Day 1: Day after triage and observations

Today I helped with the triage of buildings in the North-East Quadrant of the CBD (approximately 20+ blocks. The goal was to identify any buildings where there may still be people trapped in the building or were an imminent threat to collapse. All observations were from the outside of the buildings.

Along the way I was able to make several observations regarding damage in the CBD. Below includes a brief summary of my observations:

1. Damaged buildings include URM, reinforced masonry, and reinforced concrete (frames and walls). Within region surveyed approximately 10% of buildings were collapsed (including URM facade collapse) and another 20% could be considered unrepairable. These numbers are only an estimate – not based on systematic counting and may be somewhat higher than true statistics.
2. Significant liquefaction in CBD, particularly to the north of the Avon River (approximately Manchester and Kilmore) very close to collapse of Pyne Gould concrete frame building.


P
60

3. Evidence of foundation rocking for medium to high rise buildings. Usually in regions with liquefaction.


764 FORSYTH BARR HOUSE
STARBUCKS COFFEE


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AUTHORISED ENTRY ONLY
N.Z. FIRE SERVICE
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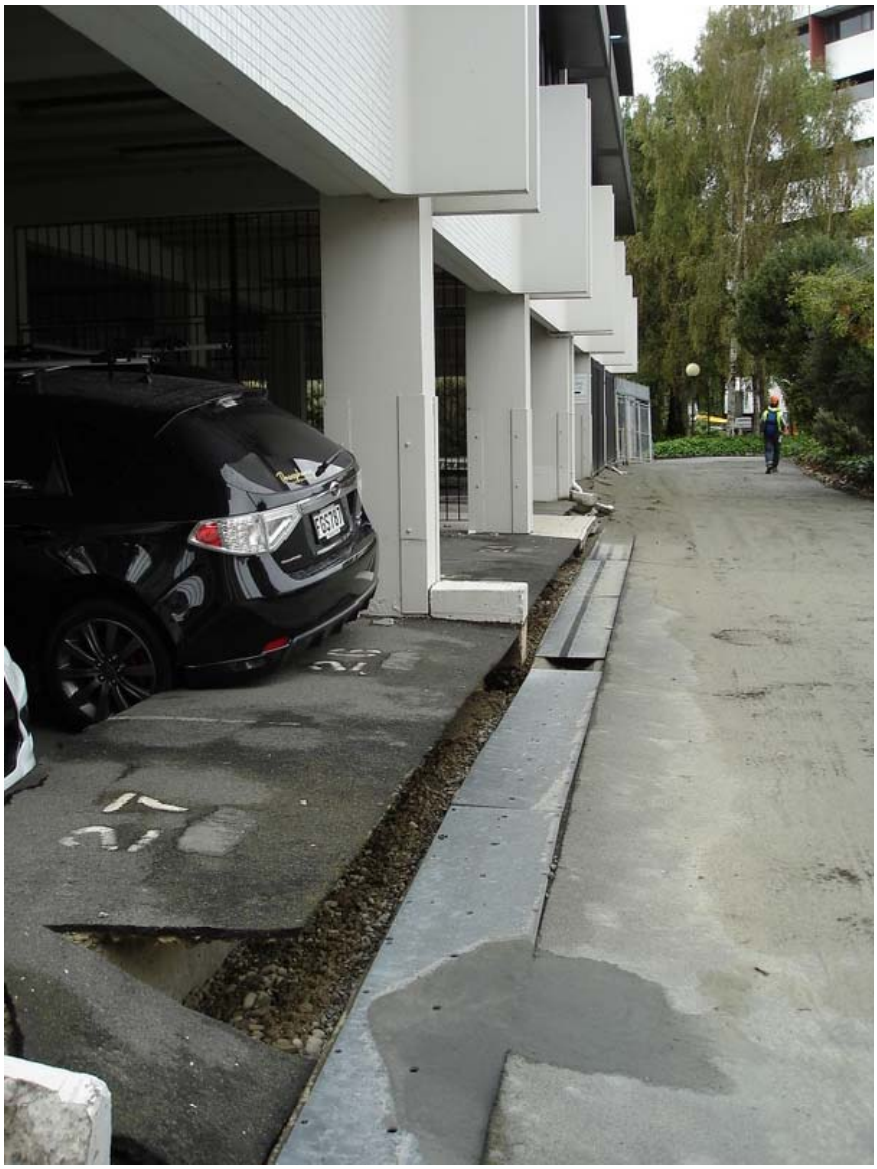
STARBUCKS
COFFEE


Wilson
Pay & Display
140 Kilmore St
Wilson Parking
$7 All Day Parking



Glass building is leaning to south (right) by maybe 3-5%:

Copperthone Hotel leaning due to reported column failures in bottom level (could not be observed) – apparently damaged initially in September:

4. Grand Chancellor Hotel – Appears to have experienced crushing of a wall in the south-east corner at ground level (building is cantilevered over the access driveway beyond the support provided by this wall). This has resulted in sagging of the building at the south-east corner and the apparent lean of the upper portion of the building. Ratchetting of panels in upper portion of building and beams in lower portion of building can be clearly seen. Building is inaccessible to determine extent of damage elsewhere in building.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seasons
CHRISTCHURCH
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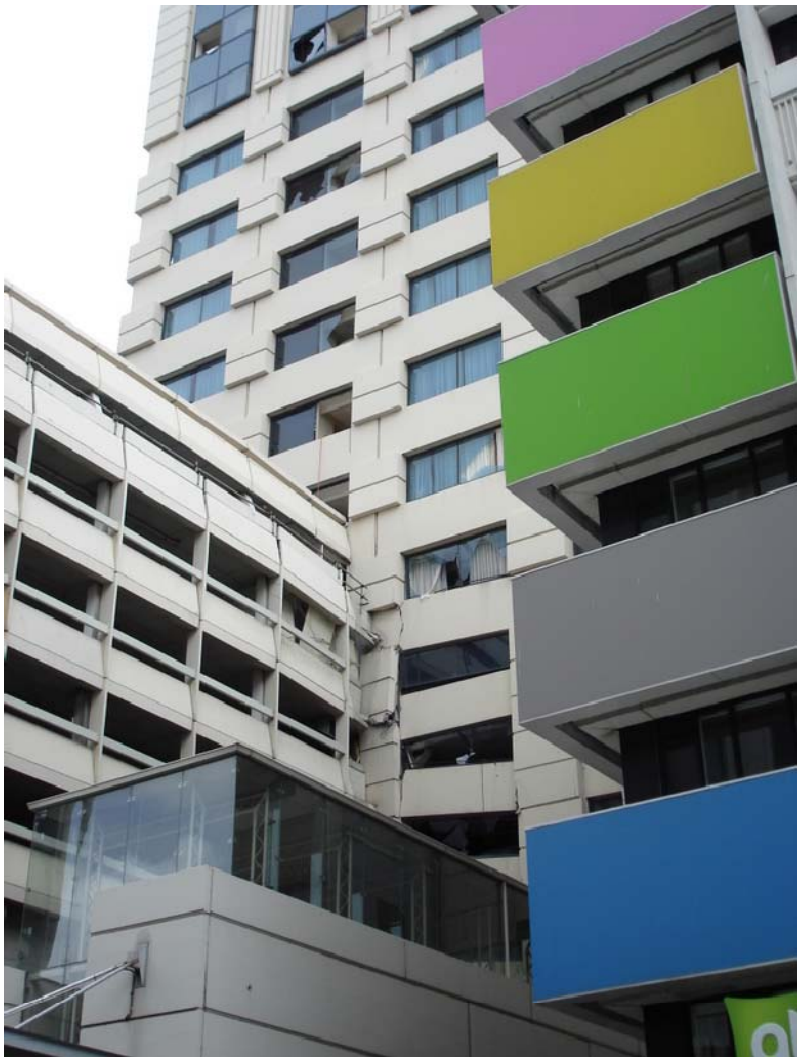
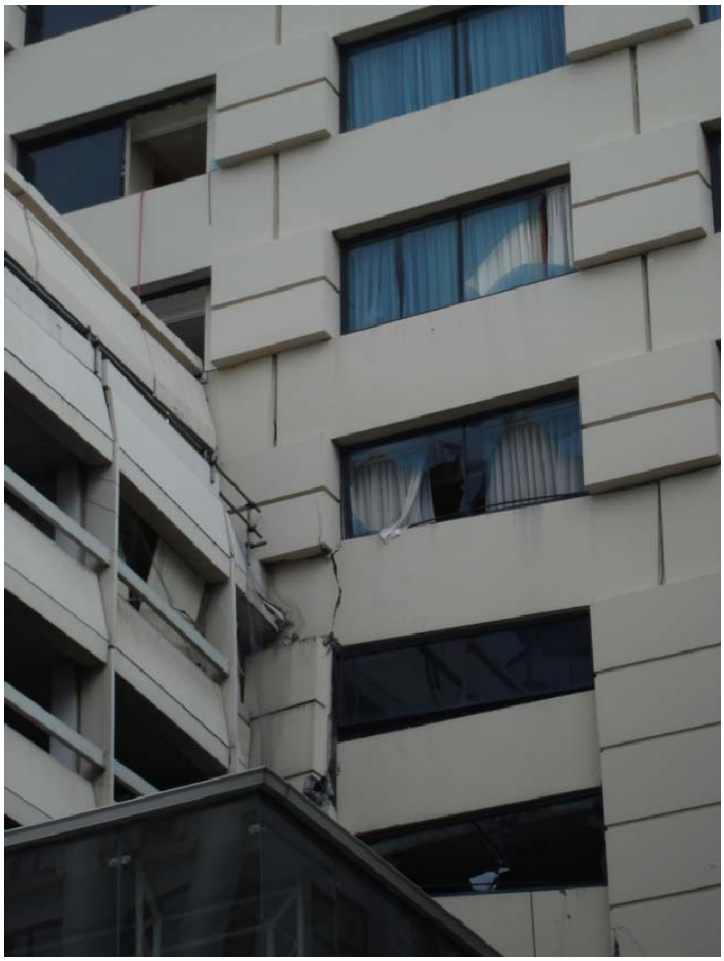
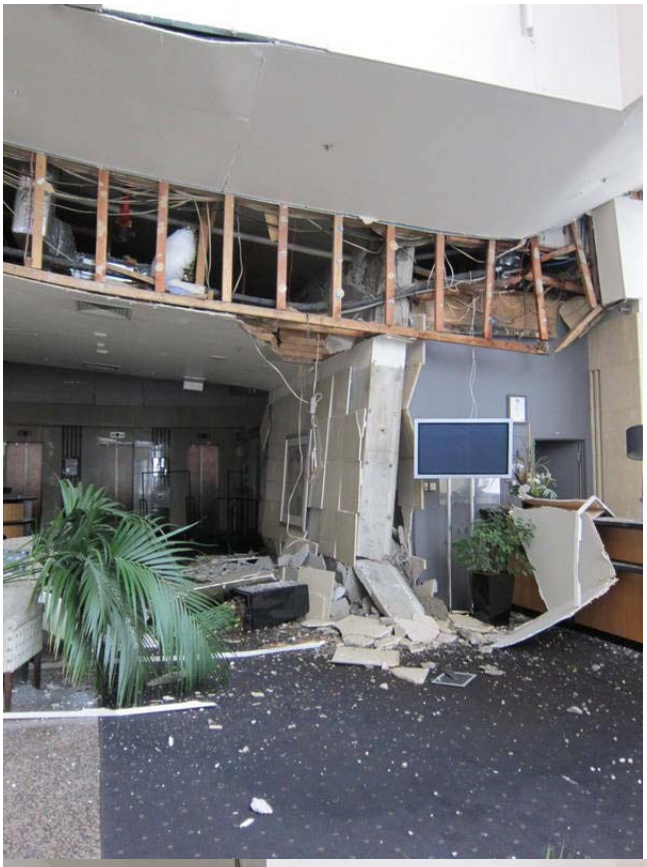
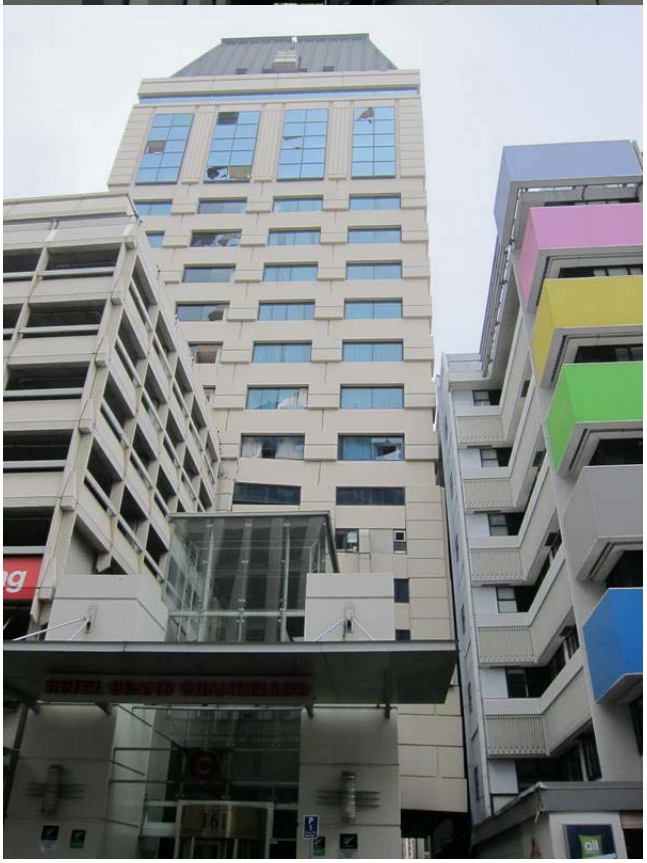


