

GENERAL ANALYSIS

APPLIED MOMENT
($WL^2/8$)

ADAM'S THEORY OF COMPOSITE ACTION

NOT QUITE
STRAIGHT

RESIDUAL MOMENT
CAPACITY MUST BE
PROVIDED BY STEEL
BEAM ACTING ON
ITS OWN, ACTING
NON-COMPOSITELY.
CONSEQUENCES:

NON-LINEAR
GROWTH IN
COMPOSITE
FLEXURAL CAPACITY
AS LIMITED BY
AVAILABLE

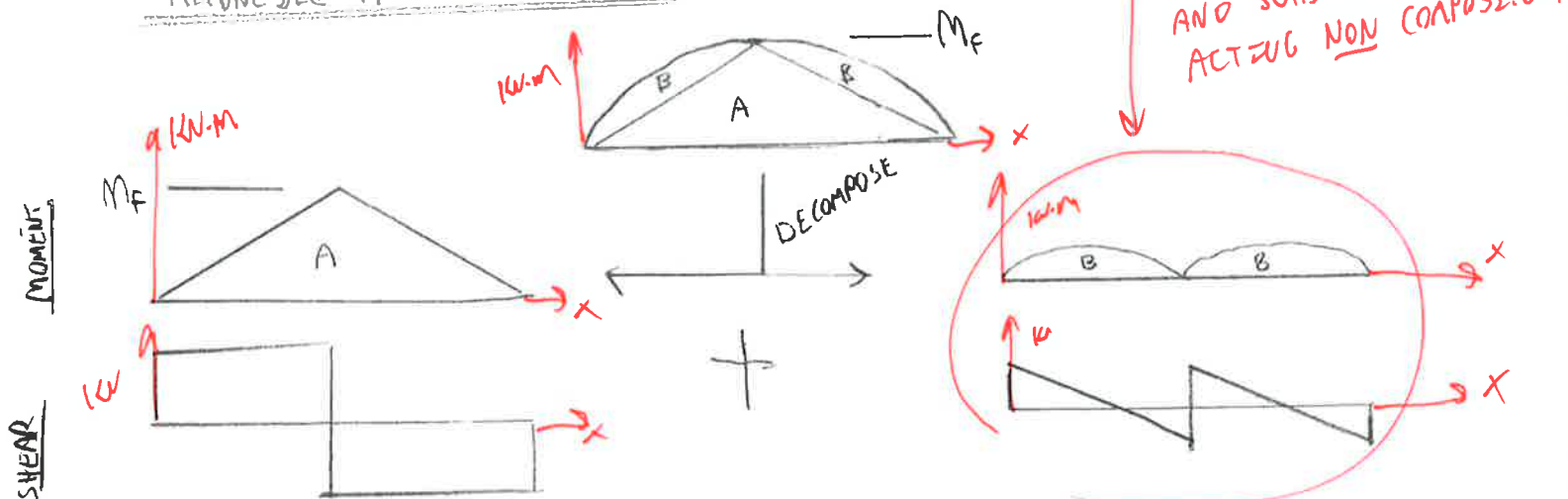
COMPOSITE MOMENT DIAGRAM
BASED ON EQUILIBRIUM,
IMMUTABLE!

RESISTING MOMENT DIAGRAM, IF
HORIZONTAL SHEAR @ INTERFACE IS
LINEAR, THEN "CHORD" FORCE &
MOMENT RESISTANCE DUE TO COMPOSITE
BEHAVIOR MUST ALSO INCREASE
LINEARLY. PROBLEM: YOU CAN'T
FIGHT A PARABOLIC APPLIED
MOMENT DIAGRAM WITH A
LINEAR MOMENT DIAGRAM,
UNIFORM HORIZONTAL
SHEAR CAPACITY (STUNS)

1) PLANE SECTIONS DO NOT REMAIN
PLANE. THIS IS DUE, NOT JUST
TO THE REALITY OF IMPERFECT
SHEAR TRANSFER BUT TO
CRUSHING.

2) THE PORTION OF LOAD RESISTED
NON-COMPOSITELY INCREASES
DEFLECTION RELATIVE TO A
FULL COMPOSITE CASE.

RECONCILE HORIZONTAL SHEAR



* HORIZONTAL SHEAR MATCHES
VERTICAL FOR PORTION
OF LOAD RESISTED COMPOSITELY

* HORIZONTAL LOAD IS
SELF-EQUILIBRATING FOR PORTION
OF LOAD RESISTED
NON-COMPOSITELY.