

Introduction

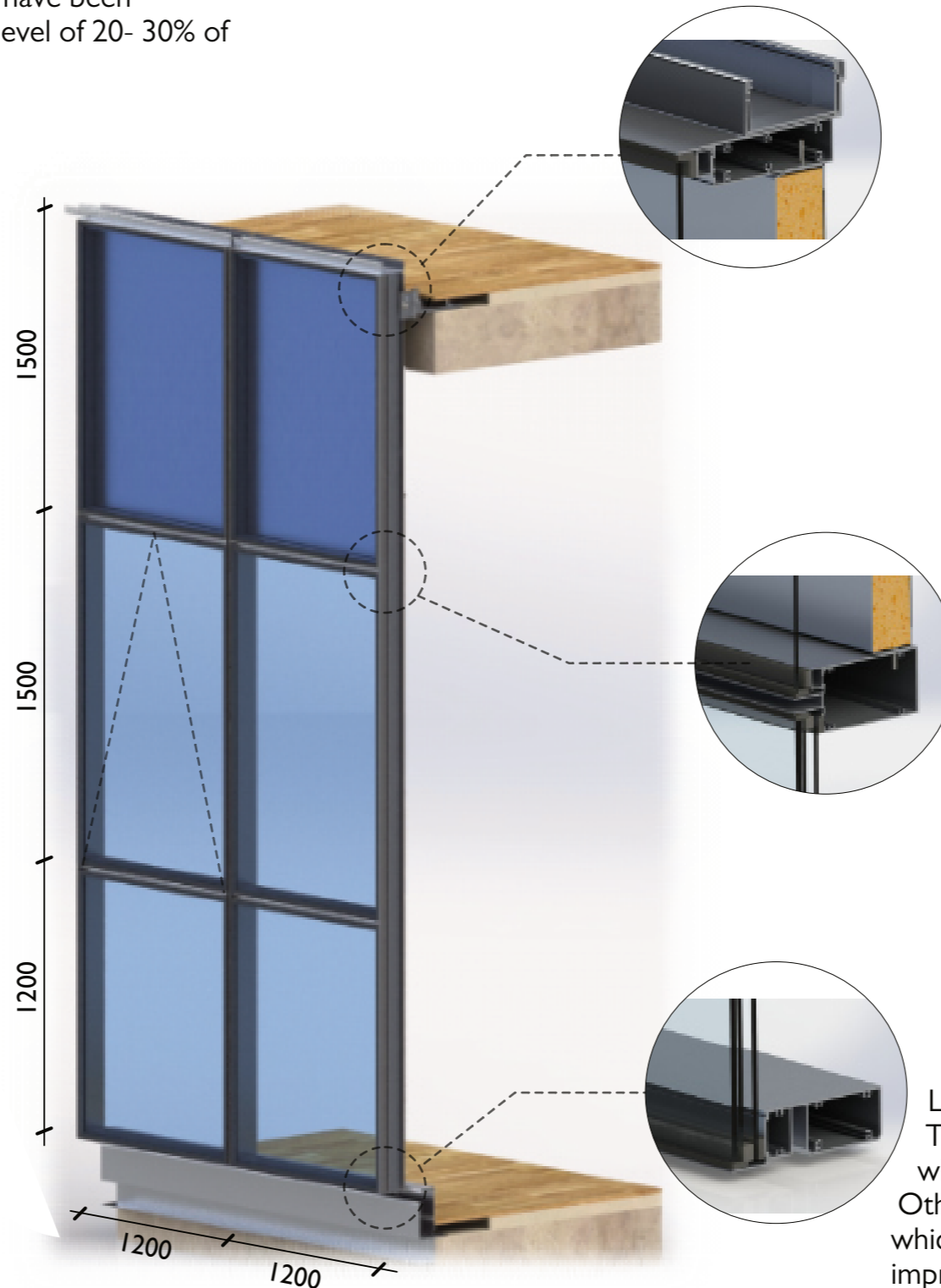
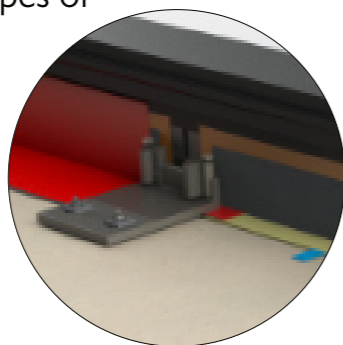
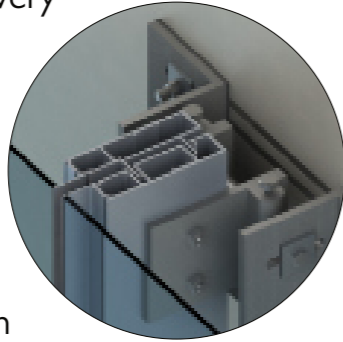
Façade plays a vital role in any buildings, capable of providing energy efficient envelopes, sustainable requirements, enhanced functional and architectural designs. Façade cost used to be typically 10% to 15% of building cost, however this has changed significantly. In this post Covid scenario, we have been observing that façade costs has increased significantly to the level of 20- 30% of overall Building cost. Hence, it is very important for the Client / Architect / Designers to understand the cost impact and take a balanced approach on cost VS performances. This will lead to final outcome as per expectations with no compromise on quality and design intent.

