Precast & GFRC

Pre-Qualification Profile

Xtramix International Precast L.L.C., P.O. Box 32020, Abu Dhabi, UAE
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Email: precast.office@xtramix.ae
Where precast is taken to a higher level
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Vision, Mission and Values
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Commercial
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Short Description of the Production and Erection of Precast Concrete Elements

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Xtramix Turnover Hits US $217m on pre-cast boom (Construction Week)
Prepared for Action (Construction Week)
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INTRODUCTION

• Who is Xtramix?
• Vision, Mission & Values
• What We Can Do?
Who is Xtramix?

Xtramix International Precast L.L.C. (XIP) and Xtramix Concrete Solutions L.L.C. (XCS) are members of Al Jaber Group, a leading conglomerate general contracting group operating in the UAE for the last decades.

Since their establishment, XIP and XCS have been contributing to the development of Abu Dhabi’s construction sector. The two companies employ over 1600 personnel.

The XIP factory is located in Abu Dhabi Industrial City III and lies over 200,000 square metres. The factory is equipped with the most up-to-date production equipment available for the first time in the Middle East. It has 20,000 square metres of production area and a well equipped storage area for finished elements, equal to 30,000 square metres. XIP has imported the latest technology in the precast industry from the leading European manufacturers.

It uses fully computerised systems from design to delivery and is all done so according to International standards. This is combined with the group’s local experience to satisfy the local market’s need.
Vision
Our vision is to exceed our customers’ expectations, ensuring our products are of the highest quality in accordance with national and international standards.

Mission
Our mission is to be the best provider for a wide range of precast products and services in the construction industry.

Values
Xtramix International Precast demonstrates full commitment to its core values, ensuring a customer service-orientated approach amongst all of its employees.

EXCEPTIONAL CUSTOMER SERVICE
Our commitment is to maintain solid and long-term business relationships, not only with our clients, but also with our suppliers and consultants.

LEADERSHIP
Our highly professional, experienced and outstandingly competent management and employees are continuously developing new ways to improve our quality of work and service.

INTEGRITY
We are transparent, honest and innovative when it comes to being ethically unyielding corresponding our attitudes to our words.

QUALITY CONTROL AND ASSURANCE
The provided products and services by us are of the highest quality and we are consistently measuring the results of our performance.

HEALTH AND SAFETY
Our aim is to ensure the health, safety, security and well-being of our employees, minimising risks and observing zero incident/accident levels.

PRECISION
We are driven by a culture of discipline and superb attention to detail, which facilitates us to provide high-quality products and services consistently.

XTRAMIX INTERNATIONAL PRECAST IS PROUD OF ITS CAPACITY TO ACHIEVE THE SET TARGETS AND CHALLENGING PROJECTS’ SCHEDULES, WITHOUT COMPROMISING ON QUALITY.
What we can do?

Xtramix International Precast specialises in the design, manufacture, delivery and erection of quality precast products for the construction industry.

Our services include:

- **Design**
The Design department prepares structural design calculations and all drawings needed. The drawings include: layout drawings, elevation drawings, drawings for erection details and detailed shop drawings. The shop drawings include rebar arrangement, position of lifting hooks, cast-in parts, the weight and quantities of each type of panel, etc. All of these drawings are submitted to the client, the client’s representative, the consultant, the contractor, the municipality and the project management agent for approval, using the latest software specific to precast.

- **Production**
The production is planned to follow the schedule for erection laid down by the company to fulfil the desired delivery rate. Moreover, we have the latest software from Germany for planning the production of precast elements, cost estimation, work preparation, follow-up analysis and invoicing for structural prefab elements.

- **Delivery**
The delivery of precast elements to site is efficient and well orchestrated. We have our fleet of flat beds, A-frames and other specialized trailers to ensure smooth delivery of elements.

- **Erection**
The erection on site is pre-planned and well coordinated to allow the elements to be erected as soon as they arrive, hence facilitating maximum efficiency.
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CAPABILITIES

• Personnel
• Equipment
• Products
Xtramix Personnel

Xtramix International Precast currently has nearly 1000 personnel working in the Management, Design, Production, Erection, Cost-control, Human Resources & Admin, Health & Safety, Planning, and Sales & Marketing departments. The workforce is highly multi-cultural and is employed from many countries around the world.

Key Personnel

<table>
<thead>
<tr>
<th>Name</th>
<th>Present Position</th>
<th>Experience (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Abdel Razzak Dajani</td>
<td>Managing Director</td>
<td>22</td>
</tr>
<tr>
<td>Dr. Tomasz Ciesielski</td>
<td>Operations Manager</td>
<td>22</td>
</tr>
<tr>
<td>Mr. Amgad Gomaa</td>
<td>Planning Manager</td>
<td>11</td>
</tr>
<tr>
<td>Mr. Youssef Greige</td>
<td>Design Manager</td>
<td>13</td>
</tr>
<tr>
<td>Mr. Ram Eskeif</td>
<td>Production Manager</td>
<td>09</td>
</tr>
<tr>
<td>Mr. Mirza Dobraca</td>
<td>Health, Safety, Security &amp; Environmental Sr. Officer</td>
<td>12</td>
</tr>
<tr>
<td>Mr. Moatasem M. Foudeh</td>
<td>Sr. HR &amp; Admin. Manager</td>
<td>12</td>
</tr>
<tr>
<td>Mr. Sohaib Hamdieh</td>
<td>Projects Manager</td>
<td>25</td>
</tr>
<tr>
<td>Mr. Robert Campbell</td>
<td>Commercial Manager</td>
<td>17</td>
</tr>
<tr>
<td>Mr. Jojimon Devasia</td>
<td>Cost Control Manager</td>
<td>12</td>
</tr>
<tr>
<td>Mr. Shaikh Haque</td>
<td>Maintenance Manager</td>
<td>20</td>
</tr>
<tr>
<td>Mr. Tayel Al Sehaim</td>
<td>Support &amp; Service Manager</td>
<td>09</td>
</tr>
<tr>
<td>Mr. Praveen Kanoth</td>
<td>QA/QC Manager</td>
<td>13</td>
</tr>
</tbody>
</table>
Senior Management & Current Number of Employees

<table>
<thead>
<tr>
<th>DEPARTMENT</th>
<th>TOTAL MANPOWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total for Precast Leading Team</td>
<td>4</td>
</tr>
<tr>
<td>Total for Sales &amp; Marketing Dept</td>
<td>4</td>
</tr>
<tr>
<td>Total for QA/QC Dept</td>
<td>19</td>
</tr>
<tr>
<td>Total for Design Dept</td>
<td>17</td>
</tr>
<tr>
<td>Total for Erection Dept</td>
<td>172</td>
</tr>
<tr>
<td>Total for Production Dept</td>
<td>527</td>
</tr>
<tr>
<td>Total for Logistics Division</td>
<td>95</td>
</tr>
<tr>
<td>Total for Planning Dept</td>
<td>5</td>
</tr>
<tr>
<td>Total for Support &amp; Services Operation</td>
<td>23</td>
</tr>
<tr>
<td>Total IT Operation</td>
<td>2</td>
</tr>
<tr>
<td>Total for HR &amp; Admin Dept</td>
<td>8</td>
</tr>
<tr>
<td>Total for House Keeping Section</td>
<td>22</td>
</tr>
<tr>
<td>Total for HSE and Security Operation</td>
<td>6</td>
</tr>
<tr>
<td>Total Cost Control Operation</td>
<td>18</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>922</strong></td>
</tr>
</tbody>
</table>
**Organization Chart**

**Legend:**
- Top Management
- Unit Leader
- Staff
- Workforce Staff
- Workforce Workforce

**GRC GROUPING STRUCTURE**

**Managing Director**
Mr. Abdel Razzak Dadani

**Operations Manager**
Dr. Tomasz Ciesielski

**Production GRC Section**

**Production Manager**
Mr. Ram Eskeif

**Production Engineer GRC**
Mr. Idries Ahmed

**Carpentry Foreman**

**Production Foreman**

**Erection GRC Section**

**Erection Manager**
Mr. Schabib Hamideh

**Erection Foreman**

**Summary of Manpower**

<table>
<thead>
<tr>
<th></th>
<th>Total MP</th>
<th>Production</th>
<th>Erection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Eng:</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Production Foreman</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Carpenter Foreman</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Erection Supervisor</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Erection Foreman</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Carpenter &amp; Carving</td>
<td>12</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Mason</td>
<td>20</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Helper</td>
<td>12</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Laminator</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Sprayman</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Erector</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Demoulding &amp; Assembly Carpenter</td>
<td>8</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>55</td>
<td>55</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note: Staff not included in the total manpower*
Xtramix Equipment

The factory has production facilities under 13,000 m² and a well equipped area for storage of finished elements equal to 18000 m². The production halls are equipped with overhead cranes of up to 16 tons capacity and the storage area has 20 tons overhead cranes.

