

**Figure 1-1 Flow Chart for Environmental Classification of Structures**

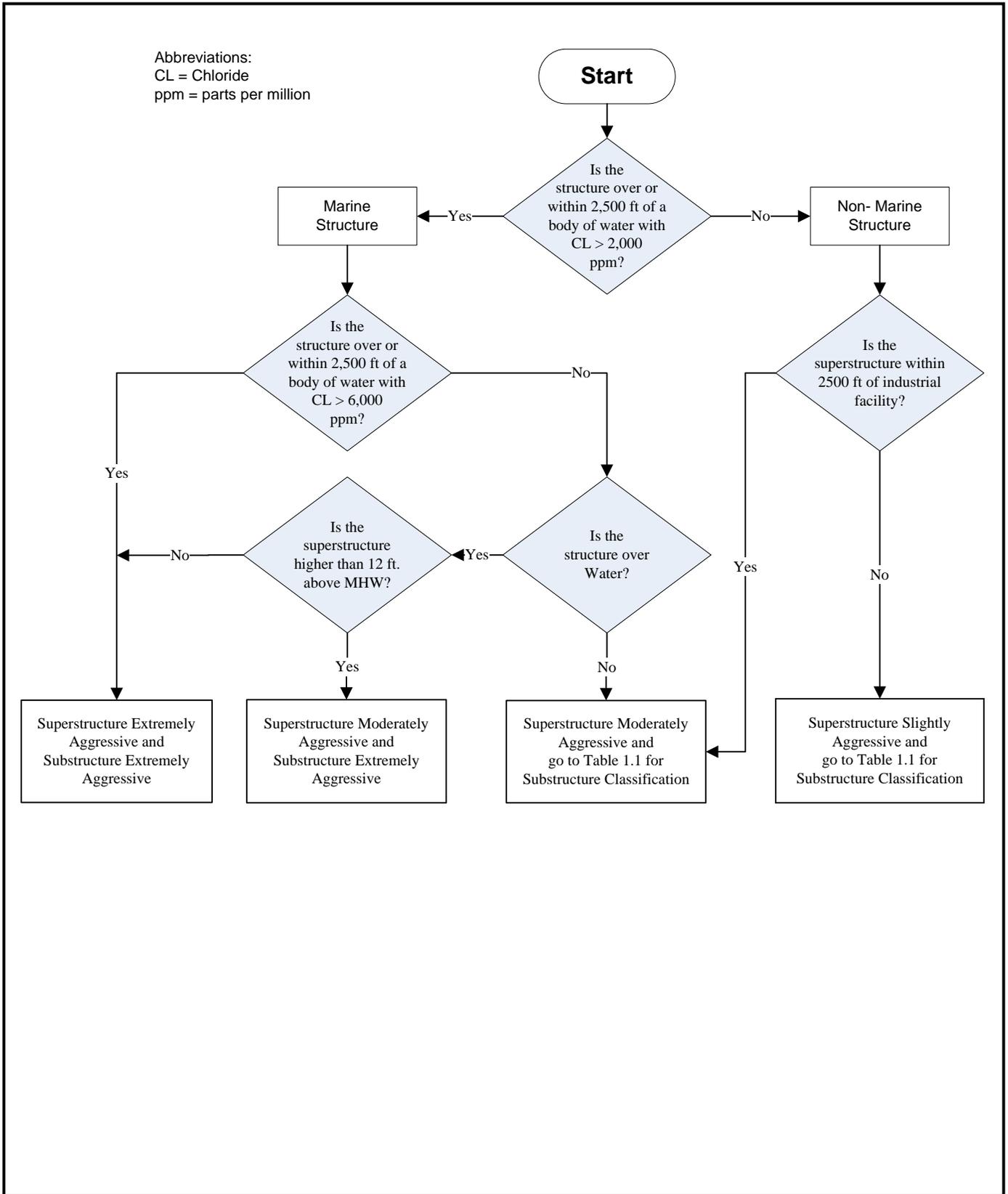
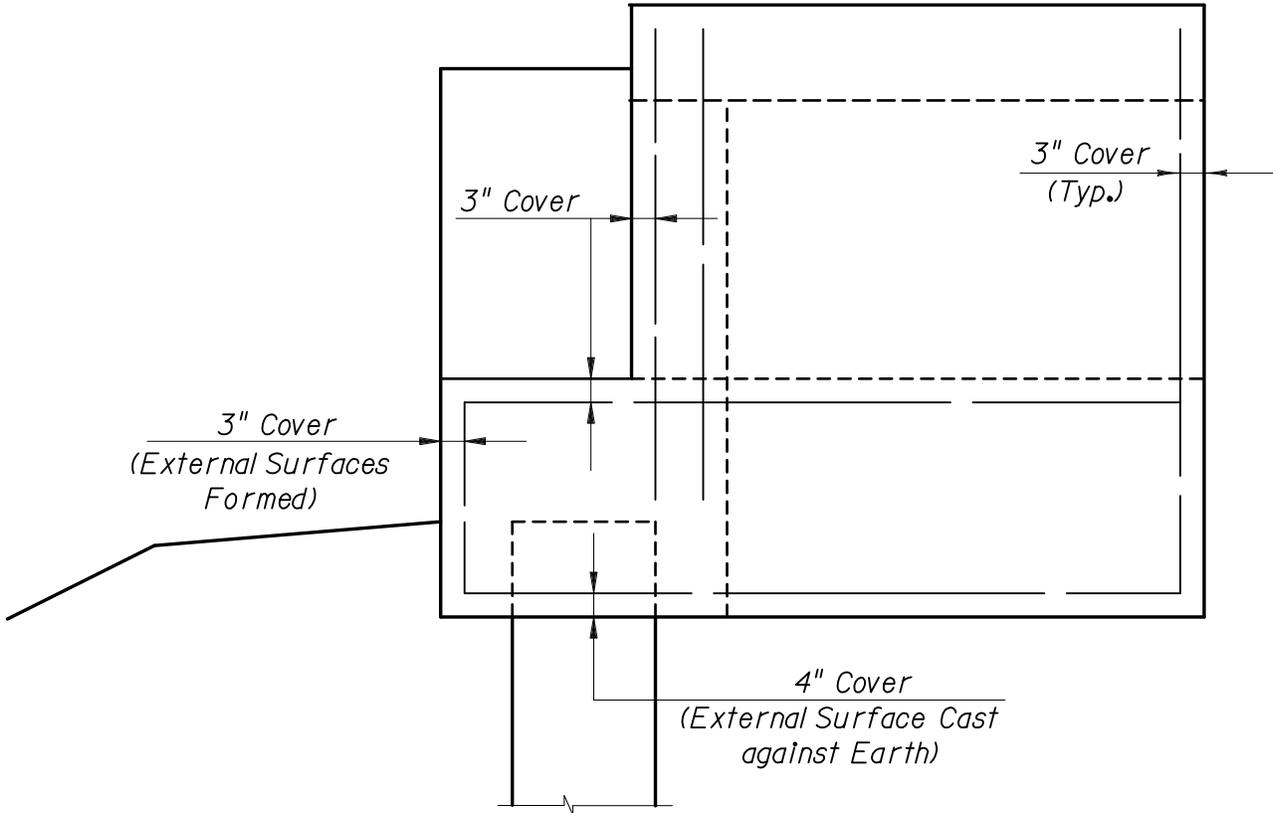


