# Capability Statement



## STRUCTURAL DESIGN SOLUTIONS

CONSULTING ENGINEERS









# WELCOME NOTE

I wish to take this opportunity to introduce **Structural Design Solutions** and offer my services in assisting you with your structural engineering requirements. **Structural Design Solutions** is a boutique engineering firm servicing the needs of clients throughout Australia.

Structural Design Solutions was **established in 2005** and is a fully **Australian owned** company. I recognised a need in the industry for **a service** which was **based on solid relationships** and giving clients the **experience** they paid for.

In recent years consulting engineering firms have been growing in size, changing their core services and developing an economy of scale culture. With experienced senior staff spread thin and providing projects a cursory service. In the process clients have become customs who are part of a financial transaction to improve the bottom line.

Our mission is to **get back to basics** and do what a consultant should do, **service clients** and treat each project as **a partnership** so everyone benefits. The foundation to achieving this is by engineering cost effective and timely design solutions that result in **solid relationships** and **mutual respect** with clients, project designers and construction teams.

Robert Facioni Managing Director



# **REPEAT BUSINESS CLIENT LIST**











**Amalgamated Property Group Avo Piling Buildcorp Caldas Property Group Deicorp Constructions Exceland Property Group Hokin Design Group Integrated Project Services Mainland Civil More Human Northern Star Projects Probuild Provincial Planning Savage Property Group Southern Cross Constructions Squillace Architects** 





















# WHAT WE ARE DESIGNING NOW

Hunter St, Labrador for MayneLine 7 Storey Residential (\$10m Const)

VOLARE, Broadbeach for Amalgamated Property 27 Storey Residential (\$50m Const)

Hamilton Ave, Surfers Paradise for More Human 20 Storey Residential (\$20m Const)

Forest Road Medical Precinct, Orange for Savage Medical, commercial, residential (\$35m Const)

> COLES, Wentworthville for DeiCorp Retail Complex (\$15m Const)

**110 Bower, Manly for Savage Property Group** High-End Luxury Apartments (\$15m Const)

Military Rd, Neutral Bay for Southern Cross 70 Apartments (\$20m Const)

Burleigh Heads for Amalgamated Property 2 x 15 Storey Residential (\$20m Const)

Carlyle St Mackay for PDD Developments 12 Storey Hotel (\$20m Const)

Pasadena, Church Point for Romeo Developments 3 Storey Luxury Residential (\$7m Const)



### RECENT AND CURRENT PROJECT LIST

RESIDENTIAL	COMMERCIAL/RETAIL
<ul> <li>108 The Esplanade Burleigh He</li> </ul>	ads (\$20m) o Summer St, Orange (\$12m)
$\circ$ Monteray, Neutral Bay (\$20m)	<ul> <li>The Legends Hotel (\$2m)</li> </ul>
$\circ$ Carlyle St, Mackay (\$20m)	<ul> <li>Oatley Village Square (\$15m)</li> </ul>
<ul> <li>○ Dungowan, Manly (\$15m)</li> </ul>	○ 61 York St (\$20m)
$\circ$ 60 to 82 Princess Hwy, St Peter	s (\$20m) o Gordon GPO (\$11m)
<ul> <li>Star Printery, Erskinville (\$10m)</li> </ul>	<ul> <li>Bunnerong Rd Matraville (\$5m)</li> </ul>
<ul> <li>Natalie, Randwick (\$8m)</li> </ul>	<ul> <li>Focus at Brookvale (\$35m)</li> </ul>
• Short St, Wentworthville (\$4m)	<ul> <li>Signal Station Gladesville (\$1m)</li> </ul>
<ul> <li>Scarborough St, Hervey Bay (\$4</li> </ul>	I.5m) o Waratah St, Mona Vale (\$2m)
$\circ$ Ryde Rd, Hunters Hill (\$4m)	<ul> <li>Hunters Hill Hotel (\$15m)</li> </ul>
$\circ$ Hunters Hill Hotel (\$15m)	
$\circ$ Park St, Mona Vale (\$5m)	HEALTH
$\circ$ Bower St, Manly (\$6m)	<ul> <li>ANTHEM Age Care, Bowral (\$10m)</li> </ul>
$\circ$ Precision Apartments (\$20m)	<ul> <li>Orange Private Medical Precinct (\$35m)</li> </ul>
<ul> <li>Plateau Apartments (\$14m)</li> </ul>	
DOMESTIC / TOWNHO	USES INDUSTRIAL
○ 3 Wolseley Cr, Point Piper (\$2m	) o 9 Bryant Drive, Tuggerah (\$4m)
○ 9 Bank St, Monterey (\$700k)	<ul> <li>Accoustic Wall, Moss Vale (\$500k)</li> </ul>
$\circ$ 130a Wolseley Rd, Point Piper (	\$4m) o Dural Light Industrial (\$9m)
○ 29a Kingsley Drive, Boat Harbo	ur (\$5m)
VALUE ADDED ENGIN	EERING WEST AUSTARLIA
<ul> <li>Sierra Grand, Broadbeach (\$100)</li> </ul>	0m) 0 432 Murray St, PERTH (\$10m)
<ul> <li>Dalgety House, Townsville (\$35</li> </ul>	m) O Douro PI, WEST PERTH (\$15m)
<ul> <li>SOUL, Surfers Paradise (\$850m</li> </ul>	) 0 124 Wittenoom St, EAST PERTH



