

THE REGENCY
STRATA PLAN NW 2556
1250 MARTIN STREET
REPORT FROM
BKL CONSULTANTS

Footstep/Impact Noise in Apartments, Condominiums and Other Multi-Family Dwellings

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It has been the author's experience that floor covering issues have been a source of major expense and aggravation to both owners and Strata Corporations, incurred both as legal fees and as consultant fees. These charges can rapidly run into the tens of thousands of dollars. Accordingly, it is proposed that Strata Councils, concerned about noise impact issues, consider adoption of the following by-law:

Possible Strata By-law Amendment

"Floor coverings in the interior of any strata lot shall not be replaced with less resilient coverings than the pre-existing coverings without the prior written consent of the Strata Council. For the purpose of this clause ceramic tile, marble or the like shall be considered less resilient than vinyl tile, hardwood flooring or the like which shall be considered less resilient than carpeting, carpeting & underpad, or the like."

We recommend that Strata Councils seek legal advice on the appropriate wording for the above by-law to suit their specific circumstances.

Whether or not a floor covering by-law has been approved by a Strata, owners should be aware that any action that they take which results in excess noise impact on their neighbours, likely contravenes by-laws regarding "quiet enjoyment" of their unit. This could lead to fines and legal consequences. Therefore, we would caution an owner to consider the consequences before making a decision on floor covering changes in any suite renovations.

Note: The information contained in the above article is provided in good faith based on BKL Consultants' experience. However, we accept no liability for any damages resulting from the application or mis-application of this advice.

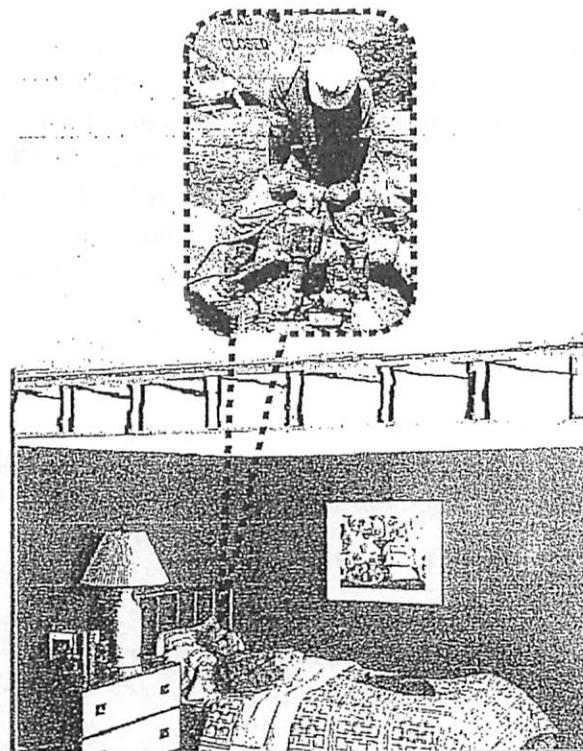
improvement in the measurable impact noise isolation, none of them to date offer sufficient improvement to be judged by the occupants as being successful. Impact noise isolation has been quantified by an ASTM test procedure for measuring Impact Insulation Class (IIC). This is a weighed decibel measurement where an increase in IIC rating of 10 decibels can be approximately related to a halving in subjective loudness. It has been our experience that IIC ratings of over 70 are generally required for most occupants to find the impact isolation tolerable. Typically, the following IIC ratings can be expected for standard floor conditions.

Floor Condition	Expected Range in IIC rating
Bare concrete floor; concrete floor with ceramic tile set with thinset mortar; concrete floor with terrazzo finish;	25-30
Concrete floor with linoleum or vinyl flooring	40-45
Bare wood frame floor with 1½" concrete floor topping and ceramic tile finish	35-45
Wood frame floor with 1½" concrete floor topping and nailed hardwood, linoleum or vinyl flooring	40-50
Concrete floor with floated hardwood flooring	45-50
Wood frame floor with 1½" concrete floor topping and floated hardwood flooring	50-55
Concrete floor with proprietary floor underlayment and finished flooring (tile, hardwood, etc)	50-60
Wood frame floor with proprietary floor underlayment under 1½" concrete floor topping and finished flooring (tile, hardwood, etc)	50-60
Any of the above floor systems with carpet or area rug, (but without underlay)	60-70
Any of the above subfloor systems with quality carpet or area rug and underlay	70-80

Unacceptable	
Marginal	
Acceptable	

Occupants of dwelling units with hard floor toppings (hardwood, vinyl, ceramic tile, etc.) must recognize that the floor impacts resulting from their activities are more readily transmitted to units below and must take active steps to limit the production of these impacts. Actions which will all help to reduce impact noise transmission to the lower unit include the removal of hard soled shoes or boots in favour of slippers or stocking feet, control of heavy impacts resulting from rapid movement through the unit or from dragged or dropped furniture, and placement of area rugs or carpets.

