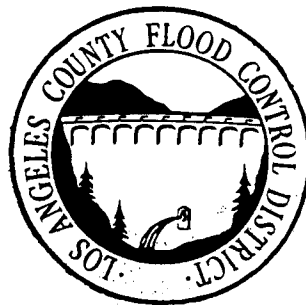


Los Angeles County Flood Control District

COST AND QUANTITY ESTIMATING MANUAL

Prepared by Design Division



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FOREWORD

In preparing this manual, an attempt was made to include the items of construction and types of work which are most commonly encountered on average storm drain projects. Prices for types of work or items of construction not included in this manual may be established by consulting with the District.

The prices contained in this manual must be used in the preparation of all estimates for projects to be constructed under District contracts.

Should a particular project deviate in any way from normal conditions, in the opinion of the designing engineer, the prices must be adjusted accordingly. Failure to make such adjustments on the basis of sound engineering judgement could result in erroneous engineering estimates.

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SECTION A

UNIT PRICES

Section A-1Reinforced Concrete Box Storm DrainsA-1.1 ExcavationA-1.1.1 General

The excavation prices are based on the area in which the proposed storm drain will be constructed, each distinctive area being classified according to the conditions of work.

The prices listed for R. C. Box excavation are for average conditions and, insofar as is applicable for any particular project, include light clearing, haulaway distance of four miles, excavation, placing and consolidating or compacting backfill, removing existing pavement (4" A.C.), temporary resurfacing (1" A.C.), removing existing improvements which interfere with construction, and the disposal of all excess excavated or removed materials.

Should unusual conditions be encountered such as excessively deep excavation, groundwater, removal of long reaches of curb and gutter, heavy clearing, heavy pavement, haulaway in excess of four miles, unstable soil conditions, special excavation problems, tight working conditions, poor access, etc., the price listed should be adjusted or other separate items provided for the cost of such work.

It should be realized that in many instances all of the project excavation will not be performed in a single class of work area. In such instances the unit price for such excavation should be established by reaches and a weighted average used for the final price.

In the event the haulaway can not be disposed of within four miles of the project excavation area, adjustment in the price for excavation should be made at the rate of 30 cents per cubic yard per mile of haulaway.

A-1 Reinforced Concrete Box Storm Drains continued.
(A-1.1 Excavation)

A-1.1.2 Classes

Class 1 - In open areas with practically no interference, such as open fields or in streets in sparsely developed residential areas located in the outlying portions of the county.

\$3.90 to 6.30 per c.y.

Class 2 - In outlying areas in residential streets with light local traffic and light overhead and underground interferences.

\$6.60 to 9.00 per c.y.

Class 3 - In residential streets with local and through traffic or light commercial and manufacturing districts with medium overhead and underground interferences.

\$9.30 to 12.30 per c.y.

Class 4 - In heavy commercial and apartment areas with restricted working room, heavy traffic, heavy overhead and underground interferences, as in the business districts of medium-sized cities.

\$12.60 to 20.40 per c.y.

Class 5 - In streets in heavily populated commercial and manufacturing areas with heavy traffic, restricted working room, and maximum overhead and underground interferences, as in the business districts of the larger cities.

\$21.00 to 30.00 per c.y.

A-1 Reinforced Concrete Box Storm Drains continued.

A-1.2 Concrete

The following tabulated prices include the cost of portland cement.

Volume of Concrete C.Y.	Cost per Cubic Yard in Dollars								
	10' to Subgrade			20' to Subgrade			30' to Subgrade		
	Easy	Medium	Diffi- cult	Easy	Medium	Diffi - cult	Easy	Medium	Diffi- cult
up to 250	454	470	487	487	504	538	546	563	580
260 to 500	338	353	367	367	382	396	403	418	432
600 to 1,000	258	270	276	282	294	306	312	324	336
1,100 to 2,500	227	233	238	244	248	259	265	276	287
2,600 to 5,000	209	215	220	224	229	235	240	245	250
5,100 to 7,500	192	197	202	206	211	216	221	226	230
7,600 to 10,000	187	192	197	202	206	211	216	221	226
10,100 to 12,500	182	187	192	197	202	206	211	216	221
12,600 and over	178	182	187	192	197	202	206	211	216

A-1.3 Furnish and Place Reinforcing Steel

Volume of Steel (lbs.)	Cost Per Pound
Up to 50,000	\$0.72
51,000 to 100,000	0.68
101,000 to 250,000	0.64
251,000 to 500,000	0.60
501,000 to 1,000,000	0.56
1,001,000 and over	0.52

A-1 Reinforced Concrete Box Storms Drains continued.

A-1.4 Reinforced Concrete Box Storm Drains to be Jacked

For total cost of R. C. Box jacked in place, use:

\$12.00 per sq. ft. of cross sectional area (outside dimensions) of box times the linear feet of box to be jacked; plus,

cost of Concrete for the box (Section A-1.2); plus
cost of Reinforcing Steel for the box (Section A-1.3).

Section A-2

Reinforced Concrete Open Channel Storm Drains

A-2.1 Excavation

A-2.1.1 General

The excavation prices are based on the area in which the proposed storm drain will be constructed, each distinctive area being classified according to the conditions of work.

The prices listed for R. C. Channel excavation are for average conditions and, insofar as is applicable for any particular project, include light clearing, removing existing improvements which interfere with construction, haulaway distance of four miles, excavation, placing and consolidating or compacting backfill and fill within the channel right of way, and the disposal of all excess excavated or removed materials.

Should unusual conditions be encountered such as heavy clearing, excessively deep excavation, groundwater, haulaway in excess of four miles, unstable soil conditions, special excavation problems, tight working conditions, poor access, etc., the price listed should be adjusted or other separate items provided for the cost of such work.

It should be realized that in many instances all the project excavation will not be performed in a single class of work area. In such instances the unit price for such excavation should be established by reaches and a weighted average used for the final price.

In the event the haulaway can not be disposed of within four miles of the project excavation, adjustment in the price for excavation should be made at the rate of 30 cents per cubic yard per mile of haulaway.

A-2 Reinforced Concrete Open Channel Storm Drains continued.
(A-2.1 Excavation)

A-2.1.2 Classes

Class 6 - Adequate access to both sides of proposed channel; clear working area; no water within existing channel; widths of 20 to 30 feet; fairly constant cross section.

\$4.20 to 6.60 per c.y.

Class 7 - Adequate access to at least one side of channel; some water within existing channel; widths of 10 to 20 feet; fairly constant cross section.

\$7.20 to 10.20 per c.y.

Class 8 - Restricted working room with limited access and in general, poor excavating conditions; utility crossings; water within existing channel; widths of 6 to 10 feet; variable cross section.

\$10.80 to 18.00 per c.y.

A-2.2 Concrete

The following tabulated prices include the cost of portland cement.

Volume of Concrete C.Y.	Cost per Cubic Yard in Dollars								
	10' to Subgrade			15' to Subgrade			20' to Subgrade		
	Easy	Medium	Diffi- cult	Easy	Medium	Diffi- cult	Easy	Medium	Diffi- cult
Up to 250	428	445	454	454	462	470	487	496	504
260 to 500	302	310	317	317	324	331	331	338	346
600 to 1,000	228	234	240	234	240	246	246	252	258
1,100 to 2,500	200	205	211	205	211	216	216	222	227
2,600 to 5,000	184	188	194	188	194	199	199	204	210
5,100 to 7,500	168	173	178	173	178	182	182	187	192
7,600 to 10,000	163	168	173	168	173	178	178	182	187
10,100 to 12,500	158	163	168	163	168	173	173	178	182
12,600 and over	154	158	163	158	163	168	168	173	178

A-2 Reinforced Concrete Open Channel Storm Drains continued.

