

Damien Crough Technical Leader Schiavello Modular & Prefab Building Division

Founding Director & Board Chair PrefabAUS



Advancing Modular Construction

Damien Crough – 13 years in Modular Construction



PROJECT Little Hero

Address 16-30 Russell Place, Melbourne IIIIII

1

FA

MODULES

75

APARTMENTS

63

VALUE

PROJECT Pegasus

Address 435-439 Whitehorse Rd, Mitcham

Π

22

Π

MODULES

92

APARTMENTS

VALUE

\$11.5m





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|----|-----|----|
| 3: | Eas | st |

ADDRESS 37-39 Bosisto St, Richmond

MODULES 63

APARTMENTS **57**

value **\$13m**



PROJECT One9

ADDRESS 19 Hall St, Moonee Ponds Vic

MODULES

36

APARTMENTS

34

VALUE





PROJECT The Schaller Studio

OPERATOR Art Series Hotels

ADDRESS 62 Lucan St, Bendigo Vic

MODULES

коомs 128



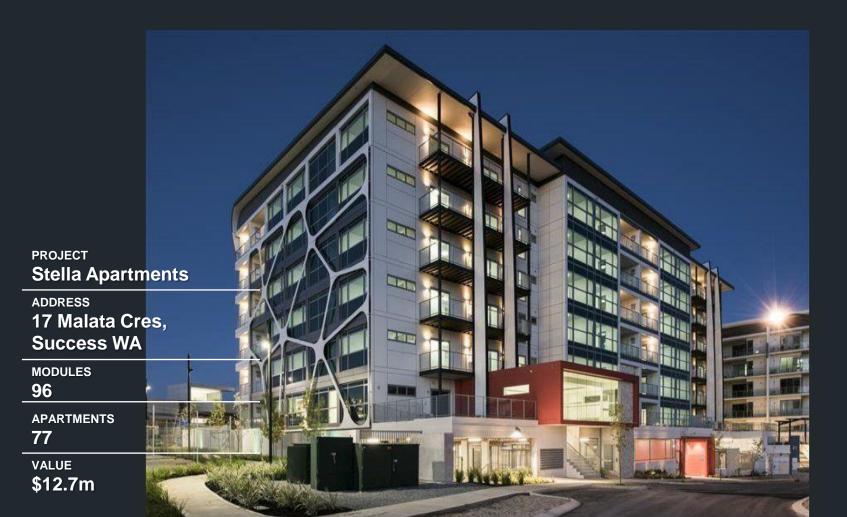
PROJECT Elaine Terminal Station

ADDRESS Lot 51, Government Rd, Elaine VIC

MODULES

4

VALUE









> Sustainability benefits

Case study example

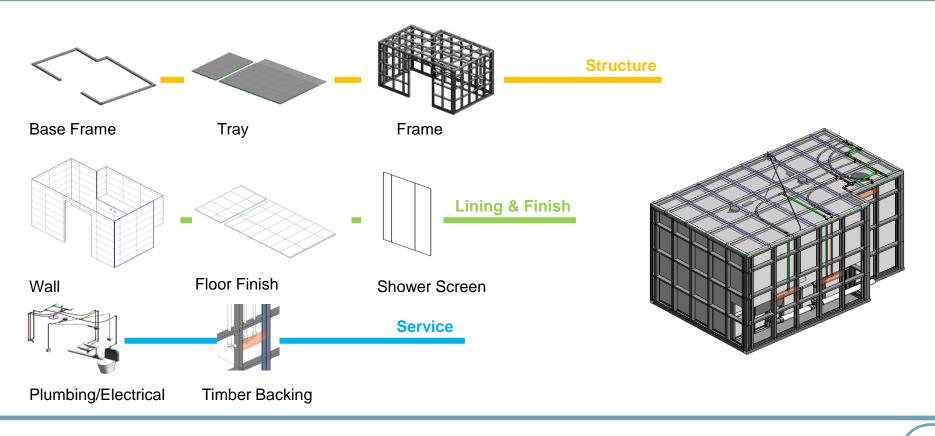
> What are the opportunities in Australia?

