

BUILDING MAINTENANCE AND STRATA MANAGEMENT ACT

BUILDING MAINTENANCE AND STRATA MANAGEMENT  
(STRATA TITLES BOARD) REGULATIONS 2005

STB No. 64 of 2016

In the matter of an application under Section 101 of the Building Maintenance and Strata Management Act in respect of the development known as Parc Vista Condominium (MCST No. 2341)

Between

Tsang Yuen Chit

... Applicant

And

- 1) Lee Chor Jye
- 2) The MCST 2341

... Respondents

**GROUND OF DECISION**

1. The Applicant's claim against the 1<sup>st</sup> Respondent is that he be ordered to repair the waterproofing to his unit so as to prevent leaks to the Applicant's unit. As against the 2<sup>nd</sup> Respondent who are the Management Corporation Strata Plan No. 2341 ("MCST"), the Applicant seeks an order that they repair the corroded steel reinforcement that has affected the structural integrity of the slab between the Applicant's unit and the 1<sup>st</sup> Respondent's unit.

2. Parc Vista is about 20 years old having obtained its TOP in 1997. The Applicant bought Unit 14-02 sometime in 2016. He found extensive cracks in the ceiling of his master bedroom, sitting room and sitting room common toilet. Cracks were also found on the vertical walls behind building façade in his sitting room and master bedroom. There were also signs of water seepage at the ceiling level and the external wall. These defects are evident in the many photographs which he included in his submission. He had reported the defects to the condominium management office since early April 2016.
3. The Applicant suspected that the cracks were due to water seepage from the outdoor balcony flooring of the 1<sup>st</sup> Respondent's Unit 15-02 which sits above his unit. He was in direct contact with the 1<sup>st</sup> Respondent on the matter from 2 July 2016. The 1<sup>st</sup> Respondent confirmed at the hearing on 24 February 2017 that he accepts responsibility for any water seepage from his unit into the Applicant's unit. He will arrange for any defect in the waterproofing in his unit to be rectified and that should stop further water seepage from his unit into the Applicant's unit below.
4. In late July 2016, the Applicant started renovation work in preparation for moving in. Between 20 and 22 July 2016, his contractor hacked away the loose concrete from the cracked areas and discovered that the steel reinforcement embedded within the slabs were severely corroded. The Applicant was concerned about the structural integrity of the slabs and brought the matter to the attention of the condominium manager. However, he was told to get his own Professional Engineer ("PE") to investigate because in the view of the condominium manager defects in slabs were for the owners themselves to resolve. The Applicant then engaged a PE from YMW Consultants who inspected the premises on 6 August 2016 and submitted an inspection report dated 10 August 2016 which is annexed at Tab C of his bundle of documents.

5. The PE, Er. Wong Yew Fai, noted spalling of concrete in large areas of the ceiling of the living room, master bedroom and common toilet. He observed that the concrete cover had delaminated and the reinforcement bars were badly corroded and had lost over 40% of their cross-sectional area. In his view, the corrosion was due to electro-chemical reaction with water and oxygen and his thermal scanning showed slightly lower temperature at the spalled area compared to non-spalled area which he interpreted as due to the presence of moisture in the concrete. He concluded that the reinforcement bars were no longer serviceable and needed to be rectified/replaced immediately and the spalled area restored by concrete jacketing method.
  
6. Separately, the 2<sup>nd</sup> Respondent also engaged a PE, Er. Liu Xiao Peng, from Leo Building Solutions to investigate and recommend remedial measures. Er. Liu visited the site on 5 November 2016 and his report dated 13 November 2016 is exhibited at Tab G of the Applicant's bundle of documents.
  
7. Er. Liu noted that "the reinforced concrete in the roof slab and beams in Unit 14-02, Tower 3, Parc Vista condominium is suffering from durability problems arising from the corrosion of reinforcement." The corroded reinforcement was visible as the owner had removed the cracked and spalling concrete cover. He observed corroded reinforcement in the living room, a bedroom and the toilet. In his view, "these reinforcement corrosions have led to various forms of corrosion-induced damage such as concrete cracking and spalling, and to reduction in structural capacity. It is observed that the corrosion is more than 40% of the reinforcement cross area and the exposed concrete showed a high humidity." He also noted that the open roof terrace of Unit 15-02 is above the affected bedroom of Unit 14-02. He did not see water leaking "in the living room with roof

terrace” but observed old water stains at other areas. In his view, the inherent alkalinity of Portland Cement concrete which protects the reinforcement steel from corrosion had been neutralized slowly and progressively over time by atmospheric carbon dioxide penetrating and chemically reacting with the concrete in a process called carbonation, and this process is accelerated where there is high humidity. Once the carbonation reaches the steel layer, the steel becomes vulnerable to corrosion and the dire results of badly corroded steel are seen in the photographs he included in his report.

