

Project

Job Number

Date

Page

of

Designer

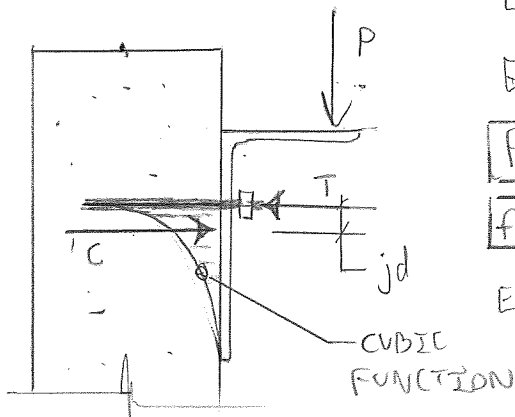
$$EI_c \rightarrow \infty$$

$$EI_{\text{BOLT}} \rightarrow \infty$$

$$f_y \rightarrow \infty$$

$$f'_c \rightarrow \infty$$

$$EI_s = \text{REALISTIC}$$



$$EI_c \rightarrow \infty$$

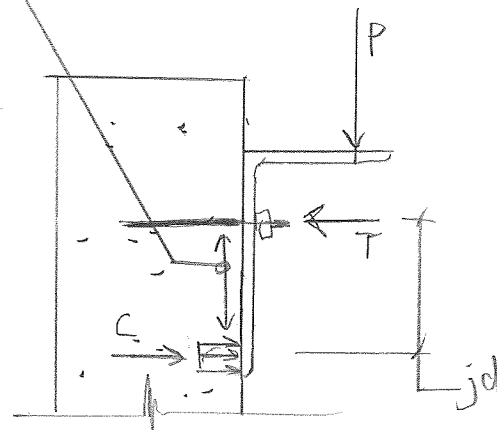
$$EI_{\text{BOLT}} \rightarrow \infty$$

$$f_y \rightarrow \infty$$

$$f'_c \rightarrow \text{REAL}$$

$$EI_s \rightarrow \text{REAL}$$

IF BOLT DOES NOT YIELD, CONCRETE IN THIS AREA MUST CRUSH TO OBTAIN STRESS DISTRIBUTION



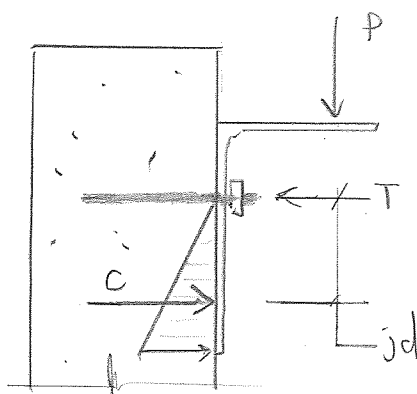
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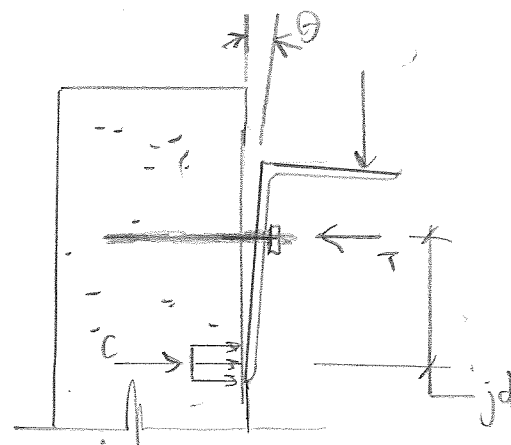
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$$EI_s \rightarrow \text{REAL}$$



THIS CASE, WHERE BOLT YIELDS, IS ONLY CASE THAT TRULY RESEMBLES DUCTILE CONCRETE BEAM DESIGN

WHY RELATIVE STIFFNESS MATTERS

WHY YIELD STRENGTH (f_y/f'_c) MATTER

PRYING FORCES