

STRUCTURALLY SPEAKING

THE NEWSLETTER OF MSC CONSULTING GROUP



AUTUMN 2008

Welcome

The team at MSC trust you have had a good start to the year and you enjoyed your relaxing break. We are all back, refreshed and ready for another busy year.

The past few years, and in particular 2007, have been extremely busy and productive and it is fair to say that we have at times been stretched to our limits. From the enquiries and sketches produced in late 2007/early 2008 we are projecting that this year will be another busy one with hopefully a little more even flow of work. We are very positive about prospects after having placed a great deal of emphasis over the past 12 months on expanding overall resources to make MSC a more efficient and professional practice.

Accordingly, we welcome on board Mr Nelson Cull, as our non-executive Chairman. As is detailed in his profile within this issue, Nelson brings a wealth of high level business acumen to MSC. We also welcome Murray Lockwood, our new General Manager, who is already implementing procedures in job resourcing, human resources and defining our business and developing a strategic plan to move forward on.

Another exciting development in the structure of MSC is the implementation of defined business units to enable teams to focus more clearly on individual projects and clients. Each of these business units will be headed by a director or associate.

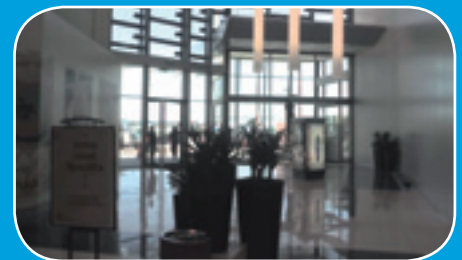
We trust you enjoy catching up on all this news from MSC and wish you all the best for a rewarding and successful 2008.

MSC provides quality technical and economical solutions to projects within agreed time frames for Structural Engineering, Civil Engineering and Resource Engineering Services

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Westfield Albany

MSC Consulting's major construction project at the huge Westfield Albany Shopping Centre is drawing to a close. The complex hosts over 100 retail shops, a food court, a cinema and close to 2,500 car parks.

Westfield NZ Construction has been head contractor on the project and MSC Consulting has been the structural engineer with the full-time presence on-site of Ross McKenzie, Engineer, and Mike Hope, Senior Technician whose job has been to observe construction and make any changes on the spot.



The MSC pair have had a tight site schedule that involved much more than just checking drawings. To meet the evolving requirements of Westfield or of the tenants they often had to move structures that were already in place. "We had to fit things on the site," explains Ross. "We had a brand new building and we had to alter footings to make it bigger. The extent of work to do that is incredible and it was all done within the same timeframe. It was a matter of everyone keeping up with the changes. All the consultants – mechanical, electrical, structural, architectural, along with all the subcontractors – everyone had offices based on site to facilitate this.

Stage Two of the huge Westfield Shopping centre went live on 1st November 2007 when retailers opened their doors for business.

According to Ross, work on fitout of the Cinemas then proceeded at "a hundred miles an hour." "The speed of construction was incredible in comparison to the majority of construction sites. Westfield worked nights, rain, hail or shine to get it done."



The Village Sky Cinema is due to open early in 2008.



Westfield Manukau City

MSC are close to completing another Westfield venture – this one involving Westfield's Manukau City Shopping Centre. The \$70M project began on site in late autumn and the Retail Stages 1 and 2 are already open, with the Cinemas opening in 2008. It is an expansion project to add new retail space, a SKYCITY cinema complex and a 2-storey carpark to the existing complex. Some of the existing buildings are also being refurbished.

MSC is providing the structural and civil engineering documentation for the entire addition. Geoff Chilcott, MSC Project Director, said joining new buildings to old was a challenge. "The addition involves driven steel piles and there was some concern from adjacent retailers over vibration during construction so we monitored the pile driving. It was just within satisfactory vibration and noise levels," he said.

The main feature of the steel-framed addition is the concrete floor suspended 10 metres in the air for the Cinema. This raised other issues in lining it up with the existing retail structure. Geoff explained: "It represented some structural challenges with holding the building up under earthquake so we had to be sure the slenderness of the seismic bracing checked out."

The cinemas are totally structure steel with structural steel beams and columns.

Woodhams Mickle Zhan are Architects for the cinemas and Westfield Architectural Design Office are architects for the retail and carparking extensions.



Bunnings Flagship at Mt Roskill

MSC were both structural engineers and civil engineers for hardware giant Bunnings' new flagship store which opened in Mt Roskill last September on the former site of Gordon & Gotch printers.

The MSC team, led by Director Bob McGuigan, designed the building and infrastructure such as storm water, sewage, site retaining walls and roading associated with the site. Chris Hume from Hume Architects provided the architectural design and Naylor Love were the builders.

