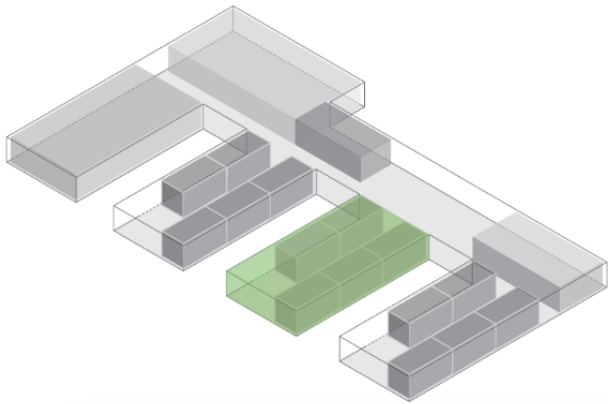**Peter Wiederspahn, AIA**
- **Associate Professor of Architecture**
- **Northeastern University**
- **SENTRY COE Research Thrust RD.1 Architectural Design Research**
- **p.wiederspahn@northeastern.edu**

Michelle Laboy, PE
- Associate Professor of Architecture
- Northeastern University
- SENTRY COE Research Thrust RD.1 Architectural Design Research

David Fannon, AIA, LEED
- Associate Professor of Architecture and Civil Engineering
- Northeastern University
- SENTRY COE Research Thrust RD.1 Architectural Design Research

15 November 2023

Layered Security in K-12 Schools: Transparency as Security

Schools Security Challenges

Use objective data to understand:

- **What are the drivers of insecurity in K-12 schools?**

- **How can architectural design ameliorate security in schools?**

- **What are the contemporary architectural design tactics to create secure educational spaces?**

- **What is the interrelationship between transparency and security?**

Methodology

Analysis
- Coding empirical data : "Grounded Theory"
- Interviews with Architects and Security Specialists
- Literature Review including Design Guidelines
- School Shooting Reports

Visualization
- Context Types
- Building Types
- Design Tactics
- Visual Design Guidelines

Layered Scales of Security

Site Scale
- Transparency and Control in the Surrounding Landscape/Cityscape

Architectural Scale
- Transparency and Control of Horizontal and Vertical Circulation

Human Scale
- Transparency and Control of Student Spaces

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Possible Design Solutions

1. Design for transparent visibility to create welcoming, nurturing, and secure spaces

"Pre-pandemic over 160,000 students stayed away from school each day for fear of bullying."

2. Leverage architectural design to discourage bullying through transparency

"When intruders or students know they can be seen, they are less likely to engage in threatening activities. Providing visibility allows everyone to see potential threats from both within and outside."

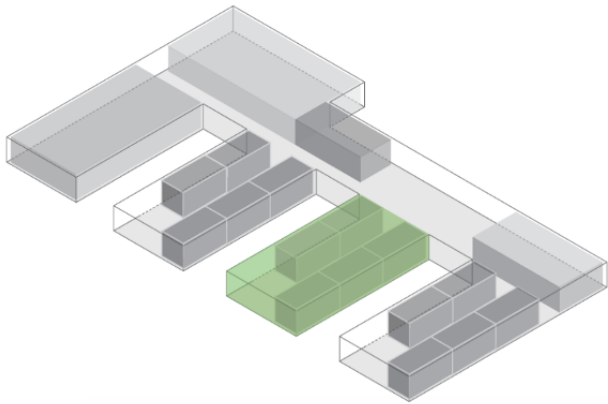**3. Balance the inherent contradictions between student well-being and security**

"While open visibility may be seen as a challenge, properly designed it can provide for visual communications, which enhance the life of the school while acting as a deterrent to adverse behavior."

4. Provide open interactivity to create community instead of defensive hardening

"I have witnessed how narrow definitions of 'safety' have led to an array of unintended consequences, threatening the very aim for caring holistically for all students."

5. Invisibly integrate surveillance/sensor technologies to maintain a culture of trust

"When (technology) systems are designed with school climate in mind, they can be an effective tool to enhance the life of the school while providing a safer environment."

Data and Analysis

Generating empirical data from architectural practice and census data

- Map showing architectural firms that have been interviewed and the reach of their completed school building projects.

