

City of Portland Bureau of Water Works

No. 8303

(5) CASING INSTALLED and (7) SCREENS:

16" Diam. from +1.0ft. to 162.66 ft. Gauge .375

12" Diam., .375 wall, stainless steel pipe installed with screen sections as noted below:

Screen Sections

<u>Depth Below Ground</u>	<u>Section Length</u>	<u>Description</u>
156-195	39.	SS pipe w/ packers
195-218	23.	40 slot screen
218-235	17.	SS pipe
235-241	6.	20 slot screen
241-251	10.	18 slot screen
251-258	7.	20 slot screen
258-267	9.	SS pipe
267-275	8.	11 slot screen
275-278	3.	20 slot screen
278-287	9.	SS pipe w/ plate & bail bottom
	<u>131.0.A.L.</u>	

An 8" valve assembly was installed on 6-13-83 at 5 feet below ground after the rig was moved off the well.

City of Portland Bureau of Water Works

No. 8303

(9) CONSTRUCTION:

The well was drilled 20" diameter from 0' to 93'
drilled 16" diameter from 93' to 142'
under reamed to 20" diameter from 142' to 162'
drilled 14" diameter from 162' to 287'

Pea gravel was placed from 0 ft. to 7 ft. and from 33 ft. to 93 ft.
between the 16" casing and the 20" borehole as the 20" temporary
casing was removed

70 sacks of Type III cement grout were placed from 7 ft. to 33 ft.
between the 16" casing and the 20" bore hole as the 20" temporary
casing was removed

42 sacks of Type III cement grout were placed in the 20" diameter
under reamed hole and the 16" casing then driven from 142' to
its final depth to seal the 16" casing to the borehole from
142 ft to 162 ft.

3 sacks of Fondu cement grout were placed from 156 ft. to 162 ft.
between the 12" S.S. riser pipe on the screen section and the
16" casing.

#12-20 sand pack was placed between the 12" screen/S.S. pipe
section and the 14" bore hole from 162 ft. to 287 ft.

City of Portland Bureau of Water Works

No. 8303

(12) WELL LOG:

<u>Material</u>	<u>From</u>	<u>To</u>
Top soil, brown	0	4
Clay, brown, silty	4	15
Clay, grey	15	27
Clay, grey, silty & gravel	27	34
Gravel, cobbles & boulders	34	38
Boulders, cobbles & gravel	38	40
Gravel w/ some clay, grey	40	43
Gravel & cobbles w/ some clay, grey	43	46
Gravel & cobbles	46	48
Gravel & sand, black	48	55
Gravel & sand, black, some cementation & clay, brown	55	60
Gravel & sand, black, some cementation	60	63
Gravel & sand w/ silt, cementation & cobbles	63	73
Gravel, 4" minus w/ sand, brown	73	76
Gravel & brown silty sand, some cementation & occasional cobbles	76	96
Sandstone w/ clay, brown, silty	96	105
Silt, brown w/ some brown sandstone	105	112
Clay, grey w/ some siltstone	112	122
Sand, black, fine-coarse	122	131
Clay, green & brown	131	133
Clay, green & brown w/ grey silty sand	133	136
Clay, green	136	140
Clay, green w/ claystone & grey silty sand	140	145
Claystone & siltstone, grey	145	151
Clay, grey, silty	151	156
Sand & clay, grey, silty	156	160
Clay, grey, soft, silty	160	165
Clay, grey, sandy	165	169
Sandstone, grey, fine	169	172
Sandstone, black, fine w/ clay	172	185
Clay, grey w/ some claystone/sandstone	185	190
Clay, greenish-grey w/ claystone	190	195

City of Portland Bureau of Water Works

(12) WELL LOG: (cont'd)

No. 8303

<u>Material</u>	<u>From</u>	<u>To</u>
Sandstone, green-black, coarse	195	220
Sandstone, green-black, coarse w/ pea gravel	220	223
Claystone, greenish-grey	223	225
Clay, greenish-grey, soft	225	229
Clay, grey, soft	229	234
Clay, black	234	235
Gravel & sandstone, black, coarse	235	236
Gravel, 1" minus, some cemented	236	238
Gravel, 1½" minus & sand, black, medium - coarse	238	245
Sand, black, medium & gravel	245	260
Gravel, 1½" minus & sand, medium-fine	260	276
Cobbles & gravel w/ sand, medium (occasional boulder)	276	279
Claystone, green	279	286
Clay, brown, sticky	286	287



Water Resources Department

MILL CREEK OFFICE PARK

555 13th STREET N.E., SALEM, OREGON 97310

PHONE 378-3741

or

1-800-452-7813
(message line)

February 24, 1983

RECEIVED

JUL 12 1983

**WATER RESOURCES DEPT.
SALEM, OREGON**

Schneider Equipment, Inc.
21881 River Road NE
St. Paul, OR 97137

Attention: Stephen Schneider

Dear Steve:

This letter will serve as formal approval for the special standards requested for the City of Portland Production Well Number 15.

Call or write if I can help on anything else.

Sincerely,

DAN KENNEDY
Administrator
Administrative Services Division

DK:wpc

SCHNEIDER EQUIPMENT, INC.

21881 River Road N.E. St. Paul, Oregon 97137 (503) 633-2666

February 21, 1983

Water Resources Department
555-13th Street N.E.
Salem, Oregon 97310

Re: City of Portland Production Well No. 15, Type II,
Phase IV Contract; Request for special standards.

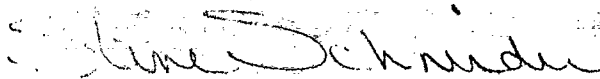
Attention: Mr. Dan Kennedy

Dear Dan:

We have initiated construction on the above referenced well and request a special standard to be approved for a 20 foot in lieu of 30 foot subsurface seal as outlined in the attached correspondence. The well is located in Multnomah County in the S.W. $\frac{1}{4}$ of the N.E. $\frac{1}{4}$ of Section 19, T1N, R3E.

