INNOVATION AND INDUSTRY LEADERSHIP RESHAPES THE FACE OF JUSTICE

BRISBANE SUPREME AND DISTRICT COURT /
LEND LEASE'S PROJECT MANAGEMENT AND CONSTRUCTION BUSINESS

Left The Brisbane Supreme and District Court is stunningly original, sustainable and a credit to everyone involved.

Some projects push the envelope – but the Brisbane Supreme Court and District Court (now officially named The Queen Elizabeth II Courts of Law) which has recently been delivered by Lend Lease's project management and construction business is literally a whole new package. From the way the project was designed, through to the method of construction, the level of innovation applied to every aspect has resulted in a public building which is stunningly original, sustainable and a credit to everyone involved.

The D&C contract was undertaken in close collaboration with the designers, Architectus, the consultant team, including engineering firms Aurecon, Steensen Varming, Thomson Kane and façade subcontractor Yuanda, and the client and user groups, including Judges, the legal fraternity and the Queensland Department of Justice and Attorney General and the client's Project Manager, Project Services.

"Pretty much every element of this project is unique. It's virtually a sculpture, not a concrete structure," said Project Director, Allan Robertson from Lend Lease's project management and construction business.

"It was built with a reverse construction methodology to normal industry practice – and every element of this building was architecturally detailed."

Lend Lease tendered for the project management and construction of the project in 2007, based on a set of schematic design documents that had been prepared for the Department following a design competition. Following appointment, Lend Lease took over the design management process in March 2008. The site itself, at the time of settlement, provided Brisbane's water supply (at the end of Tank Street). It was subsequently the location of the old Roma Street fruit and vegetable markets, which following their relocation, were demolished and an open car park formed on top of the remains. Extensive remediation was required due to contaminants in the soil. This was undertaken concurrent with bulk earthworks from September 2008. In February 2009, construction of in-ground structural elements commenced.

The design documentation was progressively developed along with extensive prototyping of every aspect of the project, which included Lend Lease constructing a complete courtroom prototype on a remote site in a purpose built building, specifically oriented to mimic the day-lighting conditions of the final building.

"We went through various studies with the client and the project design team," explained Design Manager, Frank Way from Lend Lease's project management and construction business.

"We rebuilt the prototype three times - we changed podium and floor levels as well as joinery. It was an opportunity to prove up the new design of courtrooms. The courtrooms are quite large and vision lines were a major consideration. The design incorporates an access floor to accommodate displacement air-conditioning and services and allows flexibility for future modifications.

"Accessibility has been a prime consideration, there are ramps to podium levels, and the desks have height adjustability, switches for task lights and audio are appropriately located in accessible positions. The prototype provided an excellent opportunity for the trades and Architect to work through and resolve issues prior to final commitment and manufacture.

"Pretty much every element of this project is unique. It's virtually a sculpture, not a concrete structure."

"User groups were invited to review the courtroom prototype, including the judges, members of the legal fraternity and barristers, to give feedback on the design, and their comments were taken into consideration.

"The boarded finish for the concrete lift core walls was prototyped, and was used to assist the form workers, the reinforcement subcontractor and the concreter in achieving the quality that was required. "The induction process for workers on this project included not only the safety inductions but also a design induction so that all workers on the project understood and took ownership of the quality objectives for the project," added Allan Robertson.

Three main elements of the Courts building are concrete, timber and glass – the concrete structure (sculpture); the unitised, ventilated, double-skin glazed façade; and extensive timber in floors, joinery and feature elements.

The structural concrete is off-form concrete, and almost all is highly visible, requiring painstaking attention to the construction detailing and finishing. The design included spans of up to 12 metres, which meant concrete needed to be high strength, and this was combined with colour control to achieve aesthetic aspirations and functionality.

Colour control for suspended slabs where the soffits are the ceilings was achieved by the use of specially developed Portland cement mixes incorporating white oxides. The three main services cores of the building that have a rough sawn boarded off- form finish, have a dark charcoal oxide in the mix design. The Banco Court cantilevering and transfer structure utilised various mixes of oxides to achieve the required colour difference. "The lighting design in courtrooms and public spaces relies on light being bounced off the concrete soffit surfaces, which created a challenge in terms of the quality of the off-form finish" said Frank Way.

"There was also a major challenge just with the structure. There are 5.4m floor to floor heights throughout the courtroom levels, which meant formwork and its temporary support framing extending to higher than normal levels," added Allan Robertson.

"Each piece of floor formwork had its own specific location, which had to be reconfigured for each floor. There were extremely strict tolerances and set out. All the services penetrations had to be cast in. You couldn't make a mistake. You had to QA and check every element.

"There were many lessons learned around concrete and materials handling, around protecting concrete and cleaning concrete. We developed methodologies to ensure the final presentation of the concrete."

The other highly visible element of the building is the ventilated, glazed double façade. In its usual typical form it would be stick built, piece by piece but the Lend Lease team had concerns about the

safety aspects of working at the heights involved. So the decision was made in the early stages to unitise the façade.

The units measure 5.4m X 2.4m, and are 1200mm deep, each unit comprising structural steel walkways and blinds between the double glazed internal panels and the outer laminated panels, and they were lifted into position by a mega mono-rail and winching system specifically designed for the project to manage the weights. The units weighed between 3.8 and 4.2 tonne each, with some areas of the façade also including large cantilevered glass panels in the units. This façade is light transparent with strategically placed frit detailing, producing a spectacular effect both within and without.

"Part of the design philosophy is for the building to demonstrate the transparency of the courts system," said Frank Way.

"There has been significant design effort to ensure natural light penetrated through the building, including the courtrooms. However, the courts also require good acoustics, so the parts of the courtrooms which are comprised of the glazing had to achieve a specified acoustic performance, and there was no established system for double glazed acoustic insulation available on the market.

We had to develop and test every glazing system, which was a massive task for the glazier. All of the glazing and testing was done in Australia, and the glazed walls and the courtrooms as a whole were modelled by the acoustic consultant for levels of attenuation."

The third major element of the project is the timber, which has been used for the joinery and for floors. The floors are another major departure from the norm, because where usually services are located above a suspended ceiling, the reverse is the case for the Courts. The slabs for each floor form the ceiling of the room below, while the services are located under the custom-built timber access floors which sit 800mm above each slab.

Between the access floor and the slab are the cables for power, data, AV and communications; the sprinkler system and the mechanical system. This presented a number of challenges and safety risks, including having the various sub-trades working over ducts, cable trays and other obstacles.

"On site, the access floors were a major challenge, as trades had to work on top of services, and the first trade installing was the sprinkler pipe work. After that you couldn't do heavy movements on that floor with any wheeled equipment so we built temporary access floors and walkways to move men and materials safely for the following services trades," said Allan Robertson.

"Lend Lease has a major focus on safety in design," said Frank Way. "All the drawing systems we used for this project were 3D CAD, and we had a consultant with 4D CAD undertaking modelling with time. The 3D CAD was used to determine clash detection with services.

"We had a very strong team approach on this project, including the client, and every one of the consultants. We put together the best possible team."

Lend Lease's own 68-strong onsite team included design managers, engineers and construction supervisors, with project offices located in an adjacent building. The subcontractor workforce peaked at 700 persons, and the management of safety was effective, despite all the risks and challenges. It was also completed with a strong sense of team spirit and outstanding workmanship. Lend Lease held a family open day for staff and client, where they could bring their family members and show them through the building.

"Every one of the people who worked on this project said this is a showcase. The building gives everyone involved a great sense of pride and quality," said Allan Robertson.

"How often do you get to do a unique project like this? We also developed innovative safety initiatives that can be applied across the industry, systems around working from gantries, the use of video controls and screens in cranes, and using a unitised façade so people were not working at heights.

"This was our finest hour - I have not seen a project as unique as this in my career. From the point of view of quality, delivery and uniqueness, the Supreme Court and District Court Project would be a first in the Queensland construction business."

