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Building Envelope Specialists

Exterior Walls and Windows

EXTERIOR WALLS

Any building is basically an enclosure within which the environment is controlled. The envelope between the enclosed space and the exterior environment plays a critical role in economically maintaining the desired internal environment.

The main two components of the building enclosure are:

1. Brick Veneer
2. Exterior Windows and Doors

1. Brick Veneer:

The major problems witnessed with brick veneer systems relate to the presence of moisture within the wall cavity. This moisture is forced into the cavities by rain penetration or by the movement of humid interior air from inside the occupied space. Typical moisture problems include:

1. Efflorescence and staining of brick veneer
2. Spalling/distress of brick
3. Deterioration of caulking
4. In-Wall condensation reducing insulation effectiveness

1. The presence of efflorescence is inevitably an indication of moisture migration. When it persists from year to year, it would affect the integrity of the wall cladding system. During periods of rain and driving rain, a substantial amount of moisture can be deposited into the masonry wall. During warmer weather, the amount of evaporation within the masonry wall is high, soluble salts are deposited within the veneer. In the winter, the evaporation rate is slower, and as such the salts migrate to the surface before evaporating. Another source of moisture may be attributed to infiltration from the interior of a building. Discontinuity in the air or vapour barrier will allow the moisture to flow into the components of the wall system. This moisture can transfer by capillary action and dispose its soluble salts on the veneer.

2. Bricks are a durable material. However, similar to other exterior building materials, they deteriorate with time because of weathering, aging and other external effects. Whenever distress is evident on the brick veneer, it is crucial that additional investigations are conducted to determine the root cause(s) of such distress as minor problems could turn into a major distress problem endangering the safety of the public. Other causes of spalled bricks may be attributed to the lack of horizontal movement joint at the shelf angle, expansions and contractions as a result of moisture and thermal changes, and freeze/thaw action.

3. Regardless of the quality of the sealant that was applied on the building, the service life of sealant cannot exceed the 10 to a 15-year's span when exposed to our climate. When deteriorated, the sealant becomes hard, consequently it cracks and starts separating from the surfaces it was adhered to.

4. Insulation is the most important element in resisting the heat flow across the wall system. Most types of insulation lose considerable amount of their thermal resistance when wet.

Exterior Windows and Doors

About the most common complaint by building owners about windows is **condensation**. While in some cases condensation is the result of excessively high humidity levels in dwelling units, in many cases condensation occurs at commonly accepted levels of indoor humidity.

Air leakage, both through the window and around the frame, is a commonly voiced complaint. Air leakage rates through sub-standard windows, or due to shoddy installation practices. Drafts occurring around the window are almost always the result of inadequate detailing of installation procedures coupled with low quality control standards during the construction process.

2.1 Expectations of a Window:

- ▶ Strength
- ▶ Air Tightness
- ▶ Ventilation
- ▶ Resistance to Condensation
- ▶ Escape
- ▶ Reduced Sound Transmission

As windows form an integral part of the exterior wall of the building, they must be aesthetically pleasing without undermining their performance.

There are many types of windows for residential buildings. The choice of the type depends upon various elements, including the height of the building, the size of the existing openings, operation requirements, performance requirements, energy efficiency, geographical location and architectural look. Most common residential windows are:

- ▶ Fixed
- ▶ Casement
- ▶ Awning
- ▶ Dual Action / Tilt and Turn
- ▶ Sliding (Vertical and Horizontal)
- ▶ Combination (Combo)

2.2 Commercial window types:

Curtain Wall: An exterior non-bearing wall

Store Front: Designed for high use and strength, usually installed between floor and ceiling

Sloped Glazing: Sloped framing assembly that forms the entire roof of the structure.

ABC Ratings:

Most windows in Canada are required to have ABC testing/rating. The window manufacturers frequently provide it. The ABC ratings are classified as follows:

Air Tightness A1 - A3

Water tightness - B1 - B7

Wind Load Resistance - C1 - C5

Although higher ratings are better, the engineer based upon the specific application determines the correct ratings for particular project.

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Services include:

- ▶ Evaluation and Condition Survey
- ▶ Thermographic Scans
- ▶ Design Specifications and Tender Documents
- ▶ Project Management

OUR SERVICES

Services

Accent is aware that success is dependent on the way in which it provides service to its clients and the manner in which it develops partnerships with its employees and affiliates. Because of this, we demand that these partnerships reflect our integrity and a commitment to the well-being of all.

We believe in supporting education and training opportunities that enable individuals to acquire the skill, knowledge, and experience needed to make responsible decisions in the workplace and in society.

Focus on Customers

Accent consistently meets or exceeds customers' needs and expectations by giving them a product or service that fully meets their requirements. Priorities are based on what the customer wants. This focus on the customer means that you will get the very best quality every time.

Continuous Improvement

Accents' commitment to Total Quality Management means constantly asking what it can do to better meet the customers' needs and expectations. Work methods are continuously questioned and reviewed in an effort to ensure quality. We rely and focus on a very large number of small improvements, and we are always seeking to improve our performance.