> Sustainability benefits

- Minimal waste
- Recycle
- Re-use

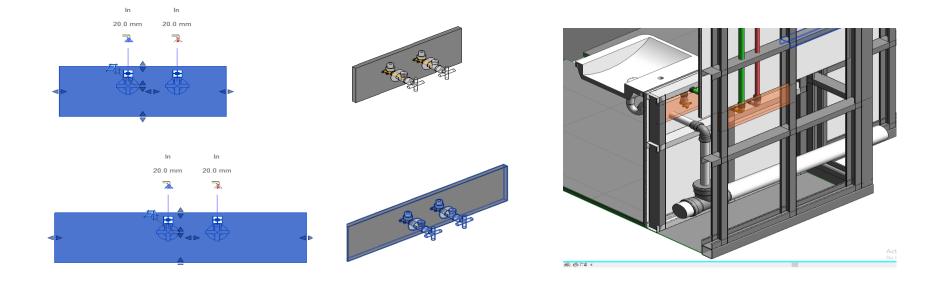


Pod Model Structure

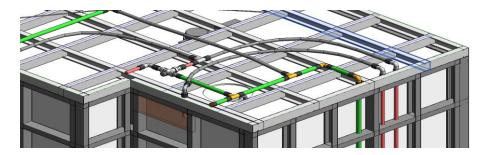


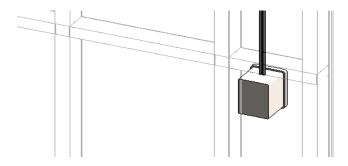


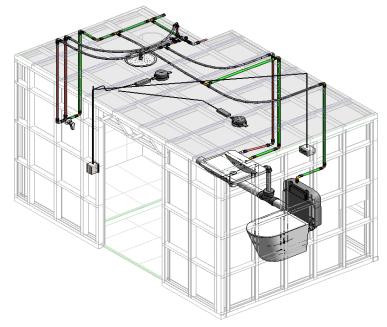
Services supports Incorporated





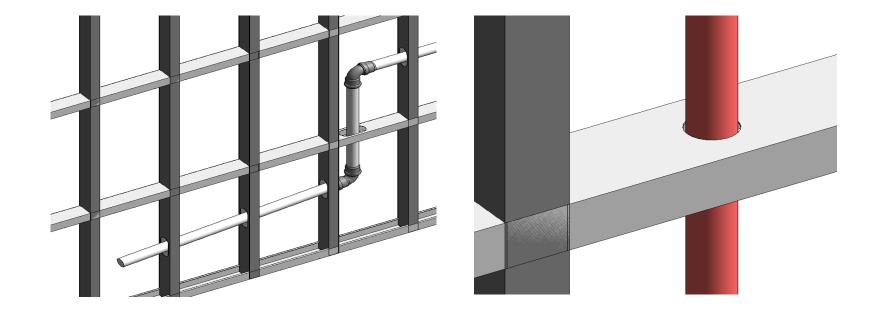








MEP Penetration





Modeling Workflow



- Adjust dimension based on drawing and schedule:
 - Width
 - Height
 - Length
 - Finish thickness
 - Substrate thickness
 - Change door dimension



- Add features:
 - Hob wall
 - Opening
 - Internal wall
- Add fixtures:
 - Toilet
 - Basin
 - Shower

Step 3: Framing



Turn Placeholder
 Wall into Frame



Modeling Workflow

Step 4: Services

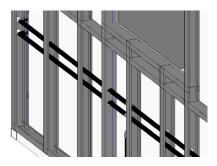
- Group Fixtures into their system
 - Hot water
 - Cold water
 - Sanitary
- Run routing for each system

Step 5: Adjustment



- Adjust Frame direction, spacing, pipe location to avoid clashes
- Add accessories
- Adjust timber backing

