

Beyond Bricks and Mortar: Unique Construction Elements in Modern School Facilities



Illinois Association of School Business Officials | Friday, March 6, 2026 | Drury Lane Events, Oakbrook Terrace



Presenters:

PANELISTS INFO:

Cory Boaz, Principal; Studio GC
(312) 509-1887; c.boaz@studiogc.com

Athi Toufexis, Principal; Studio GC
(224) 522-5122; a.toufexis@studiogc.com



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Buried Treasure



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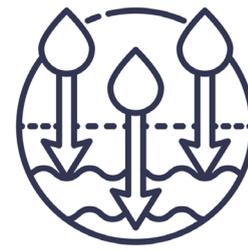
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STORMWATER MANAGEMENT SYSTEMS

Required by most municipalities once a certain site area impact is reached (i.e. 0.5 acres of disturbance) to help control watershed and environmental considerations of urbanization.



WATER CAPTURE



GROUND INFILTRATION



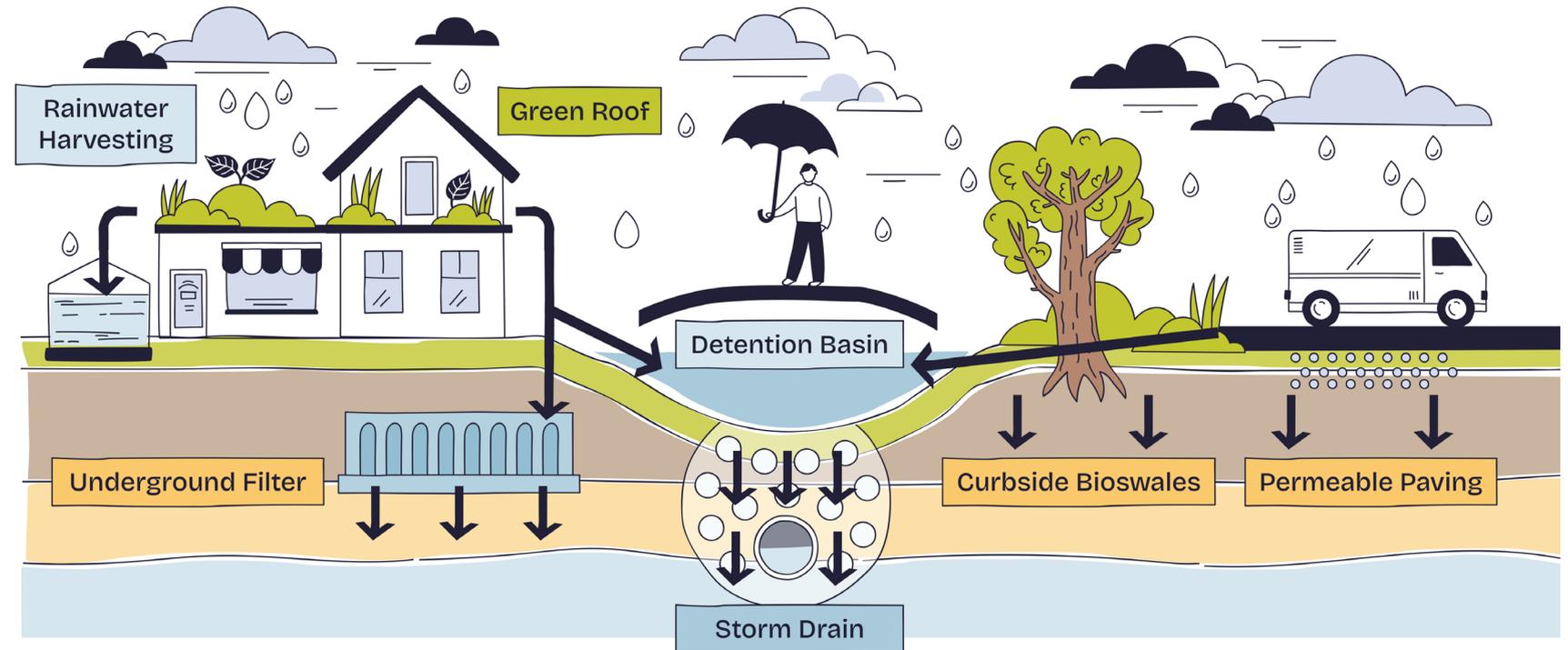
FLOW CONTROL



TEMPORARY STORAGE



FLOOD PREVENTION



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STORMWATER MANAGEMENT SYSTEMS

