NOTICE TO BIDDERS

PROPOSAL FORM

SPECIFICATIONS

and

STANDARD CONTRACTUAL REQUIREMENTS

For

SHALLOW WELL DRILLING PROJECT

at

MAPLE YARDS

WITHIN THE CITY OF

BEVERLY HILLS, CALIFORNIA

PUBLIC WORKS DEPARTMENT
BEVERLY HILLS, CALIFORNIA

MARK CUNEO, P. E.
CITY ENGINEER

Contact Person:
VINCENT CHEE, P.E.
CIVIL ENGINEER
(310) 285-2521

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160 E. Via Verde, Suite 200
San Dimas, CA 91773

Approved As To Form:

June 2015
Project No. 10106

City Attorney

NOTICE TO BIDDERS

For

SHALLOW WELL DRILLING PROJECT

at

MAPLE YARDS

WITHIN THE CITY OF

BEVERLY HILLS, CALIFORNIA

ooooo

BIDS - Sealed Proposals for Shallow Well Drilling Project at Maple Yards within the City of Beverly Hills, California, will be received up to the hour of 2:00 p.m. on **July 30, 2015** at the office of the City Clerk of said City, located in Room 290 of City Hall at 455 North Rexford Drive, Beverly Hills, California. Bids will be publicly opened at 2:00 p.m. on the above-mentioned date in the office of the City Clerk of said City Hall.

SCOPE OF THE WORK - The contract work to be performed under these specifications shall consist of furnishing all the required labor, materials, equipment, parts, implements and supplies necessary for or appurtenant to, **SHALLOW WELL DRILLING PROJECT AT MAPLE YARDS, INCLUDING WELL CASING INSTALLATION, AND INSTALLATION OF TEMPORARY PUMPS AND PIPING TO PUMP WATER TO WASTE IN NEARBY SEWER MANHOLE,** within the City of Beverly Hills, California, in accordance with Drawing No. 10395, Sheets 1 through 3 and these Project Specifications.

In general terms, the contract work for this project shall consist of the following items of work:

ITEM NO.	ESTIMATED QUANTITY	DESCRIPTION
1A	1 LS	Mobilization/Demobilization, Bond, and Insurance et al
1B	2 EA	Haul Off Bentonite-Laden Drill Cuttings
1C	2 EA	Haul Off Bentonite Drilling Fluids

2	2 LS	Treatment and Compliance for Discharge of Well Development and Testing Fluids
3	100 LF	Furnish and install 26" O.D. Low Carbon Steel (LCS) Conductor Casing
4	400 LF	Drill Pilot Borehole (50 ft to 250 ft)
5	2 LS	Geophysical Survey
6A	3 EA	Isolated Aquifer Zone Test
6B	3 EA	Laboratory Testing of Samples.
7	300 LF	Ream pilot borehole (from 50 ft to 200 ft)
8A	2 LS	Caliper Survey after Pilot Borehole Reams
8B	2 LS	Magnetic Deviation Survey
9A	144 LF	Furnish and Install 12" Blank Well Casing (2 ft Above Ground to 60 ft Below Ground + 10 ft pump section)
9B	220 LF	Furnish and Install 12" Super-flo Louvers
9C	20 LF	Furnish and Install 12" Blank Well Casing (180 ft to 190 ft Below Ground)
9D	124 LF	Furnish and Install 3" Schedule 40 Low Carbon Steel (LCS) Gravel Feed Tube
9E	374 LF	Furnish and Install 2" Schedule 40 Pressure Transducer Tube
9F	8 LF	Furnish and Install 3" Air Vent Tube
10	120 LF	(Optional) Bentonite Pilot Hole Bottom Seal
11	300 LF	Furnish and Install Tacna Sand and Gravel (50 ft to 200 ft)
12	90 LF	Install Annular Cement/Grout Seal (5 ft to 50 ft)
13	2 LS	Gyroscopic Alignment Survey
14	48 HR	Standby Time
15	120 HR	Mechanically Develop Well

16A	40 GAL	Furnish 12.5% Chlorine Solution
16B	4 GAL	Furnish NW-220
17	6 LS	Provide Video Survey and two (2) DVD Recordings for Each Survey of Completed Well
18	2 LS	Installation and Removal of Temporary Test Pump
19	120 HR	Conduct Pumping Development
20A	24 HR	Perform 12-hour (Max) Step Drawdown Test
20B	96 HR	Perform 48-hour (Max) Constant Rate Pumping Test
21	2 LS	Disinfection of Well
22	500 LF	(If Necessary) Abandonment/Destruction of Pilot Hole
23	2 EA	Install temporary pumps in Wells 1 and 2
24	110 LF	Construct 4” Sch. 40 Steel temporary discharge line from Wells 1 and 2
25	30 LF	Construct 6” Sch. 40 Steel temporary discharge line from Wells 1 and 2 to nearby sewer manhole
26	1 EA	Construct temporary air gap assembly for sewer connection
27	00 LF	Remove and dispose of existing sewer manhole and plug existing 8” sewer pipe.

Copies of the Specifications and Proposal Form may be inspected and obtained at the office of the City Engineer located at 345 Foothill Road, Beverly Hills, California. There is no charge or deposit required for this material; therefore, they are not to be returned to the City for refund. Each bidder shall furnish the City the name, address, and telephone number of the firm requesting specifications.

References in the project specifications to specific sections of the Standard Specifications refer to the book of "Standard Specifications for Public Works Construction", 2012 Edition, written by a Joint Cooperative Committee of the Southern California Chapter of the American Public Works Association and Southern California District of the Associated General Contractors of California. Contractors wishing to obtain this book may purchase copies directly from the publisher, Building News, Inc., 1612 South Clementine Street, Anaheim, California, 92802; (800) 873-6397.

LIQUIDATED DAMAGES - There will be a One Thousand Dollar ($1,000.00) assessment for each working day that work remains incomplete beyond the time stated in the Proposal Form. Refer to the Proposal Form for specific details.

PUBLIC WORKS CONTRACTOR REGISTRATION NUMBER – The Contractor is required to register with State of California Department of Industrial Relations and meet requirements to bid on public works contracts. A Public Works Contractor Registration No. shall be submitted with the bid.

PREVAILING WAGES - In accordance with the provisions of Section 1770 et seq, of the Labor Code, the Director of Industrial Relations of the State of California has determined the general prevailing rate of wages applicable to the work to be done.

The Contractor will be required to pay to all workers employed on the project sums not less than the sums set forth in the documents entitled "General Prevailing Wage Determination made by the Director of Industrial Relations pursuant to California Labor Code, Part 7, Chapter l, Article 2, Sections 1770, 1773, 1773.l."

A copy of said documents is on file and may be inspected in the office of the City Engineer, located at 345 Foothill Road, Beverly Hills, California 90210.

Attention is directed to the provisions of Sections 1777.5 and 1777.6 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under him. The Contractor and any subcontractor under him shall comply with the requirements of said sections in the employment of apprentices.

Information relative to apprenticeship standards and administration of the apprenticeship program may be obtained from the Director of Industrial Relations, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

PAYROLL RECORDS - The Contractor's attention is directed to Section 1776 of the Labor Code, relating to accurate payroll records, which imposes responsibility upon the Contractor for the maintenance, certification, and availability for inspection of such records for all persons employed by the Contractor or by the Subcontractors in connection with the project. The Contractor shall agree through the Contract to comply with this section and the remaining provisions of the Labor Code.

INSURANCE AND BOND REQUIREMENTS - The Contractor shall provide insurance in accordance with Section 3-13 of the City of Beverly Hills, Public Works Department, Standard Contractual Requirements, included as part of these Specifications. All Subcontractors listed shall attach copies of the Certificate of Insurance naming the Contractor as the additional insured as part of their insurance policy coverage. In addition, the Contractor shall guarantee all work against defective workmanship and materials furnished by the Contractor for a period of one (1) year from the date the work was completed in accordance with Section 2-11 of the Standard Contractual

Requirements. The Contractor's sureties for the "Performance Bond" shall be liable for any work that the Contractor fails to replace within a specified time.

GENERAL INSTRUCTIONS - Bids must be submitted on the Proposal Form prepared for this project and shall be delivered at the office of the City Clerk within a sealed envelope supplied by the City and marked on the outside as follows: "PROPOSAL FOR SHALLOW WELL DRILLING PROJECT AT MAPLE YARDS".

THE CITY RESERVES THE RIGHT TO REJECT ANY BID OR ALL THE BIDS AND TO WAIVE ANY INFORMALITY OR IRREGULARITY IN ANY BID, BUT IF THE BIDS ARE ACCEPTED, THE CONTRACT FOR THE IMPROVEMENT WILL BE LET TO THE LOWEST RESPONSIBLE BIDDER FOR THE PROJECT AS A WHOLE.

PROPOSAL FORM

For

SHALLOW WELL DRILLING PROJECT

at

MAPLE YARDS

Within the City of

BEVERLY HILLS, CALIFORNIA

Date_____

To the Honorable City Council
Beverly Hills, California

In compliance with advertised notice inviting sealed proposals for Shallow Well Drilling Project at Maple Yards within the City of Beverly Hills, California and after having carefully examined the location of the project and studied the specifications prepared for this work, the undersigned hereby agrees to enter into a contract to furnish all labor, materials, equipment, parts, implements, and supplies needed to perform the contract work to the satisfaction and under the direction of the City Engineer of the City of Beverly Hills, said contract to be drawn in accordance with the provisions in the Specifications, Notice to Bidders, and all the applicable clauses of the "Standard Contractual Requirements for Public Improvements in the City of Beverly Hills, California", as adopted by the Department of Public Works on November 1, 1976.

If awarded the contract, the undersigned agrees to furnish the necessary bonds and insurance as set forth in the above-mentioned Standard Contractual Requirements, within ten (10) days after the award of the contract.

Attached hereto is cash, or cashier's check, or a certified check in favor of the City of Beverly Hills, in an amount equal to at least ten percent (10%) of the total bid, or a bid bond for said amount on a form furnished by the City, with the understanding that said security shall be held by the City Clerk until the contract for doing the work has been entered into and that said security shall be forfeited to the City as liquidated damages should the undersigned fail to enter into a contract and furnish the above-mentioned bonds and insurance within the ten (10) days specified, if awarded the contract, as the undersigned agrees that in the event of such failure, the actual amount of the damage to the City would be impractical, and extremely difficult to determine.
In the event cash, or cashier's check, or a certified check is furnished for the bid bond, then a letter is required from a bonding company stating that said company will furnish

the necessary bonds, as specified in Paragraph 2-11 of the Standard Contractual Requirements if the undersigned is awarded the contract. The undersigned is aware of the fact that such a letter must be from a bonding company acceptable to the City of Beverly Hills, and that all bids accompanied by cash, or cashier's check, or a certified check in lieu of the bid bond must be accompanied by such a letter in order to be considered.

The undersigned certifies to have a minimum of three consecutive years of current experience in the type of work related to this project and that this experience is in actual operation of a firm with permanent employees performing a part of the work as distinct from a firm operating entirely by subcontracting all phases of the work.

The undersigned also certifies to be properly licensed by the State of California as a contractor to perform work of this specialty and further certifies to have been so licensed for the three years immediately preceding the date of receipt of bids. The undersigned agrees to furnish the City satisfactory proof of ability to perform the work, as well as records of performance of similar jobs completed recently, if and when requested to do so by the City Engineer.

The undersigned agrees that for change orders involving extra cost, the bidder shall allow the contingency allowance indicated by the City in the following bidding schedule. Expenditures from the contingency allowances shall be made only upon written order of the City. The portion of the allowance remaining unexpended at the completion of the work shall be deducted from the final payment due the Contractor.

The undersigned agrees that the insurance and bonding requirements set forth in Sections 2-11 and 3-13, respectively, of the City of Beverly Hills, Public Works Department, Standard Contractual Requirements can and will be fulfilled.

The undersigned hereby agrees to perform the work as described and in the Specifications prepared for this project, at the following prices, to wit:

ITEM NO.	EST QTY.	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
1A	1	Mobilization/Demobilization, Bond, and Insurance et al _____ DOLLARS AND _____ CENTS per lump sum	$_____	$_____
1B	2	Haul Off Bentonite-Laden Drill Cuttings _____ DOLLARS AND		

ITEM NO.	EST QTY.	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
		_____ CENTS		
		per each	$_____	$_____
1C	2	Haul Off Bentonite Drilling Fluids		
		_____ DOLLARS AND		
		_____ CENTS		
		per each	$_____	$_____
2	2	Treatment and Compliance for Discharge of Well Development and Testing Fluids		
		_____ DOLLARS AND		
		_____ CENTS		
		per lump sum	$_____	$_____
3	100	Furnish and install 26" O.D. Low Carbon Steel (LCS) Conductor Casing		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear foot	$_____	$_____
4	400	Drill Pilot Borehole (50 ft to 250 ft)		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear foot	$_____	$_____

ITEM NO.	EST QTY.	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
5	2	Geophysical Survey		
		_____ DOLLARS AND		
		_____ CENTS		
		per lump sum	$_____	$_____
6A	3	Isolated Aquifer Zone Test		
		_____ DOLLARS AND		
		_____ CENTS		
		per each	$_____	$_____
6B	3	Laboratory Testing of Samples		
		_____ DOLLARS AND		
		_____ CENTS		
		per each	$_____	$_____
7	300	Ream pilot borehole (from 50 ft to 200 ft)		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear foot	$_____	$_____
8A	2	Caliper Survey after Pilot Borehole Reams		
		_____ DOLLARS AND		
		_____ CENTS		
		per lump sum	$_____	$_____

ITEM NO.	EST QTY.	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
8B	2	Magnetic Deviation Survey		
		_____ DOLLARS AND		
		_____ CENTS		
		per lump sum	$_____	$_____
9A	144	Furnish and Install 12" Blank Well Casing (2 ft Above Ground to 60 ft Below Ground + 10 ft Pump Section)		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear feet	$_____	$_____
9B	220	Furnish and Install 12" Super-flo Louvers		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear feet	$_____	$_____
9C	20	Furnish and Install 12" Blank Well Casing (180 ft to 190 ft Below Ground)		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear feet	$_____	$_____
9D	124	Furnish and Install 3" Schedule 40 Low Carbon Steel (LCS) Gravel Feed Tube		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear feet	$_____	$_____

ITEM NO.	EST QTY.	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
9E	374	Furnish and Install 2" Schedule 40 Pressure Transducer Tube		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear feet	$_____	$_____
9F	8	Furnish and Install 3" Air Vent Tube		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear feet	$_____	$_____
10	120	(Optional) Bentonite Pilot Hole Bottom Seal		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear feet	$_____	$_____
11	300	(Furnish and Install Tacna Sand and Gravel (50 ft to 200 ft)		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear feet	$_____	$_____
12	90	Install Annular Cement/Grout Seal (5 ft to 50 ft)		
		_____ DOLLARS AND		
		_____ CENTS		
		per linear feet	$_____	$_____

ITEM NO.	EST QTY.	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
13	2	Gyroscopic Alignment Survey		
		_____ DOLLARS AND		
		_____ CENTS		
		per lump sum	$_____	$_____
14	48	Standby Time		
		_____ DOLLARS AND		
		_____ CENTS		
		per hour	$_____	$_____
15	120	Mechanically Develop Well		
		_____ DOLLARS AND		
		_____ CENTS		
		per hour	$_____	$_____
16A	40	Furnish 12.5% Chlorine Solution		
		_____ DOLLARS AND		
		_____ CENTS		
		per gallon	$_____	$_____
16B	4	Furnish NW-220		
		_____ DOLLARS AND		
		_____ CENTS		
		per gallon	$_____	$_____

ITEM NO.	EST QTY.	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
17	6	Provide Video Survey and two (2) DVD Recordings for Each Survey of Completed Well _____ DOLLARS AND _____ CENTS per lump sum	$_____	$_____
18	2	Installation and Removal of Temporary Test Pump _____ DOLLARS AND _____ CENTS per lump sum	$_____	$_____
19	120	Conduct Pumping Development _____ DOLLARS AND _____ CENTS per hour	$_____	$_____
20A	24	Perform 12-hour (Max) Step Drawdown Test _____ DOLLARS AND _____ CENTS per hour	$_____	$_____
20B	96	Perform 48-hour (Max) Constant Rate Pumping Test _____ DOLLARS AND _____ CENTS per hour	$_____	$_____

ITEM NO.	EST QTY.	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
21	2	Disinfection of Well _____ DOLLARS AND _____ CENTS per lump sum	$_____	$_____
22	500	(If Necessary) Abandonment/Destruction of Pilot Hole _____ DOLLARS AND _____ CENTS per linear foot	$_____	$_____
23	2	Install temporary pumps in Wells 1 and 2 _____ DOLLARS AND _____ CENTS per each	$_____	$_____
24	110	Construct 4” Sch. 40 Steel temporary discharge line from Wells 1 and 2 _____ DOLLARS AND _____ CENTS per Linear Foot	$_____	$_____
25	30	Construct 6” Sch. 40 Steel temporary discharge line from Wells 1 and 2 _____ DOLLARS AND _____ CENTS per Linear Foot	$_____	$_____

ITEM NO.	EST QTY.	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
26	1	Construct temporary air gap assembly for sewer connection _____ DOLLARS AND _____ CENTS per each	$_____	$_____
27	1	Remove and dispose of existing sewer manhole and plug existing 8" sewer pipe _____ DOLLARS AND _____ CENTS per lump sum	$_____	$_____

TOTAL BID PRICE FOR THE ENTIRE CONTRACT WORK including the cost of labor, materials, equipment, parts, implements and supplies necessary to complete the project, as based on the City Engineer's estimate of quantities of work to be done.

_____ DOLLARS
AND
_____ CENTS $ _____
(Figures)

All blank spaces appearing in the foregoing must be filled in. In case of discrepancy between words and figures, the words shall prevail.

The undersigned hereby declares that the cost of all necessary items for completion of this project are included in the unit prices quoted, all incidental costs having been taken into consideration even though said incidentals are not specifically listed in the specifications or shown on the plan. The undersigned is likewise aware of the fact that distances, quantities, and other estimated figures appearing on the plans or mentioned in the specifications or on this Proposal form are only approximate and declares that the unit prices shown above for the various items of work are based on distances and quantities calculated as the result of actual measures performed at the site of the project.

TIME FOR COMPLETION - The work on this project shall start within 5 working days from the date of receipt of written notice to proceed from the City Engineer and the

Contractor agrees to complete the entire work within **65 working days** from Notice to Proceed.

In case all the work called for is not completed in all parts and requirements within the time specified, the City shall have the right to grant or deny an extension of time for completion, as may best serve the interest of the City. The Contractor shall not be assessed with penalties during the delay in the completion of the work caused by acts of God or of the Public Enemy, acts of the State, fire not due to acts of contractors or subcontractors, floods, epidemics, quarantine, restrictions, strikes, freight embargo or unusually severe weather, or delays of subcontractors due to such causes provided that the Contractor shall, within ten (10) working days from the beginning of such delay, notify the City, in writing of the cause of the delay. The City will ascertain the facts and the extent of the delay, and the findings thereon shall be final and conclusive.

LIQUIDATED DAMAGES - Time is of the essence on this contract, and should the Contractor fail to finish the work on or before the time stated above, the Contractor shall be charged by the City, as liquidated and ascertained damages, the sum of One Thousand Dollars ($1,000) assessment for each working day that the work remains incomplete beyond the dates specified (subject, however, to extension of time duly granted in the manner and for the causes specified in the Special Provisions) it being hereby expressly impracticable and extremely difficult to fix the actual damage which would or will be suffered in the event that the Contractor should fail fully to complete the work within the time specified, and it would be further agreed that the charges per day as aforementioned shall be reasonable and proper in premise. The amount so charged shall be deducted by the City from any monies which otherwise are or become payable to the Contractor.

LIST OF SUBCONTRACTORS - The undersigned is required to fill in the following blanks in accordance with the provisions of Section 4104 of the Public Contract Code of the State of California and Section 2-3 of the Standard Specifications.

Name Under Which Subcontractor Licensed	**License No.**	**Location of the Place of Business**	**Specific Subcontract**
_____	_____	_____	_____
		_____	_____
_____	_____	_____	_____
		_____	_____
_____	_____	_____	_____
		_____	_____
_____	_____	_____	_____
		_____	_____
_____	_____	_____	_____
		_____	_____

Subcontractors listed in accordance with the provision of Section 2-3 of the Standard Specifications must be properly licensed under the laws of the State of California for the type of work which they are to perform. Do not list alternate subcontractors for the same work. All subcontractors listed shall attach copies of the Certificate of Insurance naming the Contractor as additional insured as part of their policy coverage.

The undersigned agrees to furnish proof that all contractors and subcontractors performing any work related to this improvement are complying with all the requirements of Social Security Legislation, both State and Federal, and also agrees to conform with the provisions of Sections 4100 to 4113, inclusive, of the Public Contract Code, as amended, concerning subcontractors and subcontracts.

Respectfully submitted,

Dated_____

FIRM NAME _____

SIGNATURE _____

Bidder

ADDRESS _____

_____

TELEPHONE: BUSINESS_____

RESIDENCE_____

CONTRACTOR'S LICENSE NO._____ CLASS_____ EXPIRATION DATE_____

STATE OF CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS PUBLIC WORKS CONTRACTOR REGISTRATION NUMBER_____

Bidder is *_____ If a partnership, names of partners
If a corporation, names of President **or** Vice President, **and** the Secretary **or** Assistant Secretary

NAME	ADDRESS
_____	_____
_____	_____
_____	_____

I (we) hereby state and declare under the penalty of perjury under the laws of California, that the representations made herein are true and correct.

Executed on _____ 20___ at _____ California

*By: _____ *By: _____

Title: _____ Title: _____

- Please state whether the bidder is an individual, a partnership, a corporation, or an individual doing business under a fictitious name. If the bidder is a corporation, the following is required: 1) signatures of two corporate officers; or 2) a certified copy of the corporation bylaws, and a resolution of the Board of Directors which gives authority to the officers signing this agreement to execute contracts on behalf of the corporation. Also, refer to Paragraph 2-01 of the Standard Contractual Requirements.

NONCOLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

State of California
County of_____

_____, being first duly sworn, deposes and says that he or she is _____of the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true, and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

_____
Contractor

_____

_____

(attach appropriate notary acknowledgments)

SPECIFICATIONS

For

SHALLOW WELL DRILLING PROJECT

at

MAPLE YARDS

within the City of
BEVERLY HILLS, CALIFORNIA

ooooo

SECTION 1

GENERAL PROVISIONS

1-01 WORK TO BE DONE - The contract work to be done under these Specifications shall consist of furnishing all the required labor, materials, equipment, parts, implements and supplies necessary for or appurtenant to, **SHALLOW WELL DRILLING PROJECT AT MAPLE YARDS, INCLUDING WELL CASING INSTALLATION, AND INSTALLATION OF TEMPORARY PUMPS AND PIPING TO PUMP WATER TO WASTE IN NEARBY SEWER MANHOLE,** within the City of Beverly Hills, California, in accordance with Drawing No. 10395, Sheets 1 through 3 and these Project Specifications.

The work generally consists of the following (for each well):

1A Mobilize and demobilize a direct (mud) rotary drill rig, drilling equipment and accessories, apply for and obtain all permits, provide for bonds and all other tasks and provide personnel and equipment in preparing two sites for well construction.

1B Use of dump trucks to haul off and properly dispose of bentonite-laden drill cuttings.

1C Use of vacuum trucks to haul off and properly dispose of bentonite drilling fluids.

2 Provide for treatment (including the use of at least two above-ground settling tanks) and compliance for discharge of well development and testing fluids, in accordance with Exhibit B.3 Drill 30" dia. hole (minimum), furnish and install

26" outside diameter (OD) x 1/4" (minimum) Low Carbon Steel (LCS) conductor casing and grout into place to 50 ft bgs.

4 Drill pilot borehole from 50 ft to 250 ft bgs with a 6- to 9-inch nominal diameter drill bit, collect formation samples, monitor fluid properties, conduct Eastman type drift surveys and perform related work.

5 Provide downhole geophysical surveying consisting of a spontaneous potential, short (16-inch) and long (64-inch) normal resistivity, focused (guard) resistivity, sonic variable density (sonic), gamma-ray and magnetic deviation surveys.

6A Perform three (3) isolated aquifer zone tests in one pilot borehole.

6B Retain laboratory, collect samples, deliver samples to laboratory, and pay for specified analyses.

7 Ream pilot borehole to 22-inches in diameter from 50 ft to 200 ft bgs.

8A Provide for one caliper survey after completion of pilot borehole reams.

8B Provide for one magnetic deviation survey with a magnetometer tool following completion of the pilot reams.

9A Furnish and install 72 ft of 12-inch inside diameter (ID) by 1/4-inch wall Type 304L Stainless Steel ASTM A778 blank well casing, from 2 ft above ground surface to 60 ft bgs + a 10 ft section for the pump.

9B Furnish and install 110 ft of 12-inch ID by 1/4-inch wall, Type 304L Stainless Steel ASTM A778, 0.060-inch (60-slot) Super-flo Louvers (interspersed with blank casing) from±60 ft to 180 ft bgs.

9C Furnish and install 10 ft of 12-inch ID by 1/4-inch wall Type 304L Stainless Steel ASTM A778 blank well casing from 180 ft bgs to 190 ft bgs, including a cellar pipe between.

9D Furnish and install 62 ft of 3-inch ID Schedule 40 Low Carbon Steel ASTM A53 gravel feed tube from 2 ft above ground surface to 60 ft bgs.

9E Furnish and install 187 ft of 2-inch ID Schedule 40 Type 304L Stainless Steel ASTM A53 pressure transducer tube, from 2 ft above ground surface to 185 ft bgs, with 0.050-inch slots between 60 ft and 180 ft bgs.

9F Furnish and install one, four-foot long, 3-inch ID Schedule 40 Type 304L Stainless Steel air vent tube from 2 ft above ground surface to 2 ft bgs.

10 Install (optional) bentonite pilot hole bottom seal.

11 Furnish and install Tacna Sand and Gravel, or similar, 8 X 16 gradation gravel pack, including 5 ft of plaster sand, from 50 ft to 200 ft bgs.

12 Install annular cement/grout seal in lifts from 5 ft bgs to 50 ft bgs.

13 Conduct gyroscopic alignment survey to the bottom of the pump house casing.

14 Standby time

15 Mechanically develop well by swabbing and airlift pumping (only actual swabbing or surging time shall be attributed to development time).

16A Chemicals for well development: furnish 50 gallons of 12.5% chlorine solution.

16B Chemicals for well development: furnish 5 gallons of NW-220 (or equivalent).

17 Provide three color video surveys and two (2) DVD recordings of each survey of the completed well (entire depth), two following mechanical development and a third following removal of the test pump.

18 Mobilization, installation, removal and demobilization of a temporary test pump and accessories to a depth of 150 ft bgs in each well.

19 Conduct pumping development, record and monitor changes in water levels, sand content, and flow rates.

20A Perform 12-hour (maximum) step drawdown test including measurements of water levels, pumping rates and sand production.

20B Perform 48-hour (maximum) constant rate pumping test, including measurements of water levels, pumping rates and sand production.

21 Disinfect the Well.

22 <u>If necessary</u>, abandonment/destruction of pilot hole in accordance with State or local County ordinances.

23 Installing temporary pumps in Wells 1 and 2. This shall include installation and testing of temporary pumps to confirm operational capacity.

24. Constructing 4" Sch. 40 Steel temporary discharge piping from Wells 1 and 2 to the junction point of the two wells' piping. This shall include connection of discharge piping to the temporary pumps in each well per the Plans.

25. Constructing 6" Sch. 40 Steel temporary discharge piping from the junction point of the two wells' 4" piping to the air gap structure at the manhole connection. This shall include connection of the 6" discharge piping to the 4"

discharge piping and the temporary air gap structure at the manhole connection per the Plans.

26. Constructing a temporary air gap structure at the manhole connection. This shall include removal of the existing manhole cover (storing on-site) and constructing the screened air gap structure per the Plans.

27. Removing and disposing of existing sewer manhole and plugging existing 8" sewer pipe. This shall include excavation and removal of manhole, excavating and plugging 8" sewer pipe in two places, backfilling and compacting excavations to existing grade, and proper disposal of piping and manhole per the Plans and any related State Laws.

1-02 STANDARD CONTRACTUAL REQUIREMENTS - The provisions of the "Standard Contractual Requirements for Public Improvements in the City of Beverly Hills", as adopted by the Department of Public Works on November 1, 1976, a copy of which is attached hereto and incorporated herein by reference, shall be applicable to the work covered by these Specifications.

1-03 REFERENCE SPECIFICATIONS

1-03.1 GENERAL - The following referenced specifications, including all amendments thereto issued prior to the date of the bid opening, shall be a part of these specifications, the same as though contained fully herein.

1-03.2 STANDARD SPECIFICATIONS - The words "Standard Specifications" when used in these Specifications or in the contract, refer to the "Standard Specifications for Public Works Construction", 2012 Edition written by a Joint Cooperative Committee of the Southern California Chapter of the American Public Works Association and Southern California District of the Associated General Contractors of California.

SECTION 2

SPECIAL PROVISIONS

2-01 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

2-01.1 TIME FOR COMPLETION - The work on this project shall start within 5 working days from the date of receipt of written notice to proceed from the City Engineer and the Contractor agrees to complete the entire work within 65 working days from the date of receipt of said written "Notice to Proceed".

In case all the work called for is not completed in all parts and requirements within the time specified, the City shall have the right to grant or deny an extension of time for completion as may best serve the interest of the City. The Contractor will not be assessed with liquidated damages during the delay in the completion of the work caused by acts of God or of the Public Enemy, acts of the State, fire not due to acts of contractors or subcontractors, floods, epidemics, quarantine, restrictions, strikes, freight embargo or unusually severe weather, or delays of subcontractors due to such causes provided that the Contractor shall within ten (10) working days from the beginning of such delay notify the City, in writing, of the cause of the delay. The City will ascertain the facts and the extent of the delay, and the findings thereon shall be final and conclusive.

2-01.2 LIQUIDATED DAMAGES - Time is of the essence on this contract, and should the Contractor fail to finish the work on or before the time stated above, the Contractor shall be charged by the City, as liquidated and ascertained damages, the sum of One Thousand Dollars ($1,000) for each working day that the work remains incomplete beyond the dates specified in 2-01.1; it being hereby expressly impracticable and extremely difficult to fix the actual damage which would or will be suffered in the event that the Contractor should fail fully to complete the work within the time specified, and it would be further agreed that the charges per day as aforementioned shall be reasonable and proper in premise. The amount so charged shall be deducted by the City from any monies which otherwise are or become payable to the Contractor.

2-01.3 PLANS AND SPECIFICATIONS - The specifications showing location, character of the work, and details of construction are on file at the office of the City Engineer, located in 345 Foothill Road, Beverly Hills, California. The Plans for this project are:

A. Drawing No. 10395, Sheets 1 through 3

The construction of this project shall be in accordance with the notes and details shown on the Plans, the provisions of these Specifications, referenced and applicable sections of the Standard Specifications, and all other applicable references contained in the above items.

The Contractor shall field verify and make an independent check of the estimate prior to submitting its bid. It must be understood that payment to the successful contractor will be made on the basis of the unit prices bid for the item of work and on the actual quantities of work done as measured in the field by the City Engineer.
Copies of the specifications and proposal form may be inspected and obtained at the office of the City Engineer.

Contractors wishing to obtain the book "Standard Specifications for Public Works Construction", 2012 Edition, may purchase copies directly from the publisher, Building News, Inc., 1612 South Clementine Street, Anaheim, California, 92802; (800) 873-6397.

2-03 WORK SCHEDULE

2-03.1 Time Schedule – The Contractor shall accomplish construction work between the hours of 8:00 a.m. to 6:00 p.m. during the normal workweek, Monday through Friday.

2-03.2 WORK SCHEDULE – The Contractor shall submit to the City Engineer a schedule indicating the sequence of work, estimated time for completion of each phase of the project and the method of operation required to complete the project in the time specified. The Contractor's schedule shall be submitted to the City Engineer within 10 working days from the date of award of contract. See Section 7 of Additional Special Provisions for additional information.

2-03.3 SPECIAL WORK REQUIREMENTS – The following special work requirements shall be adhered to and full compensation for conforming to all of the special work requirements shall be included in the items of work for this contract and no additional compensation will be made therefor:

a.) The Contractor is prohibited from working on the following days:

Day	Date	Holiday
Fri.-Sat.	July 3-4, 2015	Independence Day
Mon.	Sept. 7, 2015	Labor Day
Sun.	Sept. 13, 2015	Rosh Hashanah
Tue.	Sept. 22, 2015	Yom Kippur
Wed.	Nov. 11, 2015	Veteran's Day
Thur.-Fri.	Nov. 26 & 27, 2015	Thanksgiving Day
Fri.	Dec. 25, 2015	Christmas Day
Fri.	Jan. 1, 2016	New Year's Day
Mon.	Jan. 18, 2016	Martin Luther King Day
Mon.	Feb. 15, 2016	President's Day
Fri.	April 22 & 29, 2016	Passover
Fri.	April 29, 2016	Good Friday
Mon.	May 30, 2016	Memorial Day

2-04 TRAFFIC CONTROL

2-04.1 GENERAL - All streets and driveways where construction is in progress shall be kept open and in passable condition for emergency vehicles and normal traffic at all times.

2-04.2 PARKING AND ACCESS TO RESIDENT'S DRIVEWAY – The City will furnish to the Contractor "TEMPORARY NO PARKING" signs. The contractor will be responsible for posting and removing these signs as required for this project. These signs shall be placed around the circumference of a tree or street light post by a string. These signs should also reflect the exact time and date of the scheduled work. The Contractor shall comply with the requirements of Paragraph 5-07 of the Standard Contractual Requirements with reference to the need of minimizing the inconvenience caused to residents.

2-04.3 USE OF FLAG PERSON – To properly move traffic through the construction area, Contractor must be prepared to post flagger(s) to slow down and reroute traffic during installation, and if in the opinion of the City Engineer, at other phases of construction work. Flagger(s) shall be on duty the entire period the roadway is constricted.

2-04.4 CONTRACTOR'S RESPONSIBILITY - The Contractor shall take all necessary measures to obtain a normal flow of traffic to prevent accidents and to protect the work throughout the construction stages until completion of the work. The Contractor shall make the necessary arrangements to provide and maintain barriers, cones, guards, barricades and construction warning and regulatory signs. The Contractor shall take measures necessary to protect all other portions of the work during construction and until completion, providing and maintaining all necessary barriers, barricade lights, guards, temporary crossovers and watchmen.

In addition to the foregoing traffic control and safety measures, the Contractor shall undertake immediately to implement any measures requested by the City Engineer, as deemed necessary to ensure the proper flow of traffic and the protection of the public and the safety of the workers. The Contractor shall maintain at all times the ability to respond to calls from the Beverly Hills Police Department during non-working hours to replace or provide additional traffic control or safety devices as shall be required by the Police Department.