The factory is fitted with state-of-the-art production equipment in the precast industry, available for the first time in the Middle East. This machinery includes 40 pallets (50m² each), semi-rotation system, a full scale mould table plotter, numeric controlled concrete distributors, an XY compacting, advanced vibration stations and a curing chamber for 30 mould tables. The batching plant for panels has three 1.5m³ hi-tech concrete mixers. It is also equipped with the latest technology for a controlled and accurate concrete mixing.

**Automatic concrete distributor**

**Large capacity curing chambers**

**Centrally located shifting machines**
Xtramix Equipment

“Helicopter” to allow a super smooth finish

Fully automated plotter

Hollow core slabs extruders
# Xtramix Equipment

## Solid Walls and Panels Production Line

**EBAWE, Germany**

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## Pallet Production System for the Manufacture of Wall Panels

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Pallets and Shuttering</strong></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Pallet length gross approx: 12.5m</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Pallet width gross approx: 4.0m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mould thickness: 8mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shuttering limitations: 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Admissible surface load: 400 kg/m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max. asym. Load 20 %</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td><strong>Circulating Pallet system</strong></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Central shifting unit with driver</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Fixed rollers</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Fixed friction drivers</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Push-pull mechanism</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Rails</td>
<td>370</td>
</tr>
<tr>
<td>2.2</td>
<td>Central shifting</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Fixed rollers</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Fixed friction drivers</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Push-pull mechanism</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td><strong>Curing</strong></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Curing racks with 2 x 5 tires</td>
<td>3</td>
</tr>
<tr>
<td>3.2</td>
<td>Curing chamber shutters</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td><strong>Rollers and Friction Drivers</strong></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Rollers fixed</td>
<td>450</td>
</tr>
<tr>
<td>4.2</td>
<td>Rollers lowerable</td>
<td>28</td>
</tr>
<tr>
<td>4.3</td>
<td>Friction drivers fixed</td>
<td>14</td>
</tr>
<tr>
<td>4.4</td>
<td>Friction drivers lowerable</td>
<td>12</td>
</tr>
<tr>
<td>4.5</td>
<td>Pallet buffers</td>
<td>21</td>
</tr>
<tr>
<td>4.6</td>
<td>Safety equipment - fixed roller line</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td><strong>Side shifters, rails, power</strong></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Side shifters</td>
<td>3</td>
</tr>
<tr>
<td>5.2</td>
<td>Rails</td>
<td>200</td>
</tr>
<tr>
<td>5.3</td>
<td>Power supply chain for travel</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td><strong>Cleaning</strong></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Cleaning equipment movable with suck out compressor</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Oilig equipment movable</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Concrete distributor with 2 buckets, casting width 1,5m c/w</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bucket- belt, casting span 1,5m</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Concrete distributor with span 15.000mm</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Prepared for weighing facility and auto control</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pre-selection control system</td>
<td>1</td>
</tr>
</tbody>
</table>
## Pallet Production System for the Manufacture of Wall Panels

### EBAWE

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Bucket weighing facility</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Workplace lighting</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Central lubrication facility</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Adjustable bucket height</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Track for the distributor drawing</strong></td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td><strong>Compacting equipment with high frequency vibrators systems</strong></td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td><strong>Tilting equipment</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Support</strong></td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td><strong>Carrier to carry out of the elements 25t</strong></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Rails</strong></td>
<td>100</td>
</tr>
<tr>
<td>11</td>
<td><strong>Helicopter with 1 disc</strong></td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td><strong>Plotter</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Centering mechanism for pallets</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Kommunikationsprogramm</strong></td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td><strong>Circulation system control with complete electrical installation materials and</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>all software for system management control system</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>with pc and 17” monitor c/w software for visualisation &amp; monitoring of circulation system and curing chamber</strong></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td><strong>Pallet utilisation</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>USV with USB connection</strong></td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td><strong>Shutter screw titling side H=100mm, L=6.250mm</strong></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td><strong>Shutter screw titling side H=150mm, L=6.250mm</strong></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td><strong>Shutter screw titling side H=200mm, L=6.250mm</strong></td>
<td>30</td>
</tr>
<tr>
<td>16</td>
<td><strong>Shutter with integrated magnetic system with the following lengths per pallets</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>L=3700mm, H=100mm</strong></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td><strong>L=2500mm, H=100mm</strong></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td><strong>L=1000mm, H=100mm</strong></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td><strong>L=500mm, H=100mm</strong></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td><strong>L=3700mm, H=150mm</strong></td>
<td>60</td>
</tr>
</tbody>
</table>
# Pallet Production System for the Manufacture of Wall Panels

**EBAWE**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Attachment shutter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L=3700</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H=20mm</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>H=30mm</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>H=40mm</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>H=60mm</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>L=2500mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H=20mm</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>H=30mm</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>H=40mm</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>H=60mm</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>L=1000mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H=20mm</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>H=30mm</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>H=40mm</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>H=60mm</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>L=500mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H=20mm</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>H=30mm</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>H=40mm</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>H=60mm</td>
<td>30</td>
</tr>
<tr>
<td>18</td>
<td>Tilting table 15.0mX4.8m with vibrating system</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>Stair - straight version, 16 steps width max. 3m</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>Twin beam form 12000mm<em>600mm</em>600mm</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>Battery mould 6.5m<em>3.5m with 2</em>8 pcs=16 walls per mould</td>
<td>1</td>
</tr>
</tbody>
</table>
# Xtramix Equipment

## Hollow Core Slabs and Walls Production Line

*(Nordimpianti, Italy)*

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td><strong>Element Casting - Extruder System</strong></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Motorized group and concrete feeding silo</td>
<td>2</td>
</tr>
<tr>
<td>1.2</td>
<td>Lifting arm</td>
<td>2</td>
</tr>
<tr>
<td>1.3</td>
<td>Electric cable reeling drum</td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Electric cable</td>
<td>330m</td>
</tr>
<tr>
<td>1.5</td>
<td>Forming insert for h 150mm / 8 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.6</td>
<td>Wire guide for h 150mm / 8 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.7</td>
<td>Pair of wire spacers for h 150mm / 8 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.8</td>
<td>Start plate for h 150mm / 8 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.9</td>
<td>Forming insert for h 200mm / 6no. Holes</td>
<td>1</td>
</tr>
<tr>
<td>1.10</td>
<td>Wire guide for h 200m / 6 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.11</td>
<td>Pair of wire spacers for h 200mm / 6 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.12</td>
<td>Start plate for h 200mm / 6 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.13</td>
<td>Forming insert for h 265mm / 5no. Holes</td>
<td>1</td>
</tr>
<tr>
<td>1.14</td>
<td>Wire guide for h 265m / 5 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.15</td>
<td>Pair of wire spacers for h 265mm / 5 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.16</td>
<td>Start plate for h 265mm / 5 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.17</td>
<td>Forming insert from h 300mm up tp 500mm / 4no. Holes</td>
<td>1</td>
</tr>
<tr>
<td>1.18</td>
<td>Set of changing height devices mm.300/4</td>
<td>1</td>
</tr>
<tr>
<td>1.19</td>
<td>Start plate for h 300mm / 4 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.20</td>
<td>Set of changing height devices mm.400/4</td>
<td>1</td>
</tr>
<tr>
<td>1.21</td>
<td>Start plate for h 400mm / 4 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.22</td>
<td>Wire guide from h 300mm up to 500mm / 4 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.23</td>
<td>Pair of wire spacers from h 300mm up to 500mm / 4 no. holes</td>
<td>1</td>
</tr>
<tr>
<td>1.24</td>
<td>Service platform for casting machine</td>
<td>1</td>
</tr>
</tbody>
</table>

| **2**   | **Element Cutting**                                   |      |
| 2.1     | Cutting saw 500 AM                                     | 2    |
| 2.2     | Electric cable reeling drum                            | 1    |
| 2.3     | Electric cable                                        | 165m |
| 2.4     | Water hose reeling drum                                | 1    |
| 2.5     | Water hose                                            | 165m |
| 2.6     | Diamond blade diam. 1.10 mm                            | 1    |

| **3**   | **Element Lifting and Transport**                     |      |
| 3.1     | Equalizing arm with lifting clamps                     | 1    |
| 3.2     | Telescopic equalizing arm with lifting clamps         | 1    |
## Nordimpianti Equipment

