

MAINTENANCE OF 'ESSENTIAL SAFETY MEASURES' INFORMATION (Building Regulations 2006)

1. INTRODUCTION

1.1 Essential Safety Measures Defined

Essential Safety Measures (previously called essential services) are fire and life safety items installed or constructed in a building to ensure adequate levels of fire and life safety over the life of the building.

1.2 Maintenance Objectives

The primary objective of essential safety measures legislation is to ensure that every essential safety measure continues to perform at the same level of operation that existed at time of commissioning and issue of the occupancy permit.

Maintenance involves identification of relevant passive and active safety measures as required by the Building Code of Australia, periodic checks and inspections in accordance with relevant Australia Standards, and proper documentation and records of annual reports.

The primary reasons building essential safety measures require maintenance are:

- General wear and tear (i.e. exit door hardware, replacement of emergency light batteries)
- Reliability of system operation (i.e. smoke control, fire sprinkler systems)
- Faults occurring after system commissioning (i.e. smoke detection system)
- General housekeeping (i.e. paths of travel, signage)

The benefits of proper maintenance of essential safety measures include (i) better site risk management, (ii) lower incident of system faults and (iii) protection against litigation and illegitimate insurance claims.

1.3 Applicability of Building Regulations

This Part of the Building Regulations applies to all residential, commercial and industrial buildings with the only exception being typical domestic (house) type construction (except for swimming pool barriers).

2. LEGISLATIVE RESPONSIBILITIES

2.1 Building Regulatory Requirements

Essential safety measures are enshrined in legislation pursuant to Part 12 of the Building Regulations 2006. Compliance with the Building Regulations is required by Part 2 (7) of the Building Act 1993 as a means of regulating the 'construction, use, maintenance, demolition and removal of buildings'.

2.2 Occupancy Permits, Essential Safety Measure Report and Owners Responsibilities

Part 12 of the Regulations states:

'An owner of a building or place of public entertainment in respect of which a condition on an occupancy permit lists an essential safety measure or a maintenance determination has been made, must ensure that an annual essential safety measures report is prepared in accordance with regulation 1209 before each anniversary of the relevant anniversary date.

The essential safety measure report must:

- (i) be in accordance with a Form approved by the Commission;
- (ii) be signed by the owner or agent;
- (iii) specify the address of the building or place of public entertainment;
- (iv) include a statement that the owner has taken all reasonable steps to ensure, each essential safety measure is operating and is being maintained, that there have been no unauthorised penetrations to fire resisting construction and that there have been no changes to materials or assemblies regarding fire hazard properties.

2.3 Other Owner Responsibilities

The annual essential safety measures report must be displayed in an 'approved' location. This approved location should be stated on the Occupancy permit and will usually occur in the main entrance foyer and/or adjacent to the Occupancy Permit (10 penalty units).

All annual essential safety measure reports as well as records of maintenance checks, service and repair work and the like must be kept by the owner on the premises for inspection by either the municipal building surveyor or chief officer at any time on request (10 penalty units).

2.4 Maintenance Determinations

An essential safety measure may be required in a building as a result of (i) building work carried out that did not require the issue of an occupancy permit, (ii) a building order or (iii) a council emergency order.

Such a determination must be complied with in a similar manner as an occupancy permit. The owner must comply with the maintenance determination in that building and display the determination in an approved building location for inspection by the municipal council or chief officer at any time (10 penalty units).

2.5 Buildings Constructed Before the 1 July 1994

The owner of a building or part of a building constructed before the 1 July 1994 must (i) maintain all essential safety measures in a state which enables those measures to fulfill their intended purpose, (ii) ensure that exits and paths of travel to exits are maintained in an efficient condition and kept readily accessible functional and free from obstruction and (iii) ensure that existing essential safety measures are not removed from their approved location (10 penalty units).

