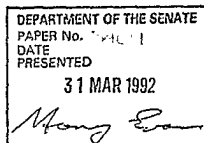


The Parliament of the Commonwealth of Australia
Parliamentary Standing Committee on Public Works



Report Relating

to the

Installation of Fire Sprinklers to the
International Terminal Building at Sydney
(Kingsford-Smith) Airport, NSW

(Third Report of 1992)



Parliamentary Standing Committee on Public Works

REPORT

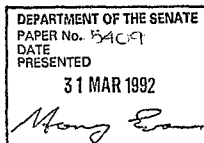
relating to the

INSTALLATION OF FIRE SPRINKLERS TO THE INTERNATIONAL TERMINAL BUILDING AT SYDNEY (KINGSFORD-SMITH) AIRPORT, NSW

(Third Report of 1992).

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA
1992

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**MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS**

(Thirtieth Committee)

Mr Colin Hollis MP (Chairman)

Mr William Leonard Taylor MP (Vice-Chairman)

Senate

Senator Bryant Robert Burns

Senator Paul Henry Calvert*

Senator John Robert Devereux

House of Representatives

Mr Ewen Colin Cameron MP

Mr Lloyd Reginald O'Neil MP

Mr Russell Neville Gorman MP

Mr Bruce Craig Scott MP

*Appointed on 24.8.90 following the retirement of Senator
Dr Glenister Sheil

Committee Secretary:

Peter Roberts

Secretarial Support:

Jackie McConnell

Sue Whalan

**EXTRACT FROM THE VOTES AND PROCEEDINGS OF
THE HOUSE OF REPRESENTATIVES**

No. 105 dated Thursday, 19 December 1991

- 41 PUBLIC WORKS - PARLIAMENTARY STANDING
COMMITTEE - REFERENCE OF WORK - INSTALLATION
OF FIRE SPRINKLERS TO THE INTERNATIONAL
TERMINAL BUILDING, SYDNEY AIRPORT, NSW:**
Mr Staples (Minister for Aged, Family and Health Services), by
leave, moved - *That, in accordance with the provisions of the
Public Works Committee Act 1969, the following proposed
work be referred to the Parliamentary Standing Committee on
Public Works for consideration and report: Installation of fire
sprinklers to the International Terminal Building, Sydney
Airport, NSW.*

Mr Staples presented plans in connection with the proposed work.

Debate ensued.

Question - put and passed.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

INSTALLATION OF FIRE SPRINKLERS TO THE INTERNATIONAL TERMINAL BUILDING AT SYDNEY (KINGSFORD-SMITH) AIRPORT, NEW SOUTH WALES

By resolution on 19 December 1991, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for consideration and report the project for the installation of fire sprinklers to the International Terminal Building at Sydney (Kingsford-Smith) Airport, New South Wales.

THE REFERENCE

1. The international terminal building (ITB) was opened in 1970 and met all the then relevant codes. Since that time the building has been modified in a number of areas to ensure public safety is not compromised. Airport terminal buildings are not expressly covered by codes, but they need to have appropriate protection. A number of reports have recommended the installation of fire sprinklers to provide safety for the occupants of the building and to protect the property. Other improvements to provide smoke isolation an emergency evacuation system and additional fire exits have also been recommended.
2. The works proposed in this reference comprise the installation of fire sprinklers throughout the existing building, associated building works, the replacement of plasterboard ceilings and ceiling tiles in the customs hall and departures area and the treatment of asbestos within the ceiling voids associated with the sprinkler installation.
3. The estimated out-turn cost for the installation of the fire sprinklers is \$14.6m.

THE COMMITTEE'S INVESTIGATION

4. The Committee received a written submission from the Federal Airports Corporation (FAC) and evidence was taken from its representatives at a public hearing held in Sydney on 19 February 1992. Prior to the public hearing the Committee inspected the existing ITB and the soon to be

completed international terminal complex (ITC). The Committee also received submissions and took evidence from:

- . CSIRO Division of Building, Construction and Engineering
- . New South Wales Fire Brigades
- . Leichhardt and Marrickville Councils
- . Public Sector Union
- . Mr Paul Corcoran.

