

**WATER WELL RECORD (WWC-5)**

KOLAR DOC ID \_\_\_\_\_ WELL ID \_\_\_\_\_

Original Record      Correction      Change in Well Use

**LOCATION OF WATER WELL**

Latitude		Longitude		Section		Township		Range		E W	Fraction	¼	¼	¼
Datum		Elevation		County										

**WATER WELL OWNER**

Name	
Business	
Address	
Well location at owner's address	

**WELL WATER USE**

--

**COMPLETION**

Depth of completed well: _____ ft.
Depth(s) groundwater encountered:
(1) _____ ft.; (2) _____ ft.;
(3) _____ ft.; (4) dry well
Static water level in well: _____ ft.
measured below land surface
on (mm/dd/yy): _____
measured above land surface
on (mm/dd/yy): _____
Estimated yield: _____ gpm
Water level was: _____ ft. after _____ hours
pumping _____ gpm
Pump installed?    Yes    No
Water well disinfected?    Yes    No
Date disinfected (mm/dd/yy): _____
Aquifer, if known:

**NEAREST SOURCE OF POTENTIAL CONTAMINATION**

Source: _____
Distance from well: _____      Direction from well: _____
Source description: _____
Source: _____
Distance from well: _____      Direction from well: _____
Source description: _____
No potential source of contamination within 100 feet.

**CONSTRUCTION**

Borehole interval:	Borehole diameter:
from _____ to _____ ft.	_____ in.
from _____ to _____ ft.	_____ in.
Casing height above land surface: _____ in.	
If casing height is less than 12 in. has a variance been approved?*	Yes    No
*variance not required for monitoring or environmental remediation wells	
Casing type: _____	
Blank casing interval: _____ ft. to _____ ft.	
Blank casing diameter: _____ in.	
Casing joints: _____	
Weight: _____ lbs/ft.	
Wall thickness or gauge no.: _____	
Blank casing interval: _____ ft. to _____ ft.	
Blank casing diameter: _____ in.	
Casing joints: _____	
Weight: _____ lbs/ft.	
Wall thickness or gauge no.: _____	
Grout interval: _____ ft. to _____ ft.	
Grout material: _____	
Grout interval: _____ ft. to _____ ft.	
Grout material: _____	
Screen / perforation material: _____	
Screen / perforation openings: _____	
Screen / perforation intervals:	
From _____ ft. to _____ ft.	
Slot size _____ unit _____	
From _____ ft. to _____ ft.	
Slot size _____ unit _____	
Gravel pack intervals:	
Gravel pack not used:      Gravel size _____ in	
From _____ ft. to _____ ft.	
Gravel pack not used:      Gravel size _____ in	
From _____ ft. to _____ ft.	

**PERMIT & ID NUMBERS (AS REQUIRED)**

DWR Application No.: _____
KDHE / EPA Project Code: _____
Site Name: _____
KDHE UIC Class V Form Completed:    Yes    No
County Permit:    Yes    No    Permit ID: _____
Lease Name & Well #: _____
# of boreholes: _____    # of dewatering wells: _____

**LITHOLOGIC LOG**

FROM	TO	LITHOLOGY INTERVALS

**COMMENTS**

--

**CONTRACTOR'S OR LANDOWNERS CERTIFICATION**

This water well was    constructed    reconstructed    pursuant to the stated water well contractor's license and was completed on _____. I certify that this record is true to the best of my knowledge and belief. This water well record was completed on _____ under the business name of _____, Kansas Water Well Contractor's License No. _____ under the authority of the designated person as defined in K.A.R. 28-30-2(j) and signed and certified by the electronic signature of the designated person at its submittal: _____.
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Send one copy to WATER WELL OWNER and retain one for your records. Fee of \$5.00 for each constructed well.