System approaches:

1. Runoff Control
 - Retention/rain gardens
 - Bioswales
 - Permeable Pavers
2. Detention / Volume Control
 - Concrete vaults (i.e. StormTrap)
 - Pipe (i.e. Contech)



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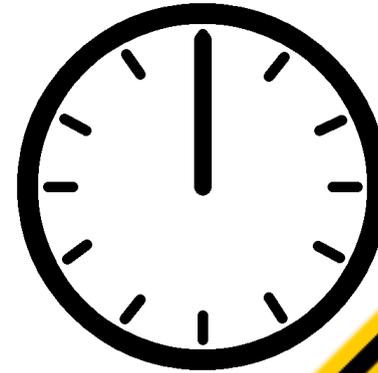
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STORMWATER MANAGEMENT SYSTEMS

Review Time!

Maintenance / Future Planning:

- Limits on future utility crossing
- Maintain as-builts of locations of all underground systems for any future addition/new construction, or soil boring investigations



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GROUND IMPROVEMENT

To improve and stabilize subpar soil conditions in preparation for foundation or other sitework.

Examples:

1. Rammed aggregate piers
2. Lime Stabilization



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GEOTHERMAL BORE FIELD

Combination of ground loops tied together to make a heat exchanger.

Bores are spaced ~18' apart, and extend to depths of 450'-500' below the ground. Approximately 1 bore per 1,500 square feet of building area.

Area can be restored back to green space or parking area.



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GEOTHERMAL BORE FIELD

Communications:

- Closed-loops (no aquifer exchange)
- Construction mess and noise

Maintenance:

- 100-year piping life expectancy
- Access to valves/purge pit for any drain-downs if necessary

Future Planning:

- Limits on future utility crossing
- Maintain as-builts of locations of all bore fields – no-build area