### Hollow Core Slabs

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3</td>
<td>Pulling device for transport wagon</td>
<td>1</td>
</tr>
<tr>
<td>3.4</td>
<td>Steel wire for pulling device</td>
<td>230m</td>
</tr>
<tr>
<td>3.5</td>
<td>Radio control for pulling device</td>
<td>1</td>
</tr>
<tr>
<td>3.6</td>
<td>Track for precast unit transport wagon</td>
<td>230m</td>
</tr>
<tr>
<td>3.7</td>
<td>Fixing device for track</td>
<td>460</td>
</tr>
<tr>
<td>3.8</td>
<td>Transport wagon</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td><strong>Production Bed Cleaning</strong></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Bed cleaner equipped with a rotating brush</td>
<td>1</td>
</tr>
<tr>
<td>4.2</td>
<td>Electric cable reeling drum</td>
<td>1</td>
</tr>
<tr>
<td>4.3</td>
<td>Electric cable</td>
<td>165m</td>
</tr>
<tr>
<td>5</td>
<td><strong>Steel Wire Storage</strong></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Strand stackable decolier</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td><strong>Steel Wire Stressing</strong></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Wire stressing machine</td>
<td>1</td>
</tr>
<tr>
<td>6.2</td>
<td>Holding trolley for wire stressing machine</td>
<td>1</td>
</tr>
<tr>
<td>6.3</td>
<td>Automatic single-wire stressing jack</td>
<td>1</td>
</tr>
<tr>
<td>6.4</td>
<td>Automatic single-wire stressing jack</td>
<td>1</td>
</tr>
<tr>
<td>6.5</td>
<td>Automatic single-wire stressing jack</td>
<td>1</td>
</tr>
<tr>
<td>6.6</td>
<td>Reaction Beam</td>
<td>8</td>
</tr>
<tr>
<td>6.7</td>
<td>Detensioning cylinder</td>
<td>16</td>
</tr>
<tr>
<td>6.8</td>
<td>Detensioning pump unit</td>
<td>1</td>
</tr>
<tr>
<td>6.9</td>
<td>Single wire anchor grips (type A45-34-3/8&quot;)</td>
<td>100</td>
</tr>
<tr>
<td>6.10</td>
<td>Single wire anchor grips (type A45-34-1/2&quot;)</td>
<td>100</td>
</tr>
<tr>
<td>6.11</td>
<td>Single wire anchor grips (type A45-34-6/10&quot;)</td>
<td>100</td>
</tr>
<tr>
<td>7</td>
<td><strong>Element Heating and Covering</strong></td>
<td></td>
</tr>
<tr>
<td>7.1</td>
<td>Heating Plant - 750 / 6</td>
<td>1</td>
</tr>
<tr>
<td>7.2</td>
<td>Hot water pumping device</td>
<td>8</td>
</tr>
<tr>
<td>7.3</td>
<td>Thermo - regulation system</td>
<td>1</td>
</tr>
<tr>
<td>7.4</td>
<td>Coiler holding trolley</td>
<td>1</td>
</tr>
<tr>
<td>7.5</td>
<td>Coiler</td>
<td>8</td>
</tr>
<tr>
<td>7.6</td>
<td>Nylon sheet 2 m wide</td>
<td>4</td>
</tr>
<tr>
<td>7.7</td>
<td>Nylon sheet 2.5 m wide</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td><strong>Production Bed</strong></td>
<td></td>
</tr>
<tr>
<td>8.1</td>
<td>Steel production bed</td>
<td>8</td>
</tr>
<tr>
<td>8.2</td>
<td>Set of bed extension</td>
<td>8</td>
</tr>
<tr>
<td>8.3</td>
<td>Fixing device</td>
<td>2560</td>
</tr>
<tr>
<td>8.4</td>
<td>Set of pipes for heating system</td>
<td>8</td>
</tr>
</tbody>
</table>
## Stema Pedax (Germany)

### Bending and Cutting Machinery (Reinforcement)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Special 42S pin control single benders</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Simplex 45HV Hydraulic Shearing machine</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Mafix B300 Mesh bending machine 3000mm</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Mafix 30V Mesh Shearing machine 3000mm</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Twinmaster 12 S Stirrup Bending Machine</td>
<td>1</td>
</tr>
</tbody>
</table>
Xtramix Precast Products

The diverse range of high quality products that are available is assured through compliance with international standards such as ASTM, BS, BS EN and DIN

[X] Floor and roof elements
[X] Internal walls (load bearing & non-load bearing)
[X] External walls (load bearing & non-load bearing)
[X] Cladding (facade) walls
[X] Stairs, parapets, vertical shafts
[X] Foundation units
[X] Bathroom floor units
[X] Boundary wall elements
[X] Tanks, reservoirs and silos
[X] Concrete poles for transmission lines
[X] Road barriers
[X] Balconies
[X] Ready-mixed concrete
[X] Concrete pumping
[X] Pre-stressed extruded hollow core slabs / walls
[X] Glass fibre reinforced concrete (GFRC)
[X] Architectural concrete arches or decoration designs
[X] Customized precast elements

There are more than 65 shapes and colours available depending on client requirements.
Walls

We produce the following types of walls:

**Solid walls** - both load-bearing and non-load-bearing, which are used in apartment buildings, villas, hotels and similar structures.

**Sandwich panels** consist of two concrete leaves with an insulation layer in between.

The external leaf is normally made of architectural concrete, i.e. of a material intended to add to the architectural effect of the façade, while the internal leaf is in grey concrete.
We manufacture *precast staircases* to suit a majority of combinations of architectural design, including:

- ✔ Straight
- ✔ Spiral / elliptical
- ✔ Freestanding

The method of production we use allows components, to be tailored to suit special requirements.

Since, moulds are used, the major advantage of using precast elements is that during mass production of the same element, precision is ensured.

Staircases
Columns & Beams

We manufacture precast reinforced beams and columns.

Precast beams have a rectangular cross-section and are mostly used horizontally for the structure of multi-storey buildings.

Precast columns have a rectangular or round cross-section and are mostly used vertically for structures and supports of multi-storey buildings and parking facilities.
We manufacture a wide range of precast road barriers, manholes, water tanks and foundations:

**Road barriers** are generally used to reduce the risk of an out-of-control vehicle crossing the central reservation and colliding with opposing traffic or roadway workers.

**Manholes** are used as catch basins for storm water drainage, providing access to buried pipelines and junction chambers at the intersection of sewer lines. The use of precast concrete manhole structures will reduce construction time and labour costs, when compared to cast-in-situ or masonry structures.

**Water tanks** are manufactured of various types and sizes and are usually used as components for wastewater treatment plants, industrial wastewater treatment systems or amenities for the treatment of agricultural waste.

**Precast foundations** can be used as lamp post foundation units, where the lamp posts are fastened to the foundations by anchor bolts.
Hollow Core Slabs

**Hollow core slabs** are among the most advanced products in the precast industry, particularly due to their high quality.

**Pre-stressed hollow core slabs** are pre-stressed floor elements with either round or shaped voids, depending on the local conditions.

Hollow core slabs have longitudinal cores, the main purpose of which is to reduce the weight of the floor.

Such precast elements are mainly used in buildings with large spans, for example villas, schools, hospitals, office buildings, industrial buildings and shopping centres.

We produce hollow core slabs of the following thicknesses:

- 150 mm
- 200 mm
- 265 mm
- 320 mm
- 400 mm
- 500 mm
Boundary Walls

Our **boundary walls** and **fences** are manufactured on table moulds or battery moulds. The moulded side is smooth as cast, the top face levelled and floated and various surface finishes are possible.

Boundary walls and fences are normally used to separate areas from each other, e.g. residential plots, airports and so on.
Cladding

A cladding panel is the concrete leaf that forms the outermost layer of a façade and therefore fulfils only an enclosing and decorative function.

With our factory equipment, we offer high-level of workmanship required to make cladding panels of the finest textures and profiles. Also, we manufacture cladding panels that create the impression of materials such as marble, granite or brickwork. It is normally used for prestigious buildings, commercial buildings and offices and refurbishment.

The units can be used for the facing of walls, columns and spandrel panels.

The units can be attached separately to the structure or they can be self-bearing and in general their architectural design is very flexible.

Architectural cladding panels can be supplied with a diverse variety of self and applied surface finishes, such as exposed aggregate, acid treated and sand blasted surfaces. Alternatively, patterned liners can be used to imitate natural finishes.
Glass Fibre Reinforced Concrete

What is Glass Fibre Reinforced Concrete?

Glass Fibre Reinforced Concrete (GRC) is not a single material but a range of high strength special concrete which can be engineered to suit particular products and application, such as cladding and decorative components, restoration of old structures, special finishes and sculptured shapes.

How are Glass Fibre Reinforced Concrete Products manufactured?

Glass Fibre Reinforced Concrete products are manufactured using various techniques, the most popular are:

Spray:

Manufactured by spraying a micro concrete mix, prepared in a high shear mixer, through a special spray gun which incorporates the AR glass fibre reinforcement at the nozzle; the materials are sprayed onto moulds to form thin sectioned, lightweight products.

Pre-mix:

Manufactured by mixing micro concrete with AR glass fibre reinforcement in a special two-stage mixer, the pre-mix material is poured into moulds and compacted by vibration.

Sprayed Pre-mix:

A form pre-mix is prepared with the pre-cut glass fibre reinforcement in a special mixer, and then sprayed.
What are the properties of Glass Fibre Reinforced Concrete?

Like steel reinforced concrete, GRC’s properties vary according to cement content, water/cement ratio, Alkali Resistant Glass Fibre type, content and orientation.

