

WELL INSTALLATION REPORT

LAYNE-WESTERN

1. CONTRACT WITH: West Des Moines Water Works DATE: 10-25-95
2. CITY AND STATE: West Des Moines, Iowa DRILLER: Dave Deaver
3. WELL NO: 20 AT TEST HOLE NUMBER 20 WELL LOCATION: Raccoon River
Park.

4. WORK COMPLETED: TOTAL MAN HOURS CHARGED TO JOB:

5. MATERIAL:	LENGTH	DIA.	GAUGE OR THICKNESS	MATERIAL	TYPE	SLOT SIZE
6. SCREEN:	10.3'	20"	Std.	SST.	W.W.	0.100"
7. INNER CASING:	31.7'	20"	0.500"	Steel	Blank	
8. OUTER CASING:						

9. 14 TONS OF GRAVEL PACK USED IN THE WELL. SIZE: Northern Gravel 3/16" x #10

10. TEST OF WELL: TEST PUMP OR PERMANENT PUMP: Test
BOWL SIZE STAGES

11. SIZE OF ORIFICE: 6" x 5" ORIFICE TUBE READING:

12. PUMPING TEST - MEASUREMENTS FROM GROUND LEVEL:

TIME	GPM	STATIC	DRAWDOWN	PUMPING LEVEL
See enclosed pumping test results.				

13. RECOVERY IN 5 MINUTES: , IN 30 MINUTES:

14. DID YOU SEAL BOTTOM OF WELL Yes THICKNESS: Std. MATERIAL: SST.

15. WELL UNDERREAMED? No FROM TO , FROM TO

16. IF ALL SCREEN WAS NOT PLACED AT BOTTOM, STATE HOW IT WAS PLACED?

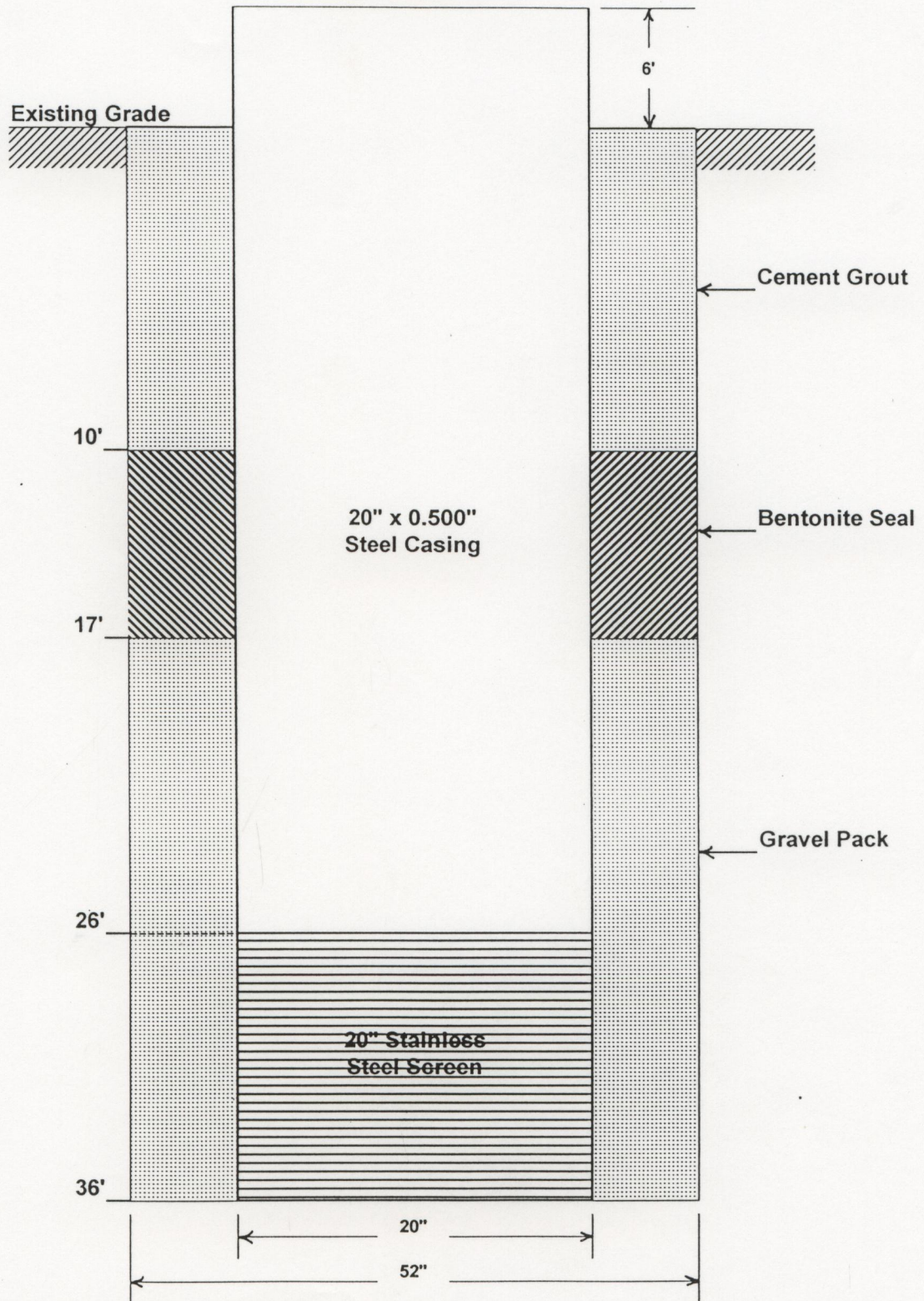
FROM TO ; FROM TO ; FROM TO

17. DEPTH OF WELL FROM GROUND LEVEL 36' SIZE OF DRILL HOLE: 52"

18. WAS CEMENT PLACED AROUND OR BETWEEN ANY OF THE CASINGS? Yes

19. IF SO, STATE INTERVALS, QUANTITY, AND METHOD USED: From 0 - 10', 6 yards.

**WELL CONSTRUCTION DIAGRAM
WEST DES MOINES WATER WORKS
WELL #20**



NOT TO SCALE



**VERTICAL TURBINE
PUMP INSTALLATION REPORT
Layne-Western**

JOB NAME: West Des Moines Water Works
Address: 1505 Railroad Ave., P.O. Box 65610
City, State: West Des Moines, Iowa 50265-0610

DATE: 6-14-96 Job Completion

Oil - (Water Lube)

PUMP NO: 96-09892 (New) - Repair
Pump Trouble: New Installation

MOTOR OR GEAR DRIVE:

Make: G.E. HP: 15
 Speed: 1750 rpm Volts: 460
 Frame: 254TP10 CD: 23.9"
 BD: 10" Non-reverse: (Yes) / No
 Serial # NLD6901009
 Running Amps: 19 - 20 - 20
 Running Volts: 480
 Gear Drive Ratio: None Standard / Comb.

WELL:

No: 20 Year Drilled: 1995
 Location: West of Well No. 18
 Diameter: 20" Depth: 42'

Measured from top of 20 inch diameter casing
 which is 3 feet above ground

Tape to water: 21'
 Airline length: 35' A.L. Material: 1/4" PVC

Static Gauge: 14' Static Level: 21'
 Pumping Gauge: 8' Pumping Level 27'
 Disch. Pressure: 40 psi when pumping into
 system at 320 gpm.

INSTALLER: Joe Dooling
 Rig Used: R12 Pump Rig

PUMP SIZE		
	DIAMETER	LENGTHS
Discharge	6" <u>(Above)</u> Below	
Column	6" <u>(Screw)</u> Flange	3 x 5' 2 x 10'
Tubing		
Shaft	1" <u>(Carbon)</u> Stainless	3 x 5' 2 x 10'

Column setting to bowl: 35 ft.

BOWL:

Manufacturer: Layne
 Diameter: 9" Shaft Diameter: 1-1/2"
 Type: BL Stages: 3
 Material: C.I. Bowl Length: 40"
 Suction Diam: 6" Suct. Length: None
 Special Paint, Coatings, Sleeves, etc:
 Column: Epoxy coated column & bowl
 Tubing: _____

PUMP REPAIR	
CONDITION OF PUMP WHEN PULLED	NEW PARTS INSTALLED
Column: _____	Column: <u>New Installation</u>
Tubing: _____	Tubing: _____
Shafting: _____	Shafting: _____
Bowl: _____	Bowl: _____
Suction: _____	Suction: _____
MACHINE WORK: _____	1. DRAIN PORTS OPEN Yes <u>(No)</u> 2. CHLORINATE WELL <u>(Yes)</u> No 3. ALIGN PUMP HEAD WITH DIAL INDICATOR <u>(Yes)</u> No 4. GROUTED HEAD-BASE PLATE <u>(Yes)</u> No 5. PUMP RUNS <u>(Good)</u> / Fair / Bad

WELL TEST DATA REPORT

LAYNE-WESTERN COMPANY

PROJECT: West Des Moines Water Works
 LOCATION: West Des Moines, Iowa
 WELL NO: 20
 WELL DIAMETER: 20 inches
 WELL DEPTH: 38 feet - from top of casing
 TOP OF SCREEN: 28 feet - from top of casing
 STATIC LEVEL: 15.0 feet - from top of casing
 ORIFICE SIZE: 6" x 5"

DATE TESTED: 11/15/95 - 11/17/95
 TESTED BY: David Deaver / Jim Hurd
 DRIVER: Submersible motor
 COLUMN AND SHAFT: 6" drop pipe
 BOWL SIZE & MAKE:
 MANUFACTURER: Grundfos
 SERIAL NUMBER:

TIME	PIEZ. READ. (IN)	FLOW RATE (GPM)	AIRLINE READING (FEET)	WATER LEVEL (FEET)	DRAW DOWN (FEET)	DISCHARGE PRESSURE		SPEC. CAPACITY (GPM/FT)	REMARKS
						(LBS.)	(FEET)		
1 min.		373		22.2	7.2			51.8	Test was started
2		373		22.6	7.6			49.1	at 10:05 a.m.
3		373		22.7	7.7			48.4	
4		373		22.8	7.8			47.8	
5		373		22.9	7.9			47.2	
6		373		22.9	7.9			47.2	
7		373		22.9	7.9			47.2	
8		373		23.0	8.0			46.6	
9		373		23.0	8.0			46.6	
10		373		23.0	8.0			46.6	
11		373		23.0	8.0			46.6	
12		373		23.0	8.0			46.6	
13		373		23.0	8.0			46.6	
14		373		23.0	8.0			46.6	
15		373		23.1	8.1			46.0	
18		373		23.3	8.3			44.9	
21		373		23.4	8.4			44.4	
24		373		23.6	8.6			43.4	
27		373		23.6	8.6			43.4	
30		373		23.7	8.7			42.9	
35		373		23.8	8.8			42.4	
40		373		23.9	8.9			41.9	
45		373		24.0	9.0			41.4	
50		373		24.0	9.0			41.4	
55		373		24.2	9.2			40.5	

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 SERIAL NUMBER:

TIME	PIEZ. READ. (IN)	FLOW RATE (GPM)	AIRLINE READING (FEET)	WATER LEVEL (FEET)	DRAW DOWN (FEET)	DISCHARGE PRESSURE		SPEC. CAPACITY (GPM/FT)	REMARKS
						(LBS.)	(FEET)		
1 hr.		373		24.2	9.2			40.5	
1:10		373		24.3	9.3			40.1	
1:20		373		24.4	9.4			39.7	
1:30		373		24.5	9.5			39.3	
1:40		373		24.6	9.6			38.9	
1:50		373		24.6	9.6			38.9	
2:00		373		24.8	9.8			38.1	
2:10		373		24.8	9.8			38.1	
2:20		373		24.9	9.9			37.7	
2:30		373		25.0	10.0			37.3	
2:40		373		25.0	10.0			37.3	
2:50		373		25.1	10.1			36.9	
3:00		373		25.1	10.1			36.9	
4 hrs.		373		25.4	10.4			35.9	
5		373		25.6	10.6			35.2	
6		373		25.8	10.8			34.5	
7		373		25.9	10.9			34.2	
8		373		26.1	11.1			33.6	
9		373		26.2	11.2			33.3	
10		373		26.3	11.3			33.0	
11		373		26.4	11.4			32.7	
12		373		26.5	11.5			32.4	
13		373		26.6	11.6			32.2	
14		373		26.7	11.7			31.9	
15		373		26.8	11.8			31.6	

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WELL DEPTH:	38 feet - from top of casing	BOWL SIZE & MAKE:	
AIRLINE LENGTH:	28 feet - from top of casing	MANUFACTURER:	Grundfos
STATIC LEVEL:	15.0 feet - from top of casing	SERIAL NUMBER:	
ORIFICE SIZE:	6" x 5"		

TIME	PIEZ. READ. (IN)	FLOW RATE (GPM)	AIRLINE READING (FEET)	WATER LEVEL (FEET)	DRAW DOWN (FEET)	DISCHARGE PRESSURE		SPEC. CAPACITY (GPM/FT)	REMARKS
						(LBS.)	(FEET)		
16 hrs.		373		26.9	11.9			31.3	
17		373		26.9	11.9			31.3	
18		373		27.0	12.0			31.1	
19		373		27.0	12.0			31.1	
20		373		27.1	12.1			30.8	
21		373		27.1	12.1			30.8	
22		373		27.2	12.2			30.6	
23		373		27.3	12.3			30.3	
24		373		27.3	12.3			30.3	
25		373		27.3	12.3			30.3	
26		373		27.4	12.4			30.1	
27		373		27.4	12.4			30.1	
28		373		27.5	12.5			29.8	
29		373		27.5	12.5			29.8	
30		373		27.5	12.5			29.8	
31		363		27.6	12.6			28.8	
32		363		27.6	12.6			28.8	
33		363		27.6	12.6			28.8	
34		363		27.7	12.7			28.6	
35		363		27.7	12.7			28.6	
36		363		27.7	12.7			28.6	
37		363		27.7	12.7			28.6	
38		363		27.8	12.8			28.4	
39		363		27.8	12.8			28.4	
40		363		27.8	12.8			28.4	

