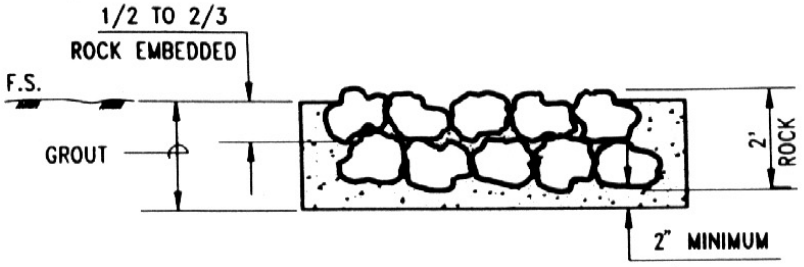
I. CASE 1 : GROUTED RIPRAP



1. ROCK FOR GROUTED RIPRAP SHALL BE GOOD QUALITY BROKEN CONCRETE AND/OR RIVER RUN ROCK. THE SMALLEST DIMENSION SHALL EXCEED 3" AND THE LARGEST DIMENSION SHALL NOT EXCEED 18". THE LARGEST DIMENSION SHALL NOT EXCEED 4 TIMES THE SMALLEST DIMENSION.
2. THERE SHALL BE A GROUT BED OF AT LEAST 2" BENEATH THE ROCK. ALL THE VOIDS BETWEEN THE ROCKS SHALL BE FILLED WITH GROUT. MAXIMUM SPACING BETWEEN ROCKS SHALL BE 2".
3. SURFACE ROCKS SHALL BE EMBEDDED FROM 1/2 TO 2/3 THEIR MAXIMUM DIMENSION.
4. LENGTH AND WIDTH AS SHOWN ON PLAN.
5. FOR PERMANENT RIPRAP OUTLET PROTECTION, THE DESIGN MUST BE BASED ON THE EROSION AND SEDIMENT CONTROL HANDBOOK BY STEVEN J. GORDON, KATHERINE JACKSON AND TARAS A. BURSZTYNSKY.

II. CASE 2 : NONGROUTED RIPRAP

1. MATERIALS: THE INVIDUAL CLASSES OF ROCKS USED IN ROCK SLOPE PROTECTION SHALL CONFORM TO THE FOLLOWING TABLE, UNLESS OTHERWISE SPECIFIED IN THE SPECIAL PROVISIONS, OR AS SHOWN ON THE PLANS.
2. PERCENTAGE LARGER THAN:

CLASSES								
						BACKING		
ROCK SIZES	1 TON	1/2 TON	1/4 TON	LIGHT	FACING	NO. 1	NO. 2	NO. 3
2 TON	0-5							
1 TON	50-100	0-5						
1/2 TON	-	50-100	0-5					
1/4 TON	95-100	-	50-100	0-5				
200 LB		95-100	-	50-100	0-5	0-5		
75 LB			95-100	-	50-100	50-100	0-5	
25 LB				95-100	90-100	90-100	25-75	0-5
5 LB							90-100	25-75
1 LB								90-100

THE AMOUNT OF MATERIAL SMALLER THAN THE SMALLEST SIZE LISTED IN THE TABLE FOR ANY CLASS OF ROCK SLOPE PROTECTION SHALL NOT EXCEED THE PERCENTAGE LIMIT LISTED IN THE TABLE DETERMINED ON A WEIGHT BASIS. COMPLIANCE WITH THE PERCENTAGE LIMIT SHOWN IN THE TABLE FOR ALL OTHER SIZES OF THE INDIVIDUAL PIECES OF ANY CLASS OF ROCK SLOPE PROTECTION SHALL BE DETERMINED BY THE RATIO OF THE NUMBER OF INDIVIDUAL PIECES LARGER THAN THE SPECIFIED SIZE COMPARED TO THE TOTAL NUMBER OF INDIVIDUAL PIECES LARGER THAN THE SMALLEST SIZE LISTED IN THE TABLE FOR THAT CLASS.

3. PLACEMENT:
   - 3.1. A FOOTING TRENCH SHALL BE EXCAVATED ALONG THE TOE OF THE SLOPE AS SHOWN ON THE PLANS.
   - 3.2. ROCKS SHALL BE SO PLACED AS TO PROVIDE A MINIMUM OF VOIDS AND THE LARGER ROCKS SHALL BE PLACED IN THE TOE COURSE AND ON THE OUTSIDE SURFACE OF THE SLOPE PROTECTION. THE ROCK MAY BE PLACED BY DUMPING AND MAY BE SPREAD IN LAYERS BY BULLDOZERS OR OTHER SUITABLE EQUIPMENT.
   - 3.3 LOCAL SURFACE IRREGULARITIES OF THE SLOPE PROTECTION SHALL NOT VARY FROM THE PLANNED SLOPES BY MORE THAN ONE FOOT MEASURED AT RIGHT ANGLES TO THE SLOPE.
   - 3.4. AT THE COMPLETION OF SLOPE PROTECTION WORK, THE FOOTING TRENCH SHALL BE FILLED WITH EXCAVATED MATERIAL AND COMPACTION WILL NOT BE REQUIRED.
4. DIMENSION OF RIPRAP SLOPE PROTECTION: LENGTH, WIDTH AND DEPTH AS SHOWN ON PLANS.

NO.	REVISIONS	BY

CITY OF ANAHEIM
PUBLIC WORKS
ENGINEERING DEPARTMENT

RIPRAP PROTECTION

APP'D [signature] 3-25-92
DIRECTOR OF PUBLIC WORKS / CITY ENGINEER DATE

APP'D [signature] 3-24-92
DEVELOPMENT SERVICES MANAGER DATE

STANDARD DETAIL NO. 336