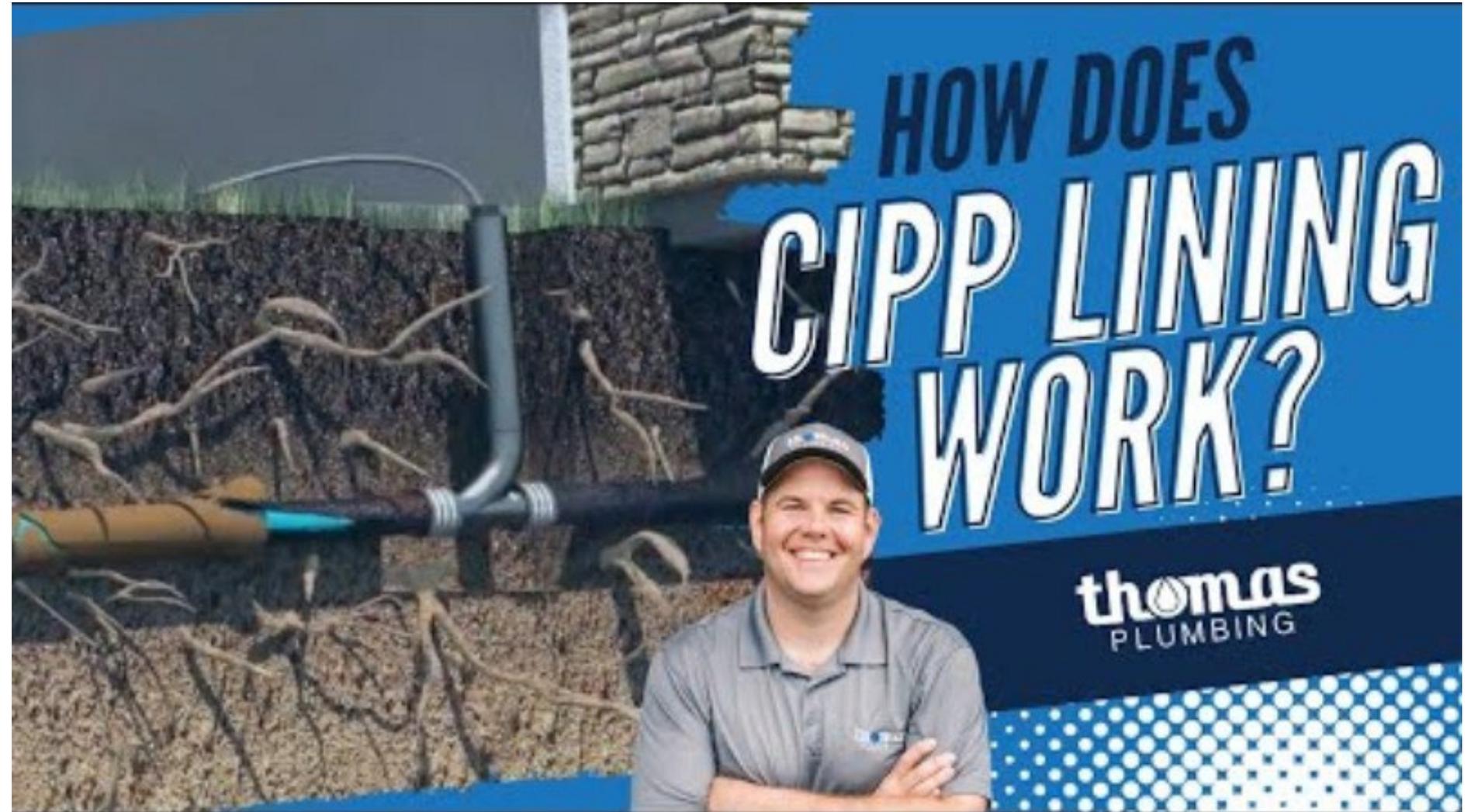


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CURED-IN-PLACE-PIPE LINING

To restore or rehab existing deteriorated storm or sanitary piping without excavation.

Does slightly reduce flowable pipe diameter.



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If these walls could talk...



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If these walls could talk...

TORNADO STORM SHELTERS

Illinois Public Schools (School Code Part 180): Required in any new E occupancy >50 occupants, or when addition increases building square footage by >50%.



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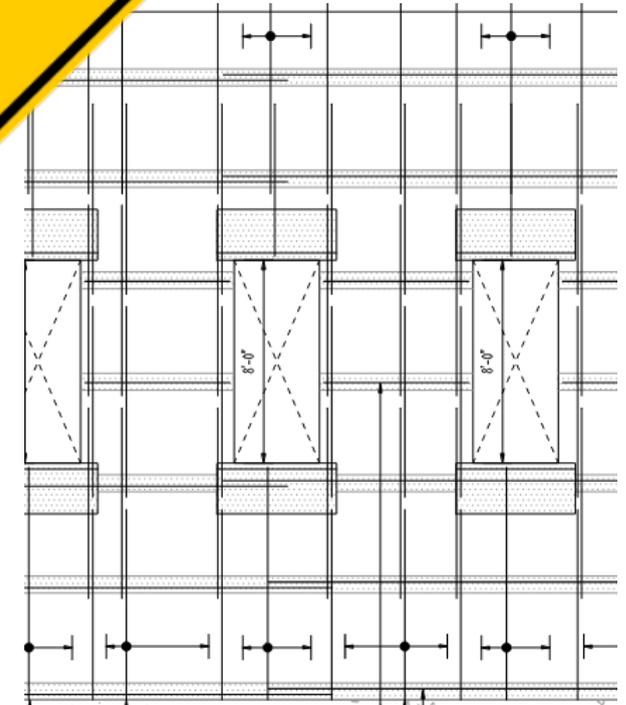


If these walls could talk...

