The Sidra Experience

Turning a Vision into Reality

The Vision

BP#9 - SIDRA MEDICAL AND RESEARCH CENTER
SCHEMATIC DESIGN REVISION 1

The Reality

Start-Up

In early 2008, the Site was a desert and had only previously been used as a burial ground because, in those days, it was quite far out of Town.

Situated on the corner of Slope Roundabout, near the Education City gateway, the only building to identify the Site was an old white villa which had belonged to the Ruling Family. Now, it was housing the advance Main Contractor JV team, the Architects, Façade company and the Group5 team

On winning the Contract, the largest unitised façade to date for Qatar, we set out to develop a delivery team of professional façade designers and project managers who could deliver a prestigious project; to a level not previously attempted in Doha.

A World Class medical facility to house a state of the art Hospital and Research Clinic to rival any other in the Region.

A bespoke facility calls for bespoke solutions. The façade company and Group 5 set about designing and testing a specific unitised system that could carry the loads of a façade that was, for the most part, 75% natural stone and 25% high performance glazing; complemented by high-grade stainless steel brise-soliel and a number of other architectural features.

Background

The Architect had envisaged that the façade would need to be realised via five different wall types but Group 5 designers found a bespoke single-solution whereby the one system employed could offer the variety of aesthetics the Architect wanted to achieve for the main buildings of both Hospital and Clinic.

A second system needed to be employed for the three towers – the design impetus for which was suggested by the sails of a traditional dhow. The movements and tolerances reports suggested Group 5 needed to adopt a different system than that for the main Hospital so, again, a bespoke system design was developed which would manage the movements already incorporated plus those of Seismic which the local authorities had, by now, added to the design criteria.

A World Class design process has to be able to adopt new design parameters during the life of the build programme. Group 5 was readily able to rise to, and meet, those technical challenges as design definition was reached.

A Stage 1 design process delivered concepts to follow the design intent for the Architect and Client to approve.

Stage 2 followed, developing the approved concepts into reality via detailed design definition. Having achieved that, Group 5 then set about the major task of preparing shop drawings. These show the Client and his professional team how we intend to realise the design, in detail.

Deliverables

Group 5 offered 1500 drawings at this Stage – sometimes, the review and approval process was taking the drawings to three or even four revisions. Altogether, some 4,000 drawings were submitted and approved, along with all the structural, thermal, acoustic and seismic calculations to support them.

While this was in progress, our procurement team optimised all our requirements to achieve efficiencies and reduce waste. Lead times were challenged again and again to make sure the assembly process was not interrupted. Some incoming supplies had to be on a just-in-time basis, whilst others allowed us to hold a forward stock.

Once a satisfactory approval status was reached, we were able to move into preparing detailed fabrication drawings for the CNC machines involved in producing the pieces and parts, for assembly on the production line.

The logistical requirements of having so many truck loads of material delivered from overseas and the checking of everything by our Quality Control team, was a particular challenge.

Optimising

QTA greatly reduced some of the logistic challenges by acquiring some land near the Site and constructed a purpose-built factory.

In this way we were able to gear our incoming deliveries and outgoing dispatches around our production & assembly capacities to meet the call-off of materials from Site.

There were a number of revisions of material priorities to suit programme changes but, every time, QTA were able to adapt to new situations by utilising both medium and short-term look-ahead strategies to avoid bottlenecks in the factory and at the Site.

A separate manufacturing facility was established to produce repetitive items especially, for example, the stainless steel brise-soliel and cable-tension components.

On four occasions, our procurement personnel visited China to audit-trail our first-tier suppliers for the approved cable tension systems and the top-grade porcelain enamel panels. Packing and shipping constraints were put in place to minimise the chances of receiving any materials damaged in transit.

While all this was happening QTA was engaged with the Client, his Consultants, the Main Contractor and Architect in an iterative design process set up to deliver exactly what was wanted, on time and within budget.

There were daily, weekly and monthly meetings to ensure that not only were QTA compliant but to also make sure our design interfaces with all the other stakeholders were robust.

The Reality

We all looked forward to installing the first of some 15,000 unitised façade panels.

That day came in March 2010 and everyone gathered around the Site to see those first actual project elements installed. It worked well and would only get better as we understood what we could achieve.

It was an appropriate time to think about celebrating our hard efforts and success.

Over the following two years the management team raised a number of social events ,arranged by our management teams for the Site crews, to demonstrate our appreciation for their work.

At various times we arranged for paintballing, ten-pin bowling and beach sports events.

We believe in engaging with, and rewarding, our most valuable resource – our people – whenever we achieve or surpass our aspirations, at any given milestones.

Further evidence of our project care was that we were awarded a Certificate of Achievement by the Main /JV for completing in excess of two million man hours at Site without a lost-time incident.