# **PROJECT DATA SHEETS**

PROJECTS UNDER CONSTRUCTION



# DUNGOWAN 7 South Styne, Manly

Originally constructed 1919 out of load-bearing masonry and reinforced concrete slabs, 'Dungowan' is a heritage four-storey residential building. The existing building has suffered sever reinforcement corrosion due to the use of Coke Breeze concrete in the slabs. The existing slabs had a limited life span and in many areas had no reinforcement left. This project involves the restoration of the existing structure and the construction of three additional levels. New car parking is provided via a new basement below the existing building incorporating a 16-spot car-stacker.

The key structural engineering features of this project are:

 $_{\odot}$  Injection Grouting of Sands under existing footings to increase capacity

• New core for upgrading of building stability resistance

 $_{\odot}$  Incorporating timber sub-floor systems below existing Coke Breeze slabs

- o Replacement of existing roof with a new concrete slab
- o Reinforced concrete frame L5 and L6
- Specialist testing of Masonry and Existing slabs



Client – 7 South Styne Builder – Southern Cross Const Construction Value – \$15,000,000 Architect – Architectural Projects Status – Under Construction

# STRUCTURAL DESIGN SOLUTIONS

# 60 to 82 Princess Highway St Peters

The project consists of 2 basement car park levels and two residential buildings over. Each building contains three residential levels and rooftop terraces. The Princess Highway building contains ground floor retail. In total there is 850m<sup>2</sup> of retail/ commercial and 63 apartments.

The key structural engineering features of this project are:

- 3500 m<sup>2</sup> construction site
- 20,000 m<sup>3</sup> Deep basement excavation in Shale
- $\circ$   $\,$  Soldier pier and shotcrete infill panel shoring
- Conventional reinforced concrete frame



Client – Deicorp Builder - Deicorp Construction Value – \$20,000,000 Architect – Nordon Jago Architects Status – Under Construction



# ANTHEM AGE CARE Retford Rd, BOWRAL

Anthem is the Southern Highlands' first Continuous Care Retirement Community. Buildings 'A' and 'B' contain one, two and three bedroom resortstyle apartments with support services. Building 'C' will have a number of higher care beds and dementia specific care beds.

The key structural engineering features of this project are:

- Staged Development
- Speed of construction and no formwork
- o Ultrafloor Slabs
- o AFS Walls



Client – The Blissett Group Construction Value – \$10,000,000

Architect – Cobel Stephens Year –Under Construction



# 61 York St, SYDNEY

This project consisted of 1 basement retail/plant level, ground level retail and 16 levels of commercial over. The building footprint was only 12m wide x 24m long. A rail easement for two future rail tunnels was 0.5m directly under the site and impacted one half of the site, an area 10m x the full 12m width. The existing North Shore and City Circle rail lines were located directly under York St in front of our site only 2m from our basement.