Traditional spray can produce the highest strength due to the high AR Glass Fibre content, low water/cement ratio, long fibre length and plane fibre orientation.

Pre-mixed strength is generally lower than that of the traditional spray method due to lower AR Glass Fibre content, higher water/cement ratio, short fibre length and 3 – dimensional fibre orientation.

The final properties of particular type of GRC materials will depend on the mix design and the method of manufacture.

Typical properties for GRC materials made using the spray up and pre-mixed processes:

<table>
<thead>
<tr>
<th>Property</th>
<th>Hand or Machine Spray</th>
<th>Vibration Cast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass Fibre (Weight %)</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Bending</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultimate Strength MPa (MOR)</td>
<td>20-30</td>
<td>10-14</td>
</tr>
<tr>
<td>Elastic Limit (LOR) MPa</td>
<td>7-11</td>
<td>5 - 8</td>
</tr>
<tr>
<td><strong>Shear</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interlaminar Strength MPa</td>
<td>3 – 5</td>
<td>N/A</td>
</tr>
<tr>
<td>In-Planar Strength MPa</td>
<td>8 – 11</td>
<td>4 – 7</td>
</tr>
<tr>
<td>Compressive Strength MPa</td>
<td>50 – 80</td>
<td>40 – 60</td>
</tr>
<tr>
<td>Impact Strength KJ/m²</td>
<td>10 – 25</td>
<td>10 – 15</td>
</tr>
<tr>
<td>Elastic Modulus GPa</td>
<td>10 – 20</td>
<td>10 – 20</td>
</tr>
<tr>
<td>Strain to Failure %</td>
<td>0.6 – 1.2</td>
<td>0.1 – 0.2</td>
</tr>
<tr>
<td>Dry Density T/m³</td>
<td>1.9 – 2.1</td>
<td>1.8 – 2.0</td>
</tr>
</tbody>
</table>
Advantages of GFRC

Lightweight structure, reduced transport and installation costs
Due to its reduced thickness, a GRC cladding panel can weight 7 times less than a similar precast concrete panel. GRC lightweight panels can be transported in light pick-up with no weight restriction, and can be erected easily without need for heavy cranes or special erection tools.

Excellent Edge and Corners Strength
Due to heavy fiber concentration in the GRC mix, GRC edges, chamfers, decorative reliefs have strong impact resistance and it doesn't spall or break during transport and installation like the normal concrete edges.

Improved Surface Details and Quality of Finish
With GRC the quality of finish is so outstanding that it allows much greater freedom and creativity in the design of intricate moldings and patterns.

Easy to mould into complex shapes
With the exceptional strength and impact resistance, GRC allows for all sorts of complex shapes and details, offering an infinite array of possibilities, from arabesques to moushrabias to sculptured columns to decorative open screens.

Maintenance Free
GRC is an inert material, unaffected by salt, freeze/thaw cycles, or corrosive atmosphere, unlike concrete, as it has no steel components, and it is not weakened or cracked by steel corrosion and can live without maintenance for long years.

Ideal for Restoration Work
All the above characteristics point to GRC as the ideal material for restoration of old buildings, facades and decorative features, as GRC can replicate exactly, or improve upon, any original feature.

Environment Friendly
GRC neither uses nor emits any volatile material and is a low energy product, therefore contributes to a safe and clean environment.
Xtramix Products
Glass Fibre Reinforced Concrete

Products Available and Typical Application

[X] Cladding Panels
[X] Architectural Moulding
[X] Restoration work
[X] Domes
[X] Cornices
[X] Decorative Screens
[X] Lightweight Buildings with Steel Structure Frames
[X] Columns
[X] Capitals
[X] Arches
[X] Coping

There are 3 basic finishing techniques coating finish, faces mix and pigmented finish
3

HSE & QUALITY

- Health, Safety & Environment
- Quality Control
- Licenses & Certification
Health, Safety & Environment

Xtramix International Precast has established a comprehensive Environment, Health and Safety Management System (EHSMS) in compliance with the requirements of Zonescorp, being the Environment, Health and Safety (EHS) Regulatory Authority for Industrial Sector in Emirate of Abu Dhabi.

XIP believes that implementation of appropriate (national & international) Design, Engineering and HSE Codes & Standards shall ensure the safe operation and eliminate incidents arising due to design deficiency or lack in Operations & HSE Controls. ISO Certification in the areas of Quality (ISO 9001), Environment (ISO14001), Health and Safety (OHSAS 18001) is the way forward to achieve the excellence in EHS management within the organization.

XIP’s HSE team looks forward to constantly striving for excellence in all aspects of health, safety and environmental related issues. The team recognises the impact that its activities can have on people and the environment. At XIP, we believe that we live in the environment that we create. Health, Safety, Environment protection and Risk Management are the integral part of our planning and decision-making. We manage our business in an ethical way that strikes for an appropriate and well-reasoned balance between economic, social, and environmental needs through effective assessment of the risks associated in conducting our business.
QUALITY, ENVIRONMENT, HEALTH AND SAFETY (QHSE)

POLICY STATEMENT

Xtramix International Precast (XTRAMIX) is committed to ensure the QHSE (Quality, Health and Safety & Environment) system is fully complying if not exceeding the requirements of the EAD, ISO 9001, ISO 14001, & OHSAS 18001, during the complete cycle of factory operation and site erection, this commitment will be presented as per the following points:


2. XTRAMIX considers that Management is most accountable for Environment, Health and Safety of each person working in, or acceding to the Factory or to the erection site.

3. To create quality culture, an environment of trust, personal integrity, mutual respect, and open communication & continually improve the QHSE MS.

4. To ensure that all Risks associated with People, Property, Process, and Environment are adequately identified and managed.

5. To develop procedure and plans to deal with all kinds of emergencies and accidents in line with Zones Corp’s requirements

6. To meet and exceed the International Standards for our industry and services.

7. To improve the quality of life of our community.

8. Setting objectives and targets at all levels and functions and striving to achieve them.

9. To reduce pollution and minimize the effect on the environment

10. To ensure the prevention of accidents in the work area through vigilance and proper Employee training and to ensure the compliance with all legal requirements pertaining to the health and safety of people.

11. To ensure the provision of sufficient information, instruction, training, and supervision.

12. Routine review of QHSE performance by Managers, supported by a proper reporting process

The XTRAMIX Management is committed to provide the resources for the effective implementation of the QHSE Policy and Management System and to ensure that our policy is communicated and understood throughout the organization. The policy will be reviewed yearly and / or if required will be amended to keep it in place with current legislation, codes of practice, and working conditions.

[Signature]
Abdel Razzak Dajani
Managing Director
XTRAMIX INTERNATIONAL PRECAST
SISTER COMPANY OF XTRAMIX CONCRETE SOLUTIONS
A Member of Al Jaber Group

QUALITY POLICY

XTRAMIX INTERNATIONAL PRECAST is committed to customer satisfaction. High quality products and services starting with design, production, delivery and erection of precast concrete components, also by complying with and continuously improving the quality management system.

XTRAMIX INTERNATIONAL PRECAST aims at achieving and periodically updating its quality objectives to suit and compete with the everyday demand and progress.

Abdel Razzak Dajani
Managing Director
INDUSTRIAL LICENSE
Preliminary License No 1649

Legal Type: Limited Liability Company
First Issue Date: 23/06/2008
Issue Date: 23/12/2010
Expiry Date: 22/12/2011

Trade Name: XTRAMIX INTERNATIONAL PRECAST-LLC
Location: Industrial City of Abu Dhabi III (36MRSA)

Owner(s) / Partner(s)

Nationality
Share (%)
0.00 United Arab Emirates
1.00 United Arab Emirates

Partner Name
1. JOAIID KALEEF JABER AL MURR
2. AL JABER HOLDING COMPANY- PSC

Activities

Activity
Precast Building Manufacturing

Products

Product
precast

Industrial License
Chamber of Commerce Membership Certificate (Arabic)
Pursuant To Law No 27 of 2005 Abu Dhabi Chamber of Commerce & Industry

Hereby Register XTRA MIX INTERNATIONAL PRECAST L.L.C

To Practice The Activities of Precast Building Manufacturing

Address Nationality of Partners Legal Form Issued on

Membership Certificate

1649

Industrial Zone License

Nationality

U.A.E.

