

**DESIGN CONDITIONS:**

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.

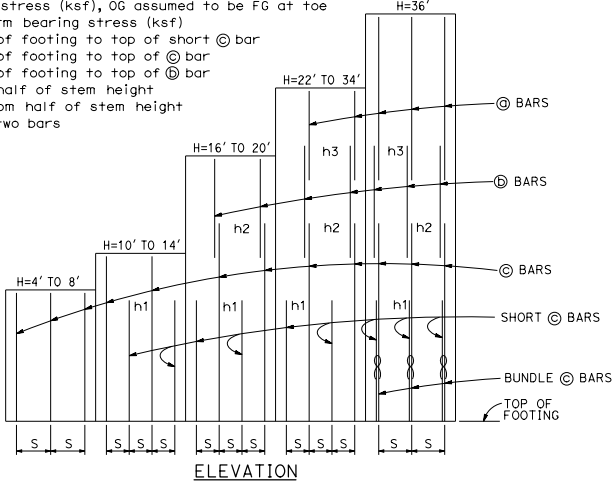
**DESIGN NOTES:**

- DESIGN: AASHTO LRFD Bridge Design Specifications, 4th Edition with California Amendments  
 LS: Varied surcharge on level ground surface  
 DC: Stem Architectural Treatment of thickness up to 6" of concrete (75 psf) considered  
 SEISMIC:  $k_h = 0.2$   
 $k_v = 0.0$   
 SOIL:  $\phi = 34^\circ$   
 $\gamma = 120$  pcf  
 REINFORCED CONCRETE:  $f'_c = 3,600$  psi  
 $f_y = 60,000$  psi  
 LOAD COMBINATIONS AND LIMIT STATES:  
 Service I  $Q = 1.00DC + 1.00EV + 1.00EH + 1.00LS$   
 Strength I  $Q = \alpha DC + \beta EV + \gamma EH + 1.75LS$   
 Extreme I  $Q = 1.00DC + 1.00EV + 1.00EH + 1.00EQD + 1.00EQE$

Where:  
 Q: Force Effects  
 a: 1.25 or 0.90, Whichever Controls Design  
 b: 1.35 or 1.00, Whichever Controls Design  
 p: 1.50 or 0.90, Whichever Controls Design  
 DC: Dead Load of Structure Components  
 EH: Horizontal Earth Fill Pressure  
 EV: Vertical Earth Pressure from Earth Fill Weight  
 LS: Live Load Surcharge  
 EQE: Seismic Earth Pressure  
 EQD: Soil and Structural and Nonstructural Components Inertia

**SYMBOLS:**

- Ser - service limit state I  
 Str - strength limit state I  
 Ext - extreme event limit state I  
 B' - effective footing width (ft)  
 q<sub>o</sub> - net bearing stress (ksf), OG assumed to be FG at toe  
 q<sub>u</sub> - gross uniform bearing stress (ksf)  
 h1 = Top of footing to top of short @ bar  
 h2 = Top of footing to top of @ bar  
 h3 = Top of footing to top of @ bar  
 Zone 1 = Top half of stem height  
 Zone 2 = Bottom half of stem height  
 ∞ - Bundle of two bars



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

July 21, 2017  
 PLANS APPROVAL DATE  
 TO ACCOMPANY PLANS DATED \_\_\_\_\_

REGISTERED CIVIL ENGINEER  
 Gary Wong  
 No. C58238  
 Exp. 6-30-18  
 STATE OF CALIFORNIA

- NOTES:**
- For details not shown and drainage notes see B3-5
  - For wall stem joint details see B0-3 and B0-3-3-4
  - At @ bars:  
 $H < 6'$ , no splices are allowed within 1'-8" above the top of footing.  
 $H > 6'$ , no splices are allowed within H/4 above the top of footing.
  - Bundle @ bars for  $H = 36'$ .
  - Hook stirrups around & space with alternating transverse reinforcement at  $2 \times "s"$ . For required number of toe or heel stirrup rows, see table. The first stirrups are placed adjacent to the stem as shown.

