EXCAVATION: Measured in excavation

1.	Excavation Class 1, detached solid rock from stripping for base of dam, from structure and other excavation except spillway	13,490
2.	Excavation Class 1, detached solid rock from spillway excavation	42,264
3.	Excavation Class 1, detached solid rock from Station 0+14 to -2+95 tunnel entrance	276
4.	Excavation Class 1, ledge rock in place from Station 0+14 to 0-50 tunnel entrance	2,537
5.	Excavation Class 1, detached solid rock from Station 11+67.8 to 15+30 tunnel exit	356
6.	Excavation Class 1, ledge rock in place from Station 11+67.8 to 13+82.8 tunnel exit	4,555
7.	Excavation Class 1, ledge rock in place from N 3440 to N 3790 and from E 4967 to E 5023	4,222
8.	Excavation Class 1, ledge rock in place from N 3480 to N 3540 and from E 5450 to E 5510	632
9.	Excavation Class 1, ledge rock in place from N 3420 to N 3460 and from E 4470 to E 4512	234
10.	Excavation Class 1, ledge rock in place from N 3440 to N 3560 and from E 4390 to E 4460	764
11.	Excavation Class 2, Station 0+14 to -2+95 tunnel entrance	10,105
12.	Excavation Class 2, Station 11+67.8 to 15+30 tunnel exit	10,467
13.	Excavation Class 2, stripping for base of dam from N 3110 to N 3990 and from E 4320 to E 4800 under downstream rock embankment	74,791
14.	Excavation Class 2, stripping for base of dam from N 3050 to N 4160 and from E 5140 to E 5590 under upstream rock embankment	90,718
15.	Excavation Class 2, stripping for base of dam from N 3040 to N 4130 and from E 4680 to E 5220	96,116
16.	Excavation Class 2, spillway excavation from Station 0+00 to 7+40	448,065
17.	Excavation Class 3, downstream toe wall trench from 0-60 to 4+02.14	1,835
18.	Excavation Class 3, upstream toe wall trench from Station 0+00 to 4+85	2,199

19. Excavation Class 3, main cutoff trench under dam
    (a) 6' neat line trench from N 3006 to ogee 5+10 — 6,912
    (b) 6' bottom 1 on 1 slopes from N 3006 to N 4100 — 4,408

20. Excavation Class 4 cutoff trench under spillway
    (a) Under spillway ogee Station 0+00 to 5+10 — 1,190
    (b) " " floor " 2+55 — 20
    (c) " " " " 5+10 — 51
    (d) " " " " 7+10 — 65

21. Excavation Class 5, tunnel excavation
    (a) Station 0+00 to Station 11+72.77 — 29,370
    (b) Outlet tower shaft — 1,923
    (c) Cleaning floor exploration tunnels 1 and 2 — 26

SUMMARY BY SCHEDULE ITEMS

Schedule Item	Determination of schedule items			
1.	Excavation Class 1, solid rock originating in structure excavation including placing and sorting in dam.			
	Rock embankment	2(1)	37,538	
		3(1)	15,273	
		4(1)	926	
	Total schedule item 1			53,737
2.	Rock embankment Class 1 rock originating in borrow pit only including placing and sorting in dam, measured in embankment			
	Rock embankment	1(2)	6,236	
		2(2)	512,635	
		3(2)	242,773	
		4(2)	23,348	
	Total schedule item 2			784,992
3.	Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill.			
	Hydraulic fill	1(3)	224,102	
	Total schedule item 3			224,102
5.	Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only including placing and sorting in hydraulic fill.			
	Hydraulic fill	1(5)	1,068,848	
	Total schedule item 5			1,068,848
7.	Excavation Class 3, cutoff trench excavation under dam including placing and sorting in dam			
	Rock embankment	2(7)	503	
		3(7)	259	
	Hydraulic fill	1(7)	5,615	
	Total schedule item 7			6,377

8. Excavation Class 4 cutoff trench excavation under spillway including placing and sorting in dam.

Hydraulic fill	1(8)	1,326	
Total schedule item 8			1,326

9. Excavation Class 5 outlet tunnel excavation excepting open cut excavation and including placing and sorting in dam.

Rock embankment	1(9)	4,481	
	2(9)	6,050	
	3(9)	1,743	
	4(9)	28	
Hydraulic fill	1	1,941	
Total schedule item 9			14,243

10. Excavation Class 1, solid rock originating in structure excavation and wasted.

Overall excavation:

Excavation	1	13,490	
	2	42,264	
	3	276	
	4	2,537	
	5	356	
	6	4,555	
	7	4,222	
	8	632	
	9	234	
	10	764	
Total overall excavation Class 1		69,330	

Excavation Class 1 placed in dam measured in excavation

Schedule item	1	53,737	
Excavation wasted		15,593	
27.5 percent swell		4,288	
As if measured in spoil bank		19,881	
Total schedule item 10			19,881

11. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation and wasted.

Overall excavation:

Excavation	11	10,105		
	12	10,467		
	13	74,791		
	14	90,718		
	15	96,116		
	16	448,065		
Total overall			730,262	
Placed in dam:				
Hydraulic fill	2(3)(schedule item 3)		224,102	
Excavation wasted, as if measured in spoil bank on basis of no swell or shrinkage			506,160	
Swell on excavation item 16			75,430	
Total schedule item 11				581,590

12. Excavation Class 3 cutoff trench excavation under dam and wasted.

Overall excavation:				
Excavation	17	1,835		
	18	2,199		
	19a	6,912		
	19b	4,408		
Total overall excavation Class 3				15,354
Excavation Class 3 placed in dam measured in excavation				
Schedule item	7			6,377
Excavation wasted			8,977	
Swell 27.5 percent			2,469	
As if measured in spoil bank				11,446
Total schedule item 12				11,446

14. Excavation Class 5, tunnel excavation excepting open cut excavation, but wasted

Overall excavation:				
Excavation	21a	29,370		
	b	1,923		
	c	26		
Total overall tunnel excavation				31,319
Tunnel excavation placed in dam measured in excavation				
Schedule item	9			14,243
Tunnel excavation wasted measured in excavation			17,076	
Swell 27.5 percent			4,696	
As if measured in spoil bank				21,772
Total schedule item 14 as if measured in spoil bank				21,772

6-7-34
copy/p

H@ W@ ROHL & T@ E@ CONNOLLY

Contractors

El Capitan Dam
Via Lakeside, California

June 2, 1934

Mr. H. N. Savage, Hydraulic Engineer
City of San Diego
San Diego, California

Subject: San Diego River Project, El Capitan Feature, Classification and Measurement of Quantities.

Dear Sir:

In accordance with the contractor's privilege of protesting any monthly estimate, as set forth in Paragraph 54 of the Contract Specifications, we specifically object to the quantities and classifications of quantities for the different bid items in estimate No. 24 for the month of April, 1934, as set forth in statement transmitted by Mr. H. N. Savage, Hydraulic Engineer, under date of May 24, 1934, for the following reasons:

The assumptions set forth under which the estimate is computed are erroneous and not in accordance with our contract in the following respects:

(a) The assumptions relative to swell or shrinkage on excavation Class 1, 2, 3 and 5 set forth in said statement are erroneous and not in accordance with the specifications and contract paragraph 55-b.

(b) Our estimate does not include payment to the contractor for idle equipment, standby charges and damages for the period from April 10, 1933, to May 31, 1933, in accordance with our claim on file.

Item No. 1

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based on truck count of excavated materials.

The quantities shown are incorrect in that the excavation of the spillway structure was not correctly classified and the total quantities shown would be greatly increased if the spillway excavation had been properly classified as provided in Paragraph 54 of the specifications.

Item No. 2

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifi-

cations in that it is based partly on truck count of excavated materials.

The quantities shown are incorrectly computed and not as required under Paragraph 55 of the specifications where it states:

> "The quantity of materials placed in embankment will be computed by subtracting spoil bank material measured in spoil bank from excavated materials measured in excavation."

Item No. 3.

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that the excavation of the spillway structure has not been correctly classified as provided in Paragraph 54 of the specifications and part of the quantity shown should properly be placed under Schedule Item No. 1 for the above reason.

Item No. 5.

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials. The quantities shown are incorrectly computed and not as required under Paragraph 55 of the specifications wherein it states:

> "The quantity of materials placed in embankment will be computed by subtracting spoil bank material measured in spoil bank from excavated materials measured in excavation."

The quantity shown is incorrect in that the Hydraulic Engineer has deducted 3544 c.y. placed in the embankment by the contractor in the manner provided by the specifications.

Item No. 7.

Not correct as to quantity for the reason that a substantial portion of Class 3 cutoff trench excavation has been improperly included and classified as structure excavation Classes 1 or 2.

Quantities shown are wrong as to method of measurement Paragraph 55 and Paragraph 101 of the specifications.

Item 9.

The quantities shown are incorrect in that measurements were not made as provided in Paragraph 101 of the specifications.

Item No. 10

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the Specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications, but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

The quantities shown are incorrect in that the excavation of the spillway structure was not correctly classified and the total quantities shown would be greatly increased if the spillway excavation had been properly classified as provided in Paragraph 54 of the specifications.

Item No. 11

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications, but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

The quantities shown are incorrect in that the excavation of the spillway structure has not been correctly classified as provided in Paragraph 54 of the specifications and part of the quantity shown should properly be placed under Schedule Item No. 10 for the above reason.

Item No. 12

Not correct as to quantity for the reason that a substantial portion of Class 3 cutoff trench excavation has been improperly included and classified as structure excavation Classes 1 or 2.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

Item No. 14

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications but was computed by adding to the estimated

excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

Item No. 17.

The quantities shown are wrong as to classifications.

Item No. 23.

Incorrectly computed.

Item No. 24.

Incorrectly computed.

Item No. 26.

Not correct as to quantity.

Item No. 33.

Not correct as to quantity.

Item No. 34.

Not correct as to quantity.

Items Nos. 8, 16, 19, 20, 21, 22, 25, 27, 28, 29, 31, 35, 36, 37, 40, 43, 45 and 46 as set forth in Estimate No. 23 are acceptable only as an approximate estimate, it being the contractor's understanding that the Hydraulic Engineer has ruled that all progress estimates are subject to change and correction by final measurement at the time of completion of the work and issuance of a final estimate.

Yours very truly,

H. W. ROHL AND T. E. CONNOLLY

By O. C. Steves (Signature)
Resident Rep.

8/2/34
copy/f

June 13, 1934

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

S-112

Subject: San Diego River Project, El Capitan Feature
Classification and Measurement of Quantities

Gentlemen:

Receipt is acknowledged of your letter dated June 2, 1934, objecting and protesting to the quantities and classification of quantities as shown in the different schedule items of progress estimate No. 24 for the month of April 1934, details of which, relating to excavation and embankment quantities for El Capitan Dam were set out in letter to you dated May 24, 1934.

The Contractor's lack of an orderly program and method of work prior to April 1, 1933 made it physically impossible for the Engineer to identify the source of and to measure wasted material from each source separately in spoil banks, and therefore, in order to arrive at a proper quantity in lieu of spoil bank measurements, an estimated quantity due to probable swell in addition to excavation measurement was included to show as nearly as possible the volume which such materials actually occupied in the spoil banks. All excavation material wasted since April 1, 1933 has been measured in spoil banks. No shrinkage of any material has been assumed in arriving at schedule item pay quantities.

Your claim for $131,289.83, which you allege was the amount of direct and unavoidable extra cost caused by your suspension of contract work April 10, 1933, was denied on September 18, 1933 by Council Resolution No. 60727.

SCHEDULE ITEM NO. 1.

Schedule Item 1, being "Excavation Class 1 solid rock originating in structure excavation including placing and sorting in dam" and further described in Paragraph 54 of the specifications as follows:

> "Excavation - Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume".

occurred in the various excavation in a manner which made it impractical to measure all of it in excavation. A large number of boulders were measured individually. Some material was

measured in place. Much excavated material coming within schedule item 1 was determined by truck count as if in excavation. (The amount of rock in each truck load being independently estimated on basis of volume of such material in place in excavation.)

All spillway excavation, except for cutoff trench, has been classified in accordance with that portion of Paragraph 54 of the specifications reading as follows:

> "Excavation Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

or as

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in class 3, 4 and 5."

The total volume has been measured in excavation and this total volume is not affected by classification.

SCHEDULE ITEM NO. 2.

Schedule item 2, being "Embankment Class 1 rock originating in borrow pit only, including placing and sorting in dam, measured in embankment" is further described in Paragraph 54 of the specifications as follows:

> "Embankment - Class 1. Rock embankment originating in borrow pit only."

To determine the total quantity of rock embankment, overall measurements of rock embankment were made and deductions made for the volume occupied by those portions of Schedule Items 1, 7, and 9 placed in rock embankment. Deductions included 27-1/2 percent for swell.

All structure excavation was measured in, or as if in excavation but the contract specifications provide that embankment Class 1 and 2 include materials originating in borrow pits (and quarries) only, and therefore you are not entitled to the yardage represented by the swell of excavated material originating in structure excavation and placed in rock embankment, especially excavation Class 1, 3 and 5.

No excavation Class 1 from the spillway excavation has been wasted.

SCHEDULE ITEM NO. 3.

Schedule item 3 consists of "Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in

structure excavation, including placing and sorting in hydraulic fill" further described in Paragraph 54 of the specifications as follows:

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in Class 3, 4 and 5."

The overall volume of excavation Classes 1 and 2 was measured in, or as if in excavation and deduction made for Class 1.

In reference to classification of spillway excavation, see previous paragraph under Schedule Item 1 dealing with that matter.

SCHEDULE ITEM NO. 5.

Schedule item 5, being "Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including sorting and placing in hydraulic fill, measured in embankment" and further described as follows:

> "Excavation Class 2. Clay, earth, sand, gravel and other embankment, except Class 1, originating in borrow pit only."

was so intermingled in the hydraulic fill with materials placed under schedule items 3, 7, 8 and 9 that it was not practical to measure it separately in embankment. The total overall quantity of hydraulic fill was measured in embankment and deductions made for the volume occupied by the portion of material placed in hydraulic fill and paid for as schedule items 7, 8 and 9 to determine the volume of material to be paid for as Schedule Item 5. It has been assumed that no swell or shrinkage occurs in excavation when placed in hydraulic fill.

The deduction of 3544 cubic yards of Item 5 was made in accordance with my letter to you of March 1, 1933 where in it was made optional to you to remove and replace improperly placed material at your own expense, or proceed with the work, in which event the incompletely placed material not removed would not be included in the monthly estimates.

SCHEDULE ITEM NO. 7.

Schedule item 7 consists of "Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam" further described as follows:

> "Excavation Class 3. Excavation in main cutoff trench under dam".

All material excavated from the cutoff trench under the dam to the width and depth as directed by the engineer and that has been placed in the dam has been included. The top of the trench

excavation for this purpose corresponds to the bottom of the stripping operations as required by the Engineer.

It is not seen how anything in Paragraph 101 of the specifications applies in any manner to trench excavation.

SCHEDULE ITEM NO. 9.

Measurements made in determining the volume of schedule item 9 conformed with requirements of Paragraph 101 of the specifications.

SCHEDULE ITEM NO. 10.

Schedule item 10 is identical with schedule item 1 except instead of the material being placed in the dam it was wasted. This material was so intermingled in the spoil banks with material paid for as schedule items 11, 12 and 14 that it was physically impossible to measure it separately in spoil banks.

Materials coming within schedule item 10 were measured in, or as if in excavation and an allowance of 27.5 percent added for swell in lieu of spoil bank measurements.

In reference to classification of spillway excavation, see previous paragraph under schedule Item 1 dealing with this matter.

SCHEDULE ITEM NO. 11.

Schedule item 11 is identical with schedule item 3, except that instead of the material being placed in the dam it was wasted.

Materials coming within schedule item 11 prior to April 1, 1933 were intermingled with other materials wasted and were measured in excavation, or as if in excavation. No allowance was made for swell or for shrinkage in lieu of spoil bank measurements. After April 1, 1933 schedule item 11 materials were measured in spoil bank.

In reference to classification of spillway excavation, see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM NO. 12.

Schedule item 12 is identical with schedule item 7, except instaed of the material being placed in the dam it was wasted.

As material coming within schedule item 12 was intermingled with other materials wasted and was measuredin excavation and an allowance of 27.5 percent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM NO. 14.

Material coming within schedule item 14 was intermingled with other materials wasted and was measured in excavation in conformity with paragraph 101 of the specifications and an allowance of 27.5 percent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM NO. 17.

Concrete placed in the outlet tower footing has been included in item 17 and concrete placed in the outlet tower above the top of the footing has been included in item 23. If this is not in accordance with your interpretation of the contract specifications, an additional statement from you will be appreciated.

SCHEDULE ITEMS NOS. 23, 24, 26, 33, 34.

You state that the quantities under items 23, 24, 26, 33 and 34 in the estimate are not correct but you do not state in what particular they are incorrect so that proper investigation may be made.

Very truly yours,

H. N. Savage,
Hydraulic Engineer.

HNS/p

8/21/34
copy /f

H. W. ROHL & T. E. CONNOLLY
CONTRACTORS

El Capitan Dam
Lakeside, Calif.
June 12,1934.

Mr. H. N. Savage
Hydraulic Engineer
City of San Diego
California.

Re: Estimate No. 25
Month of May 1934.
San Diego River Project,
El Capitan Dam Feature.

Dear Sir:

Please furnish the Contractor with a statement of the quantities and classifications between successive stations as provided in paragraph 54 and 55 of the specifications and contract for El Capitan Dam, Spillway and Outlet Works.

Very truly yours,

H.W.Rohl & T.E.Connolly

By T. E. CONNOLLY (Signature)

8/21/34
copy /f

June 18, 1934

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

S-114

Subject: San Diego River Project, El Capitan Feature, request for statement of quantities and classifications Estimate No. 25.

Gentlemen:

Pursuant to your written request dated June 12, 1934, for a statement of the quantities and classifications between successive stations of the excavation and embankment quantities shown on progress estimate No. 25 for contract work done on El Capitan Dam for the month of May 1934, you are herewith furnished the statement attached showing the information requested.

If this statement is not satisfactory to you, specific objections with reasons therefor should be filed in writing with the Engineer in accordance with paragraph 54 of the contract specifications.

Very truly yours,

H. N. Savage,
Hydraulic Engineer.

/p
encl.

8-16-34
Copy/m

CITY OF SAN DIEGO, CALIFORNIA

San Diego River Project, El Capitan Feature

Statement of stations, classifications and quantities of embankment and excavation and summary by schedule items of certain work done by H. W. Rohl & T. E. Connolly, under their contract for construction of El Capitan Reservoir Dam, Spillway and Outlet Works up to and including May 1934 and included in progress estimate No. 25.

In lieu of spoil bank measurements it was deemed proper to consider that excavation Class 1, 3 and 5 measured in excavation would swell 27.5 percent if measured in spoil bank or in rock embankment, and

That excavation Class 1, 3 and 5 measured in excavation would neither swell nor shrink if measured in hydraulic fill, and

That excavation Class 2 would neither swell nor shrink if measured in spoil bank or in hydraulic fill.

All quantities are stated in cubic yards.

ROCK EMBANKMENT: Stations, classification and quantities:

1. From N 3440 to N 3850 and from E 5590 to toe wall (Above upstream toe wall)

Overall embankment measured in embankment		11,949
(9) Excavation Class 5	4,481	
27.5 percent swell	1,232	
As if measured in embankment	5,713	
(2) Embankment Class 1	6,236	

2. From N 3060 to N 4140 and from E 5135 to toe wall (Below upstream toe wall)

Overall embankment measured in embankment		569,595
(1) Excavation Class 1	37,625	
27.5 percent swell	10,347	
As if measured in embankment	47,972	
(7) Excavation Class 3	503	
27.5 percent swell	138	
As if measured in embankment	641	
(9) Excavation Class 5	6,050	
27.5 percent swell	1,664	
As if measured in embankment	7,714	
(2) Embankment Class 1	513,268	

3. From N 3180 to N 4980 and from E 4752 to toe wall (Above downstream toe wall)

Overall embankment measured in embankment		264,798
(1) Excavation Class 1	15,273	
27.5 percent swell	4,200	
As if measured in embankment	19,473	
(7) Excavation Class 3	259	
27.5 percent swell	71	
As if measured in embankment	330	
(9) Excavation Class 5	1,743	
27.5 percent swell	479	
As if measured in embankment	2,222	
(2) Embankment Class 1	242,773	

4. From N 3440 to N 3860 and from E 4380 to toe wall (Below downstream toe wall)

Overall embankment measured in embankment		24,565
(1) Excavation Class 1	926	
27.5 percent swell	255	
As if measured in embankment	1,181	
(9) Excavation Class 5	28	
27.5 percent swell	8	
As if measured in embankment	36	
(2) Embankment Class 1	23,348	

HYDRAULIC FILL: Stations, classification and quantities:

1. From N 3100 to E 4110 and from E 4672 to E 5232

Overall embankment measured in embankment, except for 3,544 cubic yards material above the foundation line of the hydraulic fill placed contrary to directions of Hydraulic Engineer		1,306,060
(3) Excavation Class 2	234,102	
(7) Excavation Class 3	5,683	
(8) Excavation Class 4	1,326	
(9) Excavation Class 5 measured in excavation	1,941	
(5) Embankment Class 2 (3544 cubic yards Class 2 embankment not sorted by hydraulic means not included in estimate)	1,073,008	

8. Excavation Class 4 cutoff trench excavation under spillway including placing and sorting in dam.

Hydraulic fill	1(8)	1,326	
Total schedule item 8			1,326

9. Excavation Class 5 outlet tunnel excavation excepting open cut excavation and including placing and sorting in dam

Rock embankment	1(9)	4,481	
	2(9)	6,050	
	3(9)	1,743	
	4(9)	28	
Hydraulic fill	1	1,941	
Total schedule item 9			14,243

10. Excavation Class 1, solid rock originating in structure excavation and wasted.

Overall excavation:

Excavation	1	13,490	
	2	42,351	
	3	276	
	4	2,537	
	5	356	
	6	4,555	
	7	4,222	
	8	632	
	9	234	
	10	764	
Total overall excavation Class 1		69,417	

Excavation Class 1 placed in dam measured in excavation

Schedule item	1	53,824	
Excavation wasted		15,593	
27.5 percent swell		4,288	
As if measured in spoil bank		19,881	
Total schedule item 10			19,881

11. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation and wasted.

Overall excavation	11	10,105	
	12	10,467	
	13	74,791	
	14	90,718	
	15	96,116	
	16	448,557	
Total overall		730,774	
Placed in dam:			
Hydraulic fill	2(3)	224,102	
Excavation wasted, as if measured in spoil bank on basis of no swell or shrinkage		506,672	
Swell on excavation item 16		76,068	
Total schedule item 11			582,740

12. Excavation Class 3 cutoff trench excavation under dam and wasted.

Overall excavation:			
Excavation	17	1,835	
	18	2,199	
	19a	6,980	
	19b	4,408	
Total overall excavation Class 3		15,422	
Excavation Class 3 placed in dam measured in excavation			
Schedule item 7		6,445	
Excavation wasted		8,977	
Swell 27.5 percent		2,469	
As if measured in spoil bank		11,446	
Total schedule item 12			11,446

14. Excavation Class 5, tunnel excavation Excepting open cut excavation, but wasted.

Overall excavation:			
Excavation	21a	29,370	
	b	1,923	
	c	26	
Total overall tunnel excavation		31,319	
Tunnel excavation placed in dam measured in excavation			
Schedule item	9	14,243	
Tunnel excavation wasted measured in excavation		17,076	
Swell 27.5 percent		4,696	
As if measured in spoil bank		21,772	
Total schedule item 14 as if measured in spoil bank			21,772

EXCAVATION: Measured in excavation

1.	Excavation Class 1, detached solid rock from stripping for base of dam, from structure and other excavation except spillway	13,490
2.	Excavation Class 1, detached solid rock from spillway excavation	42,351
3.	Excavation Class 1, detached solid rock from Station 0+14 to -2+95 tunnel entrance	276
4.	Excavation Class 1, ledge rock in place from Station 0+14 to 0-50 tunnel entrance	2,537
5.	Excavation Class 1, detached solid rock from Station 11+67.8 to 15+30 tunnel exit	356
6.	Excavation Class 1, ledge rock in place from Station 11+67.8 to 13+82.8 tunnel exit	4,555
7.	Excavation Class 1, ledge rock in place from N 3440 to N 3790 and from E 4967 to E 5023	4,222
8.	Excavation Class 1, ledge rock in place from N 3480 to N 3540 and from E 5450 to E 5510	632
9.	Excavation Class 1, ledge rock in place from N 3420 to N 3460 and from E 4470 to E 4512	234
10.	Excavation Class 1, ledge rock in place from N 3440 to N 3560 and from E 4390 to E 4460	764
11.	Excavation Class 2, Station 0+14 to -2+95 tunnel entrance	10,105
12.	Excavation Class 2, Station 11+67.8 to 15+30 tunnel exit	10,467
13.	Excavation Class 2, stripping for base of dam from N 3110 to N 3990 and from E 4320 to E 4800 under downstream rock embankment	74,791
14.	Excavation Class 2, stripping for base of dam from N 3050 to N 4160 and from E 5140 to E 5590 under upstream rock embankment	90,718
15.	Excavation Class 2, stripping for base of dam from N 3040 to N 4130 and from E 4680 to E 5220	96,116
16.	Excavation Class 2, spillway excavation from Station 0+00 to 7+40	448,557
17.	Excavation Class 3, downstream toe wall trench from 0-60 to 4+02.14	1,835
18.	Excavation Class 3, upstream toe wall trench from Station 0+00 to 4+85	2,199

19. Excavation Class 3, main cutoff trench under dam
    (a) 6' neat line trench from E 2990 to ogee 5+10 — 6,980
    (b) 6' bottom 1 on 1 slopes from N 3015 to N 4100 — 4,408

20. Excavation Class 4 cutoff trench under spillway
    (a) Under spillway ogee Station 0+00 to 5+10 — 1,190
    (b) " " floor " 2+55 — 20
    (c) " " " " 5+10 — 51
    (d) " " " " 7+10 — 65

21. Excavation Class 5, tunnel excavation
    (a) Station 0+00 to Station 11+72.77 — 29,370
    (b) Outlet tower shaft — 1,923
    (c) Cleaning floor exploration tunnels 1 and 2 — 26

SUMMARY BY SCHEDULE ITEMS

Schedule Item	Determination of schedule items			
1.	Excavation Class 1, solid rock originating in structure excavation including placing and sorting in dam.			
	Rock embankment	2(1)	37,625	
		3(1)	15,273	
		4(1)	926	
	Total schedule item 1			53,824
2.	Rock embankment Class 1 rock originating in borrow pit only including placing and sorting in dam, measured in embankment			
	Rock embankment	1(2)	6,236	
		2(2)	513,268	
		3(2)	242,773	
		4(2)	23,348	
	Total schedule item 2			785,625
3.	Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill.			
	Hydraulic fill	1(3)	224,102	
	Total schedule item 3			224,102
5.	Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only including placing and sorting in hydraulic fill			
	Hydraulic fill	1(5)	1,073,008	
	Total schedule item 5			1,073,008
7.	Excavation Class 3, cutoff trench excavation under dam including placing and sorting in dam			
	Rock embankment	2(7)	503	
		3(7)	259	
	Hydraulic fill	1(7)	5,683	
	Total schedule item 7			6,445

8/21/34
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H. W. ROHL & T. E. CONNOLLY
CONTRACTORS

El Capitan Dam
Lakeside, Calif.
June 27, 1934.

Hydraulic Engineer
City of San Diego,
California.

Subject: San Diego River Project,
El Capitan Dmm Feature,
Classification and Measurement
of Quantities.

Dear Sir:

In accordance with the contractor's privilege of portesting any monthly estimate, as set forth in Paragraph 54 of the Contract Specifications, we specifically object to the quantities and classifications of quantities for the different bid items in estimate No. 25 for the month of May 1934, and as set forth in statement transmitted by Mr.H.N.Savage,Hydraulic Engineer, under date of June 18,1934 for the following reasons:

The assumptions set forth under which the estimate is computed are erroneous and not in accordance with our contract in the following respects:

(a) The assumptions relative to swell or shrinkage on excavation Classes 1,2,3 and 5 set forth in said statement are erroneous and not in accordance with the specifications and contract paragraph 55-b.

(b) The estimate does not include payment to the contractor for idle equipment, standby charges and damages for the period from April 10,1933, to May 31,1933, in accordance with our claim on file.

Item No. 1

The quantities shown have not been computed from measurements required to be made as provided in paragraph 55 of the specifications in that it is based on truck count of excavated materials.

The quantities shown are incorrect in that the excavation of the spillway structure was not correctly classified and the total quantities shown would be greatly increased if the spillway excavation had been properly classified as provided in Paragraph 54 of the specifications.

Item No. 2

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrectly computed and not as required under Paragraph 55 of the specifications where it states:

> "The quantity of materials placed in embankment will be computed by subtracting spoil bank materials measured in spoil bank from excavated materials measured in excavation."

Item No. 3

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that the excavation of the spillway structure has not been correctly classified as provided in Paragraph 54 of the specifications and part of the quantity shown should properly be placed under Schedule Item No. 1 for the above reason.

Item No. 5

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials. The quantities shown are incorrectly computed and not as required under Paragraph 55 of the specifications wherein it states:

> "The quantity of materials placed in embankment will be computed by subtracting spoil bank material measured in spoil bank from excavated materials measured in excavation."

The quantity shown is incorrect in that the Hydraulic Engineer has deducted 3544 c.y. placed in the embankment by the contractor in the matter provided by the specifications.

Item No. 7

Not correct as to quantity for the reason that a substantial portion of Class 3 cutiff trench excavation, has been improperly included and classified as structure excavation Classes 1 or 2.

Quantities shown are wrong as to method of measurement Paragraph 55 and Paragraph 101 of the specifications.

Item No. 9

The quantities shown are incorrect in that measurements were not made as provided in Paragraph 101 of the specifications.

Item No. 10

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications, but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

The quantities shown are incorrect in that the excavation of the spillway structure was not correctly classified and the total quantities shown would be greatly increased if the spillway excavation had been properly classified as provided in Paragraph 54 of the specifications.

Item No. 11

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications, but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

The quantities shown are incorrect in that the excavation of the spillway structure has not been correctly classified as provided in Paragraph 54 of the Specifications and part of the quantity shown should properly be placed under Schedule Item No. 10 for the above reason.

Item No. 12

Not correct as to quantity for the reason that a substantial portion of Class 3 cutoff trench excavation has been improperly included and classified as structure excavation Classes 1 or 2.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

Item No. 14

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

Item No. 17

The quantities shown are wrong as to classifications.

Item No. 23

Incorrectly computed.

Item No. 33

Not correst as to quantity.

Items Nos. 8,16,19,20,21,22,25,27,28,29,31,35,36, 37,40,43,45 and 46 as set forth in Estimate No. 25 are acceptable only as an approximate estimate, it being the contractor's understanding that the Hydraulic Engineer has ruled that all progress estimates are subject to change and correction by final measurement at the time of completion of the work and issuance of a final estimate.

Yours very truly,

H.W.Rohl & T.E.Connolly

By T. E. CONNOLLY (Signature)

July 2, 1934

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

S-115

Subject: San Diego River Project, El Capitan Feature
Classification and measurement of quantities
Estimate No. 25

Gentlemen:

Receipt is acknowledged of your letter dated June 27, 1934 objecting and protesting to the quantities and classification of quantities as shown in the different schedule items of progress estimate No. 25 for the month of May 1934, details of which, relating to excavation and embankment quantities for El Capitan Dam were set out in letter to you dated June 18, 1934.

The contractor's lack of an orderly program and method of work prior to April 1, 1933 made it physically impossible for the Engineer to identify the source of and to measure wasted material from each source separately in spoil banks, and therefore, in order to arrive at a proper quantity in lieu of spoil bank measurements, an estimated quantity due to probable swell in addition to excavation measurement was included to show as nearly as possible the volume which such materials actually occupied in the spoil banks. All excavation material wasted since April 1, 1933 has been measured in spoil banks. No shrinkage of any material has been assumed in arriving at schedule item pay quantities.

Your claim for $131,289.83, which you allege was the amount of direct and unavoidable extra cost caused by your suspension of contract work April 10, 1933, was denied on September 18, 1933, by Council Resolution No. 60727.

SCHEDULE ITEM NO. 1. Schedule Item 1, being "Excavation Class 1 solid rock originating in structure excavation including placing and sorting in dam" and further described in Paragraph 54 of the specifications as follows:

> "Excavation - Class 1. Solid rock which shall include except class 3, 4 and 5, excavation, all ledge rock in place that cannot be loosened except by wedging, barring, or blasting and all detached masses of solid rock more than one cubic yard in volume."

occurred in the various excavation in a manner which made it impractical to measure all of it in excavation. A large number of boulders were measured individually. Some material was measured in place. Much excavated material coming within schedule item 1 was determined by truck count as if in excavation. (The amount of rock in each truck load being independtly estimated on basis of volume of such material in place in excavation.)

All spillway excavation, except for cutoff trench, has been classified in accordance with that portion of Paragraph 54 of the specifications reading as follows:

> "Excavation Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

or as

> EExcavation Class 2. All earth, overburden, sand, gravel and other excavation not included in class 3, 4 and 5."

The total volume has been measured in excavation and this total volume is not affected by classification.

SCHEDULE ITEM NO. 2. Schedule item 2, being "Embankment Class 1 rock originating in borrow pit only, including placing and sorting in dam, measured in embankment" is further described in Paragraph 54 of the specifications as follows:

> "Embankment - Class 1. Rock embankment originating in borrow pit only."

To determine the total quantity of rock embankment, overall measurements of rock embankment were made and deductions made for the volume occupied by those portions of schedule items 1, 7, and 9 placed in rock embankment. Deductions included 27.5 percent for swell.

All structure excavation was measured in, or as if in excavation but the contract specifications provide that embankment Class 1 and 2 include materials originating in borrow pits (and quarries) only, and therefore you are not entitled to the yardage represented by the swell of excavation material originating in structure excavation and placed in rock embankment especially excavation Class 1, 3 and 5.

No excavation Class 1 from the spillway excavation has been wasted.

SCHEDULE ITEM NO. 3. Schedule item 3 consists of "Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill" further described in Paragraph 54 of the specifications as follows:

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in Class 3, 4 and 5."

The overall volume of excavation Classes 1 and 2 was measured in, or as if in excavation and deduction made for Class 1. In reference to classification of spillway excavation, see previous paragraph under Schedule Item 1 dealing with that matter.

SCHEDULE ITEM NO. 5. Schedule item 5, being "Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including sorting and placing in hydraulic fill, measured in embankment" and further described as follows:

> "Excavation Class 2. Clay, earth, sand, gravel and other embankment, except Class 1, originating in borrow pit only."

was so intermingled in the hydraulic fill with materials placed under schedule items 3, 7, 8 and 9 that it was not practical to measure it separately in embankment. The total overall quantity of hydraulic fill was measured in embankment and deductions made for the volume occupied by the portion of material placed in hydraulic fill and paid for as schedule items 7, 8 and 9 to determine the volume of material to be paid for as Schedule item 5. It has been assumed that no swell or shrinkage occurs in excavation when placed in hydraulic fill.

The deduction of 3544 cubic yards from Item 5 was made in accordance with my letter to you of March 1, 1933 wherein it was made optional to you to remove and replace improperly placed material at your own expense, or proceed with the work, in which event the incompletely placed material not removed would not be included in the monthly estimates.

SCHEDULE ITEM NO. 7. Schedule item 7 consists of "Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam" further described as follows:

> #Excavation Class 3. Excavation in main cutoff trench under dam".

All material excavated from the cutoff trench under the dam to the width and depth as directed by the engineer and that has been placed in the dam has been included. The top of the trench excavation for this purpose corresponds to the bottom of the stripping operations as required by the Engineer. It is not seen how anything in Paragraph 101 of the specifications applies in any manner to trench excavation.

SCHEDULE ITEM NO. 9. Measurements made in determining the volume of schedule item 9 conformed with requirements of Paragraph 101 of the specifications.

SCHEDULE ITEM NO. 10. Schedule item 10 is identical with schedule item 1 except instead of the material being placed in the dam it was wasted. This material was so intermingled in the spoil banks with material paid for as schedule items 11, 12 and 14 that it was physically impossible to measure it separately in spoil banks.

Materials coming within schedule item 10 were measured in, or as if in excavation and an allowance of 27.5 percent added for swell in lieu of spoil bank measurements.

In reference to classification of spillway excavation, see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM NO. 11. Schedule item 11 is identical with schedule item 3, except that instead of the material being placed in the dam it was wasted. Materials coming within schedule item 11 prior to April 1, 1933 were intermingled with other materials wasted and were measured in excavation, or as if in excavation. No allowance was made for swell or for shrinkage in lieu of spoil bank measurements. After April 1, 1933 schedule item 11 materials were measured in spoil bank.

In reference to classification of spillway excavation, see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM NO. 12. Schedule item 12 is identical with schedule item 7, except instead of the material being placed in the dam it was wasted. As material coming within schedule item 12 was intermingled with other materials wasted and was measured in excavation and an allowance of 27.5 percent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM NO. 14. Material coming within schedule item 14 was intermingled with other materials wasted and was measured in excavation in conformity with paragraph 101 of the specifications and an allowance of 27.5 percent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM NO. 17. Concrete placed in the outlet tower footing has been included in item 17 and concrete placed in the outlet tower above the top of the footing has been included in item 23. If this is not in accordance with your interpretation of the contract specifications, an additional statement from you will be appreciated.

SCHEDULE ITEMS NOSS 23 and 33. You state that the quantities under items 23 and 33 in the estimate are not correct but you do not state in what particular they are incorrect so that proper investigation may be made.

Very truly yours,

Fred D. Pyle
Hydraulic Engineer.

/p
cc-City Manager
City Attorney
Special Water Counsel
Resident Engineer

8/3/34
copy/f

H. W. ROHL & T. E. CONNOLLY
CONTRACTORS

El Capitan Dam
Lakeside, Calif.
July 17, 1934.

Fr. Fred D. Pyle
Hydraulic Engineer
City of San Diego
California.

Re: Estimate No. 26
Month of June 1934.
San Diego River Project,
El Capitan Dam Feature.

Dear Sir:

Please furnish the Contractor with a statement of the quantities and classifications between successive stations as provided in paragraph 54 and 55 of the specifications and contract for El Capitan Dam Spillway and Outlet Works.

Very truly yours,

H.W.Rohl & T.E.Connolly

By O. C. STEVES (Signature)
Superintendent

July 23, 1934

Messrs. H. W. Rohl & T. E. Connolly S-118
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

Subject: San Diego River Project, El Capitan Feature, request for statement of quantities and classifications Estimate No. 26

Gentlemen:

Pursuant to your written request dated July 17, 1934, for a statement of the quantities and classifications between successive stations of the excavation and embankment quantities shown on progress estimate No. 26 for contract work done on El Capitan Dam for the month of June 1934, you are herewith furnished the statement attached showing the information requested.

If this statement is not satisfactory to you, specific objections with reasons therefor should be filed in writing with the Engineer in accordance with paragraph 54 of the contract specifications.

Very truly yours,

Fred D. Pyle
Hydraulic Engineer.

/p
encl.
cc-City Manager
City Attorney
Special Water Counsel
Resident Engineer

CITY OF SAN DIEGO, CALIFORNIA

San Diego River Project, El Capitan Feature

Statement of stations, classifications and quantities of embankment and excavation and summary by schedule items of certain work done by H. W. Rohl & T. E. Connolly, under their contract for the construction of El Capitan Reservoir Dam, Spillway and Outlet Works up to and including June 1934 and included in progress estimate No. 26.

In lieu of spoil bank measurements it was deemed proper to consider that excavation Class 1, 3 and 5 measured in excavation would swell 27.5 percent if measured in spoil bank or in rock embankment, and

That excavation Class 1, 3 and 5 measured in excavation would neither swell nor shrink if measured in hydraulic fill, and

That excavation Class 2 would neither swell nor shrink if measured in spoil bank or in hydraulic fill.

All quantities are stated in cubic yards.

