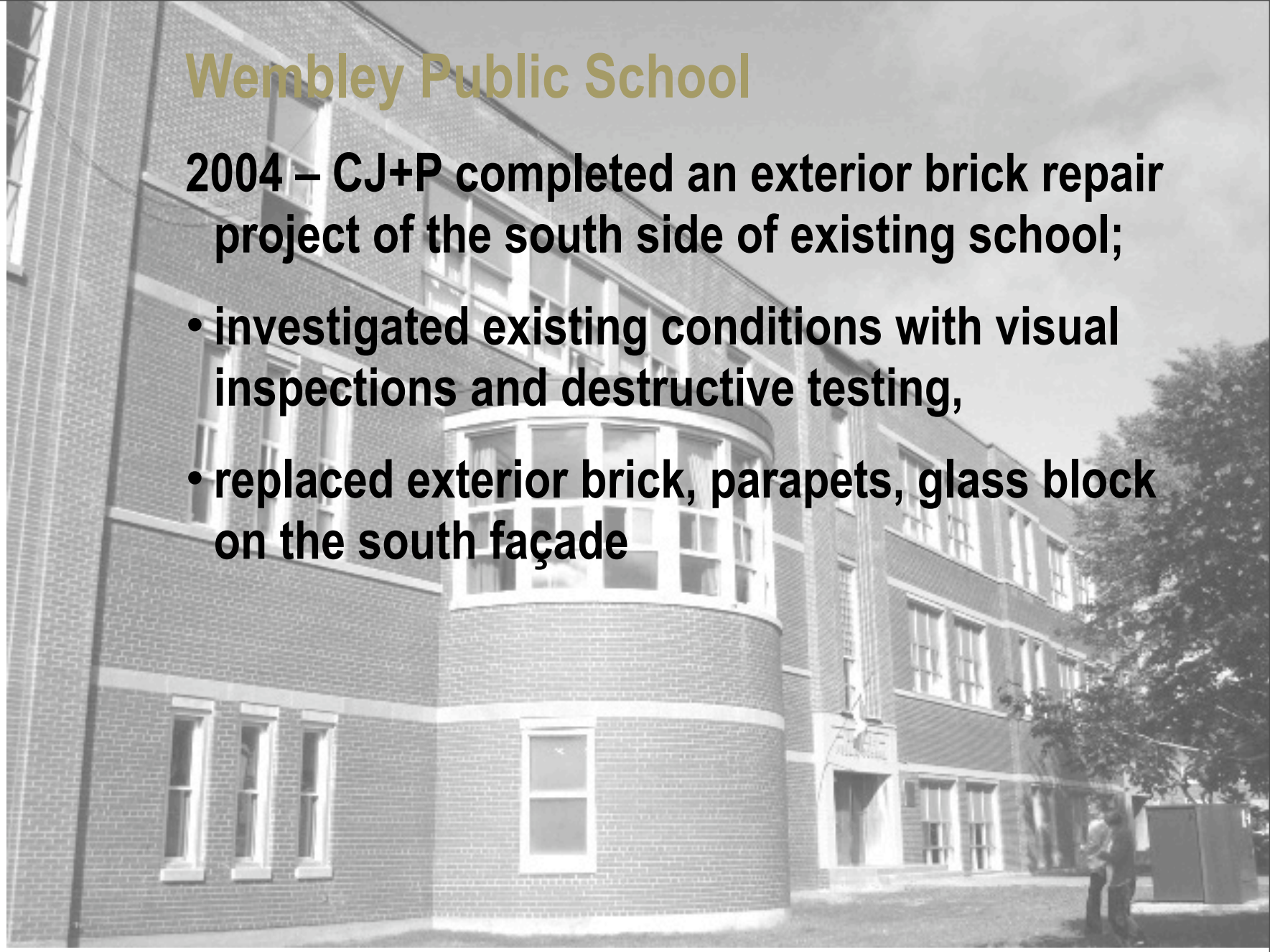
Wembley Public School



2004 – CJ+P completed an exterior brick repair project of the south side of existing school;

- **investigated existing conditions with visual inspections and destructive testing,**
- **replaced exterior brick, parapets, glass block on the south façade**

Troublespots / Conditions;

- **no rain screen** – water that was getting into the wall, could not drain, would fill glass block and cause brick to spall, break apart, deteriorate
- **no vapour barrier** – warm air passing through the exterior wall can contribute moisture to the exterior wall and cause brick to spall, break apart
- **no insulation value at the exterior wall**
- **deterioration of the brick, glass block, parapet**
- **low quality masonry construction**

