

Submission No. 1
(Shanghai World Expo 2010)

M.L.
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Australian Pavilion
WORLD EXPO
SHANGHAI 2010

CONSTRUCTION OF THE AUSTRALIAN PAVILION AT THE SHANGHAI WORLD EXPO 2010

SUBMISSION TO
THE JOINT PARLIAMENTARY STANDING COMMITTEE ON
PUBLIC WORKS



Australian Government

Department of Foreign Affairs and Trade

Shanghai World Expo 2010

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1 Submission introduction

- 1.1 The Department of Foreign Affairs and Trade (DFAT) seeks approval from the Parliamentary Standing Committee on Public Works (PWC) to proceed with a purpose built temporary building on the site allocated to Australia in the South-east Asia and Oceania area of the Shanghai World Expo 2010 (expo), located in Zone B on the Pudong side of the expo site in Shanghai, China. This temporary facility will be developed and managed by DFAT on behalf of the Australian Government.
- 1.2 Previous Australian pavilions at world expositions in Seville in 1992, Hanover in 2000 and Aichi in 2005 have been granted exemption from scrutiny by the Committee on the basis of urgency. Project timings for Australia's presence at this expo require a construction, exhibition and technical operations contract to be signed by mid-September 2008, assuming a tender release date of 20 June. DFAT is available to respond to Committee queries quickly in order to both meet the September deadline, and provide further information to the Committee if desired.

(i) IDENTIFICATION OF THE NEED

2 Summary of proposal

- 2.1 The proposal is to construct a new temporary building (image A) on a vacant site in Zone B of the expo site in Pudong, Shanghai, China (image B). The design of the Australian pavilion will provide the platform from which we will meet our objectives for Australia's participation in the expo (paragraph 5). The pavilion provides a public exhibition space (including a 1000 seat theatre – image M), dedicated VIP area (including 250 sqm conference room – image L), representational offices, smaller dining area, performance spaces for the cultural program, back of house technical areas, queuing space and commercial retail and food and beverage areas.
- 2.2 The pavilion footprint is 3178 sqm with a total floor area of 7306 sqm over three floors on a 4800 sqm plot in the South-east Asian and Oceania cluster in the centre of the expo (image B, C and D).
- 2.3 The images listed in paragraph 43 are in a logical viewing order, not in the order referred to in the submission.

3 Background

- 3.1 DFAT acquired portfolio responsibility for Australian participation in World Expositions in 1998 and represents Australia at the Paris-based Bureau International des Expositions (BIE), of which Australia is a voting member. The Department is responsible for ensuring effective whole-of-government representation and manages the participation and involvement of a complex range of key stakeholders and partners that include:
- (a) other Commonwealth agencies (e.g. Austrade, Tourism Australia);
 - (b) state and territory governments;
 - (c) business and industry groups; and
 - (d) sponsors.
- 3.2 DFAT has managed a similar Australian presence at the last two world expositions: Hanover, Germany in 2000; and Aichi, Japan in 2005.
- 3.3 In addition to the \$61 million being provided through the budget, the Government will seek an estimated \$22 million in funding through corporate sponsorships and partnerships with the states and territories.

- 3.4 The then Prime Minister announced on 29 June 2006 that Australia would participate in the expo.
- 3.5 This will be the first major World Exposition since Aichi, Japan, in 2005. It will take place between 1 May 2010 and 31 October 2010. The expo park covers an area of 5.28 square kilometres and is located on the waterfront of the Huangpu River between Nanpu Bridge and Lupu Bridge, in downtown Shanghai, China.
- 3.6 The Shanghai World Expo Organising Bureau (the bureau) expects that:
- (a) the total number of participants will exceed 200, consisting of at least 170 countries and 40 international organisations, corporate groups and NGOs. As of 18 June 2008, 172 countries and 33 international organisations plus numerous Chinese government organisations and corporate groups have confirmed that they will participate; and
 - (b) the total number of visitors to the expo will be approximately 70 million people with 93 % of the visitors to be from China itself, based on experience, we expect up to 7 million visitors to the Australian pavilion.
- 3.7 The bureau has adopted the theme of “Better City, Better Life” for the expo. It has identified the following expo sub-themes:
- (a) “Blending of diverse cultures in the city”
 - (b) “Economic prosperity in the city”
 - (c) “Innovations of science and technology in the city”
 - (d) “Remodelling of communities in the city”
 - (e) “Interactions between urban and rural areas”

4 Need

- 4.1 In terms of its potential to assist Australian business and raise Australia’s profile in a strategic market, the expo represents a unique opportunity, eclipsing in scale any previous expo, including Aichi in 2005. It is therefore essential that Australia’s presence at the expo be commensurate with our economic and strategic interests in China. Those bilateral interests are broad, substantial, multifaceted and evolving. They are based in large part on strong economic complementarities. They are vital to Australia’s economic future.
- 4.2 China is Australia’s second largest trading partner, with two-way trade reaching some \$50 billion in 2006. It is our 2nd-largest export market, **our largest merchandise**

trading partner, our largest source of overseas students, our 2nd-largest buyer of resources and energy commodities, an increasingly important investor in Australia, a fast-growing tourism market and an attractive financial services market.

5 Participation objectives

5.1 DFAT, with stakeholder input has identified the following objectives for Australia's participation in what is expected to be the largest world expo to date:

- (a) to project a contemporary image of Australia as a culturally diverse and harmonious nation, technologically sophisticated with a dynamic forward-looking economy;
- (b) to utilise the Australian presence at the expo to strengthen and deepen ties between Australia and China by reinforcing existing bilateral contacts, and by cultivating and nurturing new areas of bilateral cooperation and exchange;
- (c) to promote bilateral trade and investment through an active business liaison program in key sectors working with Austrade and state and territory Governments;
- (d) to raise awareness of Australia's economic achievements and strengths in major export sectors;
- (e) to raise the profile of Australia as an innovative nation with excellent education, training and scientific research capabilities;
- (f) to increase awareness of Australia as an exciting travel destination, highlighting Tourism Australia's current priorities for the Chinese market;
- (g) in line with the expo themes, to promote Australia's environmental and urban development credentials and commitment to sustainable development, effective urban-rural interface and the use of technological solutions in the urban environment; and
- (h) to manage project elements professionally and ethically and to ensure sound financial and contract management practices are implemented.

