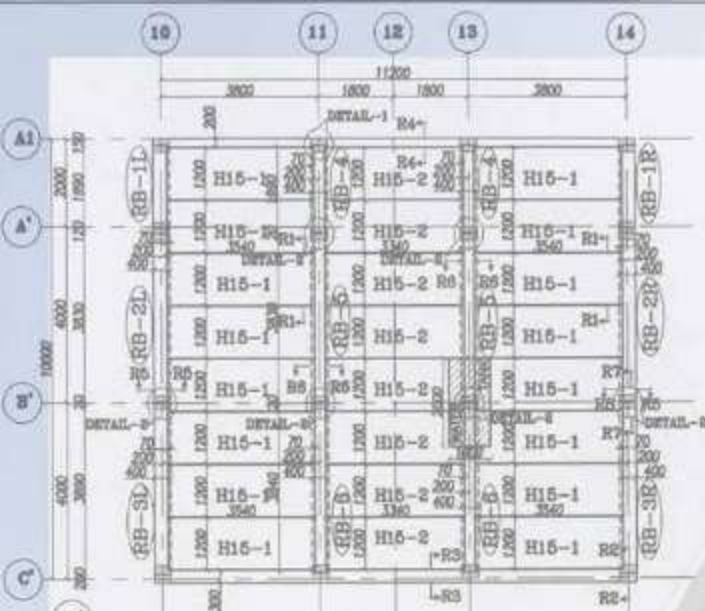


HOLLOWCORE

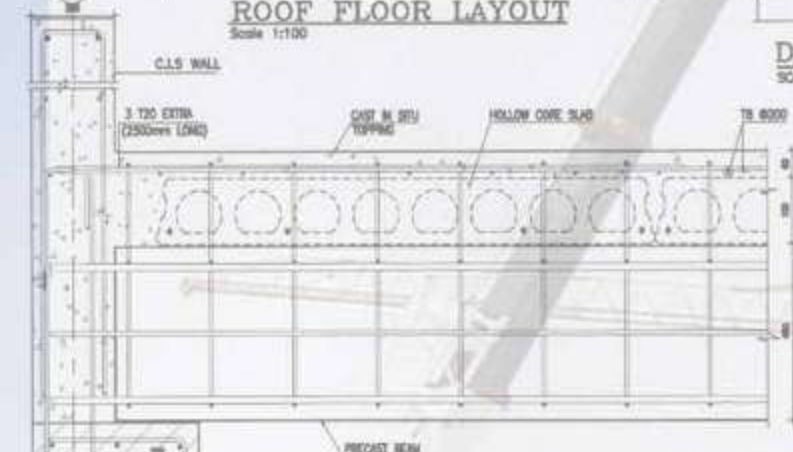


الخليج للقوالب الخرسانية
GULF PRECAST



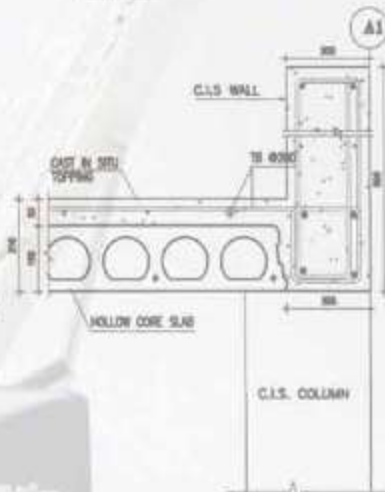
ROOF FLOOR LAYOUT

Scale 1:100



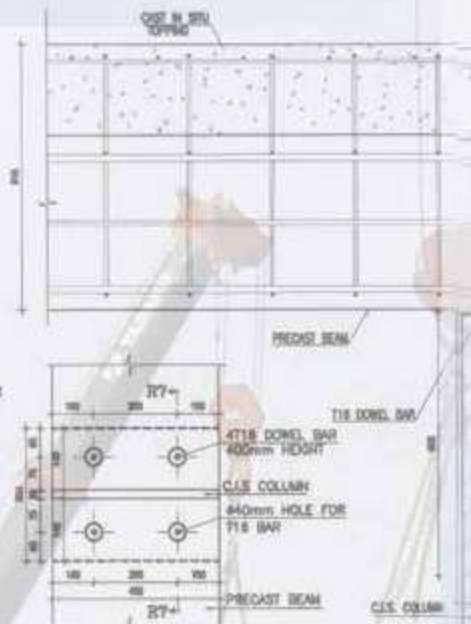
SECTION R2-R2

SCALE 1/10



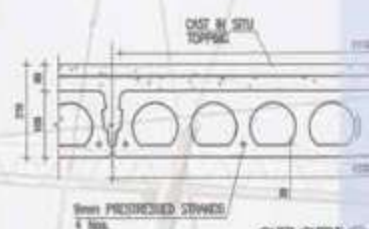
SECTION R4-R4

SCALE 1/10



DETAIL-2

SCALE 1/10



SECTION

SCALE 1/10



الخليج للقوالب الخرسانية
GULF PRECAST

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INTRODUCTION TO HOLLOWCORE

Hollowcore slabs are precast prestressed concrete elements extensively used for floor, roof slabs and wall panels. The success of this precast product is owing to the combination of high efficiency of design, automated production technology resulting in remarkable low price, versatility in the selection of unit depth and capacity, in addition to its ready-to-paint smooth soffit as well as its high quality and durability.

The automated manufacturing process uses a combination of dry mix concrete and shear compaction, which considerably reduces the consumption of water and concrete if compared to conventional process. This key sustainable advantage is recognized by governmental authorities (such as Dubai Municipality, Abu Dhabi Municipality, and Estidama / Leed).

Hollowcore is manufactured using long line extruders which form continuous cores running through the slabs. The primary purpose of these cores is to decrease by 40% to 50% the weight of the slabs, which leads to significant savings in the rest of the members of the building construction. They are also used as pre-existing conduits to place electrical cables and pipes, thus reducing even further the overall construction time.

Hollowcore slabs from Gulf Precast are used horizontally in all type of structures such as villas, buildings, commercial and industrial structures, hotels, schools, shopping centers.

They may even be used vertically, as wall panel partitions, in industrial structures or in boundary walls.





ADVANTAGES OF HOLLOWCORE

Advantages of Hollowcore Slabs are numerous:

- ☛ Remarkably lower price compared to other systems.
- ☛ Automated production under strict Quality and Safety Control.
- ☛ Longer span and greater loads than conventional slabs of the same thickness.
- ☛ No need for propping and scaffolding.
- ☛ Under side immediately ready for following trades.
- ☛ Maximum design flexibility.