For more information contact Lend Lease's project management and construction business, Level 4 The Bond 30 Hickson Road Millers Point NSW 2000, phone 02 9236 6111, website: www.lendlease.com.au

NOTEWORTHY ASPECTS OF AN EXTRAORDINARY PROJECT

- The Queen Elizabeth II Courts of Law contains a total of 39 courtrooms, with the capacity to expand to 45 in the future if required. These comprise the Large Ceremonial Banco Court, the Court of Appeal, an Applications court, 23 Criminal courts and 13 Civil courts. The two basement levels include car parking for judges, bicycle parking and change and shower facilities and containment for persons in custody. A separate secure entrance has been provided for Corrective Services vehicles.

- Collaboration between Lend Lease's Project Management and Construction business, Architectus and the Consultant team extended down to even small details, like custom designed fire sprinklers that would be barely visible and could be cast into the slabs without requiring drilling. Steel components were reduced in size where possible, and for the maintenance walkways within the unitised façade, plexiglass was used instead of steel for the toe rail to minimise distracting visual impacts.

- The design and construction have striven for a best practice sustainable building, this included the installation of solar panels on the roof for power and for thermal hot water systems; computerised blinds within the façade units and within the interior of each court which are automatically controlled by a computerised solar programme; sensor-switched lighting systems; and a 1,000,000L thermal energy tank below the building, which chills water to around 5 degrees overnight during off-peak, then draws the chilled water through the building as it is required throughout the day, minimising the number of chillers required as well as recurrent cost.

- The top four levels of the double glazed façade, where the Judges Chambers and other administrative facilities are housed, have openings on the interior side, which allow access onto individual verandahs in the façade's cavity.

- Gardens have been incorporated into the building, including a secure garden on the ground floor featuring Kauri pines, and sky gardens incorporating climbing jasmine on trellises stretching up to five storeys high.

- There are three major pieces of public art including the 90 metre "Eyes are Singing Out" work by Japanese artist Yayoi Kusama, which is located in the public square; Indigenous artist, Sally Gabori's "Dibirdibi Country" which is an insitu work behind the Judges bench in the Banco Court, and the 17metre square abstract, titled "Collision and Improvisation" hand painted by Gemma Smith on the Courthouse entrance foyer ceiling.

- Due to the ceiling heights of the courts, the 88m high 17 level building is equivalent in scale to a 20-25 storey building.

- There is around 95,000m^2 of exposed concrete internally and externally, all finished to an impeccable standard.

- In all, the project comprised up to 100 separate subcontractor packages.

- There were regular meetings of all workers, design team, consultants and management on the project, up to 900 people at the peak of works, to build the sense of team effort and keep everyone on the same, remarkable page.

Below Sarri Painters completed all the internal and external painting and finishes for every part of the Brisbane Supreme Court project

There is an enormous amount of expectation with a truly iconic project, requiring tremendous expertise and dedication to rise to the challenge and succeed. Sarri Painters have over fifty years of experience in putting the finishes on major public buildings, and their workmanship on the Brisbane Supreme Court project is a testament to the high level of skill they apply to their work.

Sarri Painters completed all the internal and external painting and finishes for every part of the project, from the basement cell blocks to the roof. The task took two years, and at peak a team of up to 20 painters, including both trade-qualified staff and apprentices.

All the products they used for the job were low VOC products, in keeping with the high ESD standards of the design. With so many different surfaces involved, the range of products used included acrylic wall and ceiling paints, door paints, clear sealants and anti-graffiti paint for the exterior, specialist finishes for the timber floors and courtroom joinery, and epoxy coatings for the jail cells.

"The original specification for the cells was a two pack epoxy finish, which is high VOC's. We looked into an alternative product from the USA, which was low in VOC's, hard-wearing water-borne acrylic epoxy, and this product was accepted and used for the job, resulting in better air quality in the basement area," said Sarri Painters Spokesman, Mr Aaron Sarri.

"This was quite a difficult job from a management and logistics perspective, as we were relying on a lot of different trades to be able to coordinate our program.

"We exceeded the apprentice hours which were required under the contract. All major Government contracts require us to comply with a certain level of apprentice hours, as we are very committed to developing the talents of the next generation of painters, we took the opportunity to provide more hours for our apprentices, so they could make the most of this extremely challenging training opportunity.

"The Supreme Courts project had a very high quality standard, and we are proud of the results we achieved. It is a real showpiece for all those involved."

Sarri Painters have an outstanding reputation for their excellence, quality painting and workmanship. The company has evolved out of a family business which dates back to 1951, upholding the values of commitment to clients through professionalism, dedicated craftsmanship through three generations. Currently, the company's staff include up to 70 trade qualified painters, plus apprentices, administration and management, giving them the ability to manage simultaneous major projects.

Painting is a trade without margins for error, as the skills are so visibly on public display. It is a credit to Sarri Painters that they have contributed to many of Brisbane's most noteworthy projects, including the award-winning GoMA and State Library Extension, and Brisbane International Airport. They also worked on the Southbank Cultural Precinct, not only providing painting for the structures, but also for some of the public art elements.

Sarri Painting has worked across commercial, public, education, infrastructure and high rise residential projects, not only in Brisbane but as far north as Airlie Beach, and also in Perth and Sydney. They approach every project as an active collaboration between their employees, the client and the project's consultant and subcontract team, ensuring an outstanding outcome.

Sarri Painters capabilities include painting, texture and decorative coatings, spray painting, maintenance and repair, specialist coatings, two pack floor coatings and concrete sealers, wall papering, wall talker and vinyl wall coverings, high pressure water blasting, decorative finishes, painting for public artworks, and artwork preservation.

Their painters use the best available products for every job, sourced from the company's well-established network of suppliers. And when a job like the Brisbane Supreme Courts requires something really unique, they go every length to find it.

For Sarri Painters, the primary goal for every project is to deliver the highest quality finishes, safely, on time, and in a manner which is an absolute credit to everyone involved.

For more information contact Sarri Painters, Unit 12 / Windsor Business Park 104 Newmarket Road Windsor QLD 4030, phone 07 3861 1166, fax 07 3357 3155 website: www.sarripainters.com.au

Right ASP Access Floors designed, manufactured and installed the access floors for Brisbane Supreme Court

With their engineering brilliance, global experience and locally based skills, Australian company ASP Access Floors are uniquely able to meet the highly specific requirements of an exceptional project like the Brisbane Supreme Court and District Courts. The access floors they designed, manufactured and installed for every level of the project are so state-of-the-art that the company invented 22 new products simply to be able to provide the combination of function, load-bearing and aesthetics required.

Their access floors made the design goal of the exposed concrete ceilings possible, by enabling all the services, data, communications and HVAC systems to run under the floors. The access floor not only easily met the Australian Standard load requirements but also supported fixtures and a full complement of court users and participants. Also, because every single court room is different in its layout and proportions, so was every single one of the 42 court floors ASP created.

ASP had a total of 35 people working onsite, including a site-based project manager, foreman and their most skilled installation employees. The project also had a Sydney-based project manager, plus engineering design and drafting personnel working on the specific design and detail drawing stages, plus manufacturing workers at two locations.

"This is not a type of job that has even been done in Australia before," says ASP Access Floors.

"It was very difficult, because there were so many unique things we had to do. The project took us three years from beginning to end, and we spent nearly 18 months designing and producing the shop drawings.

"All the work was done in-house. Everything was designed and tested in-house, then we got certification for all the new products designed for the project. Part of the manufacture was done here at our Seven Hills workshop by our trade-qualified staff to ensure it meets Australian standards, part of it offshore at our own facility in China, which uses our own strict quality control procedures to ensure products meet the required standards."

The access floor system comprises a cavity with pedestal supports adhered to the concrete slab, with a steel cementitous panel on top of the pedestals. In Brisbane Supreme Courts a specialty timber was applied to the surface of the access floor panels. The timber layer comprises a Greenline plywood product with a 6mm thick solid walnut layer. ASP was involved in the prototyping stage with lend Lease, part of which involved trying out different finishes, and the walnut was chosen due to its close grain. All the adhesives used for the floors are low VOC, to meet the project's Green design specifications.

"The result looks really special," says ASP Access Floors.

"It is a unitized system, which was all put together on site. The steel panels were brought in from our factory overseas, then the timber element was adhered to the panels in our Sydney warehouse.

