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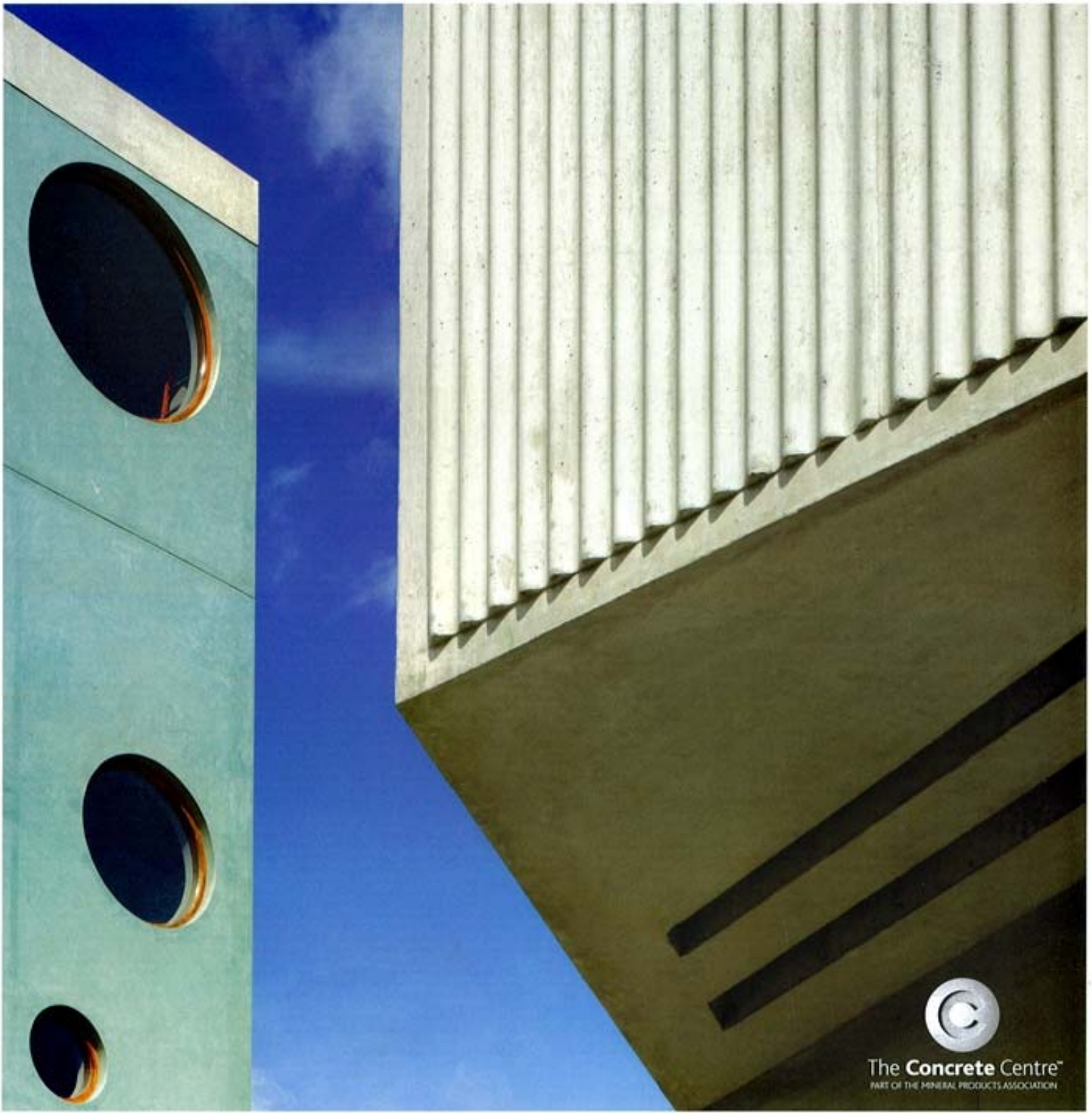
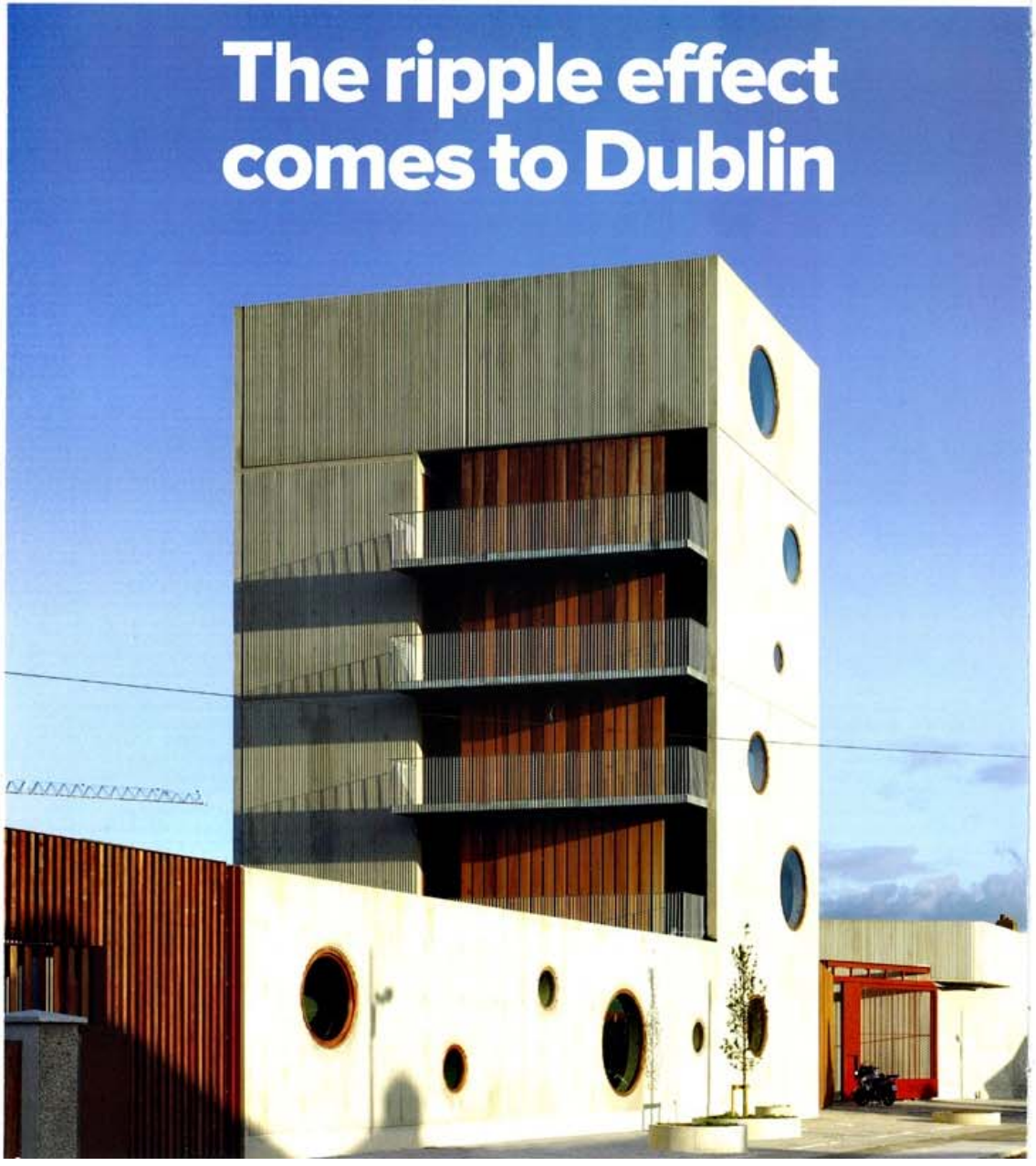
Luck of the Irish
O'Donnell & Tuomey cares for this Dublin community and it shows in the practice's new Sean O'Casey Centre