2-04.5 PAYMENT - The entire cost for traffic control as detailed in this section and as required for this construction shall be included in the unit prices bid for the various items of work, and no additional compensation shall be allowed therefor.

2-05 UTILITIES

2-05.1 CONTRACTOR'S RESPONSIBILITY - The Contractor shall verify the location of all underground utilities and services before proceeding with work, requesting in advance the services of inspectors from the utility companies in order to ascertain said locations. Damage to underground utilities resulting from neglect on the part of the Contractor shall be corrected and paid for by the Contractor.

2-05.2 NOTIFICATION - The Contractor shall notify all owners of public utilities 48 hours in advance of excavating around any of their substructures, and shall also provide the same notice to Underground Service Alert of Southern California, Telephone No. 811. Upon request, the City Engineer will furnish the Contractor a list of the various offices and numbers to call.

2-06 BUSINESS LICENSE - The Contractor is required to have a current City of Beverly Hills business license issued through the City of Beverly Hills Building & Safety and/or Finance Administration Departments. This license shall be obtained by the Contractor at no fee from the City.

2-06.1 PUBLIC WORKS CONTRACTOR REGISTRATION NO. – Under SB 854, Contractor is required to register and meet requirements with the State of California, Department of Industrial Relations to bid on public works contracts. A Public Works Contractor Registration No. shall be submitted with the bid.

2-07 PERMITS

2-07.1 - Prior to the commencement of work, the Contractor shall obtain a construction permit from the City of Beverly Hills Public Works Permit Counter located at 455 North Rexford Drive. Permits shall be kept in a readily available place on the job site at all times during construction. While no fee will be charged for the City of Beverly Hills permit, no permit will be issued unless the Contractor provides evidence of a current City of Beverly Hills business license.

2-07.2 - The Contractor shall obtain an after-hours no fee permit from the Building and Safety Department, 455 North Rexford Drive, for construction operations to be performed during Saturdays and Sundays. See Section 3 of Additional Special Provisions for additional information.

2-09 ADDITIONAL WORK AND EXTRA WORK - The City reserves the right to order additional work over and above the quantities listed in the Proposal Form. In the event that additional work is required and is so ordered by the City Engineer, payment to the Contractor will be based on the actual quantity of additional work ordered and measured in the field by the City Engineer and will be paid for at the unit price bid by the Contractor. Whenever extra work is found to be necessary, the procedure described in Paragraph 5-11 of the Standard Contractual Requirements shall be followed.

2-10 SAFETY REGULATIONS - The Contractor shall comply with the requirements set forth in Section 7-10.4.1 of the Standard Specifications.

2-11 AVOIDANCE OF DUST NUISANCE - During the process of breaking and removal of any material from the site of the project and until completion of the contract work, the Contractor shall take all necessary measures in order to avoid the nuisance of excessive dust. Refer to Section 7-8.1 of the Standard Specifications.

Contractor shall sweep the project area free of all dust and debris at the conclusion of each working day prior to opening the construction area to traffic.

2-12 RECYCLING OF MATERIALS AND NONSTORMWATER DISCHARGES

2-12.1 RECYCLING OF MATERIALS - The Contractor is encouraged to recycle all materials. The Contractor shall provide the City all documentation as to the weight of the material in accordance with the requirements of AB 939.

2-12.2 DISCHARGES INTO STORM DRAIN SYSTEM - Storm water/urban runoff discharges to the public storm drainage system shall be prohibited for all discharges not wholly comprised of storm water, or permitted by a valid National Pollution Discharge Elimination System (NPDES) permit issued by the California Regional Water Quality Control Board. "Storm drain system" includes all roads with drainage systems, municipal streets, catch basins, curbs, gutter ditches, man-made channels, or storm drains. The Contractor shall prevent all non-storm water discharges from the construction site (i.e., mixing and cleaning of construction materials, concrete washout, disposal of paints, adhesives, solvents, and landscape products).

2-13 ITEMS OF WORK

2-13.1 GENERAL

See the Plans, Specifications, Additional Special Provisions and Technical Provisions in Appendix A for details related to the items of work covered under this Contract.

SECTION 3

CONSTRUCTION REQUIREMENTS AND MATERIALS

3-01 SHOP DRAWING SUBMITTALS

3-01.1 The Contractor shall submit to the City Engineer within five (5) working days after the notice to proceed of the contract for review five (5) copies of each shop drawing as specified in the Additional Special Provisions, and the Technical Provisions, except those submittals required after well completion. Shop drawing submittals shall include detailed design calculations, shop drawings, fabrication and installation drawings, catalog sheets, data sheets and similar items. The City Engineer shall review the shop drawings and return them to the Contractor within ten (10) working days.

3-01.2 Fabrication and/or purchase of an item may be commenced only after the City Engineer has reviewed the pertinent submittals and returned them to the Contractor marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED." Corrections indicated on the submittals shall be considered as changes necessary to meet the requirements of the specifications and shall not be taken as the basis of claims for extra work.

3-01.3 The City Engineer's review of shop drawing submittals shall not relieve the Contractor of the entire responsibility for the correctness of details and dimensions. The Contractor shall assume all responsibility and risk for any misfits due to any errors in Contractor submittals. The Contractor shall assume all responsibility for the dimensions and the design of adequate connections and details.

3-02 REMOVAL AND DISPOSAL OF MATERIALS - All materials removed must be hauled away from the construction site on the same working day and legally disposed of and/or recycled at a site located outside the City limits of Beverly Hills. The Contractor shall recycle materials whenever possible. If the Contractor recycles materials in accordance with the requirements of AB 939, the City shall be provided documentation as to the weight of the material.

Except as otherwise specifically authorized by the City Engineer, all self-propelled equipment used by the Contractor in breaking and removal operations shall be equipped with rubber tires.

3-03 AVOIDANCE OF DUST NUISANCE - The Contractor shall take all necessary measures in order to avoid the nuisance of excessive dust resulting from the process of breaking, reconstructing and removing any materials on the project site. Such measures shall be employed for the duration of the contract work. Refer to Section 7-8.1 of the Standard Specifications.

3-04 GUARANTY

A material guaranty for a period of one year from the date the City of Beverly Hills records a Notice of Completion for the work will be required for this contract.

3-05 CLEANUP

3-05.1 The Contractor shall clean up the construction sites daily, throughout the course of the work. No dirt, scrap material, trash, tools, or other unwanted material shall be trapped or left at the sites.

3-05.2 After the work specified herein has been completed, the entire area of work shall be left in a neat and presentable condition, free of all cleared vegetation, rubbish, construction debris and waste, surplus materials, and other objectionable materials. All such removed materials shall be disposed of by the Contractor away from the site of work and in conformance with all applicable codes, ordinances, and regulations.

STANDARD CONTRACTUAL REQUIREMENTS

FOR PUBLIC IMPROVEMENTS
IN THE CITY OF BEVERLY HILLS CALIFORNIA

AS ADOPTED BY
THE DEPARTMENT OF PUBLIC WORKS
ON NOVEMBER 1, 1976

PART I

GENERAL PROVISIONS

1-01 APPLICABILITY - Whenever these Standard Contractual Requirements are referred to in any proposal form, specifications, or contract for any work of public improvement proposed to be made by the City of Beverly Hills, they are made an integral part of all such documents pertaining to such work and are incorporated in each of such documents by reference as though set forth at length therein.

1-02 DEFINITION OF TERMS - The following terms, unless the context requires a different meaning, when used herein or in the proposal form, specifications, or the contract, shall have the following meanings:

BIDDER - Any individual, firm, partnership, corporation, or combination thereof, submitting a proposal for work contemplated.

BIDDER'S SECURITY - The cash, cashier's or certified check, or bidder's bond accompanying the proposal submitted by the bidder, as a guaranty that the bidder will enter into a contract with the City for the performance of the work if the contract is awarded to him.

CITY - The City of Beverly Hills, California.

CITY ATTORNEY - The City Attorney of the City.

CITY CLERK - The City Clerk of the City.

CITY ENGINEER - The City Engineer of the City

CITY COUNCIL - The Council of the City of Beverly Hills.

CODE - The terms Business and Professions Code, Civil Code, Government Code, Labor Code and Streets and Highways Code refer to codes of the State of California.

CONTRACT DOCUMENTS - The written agreement covering the performance of the work and the furnishing of labor, materials, tools and equipment in the construction of the work. The contract shall include the notice to bidders, proposal,

plans, specifications, these Standard Contractual Requirements and contract bonds; also any and all supplemental agreements amending or extending the work contemplated and which may be required to complete the work in a substantial and acceptable manner.

CONTRACTOR - The person or persons, firm, partnership, corporation, or combination thereof, which have entered into a contract with the City, as party or parties of the second part.

INSPECTOR - The Inspector of the Department of Public Works of the City, authorized by the City Engineer to represent him in the field during the performance of the work.

NOTICE TO BIDDERS - The public advertisement through which the City invites bids for the performance of specific work.

PLANS - The official project drawings and Standard Drawings, profiles, cross sections, working drawings and supplemental drawings, or reproductions thereof, approved by the City Engineer, which show the location, character, dimensions and details of the work to be performed.

PROJECT DRAWINGS - The project drawings are specific details and dimensions to the work and are supplemented by the Standard Drawings insofar as the same may apply.

PROPOSAL OR BID - The offer of the bidder for the work when made out and submitted on the prescribed proposal form, properly signed and guaranteed.

PROPOSAL FORM - The form furnished to prospective bidders by the City, for use by the bidder in preparing and submitting his bid.

PUBLIC UTILITIES - Railroad tracks, overhead or underground wires, pipe lines, conduit, ducts or structures owned, operated or maintained along or across a public right of way, including such installations owned by the Water Department, the Fire Department or the Police Department of the City, but excluding sewers, storm drains, street lighting systems and traffic signal systems owned by the City and operated or maintained by the Department of Public Works.

PUBLIC WORKS DIRECTOR - The Public Works Director of the City.

REFERENCE SPECIFICATIONS - Bulletins, standards, rules, methods of analysis or test, codes, and specifications of other agencies, engineering societies, or industrial associations referred to on the plans or in the specifications, copies of which are on file in the office of the City Engineer.

ROADWAY - That portion of a street or alley reserved for vehicular use.

SPECIFICATIONS - The project specifications prepared for the proposed work, and specifications included therein by reference, including standard specifications of other agencies, and any other specifications contained or referred to in supplemental agreements between the Contractor and the City.

STANDARD DRAWINGS - Plans of structures or devices adopted for work in the City and referred to on the plans or in the specifications by title or index number, or standard drawings or plans of other agencies which are referred to on the plans or in the specifications.

STATE - The State of California.

STREET SUPERINTENDENT - The City Engineer who has been authorized by the City Council to act in the capacity of Street Superintendent in the course of improvements carried under the proceedings of the Improvement Act of 1911, as amended, now a part of the Streets and Highways Code, as amended.

SUBCONTRACTOR - The person or persons, firm, partnership, corporation or combination thereof, who have entered into a contract with the Contractor to perform part of the work.

SUBGRADE - The surface to be used as a base for the pavement, gutter sidewalk, conduit, pipe or structure proposed to be installed.

SURETY - Any individual, firm or corporation, bound with and for the Contractor for the acceptable performance, execution, and completion of the work, and for the satisfaction of all obligations incurred.

WORK, PROJECT OR IMPROVEMENT - All the work specified, indicated, shown or contemplated in the contract to construct the improvement including all alterations, amendments or extensions thereto made by change order or other written orders of the City Engineer.

The meaning of any other word not mentioned herein shall be clarified by the City Engineer at the request of the Contractor, who shall accept the interpretation furnished him as representing the true meaning of such word.

1-03 ABBREVIATIONS - Following is a list of the most common abbreviations and symbols used on the plans and in the specifications.

ABBREVIATIONS	WORD or WORDS
AC	Asphalt concrete
ASTM	American Society for Testing Materials
BC	Beginning of curve
BCR	Beginning of curb return
BHW	Beverly Hills Water Department
BM	Bench mark
BVC	Beginning of vertical curve
CB	Catch basin
CC or C/C	Center to center
CF	Curb face
cfs	Cubic feet per second
CIP	Cast iron pipe
CL or C	Center line

ABBREVIATIONS	WORD or WORDS
CMP	Corrugated metal pipe
Conc.	Concrete
Cu.	Cubic
D	Diameter of pipe
Dia.	Diameter
Dr	Drive
DW&P	Los Angeles Department of Water & Power
Dwy.	Driveway
EC	End of curve
ECR	End of curb return
EG	Edge of gutter
Elev.	Elevation
EVC	End of vertical curve
Ex or Exist.	Existing
FB	Field Book
FH	Fire hydrant
FL	Flow line
fps	Feet per second
FS	Finished surface
Ft.	Foot or feet
Galv.	Galvanized
GL	Ground line
Gr	Grade
GRS	Galvanized Rigid Conduit
H	High or height
HC	House connection (sewer)
Hor	Horizontal
ID	Inside diameter

IDTC	Innerduct conduit
JC	Junction chamber
JS	Junction structure
L	Length
LACFCD	Los Angeles County Flood Control District
L&T	Lead and tack
LD	Local depression
Lin.	Linear
Long.	Longitudinal
MFS	Metropolitan Fiber Systems
MH	Manhole
MTD	Multiple tile duct
MWD	Metropolitan Water District
No.	Number
OD	Outside diameter
OLC.	Ornamental lighting conduit
PCC	Portland cement concrete or point of compound curvature
PI	Point of intersection
PL	Property line
PP	Power pole
PRC	Point of reverse curvature

ABBREVIATIONS	**WORD or WORDS**
Prop.	Proposed
psi	Pounds per square inch
PT	Point of tangency
PT&T	Pacific Telephone & Telegraph Co.
Pvmt.	Pavement
Q	Rate of flow
R	Radius
RC	Reinforced concrete
RCP	Reinforced concrete pipe
Rdwy	Roadway
R&O	Rock and oil
R/W	Right of way
S	Slope
San.	Sanitary
SCE	Southern California Edison Company
SCG	Southern California Gas Company
SD	Storm drain
SIC	Signal interconnect cable
Spec.	Specifications
SPCo	Southern Pacific Company
Sq.	Square
SS	Sanitary sewer

St.	Street
Sta.	Station
Std.	Standard
Str.Gr.	Straight Grade
T	Tangent distance
TC	Top of curb
TS	Traffic signal or transition structure
TSC	Traffic signal conduit
USC&GS	United States Coast and Geodetic Survey
USGS	United States Geological Survey
V	Depth of catch basin
v	Velocity
VC	Vertical curve
Vert.	Vertical
W	Width
WS	Water surface or wearing surface
Yd.	Yard or yards

The meaning of any other symbol or abbreviation not shown on the preceding list and not clarified in the plans, specifications, or contract, shall be interpreted by the City Engineer at the request of the Contractor, who shall accept such interpretation as representing the true meaning thereof.

REV 10-30-80
REV 10-12-88
REV 07-17-90
REV 03-13-91
REV 08-10-95
REV 12-21-95

PART 2

PROPOSAL REQUIREMENTS

2-01 PROPOSAL FORMS - All bids must be submitted on the proposal form attached to the specifications for a given project, and shall be delivered at the office of the City Clerk of Beverly Hills, located at 455 North Rexford Drive, Beverly Hills, California 90210.

All proposals must give the prices bid, both in written words and in figures, and must be signed by the bidder, who must state his address. If the proposal is made by an individual, his name, post office address and telephone number must be given. If made by a firm or partnership, the name, post office address and telephone number of each member of the firm or partnership must be shown. If made by a corporation, the proposal must show the name of the state under the laws of which the corporation was chartered, and the names, title and business addresses of the president, secretary and treasurer.

2-02 REJECTION OF PROPOSALS CONTAINING ALTERATIONS, ERASURES OR IRREGULARITIES - Proposals may be rejected by the City Council if they show any alterations of form, additions not called for, conditional or alternative bids, incomplete bids, erasures or irregularities of any kind. The City reserves the right to reject any or all bids, and to waive any informality or irregularity in any bid.

2-03 BIDDER'S SECURITY - Each bid submitted must be accompanied by cash, cashier's check, or certified check made payable to the City, or a bidder's bond in favor of the City, in the form set forth in Exhibit "A" attached hereto. Any of the foregoing types of bidder's security must be in an amount equal to at least ten percent (10%) of the total bid submitted by the bidder for the project. A bidder's bond shall be executed by a corporate surety acceptable to, and approved by, the City Attorney. A bid will not be considered unless one of the above-mentioned forms of bidder's security is enclosed with it.

2-04 FORFEITURE OF THE BIDDER'S SECURITY - If the successful bidder fails to execute the contract and furnish the necessary bonds and insurance within ten (10) days from the date of award of the contract, his bidder's security shall be forfeited to the City as liquidated damages.

2-05 BONDING LETTER - If cash, or cashier's check, or a certified check is furnished for the bid bond, a letter is required from a bonding company stating that in the event the contract is awarded to the bidder the bonding company will furnish, at the bidder's expense, the bonds required by Paragraph 2-11 hereof.

2-06 WITHDRAWAL OF BIDS - A bid may be withdrawn by a bidder prior to, but not after, the date and hour fixed for the opening of the bids, as said date and hour are specified in the Notice to Bidders

2-07 JURISDICTION OF THE CITY COUNCIL REGARDING BIDS - All bids shall be under the jurisdiction of the City Council and subject to final acceptance or rejection

until after the City Council has awarded the contract and said contract has been duly entered into with the successful bidder.

2-08 DECISION AS TO WHICH CONTRACTOR IS THE LOWEST AND BEST BIDDER -All bidders must submit with their proposal satisfactory evidence that they are capable of performing the work in accordance with the plans and specifications. The City Engineer may require any bidder bidding on any public improvement to submit experience records covering a three-year period. The City Council may reject the bid of any bidder who has been delinquent or unfaithful in the performance of any previous contract work. The decision of the City Council as to which bidder is considered the "lowest responsible bidder" will be based not only on the actual amount of the bid but also on the relative competence and experience of the bidders, with particular regard to the quality of performance of any work done by them for the City in the past, and such decision shall be final and binding upon all persons.

2-09 AWARDS - A decision with reference to the acceptance of bid and the award of a contract will be made by the City Council within sixty (60) days after the opening of bids.

2-10 EXECUTION OF THE CONTRACT - The contract, in the form set forth in Exhibit "C" attached hereto, shall be executed by the successful bidder, in accordance with the instructions set forth in Exhibit "B" attached hereto, and returned to the City for execution by the City, and shall be accompanied by the bonds required in Paragraph 2-11 hereof and the evidence of insurance required by Paragraph 3-12 hereof, all within ten (10) days after the bidder has received notice of the award of the contract. No bid or proposal shall be considered binding upon the City until such time as it has been executed by the City. The failure of the successful bidder to execute the contract and to submit acceptable bonds and evidence of insurance as, and within the time, required shall be cause for the annulment of the award and the forfeiture of the bidder's security.

2-11 CONTRACT BONDS - The successful bidder shall furnish to the City, at his own expense, two surety bonds. One bond shall be in the amount of One Hundred percent (100%) of the contract price, in the form set forth in Exhibit "D" attached hereto, to guarantee faithful performance of the contract work. The “Performance Bond” shall guarantee that all materials and workmanship will be free from original or developed defects. The “Performance Bond” must remain in effect until the end of all warranty periods set forth in the contract.

All work shall be guaranteed by the Contractor against defective workmanship and materials furnished by the Contractor for a period of one (1) year from the date the work was completed. The Contractor shall replace or repair any such defective work in a manner satisfactory to the City Engineer, after notice to do so from the City Engineer, and within the time specified in the notice. If the Contractor fails to make such replacement or repairs within the time specified in the notice, the City may perform this work and the Contractor’s sureties shall be liable for the cost thereof.

2-12 RETURN OF BIDDER'S SECURITY - If cash, or cashier's check or certified check is furnished as bidder's security, the City Clerk will return the bidder's security

(excepting anyone subject to forfeiture) upon the occurrence of either of the following: the decision of the Council not to award a contract, or the compliance by a successful bidder with Paragraph 2-10 hereof.

2-13 EXAMINATION OF THE SITE OF THE WORK, PLANS AND SPECIFICATIONS - Before submitting their bids, all bidders are required to examine carefully the site of the project and the proposal, plans, specifications and contract forms for the work contemplated, and it will be assumed that all bidders have investigated and are satisfied with the conditions to be encountered as to the character, quality and quantities of work to be performed and materials to be furnished, as well as to the requirements of the plans, specifications, and the contract. Quantities and dimensions, as shown on the plans, specifications and proposal form, shall be considered as being only approximate and merely intended to assist the bidders in checking their own figures as ascertained at the site of the proposed work. The submission of a proposal shall constitute a representation and warranty by the bidder that the bidder has made such an examination.

2-14 COMPLIANCE WITH THE PROVISIONS OF THE GOVERNMENT CODE - All contractors shall conform to the provisions of Sections 4100 to 4113, inclusive, of the Public Contract Code, as amended, concerning subcontractors and subcontracts.

2-15.1 REJECTION OF BIDS - Proposals may be rejected by the City Council, whereupon evidence of prior performance of the bidder, the City Council has made a finding that within a three-year period prior to the bid opening the bidder is not a responsible contractor because of past unsatisfactory performance with the City or with other public entities.

2-16 COMPLIANCE WITH PROVISIONS OF THE FEDERAL EQUAL EMPLOYMENT OPPORTUNITY BID CONDITIONS - All bidders to be eligible for the federally-assisted or non-exempt federal construction contracts in the area of jurisdiction of the Los Angeles Building and Construction Trades Council must comply with the provisions of the greater Los Angeles Plan or the affirmative action program, both of which are set forth in the Federal Equal Employment opportunity Bid Conditions incorporated by reference herein and attached hereto as Exhibit "H" pursuant to the U.S. Department of Labor Orders dated September 23, 1971.

NOTE: Exhibit "H" will not be attached hereto for projects which are not financed with federal funds.

2-17 INTERPRETATION OF CONTRACT DOCUMENTS - No oral interpretations will be made to any bidder as to the meaning of the contract documents. Should a prospective bidder discover discrepancies or omissions in the contract documents or should he be in doubt as to the meaning of the contract documents, he shall request clarification or modification from the City. Request for an interpretation shall be made in writing and delivered to the City at least 10 days (240 hours) before the time announced for opening the proposals. Interpretations by the City will be in the form of an addendum to the contract documents and, when issued, will be sent as promptly as is practical to all parties to whom the contract documents have been issued. All such addenda shall

become part of the contract. The submission of a proposal by the bidder shall constitute the acknowledgment that if awarded the contract, he has carefully reviewed the contract documents, based his bid solely on these documents, and has found them free of any ambiguity and sufficient for bid purposes and that he has not relied on any explanatory or interpretations from any other source except as provided for herein.

REV 10-30-80
REV 10-12-88
REV 08-19-91

PART 3

LEGAL RELATIONS AND RESPONSIBILITY TO THE CITY

3-01 LAWS TO BE OBSERVED - The Contractor shall keep himself fully informed on all existing and pending State and national laws and all municipal ordinances and regulations of the City, which in any manner affect those employed in the work, or the material used in the work, or which in any way affect the conduct of the work, and of all such orders and decrees of bodies or tribunals having jurisdiction or authority over the same. The Contractor shall particularly observe all ordinances of the City in relation to the obstruction of streets or conduct of the work, keeping open passageways and protecting the same where they are exposed or dangerous to traffic.

3-02 SOCIAL SECURITY REQUIREMENTS - The Contractor shall furnish to the City satisfactory evidence that he and all subcontractors working for him are complying with all requirements of the Federal and State Social Security legislation. The Contractor, at any time on request, shall satisfy the City that the Social Security and Withholding Tax are being properly reported and paid.

3-03 PREVAILING WAGES - In accordance with the provisions of Section 1770 et seq, of the Labor Code, the Director of the Department of Industrial Relations of the State of California has ascertained the general prevailing rate of wages applicable to the work to be done under contract for public improvement. The Contractor will be required to pay to all men employed on the project sums not less than the sums set forth in the documents entitled "General Prevailing Wage Determination made by the Director of Industrial Relations pursuant to California Labor Code Part 7, Chapter 1, Article 2, Sections 1770, 1773 and 1773.1."

A copy of said documents is on file and may be inspected in the office of the City Engineer in Room G10 of the Beverly Hills City Hall located at 345 Foothill Rd., Beverly Hills, California 90210.

3-04 PENALTIES - The Contractor shall comply with Labor Code Section 1775 and he shall forfeit, as a penalty to the City, the sum of twenty-five ($25.00) dollars for each working day or portion thereof during which the Contractor or any subcontractor under him has paid to any worker employed in the project an amount less than that required by the provisions of the preceding Paragraph 3-03.

3-05 PAYROLL RECORDS - The Contractor's attention is directed to Section 1776 of the Labor Code, relating to accurate payroll records, which imposes responsibility upon the Contractor for the maintenance, certification, and availability for inspection of such records for all persons employed by the Contractor or by the Subcontractors in connection with the project. The Contractor shall agree through the Contract to comply with this section and the remaining provisions of the Labor Code.

3-06 WORKING HOURS - The Contractor shall forfeit, as penalty to the City, the sum of twenty-five ($25.00) dollars for each worker employed in the execution of the contract by him or by any subcontractor under him for each working day during which

such worker is required or permitted to work more than eight (8) hours in any one working day and forty (40) hours in any one calendar week, in violation of the provisions of Article 3, Chapter 1, Part 7, Division 2 of the Labor Code (Section 1810 et seq).

3-07 APPRENTICES - Attention is directed to the provisions of Sections 1777.5 and 1777.6 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under him. The Contractor and any subcontractor under him shall comply with the requirements of said sections in the employment of apprentices.

Information relative to apprenticeship standards and administration of the apprenticeship program may be obtained from the Department of Industrial Relations, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

3-08 COLLUSION IN BIDDING - Any collusion between bidders bidding on the work and limiting free competition in bidding, shall be considered unlawful and may prevent a Contractor who has been a party thereto from receiving payment under the contract.

3-09 REGISTRATION OF CONTRACTORS - Only a Contractor licensed in accordance with the provisions of Chapter 9, Division 3 of the Business and Professions Code shall be permitted to enter into a contract with the City for any public improvement.

3-10 PERMITS AND LICENSES - The Contractor shall procure all permits and licenses, pay all charges and fees and give all notices necessary and incidental to the due and lawful prosecution of the work. City of Beverly Hills permits will be at no cost to the Contractor.

3-11 PATENTS - The Contractor shall assume all responsibility arising from the use of any patented, or allegedly patented, materials, equipment, devices or processes used on or incorporated in the work, and shall defend, indemnify, and hold harmless the City of Beverly Hills and City of Los Angeles, and each of its officers, agents, and employees from and against any and all liabilities, demands, claims, damages, losses, costs, and expenses, of whatsoever kind or nature, arising from such use.

3-12 INDEMNITY - The Contractor agrees to defend, indemnify, and save harmless the City of Beverly Hills and each of its officers, agents, and employees, from and against any and all liabilities, demands, claims, damages, losses, costs and expenses of whatsoever kind or nature, including, but not limited to, any and all direct and indirect cost of defense, made against, or incurred or suffered by, any such indemnity as a direct or indirect consequence of entering into this contract or of injury, sickness, or disease, including death, to persons or injury to, or destruction of, property, including, but not limited to, the loss of use of property, resulting directly or indirectly from, or in any manner connected with or pertaining to any and all operations, and any and all activities, omissions and conditions in any manner connected therewith or pertaining thereto, of the Contractor under the contract.

3-13 INSURANCE - The Contractor and Subcontractors shall at all times, during the term of the contract, carry, maintain, and keep in full force and effect, a policy or policies of Comprehensive Public Liability Insurance with an insurance company acceptable to,

and approved by, the City Attorney, with minimum limits of Two Million Dollars ($2,000,000), combined single limit coverage against any injury, death, loss or damage as a result of wrongful or negligent acts or omissions by the Contractor, together with an endorsement in substantially the form set forth in Exhibit "F", attached hereto.

All Subcontractor's Certificate of Insurance shall name the Contractor as the additional insured as part of their insurance policy coverage. Evidence of such coverage shall be submitted with the Contract Documents for review and approval by the City.

The Contractor and Subcontractors shall at all times, during the term of the contract, carry, maintain, and keep in full force and effect, a policy or policies of Business Automobile Liability Insurance with an insurance company acceptable to, and approved by, the City Attorney, with minimum limits of One Million Dollars ($1,000,000).

The Contractor shall provide the necessary insurance during the term of the contract issued by an insurer with a B+:VII or better rating in the most recent edition of Best's Insurance Guide.

3-14 WORKER'S COMPENSATION - The Contractor shall at all times, during the term of the contract, carry, maintain, and keep in full force and effect a policy or policies of Workmen's Compensation in substantially the form set forth in Exhibit "G", attached hereto.

PART 4

PROSECUTION AND PROGRESS OF THE WORK

4-01 WORK SCHEDULE - As soon as notified of the award of the contract, the Contractor shall prepare and submit to the City Engineer a work schedule for accomplishing the work. Said schedule must show the dates of the expected start and completion of the various items of the contract work. During a scheduling conference between the Contractor and the City Engineer, the work schedule will be discussed and modified, if necessary, by mutual agreement. The work schedule must be carefully conceived and adhered to, because it will be the basis for the contents of letters addressed to owners of property adjoining the work area, giving them an understanding of the dates on which their street will be under construction and that they may be prevented from using their driveways during the Contractor's operations. Should it become necessary for the City to delay temporarily the work schedule agreed upon during the scheduling conference, every effort will be made to permit a new work schedule at the time most convenient to the Contractor, thus permitting the project to proceed with the shortest intramural movement of equipment. The Contractor shall notify the City Engineer in all such cases, in order to arrive at a mutually satisfactory schedule.

4-02 SUBLETTING AND ASSIGNMENT - The Contractor shall give his personal attention to the fulfillment of the contract and shall keep the work under his control. The Contractor shall not assign, transfer nor sublet any part of the work without the written consent of the City by the City Engineer and of the Surety of the Contractor's bond, and such consent of Surety, together with a copy of the subcontract, shall be filed with the City Engineer. No assignment, transfer or subletting, even though consented to, shall relieve the Contractor of his liabilities under the contract. Subcontractors shall not be recognized as such, and all persons engaged in the project will be considered as employees of the Contractor, their work being subject to the provisions of the contract and the specifications. Should any subcontractor fail to perform the work undertaken by him to the satisfaction of the City Engineer, said subcontractor shall be removed immediately from the project upon request by the City Engineer and shall not again be employed on the work, and the Contractor shall be held liable for the deficient work.

The Contractor shall submit to the City a list with the names, addresses and telephone numbers of all subcontractors who will work under him, as a part of, and in addition to the requirements set forth in Paragraph 2-14 hereof.

4-03 CHARACTER OF WORKMEN - The Contractor shall employ none but competent foremen, laborers and mechanics. Any overseer, superintendent, laborer or other person employed on the work by the Contractor who is intemperate, incompetent, troublesome or otherwise undesirable, or who fails or refuses to perform the work in the manner specified herein, shall be discharged immediately and such person shall not again be employed on the work.

4-04 AGENTS OR FOREMAN - In the absence of the Contractor from the site of the project, even if such is only of a temporary duration, he must provide and leave at the site a competent and reliable agent or foreman in charge. All notices, communications,

orders or instructions given, sent to, or served upon, such agent or foreman by the City Engineer shall be considered as having been served upon the Contractor.

4-05 TEMPORARY STOPPAGE OF CONSTRUCTION ACTIVITIES - The City Engineer shall have the authority to suspend the contract work wholly or in part, for such a period of time as he may deem necessary, due to unsuitable weather, or to such other conditions as he considers unfavorable for the proper prosecution of the work, or for such time as he may deem necessary due to failure on the part of the Contractor or his workmen to carry out orders or to perform any of the requirements of the contract. The Contractor shall immediately comply with such an order from the City Engineer and shall not resume operations until so ordered in writing.

4-06 TIME OF COMPLETION AND LIQUIDATED DAMAGES - If all the contract work is not completed in all parts and requirements within the time specified in the proposal form, the City shall have the right to grant or deny an extension of time for completion, as may seem best to serve the interest of the City. The Contractor shall not be assessed with liquidated damages during any delay in the completion of the work caused by acts of God or of the Public Enemy, acts of the State, fire not due to acts of contractors or subcontractors, floods, epidemics, quarantine, restrictions, strikes, freight embargo or unusually or severe weather, or delays of subcontractors due to such causes, provided that the Contractor shall, within ten (10) days from the beginning of such delay, notify the City, in writing, of the cause of the delay. The City will ascertain the facts and the extent of the delay, and the findings thereon shall be final and conclusive.

4-07 SUSPENSION OF CONTRACT - If at any time, in the opinion of the City Council, the Contractor fails to supply an adequate working force, manufactured articles, or material of proper quality, or has failed in any other respect to prosecute the work with the diligence and force specified and intended in and by the terms of the contract, notice thereof in writing will be served upon him, and should he neglect or refuse to provide means for a satisfactory compliance with the contract within the time specified in said notice and as directed by the City Engineer, City Council shall have the power to suspend the operation of the contract and discontinue all work or any part thereof. Thereupon, the Contractor shall discontinue such work, or such part thereof as the City may designate, and the City may thereupon, by contract or otherwise, as it may determine, complete the work or such part thereof, and charge the entire expense of so completing the work or any part thereof to the Contractor, and for such completion the City itself or its contractors may take possession of and use, or cause to be used in the completion of the work, or any part thereof, any such materials, implements and tools of every description as may be found at the place of such work. All expense charged under this paragraph shall be deducted and paid for by the City out of any monies then due or to become due the Contractor under the contract, or any part thereof, and in such accounting the city shall not be held to obtain the lowest figure for the work for completing the contract, or any part thereof, or for insuring its proper completion, but all sums paid therefor shall be charged to the Contractor. In case the expenses so charged are less than a sum which would have been payable under the contract, if the same had been completed by the Contractor, the Contractor shall be entitled to receive the difference, and in case such expense shall exceed the amount payable under the contract, then the Contractor shall pay the amount of the excess to the City, upon completion of the work, without further demand being

made therefor. In the determination of the question as to whether or not there has been any such noncompliance with the contract as to warrant the suspension or annulment thereof, the decision of the City Council shall be binding on all parties to the contract.

PART 5

CONTROL OF THE WORK

5-01 AUTHORITY OF THE CITY ENGINEER - The City Engineer shall decide any and all questions that may arise as to the quality and acceptability of materials furnished and work performed, as to the manner of performance and rate of progress of the work, and any and all questions which may arise as to the interpretation of the plans and specifications. The City Engineer shall likewise decide any and all questions as to the acceptable fulfillment of the contract on the part of the Contractor, and all questions as to claims and compensations. The decision of the City Engineer shall be final and he shall have relative authority to enforce and make effective such decisions and actions as the Contractor fails to carry out promptly.