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Data and Analysis

Generating empirical data from architectural practice

- Define context and neighborhood types using census and mapping data

- Documented actual contemporary architectural school precedents

- Categorized schools into architectural "Form Types" relative to "Interior Circulation Types"
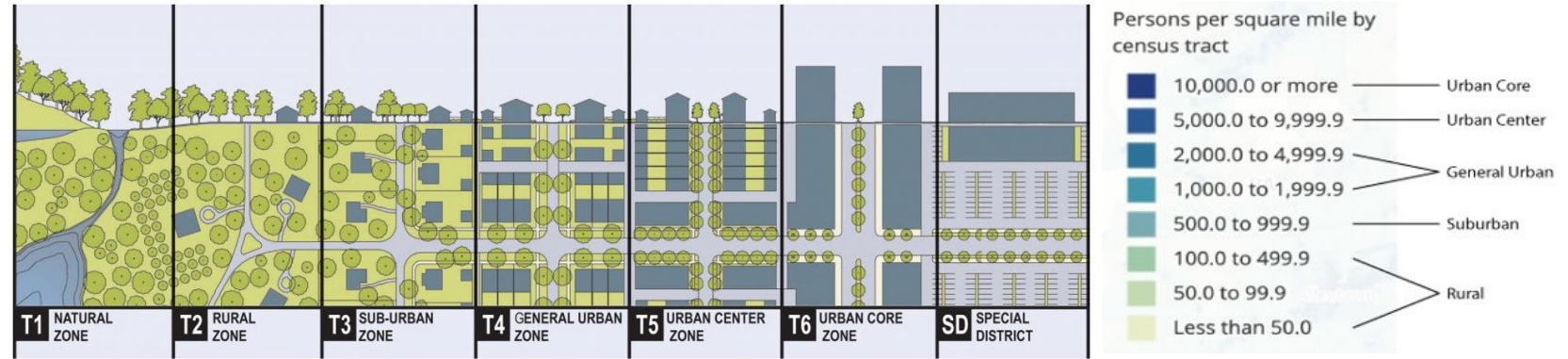
DPZ CoDesign, "The rural-to-urban Transect Diagram" in Robert Steuteville "**Great idea: The rural-to-urban Transect**" *Public Square: A CNU Journal*. 13, APR 2017.

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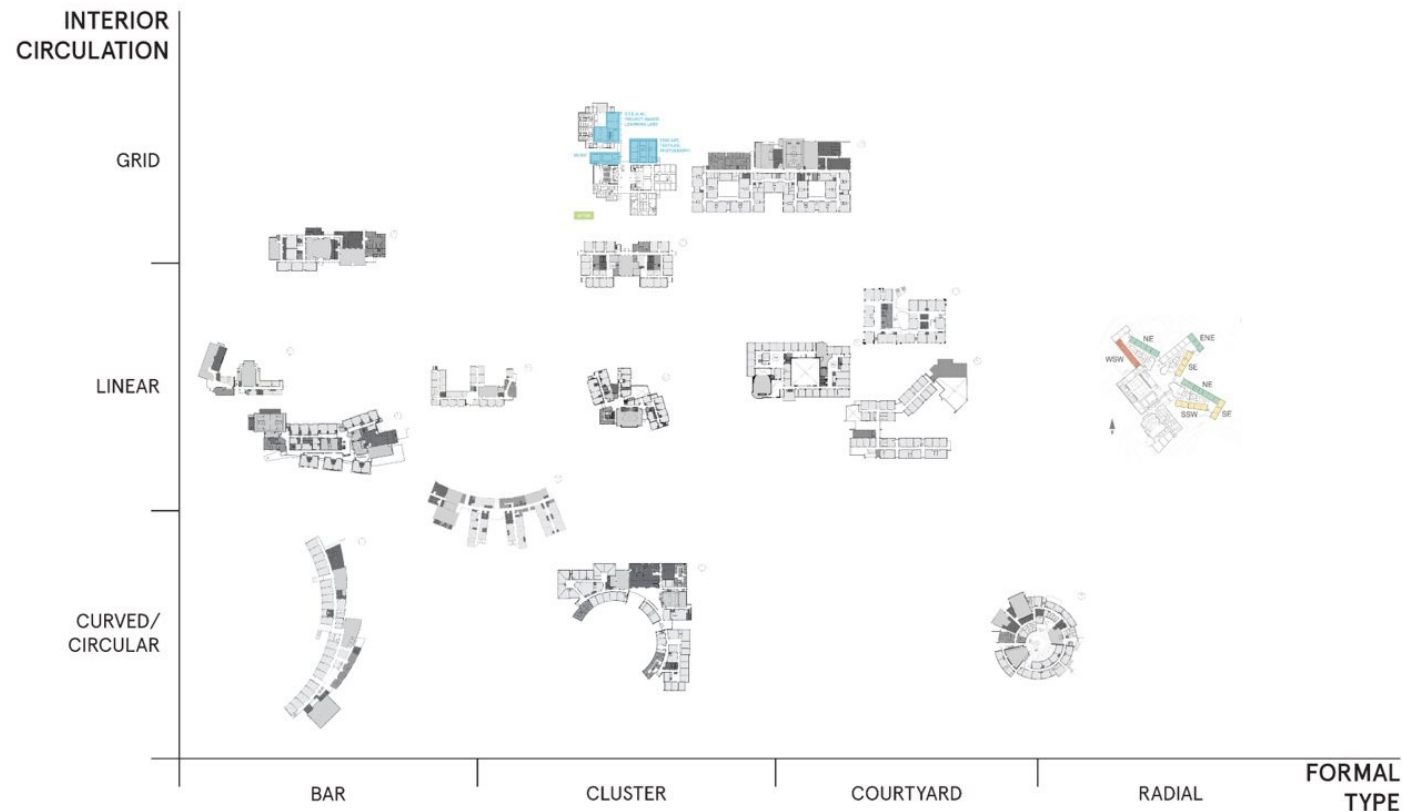
Data and Analysis

Extrapolating data from architectural practice

- Abstracted precedents to identified primary spatial and organizational components common to all schools:

- Public gathering spaces:
  - -Lobby
  - -Library
  - -Cafeteria
  - -Auditoria
  - -Gymnasia

