



BUSINESS PLAN · INDIA

Glass and Aluminium Fabrication

Toughened glass cannot be cut after the furnace

BUILD MATERIALS

AISEVAK.IN · BY ABL DIGITAL TECHNOLOGIES

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This document is confidential and prepared for planning purposes. All financial figures are illustrative model assumptions for an Indian MSME context and must be validated against live quotes, local rates and professional advice before any investment or borrowing decision.

1. Executive Summary

This plan sets out a **Glass & Aluminium Fabrication Business** in India — a workshop-and-site operation designing, fabricating and installing aluminium windows and doors, structural glazing and curtain-wall façades, glass partitions, railings and shopfronts for developers, builders, architects, corporate fit-outs and institutional clients.

The governing physical fact in this business is that toughened glass cannot be cut, drilled or notched after it is tempered. Every edge, hole, cut-out and dimension must be settled before the pane enters the furnace, because afterwards the glass will shatter rather than yield. So a handle position moved by forty millimetres, a hinge relocated, or a dimension corrected on site is not a modification — it is a new pane, remade from raw stock, at full cost and full lead time. The design freeze in this trade is therefore a physical event rather than a contractual one, and a fabricator who treats it as a clause to be negotiated is describing a process that does not exist. This is the precast plant's released-for-construction discipline in a harder form — **a precast element can at least be re-cast from the same mould; a toughened pane is a one-off cut that cannot be salvaged** — and the plan measures it: **panes remade after a post-tempering change fall from 8.4% to 1.6%, and fabrication begins only against dimensionally signed-off site measurement in 100% of cases by Year 3, from 54%.**

The second is that this business fabricates to millimetre tolerance and installs onto a building constructed to nothing of the sort. The architect's drawing says the opening is 1,500 millimetres. The opening is 1,478 at the sill and 1,509 at the head, out of plumb across its height, and nobody checked because nobody in the concrete trade was ever asked to work to that accuracy. The fabricator absorbs that deviation inside his own tolerance and his own margin — which is precisely why the trade's habit of quoting from drawings and measuring afterwards is where the money in this business is lost. This plan measures the building rather than the drawing: **quotations based on physical site measurement rather than on the architect's drawing rise from 22% to 88%, and rework attributable to structural deviation falls from 6.2% to 1.8%. The drawing is used for a budget figure and the contract carries an agreed variation mechanism against measurement — because the alternative is discovering a thirty-millimetre discrepancy after the glass has been through the furnace.**

The third is the one this trade prefers not to put in writing, and this plan puts it in writing. Toughened glass can break spontaneously, years after installation, with no impact and no workmanship defect, because of a microscopic nickel-sulphide inclusion that expands slowly inside the pane until the stored tension releases. It is rare and it is real, it is documented, and it is not something a fabricator can promise will never happen. Heat-soak testing reduces the population of vulnerable panes very substantially and does not reduce it to zero. A fabricator who assures a client that toughened glass never breaks by itself is making a claim the physics does not support — the same category of promise as a guaranteed visa outcome, and it will be remembered when a pane fails. This plan therefore **heat-soaks 100% of toughened glass in overhead and structural applications by Year 3 from 41%, specifies laminated rather than monolithic glass wherever falling glass would land on people, and discloses the residual risk in writing on every contract.**

And the fourth is that the consequence of failure here is not a claim, it is a death. A façade pane leaving a fourth-floor elevation is lethal to whoever is beneath it, and the mechanisms that release it — under-designed fixings, wind loads never calculated, structural sealant applied by an untrained hand or cured wrong — are all decisions taken quietly in a workshop months earlier by people who will never see the street. This is the adventure-tourism convention arriving in a new industry: the customer can be killed, and the failure is invisible until it is total. The controls are structural and measured as leading indicators rather than as outcomes: **façade designs with independent wind-load calculation move from 38% to 100%, and structural sealant applied by**

trained applicators with batch and cure records from 47% to 100%.

This plan models a business requiring **₹5.80 crore** (₹2.00 crore promoter + ₹1.60 crore term loan + ₹2.20 crore cash-credit limit), moving from **₹9.60 crore turnover and an ₹86 lakh loss** to **₹23.40 crore turnover and ₹1.21 crore profit** by Year 3, with *return on capital employed rising from (14.6%) to 15.9%*. (Aluminium and glass fabrication, glazing and façade installation — figures illustrative.)

2. Business Description, Vision & Legal Structure

Concept: A fabrication and glazing contractor run on measured openings, verified wind loads and disclosed residual risk, in a trade where all three are usually assumed.

Vision: To be the fabricator whose façade calculation somebody else has checked.

Mission: Measure the building, not the drawing; freeze before the furnace; heat-soak what goes overhead and laminate what goes over people; have the wind load calculated by someone independent; and tell the client what glass can do.

Legal structure options

- **Private Limited** — recommended: façade contracts, developer onboarding, performance guarantees and a ₹2.20 crore working-capital limit all sit better in a company, and the liability profile argues for it independently.
- **Partnership / LLP** — common in the trade where a fabricator and a site partner combine, and workable at the windows-and-doors end.
- **Proprietorship** — inappropriate for structural glazing work, and the reason is not commercial: **this business installs heavy glass at height over public areas, and that exposure should not be held personally.**

Regulatory anchor: a workshop licence load plus a construction one, with a genuine safety code underneath it. **IS 875 Part 3 for wind loads, which is the calculation that decides whether a façade stays on a building and which is routinely skipped on smaller projects in favour of "what we did last time"; IS 2553 for safety glass and the toughened-glass specifications, with heat-soak testing to the applicable standard for overhead and structural applications. National Building Code provisions on glazing, safety glass in critical locations and fire compartmentation at floor slabs, plus city-specific façade and glazing approvals in several jurisdictions. Anodising thickness to IS 1868 and powder-coating specifications, which matter because both processes are almost always outsourced and are where this trade's most common quality failure originates.** Then: **Building and Other Construction Workers Act registration and cess on installation scope; work-at-height, scaffolding, hoist and suspended-platform obligations with statutory certification of access equipment and lifting gear — this business works above occupied streets; Factories Act registration for the workshop and SPCB consent where any coating or processing is done in-house; product and public liability insurance, which here is a working requirement rather than a compliance line, because the failure mode is a falling pane; GST under works-contract treatment on composite supply-and-install; and EPF and ESI across fabrication and site crews, with contractor compliance where installation labour is partly engaged through agencies.**

3. Promoter & Ownership

Led by a promoter with fabrication, façade contracting or building-envelope engineering background. Three competences decide outcomes. *Estimation discipline against measured reality*, because a quotation built from drawings will be wrong by an amount nobody can predict and the difference comes out of the contract margin rather than out of a variation. *Engineering literacy on wind, fixings and sealant*, since the promoter is the last person in the chain who can insist that a calculation be done, and on a small project there is frequently nobody else who will ask. And *the willingness to disclose*

what glass can do — spontaneous breakage, thermal stress, the limits of a sealed unit — which costs an occasional order and is the only honest basis on which to sell a product whose rare failures are dramatic. Ownership, equity & investor terms are editable inputs.

4. Market Analysis — India

Indian demand for aluminium and glass building envelope is growing faster than construction generally — driven by high-rise development where glazed façades are the default, commercial fit-out standards, the replacement of steel and timber windows in renovation, and energy-code pressure that is beginning to specify glass performance rather than merely glass.

