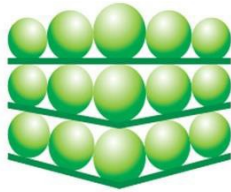




**BUBBLE DECK CONSTRUCTION SDN BHD** (951106-H)  
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Doc. No.	<b>PM-OP-S01</b>
Revision	<b>02</b>
Effective Date	<b>21-02-2020</b>
Page	<b>Page 1 of 1</b>

## SITE ERECTION & INSTALLATION GUIDE



**BUBBLEDECK**  
 Construction Sdn Bhd

Building More With Less  
 The Biaxial Hollow Precast Concrete Slab System

**PROEJCT TITLE**



**PROJECT NAME**



**CLIENT**



**ISSUED DATE**



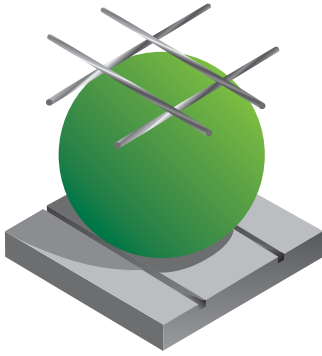
Prepared by Project Sales Coordination Engineer :
Signature
Name :
Date :

Verified by SPM / PM :
Signature
Name :
Date :

Approved to release by PD / GM/AGM :
Signature
Name :
Date :

Acknowledged receipt by Customer's representative :
Company Stamp & Signature
Name :
Date :

# Stage 1 - Erect Temporary Propping



During erection each slab must be placed on suitable temporary propping beams arranged in parallel rows mounted on props sufficient to adequately support the weight of the BD precast elements plus the loose reinforcement fixed on site, concrete poured on site and all other site construction loads applied during final pouring of the concrete topping and curing of the slab.

1. The maximum distance between propping beams must not be greater than 1.5 metres or as advised.
2. The maximum distance of the propping beams from slab edges must be as follows:
  - (a) from an edge where a slab is supported on brick or concrete walls - 300mm;
  - (b) from an edge next to construction tolerance joints 200mm.

Propping beams must be at right angles to the direction of the reinforcement girders precast in the element. Normally the girder reinforcement is placed parallel to the length of each slab but this must always be checked against the manufacturing and installation drawings. The propping beams, and individual props below, must form a stable platform prior to placing filigree elements onto them and maintained stable during casting of the site concrete.

## IMPORTANT :

**Removal of the temporary propping is strictly NOT allowed before each slab is cured sufficiently to support its own weight and temporary construction loads.**

**Refer to BD Scaffolding Drawings for instruction on Erection and Dismantling Temporary Propping System.**



Typical arrangement of props and propping beams

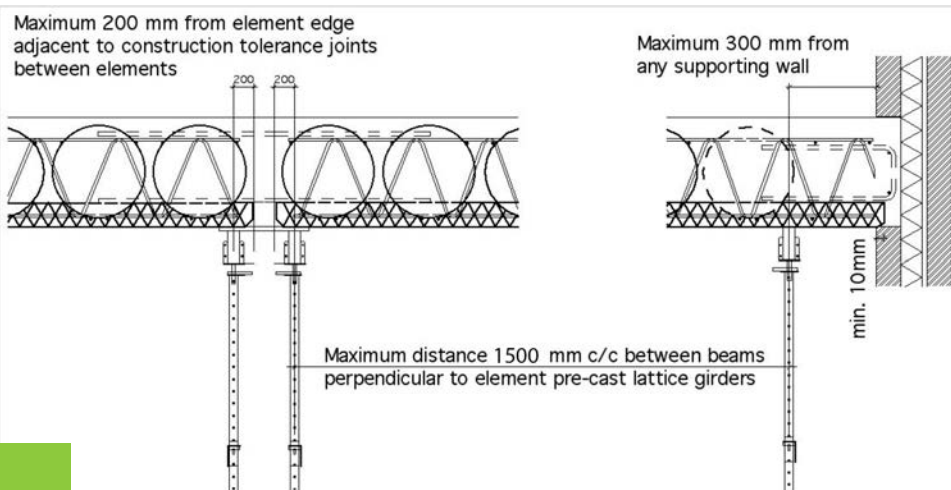
**All temporary propping must be checked, inspected and approved with GREEN TAG issued by qualified Safety Officer before BD element is launched.**



## INSPECTION BEFORE LAUNCHING

1. To inspect the floor, ensure column and lift core wall are completed and all formwork are removed.
2. To determine the exact required BD soffit level.
3. To check the temporary prop (scaffolding) arrangement according to the BD Scaffolding Drawings provided.
4. If item (3) is not in accordance, immediate rectification is required i.e. to re-arrange the scaffolding according to the BD Scaffolding Drawings.
5. To check the Propping beams top level according to item (2).
6. **IMPORTANT NOTE:** The tolerance should **NOT** be more than  $\pm 3\text{mm}$ .
7. If item (6) is detected, immediate rectification is required i.e. to adjust the temporary prop level.