A totally remarkable achievement by the Health and Safety management team, both at Site and in our factories and a testament to Group 5 CDM design principles.

Following this, there are some headlines of what Group 5 and its delivery partners brought to Sidra:

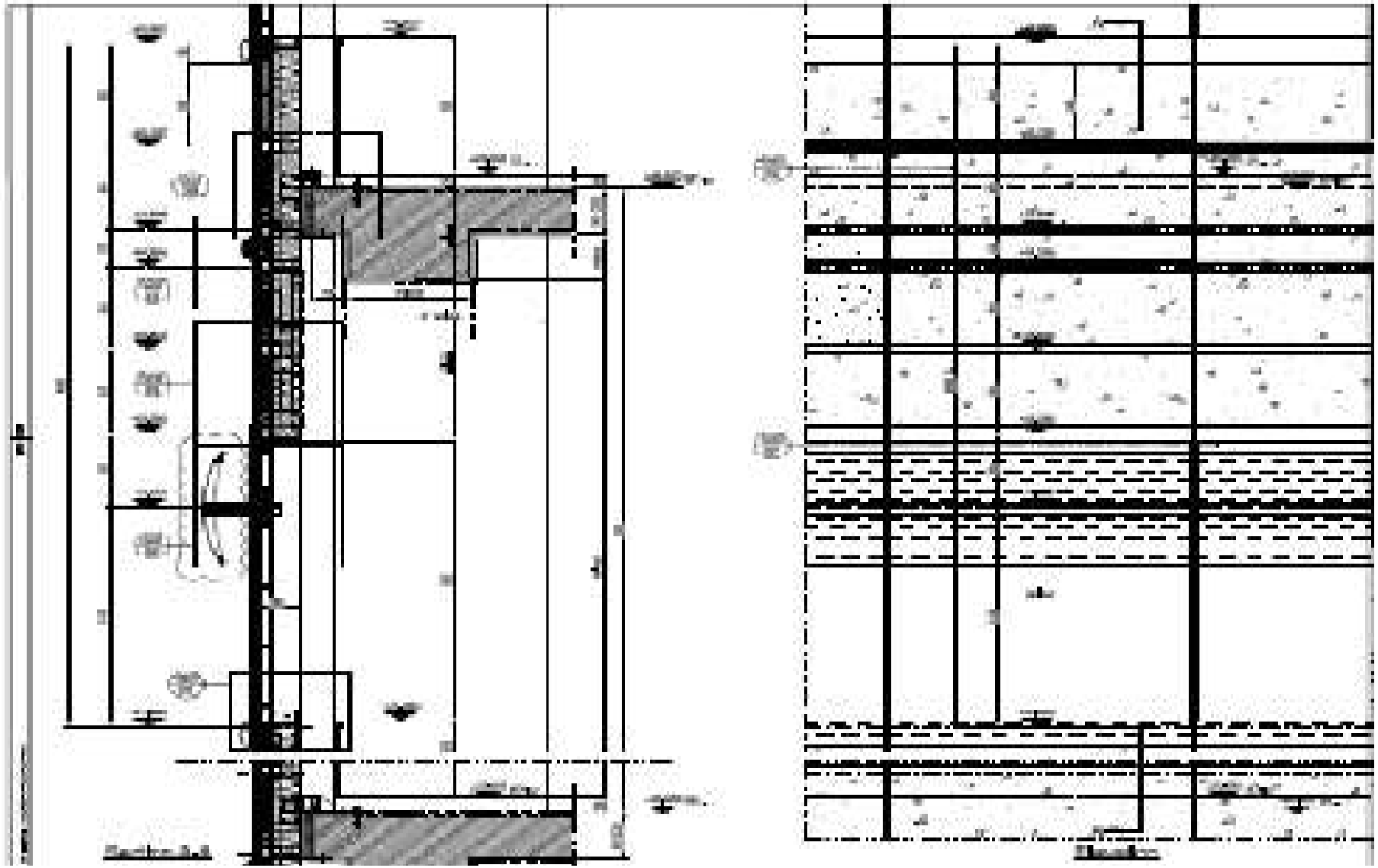
Scope 1

MAIN HOSPITAL
OUT-PATIENT CLINIC
STAFF CAR PARK
CENTRAL SERVICE BUILDING
LINK BRIDGES & TUNNEL ACCESS AREAS
BUILDING LINKS-HOSPITAL TO CLINIC
INTERNAL FACADES & ACOUSTIC PANELLING

