

Mandatory Building Inspection Scheme and Mandatory Window Inspection Scheme

1 Background

Building safety is one of the main areas of concern of the Building Authority. The enactment of the Building (Amendment) Ordinance 2011 [B(A)O 2011] and the subsidiary Building (Inspection and Repair) Regulation [B(I&R)R] marked the beginning of a new era in building safety. Through implementation of the Mandatory Building Inspection Scheme (MBIS) and a Mandatory Window Inspection Scheme (MWIS) introduced hereunder, it is mandatory for owners to regularly inspect their buildings and the windows therein with a view to identifying problems at an early stage and carry out timely remedial works to prevent their buildings from falling into disrepair thus causing danger to the occupiers and the public.

2 Purpose

With the purpose to tackle the long-standing problem of building neglect and to ensure building safety in the long run, the MBIS and MWIS are products of the community consensus after years of preparation by the government and consultation of the public before their final introduction under the B(A)O 2011.

Under the MBIS, building owners are required to appoint a Registered Inspector (RI) to carry out inspection and Registered Contractor (RC) to carry out any necessary repair works for their buildings under supervision of an RI upon receipt of a notice served by the Building Authority (BA) under the Buildings Ordinance (BO).

Under the MWIS, building owners are required to appoint a Qualified Person (QP) to carry out inspection and an RC to carry out any necessary repair works for the windows in their buildings under supervision of an QP upon receipt of a notice served by the BA under the BO. The window repair works may be carried out by the QP appointed for the window inspection provided that the QP is also an RC.

3 Legislation

The MBIS and MWIS were introduced with the enactment of the B(A)O 2011 in June 2011 and the subsidiary legislations including the B(I&R)R in December 2011. The

legislations empower the Building Authority (BA) to issue statutory notices to owners as necessary requiring them to carry out prescribed inspections and prescribed repairs of their buildings and windows every 10 years and 5 years respectively. The legislations also provide for matters relating to the appointment, control and duties of RIs and QPs as well as the procedural requirements for such inspections and repairs of the buildings and windows respectively.

4 Key Features of Mandatory Building Inspection Scheme (MBIS)

The MBIS applies to private buildings aged 30 years or above except domestic buildings not exceeding three storeys in height. To spread over the workload of the professional personnel, the contractors and the government departments, the scheme will cover about 2,000 buildings each year. Upon receipt of a notice served by the BA, owners are required to carry out inspection and repair in relation to the common parts, external walls, projections and signboards of their buildings. After the notice has been complied with, a fresh notice in respect of the same part of the building will not be served before the expiry of 10 years after the issue date of the preceding notice.

To comply with the statutory notice, building owners shall appoint an RI, whose name is on the inspectors' register kept by the BA, to carry out inspection in respect of the building. The RI may be an Authorized Person (AP), Registered Structural Engineer (RSE), Registered Professional Engineer (RPE) of the relevant disciplines and Registered Professional Surveyor (RPS) of the relevant divisions. As regards the carrying out of the repair works, the owner shall appoint a registered general building contractor (RGBC) or registered minor works contractor (RMWC) as appropriate to carry out the works under the supervision of an RI.

5 Key Features of Mandatory Window Inspection Scheme (MWIS)

The MWIS applies to private buildings aged 10 years or above except domestic buildings not exceeding three storeys in height. For similar reason of spreading over the workload, the scheme will cover about 5,800 buildings each year. Upon receipt of a notice served by the BA, owners are required to carry out inspection and repair in relation to the windows in the common parts as well as individual premises of the building. After the notice has been complied with, a fresh notice in respect of the same window will not be served before the expiry of 5 years after the issue date of the preceding notice.

To comply with the statutory notice, building owners shall appoint a QP to carry out inspection and repair in respect of the windows in the building. The QP may be an AP, RSE, RI, RGBC or RMWC qualified to carry out the repair works.

6 Duties and Responsibilities of RIs

The main duties and responsibilities of RIs as stipulated in the BO, the B(I&R)R and the CoP issued by the Buildings Department (BD) are as follows:-

- (a) Carry out prescribed inspection personally and provide proper supervision of the carrying out of the prescribed repair;
- (b) Comply with the BO in general, and sections 30(A) to 30(F) therein in respect of MBIS and MWIS in particular;
- (c) Notify the BA of any case of emergency during the prescribed inspection and prescribed repair;
- (d) Comply with the B(I&R)R which sets out the detailed procedural requirements, scope and standard of prescribed inspection and prescribed repair, duties of RI in respect of detailed investigation, etc.
- (e) Make reference to the CoP which gives operational details of procedures and guidelines on the scope and technical standards regarding the prescribed inspection, assessment and prescribed repair of buildings.

7 Code of Practice for MBIS and MWIS

The CoP aims to provide the RI and QP with the details of procedural requirements and technical standards to carry out prescribed inspection of buildings and windows and for the RC to carry out the prescribed repair under the two schemes. It also provides guidance on compliance with the statutory requirements of the BO and B(I&R)R.

