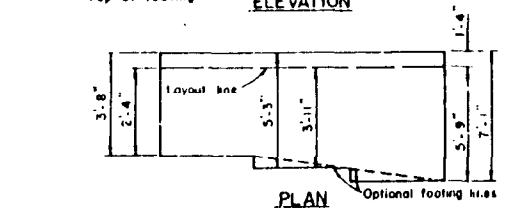
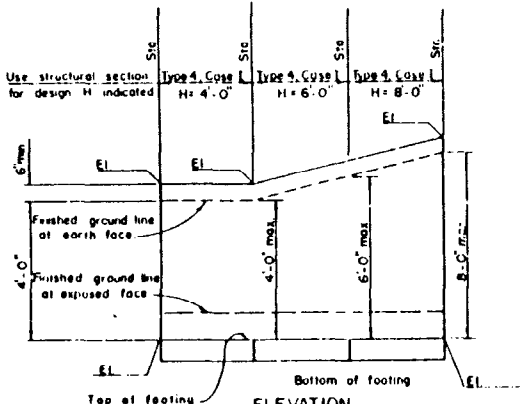


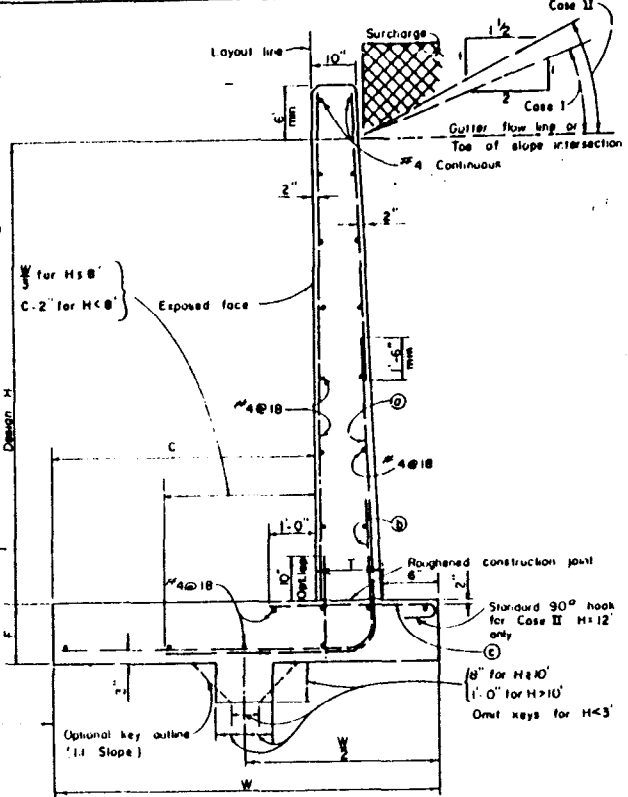
NOTE:  
 1 Where top of wall gutters are shown on plans, see Standard Plan S-503-0 for details.  
 2 Where return walls are shown on plans, see Standard Plan S-504-0 for details.  
 3 See Standard Plan S-105-0 for Retaining Wall Miscellaneous Details

Dimensions above bars indicate minimum distance from top of footing to upper end of bars  
 Exposed face bars not shown  
 Top of footing

**PLACEMENT OF VERTICAL REINFORCEMENT**



**TYPICAL LAYOUT EXAMPLE**



**SECTION**

**NOTES TO CONTRACTOR**

1. ALL BAR REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A615, GRADE 60.
2. ALL CONCRETE SHALL BE CLASS 55-B-3250.
3. BAR SPACINGS ARE CENTER TO CENTER OF BARS. BAR COVER IS CLEAR DISTANCE BETWEEN SURFACE OF BAR AND FACE OF CONCRETE AND SHALL BE 2" UNLESS OTHERWISE NOTED. REINFORCEMENT SHALL TERMINATE 2" FROM CONCRETE SURFACES UNLESS OTHERWISE NOTED.
4. LONGITUDINAL BARS SHALL BE LAPPED 20 BAR DIAMETERS AT SPLICES.
5. THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN FOOTING EXCAVATIONS ARE COMPLETED AND PRIOR TO PLACING OF REINFORCEMENT TO PERMIT AN INSPECTION OF THE BEARING SOIL BY A REPRESENTATIVE OF THE GEOLOGY AND SOILS SECTION OF THE STREET OPENING AND WIDENING DIVISION.
6. COMPACTION OF THE BACKFILL MATERIAL BY PONDING OR JETTING WILL NOT BE PERMITTED.