- ☛ High strength, lightweight, durable structure.
- ☛ Superior fire resistance.
- ☛ Superior earth quake resistance.
- ☛ Preexisting longitudinal holes that can be used as conduits.
- ☛ Speed and ease of construction.
- ☛ High thermal insulation properties.

To further increase their strength, the slabs are reinforced longitudinally with a number of wire steel strands (the number and diameter of which are calculated during the engineering stage), which are prestressed for optimal resistance.

Hollowcore is the product of choice in structures that require sound barriers between floors, excellent fire and earthquake resistance, heat insulation characteristics, long spans, and is therefore widely used in hotels, schools, multi-storey car parks, high rise buildings and upscale residential and commercial complexes.

Hollowcore slabs are available in a range of seven depths: 150, 200, 265, 320, 400, 450 and 500mm slabs. The longest span can reach up to 18m.



Abu Dhabi International Airport

Khalifa Mosque at Al Falah Community





Depending on the project requirements, in particular the desired span and loading performance, Gulf Precast Engineering department proposes and designs the most adequate and economical Hollowcore solution for the project.

Factory produced by automatic extrusion:

Hollowcore slabs are manufactured in the factory on 125 long beds using automatic extruders, combining high output, low manpower and superior quality products.

Rapid construction:

Hollowcore slabs are cut to fit the requirements before leaving the factory, thus allowing simple fast erection on site.

Immediate work deck:

Hollowcore slabs provide an immediate solid work deck for other trades. After grouting the shear keys, the slabs can support construction loads up to full design capacity of the floor.

No formwork or Propping:

Expensive formwork and temporary props are eliminated, giving free uncluttered space with vastly improved access within the work site.

Reduced on-site labour:

Only a small erection crew is required to install as much as 600 square meters per day. The time of tradesmen on site is kept to a minimum.

Efficient light weight section:

The Hollowcore and prestressing impart a lightness and strength to the slabs which reduce the dead load on the floor. The depth of floor and the strand pattern can be varied at minimum cost to suit the span and load requirements.