8. Er. Liu summarised his conclusion as follows: “Considering the time of 20 years since Parc Vista condominium was built and the unfavourable location of Unit 14-02, Tower 3, carbonation due to high humidity of concrete is the leading factor for the reinforcement corrosion”. He recommended immediate repairs to safeguard the structure’s integrity, including propping up the beams and slabs prior to the start of the repair work for safety reason. The need to erect support structures underscore the severity of the structural defects.
9. For the hearing on 24 February 2017, the MCST brought in a third PE, Er. Ng Soon Hua, as expert witness. Er. Ng Soon Hua said that he had reviewed the reports of the other two PEs but he himself had not visited the site. He was in general agreement with the findings and conclusions in the reports but stressed that any structural repairs to be undertaken must be under the direction and supervision of a PE. He highlighted that the hacking away of the loose and spalled concrete was apparently done by contractors without a professional engineer’s supervision and that should not have been so. He opined that after the cracked and spalled concrete were removed, the reinforcement will corrode even more as some protection is better than no protection. However, he did not say that the hacking was excessive or had added to the pre-existing structural damage.

10. The Board notes that both the first and second PE engaged by the MCST had found that the steel reinforcement had lost over 40% of its cross-sectional area through corrosion and had already impaired the structural integrity of the slabs and needed immediate structural repair. The dire condition was pre-existing and it became apparent upon removal of the cracked and spalled concrete. It was not the result of the hacking. Er. Wong who inspected the Unit just 2 weeks after the hacking stated that “The condition of the rebars is unserviceable”. The contemporaneous photographs clearly recorded the condition and Er. Liu who inspected the Unit 3 months later also did not suggest that the condition was due to or made worse by the hacking away of the loose and spalled concrete. The Board finds no evidence that the Applicant who is a new owner and was only doing renovation in preparation of moving in, had in any way contributed to the structural damage to the ceilings and walls of his new apartment. The Board finds that the MCST’s claim that *the problem has become aggravated after removal of the “spalling concrete”* is without supporting evidence. Indeed, the Board is concerned that the MCST which had been kept informed all along through its condominium manager(s) of the serious corrosion had apparently not initiated any action to repair the defective structural beams and slabs even though the Applicant’s appointed PE and the MCST’s appointed PE both recommended immediate repairs for structural safety reason.
  
11. The Board finds from the evidence that the slabs and the embedded steel reinforcement between the Applicant and the 1<sup>st</sup> Respondent’s unit are common property, and is so badly damaged through no fault of any party. Under Section 29(1)(b)(i) of the Building Maintenance and Strata Management Act (“BMSMA), the management corporation is duty bound to repair, renew or replace as necessary any part of the common property that is not in a good and serviceable state. The 2<sup>nd</sup> Respondent’s contention that the Applicant and

the 1<sup>st</sup> Respondent should bear equally the costs of the repair to the damaged structural capacity of the slab is without merit. Since it is a common property, the costs of repair should be borne by the MCST.

12. The Board makes the following orders:

1. The 1<sup>st</sup> Respondent shall engage a qualified contractor to carry out such waterproofing of his open deck and common toilet as recommended by a qualified contractor within 8 weeks; and
2. The 2<sup>nd</sup> Respondent is to engage a Professional Engineer registered in Civil Engineering to examine and make recommendations to rectify the structural defects and corrosion of the steel reinforcement and make such repairs as recommended under the direction and supervision of the Professional Engineer within 8 weeks.

13. The Board also orders that both the respondents shall consult their respective contractors/consultants to co-ordinate their works.

14. The Board will hear parties on costs.

Dated this 2nd day of March 2017

MR ALFONSO ANG  
President

MS LEE LAY SEE  
Member

MR CHUA KOON HOE  
Member