Noise issues are common in multi-family dwellings, and footstep/impact noise is currently the most significant. Footstep/impact noise isolation is only loosely related to the airborne noise isolation (isolation of noise which is generated in the air such as from loud speakers or from voices and is typically governed by Building Code requirements in most jurisdictions). Consequently, a floor system can have an excellent airborne isolation that meets building code standards, but can still have a footstep/impact noise isolation deficiency. Although the noise isolation properties of the construction details found in multi-family buildings are substantially superior to those found in single family dwellings, the proximity of the occupants when compared to the physical separation offered by single family dwellings leads to residents being more aware of the activities of their neighbours. Unfortunately, the noise isolation expectations of the residents, many of whom have moved from single family dwellings, often exceed the capabilities of the construction.



Footstep or impact noise is observed both in buildings of concrete construction and wood frame construction. However, there is a clear difference in the nature and extent of the problem in these two constructions. In both cases, if the floor finish is "hard", i.e., tile, hardwood, or the like, footstep impacts will clearly be transmitted to any spaces below. However, with a structural concrete floor such as that found in highrises, if the floor is covered with a quality carpet and underlay, footstep impacts are generally attenuated adequately for most occupants. On the other hand, in wood frame construction, the floor system is less massive and stiff than that found in concrete construction. Thus, the impact from the footstep tends to cause the floor to deflect and produces a low frequency "thump", even when quality carpet and underlay is used.

Footstep/impact noise is generated by the striking of a hard object (the shoe, the dragged chair, the dropped book, etc) on a hard surface. The harder the surface or object, the more noise that is generated, and conversely, the softer the surface or object, the less noise generated. This is why a person in bare, or stocking, feet generally will cause less noise than one in boots. This is also why a carpet performs substantially better than a harder surface such as vinyl tile, hardwood or ceramic tile. In terms of loudness, footsteps would be 4 to 8 times louder with a hardwood floor than with a carpeted floor for similar constructions. Even with hard floors rafted on resilient supports, the impact noise transmitted through to a lower suite will be substantially higher than for a standard floor with carpet and underpad, likely still in the range of 4 times as loud. Removal of the existing carpet and underpad and replacement with a harder flooring will inevitably lead to substantial increases of footfall and other impact noise in the suite below.

Several manufacturers have developed underlayment systems in an attempt to improve the isolation of floor systems with hard floor toppings. Unfortunately, while most of the systems offer a modest

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- (1) Subject to subparagraph (3), an owner, tenant or occupant must obtain the written approval of the strata corporation before making an alteration, change, upgrade or improvement (hereinafter referred to as "an alteration") to a strata lot.
- (2) An owner, tenant or occupant must obtain the written approval of the strata corporation before making an alteration, change or improvement or attaching anything to (hereinafter referred to as "an alteration") the common property, including limited common property.
- (3) An owner, tenant, or occupant need not request or obtain the written approval of the strata corporation for those items set out in column A of Schedule A to this bylaw.
- (4) Subject to subparagraph (5), the strata corporation must not unreasonably withhold its approval under subsection (1) [strata lot], but as a condition of its approval, it may require the owner, tenant or occupant to:
 - (a) present design drawings and specifications of the work to be done (and where appropriate, have the same approved by an engineer or architect) pertaining to the proposed alteration;
 - (b) obtain all necessary permits and governmental approvals and provide copies thereof to the strata council prior to commencing the work.
 - (c) present a proposed schedule for carrying out the work and completing the alteration (and comply with the same);
 - (d) provide proof of third party liability insurance in an amount specified by the strata corporation;
 - (e) provide such other information as may be reasonably requested by the strata council; and
 - (f) in the case of a tenant or occupant making the request, provide written approval of the request by the owner.
- (5) The strata corporation must not grant approval for those items set out in column C of Schedule A to this bylaw except where approved by a $\frac{3}{4}$ vote of the owners.
- (6) Subject to subparagraph (5), the strata corporation may require as a condition of its approval under subsection (2) [common and limited common property] that the owner of the strata lot for whose exclusive use the limited common property is designated and/or the tenant or occupant making the request:
 - (a) present design drawings and specifications of the work to be done (and where appropriate, have the same approved by an engineer or architect) pertaining to the proposed alteration;
 - (b) obtain all necessary permits and governmental approvals and provide copies thereof to the strata corporation prior to commencing the work;

