

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

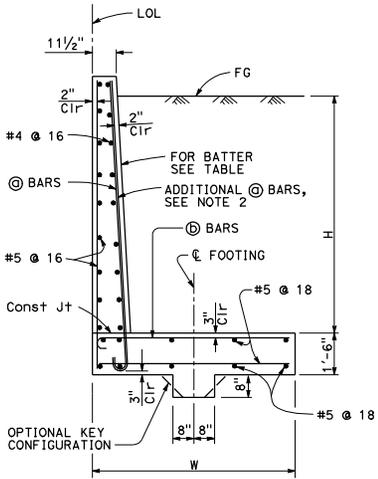
**Gary Wong**  
REGISTERED CIVIL ENGINEER

April 20, 2012  
PLANS APPROVAL DATE

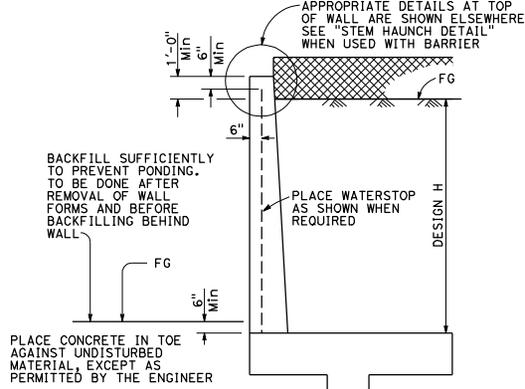
Gary Wong  
No. C88238  
Exp. 6-30-12  
CIVIL  
STATE OF CALIFORNIA

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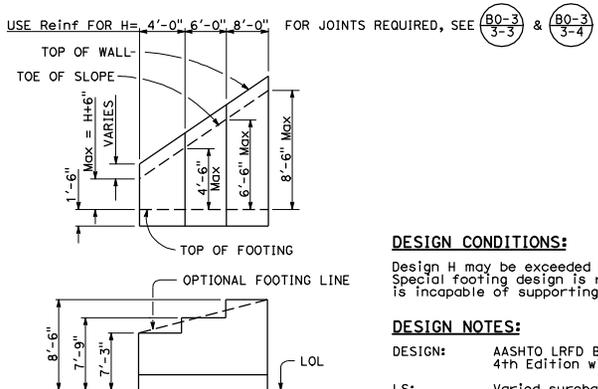
TO ACCOMPANY PLANS DATED \_\_\_\_\_



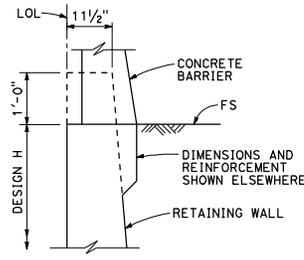
**SPREAD FOOTING SECTION**



**DESIGN SECTION**



**TYPICAL LAYOUT EXAMPLE**



**STEM HAUNCH DETAIL**

**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.

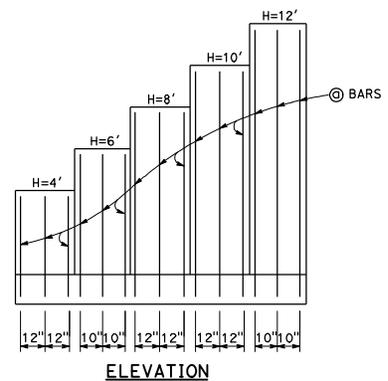
**DESIGN NOTES:**

- 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
- CT: 54 kip transverse force applied at  $H_e = 32'$ , distributed over 10 feet at the top of wall and 1 : 1 distribution down and outward. Distribution below footing taken no less than 40'.
- 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  $Q = aDC+\phi EV+\phi EH+1.75LS$   
Extreme I  $Q = 1.00DC+1.00EV+1.00EH+1.00EQD+1.00EQE$   
Extreme II  $Q = 1.00DC+1.00EV+1.00EH+1.00CT$

- Where:
- Q: Force Effects
  - a: 1.25 or 0.90, Whichever Controls Design
  - $\phi$ : 1.35 or 1.00, Whichever Controls Design
  - $\phi$ : 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
  - CT: Vehicular Collision Force

**NOTES:**

- At @ bars:
  - $H \leq 6'$ , 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.
- Provide #6 @ 8" @ bars in addition to tabulated @ bars over a distance of 8'-0" measured from all expansion joints, begin wall and end wall locations.



**ELEVATION**

**SYMBOLS:**

- Ser - service limit state I
- Str - strength limit state I
- Ext I - extreme event limit state I
- Ext II - extreme event limit state II
- B' - effective footing width (ft)
- $q_0$  - net bearing stress (ksf), OG assumed to be FG at toe
- $q_0$  - gross uniform bearing stress (ksf)

DESIGN H	4'	6'	8'	10'	12'
W	7'-3"	7'-9"	8'-6"	9'-6"	10'-6"
BATTER	NONE	NONE	100 : 2	100 : 3	100 : 4
@ BARS	#7 @ 12	#7 @ 10	#7 @ 12	#7 @ 12	#7 @ 10
@ BARS	#7 @ 12	#7 @ 10	#8 @ 12	#9 @ 12	#10 @ 10
Ser: B', $q_0$	6.2, 1.4	6.1, 1.8	6.4, 2.1	7.0, 2.5	7.7, 2.8
Str: B', $q_0$	6.2, 2.4	6.1, 2.9	5.3, 3.0	6.0, 3.5	6.8, 4.0
Ext I: B', $q_0$	4.4, 1.5	4.1, 2.2	4.0, 3.1	4.1, 3.9	4.2, 4.8
Ext II: B', $q_0$	2.5, 2.7	3.1, 3.0	3.8, 3.2	4.9, 3.3	5.8, 3.5

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**RETAINING WALL TYPE 5 (CASE 1)**  
NO SCALE

RSP B3-4A DATED APRIL 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP B3-4A**

2010 REVISED STANDARD PLAN RSP B3-4A