2.6 Swimming Pool and Spa Maintenance

The occupier of an allotment or building containing a swimming pool appurtenant to a class 1, 2, 3, 10, or 4 part of a building must 'take all reasonable steps' to ensure that all pool type fencing, gates, barriers, latches, self-closing devices, building perimeter precautions, fly screens and the like that restrict access and provide access to the pool or spa area, are being properly maintained at all times (50 penalty units).

3. BUILDING CODE OF AUSTRALIA (BCA2006)

3.1 BCA Performance Requirements

Part I of the BCA requires compliance with performance requirements IP1.1 and IP1.2 which state

IP1.1 *'Safety measures to be capable of performing to a standard no less than that which they were originally required to achieve'*; and

IP1.2 *'Mechanical ventilation and hot water, warm water and cooling water systems must be adequately maintained to safeguard people from illness or injury'*.

3.2 BCA Deemed to Satisfy Provisions

Compliance with the above BCA performance requirements can typically be achieved by compliance with Parts I1.1 and I1.2. The BCA Tables for safety measures compliance is reproduced (with modification as follows):

Table I1.1 SAFETY MEASURES

Safety Measure	Part of Building to Which it Applies	BCA Provisions for Determining Standard of Performance	Nature of Inspection or Test Frequency
Building Fire Integrity			
Building elements required to satisfy prescribed fire resistance levels		BCA Section C D1.12	Annual Inspection for damage, deterioration, or unauthorised alteration
Materials and assemblies required to have fire hazard properties		C1.10	Annual Inspection for damage, deterioration, or unauthorised alteration
Elements required to be non-combustible, provide fire protection, compartmentation and separation		C2.5 to C2.14, C3.3, C3.11, D1.7, D1.8, E1.3, G3.4	Annual Inspection for damage, deterioration, or unauthorised alteration
Wall wetting sprinklers (including doors and windows required in conjunction with wall wetting sprinklers)		C3.4, C3.8, C3.11, D1.7, D1.8, G3.8	As per AS 1851-2005 Section 2 if Sprinkler system installed or every six months to ensure compliance, no damage or deterioration and water supply availability.
Fire Doors (including sliding fire doors and their associated warning systems) and associated self-closing, automatic closing and latching mechanisms		C2.12, C2.13, C3.4 to C3.8, C3.10, C3.11, D1.7, D1.8, D1.12	Every three months as per AS 1851 – 2005 Section 17 check operation of handles, closers and electronic strikes
Fire windows (including windows that are automatic or permanently fixed in position)		C3.4, C3.8, C3.11, D1.7, D1.8	Every six months as per AS 1851 – 2005 section 17 for damage, deterioration, or

			unauthorised alteration (BCA refer Appendix E)
Fire shutters		C3.4, C3.5, D1.7, D1.8	Every three months as per AS 1851 – 2005 section 17, Annual Inspection for damage, deterioration, or unauthorised alteration
Solid core doors and associated self-closing, automatic closing and latching mechanisms		C3.11	Annual Inspection for damage, deterioration, and check operation of closers, handles and electronic strikes.
Fire protection at service penetrations through elements required to be fire resisting or have a resistance to the incipient spread of fire		C3.12, C3.13, C3.15	Every six months as per AS 1851 – 2005 Inspection for damage, deterioration, or unauthorised alteration
Fire protection associated with construction joints, spaces and the like in and between building elements required to be fire resisting		C3.16	Every six months as per AS 1851 – 2005 Inspection for damage, deterioration, or unauthorised alteration
Smoke doors and associated self-closing, automatic closing and latching mechanisms		Spec C2.5, D2.6	Every three months as per AS 1851 – 2005 Check operation of closers, handles and electronic strikes
Proscenium walls (including proscenium curtains)		H1.3	Annual Inspection for damage, deterioration, or unauthorised alteration
Means of Egress			
Paths of travel to exits		D1.6	Inspection every three months to ensure there are no obstructions and no alterations
Discharge from exits (including paths of travel from open spaces to public roads)		D1.7, D1.9-D1.11, D2.12, G4.3, G4.6, G4.7	Inspection every three months to ensure there are no obstructions and no alterations
Exits (including fire isolated stairways and ramps, stair treads, balustrades and handrails associated with exits and fire isolated passageways)		D2.2, D2.3, D2.8-D2.11, D2.13, D2.16, D2.17	Inspection every three months to ensure there are no obstructions and no alterations
Smoke lobbies to fire isolated exits		D1.7, D2.6	Annual Inspection for damage, deterioration, or unauthorised alteration
Open access ramps or balconies for fire isolated		D2.19 – D2.23	Annual Inspection for damage,