Demand drivers

- **High-rise residential and commercial construction**, where the glazed envelope is the design norm rather than an upgrade.
- **Corporate and retail fit-out**, design-led, fast-moving and less cyclical than structural construction.
- **Window replacement in renovation**, converting steel and timber to aluminium and uPVC in existing buildings — a repeat, cash-paying base.
- **Energy-code and comfort requirements**, which move specification from clear float toward performance glass and thermally broken sections.
- **Institutional and industrial glazing**, documented, tendered and steady.
- **Rising expectations of finish and acoustic performance** in urban housing.

Market sizing (illustrative framing)

Layer	Definition	Indicative scale
TAM	Building envelope and interior glazing in the served region	Construction and fit-out defined
SAM	Projects reachable for site installation and service	Installation-radius bounded, not demand bounded
SOM (Yr 1-3)	Turnover x margin, weighted across windows, façade and interior	₹9.60cr → ₹23.40cr; façade share 30% → 42%

This business is late-cycle in the same way the panel trade is, and for the same reason, which has a specific consequence for how its pipeline should be read. Windows and façades are installed after the structure is complete and the building is being finished, so the work arrives six months to two years after the concrete was poured — a fabricator watching cement and RMC volumes soften is watching his own next year rather than his current one. The façade segment lags furthest, because a curtain wall is designed with the building and installed near its end. Two further features shape the plan. First, the segments behave differently through a cycle: façade and new-build windows fall with development, while replacement glazing and fit-out do not fall nearly as far — a household or an office replacing windows is spending against comfort and appearance rather than against a project pipeline, which is why the plan holds a deliberate interior and replacement base rather than becoming a pure façade contractor. Second, the façade end is where the margin, the engineering content and the fatal risk all sit together — moving façade share from 30% to 42% raises the return and raises the exposure in the same movement, which is why the wind-load, sealant and laminated-glass controls scale with it rather than after it.

5. Competition & Competitive Advantage

Landscape: large specialist façade contractors on premium and high-rise work, generally engineering-led and expensive; **a very large tail of small local fabricators who quote from drawings, do not calculate wind loads and compete almost entirely on rate**; system suppliers and their approved-fabricator networks; uPVC window specialists competing at the residential end; and the client's own contractor self-performing simple glazing. **Because a window looks like a window and a quotation looks like a quotation, competition at the lower end runs on rate against specifications that are not comparable — a cheaper quote may use a thinner section, unheat-soaked glass, an untested sealant or a fixing nobody calculated, and the client cannot see any of it.**

The business's edge

- **Quotations built from measured openings**, so the price holds instead of becoming a variation argument.
- **Independent wind-load calculation** on every façade, which most competitors at this scale do not do at all.
- **Heat-soaked and laminated glass where the application demands it**, specified rather than value-engineered away.
- **Coating batches checked** against a retained standard before installation, not after complaint.
- **A metal-price variation clause**, so a long project is not an unhedged commodity position.
- **Disclosed residual risk**, which is uncomfortable at signature and decisive after an incident.

The competitive difficulty here is that this plan's disciplines are invisible in a quotation and expensive in it, which is a combination that loses tenders — so the response has to be commercial rather than indignant. A client comparing two quotations for the same elevation sees two numbers. He cannot see that one includes heat-soaked glass and the other does not, that one is laminated over the entrance canopy and the other is monolithic, that one carries an independently checked wind-load calculation and the other assumed a section that worked on a different building. The cheaper quotation is not cheating him in any way he could detect, and telling him "we use better quality" is an assertion competing with the same assertion at a lower price — exactly the position the plywood dealer faced on grade. Three answers work. **Quote to a written specification that names the glass type, the heat-soak status, the sealant system, the fixing design and the wind pressure assumed, so the comparison becomes item-by-item rather than number-against-number — most competitors cannot produce that document, and the ones who can are competing on the same terms. Sell the measured quotation as a commercial benefit rather than a technical one: a price built from real openings does not become a variation claim halfway through, which a developer who has been through that once will pay for. And decline the project where the client insists on a specification the engineering does not support — a façade contract won by omitting the calculation is a liability held for the life of the building.**

6. Fabrication, Tempering & the Measurement Question

Segment / element	Character	Economics
Structural glazing & curtain-wall façades	Engineering-led; the margin and the fatal risk together	30% → 42% of turnover
Aluminium windows & doors (new build)	Volume, rate-competitive, drawing-driven	48% → 40%; the segment most exposed to the cycle
Interior glazing, partitions, railings & shopfronts	Fit-out led; the cycle cushion	22% → 18%; faster payment, less cyclical

Replacement glazing (renovation)	Cash, repeat, retail in character	Held deliberately as a downturn base
Toughened glass after tempering	Cannot be cut, drilled or notched	A late change is a new pane, not a modification
Panes remade after a post-tempering change	The design-freeze metric	8.4% → 3.9% → 1.6%
Quotations from measured openings vs from drawings	Where the margin is won or lost	22% → 88%
Heat-soaked glass overhead / laminated over people	Reduces a risk it cannot eliminate	41% → 100% / 58% → 100%

Spontaneous breakage deserves a full and unflattering description, because it is the thing a client will remember and because the industry's habit of not mentioning it is what makes it unmanageable when it happens. Float glass occasionally contains microscopic nickel-sulphide particles. In annealed glass they are harmless. In toughened glass, which holds the surface in compression and the core in tension, such a particle can slowly change phase and expand until the stored energy releases and the pane disintegrates — with no impact, no defect of workmanship, and frequently years after installation. Nobody can look at a finished pane and say whether it contains one. Heat-soak testing holds the glass at elevated temperature to provoke vulnerable panes into failing in the oven rather than in a building, and it is effective — it does not, however, guarantee that no surviving pane will ever fail, and any supplier who says it does is describing a test that does not exist. This plan's position has three parts. Heat-soak everything toughened that goes overhead or into a structural application, moving from 41% to 100%, and price it in rather than offering it as an upgrade the client can decline. Specify laminated glass wherever a failure would drop glass onto people — canopies, balustrades, overhead glazing, street-facing façades — because laminated glass that breaks stays in its frame, and that, rather than heat-soaking, is the control that actually protects the person below. And disclose the residual risk in writing on every contract, moving from 0% to 100%, so that the conversation after a rare failure is about a known and managed characteristic of the material rather than about what the fabricator failed to mention.

7. Go-to-Market — the Architect, the Specification and the Metal Price

Acquisition

- **Architects and façade consultants**, who specify the system and increasingly the performance, and who decide before the contractor is appointed.
- **Developers and main contractors**, reached with measured quotations and a written specification rather than a rate.
- **Corporate fit-out and project management firms**, repeat buyers with short cycles and better payment.
- **Replacement and renovation demand**, reached locally and valuable as a cycle cushion.
- **System-supplier approvals**, which open premium work and carry their own technical discipline.

Retention

- **A price that holds**, because it was built from the building rather than the drawing.
- **Installation to programme**, since glazing sits on the critical path near handover.
- **Leak-free performance** through the first monsoon, which is when the client's opinion is actually formed.
- **Snagging closed rather than argued**, which is what releases retention.