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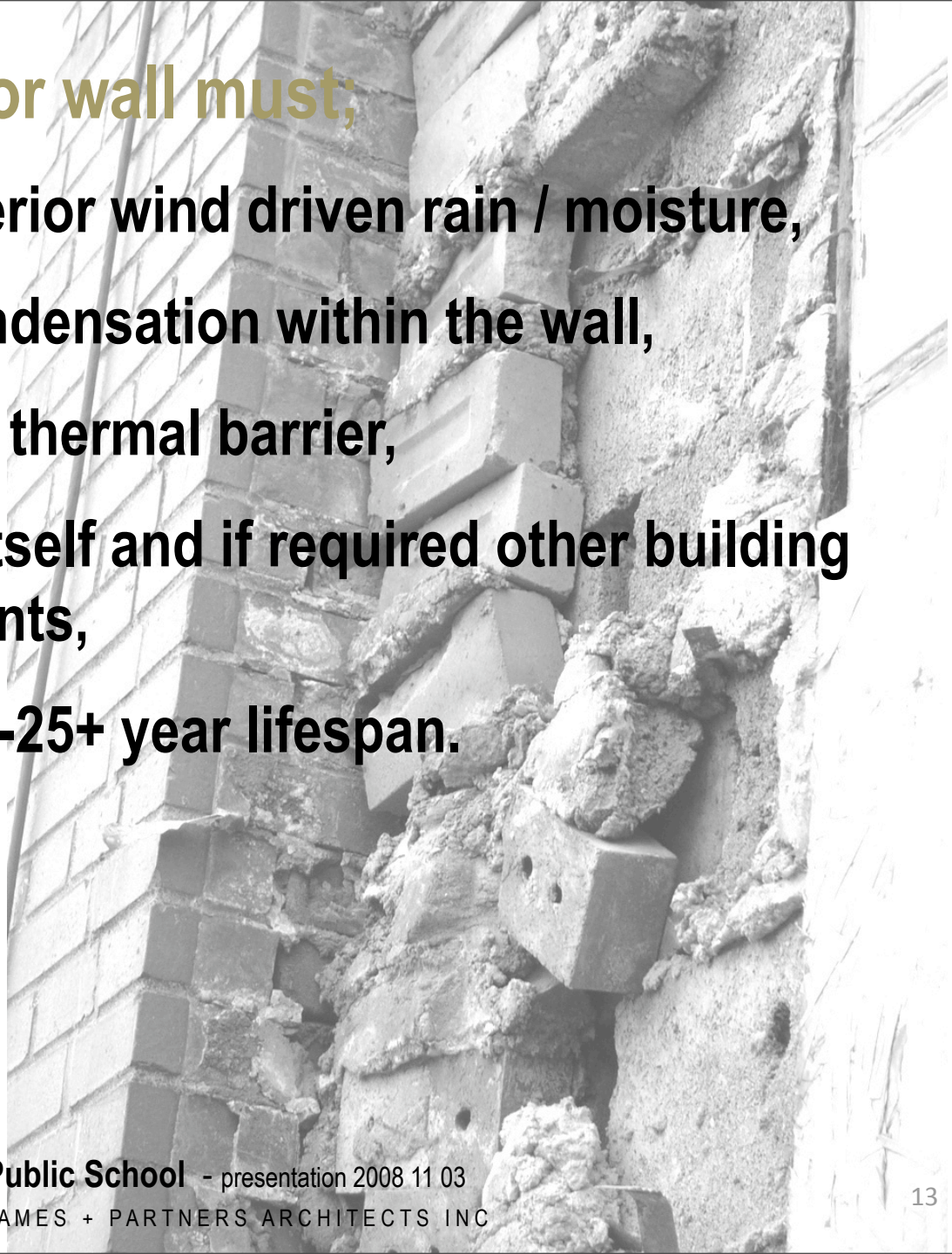
An exterior wall must;

- repel exterior wind driven rain / moisture,
- resist condensation within the wall,
- provide a thermal barrier,
- support itself and if required other building components,
- have a 20-25+ year lifespan.



An exterior wall must;

- repel exterior wind driven rain / moisture;
  - provide a ‘rainscreen’ that will shed water at the face of the wall,
  - provide pathways for the ‘rainscreen’ to drain moisture from the wall,
  - without a ‘rainscreen’ exterior masonry walls can deteriorate; i.e., freeze / thaw cycles can cause spalling brick.

