APPENDIX 2

MOMENT AND CURVATURE COMPUTER OUTPUT

Theoretical $M_{cr}$, $\phi_{cr}$, $M_y$, $\phi_y$, $M_y$, and $\phi_u$

A.2.1 Specimen : Group - E

At Cracking

CHAR. STRENGTH OF CONCRETE ($f_{ck}$) = 41.20 N/Sq.mm
STRESS IN STEEL ($f_y$) = 296 N/Sq.mm
YOUNG’S MODULUS OF STEEL ($E$) = $2.20 \times 10^5$ N/Sq.mm
YOUNG’S MODULUS OF CONCRETE ($E_c$) = 36586.72 N/Sq.mm
CRACKING MOMENT ($M_{cr}$) = 1.14 kNm
CRACKING PIE ($\phi_{cr}$) = 2.08 E-03 rad/m

At Yield

STRAIN IN STEEL = 1.34545E-03
DEPTH OF NEUTRAL AXIS (NAD) = 39.75 mm
THEORETICAL YIELD MOMENT ($M_y$) = 6.00 kNm
THEORETICAL YIELD PIE ($\phi_y$) = 20.11 E-03 rad/m
At Ultimate

STRAIN IN CONCRETE = .0035
DEPTH OF NEUTRAL AXIS (NAD) = 60.38 mm

THEORETICAL ULTIMATE MOMENT ($M_u$) = 9.08 kNm
THEORETICAL ULTIMATE PIE ($\phi_u$) = 59.14 E-03 rad/m

A.2.2 Specimen : Group - F

At Cracking

CHAR. STRENGTH OF CONCRETE ($f_{ck}$) = 41.20 N/Sq.mm
STRESS IN STEEL ($f_y$) = 256 N/Sq.mm
YOUNG'S MODULUS OF STEEL ($E$) = 2.02x10^5 N/Sq.mm
YOUNG'S MODULUS OF CONCRETE ($E_c$) = 36586.72 N/Sq.mm
CRACKING MOMENT ($M_{cr}$) = 1.21 kNm
CRACKING PIE ($\phi_{cr}$) = 2.05 E-03 rad/m

At Yield

STRAIN IN STEEL = 1.267326E-03
DEPTH OF NEUTRAL AXIS (NAD) = 41.64 mm
THEORETICAL YIELD MOMENT ($M_y$) = 7.15 kNm
THEORETICAL YIELD PIE ($\phi_y$) = 29.50 E-03 rad/m
At Ultimate

STRAIN IN CONCRETE = 0.0035
DEPTH OF NEUTRAL AXIS (NAD) = 62.64 mm
THEORETICAL ULTIMATE MOMENT (M_u) = 9.50 kNm
THEORETICAL ULTIMATE PIE (φ_u) = 57.72 E-03 rad/m

A.2.3 Specimen : Group - G

At Cracking

CHAR. STRENGTH OF CONCRETE (f_{ck}) = 41.20 N/Sq.mm
STRESS IN STEEL (f_y) = 256.40 N/Sq.mm
YOUNG’S MODULUS OF STEEL (E) = 2.02 x 10^5 N/Sq.mm
YOUNG’S MODULUS OF CONCRETE (E_c) = 36586.72 N/Sq.mm
CRACKING MOMENT (M_{cr}) = 1.23 kNm
CRACKING PIE (φ_{cr}) = 2.05 E-03 rad/m

At Yield

STRAIN IN STEEL = 1.267326E-03
DEPTH OF NEUTRAL AXIS (NAD) = 44.70 mm
THEORETICAL YIELD MOMENT (M_y) = 8.21 kNm
THEORETICAL YIELD PIE (φ_y) = 34.10 E-03 rad/m
At Ultimate

STRAIN IN CONCRETE = 0.0035
DEPTH OF NEUTRAL AXIS (NAD) = 78.75 mm
THEORETICAL ULTIMATE MOMENT (Mu) = 13.00 kNm
THEORETICAL ULTIMATE PIE (\(\phi_u\)) = 45.66 E-03 rad/m

A.2.4 Specimen : Group - H

At Cracking

CHAR. STRENGTH OF CONCRETE (fck) = 41.20 N/Sq.mm
STRESS IN STEEL (fy) = 256.40 N/Sq.mm
YOUNG'S MODULUS OF STEEL (E) = 2.02 x 10^5 N/Sq.mm
YOUNG'S MODULUS OF CONCRETE (Ec) = 36586.72 N/Sq.mm
CRACKING MOMENT (M\(^c\)) = 1.21 kNm
CRACKING PIE (\(\phi_c\)) = 2.05 E-03 rad/m

At Yield

STRAIN IN STEEL = 1.267326E-03
DEPTH OF NEUTRAL AXIS (NAD) = 45.31 mm
THEORETICAL YIELD MOMENT (My) = 8.19 kNm
THEORETICAL YIELD PIE (\(\phi_y\)) = 24.29 E-03 rad/m
At Ultimate

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