The key structural engineering features of this project are:

- o 16-storey building only cantilevered 5m over the tunnels
- $\circ~$  Reinforced concrete walls designed as deep beams to cantilever
- $\circ\,$  Rail Infrastructure Corridor Services (RICS) and independent engineer approval
- o Precast walls
- Founding building outside Rail Zone of Influence





Client – Nick Manettas Builder – BuildCorp Project Value – \$20,000,000

Architect – Candalepas Arch. Status – Under Construction



# **GORDON GPO**

This development involves the retaining of the existing GPO building and excavating 12m below it. The new development incorporates 3 carpark levels, a major retail level, a ground level podium with small retail outlets and a two level gymnasium over.

The key structural engineering features of this project are:

- $\circ\,$  Developing a temporary support structure to allow 12m excavation below the existing GPO Building
- o Incorporating the temporary structure into the final design
- $\circ$  Steel soldier and shotcrete shoring system
- o Reinforced concrete frame



Client – Caldas Builder – Probuild Construction Value – \$11,000,000 Architect – Hokin Design Group Status – Under Construction

# STRUCTURAL DESIGN SOLUTIONS

# Pavilions on Scarborough HERVEY BAY

This project consists of 1 basement car park and four levels of residential over.

The key structural engineering features of this project are:

- Variable founding material
- Front half of Building Piled to weathered sandstone
- o Back half of Building Pads on weathered sandstone
- Load-bearing block work
- Reinforced concrete slabs
- Design for Category B wind loading (60m/s)



Client – 25 – 27 Scarborough St Project Value – \$4,000,000 Architect – Parups Waring Status – Out to Tender 2007



# **PROJECT DATA SHEETS**

# CONSTRUCTION RECENTLY COMPLETED



# 130a WOLSELEY ROAD Point Piper

This prime Sydney Harbour waterfront site has been remodeled by award winning architect William Zuccon. The existing three level shell has been retained and a new level excavated below. A lift has also been introduced for access to pool level and a turntable for car parking.

The key structural engineering features of this project are:

- Reuse of the existing structure
- $\circ~$  Removal of load-bearing walls to increase room sizes
- New Long span cantilever balcony (7m)
- Excavation below existing building



Client – Brian White Builder – Probuild Project Value – \$4,000,000 Architect – Dods and Zuccon Status – Completed 2007

## **STRUCTURAL DESIGN** SOLUTIONS

# OATLEY VILLAGE SQUARE Mulga Rd, Oatley

This project is the highly controversial development in Oatley which bring a Coles Shopping Centre to Oatley. The project consists of 2 basement car park levels, the Coles retail and commercial level, a mezzanine café, a ground floor Residential Podium and loading dock and a Level 1 residential and commercial.

- **o** Deep basement excavation in good quality Rock
- No shoring or underpinning
- o Steep sloping site allowing access at three levels
- Post tentioned floor plates







Client – R + 3 Pty Ltd Builder - Deicorp Construction Value – \$15,000,000

Architect – Hely Horne Pery Medcalf Status – Completed 2007



# NATALIE 155 Avoca St, Randwick

The project consists of 1 basement car park levels, a ground floor commercial transfer level and four residential levels over. We were introduced and took over the project when the original engineer had an over-designed system.

The key structural engineering features of this project are:

- o Basement excavation in good quality Rock
- $\circ~$  We eliminated shoring and underpinning design by previous engineers saving \$250k
- The original load bearing masonry and reinforced floor plate system design by previous engineers did not work for floor to floor. We created a new Post Tensioned scheme and accelerated the construction program

![](_page_15_Picture_7.jpeg)

Client – Exceland Pty Ltd Builder – Living Projects Construction Value – \$8,000,000 Architect – Turner Associates Status – Completed 2007

![](_page_16_Picture_0.jpeg)

# STAR PRINTERY Coulson St, Erskinville

Star Printer involves the reuse of the existing printery into an new residential development. The existing 3 level structure at the front of the site is incorporated into a new 5 level residential building. The rear half of the site has a new 5 storey building built in precast.