5. A number of written submissions relating to the project were also received from other organisations and these are incorporated in the Minutes of Evidence.

6. A list of the witnesses who gave evidence at the public hearing is at Appendix A. The Committee's proceedings will be printed as Minutes of Evidence.

7. During its investigation the Committee took the view that this project should be examined on its merits and in isolation from issues relating to the third runway at the Sydney Airport. The construction of the third runway was exempted from the scrutiny of the Committee on the grounds of urgency by the House of Representatives on 14 November 1991.

THE NEED

8. The FAC is a government business enterprise established by and incorporated under the *Federal Airports Corporation Act 1986*. The Act was passed by the Commonwealth Parliament on 14 February 1986 and proclaimed on 13 June 1986.

9. On 1 January 1988 the FAC assumed responsibility for ownership, management and development of 17 of Australia's federal airports, including Sydney (Kingsford-Smith) Airport.

10. The ITB which came into operation in May 1970, met all the then relevant codes. Since then the building has been modified in a number of areas to ensure public safety is not compromised. Airport terminal buildings, whilst not expressly covered by building and safety codes, need to have appropriate protection.

11. A number of fire hazard reports have recommended installation of fire sprinklers to provide safety for the occupants of the building and to protect the property. Other improvements to provide smoke isolation an emergency evacuation system and additional fire exits were also recommended.

12. Since the FAC assumed responsibility for Sydney Airport on 1 January 1988:

- the Corporation's insurers were made aware of the status of fire protection in the building and were advised of the Corporation's proposal to install fire sprinklers
- additional fire exits were constructed as part of a project completed in 1989 which made a number of improvements to the international terminal at a cost of \$50m. (The Committee's Second Report of 1986: *Improvement of International Terminal Facilities, Sydney (Kingsford-Smith) Airport* refers to this project)
- smoke isolation measures have been substantially completed on existing stairwells and escalators.

13. Consideration was given to the provision of fire sprinklers in the FAC's 1988 capital works program. However, because of problems being encountered with asbestos during the ITB improvement project, the FAC Board decided to delay the installation until that project was completed. The FAC advised the Committee that some \$200 000 of the out-turn cost could be attributed to areas that were modified in 1988-89.

14. The FAC has also proceeded with the extension of the ITC to provide a new 70000 m² terminal and concourse at a cost of \$272m. The fire protection measures for the new terminal expansion were based on the recommendations of the National Building Technology Centre which carried out fire engineering studies for the project.

15. The provision of a fire sprinkler system has been evaluated by the FAC as being necessary for the protection of both the occupants and the asset and achieving Building Code of Australia compliance. The building is vast and firefighting after detection has been evaluated as being very difficult.

16. The FAC advised the Committee that the loss of the building would have a profound effect on the economy through losses in international tourism and subsequent litigation action in the event of death or injury. The approval of the new ITC was based on this project proceeding. A decision not to proceed would have major impacts on current designs as the new ITC could not be integrated with the existing terminal. In relation to the current fire status of the ITB, the FAC advised that there is a risk of a fire in the building which could not be attended to properly without fire sprinklers. Since 1983 there have been 13 minor fires reported in the ITB mainly from kitchens and industrial garbage bins; two ceiling space fires were also reported.

The Committee's Conclusion

17. There is a need for the installation of fire sprinklers to the International Terminal Building at Sydney (Kingsford-Smith) Airport to meet current fire safety standards.

THE PROPOSAL

18. The ITB comprises a main building of five levels (basement, ground, first, second and third) and a concourse of three levels (ground, mezzanine and first).

19. The building basement and concourse ground level are mainly for baggage handling. Aircraft servicing equipment also uses the concourse which is not enclosed at ground level.

20. The ground floor in the main building and the mezzanine floor of the concourse comprise the arrivals level. Aerobridges are at this level of the concourse. Concessions, office space, mail handling, plant and building maintenance facilities are also at this level.

21. The first floor of the main building, which is approached by an elevated roadway, and the first floor of the concourse comprise the departures level. Various food and beverage facilities and other concessions are also at this level. Access is available via stairways from departures level gate lounges down to the arrivals level.

22. The second floor of the main building is occupied by the main public restaurant, airline VIP lounges and offices, aircrew briefing rooms and administrative offices.

23. The third floor of the main building is occupied by air handling plant, lift machine rooms and equipment associated with the second floor concessions.

24. Above the arrivals and departures levels there is extensive ceiling space housing building services and equipment. A wooden floor provides access for maintenance purposes.

Scope of Works

25. The works comprise the installation of fire sprinklers throughout the existing building, associated building works, the replacement of plasterboard ceilings and ceiling tiles in the customs hall and departures area and the treatment of asbestos from within the ceiling voids associated with the sprinkler installation.

26. All areas of the existing terminal and concourse will be protected including the basement, ground level, first floor level, second floor level and penthouse level and the large ceiling spaces between levels.

The Fire Sprinkler System

27. The system to be installed will comply with Australian Standard No. AS2118 - 'Automatic Fire Sprinkler Systems'. Water supply to the system will be from two independent sources to provide a secure water supply. The water will be from the augmented water supply system. The wet-pipe system will be activated by the heat of a fire. This system is not affected by smoke or avgas fumes.

28. The system will consist of 19 zones and will enable the point source of any fire to be monitored.

29. In brief the system consists of:

- . 1000 m of 200 mm diameter pipe
- . 1000 m of 100 mm and 150 mm diameter pipe
- . 60 km of 25 mm to 65 mm diameter pipe
- . 16 000 sprinkler heads.

30. Some 10 000 sprinkler heads will be installed in suspended ceilings or on exposed slabs/beams. In addition some 5000 heads will be provided in the extensive ceiling spaces.

Fire Safety Study

31. In a submission to the Committee the CSIRO's Division of Building, Construction and Engineering (DBCE) indicated its support for the project but stated that a fire safety study of the proposal could lead to considerable cost savings.

32. DBCE further noted that full installation of fire sprinklers in accordance with AS2118 is proposed by the FAC for the entire ITB.

33. Analysis of other terminal buildings such as Tullamarine showed that although sprinkler protection was required in many of the occupied areas there were areas such as undercrofts and some spaces with high ceilings where sprinklers would not be effective or would not be required. DBCE indicated that for these areas alternative methods of fire protection are more cost effective and still provide the required level of safety. It believes that considerable savings may be realised by limiting sprinkler systems to areas where they are required for life safety reasons or as cost effective fire protection.

34. The FAC felt it would be impractical to have some areas of the ITB without sprinklers as this would limit its full integration with the new ITC which is fitted fully with sprinklers. FAC does not believe that two separate terminals would be functional.

35. However, the completion of a fire safety study was supported by the New South Wales Fire Brigades which indicated that cost savings could result.

Committee's Recommendation

36. The Committee recommends that the Federal Airports Corporation commission a fire safety study to determine whether cost savings can be made in the provision of fire sprinklers.

Associated Works

37. In the main building and concourse associated works will include normal work associated with installation of such systems.

38. The existing suspended ceiling in the departures hall and the set plaster ceiling in the customs arrivals hall will be totally removed. Following installation of the sprinkler system new ceilings will be provided to both areas. New light fittings will be provided to the new ceiling areas. New air-conditioning diffusers and associated trunking will be provided to the new ceiling areas.

Asbestos

39. In limited areas of concealed ceiling voids asbestos is present in small quantities. Asbestos will be removed from those areas which are disturbed during the sprinkler installation. The FAC assured the Committee that removal would be done in accordance with all statutory requirements.

ENVIRONMENTAL FACTORS

40. The installation of fire sprinklers within the existing building has been assessed by the FAC as not being of environmental significance under the meaning of the *Commonwealth Environment Protection (Impact of Proposals) Act 1974*.

41. The works will impact on day terminal operations. An area of potential significant impact is noise and dust generated during the project.

42. The works will be programmed to minimise this potential impact by:
- . relocation of personnel and functions
 - . appropriate use of hoardings and screens
 - . working outside the normal terminal hours of operation.

SECURITY

43. The sprinkler systems will be securely-locked from general access and the system isolation valves will be fitted with anti-tamper switches. During construction full height barriers will be erected to prevent entry to work areas but permit egress via predetermined paths.

44. The Australian Customs Service (ACS) expressed concern regarding security during the installation as access will be required by contractors' employees to restricted airside areas with potential close contact with uncleared travellers and baggage. ACS recommended that all contractor employees entering outside areas wear identification cards and the contractor be advised that ACS may exercise its right to conduct compliance checks if sufficient reasons exist.

45. The FAC indicated that it is normal procedure for building contracts to include security provisions in the general contract condition for such a project.

46. Both the FAC and ACS referred to the good cooperation which existed in relation to security matters during the recent construction programs at Sydney Airport. The FAC assured the Committee that there will be ongoing consultations to ensure that security is maintained.

CONSULTATION

47. The proposed works will affect the FAC tenants, concession operators and airport users. The timing and staging of each element of the work will require continuous consultation.

48. All the terminal occupants and relevant unions will be fully briefed on the proposed works and each party will be involved in on-going negotiations and coordination. This consultation process has already commenced.

49. In its submission the Public Sector Union (PSU) raised a number of issues in relation to the consultation process. It stated in evidence that in accordance with the appropriate award it is the responsibility of the secretary of the departments or organisations concerned to consult with unions regarding potential disabilities. The PSU stated that consultation had not occurred in all cases as laid down in the award although consultations with ACS had commenced. The FAC also indicated that the airports consultative committee would provide a forum for consultations between it and relevant unions. The Committee regards meaningful consultations as being extremely important and suggests that PSU should pursue this matter with the *Australian Industrial Relations Commission*. In evidence to the Committee the New South Wales Fire Brigades stated that the FAC, being a Commonwealth body, was not required to consult with it in relation to fire safety at the airport. This issue has been raised recently in a number of inquiries and the Committee will be reporting on it shortly. However, in relation to this project, the Committee is pleased to note that the FAC has made a commitment to consult with the New South Wales Fire Brigades in the future.

PLANNING

50. The completion of the new ITC in 1992 provides an opportunity to minimise disruption as a significant proportion of the existing tenants will vacate their facilities and relocate to the new terminal. The space so created in the old terminal will assist in providing alternative accommodation during this project.

51. The commissioning of check-in facilities, baggage reclaim and customs areas in the terminal also provides an opportunity to seal off portions of the old terminal to permit works to proceed. Where there is no other means the works will be undertaken out of hours. The budget provides for this requirement.

MASTER PLAN

52. During the public hearing the absence of an approved master plan for Sydney Airport was raised by both the Committee and the representative of the Leichhardt and Marrickville Municipal Councils. In its report on the construction of the ITC (*Expansion of International Terminal Complex, Sydney (Kingsford-Smith) Airport, Thirteenth Report of 1988*) the Committee recommended that the FAC prepare a master plan for the

Sydney Airport as expeditiously as possible to ensure the overall orderly development and operation of the airport.

53. In July 1990 the FAC released for public comment a draft planning strategy for Sydney Airport. This report presented the FAC's plan for the development of the airport up to the year 2010. At the public hearing the FAC indicated that a decision on the third runway was necessary before the master plan could be finalised. It has now engaged a consultant to consider the issues raised in relation to the draft planning strategy and to finalise the master plan.

54. The Committee is very concerned that an approved master plan has not been finalised for Sydney Airport and believes that such a plan is desirable in the public interest. The Minister for Shipping and Aviation should therefore, as provided by the *Federal Airports Corporation Act 1986*, direct the FAC to complete the master plan as a matter of extreme urgency. In the absence of a master plan the Committee is loath to recommend further work at Sydney Airport. However as this project concerns an issue of public safety the Committee believes, albeit reluctantly, that it has no option but to agree to the work proceeding.

Committee's Recommendation

55. The Committee recommends that the Minister for Shipping and Aviation direct the Federal Airports Corporation to complete an approved master plan for Sydney Airport as a matter of extreme urgency.