- Classroom spaces

- Circulation spaces:
  - -Horizontal circulation
  - -Vertical circulation

	Form	Components	Interior Organization	Horizontal Circulation	Vertical Circulation
BAR		classrooms public gathering			
COURTYARD		classrooms public gathering			
RADIAL		classrooms public gathering			
CLUSTER		classrooms public gathering			
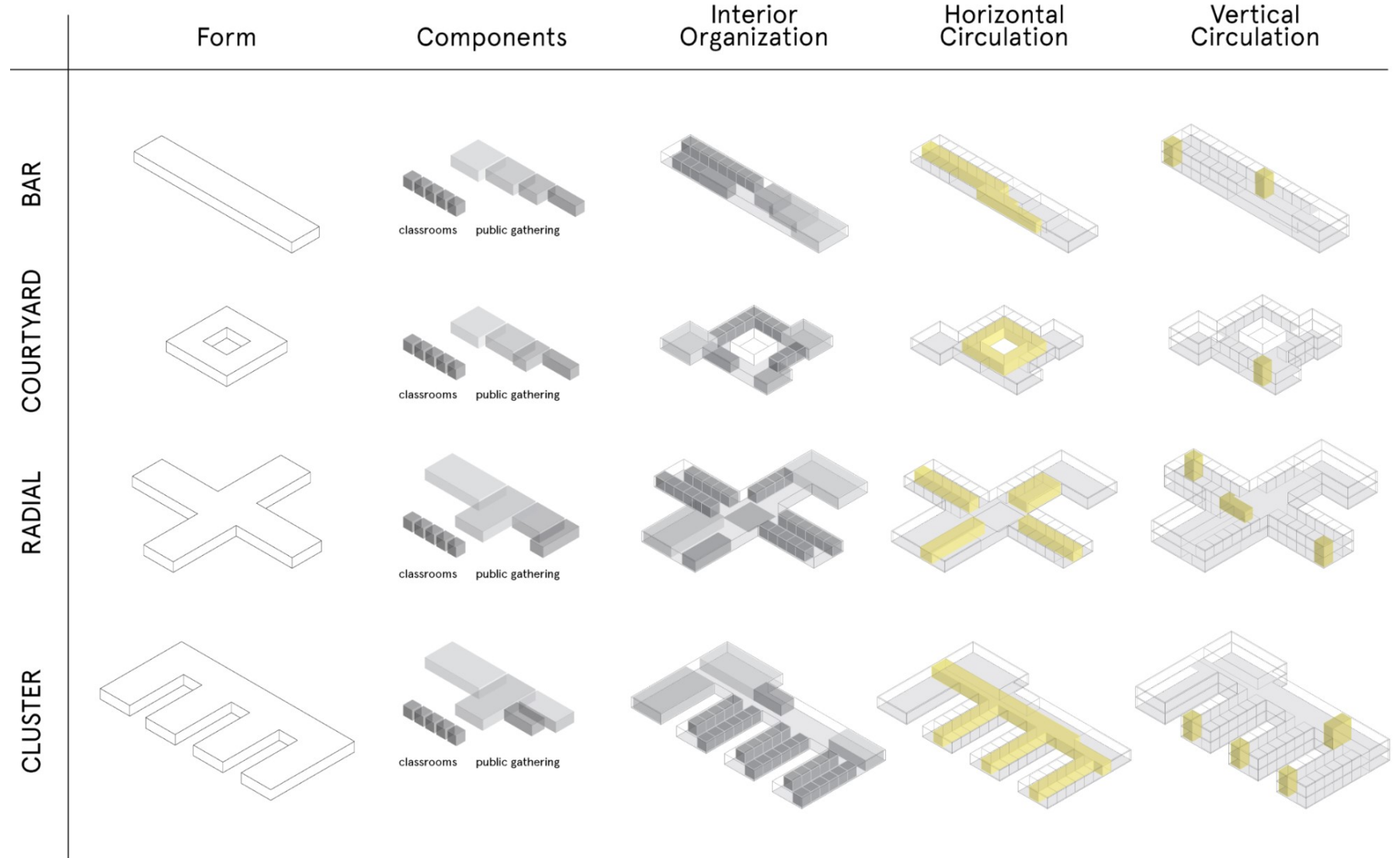
Site Scale

Transparency and Control of Surrounding Landscape/Cityscape

Physical and landscaping barriers at the perimeter of school property:

- Visibly open fences
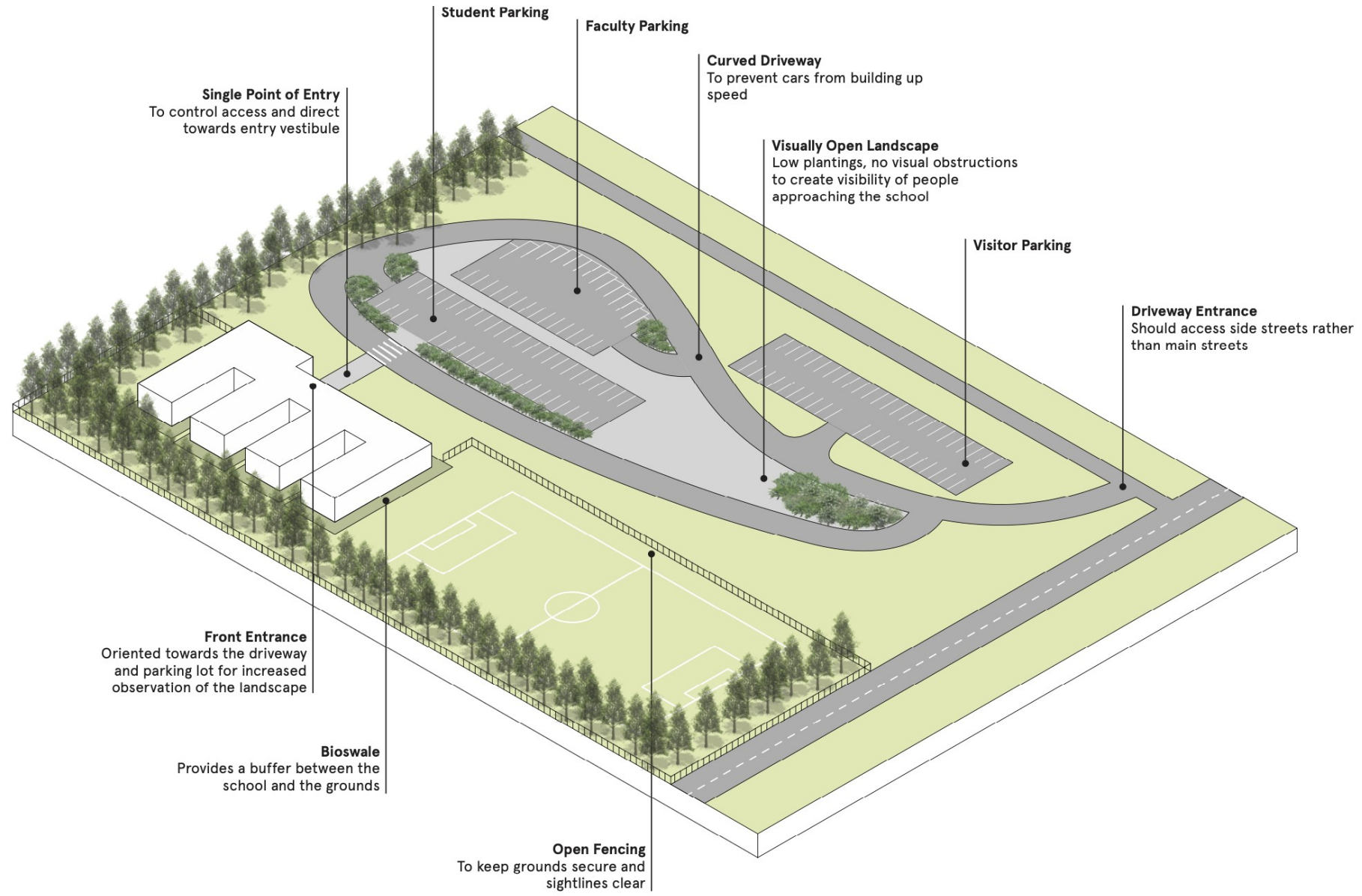- Dense greenery for privacy

Separate vehicle parking areas:

- Student Buses
- Faculty Cars
- Student Cars
- Guests Cars

All parking areas visible from Administration suite

Direct all foot traffic to limited and observable entry points

Student Parking

Faculty Parking

Single Point of Entry
To control access and direct towards entry vestibule

Curved Driveway
To prevent cars from building up speed

Visually Open Landscape
Low plantings, no visual obstructions to create visibility of people approaching the school

Visitor Parking

Driveway Entrance
Should access side streets rather than main streets

Front Entrance
Oriented towards the driveway and parking lot for increased observation of the landscape