Figure 1-2, End Bent in Slightly or Moderately Aggressive Environment



**END BENT LOCATION IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENT**

Figure 1-3 Pier In Water Extremely Aggressive Environment

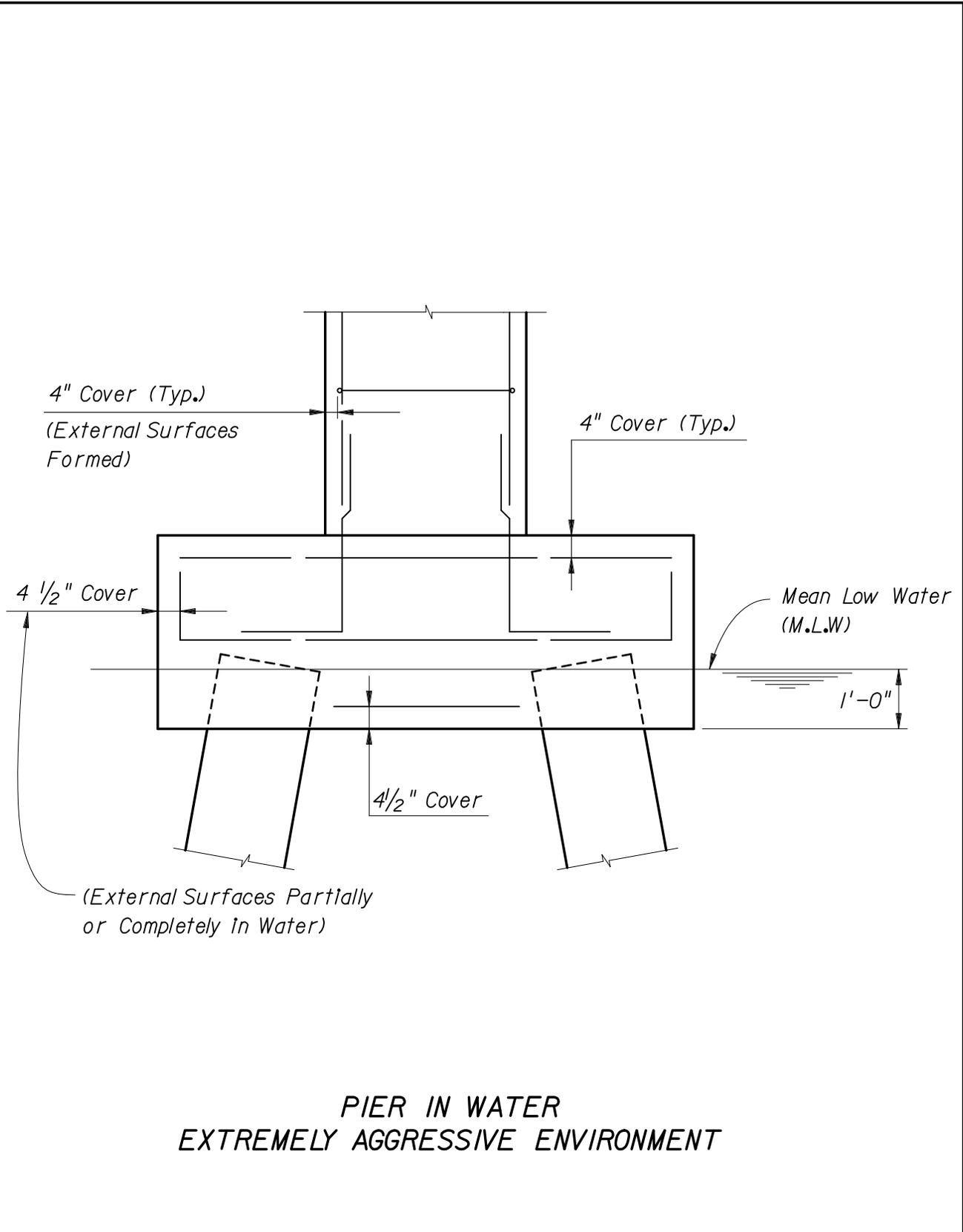
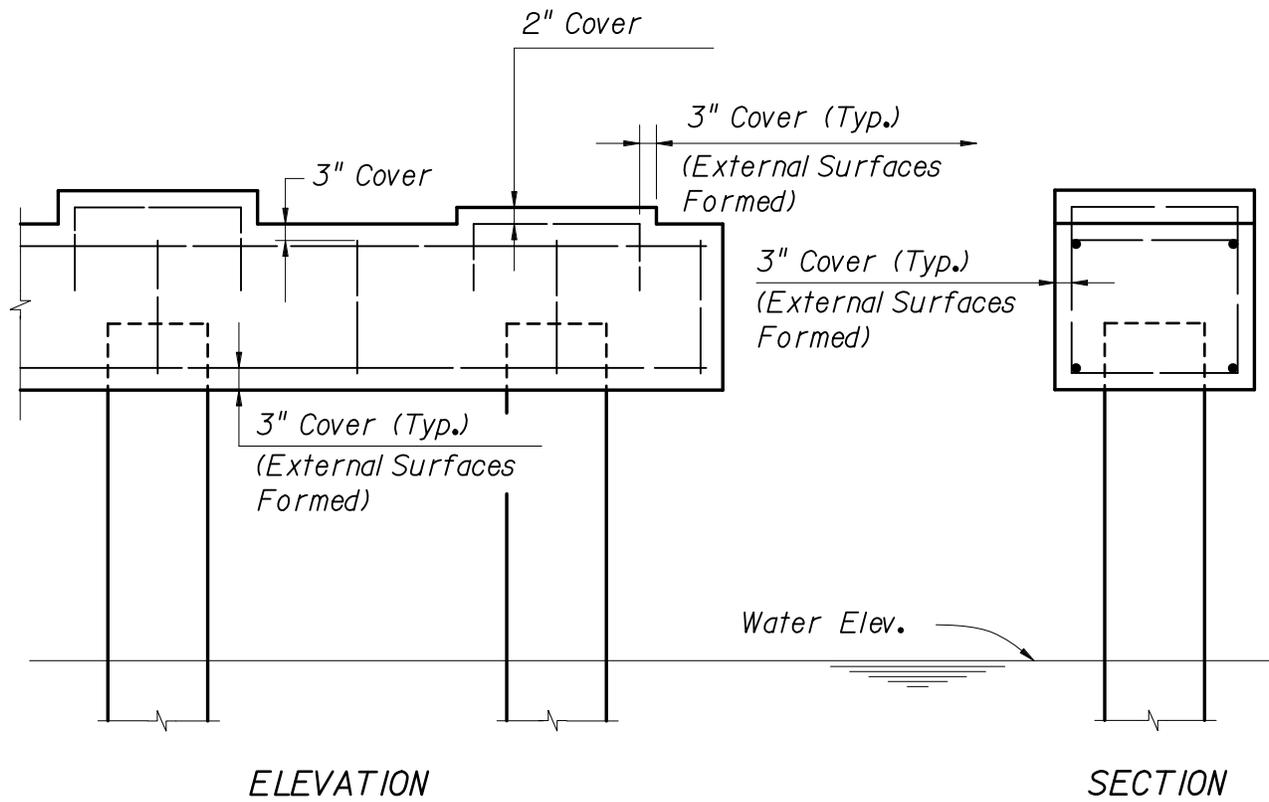