"There are aluminium grilles in the floor under each chair in every courtroom for the air-conditioning. This is a new system, and we had to create it, because it had never been done in Australia. This also meant the access floor had to meet certain Air Leakage specifications under the floor. We can control that to achieve the appropriate pressure for the air conditioning, and then achieve a certain rate of leakage so can the system can direct air through the grilles. If you have to use too much pressure, the system uses too much energy."

"We have been in business for 34 years, and this was more complex than all the other projects we've done. Our team have achieved incredible things working together with Lend Lease, everybody agrees it was an impossible task, but we did it, and completed it on program, for which Lend Lease should be congratulated."

"About five years ago we looked at the future of access floors, and redesigned all our products to meet the new specifications architects are putting together, especially in terms of air leakage, and we designed about 60 new products to meet these new specifications. There was a considerable amount of testing, and significant investment."

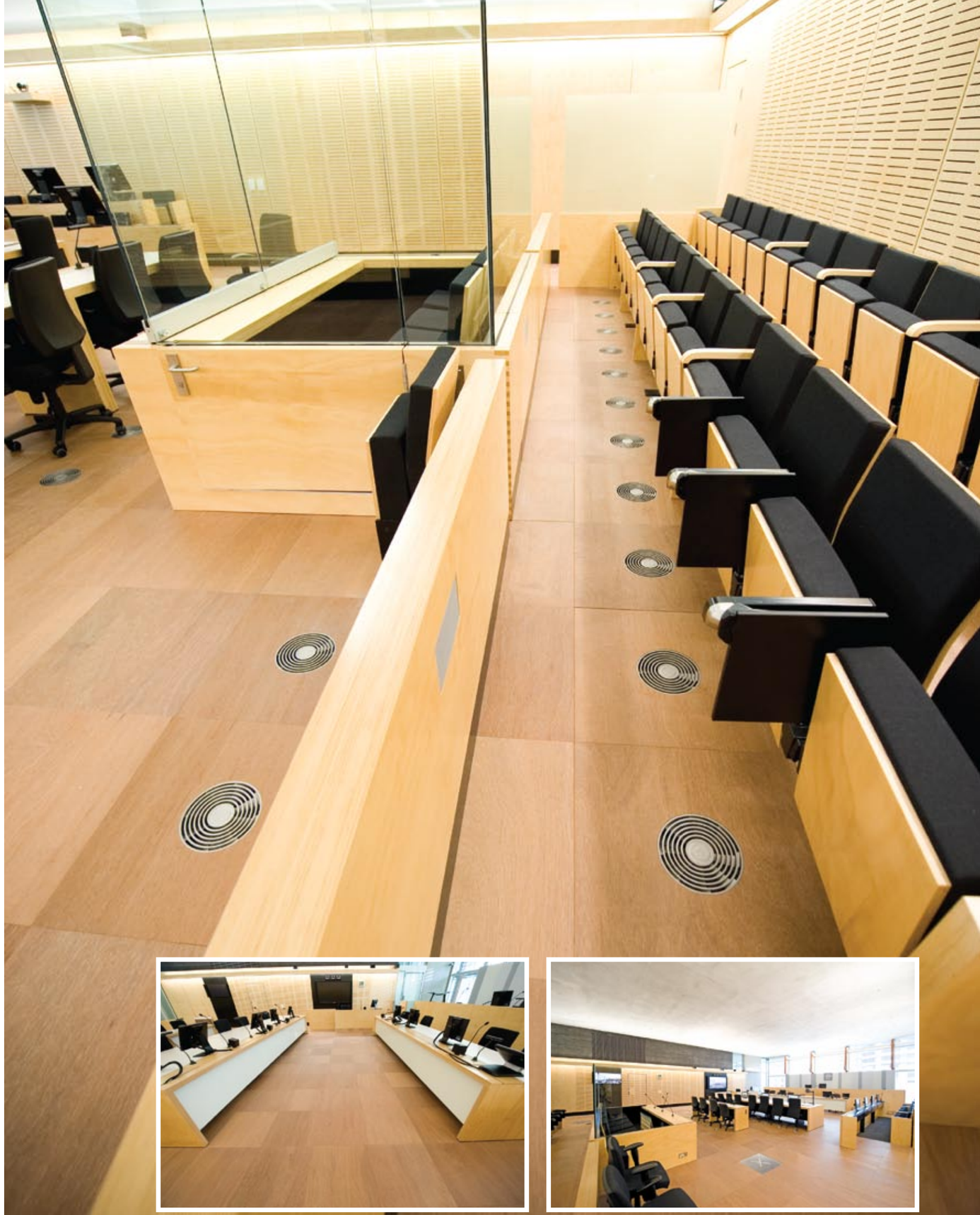
The first ASP project which involved underfloor HVAC was the multi-award winning ANZ Docklands by HASSELL. ASP also contributed their expertise to other landmark sustainable projects, including 1 Bligh St, SA Water, Rio Tinto HQ on Albert St, C7 Lend Lease Victoria Harbour, Red Cross Sydney and Melbourne Water Digital Harbour. Their floors have also been used in the ABC Studios and the new Channel Seven, where the ability to easily replace cables as technology moves on is a major industry advantage.

ASP is a family company, with clear succession planning to ensure their products, reputation and expertise is secure. ASP prides itself in providing the engineering and inventive force, and continually seeking to improve access flooring solutions.

"We are one of the biggest access floor companies in the world, selling our products throughout Asia, the UK and the Middle East, and are opening a distributor in the USA. We do between 110 and 150 projects each year. Our access floors were specified on Cairo Airport, and have been used on major projects in Dubai, for gas processing plants in Saudi Arabia, Bahrain and Qatar, and have also been used in British Parliament and by British Railways," says ASP Access Floors.

"We hold 20-odd different patents in the US, Canada and Europe, so we can achieve things no other company can. We have a great future, and a great team, and the things we've achieved we're very proud of."

For more information contact ASP Access Floors Pty Ltd, 32 Prime Dr Seven Hills NSW 2147, phone 02 9620 9915, fax 02 9620 9918, email: sales@aspfloors.com.au, website: www.aspfloors.com.au



Below VIDEOPRO was the official integrator for all the audio and visual technology systems for every part of the Brisbane Supreme Court

Legal decisions rely on being able to hear and see the participants in a case. For the Brisbane Supreme Courts, meeting this need required Queensland's biggest AV integration project, a task carried out by VIDEOPRO, leading experts in AV systems and video conferencing.

As the official integrator for all the audio and visual technology systems for every part of the courts complex, VIDEOPRO worked with Design Stage and Aurecon, the designers of the AV solution, to install the technology. This included 39 court rooms, meeting rooms, jury rooms, video conferencing rooms, evidence gathering rooms, interview rooms, the hearing room, committee room, basement cells, judges quarters, the library, oral history room and jury assembly areas.

They also worked with Design Stage and Aurecon to install ten levels of digital wayfinding signage, seven 50" Samsung display monitors for court listings on the ground floor and connected four Courts on Level 3 to the street via copper and fibre to the outdoor broadcast cabinet located on the sites 'green wall', which allows broadcast media to connect directly to these court rooms at pre-determined times and intervals.

In all, more than 26,000 manhours of installation, commissioning and testing by VIDEOPRO's installation team were required to complete the task.

An example of the incredible amount of resources involved is the cabling of the courtrooms. This amounted to a total 234km of cable, with 6km of cable installed for each courtroom, comprising 2200m of Cat-6 Data Cable, 700m of SP-250 Speaker Cable, 1000m of 1800B Microphone Cable, 1800m of Figure 8 Cable, 100m of RG58 Cable and 150m of RG59 Cable.

Finer details include custom mute buttons for AV and Audio which VIDEOPRO integrated into the joinery of each room, custom-built AV racks assembled at VIDEOPRO's own facility, and high resolution document cameras which allow court participants to display hard copy documents on courtroom monitors.

"Due to the time frame of the whole project, and the tendency for technology to rapidly change, the design of the original system differed slightly to the end result. The courts systems included audio and visual for participants and the gallery, including microphones, speakers and recording video cameras, which feed out to the State Recording Bureau for transcription. The vision in the courts includes a monitor with a 70" LCD display behind the witness stand, which can be used for video conferencing," explained VIDEOPRO Project Leader, Graham Wands.