DESIGN H	TABLE OF REINFORCING STEEL, DIMENSIONS AND DATA									
	CASE I					CASE II				
	LEVEL BACKFILL + 2 SURCHARGE OR 2:1 BACKFILL					1 1/2:1 BACKFILL				
W	3'-8"	5'-3"	7'-1"	9'-4"	11'-9"	3'-8"	5'-3"	7'-1"	9'-4"	11'-10"
F	0'-0"	0'-10"	0'-10"	0'-11"	1'-1"	0'-10"	0'-10"	0'-10"	1'-0"	1'-3"
C	2'-4"	3'-11"	5'-9"	8'-0"	10'-5"	2'-4"	3'-11"	5'-9"	7'-11"	10'-3"
T	0'-10"	0'-10"	0'-10"	0'-10"	1'-0"	0'-10"	0'-10"	0'-10"	0'-11"	1'-1"
BAR (a)	4 @ 18	5 @ 15	4 @ 18	5 @ 13 1/2	6 @ 11 1/2	4 @ 18	5 @ 14 1/2	4 @ 18	5 @ 12	6 @ 10
BAR (b)			6 @ 15	7 @ 13 1/2	7 @ 11 1/2			7 @ 16	7 @ 12	7 @ 10
BAR (c)	4 @ 18	4 @ 18	4 @ 18	4 @ 18	4 @ 18	4 @ 18	4 @ 18	4 @ 18	4 @ 18	4 @ 18
SOIL PRES. (psf)	630	690	660	660	700	490	560	610	680	750

DEPARTMENT OF PUBLIC WORKS

BUREAU OF ENGINEERING CITY OF LOS ANGELES

**REINFORCED CONCRETE RETAINING WALL TYPE 4**

**STANDARD PLAN S-501-0**

SUBMITTED <i>December 9, 1970</i>	REVISIONS					REFERENCES
	NO.	DATE	DESCRIPTION	DIV. ENGR	CITY ENGR	
APPROVED <i>[Signature]</i> 1971 DESIGNED BY <i>L. TANNER</i> DRAWN BY <i>J. ANAYA</i> CHECKED BY <i>M. NAGAI</i>						VAULT INDEX NUMBER B-3780 SHEET 1 OF 2 SHEETS

NOTES TO DESIGNERS

1. THE USE OF THIS STANDARD PLAN IS LIMITED TO WALLS OF DESIGN H OF 12 FEET OR LESS.
2. SPECIAL FOOTING DESIGN IS REQUIRED WHERE FOUNDATION MATERIAL IS INCAPABLE OF SUPPORTING TOE PRESSURE LOADS LISTED IN TABLE.
3. THE MAXIMUM TOE PRESSURE LOAD SHALL NOT EXCEED THAT ALLOWED BY THE CITY OF LOS ANGELES BUILDING CODE FOR THE TYPE OF FOUNDATION MATERIAL EXCEPT AS RECOMMENDED BY A SPECIAL FOUNDATION INVESTIGATION.
4. A SPECIAL FOUNDATION INVESTIGATION SHALL BE OBTAINED FOR WALLS WITH A DESIGN H GREATER THAN 8'-0".
5. THE MAXIMUM HEIGHT OF FOOTING STEPS SHALL BE LIMITED TO ONE-THIRD THE HEIGHT OF THE SHORTER ADJACENT WALL SECTION. THE LOCATION OF FOOTING STEPS SHALL BE SHOWN ON THE PLANS.
6. IF THE DESIGNER ELECTS TO PROVIDE A LONGITUDINAL SLOPE ON THE FOOTING INSTEAD OF FOOTING STEPS, THE MAXIMUM LONGITUDINAL SLOPE OF THE FOOTING SHALL BE SIX PERCENT.
7. ALL WALLS SHALL BE SUBMITTED TO THE BRIDGE AND STRUCTURAL DESIGN DIVISION FOR STRUCTURAL AND ARCHITECTURAL REVIEW AND APPROVAL.
8. WALLS SUPPORTING STRUCTURES LESS THAN A DISTANCE H FROM THE WALL FACE SHALL BE DESIGNED BY THE BRIDGE AND STRUCTURAL DESIGN DIVISION.
9. BACKFILL SLOPE MUST NOT EXCEED 1 1/2 HORIZONTAL TO 1 VERTICAL. USE CASE II WALLS WHEN BACKFILL SLOPE IS STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL.
10. BAR CLEARANCES SHOWN ARE FOR NORMAL ENVIRONMENT. FOR MARINE ENVIRONMENT ( WITHIN 1000 FT. OF THE OCEAN OR TIDAL WATER ) OR HIGH CHLORIDE ENVIRONMENT ( ABOVE 1000 P.P.M. ) THE BAR COVER SHALL BE INCREASED.

DESIGN DATA

ALLOWABLE STRESSES

Concrete (Values for  $f'_c = 3,250$  psi)

$f_c = 1,300$  psi

$v = 90$  psi

Bar reinforcement (Values for ASTM A615 Grade 60)

$f_s = 24,000$  psi

$u = 350$  psi

$n = E_s/E_c = 10$

DESIGN LOADS

Earth Weight = 120 pcf

Effective Fluid Pressure:

Level backfill = 36 pcf + 2 ft. surcharge

2 horizontal to 1 vertical backfill = 49 pcf

1 1/2 horizontal to 1 vertical backfill = 69 pcf

A vertical component of one-third the horizontal earth force is assumed to act in the vertical plane at the footing heel for backfill 3:1 or steeper. For backfill slopes less than 3:1 the percentage of horizontal force assumed to act in the vertical plane decreases linearly to zero for level backfills.

The resultant of all vertical and horizontal forces passes through the middle one-third of the footing.

The minimum safety factor against overturning is 1.75.