IOWA DEPARTMENT OF NATURAL RESOURCES

CONSTRUCTION DOCUMENTS FOR WATER TREATMENT SYSTEM REPLACEMENT LEWIS AND CLARK STATE PARK

MONONA COUNTY, IOWA

PROJECT #13-01-67-01

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Shahid Hameed

Shahid Hameed

Date 3/1/16

My license renewal date is December 31, 2016.

Pages or sheets covered by this seal: ALL

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

DIRECTORY

PROJECT MANAGER		CONSTRUCTION INSPECTOR	
COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES	COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES
ADDRESS	502 EAST 9TH STREET	ADDRESS	613 APOLLO RD
CITY,STATE,ZIP	DES MOINES, IA 50319	CITY,STATE,ZIP	HINTON, IA 51024-8827
CONTACT	MIKE HAMEED	CONTACT	JEFF FELTS
TELEPHONE	515-725-8467	TELEPHONE	515-250-3712
FAX		FAX	
EMAIL	Mike.Hameed@dnr.iowa.gov	EMAIL	Jeff.Felts@dnr.iowa.gov

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF DRILLING A NEW WELL, NEW WATER TREATMENT BUILDING WITH IRON REMOVAL, SOFTENING AND CHLORINE INJECTION SYSTEM AND DEMOLISHING OF THE OLD TREATMENT BUILDING & TANK AND OTHER INCIDENTAL WORK AS REQUIRED BY D.N.R CONSTRUCTION INSPECTOR AT LEWIS AND CLARK STATE PARK, MONONA COUNTY, IOWA.

AUTHORIZATION TO BID

AUTHORIZATION - PARKS | WILDLIFE | FISHERIES | LAW ENFORCEMENT | FORESTRY

ENGINEERING BUREAU CHIEF

3/7/16

DATE

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CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILING
502 E. 9TH ST., DES MOINES, IA 50319-0034