Form	WWC5.2 - Water Well Record
Doc ID	1676874
Well Owner	City of Olathe, KS
Contractor	Layne Christensen Company #102

#### Lithology

From	To	Lithology Intervals
0	1	topsoil
1	13	clay,dark,brown
13	22	clay,light,tan
22	24	clay,silty,brown
24	28	sand,very fine
28	30	sand,very fine,clayey
30	37	sand,fine
37	46	sand,fine to medium,brown
46	48	clay,medium to coarse,gray
48	50	other,wood
50	72	sand,fine to medium,gray,cobbles 53-55, boulders 58-60
72	73	clay,brownish,olive,with boulders
73	74	limestone,unknown,brownish, olive



Layne Christensen Company  
620 South 38th Street  
Kansas City, KS 66106  
913-321-5000

## TEST HOLE REPORT



OWNER: City of Olathe, KS  
JOB NO: 1101528 DATE: 02/04/21  
CITY: Olathe STATE: KS

TEST HOLE  
NO: VW-1  
DRILLER: R. Bowles

TEST HOLE LOCATION: 38.9829310°, -094.9267100°  
Northing 251,411.646 Easting 2,185,797.143  
*Distance and direction from permanent landmark or previous test hole.*

FROM (FEET)	TO (FEET)	MARSH FUNNEL VISCOSITY (SEC)	MUD PIT LOSS (INCHES)	APPROXIMATE STATIC WATER LEVEL: _____
				FORMATION LOG
0	1			Topsoil
1	13			Dark brown clay
13	22			Light tan clay
22	24			Brown silty clay
24	28			Very fine sand
28	30			Same with clay
30	37			Fine sand
37	46	31	2"	Medium/fine brown sand with coarse and fines
46	48			Medium/coarse with fines trace gray clay
48	50			Wood
50	72	31"	5"	Medium/fine gray sand with coarse, cobbles 53-55, boulders 58-60
72	73			Olive brown clay with boulders
73				Brown limestone

SIZE MUD PIT: \_\_\_\_\_ LENGTH: 10' WIDTH: 3' DEPTH: \_\_\_\_\_  
COMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



February 8, 2021

Layne  
620 S. 38th Street  
KC KS 66106

Re: Project: Olathe Vertical Wells  
Description: Well Sand Sample  
Sampled By: Client  
Project #: C10-16-191  
Report #: K39700  
Original Dry: 814.7  
Location: Well 1  
Depth: 40-45'

**Report Of Test Results**  
Gradation ASTM C-136/AASHTO T-27

Sieve size	Opening (mm)	Cumulative Retained	% Retained	% Passing
1/2"	12.5	0	0	100
3/8"	9.5	0.0	0	100
No. 4	4.75	6.2	1	99
No. 8	2.36	200.4	25	75
No. 16	1.180	597.9	73	27
No. 30	0.600	757.0	93	7
No. 50	0.300	773.1	95	5
No. 100	0.150	791.0	97	3
No. 200	0.075	796.6	97.8	2.2

Thank you for your continued interest in Kansas City Testing & Engineering, LLC

Respectfully Submitted  
**Kansas City Testing & Engineering, LLC**

Sam Coulson, PE  
Lab Manager

*Page 1 of 1 Results relate only to sample tested. Reports shall not be reproduced except in full without the written approval of Kansas City Testing & Engineering, LLC.*



February 8, 2021

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620 S. 38th Street  
KC KS 66106

Re: Project: Olathe Vertical Wells  
Description: Well Sand Sample  
Sampled By: Client  
Project #: C10-16-191  
Report #: K39700  
Original Dry: 872.6  
Location: Well 1  
Depth: 45-50'

**Report Of Test Results**  
Gradation ASTM C-136/AASHTO T-27

Sieve size	Opening (mm)	Cumulative Retained	% Retained	% Passing
1/2"	12.5	0	0	100
3/8"	9.5	0.0	0	100
No. 4	4.75	68.8	8	92
No. 8	2.36	271.6	31	69
No. 16	1.180	635.7	73	27
No. 30	0.600	794.1	91	9
No. 50	0.300	818.3	94	6
No. 100	0.150	840.7	96	4
No. 200	0.075	847.6	97.1	2.9

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February 9, 2021

Layne  
620 S. 38th Street  
KC KS 66106

Re: Project: Olathe Vertical Wells  
Description: Well Sand Sample  
Sampled By: Client  
Project #: C10-16-191  
Report #: K39700  
Original Dry: 849.1  
Location: Well 1  
Depth: 50-55'

**Report Of Test Results**  
Gradation ASTM C-136/AASHTO T-27

Sieve size	Opening (mm)	Cumulative Retained	% Retained	% Passing
1/2"	12.5	0	0	100
3/8"	9.5	0.9	0	100
No. 4	4.75	47.9	6	94
No. 8	2.36	336.9	40	60
No. 16	1.180	669.0	79	21
No. 30	0.600	796.8	94	6
No. 50	0.300	815.3	96	4
No. 100	0.150	831.3	98	2
No. 200	0.075	836.5	98.5	1.5