IMPLEMENTATION STRATEGY

56. An initial project program which has general support from all affected parties will be produced.

57. Subsequently as the works proceed, individual packages will be closely coordinated with tenants to ensure that disruptions to operations are minimised.

58. In its submission the ACS indicated that it is impressed by the manner in which current ITC works infringing on the ITB are being carried out with minimum inconvenience to tenants and passenger processing. ACS is confident that the FAC will be able to minimise disruption during the sprinkler installation. However, ACS believes that it will nevertheless

experience an unknown degree of disruption to its operations. In addition it believes that any adverse working environment will likely result in a claim by staff associations for a disability allowance to compensate affected staff members. ACS believes that the FAC should reimburse it for any disability allowances which may be granted.

59. In response to ACS, the FAC stated that the out-turn cost included an amount for disability allowances which may be granted to contractors undertaking the project. No allowance has been made in the estimate for disability allowances for employees of any other organisations (including ACS). This is in accordance with standard FAC practice.

PROGRAM

60. It is planned that the first tender will be called in June 1992 with completion within two and a half years. The FAC indicated to the Committee that the work could be done in a shorter time but this would involve greater disruption to the operation of the terminal.

PROJECT DELIVERY METHOD

61. It is planned that a series of contracts will be let to afford maximum flexibility in the works progress and give closer control during construction.

PROJECT COST

62. The FAC Board has approved funding of \$14.6m as an out-turn cost for the installation of fire sprinklers. The Committee questioned the cost of the project and was advised by the FAC that a major part of the cost is related to associated building works including removal and replacement of ceilings. The actual cost of the fire sprinklers heads, which number approximately 16 000, and the 60 kilometres of associated pipe work is estimated to be some 50% of the out-turn cost.

63. However, the Committee is still of the view that the cost of \$14.6m is excessive and believes that the FAC should, in addition to examining the need for full sprinkler protection, thoroughly reassess the cost components of the project to determine areas of possible cost savings. The Committee is also concerned at the possible impact of disability allowances on the estimated out-turn cost and believes that the FAC should take all possible

steps to minimise the need for the payment of the disability allowances and should advise the Committee of the extent of any such payments.

Committee's Recommendations

64. The Committee recommends the installation of fire sprinklers to the International Terminal Building at Sydney Airport. However, the Committee further recommends that the Federal Airports Corporation thoroughly reassess all aspects of the out-turn cost of \$14.6m to determine areas of possible cost savings.

65. The Committee recommends that the Federal Airports Corporation take all possible steps to minimise the need for the payment of disability allowances and advise it of the extent of any such payments.

CONCLUSION AND RECOMMENDATIONS

66. The conclusion and recommendations of the Committee and the pages in the report to which each refers are set out below:

	Page
1. There is a need for the installation of fire sprinklers to the International Terminal Building at Sydney (Kingsford-Smith) Airport to meet current fire safety standards.	4
2. The Committee recommends that the Federal Airports Corporation commission a fire safety study to determine whether cost savings can be made in the provision of fire sprinklers.	7
3. The Committee recommends that the Minister for Shipping and Aviation direct the Federal Airports Corporation to complete an approved master plan for Sydney Airport as a matter of extreme urgency.	10
4. The Committee recommends the installation of fire sprinklers to the International Terminal Building at Sydney Airport. However, the Committee further recommends that the Federal Airports Corporation thoroughly reassess all aspects of the out-turn cost of \$14.6m to determine areas of possible cost savings.	12
5. The Committee recommends that the Federal Airports Corporation take all possible steps to minimise the need for the payment of disability allowances and advise it of the extent of any such payments.	12


Colin Hollis
Chairman

26 March 1992

APPENDIX A

WITNESSES

ADAMS, Mr Kevin John, District Officer, Fire Safety Division,
New South Wales Fire Brigades, 219-227 Elizabeth Street,
Sydney, New South Wales

ARMSTRONG, Mr Brian George, Manager Technical Services,
Federal Airports Corporation, PO Box 63, Mascot, New
South Wales

CLARK, Mr Lee Robert, Sprinkler Designer, Kuttner Collins,
Level 9, 8 West Street, North Sydney, New South Wales