Aluminium is priced on a global exchange and this business quotes fixed rates on projects that run for nine months, which makes every long contract an unhedged commodity position taken by somebody who is not a commodity trader. Sections are extruded from metal whose price is set in London and moves with global supply, energy costs and currency — none of which has anything to do with a housing project in an Indian district — and a fabricator who quotes a fixed rate in April against sections he will buy in November has taken a view whether or not he thinks of it that way. The risk runs both ways, exactly as the cement dealership found on steel: metal that falls leaves him holding expensive stock, and metal that rises leaves him honouring a rate against material he now buys dearer. The difference from the dealership is that the underlying price here is set several steps further away, so local judgement is worth even less. The plan's answer is contractual rather than financial. **A metal-price variation clause on contracts beyond a stated duration, indexed to a published reference, moving from 0% to 74% of contract value — which is normal in industrial supply and unusual in this trade only because clients have not been asked. Section requirements ordered and price-locked against confirmed contracts rather than bought speculatively, taking unhedged forward exposure from ₹1.24 crore to ₹38 lakh. And where a client refuses the clause, the exposure is priced into the rate explicitly rather than absorbed silently as a favour — the same discipline the cement dealership applied to long fixed-rate project commitments.**

8. Operations Plan (measure, design, fabricate, temper, install, seal)

- **Site measurement:** every opening physically measured at multiple points after the structure is complete, not taken from the drawing — because the building was built to tolerances nobody checked and the deviation is absorbed in this business's margin.
- **Design & engineering:** wind loads calculated per IS 875 Part 3 for every façade with independent checking, **fixings designed against pull-out in the actual substrate rather than assumed from a previous project.**
- **Design freeze:** all holes, notches, edges and dimensions settled and signed before glass is released to the furnace, since after tempering the pane cannot be altered and a change is a remake.
- **Glass specification:** heat-soak for overhead and structural applications; laminated wherever failure would drop glass onto people; thermal-stress checked where shading patterns or spandrel backing apply.
- **Aluminium:** sections ordered against confirmed contracts with price locked; **anodising and powder-coating batches inspected for thickness, adhesion and shade against a retained reference standard before fabrication, because coating is outsourced and is where this trade most often fails.**
- **Fabrication:** cutting, machining and assembly to jig; **drainage and pressure-equalisation details built as designed rather than as convenient, since these are what keep water out and are invisible once assembled.**
- **Handling & transport:** glass carried on edge in A-frames with interleaving; **breakage recorded by stage — workshop, transit, hoisting, installation — because the four have different causes and only one is a fabrication problem.**
- **Installation:** certified access equipment, hoists and suction lifters with trained crews; exclusion zones below; **this business works above occupied streets and treats that accordingly.**
- **Sealant:** structural silicone applied by trained applicators to a written procedure with batch numbers, substrate preparation and cure conditions recorded — **the joint that holds the glass to the building is a chemical bond made by hand and it cannot be inspected once cured.**
- **Water testing:** hose or spray testing on completed elevations before handover, **because the alternative is the first monsoon testing it in front of the client.**

- **Snagging & retention:** defects closed on a schedule, **since retention is released against snagging and is money most fabricators lose by inattention rather than by dispute.**

Control points

Area	Activity	Control point
The physical design freeze	Panes remade after post-tempering change / fabrication only on signed-off measurement	8.4% → 1.6% / 54% → 100%
Measure the building, not the drawing	Quotations from measured openings / rework from structural deviation	22% → 88% / 6.2% → 1.8%
Somebody could be killed	Façades with independent wind-load calculation / sealant by trained applicators with records	38% → 100% / 47% → 100%
A risk reduced, not eliminated	Heat-soaked overhead & structural / laminated over people / risk disclosed in writing	41% → 100% / 58% → 100% / 0% → 100%
The outsourced failure	Coating batches checked against a retained standard / shade-mismatch rework	30% → 100% / 3.1% → 0.6%
An unhedged position	Contracts with a metal-price variation clause / unhedged forward exposure	0% → 74% / ₹1.24cr → ₹38L
Money most fabricators lose by inattention	Retention recovered within the contract period	44% → 68% → 86%
Breakage & commercial	Breakage by stage · receivable days excl. retention · top-3 share	4.7% → 1.9% · 74 → 58 · 54% → 36%

Colour matching across a batch boundary is the third appearance of the same problem in this vertical, and by now it should be recognised as a category of risk rather than met freshly each time. The tiles showroom found it in shade lots fired in a kiln it did not own; the paint store found it in a tinting machine it did own and could calibrate; here it appears in anodising and powder-coating baths belonging to a subcontractor, where a second batch of sections coated three weeks later will not exactly match the first — and an elevation assembled from both will show a band that the client sees from the road. The fabricator neither owns the process nor can correct it after the fact, since stripping and recoating an installed section is a demolition of the installation around it. Three disciplines follow. Retain a physical reference sample for every project and check each incoming coating batch against it for shade, thickness and adhesion before fabrication rather than after installation, moving from 30% to 100%. Order coating for a whole elevation in a single batch wherever the programme allows, accepting a longer lead time in exchange for continuity — the same logic the tiles plan applied to shade lots. And where a second batch is unavoidable, agree the break line with the architect in advance — because a customer told beforehand is managing a constraint and the same customer told afterwards has been sold a defect, which is the rule this library set in the tiles plan and which holds unchanged here.

9. Standards, Safety & Site Compliance (India)

- **IS 875 Part 3 for wind loads** — the calculation that decides whether a façade stays on a building, and the one most routinely skipped on smaller projects in favour of what worked last time.

- **IS 2553 and the toughened-glass specifications, with heat-soak testing to the applicable standard for overhead and structural glazing;** laminated glass specified in critical locations.
- **National Building Code provisions on glazing, safety glass in critical locations and fire compartmentation at floor slabs,** plus city-specific façade approvals in several jurisdictions.
- **Anodising thickness to IS 1868 and powder-coating specification — both almost always outsourced, and the origin of this trade's commonest quality failure.**
- **BOCW registration and cess on installation scope; work-at-height, scaffolding, hoist and suspended-platform obligations with statutory certification of access equipment and lifting gear — this business works above occupied streets.**
- Factories Act registration for the workshop; SPCB consent where coating or processing is done in-house.
- **Product and public liability insurance as a working requirement rather than a compliance line, because the failure mode is a falling pane.**
- GST under works-contract treatment on composite supply-and-install; EPF and ESI across fabrication and site crews, **with contractor compliance where installation labour is engaged through agencies.**

10. Organisation & Manpower Plan

Role	Yr 1	Yr 2	Yr 3
Promoter / proprietor	1	1	2
Site installation supervisors & glaziers	6	9	13
Fabrication supervision & workshop	5	7	10
Design, estimation & detailing	4	6	8
Project management & client coordination	3	4	6
Accounts, credit control & admin	3	4	5
Site measurement & survey	2	3	5
Business development (architect & builder)	2	3	4
QC — glass, coating & sealant (reporting to the promoter)	2	3	4
Staff total	28	40	57

*Plus fabrication and installation crews carried in the labour cost line rather than in salaries: **45 → 100**. Total employment 73 → 157.*