**TABLE OF REINFORCING STEEL, DIMENSIONS AND DATA**

DESIGN H	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'	34'	36'
W	6'-5"	7'-3"	8'-3"	9'-3"	10'-8"	12'-6"	13'-9"	15'-1"	16'-6"	17'-10"	19'-3"	20'-4"	21'-5"	22'-8"	23'-11"	25'-1"	26'-4"
C	2'-2"	2'-6"	3'-0"	3'-6"	3'-8"	3'-11"	4'-0"	4'-7"	5'-3"	6'-0"	7'-0"	7'-9"	8'-3"	8'-8"	9'-0"	9'-6"	9'-10"
B	4'-3"	4'-9"	5'-3"	5'-9"	7'-0"	8'-7"	9'-9"	10'-6"	11'-3"	11'-10"	12'-3"	12'-7"	13'-2"	14'-0"	14'-11"	15'-7"	16'-6"
F	1'-4"	1'-4"	1'-4"	1'-6"	1'-6"	1'-6"	1'-8"	2'-0"	2'-4"	2'-9"	3'-2"	3'-0"	3'-0"	3'-0"	3'-3"	3'-3"	3'-3"
BATTER	1/2: 12	1/2: 12	1/2: 12	1/2: 12	1/2: 12	1/2: 12	1/2: 12	1/2: 12	1/2: 12	1/2: 12	5/8: 12	3/4: 12	1: 12	1: 12	1 1/8: 12	1 1/8: 12	1 1/8: 12
SPACING "S"	16"	16"	16"	8"	8"	7"	7"	-	6"	6"	7"	7"	6"	6"	6"	6"	8"
@ BARS	-	-	-	-	-	-	-	-	#5	#5	#5	#5	#5	#5	#5	#6	#6
⊕ BARS	-	-	-	-	-	-	-	#5	#5	#7	#7	#7	#8	#8	#8	#8	#9
⊙ BARS	#5	#5	#6	#5	#6	#6	#7	#8	#8	#9	#10	#10	#10	#10	#10	#11	#11
∞ BARS	#5	#5	#6	#5	#6	#8	#9	#9	#9	#10	#11	#9	#9	#9	#10	#10	#9
h1	-	-	-	4'-2"	4'-7"	6'-2"	7'-3"	8'-6"	8'-8"	9'-8"	11'-0"	12'-2"	14'-0"	13'-0"	15'-10"	14'-6"	12'-0"
h2	-	-	-	-	-	-	10'-6"	12'-9"	14'-2"	13'-8"	17'-9"	18'-6"	17'-10"	18'-9"	20'-3"	21'-0"	17'-0"
h3	-	-	-	-	-	-	-	-	-	15'-6"	17'-9"	19'-6"	21'-8"	23'-0"	24'-8"	25'-6"	24'-8"
No. of Toe Stirrups	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6	6
No. of Heel Stirrups	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6	6
ZONE 1 ⊕ BARS	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18
ZONE 2 ⊕ BARS	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18
ZONE 1 ⊕ BARS	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18
ZONE 2 ⊕ BARS	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18
Ser: B', q <sub>o</sub>	4.3, 0.8	4.9, 1.1	5.6, 1.3	7.1, 1.5	8.0, 1.8	9.3, 2.1	10.6, 2.3	11.9, 2.5	13.3, 2.6	14.6, 2.8	15.9, 2.9	17.0, 3.0	18.0, 3.1	19.3, 3.3	20.4, 3.5	21.5, 3.7	22.7, 3.9
Str: B', q <sub>o</sub>	2.4, 2.2	2.4, 2.7	2.7, 3.2	3.0, 3.7	4.3, 3.8	5.9, 3.8	7.0, 4.1	7.9, 4.3	9.0, 4.5	9.9, 4.7	10.8, 4.9	11.6, 5.0	12.3, 5.2	13.3, 5.4	14.2, 5.7	15.0, 5.9	16.0, 6.1
Ext: B', q <sub>o</sub>	4.1, 1.5	3.9, 2.1	3.8, 2.8	3.5, 3.9	3.6, 4.9	4.2, 5.5	4.6, 6.3	5.0, 7.0	5.6, 7.4	6.0, 8.0	6.5, 8.4	6.9, 8.6	7.2, 9.2	7.7, 9.6	8.1, 10.4	8.4, 10.9	8.9, 11.3

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**RETAINING WALL TYPE 1 (CASE 3)**  
 RSP B3-1C DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN B3-1C  
 DATED OCTOBER 30, 2015 - PAGE 288 OF THE STANDARD PLANS BOOK DATED 2015.

NO SCALE **REVISED STANDARD PLAN RSP B3-1C**

2015 REVISED STANDARD PLAN RSP B3-1C