5-02 CONFORMITY WITH PLANS AND ALLOWABLE VARIATION - Finished surfaces shall in all cases conform to the lines, grades, cross-sections and dimensions shown on the plans. Minor deviations from approved plans, whenever required by the exigencies of construction, shall be determined in all cases by the City Engineer and authorized in writing.

5-03 PROGRESS OF THE WORK - The Contractor shall begin work on the date agreed upon following the scheduling conference mentioned in Paragraph 4-01 hereof, and shall diligently prosecute the same to completion before the expiration of the time limit appearing in the specifications and in the proposal form.

5-04 SAMPLES - The Contractor shall furnish all products and materials required to complete the work. All materials and products must be of the specified quality and fully equal to samples, when samples are required. Whenever required, the Contractor shall submit to the City Engineer for test, and free of charge, samples of any one of the materials or products proposed to be used in the work. Said samples shall be delivered by the Contractor to the place within the City designated by the City Engineer. Rejected material must be immediately removed from the work by the Contractor and shall not again be brought back to the site.

5-05 TRADE NAMES AND ALTERNATIVES - For convenience in designation on the plans or in the specifications, certain equipment or articles or materials to be incorporated in the work may be designated under a trade name or the name of a manufacturer and his catalog information. The use of alternative equipment or an article or equipment which is of equal quality and of the required characteristics for the purpose intended will be permitted, subject to the approval of the City Engineer, in accordance with the following requirements.

The burden of proof as to the comparative quality and suitability of alternative equipment or articles or materials shall be upon the Contractor and he shall furnish, at his own expense, all information necessary or related thereto as required by the City Engineer. The City Engineer shall be the sole judge as to the comparative quality and suitability of alternative equipment or articles or materials and his decision shall be final. All requests

for substitution shall be submitted seven (7) days in advance of bid opening to permit, if the request is approved, an addendum to be issued to all bidders.

5-06 PROTECTION OF THE WORK - The Contractor shall continuously maintain adequate protection of all his work from damage, and the City will not be held responsible for the care or protection of any material, equipment, or parts of work, except as expressly provided for in the specifications.

5-07 ACCESS TO RESIDENTS DRIVEWAYS - The Contractor shall notify residents of property adjoining the location of the work, sufficiently in advance of construction, as of the date when such construction work will start. In case of work requiring excavation of the roadway which may interfere with the use by residents of their driveways, suitable provisions shall be made by the Contractor to make it possible for residents to gain access to their driveways until such time as the exigencies of construction may demand a temporary blocking of said driveways. Efforts shall be made by the Contractor to minimize the duration of said blocking and to notify the residents of this need well in advance, thus allowing them to make suitable arrangements to keep their automobiles elsewhere.

5-08 CONFLICT OF TERMS - The notice to bidders, proposal, plans, specifications, and Standard Contractual Requirements are essential parts of the contract for a given project. These documents, together with the necessary bonds and bidder's guarantee, constitute the contract as defined herein and a requirement included in one document shall be as binding as though included in all, as they are intended to be cooperative and to provide a description of the work to be done. Should there be any conflict or discrepancy between terms used, then the specifications shall govern over the plans and change orders and supplemental agreements shall govern over any other contract document.

Special specifications of other agencies, engineering societies or industrial associations and Standard Drawings of the City or of other agencies referred to in the specifications or on the plans shall also be considered as essential parts of the contract. Where a given specification is incorporated by reference, said reference shall apply to the latest modification, unless otherwise shown on the plans or in the specifications. Whenever an object, thing, or work of any kind is indicated only on either the plans or in the specifications, it shall be deemed that the intent was to show said item in both places, and the work shall be done in the place where it is shown. In case of doubt about the meaning of any contracting clause the interpretation shall be made by the City Engineer and shall be so accepted by the Contractor.

5-09 INTERPRETATION OF PLANS AND SPECIFICATIONS - Should it appear that the work to be done, or any matter relative thereto, is not sufficiently detailed or explained on the plans or in the specifications, the Contractor shall request the City Engineer for such further explanation as may be necessary, and shall conform to such explanation or interpretation as part of the contract, so far as may be consistent with the intent of the original specifications. In the event of doubt or question relative to the true meaning of the specifications, reference shall be made to the City Council, whose decision thereon shall be final.

5-10 ALTERATIONS, INCREASES AND DECREASES OF WORK TO BE DONE - The City reserves the right to increase or decrease the quantity of any item or portion of the work described on the plans, the specifications, or the proposal form or to omit portions of the work so described as may be deemed necessary or expedient by the City Engineer and the Contractor shall agree not to claim or bring suit for damages, whether for loss of profits or otherwise, on account of any decrease or omission of any kind of work to be done. By mutual consent of the parties signatory to the contract, alterations, modifications or deviations from the type of work described on the plans, specifications, or on the proposal form, may be made without in any way making the contract void. The price to be paid by the City to the Contractor for such altered or modified work shall be agreed upon in writing, endorsed upon the original contract and signed by the proper parties to said contract.

Whenever, during the progress of the work, such changes or modifications are deemed necessary by the City Engineer and agreed upon, as aforesaid, said deviations shall be considered and treated as though originally contracted for, and shall be subject to all the terms, conditions and provisions of the original contract.

5-11 CHANGE ORDERS - If for any reason it may become desirable during the course of the Work to change the alignment, dimensions or design of the Work, the City reserves the right to issue change orders in writing to give effect to such changes as may be necessary or desirable. The changes may or may not result in a change in the amount of Work. When the Contractor considers that any change order in writing by the City involves extra work, he shall immediately notify the City in writing as to when and where extra work is to be performed and shall make claim for compensation therefor each month not later than the first day of the month following that in which the work claimed as extra work was performed. If the changes do, in the opinion of the City, change the amount of Work, the Contract Price shall be adjusted as "extra work", pursuant to Section 6-01.

New and unforeseen work will be classed as extra work only when said work is not covered and cannot be paid for under any of the various items or combination of items for which a bid price appears on the proposal form. The Contractor shall not do any extra work except upon written order from the City Engineer. Compensation for such extra work shall be previously agreed upon in writing between the Contractor and the City Engineer.

5-12 LINES AND GRADES - Except when, as per orders from the City Engineer, minor changes in the work are to be made by the Contractor, all work shall during its progress and upon completion, conform to the lines, grades and elevations shown on the plans. All distances and measurements are given thereon and will be made in a horizontal plane. Three consecutive points shown on the same rate of slope must be used in common in order to detect any variation from a straight line, and in case any such discrepancy exists, it must be reported to the City Engineer. Failure to make this report shall make the Contractor responsible for any error in the finished work.

5-13 GRADE STAKES - The Contractor shall give at least twenty-four (24) hour notice in writing when he will require the services of the City Engineer for laying out any portion of the work, and shall dig all holes necessary for line and grade stakes. The

Contractor shall preserve all stakes set for the lines, grades or measurements of the work in their proper place until authorized to remove them by the City Engineer. Any expense incurred in replacing said stakes as the Contractor may have failed to preserve shall be borne by the Contractor.

5-14 PROTECTION OF SURVEY MONUMENT - All survey monuments existing along the portions of any street where work is to be done shall be carefully protected and preserved by the Contractor. Any displacement or damage to said monuments resulting from carelessness in spotting their location during the progress of the work or from negligent use of equipment in their vicinity shall be corrected by the Contractor at his own expense.

5-15 PUBLIC UTILITIES - In case it should be necessary to remove the property of a public utility or franchise, such owner will, upon proper application by the Contractor, be notified by the City Engineer to move such property within a reasonable time and the Contractor shall not interfere with said property until after the expiration of the time specified. The right is reserved to the owners of public utilities or franchises to enter upon the streets for the purpose of making repairs or changes in their property which may be necessary as a result of the work. Employees of the City shall likewise have the privilege of entering upon the streets for the purpose of making any necessary repairs or replacements.

5-16 UNIDENTIFIED EXISTING UTILITIES - The City shall be responsible for the timely removal, relocation or protection of existing main or trunk line utility facilities located on the site, if such utilities are not identified by the City in the plans and specifications made a part of the invitation for bids. The Contractor will be compensated by the City for the costs of locating repairing damage not due to failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the plans and specifications, with reasonable accuracy, and for equipment on the project necessarily idled during such work.

The Contractor shall not be assessed for liquidated damages for delay in completion of the project, when such delay was caused by failure of the City or owner of the utility to provide for removal or location of such utility facilities. This shall not be deemed to require the City to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the site of the project can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes on or adjacent to the side of the construction; provided, however, nothing herein shall relieve the City from identifying main or trunk lines in the plans and specifications. If the Contractor performing services required under the contract discovers utility facilities not identified by the City in the contract plan and specifications, he shall immediately notify the City and the utility in writing. The City, if it is the owner of the public utility shall have the sole discretion to perform repairs or relocation work or permit the contractor to do such repairs or relocation at a reasonable price.

5-17 REMOVAL OF INTERFERING OBSTRUCTIONS -The Contractor shall remove and dispose of all debris, abandoned structures, tree roots, and obstructions of any character met during the process of excavation, it being understood that the cost of

said removals are made a part of the unit price bid by the Contractor under the item for excavation or removal of existing work.

5-18 PROCEDURE IN CASE OF DAMAGE TO ADJOINING WORK - Any portions of adjoining curb, gutter, sidewalk or any other City improvements damaged by the Contractor during the course of construction shall be replaced by the Contractor at his own cost, free of all charges to the City. The cost of additional replacement of curb, gutter or sidewalk in excess of the estimated quantities shown in the proposal form and specifications, and found necessary during the process of construction, (but not due to damage resulting from carelessness on the part of the Contractor during his operations), shall be paid to the Contractor at the unit prices submitted in his bid.

5-19 AVOIDANCE OF PATCHWORK APPEARANCE - New PCC work shall conform in grade, finish and color to the adjoining portions. Any sections of said work having a patchwork appearance will be rejected by the City Engineer and the Contractor shall replace them at his own expense. To insure a neat break line between existing and new portions of PCC work, the Contractor will be required to use a concrete cutting saw of a type approved by the City Engineer. The cost of saw cutting shall be included by the Contractor in the unit prices bid for removal of existing work. Likewise, whenever adjoining PCC work is damaged during the process of new construction, the damaged portions shall be removed in such a way that a neat, straight joint is provided between the new portions and existing work.

5-20 CARE OF GUTTERS ADJACENT TO AREAS TO BE PAVED - During the process of resurfacing the roadways or construction of new pavement, the Contractor shall exercise particular care to remove all excess resurfacing material which may be deposited upon the PCC gutters. Whenever specifications call for the resurfacing material to overlap the existing gutters the overlapping portions shall not exceed the dimensions shown on the plans and a wavy overlapping line shall be avoided. Any undulation of the overlapping line accidentally resulting from the application of the paving or resurfacing material shall be corrected by the Contractor before the work is accepted by the City Engineer.

5-21 DEPTH OF THE REQUIRED EXCAVATION - When the contract work requires excavation and removal of existing pavement and excess of underlying soil, these materials shall be removed to the depth shown on the plans. Whenever the subgrade exposed after the removal of the excess underlying soil is found to be of the desirable kind, excavation need not proceed below the depth specified on the plans. However, if the excavation discloses the fact that there is mud or any other soft material in the subgrade, said material shall be removed to a minimum depth of six inches (6"), at the discretion of the City Engineer. Backfill of the additional excavated portions shall be made with select material removed from other portions of the work, provided said material is found suitable by the City Engineer. The volume in place of the additional soil excavation will be determined by the field representatives of the City Engineer, and the Contractor will be entitled in this case to extra payment based on the additional number of cubic yards excavated, at the unit price bid by him under the item for excavation in the proposal form. Should imported material be required for the backfill, the unit cost per cubic yard of said imported material shall be agreed in advance, in writing, between the

Contractor and the City Engineer, and extra payment for said material will be made to the Contractor for the actual volume used, as verified in the field by representatives of the City Engineer.

5-22 SEQUENCE OF THE WORK OF EXCAVATION - Whenever the contract work calls for excavation of existing pavement and excess soil and for construction of base material, the process of excavation shall be conducted by the Contractor so that, at the end of any working day, the area where excavation is proceeding shall not be more than 300 feet in advance of the area where the untreated rock base over sections already excavated is being laid, unless otherwise indicated in the specifications.

5-23 AVOIDANCE OF DUST NUISANCE - During the process of breaking, excavating and removing any material from the site of the project and until completion of the work, the Contractor shall take every precaution to avoid the nuisance of unnecessary dust by using any measures advocated by the City Engineer.

5-24 MAINTENANCE OF TRAFFIC AND SAFETY REQUIREMENT - Any Contractor performing work in a street right-of-way shall conduct his operations so as to cause the least possible obstruction and inconvenience to public traffic and safety, and shall take all necessary measures to maintain an adequate traffic flow, to prevent accidents and to protect the site of the work. During construction the Contractor shall, as far as practicable, keep the project free of rubbish and debris and in as clean a condition as possible.

A suitable width of any intersecting street shall be kept in reasonably good condition for traffic, including the necessary provisions for proper drainage. Should the requirements of construction demand closing the full width of an intersection, such closing shall be allowed only after the Contractor has secured permission from the City Engineer and the duration of the closing must be for the minimum length of time possible. After said permission is granted, the Contractor shall make the necessary arrangements to provide temporary crossings, or to reroute traffic away from said intersection and provide and maintain barriers, guards, directional signs, watchmen and lights at all detour points, in order to give adequate warning to the public at all times that the streets are under construction and of the dangerous conditions as a result thereof. The Contractor shall also erect and maintain such additional warning and directional signs as may be furnished by the City.

5-25 BARRIERS, LIGHTS, ETC. - The above-mentioned barriers, safety lights, warning and regulatory signs, guards, temporary crossovers and watchmen shall also be provided and maintained by the Contractor at his own cost over all portions of the work during construction and until completion. Provisions shall be made by the Contractor to insure operation of the safety lights throughout the evenings without interruption. No safety lights using the inflammable liquids shall be permitted during the progress of the work, and only electric battery operated safety lamps will be approved for this purpose.

5-26 REMOVAL OF DEFECTIVE OR UNAUTHORIZED WORK - It is the intent of the specifications that only first class work, materials and workmanship will be acceptable. All work which is defective in its construction or deficient in any of the requirements of the

specifications shall be remedied, or removed and replaced by the Contractor in an acceptable manner, and no compensation will be allowed for such correction. Any work done beyond the lines shown on the plans or established by the City Engineer, or any extra work done without written authority will be considered as unauthorized and will not be paid for. Upon failure on the part of the Contractor to comply forthwith with any order of the City Engineer made under the provisions of this paragraph, the City Engineer shall have authority to cause defective work to be remedied or removed and replaced, and unauthorized work to be removed, and to deduct the costs thereof from any monies due or to become due the Contractor. If the work is found to be in compliance with these specifications, the City Engineer will furnish the Contractor with a certificate to that effect.

5-27 SUPERVISION - All manufactured products, materials and appliances used and installed and all details of the work done shall at all times be subject to the supervision, test and approval of the City Engineer or his authorized representatives. The City Engineer or his authorized representatives shall have access to the work at all times during construction, and shall be furnished with every reasonable facility for securing full knowledge with regard to the progress, workmanship and character of the materials used or employed in the work.

5-28 INSPECTORS - The Contractor shall prosecute work only in the presence of Inspectors appointed by the City Engineer and any work done in the absence of said Inspectors will be subject to rejection. All instructions given to the Contractor by such assistants shall be regarded as having been given directly by the City Engineer. The Contractor shall make a written application for an Inspector at least twenty-four (24) hours before his services are required on the work. Whenever the cost of an improvement or the cost of any portion thereof is defrayed from the Gas Tax Funds allocated to the City by the County of Los Angeles, or by the State of California, Inspectors appointed by the State or County shall likewise be given full access to the site of the work in order that they may perform their inspection duties efficiently and without interference. The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill the contract as prescribed. Defective work shall be made good and unsuitable materials rejected, notwithstanding the fact that such defective work and unsuitable materials may have been previously overlooked by the Inspectors and accepted or estimated for payment.

5-29 FINAL CLEANING UP - Upon completion of the project and before making application to the City Engineer for acceptance of the work, the Contractor shall clean all the streets and grounds occupied by him in connection with the project, of all rubbish, debris, excess material, temporary structures and equipment, leaving the entire site of the work in a neat presentable condition.

5-30 LOSS OR DAMAGE - Any loss or damage arising from any omission or act of the Contractor or any agent or person employed by him or by any action which had not been authorized in the provisions of the specifications, shall be sustained by the Contractor.

PART 6

MEASUREMENT AND PAYMENT

6-01 EXTRA WORK - Extra work as hereinbefore defined, when ordered and accepted, shall be paid for under a written work order in accordance with the terms therein provided. Payment for extra work will be made at the unit price or lump sum previously agreed upon between the Contractors and prepared by the City Engineer. All extra work shall be adjusted daily upon report sheets prepared by the City Engineer, furnished to the Contractor, and signed by both parties, and said daily reports shall be considered thereafter the true record of extra work done.

6-02 PAYMENTS - Monthly payments will be made to the Contractor in amounts equal to ninety-five (95%) of the value of all work done during the preceding calendar month, calculated at the unit price bid by the Contractor for the work and on the basis of the percentage of work performed, as estimated by the representative of the City Engineer, it being understood that the sums thus figured to be due the Contractor will become payable ten (10) days after the approval and acceptance of said estimate by the City Engineer. The Contractor shall submit an invoice for all payments requested by him. No such estimate of work done or payment to be made shall be required when, in the judgment of the City Engineer, the work is not proceeding in accordance with the provisions of the contract, or when the total value of the work done since the beginning of the project or since the preceding monthly payment is estimated to amount to less than three hundred ($300.00) dollars.

After completion of the project, the City Engineer will make a final inspection of its site and, if the work is found satisfactory, he will recommend the official approval of the contract work. The City Engineer will also make a final estimate of the actual amount of work done on each item appearing on the proposal form, including extra work, if any, and of the value of such work, and the City will pay the entire sum so found to be due after deducting therefrom all previous payments and five percent (5%) to be retained. All previous partial estimates shall be subject to correction in the final estimate and payment. The five percent (5%) retained shall not be due and payable until the Notice of Completion of the project has been filed by the City Clerk with the Los Angeles County Recorder and until after the expiration of thirty-five (35) days after the date of the official approval of the work by the City Council.

In accordance with Government Code Section 4590, the Contractor will be paid the amount of any funds retained by the City, if the Contractor so requests in writing, and the Contractor provides to the Director of Finance Administration a bank or savings and loan certificate of deposit or a security as described in Government Code Section 16430 in the amount equivalent to the amount withheld as determined by the Director of Finance Administration. In lieu of providing such securities to the Director of Finance Administration, the Contractor may deposit such security with a state or federally chartered bank as an escrow agent, said escrow agreement to be satisfactory to the City Attorney. The escrow shall provide that payment of the funds shall not be made to the Contractor until satisfactory completion of the contract as provided in this Section above

and shall include the satisfaction of any Stop Notices filed as provided by law and the satisfaction by the Contractor assessed against the Contractor as provided for herein. Any such security shall be provided by the Contractor at the sole expense of the Contractor and the Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall receive any interest therein. To cover the expenses of the City in processing any request by Contractor for payment of funds retained pursuant to this subsection, Contractor shall pay City the amount of One Hundred ($100.00) Dollars for processing the first application for withdrawal of funds retained and the amount of Fifty ($50.00) Dollars for each additional withdrawal of funds retained.

It shall be mutually agreed between the parties to the contract that no certificate given, with the exception of the certificate of final payment, shall be conclusive evidence of the faithful performance of the contract, either in whole or in part, and that no payment shall be construed to be in acceptance of any defective work or improper materials.

PUBLIC WORKS DEPARTMENT
CITY OF BEVERLY HILLS

REV 01-22-82
REV 12-10-86
REV 08-19-91
STDCREQ

EXHIBIT A

BIDDER'S BOND

(Public Contract)

KNOW ALL MEN BY THESE PRESENTS: That

as Principal (herein called "Principal") and

as surety (herein called "Surety") are held and firmly bound unto the CITY OF BEVERLY HILLS, a municipal corporation of the State of California (herein called "Obligee"), in just and full sum of ten per cent (10%) of the total amount of the bid of Principal for the herein described work of improvement,

lawful money of the United States of America, for the payment of which, well and truly to be made, we hereby bind ourselves and our, and each of our, heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, That

WHEREAS, Principal is bidding, or is about to bid, for the following described work of improvement, all in a accordance with the Notice to Bidders, Proposal form, Improvement Map, Specifications, and Standard Contractual Requirements of Obligee therefor:

NOW, THEREFORE, if Obligee shall make an award to Principal for said work of improvement according to the terms of such bid, and Principal shall duly execute, or cause to be executed, and delivered to Obligee the Contract, bonds, and evidence of insurance coverage as, and within the time, required by the Standard Contractual Requirements, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

No extension of time granted to the Principal and no change or alteration in any of the terms of the bid or the bid requirements, whether made after notice or not, shall release or otherwise affect the obligations of the Surety hereunder, and the Surety waives notice of any such extension, change, or alteration. The Surety, by the execution of this bond, represents and warrants that this bond has also been duly executed by the Principal with proper authority, and the Surety hereby waives any defense which it might have by reason of any failure of the Principal to execute or properly execute this bond.

In the event suit is brought upon this bond by the Obligee and judgement is recovered by the Obligee, court costs, including reasonable attorney's fees, shall be an additional obligation of this bond for which Principal and Surety shall be liable.

Signed and sealed the _____ day of _____, 20___.

_____ _____

_____ _____

PRINCIPAL SURETY

A P P R O V E D A S T O F O R M :
City Attorney

By: _____

_____20____.

NOTE TO SURETY COMPANY: The following form of acknowledgement should be used. If any other form of acknowledgement is used, there must be submitted a certified copy of unrevoked resolution of authority for the attorney-in-fact.

_____

(SURETY CO. ATTORNEY-IN-FACT)

STATE OF CALIFORNIA: COUNTY OF LOS ANGELES: SS.

On _____, before me, the undersigned, a Notary Public in and for said County and State, personally appeared _____, known to me to be the duly authorized attorney-in-fact of the corporate surety named in the within Instrument, known to me to be authorized to execute said Instrument on behalf of said corporation, known to me to be the person whose name is subscribed to said Instrument as the attorney-in-fact of said corporation, and acknowledged to me that he (she) subscribed the name of said corporation thereto as surety, and his (her) own name as attorney-in-fact and that said corporation executed the same.

WITNESS my hand and official seal _____

(Seal) Notary Public on and for said County and State

APPENDIX A

EXHIBIT B

INSTRUCTIONS FOR EXECUTION OF INSTRUMENTS

1. **By an Individual.** The individual must sign the instrument, and if he is doing business under a fictitious name, the fictitious name must be set forth. **The signature must be acknowledged before a Notary public.**

2. **By a Partnership.** The name of the partnership must be set forth followed by the signature of all of the partners. **The signatures must be acknowledged before a Notary Public.** The signatures of less than all of the partners will be acceptable only if submitted with evidence of authority to act on behalf of the partnership.

3. **By a Corporation.** The name of the corporation must be set forth, followed by the signatures of the President or Vice-President and Secretary or Assistant Secretary. **The signatures must be acknowledged before a Notary Public, using in substance the following form of acknowledgement:**

"STATE OF _____)
) ss.
COUNTY OF _____)

On _____, 20___, before me the undersigned Notary Public, personally appeared _____, known to me to be the (President) (Vice President), and _____, known to me to be the (Secretary) (Assistant Secretary), of the corporation that executed the within instrument, and acknowledged to me that such corporation executed the within instrument pursuant to its by-laws or a resolution of its board of directors.

WITNESS my signature and seal.

(Seal)

_____
Notary Public

4. **By a Surety.** The name of the surety must be set forth, followed by an authorized signature. **The signature must be acknowledged before a Notary Public.**

5. **By an Insurance Company.** The name of the company must be set forth, followed by an authorized signature. **The signature must be acknowledged before a Notary Public.**

EXHIBIT "B"

EXHIBIT C

AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 20____, by and between the CITY OF BEVERLY HILLS, a municipal corporation, hereinafter referred to as “City”, and

hereinafter referred to as “Contractor”;

W I T N E S S E T H
In this consideration of their covenants the parties hereto agree as follows:

1. Contractor shall furnish all labor, materials and equipment necessary to perform the following work in the City of Beverly Hills, California, strictly in accordance with the Notice to Bidders, Proposal form, Plans and Specifications for such improvement, Standard Contractual Requirements and inclusive of Addendums, each of which documents are made a part of this Contract as though fully set forth herein:

2. In consideration of such work City agrees to pay Contractor and Contractor agrees to accept the sum of

in the manner provided in subject Plans and Specifications and subject to adjustment provided therein.

3. Concurrently with the execution of this Contract, Contractor shall file with the City the bonds and certificates of insurance specified in said Standard Contractual Requirements.

This Contract shall not be assigned without the written permission of the City Council.

IN WITNESS WHEREOF, the parties hereto have executed this instrument the day and year first above written.

ATTEST:

_____
BYRON POPE, City Clerk

CITY OF BEVERLY HILLS,
A municipal corporation

_____
Lili Bosse, Mayor

APPROVED AS TO CONTENT:

_____
JEFF KOLIN, City Manager

CONTRACTOR:

_____

_____
KARL KIRKMAN, Risk Manager

_____

_____
DAVID LIGHTNER, Director
Of Capital Assets

APPROVED AS TO FORM:

_____
LAURENCE S. WIENER, City Attorney

FUNDS AVAILABLE:

_____
DON RHOADS, Director of Administrative Services/Chief Financial Officer

EXHIBIT “C”

EXHIBIT D

PERFORMANCE BOND

(Public Contract)

KNOW ALL MEN BY THESE PRESENTS: That

as Principal (herein called "Principal") and

as surety (herein called "Surety") are held and firmly bound unto the CITY OF BEVERLY HILLS, a municipal corporation of the State of California (herein called "Obligee"), in just and full sum **xxxxxxxxxx Dollars ($xxxxxxx.00)** lawful money of the United States of America, (said sum being equal to 100% of the estimated amount payable by the terms of the hereinafter described Contract) for the payment of which, well and truly to be made, we hereby bind ourselves, and our, and each of our, heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, That

WHEREAS, Principal has been awarded a Contract for the following described work of improvement and is required by Obligee to give this bond in connection with the execution of the written Contract therefor:

NOW, THEREFORE, if Principal shall well and truly do and perform each and all of the covenants, conditions, and agreements of said Contract on the Principal's part to be done and performed, and any and all alterations thereof made as therein provided, at the time and in the manner therein specified, and shall indemnify and save harmless the Obligee, its officers, agents, and employees, as therein stipulated, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

No extension of time granted to the Principal and no change or alteration in any of the terms of the Contract or the Contract documents or the work to be performed thereunder, whether made after notice or not, shall release or otherwise affect the obligation of the Surety hereunder, and the Surety waives notice of any such extension, change, or alteration. The Surety, by the execution of this bond, represents and warrants that this bond has also been duly executed by the Principal with proper authority, and the Surety hereby waives any defense which it might have by reason of any failure of the Principal to execute or properly execute this bond.

In the event suit is brought upon this bond by the Obligee and judgment is recovered by the Obligee, court costs, including reasonable attorney's fees, shall be an additional obligation of this bond for which Principal and Surety shall be liable.

Signed and sealed the _____ day of _____, 20___.

_____ _____

_____ _____

PRINCIPAL SURETY

APPROVED AS TO FORM:
City Attorney

By: _____

_____20____.

NOTE TO SURETY COMPANY: The following form of acknowledgement should be used. If any other form of acknowledgement is used, there must be submitted a certified copy of unrevoked resolution of authority for the attorney-in-fact.

ATTACH APPROPRIATE JURAT

EXHIBIT "D"

EXHIBIT E

CONTRACTOR'S PAYMENT BOND

(Public Contract)

KNOW ALL MEN BY THESE PRESENTS: That

as Principal (herein called "Principal") and

as Surety (herein called "Surety") are held and firmly bound unto the CITY OF BEVERLY HILLS, a municipal corporation of the State of California (herein called "Obligee"), in just and full sum of **XXXXXXX Dollars ($XXXXXXXX)**, lawful money of the United States of America, (said sum being equal to 100% of the estimated amount payable by the terms hereinafter described Contract) for the payment of which, well and truly to be made, we hereby bind ourselves, and our, and each of our, heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, That

WHEREAS, Principal has been awarded a Contract for the following described work of improvement and is required by Obligee to give this bond in connection with the execution of the written Contract therefor:

NOW, THEREFORE, if Principal or his subcontractors shall fail to pay for any materials, provisions, provender or other supplies, or teams, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, the surety will pay for the same, in an amount not exceeding the sum specified above, and also in case suit is brought upon this bond, a reasonable attorney's fee to be fixed by the court. This bond shall insure to the benefit of any and all persons entitled to file claims under the Civil Code so as to give a right of action to them or their assigns in any suit brought upon the bond.

No extension of time granted to the Principal and no change or alteration in any of the terms of the Contract or the Contract documents or the work to be performed thereunder, whether made after notice or not, shall release or otherwise affect the obligation of the Surety hereunder, and the Surety waives notice of any such extension, change, or alteration. The Surety, by the execution of this bond, represents and warrants that this bond has also been duly executed by the Principal with proper authority, and the Surety hereby waives any defense which it might have by reason of any failure of the Principal to execute or properly execute this bond.

Signed and sealed the _____ day of _____, 20___.

_____ _____

_____

PRINCIPAL

APPROVED AS TO FORM:
City Attorney

By: _____

_____20____

ATTACH APPROPRIATE JURAT

EXHIBIT "E"

EXHIBIT F

CERTIFICATE OF INSURANCE
(PUBLIC LIABILITY)

This is to certify that the following endorsement is part of the policy(ies) described below:

Named Insured (Contractor)

Address

Companies Affording Coverage

A.

B.

C.

Policy Number	Company A,B,C	Coverage	Expiration Date	B.I.	Limits P.D.	Aggregate
		[ ] Automobile Liability				
		[ ] General Liability				
		[ ] Products/Completed Operations				
		[ ] Blanket Contractual				
		[ ] Contractor's Protective				
		[ ] Personal injury				
		[ ] Other				
		[ ] Excess Liability				
		[ ] Workers' Compensation				

It is hereby understood and agreed that the City of Beverly Hills, its City Council and each member thereof and every officer and employee of the City shall be named as a joint and several assureds with respect to claims arising out of the following project**:**

It is further agreed that the following indemnity agreement between the City of Beverly Hills and the named insured is covered under the policy: Contractor agrees to indemnify, hold harmless and defend City, its City Council and each member thereof and every officer and employee of City from any and all liability or financial loss resulting from any suits, claims, losses or actions brought against and from all cost and expenses of litigation brought against City, its City Council and each member thereof and any officer or employee of City which results directly or indirectly from the wrongful or negligent actions of contractor's officers, employees, agents, or others employed by contractor while engaged by contractor in the (performance of this agreement) construction of this project.

It is further agreed that the inclusion of more than one assured shall not operate to increase the limit of the company's liability and that insurer waives any right on contribution with insurance which may be available to City of Beverly Hills.

In the event of cancellation or material change in the above coverage, the company will give 45 days' written notice of cancellation or material change to the certificate holder.

Except to certify that the policy(ies) described above have the above endorsement attached, this certificate or verification of insurance is not an insurance polity and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, condition of any contract or other document with respect to which this certification or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

DATE _____ BY _____
AUTHORIZED INSURANCE REPRESENTATIVE

AGENCY _____ TITLE _____

_____ ADDRESS _____

_____ _____

EXHIBIT "F"

ADDITIONAL SPECIAL PROVISIONS

SHALLOW WELL DRILLING PROJECT
AT
MAPLE YARDS

For
City of Beverly Hills
Public Works Department
Beverly Hills, California

June 2015

ADDITIONAL SPECIAL PROVISIONS
SHALLOW WELL DRILLING PROJECT AT MAPLE YARDS
CITY OF BEVERLY HILLS

TABLE OF CONTENTS

ADDITIONAL SPECIAL PROVISIONS
SHALLOW WELL DRILLING PROJECT AT MAPLE YARDS
CITY OF BEVERLY HILLS

SECTION 1 - PURPOSE & LOCATION OF WORK

The purpose of this project is to provide the City of Beverly Hills (referred to hereinafter as the "City") with two new shallow municipal-supply groundwater production wells at their Maple Yard Site (also known as "City Lot 9"). The proposed wells (to be known as "Well 1" and "Well 2"), which are to be used for general water supply purposes have a targeted operational production rate of 200 to perhaps as high as 500 gallons per minute (gpm), depending on in-situ conditions encountered at each drill site. Pilot holes for the two (2) new wells are anticipated to have a maximum drilling depth of 250 ft below ground surface (bgs). Both wells are anticipated to be cased to depths of approximately 190 ft bgs. The area of the work is within a maintenance and/or storage yard for the City of Beverly Hills Public Works Department at their Maple Yard (City Lot 9) site and in the vicinity of the City's Water Treatment Plant. The project site is located on the south side of Alden Drive, approximately 400 ft east of intersection with Foothill Road.

SECTION 2 - DESCRIPTION OF WORK

Work includes the furnishing of all materials, labor, equipment, fuel, tools, transportation, and services for drilling, construction, development, testing, and completion of the two new municipal-supply shallow groundwater wells as described in these Technical Specifications.

The two new wells shall be constructed in compliance with local codes and regulations and in accordance with the following documents: *State of California Water Well Standards, Bulletin No. 74-81,* dated December 1981, and its Draft Supplement *Bulletin No. 74-90* dated June 1991; Sections 13800 through 13806 of the California Water Code, and; American Water Works Association (AWWA) *Standard for Water Wells (AWWA A100-06).*

Details associated with this project are presented in the attached Plans, Specifications and Exhibits. The Contractor is hereby directed to fully review these specifications and all the documents presented in the exhibits. These documents provide the requisite detail needed by the Contractor to submit bids on this project.

In accordance with Table A1, in Exhibit A, the attached Plans and these specifications, the general work required for construction for each well includes, but is not limited to, the following:

- Move all equipment, including a direct (mud) rotary drill rig and other accessories and appurtenances, onto and from each well site; the two well sites are located about 100 feet from each other.
- Provide for temporary storage tanks and mobile treatment facilities for settlement of solids in all water/fluids generated during isolated aquifer zone testing, mechanical and pumping development, and also the final pumping tests. This treatment must be performed prior to discharge to the local sewer system. See Sections 23 and 24 of these Additional Special Provisions for details of this treatment/discharge work.
- Noise is to be controlled so as to not exceed limits identified in City municipal codes (see Exhibit B for details regarding the local City of Beverly Noise Ordinance).
- Drill the upper 50 ft of the borehole to a minimum of 32 inches in diameter and install approximately 50 feet of 26-inch outside diameter (OD) by ¼-inch (minimum) wall thickness, low carbon steel (LCS) conductor (surface) casing. Grout the annular

space between the casing and the wall of the borehole from the bottom of the conductor casing and up to ground surface.