Recent Impact due to global market

- Energy price increase
- Chaotic and broken supply chain
- Expensive and unreliable Logistics
- Raw materials price increase and uncertain supply

Analysis of a Typical Façade System

We wish to review widely used system “Unitised Curtain Wall” i.e. Pre-fabricated panelized facades globally used for all the types of buildings. This system involves several components that are assembled in a factory, transported to site and gets installed on the building to get the enclosure. Although from the layman’s point of view, the façade looks like a grid of glass panes. But, there are several components contributing to build the envelope which may be glazing, cladding or any other architectural materials. We illustrate the impact of key components to understand the design VS cost implications.



Facade Composition

A typical Unitized Curtain Wall Panel, is majorly comprises of System Frames, Glass, Spandrel Panel and Operable based on functional requirements. Consider an example with sizes as follows.

Panel Size	Height (m)	Width (m)	Area (SqM)
Sill Vision Area	1.2	1.2	1.44
Spandrel Area	1.5	1.2	1.8
Operable Vision Area	1.5	1.2	1.8
Overall Panel	4.2	1.2	5.04

Cost Summary

Based on the current cost trends, market study, cost summarized shown below as per sq.m. for above sizes, Excluding all Taxes. Refer following pages for cost break-ups

Elements	Rate INR/SqM
A- UCW SYSTEM WITHOUT OPERABLE FRAME	11,140
B- OPERABLE FRAME & HARDWARE	2,610
C- SPANDREL PANEL (Single Glazed)	1,087
D- GLASS (Double Glazed High Performance)	4,641
Total Cost - INR / Sqm (A+B+C+D) with operable	19,478
Total Cost - INR / Sqm (A+C+D) w/o operable	16,868

There are many sub-components included to derive the cost of this Panel, say Glass Types- Double Glazing Unit, Double Glazing Laminated Unit or Single Glazing, Spandrel Panel Height, Operable Type and Hardware are few of the major cost constituting element which directly impacts the building performances as well. Other features such as Aluminium or Verticals Fins or shading elements which will increase consumption of Aluminium, but these may have improved energy efficiency and enhance the aesthetics of buildings.