CORCORAN, Mr Paul, 19A Howard Street, Randwick, New South
Wales

FELTHAM, Mr Peter, Organiser, Public Sector Union, New South
Wales Branch, 6th Floor, PSU House, 191-199 Thomas
Street, Haymarket, New South Wales

GRUBITS, Mr Stephen John, Manager, Fire Technology Program,
CSIRO, Division of Building, Construction and Engineering,
PO Box 310, North Ryde, New South Wales

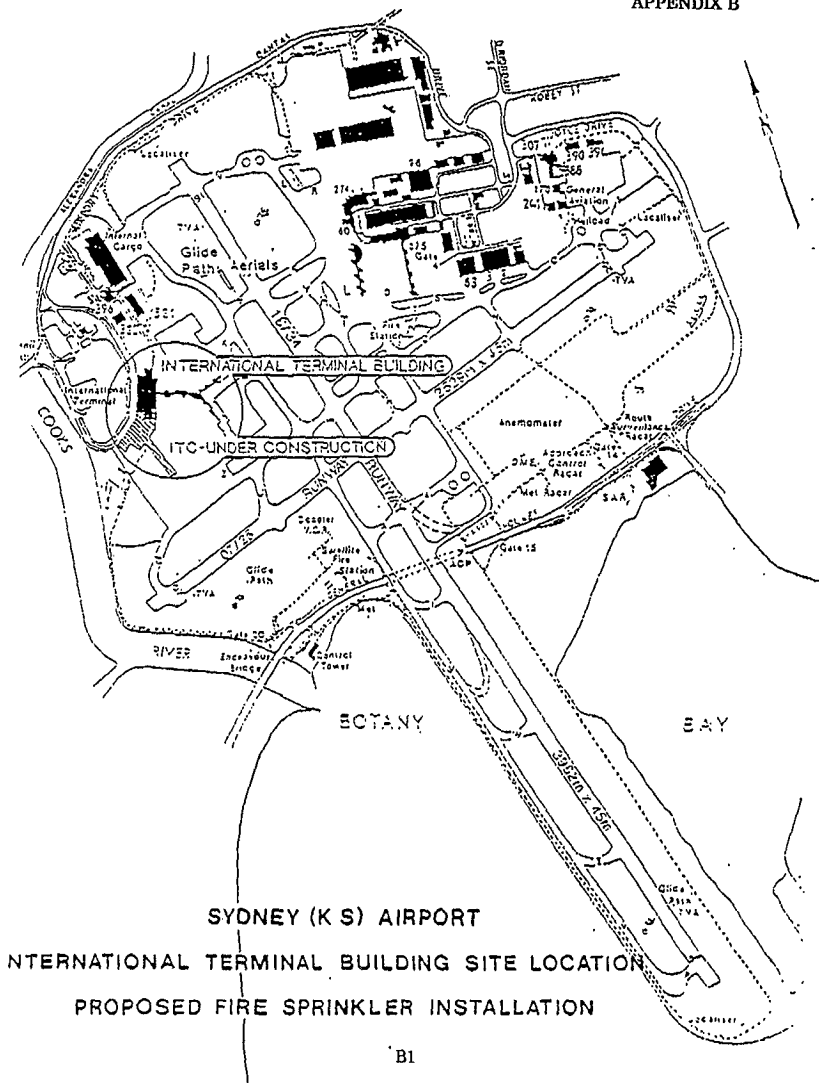
HOWE, Mr John Michael, Project Manager, Australian
Construction Services, Locked Bag 10, PO Chatswood, New
South Wales

