AKB Glass Systems

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INNOPOLIS GVRC, ATRIUM FAÇADE_ HYDERABAD - TENDER STAGE FAÇADE BOQ					Date :- 28.12.2023
S.No	Description	Unit	Total Area	Unit Rate	Total Amount
A	**Structural Glazed Semi Unitized Curtainwall Facade:**				
	Structural Glazed Semi Unitized Curtain wall Facade System: Design, Engineer,fabricate, package, deliver (to Job site) and install Semi Unitized Curtain Wall Structural glazed system with Brackets [Curtainwall system only without glass, refer BOQ item A.2 & A.3 for Vision & Spandrel glasses quoted separately]. The Main Frame and Sub Frame to Designed for Kpa Normal 1.11 and 1.6 Kpa Critical wind loads provide adequate toggle cleats to the subframe based on Glass Panel size as per Structural Adequacy The glass panels comprising of 24mm DGU for Vision and 6mm for SGU Spandrel Glass are to be glazed to Subframe frame with Double side adhesive foam Spacer tape (Norton / Approved Equivalent) and structural silicone of Dow corning / GE make, wherever applicable with all approved standard accessories and hardwares. The main frame to be designed as Rainscreen with provision of EPDM gaskets having 3 barrier gaskets against air and water leakage. The Bracketing at Floor and Ceiling levels to be with Sleeve to accommodate building movements, thermal expansions and the seismic movements. All facade envelope and Interface closures with FR Class A Grade ACP or 2mm Thick SDP Coated Aluminium Sheet No extra claims shall be entertained at any stage for aluminiumll profile wall thickness / size dimensions / Seals / Trims / Flashing / Smoke & Fire Seal etc once approved by the Architect. The Contractor shall be responsible for the detailed engineering design development and the provision of all plant, labour, material, fabrication, assembly, transportation, installation, coordination with adjacent and abutting construction, and any other endeavour necessary to provide complete curtain wall.				
	The Scope includes provision of the following in the Semi Unitized Curtainwall System 1. Fixing of coping at Terrace levels and Sealing the Curtainwall at the top / sill with Hard primary & Flexi-secondary Seal wherever required. 2. Curtainwall profiles to be designed with edgeguards for the glazed panels perimeter 3. Curtainwall system to have an extruded Corner Mullion 4. Structural sealant bite size to be as per Approved structural calculations 5. All curtainwall Transom section sizes shall be same as the Mullion section depth. 6. The Aluminium flashing seals at the Building expansion joints interfacing the Curtainwall facade. 7. Operable Vent to have main frame and subframe without aluminium profile being seen from outside. 8. Make provision in the Curtainwall system for the fixation of Facade Lighting. 9. Fixing of vertical/ horizontal flashings/ sealing & side wall closure, above Spandrel transom at False ceiling level and wherever required facade envelope closures with FR Grade class A Grade ACP or 1mm Thick SDP Coated Aluminium sheet. No extra claims shall be entertained at any stage for aluminium profile wall thickness / size dimensions / Seals / Trims / Flashing / Smoke & Fire Seal etc once approved by the Architect / Client. The Contractor shall be responsible for the detailed engineering design development and the provision of all plant, labour, material, fabrication, assembly, transportation, installation, coordination with adjacent and abutting construction, and any other endeavour necessary to provide complete curtain wall.				
A.1	Aluminium: All aluminum extruded profiles shall be confirming to alloy 6063 T6. Where Extruded Aluminium brackets and other Structural elements are proposed they shall be confirming to alloy 6005 T6. Finish: All exposed visible aluminum profiles external and internal areas of the Facade shall be Super Durable powder Coated to 50-60 Microns as per approved shade. Glass: (Glass price to be provided separately as mentioned below items: A.2, A.3,A4 for Vision glazing) Vision Glass - Semi Unitized glazing system shall be designed to accomodate 24mm DGU & 6/8mm thick SGU Performance Heat Strengthened glass. Vision Glass - Monolithic SGU Heat Strengthened Glass -Single glazing adapter aluminium extruded profiles. Wind Load : The System and glass shall be designed to 1.11 Kpa for Normal areas and 1.6 Kpa Critical areas as per structural adequacy as per IS 875 part 3 . Anchorage: Design to allow absorption of 3 dimensional construction tolerances to maintain set out as per arch dwgs and approved shop drawings. The anchoring / bracing of the curtain wall glazing to the RCC slab / beams / columns shall be done with hot dip galvanized brackets(Galvanizing to be done confirming to IS:4759-1996 up to 610 gms. per sqm. (80-90 micron thickness). of approved design.	SqM	824	5,650	4,655,600.00