- Drill the pilot borehole below the bottom depth of the conductor, to a maximum depth of 250 ft bgs with a nominal 6- to 9-inch diameter drill bit, collect drill cuttings, keep a drilling time log, provide a borehole drift survey as drilling proceeds (via the use of an Eastman-type drift survey tool), monitor and maintain drilling fluid properties, and prepare drilling logs.
- Conduct downhole geophysical surveying with spontaneous potential (SP), short-normal (16-inch) and long-normal (64-inch) resistivity, focused (guard or laterlog3) resistivity, sonic variable density (sonic), gamma-ray and magnetic deviation surveys in each pilot borehole. The City and/or its Technical Representative (hereafter referred to as the "Representative") will decide whether geophysical logging should be performed in one or both wells.
- Conduct isolated aquifer zone testing in the open borehole within one (1) zone to be selected by the City's Representative after reviewing the geophysical logs. Due to the proximity of the well sites, zone testing may only be conducted in the first pilot hole to be drilled.
- Ream each pilot hole to a diameter of 22 inches between the depths of 50 ft and 200 ft bgs, or as directed by the Representative, following submittal of the Final well design by the Representative.
- Perform caliper and magnetic deviation surveys of the final borehole reams.
- Install a 10-foot long bentonite seal in the bottom of the reamed boreholes, if requested by the City and/or its Representative; this is an optional item and might not be performed.
- Install 12-inch ID, by 1/4-inch wall Type 304L stainless steel (SS) blank well casing interspersed with Type 304L SS Ful-flo louvers (having 0.060-inch slots on a preliminary basis).
- Concurrent with casing installation, install a gravel feed tube and one air vent tube, in accordance with the attached Plans and Specifications.
- Following casing installation, install a gravel pack between the approximate depths of 60 ft bgs and the total depth of the reamed borehole. A five-foot layer of fine-grained sand shall be placed atop this gravel pack (i.e., from 65 ft up to 60 ft bgs) to help prevent cement filtrate from entering into the upper section of the gravel pack.
- Install a cement annular seal from 5 ft bgs to an approximate depth of 60 ft bgs.
- Develop each well by such methods as surging and simultaneously airlifting of water in each section of perforated casing by swabbing, by addition of well development chemicals (if needed) and by pumping methods using a test pump. This may include brushing of the well casing.

- Conduct as many as two video surveys of each well casing, to check if development operations were adequate in cleaning of perforations.
- Conduct a 12-hour (maximum) step drawdown test and then a 48-hour (maximum) constant rate pumping test to evaluate the performance of each new well.
- Conduct an alignment test, using a gyroscopic tool, to the total depth of each well, and a third and final color video survey to document as-built well conditions.
- Conduct disinfection of each well.
- Conduct final site cleanup and restoration at each site.

SECTION 3 - PERMITS, NOTIFICATIONS & LICENSES

The Contractor shall, at a minimum, obtain the following permits/licenses that may be required, including the following:

1) Los Angeles County Department of Environmental Health Services (LACDEHS) water well permit.
2) All other applicable permits, for equipment and offsite transport of wastes, will be obtained at the driller's expense.

It will be the responsibility of the Contractor to notify Underground Services Alert (USA) at least 48 hours in advance of performing any excavation onsite. Further, the Contractor will also need to notify LACDEHS at least 48 hours in advance of setting the cement conductor seal in the well.

Discharge of treated wastewater will be conducted directly to the local sewer system. Thus, a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of development and testing water will not need to be filed with the California Regional Water Quality Control Board, Los Angeles Region (RWQCB). .

A bidder shall hold a valid Class A and/or Class C-57 California Contractor's License. Concurrent with the bid submittal, the Contractor will submit a list of at least five (5) municipal-supply water wells, measuring at least 250 ft in depth and of similar diameter and of comparable yield to the wells to be constructed, that the Contractor has constructed in the past five years. In addition, provide the well owner's name, contact person, telephone number, and dates of construction for each referenced well.

SECTION 4 - LOCAL CONDITIONS

The geologic conditions that may be encountered during drilling include younger and poorly consolidated alluvial sediments in each borehole. The sediments consist largely of complexly interlayered and interfingered layers and lenses of gravel, sand, silt and clay. In addition, shallow perched groundwater conditions could also be encountered during drilling at depths of 20± ft bgs.

Neither the City nor its Representative guarantee and/or warrant that the subsurface conditions listed herein, are indicative or representative of the subsurface conditions that will be encountered beneath each well site. The purpose of the information presented in this section is solely to provide the Contractor with general information on potential subsurface conditions that may be

encountered beneath each well site. It is possible that the geologic conditions encountered at each well site may be significantly different than those mentioned above. The information provided in this section is to be used by the Contractor strictly at his own risk.

SECTION 5 - PRE-BID MEETING

Prior to the award of the contract, the City and it's Representative will conduct a pre-bid meeting with prospective Contractors to review the bid documents and conduct a walk of each well site. This pre-bid meeting will be held at the City's Public Works Department office located at 345 Foothill Road, Beverly Hills, California on:

July 15, 2015
At 10:00 AM

This pre-bid meeting is to be conducted so that prospective bidders can become acquainted with each well site, nearby point(s) of discharge and other key logistical issues. Specifically, during this pre-bid site walk the Contractor should assess the local physical features, proximity of residences and other structures, site logistics, possible obstructions, water and power sources, and the point of discharge for all fluids generated during the development and testing of each new well.

Submission of a bid by the Contractor shall constitute acknowledgment that, if awarded the Contract, the Contractor is relying solely on his own examination of: the site of the work; access into and out of the site; the physical conditions of the site (both surface and subsurface); the Contractual conditions under which the work is to be performed; and all other data and matters pertaining to the fulfillment and successful completion of all work.

SECTION 6 - METHOD OF DRILLING

The proposed wells shall be drilled by the direct (mud) rotary drilling method. It is the responsibility of the Contractor to ensure that the drilling method and equipment used is capable of drilling and setting casing to the specified depths and in drilling and reaming within the types of earth materials to be encountered beneath the property.

The drilling equipment shall be in good condition and of sufficient mast capacity to permit drilling of the boreholes required by these Specifications to depths of at least 250 ft bgs. All drilling equipment including mast and draw-works, air compressors, drilling fluid pumps, drill pipe, etc., must be of requisite size, sufficient capacity, and in suitable condition to drill and set casing to the anticipated depths. The mast and all running gear (hoists, cables, etc.) shall have sufficient and demonstrated capacity to lift two (2) times the buoyant weight of either the drill string or the casing assembly (whichever is greater).

The Contractor shall furnish with their bid detailed information documenting the capacity of the various components of the rig used including, but not limited to, derrick/mast capacity, drill pipe type and rating, all line and hook load capacities, air compressor rating, etc., if requested by the City and/or its Representative(s). The drill rig utilized must have the ability to fully lift and land the anticipated casing loads without the use of cranes, float plugs, or other similar methods.

SECTION 7 - COMPLETION OF WORK

The entire construction project of both wells shall be completed within 65 working days from the day the Notice-to-Proceed is issued. The Contractor shall conduct drilling, well construction and mechanical development operations between the hours of 8:00 a.m. to 6:00 p.m. during the normal work week, Monday through Friday, unless otherwise directed in writing by the City and/or its Representative. Other operations, such as pumping development and testing, shall be conducted at the Contractor's discretion and within a time schedule adequate to complete the entire project on time.

The City recognizes that drilling efficiency and rapid advance rates for the pilot borehole and borehole reams are critical to the successful and timely completion of the well. The Contractor shall be expected to drill, construct and test each well from commencement of drilling below the surface conductor casing, reaming the pilot borehole, setting casing, gravel packing, cementing, all well development and final pumping tests without significant delays.

The Contractor shall submit a construction schedule during the pre-construction meeting, including starting date for review by the City and/or its Representative(s).

Drilling shall begin with the drill rig at the first well to be constructed. Following completion of the first well (drilling, construction, development and testing), the drill rig shall then be moved over to location of the second well, where pilot hole drilling can then begin.

SECTION 8 - WORKING SPACE

The Contractor shall limit his work activities, including the temporary storage of materials and excavated dirt inside the City's rights-of-way and temporary construction easements as shown on the Plans. The Contractor shall prevent erosion of surface soils from all development and testing water. The Contractor shall keep local streets open for traffic at all times and install signs (as necessary) for road crossings.

SECTION 9 - PRECONSTRUCTION MEETING

Upon award of Contract, the Contractor will arrange a pre-construction meeting to be attended by the City, its Representative(s), the Contractor and his/her field superintendent/foreman, and others whose input may be desired by the Contractor or the City. The pre-construction meeting will be held within approximately 5 working days after the Contractor receives the Notice-to-Proceed (NTP) from the City. The purpose of this conference will be to establish and discuss the various aspects of the project, including the following items:

1. Communication and liaison between the parties throughout the project.
2. The construction schedule.
3. Best Management Practices (BMPs), as applicable.
4. Use of an onsite source for make-up water needed for drilling and reaming.
5. Identify casing manufacturers, and the subcontractors for electric logging, drift surveys, deviation and alignment surveys, video surveys, spinner logging and depth-specific sampling.

6. Drilling method to be used.
7. Isolated aquifer zone sampling procedures/methods.
8. Development techniques and options by mechanical/chemical/pumping methods.
9. Methods for disposal of drill cuttings and treatment for the disposal of all treated fluids/water generated during drilling, development, and testing operations. The location of the nearest discharge point to the local storm drain system will be identified.
10. Construction costs and payments/invoices and processing.
11. The types of and timing for submittal of key documents for well construction by the Contractor to the City and/or its Representative(s).
12. Any other subjects and submittals deemed appropriate to the project.

SECTION 10 - CONTRACTOR'S DAILY REPORTS

The Contractor shall complete a daily report indicating manpower, major equipment, subcontractors, etc., involved in the performance of the work. The daily reports shall be submitted to the City's Representative at his/her request.

SECTION 11 - CONSTRUCTION UTILITIES

The Contractor shall provide necessary onsite utilities during the course of work at the site. These utilities may include, but not be limited to the following items:

(a) POTABLE WATER: All drinking water on the site during construction shall be furnished by the Contractor and shall be bottled water or water furnished in approved dispensers.

(b) CONSTRUCTION WATER: The Contractor shall obtain construction water from the City at no cost to the Contractor at the location designated during the Pre-Construction Meeting.

(c) SANITARY FACILITIES: The Contractor shall provide adequate temporary toilet and washing facilities for his workers and other site personnel. The Contractor shall maintain such facilities in a sanitary condition throughout the construction period. After construction is complete, the temporary facilities shall be removed and the premises disinfected, as required.

(d) POWER AND FUEL: The Contractor shall be responsible for providing for his work under the contract all necessary power and special connections to a power supply and fuel for engines, generators, etc as necessary.

(e) PORTABLE TELEPHONE: The Contractor shall provide a portable (cellular) telephone(s) for his/her workers and other site personnel; this phone will be used to provide 24-hour access to the driller and for emergencies.

SECTION 12 - PROTECTION OF EXISTING UTILITIES

The Contractor shall protect existing utilities (water lines, gas mains, power poles, etc.), if present, against damage from his/her operations. All damages, if any, caused by the Contractor shall be repaired by the Contractor at his/her own expense.

SECTION 13 - ACCIDENT PREVENTION

It is required that precautions shall be exercised at all times for the protection of any and all persons (including employees) and property and that the safety provisions of applicable laws, building, and construction codes shall be observed and that all machinery, equipment, and all hazards shall be guarded or eliminated in accordance with the safety provisions of the *Manual of Accident Prevention in Construction* published by the Associated General Contractor of America, to the extent that such provisions are not in contravention of applicable laws.

SECTION 14 - CONSTRUCTION STAKING

The City and/or its Representative(s) will provide staking to identify the center of each proposed well. The Contractor shall be responsible for protecting and replacing damaged field staking during construction. Prior to start of work, the Contractor shall establish a schedule and allow the City adequate time to perform the construction surveying work.

The Contractor shall preserve all existing lot, property, or survey stakes, markers, or monuments, as they exist in the field. The Contractor shall be responsible for his disturbance, removal, or covering of existing lot stakes and shall pay the City the actual cost incurred for the proper replacement of said lot stakes or monuments. Only a Licensed Land Surveyor or a Registered Civil Engineer (pre-1982) of the State of California shall be employed to restore or replace property monuments.

SECTION 15 - SITE MAINTENANCE

The Contractor shall at all times maintain the site in a neat and orderly condition, free from trash and waste construction materials. All construction materials, equipment, and trash shall be stored only within a temporary fenced construction area. Unattended construction materials, equipment, and trash shall be left in a manner such that they do not constitute fire hazards or become or cause nuisance or dangers due to forces of nature such as rain, wind, or an attractive nuisance which may attract children.

SECTION 16 - NUISANCE WATER

The Contractor shall anticipate nuisance water, such as rainfall, irrigation water, or surface water runoff, which may be encountered within the construction sites during the period of construction under this Contract. The Contractor, by submitting his bid, will be held to have investigated the risks arising from such waters, and to have made his bid in accordance therewith. The Contractor shall at all times protect the work from damage by such waters and shall take all due measures to prevent delays in progress of the work caused by such waters. The Contractor shall dispose of nuisance water at his own expense, and without adverse effects to the sites or any other adjacent properties.

SECTION 17 - NOISE CONTROL

Noise suppression shall be practiced at all times to minimize disturbance to persons living or working nearby, and to the general public. The City Noise Ordinance, which details specific noise requirements and policies for construction activities, is presented in Exhibit B of these Special Provisions.

The measures to be used in effecting noise suppression shall include (but are not limited to) equipping all internal combustion engines with critical residential silencers (mufflers), shielding noise-producing equipment from nearest areas of human occupancy by locating the equipment in such positions as to direct the greatest noise emissions away from such areas, and conducting operations in the most effective manner to minimize noise generation consistent with the execution of the Contract in a timely and economic manner.

In accordance with City Noise Ordinance, the drill site is located in a commercial area. Consequently, noise levels shall be controlled in such a manner that they do not exceed the ambient noise levels by more than five (5) decibels at the property line of the subject property.

It will be extremely important for the Contractor to minimize such noises or disturbances created from construction activities during the day and especially between the hours of 6:00 pm and 8:00 am. If noise emanating from the site exceeds these levels then the Contractor will not be allowed to proceed with operations until the condition(s) causing the excessive noise has been corrected. The cost for delays due to the condition(s) will be the Contractor's responsibility.

Additionally, no construction, maintenance or repair work will be permitted between the hours of 6:00 pm and 8:00 of any working day, or at any time on a Sunday or public holiday unless an after hours construction permit is procured by the Contractor.

SECTION 18 - TERMINATION

The City reserves the right to terminate the work on either well at any time. In such an event, the Contractor will be paid for the value of his work successfully completed at the time and on the basis of the unit values shown on the bid documents. The City also reserves the right to select an alternative well site to replace either pilot borehole/reamed borehole that required destruction. If such an alternative site is chosen by the City, the Contractor will be paid for the work done at the alternate site on the basis of the unit price items shown on the Bid Schedule.

SECTION 19 - FIELD OFFICES

The Contractor shall furnish for the project a temporary field office at the drill site for the joint use of his personnel, the City and its Representative(s). The driller's Shelter (aka the "Doghouse") is suitable as a shelter. The field office is considered necessary for 24-hour per day availability of a clean, dry shelter to protect logging equipment and personnel from the elements. This will also be used so that the aforementioned parties can meet and discuss geologic and geophysical logs and other data in order to determine casing completion details and any other in-the-field determinations. Special plan racks, air conditioning, and/or hot running water will not be required.

SECTION 20- SUPERVISION AND COOPERATION

The Contractor shall provide a qualified and experienced foreman and drilling superintendent, one of whom shall be in regular attendance throughout the drilling and construction of each well. In addition to directing all well construction and well testing activities, the foreman shall be capable of coordinating the work with all personnel, subcontractors, and the City and/or its Representative(s) so that the overall project is successfully executed and completed within the allotted contract period without conflicts or delays.

SECTION 21 - PROTECTION OF WELL SITE

Throughout the construction period, the Contractor shall keep the work site clean and free of all rubbish and debris. The Contractor shall provide for the disposal of all surplus materials, waste products, debris, etc., and shall make necessary arrangements for such disposal. Debris may be contained on the site, but only in approved containers, until it is hauled away and disposed of by the Contractor at a site suitable to accept such wastes.

At completion of the work, the Contractor shall remove all waste materials, rubbish and debris from and around each well site as well as all tools, construction equipment, fuel tanks, machinery, temporary structures, and surplus materials. The Contractor shall leave the property clean and ready for use by the City. The Contractor shall restore to their original condition all temporary work areas, including the physical conditions of the ground surface and subsurface.

Throughout all phases of work on this project, the Contractor shall maintain job site and wellhead security to preclude accidental or intentional damage and/or contamination of each new well, the water supply, and surrounding soil. The Contractor shall be responsible for the restoration of existing pre-construction environmental (soil and groundwater) conditions. Whenever the site is unattended, the borehole or installed well casing(s) and ancillary tubes shall be covered to prevent entry by animals, humans, or equipment/tools. In addition, the site should be secured whenever drilling operations are not being performed.

It is anticipated that nuisance water, such as rainfall, irrigation water, or local surface runoff may occur within the construction site during the period of construction under this Contract. The Contractor, by submitting his bid, will be held to have investigated the risks arising from such waters and shall take all due measures to prevent delays in progress of the work caused by such waters.

The Contractor shall prevent damage to the site and adjacent properties due to water and/or fluids generated during drilling, development, or testing or due to interruption or diversion of storm or wastewater during execution of the work. The Contractor shall properly dispose of drilling, waste, and nuisance water. The Contractor shall provide drilling fluid tanks of adequate sizes to clarify and re-circulate the water used for the drilling.

SECTION 22 - DISPOSAL OF MATERIALS

The Contractor will be required to manifest and remove from the drill sites all bentonite-laden drill cuttings generated from the drilling and reaming activities.

Bentonite-laden drilling fluids/muds shall not be discharged offsite or to ground surface and shall be hauled away for disposal at a facility designated/licensed to receive such wastes. All other waste materials/items generated (other than those exempted by the City) as a result of drilling operations will also be hauled away for disposal. Under no circumstances will drilling fluids and/or drilling muds be permitted to flow uncontrolled offsite, onto nearby streets or into local catch basins.

SECTION 23 - DISCHARGE OF WELL DEVELOPMENT AND TESTING WATER

Muddy or dirty fluids generated during mechanical development and testing will be clarified/treated and then discharged to the nearby sewer system. Discharge to this sewer system shall be conducted as described in Exhibit C.

The Contractor shall supply the necessary piping to convey only development and testing water to the onsite discharge point. All costs associated for the installation of discharge piping will be included under Section 2 (Bid Item No. 2) of the Technical Provisions.

SECTION 24 - SUBMITTALS

All records shall be available to the City at all times on the job site. Copies of all records shall be submitted to the City and/or its Representative(s). Table A3 in Exhibit A provides a listing of submittals for each well to be provided by the Contractor and shall include but not necessarily limited to the following:

1) The approved LACDEHS well permit application and a completed State of California Department of Water Resources (DWR) Well Completion Report for each well.

2) Daily driller's log sheets showing:

   a) drilling bit types and depth changes;
   b) additives used during drilling of the pilot hole and reaming and;
   c) record of drilling fluid properties including mud weight, viscosity, sand content, and water loss.

3) All downhole geophysical survey, caliper, borehole magnetic deviation, gyroscopic alignment of well casing logs in ASCII format and Adobe Acrobat Portable Document Format (PDF) provided electronically. In addition, a minimum of three (3) paper field copies and five (5) final paper copies of each log shall be provided to the City and/or its Representative(s) following completion of logging.

4) Estimates of the volumes of gravel and cement required to construct each well.

5) Certifications and Bills of Lading for all steel casings and for the type and slot opening for the casing perforations.

6) Certifications for all welders assigned to the project by the Contractor, when requested by the City and/or its Representative(s).

7) Sieve analyses for the formation samples and gravel pack and a physical sample of the gravel pack. If the specified gravel is not available at the time of construction, then

the Contractor will submit a sample and gradation analysis of a comparable type of gravel to the City and/or its Representative(s).

8) Cement/grout delivery tickets for the cement used for the conductor casing and for the cement/grout annular seal.

9) Mechanical development (airlifting and swabbing) records.

10) Totalizer/odometer meter calibration records.

11) Pumping development and Rossum sand measurement records.

12) Daily driller's reports (logs).

13) Development and test records showing production rate, static water level, pumping level, drawdown, specific capacity, sand content, gravel pack movement, water clarity, and all other pertinent information regarding methods of development.

14) Pumping test records during each of the pumping tests that shall include physical data describing the construction features such as well depth, casing diameter, and pump depth setting(s) and length(s) of the well screen(s); a description of the measuring point and its measured height above land surface and/or mean sea level; and the methods used in measuring water levels and pumping rates.

15) Records on the type of pumping equipment used including engines, drive components, bowls, lines and shafts.

16) Records of the operation of equipment used during test pumping including engine rpm and horsepower, fuel use, and other essential information that will be useful in designing a pump system.

17) Provide a record of the pump setting depth(s) used during pumping development, including length of pump column, bowls, and any suction pipe used.

18) Two copies of the three video surveys (per well) shall be submitted in DVD format. In addition, one copy of all three video survey reports (per well) shall be provided to the City and/or its Representative(s) in paper and/or Adobe Acrobat PDF.

Following all construction activities, time is of the essence in submitting the required records and forms to the City and/or its Representative(s). The Contractor shall submit all of the above information to the City and/or its Representative(s) within 10 working days following completion of work on the well. However, the following submittal items will need to be supplied to the City and/or its Representative(s) at the time of delivery to the job site:

- Sieve analyses and weigh tickets for the gravel pack materials.
- Certified test reports for all blank and perforated well casings and accessory tubings.
- Weigh tickets and descriptions of cement seal material.

END OF ADDITIONAL SPECIAL PROVISIONS

TECHNICAL PROVISIONS

SHALLOW WELL DRILLING PROJECT
AT
MAPLE YARDS

For
City of Beverly Hills
Public Works Department
Beverly, California

June 2015

TECHNICAL PROVISIONS
SHALLOW WELL DRILLING PROJECT AT MAPLE YARDS
CITY OF BEVERLY HILLS

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1 SECTION 1: MOBILIZATION AND DEMOBILIZATION (Bid Item Nos. 1A to 1C)

1.1 SCOPE

Mobilization and demobilization (Bid Item No. 1A) shall include the following: the transportation of personnel, equipment, and operating supplies and materials to and from the project site (i.e., both well sites); relocation or removal of overhead wires, as needed; establishment of a field office, telephone service, and portable sanitary facilities; mobilization of two water storage tanks; erection of temporary fences (as necessary); obtaining an adequate source of fresh water from the City of Beverly Hills Public Works Department (City); use of dump truck and/or vacuum trucks to haul off and remove bentonite-laden drill cuttings and fluids; and installing any temporary discharge piping that will be needed for well development and testing fluids and all other preparatory work at the project site.

The Contractor shall provide a complete direct (mud) rotary drilling unit; all tools, accessories, power, fuel, materials, supplies, lighting, water, and other equipment; and experienced personnel necessary to conduct efficient drilling operations. The drilling unit shall be in good condition and of such capacity as to drill a borehole required by these Technical Specifications to a minimum depth below ground surface (bgs) as follows:

Specified Depth of Pilot Hole Per Well

250 ft bgs

Bentonite-laden drill cuttings and/or drilling fluids generated during pilot hole drilling and reaming operations shall be removed offsite for proper disposal. Bentonite-lade drill cuttings shall be hauled offsite via the use of dump trucks (Bid Item No. 1B), and then be properly treated and disposed. Similarly, bentonite-laden drilling fluids generated during direct mud rotary drilling will need to be removed from the site via the use of vacuum trucks (Bid Item No. 1C) and properly treated and disposed of thereafter.

1.2 MEASUREMENT AND PAYMENT

Total payment of Bid Item No. 1A will be made on the amount presented in the original bid item, regardless of actual cost to the Contractor and will constitute full compensation for all labor, materials, equipment, power, and all other items necessary and incidental to completion of the work. Mobilization to the project site will constitute 70 percent of Bid Item No. 1A. Demobilization from the project site will constitute the remaining 30 percent of Bid Item No. 1A.

The removal and hauling off of bentonite-laden drill cuttings and/or drilling fluids for proper disposal via dump trucks (Bid Item No. 1B) and/or vacuum trucks (Bid Item No. 1C) shall be paid at the unit per truck basis. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to perform the removal and proper disposal of bentonite-laden drill cuttings and/or drilling fluids at the well per Plans and Specifications.

END OF SECTION

2 SECTION 2: DISCHARGE (Bid Item No. 2)

2.1 SCOPE

The Contractor shall conduct the temporary storage, treatment, and discharge of well development and testing fluids such that fluids are generally clear and free of sediment. The Contractor shall follow the provisions of the attached Exhibit C, "Workplan for Discharge of Well Development and Testing Water" of these Technical Specifications.

2.2 REQUIREMENTS

The Contractor will be required to temporarily store, treat, and dispose of all wastewater generated during isolated aquifer zone testing, during mechanical and pumping development, and during step drawdown and constant rate pumping tests in compliance with the provisions outline in Exhibit C of these Technical Specifications.

Under no circumstances are drilling fluids, bentonite drilling muds (if used), fluids from isolated aquifer zone testing, fluids from mechanical development, or fluids and groundwater from pumping development permitted to flow uncontrolled offsite, into nearby streets, or into any storm drains, channels and/or culverts.

2.3 MEASUREMENT AND PAYMENT

Payment for temporary storage, treatment, discharge, sampling and analysis of wastewater generated during isolated aquifer zone testing, mechanical and pumping development, step-drawdown and constant-rate discharge testing, conducted in accordance with Exhibit C of these Technical Specifications, shall be on a lump sum basis. Payment will be made when the work is properly completed. Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies. Payment will constitute full compensation for all labor, materials, equipment, power, and all other items necessary and incidental to completion of the work.

END OF SECTION

3 SECTION 3: CONDUCTOR (SURFACE) CASING (Bid Item No. 3)

3.1 SCOPE

Work under this bid item will consist of the Contractor installing a surface conductor casing for each well, in accordance with Table A1, in Exhibit A, the attached Plans, and as specified herein. The Contractor shall bore a minimum 32-inch diameter borehole from ground surface to a depth of 50 ft bgs, or as directed by the City's Representative(s), into which a minimum 26-inch outside diameter (OD) by 1/4-inch wall thickness (minimum) surface conductor casing shall be installed. The conductor casing will provide near-surface borehole stability and conduct drilling fluids and cuttings safely to the surface.

The Contractor shall notify and arrange for a LACDEHS inspector to be onsite to observe and approve this cement seal around the conductor casing for each well. Should the installation of the conductor casing not meet with the approval of the LACDEHS inspector, the Contractor shall correct any deficiencies, as noted by the LACDEHS inspector and at the Contractor's expense, in order to obtain an installation satisfactory to the inspector.

3.2 MATERIAL REQUIREMENTS

The conductor casing shall be a minimum 26-inches OD low carbon steel pipe having a wall thickness of not less than 1/4-inch and a length of not less than 50 ft. Conductor casing shall be manufactured in accordance with ASTM A-139, Grade B, without copper or equivalent. All joints in the conductor casing shall be securely welded and shall be watertight. Field joints shall be either collared or butt-welded. Centering guides shall be welded to the conductor casing with a minimum of two sets of guides (one set 10 ft from the bottom and one set 10 ft from the top). Each set shall consist of three guides equally spaced circumferentially.

After the conductor casing has been installed, the annular space between the borehole and the conductor casing shall be filled and sealed by means of a tremie pipe and pumping cement into the annular space around the conductor casing. The cement shall consist, at a minimum, of a 10-sack mix with ASTM C150 Type II Portland Cement.

There shall be not more than two parts by weight of sand to one part by weight of cement. The water-cement ratio shall be about 7 gallons per sack of cement (94 pounds). All onsite water additions shall be metered. Up to 5 percent bentonite gel and 2 percent calcium chloride may be added if deemed necessary. Upon completion of grouting, the cement shall be visible above the surface of the ground outside the conductor casing. After grouting operations are completed, the cement shall be left undisturbed for a period of not less than 24 hours before drilling is resumed.

3.3 MEASUREMENT AND PAYMENT

The conductor casing at each well shall be paid at the unit price per lineal foot measured from ground surface to the bottom of the 26-inch OD steel casing at 50 ft, minimum. The price for each well shall constitute full compensation for all labor, material, equipment, and incidentals required to: drill a minimum 30-inch diameter borehole to at least 50 ft, install a 26-inch OD by 5/16-inch wall (minimum) low carbon steel casing and centering guides, fill the annular space with cement, and dispose of all drill cuttings at a facility designated/licensed to receive such wastes, complete in place per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

4 SECTION 4: PILOT HOLE DRILLING (Bid Item No. 4)

4.1 SCOPE

Work under this bid items will consist of the Contractor drilling a 6-inch to 9-inch diameter pilot hole by the direct (mud) rotary method for each well, in accordance with Table A1, in Exhibit A, the attached Plans and Specifications and as specified herein. Each pilot hole shall extend from the bottom of the surface conductor casing (at 50 ft bgs) to the following depth:

Depth of Pilot Hole Per Well

250 ft bgs

4.2 CONSTRUCTION METHODS

4.2.1 Drilling Fluid Properties

Only potable water shall be used in the drilling fluid. All water used during drilling shall meet California State Department of Public Health standards for drinking water. The drilling fluid shall possess such characteristics as are required to adequately maintain the walls of the borehole to prevent caving of the wall as drilling progresses and to permit recovery of representative samples of the drill cuttings. The drilling fluid shall also possess such characteristics that it can be readily removed from the borehole during the placement of the gravel pack and during development of each well.

Drilling fluid additives shall consist of a bentonite additive, such as Quick Gel or similar. The properties specified below are to be maintained to the satisfaction of the City's Representative(s). The Contractor is advised that excessive water loss in clay zones can lead to swelling, loss of shear strength, substantial caving, and borehole stability problems. The drilling fluid to be utilized should contain properties to minimize these possibilities.

The Contractor must possess sufficient fluid tank volume to effectively separate cuttings and to keep sand and solids contents below their specified amounts. If drilling fluid conditions as outlined below are exceeded, the Contractor will be required to immediately suspend further drilling until corrected. Reference is made to Sections 22 and 23 in the Additional Special Provisions of these Technical Specifications for disposal of drilling fluid/mud.

Excavated mud pits shall not be used. Portable mud tanks with internal baffles, which allow drill cuttings to settle, are required. Sediment shall be removed periodically from the tank(s) in order to maintain tank volume and to keep drilling fluid properties within specifications.

The drill rig must be provided at all times with the following Standard API drilling fluid measuring devices to measure the following properties:

a.) Drilling fluid weight
b.) Drilling fluid viscosity
c.) Drilling fluid sand content
d.) Total solids
e.) Water loss

The drilling fluid shall have the following properties in accordance with API Code RP 13B (or latest revisions) "Recommended Standard Procedure for Testing Drilling Fluids." In the event the Contractor cannot attain these properties, the mud shall be replaced.

1) Weight – a maximum to 80 pounds per cubic foot (10.7 pounds per gallon) during pilot borehole drilling and a maximum of 75 pounds per cubic foot (10.0 pounds per gallon) during pilot borehole ream, and 70 pounds per cubic foot (9.4 pounds per gallon) during aquifer completions, and gravel packing.
2) Marsh funnel viscosity – maximum to 50 seconds during pilot borehole drilling, and a maximum of 45 seconds during pilot borehole ream, and a maximum of 40 seconds during gravel packing, and casing completion.
3) Sand content (of mud entering the pump) – a maximum of five percent by volume during all aspects of drilling.
4) Total solids content of less than or equal to 10%.
5) Water loss of less than or equal to 15 millimeters.

At the completion of drilling operations, drilling fluids are to be removed from the site and properly disposed of by the Contractor at his expense. Under no circumstances are drilling fluids, drill cuttings, and/or drilling muds permitted to flow uncontrolled offsite or into nearby streets.

4.2.2 Drift Survey

In order to ensure that each pilot hole has been drilled in a nearly vertical alignment and that it exhibits little deviation upon completion, the Contractor shall furnish and employ a self-checking mechanical drift indicator (Eastman Drift Survey, or equivalent) to measure borehole deflection. Drift indications shall be taken at 50-foot intervals immediately after each 50-foot increment of pilot hole is drilled. The drift survey shall begin at a depth of 100 ft bgs. The drift from vertical shall not be more than one half of one (1) degree. The Contractor, at no additional expense to the City, shall correct any deviation during drilling.

4.3 CONSTRUCTION RECORDS

The Contractor must keep records providing the following information to the City and its Representative(s):

1) A log of drilling bit types and depths of changes.
2) A record of drilling fluid properties at 4-hour intervals. The record shall show mud weights, Marsh funnel viscosity, sand content, solids content, water loss, water additions, and any mud additives used.
3) The driller's log for each completed well shall provide the following parameters: diameter, wall thickness, depths, and quantities of blank and screened casing installed; borehole ream diameters; cemented sections; gradation of gravel envelope; any other pertinent details deemed necessary for the City or the City's Representative(s).
5) All measurements for depths shall be referenced to existing ground surface at each well site.

During drilling of each pilot borehole and at 10-foot intervals, or less, or as directed by the City's Representative(s), the Contractor shall take representative samples of drill cuttings from the interval and shall place cuttings in appropriately labeled (by depth), zip-lock plastic bags supplied

by the Contractor. All bags shall be labeled to indicate the depth interval, date, and well number of the collected sample. The samples shall be properly stored by the Contractor in a manner as to prevent breakage or loss until the samples are accepted by the City's Representative(s). Samples of the collected drill cuttings shall be selected by the City's Representative(s) for sieve analysis and submitted to a laboratory suitable for conducting such analyses by the Contractor.

Upon completion of each pilot borehole, downhole geophysical surveying of each pilot borehole shall be conducted for the purpose of providing information for the final design of each well. The geophysical surveying is described in subsequent Section 5 of these Technical Provisions. Determination of the final depth of each reamed borehole shall be made after completion of the geophysical surveying and/or after isolated aquifer zone testing (if performed).

4.4 MEASUREMENT AND PAYMENT

Pilot hole drilling shall be paid at the unit price per lineal foot measured from the bottom of the steel conductor casing to the bottom of the pilot hole. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to drill approximately 200 ft of a 6-inch to 9-inch diameter pilot hole between the depths of 50 ft and 200 ft bgs, per well, including the disposal of all drill cuttings and drilling fluids (see Sections 22 and 23 of the Additional Special Provisions), complete per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

5 SECTION 5: DOWNHOLE GEOPHYSICAL SURVEYING (Bid Item No. 5)

5.1 SCOPE

Downhole geophysical surveys of the entire open pilot hole drilled for each well shall be conducted for the purpose of providing information for the final design of each well. Determination of the final depth of the borehole reams for each well shall be made after completion of the geophysical surveying at each well. The Contractor shall furnish services for performing the downhole geophysical surveys of the pilot hole at each site, as specified herein. The City's Representative(s) shall approve the downhole geophysical surveying subcontractor, which shall not be an associate or subsidiary of the Contractor.