Two allocations carry the plan. A dedicated site-measurement function of two rising to five is unusual in this trade and is the direct expression of its central discipline — most fabricators measure with whoever is free, after the order, and discover the building's deviations when the glass arrives. **And QC on glass, coating and sealant reports to the promoter rather than to production or projects**, the rule this library has applied to cancellation authority, credit limits, stock ageing, concrete cube results, block cure enforcement, hardware range review, panel grade testing, quarry boundary survey and precast bed release: **a control that reports to the party it constrains is not a control — and here the constrained party is the one whose elevation must be glazed this week.**

11. Implementation Timeline & Milestones

Phase	Timeline	Milestone
Setup	Month 0-4	Workshop leased with glass storage and A-frame handling, fabrication machinery commissioned, glass processing and heat-soak supply tied up with a tested processor, coating suppliers qualified against retained reference standards, wind-load checking arrangement established with an independent engineer, access equipment certified before the first site
Launch	Year 1	₹9.60cr turnover, ₹86L loss; façade 30%; measured quotations 22%; heat-soak on overhead 41%; wind-load checked 38%; retention recovery 44%; ROCE (14.6%)
Build	Year 2	Façade 36%; measured quotations 61%; heat-soak 78%; wind-load checked 74%; metal-price clause on 42% of contract value; ₹15.80cr turnover, near break-even; ROCE (0.6%)
Scale	Year 3	₹23.40cr turnover, ₹1.21cr profit; ROCE 15.9%; façade 42%; measured quotations 88%; heat-soak and laminated-over-people at 100%; wind-load checked 100%; sealant records 100%; risk disclosed 100%; retention recovery 86%

12. Financial Plan (Illustrative)

All figures are illustrative model assumptions for an Indian context, shown so the promoter can replace them with live rates. **Measured estimation, rework and retention recovery are the levers. Headline rate is barely one, because two quotations for the same elevation are not quotations for the same thing.**

12.1 Project cost & means of finance

Capital requirement	₹
Fabrication machinery (cutting, CNC, crimping, glazing line, edge processing)	1,68,00,000
Working capital (WIP, material stock, receivables & retention)	1,42,00,000
Workshop fit-out, racking, glass storage & handling	62,00,000
Launch & initial operating losses	56,00,000
Access equipment, hoists, suction lifters & site tools	48,00,000
Delivery vehicles (glass-carrying)	34,00,000
Workshop & yard deposits	32,00,000
Design, estimation & engineering software setup	16,00,000
Testing, mock-up & certification	14,00,000
Legal, licences & registrations	8,00,000
Total project cost	5,80,00,000
Cash-credit / working-capital limit	2,20,00,000
Promoter contribution	2,00,00,000
Term loan (machinery, workshop & vehicles)	1,60,00,000

12.2 Projected Profit & Loss (3 years)

Particulars	Year 1	Year 2	Year 3
TURNOVER (net of GST)	9,60,00,000	15,80,00,000	23,40,00,000
— Structural glazing & façades	2,88,00,000	5,69,00,000	9,83,00,000
— Aluminium windows & doors (new build)	4,61,00,000	7,11,00,000	9,36,00,000
— Interior glazing, partitions, railings & replacement	2,11,00,000	3,00,00,000	4,21,00,000
Materials (glass, aluminium sections, hardware, sealants, coatings)	6,53,00,000	10,35,00,000	14,74,00,000
Gross margin	3,07,00,000	5,45,00,000	8,66,00,000
Gross margin %	32.0%	34.5%	37.0%
Fabrication & installation labour	1,04,00,000	1,58,00,000	2,24,00,000
Salaries (design, estimation, projects, measurement, QC, admin)	62,00,000	84,00,000	1,12,00,000
Site transport, access equipment, hoists & scaffolding	36,00,000	56,00,000	82,00,000
Finance cost (cash credit on WIP, receivables & retention)	34,00,000	44,00,000	56,00,000
Rework: remakes, breakage & shade mismatch	32,00,000	38,00,000	44,00,000
Depreciation (machinery, workshop, access equipment, vehicles)	26,00,000	30,00,000	36,00,000
Workshop rent, power & consumables	24,00,000	32,00,000	42,00,000
Bad debt, retention written off & liquidated damages	20,00,000	28,00,000	38,00,000
Insurance (product & public liability), admin & compliance	16,00,000	22,00,000	30,00,000
Design, wind-load calculation & independent checking	14,00,000	20,00,000	28,00,000
Marketing, architect & builder engagement	12,00,000	18,00,000	26,00,000
Testing, QC & heat-soak	8,00,000	12,00,000	18,00,000
Technology (design, estimation, project software)	5,00,000	7,00,000	9,00,000
Total expenses	3,93,00,000	5,49,00,000	7,45,00,000
Net profit / (loss) before tax	(86,00,000)	(4,00,000)	1,21,00,000
Net margin (on turnover)	(8.96%)	(0.25%)	5.17%
AVERAGE CAPITAL EMPLOYED	5,90,00,000	6,60,00,000	7,60,00,000
RETURN ON CAPITAL EMPLOYED	(14.6%)	(0.6%)	15.9%
PANES REMADE AFTER POST-TEMPERING CHANGE	8.4%	3.9%	1.6%
Fabrication started only on dimensionally signed-off measurement	54%	82%	100%
QUOTATIONS FROM MEASURED OPENINGS / rework from structural deviation	22% / 6.2%	61% / 3.4%	88% / 1.8%
FAÇADES WITH INDEPENDENT WIND-LOAD CALCULATION	38%	74%	100%

Structural sealant by trained applicators with batch & cure records	47%	81%	100%
HEAT-SOAKED OVERHEAD & STRUCTURAL / LAMINATED OVER PEOPLE / risk disclosed in writing	41% / 58% / 0%	78% / 84% / 100%	100% / 100% / 100%
Coating batches checked against retained standard / shade-mismatch rework	30% / 3.1%	72% / 1.4%	100% / 0.6%
CONTRACTS WITH A METAL-PRICE VARIATION CLAUSE / unhedged forward exposure	0% / ₹1,24,00,000	42% / ₹78,00,000	74% / ₹38,00,000
RETENTION OUTSTANDING (% of turnover) / recovered within contract period	7.8% / 44%	6.5% / 68%	5.4% / 86%
Breakage by stage (total) · receivable days excl. retention · top-3 share	4.7% · 74 · 54%	2.9% · 66 · 45%	1.9% · 58 · 36%

12.3 Unit economics & break-even

- Rework is the largest controllable item in this P&L and it originates almost entirely upstream of the workshop. Remakes after a post-tempering change, breakage, and shade mismatch together run ₹32 lakh in Year 1 on ₹9.60 crore of turnover — and the fixes are a measurement discipline, a design freeze and a coating check, none of which requires capital.
- Quoting from drawings instead of from measured openings is the industry's default and is a systematic transfer of the structure's inaccuracy into the fabricator's margin. Rework attributable to structural deviation falls from 6.2% to 1.8% of production value, which on Year-3 turnover is worth more than the entire wind-load, testing and heat-soak programme costs.
- Retention is real money that most fabricators treat as an accounting curiosity. At 7.8% of turnover held for twelve months after completion, it is larger than the Year-1 loss — and recovery moves from 44% to 86% through snagging closed on a schedule rather than argued about later.
- Break-even: Year 3, and Year 2 is a near-miss rather than a profit. A glazing contractor's ramp is slow because the first façade references have to be built before the second ones are awarded, and a proposal showing Year-1 profit is describing a business that inherited a client list.
- Façade share rising from 30% to 42% raises both the return and the fatal exposure in one movement, which is why the wind-load, sealant and laminated-glass controls reach 100% in the same year the mix does.

