Aesthetic and efficient precast cladding and structural solutions

Introduction

- FP McCann was established in 1947 and incorporated in 1979
- Currently 12 manufacturing sites in the UK
- Annual turnover in excess of £170 million
- Over 1500 employees
- Business is spread over 6 divisions
- **Precast Concrete Division** added to its portfolio the purchased Bell & Webster in January 2014 and again in November 2015 with the purchase of Buchan Concrete. Both businesses compliment each other with B & W manufacturing grey concrete frames and Buchan manufacturing architectural concrete sandwich panels – both companies are now known as **FP McCann Ltd**
Contents: Aesthetic considerations

Crosswall or ‘room’ solutions

Architectural sandwich cladding panels

Hollowcore floors

Byley Site
Grantham Site

What we provide

- Estimate
- Design
- Manufacture
- Installation

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Crosswall construction

Crosswall construction comprises a number of factory engineered concrete components including:

- Walls
- Floors & Ceilings
- Stairs & Landings
- Lift Shafts
Crosswall Construction

- External walls with window openings
- Internal dividing walls
- Walls are stitched together to form load bearing joints
- Ties in every unit
- Prestressed flat slabs spanning from cross wall to cross wall and are recessed to receive bathroom pod
- Pod forms part of corridor wall and service riser
- Floor slabs are stitched together and act as a diagram providing lateral stability

Components

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Hotels

Residential

Student accommodation  Secure Accommodation
University of the West of England Case Study

The Scope
24 house blocks
1974 rooms
374 Communal areas
Staircase & Landings
Installation of Bathroom Pods

Programme
39 week erection
50 rooms / week
House block every 8 working days
Manufacture

- Large manufacturing facilities
- Committed investment programme
- Battery Moulds
- Steel beds
- Tilt-up tables
- Large storage area
- Experience of co-location
- Superior quality
- Award winning approach to safety

Steel faced moulds
• Concrete is poured into reinforced moulds. Typically self compacting

• Formed face typically ‘as struck’ type C as internal walls

• Upper surface is an ‘unformed finish’

Flat Beds and Tilt beds
Vertical Battery Mould

• Concrete is poured from the top of the mould using self compacting concrete.
• Vertical battery moulds provide a class ‘C’ finish and are used for party walls.

Quality control
Floor slab
Soffits exposed, floor ready for direct carpet

Cast in recess for bathroom pod
Integrated services?

Prefabricated and stored
Construction

Panels are delivered directly to site in line with the construction programme

Construction

Wall units are lifted directly from the delivery vehicles into place – no scaffolding
Floors fixed
Integrated barriers
Tying and grouting of joints as structure is erected

Walls and bathrooms pods positioned

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Minimal internal finishing
Joints sealed by fabricator

Units directly decorated
Lighting conduit cast in
Direct decoration

- Decorators preparation
- Walls to receive a mist coat and two coats of emulsion
- Spray finish preferred

Electrical services built into furniture

Flexibility for the life of the room
Electrical services built into furniture
Flexibility for the life of the room

Construction
Early internal decoration
External cladding off of the critical path
Construction
Or concrete sandwich panels – self finished or brick faced
Factory installed windows…. or on site.

Motel One, Manchester
Architect: Hodder + Partners
Main Contractor: Russells Construction
Completed 2015
330 bed hotel
14 storeys
Concrete crosswall construction with architectural concrete (recon) cladding panels
Build programme for precast: 35 weeks
Actually built in 22 weeks
Acid etched precast concrete sandwich panels

Construction
Cross wall, bathroom pods, insulated sandwich panel facade
Eastside Locks, Birmingham
Glenn Howells Architects
Sandwich Panels - Various Finishes

Ashlyns Sports Hall
Ribbed Textured
Baltic Triangle, Liverpool

Feldhaus Klinker Multi Red

Celina Klinker Gronable Metallic

Barons Quay
Ibstock Smooth Black Glazed Brick Slip
Brick slip faced panels

Setting out in the mould

Brick slip faced panels

Pointing in the mould – colour as required
Brick slip faced panels
Re-inforcement

Power floating the unformed face (back of the panel)
**Sandwich panels**

Low conductivity wall ties between slabs and insulation

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**Premier Inn Hotel, Manchester**

193 Bedrooms

Roger Stephenson Architects
Premier Inn, Manchester
Aston Smooth Brick

Cut brick set out in the mould
Detail: Brick plus ‘special’ return

Detail: Joint size and location
Withington Girls School, Manchester

Architect: Levitt Bernstein
Structural Engineer: Civic Engineers
Main Contractor: Seddon Construction
Completed 2015 (18 months after architects initial appointment)
Withington Girls School, Manchester

Crosswall construction with brick faced sandwich panels as flanking walls

Precast columns dividing the bays
Precast fins and bands of façade fixed through insulation, back to structure

Rustic style brick – a challenge to align in the mould. Needed to be sanded before placing, and repointed afterwards
Exposed concrete soffits – standard agreed following factory inspections of samples

Hollowcore flooring
Precast concrete hollowcore flooring units

- Prestressed concrete slabs
- Typically 1200mm wide (or parts thereof)
- 150-40mm deep depending on span
- Can be designed for long, clear unpropped spans

Precast concrete hollowcore flooring units

- Cost effective, high performing structural floor
- Effective means of providing thermal mass
- Not an architectural product
Exposed Soffits – Detailing:
Points to consider

Be realistic about achievable finish

- Typically an ‘A’ grade finish
- Always an as struck finish (although some touching up will be required for grade B)
- Benchmark samples with manufacturer early to align expectations
- No over wiring of units to be permitted in manufacture
Exposed Soffits – Detailing:
Or consider a painted soffit

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Exposed Soffits – Detailing:
Consider layout and cut locations

- Different slab depths (and different manufactures) have differing cutting zones
- Flexibility on cut widths units reduces in-situ strips (CDM/visual)

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Exposed Soffits – Detailing:
Setting out

- Uniform layout to reduce visual impact of camber
- But non-cut edges together

Exposed Soffits – Detailing:
Hide cut edges

- Cut edge hidden by non load bearing steel
- Non loading bearing steel introduced to eradicate site propping (CDM)
- No temporary works required (CDM)
- To reduce cost steel angle or plate can be stitch welded
- Tidy detail to contain concrete infill
Exposed Soffits – Detailing: Control drilling on site

- Drainage holes are required to be drilled on site to drain the cores
- Control and align carefully
Thank You

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