Scope 2

EXTERNAL UNITIZED CURTAIN WALLS	67,842 M^2
INTERNAL UNITIZED CURTAIN WALLS	5,963 M^2
GLAZED SKYLIGHTS	9,874 M^2
CABLE-TENSION GLAZED FACADE	7,279 M^2
STRUCTURAL, BOLT FIX, “SPIDER” GLAZING	12,470 M^2
SUN TRACK LOUVERS	6,140 M^2
S/S MESH & FLAT PANELS (VARIOUS)	7,173 M^2
ALUMINIUM LOUVERS (VARIOUS TYPES)	1,445 M^2
S/S BRISE SOLIEL	15,407 M^2
S/S FEATURE CAPPINGS	146,800 LM
S/S & ALUMINIUM CLADDING TO COLUMNS	67,842 M^2
ACOUSTIC PANELLING	6,000 M2

Our Starting Place : Design Intent



The Process Begins

Planning to Succeed

Purpose-Built Factory for Sidra

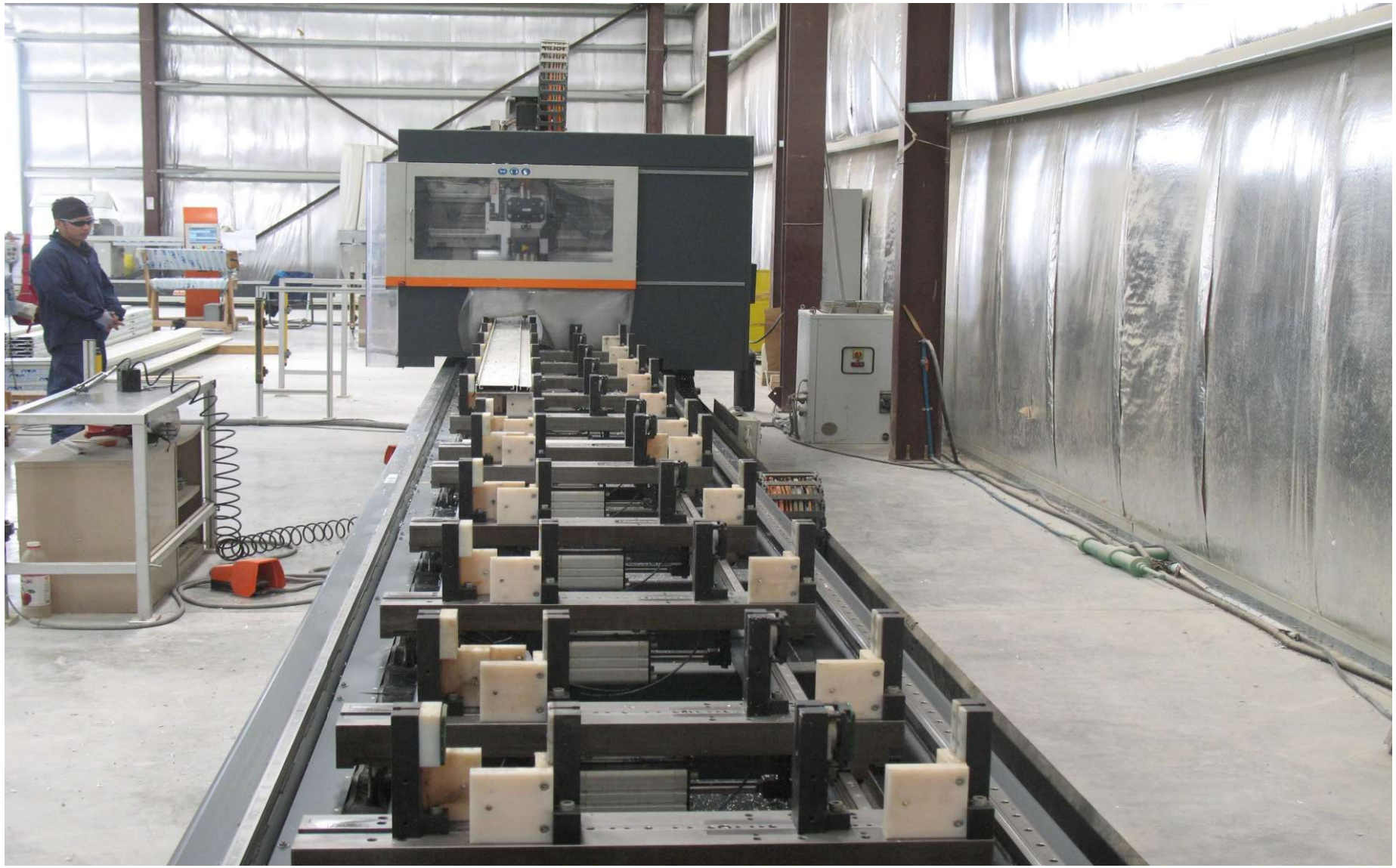
Controlled Environment Management

Logistics & Material Tracking

QTA sourced the best equipment

State of the Art and Quality Controlled

On-Line CNC Millwork

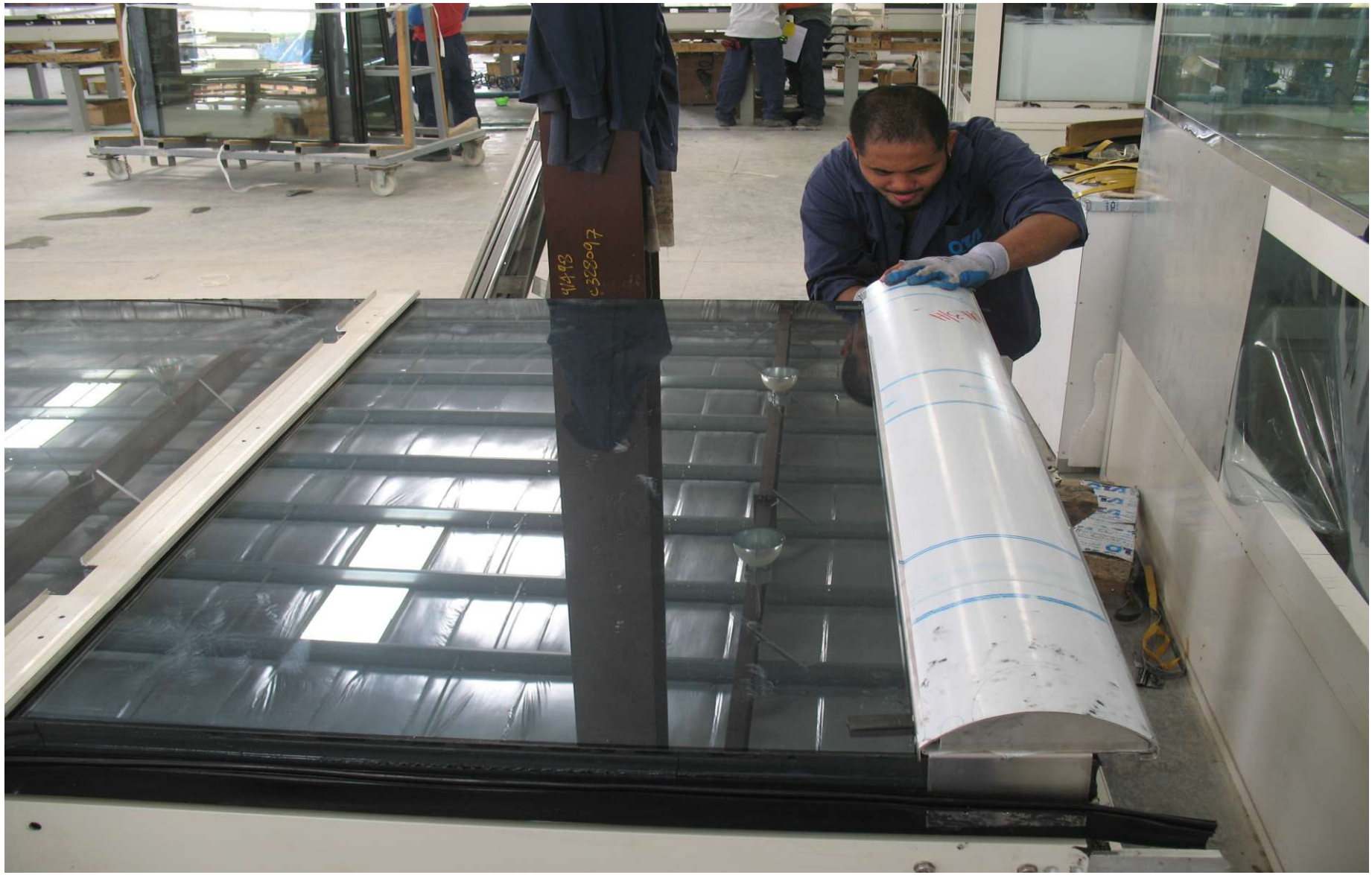


For machining pieces and parts

Work in Progress

One of two Air Conditioned rooms for applying Structural Sealants

Final Adjustments before Shipping Out



In full Swing 1

Daily QC Check on Structural Sealant

Safety Training in Progress

They said, “ Can we have a Mock-Up ?”