An exterior wall must;

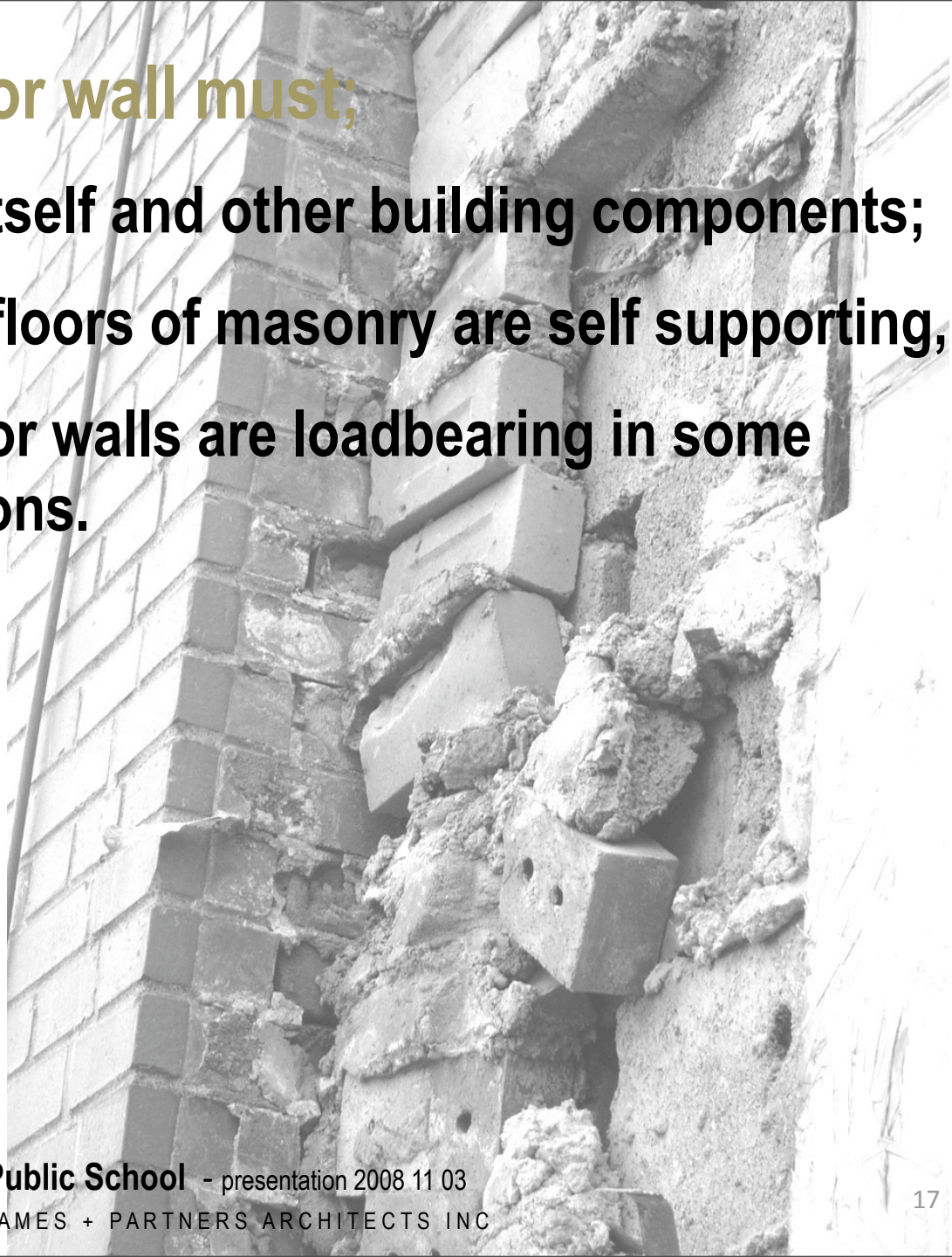
- resist condensation within the wall;
  - provide a continuous '*vapour barrier'* at the exterior wall so that warm moist air cannot escape the building,
  - a continuous vapour barrier reduces energy usage of buildings,
  - a continuous vapour barrier avoids build up of moisture in the exterior wall that may lead to deterioration of the wall – i.e., brick spalling, mould growth, etc.

An exterior wall must;

- provide a thermal barrier;
  - insulation located in the exterior wall keeps the building warm in the winter and cool in the summer,
  - superior insulation levels reduce energy costs,
  - without appropriate insulation level costs to heat (and cool) the building remain high.

An exterior wall must;

- support itself and other building components;
  - three floors of masonry are self supporting,
  - exterior walls are loadbearing in some locations.



Retrofit extent

- 2004 work was a ‘band-aid’ type solution, not a cure
  - only 12% (2,500sf) of the brick was replaced in 2004 – predominately on the south façade,
  - did not include insulation upgrades, replaced / repaired spalling brick only - additional retrofit work required
- 88% (18,500sf) of the existing exterior wall has not been upgraded and requires retrofit measures.

Retrofit solutions – a 'cure' type solution

- apply a new cladding to the exterior wall to provide a rainscreen
- install a new continuous vapour barrier
- add insulation to the exterior wall (R30+/-)
- repair deteriorated brick masonry
- upgrade windows, locate new windows to inline with new insulation at exterior wall