COVER SHEET

ACCESS ROAD CONSTRUCTION FOR:
LEWIS & CLARK STATE PARK

FREMONT COUNTY, IA

NO.	BY DATE	REVISION

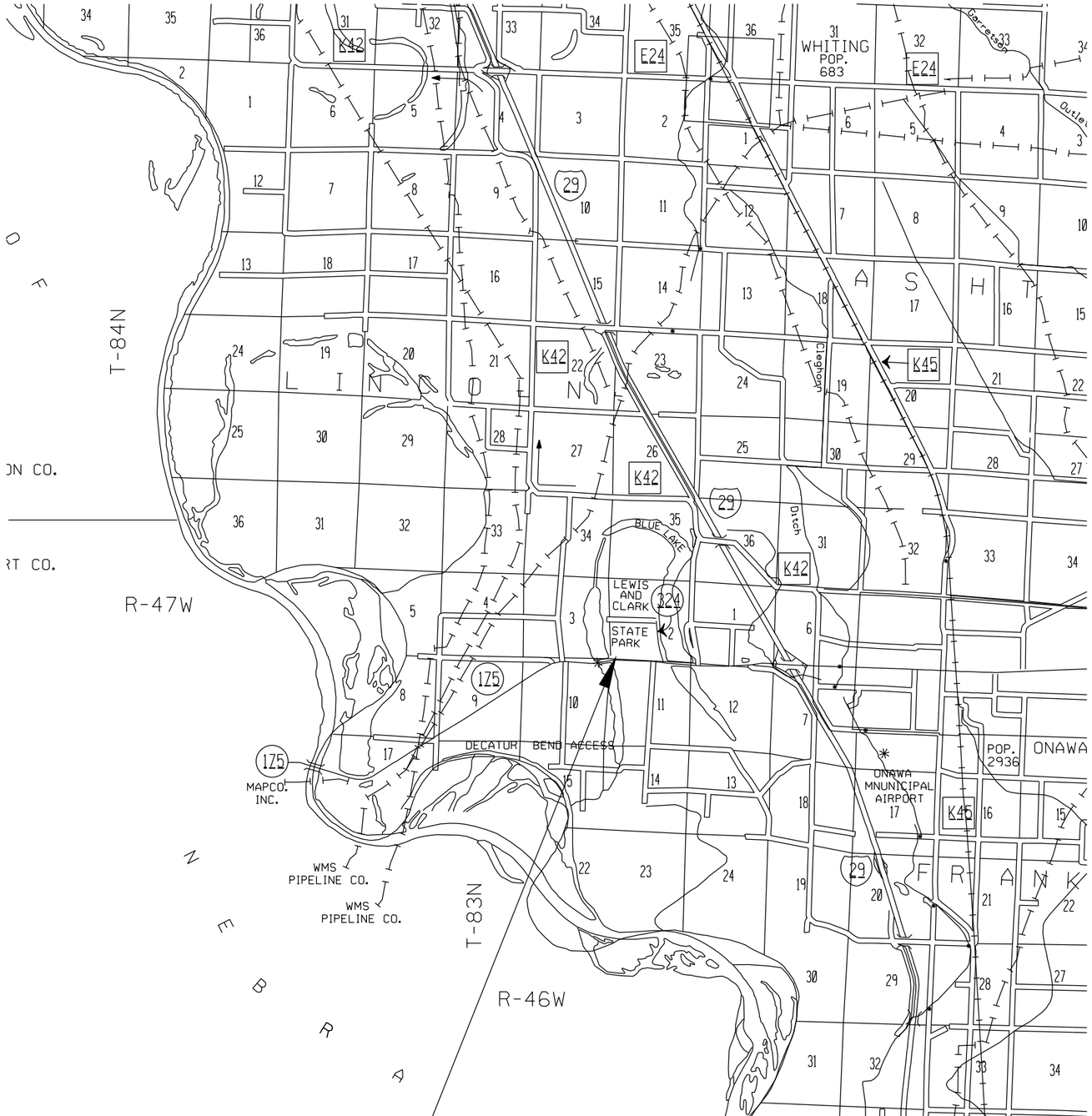
DRAWN BY: MH

PROJECT NUMBER: 13-01-67-01

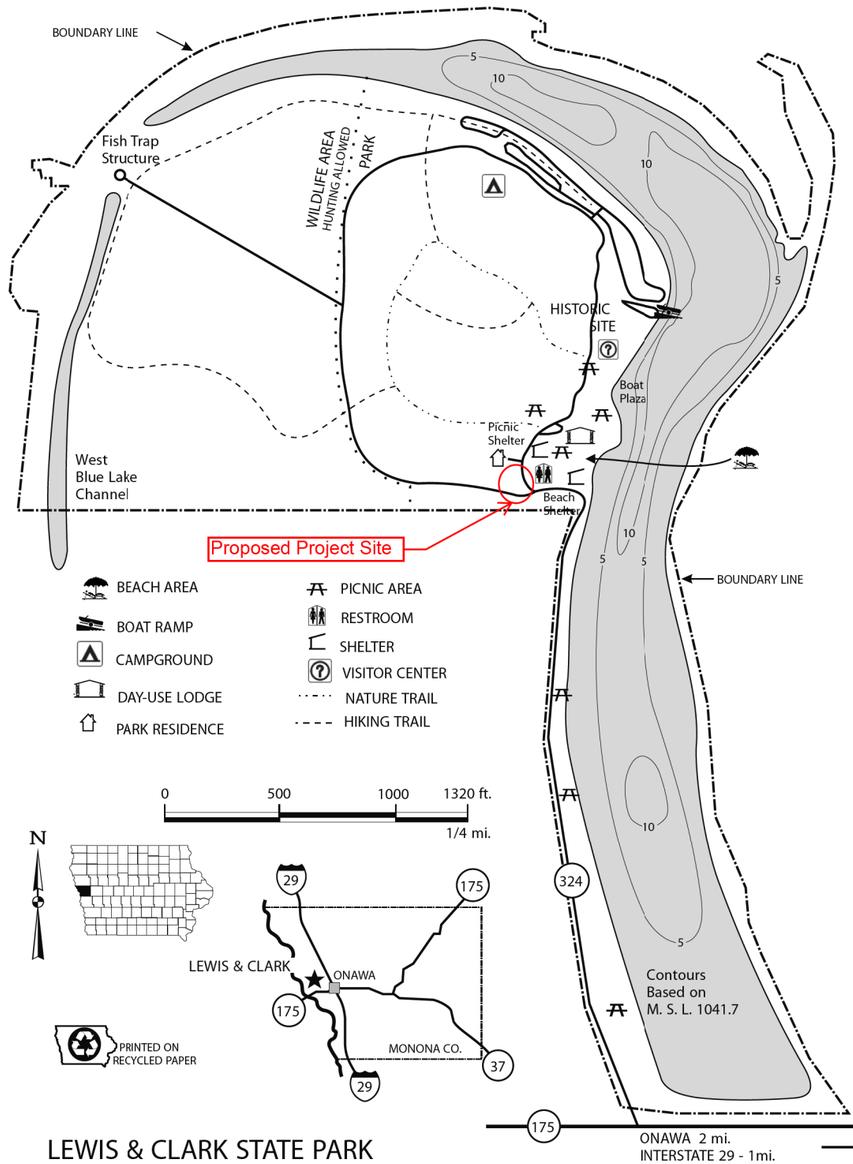
CHK'D BY:

DATE: JAN/2016

SHEET No: A.01



PROJECT LOCATION



LEWIS & CLARK STATE PARK

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PROJECT LOCATION

ACCESS ROAD CONSTRUCTION FOR:

LEWIS & CLARK STATE PARK

FREMONT COUNTY, IA

NO.	BY DATE	REVISION

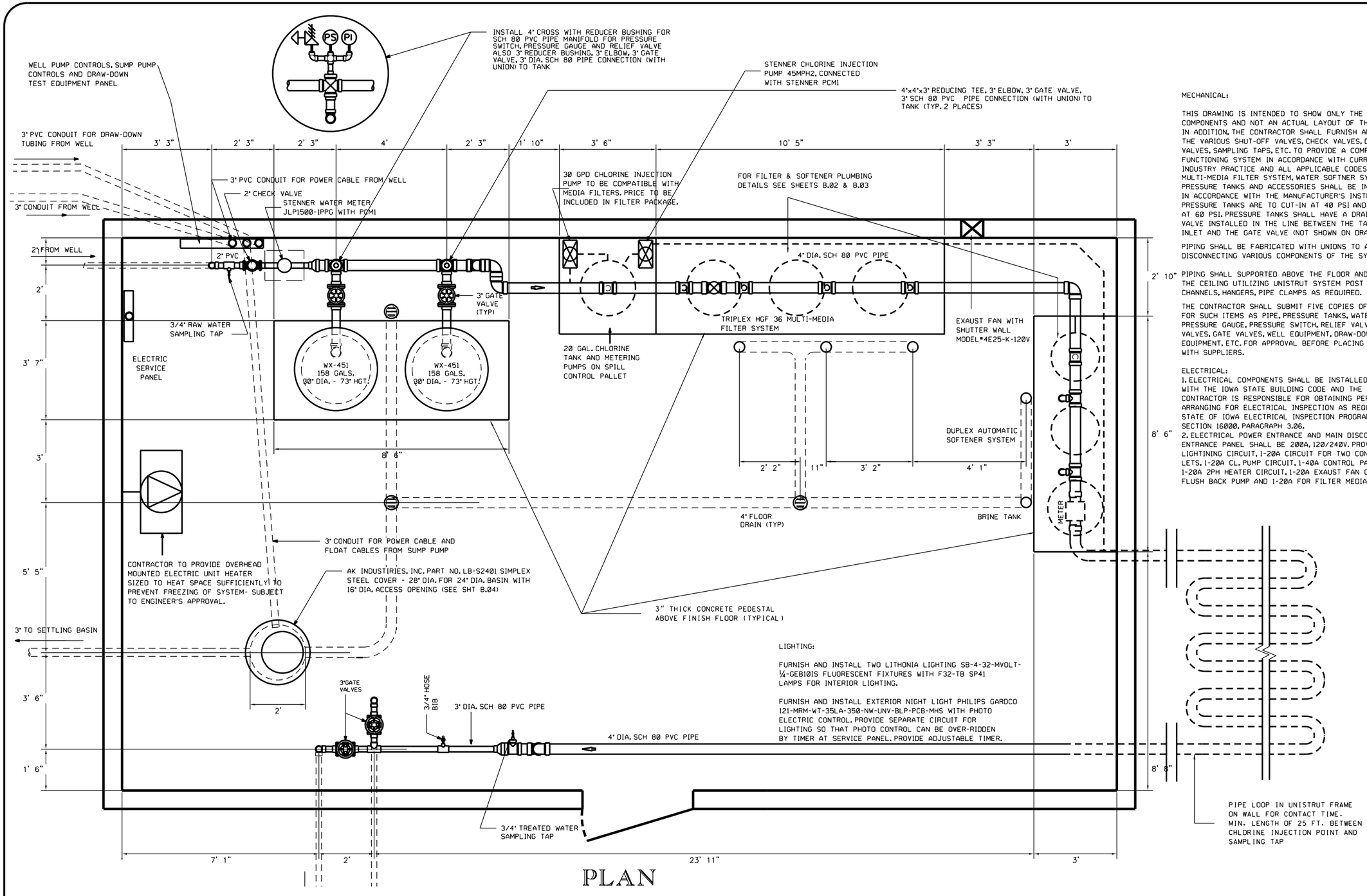
DRAWN BY: MH

PROJECT NUMBER: 13-01-67-01

CHK'D BY:

DATE: JAN/2016

SHEET No: A.02



PLAN

LIGHTING:

FURNISH AND INSTALL TWO LITHONIA LIGHTING SB-4-32-MVOLT-¼-GEB10IS FLUORESCENT FIXTURES WITH F32-TB SP41 LAMPS FOR INTERIOR LIGHTING.

FURNISH AND INSTALL EXTERIOR NIGHT LIGHT PHILIPS GARDCO 121-MRM-WT-35LA-350-NW-UNV-BLP-PCB-MHS WITH PHOTO ELECTRIC CONTROL. PROVIDE SEPARATE CIRCUIT FOR LIGHTING SO THAT PHOTO CONTROL CAN BE OVER-RIDDEN BY TIMER AT SERVICE PANEL. PROVIDE ADJUSTABLE TIMER.

MECHANICAL:

THIS DRAWING IS INTENDED TO SHOW ONLY THE BASIC COMPONENTS AND NOT AN ACTUAL LAYOUT OF THE SYSTEM. IN ADDITION, THE CONTRACTOR SHALL FURNISH AND INSTALL THE VARIOUS SHUT-OFF VALVES, CHECK VALVES, DRAIN-DOWN VALVES, SAMPLING TAPS, ETC. TO PROVIDE A COMPLETE FUNCTIONING SYSTEM IN ACCORDANCE WITH CURRENT INDUSTRY PRACTICE AND ALL APPLICABLE CODES. MULTI-MEDIA FILTER SYSTEM, WATER SOFTNER SYSTEM, PRESSURE TANKS AND ACCESSORIES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PRESSURE TANKS ARE TO CUT-IN AT 40 PSI AND CUT-OUT AT 60 PSI. PRESSURE TANKS SHALL HAVE A DRAIN-DOWN VALVE INSTALLED IN THE LINE BETWEEN THE TANK INLET AND THE GATE VALVE (NOT SHOWN ON DRAWING).

PIPING SHALL BE FABRICATED WITH UNIONS TO ALLOW DISCONNECTING VARIOUS COMPONENTS OF THE SYSTEM.

PIPING SHALL SUPPORTED ABOVE THE FLOOR AND HUNG FROM THE CEILING UTILIZING UNISTRUT SYSTEM POST BASES, CHANNELS, HANGERS, PIPE CLAMPS AS REQUIRED.

THE CONTRACTOR SHALL SUBMIT FIVE COPIES OF SHOP DRAWINGS FOR SUCH ITEMS AS PIPE, PRESSURE TANKS, WATER METER, PRESSURE GAUGE, PRESSURE SWITCH, RELIEF VALVE, DRAIN VALVES, GATE VALVES, WELL EQUIPMENT, DRAW-DOWN TEST EQUIPMENT, ETC. FOR APPROVAL BEFORE PLACING ORDER WITH SUPPLIERS.