Mock-Up : Aspect 1

Mock-Up : Aspect 2

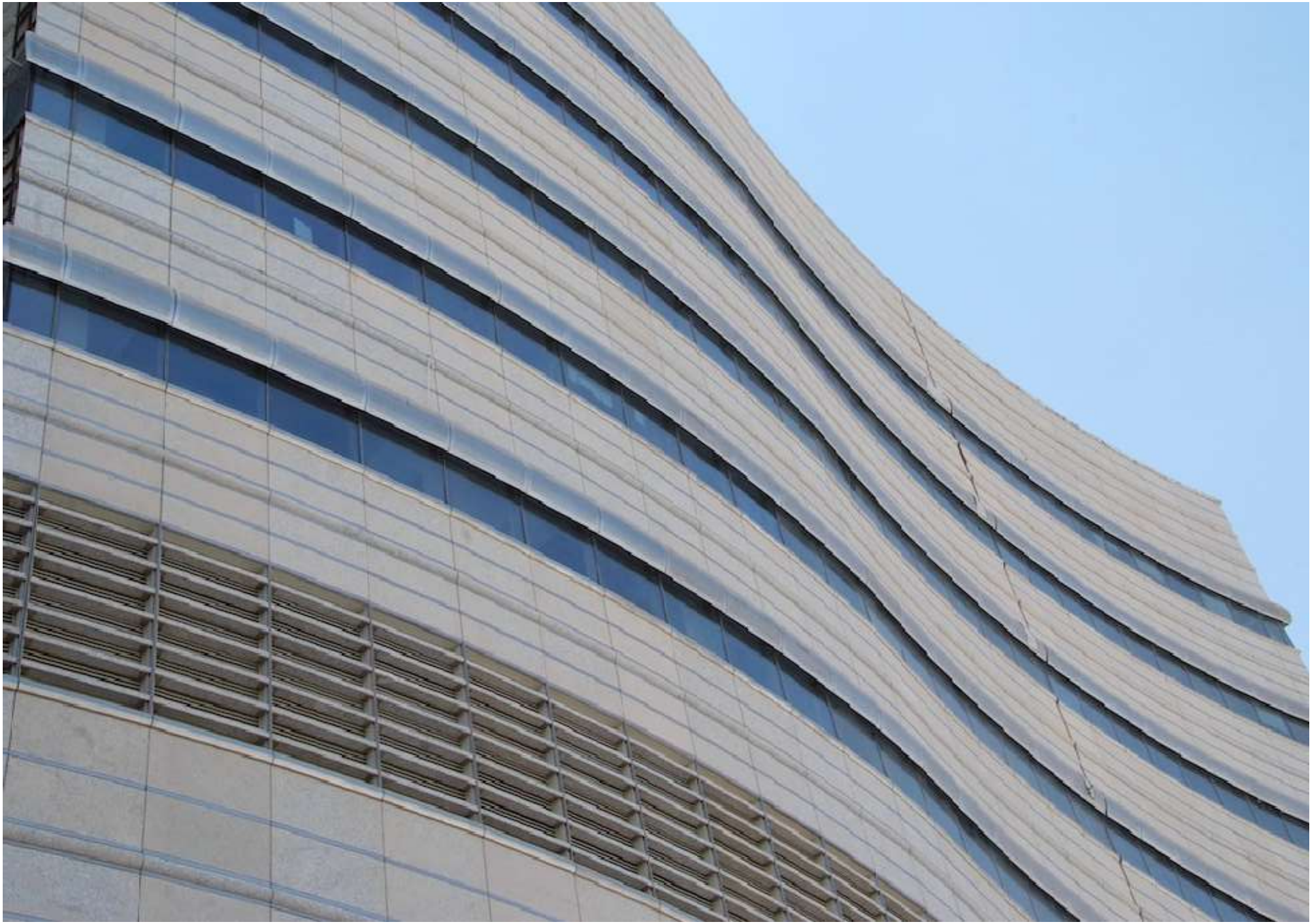
QTA Teams : Time Out

The best team won !

Going home happy

Three “Sails” of Porcelain & Glass

- Curtain Wall Type 1 for the main facades, complimented by Curtain Wall Type 2 for the three feature “Sails”.
- These pixelated walls comprise high performance glass and porcelain enamel panels which are colour-coded for facility identification.
- Each finished off with a large scale free skylight area over the Healing Gardens within.



Research Clinic Exterior

- The entrance is an architecturally challenging configuration of stone, glass and lighting features hidden within.
- Above the entrance is a domed skylight flooding the inside space with light and enhancing the colour of the stone interior.
- The external canopy here curls around the whole façade to interface with the future tram terminal.

Research Clinic Interior

- Rarely has an exterior facade allowed so much direct and indirect light to permeate to the inner space of this reception area.
- The Group 5 team engineered almost everything that can be seen in this picture.
- The feature water fountain, cascading from the reception desk to the mall below, does so on an engineered glass wall.