	Brackets: Provided system to be designed to accomodate Floor / Face mounted Brackets to support the Curtainwall Mullion. Bracketing system with MS Hot Dipped Galvanized or Aluminium alloy of alloy 6005 T6 with buit-in Serrations for Fin & Base plates to accormodate the 3-dimensional movements with Serrated plate washers and locking screws with GI shims and SS 316 grade fasteners / Anchor bolts of Hilti /Fischer / Approved equivalent make, nylon separators to prevent bi-metallic contacts. Gaskets: All the gaskets shall be EPDM or Silicon material, hardness 60-70 from approved extruders. Co-ordination: MEP, civil works for layout marking, facade access & Lighting Provide non powdering /non staining PVC shims or GI shims of various thickness to adjust the level / line variations fixed with Anchor fasteners Hilti/Fischer make as per structural requirement / approval and to withstand the dead load of the curtain walls as well as stresses due to wind pressure and loads due to Facade cleaning/ maintenance. Allow for Diagnostic check for water leakage & Quality Assurance as per AAMA 501.2-03 at 10% , 25%, 50%,75% of installed area in two locations during installation and 2 more locations during Handover. Location: All Elevations				
A.2	**Vision DGU Glass : (Extra Over item: A.1)** Type - GL1: - 24mm thick Insulated glass unit comprising of 6mm Thick Heat Strengthned Performance Glass (Approved High performance glass from Guardian DS 40 Blue / Saint Gobain KBT 140) +12mm Airspace + 6mm Clear Toughened glass. Please note that the Glass thickness of the proposed vision glass shall be as per the Structural adequacy. Glass Shade as per Client Slection Location : All Elevations at LAB Areas (Front & Rear Eelevation)	SqM	801	3,942	3,157,542.00
A.3	**Spandrel SGU Glass : (Extra Over item: A.1)** Type - GL2: - 6mm thick Monolithic SGU Heat Strengthened Glass - shade to match with the Outerlite of GL1 Vision glass. Please note that the Glass thickness of the proposed Spandrel glass shall be as per the Structural adequacy. Location : Rear Elevations at slab Area	SqM	23	2,400	55,200.00
A.4	**Spandrel Insulation and Backpan** : Providing & fixing Rock wool insulation of 50mm Thk. (Density : 48 Kg. / M3) insulation of approved sample / make with Woven Fabric Black veil enclosed in a 1.2mm thk. Powder Coated G.I. back pan with stiffeners to control any distortion with all necessary Vent & Drain holes, Insulation holding pins and Bi-metallic separators between GI backpan and Aluminium profile and to provide weather seal to the perimeter of the Spandrel panel backpan. (Note: Smoke-seal & Fire stop insulation is rated separately, refer BOQ item no. A.5)	SqM	23		-
A.5	**Smoke Seal with compressed Rockwool Insulation : (Extra Over item: A.1)** Smoke Seal: Provide & fix rock wool 100mm depth with Intumescent spray/ seal of HILTI / 3M or Approved Equivalent of minimum 3mm thick with Rockwool / Mineral wool compressed to 30-40% compression (Achieving Density : 96 Kg. / M3) Rockwool insulation at the Gap between RCC slab beam and Facade backpan of approved sample / make with 2mm thk. G.I. sheet clips fixed intermittently holding the rockwool in place. The Upperside of the compressed rockwool insulation has to be sealed with 2 hour fire rated Intumescent spray to the structure / rockwool , as specified. Refer concept drawings for details. Quote to include Smoke seal / Firestop width range of 75mm - 125mm Galvanized sheet shall be min1mm thick with sealed overlaps and interfaces and 2mm below screeding.	Rmt	188		-
A.6	**Top Hung Operable Vents : (Extra Over item: A.1)** Design,supply, fabricate, package, deliver (to Job site), install & testing the with all the Top hung operable panel with Heavy duty Stainless Steel Friction hinges and restricted opening arms and all necessary Multi-point Locking handle based on Windload, connecting device, Corner transmission locking points, etc., all complete weather tight panel, Make Provision & fixed for Anti Fall Device. Extra over Item A.1 for Top hung operable panels with concealed extruded aluminium profile frames and shutter panels integrated in the Curtainwall opening with all necessary Glazing and Seal gaskets providing weather tight Vent with Water drain slot holes, Multi-point locking and Approved handles of tested cycles. Provision to be made for Detachable handles and break-operable glass panel shutter as per Fire Safety Norms. Aluminium: All aluminum extruded profiles shall be confirming to alloy 6063 T6. Where Extruded Aluminium brackets and other Structural elements are proposed they shall be confirming to alloy 6005 T6. Note: Alum. Hand Rail to be provided, Shape & Finish will be approved by Architect / Client. Finish: All exposed visible aluminum profiles external and internal areas of the Facade shall be Super Durable powder Coated to 50-60 Microns as per approved shade. All invisible aluminium profiles to be Chromatized finish. Overall size: 2341mm (width) X 1212mm (height) - 04 Nos. 2441mm (width) X 1212mm (height) - 04 Nos. 2181mm (width) X 1212mm (height) - 03 Nos. 2033mm (width) X 1212mm (height) - 03 Nos. Location : All Elevations at LAB Areas (Front & Rear Eelevation) Glass: (price to be excluded; has considered in BOQ item A.2) profile system to be designed to accomodate 24mm thick Insulated Glass unit structural glazed to the operable shutters with Double side adhesive foam Spacer tape (Norton) and structural silicone of Dow corning / GE make Hardwares: Friction hinge, 6 / 8 point locking arrangement(Based on Wind Load Calculation) with handle from GIESSE/ Securistyle or approved equivalent make. All the cost estimation & work execution should be done in accordance with specification manual.	Nos	14	9,031	126,434.00