"The courtroom audio systems have custom designed speakers using planar drivers, so when someone speaks into a microphone it comes out everywhere but theirs.

"There are controls for the system outside the courts, so material can be played straight to monitors from a laptop, allowing for direct communication. The meeting rooms and conference rooms all have AMX touch panel controls.

"There were a number of stages of installation. The cable tray systems had to go under the floor first, which required close coordination with electrical, data and HVAC trades. Then the cabling had to go in before the floor went down.

"Phase two was to bring in all the AV equipment, place it, and connect it. Then phase three was the testing process, which included loading the files for all the AV signals and files for control panels.

"The biggest challenge was getting the specifications right, and coordinating the sheer volume of equipment ($8 million worth) that had to come in. There was a lot of equipment to source and track – over 50 different vendors – which all had to be tied into the overall works program.

"All the courts were very different, so we had to document individual systems for each space using AutoCAD, producing schematics and doing overlays with the architect's drawings. The rooms were acoustically challenging, being very live rooms with hard ceilings.

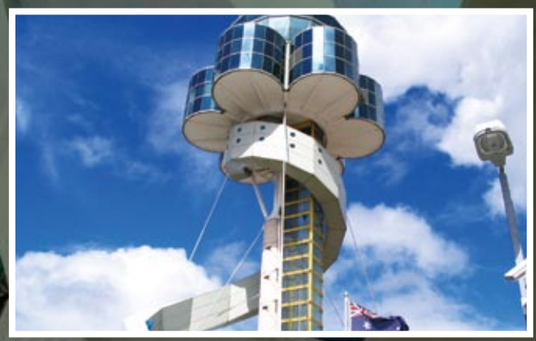
"We are proud that we delivered this on time, to budget and to a very high standard. We were very fortunate to work with Lend Lease on this project. They were extremely flexible, understanding situations where equipment needed to be respecified post-tender due to things like a model becoming obsolete. After such a large project, there is a high level of respect between the stakeholders, we formed some very strong relationships with Aurecon, Design Stage, the Queensland Department of Justice and Project Services. All parties worked professionally and it contributed to the result."

VIDEOPRO has been in the AV business since video first hit the mainstream of business and private life in 1980. Since those long-gone days of BetaMax, they have continued to operate at the leading edge of the technology, combining a retail division, a business solutions division and e-commerce.

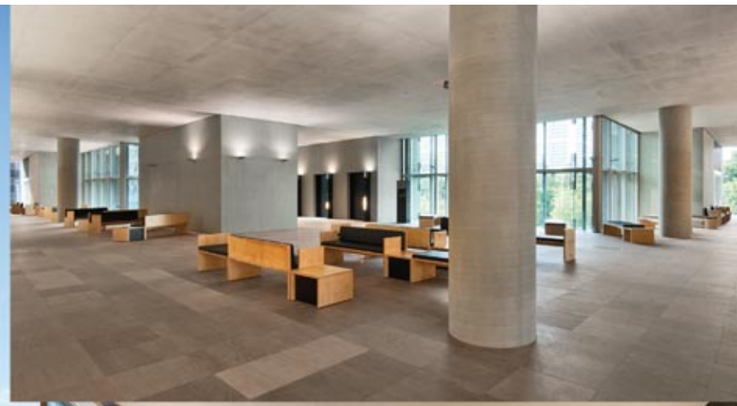
The company's approach to projects is founded on a drive to discover the best possible AV solutions, working as a team to complete each job with focus, commitment and care, ensuring the right result first time. Clients including Queensland Emergency Services, Griffith University Film and Television School, Q Rail, University of Southern Queensland, Queensland Health, Hilton Hotel Brisbane and Queensland Parliament House have relied on VIDEOPRO to provide highly advanced AV solutions ranging from custom-designed displays, AV streaming to internet, communications and recording technology, through to broadcast AV technology and customised videoconferencing systems.

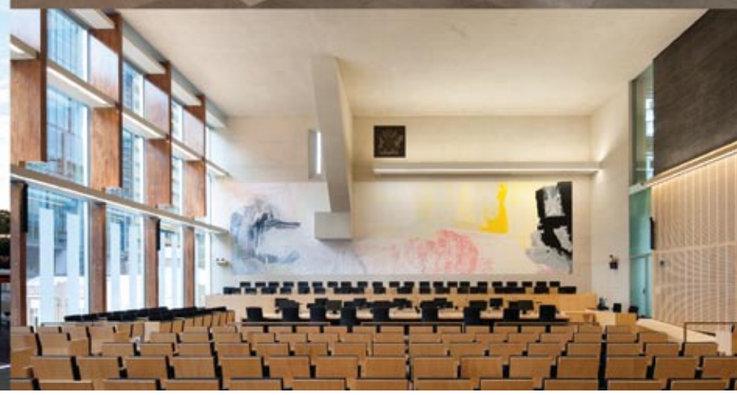
For more information contact VIDEOPRO, 37 Eagleview Place Eagle Farm QLD 4009, phone 07 3250 0000, fax 07 3250 0010 email: sales@VIDEOPRO.com.au, website: www.VIDEOPRO.com.au

Below Major Airport Control Towers, Major Water Infrastructure, Rail Infrastructure



Below Architectus in association with Guymer Bailey created a building which is calm, dignified and has views and light.





Photography John Gollings

Digital technology combined with engineering expertise creates superior means for taking a whole-of-life (WoL) approach to managing built assets, as AssetFuture have demonstrated in their consultancy for the Brisbane Supreme Courts. Their skills created a clear picture from early design stages of how the building's components perform through time. On many projects the company has tackled, this often generates a progressive evolution in the design to ensure a more cost-effective result long-term.

"We were engaged by QLD Project Services on behalf of the Department of Justice to prepare a 20 year budget for the future recurrent maintenance and capital replacement plan for the entire Supreme Court and the Magistrates Court including site works," said AssetFuture Director, Larry Woodland. "For the Supreme Court the plans were developed at the start of construction when we were able to view floor plans and view some of the court room mock ups that had been built. The Magistrates Court plan involved a condition assessment of the Court, which was about five years old at the time.

"Using our application we were able to 'model' the degradation of the building elements and components to produce the long term budgets and detail maintenance plans for the facility, which were used by the client to prepare budgets for future funding and also to develop maintenance contract specifications for the maintenance of both facilities."

AssetFuture have a background in the engineering aspects of asset and facility management, which gives them crucial insight into keeping buildings functional, safe and valuable. This wealth of knowledge underpins their digital software package, 'FacilityFuture'. FacilityFuture brings together every aspect of WoL management, including planning maintenance, budgeting through time, deterioration reports, scenarios modelling, individual asset lifecycle costings, asset valuation reports and future asset condition reports. A recent innovation is the creation of an app and web-based platform which enables the upload of data and downloading of relevant reports from iPads and similar portable devices.

AssetFuture also provide a data upload capability into asset management systems as well as comprehensive infrastructure asset management staff training course, sharing experience gained from a substantial public and private sector track record in WoL management planning.

AssetFuture's clients have included every level of Government around the country; including recently undertaking WoL assessments for Queensland Rail including SEQ rail infrastructure, 320 stations and depots, and current work for the NSW Department of Education completing WoL assessments for over 500 public schools across the state, recently extended by a further 500 schools. Their private sector projects have included Highgate Apartments in Sydney, Ballymore Sporting complex in Brisbane, AL JIMI mall in Dubai for GHD; and BlueScope Steel at Port Kembla, which included risk assessments, equipment budgets and long-term maintenance plans for business critical industrial equipment.

For more information contact AssetFuture, Director: Larry Woodland, mobile 0414 488 541, email: larryw@assetfuture.com, website: www.assetfuture.com

Changing the way spaces work so they are better for people is a guiding principle of Architectus designs, and this concept is embodied on a grand and lasting scale in the Brisbane Supreme Court project. As winners of the design competition for the building held in 2007, a collaborative team of architects from Architectus' offices in Brisbane, Sydney, Melbourne and Auckland in association with Guymer Bailey Architects has been involved in the project from inception through to the official opening in August 2012.