The 11,000-square-metres project, which started at the end of 2006, was no mean feat according to Bob. "We had to demolish a large industrial building and construct on a difficult site with different levels," he said. "Our civil engineering team had a large element of infrastructure works to co-ordinate with the building structure. The main challenges were integrating this building with the levels of the site and getting the roading infrastructure to work with Bunnings' requirements for customer flow."

The building has some unique features for a Bunnings' location, in particular, its double-level carpark. "We've maintained the existing terracing on the site which was a high level and a low level, split down the middle," said Owen Sanders, Bunnings' Project Manager. "What was the lower level terrace is now an undercroft, or basement, carpark, which is unusual for us. We wanted to retain the site for retail as much as possible so utilized the existing site topography to achieve that by putting in a two-level carpark."

Another challenge for contractors, and a first for Bunnings, involved protected trees that had to be maintained on the site. Some were relocated, others, which were not allowed to be moved, were either built around or had the site configured to accommodate them.

Despite the ups and downs inherent in a project of this scale, Owen reported the contractors and sub-contractors delivered the goods. "It was a difficult task in that there was a lot of onsite re-engineering of the earth works but they pulled together very well. We're proud of what we're doing here; we've got a great location, it's our flag-bearing location."



Visit the MSC website at www.msc.co.nz where you will find a comprehensive details of the business. Included is the company profile, range of services, animated concepts, further project news and the drawing room.

Links Apartments, Red Beach

The residents at Hibiscus Coast Retirement Village in Red Beach, Orewa, will soon have some 'youngsters' on their block. The Links Apartments, 72 apartments designed for the active over-50s market, are being built in the village complex. Owners of the development, Private Care Holdings, engaged MSC as structural engineers for the massive project which involves an overall footprint of more than 4000 square metres and a basement footprint of just under 4000 square metres.

MSC's Bob McGuigan has acted as Engineer on the project while Tom Donald is Project Manager and Design Engineer. He explains: "The apartments are aimed at people who still want to get out and about. They all have their own entry so residents won't go through the village. The developers purchased land off the golf course and the green-keepers' workshop had to be demolished to make way for construction. So we've built a new workshop under the complex on the golf course side. Above it there's a huge deck and plaza area for residents."

John Jensen and Associates in conjunction with JCY Architects were the architects. Haydn & Rollet are handling construction with Kim Barrett as building planner and Robbie Wilson as project manager.

Robbie says the development, though large, sits well in its neighbourhood: "It's a typical low-rise construction that has been architecturally designed to blend into its surroundings. There's an architectural feature there that blends what is by far the biggest building in the area into a purely residential skyline – that has worked quite well."

The apartments are due for completion in April.



Heards Parnell Heards Building a Bag of All Sorts

The Heards confectionary building at Parnell proved an interesting challenge for MSC who undertook all the engineering for a revamp of the classified building last year. The refurbishment had to be integrated into the structure of the old building which had a carparking building appended to one side. Excavation was required between the ground floor and the floor above so intermediate floor could be constructed - a challenge both architecturally and structurally.

Bob McGuigan, MSC's structural engineer, explained: "We designed new basement carparking and an additional storey of carparking to complement the existing exterior carparking. That involved some pretty heavy engineering with some underpinning of the property next door. We also built some large balcony decks on the back of the building for the apartments."

"But before all that, we had to investigate the seismic capacity of the building to ensure it was capable of being used for this purpose. As it turned out there were no issues; we were able to prove the old building was capable of safely carrying the new apartment use without significant alteration."

Ashton Mitchell Architects provided the architectural design to refurbish the four individual parts of the 1921 art deco building, constructed over many years, into a new apartment/commercial complex. "

"No individual part of the building was parallel to any other part; the building was all over the place, floor levels were varied and the walls were not parallel," said Peter Ashton.

Initial plans for a dedicated apartment building with retail at the ground floor had to be amended along the way. "The building has a large floor plate and we needed to get light and air into the middle so we cut a big atrium out of the middle which has worked out brilliantly. Also, during the design process we had to deal with a changing brief and ended up converting some of the lower floors into commercial office uses whilst the top two levels became high quality apartments, leading to a truly mixed-use building development," said Peter.

The end result is a grand old building housing a mix of modern commercial and retail space topped by high-end apartments. Peter and Bob agreed that the four top-level apartments are in a class of their own. "They're considerably larger than the market norms and have been fitted out to a very high standard which should command a premium."



North Shore City Council City Council goes up a Level

MSC have completed design and construction planning for an extension to North Shore City Council's Strand Plaza premises in Takapuna and construction is about to begin. MSC are structural engineers with Bob McGuigan as engineer to the contractor and Tom Donald managing project design and overseeing drawing documentation.