A-2.3 Furnish and Place Reinforcing Steel

Volume of Steel (lbs.)	Cost per Pound
Up to 50,000	\$0.68
51,000 to 100,000	0.64
101,000 to 250,000	0.60
251,000 to 500,000	0.56
501,000 to 1,000,000	0.52
1,001,000 and over	0.48

Section A-3Reinforced Concrete Pipe Storm DrainsA-3.1 Main Line and Connector Pipe Storm Drains

The attached tables must be used with discretion. The tabulated prices include all costs involved in constructing the reinforced concrete pipe storm drain, complete in place, except shoring and permanent resurfacing.

Prices in the tables are based on medium traffic, medium overhead and underground interferences, light clearing, no groundwater, stable soil conditions, normal access, haulaway distance of four miles, pipe D-loads per Standard Drawing No. 2-D 213.1, imported Types "A" and "B" bedding, placing and consolidating or compacting backfill, removing existing pavement (4" A.C.), temporary resurfacing (1" A.C.), removing existing improvements which interfere with construction, and the disposal of excess excavated or removed materials.

Should the material from the excavations be suitable for use as Types "A" and "B" bedding, a reduction in cost from the prices shown in the tables on pages A-9 and A-10 can be made as follows:

88% of the tabulated values for all pipe 6 to 10 feet to subgrade.

91% of the tabulated values for all pipe 11 to 20 feet to subgrade.

93% of the tabulated values for all pipe 21 to 30 feet to subgrade.

Should unusual conditions be encountered such as excessively deep excavation, groundwater, removal of long reaches of curb and gutter, heavy clearing, heavy resurfacing, haulaway in excess of four miles, unstable soil conditions, special excavation problems, tight working conditions, poor access, etc., the price listed should be adjusted or other separate items provided for the cost of such work.

It should be realized that in many instances all the project excavation will not be performed in a single class of work area. In such instances the unit price for such excavation should be established by reaches and a weighted average used for the final price.

In the event the haulaway can not be disposed of within four miles of the project excavation, adjustment in the price for excavation should be made at the rate of 30 cents per cubic yard per mile of haulaway.

A-3 Reinforced Concrete Pipe Storm Drains continued.
 (A-3.1 Main Line and Connector Pipe Storm Drains)

The following tabulated prices for reinforced concrete pipe are in dollars per linear foot.

Pipe Size In.	DEPTH TO SUBGRADE - FEET								Pipe Size In.
	6	7	8	9	10	11	12	14	
15	61.50	63.00	64.50	66.00	67.00	68.50	70.00	73.00	15
18	67.50	69.00	70.50	72.25	73.75	75.25	76.75	79.25	18
21	70.00	71.50	73.00	75.25	76.25	78.25	79.75	83.75	21
24	73.00	74.50	76.00	77.75	79.75	81.25	82.75	86.00	24
27	76.00	77.75	79.75	81.25	82.75	84.50	86.75	90.00	27
30	79.75	82.25	85.25	86.00	87.50	90.00	91.50	95.00	30
33	85.25	86.75	89.00	90.50	92.00	94.50	96.00	100.00	33
36	89.00	91.50	93.00	95.00	97.00	99.00	100.50	104.50	36
39	95.00	97.50	99.00	101.50	103.00	105.25	106.75	110.75	39
42	101.50	103.00	104.50	106.75	108.25	110.75	112.75	116.75	42
45	104.50	106.75	109.25	111.25	113.75	116.00	118.25	122.00	45
48	107.50	111.25	113.75	116.00	118.25	120.50	123.00	127.50	48
51	110.75	113.75	116.75	119.75	122.00	124.50	127.50	133.50	51
54	114.50	117.50	120.50	123.50	126.00	129.00	131.50	139.75	54
57	120.00	123.00	126.00	129.00	132.00	134.50	138.25	146.75	57
60		126.00	132.00	135.25	138.25	142.25	145.75	153.50	60
63		133.25	139.35	142.75	145.75	150.50	153.50	161.50	63
66		139.75	145.75	149.75	153.50	158.00	161.50	169.00	66
69		146.00	152.00	158.00	162.00	166.00	169.75	177.25	69
72			161.50	167.50	171.75	175.25	178.75	186.50	72
75			169.75	175.75	179.75	183.50	187.50	195.00	75
78			174.00	181.25	191.00	195.00	199.00	206.75	78
81			186.25	193.50	203.50	207.25	211.25	219.00	81
84				209.00	219.00	222.00	226.00	231.00	84
87				226.00	229.00	232.00	235.00	241.25	87
90				233.75	236.75	239.75	243.50	251.00	90
93				241.25	244.25	247.25	252.00	260.50	93
96					252.00	255.00	260.50	269.75	96
102					305.00	313.50	322.00	330.25	102
108					325.75	334.25	342.50	351.00	108
114						362.75	371.00	379.50	114
120							400.75	409.25	120

A-3 Reinforced Concrete Pipe Storm Drains continued.
(A-3.1 Main Line and Connector Pipe Storm Drains)

The following tabulated prices for reinforced concrete pipe are in dollars per linear foot.

Pipe Size In.	DEPTH TO SUBGRADE - FEET								Pipe Size In.
	16	18	20	22	24	26	28	30	
	15	76.00	78.25	81.25	84.50	86.75	90.00	92.00	
18	82.25	85.25	88.25	90.50	93.00	95.00	97.50	100.00	18
21	86.75	90.50	93.50	97.00	99.00	102.00	104.50	106.75	21
24	89.00	93.00	96.00	100.00	104.50	108.25	112.25	116.00	24
27	93.50	97.00	100.50	104.50	108.25	112.25	116.00	119.75	27
30	99.00	103.00	106.75	109.75	113.75	117.50	120.50	123.50	30
33	103.75	106.75	110.75	113.75	117.50	120.50	123.50	126.50	33
36	108.25	112.25	116.00	119.75	123.50	127.50	131.50	135.25	36
39	114.25	118.25	122.00	125.00	128.50	131.50	134.50	137.50	39
42	120.50	124.50	128.50	130.50	133.50	136.75	139.00	141.25	42
45	126.50	131.50	135.25	138.25	140.50	144.25	146.75	149.00	45
48	133.50	138.25	142.25	145.25	147.50	151.25	154.50	156.50	48
51	140.50	145.25	149.00	152.00	154.50	158.00	161.50	165.00	51
54	147.50	152.75	156.00	159.00	161.50	166.00	169.75	173.75	54
57	155.00	160.50	163.00	166.75	169.00	173.75	177.25	181.25	57
60	163.00	168.25	169.75	174.25	178.75	183.50	188.00	193.00	60
63	170.50	175.75	183.50	189.50	195.00	201.25	206.75	212.00	63
66	178.25	183.50	191.00	198.00	205.75	212.00	219.50	224.50	66
69	186.50	193.00	200.50	208.25	215.75	223.50	230.50	237.25	69
72	195.00	202.75	210.25	219.50	229.00	237.25	244.25	255.50	72
75	203.50	211.25	219.00	229.00	238.25	248.00	257.50	266.50	75
78	212.75	220.50	228.00	238.75	251.00	259.50	270.25	281.00	78
81	226.00	233.50	241.25	253.00	264.25	274.75	285.00	298.00	81
84	236.50	245.00	253.50	265.00	277.25	289.00	299.50	315.00	84
87	248.00	256.50	265.75	277.25	291.00	302.75	315.00	331.75	87
90	259.50	268.00	278.00	290.50	304.75	317.00	331.00	348.50	90
93	271.25	279.50	290.50	303.25	318.50	332.50	350.00	365.75	93
96	282.50	292.00	302.75	316.50	333.25	348.50	370.25	388.00	96
102	339.50	348.00	356.50	378.00	399.25	420.00	441.50	463.25	102
108	363.25	375.50	388.00	413.00	438.50	464.75	490.00	515.50	108
114	390.00	402.25	419.50	437.75	465.25	494.75	526.25	557.75	114
120	421.00	433.75	447.50	477.50	596.25	529.75	562.75	596.00	120
126	460.00	474.00	488.50	515.50	536.75	570.00	606.00	642.00	126
132	503.00	517.00	532.25	567.50	586.75	625.25	662.75	700.50	132
138	544.50	559.75	576.00	600.50	639.00	660.50	705.00	749.75	138
144	593.75	609.00	625.75	651.25	692.75	715.00	762.00	808.00	144