ELECTRICAL:
1. ELECTRICAL COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE IOWA STATE BUILDING CODE AND THE N.E.C THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING PERMITS AND ARRANGING FOR ELECTRICAL INSPECTION AS REQUIRED BY THE STATE OF IOWA ELECTRICAL INSPECTION PROGRAM. SEE SPEC. SECTION 16000, PARAGRAPH 3.06.
2. ELECTRICAL POWER ENTRANCE AND MAIN DISCONNECT: ENTRANCE PANEL SHALL BE 200A, 120/240V. PROVIDE 1-20A LIGHTNING CIRCUIT, 1-20A CIRCUIT FOR TWO CONVENIENCE OUTLETS, 1-20A CL. PUMP CIRCUIT, 1-40A CONTROL PANEL CIRCUIT, 1-20A 2PH HEATER CIRCUIT, 1-20A EXAUST FAN CIRCUIT, 1-20A FLUSH BACK PUMP AND 1-20A FOR FILTER MEDIA AND SOFTNER.

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

MECHANICAL LAYOUT

WATER TREATMENT SYSTEM REPLACEMENT

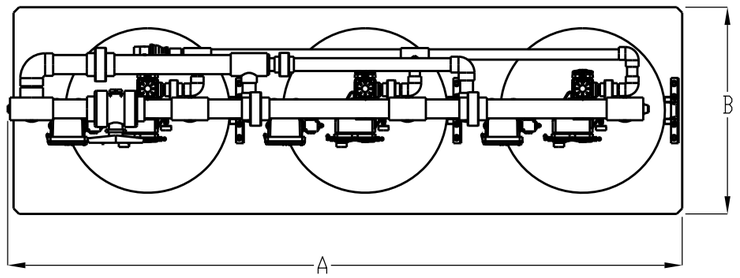
LEWIS & CLARK STATE PARK

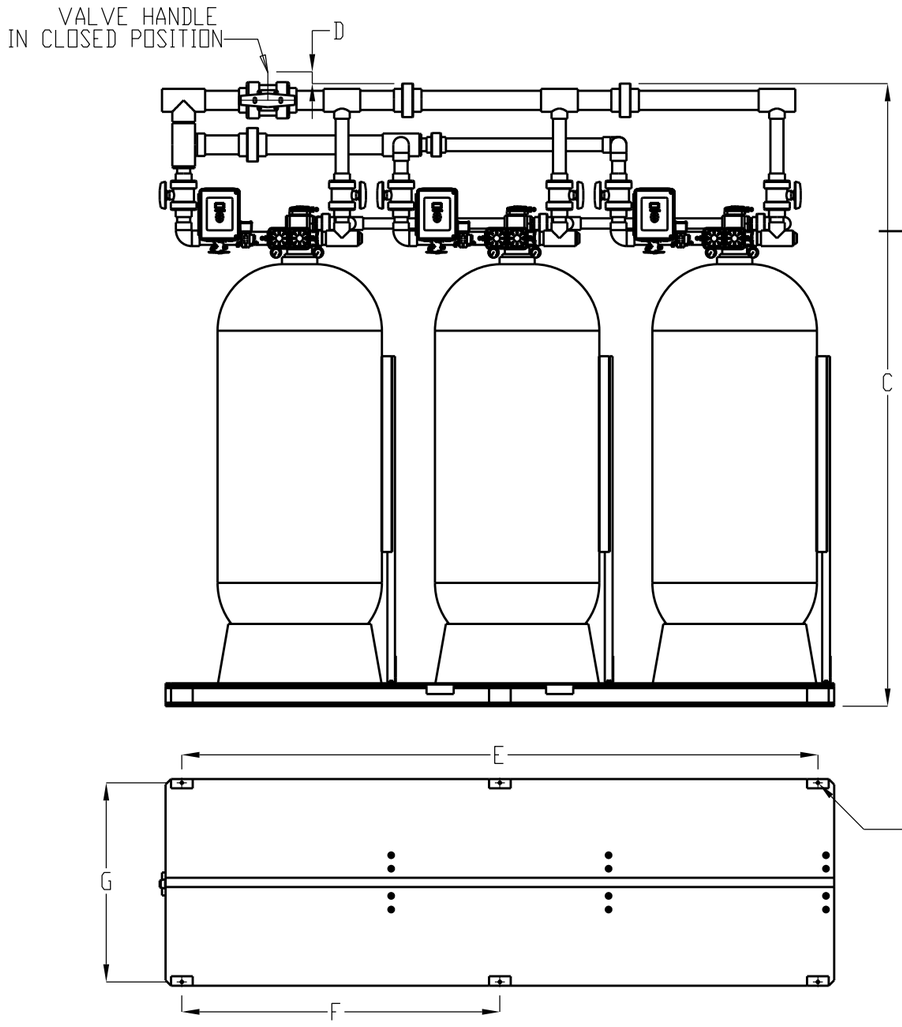
MONONA COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY: MH
PROJECT NUMBER: 13-01-67-01
CHK'D BY:
DATE: 7/9/2015