6 Overview of Australia's participation

6.1 Australia will achieve the objectives described above through a striking Australian pavilion containing high-impact exhibitions and presentations. Importantly, the

- pavilion will also host targeted business, communications and cultural programs, as well as other associated events such as industry seminars and VIP visits.
- 6.2 The pavilion is scheduled for completion on 1 March 2010, two months prior to the opening of expo to provide adequate settling in time to test systems and operations (this was of great value in Aichi).
- 6.3 **The Pavilion** - The objective of the pavilion is to tell the “Australian Story” through interactive exhibits, displays and multimedia presentations. An anticipated 124 staff, many of whom will be bilingual, will work at the pavilion, engaging directly with visitors. The pavilion will also provide a wide range of quality Australian food and beverage, gifts and merchandise.
- 6.4 The pavilion will serve the following core functions:
- (a) inform and engage visitors through displays, exhibitions, multimedia presentations and information;
 - (b) entertain visitors through cultural performances; and
 - (c) facilitate business and people-to-people links through the activities hosted in the VIP facilities.
- 6.5 The design concept describes an impressive building with distinctively Australian elements, intended to set it apart from other pavilions in the highly competitive expo environment. Its innovative design will highlight Australia’s expertise in architecture, interior design and urban planning, reflecting the ‘Better City, Better Life’ theme of the expo. Its exhibitions will display Australian strengths in strategic sectors such as innovation, the environment, science and technology, research and education, and will highlight the substantial historical and contemporary business and people-to-people connections between Australia and China.
- 6.6 **Business program** - DFAT will lead the coordination and hosting of a comprehensive business program in the pavilion VIP area (including a 250 sqm facility). This will include business networking events, trade and investment seminars, lunches, dinners and receptions, corporate sponsor promotions and events that highlight strategic cooperation between Australia and China. We expect to host some 250 events over the 184 days of the expo.
- 6.7 **Cultural program** - A vibrant, contemporary cultural program incorporating major concerts, daily shows by Australian staff performers and a rolling program of performances by visiting Australian artists will:
- (a) highlight and promote Australian culture and arts exports;

- (b) support the pavilion business and VIP programs;
- (c) celebrate the diversity of Indigenous arts; and
- (d) add to the pavilion experience for all visitors.

The cultural program will be managed by a specialist contractor, to be selected by tender in 2008. While the majority of the cultural program will take place in the Australian pavilion, elements of the program will take place in other areas of the expo site.

6.8 **Communications program** - The Communications program will deliver a broad scope of communications and public affairs services designed to extend the reach of the activities taking place in and around the pavilion to a broader audience, including:

- (a) the creative use of internet and other modern communication technologies;
- (b) media management;
- (c) public relations;
- (d) the production of collateral materials and publications; and
- (e) promotional events management.

6.9 **Other events** - It is anticipated that the pavilion will be used for a range of other events including functions highlighting Australia-China people-to-people links (e.g. sister city relationships), activities hosted by DFAT on behalf of key stakeholder groups (e.g. tourism and education organisations), sponsor functions and visits by high profile Australians.

7 **Design process to date**

7.1 The design of the Australian pavilion has been undertaken pursuant to a tender process conducted by DFAT in 2007. The Commonwealth provided \$1.5 million in administered funding in financial year 2007-2008 to develop design options for Government consideration.

7.2 The design tender resulted in the contracting of Melbourne firm Think OTS and subcontracted architects Wood Marsh. The contractor worked closely with DFAT during 2007-2008 to design an appropriate physical building and exhibition concept.

7.3 Engineering contractor Connell Wagner are finalising mechanical, acoustic, geotechnical and other engineering works in support of the design in both Australia and Shanghai.

7.4 Quantity Surveyor Ryder Hunt has reviewed planned budget allocations.

8 Environmental impact assessments

- 8.1 Local authorities do not require an environmental impact assessment. The construction of the pavilion will be subject to the bureau's regulations and guidelines, which include reference to an environmentally responsible approach to construction and operation of the pavilion.
- 8.2 The site was previously used for heavy industry including steel manufacture. The ageing factories, along with the previous 55,000 residents have been removed from the site and there is no remaining foliage, or indeed, anything at all on site.
- 8.3 Given the 70-90 year history of heavy industry on the site, possible site contamination requires thorough investigation. The bureau has undertaken remediation activities on the site and subsequently conducted testing which indicated that the site meets Chinese, Dutch (the accepted international norm) and Australian standards for a wide range of contaminants. DFAT has insisted on conducting our own independent testing of the site to further mitigate any risk and to provide assurance that we have met our duty of care obligations to both staff and visitors to the pavilion. The testing is being conducted by ERM, an international firm recommended to us by senior business contacts in China. In order to comply with Chinese requirements the testing is being done jointly between ERM and a firm nominated by the Chinese. Verified independent testing is also important to establish the benchmark levels of any on-site contaminants to ensure that the Commonwealth does not face unexpected clean-up costs when we hand the site back to the Chinese in December 2010.
- 8.4 The site is flat and located adjacent to the Huangpu river, which is subject to flooding. The bureau is responsible for putting in place earthworks to reduce the likelihood of localised flooding on site.
- 8.5 The site is under construction and will continue to be so until 2010. Therefore, the implementation and adherence to suitable noise and dust mitigation measures, a traffic management plan, and suitable restrictions on working hours during the construction period, whilst necessary, will be undertaken in the context of a larger construction precinct.

9 Consultation

- 9.1 Consultations have been held with Commonwealth departments and agencies, state, territory and interested local government and business representatives. DFAT formed an expo inter-departmental committee in 2007 and has regularly provided members with information about the design process as it has developed. These consultations have taken place in various locations in both Australia and China.
- 9.2 The proposed design has been developed to provide the capacity for a whole-of-nation exhibition representing the best of Australia, an effective physical platform to support the VIP/business and cultural programs.
- 9.3 The bureau is the point of contact for approval of building works, and we have undertaken a range of discussions with the bureau to ensure that the design works have been completed in accordance with their requirements. The bureau will continue to be consulted during the design development and construction phase.
- 9.4 Project team representatives have attended both participants' conferences held to date, at which detailed planning and implementation information was provided. These conferences also provided an opportunity for discussion of technical components of guidelines and regulations.

10 Amount of revenue derived from the project

- 10.1 The pavilion and its contents will be sold at the conclusion of the expo to partially offset the cost of decommissioning and removal.

(ii) TECHNICAL INFORMATION

11 Location and climatic information

- 11.1 Shanghai is approximately 31 degrees north of the equator and 121 degrees east longitude. The climate is sub-tropical monsoon, with the rainy season from May to September, dominated by the monsoon, resulting in high rainfall and humidity.
- 11.2 Over 60% of the annual rainfall of 1148mm falls during the wet season, with relatively frequent localised flooding. Daily temperatures in Shanghai during June to September are often in the mid thirties with humidity usually above 90%. Precipitation is lowest during January and February. Daily high temperatures in Shanghai average from 7 – 31°C with night temperatures during December and January falling as low as -5°C. While heavy snow is unusual, 2007 saw unprecedented snowfall in Shanghai and southern China generally.