A-3 Reinforced Concrete Pipe Storm Drains continued.

A-3.2 Reinforced Concrete Pipe Storm Drains to Be Jacked

For total cost of reinforced concrete pipe storm drains to be jacked complete in place, use:

- a. Cost of jacking as obtained from the following table, plus,
- b. Cost of reinforced concrete pipe adjoining the jacked section as obtained from the tables of pages A-9 and A-10.

Pipe Size	Prices - Dollars per Linear Foot			
	Jacking Limits (Linear Feet)			
	32' or Less	33' to 60'	61' to 100'	101' to 150'
18" to 36"	300	330	410	450
39" to 57"	360	430	490	570
60" to 81"	450	600	720	810
84" to 108"	630	810	960	1140
114" to 144"	840	1020	1200	1410

Section A-4Storm Drain TunnelsA-4.1 General Conditions

For the price of constructing R. C. Arch or Circular Tunnels, complete in place, use the following table:

Diameter Feet	Price \$/Lin. Ft.
5	\$1020
6	1050
7	1080
8	1140
9	1370
10	1590
11	1820
12	2040
13	2270
14	2500
15	2650
16	2800
17	2950
18	3100
19	3250

A-4.2 Special Conditions

Price adjustments in the above table for other than average conditions are as follows:

If there is some groundwater, increase price by 10%.

If groundwater is excessive, increase price by 20%.

Prices in the above table shall be adjusted depending on length of tunnel as follows:

250' or Less	250' to 500'	500' to 1,000'	1,000' to 2,000'	2,000' to 4,000'	4,000' or More
+20%	+10%	+5%	0%	-5%	-10%

Section A-5

Shoring of Excavations

A-5.1 General

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 399, Case 1, Shoring for Vertical Excavations.

A-5.2 Storm Drain Production Rates

Production Rate - R. C. Pipe - Feet Per Day			
Pipe Size	Depth of Trench		
	10' or Less	11' to 20'	21' or More
Up to 36"	300	200	100
39" to 63"	200	140	80
66" to 90"	150	90	65
93" and Over	100	70	50

Production Rate - R. C. Box - Feet per Day			
Outside Width of Box	Depth of Trench		
	10' or Less	11' to 20'	21' or More
Up to 9'	80	65	50
10' to 13'	75	60	45
14' to 17'	70	55	40
18' and Over	65	50	35

A-5.3 Labor and Equipment Costs

Production Rate Feet per Day	Labor and Equipment Costs - R. C. Pipe - \$/Lin. Ft.		
	Solid Sheeting	Sheeting Spaced 5-foot c-c	Sheeting Spaced 10-foot c-c
50	\$37.80	\$21.65	---
75	22.85	13.80	---
100	16.90	9.95	\$6.10
125	12.60	7.20	5.05
150	9.95	5.05	3.85
175	---	3.95	3.05
200	---	3.05	2.45
250	---	2.45	1.85
300	---	1.85	1.20

A-5 Shoring of Excavations continued.
 (A-5.3 Labor and Equipment Costs)

Production Rate Feet per Day	Labor and Equipment Costs R. C. Box - \$/Lin. Ft. Solid Sheeting
35	\$55.00
40	46.10
45	39.40
50	34.10
55	30.10
60	26.80
65	24.00
70	21.80
75	19.90
80	18.50

A-5.4 Material Costs

Sheeting - Dollars per Linear Foot of Trench					
Spacing and Use	Depth of Trench - Feet				
	10	15	20	25	30
Solid Sheet					
Used 1 time	\$37.32	\$52.87	\$68.45	\$83.99	\$99.53
Used 5 times	7.46	10.57	13.70	16.80	19.91
Used 10 times	3.74	5.28	6.85	8.39	9.95
Spaced 5' c-c					
Used 1 time	7.46	10.57	13.70	16.80	19.91
Used 5 times	1.50	2.12	2.74	3.35	4.00
Used 10 times	0.73	1.04	1.38	1.69	1.99
Spaced 10' c-c					
Used 1 time	3.74	5.28	6.85	8.39	9.95
Used 5 time	0.73	1.04	1.38	1.69	1.99
Used 10 times	0.37	0.53	0.67	0.83	0.98

A-5 Shoring of Excavations continued.
 (A-5.4 Material Costs)

*Walers - Dollars per Linear Foot of Trench			
No. Times Used	Depth of Trench - Feet		
	14' or Less	15' to 25'	26' to 36'
Used 15 times	0.67	1.36	2.03

*Walers not required when sheeting is spaced 10' c-c.

Cross-bracing - Dollars per Linear Foot of Trench				
Depth of Trench	No. Used	Width of Trench - Feet		
		9' or Less	10' to 19'	20' or More
Used 15 times				
14' or less	2	\$0.28	\$0.49	\$0.86
15' to 25'	4	0.55	0.95	1.72
26' to 36'	6	0.83	1.44	2.54

The total cost per linear foot for shoring is the summation of the costs for labor and equipment and materials taken from the preceding tables.

Section A-6Storm Drain ManholesA-6.1 Manhole No. 1

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 102.

For total cost of Manhole No. 1 in dollars use:

- a. \$850 for manhole (exclusive of shaft), plus,
- b. Cost of Shaft (Manhole No. 3, page A-19).

A-6.2 Manhole No. 2

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 184.

D1 = Inlet diameter in inches.

D2 = Outlet diameter in inches.

For total cost of Manhole No. 2 in dollars use:

- a. Cost of manhole (exclusive of shaft) as obtained from the following table and the tables on pages A-17 and A-18, plus,
- b. Cost of shaft (Manhole No. 3, page A-19).