"This was a large site, and one of the three major buildings of Queensland Governance. The design is not only of the courts but also of the square, so it begins with an urban design concept. It is a major change to the city and adds a new square which is the major point of arrival from the Kurilpa Bridge," said Architectus Design Director, Professor John Hockings.

The light-filled, spacious and transparent design reflects changing ideas of what is a courts building. While it still meets the very strict security requirements, and provides separation between the four different user groups – judges, the public, the legal fraternity and offenders – the unhealthy, unsustainable enclosed spaces of the past are no more.

"We wanted to take a quantum leap with the building's extremely innovative design. Because no direct sunlight is allowed in courtrooms, no sound can enter or leave and people outside cannot see in, we had the idea of the double glazed skin. The external ventilating skin of suspended glass, computerised adjustable blinds, sunshade walkways and internal glazing layer is based on the idea of subtropical architecture, where flyscreens and louvres mediate between inside and outside conditions," explained Professor Hockings.

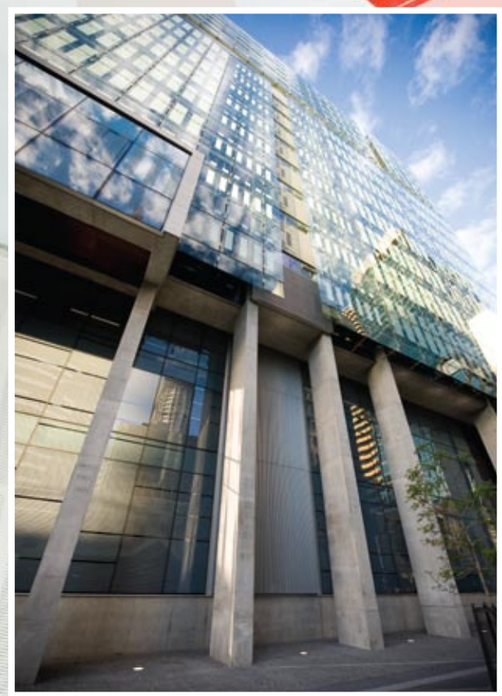
"The external suspended skin has fritting patterns on it so those inside can see out, but those outside cannot see in."

"We wanted to make the rooms comfortable and natural and avoid cold air conditioning. Top down air conditioning is also inefficient, so we designed for displacement air conditioning which comes up through the timber floors overlaying the floor slabs, eliminating the need for normal dropped ceilings with grilles for HVAC so we can just have concrete ceilings. The rooms use pelmet lighting which is thrown up onto the ceiling and bounced down into the room, so there is no glare of artificial light. There are acoustic timber walls up to 3m high, and all natural timber furniture which we designed ourselves. The collaboration (between Architectus, Guymer Bailey, Lend Lease and the consultant team) went right down to small components such as the design of fire sprinklers which are almost invisible and cast into the slab without drilling.

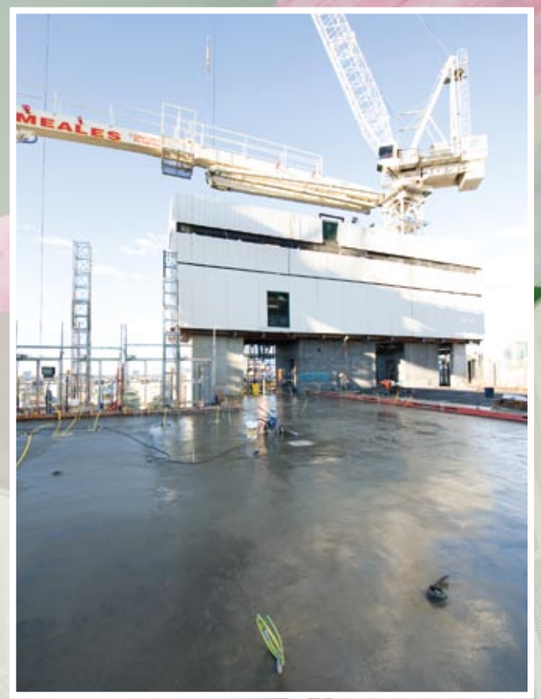
"The building is very easy to move around; it is calm and dignified and has views and light. The whole design is innovative and green; creating habitable, healthy spaces for people."

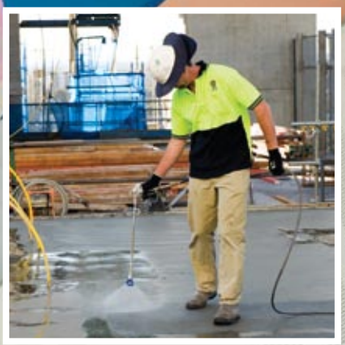
For more information contact Architectus Brisbane, Level 4, 79 Adelaide Street Brisbane QLD 4000, phone 07 3221 6077, fax 07 3221 1645, email: brisbane@architectus.com.au, website: www.architectus.com.au

Below Yuanda Australia were responsible for the double-skinned ventilated façade



Below Around 25,000m² of Concrete has been treated with Densi-Proof on the Brisbane Supreme Court





To embody the concept that the law and the courts are transparent to the public, the architect for the Brisbane Supreme Court envisaged an innovative multiple skin naturally ventilated facade system, designed to actively respond to the environment in order to achieve the performance requirements of the building. After a thorough Pre-qualification and tender process by Lend Lease, Yuanda Australia were awarded the design and construct contract to further develop the concept design to a solution which met not only the performance and aesthetic requirements, but also achieved buildability, safety in design and programme targets. An early award of the contract allowed Yuanda to work closely with Lend Lease, Architectus and facade consultant Aurecon in order to provide valuable input to the concept design, and develop a detailed design that holistically addressed the challenges of the project. From outside to inside the multiple skin system comprised a suspended frameless breathable external glass skin, actively controlled adjustable shading which is linked to the building management system, horizontal shading and maintenance walkways, natural timber and steel structural support members and an internal skin of unitised curtain wall incorporating high performance double glazing. During the tender process for the project, Yuanda proposed an alternative unitised design for the ventilated facade in discussions with Lend Lease, which would see the multiple skin system Pre-fabricated off site and then delivered and installed on site in one panel. This approach sought to maximise factory assembly to maintain a high quality, minimise site interfaces and ensure that installation productivity could meet the construction programme. The unitised multiple skin system had a number of key benefits, including site safety, buildability, installation productivity and the ability to deliver the aesthetic and performance targets. Unitised facade construction entails breaking the facade into a series of repeatable modules, which are then installed on site individually. Applying this approach to a system with multiple layers and components introduced a number of challenges, the resolution of which created a number of unique project innovations. Pre-assembly of both skins of the system and all associated components created a number of practical and logistical issues, mainly related to handling and lifting of assembled panels at each stage of the process. Each typical panel comprised a 5.4m high x 2.4m wide x 1.2mm deep three dimensional module, with each panel weighing 3,200kg (3.2T). The heaviest panel weighed in at around 4.5T. Detailed design and construction planning for the project took 12-18 months to complete, including development of a bespoke gantry system which was located on site and used to lift each panel from a horizontal to vertical orientation prior to installation. The glazing systems were Pre-fabricated at the Yuanda manufacturing facility located in Shenyang, China and shipped as flat-pack components to Brisbane. Each panel was then assembled in Brisbane, incorporating 300 Tonnes of Australian procured and fabricated steelwork to link both skins of the system. Fabrication and assembly took almost 12 months in total, with site installation complete within 2 years. Each individual panel was delivered to site within a steel transportation cage, which allowed the panel to remain stable during the process of re-orientation from horizontal to vertical. The centre of gravity of each pre-assembled module was outside the line of the inner skin of the system, creating difficult lifting arrangements which required bespoke lifting devices to be developed. The panels were lifted from ground level using a custom designed remote controlled twin rail monorail system, which allowed re-location of the panel to the required position on the building for installation. Development of the handling and lifting equipment for the project took around 6-8 months to design, manufacture and commission for use. A significant amount of research and development took place during the development of the Supreme Court project, which included the following: Extensive performance testing to ensure that the facade systems achieved onerous structural, water penetration and air permeability targets; Development and testing of maintenance access walkways to ensure safe access for building maintenance within the multiple skin cavity; Impact resistance testing to confirm the resistance of glazed ground level facade systems to intruder entry and vandalism; Full scale visual prototyping of components and facade systems to ensure efficient assembly and compliance with the design intent; Lifting trials of multiple skin panels to test re-orientation from horizontal to vertical; Development of handling gantry system to re-orientate panels and transition from delivery trucks to site; Transportation trials, involving a full size assembled panel being driven on different road conditions to test the ability of panels to maintain alignment and resist damage during delivery to site.