exits			deterioration, or unauthorised alteration
Doors (other than fire or smoke doors) in a required exit, forming part of a required exit or in a path of travel to a required exit and associated self-closing, automatic closing and latching mechanisms.		D1.6, D2.19 – D2.21, D2.23	Inspection every three months to ensure doors are intact, operational and fitted with conforming hardware
Signs			
Exit signs (including direction signs)		Specification D1.12, E4.5, E4.6, E4.8	Every six months to AS 2293.2-1995
Signs warning against the use of lifts in the event of fire		E3.3	Annual Inspection to ensure the warning sign is in place and legible
Warning signs on sliding fire doors and doors to non-required stairways, ramps and escalators		C3.6, Specification D1.12	Annual Inspection to ensure the warning sign is in place and legible
Signs, intercommunication systems, or alarm systems on doors of fire isolated exits stating that re-entry to a storey is available		D2.22	Annual Inspection to ensure the warning sign is in place and legible
Signs alerting persons that operation of doors must not be impaired			Annual Inspection to ensure the warning sign is in place and legible
Signs required on doors in alpine areas, alerting people that they open inwards		G4.3	Annual Inspection to ensure the warning sign is in place and legible
Fire order notices required in alpine areas		G4.9	Annual Inspection to ensure the warning sign is in place and legible
Lighting			
Emergency Lighting		E4.2, E4.4	Every six months to AS 2293.2-1995
Fire Fighting Services and Equipment			
Fire hydrant system (including on-site pump set and fire-service booster connection)		E1.3, AS 2419.1	Weekly to AS 1851 – 2005 section 4 where pumps are installed or six monthly to AS 1851 – 2005 section 4
Fire hose reel system		E1.4, AS 2441	Every six months to AS 1851 – 2005 section 14
Fire sprinkler system		E1.5, G3.8, H1.2, AS 2118.1	Weekly to AS 1851 – 2005 section 2
Portable fire extinguishers		E1.6, AS 2444	Every six months to AS 1851 – 2005 section 15.4
Fire control centres (or rooms)		E1.8	Annual inspection to ensure compliance of construction and contents with BCA

Provisions for special hazards		E1.10	Inspection regime to be developed in consultation with designer utilising appropriate Australian standards, manufacturer specifications, etc
Air Handling Systems			
Smoke hazard management systems <ul style="list-style-type: none"> ➤ Automatic air pressurization for fire isolated exits ➤ Zone smoke control system ➤ Automatic smoke exhaust system ➤ Automatic smoke and heat vents ➤ Air handling systems (which may contribute to smoke spread) ➤ Miscellaneous air handling systems covered by sections 5 and 11 of AS/NZS 1668.1 serving more than one fire compartment 		E2.2	Quarterly and as prescribed in AS 1851 – 2005 section 18
Carpark mechanical ventilation system		F4.11	Frequency as nominated by manufacturer on label attached to equipment in accordance with AS 1851 – 2005 section 18
Atrium smoke control system		Specification G3.8	As per AS 1851 – 2005 section 18
Automatic Fire Detection and Alarm Systems			
Smoke and heat alarm system		Clause 3 of specification E2.2a, AS 3786	As prescribed in AS 1851 – 2005 section 7 Monthly inspection to test operation, replace battery or unit as necessary
Smoke and heat detection system		Clause 4 of specification E2.2, AS 1670.1	Monthly as prescribed in AS 1851 – 2005 section 6
Atrium fire detection and alarm systems		Clause 4 of specification G3.4, AS 1670.1	Monthly as prescribed in AS 1851 – 2005 section 6
Occupant Warning Systems			
Emergency warning and intercommunication system		E4.9, Clause 6 of specification G3.8	Monthly to AS 1851 – 2005 section 10
Building occupant warning system		Clause 8 of specification E1.5, Clause 6 of specification E2.2a	Monthly to AS 1851 – 2005 section 9
Lifts			