A.7	**Horizontal Fins - Extruded Aluminium Pointed Cappings: (Extra Over item: A.1)** Design, fabricate, package, deliver (to Job site) and install 65mm X 75mm size built-up Extruded Aluminium integrated to the Semi-Unitized glazed panels fixed Horizontally as shown in drawings. Size and thickness of the Capping as specified in the drawings and structurally adequate to withstand the Design wind pressure.The Fins are to be fixed post installation of the Curtainwall glazed facade with pre-installed with supporting plate bracket with all necessary fixing fasteners, gaskets and weather seals complete and fixation to withstand the designed wind pressure and as per structural requirement. Fin Depth: 65mm face Height x 75mm depth Note: The Fins to have provision of accomodating any Facade lighting if required. Location: Refer Typical Curtainwall Facade part elevation Drawings Aluminium: All aluminum extruded profiles shall be confirming to alloy 6063 T6. Where Extruded Aluminium brackets and other Structural elements are proposed they shall be confirming to alloy 6005 T6. Finish: All exposed visible aluminum profiles external and internal areas of the Facade shall be Super Durable powder Coated to 50-60 Microns as per approved shade. Location : All Elevations at LAB Areas (Front & Rear Eelevation)	Rmt	165	1,501	247,665.00
A.8	**Cement Board (Internal)** Design, fabricate, package, deliver (to Job site) and install 12mm Thick cement board placed with Face of the mullion behind the acp cladding .The Cut edges of Cement board to be with perimeter seal. Location: Refers Facade Section shown in the drawings	RO		376	141,263.22
B	**ACP Cladding**				
	ACP Cladding Design, engineer, furnish, fabricate, package, deliver (to Job site) and install in tray form with face sealed sealant 4mm thick Composite Aluminium Cladding Non FR Grade Mineral based polymer core with Aluminium sheet alloy AA 3000 or 5000 series fabricated panels of Approved shade of Metal Cladding with Face sealed joint system with sealants DC 789 grade from Dow corning make or approved equivalent. The aluminium composite panel cladding sheet shall be coil coated with Kynar 500 based/ hylar 5000 PVDF / Lumiflon / Exterior grade compliance to AAMA2605 based flouropolymer based resin lead free coating of Approved color and shade on face # 1 and polymer (service) coating on face # 2 with overall weight of not less than 7.38 Kg/m² The ACP panels will be mechanically fixed by necessary hardware to Aluminium Vertical & Horizontal secondary framing members. The cladding system shall be supported by Primary structural steel horizontal & vertical members in accordance with Tender Drawings and Details. The Facade Contractor to make provision for Integerating any Facade Lighting into the metal cladding system. Cladding sheet: 4mm thick Composite Aluminium Panel Comprising of two skins of 0.50mm thick coil cored aluminium sheets sandwiched with Mineral Filled polymer core of 3mm thick and exterior grade coating of PVDF coil coated aluminium with Exterior Grade compliance to AAMA2605 based fluoropolymer resin lead free coating Paint. ACP approved manufacturer - Alucobond or Approved equivalent. Finish For Aluminium: All concealed aluminum framing profiles shall be clear chromatized. Finish For Structural Steel : Primer with 1(one) coat of Zinc Rich Epoxy 50 Microns,Intermediate: Epoxy Micaceous Iron Oxide 125microns and finished with 1 (one) coat Polyurethane 50microns Wind Load : The cladding System shall be designed for 1.11Kpa Normal and 1.6 Kpa Critical wind load as per structural adequacy as per IS 875 part 3. Anchorage:The anchoring / bracing of the curtain wall glazing to the RCC slab / beams / columns shall be done with hot dip galvanized brackets(Galvanizing to be done confirming to IS:4759-1996 up to 610 gms. per sqm. (80-90 micron thickness). of approved design. Co-ordination: MEP, civil works for layout marking, facade access & Lighting. Secondary Steel Structure : Where applicable Quote to Include for Secondary steel supports for framing of metal cladding where ever required Design the system to absorb +/- 50mm host structure tolerances. The anchoring / bracing of the Metal cladding to the RCC slab / beams / columns shall be done with providing non powdering pvc / GI shims. Shims of various thickness to adjust the beam level / line variations fixed with SS fasteners in the concrete and to withstand the dead load of the cladding as well as stresses due to wind pressure etc. All screws used shall be only stainless steel 304 grade. All bolts, nuts and washers used shall be only stainless steel of 316 Grade.				-
B.1	**Round Colum ACP Cladding :** Design, engineer, furnish, fabricate, package, deliver (to Job site) and install in tray form with face sealed sealant 4mm thick Composite Aluminium Cladding Non FR Grade Mineral based polymer core with Aluminium sheet alloy AA 3000 or 5000 series fabricated panels of Approved shade of Metal Cladding with Face sealed joint system with sealants DC 789 grade from Dow corning make or approved equivalent. Finishes : as approved by Architect / Client Location : Front Eelevation)	SqM	145	5,600	812,000.00
B.2	**ACP Cladding :** Design, engineer, furnish, fabricate, package, deliver (to Job site) and install in tray form with face sealed sealant 4mm thick Composite Aluminium Cladding Non FR Grade with Aluminium sheet alloy AA 3000 or 5000 series fabricated panels of Approved shade of Metal Cladding with Face sealed joint system with sealants DC 789 grade from Dow corning make or approved equivalent. Finishes : as approved by Architect / Client Location : Front Elevation Grid Between B-E	SqM	979	4,757	4,657,103.00
	Roof Coping : Non FR ACP roof coping panel to Facade termination with marine ply backup panels beneath Continuous curtainwall façade Terrace roof termination with Marine plywood backing and insulation to Curtainwall Roof Coping. Coping ACP panel shall have 12mm Thick Marine Grade BWP fixed continuously from below to support the live load of 1KN. Provide primary seal of 1 mm GI sheet & EPDM membrane for Coping. Panel type: 4mm thick Aluminium Composite Panel Location :Front & Rear elevation	Rmt	103	5,419	558,157.00