External Canopy & Column Cladding

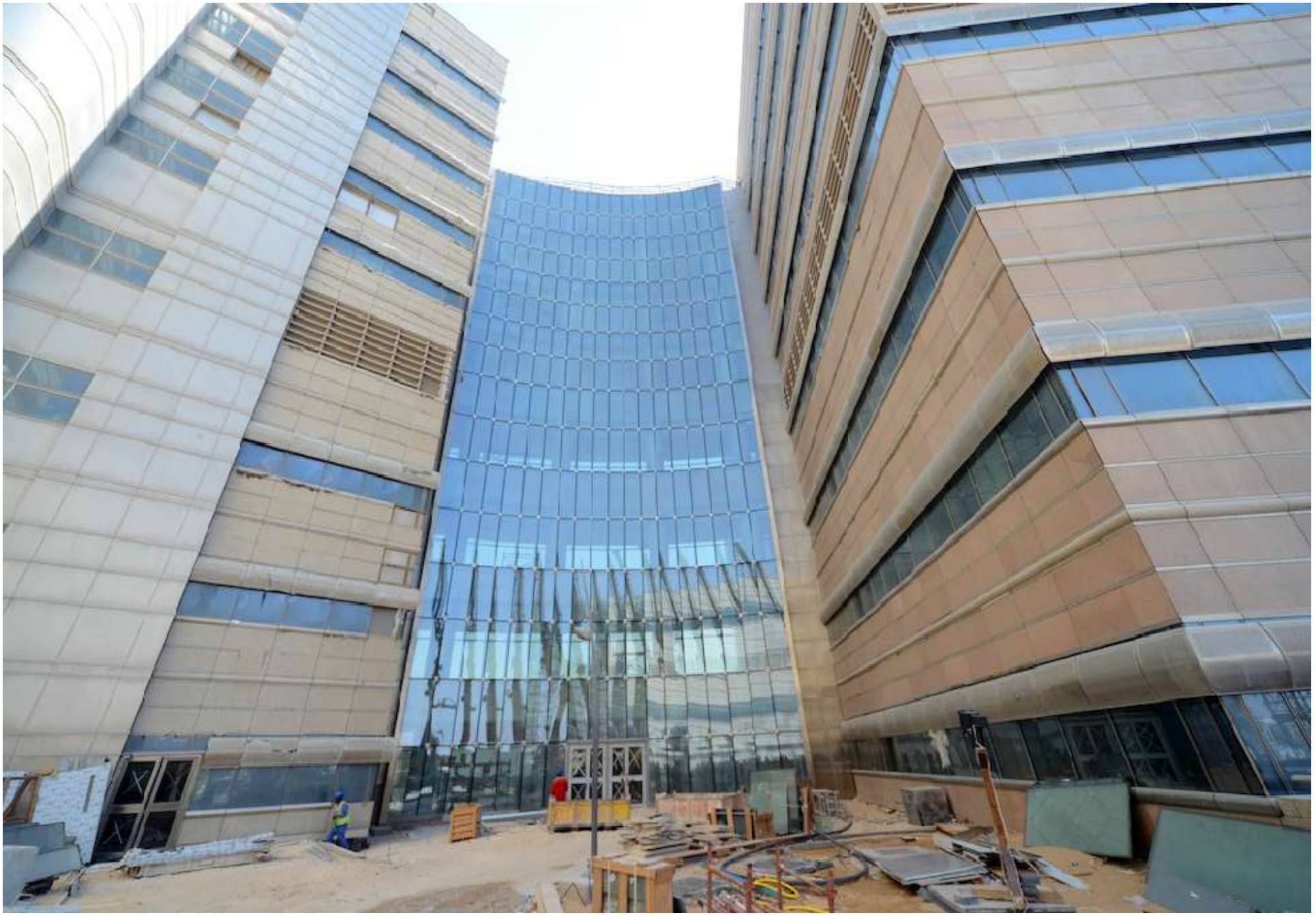
- First impressions count and who could fail to be impressed with the quality of the cladding to this futuristic external space.
- The canopies are offset above a radial bolt-fix glass wall, affording light with controlled thermal environment to the internal areas.
- An entrance befitting of a World Class Research establishment

Bolt Fix Screens from Inside & Outside

- Clean and clinical lines from inside complimented by the exterior appearance which is in keeping with the garden areas and elevational aspects of the Hospital next door.
- These two main project elements are joined together by a glass link bridge which has excellent vistas at both front and rear of the Sidra facilities.

Bolt-Fix Link Bridges

- As mentioned, we have a magnificent nine storey all glass link bridge between the Hospital and Research Clinic.
- You can see both front and rear elevations in these photographs.
- There is a similar bridge at the rear of the Hospital connecting it with the Staff Car Park
- Both Link-bridges are air-conditioned.