Design flexibility:

Hollowcore slabs are compatible with most building materials including masonry, concrete and steel. Slabs can accommodate most building requirements including openings, angles and cantilevers.



Al Wanda Mall, Abu Dhabi



**Durability:**

Concrete quality meets the durability requirements of the most stringent standards. Strand cover may be varied to suit particular exposure classifications.

Long span:

Hollowcore slabs can accommodate long spans, resulting in flexible open space with fewer beams, walls and supporting columns. Clear spans of up to 18m can be obtained economically.

High load capacity:

Hollowcore slabs can handle the heavy loads required in most factories, warehouse and storage buildings without increasing floor depths or adding multitudes of beams and columns.

Fire resistance:

Fire resistance periods up to 240 minutes (4 hours) can be provided to meet building code requirements.

Sound insulation:

The low sound transmission property of Hollowcore floors reduces the amount of noise transmitted through floors and ceilings. Sound Transmission Class ratings as specified in building codes can be met for variety of occupancies.

Prefinished ceilings:

Exposed Hollowcore soffits can be painted directly or spray coated to provide attractive ceilings. Alternatively ceiling tiles can be applied directly or suspended ceiling simply installed.

Service cores:

Longitudinal core holes in floor slabs can be used as service ducts for concealed services such as plumbing, electrical and telephone cable. Breakouts can be drilled as required.





1. Bed Preparation:

The prestressing steel beds are cleaned thoroughly and slightly oiled to allow easy stripping of concrete after casting. The steel strands are then laid and fixed at both ends.

2. Stressing the Strands:

The 7-wire strands are stressed one by one, under strict Quality Control.

The stressing forces, number of strands and their position are all determined according to slab design.



3. Casting and Automatic Extrusion:

In order to meet the high durability and strength requirements for Hollowcore, top quality concrete (high early and ultimate strength, zero slump, high durability) is batched and transported to our state-of-the-art extruder which compacts it, then extrudes the Hollowcore section continuously along a 125m bed.





4. Detensioning and Cutting:

18 hours later, when quality checks confirm that required concrete strength has been reached, strands are detensioned and the precast prestressed concrete bed is cut into different elements according to design.

5. Storage and Curing:

Hollowcore slabs are then stored and cured in the yard according to quality procedures and up to the specified time.



6. Transport to Site:

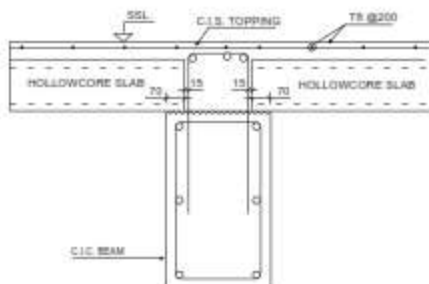
Transport is done by flat trailers, with Hollowcore slabs stacked horizontally, supported by timber planks and well secured to avoid transport damage.

7. Erection:

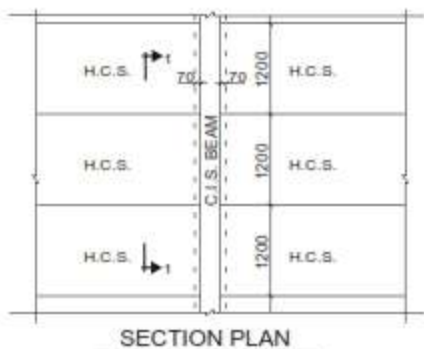
Hollowcore slabs are lifted from the trailers or stock on site by a special spreader beam and lifting belts, to ensure that no overstressing or damage occurs during erection.

Up to 600 m² of Hollowcore slabs can be erected by one team in one day, making Hollowcore one of the fastest construction systems available.

