



Imparta Engineers is an independent engineering company with expertise in providing the insurance industry with specialist technical building advice. Their team of engineers and building designers across Australia provide engineering services including diagnostic reports, structural and architectural documentation, and repair scopes for all types of buildings and structures.

Where necessary, they also engage consultants to provide specialist advice and engineering methods to provide a turn-key solution to the client.

#### **CASE STUDY**

The case study involves an existing four storey apartment building which comprised of concrete columns, wall panels and proprietary prestressed floor beams and Hollowcore floor planks— all of which were precast elements fabricated offsite.

A car fire on the ground floor carpark had resulted in several of the first floor Hollowcore planks becoming structurally compromised beyond repair.

#### **CHALLENGE**

The damaged Hollowcore planks were critical structural elements which supported the levels directly above.

The damaged Hollowcore planks were not able to be replaced like-for-like due to constructability issues. Specifically, the crane would not be able to install new precast Hollowcore planks from above without first demolishing the upper levels of the building.

#### **ENGAGEMENT**

Imparta Engineers were engaged to provide an alternative solution which would allow for the repairs to be undertaken within the access constraints at the site. Imparta Engineers initially attended the site to undertake concrete testing using a Schmidt Hammer to determine the severity of the damage.

Imparta Engineers also met with the Loss Adjuster and Unit Owners to discuss the proposed repair options, and associated complexities and risks for each proposed solution.

#### **SOLUTION/METHODOLOGY**

The optimal solution provided by Imparta Engineers was agreed upon by the Loss Adjuster and Unit Owners, and involved the following steps:

- Undertaking a full dilapidation survey of the building.
- Relocating all occupants of the building for the duration of the construction works to ensure safety of the occupants.
- Scanning the existing concrete to determine the size and location of existing reinforcement.
- Providing new footings for the extensive propping which would temporarily support the building
- Propping the backspan of the existing floor slab.
- Carefully punching through the existing damaged Hollowcore planks to prop and brace the load-bearing precast panel above, while avoiding damaging the existing prestressing strands.
- Providing a temporary catch deck to safely demolish and remove the existing floor.
- Carefully demolishing the damaged floor planks while retaining the existing starter bars.
- Pouring a new in-situ new post-tensioned floor slab, leaving pockets in the slab for the vertical propping supporting the precast panel.
- Pouring a new screed layer to tie the new slab into the existing starter bars once stressing of the new floor slab had been completed.
- Removing the propping and infilling the pockets which remained in the slab.

#### **QUALITY CONTROL AND CUSTOMER SATISFACTION**

Imparta Engineers undertook inspections at all critical stages, including inspection of the temporary propping, footing reinforcement, and slab reinforcement, to ensure that the construction was in accordance with the design documentation.

The ongoing communication between Imparta Engineers and the Unit Owners ensured that all stakeholders had a full understanding of the complexity, nature and time frames involved with the repair works.

#### **RESULTS**

The solution provided by Imparta Engineers allowed the repairs to be undertaken without demolition of the upper levels of the building, significantly reducing the cost to the Insurer. Additionally, the time frame of the project was reduced, therefore minimising the cost of relocating the occupants of the building during the construction works.

Imparta Engineers is committed to providing safe, sustainable and cost-effective solutions to the Insurance Industry.

# IMPARTA

ENGINEERS

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# CASE STUDY

A car fire on the ground floor carpark had resulted in several of the first-floor Hollowcore planks becoming structurally compromised beyond repair.

An existing four-storey apartment building comprised of:

- Concrete columns
- Wall panels
- Proprietary prestressed floor beams
- Hollowcore concrete floor planks

*(All precast elements fabricated offsite)*



Ground Floor  
Car Fire



# CHALLENGE

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## CHALLENGE

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Specifically, the crane would not be able to install new precast Hollowcore planks from above without first demolishing the upper levels of the building.



Fire Damaged  
Transfer Slab

# ENGAGEMENT

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# SOLUTION/METHODOLOGY

**The optimal solution provided by Imparta Engineers was agreed upon by the Loss Adjuster and Unit Owners.**

Undertaking a full dilapidation survey of the building.

Relocating all occupants for the duration of the construction works to ensure their safety.

Scanning the existing concrete to determine the size and location of existing reinforcement.

Providing new footings for the extensive propping which would temporarily support the building.

Propping the backspan of the existing floor slab.

Carefully punching through the existing damaged Hollowcore planks to prop and brace the load-bearing precast panel above, while avoiding damaging the existing prestressing strands.

Providing a temporary catch deck to safely demolish and remove the existing floor.