Stretcher facility in lifts		E3.2	Annual inspection to ensure compliance of facilities with BCA
Emergency lifts		E3.4	As per requirements of AS 1735. Periodic inspection as per manufacturers specification, however no less than annual inspection.
Passenger lift fire service controls		E3.7	Periodic inspection as per manufacturers specifications however no less than annual inspection
Standby Power Supply Systems			
Standby power supply systems		E3.4 Clause 6 of specification G3.8	Every six months test to ensure auxiliary power is operable. For diesel engines- test as prescribed in AS 1851 - 2005 based on proving electrical load in lieu of flow/pressure for pump sets
Building Clearance and Fire Appliances			
Open space around large isolated buildings		C2.3, C2.4	Annual inspection to ensure that unobstructed access to buildings and fire fighting facilities are maintained
Vehicular access around large isolated buildings		C2.3, C2.4	Annual inspection to ensure clearance is maintained
Other Measures			
Air Conditioning Systems		BCA E2.2, AS 1668.2-1991	Quarterly to AS 1851-2005, AS 3666-1995
Glazed assemblies		B1.4, F1.13	Annual Inspection
Balconies		Part B1	Annual Inspection
Balustrades		Part B1, D2.16	Annual Inspection
Swimming Pool Fencing		G1.1	Annual Inspection
Refrigerated chambers, strong rooms and vaults		G1.2	Annual Inspection
Bushfire protection measures		G5.2	Annual Inspection
Building Use and Application			
Classification and use of the building		A3.2-A3.4	Annual Inspection
Occupancy Hazard		E1.5, E1.6, E1.10	Annual Inspection

3.3 Australian Standards

The standards and level of frequency of testing and maintenance is often dictated by Australian Standards that are reference in the BCA. The primary Australian Standard regarding maintenance is AS 1851-2005 which provides guidance on maintenance.

Many of these standards provide guidance and advice as to the levels of maintenance and testing that needs to be done for each particular essential safety measure.

For example a fire hydrant system with pump sets requires the following levels of testing:

Weekly
Monthly
Quarterly
Yearly
Three Yearly
Six Yearly

Each level of testing contains different requirements and tests different components of the system. The weekly check is mainly visual and relates to the pump sets whilst the quarterly check requires amongst other things testing of the monitored connection and actual operation of the pump set.

4. EXAMPLES OF COMMON PITFALLS

Example 1: Multi-Storey Residential Building in the CBD

An essential services audit of a newly constructed 10-storey residential building in the inner city found the following items:

- storage of combustible material in fire isolated stairway;
- choking open of self-closing fire doors;
- pay tv cabling installed in electrical shaft without re-installing fire rated pillows and cushions in the penetration;
- Insertion of additional door hardware to fire rated apartment doorways that compromise the fire resistance of the doorset;
- Small multi-purpose room created at the end of a corridor (i.e. lightweight partitions and doorset) without extending smoke detection system;
- Installation of cage storage to basement carpark caused blockage of required egress path;
- No maintenance of separating fire rated walls between apartments due to inability to obtain access to all apartments;

Example 2: Four Storey Office Building in Eastern Suburbs

- internal fit out to third floor occurred without a building permit and affected the location of all exit signs;
- the same fit out also caused the path of travel width to an exit to be reduced to less than 1m between workstations
- internal fit out also caused some new small offices to not have smoke detector coverage;
- illegal installation of commercial grade carpet within the fire isolated stairway (not permitted by the BCA);
- moveable office furniture (couches) was placed in front of the fire hose reel affecting accessibility;
- smoke detection system had been maintained for 2 years on a weekly basis without annual test being done.