Bioswale
Provides a buffer between the school and the grounds

Open Fencing
To keep grounds secure and sightlines clear

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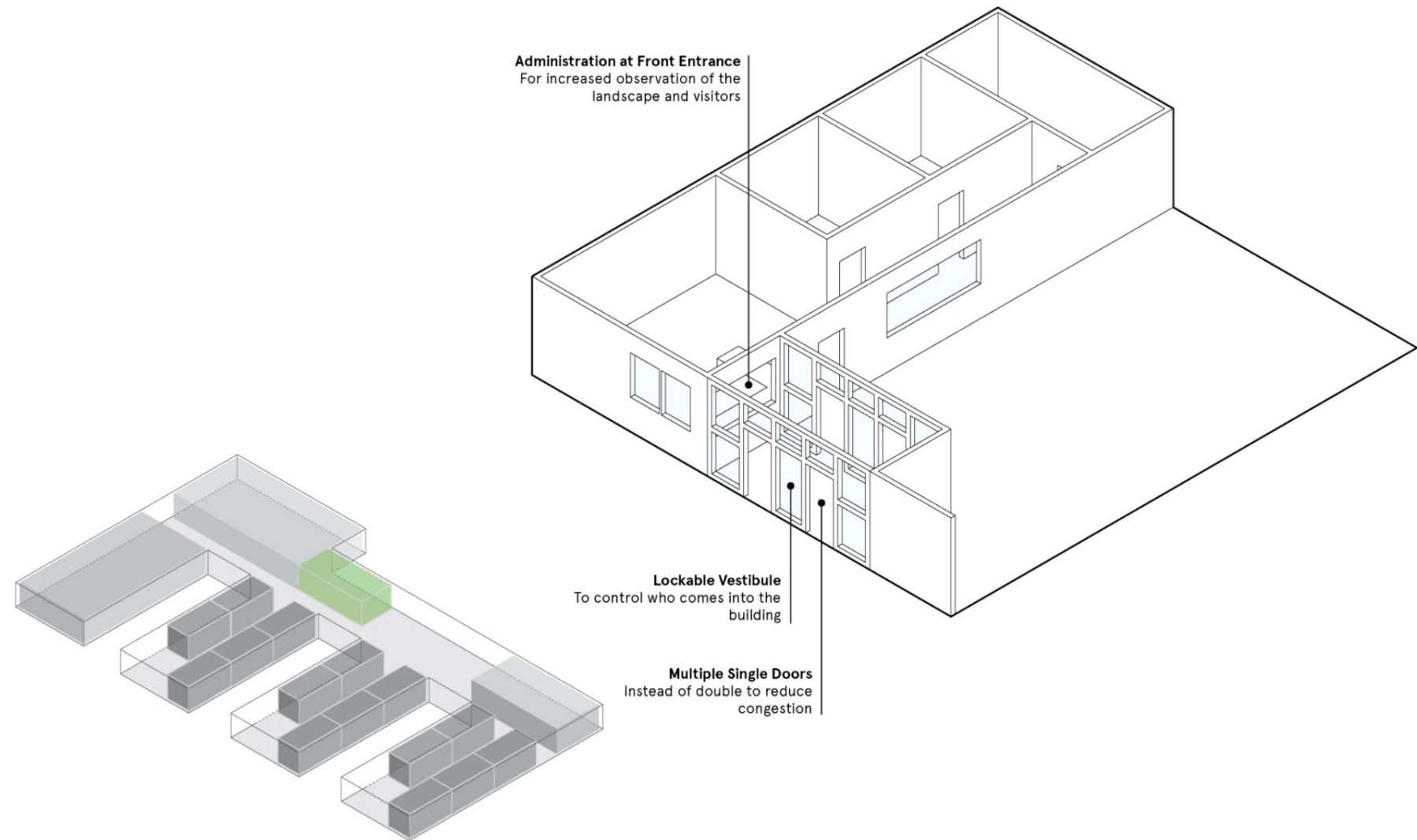U.S. Department of Homeland Security Center of Excellence

Architectural Scale

Transparency and Control of Horizontal and Vertical Circulation

"The data shows that most threats come from within… One of the tools that I believe possesses a great deal of power is transparency."