5.2 GEOPHYSICAL SURVEYING METHODS

The Contractor shall provide for downhole geophysical surveying services in the pilot borehole. A subcontractor experienced and qualified for such services can be utilized by the Contractor. The logging subcontractor shall be onsite as soon as possible following completion of the pilot hole. Standby time will not be paid while awaiting the logging subcontractor. The geophysical surveys to be performed in the pilot hole shall include the following:

- Spontaneous Potential (SP) survey.
- Short-normal (16-inch) and long-normal (64-inch) resistivity surveys.
- A focused (guard or laterlog3) resistivity survey.
- Gamma-ray survey.
- Magnetic Deviation Survey.

The geophysical survey log scale is to be: one vertical inch on the log graph equals 50 vertical feet of borehole. The logging will be performed using digital equipment and recording continuously with a minimum of one data point per vertical foot. The vertical logging speed shall be no greater than 40 ft per minute, or as directed by the City's Representative(s).

The geophysical surveys shall be run in the presence of the City's Representative(s). All downhole logging tools shall be calibrated and reported with each logging run. The report shall be appended to each log. The calibration report shall include the standards used in calibration along with the date calibration was conducted. The report should have at a minimum, calibration units, type of calibration (e.g. two points or multiple points) and readings from the instrument for each standard. If the tool does not have field or shop calibration (such as the acoustic log) a request can be made to determine the make and manufacturer of the equipment. A request can be made to physically demonstrate calibration procedures. This would be conducted at the well site with the company representative present to witness the procedure.

If the logging probed fails to descend to the total drilled depth of the borehole, the Contractor, at his own expense, shall re-condition the pilot borehole to permit the logging probe to descend to the bottom of the drilled pilot borehole. Standby time will not be paid for the re-conditioning of the pilot borehole to enable logging operations to proceed.

If review of the geophysical survey logs of the pilot borehole by the City's Representative(s) reveal that the completion of the borehole into a water well is not desirable at this site, then the City reserves the right to terminate all further work at the site. In such an event, the Contractor will be paid for the value of his work completed to that time and on the basis of the lump sum unit prices provided on the Bid Schedule and no additional compensation will be allowed. If further

work at the site is terminated, the specified items in Section 22, Abandonment and Destruction, of these Technical Provisions will be applicable.

A minimum of three (3) field copies of the geophysical survey logs will be provided to the City's Representative(s) shortly following completion of logging. Five (5) paper copies of the final geophysical survey logs, in addition to electronic data in ASCII format, and Adobe Acrobat PDF shall be submitted electronically to the City and/or the City's Representative(s) following the completion of logging, as noted in Section 24 of the Additional Special Provisions.

If isolated aquifer zone testing is to be performed (Bid Item No. 6), then an estimated six (6) hours of time without compensation will be allotted to the Contractor, during which time the City's Representative(s) will review the downhole geophysical survey logs and provide recommendations for the depths of the isolated aquifer zone tests. If isolated aquifer zone testing is not conducted, then the Contractor will be required to wait a minimum period of 96 hours (4 days, excluding holidays and weekends, and special "flex time" for the City) without compensation, during which time the Final well design schedule will be completed by the City's Representative(s) and then submitted to the Contractor.

The magnetic deviation survey shall be performed in the final reamed borehole using a magnetometer tool. Deviation measurements with this tool shall be collected every 10 feet, or at an interval as specified in writing by the City's Representative(s). The vertical deviation of the reamed borehole from true north shall not exceed 3 inches per 100 ft of depth in the reamed borehole. Should the reamed borehole not meet the required deviation as stated above, the Contractor shall re-enter the borehole and re-ream as necessary to meet the required deviation standard. In this event, and following re-reaming (if needed), an additional deviation survey shall be performed by the Contractor, at no additional expense to the City. After the caliper and deviation surveys have been performed and approved by either the City or its Representative(s), then installation of the well casing may commence.

5.3 MEASUREMENT AND PAYMENT

Downhole geophysical surveying of the pilot hole (and the magnetic deviation survey of the final reamed borehole) for each well shall be paid at the unit lump sum price basis. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to perform the geophysical surveying to the total depth of the pilot hole at each well (and the magnetic deviation survey), complete per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

6 SECTION 6: ISOLATED AQUIFER ZONE TESTING (Bid Item Nos. 6A & 6B)

6.1 SCOPE

Work under this section shall consist of the collection of isolated aquifer zone water samples for the purpose of determining water quality conditions of selected aquifers in the open pilot hole for the initial well as specified under Exhibit A, Table A1 and Figure A1, and as specified herein. Depending on the data provided by the downhole geophysical survey logs and the geologic log at the completion of each pilot hole, the City's Representative(s) may instruct the Contractor to perform isolated aquifer zone testing in the pilot borehole for the initial well at three (3) selected depth intervals.

For bidding purposes, the Contractor may be required to develop these zone(s) using airlifting methods, and then to use a submersible pump to extract groundwater samples from as many as three (3) aquifer zones in the pilot hole for the initial well between the total depth of the pilot hole and a depth of approximately 75 ft bgs.

6.2 CONSTRUCTION MATERIALS/METHODS

Upon review of the downhole geophysical logs, the City's Representative(s) shall provide the Contractor with a written schedule of the specific depth intervals at which to conduct isolated aquifer zone tests and the depth settings for the required seals and gravel packs. Figure A1 presents a schematic diagram of the isolated aquifer zone testing tool and the intervening seals and gravel packs. Key general procedures for this development and sampling of each zone include:

1. Install a 10-foot to 20-foot (maximum) bentonite seal such that the top of the seal is 20 ft below the bottom of the aquifer zone to be sampled.
2. Set the zone sampling string to the specified depth, placing the perforated interval of the aquifer sampling tool adjacent to the aquifer zone to be sampled. The sampling tool for the test shall be a maximum of 20 ft in length, and shall contain 0.060-inch mill slot perforations with an open area of at least 5.5 square inches per foot.
3. Place gravel in the annular space from the top of the lower bentonite seal, up and around the perforated tool and also as high as 20 ft above the perforated interval of the sampling tool.
4. Initially set the bottom of the air injection pipe inside the sampling string to at least 50 to 100 ft below the initial static water level measured inside the tool assembly by the Contractor. The bottom of the air injection pipe (airline) may need to be set to greater depths if sufficient groundwater is not produced or if inadequate submergence is occurring. It may eventually be necessary to place the bottom of the airline into the perforated sampling tool, in order to obtain adequate submergence.
5. Commence airlifting until the discharge water is clear of drilling fluids and fine-grained sediment (a minimum of 6 hours). During airlifting of each test zone, the Contractor shall monitor and record airlift flow rates, and shall collect a water sample in a mason jar from the discharge every one hour. These samples are to be clearly labeled as to the elapsed time of airlifting, and shall be retained onsite for observation by the City's Representative(s). Once the discharge water is clear of drilling fluids and fine-grained

sediments, the Contractor (while continuing to airlift) shall notify the City's Representative(s).

6. If the discharge has not cleared within 6 hours, then airlifting will be performed (and the air injection pipe may need to be deepened) for an additional 12 hours, for a total 18 hours or less, as determined by the City's Representative(s). The total maximum time of 18 hours of airlifting from each test zone will be included in the lump sum price for the bid item for each isolated aquifer zone test. The Contractor shall monitor and keep a record of airlifting rates from each tested aquifer zone.

7. The Contractor shall remove the airline and then install an environmental submersible sampling pump, using threaded steel pump column. This pump shall have a capacity of at least 200 gpm, unless otherwise approved by the City's Representative(s), and shall be set to a depth that is approximately 100 ft below the measured static water level inside the tool assembly. Prior to use and installation, the pump shall be decontaminated by rinsing with distilled water.

8. The Contractor shall be responsible for monitoring each aquifer test zone for any possible broken or leaking bentonite seals prior to sampling of each zone. This will include monitoring the fluid level within the conductor casing at 30-minute intervals to ensure the level does not fall as a result of leakage through or past the bentonite seal. The Contractor shall also observe and record turbidity of the discharge to ensure that drilling fluid/mud does not enter the sampling interval as a result of leakage through or past the bentonite seal. Should the bentonite seal become leaky or broken the Contractor shall repair or replace it at no additional expense to the City and the zone shall be rendered functional without hindering the placement of subsequent isolated zone testing intervals in the pilot hole. If the seal cannot be repaired or replaced, the Contractor shall re-enter the pilot hole and reset the zone at his own cost.

   After installation of the temporary pump, the Contractor shall pump for a minimum of 2 hours and a maximum of 6 hours from each test zone, until the City's Representative(s) has determined that the specific conductance, pH, and temperature of the discharge have stabilized. The City's Representative(s) will then collect a water sample for analysis by the Contractor. The total maximum pumping time of 6 hours per zone will be included in the lump sum price for the isolated aquifer zone testing bid item.

   Just prior to cessation of pumping from each tested aquifer zone, the Contractor shall record the pumping rate and the final pumping level. These data shall be provided to the City's Representative(s).

9. After a water sample from each test zone has been collected but prior to breaking the annular seals for each zone test, the Contractor shall shut off the pump, measure and record the non-pumping (static) water level inside the sampling string for each aquifer test zone after a minimum period of one hour has elapsed. This measurement shall be immediately provided to the City's Representative(s).

The Contractor shall be responsible for the collection, storage, transport, analysis and cost(s) of the groundwater samples collected from each isolated aquifer zone test. Thus, the Contractor will need to acquire the services of a State-certified testing laboratory, acceptable to the City, for the complete analysis of selected California Title 22 General Mineral & Physical Constituents,

Inorganics (metals), and VOCs. The following list shall constitute the list of analytes for the collected groundwater samples from each zone test:

1. Title 22 General Mineral & Physical Constituents
2. The Title 22 regulated Inorganic Constituents (trace metals). These will be filtered in the field with a 0.45 micron field filter.
3. Volatile organic compounds utilizing U.S. Environmental Protection Agency (EPA) Methods 524.2 & 524.2M, including methyl-tert-butyl ether and the Unregulated Chemicals Requiring Monitoring (UCRM).
4. Perchlorate.
5. Boron.
6. Vanadium.

The Contractor's chosen laboratory shall test for the above-listed analytes within a 48- to 72-hour time period. The laboratory detection reporting limits for each analyte shall be less than the applicable California and U.S. EPA drinking water standards. The resulting laboratory data shall be immediately provided by the laboratory and/or Contractor to the City and the City's Representative(s) for evaluation.

Upon completion of isolated aquifer zone testing and following receipt by the City's Representative(s) of all laboratory test results from all sampled aquifer zones, the City's Representative will prepare the final casing schedule for the new well. However, the Contractor will be required to wait a maximum of 120 hours (5 days) excluding weekends, holidays and special "flex time" for the City, prior to the commencement of reaming operations. This will allow the City and its Representative(s) to receive the analytical data from the laboratory, to review the pilot hole records and zone test water level data, and to provide the recommendations to the Contractor for the Final well design. No standby time will be allowed for this "waiting" period.

6.3 MEASUREMENT AND PAYMENT

Isolated aquifer zone testing in the pilot hole for the initial well shall be paid at the unit price per zone sampled. The unit price shall constitute full compensation for all labor, material, equipment, laboratory changes, and incidentals required to procure and test water samples that are satisfactory to the City's Representative(s) from zones below 100 ft, complete per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

7 SECTION 7: PILOT HOLE REAM (Bid Item Nos. 7)

7.1 SCOPE

Work under this bid item will be performed in accordance with Table A1 in Exhibit A, the attached Plans and Specifications as specified herein. If the City's Representative(s) and/or the City find it desirable to complete each pilot hole into a water well, as warranted by the results of geologic logging, downhole geophysical surveying, and isolated aquifer zone test results at the site, the pilot hole shall be reamed using the direct (mud) rotary drilling method.

7.2 CONSTRUCTION METHOD

After completion of the placement of a pilot hole bottom plug (if necessary) the borehole will be reamed to the approximate diameters and depths as follows:

Diameters & Depths of Pilot Hole Ream Per Well

22-inch from 50 ft to 200 ft bgs

The final reaming depth of 200 ft bgs allows for 10 ft of additional borehole below the preliminarily-estimated bottom most section of casing (after the installation of the bottom hole seal). The Contractor is reminded that drilling fluid properties during the pilot hole ream must conform to those specified in Section 4 of these Technical Provisions. Upon completion of all pilot hole reaming at the site, a caliper and a magnetic deviation survey will be performed as specified in Section 9 of these Technical Provisions.

7.3 MEASUREMENT AND PAYMENT

7.3.1 22-INCH DIA. REAM *(*Bid Item No. 7)

Reaming of the pilot hole at each well shall be paid at the unit price per lineal foot as measured from the bottom of the 26-inch OD steel conductor casing. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to ream the pilot hole complete per Plans and Specifications. The length of the 22-inch diameter pilot hole ream is estimated to be to 150 ft, as measured between the depths of 50 ft and 200 ft bgs. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

8 SECTION 8: CALIPER & DEVIATION SURVEYS (Bid Item Nos. 8A & 8B)

8.1 SCOPE

Work shall consist of performing a caliper survey to measure the diameter of the borehole ream and a magnetic deviation survey to measure the plumbness and alignment of the final reamed borehole in each well, as specified herein, unless otherwise directed by the City's Representative(s).

8.2 SURVEY METHODS

The Contractor shall furnish services for performing a caliper survey and a magnetic deviation survey of the final ream of the borehole in each well. These services can be supplied by a subcontractor qualified and experienced in such surveys.

9.2.1 CALIPER SURVEY TOOL (Bid Item No. 8A)

The caliper survey tool should have a minimum of 3 arms and have the ability to measure borehole diameters to a minimum of 48 inches. The intent of the caliper survey is to provide an assessment of the condition of the borehole and possible zones of caving and/or overbreak. The Contractor should, upon his own inspection of the caliper survey, assess his ability to successfully land the casing to the required depth on the basis of this inspection. Based on his inspection of the caliper survey, the Contractor shall also submit estimates of the volumes of gravel and cement required to properly and completely fill the annular space between the reamed borehole walls and the outside of the installed well casing. In addition, a minimum of five (5) field and five (5) final copies of the caliper log will be provided to the City's Representative(s). The caliper survey logs will also be submitted electronically to the City and/or the City's Representative(s) in ASCII format and in Adobe Acrobat PDF as listed in Section 24 of the Additional Special Provisions.

If the caliper survey log shows that the final reamed borehole does not meet the specified diameter and/or depth at any point, the Contractor shall re-ream the borehole to the proper diameter and final depth, and then conduct an additional caliper survey to confirm that compliance with the final well design has been met. In this event, the Contractor will not be entitled to additional compensation for the re-reaming or the re-logging of the borehole.

9.2.2 DEVIATION SURVEY TOOL (Bid Item No. 8B)

The magnetic deviation survey shall be performed using a magnetometer tool. Deviation measurements with the tool shall be collected every 10 feet, or at an interval as specified in writing by the City's Representative(s). The vertical deviation of the reamed borehole from true north shall not exceed 3 inches per 100 ft of depth in the reamed borehole. Should the reamed borehole not meet the required deviation as stated above, the Contractor shall re-enter the borehole and re-ream as necessary (at no extra cost to the City) to meet the required deviation standard. Following re-reaming (if needed), an additional deviation survey shall be performed by the Contractor, at no additional expense to the City. In addition, a minimum of five (5) field and five (5) final copies of the deviation survey log will be provided to the City's Representative(s). The deviation survey logs will also be submitted to the City's Representative(s) in ASCII format and in Adobe Acrobat PDF as listed in Section 24 of the Additional Special Provisions. After the caliper and deviation surveys have been performed and after results have been approved by either the City or its City's Representative(s), then installation of the well casing may commence.

8.3 MEASUREMENT AND PAYMENT (Bid Item Nos. 8A & 8B)

Caliper and magnetic deviation surveying of the final ream of the borehole at each well shall be paid at the lump sum price basis, for each well. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to perform each of these surveys to the total depth of the ream for each well, complete per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

9 SECTION 9: WELL CASING AND LOUVERS (Bid Item Nos. 9A through 9F)

9.1 SCOPE

As specified for each well and in accordance with Table A1, in Exhibit A, the attached Plans and Specifications, and these Technical Provisions, the Contractor shall furnish and install blank and louvered well casing, a cellar pipe and cap, a gravel feed tube, a water level sounding/pressure transducer tube, and an air vent tube. The estimated well casing for each well (excluding the accessory tubes) shall extend to the following approximate depth:

Depth of Well Casing Per Well

190 ft bgs

The types of casing, and their approximate depth settings, diameters, wall thicknesses, and total lengths for the well are listed on Table A1, in Exhibit A. Additionally, the top of the well casing (including the accessory tubes) shall extend (stick up) approximately 2 ft above the ground surface (ags).

Prior to the installation of any casing, the City's Representative(s) will assess the well casing for compatibility with the onsite gravel pack and with the final well casing design. Any deviation unacceptable to the City's Representative(s) may be cause to reject the well casing and/or gravel pack. If the well casing is unacceptable and rejected by the City's Representative(s), the Contractor shall replace the well casing with an acceptable replacement at the Contractor's expense. No additional payments will be made for time lost by the Contractor while awaiting any replacement casing or for the possible re-reaming of the borehole that might be required while awaiting the replacement casing.

9.2 CONSTRUCTION MATERIALS

9.2.1 12-inch ID Type 304L Stainless Steel Blank Casing

The blank pump house casing shall consist of Type 304L stainless steel and shall be 12-inches inside diameter (ID) in size and manufactured in accordance with ASTM Standard A778, with the following additions:

- The steel from which the well casing is to be manufactured shall be Type 304L stainless steel.
- The well casing shall have a minimum 0.250-inch (1/4") wall thickness +/- five (5) percent.
- Welding shall be by the submerged gas tungsten-arc process using at least one pass on the inside and one pass on the outside (internal and external weld).
- There shall be no more than one (1) single seam per 40 ft length of well casing.
- Casing section lengths shall be in increments of 5, 10, 20 and 40 ft (random, odd lengths of casing will not be permitted).
- Mid-casing welds shall not be permitted (cannot weld two sections together).
- Casing shall have fully welded collars.

The blank well casing (interspersed with louvered casing) will be installed from 2 ft above ground surface to a depth of 180 ft bgs. Estimated total length of the 12-inch ID by 1/4 –inch wall thickness Type 304L stainless steel blank casing is 122 ft.

Length of 12-inch Blank Type 304L Stainless Steel Well Casing Per Well

70 ft

9.2.2 12-inch ID Type 304L Stainless Steel Louvered Well Casing

The louvered well casing shall be 12-inches ID in size and manufactured in accordance with ASTM Standard A778, with the following additions:

- The steel from which the well casing is to be manufactured shall be Type 304L stainless steel.
- The well casing shall have a minimum 0.250-inch (1/4") wall thickness +/- five (5) percent.
- Welding shall be by the submerged gas tungsten-arc process using at least one pass on the inside and one pass on the outside (internal and external weld).
- There shall be no more than one (1) single seam per 40 ft length of well casing.
- Casing section lengths shall be in increments of 5, 10, 20 and 40 ft (Random odd lengths of casing will not be permitted).
- Mid-casing welds shall not be permitted (cannot weld two sections together).
- Casing shall have fully welded collars.

The perforated Type 304L stainless steel well casing shall have Roscoe Moss Super-flo louvers and shall be designed and fabricated to withstand the stresses associated with casing installations and usage to depths of at least 180 ft. For bidding purposes, the total length of 12-inch diameter louvered Type 304L stainless steel well casing that is to be interspersed with 12-inch diameter blank well casing between the approximate depths of 60 ft and 180 ft is estimated to be as follows:

Length of 12-inch Louvered Type 304L Stainless Steel Well Casing Per Well

110 ft

The size of the slot openings of the louvered well casing will be determined by the City's Representative(s) and will be based upon lithologic samples, sieve analysis, and hydrogeological characteristics of the aquifers. For bidding purposes, slot openings are estimated at 0.060 inches at this time.

9.2.3 12-inch ID Type 304L Stainless Steel Cellar Pipe with Cap

The cellar pipe shall consist of 12-inch ID by 1/4-inch wall Type 304L stainless steel casing and shall be 10 ft in length. This casing shall be installed at the bottom of the well. The cellar pipe shall be manufactured in accordance with ASTM Standard A778, with the following additions:

- Casing section lengths shall be in increments of 5 and 10 ft (Random odd lengths of casing will not be permitted).
- Casing shall have fully welded collars.

The bottom of the cellar pipe shall be fitted with a Type 304L stainless steel plate or cap, welded in place.

Length of 12-inch Louvered Type 304L Stainless Steel Cellar Pipe **Per Well**

10 ft

9.2.4 Accessory Tubes

The following accessory tubes will be constructed of either Low Carbon Steel (LCS) or Type 304L stainless steel (both ASTM A53) and have the following specifications:

- 3-inch ID, Schedule 40, Low Carbon Steel, Permanent Gravel Feed Tube to a depth of 55 ft bgs
- 2-inch ID, Schedule 40, Type 304L Stainless, Water Level Sounding/Pressure Transducer Tube to a depth of 185 ft bgs, and slotted (machine-cut) between the depths as specified, with slot size openings of 0.050-inches.
- 3-inch ID, Schedule 40, Type 304L Stainless Steel, Air Vent Tube to a depth of 2 ft bgs

The accessory tubes shall extend from 2 ft above ground surface (ags) to the approximate depths indicated above and on Table A1, in Exhibit A, and as shown on the Plans and Specifications. Orientation of these tubes relative to north are shown on the Plans and will be addressed in the Final Well Design Memorandum to be issued after the completion of the isolated aquifer zone sampling. The tops of these accessory tubes shall be capped with a minimum ¼ inch thick steel plate. These plates shall be completely welded in place and cut to fit the outside diameter of the respective accessory tube.

9.3 CONSTRUCTION METHODS

Each well casing shall be plumb and shall be centered in the borehole. The well casing shall be suspended in tension from the surface by means of an appropriate hanger or clamp. The use of float plugs to land and set the well casing will not be permitted. The bottom of the well casing shall be at a sufficient distance above the bottom of the reamed borehole so that none of the well casing will be supported from the bottom of the borehole. Temporary construction tremie pipes, which will be used to install the gravel pack and cement grout annular seal, may be installed prior to installation of the well casing. The Contractor will install the temporary tremie pipe such that it shall not interfere with the installation of the well casing and the final position of the accessory tubes.

Prior to the installation of any casing, the Contractor shall inspect for and remove any tags, labels, or other deleterious matter attached to the interior or exterior of the pipe and louvered sections delivered to the job site.

Three Type 304L stainless steel centralizers with 120-degree spacing are to be attached directly to the casing by welding onto the casing at each depth where placed. This is for the purpose of

centering and holding the well casing in the proper position until the gravel pack is in place. The material of the centralizers shall be of the same chemical and physical properties as used for the blank and louvered well casing. Casing centralizers shall be placed at the bottom and top of the louvered interval only, when they occur within those intervals. The maximum amount of separation between the centralizers shall be 80 ft.

9.3.1 Cellar Pipe and End Cap

The Contractor shall install the 12-inch ID 10-foot long section of cellar pipe between the tentative depths as shown on Table A1, in Exhibit A and on the attached Plans. The permanent bottom end cap (plate) shall be securely welded in place.

9.3.2 Blank and Louvered Well Casing

The Contractor shall install the blank and louvered well casing at intervals as determined by the City's Representative(s). The estimated casing lengths are shown on Table A1, in Exhibit A. The respective Bidder's Sheet for both wells also includes estimated casing lengths, which are for bidding purposes only.

9.3.3 Accessory Tubes

Permanent Gravel Feed Tube

The bottom of the 3-inch ID LCS permanent gravel feed tube shall be placed as shown on Table A1, in Appendix A, and on the Plans, which is approximately 20 ft below the top of the gravel pack. This tube may be lowered prior to installation of the well casing and shall be placed such that the temporary tremie pipe will not interfere with the gravel feed tube. This tube shall remain opening during well casing installation, gravel packing, and placement of the cement grout annular seal. Following completion of the cement grout annular seal, the tube will be filled to the surface with gravel pack material. The top of the gravel feed tube shall be equipped with a welded LCS plate or cap.

Water Level Sounding/Pressure Transducer Tube

The 2-inch ID Type 304L Stainless Steel water level sounding/pressure transducer tube may be lowered prior to the installation of the well casing and shall be placed such that the temporary tremie pipe will not interfere with the water level sounding/pressure transducer tube. The pressure transducer tube shall be placed between 90- to 180-degrees from the permanent gravel feed line, or at a position directed by the City's Representative(s). This tube shall remain open during well casing installation, gravel packing, and placement of the cement grout annular seal. This tube shall also be slotted (machine-cut) between the depths as specified. The slot size of openings shall be 0.050-inches. No entry port into the well casing will be required. The top of the water level sounding/pressure transducer tube shall be equipped with a welded Low Carbon Steel plate or cap.

Air Vent Tube

The Contractor shall install the 3-inch Type 304L stainless steel air vent tube any time following the placement of the cement annular seal. The air vent tube shall be installed to a depth of 2 ft and shall have an angle of entry into the well casing of approximately 30 degrees from the vertical. The top of the air vent tube shall be equipped with a welded Type 304L stainless steel plate or cap.

9.3.4 Temporary Capping and Determination of Openness of Well Casing & Tubes

Following well casing installation, the top of the well casing and accessory tubes shall be provided with welded caps at all times when personnel are not on the site. The Contractor shall run a minimum 40-ft long by 11-inch diameter dummy throughout the well casing prior to well development to verify that the well casing is completely open. If the well casing is obstructed, the obstructions shall be removed or the well casing repaired by the Contractor at no extra cost to the City. Additionally, the Contractor shall check that the accessory tubes are unobstructed and completely free and clear of all debris to their total depths. This tube check shall be performed by passing a five-foot long dummy with a diameter ½-inch less than the inside diameter of the specific tube being measured. The dummy shall pass through the entire length of each tube. If any of the tubes are obstructed, the obstructions shall be removed or the tube repaired by the Contractor at no extra cost to the City.

9.3.5 Field Welding Procedures

All field welding shall be performed in accordance with the American Welding Society Standards by a certified welder. The welders used shall be certified in accordance with AWS 010.9-80 for level AR-1 and shall be qualified in the 2G and 5G positions or the 6G position. The following field welding procedures shall apply:

a) A length of well casing shall be lowered in the borehole with the collar facing upward.

b) The plain end of the following well casing length shall be inserted into the collar. True contact of the two joints must be verified by observation through the three (3) ¾-inch diameter, equally spaced, inspection holes.

c) Spot welds shall be placed through the three holes in order to hold the contact position.

d) All field joints on the blank and louvered well casing and accessory tubes shall be properly lap-welded or butt-welded during well installation.

e) A fillet type weld shall be made covering the top edge of the collar continuously for the entire circumference. Two passes or welds shall be applied to joints in 5/16-inch and thicker wall material, otherwise for wall thicknesses ¼-inch of thinner only one pass is necessary.

f) The inspection holes on blank well casing sections shall be sealed (welded) to assure a leak proof connection.

The following electrodes shall be utilized for various blank and louvered well casing materials, as appropriate (shading indicates the type of electrode to be used for the well casing specified herein):

Electrode Type To Be Used

Well Casing Material	Electrode No.
Mild (Carbon) Steel	E-6011 or E-7018
Copper Bearing Steel	E-6011 or E-7018
Low Alloy Steel (ASTM A 242 or equivalent)	E-7018
Stainless Steel (Type 304L)	E-308L-16
Stainless Steel (Type 316L)	E-316L-16

Depending on wall thickness, the following electrode sizes shall apply:

Electrode Size To Be Used

Wall Thickness	Electrode Size
1/8-inch	1/8 inch
3/16- to 1/4-inch	5/32- to 3/16-inch
Over 1/4-inch	3/16- to 1/4-inch

9.3.6 Well Replacement / Repair Conditions

If, for any reason, the casing cannot be landed in the correct position or at a depth acceptable to the City's Representative(s) and/or the City, the Contractor shall abandon the borehole and construct another well. This replacement well will be located near the original well location, and the Contractor shall drill and construct this new well in accordance with the Specifications at no additional cost to the City. The abandoned borehole shall be sealed and destroyed in accordance with directions from the City and in accordance with any laws/regulations/ordinances pertaining to proper well destruction, all at no additional cost to the City. Other conditions for the abandonment/destruction of the pilot borehole or well are outlined in Section 22 of these Technical Provisions.

If any damage should be done to the well casings and accessory tubings during well construction, development or testing operations, by actions of the Contractor, or due to collapse of the borehole, and if it is deemed feasible by the Contractor that the damage can be successfully and properly repaired, then the Contractor may repair the well, if the process appears feasible to the City and its Representative(s). The repair work must be agreed upon beforehand by the City and its Representative(s), and the City reserves the right to reject any repair work performed on the well, if that repair work is not performed to its satisfaction. All work required repairing the well and all additional materials, labor and equipment required, shall be furnished by the Contractor at the expense of the Contractor and no additional compensation shall be made or allowed.

If any of the casings should collapse prior to well completion, they shall be withdrawn and replaced at the Contractor's expense. If the casing cannot be withdrawn or removed then the well will be destroyed in accordance with the State Department of Water Resources (DWR) and/or LACDEHS guidelines, and the Contractor will be required to move to another position designated by the City and drill and construct a new well. All new work required replacing the well and all additional materials, labor and equipment required, shall be furnished by the Contractor at the expense of the Contractor and no additional compensation shall be made or allowed by the City.

9.4 MEASUREMENT AND PAYMENT

9.4.1 12-INCH ID BLANK WELL CASING (Bid Item No. 9A)

The 12-inch ID Type 304L stainless steel blank well casing for each well shall be paid at the unit price per lineal foot. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to emplace 12-inch ID, 1/4-inch wall, Type 304L stainless steel blank well casing, in accordance with Table A1 and the attached Plans and as recommended by the

City's Representative(s), complete in place per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

9.4.2 12-INCH ID LOUVERED WELL CASING (Bid Item No. 9B)

The 12-inch ID Type 304L stainless steel louvered well casing for each well shall be paid at the unit price per lineal foot. The price shall constitute full compensation for all labor, material, equipment and incidentals required to intersperse 12-inch ID, 1/4-inch wall, Type 304L stainless steel Super-flo louvered well casing, in accordance with Table A1 and the attached Plans and as recommended by the City's Representative(s), complete in place per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

9.4.3 12-INCH ID CELLAR PIPE AND END CAP (Bid Item No. 9C)

The 12-inch ID Type 304L stainless steel cellar pipe for each well shall be paid at the unit price per lineal foot. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to emplace 12-inch ID, 1/4-inch wall, Type 304L stainless steel blank cellar pipe with a Type 304L stainless steel end cap in the well, in accordance with Table A1 and the attached Plans and as recommended by the City's Representative(s), complete in place per Plans and Specifications.. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

9.4.4 3-INCH ID GRAVEL FEED TUBE (Bid Item No. 9D)

The permanent Low Carbon Steel gravel feed tube in each well shall be paid at the unit price per lineal foot. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to emplace the 3-inch ID LCS blank pipe in accordance with Table A1 and the attached Plans and as recommended by the City's Representative(s), complete in place per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

9.4.5 2-INCH ID PRESSURE TRANSDUCER TUBE (Bid Item No. 9E)

The Type 304L stainless steel pressure transducer tube (i.e., the sounding tube) for each well shall be paid at the unit price per lineal foot. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to place 2-inch ID stainless steel blank pipe in accordance with Table A1 and the attached Plans and as recommended by the City's Representative(s),, complete in place per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

9.4.6 3-INCH ID AIR VENT TUBE (Bid Item No. 9F)

The Type 304L stainless steel air vent tube at each well shall be paid at the unit price per lineal foot. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to emplace 3-inch ID Type 304L stainless steel blank pipe in accordance with Table A1 and the attached Plans and as recommended by the City's Representative(s), complete in place per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

10 SECTION 10: PILOT HOLE BOTTOM SEAL (Bid Item No. 10)

10.1 SCOPE

This section covers the optional sealing of the lower portion of the borehole, at any time following completion of reaming operations and prior to emplacement of the gravel pack, if decided upon by the City's Representative(s). A bentonite seal (plug) may be placed into the depth interval specified by the City's Representative(s) for this bid item and in accordance with Exhibit A, Table A1, and as specified herein. The placement of this seal in the bottom of the borehole is to be performed only upon the specific written request of the City's Representative(s).

10.2 CONSTRUCTION METHOD

If needed, the Contractor shall furnish services including all labor, material, and equipment required to install a non-shrinking bentonite seal (plug) within the depth zone near the bottom of the reamed borehole, as specified by the City's Representative(s). Granular bentonite shall be employed in constructing this seal and this material shall be emplaced via the use of a tremie pipe. This seal may be mixed with fine sand, such as a No. 30 sand gradation, or similar, on a 1:1 mix ratio, in order to facilitate seal emplacement and as approved by the City's Representative(s).

10.3 MEASUREMENT AND PAYMENT

The bottom hole seal at each well will be paid at the per lineal price basis. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to place a 20-foot long cement seal in the bottom of the pilot hole for each well as specified by the City's Representative(s), complete in place per Plans and Specifications. It is estimated that the cement plug may be placed between the depths of 190 ft to 200 ft bgs. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s). The City or its Representative(s) reserves the right to delete this bid item.

END OF SECTION

11 SECTION 11: GRAVEL PACK (Bid Item No. 11)

11.1 SCOPE

Work under this bid item shall consist of providing and installing an engineered gravel/sand pack in the annulus of the reamed borehole adjacent to the blank well casing and louver, in accordance with Table A1, in Exhibit A, the attached Plans, and as specified herein unless otherwise directed in writing by the City's Representative(s).

11.2 CONSTRUCTION MATERIALS

The gravel used for packing shall be hard, water worn, and washed clean of silt, fine sand, dirt, and foreign matter. Crushed gravel will not be accepted. The gravel shall be well rounded and graded, and subject to the approval of the City's Representative(s). The gravel pack gradation must be compatible with the formation sediments encountered and the approximately 0.060-inch slot size opening for the louvered casing being considered for use. A No. 8 X 16 Tacna Sand and Gravel (Tacna), or similar, shall be in the annulus of the borehole ream, forming the gravel envelope, installed in the following approximate depth intervals:

Depth of Gravel Pack Per Well

55 ft to 200 ft bgs

All gravel must be brought to and stored at the site in closed containers (e.g., "supersacks"). A description and current sieve analysis of the actual gravel packing materials to be delivered to the site must be submitted for approval to the City's Representative(s) at least 48 hours prior to the anticipated placement of the material in each well. The City's Representative(s) may elect to have a certified testing laboratory perform a sieve analysis to verify conformance with the approved sample. Failure to meet gradation of the approved sample shall be grounds for rejection. While in the supersacks at the well site, the gravel pack shall be protected and kept free of all foreign matter.