Example 3: Large Industrial Building in Laverton

- Panic bolts and additional locking hardware installed to exit doors (doors must always be openable with single handed downward action and without a key);
- Installation of manufacturing equipment caused blockage of required exit door;
- Installation of new portable offices (inside factory) without extending detection system;
- Construction of mezzanine storage with non-complying balustrade and ladder access;
- Underside of mezzanine not provided with smoke detector coverage;
- Change of use occurred without obtaining new occupancy permit (i.e. changed from warehouse to factory – occupancy of excessive hazard);
- The fire hydrant system had been maintained for 5 years without the 3 yearly flow test being done.

5. OTHER INFORMATION

5.1 Log Books and Maintenance Records

One of the most important aspects of essential safety measures compliance and maintenance is the method of record keeping on the site.

This inevitably varies from site to site but should as a minimum include the following:

- Fire detection and fire suppression system log books;
- Emergency and exit lighting log books;
- Maintenance tags on all fire hydrants, hose reels and extinguishers;
- Log book maintenance records for fire hydrants, hose reels and extinguishers confirming the nature and level of maintenance performed;
- A schedule of locations of all fire hydrants, hose reels and hose reels on the site;
- Maintenance log books and records for all maintenance checks conducted on the site on each and every essential safety measure;
- A list of all the contractors that are engaged to carry out maintenance and testing on the building;
- A central essential safety measures cabinet which houses all of the relevant maintenance records and log books.

The proper and centralized keeping of site records has never been as important and necessary as it is today.

6. SERVICES OFFERED BY CONTI GROUP

Conti Group Building Consultants provide a service to both the private and public sectors in relation to maintenance of essential safety measures in accordance with Part 12 of the Building Regulations 2006.

The services offered are summarized as follows:

Existing Buildings (i.e. constructed before the 01 July 1994)

1. Carry out a walk-through site inspection and determine the type, nature and number of essential safety measures currently on the site;
2. Identify the essential safety measures that are in place and determine the nature, frequency and level of maintenance that would be appropriate for the building;
3. Carry out an annual or bi-annual inspection, where required, on the essential safety measures relating to building fire integrity, means of egress, signage, building clearance and fire appliances and other measures;
4. Prepare an essential services schedule and/or maintenance determination and a manual for the site relative to the safety measures that are in place giving the owner guidance and recommendations on the degree of maintenance that should be provided to comply with Parts 1213 – 1217 of the Building Regulations 2006.

New Buildings (i.e. constructed on or after the 01 July 1994)

1. Carry out a walk-through site inspection of the building to determine whether the essential safety measures listed on the Occupancy permit correctly reflect the actual essential safety measures found on site;
2. Carry out an annual or bi-annual inspection, where required, on the essential safety measures relating to building fire integrity, means of egress, signage, building clearance and fire appliances and other measures;
3. Carry out the annual essential safety measures inspection and audit to determine whether all of the essential safety measures in the building are being properly checked and maintained in accordance with the occupancy permit schedule;
4. Advise the body corporate or building managers as to what matters, if any, require further consideration, confirmation, attention or on site rectification for compliance;
5. Issue the Annual Essential Safety Measures report for the building and advise as to the correct location for placement of this report.

Information Required for Essential Safety Measure Reports

- A copy of the Building and Occupancy Permit
- A copy of the Essential Safety Measure Determination or Schedule
- A copy of the Architectural Drawings for the building