12 Site selection and description

- 12.1 In recognition of Australia's commitment to the expo and China's high expectations of the Australian pavilion, the bureau has provisionally allocated Australia a prime site in the south-east Asia and Oceania cluster at the centre of the expo site, close to a public entrance and the expo's only on-site subway stop located in Zone B. Other countries with pavilions located near the Australian pavilion include Singapore, Thailand, New Zealand, other Pacific islands and other ASEAN nations.
- 12.2 The 4800 sqm site is flat and has been cleared of all structures and foliage by the bureau. The site is adjacent to the Lupu bridge, which runs through the expo site adjacent to the Australian pavilion site separating zone B from zone C – (image B).
- 12.3 Consultation with local engineers indicates that the underlying geology presents no difficulty to the proposed structural design of the pavilion on this site. A geotechnical investigation has been completed by our contracted engineers through ThinkOTS. It is expected that significant supporting underground foundations (20 metres) will be required as the site is adjacent to the Huangpu river, only three metres above sea level, with a soft silt-based soil.

13 Zoning and approvals

- 13.1 The entire expo site has been set aside by the Shanghai municipal authorities for the purposes of the expo. The site is provided free of charge to Australia from the time of signing the participation agreement until May 2011 as a condition of participation. Project planning includes an early return of the site to the Chinese on or around 22 December 2010.
- 13.2 All building application procedures are facilitated by the bureau on behalf of participants. DFAT has engaged in several technical discussions with the bureau to ensure that the proposed design concept meets Shanghai municipal requirements. Building designs are to be endorsed by Chinese accredited architects and engineers and construction will be undertaken by Chinese accredited building companies.

14 Codes and standards

- 14.1 The project will be designed in accordance with the Building Code of Australia (BCA) and relevant Australian or international standards, where they are deemed to be of a higher or more relevant standard than the Chinese equivalent.
- 14.2 The project will be delivered in accordance with or exceeding the Disability Discrimination Act 1992 where possible. Particular attention will be given to equality in access to premises and amenities and the capacity of visitors to access pavilion messages.

15 Local industry capacity

- 15.1 Local industry has been consulted in Shanghai, revealing ample construction industry capacity to undertake a project of this type. The Australian exhibition industry has proven capacity and experience to deliver this type of exhibition construction and operation contract.

16 Environmental imperative

- 16.1 DFAT will seek to highlight aspects of Australian technology and capacity in clean energy and green technologies throughout the design and operation of the pavilion. The pavilion will only operate for six months and therefore many carbon saving and other green initiatives will have insufficient time in service to be economically viable. Nonetheless, within that context, environmental technologies will be used where

possible, even if full return on investment is not possible, as the opportunity to display Australia's credentials in this area should not be missed.

- 16.2 While not directly relevant to this investigation of pavilion construction, the Committee may wish to know that DFAT is investigating with the Australian Greenhouse Office the project's involvement in "greenhouse challenge" and carbon-offsets for as many aspects as possible of Australia's participation at the expo.

17 Energy conservation measures

- 17.1 Energy conservation will be an important design consideration in the selection of plant and equipment.
- 17.2 The following energy conservation measures have been incorporated into the design to maximise energy efficiency:
- (a) Building Fabric to be insulated to Australian BCA Part J requirements and air tight to reduce air infiltration;
 - (b) High efficiency equipment selection e.g. fan motors, air conditioning plant, inverter drive to motors and A/C compressors;
 - (c) Displacement air conditioning to high occupancy spaces helps reduce fan pressures;
 - (d) Cosatron to improve air quality at reduced ventilation rates reducing outdoor air load on the A/C plant;
 - (e) "Shaw Method" of outdoor air pre-treatment and cascade of chilled water use to manage humidity;
 - (f) Separate VRV air conditioning to back of house offices for efficient after hours use of individual spaces;
 - (g) Investigation of waterless or water reduced urinals for public toilets;
 - (h) Rain water collection tank in part of the total water storage is a viable solution that may be considered in the next phase of the design;
 - (i) High efficiency glazing to reduce thermal transmission between the outside and inside of the building;
 - (j) Adoption of appropriate colours to the window treatments to reflect heat; and
 - (k) Use of appropriate building materials and thermal insulation to minimise thermal external/internal gradients.

18 Heritage considerations

- 18.1 There are no heritage considerations associated with the construction of the pavilion. There is currently no building on the site. The pavilion and most buildings on the broader expo site will be of a temporary nature and must be removed at the end of the expo.

19 Provisions for people with disabilities

- 19.1 The pavilion design will comply with the BCA and relevant Australian and expo codes and standards in relation to disability access.
- 19.2 Previous expos have had a high proportion of vision or access impaired visitors. The Australian pavilion will accord a high priority to providing access to the messaging contained within the pavilion to such visitors.

20 Child care provisions

- 20.1 Due to the temporary nature and operational requirements of the pavilion, no childcare facilities are included within the pavilion design.

21 Occupational health and safety

- 21.1 In accordance with the Occupational Health and Safety Act (Commonwealth Employment) 1991, considerable attention will be given to this aspect during the detailed planning of the project.
- 21.2 Occupational health and safety practices will be implemented and enforced during the construction works at the site. These practices will be consistent with Commonwealth law and the bureau regulations.

22 Site utilisation

- 22.1 The building has been placed on the site to best present the building, consistent with functional planning and operations, within the constraints of required setbacks from the site boundaries. The proposed siting of the building takes into consideration climatic factors, operational activities and the bureau's requirement to provide visitor access from the south-east corner of the pavilion.
- 22.2 The bureau requires that pavilions occupy between 60 and 80 percent of the plot size. The Australian pavilion occupies 66.2% of the site.

23 Scope of work

- 23.1 The proposal is to construct a new temporary 3178 sqm pavilion with appropriate public exhibition areas and capacity to host the VIP, business and cultural programs that make up the Australian participation at the expo.
- 23.2 Onsite exhibition engineering is extensive. The operating structure and electronics for the main Act 2 theatre are significant and will require a regular program of monitoring and proactive maintenance. The critical nature of the main show to the pavilion achieving its objectives requires that the component parts are thoroughly engineered and tested prior to opening is the rationale behind a 1 March 2010 completion date, i.e. 2 months prior to the opening of expo.
- 23.3 Items in the fit-out scope include all tenancy related security hardware. Fixed workstations, fixed partitions and doors, window treatments and floor coverings are also included in the fitout scope as are all exhibition components. In addition, commercial area fitout will be negotiated once the retail provider has been selected in late 2008 (cost of fitout will be the commercial provider's responsibility).
- 23.4 Loose furniture such as tables, chairs, desks, filing cabinets and general office equipment such as photocopiers, computers and printers are included in the scope of works.