The Contractor must also submit all weigh tickets for the gravel transported to the site at least 48 hours prior to installation. If the specified gravel is not available at the time of construction, then the Contractor will submit a sample and a gradation analysis of a comparable type of gravel to the City's Representative(s). The City's Representative(s) will make a determination prior to installation as to the adequacy of the gravel to be used for the pack.

Prior to the installation of any casing, the City's Representative(s) will assess the delivered gravel pack for compatibility with the well casing and with the final well casing design. Any deviation unacceptable to the City's Representative(s) may be cause to reject the gravel pack (and/or well casing). If the gravel pack is unacceptable and rejected by the City's Representative(s), the Contractor shall replace the gravel pack with an acceptable replacement at the Contractor's sole expense.

11.3 CONSTRUCTION METHODS

Following installation of the casing or the borehole bottom seal (if emplaced), the drilling fluid shall be properly thinned with clean water. The Contractor shall also determine his own estimate of the volume of gravel to be installed based on his review of the caliper log. The quantity of

gravel pack placed in the annulus shall not be less than the calculated volume plus 10%. A lesser quantity of gravel will be judged to be an indication of possible voids and corrective measures shall be undertaken to rectify the situation. If the borehole does not take the calculated volume of gravel pack plus 10 percent, with allowances for normal losses, settling and calculation differences, the City and/or its City's Representative(s) may have cause to reject the well.

The gravel pack, as specified, shall be installed in the annular space between the reamed borehole and the well casing through a temporary $2^{7}/_{8}$-inch OD tremie pipe. A circulating system with one or more positive displacement pumps utilizing fresh water shall be used for the purpose of introducing the gravel into the annular space. The gravel pack shall be placed by pumping through the bottom of the temporary tremie pipe which shall be extended a maximum of no greater than 45 ft above the top of the gravel being placed at any time.

As gravel pack installation progresses, the temporary tremie pipe shall be gradually withdrawn from the annular space. During the entire gravel packing operation, clean or clarified water shall be circulated through the annular space between the wall of the borehole and well casing. The use of that water displaced during installation of the casing, gravel pack and cement seal is allowed, provided it is clarified by settling and/or using a flocculant, until it has a low turbidity. After the gravel is installed, a swab shall be carefully worked opposite all louvered sections of casing. As the gravel settles in the annular space, more gravel shall be added via the tremie pipe. This operation shall be continued until there is no further measurable settlement of the gravel pack.

Near the end of gravel packing, the Contractor shall place 5 ft of No. 30 (plaster) sand on top of the gravel pack within the annulus, to aid in preventing cement filtrate from seeping downward into the underlying gravel pack.

11.4 MEASUREMENT AND PAYMENT

The gravel envelope at each well shall be paid at the unit price per lineal foot. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to install No. 8 X 16 gradation Tacna gravel, or equivalent, in each well, in accordance with Table A1 and the attached Plans and as recommended by the City's Representative(s), complete in place per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

12 SECTION 12: ANNULAR GROUT SEAL (Bid Item No. 12)

12.1 SCOPE

Work under this section shall consist of providing and installing a sand-cement grout in the annular space from the top of the plaster sand (which directly overlies the gravel pack) up to a depth of 5 ft bgs, in each well, as specified herein and as shown in Table A1, Exhibit A, and the attached Plans, unless otherwise specified in writing by the City's Representative(s).

12.2 CONSTRUCTION MATERIALS

The annular grout seal shall be a 10.3-sack mix sand-cement grout. Grout used for the seal shall be Portland cement conforming to ASTM C150, Type II. There shall be not more than two parts by weight of sand to one part by weight of cement. The water-cement ratio shall be about 7 gallons per sack of cement (94 pounds). All onsite water additions shall be metered. Up to 5 percent bentonite gel and 2 percent calcium chloride may be added if deemed necessary, and if approved by the City's Representative(s) in writing.

12.3 CONSTRUCTION METHODS

The grout shall be emplaced in the annular space in lifts (as determined solely by the Contractor), between the well casing and the borehole walls, from bottom to top by means of a temporary $2^{7}/_{8}$-inch OD tremie pipe. The grout shall be placed by a positive displacement method using pumping.

The temporary tremie pipe shall extend from ground surface to the bottom of the zone to be sealed, i.e., to the top of the plaster sand (just above the top of the gravel pack). Grout may then be placed, from bottom to top, in a continuous operation unless determined by the Contractor that a staged placement is required to prevent casing collapse. The temporary tremie pipe shall be slowly raised as the grout is placed, but the discharge end of the temporary tremie pipe must be submerged in the emplaced grout at all times until grouting is completed. The temporary tremie pipe shall be maintained full of grout, to the surface, at all times until completion of the entire grout seal. Following placement of the annular grout seal, no further work shall be performed in the well for a minimum of 24 hours. No standby time will be paid while the grout seal is setting.

The Contractor shall be responsible for computing the casing collapse potential during grouting and shall take whatever precautions necessary, including conducting the grout sealing in stages, in order to prevent damage to the well casing. In the event the borehole (or the casing) collapses prior to completion of the grout seal, the Contractor, at his own expense, shall take whatever remedial steps are necessary to reopen the borehole annulus and place the seal as specified.

The Contractor shall keep a record of the volume of grout used. The grout volume shall not be less than the calculated volume of the annular space between the conductor casing or the reamed borehole and the well casing. The Contractor shall make a determination, prior to installation, as to the volume of grout to be used. If the borehole does not take the calculated volume plus 10 percent of the cement, with allowances for normal losses, settling and calculation differences, the City and/or its Representative(s) may have cause to reject the well.

12.4 MEASUREMENT AND PAYMENT

The annular grout seal in each well shall be paid at the unit price per lineal foot. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to place

the grout in each well in in accordance with Table A1 and the attached Plans and as recommended by the City's Representative(s) complete in place per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

13 SECTION 13: GYROSCOPIC ALIGNMENT TESTING (Bid Item No. 13)

13.1 SCOPE

Work on this bid item shall consist of testing to determine the plumbness and alignment of the installed well casing using gyroscopic methods in each well as specified under Exhibit A, Table A1, and as specified herein, unless otherwise directed by the City's Representative(s). The alignment test may be performed at any time after the annular grout seal has set.

13.2 TESTING METHODS

Tests to determine the plumbness and alignment of the casing shall be made by the Contractor after the casing has been installed and before the acceptance of the new well by the City. The casing in the completed well shall be sufficiently plumb and aligned so that there will be no interference with installation, alignment, operation or future removal of the permanent pump to any depth within the installed casing. The alignment of the casing shall be performed with a gyroscopic-type tool, or similar type tool as accepted by the City's Representative(s). Deviation measurements with the tool shall be collected every 10 feet, or at an interval as specified in writing by the City's Representative(s).

The well casing shall be installed with a vertical alignment such that a line drawn from the center of the well casing at ground surface to the center of the well casing at the bottom of the alignment survey interval shall not deviate from the vertical by more than 6 inches in 100 feet of length in the same direction and shall be no closer than 5 inches to the wall of the final borehole.
If upon review of the data by the City or the City's Representative(s), it is found that the well is not sufficiently plumb and aligned to the maximum depth of the deviation survey, this could constitute rejection of the well by the City. In this case, the well shall be destroyed and another well drilled and constructed on the property at the Contractor's sole expense.

13.3 MEASUREMENT AND PAYMENT

The alignment survey for each well shall be paid at the unit lump sum price basis. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to perform a gyroscopic survey to test the alignment and deviation of the pump house casing to a depth of approximately 180 ft bgs in each well per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

14 SECTION 14: STANDBY TIME (Bid Item No. 14)

14.1 SCOPE

During the progress of drilling operations, it may be necessary for the City and/or its Representative(s) to perform and evaluation/analysis of data that will require the drilling crew and equipment to stand idle. In such event, the City's Representative(s) shall request the Contractor in writing to cease operations and shall state the anticipated extent or duration thereof. The Contractor shall promptly furnish such assistance and cease operations.

However, specifically excluded under this bid item is the time reserved by the City's Representative(s) following receipt of the downhole geophysical survey logs (Bid Item No. 5). Also excluded from chargeable standby time is any rig time associated with awaiting: the laboratory results associated with isolated aquifer zone testing (Bid Item No. 6B); the Final well design from the City and/or its Representative(s); or the time for the Contractor, the City and its Representative(s) to review the caliper and magnetic deviation surveys (Bid Item Nos. 8A & 8B).

14.2 MEASUREMENT AND PAYMENT

Standby time will be paid on an hourly rate. For bidding purposes, a total of 24 hours are estimated for standby time, if required, at each well. The actual hours of standby time must be approved by the City's Representative(s) and will apply only during working hours.

END OF SECTION

15 SECTION 15: MECHANICAL WELL DEVELOPMENT (Bid Item No. 15)

15.1 SCOPE

Mechanical well development shall be conducted under this section for the specified number of hours as shown in Exhibit A, Table A1, and as specified herein, unless otherwise directed by the City's Representative(s). Mechanical well development is to be initiated within 24 hours following the end of the 24-hour set-up time period required for the annular cement seal, and shall consist of surging the well within the perforated casing intervals in order to wash drilling fluids and cuttings from the gravel pack and well bore and then to remove these materials from the well by simultaneous airlift pumping. Temporary storage tanks will be used to contain the fluids, as necessary. Refer to Section 23 of the Additional Special Provisions for details regarding disposal of development and testing water. The Contractor is reminded that particular care must be exercised during all mechanical (and chemical) development operations, when using the swabbing tools, to preclude damage to any portion of the entire well casing and its perforations.

15.2 MECHANICAL DEVELOPMENT PROCEDURES

First Phase

The use of an open-ended, single-swab block tool attached to the end of the drill pipe shall be the initial step in the development process. The purpose of this first phase is to clean out the majority of the heavy fluids and sediment from the well casing. This tool shall be moved up and down 4 or 5 times in each 20-foot section of perforations during airlifting. After working the tool to the bottom of the well, all sediment in the bottom of the well casing shall be removed by airlifting.

Second Phase

This phase of mechanical development shall be performed with a double-swab tool consisting of a rubber packer assembly near each end of an approximately 20-foot long perforated tube which is to function as the intake zone for fluids and sediment. The outside diameter of the swabs shall be not less than 1-inch smaller than the inside diameter of the perforated sections of casing, and the downhole end of the perforated tube shall be capped.

Development shall begin at the uppermost perforated section of the casing with simultaneous swabbing and airlifting, and shall continue to each successively lower 20-foot long section of perforated well casing until the discharge has a turbidity not greater than 300 Nephelometric Turbidity Units (NTUs), or a clarity as approved by the City's Representative(s). The clarity may be measured with the use of a glass jar and the City's Representative(s) will instruct the Contractor on the degree (measurement) of clarity that is acceptable prior to moving to the next interval. Following such determination, the assembly shall be lowered to the next 20-foot interval of perforations, and the procedure repeated until all screened or perforated sections of the well casing have been mechanically developed. It is anticipated that each 20-foot zone of perforations will require on the order of 2 to 4 hours of such simultaneous swabbing and airlifting.

While in each 20-foot perforated section, the Kelly bar shall be used to move the tool assembly up and down 4 or 5 times within shorter sections of the respective 20-foot perforated zone. Following this, tool movement shall then cease for approximately 10 to 15 minutes while continuing to airlift water from the well. When the discharge again clears, the tool assembly shall again be moved up and down while continuing to airlift. The process shall be repeated until water

produced from the 20-foot perforated section has cleared sufficiently to permit moving the entire tool assembly to the next 20-foot section, and then repeating the process.

The Contractor shall provide adequate air compressor capacity in both volume (CFM) and pressure (PSI) to maintain the proper relationships between air pressure/air volume capacity and diameters and lengths of both drill pipe and air tubing in order to maintain airlifting efficiency during mechanical development.

During mechanical development, potable water shall be allowed to flow down into the gravel feed tube through a garden hose. However, if water is unable to flow through this tube, then the Contractor shall take action to clear the tube until there is an adequate flow of water (the rate at which the garden hose flows).

Upon completion of mechanical development, the well shall be accurately sounded to determine the level of accumulated sediment in the bottom of the well casing. The sediment level shall be recorded in the driller's daily log. If the sediment fill level is more than 5 ft below the bottom of the lowermost section of perforations, the Contractor may proceed with installation of the test pump. If the sediment fill in the bottom of the casing lies within any portion of the lowermost perforated interval, this fill shall be removed by bailing prior to installation of the test pump.

Mechanical development fluids shall be directed to onsite temporary fluid storage tanks where the sediment will be allowed to settle to the bottom of the tank. The tanks shall be discharged to the onsite discharge pond or to an offsite discharge point, if feasible.

If chemical well development is to be conducted (see Section 16 of these Technical Provisions), the chemicals shall be injected into the casing through the double-swab tool. Chemical injection shall be in intervals determined by the City's Representative(s). The double-swab tool shall be moved up and down the extent of the Kelly several times after each injection of chemicals.

15.3 MEASUREMENT AND PAYMENT

Mechanical development of each well shall be paid on a per-hour basis. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to mechanically develop each well for approximately 60 hours (120 hours total), complete per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s). Any additional mechanical development time, as needed to completely develop these wells or any reduction in the estimated number of mechanical development hours, shall be approved by the City's Representative(s) and shall be paid at the same unit hourly rate for this bid item.

END OF SECTION

16 SECTION 16: CHEMICAL DEVELOPMENT (Bid Item Nos. 16A & 16B)

16.1 SCOPE

If decided upon by the City's Representative(s), the well shall be superchlorinated and/or chemically developed with a polymer dispersant for the purpose of dispersing any residual wall cake in the bore. Chemical well development shall be done at a time after the placement of the annular grout seal, but typically during the first phase of mechanical development. This is an optional task, and the City and/or its City's Representative(s) reserve the right to delete this task. The Contractor will perform chemical development in two stages to be conducted following the first phase of mechanical development.

16.2 QUANTITIES

Quantities of chemicals needed for well development in the well depend on the volume of water in the well casing and the volume of the water in the gravel pack adjacent to the sections of louvered well casing. Sodium acid pyrophosphate (SAPP) or other chemicals containing phosphates or other potential biological nutrients will not be permitted for use in chemical development.

Chlorine

A NSF-approved chlorine solution shall be used only if a polymer drilling additive (e.g. bentonitic type additives or Polybore) is used during drilling and reaming. For bidding purposes, the total estimated amount of the chlorine solution (12½% strength solution) needed per well for the first stage of chemical development is as follows:

Amount of 12% Chlorine Solution Needed Per Well

20 gallons

Polymer Dispersant

A polymer dispersant, such as NW-220®, AQUA CLEAR PFD™, Thermo-Thin, or equivalent) shall be used during the second stage of mechanical development of the well. For bidding purposes, the total estimated amount of polymer dispersant needed per well for chemical development is as follows:

Amount of Dispersant Needed Per Well

2 gallons

16.3 METHOD OF CHEMICAL DEVELOPMENT

First Stage

If a polymer additive is used in the drilling fluid, then chemical development will begin with superchlorination of the well. This initial stage of chemical development will consist of installing and agitating into each section of louvered casing, using the open-ended single-swab tool, a 12.5% chlorine/water solution. This solution will be pre-mixed prior to placing it downwell. Following placement of the chlorine solution, the zone shall be agitated by moving the single-swab tool up and down throughout each section of louvered casing, beginning in the lowermost section of louvered casing and continuing upward in the well until completed. This chemical shall remain in the well for a period of not less than 12 hours.

The Contractor will not be compensated for any downtime incurred during this 12-hour period. Following this downtime period, the Contractor will re-enter the well with the single-swab tool and evacuate water from casing storage in the well and transfer it to a (Baker® or Rain For Rent®) tank. De-chlorination of the discharge will be necessary, prior to discharge to the local storm drain system.

Second Stage

This second stage of chemical development shall consist of placing the polymer dispersant into each section of louvered casing in the well. The polymer dispersant can be added immediately to each 20-foot-long section of louvered casing following evacuation of water from the well with the single-swab tool. Following installation of the polymer dispersant throughout the louvered sections of the well casing, the Contractor shall agitate the fluid column in the well. Mechanical development using the double-swab tool can begin following the installation of the polymer dispersant.

16.4 MEASUREMENT AND PAYMENT

Chemical development at each well shall be paid at the unit price in volume (gallons) for each solution used. The price shall constitute full compensation only for the actual quantities of material used to chemically develop each well per Plans and Specifications. For bidding purposes, Bid Item No. 16A will consist only of providing NSF-approved 12.5% chlorine solution, whereas Bid Item No. 16B for the well is for polymer dispersant at the preliminary quantities estimated above. For each stage of chemical development, payment for the Contractor's time and equipment for installing these chemicals into the well are to be included only under Bid Item No. 16 (Mechanical Development). The City's Representative(s) reserves the right to delete either Bid Item No. 16A or 16B.

END OF SECTION

17 SECTION 17: COLOR VIDEO SURVEYS (Bid Item No. 17)

17.1 SCOPE

The work under this section entails the performance of three (3) video surveys at each well (6 video surveys total), as deemed necessary and if requested by the City and/or its Representative(s). The first color video survey at the well will be performed following completion of mechanical development operations to check the condition of the perforations following mechanical development. If this first video survey indicates additional development is needed, then a second video survey will be performed following that additional mechanical and/or chemical development. A third, and final, video survey will be performed following removal of the temporary test pump.

Based on review of the first video survey log by the City's Representative(s) and/or the City, sediment fill or other debris occur within the louvered intervals of the well or in the cellar pipe, the Contractor shall remove this material at no additional expense to the City. Additionally, if review of the first video survey log reveals/shows louvers or sections of louvers that appear to be plugged and/or coated, indicating insufficient development, then the Contractor will be required to wire-brush those sections and to perform additional mechanical development and/or chemical development operations. Based on review of the second video survey log, if sediment fill or other debris occur within the louvered sections of the well casing or in the cellar pipe, the Contractor shall remove this material at no additional expense to the City.

17.2 VIDEO SURVEY METHOD

The Contractor shall furnish all labor, material and equipment required to provide three color video surveys of the installed well casing at each well site, as requested by the City. The camera shall have both vertical- and sideway-viewing capabilities. As the camera probe surveys the full casing interval, a digital depth record shall be recorded on the videotape for reference using the sideway viewing lens set to zero at ground surface. The Contractor shall introduce clear water into the well for a sufficient period of time and add a flocculant, as necessary, in order to produce clear viewing conditions. Prior to the third and final video survey, the camera shall be disinfected prior to lowering into the well.

Should any of the video surveys fail to produce a clear picture of the internal casing conditions throughout the total depth of the well, additional clear water preparations shall be instituted and additional video surveys conducted until a clear video record is obtained of all casing. This extra work, if needed, shall be accomplished at the Contractor's expense. There will be no additional payment for rig time or idle time while each survey is being run. When a successful video survey has been acquired, two (2) copies of each video survey in DVD format and one copy of the video survey report in paper and/or Adobe Acrobat PDF shall be provided to City's Representative(s).

If, based on review of the video survey log by the City and/or its Representative(s), the log shows sediment fill or other debris within the perforated interval of the well, the Contractor shall remove this material (by such methods as wire brushing and bailing) at no additional expense to the City.

17.3 RECORDS

Each video should have a title at the beginning indicating the well name, the date of the video survey, and the zero depth point (e.g. ground surface); these items should be captured on the video at the side-looking position. The video survey report should include, at a minimum, the

name of the video company, name of the operator, camera/rig/van number, name of the well, location of the well (streets and/or GPS coordinates), arrival time, departure time, name of City's representative (if on site), date of the video, type of video (static/non-pumping or pumping), zero depth reference point (e.g. top of casing), distance between side-view camera and downhole camera, distance between downhole camera and light source, casing/well diameter, depth (from side-view camera) of top and bottom of each perforated interval, type of perforations, casing/louvers condition (including amount of sediments in louvers, if any), water entry/exit points/intervals (e.g., based on particle movement in water and/or clarity or cloudiness of the water), and total depth of the well/video (e.g., top of fill or bottom of well casing).

17.4 MEASUREMENT AND PAYMENT

Each of the color video surveys for the two wells shall be paid at the unit lump sum price. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to perform three color video surveys for each well (6 video surveys total), complete per Plans and Specifications. An additional video survey will be performed at the Contractor's expense, as noted above, if water conditions during any of the video surveys are too turbid for complete observation of the entire well casing.

END OF SECTION

18 SECTION 18: TEMPORARY TEST PUMP (Bid Item Nos. 18)

18.1 SCOPE

The work on this bid item shall consist of furnishing, installing and then removing and demobilizing a temporary test pump to the well site(s), in accordance with Table A1, in Exhibit A, and as specified herein, unless otherwise directed in writing by the City's Representative(s). Work shall consist of installing a temporary deep well test pump powered by a diesel or gasoline engine to perform pumping development and all subsequent pumping tests. Following completion of testing, this deep well test pump shall be removed from the first well and installed in the second well before being transported offsite. This pump shall have a pumping capacity of at least 500 gpm against a total dynamic head of at least 150 ft.

18.2 METHOD

Prior to test pump installation, the well shall be sounded to determine the depth of sediment fill, if any, in the bottom of the casing. If the sediment fill level in the bottom of the casing lies within any portion of the lowermost section of the louvers, then the Contractor, at his sole expense, shall bail this sediment fill prior to installation of the test pump. The Contractor must exercise care in the installation of the pump so that the louvered well casing is not damaged.

The pump intake shall initially be installed for pumping development purposes to the depth of 150 ft bgs, or at a depth as specified in writing by the City's Representative(s), following mechanical development of the well.

After removing the test pump from the well, the Contractor shall remove any oil from the water surface within the well (e.g., test pump lubricating oil). An acceptable method of removal is to lower, via a cable, an oil absorbent "sock" or similar material designed to absorb spilled oil. Following this, the Contractor shall sound the depth of the well to determine if any sediment fill has accumulated in the bottom of the casing during pumping development and test pumping.

Shortly following pump removal, wire brushing of the entire well casing will be performed and all sediment fill and any foreign objects (e.g. metal debris) shall then be removed from the bottom of the casing via bailing methods, if necessary.

18.3 EQUIPMENT

The test pump shall be a deep well turbine type. The capacity of the pump shall not be less than that specified in Table A1, Exhibit A, or as specified in writing by the City's Representative(s). The prime mover shall be a variable-speed type. Along with the pump and column, the Contractor shall also install a temporary, minimum 1-inch ID, PVC pipe to provide access to the well for a sounder or other tools, as may be needed. This PVC pipe shall be securely attached to the pump column and the bottom opening of the pipe shall be designed/modified so that any tools lowered into the perforated section of the casing below the pipe will not become lodged when removed.

The Contractor shall also provide accurate dual reading flow meters, in gpm for the instantaneous rate dial meter and total gallons pumped, for the totalizing odometer meter, or other approved devices, that will accurately monitor both instantaneous flow rates and total flow volumes during all pumping work. The meter used by the Contractor shall have been recently calibrated and a record showing this calibration will be provided to the City and/or its Representative(s), prior to installation. Discharge piping shall be provided for the pumping unit, and be of sufficient size and length to conduct water to the offsite discharge point.

The engine shall be equipped with suitable throttling devices to control and vary discharge rates as necessary. The test pump shall not be equipped with a foot valve, which would prevent backspin and interfere with surging operations. The discharge line shall be provided with suitable equipment for regulating flow during testing and measuring sand content, such as gate or butterfly valves and a Rossum Centrifugal Sand Sampler (American Water Works Association A100-06, AWWA Standards for Water Wells, 2006). The required pumping unit shall be capable of being operated without interruption for a continuous period of 72 hours during subsequent aquifer testing operations.

18.4 RECORDS

The Contractor shall keep accurate records of the pumping development process and furnish copies of all records to the City or its Representative(s) upon completion of development. The records shall also be available to the City's Representative(s) for inspection at any time during development operations. Development records shall be maintained on at least a half-hour basis showing production rate, pumping level, drawdown, specific capacity, sand production, and all other pertinent information concerning well development. During development all water level measurements shall be referenced to an arbitrary reference point established at the top of the sounding tube, or as specified by the City's Representative(s).

The Contractor shall also keep records on the type of pumping equipment used including engines, drive components, bowls, lines, and shafts. The Contractor will keep records of operation of equipment during the test including engine rpm and horsepower, fuel use, and other essential information that will be useful in designing a pump system. The Contractor shall also provide in record the pump setting depth(s) used during pumping development, including length of pump column, bowls, and any suction pipe used.

18.5 MEASUREMENT AND PAYMENT

Installation and removal of the test pump at each well shall be paid at the unit lump sum price. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to install a test pump in each well to a depth of 150 ft bgs, maintain the test pump, and remove the test pump, complete in place per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

END OF SECTION

19 SECTION 19: PUMPING DEVELOPMENT (Bid Item No. 19)

19.1 SCOPE

Pumping development shall be conducted at each well as specified herein and in accordance with Table A1, in Exhibit A, unless otherwise specified in writing by the City's Representative(s). Pumping development will consist of operating a temporary deep well test pump to further remove fine-grained formation sediments and drilling fluids prior to conducting the final pumping tests of the well. Refer to Section 23 of the Additional Special Provisions and Exhibit C, for details regarding treatment, monitoring and disposal of water.

19.2 PUMPING DEVELOPMENT PROCEDURES

Pumping development shall consist of intermittent pumping and surging of the well, beginning at an initial rate of 50 gpm, and shall continue at successively higher rates until the water is clear. Surging shall allow water to flow back through the bowls with free backspin and through the casing perforations. The pump shall then be started and stopped several times and then pumped at 50 gpm until the water is clear. The procedure shall be repeated at approximately 50 gpm increments up to the maximum rate specified (see Table A1 in Exhibit A) or as recommended by the City's Representative(s).

Development at each rate shall continue until the following conditions have been met:

a) There shall be no settlement of the gravel pack.

b) The specific capacity (gallons per minute per foot of drawdown) shall have reached a relatively constant value over a period of at least 4 continuous hours, or as recommended by the City's Representative(s).

c) The sand content is no greater than 3 parts per million (ppm) measured 15 minutes after surging, or as recommended by the City's Representative(s), while pumping at the specified rate.

During mechanical development, potable water shall be allowed to flow down into the gravel feed tube through a garden hose. However, if water is unable to flow through this tube, then the Contractor shall take action to clear the tube until there is an adequate flow of water (the rate at which the garden hose flows).

19.3 DISCHARGE WATER

Discharge water shall be conveyed from the pump to the point of discharge at the offsite discharge point. It is imperative to ensure that no damage by flooding or erosion is caused to the offsite discharge point by the pumped groundwater. Modifications may need to be performed by the Contractor to the offsite discharge point, in order to accommodate the anticipated discharge volumes. The Contractor shall provide all discharge piping and other equipment to the offsite discharge point. Refer to Section 23 of the Additional Special Provisions and Exhibit C for details regarding treatment, monitoring, and disposal of water.

19.4 MEASUREMENT AND PAYMENT

Pumping development at each well shall be paid at the unit price per hour. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to develop

the well by pumping for a period of 60 hours, complete per Plans and Specifications. No partial payment will be allowed unless all work has been completed and accepted by the City's Representative(s).

The City will pay for a maximum of 60 hours of pumping development at each well (120 hours total). The Contractor shall continue pumping development until the conditions stated in Section 19.2 of these Technical Provisions are satisfied. Additional or fewer pumping hours for development, as deemed necessary and as recommended by the City or its Representative(s), shall be paid for at the same unit hourly rates for this bid item.

END OF SECTION

20 SECTION 20: PUMPING TESTS (Bid Item Nos. 20A & 20B)

20.1 SCOPE

The Contractor shall test each well by conducting a step drawdown test and a constant rate pumping test to determine the optimum rate of pumping and assist in collecting accurate water level measurements during testing operations. Refer to Section 23 of the Additional Special Provisions and Exhibit C, for details regarding treatment, monitoring and disposal of water. There shall be a period of at least 24 hours of non-pumping conditions following completion of pumping development, prior to the start of the step drawdown test, unless otherwise directed by the City's Representative(s).

The Contractor shall also provide qualified personnel on a 24-hour basis during the step drawdown and constant rate pumping tests to assure proper operation of the pumping test equipment to monitor pumping rates, and to assist in water level monitoring if requested by the City's Representative(s).

20.2 STEP-DRAWDOWN TEST

Prior to starting the step drawdown test, a manual measurement of the initial pre-test static water level shall be made by the Contractor using an operable electric sounder. There shall be a period of at least 24 hours of non-pumping conditions following development work prior to the start of the step drawdown test. The well shall be "step" tested at rates of approximately ¾, 1, 1¼, and 1½ times the design capacity of the well and shall be a maximum of 12 hours in duration, unless otherwise directed by the City's Representative(s).

The Contractor shall operate the pump at a constant rate for each pumping step, and change (increase) the pumping rate up to the next (and higher) step rate as recommended by the City's Representative(s) as the test proceeds. Discharge of the pump shall be controlled by both a gate valve and an engine throttle. The discharge shall be controlled and maintained at approximately the desired discharge for each step rate with an accuracy of plus or minus 5 percent. Pump discharge shall be measured with an instantaneous flow meter and a totalizing meter and a stopwatch or other device as approved by the City's Representative(s).

Both an airline and electric tape water level sounder shall be furnished by the Contractor. The Contractor shall assist in collecting and recording accurate water levels during all pumping operations and pumping tests. Sand content measurements using a Rossum Tester shall be recorded at appropriate time intervals by the Contractor during the step drawdown test.

20.3 CONSTANT RATE PUMPING TEST

After a 12- to 24-hour water level recovery period following the end of the step drawdown test, a constant rate pumping test shall be conducted by pumping the well at the constant rate determined by the City's Representative(s) and for a maximum continuous period of approximately 48 hours, or until the pumping level remains constant for at least 4 hours and the City's Representative(s) terminates the test. A water level recovery monitoring period of 12 to 24 hours shall follow the termination of the constant rate pumping test, unless otherwise directed by the City's Representative(s). Water level recovery measurements during this period will also be collected and recorded by the Contractor using an accurate, operable, hand-held water level electric sounding device.

During the constant rate pumping test, the Contractor shall conduct the final sand content testing using a Rossum Sand Tester. The sand content shall be determined by averaging the results of samples collected at the following times during the final pumping test:

1. Five minutes after start of the test;
2. After 1/4 of the total planned test time has elapsed;
3. After 1/2 of the time has elapsed;
4. After 3/4 of the time has elapsed;
5. Near the end of the pumping test.

20.4 ABORTED TESTS

Whenever continuous pumping at a uniform rate has been specified, failure of pumping operations for a period greater than one percent of the elapsed pumping time shall require suspension of the test until the water level in the pumped well has recovered to its original level. Such tests are invalid and will not be construed as a test.

Recovery shall be considered "complete" after the well has been allowed to rest for a period at least equal to the elapsed pumping time of the aborted test, except that if any three successive water level measurements spaced at least 20 minutes apart show no further rise in the water level in the pumped well, the test may be resumed immediately. The City's Representative(s) shall be the sole judge as to whether this latter condition exists. The Contractor will not be paid for any re-testing done if the specified time or recovery requirements of the City's Representative(s) for the aborted test are not first met.

20.5 DISCHARGE WATER

Discharge water shall be conveyed from the pump to the designated point of discharge. It is imperative to ensure that no damage by flooding and/or erosion is caused to the discharge point by the pumped groundwater. Modifications may need to be performed by the Contractor to the discharge point, in order to accommodate the anticipated discharge volumes. The Contractor shall provide all discharge piping and other equipment to discharge the pumped water, as necessary. Refer to Section 23 of the Additional Special Provisions and Exhibit C for details regarding treatment, monitoring, and disposal of water.

20.6 RECORDS

The Contractor shall keep accurate records of the pumping tests and furnish copies of all records to the City's Representative(s) upon completion of the test. The records shall also be available to the City's Representative(s) for inspection at any time during the test. For each test, the records shall include physical data describing the construction features such as, but not limited to:

- Well depth, casing diameter, and length(s) of the well screen(s).
- Pump depth setting.
- A description of the reference measuring point for water levels and its measured height above ground surface.
- The methods used in measuring water levels and pumping rates.
- Actual water level, pumping rate, and sand measurements collected by the Contractor during the testing periods.

20.7 MEASUREMENT AND PAYMENT

Step-drawdown testing of each well shall be paid at the unit price per hour. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to test each well at 3 or 4 separate pumping rate steps at 3 hours each for a maximum of 12 hours, or as directed by the City's Representative(s). Additional or fewer pumping hours as recommended by the City's Representative(s) will be paid for at the same hourly rate shown as shown for this bid item (No. 20A)

A constant rate pumping test of each well shall be paid at the unit price per hour. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to test each well for a maximum test period of 48 hours. Additional or fewer pumping hours as recommended by the City's Representative(s) will be paid for at the same hourly rate as shown for this bid item (No. 20B).

END OF SECTION

21 SECTION 21: WELL DISINFECTION AND CAPPING (Bid Item No. 21)

21.1 SCOPE

The Contractor shall disinfect each well against bacteria following completion of the final video survey of the fully constructed, developed, and tested well (see Section 17 of these Technical Provisions for details on the final video survey). The well and accessory tubes at each site will then be securely capped, following disinfection, in order to prevent entry by unauthorized personnel or animals.

21.2 DISINFECTANTS

Chlorine approved by state or local regulatory agencies shall be used as disinfectant. The disinfectant shall be delivered to the work site in original closed containers bearing the original label indicating the percentage of available chlorine. Dry, granular, 65% calcium hypochlorite ($Ca[ClO]_2$) is considered an acceptable disinfectant. A 12.5% solution of liquid sodium hypochlorite (NaClO) shall be used instead of calcium hypochlorite if the Langelier Saturation Index of groundwater from the well exceeds 0.5. The disinfectant shall have been purchased within 30 days of use. Chlorine compounds in dry form shall not be stored for more than one year. During storage, disinfectants shall not be exposed to the atmosphere or to direct sunlight.

21.3 QUANTITIES

Unless superseded by governmental regulation, the quantity of chlorine compounds used for disinfection shall be sufficient to produce a minimum of 200 parts per million (ppm) chlorine solution, when mixed with the total volume of water in the well. A dosage of approximately 2.5 pounds of $Ca(ClO)_2$ per 1,000 gallons of water filled casing and screen is considered an acceptable method of estimating the amount of disinfectant needed.