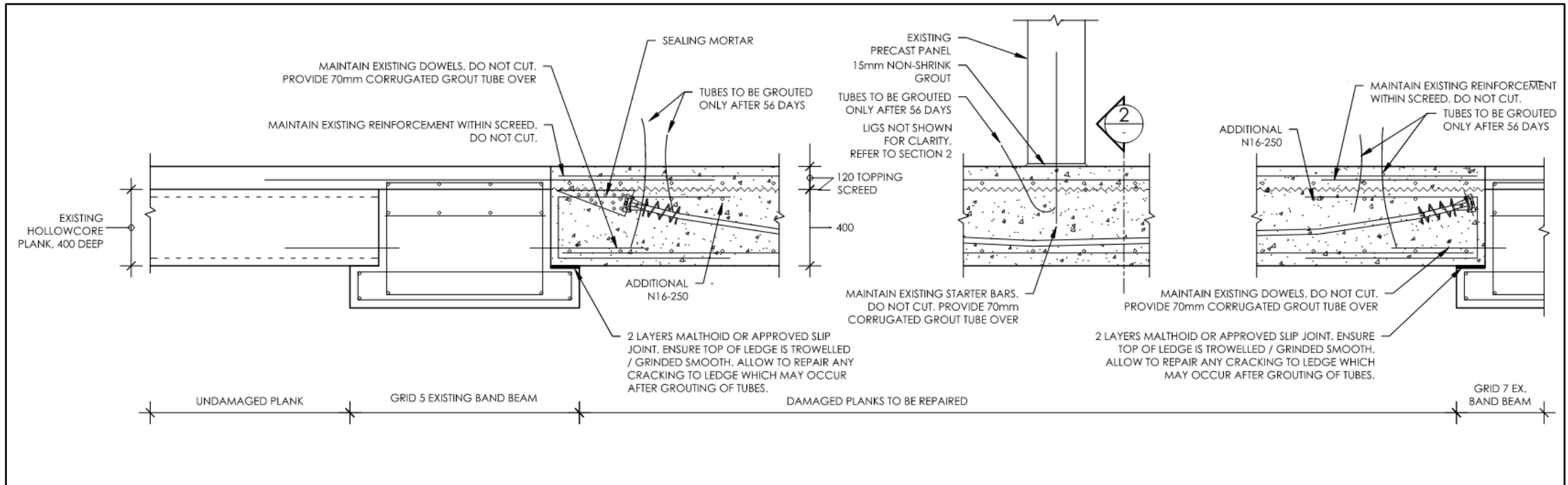
Carefully demolishing the damaged floor planks while retaining the existing starter bars.

Pouring a new in-situ new post-tensioned floor slab, leaving pockets in the slab for the vertical propping supporting the precast panel.

Pouring a new screed layer to tie the new slab into the existing starter bars once stressing of the new floor slab had been completed.

Removing the propping and infilling the pockets which remained in the slab.

# SOLUTION/METHODOLOGY



SECTION DETAIL OF NEW TRANSFER SLAB



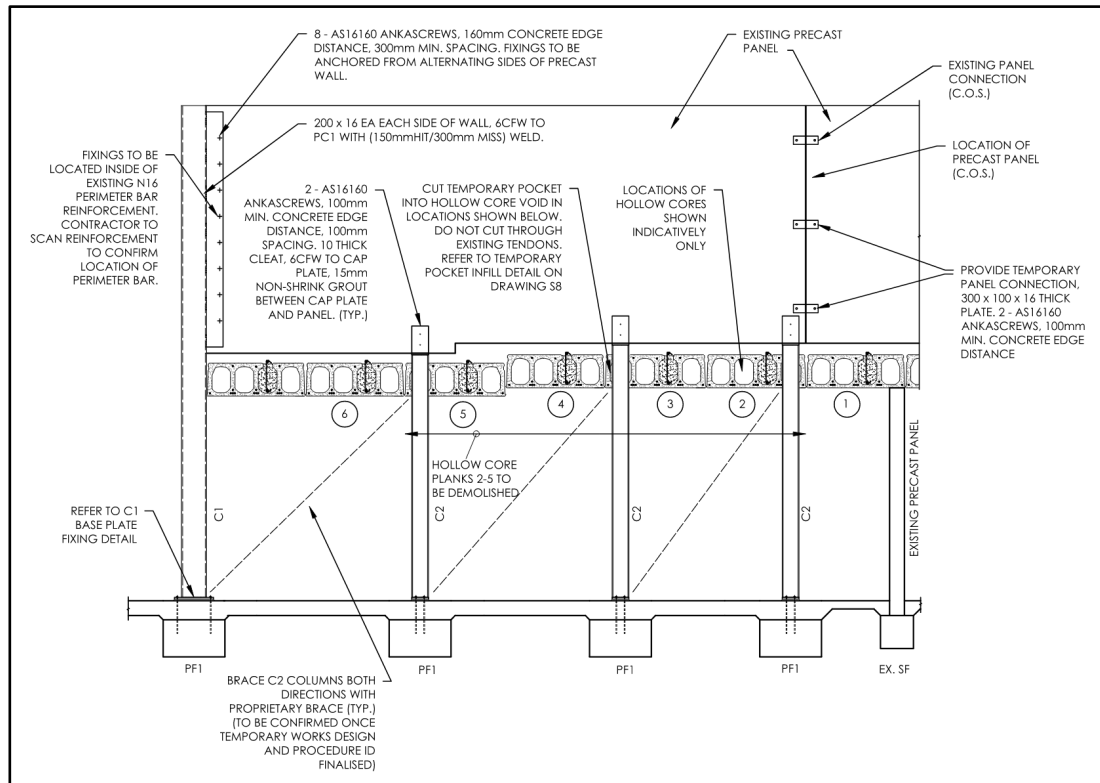
# COMPLETED STRUCTURAL WORKS



REPAIRED TRANSFER SLAB (WITH PROPPING IN PLACE)



# SOLUTION/METHODOLOGY



**TEMPORARY PROPPING DETAIL  
FOR LOAD BEARING PRECAST PANEL**



**Vertical Props  
Below Load Bearing  
Precast Panel**

# QUALITY CONTROL & CUSTOMER SATISFACTION

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REINFORCEMENT INSPECTION

Post-Tensioning  
Tendons

# RESULTS

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SAFE, SUSTAINABLE AND COST-EFFECTIVE SOLUTIONS  
TO THE INSURANCE INDUSTRY.**