12.4 Projected Cash Flow — Year 1 (quarterly, illustrative)

Particulars (₹)	Q1	Q2 monsoon	Q3	Q4
Opening balance	62,00,000	44,00,000	28,00,000	20,00,000
Collections from customers	2,08,00,000	1,94,00,000	2,36,00,000	2,48,00,000
Payments to suppliers, labour, site costs, interest & overheads	2,26,00,000	2,10,00,000	2,44,00,000	2,58,00,000
Closing balance	44,00,000	28,00,000	20,00,000	10,00,000

Retention is the cash feature that distinguishes this business from every trading operation in this vertical, and it is consistently underestimated because it does not appear in a receivable-days figure. Five to ten per cent of each contract is withheld by the client until a defect-liability period expires, typically twelve months after completion — so at any moment this business has a year's worth of retentions outstanding, 7.8% of turnover

in Year 1, which is larger than that year's loss. It is unsecured, it is released only when snagging is closed, and a great deal of it is never collected at all — not because it is disputed but because the fabricator moved on, the client's project team dispersed, and nobody chased it. Three consequences run through the plan. **First, the working-capital limit must be sized to include retention, because a facility calculated on invoiced receivables alone will be short by roughly a month of turnover. Second, snagging is closed on a schedule and documented, since retention is released against a list and the fabricator who returns promptly with photographs collects while the one who argues does not — recovery within the contract period rises from 44% to 86%. Third, the monsoon quarter behaves as it did for the precast plant rather than for the rest of the vertical: workshop fabrication continues under a roof while site installation slows, because sealant will not cure in the wet and working at height in wind is unsafe — so production and billing decouple for a quarter, and a facility sized on the vertical's usual seasonal pattern will be wrong here too.**

12.5 Key Performance Indicators to Monitor

- **The design freeze:** panes remade after post-tempering change; fabrication released only on signed-off measurement; change orders received after glass release.
- **Measured reality:** quotations from measured openings; rework attributable to structural deviation; variation value against contract value.
- **Life safety:** façades with independent wind-load calculation; sealant applicator training and batch/cure records; heat-soak coverage; laminated specification where failure would drop glass on people; work-at-height near misses recorded — a metric that is supposed to rise.
- **The outsourced process:** coating batches checked for shade, thickness and adhesion; shade-mismatch rework; single-batch elevation coverage.
- **Commercial:** metal-price variation clause coverage and unhedged forward exposure; retention outstanding and recovered within contract period; receivable days excluding retention; concentration; breakage by stage.

13. Funding Requirement & Bankability

Total ask: **₹1.60 crore term loan plus a ₹2.20 crore cash-credit limit** against ₹2.00 crore promoter contribution. Four points. **First, the working-capital limit must be sized against WIP plus receivables plus retention, not against invoiced receivables alone — retention is roughly a month of turnover permanently outstanding and a facility that ignores it will be short by exactly that amount every year. Second, the security position is modest and should be read as such: fabrication machinery is specialised with a thin secondary market, glass and section stock is largely allocated to live contracts, and there is no land in this project — so this is a cash-flow lend against contracts rather than an asset lend, and contract quality matters more than collateral. Third, the diagnostic questions are measurement and rework, not turnover. A fabricator who can state what share of his quotations came from measured openings, what his remake rate is and what his retention recovery looks like is running the business; one who quotes order book and capacity is quoting the part that is easiest to win and hardest to keep. Fourth, and specific to this trade: ask whether wind loads are calculated and by whom. A façade contractor without an independent calculation on his elevations carries a contingent liability that does not appear anywhere in his accounts and will not appear until a pane comes off a building — at which point it is not a commercial exposure, it is a criminal one.**

13.1 Funding utilisation

Use of funds	₹	% of total
Fabrication machinery (cutting, CNC, crimping, glazing line, edge processing)	1,68,00,000	29.0%

Working capital (WIP, material stock, receivables & retention)	1,42,00,000	24.5%
Workshop fit-out, racking, glass storage & handling	62,00,000	10.7%
Launch & initial operating losses	56,00,000	9.7%
Access equipment, hoists, suction lifters & site tools	48,00,000	8.3%
Delivery vehicles (glass-carrying)	34,00,000	5.9%
Workshop & yard deposits	32,00,000	5.5%
Design, estimation & engineering software setup	16,00,000	2.8%
Testing, mock-up & certification	14,00,000	2.4%
Legal, licences & registrations	8,00,000	1.2%
Total	5,80,00,000	100%

14. Risk Analysis & Mitigation

Risk	Mitigation
Toughened glass cannot be cut after the furnace	EVERY EDGE, HOLE, CUT-OUT AND DIMENSION MUST BE SETTLED BEFORE THE PANE ENTERS THE FURNACE, BECAUSE AFTERWARDS THE GLASS SHATTERS RATHER THAN YIELDS. A HANDLE MOVED FORTY MILLIMETRES, A HINGE RELOCATED OR A DIMENSION CORRECTED ON SITE IS NOT A MODIFICATION — IT IS A NEW PANE, REMADE FROM RAW STOCK AT FULL COST AND FULL LEAD TIME. THE DESIGN FREEZE IN THIS TRADE IS A PHYSICAL EVENT RATHER THAN A CONTRACTUAL ONE, AND A FABRICATOR WHO TREATS IT AS A CLAUSE TO BE NEGOTIATED IS DESCRIBING A PROCESS THAT DOES NOT EXIST. THIS IS THE PRECAST PLANT'S RELEASED-FOR-CONSTRUCTION DISCIPLINE IN A HARDER FORM — A PRECAST ELEMENT CAN AT LEAST BE RE-CAST FROM THE SAME MOULD; A TOUGHENED PANE IS A ONE-OFF CUT THAT CANNOT BE SALVAGED → all holes, notches, edges and dimensions signed before glass is released to the furnace; fabrication started only against dimensionally signed-off measurement (54%→100%); change orders after glass release priced as remakes rather than absorbed (panes remade 8.4%→1.6%)
Fabricated to millimetres, installed onto a building built to nothing of the sort	THE DRAWING SAYS THE OPENING IS 1,500 MILLIMETRES. IT IS 1,478 AT THE SILL AND 1,509 AT THE HEAD, OUT OF PLUMB ACROSS ITS HEIGHT, AND NOBODY CHECKED BECAUSE NOBODY IN THE CONCRETE TRADE WAS EVER ASKED TO WORK TO THAT ACCURACY. THE FABRICATOR ABSORBS THAT DEVIATION INSIDE HIS OWN TOLERANCE AND HIS OWN MARGIN — WHICH IS PRECISELY WHY THE TRADE'S HABIT OF QUOTING FROM DRAWINGS AND MEASURING AFTERWARDS IS WHERE THE MONEY IN THIS BUSINESS IS LOST, AND IT IS A SYSTEMATIC TRANSFER OF THE STRUCTURE'S INACCURACY INTO THE FABRICATOR'S MARGIN → every opening physically measured at multiple points AFTER the structure is complete, with a dedicated survey function of two rising to five; the drawing used for a budget figure and the contract carrying an AGREED VARIATION MECHANISM AGAINST MEASUREMENT, BECAUSE THE ALTERNATIVE IS DISCOVERING A THIRTY-MILLIMETRE DISCREPANCY AFTER THE GLASS HAS BEEN THROUGH THE FURNACE (measured quotations 22%→88%; rework from structural deviation 6.2%→1.8%, worth more on Year-3 turnover than the entire wind-load, testing and heat-soak programme costs)

