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495 Collins Street

Design Advice: DA_028C

Subject: **Heritage Rialto & Winfield Buildings: Key structural design concepts.**

Date: 01_05_2023

From: [redacted]

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Distribution

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Veronica,

We provide the following summary of key structural design and construction concepts relevant to the existing Heritage Rialto & Winfield buildings, in the context of the proposed redevelopment of 495 Collins Street.

PROPOSED REDEVELOPMENT – OVERVIEW

The site at 495 Collins Street is bordered by Collins Street to the north, Flinders Lane to the South, 477 Collins Street to the east and the Rialto Tower forecourt to the west and is currently occupied by the heritage Rialto building and the modified heritage Winfield building in the east and western halves of the site, respectively.

The proposed redevelopment comprises:

- Retention of the existing heritage Rialto building in the western half of the site in its entirety.
- Retention of the Collins Street frontage component (approximately 10m) of the existing heritage Winfield Building on the eastern half of the site.
- Construction of a new basement in the balance of the eastern half of the site, with the floor level for the lowest basement level (B3) at RL -9.800.
- Construction off a new mixed-use (Hotel / Commercial Office) tower, integrated with the retained heritage buildings through the Ground Plane / Podium levels.

PROPOSED BASEMENT EXCAVATION & CONSTRUCTION

The proposed development includes three basement levels, with a proposed bulk excavation level of around RL -10.500, approximately 21.5 m and 13.7m below Collins Street and Flinders Lane levels, respectively.

Favorable ground conditions are expected, characterized by a Basalt layer underlain by Werribee Formation soils and weathered Silurian Age Siltstone, which is expected to be encountered near the proposed bulk excavation level and to be utilized as the founding material for piled foundations for the tower. Groundwater is anticipated at around RL 0.0 and a 'sealed' basement solution with 'hydrostatic' lowest basement slab is anticipated, in line with Melbourne City Council's groundwater management policies.

The proposed basement site retention concept comprises:

- Bored RC secant pile walls (overlapping, alternating 'hard / soft' piles), installed prior to commencement of basement excavation, tied at the top by a continuous perimeter capping beam.
- Three rows of temporary ground anchors at 2000mm maximum centres (every 5th pile), to provide lateral restraint to the basement retaining walls during the temporary (excavation / construction) condition, prior to construction of new basement and ground plane floor slabs.
- Progressive excavation and installation of ground anchors, with the top row of anchors close to the existing "surface" / founding level for existing foundations to the Rialto & Winfield buildings.
- Permanent lateral restraint ("strutting") of the basement retaining walls via basement and ground plane floor structures.

- Waterproofing systems comprising a combination of 'hydrostatic' lowest basement slab, internal impermeable wall liner with sprayed RC facing or independent internal 'hydrostatic' wall.

The proposed sub-structure concepts provide "active" retention of retained existing building structures, with design and detailing to minimize lateral displacement of the basement retaining walls, utilizing "conventional" construction methodology successfully implemented for numerous similar applications, namely significant basement excavations in close proximity to existing heritage buildings.

Figures 028-01 & 02 provide selected structural model and drawing extracts that diagrammatically illustrate key principles and parameters of the basement construction methodology.

STRATEGY FOR MODIFICATIONS & UPGRADES TO EXISITNG STRUCTURE

The proposed structural strategy for refurbishment works to the retained existing heritage Rialto & Winfield building fabric indicatively comprises:

GENERAL OVERVIEW

Existing conditions

The existing Rialto and Winfield buildings comprise a combination of "original" heritage building fabric and "modifications" undertaken primarily as part of the Menzies at Rialto Hotel redevelopment in the early 1980's and refurbishment for the current Intercontinental Hotel redevelopment in the late 2000's.

Rialto Building – proposed works

- Retention of the existing building envelope.
- Minimal interventions to the existing external building fabric.
- Demolition of the majority of existing modified elements inside the Rialto Building footprint, except for:
    - Remnants of the internal brick dividing walls. Some small openings and penetrations allowed.
    - Selected existing local column / pier elements on the north-south axis of the building at the intersections with east-west "half-grids".
    - Existing lifts and stairs in eastern façade between (new) gridlines 1-2 & 8-9.
- Introduction of new vertical circulation provisions (stairs and lifts) for compatibility with functional planning and access / egress requirements for the integrated mixed-use redevelopment. Scope for structural modifications dictated by architectural and functional planning for refurbishment of building.
- Construction of new link bridges and walkways to connect the refurbished existing building with the new Podium structure.