Manhole No. 2

Pipe Size D1	Pipe Size - D2										Pipe Size D1
	36"	39"	42"	45"	48"	51"	54"	57"	60"	63"	
36"	610	650	680	710	740	770	800	830	860	890	36"
39"		680	710	740	770	800	830	860	890	920	39"
42"			740	770	800	830	860	890	920	950	42"
45"				800	830	860	890	920	950	980	45"
48"					860	890	920	950	980	1010	48"
51"						920	950	980	1010	1040	51"
54"							980	1010	1040	1070	54"
57"								1040	1070	1100	57"
60"									1100	1130	60"
63"										1160	63"

A-6 Storm Drain Manholes continued.
 (A-6.2 Manhole No. 2)

Manhole No. 2

Pipe Size D1	Pipe Size D2										Pipe Size D1
	66"	69"	72"	75"	78"	81"	84"	87"	90"	93"	
36"	925	955	985	1030	1075	1120	1170	1230	1290	1350	36"
39"	955	985	1015	1060	1105	1150	1200	1260	1320	1380	39"
42"	985	1015	1045	1090	1135	1180	1230	1290	1350	1410	42"
45"	1015	1045	1075	1120	1170	1210	1260	1320	1380	1440	45"
48"	1045	1075	1105	1150	1200	1240	1290	1350	1410	1470	48"
51"	1075	1105	1135	1180	1230	1270	1320	1380	1445	1505	51"
54"	1105	1135	1170	1210	1260	1310	1350	1415	1475	1535	54"
57"	1135	1170	1200	1240	1290	1340	1380	1445	1505	1565	57"
60"	1170	1200	1230	1270	1320	1370	1415	1475	1535	1595	60"
63"	1200	1230	1260	1310	1350	1400	1445	1505	1565	1625	63"
66"	1230	1260	1290	1340	1380	1430	1475	1535	1595	1655	66"
69"		1290	1320	1370	1415	1460	1505	1565	1625	1690	69"
72"			1350	1400	1445	1490	1535	1595	1655	1720	72"
75"				1430	1475	1520	1565	1625	1690	1750	75"
78"					1505	1555	1595	1655	1720	1780	78"
81"						1615	1655	1720	1780	1840	81"
84"							1720	1780	1840	1900	84"
87"								1840	1900	1970	87"
90"									1970	2030	90"
93"										2090	93"

A-6 Storm Drain Manholes continued.
 (A-6.2 Manhole No. 2)

Manhole No. 2

Pipe Size D1	Pipe Size - D2									Pipe Size D1
	96"	102"	108"	114"	120"	126"	132"	138"	144"	
36"	1415	1505	1625	1750	1870	2000	2120	2275	2425	36"
39"	1445	1535	1655	1780	1900	2030	2150	2305	2460	39"
42"	1475	1565	1690	1810	1940	2060	2185	2335	2490	42"
45"	1505	1595	1720	1840	1970	2090	2215	2365	2520	45"
48"	1535	1625	1750	1870	2000	2120	2245	2395	2550	48"
51"	1585	1675	1800	1920	2040	2165	2285	2440	2600	51"
54"	1625	1720	1840	1970	2090	2215	2335	2490	2640	54"
57"	1675	1765	1890	2010	2135	2255	2380	2530	2690	57"
60"	1720	1810	1940	2060	2185	2305	2425	2580	2735	60"
63"	1765	1860	1980	2105	2225	2350	2470	2630	2780	63"
66"	1830	1920	2040	2165	2285	2410	2530	2690	2845	66"
69"	1890	1980	2105	2225	2350	2470	2600	2750	2905	69"
72"	1950	2040	2165	2285	2410	2530	2660	2810	2965	72"
75"	2010	2105	2225	2350	2470	2600	2720	2875	3025	75"
78"	2075	2165	2285	2410	2530	2660	2780	2935	3090	78"
81"	2150	2245	2365	2490	2610	2735	2855	3010	3160	81"
84"	2225	2320	2440	2570	2690	2810	2935	3090	3240	84"
87"	2305	2395	2520	2640	2765	2885	3010	3160	3320	87"
90"	2380	2470	2600	2720	2845	2965	3090	3240	3395	90"
93"	2460	2550	2670	2795	2915	3040	3160	3320	3475	93"
96"	2550	2640	2765	2885	3010	3130	3260	3410	3565	96"
102"		2735	2855	2980	3100	3230	3350	3505	3655	102"
108"			2950	3070	3190	3320	3440	3595	3750	108"
114"				3160	3290	3410	3535	3685	3840	114"
120"					3380	3505	3625	3780	3930	120"
126"						3610	3730	3890	4040	126"
132"							3840	3995	4145	132"
138"								4105	4255	138"
144"									4360	144"

A-6 Storm Drain Manholes continued.

A-6.3 Manhole No. 3A-6.3.1 General

Reference is made to the Los Angeles County Flood Control District Standard Drawings Nos. 2-D 104 and 2-D 107.

These prices apply to concentric or eccentric manhole shafts and include the cost for the seat and the frame and cover.

Use price from table below for shaft costs on Manholes Nos. 1, 2 and 4.

A-6.3.2 Shaft Cost, 3'-0" Diameter

Shaft Height Feet	Price Dollars
1	\$ 860
2	890
3	925
4	955
5	985
6	1015
7	1045
8	1090
9	1150
10	1210
11	1290
12	1350
13	1410
14	1490
15	1555
16	1625
17	1690
18	1765
19	1830
20	1890
21	1970
22	2030
23	2105
24	2165
25	2225

A-6 Storm Drain Manholes continued.

A-6.4 Manhole No. 4

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 113.

For total cost of Manhole No. 4 in dollars use:

- a. Price for manhole (exclusive of shaft) shown for Manhole No. 2, on pages A-16, A-17 and A-18, adjusted for difference in length. Adjustment to be directly proportioned to lengths, plus,
- b. Cost of shaft (Manhole No. 3, page A-19), plus,
- c. Cost of spur (Junction Structure No. 1, page A-31).

Section A-7Storm Drain Catch BasinsA-7.1 Catch Basin No. 1

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 160.

Depth "v" Feet	Price Dollars
3.0	\$1080
3.5	1150
4.0	1230
4.5	1310
5.0	1380
5.5	1505
6.0	1625
6.5	1735
7.0	1860
7.5	1980
8.0	2090
8.5	2215
9.0	2335
9.5	2470
10.0	2600

A-7 Storm Drain Catch Basins continued.

A-7.2 Catch Basin No. 2

Reference is made to the Los Angeles County Flood Control District
Standard Drawing No. 2-D 162.

Depth "v" Feet	Price Dollars
3.0	\$1230
3.5	1320
4.0	1415
4.5	1830
5.0	1970
5.5	2090
6.0	2225
6.5	2365
7.0	2500
7.5	2640
8.0	3320
8.5	3485
9.0	3655
9.5	3820
10.0	4000

A-7 Storm Drain Catch Basins continued.

A-7.3 Catch Basin No. 3

Reference is made to the Los Angeles County Flood Control District
Standard Drawing No. 2-D 163.

Depth "v" Feet	Price - Dollars								Depth "v" Feet
	W=10'	W=14'	W=21'	W=28'	W=35'	W=42'	W=49'	W=56'	
3.0	1595	2000	2640	3320	4025	2795	5590	6420	3.0
3.5	1750	2120	2795	3505	4300	5130	5990	6880	3.5
4.0	1870	2275	2980	3720	4580	5465	6390	7375	4.0
4.5	2425	2915	3810	4795	5870	7030	8170	9400	4.5
5.0	2610	3100	4085	5130	6300	7495	8725	10,015	5.0
5.5	2795	3320	4360	5465	6695	7985	9245	10,595	5.5
6.0	2980	3505	4640	5810	7100	8450	9800	11,215	6.0
6.5	3160	3720	5010	6145	7495	8910	10,350	11,825	6.5
7.0	3350	3930	5160	6480	7895	9400	10,870	12,445	7.0
7.5	3535	4115	5436	6820	8330	9865	11,430	13,055	7.5
8.0	4520	5345	6910	8665	10,475	12,380	14,255	16,220	8.0
8.5	4765	5650	7315	9095	10,970	12,965	14,960	17,015	8.5
9.0	4975	5960	7680	9520	11,490	13,580	15,665	17,850	9.0
9.5	5220	6235	8045	9955	11,980	14,190	16,375	18,650	9.5
10.0	5465	6545	8420	10,415	12,505	14,810	17,110	19,475	10.0

A-7 Storm Drain Catch Basins continued.