TORNADO STORM SHELTERS

Maintenance / Future Planning:

- Stringent limits and requirements on any wall penetrations: plan ahead for future empty pathways if possible
- Specialty tested assemblies for all openings (doors, louvers, windows, hardware): not an off-the-shelf replacement
- Hardware modification limitations: can't just add a card reader in future
- One and done! No way to recommission a shelter after a tornado event.



If these walls could talk...

OPERABLE PARTITIONS

“Can we make this large room a flexible space by adding an operable partition?”

Considerations:

1. Structural requirements
2. Egress when partition is closed
3. Exit/panic hardware potentially required when partition is open due to occupant load



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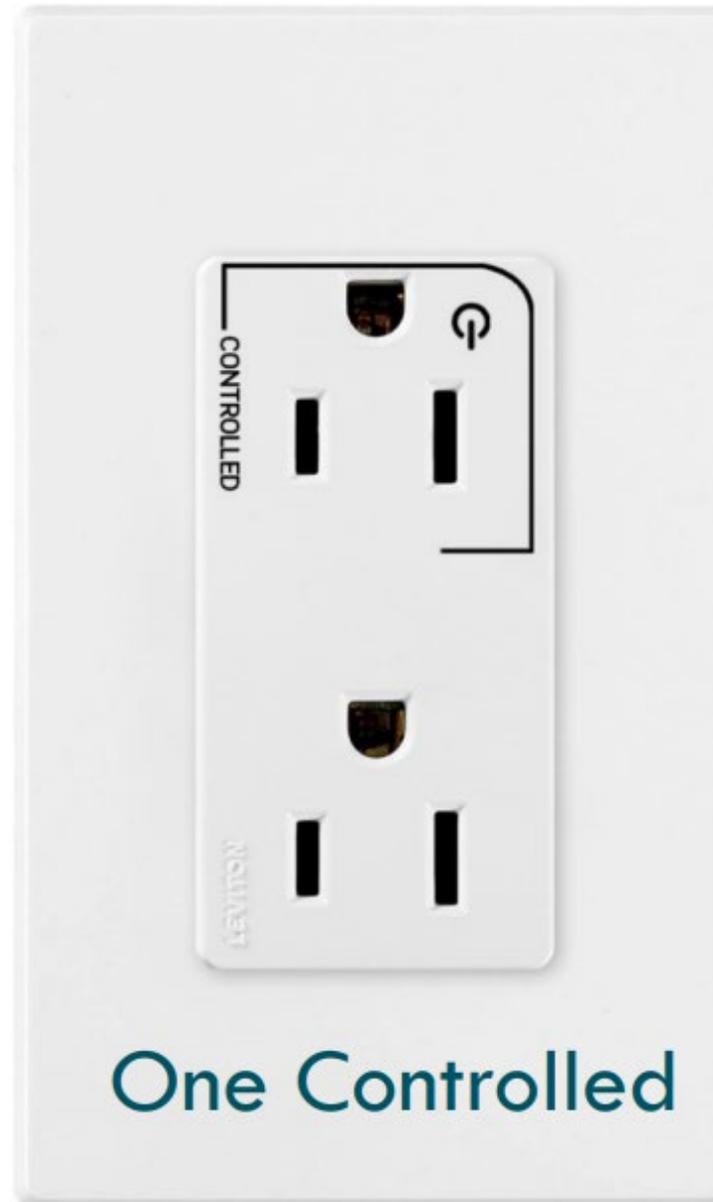
If these walls could talk...

PLUG LOAD MANAGEMENT

Automatic receptacle control
required by newer energy codes.
(At least 50% of all receptacles in
offices/workstations, conference
rooms, breakrooms, classrooms)
Must be permanently marked.

Maintenance / Future Planning:

- User training
- IT department training



If these walls could talk...

