TESTING OF WATER LINES

After placing all harnessing and all valve support concrete, sufficient backfill shall be placed prior to filling the pipe with water and field testing to prevent lifting of the pipe. When local conditions require that the trenches be backfilled immediately after the pipe has been laid, the testing shall be carried out after backfilling has been completed but prior to placement of the permanent surface. At least seven (7) days shall elapse after the last valve support or hydrant block has been cast (Type I Portland Cement) prior to testing, unless high early strength concrete (Type III) is used, in which case three (3) days shall elapse.

All testing will be performed in accordance with the AWWA C600, current revision. Pressure Test: After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing.

Test pressure restrictions. Test pressures shall:

a. not be less than 1.25 times the working pressure at the highest pressure point along the test section;
b. not exceed pipe or thrust restraint design pressures;
c. be of at least 2-hour duration;
d. not vary by more than + 5 psi;
e. not exceed twice the rated working pressure of the valves or hydrants when the pressure boundary of the test section includes closed gate valves or hydrants;
f. not exceed the rated pressure of the valve.

Each valved section of pipe shall be filled with properly disinfected water slowly and the specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. All exposed pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until it is satisfactory to the Engineer.

A leakage test shall be conducted concurrently with the pressure test. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD(P)^{P}}{133,200}$$

in which L is the allowable leakage, in gallons per hour; S is the length of pipeline tested in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. When testing against closed metal-seated valves, an additional leakage per enclosed valve of 0.0078 gal/hr/in. of nominal valve size shall be allowed. When hydrants are in the test section, the test shall be made on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than the allowable amount, the Contractor shall, at his own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

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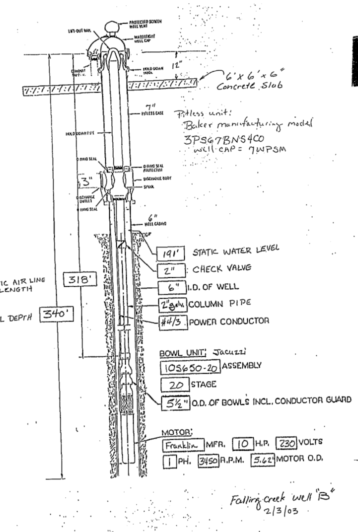
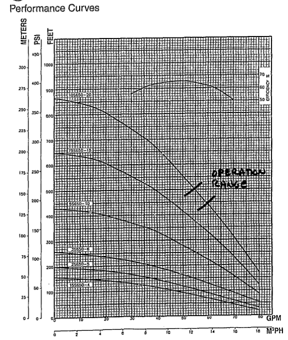

PROTECTED SCREEN WELL VENT
LIFT-OUT BAIL
WATERTIGHT WELL CAP
HOLD-DOWN
12"
6'x6'x6" Concrete Slab
7" PITLESS CASE
Pitless unit: Baker manufacturing model 3PS67BNS4CO well cap = 7WPSM
HOLD DOWN PIPE
O-RING SEAL
DISCHARGE BODY
SPOOL
3"
DISCHARGE OUTLET
6" WELL CASING
191' STATIC WATER LEVEL
2" CHECK VALVE
6" I.D. OF WELL
2" galv. COLUMN PIPE
#4/3 POWER CONDUCTOR
STATIC AIR LINE LENGTH 318'
WELL DEPTH 340'
BOWL UNIT: Jacuzzi
10S650-20 ASSEMBLY
20 STAGE
5½" O.D. OF BOWLS INCL. CONDUCTOR GUARD
MOTOR:
Franklin MFR. 10 H.P. 230 VOLTS
1 PH. 3450 R.P.M. 5.62" MOTOR O.D.
Falling Creek Well "B" 2/3/03

SandHandler™ High Capacity 6" 50 GPM

Performance Curves



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SECTION 11252

PUMPING EQUIPMENT

PART 1 GENERAL

WORK INCLUDED

The work includes providing all operating equipment and special materials complete with all accessories and appurtenances required for complete pumping systems, including the control system, starters, enclosures, and other equipment.

SUBMITTALS

Shop drawings, catalog data sheets, pump curves, diagrams, design calculations, and other such data necessary to describe completely and to substantiate compliance with the drawings and specifications shall be submitted for all materials, equipment and accessories specified in this section, in accordance with the procedure set forth in the Section 01340. Complete operation and maintenance instructions for all equipment shall be submitted with the shop drawings. No shop drawing will be considered complete until the operation and maintenance instructions and manuals have been approved by the Engineer.

ELECTRICAL EQUIPMENT

Complete starting equipment suitable for motor control indicated shall be provided in the Motor Control Center as specified.
Horsepower indicated and/or specified is approximate only and shall be adjusted to provide the specified capacities.
All equipment shall be protected by surge protectors and by lightning protectors.