Winfield Building – proposed works

- Retention of the existing original heritage building. No significant structural interventions within the retained component.
- Demolition of the non-heritage southern 1980's building.
- Construction of new lifts and stairs south of and immediately adjacent to the retained portion of the Winfield building, integrated with new Podium floor structures.

Atrium Roof

Demolition and removal of the existing (1980's) steel-framed / glazed atrium roof structure.

RETAINED HERITAGE BUILDING COMPONENTS – SEISMIC COMPLIANCE STRATEGY

Rialto Building

Subject to determination by the Relevant Building Surveyor, we anticipate that the proposed internal interventions within the heritage Rialto building envelope will trigger requirements for retrospective compliance with Seismic design criteria in accordance with AS1170.4.

The proposed structural concept is to utilize new lateral stability elements, primarily reinforced concrete lift and stair cores, introduced as part of proposed circulation upgrades within the Rialto building, to provide supplementary lateral stiffness and compliance with relevant requirements of AS1170.4.

Winfield Building

Demolition of the majority of the existing (non-Heritage) building fabric to the existing (modified) structure will trigger requirements for retrospective compliance with AS1170.4 Earthquake Design. The relatively small footprint of the retained existing heritage Winfield Building, in conjunction with the provision of the proposed new lift / stair structure immediately to the south and integration of the new Podium floorplates, presents the opportunity for a logical strategy for upgraded / supplementary lateral stability structure to address retrospective seismic compliance requirements.

Figure 028-03 provides selected drawing extracts that diagrammatically illustrate key principles and preliminary concepts for structural modifications to the retained existing heritage building components.

It is anticipated that subsequent investigation, design development, detailed design and verification processes will indicatively comprise:

- Development of details and methodology for modifications to and enhancement of existing building structure.
- Detailed lateral stability analysis, design and contract documentation, including addressing relevant seismic compliance in accordance with AS1170.4.
- Independent third-party structural certification.

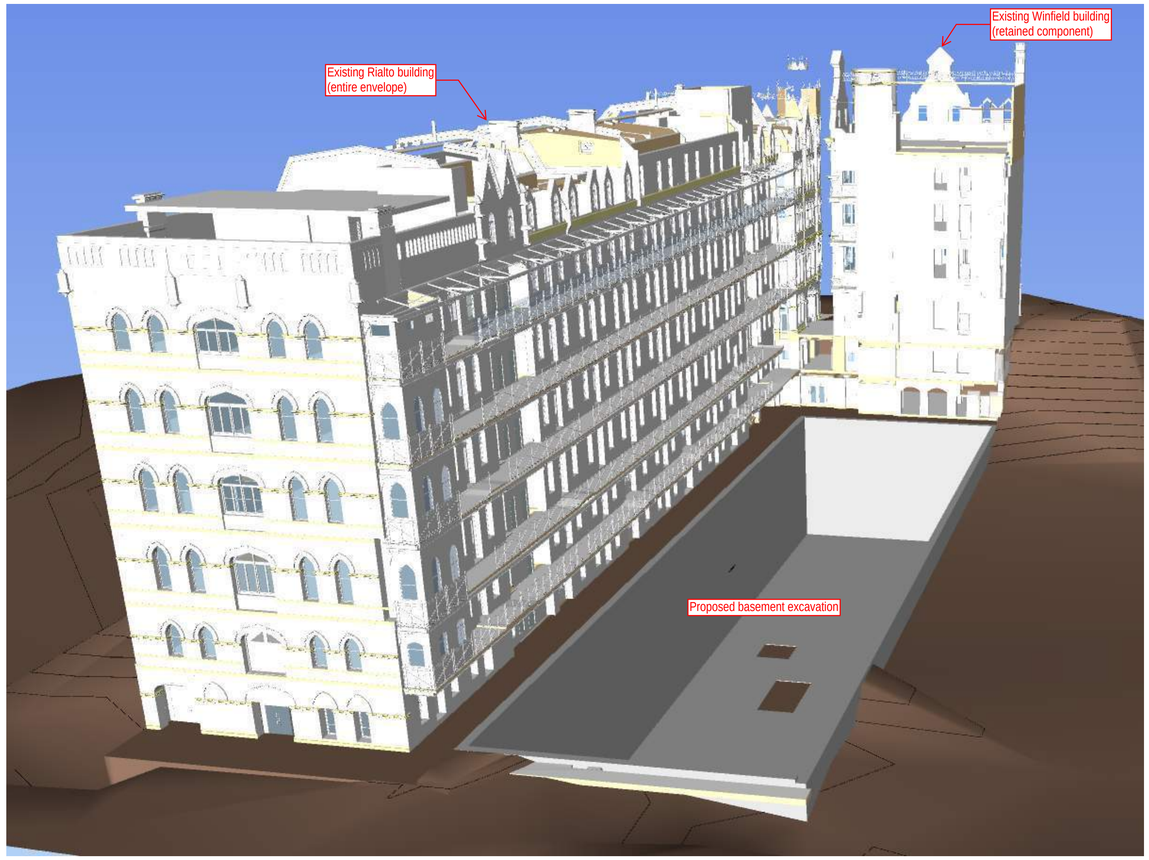
CLOSURE

We trust that this advice assists with clarification of proposed approaches relevant to retention of and modifications and upgrades to the existing heritage building components in the context of the proposed redevelopment at 495 Collins Street.

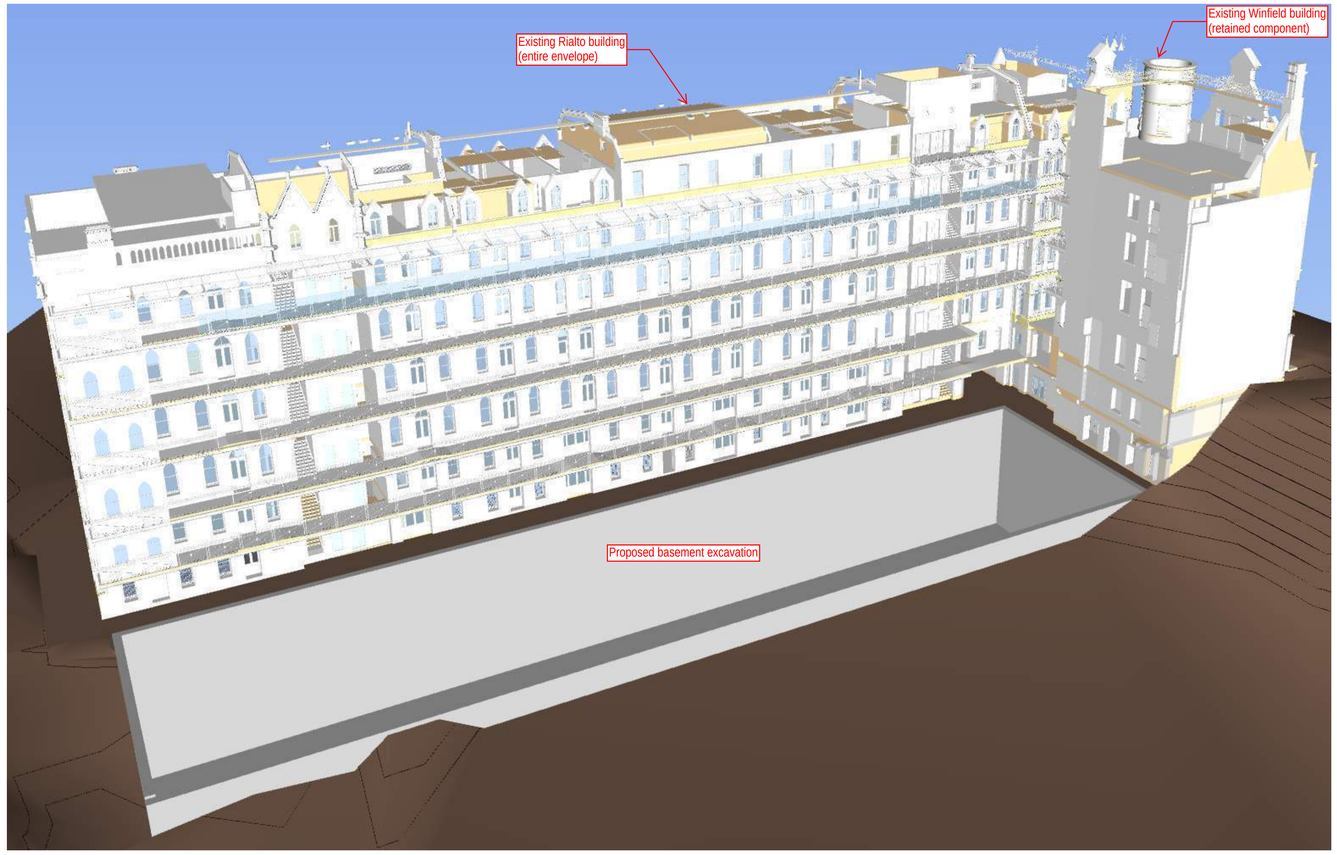
Please contact us if any further information or clarification is required.