ROCK EMBANKMENT: Stations, classification and quantities:

1. From N 3440 to N 3850 and from E 5590 to toe wall (above upstream toe wall)

Overall embankment measured in embankment			11,949
(9) Excavation Class 5	4,481		
27.5 percent swell	1,232		
As if measured in embankment	5,713		
(2) Embankment Class 1	6,236		

2. From N 3060 to N 4140 and from E 5135 to toe wall (below upstream toe wall)

Overall embankment measured in embankment			569,601
(1) Excavation Class 1	37,630		
27.5 percent swell	10,348		
As if measured in embankment	47,978		
(7) Excavation Class 3	503		
27.5 percent swell	138		
As if measured in embankment	641		
(9) Excavation Class 5	6,050		
27.5 percent swell	1,664		
As if measured in embankment	7,714		
(2) Embankment Class 1	513,268		

3. From N 3180 to N 3980 and from E 4752 to toe wall (above downstream toe wall)

Overall embankment measured in embankment		264,798
(1) Excavation Class 1	15,273	
27.5 percent swell	4,200	
As if measured in embankment	19,473	
(7) Excavation Class 3	259	
2715 percent swell	71	
As if measured in embankment	330	
(9) Excavation Class 5	1,743	
27.5 percent swell	479	
As if measured in embankment	2,222	
(2) Embankment Class 1	242,773	

4. From N 3440 to N 3860 and from E 4380 to toewall (below downstream toe wall) 24,565

Overall embankment measured in embankment		
(1) Excavation Class 1	926	
27.5 percent swell	255	
As if measured in embankment	1,181	
(9) Excavation Class 5	28	
27.5 percent swell	8	
As if measured in embankment	36	
(2) Embankment Class 1	23,348	

HYDRAULIC FILL: Stations, classification and quantities:

1. From N 3100 to N 4110 and from E 4672 to E 5232

Overall embankment measured in embankment Except for 3,544 cubic yards material above foundation line of the hydraulic fill, placed contrary to directions of Hydraulic Engineer		1,356,952
(3) Excavation Class 2	224,102	
(7) Excavation Class 3	5,683	
(8) Excavation Class 4	1,326	
(9) Excavation Class 5 measured in excavation	1,941	
(5) Embankment Class 2 (3544 cubic yards Class 2 embankment not sorted by hydraulic means, not included in estimate)	1,123,900	

EXCAVATION: Measured in excavation

1.	Excavation Class 1, detached solid rock from stripping for base of dam, from structure and other excavation except spillway	13,490
2.	Excavation Class 1, detached solid rock from spillway excavation	42,356
3.	Excavation Class 1, detached solid rock from Station 0+14 to Station -2+95 tunnel entrance	276
4.	Excavation Class 1 ledge rock in place from Station 0+14 to Station 0-50 tunnel entrance	2,537
5.	Excavation Class 1, detached solid rock from Station 11+67.8 to Station 15+30 tunnel exit	356
6.	Excavation Class 1, ledge rock in place from Station 11+67.8 to Station 13+82.8 tunnel exit	4,555
7.	Excavation Class 1, ledge rock in place from N 3440 to N 3790 and from E 4967 to E 5023	4,222
8.	Excavation Class 1, ledge rock in place from N 3480 to N 3540 and from E 5450 to E 5510	632
9.	Excavation Class 1, ledge rock in place from N 3420 to N 3460 and from E 4470 to E 4512	234
10.	Excavation Class 1, ledge rock in place from N 3440 to N 3460 and from E 4390 to E 4460	764
11.	Excavation Class 2, Station 0+14 to Station -2+95 tunnel entrance	10,105
12.	Excavation Class 2, Station 11+67.8 to Station 15+30 tunnel exit	10,467
13.	Excavation Class 2, stripping for base of dam from N 3110 to N 3990 and from E 4320 to E 4800 under downstream rock embankment	74,791
14.	Excavation Class 2 stripping for base of dam from N 3050 to N 4160 and from E 5140 to E 5590 under upstream rock embankment	90,718
15.	Excavation Class 2, stripping for base of dam from N 3040 to N 4130 and from E 4680 to E 5220 under hydraulic fill	96,116
16.	Excavation Class 2, spillway excavation from Station 0+00 to Station 7+40	448,577
17.	Excavation Class 3, downstream toewall trench from Station 0-60 to Station 4+02.14	1,835
18.	Excavation Class 3 upstream toewall trench from Station 0+00 to Station 4+85	2,199

19. Excavation Class 3, main cutoff trench under dam		
(a) 6' neat line trench from N 2990 to ogee 5+10		6,980
(b) 6' bottom 1 on 1 slopes from N 3015 to N 4100		4,408
20. Excavation Class 4, cutoff trench under spillway		
(a) Under spillway ogee Station 0+00to 5+10		1,190
(b) " " floor " 2+55		20
(c) " " " " 5+10		51
(d) " " " " 7+10		65
21. Excavation Class 5 tunnel excavation		
(a) Station 0+00 to Station 11+72.77		29,370
(b) Outlet tower shaft		1,923
(c) Cleaning floors exploration tunnels 1 and 2		26

SUMMARY BY SCHEDULE ITEMS

Schedule Item	Determination of schedule items			
1.	Excavation Class 1, solid rock originating in structure excavation including placing and sorting in dam			
	Rock embankment	2(1)	37,630	
		3(1)	15,273	
		4(1)	926	53,829
2.	Embankment Class 1 rock originating in borrow pit only including placing and sorting in dam measured in embankment			
	Rock embankment	1(2)	6,236	
		2(2)	513,268	
		3(2)	242,773	
		4(2)	23,348	785,625
3.	Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation including placing and sorting in hydraulic fill			
	Hydraulic fill	1(3)	224,102	224,102
5.	Embankment Class 2, clay, earth, sand, gravel and other excavation originating in borrow pit only including sorting and placing in hydraulic fill, measured in embankment			
	Hydraulic fill	1(5)		1,123,900
7.	Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam			
	Rock embankment	2(7)	503	
		3(7)	259	
	Hydraulic fill	1(7)	5,683	6,445
8.	Excavation Class 4 cutoff trench excavation under spillway including placing and sorting in dam			
	Hydraulic fill	1(8)		1,326

9. Excavation Class 5 outlet tunnel excavation excepting open cut excavation and including placing and sorting in dam.

Rock embankment	1(9)		4,481	
	2(9)		6,050	
	3(9)		1,743	
	4(9)		28	
Hydraulic fill	1(9)		1,941	14,243

10. Excavation Class 1 solid rock originating in structure excavation and wasted.

Excavation	1	13,490		
	2	42,356		
	3	276		
	4	2,537		
	5	356		
	6	4,555		
	7	4,222		
	8	632		
	9	234		
	10	764		
Total overall excavation Class 1			69,422	
Excavation Class 1 placed in dam measured in excavation				
Schedule item	1		53,829	
Excavation wasted			15,593	
27.5 percent swell			4,288	
As if measured in spoil bank			19,881	
Total schedule item 10				19,881

11. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation and wasted.

Excavation	11	10,105		
	12	10,467		
	13	74,791		
	14	90,718		
	15	96,116		
	16	448,577		
Total overall			730,774	
Placed in dam				
Hydraulic fill	2(3)		224,102	
Excavation wasted, as if measured in spoil bank on basis of no swell or shrinkage			506,672	
Swell on excavation item 16			76,518	
Total excavation item 11				583,190

12. Excavation Class 3 cutoff trench excavation under dam and wasted.

Overall excavation				
Excavation	17	1,835		
	18	2,199		
	19a	6,980		
	b	4,408		
Total Class 3 overall excavation			15,422	
Excavation Class 3 placed in dam measured in excavation				
Schedule item 7			6,445	
Excavation wasted			8,977	
27.5 percent swell			2,469	
Total schedule item 12 as if measured in spoil bank				11,446

14. Excavation Class 5, tunnel excavation excepting open cut excavation, but wasted.

Overall excavation:

Excavation	21a	29,370
	b	1,923
	c	26
Total overall tunnel excavation		31,319

Tunnel excavation placed in dam measured in excavation

Schedule item 9	14,243

Tunnel excavation wasted measured in excavation	17,076
Swell 27.5 percent	4,696
As if measured in spoil bank	21,772

Total schedule item 14 as if measured in spoil bank 21,772

8/21/34
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H. W. ROHL & T. E. CONNOLLY
CONTRACTORS

July 31, 1934.

Mr. Fred D. Pyle
Hydraulic Engineer
City of San Diego
California.

Subject: San Diego River Project,
El Capitan Dam Feature,
Classification & Measurement
of Quantities.

Dear Sir:

In accordance with the Contractors privilege of protesting any monthly estimate, as set forth in Paragraph 54 of the Contract Specifications, we specifically object to the quantities and classifications of quantities for the different bid items in estimate No. 26 for the month of June 1934, and as set forth in statement transmitted by Mr. F.D.Pyle, Hydraulic Engineer, under date of July 23,1934 for the following reasons:

The assumptions set forth under which the estimate is computed are erroneous and not in accordance with our cnntract in the following respects:

(a) The assumptions relative to swell or shrinkage on excavation Classes 1,2,3 and 5 set forth in said statement are erroneous and not in accordance with the specifications and contract paragraph 55-b

(b) The estimate does not include payment to the contractor for idle equipment,standby charges and damages for the period from April 10,1933 to May 31, 1933 in accordance with our claim on file.

(c) The estimate does not include payment to the contractor for idle equipment,standby charges and damages for the period April 18,1934 to June 14,1934 in accordance with our claim on file.

Item No. 1

The quantities shown have not been computed from measurements required to be made as provided in paragraph 55 of the specifications in that it is based on truck count of excavated materials.

The quantities shown are incorrect in that the excavation of the spillway structure was not correctly classified and the total quantities shown would be greatly increased if the spillway excavation had been properly classified as provided in Paragraph 54 of the specifications.

Item No. 2

The quantities shown have not been computed from measurements required to be made as provided in

Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrectly computed and not as required under Paragraph 55 of the specifications where it states:

"The quantity of materials placed in embankment will be computed by subtracting spoil bank materials measured in excavation."

Item No. 3

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that the excavation of the spillway structure has not been correctly classified as provided in Paragraph 54 of the specifications and part of the quantity shown should properly be placed under Schedule Item No. 1 for the above reason.

Item No. 5

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials. The quantities shown are incorrectly computed and not as required under Paragraph 55 of the specifications wherein it states:

"The quantity of materials placed in embankment will be computed by subtracting spoil bank material measured in spoil bank from excavated materials measured in excavation."

The quantity shown is incorrect in that the Hydraulic Engineer has deducted 3544 c.y. placed in the embankment by the contractor in the matter provided by the specifications.

Item No. 7

Not correct as to quantity for the reason that a substantial portion of Clas 3 cutoff trench excavation, has been improperly included and classified as structure excavation Classes 1 Or 2.

Quantities shown are wrong as to method of measurement Paragraph 55 and Paragraph 101 of the specifications.

Item No. 9

The quantities shown are incorrect in that measurements were not made as provided in Paragraph 101 of the specifications.

Item No. 10

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications, but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

The quantities shown are incorrect in that the excavation of the spillway structure was not correctly classified and the total quantities shown would be greatly increased if the spillway excavation had been properly classified as provided in Paragraph 54 of the specifications.

Item No. 11

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications, but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

The quantities shown are incorrect in that the excavation of the spillway structure has not been correctly classified as provided in Paragraph 54 of the specifications and part of the quantity shown should properly be placed under Schedule Item No. 10 for the above reason.

Item No. 12

Not correct as to quantity for the reason that a substantial portion of Class 3 cutoff trench excavation has been improperly included and classified as structure excavation Classes 1 or 2.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

Item No. 17
The quantities shown are wrong as to classifications.

Item No. 23
Incorrectly computed.

Item No. 33
Not correct as to quantity.

Items Nos. 8,16,19,20,21,22,25,27,28,29,31,35,36, 37,40,43,45, and 46 as set forth in Estimate No. 26 are acceptable only as an approximate estimate,it being the contractor's understanding that the Hydraulic Engineer has ruled that all progress estimates are subject to change and correction by final measurement at the time of completion of the work and issuance of a final estimate.

Yours very truly,

H.W.Rohl & T.E.Connolly

By T. E. CONNOLLY (Signature)

August 3, 1934

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California

S-120

Subject: San Diego River Project, El Capitan Feature, Classification and Measurement of Quantities Estimate No. 26

Gentlemen:

Receipt is acknowledged of your letter dated July 31, 1934 objecting and protesting to the quantities and classification of quantities as shown in the different schedule items of progress estimate No. 26 for the month of June, 1934, details of which, relating to excavation and embankment quantities for El Capitan Dam were set out in letter to you dated July 23, 1934.

The Contractor's lack of an orderly program and method of work prior to April 1, 1933 made it physically impossible for the Engineer to identify the source of and to measure wasted material from each source separately in spoil banks, and therefore, in order to arrive at a proper quantity in lieu of spoil bank measurements, an estimated quantity due to probable swell in addition to excavation measurement was included to show as nearly as possible the volume which such materials actually occupied in the spoil banks. All excavation material wasted since April 1, 1933 has been measured in spoil banks. No shrinkage of any material has been assumed in arriving at schedule item pay quantities.

Your claim for $131,289.83, which you allege was the amount of direct and unavoidable extra cost caused by your suspension of contract work April 10, 1933, was denied on September 18, 1933 by Council Resolution No. 60727.

Your claim dated June 30, 1934 for $129,247.50, which you allege was the amount of extra cost caused by the delay of work from April 18, 1934 to June 14, 1934, was denied on July 23, 1934, by Council Resolution No. 61903.

SCHEDULE ITEM NO. 1, being "Excavation Class 1 solid rock originating in structure excavation including placing a nd sorting in dam" and further described in Paragraph 54 of the specifications as follows:

> "Excavation - Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

occurred in the various excavation in a manner which made it impractical to measure all of it in excavation. A large number of boulders were measured individually. Some material was measured in place.

Much excavated material coming within schedule item 1 was determined by truck count as if in excavation. (The amount of rock in each truck load being independently estimated on basis of volume of such material in place in excavation.)

All spillway excavation, except for cutoff trench, has been classified in accordance with that portion of Paragraph 54 of the specifications reading as follows:

> "Excavation Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

or as

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in class 3, 4 and 5."

The total volume has been measured in excavation and this total volume is not affected by classification.

SCHEDULE ITEM NO. 2, being "Embankment Class 1 rock originating in borrow pit only, including placing and sorting in dam, measured in embankment" is further described in Paragraph 54 of the specifications as follows:

> "Embankment - Class 1. Rock embankment originating in borrow pit only."

To determine the total quantity of rock embankment, overall measurements of rock embankment were made and deductions made for the volume occupied by those portions of schedule items 1, 7, and 9 placed in rock embankment. Deductions included 27½% for swell.

All structure excavation was measured in, or as if in excavation but the contract specifications provide that embankment Class 1 and 2 include materials originating in borrow pits (and quarries) only, and therefore you are not entitled to the yardage represented by the swell of excavated material originating in structure excavation and placed in rock embankment especially excavation Class 1, 3 and 5. No excavation Class 1 from the spillway excavation has been wasted.

SCHEDULE ITEM NO. 3 consists of "Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill" further described in Paragraph 54 of the specifications as follows:

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in Class 3, 4 and 5."

The overall volume of excavation Classes 1 and 2 was measured in, or as if in excavation and deduction made for Class 1. In reference to classification of spillway excavation, see previous paragraph under Schedule Item 1 dealing with that matter.

SCHEDULE ITEM NO. 5, being "Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including sorting and placing in hydraulic fill, measured in embankment" and further described as follows:

> "Excavation Class 2. Clay, earth, sand, gravel and other embankment, except Class 1, originating in borrow pit only."

was so intermingled in the hydraulic fill with material placed under schedule items 3, 7, 8 and 9 that it was not practical to measure it separately in embankment. The total overall quantity of hydraulic fill was measured in embankment and deductions made for the volume occupied by the portion of material placed in hydraulic fill and paid for as schedule items 7, 8 and 9 to determine the volume of material to be paid for as Schedule item 5. It has been assumed that no swell or shrinkage occurs in excavation when placed in hydraulic fill.

The deduction of 3544 cubic yards from Item 5 was made in accordance with letter to you of March 1, 1933 wherein it was made optional to you to remove and replace improperly placed material at your own expense, or proceed with the work, in which event the incompletely placed material not removed would not be included in the monthly estimates.

SCHEDULE ITEM NO. 7 consists of "Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam" further described as follows:

> "Excavation Class 3. Excavation in main cutoff trench under dam."

All material excavated from the cutoff trench under the dam to the width and depth as directed by the engineer and that has been placed in the dam has been included. The top of the trench excavation for this purpose corresponds to the bottom of the stripping operations as required by the Engineer. It is not seen how anything in Paragraph 101 of the specifications applies in any manner to trench excavation.

SCHEDULE ITEM NO. 9. Measurements made in determining the volume of schedule item 9 conformed with requirements of Paragraph 101 of the specifications.

SCHEDULE ITEM NO. 10 is identical with schedule item 1 except instead of the material being placed in the dam it was wasted. This material was so intermingled in the spoil banks with material paid for as schedule items 11, 12 and 14 that it was physically impossible to measure it separately in spoil banks. Materials coming within schedule item 10 were measured in, or as if in excavation and an allowance of 27.5 percent added for swell in lieu of spoil bank measurements. In reference to classification of spillway excavation see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM NO. 11 is identical with schedule item 3, except that instead of the material being placed in the dam it was wasted. Materials coming within schedule item 11 prior to April 1, 1933 were intermingled with other materials wasted and were measured in excavation, or as if in excavation. No allowance was made for swell or for shrinkage in lieu of spoil bank measurements. After April 1, 1933 schedule item 11 materials were measured in spoil bank. In reference to classification of spillway excavation, see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM NO. 12 is identical with schedule item 7, except instead of the material being placed in the dam it was wasted. As material coming within schedule item 12 was intermingled with other materials wasted and was measured in excavation and an allowance of 27.5 percent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM NO. 14. Material coming within schedule item 14 was intermingled with other materials wasted and was measured in excavation in conformity with paragraph 101 of the specifications and an allowance of 27.5 percent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM NO. 17. Concrete placed in the outlet tower footing has been included in item 17 and concrete placed in the outlet tower above the top of the footing has been included in item 23. If this is not in accordance with your interpretation of the contract specifications an additional statement from you will be appreciated.

SCHEDULE ITEMS NOS. 23 and 33. You state that the quantities under items 23 and 33 in the estimate are not correct but you do not state in what particular they are incorrect so that proper investigation may be made.

Very truly yours,

Fred D. Pyle
Hydraulic Engineer

/p
cc-City Manager
City Attorney
Special Water Counsel
Resident Engineer

8/22/34
copy /f

H. W. ROHL & T. E. CONNOLLY
CONTRACTORS

El Capitan Dam
Lakeside, Calif.
August 14,1934.

Mr. Fred D. Pyle
Hydraulic Engineer
City of San Diego
California.

Re: Estimate No. 27
Month of July 1934.
San Diego River Project,
El Capitan Dam Feature.

Dear Sir:

Please furnish the Contractor with a statement of the quantities and classifications between successive stations as provided in paragraph 54 and 55 of the specifications and contract for El Capitan Dam Spillway and Outlet Works.

Very truly yours,

H.W.Rohl & T.E.Connolly

By T. E. CONNOLLY (Signature)

August 20, 1934

Messrs. H. W. Rohl & T. E. Connolly S-121
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California

Subject: San Diego River Project, El Capitan Feature, request for statement of quantities and classifications Estimate No. 27

Gentlemen:

Pursuant to your written request dated August 14, 1934, for a statement of the quantities and classifications between successive stations of the excavation and embankment quantities shown on progress estimate No. 27 for contract work done on El Capitan Dam for the month of July 1934, you are herewith furnished the statement attached showing the information requested.

If this statement is not satisfactory to you, specific objections with reasons therefor should be filed in writing with the Engineer in accordance with paragraph 54 of the contract specifications.

Very truly yours,

Fred D. Pyle,
Hydraulic Engineer.

/p
cc-City Manager
City Attorney
Special Water Counsel
Resident Engineer

CITY OF SAN DIEGO, CALIFORNIA

San Diego River Project, El Capitan Feature

Statement of stations, classifications and quantities of embankment and excavation and summary by schedule items of certain work done by H. W. Rohl & T. E. Connolly, under their contract for the construction of El Capitan Reservoir Dam, Spillway and Outlet Works up to and including July 1934 and included in progress estimate No. 27.

In lieu of spoil bank measurements it was deemed proper to consider that excavation Class 1, 3 and 5 measured in excavation would swell 27.5 per cent if measured in spoil bank or in rock embankment, and

That excavation Class 1, 3 and 5 measured in excavation would neither swell nor shrink if measured in hydraulic fill, and

That excavation Class 2 would neither swell nor shrink if measured in spoil bank or in hydraulic fill.

All quantities are stated in cubic yards.

ROCK EMBANKMENT: Stations, classification and quantities:

1. From N 3440 to N 3850 and from E 5590 to toe wall (above upstream toe wall)

Overall embankment measured in embankment		11,949
(9) Excavation Class 5	4,481	
27.5 per cent swell	1,232	
As if measured in embankment	5,713	
(2) Embankment Class 1	6,236	

2. From N 3060 to N 4140 and from E 5135 to toe wall (below upstream toe wall)

Overall embankment measured in embankment		575,962
(1) Excavation Class 1	37,729	
27.5 per cent swell	10,375	
As if measured in embankment	48,104	
(7) Excavation Class 3	503	
27.5 per cent swell	138	
As if measured in embankment	641	
(9) Excavation Class 5	6,050	
27.5 per cent swell	1,664	
As if measured in embankment	7,714	
(2) Embankment Class 1	519,503	

3. From N 3120 to N 3980 and from E 4752 to toewall (above downstream toe wall)

Overall embankment measured in embankment		264,798
(1) Excavation Class 1	15,583	
27.5 per cent swell	4,285	
As if measured in embankment	19,868	
(7) Excavation Class 3	259	
27.5 per cent swell	71	
As if measured in embankment	330	
(9) Excavation Class 5	1,743	
27.5 per cent swell	479	
As if measured in embankment	2,222	
(2) Embankment Class 1	247,874	

4. From N 3440 to N 3860 and from E 4380 to toewall (below downstream toe wall) 24,565

Overall embankment measured in embankment

(1) Excavation Class 1	926	
27.5 per cent swell	255	
As if measured in embankment	1,181	
(9) Excavation Class 5	28	
27.5 per cent swell	8	
As if measured in embankment	36	
(2) Embankment Class 1	23,348	

HYDRAULIC FILL: Stations, classification and quantities.

1. From N 3060 to N 4140 and from E 4672 to E 5232

Overall embankment measured in embankment except for 3,544 cubic yards material above the foundation line of the hydraulic fill placed contrary to directions of Hydraulic Engineer		1,467,799
(3) Excavation Class 2	224,102	
(7) Excavation Class 3	5,683	
(8) Excavation Class 4	1,326	
(9) Excavation Class 5 measured in excavation	1,941	
(5) Embankment Class 2 (3544 cubic yards Class 2 embankment not sorted by hydraulic means, not included in estimate)	1,234,747	

EXCAVATION: Measured in excavation.

1.	Excavation Class 1, detached solid rock from stripping for base of dam, from structure and other excavation except spillway.	13,490
2.	Excavation Class 1, detached solid rock from spillway excavation	42,765
3.	Excavation Class 1, detached solid rock from Station 0+14 to Station -2+95 tunnel entrance	276
4.	Excavation Class 1 ledge rock in place from Station 0+14 to Station 0-50 tunnel entrance	2,537
5.	Excavation Class 1, detached solid rock from Station 11+67.8 to Station 15+30 tunnel exit	356
6.	Excavation Class 1, ledge rock in place from Station 11+67.8 to Station 13+82.8 tunnel exit	4,555
7.	Excavation Class 1, ledge rock in place from N 3440 to N 3790 and from E 4967 to E 5023	4,222
8.	Excavation Class 1, ledge rock in place from N 3480 to N 3540 and from E 5450 to E 5510	632
9.	Excavation Class 1, ledge rock in place from N 3420 to N 3460 and from E 4470 to E 4512	234
10.	Excavation Class 1, ledge rock in place from N 3440 to N 3560 and from E 4390 to E 4460	764
11.	Excavation Class 2, Station 0+14 to Station -2+95 tunnel entrance	10,105
12.	Excavation Class 2, Station 11+67.8 to Station 15+30 tunnel exit	10,467
13.	Excavation Class 2, stripping for base of dam from N 3110 to N 3990 and from E 4320 to E 4800 under downstream rock embankment	74,791
14.	Excavation Class 2, stripping for base of dam from N 3050 to N 4160 and from E 5140 to E 5590 under upstream rock embankment	90,718
15.	Excavation Class 2, stripping for base of dam from N 3040 to N 4130 and from E 4680 to E 5220 under hydraulic fill	96,116
16.	Excavation Class 2, spillway excavation from Station 0+00 to Station 7+40	450,457
17.	Excavation Class 3, downstream toewall trench from Station 0-60 to Station 4+02.14	1,835
18.	Excavation Class 3 upstream toewall trench from Station 0+00 to Station 4+85	2,199

19. Excavation Class 3, main cutoff trench under dam
(a) 6' neat line trench from N 2990 to ogee 5+10 — 6,980
(b) 6' bottom 1 on 1 slopes from N 3015 to N 4100 — 4,408

20. Excavation Class 4, cutoff trench under spillway
(a) Under spillway ogee Station 0+00 to 5+10 — 1,190
(b) " " floor " 2+55 — 20
(c) " " " " 5+10 — 51
(d) " " " " 7+10 — 65

21. Excavation Class 5 tunnel excavation
(a) Station 0+00 to Station 11+72.77 — 29,370
(b) Outlet tower shaft — 1,923
(c) Cleaning floors exploration tunnels 1 and 2 — 26

SUMMARY BY SCHEDULE ITEMS

Schedule Item	Determination of schedule items			
1.	Excavation Class 1, solid rock originating in structure excavation including placing and sorting in dam			
	Rock embankment	2(1)	37,729	
		3(1)	15,583	
		4(1)	926	54,238
2.	Embankment Class 1 rock originating in borrow pit only including placing and sorting in dam measured in embankment			
	Rock embankment	1(2)	6,236	
		2(2)	519,503	
		3(2)	247,874	
		4(2)	23,348	796,961
3.	Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation including placing and sorting in hydraulic fill.			
	Hydraulic fill	1(3)		224,102
5.	Embankment Class 2, clay, earth, sand, gravel and other excavation originating in borrow pit only including sorting and placing in hydraulic fill, measured in embankment.			
	Hydraulic fill	1(5)		1,234,747
7.	Excavation Class 3, cutoff trench excavation under dam including placing and sorting in dam.			
	Rock embankment	2(7)	503	
		3(7)	259	
	Hydraulic fill	1(7)	5,683	6,445
8.	Excavation Class 4 cutoff trench excavation under spillway including placing and sorting in dam.			
	Hydraulic fill	1(8)		1,326

9. Excavation Class 5 outlet tunnel excavation excepting open cut excavation and including placing and sorting in dam

Rock embankment	1(9)	4,481	
	2(9)	6,050	
	3(9)	1,743	
	4(9)	28	
Hydraulic fill	1(9)	1,941	14,243

10. Excavation Class 1 solid rock originating in structure excavation and wasted.

Excavation	1	13,490	
	2	42,765	
	3	276	
	4	2,537	
	5	356	
	6	4,555	
	7	4,222	
	8	632	
	9	234	
	10	764	
Total overall excavation Class 1		69,831	
Excavation Class 1 placed in dam measured in excavation, Schedule item 1		54,238	
Excavation wasted		15,593	
27.5 per cent swell		4,288	
As if measured in spoil bank			19,881

11. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation and wasted.

Excavation	11	10,105	
	12	10,467	
	13	74,791	
	14	90,718	
	15	96,116	
	16	450,457	
Total overall		732,654	
Placed in dam hydraulic fill 2(3)		224,102	
Excavation wasted, as if measured in spoil bank on basis of no swell or shrinkage		508,552	
Swell on excavation item 16		77,081	
Total excavation item 11			585,633

12. Excavation Class 3 cutoff trench excavation under dam and wasted.

Overall excavation			
Excavation	17	1,835	
	18	2,199	
	19a	6,980	
	b	4,408	
Total Class 3 overall excavation		15,422	
Excavation Class 3 placed in dam measured in excavation. Schedule item 7		6,445	
Excavation wasted		8,977	
27.5 per cent swell		2,469	
Total schedule item 12 as if measured in spoil bank			11,446

14. Excavation Class 5, tunnel excavation excepting open cut excavation but wasted.

Overall excavation			
Excavation	21a	29,370	
	b	1,923	
	c	26	
Total overall tunnel excavation		31,319	
Tunnel excavation placed in dam measured in excavation Schedule item 9		14,243	
Tunnel excavation wasted measured in excavation		17,076	
27.5 per cent swell		4,696	
Total schedule item 14 as if measured in spoil bank			21,772

September 1, 1934

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

S-124

Subject: San Diego River Project, El Capitan Feature
Classification and measurement of quantities
Estimate No1 27

Gentlemen:

Receipt is acknowledged of your letter dated August 29, 1934 objecting and protesting to the quantities and classification of quantities as shown in the different schedule items of progress estimate No. 27 for the month of July 1934, details of which, relating to excavation and embankment quantities for El Capitan Dam were set out in letter to you dated August 20, 1934.

The Contractor's lack of an orderly program and method of work prior to April 1, 1933 made it phydically impossible for the Engineer to identify the source of and to measure wasted material from each source separately in spoil banks, and therefore, in order to arrive at a proper quantity in lieu of spoil bank measurements, an estimated quantity due to probable swell in addition to excavation measurement was included to show as nearly as possible the volume which such materials actually occupied in the spoil banks. All excavation material wasted since April 1, 1933 has been measured in spoil banks. No shrinkage of any material has been assumed in arriving at schedule item pay quantities.

Your claim for $131,289.83, which you allege was the amount of direct and unavoidable extra cost caused by your suspension of contract work April 10, 1933, was denied on September 18, 1933, by Council Resolution No. 60727.

Your claim dated June 30, 1934 for $129,247.50 which you allege was the amount of extra cost caused by the delay of work from April 18, 1934 to June 14, 1934, was denied on July 23, 1934 by Council Resolution No. 61903.

SCHEDULE ITEM NO. 1, being "Excavation Class 1 solid rock originating in structure excavation including placing and sorting in dam" further described in Paragrpph 54 of the specifications as follows:

> "Excavation-Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

occurred in the various excavation in a manner which made it impractical to measure all of it in excavation. A large number of boulders were measured individually. Some material was measured in place. Much excavated material coming within schedule item 1 was determined by truck count as if in excavation. (The amount of rock in each truck load being independently estimated on basis of volume of such material in place in excavation.)

All spillway excavation, except for cutoff trench, has been classified in accordance with that portion of Paragraph 54 of the specifications reading as follows:

> "Excavation Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

or as

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in class 3, 4 and 5."

The total volume has been measured in excavation and this total volume is not affected by classification.

SCHEDULE ITEM NO. 2, being "Embankment Class 1 rock originating in borrow pit only, including placing and sorting in dam, measured in embankment" is further described in Paragraph 54 of the specifications as follows:

> "Embankment-Class 1. Rock embankment originating in borrow pit only."

To determine the total quantity of rock embankment, overall measurements of rock embankment were made and deductions made for the volume occupied by those portions of schedule items 1, 7, and 9 placed in rock embankment. Deductions included 27-1/2 per cent for swell.

All structure excavation was measured in, or as if in excavation but the contract specifications provide that embankment Class 1 and 2 include materials originating in borrow pits (and quarries) only, and therefore you are not entitled to the yardage represented by the swell of excavated material originating in structure excavation and placed in rock embankment, especially excavation Class 1, 3 and 5. No excavation Class 1 from the spillway excavation has been wasted.

SCHEDULE ITEM NO. 3 consists of "Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill" further described in Paragraph 54 of the specifications as follows:

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in Class 3, 4 and 5."

The overall volume of excavation Classes 1 and 2 was measured in, or as if in excavation and deduction made for Class 1. In reference to classification of spillway excavation, see previous paragraph under Schedule Item 1 dealing with that matter.

SCHEDULE ITEM NO. 5, being "Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including sorting a nd placing in hydraulic fill, measured in embankment" and further described as follows:

> "Excavation Class 2. Clay, earth, sand, gravel and other embankment, except Class 1, originating in borrow pit only."

was so intermingled in the hydraulic fill with materials placed under schedule items 3, 7, 8 and 9 that it was not practical to measure it separately in embankment. The total overall quantity of hydraulic fill was measured in embankment and deductions made for the volume occupied by the portion of material placed in hydraulic fill and paid for as schedule items 7, 8 and 9 to determine the volume of material to be paid for as schedule item 5. It has been assumed that no swell or shrinkage occurs in excavation when placed in hydraulic fill.

The deduction of 3544 cubic yards from item 5 was made in accordance with my letter to you of March 1, 1933 wherein it was made optional to you to remove and replace improperly placed material at your own expense, or proceed with the work, in which event the incompletely placed material not removed would not be included in the monthly estimates.

SCHEDULE ITEM NO. 7 consists of "Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam" further described as follows:

> "Excavation Class 3. Excavation in main cutoff trench under dam."

All material excavated from the cutoff trench under the dam to the width and depth as directed by the engineer and that has been placed in the dam has been included. The top of the trench excavation for this purpose corresponds to the bottom of the stripping operations as required by the Engineer. It is not seen how anything in Paragraph 101 of the specifications applies in any manner to trench excavation.

SCHEDULE ITEM NO. 9. Measurements made in determining the volume of schedule item 9 conformed with requirements of Paragraph 101 of the specifications.

SCHEDULE ITEM NO. 10 is identical with schedule item 1 except instead of the material being placed in the dam it was wasted. This material was so intermingled in the spoil banks with material paid for as schedule items 11, 12 and 14 that it was physically impossible to measure it separately in spoil banks. Materials coming within schedule item 10 were measured in, or as if in excavation and an

allowance of 27.5 per cent added for swell in lieu of spoil bank measurements. In reference to classification of spillway excavation see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM NO. 11 is identical with schedule item 3, except that instead of the material being placed in the dam it was wasted. Materials coming within schedule item 11 prior to April 1, 1933 were intermingled with other materials wasted and were measured in excavation, or as if in excavation. No allowance was made for swell or for shrinkage in lieu of spoil bank measurements. After April 1, 1933 schedule item 11 materials were measured in spoil bank. In reference to classification of spillway excavation, see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM NO. 12 is identical with schedule item 7, except instead of the material being placed in the dam it was wasted. As material coming within schedule item 12 was intermingled with other materials wasted and was measured in excavation and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM NO. 14. Material coming within schedule item 14 was intermingled with other materials wasted and was measured in excavation in conformity with paragraph 101 of the specifications and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM NO. 17. Concrete placed in the outlet tower footing has been included in item 17 and concrete placed in the outlet tower above the top of the footing has been included in item 23. If this is not in accordance with your interpretation of the contract specifications, an additional statement from you will be appreciated.

SCHEDULE ITEMS NOS. 23 and 33. You state that the quantities under items 23 and 33 in the estimate are not correct but you do not state in what particular they are incorrect so that proper investigation may be made.

Very truly yours,

Fred D. Pyle
Hydraulic Engineer.

/p
cc-City Manager
City Attorney
Special Water Counsel

September 27, 1934

Messrs. H. W. Rohl & T. E. Connolly S-128
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California

Subject: San Diego River Project, El Capitan Feature, request for statement of quantities and classifications Estimate No. 28

Gentlemen:

Pursuant to your written request dated September 19, 1934, for a statement of the quantities and classifications between successive stations of the excavation and embankment quantities shown on progress estimate No. 28 for contract work done on El Capitan Dam for the month of August 1934, you are herewith furnished the statement attached showing the information requested.

If this statement is not satisfactory to you, specific objections with reasons therefor should be filed in writing with the Engineer in accordance with paragraph 54 of the contract specifications.

Very truly yours,

Fred D. Pyle,
Hydraulic Engineer.

/p
cc City Manager
City Attorney
Special Water Counsel
Resident Engineer

CITY OF SAN DIEGO, CALIFORNIA

San Diego River Project, El Capitan Feature

Statement of stations, classifications and quantities of embankment and excavation and summary by schedule items of certain work done by H. W. Rohl & T. E. Connolly, under their contract for the construction of El Capitan Reservoir Dam, Spillway and Outlet Works up to and including August 1934 and included in progress estimate No. 28.

In lieu of spoil bank measurements it was deemed proper to consider that excavation Class 1, 3 and 5 measured in excavation would swell 27.5 per cent if measured in spoil bank or in rock embankment, and

That excavation Class 1, 3 and 5 measured in excavation would neither swell nor shrink if measured in hydraulic fill, and

That excavation Class 2 would neither swell nor shrink if measured in spoil bank or in hydraulic fill.

All quantities are stated in cubic yards.

ROCK EMBANKMENT: Stations, classification and quantities.

1. From N 3440 to N 3850 and from E 5590 to toe wall (Above upstream toe wall)

Overall embankment measured in embankment			11,949
(9) Excavation Class 5	4,481		
27.5 per cent swell	1,232		
As if measured in embankment	5,713		
(2) Embankment Class 1	6,236		

2. From N 3060 to N 4160 and from E 5135 to toe wall (Below upstream toe wall)

Overall embankment measured in embankment			585,375
(1) Excavation Class 1	38,969		
27.5 per cent swell	10,716		
As if measured in embankment	49,685		
(7) Excavation Class 3	503		
27.5 per cent swell	138		
As if measured in embankment	641		
(9) Excavation Class 5	6,050		
27.5 per cent swell	1,664		
As if measured in embankment	7,714		
(2) Embankment Class 1	527,335		

3. From N 3100 to N 4000 and from E 4752 to toewall (above downstream toe wall)

Overall embankment measured in embankment		276,984
(1) Excavation Class 1	15,583	
27.5 per cent swell	4,285	
As if measured in embankment	19,868	
(7) Excavation Class 3	259	
27.5 per cent swell	71	
As if measured in embankment	330	
(9) Excavation Class 5	1,743	
27.5 per cent swell	479	
As if measured in embankment	2,222	
(2) Embankment Class 1	254,564	

4. From N 3440 to N 3860 and from E 4380 to toewall (below downstream toe wall) 24,565

Overall embankment measured in embankment	
(1) Excavation Class 1	926
27.5 per cent swell	255
As if measured in embankment	1,181
(9) Excavation Class 5	28
27.5 per cent swell	8
As if measured in embankment	36
(2) Embankment Class 1	23,348

HYDRAULIC FILL: Stations, classification and quantities.

1. From N 3040 to N 4140 and from E 4672 to E 5232

Overall embankment measured in embankment except for 3,544 cubic yards material above the foundation line of the hydraulic fill placed contrary to directions of Hydraulic Engineer		1,538,372
(3) Excavation Class 2	224,102	
(7) Excavation Class 3	5,683	
(8) Excavation Class 4	1,326	
(9) Excavation Class 5 measured in excavation	1,941	
(5) Embankment Class 2 (3544 cubic yards Class 2 embankment not sorted by hydraulic means, not included in estimate)	1,305,320	

ROLLED EMBANKMENT: Stations, classifications and quantities

1.	From N 3040 to N 4150 and from E 4906 to E 5084		52,496
	(4) Excavation Class 2	4,304	
	(6) Embankment Class 2	48,192	

EXCAVATION: Measured in excavation

1.	Excavation Class 1, detached solid rock from stripping for base of dam, from structure and other excavation except spillway	13,490
2.	Excavation Class 1, detached solid rock from spillway excavation	44,005
3.	Excavation Class 1, detached solid rock from Station 0+14 to Station -2+95 tunnel entrance	276
4.	Excavation Class 1 ledge rock in place from Station 0+14 to Station 0-50 tunnel entrance	2,537
5.	Excavation Class 1, detached solid rock from Station 11+67.8 to Station 15+30 tunnel exit	356
6.	Excavation Class 1, ledge rock in place from Station 11+67.8 to Station 13+82.8 tunnel exit	4,555
7.	Excavation Class 1, ledge rock in place from N 3440 to N 3790 and from E 4967 to E 5023	4,222
8.	Excavation Class 1, ledge rock in place from N 3480 to N 3540 and from E 5450 to E 5510	632
9.	Excavation Class 1, ledge rock in place from N 3420 to N 3460 and from E 4470 to E 4512	234
10.	Excavation Class 1, ledge rock in place from N 3440 to N 3560 and from E 4390 to E 4460	764
11.	Excavation Class 2, Station 0+14 to Station -2+95 tunnel entrance	10,105
12.	Excavation Class 2, Station 11+67.8 to Station 15+30 tunnel exit	10,467
13.	Excavation Class 2, stripping for base of dam from N 3110 to N 3990 and from E 4320 to E 4800 under downstream rock embankment	74,791
14.	Excavation Class 2, stripping for base of dam from N 3050 to N 4160 and from E 5140 to E 5590 under upstream rock embankment	90,718

15. Excavation Class 2, stripping for base of dam from N 3040 to N 4130 and from E 4680 to E 5220 under hydraulic fill — 96,116

16. Excavation Class 2, spillway excavation from Station 0+00 to Station 7+40 — 458,200

17. Excavation Class 3, downstream toewall trench from Station 0-60 to Station 4+02.14 — 1,835

18. Excavation Class 3 upstream toewall trench from Station 0+00 to Station 4+85 — 2,199

19. Excavation Class 3, main cutoff trench under dam
(a) 6' neat line trench from N 2990 to ogee 5+10 — 6,980
(b) 6' bottom 1 on 1 slopes from N 3015 to N 4100 — 4,408

20. Excavation Class 4, cutoff trench under spillway
(a) Under spillway ogee Station 0+00 to 5+10 — 1,190
(b) " " floor " 2+55 — 20
(c) " " " " 5+10 — 51
(d) " " " " 7+10 — 65

21. Excavation Class 5 tunnel excavation
(a) Station 0+00 to Station 11+72.77 — 29,370
(b) Outlet tower shaft — 1,923
(c) Cleaning floors exploration tunnels 1 and 2 — 26

SUMMARY BY SCHEDULE ITEMS
Determination of schedule items

Schedule Item				
1. Excavation Class 1, solid rock originating in structure excavation including placing and sorting in dam				
Rock embankment	2(1)		38,969	
	3(1)		15,583	
	4(1)		926	55,478
2. Embankment Class 1 rock originating in borrow pit only including placing and sorting in dam measured in embankment				
Rock embankment	1(2)		6,236	
	2(2)		527,335	
	3(2)		254,564	
	4(2)		23,348	811,483
3. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation including placing and sorting in hydraulic fill.				
Hydraulic fill	1(3)			224,102
4. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and compacting in rolled embankment				
Rolled embankment	1(4)			4,304

5. Embankment Class 2, clay, earth, sand, gravel and other excavation originating in borrow pit only including sorting and placing in hydraulic fill, measured in embankment.

Hydraulic fill	1(5)		1,305,320

6. Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including placing and compacting in rolled embankment, measured in embankment.

Rolled embankment	1(6)		48,192

7. Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam.

Rock embankment	2(7)	503	
	3(7)	259	
Hydraulic fill	1(7)	5,683	6,445

8. Excavation Class 4 cutoff trench excavation under spillway including placing and sorting in dam.

Hydraulic fill	1(8)		1,326

9. Excavation Class 5 outlet tunnel excavation excepting open cut excavation and including placing and sorting in dam.

Rock embankment	1(9)	4,481	
	2(9)	6,050	
	3(9)	1,743	
	4(9)	28	
Hydraulic fill	1(9)	1,941	14,243

10. Excavation Class 1 solid rock originating in structure excavation and wasted.

Excavation	1	13,490	
	2	44,005	
	3	276	
	4	2,537	
	5	356	
	6	4,555	
	7	4,222	
	8	632	
	9	234	
	10	764	
Total overall excavation Class 1		71,071	
Excavation Class 1 placed in dam measured in excavation, Schedule item 1		55,478	
Excavation wasted		15,593	
27.5 per cent swell		4,288	
As if measured in spoil bank			19,881

11. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation and wasted.