- (c) present a proposed schedule for carrying out the work and completing the alteration (and comply with the same);
 - (d) provide such other information as may be reasonably requested by the strata council;
 - (e) have the owner of the strata lot enter into a written agreement that they shall be responsible for any future repair and maintenance costs relating directly or indirectly to the alteration. The owner shall, prior to transferring title to the strata lot cause any future owner to agree in writing to be bound by the terms of such agreement;
 - (f) post a performance bond of sufficient value (as determined by the strata council acting reasonably) to ensure that the work is completed and to repair any damage to the common property;
 - (g) provide proof of third party liability insurance in an amount specified by the strata council or the section executive (as the case may be); and
 - (h) in the case of a tenant or occupant making the request, provide written approval of the request by the owner.
- (7) When carrying out any work approved pursuant to this bylaw, including items set out in the attached Schedule "A", an owner, tenant or occupant (and their trades where applicable) must:
- (a) only perform work between the hours of 8:00 am and 5:00pm on weekdays and the hours of 10:00 am and 5:00pm on Saturdays. No work shall be performed on a Sunday or any statutory holiday;
 - (b) ensure that all work is done to a standard and is of a quality consistent with that of the rest of the building and provide adequate supervision and oversight of the work;
 - (c) use only licensed and qualified trades when carrying out work on the electrical, plumbing, heating and fire suppression systems;
 - (d) comply with the *British Columbia Building Code* and all other applicable regulations;
 - (d) ensure that all trades have coverage under the *Workers Compensation Act*;
 - (e) provide the strata council with a list of all trades that will be carrying out work in relation to the alteration, including their names and contact information;
 - (f) provide the owners, tenants and occupants of the strata lots immediately adjacent to the strata lot in question with notice at least 24 hours in advance of starting the alteration, that work will be carried out to the strata lot and/or the common property and on what days;

- (g) take all reasonable steps in the circumstances to minimize any disruption to any other owner, tenant or occupant;
- (h) ensure the installation of the elevator blankets when having materials delivered and using the elevator to do so;
- (i) place protective coverings on the floors, door frames and corners the hallways when material is being delivered and immediately clean up all dust, debris or garbage left on the common or limited common property as a result of the alteration;
- (j) not deposit any debris or garbage resulting from the alteration in the garbage bin;
- (k) promptly repair and make good any damage caused to the common property or another strata lot as a result of the alteration;
- (l) not permit a lien to be filed against any other strata lot as a result of or arising out of the alteration, and in the event that a lien is registered, take all steps necessary to have the same removed immediately;
- (m) not penetrate the surface of the floor nor create excessive vibration such that it would cause damage to the enclosed in-floor heating system piping¹;

¹Damage to the Poly-B piping, such as puncturing, cracking or loosening of the fittings would result in leakage with very serious consequences.

- (n) not store (even temporarily) materials, tools, waste or any item related to the alteration on the common property; and
 - (o) comply with the guidelines set out in Section 2 of Schedule A to this bylaw.
- (8) Where an owner, tenant or occupant has been given permission to carry out an alteration, the owner of the strata lot in question shall indemnify and save harmless the strata corporation for all costs, charges and expenses (including legal fees on a solicitor and own client basis) incurred by the strata corporation which relate to or arise out of the alteration.
- (9) Where an owner, tenant or occupant is in breach of any provision or requirement of subsection (4), (6) or (7) the strata corporation may issue a notice to the owner, tenant or occupant carrying out the alteration to cease all work on the alteration until the breach is remedied and the owner, tenant or occupant to whom the notice is delivered shall comply with the same.
- (10) The strata corporation at an owner's expense, may return to its previous condition any alteration which has been made and has not been approved.