A-7.4 Catch Basin No. 4

Reference is made to the Los Angeles County Flood Control District
Standard Drawing No. 2-D 101.

Depth "V" Feet	Price - Dollars				Depth "V" Feet
	1 Grate	2 Grates	3 Grates	4 Grates	
3.0	1320	2090	2855	3720	3.0
3.5	1445	2245	3070	3930	3.5
4.0	1565	2395	3260	4115	4.0
4.5	1970	2950	3930	4855	4.5
5.0	2090	3100	4115	5160	5.0
5.5	2245	3290	4330	5405	5.5
6.0	2365	3440	4520	5650	6.0
6.5	2490	3625	4730	5870	6.5
7.0	2640	3780	4945	6115	7.0
7.5	2765	3960	5130	6360	7.5
8.0	3160	4610	5995	7435	8.0
8.5	3350	4795	6205	7645	8.5
9.0	3505	5345	6450	7890	9.0
9.5	3685	5530	6695	8135	9.5
10.0	3870	5740	6940	8380	10.0

A-7 Storm Drain Catch Basins continued.

A-7.5 Catch Basin No. 5

Reference is made to the Los Angeles County Flood Control District
Standard Drawing No. 2-D 164.

Depth "v" Feet	Price - Dollars			Depth "v" Feet
	1 Grate	2 Grates	3 Grates	
3.0	1445	2305	3320	3.0
3.5	1565	2425	3475	3.5
4.0	1655	2580	3655	4.0
4.5	2120	3100	4270	4.5
5.0	2275	3290	4450	5.0
5.5	2425	3440	4640	5.5
6.0	2580	3625	4825	6.0
6.5	2735	3780	5010	6.5
7.0	2885	3960	5190	7.0
7.5	3040	4115	5375	7.5
8.0	3565	4730	6085	8.0
8.5	3720	4945	6330	8.5
9.0	3900	5130	6605	9.0
9.5	4055	5345	6850	9.5
10.0	4240	5530	7090	10.0

A-7 Storm Drain Catch Basins continued.

A-7.6 Catch Basin No. 5A

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 195.

Depth "V" Feet	Price - Dollars				Depth "V" Feet
	2 Grates	4 Grates	6 Grates	8 Grates	
3.0	2215	3290	4390	5560	3.0
3.5	2335	3475	4640	5870	3.5
4.0	2460	3655	4855	6145	4.0
4.5	3070	4330	5560	6910	4.5
5.0	3260	4550	5840	7250	5.0
5.5	3595	4795	6115	7590	5.5
6.0	3750	5040	6390	7925	6.0
6.5	3930	5285	6665	8260	6.5
7.0	4085	5495	6910	8605	7.0
7.5	4270	5740	7190	8940	7.5
8.0	4885	6545	8200	10,200	8.0
8.5	5100	6820	8540	10,595	8.5
9.0	5315	7100	8880	10,970	9.0
9.5	5495	7375	9215	11,365	9.5
10.0	5740	7650	9550	11,765	10.0

A-7 Storm Drain Catch Basins continued.

A-7.7 Catch Basin No. 6

Reference is made to the Los Angeles County Flood Control District
Standard Drawing No. 2-D 109

Depth "v" Feet	Price - Dollars						Depth "v" Feet
	Case "A"			Case "B"			
	1 Grate	2 Grates	3 Grates	1 Grate	2 Grates	3 Grates	
3.0	2030	2980	3960	2580	3535	4550	3.0
3.5	2150	3160	4205	2735	3810	4885	3.5
4.0	2305	3380	4490	2915	4055	5220	4.0
4.5	2425	3595	4765	3070	4300	5560	4.5
5.0	2580	3780	5040	3260	4550	5900	5.0
5.5	2855	4300	5740	3720	5220	6820	5.5
6.0	3040	4550	6085	3930	5530	7220	6.0
6.5	3190	4795	6420	4115	5840	7650	6.5
7.0	3380	5040	6755	4330	6145	8045	7.0
7.5	3535	5315	7100	4520	6450	8450	7.5
8.0	3720	5560	7435	4730	6755	8850	8.0
8.5	3870	5810	7770	4945	7070	9245	8.5
9.0	4055	6055	8110	5130	7375	9680	9.0
9.5	4205	6330	8450	5345	7680	10,075	9.5
10.0	4390	6575	8785	5530	7985	10,475	10.0

A-7 Storm Drain Catch Basins continued.

A-7.8 Catch Basin No. 7

Reference is made to the Los Angeles County Flood Control District
Standard Drawing No. 2-D 170.

Depth "V" Feet	Price - Dollars				Depth "V" Feet
	1 Grate	2 Grates	3 Grates	4 Grates	
3.0	1445	2305	3190	4175	3.0
3.5	1565	2425	3380	4390	3.5
4.0	1655	2580	3535	4610	4.0
4.5	2150	3130	4175	5315	4.5
5.0	2305	3320	4390	5530	5.0
5.5	2425	3475	4610	5780	5.5
6.0	2580	3655	4795	6025	6.0
6.5	2705	3810	5010	6235	6.5
7.0	2825	3995	5190	6480	7.0
7.5	2980	4145	5405	6725	7.5
8.0	3100	4330	5620	6970	8.0
8.5	3870	5190	6575	8045	8.5
9.0	4055	5410	6820	8325	9.0
9.5	4205	5620	7070	8570	9.5
10.0	4390	5810	7315	8850	10.0

A-7 Storm Drain Catch Basins continued.

A-7.9 Catch Basin No. 8A

Reference is made to the Los Angeles County Flood Control District
Standard Drawing No. 2-D 249.1

Depth "V" Feet	Price - Dollars						Depth "V" Feet
	W=3.5'	W=7'	W=10'	W=14'	W=21'	W=28'	
3.0	1690	2060	2365	2765	3380	4055	3.0
3.5	1780	2185	2490	2915	3565	4270	3.5
4.0	1900	2305	2640	3070	3720	4450	4.0
4.5	2245	2735	3130	3655	4390	5285	4.5
5.0	2365	2885	3290	3810	4610	5495	5.0
5.5	2460	3010	3440	3995	4795	5740	5.5
6.0	2580	3130	3595	4145	5010	5990	6.0
6.5	2705	3290	3750	4330	5190	6205	6.5
7.0	2825	3410	3990	4490	5405	6450	7.0
7.5	2950	3565	4055	4670	5620	7030	7.5
8.0	3070	3685	4205	4825	5810	7250	8.0
8.5	3595	4270	4885	5680	6820	8450	8.5
9.0	3720	4420	5070	5870	7070	8725	9.0
9.5	3840	4580	5220	6085	7315	9000	9.5
10.0	3995	4730	5405	6300	7525	9245	10.0

A-7 Storm Drain Catch Basins continued.

A-7.10 Catch Basin No. 8B

Reference is made to the Los Angeles County Flood Control District
Standard Drawing No. 2-D 249.2.