Figure 1-4 Intermediate Bent in water (Slightly or Mod. Aggressive)



**INTERMEDIATE BENT IN WATER  
CLASSIFIED AS SLIGHTLY OR MODERATELY  
AGGRESSIVE ENVIRONMENT**

Figure 1-5 Cast -in-Place slab beam supported superstructure (All environments)

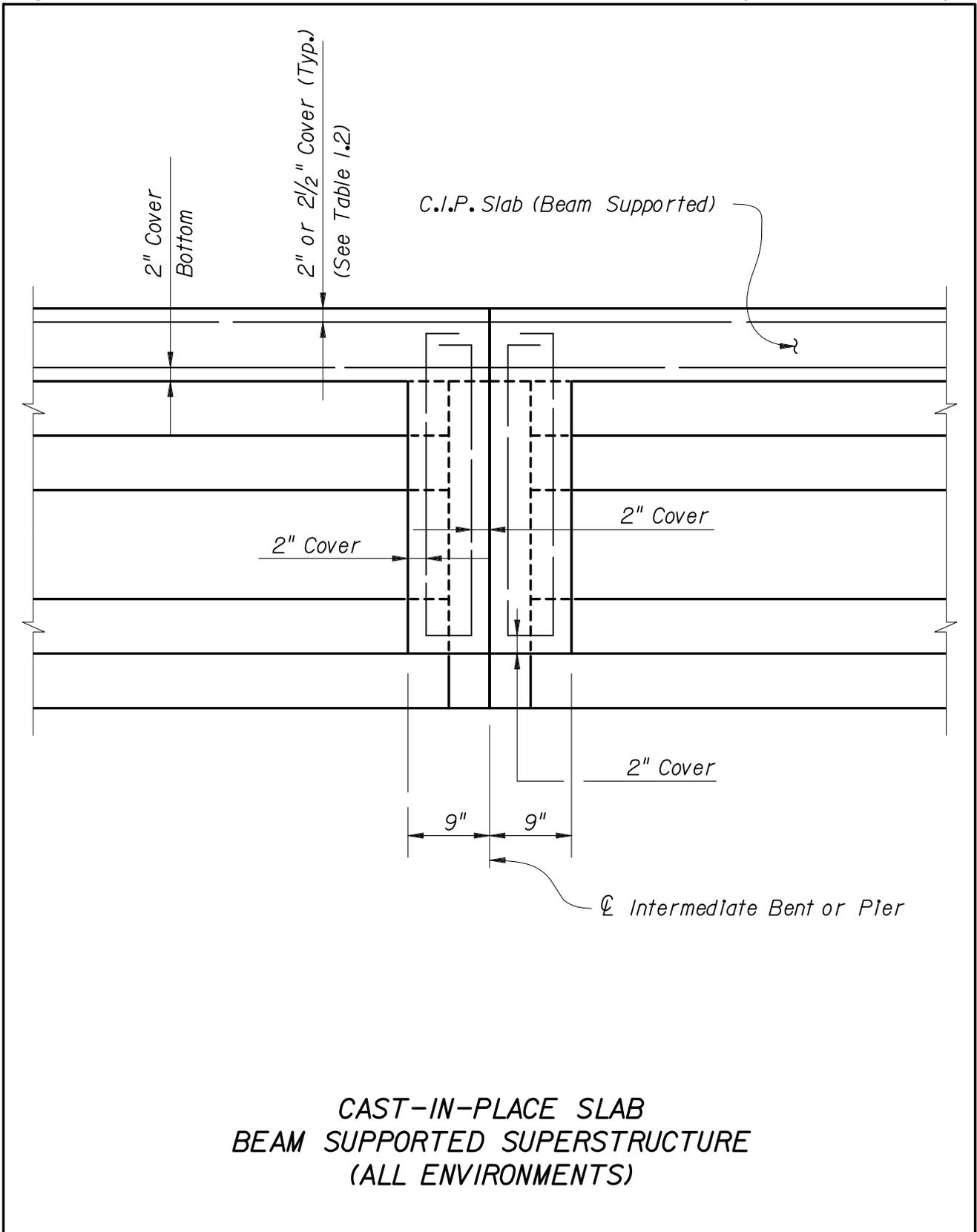
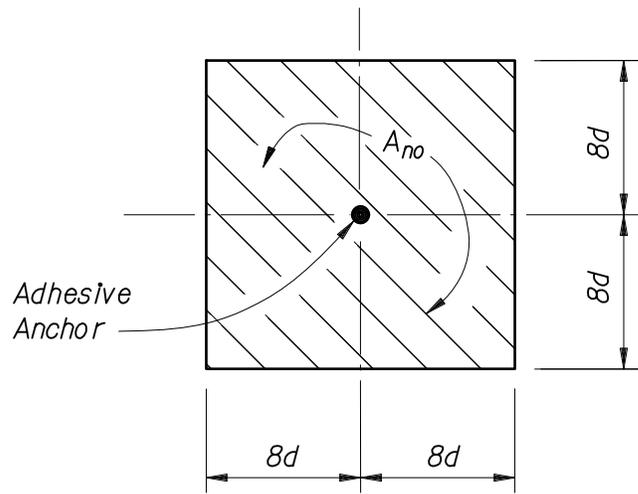
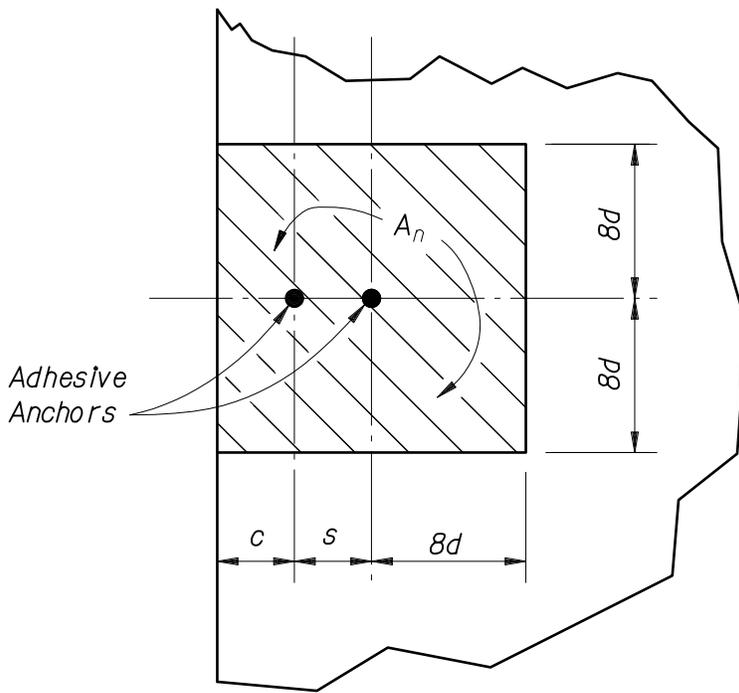