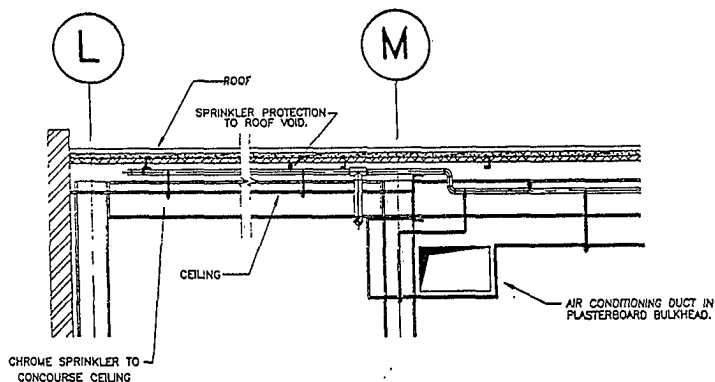
MALONEY, Mr John Raymond, Regional Manager, Passenger
Processing, New South Wales Australian Customs Service,
International Terminal Building, Sydney (Kingsford Smith)
Airport, Sydney, New South Wales

O'NEILL, Mr David John Patrick, PSU Delegate, Australian
Customs, PSU (Australian Public Sector and Broadcasting
Union), C/- 6th Floor, 191 Thomas Street, Haymarket, New
South Wales

RICHMOND, Mr James, Building Manager, Federal Airports Corporation, Sydney Airport, Mascot, New South Wales

WILLIAMS, Mr Anthony Glencoe, Consultant, Leichhardt and Marrickville Councils, 214A Old South Head Road, Vaucluse, New South Wales



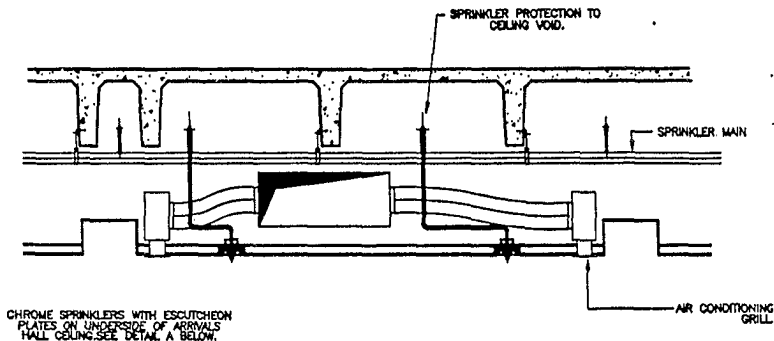


DEPARTURES CONCOURSE

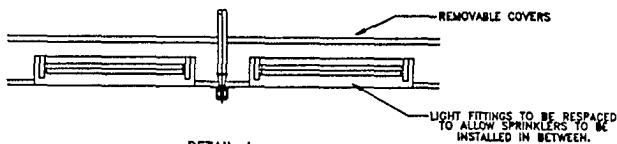
TYPICAL TENANCY

TERMINAL COMPLEX DEPARTURES CONCOURSE
CATEGORY A CEILING TREATMENT





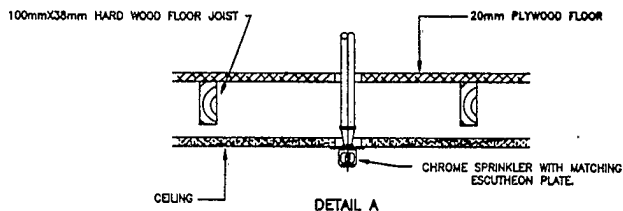
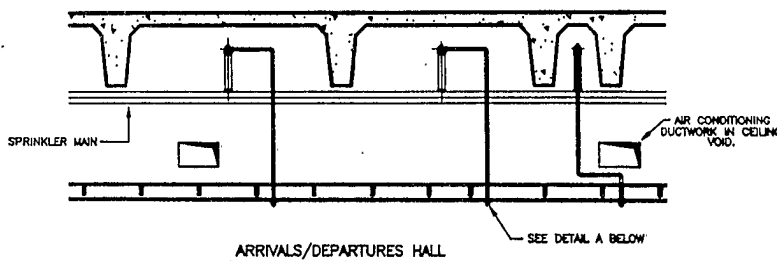
ARRIVALS HALL TIMBER CEILING