SHEET No: B.01





P/N	Model	System Length A	System Width B	System Height C	Valve Handle D	Inlet	Outlet	Skid Floor Mounting Hole E	Skid Floor Mounting Hole F	Skid Floor Mounting Hole G
01026623	HDF-20-T,Duplex,Prl,Galv,Skid	82.0	38.0	97.5	4.5	2" NPT	2" NPT	50.00		24.63
01026624	HDF-24-T,Duplex,Prl,Galv,Skid	82.0	38.0	104.5	4.5	2" NPT	2" NPT	50.00		24.63
01026625	HDF-30-T,Duplex,Prl,Galv,Skid	83.5	38.0	109.0	4.5	2" NPT	2" NPT	76.00		36.63
01026626	HDF-36-T,Duplex,Prl,Galv,Skid	86.5	38.0	111.5	4.5	2" NPT	2" NPT	76.00		36.63
01026627	HDF-20-T,Duplex,Prl,PVC,Skid	82.0	38.0	101.5	0.5	2" Soc	2" Soc	50.00		24.63
01026628	HDF-24-T,Duplex,Prl,PVC,Skid	82.0	38.0	108.5	0.5	2" Soc	2" Soc	50.00		24.63
01026629	HDF-30-T,Duplex,Prl,PVC,Skid	84.0	38.0	113.5	0.5	2" Soc	2" Soc	76.00		36.63
01026630	HDF-36-T,Duplex,Prl,PVC,Skid	87.0	38.0	115.5	0.5	2" Soc	2" Soc	76.00		36.63
01026631	HDF-20-T,Triplex,Prl,Galv,Skid	123.0	38.0	97.5	4.5	2" NPT	2" NPT	78.00	39.00	24.63
01026632	HDF-24-T,Triplex,Prl,Galv,Skid	123.0	38.0	104.5	4.5	2" NPT	2" NPT	78.00	39.00	24.63
01026633	HDF-30-T,Triplex,Prl,Galv,Skid	123.5	38.0	109.0	4.5	2" NPT	2" NPT	117.00	58.50	36.63
01026634	HDF-36-T,Triplex,Prl,Galv,Skid	126.5	38.0	111.5	4.5	2" NPT	2" NPT	117.00	58.50	36.63
01026635	HDF-20-T,Triplex,Prl,PVC,Skid	123.0	38.0	101.5	0.5	2" Soc	2" Soc	78.00	39.00	24.63
01026636	HDF-24-T,Triplex,Prl,PVC,Skid	123.0	38.0	108.5	0.5	2" Soc	2" Soc	78.00	39.00	24.63
01026637	HDF-30-T,Triplex,Prl,PVC,Skid	124.0	38.0	113.5	0.5	2" Soc	2" Soc	117.00	58.50	36.63
01026638	HDF-36-T,Triplex,Prl,PVC,Skid	127.0	38.0	115.5	0.5	2" Soc	2" Soc	117.00	58.50	36.63
01026639	HRF-20-T,Duplex,Prl,Galv,Skid	82.0	38.0	97.5	4.5	2" NPT	2" NPT	50.00		24.63
01026640	HRF-24-T,Duplex,Prl,Galv,Skid	82.0	38.0	104.5	4.5	2" NPT	2" NPT	50.00		24.63
01026641	HRF-30-T,Duplex,Prl,Galv,Skid	83.5	38.0	109.0	4.5	2" NPT	2" NPT	76.00		36.63
01026642	HRF-36-T,Duplex,Prl,Galv,Skid	86.5	38.0	111.5	4.5	2" NPT	2" NPT	76.00		36.63
01026643	HRF-20-T,Duplex,Prl,PVC,Skid	82.0	38.0	101.5	0.5	2" Soc	2" Soc	50.00		24.63
01026644	HRF-24-T,Duplex,Prl,PVC,Skid	82.0	38.0	108.5	0.5	2" Soc	2" Soc	50.00		24.63
01026645	HRF-30-T,Duplex,Prl,PVC,Skid	84.0	38.0	113.5	0.5	2" Soc	2" Soc	76.00		36.63
01026646	HRF-36-T,Duplex,Prl,PVC,Skid	87.0	38.0	115.5	0.5	2" Soc	2" Soc	76.00		36.63
01026647	HRF-20-T,Triplex,Prl,Galv,Skid	123.0	38.0	97.5	4.5	2" NPT	2" NPT	78.00	39.00	24.63
01026648	HRF-24-T,Triplex,Prl,Galv,Skid	123.0	38.0	104.5	4.5	2" NPT	2" NPT	78.00	39.00	24.63
01026649	HRF-30-T,Triplex,Prl,Galv,Skid	123.5	38.0	109.0	4.5	2" NPT	2" NPT	117.00	58.50	36.63
01026650	HRF-36-T,Triplex,Prl,Galv,Skid	126.5	38.0	111.5	4.5	2" NPT	2" NPT	117.00	58.50	36.63
01026651	HRF-20-T,Triplex,Prl,PVC,Skid	123.0	38.0	101.5	0.5	2" Soc	2" Soc	78.00	39.00	24.63
01026652	HRF-24-T,Triplex,Prl,PVC,Skid	123.0	38.0	108.5	0.5	2" Soc	2" Soc	78.00	39.00	24.63
01026653	HRF-30-T,Triplex,Prl,PVC,Skid	124.0	38.0	113.5	0.5	2" Soc	2" Soc	117.00	58.50	36.63
01026654	HRF-36-T,Triplex,Prl,PVC,Skid	127.0	38.0	115.5	0.5	2" Soc	2" Soc	117.00	58.50	36.63

