CONCRETE & THE ENVIRONMENT
THE BELGIAN PRACTICE

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WHO'S FEBELCEM?

- The Federation
- The members

CONTENTS

- The environmental aspects of concrete
- In situ pavement recycling using cement at the military airbase of Bierset
- Conclusions

LCA

Manufacturing of cement
REDUCTION OF ENVIRONMENTAL IMPACT

- Cement of type CEM III : blast furnace slag
- Use of waste as alternative fuel
  - Used tyres
  - Waste wood
  - Animal meal and animal remains
- Dustfilters

AGGREGATE : QUARRIES AND PITS

RECYCLING AGGREGATE

RECYCLING IN CONCRETE PRODUCTION

READY MIXED CONCRETE PLANTS

CONCRETE IN USE
NATURAL ADVANTAGES OF CONCRETE

- No emissions
- No toxic preservatives
- Inherent fire-resistance
- Low embodied energy content
- Acoustic insulation
- Thermal mass

LEACHING BEHAVIOUR OF CONCRETE

ROAD CONSTRUCTION: CRCP

FINE EXPOSED AGGREGATE SURFACE

NOISE MEASUREMENTS

ENERGY SAVING

- Lighting costs (pavement brightness)
- Fuel consumption
FEBELCEM, CEMBUREAU, EFCA, EISIA, ERMCO, EUEPG, BIBM

LCA : PARTICIPANTS IN THE PROJECT GROUP

BIBM. International Bureau for Precast Concrete
CEMBUREAU. European Cement Association
EFCA. European Federation of Concrete Admixtures Associations
EISIA. European Independent Steelworks Association
ERMCO, European Ready Mixed Concrete Organisation
UEPGE, European Aggregates Association

LCA : FUNCTIONAL UNITS

- Hollow core slab
- Exterior load bearing wall
- Cladding wall
- Column
- Paving blocks
- Flat roof
- Frame
- Foundation pile
- Road pavement
- Bridge pylon

PART II

IN SITU PAVEMENT RECYCLING USING CEMENT AT THE BELGIAN AIRBASE OF BIERSET

IN SITU RECYCLING : INTRODUCTION

1994 : BIERSET – CAR PARKING

EVOLUTION OF BELGIAN REALISATIONS

**Feasibility Conditions**

- Continuous Grading
- < 10 % of elements > 80 mm
- No inhibiting substances
- ...

**Execution: Optional Operations**

- Sawing
- Cleaning
- Spreading of added aggregate
- Compaction

**Execution: Recycling**

- Spreading of water tank
- Recycling

**The Bierset Worksite: Recycler**
ADVANTAGES OF IN SITU RECYCLING

- Re-use of the existing pavement
- Reduction dumps
- Decrease aggregate extraction
- Less transportation costs and nuisance
- Lower rehabilitation costs

Re-use of the existing pavement
Reduction dumps
Decrease aggregate extraction
Less transportation costs and nuisance
Lower rehabilitation costs
CONCLUSIONS

- CONCRETE IS GREEN
- LCA

- IN SITU RECYCLING USING CEMENT IS
  - AN EXCELLENT TECHNIQUE
  - A SUSTAINABLE SOLUTION