Your prompt attention to this request will be greatly appreciated. If there are any questions, please do not hesitate to call.

Sincerely,



John J. Schneider
General Manager

cc: [unclear]

cc: letter to City of Portland dated 6/10/82
of Portland hrs. to WAD dated ~~5/7/82~~ and 4/14/82



CITY OF
PORTLAND, OREGON

BUREAU OF WATER WORKS

Francis J. Ivancie, Mayor
Carl Geibel, Administrator
1800 S.W. 6th
Portland, Oregon 97201
(503) 248-4178

April 14, 1982

State of Oregon
Department of Water Resources
555 13th Street N.E.
Salem, OR 97310

Attention: Mr. William McCall

Subject: Request for SPECIAL STANDARDS for the EAST WELL FIELD
PRODUCTION WELLS -- PHASE IV of the City of Portland

Gentlemen:

Enclosed herewith are specifications titled "East Well Field Production Wells - Phase IV" and Plan No. 1-G-154 which are proposed to serve as the contract documents for the three production wells of the City of Portland's Groundwater Development Program. The manner in which these wells are proposed to be constructed is believed to not conform with all the provisions of the "General Standards for the Construction and Maintenance of Water Wells in Oregon" and Special Standards are requested for those items which are not in conformance with the General Standards.

The Special Standards requested are the same as were granted by the State for Phase I and II of this development by letters dated March 20, 1979 and August 6, 1980.

The proposed production wells, specifically Types I and II on Sheet 2 of Plan 1-G-154, are required by the attached specifications to have a minimum grout seal above a confined aquifer of 20 feet instead of the 30 feet required in the General Standards. This has been done because of the following circumstances:

1. The confining layers above both confined aquifers are not cemented formations, but are instead compacted silts and fine sands which are subject to erosion.
2. The confined aquifers have sufficient head to flow when unrestrained, and the lower aquifer is capable of flows in excess of 500 gpm at the ground surface.
3. The head difference between the two confined aquifers is sufficient to generate considerable flow between the two aquifers if a path for such a flow is created.

- 2-
4. The confining layers have been found by previous investigations by the City to vary considerably in thickness and they may not be 30 feet thick at all locations.

Given the above characteristics, it is believed that if the contractor were to drill into one of the confined aquifers while drilling the hole for the subsurface seal, sufficient flow would be created outside the well casing to severely erode the confining layer and inhibit the placement of cement grout as a seal. Placement of only 20 feet of grout seal against the confining layer will significantly reduce the likelihood that the lower aquifer will be encountered prior to placement of the grout seal and a Special Standard is requested which will permit the use of 20-foot sub-surface seal.

The requirement for a 30-foot sub-surface grout seal above the confined aquifers could be met by extending the seal into the overlying aquifer. However, the overlying aquifers are not sufficiently consolidated or cemented to stand open hole if drilled by cable tool or air rotary drills. Additionally, these aquifers are sufficiently permeable that grout would flow out into the aquifer and it is unlikely that any such seal will be successful.

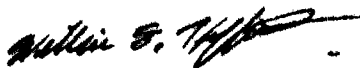
The Water Bureau requests a second Special Standard which will permit use of a mechanical-type watertight seal to be placed between the 22-inch outer casings and the 18-inch inner casings of Type I wells. This type of seal is proposed for use because placement of a cement grout seal between two casings so close in size would be very difficult. Additionally, if the grout seal were to leak, it would be extremely difficult, if not impossible, to repair. However, if the mechanical seal were to leak, it could be removed, repaired, and reinstalled.

The seal between the 18 and 22-inch casings could be made by extending the inner casing to the ground surface and welding a plate between the casings. However, the inner casing has been terminated below ground in order to increase the area available in the top of the well for special piping and other specialized equipment required to monitor and safeguard the well.

If there are any questions concerning this communication or other Special Standards required for the proposed wells, please notify Bill Hoffstetter at the above address, or by phone at 254-3678, and the Bureau will furnish whatever additional information or requests are required.

Sincerely,

C. Goebel, Administrator


William F. Hoffstetter
Engineer III

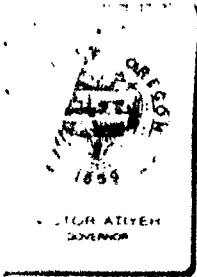
WFH:1s

Enclosures

cc: P. Norseth

Ralph H. Jackson, Water Resources Dept.

Al Smyth, Health Divn., Human Resources Dept.



Water Resources Department

MILL CREEK OFFICE PARK

555 13th STREET N.E., SALEM, OREGON 97310

PHONE 378-2907

or
1-800-452-7813
(message line)

June 10, 1982

William Hoffstetter
Bureau of Water Works
1800 Southwest 6th
Portland, OR 97392

Dear Bill:

I apologize for the delay in responding to your request for special standards dated April 14, 1982, and updated May 7, 1982.

As you know, special standards must be issued to the drilling contractor. However, I will give tentative approval to the design outlined so that bids may be obtained. It will then be necessary for the contractor to request the identical special standards specifying the locations of the well(s) where these techniques are to be used.

To reiterate: 1) a 20-foot seal will be approved in the confining stratum overlying each confined water bearing zone; and 2) the neoprene/concrete seal between the inner and outer casings as shown in the drawing included with your May 7, 1982 request will be approved.

If I can be of further assistance, please call. I'll try to be more prompt!

Sincerely,

Frederick G. Lissner
FREDERICK G. LISSNER
Hydrogeologist

FGLwpc
1151B