Valid Until

2012

Abu Dhabi Chamber of Commerce & Industry

1969-2011

www.AbuDhabiChamber.ae

551297
CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

Xtramix International Precast L.L.C.
P.O. Box 32020, Mussafah ICAD III
Abu Dhabi, United Arab Emirates

has established and applies
a Quality Management System for

Design, Manufacture,
Delivery and Installation of Precast Concrete

An audit was performed, Report No. 70'83295
Proof has been furnished that the requirements
according to

ISO 9001:2008
are fulfilled. The certificate is valid until 2014-11-03
Certificate Registration No. 12 100 41748 TMS

Munich, 2011-11-00

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstraße 65 • 80339 München • Germany
CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH

certifies that

Xtramix International Precast L.L.C.
P.O. Box 32020, Mussafah ICAD III
Abu Dhabi, United Arab Emirates

has established and applies
an Occupational Health and Safety Management System for

Design, Manufacture,
Delivery and Installation of Precast Concrete

An audit was performed Report No. 7C783295
Proof has been furnished that the requirements
according to

BS OHSAS 18001:2007

are fulfilled The certificate is valid until 2014-11-03
Certificate Registration No. 12 116 41748 TMS

Munich, 2011-11-09

TÜV SÜD Management Service GmbH – Zertifizierungsstelle – Ridlerstraße 85 – 80339 München – Germany
CERTIFICATE

The Certification Body of TÜV SÜD Management Service GmbH certifies that

Xtramix International Precast L.L.C.
P.O. Box 32020 Mussafah ICAD III
Abu Dhabi, United Arab Emirates

has established and applies an Environmental Management System for

Design, Manufacture, Delivery and Installation of Precast Concrete

An audit was performed, Report No. 70783295
Proof has been furnished that the requirements according to

ISO 14001:2004

are fulfilled. The certificate is valid until 2014-11-03
Certificate Registration No. 12 104 41748 TMS

Munich 2011-11-09

TÜV SÜD Management Service mbH • Zertifizierungsstelle • Ridlerstraße 85 • 80339 München • Germany

EMS-TGJ-ZM-07-92
To: XTRAMIX INTERNATIONAL PRECAST LLC
Attn: Manager
From: COMPANY REGISTRATION DEPT.
Fax No.: 02-694 3294

Abu Dhabi Water & Electricity (ADWEA)
PO Box 6120 - Tel. (009712) 6943261 Abu Dhabi, U.A.E.

Date: 07 DEC 2011
Co. Code: 9937292
Subject: Pre-qualification of M/s. XTRAMIX INTERNATIONAL PRECAST LLC, Abu Dhabi

Co. ID: 9937292 have been qualified as local manufacturer and included in our records as a possible source for supply of the following product:

<table>
<thead>
<tr>
<th>PG No.</th>
<th>PG Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0111120</td>
<td>PRECAST CONCRETE/SECTIONS/MODULES</td>
</tr>
</tbody>
</table>

Please note that at the time of release of enquiries/tenders, a further short listing takes place based on exhibited interest at that time and the specifics of material/equipment in question as the need may be.

You are advised to quote your registration No. 9937292 in all future correspondence.

Regards,

Nadya H. Al Amimi
Companies Registration Dept. Manager
FROM FAX No. :

FACSIMILE TRANSMITTAL SHEET

TO: XTRAMIX INTERNATIONAL PRECAST LLC
ATTN: GENERAL MANAGER
DATE: 11TH DECEMBER 2011
FAX NUMBER: 02-5511425
PHONE NUMBER:
YOUR REFERENCE NUMBER:
NONE
RE: N/A

FROM: MANAGER, SUPPLY DEPARTMENT
TOTAL NO. OF PAGES INCLUDING COVER: ONE
OUR REFERENCE NUMBER:
SD/CONTRACTS/AMW/4018/11
SUBJECT: PRE-QUALIFICATION

This has reference to your e-mail dated 07th December 2011 regarding above subject.

Please be advised that your company has been pre-qualified by ADWEA in DECEMBER 2011. ADSSC currently has the same registration of companies as ADWEA and all approved vendors with ADWEA are accepted by ADSSC.

Based on the above your company is deemed to be included in the approved Vendor List for ADSSC for the following Product Group:

- 0111128 – PRECAST CONCRETE/SECTIONS/MODULES

For any queries regarding the above subject, please contact Mr. Adnan Wadiq phone No. 02-6947145.

Best Regards,

Mohamed S.S. Al Nuaimi
Supply Dept. Manager

Abu Dhabi Sewerage Services Company (ADSSC)
Supply Department
P.O.Box: 108601 Abu Dhabi, U.A.E
Tel#: 02-6947331 Fax#: 02-6947088
4

PROJECTS PROFILE

- Residential
- Industrial / Oil & Gas
- Commercial
- Transport
- Government
- Private
- Marine
The design, manufacture, delivery and erection of precast villas

Project: Al Falah Community Development
Main Contractor: Al Jaber Building
Project Duration: 33 months
Scope: 2018 precast villas - 3 types and 3 styles
Location: Al Falah, Abu Dhabi

As part of the Abu Dhabi 2030 directive, Al Falah community development project is a master planned community for UAE nationals.

As part of Abu Dhabi Government Housing Initiative, the package includes construction of 5,000 homes for UAE families.

The estimated duration of the project is from third quarter of 2009 to third quarter 2012.
The design, manufacture and delivery of underground water tanks

Project: Al Falah Community Development
Main Contractor: Al Jaber Building
Project Duration: 33 months
Scope: 2018 precast underground water tanks
Location: Al Falah, Abu Dhabi

As part of the Abu Dhabi 2030 directive, Al Falah community development project is a master planned community for UAE nationals.

As part of Abu Dhabi Government Housing Initiative, the package includes construction of 5,000 homes for UAE families.

The estimated duration of the project is from third quarter of 2009 to third quarter 2012.
The design, manufacture, delivery and installation of footings and hollow core slabs

<table>
<thead>
<tr>
<th>Project:</th>
<th>Presidential Sea Palace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Contractor:</td>
<td>Al Jaber Building</td>
</tr>
<tr>
<td>Project Duration:</td>
<td>02 months</td>
</tr>
<tr>
<td>Scope:</td>
<td>Precast footings and hollow core slabs</td>
</tr>
<tr>
<td>Location:</td>
<td>Abu Dhabi</td>
</tr>
</tbody>
</table>

The Presidential Sea Palace (Qasr Al Bahr) incorporates the development of entertainment pavilion and trellis link in the palace, where XIP had constructed the precast footings and hollow core slabs.
Residential

The design, manufacture, delivery and installation of *underground water tanks*

**Project:** Water tanks for Saadiyat Island  
**Main Contractor:** Al Jaber Building  
**Project Duration:** 04 months  
**Scope:** Precast underground water tanks  
**Location:** Saadiyat Island, Abu Dhabi

Developed by Tourism Development and Investment Company (TDIC), Saadiyat Beach is an elite residential community offering a wide range of modern and sophisticated facilities, to achieve the island’s promise of first-class living.

The primary phase of the development consists of 3-bedroom to 6-bedroom villas with varying luxuriously designed layouts in Arabian, Mediterranean and Contemporary styles. All villas are designed to exude elegance and comfort, with some of the top-end luxury villas having their own gymnasia, elevator, swimming pool and movie theatre.

Saadiyat Island will also have Saadiyat bridge and expressway, the Gary Player designed Saadiyat Beach Golf Course and the Saadiyat Experience Centre (Manarat Al Saadiyat), which will provide an overview of the island’s distinctive projects.
The design and manufacture of cable trenches and footings

**Project:** SE Full Field Development  
**Main Contractor:** Al Jaber Energy Services  
**Project Duration:** 12 months  
**Scope:** Precast trenches and manholes  
**Location:** ASAB, Abu Dhabi

ASAB EPC was awarded to Petrofac Sharjah in January 2009 and will be completed at the end of 2012.

The project scope includes additional wells, flow lines, replacement and modification of existing facilities as well as building new surface facilities that will sustain production targets from 2011 through 2045.

Such projects demonstrate UAE’s commitment to play an active role in securing future energy supplies despite the currently available space capacity.
The design and manufacture of **manholes, valve boxes and junction boxes**

**Project:** Integrated Gas Development  
**Main Contractor:** Consolidated Contracting Engineering  
**Project Duration:** 03 months  
**Scope:** Precast manholes/valve boxes/ junction boxes  
**Location:** Habshan, Abu Dhabi

The purpose of the Abu Dhabi Gas Industries (GASCO) Integrated Gas Development (IGD) project is to add new onshore and offshore gas processing facilities at Habshan and Ruwais in Abu Dhabi. These IGD project’s new facilities will enable for gas to be received from the Umm Shaif field and processed at Habshan and Ruwais.

The purpose of the project is to provide natural gas supply to consumers in Abu Dhabi and to meet their increasing requirement for energy. The project will also connect the onshore and offshore facilities of companies which are operating under Abu Dhabi National Oil Company (ADNOC).

A new complex, known as Habshan 5 is one of the project’s components, which will include a gas processing facility, a natural gas liquids (NGL) recovery unit, four sulphur recovery units and utilities in addition to other onsite facilities.

In Ruwais, new facilities will also be added to the GASCO’s already existing plant including a new NGL train and six cryogenic NGL storage tanks.