Hospital Lobby

- Here you can see the many facets of Group 5 contribution to the complete project, not just the external envelope.
- There are full height glass lifts and screens, ballustrades and skylights.
- Complimenting all of this is the acoustic panelling which incorporates a water drenching and smoke extraction system in the event of fire.

Internal Acoustic Panels and Glass Ballustrades

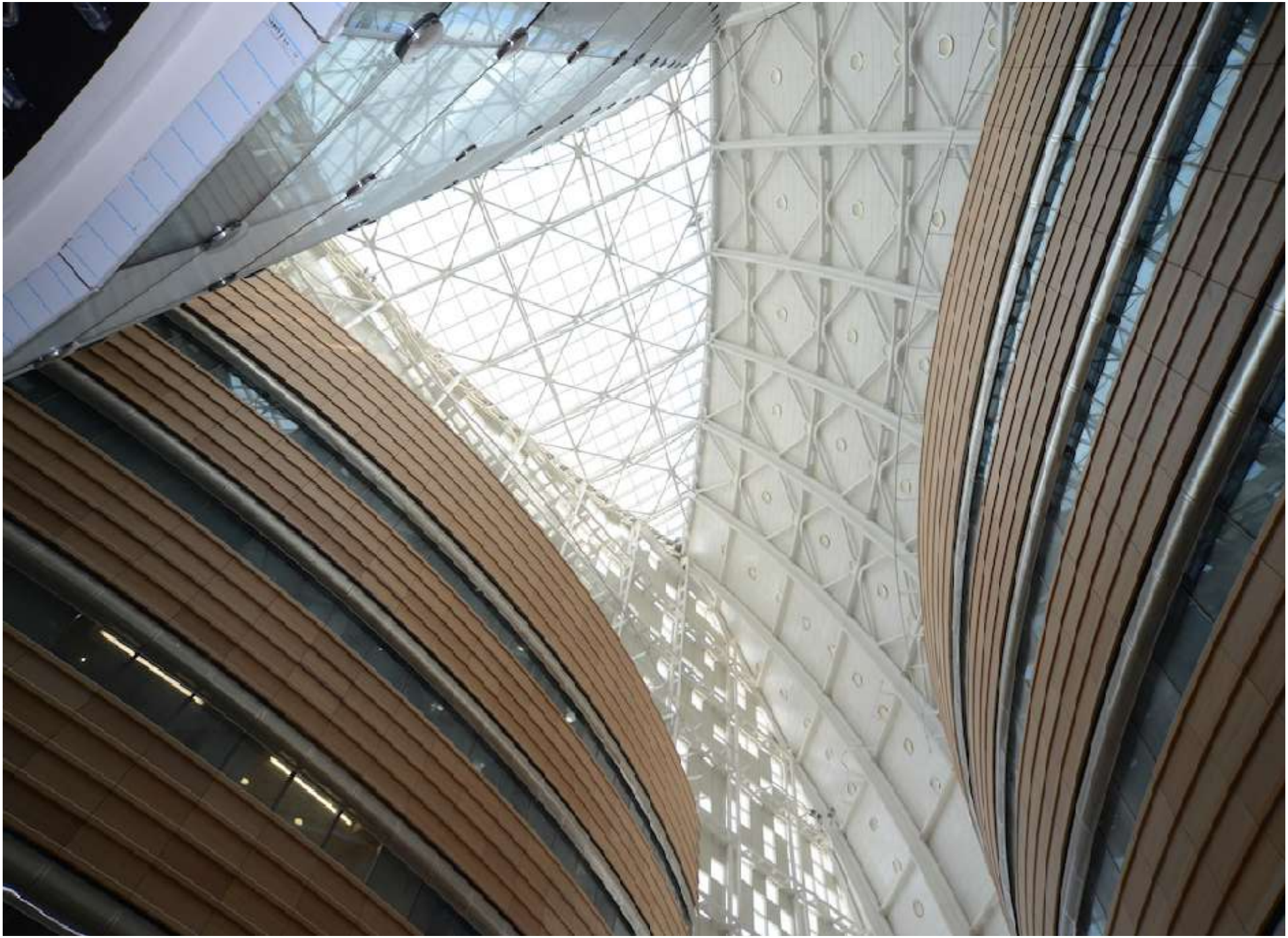
- These acoustic panels are common to both Hospital and Research Clinic.
- They are integral to the internal unitised curtain walls, themselves a derivative from the external façade system.
- Only two façade systems were used to meet all the design intent criteria for the complete facility.

