

FENWICK ENGINEERING TECHNOLOGY

CONCRETE TECHNOLOGY AND PRODUCTION PRACTICE

CONCRETE TECHNOLOGY AND BATCH PLANT DESIGN FOR PRECAST CONCRETE MANUFACTURE 1 DAY

NO PREVIOUS QUALIFICATIONS ARE NEEDED

COURSE OBJECTIVES

This course provides an understanding of the following:

- * Basic Concrete Technology and Mix Design Techniques
- * Concrete technology applied to Precast Manufacture – Cost reduction and quality improvement techniques.
- * Coloured concrete - in theory and practice
- * Batch plant design for Precast Concrete
- * Precast concrete technology - particularly high volume manufacture.

by
FENWICK ENGINEERING TECHNOLOGY

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INDEX

1. CONCRETE TECHNOLOGY

- 1.1 WHAT IS CONCRETE?
- 1.2 BINDERS (CEMENTS)
- 1.3 AGGREGATES
- 1.4 PFA
- 1.5 ADMIXTURES
- 1.6 PROPERTIES OF HARD CONCRETE
- 1.7 WHAT AFFECTS THE STRENGTH OF CONCRETE?
 - 1.7.1 WATER/CEMENT RATIO
 - 1.7.2 CEMENT CONTENT
 - 1.7.3 MINIMUM SURFACE AREA OF AGGREGATES IN A MIX
 - 1.7.4 HOW TO DESIGN A MIX WITH MINIMUM SURFACE AREA
 - 1.7.5 COMPACTION
 - 1.7.6 TIME
 - 1.7.7 TEMPERATURE
 - 1.7.8 HUMIDITY
 - 1.7.9 CURING
- 1.8 PROPERTIES OF FRESH CONCRETE
 - 1.8.1 WORKABILITY
 - 1.8.2 WORKABILITY AND THE HIGH VOLUME PROCESSES
- 1.9 OVERALL PROCESS CONTROL

2. PRINCIPLES OF MIX DESIGN

- 2.1 PROCESS CONTROL AND THE INFLUENCE ON MIX DESIGN
- 2.2 STATISTICS - TARGET STRENGTH AND STANDARD DEVIATION
- 2.3 THE PROCESS OF MIX DESIGN

3. OPC SUBSTITUTION: THE USE OF PULVERISED FUEL ASH - PFA AND GROUND GRANULATED BLAST FURNACE SLAG - GGBFS.

3.1 PULVERISED FUEL ASH - PFA

3.2 GROUND GRANULATED BLAST FURNACE SLAG - GGBFS

4. COLOURED CONCRETE

5. CONCRETE PRODUCTION IN PRACTICE

5.1 WHY IS ACCURACY AND REPEATABILITY NECESSARY?

5.2 THE ESSENTIAL ELEMENTS OF A BATCH PLANT

5.2.1 BULK STORAGE OF AGGREGATES

5.2.2 FEED SYSTEMS TO THE STORAGE SYSTEM -
AGGREGATES

5.2.3 STORAGE OF AGGREGATES

5.2.4 STORAGE OF BINDERS

5.2.5 STORAGE OF PIGMENTS AND ADMIXTURES

5.2.6 FEED AND WEIGH SYSTEMS FOR AGGREGATES

5.2.7 FEED AND WEIGH SYSTEMS FOR BINDERS

5.2.8 COLOUR SYSTEMS

5.2.9 PLANT CONTROL

5.2.10 MIXING

5.2.11 TRANSPORT AND STORAGE OF THE FINISHED BATCH.

5.3 SOPHISTICATED PROCESS CONTROL - MOISTURE

COMPENSATION IN AGGREGATES AND MIXER WATER CONTROL

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

6. COURSE CONCLUSION

**NOTE: THIS COURSE MUST BE ATTENDED BEFORE
EITHER THE 'BLOCK PLANT MANUFACTURE' OR 'WET
PRESSING' COURSE**