Since formation in 2007, Yuanda has a strong history of collaboration with Lend Lease, having delivered facade systems for high profile projects such as the ANZ Headquarters in Melbourne Docklands, Gold Coast University Hospital and Myer headquarters in Melbourne. This history has been a key to the success of the Supreme Court project, along with the Yuanda teams reputation for innovative design, advanced technology, highly efficient and high quality production techniques and pioneering installation innovations. The Brisbane Supreme Court project is unique in the Australian facade industry, and in many respects the design and construction techniques used are a first for the industry in this country.

For more information contact Yuanda Australia Pty Ltd, Suite 3/40 Brookes Street, Bowen Hills QLD 4006, phone 07 3251 6100 fax 07 3251 6150, website: www.yuanda.com.au

As an environmentally friendly, highly effective and easy to apply concrete curing & waterproofing system, Protect Crete Densi-Proof is becoming the product of choice for major project builders looking to save time and money at the time of pour, and deliver a structure with long-term protection from concrete cancer.

Densi-Proof is sprayed on freshly poured concrete to provide a faster cure than the standard water cure, allowing the fast-tracking of applying subsequent coatings and toppings on both walls and flooring.

Originally developed in the USA, and now manufactured in Australia, Densi Proof has never had a failure in the 27 years it has been in the market. The products have been distributed in Australia for over a decade, and are backed by a 15 year guarantee. Protect Crete products including Densi-Proof have been tested for VOC compliance by Cetec-Foray under the specification of the Green Building Council of Australia and passed the stringent requirements easily, meeting the criteria of Green Star. Earlier testing by a Melbourne laboratory, Environmental Consulting Pty Ltd, gave values of less than one 500th of a gram per litre of VOC, virtually none.

One of the biggest projects Protect Crete has supplied to date is the Lend Lease built, Gold Coast University Hospital project, which is currently under construction. By completion, Andrew McLeay, Director of Protect Crete Queensland, estimates they will have supplied over 50,000m² of Densi-Proof, ensuring one of the largest hospital projects in the Southern Hemisphere is protected from cracking, moisture ingress and other preventable risks to the integrity of structural concrete.

Protect Crete Queensland supplied Lend Lease with Densi-Proof for Brisbane's new Supreme Court project, for both curing and waterproofing. Around 25,000m² of concrete has been treated with Densi-Proof throughout the complex, with Protect Crete meeting fast turnaround timeframes for delivery. "The Brisbane Supreme Court is a unique project that has not been attempted in Australia before. It will be a Brisbane city landmark, and Protect Crete Qld are very proud to have contributed to the project's success," says Andrew.

Protect Crete's range also includes Densi-Proof "Plus" products for specific uses. Densi-Proof plus Surface Repeller has been used extensively for the Supreme Court car parks, and also the car parks above the tenancies at Marina Mirage on the Gold Coast. Densi-Proof plus Surface Sheen was used extensively in the plant rooms, to provide a clean and safe environment around electrical equipment.

Other major projects protected by Densi-Proof include; the Brisbane Airport Link, where it has been used to protect the underground concrete pipes, Mackay Hospital and Centro Supermarket in Emerald during flood restoration. The quality of the products & their proven results have seen repeat orders from Mirvac, Baulderstone, Lend Lease, Abigroup and Hutchinsons Builders.

For more information contact Protect Crete QLD, phone 07 5520 3391, fax 07 5576 5148, mobile 0422 320 468 email: info.qld@protectcrete.com.au, website: www.protectcrete.com.au

Below WAREMA external venetian blinds were supplied for the project

Below TA Taylor undertook concrete cleaning and patching for the Brisbane Supreme Court

The new Brisbane Supreme Court project features a double skin façade integrated with Warema external venetian blinds. This combination results in a building envelope that tempers climate effects, controls heat gain and attenuates daylight. The concept is widely used in energy efficient buildings internationally. It allows the significant benefits of external sunshading to be used in tall buildings regardless of wind effects. Architectus,; the architects of the project describe the design as exhibiting "a high degree of transparency and lightness appropriate to the expression of contemporary justice and to it's sub-tropical locale". The choice of Warema external venetian blinds aligns with these objectives.

The installation consists of Warema 80mm flangeless motorised venetian units installed inside the outer glazing and housed in slim pelmets within the structural framing of the façade. Each blind is individually motorised and guided by cables anchored to the maintenance walkway. Installation occurred at the assembly location of the façade modules with the complete module then lifted into final location.

Control is via a Warema Climatronic control system. As the sun reaches each façade the blinds descend and the slats rotate in unison to track the path of the sun using an integrated Warema solar programme. The layout of the 39 courtrooms faces court participants towards the façade with the judge's bench framed by double height façade glazing. No direct sunlight passes through the blind but diffuse light reflects through the slats creating an interior filled with daylight but importantly without glare. When the sun departs from the façade the blinds retract and the cycle continues daily.

Warema is the international market leader in external sunshading and a leading innovator in the blind industry. Many blade profiles and configurations are possible to suit the requirements of different projects. A large range of control systems from simple devices to BMS integrated control networks offers endless possibilities for shading strategies. Warema products are manufactured in Germany and available in Australia through a network of specialists.

For more information contact Shade Factor Pty Ltd, Australasian agents for Warema, phone 03 9558 3006, website: www.shadefactor.com.au

Achieving the required off-form concrete finish quality for the Brisbane Supreme Court project was assisted by the diverse specialist talents of TA Taylor, who undertook concrete cleaning and patching on an on-call basis between July 2010 and August 2012 for quality control issues including marks, rust stains from formwork, minor imperfections and cracks.

TA Taylor General Manager, Jim Aitken, said a lot of trial and error colour matching was involved in mixing colour pigments to achieve seamless colour matching. The cleaning process was also a customised system involving acetic acid, developed to be as environmentally benign and safe for the workforce as possible. They engaged an industrial chemist to analyse the staining and develop a formula, which was redeveloped as work progressed to get the results required.

More broadly, TA Taylor are leaders in the field of polyurea and polyurethane applications and technologies, undertaking projects across Australia including recently relining the South Bank main lagoon and boat ponds; and providing a polyurea protective coating and lining system for parts of the CLEM7 tunnel, the Western Corridor Recycled Water Project, Gold Coast desalination plant and Orange Base Hospital helipad.

TA Taylor were founded in 1963, and have grown into a highly diverse operation which also provides building reports, building inspections, expert witness services, carbon fibre for structural strengthening, corrosion control, concrete cancer repairs, structural concrete repairs, brickwork repairs, Heritage restorations, waterproofing, painting and rendering, facade restoration, joint sealing and general building repairs.

All their work is performed to a high standard, guided by QMS, EMS and WHSMS which meet the requirements of ISO 9002.

"We have a very mobile, well-trained and highly skilled workforce, and three Pantechs trucks equipped with generators and spray equipment, allowing us to undertake quite remote jobs, such as lining holding tanks for Xstrata Zinc at Mount Isa, and water reservoirs for remote local councils" said Jim.

"We have also engaged Dudley Primeaux III, the inventor of the polyurea technology, as a consultant on one of our projects. This gave us an even greater understanding of the polyurea technology & methodology. We are members of the PDA (Polyurea Development Association) in the USA, this gives us access to the latest developments in application and product requirements. The product itself can be manufactured to suit any project's requirements," said Jim.