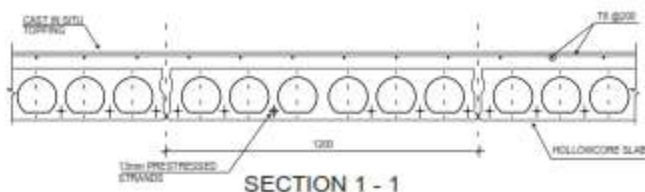




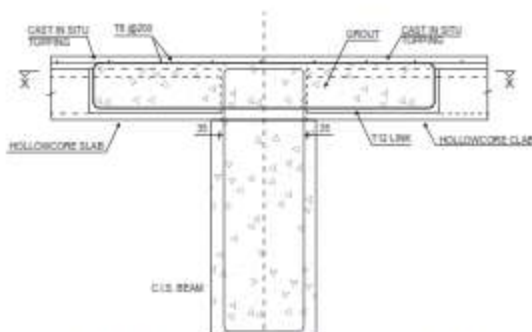
HOLLOWCORE SLAB CONNECTION DETAIL



SECTION PLAN

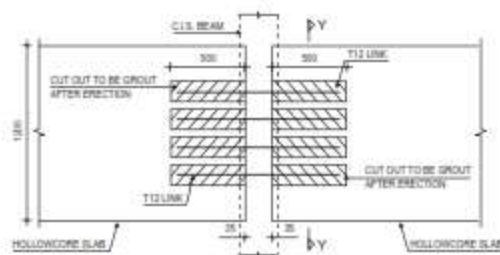


SECTION 1 - 1

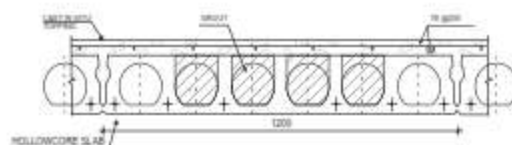


TYPICAL HOLLOWCORE SLAB CONNECTION DETAIL

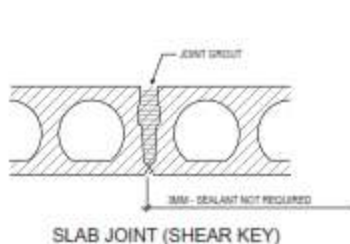




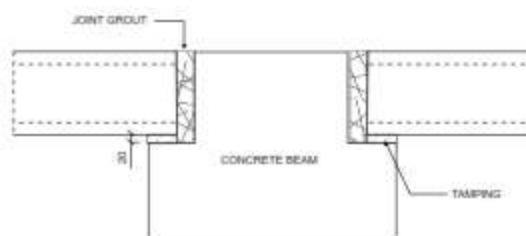
SECTION X - X



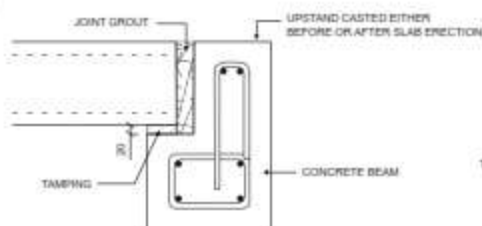
SECTION Y - Y



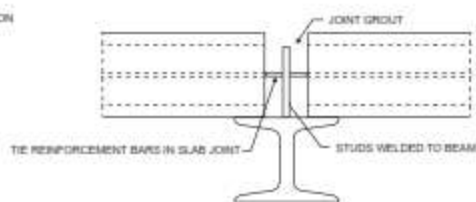
SLAB JOINT (SHEAR KEY)



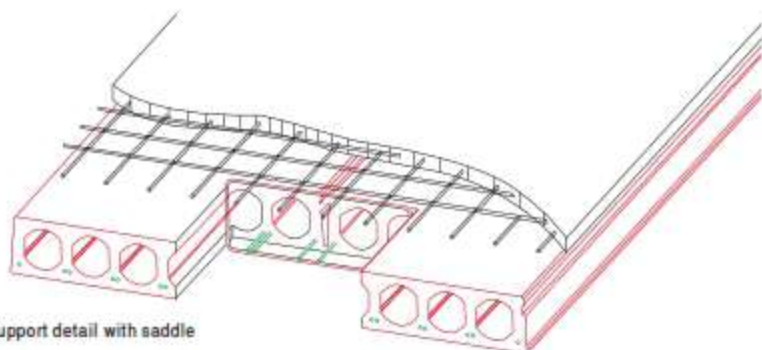
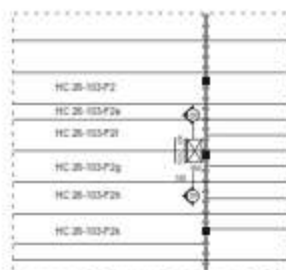
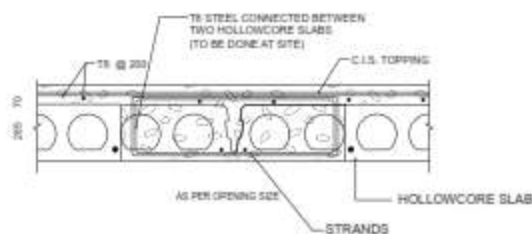
SUPPORT ON CONCRETE BEAM