Regards,

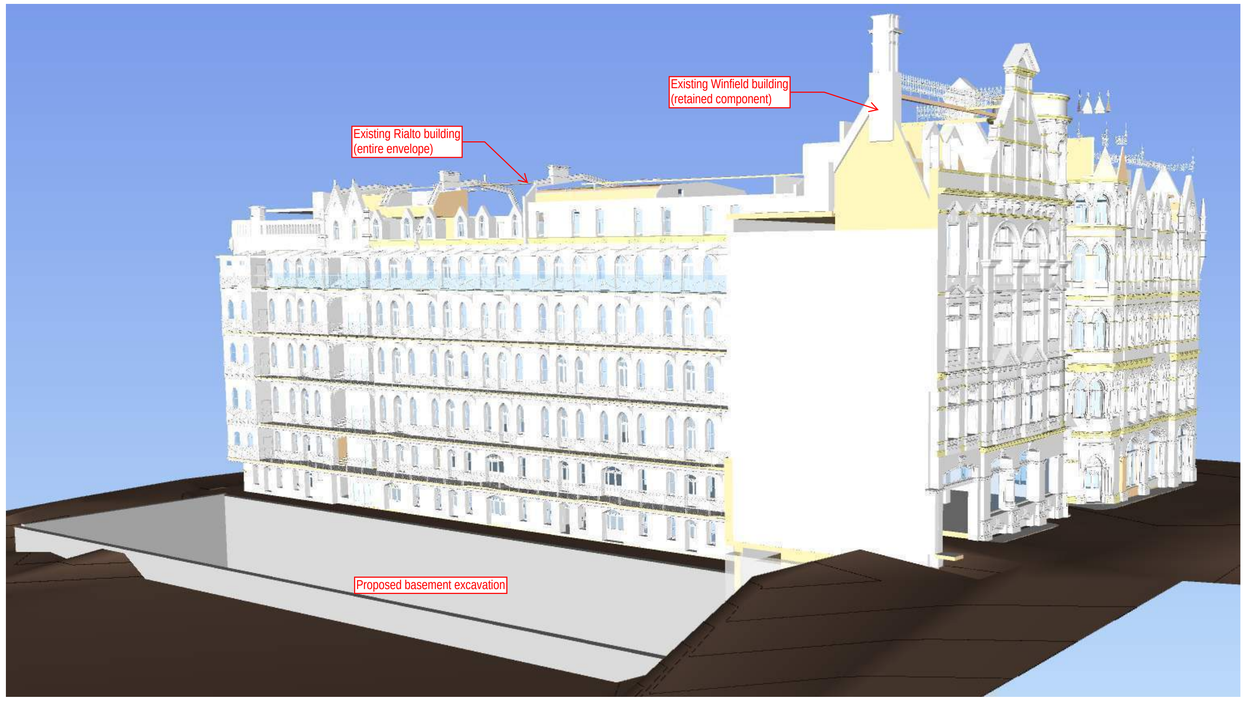
[redacted]