Excavation	11	10,105	
	12	10,467	
	13	74,791	
	14	90,718	
	15	96,116	
	16	458,200	

11.	Total overall	740,397	
	Placed in dam hydraulic fill 2(3)	228,406	
	Excavation wasted, as if measured in spoil bank on basis of no swell or shrinkage	511,991	
	Swell on excavation item 16	78,119	
	Total excavation item 11		590,110

12. Excavation Class 3 cutoff trench excavation under dam and wasted.

	Overall excavation		
	Excavation 17	1,835	
	18	2,199	
	19a	6,980	
	b	4,408	
	Total Class 3 overall excavation	15,422	
	Excavation Class 3 placed in dam measured in excavation. Schedule item 7	6,445	
	Excavation wasted	8,977	
	27.5 per cent swell	2,469	
	Total schedule item 12 as if measured in spoil bank		11,446

14. Excavation Class 5, tunnel excavation excepting open cut excavation but wasted.

	Overall excavation		
	Excavation 21a	29,370	
	b	1,923	
	c	26	
	Total overall tunnel excavation	31,319	
	Tunnel excavation placed in dam measured in excavation. Schedule item 9	14,243	
	Tunnel excavation wasted measured in excavation	17,076	
	27.5 per cent swell	4,696	
	Total schedule item 14 as if measured in spoil bank		21,772

October 9, 1934

Messrs. H. W. Rohl & T. E. Connolly S-131
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

Subject: San Diego River Project, El Capitan Feature
Classification and measurement of quantities
Estimate No. 28

Gentlemen:

Receipt is acknowledged of your letter dated October 5, 1934 objecting and protesting to the quantities and classification of quantities as shown in the different schedule items of progress estimate No. 28 for the month of August 1934, details of which, relating to excavation and embankment quantities for El Capitan Dam were set out in letter to you dated September 27, 1934.

The Contractor's lack of an orderly program and method of work prior to April 1, 1933 made it physically impossible for the Engineer to identify the source of and to measure wasted material from each source separately in spoil banks, and therefore, in order to arrive at a proper quantity in lieu of spoil bank measurements, an estimated quantity due to probable swell in addition to excavation measurement was included to show as nearly as possible the volume which such materials actually occupied in the spoil banks. All excavation material wasted since April 1, 1933 has been measured in spoil banks. No shrinkage of any material has been assumed in arriving at schedule item pay quantities.

Your claim for $131,289.83, which you allege was the amount of direct and unavoidable extra cost caused by your suspension of contract work April 10, 1933, was denied on September 18, 1933 by Council Resolution No. 60727.

Your claim dated June 30, 1934, for $129,247.50, which you allege was the amount of extra cost caused by the delay of work from April 18, 1934 to June 14, 1934, was denied on July 23, 1934, by Council Resolution No. 61903.

SCHEDULE ITEM No. 1, being "Excavation Class 1 solid rock originating in structure excavation including placing and sorting in dam" is further described in Paragraph 54 of the specifications as follows:

> "Excavation - Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

occurred in the various excavation in a manner which made it impractical to measure all of it in excavation. A large number of boulders were measured individually. Some material was measured in place. Much excavated material coming within schedule item 1 was determined by truck count as if in excavation. (The amount of rock in each truck load being independently estimated on basis of volume of such material in place in excavation.)

All spillway excavation, except for cutoff trench, has been classified in accordance with that portion of Paragraph 54 of the specifications reading as follows:

> "Excavation Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

or as

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in class 3, 4 and 5."

The total volume has been measured in excavation and this total volume is not affected by classification.

SCHEDULE ITEM No. 2, being "Embankment Class 1 rock originating in borrow pit only, including placing and sorting in dam, measured in embankment" is further described in Paragraph 54 of the specifications as follows:

> "Embankment - Class 1. Rock embankment originating in borrow pit only."

To determine the total quantity of rock embankment, overall measurements of rock embankment were made and deductions made for the volume occupied by those portions of schedule items 1, 7, and 9 placed in rock embankment. Deductions included 27-1/2 per cent for swell.

All structure excavation was measured in, or as if in excavation but the contract specifications provide that embankment Class

1 and 2 include materials originating in borrow pits (and quarries) only, and therefore you are not entitled to the yardage represented by the swell of excavated material originating in structure excavation and placed in rock embankment, especially excavation Class 1, 3 and 5.

No excavation Class 1 from the spillway excavation has been wasted.

SCHEDULE ITEM No. 3 consists of "Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill" further described in Paragraph 54 of the specifications as follows:

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in Class 3, 4 and 5."

The overall volume of excavation Classes 1 and 2 was measured in, or as if in excavation and deduction made for Class 1. In reference to classification of spillway excavation, see previous paragraph under Schedule Item 1 dealing with that matter.

SCHEDULE ITEM No. 5, being "Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including sorting and placing in hydraulic fill, measured in embankment" and further described as follows:

> "Excavation Class 2. Clay, earth, sand, gravel and other embankment, except Class 1, originating in borrow pit only."

was so intermingled in the hydraulic fill with materials placed under schedule items 3, 7, 8 and 9 that it was not practical to measure it separately in embankment. The total overall quantity of hydraulic fill was measured in embankment and deductions made for the volume occupied by the portion of material placed in hydraulic fill and paid for as schedule items 7, 8 and 9 to determine the volume of material to be paid for as Schedule Item 5. It has been assumed that no swell or shrinkage occurs in excavation when placed in hydraulic fill.

The deduction of 3544 cubic yards from Item 5 was made in accordance with my letter to you of March 1, 1933 wherein it was made optional to you to remove and replace improperly placed material at your own expense, or proceed with the work, in which event the incompletely placed material not removed would not be included in the monthly estimates.

SCHEDULE ITEM No. 7 consists of "Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam" further described as follows:

> "Excavation Class 3. Excavation in main cutoff trench under dam."

All material excavated from the cutoff trench under the dam to the width and depth as directed by the engineer and that has been placed in the dam has been included. The top of the trench excavation for this purpose corresponds to the bottom of the stripping operations as required by the Engineer. It is not seen how anything in Paragraph 101 of the specifications applies in any manner to trench excavation.

SCHEDULE ITEM No. 9. Measurements made in determining the volume of schedule item 9 conformed with requirements of Paragraph 101 of the specifications.

SCHEDULE ITEM No. 10 is identical with schedule item 1 except instead of the material being placed in the dam it was wasted. This material was so intermingled in the spoil banks with material paid for as schedule items 11, 12 and 14 that it was physically impossible to measure it separately in spoil banks. Materials coming within schedule item 10 were measured in, or as if in excavation and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements. In reference to classification of spillway excavation see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM No. 11 is identical with schedule item 3, except that instead of the material being placed in the dam it was wasted. Materials coming within schedule item 11 prior to April 1, 1933 were intermingled with other materials wasted and were measured in excavation, or as if in excavation. No allowance was made for swell or for shrinkage in lieu of spoil bank measurements. After April 1, 1933 schedule item 11 materials were measured in spoil bank. In reference to classification of spillway excavation, see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM No. 12 is identical with schedule item 7, except instead of the material being placed in the dam it was wasted. As material coming within schedule item 12 was intermingled with other materials wasted and was measured in excavation and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM No. 14. Material coming within schedule item 14 was intermingled with other materials wasted and was measured in excavation in conformity with paragraph 101 of the specifications and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM No. 17. Concrete placed in the outlet tower footing has been included in item 17 and concrete placed in the outlet tower above the top of the footing has been included in item 23. If this is not in accordance with your interpretation of the contract specifications, an additional statement from you will be appreciated.

Messrs. H. W. Rohl & T. E. Connolly --5 10-9-34 S-131

SCHEDULE ITEMS Nos. 23 and 33. You state that the quantities under items 23 dnd 33 in the estimate are not correct but you do not state in what particular they are incorrect so that proper investigation may be made.

Very truly yours,

Fred D. Pyle
Hydraulic Engineer.

/p
cc City Manager
City Attorney
Special Water Counsel

October 23, 1934

Messrs. H. W. Rohl & T. E. Connolly S-136
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California

Subject: San Diego River Project, El Capitan Feature, request for statement of quantities and classifications Estimate 29.

Gentlemen:

Pursuant to your written request dated October 16, 1934, for a statement of the quantities and classifications between successive stations of the excavation and embankment quantities shown on progress estimate No. 29 for contract work done on El Capitan Dam for the month of September 1934, you are herewith furnished the statement attached showing the information requested.

If this statement is not satisfactory to you, specific objections with reasons therefor should be filed in writing with the Engineer in accordance with paragraph 54 of the contract specifications.

Very truly yours,

Fred D. Pyle
Hydraulic Engineer

/p
encl.
cc-City Manager
City Attorney
Special Water Counsel
Resident Engineer

CITY OF SAN DIEGO, CALIFORNIA

San Diego River Project, El Capitan Feature

Statement of stations, classifications and quantities of embankment and excavation and summary by schedule items of certain work done by H. W. Rohl & T. E. Connolly, under their contract for the construction of El Capitan Reservoir Dam, Spillway and Outlet Works up to and including September 1934 and included in progress estimate No. 29.

In lieu of spoil bank measurements it was deemed proper to consider that excavation Class 1, 3 and 5 measured in excavation would swell 27.5 per cent if measured in spoil bank or in rock embankment, and

That excavation Class 1, 3 and 5 measured in excavation would neither swell nor shrink if measured in hydraulic fill, and

That excavation Class 2 would neither swell nor shrink if measured in spoil bank or in hydraulic fill.

All quantities are stated in cubic yards.

ROCK EMBANKMENT: Stations, classification and quantities.

1. From N 3440 to N 3850 and from E 5590 to toe wall
(Above upstream toe wall)

Overall embankment measured in embankment			11,949
(9) Excavation Class 5	4,481		
27.5 per cent swell	1,232		
As if measured in embankment	5,713		
(2) Embankment Class 1	6,236		

2. From N 3020 to N 4170 and from E 5135 to toe wall
(Below upstream toe wall)

Overall embankment measured in embankment			601,600
(1) Excavation Class 1	39,584		
27.5 per cent swell	10,886		
As if measured in embankment	50,470		
(7) Excavation Class 3	503		
27.5 per cent swell	138		
As if measured in embankment	641		
(9) Excavation Class 5	6,050		
27.5 per cent swell	1,664		
As if measured in embankment	7,714		
(2) Embankment Class 1	542,775		

3. From N 3060 to N 4000 and from E 4752 to toe wall (Above downstream toe wall)

Overall embankment measured in embankment		292,074
(1) Excavation Class 1	16,198	
27.5 per cent swell	4,454	
As if measured in embankment	20,652	
(7) Excavation Class 3	259	
27.5 per cent swell	71	
As if measured in embankment	330	
(9) Excavation Class 5	1,743	
27.5 per cent swell	479	
As if measured in embankment	2,222	
(2) Embankment Class 1	268,870	

4. From N 3440 to N 3860 and from E 4380 to toe wall (Below downstream toe wall) 24,565

Overall embankment measured in embankment

(1) Excavation Class 1	926
27.5 per cent swell	255
As if measured in embankment	1,181
(9) Excavation Class 5	28
27.5 per cent swell	8
As if measured in embankment	36
(2) Embankment Class 1	23,348

HYDRAULIC FILL: Stations, classification and quantities.

1. From N 4020 to N 4170 and from E 4672 to E 5232

Overall embankment measured in embankment except for 3,544 cubic yards material above the foundation line of the hydraulic fill placed contrary to directions of Hydraulic Engineer		1,560,822
(3) Excavation Class 2	224,102	
(7) Excavation Class 3	5,683	
(8) Excavation Class 4	1,326	
(9) Excavation Class 5 measured in excavation	1,941	
(5) Embankment Class 2 (3544 cubic yards Class 2 embankment not sorted by hydraulic means not included in estimate	1,327,700	

ROLLED EMBANKMENT: Stations, classifications and quantities

1.	From N 3020 to N 4170 and from E 4906 to E 5084		122,884
	(4) Excavation Class 2	13,761	
	(6) Embankment Class 2	109,123	

EXCAVATION: Measured in excavation.

1.	Excavation Class 1, detached solid rock from stripping for base of dam, from structure and other excavation except spillway	13,490
2.	Excavation Class 1, detached solid rock from spillway excavation	45,235
3.	Excavation Class 1, detached solid rock from Station 0+14 to Station -2+95 tunnel entrance	276
4.	Excavation Class 1 ledge rock in place from Station 0+14 to Station 0-50 tunnel entrance	2,537
5.	Excavation Class 1, detached solid rock from Station 11+67.8 to Station 15+30 tunnel exit	356
6.	Excavation Class 1, ledge rock in place from Station 11+67.8 to Station 13+82.8 tunnel exit	4,555
7.	Excavation Class 1, ledge rock in place from N 3440 to N 3790 and from E 4967 to E 5023	4,222
8.	Excavation Class 1, ledge rock in place from N 3480 to N 3540 and from E 5450 to N 5510	632
9.	Excavation Class 1, ledge rock in place from N 3420 to N 3460 and from E 4470 to E 4512	234
10.	Excavation Class 1, ledge rock in place from N 3440 to N 3560 and from E 4390 to E 4460	764
11.	Excavation Class 2, Station 0+14 to Station -2+95 tunnel entrance	10,105
12.	Excavation Class 2, Station 11+67.8 to Station 15+30 tunnel exit	10,467
13.	Excavation Class 2, stripping for base of dam from N 3110 to N 3990 and from E 4320 to N 4800 under downstream rock embankment	74,791
14.	Excavation Class 2, stripping for base of dam from N 3050 and to N 4160 and from E 5140 to E 5590 under upstream rock embankment	90,718

15. Excavation Class 2, stripping for base of dam from N 3040 to N 4130 and from E 4680 to E 5220 under hydraulic fill — 96,116

16. Excavation Class 2, spillway excavation from Station 0+00 to Station 7+40 — 467,657

17. Excavation Class 3, downstream toe wall trench from Station 0-60 to Station 4+02.14 — 1,835

18. Excavation Class 3 upstream toe wall trench from Station 0+00 to Station 4+85 — 2,199

19. Excavation Class 3, main cutoff trench under dam
    (a) 6' neat line trench from N 2990 to ogee 5+10 — 6,980
    (b) 6' bottom 1 on 1 slopes from N 3015 to N 4100 — 4,408

20. Excavation Class 4, cutoff trench under spillway
    (a) Under spillway ogee Station 0+00 to 5+10 — 1,190
    (b) " " floor " 2+55 — 20
    (c) " " " " 5+10 — 51
    (d) " " " " 7+10 — 65

21. Excavation Class 5 tunnel excavation
    (a) Station 0+00 to Station 11+72.77 — 29,370
    (b) Outlet tower shaft — 1,923
    (c) Cleaning floors exploration tunnels 1 and 2 — 26

SUMMARY BY SCHEDULE ITEMS
Determination of schedule items

Schedule Item				
1. Excavation Class 1, solid rock originating in structure excavation including placing and sorting in dam				
Rock embankment	2(1)		39,584	
	3(1)		16,198	
	4(1)		926	56,708
2. Embankment Class 1 rock originating in borrow pit only including placing and sorting in dam measured in embankment				
Rock embankment	1(2)		6,236	
	2(2)		542,775	
	3(2)		268,870	
	4(2)		23,348	841,229
3. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation including placing and sorting in hydraulic fill				
Hydraulic fill	1(3)			224,102
4. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and compacting in rolled embankment				
Rolled embankment	1(4)			13,761

5. Embankment Class 2, clay, earth, sand, gravel and other excavation originating in borrow pit only including sorting and placing in hydraulic fill, measured in embankment

Hydraulic fill	1(5)		1,327,770

6. Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including placing and compacting in rolled embankment, measured in embankment

Rolled embankment	1(6)		109,123

7. Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam

Rock embankment	2(7)	503	
	3(7)	259	
Hydraulic fill	1(7)	5,683	6,445

8. Excavation Class 4 cutoff trench excavation under spillway including placing and sorting in dam

Hydraulic fill	1(8)		1,326

9. Excavation Class 5 outlet tunnel excavation excepting open cut excavation and including placing and sorting in dam

Rock embankment	1(9)	4,481	
	2(9)	6,050	
	3(9)	1,743	
	4(9)	28	
Hydraulic fill	1(9)	1,941	14,243

10. Excavation Class 1 solid rock originating in structure excavation and wasted.

Excavation	1	13,490	
	2	45,235	
	3	276	
	4	2,537	
	5	356	
	6	4,555	
	7	4,222	
	8	632	
	9	234	
	10	764	
Total overall excavation Class 1		72,301	
Excavation Class 1 placed in dam measured in excavation, schedule item 1		56,708	
Excavation wasted		15,593	
27.5 per cent swell		4,288	
As if measured in spoil bank			19,881

11. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation and wasted.

Excavation	11	10,105	
	12	10,467	
	13	74,791	
	14	90,718	
	15	96,116	
	16	469,657	
		749,854	467,657

11. Total overall		749,854	
Placed in dam hydraulic fill and rolled embankment schedule items 3 and 4		237,863	
Excavation wasted as if measured in spoil bank on basis of no swell or shrinkage		511,991	
Swell on excavation item 16		78,119	
Total excavation item 11			590,110
12. Excavation Class 3 cutoff trench excavation under dam and wasted.			
Overall excavation			
Excavation	17	1,835	
	18	2,199	
	19a	6,980	
	b	4,408	
Total Class 3 overall excavation		15,422	
Excavation Class 3 placed in dam measured in excavation. Schedule item 7		6,445	
Excavation wasted		8,977	
27.5 per cent swell		2,469	
Total schedule item 12 as if measured in spoil bank			11,446
14. Excavation Class 5, tunnel excavation excepting open cut excavation but wqqted.			
Overall excavation			
Excavation	21a	29,370	
	b	1,923	
	c	26	
Total overall tunnel excavation		31,319	
Tunnel excavation placed in dam measured in excavation. Schedule item 9		14,243	
Tunnel excavation wasted measured in excavation		17,076	
27.5 per cent swell		4,696	
Total schedule item 14 as if measured in spoil bank			21,772

November 7, 1934

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California

S-137

Subject: San Diego River Project, El Capitan Feature
Classification and measurement of quantities
Estimate No. 29

Gentlemen:

Receipt is acknowledged of your letter dated October 31, 1934 objecting and protesting to the quantities and classification of quantities as shown in the different schedule items of progress estimate No. 29 for the month of September 1934, details of which, relating to excavation and embankment quantities for El Capitan Dam were set out in letter to you dated October 23, 1934.

The Contractor's lack of an orderly program and method of work prior to April 1, 1933 made it physically impossible for the Engineer to identify the source of and to measure wasted material from each source separately in spoil banks, and therefore, in order to arrive at a proper quantity in lieu of spoil bank measurements, an estimated quantity due to probable swell in addition to excavation measurement was included to show as nearly as possible the volume which such materials actually occupied in the spoil banks. All excavation material wasted since April 1, 1933 has been measured in spoil banks. No shrinkage of any material has been assumed in arriving at schedule item pay quantities.

Your claim for $131,289.83, which you allege was the amount of direct and unavoidable extra cost caused by your suspension of contract work April 10, 1933, was denied on September 18, 1933 by Council Resolution No. 60727.

Your claim dated June 30, 1934, for $129,247.50, which you allege was the amount of extra cost caused by the delay of work from April 18, 1934 to June 14, 1934, was denied on July 23, 1934, by Council Resolution No. 61903.

SCHEDULE ITEM No. 1, being "Excavation Class 1 solid rock originating in structure excavation including placing and sorting in dam" is further described in Paragraph 54 of the specifications as follows:

> "Excavation - Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

occurred in the various excavation in a manner which made it impractical to measure all of it in excavation. A large number of boulders were measured individually. Some material was measured in place. Much excavated material coming within schedule item 1 was determined by truck count as if in excavation. (The amount of rock in each truck load being independently estimated on basis of volume of such material in place in excavation.)

All spillway excavation, except for cutoff trench, has been classified in accordance with that portion of Paragraph 54 of the specifications reading as follows:

> "Excavation Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place than cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

or as

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in class 3, 4 and 5."

The total volume has been measured in excavation and this total volume is not affected by classification.

SCHEDULE ITEM No. 2, being "Embankment Class 1 rock originating in borrow pit only, including placing and sorting in dam, measured in embankment" is further described in Paragraph 54 of the specifications as follows:

> "Embankment - Class 1. Rock embankment originating in borrow pit only."

To determine the total quantity of rock embankment, overall measurements of rock embankment were made and deductions made for the volume occupied by those portions of schedule items 1, 7, and 9 placed in rock embankment. Deductions included 27-1/2 per cent for swell.

All structure excavation was measured in, or as if in excavation but the contract specifications provide that embankment Class

1 and 2 include materials originating in borrow pits (and quarries) only, and therefore you are not entitled to the yardage represented by the swell of excavated material originating in structure excavation nad placed in rock embankment, especially excavation Class 1, 3 and 5.

No excavation Class 1 from the spillway excavation has been wasted.

SCHEDULE ITEM No. 3 consists of "Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill" further described in Paragraph 54 of the specifications as follows:

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in Class 3, 4 and 5."

The overall volume of excavation Classes 1 and 2 was measured in, or as if in excavation and deduction made for Class 1. In reference to classification of spillway excavation, see previous paragraph under Schedule Item 1 dealing with that matter.

SCHEDULE ITEM No. 5, being "Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including sorting and placing in hydraulic fill, measured in embankment" and further described as follows:

> "Excavation Class 2. Clay, earth, sand, gravel and other embankment, except Class 1, originating in borrow pit only."

was so intermingled in the hydraulic fill with materials placed under schedule items 3, 7, 8 and 9 that it was not practical to measure it separately in embankment. The total overall quantity of hydraulic fill was measured in embankment and deductions made for the volume occupied by the portion of material placed in hydraulic fill and paid for as schedule items 7, 8 and 9 to determine the volume of material to be paid for as Schedule Item 5. It has been assumed that no swell or shrinkage occurs in excavation when placed in hydraulic fill.

The deduction of 3544 cubic yards from Item 5 was made in accordance with letter to you of March 1, 1933 wherein it was made optional to you to remove and replace improperly placed material at your own expense, or proceed with the work, in which event the incompletely placed material not removed would not be included in the monthly estimates.

SCHEDULE ITEM No. 7 consists of "Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam" further described as follows:

> "Excavation Class 3. Excavation in main cutoff trench under dam."

All material excavated from the cutoff trench under the dam to the width and depth as directed by the engineer and that has been placed in the dam has been included. The top of the trench excavation for this purpose corresponds to the bottom of the stripping operations as required by the Engineer. It is not seen how anything in Paragraph 101 of the specifications applies in any manner to trench excavation.

SCHEDULE ITEM No. 9. Measurements made in determining the volume of schedule item 9 conformed with requirements of Paragraph 101 of the specifications.

SCHEDULE ITEM No. 10 is identical with schedule item 1 except instead of the material being placed in the dam it was wasted. This material was so intermingled in the spoil banks with material paid for as schedule items 11, 12 and 14 that it was physically impossible to measure it separately in spoil banks. Materials coming within schedule item 10 were measured in, or as if in excavation and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements. In reference to classification of spillway excavation see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM No. 11 is identical with schedule item 3, except that instead of the material being placed in the dam it was wasted. Materials coming within schedule item 11 prior to April 1, 1933 were intermingled with other materials wasted and were measured in excavation, or as if in excavation. No allowance was made for swell or for shrinkage in lieu of spoil bank measurements. After April 1, 1933 schedule item 11 materials were measured in spoil bank. In reference to classification of spillway excavation, see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM No. 12 is identical with schedule item 7, except instead of the material being placed in the dam it was wasted. As material coming within schedule item 12 was intermingled with other materials wasted and was measured in excavation and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM No. 14. Material coming within schedule item 14 was intermingled with other materials wasted and was measured in excavation in conformity with paragraph 101 of the specifications and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM No. 17. Concrete placed in the outlet tower footing has been included in item 17 and concrete placed in the outlet tower above the top of the footing has been included in item 23. If this is not in accordance with your interpretation of the contract specifications, an additional statement from you will be appreciated.

SCHEDULE ITEMS Nos. 23 and33. You state that the quantities under items 23 and 33 in the estimate are not correct but you do not state in what particular they are incorrect so that proper investigation may be made.

Very truly yours,

Fred D. Pyle,
Hydraulic Engineer

/f
cc H.W.Rohl & T.E.Connolly, El Capitan Dam
Contractor's Resident Representative
John M. Martin, Attorney for Contractor
City's Resident Engineer

November 22, 1934

Messrs. H. W. Rohl & T. E. Connolly S-140
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California

Subject: San Diego River Project, El Capitan Feature, request for statement of quantities and classifications Estimate 30.

Gentlemen:

Pursuant to your written request dated November 15, 1934, for a statement of the quantities and classifications between successive stations of the excavation and embankment quantities shown on progress estimate No. 30 for contract work done on El Capitan Dam for the month of October 1934, you are herewith furnished the statement attached showing the information requested.

If this statement is not satisfactory to you, specific objections with reasons therefor should be filed in writing with the Engineer in accordance with paragraph 54 of the contract specifications.

Very truly yours

Fred D. Pyle
Hydraulic Engineer

/p
cc-City Manager
City Attorney
Special Water Counsel
Resident Engineer

CITY OF SAN DIEGO, CALIFORNIA

San Diego River Project, El Capitan Feature

Statement of stations, classification and quantities of embankment and excavation and summary by schedule items of certain work done by H. W. Rohl & T. E. Connolly, under their contract for the construction of El Capitan Reservoir Dam, Spillway and Outlet Works up to and including October 1934 and included in progress estimate No. 30.

In lieu of spoil bank measurements it was deemed proper to consider that excavation Class 1, 3 and 5 measured in excavation would swell 27.5 per cent if measured in spoil bank or in rock embankment, and

That excavation Class 1, 3 and 5 measured in excavation would neither swell nor shrink if measured in hydraulic fill, and

That excavation Class 2 would neither swell nor shrink if measured in spoil bank or in hydraulic fill.

All quantities are stated in cubic yards.

ROCK EMBANKMENT: Stations, classification and quantities.

1. From N 3440 to N 3850 and from E 5590 to toe wall (Above upstream toe wall)

Overall embankment measured in embankment		11,949
(9) Excavation Class 5	4,481	
27.5 per cent swell	1,232	
As if measured in embankment	5,713	
(2) Embankment Class 1	6,236	

2. From N 3000 to N 4180 and from E 5135 to toe wall (Below upstream toe wall)

Overall embankment measured in embankment		613,551
(1) Excavation Class 1	39,880	
27.5 per cent swell	10,967	
As if measured in embankment	50,847	
(7) Excavation Class 3	503	
27.5 per cent swell	138	
As if measured in embankment	641	
(9) Excavation Class 5	6,050	
27.5 per cent swell	1,664	
As if measured in embankment	7,714	
(2) Embankment Class 1	554,349	

3. From N 3000 to N 4100 and from E 4752 to toe wall (Above downstream toe wall)

Overall embankment measured in embankment		294,181
(1) Excavation Class 1	16,198	
27.5 per cent swell	4,454	
As if measured in embankment	20,652	
(7) Excavation Class 3	259	
27.5 per cent swell	71	
As if measured in embankment	330	
(9) Excavation Class 5	1,743	
27.5 per cent swell	479	
As if measured in embankment	2,222	
(2) Embankment Class 1	270,977	

4. From N 3440 to N 3860 and from E 4380 to toe wall (Below downstream toe wall) 25,478

Overall embankment measured in embankment	
(1) Excavation Class 1	926
27.5 per cent swell	255
As if measured in embankment	1,181
(9) Excavation Class 5	28
27.5 per cent swell	8
As if measured in embankment	36
(2) Embankment Class 1	24,261

HYDRAULIC FILL: Stations, classification and quantities

1. From N 3000 to N 4180 and from E 4672 to E 5232

Overall embankment measured in embankment except for 3,544 cubic yards material above the foundation line of the hydraulic fill placed contrary to directions of Hydraulic Engineer		1,572,845
(3) Excavation Class 2	224,102	
(7) Excavation Class 3	5,683	
(8) Excavation Class 4	1,326	
(9) Excavation Class 5 measured in excavation	1,941	
(5) Embankment Class 2 (3544 cubic yards Class 2 embankment not sorted by hydraulic means not included in estimate)	1,339,793	

ROLLED EMBANKMENT: Stations, classifications and quantities

1.	From N 3000 to N 4180 and from E 4906 to E 5084		161,638
	(4) Excavation Class 2	18,625	
	(8) Excavation Class 4	44	
	(6) Embankment Class 2	142,969	

EXCAVATION: Measured in excavation

1.	Excavation Class 1, detached solid rock from stripping for base of dam, from structure and other excavation except spillway	13,490
2.	Excavation Class 1, detached solid rock from spillway excavation	45,531
3.	Excavation Class 1, detached solid rock from Station 0+14 to Station -2+95 tunnel entrance	276
4.	Excavation Class 1 ledge rock in place from Station 0+14 to Station 0-50 tunnel entrance	2,537
5.	Excavation Class 1, detached solid rock from Station 11+67.8 to Station 15+30 tunnel exit	356
6.	Excavation Class 1, ledge rock in place from Station 11+67.8 to Station 13+82.8 tunnel exit	4,555
7.	Excavation Class 1, ledge rock in place from N 3440 to N 3790 and from E 4967 to E 5023	4,222
8.	Excavation Class 1, ledge rock in place from N 3480 to N 3540 and from E 5450 to E 5510	632
9.	Excavation Class 1, ledge rock in place from N 3420 to N 3460 and from E 4470 to E 4512	234
10.	Excavation Class 1, ledge rock in place from N 3440 to N 3560 and from E 4390 to E 4460	764
11.	Excavation Class 2, Station 0+14 to Station -2+95 tunnel entrance	10,105
12.	Excavation Class 2, Station 11+67.8 to Station 15+30 tunnel exit	10,467
13.	Excavation Class 2, stripping for base of dam from N 3110 to N 3990 and from E 4320 to E 4800 under downstream rock embankment	74,791
14.	Excavation Class 2, stripping for base of dam from N 3050 to N 4160 and from E 5140 to E 5590 under upstream rock embankment	90,718
15.	Excavation Class 2, stripping for base of dam from N 3040 to N 4130 and from E 4680 to E 5220 under hydraulic fill	96,116

16. Excavation Class 2, spillway excavation from Station 0+00 to Station 7+40 — 472,908

17. Excavation Class 3, downstream toe wall trench from Station 0-60 to Station 4+02.14 — 1,835

18. Excavation Class 3 upstream toe wall trench from Station 0+00 to Station 4+85 — 2,199

19. Excavation Class 3, main cutoff trench under dam
    (a) 6' neat line trench from N 2990 to ogee 5+10 — 6,980
    (b) 6' bottom 1 on 1 slopes from N 3015 to N 4100 — 4,408

20. Excavation Class 4, cutoff trench under spillway
    (a) Under spillway ogee Station 0-11.2 to 5+10 — 1,222
    (b) " " floor " 2+55 — 32
    (c) " " " " 5+10 — 51
    (d) " " " " 7+10 — 65

21. Excavation Class 5 tunnel excavation
    (a) Station 0+00 to Station 11+72.77 — 29,370
    (b) Outlet tower shaft — 1,923
    (c) Cleaning floors exploration tunnels 1 and 2 — 26

SUMMARY BY SCHEDULE ITEMS

Schedule Item	Determination of schedule items			
1.	Excavation Class 1, solid rock originating in structure excavation including placing and sorting in dam			
	Rock embankment	2(1)	39,880	
		3(1)	16,198	
		4(1)	926	57,004
2.	Embankment Class 1 rock originating in borrow pit only including placing and sorting in dam measured in embankment			
	Rock embankment	1(2)	6,236	
		2(2)	554,349	
		3(2)	270,977	
		4(2)	24,261	855,823
3.	Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation including placing and sorting in hydraulic fill			
	Hydraulic fill	1(3)		224,102
4.	Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and compacting in rolled embankment			
	Rolled embankment	1(4)		18,625
5.	Embankment Class 2, clay, earth, sand, gravel and other excavation originating in borrow pit only including sorting and placing in hydraulic fill, measured in embankment			
	Hydraulic fill	1(5)		1,339,793

6.	Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including placing and compacting in rolled embankment, measured in embankment			142,969
	Rolled embankment	1(6)		
7.	Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam.			
	Rock embankment	2(7)	503	
		3(7)	259	
	Hydraulic fill	1(7)	5,683	6,445
8.	Excavation Class 4 cutoff trench excavation under spillway including placing and sorting in dam.			
	Hydraulic fill	1(8)	1,326	
	Rolled embankment	1(8)	44	1,370
9.	Excavation Class 5 outlet tunnel excavation excepting open cut excavation and including placing and sorting in dam			
	Rock embankment	1(9)	4,481	
		2(9)	6,050	
		3(9)	1,743	
		4(9)	28	
	Hydraulic fill	1(9)	1,941	14,243
10.	Excavation Class 1 solid rock originating in structure excavation and wasted.			
	Excavation	1	13,490	
		2	45,531	
		3	276	
		4	2,537	
		5	356	
		6	4,555	
		7	4,222	
		8	632	
		9	234	
		10	764	
	Total overall excavation Class 1		72,597	
	Excavation Class 1 placed in dam measured in excavation, schedule item 1		57,004	
	Excavation wasted		15,593	
	27.5 per cent swell		4,288	
	As if measured in spoil bank			19,881
11.	Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation and wasted.			
	Excavation	11	10,105	
		12	10,467	
		13	74,791	
		14	90,718	
		15	96,116	
		16	472,908	
	Total overall		755,105	

11. (continued)

Total overall	755,105	
Placed in dam hydraulic fill and rolled embankment schedule items 3 and 4	242,727	
Excavation wasted as if measured in spoil bank on basis of no swell or shrinkage	512,378	
Swell on excavation item 16	78,182	
Total excavation item 11		590,560

12. Excavation Class 3 cutoff trench excavation under dam and wasted.

Overall excavation		
Excavation 17	1,835	
18	2,199	
19a	6,980	
19b	4,408	
Total Class 3 overall excavation	15,422	
Excavation Class 3 placed in dam measured in excavation, schedule item 7	6,445	
Excavation wasted	8,977	
27.5 per cent swell	2,469	
Total schedule item 12 as if measured in spoil bank		11,446

14. Excavation Class 5, tunnel excavation except open cut excavation, but wasted.

Overall excavation.		
Excavation 21a	29,370	
b	1,923	
c	26	
Total overall tunnel excavation	31,319	
Tunnel excavation placed in dam measured in excavation, schedule item 9	14,243	
Tunnel excavation wasted measured in excavation	17,076	
27.5 per cent swell	4,696	
Total schedule item 14 as if measured in spoil bank		21,772

December 4, 1934

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California

S-143

Subject: San Diego River Project, El Capitan Feature
Classification and measurement of quantities
Estimate No. 30

Gentlemen:

Receipt is acknowledged of your letter dated November 30, 1934 objecting and protesting to the quantities and classification of quantities as shown in the different schedule items of progress estimate No. 30 for the month of October 1934, details of which, relating to excavation and embankment quantities for El Capitan Dam were set out in letter to you dated November 22, 1934.

The Contractor's lack of an orderly program and method of work prior to April 1, 1933 made it physically impossible for the Engineer to identify the source of and to measure wasted material from each source separately in spoil banks, and therefore, in order to arrive at a proper quantity in lieu of spoil bank measurements, an estimated quantity due to probable swell in addition to excavation measurement was included to show as nearly as possible the volume which such materials actually occupied in spoil banks. All excavation material wasted since April 1, 1933 has been measured in spoil banks. No shrinkage of any material has been assumed in arriving at schedule item pay quantities.

Your claim for $131,289.83, which you allege was the amount of direct and unavoidable extra cost caused by your suspension of contract work April 10, 1933, was denied on September 18, 1933 by Council Resolution No. 60727.

Your claim dated June 30, 1934, for $129,247.50, which you allege was the amount of extra cost caused by the delay of work from April 18, 1934 to June 14, 1934, was denied on July 23, 1934, by Council Resolution No. 61903.

SCHEDULE ITEM No. 1, being "Excavation Class 1 solid rock originating in structure excavation including placing and sorting in dam" is further described in Paragraph 54 of the specifications as follows:

> "Excavation - Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

occurred in the various excavation in a manner which made it impractical to measure all of it in excavation. A large number of boulders were measured individually. Some material was measured in place. Much excavated material coming within schedule item 1 was determined by truck count as if in excavation. (The amount of rock in each truck load being independently estimated on basis of volume of such material in place in excavation.)

All spillway excavation, except for cutoff trench, has been classified in accordance with that portion of Paragraph 54 of the specifications reading as follows:

> "Excavation Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume."

or as

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in class 3, 4 and 5."

The total volume has been measured in excavation and this total volume is not affected by classification.

SCHEDULE ITEM No. 2, being "Embankment Class 1 rock originating in borrow pit only, including placing and sorting in dam, measured in embankment" is further described in Paragraph 54 of the specifications as follows:

> "Embankment - Class 1. Rock embankment originating in borrow pit only."

To determine the total quantity of rock embankment, overall measurements of rock embankment were made and deductions made for the volume occupied by those portions of schedule items 1, 7 and 9 placed in rock embankment. Deductions included 27-1/2 per cent for swell.

All structure excavation was measured in, or as if in excavation but the contract specifications provide that embankment Class 1 and 2 include materials origina ting in borrow pits (and quarries) only, and therefore you are not entitled to the yardage represented by the swell of excavated material origina ting in structing excavation and placed in rock embankment, especially excavation Class 1, 3 and 5.

No excavation Class 1 from the spillway excavation has been wasted.

SCHEDULE ITEM No. 3 consists of "Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill" further described in Paragraph 54 of the specifications as follows:

> "Excavation Class 2. All earth, overburden, sand, gravel and other excavation not included in Class 3, 4 and 5."

The overall volume of excavation Classes 1 and 2 was measured in, or as if in excavation and deduction made for Class 1. In reference to classification of spillway excavation, see previous paragraph under Schedule item 1 dealing with that matter.

SCHEDULE ITEM No. 5, being "Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only, including sorting and placing in hydraulic fill, measured in embankment" and further described as follows:

> "Excavation Class 2. Clay, earth, sand, gravel and other embankment, except Class 1, originating in borrow pit only."

was so intermingled in the hydraulic fill with materials placed under schedule items 3, 7, 8 and 9 that it was not practical to measure it separately in embankment. The total overall quantity of hydraulic fill was measured in embankment and deductions made for the volume occupied by the portion of material placed in hydraulic fill and paid for as schedule items 7, 8 and 9 to determine the volume of material to be paid for as schedule item 5. It has been assumed that no swell or shrinkage occurs in excavation when placed in hydraulic fill.

The deduction of 3544 cubic yards from Item 5 was made in accordance with letter to you of March 1, 1933 where in it was made optional to you to remove and replace improperly placed material at your own expense, or proceed with the work, in which event the incompletely placed material not removed would not be included in the monthly estimates.

SCHEDULE ITEM No. 7 consists of "Excavation Class 3 cutoff trench excavation under dam including placing and sorting in dam" further described as follows:

> "Excavation Class 3. Excavation in main cutoff trench under dam."

All material excavated from the cutoff trench under the dam to the width and depth as directed by the engineer and that has been placed in the dam has been included. The top of the trench excavation for this purpose corresponds to the bottom of the stripping operations as required by the engineer. It is not seen how anything in Paragraph 101 of the specifications applies in any manner to trench excavation.

SCHEDULE ITEM No. 9. Measurements made in determining the volume of schedule item 9 conformed with requirements of Paragraph 101 of the specifications.

SCHEDULE ITEM No. 10 is identical with schedule item 1 except instead of the material being placed in the dam it was wasted. This material was so intermingled in the spoil banks with material paid for as schedule items 11, 12 and 14 that it was physically impossible to measure it separately in spoil banks. Materials coming within schedule item 10 were measured in, or as if in excavation and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements. In reference to classification of spillway

excavation see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM No. 11 is identical with schedule item 3, except that instead of the material being placed in the dam it was wasted. Materials coming within schedule item 11 prior to April 1, 1933 were intermingled with other materials wasted and were measured in excavation, or as if in excavation. No allowance was made for swell or for shrinkage in lieu of spoil bank measurements. After April 1, 1933 schedule item 11 materials were measured in spoil bank. In reference to classification of spillway excavation, see previous paragraph under schedule item 1 dealing with this matter.

SCHEDULE ITEM No. 12 is identical with schedule item 7, except instead of the material being placed in the dam it was wasted. The material coming within schedule item 12 was intermingled with other materials wasted and was measured in excavation and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM No. 14. Material coming within schedule item 14 was intermingled with other materials wasted and was measured in excavation in conformity with paragraph 101 of the specifications and an allowance of 27.5 per cent added for swell in lieu of spoil bank measurements.

SCHEDULE ITEM No. 17. Concrete placed in the outlet tower footing has been included in item 17 and concrete placed in the outlet tower above the top of the footing has been included in item 23. If this is not in accordance with your interpretation of the contract specifications, an additional statement from you will be appreciated.

SCHEDULE ITEMS Nos. 23 and 33. You state that the quantities under items 23 and 33 in the estimate are not correct but you do not state in what particular they are incorrect so that proper investigation may be made.

Very truly yours,

Fred D. Pyle
Hydraulic Engineer

/p
cc City Manager
City Attorney
Special Water Counsel

LITIGATION

SPILLWAY EXTENSION

2-11-35
copy/p

April 19, 1933

Mr. H. N. Savage
Hydraulic Engineer
San Diego, Calif.

Subject: San Diego River Project, El Capitan Feature, spillway extension

Dear Sir:

This is in response to your communication dated April 15, 1933, upon the above subject, in which you ask for advice concerning the application of the provisions of Paragraph 13 of the specifications to the spillway extension work under the plans recently approved by the State Engineer.

As you are aware, Specification 13, authorizing changes in the designs or material, in the plans for installation or construction, in the quantities or character of the work or material required, provides that

> "No changes affecting the cost in excess of one thousand dollars will be made by the Engineer without the approval of the Common Council. If such changes result in an increase or decrease of cost to the contractor, the Engineer will make such additions or deductions on account thereof as he may deem reasonable and proper, and such action thereon, subject to approval by the Common Council, shall be final."

The fact, as pointed out in your communication, that the contract drawings indicate that extensions of the spillway channel are contemplated by the wording "extend lining as indicated by the Engineer," and "detailed structure and hydraulic drawing for the spillway channel, discharge end, are to be developed and submitted for approval by State Engineer before construction," does not obviate the necessity of a compliance with the requirement of Section 13 of the specifications, where any extension or change will affect the cost in excess of one thousand dollars. Neither does the fact, pointed out by you, that Section 94 of the contract specifications provides that "the overflow spillway shall be constructed to the grades and dimensions shown on the drawings or prescribed by the Engineer," relieve the Hydraulic Engineer from a compliance with Section 13.

In various places throughout the specifications construction is to be performed as directed by the Engineer. However, wherever the directions of the Engineer extend, increase or change the construction, as the same is shown in the drawings, and affects the cost more than one thousand dollars, it appears to be very clear under the provisions of Section 13 of the specifications that the Engineer must first secure the approval of the Council.

It is my opinion that the specifications do not obligate the contractor to require or demand in writing that work of the

character above mentioned be done under the provisions of Section 13 of the specifications; and that it is the duty of the Hydraulic Engineer, irrespective of such a request, to present the matter to the City Council for its approval.

In the last paragraph of your communication you request the preparation of a form of resolution for submission to the Council in event it is my opinion that the spillway extension work requires such action. Please be advised in this connection that the proper procedure would be for the Hydraulic Engineer to address a communication to the City Council setting forth the nature and character of the work involved, with the recommendation that it be authorized. If the City Council adopts the Hydraulic Engineer's recommendation in the premises, the City Attorney will then prepare the appropriate resolution.

Trusting that this answers your inquiries sufficiently, I am,

Very truly yours,

C. L. Byers
City Attorney

2-11-35
copy/p

April 15, 1933 1856

From : Hydraulic Engineer

To : City Attorney

Subject : San Diego River Project, El Capitan Feature
Spillway extension

Contract drawings WD-382, approved by the State Engineer on February 29, 1932, and contract drawing WD-385 are a part of the bound copy of contract specifications under which H. W. Rohl & T. E. Connolly are constructing El Capitan Reservoir Dam, Spillway and Outlet Works. These drawings show the spillway channel lining to a point about 230 feet west of the west end of the spillway overflow crest. An extension is indicated on each drawing by the following wording "Extend lining as indicated by the engineer" and "Detailed structure and hydraulic drawing for the spillway channel, discharge end, are to be developed and submitted for approval by State Engineer before construction."

The contract specifications read in part as follows: "94. CONCRETE IN OVERFLOW SPILLWAY.- The overflow spillway shall be constructed to the grades and dimensions shown on the drawings or prescribed by the engineer. . ."

In accordance with the above notations, on February 2, 1933 detail structural and hydraulic designs showing the spillway as extending about 290 feet further than indicated on the contract drawings and down to elevation 575 were submitted to the State Engineer and after modification were approved by him on March 21, 1933 on condition that the spillway lining would be extended downward to a still lower elevation.

On March 29, 1933 the contractor was furnished prints of the drawings as approved by the State Engineer and was advised that the State Engineer had indicated that he would require a somewhat further extension of the spillway channel. The drawings for this second extension were submitted to the State Engineer on April 5, 1933. As submitted they show a further extension in length of about 150 feet and down to elevation 560.

To date no written notice has been received from the contractor objecting to such work under the contract schedule items nor has he requested in writing instructions that such work be done under the provisions of paragraph 13 of the contract specifications. The contractor's legal representative, Jr. John M. Martin, has verbally requested that since the amount of the spillway extension exceeds $1000 the contractor be notified of the change in accordance with paragraph 13 of the contract specifications, which require the approval of the Council.

Due to the notation on the contract drawings and to the specifications reference, this office desires your opinion as to the extent of spillway continuation the Hydraulic Engineer is authorized to require under the contract schedule items, and without the issuance of an order in accordance with the provisions of contract specifications paragraph 13; and if in your opinion a portion of the work should properly be ordered by the engineer in accordance with the provisions of paragraph 13 of the contract specifications, please prepare and submit to this office form of resolution authorizing the Hydraulic Engineer to issue such order so that it may be submitted to the Council with proper explanations and recommendation.

4-30-34
copy/p

H. W. ROHL & T. E. CONNOLLY

Contractors

Lakeside, Cal.,
August, 7, 1933.

Mr. H. N. Savage,
Hydraulic Engineer
San Diego,
Cal.

Dear Sir:

Contrary to the statement of Mr. Woods that we had plans for the completed spillway, I find no plans to have been handed Mr. Steves nor are there any plans in our field office.

Would you please favor me with a set of the completed and approved plans for this feature so I may study them at the earliest moment.

Yours very truly,

H.W.Rohl & T.E.Connolly

T E Connolly (Signed)

5/11/34
copy /f

August 10, 1933

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

S-35

Subject: San Diego River Project, El Capitan Feature, spillway Drawings.

Gentlemen:

In compliance with your requisition dated August 7, 1933, enclosed are prints of drawings of the El Capitan reservoir spillway and spillway discharge channel to Station 10+37, as indicated and provided for in the contract drawings and specifications.

WD-449 Sheets 1 to 6 inclusive, approved by State Engineer March 21, 1933.

WD-450 approved by State Engineer March 21, 1933.

Very truly yours,

H. N. Savage,
Hydraulic Engineer.

HNS/p

4-30-34
copy/p

H. W. ROHL & T. E. CONNOLLY

Contractors

Lakeside, Cal.
August, 22, 1933.

Mr. H. N. Savage, Hydraulic Engineer
San Diego,
Cal.

Dear Sir:

The plans furnished and accompanied by your letter S-35, comply but in part with my request of August 7, 1933.

I was told by yourself and Mr. Wood that the State Engineer had approved entirely completed plans for the spillway. Those plans, which I did not have, were what I was seeking. Plans for the spillway as shown in the specifications we have had for some time. I am desirous of obtaining a complete set of approved plans for the entire structure and outlet canal.

Yours very truly,

H.W.Rohl & T.E.Connolly

T E Connolly (Signed)

5/11/34
copy /f

August 22, 1933

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

S-39

Subject: San Diego River Project,
El Capitan Feature, Spillway
Discharge Channel - Drawings.

Gentlemen:

Supplementing my letter dated August 10, 1933 (S-35) furnishing prints of drawings of El Capitan reservoir spillway, and discharge channel to Station 10+37;

Enclosed are prints of drawings WD-449 Sheet 7a of 7; WD-454 and WD-460 showing the spillway discharge channel between Stations 10+37 and 15+50 as approved by the California State Engineer on July 18, 1933, for your study and consideration.

Very truly yours,

H. N. Savage,
Hydraulic Engineer.

HNS/f

5-3-34
copy/p

H. W. ROHL & T. E. CONNOLLY
Contractors

September, 1, 1933.

Mr. H. N. Savage, Hydraulic Engineer,
San Diego,
Cal.

Dear Sir:

I have given due consideration to the drawing of the spillway extension handed me by yourself and Mr. Wood on August, 23, 1933.

The design, volume and circumstances surrounding this radical change are so entirely different from anything that was contemplated in or under our contract that we cannot undertake its construction under our contract.

If we are to construct this extension at all it will have to be accorded special treatment.

Yours very truly,

H.W.Rohl & T.E.Connolly.

(Signed) T E Connolly

11/15/33
copy /f

October 3, 1933

M E M O R A N D U M

Subject: El Capitan Reservoir Dam, Spillway and Outlet Works, Drawings and Specifications, Potential Bidders Interpretation, Policies.

Walter A. Stebbins, C.E. Junior partner with H. G. Fenton, Contractor, San Diego, California and D. W. Albert, C.E. were employed by George R. Daley and H. G. Fenton to collaborate in figuring the job for the construction of the El Capitan reservoir dam, spillway and outlet works.

In conference this morning with Mr. Stebbins, he stated specifically that he and Mr. Albert anticipated an increase of about 300,000 cubic yards of material which would have to be excavated from the spillway over that shown in the item for bids.

Mr. Stebbins also stated specifically that it was both his and Mr. Albert's understanding and expectation that the contractor would be required to excavate a spillway channel extension down to a connection with the river and that a material portion of the reach of the spillway channel extension would have to be concrete reinforced lined.

D. W. Albert (Signature)

D. W. Albert
Hydraulic Fill Engineer

H. N. Savage (Signature)

H. N. Savage
Hydraulic Engineer

2-11-35
copy/p

December 14, 1933

M E M O R A N D U M

San Diego River Project, El Capitan Feature
Spillway extension, Court judgment

The drawings and specifications which are a part of the contract between the City of San Diego and H. W. Rohl and T. E. Connolly for the construction of El Capitan Reservoir Dam, Spillway and Outlet Works, show the dimensions of the spillway to Station 7+40 with notation that "Detailed structural and hydraulic drawings for the spillway channel discharge end, are to be developed and submitted for approval by State Engineer before construction." and "Extend lining as directed by the Engineer."

The California State Engineer required that the spillway discharge channel be extended and concrete lined to Station 15+50 and that a further reach of discharge channel be excavated but not lined from Station 15+50 to the San Diego River at Station about 24+50.

H. W. Rohl and T. E. Connolly brought action (Case No. 76082) in the Superior Court of the State of California for "declaratory relief" to confirm contract requirement to construct the spillway extension below Station 7+40.

The Court, by judgment entered December 5, 1933, in Judgment Book No. 93 page 57, ordered, adjudged and decreed that the construction of the spillway channel extension west of Station 7+40 was not covered by the existing contract and that the contractor was under no legal obligation as to the construction of the spillway extension beyond Station 7+40.

F. D. Pyle (signed)

LITIGATION

HYDRAULIC FILL

5-8-34
Copy/m

1865

COPY

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF SAN DIEGO.

H. W. ROHL and T. E. CONNOLLY, co-partners doing business under the firm name and style of H. W. Rohl and T. E. Connolly,

Plaintiffs

vs.

THE CITY OF SAN DIEGO, CALIFORNIA

A municipal corporation

Defendant.

No._____

Action brought in the Superior Court of the County of San Diego, and Complaint filed in the Office of the Clerk of the Superior Court of said County.

S U M M O N S

THE PEOPLE OF THE STATE OF CALIFORNIA SEND GREETINGS TO:

THE CITY OF SAN DIEGO, CALIFORNIA, a municipal corporation,

Defendant.

You are directed to appear in an action brought against you by the above named plaintiff___ in the Superior Court of the State of California, in and for the County of San Diego, and to answer the complaint therein within ten days after the service on you of this Summons, if served within the County of San Diego, or within thirty days if served elsewhere, and you are notified that unless you appear and answer as above required, the plaintiffs will take judgment for any money or damages demanded in the Complaint, as arising upon contract, or will apply to the Court for any other relief demanded in the Complaint.

Given under my hand and seal of the Superior Court of the County of San Diego, State of California, this___ day of_____ 193___.

(SEAL SUPERIOR COURT)
SAN DIEGO COUNTY

County Clerk and Clerk of the Superior Court of the State of California, in and for the County of San Diego

By_____ Deputy.

NOTICE

APPEARANCE: "A defendant appears in an action when he answers, demurs, or gives the plaintiff written notice of his appearance, or when an attorney gives notice of appearance for him." (Sec. 1014, C.C.P.)

Answers or demurrers must be in writing, in form pursuant to rule of court, accompanied with the necessary fee, and filed with the Clerk.

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF SAN DIEGO

No._____

H. W . ROHL and T. E. CONNOLLY, etc.
Plaintiffs

vs.

THE CITY OF SAN DIEGO, CALIFORNIA, etc.
Defendant

John M. Martin and Frank L. Martin, Jr.
650 So. Spring St.
Los Angeles, Calif.
Vandike 0447
Attorney for Plaintiffs.

STATE OF CALIFORNIA)
) SS.
County of San Diego)

_____being sworn, says: I am and was at the time of the service of the summons herein, over the age of eighteen years, and not a party to the within entitled action; I personally served the within Summons on the hereinafter named defendants, by delivering and leaving with each of said defendants personally, in the County of San Diego, State of California, at the address and the time set opposite their names, a copy of said Summons attached to a copy of the Complaint referred to in said Summons.

Name of Defendants Served	City and Street Address	Date of Service
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

My fees for services are, $_____for_____miles actually traveled at_____cents per mile, $_____. Total $_____

(Signed)_____

Subscribed and sworn to before me this_____day of

_____, 193___.

County Clerk and Clerk of the Superior Court of San Diego, California, in and for the County of San Diego

By_____Deputy.

_____

Notary Public in and for the County of Los Angeles, State of California.

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF SAN DIEGO.

H. W. ROHL and T. E. CONNOLLY co-partners doing business under the firm name and style of H.W. Rohl and T. E. Connolly,

Plaintiffs

-vs-

THE CITY OF SAN DIEGO, CALIFORNIA, a municipal corporation,

Defendant.

No.

C O M P L A I N T
FOR DECLARATORY RELIEF

Come now the plaintiffs and for their cause of action for declaratory relief, COMPLAIN and ALLEGE:

I.

That the plaintiffs H. W. Rohl and T. E. Connolly now are, and at all times mentioned have been, co-partners doing business under the firm name and style of H. W. Rohl and T. E. Connolly.

II.

That the defendant The City of San Diego, California, is now, and at all times herein mentioned was, a duly organized and existing municipal corporation within the County of San Diego, California.

III.

That on or about the 23rd day of April, 1932, there was duly made and entered into by and between the plaintiffs and the defendant a contract, whereby the plaintiffs, as contractor, for the considerations therein set forth, agreed to build, erect and construct for the defendant what is commonly referred to as the El Capitan Reservoir Dam, Spillway and Outlet works. That a true and correct copy of the contract for the performance of said work, including the original plans and the original specifi-

cations for the construction of said dam is attached hereto as Exhibit "1" and is hereby referred to and made a part of this Complaint by reference the same as though fully rewritten herein.

IV.

That said dam is what is known and commonly referred to as an hydraulic fill dam. That an hydraulic fill dam is one where the fill is built of earth, sand and gravel, which materials during construction are saturated and segregated by water so that the finer particles are deposited in the center of the dam to form an impervious core, while the larger and coarser materials are deposited on the outer sides of the dam to resist the pressure of the more or less fluid core and permit its drainage and consolidation. That the material for the hydraulic fill portion of the dam is delivered along the outer flanks of the dam and washed towards the center. When the material is transported to the dam by water, through pipes or flumes, it is known as the "full hydraulic" method, and when it is delivered to the outer flanks in trucks or cars and then washed to the center of the dam by water, it is called the "semi-hydraulic" method. In either method the impervious puddle core section in the center is created by the deposition of fine material in still water, a pool known as the "summit pool", being maintained on the top of the dam and in the center. The thickness of the puddle core is determined by the width of the "summit pool". The coarse material is deposited in the areas adjacent to the pool or at the water's edge, these areas being of coarse and sandy material, are known as the "beaches", and being open and porous quickly drain and become firm and stable.

The very fine materials washed out of the beaches float out in suspension in the quiet waters of the summit pool to slowly settle and consolidate, and thus form what is known as the "impervious puddle core". The time required for the material to settle and consolidate depends upon the size of the particles deposited, the finer they are the longer time required to settle. The puddle core area, therefore, is made of a mixture of water and solids, varying from pure water at the surface to stiff, plastic mud at greater depths. This saturated mixture, being semi-fluid in character, exerts a lateral pressure against the beach section and is only restrained from flowing out by the weights of the beach areas. It is, therefore, important that the core material should rapidly drain and consolidate to avoid a rupture and failure during construction. Therefore, the most hazardous period for a dam of this type is during construction. For this reason, it is important during construction to know the rate at which the core material is consolidating. To determine this the plaintiffs constructed a steel weight weighing 6.3 lbs., which they lower into the puddle core and measure the depths at which it comes to rest. By comparing these measurements from time to time the relative rate of consolidation can be obtained.

The relative quantities in the beaches and the core must depend upon the character of material being used and the relative amounts of fine and coarse material contained in a given quantity of material. When there is a deficiency of fines in the material, the beaches will build up faster than the puddle core, and the depth of the water in the summit pool will increase. To remedy such a condition the summit pool and the puddle core must

either be narrowed up or material containing a higher percentage of fines used, or beach material from which the fines have been washed must be removed and replaced with new material from which additional fines can be obtained. When there is an excess of fines in the material, the puddle core area must be widened, or some of the fines must be wasted from the summit pool.

V.

Prior to the filing of the bid by the plaintiffs, pursuant to which the above mentioned contract was let, plaintiffs studied the Plans and Specifications, visited and examined the site for the dam, and a number of conferences were held by the plaintiffs and their engineers, with H. N. Savage, Fred D. Pyle, and Harold Wood, engineers of the City, in charge. Due to the design of the El Capitan Dam, the plaintiffs made particular inquiery of the City's Engineers in charge as to the matter of borrow pits from which the fine material could be obtained for use in construction of the hydraulic fill portion of the dam. The Contract, copy of which is attached hereto marked Exhibit "1", does not set forth any stated percentage of fines to be furnished by the contractor, or any basis for testing the hydraulic fill material to be used. The contract does direct the bidder's attention to Sheet 1 of Drawing W.D. 351 of the Plans attached hereto, which shows three designated borrow pit areas, with a notation thereon that the material in borrow pit areas A, B and C is available for hydraulic fill. The drawing shows that it is Sheet 1 of three. Sheets 2 and 3 of the same drawing were on file for the examination of the bidders in the office of the Hydraulic Engineer of the City of San Diego at the time the Call for Bids was made.

The defendant, through its engineers aforesaid, exhibited sheets 2 and 3 of said Drawings W.D. 351 to the plaintiffs and represented to the plaintiffs that the City had caused to be made an actual survey of the quantities of borrow pit material contained in the borrow pit areas A, B and C and further represented and stated that as disclosed by the City's Engineering notations endorsed on said drawings there was available in the three designated borrow pit areas 1,146,823 yards of fine material for use in the hydraulic fill. Paragraph 63 of the Specifications advised the plaintiffs that

> "Hydraulic fill material shall be derived from excavation for the dam, stripping of foundation, structures, tunnel, spillway, or borrow pits, as may be directed by the engineer."

Item 3 of the Bid Schedule informed the plaintiffs that it was estimated that 350,000 cubic yards of structural excavation would be placed in the hydraulic fill portion of the dam. Page 5 of the Specifications, setting forth the Notice Inviting Bids for the work, states that the total estimated quantity of hydraulic fill material to be placed in the dam is 1,350,000 cubic yards. The defendant represented and stated to the plaintiffs prior to the time the plaintiffs' bid was filed that there was more fine material in the three designated borrow pit areas shown on Drawing W.D. 351 than would be required in constructing the dam. Said borrow pit areas A, B and C were visited by the plaintiffs and their engineers prior to the time their bid was filed, in company with Harold Wood, the resident engineer of the defendant City, and the defendant City and its engineers and representatives aforesaid represented and stated to the plaintiffs that the material from borrow pits A, B and C had been sampled, measured and tested, and that such

material, together with the material obtained from the excavation for the structure, was suitable and adequate to complete the dam as designed. That had the defendant not represented to the plaintiffs that said borrow pit material was adequate and suitable to complete the dam, the plaintiffs would neither have bid upon nor executed the contract for the construction of said dam.

VI.

That before plaintiffs filed their bid for the construction of El Capitan Dam, the plaintiffs submitted to H. N. Savage, Hydraulic Engineer for the defendant City, their proposed method for placement of hydraulic fill material in the dam by the semi-hydraulic method, which method was approved at that time. Under date of February 1, 1933, plaintiffs, in writing, again submitted in detail to the Hydraulic Engineer their proposed method of placement of hydraulic fill material by the semi-hydraulic method. Said method was again approved by said Hydraulic Engineer, who likewise approved the installation of the machinery and equipment for use in placing the hydraulic fill material by means of the semi-hydraulic process. That in reliance upon the Hydraulic Engineer's approval of the plaintiffs' proposed method of placement of hydraulic fill material, plaintiffs, at great expense, installed the barges, pumps, hydraulic giants and other equipment required for the satisfactory accomplishment of the hydraulic fill portion of the work by the semi-hydraulic process.

VII

That on or about February 12, 1933, plaintiffs commenced the placement of hydraulic fill material in El Capitan Dam by the semi-hydraulic process. That between February 12, 1933, and October 16, 1933, plaintiffs successfully placed, under the approval

and to the satisfaction of the engineers for the defendant city, 1,225,456 cubic yards of hydraulic fill material.

VIII

That the defendant city has through its Hydraulic Engineer directed the movement of the contractor's shovels in borrow pits from day to day, and at times from hour to hour, and has required the contractor, over its protest, to put the borrow pit material containing the highest percentage of fines into the bottom of the structure, where it was not needed. That said orders on the part of the Hydraulic Engineer have been arbitrary, capricious and unreasonable, and have resulted in a very substantial waste of fines. The Hydraulic Engineer has likewise arbitrarily extended the limits of the puddle core far beyond the limits specified in the contract, and has by so doing wasted to date approximately 90,000 cubic yards of fines which the plaintiffs had a right to use and should have been permitted to use for the upbuilding of the puddle core within the limits thereof as specified in the contract. That had said Hydraulic Engineer confined the puddle core to the proper limits thereof as fixed by the contract, the 90,000 cubic yards of fines so wasted would have been ample to have completed the puddle core section of the dam.

IX.

That as a direct result of the wasting of fines by the City's Hydraulic Engineer in the manner aforesaid, and his arbitrary extension of the puddle core beyond the limits thereof as specified in the contract, and the orders of the Hydraulic Engineer requiring the plaintiffs to discontinue the semi-hydraulic method, as hereinafter alleged, the puddle core has continuously lagged behind the

upbuilding of the beach area and thereby increased the plaintiffs' construction costs to date more than $100,000.00. That the total amount of such increased construction costs cannot yet be ascertained and the amount which the plaintiffs will ultimately be entitled to collect from the defendant City on account thereof is therefore not an issue in this case, but will be made the subject of a separate action as soon as the amount of such increased construction costs can be ascertained. That the question as to whether it is the duty of the plaintiffs to refuse to follow arbitrary and unreasonable orders of the Hydraulic Engineer is an issue in this case, it being the plaintiffs' contention that the contractor need not refuse to follow arbitrary and unreasonable orders of the Hydraulic Engineer, but that the contractor may protest and follow such orders and collect from the City for all increased costs of construction on account thereof.

X.

That under date of October 16, 1933, the Hydraulic Engineer by his Order S-55 directed the contractor to change its method from the hydraulic giant method for sluicing in the hydraulic fill, which is commonly known and referred to as the semi-hydraulic method, to what is commonly known and referred to as the full hydraulic method. That upon receipt of said Order directing the contractor to change from the semi-hydraulic method, which the Hydraulic Engineer had theretofore approved, to the full hydraulic method, as set forth in said Order, the contractor immediately notified the Hydraulic Engineer that the full hydraulic method, as set forth in said Order of October 16, would not work, and that said change in method would cause extensive sand strata to come into the puddle core and render necessary a large amount

of expensive corrective work in connection with the removal thereof. That said contractor further notified said Hydraulic Engineer that the full hydraulic method which had been ordered was wrong, and that said Order would in substance require the contractor to scrap the equipment which had been purchased and installed in reliance upon the Hydraulic Engineer's approval of the semi-hydraulic method of placement, and at a very substantial expense purchase new equipment for use in placement of materials by the full hydraulic method. That said Order was arbitrary, unreasonable and an illegal attempt on the part of the Hydraulic Engineer to withdraw an approval which he had previously given and upon which the contractor had relied in the purchase and installation of the semi-hydraulic equipment, and in making its bid.

XI.

That after protesting said Order, the contractor notified the Hydraulic Engineer that he was proceeding under protest, and that he would claim damages and increased compensation from the City of San Diego to the extent that the contractor's costs were increased by the Hydraulic Engineer's arbitrary, unwarranted and illegal withdrawal of approval of the semi-hydraulic method.

XII.

That during the period between February, 1933, to October, 1933, the contractor placed by the semi-hydraulic method approximately 1,225,456 cubic yards of hydraulic fill material in the dam in full compliance with the Contract Drawings and Specifications and directions of the Hydraulic Engineer. That during said period during which the semi-hydraulic method was used by the contractor, the quality of the core and of the beaches produced was in all respects in accordance with the contract

specifications. That on or about November 28, 1933, the contractor completed the installation of the new equipment for the placing of materials by full hydraulic method as required by the Hydraulic Engineer's Order of October 16, 1933. That on or about November 28, 1933, the placing of materials in the hydraulic fill portion of the dam was commenced by the full hydraulic method and continued until December 4, 1933, on which date the contractor stopped the hydraulic work for the reason that it was discovered that the placement of hydraulic material by the full hydraulic method had caused a very substantial amount of sand to be washed into the puddle core. Under date of December 12, 1933, the contractor notified the Hydraulic Engineer that an inspection of the puddle core placed by the full hydraulic method under his order, disclosed the fact that a strata of sand had been created. The contractor further notified the Hydraulic Engineer that while the strata of sand had been caused by his order requiring the use of the full hydraulic method, that nevertheless the contractor felt that the condition should be remedied, and would at once proceed to do so, and that for all expenses occasioned thereby would hold the City responsible. Thereafter and on or about December 13, 1933, the contractor proceeded with due diligence with the removal of sand from the puddle core, and at great expense accomplished the removal thereof on or about February 8, 1934. On or about February 9, 1934, the contractor again resumed hydraulic operations by the full hydraulic method, which method again resulted in sand being washed into the puddle core, for the removal of which sand the contractor again shut down hydraulic operations and commenced corrective work on the puddle core under date of

March 21, 1934. That thereafter the work of removal of sand from the puddle core was diligently prosecuted, and the last corrective work on the puddle core in connection with the removal of sand therefrom was completed on or about April 18, 1934. That since April 18, 1934, the contractor has been endeavoring to obtain specific directions and instructions from the Hydraulic Engineer, and has been and is now being delayed on account of the failure and refusal of the Hydraulic Engineer to give specific instructions for proceeding with the work. That under date of April 24, 1934, the contractor asked the Hydraulic Engineer if the puddle core was O.K., and the Hydraulic Engineer answered that he did not know. On the same day the contractor asked the Hydraulic Engineer if he knew of anything that needed correction, and the Hydraulic Engineer answered that he did not know.

XIII.

Plaintiffs further allege that the failure of the Hydraulic Engineer to issue proper and definite instructions to the contractor relative to proceeding with the work has rendered it impossible for the contractor to proceed and comply with all orders in connection with the hydraulic fill portion of the structure. That the upbuilding of the puddle core as required by the Hydraulic Engineer from time to time has been definitely accomplished, and the depth of the water in the summit pool has been reduced so that it now meets the arbitrary, unreasonable and meaningless requirements of the Hydraulic Engineer.

XIV.

That the Hydraulic Engineer has rendered it impossible for the contractor to proceed to complete the construction of

the Dam if all of his orders are to be followed. That during the seven months' period the contractor was permitted to use the semi-hydraulic method, he successfully placed approximately 1,250,000 cubic yards of hydraulic fill in the Dam. That in the five months' period from November 28, 1933, to May 1, 1934, during which the Hydraulic Engineer has required the contractor to use the full hydraulic method, the contractor has been able to place only 66,000 cubic yards of hydraulic fill in the Dam.

XV.

The Hydraulic Engineer has issued and is now seeking to force the contractor, over its protest, to comply with each and all of the orders hereinafter set forth, each and all of which orders the contractor contends are arbitrary, unreasonable, grossly erroneous and not contemplated by the contract, relative to each of which orders there has arisen and now exists a controversy between the parties to this action. That the plaintiffs seek a declaratory judgment and decree by this Court as to whether said orders, or any of them, are proper and valid orders which it is the duty of contractor to follow. That as to orders which are unreasonable the plaintiffs seek a declaratory judgment as to its contract right to follow such unreasonable orders after having duly protested the same and to recover from the defendant City for all increased costs of construction occasioned thereby, it being the plaintiffs' contention that the contractor is privileged to protest such orders and thereafter comply with such orders and recover from the City for all increased costs but that it is likewise the privilege of the contractor to decline to comply with orders of the Hydraulic Engineer which are arbitrary, unreasonable, or not contemplated by the contract.

XVI.

That among others, the Hydraulic Engineer has given and the contractor has protested the following orders, which are arbitrary, unreasonable, grossly erroneous, not good construction practice, and not contemplated by the contract, to-wit:

1. Ordered the contractor from day to day, and at times from hour to hour, to operate his shovels at specific locations in the borrow pit areas, which orders have resulted in wasting fines by reason of the borrow pit material containing the highest percentage of fines being placed at the lower elevations of the dam where such materials were not needed instead of saving said materials for use at higher elevations of the dam, where they would be and are now needed.

2. Ordered the contractor to follow stakes set by the Hydraulic Engineer which established the width of the summit pool in such a manner as to extend the limits of the puddle core far beyond the limits as specified in the contract. The construction of said core requiring approximately 90,000 cubic yards of additional fines, which fines had they not been wasted by arbitrarily extending the limits of said puddle core, would have been practically sufficient to have completed the entire puddle core section of the dam.

3. Ordered the contractor to eliminate the coarse material originating in structure excavation, so that no portion of such coarse material could be mixed with the fine borrow pit material so as to form beaches of a gradient and character from which the fines could be

thoroughly washed into the puddle core, which order has likewise resulted in creating not only an unstable condition in the beaches, but in a substantial waste of fines, with the result that it has been practically impossible to keep the puddle core from lagging behind the upbuilding of the beach areas. This order has also greatly increased the hazards of the contractor relative to the delivery of a completed structure, by reducing the stability of the beaches.

4. Ordered the contractor to change from the semi-hydraulic method, which the Hydraulic Engineer had theretofore approved, and which had been successfully used in the placement of approximately one and a quarter million cubic yards of hydraulic fill in the dam, to the full hydraulic method, which method through actual use on the job has been definitely proved impractical of successful operation under the orders relative to which the Hydraulic Engineer has required its use by the contractor. This order has also resulted in the deposits of film or layers of clay in the beaches that increase the danger of sliding of the beaches due to internal pressures in the dam. This has greatly impaired the safety of the structure and increased the hazards of the contractor relative to the delivery of a completed structure.

5. Ordered the contractor not to remove any of the hydraulic fill material from the beaches which has heretofore been saturated, separated and placed in the hydraulic fill portion of the dam.

6. Arbitrarily fixed the width and depth of the summit pool in such manner as to render impossible the

prosecution of the work in a reasonable manner and according to good construction practice.

7. Arbitrarily established a standard of placement which requires that a six-pound weight come to rest not more than seven feet below the surface of the summit pool, and prohibited the contractor from raising the surface of the water in the summit pool more than seven feet above the elevation at which said six-pound weight comes to rest in the puddle core.

8. Ordered and directed the contractor to raise the puddle core without raising the summit pool or the beaches and prohibited the removal of any portion of the material from the beaches from which the fines had already been washed.

9. Ordered the contractor to use borrow pit material for the hydraulic fill containing not less than 50% fines passing a 200-mesh screen. There is not now and there has not existed at any time since the defendant City's call for bids any substantial amount of material in the borrow pits designated in the contract, which contains not less than 50% fines passing a 200-mesh screen. This is an attempt on the part of the Hydraulic Engineer to change the contract which plaintiffs agreed to perform by establishing a standard for acceptable borrow pit material and a standard of impervious puddle core which was not contemplated by the contract, and which it is impossible to construct by using the materials from borrow pits A, B, and C, which were designated and approved by the contract.

XVII.

Section 63 of the Contract Specifications provided in part:

> "The materials for the main body of the embankment shall be delivered near the outer edge of the embankment slopes and so manipulated that the coarser material, free from clay and silt, will remain near the outer slopes and the finer materials carried toward the center, the impervious materials being deposited next to the core wall so as to form an impervious core."

It is obvious that the contract does not mean that the word "impervious" is to be given a literal interpretation, because there is no kind of a dam core than can be built, either by the hydraulic method or by use of concrete, that would be 100% impervious. The contract does not specify either the rate of percolation, chemical analysis, percentage of fines, test by weight, screen mesh, or any other standard of impermeability for the so-called "impervious" core, except that the specifications above quoted do provide that the impervious materials are to be deposited next to the "core wall" so as to form an impervious core. It was never contemplated that the "core wall" referred to in the above quoted portion of the specifications was to be constructed of hydraulic fill materials. This "core wall" was to be constructed of concrete, reinforced with both structural and reinforcing steel. It was to extend from a considerable distance below streambed to the crest of the dam. This concrete "core wall" against which the contract provided that the contractor was to place the impervious materials so as to form the so-called "impervious core", has been eliminated by specific orders of the Hydraulic Engineer. It was stopped at approximately the streambed elevation. There is no concrete core against which the contractor can now place impervious materials so as to form the so-called "impervious core". The word "impervious" is a relative term. No dam constructed wholly of hydraulic fill material can be built that is absolutely impervious. Small detached lenses of

coarse material in the puddle core of the dam are not contrary to good construction practice and do not create a pervious condition through the puddle core. The City by its own order prevented the contractor from constructing the "reinforced concrete core wall" as provided by the original contract and specifications attached hereto as Exhibit "1". Such concrete core wall together with the impervious materials deposited next to the concrete core wall would have formed the impervious core as provided for in the contract. Such was the contract contemplation of the parties. It was never the intention of the contract that the Hydraulic Engineer should eliminate the "reinforced concrete core wall" and then increase his standard of impermeability for the so-called "impervious core" by requiring that not less than 50% of the fines should pass a 200-mesh screen. Such a requirement constitutes a radical change in the character of the work to be performed, and plaintiffs allege that they are under no obligation to at their contract unit prices furnish 50% fines for the purpose of meeting such a requirement of the Hydraulic Engineer.

XVIII.

The Hydraulic Engineer has repeatedly and arbitrarily invaded the contractor's rights by ordering the contractor to use methods prescribed by the Hydraulic Engineer. It is the plaintiffs' contention that inasmuch as the Hydraulic Engineer has by his arbitrary, unreasonable and wrong orders prevented the contractor from using the semi-hydraulic method, which method was producing satisfactory results, that the defendant City is now responsible for the results heretofore and hereafter accomplished by the contractor through use of the full hydraulic method. It is further the plaintiffs' contention that they are an independent contractor

and have the right to use such methods as constitute good construction practice. That the Hydraulic Engineer and the defendant City are, under the terms of the plaintiffs' contract, not entitled to arbitrarily withhold approval of the contractor's methods, if acting reasonably and in good faith they should be satisfied with such methods.

XIX.

It is further the plaintiffs' contention that there is no practical distinction between the present contract which is to be performed subject to the satisfaction of the Hydraulic Engineer, subject to the approval of the Common Council of the defendant City, and a contract which is to be performed to the satisfaction of the defendant City. That under the terms of plaintiffs' contract the contractor fulfills all obligations thereof by performing the work in such manner that the defendant City and/or the Hydraulic Engineer acting as a reasonable person, should be satisfied with it. That said contract calls for only such performance by the contractor as would be satisfactory to a reasonable person, and that the Hydraulic Engineer cannot arbitrarily and unreasonably claim dissatisfaction merely because the specifications contemplate that the work shall be done in a manner satisfactory to him, subject to the approval of the Common Council.

XX.

Plaintiffs further contend that the Hydraulic Engineer cannot, after approving in advance the materials located in borrow pits A, B, and C for use in the hydraulic fill, and after approving in advance the placement of hydraulic fill materials by the semi-hydraulic method, thereafter withdraw approval either

of the materials or as to the method of placement. That so long as the plaintiffs can in accordance with good construction practice perform the work by use of the semi-hydraulic method and the materials from borrow pits A, B and C, that the Hydraulic Engineer and/or the defendant have no right to demand that more expensive materials be used or that a more expensive method of placement be adopted. That the Hydraulic Engineer's attempted withdrawal of approval, either as to the materials to be used, or the method of placement, is arbitrary, unreasonable and illegal.

XXI.

That the amount to which the plaintiffs' costs have been increased and/or the amount of damages which the plaintiffs have suffered by reason of the arbitrary and unreasonable orders of the Hydraulic Engineer, cannot at this time be ascertained. That said amount is at this time unknown to the plaintiffs. That the amount of such increased compensation and/or of damages which the plaintiffs may be entitled to recover against said defendant is for said reasons not made an issue in this case but will be made the subject of a separate and independent action as soon as the same may be determined and ascertained.

XXII.

That the controversies which have arisen and now exist between the plaintiffs and the defendant relative to the hydraulic fill portion of the El Capitan Dam which plaintiffs desire to have determined in this action, are as follows:

1. What kind of an impervious core is it the duty and obligation of the plaintiffs to construct within the meaning of the Specifications since the elimination of the concrete core wall?

Plaintiffs contend that it is such a core as can be constructed by good and usual construction methods out of the materials available in the designated borrow pits upon which plaintiffs bid, and the semi-hydraulic method will produce the best core.

The defendent contends that it is a core which must contain not less than 50% fines passing a 200-mesh screen, and that the full hydraulic method should be used.

2. If an impervious core within the meaning of the Specifications is one which requires borrow pit material containing not less than 50% fines passing a 200-mesh screen, whose duty is it to obtain and furnish such materials?

Plaintiffs contend that it is the duty of the City to furnish such materials to the contractor at the City's own cost and expense, or to designate the source thereof and compensate the contractor for obtaining and furnishing such materials, as extra work, pursuant to resolution duly passed as provided for in the contract.

Defendant contends that it is the duty and obligation of the contractor to obtain and furnish such materials at his own cost and expense regardless of the source thereof.

3. If the City has extended the limits of the puddle core and designated which materials should be used therein, and has thereby wasted a substantial amount of the best fines available for the completion of the core, whose duty is it to obtain and furnish materials from outside sources to make up the deficiency due to such waste?

Plaintiffs contend that the City is responsible for materials wasted under its direction and over the protests

of the contractor, and that it is the duty of the City to either replace such materials so wasted to the extent that the same may be needed in the completion of the core, or to compensate the contractor for his increased costs occasioned thereby.

Defendant contends that it is the duty and obligation of the contractor to obtain and furnish such materials at the contractor's own cost and expense.

4. Are the orders, or any of them, mentioned in Paragraph XVI of this Complaint, unreasonable, or arbitrary, or not contemplated by the contract, or grossly erroneous, or contrary to good construction practice? If so, is it the duty and obligation of the contractor to follow such orders; or is it the duty and obligation of the contractor to decline to follow any orders that are unreasonable, or arbitrary, or not contemplated by the contractor, or grossly erroneous, or contrary to good construction practice?

5. If the contractor follows orders which are unreasonable, arbitrary, not contemplated by the contract, grossly erroneous, and contrary to good construction practice, under protest, is the contractor entitled to increased compensation to the extent that his costs are increased by following such orders under protest?

6. If the City designates the material to be used and prescribes the method of placement thereof in the hydraulic fill, is the City responsible for the results obtained? Is it the duty of the City to accept whatever kind of puddle core is produced?

The plaintiffs contend that the City is responsible for the results obtained, and is obligated to either accept

the core or to compensate the contractor for remedying the same to the extent his costs are increased by corrective work. That the contractor should be permitted to use the semi-hydraulic method.

The defendant contends that the Hydraulic Engineer has the right to designate the materials to be used and to prescribe the method of placement, and hold the contractor responsible for the results obtained, and that the contractor is not entitled to use the semi-hydraulic method.

WHEREFORE the plaintiffs pray that the Court determine the controversies between the plaintiffs and the defendant, and by declaratory judgment declare the respective rights, duties and obligations of the plaintiffs and the defendant with respect thereto; for their costs of suit, and for such other and further relief as to the court may seem meet and proper in the premises.

JOHN M. MARTIN (Signature)

FRANK L. MARTIN, JR.
Attorneys for Plaintiffs

2-8-35
copy/p

May 10, 1934

1890

City of San Diego, California
El Capitan Reservoir Dam, Spillway and Outlet Works
Contract Construction

Engineer Fred D. Pyle's report on Contractor H. W. Rohl and T. E. Connolly's complaint for declaratory relief, filed May 4, 1934.

M E M O R A N D U M

Subject: San Diego River Project, El Capitan Feature, Complaint of H. W. Rohl & T. E. Connolly filed with Superior Court. Preliminary comments by articles as indicated.

ARTICLES I, II, III - no comment.

ARTICLE IV

(1) Exception is taken to the statement

"The thickness of the puddle core is determined by the width of the summit pool."

With conditions which have existed during the construction of El Capitan reservoir dam, the statement should be qualified by the addition of the words

"less the width of the underwater slopes of the beaches."

The lower ends of the underwater slopes being that point where the slopes as determined in the usual manner by a six pound weight coming to rest in or on the hydraulic fill material, became flatter than about 1 on 3.5. The combined length of the two underwater slopes at El Capitan dam has averaged about 5 times the depth of the summit pool as determined in the usual manner.

Where the maximum depth of the summit pool at N 3200 on February 16, 1934 was 19.4 feet and the width 135 feet, with water surface at elevation 684.4. The combined length of the beaches was only 75 feet. The underwater slopes would account for about 97 feet on a basis of 5 feet for each foot of depth, leaving 38 feet for the width of puddle core as compared with theoretical width of 66.7.

Because of the relatively steep underwater beach slopes at that particular time and place, the width of the impervious puddle core as determined by study of the plotted section, was about 52 feet. This indicates that because the summit pool is wide, it does not follow that the impervious puddle core is necessarily wide.

If the depth of the summit pool was limited to 7 feet, the width of the summit pool would, on a basis of water surface at elevation 684.4 have been 96 feet or 39 feet less than it was and the width of the beaches would have been increased 39 feet or more than 50 per cent.

The fact that the underwater beach slopes were steep may have contributed to the formation of sand strata in the impervious puddle core section a few weeks later.

The portion of the hydraulic fill that is formed by the underwater slopes of the beaches differs but little in gradation analysis from the beach material except that there are layers or strata of silt depending upon continuity of hydraulic placement of materials. Shutdowns of a week or more permit the precipitation and consolidation of silt layers to the extent that the possibility of the silt being crowded out into the summit pool is decreased.

It is indicated that when borrow pit materials contain an average of 34 percent of fines by weight, that is material passing 200 mesh screen, the beaches, when constructed by full hydraulic methods, will contain from 14 to 21 percent of fines, the underwater beaches or transition section between the impervious puddle core and the beaches about 35 percent fines and the impervious puddle core where free of sand strata 50 to 95 percent, with the large majority of the samples showing 75 to 85 percent fines. Gradation analysis of the sand strata which appeared in December 1933, shows that the great majority contained from 10 to 30 percent of fines.

Except for sand strata, the impervious puddle core material has been excellent throughout the construction of the dam.

(2) Due to the lagging of the upbuilding of the puddle core in relationship to the upbuilding of the beaches which has prevailed since September 1933 and was called to the contractor's attention by letter S-47 dated September 23, 1933, the summit pool has been very wide and the beaches correspondingly narrow.

The contractor, in constructing rock embankments and in dumping material for hydraulicking, has not made full use of much beach next to the rock embankment with the result that considerable fines that should have been in the impervious puddle core were wasted by the contractor in permitting them to remain in the other portions of the hydraulic fill.

The Hydraulic Engineer has numerous times since September 23, 1933, notified and instructed the contractor to correct these unsatisfactory and dangerous conditions.

ARTICLE V.

Sheets 1, 2 and 4 of Drawing WD-351 show materials available in borrow pit areas A, B and C for hydraulic fill, also the estimated depth of available material where certain borings were made. The indicated volume of material available for the three areas A, B and C totals 1,146,823 cubic yards.

It was well known to all parties at that time that there were considerable quantities available in other areas in the same vicinity.

Over a large portion of borrow pit area A, from which the contractor has obtained material, the depth of the material was nearly twice the depth used in estimating the quantity available when drawing WD-351 was prepared.

In no place on the drawing was it indicated or intimated that the material was "fine" as stated by the contractor in the complaint.

(2) Item 5 of the schedule indicated requirement for 1,000,000 cubic yards of clay, earth, sand, gravel and other embankment originating in borrow pit for construction of hydraulic fill. In addition there was indicated in item 6 of the schedule a requirement for 70,000 cubic yards of similar material for construction of rolled embankment. The City's engineers had every reason to believe that there was sufficient material available for the construction of the hydraulic fill.

I had no personal contact on the ground with prospective bidders.

Ample borrow pit material remains to complete the hydraulic fill portion of the dam.

ARTICLE VI.

Between the time the contract was executed April 23, 1932, and February 14, 1933, the contractor was repeatedly requested to furnish the Hydraulic Engineer information as to the contractor's plan of operation to be used in placing the hydraulic fill material, which information was not furnished until February 1, 1933, by which time the contractor had most of his equipment on the ground for the semi-hydraulic placing of the material. I had no personal contact with prospective bidders as to methods of hydraulic fill construction which might be used. No written permission was given the contractor to use semi-hydraulic methods in placing hydraulic fill material.

ARTICLE VII.

The following quantities were placed in the hydraulic fill previous to October 30, 1933 and included in the October 1933 estimate and were indicated to the contractor in statement accompanying letter dated November 22, 1933:

Schedule Item	Cubic Yards
3. Excavation Class 2	216,388
7. Excavation Class 3	3,685
8. Excavation Class 4	976
9. Excavation Class 5	1,941
5. Embankment Class 2	1,009,068
Total	1,232,058

3,544 cubic yards Class 2 embankment not sorted by hydraulic means not included in estimates.

The Hydraulic Engineer, previous to October 31, 1933, by letter S-47 dated September 23, 1933, and S-53 dated October 11, 1933, had called the attention of the contractor to the lagging of the upbuilding of the puddle core behind the upbuilding of the beaches, and stated that it could not safely be allowed to continue.

ARTICLE VIII.

(1) During the time that the beach sections were wide compared with the impervious puddle core section, the contractor was directed to take no coarse sand or disintegrated granite from the borrow pits and to utilize certain proportions of the decomposed granite from

structure and spillway excavation, all in accordance with that portion of paragraph 63 of the contract specifications reading as follows:

> "Hydraulic fill material shall be derived from the excavation for the dam, stripping of foundation, structures, tunnel, spillway, or borrow pits, as may be directed by the engineer."

Notwithstanding repeated instructions and directions, the contractor used a considerable quantity of sand from the west portion of borrow pit area.

(2) Except for coarse sand in the extreme westerly portion of borrow pit area A and disintegrated granite underlying all borrow pit areas at various depths, analysis of material have not shown much variation in the amount of fines in one portion of the areas as compared with another but do show somewhat larger percentage of fines than obtained from the analyses made before the work was advertised.

(3) The Hydraulic Engineer has not extended the limits of the impervious puddle core at any time beyond the limits specified in the contract specifications. Stakes and markers have been set at various times for the edge of the summit pool. (See 1 Article IV).

(4) It is not known that any fines were wasted because of the instructions of the City, but the contractor has wasted fines by (a) not accomplishing the upbuilding of the lagging puddle core in its relationship to the beaches; (b) excessive quantities of hydraulic fill material left adjacent to the rock embankments without proper hydraulicking and removal of fines; (c) insufficient saturation and washing of the hydraulic fill material which resulted in much fine material being left in the beach section which should have been washed into the impervious puddle core section.

(5) On October 18, 1933, with water surface of the summit pool at elevation 681, there were 31,480 cubic yards of water and soft mud above the bottom of the pool determined in the usual manner by a six-pound weight of which only 9000 cubic yards were below elevation 674, indicating that the impervious puddle core lacked only 9000 cubic yards of material to change it from an unsatisfactory depth of 15 feet to a satisfactory depth of about 7 feet. If this had been properly brought up, the width of the pool could have been greatly decreased and the length of the beaches correspondingly increased, which would have increased the area available for hydraulicking and for depositing the coarser materials, decreased the amount of fines required by limiting the transition area between the beach and the impervious puddle area and would have materially reduced the danger of sand strata forming in the impervious puddle core section.

ARTICLE IX.

(1) All orders and instructions were issued in accordance with the provisions of the contract specifications.

(2) Change from semi to full hydraulic method commented on under next article.

ARTICLE X.

(1) The contractor was not producing satisfactory results with the semi-hydraulic method in the opinion of the Hydraulic Engineer and in accordance with the contract specifications he directed the contractor by letter S-55 dated 10-16-33 to change to full hydraulic.

(2) The contractor in letter dated October 25, 1933 in reference to letter S-55 made no statement that the full hydraulic method would not work or that it would cause extensive sand strata in the puddle core.

(3) The contractor did in letter dated October 25, 1933 state that letter S-55 would require the contractor to scrap one set of equipment and purchase another. However the machinery and equipment during placing of material with semi-hydraulic methods has been practically all in use in placing material by the full hydraulic method.

(4) It was my understanding that the contractor has permission to use the semi-hydraulic method in the first portion of the hydraulic fill and to the extent that the results were satisfactory to the Hydraulic Engineer.

ARTICLE XI. No comment.

ARTICLE XII.

(1) The material in the impervious puddle core section, except for sand strata has been satisfactory. The material in the remaining portion of the hydraulic fill while passable contained more fines than was desirable especially in view of the lagging of the puddle core section and the increasing hazard of the formation of sand strata in the puddle core.

(2) The contractor was notified on December 4, 1933 at 7:55 PLM. letter S-72 to immediately discontinue his use of material exclusively from borrow pit area A and/or B and to comply with letter S-63 dated November 20, 1933 which cited letter S-57 dated October 20, 1933 reading in part as follows:

> ". . . You are hereby directed and required to immediately secure, furnish and place suitable fines of clay and silt material in the hydraulic fill portion of the dam to accomplish the upbuilding of the puddle core. . . ."

The contractor did not change his methods or discontinue placing of hydraulic fill material until 9:30 A.M. the following day, by which time an extensive sand stratum had formed under about 80 percent of the puddle core section.

(3) Had the contractor properly followed the hydraulic Engineer's instructions, the formation of sand strata could have been prevented.

(4) The contractor did not inform the City that he expected to hold the City responsible for cost of removing the sand strata. In fact, in his office on December 20, 1933, before the City's Consulting Engineer L. C. Hill, Assistant Deputy State Engineer George W. Hawley, State Geologist Fred C. Herrmann, State Senior Engineer of Dam Inspection Gerald McKinlay, City's Engineers Wood, Albert and

Pyle, Contractor's Engineer E. Alan Rowe, Contractor T. E. Connolly stated that there was sand in the puddle core and that he proposed to take it out as quickly as possible, but if it happened again it would be up to the City. The contractor has acknowledged that he depended too much on Mr. Greely who was supposed to know all about hydraulic fill construction and that Mr. Greely had gone to Yuma and come back with a headache and everything was haywire.

(5) The contractor did not commence to remove sand until January 5, 1934 or 30 days after he discontinued placing hydraulic fill and did not complete the removal until February 6, 1934.

(6) The contractor, before undertaking the second period of placing hydraulic fill material, was notified on February 8, 1934 letter S-88, reading in part as follows:

> "No objection will be offered to the Contractor immediately accomplishing the upbuilding of the lagging impervious core section of the El Capitan Dam with suitable fine materials from local borrow pits and adjacent areas, by full hydraulic process, provided the excess of the coarse sand is removed and wasted from such local material incident to its treatment in the "hog box".

Contractor T. E. Connolly, on February 7, 1933, told the City's Consulting Engineer Louis C. Hill that he expected to operate his equipment and the hydraulic fill materials in such a way that much of the coarser material would not reach the dam or would be removed from the dam and that he expected to bring up the puddle core with the extra fines thus saved. This the contractor did not do to the extent that he told Mr. Hill he would.

(7) The contractor was repeatedly advised by the Hydraulic Engineer in writing - February 23 S-90; March 6, S-93; March 13, S-95; March 17, S-96; March 17, S-97 - as to the condition of the summit pool during the second period of full hydraulic operations and the formation of sand strata all of which letters the contractor disregarded. The contractor was notified by letter March 21, 1934 S-98 to discontinue the placing of hydraulic fill material until the sand strata condition then existing was corrected.

On March 9, 1934 Contractor T. E. Connolly in the presence of City's engineers D.W.Albert and Fred D.Pyle, City Attorney C.L.Byers and others, said that the City's engineers all had a new disease "sanditus". He was told of the possibility of sand slides into the impervious puddle core section and he replied to the effect that it was his lookout and if sand got in it would be up to him to get it out. On March 10 sand about 3 feet deep was found in the impervious puddle core section vicinity N3200 to N3400 extending practically across the impervious puddle core section.

(8) The correction of the sand strata condition has not been completed to the satisfaction of the Hydraulic Engineer. Mr. T. E. Connolly was advised on May 1, 1934 by the Hydraulic Engineer in the presence of Assistant City Attorney H.B.Daniel and Engineer Fred D. Pyle that the condition of the impervious puddle core section of the dam as indicated by comprehensive analysis of samples, did not justify its approval by the Hydraulic Engineer; and that provided the contractor would furthermore run his core mixing motator machine

effectively in depth in elevation 672 or as required and for the entire length of the summit pool from abutment to abutment, and on both sides of the central alignment of the structure to the satisfaction of the Hydraulic Engineer, the Hydraulic Engineer would approve the work for payment subject to the State Engineer's deeming the structure to be safe. This the contractor has not done.

ARTICLE XIII.

(1) Proper and definite instructions and orders have been issued by the Hydraulic Engineer from time to time but many of them have not been complied with by the contractor.

(2) The Hydraulic Engineer, by letter dated March 6, 1934, S-93, notified the contractor not to raise the level of the surface of the summit pool (then at elevation 690.4) until the upbuilding of the puddle core to within about 7 feet of the surface of the pool as indicated in the usual manner by a 6-pound weight coming to rest, had been accomplished. The contractor within a few days raised the water surface to 691.5 and made no change in his method of operation.

(3) The depth of the summit pool on May 1, 1934 varied from 6.5 to 9.5 feet, with the water surface at elevation 690 or about 1.5 feet below the normal water surface as compared with the elevation of the beaches when hydraulic operations were stopped.

(4) The purpose of controlling the depth of the puddle core is to increase the length of the beaches and to reduce the length of underwater beaches and thus be able to secure the maximum amount of fines for use in the puddle core, also to reduce the hazard as to formation of sand strata.

ARTICLE XIV.

(1) The contractor may proceed at any time after correcting the unsatisfactory condition of the puddle core as to sand strata. The contractor has carried on no corrective work since April 17, 1934.

ARTICLE XV. Except for discussion as above, this is a legal problem.

ARTICLE XVI.

(1) There remains in borrow pit areas A, B, C and vicinity ample material to complete the dam equal in fines to the material that has been removed; and

(2) The excessive limits of the summit pool objected to by the contractor were due entirely to the excessive depth of the summit pool. Any narrowing of the summit pool before the upbuilding of the lagging puddle core would have resulted in a decrease in width of the impervious puddle core section.

(3) The Hydraulic Engineer desired the use of the maximum amount of coarse material from structure excavation in the hydraulic fill as such use would materially reduce the total cost of the completed dam. Spillway excavation to the extent of 190,623 cubic yards (consisting principally if disintegrated granite) was placed in the hydraulic fil The placing of this material was discontinued in order to give the contractor an opportunity to accomplish the upbuilding of the lagging puddle core.

(4)
a. Reasons for order to change to full hydraulic construction given in comments on Article X.

b. Where films or layers of silt exist on or in the beaches, they are the result of imporper workmanship and conduct of the work and not of the full hydraulic method of placement of materials.

(5) Letter of October 19, 1933 S-56 was issued to stop the contractor from digging a deep trench in the downstream beach. The contractor was permitted to remove material from the beaches in removing the sand strata which formed in the first week in December and his operations following that time.

(6) See comments under Article IV.

(7) See comments under Article IV.

(8)
a. The contractor could have complied with letter of March 6, 1934 S-93 by cutting down the beaches, placing suitable fines in the summit pool or by a combination of these two methods.

b. The contractor has not been restricted in his washing of beach material or in his movement of beach material since undertaking the removal of sand strata in January 1934.

(9)
a. Hydraulic Engineer has not at any time ordered the contractor to use borrow pit material containing not less than 50% fines for construction of hydraulic fill. In letter of January 24, 1934 S-85, the Hydraulic Engineer states that the proof of the pudding is in the eating, i.e. the actual tests of the material placed in the impervious puddle core will determine the fitness of borrow pit material.

b. No standard has been established for acceptable borrow pit material. If the contractor used poor material he would encounter certain difficulties which would be expensive for him to overcome. If the contractor used better material he would have less difficulties to overcome but the material may cost him more. The question of which material, except for the utilization of structure excavation required by the City, is one to be decided by the contractor.

c. No standard has been set for puddle core material as all of the puddle core material placed to date, except for sand strata and lenses, has been satisfactory. As the sand strata is disturbed in the process of removing or mixing, the percentage of fines in the strata increases. On February 7, 1933 when puddle core material containing more than 40 per cent passing 200 mesh screen was at least 20 feet wide in the vicinity of the axis of the dam and the remaining material in the strata located along the beaches contained 30 to 40 percent of material passing a 200 meah screen, the Hydraulic Engineer and the State's engineers deemed that the sand strata was sufficiently corrected to assure the safety of the structure and permitted the contractor to resume the placing of hydraulic fill. In the corrective work previous to February 7 the work was done in such manner as to avoid possibility of fingers of sand extending across the impervious puddle core.

In the corrective work performed since the second sand strata condition developed, the contractor has operated his sand mixing equipment in such a manner that there is no definite assurance that there are no fingers of sand extending across the impervioud puddle core which may have been left between zones of operation of the machine in working crosswise of the summit pool.

d. Not impossible to have constructed a satisfactory impervious puddle core with materials from borrow pit areas A,B,C and vicinity to the indicated width with full hydraulic methods and to the height the contractor has now constructed the hydraulic fill.

c. Exclusive use of materials from borrow pit areas A,B, and C were not designated by the contract. The areas were indicated on contract drawing WD-351 Sheet 1 of 3 as areas of material available for hydraulic fill. There was no approval as to the quality of material in these areas, its gradation, or suitability for the work. Availability of material for the construction of the rock embankment was not shown or stated. Drawing WD-351 indicated where material was available and did not show all the material that was available in the vicinity. It is indicated in paragraph 53 of the contract specifications that it is optional with the contractor as to where he secures borrow pit and quarry materials.

ARTICLE XVII.

(1) The contractor was aware before bidding that the concrete core wall was to be omitted from the impervious puddle core section except in the vicinity of the foundation.

(2) The materials in the impervious puddle core section of the dam as constructed have been satisfactory except for the formation of sand strata and lenses which are specifically prohibited in paragraph 63 of the contract specifications. The sand strata have resulted not because of the full hydraulic method used by the contractor but because of his operations.

ARTICLE XVIII. Subject to above comments these are legal problems.

ARTICLES XIX, XX, XXI. do.

ARTICLE XXII. This article contains a summary of the items of the complaint to which all of the foregoing comments apply.

GENERAL COMMENTS

Burden of proof on contractor. Contract specifications state in many places that work is to be conducted as directed by the Engineer, or to the satisfaction of the Engineer, and the work done is to be to the satisfaction of the Engineer. The complaint has many points in common with those set forth in complaint of M. M. Guho and M. Miller against the City of San Diego in reference to the construction of the tunnels of the Otay Reservoir-San Diego Second Main Pipe Line which was decided favorably to the City on consideration by the Court of the testimony of the plaintiffs and the contract and without the necessity of introduction of testimony by the City.

Fred D. Pyle
Engineer

FDP/p

2-7-35
copy/p

May 17, 1934

M E M O R A N D U M

Subject: San Diego River Project, El Capitan Feature
Complaint of Contractor H. W. Rohl and
T. E. Connolly, stipulations

1. I interviewed Deputy City Attorney H. B. Daniel May 16, 1934 relative to proposed stipulations in connection with the complaint of H. W. Rohl and T. E. Connolly, contractors for the construction of El Capitan Reservoir Dam, Spillway and Outlet Works, as filed in Superior Court, stipulations as submitted by the City Attorney on May 9 and modified in this office.

2. Mr. Daniel was considerably "put out" about the increase in the estimate of fines which might have to be imported, saying that it had grown from less than 10,000 cubic yards to 10,000 cubic yards, then by L. C. Hill to 25,000, then by you in T. E. Cosgrove's office to 40,000, and now 50,000.

3. He was told that any estimate of 10,000 cubic yards was only for bringing up the lagging impervious puddle core before about February 8, 1934 and did not include material that might be required to keep the puddle core from lagging as the upper portion of the dam was constructed.

4. Also, that if the work was handled correctly, 25,000 cubic yards might complete the dam;

5. But if the contractor continued as in the past, 40,000 cubic yards might be required; and

6. If the contractor had an extra bonus, i.e. extra work order, full rentals for equipment plus 15 per cent, he might import as much as 50,000 cubic yards.

7. Mr. Daniel said that if the contractor brought in 50,000 cubic yards of fine material, there would be so much fine material the dam would not be safe. He was advised that if the contractor received a bonus on the last portion of fine material brought in, the contractor might cut his borrow pits deeper and bring in large quantities of disintegrated granite which would tend to overcome the excess fines in the beaches but would greatly increase the costs.

8. Mr. Daniel said that a stipulation was in the nature of a compromise and that if no limit of materials to be imported was established or it was so high as to prevent the contractor from receiving benefits, there would be no compromise and the contractor would probably not enter into the stipulations.

9. Mr. Daniel stated that in his opinion the contractor could not recover costs for material imported, except for the amount indicated as being in excess of the compromise amount.

10. He thought there was some improvement in the engineering wording of paragraph II but that the legal portion as to a compromise was overlooked by this office.

11. He objected to proposed striking out of references to extra work orders in paragraphs IV and V stating that this inclusion was purely legal and necessary if the option was to be completed as a compromise.

Fred D. Pyle
Engineer

FDP/p
cc D. W. Albert

5-23-34
copy/p

COPY

1901

May 19, 1934.

Mr. H. N. Savage,
Hydraulic Engineer,
City Hall,
San Diego,
California.

Re: El Capitan Dam,
Spillway and Outlet Tunnel Works -

My dear Mr. Savage:

Today Messrs. Byers and Daniels have been in conference with me going over tentative draft of proposed stipulation providing for continuance of construction work on hydraulic fill without altering mutual rights and obligations of City and Contractor. We have exerted our best efforts to arrive at a draft that will protect the rights of both parties but at the same time allow the work to proceed.

The provision of the stipulation which gave us the most trouble is contained in Paragraph II. As it now reads, assuming the Contractor will sign the stipulation, he undertakes to bring in 25,000 cubic yards of rich material, depositing it as you may direct. There is a specific provision that the production and deposit of this 25,000 cubic yards of rich material shall not be construed as an admission by the Contractor that he is required under the contract to do this; nor, as an admission by the City that he will not be required to bring in more material. In other words, after the 25,000 cubic yards are brought in and used, and if found to be insufficient, we will be in the same position we are today, namely, the Contractor will have made no admissions; neither shall the City. So far as I am able to understand, the stipulation is acceptable, and with this understanding I have signed the original and incorporated a place for your approval. A copy is enclosed herewith for your files.

With sincere feelings of esteem I am,

Very truly yours,

T. B. COSGROVE

T. B. COSGROVE

TBC:TM
ENC.

IN THE MATTER OF THE CONSTRUCTION OF THE EL CAPITAN DAM, SAN DIEGO COUNTY, CALIFORNIA.

DOCUMENT NO._____ OFFICIAL FILE, CITY CLERK, SAN DIEGO.

S T I P U L A T I O N.

STIPULATION PROVIDING FOR CONTINUANCE OF CONSTRUCTION WORK WITHOUT IN ANY MANNER ALTERING MUTUAL RIGHTS AND OBLIGATIONS OF THE PARTIES HERETO.

WHEREAS, construction work upon the hydraulic fill section of the El Capitan Dam, Spillway and Outlet Works, has ceased because of disagreement between the undersigned as to the respective and mutual rights and obligations of the parties to this stipulation, and,

WHEREAS, it is the desire of the parties immediately to resume construction work upon said hydraulic fill section without in any manner altering or changing the respective and mutual rights and obligations of the parties hereto,

NOW, THEREFORE, in order to provide for the immediate resumption of said construction work under the terms of said contract-specifications, but at the same time preserving to the undersigned, and to each of them, all rights and without relieving either of said parties of any obligations now existing or hereafter arising.

IT IS HEREBY STIPULATED AND AGREED, by and between the undersigned, as follows:

I.

That the contractor will undertake the corrective work suggested in the letter of the Hydraulic Engineer No. S-108, dated May 12, 1934, using the methods therein mentioned, which said letter reads as follows:

"May 12, 1934

Messrs. H. W. Rohl and T. E. Connolly S-108
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

Subject: San Diego River Project, El Capitan Feature, Hydraulic fill, correction of sand strata.

Gentlemen:

Receipt is acknowledged of your letter dated May 7, 1934, requesting information as to wherein the impervious puddle core section of the El Capitan Dam does not comply with the contract specification requirements.

Analysis of samples taken from the impervious core section indicate a number of sand strata and/or lenses still projecting into the impervious puddle core sections from both the upstream and downstream beaches, contrary to the specific requirement of the specifications.

You were comprehensively and specifically advised in my office May 1, 1934 as to this condition.

As then stated to you I again state that provided you will run your core mixing rotator machine, or other efficient machine, effectively in depth to elevation 672, or to a lesser depth if directed, and for the entire length of the summit pool from abutment to abutment, and on both sides of the central alignment of the structure, zones of operation of machine runs to be separated by upwards of 15 feet, all to the satisfaction of the Hydraulic Engineer; the Hydraulic Engineer will approve the work subject to the State Engineer's deeming the structure to be safe.

Very truly yours,
H. N. Savage
H. N. Savage
Hydraulic Engineer.

HNS/f"

II.

That as soon as the corrective work mentioned in Paragraph I hereof has been accomplished and approved by the City's Hydraulic Engineer, the contractor immediately thereafter will secure, furnish and place as the work progresses, and as the Hydraulic Engineer may direct, twenty-five thousand (25,000) cubic yards, or so much thereof as may be necessary in the opinion of the Hydraulic Engineer, of material rich in suitable fines

of clay and silt from sources other than borrow pit areas A, B, C and vicinity, to accomplish and maintain the upbuilding of the puddle core in its relationship to the beaches, as the City's Hydraulic Engineer may from time to time direct. Such richer material shall contain not less than sixty percent (60%) of fines passing a two hundred (200) mesh screen.

The said material richer in fines shall be mixed for placement in the hydraulic fill section of the dam with material from borrow pit areas A, B and C and vicinity, or with similar material thereto which the contractor may furnish from sources other than said borrow pit areas, in such proportions as the City's Hydraulic Engineer may from time to time direct; or, on request of the City's Hydraulic Engineer, such richer material shall be placed directly in the puddle core section of the dam.

IT IS ALSO EXPRESSLY STIPULATED AND AGREED, by and between the parties hereto, that the securing and placing of said twenty-five thousand (25,000) cubic yards of material rich in suitable fines of clay and silt, as hereinbefore in this paragraph specified, shall not be construed as an admission by either party that further and additional material may not be required to complete the construction of said dam; neither shall it be construed as an admission by either party that the cost or expense of securing further or additional richer material in the event that further or additional richer material is necessary to be obtained, shall be borne by the contractor or by The City of San Diego.

III.

That the contractor will proceed to place the hydraulic fill material, except when otherwise ordered by the City's

Hydraulic Engineer, by the full hydraulic method in conformity with the order of the City's Hydraulic Engineer contained in his letter No. S-55, dated October 16, 1933, reading as follows:

"October 16, 1933

Messrs. H. W. Rohl & T. E. Connolly S-55
Contractor El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

Subject: San Diego River Project, El Capitan Feature, Hydraulic Fill.

Gentlemen:

You are hereby directed to discontinue the dumping of dry material for hydraulic fill on the inside slopes or on the top of the rock embankments of El Capitan Dam for sluic- into the hydraulic fill, and instead thereof, to hereafter place the material by the full hydraulic process by fully saturating and running the material through properly constructed transporting equipment--pipes or flumes--on to the outer reaches of the hydraulic fill.

Very truly yours,
H. N. Savage
H. N. Savage
Hydraulic Engineer."

HNS/f

and will continue so to do as long as said process is required by the Hydraulic Engineer of the City of San Diego.

IV.

IT IS STIPULATED AND AGREED that in consenting to perform the work mentioned in Paragraphs numbered I, II and III of this stipulation, or in performing said work in the manner therein provided, the contractor does not waive any rights which he may now have under the contract-specifications to claim additional compensation therefor on account of increased cost or as extra work; and, in event it shall be determined by final decree or judgment in any action now pending, or in any action hereafter instituted, that all or any portion of the work referred to in Paragraphs numbered I and II hereof constitutes

extra work as that term is used in said contract-specifications, then, and in that event, this stipulation shall have the same effect as though Work Orders had been issued and approved as provided for in Paragraph XIV of said contract-specifications for such portion of said work finally determined to constitute extra work.

V.

IT IS FURTHER STIPULATED AND AGREED that The City of San Diego in entering into this stipulation does not in any manner, or to any extent, directly or by implication, concede or admit any right of the contractor to claim additional compensation either by reason of increased costs or for extra work in connection with the work hereinabove referred to; nor does said City in any particular whatsoever waive any right it now has to require said work to be performed strictly in accordance with the contract-specifications and at the unit prices specified therein.

VI.

It is understood by both parties hereto that this stipulation is entered into for the sole purpose of progressing the work on said El Capitan Dam, Spillway and Outlet Works during the pendency of now pending or contemplated litigation and that neither this stipulation nor the performance of work hereunder shall be deemed a waiver of or prejudicial to any existing legal rights of either party under the contract-specifications relative to the subject-matter hereof.

Dated this_____day of May, 1934.

_____

_____

Attorneys for Contractor.

City Attorney

Deputy City Attorney

Special Counsel.
Attorneys for The City of San Diego.

Pursuant to a resolution of the Council of The City of San Diego, duly adopted, the foregoing stipulation is authorized, accepted and approved by said City, and in witness whereof a majority of the members of the Council of said City have hereunto subscribed their names.

APPROVED:

Hydraulic Engineer of The City of San Diego.

LITIGATION

EXCAVATION CLASSIFICATION

8-27-34
Copy/m

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF SAN DIEGO

No. 78204

H. W. ROHL and T. E. CONNOLLY, co-partners doing business under the firm name and style of H. W. Rohl and T. E. Connolly,

Plaintiffs,

-vs-

THE CITY OF SAN DIEGO, CALIFORNIA, a municipal corporation,

Defendant.

COMPLAINT
FOR DECLARATORY RELIEF

Comes now the plaintiffs and for their cause of action for declaratory relief, COMPLAIN and ALLEGE:

I

That the plaintiffs H. W. Rohl and T. E. Connolly are now, and at all times herein mentioned have been, co-partners doing business under the firm name and style of H. W. Rohl and T. E. Connolly.

II

That the defendant THE CITY of San Diego, California, is now, and at all times herein mentioned was, a duly organized and existing municipal corporation within the County of San Diego, California.

III

That on or about the 23rd day of April, 1932, there was duly made and entered into by and between the plaintiffs and the defendant a contract, whereby the plaintiffs, as contractor, for

the consideration therein set forth, agreed to build, erect and construct for the defendant what is commonly referred to as the El Capitan Reservoir Dam, Spillway and Outlet Works. That a true and correct copy of the contract for the performance of said work, including the original plans and the original specifications for the construction of said dam is attached hereto as Exhibit "1" and is hereby referred to and made a part of this Complaint by reference the same as though fully rewritten herein.

IV

The excavation and embankment required for the construction of the El Capitan Dam for the City of San Diego is covered by the first 14 items of the Bid Schedule, as set forth at pages 13 and 14 of Exhibit "1". Item 16 of the Bid Schedule is for backfill and no controversy exists relative to this item. Schedule Items #4 and #6 relate to excavation and embankment to be placed in rolled fill and no work has been done to date that falls under this classification.

The detailed specifications for excavation and embankment items are contained on pages 31, 32, 33, 34 and 35 of the contract specifications and include specification items 51 to 66 inclusive. The excavation is divided into 5 classes as provided in paragraph 54 of the specifications.

Class 1. Solid rock which shall include, except Class 3, 4 and 5, excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting, and all detached masses of solid rock more than one cubic yard in volume.

Class 2. All earth overburden, sand, gravel and other excavation not included in Class 3, 4 and 5.

Class 3. Excavation in main cutoff trench under the dam.

Class 4. Excavation in cutoff trenches under the spillway.

Class 5. Excavation in outlet tunnel excepting excavation in cut and cover section and approach and outlet sections.

V

Excavation Classes 3, 4 and 5 were for definitely specified portions of the structure and for these particular features no classification between earth and rock was to be made in determining the payment for excavation. However, in computing the pay quantities for embankment items it is necessary to determine the disposition and quantity of this material that went into the rockfill embankment and the hydraulic fill portion of the dam. Excavation classes 1 and 2 covered all excavation required for the construction of the dam and pertinent structures except those items covered by Classes 3, 4 and 5 and excavation for borrow pits and quarry excavation. For Classes 1 and 2 it is necessary to measure and classify the excavation between earth and rock and also to determine and measure the quantities of such excavation that were placed in the hydraulic fill portion of the dam, the rockfill embankment or wasted.

VI

Embankment items were divided into two classes as follows:

Class 1. Rock embankment originating in borrow pit only.

The material included in this classification was all obtained from the quarry.

Class 2. Clay, earth, sand, gravel and other embankment, except Class 1, originating in borrow pit only.

The material included in this class was all obtained from borrow pit areas A, B and C as outlined and specified in the

specifications and contract drawings or from other depsits of similar material in the immediate vicinity of the work, or from spoil banks of wasted excavation.

VII

In the bidding schedule, payment for excavation and embankment was provided in the following items, eliminating those items relative to roll fill embankment of which no work has been done to date.

Item 1. Excavation Class 1. Solid rock originating in structure excavation including placing and sorting in the dam, for which the contractors bid $1.00 per c.y.

Item 2. Embankment Class 1. Rock originating in borrow pit only, including placing and sorting in dam, measured in embankment, for which the contractors bid $1.00 per c.y.

Item 3. Excavation Class 2. Earth overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill, for which the contractors bid $ .40 per c.y.

Item 5. Embankment Class 2. Clay, earth, sand, gravel and other embankment originating in borrow pit only including sorting and placing in hydraulic fill, measured in embankment, for which the contractors bid $ .40 per c.y.

Item 7. Excavation Class 3. Cutoff trench excavation under the dam including placing and sorting in the dam, for which the contractors bid $3.00 per c.y.

Item 8. Excavation Class 4. Cutoff trench excavation under the spillway including placing and sorting in the dam, for which the contractors bid $2.00 per c.y.

Item 9. Excavation Class 5. Outlet tunnel excavation excepting open cut excavation and including placing and sorting in the dam for which the contractors bid $5.00 per c.y.

Item 10. Excavation Class 1. Solid rock originating in structure excavation and wasted, for which the contractors bid $1.00 per

Item 11. Excavation Class 2. Earth overburden, sand, gravel and other excavation originating in structure excavation and wasted, for which the contractors bid $ .25 per c.y.

Item 12. Excavation Class 3. Cutoff trench excavation under the dam and wasted, for which the contractors bid $3.00 per c.y.

Item 13. Excavation Class 4. Cutoff trench excavation under the spillway and wasted, for which the contractors bid $1.50 per c.y.

Item 14. Excavation Class 5. Outlet tunnel excavation excepting open cut excavation, but wasted, for which the contractors bid $5.00 per c.y.

VIII

Payment for the five clawses of excavation required was to be divided into two classes, First, that portion placed in the dam, covered by bid items 1, 3, 7, 8 and 9, and Secondly, that portion wasted, covered by schedule items 10, 11, 12, 13 and 14. The prices bid for placing material in the dam and for wasting were identical for excavation Classes 1, 3 and 5. For excavation Class 2, the price bid for that portion placed in the dam was 40 cents per cubic yard and the price bid for that portion wasted, was 25 cents per cubic yard. For excavation Class 4 the price bid for that portion placed in the dam was $2.00 per cubic yard

and for that portion wasted $1.50 per cubic yard. The above prices for those portions of the five classes of excavation placed in the dam were to be paid irrespective of the location in the dam in which they were placed, whether rockfill or hydraulic fill.

IX

The plaintiffs allege that the monthly estimates for work performed to date are arbitrary, unreasonable, not in compliance with the contract and grossly erroneous in the following particulars:

(a) The City's Hydraulic Engineer has not complied with the specifications relative to the measurement and payment of excavation and embankment items.

(b) The excavation and embankment quantities were not measured as provided in the specifications and in numerous instances were arbitrary guesses by the Hydraulic Engineer or his assistants.

(c) The Hydraulic Engineer in determining the pay quantities for excavation wasted for a large part of the work did not measure such wasted material in spoil bank as provided in the specifications, but made an arbitrary and incorrect assumption as to the amount that such material would swell when placed in the spoil bank.

(d) The classification of the excavation for the spillway structure and that part of the main dam excavation not shown on the plans, but ordered by the City pursuant to requirements of the State Engineer, between earth and rock is grossly erroneous, not in compliance with the contract and gives no consideration to the required method of excavation which under the contract was to determine the proper classification and basis of payment.

X

Paragraph 55 of the Detail Specifications - Measurement of and Payment for Excavation and Embankment - is contained on pages 21 and 32 of the printed specifications, and is as follows:

"55. Measurement of and Payment for Excavation and Embankment:- All excavation for the dam or structure shall be measured to the neat lines shown on the drawings or prescribed by the engineer. Measurement and payment for the various items of excavation and embankment, classified in accordance with these specifications will be as follows:

(a) All approved material excavated from the dam, foundations, tunnel and shaft, cutoff trenches, spillway or other structures, for the dam, stripping for the base of the dam, etc., excepting borrow pits, if placed and sorted in the dam, in accordance with the engineer's directions, will be measured for payment in excavation. The quantity of materials placed in embankment will be computed by subtracting spoil bank material measured in spoil bank from excavated materials measured in excavation. Payment will be made at the respective unit prices bid which shall include the cost of excavation, conveying, placing, sorting and compacting in hydraulic fill, rolled embankment or rock embankment.

(b) All approved material excavated from the dam, foundation, tunnel and shaft, cutoff trench, spillway or other structures, for the dam or stripping for base of dam, etc., excepting borrow pits, but wasted will be measured for payment in spoil bank. Payment will be made at the unit prices bid which shall include the cost of excavation and wasting where directed by the engineer.

(c) All approved material excavated from borrow pits, if placed and sorted in the dam in accordance with the engineer's directions, will be measured for payment in embankment in the dam to the lines and grades shown on the drawings or established by the engineer in the field, and payment will be made at the respective unit prices bid which shall include the cost of excavation, conveying, placing, sorting and compacting in the dam and all labor and operations. No payment will be made for materials wasted from borrow pits."

XI

The first monthly progress estimate for the construction of the El Capitan Dam was for work performed during the month of June 1932. To date 24 monthly progress estimates have been

received, the last being for work performed during April, 1934. During this period the City's Hydraulic Engineer made several changes in his methods of computing the earth work quantities and interpretation of paragraph 55 above.

On November 15, 1932, the contractor duly requested in writing a statement of the quantities and classifications between successive stations for earth work performed up to and including Estimate No. 6 which included all work performed to November 1, 1932. On receipt of this statement the contractor, under date of November 29, 1932, duly filed a written protest to such estimate as to quantities, methods of computation and classification. The contractor from time to time notified the Hydraulic Engineer both verbally and in writing that the classification and methods of measuring and computing the quantities for excavation items were not in accordance with the specifications and that excavation wasted was not being measured as provided in the specifications.

XII

On November 14, 1932, the contractors Rohl and Connolly appeared before the City Council of San Diego in person and again protested the methods of computation and measurement used to date. Mr. Savage, The Hydraulic Engineer, was present at this meeting and admitted to the Council and the contractors that his estimates were in error and stated that they would be corrected in the next estimate. However, this was not done and it was not until the issuance of the estimate for work performed to and including December, 1932, that the methods of computing the pay quantities were changed. The method of computation used for this revised estimate was still not in accordance with the specifications and th

contractors continued to duly protest in writing each monthly estimate as provided by the contract. On March 21st, 1933, the City Attorney rendered a legal opinion to the City Council and the Hydraulic Engineer as to his interpretation of the specifications, a true copy of which opinion is hereto attached marked Exhibit "2" and made a part hereof by reference.

XIII

After receipt of the Opinion of the City Attorney and under dat of April 20, 1933, the Hydraulic Engineer verbally agreed with the contractors to change the method of measurement and computation theretofore used in determining the amount of payment for excavation and embankment items and to prepare and deliver to the contractors a correct estimate and progress payment measured and computed in accordance with the terms of the contract specifications for all work performed with the terms of the contract specifications for all work performed prior to April 1, 1933. At that time and in consideration thereof it was verbally agreed by and between the City and the contractors that the contractors would sign and deliver to the City a written memorandum, which memorandum was in words and figures as follows:

"San Diego, Calif.
April 20, 1933

To the Honorable the Mayor and
Council of the City of San Diego
and to Mr. H. N. Savage, Hydraulic
Engineer of said City.

Gentlemen:

Reference is hereby made to the official opinion of the City Attorney of San Diego dated March 21, 1933, addressed to Mr. H. N. Savage, Hydraulic Engineer, upon the subject of controlling the computation of progress estimates for all work performed to April 1,1933. The contractors hereby agree as follows:

1. Materials from structure excavation excavated and placed in embankment to be measured in excavation and paid for on the basis of excavation measurements.

2. Materials from structure excavation excavated and wasted are to be measured for payment in excavation and in lieu of spoil bank measurement in excavation increased twenty-seven and one half (27 1/2) percent as to classes of materials 1, 3, 4 and 5.

3. To waive any and all claims arising out of or based upon disputed classifications (but not quantities) of materials and/or the appropriate items of the bid schedule governing payment for any and all work performed prior to April 1, 1933.

4. That subsequent to April 1, 1933, all materials from structure excavation deposited in spoil bank will be measured in spoil bank currently as the work is performed.

Very truly yours,
H. W. Rohl & T. E. Connolly
By T. E. Connolly."

XIV

The contractor signed and delivered the above memorandum of April 20, 1933, and fully complied with the terms of the above stated agreement of April 20, 1933, but the City and the Hydraulic Engineer have failed and refused to carry out the terms of the aforesaid agreement of April 20, 1933, and have failed and refused to make and deliver an estimate or progress payment in accordance with said agreement. The Hydraulic Engineer did make and deliver to the contractor an estimate for the month of March, 1933, which estimate purported to include all work performed prior to April 1, 1933, but which estimate was not based upon measurements or computations made in accordance with the aforesaid agreement of April 20, 1933. The Hydraulic Engineer did not carry out the terms of the agreement in that he did not issue an estimate in accordance with the legal opinion of the City Attorney and the written memorandum of April 20, 1933. The detailed method used by the Hydraulic Engineer in computing and preparing said Estimate No. 11

for the month of March, 1933, is hereinafter referred to as Method "D" and is fully described in paragraph XVI of this Complaint. All estimates received subsequent to that date have been computed by the method used by the Hydraulic Engineer in the March, 1933, Estimate No. 11.

XV

On receipt of a statement of quantities following the issuance of each monthly estimate the contractors have duly protested in writing the estimates as received. Attached hereto as Exhibit "3" hereof is a true copy of the Hydraulic Engineer's statement of the quantities and classifications between successive stations of the excavation and embankment items for Estimate No. 24 covering all work performed up to and including the month of April, 1934. The foregoing statement relative to Estimate No. 24 was by the contractors duly protested in accordance with the terms of the Contract Specifications by a written protest filed with the Hydraulic Engineer under date of June 4, 1934, a true copy of said protest being attached hereto marked Exhibit "4" and made a part hereof by reference.

XVI

In Order to compare the various methods used by the Hydraulic Engineer with the contract method as interpreted by the City Attorney and the contract method as interpreted by the contractors, the following tabulation is set forth showing the methods used for each item of the bid schedule relative to excavation and embankment. In the tabulation hereinafter set forth of the 14 Excavation and Embankment items, the various methods are as follows:

"A" This is the method used by the Hydraulic Engineer for the first 7 monthly estimates received by the contractor for work performed up to and including November, 1932.

"B" This is the method used by the Hydraulic Engineer in computing monthly estimates #8, #9 and #10 for work performed up to and including February, 1933.

"C" This is the method outlined by the City Attorney in his legal opinion of March 21, 1933, to the City Council and the Hydraulic Engineer relative to the interpretation of the specifications and is likewise the Resident Engineer's interpretation of the specifications.

"D" This is the method used by the Hydraulic Engineer in computing the pay quantities for Estimate No. 11 for all work performed up to and including March, 1933, and is the method which has been used in determining the pay quantities for all subsequent estimates. This method was used by the Hydraulic Engineer following the receipt of the official opinion from the City Attorney relative to the proper interpretation of the Specifications, but in the respects hereinafter set forth is contrary to the method set forth in the official opinion as the correct method.

"E"It is the contention of the contractor that this is the method for measurement and computation of quantities provided by the specifications.

In the following tabulation each item of the Bid Schedule is set forth showing the manner of computing the pay quantities for such item by the five different methods enumerated above, which methods are for convenience referred to as Methods A,B,C,D, & E.

Item No. 1

Excavation Class 1. Solid rock originating in structure excavation including placing and sorting in dam.

A. Neat quantities measured in excavation.

B. Neat quantities measured in excavation, minus 27-1/2 percent of Item 10.

C. Neat quantities measured in excavation.

D. Neat quantities measured in excavation.

E. Neat quantities measured in excavation.

Item No. 2

Embankment Class 1. Rock originating in borrow pit only, including placing and sorting in dam, measured in embankment.

A. Total rock embankment measured in embankment, less excavation items placed in the rock embankment and measured in excavation.

B. Total rock embankment measured in embankment, less 127-1/2 percent of excavation items placed in the rock embankment and measured in excavation.

C. Same as "A" above.

D. Same as "B" above.

E. Total rock embankment measured in embankment, less the difference between the total rock excavation items measured in excavation and the total rock excavated and wasted measured in spoil bank.

Item No. 3

Excavation Class 2. Earth, overburden, sand and gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill.

A. Neat quantities measured in excavation.

B. Neat quantities measured in excavation.

C. Neat quantities measured in excavation.

D. Neat quantities measured in excavation.

E. Neat quantities measured in excavation.

Item No. 5

Embankment Class 2. Clay, earth, sand, gravel and other embankment originating in borrow pit only, including sorting and placing in hydraulic fill, measured in embankment.

A. No hydraulic fill placed during the time this method was used.

B. Total hydraulic fill measured in embankment less excavation items placed in hydraulic fill measured in excavation.

C. Total hydraulic fill measured in embankment less excavation items placed in hydraulic fill measured in excavation.

D. Total hydraulic fill measured in embankment, less the excavation items placed in the hydraulic fill and measured in excavation.

E. Total hydraulic fill measured in embankment, less the difference between the total excavation items measured in excavation and the total excavation items wasted measured in spoil bank, minus the total quantity deducted from the gross rock embankment as computed for determining the quantities of Item No. 2.

Item No. 7

Excavation Class 3. Cutoff trench excavation under the dam, including placing and sorting in the dam.

A. None of this item during period this method was used.

B. None of this item during period this method was used.

C. Neat quantities measured in excavation.

D. Neat quantities measured in excavation.

E. Neat quantities measured in excavation.

ITEM NO. 8

Excavation Class 4. Cutoff trench excavation under the spillway, including placing and sorting in the dam. All of the methods used in computing this item were the same as for Item No. 7 above.

Item No. 9

Excavation Class 5. Outlet tunnel excavation excepting open cut excavation and including placing and sorting in the dam.

A. Neat quantities measured in excavation.

B. Neat quantities measured in excavation, less 27-1/2 percent of Item No. 4.

C. Neat quantities measured in excavation.

D. Neat quantities measured in excavation.

E. Neat quantities measured in excavation.

ITEM NO. 10

Excavation Class 1. Solid rock originating in structure excavation and wasted.

A. Neat quantities measured in excavation.

B. 127-1/2 percent of the neat quantities measured in excavation.

C. 127-1/2 percent of the neat quantities measured in excavation.

D. 127-1/2 percent of the neat quantities measured in excavation.

E. Total wasted measured in spoil bank.

ITEM NO. 11

Excavation Class 2. Earth overburden, sand, gravel and other excavation originating in structure excavation and wasted

A. Neat quantities measured in excavation.

B. Neat quantities measured in excavation.

C. Neat quantities measured in excavation.

D. Neat quantities wasted, measured in excavation, plus measured swell on spillway excavation wasted after July 27, 1933.

E. Total excavation wasted measured in spoil bank.

ITEM NO. 12

Excavation Class 3. Cutoff trench excavation under dam, and wasted.

A. Neat quantity of excavation wasted measured in excavation.

B. 127-1/2 percent of the neat excavation wasted measured in excavation.

C. No work of this class performed during period this method was used.

D. No work of this class performed during period this method was used.

E. Total excavation wasted measured in spoil bank.

ITEM NO. 14

Excavation Class 5. Outlet tunnel excavation except open cut excavation, but wasted.

A. Neat quantity wasted measured in excavation.

B. 127-1/2 percent of the neat quantity wasted measured in excavation.

C. 127-1/2 percent of the neat quantity wasted measured in excavation.

D. 127-1/2 percent of the neat quantity wasted measured in excavation.

E. Total excavation wasted measured in spoil bank.

XVII

The foregoing tabulation shows that it is only with reference to Items 2 and 5 that there is any difference between Method "C" outlined in the opinion of the City Attorney, Method "D" used by the Hydraulic Engineer in Estimate 24, and Method "E" as contended for by the contractoes. However, the contractor contends that the measurements necessary in order to compute the amount due the contractor under either Method "C", "D", or "E" have not been made with reference to any of the excavation or embankment items and that the spillway excavation as classified by the Hydraulic Engineer is grossly erroneous and not in accordance with the terms of the contract, for the reasons set forth in section (d) of Paragraph IX of this Complaint.

XVIII

Specifications Par. 55 states that all quantities shall be measured for payment. At no place in the specifications does it state that any of the quantities making up the estimates shall be estimated. By measurement is meant the determination of volume by ascertaining and measuring the dimensions of the space occupied by the various materials and computing the volume thereof from these dimensions. At the El Capitan Dam it was physicially possible and it was the duty of the City and the Hydraulic Engineer to actually measure the quantities required to be known to compute the amount due the contractor for work currently performed under the speicifications. To prepare a monthly estimate of the amount of work performed by the contractor under the various excavation

and embankment items, the following measurements of quantities were by the contract required to be made by the City and the Hydraulic Engineer, to-wit:

1st. The quantities of material covered by Items 1, 3, 7, 8 and 9 of the schedule should have been separately measured in excavation.

2nd. That part of the material covered by Items 1, 3, 7, 8 and 9 of the schedule that were placed in the rock embankment of the dam should have been separately measured in excavation.

3rd. That part of the material covered by Items 1, 3, 7, 8 and 9 of the schedule that were placed in the hydraulic fill portion of the dam should have been separately measured in excavation.

4th. All material covered by Items 10, 11, 12, 13 and 14 of the schedule should have been wasted in separate spoil banks and there measured monthly as the work progressed.

XIX

The Hydraulic Engineer measured in excavation by survey and cross-section, the total quantity of excavation performed by the contractor for the dam and its appurtenant structures. Under the specifications, however, the total quantity for certain particular features of the work was to be classified between earth and rock and the quantities of each class separately measured. A further separation and measurement was required of that portion of the earth and rock that was wasted and that portion of each class which was placed in the dam. The quantities of each class placed in the dam were to be still further separated and measured to determine the quantity of each that was placed in either the

rock embankment or the hydraulic fill portion of the dam. For those features of the work where no classification between earth and rock was to be made, such as the outlet tunnel and cutoff trenches, the gross excavation was to be separated and measured to determine the quantity wasted and the quantity placed in the dam. Of the material placed in the dam the amount that was disposed of in the rock embankment should have been measured separately from the quantity that was placed in the hydraulic fill. The attached diagram, Exhibit No. 5, shows graphically the correct division of the total excavation of each class into the various subdivisions where measurements should have been made by the City currently as the work was performed, in order to correctly compute and determine the quantities of work performed under the different items of the bid schedule in accordance with the terms of the contract specifications. The attached Exhibit No. 4 sets forth in detail the plaintiffs' objections to Estimate #24 with specific reasons therefor.

XX

While the Hydraulic Engineer actually measured the total quantity of excavation performed for each feature of the work, the distribution of this total quantity into the various subdivisions as shown to be required from the above, was not actually measured, and the quantities used in computing the monthly estimate were determined by the Hydraulic Engineer in most instances from a "truck count". In making a "truck count" the capacity of each truck body was determined by the Hydraulic Engineer by measurement and the total truck loads were counted and multiplied by the rated capacity of each truck. Such a determination is not a measurement, but is an estimate. The material excavated and loaded into a truck

would not represent the same volume as the material occupied in place before excavation, but would be increased by the amount of the swell of such material after being excavated. For example, the disposition of the material excavated from the spillway was determined as follows:

The spillway excavation was to be classified between earth and rock. The Hydraulic Engineer first cross-sectioned the spillway site to determine the original ground surface. As the work progressed the excavation was cross-sectioned and from these two surveys the gross quantity of excavation was determined. It was necessary to then determine the quantities of earth and rock included in such excavation. This was done as follows:

The City has inspectors on the job during the progress of the work and as the material was being excavated that portion of the excavation which in the inspector's opinion was rock was separately loaded into trucks and placed in the rockfill. The inspector would then estimate by visual observation the total yardage in each truck. He would then further estimate the space that the material loaded into the truck would have occupied in its original location before excavation. From these observations and estimates the total volume of rock was estimated. The gross excavation as indicated by the cross-sections would then be reduced by the amount of rock estimated as above to determine the volume of earth in excavation. The contractors claim that this is not a measurement but is merely an estimate subject to a wide range of error and that it is necessary to make actual measurements currently as the work is performed in order to accurately compute and determine the amount that the contractor is to be paid under the terms of its contract.

XXI

The quantity of rock from the spillway excavation as above estimated was all placed in the rockfill portion of the dam. The quantity of earth from the spillway excavation as above estimated was either placed in the hydraulic fill portion of the dam or wasted. The relative amounts of earth placed in the hydraulic fill portion of the dam was estimated by a truck count as described above. The quantities of excavation for other features of the work were segregated in a similar manner, the spillway being described as above merely for the purpose of illustrating the methods used. The contractors claim that the quantities estimated in the manner described above for the spillway are not measurements as required by the specifications and incumbent upon the Hydraulic Engineer to make, but inmost instances are arbitrary estimates subject to gross error.

XXII

Under the specifications all material covered by Items 10, 11, 12, 13 and 14 of the specifications should have been wasted to separate spoil banks and there measured to determine the pay quantities. Prior to July 27, 1933, all wasted material of the various classes was deposited in spoil banks designated by the Hydraulic Engineer, and the Hydraulic Engineer failed and neglected to measure the material in spoil banks as required by the specifications. Subsequent to July 27, 1933, the excavation from the spillway was wasted to separate spoil banks and there measured. The Hydraulic Engineer in determining the quantities for his monthly estimates for all material wasted prior to July 27, 1933, made arbitrary and erroneous estimates of the amount that such wasted material measured in excavation would swell when wasted into spoil bank. In making these estimates he assumed that rock would swell

27-1/2 percent and that the earth would neither shrink nor swell.

XXIII

The contractors contend that the Hydraulic Engineer's estimate of 27-1/2 percent swell for excavation Classes 1, 3, 4 and 5 is erroneous and allege that a reasonable allowance for swell on excavation of these classes would be 35 percent. The contractors accept the estimate of the Hydraulic Engineer that excavation Class 2 would neither shrink nor swell when wasted into spoil bank. The total spillway excavation measured in excavation performed to May 1, 1934, is 490,329 cubic yards as shown in the Hydraulic Engineer's statement of quantities. Of this amount the Hydraulic Engineer has classified 42,264 cubic yards as excavation Class 1 and 448,065 cubic yards as excavation Class 2. The contractors claim that under paragraph 54 of the specifications, 425,329 cubic yards should have been classified as excavation Class 1 and 65,000 cubic yards as excavation Class 2. The contractors claim that the Hydraulic Engineer has erroneously deducted from the hydraulic fill embankment a total of 3544 cubic yards as set forth in the statement of quantities for Estimate #24, copy of which statement is attached hereto as Exhibit "3". This hydraulic fill material was placed in accordance with the specifications and should have been included in computing the quantities for which the contractors were to receive payment.

XXIV

In Estimate #24 for work performed to May 1, 1934, the Hydraulic Engineer has certified to a total of $1,758,383.50 for excavation and embankment items Nos. 1 to 14 inclusive computed by Method "D". If the quantities had been computed in accordance with the method outlined by the City Attorney in his legal opinion

(Method "C") and the Hydraulic Engineer's classification of excavation and estimate of swell in lieu of spoil bank measurements, the total for the same schedule items would be $1,777,171 or $18,787.50 more than the amount allowed by the Hydraulic Engineer. Recomputing Estimate #24 for these same items by Method "E" and using the Hydraulic Engineer's classification of excavation and estimate of swell in lieu of spoil bank measurements, the total would be $1,817,107 or $58,723.50 more than the amount allowed by the Hydraulic Engineer.

XXV

Recomputing items Nos. 1 to 14 inclusive of Estimate #24 for all work performed to May 1, 1934, but using the classification of excavation claimed by the contractors and their estimate of the proper allowance for swell on excavation wasted but not measured in spoil bank, the total amount of said estimate under the above set forth methods of computing would be as follows:

	Total to May 1, 1934	Increase over amount allowed by Hyd. Engr. in his estimate #24
Method "D"	$2,083,183	$324,799.50
Method "C"	2,126,468	368,084.50
Method "E"	2,188,841	430,457.50

XXVI

If Estimate #11 for work up to the first of April, 1933, had been made and prepared by the Hydraulic Engineer in accordance with the Agreement of April 20, 1933, as alleged at Paragraph XIII hereof and computed in accordance with the City Attorney's Opinion of March 21, 1933, the total amount due for Items 1 to 1e inclusive up to April 1, 1933, would have been $1,014,112. The Hydraulic Engineer, however, did not follow the City Attorney's Opinion in

computing Estimate #11, but erroneously deducted 7,851 cubic yards from the pay quantities under Item #2, said 7,851 cubic yards being the Hydraulic Engineer's estimated swell on Excavation Classes 1, 3 and 5 placed in the Rock Embankment.

XXVII

Using this total of $1,014,112 as correct for all work performed on the above items to April 1, 1933, but recomputing the amounts due the contractor for work performed from April 1, 1933, to May 1, 1934, by Methods "C" and "E" with excavation classified as claimed proper by the contractors and using their estimate of the proper allowance for swell on excavation wasted but not measured in spoil bank, the total estimate for work performed on these items from the commencement of work, to May 1, 1934, would be as follows:

	Total to May 1, 1934	Increase over amount allowed by Hyd. Engr. in his Estimate #24
Method "C"	$2,116,872	$358,488.50
Method "E"	2,165,417	407,033.50

XXVIII

If Estimate #11 for work up to the first of April, 1933, had been made and prepared by the Hydraulic Engineer in accordance with the Agreement of April 20, 1933, as alleged at Paragraph XIII hereof and computed in accordance with the City Attorney's Opinion of March 21, 1933, the total amount due for Items 1 to 14 inclusive up to April 1, 1933, would have been $1,014,112. The Hydraulic Engineer, however, did not follow the City Attorney's Opinion in computing Estimate #11, but erroneously deducted 7,851 cubic yards from the pay quantities under Item #2, said 7,851 cubic yards being the Hydraulic Engineer's estimated swell on Excavation Classes 1, 3 and 5 placed in the Rock Embankment.

1932

XXVII

Using this total of $1,014,112 as correct for all work performed on the above items to April 1, 1933, but recomputing the amounts due the contractor for work performed from April 1, 1933, to May 1, 1934, by Methods "C" and "E" with excavation classified as claimed proper by the contractors and using their estimate of the proper allowance for swell on excavation wasted but not measured in spoil bank, the total estimate for work performed on these items from the commencement of work, to May 1, 1934, would be as follows:

	Total to May 1, 1934	Increase over amount allowed by Hyd. Engr. in his Estimate #24
Method "C"	$2,116,872	$358,488.50
Method "E"	2,165,417	407,033.50

XXVIII

The plaintiffs have computed and hereinafter set forth a true and correct tabulation showing the total pay quantities and gross estimate for work performed from the commencement of the job to May 1, 1934, on account of Excavation and Embankment Items Nos. 1 to 14 inclusive. This tabulation shows the total gross amount computed in accordance with each of said methods to be as follows:

	Total to April 1, 1933	April 1 1933 to May 1 1934	Total to May 1, 1934
Method "A" using City Classification	$978,941	---- not computed ---	
Method "B" using City Classification $ 27-1/2% swell	964,979	---- not computed ---	
Method "C" using City Classification & 27-1/2% swell	1,014,112	$ 763,059	$1,777,171
Method "D" using City Classification & 27-1/2% swell	1,006,261	752,541	1,758,801
Method "E" using City Classification & 27-1/2% swell	1,023,797	793,310	1,817,107
Method "A" using Contractors Classification & 35% swell	------ - - - not computed - - -		
Method "B" using Contractors Classification & 35% swell	- - - - - - - - not computed - - -		
Method "C" using Contractors Classification & 35% swell	1,023,708	1,102,760	2,126,468
Method "D" using Contractors Classification & 35% swell	994,614	1,088,569	2,083,183
Method "E" using Contractors Classification & 35% swell	1,037,536	1,151,305	2,188,841
Method "C" using City Classification & 27-1/2% swell to April 1, 1933 & Method "C" using Contractors Class & 35% swell from Apr.1, 1933 to May 1, 1934	1,014,112	1,102,760	2,116,872
Method "C" using City Classification & 27-1/2" swell to April 1, 1933 & Method "E" using Contractors Class. & 35% swell from Apr. 1, 1933 to May 1, 1934	1,014,112	1,151,305	2,165,417

XXIX

That actual and bona fide controversies have arisen and now exist with reference to the respective rights and duties of the parties hereto. That the controversies which have arisen and now exist between the plaintiffs and the defendant relative to the

classification of materials, measurement of quantities, and computation of the amounts earned by the plaintiffs for the work performed by plaintiffs for the defendant under said contract for the construction of El Capitan Reservoir Dam, Spillway and Outlet Works from the commencement of work until the 1st of May, 1934, and which plaintiffs desire to have determined in this action, are as follows:

1. Is the Agreement of April 20, 1933, as set forth in Paragraph XIII hereof, a valid and subsisting obligation pursuant to which obligation it is the duty of the Hydraulic Engineer to make and prepare a corrected estimate No. 11 for all work performed prior to April 1, 1933, based upon measurements and computations made in conformity with the City Attorney's Opinion of March 21, 1933?

2. If the Agreement of April 20, 1933, as alleged in Paragraph XIII hereof, does not obligate the City to deliver to the contractors a corrected Estimate No. 11, based upon measurements and computations made by the Hydraulic Engineer in accordance with the City Attorney's Opinion of March 21, 1933, is said Agreement alleged in Paragraph XIII hereof, by the terms of which the contractors agreed to accept 27-1/2% swell in lieu of spoil bank measurements and to waive all claims based upon disputed classifications for all work performed prior to April 1, 1933, binding upon the contractors?

3. What items should have been and were by the Hydraulic Engineer measured in excavation? The contractors allege and contend that there are the items colored blue on Exhibit No. 5 hereof.

4. What items should have been, but were not, but the Hydraulic Engineer measured in excavation? The contractors allege and contend that these are the items colored green on Exhibit No. 5 hereof.

5. What items should have been but were not by the Hydraulic Engineer, measured in spoil bank? The contractors allege and contend that these are the items colored yellow in Exhibit No. 5 hereof.

6. What items should have been, but were by the Hydraulic Engineer only partly measured in spoil bank? The contractors allege and contend that these are the items colored brown on Exhbit No. 5 hereof.

7. What are the quantities to be deducted from the gross embankment in order to determine the pay quantities for schedule items 2 and 5, which should have been computed from measurements made by the Hydraulic Engineer in accordance with the contract? The contractors allege and contend that said quantities so to be deducted should have been, but were not, by the Hydraulic Engineer correctly computed, due to the failure of the Hydraulic Engineer to take measurements of the quantities colored red on Exhibit No. 5 hereof.

8. Where the Hydraulic Engineer in determining the pay quantities for excavation wasted, did not measure such wasted material in spoil bank as provided in the contract, but made an arbitrary and incorrect assumption as to the amount that such material would swell when placed in the spoil bank, what is a fair and reasonable percentage allowance for swell in lieu of spoil bank measurements? The contractors allege and contend that an allowance of 35% swell as to classes of materials 1,3,4 and 5, is fair and reasonable. The City contends that an allowance of 27-1/2% swell for classes of materials 1, 3, 4, and 5 is reasonable. The contractors allege, and both the City and contractors contend, that materials wasted should be measured in

spoil bank, and it is only proper to substitute an agreed percentage allowance for swell in lieu of spoil bank measurements in those cases where actual measurements are not available.

9. As set forth in Paragraph IV hereof, the contract distinction between Class 1 excavation and Class 2 excavation is based upon the provision that Class 1 excavation shall be limited to ledge rock in place that can not be loosened except by wedging, barring or blasting. The contractors allege and contend that the Hydraulic Engineer's classification as per Estimate #24 of the excavation for the spillway and that part of the main dam excavation not shown on the plans but ordered by the City pursuant to requirements of the State Engineer, is grossly erroneous, not in compliance with the contract, and gives no consideration to the required method of excavation which under the contract was to determine the proper classification and basis of payment. As set forth in Paragraph XXIII hereof, the Hydraulic Engineer has classified only 42,264 cubic yards of the spillway excavation as Class 1, whereas the contractors allege that 425,329 cubic yards of the spillway excavation should be classified as Class 1 excavation. The contractors further allege that pursuant to requirements of the State Engineer, the Hydraulic Engineer ordered the contractors to perform, and the contractors did perform, approximately 100,000 cubic yards of main dam excavation not shown on the plans, and that the Hydraulic Engineer has erroneously classified the greater portion of said excavation as Class 2. The contractors allege and contend that a large portion of said main dam excavation is in fact Class 1 excavation and that unless the court finds that the City and the contractors are mutually bound to perform the terms of the

Agreement of April 20, 1933, as set forth in Paragraph XIII hereof, that the contractors are entitled to receive payment as Class 1 excavation for such portion of said main dam excavation as the court shall find and determine should under the contract be properly classified as Class 1 excavation.

10. What is the method of measurement and computation for payment for excavation and embankment Items 1 to 14 inclusive provided by the contract? Is it Method "A", "B", "C", "D" or "E" as defined in Paragraph XVI hereof, or is it some other method? The contractors contend that Method "E" as defined in Paragraph XVI hereof is the method provided by the contract. The City Council has made no determination as to method other than by Resolution of approval of the plans and specifications prior to the call for bids. The City Attorney contends that Method "C" as defined in Paragraph XVI hereof is the correct method. The City's Hydraulic Engineer has made and signed estimates in accordance with Methods "A", "B" and "D", but plaintiffs are not informed as to which method the Hydraulic Engineer now claims is correct.

11. What is the correct amount earned by the contractors and which should have been included in Estimate #24 on account of excavation and embankment Items 1 to 14 inclusive performed from the commencement of work to May 1, 1934? The contractors contend that the total sum of $407,033.50 should be added to the Hydraulic Engineer's estimate #24 on account of excavation and embankment items performed to May 1, 1934. This amount is based upon the contractors' contention that Method "E" is the correct method for measurement and computation of pay quantities. If the City

Attorney's Method (Method "C") is the correct method for measurement and computation of pay quantities, then the contractors contend that the total sum of $358,488.50 should be added to the Hydraulic Engineer's Estimate #24.

12. If hydraulic fill material is good enough to remain in the dam, is it good enough to be paid for? In other words, is the 3544 cubic yards of hydraulic fill material for which the Hydraulic Engineer has made a deduction, as alleged in Paragraph XXIII hereof, from the pay quantities, properly deductible from Estimate #24? The contractors allege and contend that said material is in all respects in conformity with the specification requirements, and that the deduction thereof by the Hydraulic Engineer from the pay quantities is grossly erroneous.

13. The contractors allege and contend that the City is now in default of its obligations under the terms of the contract for the building of said dam, in that the Hydraulic Engineer has failed to make and deliver to the contractors a monthly estimate or progress payment in accordance with the terms of said contract. That the contractors are under no obligation to proceed with the construction of said dam until such time as the City has caused to be made and delivered to the contractors an estimate and progress payment for work performed to June 1, 1934, based upon measurements taken and classifications and computations made in accordance with the method provided by the contract.

XXX

That the Hydraulic Engineer of the defendant City has threatened to declare the contractors in default and to suspend said contract or take over the work as provided for in Paragraph

12 of said contract. That plaintiffs are informed and believe and upon such information and belief allege, that the defendant and/or its Hydraulic Engineer intend to and will, unless restrained and enjoined by this Honorable Court from so doing, immediately and forthwith proceed, unlawfully, and without any right whatsoever so to do, to declare a default, and either suspend said contract or take over the work under the guise of the provisions of said Paragraph 12 of said contract, and that by reason thereof plaintiffs will sustain irreparable damages, and that plaintiffs have no other plan, speedy and adequate remedy at law.

XXXI

That the allegations of this Complaint are made upon the information and belief of the plaintiffs, and each of them. That plaintiffs are informed and believe that each and all of said allegations are true, and therefore allege the same to be true.

WHEREFORE, plaintiffs pray that the Court determine the controversies set forth at Paragraph XXIX hereof between the plaintiffs and the defendant, and by declaratory judgment decree the respective rights, duties and obligations of the plaintiffs and the defendant with respect thereto. That the plaintiffs have and recover judgment against the defendant decreeing the amount earned by plaintiffs on account of items 1 to 14 inclusive is the sum of FOUR HUNDRED SEVEN THOUSAND THIRTY FIVE AND 50/100 DOLLARS ($407,035.50) more than the amount set forth in estimate #24 for items 1 to 1e inclusive performed prior to May 1, 1934. That the Court enjoin and restrain the defendant from suspending or attempting to suspend, or taking over the work or attempting to take over the work covered by said El Capitan Dam contract. For their costs of suit, and for such other and further relief as to the

Court may seem meet and proper.

JOHN M. MARTIN

FRANK L. MARTIN, Jr.
Attorneys for Plaintiffs.

STATE OF CALIFORNIA,)
) ss.
County of San Diego.)

T. E. CONNOLLY being by me first duly sworn, deposes and says that he is one of the plaintiffs in the above entitled actuibl that he has read the foregoing Complaint for Declaratory Relief and knows the contents thereof and that the same is true of his own knowledge, except as to the matters which are therein stated upon his information or belief; and as to those matters that he believes it to be true. That he makes this verification for and in his own behalf and for and in behalf of the other within named plaintiff.

T. E. CONNOLLY

Subscribed and sworn to before me
this 6th day of June, 1934.

(N.P.Seal) Edith G. Benjamin
Notary Public in and for the County
of San Diego, State of California.

8-31-34
Copy/m

1942

CITY OF SAN DIEGO
Water Department
Division of Development and Conservation
San Diego, California

Offices: 524 F Street

Hiram Newton Savage
Hydraulic Engineer in Charge

May 24, 1934.

Messrs. H. W. Rohl & T. E. Connolly
Contractors El Capitan Dam
4351 Alhambra Avenue
Los Angeles, California.

S-110

Subject: San Diego River Project, El Capitan Feature, request for statement of quantities and classifications Estimate No. 24

Gentlemen:

Pursuant to your written request dated May 15, 1934, for a statement of the quantities and classifications between successive stations of the excavation and embankment quantities shown on progress estimate No. 24 for contract work done on El Capitan dam for the month of April 1934, you are herewith furnished the statement attached showing the information requested.

If this statement is not satisfactory to you, specific objections with reasons therefor should be filed in writing with the Engineer in accordance with paragraph 54 of the contract specifications.

Very truly yours,

H. N. Savage
H. N. Savage
Hydraulic Engineer.

/p
encl.
cc-H.W.Rohl & T.E.Connolly, El Capitan Dam
Contractor's Resident Representative
John M. Martin, Attorney for Contractor

EXHIBIT "3"

CITY OF SAN DIEGO, CALIFORNIA

San Diego River Project, El Capitan Feature

Statement of stations, classifications and quantities of embankment and excavation and summary by schedule items of certain work done by H. W. Rohl & T. E. Connolly, under their contract for construction of El Capitan Reservoir Dam, Spillway and Outlet Works up to and including April 1934 and included in progress estimate No. 24.

In lieu of spoil bank measurements it was deemed proper to consider that excavation Class 1, 3 and 5 measured in excavation would swell 27.5 percent if measured in spoil bank or in rock embankment, and

That excavation Class 1, 3 and 5 measured in excavation would neither swell nor shrink if measured in hydraulic fill, and

That excavation Class 2 would neither swell nor shrink if measured in spoil bank or in hydraulic fill.

All quantities are stated in cubic yards.

ROCK EMBANKMENT: Stations, classification and quantities:

1. From N 3440 to N 3850 and from E 5590 to toe wall (Above upstream toe wall)

Overall embankment measured in embankment		11,949
(9) Excavation Class 5	4,481	
27.5 percent swell	1,232	
As if measured in embankment	5,713	
(2) Embankment Class 1	6,236	

2. From N 3060 to N 4140 and from E 5135 to toe wall (Below upstream toe wall)

Overall embankment measured in embankment		568,851
(1) Excavation Class 1	37,538	
27.5 percent swell	10,323	
As if measured in embankment	47,861	
(7) Excavation Class 3	503	
27.5 percent swell	138	
As if measured in embankment	641	
(9) Excavation Class 5	6,050	
27.5 percent swell	1,664	
As if measured in embankment	7,714	
(2) Embankment Class 1	512,635	

(3) From N 3180 to N 3980 and from E 4752 to toe wall (Above downstream toe wall)

EXHIBIT "3"

Overall embankment measured in embankment 264,798

(1)	Excavation Class 1	15,273
	27.5 percent swell	4,200
	As if measured in embankment	19,473
(7)	Excavation Class 3	259
	27.5 percent swell	71
	As if measured in embankment	330
(9)	Excavation Class 5	1,743
	27.5 percent swell	479
	As if measured in embankment	2,222
(2)	Embankment Class 1	242,773

4. From N 3440 to N 3860 and from E 4380 to toe wall (Below downstream toe wall) 24,565

(1)	Excavation Class 1	926
	27.5 percent swell	255
	As if measured in embankment	1,181
(9)	Excavation Class 5	28
	27.5 percent swell	8
	As if measured in embankment	36
(2)	Embankment Class 1	23,348

HYDRAULIC FILL: Stations, classifications and quantities.

1. From N 3100 to N 4110 and from E 4672 to E 5232

Overall embankment measured in embankment, except for 3,544 cubic yards material above the foundation line of the hydraulic fill placed contrary to directions of Hydraulic Engineer 1,301,832

(3)	Excavation Class 2	224,102
(7)	Excavation Class 3	5,615
(8)	Excavation Class 4	1,326
(9)	Excavation Class 5 measured in excavation	1,941
(5)	Embankment Class 2 (3544 cubic yards Class 2 embankment not sorted by hydraulic means not included in estimate	1,065,304

EXCAVATION: Measured in excavation

1. Excavation Class 1, detached solid rock from stripping for base of dam, from structure and other excavation except spillway 13,490

EXHIBIT #1

2.	Excavation Class 1, detached solid rock from spillway excavation	42,264
3.	Excavation Class 1, detached solid rock from Station 0+14 to 2+95 tunnel entrance	276
4.	Excavation Class 1, ledge rock in place from Station 0+14 to 0-50 tunnel entrance	2,537
5.	Excavation Class 1, detached solid rock from Station 11+67.8 to 15+30 tunnel exit	356
6.	Excavation Class 1, ledge rock in place from Station 11+67.8 to 13+82.8 tunnel exit	4,555
7.	Excavation Class 1, ledge rock in place from N 3440 to N 3790 and from E 4967 to E 5023	4,222
8.	Excavation Class 1, ledge rock in place from N 3480 to N 3540 and from E 5450 to E 5510	632
9.	Excavation Class 1, ledge rock in place from N 3420 to N 3460 and from E 4470 to E 4512	234
10.	Excavation Class 1, ledge rock in place from N 3440 to N 3560 and from E 4390 to E 4460	764
11.	Excavation Class 2, Station 0+14 to -2+95 tunnel entrance	10,105
12.	Excavation Class 2, Station 11+67.8 to 15+30	10,467
13.	Excavation Class 2, stripping for base of dam from N 3110 to N 3990 and from E 4320 to E 4800 under downstream rock embankment	74,791
14.	Excavation Class 2, stripping for base of dam from N 3050 to N 4160 and from E 5140 to E 5590 under upstream rock embankment	90,718
15.	Excavation Class 2, stripping for base of dam from N 3040 to N 4130 and from E 4680 to E 5220	96,116
16.	Excavation Class 2, spillway excavation from Station 0+00 to 7+40	448,065
17.	Excavation Class 3, downstream toe wall trench from 0-60 to 4+02.14	1,835
18.	Excavation Class 3, upstream toe wall trench from Station 0+00 to 4+85	2,199
19.	Excavation Class 3, main cutoff trench under dam	
	(a) 6' neat line trench from N 3006 to ogee 5+10	6,912
	(b) 6' bottom 1 on 1 slopes from N 3006 to N 4100	4,408
20.	Excavation Class 4 cutoff trench under spillway	
	(a) Under spillway ogee Station 0+00 to 5+10	1,190
	(b) " " floor " 2+55	20
	(c) " " " " 5+10	51
	(d) " " " " 7+10	65

21. Excavation Class 5, tunnel excavation
    (a) Station 0+00 to Station 11+72.77 — 29,370
    (b) Outlet tower shaft — 1,923
    (c) Cleaning floor exploration tunnels 1 and 2 — 26

SUMMARY BY SCHEDULE ITEMS

Schedule Item	Determination of Schedule items			
1.	Excavation Class 1, solid rock originating in structure excavation including placing and sorting in dam.			
	Rock embankment	2(1)	37,538	
		3(1)	15,273	
		4(1)	926	
	Total schedule item 1			53,737
2.	Rock embankment Class 1 rock originating in borrow pit only including placing and sorting in dam, measured in embankment			
	Rock embankment	1(2)	6,236	
		2(2)	512,635	
		3(2)	242,773	
		4(2)	23,348	
	Total schedule item 2			784,992
3.	Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill.			
	Hydraulic fill	1(3)	224,102	
	Total schedule item 3			224,102
5.	Embankment Class 2, clay, earth, sand, gravel and other embankment originating in borrow pit only including placing and sorting in hydraulic fill.			
	Hydraulic fill	1(5)	1,068,848	
	Total schedule item 5			1,068,848
7.	Excavation Class 3, cutoff trench excavation under dam including placing and sorting in dam			
	Rock embankment	2(7)	503	
		3(7)	259	
	Hydraulic fill	1(7)	5,615	
	Total schedule item 7			6,377
8.	Excavation Class 4 cutoff trench excavation under spillway including placing and sorting in dam.			
	Hydraulic fill	1(8)	1,326	
	Total schedule item 8			1,326

EXHIBIT "3"

9. Excavation Class 5 outlet tunnel excavation excepting open cut excavation and including placing and sorting in dam.

Rock embankment	1(9)	4,481	
	2(9)	6,050	
	3(9)	1,743	
	4(9)	28	
Hydraulic fill	1	1,941	
Total schedule item 9			14,243

10. Excavation Class 1, solid rock originating in structure excavation and wasted.

Overall excavations:

Excavation	1	13,490	
	2	42,264	
	3	276	
	4	2,537	
	5	356	
	6	4,555	
	7	4,222	
	8	632	
	9	234	
	10	764	
Total overall excavation Class 1		69,330	

Excavation Class 1 placed in dam measured in excavation

Schedule item	1	53,737	
Excavation wasted		15,593	
27.5 percent swell		4,288	
As if measured in spoil bank		19,881	
Total schedule item 10			19,881

11. Excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation and wasted.

Overall excavation:

Excavation	11	10,105		
	12	10,467		
	13	74,791		
	14	90,718		
	15	96,116		
	16	448,065		
Total overall			730,262	
Placed in dam:				
Hydraulic fill (schedule item 3)	2(3)		224,102	
Excavation wasted, as if measured in spoil bank on basis of no swell or shrinkage			506,160	
Swell on excavation item 16			75,430	
Total schedule item 11				581,590

12. Excavation Class 3 cutoff trench excavation under dam and wasted.

Overall excavation:

Excavation	17	1,835	
	18	2,199	
	19a	6,912	
	19b	4,408	

EXHIBIT "3"

Total overall excavation Class 3 15,354

Excavation Class 3 placed in dam measured in excavation
Schedule item 7 6,377

Excavation wasted 8,977
Swell 27.5 percent 2,469
Ad if measured in spoil bank 11,446

Total schedule item 12 11,446

14. Excavation Class 5, tunnel excavation excepting open cut excavation, but wasted.
Overall excavation:

Excavation	21a	29,370
	b	1,923
	c	26

Total overall tunnel excavation 31,319

Tunnel excavation placed in dam measured in excavation
Schedule item 9 14,243

Tunnel excavation wasted measured in excavation 17,076
Swell 27.5 percent 4,696
As if measured in spoil bank 21,772

Total schedule item 14 as if measured in spoil bank 21,772

June 2, 1934.

H. N. Savage, Hydraulic Engineer,
City of San Diego,
San Diego, California.

Subject: San Diego River Project,
El Capitan Dam Feature,
Classification and Measurement
of quantities.

Dear Sir:

In accordance with the contractor's privilege of protesting any monthly estimate, as set forth in Paragraph 54 of the Contract Specifications, we specifically object to the quantities and classifications of quantities for the different bid items in estimate No. 24 for the month of April, 1934, and as set forth in statement transmitted by Mr. H. N. Savage, Hydraulic Engineer, under date of May 24, 1934, for the following reasons:

The assumptions set forth under which the estimate is computed are erroneous and not in accordance with out contract in the following respects.

(a) The assumptions relative to swell or shrinkage on excavation Classes 1, 2, 3 and 5 set forth in said statement are erroneous and not in accordance with the specifications and contract paragraph 55-b.

(b) The estimate does not include payment to the contractor for idle equipment, standby charges and damages for the period from April 10, 1933, to May 31, 1933, in accordance with our claim on file.

Item No. 1.

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based on truck count of excavated materials.

The quantities shown are incorrect in that the excavation of the spillway structure was not correctly classified and the total quantities shown would be greatly increased if the spillway excavation had been properly classified as provided in Paragraph 54 of the specifications.

Item No. 2

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

EXHIBIT "4"

The quantities shown are incorrectly computed and not as required under Paragraph 55 of the specifications where it states:

> "The quantity of materials placed in embankment will be computed by subtracting spoil bank material measured in spoil bank from excavated materials measured in excavation."

Item No. 3

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that the excavation of the spillway structure has not been correctly classified as provided in Paragraph 54 of the specifications and part of the quantity shown should properly be placed under Schedule Item No. 1 for the above reason.

Item No. 5

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials. The quantities shown are incorrectly computed and not as required under Paragraph 55 of the specifications wherein it states:

> "The quantity of materials placed in embankment will be computed by subtracting spoil bank material measured in spoil bank from excavated materials measured in excavation."

The quantity shown is incorrect in that the Hydraulic Engineer has deducted 3544 c.y. placed in the embankment by the contractor in the manner provided by the specifications.

Item No. 7

Not correct as to quantity for the reason that a substantial portion of Class 3 cutoff trench excavation, has been improperly included and classified as structure excavation Class 1 or 2.

Quantities shown are wrong as to method of measurement Paragraph 55 on Paragraph 101 of the specifications.

Item No. 9

The quantities shown are incorrect in that measurements were not made as provided in Paragraph 101 of the specifications.

EXHIBIT "4"

Item No. 10

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications, but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

The quantities shown are incorrect in that the excavation of the spillway structure was not correctly classified and the total quantities shown would be greatly increased if the spillway excavation had been properly classified as provided in Paragraph 54 of the specifications.

Item No. 11

The quantities shown have not been computed from measurements required to be made as provided in Paragraph 55 of the specifications in that it is based partly on truck count of excavated materials.

The quantities shown are incorrect in that the excavation of the spillway structure has not been correctly classified as provided in Paragraph 54 of the specifications and part of the quantity shown should properly be placed under Schedule Item No. 10 for the above reason.

Item No. 12

Not correct as to quantity for the reason that a substantial portion of Class 3 cutoff trench excavation has been improperly included and classified as structure excavation Classes 1 or 2.

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

Item No. 14

The quantities shown are incorrect in that material wasted was not measured in spoil bank as required under Paragraph 55 of the specifications but was computed by adding to the estimated excavation, in excavation, an arbitrary and erroneous estimate of the Hydraulic Engineer of the percentage of swell.

Item No. 17.

The quantities shown are wrong as to classifications.

1952

Item No. 23

Incorrectly computed.

Item No. 24

Incorrectly computed.

Item No. 26

Not correct as to quantity.

Item No. 33

Not correct as to quantity.

Item No. 34

Not correct as to quantity.

Items Nos. 8, 16, 19, 20, 21, 22, 25, 27, 28, 29, 31, 35, 36, 37, 40, 43, 45, and 46 as set forth in Estimate No. 23 are acceptable only as an approcimate estimate, it being the contractor's understanding that the Hydraulic Engineer has ruled that all progress estimates are subject to change and correction by final measurement at the time of completion of the work and issuance of a final estimate.

Yours very truly,

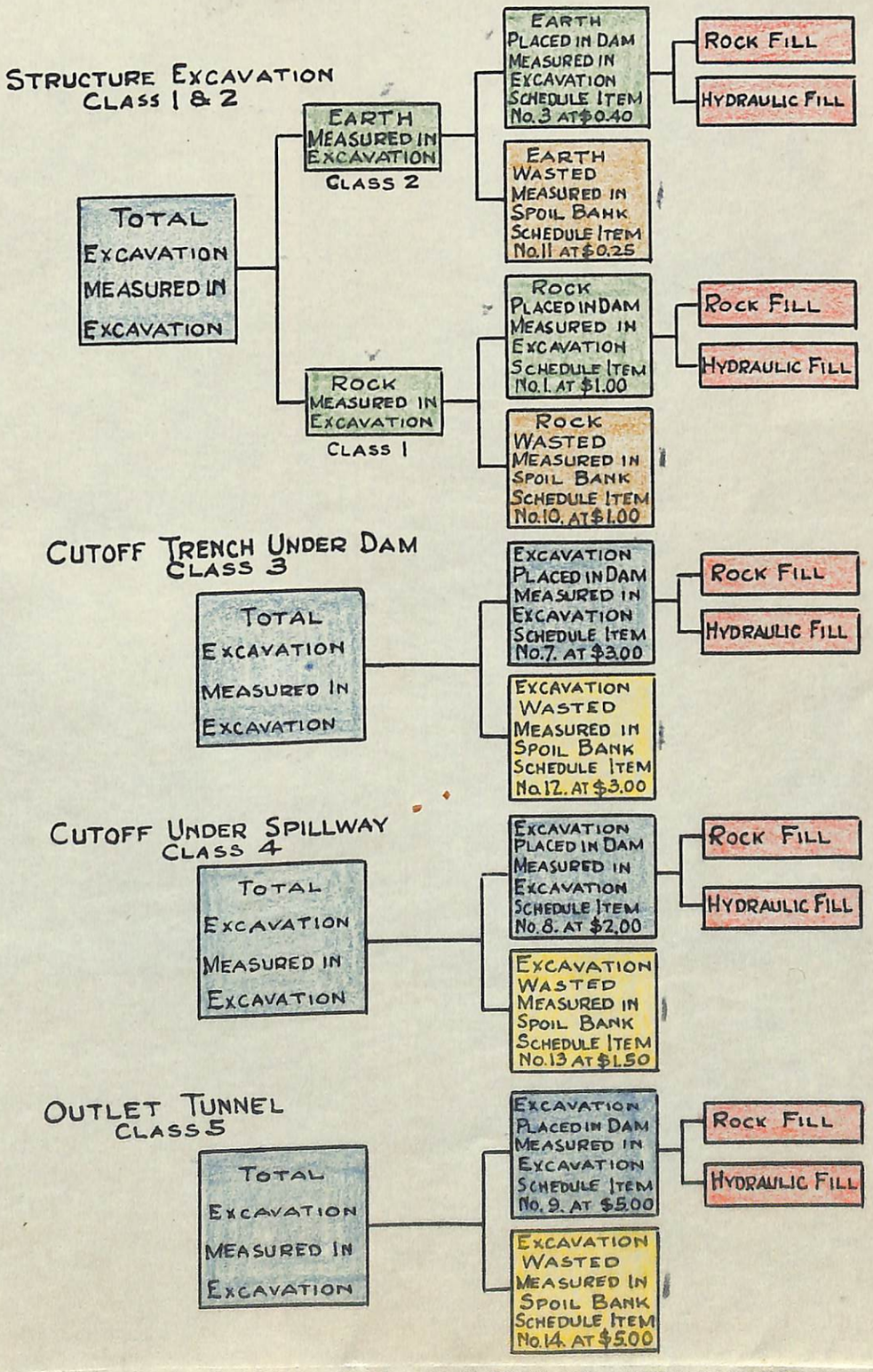
H. W. Rohl and T. E. Connolly

By O. C. STEVES

EXHIBIT "4"

EXHIBIT NO. 5

DIAGRAM OF MEASUREMENTS REQUIRED TO DETERMINE PAY QUANTITIES OF EXCAVATION OF VARIOUS CLASSES AT THE EL CAPITAN DAM



ITEMS COLORED BLUE, ABOVE, SHOULD HAVE BEEN AND WERE MEASURED IN EXCAVATION.

ITEMS COLORED GREEN ABOVE, SHOULD HAVE BEEN, BUT WERE NOT, MEASURED IN EXCAVATION.

ITEMS COLORED YELLOW, ABOVE, SHOULD HAVE BEEN, BUT WERE NOT, MEASURED IN SPOIL BANK.

ITEMS COLORED BROWN, ABOVE, SHOULD HAVE BEEN, BUT WERE ONLY PARTLY, MEASURED IN SPOIL BANK.

ITEMS COLORED RED, ABOVE, ARE THE QUANTITES TO BE DEDUCTED FROM THE GROSS EMBANKMENT TO DETERMINE PAY QUANTITIES FOR SCHEDULE ITEMS 2 & 5 WHICH SHOULD HAVE BEEN COMPUTED FROM THE ABOVE MEASUREMENTS, BUT WERE NOT CORRECTLY COMPUTED DUE TO FAILURE TO TAKE MEASUREMENTS WHERE INDICATED ABOVE.

2-8-35
copy/p

1954

June 25, 1934

M E M O R A N D U M

Subject: San Diego River Project, El Capitan Feature
Complaint of H. W. Rohl & T. E. Connolly
Filed with Superior Court.No. 78204.

Preliminary comments by articles as indicated:

ARTICLE VIII - Schedule item 3 applies only to excavation Class 2, earth, overburden, sand, gravel and other excavation originating in structure excavation, including placing and sorting in hydraulic fill.

" IX - See Hydraulic Engineer's letter dated June 13, 1934 to the contractor S-112, subject San Diego River Project, El Capitan Feature, Classification and Measurement of Quantities

" XI - See the various letters in question.

" XII - See City Attorney's letter dated March 21, 1933 to the Hydraulic Engineer.

" XIII - Contractor's letter dated April 20, 1933 to the City Officials constitutes a virtual acceptance of classification and measurement to March 31, 1933, except for errors of computation which might be discovered.

" XIV - See three copies of estimate prepared for March 1933 and Memorandum of F. C. Pyle to Hydraulic Engineer dated April 24, 1933.

" XV - See letter S-112 as heretofore mentioned.

" XVI - Schedule items 2 and 5 are for materials "originating in borrow pit only". See letter S-112 as heretofore mentioned.

" XXI - Under the conditions that existed as to intermingled classifications of material in excavation and the intermingling of materials from various sources and of various classes in the dam, the Hydraulic Engineer under the specifications did not exceed his authority in arriving at the quantity for which the contractor was to be paid under each schedule item.

" XXII - Contractor was not in any way prevented by the City from placing material coming within schedule items 10, 11, 12, 13 and 14 in separate spoil banks for measurement.

ARTICLE XXIII - Contractor by letter dated April 20, 1933 accepted the 27-1/2 per cent swell on certain items up to that time. All materials wasted since that time have been measured in spoil banks.

As to classification of spillway excavation, see reports of Consulting Geologist John P. Buwalda dated September 11, 1933 and November 23, 1933.

As to deduction of 3544 cubic yards of hydraulic fill material see Hydraulic Engineer's letter dated March 1, 1933 to the contractor.

" XXVI - If excavation Class 1, 3 and 5 swelled when placed in spoil banks, the Hydraulic Engineer was justified in assuming that it would swell an equal amount when placed in rock embankment.

" XXIX - State required additional excavation of 100,000± cubic yards because of fine sands and silts located in coarse sands and gravel, which was evidently Class 2. Detached masses of rock were measured and classified as Class 1.

Estimate for work done to March 31, 1933 was acdepted by the contractor by letter dated April 20, 1933, except as to possible errors due to computations.

Paragraph 10 - Is it possible the Contractor's wish protection against the possibility of the Hydraulic Engineer reverting to the "A" method of determination of schedule items?

" XXX - The Hydraulic Engineer has with great forbearance permitted the contractor during the past seven months to continue with the work. Although in that time but little progress has been made and the safety of the dam has twice been in jeopardy because of the contractor's disregard of the Hydraulic Engineer's instructions.

Fred D. Pyle
Hydraulic Engineer

FDP/f

10/8/34
copy /f

1956

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF SAN DIEGO

H. W. ROHL and T. E. CONNOLLY, co-partners doing business under the firm name and style of H. W. Rohl and T. E. Connolly, Plaintiffs, -vs- THE CITY OF SAN DIEGO, CALIFORNIA, a municipal corporation, Defendant.	No. 78776 COMPLAINT FOR DECLARATORY RELIEF

Comes now the plaintiffs and for their cause of action for declaratory relief, COMPLAIN and ALLEGE:

I

That the plaintiffs H. W. Rohl and T. E. Connolly are now, and at all times herein mentioned have been, co-partners doing business under the firm name and style of H. W. Rohl and T. E. Connolly.

II

That the defendant, The City of San Diego, California, is now, and at all times herein mentioned was, a duly organized and existing municipal corporation within the County of San Diego, California.

III

That on or about the 23rd day of April, 1932, there was duly made and entered into by and between the plaintiffs and the defendant a contract, whereby the plaintiffs, as contractor, for the consideration therein set forth, agreed to build, erect and construct for the defendant what is commonly referred to as the El Capitan Reservoir Dam, Spillway and Outlet Works. That a true and correct copy of the contract for the performance of said work, including the original plans and the original specifications for the constructinn of said dam is attached hereto as Exhibit "1" and is hereby referred to and made a part of this Complaint by reference the same as though fully rewritten herein.

1957

IV

That an actual and bona fide controversy has arisen and now exists with reference to the legal interpretation, meaning, construction, and application of Section 54 of the contract specifications, and as to the duty of the defendant City, and its Hydraulic Engineer, to prepare and deliver to the contractor an estimate and progress payment, based upon classifications, made in accordance with said specifications for all work heretofore and hereafter performed.

V

Paragraph 54 of the specifications provides as to the classification of excavation as follows:

Class 1. Solid rock which shall include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume.

Class 2. All earth, overburden sand, gravel and other excavation not included in class 3, 4 and 5.

Class 3. Excavation in main cutoff trench under dam.

Class 4. Excavation in cutoff trenches under spillway.

Class 5. Excavation in outlet tunnell excepting excavation in cut and cover section and approach and outlet sections.

VI

Plaintiffs allege and contend that said provision of the specifications as to Class 1 excavation is to be given an engineering construction interpretation in accordance with its accepted meaning in construction contracts, and that Class 1 excavation not only includes solid rock but also includes all ledge rock in place which it is not practical or economical or in accordance with good construction practice to excavate without the use of powder, or other means of wedging, barring or blasting.

Plaintiffs are informed and believe and upon such information and belief allege that the defendant City, and its Hydraulic Engineer, contend that said provision of the specifications as to Class 1 excavation means that Class 1 excavation includes only such solid rock in place as it is physically impossible to excavate except by wedging, barring or blasting.

VII

That plaintiffs have within the time and in the manner pro-

vided for in said specifications duly protested and objected to each and every statement of the quantities and classifications furnished plaintiffs under the provisions of Paragraph 54 of the specifications.

VIII

That the plaintiffs will complete the construction of said dam in about 90 days, at which time it will be the duty of the defendant City, and its Hydraulic Engineer, to prepare and deliver to the plaintiffs a final estimate, as provided for in Paragraph 50 of the specifications, for the completed work, computed upon the basis of the items and unit prices named in the contract. That the defendant City, and its Hydraulic Engineer, have in the preparation of each of the twenty-seven monthly estimates for work performed from the 23rd day of April 1932, to date, erroneously interpreted Paragraph 54 of the specifications and have failed to prepare or deliver to the Contractor any monthly estimate or progress payment based upon classifications, made in conformity with the true meaning, correct interpretation and proper application of said Paragraph 54 of the specifications. That plaintiffs are informed and believe and upon such information and belief allege that unless and until this Honorable Court construes and determines by declaratory decree the true meaning, legal construction and proper application of Paragraph 54 of the specifications, neither the defendant City nor its Hydraulic Engineer will correctly classify the excavation heretofore performed and hereafter to be performed or prepare a final estimate based upon classifications, in accordance with the terms and provisions of the Contract and Specifications.

IX

That plaintiffs have no other plain, speedy and adequate remedy and unless relief be granted hereunder, plaintiffs will sustain irreparable damages.

WHEREFORE, plaintiffs pray that the Court construe and interpret Paragraph 54 of the Contract Specifications, determine the above set forth controversies of the parties hereto, and by declaratory judgment decree the respective rights, duties and obligations of the parties with respect thereto, for their costs of suit and for such other and further relief as to the Court may seem meet and proper.

JOHN M. MARTIN

FRANK L. MARTIN, JR.
Attorneys for Plaintiffs

10/4/34
copy /f

1959

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA,

IN AND FOR THE COUNTY OF SAN DIEGO.

H. W. ROHL and T. E. CONNOLLY, co-partners doing business under the firm name and style of H. W. Rohl and T. E. Connolly, Plaintiffs, -vs.- THE CITY OF SAN DIEGO, CALIFORNIA, a municipal corporation, Defendant.	No. 78776. ANSWER

Comes now the defendant above named, and answering the complaint herein, admits, denies, and alleges as follows:

I.

Answering paragraph IV of said complaint, this defendant denies that an actual and bona fide or that an actual or bona fide controversy has arisen and now exists, or has arisen or now exists with reference to the legal interpretation, meaning, construction, and application, or with reference to the legal interpretation or meaning or construction or application of Section 54 of the contract specifications, and/or as to the duty of the defendant City and/or its Hydraulic Engineer to prepare and/or deliver to the contractor an estimate and/or progress payment based upon classifications made in accordance with said specifications for all work heretofore and/or hereafter performed.

II.

Defendant admits that plaintiffs contend that said provision of the specifications as to Class 1 excavation is to be given an engineering construction interpretation in accordance with its accepted meaning in construction contracts, and that Class 1 excavation not only includes solid rock but also includes all ledge rock in place which it is not practical or economical or in accordance with good construction practice to excavate without the use of powder, or other means of wedging, barring or blasting.

Defendant denies generally and specifically each and all of the allegations of said paragraph VI not specifically admitted herein.

Defendant alleges that said provision of the specifications as to Class 1 excavation means that Class 1 solid rock shall

include except class 3, 4 and 5 excavation, all ledge rock in place that cannot be loosened except by wedging, barring or blasting and all detached masses of solid rock more than one cubic yard in volume..

III.

Answering paragraph VII of said complaint, defendant denies generally and specifically the allegations therein contained.

IV.

Answering paragraph VIII, defendant alleges that it has not sufficient information or belief to enable it to answer certain allegations there appearing, and basing its answer on that ground denies that the plaintiffs will complete the construction of said dam is about ninety days.

Defendant admits that at the end of each calendar month the engineer will make an estimate of the amount earned to that date, under the terms of the contract, for completed work, classified and computed on the basis of the items and unit prices named in the contract. To the estimate made as above set forth will be added the amounts earned for extra work to the date of the progress estimate. From the total thus computed a deduction of twenty-five per cent will be made, and from the remainder a further deduction will be made of all amounts due to the City of San Diego from the contractor for supplies or materials furnished or services rendered and any dher amounts that may be due to the City of San Diego as damages for delays or otherwise under the terms of the contract. From the balance thus determined will be deducted the amount of all previous payments and the remainder will be paid to the contractor upon the approval of the accounts. The twenty-five per cent deducted as above set forth shall not become due and payable until the completion of the work to the satisfaction of the Engineer and its acceptance by The City of San Diego, and until release shall have been executed and filed as hereinafter provided, and until five days shall have elapsed after the expiration of the period within which liens may be filed under the provisions of Title 4, Part 3 of the Code of Civil Procedure of the State of California. In case of suspension of the contract the said twenty-five per cent shall be and become the sole and absolute property of the City of San Diego to the extent necessary to repay to the City of San Diego any excess in the cost of the work above the contract price. When the terms of the contract shall have been fully complied with to the satisfaction of the engineer and when a release of all claims against the City of San Diego, under or by viture of the contract, shall have been executed by the contractor, and when five days shall have elapsed after the expiration of the period within which liens may be filed, as hereinabove provided, final payment will be made, at such time and in such manner as provided by law, of any balance due, including the percentage withheld as above stated, or such portion thereof as may be due the contractor.

Further answering said paragraph VIII, the defendant denies generally and specifically each and every allegation contained in said paragraph not hereinbefore specifically admitted.

V.

Defendant denies generally and specifically the allegations set forth in paragraph IX of said compalint.

WHEREFORE, defendant prays that the plaintiffs take nothing under and by virtue of their complaint herein; that the court refrain from construing and refuse to construe any of the provisions of said contract (Exhibit 1 attached to said complaint); that the court enter its judgment denying any declaratory relief to the plaintiffs, and dismissing the action and awarding the defendant its costs herein incurred, and for such further and general relief in the premises as to the court may appear proper.

C. L. BYERS
City Attorney.

H. B. DANIEL
Deputy City Attorney.

HUNSAKER & O'NEIL
Attorneys for Defendant.

STATE OF CALIFORNIA,)
) ss.
County of San Diego.)

RUTHERFORD B. IRONES, being first duly sworn, upon oath deposes and says: That he is Mayor of The City of San Diego, a municipal corporation, defendant in the above-entitled action; that he has read the foregoing Answer, and knows the contents thereof, and that the same is true of his own knowledge, except as to the matters therein stated on information or belief, and as to those matters he believes it to be true.

RUTHERFORD B. IRONES

Subscribed and sworn to before me

this _____ day of September, 1934.

(SEAL) _____
Notary Public in and for the County
of San Diego, State of California.

1962

LITIGATION

DALEY-FENTON-CROUCH

2-13-35
copy/p

1963

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA,
IN AND FOR THE COUNTY OF SAN DIEGO.

No. 70858.

GEORGE R. DALEY and HENRY G. FENTON,

Plaintiffs,

-vs.-

THE CITY OF SAN DIEGO, CALIFORNIA, A Municipal Corporation, WALTER W. AUSTIN as Mayor of the said City, LOUIS C. MAIRE ALFRED STAHEL, JR., IRA S. IREY and JAMES V. ALEXANDER, as members of the Common Council of the said City, C. FREDERIC WATERBURY, as Auditor of the said City, JACK T. MILLAN, as Treasurer of the said City, H.W. ROHL and T.E. CONNOLLY, co-partners doing business under the firm name and style of H.W. Rohl and T.E. Connolly, John Doe and Richard Roe,

Defendants.

AFFIDAVIT OF H. N. SAVAGE. ON ORDER TO SHOW CAUSE.

STATE OF CALIFORNIA,)
) ss.
County of San Diego.)

H. N. SAVAGE, being first duly sworn, on oath deposes and says:

That he is and at all times hereinafter mentioned was the duly and regularly appointed, qualified and acting Hydraulic Engineer in charge of water development for The City of San Diego, and that as such engineer he is and will be in charge of the construction of El Capitan dam reservoir, spillway and outlet works under a contract heretofore entered into, to-wit, on the 25th day of April 1932, between said City and H. W. Rohl and T. E. Connolly; that said contract was awarded to said Rohl and Connolly pursuant to notice inviting bids duly and regularly advertised by the said City under said form of contract, drawings and specifications theretofore filed with said City, being Document No. 274415; that prior to the action of said Common Council in authorizing the notice inviting bids for the doing of said work in accordance with the form of contract, drawings and specifications contained in said Document No. 274415, the form of contract, drawings and specifications, together with all other forms and requirements contained in said document, were by said Common Council at a regular meeting thereof duly and regularly adopted and approved as the basis upon which the contract for the construction of El Capitan reservoir dam, spillway and outlet works would be awarded; that the contract, plans and drawings and specifications contained in said Document No. 274415 are the contract, plans, drawings and specifications referred to in the complaint of plaintiffs herein; that prior to said notice inviting bids upon said drawings and specifications for the erection of El Capitan dam reservoir, spillway and outlet works affiant pre-

pared and filed with the City Clerk of said City estimates of the cost of doing the said work thereunder, and that said estimate of cost was $2,805,735.

That in response to the City's notice inviting bids for said work five bids were received; that affiant is well acquainted with conditions obtaining in the contracting world at the present time, and that in view of said conditions, in affiant's judgment, the five bids received were as many as would be reasonable to expect in view of said conditions; that one of the five bids received was submitted by the Utah Construction Company, which said company is prominently qualified for such work, having satisfactorily completed a number of sizeable dam construction jobs for the United States Government Reclamation Service; that said construction jobs were under specifications similar to those required by the City of San Diego for the construction of El Capitan reservoir dam, spillway and outlet works; that the bid of said Utah Construction Company was $2,594,050.00; that the lowest bid was submitted by H.W.Rohl and T.E.Connolly, who are likewise known to affiant to be responsible and reliable bidders, veterans in large construction work and qualified by successful experience to undertake said contract, the bid of said Rohl and Connolly being $2,332,860.00; that the same was $472,875.00, or over 16%, lower than affiant's estimate of the cost of doing said work.

That affiant is creditably informed and believes that the plaintiffs in the above entitled action were desirous of bidding and fully intended to bid upon said contract, and that they had prepared a bid for submission thereon which was substantially higher in amount than said bid of Rohl and Connolly; that said plaintiffs were prevented from putting in their said bid for the sole reason that they were unable to secure commitments from responsible and acceptable surety companies for the required bonds.

Affiant further deposes and says that said five bids were opened and declared by the Common Council at a regular meeting thereof on April 11, 1932, at which time and place George R. Daley, one of said plaintiffs herein, was present; and that the said Daley then and there publicly stated to the said Common Council that he and his co-plaintiff had intended to submit a bid upon said El Capitan contract, in accordance with the drawings and specifications hereinabove mentioned, but that they were prevented from doing so by their inability to secure surety bonds required therefor; that said Daley then and there stated in substance and effect that the said drawings and specifications and form of contract were acceptable and all right, and that he was willing to work under them, with the sole exception that the City was required to withhold 25% from all progress estimates from the contractor until the expiration of thirty-five days from the completion and acceptance of the contract, as required by the provisions of Section 94 of the Charter of said City; that he, the said Daley, believed that he and his co-plaintiff could secure bonds if said 25% holdback could be reduced to 15%. That said Daley then and there requested and urged the Common Council to reject all of said five bids and return them to the bidders unopened and to reduce the percentage of the contract price to be withheld from 25% to 15% and to re-advertise for new bids. That upon the refusal of the said Common Council so to do the said plaintiffs subsequently,

to-wit, on or about April 18, 1932, filed with the City Clerk of said City the proposal or proposition in writing which is set forth in the affidavit of Walter W. Austin, dated April 27th, 1932, on file herein. That affiant was instructed by the Common Council of said City to examine and report upon said proposition or proposal, and did so report to the effect that there were many legal, practical and administrative difficulties in the way of the City's accepting such proposition, and recommending that the contract for said work be awarded to the said H. W. Rohl and T. E. Connolly as the lowest responsible and reliable bidders. That upon being informed of said report and recommendation and that the Common Council of said City would in all probability adopt the same and award said contract to said Rohl and Connolly and reject the proposition or proposal of the said plaintiffs, the plaintiffs instituted the above entitled action.

Affiant further deposes and says that he is familiar with the description of all of the lands and rights of way upon which the said El Capitan dam and reservoir will be constructed, together with all lands which will be flooded by the water impounded in said reservoir, and has carefully checked the boundaries and descriptions thereof; and that prior to the award of said contract to the said Rohl and Connolly The City of San Diego was and now is possessed of the titles and/or the right to acquire title to all of said lands and rights of way required in and about the construction, operation and maintenance of said dam and reservoir.

Affiant further deposes and says that any delay, even so much as a month, in starting installation of the El Capitan reservoir dam, spillway and outlet works and accessory structures would in all probability result in preventing the progress of said work by the time of the fall and winter rains of 1932-33 from reaching a point at which safe flood by-pass tunnel control could be provided for, and that in the event of heavy floods occurring at said time might and in all probability would result in great damage to the work, consequent delay and very heavy loss to both The City of San Diego and the said contractors.

Affiant further says that as now contracted for said dam is to be completed ready for the storage of the 1934-35 winter flow which, in the event of a flood runoff similar to that occurring in 1921-22 when said City's Barrett Reservoir dam was being completed and was filled and sufficient water was diverted to fill Lower Otay Reservoir (the combined storage of said two last mentioned reservoirs being similar to the maximum storage of the projected El Capitan Reservoir), would have a value to The City of San Diego of upwards of $1,000,000.00. That if construction work on said dam as now contracted for should be restrained by this court great and irreparable loss might and in all probability would be suffered by the said City both in respect of its obligations and liability to said contractors and in respect of the loss of flood water of immense value to said City, as hereinabove explained; that subsequent to the filling of said Barrett Reservoir in 1921-22 five years elapsed before there was sufficient runoff to again fill the reservoir; and that even a relatively short delay in or restraint of the construction work at said El Capitan Dam will not permit of the completion of said dam until after the 1934-35 runoff period.

Subscribed and sworn to before me this 27th day of April, 1932.

H. N. Savage

Notary Public in and for the County of San Diego
State of California

2-11-35
copy/p

1966

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF SAN DIEGO

No. 70858

GEORGE R. DALEY and HENRY G. FENTON,

Plaintiffs

vs.

THE CITY OF SAN DIEGO, CALIFORNIA a Municipal Corporation, WALTER W. AUSTIN, as Mayor of the said City, LOUIS C. MAIRE, JOSEPH J. RUSSO, ALFRED STAHEL, JR., IRA S. IREY AND JAMES V. ALEXANDER, as members of the Common Council of the said City, G. Frederic Waterbury, as Auditor of the said City, Jack T. Millan, as Treasurer of the said City, H. W. Rohl and T. E. Connolly, co-partners doing business under the firm name and stYoe of H. W. Rohl and T. E. Connolly, John Doe and Richard Roe,

Defandants.

AFFIDAVIT OF ALAN ROWE ON BEHALF OF DEFENDANTS

STATE OF CALIFORNIA)
) SS.
COUNTY OF SAN DIEGO)

ALAN ROWE, being first duly sworn, on oath deposes and says:

That he is the consulting engineer for the defendants H. W. Rohl and T. E. Connolly to whom the contract for the construction of the El Capitan reservoir dam, spillway and outlet works has been let.

That he is a registered civil and hydraulic engineer of the State of California and associate member of the American Society of Civil Engineers, has been associated as a partner with J. B. Lippincott of Los Angeles for the past eighteen years and has practised engineering for the past twenty-two years.

That during his engineering experience has has performed engineering services for the following clients: the State of California, for the City of Los Angeles, for the County of Los Angeles, for the City of Santa Ana, for the San Diego County Water Company, for the City of Long Beach, for the Santa Fe Irrigation District, for the Santa Fe Railroad Company, for the Union Oil Company, for the Riverside Cement Company, for the Spring Valley Water Company of San Francisco and for the East Bay Water Company of Oakland. That he was Supervising Engineer at Sandy Hook in the construction division of the United States Army, Assistant Supervisor of the United States Housing Corporation, Bethlehem, Pa., and Field Engineer in the construction of Camp Kearny.

That he has spent at least 45 days in studying thepplans and specifications of the El Capitan reservoir dam, spillway and outlet works, including the site of the work, checking the flood record of the U. S. Geological Survey, analyzing all risks and hazards and preparation of the bid of H. W. Rohl and T. E. Connolly. That he is fully informed as to the cost of constructing said work, the order in which the work must be performed, the equipment necessary and the cost and rental value thereof and the risks and hazards to be encountered.

That the contract between the City of San Diego and H. W. Rohl and T. E. Connolly for the construction of the El Capitan reservoir dam, spillway and outlet work, which has been awarded, executed and delivered and dated April 23, 1932, requires the contractors to keep in readiness and available at once for said work the following construction equipment, to wit:

Six power shovels
Thirty trucks
A complete concrete mixing plant
A complete sand and gravel screening and crushing plant
A complete air compressor plant with permanent air lines, drills, etc.
Tunnel equipment consisting of mucking machines, drills, blowers, concrete air guns, cars and track, etc.
Hydraulic equipment consisting of mud pumps, jet pumps, low pressure pumps, motors, pipe line, fittings and valves.

That the aforesaid equipment represents an investment of approximately $400,000.00, having a reasonable rental value of at least $1,000.00 per day. That by reason of the letting of said contract the contractors must reserve this equipment for this particular work and that for each day's delay in starting the work the contractors will necessarily suffer a loss of $1,000.00 per day on account of loss of use of equipment.

That said contract requires the work to be completed on or before October 31, 1934 and for failure so to do the contractors forfeit to the City a penalty of $100.00 per day as liquidated damages for each day's delay. That in order to complete the work within the time allowed by the contract, construction operations must be carried on without interruption or delay.

That it is necessary that the contractors at once conserve the water now flowing in the river for use in construction during the dry summer months.

That in order to carry on construction operations during the winter season of 1932-33 adequate provision must be made prior to December 15, 1932 for by-passing the flood waters of the San Diego river past the damsite. The plans require this to be done by the construction of a by-pass tunnel approximately 1200 feet in length through the South abutment. It will require at least 150 days to complete the excavation and lining of this tunnel. In addition to the complete construction of the by-pass tunnel it will be necessary

to complete the rock fill in the upper toe of the dam to a point at least 80 feet above the stream bed. All of this must be done prior to the flood season of 1932-33 in order to carry on construction operations during the flood season with a reasonable amount of safety, and in order to prevent the destruction by flood waters of the work theretofore performed.

That the construction work involved to obtain this result includes approximately 30,000 cu.yds. of tunnel excavation through solid rock; the placing of approximately 7800 cu.yds. of concrete in lining, flooring, and portal structures of the tunnel; the temporary diversion of the summer flow of the river; excavating to bed rock approximately 60,000 cu.yds. of sand and gravel in the stream channel for a bdd rock connection; the unwatering of this excavation; the construction of a concrete toe dam containing approximately 6,000 cu.yds. of concrete; and the pouring, transporting, and placing of approximately 285,000 cu.yds. of rock. All of this work must be completed prior to Dec. 15, 1932, or within 236 days after the signing of the contract.

That in addition to completing the work enumerated above, it will be necessary for the contractors to excavate, screen and crush the concrete aggregate materials required for approximately 60,000 cu.yds. of concrete from stream deposits above the damsite and stock pile the same at a point above the flood channel of the river.

That in order to complete the aforesaid work prior to Dec.15, 1932, it is necessary that the contractors immediately assemble on the job all of the construction equipment enumerated above and prosecute the work with unusual rapidity. That unless construction work is started immediately it will be practically impossible to complete the aforesaid work before the flood season and any work performed in the stream channel prior to the spring of 1933 would be at the risk of destruction from floods. That in such event the contractors would not only suffer the loss of work completed prior to the flood season and damage to equipment, but would also suffer a delay of at least ten months in the completion of the contract for which they would suffer a penalty of $100.00 per day as liquidated damages to the City.

That in the opinion of affiant the contractors might easily suffer a lost of at least $500,000.00 in loss of use of equipment, in destruction of work and equipment by floods, liquidated damages to the City due to delay in completion of the work, and interest on capital invested, in the event Plaintiffs' application for a temporary injunction be granted.

That any delay or postponement of the commencement of work will work an irreparable injury to the defendants H. W. Rohl and T. E. Connolly.

Alan Rowe

Subscribed and sworn to before me
this_____day of_____1932.

_____
Notary Public in and for the County
of San Diego, State of California.

2-13-35
copy/p

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA,
IN AND FOR THE COUNTY OF SAN DIEGO.

No. 70858.

GEORGE R. DALEY and HENRY G. FENTON,

Plaintiffs,

-vs.-

THE CITY OF SAN DIEGO, CALIFORNIA, A Municipal Corporation, WALTER W. AUSTIN as Mayor of the said City, LOUIS C.MAIRE, ALFRED STAHEL,JR.,IRA S.IREY and JAMES V. ALEXANDER, as members of the Common Council of the said City, C. FREDERIC WATERBURY, as Auditor of the said City, JACK T.MILLAN,as Treasurer of the said City, H.W.ROHL and T.E.CONNOLLY, co-partners doing business under the firm name and style of H.W.Rohl and T.E.Connolly, John Doe and Richard Roe,

Defendants.

LA MESA,LEMON GROVE AND SPRING VALLEY IRRIGATION DISTRICT,

Intwrvenor.

ORDER DISCHARGING ORDER TO SHOW CAUSE.

This matter coming on regularly to be heard before the Court this day upon an order to show cause heretofore issued herein, directed to the above named defendants, why they and each of them should not be restrained from proceeding further with the construction of El Capitan Dam; and all of said defendants save and except defendants H.W.Rohl and T.E.Connolly appearing by counsel, and having filed affidavits in return to said order to show cause; and La Mesa,Lemon Grove and Spring Valley Irrigation District, intervenor herein, appearing by its attorney Albert J.Lee, Esq.; and said plaintiffs appearing by their attorney, Charles C.Crouch, Esq.; and the said defendants being ready to proceed with the hearing upon said order; and said Counsel for plaintiffs thereupon announcing in open court that plaintiffs would not proceed with their application for a temporary restraining order, and desired to withdraw said application:

NOW, THEREFORE, IT IS ORDERED that the order heretofore, to-wit, on April 21st, 1932, issued herein, requiring the above named defendants to show cause why they should not be temporarily restrained from proceeding with the construction of the public improvement described in the complaint on file in this action, be, and the same is hereby discharged with prejudice against any renewed application for a temporary restraining order pending the hearing of said action upon its merits.

Done in open court this 29th day of April, 1932.

Judge of the Superior Court.

2-11-35
copy/p

1979

November 19, 1932

From : Secretary

To : Hydraulic Engineer

Subject : San Diego River Project, El Capitan Feature
Brief of Charles C. Crouch (Amicus Curiae)

There has been received from Attorney Charles C. Crouch Brief, "In The District Court of Appeal Second Appellate District of the State of California - The City of San Diego, a municipal corporation, et al., Petitioners vs. J. T. Millan, as Treasurer of The City of San Diego, Respondent."

After 49 pages of discussion, the conclusions are as follows:

"CONCLUSION.

. . . . . .

"In conclusion we respectfully submit to the Court that:

"1. This Court should not depart from, strain, or stretch the law in order to help the City of San Diego out of the dilemma it has placed itself by ignoring the requirements of the law even after such requirements were called to its attention by appropriate court proceedings.

"2. That the burden is upon the petitioners to show their clear right to the relief asked and, and this Court cannot be in a position to say that such right has been clearly established until it is made to appear to the Court that the City can legally expend the moneys which it asks the Court to help raise; and that before the Court decides this matter, counsel for petitioners should be ordered to procure and file for the use of the Court certified copies of the pleadings in the pending San Diego Superior Court cases, and that all the issues therein raised as to the City's legal right to expend moneys for the purpose of constructing the hydraulic earth filled dam at El Capitan should be passed upon by this court.

"3. That the City of San Diego has no right to sell any of the El Capitan Dam bonds for the purpose of raising money to be used for any other purposes and objects than those mentioned in the ordinance calling the election at which the said bonds were voted.

"4. That the City of San Diego has no right to dispose of any of the bonds voted for the construction of an arched gravity section, masonry type of dam at El Capitan Dam Site No. 2.

"5. That the special election of December 15, 1931, was limited in its effect to the authorization of the expenditure of 'money raised by the sale of bonds' voted for the construction of an arched gravity section, masonry type dam at El Capitan Dam

Site No. 2, for the construction of a different type of dam, and does not authorize the expenditure for such purpose of moneys to be thereafter raised by the sale of other bonds of said issue.

"6. That unexpended moneys raised by the sale of Sutherland Dam bonds cannot legally be used for the purchase of unsold El Capitan Dam bonds.

"7. To issue the writ prayed for in this case would be to sanction by the Common Council the violation of that portion of section 6 of the Bond Act of 1901, which prohibits a municipality from selling bonds issued under the act for not less than their par value.

"8. That the petition for the writ should be denied.

Respectfully submitted,

CHARLES C. CROUCH
Amicus Curiae."

Attached is clipping from this morning's (November 19, 1932) San Diego Union regarding the above matter. No doubt it is old news to you.

E. I. Fraser

F/f
encl. clipping

1-7-35
copy/p

1972

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF SAN DIEGO

GEORGE R. DALEY and HENRY G. FENTON,

Plaintiffs,

-vs-

THE CITY OF SAN DIEGO, CALIFORNIA, a Municipal Corporation, et al.,

Defendants.

No. 71108

I N J U N C T I O N.

This cause having been regularly called and tried by the Court, and the findings of fact and conclusions of law, and the decision thereon in writing, having been rendered, wherein judgment was ordered in favor of plaintiffs, and against defendants, and for costs, on motion of Charles C. Crouch, attorney for plaintiffs.

IT IS ORDERED, ADJUDGED AND DECREED:

1. That plaintiffs have judgment as prayed for in their complaint, including costs taxed at $19.50.

2. That the defendant The City of San Diego be, and it is hereby, perpetually enjoined and restrained from proceeding further under Resolution No. 58,304, passed and adopted by the Common Council of the said City on the 25th day of April, 1932, and from paying any part of the cost of the construction of the road in the said resolution and hereinafter more particularly described.

3. That the defendant G. Frederick Waterbury, as Auditor of the said City, be, and he is hereby, permanently enjoined and restrained from making or issuing any certificate authorizing the payment by the said City of any part of the cost of the construction of the said road.

4. That the defendant Jack T. Millan, as Treasurer of the said City, be, and he is hereby, permanently enjoined and restrained from paying to the defendants H. W. Rohl and/or T. E. Connolly, any sum of money from the treasury of the said City in payment of any portion of the cost of the construction of the said road.

5. That the defendants H. W. Rohl and T. E. Connolly, and each of them, are hereby permanently enjoined and restrained from accepting or taking from the treasury of the said City any sum of money in payment for the cost of the construction of the said road.

The said road is more particularly described as follows:

That certain county road No. 389 along the south side of the San Diego River from the vicinity of El Capitan Dam to El Monte Park in the county of San Diego, State of California.

Dated this 24th day of April, 1933.

Clarence Harden (Signed)

Judge

1-7-35
copy/p

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF SAN DIEGO

GEORGE R. DALEY and
HENRY G. FENTON

Plaintiffs.

vs.

THE CITY OF SAN DIEGO, CALIFORNIA, a Municipal Corporation, et al.,

Defendants.

No. 71189

I N J U N C T I O N

This cause having been regularly called and tried by the Court, and the findings of fact and conclusions of law, and the decision thereon in writing, having been rendered, wherein judgment was ordered in favor of plaintiffs, and against defendants, and for costs, on motion of Charles C. Crouch, attorney for plaintiffs,

IT IS ORDERED, ADJUDGED AND DECREED:

1. That plaintiffs have judgment as prayed for in their complaint, including costs taxed at $29.80.

2. That the defendant The City of San Diego be, and it is hereby perpetually enjoined and restrained from proceeding further under Resolution No. 58,305, passed and adopted by the Common Council of the said City on the 25th day of April, 1932, and from paying any part of the cost of the construction of the road in the said resolution and hereinafter more particularly described.

3. That the defendant G. Frederick Waterbury, as Auditor of the said City, be, and he is hereby permanently enjoined and restrained from making or issuing any certificate authorizing the payment by the said City of any part of the cost of the construction of said road.

4. That the defendant Jack T. Millan, as Treasurer of the said City, be, and he hereby, permanently enjoined and restrained from paying to the defendants H. W. Rohl and/or T. E. Connolly, any sum of money from the treasury of the said City in payment of any portion of the cost of the construction of the said road.

5. That the defendants H. W. Rohl and T. E. Connolly, and each of them, are hereby permanently enjoined and restrained from accepting or taking from the treasury of the said City any sum of money in payments for the cost of the construction of the said road.

No. 71108 Dept._____

In the
SUPERIOR COURT
of the
State of California
in and for the
County of San Diego

GEORGE R. DALEY and
HENRY G. FENTON,
Plaintiffs,

-vs-

THE CITY OF SAN DIEGO,
CALIFORNIA, et al.,
Defendants.

Entered; Judgment Book 90
Page 494
Apr. 25, 1933, Docket 20
Page 105

I N J U N C T I O N

F I L E D

April 24, 1933

J. B. McLEES, Clerk
By Geo. W. Edwards, Deputy

CHARLES C. CROUCH

Attorney for Plaintiffs.

The said road is more particularly described as follows:

That certain road along Chocolate Creek for a distance of about three miles connecting County Road No. 389 with State Highway No. 80 in the county of San Diego, State of California.

Dated this 31st day of May, 1933.

Clarence Harden (Signed)

Judge.

No. 71189 Dept._____

In the

SUPERIOR COURT
of the
State of California
in and for
the
County of San Diego

GEORGE R. DALEY and
HENRY G. FENTON,

Plaintiffs,

-vs-

THE CITY OF SAN DIEGO,
CALIFORNIA, et al.,

Defendants.

I N J U N C T I O N.

Entered; Judgment Book 93
Page 79
May 31, 1933, Docket 20 Page 124

F I L E D

May 31, 1933

J. B. McLEES, Clerk

By Geo. W. Edwards,
Deputy

CHARLES C. CROUCH

Attorney for Plaintiffs.

8/11/34
copy /f

CHARLES C. CROUCH
Attorney
San Diego, California

June 2, 1934.

The Honorable,
The Mayor and Common Council of
The City of San Diego, California.

Gentlemen:

On April 25, 1932, the Common Council of the City of San Diego passed and adopted its Resolution No. 58,304 purporting to authorize H. W. Rohl and T. E. Connolly to widen, improve and re-align County Road No. 389 along the south side of the San Diego River from the vicinity of El Capitan Dam to El Monte Park; the said work to be done as "extra work" under the provisions of Paragraph 14 of their contract with the City for the construction of El Capitan Dam.

On the same date the Council passed and adopted its Resolution No. 58,305 purporting to authorize the said contractors to construct a new road along Chocolate Creek for a distance of three miles leading from the damsite to State Highway No. 80, the said work also to be done as "extra work" under the provisions of the said contract.

On May 13, 1932, I brought an action in the Superior Court of the County of San Diego against these contractors, the City, the City Auditor and the City Treasurer alleging the invalidity of giving the work described in Resolution No. 58,304 to these contractors as "extra work" without the calling of public bids therefor; and on May 20, 1932, I brought a similar action with relation to the work described in Resolution No. 58,305. These actions are numbered 71,108 and 71,189, respectively of the records of actions in the said Superiar Court. In these actions the Court was asked to enjoin the City from paying and the contractors from receiving the money in payment for these items of work.

Prompt service was made upon the City, its Auditor and Treasurer, and the contractors, of the complaints in these actions, but notwithstanding the pendency of these court actions and before the trials thereof the City went ahead and paid these contractors three-fourths of the cost of the work.

Upon the trials the Court adjudged that these contracts were illegally entered into by the City and enjoined the City and its Treasurer from paying out any further municipal funds to the contractors in payment of the cost of this work. The total cost of this work was $14,155.94.

An appeal was prosecuted by the contractors from the Court's judgment in Suit No. 71,189, but on the 23rd day of May,

1934, a stipulation was signed dismissing the same.

By these suits $14,155.94 has been saved the taxpayers of the City. In order, however, that they may secure the full benefit of it, it will be necessary that the city bring action against the contractors for the return of the $10,616.96, illegally paid them. I therefore respectfully suggest and request that you instruct the City Attorney to prosecute such an action.

Respectfully,

CHARLES C. CROUCH (Signature)

Document No. 288338

Filed June 2, 1934

ALLEN H. WRIGHT City Clerk

By FRED W. SICK Deputy

Communication from Charles C Crouch relative to extra work orders issued to Rohl-Connolly for road work in and around El Capitan Dam

1978

CITY'S CONSULTANTS

1979

CONSULTANTS

J. P. BUWALDA

3/27/34
copy /f

August 28, 1933

Dr. J. P. Buwalda
California Institute of Technology
Pasadena, California.

My dear Dr. Buwalda:

The City of San Diego is building under contract with H. W. Rohl & T. E. Connolly a rock embankment-hydraulic fill dam across the San Diego River.

The work involves excavation for structures of about 1,000,000 cubic yards of material; the placing of about 1,000,000 cubic yards of rock embankment; 1,730,000 cubic yards of hydraulic fill material and the forming of about 63,400 cubic yards of concrete reinforced.

As usual, there is liable to be differences of opinion between the Contractor's and the City's resident engineers regarding the classification of material excavated for structures.

The City of San Diego may desire to employ the services of a geologist qualified to collaborate in determining classification of material under the requirements and provisions of the drawings and specifications and fair alike to each the Contractor and the taxpayers of the City of San Diego.

Based on my very agreeable and only too slight acquaintance with you as the result of a few contacts in Berkeley, California, and having followed your work and accomplishings, I am constrained to the impression that if agreeable and conveniently available you might be well qualified for the classification of the material involved.

The City "fathers" will likely consider two or more other Geologists.

If consistent, I wish you would advise me if it would be agreeable to you to have me recommend your employment and at what compensation. While very widely intermittent, your services of employment, if secured, might likely extend over a period of about two years, more or less.

Very truly yours,

H. N. Savage
Hydraulic Engineer.

HNS/f

3/27/34
copy /f

September 5, 1933

TO THE HONORABLE, THE MAYOR AND COUNCIL
OF THE CITY OF SAN DIEGO, CALIFORNIA.

Subject: San Diego River Project, El Capitan Feature Inspection by Consultants.

Gentlemen:

The contract construction of the El Capitan Reservoir Dam, Spillway and Outlet Works has again reached a stage where it is essential for the conduct of the work for the City to have the consulting services of a ranking Hydraulic Engineer and a ranking Geologist to determine the proper and economical procedure for the continued construction of dam and spillway.

The importance and magnitude of the El Capitan Reservoir Dam, Spillway and Outlet Works and the construction problems developed in connection therewith justify the immediate services of consultants of ranking ability.

It is understood that compensation of $100.00 per day and expenses for consultants is required, justified and parliamentary practice.

RECOMMENDATION: It is recommended that Mr. L. C. Hill of Los Angeles be employed as Consulting Engineer; and

That Dr. John P. Buwalda of Los Angeles be employed as Consulting Geologist; and

That $500.00 be made available from the El Capitan bond fund for their services and expenses.

Respectfully,

H. N. Savage,
Hydraulic Engineer.

HNS/p
cc City Manager
City Attorney

3/27/34
copy /f

1982

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA

Geology and Paleontology

September 11, 1933.

Mr. Hiram N. Savage,
Hydraulic Engineer in Charge,
Water Department,
City of San Diego,
California.

My dear Mr. Savage:

Although I have already spent a day in service with you at El Capitan dam, it is proper that I should acknowledge your courteous letter of August 28th, received during my absence.

As I indicated when you kindly telephoned me I will be available for the professional duties which you suggested in your letter, and will normally be able to come to San Diego without difficulty if given two or three days notice.

You may wish to have data regarding me in your files. I am at present Professor of Structural Geology, and Chairman of the Division of Geology and Paleontology, at the California Institute of Technology. My earlier academic record consists of: Doctorate at University of California in 1915; Instructor at that institution 1915-17; Assistant Professor at Yale University 1917-1921; Associate Professor and Professor at University of California 1921-26, and Dean of the Summer Sessions during four years of that period; present post from 1926 on. Associate Geologist, U. S. Geological Survey; Research Associate, Carnegie Institution of Washington; with Duncan McDuffie and Frederick Law Olmsted a member of the Board of (3) Expert Advisors to the National Park Service appointed by the Secretary of the Interior. As Consulting Geologist I have served professionally in connection with the following dams or damsites: Chatsworth (betterment); Boquet Canyon; Pine Canyon; Long Valley; Cajalco; and some other smaller ones. Also geological surveys for the Colorado River Aqueduct and for the Mono project. Various geological studies for economic occurrences of petroleum and natural gas, and for mineral deposits and ground water.

For short term services involving large responsibility, such as geological choice of a site for a large dam, my fee has ranged from $50 to $100 per day dependent upon the nature of the problem.

Since Berkeley days I have heard frequently of your accomplishments as an Engineer, and of the constructive program you are carrying out at San Diego. It was a real pleasure to renew the earlier acquaintance.

With cordial good wishes I am

Very sincerely yours,

JOHN P. BUWALDA (Signature)

9-25-33
copy/p

CALIFORNIA INSTITUTE OF TECHNOLOGY
Pasadena

Geology and Paleontology

September 11, 1933.

Mr. Hiram N. Savage,
Hydraulic Engineer in Charge
Water Department
City of San Diego, California.

My dear Mr. Savage:

Of the topics discussed yesterday at El Capitan Dam three are of geological character and I record below my observations and opinions regarding these.

Spillway Cut.

The question has been raised whether the slope of the rather high face on the north side of the spillway should be reduced.

I examined the entire length of the lower or accessible part of this cut slope, and also examined the more gently sloping ground extending northward from the rim of the cut to the granitic bedrock outcropping on the higher parts of the canyon wall. The rock in the cut face is the coarse-grained granitic rock constituting the entire damsite. Most of it is no longer fresh like the rock in the quarry west of the dam, but has been weathered to that stage at which it crumbles to some extent when a sharp pick is drawn across a newly cut surface, and pieces of it crush rather easily under the hammer. Occasional masses occur in the weathered rock which are still nearly as fresh as the quarry rock. The eastern, lower, part of the cut shows somewhat fresher, but also somewhat more jointed, granite than the higher part of the face to the west.

In marked contrast with most bodies of granitic rock in southern California the granite in this face is not shattered and is not extensively jointed. The rock is homogeneous and quite structureless. Traces of gneissoid or schistose structures are wanting. The joint planes are relatively widely spaced and hence rather few in number. The rock mass shows no sigh of important internal movement or distortion and there is no indication of even slight jumbling of its parts, such as usually is to be seen in rock bodies which have suffered landsliding. Many of the joints do exhibit minor slickensides and some show a very thin layer of gouge but they are not to be regarded as even minor faults. Relatively slight movement on joint planes commonly produces these phenomena.

The joints cutting the face have different orientations and inclinations. One set is steep and their trend makes a large angle with the face. One of these is the joint near

the western end of the face, marked by pink gouge and discoloration, on which about one inch of movement has occurred during the past ten days. Another group of joints tends roughly east and west and dips gently northward into the face. Several other joints were noted in the lower part of the face which also trend east and west but slope southward. There are also curved joints. Some of the blocks which have fallen out of the face were unstable because they were flat prisms behind which joints intersected. The slickensides or striations seen on the joint surfaces were all approximately horizontal.

The slip or joint plane on which about one inch of movement has recently occurred traverses the lower portion of the western part of the high face and can be traced for two or three hundred feet southward down the slope on which the steeper downstream part of the spillway is to be built. This joint, and others less well marked, are clearly old fractures which were in existence long before the recent movement began.

The surface north of the rim of the cut was examined to determine whether the displacement along the pink slip plane involves a large body of rock which may be pulling away from the bedrock of the mountainside; the ground was searched for tension or shear cracks but none was found. The only cracks seen were certain small fissures within a rod or two of the rim and roughly on the extension of the pink slip plane seen in the face.

From my inspection of this cut I conclude that:

The slope of this cut is appropriate for such rock as might expectably have been found in it, or for such granite as that in the quarry, but it is rather steep for granitic rock which on the whole has been weathered to the stage which this body has reached. Unless the spillway can be moved southward considerably and away from it, it will probably be necessary to reduce the slope of this cut face, but before that decision is reached it will be desirable to excavate the spillway to fully depth so that the nature of the rock underlying the face now exposed may be determined. The character of the movement will than also be better established. Masses of rock on the face which appear threatening to workers below might be sprung off with small charges of powder.

A considerable number of rather permanent points might well be set along both an east-west and a north-south line across the area suspected of sliding, with both triangulation and levelling. This work will be valuable both for determining the extent and nature of present movement, and for watching the suspected mass in the future. The fact that the mass did not move on days when work was suspended suggests that it is not very unstable, but a wet winter, by increasing the weight of the block and softening and lubricating it, might encourage movement. Fortunately the mass is only moderately jointed, but the steep joints and those few dipping south in the lower part of the face facilitate displacement.

While small masses off the face may fall suddenly it is not probable that the larger mass which has moved slowly about an inch thus far will shift rapidly, and the wisest course would appear to be to continue excavation and to make plans for any possible reduction of slope only after underlying rock conditions can be observed and after the character of the movement has been more fully determined.

I examined the rocky point south of the spillway, against which the right end of the dam abuts, to determine whether that knob represents a mass which has slid down from the canyon side. Available exposures indicate that it is not jumbled but has merely suffered normal degradation by weathering in place, and that it is hence not likely to pull away from the spillway or exert pressure against the dam.

Classification of Material in Spillway Excavation.

The partially decayed granite in which the spillway is being excavated cannot legitimately be classified either as rock or as non-rock material. Eighty five or ninety percent of it is decomposed to the stage that it is handled by steam shovel, after a little loosening with powder, in much the same way that soil would be excavated. This material cannot properly be classified as rock. On the other hand certain masses embedded in the weathered material are rock still as fresh as that in the quarry, and require similar treatment with dynamite. A single classification is not applicable to all the material being excavated and the procedure being followed by the City of San Diego is seggregating the unquestioned rock and the decayed material is both the fair and the practical one. In case of litigation, still photographs taken from time to time will be forceful evidence before a judge or jury, and even more convincing would be moving pictures recording the ease with which the shovel handles the decayed material.

Additional Clay for Use in Core.

With Mr. Wood and Mr. Marliave I inspected very briefly the borrow pits. Mr. Wood pointed out a layer of reddish clay which he suggested might be used for increasing the clay content in the core materials.

This reddish clay bed represents the upper part of a body of ancient stream gravels, deposited by the existing stream before it had cut down to its present level. The upper two to three feet of these gravels were, after deposition, well decomposed to a clay by ordinary weathering, and subsequently they were covered by soil washed down from the hills to the east. The upper surface of the clay will probably be found to be practically horizontal when followed eastward to its limit against the granite, while the overlying soil will for some distance at least thicken toward the east. The clay will probably not thicken materially when followed eastward beneath the soil. Although still retaining some undecomposed pebbles the red layer appears to contain a rather high clay content. The presence of the pebbles and the thinness of the bed raise some question however as to its value as a source for clay unless only limited quantities are required.

Very sincerely yours,

JOHN P. BUWALDA (Signature)
Consulting Geologist

3/28/34
copy /f

September 14, 1933

TO THE HONORABLE, THE MAYOR AND COUNCIL
OF THE CITY OF SAN DIEGO, CALIFORNIA.

Subject: San Diego River Project, El Capitan Feature, Report of Consulting Geologist.

Gentlemen:

Enclosed for the official files of the City of San Diego is Consulting Geologist J. P. Buwalda's report dated September 11, 1933 on his inspection trip to El Capitan Reservoir Dam, Spillway and Outlet Works September 9, 1933, in accordance with Resolution No. 60664.

Very respectfully,

H. N. Savage
Hydraulic Engineer.

F/f
Encl.
J.P.Buwalda's report

3/28/34
copy /f

1988

CALIFORNIA INSTITUTE OF TECHNOLOGY
Pasadena

Geology and Paleontology

November 23, 1933

Mr. Hiram N. Savage,
Hydraulic Engineer in Charge,
Water Department, City of San Diego,
San Diego, California.

Dear Mr. Savage:

On November 13th, 1933, I examined again the geological conditions in the north abutment and spillway at the El Capitan dam as developed by recent excavation, and observed the excavational activities under way on that day. The floor of the spillway had been cut down to its final level throughout nearly the entire length from its upper end to a point considerably west of the axis of the dam projected northward. Perhaps one-third of the concrete floor of the spillway has been laid but several uncovered patches of ground among the paved areas still give excellent evidence as to the nature of the material underlying the concrete, and the unpaved portion is now well exposed. The lower part of the slope on the north side of the spillway has now been laid bare and the steep north face of the hill standing between the north end of the dam and the spillway, affords full opportunity to determine the nature of the materials in which the excavation was made.

The materials in the floor of the spillway are in part rock and in part the products of decay and decomposition, resembling residual soil more closely than rock. When pared down by workmen, the materials give a hummocky surface, for the softer portions are excavated by shovelling with some picking and the harder rounded masses are left standing slightly higher. At this lowest level in the rock section - the floor of the spillway - where materials are presumably most fresh, I estimate that about one-third of the material is rather hard and the remainder is soft and certainly not true rock. At one locality I observed workmen lowering the floor somewhat preparatory to pouring concrete on it, by attacking it with pick and shovel. At another place the material was being loosened up rapidly with an air hammer. The power shovel was digging it away at a rapid rate after it had been loosened somewhat with powder, but unloosened materials were likewise being cut by the shovel extensively. While about one-third of the spillway floor appears harder than the remainder, inspection of the seemingly harder parts indicates that really fresh rock constitutes only between five and ten percent of the entire floor of the spillway.

The materials being cut by the steam shovel on the spillway floor west of the axial line of the dam projected northward are likewise decayed and weathered; fresh rock, in the form of sub-

spherical masses makes up less than one tenth of the total volume.

The high face north of the spillway has now been cut down nearly to spillway level, the only prism of material yet to be removed being eight or ten feet high and perhaps fifteen feet wide, the upper surface of which forms the bench occupied by the road at the foot of the high face. This prism, like the spillway floor, consists of fresh rock to the extent only of five to ten percent; the remainder is decayed material somewhat firmer than surface soil but of a hardness such that small charges of powder easily loosen large volumes of it. A large part has been dug away by the unaided power shovel, for deep shovel tooth marks occur abundantly along the south face of the prism.

I inspected the lower part of the high face to determine what fraction of it is rock. It is true that fresh rock masses constitute a somewhat larger percentage of the total in the lower part of the face than in the upper, and that the non-rock or decayed portion is somewhat firmer in the lower part of the face than in the upper. The globular rock masses however do not exceed about one-tenth of the volume in the lower part of the face. The intervening material, disintegrated, and in a state such that it crumbles down relatively easily when scratched by the geologic pick, is scarcely to be regarded as rock under the definition set down in the Pland and Specifications.

The spillway has now been excavated well into the hill lying between it and the north end of the dam. The north face of this hill is steep and exposes excellently the materials of which it is made. Decay and disintegration have affected these materials less than those on the floor of distant parts of the spillway and those in the slopes north of the spillway. Perhaps one-third of the lower portion of the north cut face of the hill and of the adjacent portion of the floor of the spillway is fresh rock or material sufficiently hard to be termed rock. Every gradation exists from fresh rock to relatively soft material but usually the line between fresh rock and relatively soft decayed material here is a rather sharp one. Weathering in the hill has proceeded downward along joint planes and the rhombohedral masses between the intersecting joints have decayed most rapidly at the corners and angles, resulting usually in a subspherical mass surrounded by shells of various thickness of material progressively less and less decayed inward.

In a final consideration of what is rock and what is not, the argument may be advanced that the steepness at which the faces stand indicates that they are in rock. This argument would be specious. In arid and semi-arid climates many types of material will stand stably in vertical faces. Borrow pits in materials so soft as to be excavated by power shovels unaided by explosives are often surrounded by high vertical backwalls. River-cut bluffs in soft alluvium, in windblown loess, and in weal glacial deposits stand at very steel angles in dry climates the world over.

The materials excavated for the spillway have been going in large part into spoil heaps; I examined these, inasmuch as they give an excellent idea of the character of the materials. I find very little rock in these heaps; they are built almost entirely of fine materials resulting from the crumbling of decayed granite. Small angular and subangular pieces and some larger chunks make up part of the volume of these heaps, but these pieces and chunks are badly weathered, break or crumble easily when struck by a geologic hand pick, and most of them are in a condition such that they barely withstood handling and dumping in the heap.

My conclusion with reference to the nature of the materials excavated for the spillway is that in the lower part, examined on November 13th, as well as in the upper part, inspected about a month earlier, rock constitutes but a small fraction of the total volume removed and that by far the greater part of the excavation has been in weathered products much too soft to be properly termed rock.

Technical Definitions of Rock. In the technical terminology of Geology the word rock is used in two senses. The geologist sometimes speaks of "the rocks of the earth's crust"; this is a broad usage in which it is intended to include all the materials which make up the outer solid shell of the earth; the fresh granite of the bedrock, the overlying soils, and even the ice of ice caps and glaciers. The stricter usage, intended to contrast the hard unweathered bedrock below and the overlying mantle of weathered rock or soil above - and this is obviously the only usage adapted to engineering specifications - restricts the term rock to hard materials in which the constituent minerals or particles are firmly bound together so as to give the mass strength under compression or percussion. The soft weak materials usually overlying the hard fresh rock, and either derived from it by weathering and decay or carried on to it from other sources, are usually characterized as soil, or soil mantle, or regolith, or alluvium. Sometimes the boundary between rock and soil is quite sharp; in the majority of cases the rock below grades gradually upward into soil and there is no sharp dividing boundary surface. This is particularly true where the soil is sedentary, that is, derived by decay in place from the rock below. This is essentially the condition at the spillway of the El Capitan Dam. At such localities the materials could be divided, if desired, into three classes: soil, firm decay products, and rock. Or a fourfold division could be made: soil, compact subsoil, firm decay products, and rock. In stripping, the first two of the first classification, the first three of the second, would ordinarily be removed. At El Capitan spillway the material regarding which difference of opinion exists is a mixture of the decay products of the first classification above with certain amount of rock. It is neither rock nor soil. The segregation being practised, into rock and decay products, is clearly the fair and practical solution. An excavator may contend that the decay products are actually rock because it

is necessary to drill them and use explosives to some extent to loosen them - more than would be necessary in soil - but neither under the definition set down in the specifications nor in strict geologic terminology is the name rock properly applied to this material.

Slip in Spillway Bluff. It is reported that the southward movement of the western portion of the bluff rising on the north above the spillway, along a conspicuous reddish-colored slip surface, ceased about a month before the date of the writer's examination, more or less concurrently with the completion of the blasting in or against the bluff face. The final test determining the stability of this mass will be either a wet Winter or a moderately strong earthquake. To judge from other cases, heavy precipitation, by increasing the weight of the mass and lubricating the slip plane with wet gouge, would probably be the more severe test.

Very sincerely yours,

JOHN P. BUWALDA (Signature)

John P. Buwalda,
Consulting Geologist

JPB:LR

CONSULTANTS

T. B. COSGROVE

9/29/33
copy /f

COPY

April 26, 1933

Mr. T. B. Cosgrove,
Messrs. Hunsaker & Cosgrove,
Attorneys and Counsellors at Law,
Rowan Building
Los Angeles, California.

My dear Mr. Cosgrove:

Under date of April 8th, 1933, I was favored with a communication from the Hydraulic Engineer, entitled, "From Hydraulic Engineer to City Attorney. Subject: San Diego River Project, El Capitan Feature. Compliance with Contract Specifications," a copy of which Mr. Savage forwarded to you under the same date.

In his letter the Engineer refers to sections 7, 10, 12, 17, 27, 30, 63, 53, 65, 52, 59 and 61 of the Specifications, and refers to various letters from the Engineer to the contractors, dated as follows: March 12th, 21st, 22nd, 22nd, 22nd, 29th, 30th, April 7th, and April 7th. It appears that the contractors failed to follow various instructions as directed by the Engineer by means of these communications.

As you remember, these matters were discussed somewhat, and you were of the opinion that various of the letters written by the Engineer were not sufficiently definite to enforce compliance. I refer you to the last paragraph of the letter addressed to me, requesting an opinion, and which reads as follows:

> "Your immediate consideration of the above important contract matters and your legal opinion as to how the Hydraulic Engineer shall proceed in order to secure compliance with the contract specifications is deemed fundamental before the Hydraulic Engineer may certify the monthly estimate for work done in March, 1933."

Under date of April 24th, I have been favored with an additional communication from the Hydraulic Engineer, a copy of which I enclose, and invite your attention to the last paragraph thereof.

Other than to refer the Hydraulic Engineer to various provisions of the contract specifications, I am at a loss to

otherwise answer. In view of the attitude of the Engineer in connection with these various requests for legal advice, I should very much appreciate a communication from you on the subject requested by Mr. Savage.

Thanking you for your help in the recent dispute, I am,

Yours very truly,

C. L. Byers,
City Attorney.

CLB/S

10/2/33
copy /f

HUNSAKER & COSGROVE
Attorneys and Counselors at Law
1030-1045 Rowan Building
Fifth and Spring Streets

Los Angeles, Cal.

May 2, 1933.

Re: Affairs of The City of San Diego -
El Capitan Dam Matters.

Mr. C. L. Byers,
City Attorney,
San Diego, California.

Dear Sir:

Your esteemed favor of the 26th inst., in the matter as above entitled, is received and the contents thereof carefully noted.

The City Attorney, unless he possesses the gift of prophecy, may not prepare opinions for filing under appropriate headings to be used in event of the occurrence of an anticipated difficulty. When the problem has actually arisen and from the conflicting statements of the parties in interest a fairly correct conclusion reached as to the facts, the City Attorney may approximate the legal status of the situation and the corresponding rights of the contestants.

If a condition exists in actual construction work which may be pointed out, specifically identified, or otherwise understood and determined, that, in the opinion of the Hydraulic Engineer, violates the contract specifications and has not been approved, the City Attorney is entitled to a statement of this condition, the assistance of the City's forces on the work in an examination thereof, and thereafter should examine the correspondence upon the subject, if any, passing between the Hydraulic Engineer and the contractor. To attempt, however, to solve the problem from the correspondence, in my humble opinion, is an incorrect and inverse order of proceeding.

At your request, I shall be glad to proceed to the work with you at any time for the purpose of solving from a legal standpoint any existing controversy.

With sincere feelings of esteem, I am

Very truly yours,

T. B. COSGROVE

TBC:MH

T. B. Cosgrove

2-5-35
copy/p

June 1, 1933

Mr. T. B. Cosgrove
Attorney & Counselor at Law
1031 Rowan Building
Los Angeles, California

Subject: San Diego River Project,
El Capitan Feature
Contract construction

My dear Mr. Cosgrove:

In anticipation that the Mayor and Council might invite you to come to San Diego to consider with them and the City Attorney the status of the City's El Capitan Reservoir Dam, Spillway and Outlet Works contract construction matter, I am constrained to suggest that before you reach conclusions and release them that you travel with me, accompanied by the City Attorney if he finds it convenient to go along, to the dam and on the ground personally acquaint yourself with the controlling facts and factors.

Very truly yours,

H. N. Savage,
Hydraulic Engineer.

HNS/f

2-5-35
copy/p

August 30, 1933

Mr. T. B. Cosgrove
Attorney at Law
1030 Rowan Building
Los Angeles, California

Subject: San Diego River Project, El Capitan Reservoir Dam, Spillway and Outlet Works

Dear Mr. Cosgrove:

The Contractor is prominently "setting a pace" for claims for extras account classification of materials excavated, particularly from the spillway.

Anticipating that you may be in San Diego over the week-end, if agreeably convenient I hope it will be possible for you to travel out to the El Capitan Dam with me. I will endeavor to make the trip at the most convenient day and date to you.

Very truly yours,

H. N. Savage,
Hydraulic Engineer.

HNS/f

COSGROVE & O'NEIL

Los Angeles, Calirornia

October 14, 1933

Re: San Diego River Project - El Capitan Feature - Hydraulic Fill Material - Your letter S-53, October 11, 1933, to Rohl and Connolly

Mr. H. N. Savage
Hydraulic Engineer
524 F Street
San Diego, California

Dear Mr. Savage:

City Attorney Byers has been in conference with me this morning, discussing the situation referred to in your letter as above entitled, and calls my attention to the contractor's statements relative thereto.

From Mr. Byers I learn that, following the delivery of your letter S-53 to Mr. Rohl, he (Mr. Rohl) called at the office of the City Attorney yesterday (the 13th) and stated, as I understand, in effect that unless he receives some definite instructions as to method of procedure to be followed in the immediate future, the work could not proceed beyond a period of ten days or thereabout; that he was willing to proceed in any manner directed by the Hydraulic Engineer and would install immediately the additional equipment essential to proceeding with a full hydraulic fill, or, perhaps as you term it, full hydraulicing.

I gather also from what Mr. Byers says that it is the contractor's contention that the fines in the material being presently taken from the borrow pits are not sufficient to prevent the impervious core of the fill from lagging behind the upbuilding of the beaches as has resulted recently. In this same connection, as one might gather from the preceding statement, Mr. Rohl contends that new deposits of material with a larger percentage of clay and silt than that presently used must be made available immediately.

In dictating this portion of the letter I have in mind the tentative draft of letter I examined in your office on Monday last and the discussions I heard between yourself and Mr. Wood relative to explorations being conducted by him respecting additional deposits of hydraulic fill material.

From Mr. Byers I learn that the contractor contends that it is the duty of the Hydraulic Engineer to specify the method which should be followed by the contractor, not alone in hydraulicing the material into place but, as well, any change in the existing method in the event the Hydraulic Engineer is dissatisfied with the existing method. I understand this is the position of

Mr. Byers and yourself. In this connection, I recall your having stated to me on more than one occasion that you probably would soon advise the contractor to desist with the present method of hydraulicing and substitute therefor the sluice box method. I understand that the contractor advised the City Attorney that he is willing to make this change if advised so to do but does not wish to make the change unless so advised.

The matter that worries me is the possibility of the contractor stopping the work for the reason, real or fancied, that, as he declares, he cannot proceed for more than approaching ten days with the present methods and that he has received no instruction as to a change in method which will enable him to proceed. Of course, you understand I am not accepting this statement of the contractor as the fact. I do not know.

Further explaining the preceding statement or contention of the contractor, as Mr. Byers explains it to me, it is this: The materials now available for the fill do not contain sufficient silts and clays. For this reason the impervious section of the fill or the core has lagged behind and is lagging behind to such an extent that he cannot proceed further. The matter would be remedied, as I understand, by making available borrow pit material with sufficient clays and silts to enable the contractor to bring the impervious core wall up to the level of the beaches with his present method of hydraulicing. Accordingly, the change in the method hereinbefore referred to embraces the idea of furnishing satisfactory borrow pit material as well as changing to the sluice box method.

As I dictate this letter I keep referring to the language appearing in your letter S-53. Here you state that the lagging behind of the impervious core "is due to insufficient hydraulic saturating and insufficient hydraulic separating and washing - in placing the borrow pit material -". Of course, if this is correct and you can clearly establish it, then the contractor apparently is mistaken in his contention that the lagging behind of the upbuilding of the impervious core is due to an absence of sufficient silts and clays in the borrow pit material.

Presnetly in analyzing this problem, we must consider all the facts. We must not limit ourselves to the facts known to the contractor or which we believe to be known to the contractor. The fact is that on Monday last when I conferrred with you respecting the letter which we concluded afterwards should not be sent, you did not know whether the borrow pit material contained sufficient silts and clays. An additional circumstance is the investigation then being conducted by Mr. Wood. Although such investigation was justified out of an abundance of precaution, the uncertainty or doubt which prompted it is a circumstance which would have probative effect.

It occurs to me that if the matter were placed before a judge for decision and he were acquainted with all of the facts known to the City Attorney, yourself and myself, he would very likely

conclude that the time had arrived when the contractor was entitled to receive, and the Hydraulic Engineer in charge was required to give, additional definite direction for proceeding with the work in the particular under consideration. If you say that this is the purport or tenor of your letter of October 11 (S-53), the contractor will respond that the statement therein that the lagging behind of the upbuilding of the impervious core wall has been due to the contractor's defective work is diametrically opposed to your action and the action of your representatives at the dam in allowing it to proceed and approving it after it has proceeded. If the contractor has not been properly hydraulicing the borrow pit material into place, he should have been advised heretofore and the work should have been stopped or at least there should have been no approval of it. I do not believe the courts would look with favor upon the City's contention that, with the representatives you had on the work, you were now in position to say that the hydraulicing of some several days past or perhaps weeks has not been satisfactory. With what I know respecting the situation as late as last Monday, I think that such a contention by the City would be without any merit at all.

When at the dam last Monday afternoon I stood with Mr. Pyle for some time, observing the manner in which the fill material was being hydrauliced into place and the manner in which the beaches were being torn up and re-worked. It was an exceptionally effective and efficient operation. So much so that Mr. Pyle felt impelled to advise that it was not typical, that ordinarily the hydraulicing was not as efficiently performed. Of course, I must accept this statement of Mr. Pyle, but nevertheless observed what, if ordinarily carried on, would have been considered as a decidedly effective washing and separating of the material.

If satisfactory borrow pit material is available, of course everyone is interested in using it. The thing that is beginning to get under my skin is the constant recurrence of the thought that this dam may not carry as considerable a factor of safety as it should. With all of the contentions and differences of opinion that have been expressed, if anything ever happened to the structure, then all the critics would declare immediately that anybody should have known that the work was being carried on in an unskillful manner.

If you get a structure which meets with your entire approval, the circumstance that we have to fight the contractor every foot of the way would really add somewhat to the satisfaction of the completed job. Accordingly, constant contesting of points with the contractor may be a desirable condition. At least I do not mind it.

Certainly the Hydraulic Engineer knows how the work ought to be done. As certainly he is in position to tell the contractor how it should be done. The contractor now says he wants to be told (assuming Mr. Byers correctly understands him) so why should we not take this responsibility and tell him in plain language

what to do and when to do it? Of course, if we have done this, that is the end of it. If we haven't, why shouldn't we?

With sincere feelings of esteem, I am

Very truly yours,

T. B. Cosgrove

TBC:MH

cc: Hon. C. L. Byers
City Attorney
San Diego, California

P.S. Had no chance to read this after dictation. Trust you will make allowances for repetitions etc.

2-6-35
copy/p

November 9, 1933

Mr. T. B. Cosgrove
Special Water Counsel
City of San Diego
1031 Rowan Building
Los Angeles, California

Subject: San Diego River Project, El Capitan Feature Contract construction, classification of materials

My dear Mr. Cosgrove:

Enclosed is copy of letter dated October 18, 1933 from Dr. C. F. Tolman, Consulting Geologist, Stanford University, California, with which was transmitted a copy of letter dated October 17, 1933 addressed by Attorney John M. Martin to Dr. Tolman inviting his professional services for Contractor H.W.Rohl and T.E.Connolly in classification of material being excavated by the Contractor from the El Capitan reservoir dam spillway.

Enclosed is copy of my letter dated October 22, 1933 to the City Attorney expressing my impression that the City of San Diego's Attorneys might deem it of importance for the City to continue to avail of the professional services of Consulting Geologist Dr. C.F. Tolman and also of Dr. John P. Buwalda, and also of Consulting Engineer Louis C. Hill and to have them visit, inspect and report on the classification of materials being encountered by the Contractor for the construction of the El Capitan reservoir dam, spillway and outlet works with especial reference to spillway excavation material.

Enclosed is copy of City Attorney C.L.Byers' letter dated October 26, 1933, expressing his concurrence in the City of San Diego having an inspection and report on the classification of materials being submitted by the Contractor, with especial reference to the spillway material.

Enclosed is copy of my letter to Dr. Tolman dated October 28, 1933; also

Copy of my letter to Dr. Tolman dated October 31, 1933.

Enclosed is copy of Dr. Tolman's reply dated November 6, 1933 to my letters dated October 28 and 31, 1933.

It is my impression that the employment by the City of San Diego of Dr. Tolman under the conditions outlined by him in his letter of November 6, might in his interpretation formally constitute him a single arbitrator acting for both the City of San Diego and the Contractor in the classification of the material being excavated from the spillway.

Provided my above interpretation of the purport of Dr.Tolman's letter dated November 6, is appropriate, it is my impression that the City of San Diego may not care to employ Dr. Tolman to act as a single arbitrator regarding the legal contract classification of materials being excavated by the Contractor from the El Capitan reservoir dam spillway.

City Attorney C.L.Byers, representing the City of San Diego, is about leaving for Washington, D.C. for the purpose of presenting and promoting the City's application for U. S. PWA funds with which to strengthen the Hodges reservoir dam buttresses; and funds for the construction of a public road along the left and/or south side of the El Capitan reservoir; and funds for the installation of the required main pipe line from El Capitan reservoir 6 mile reach of 48 inch pipe line to the La Mesa, Lemon Grove & Spring Valley Irrigation District pumping plant and a 2 mile reach of 36-inch pipe line to a connection at Lakeside with the City's reach of Lakeside to San Diego 36-inch pipe line installed about 1926.

Dr. Tolman made an inspection and report for the City of San Diego on the "Geology of Upper and Lower Pamo Damsites, Upper and Lower Roden Damsites, the San Vicente Damsite, the Lower, Upper and No. 3 Damsites at El Capitan" in August 1927.

Also Dr. Tolman was the Geologist inspecting and reporting with Consulting Engineer Louis C. Hill, C.R.Olberg and A.J.Wiley on the "Examination of the Dams of the Water Supply System of the City of San Diego" in May 1928.

Also Dr. C.F.Tolman and Dr. C.D.Marx were selected by the Council of the City of San Diego to and did make a "Geological and Engineering Report on the Proposed Dam at El Capitan Damsite Number 2 on the San Diego River" to the City of San Diego on November 10, 1931.

The Honorable, the Mayor and Council of the City of San Diego enacted an ordinance on October 30, 1933 providing $1000 for the employment of Consulting Geologists and Consulting Engineer Louis C.Hill

It had been my expectation that you might find it agreeable and desirable to have Dr.Buwalda,and also if you deem advisable, Dr. Tolman visit,inspect and report on the geological classification of material at El Capitan dam at the time of your next visit to San Diego

Mr. Hill, acting for the U.S.Army Engineers, is in Montana inspecting and reporting on the location,type and construction of a projected flood storage dam across the Missouri River near old Fort Peck.

Anticipating your valued and professional cooperation with the City of San Diego in effecting an equitable settlement with the Contractor for the construction of the El Capitan reservoir dam, spillway and outlet works, by agreement if practicable or by a court decree if unavoidable, it is deemed advisable to have your consideration of employment by the City of Dr. Tolman under the conditions named by him in his letter dated November 6, 1933.

On receipt of your reaction, I will be pleased to endeavor to accomplish your wishes in this connection.

Very truly yours,
H. N. Savage,
Hydraulic Engineer

HNS/f
encls.
Letter from Dr. Tolman 10/18/33
" to City Attorney 10/22/33
" from City Attorney 10/26/33
" to Dr. Tolman 10/26/33
" to Dr. Tolman 10/31/33
" from Dr. Tolman 11/6/33

2-5-35
copy/p

COSGROVE & O'NEIL

Los Angeles

November 10, 1933

Re: San Diego River Project, El Capitan Feature
Contract Construction, Classification of
Excavation Materials.

Mr. H. N. Savage,
Hydraulic Engineer
524 F Street
San Diego, California.

Dear Sir:

Your esteemed favor of the 9th inst., in the matter as above entitled, together with enclosures, is received and the contents thereof carefully noted.

This matter was the subject of discussion with Mr. Byers yesterday.

In incline to the opinion that under the circumstances we should not have Professor Tolman. If doubt were based upon no other circumstance, to my way of thinking it would be sufficient to point out that we are not authorized to submit the matter to arbitration.

Tuesday of next week I shall be in San Diego in connection with the hearing of the application for declaratory relief in the matter of Kohl & Connolly v. City of San Diego. At that time I shall go over this matter more at length with you.

With sincere feelings of esteem, I am

Very truly yours,

T. B. Cosgrove

TBC:MH

2-5-35
copy/p

2005

December 16, 1933

Mr. T. B. Cosgrove
Special Water Counsel
1030 Rowan Building
Los Angeles, California

Subject: El Capitan Reservoir Dam, Spillway and Outlet Works, Contract Construction

My dear Mr. Cosgrove:

I was gratified on Sunday December 10, 1933, while we were enroute to, at, and returning from the El Capitan Dam job, to be favored with your understanding of some of the fundamental factors - legal, fiscal and engineering - involved in the City of San Diego's San Diego River Project, El Capitan reservoir dam, spillway and outlet works.

Recalling the highly qualified, persistent, efficient co-operation and accomplishings you contributed as City Attorney in advancing the construction of the City's relatively simple Lower Otay masonry dam work, I have by comparison been prominently and increasingly concerned for the City of San Diego's interests throughout the construction by contract of the relatively outstandingly difficult, highly involved type and materials of construction entering into the hydraulic fill El Capitan dam work.

The Contractor's Consulting Engineer J. B. Lippincott of Los Angeles has twice stated to me on the ground since the El Capitan dam work was undertaken by contract that under no consideration would he assume the engineering supervision of the construction by contract of a hydraulic fill dam, being influenced by the obvious and unavoidable preundertermination of specific technical specifications for hydraulic fill materials, and their proper placing in the structure.

It is realized that the financial compensation you are receiving from the City of San Diego is relatively meger compared wo the magnitude of the compensation you must be abundantly earning incident to your general practice in Los Angeles and vicinity, comprehending enumerable legal matters of outstanding character and responsibility, among them known to me the City of Los Angeles, Division of Water Development and the recent Los Angeles Times cases.

San Diego intelligentsia, including outstanding representatives of the Press--Union, Tribune, Sun--recognize the unusual requirement for and importance to the City of San Diego of having qualified, efficient and aggressive legal and engineering cooperation as the El Capitan dam contract work progresses to the end that every feature of the administration be comprehensively in hand, and having in mind the Contractor's obvious policy and persistent efforts to create, build up and pyramid evidence with which to support claims which he has presented voluminously following monthly estimates.

Provided it would be agreeable and convenient for you to do so, I feel that the City of San Diego if by materially increasing your present compensation could secure proportionately more of your time and attention on the ground in the field and in the offices, that major protection and material benefits would be secured for the City in carrying forward to completion the El Capitan dam contract work, and in a manner fair to both the City and the Contractor. The highly difficult to construct type of the structure and the number and magnitude of administrative features--legal, fiscal and engineering--involved can only be learned, understood and properly digested by comprehensive and continuous cooperative legal and engineering investigations and considerations in the field as the work proceeds.

Very truly yours,

H. N. Savage,
Hydraulic Engineer.

HNS/f

3-5-35
copy/p

2007

January 24, 1934

Mr. T. B. Cosgrove
Special Water Counsel City of San Diego
1030 Rowan Building
Los Angeles, California

Subject: San Diego River Project, El Capitan Feature
Impervious core section contract construction

Dear Mr. Cosgrove:

Under date of January 4, 1934 you were advised as to the situation at El Capitan reservoir dam, especially regarding the puddle core and the sand strata in the puddle core resulting from the contractor's operations between November 27 and December 5, 1933, which were not in accordance with instructions and directions.

You were also furnished a copy of letter dated January 15, 1934 to L. C. Hill, Consulting Engineer, indicating the progress made by the contractor in attempting to remove the sand strata from the puddle core area of the dam, and showing almost no progress to that date.

Since January 15, the contractor has made some progress in removing the sand, practically completing its removal from the easterly portion of the puddle core.

It is indicated that the work of removing the sand strata will be completed about the end of the month.

Mr. L. C. Hill, Consulting Engineer for the City of San Diego and W. H. Holmes Assistant Deputy State Engineer, inspected the work on January 22, and a conference was held with the City's staff. It was the opinion of those present that the contractor was making progress in removing the sand strata and that after the sand was removed it would be necessary to either bring up the lagging puddle core with material rich in fines, or to lower the beaches by removing beach material from the dam; also that the impervious puddle core could not be successfully up-built with materials exclusively from borrow pit areas "A" and "B" or borrow pit areas producing similar materials.

The contractor has not submitted a program for correcting the up-building of the puddle core which has been lagging behind the up-building of the beaches and which made necessary the issuance on October 20, 1933 of letter S-57; on November 20, 1933 of letter S-63 and December 4, 1933 of letter S-70, copies of which were furnished you.

It is not indicated that the contractor is planning to import materials rich in fines for the up-building of the puddle core.

When the contractor has completed the removal of sand strata from the puddle core, he will have removed about 5,000 cubic yards

of material from the puddle core. A portion of this sandy material has been placed on the outside slopes of the rock embankments and a portion has been loaded in trucks and wasted. The removal of this material has again increased the depth of water in the summit pool. However, the summit pool will generally not be as deep after the sand is removed as it was on November 27, 1933 when the contractor commenced placing material from borrow pit area "A" in opposition to letters S-57 and S-63.

In view of the developments and the controversies that may arise when the contractor again commences the construction of the hydraulic fill portion of the dam, it is deemed very desirable that you visit the work and make a personal inspection at the earliest practicable date.

Very truly yours,

Fred D. Pyle
Acting Hydraulic Engineer

FDP/f

3-1-35
copy/p

2009

March 9, 1934

Honorable T. B. Cosgrove
Attorney for City of Los Angeles, California
Dept. of Water & Power, Division of Water
Attending Legal Hearing at
Sonora, California.

Subject: San Diego River Project, El Capitan Feature
Hydraulic fill area, status of work and
Contractor's methods

My dear Mr. Cosgrove:

I was gratified to receive your letter dated February 27, 1934, disclosing your valued interest and justified concern over the increasing lagging of the up-building by the contractor of the impervious puddle core section of the El Capitan Dam.

Feeling it encumbent upon me to officially call a halt on the contractor's methods resulting in the relatively lagging up-building of the impervious puddle core section, a conference was arranged at El Capitan Dam on March 5, 1934, which was attended by Hydraulic Fill Engineer D. W. Albert; Resident Engineer Harold Wood; Assistant Hydraulic Engineer Fred D. Pyle; Hydraulic Engineer H. N. Savage; and Deputy State Engineer George W. Hawley; Assistant Deputy State Engineer W. H. Holmes and State's Consulting Engineer Fred C. Herrmann.

It was the unanimous opinion of the seven engineers that the safety of the dam was being increasingly endangered by the contractor's policies and methods which have been continuous for some time, irrespective of repeated formal notices advising him of his increasingly unsatisfactory to the City policies and methods of conducting the hydraulic fill portion of the work.

Formal notice dated March 6, 1934 (S-93), approved as to purport and language by the City Attorney, was delivered to the contractor at 5:35 P.M. March 6, 1934. Copy S-93 enclosed.

At the time of the conference of the engineers March 5, 1934 the surface of the summit pool was at elevation 689.5 and the depth of the penetration by 6-pound weight was at elevation about 669.

On March 6, 1934, 5:35 P.M.(at the time of the delivery of letter S-93 to the Contractor) athe elevation of the surface of the summit pool was at 690.4 and the depth of the penetration by 6-pound weight was at elevation about 668.4.

Sometime during the afternoon or evening of March 6, an about 100 foot reach of the upstream beach adjacent to the left or south end of the puddle core, where the lagging depth was greatest, subsided about 2 feet, pushing some of the clayey material already deposited on the subsurface slope of the beach into the impervious puddle core section and possibly forcing some of the subsurface beach material in the opposite direction into the rock embankment. A comprehensive sampling was immediately accomplished and analyses