21.4 DISINFECTION METHODS

The disinfecting agent shall be uniformly applied throughout the entire water depth of the well. This may be accomplished by using a perforated, capped container (basket) containing the dry chemical and lowering and raising the container by cable throughout the full column of water in the well for a minimum of two (2) hours. If sodium hypochlorite is used, the solution must reach all parts of the well. To accomplish this, a tube shall be suspended in the well so that it reaches the bottom of the casing. After the tube has been extended to the casing bottom, it shall be withdrawn as the sodium hypochlorite solution is pumped through the tube. Dispersion of the disinfectant shall be assisted by pouring into the well a volume of water equal to the volume of water contained in the well, after the disinfectant has been emplaced. This will cause the disinfectant to flow out of the well into the area adjacent to the screen.

21.5 WELL CAPPING

The well casing and accessory tubes at each well shall each be capped upon completion of the final video survey to prevent later entry into the well casing or accessory tubes by unauthorized personnel or animals. The conductor casing, well casing, pressure transducer tube, gravel feed tube, and air vent tube shall each extend 2 ft above ground surface prior to capping. The caps shall consist of at least 1/4-inch thick Type 304L stainless steel or Low Carbon steel plates, where appropriate, and shall completely seal and cover the opening to the top of the well casing and accessory tubes. The caps shall be properly welded, with the weld extending completely around each cap.

21.6 MEASUREMENT AND PAYMENT

Well disinfection and capping for each well shall be paid at the unit lump sum price. The price shall constitute full compensation for all labor, material, equipment, and incidentals required to disinfect and cap the well, per Plans and Specifications.

END OF SECTION

22 SECTION 22: ABANDONMENT AND DESTRUCTION (Bid Item No. 22)

22.1 SCOPE

The Contractor, based on his actions, or at the specific request of the City's Representative(s), may be required to abandon the borehole or destroy the well(s).

22.2 QUANTITY

For bidding purposes, the length of pilot hole or well casing to be abandoned/destroyed is approximately as follows:

Length of Borehole or Well Casing Per Well

250 ft

22.3 ABANDONMENT PRIOR TO INSTALLATION OF WELL CASING

22.3.1 Abandonment Due to Actions of Contractor

If abandonment of the pilot borehole is by reason of any actions of Contractor, including but not limited to such causes as losing tools, damaging the well, misalignment, or any other cause attributed to careless or poor workmanship, the borehole shall be completely filled with bentonite and/or cement, in accordance with applicable State and County Standards for permanent destruction. No payment will be made for drilling and filling the abandoned borehole, or for mobilization and demobilization, and the Contractor shall drill a new borehole within fifty (50) feet of the same location.

22.3.2 Abandonment at Request of the City or the City's Representative(s)

If abandonment of the pilot borehole is specifically requested by the City or its Representative(s) secluding, but not limited to such causes as total lack of potential aquifers, insufficient number of potential aquifers, or unacceptable quality, the borehole shall be completely filled with bentonite and/or cement, in accordance with applicable State and County Standards for such destruction. In this event, the Contractor will be paid for mobilization and demobilization at this site, as well as for the footage of drilling completed. The Contractor may then be requested to re-mobilize at a second test site selected by the City or the City's Representative(s). No payment for stand-by time while awaiting a second well site will be made.

Abandonment hereunder shall also include payment for abandonment of any remaining or unused portion of the pilot hole that is not being used for final well completion.

22.4 DESTRUCTION OF WELL CASING AND/OR WELL LOUVERS

22.4.1 Destruction Due to Actions of Contractor

Destruction of the cased borehole can be caused by reason of any action of the Contractor or negligence. In such event, the Contractor shall pull or leave the casing(s) in place, at his discretion. If the casing is pulled, the borehole shall be destroyed in accordance with applicable State and County Standards. No payment will be granted for lost or damaged casings and/or their installation in a well destroyed by reason of any action of the Contractor. The Contractor shall be required to drill a new well within fifty (50) feet of the original site.

22.5 MEASUREMENT AND PAYMENT

Abandonment of either the pilot hole or destruction of the completed well(s) specifically requested by the City's Representative(s) shall be paid for on a per lineal foot basis per in place at the unit price. The cost by the Contractor will include abandonment procedures performed in accordance with State and/or local County ordinances, as applicable. Payment shall be considered full compensation for furnishing all labor, materials, tools, incidentals, and equipment necessary and incidental to completion of the work, as specifically requested by the City's Representative(s). No payment will be granted for abandonment or destruction due to actions of the Contractor.

END OF SECTON

END OF TECHNICAL SPECIFICATIONS

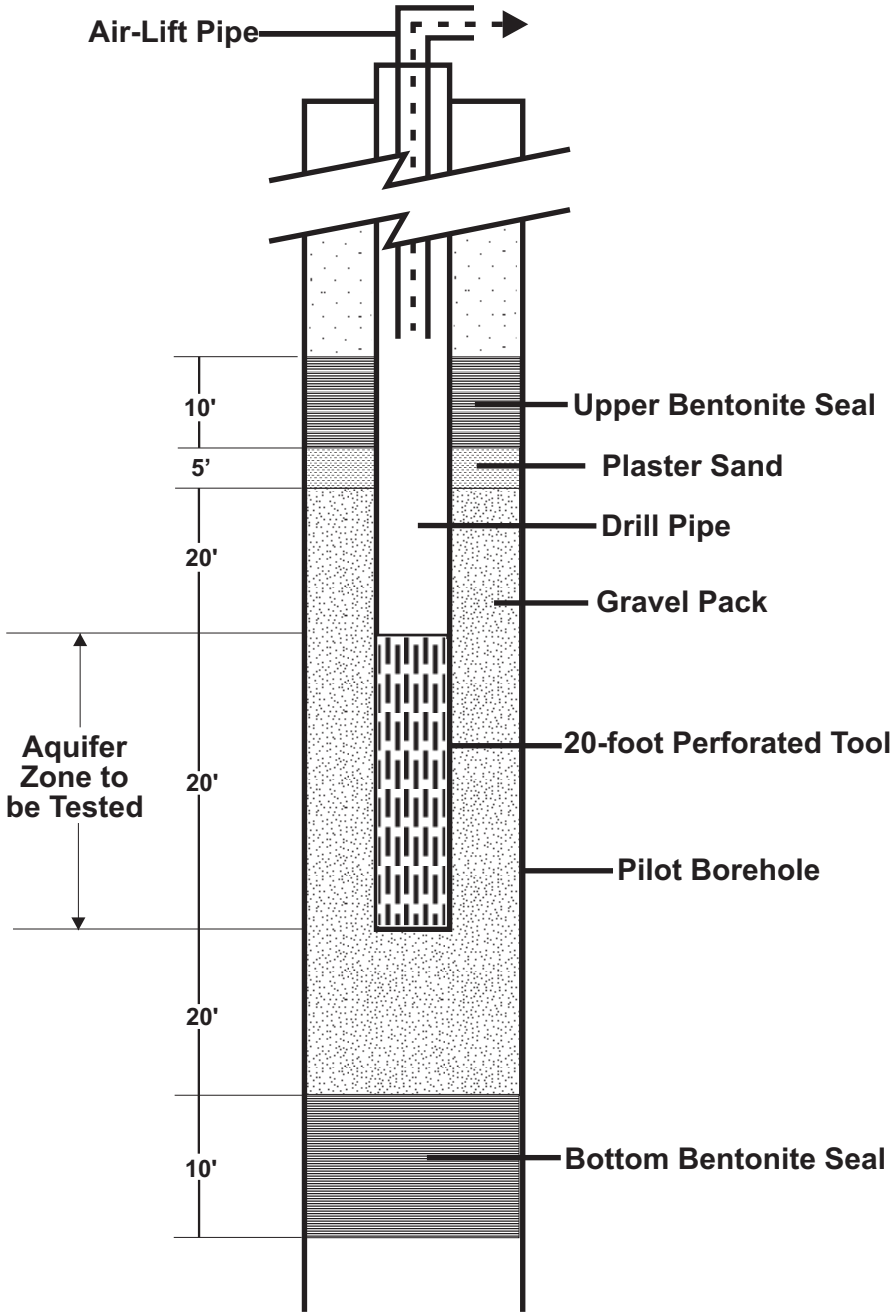
EXHIBIT A
CONSTRUCTION EXHIBITS
FOR
DRILLING OF WELLS 1 AND 2
AT
MAPLE YARD (CITY LOT 9)

Figure A1, “Isolated Aquifer Zone Test Construction Schematic”

Table A1, “Construction Supplement to Special Provisions”

Table A2, “Mandatory Bid Submittals”

Table A3, “Summary of Well Construction Submittals”



Note: Listed intervals are for general reference purposes
Diagram not to scale.

FIGURE A1
ISOLATED AQUIFER ZONE TEST
CONSTRUCTION SCHEMATIC

TABLE A1
CONSTRUCTION SUPPLEMENT TO SPECIAL PROVISIONS
SHALLOW WELL DRILLING PROJECT AT MAPLE YARDS
CITY OF BEVERLY HILLS

Bid Item No(s).	Bid Item Description	Section No.	Specified Items and Quantities (Quantity in Parenthesis is for Two Wells)					
1A	Mobilization/Demobilization	1	Direct (mud) rotary drill rig and ancillary equipment, including all permit and site setup activities.					
1B	Dump Trucks		Use of dump trucks to haul off bentonite-laden drill cuttings.					
1C	Vacuum Trucks		Use of vacuum trucks to haul off bentonite-laden drilling fluids.					
1D	Lost Circulation Materials		Use of additional lost circulation materials.					
2	Discharge Compliance	2	Discharge wastewater in compliance with provisions in Exhibit B.					
3	Conductor Casing	3	Depth: 50 ft bgs, length 50 ft per well (100 ft total).					
			32-inch diameter (minimum) borehole.					
			26-inch OD (minimum) by 1/4-inch thick wall low carbon steel (LCS) ASTM A139, Grade B casing.					
			10.3 Sack Portland Cement.					
4	Pilot Hole Drilling	4	Depth: 6- to 9-inch nominal diameter pilot hole from 50 ft to 250 ft bgs per well (400 ft total).					
5	Downhole Geophysical Surveying	5	Downhole surveys to be performed per well: Spontaneous potential, short- and long-normal resistivity, focused (guard or laterlog3) resistivity, gamma-ray and magnetic deviation surveys.					
6A	Isolated Aquifer Zone Testing	6	Setup 3 sample intervals at specified depths following electric log in one pilot hole.					
6B			Collect 3 sets of samples and pay for laboratory testing of constituents.					
7	Pilot Borehole Reams	7	22 inches in diameter from 50 ft to 200 ft per well (300 ft total).					
8A	Caliper Survey	8	To total depth of the completed reamed borehole per well, as specified.					
8B	Magnetic Deviation Survey							
9A to 9F	**Well Casings & Accessory Tubes**	**9**	**Inside Diameter (inches)**	**Wall Thickness (inches)**	**Type/Name of Casing/Tubes**	**Type of Material**	**Depth Interval Per Well (ft bgs)**	**Total Length for Two Wells (ft)**
	Well Casings							
	Sub-bid Item 9A		12	1/4	Blank well casing (interspersed with louvers)	Type 304L Stainless Steel ASTM A778	+2 to 180	144
	Sub-bid Item 9B				Roscoe Moss Super-flo Louvers with 0.060 inch slot openings.		60 to 180	220
	Sub-bid Item 9C				Blank well casing, including cellar pipe with end cap.		180 to 190	20
	Accessory Tubes							
	Sub-bid Item 9D		3	NA	Gravel feed tube (Schedule 40)	Low Carbon Steel ASTM A53	+2 to 60	124
	Sub-bid Item 9E		2		Pressure Transducer Tube (Schedule 40) with 0.050-inch slots between 60 ft and 180 ft bgs	Type 304L Stainless Steel ASTM A53	+2 to 185	374
	Sub-bid Item 9F		3		Air vent/access tube (Schedule 40)		+2 to 2	8
10	Borehole Bottom Seal	10	To be performed per specifications, if needed, from 190 to 250 ft bgs per well (120 ft total).					
11	Gravel Pack	11	Tacna Sand & Gravel 8 x 16 gradation, or equivalent, including 5 ft of plaster sand from 50 ft to 200 ft bgs per well (300 ft total).					
12	Cement Annular Seal	12	10.3 Sack Portland Cement 5 ft bgs to 50 ft bgs per well (90 ft total).					
13	Alignment of Well	13	Gyroscopic methods to the bottom of the well casing per well.					
14	Standby Time	14	24 hours maximum per well (48 hours total).					
15	Mechanical Well Development	15	60 hours per well (120 hours total) via simultaneous airlifting and swabbing.					
16A	Chemical Well Development - Chlorine Solution	16	20 gallons per well (40 gallons total) of a 12.5% chlorine solution.					
16B	Chemical Well Development - Polymer Dispersant Solution		2 gallons per well (4 gallons total) of NW-220 (or equivalent).					
17	Color Video Surveys	17	Three video surveys per well (6 video surveys total) ; two following mechanical development and a third following test pump removal to the total constructed well depth.					
18	Mobilization & Demobilization of Test Pump	18	Install test pump with intake at 150 ft bgs at each well.					
19	Pumping Development	19	Pumping capacity: 500 gpm with a total dynamic head of at least 150 ft and at pumping rate increments between 50 and 500 gpm for a total period of 60 hours per well (120 hours total).					
20A	Pumping Tests	20	12 hour step drawdown test at specified rates per well (24 hours total).					
20B			48 hour (maximum) constant rate pumping test at specified design rate of 200 gpm per well, if possible (96 hours total).					
21	Disinfection of Well	21	No additional specified parameters.					
22	Abandonment & Destruction	22	No additional specified parameters.					

NOTE: bgs = below ground surface

TABLE A2
MANDATORY BID SUBMITTALS
SHALLOW WELL DRILLING PROJECT AT MAPLE YARDS
CITY OF BEVERLY HILLS

ITEM DESCRIPTION	REQUIRED SUBMITTALS
Project Schedule	A project schedule in MS Project or similar format denoting major milestones.
Drilling Method	A minimum of five (5) years of drilling similar municipal-supply water wells with the direct (mud) rotary drilling method. All drilling and supervisory personnel shall have had at least five (5) years of experience in the use of this drilling method.
Drill Rig	Make, model, weight and bearing capacity of the direct (mud) rotary drill rig.
Drilling Depths	A minimum of five (5) years of drilling by the direct (mud) rotary method to the minimum depths required for this project. All drilling and supervisory personnel shall have had at least five (5) years of experience with boreholes for municipal-supply wells.
Downhole Geophysical Surveying	The name and contact information of the subcontractor that will conduct the downhole geophysical surveys.
Isolated Aquifer Zone Testing.	Demonstrated experience in performing such testing for municipal-supply wells and to the minimum depths proposed herein. A list of wells with names of the agency, the name and telephone contact of project manager and the well name/number, location, and depth.
Caliper and Deviation Surveys	The name and contact information of the subcontractor that will conduct the caliper and deviation (magnetic and gyroscopic) surveys.
Certified Welders	The names, experience and classification level for all required Certified Welders for this project.
Color Video Survey	The name and contact information of the subcontractor that will conduct the color video survey.

NOTES: Failure to supply any of the above listed submittals shall result in the bid being considered non-responsive and will result in disqualification and rejection of the bid.

The Owner shall make a determination on whether or not the bidder has adequate experience to conduct the work on this project. Should it be deemed by the Owner that the bidder has not demonstrated sufficient experience to perform the work, then the bid shall be rejected.

TABLE A3
SUMMARY OF WELL CONSTRUCTION SUBMITTALS*

Work Phase	Submittal	Specification Section(s)	Submitted Schedule
Mobilization & Demobilization	Copies of the approved Los Angeles County Department of Environmental Health Services (LACDEHS) Well Permit Application and completed California Department of Water Resources (DWR) Well Completion Report.	1	The LACDEHS well permit is due prior to mobilization, and the DWR well completion report is due following completion of the well.
Pilot Hole Drilling and Borehole Reams	Daily Driller's Log Sheets showing bit types and depth changes additives, mud weight, viscosity, sand content, and water loss.	4	Daily reports grouped and submitted to the City and/or its Representative(s) upon request.
Geophysical Surveys	Geophysical survey logs consisting of a spontaneous potential, short (16-inch) and long (64-inch) normal resistivity, focused (guard) resistivity, gamma-ray and magnetic deviation surveys shall be submitted to the City and/or its Representative(s) immediately after collection.	5	Three (3) field copies and five (5) final copies of the survey due upon completion; (1) ASCII digital copy and (1) Adobe PDF due immediately following completion of survey.
Caliper and Borehole Magnetic Deviation Survey	A caliper survey and magnetic deviation survey shall be submitted to the City and/or its Representative(s) immediately after collection.	8	Three (3) field copies and five (5) final copies of the survey due upon completion; (1) ASCII digital copy and (1) Adobe PDF due immediately following completion of survey.
Well Casing	Certifications and Bills of Landing for all steel casings should be submitted to the City and/or its Representative(s).	9	Due immediately upon delivery of well casing materials to the well site
Gravel Pack	The Contractor shall supply their estimates for volume of gravel pack to be installed based on their review of the caliper log.	11	Due immediately upon completion and review of the caliper survey.
	Copies of the gradation analysis of the selected gravel pack from the gravel pack supplier.		Due immediately upon completion of the final well design.
	Copies of the weigh tickets for the gravel transported to the site shall be provided to the City and/or its Representative(s).		Due immediately upon delivery to the well site.
Annular Grout Seal	Copies of the cement/grout delivery tickets for the cement used for the conductor casing and annular grout seal.	12	Due immediately upon delivery to the well site.
Alignment of Well	A gyroscopic deviation survey log shall be submitted to the City and/or its Representative(s) immediately after collection.	13	Three (3) field copies and five (5) final copies of the survey due upon completion; (1) ASCII digital copy and (1) Adobe PDF due immediately following completion of survey.
Standby Time	Daily logs summarizing idle resources and written request for standby time, if applicable.	14	Due upon completion of each idle period for which standby time is requested.
Mechanical Well Development	Daily development summary (depth intervals developed, total hours, gravel settlement/additions, and volume of sediment bailed from well).	15	Daily reports submitted to the City and/or its Representative(s) upon request.
Chemical Well Development	Daily development summary (depth intervals developed, chemicals used and their quantities, and residual chlorine and pH measurements).	16	Daily reports submitted to the City and/or its Representative(s) upon request.
Color Video Surveys	DVD of final video surveys and paper & digital copies of static spinner survey log shortly following completion.	17	Two (2) DVD copies of video log due in the field within 48 hours of completion, and one electronic report in Adobe PDF.
Test Pump Installation	Pump installation summary (type, diameter, capacity range, intake depth) and totalizer odometer calibrations records.	18	Due upon completion of pump installation.
Pumping Development	Daily development summary (hours pumped, surging details, daily static water level, well discharge, pumping water level, specific capacity and sand content).	19	Daily reports submitted to the City and/or its Representative(s) upon request.
Pumping Tests	Daily pump test summary (hours pumped, pumping rates, daily static water level, well discharge, pumping water level, specific capacity and sand content).	20	Daily reports submitted to the City and/or its Representative(s) upon request.
Well Disinfection	Record of chlorine concentration used for disinfection.	22	Due within 1 week of completion.

Notes:
*Submittals shall be delivered to the City and/or its Representative(s), as identified in the Pre-Construction meeting. Additional submittals not presented in the above table may be required by City to complete the work. Other submittals are also specified in the General Conditions and Special Provisions of the Technical Specifications. This table is provided as a guide and is not all inclusive. See appropriate sections of the Technical Specifications for submittal requirements.

EXHIBIT B
CITY OF BEVERLY HILLS
NOISE ORDINANCE

Chapter 1
NOISE REGULATIONS

Article 1. General Provisions

5-1-101: DECLARATION OF POLICY:

It is hereby declared to be the policy of the city in its exercise of the police power to prohibit unnecessary, excessive, and annoying noise levels from all sources. At certain levels noises are detrimental to the health and welfare of the citizenry, and in the public interest such noise is proscribed. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-102: DEFINITIONS:

For the purposes of this chapter, the words and phrases herein shall be defined as follows:

"A" BAND LEVEL: The total sound level of all noise as measured with a sound level meter using the "A" weighting network. The unit is the dBA.

AMBIENT NOISE: The all encompassing noise associated with a given environment, usually being a composite of sounds with many sources from various distances.

BAND PRESSURE LEVEL: "Band pressure level" of a sound for a specified frequency band shall mean the sound pressure level for the sound contained within the restricted band.

CYCLE: The complete sequence of values of a periodic quantity which occurs during a period.

DECIBEL (dB): A unit of level which denotes the ratio between two (2) quantities which are proportional to power; the number of decibels corresponding to the ratio of two (2) amounts of power is ten (10) times the logarithm to the base-10 of this ratio.

EMERGENCY WORK: Work made necessary to restore property to a safe condition following a public calamity or work required to protect persons or property from an imminent exposure to danger to the health and safety of the persons or property.

FREQUENCY: "Frequency" of a function periodic in time shall mean the reciprocal of the primitive period. The unit is the cycle per unit time and shall be specified.

MICROBAR: A unit of pressure commonly used in acoustics and is equal to one dyne per square centimeter.

MOTOR VEHICLES: Shall include, but not be limited to, minibikes and go-carts.

SOUND AMPLIFYING EQUIPMENT: Any machine or device for the amplification of the human voice, music, or any other sound, or by which the human voice, music, or any other sound is amplified. "Sound amplifying equipment" shall not include warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

SOUND LEVEL METER: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks, for the measurement of noise and sound levels in a specified manner.

SOUND PRESSURE LEVEL: "Sound pressure level" in decibels of a sound shall mean twenty (20) times the logarithm to the base-10 of the ratio of the pressure of this sound to the reference pressure, which reference pressure shall be explicitly stated. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-103: DECIBEL MEASUREMENT CRITERIA:

Decibel measurements shall be made with a sound level meter and shall be based on a reference sound pressure of 0.0002 microbars, as measured in any octave band with center frequency, in cycles per second, as follows: 63, 125, 250, 500, 1,000, 2,000, 4,000, and 8,000, and for the combined frequency bands. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-104: GENERAL STANDARDS RELATIVE TO DISTURBANCE OF PEACE:

Notwithstanding any other provision of this chapter, and in addition thereto, it shall be unlawful for any person to wilfully make or continue, or cause to be made or continued, any loud, unnecessary, excessive, or unusual noise which unreasonably disturbs the peace and quiet or which causes discomfort or annoyance to any reasonable person of normal sensitiveness.

The factors which may be considered in determining whether such noise violates the provisions of this section shall include, but are not limited to, the following:

A. The volume of the noise;

B. The intensity of the noise;

C. Whether the nature of the noise is usual or unusual;

D. Whether the origin of the noise is natural or unnatural;

E. The volume and intensity of the background noise, if any;

F. The proximity of the noise to residential sleeping facilities;

G. The nature and zoning of the area within which the noise emanates;

H. The density of the inhabitation of the area within which the noise emanates;

I. The time of the day or night the noise occurs;

J. The duration of the noise;

K. Whether the noise is recurrent, intermittent, or constant; and

L. Whether the noise is produced by a commercial or noncommercial activity. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-105: ADDITIONAL REMEDIES; INJUNCTIONS:

As an additional remedy, the operation or maintenance of any device, instrument, vehicle, or machinery in violation of any provision of this chapter, which operation or maintenance causes discomfort or annoyance to reasonable persons of normal sensitiveness, or which endangers the comfort, repose, health, or peace of residents in the area, shall be deemed and is declared to be a public nuisance and may be subject to summary abatement, or by a restraining order, or injunction issued by a court of competent jurisdiction. (Ord. 11-O-2613, eff. 10-31-2011)

Article 2. Specific Noise Sources And Regulations

5-1-201: SOUND AMPLIFYING EQUIPMENT:

It shall be unlawful for any person within any residential zone of the city to use or operate any sound amplifying equipment between the hours of ten o'clock (10:00) P.M. and eight o'clock (8:00) A.M. of the following day in such a manner as to be distinctly audible at or beyond the property line of the property on which the equipment is located. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-202: MACHINERY, EQUIPMENT, FANS, AND AIR CONDITIONING:

It shall be unlawful for any person to operate any machinery, equipment, pump, fan, air conditioning apparatus, or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any property to exceed the ambient noise level by more than five (5) decibels based on a reference sound pressure of 0.0002 microbars, as measured in any octave band center frequency, in cycles per second, as follows: 63, 125, 250, 500, 1,000, 2,000, 4,000, and 8,000 and for the combined frequency bands (all pass). (Ord. 11-O-2613, eff. 10-31-2011)

5-1-203: MOTOR VEHICLE ALARMS:

The council finds that on numerous and repeated occasions, alarms which have been installed in motor vehicles have been activated inadvertently by accident or carelessness and not as the result of any criminal action or conduct; and the noise which results from the activation of such alarms has arisen at all hours of the day and night and is detrimental to the public health, safety, and welfare; and the council has a responsibility to ensure and preserve the peace and tranquility of the city by regulating motor vehicle alarms and that the regulation of the intrusive and disturbing noise which results from the inadvertent activation of motor vehicle alarms is reasonably related to the proper exercise of police power to protect the health, safety, and general welfare of the public.

A. It shall be unlawful for any person to cause, allow, or permit any alarm located in a motor vehicle registered in the name of or driven by such person to emit any audible sound within the city for a period of more than ten (10) minutes. The time shall be calculated based upon the emission of the first audible sound, and end ten (10) minutes thereafter, notwithstanding any variation or delay in the emissions of audible sound.

B. Any violation of this section is hereby declared a public nuisance and in addition to other remedies if the alarm continues to be activated for a period in excess of forty five (45) minutes, any police officer may have the vehicle removed from any zone in the city to abate such nuisance. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-204: MOTOR VEHICLE OPERATION AND REPAIR:

A. It shall be unlawful for any person within any residential area of the city to repair, rebuild, or test any motor vehicle in such a manner that a reasonable person of normal sensitiveness residing in that area is caused discomfort or annoyance.

B. It shall be unlawful for any person to operate any motor vehicle within the city in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance; provided, however, any such vehicle which is operated upon any public highway, street, or right of way shall be excluded from the provisions of this section. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-205: RESTRICTIONS ON CONSTRUCTION ACTIVITY:

A. No person shall engage in construction, maintenance or repair work which requires a city permit between the hours of six o'clock (6:00) P.M. and eight o'clock (8:00) A.M. of any day, or at any time on a Sunday or public holiday unless such person has been issued an after hours construction permit issued pursuant to subsection C of this section. In addition, no person shall engage in such work within a residential zone, or within five hundred feet (500') of a residential zone, at any time on a Saturday unless such person has been issued an after hours construction permit issued pursuant to subsection C of this section. For the purpose of this section, "public holiday" shall mean:

1. New Year's Day.

2. Memorial Day.

3. Independence Day.

4. Labor Day.

5. Thanksgiving Day.

6. Christmas Day.

Nothing in this section shall restrict the performance of "emergency work" as that term is defined in section 5-1-102 of this chapter.

B. No person employed for the purposes of construction, maintenance, or repair work which requires a city permit shall enter a site on which such work will be done prior to eight o'clock (8:00) A.M. Any violation of this subsection shall be deemed to be an infraction.

C. The city building official, after consultation with appropriate city officials, may issue an after hours construction permit authorizing work and/or entrance to a work site otherwise prohibited by this section if the city building official determines that the public interest will be served by such a permit. Situations in which the public interest may be served by the issuance of such an after hours construction permit includes, but are not limited to, construction near school grounds, and construction that may interfere with vehicular or pedestrian traffic in heavily traveled public rights of way.

D. Applications for an after hours construction permit issued pursuant to subsection C of this section shall be in writing and shall set forth how the public interest will be served by issuing the permit. An after hours construction permit may be revoked or suspended by the city building official if the city building official determines that activity conducted pursuant to the permit detrimentally affects the public health, safety or welfare. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-206: NOISE IN PROXIMITY OF SCHOOLS, HOSPITALS, AND CHURCHES:

It shall be unlawful for any person to create any noise on any street, sidewalk, or public place adjacent to any school, institution of learning, or church while the same is in use, or adjacent to any hospital; which noise substantially and unreasonably interferes with the workings of such institutions or which disturbs or unduly annoys patients in the hospital, provided that conspicuous signs are displayed on such street, sidewalk, or public place indicating the presence of a school, church, or hospital. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-207: HAWKERS AND PEDDLERS:

It shall be unlawful for any person within the city to sell anything by public outcry within any area of the city zoned for residential uses. The provisions of this section shall not be construed to prohibit the selling by outcry of merchandise, food, and beverages at licensed sporting events, parades, fairs, circuses, and other similar licensed public entertainment events. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-208: DRUMS:

It shall be unlawful for any person to use any drum, other percussion or musical instrument, or device of any kind for the purpose of attracting attention by the creation of noise within the city. The provision of this section shall not apply to any person who is a participant in a school band or duly licensed parade or who has been otherwise duly authorized to engage in such conduct. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-209: PORTABLE GASOLINE ENGINE POWERED BLOWERS:

It shall be unlawful for any person within the city to use or operate any portable machine powered with a gasoline engine used to blow leaves, dirt, and other debris off sidewalks, driveways, lawns, or other surfaces. (Ord. 11-O-2613, eff. 10-31-2011)

5-1-210: ANIMAL AND FOWL NOISE:

No person shall keep or maintain, or permit the keeping of, upon any premises owned, occupied, or controlled by such person, any dog or other animal or fowl otherwise permitted to be kept which, by any loud or continuous cry, bark, howl, or other sound, unreasonably disturbs other persons. (Ord. 11-O-2613, eff. 10-31-2011)

EXHIBIT C
WORKPLAN
FOR
DISCHARGE OF
WELL DEVELOPMENT
AND TESTING WATER

Introduction

All wastewater generated during isolated aquifer zone testing, mechanical development, pumping development, step-drawdown testing and constant-rate discharge testing shall be discharged to the local sewer system. Thus, no National Pollutant Discharge Elimination System (NPDES) permit will be necessary, and any discharge requirements as established by the California Regional Water Quality Control Board, Los Angeles Region (CRWQCB) will not be applicable to the project.

Point of Discharge

The discharge for all zone testing, well development, and testing fluids shall be at the existing local sewer system. Onsite access to this sewer system will be through a manhole cover located along the western edge of the project area. The discharge location is approximately 35 ft south of proposed Well 1. This discharge point allows for flow into the local sewer system. The Contractor shall provide all the necessary piping to convey the discharged water to the onsite discharge point.

Isolated Aquifer Zone Testing and Mechanical Development Fluids

Treatment of Wastewater

It is anticipated that highly turbid water will be generated during isolated aquifer zone testing, mechanical development, and possibly, during initial pumping development. Thus, it will be imperative to keep the turbidity under control prior to any discharging. Consequently, the Contractor will supply a minimum of two holding tanks (either Baker or Rain-for-Rent tanks) for settling of sediment and/or suspended solids from the discharge water. These tanks shall be interconnected, sequentially, and baffled so as to allow sufficient clarification of the discharge water. The tanks can be used in conjunction with a “dirt bag” to help reduce turbidity. The turbidity of the discharged water should be less than 300 nephelometric turbidity units (NTU).

Additionally, it may be necessary to blend the discharge water from the holding tanks with hydrant water from a nearby water source at the site to reduce the turbidity of the discharged water to below 300 NTU. Heavy fluids generated during drilling shall be removed for disposal offsite, unless they can be adequately “treated”, via settling, centrifuging, or other pre-approved methods without disruption to the work schedule. A total of two (2) tanks will be needed to help store and treat the water pumped during isolated aquifer zone testing and during mechanical development.

During isolated aquifer zone testing, it is estimated that volumes of wastewater generated from the sampled zone may be on the order of 15,000 to 30,000 gallons (gal) at each well site. Thus, this water will need to be stored temporarily and treated using onsite temporary storage tanks. During subsequent mechanical development, it is estimated that the volume of water to be discharged may range from 250,000 gal to 500,000 gal at each well site.

Treatment Process

Treatment (i.e. clarification) of the turbid water will need to be performed prior to discharge to the local storm drain system. Such a system will be devised by the Contractor and will reduce the turbidity and/or sediment load during the discharge process.

Pumping Development, Step Drawdown, and Constant Rate Pumping Tests

Following mechanical development of the well, it is anticipated that discharge from the well during pumping development will be well below the requested turbidity limit of 300 NTU. However, sand concentrations in the initial pumped fluids may be excessive. Therefore, the holding tanks used should still be used to help reduce the overall sand concentrations of the pumped discharge during pumping development and well testing.

It is recommended that the Contractor accounts for his personnel time and materials accordingly; any standby, downtime, personnel time and material costs incurred during the treatment process will be at no extra expense to City.

During pumping development, step-drawdown testing, and constant-rate discharge testing it is estimated that a total of 400,000 to 800,000 gallons of water may be discharged, from each well site.

SECTION 02050
REMOVAL OF EXISTING FACILITIES

PART 1: GENERAL

1.01 DESCRIPTION

This Section includes demolition, removal, replacement, and abandonment of existing pipelines and other facilities.

1.02 SUBMITTALS

A. Submit schedule of demolition. Include details about specific tasks that must be completed prior to demolition of specific facilities. If testing of a facility is required prior to demolition of another facility, include in the schedule. Identify demolition time constraints. Demolition schedule shall be a part of the Construction Schedule.

B. Submit in accordance with "General Provisions" Section 3 and "Additional Special Provisions" Section 24.

1.03 MEASUREMENT AND PAYMENT

Full compensation for Removal of Existing Facilities including furnishing all materials, labor, tools, equipment, and incidentals and performing all the work described in this Section and as indicated on the Plans shall be included in the Contract lump sum price paid for "Remove and Dispose of Existing Sewer Manhole and Plug Existing 8" Sewer Pipe" and no additional compensation shall be allowed therefor.

PART 2: MATERIALS

(Not Used)

PART 3: EXECUTION

3.01 GENERAL

Perform removal, replacement, abandonment, and demolition work in accordance these specifications and as shown on the Plans. Prepare remaining surfaces to receive new scheduled and specified materials and finishes or to match materials and finishes of adjacent surfaces if none are specified or shown on the Plans.

3.02 CONSTRAINTS

Removal of facilities identified on the Plans must occur before the temporary discharge line is tested and put into service.

3.03 REMOVAL AND SALVAGING

A. Remove piping and other facilities as shown on the Plans or specified herein. Facilities identified for removal shall become the property of the Contractor. As such, the Contractor assumes responsibility for all removal and disposal.

B. Materials and equipment salvaged from the project site are the property of the Owner. Salvaged material and equipment shall be delivered by the Contractor to a laydown area or areas within the project site as determined by the Owner. The Contractor shall take reasonable precautions to protect salvaged materials during the salvage and during storage.

3.04 ABANDON

Abandon in place piping shown on the Plans to be abandoned. Abandoned pipe shall be cut and plugged at the ends with concrete or other approved method. Concrete shall be 450-C-2000 per SSPWC or approved equivalent.

3.05 DEMOLITION

A. Existing structures, boxes, pipes, and other items are to be removed, altered, salvaged, and disposed of as specified herein or indicated on the Plans. Remove and dispose of all portions of these items which interfere with project construction. Protect existing facilities that do not directly interfere with project construction unless otherwise shown on the Plans to be abandoned, removed, or salvaged.

