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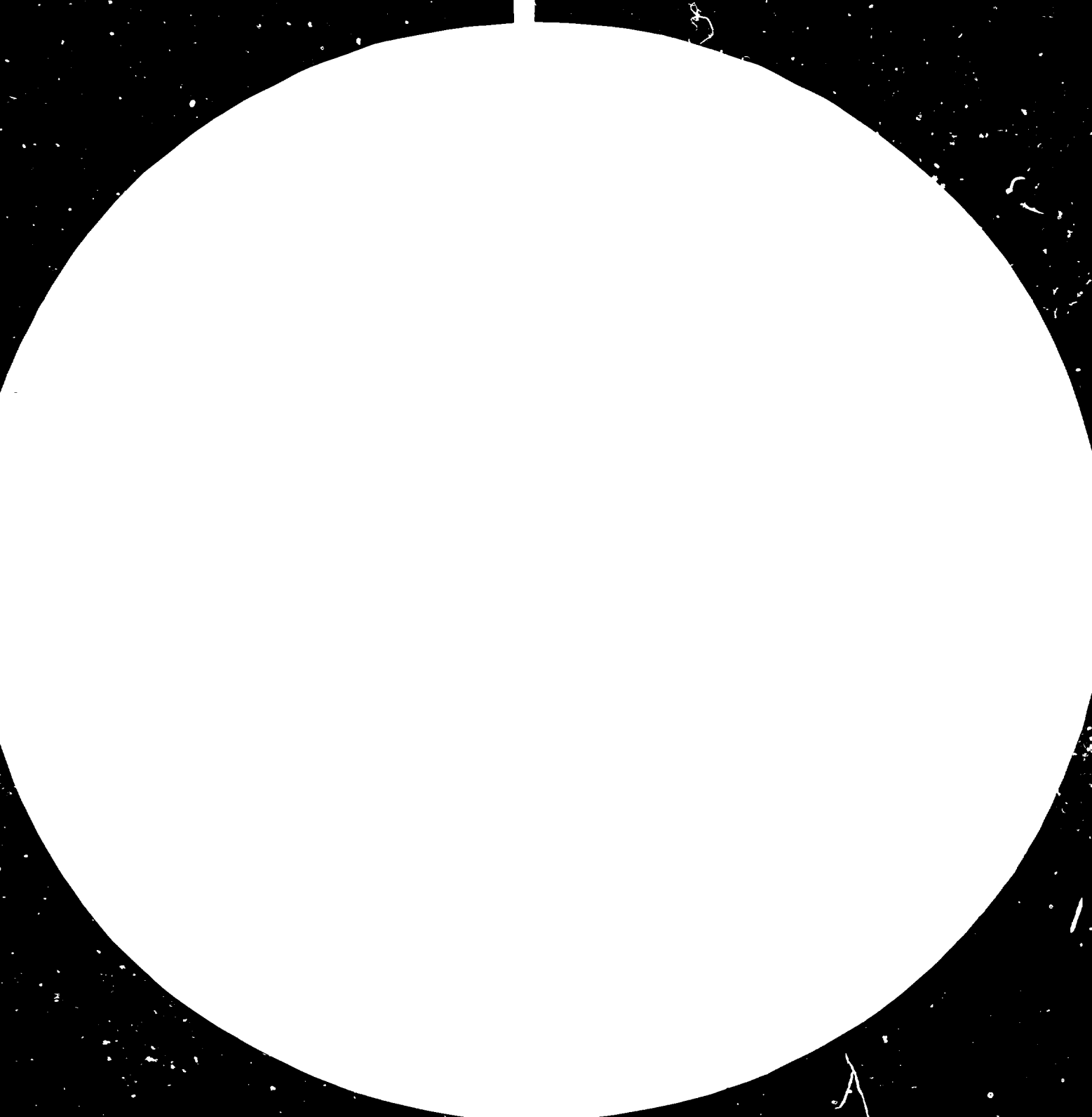
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paper

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Workshop on Cement and Concrete Products  
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CONCRETE - MATERIALS, PROPERTIES AND PRACTICE\*

by  
D. Beal\*\*

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A) FRESH STATE

1. Workability
  - a) Compactability W/C, paste or mortar content x ( $1/A/C$ ), aggregate size, surface texture,  $1/\text{specific surface}$ .
  - b) Mobility Mortar or paste content,  $1/\text{aggregate size}$ .
  - c) Handling Stability Cement content ( $1/A/C$ ), sand content,  $1/\text{aggregate size}$ , grading.
  - d) Vibrational Stability  $1/\text{mortar or paste content}$ ,  $1/W/C$ .

B) HARDENED STATE

1. Compressive Strength  $1/W/C$ , degree of hydration, age, temperature, maturity, curing, type of cement, aggregate,  $1/\text{voids}$ , A/C, method of testing.
2. Flexural, Tensile, Shear Bond, Biaxial, Triaxial Strengths Compressive strength, aggregate size.
3. Modulus of Elasticity, Rigidity Compressive strength, type of aggregate.
4. Poisson's Ratio  $1/A/C$ , age.
5. Density  $1/\text{voids}$ ,  $1/W/C$ , type of aggregate.
6. Impermeability Density,  $1/W/C$ , degree of hydration, age, compressive strength.
7. Physical Durability Density, type of aggregate,  $1/W/C$ .
8. Shrinkage and Moisture Movement W/C, cement content, ( $1/A/C$ ), aggregate size.
9. Thermal Coefficient of Expansion  $4-7 \times 10^{-6}$  in/in/ $^{\circ}$ F, type of aggregate, A/C, temperature.
10. Thermal Conductivity Density, moisture content, type of aggregate.
11. Chemical Deterioration Density, type of cement.

