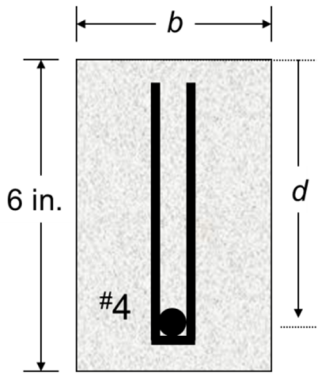
Example 1

Let's use the failure models to predict the ultimate strength-to-weight (SWR) of one of our reinforced concrete beams from lab.



Consider a beam with the following characteristics:

- Concrete strength f'_c = 4,000 psi
- Steel strength f_y = 60,000 psi
- The tension reinforcement will be 1 #4 rebars
- The shear reinforcement will be #3 rebars, U-shaped, 3 in. spacing
- Use minimum cover of 0.75 in. and a width to accommodate the reinforcement

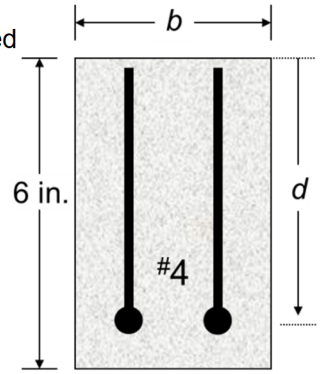
Consider the following mix for a yd^3 of concrete developed using the ACI mix design procedure.

Component	Amount (lb.)
water	315
cement	553
coarse aggregate	1,641
fine aggregate	1,431

Bar #	Diameter (in.)	As ($in.^2$)
3	0.375	0.11
4	0.500	0.20
5	0.625	0.31
6	0.750	0.44

Example 2

Let's use the failure models to predict the ultimate strength-to-weight (SWR) of one of our reinforced concrete beams from lab.



Consider a beam with the following characteristics:

- Concrete strength f'_c = 6,000 psi
- Steel strength f_y = 60,000 psi
- The tension reinforcement will be 2 #4 rebars
- The shear reinforcement will be #3 rebars installed vertically at 4 in. spacing
- Use minimum cover of 1 in., a bar spacing of 0.75 in., and a width to accommodate the reinforcement

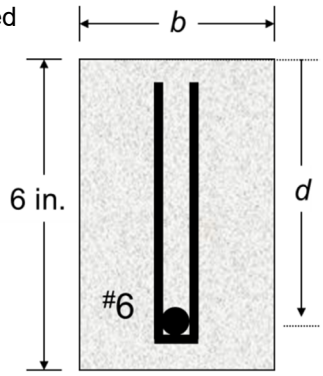
Consider the following mix for a yd^3 of concrete developed using the ACI mix design procedure.

Component	Amount (lb.)
water	315
cement	768
coarse aggregate	1,641
fine aggregate	1,251

Bar #	Diameter (in.)	As ($in.^2$)
3	0.375	0.11
4	0.500	0.20
5	0.625	0.31
6	0.750	0.44

Example 3

Let's use the failure models to predict the ultimate strength-to-weight (SWR) of one of our reinforced concrete beams from lab.



Consider a beam with the following characteristics:

- Concrete strength f'_c = 4,000 psi
- Steel strength f_y = 60,000 psi
- The tension reinforcement will be 1 #6 rebars
- The shear reinforcement will be #3 rebars, U-shaped, 3 in. spacing
- Use minimum cover of 0.75 in. and a width to accommodate the reinforcement

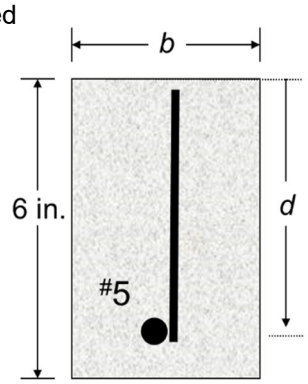
Consider the following mix for a yd^3 of concrete developed using the ACI mix design procedure.

Component	Amount (lb.)
water	315
cement	553
coarse aggregate	1,641
fine aggregate	1,431

Bar #	Diameter (in.)	As ($in.^2$)
3	0.375	0.11
4	0.500	0.20
5	0.625	0.31
6	0.750	0.44

Example 4

Let's use the failure models to predict the ultimate strength-to-weight (SWR) of one of our reinforced concrete beams from lab.



Consider a beam with the following characteristics:

- Concrete strength f'_c = 6,000 psi
- Steel strength f_y = 60,000 psi
- The tension reinforcement will be one #5 rebars
- The shear reinforcement will be one #3 rebars installed vertically at 3 in. spacing
- Use minimum cover of 1 in. to accommodate the reinforcement

Consider the following mix for a yd^3 of concrete developed using the ACI mix design procedure.

Component	Amount (lb.)
water	315
cement	768
coarse aggregate	1,658
fine aggregate	1,242

Bar #	Diameter (in.)	As ($in.^2$)
3	0.375	0.11
4	0.500	0.20
5	0.625	0.31
6	0.750	0.44