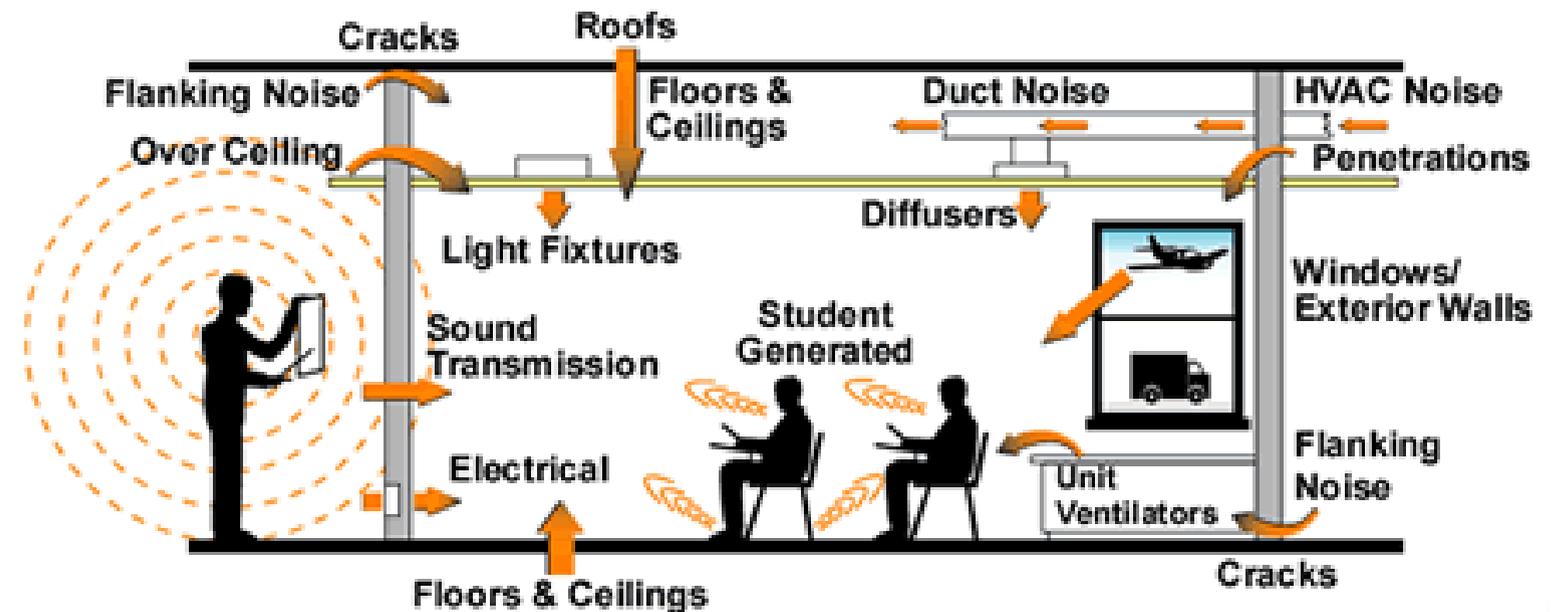
ENHANCED CLASSROOM ACOUSTICS

Acoustic requirements defined in newer building codes for classrooms with <20,000 CF volume (40' x 55' x 9'...big rooms!)

Requirements for:

1. Reverberation time
2. Ambient sound levels

Evaluated fully furnished, HVAC running, unoccupied.



If these walls could talk...

ENHANCED CLASSROOM ACOUSTICS

Reverberation time (2 options)

1. Performance (field measured & verified)
2. Prescriptive (calculated)

Ambient Sound

1. Dependent on noises from inside of classroom (i.e. HVAC, electrical) as well as outside noises (traffic, airplanes, adjacent rooms)
2. Verified post construction (field measured)

<35 dBA & <55 dBC



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For a classroom with a volume less than or equal to 10,000 cubic feet (285 m³):

$$(NRC_{Floor} \times SFloor) + (NRC_{Ceiling} \times S_{Ceiling}) + (NRC_{Wall} \times SWall) \geq Volume/12$$

For a classroom with a volume between 10,000 cubic feet (285 m³) and 20,000 cubic feet (565 m³):

$$(NRC_{Floor} \times SFloor) + (NRC_{Ceiling} \times S_{Ceiling}) + (NRC_{Wall} \times SWall) \geq Volume/14$$