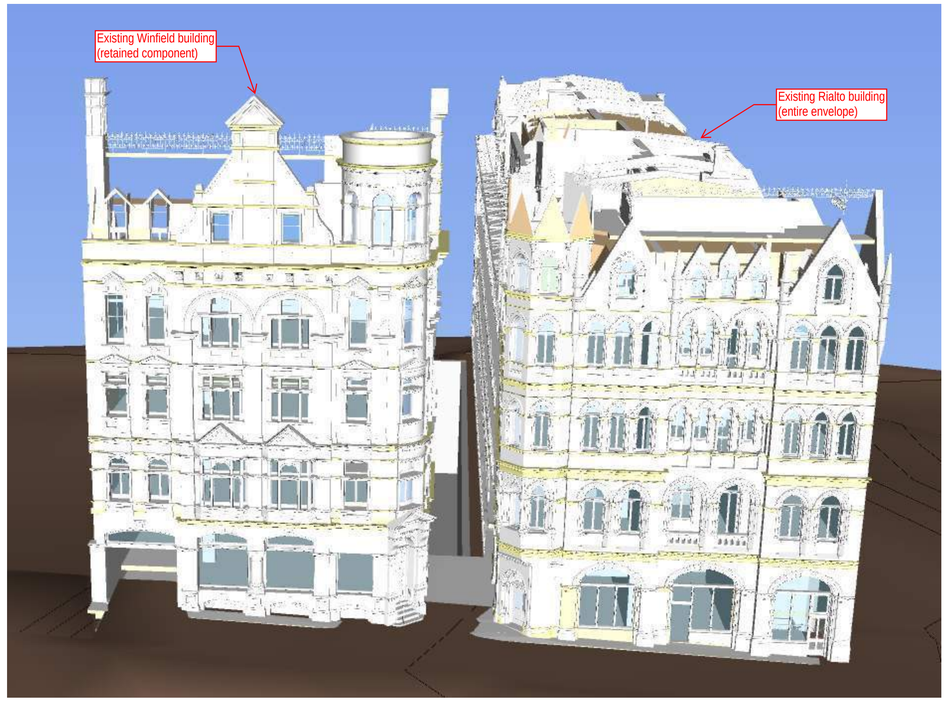
VIEW FROM SOUTH



VIEW FROM EAST



VIEW FROM NORTH-EAST



VIEW FROM NORTH

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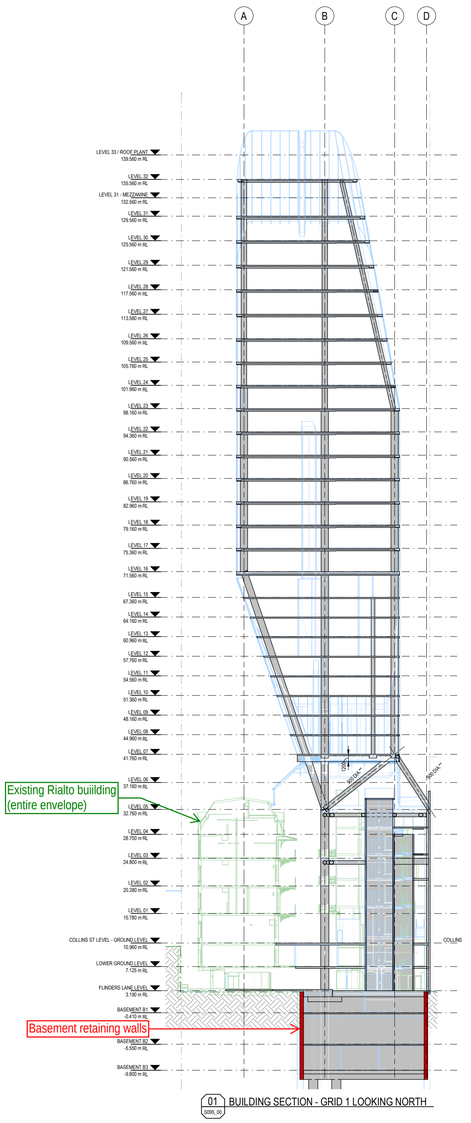
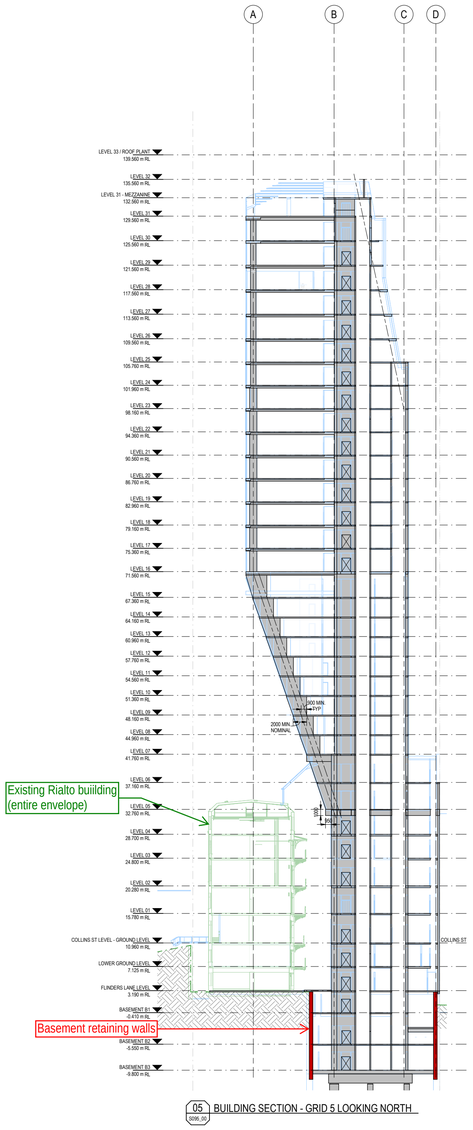
BASEMENT CONSTRUCTION - STRUCTURAL MODEL EXTRACTS