Turkish delight
From Taut to Tabanlioglu, Dennis Sharp examines the history of modern architecture in Turkey

Outer beauty
Projects in Brighton and the Netherlands reveal precast concrete cladding is more than just a pretty face



The ripple effect comes to Dublin



Quirky detailing and a clever use of poured concrete give this new community centre a dramatic impact

By Graham Bizley

Set in a neighbourhood of two-storey brick terraced houses, the corrugated concrete walls and circular windows of the Sean O'Casey Community Centre make a distinctive new landmark in the Dublin district of East Wall. The building houses four main facilities – a crèche, daycare facilities for the elderly, a 153-seat theatre and a sports hall – all sharing a single entrance.

Irish practice O'Donnell & Tuomey won the commission in a competitive interview in 2006. The different elements of the brief are arranged around four courtyards that provide the necessary separation between activities while also allowing oblique visual links between them. "We were concerned to maintain the complexity and make it a social building," says John Tuomey.

A five-storey tower rises above the main mass of the building containing classrooms and administration offices. The community groups that make up the client body wanted a large building which would be visible as a symbol of the regeneration of the area. The tower is compact in plan but in the context of the surrounding housing, has a powerful presence reminiscent of the grain silos and warehouses that once characterised the dockland landscape.

The concrete external walls are textured with a ribbed pattern giving the building a robust presence on the street. Three sizes of circular timber window are scattered playfully across the elevations. Small portholes at eye level, middle-size windows at desk level and larger openings at body scale provide welcoming glimpses between the world within and the community outside.

In contrast the internal courtyards are lined with iroko-framed glazed screens, the top and bottom members of which are concealed in the floor and by the roof soffit so the relationship between inside and outside is very direct. The courtyard gardens have been planted like miniature woodlands with oak, birch and hazel, the trunks of which will visually mingle with the vertical mullions. The iroko elements have been left unsealed so will soon fade to grey like the concrete.

The external walls, upper floors and roofs are all concrete, cast in situ (see detail, page 8). To form the ribbed pattern the contractor initially proposed a German proprietary form liner system, but this was proving uneconomical for the limited number of pours required. As a cheaper alternative, corrugated galvanised steel sheets from the local builder's merchant were tried, fixed to the inside of standard plywood shutters. With a bit of practice these were found to give excellent results and were easy to adapt on site. The tricky thing with the sinusoidal shape was to seal all the edges. Adjacent sheets were lapped by 1½ corrugations and compressible seals were used at the edges.

Opposite
The centre's tower rises five storeys above the East Wall neighbourhood.
Above
Reception area with circular rooflights.
Below
Courtyards have been planted with trees that will visually mingle with the vertical mullions.

Achieving the carefully proportioned elevation patterns involved close coordination of day-joints between the architects and structural engineer Casey O'Rourke. Ideally the pour sizes needed to be small to avoid shrinkage cracking without the need for excessive reinforcement. The walls and parapet were therefore cast in full-height sections so that the only horizontal joint is at the bottom between the plinth and wall. Proprietary starter bars were cast into the walls to support the roof and intermediate floors of the tower.

Day joints were difficult to form neatly in the corrugated formwork so flat sections were introduced that could be rubbed down once the formwork was struck. These recesses introduce another layer of proportion to the facades and give the ribbed areas a more crafted feel. Internally the same attention was given to the exposed concrete soffits. The joints were all set out and the surface was rubbed by hand once the phenolic-faced birch plywood formwork was removed.

Different spaces within the centre have different linings: the sports hall is faced with OSB board, the theatre with birch plywood and the ▶

PHOTOS: DENNIS GILBERT/VIEW

daycare centre with lacquered MDF.

There was previously a dilapidated school building on the site and ground conditions were generally poor as much of the docklands area is reclaimed land. Rather than using piled foundations a cheaper alternative was to improve the ground using vibrated stone columns. This technique involves boring a hole and filling it with stones which are then compacted into the soil. For this project the columns needed to be about 8m deep and at between 1.5 and 3m centres.

Numerous trials and samples were carried out on site, resulting in a remarkably high quality finish. The cost was by no means cheap at €7.9 million (£6.5 million) for a 2080sq m building, particularly when you think of the cheap and not-so-cheerful buildings community centres normally inhabit. However the Dublin Docklands Development Authority, which provided half the funding, was after more than just a functional building. The Sean O'Casey Centre, which opened earlier this year, has succeeded in providing a symbol of the regeneration of the whole district, one from which the whole community can benefit and take pride.

PROJECT TEAM
Architect: O'Donnell & Tuomey
Client: Dublin Docklands Development Authority
Structural engineer: Casey O'Rourke Associates
Contractor: PJ Hegarty & Sons

Left
Circular windows are cut out of the in the exterior concrete walls.

■ For a video tour of the Sean O'Casey Centre, visit bdonline.co.uk

Sean O'Casey Community Centre

Corrugated concrete walls with circular cut-out windows define the community centre's outer shell. The load-bearing walls were cast in situ using corrugated galvanised steel sheets screwed to the plywood face of the formwork. Circular voids were formed by fixing plywood drums to the formwork. The windows frames are unsealed iroko.

To control shrinkage cracking the walls were poured in a number of sections so one section would have a few days to dry out before the next section was poured. Day joints are concealed in flat strips that also serve to break the walls up into corrugated panels.

The roofs are also cast in situ concrete with the smooth soffit exposed on its underside. The concrete walls and steel supports are built off reinforced concrete strip foundations which bear on compacted stone columns.