Typical cross-section of temporary propping system



8. To check the column/wall height and column/wall to column/wall spacing (center to center) against the dimension stated in the BD Construction drawing.
9. To repeat item (8) for all columns and shear wall.
10. **IMPORTANT NOTE:** The tolerance for column/wall to column/wall spacing should **NOT** be more than  $\pm 6\text{mm}$ .
11. If item (10) is detected, immediate rectification is required i.e. to modify the BD Panel.

## Stage 2 - Delivery, Lifting & Placing BD Elements

We deliver the BD precast elements on flatbed trailers typically between 12 metres, excluding drivers cab. The precast elements will be stacked on top of each other up to a maximum 2.5 metres overall height. For example, with BD285 slabs there will be maximum 8 layers of slabs.

Each individual load will be planned so the weight of a load will be a maximum 30 tonnes and you must provide suitably hard and level access for our delivery transport to reach the unloading location you have determined.



Loading BD precast elements onto the flatbed trailer

### IMPORTANT :

**Upon arrival of the trailer on site, it's the responsibility of the customer or its appointed site representative to carefully inspect the quality of the BD precast elements and to ascertain any damages to the elements which could be caused during the transporting, or other unacceptable characteristics, must be reported to us by recording the details on our Delivery Order (D/O).**

Following your inspection on the precast elements and after the BD precast elements have all been lifted to its designated position, the BD site representative will require you to sign on our Delivery Order (D/O) to confirm you have received the elements satisfactorily.

If in the event the loading frame is required to be placed on the site for the stacking of BD precast elements, as soon as the lifting of these elements have been completed, it must be returned to the next delivery trailer to bring back to our factory for re-use.

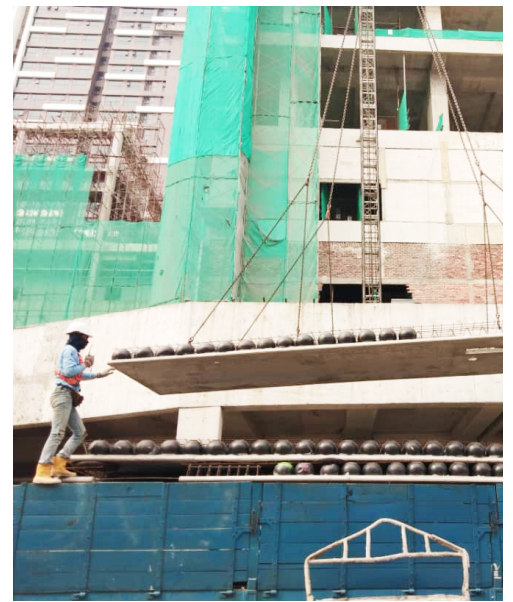
Charges may occur if the loading frame is not returned.

### UNLOADING PRECAST ELEMENT

It is the responsibility of the customer or its appointed contractor to provide attendance and adequate mechanical equipment i.e. tower crane or mobile crane for the unloading of elements from the trailer upon their arrival at site.

For optimum working efficiency, we recommend you to plan site operations to allow the precast elements to be lifted off the trailers and moved straight into their final position on the temporary propping.

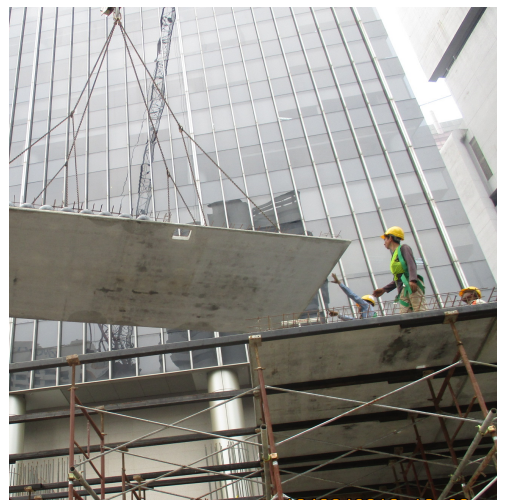
However, for transport efficiency and safety, some elements are loaded onto the trailer out of sequence to their erection order, in which case or in the event of site circumstances preventing final placing the precast elements can be temporarily stored elsewhere on site. The elements must be transversely supported on timber packers laid between the bubble rows (sat on the top reinforcement mesh) at maximum 1.5 metres centres resting on flat, level, ground and protected from soiling by mud, dirt, or other materials. Elements can be stacked on top of each other to a maximum 8 layers high.



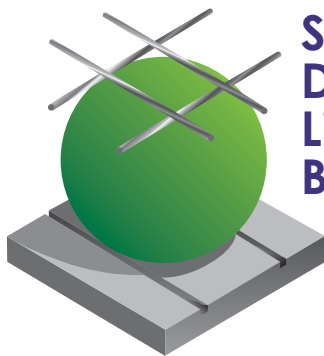
Loaded trailer arriving on site ready for lifting

### IMPORTANT :

1. To check the provision of crane, site access, unloading space and site storage (if required).
2. If item (1) is not in accordance, immediate rectification is required i.e. to contact 3rd party service provider or invite BD representative for discussion on suggested solution.



