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For the attention of : - Chris Hansen

Dear Chris,

**Northpoint Tower**  
**Structural Engineering Consultant Advice Note 006**  
**Shard Awning**

Further to our recent conversation, I am writing to outline the structural and façade implications of locating the awning to the shard entry mid-way between levels 8 and 9 in order to respond to the recent comments issued by North Sydney Council as part of their review of the Section 96 design.

Shard Awning Midway between levels 8 and 9

If it was mandated that an awning needed to be installed between Levels 8 and 9 at the southern end of the building, the main issue with this from a structural point of view is that there is no available structure between the floors to support the awning outrigger steelwork. We would also have to resolve the issue of how these outriggers penetrate the façade whilst not compromising the building sight lines as we would need to introduce an additional spandrel section between floors. This would significantly impact on the tenant areas on Level 8 which includes future restaurant operators. There would also be issues with how best to treat the penetration of the façade spandrel panel at mid height as it may introduce a point of weakness leading to future maintenance and leaking issues.

To provide support to the awning we would need to introduce vertical structure in the form of steel posts or similar at each outrigger location (approx. 1800mm c/c) to carry the awning reactions. This would then have a significant impact on the architecture of the façade. Another option would be to provide a large horizontal transom between the existing primary columns to support the outriggers however this again would have a significant impact on the architecture and design intent of the façade at this entry point.

Infill Awning between points of shard

enstruct has also investigated the following structural options to infill the area between the points of the shard and present the implications of each of these options;

- Option 1 – Provide rafter between points of the shard
- Option 2 – Provide hangers to outrigger beams
- Option 3 – Introduce columns to support the awning structure

Option 1 – This option would introduce a rafter member to span between the points of the shard. This member would be of the order of 500mm deep in order to support the

extended awning along with the introduction of approximately 2.2T of steelwork to the project in addition to the increased area of glass. To have a deep beam at the main entry would again detract from the design intent and also impact on sight lines from within the internal tenant areas.

Option 2 – This option would require the structural depth of the outriggers to be increased as well as the need to introduce hangers to each awning section with the introduction of approximately 1.2T of steelwork to the project in addition to the increased area of glass. This option also has the added complication of requiring the hangers to penetrate the glazed sections at L10 potentially introducing waterproofing and long term maintenance issues and again detracts from the design intent of this opening by complicating the clean lines of the glazed façade at the main intersection of Pacific Highway and Miller Street.

Option 3 – This option would introduce vertical tapered columns to support the awning over the entry. In addition to introducing a number of columns which foul the public domain, additional strengthening would be required to the L7 structure and foundations to support these columns which has further potential impact to the Level 6 space below which is required to support the retail tenants on the floors above. This option would add approximately 3.5T of steelwork to the project in addition to the increased area of glass.

I trust this adequately addresses your comments and requirements of the email from North Sydney Council dated 7<sup>th</sup> December 2015.

Should you have any comments or queries on the above, please don't hesitate to contact me.

Yours Sincerely,



for  
enstruct group pty ltd

Brian Healy BE CEng  
Senior Associate