Where:

NRC_{Floor} = NRC rating of the floor finish material

S_{Floor} = floor area in square feet

NRC_{Ceiling} = NRC rating of the ceiling finish material

S_{Ceiling} = ceiling area in square feet

NRC_{Wall} = NRC rating of the wall acoustical treatment

S_{Wall} = wall treatment area in square feet

Volume = room volume in cubic feet



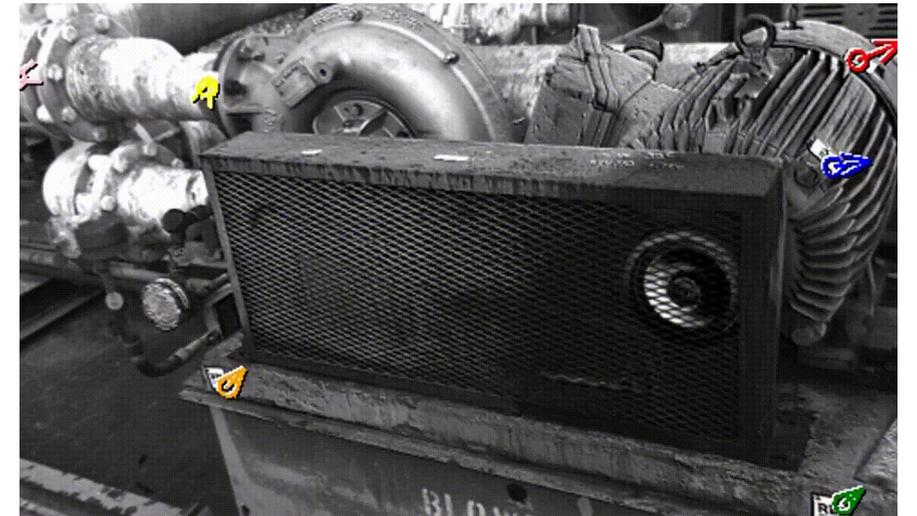
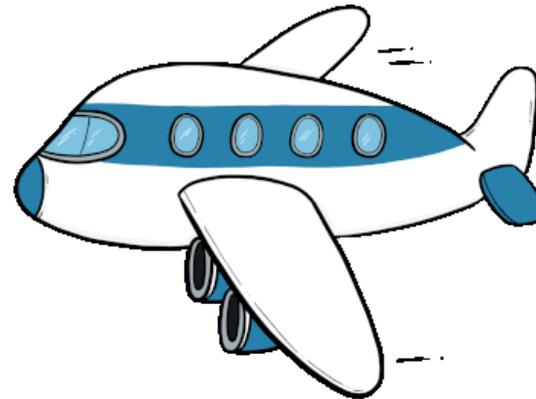
FPC
FACILITIES PROFESSIONALS
CONFERENCE

If these walls could talk...

ENHANCED CLASSROOM ACOUSTICS

Considerations:

1. Aesthetics
2. Material selections
3. HVAC system noise and equipment locations
4. Roof drain/other water system noise
5. Compensation for exterior environment outside of project control (flight paths; highways; etc)
6. Metal roofs/open ceilings



Over and Out



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Over and Out

SOLAR PANEL ARRAYS

Roof Mount vs. Ground Mount

Considerations:

1. Structural requirements
2. Shading/leaves from adjacent trees
3. Rooftop equipment (vent stacks, exhaust fans, RTUs)
4. Maintenance