The deliveries are organized and planned according to the programme as earlier agreed, thus we shall not accept any responsibility for any delays with deliveries or construction progress arising from events outside our control such as unexpected access restrictions or force majeure.



## Stage 2 - Delivery, Lifting & Placing BD Elements (con't...)

### LIFTING AND PLACING OF PRECAST ELEMENT :

The BD element must **ONLY** be lifted by the Lattice Girder reinforcement. Lifting hooks must **ALWAYS** be attached under the upper angles of the girder reinforcement diagonal web bars. Lifting hooks must **NEVER** be attached to the upper reinforcement mesh as this would be unsafe.

### IDENTIFICATION & TRACEABILITY :

1. Each BD element comes with a "PRODUCT TAG" with Level and Element No. clearly written.
2. All LIFTING POINTS are sprayed with WHITE paint.
3. Each BD element comes with a COLOURED POSITIONING BALL.



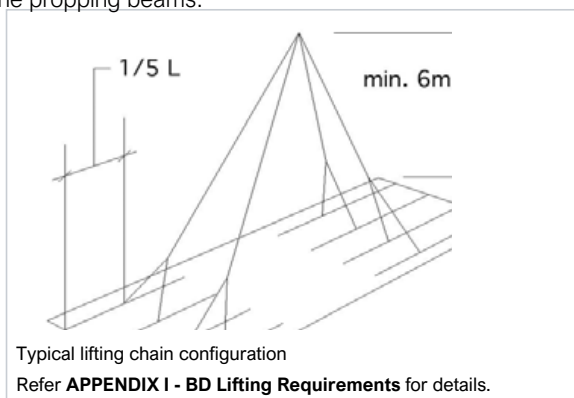
### IMPORTANT :

It is the customer or its appointed representative's responsibility to organize and provide suitable lifting equipment. All lifting equipment must be tested and certified capable of lifting a minimum of 6 tonnes, appropriate for the purpose as described below, and must meet all legal health and safety requirements.

### LIFTING EQUIPMENT :

Each individual element requires the use of 8 lifting hooks, in 2 parallel rows of 4 hooks each attached around the lattice girders positioned approx. 1/5 of the total element length in from each end. The upper part of the hoisting system (4 suited chains) must be at least 6 metres minimum in length. Chain branches to the eight lifting hooks must be equal lengths.

When in use, care should be taken that lifting forces are equal at each lifting hook point and the element remains horizontal during lifting. Before lifting attach suitable ropes at two opposite corners of the element for guiding element into position on the propping beams.



Lifting BD element onto position

### POSITION OF ELEMENT ON PROPPING:

It's important the elements are lifted onto position in the planned erection system. The positioning of each element has to be properly taken care of. Each element must be positioned the correct way - often obvious from position of column cut outs and building shape, for details please refer to the BD Construction Drawings - so the top chamfer along the longitudinal edge is butted up to the adjacent elements vertical longitudinal edge.

### IMPORTANT :

During final positioning of the element, to ensure the bubble pattern between adjacent elements are aligned as shown on the BD Construction Drawing. The spaces between bubble rows on adjacent elements aligned to facilitate inserting splice reinforcement across the joint between elements.

To check Gridline and Setting-out for X and Y Direction according to BD Construction Drawing.

If the above is not in accordance, immediate rectification is required i.e. to re-arrange Gridline and Setting-out by the surveyor appointed by the customer.



For quick installation of the bottom splice reinforcement we recommend when the first element is in final position the bottom splice bars are temporarily slid fully in between the bubble rows on top of the precast concrete layer before the adjacent element is placed. At a later stage please remember to slide the bottom splice bars back across the element joint between the bubble rows in the adjacent element, so the bars are finally positioned half in one element and half in the adjacent element prior to concreting.



Sliding bottom splice bar central over joints

### SITE ADJUSTMENT OF BD ELEMENTS :

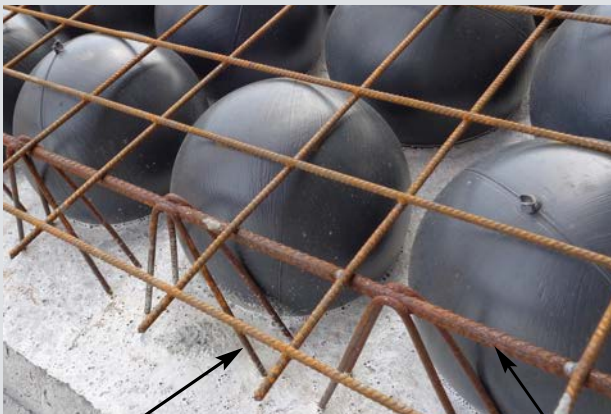
The BD elements are designed and manufactured to suit the buildings configuration and column/wall layout. They arrive on site with cut-outs/recesses/steps for column or wall positions and larger service holes already formed, therefore, they should not require any site adjustment.

However, it has been known for columns to be erected out of position on site and in this unusual event it's possible to carefully alter the BD element with a disc cutter to maintain the margin between RC columns/walls and the element.