The project involves extending behind the existing building over what is now the carpark and creating a basement, ground floor and new mezzanine-level carparking. Four office floors, one more than in the old building, will sit above that. A deck extension will overlook the courtyard plaza and a ground-floor shop will be removed to allow for a direct pedestrian link between Lake Road and the Council's main plaza entrance. The construction will be fully connected to the existing building and matched to the external façade as close as possible.

Tom reports some challenges. "We're demolishing one bay on the back of the existing building which takes out some of the earthquake resistance from that building, so we're having to replace that. Also, we have to allow for the movement of both buildings separately so we'll have seismic joints between the two. The existing building is on shallow foundation and it is 15 -16 years old so the ground underneath would have consolidated by now. If we built the new one the same way it would slowly settle down into the ground so we're piling it so that we don't get any differential settlement."

Another challenge was the existing building's floor-to-floor stud height between ground and first floor is 5.5 metres - almost twice the norm. The planned mezzanine floor of the new building allows extra carparking to be added between the ground and first floors.

HBO Architects and Interiors are the architects while Haydn & Rollet, MSC's client in the project, are doing the construction. Kim Barrett, Project Manager, played a big part in co-ordinating all the consultants.



Settlers Albany Retirement Village

MSC are both civil engineers and structural engineers for the Settlers Retirement Village about to go up in Albany. Kevin Wyborn is Director in charge of site works while John Syme is looking after the buildings.

Getting the project to the starting line involved a lengthy Resource Consent process. Because of the location near Lucas Creek, environmental issues such as stormwater treatment, planting and replanting had to be resolved. The project required fairly extensive earthworks, roading and drainage because of concerns associated with the creek.

John reports that five 3-storey blocks are being constructed initially with a whole lot more to come, including bigger buildings and a community centre.

"We've finished designing the first blocks so we're ready to kick off. There'll be a lot of action over the next few months," he says.

Stage One of the project, involving part earthworks, part stormwater and part drainage is almost complete, and construction will soon be underway.

Babbage Consultants are architects to the project.



Waimauku Retail Centre

Waimauku locals and State Highway 16 travellers will be in for a surprise early in 2008 when a new retail centre opens bringing a café, supermarket, video shop and other small retail outlets. MSC were civil and structural engineers for the new centre.

As a prominent development in rural Waimauku there was some controversy with the Friends of Waimauku. However during the consenting process the layout, shape and look were all altered to accommodate both the locals' and clients needs.

Even so, getting all the approvals was an extensive process according to MSC's Paul Culley and Chris Jennins who worked on site. Paul explained: "It was a complicated site because it lies within an existing flood-prone area so we had to manage all the stormwater on the site and the consent process also included the Environment Court. We had to treat the stormwater and re-use it in accordance with ARC and Rodney District Council guidelines so half the site was re-earthworked to provide attenuation of the storm flows and the other half was raised to create a building platform for the proposed buildings."

With all the issues resolved, three single-level blocks with good exposure to State Highway 16 were constructed for the developer, Bruce Carter Investments Ltd. Bob McGuigan and John Ok oversaw the structural side for MSC while GMC Architects provided the architectural design.



Pukekohe Retail Retail by the Racetrack



MSC have been involved in both the site work and the structural work for a bulk retail development in Pukekohe, adjacent to the town's racecourse. The project is a joint venture between the Pukekohe Racing Club and Dominion Funds.

Stage One of the venture opened last September when retail heavyweights, Harvey Norman, Noel Leeming, Briscoes and Rebel Sport, opened outlets at the new retail park.

Kevin Wyborn was MSC's engineer to the project and describes the features required for a site that sits in a floodplain. "It involved the construction of a floodway that varies between 15-40 metres in width. We also constructed 250 metres of box culvert, 2.5 metres wide by 1.5 metres, and a pavement set on very soft, peaty soil. The bulk of the pavement was constructed from by-product of Glenbrook Steel Mill."

MSC designed the pavement following pavement trials, in a joint initiative with Works Infrastructure who have submitted the resulting structure for a New Zealand Road and Pavement Design Award.

Kevin said it was a low-impact site in terms of stormwater management, so swales are used to treat the stormwater runoff from the carpark and road areas.

Geoff Chilcott looked after the structural side of the project for MSC.



Winstones Covering the Gib Board

MSC was the principal consultant for a large new facility constructed at Winstones Christchurch factory last year for the storage and shelter of gypsum, the raw material from which Gib Board is produced.

MSC worked side-by-side with Roger Power of Fletchers who provided the concept design and coordinated the project. The architectural task was handled by Brian Harris Design.