Toughened glass breaks by itself, and no supplier can promise otherwise	FLOAT GLASS OCCASIONALLY CONTAINS MICROSCOPIC NICKEL-SULPHIDE PARTICLES. IN ANNEALED GLASS THEY ARE HARMLESS; IN TOUGHENED GLASS, WHICH HOLDS THE SURFACE IN COMPRESSION AND THE CORE IN TENSION, SUCH A PARTICLE CAN SLOWLY CHANGE PHASE AND EXPAND UNTIL THE STORED ENERGY RELEASES AND THE PANE DISINTEGRATES — WITH NO IMPACT, NO DEFECT OF WORKMANSHIP AND FREQUENTLY YEARS AFTER INSTALLATION. NOBODY CAN LOOK AT A FINISHED PANE AND SAY WHETHER IT CONTAINS ONE. HEAT-SOAK TESTING PROVOKES VULNERABLE PANES INTO FAILING IN THE OVEN RATHER THAN IN A BUILDING AND IS EFFECTIVE — IT DOES NOT GUARANTEE THAT NO SURVIVING PANE WILL EVER FAIL, AND A FABRICATOR WHO ASSURES A CLIENT THAT TOUGHENED GLASS NEVER BREAKS BY ITSELF IS MAKING A CLAIM THE PHYSICS DOES NOT SUPPORT — THE SAME CATEGORY OF PROMISE AS A GUARANTEED VISA OUTCOME, AND IT WILL BE REMEMBERED WHEN A PANE FAILS → heat-soak on ALL toughened glass overhead and structural, priced in rather than offered as a declinable upgrade (41%→100%); LAMINATED RATHER THAN MONOLITHIC WHEREVER A FAILURE WOULD DROP GLASS ONTO PEOPLE, BECAUSE LAMINATED GLASS THAT BREAKS STAYS IN ITS FRAME — AND THAT, NOT HEAT-SOAKING, IS THE CONTROL THAT ACTUALLY PROTECTS THE PERSON BELOW (58%→100%); and the residual risk disclosed IN WRITING on every contract (0%→100%), SO THE CONVERSATION AFTER A RARE FAILURE IS ABOUT A KNOWN AND MANAGED CHARACTERISTIC OF THE MATERIAL RATHER THAN ABOUT WHAT THE FABRICATOR FAILED TO MENTION
The consequence of failure is a death, not a claim	A FAÇADE PANE LEAVING A FOURTH-FLOOR ELEVATION IS LETHAL TO WHOEVER IS BENEATH IT, AND THE MECHANISMS THAT RELEASE IT — UNDER-DESIGNED FIXINGS, WIND LOADS NEVER CALCULATED, STRUCTURAL SEALANT APPLIED BY AN UNTRAINED HAND OR CURED WRONG — ARE ALL DECISIONS TAKEN QUIETLY IN A WORKSHOP MONTHS EARLIER BY PEOPLE WHO WILL NEVER SEE THE STREET. THIS IS THE ADVENTURE-TOURISM CONVENTION IN A NEW INDUSTRY: THE CUSTOMER CAN BE KILLED, AND THE FAILURE IS INVISIBLE UNTIL IT IS TOTAL. THE JOINT THAT HOLDS THE GLASS TO THE BUILDING IS A CHEMICAL BOND MADE BY HAND AND IT CANNOT BE INSPECTED ONCE CURED → wind loads calculated per IS 875 Part 3 with INDEPENDENT checking on every façade (38%→100%); fixings designed against pull-out in the ACTUAL substrate rather than assumed from a previous project; structural silicone applied by TRAINED APPLICATORS to a written procedure with batch numbers, substrate preparation and cure conditions recorded (47%→100%); certified access equipment, hoists and suction lifters with exclusion zones below; and NEAR MISSES RECORDED AS A METRIC THAT IS SUPPOSED TO RISE, SINCE AN OPERATION REPORTING NONE IS NOT SAFER, IT IS NOT RECORDING
The disciplines are invisible in a quotation and expensive in it	A CLIENT COMPARING TWO QUOTATIONS FOR THE SAME ELEVATION SEES TWO NUMBERS. HE CANNOT SEE THAT ONE INCLUDES HEAT-SOAKED GLASS AND THE OTHER DOES NOT, THAT ONE IS LAMINATED OVER THE ENTRANCE CANOPY AND THE OTHER MONOLITHIC, THAT ONE CARRIES AN INDEPENDENTLY CHECKED WIND-LOAD CALCULATION AND THE OTHER ASSUMED A SECTION THAT WORKED ON A DIFFERENT BUILDING. THE CHEAPER QUOTATION IS NOT CHEATING HIM IN ANY WAY HE COULD DETECT, AND "WE USE BETTER QUALITY" IS AN ASSERTION COMPETING WITH THE SAME ASSERTION AT A LOWER PRICE — EXACTLY THE POSITION THE PLYWOOD DEALER FACED ON GRADE → quote to a WRITTEN SPECIFICATION naming glass type, heat-soak status, sealant system, fixing design and wind pressure assumed, SO THE COMPARISON BECOMES ITEM-BY-ITEM RATHER THAN NUMBER-AGAINST-NUMBER — MOST COMPETITORS CANNOT PRODUCE THAT DOCUMENT AND THE ONES WHO CAN ARE COMPETING ON THE SAME TERMS; sell the measured quotation as a COMMERCIAL benefit, since a price built from real openings does not become a variation claim halfway through; and DECLINE THE PROJECT WHERE THE CLIENT INSISTS ON A SPECIFICATION THE ENGINEERING DOES NOT SUPPORT, BECAUSE A FAÇADE CONTRACT WON BY OMITTING THE CALCULATION IS A LIABILITY HELD FOR THE LIFE OF THE BUILDING