### IMPORTANT :

The upper and diagonal bars in the lattice beam girder reinforcement must **NOT** be cut on site as they have an important structural function both during lifting and once in place.

Sample of Lattice Girder



**DO NOT** cut diagonal bars

**DO NOT** cut top bar

### CUT-OUTS, RECESSES & SERVICE HOLES :

During the manufacturing process polystyrene void formers are fixed in these locations to create areas without any concrete bottom. During erection of the elements these are quickly broken out with a suitable chisel and mallet.

### INSPECTION BEFORE CONCRETING

- To inspect the levelness for the BD slab soffit level.
- NOTE:** The tolerance should **NOT** be more than  $\pm 3\text{mm}$ .
- If item (2) is detected, immediate rectification is required i.e. to adjust temporary prop Level.
- To inspect the gap between Element to Element/ Column/Wall/Beam.
- NOTE:** The Gap tolerance should **NOT** be more than 10mm.
- If item (5) is detected, immediate rectification is required i.e. to provide necessary formwork to seal off the gap.
- To inspect the crack at BD slab soffit.
- If item (7) is detected, immediate rectification is required. Refer to **Appendix II - Method Statement -- Rectification Method for Each Stages of Crack lines.**

## Stage 3 - Fixing Loose Site Reinforcement :

Construction Drawings are provided to refer for loose site reinforcement (supplied by others) fixed at the bottom of the slab (directly on top of the precast concrete permanent formwork without spacers or on top of site shuttering on spacers) and reinforcement fixed at the top of the slab (directly onto top mesh reinforcement), together with accompanying bar bending schedules. These must be studied and closely followed at all times.

We can be contacted at anytime if you have any questions pertaining to the above. The sequence for fixing loose reinforcement is at the discretion of the customer, however we recommend the following procedure is adopted:-

#### Typical Reinforcement Type

#### INSTALLATION / FIXING PROCEDURE

#### Bottom Joint Splice Bars

Inserted loose bar between every bubble directly on top of the precast concrete permanent formwork. If they have been inserted into one element during lifting elements into position, as we recommend, then simply slide the bars across the joint between adjacent elements to sit with equal lengths both sides of the joint between elements.

#### Bottom Shear Bars

Inserted loose bar between bubbles in positions shown on drawings across holes, openings and returns in slabs where applicable

#### "Beam Strips" within Slab Depth

Where applicable assemble bars into cages and fix between and / or around columns (as shown on drawings)

#### Perimeter Hairpins / Bars

Slide hairpins in between bubble rows and slide in top / middle / bottom edge bars around slabs perimeter, tying to hairpins as shown on drawings

#### Column Shear Reinforcement

Insert bottom bars across columns directly on top of the precast concrete bottom formwork. Fix bars over top mesh reinforcement (between the bubbles) across and around column heads as shown on drawings, tying in place to mesh.

**NOTE :** where shear studs or shear rails have been precast into element at factory there may not be any bars to be fixed on site.

#### Top Joint / Top Bar Reinforcement

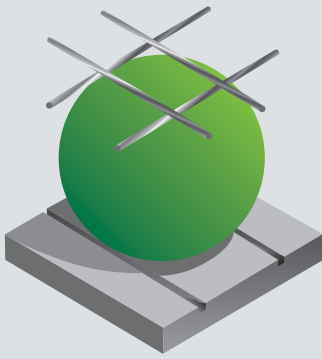
Element joint splice reinforcement comprising either individual short bars or purpose made mesh sheets (supplied by others) are placed with the bars between bubble rows and tied in place equally across the joint between adjacent elements. In certain areas, for engineering reasons, additional top bar reinforcement will be required (supplied by others) which must be laid between bubble rows (not across top of bubbles) directly onto and tied to top mesh reinforcement, as shown on the drawings. The first layer of top additional bar reinforcement must be laid across top of lower bars of top mesh reinforcement to avoid unnecessarily reducing top concrete cover.

#### Other Loose Reinforcement

As building configurations vary it is not possible to describe all possible non-typical loose reinforcement configurations (such as cages for steps between main slab and cantilever slab) requiring site fixing. This non-typical reinforcement will be shown and detailed on the site installation drawings.

### IMPORTANT :

**Top joint and additional bar reinforcement first layer must be laid between bubble rows (not across top of bubbles) straight onto top of lower bars of top mesh reinforcement to avoid excessive layers of steel and difficulty with achieving required concrete cover.**



## Stage 4 - Constructing Edge Shuttering

Once the perimeter loose reinforcement has been installed work on erecting perimeter and construction joint shuttering can commence. Temporary works are your responsibility to determine, but our recommendations are:-

## Stage 5 - Preparation for Concreting



The precast concrete permanent formwork edges are manufactured to a high accuracy and care taken to get a tight joint during laying the elements can render joint filling unnecessary. When joints between slab elements have not been closely butted they must be filled to prevent grout seepage. Should this be required, "V" corner bead shall be inserted at the bottom of the splay joint between elements. This is most easily undertaken prior to installing the loose splice reinforcement.