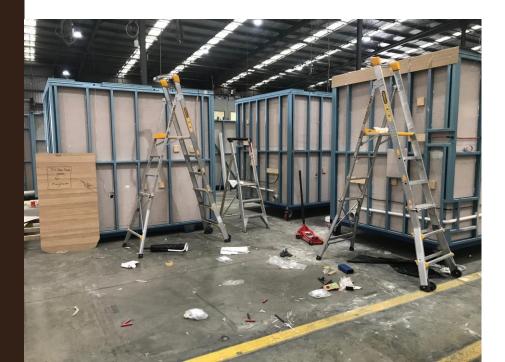
Step 6: Penetration

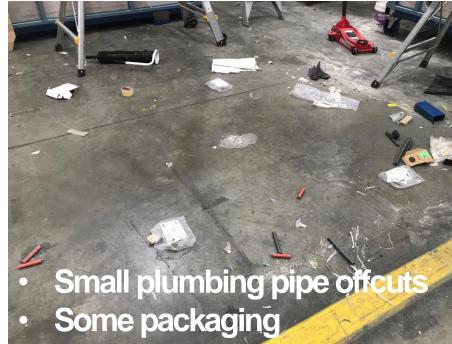


- Run clash detection to detect clashes between elements
- Create penetrations



> Minimal Waste







Recycle & Re-use



Punch outs for service
 penetrations is the only waste





Case study example - Urbanest Student Accommodation 599 Swanston Street Melbourne

Urbanest Student Accommodation 599 Swanston Street Melbourne

- Builder ICON CO
- 423 Schiavello Bathroom Pods
- Production rate of 10 pods per day



> 599 Swanston Street - Urbanest Student Accommodation

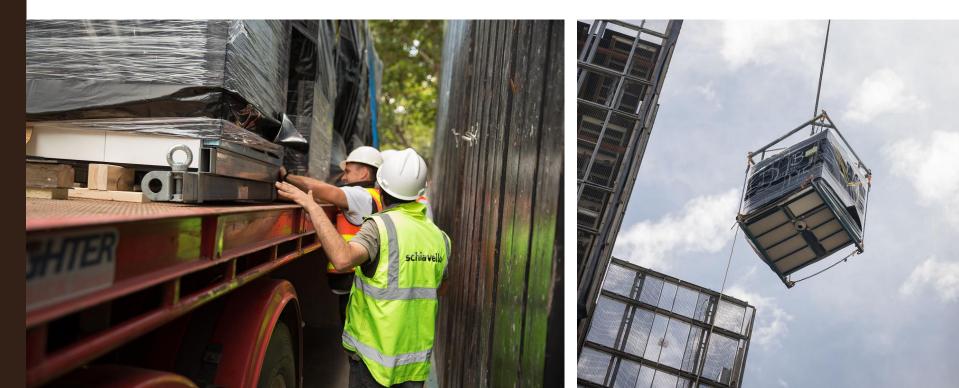




> 599 Swanston Street - Urbanest Student Accommodation



> Pod transport and lifting on site



Illawarra Retirement Trust Apartments, 27A Stewart Street Wollongong

- Builder Infinity Construction
- 138 Schiavello Bathroom Pods
- Production rate of 10 pods per day



https://www.youtube.com/watch?time_continue=40&v=Khz1bcg2xUQ

> Illawarra Retirement Trust Wollongong







PARKROYA

ParkRoyal Hotel Parramatta Extension

- Builder Infinity
 Construction
- 91 Schiavello Bathroom Pods
- Production rate of 10 pods per day



> Parkroyal Hotel Parramatta





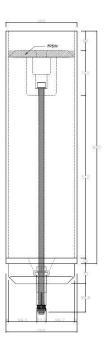


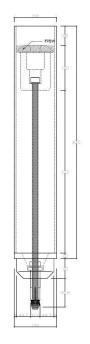
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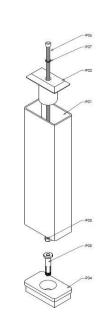
Schiavello SPEC Structural System 10 - 35 levels