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February 8, 2021

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620 S. 38th Street  
KC KS 66106

Re: Project: Olathe Vertical Wells  
Description: Well Sand Sample  
Sampled By: Client  
Project #: C10-16-191  
Report #: K39700  
Original Dry: 608.5  
Location: Well 1  
Depth: 55-60'

**Report Of Test Results**  
Gradation ASTM C-136/AASHTO T-27

Sieve size	Opening (mm)	Cumulative Retained	% Retained	% Passing
1/2"	12.5	0	0	100
3/8"	9.5	4.4	1	99
No. 4	4.75	116.9	19	81
No. 8	2.36	309.9	51	49
No. 16	1.180	459.2	75	25
No. 30	0.600	520.6	86	14
No. 50	0.300	565.5	93	7
No. 100	0.150	589.5	97	3
No. 200	0.075	595.5	97.9	2.1

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February 8, 2021

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KC KS 66106

Re: Project: Olathe Vertical Wells  
Description: Well Sand Sample  
Sampled By: Client  
Project #: C10-16-191  
Report #: K39700  
Original Dry: 639.9  
Location: Well 1  
Depth: 60-65'

**Report Of Test Results**  
Gradation ASTM C-136/AASHTO T-27

Sieve size	Opening (mm)	Cumulative Retained	% Retained	% Passing
1/2"	12.5	0	0	100
3/8"	9.5	3.8	1	99
No. 4	4.75	83.4	13	87
No. 8	2.36	182.5	29	71
No. 16	1.180	419.1	65	35
No. 30	0.600	566.5	89	11
No. 50	0.300	605.8	95	5
No. 100	0.150	624.3	98	2
No. 200	0.075	629.3	98.3	1.7

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February 8, 2021

Layne  
620 S. 38th Street  
KC KS 66106

Re: Project: Olathe Vertical Wells  
Description: Well Sand Sample  
Sampled By: Client  
Project #: C10-16-191  
Report #: K39700  
Original Dry: 699.8  
Location: Well 1  
Depth: 65-70'

**Report Of Test Results**  
Gradation ASTM C-136/AASHTO T-27

Sieve size	Opening (mm)	Cumulative Retained	% Retained	% Passing
1/2"	12.5	0	0	100
3/8"	9.5	3.3	0	100
No. 4	4.75	104.2	15	85
No. 8	2.36	257.9	37	63
No. 16	1.180	559.3	80	20
No. 30	0.600	668.2	95	5
No. 50	0.300	677.7	97	3
No. 100	0.150	684.3	98	2
No. 200	0.075	687.6	98.3	1.7

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February 9, 2021

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KC KS 66106

Re: Project: Olathe Vertical Wells  
Description: Well Sand Sample  
Sampled By: Client  
Project #: C10-16-191  
Report #: K39700  
Original Dry: 763.1  
Location: Well 1  
Depth: 70-73'

**Report Of Test Results**  
Gradation ASTM C-136/AASHTO T-27

Sieve size	Opening (mm)	Cumulative Retained	% Retained	% Passing
1/2"	12.5	0	0	100
3/8"	9.5	31.2	4	96
No. 4	4.75	162.4	21	79
No. 8	2.36	402.9	53	47
No. 16	1.180	653.7	86	14
No. 30	0.600	726.9	95	5
No. 50	0.300	738.9	97	3
No. 100	0.150	746.9	98	2
No. 200	0.075	750.9	98.4	1.6