NOTE: USE THIS DRAWING FOR PLUMBING DETAILS ONLY. ACTUAL FILTER MODEL USED IS HGF-36 TRIPLEX CULLSORB FILTERS.

REVISION DESCRIPTION	DCO#	BY	DATE
Release Data Sheets	013937	MKM	08-15-13

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The 3-D file for this item is the controlling document, from which all component and feature dimensions should be referenced and held, excluding threads. The intent of this drawing is to identify critical dimensions and tolerances for inspection.

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MATERIAL

SIZE: B | DRAWN BY: MKM

SCALE: 1:25 | APPROVED BY: MKM

SHEET: 1 OF 1 | APPROVED DATE: 08-15-13

TOLERANCES, UNLESS OTHERWISE SPECIFIED

LAST DIGIT	TOLERANCE (inches)	(millimeters)
0.	± 0.030	± 0.76
0.0	± 0.015	± 0.38
0.00	± 0.010	± 0.25
0.000	± 0.005	± 0.13
ANGULAR	± 0.5 °	± 0.5 °

PART DESCRIPTION: HF42 Systems Skid Mounted

PART NUMBER: DRW-1045

REV: A

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

MULTI-MEDIA FILTER SYSTEM

WATER TREATMENT SYSTEM REPLACEMENT

LEWIS & CLARK STATE PARK

MONONA COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY: MH | PROJECT NUMBER: 13-01-67-01

CHK'D BY: | DATE: 7/9/2015

SHEET No: B.02

Spec Seq#:

NOTES:

(1) ITEMS SHOWN IN BROKEN LINES TO BE FURNISHED BY THE CONTRACTOR.

(2) ALL DIMENSIONS ARE ± 1 INCH (25mm) AND SUBJECT TO CHANGE WITHOUT NOTICE.

(3) UNIONS SHOULD BE LOCATED ON INLET AND OUTLET CONNECTIONS OF CONTROL VALVE TO FACILITATE SERVICING.