### LOCATION

### EDGE SHUTTERING ERECTION PROCEDURE

#### Perimeter Shuttering

Cut sheet of 12mm ply into strips to width of finished slab depth. Fix 75mm x 50mm battens along back edge at top and bottom. Where BD element is tight to edge of finished slab simply plug and screw through bottom batten & ply shuttering straight into centre of precast concrete permanent formwork edge. Fix top of ply shuttering by wire tying back to top mesh reinforcement from screws fixed into top batten.

When an in-situ concrete edge strip has been planned to make up the overall floor-plate width then construct perimeter shuttering with timber gallows brackets & plywood perimeter / soffit shuttering in traditional manner, except bracket bottom batten can be plugged and screwed to underside of precast concrete permanent formwork.

#### Construction Tolerance margin around RC columns / Walls \*

Cut sheet of 12mm ply into strips 150mm wide, plug and screw 50x50 battens to face of r.c. columns / walls (top 12mm below slab soffit), slide ply into position. Plug and screw external edge of ply shuttering into underside of precast concrete permanent formwork.

#### Construction tolerance joints between groups of elements

Cut sheet of 12mm ply into strips 180mm wide and prop up to underside of precast concrete permanent formwork.



### IMPORTANT :

**Expanding form must NOT be used for joint filling as the uncontrollable thickness can adversely reduce concrete cover to splice reinforcement impairing durability and fire resistance of the finished slab.**

Prior to pouring topping concrete remove element labels, unused tying wire, unused reinforcement, loose concrete and all other debris or foreign matter. Then immediately before placing in-situ concrete power-wash top of the precast concrete permanent formwork to clean off residual dirt and moisten the precast concrete surface.

### IMPORTANT :

**Maintain the precast concrete top surface, particularly during hot weather, in a damp (not wet) condition to ensure a good bond between the precast concrete permanent formwork concrete and the in-situ concrete.**

# Stage 7 - Pouring Topping Concrete

## IMPORTANT :

When ordering concrete, the customer to take into account the volume taken up by the bubble void formers mean the concrete volume is **NOT** arrived at by taking the pour area x depth from top of shuttering to precast concrete permanent formwork. The concrete volume to order can be estimated, dependant upon BubbleDeck slab depth type, from the following table:-

When pouring concrete evenly distribute across area and avoid placing in heaps.

BubbleDeck Slab Type	Overall Slab Depth	Concrete Pour Volume m <sup>3</sup> / m <sup>2</sup> plan area
BD235	235 mm	0.117
BD285	285 mm	0.152
BD345	345 mm	0.197
BD395	395 mm	0.229
BD450	450 mm	0.271

Due to the limited space between the bubbles a thin vibrating poker **MUST** be used to compact the concrete, remove any entrained air and to ensure a good flow around the bubbles. Avoid separation occurring due to the vibrating of shuttering reinforcement and/or bubbles that can result in segregation of the concrete has been poured a steel beam or power float is then used to level the top and finish to an even and level surface.



Pouring, Vibrating & Floating Site Concrete

## Stage 6 - BubbleDeck Site Inspection

Once you are able to predict when all loose reinforcement will be fixed please contact our Site Representative to notify the date you intend to pour concrete and arrange our site inspection. He will then arrange for our technical representative to visit site and undertake a full inspection of the BubbleDeck element and loose reinforcement installation.

Following inspection our technical representative will issue you with an inspection record listing any work that needs to be undertaken prior to site concreting, or confirming the installation is ready for concreting and the work is to our approval.

## IMPORTANT :

- To inspect provision of all reinforcement as according to BD Construction Drawing.
- NOTE:** All reinforcement must comply to BD Construction Drawing.
- If item (2) is detected, immediate rectification is required i.e. to comply BD Construction Drawing.
- BubbleDeck Construction Sdn Bhd will not liable to the Structure Integrity if no inspection is carried out by with the present of BD representative prior to Concreting Process.

## Stage 8 - Removing Temporary Propping

During construction planning we will confirm to you the minimum period for removal of propping. Removal of temporary propping varies dependant upon our floor slab design, strength of site concrete, and ambient temperatures.

### SUMMARY SITE INSTALLATION GUIDE

ITEM	ACTION
1. <b>TEMPORARY SUPPORTS</b>	Propping on parallel beams not more than 1.5m spacing.
2. <b>PLACING ELEMENTS</b>	Semi precast elements mechanically lifted onto position.
3. <b>JOINT REINFORCEMENT</b>	Insert loose bottom splice bars and tie top mesh across joint between elements.
4. <b>COLUMN CAPITAL REINFORCEMENT</b>	Insert loose bars across columns.
5. <b>EDGE REINFORCEMENT</b>	Insert edge bars and hairpins around slab perimeter.
6. <b>PERIMETER SHUTTERING</b>	Fix shuttering to bottom precast concrete element and tie to top mesh reinforcement.
7. <b>SOFFIT SHUTTERING</b>	Prop plywood across tolerance joints between element bays and between elements and columns.
8. <b>SITE PREPARATION</b>	Seal joint between elements, clean precast concrete element.
9. <b>CONCRETING</b>	Pour, vibrate and float in-situ concrete.
10. <b>FINISHING</b>	No further work is required.

