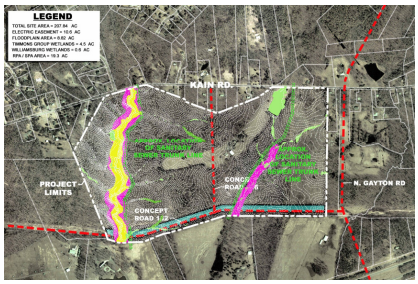

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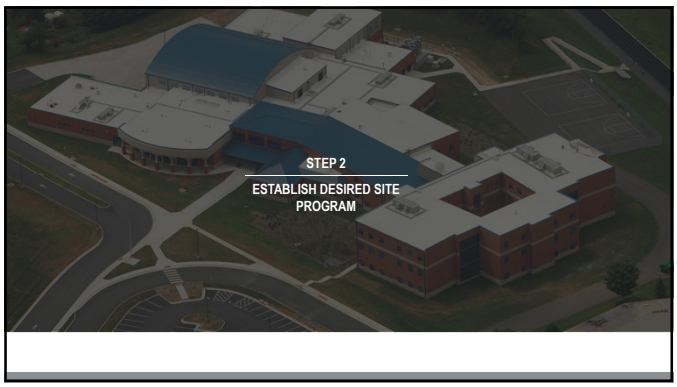

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Identify Site Program Elements

- Parking lots
  - Staff, Volunteers, and Visitors
  - Try not to overbuild
  - Overflow parking options for events (grass)
  - Try not to use play surface of athletic fields
- Drop-off area
  - Cars only (Queuing Requirements)
  - Busses (Overnight Parking?)
- Public transportation
  - Bus stop
  - Bike lanes
- Service area
  - Dumpsters vs. Compactors
  - How many dumpsters
  - Loading dock(s) required? How many?
  - Mechanical equipment
  - Separate parking for service staff
- Types of deliveries
  - Need to establish design vehicle for turning movements

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Identify Site Program Elements

- Athletic fields
- Trails
- Greenspace preserve areas
- Outdoor assembly spaces
  - Terraced seating
  - Stage area
- Outdoor classroom spaces
  - What is the focus?
  - Active
  - Quiet/passive

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Identify Site Program Elements

- Security measures
  - Secure perimeter
  - Card readers
  - Fenced areas
  - Passive security
- Stormwater management
  - Best if this follows functional layout
  - Typically allow for space downgradient from building, parking & hardscape areas.
  - Rule of thumb: will occupy 10% to 15% of the site area

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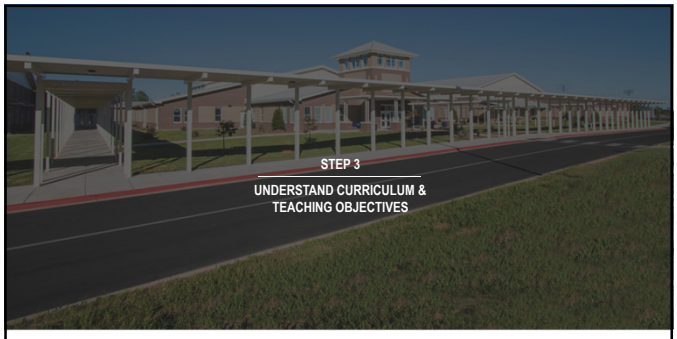

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Understand Curriculum & Teaching Objectives

- STEM / STEAM
- Project-Based Learning
- Place-Based Understanding
  - Hands-on experience with nature
  - Seasonal changes
  - Watershed understand
- Team-Based Education
  - Recreational opportunities
  - Problem solving
- Identify opportunities to use the natural setting to achieve educational goals

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Dynamic Collaboration with the Architect

- What opportunities exist to connect building spaces with outdoor spaces
  - Outdoor classrooms
  - Community gardens
  - Stormwater collection
  - Amphitheater
- What are the elements of site design that influence building design?
  - Building location
  - Parking, drives and walks
  - Grading considerations
  - Stormwater management

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Site Design Goals – Building Location

- Optimize solar orientation for building(s)
  - Ideally long axis of building runs east/west
  - Building shading options may be utilized if site doesn't readily allow proper orientation
- Optimize building presentation and visibility
  - From public way
  - From site entrance
  - Options for multiple views of facility
  - Clearly need to identify front door and any other distinct entry points
- Maximize natural areas
  - Wetlands/Streams
  - Forest land
  - Native plantings

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Site Design Goals – Parking, Drives & Walks