The key structural engineering features of this project are:

- o Reuse of the existing structure
- Light weight construction of 2 additional levels over
- New building in Precast Construction (walls and slabs)
- Rail Infrastructure Corridor Services (RICS) approval
- o Excavation adjoining a rail embankment

![](_page_16_Picture_9.jpeg)

![](_page_16_Picture_10.jpeg)

![](_page_16_Picture_11.jpeg)

![](_page_16_Picture_12.jpeg)

Client – More Human Builder – Deicorp Constructions Construction Value – \$10,000,000 Architect – Turner Associates Status – Completed 2007

![](_page_17_Picture_0.jpeg)

# 264 Bunnerong Rd, Mattraville

This project consisted of a basement level car park, ground floor retail tenancies and two levels of commercial over including a child day care centre.

The key structural engineering features of this project are:

- Screw pile foundations
- o Sheet pile shoring with no anchoring
- o Reinforced concrete transfer slab
- Composite Structural steel and concrete frame over

![](_page_17_Picture_8.jpeg)

![](_page_17_Picture_9.jpeg)

Client – Exceland Property Group Builder – Living Projects Construction Value – \$5,000,000

![](_page_17_Picture_11.jpeg)

Architect – RDA Associates Status – Completed 2007

![](_page_18_Picture_0.jpeg)

# Waratah St MONA VALE

Currently four small shop fronts occupy site. The original design in 1968 included a second level which was never built. We took advantage of the load capacity of the existing pile foundations to design two additional commercial levels of light weight construction.

- Reuse of the existing structure and pile foundations
- o Steel framed and timber floored building over

![](_page_18_Picture_6.jpeg)

![](_page_18_Picture_7.jpeg)

Client – Provincial Planning Builder – EJ Constructions Construction Value – \$2,000,000

![](_page_18_Picture_9.jpeg)

Architect – Hokin Design Group Status – Completed 2007

![](_page_19_Picture_0.jpeg)

# MANLY APARTMENTS Bower ST, Manly

Currently eight small units occupy this Marine Parade site. To take advantage of the panoramic views of Manly beach a development, comprising three units over three levels, each with an area of greater than two hundred metres square, was proposed

The key structural engineering features of this project are:

- Reuse of the existing structure
- Removal of load-bearing walls to increase room sizes
- Strengthening of existing concrete slabs
- Additional level added of light weight construction

![](_page_19_Picture_8.jpeg)

Client – Savage Property Group Project Value – \$6,000,000 Architect – Squillace Architects Status – Completed 2007

![](_page_20_Picture_0.jpeg)

# 18 to 20 Park St Mona Vale

This project consisted of 6 ground floor retail tenancies, 18 residential units and basement level car parking.

The key structural engineering features of this project are:

- High Level Water Table
- Secant piled cut off wall
- Ground Floor transfer slab

![](_page_20_Picture_7.jpeg)

Client – Northern Star Projects Project Value – \$5,000,000

Architect – Hokin Design Group Status – Completed 2007

![](_page_21_Picture_0.jpeg)

# 7 - 9 Short St Wentworthville

This project consisted of 1 basement level car park with a ground level landscaped podium and two residential buildings over containing 18 units.

The key structural engineering features of this project are:

- Basement Excavation in Silty Clays
- Anchoring restrictions limited shoring systems
- Sheet piling would not work
- o Cantilever piers and shotcrete infill panel used for shoring
- Reinforced concrete frame with load-bearing masonry

![](_page_21_Picture_9.jpeg)

![](_page_21_Picture_10.jpeg)

Client – Rainsu Pty Ltd Project Value – \$4,000,000

Architect – SAOKI Status – Completed 2007

![](_page_22_Picture_0.jpeg)

# TUGGERAH CENTRAL Bryant Drive, Tuggerah

This Greenfield site has been raised by up to 1.5m to finished levels and three industrial buildings have been built.

The key structural engineering features of this project are:

- o Cut and Fill design
- $\circ\,$  Bound sub-grade was used to minimize slab thickness for the trafficable pavements.
- **o** Concrete Pavement Slabs
- Steel Portal Frame Construction
- o 125mm and 150mm thick Precast Panels

![](_page_22_Picture_9.jpeg)

Client – Provincial Planning Construction Value – \$4,000,000 Architect – McPherson Smith King Status – Completed 2006

![](_page_23_Picture_0.jpeg)

# Light Industrial Estate, New Line Rd, DURAL

This light industrial estate project consisted of 50 strata factory units of approx. 100sqm each, a café building and on grade parking for 100 vehicles. Each of the factories was provided with full amenities and a mezzanine office.