### INSPECTION AFTER CONCRETING

- To conduct 7 days Concrete Cube Test for each Concrete Casting, result to submit to BD for record.
- NOTE: The 7 days Concrete Cube Strength must achieve min. 75% of Design Concrete Strength** (Design Concrete Strength to refer BD Construction Drawing).
- If item (2) is not in accordance, **ALL** scaffolding must be maintained and upper floor construction activity must be on hold.
- To submit Mill Certificate for every batch of reinforcement procurement to BD for record.
- If item (4) is not in accordance to MS145 and MS146, All scaffolding must be maintained and upper floor construction activity must be on hold.
- Removing of Temporary Propping - refer BD Scaffolding Drawings.
- To conduct 28 days Concrete Cube Test for each Concrete Casting, Result to submit to BD for record. **NOTE:**
- The 28 days Concrete Cube Strength must achieve 100% of Design Concrete Strength** (Design Concrete Strength to refer BD Construction Drawing).
- If item (8) is not in accordance, **FULL** scaffolding must be provide back according to BD Scaffolding Drawings and upper floor construction activity must be on hold.
- To monitor the Deflection and Levelness of Slab Soffit Level for 1 month further to full removal of temporary propping.
- Monitoring record for Item (10) to submit to BD for record.
- To inspect and confirm if there is the crack at slab soffit.
- If item (12) is detected, immediate rectification is required - refer **Appendix II - Method Statement Rectification Method for Each Stages of Crack Lines.**



## Subsequent site operations by other contractors

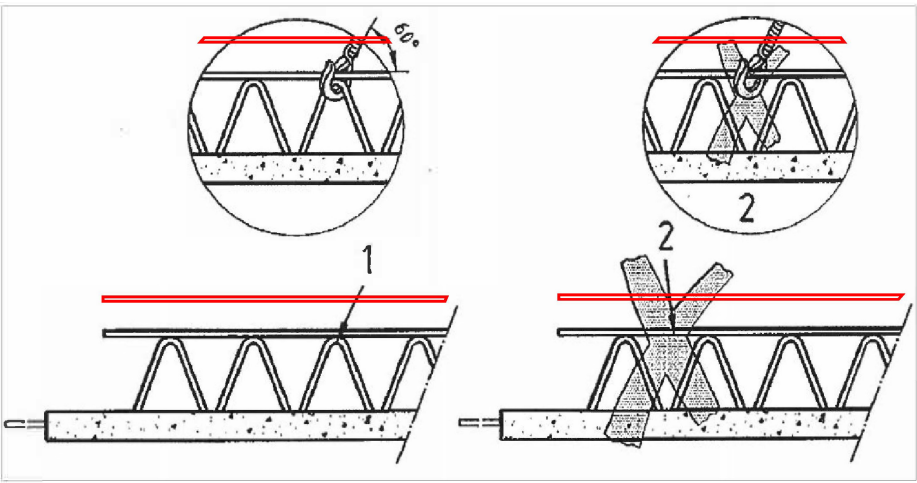
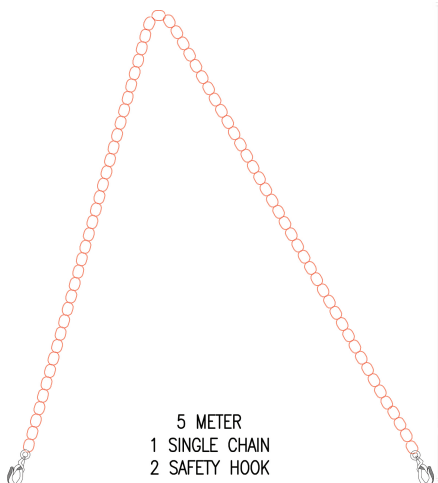
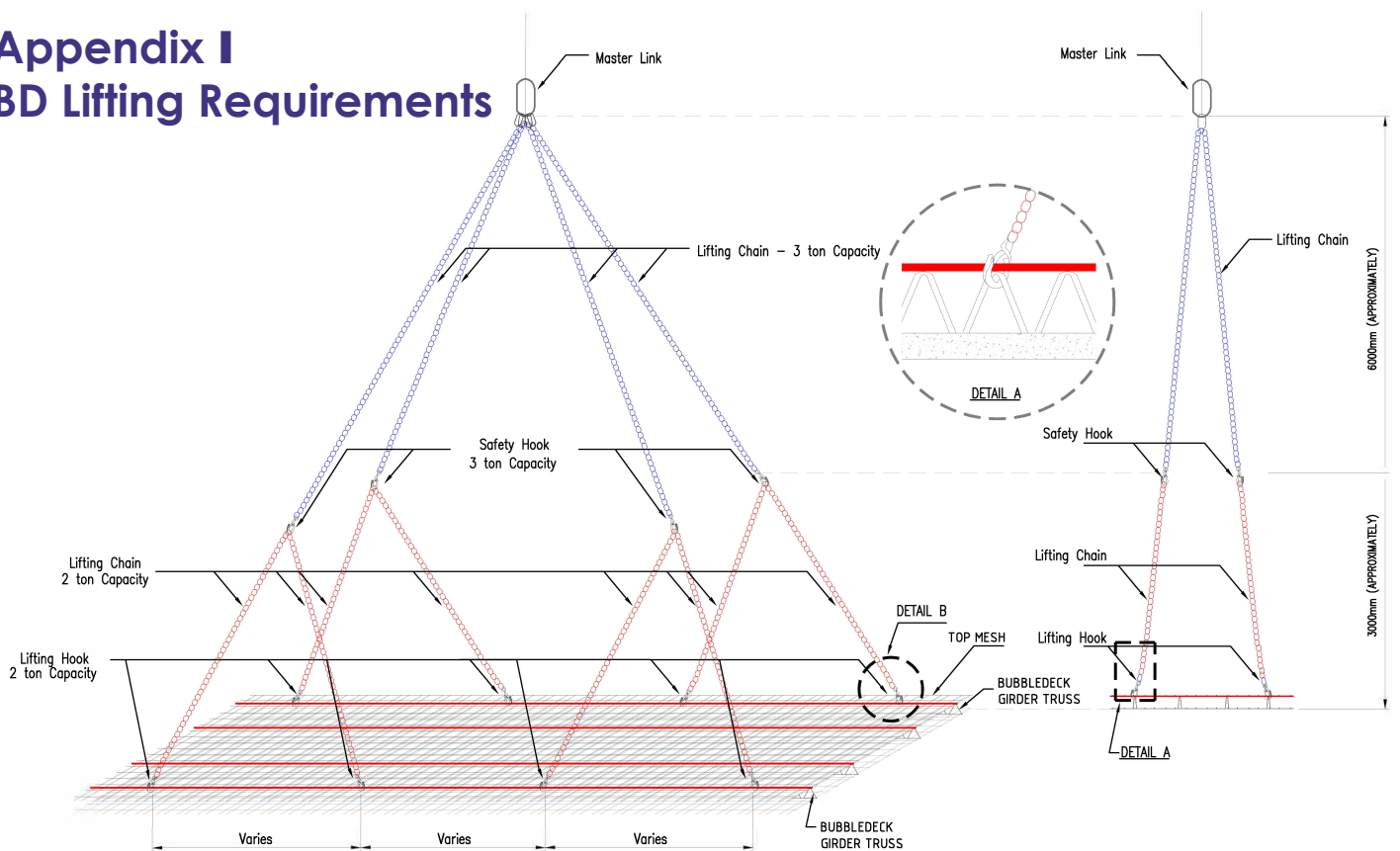
Holes can be easily be diamond-core drilled through the completed BubbleDeck slab. Due to the two-ways spanning attributes of BD slabs, there are few limitations on the positioning of holes, except near columns and shear forces are highest.