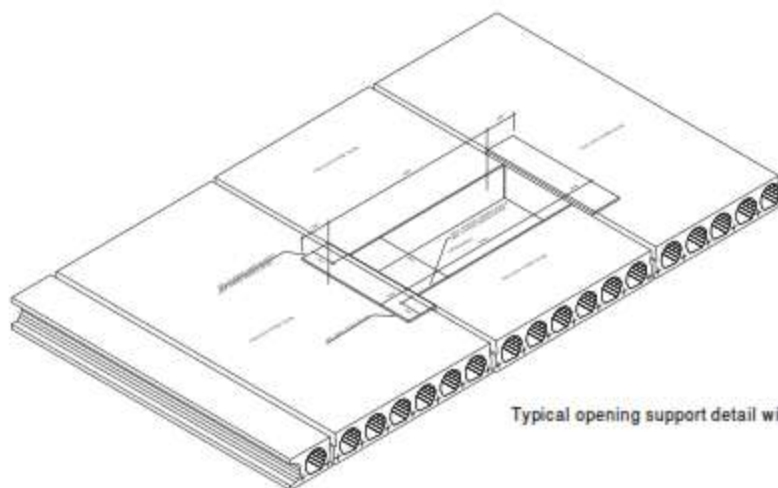
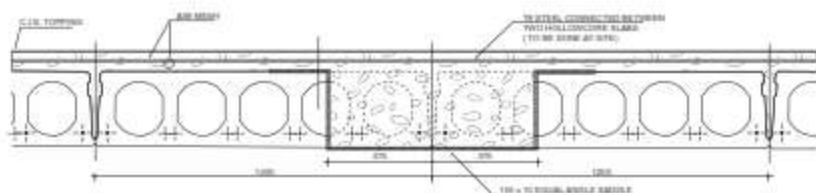
SUPPORT ON CONCRETE BEAM



SUPPORT ON STEEL STRUCTURE



Typical opening support detail with saddle



Typical opening support detail with saddle



TYPICAL PROJECTS

Ruwais Housing Complex



Al Wathba Insurance Building



Al Rawdhat Building



Al Barari Villas, Abu Dhabi



Erection of Hollowcore at Emirat Housing Development, Al Ain



Al Qasas Villas



22 Villas for Sheikh Hamdan Bin Zayed





Paris Sorbonne University during construction



Paris Sorbonne University, Abu Dhabi



IKEA, Abu Dhabi



Dubai Mall



Dubai Mall during construction



Dubai Garden Apartments



Abu Dhabi Theatre



Abu Dhabi Financial Centre



MAN Showroom, Jebel Ali, Dubai



Al Falah Community, Abu Dhabi



MAN Showroom, Jebel Ali, Dubai



Al Falah Community during construction

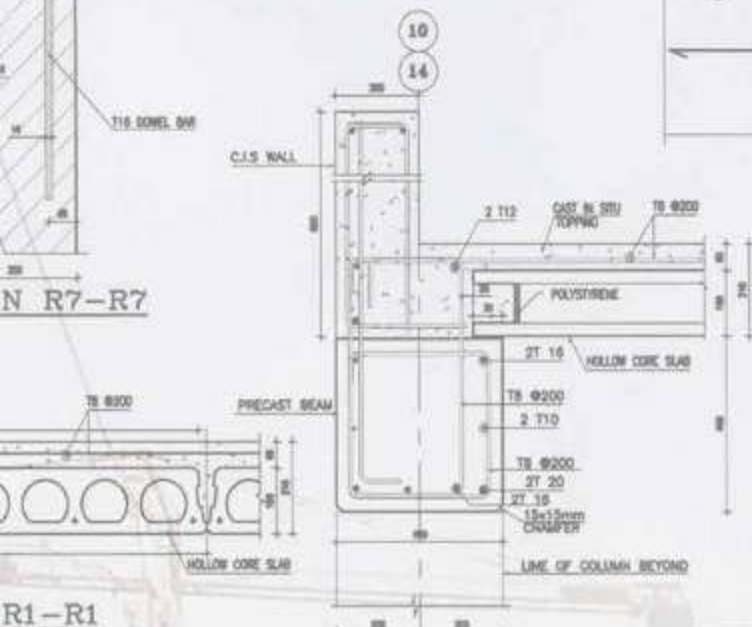
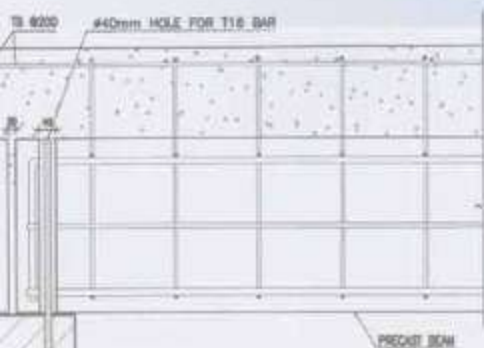