- See, approach, arrive, park, enter
- Wayfinding on site
  - Consider the point of view of a visitor to the site…do I know where to go?
- Vehicular circulation
  - From public way
  - Utilize traffic calming measures to provide safety for pedestrians at crossing points
- Pedestrian circulation
  - Minimize distance of travel
  - Make the walkways interesting and aesthetically pleasing
  - Minimize the crossing of major drive aisles and roadways
- Service vehicle access
  - Separate out from general site traffic as soon as practical
  - Avoid pedestrian crossings

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Site Design Goals – Grading

- Minimize total amount of grading
  - Minimize area of earthwork
  - Try to take advantage of areas of flatter existing grades
  - Maximize undisturbed areas around site
- Balance total movement of earth around site
  - Ideally cut/fill areas are close to each other
  - Cut/fill map is a good way to visualize how earthwork operation may proceed
- Minimize retaining walls
  - Prefer no walls, but blend them into the site if they are needed
- Identify existing satisfactory vs. unsatisfactory material
  - Try to use unsatisfactory material in berms or other non-structural areas
- Identify presence of subsurface rock
  - Design to minimize need to remove it
  - Place excavated rock around the site strategically

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Site Design Goals – Grading

- Accessibility standards
  - Up to 5% (1'/20') longitudinal slope is not considered a ramp
  - 2% maximum cross-slope
  - Greater than 5%, up to 8.33% (1'/12') is considered a ramp
  - Ramps require handrails and landings every 2.5' of vertical rise.
  - Short ramps (less than 6" of vertical rise) do not require handrails
  - More than 2 risers requires handrails
- General grading recommendations
  - Minimum of 1% grade across concrete pavement
  - Minimum of 2% grade across asphalt pavement
  - Minimum of 2% grade across lawn areas
  - Maximum slope across parking areas should be 5%
  - There are always potential exceptions to these guidelines!

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Site Design Goals – Stormwater Management

- Meet Regulatory Requirements
  - Minimum price of doing project
- When Feasible, incorporate visible stomwater technology
  - Permeable Pavement Options
  - Flow Through Planters
  - Green Walls
  - Biofilters
  - Rain Gardens
  - Created Wetlands
  - Must pay attention to aesthetics
- Engage Students
  - Interpretive Signage
  - Give Faculty the ability to engage students in sampling and testing

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Collaborative Site Design

- Design charrette setting is preferred
  - Enables communication
  - Real time interaction and refinement of ideas
  - Engage owner/user groups in concept planning
  - Need group buy in of concept!!
- Iterative process
  - Present site constraints first, so that everyone understands what we have to work with
  - Building goals may be tweaked to accommodate what the site is offering
  - Share intent of the operation of the building
  - Discuss movement from site to building and back
- Need to stop "designing"
  - Changes to function should stop after schematics
  - Changes to exterior footprint should stop after design development

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Understand Maintenance Capabilities

Minimize Managed Turf
- Try to restrict to only athletic fields

Reforestation
- May be part of your stormwater program
- May be required to be in a preservation easement

Meadowgrass
- Limited mowing
- Need to sign appropriately so that parents understand and appreciate the aesthetic
- Sign for "no mow" and educate the grounds crew

Use of Native Plants
- Signage

Artificial Turf for interior courtyards

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Understand Security Protocols

- Follow Crime Prevention Through Environmental Design (CPTED) principals
- Clear sight lines for approach to entry vestibule
  - Passive observation
  - Early alarm
- Appropriate Landscaping
- Welcoming Environment vs. Secure Environment
- Secure remote areas and walking trails
- Keep outdoor after school functions away from building where possible

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21st Century School Site Planning

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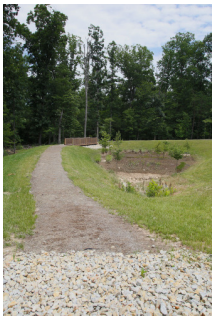
21st Century School Site Planning



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21st Century School Site Planning


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21st Century School Site Planning


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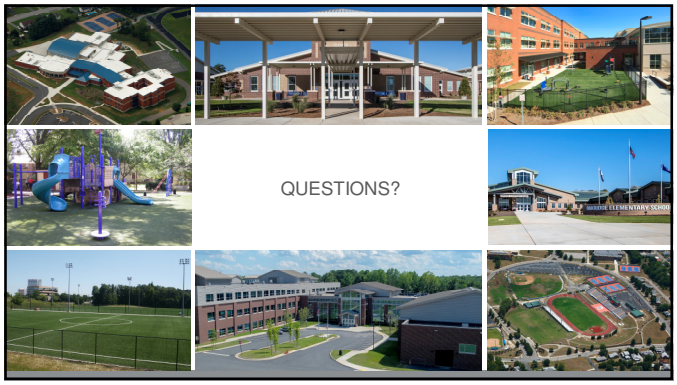

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