The key areas of concern covered in the CoP are the external elements and other physical elements, structural elements, fire safety elements, drainage system and unauthorized building works under the MBIS and the windows under the MWIS.

7.1 Inspection and Assessment under MBIS

While the scope and standard of inspection have been set out in the B(I&R)R, the

corresponding detailed requirements are covered by the CoP. According to the CoP, inspection by the RI under MBIS shall cover the common parts, external walls, projections and signboards erected on a building and unauthorized building works in common parts and external walls of a building. Based on the assessment, the RI shall make recommendations on any action required to achieve the objectives of the CoP.

Building elements to be inspected shall include the following:-

(a) External elements and other physical elements:-

The scope of prescribed inspection of the external elements shall cover the non-structural external walls, non-structural walls of lightwell, fence walls, external finishes, fixtures, installations and appendages to the external walls. These elements shall include external finishes, cladding, fins, grilles and metal louvers, protective barriers, railings, parapets and balustrades, fencing and associated fixings, curtain wall, appendages and manually or electrically operated metal gates.

The RI shall adopt various inspection methods such as visual inspection and any special inspection technologies to ascertain the extent of the defects and shall be personally satisfied with and responsible for the inspection findings. The RI shall assess the conditions of the inspected elements and provide recommendations on the follow up action, if necessary, based on the inspection findings and professional judgment.

(b) Structural elements:-

The scope of inspection under this category shall cover structural elements on the external walls and in the common parts of the main building and all other ancillary building structures within the lot boundary. Major structural elements include columns, walls, beams, slabs, cantilevered projecting structures, transfer structures, hanging structures and other structural elements exposed in the building. Inspection shall be conducted visually or by other non-destructive methods such as hammer-tapping, cover meter survey, crack width measurement or other feasible means for identifying various defects.

For the purpose of discharging his statutory duties, the RI shall endeavour to conduct inspection on sufficient percentage of, if not all, critical structural elements such as cantilevered projecting structures, transfer structures, etc. If such structural elements are concealed by shopfront extensions, false ceiling and covering panels, etc., the RI shall make all efforts to inspect a minimum percentage of such critical structural elements as follows:-

Concealed pure cantilevered slab type structures	100%
Concealed beam-slab type cantilevered structures	30%
Concealed transfer plates/beams	30%
Other concealed elements	Subject to RI's professional judgment

If the RI is not certain about the structural condition and safety level of the cantilevered projecting structures (e.g. serious corrosion of steel reinforcement is noted after the opening up inspection of the cantilevered slab canopy) or transfer structures, detailed investigation may be considered. The RI shall assess the conditions of the structural elements inspected and provide recommendations on the follow-up action including repair works, if necessary, based on the inspection findings and professional judgment.

(c) Fire safety elements:-

The scope of inspection of fire safety elements shall cover all fire safety provisions in the common parts and external walls of a building including the means of escape, means of access for fire fighting and rescue, and fire resisting construction. The RI shall also identify any unauthorized alterations and additions works and change in use affecting the fire safety and structural safety and report to the BA for follow-up actions. The RI shall assess the conditions and provide recommendations on the follow-up action including proposals for rectification and repair works, if necessary, based on the inspection findings and professional judgment.

(d) Drainage system:-

The scope of inspection of drainage system shall cover the drainage system located at external walls of building, in common areas, within common pipe ducts, underground or/and above-ground, and any other common drainage system for the building under inspection that may, if defective, choked or misconnected, affect the sanitary or hygienic condition of the building. The RI shall also identify any unauthorized alterations and additions adversely affecting the drainage system in the inspection and report to the BA for follow-up actions.

All parts of drainage system shall be inspected visually or by other means that the RI considers suitable in the circumstances of the building under inspection. Alternatively, the RI may consider adopting other feasible method of inspection such as closed circuit television (CCTV) survey. The RI shall provide appropriate proposals for the rectification and repair works if necessary, based on the inspection findings, detailed investigation and professional judgment.

(e) Unauthorized Building Works (UBW):-

It is a statutory requirement for the RI to identify and report to the BA the existence of UBW in common parts of the building during the course of carrying out the prescribed inspection. These UBW include roof top/flat roof/yard/lane structures, projections erected on the exterior of the buildings, unauthorized alterations of external walls or parapets, unauthorized alterations and additions of structural elements or drainage system, unauthorized alterations and additions affecting fire safety and sub-divided flats.

The RI shall report to BA immediately if any of the following situations are observed:

- UBW are unstable;
- Parent structure is overloaded and show signs of serious distress;
- UBW constitute serious environmental nuisance or health hazard;
- UBW are under construction.

The RI shall assess the safety of UBW and provide recommendations on the follow-up action based on the inspection findings and professional judgment,

provide proposals in the inspection report, for any rectification or repair works, and any urgent action if necessary.