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G	**Structural Steel For Support Curtainwall**				
G.1	Design, fabricate, package, deliver (to Job site) hoist and install Structural steel Works as Primary and secondary Framing members for Items listed in the BOQ item B,D and Other items in project. Tentative Quantities for Ms Steel Structure for Entrance Canopy. Facade vendor Quantify and Quote for Ms Steel Structure as per approved Structural calculation. **Scope Includes** 1. Assembly, welding, jointing, building up new sections using plates/rolled sections/CHS/RHS, including cost of fasteners, nuts, bolts and washers 2. Supplying all temporary staging and supporting work and making all structural steel work in accordance with the design drawings. 3. Preparing shop drawings , obtaining Client / Architect / Consultants Approval. **Finish**:All coating should be factory applied with site touch-up if necessary. Care should be taken to avoid warping or twisting of slender steel sections or fabricated parts. Appropriate cleaning or treatment should be done for surface prior to any further coatings to get smooth finished surface. The rate of steel work should include **Option 1** :1(one) coat of red oxide primer and two coats of enamel paint. **Option 2 :** Primer with 1(one) coat of Zinc Rich Epoxy 50 Microns,Intermediate: Epoxy Micaceous Iron Oxide 125microns and finished with 1(one) coat Polyurethane 50microns Fabrication of following types of structural steel material trusses, purlins, girders, brackets etc. with connections using plates, channels,and angles, gusset plates, connection bolts, cleats, fasteners etc. as per drawing, steel conforming to IS:226 and IS:2062-Gr. A minimum yield strength 335Mpa for plates. Fasteners, welding electrodes, consumables, will not be paid seperately. Rates inclusive of necessary tests as per technical specifiations. Rates for items of work in the 'Bill of Quantities' are to be inclusive of all taxes and duties including Customs Duties,, Transportation, Insurance, scaffolding, handling and testing.	Tonne		54,000	-
Total Façade Areas and Total Amount for Aluminium, Glazing & Cladding works		**Sqm**	**Value including GST**		**14,410,964.22**