The key structural engineering features of this project are:

- Cut and Fill Design for a site 300m x 75m with a 15m Fall
- o Retained Cut faces of up to 4m in height
- o Battered and Retained Fill boundaries of up to 6m depth
- o Industrial Pavement Design
- o Tilt-up Panels
- o Steel framed roof

![](_page_23_Picture_10.jpeg)

![](_page_23_Picture_11.jpeg)

Client – Caldas Project Value – \$8,000,000 Architect – Hokin Design Status – Completed 2005

![](_page_24_Picture_0.jpeg)

## Focus at Brookvale

This mixed-use light industrial and commercial estate project consisted of 50 strata factory units of approx. 120sqm each, a 3000sqm showroom, a 3000sqm warehouse, 250 parking spaces and two commercial buildings (2 and 4 levels) over the warehouse and car park.

- Cut and Fill Design for a site 300m x 120m with a 50m Fall
- Retained Cut faces of up to 25m in height
- o 50,000m3 of material removed to create 3 bench levels
- o Industrial Pavement Design
- Factories Tilt-up Panels
- **o** Commercial Building Reinforced Frame and PT Slabs
- o Steel framed roof

![](_page_24_Picture_11.jpeg)

![](_page_24_Picture_12.jpeg)

![](_page_24_Picture_13.jpeg)

Client – Caldas Architect – Hokin Design Project Value – \$35,000,000 Status – Completed 2006

![](_page_25_Picture_0.jpeg)

# Plateau Apartments Pittwater Rd, Mona Vale

This project consisted of 2 basement car park levels, ground retail and commercial level, and three levels of residential over.

- **o** Deep Basement Excavation
- High Water Table 2m below natural ground
- Secant Pile Cut-off Wall
- Post-tensioned raft slab
- $\circ$   $\,$  Founding on weathered clayey sandstone with variable bearing
- o Shotcrete shoring system adjacent existing buildings

![](_page_25_Picture_10.jpeg)

![](_page_25_Picture_11.jpeg)

Client – Caldas Project Value – \$14,000,000

![](_page_25_Picture_13.jpeg)

Architect – Squillace Architects Status – Completed 2005

![](_page_26_Picture_0.jpeg)

# Precision Apartments Crows Nest

This project consisted of 2 basement car park levels, a lower ground retail and commercial level, an upper ground church auditorium and commercial space, eight levels of residential over.

- **o** Deep Basement Excavation
- o Construction adjacent an existing 7 storey building
- $\circ$  Steel soldier pier and shotcrete infill panel shoring system
- o 25m clear spans transferring 8 levels over church auditorium

![](_page_26_Picture_8.jpeg)

![](_page_26_Picture_9.jpeg)

![](_page_26_Picture_10.jpeg)

Client – Caldas Project Value – \$20,000,000

Architect – Squillace Architects Status – Completed 2004

![](_page_27_Picture_0.jpeg)

# Ultimo View Wattle St Ultimo

This project consisted of 2 basement car park levels, ground retail and commercial level, and six levels of residential over.

The key structural engineering features of this project are:

- o Deep basement excavation
- Building on highly contaminated soil of a low bearing capacity
- $\circ$  Designing for a high water table at a depth of 3m
- A secant pile cut off wall
- Underpinning adjoining buildings

![](_page_27_Picture_9.jpeg)

Client – Sing Hui Group Builder - Deicorp Construction Value – \$9,000,000 Architect – Nordon Jago Status – Completed 2004

![](_page_28_Picture_0.jpeg)

# HUNTERS HILL HOTEL

This Heritage listed Sydney icon is being sympathetically redeveloped to incorporate a fully renovated Pub with Ground floor Retail along the Gladesville Rd frontage and a Residential complex. The project consists of two basements, 2 storey Luxury Townhouses at the rear of the site and three levels of Apartments over the Retail and Pub.