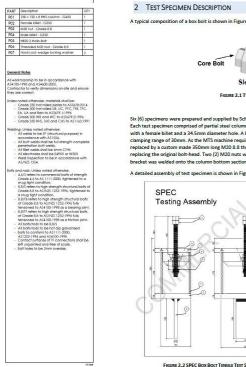


SPEC – Single Pin Expansion Clamp - post tensioned steel column connection













Six (6) specimens were prepared and supplied by Schiavello for testing based on the sketch presented in Figure 2.2. Each test specimen comprised of partial steel column section (250×150×6.0 RHS) formed by 20mm thick top end plate with a female billet and a 34.5mm diameter hole. A HB20-1 box bolt will be fastened into the female billet with a clamping range of 30mm. As the MTS machine required gripping of the specimens, the original bolt provided has been replaced by a custom made 350mm long M20 8.8 threaded rod. An M20 nut has been welded against the threaded rod replacing the original bolt-head. Two (2) M20 nuts were placed and welded at the far end (top) of rod and an inverted Tbracket was welded onto the column bottom section to facilitate gripping and pulling during the testing process

A detailed assembly of test specimen is shown in Figure 2.2 below

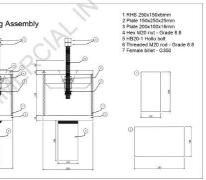


FIGURE 2.2 SPEC BOX BOLT TENSILE TEST SPECIMEN ASSEMBLY (DRAWN AND PROVIDED BY SCHIAVELLO)

- A prototype of the design has been constructed and erected as a demonstration of the chosen building systems
- The system came together extremely quickly





- A prototype of the design has been constructed and erected as a demonstration of the chosen building systems
- The system came together extremely quickly





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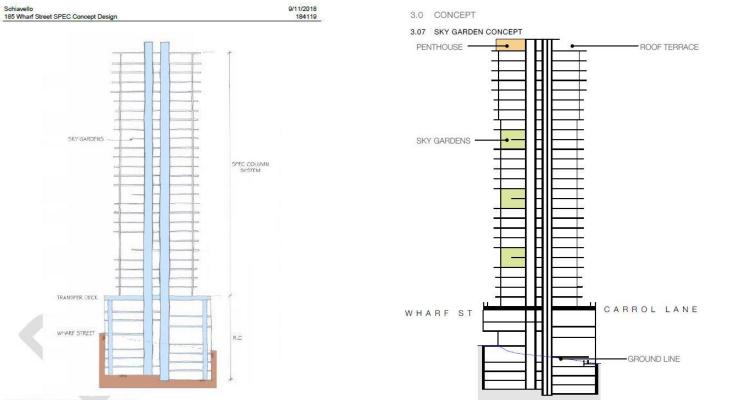
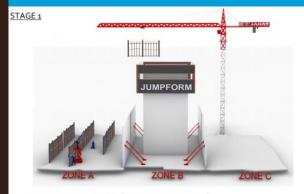
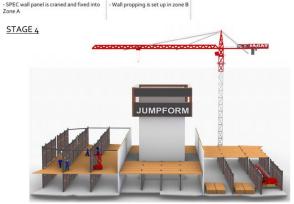


Figure 4: Proposed Building Envelope Breakup



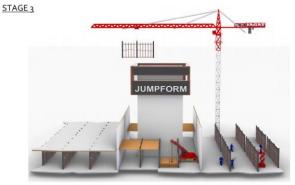


- Temporary bracing is removed after screed is dry - SPEC Walls are installed in for second level, Zone A - Workers repeat stage 1

- Lobby slab is formed in Zone B - CLT panels are stacked and stored in vacant locations in Zone C - CLT panels are installed above SPEC walls in Zone C



- CLT panels are stacked and stored in vacant locations in Zone A - CLT panels are installed above SPEC walls in Zone A - Wall propping is set up in zone B - Panel is fixed into Zone B



IT INTERIO

- Screed is paved above CLT in Zone A - CLT panels are stacked and stored in vacant locations in Zone B C C CLT panels are installed above SPEC walls in Zone B C C

| System Type | Cycle Time | System Weight | Construction complexity | Craneage | Pump reliance |
|---|---------------|------------------|----------------------------|----------|------------------|
| Traditional Reinforced Concrete/Post Tensioned | | | | | |
| Steel/Composite Decking | | | | | |
| SPEC/Composite Decking | | | | Į. | |
| SPEC/CLT | | | | | |

Corrections – Stackable Modular Cell