Depth "V" Feet	Price - Dollars						Depth "V" Feet
	W=3.5'	W=7'	W=10'	W=14'	W=21'	W=28'	
3.0	1595	1970	2275	2705	3320	4055	3.0
3.5	1690	2090	2395	2855	3475	4270	3.5
4.0	1780	2215	2520	3010	3655	4450	4.0
4.5	2120	2640	3040	3565	4330	5285	4.5
5.0	2245	2765	3190	3720	4520	5495	5.0
5.5	2365	2915	3350	3870	4730	5740	5.5
6.0	2490	3040	3505	4055	4945	5990	6.0
6.5	2610	3160	3655	4240	5130	6205	6.5
7.0	2735	3320	3810	4390	5345	6450	7.0
7.5	2825	3440	3960	4580	5530	6695	7.5
8.0	3320	3595	4115	4730	5740	6940	8.0
8.5	3475	4175	4795	5590	6755	8110	8.5
9.0	3625	4330	4975	5780	7000	8390	9.0
9.5	3750	4490	5130	5990	7220	8665	9.5
10.0	3870	4640	5315	6175	7435	8910	10.0

A-7 Storm Drain Catch Basin continued.

A-7.11 Catch Basin No. 9

Reference is made to the Los Angeles County Flood Control District
Standard Drawing No. 2-D 471

Depth "V" Feet	Price - Dollars						Depth "V" Feet
	W=3.5'	W=7'	W=10'	W=14'	W=21'	W=28'	
3.0	2335	2610	2885	3290	3930	4610	3.0
3.5	2460	2735	3040	3410	4085	4795	3.5
4.0	2610	2915	3230	3625	4330	5070	4.0
4.5	2735	3040	3380	3870	4765	5740	4.5
5.0	2885	3230	3565	4055	5040	6085	5.0
5.5	3160	3595	4025	4550	5590	6695	5.5
6.0	3350	3780	4240	4765	5900	7065	6.0
6.5	3505	3960	4420	4975	6265	7405	6.5
7.0	3685	4145	4640	5220	6450	7770	7.0
7.5	3840	4330	4825	5405	6725	8110	7.5
8.0	4025	4520	5040	5870	7435	9185	8.0
8.5	4175	4700	5255	6145	7800	9580	8.5
9.0	4360	4885	5435	6420	8140	9985	9.0
9.5	4520	5070	5650	6665	8480	10,385	9.5
10.0	4700	5255	5840	6910	8785	10,780	10.0

Section A-8Storm Drain Junction StructuresA-8.1 Junction Structure No. 1

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 189.

Pipe Size Inches	Price Dollars
12	\$ 860
15	890
18	925
21	965
24	995
27	1045
30	1105
33	1150
36	1200
39	1240
42	1320
45	1380
48	1460
51	1520
54	1585
57	1675
60	1750
63	1840
66	1920
69	2030
72	2195

A-8 Storm Drain Junction Structures continued.

A-8.2 Junction Structure No. 2

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 112.

Pipe Size Inches	Price Dollars
12	\$ 720
15	750
18	800
21	830
24	875
27	955
30	1015
33	1090
36	1180
39	1290

Section A-9Storm Drain Transition StructuresA-9.1 General

Reference is made to the following Los Angeles County Flood Control District Standard Drawings.

- 2-D 235 - Transition Structure No. 1
- 2-D 239 - Transition Structure No. 2
- 2-D 188 - Transition Structure No. 3
- 2-D 198 - Transition Structure No. 4
- 2-D 260 - Transition Structure No. 5
- 2-D 200 - Transition Structure No. 6
- 2-D 201 - Transition Structure No. 7

Volume Limits C. Y. of Concrete	Price - Dollars Per C. Y.
1 to 5	\$670
6 to 10	600
11 to 15	535
16 to 20	470
21 to 50	400
51 and over	335

Section A-10Sanitary SewersA-10.1 Main Line and House Connection Sewers

The prices tabulated below are in dollars per linear foot of clay pipe sewer.

Pipe Size In.	Depth of Trench - Feet						Pipe Size In.
	8 or Less	10	12	14	16	18	
6	30.35	40.55	50.65	57.50	64.20	70.90	6
8	33.85	43.90	54.10	60.85	67.55	74.40	8
10	38.75	48.85	59.30	66.00	74.40	81.10	10
12	46.30	57.50	67.55	74.40	81.10	87.85	12
15	58.85	67.55	77.75	84.50	91.20	98.05	15
18	69.50	81.10	91.20	98.05	104.75	111.50	18
21	81.10	91.20	101.40	108.10	118.30	128.40	21
24	96.50	106.55	118.30	128.40	138.35	148.70	24
27	114.85	125.05	135.10	145.30	155.30	168.95	27
30	138.60	148.70	158.90	168.95	179.15	192.60	30

A-10.2 Sanitary Sewer Manholes

Use \$170 per vertical foot for a 4-foot diameter sewer manhole, complete in place.

Use \$200 per vertical foot for a 5-foot diameter sewer manhole, complete in place.

A-10 Sanitary Sewers continued.

A-10.3 Remodeling of Sanitary Sewer House Connections

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 250.

Type	Case	Cost
Reconstruction	1 and 2	\$ 36.00 per lin. ft.
Reconstruction	3 and 4	\$ 55.00 per lin. ft.
Reconnection	5	\$370.00 per unit
Reconnection	6	\$ 75.00 per vert. ft.

A-10.4 Protection for Main Line and House Connection Sewers

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 251.

Type	Case	Cost
Encasement	III	\$490.00 per unit
Blanket	IV Half-section D-D	\$430.00 per unit

Section A-11Pipe Supports Across Storm Drain TrenchesA-11.1 General

Reference is made to the Los Angeles County Flood Control District Standard Drawings Nos. 2-D 173.1, .2 and .3.

The prices tabulated below may be applied to connector pipe and main line pipe and box conduit. The cost of a temporary support is included in the price of the permanent support.

Storm Drain Trench Width Feet	Price Per Unit
3 to 5	\$310
6 to 8	460
9 to 12	610
13 to 18	770
19 to 25	925

Section A-12Subdrainage SystemsA-12.1 Subdrainage Pipe and Manholes

Reference is made to the Los Angeles County Flood Control District Standard Drawings Nos. 2-D 295.1, .2 and .3.

6-inch perforated and non-perforated concrete or asbestos cement pipe	- Use \$6.00 per lin. ft.
8-inch perforated and non-perforated concrete or asbestos cement pipe	- Use \$9.60 per lin. ft.
Subdrainage manholes (not including items listed below)	- Use \$4920.00 each
Subdrain system flap gates	- Use \$365.00 each
Subdrain manhole gate box	- Use \$490.00 each
Subdrain manhole outlet pipe	- Use \$590.00 each

A-12.2 and Gravel Materials

Gravel fill, complete in place	- Use \$27.00 per cu. yd.
Drain material, complete in place	- Use \$24.00 per cu. yd.
Sand and gravel blanket, complete in place	- Use \$23.00 per cu. yd.
Filter material, complete in place	- Use \$24.00 per cu. yd.

Section A-13Fencing and GatesA-13.1 Fencing

Reference is made to the Los Angeles County Flood Control District Standard Drawings Nos. 2-D 178, 2-D 179 and 2-D 180.

4 ft. channel wall or headwall fence	- Use \$6.00 per lin. ft.
5 ft. channel wall or headwall fence	- Use \$6.60 per lin. ft.
5 ft. Right of way fence	- Use \$7.20 per lin. ft.
Rail and tension rod assembly	- Use \$62.00 per unit
Rail assembly	- Use \$58.00 per unit

In the event vinyl clad fencing material is used, the prices shown above should be increased by 70%.

