

Monday 12th December 2011
Project Reference: 2001164

DeiCorp Constructions Pty Ltd
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Petersham NSW 2049

Attention: Mr. Greg Colbran

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Dear Greg,

STRUCTURAL REPORT FOR PEMULWUY DEVELOPMENT, REDFERN

Bonacci Group are the structural engineers for the proposed development known as Pemulwuy located in Redfern and bounded by Lawson St, Eveleigh St, Louis St, Vine St and the railway lines.

The new development is a mixed use development comprising three distinct precincts with the overall development containing a mixture of residential apartments, townhouses, commercial offices, student accommodation and retail facilities.

Each building will be constructed using conventional reinforced concrete slabs and columns with Precinct One being up to 5 stories in height with a single storey below ground basement carpark level. Precinct Two is 4 stories in height with no below ground basements while Precinct Three is a 6 storey building with no basement levels.

The foundations for each precinct vary slightly to respond to both the underlying geotechnical conditions and also the adjoining railway lines.

The following is a brief description of the proposed foundation and shoring design required for this new development which will be further developed during the detailed design stage prior to construction works commencing which may change some of the systems and advice provided within this report.

For information regarding the effects of these works on the existing rail tracks, the retaining wall to the railway and the embankment stability please refer to the report undertaken by the project geotechnical engineers, SMEC.

Railcorp Railway Lines:

The main city lines are located immediately adjacent to the site with the typical level of the tracks immediately adjacent to the site being approximately RL23 to 24.0.

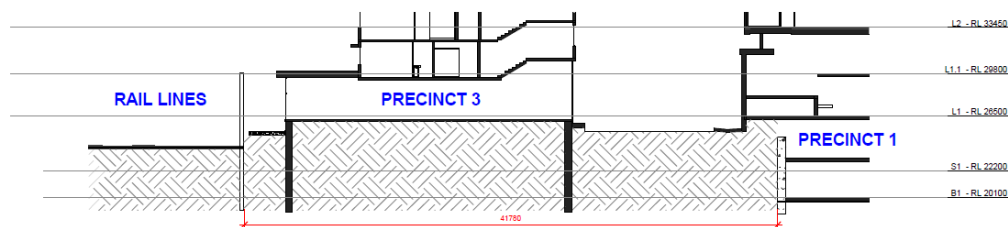
All information relating to the existing railway lines has been based on the drawings received from Railcorp which are as follows:

Set-out / track centreline	4SS 1004 + adjoining 3SS1003 and 5IR1004
Track grade	SS1508 (Down) and SS1509 (Up)

There were no available drawings relating to the construction of the engine drive tunnel. As a result no comments relating to the capacity of the existing rail tunnel is contained within this report.

Precinct One:

Precinct One contains one level of underground carpark which steps to follow the nature ground fall along Eveleigh St and hence the basement RL steps from RL20.1 down to RL16.956 along the length of the development. As a result the foundations for this building will be founded in the hard shale located close to the surface and will use a combination of strip and pad footings to support the applied loads from the maximum 6 storey and typically 2 storey buildings that form Precinct One.



The foundations for this Precinct are located a minimum horizontal distance of 29.5m from the rail boundary and extend to over 45m from boundary. Due to the footings being located a minimum of 4m and up to 8m below the level of the track level then as advised by the project geotechnical engineers SMEC then no loads will be applied to the railcorp boundary.

The single level basement excavation will use a combination of concrete soldier piles with a sprayed shotcrete infill wall that is anchored in the temporary condition restrained by the building structure in the permanent condition. Where possible a temporary battered solution may also be adopted with the ground battered in the temporary condition and then backfilled against the permanent retaining walls of the building.

The temporary shoring system required to support the single level of basement excavation will be an anchored concrete 600 dia contiguous pile wall. This system is in accordance with the recommendations of the project geotechnical engineer and is a common site retention system in Sydney. Along the Eveleigh St frontage closest to the rail boundary, these soldier piles will be founded a minimum of 1m below the bulk excavation level with a toe RL of approx RL 18.5 to 15.0.