- Single point of entry area visible from administration suite

- Controlled point of entry with double door-lock entry vestibule

- Staffed check-in window for everyone entering school
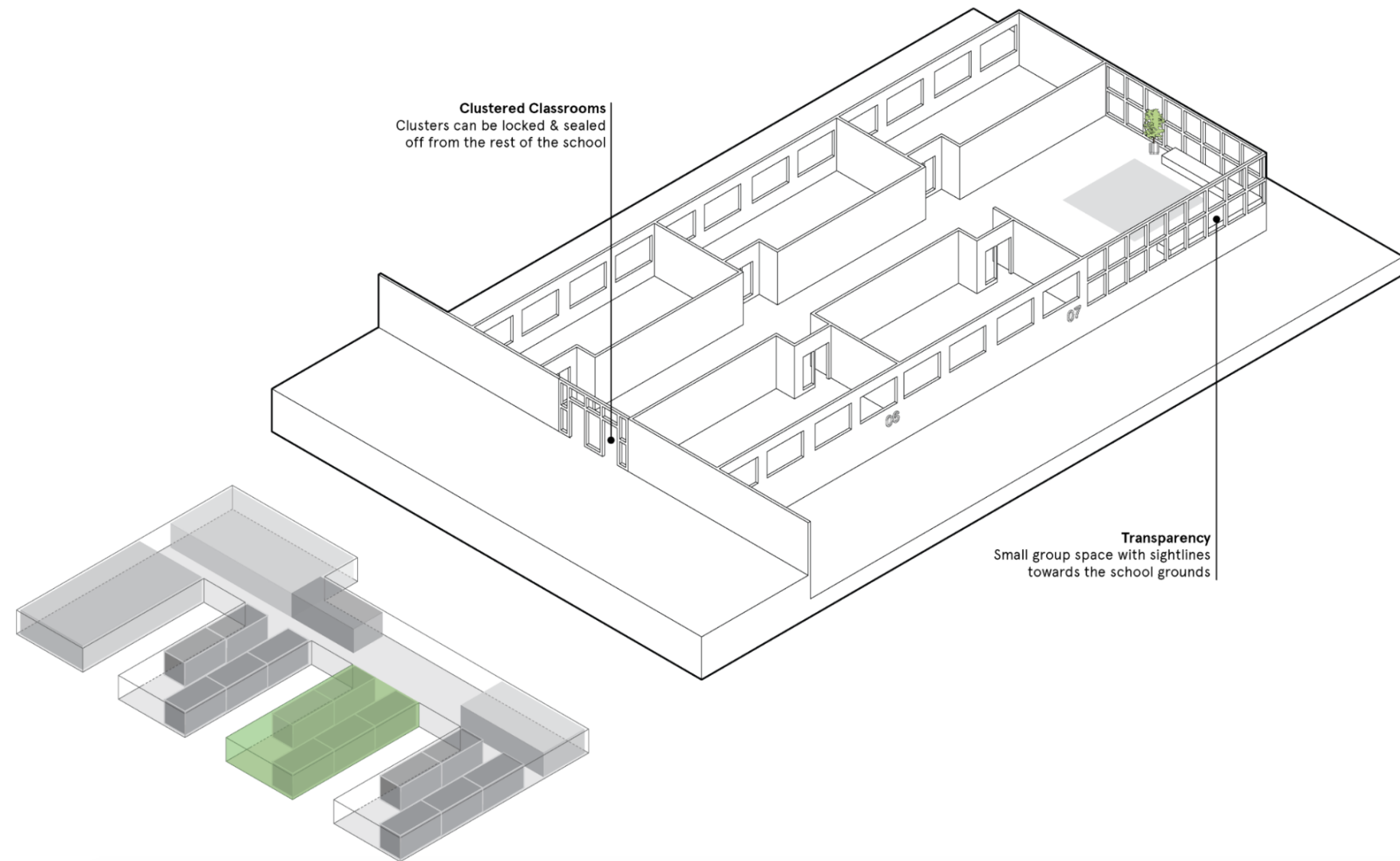

Administration at Front Entrance
For increased observation of the landscape and visitors

Lockable Vestibule
To control who comes into the building

Multiple Single Doors
Instead of double to reduce congestion

Architectural Scale

Transparency and Control of Horizontal and Vertical Circulation

"The thing that happens every day is bullying... That happens in the corners that are out of sight. So, if we can eliminate those areas, we really have a way of curbing that behavior."

- Create smaller classroom clusters off of main circulation

- Provide transparent but lockable entries to each classroom cluster

Clustered Classrooms
Clusters can be locked & sealed off from the rest of the school

Transparency
Small group space with sightlines towards the school grounds

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Human Scale

Transparency and Control of Student Spaces

- Provide vision glass from the corridor to create a visual connection

- Provide a blind zone within the classroom so students and faculty can avoid being seen in an emergency

- Have exterior grade below the sight lines into the classrooms from the outside

- Provide room numbers on the outside of the building to orient emergency responders

Vision Glass
For classroom transparency

Recessed Door
Provides space out of hallway sightlines

Windows
Elevated above grade to reduce sightlines but provide natural surveillence of the grounds

Blind Zone
Indicated by different floor color or material; along the hallway and out of sight of the door

Room Numbers
Visible on building exterior