The key structural engineering features of this project are:

- Reuse of the existing Pub structure
- o Additional level added over existing Structure
- Deep Basement construction
- Underpinning existing Hotel
- Minimising transferring Structure through various uses

![](_page_28_Picture_9.jpeg)

Client – Caldas Project Value – \$15,000,000 Architect – Squillace Architects Status – Concept Developed 2006

![](_page_29_Picture_0.jpeg)

# PROJECT DATA SHEETS

# PROJECTS OUT TO TENDER

![](_page_30_Picture_0.jpeg)

# Boat Harbour NELSONS BAY

This project consisted of ten luxury townhouses.

- Long Site with Variable Rock levels
- Cut and Fill Design
- Load bearing masonry and concrete slabs
- Architecturally designed Steel Roofs

![](_page_30_Picture_8.jpeg)

![](_page_30_Picture_9.jpeg)

Client – Savage Property Group Construction Value – \$4,000,000

Architect – Squillace Architects Status – Out to Tender 2007

![](_page_31_Picture_0.jpeg)

# 35 – 39 Ryde Rd Hunters Hill

This development consists of six apartments and four townhouses over a basement carpark.

The key structural engineering features of this project are:

- o Reinforced Block-work basement retaining walls
- o Reinforced concrete podium transfer
- Load-bearing masonry
- Timber roof trusses

![](_page_31_Picture_8.jpeg)

Client – Fig Tree Developments Project Value – \$4,000,000 Architect – Squillace Architects Status – Out to Tender 2007

![](_page_32_Picture_0.jpeg)

# Summer ST, ORANGE

This project is located in Orange, one of New South Wales' most vibrant regional centres. The development consists of approximately 3300sqm of commercial space with one basement of car parking. Ground floor is a large open plan retail use. Level 1 is a large open plan commercial space. Level 2 contains office suites with mezzanines.

The key structural engineering features of this project are:

- o Soldier Piled Shotrete Infill Shoring
- o Large Column Grid with Clear Spans 13m
- Post Tensioned Slabs
- Retention of Existing Facade

![](_page_32_Picture_8.jpeg)

Client – M Savage Construction Value – \$12,000,000 Architect – Bureau SRH Year – Out To Tender 2007

![](_page_33_Picture_0.jpeg)

# The Legends Hotel George St, Liverpool

The Legends Hotel is an icon of the Liverpool area. To maximize revenue from Poker Machines the hotel is undergoing a transformation. A new catering and bistro area is being constructed at the rear of the site. Smoking areas are also being provided as part of the redevelopment. The existing hotel is being modernized and areas opened up to improve circulation.

The key structural engineering features of this project are:

- o Reuse of the existing structure
- $\circ~$  Removal of load-bearing walls to increase room sizes
- o Long Clear Spans over Pokies Room
- New Rear extension

![](_page_33_Picture_8.jpeg)

Client – The Legends Hotel Construction Value – \$2,000,000 Architect – Paul Kelly Design Year – Out To Tender 2007

![](_page_34_Picture_0.jpeg)

# PROJECT DATA SHEETS

# VALUE ADDED ENGINEERING

![](_page_35_Picture_0.jpeg)

# SIERRA GRAND Broadbeach, QLD

The project consists of 35 levels of residential building over a two basement carpark and a plaza level with retail. The tower is 100m tall with a width of 60m and depth of 25m, the site area is 80m x 80m. Due to the geometry of the building and its low natural frequency it is sensitive to wind excitation.

Structural Design Solutions were called in to provide some **value added engineering** as construction costs were too high. The previous structural design provided horizontal wind resistance by the combination of a moment frame (through the column and slab connection) and the shear walls. We eliminated much inefficiency by changing the stability system to purely shear walls.

The key structural engineering features our scheme provided are:

- Total Structural Savings of \$2million
- Reduced slab thicknesses from 230mm to 200mm
- o Removed shear heads "Stud Rail" over all tower columns
- Reduced column sizes up the tower
- o Reduced Piles
- Reduced Pile cap sizes

![](_page_35_Picture_11.jpeg)

Client – Amalgamated Property Group Builder – Amalgamated Constructions Project Value – \$100 Million Architect – DBI Design Status – Under Construction

![](_page_36_Picture_0.jpeg)

# DALGETY HOUSE Townsville, QLD

The project consists of 20 levels of residential building. The tower is 60m tall with a width of 30m and depth of 30m. The building is located in Townsville which is Wind Region C to AS1170.2:2002 and has a loading some 2.5 times larger than in Sydney.