A-13.2 Gates

Reference is made to the Los Angeles County Flood Control District Standard Drawings Nos. 2-D 178, 2-D 179 and 2-D 180.

4 ft. Walk Gate	- Use \$250.00 per unit
12 ft. Double drive gate	- Use \$470.00 per unit
16 ft. Double drive gate	- Use \$610.00 per unit
20 ft. Double drive gate	- Use \$760.00 per unit

In the event vinyl clad fencing material is used, the prices shown above should be increased by 70%.

Section A-14Restoration of Permanent SurfacingA-14.1 Premix

Thickness	Cost per Sq. Ft.
1" P.M.	\$0.24
2" P.M.	0.44
3" P.M.	0.68
4" P.M.	0.92

A-14.2 Asphaltic Concrete

Thickness	Cost per Sq. Ft.
2" A.C.	\$0.56
3" A.C.	0.80
4" A.C.	1.08
5" A.C.	1.37
6" A.C.	1.61
7" A.C.	1.88
8" A.C.	2.17

A-14.3 Portland Cement Concrete

Thickness	Cost per Sq. Ft.
3" P.C.C.	\$1.16
4" P.C.C.	1.54
5" P.C.C.	1.97
6" P.C.C.	2.30
7" P.C.C.	2.70
8" P.C.C.	3.07
9" P.C.C.	3.50

A-14 Restoration of Permanent Surfacing continued.

A-14.4 Select Material Base

Thickness	Cost per Sq. Ft.
3" S.M.B.	\$0.16
4" S.M.B.	0.22
5" S.M.B.	0.28
6" S.M.B.	0.34
7" S.M.B.	0.40
8" S.M.B.	0.46
9" S.M.B.	0.53
10" S.M.B.	0.59
11" S.M.B.	0.65
12" S.M.B.	0.72

A-14.5 Untreated Rock Base

Thickness	Cost per Sq. Ft.
3" U.R.B.	\$0.18
4" U.R.B.	0.24
5" U.R.B.	0.31
6" U.R.B.	0.37
7" U.R.B.	0.43
8" U.R.B.	0.49
9" U.R.B.	0.55
10" U.R.B.	0.61
11" U.R.B.	0.67
12" U.R.B.	0.74

A-14.6 Miscellaneous

Fog Seal	\$0.023 per sq. ft.
Chip Seal	0.12 per sq. ft.
Soil Sterilant	0.04 per sq. ft.

Section A-15Miscellaneous ConstructionA-15.1 Gutters and Local Depressions

8" P.C.C. Local Depressions	\$7.20 per sq. ft.
8" P.C.C. Warped Gutter	7.20 per sq. ft.
8" P.C.C. Cross Gutter	4.50 per sq. ft.

A-15.2 Curb and Gutter

8" P.C.C. Curb	\$ 7.20 per lin. ft.
8" P.C.C. Curb and 12" Gutter	10.80 per lin. ft.
8" P.C.C. Curb and 18" Gutter	11.70 per lin. ft.
8" P.C.C. Curb and 24" Gutter	12.60 per lin. ft.
8" P.C.C. Curb and 48" Gutter	18.00 per lin. ft.
8" P.C.C. Curb and 60" Gutter	21.60 per lin. ft.
8" A.C. Curb	3.60 per lin. ft.

A-15.3 Redwood Headers

1" x 2"	\$1.20 per lin. ft.
1" x 3"	1.38 per lin. ft.
2" x 3"	1.62 per lin. ft.
2" x 4"	1.80 per lin. ft.
2" x 6"	2.58 per lin. ft.
4" x 6"	4.56 per lin. ft.

A-15 Miscellaneous Construction continued.

A-15.4 Tree Removals

Up to 12" Dia.	\$108	each
13" to 24" Dia.	216	each
25" and over	324	each
Palm Tree up to 12" Dia.	216	each
Palm Tree 13" to 24" Dia.	324	each
Palm Tree 25" and over	432	each

The diameter of the tree is determined by measuring the trunk 3 feet above the existing ground.

A-15.5 Portland Cement Concrete Driveway Aprons

3" Thickness	\$2.00 per sq. ft.
4" Thickness	2.50 per sq. ft.
6" Thickness	3.60 per sq. ft.

A-15.6 Gunite Channel Lining

3" Thickness	\$2.52 per sq. ft.
4" Thickness	3.24 per sq. ft.
5" Thickness	3.96 per sq. ft.
6" Thickness	4.68 per sq. ft.

The prices shown for the gunite channel lining include a wire mesh reinforcement.

Section A-16Automatic Flap Gates and Protection BarriersA-16.1 Flap Gates

The prices tabulated below are for Armco, Cascade, Waterman, or District-approved equal, circular flap gates designed for 20 feet of seating head.

Diameter of Gates Inches	Cast Iron Flap Gates Dollars	Epoxy Coated Flap Gates Dollars
6	\$ 430	\$ 540
8	650	755
10	830	935
12	1010	1115
15	1225	1370
18	1475	1655
21	1800	1980
24	2160	2375
30	2590	2845
36	3130	3490
42	3710	4210
48	4430	5075
54	5255	6120
60	6230	7270
72	7310	8820

For District-approved rectangular flap gates use the following prices:

\$3.00 per lb. for cast iron flap gates

\$3.60 per lb. for epoxy coated flap gates

A-16 Automatic Flap Gates and Protection Barriers continued.

A-16.2 Protection Barriers

Reference is made to the Los Angeles County Flood Control District Standard Drawings Nos. 2-D 261.1, .2 and .3.

\$48.00 per sq. ft. for galvanized steel protection barriers.

\$56.00 per sq. ft. for epoxy coated steel protection barriers.

Section A-17Electrolier Lighting ReconstructionA-17.1 Electrolier Lighting Conduit

For galvanized steel electrical conduit, complete in place, use the following table:

Diameter Inches	Price \$/Lin. Ft.
1/2	\$15.85
3/4	18.00
1	20.65
1-1/4	22.10
1-1/2	23.75
2	27.60

A-17.2 Electrolier Lighting Cable

The price for the cable, installed in conduit, includes a No. 8 A.W.G. solid copper conductor insulated with 7/64" approved polyethylene compound rated at 5,000 volts. Use \$4.30 per linear foot.

A-17.3 Electroliers

The price for removal and reinstallation of an electrolier includes construction of a new base. Use \$2065.00 per unit.

A-17.4 Pull Boxes

The price for the pull box includes furnishing and installation. Use \$290.00 per unit.

Section A-18Concrete CollarsA-18.1 General

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 393.

Pipe Size Inches	Price Dollars
12 to 21	\$ 215
24 to 33	290
36 to 45	470
48 to 57	720
60 to 69	1225

Section A-19Concrete BackfillA-19.1 General

Reference is made to the Los Angeles County Flood Control District Standard Drawings Nos. 2-D 177 and 2-D 213.1

Prices shown apply to connector pipe as well as main line pipe.

Volume Limits (C. Y.)	Price \$ Per C. Y.
1 to 5	\$180
6 to 10	160
11 to 15	145
16 to 20	125
21 to 25	110
26 and over	90

Section A-20Inlet No. 1A-20.1 General

Reference is made to the Los Angeles County Flood Control District Standard Drawing No. 2-D 265.