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Lab Manager

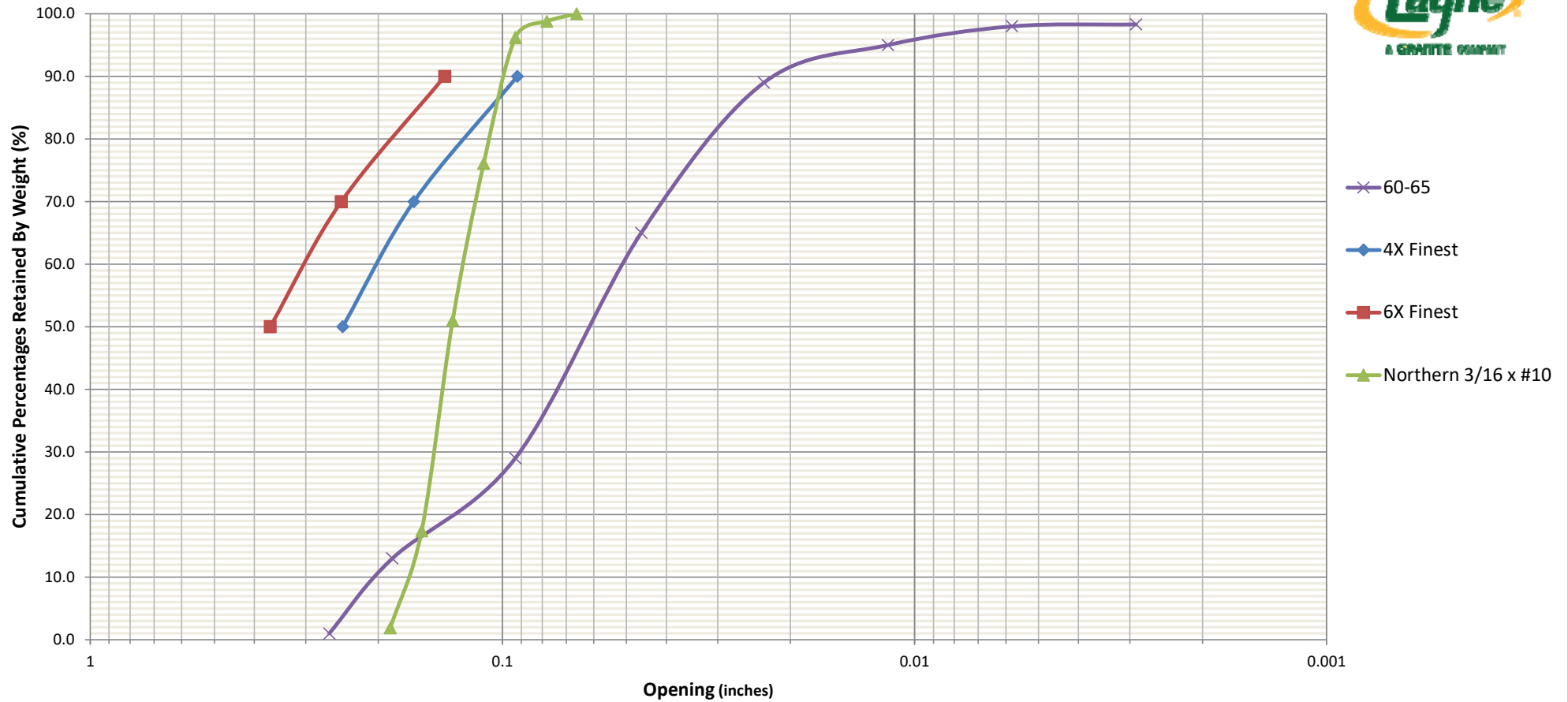
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# Olathe, KS Well VW-1 Finest Formation & Gravel Selection





## WELL SCREEN FLOW CALCULATION

City of Olathe, KS

Well VW-1

2/4/2021

### KNOWN PARAMETERS:

- |   |                            |
|---|----------------------------|
| 1. Screen Diameter:   | 36 inches                  |
| 2. Screen Length:   | 12 feet                    |
| 3. Open Area of Johnson Screen<br>0.090" Slot Wire Wrap Hi-Q Screen         | 548.00 in <sup>2</sup> /lf |
| 4. Maximum Allowable Entrance<br>Velocity of Water Entering<br>Well Screen: | 0.1 ft/sec                 |

### ASSUMED PARAMETERS:

- |  |      |
|--|------|
| 1. Percent Blockage of Open<br>Area by Gravel Pack | 50 % |
|--|------|

### STANDARD FLOW CALCULATION FORMULA: $Q = VA$

WHERE:  $Q$  = FLOW RATE PER FOOT OF SCREEN, GPM

$Q_{MAX}$  = MAXIMUM TOTAL ALLOWABLE FLOW RATE, GPM

$V$  = VELOCITY OF WATER ENTERING THE SCREEN, FT/SEC

$A$  = OPEN AREA OF THE SCREEN, FT<sup>2</sup>

$$Q = VA$$

$$Q = \left( 0.1 \text{ ft/sec} \right) \left( 548.0 \text{ in}^2/\text{lf} \right) \left( 0.5 \text{ for blockage} \right)$$

$$Q = \left( 0.1 \text{ ft/sec} \right) \left( 274.0 \text{ in}^2/\text{lf} \right)$$

$$Q = \left( 0.1 \text{ ft/sec} \right) \left( 60 \text{ sec/min} \right) \left( 274.0 \text{ in}^2/\text{lf} \right) \left( 1 \text{ ft}^2 / 144 \text{ in}^2 \right) \left( 7.48 \text{ gal/ft}^3 \right)$$

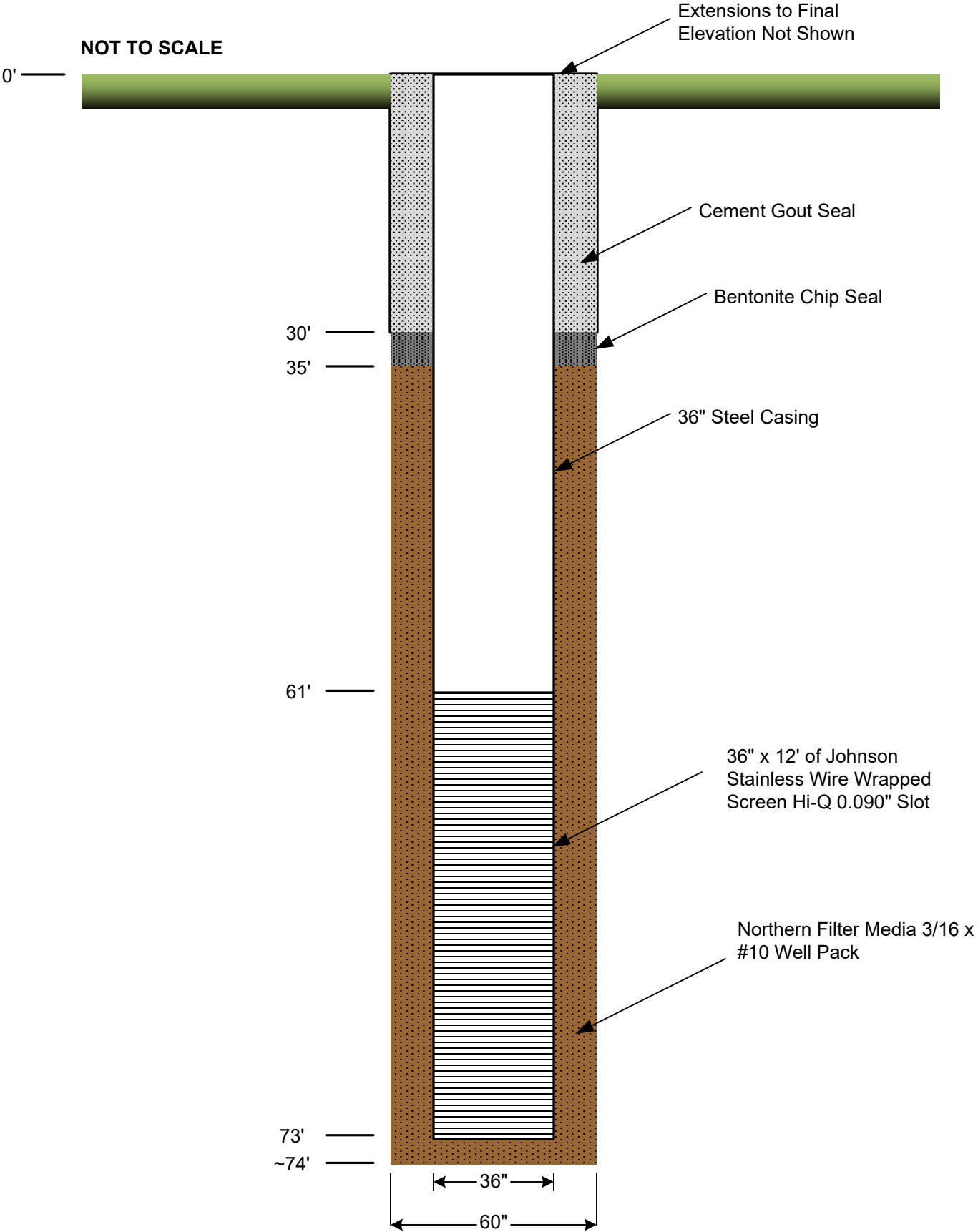
$$Q = 85.4 \text{ gpm/lf of screen}$$

$$Q_{MAX} = \left( 85.4 \text{ gpm/lf of screen} \right) \left( 12 \text{ lf of screen} \right)$$

$$Q_{MAX} = 1024.8 \text{ GPM}$$



City of Olathe, KS  
Well VW-1  
2/17/2021 Proposed Construction





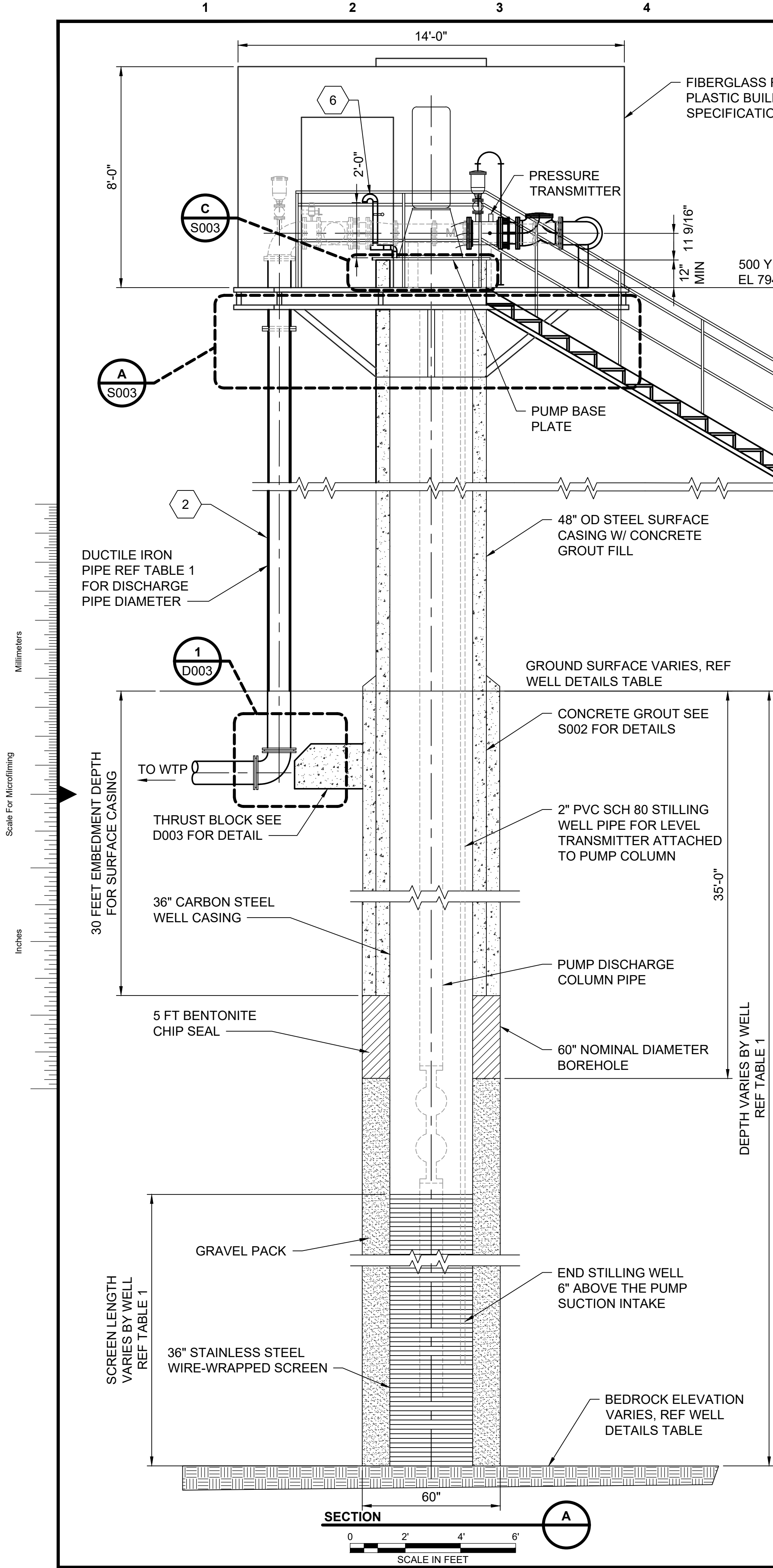
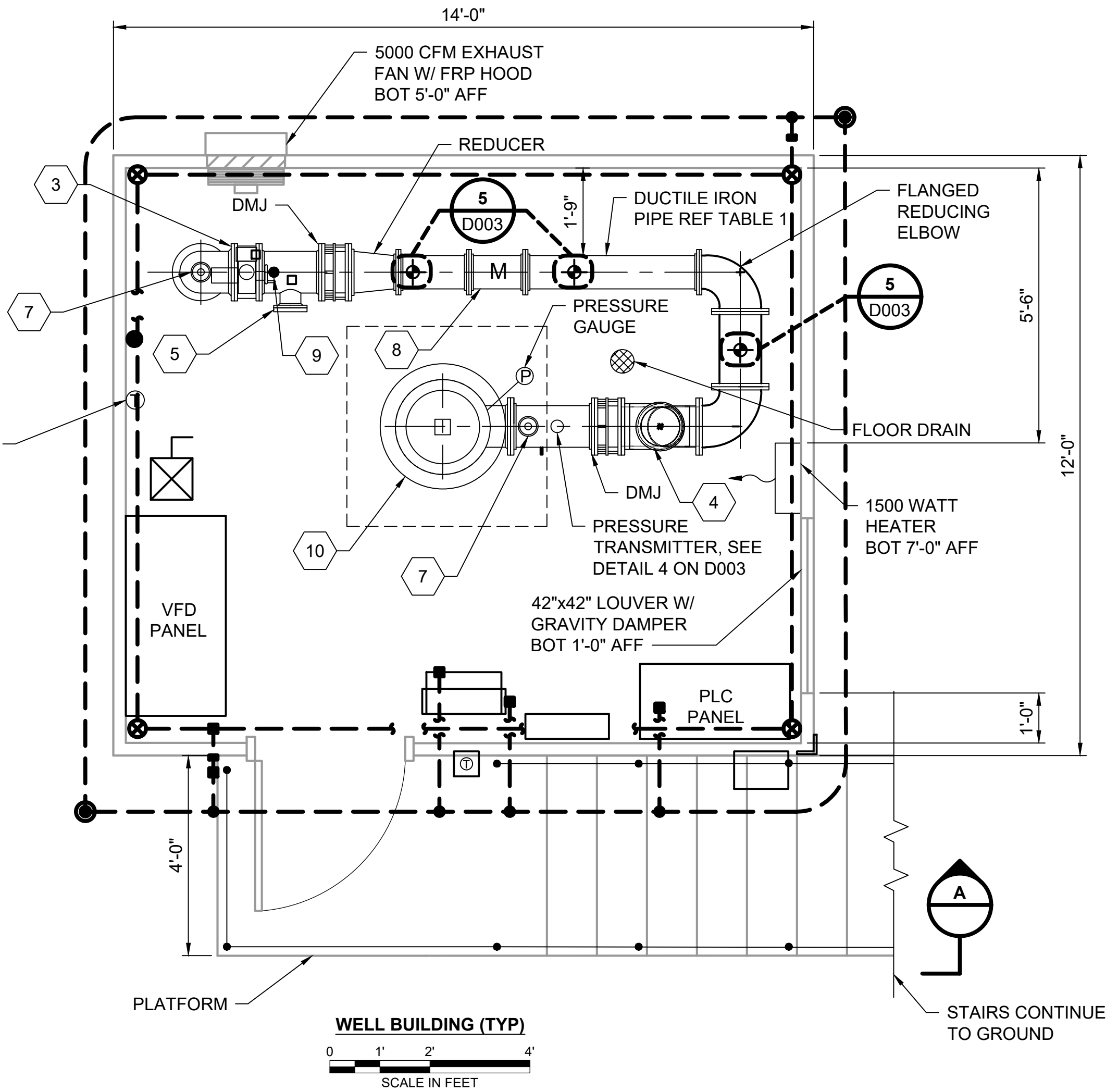


TABLE 1 - WELL DETAILS											
WELL ID	NORTHING	EASTING	SURFACE ELEVATION (FEET AMSL)	ESTIMATED DEPTH TO BEDROCK (FEET BELOW GROUND SURFACE)	BOREHOLE DIAMETER (INCHES)	WELL CASING AND SCREEN DIAMETER (INCHES)	WELL SCREEN LENGTH (FEET)	DESIGN MAXIMUM PUMPING RATE (GPM)	DISCHARGE PIPING DIAMETER (INCHES)	REDUCER SIZE (INCHES)	FLOW METER DIAMETER (INCHES)
VW1	251,411.646	2,185,797.143	787.73	73	60.0	36.0	12.0	950.0	10.0	8	8.0
VW2	251,597.450	2,186,149.783	780.24	62	60.0	36.0	10.0	800.0	10.0	8	8.0
VW10	251,557.000	2,186,523.000	782.00	63	60.0	36.0	10.0	600.0	8.0	6	6.0
VW6R	250,984.000	2,186,241.000	787.00	64	60.0	36.0	8.0	500.0	8.0	6	6.0
VW5	252,032.000	2,185,831.000	781.00	64	60.0	36.0	11.0	940.0	10.0	8	8.0

\* COORDINATES PROVIDED ARE IN THE STATE PLANE COORDINATE SYSTEM, NAD83, KANSAS NORTH, FIPSZONE 1501, WITH UNITS OF US SURVEY FEET

- GENERAL NOTES:**
1. PIPING WILL BE CONNECTED TO EXISTING RAW WATER SYSTEM COLLECTION PIPING AS SHOWN ON CIVIL (C-DWGS) DRAWING.
  2. REFER TO CIVIL DRAWINGS FOR PLAN ORIENTATION.
  3. WELL CONSTRUCTION DETAILS ARE PRELIMINARY. FINAL WELL DETAILS WILL BE BASED ON THE TEST BORING DRILLED AT EACH WELL LOCATION.
  4. WELL CONSTRUCTION SHOWN AS SECTION A FOR VW1 ONLY.
  5. REFER TO SPECIFICATION SECTION 13 34 23 AND DRAWING A001 FOR FRP BUILDING REQUIREMENTS.
  6. REFER TO DRAWINGS S002 AND S003 FOR STRUCTURAL AND FRAMING DETAILS.
  7. PUMP SUCTION SET 5'-0" ABOVE BOTTOM OF WELL.

- KEYED NOTES:**
- 1 OSHA STAIRS. MINIMUM 36-INCH WIDE. REFER TO A001.
  - 2 HEAT TRACE AND INSULATE ABOVE GRADE PIPING.
  - 3 ELECTRONICALLY ACTUATED BUTTERFLY VALVE W/ VALVE STEM.
  - 4 SWING CHECK VALVE.
  - 5 TEE WITH BLIND FLANGE DIAMETER TO MATCH DISCHARGE PIPING.
  - 6 WELL VENT WITH RETURN BEND AND #16 COPPER SCREEN.
  - 7 2" BALL VALVE TO 2" COMBINATION AIR RELEASE VALVE W/ MESH COPPER SCREEN. SEE DETAIL 2 ON D003. PIPE DISCHARGE TO FLOOR DRAIN
  - 8 FOXBORO MAGNETIC FLOW METER. SEE TABLE 1 FOR SIZE.
  - 9 SMOOTH NOSE SAMPLE TAP. SEE DETAIL 4 ON D003.
  - 10 CAST-IRON DISCHARGE HEAD WITH MINIMUM 2-INCH THICK BASE PLATE.



no.	date	by	ckd	description
A	7/31/20	BDF	LD	ISSUED FOR 60% OWNER REVIEW
B	9/30/20	BDF	LD	ISSUED FOR 90% OWNER REVIEW

**PRELIMINARY - NOT FOR CONSTRUCTION**



9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
BMCD LICENSE NO. E-65

date	JUNE 25, 2020	detailed	B. FIFIELD
designed	L. DEANGELIS	checked	



Johnson County, Kansas  
CITY PROJECT No 5-C-031-18

**VERTICAL WELL FIELD IMPROVEMENTS PROJECT**  
GENERAL WELL ARRANGEMENTS

project	110372	contract	
drawing		rev.	
D002		B	
sheet	of	sheets	
file 110372_D002 - GENERAL ARRANGEMENT.DWG			