For more information contact TA Taylor (Aust) Pty Ltd, 152 Gerler Road, Hendra QLD 4011, phone 07 3268 4955, email: reception@tataylor.com.au, website: www.tataylor.com.au

Below Chemind supplied all waterproof membrane systems for the Brisbane Supreme Court

Below Clean-Air Australia undertook the cleaning of under floor plenums from the Basement through to Level 14 of the building to remove construction debris.

The Brisbane Supreme Courts project is a shining example of supplier, contractor and project management teams working together to meet client expectations, according to Scott Whitelaw, Technical Manager for Chemind & Grace Construction Products (Chemind).

Chemind supplied all waterproof membrane systems for the project, which were applied by A1 Waterproofing & Applications Pty Ltd, one of the company's approved, specialist applicators. There were three key challenges: a tight construction schedule, numerous periods of heavy wet weather, and the need for waterproofing systems that would resist damage and cure rapidly after application.

Products from Chemind and from Grace Construction Products provided the solutions. Grace's iconic self-adhesive, low VOC sheet membrane, Grace Bituthene® 3000, provided guaranteed waterproof integrity to below grade structures. "Chemspray 790 spray applied polyurea membrane provided solutions on podium decks, insulated roof decks, deep planters and balconies. This Green Star compliant, fast curing system for waterproofing and protective coating applications simplifies the process, producing a robust but flexible membrane, fully bonded to the underlying concrete structure," said Scott.

"The cured waterproofing could be walked on within seconds and the area returned to full service in hours. Daily application rates of over 1500m² could be achieved, helping regain time lost due to inclement weather." Chemind supplied other Green Star compliant products for the project including: Aquagard M and Ultraure A-80 liquid applied PU membranes; Ultraure A-80 Non-Slip Top Coat; Epocote F100W HD water-borne epoxy floor coating; and Fastflex anti-efflorescence, PMC membrane for waterproofing of wet areas prior to tiling.

"As we do for all our projects, Chemind provided a unique combination of proven waterproofing systems for every area of application, technical backup to the applicator plus the ability to liaise directly with site engineers and propose economic, technical solutions to complex waterproofing details. Our collaborative approach delivers high quality, fully traceable waterproofing installation," said Scott.

Other challenging Lend Lease projects that Chemind and Grace have contributed to include Convesso and Serrata Apartments, Melbourne; 1 & 4 National Circuit and a new Government Complex, ACT; Liverpool and North Shore Private Hospitals, Sydney. Grace product expertise in major civil projects has been widely utilised on SE Queensland's Tugun Bypass; Clem 7; Airport Link and Legacy Way as well as Sydney's rail duplication on bridge decks and tunnels for Melbourne's EastLink and PerthMetro.

Since 1976 Chemind has been developing their expertise, constantly developing new product technologies. Working cooperatively with applicators, site managers, designers, engineers and architects across Australia, New Zealand and the Asia-Pacific region, they ensure innovative, cost-effective waterproofing and structural protection solutions.

For more information contact Chemind Construction Products, phone 1800 334 444, email: info@chemind.com.au, website: www.chemind.com.au

Like their name suggests, Clean-Air Aust are specialists in ensuring a healthy indoor atmosphere in spaces like the Brisbane Supreme Court. Their team of a dozen skilled ventilation technicians undertook the cleaning of under floor plenums from the Basement through to Level 14 of the building to remove construction debris.

"The objective of cleaning of the underfloor plenums was to reduce indoor air quality (IAQ) problems resulting from construction. As the underfloor plenum is used as a direct pathway for the air to be supplied to the rooms it was essential that all contamination and dust be removed to provide clean air to the building," said Clean-Air Australia Spokesman, Chris Bowd.

"Under floor plenums require specialized cleaning methods. We had a HEPA filtered vacuum machine that is certified 99.97% efficiency at 0.3 microns and negative air extraction systems with mechanical cleaning to achieve the Post construction cleaning to ISO 14644-1 1999 Class 8 Standard for Cleanliness.

"Clean-Air Aust is privileged to be associated with this prestigious project and thank Lend Lease and the project team for giving us the opportunity to prove our capabilities and expertise."

Clean -Air Aust are the largest HVAC hygiene and restoration company in Queensland, with 20 years experience in their field and a skilled workforce including Ventilation Maintenance Technicians, Engineers, Project Managers and supervisors. They provide HVAC restoration services to the Government sector, Health sector, Commercial buildings and facility cleans from Northern New South Wales to Far North Queensland.

A NADCA-certified company, Clean-Air Aust. have spent many years on research and development. In addition to cleaning underfloor plenums, they also apply mould preventative coatings, and specialise in rust treatment, restoration and painting of HVAC equipment.

"Clean-Air Aust. provide detailed inspections and air quality testing to determine the scope of work required and priority levels for the air conditioning systems throughout the building to enable asset managers to prioritise and schedule remediation work to be carried out effectively as per the Australian Standards," said Chris.

Other major projects include the Prince Charles Hospital Emergency department expansion, Nambour hospital refurbishment, Robina Hospital Expansion, Cairns and Mackay Courthouse, and the Gold Coast University Hospital.

For more information contact Clean-Air Australia Pty Ltd, Unit 2/33 Achievement Crescent Acacia Ridge QLD 4110, phone 07 3274 2833, fax 07 3274 2733,
Geoff Kelly – Managing Director – 0439 933 649
Chris Bowd – Sales Manager – 0418 743 527
Muni Kumar – Sales Engineer – 0448 883 966
Trent Giles – Project Manager – 0448 114 410
Felix Kanofski – Supervisor – 0430 391 359

Below Nawkaw applied their spray blended masonry colouring products to all the levels of concrete for the Brisbane Supreme Court project

Mixing colour-controlled concrete can be a risky business. Nawkaw offer an efficient, waste-free alternative, which is on very public display at the Brisbane Supreme Court project, where Nawkaw applied their spray blended masonry colouring products to all the levels of concrete.

"Our product was picked for this project because of the natural finish it provides to any type of concrete, including any patching," explained Nawkaw Spokesman, Sam Malik.

"Unlike traditional methods such as paint, the Nawkaw process is clean and efficient and the depth of colour/translucency is easily controlled.

"Nawkaw's penetrating emulsions are formulated with colour fast oxide pigments. As the colour penetrates the surface of the concrete, it locks into the surface. It will not fade, peel or crack, and requires no on-going maintenance, unlike a paint system that will require recoating every 6-10 years. This results in a longer life cycle on analysis as well as the range of Nawkaw concrete colours being guaranteed for a minimum of 25 years."

Nawkaw coordinated their works with the Lend Lease construction program over a two year period, post-applying their products to finished sections of concrete, and delivering effective and stunning results in a timely manner.

Because the Nawkaw Process uses between 500 to 1000 times less oxides than in-mix coloured concrete, which requires an integral oxide dosage, the consumption of non-renewable mineral resources is greatly reduced. Coupled with the longevity of the colour and no requirement for maintenance products, this makes for an environmentally responsible choice.

"The colouring achieved is also more consistent than traditional in-mix colouring methods, therefore the risk of needing to reject and scrap any concrete batches is virtually eliminated. The technician is also able to blend away any tonal variations, patches and the like," said Sam.

Nawkaw products have been used on many major projects around the nation, including ANU Canberra student accommodation, Canberra University Student Accommodation, Pat Rafter Arena in Queensland, Top Ryde City in Sydney and Waterfront City in Melbourne. The company holds HIA, MBA and BSA licenses, and has extensive experience in both new and repair/refurbishment projects including colouring for precast concrete, off-form concrete, brickwork and masonry products.

"The great thing about our company, our people and our products is that we are both in Australia as well as having a worldwide presence, therefore whatever our customers can think of in terms of colour or process or masonry refurbishment, we can assist in achieving it, because our team has such vast experience to draw on," said Sam.

For more information contact Nawkaw P/L, phone 1300 NAWKAW (629 529), or contact Sam in QLD on 0407 115 556, fax 07 56041104, website: www.nawkaw.com.au

Below Signtec Visual Solutions manufactured and installed over 2,000 items of signage in vinyl, metals, plexiglass, and plastic

job came together really well, and we are very proud of what we've manufactured and supplied – we maximised our efforts to make sure that the signage produced was above and beyond expectations."