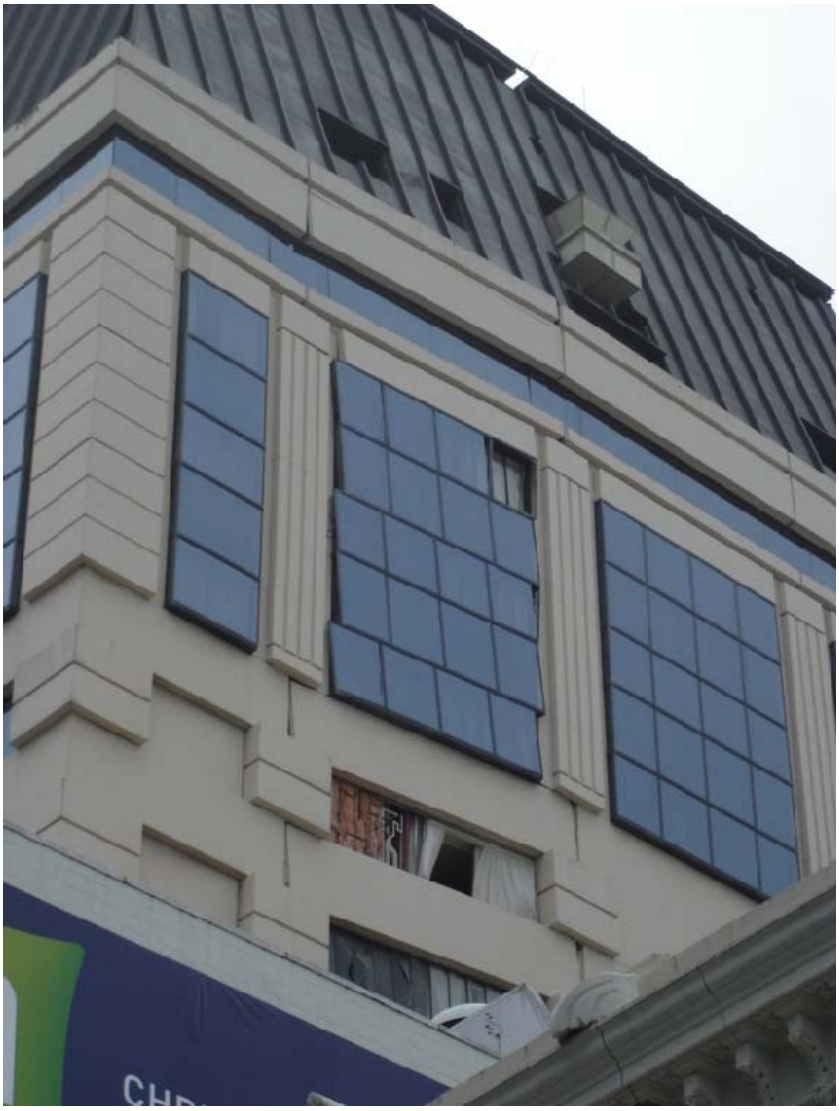







Wilson Parking


all
LIQUOR CENTRE
Sushi
Cashel Liquor




HOTEL GRAND CHANCELLOR
161


HELP
IS ON
THE WAY

5. Collapsed buildings – Two high-profile collapsed concrete frame buildings were inaccessible due to ongoing search and rescue efforts.


ATF

6. Concrete buildings – Many concrete frames appeared to experience little damage or even cracking. Some evidence of column shear failures and beam-column joint cracking was observed. Westpac building, slightly damaged in September 2010, received more damage to the beam column joints.


TVNZ


TVNZ

Crown Plaza Building:


PUBLIC
CAR
PARK


PUBLIC
CAR
PARK
PEDESTRIAN
ENTRANCE
TO LEVEL 1
(LOWER LEVEL)

7. Reinforced masonry – Reinforced masonry is popular in Christchurch. At least three cases of severe damage to RM buildings were noted. Column shear failures were observed up to at least the fourth story in one building. Collapse of a two story RM building with smooth bars and apparently poor bond was observed.

8. URM – The vast majority of cases with out of plane wall failures appeared not to have any anchors to the diaphragms. More in-plane diagonal cracking along mortar joints was observed compared to Sept 2010 Earthquake. Lives were likely saved because fences had been set up around many URM building facades damaged in September 2010. Many of these wall now collapsed in Feb 2011.


MILLENNIUM


MILLENNIUM


MILLENNIUM
EMERGENCY POLICE


HEREFORD COURT
118
Good as Gold
GOODS & LIVING
Good as Gold
Whitcoulls


Harcourts
For Sale
Hereford Courts Offer Opportunity


NO ENTRY


Tramway Ln
WIN

9. Response was extremely well organized with very good supplies (hard hats, boots, jackets, food) available for volunteers. Volunteers immediately put to use. CBD closed to all except emergency personal, maintaining calm environment in the city core.


CIVIL DEFENCE
ST JOHN


NewstalkZB


ST JOHN
AMBULANCE
PARKING