Once fully operational, the complex will have a capacity of 900mmscfd of natural gas, 12,000t/d of NGL and 5,000t/d of liquid sulphur. The propane, butane, paraffinic naphtha and sulphur produced in Ruwais will be exported. The ethane will be supplied as raw material (feedstock) to the Borouge Petrochemical Complex.
Industrial / Oil & Gas

The design and production of precast pipe supports, foundations, junction boxes and grade beams

Project: Bu Hasa Water Injection Enhancement
Main Contractor: Sicon Oil & Gas S.P.A. (Member of CCIC Group)
Project Duration: 04 months
Scope: Precast pipe supports, foundations, junction boxes and grade beams
Location: Abu Dhabi

The purpose of the Bu Hasa Water Injection Enhancement Project is to provide additional water injection capacity in Shuaiba Unit "H" north, in order to remedy the pressure depletion in this area. It will also provide pressure support to the inactive wells and help to maintain the sustainable production capacity.

The completion of the project is expected to be by the end of year 2011.
Industrial / Oil & Gas

The production, delivery and installation of full precast structure

<table>
<thead>
<tr>
<th>Project:</th>
<th>Shah Gas Development (SGD) Program – Shah Process Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Contractor:</td>
<td>BUTEC Abu Dhabi / Saipem Spa (Italy)</td>
</tr>
<tr>
<td>Project Duration:</td>
<td>09 months</td>
</tr>
<tr>
<td>Scope:</td>
<td>full precast structure for 8 substations</td>
</tr>
<tr>
<td>Location:</td>
<td>Shah, Abu Dhabi</td>
</tr>
</tbody>
</table>

The project involves the construction of 8 substations and equipment shelters along with the related MEP work.

Shah Gas Development Project will develop onshore sour gas reservoirs at Shah, an oil field, and establish grass root gas processing facilities to boost the availability of gas.

The project is being managed by Abu Dhabi Gas Development Company on behalf of GASCO.
The design, production, delivery and erection of
beams and hollow core slabs

Project: Lifecare Hospital
Main Contractor: International Construction and
Contracting Company
Project Duration: 04 months
Scope: Precast beams, hollow core slabs
Location: Mussafah, Abu Dhabi

The Lifecare hospital is being built in Worker’s Village,
Mussafah.

This project involves the construction of a 160 bed
hospital comprising of a basement level, a ground
floor and 4 additional floors.

Therefore, the building is 5 stories in structural
combination of cast-in-situ columns and precast
beams and hollow core slabs.
The design, production, delivery and erection of beams and hollow core slabs for Sewage Treatment Factory

Project: Sewage Treatment Factory  
Main Contractor: 4 Dimensions  
Project Duration: 01 month  
Scope: Precast beams and hollow core slabs  
Location: Saadiyat Island, Abu Dhabi

Sewage Treatment Factory comprises of two stories buildings.

The structure is a combination between cast-in-situ columns and precast beams and hollow core slabs.
The design, production, and erection of hollow core slabs and walls

**Project:** National Security Building
**Main Contractor:** Stars General Contracting Co.
**Project Duration:** 01 month
**Scope:** Precast hollow core slabs and walls
**Location:** Abu Dhabi

The National Security Building is a one storey building, the structure of which is full precast system including load-bearing walls and hollow core slabs.
The design, production, and erection of **boundary walls** for private villa, Abu Dhabi

**Project:** Precast boundary walls for Amena Al Dhahery  
**Main Contractor:** Al Jaber Building  
**Project Duration:** 01 month  
**Scope:** Precast boundary walls  
**Location:** Al Barsha, Dubai

XIP’s scope of work for this project included construction of boundary walls for private villas in Dubai.

The boundary wall included precast footings, columns, walls and decorative GRC elements.

*Photos – coming soon*
The design, production, and erection of **boundary walls** for private plots, Abu Dhabi

**Project:** Precast boundary walls for Plot 105 & Plot 106  
**Main Contractor:** 4 Dimensions  
**Project Duration:** 02 months  
**Scope:** Precast boundary walls  
**Location:** Khalifa City A, Abu Dhabi

XIP’s scope of work includes the construction of boundary walls for private villas in Khalifa City A, Abu Dhabi.

The boundary wall includes precast footings, columns and decorative walls.

*Photos – coming soon*
The design, production, and erection of **boundary walls** for multiple projects/villa

<table>
<thead>
<tr>
<th>Project</th>
<th>Boundary walls various villas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Contractor:</td>
<td>Emirates Canadian Contracting</td>
</tr>
<tr>
<td>Project Duration:</td>
<td>03 months</td>
</tr>
<tr>
<td>Scope:</td>
<td>Precast boundary walls</td>
</tr>
<tr>
<td>Location:</td>
<td>Abu Dhabi</td>
</tr>
</tbody>
</table>

XIP’s scope of work for this project included the construction of boundary walls for 3 private villas in several locations.

The boundary wall includes precast footings, columns, walls and decorative GRC elements.
Marine

The production, delivery and construction of full precast structure

**Project:** 5 substations at KPIZ  
**Main Contractor:** ZUBLIN / Al Jaber Engineering  
**Project Duration:** 03 months  
**Scope:** Full precast structure  
**Location:** Khalifa Port and Industrial Zone in Taweelah

The project is owned by Abu Dhabi Ports Company (ADPC)

The project involves construction of the Khalifa Port and Industrial Zone which is being set to replace the Mina Zayed Port when it becomes operational. KPIZ will include a large industrial and container handling terminal and its new berths will be designed to handle raw and bulk cargoes. It will also cover the construction of an industrial zone comprising light to heavy industries including base metals, chemicals, building materials, trade and logistics. There will also be plots allocated for commercial and community areas.
5

BRIEF METHOD STATEMENT

• Short Description of the Production and Erection of Precast Concrete Elements
Short Description of the Production and Erection of Precast Concrete Elements

Design

XIP’s Design Department prepares structural design calculations and all drawings needed for the production and erection of the precast elements. The drawings include: layout drawings, elevation drawings, drawings for erection details and detailed shop drawings. The shop drawings include rebar arrangement, position of lifting hooks, cast-in parts, the weight and quantities of each type of panel. All of these drawings are submitted to the client, the client’s representative, the consultant, the contractor, the municipality and the project management agent for approval, using the latest software specific to precast.

Factory and Equipment

The production takes place in XIP’s new factory located in ICAD III. The factory has production facilities under 20,000 m² and a well equipped storage area for finished elements equivalent to 26,000 m². The production halls are equipped with overhead cranes of up to 16 tons in capacity and the storage area has 25 tons overhead cranes.

The factory is fitted with state-of-the-art production equipment in the precast industry, available for the first time in the Middle East. This machinery includes 40 pallets (50m² each), semi-rotation system, a full scale mould table plotter, numeric controlled concrete distributors, an XY compacting, advanced vibration stations and curing chambers for 30 mould tables. The batching plants for panels have three 1.5m³ hi-tech concrete mixers. It is also equipped with the latest technology for computer controlled and accurate concrete mixing.

Production

The production is planned to follow the schedule for erection laid down by the company to fulfill the desired delivery rate. Moreover, we have the latest software from Germany for planning of production of precast elements, cost estimation, facilitating work preparation, follow-up analysis and invoicing for structural prefab elements.
Short Description of the Production and Erection of Precast Concrete Elements

Mould Manufacturing

Moulds for panels are fabricated on the rolling mould tables. Before any mould building takes place, the table is rolled through the cleaning station and a rotating brush cleans it from all the dirt, dust and possible rust.

After cleaning the mould table, the table is plotted to the shapes of the panels to be casted. The plotting can only take place after the shape of the panels is loaded directly from the Design Department into the controlling computer.

From the plotting station the mould table is moved to the designated area in the production hall, where the mould building takes place. The preparing of shuttering (mould sides) and other mould parts can begin. Advanced professional shuttering system of newest technology combined with integrated magnets is used. Additional materials used for mould building are basically steel plates and steel profiles. Plywood is used in limited parts of the mould. The steel shuttering for individual moulds is welded as separate parts complete with 10x10 chamfer lists and then fixed to the mould table with strong magnets. Window openings require special inside shuttering. Therefore, special manufacturing is performed on three dimension elements like panels with L, U and Z shaped sections.

When the mould is finished it is checked by the Quality Control for all measurements, including the diagonals having the same measurement in both directions. The correct location of reinforced steel, embedded pieces and lifting anchors are checked and the shuttering is controlled for stability and straightness. The chamfers must be straight and have close contact to the table surface. The finished and controlled mould is sprayed with a thin layer of slip oil on all inside parts of the mould. It is important that a very thin layer of the slip oil is applied. Areas of the mould with excessive slip oil layer are cleaned with a dry cloth. The type of slip oil used must be controlled for hampering painting of the panels after finishing.
Short Description of the Production and Erection of Precast Concrete Elements

Steel Reinforcement and Cast-in Parts

Reinforcement is bound in a separate zone of the production hall and brought as units to the mould. Before placing the reinforcement spacers, it is ensured that the correct concrete cover is fixed to the reinforcement units. Lifting hooks and cast-in parts are placed and fixed in the mould together with the reinforcement. To hold the reinforcement and the cast-in parts in position, welding in a limited degree could be used.