An unhedged commodity position taken by somebody who is not a trader	SECTIONS ARE EXTRUDED FROM METAL WHOSE PRICE IS SET ON A GLOBAL EXCHANGE AND MOVES WITH SUPPLY, ENERGY COSTS AND CURRENCY — NONE OF WHICH HAS ANYTHING TO DO WITH A HOUSING PROJECT IN AN INDIAN DISTRICT — AND A FABRICATOR WHO QUOTES A FIXED RATE IN APRIL AGAINST SECTIONS HE WILL BUY IN NOVEMBER HAS TAKEN A VIEW WHETHER OR NOT HE THINKS OF IT THAT WAY. THE RISK RUNS BOTH WAYS AS THE CEMENT DEALERSHIP FOUND ON STEEL — METAL THAT FALLS LEAVES HIM HOLDING EXPENSIVE STOCK, METAL THAT RISES LEAVES HIM HONOURING A RATE AGAINST DEARER MATERIAL — AND THE DIFFERENCE IS THAT THE PRICE HERE IS SET SEVERAL STEPS FURTHER AWAY, SO LOCAL JUDGEMENT IS WORTH EVEN LESS → a METAL-PRICE VARIATION CLAUSE on contracts beyond a stated duration, indexed to a published reference (0%→74% of contract value), WHICH IS NORMAL IN INDUSTRIAL SUPPLY AND UNUSUAL IN THIS TRADE ONLY BECAUSE CLIENTS HAVE NOT BEEN ASKED; sections ordered and price-locked against CONFIRMED contracts rather than bought speculatively (unhedged exposure ₹1.24cr→₹38L); and where a client refuses the clause, THE EXPOSURE PRICED INTO THE RATE EXPLICITLY RATHER THAN ABSORBED SILENTLY AS A FAVOUR
Colour across a batch boundary — the vertical's third instance	THE TILES SHOWROOM FOUND IT IN SHADE LOTS FIRED IN A KILN IT DID NOT OWN; THE PAINT STORE FOUND IT IN A TINTING MACHINE IT DID OWN AND COULD CALIBRATE; HERE IT APPEARS IN ANODISING AND POWDER-COATING BATHS BELONGING TO A SUBCONTRACTOR, WHERE A SECOND BATCH COATED THREE WEEKS LATER WILL NOT EXACTLY MATCH THE FIRST — AND AN ELEVATION ASSEMBLED FROM BOTH SHOWS A BAND THE CLIENT SEES FROM THE ROAD. THE FABRICATOR NEITHER OWNS THE PROCESS NOR CAN CORRECT IT AFTERWARDS, SINCE STRIPPING AND RECOATING AN INSTALLED SECTION IS A DEMOLITION OF THE INSTALLATION AROUND IT → a physical REFERENCE SAMPLE retained per project with every incoming coating batch checked for shade, thickness and adhesion BEFORE fabrication rather than after installation (30%→100%); coating for a whole elevation ordered in a single batch wherever the programme allows, accepting a longer lead time for continuity; and where a second batch is unavoidable, THE BREAK LINE AGREED WITH THE ARCHITECT IN ADVANCE — BECAUSE A CUSTOMER TOLD BEFOREHAND IS MANAGING A CONSTRAINT AND THE SAME CUSTOMER TOLD AFTERWARDS HAS BEEN SOLD A DEFECT, THE RULE THIS LIBRARY SET IN THE TILES PLAN AND WHICH HOLDS UNCHANGED HERE (shade-mismatch rework 3.1%→0.6%)
Retention, cycle position & compliance	RETENTION IS REAL MONEY MOST FABRICATORS TREAT AS AN ACCOUNTING CURIOSITY: FIVE TO TEN PER CENT OF EVERY CONTRACT WITHHELD FOR TWELVE MONTHS AFTER COMPLETION, SO A YEAR'S WORTH IS ALWAYS OUTSTANDING — 7.8% OF TURNOVER IN YEAR 1, LARGER THAN THAT YEAR'S LOSS — UNSECURED, AND A GREAT DEAL OF IT NEVER COLLECTED AT ALL, NOT BECAUSE IT IS DISPUTED BUT BECAUSE THE FABRICATOR MOVED ON, THE CLIENT'S PROJECT TEAM DISPERSED AND NOBODY CHASED IT → the limit sized to include retention, since a facility on invoiced receivables alone will be short by roughly a month of turnover; snagging closed on a SCHEDULE and documented, because THE FABRICATOR WHO RETURNS PROMPTLY WITH PHOTOGRAPHS COLLECTS AND THE ONE WHO ARGUES DOES NOT (recovery 44%→86%). LATE-CYCLE LIKE THE PANEL TRADE — INSTALLED AFTER THE STRUCTURE IS FINISHED, SO A FABRICATOR WATCHING CEMENT AND RMC VOLUMES SOFTEN IS WATCHING HIS OWN NEXT YEAR, with interior and replacement glazing held deliberately as the cycle cushion. Compliance: IS 875 Part 3, IS 2553 and toughened-glass specifications, NBC glazing and safety-glass provisions, IS 1868 anodising thickness, BOCW cess and work-at-height obligations, statutory certification of access and lifting equipment, AND PRODUCT AND PUBLIC LIABILITY INSURANCE AS A WORKING REQUIREMENT RATHER THAN A COMPLIANCE LINE, BECAUSE THE FAILURE MODE IS A FALLING PANE

15. SWOT Analysis

Strengths Quotations built from measured openings, so the price holds instead of becoming a variation argument; independent wind-load calculation on every façade, which most competitors at this scale do not do at all; heat-soaked and laminated glass specified rather than value-engineered away, with residual risk disclosed in writing; coating batches checked against a retained standard before installation; a metal-price variation clause; QC reporting to the promoter.	Weaknesses Disciplines that are invisible in a quotation and expensive in it; a slow ramp with break-even only in Year 3; retention of 7.8% of turnover permanently outstanding and unsecured; specialised machinery with a thin secondary market and no land in the project; margin exposed to a structure's inaccuracy and to a metal priced on a global exchange; a coating process the business neither owns nor can correct.
Opportunities High-rise development where the glazed envelope is the design norm; corporate and retail fit-out, faster-paying and less cyclical; replacement of steel and timber windows in renovation as a genuine downturn base; energy-code pressure moving specification toward performance glass and thermally broken sections; architect and façade-consultant specification, which rewards exactly this plan's engineering position; system-supplier approvals opening premium work.	Threats A large tail of small fabricators quoting from drawings without wind-load calculations, on rates that are not comparable; a pane coming off a building, which is a criminal exposure rather than a commercial one; aluminium price movement against fixed-rate contracts; a coating batch mismatch discovered after installation; late-cycle downturn arriving after the warning signs have passed; retention never collected.

16. Recommended AiSevak Tools for This Business

This business would use AiSevak's Build Materials vertical tools in operations:

- **The design freeze: measurement sign-off gate before glass release to the furnace, remake register by cause, change-order-after-release pricing, tempering release log.**
- **Measured estimation: site-measurement capture at multiple points per opening, drawing-versus-measured variance reporting, quotation source tracking, variation mechanism against measured reality.**
- **Life safety: wind-load calculation register with independent-check status per façade, fixing pull-out test records, sealant applicator qualification with batch and cure logs, heat-soak and laminated-specification coverage, access-equipment certification calendar, near-miss register.**
- **The outsourced process:** reference-sample library per project, incoming coating batch checks for shade, thickness and adhesion, single-batch elevation planner, shade-mismatch rework log.
- **Commercial:** metal-price variation clause coverage and unhedged forward exposure, retention register with snagging schedule and recovery tracking, receivable ageing excluding retention, breakage-by-stage analysis, concentration monitor.

17. Key Assumptions & Notes

- Glass & aluminium fabrication: workshop-and-site business designing, fabricating and installing aluminium windows and doors, structural glazing and curtain-wall façades, glass partitions, railings and shopfronts for developers, builders, architects, corporate fit-outs and institutional clients. **Ninth plan in the build-materials vertical; FABRICATION/CONTRACTING sub-model, closest to prefab-panels-mfg and using its design-stage and installation-scope logic rather than the trading conventions.**

- **△ CONVENTIONS SET HERE: (a) TOUGHENED GLASS CANNOT BE CUT, DRILLED OR NOTCHED AFTER TEMPERING, SO THE DESIGN FREEZE IS A PHYSICAL EVENT RATHER THAN A CONTRACTUAL ONE — THE PRECAST RELEASED-FOR-CONSTRUCTION RULE IN A HARDER FORM, SINCE A PRECAST ELEMENT CAN BE RE-CAST FROM THE SAME MOULD AND A TOUGHENED PANE CANNOT BE SALVAGED. (b) FABRICATED TO MILLIMETRES AND INSTALLED ONTO A BUILDING BUILT TO NOTHING OF THE SORT — MEASURE THE BUILDING, NOT THE DRAWING, BECAUSE QUOTING FROM DRAWINGS IS A SYSTEMATIC TRANSFER OF THE STRUCTURE'S INACCURACY INTO THE FABRICATOR'S MARGIN. (c) TOUGHENED GLASS BREAKS BY ITSELF FROM NICKEL-SULPHIDE INCLUSION — RARE, REAL, NOT A WORKMANSHIP DEFECT, REDUCED BUT NOT ELIMINATED BY HEAT-SOAKING; DISCLOSE IT IN WRITING, AND USE LAMINATED GLASS WHERE FAILURE WOULD DROP GLASS ON PEOPLE, BECAUSE THAT AND NOT HEAT-SOAKING IS WHAT PROTECTS THE PERSON BELOW. (d) THE CONSEQUENCE OF FAILURE IS A DEATH, NOT A CLAIM — THE ADVENTURE-TOURISM CONVENTION IN A NEW INDUSTRY, ANSWERED WITH INDEPENDENT WIND-LOAD CALCULATION AND TRAINED SEALANT APPLICATION MEASURED AS LEADING INDICATORS. (e) ALUMINIUM IS PRICED ON A GLOBAL EXCHANGE, SO A LONG FIXED-RATE CONTRACT IS AN UNHEDGED COMMODITY POSITION TAKEN BY SOMEBODY WHO IS NOT A TRADER — ANSWERED CONTRACTUALLY WITH A VARIATION CLAUSE, NOT FINANCIALLY. (f) RETENTION IS ROUGHLY A MONTH OF TURNOVER PERMANENTLY OUTSTANDING AND IS MOST OFTEN LOST TO INATTENTION RATHER THAN DISPUTE.**
- **□ COLOUR ACROSS A BATCH BOUNDARY IS NOW THE VERTICAL'S THIRD INSTANCE AND SHOULD BE TREATED AS A RECOGNISED CATEGORY RATHER THAN MET FRESHLY: TILES (a kiln the shop did not own), PAINT TINTING (a machine the shop did own and could calibrate), AND COATING (a subcontractor's bath the fabricator neither owns nor can correct after installation). THE CONTROL IS THE SAME IN ALL THREE — RETAIN A REFERENCE, ORDER THE WHOLE REQUIREMENT IN ONE LOT WHERE POSSIBLE, AND WHERE A BREAK IS UNAVOIDABLE AGREE ITS LOCATION IN ADVANCE, BECAUSE A CUSTOMER TOLD BEFOREHAND IS MANAGING A CONSTRAINT AND THE SAME CUSTOMER TOLD AFTERWARDS HAS BEEN SOLD A DEFECT.**
- **Economics & cash — REWORK IS THE LARGEST CONTROLLABLE ITEM AND ORIGINATES ALMOST ENTIRELY UPSTREAM OF THE WORKSHOP; THE FIXES ARE A MEASUREMENT DISCIPLINE, A DESIGN FREEZE AND A COATING CHECK, NONE OF WHICH REQUIRES CAPITAL (Y1 -₹86L → Y3 ₹1.21cr; net margin -8.96%→5.17%; gross margin 32.0%→37.0%; ROCE (14.6%)→(0.6%)→15.9%; façade share 30%→42%, WHICH RAISES THE RETURN AND THE FATAL EXPOSURE IN ONE MOVEMENT, WHICH IS WHY THE WIND-LOAD, SEALANT AND LAMINATED-GLASS CONTROLS REACH 100% IN THE SAME YEAR THE MIX DOES; receivables excluding retention 74→58 days; BREAK-EVEN IN YEAR 3 WITH YEAR 2 A NEAR-MISS RATHER THAN A PROFIT, BECAUSE THE FIRST FAÇADE REFERENCES MUST BE BUILT BEFORE THE SECOND ONES ARE AWARDED — A PROPOSAL SHOWING YEAR-1 PROFIT IS DESCRIBING A BUSINESS THAT INHERITED A CLIENT LIST; monsoon behaves as it does for precast rather than for the rest of the vertical, since workshop fabrication continues under a roof while site installation slows because sealant will not cure in the wet and working at height in wind is unsafe). Regulatory: IS 875 PART 3 WIND LOADS — THE CALCULATION THAT DECIDES WHETHER A FAÇADE STAYS ON A BUILDING AND THE ONE MOST ROUTINELY SKIPPED IN FAVOUR OF WHAT WORKED LAST TIME; IS 2553 and toughened-glass specifications with heat-soak testing for overhead and structural applications; NBC glazing, safety-glass and floor-slab compartmentation provisions plus city-specific façade approvals; IS 1868 ANODISING THICKNESS AND POWDER-COATING SPECIFICATION, BOTH ALMOST ALWAYS OUTSOURCED AND THE ORIGIN OF THIS TRADE'S COMMONEST QUALITY FAILURE; BOCW registration and cess, work-at-height, scaffolding, hoist and suspended-platform obligations with statutory certification of access and lifting gear; Factories Act and SPCB where processing is in-house; PRODUCT AND PUBLIC LIABILITY INSURANCE AS A WORKING REQUIREMENT RATHER THAN A COMPLIANCE LINE; works-contract GST; EPF/ESI with contractor compliance on agency labour. Lender note: THE LIMIT MUST BE SIZED AGAINST WIP PLUS RECEIVABLES PLUS RETENTION — RETENTION IS ROUGHLY A MONTH OF TURNOVER PERMANENTLY OUTSTANDING AND A FACILITY IGNORING IT WILL BE SHORT BY EXACTLY THAT EVERY YEAR**

THE SECURITY POSITION IS MODEST — SPECIALISED MACHINERY WITH A THIN SECONDARY MARKET, STOCK ALLOCATED TO LIVE CONTRACTS AND NO LAND — SO THIS IS A CASH-FLOW LEND AGAINST CONTRACTS RATHER THAN AN ASSET LEND, AND CONTRACT QUALITY MATTERS MORE THAN COLLATERAL; ASK FOR MEASUREMENT AND REWORK, NOT TURNOVER — A FABRICATOR WHO CAN STATE HIS MEASURED-QUOTATION SHARE, HIS REMAKE RATE AND HIS RETENTION RECOVERY IS RUNNING THE BUSINESS; ONE WHO QUOTES ORDER BOOK AND CAPACITY IS QUOTING THE PART THAT IS EASIEST TO WIN AND HARDEST TO KEEP; and ASK WHETHER WIND LOADS ARE CALCULATED AND BY WHOM, BECAUSE A FAÇADE CONTRACTOR WITHOUT AN INDEPENDENT CALCULATION CARRIES A CONTINGENT LIABILITY THAT APPEARS NOWHERE IN HIS ACCOUNTS AND WILL NOT APPEAR UNTIL A PANE COMES OFF A BUILDING — AT WHICH POINT IT IS NOT A COMMERCIAL EXPOSURE, IT IS A CRIMINAL ONE. ₹5.80cr, turnover 9.60→23.40cr, 73→157 total employment, façade 30%→42%, ROCE (14.6%)→15.9%. Figures illustrative, exclude GST.

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