24 Access

- 24.1 The main public pedestrian access to the pavilion is from the ground floor entrance in Zone B. The bureau has mandated that our primary pedestrian entry be on the south-east corner of the pavilion. VIP access will be available to the building from either the ground level on the east side of the building or from the surrounding elevated walkway on the west side of the building. Vehicular access is planned to the logistics/loading dock area at the north-west corner of the building. Coordination for vehicular access will be undertaken with the bureau in due course. Very limited parking is available on site; the pavilion will have access to parking in an underground parking area some distance from the pavilion.
- 24.2 The main entrance to the pavilion provides public pedestrian access for visitors, with controlled driveway access for official vehicles. The VIP area has a separate foyer on

the ground level with controlled door access. Staff will enter the pavilion through the logistics/loading dock during pavilion operating hours.

25 Utilities

- 25.1 Utility provision is the responsibility of the bureau, and the pavilion will distribute the services within the Australian site. The pavilion is responsible for usage charges for utilities and waste water returned to the expo infrastructure. On site air conditioning systems will utilise chilled water provided by the bureau. We understand that all services will connect at one point, on the north-west corner of our site.

26 Architecture and exhibition

- 26.1 The pavilion presents a modern, efficient, pleasant and safe work environment for staff and an exciting and engaging platform for visitors to the pavilion.
- 26.2 The design process created a concept for a well-designed purpose-built pavilion that will showcase Australia to the Chinese public, compare favourably to our marker countries and provide a platform for helping Australian business succeed in the China market.
- 26.3 The design concept for the Australian Pavilion achieves all those aims. It was created by Think OTS, and architects Wood Marsh. It was subsequently developed in close collaboration with DFAT, with a view to making maximum use Australia's site.
- 26.4 Importantly, the design concept will be an impressive, striking and attractive piece of architecture with distinctively Australian elements. Its sculptural curving walls and rich red ochre exterior will set it apart from other pavilions in a highly competitive expo environment. Its cutting edge design will highlight our expertise in architecture, interior design and urban planning, enabling Australia to contribute to the "Better City, Better Life" theme of the expo while positioning Australian design, urban planning, engineering and architectural services companies favourably in the Chinese market. Its exhibitions will showcase Australian strengths in strategic sectors such as innovation, the environment, science and technology, research and education, and will highlight substantial business and people-to-people connections between Australia and China.
- 26.5 The Australian pavilion will be a three-storey structure. At its highest point the pavilion will stand 20 metres high – the maximum height restriction set by the Chinese. It will rise well above the surrounding skywalk (elevated 10 metres above the ground),

- giving the pavilion great visual profile. It will compare well with the likely height of other pavilions in our zone.
- 26.6 Internally, the pavilion will provide 7306 sqm of space – sufficient for all public areas, the theatre, offices, storage, plant facilities, public toilets, retail and food and beverage operations, performance spaces, fire stairs and elevators.
- 26.7 The pavilion will include three basic elements, or acts. In Act 1, visitors are engaged, informed and entertained as they journey 160 metres along and up a ramp to holding areas for the main show, Act 2. Act 1 involves a walk through a colourful high-tech display that introduces elements of the Australian story through sounds, graphic screens and three-dimensional displays.
- 26.8 The Act 1 ramp will run outside the building at various points, and at those points will be surrounded by a tubular glass casing as per diagrams and artist renderings. The tubular design will enhance the visitors' experience of Act 1, add an intriguing design element to the pavilion's exterior architecture and capture the interest of pedestrians. Moreover, this tubing will not require supporting structures to be constructed beneath the ramp, thanks to strong steel support belts wound around the tube in an innovative double-helix configuration.
- 26.9 The ramp will lead visitors to holding areas on level three outside the Act 2 circular theatre with a capacity of 1000. We judge the theatre in this configuration could accommodate some 38,000 visitors per day. Over the life of the pavilion, the total capacity will be up to 7 million, double the number of visitors to our pavilion in Aichi.
- 26.10 The theatre will feature a rotating circular audio visual sculpture (images M and N). The display will feature screens five metres high that will rise and fall in a synchronised manner around a sculptural form that will change four times during a proposed nine-minute multimedia presentation. The presentation will showcase Australia, developing themes and characters introduced in Act 1. Importantly, the presentation will utilise cameras in the theatre to incorporate live video footage of the audience, adding a dynamic, interactive element to the presentation.
- 26.11 Following the Act 2 show, visitors will exit the theatre and pass through a special stakeholders' area, where pamphlets and brochures about Australia will be available, where plasma screens will show inviting images of Australia (tailored to the requirements of stakeholders), and where corporate sponsors could promote their products and services.

- 26.12 From the stakeholders' area visitors will proceed down a ramp to an enclosed, 500 sqm air-conditioned public area - Act 3. This walk-through space will be a comfortable internal courtyard with a high impressive ceiling, a theatre stage for performances, special displays about Australia, a retail shop and a food and beverage area. It will be a beautiful indoor landscaped area where visitors can relax, enjoy free cultural performances, shop for food, drinks and gifts or proceed directly to the exits.
- 26.13 The VIP area of the pavilion will provide an ideal platform for the business program. It will be well appointed and – at 250 sqm – spacious by Chinese standards. It will include a booth for interpreters, a dedicated stage for cultural performances and a significant space for displays. This VIP area will have a separate entry and exit door connecting directly to the 10 metre high skywalk, which runs along two sides of the Australian pavilion site. The VIP kitchen and service staff will be able to service seated banquets of up to 100 persons and stand-up functions for 150. The kitchen will have its own service elevator.
- 26.14 The pavilion represents Australia to the host nation through the exhibit content and wherever possible a range of Australian materials and finishes in public area fit-outs.

27 Structural engineering

- 27.1 Conventional reinforced concrete slabs, supported on steel beams, are used as the primary structural form for suspended floors. The concrete floor slabs are on conventional formwork in the theatre areas, and on profiled metal deck formwork in the central office/function areas. The roof structure is lightweight metal roofing on structural steel beams and trusses. The roof and suspended floors are supported on steel columns. Core walls and shear walls are reinforced concrete. The construction methodology will provide value for money and is fit for the purpose and life of the building.
- 27.2 Live loads are in accordance with Australian loading codes and expo specific requirements. Account has been taken of local site conditions including wind and seismic forces appropriate to the location.
- 27.3 The foundations are reinforced, pre-stressed high strength concrete (PHC) piles, in accordance with local building practice. Initial investigations suggest depths of 20 metres may be required.