Pipe Size Inches	Price Dollars
15	\$ 720
18	865
21	1010
24	1150
27	1295
30	1440

SECTION B

QUANTITY SURVEY SHEETS

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Engineer's Estimate Summary Sheet--Continued

Date: _____

Project _____ Proposal or Alternate _____

Description	Pg. Ref.	Quantity	Unit Cost	Total
				\$

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Drawn by _____
 Calc'd. by _____
 Ckd. by _____

Engineer's Quantity Survey Sheets

EXCAVATION FOR BOX CONDUIT AND OPEN CHANNEL

Plan Sht. No.	Size W x H	Stations		Length Ft.	Trench Width	Excavation				Backfill			Haulaway		Fill		
		From	To			Average Depth	Area	C.Y./L.H.	Total C.Y.	Conduit End Area	Backfill Area	C.Y./L.H.	Total C.Y.	X-sect. Area	C.Y./L.H.	Total C.Y.	

Project _____ Proposal or Alternate _____

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Engineer's Quantity Survey Sheets

Date _____
Calc. by _____
Ckd. by _____

PERMANENT SURFACING

Project _____ Proposal or Alternate _____

Plan Sht. No.	Pipe or Box Size	Length Ft.	Width* Ft.	New Surf. Mat'l In.	New Base Mat'l In.	Cost Surf. Mat'l \$/S.F.	Cost Base Mat'l \$/S.F.	Total Cost \$/S.F.	Area L x W S.F.	Total Cost \$

*Use trench width plus 2.0' for bituminous paving. Use trench width for concrete paving.

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Date _____

Calc. by _____

Engineer's Quantity Survey Sheets

Ckd. by _____

BOX CONDUIT

Project _____ Proposal or Alternate _____

Plan Sht. No.	Box Size or Section	Stations		Length Ft.	Concrete		Reinf. Steel	
		From	To		C.Y./ L.F.	Total C.Y.	Lbs./ L.F.	Total Lbs.

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Date _____

Engineer's Quantity Survey Sheets

Calc. by _____

Ckd. by _____

MAIN LINE PIPE

Project _____ Proposal or Alternate _____

Plan Sht. No.	Pipe Size	D Load or Sec.	Length L.F.	Ave. Trench Depth		Plan Sht. No.	Pipe Size	D Load or Sec.	Length L.F.	Ave. Trench Depth

Engineer's Quantity Survey Sheets

CONNECTOR PIPE

Project _____ Proposal or Alternate _____

Plan Sht. No.	Pipe Size	D Load or Sec.	Length L.F.	Ave. Trench Depth		Plan Sht. No.	Pipe Size	D Load or Sec.	Length L.F.	Ave. Trench Depth

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Date _____

Engineer's Quantity Survey Sheets

Calc. by _____

Ckd. by _____

MANHOLES FOR STORM DRAINS

Project _____ Proposal or Alternate _____

Plan Sht. No.	M.H. ^o No.	Station	Shaft Height Ft.	Inlet Dia. In.	Outlet Dia. In.	Spur Dia. In.	M.H. Lgth. Ft.	Spur* Lgth. Ft.	

^oCircle Manhole Number if pressure.

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Engineer's Quantity Survey Sheets

Date _____

Calc. by _____

Ckd. by _____

JUNCTION STRUCTURES

Project _____ Proposal or Alternate _____

Plan Sht. No.	Junc.° Str. No.	Station	Length* Ft.	Spur Dia.	Conc. C.Y.	

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Engineer's Quantity Survey Sheets

Date _____

Calc. by _____

Ckd. by _____

TRANSITION STRUCTURES

Project _____ Proposal or Alternate _____

Plan Sht. No.	Trans. Str. No.	Stations		Length L.F.	Outlet Size	Inlet Size	Size Inlet Dia.	Conc. C.Y.	
		From	To						

SPECIAL CONCRETE STRUCTURES

Project _____ Proposal or Alternate _____

Plan Sht. No.	Description	Stations		Length Ft.	Conc. C.Y.	
		From	To			

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Engineer's Quantity Survey Sheets

LOCAL DEPRESSIONS - APRONS - WARPED GUTTERS

Date _____
 Calc. by _____
 Ckd. by _____

Project _____ Proposal or Alternate _____

Plan Sht. No.	C.B. No.	Description	W Ft.	K Ft.	L Ft.	M Ft.	X Ft.	Y Ft.	Concrete		Asph. Conc.		Thick-ness S.F.		
									Thick-ness	S.F.	Thick-ness	S.F.	Thick-ness	S.F.	

Engineer's Quantity Survey Sheet

SANITARY SEWERS

Project _____ Proposal or Alternate _____

Plan Sht. No.	Main Line*			House Connections*			Manholes				
	Pipe Size In.	Construct Sani. Sewer Length	Average Trench Depth	Station	Reconstruct Case-1-2-3-4 Ft.	Reconnect Case-5 Units	Construct Case-6 V.F.F.	Type	M.H. Dia. Ft.	Shaft Ht. Ft.	Remodel Base Units

*Add surfacing quantities to Page 4

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Date _____

Engineer's Quantity Survey Sheets

Calc. by _____

Ckd. by _____

UTILITY REINFORCEMENT

Project _____ Proposal or Alternate _____

Plan Sht. No.	Pipe Size In.	Support S.S.	Encase S.S.	Blanket S.S.	Others	Others	Quantity			
							C.Y.	L.F.	Units	

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Date _____

Engineer's Quantity Survey Sheets

Calc. by _____

Ckd. by _____

ELECTROLIER LIGHTING RECONSTRUCTION

Project _____ Proposal or Alternate _____

Plan Sht. No.	Cable Ft.	1" Conduit Ft.	1 1/4" Conduit Ft.	1 1/2" Conduit Ft.	2" Conduit Ft.	Electroliers Units	Pull Boxes Units		

FLAP GATES - PROTECTION BARRIERS - C.M.P.

Project _____

Proposal or Alternate _____

Plan Sht. No.	Flap Gates				Prot. Barrier		C. S. P.*			
	Size Dia.	Plain Units	Epoxy Coated Units		Plain S.F.	Epoxy Coated S.F.	Size In.	Ga.	A.D.	Quantity Ft.

*Add surfacing quantity to Page 4

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Date _____

Engineer's Quantity Survey Sheets

Calc. by _____

Ckd. by _____

FENCING

Project _____ Proposal or Alternate _____

Plan Sht. No.	Fence				Gates			Rail Assembly Units	Rail & Truss. Assm. Units
	Height Ft.	Type	Finish*	Quantity L.F.	Size Ft.	Type	Quantity Unit		

*Indicate with (VC) if Vinyl Clad.

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Engineer's Quantity Survey Sheet

SUBDRAINAGE

Date _____
 Calc. by _____
 Ckd. by _____

Project _____ Proposal or Alternate _____

Plan Sht. No.	Drain Material C.Y.	Filter Material C.Y.	Perforated Pipe L.F.	Non-Perf. Pipe L.F.	Subdrain* Manhole Units		

*Includes flapgates, gate boxes, and outlet pipe.

MISCELLANEOUS CONSTRUCTION ITEMS

Project _____ Proposal or Alternate _____

Plan Sht. No.	Description		

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Date _____
 Calc. by _____
 Ckd. by _____

Engineer's Quantity Survey Sheets

SHORING OF EXCAVATION

Plan Sht. No.	Stations		Length L.F.	Ave. Depth Ft.	Labor and Equip. Cost		Sheeting No. Times Used	Walers \$/L.F.	Cross- Bracing \$/L.F.	Total \$/L.F.	Total Cost
					Product. Rate L.F./Day	Sheeting Spacing c-c					
					From	To					