SECTION 1 - CATEGORIES

The Regency classifies redecoration/renovation/reconstruction work into 3 columns: A, B & C respectively as follows:

A: No approval required

B: Approval required

C: Not allowed

	A	B	C
1. Painting of walls, ceiling and interior doors.	X		
2. Removal and/or application of wall paper.	X		
3. Painting and/or staining of counters cabinets and vanities (applies to kitchen, laundry/utility room and bathrooms).	X		
4. Re-carpeting (floor coverings for the 1 st floor as well as the 2 nd and 3 rd floors are covered in the existing bylaws).	X		
5. Replacement of faucets.	X		
6. Replacement of interior doors within a strata lot	X		
7. Replacement of light fixtures.	X		
8. Replacement of heat and smoke detectors providing the original locations are unchanged	X		
9. Replacement of sinks (provided they remain at the original locations)	X		
10. Replacement of toilets (provided they remain at the original location)	X		
11. Replacement of fireplace (meaning the manifold, heating box and circulating fan). This will not be construed as reconstruction of the fireplace.		X	
12. Replacement of kitchen and laundry/utility room cabinets and bathroom vanities		X	
13. Replacement of kitchen counters		X	
14. Removal of partition walls that do not contain any wiring or piping.		X	
15. Plumbing or electrical work		X	
16. Replacement of shower and/or bath tub providing the original location of the drains and piping are not relocated/altered/modified in any way and there is no direct impact on concrete floors, walls or ceiling (eg. any kind of jack hammer or manual chisel/hammer).		X	
17. Alteration/modification of electrical panel.		X	

18. Replacement of existing tile and or marble in the kitchen, bathrooms and the entrance areas providing that new tiles and or other hard floor material is laid on top of the existing ones.		X	
19. Repair of tiles		X	
20. Removal of gyprock that exposes internal services or is adjacent to other suites or common property (e.g. hallways, outside exterior)			X
21. Anything that alters the original building plans or changes location of original building services (ie. electrical, water, cable, etc).			X
22. Removal of partition walls that contain wiring and/or piping.			X
23. Removal or modification of load bearing walls and/or columns			X
24. Alteration/modification of all in-floor heating system components (not including thermostats)			X
25. Removal of closets.			X
26. Alteration/modification or interference with gas piping.			X
27. Addition of any gas appliance.			X
28. Replacement of exterior doors (except where damaged)			X
29. Replacement of windows and patio doors (except where damaged)			X
30. Balcony railings			X
31. Exterior cladding or finishes			X
32. Wood frame construction			X
33. Removal of existing tile and or marble floor in the kitchen, bathrooms and the entrance areas			X

SECTION 2 - GUIDELINES

This section specifies the guidelines that must be observed when undertaking work classified under "Column B" in SECTION 1.

- a) During the course of work, the unit owner(s) will ensure that his/her contractor maintains a fully charged, properly sized ABC fire extinguisher within the unit. Further, smoke detectors, heat detectors and carbon monoxide detectors must be maintained 'active' by the unit's owner(s) during the entire redecoration/renovation period.
- b) Common areas must be protected at all times. The effected hallway(s), stairway(s) and elevator must be totally covered (wall to wall) for protection. Plastic or paper may not be used as covering material because its slippery nature poses a potential hazard. After each work day, the covering material must be rolled back and all affected common areas must be cleaned.

- c) The outside doors of Regency may be kept open only under the direct supervision of an owner or the owner's agent due to security issues.
- d) There can be no interference with access by other owners to the building during the course of the work.
- e) The water ingress into the frame of the panoramic windows must be allowed to flow outside (meaning no sealing or painting of outside sills where the frame meets the sills).
- f) No tradesman, construction worker, etc. is allowed in the workshop, mechanical room, elevator room or electrical rooms of The Regency without Council's supervision.
- g) Approved work that necessitates direct impact on concrete (floor, ceiling or walls) must be done in a single half hour session during the entire permit period and during 11am – noon on a week day. For such repair work, it will be the owners' responsibility to write a notice and distribute it to all 12 units 2 working days before the work commences.
- h) Plumbing work that requires water (hot and/or cold water) disruption to any other unit must be completed in two 1 hour sessions during the permitted period, on a week day between 10am to noon. For such work, it will be the owners' responsibility to write a notice and distribute it to all 12 units 2 working days before the work commences.
- i) Redecoration/renovation work must be scheduled in conjunction with Strata's all other pre-planned projects (e.g. painting of building) that affects the whole building. Pre-planned projects will carry the overriding priority.
- j) The Regency is a self-administered building on volunteer basis. The Council members may be available Monday to Friday and 9am to 5pm during normal work days and by appointment only. Simply knocking on a door or ringing the doorbell without appointment will be ignored.