EQUIPMENT INSTALLATION

The installation of all equipment including setting anchor bolts and grouting base plates shall be as recommended by the manufacturer to conform to the particular application involved, in accordance with the details shown on the drawings. All anchor bolts shall be plated steel. Installation of equipment and connections to equipment shall be completed in every detail in a first-class workmanlike manner. All bearings shall be properly lubricated. Necessary supports for all equipment shall be provided as required. Shop drawings for supports shall be submitted. Prior to acceptance of all or any part of the work test each pump and furnish written certification that it has been installed in accordance with the manufacturer's requirements and is ready to begin operation.

MANUFACTURER'S REPRESENTATIVES

Require, as part of the work under this contract, and at no additional cost to the Owner, that the approved pump manufacturers and control manufacturers provide the services of competent and experienced representatives to instruct the Contractor as required for the proper installation and start up of the equipment and to instruct the Owner-designated employees in the operation and maintenance of the installation.

QUALITY ASSURANCE

All materials and workmanship shall be of first class quality, and shall be used for the purpose for which they were manufactured. Pumps shall comply with OSHA requirements.
Each pump manufacturer shall warrant the equipment provided against defects in materials and workmanship for a period of twelve (12) months from start-up, under the use, operation and service of this project. The warranty shall be written.

GENERAL PUMP REQUIREMENTS

The pumps shall be designed and constructed in accordance with Standards of the Hydraulic Institute. The efficiency of the pump when operating under conditions of the specified capacities and heads shall be as near its peak efficiency as practicable.
The pumps shall be factory tested, hydraulically and dynamically balanced and shipped completely assembled. Certified factory performance curves for each pump, except sump pumps, shall be submitted to the Engineer for review. No pump will be approved until the performance curve is approved. Each pump shall be field tested under actual operating conditions. If any defect or fault is found during the test, the Contractor shall make all repairs or replacements and do whatever is necessary to remedy the defect or fault and shall retest the equipment to the satisfaction of the Engineer. All costs of repairs and replacement and retesting shall be at the Contractor's expense.

All pump motors and controls shall be suitable for operation at 40 degrees C ambient temperature unless indicated or specified otherwise. The pumps shall be capable of 24 hour per day operation, 7 days per week.

No spare parts for storage, required by this section, shall be delivered until such time as the Building is ready for occupancy by the Owner.

WELL PUMP

General:

Contractor shall furnish and install a quantity of one (1) Jacuzzi Sandhandler submersible, 6", model S650, 10 hp, 20 stage, water lubricated, vertical turbine pump with a submersible motor. The motor shall be a Franklin, 10 HP, one phase, 230 volts, 3,450 rpm, 5.62" O.D. motor. The unit shall have a stainless steel shaft, shell, intake screen, cable shield, and wear ring. The riser pipe shall be 2" galvanized steel pipe. The pitless adapter shall be a Baker 3PS67BNS4CO with a 3" discharge. The pump shall be set at 318 feet below the top of the well casing.

Conditions of Operation:

Capacity 55 U.S. Gallons per Minute
Total Head 498' TDH

146-3970.4 3/3

PART 3 EXECUTION

EQUIPMENT INSTALLATION

The installation of all shall be as recommended by the manufacturer to conform to the particular application involved, in accordance with the detail shown on the drawings. All anchor bolts shall be plated steel. Installation of equipment and connections to equipment shall be completed in every detail in a first-class workmanlike manner. All bearings shall be properly lubricated. Necessary supports for all equipment shall be provided as required.

Install the various pump systems in strict accordance with the respective manufacturer's instructions. Units shall be plumb and all joints shall be tight and non-leaking. Prior to acceptance of all or any part of the work, test each pump and furnish written certification that it has been installed in accordance with the manufacturer's requirements and is ready to begin operation.

START UP

No form of energy shall be turned on to any part of the system prior to the receipt by the Engineer of a Certified Statement of Approval of the Installation from the System Manufacturer.

Upon completion of the system start up, the System Manufacturer shall provide three (3) sets of complete Operation and Maintenance manuals. The manuals shall contain complete operation and maintenance instruction on each of the types of equipment provided. Additionally, complete as-built wiring and interconnecting diagrams shall provide and updated to include any and all changes that may have occurred during installation.

DISINFECTION EQUIPMENT

Disinfection of raw water shall be accomplished by the introduction of sodium hypochlorite solution. The hypochlorite pump shall have the capacity to provide hypochlorite at a normal operating rate of 1 part per million and a sustained emergency rate of 8.5 parts per million, at a water discharge rate of 780 gpm.

Two hypochlorite pumps shall be provided. One for normal use and the other for backup.

END OF SECTION

COMMONWEALTH OF VIRGINIA
2/28/03
STEWART W HUBBELL
No. 07420
PROFESSIONAL ENGINEER

Revisions	Date

Issue Date: 2/14/2003
Drawn By: SWH
Designed By: SWH
Checked By: SWH
Date: 2/14/03

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4071 FALLING CREEK WELLS A & B

SPECIFICATIONS FOR WELL B

TOWN OF VINTON, VIRGINIA

Vertical Scale: N/A

Horizontal Scale: N/A

Commission Number: 1955

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File Name: S04 to 7_3.plt / Plot Date: 4/15/02 / Plot File Date: 4/15/02