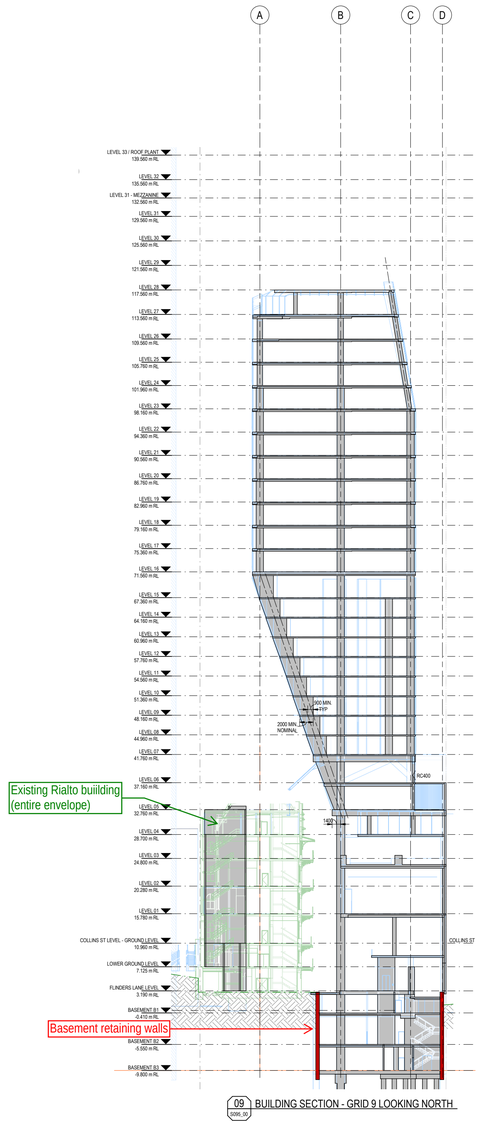
Title:	495 Collins St	4D ref:	1519
Scale:	N.T.S.	Sheet:	Figure 028-01
Author:	DD	Date:	December 2022



