

**FENWICK ENGINEERING TECHNOLOGY**

**CONCRETE TECHNOLOGY AND PRODUCTION  
PRACTICE**

**WET (HYDRAULIC) PRESSED MANUFACTURE - 1 DAY**

**This course CAN ONLY be attended after attending the course 'CONCRETE TECHNOLOGY AND BATCH PLANT DESIGN FOR PRECAST CONCRETE MANUFACTURE' - which is designed to precede this course.**

**COURSE OBJECTIVES**

This course provides an in depth understanding of the following:

- \* The main products produced by the wet pressed process - paving flags, kerbs, channels and edgings.
- \* 'Wet pressed' concrete technology applied to these products.
- \* The practice of producing concrete suitable for wet pressing and related plant design.
- \* The wet pressing operation and process technology principles and practice.

by

**FENWICK ENGINEERING TECHNOLOGY**

**Richard G Fenwick**

Copyright 2001 - Fenwick Engineering Technology

# INDEX

## **1. IMPORTANT PROCESS RELATED PROPERTIES OF PRODUCTS TYPICALLY MANUFACTURED BY WET PRESSING.**

## **2. WHAT AFFECTS THE STRENGTH OF WET PRESSED CONCRETE?**

2.1 WATER/CEMENT RATIO

2.2 CEMENT CONTENT

2.3 MINIMUM SURFACE AREA OF AGGREGATES IN A MIX

2.4 COMPACTION

2.5 TIME

2.7 TEMPERATURE

2.8 HUMIDITY

2.9 CURING

2.9.1 DESIGN PARAMETERS FOR SATISFACTORY CURING

2.9.2 PRACTICAL SOLUTIONS

## **3. PROPERTIES OF FRESH WET PRESSED CONCRETE**

3.1 WORKABILITY - GENERAL

3.2 WORKABILITY AND WET PRESSED CONCRETE

## **4. PRINCIPLES OF MIX DESIGN**

4.1 THE PROCESS OF MIX DESIGN

4.2 FACTORS IN MIX DESIGN FOR WET PRESSED PRODUCTS

4.2.1 AGGREGATE TYPE

4.2.2 AGGREGATE SHAPE

4.2.3 MAXIMUM AGGREGATE SIZE

4.2.4 BINDERS

4.2.5 ADDITIVES

4.2.6 COMPACTION AND PRESSING - WET CENTRES

4.2.7 GREEN STRENGTH

4.2.8 PLUCKING

4.2.9 WARM CONCRETE

4.2.10 CURING AND CURING REGIMES

## **5. CEMENT SUBSTITUTES**

5.1 PULVERISED FUEL ASH - PFA

5.2 GROUND GRANULATED BLAST FURNACE SLAG - GGBFS

## **6. COLOURED CONCRETE**

## **7. CONCRETE PRODUCTION IN PRACTICE**

7.1 WHY IS ACCURACY AND REPEATABILITY NECESSARY?

7.2 SPECIAL REQUIREMENTS FOR 'WET PRESSED' BATCH PLANTS

7.2.1 BULK STORAGE OF AGGREGATES

7.2.2 FEED SYSTEM TO THE STORAGE SYSTEM -  
AGGREGATES

7.2.3 STORAGE OF AGGREGATES

7.2.4 STORAGE OF BINDERS - OPC, PFA, ETC.

7.2.5 STORAGE OF PIGMENTS, ADMIXTURES ETC

7.2.6 FEED AND WEIGH SYSTEMS FOR AGGREGATES

7.2.7 FEED AND WEIGH SYSTEMS FOR BINDERS

7.2.8 COLOUR SYSTEMS

7.2.9 PLANT CONTROL

7.2.10 MIXING

7.2.11 THE IMPORTANCE OF RAPID MIXING, FAST OVERALL  
BATCH TIME AND SMALL BATCHES

7.2.12 THE IMPORTANCE OF ADDING MATERIALS IN THE  
CORRECT SEQUENCE INTO THE MIXER

7.2.13 TRANSPORT AND STORAGE OF THE FINISHED BATCH

7.3 SOPHISTICATED PROCESS CONTROL MOISTURE COMPENSATION  
IN AGGREGATES AND MIXER WATER CONTROL

7.3.1 AGGREGATES

7.3.2 IN THE MIXER

7.4 WHAT THE PRODUCTION MANAGER SHOULD DO TO ENSURE  
THAT THE BATCH PLANT IS OPERATING CORRECTLY

## **8. THE WET PRESSED PROCESS - MECHANICAL AND PROCESS OPERATION**

8.1 DESCRIPTION AND MARKET

8.2 COMPETING PROCESSES - MACHINE BASE

8.2.1 VIBRATORY COMPACTION - BLOCK MACHINES

8.2.2 TAMPING PROCESS

8.2.3 HERMETIC PROCESS.

### 8.3 BASIC MACHINE AND PROCESS DESCRIPTION

#### 8.3.1 PRESS DESCRIPTION

#### 8.3.2 PROCESS BENEFITS

#### 8.3.3 PROCESS DISADVANTAGES

### 8.4 PRESS TOOLING - MOULDS

#### 8.4.1 MOULD BOX AND LINERS

#### 8.4.2 FILTER SECTIONS - TOP (DIE HEAD) AND BOTTOM (FORMER)

#### 8.4.3 RADIUSSED KERB AND OTHER RE-ENTRANT PRODUCTS

### 8.5 PERFORATED PLATES.

### 8.6 WATER (VACUUM) TAKE-OFF

### 8.7 DUPLEX (AND MULTIPLEX) PRESSING

### 8.8 PRESSING PRESSURE

### 8.9 PRESSING SPEED

#### 8.10 CONCRETE DISPENSING

##### 8.10.1 MANUAL DISPENSING

##### 8.10.2 AUTOMATED DISPENSING

### 8.11 PAPER PLACING

### 8.12 FILTER CLOTH

### 8.13 EJECTION AND STACKING

### 8.14 TAKE-OFF WATER PROCESSING

## **9. HOW A PRODUCTION MANAGER SHOULD RUN AN AUTOMATED PLANT**

## **10. QUALITY ASSURANCE AND QUALITY CONTROL SYSTEMS**

### 10.1 PLANT DEFINITION AND SET UP

### 10.2 INSPECTION AND TESTING

#### 10.2.1 INCOMING MATERIALS INSPECTION AND TESTING

#### 10.2.2 ROUTINE INSPECTION PROCEDURES

### 10.3 TYPICAL QUALITY CONTROL HANDBOOK PROCEDURES FOR FINISHED PRODUCT

### 10.4 INSPECTION AND TESTING

## **11. OVERALL COURSE CONCLUSION**