Service risers larger than 250mm square should be designed into the slab for forming during production in the factory and boxed out on site prior to pouring in-situ concrete.

Pipe holes up to around 250mm diameter are best diamond-core drilled after casting of slabs to ensure optimum vertical alignment. There is greater flexibility where these can be placed because the slab will span around such holes. The only limitation is to avoid cutting off too much support when holes are formed near supporting columns/walls, or a series of holes in a row in certain situations, but these can be allowed during design stage.

Prior to forming holes in completed slabs larger than 250mm diameter, within 500mm of a supporting column/wall, or multiple holes in close proximity, recommendation and advice must be obtained from BubbleDeck Design and Technical Department before such works is to be taking place.

## Appendix I BD Lifting Requirements





# Appendix II

## Method Of Statement - Rectification Method for Each Stages of Crack Lines

### **CRACK WIDTH LESS THAN 0.3mm** (BS 8110-1:1997 Clause 3.12.11.2.1)

1. To Provide a V Groove
2. Patch with Grout (Pentens EGrout)

### **CRACK WIDTH MORE THAN 0.3mm** (BS 8110-1:1997 Clause 3.12.11.2.1)

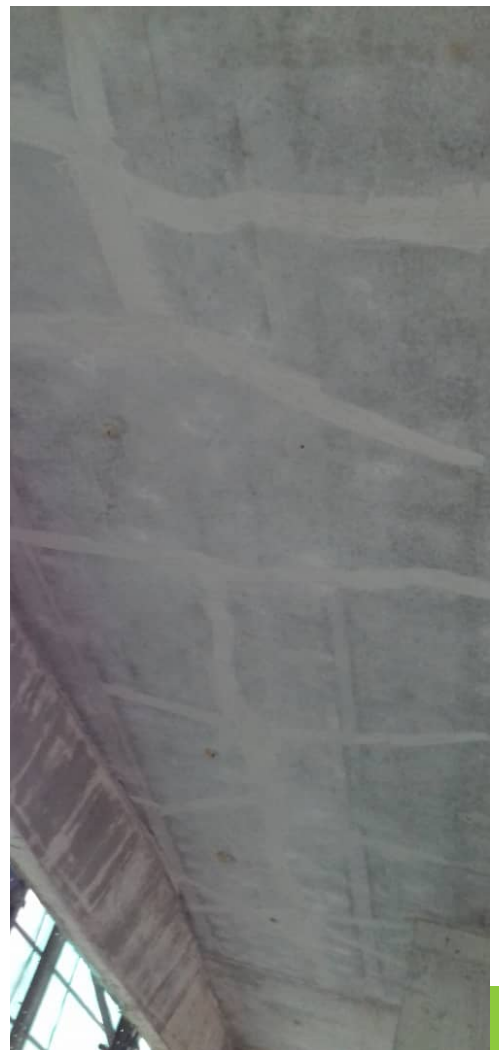
1. Surface must be clean and sound.
2. Remove all dirt, grease, wax, curing compounds and other foreign matter.
3. Prepare a small surface sealing material to use as an adhesive for setting ports. Apply a thin bead of Penten EGrout around the perimeter of the port base.
4. Centralize barrel of port over crack and press into place, be careful not to plug the opening at the bottom of the port.
5. Mix additional surface seal material – Pentens EGrout.
6. Use a putty knife or margin trowel while sealing in order to ensure proper bonding to the roughened concrete surface.
7. Make sure the sealant is cured before starting the injection. Mix Pentens LP-504 (A:B = 2:1) and fill into the packer. Install the packer on the port and fit the rubber squeeze on the packer and start resin flow into cracks.
8. Allow the Pentens LP-504 to cure. The waiting time is usually between 4 ~ 10 hours depending on the temperature.
9. Once the injection work is complete, remove the packer and port. Use the electric grinder to remove excessive cure sealant.
10. The width of the crack should not exceed 5 mm.  
(Refer to Penten LP-504 Product Data Sheet Important Notes No. 1) Specialist work shall be applied if crack width exceeds 5mm.

### **SHRINKAGE CRACK** **may not be detected by visual, but water mark may appear.**

1. No action is required.

### **WHEN PANEL IS DEFORMED OR DISTORTED**

1. To reject the panel.



## Appendix III

### Method Of Statement - Slab Coring

#### CONCRETE HACKING

- (i) To prepare the additional propping near to the panel edges (If opening is more than 300mm dimension).
- (ii) To prepare the opening required on-site.
- (iii) To remove the wire mesh/rebar and bubble(s) from the hacking area.
- (iv) All reparation shall be in such to leave a sound exposed concrete surface free from dust, debris, loose particles and any deleterious matters.

#### REINFORCEMENT PREPARATION

- (i) All the exposed reinforcement shall be cleaned from any cement deposits and any corrosion by wire brushing blasting or other approved methods.
- (ii) Should there be any reinforcement damaged during the removal of concrete or the preparation process, shall be repaired or replaced.

## Appendix IV

### Method Of Statement - Grouting for M&E Opening

#### M&E CONDUIT

- (i) To fill the bottom of opening with 100mm with 100mm thick of Polystyrene to the extract of the opening measurement.
- (ii) To fill the top section of the opening with SIKA 215.
- (iii) Once the SIKA 215 is cured, to remove the Polystyrene and to patch the gap with cement mortar and make good.

#### M&E OPENING (OTHERS)

- (i) To prepare the formwork for the bottom opening.
- (ii) To insert the pipe sleeve and to fill the gap with SIKA 215.
- (iii) After post-concreting of the BD slabs, to remove the formwork and make good.

## Appendix V

### Method Of Statement - BubbleDeck Slab On-Site Stacking

- (i) To prepare a proper storage area with solid ground, relatively level, firm and well drained to avoid any differential settlement, which may damage the BubbleDeck slab/panel.
- (ii) To prepare strips of wood or hollow section across the full width of the BubbleDeck slab/panel.
- (iii) To allow for maximum of three (3) BubbleDeck slab/panels stacking in horizontal position.
- (iv) To ensure the bigger size BubbleDeck slab/panel to be at the bottom of the stacking position.
- (v) To minimise unnecessary double handling, the BubbleDeck slab/panels stacking should be based on the erection/launching sequence.

## Appendix VI

### Method Of Statement - Soffit Surface Defect

Method of rectification of defect to be determined by Bubbledeck's Site Representative.

#### DEFECT LESS THAN 25MM DEPTH

- (i) Surface preparation shall be done in accordance with the material manufacturer's recommendation and clean from any debris.
- (ii) To remove all loose concrete, dust and concrete waste prior to touching up works.
- (iii) Touch up or patching works only using adhesive mortar or equivalent material.
- (iv) Finishes of patching work as smooth surfaces and make good.

#### DEFECT MORE THAN 25MM AND REBAR EXPOSED

- (i) Surface preparation shall be done in accordance with the material manufacturer's recommendation and clean from any debris.
- (ii) Remove all loose concrete, dust and concrete waste prior to touching up works.
- (iii) Install watertight formwork and make inlet and out for injection below.
- (iv) Mix SIKA-215 as flowable grout to pump in the formwork.
- (v) Remove formwork only after 24hours and make good.



## Contact details

### **BUBBLE DECK CONSTRUCTION SDN. BHD.**

#### **Head Quarter**

No. 59-3 (3rd Floor)  
Jalan Kampung Pandan  
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