Figure 1-6 Effective Tensile Stress Areas of Adhesive Anchors



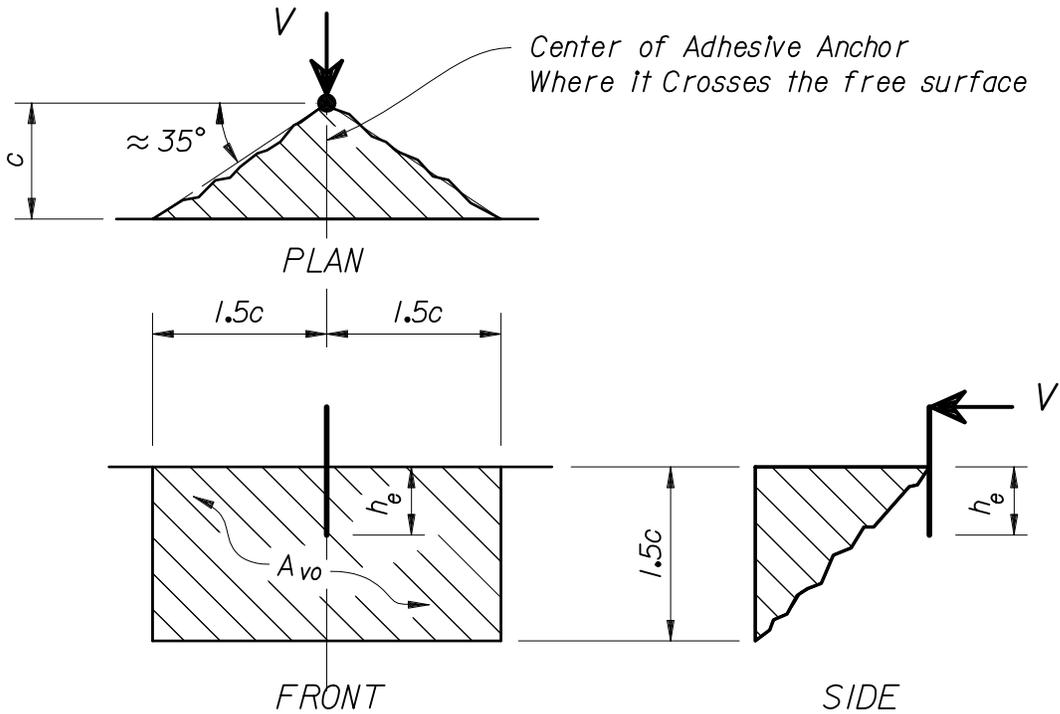
PLAN FOR CALCULATION of  $A_{no}$



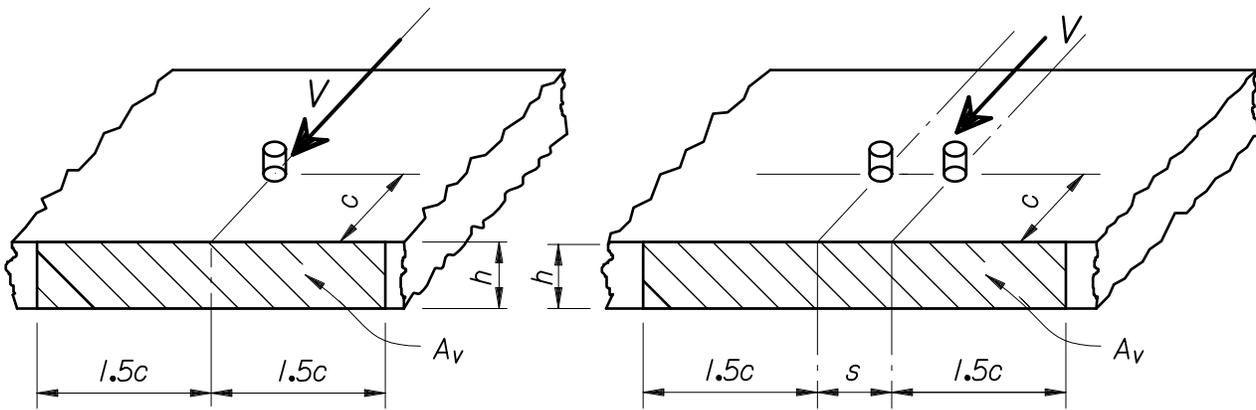
PLAN FOR CALCULATION of  $A_n$

EFFECTIVE TENSILE STRESS AREAS OF ADHESIVE ANCHORS

**Figure 1-7 Effective Shear Stress Areas of Adhesive Anchors**



FOR CALCULATION of  $A_{vo}$



$$A_v = 2 (1.5c)h$$

When  $h < 1.5c$

$$A_v = [2(1.5c) + s]h$$

When  $h < 1.5c$  and  $s < 3c$

FOR CALCULATION of  $A_v$

**EFFECTIVE SHEAR STRESS AREAS  
OF ADHESIVE ANCHORS**

Figure 1-8 Adhesive Anchors Design Example 1

1.6. Adhesive Anchors Design Example 1 - Single Anchor Away from Edges and Other Anchors

Design an adhesive anchor using threaded rod (ASTM A193, Grade B7) for a factored tension load of 18 kips. The anchor is located more than 8 anchor diameters from edges and is isolated from other anchors. The anchor embedment length is to be sufficient to ensure steel failure.

