Wellington & New Zealand-specific Stairway Safety Issues and “People Committing Data”

Postscript to Safety 2012 Pre-conference Workshop by Chair Jake Pauls, CPE

Wellington, NZ, Oct 1, 2012
A central concept in the field of missteps and falls:

Expectation

What is the user of the built environment (a walkway, building entrance, stairway, etc.) expecting to find underfoot and generally?
Let’s walk down, via the Michael Fowler Centre interior stairs, to the area immediately below the Workshop meeting room and to the City beyond
Let’s walk down, via the Michael Fowler Centre interior stairs, to the area immediately below the Workshop meeting room and to the City beyond where people have been, and still are, “committing data” —to use the expression coined by the late safety guru, John Archea.
On our way from the 2nd floor of the Centre we encounter our first incorrect expectation, that of the stairway designer regarding handrail usability.

The railing does not serve all hand sizes well due to the finger interference at the supporting structure. Thus, there is a failure to get a completely effective power grip on the railing.
The railing is thus little used and, when touched, it is a tentative touch—not an effective grasp.
Michael Fowler Centre Stairway

Note also the two visual indications (as viewed in the so-called “crouch-and-sight test”) of non-uniform step geometry—one of many examples of construction defects in and around the Centre affecting stair step geometry uniformity which is critical to safe stair use.
As we leave the Centre, we encounter our second incorrect expectation of the stairway designer—and Centre Management—regarding handrail usability. Plus, there is an incongruous use of warning signs.
There are many examples of this same sign posted at the top and bottom on almost all exterior stairs around the Michael Fowler Center.
The problem is that the signs provide no helpful, indeed critically important information about the defects of the stair itself, especially step uniformity.
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This stair has multiple non-uniformities, including the rise height of the top few steps down as seen in this “crouch-and-sight test.” Rise height ranges between 160 mm and 185 mm.
The problem is that the signs provide no helpful, indeed critically important information about the defects of the stair itself, especially step uniformity.

This and other stairs around the Centre fail the two most basic, easy to perform tests to check the uniformity of step dimensions, the “crouch and sight test” and the inter-nosing distance test described in the stairway safety literature.
To be helpful, the sign should be revised as shown below in a suggested rewording.

A proper warning has to be specific and clear about the:

- **Exact danger**
- **Consequences**
- **Countermeasures**

THESE STEPS HAVE NOT BEEN CONSTRUCTED UNIFORMLY. YOU SHOULD EITHER AVOID USING THEM OR USE VERY CAUTIOUSLY TO REDUCE RISK OF INJURY.
There is one nearby stair, the one leading to the Te Wharewakō o Poneke, one of the conference venues equipped with any handrails.
There is one nearby stair, the one leading to the Te Wharewake o Poneke, that is even more dangerous and it is not even equipped with any handrails.
It has severe rise height non-uniformities at the top of the flight with the top step having a rise of about 210 mm and the next lower one only about 150 mm.

It badly fails the simple “crouch and sight test” depicted here—*step nosings do not line up visually.*
It has severe rise height non-uniformities at the top of the flight with the top step having a rise of about 210 mm and the next lower one only about 150 mm.

It badly fails the simple “crouch and sight test” depicted here. It also fails the second simple test of inter-nosing distances: 450 and 340 mm at the top.
Making descent of this dangerous stair more risky is the difficulty of seeing the step nosings and this is exacerbated with the harbour view directly ahead.
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Nosing marking would help.
As it exists, this stair fails all three of the long published, basic criteria for reasonably safe stairs:

1. Readily visible step nosings
2. Appropriate, *consistent* step dimensions
As it exists, this stair fails all three of the long published, basic criteria for reasonably safe stairs. *These basic criteria have been ignored in the design, construction and maintenance of the stair—all at the needless expense of basic public safety*
Further along the walkway to the Te Wharewake o Poneke is yet another stair with top-of-flight non-uniformities and step visibility problems for descending users, especially those on the left side which is the convention for people in New Zealand.
Nosings need contrast marking to compensate for environmental conditions here. *Ironically, the convenient path markings provided by Safety2012 organizers direct people to the more problematic part of the stair.*
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Leaving the immediate surroundings of the Michael Fowler Center, to nearby facilities, such as the Library, we find other stairway defects. Although the upper part of this stairway is well marked, the lower flight is not and this omission is especially critical due to orientation and other challenges on that flight.
Just as this entrance stair poses special problems of stair visibility in the transition from indoors to outdoors, there are other public facilities in Wellington where stairs at entrances pose safety problems, but in the more difficult transition from the bright outdoors to darker interior spaces.
Consider the example of this famous restaurant in Wellington where stairs at entrances pose safety problems, here in the more difficult transition from the bright outdoors to darker interior spaces.
What could be done to mitigate, if not prevent special problems here?

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The restaurant has another comparable, bad entrance situation, but at a revolving door.

Mitigating the hidden step involves a small design change to help make the transition clear.
What could be done to mitigate, if not prevent special problems here?

The restaurant has another comparable, bad entrance situation, but at a revolving door.

Adding conspicuous, contrasting marking at the platform edge would make this even safer.
What could be done to mitigate, if not prevent special problems here?

What could be done at the outside of the entrance to warn of the hidden step inside?
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What could be done at the outside of the entrance to warn of the hidden step inside?

The current, tiny notices at the door leaf do not provide adequate warnings of the danger.
Getting in is not the sole problem with this restaurant. When leaving the dining area, one encounters another bad stair, one with non-uniformities and no handrails.
Getting in is not the sole problem with this restaurant. When leaving the dining area, one encounters another bad stair. It clearly fails the “crouch and sight test.”
Along Victoria Street, two nearby premises—with two flights each—all have apparent step non-uniformity problems, each failing the “crouch and sight test” (with full diagnoses pending). Here is 64 Victoria St. lower flight.
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Along Victoria Street, two nearby premises—with two flights each—all have apparent step non-uniformity problems, each failing the “crouch and sight test” (with full diagnoses pending). The defects here are in mid flight.
But none of the foregoing examples of defective stairs is as potent as is the example of the “Plimmer Steps” where the second from the bottom step rise is 145 mm and the lowest step rise is 230 mm!
With the second from the bottom step rise of 145 mm and the lowest step rise of 230 mm, there is a huge discrepancy between **user expectation** and **reality** with the last step off the stair.
The deviation between the non-uniformity here and what is accepted in standards is large. The risk of missteps and falls at the base of the flight is larger by orders of magnitude.
This Postscript raises very serious questions about deficiencies in the design, construction, maintenance and regulation of stairs in Wellington and possibly more widely in New Zealand—*and elsewhere*.

A prime question is how the presence of a national injury insurance plan (ACC) affects this.
Obviously, the limited time available for the workshop in New Zealand left important questions unasked, let alone answered.

The discussions in connection with the New Zealand workshop must continue in the near future with even more questions and, we should all hope, more answers. Thank you.