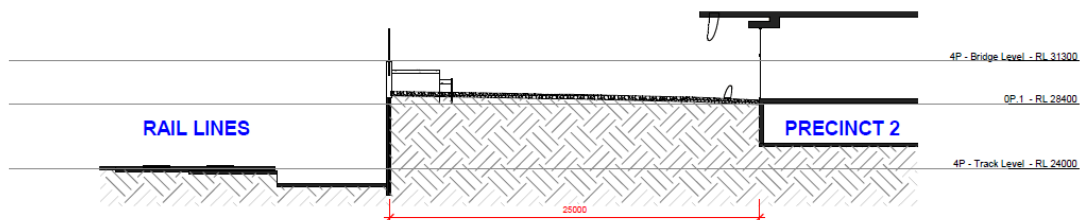
The proposed excavation sequence would be:

- Drill 600mm diameter holes to set out and depth shown on plans, elevations and sections. All sockets are to be dewatered if necessary and specific holes/sockets will require an inspection from the geotechnical engineer to verify that the foundation conditions comply with the design assumptions.

- Place reinforcement in bored holes and place concrete in holes up to the underside of the capping beam.
- Excavate against the boundary to a maximum of 500mm below the top level of anchors. Drill, install and stress anchors. Repeat for each level of anchors.
- Once construction of the permanent podium structure has been completed and a minimum of 2 months after completion of podium, all ground anchors are to be distressed and have their anchor heads removed.

Precinct Two:

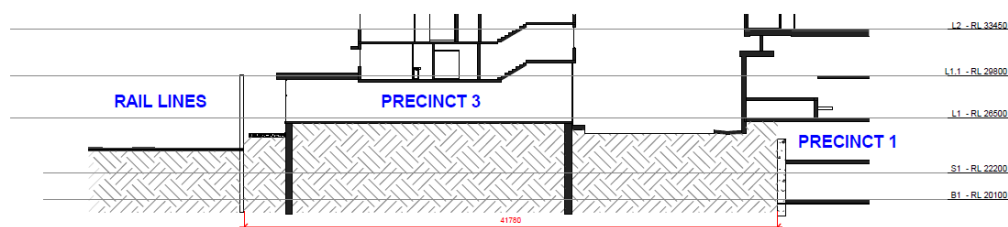
Precinct Two contains 4 levels of above ground structure and there is no basement located beneath this Precinct. The ground floor will be located at RL25.725. The foundations for this building will be a piled solution to transfer the loads to the underlying hard shale with the piles expected to be founded at approximately RL18.



This Precinct is located a minimum of 14.1m from the Railcorp boundary and with the piles founded at RL18 which is 6m below the level of the railway tracks which are located at approximately RL24.0. As a result the project geotechnical engineers SMEC have advised that no loads will be applied from this building to the Railcorp boundary.

Precinct Three:

Precinct Three contains 6 levels of above ground structure and also has a stepping ground floor to match the existing ground levels along Eveleigh St, there is no basement beneath this Precinct. The foundations for this building will be a piled solution to transfer the applied building loads to the underlying hard shale with the ground floor located at between RL23.7 and 25.1.



This Precinct is located immediately adjacent to the Railcorp boundary with the

building at the minimum distance being 1m from the railway boundary and as a result the buildings foundations will be founded beneath the level of the railway tracks. Hence these piles will vary in depth depending on their distance to the boundary but immediately adjacent to the boundary they will be founded at approximately RL17.

Using this system, the project geotechnical engineers SMEC have advised that all vertical and lateral loads applied by the building will then be transferred via the piled foundation to the rock founded beneath the zone of influence of the railcorp boundary.

Existing Retaining Wall along Railcorp Boundary:

Currently there is a large retaining wall that supports the existing ground level along the Railcorp boundary which is up to 7m above the track level and extends from the Lawson St bridge to past the extent of the Pemulwuy project.



The age of the retaining wall is unknown as is any details of the construction of this retaining wall or how this retaining wall has been designed to support the current maximum of 7m at Lawson St and reducing to 2m of earth along with the existing buildings located in the same region as the proposed Precinct Three building.

As part of the construction design works that will be undertaken prior to construction starting for Precinct Three, the details of this retaining wall will be determined via site investigations and a capacity review performed to determine the ability of this retaining wall to continue to support the existing ground level.

As previously discussed the Precinct Three building will have its vertical and

horizontal loads transferred to below this retaining wall. Hence the final condition will not change from the current situation on site except that the current buildings on the site will be demolished and depending on the depth of their foundations this may reduce the loads currently applied to this retaining wall.

For further information regarding the impacts of the excavation and future development on the existing railway lines and retaining walls, please refer to the report undertaken by SMEC.

Yours faithfully,
BONACCI GROUP PTY LTD

A handwritten signature in black ink, appearing to read 'R Campbell', written in a cursive style.

Ryan Campbell BE (Hons) BSc MEngSc RPEQ MIEAust MAICD MIABSE
Director