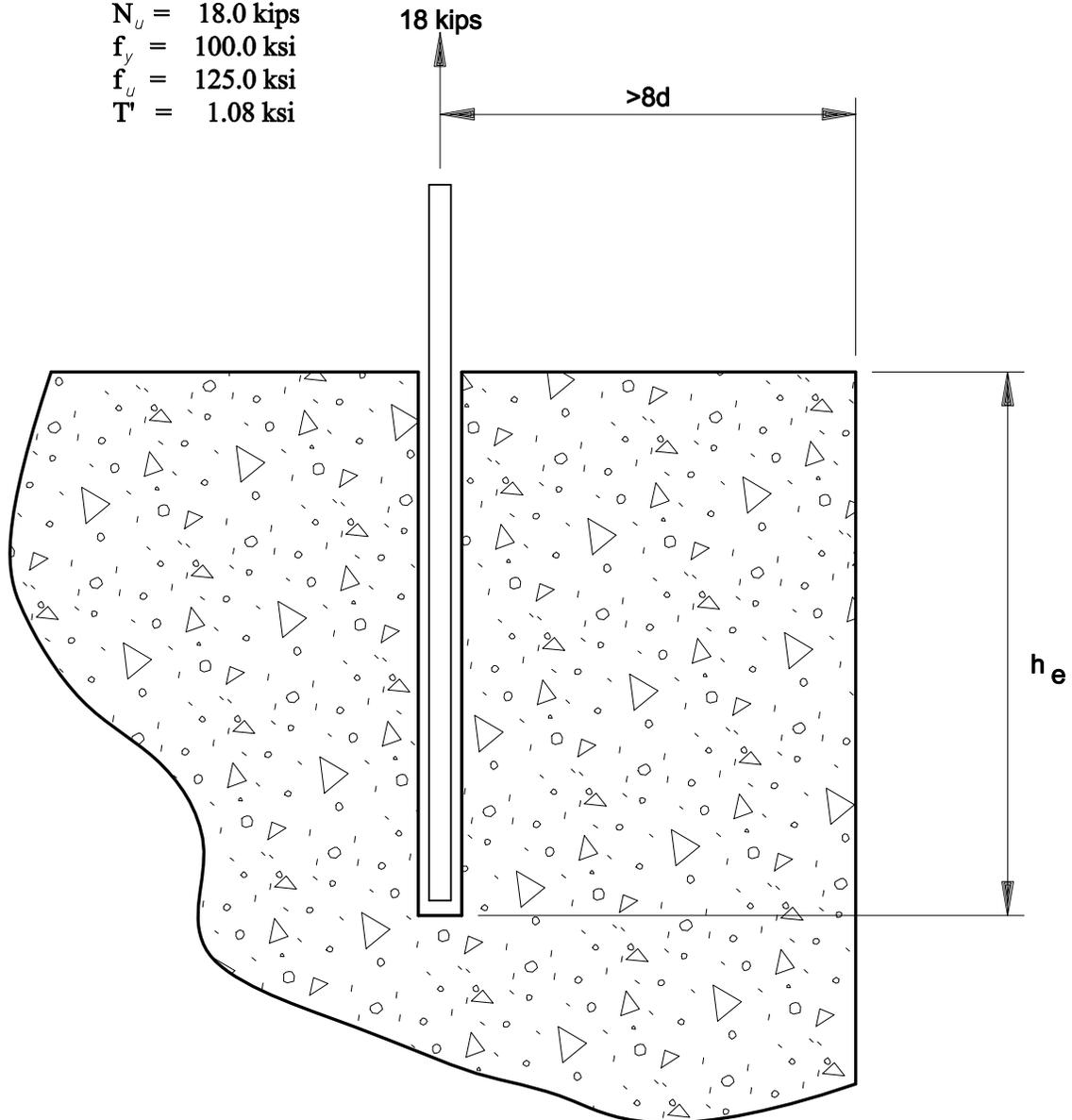
Given:

$$N_u = 18.0 \text{ kips}$$

$$f_y = 100.0 \text{ ksi}$$

$$f_u = 125.0 \text{ ksi}$$

$$T' = 1.08 \text{ ksi}$$



Section View

Figure 1-9 Adhesive Anchors Design Example 2

1.6. Adhesive Anchors Design Example 2 - Single Anchor Away from Other Anchors but Near Edge

Design an adhesive anchor using threaded rod (ASTM A193, Grade B7) for a factored tension load of 18 kips. The anchor is located 4 inches from an edge but is isolated from other anchors. The anchor embedment length is to be sufficient to ensure steel failure.