BUILDING FACADE COSTS INSIGHTS & CURRENT TRENDS

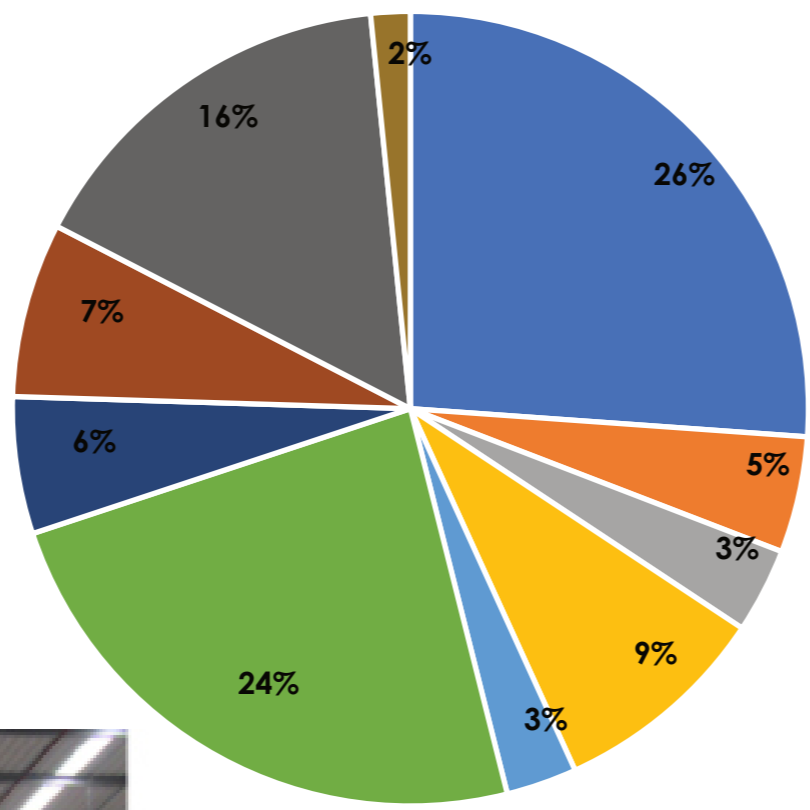


Cost Analysis

Following table and chart illustrates major cost components of curtain wall systems i.e. Predominantly Aluminium Extrusion (approx. 26%), Glass (approx. 24%) and Labour & Transportation (approx. 16%).

Although Aluminium and glass are major cost drivers, good detailing and ease of fabrications will lead to great savings in material and time. Hence it is not wise just to focus on the aluminium weight and glass thickness alone. Instead, a holistic approach is recommended considering fabrications and its implementations. Good understanding of the building and the site conditions will result in less abortive works and rectifications due to incorrect fabrications.

With increased cost of inputs, strive for economic facade works using less materials, wastages and efficient fabrication process. Avoid damages caused during transportation and site handling, will help in completing the project on time with better quality.



Cost Break-up

#	Façade Elements	Assumptions	Per Panel 5.04 sqm (INR)	Per Sqm (INR)	%
1	Aluminium Extrusion	Customized, 6063-T6	25,651	5,090	26%
2	Surface Finish	High Performance Powder Coat	4,642	921	5%
3	Bracket & Fixtures	Aluminium Hook Brackets, High Strength Anchors	3,397	674	3%
4	Accessories	High Performance Sealants	8,727	1,732	9%
5	Smoke Seal & Closure	Continuous Seal	2,819	559	3%
6	Glass	Vision DGU, Spandrel SGU	23,391	4,641	24%
7	Spandrel Backpan	2mm Aluminium & Insulation	5,478	1,087	6%
8	Operable Hardware	Heavy Duty, Top Hung Operable (European brand)	6,975	1,384	7%
9	Labour & Transportation	Consider 600 KM road transport	15,518	3,079	16%
10	Site & Misc.	Management, handling etc.,	1,570	312	2%
Total			98,168	19,478	100%



Cost Saving Tips

In this uncertain scenario where in cost and deliveries are unpredictable, comprehensive approach on optimization shall lead to on-time completion within the budget. Following points may be worthwhile to note.

- ◆ Try to simplify designs to use existing design details, profiles, standard sizes, etc.
- ◆ Optimize designs with good engineering, neither conservative nor under-design
- ◆ Early design, good project plan, advance scheduling, avoid late material order, etc.
- ◆ Focus on ease of fabrications, repetitions, mass productions help to reduce production costs
- ◆ Re-work on supply chains, work with assured and committed delivery
- ◆ Improve transportation and logistics, reduce damages / breakages, avoid replacements
- ◆ Be aware of site conditions, changes etc., Avoid abortive fabrications works.
- ◆ Do it correctly first Time