When all reinforcement and the cast-in parts are placed in the mould, quality control takes place. The reinforcement shall be controlled for the correct dimension, correct bending radius, correct position and correct cover to all surfaces. The cast-in parts are checked to be the correct items and in accurate position. The control includes ensuring that all parts in the mould are firmly fixed, so they will not move during casting, shaking and vibration.

Concreting the Mould

The finished mould ready for concreting is rolled by central shifter to the concreting station and placed on the shaking and vibrator frame. Concreting must be planned so that it can take place in one operation without being interrupted by breaks or any other reasons. The Casting Supervisor orders the concrete from the Batch Plant Operator. The mix design and the amount needed are always given on the element shop drawing. It is the Casting Supervisor’s responsibility to ensure that correct concrete mix design is ordered.

The concreting is executed mechanically by the concrete distributor that can be operated either manually or by computer. After filling the mould with the correct amount of concrete, the concrete is ready for compacting. The compacting is done by first shaking the frame in X, Y angle. Then the vibrator frame starts operating on which the mould table is fixed. The vibrator frame vibrates and shakes the mould at the same time. After compacting the panels, the surface of the panels are evened with a straight aluminum beam and finally made smooth mortarboard by “helicopter” (see photo).
Short Description of the Production and Erection of Precast Concrete Elements

Controlling the Concrete

Every concrete mix design used requires to have nine test cubes to be taken out once a day. Three cubes are stored and cured together with the element, later to be used to control the strength by de-moulding. Six are sent to the laboratory and cured under standard conditions. Three are crushed tested after seven days and three are crush tested after twenty eight days for the final test. The Laboratory Supervisor is responsible for controlling the concrete. He works out the concrete mix designs and supervises the company’s laboratory for testing of concrete and aggregates.

Curing

The mould table with the cast panels ready for curing is moved by central shifter to the curing chamber. The curing is closed and isolated to ensure 100% humidity and avoid heat loss. The curing is finished in about eight to twelve hours.

One test cube is crushed at the time of expected sufficient strength for de-moulding. When the strength has reached 70% of specified final strength the mould table with the panel elements can be taken out of the curing chamber and moved to the place for de-moulding.
Short Description of the Production and Erection of Precast Concrete Elements

De-moulding, Re-touching and Storage

De-moulding takes place by taking off the panel’s top shuttering and the outer side shuttering of the panels. Then the mould table is tilted 80 degrees (10 degrees from vertical). From the tilted position, the panels are moved one by one with a crane and placed in vertical position on railed wagons. The wagons transport the panels to the stockyard where the panels are placed in vertical position in racks.

On the stockyard, the Stockyard Supervisor monitors the panels for being correctly marked, while making a visual quality control of the element to match the shop drawing. The stockyard supervisor also checks if the panels need re-touching and he leads the stockyard re-touching team. It is normal that the panels need more or less retouching (smoothening and repair of smaller damages). Re-touching or minor repairs must comply with the written procedures and only the approved materials must be used.

The Stockyard Supervisor is also responsible for keeping order on the stockyard and has to know the location of the panels on the stockyard (preferably by plotting their numbers on the plan of the stockyard).
Short Description of the Production and Erection of Precast Concrete Elements

Transportation and Erection

Transportation of cladding panels from stockyard to the building site takes place on trucks, which are supplied with A-frames placed on the truck load plan. The A-frames carry the panels in upright position -10 degrees from vertical. The panels are secured with nylon straps or chains. On the site the panels are off loaded to a temporary store or preferably taken directly by the crane for installation and erection in the building.

Erection and installation of cladding panels in high rise buildings is executed with cranes hoisting the panels to the place for permanent fixing. The method in which the panels are fixed is accurately described on the project drawings delivered to the erection teams, which are prior approved by the consultant. The method and procedure for the erection and can briefly be described as follows:

The panels are fixed in the upper edge with a so called “wet fixing”. This means that cast in place concrete is placed around protruding reinforcement at the top of the panel at the edge and over the existing concrete floor.

At the lower panel edge stainless steel parts cast in the panel previously erected underneath and stainless steel parts in the panel being erected is connecting the panels in a way that there is allowance for a vertical movement, but no horizontal movement. Therefore, allowing for temperature movements, yet holding the panel in correct position horizontally.

The erection takes place by hoisting the panel and placing it on leveled shim pads on top of the panel previously erected underneath. To do that, it is necessary to hoist the panel to a level slightly over the final level, then pulling in the panel with ropes and lowering it until the stainless parts connect the panels. The top of the panel is pulled closer to the floor’s edge and especially designed holder secures the panel allowing the crane to be loaded.

The final positioning of the panel can be done without the crane. The special holder at the top of the panel can pull the panel to correct vertical position and a specific device for lifting and adjusting height is used under the panel.

When the panel is finally adjusted and controlled the gap between the top of the panel and the concrete floor is closed. The casting can take place at the fixing.
6

IN THE NEWS

• Construction Week Articles
Major concrete pour for Abu Dhabi’s Xtramix
by Ben Roberts on Sep 20, 2011

Onsite pour by Xtramix Concrete Solutions

Xtramix Concrete Solutions is more than two-thirds of the way through one of the biggest concrete pours in Abu Dhabi for a major hospital project.
The Abu Dhabi supplier of ready mix and pre-cast worked for 33 hours between 5pm last Thursday and the early hours of Saturday morning pouring 10,000 cubic metres into the foundation for Danat Al Emarat Hospital project, according to Robert Campbell, commercial manager.
“After the first pour we’ve completed around 70% – we’ve done 10,000 cubic metres and there’s about 7,000 cubic metres to go,” he told CW this morning. “As with all similar projects you need to have the ramp access down to the foundations, so once we dig this out we can do the rest.”
Xtramix Concrete Solutions is one of the few companies that has the resources to “upscale” for a project like this and be able to deliver the high quantity of ready mix required, added Campbell.

Precast concrete seminar to be held in Abu Dhabi
by CW Staff on Apr 20, 2011

The Precast Chapter of the Concrete Technology Institute (CTI) UAE will host a one-day seminar to highlight risk mitigation, improve green building standards, and promote sustainability and safety in the UAE.

Organised under the patronage of the Abu Dhabi Chamber of Commerce and Industry, the consortium of ten firms will hold their inaugural seminar on 25 April at the Fairmont Bab Al Bahr in Abu Dhabi.

It will gather key government officials, contracting companies, consulting firms and real-estate developers, offering a platform to share know-how in the construction industry.

Khalfan Al Kaabi, First Vice-Chairman of the Abu Dhabi Chamber of Commerce and Industry, will deliver the opening address at the seminar.

The seminar will address several issues facing the industry, including the effects of seismic activity on the design of high-rise buildings, as well as quality and safety considerations.

Precast concrete, a rapidly-expanding means of construction in the Middle East, saves time and reduces costs. It also allows consistent high quality, while improving sustainability and durability.

“We are delighted to launch the first-ever gathering of the CTI’s Precast Chapter, which is expected to serve as a constructive platform for industry professionals as they discuss challenges and share experiences,” said spokesperson Abdel Razzak Dajani.

“We are laying the foundation of a gathering that will evolve into a major industry forum for professionals. Among other things, they can collaborate and identify ways to improve the sustainability of the industry and its impact on the environment.”

The seminar is supported by the Concrete Technology Institute UAE. It is a local branch of the UK-based Concrete Society, an internationally-recognised organisation promoting concrete and concrete technology through professional guidance, training, education, research and development.

Xtramix turnover hits US $217m on pre-cast boom

by Ben Roberts on Mar 9, 2011

Xtramix Concrete Solutions, the Abu Dhabi based manufacturer, produced a turnover of AED 800 million last year, as a resurgence in construction activity met with a higher demand for its new line in pre-cast concrete.

Abdel Dajani, managing director, told CW this morning that the company was able to capitalise on the ongoing construction activity in residential projects, in Ras Al Khaimah in particular, as well as the UAE capital. Further, its business line in pre-cast concrete – Xtramix International Precast – launched last year had found a receptive market despite the relative novelty of the building method regionally.

"In 2010 we started the production of the pre-cast and have managed to work on one of the largest projects in Abu Dhabi, in Al Falah, where we are building 2080 of the 5,000 villas and are the main sub contractor," he said.

Xtramix Concrete Solutions began only four years ago as a ready mix supplier. Dajani set up the business upon joining the Al Jaber Group that year.

With growing sales the company then decided to launch a business that sells pre-cast concrete, where beams, slabs and panels are manufactured, cured and finished in a factory before being exported to sites and erected. This is opposed to the 'cast in situ' method that would use ready mix and complete the pouring onsite.

"The benefit of pre-cast concrete is that it's all done in factory, and this saves time and money. Also there is a benefit with the finishing - you can produce a nice finish before the walls are to be painted. "The speed of production is incredible, especially with the symmetrical design for medium-to high buildings."