Workers Village, Abu Dhabi

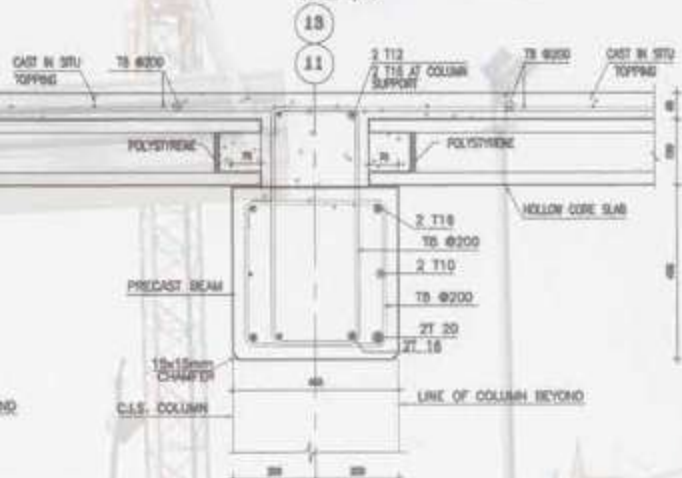




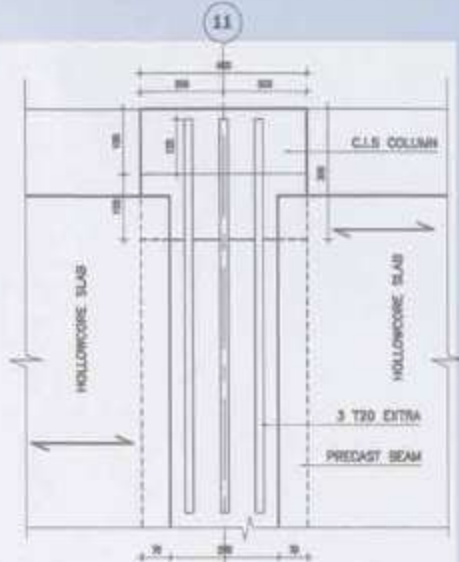




SECTION R5-R5
SCALE 1/10



SECTION R6-R6
SCALE 1/10



DETAIL-1
SCALE 1/10

NOTES:

1. ALL DIMENSION IN MILLIMETRES
2. CONCRETE GRADE FOR HOLLOWCORE SLABS 50 N/MM²
3. REINFORCEMENT GRADE 420 N/MM²
4. PRESTRESSED STRANDS : UNCOATED 9mm HIGH TENSILE UNCOATED TENSILE STRENGTH 1880 N/MM², ASTM A 416 GRADE 270

- REFER DWG. NO.: ACC-01 & 05

REV	DATE	REVISION DETAILS
CLIENT:  ABU DHABI MUNICIPALITY AGRICULTURE SECTION		
CONSULTANT: ARABIAN ENGINEERING CENTER P.O.BOX : 3181 - ABU DHABI		
CONTRACTOR: IMECO INT'L MECH. & ELECT. CO. P.O.BOX : 48527-ABU DHABI TEL: 644700 - FAX: 644045		
PROJECT: CONSTRUCTION & MAINTENANCE OF 218 FARMS AT SHAWAMEKH		
 GULF PRECAST CONC. CO. L.L.C TEL: OFFICE 6714441, FAC: 5510588, FAX: 6714443, BOX: 44495 E-mail : gprecast@emirates.net.ae		
TITLE: SUB: ACCOMMODATION ROOF LAYOUT & GENERAL DETAILS		
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