Case Study Olympic Stadium Seating Conversion:

Our Client: BDN Construction Limited, Nottingham UK.

About BDN: BDN are specialist paving, kerbing and groundwork's contractor, based in Nottingham and working throughout the UK on many prestigious contracts.

Contract: London Olympic Stadium Conversion (Pre Tender testing).

Main Contractor: Balfour Beatty £154 Million.

Contract Press Release: http://www.theguardian.com/business/2014/jan/06/balfour-beatty-wins-london-olympic-stadium-west-ham-contract

Scope of works: Construct 19 no holding down bolt boxes for test erection of the new flexible seating conversion to a football stadium for West Ham Utd. Seating is also removable and re-configures for athletics. Stadium will be used for 2015 Rugby World Cup.

Site address: Airfield at Long Bennington, Newark.

Brief:

Fast-Form Systems Ltd were approached by Brett Noble MD of BDN Construction Ltd to supply a formwork system to construct 19 no bolt bases ranging in sizes from 1.3m x 1.3m x .9m deep to 3.9m x.1.9m x .9m deep, including hire of all ply (Wysaform MDO used) and materials required delivered to site in Newark in 2 days time.

The other systems considered were traditional timber shutters and well known panel system so we are able to show cost & time comparisons which are shown below.

Fast-Form provided the lowest quotation for the works and was also asked to install the system, this was then passed to one of our nominated who undertook the contract on a supply and fix basis.

The boxes had to be finished by Wednesday 19th March at the latest for the steel contractor to start erecting the seating. All boxes had to be shuttered at once so no re-use of materials!

The contract was awarded on Thursday 13th March 2014, on Friday 14th work on site with 2 men. 12 boxes were ready and poured on Monday 17th and the last of the boxes was poured at 1pm on Tuesday 18th March. All shutters stripped and removed from site by 9.30am Wednesday 19th March. Huge savings in cost due to lower hire and reduced labour.

You will see from the photo's that we have used timber rails to extend the centres of the brackets to reduce the number of brackets per base this was in part due to the short notice of the order which meant we were low on stock and also to show how less brackets can be used if you use a rail.

We also we tested smaller brackets strength by extending their height with 4 x 2 so a 600mm high bracket poured a 900mm high base proving the bracket can take much more than its own height in pressure. Normally ply would be applied directly to the brackets with no timber rails but at closer centres.

Alkus ply was used to demonstrate the strength of the new German ply with no rails at 600mm centres. Alkus will shortly be offered on a hire and sale basis.

Comparisons cost:	Fast-Form	Panel System	Traditional Shuttering
Hire / Cost	£1725.00 1 weeks hire included all ply and timber, fixings. No other props or material required. Drill bits / plant hire etc: £400	£2400.00 Min 2 week hire Prop hire: 200 no £600 Drill bits / plant hire etc: £400	Ply 50 sheets: £1500.00 4x2 600m: £900.00 Nails etc: £100.00 Prop hire: 200 no £600 Drill bits / plant hire etc: £400
Delivery / collection	£70 each way No forklift required Non articulated transport	£200 each way Forklift req'd Articulated transport	£1000 Labour included to strip/ de-nail or load. Materials require storage or disposal afterward and are not included in costs.
Make up shutters	Not required	Not Required	2 men 5 days £1500.00
Installation time including hanging 96 holding down bolts	3 men 3 days £1350.00	2 men 10 days £3000.00	2 men 5 days £1500.00
Total cost	**£3615.00**	**£6800.00**	**£7500.00**
Duration	3 days	2 weeks	2 weeks
Comparisons use:	Fast-Form	RMD	Traditional Shuttering
Speed of system	Lightweight and fast to erect, no make-up required	Metal panels and rigid sizes mean oversizing some bases resulting in higher concrete costs or ply inserts resulting in more time to fit	Make up of shutters double duration of the contract, also timber needs stripping and de-nailing and needs to removed from site
Environmental	Low carbon footprint	High carbon footprint	High carbon footprint
Weight of system	Lightweight all brackets can be lifted easily by hand max weight 12kg	Heavy system with panel weights in excess of 100kg, needs mechanical lifting	Shutters when made are heavy and can exceed 100kg
Safety	Come with full structural calculations for loadings	Come with full structural calculations for loadings	No calculations available.

Pictures: