

General

JAN 15 1991

GW

Stall -

Well Mugging

State of New Mexico
State Engineer Office, District 1
Attn: Mr. Dave Esparza
3311 Candelaria N.E., Suite A
Albuquerque, NM 87107

Dear Mr. Esparza:

The Department of Energy (DOE) plans to abandon and plug the remaining wells in our Los Alamos well field. The following remaining wells are included in this action:

DOE Designation

LA-1B - plugged
LA-2 - *consolidate* *
LA-3 -
LA-5
A 4-inch monitoring well
Adjacent to LA-1

State Engineer Designation

RG-485
RG-485-S-5
RG-485-S-3
RG-485-S-2

None

This action is a completion of action we have initiated in 1989 to abandon and plug the wells in our Los Alamos well field. Wells LA-1, LA-4, and LA-6 have been abandoned and plugged in accordance with our letter to you dated November 9, 1989.

Enclosed for your information are the specifications that will be used to plug the above listed wells. Plugging of the above mentioned wells will complete our abandonment of the Los Alamos well field. The wells in the Los Alamos well field are being replaced with Otowi Wells 1 and 4, designated as RG-485-S-6 AND RG-485-S-7 by your office. The combined existing surface and underground right of 5541.3 acre-feet per annum will remain unchanged as a result of this action. This action should also not affect our Permit Application of November 4, 1990 to supplement our existing right with 1,200 acre-feet per annum of San Juan-Chama Surface water.

Should you have any questions or comments on this action, please feel free to contact me or Juan Griego at (505) 667-4661.

Sincerely,

Original signed by
David A. Padilla

David A. Padilla, Acting Chief
Facilities & Property Branch

Enclosure:
Specifications

bec:
Dave Sneesby, ENG-8, LANL, MS-M718

COORDINATOR	
RTG SYMBOL	LFP
INITIALS	
DATE	01-15-91
RTG SYMBOL	LFP
INITIALS	
DATE	01-15-91
RTG SYMBOL	PADILLA
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LOS ALAMOS WELL FIELD
ABANDONMENT

TECHNICAL PROVISIONS

SECTION 1 - SCOPE OF WORK

The work includes the furnishing of all labor, material, transportation, tools, supplies, plant, equipment, and appurtenances to complete the work. The work consists of the satisfactory plugging of seven deep water wells and one monitor well as herein specified. The work shall be completed in strict accordance with the Specifications and Drawings.

The work required for the construction includes the following:

1. Mobilization and demobilization of equipment, on and off all sites.
2. Cut off conductor pipe(s) and inner casing to the appropriate level to allow access into the wells for plugging procedures.
3. Sound the 4" monitor well to confirm depth. Install 2-3/8" minimum tremie pipe to within 5 feet of the sounded depth and pump the casing full of sand-cement-bentonite grout.
4. Sound wells LA-1, LA-1B, LA-2, LA-3, LA-4, LA-5 and LA-6 to confirm depth. Wire brush casing and screen sections to loosen and remove scale as follows:

<u>Well</u>	<u>Interval to be brushed</u>
LA-1	50'-250'
LA-1B	325'-530'
LA-2	100'-300'
LA-3	100'-300'
LA-4	700'-900'
LA-5	400'-700'
LA-6	400'-500'

Install 2-3/8" tremie pipe to within 5 feet of the sounded depth.

5. Pump in the theoretical volume of sand-cement-bentonite grout to fill the inner casing to the specified depth of the top of the lower interval of sand-cement-bentonite grout. Raise the tremie pipe to such depth that it is at least 100 feet above that interval and displace the grout remaining inside the tremie pipe with an adequate volume of clear water to flush it thoroughly.
6. Allow the sand-cement-bentonite grout to set undisturbed until such time that the level to which it filled can be determined by sounding. In the event additional sand-cement-bentonite grout is needed to fill to the desired level, lower the tremie pipe to within 5 feet of the sounded depth and pump in the calculated volume of grout to fill to the desired depth. The contractor may, at his option, place either neat cement-bentonite grout or sand-cement grout in this interval.
7. The tremie pipe shall then be raised to the specified depth of the base of the neat cement-bentonite grout interval and 110% of the calculated volume of neat cement-bentonite grout to fill to the desired level shall be pumped. Required amounts of neat cement-bentonite grout will be as follows:

<u>Well</u>	<u>Volume</u>
LA-1	11.5 CY
LA-1B	16.0 CY
LA-2	11.5 CY
LA-3	14.5 CY
LA-4	21.0 CY
LA-5	32.0 CY
LA-6	10.5 CY

8. Immediately raise the tremie pipe to the desired level of the top of the neat cement-bentonite grouted interval and pump the inner casing full, to the surface, with sand-cement-bentonite grout. The contractor may, at his option, place neat cement-bentonite grout in this interval in lieu of sand-cement-bentonite grout.
9. If the annular space between the inner casing and the conductor casing(s) is filled with gravel or other material, the fill material shall be cleaned out to a minimum depth of 20 feet and the annulus filled to the surface with grout. If the annulus is open to a greater depth, the tremie pipe shall be lowered to within 5 feet of that depth, and the annulus shall be filled to the surface with grout.
10. Two pounds of bentonite, per sack of cement, shall be added to both the neat cement and sand-cement grout mixtures. The bentonite may be added to the dry cement and thoroughly mixed prior to the addition of water to the grout mixtures or the bentonite may be mixed with water completely and then introduced and mixed into the wet grout. In either event, the bentonite shall be thoroughly blended into the grout mixture prior to placement. Under no circumstances shall dry bentonite be added to wet grout.
11. All casings shall be cut off at least 1 foot below grade and filled completely with grout. Well sites shall be cleaned up and graded to finish elevation

SECTION 2 - PLACEMENT OF GROUT

Neat cement-bentonite grout and sand-cement-bentonite grout shall be introduced at the bottom of the intervals to be sealed and/or filled and placed progressively upward to the top of the wells. All grout shall be placed by the use of a minimum 2-3/8" tremie pipe, in such a way as to avoid segregation or dilution of the grouting material. Dumping of grouting material from the surface will not be permitted.

SECTION 3 - NEAT CEMENT-BENTONITE GROUT

Neat cement grout shall be a mixture of Portland cement (ASTM C-150, Type II) and not more than six (6) gallons of clean water per 94 lb. sack of cement, weighing approximately 113 lbs. per cubic foot. Two pounds of bentonite and 0.7 gallons of water shall be added per sack of cement. (See Section 1, Paragraph 10)

SECTION 4 - SAND-CEMENT-BENTONITE GROUT

Sand-cement-bentonite grout shall be a mixture of Portland cement (ASTM C-150), Type II), sand and water, in the proportion of four parts, by weight, of sand to one part, by weight, of cement, with not more than six (6) gallons of clean water per 94 lb. sack of cement. Two pounds of bentonite and 0.7 gallons of water shall be added per sack of cement. (See Section 1, Paragraph 10). In addition, two percent, by weight of calcium chloride may be added to that portion of the sand-cement-bentonite grout placed below the neat cement-bentonite grout.

SECTION 5 - CLEANING UP

After the work is completed, the Contractor shall remove all debris, tools, equipment, supplies and excess material from the sites. Land surface shall be smoothly graded. Final site condition shall be as approved by the Contract Administrator.

SECTION 6 - MEASUREMENT AND PAYMENT

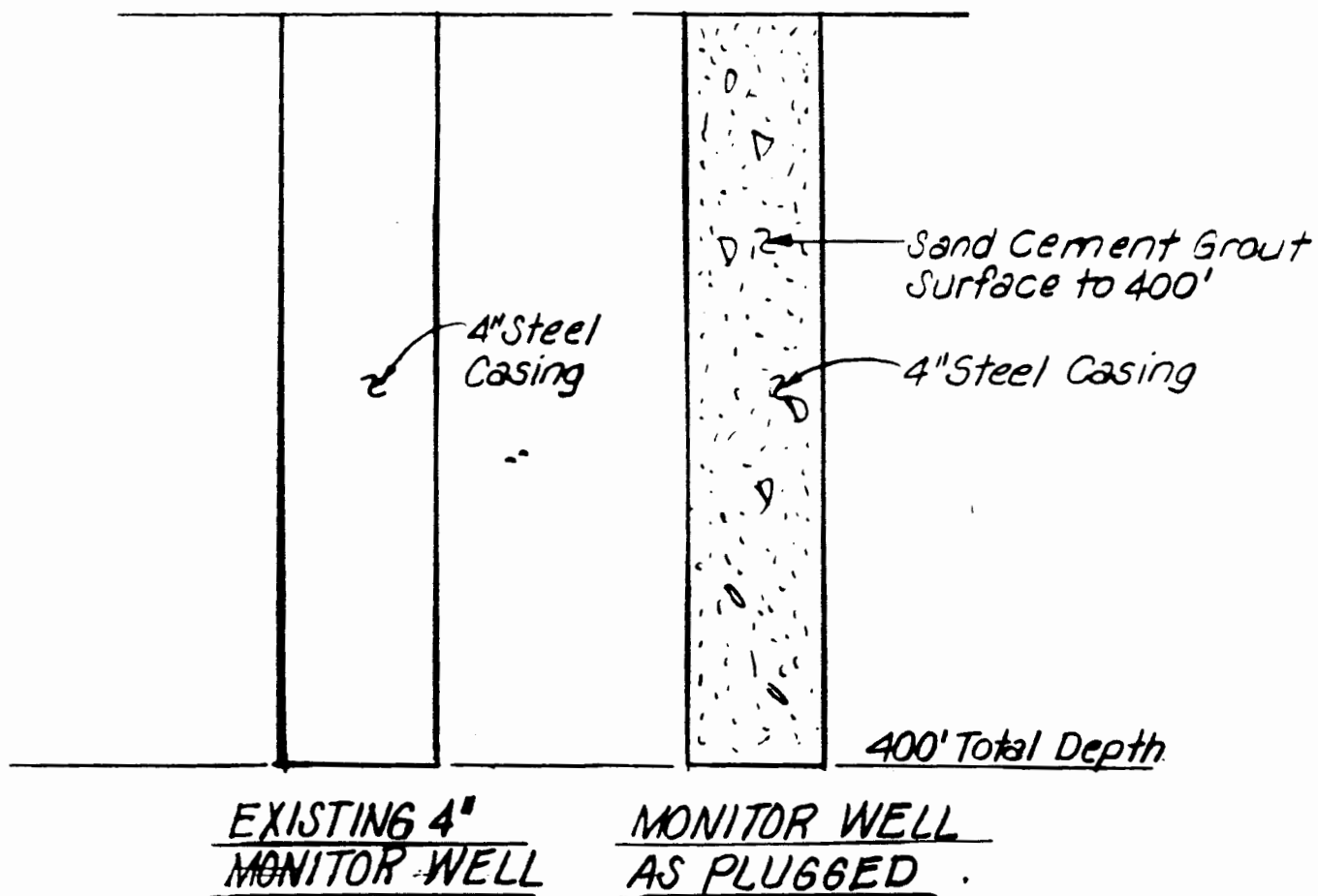
All measurements and payments will be based on completed work performed in strict accordance with the Drawings and Specifications and in accordance with contract fixed unit prices. Incidental work and items not listed in the contract fixed unit price schedule will not be paid for separately, but will be included in the payment for the listed item or items to which such incidental work applies.

Measurement:

- (1) Placement of Sand-Cement-Bentonite Grout: Sand-cement-bentonite grout will be measured in calibrated vehicles based on the total number of cubic yards of the material acceptably incorporated into the work.
- (2) Placement of Neat Cement-Bentonite Grout: Neat cement-bentonite grout will be measured in calibrated vehicles based on the total number of cubic yards of the material acceptably incorporated into the work.

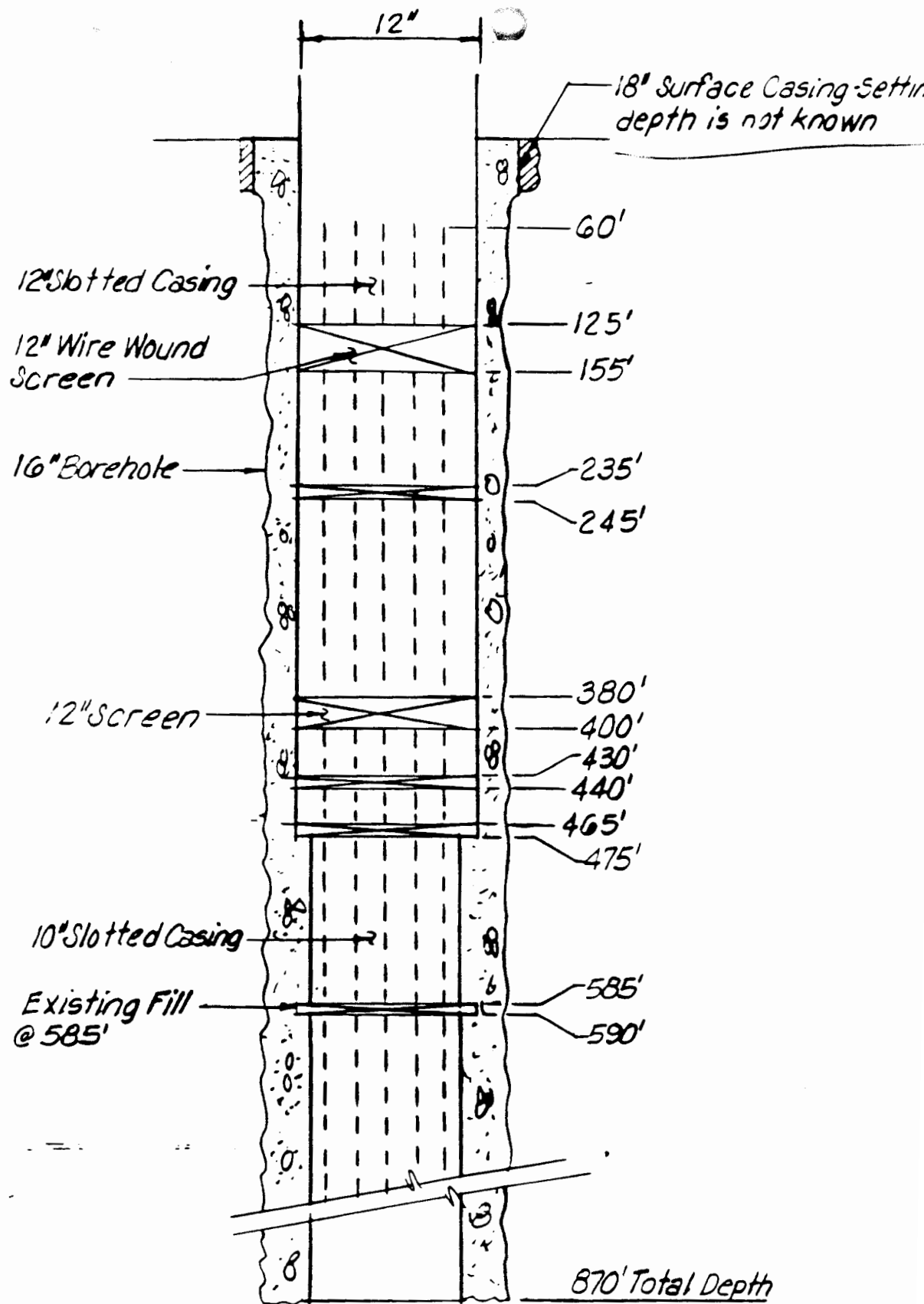
Payment:

- (1) Mobilization and Demobilization: Mobilization and demobilization of all cementing and related equipment will be paid for at the contract price per well. The price shall constitute full compensation for site preparation, bringing equipment to the site from the point of origin, erecting and installing of the cementing equipment, demobilization of equipment to the point or origin, disposal of excess materials and cleaning up after the completion of the work.
- (2) Placement of Sand-Cement-Grout: Payment will be made at the fixed unit price per cubic yard for placement of the sand-cement-bentonite grout, in each well, which price shall include all cost for furnishing and placing the material.
- (3) Placement of Neat Cement-Bentonite Grout: Payment will be made at the fixed unit price per cubic yard for placement of neat cement-bentonite grout, in each well, which price shall include all cost for furnishing and placing the material.



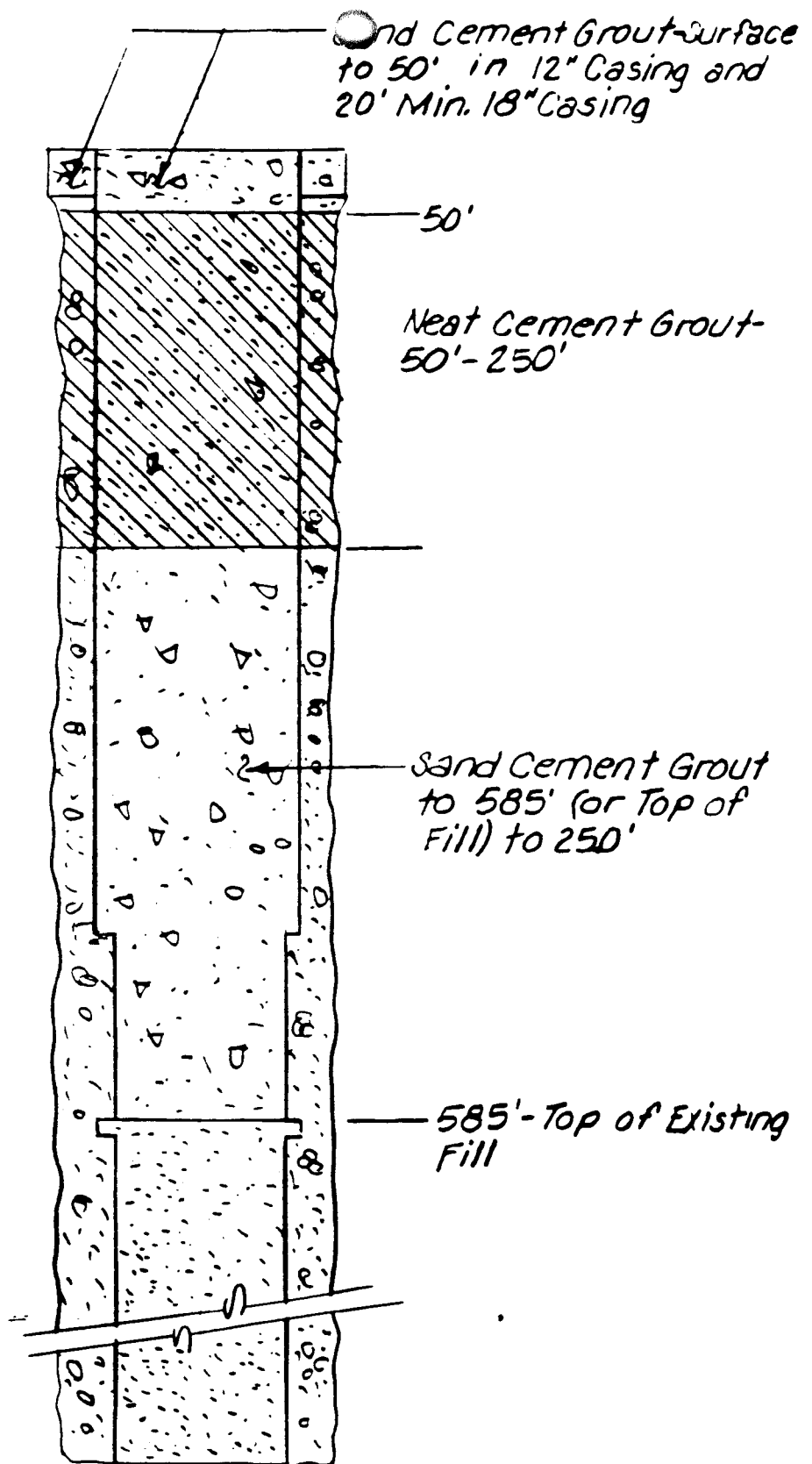
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CONSULTING GEOLOGIST
ALBUQUERQUE, N. MEX. 87105

4" MONITOR WELL



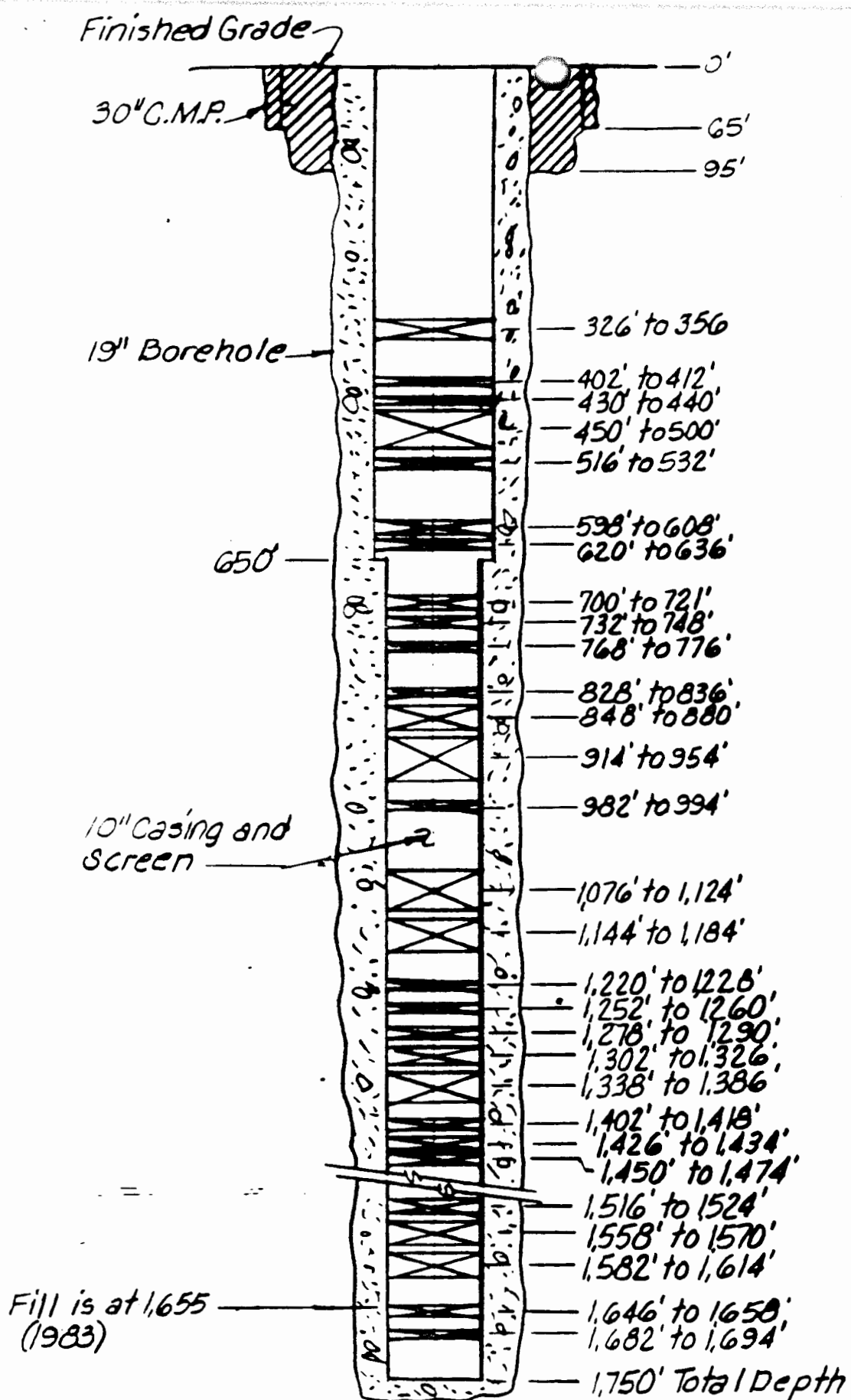
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EXISTING WELL LA-1



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WELL LA-1
AS PLUGGED



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EXISTING WELL LA 1

Clean out Gravel
and Grout to 20'
Minimum

20 MINIMUM FILLING GRAVEL

20" Casing

Sand Cement Grout
320' to Surface

320'

Neat Cement Grout
320' to 530'

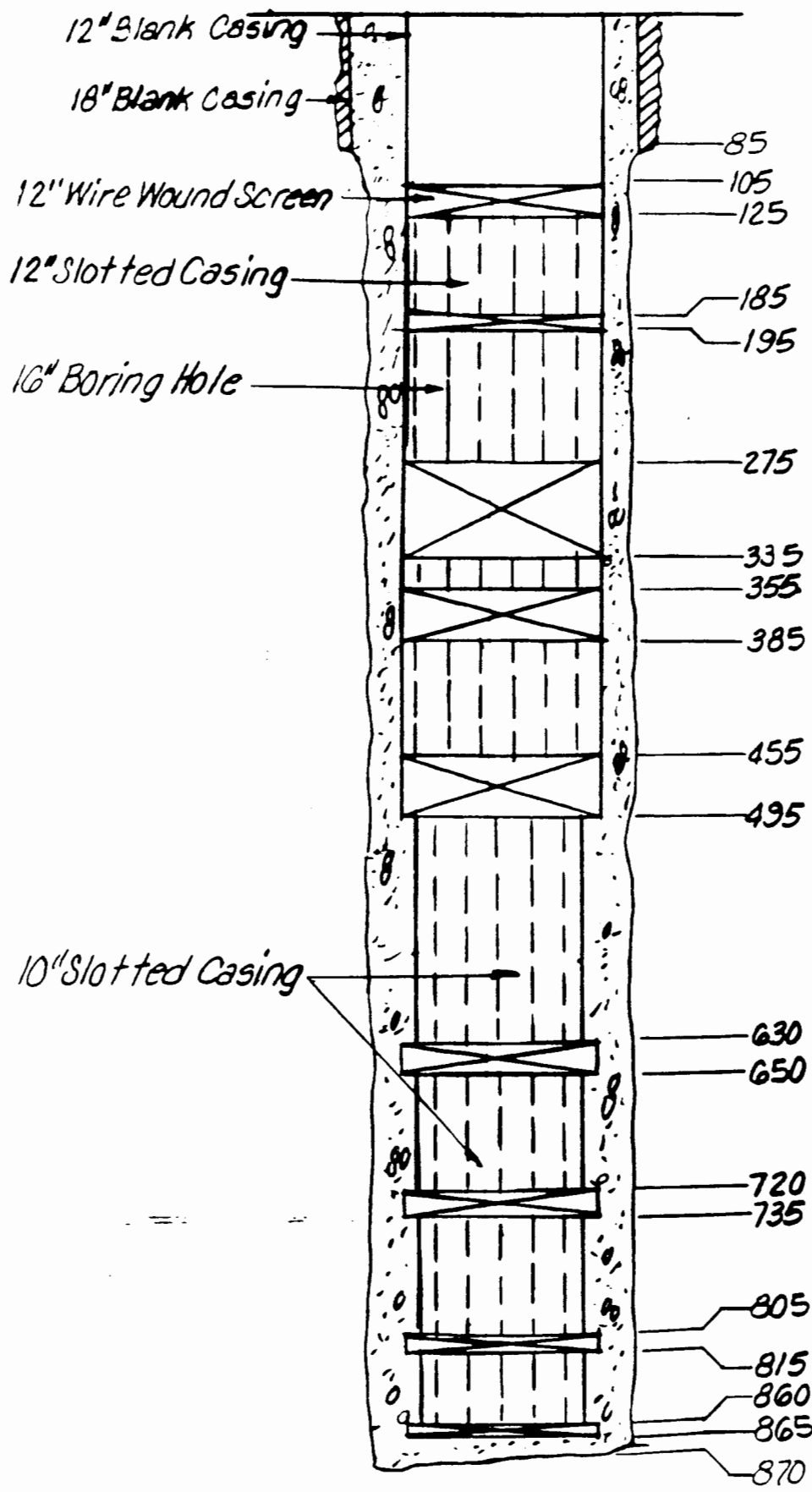
530'

Sand Cement Grout
1,655' (or top of Fill)
to 530'

Fill at 1,655' in 196

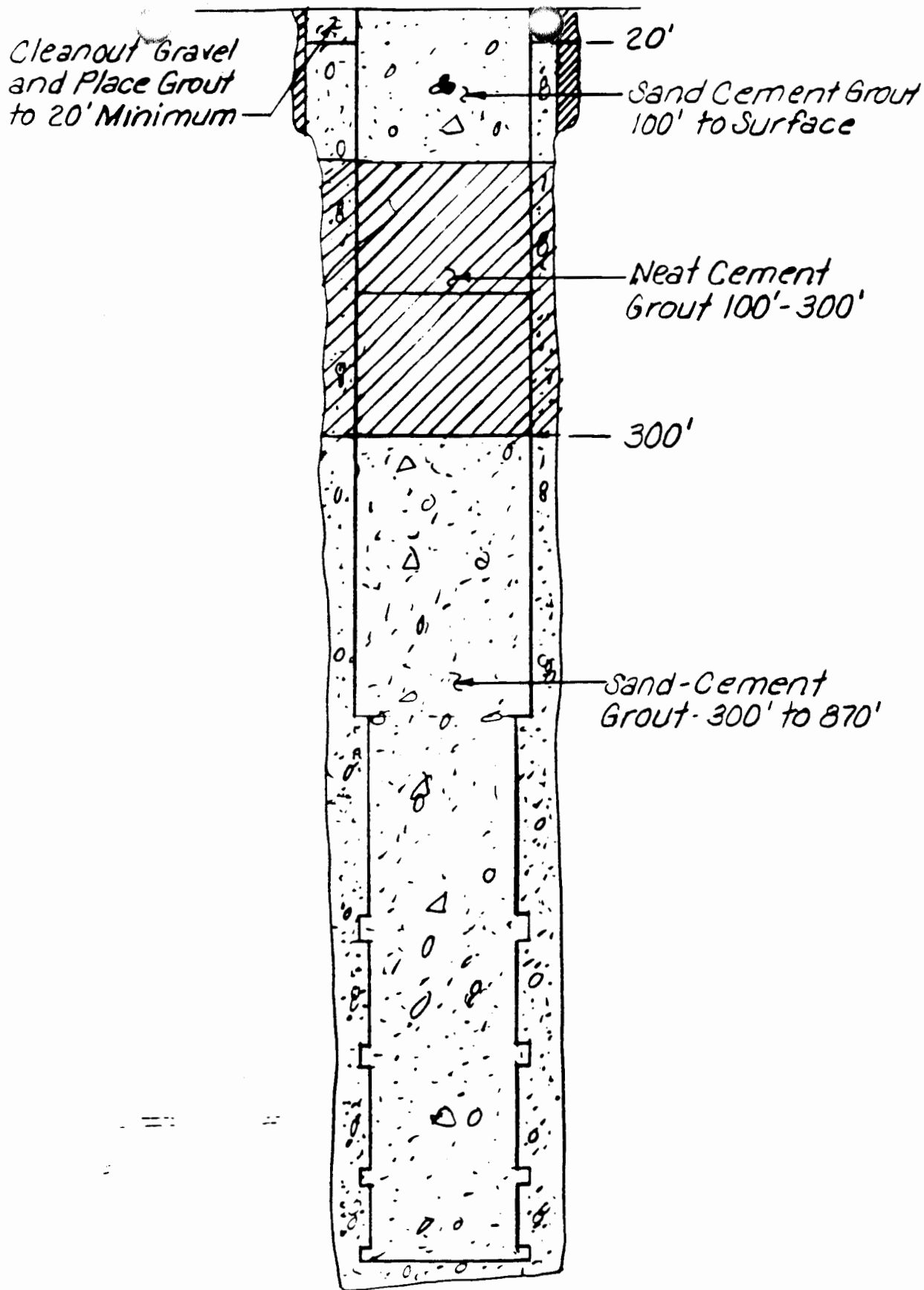
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WELL LA-1-B
AS PLUGGED



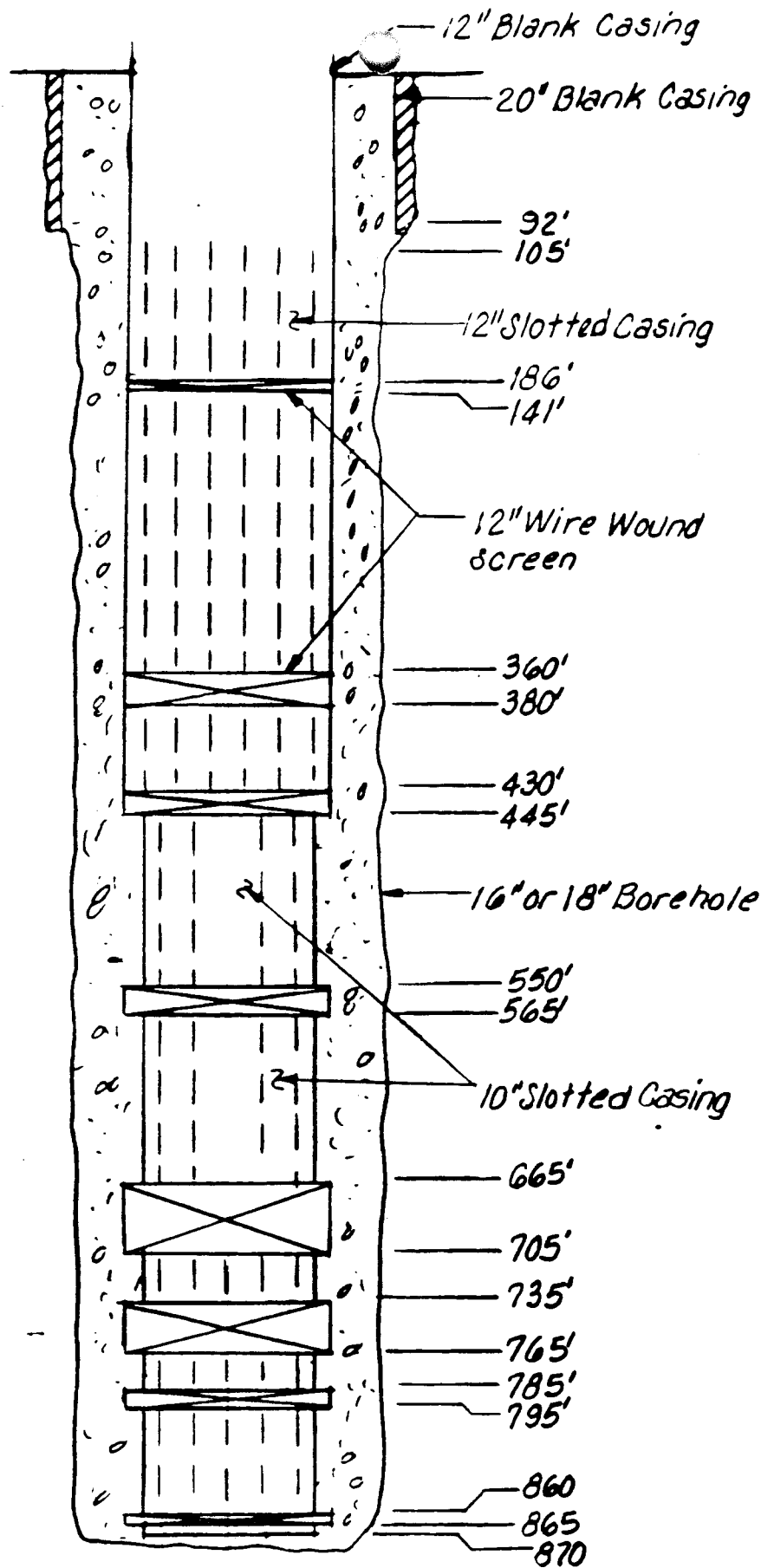
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EXISTING WELL LA-2



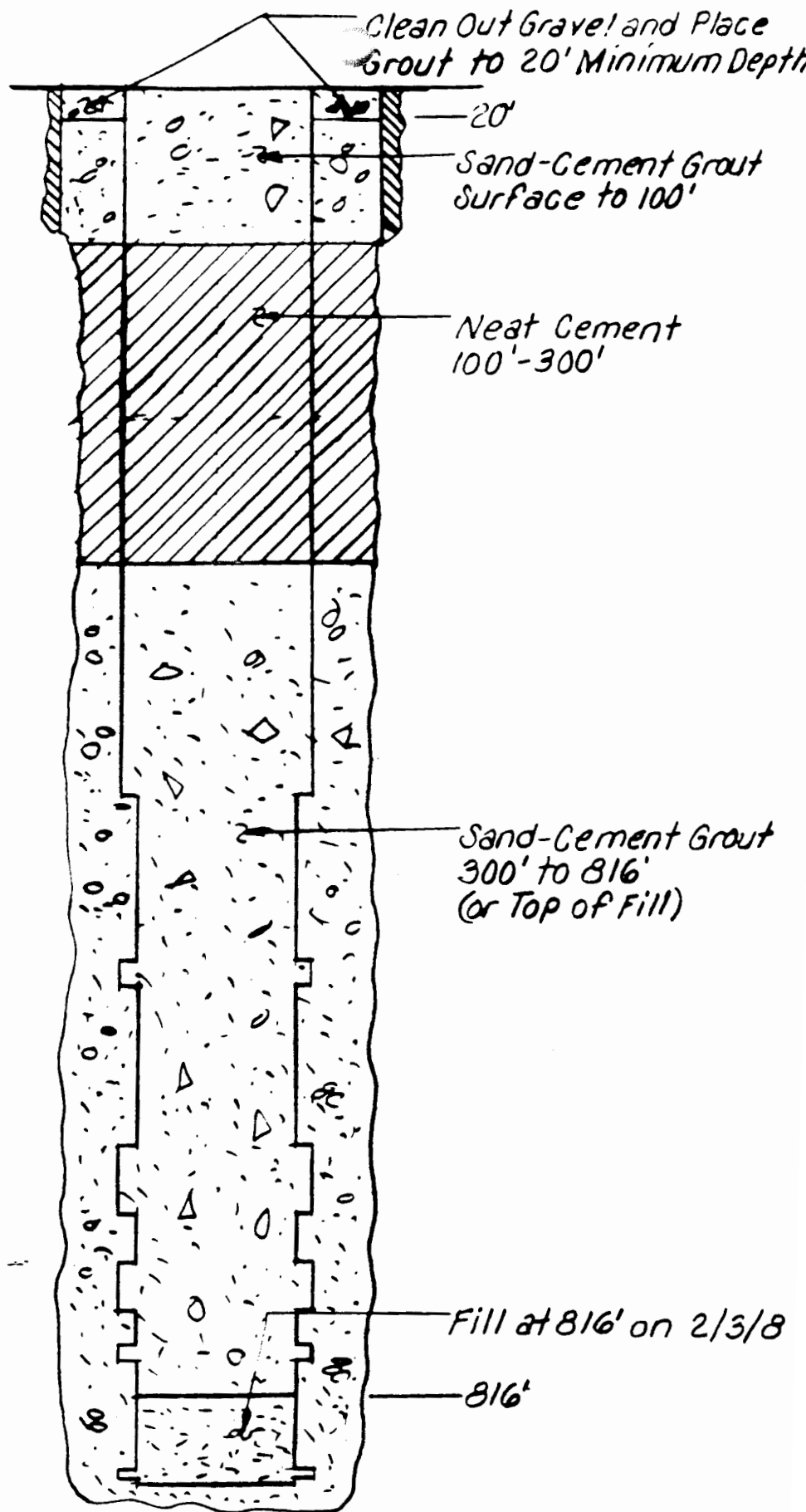
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WELL LA-2
AS PLUGGED



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EXISTING WELL LA-3



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WELL LA-3
AS PLUGGED

10" Screen and
Casing (Break
@ 754')

20" Surface Casing,
Grouted in 22" Hole

163'

12" Casing

19" Bore Hole Under-
Reamed to 27" Opposit
Screened Sections

754'

804'

832'

872'

920' to 930'

953' to 963'

1027' to 1037.5'

1075' to 1085'

1103.5' to 1113.5'

1132.5' to 1142.5'

1161' to 1171'

1190' to 1200'

1218.5' to 1228.5'

1247.5' to 1257.5'

1332.5'

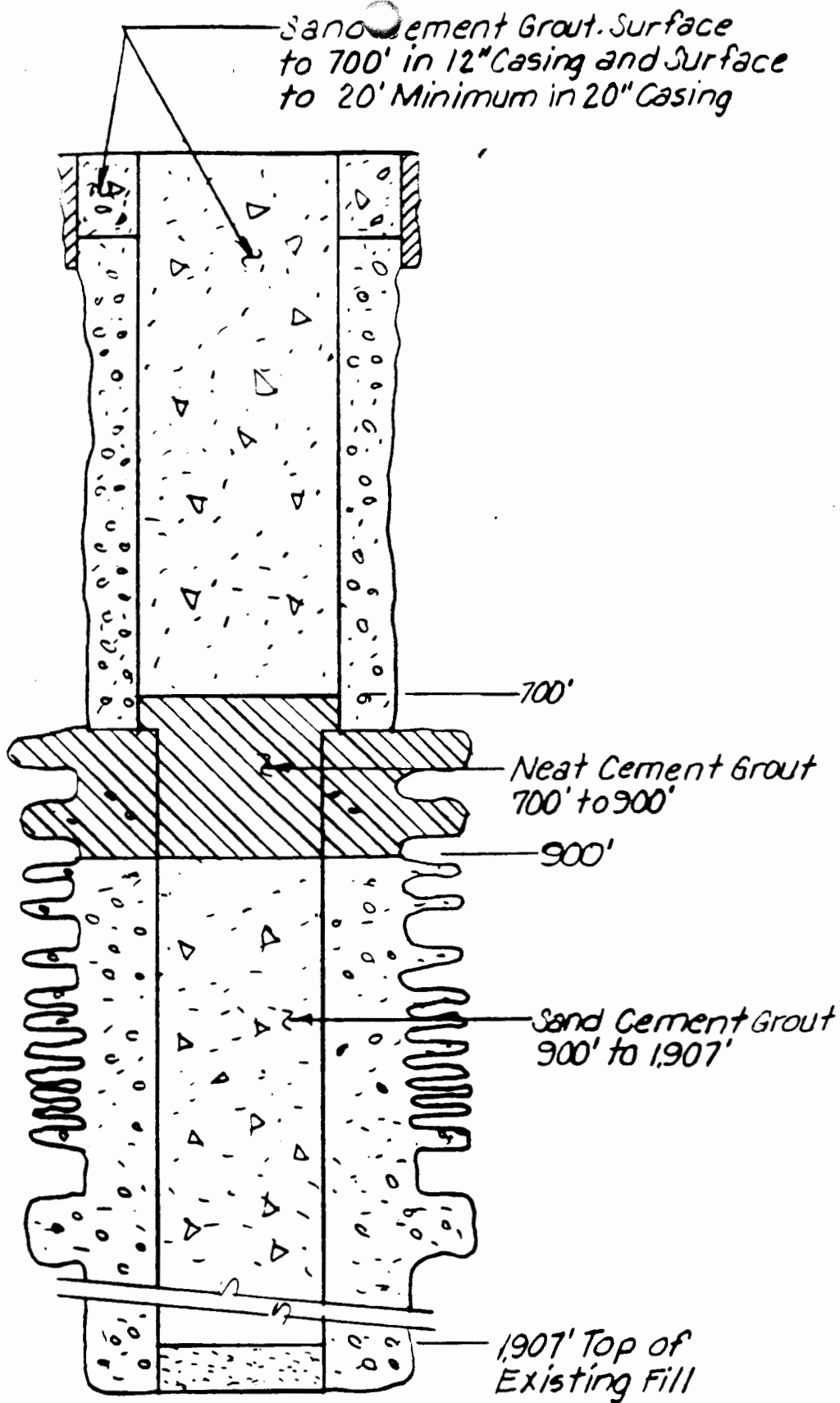
1402.5'

Existing Fill @ 1907'

1964.5' Total Depth

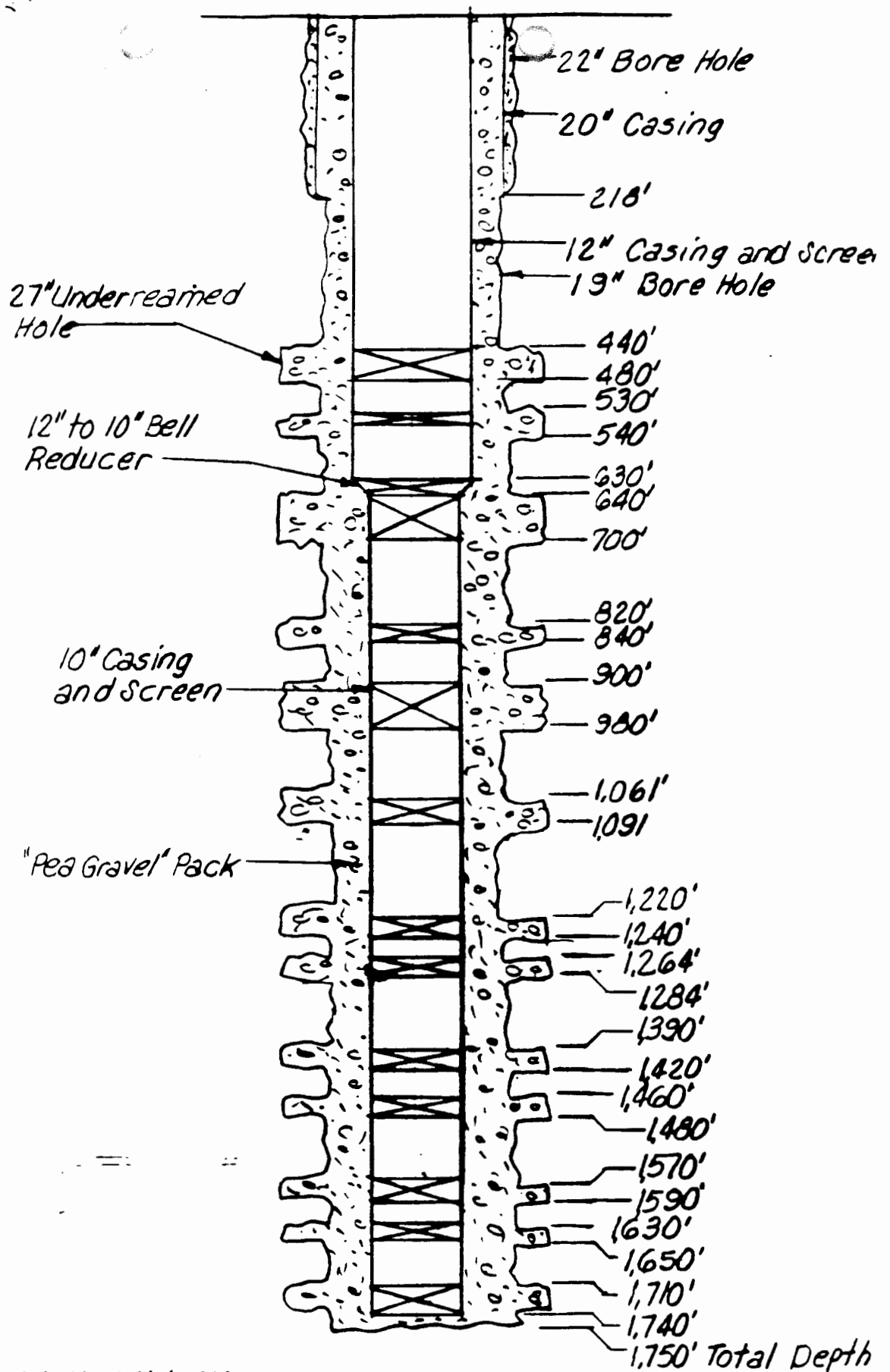
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EXISTING WELL LA



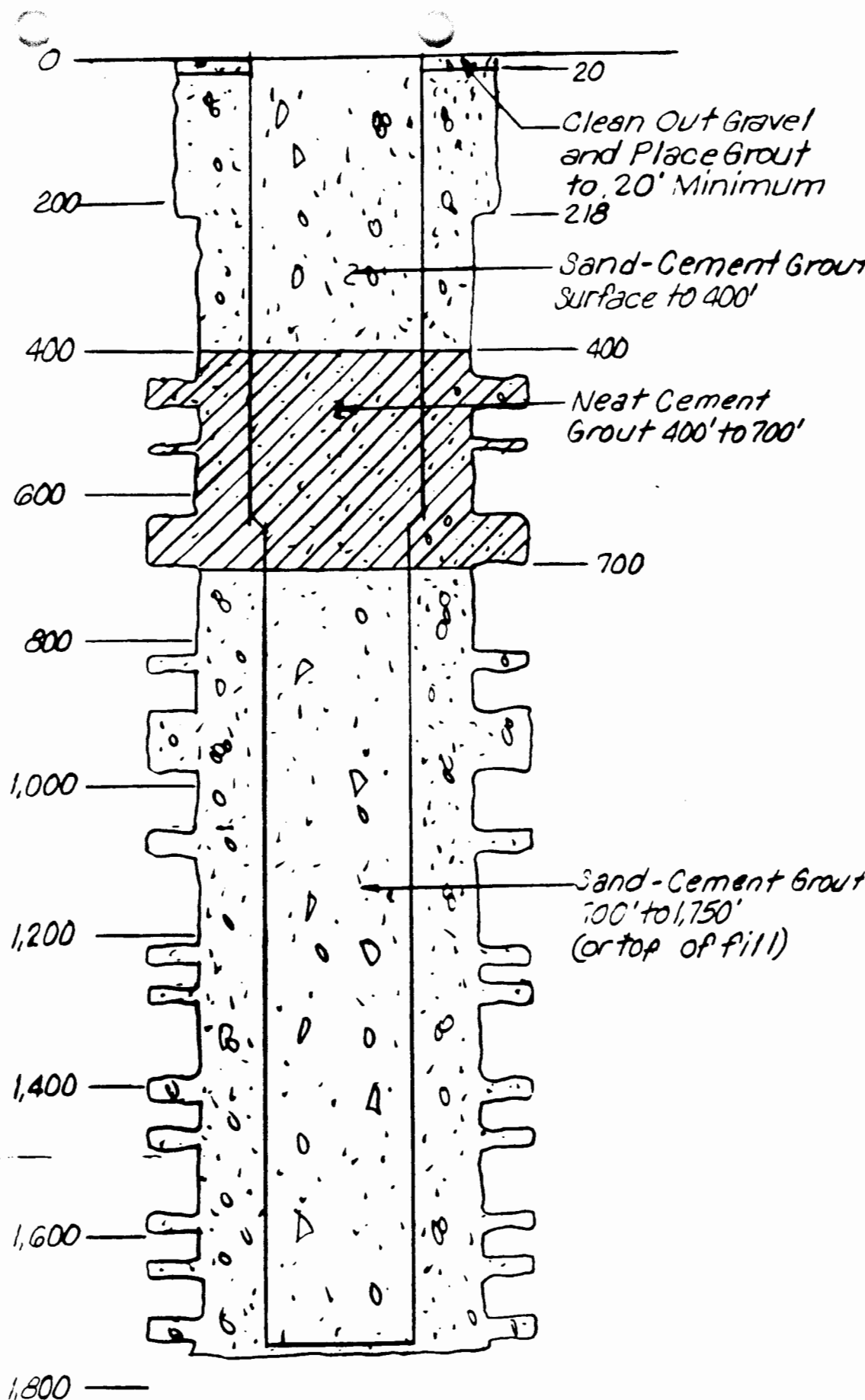
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WELL LA-4
AS PLUGGED