28 Materials and finishes

- 28.1 Materials have been selected to present a high quality building that is appropriate for the high visitor load and requires minimum maintenance. Some of the construction materials such as glazing components, steel window sections, plant and equipment, electrical and hydraulic fixtures and fittings, joinery, loose furniture, high strength concrete, stone and structural steelwork will require importation as they are either not available in China or at least not of appropriate quality, or because the use of Australian materials has been favoured for representational purposes.
- 28.2 External finishes to the building are Corten steel. Corten is a material that is designed to oxidise rapidly, resulting in a rich ochre matt finish. A protective crystalline coating develops that prevents further oxidisation. Local or imported hardwearing stone or stone composite materials will be used for exterior floor surfaces.
- 28.3 Non-load bearing internal walls to office fit-out are light weight steel stud framed partitions and painted plasterboard construction.
- 28.4 Wet areas are finished with ceramic tiles to walls and slip resistant vitrified tiles to floors.
- 28.5 Ceiling finishes in office and VIP areas are light weight steel and painted plasterboard construction. Back of house and technical areas will be either unfinished concrete or lay-in suspended acoustic ceiling tiles. Exhibition areas will have a variety of ceiling finishes including as part of the exhibition design.
- 28.6 Floor finishes are carpet, vinyl, timber, concrete and vitrified tiles as appropriate to the area.

29 Mechanical services

- 29.1 All offices, meeting rooms, exhibition spaces and VIP reception rooms are mechanically air-conditioned by the building centrally controlled system. The design approach considers areas that require 24-hour operation.
- 29.2 Equipment and materials for mechanical services will be selected for maximum efficiency and low maintenance over the short life of the pavilion.
- 29.3 Exhaust systems are provided to staff and public toilets, staff shower facilities and both kitchens.
- 29.4 Negative pressure ventilation is provided to the VIP kitchen to avoid the cross contamination of kitchen smells to the main VIP area.

- 29.5 Hydraulic services comply with BCA and appropriate Australian standards and Chinese regulations.
- 29.6 Hot water is provided to showers, basins and sinks, sourced from locally available continuous gas heating and delivery systems.
- 29.7 A stormwater system comprising roof gutters, down pipes and underground PVC pipes shall be provided.
- 29.8 A sewerage treatment system sized for the entire site, including the public toilet and commercial kitchen loads is provided.
- 29.9 The locally required grease trap systems will be included for both kitchen areas to facilitate the removal of incompatible material.

30 Electrical services

- 30.1 Design Standards - Electrical services are required to comply with BCA and appropriate Australian standards. As the site is located in a tropical region no electrical cables shall be directly exposed to the sun.
- 30.2 Power Systems - Electrical energy provision at the expo is the responsibility of the bureau. Designated service providers are establishing necessary on-site infrastructure. China has a good electrical generation capacity and will ensure that the expo is sufficiently serviced.
- 30.3 Metering facilities will be provided at the boundary of the site by the bureau nominated service provider.
- 30.4 The main electrical switchboard complete with surge protection is located at the north-west corner of the building.
- 30.5 Light Systems - Luminaires and lighting layout are selected to suit the use of the space. Specialist exhibition and lighting designers will be engaged to establish an appropriate lighting solution. Emergency lighting is independent of the general lighting fixtures and shall incorporate integral battery and charger. Exit lighting is of the independent battery back-up type. External lighting is provided for security, utility and decorative purposes.

31 Telephone system

- 31.1 The bureau nominated provider is installing new telephone/data infrastructure in the site. The telephony and data services will be connected to the building consistent with

other utility provision. Telephone lines are connected from this infrastructure into the IP telephone system located within the pavilion.

32 Lightning protection system

- 32.1 Lightning protection is not necessary to meet BCA standards for this type of building. Chinese standards will also be met, once further investigation has taken place.

33 Fire, smoke detection and public address systems

- 33.1 Given the building is temporary and the cost and difficulty of installing many of the systems required by the Deemed-to-Satisfy requirements of the BCA, the following fire safety systems and concepts are considered to most likely provide compliance with the requirements for a temporary building if constructed in Australia. These can be justified using performance based design that takes account of occupation and risk of ignition etc. The fire safety design and systems required are presented in the following marked up plans and the following dot points:
- (a) Smoke detection to AS1670 requirements throughout, thermal detection within the kitchens;
 - (b) Egress provisions as detailed within the attached drawings. Safe egress from the building is ensured by compliance with BCA requirements; and
 - (c) The entry and exit ramps to have 4m width and be non-combustible and 60 minute fire doors located at the top or bottom to close upon smoke alarm.
- 33.2 Fire compartmentation as per the attached plans include:
- (a) The VIP entry to become a 60 FRL fire rated corridor;
 - (b) All Back of House areas to be fire separated;
 - (c) The three-level entrance atrium void is to be isolated at second and third levels i.e. from the office and VIP areas;
 - (d) Stair to be 60 FRL and available to all occupants; and
 - (e) Exit and entry ramp to have 60 FRL fire doors installed.
- 33.3 Structure to achieve a 60 minute fire rating in lieu of compliance with the BCA Specification C1.1.
- 33.4 An audible local fire alarm system to alert occupants is to be installed throughout the building.
- 33.5 Emergency plans and training to be implemented.

- 33.6 Extinguishers available at stage level for use by staff to extinguish a possible stage fire. Hose reel and hydrants coverage as per BCA and local requirements
- 33.7 Smoke detection, emergency public address and evacuation systems will be provided in accordance with the specifications of the bureau. These systems at expos typically include a link direct to an expo fire control centre. The systems include fire and heat detection and automated public address and evacuation systems. Precise details are not yet available. The bureau will have fire and paramedic services on-site, as part of its emergency management infrastructure.

34 Security

- 34.1 The pavilion will include the following security elements:
- (a) Access control to allocated doors; and
 - (b) CCTV cameras to cover all portions of the grounds and selected internal areas.

35 Communications

- 35.1 An integrated telephone and data communications backbone and horizontal cabling system is provided throughout the building.
- 35.2 Pavilion operations will utilise two-way radio systems. The bureau has advised certain controls for two-way devices will be imposed, but no details are yet available.

36 Lift services

- 36.1 This pavilion will include two elevators for VIPs, a disabled access lift and a service lift.