DETAIL A

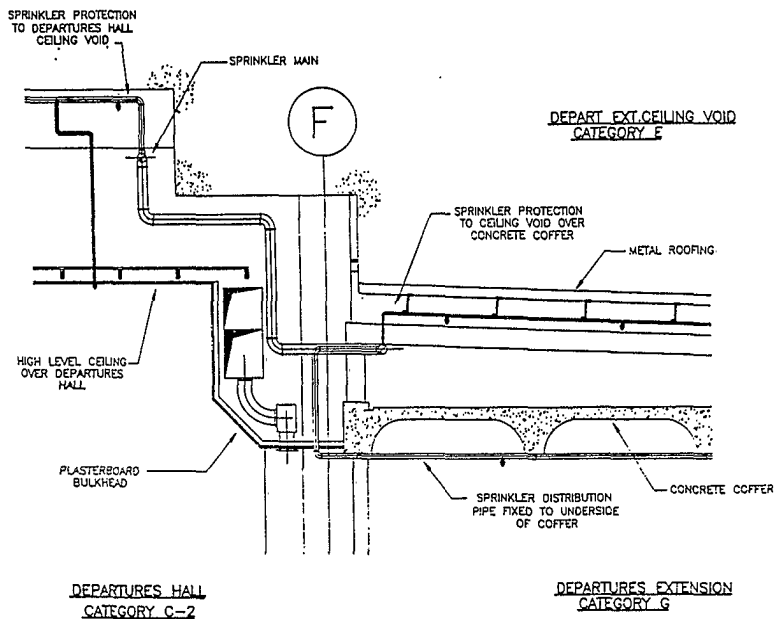
TERMINAL COMPLEX ARRIVALS HALL CATEGORY B CEILING TREATMENT





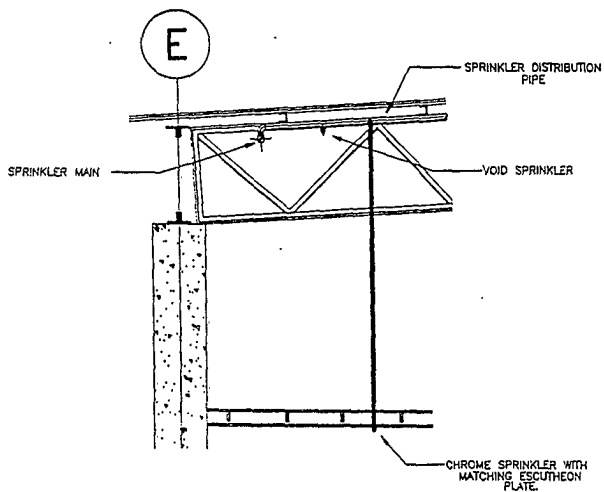
TERMINAL COMPLEX ARRIVALS AND DEPARTURES CATEGORY C1&2 CEILING TREATMENTS





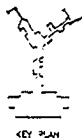
TERMINAL COMPLEX DEPARTURES HALL
CATEGORY C-2,E AND G CEILING TREATMENTS

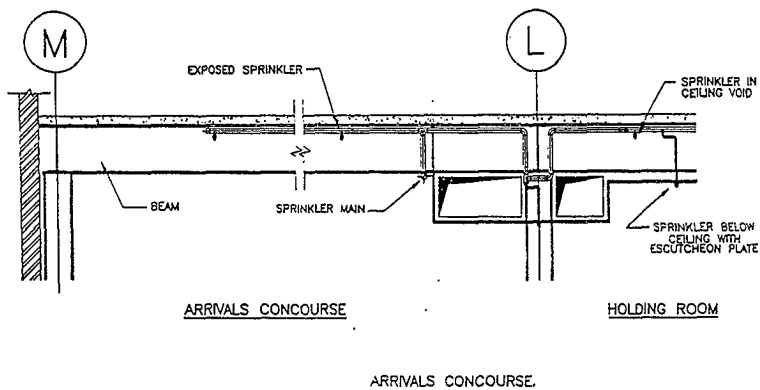




SECOND FLOOR CEILING VOID

TERMINAL COMPLEX SECOND FLR CEILING VOIDS
CATEGORY D CEILING TREATMENT





TERMINAL COMPLEX ARRIVALS CONCOURSE
CATEGORY G CEILING TREATMENT