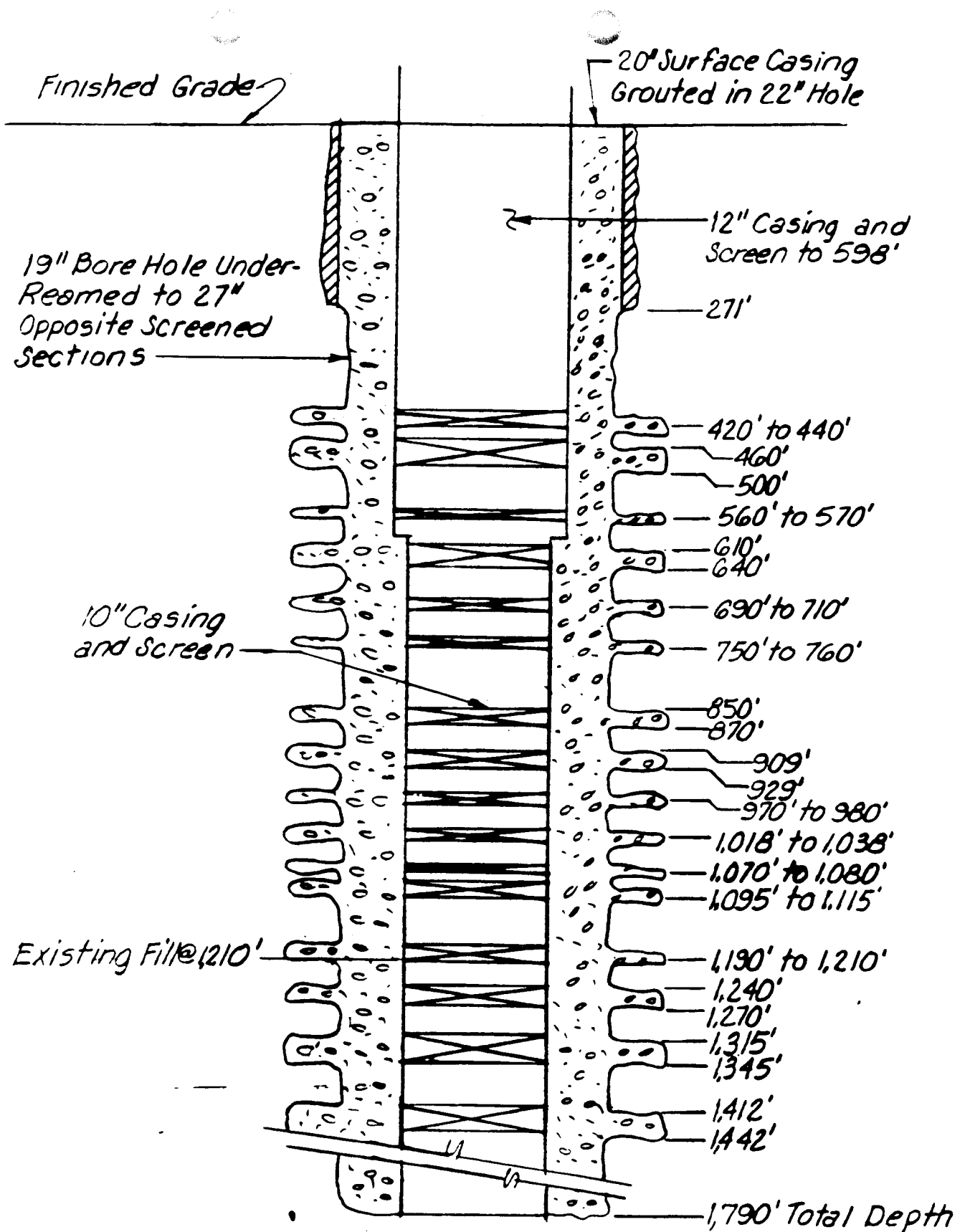
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EXISTING WELL LA-



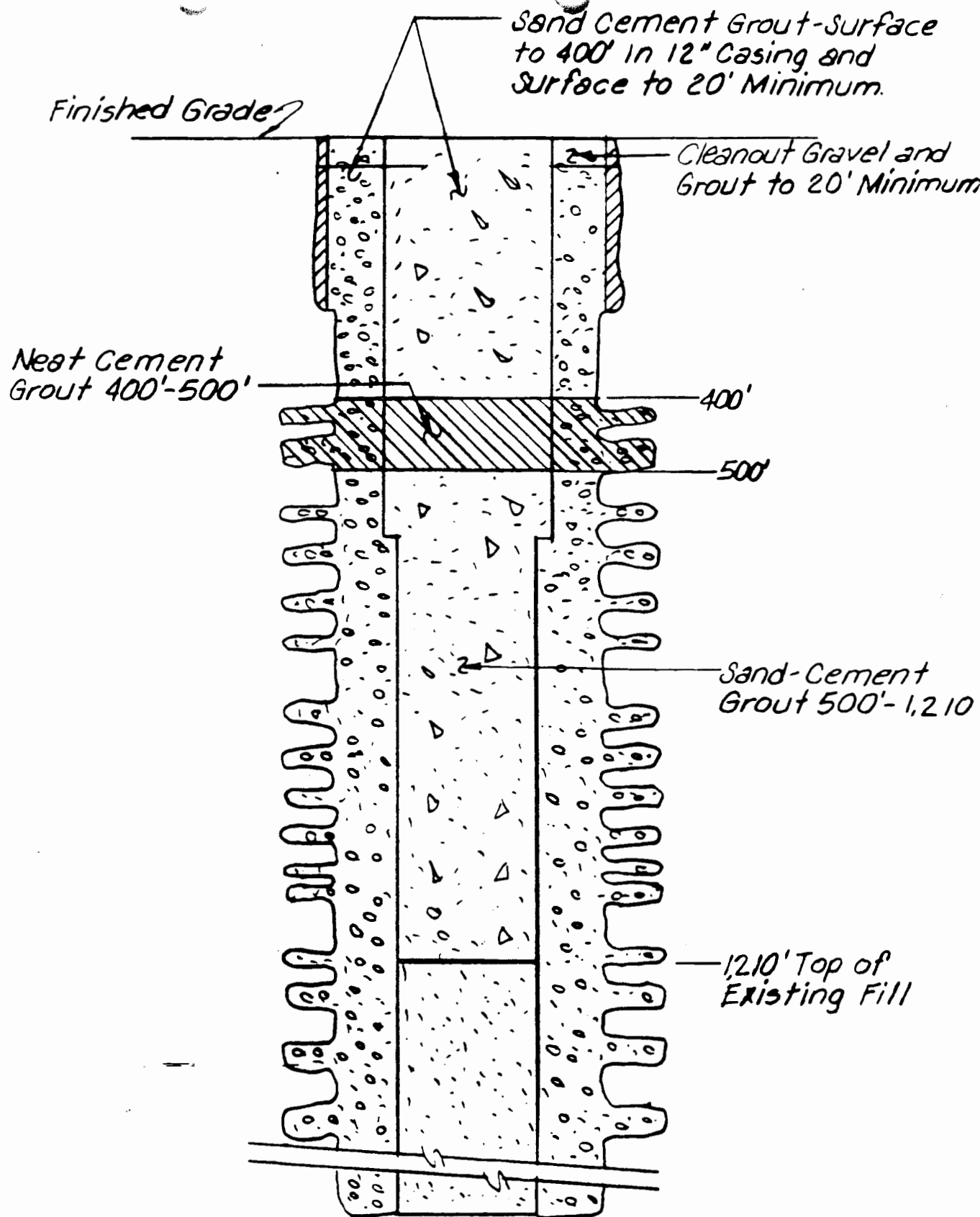
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WELL LA-5
AS PLUGGED



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EXISTING WELL LA-6



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WELL LA-6
AS PLUGGED