37 Landscaping and civil works

- 37.1 The site landscaping consists of a selection of suitable tropical species, both Australian-native and exotic, and will be chosen to provide low maintenance vegetation and to enhance the pavilion presentation and overall site aesthetics. It is divided into three zones:
- (a) Act 3 atrium plantings – the area surrounding retail and cultural performance spaces;
 - (b) external queuing area; and

- (c) non-queue external areas, this area will be low maintenance and hard wearing to deal with very high visitor loads.

37.2 The non-public logistics and loading dock areas including driveway and parking areas are designed with a surface finish that is appropriate for use by both pedestrians and vehicles.

38 Acoustics

38.1 Particular consideration has been given to the acoustics requirements and in the selection of materials and finishes to control noise transmission through a commissioned acoustics engineering study. This document includes specific treatment for attenuation measures between three key areas:

- (a) from the main Act 2 theatre to the VIP reception area;
- (b) from the VIP kitchen to the VIP reception area; and
- (c) from the Act 3 performance space to the VIP reception area.

38.2 Reduction in sound transmission of external noise is achieved by the use of insulated walls and laminated glazing.

38.3 Internal ceilings, partitions and doors are detailed to achieve required sound attenuation levels and building services will be designed to minimise noise transmission to the exhibition and VIP reception facilities.

38.4 Acoustic treatment is provided to mechanical plant in compliance with Australian standards.

39 Operation, maintenance and warranties

39.1 Operation and maintenance manuals are to be provided by the construction contractor. The manuals will contain equipment data, supplier identification, specifications, recommended maintenance procedures and manufacturer's manuals. As-built services and architectural drawings will be incorporated into the final construction completion report.

39.2 Warranties will be provided in the name of the Commonwealth of Australia.

39.3 The contractor will have on-site technical staff, which will maintain and operate the exhibition and other components of the pavilion. Specialist landscape, IT administration, audio-visual and electronics technicians will be included in the onsite technical team.

40 Cost

- 40.1 The cost estimate of the proposed works is AUD \$49.38 M inc GST, based on September 2007 prices. The cost estimate includes construction and other related elements such as consultants' fees, project management, supervision, exhibition, furniture, artworks, white goods and site office expenses. Further information is provided in the confidential cost breakdown at paragraph 44.
- 40.2 The estimate does not include Chinese import taxes as we will be provided with reimbursements for any import taxes paid. Other relevant Chinese and Australian taxes have been included.

41 Project delivery

- 41.1 A single contract will be awarded for the construction, exhibition and technical operations of the pavilion. The scope of the contract includes project management and coordination of all aspects of the pavilion delivery. An open tender will be advertised nationally and included on relevant websites. DFAT has promoted the upcoming tender opportunity in Shanghai through briefings to the local Australian business community and through newsletters and websites where appropriate. Active promotion of the tender has been necessarily limited while the budget for the project is being considered in the Commonwealth budget process.
- 41.2 Local approvals will also be the responsibility of the contractors and their in-country partners. Currency fluctuations and escalation effects will be managed in the contract.

42 Construction program

- 42.1 The aim is to release the tender in June 2008. We will need to sign contracts by mid-September 2008 to achieve construction commencement this calendar year. The construction program requires the base building to be complete and dustproof in the technical areas by mid-September 2009. Practical completion and occupation is scheduled for 1 March 2010, with the commencement of expo on 1 May 2010. The defects liability period will run until the end of expo on 31 October 2010.

43 Associated design drawings and images

- 43.1 The following drawings have been prepared to illustrate and define the proposal:

- (a) Pavilion perspective
- (b) Expo site zones
- (c) Site 2006
- (d) Site 2007
- (e) Architectural locality
- (f) Plans - level one
- (g) Plans -level two
- (h) Plans - level three
- (i) Plans – roof
- (j) Elevations
- (k) Sections
- (l) Conference room
- (m) Theatre exhibit
- (n) Theatre engineering
- (o) Air-conditioning
- (p) Engineering – details
- (q) Piling plans