He said the market is increasingly recognising the cost saving involved in off-site manufacturing, bringing the market more in line with European residential construction.

Dajani added that the company would continue to grow its client base this year. This includes those in both the residential market as well as infrastructure developers. The company has recently presentations to quasi-government organisations in the UAE capital, such as Abu Dhabi National Oil Company and GASCO.

http://www.constructionweekonline.com/article-11315-xtramix-turnover-hits-us-217m-on-pre-cast-boom/
As 2010 approaches, many firms are re-evaluating their working methods in order to maximise their efficiency prior to any potential upturn in the construction sector. Value engineering is thus becoming a common phrase, with off-site prefabrication one of the key factors being considered for this process.

Off-site prefabrication can be applied to many elements of a building. And, while a wide variety of materials and products can be used in the process, one of the most successful is concrete. So what is the uptake of precast concrete products in the Middle East and how is the material being used?

"Precast concrete was introduced to this part of the world more than ten years ago and has rapidly grown in popularity," reports Dubai Precast general manager Matti Mikkola. The use of precast concrete products peaked in 2007-08, assid the construction sector in general, however its role is now only slowly down to a stronger construction market. "Along with a rapid increase in the construction sector, the precast business managed to gain an increasing market share from the conventional structural systems," reports Mikkola.

**PRECAST CONCRETE IN USE**

There is a vast range of applications for precast concrete within the construction industry, many of which are installed for a project's operational purposes. Sanitary and storm sewers, box culverts, catch basins, pump/lift stations, septic tanks, exterior grease interceptors, water storage tanks, wet wells, electrical and communication vaults and many other products all play a pivotal role in maintaining a clean, healthy, productive environment. The main components of these systems typically consist of precast concrete," explains Xtramix International Precast's precast operations manager Dr Tomasz Ciesielski.

In addition, precast concrete can be used to provide larger structural components such as walls, frames and floors. The basic concept remains the same at a factory location in advance being needed on a project, concrete is poured into shaped casts to form individual components. These are then transported to the construction site when required and connected together to form the final structure. One very visible, large-scale use of precast concrete currently underway is the Dubai Metro project; however it is also being used extensively in the region for many other less prominent projects.

"**PRECAST CONCRETE WAS INTRODUCED TO THIS PART OF THE WORLD MORE THAN TEN YEARS AGO AND HAS RAPIDLY GROWN IN POPULARITY**"
In the News

“Construction Week” Magazine

“A large majority of projects done with precast are housing projects; these comprise of many types of low-rise buildings, including labour accommodation, hostels and housing projects,” reports Mikkola.

“The repetitive nature of these projects makes precasting them a wise decision as it reduces the amount of manpower required; the components are produced in a factory where the efficiency is higher and only a small amount of labour is required for the installation at site,” Mikkola explains.

The second largest sector for precast use is commercial buildings, including offices and shopping malls. "Some precast products are very efficient for [providing] long spans such as those required in shopping malls and car parks," explains Mikkola.

"The architect is able to provide large open spaces, which are the requirement in modern malls," he adds.

"Architectural precast concrete provides architects with an exciting medium when designing facades for a wide range of buildings, from healthcare facilities to shopping malls, commercial office buildings to sports stadiums," adds Ahmad E’Wida, quality assurance/control manager and precast operations manager’s assistant at Xtramix International Precast. "Precast concrete frames involve an entire structure being fabricated off-site. In addition, structural components can be supplied for incorporation into a structure on-site," adds E’Wida. Such precast building frames can be used to simultaneously achieve both structural and decorative design requirements as it is possible to achieve a variety of concrete mixes and finishes under factory conditions.

Precast walls are suitable for central cores and lift shafts in addition to internal and external building walls. Mainly used for domestic properties, precast walls can be load-bearing or partition only, depending on the client needs. "Precast walls offer the advantages of speed of construction, smooth surface finishing, acoustic insulation and fire resistance," explains E’Wida.

Floors can be totally or partially precast according to project requirements. E’Wida explains: "Partially precast floors are composed of a precast part and a cast in-situ part; both parts work together at the final stage to achieve the composite structural capacity." With fully precast floors, a series of piers are cast at the factory then con-

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Dubai, UAE

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“BECAUSE PRECAST CONCRETE PRODUCTS TYPICALLY ARE PRODUCED IN A CONTROLLED ENVIRONMENT, THEY EXHIBIT HIGH QUALITY”

are produced in a controlled environment, they exhibit high quality and uniformity. Variables affecting quality typically found on a job site, such as temperature, humidity, materials quality and craftsmanship, are nearly eliminated in a plant environment,” stresses Ciesliski.

The relatively better strength and durability of precast to poured in-situ concrete should also be considered. “The strength of precast concrete gradually increases over time, whereas other materials can deteriorate, experience creep and stress relaxation, lose strength and/or deflect. The load-carrying capacity of precast concrete is derived from its own structural qualities and does not rely on the strength or quality of the surrounding backfill materials,” Ciesliski explains.

There are also some less positive points that should be considered when determining the potential benefits of precast concrete for a project. “The system building is less flexible in its design concept than purpose-mode structures; plus structural connection between the precast concrete units can present both design and contractual problems,” warns E’Wida.

“Each project is different,” reminds Mikkola. “For some types of buildings, precast is always the cheaper solution; for example, with long-span parking buildings the structure will be cheaper, much faster to build and the final quality is very high,” he adds.

SUSTAINABLE CONSTRUCTION

One of the primary considerations with any product or material currently being applied to Middle East construction projects is its sustainability or contribution to ‘green’ building. Precast concrete meets these demands in several ways.

Firstly, precast concrete products have been shown to have a service life of more

PRECAST CONCRETE: THE BENEFITS

- Durability: the final product is produced according to precise specifications; for durability and products can last more than 100 years.
- Assured quality: the concrete is precast in factory-controlled conditions, removing any external conditions on site that may affect its final quality.
- Reduced labour is required on site.
- Faster on site construction times can be achieved as the products are simply slotted into position after delivery.
- The strength of precast concrete has been proven to gradually increase with time.
- The load-carrying capacity of precast concrete is derived from its own structural qualities and does not rely on the strength or quality of surrounding backfill materials.
- The precast products can be ordered in advance to ensure availability at the time needed on a project and can be produced at times when material prices are most competitive.
In the News

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than 100 years, with the potential for the precast elements to be dismantled following the lifetime of a building and reused for future applications. “This needs to be considered in the design from day one, however we think that one day that will be a major consideration,” predicts Mikola.

In addition, the product can be used to contribute to reducing operational energy use in a building, E’Wida explains. “Architecturally-finished precast structures can be left exposed to exploit the concrete’s high thermal capacity in a building’s green energy management system.”

THE FUTURE OF PRECAST CONCRETE?

What is the future for precast concrete use in the Middle East? Will buildings be designed to enable its use and maximise long-term value engineering or will the economic downturn see a fall in demand for the foreseeable future?

In order to truly maximise the benefits of the product, traditional design and construction methods may need to be reviewed.

SEALING SURFACES

With concrete one of the most popular building materials in the Middle East, ensuring its long life, quality surface finish and suitability for ‘green’ building are important considerations. There are now several products available in the market that aim to ensure these factors, including specialist sealing products.

One such product is Ashford Formula. A concrete sealant used worldwide for around 60 years, the product range was soft-launched in the region’s market three years ago and the firm is currently undertaking a continuing expansion programme within the Middle East. “Specific project types were selected as test beds in different industries, these were monitored to ensure regional suitability, given the at times challenging conditions here in the Middle East,” reports Ashford Formula director of Concrete Distribution Tony Hogg.

“The main benefits of Ashford Formula are that your concrete floor is permanently sealed, dust-proofed and hardened for the lifetime of the concrete,” explains Hogg. In addition, the product increases abrasion resistance and curing; plus, it meets the current international sustainable building standards, being accredited to both Leed and TUV.

Ashford Formula is used primarily for floors, but can also be applied to walls used in the lift-up building method, where the product is applied to the walls in a horizontal position prior to being hoisted into place. A high percentage of installed applications to date has been in low-level warehouse buildings where longevity, dust-free environments and a clean appearance are vital. “In this region we have seen an increase in the use of Ashford from an architectural perspective in offices, villas and hotels,” reports Hogg.

The product can be used on all types of concrete structure, whether precast, self-leveling or traditional forms. “The important thing is that (the concrete) must contain OPC as the Ashford Formula reacts with cement particles within the concrete to create a chemical reaction, which in turn leads to an initial gel stage,” explains Hogg. “Tetrahedral shaped crystals are formed (during this stage) locking themselves permanently to the matrix of the concrete, thus creating a lifelong seal, hardening the surface of the concrete by on average 40% and forming a naturally dusting surface into a dust free finish,” adds Hogg.

Ashford currently serves the GCC from its UAE base with a wider network of distributors. Its strategy for 2010 is to develop and expand its list of distributors and approved applicators within the region.
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