01 BUILDING SECTION - GRID 1 LOOKING NORTH
0095_00



05 BUILDING SECTION - GRID 5 LOOKING NORTH
0095_05



09 BUILDING SECTION - GRID 9 LOOKING NORTH
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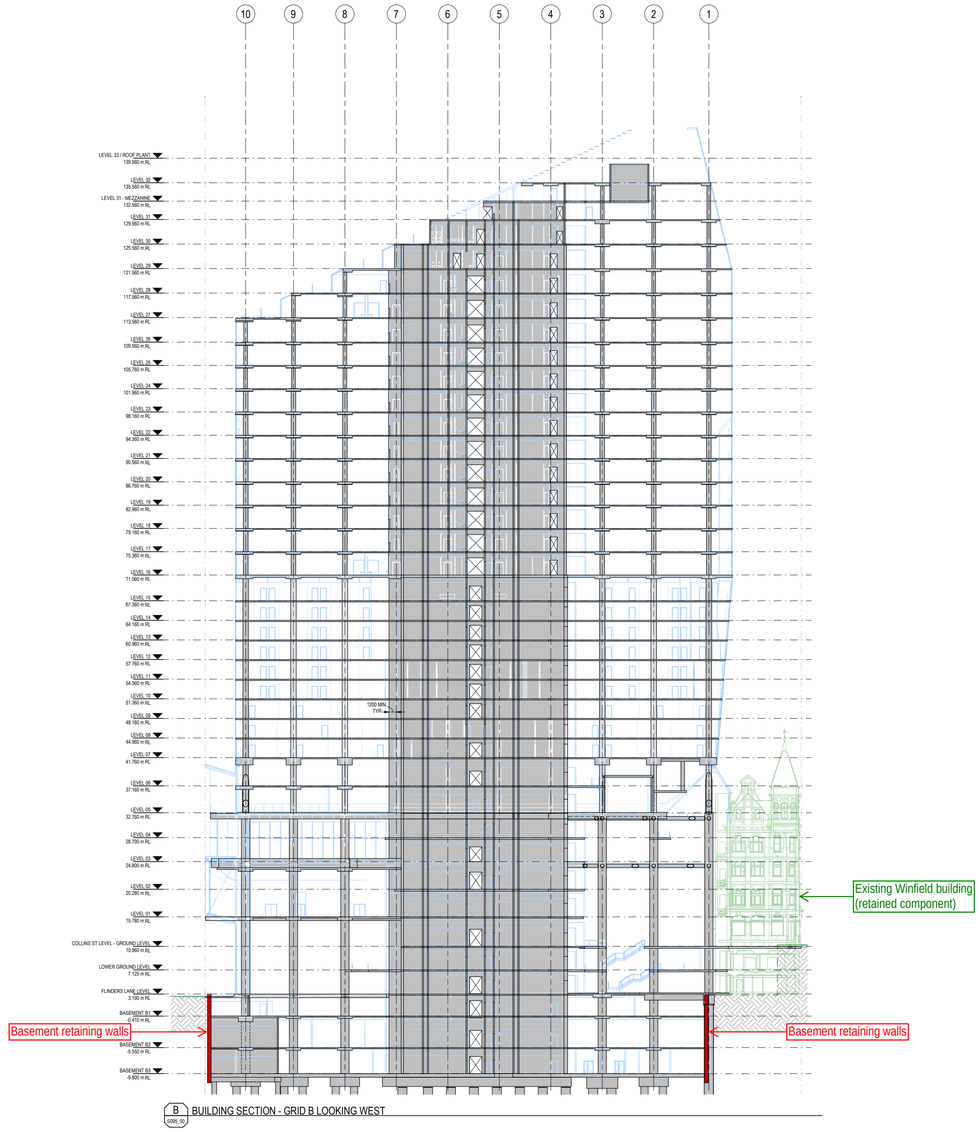
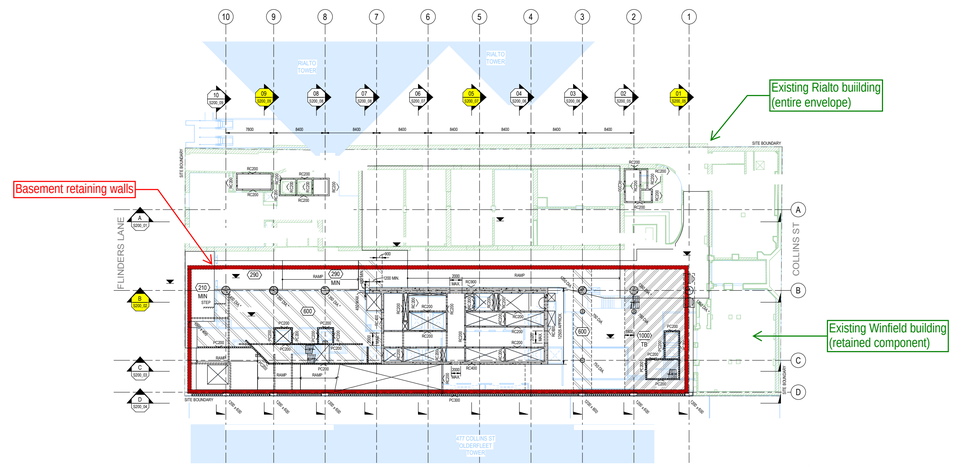


B BUILDING SECTION - GRID B LOOKING WEST
0095_00



FLINDERS LANE LEVEL KEY PLAN
SCALE 1 : 200

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BASEMENT CONSTRUCTION - BUILDING SECTION EXTRACTS

Title:	495 Collins St	4D ref:	1519
Scale:	1:500 @ A1	Sheet:	Figure 028-02
Author:	DD	Date:	December 2022

GROUND LEVEL (COLLINS ST) KEY PLAN

SCALE 1 : 200

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EXISTING HERITAGE BUILDINGS - SCHEMATIC PLAN

Title:	495 Collins St	4D ref:	1519
Scale:	1:200 @ A1	Sheet:	Figure 028-03
Author:	DD	Date:	December 2022