Image A – Pavilion perspective



Image B – Expo layout

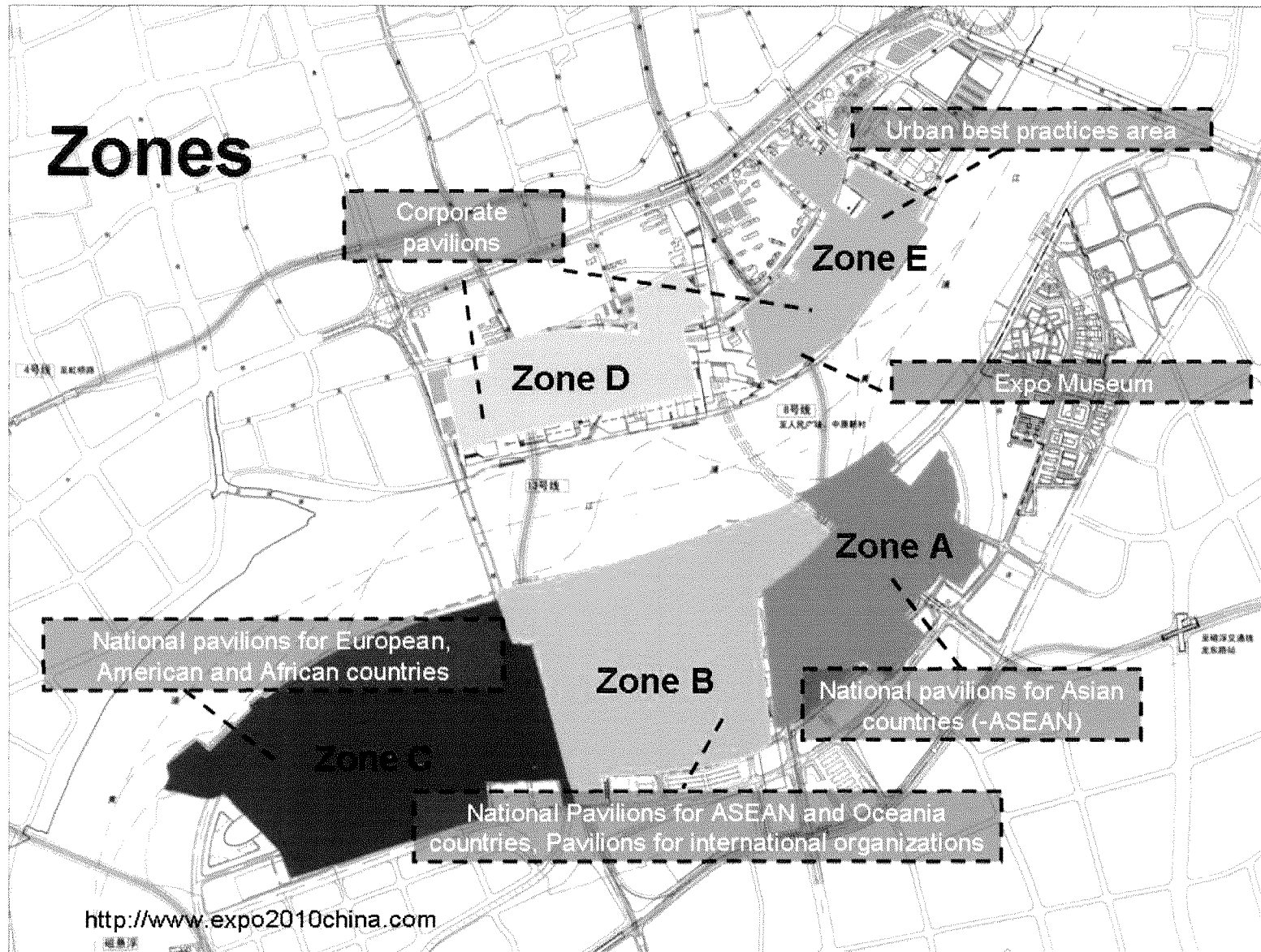


Image C – Site 2006



Image D – Site 2007



Image L -

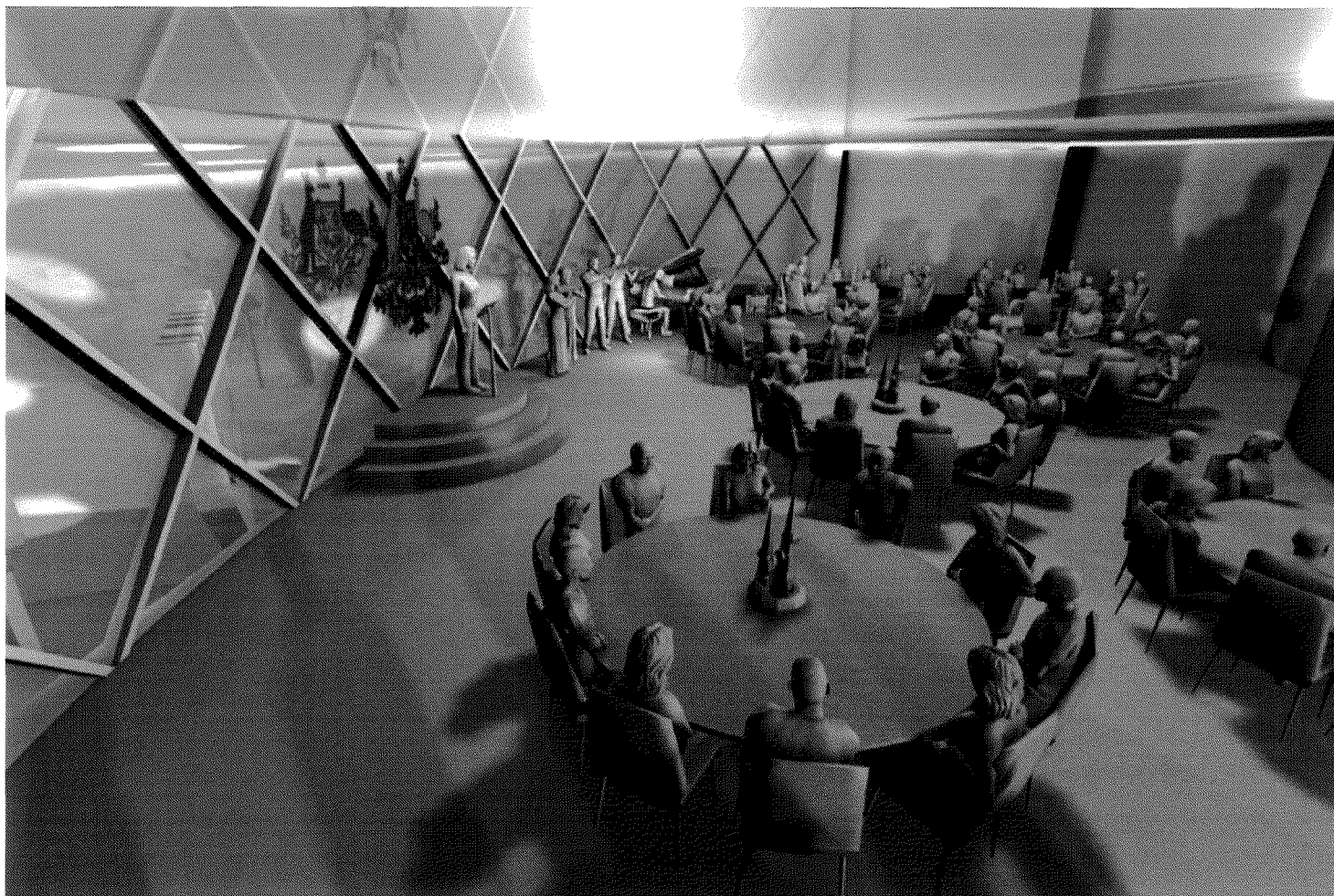


Image M – Theatre exhibit

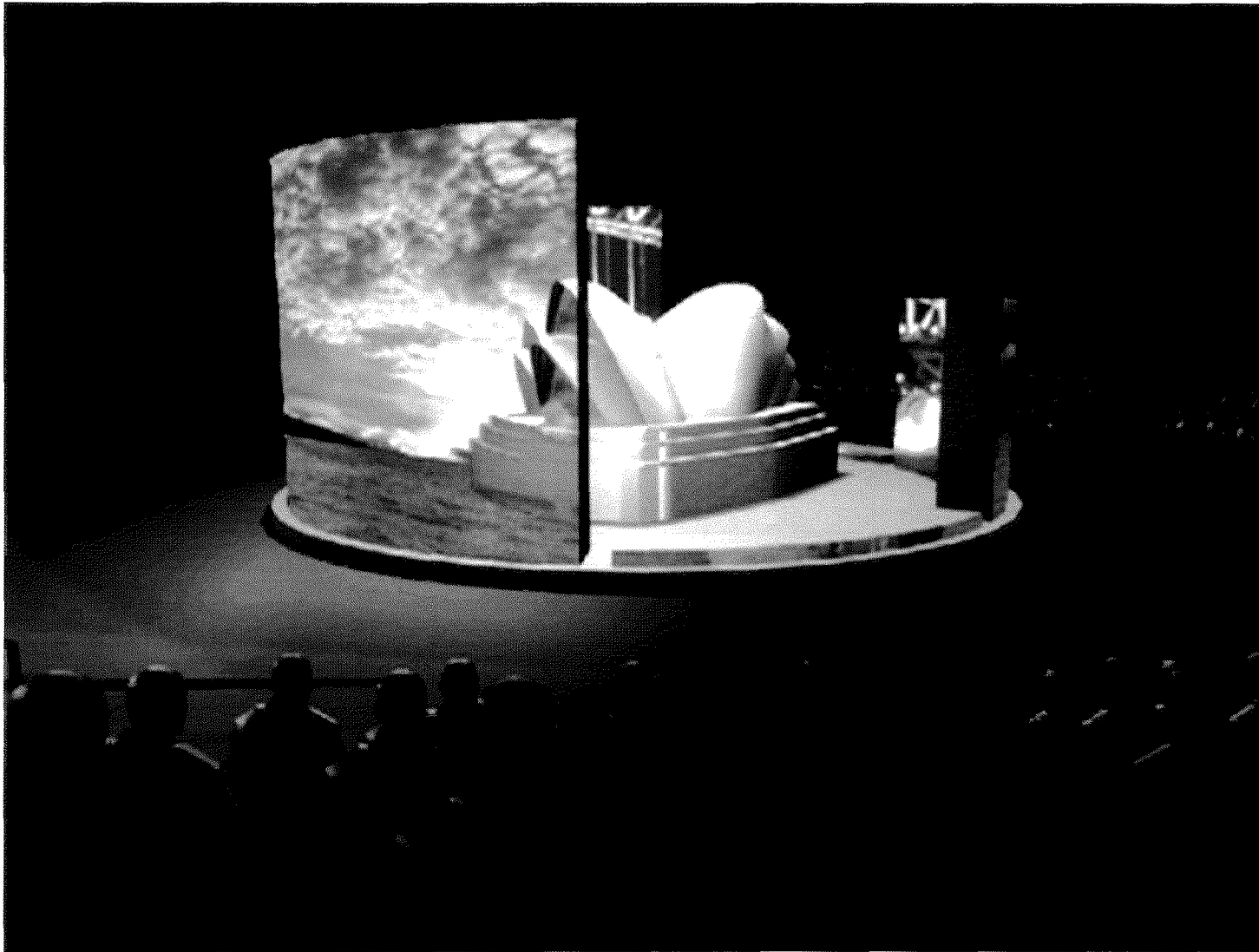
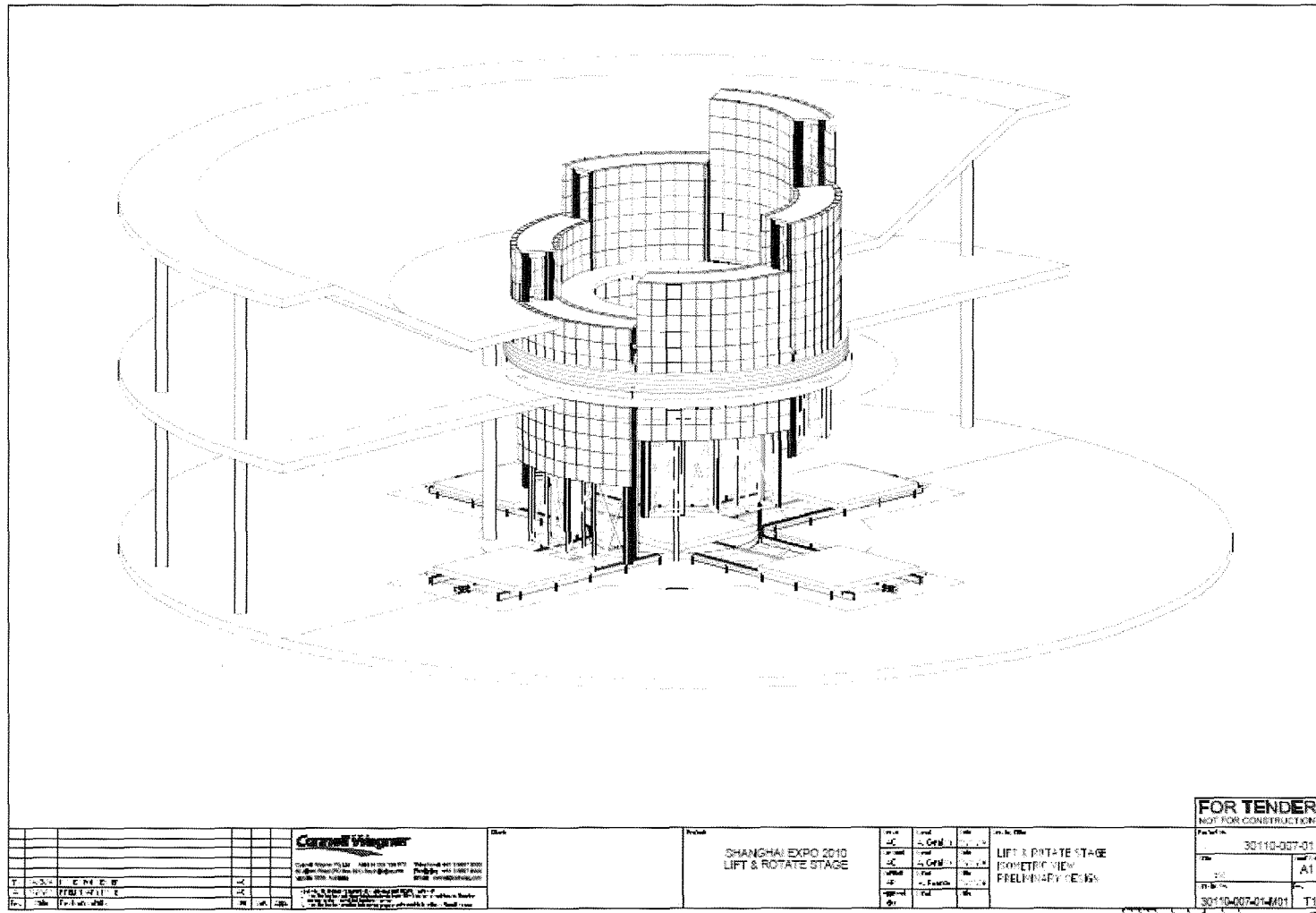


Image N – Theatre engineering



										FOR TENDER NOT FOR CONSTRUCTION	
		114 St. Albans Street, St. Albans NSW 2150 Tel: 02 9630 1100 Fax: 02 9630 1101 Email: carnell@wiegman.com.au		SHANGHAI EXPO 2010 LIFT & ROTATE STAGE		30110-007-01		LIFT & ROTATE STAGE ISOMETRIC VIEW PRELIMINARY DESIGN		30110-007-01-A1 T1	