Signtec Visual Solutions provided Braille and Tactile Signage which meets the requirements of the Disability Discrimination Act (DDA). These signs are CNC routed, with the individual letters chemically bonded into the surface of the sign. The Braille uses securely embedded stainless steel spheres into CNC drilled holes – each sphere needs to protrude 0.46 to .53mm to meet the DDA standard. VISUALISE™ Braille & Tactile Signs are proudly manufactured in Australia by Pitt & Co (Aust) Pty Ltd to a Patented design. VISUALISE™ Braille & Tactile Signs founder Trevor Pitt, developed the signage system in conjunction with the relevant authorities and Australian standards. Other special aspects of the courts signage include the use of 12V LED's for all the electrical signage, for maximum safety and energy efficiency, and an immaculately applied anti-graffiti coating on the entry sign. Like all Signtec products, everything is made to last, with only the best quality materials being used.

For over 30 years, Pitt & Co (Aust) Pty Ltd - has been designing, manufacturing and installing award-winning visual communication, from Wayfinding signage, identification plates for machinery through to corporate logos that light up the sky. Other projects to their credit include signage for Queensland Rail, Bombardier Transportation Australia, QR National trains, Downer EDI Rail, RTA NSW, Nambour Hospital, The Friendly Society Private Hospital in Bundaberg, Gas Pipeline Companies, various Translink Railway Stations and signage for Suncorp Stadium.

For more information contact Signtec Visual Solutions, 113 Delta Street Geebung QLD 4034, phone 07 3216 5088, fax 07 3216 5470, website: www.signtec.com.au, www.pittco.com.au

In producing all of the signage for the Brisbane Supreme and District Courts project, Signtec Visual Solutions and VISUALISE™ Braille & Tactile Signs had to deliver an extraordinary level of customised detail. From the 12m engineered aluminium sign construction in the main courtyard, through to all the interior visual identification and internal wayfinding communication, every item was individually manufactured at the company's Maryborough and Brisbane facilities to the highest quality standards.

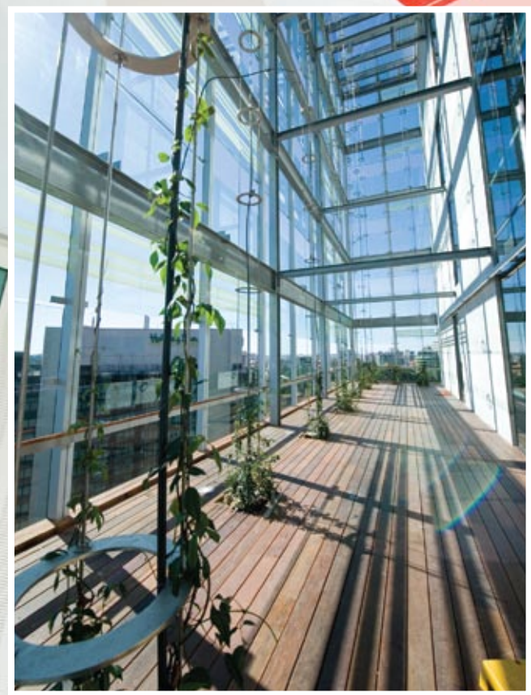
Signtec's staff undertook the complex installation task, often working night shifts. Overall the company manufactured and installed over 2,000 items of signage in vinyl, various metals, acrylic, and aluminum, and the work continues with ongoing additions and maintenance. "We worked very closely with the builders & the architect, and we are really pleased with the way our products and their building complement each other," said Signtec's Project Manager. "Normally we are on site as a project is nearing completion but due to the fact that everything was unique in the specification, meant there was a considerable degree of variance for every sign - everything had to be individually site measured, making the logistics of the project all the more challenging."

"We developed a method of CNC routing and folding all our aluminium to get dimensional accuracy - everything had shadow lines. There were extremely specific details for some of the signs, such as the court entry signage and prisoner elevators."

"This project was a great experience, and we valued the excellent working relationship we had with Lend Lease and the other subcontractors. The

Below Caelli Constructions provided the formwork, and operation of the in-placed core system, for the Brisbane Supreme Court project.

Below Ronstan Tensile Architecture were responsible for the vertical greening trellises reaching to the 19th floor of the Brisbane Supreme Court



Challenging construction projects have been relying on Caelli Constructions since 1972, for the kind of skilled expertise and quality solutions they delivered in providing the formwork, and operation of the in-placed core system, for the Brisbane Supreme Court project.

Caelli have their own fully equipped manufacturing facility which designs and produces specialized formwork systems, including edge protections screens, table forms and self climbing wall shutters. The services they provide across Queensland and Victoria include concrete, reinforcing, concrete pumping and shotcrete services and plant hire; tower cranes sales, hire, erection and dismantling; waterproofing and joint sealing; and specialised labour hire.The trade skills among their over 500-strong workforce includes carpentry, concreting, steelfixing, crane operations, concrete pumping, welding and manufacturing, all supported by digitally-based management systems which ensure logistics, communication and safety are effectively coordinated between the various project sites.

Caelli's combination of skill and capability was recognised with the 2003 MBA Specialist Contractor of the Year award for City Point on Bourke. Other current major projects include the Peter Doherty Institute for Brookfield Multiplex and Queensland Children's Hospital.

For more information contact Caelli Constructions – Head Office: PO Box 21 Craigieburn VIC 3064, phone 03 9305 7733, fax 03 9305 7744, email: info@caelli.com.au. ***Queensland Office:*** 515 Olsen Avenue Southport QLD 4215, phone 07 5564 5550, fax: 07 5564 5511, email: qld@caelli.com.au, website: http://www.caelli.com.au/index.htm

Complex, challenging, or unique applications of Tensile Architecture, like the vertical greening trellises reaching to the 19th level of the Brisbane Supreme Court, require specialist talents to achieve the vision.

Ronstan Tensile Architecture delivered the goods, engineering and installing 32 long span tri-cable vertical trellises and a myriad of mounting discs, spacer rings with positioning clamps, tie backs, turnbuckles, fixing rods, brackets and anchors – all fabricated in stainless steel, tested for integrity and safety, and with Certified Quality to ISO 9001:2000.

Since the 1950s Ronstan has been evolving and redefining the possibilities of Tensile Architecture, contributing to projects as diverse as Taronga Zoo's chimpanzee enclosure and Festival Footbridge in Adelaide.

"Our products are suited to many varied applications from structural bracing to architectural features," said Ronstan spokesman, Sascha Humphreys.

"A lot of consideration, time and technical expertise goes into our projects. We engineer to specific criteria, and examine every single detail. We don't shy away from the complicated and do our utmost to realise our clients' dreams."

For more information contact Ronstan Tensile Architecture, 19 Park Way Braeside VIC 3195, phone 03 8586 2000, email: architectural@ronstan.com.au, website: www.ronstantensilearch.com

STRATEGIC FORMWORK

Below Strategic Formwork - Suppliers of self climbing & crane lifted jumpforms

Photo courtesy of Chay Doleman Photography

This project consisted of five of our telescopic self climbing CoreMakers, three of which had 5400mm pour heights each requiring double decker internal and external walkway platforms to facilitate a safe working environment, for the carpenters and steel fixers.

Stringent architectural requirements demanded that each CoreMaker was to include a variety of off-form finishes, including boarded Oregon tongue and groove shutters as well as three different concrete mixes per casting.

Site logistics demanded that two selfclimbing tower cranes and one concrete placing boom were incorporated within the CoreMakers. This resulted in the CoreMaker being extended in plan to incorporate the construction of two off-form perimeter columns which started at ground floor and terminated earlier than the surrounding corewalls. Subsequently the CoreMaker was designed to lift these additional formwork panels and working platforms throughout the floors where these elements were not present. Adding to the complexity, these off form columns required temporary bracing as the jumpforms were maintained 4 floors ahead of the slabs.

We are proud of overcoming the challenges set throughout this project, and have been delighted to have participated in this prestigious project.

For more information contact Strategic Formwork, phone 02 9545 0244, fax 02 9545 0255, website: www.strategicformwork.com