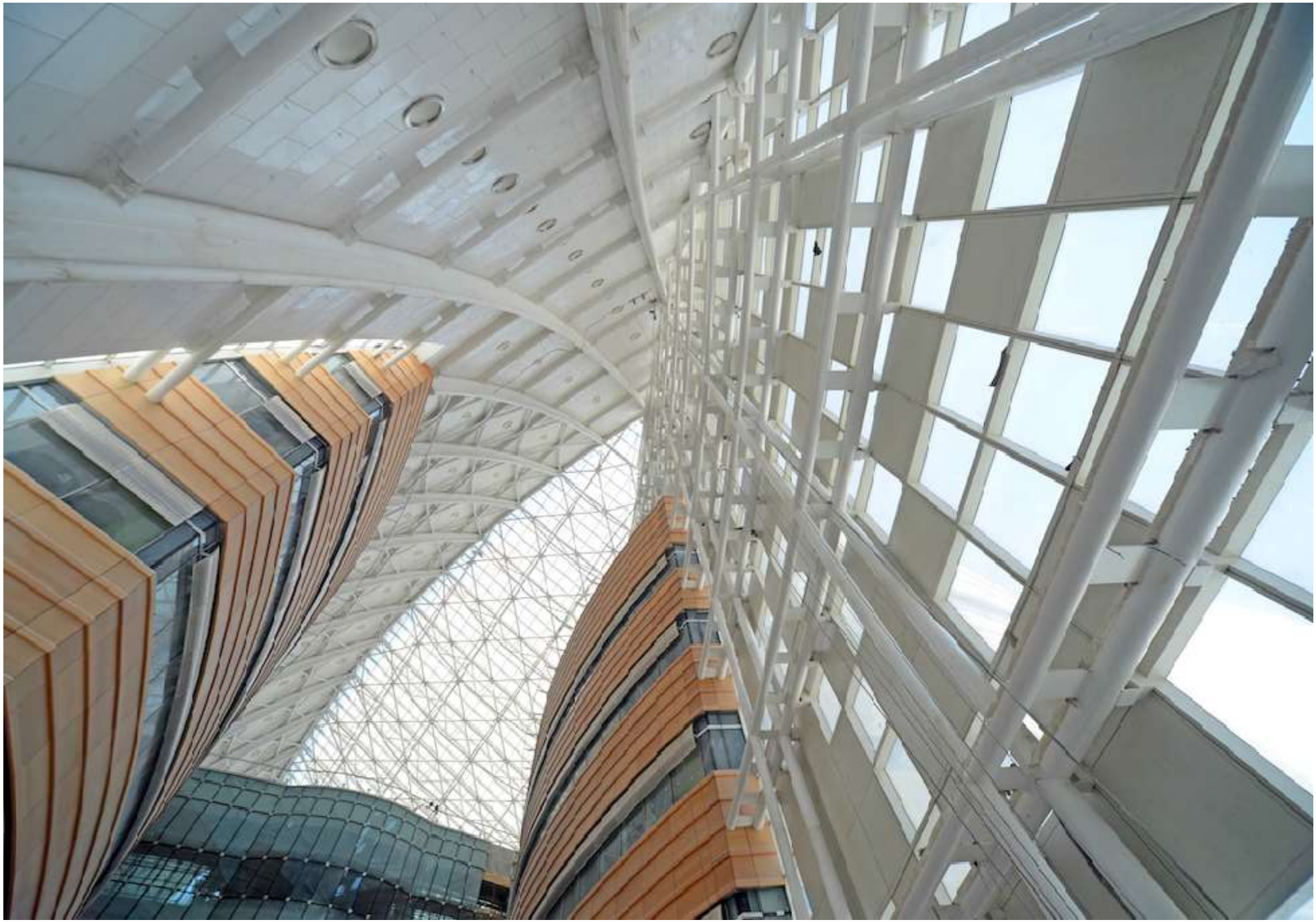
Small Internal Atria

- There are three of these spaces, one in each portion of the Hospital.
- The facades comprise of granite, glass, aluminium and stainless steel to offer that clean and clinical feel a Hospital should offer.
- There are seating areas around these spaces so that both patients and their visitors can relax and enjoy these shapes and depths.

Three Main Tower Atria : Internal

- These elevations are what you can experience in the Healing Gardens.
- These spaces are enhanced with real trees, small fountains and running water streams.
- The mixture of facades and materials combine with the environmental elements to offer a truly relaxing area in which to recuperate.





Cable Tension Walls

- The ground floor and third floor slabs, between them, manage 27 tonnes of vertical load and 17 tons of lateral load between the columns.
- These walls carry a huge load and are graced externally by the stainless steel brise soliel, a common feature across all the facades externally.
- The cable tensioned glass walls offer an unrivalled vision and space environment.

We had what we needed to SUCCEED

Purpose

Passion

Pride