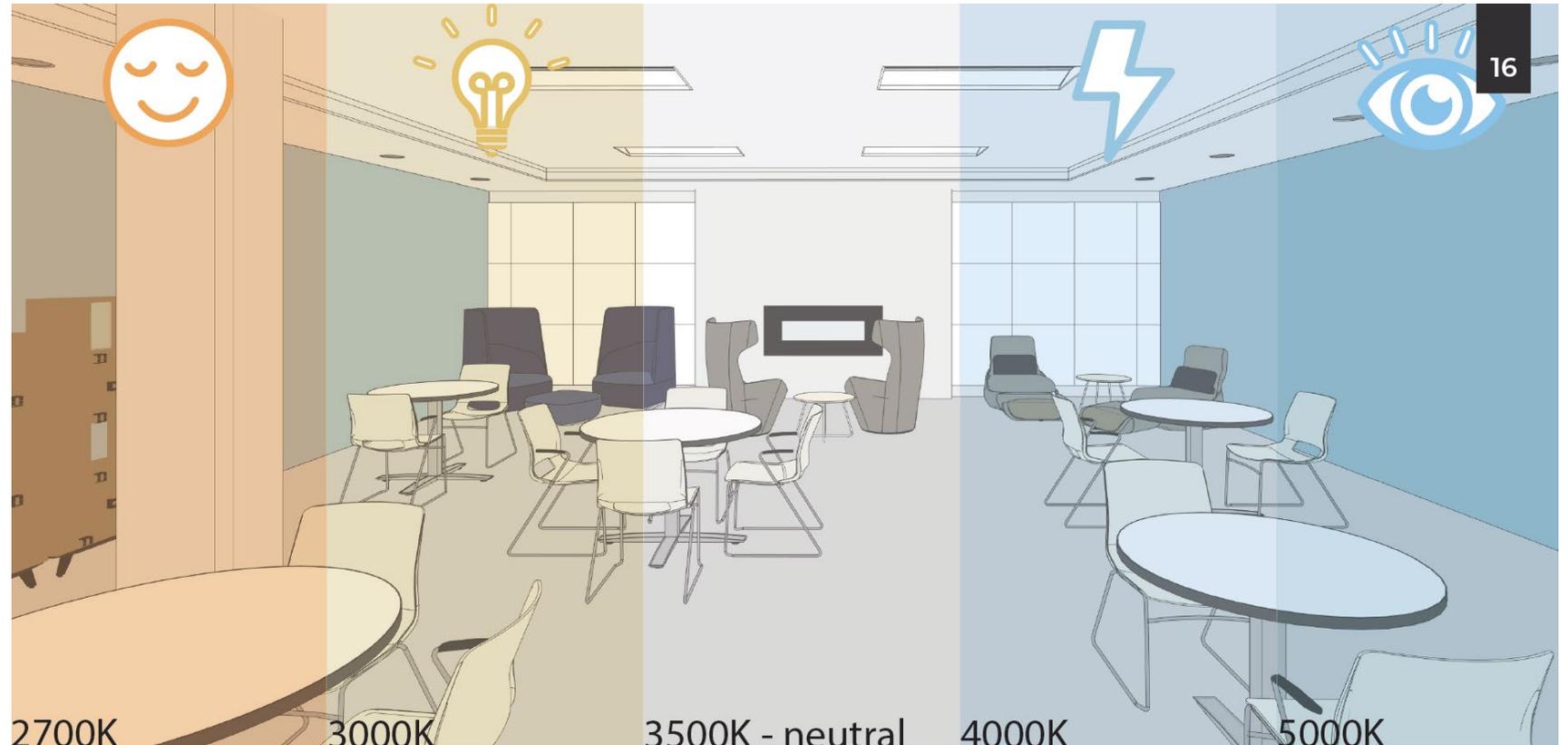
Over and Out

TUNABLE LIGHTING

Light temperatures and impact on circadian rhythm, especially for students with autism

Considerations:

1. User ease (pre-programmed scenes)
2. User training
3. White tunable or full RGB tunable
4. Cost



2700K

calming
relaxing

use: morning arrival;
room or activity
transitions; reading
time

3000K

creating

use: general default
in early morning or
late afternoon,
discussion, projects

3500K - neutral



4000K

energizing
focusing

use: after lunch to
aid in energy levels;
general group focus
time

5000K

alertness
awareness

use: midday, peak
alertness, during
testing and
high-focus work



Over and Out

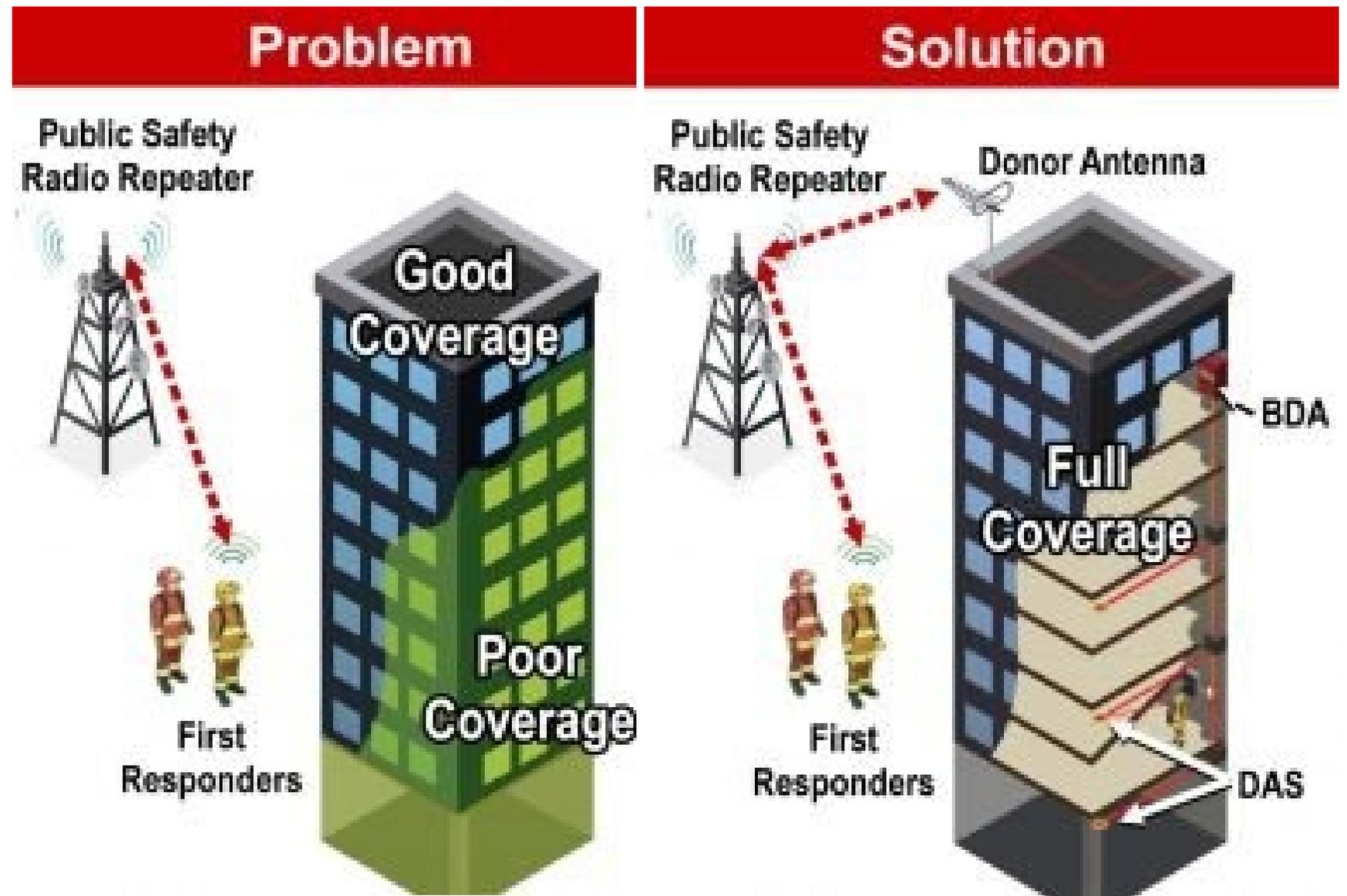
EMERGENCY RESPONDER RADIO COMMUNICATIONS

Code required

- Bi-directional amplifiers
- Distributed Antenna Systems

Considerations:

1. High coordination with local first responders (fire/police)
2. RF Survey for existing coverage
3. Post-install survey/test reports



Questions and Answers

We thank you for your time!



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