Given:

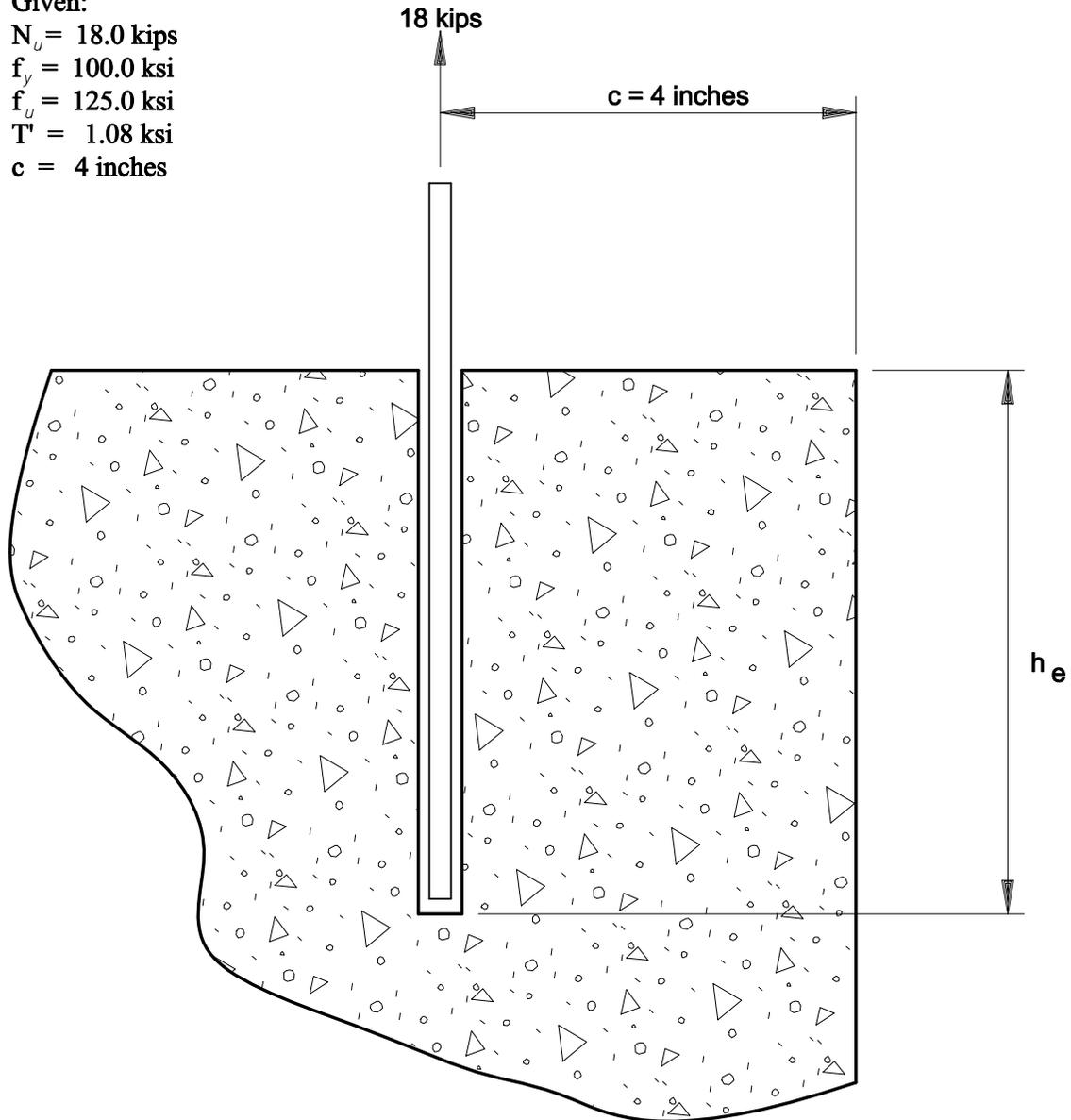
$$N_u = 18.0 \text{ kips}$$

$$f_y = 100.0 \text{ ksi}$$

$$f_u = 125.0 \text{ ksi}$$

$$T' = 1.08 \text{ ksi}$$

$$c = 4 \text{ inches}$$



Section View

Figure 1-10 Adhesive Anchors Design Example 3

1.6 Adhesive Anchors Design Example 3 - Two Anchors Spaced at 8 inches, 4 inches from Edge  
Design a group of two adhesive anchors using threaded rod (ASTM A193, Grade B7)  
for a factored tension load of 18 kips. The anchors are located 4 inches from an  
edge and are spaced 8 inches apart. Steel failure is not required.

Given:

$$N_u = 18.0 \text{ kips}$$

$$f_y = 100.0 \text{ ksi}$$

$$f_u = 125.0 \text{ ksi}$$

$$T = 1.08 \text{ ksi}$$

$$c = 4 \text{ inches}$$

$$s = 8 \text{ inches}$$