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Note: 1.The above quantities are approximate only, however the final bill will be made as per the actual site measurements.
2. Any further taxes levied on this work by the government with the amendment in the act effective, retrospectively will be charged extra.

Note: Due to the unprecedented market dynamics, this year has seen extraordinary pressures on the prices of our raw material & other input costs. Such as Aluminium, Glass, Silicon, Aluminium Composite Panel and Hardware Etc. The offer price shall be finalized on the day of confirmation of order and advance payment.

PAYMENT TERMS

Payment: 50% Advance along with the work order.
40% on the receipt of material at the site.
10% on completion of the work.

1. We have quoted as per information received and in reply to the specification only, any modification will require corresponding revision of rates.
2. Tolerance and forms for flat Toughend glass.
   a. Deviation of form +/- 3mm
   b. Straightness of edge < 3mm /m
   c. Twisting < 4mm / m
3. All the final glass measurements/sizes will be taken + 50mm (In both Widht & Height) as standard to the actual glass measurements/sizes.
4. Deliveries will be made against Delivery Challans which the client/client's representative has to acknowledge.
5. The liability for safe keeping of material delivered at site lies with the client's scope.
6. Lockable room to be provided by client at site for safe storage of material, tools & workmen.
7. Electrical connection to be provided by client wherever necessary at site.
8. Any civil defects to be rectified by your person at your cost.
9. **Scaffolding to be provided by client wherever necessary at site.**
10. Sealing the gaps between the masonry structure and aluminium frames do not fall under our scope of work.
11. MS Frame if necessary to be provided by you or by us at an extra cost.
12. You should ensure necessary plumb levelled flooring & roofing.
13. Quotation validity 30 Days.

We at ***AKB Glass Systems*** are committed to customer care and shall always be available to attend to any kind of assistance requested.

Thanking you and assuring you of our best services at all times.

Yours faithfully,
For AKB Glass Systems

Kesavan Natarajan
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