The project involved constructing a large canopy which MSC Director, Bob McGuigan, said posed some challenges including with the geotechnics on site and integrating the whole structure into the existing factory compound.

He said it was a real pleasure for MSC to work with the Mainlanders, including the contractors and the local authorities. "It really was very refreshing working with the Christchurch City Council. The further south you go the easier council dealings seem to become".

Ruakaka Stormwater Ruakaka Wastewater Upgrade



MSC designed and constructed the recent upgrade of Ruakaka's wastewater system. MSC Director, Kevin Wyborn was Engineer to the Contract and Sura Fawaz led the design.

The main feature of the upgrade was its reticulation, a combination of gravity, sewer and pump to rising main, which required two new pump stations. According to Kevin, with quite a big catchment and around 1,100 metres of gravity, the project was edging on the large side.

"We put in around 2.4 kilometres of rising main up to 450 diameter," he explained. "The outfall was the wastewater treatment ponds at Ruakaka."

We would normally expect to drain the ponds but because it was a live system we couldn't decommission the ponds so had to come up with something innovative. So we designed a semi-floating type outfall where we had a pipe fixed onto a series of floating pontoons and secured to posts."

While the design was not too unusual he said the arrangement behind the upgrade was different. "The Whangarei District Council didn't have sufficient funds in their budget to do the upgrade so a group of developers got together and formed Bream Bay Alliance to fund the project. They were then effectively reimbursed through the relevant contribution they have to pay for individual subdivision."

The project was 18 months in the planning and six months in construction.



Paperlinx Big Space for Spicers

MSC were the structural engineers behind a very large construction project to provide PaperLinks, an Australian publicly-listed company known in New Zealand as Spicers Paper, with a new Head Office, storage plant and paper handling facility.

The impressive building in the Goodman Industrial Park at Highbrook sits alongside the Tamaki Estuary and because of the site's very sensitive coastal environment the project was subject to stringent Resource Consents conditions.

MSC draughtsman, Young Kim (YK to his colleagues), provided all the project drawings while Bob McGuigan was design engineer. The MSC team worked closely with architects Woodham, Mickle Zhan and Goodman Property. Andre Koolen from RCP Project Managers coordinated the project built by Federal Construction.



Structural Drafting Update

MSC has changed from a traditional 2-D AutoCAD draughting programme to the 3-D world of Revit Structure making it a lot easier for MSC's draughtspeople and engineers to communicate and coordinate ideas. Revit Structure enables the draughting team to produce much more advanced project visuals and to analyse these electronically with the engineers.

The new software from Autodesk uses a single building information model (BIM) and two-way linking with third party applications, which makes it much easier to coordinate the design, analysis and documentation of a building within one computer model.

MSC's IT/Drawing Office Manager, Andrew McCabe, explained the benefits: "This is a significant step forward from traditional CAD systems which use a number of individually created documents to detail a building. These documents (usually 2-D) are not connected so the risk of uncoordinated data is very high. Consequently, with CAD, changing building information is a drawn-out, error-prone process.

"By contrast, BIM gathers all the information in one location which can be cross-linked among associated sites. A core feature of BIM is that engineers are able to create and modify the entire project in one design context. As structural plans are drawn, the elevations, sections and details are generated simultaneously. As changes are made they are applied concurrently to all views relating to the project."

Andrew says Revit will greatly improve project coordination and sharing of architectural, structural and mechanical data. "Clashes are checked electronically in the 3-D environment so, for example, any changes made by the architect's model will be highlighted in the structural model."

The new software works for all MSC's clients. "Revit is fully compatible with AutoCAD so we can continue providing fully-layered 2-D files to clients and business partners who don't have Revit. The files can be used in the same way as if drawn in 2-D AutoCAD"



New to the Team

Non Executive Chairman

Nelson Cull is an Auckland based businessman whose executive career has been largely in the oil industry both in New Zealand and overseas. Nelson has also enjoyed a close association with engineering. Between 2002 and 2004 he ran Works Infrastructure in New Zealand and from 2002 through to 2006 he was Chairman of Techscope, the engineering services company based at Albany which operates throughout the Auckland region.

General Manager

Murray Lockwood - With 30 years experience in the building, contracting, fitout and audio-visual industries Murray brings management experience to the business in the areas of operations, human resources, strategic planning and business development.

A lot of history

Terry Randell from Design Architectural is one of MSC's oldest clients so it's a happy coincidence that we're teaming up with him on a project for a client that also has a lot of history – Gibson & O'Connor. Gibson & O'Connor, builders of the Beehive, recently celebrated their 50th anniversary. No surprise then, that it's time for a new Head Office which MSC and Design Architectural are putting together at Mt Wellington.