Internally the building is arranged around courtyards surrounded by glazed screens. Around the courtyards the roof is supported on steel columns cast directly into the roof slab. The columns are at close enough centres that the concrete can form a beam between them.

Detail drawing by Graham Bizley

Cut-away section through dining area and courtyard

1. Foundations
1200 x 400mm reinforced concrete strip footing below external wall on 50mm sand blinding.
900 x 300mm reinforced concrete strip footing below steel columns on 50mm sand blinding.
Vibrated stone columns at varying centres.
Ground floor slab thickens at edges to 400 x 400mmm at courtyard perimeter.

2. Ground floor
55mm brick pavers with two coats clear sealant.
100mm screed with under-floor heating pipes cast in.
25mm service void formed between edge of screed and wall using 18mm WBP plywood formwork.
75mm urethane insulation.
Damp proof membrane laid over slab and finished 150mm above floor level in cast-in groove in concrete upstand.
265mm-thick reinforced concrete slab, thickening to 400 x 400mm at courtyard perimeter.
50mm blinding and 200mm compacted hardcore.

3. External concrete wall
500mm-high x 250mm-wide reinforced concrete kicker with hydrophilic strip on top.
300mm-thick reinforced concrete wall cast in situ with corrugated surface and class C finish externally.
Internal breather membrane bonded to DPM base.
100 x 75mm softwood studs at 400mm centres.
100mm high density insulation between studs.
Vapour barrier.
75 x 25mm softwood battens forming 25mm service void.
15mm skimmed plasterboard internal lining with painted finish.

4. Concrete formwork
1220 x 3810 x 0.4mm corrugated galvanised steel sheets nailed to plywood and holes sealed.
Sheets overlapped by 1½ corrugations.

5. External window
Ex 150 x 75mm iroko window frame screwed to concrete via galvanised steel angle brackets.
Bituminous DPC fixed to frame, dressed over internal breather membrane and bonded to concrete.
Breathable mastic seal.
15mm skimmed plaster-board internal lining fixed to 50mm softwood studwork to form window reveal.

6. Steel support
114 x 6mm galvanised steel CHS columns at 2.5m centres to courtyard.
275 x 275 x 15mm baseplate welded to CHS and bolted to concrete footing.
Column cased in 50mm mass concrete up to slab level as corrosion protection.
400 x 200 x 20mm thick steel plate welded to top of CHS and cast into roof slab 75mm above underside.
Ten 19mm diameter x 120mm high shear studs welded to top side of plate to tie column head into reinforcement of slab.

7. Roof
Two-layer polymer modified bitumen waterproof membrane with mineral chips on exposed surfaces.
Tapered polyisocyanurate insulation varying from 110 to 270mm thick to form 1:80 fall.
1.2mm foil vapour barrier.
300mm fair-faced re-inforced concrete roof slab left exposed internally with Class C patterned finish.
Plywood formwork with joints and fixings set out to correspond with plan.

8. Rooflight
375mm-high x 75mm-wide reinforced concrete upstand.
25mm PIR insulation around upstand.
75 x 50mm softwood kerb screwed to upstand.
Top layer of polymer modified bitumen water-proof membrane dressed up vertical face and under rooflight frame.
700 / 1400 or 2100mm diameter circular extruded aluminium frame screwed to kerb to ensure 1:100 fall.
Walk-on double glazed sealed unit consisting of 21.5mm toughened laminated outer pane, 16mm air filled cavity, 6mm soft coat low-E inner pane.

9. Courtyard glazed screen
250 x 75mm iroko mullions, head and cill members.
Double-glazed sealed units.

10. Roof parapet at courtyard
250mm wide x 260mm high reinforced concrete upstand.
Glazed screen head member restrained back to upstand with galvanised steel angle bolted to concrete.
Vapour barrier.
DPM fixed to top of glazing frame.
44 x 80mm (tapering to 70mm) treated softwood battens fixed to upstand.
18mm WBP plywood fixed to battens and glazing frame.
Top layer of polymer modified bitumen water-proof membrane dressed up and over plywood.
3mm galvanised steel coping fixed to plywood.

11. Rainwater system
100mm diameter x 1m long stainless-steel pipe between paired mullions.
Stainless-steel chain fixed through hole in bottom of pipe to take water to ground.
900mm diameter reinforced concrete ring supported on 500 x 150mm reinforced concrete footing.

PHOTO: EDMUND SUMNER