B. Perform the work in a manner that will not damage parts of the structure not intended to be removed or to be salvaged for the Owner. If, in the opinion of the Engineer, the method of demolition used may endanger or damage parts of the structure or affect the satisfactory operation of the facilities, promptly change the method when so notified by the Engineer. No blasting will be permitted.

C. All equipment, material, and piping, except as specified to be salvaged for the Owner, or removed by others, within the limits of the demolition, excavations, and backfills, will become the property of the Contractor and shall be removed from the project site.

D. Do not reuse material salvaged from demolition work on this project.

E. When removing portions of curb, gutter, or sidewalk, sawcut and remove the concrete at a control joint. This may require more removal than would otherwise be necessary.

END OF SECTION

SECTION 11212
SUBMERSIBLE PUMPS

PART 1: GENERAL

1.01 DESCRIPTION

1.02 THIS SECTION INCLUDES FURNISHING, INSTALLING, AND TESTING SUBMERSIBLE PUMPS. REFERENCES

ASTM A48	Standard Specification for Gray Iron Castings
ASTM A582	Standard Specification for Free-Machining Stainless Steel Bars
HIS	Hydraulic Institute Standards
ICEA	Insulated Cable Engineers Association
NEMA	National Electric Manufacturer's Association
NEC	National Electric Code

1.03 SUBMITTALS

A. Basic Data: Prior to preparation of shop drawings, the Contractor shall submit the following information for the pump specified under this Section.

1. Pump curve indicating total dynamic head, flow rate, brake horsepower, shutoff head, and efficiency

2. Motor data, including the manufacturer; the minimum guaranteed efficiency and power factor at full load, ¾ load, and ½ load; locked motor current in amps; full load current in amps; the motor speed in rpm; and the mounting details.

B. Shop Drawings: After the above equipment submittals have been approved, drawings, specifications, and other data required to be submitted hereunder shall include, but shall not be limited to, the following:

1. Complete fabrication, assembly, foundation, and installation drawings, together with detailed specifications and data covering materials of construction, weight of the pump, power drive assembly, parts, devices, wiring diagrams, and other accessories forming a part of the equipment furnished.

2. Materials of pump construction including impellers, shafts, bearings, castings, and pump discharge head.

3. Electric motor data including size, make, type, designation, and mounting details.

4. Manufacturer's Installation instructions

C. Test Reports: Provide Certified Test Reports as required in Part 3 herein.

D. Guarantee: Provide warranty as required herein under "Quality Assurance".

E. Submit in accordance with "General Provisions" Section 3 and "Additional Special Provisions" Section 24.

1.04 QUALITY ASSURANCE

A. General: All pumping equipment furnished under this section shall be of a design and manufacture that has been used in similar applications and be demonstrated to the satisfaction of the Owner that the quality is equal to equipment made by those manufacturers specifically named herein.

B. Pump Guarantee: The pump manufacturer shall warrant the units being supplied to the owner against defects in workmanship and material for a period of one (1) year under normal use, operation and service after the date of acceptance. The warranty shall be in printed form and apply to all similar units. The warranty shall be presented to the owner in written form and shall bear the appropriate pump serial numbers. The pump manufacturer's share of the warranty coverage costs shall be 100%.

1.05 PUMP OPERATING CONDITIONS

Submersible pump shall be capable of providing flow as determined by the hydrogeologist. The anticipated flow is between 100 and 500 gpm at a total dynamic head of 120 ft.

1.06 MEASUREMENT AND PAYMENT

Full compensation for Submersible Deep Well Pumps Assembly including furnishing all materials, labor, tools, equipment, accessories, and incidentals and performing all work described in this Section and as indicated on the Plans shall be included in the Contract price paid for "Install Temporary Pumps in Wells 1 and 2" and no additional compensation shall be allowed therefor.

PART 2: PRODUCTS

2.01 DEEP WELL SUBMERSIBLE WATER PUMPS

A. General: Each piece of equipment furnished shall be of the most recent proven design as approved by the purchaser. The pump shall be a submersible turbine type multi-stage in series design, with closed impellers.

B. Materials: As a minimum, the pump bowl assembly shall be furnished in materials based on the material Table 4 in the ANSI/AWWA E101-88 standard. All materials used and not specified herein shall be the best available of the purpose intended as dictated by the best engineering practice and shall be within this limitation conform to the latest Standard of the American Society for Testing Materials, so far as practical. All materials used shall be described in the bidder proposal including references to ASTM numbers. Should the bidder desire to use materials other than specified, he shall submit with his bid a request for the approval by the purchaser for such deviations. A full explanation and justification for the substitution and the advantages shall accompany the request to the purchaser.

C. Pump Shaft: The pump shaft shall be pickled, annealed, turned, ground, and polished corrosion resistant 416 Stainless Steel or better. The shaft, as a minimum, shall be based on a diameter as listed in the standards of ANSI/AWWA E101-88 and the requirements of ASTM-A582.

D. Impellers: Impellers shall be of the closed type, made of cast iron or bronze ASTM B584-C903 material or better. The impellers shall be mounted to the pump shaft and held rigidly in place with either tapered collets or split rings and keys. Impellers shall be accurately machined and dynamically balanced to a minimum of ISO 1940 grade G6.3. The outer tips of the impeller blades shall not be feathered and shall be of sufficient thickness to withstand considerable wear before affecting performance of the pump

E. Pump Bowl Assembly: The pump bowls shall be made of cast iron or better. The castings shall be smooth, sound, fine grained, high density, and free of sand pockets, blowholes, and all other detrimental flaws and defects.

The pump cases shall be machined to a close fit and shall be designed so they can easily be disassembled and reassembled.

F. Check Valve: An integrated check valve shall be provided with the pump. Check valve shall be positive seal, stainless steel, threaded check valve.

G. Pump Bearings: Each pump bowl shall include its own shaft sleeve bearing, stainless steel backed and rubber flutted. The pump suction / strainer body shall also have a bearing in it. Bearing material shall be bronze ASTM B584-844.

H. Pump to Motor Adaptation: The pump suction or strainer body with adapter bracket and suction case shall be of the same material or better as specified for the pump series cases. The pump to motor adaptation shall be a 1 piece system (adapter bracket and strainer-body) to insure easy pump to motor adaptation. The shaft coupling shall consist of a solid rigid coupling and be capable of transferring the pump thrust to the motor up and down thrust bearings.

I. Submersible Motor: The motor shall be new and unused of the submersible type and be of the proper rating to drive the specified pump continuously over the complete operating range of head and capacity without the pump load exceeding the motor nameplate rating.

The rotor shall be statically and dynamically balanced. Rotor bars shall be copper. Aluminum rotor bars are not acceptable.

The rotor shaft shall be sealed with a single mechanical shaft seal. An expansion bellows shall be installed in the bottom of the motor to equalize the pressure inside the motor with the external pressure exerted on the outside of the motor by hydrostatic forces.

The motor design shall include the capability to carry continuously, the total sum of the weight of the rotating components of the pump and motor, and the hydraulic thrust that the pump may develop in both the up and down direction.

Rotor Radial bearings will be of carbon graphite or cutless rubber design.

J. Power Cable Assembly: The pump/motor manufacturer shall supply, in addition to the pump units, a power cable assembly of appropriate size and construction to meet the service intended. The power cable assembly shall be furnished in the proper length to extend from the motor terminals to the junction box mounted at the surface plate.

The power cable shall be based on three (3) conductors of stranded copper. The cable shall be supplied with PVC, EPR or EPDM Insulation. Power cable is also to include an integral ground lead of appropriate size as determined by the National Electric Code (NEC). Power cables are to include an overall PVC, TPE, CPE or Tyrin jacket.

K. Surface Plate: The pump/motor manufacturer shall furnish the surface plate assembly. This assembly shall consist of a heavy-duty support plate designed to support the total weight of the pump/motor, and discharge column pipe when liquid filled. The surface plate assembly shall also include a long radius, 90 elbow with a 150-lb. slip-on, flat faced ANSI B16.5 flanged outlet. A stick-down pipe nipple

shall also be provided of not less than 12" long. The stick-down pipe shall be of the same size and rating as the discharge elbow. The stick-down nipple shall be provided with a threaded end connection. The surface plate shall be as identified on the Plans. The surface plate shall also incorporate two lifting lugs capable of supporting the entire combined weight of the pump/motor, and discharge column assembly.

L. Pump Discharge and Suction Case: The discharge and suction case shall be grey cast iron or approved better.

M. Column Assembly: The discharge column assembly shall be composed of a discharge pipe column.

1. Pipe Column: Unless otherwise shown on the plans, the pipe column shall be steel with a minimum ¼-inch wall thickness and shall be connected by threaded sleeve type couplings. Pipe column section shall be of such a design and construction that accurate alignment will be automatically obtained when the column is assembled. The maximum length of any section shall be 10 feet or less.

2.02 SPACERS

Contractor shall construct pipe spacers for portion of piping that is within the well.

2.03 ACCEPTABLE MANUFACTURERS

The acceptable pumps shall be Grundfos SP, or Approved Equivalent.

PART 3: EXECUTION

3.01 INSTALLATION AND START-UP

The Contractor shall arrange to have the pump manufacturer or supplier of the equipment furnished under this section provide competent factory-trained personnel to supervise the installation and initial operation.

3.02 FIELD TESTING

A. Perform tests on pumps, drivers, and equipment, including visual equipment checks to ensure compliance with approved detail drawings; pump start-run to ensure proper operation and to detect leakage of piping, valves, and fittings; sequence of operation check; verification that required pump accessories have been provided; test of pump alarm devices; and additional inspections and tests necessary to ensure that the entire pump installation is correct, complete, and ready for operation. Pump test water should be pumped to waste into the sewer manhole onsite per

Plans, and the Contractor is responsible for obtaining a NPDES discharge permit for any groundwater extraction discharge.

B. In the event any of the pumping equipment fails to meet the above test requirements, it shall be modified and retested in accordance with the requirements of these Specifications at no additional cost to the Owner.

3.03 OPERATOR TRAINING

The Contractor shall provide the services of a representative of the manufacturers to instruct the Owner's operating personnel in the use and maintenance of the equipment.

3.04 ELECTRICAL REQUIREMENTS

The Contractor shall coordinate with Southern California Edison (SCE) to provide temporary power to the well. The Contractor shall abide with all SCE requirements. The Contractor shall make any service and installation agreements that SCE may require. Install electric service entrance equipment in accordance with the serving utility's requirements. Coordinate with the servicing utility to ensure timely connection by the utility. Obtain utility company approval of service entrance and metering equipment shop drawings prior to starting fabrication.

Submit in accordance with "General Provisions" Section 3 and "Additional Special Provisions" Section 24.

The Contractor shall provide controls for the submersible pump. Controls will include "Hand/Auto/Off" switch. The "Auto" Switch shall be timer/clock based.

The Contractor shall provide automatic shutoff protection per manufacturer's recommendations for the following situations:

- High motor temperature
- Over- and Under-Voltage
- Overcurrent (overload and short circuit current)
- Loss of Phase

END OF SECTION

SECTION 15076B
STEEL PIPE

PART 1: GENERAL

1.01 DESCRIPTION

This section includes cement-mortar and/or epoxy lined welded steel pipe with fittings and special pieces, fabricated in accordance with AWWA C200, C203, and C205 for pipe 4-inches in diameter and larger. Also included are requirements for mill-manufactured steel pipe.

1.02 REFERENCES

ANSI B16.1	ANSI/ASME B16.1 Cast Iron Pipe Flanges and Flanged Fittings
ANSI B16.5	ANSI/ASME B16.5 Pipe Flanges and Flanged Fittings
ANSI B36.10	ANSI/ASME B36.10 Welded and Seamless Wrought Steel Pipe
ASME	Boiler and Pressure Vessel Code Section VIII
ASME	Boiler and Pressure Vessel Code Section IX
ASTM A36	Standard Specification for Carbon Structural Steel
ASTM A53	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A105	Standard Specification for Carbon Steel Forgings for Piping Applications
ASTM A106	Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service
ASTM A181	Standard Specification for Carbon Steel Forgings, for General-Purpose Piping
ASTM A185	Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
ASTM A193	Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
ASTM A194	Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
ASTM A234	Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
ASTM A283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
ASTM C40	Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
ASTM C87	Standard Test Method for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar

ASTM C136	Standard Test Method for Sieve Analysis for Fine and Coarse Aggregates
ASTM C150	Standard Specification for Portland Cement
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM D1293	Standard Test Methods for pH of Water
ASTM E165	Standard Test Method for Liquid Penetrant Examination
ASTM E709	Standard Guide for Magnetic Particle Examination
AWWA C200	Steel Water Pipe – 6 inches and Larger
AWWA C203	Coal-Tar Protective Coatings and Linings for Steel Water Pipelines – Enamel and Tape – Hot-Applied
AWWA C205	Cement-Mortar Protective Lining and Coating for Steel Water Pipe – 4 inches and Larger – Shop Applied
AWWA C206	Field Welding of Steel Water Pipe
AWWA C207	Steel Pipe Flanges for Waterworks Service – Sizes 4 Inches through 144 Inches
AWWA C208	Dimensions for Fabricated Steel Water Pipe Fittings
AWWA C602	Cement Mortar Lining of Water Pipelines In Place – 4 Inches and Larger
AWWA C604	Installation of Steel Water Pipe 4 Inches and Larger
AWWA M11	Steel Pipe – A Guide for Design and Installation
CAC	California Administrative Code, Title 22, Section 64630
NACE RP-02-74	High Voltage Electrical Inspection of Pipeline Coatings
NACE TM-01-75	Sulfide Stress Cracking Resistant Metallic Materials for Oilfield Equipment
NSF 61	Drinking Water System Components and Materials
CDPH	California Department of Public Health
SSPC	The Society for Protective Coatings

1.03 **SUBMITTALS**

A. Submit pipeline layout including:

The location, length, plate thickness, and designation by number of each steel pipe section and fabrication.

The elements of curves and bends, both in horizontal and vertical alignment, including elements of the resultant true angular deflections in cases of combined curvature.

The limits of each reach of each type of field-welded joint.

Locations of longitudinal and circumferential joints in the pipe, fabricated fittings, and outlets.

Details and locations of closure joints for length adjustment and for construction convenience.

B. Submit details of pipe ends.

C. Submit details of specials and fittings.

D. Submit certifications for lining and coating systems.

E. Submit affidavits of compliance with referenced standards (e.g., AWWA C200, C203, etc.) with each required submittal.

F. Submit calculations for the design of pipe wall thickness.

G. Submit in accordance with ”General Provisions” Section 3 and “Additional Special Provisions” Section 24.

1.04 **MEASUREMENT AND PAYMENT**

Full compensation for Steel Pipe including furnishing all materials, labor, tools, equipment, and incidentals and performing all work described in this Section and as indicated on the Plans shall be included in the Contract price paid for “Construct 4” Schedule 40 Steel Temporary Discharge Lines from Wells 1 and 2” and “Construct 6” Schedule 40 Steel Temporary Discharge Lines from Wells 1 and 2” work. All pipeline related costs including pipe, fittings, couplings, adaptors, appurtenances, disposal, in-kind replacements, and testing shall be included and no additional compensation shall be allowed therefor.

PART 2: MATERIALS

2.01 **GENERAL**

All pipe and appurtenances in this Section shall be in accordance with the requirements of AWWA C200 and C208 except as noted otherwise herein.

2.02 **STEEL FOR PIPE**

A. Sheet Steel or Plate and Minimum Yield Point:

A. ASTM A283, Grade D (33,000 psi)

B. Order the steel plate and sheet by thickness with a maximum allowable variation of not more than 0.01 inch less than the thickness specified. The carbon content shall not exceed 0.25%. Tests performed on 8-inch tension specimens shall show elongations not less than 18%. The cold working of steel plate to obtain the specified tensile requirements will not be permitted. Any laminations or other defects shall be cause for rejection.

B. Structural Steel for Outlet Reinforcement:

ASTM A36.

2.03 **MILL-MANUFACTURED STEEL PIPE**

ASTM A53, Type S, Grade B or ASTM A106, Grade B. Minimum wall thickness shall be standard weight, ANSI B36.10.

2.04 **DIAMETER OF PIPE SECTONS**

A. The nominal diameter or inside diameter of the pipe and other fabricated steel sections as shown on the Plans is the clear diameter of the lined pipe after the application of interior mortar lining.

2.05 **SHOP TESTING**

Test in accordance with AWWA C200.

2.06 **LINING**

All steel pipe and fittings shall be lined in accordance with one of the following methods.

A. Cement Mortar Lining: Apply to pipe either shop- or field-applied mortar lining. Mortar lining thickness shall be ½-inch with a tolerance of plus ¼-inch and minus 0, unless otherwise indicated. Apply the following types of cement-mortar linings to the interior of the pipe in accordance with AWWA C205 or AWWA C602:

Cement shall be ASTM C150, Type II for mortar lining. Potable water shall be used.

2.07 **COATING**

A. All steel pipe shall be coated in accordance with the following method:

C. Coat exposed pipe in vaults, structures, and open to atmosphere with epoxy in accordance with Part 2 of this Section.

2.08 **PAINTING AND COATING**

All aboveground steel piping shall be coated with the following:

System No. 15 - Exposed Metal, Atmospheric Weathering Environment

Type: Epoxy / Polyurethane

Service Conditions: Shall be used on exterior steel and piping, fittings, and appurtenances subject to sunlight and weathering.

Surface Preparation: SSPC SP-6.

Prime Coat:	Two coats to a dry film thickness of 6-10 mils: Tnemec V69 Hi-Build Epoxoline or approved equivalent
Finish Coat:	One coat to a total dry film thickness of 2-3 mils: Tnemec Series 1075 Endura-Shield or approved equivalent. Total dry film thickness of system shall be 8 mils minimum.

2.09 PIPE ENDS

A. Type of pipe ends shall be rolled groove rubber gasket, carnegie bell with weld-on bell ring and spigot, single welded lap joints, flanged joints or butt-strap joints. Where the Plans indicate "welded joints", a single welded lap joint shall be used. Where the Plans indicate "restrained joints" a single welded lap joint shall be used.

B. Flanges shall be Class E or Class F, slip-on type in accordance with AWWA Standard C207 or shall be flat faced forged steel flanges per ANSI B16.5, CL 150 or CL 300. Flanges shall be flat-faced with O.D. and drilling in accordance with ANSI Standard B16.1.

C. Flanges for connection to existing facilities shall be shipped loose for welding in the field.

2.10 GASKETS

A. Gaskets for flanged joints shall be 1/8-inch thick, cloth-inserted rubber. Full face type gaskets with pre-punched holes shall be used where both flanges are flat faced and pipe size is 12-inches or less. Ring gaskets extending to the inner edge of the bolts shall be used where a raised face flange is present and for all pipe 14-inches and larger.

B. Rubber gaskets for push-on joints shall be synthetic or natural rubber manufactured in accordance with AWWA C111.

2.11 BOLTS, NUTS, AND WASHERS

A. Bolts, nuts, and washers for submerged applications, buried applications and applications in vaults shall be Type 316 stainless steel conforming to ASTM A193, Grade B8 for bolts, and ASTM A194, grade 8 for nuts. Bolts, nuts, and washers for above ground applications shall be Type 316 stainless steel or cadmium plated. Fit shall be classes 2A and 2B per ANSI B1.1 when connecting to valves with body bolt holes.

B. Bolts for flange insulation kits shall conform to ASTM A193, grade B7. Nuts shall conform to ASTM A194, grade 2H.

C. Provide washers for each nut.

D. The length of each bolt or stud shall be such that between ¼-inch and 3/8-inch will project through the nut when drawn tight.

2.12 **WELDED FITTINGS**

Welded fittings shall be butt-welded wrought carbon steel fittings conforming to ASTM A234, Grade WPB. Minimum thickness shall equal the thickest matching pipe.

2.13 **THREADED OPENINGS**

A. Threaded openings shall not be less than 2 inches, nor more than 4 inches in nominal size, and shall be a standard weight, flat-bottom, threaded welding outlet. Where the mounting surface is curved to a diameter of 36 inches or less, the mounting diameter shall be the same as that of the surface upon which it is to be mounted.

B. The threaded outlet and its plug shall be forged from steel conforming to ASTM A105 or ASTM A181, Class 70. The outlets shall be weldolets.

2.14 **WELDING OUTLETS**

Welding-type outlets shall have a mounting diameter the same as that of the surface upon which they are to be mounted. Where the mounting surface is curved to a diameter of 36 inches or more, the outlet bottom may be flat. Welding-type outlets shall be forged from steel conforming to the requirements specified for threaded outlets. The outlets shall be weldolets.

PART 3: EXECUTION

3.01 **GENERAL**

Pipe shall be installed in accordance with the applicable portions of AWWA C200.

3.02 **JOINTS**

A. When plate flanges are made from butt-welded segments, do not place the joints between segments adjacent to longitudinal joints in adjoining steel plate sections. Relieve stress on flanges made from butt-welded segments.

B. Furnish forged steel slip-on flanges or welding neck flanges for companion flanges and connections. Blind flanges, reducing flanges, special flanges, and

flanges which are greater in diameter than 24-inch-nominal pipe size may be made of plate.

C. For drilling of bolt holes of insulating flanges not dimensioned on the Plans, prepare flange bolting as recommended by the insulating sleeve manufacturer.

3.03 CURVES, ANGLES, CLOSURES, AND SHORT SECTIONS

A. Fabricated Bends: Do not use fabricated bends to accomplish angles in the alignment unless shown on the Plans or permitted by the Engineer. Deflection between the centerline of adjacent courses shall not exceed 15 degrees, and girth seams shall be double-butt welded in the shop.

3.04 FIELD LINING AND COATING REPAIRS

Linings and Coatings shall be repaired whenever necessary and whenever welding is performed.

3.05 BLIND FLANGES

At outlets not indicated to be connected to valves or to other pipes and to complete the installed pipeline hydrostatic test, provide blind flanges with bolts, nuts, and gaskets. Thickness of blind flanges shall be at least equal to thickness of mating flange.

3.06 HANDLING OF PIPE

A. Measure the outside diameter of bell and spigot to check that clearance between laying surfaces is within specified tolerance prior to joint assembly.

3.07 SEPARATION REQUIREMENTS

The Contractor shall comply with The State of California Division of Drinking Water requirements for separation of potable water, recycled water, and wastewater pipelines.

3.08 THRUST RESTRAINT

All Piping shall be restrained.

3.09 ALIGNMENT

Alignment Tolerances: Tolerances on alignment are plus or minus 1-inch.

3.10 FLANGED CONNECTIONS

A. When making connections to existing flanges, or closing any pipe, the new pipe shall have the flanges shipped loose so that minor filed adjustments can be readily made.

3.11 FIELD WELDED JOINTS

A. Provide single-welded lap joints, double-welded lap joints, butt-welded joints, and/or butt-strap joints where indicated on the Plans including areas identified to be restrained joints.

B. Field welding shall be in accordance with AWWA C206 except as modified herein. Welder's qualifications shall be in accordance with Section IX, Part QW, of the ASME Boiler and Pressure Vessel Code. Any welder performing work shall have been qualified for the process involved within the past three years.

C. Prior to welding interior joint, shade pipe to 60 degrees except at the joints. Complete the interior weld prior to coating the outside joint.

D. If joint laying surfaces are rusted or pitted where weld metal is to be deposited, clean them by wire brushing or sand blasting.

E. Completed fillet welds shall be convex with a maximum reinforcement of 1/8-inch. Minimum leg length shall be the sum of the greatest abutting plate thickness plus joint clearance. Equalize joint clearance around entire circumference prior to welding. Remove all tack welds prior to the start of joint welding.

F. Preheat the joints to be welded where required in accordance with Table 1 of AWWA C206.

G. Where weld metal is to be deposited, clean joints by wire brushing or sand blasting. Clean each layer of deposited weld metal prior to depositing the next layer of weld metal, including the final pass, by a power-driven wire brush.

H. No welding ground shall be made on the coated part of the pipe.

I. In all hand welding, the metal shall be deposited in successive layers so that there will be at least as many passes or beads in the completed weld as indicated in the following table:

Steel Cylinder Thickness (inches)	Fillet Weld, Minimum Number of Passes
3/16 or less	1
7/32 through ¼	2
9/32 through 3/8	3
13/32 through ½	4
More than ½	1 for each 1/8 inch and any remaining fraction thereof

J. The plate edges shall be so prepared that there will be sufficient angle in the welding groove to prevent side arcing of the electrode and to permit penetration at the deepest point of the groove. All such welds shall be back-chipped with a round-nosed tool to clean metal on the reverse side from the side of the deepest penetration before any welding is done on said reverse side. Each hand pass and each back-chipped welding groove shall be subject to inspection before the ensuing pass is made. Each hand pass shall be the full width of the weld.

K. Complete each pass around the entire circumference of the pipe before commencing the next pass. Use the electrodes recommended by the pipe fabricator. Do not deposit more than 1/8-inch of throat thickness per pass.

L. During welding exterior welds, the coating of welded steel pipe shall be protected by draping an 18-inch-wide strip of heat-resistant material over the top half of the pipe on each side of the coating holdback to avoid damage to the coating by hot weld splatter. No welding ground shall be made on the coated part of the pipe.

3.12 PAINTING AND COATING

A. Remove unspecified and unapproved coatings from site immediately.

B. Deliver materials in their original unopened containers with labels identifying the manufacturer's name, brand name, product type, batch number, date of manufacturer, expiration date or shelf life, color, and mixing and reducing instructions.

C. Store coatings in a well ventilated facility that provides protection from the sun, weather, and fire hazards. Maintain ambient storage temperature between 45 and 90 degrees Fahrenheit, unless otherwise recommended by the manufacturer.

D. Take precautions to prevent fire and spontaneous combustion.

E. Do not apply coatings under dusty conditions unless other such protection is provided for the items being coated. Do not apply coatings when the ambient or surface temperatures are below or exceed manufacturer's recommendations.

F. Protect any surface that is not to be coated.

G. Surfaces that are damaged shall receive a field touchup to cover all scratches or abraded areas.

3.13 TESTING

Prior to putting the temporary discharge line in service, Contractor shall slowly fill pipe with water from a nearby source by means approved by the Engineer. Pipe ends shall be temporarily sealed and pipe shall be pressurized to 50psi.

The Contractor shall observe for any noticeable leaks and repair all noticeable leaks at no extra cost.

END OF SECTION

SECTION 15122
MISCELLANEOUS PIPE APPURTENANCES

PART 1: GENERAL

1.01 DESCRIPTION

This section includes flexible gasketed sleeve-type compression pipe couplings, air gaps, and gate valves for steel pipes. Not all couplings identified in this section are necessarily required.

1.02 REFERENCES

ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings Class 25, 125, 250, and 800
ANSI B16.5	Pipe Flanges and Flanged Fittings
ASTM A36	Standard Specification for Carbon Structural Steel
ASTM A47	Standard Specification for Ferritic Malleable Iron Castings
ASTM A53	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A108	Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished
ASTM A126	Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings
ASTM A193	Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
ASTM A194	Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
ASTM A276	Standard Specification for Stainless Steel Bars and Shapes
ASTM A283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
ASTM A285	Standard Specification for Pressure Vessel Plates, Carbon Steel, Low- and Intermediate-Tensile Strength
ASTM A307	Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
ASTM A510	Standard Specification for General Requirements for Wire Rods and Course Round Wire, Carbon Steel
ASTM A512	Standard Specification for Cold-Drawn Buttweld Carbon Steel Mechanical Tubing
ASTM A536	Standard Specification for Ductile Iron Castings
ASTM B16	Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines
ASTM B62	Standard Specification for Composition Bronze or Ounce Metal Castings

ASTM D429	Standard Test Methods for Rubber Property-Adhesion to Rigid Substrates
ASTM D2000	Standard Classification System for Rubber Products in Automotive Applications
AWWA C105	American National Standard for Polyethylene encasement for Ductile-Iron Pipe Systems
AWWA C110	American National Standard for Ductile-Iron and Gray-Iron Fittings for Water
AWWA C153	Ductile-Iron Pipe and Fittings
AWWA C210	Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines
AWWA C213	Fusion Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines
AWWA C509	Resilient Seated Gate Valves for Water Supply Service
AWWA C550	Protective Interior Coatings for Valves and Hydrants
AWWA C606	Grooved and Shouldered Joints
AWWA M11	Steel Water Pipe: A Guide for Design and Installation
NSF/ANSI 61	Drinking Water System Components

1.03 SUBMITTALS

A. Submit manufacturer's catalog data for each coupling, adaptor, gate valve, or other appurtenance. Include manufacturer's model or figure number for each type of coupling or joint for each type of pipe material for which couplings are used.

B. Show materials of construction by ASTM reference and grade. Show coatings and provide dimensions.

C. Submit installation instructions including manufacturer's recommended torques to which the coupling bolts shall be tightened.

D. Submit in accordance with “General Provisions” Section 3 and “Additional Special Provisions” Section 24.

1.04 MEASUREMENT AND PAYMENT

Full compensation for Miscellaneous Pipe Appurtenances including furnishing all materials, labor, tools, equipment, and incidentals and performing all work described in this Section and as indicated on the Plans shall be included in the Contract price paid for related piping work and no additional compensation shall be allowed therefor.

PART 2: MATERIALS

2.01 STEEL FLEXIBLE PIPE COUPLINGS

A. Steel couplings shall have middle rings made of steel conforming to ASTM A36, A53 (Type E or S), or A512 having a minimum yield strength of 30,000 psi. Follower rings shall be malleable iron (ASTM A47, Grade 32510), ductile iron (ASTM A536), or steel (ASTM A108, Grade 1018, or ASTM A510, Grades 1018 or 1021). Minimum middle ring length shall be 5 inches for pipe sizes 3/4 inch through 4-1/2 inches, and 7 inches for pipe sizes 5 inches through 24 inches.

B. Sleeve bolts shall have a minimum yield strength of 40,000 psi and an ultimate strength of 60,000 psi. Nuts and bolts shall be 316 Series stainless steel, regardless of location.

C. Steel follower rings shall be cast, forged, or hot rolled in one piece. Do not use rings fabricated from two or more shapes.

D. Wall thickness of sleeve shall be at least that specified for the size of pipe in which the coupling is to be used.

2.02 FLEXIBLE PIPE COUPLINGS FOR PLAIN END STEEL PIPE

A. Flexible pipe couplings for steel pipe shall be steel, Dresser Style 38, Smith-Blair Type 411, Romac Style 400, Baker Series 200, or approved equivalent.

2.03 FLANGED COUPLING-ADAPTERS FOR STEEL PIPE

Flanged coupling adapters for steel pipe shall be steel: Dresser Style 128, Smith-Blair Type 913, Romac FC400, Baker 602, or approved equivalent. Flange ends shall match the flange of the connecting pipe.

2.04 AIR GAP

Contractor shall furnish and install air gap connection as called out on the Plans. Contractor shall salvage existing manhole cover and construct grate cover in its place. Grate cover shall be FRP or approved other material, capable of preventing incidental vermin and/or rodents from entering manhole. Grate shall have 3" max openings, with a max thickness of grate to match that of the manhole cover being salvaged. Contractor shall submit manufacturer's catalogue for grate cover in accordance with "General Provisions" Section 3 and "Additional Special Provisions" Section 24.

2.05 GATE VALVES

A. Valves identified on the Plans by size and type. Valves shall be in conformance with AWWA C509, unless noted otherwise.

B. Valves shall be complete with operating handwheels, levers, chainwheels, pipe stands, gear actuators, operating nuts, chains, and wrenches required for operation. Valves shall have the name of the manufacturer and the size of the valve cast or molded onto the valve body or bonnet or shown on a permanently attached plate.

C. Provide open stem and yoke operator with handwheel. Minimum handwheel diameter shall be 12 inches. Valve operators shall open by turning counterclockwise.

D. Contractor to coordinate the drilling pattern between flanges. Gaskets, bolts, nuts, and washers for flanged valves shall be in accordance with the requirements for the adjacent pipe.

E. Pressure Rating: Gate valves shall be resilient-seated gate valves with a minimum rated working pressure of 200 psi. Valve shall be bubble tight at the rated working pressure.

F. General: Valve shall have a smooth unobstructed waterway free from any pockets that would allow sediments to gather.

G. Valve Bodies, Operating Nuts, Bonnet, Seal: Cast iron ASTM A126 class B or ductile iron ASTM A536, grade 65-45-12.

H. Valve Ends: Furnish valve with flanged ends. Flanged ends shall be class 125, ANSI B16.1.

I. Valve Wedge: Cast iron ASTM A126, class B or Ductile iron ASTM A536, Grade 65-45-12 with Buna N rubber encapsulation, ASTM D2000.

J. Valve Stems: Brass ASTM B16 or Bronze ASTM B62. Stem guide shall be made of materials that will not bind with the stem.

K. Stem Seals: Synthetic rubber ASTM D2000, O-ring seal type with three rings located in stem.

L. Bonnet and Seal Nuts and Bolts:

Above ground installations – cadmium plated carbon steel ASTM A307, Grade B cadmium plated or stainless steel A193 and A194, Type 316 Grade B8 or Grade 8.

M. Bronze Parts: All internal working parts (unless otherwise noted above) shall be all bronze containing not more than 2 percent aluminum or more than 5 percent zinc.

N. All internal and external ferrous surfaces of the valve body and bonnet shall have a fusion bonded epoxy coating, a minimum of 8 mils Dry Film Thickness, in compliance with AWWA C550, applied electrostatically by the manufacturer prior to assembly.

O. Finish coat valves located above ground in the field in accordance with "Painting and Coating" subsection of this Specification, below. Finish coat shall match the color of the adjacent piping. Coat handwheels the same as valves.

P. Acceptable valve manufacturers: American Flow Control, Mueller, or approved equal.

2.06 PIPE SUPPORTS

Pipe supports shall be provided as called out per Plans. Contractor shall provide supports for all valves and tees.

2.07 BOLTS, NUTS AND WASHERS

Bolts and nuts for above ground applications shall be Type 316 stainless steel. Fit shall be classes 2A and 2B per ANSI B1.1 when connecting to valves with body bolt holes.

PART 3: EXECUTION

3.01 INSTALLATION OF FLEXIBLE PIPE COUPLINGS

A. Clean oil, scale, rust, and dirt from pipe ends. Clean gaskets in flexible pipe couplings before installing.

B. Lubricate bolt threads with graphite and oil prior to installation.

3.02 **PAINTING AND COATING**

A. Coat flexible pipe couplings, transition couplings, and flanged coupling adapters located indoors, in vaults and structures, and above ground with the same coating system as specified for the adjacent pipe. Prime coat shall be applied at the factory. Color shall match the color of the connecting pipe.

B. Line flexible pipe couplings with 12-mils fusion bonded epoxy.

3.03 **TESTING**

A. Test appurtenances in place with the pipe being tested. Temporarily restrain expansion joints and other appurtenances as necessary for the test. Test in accordance with Section 15076B “Steel Pipe”.

END OF SECTION