Structural Design Solutions were called in to provide some **value added engineering** as construction costs were too high. The previous structural design had a 1500mm thick raft over the whole site, 59 x 1200mm dia. piles. Through our knowledge of the Granite subgrade, we were able to increase bearing capacities by working with the geotechnical engineer. We also rationalized the core system to work more effectively.

The key structural engineering features our scheme provided are:

- Removed the raft slab and provided a simple slab on ground (125mm thick) and pile caps as required
- o Reduced the pile number to 49
- $\circ~$  Reduced half of the pile sizes from 1200mm to 750mm

![](_page_36_Picture_8.jpeg)

Client – Fortia Funds Management Builder – Parkview Project Value – \$35 Million Architect – Vavayis Architects Year of Review – Under Construction

## **STRUCTURAL DESIGN SOLUTIONS**

# SOUL Surfers Paradise, QLD

The project consists of 300 apartments in a 77 level tower over three basements of car parking. The site incorporates the old Raptis Plaza and provides a new retail precinct in the heart of Surfers Paradise. The original structural engineering design of the basement required a secant wall to be constructed in front of the existing diaphragm wall of Raptis Plaza. The secant wall would commence at the top of the existing diaphragm wall at natural ground and would extend to a depth of one additional basement below the toe of the diaphragm wall.

Structural Design Solutions were called in by Mainland Civil to provide some **value added engineering** in the design of an alternative shoring system. Working together with Douglas Partners and Bauer, Structural Design Solutions took the lead role in the design of a new shoring system which had never been done in Australia.

The new shoring system introduced the Soil Mix System which involves a triple auger that mixes a cementations grout into the sand. Steel soldiers are inserted into the soil mix wall at 750mm ctrs to provide the global structural shoring system. The Soil Mix wall commenced from the toe of the existing diaghram wall and extends down the extra basement required. A capping beam was detailed to tie the Soil Mix wall to the diaphragm wall thus providing a monolithic element.

The key structural engineering features this scheme provided are:

- Introducing the Soil Mix system into Australia.
- Saving Time in installing the shoring system and making the site clear for Grocon to mobilise tower pile drilling rigs.
- Reducing the construction costs of the shoring system by \$500k.
- Using the existing diaphragm wall as the temp and final shoring thus eliminating the wastage of a double wall.

![](_page_37_Picture_10.jpeg)

![](_page_37_Picture_11.jpeg)

Client – Juniper Builder – Grocon Constructions Project Value – \$850 Million Civil Contractor – Mainland Civil Status – Under Construction

![](_page_38_Picture_0.jpeg)

# PROJECT DATA SHEETS

# WEST AUSTRALIA

![](_page_39_Picture_0.jpeg)

# PERTH PROJECTS

Structural Design Solutions has been actively involved in the delivery of project throughout Australian including **West Australia**. Through our joint venture partner **ETEC Consultants** we have been involved in many Perth based projects. This joint venture arrangement allows Structural Design Solutions to offer our National clients widespread coverage.

#### 432 Murray St, PERTH

7 levels of A grade quality office accommodation.

Our Services Included:

- o Post Tensioning Options
- o Stability Design
- o Design Review

#### Douro Place, WEST PERTH

10 level residential building.

Our Services Included:

o Stability Design

#### 124 Wittenoom St, EAST PERTH

6 level residential building.

Our Services Included:

o Stability Design

![](_page_39_Picture_17.jpeg)

![](_page_40_Picture_0.jpeg)

### STRUCTURAL DESIGN SOLUTIONS

CONSULTING ENGINEERS

### STRUCTURAL DESIGN SOLUTIONS

PO Box 245 Five Dock NSW 2046 Australia **Ph: +61 (0) 2 9712 4700** Fax: +61 (0) 2 9712 4733 Email: engineers@structuraldesignsolutions.com.au