7.2 Detailed Investigation under MBIS

Under certain circumstances, the RI shall consider conducting a detailed investigation (DI) where:-

- There are serious defects, not arising from normal deterioration, constituting structural instability or serious health hazard;
- The extent or cause of the defects cannot be ascertained in the inspection;
- Serious structural defects such as significant structural cracks on beams/slabs, crushing of columns, extensive concrete spalling, serious corrosion of reinforcement or structural steel, excessive deformation or movement of the building structure etc. are observed;
- Serious corrosion of the main steel reinforcements at the root of cantilevered slab canopies after opening up inspection is observed;
- There is uncertainty in the fire resistance rating of fire resisting construction;
- Misconnection of drain pipes is detected; or
- Defective underground drains, source of leakage, defective concealed pipes, corroded or loosen metal brackets within pipe ducts are detected.

Under the provision of the B(I&R)R, the RI may engage suitable specialist to conduct tests for the DI. If considered necessary, he may also seek input from a specialist of appropriate professional discipline for the DI. However, the RI shall exercise his professional judgment and be personally responsible for the application of the findings of the DI when formulating appropriate repair proposals to render the building safe.

When the RI intends to conduct a DI, he shall submit notification of his intention and submit a DI proposal to the BA in accordance with the B(I&R)R. The RI must not commence the DI before the proposal has been endorsed by the BA.

7.3 Rectification and Repair under MBIS

Upon completion of inspection, assessment and DI, the RI shall formulate a repair proposal, if he considers required, for making good all deficiencies and defects. For

this purpose, the Code provides the technical standards for commonly used methods of repair and proof tests. The RI should exercise professional judgment in adopting the most appropriate repair methods and proof tests to ensure that the repair works are carried out in compliance with the standards stipulated in the BO and B(I&R)R.

As a general guidance, the RI shall consider the following aspects when formulating a repair proposal:-

- The intended use and design life of the structure;
- Severity of exposure, condition of the existing structure and causes of defect;
- Impact of repair proposal to the occupants and the public;
- Effects of repair works on the building and the environment;
- Required performance of repair works, durability and access;
- Compatibility of repair materials and method of application with the substrate and the parent structure; and
- Other aspects relevant to the safety and health standards of the building under repair.

When determining the most suitable repair methods and carrying out repair works for the various building elements, the RI shall consider the following aspects:-

(a) External elements and other physical elements:-

Repair methods for elements under this category generally include removal and reinstatement of components, with insertion of new fixings for some elements. The standard of any repair or renewal should not be inferior to that of the original design standard including the use of materials.

(b) Structural elements:-

When formulating repair methods for reinforced concrete elements, structural steelworks and masonry structures, the RI should consider aspects including effects on the structure during and after repair works, means for ensuring load-carrying capacity during and after repair works, and any other aspects which are relevant to the structural safety standards of the building under repair.

(c) Fire safety elements:-

Repair works for the approved fire safety provisions in terms of means of escape, means of access for fire fighting and rescue, and fire resisting construction shall be carried out to a standard not inferior to the original approved design, and in the case which upgrading works required under the relevant fire safety ordinances have been completed, to such upgraded standards.

(d) Drainage system:-

All repair works in relation to common drains, underground drains, and manholes, surface channels, gullies and catch pits shall comply with the Building (Standards of Sanitary Fittings, Plumbing, Drainage Works and Latrines) Regulations that applied at the time the building was built and the relevant guidelines and requirements issued by the Drainage Services Department and the Environmental Protection Department.

7.4 Inspection and Repair under MWIS

The prescribed inspection by the QP for MWIS shall cover all window elements of openable and fixed panels including the window frames, glass panes and associated fixings.

All windows shall remain safe until the next cycle of inspection in five years. All defective window components shall be replaced. The renewed components shall be of such material or size not inferior to that of the original design. Windows of specified fire resistance rating shall be maintained after rectification.

7.5 Supervision and Control under MBIS and MWIS

Proper supervision and control is essential during the course of rectification and repair works for ensuring material quality, workmanship and safety. Supervision and control for both MBIS and MWIS shall cover the following:-

- Adequate measures to ensure a safe working environment;
- Adequate control on the sequence of rectification and repair works, the erection and maintenance of scaffolds; and

- Adequate measures to ensure that the rectification and repair works are carried out in accordance with the inspection findings of the RI and QP.

The RI/QP shall examine and supervise all the rectification and repair works carried out by the RC at such frequency and extent as he considers appropriate to ensure that the works are prepared, carried out and completed safely up to the required standards, and that the building has been rendered safe after completion of the repair works.

8 Implementation Timetable

The BD has commenced the registration for RIs on 30 December 2011 and the MBIS and MWIS are scheduled for full implementation in the second quarter of 2012.

9 Conclusion

The BD is determined to take on a more proactive approach in addressing the safety problems of existing buildings. The implementation of MBIS and MWIS would certainly help to ensure that owners take their part to properly and regularly maintain building and window safety. With the enactment of the new legislations setting out the legal framework and the publication of the CoP specifying the scope and performance standards of building inspection and repair for compliance with the statutory requirements under MBIS and MWIS, we need the participation, full support and co-operation of building owners, professional personnel and contractors in the building industry in achieving our goal.