(4) THE USE OF DISSIMILAR METALS IN A PIPING SYSTEM IS NOT RECOMMENDED. WHERE DISSIMILAR METALS MUST BE CONNECTED IN A WATER SYSTEM. THE USE OF NONCONDUCTIVE (DIELECTRIC) FITTINGS MAY REDUCE GALVANIC CORROSION.

(5) AN ELECTRICAL OUTLET SHOULD BE PROVIDED WITHIN FIVE FEET OF THE EQUIPMENT LOCATION.

(6) ALLOW A MINIMUM OF 24 INCHES ABOVE SOFTENER FOR FILLING.

(7) TO PERMIT THE OBSERVATION OF THE DRAIN FLOW DO NOT MAKE A DIRECT CONNECTION TO THE DRAIN. PROVIDE AN AIR GAP OF AT LEAST FOUR TIMES THE DIAMETER OF THE DRAIN PIPE OR CONFORM TO LOCAL SANITATION CODES.

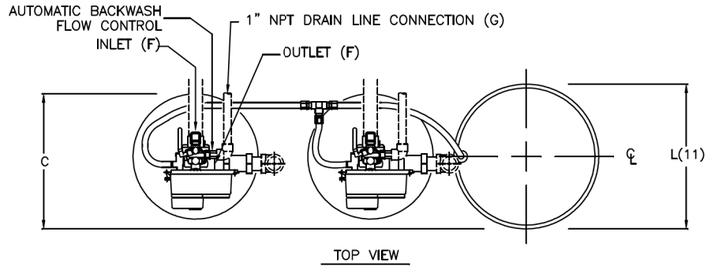
(8) WHEN USING A WATER METER, THERE MUST BE A MINIMUM AMOUNT OF STRAIGHT PIPE BEFORE AND AFTER THE SENSOR. REFER TO THE INSTALLATION INSTRUCTIONS FOR DETAILS.

(9) SYSTEM USES FRP TANKS WHICH MUST NOT BE SUBJECTED TO VACUUM. INSTALL SIPHON BREAK ON DRAIN LINE. INSTALL VACUUM BREAKER ON INLET PIPING IF THE SERVICE LINE IS SUBJECT TO A VACCUM.

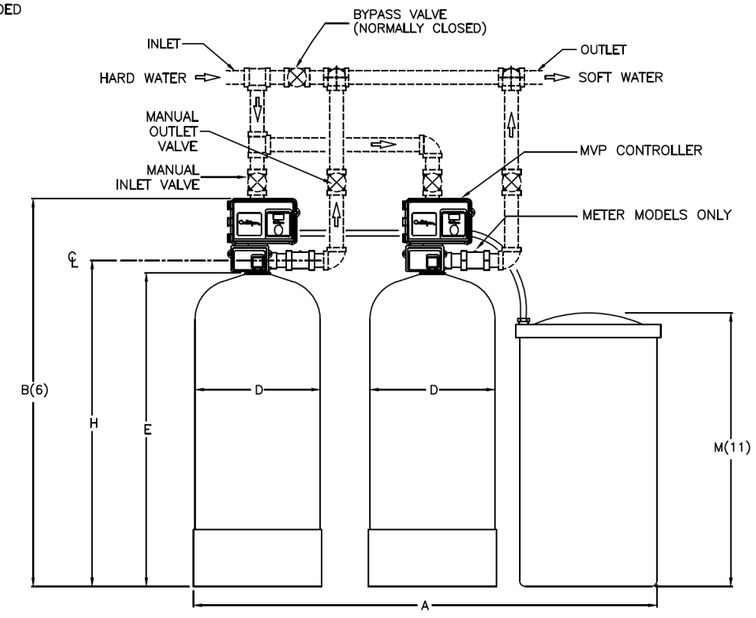
(10) FOR MAXIMUM PROTECTION OF THE CONTROLLER, IT IS RECOMMENDED THAT A DEDICATED 120 VOLT CIRCUIT IS PROVIDED.

(11) BRINE TANK DIMENSIONS SHOWN ARE FOR THE BRINE TANK MOST COMMONLY SELECTED FOR USE WITH THIS SIZE SYSTEM.

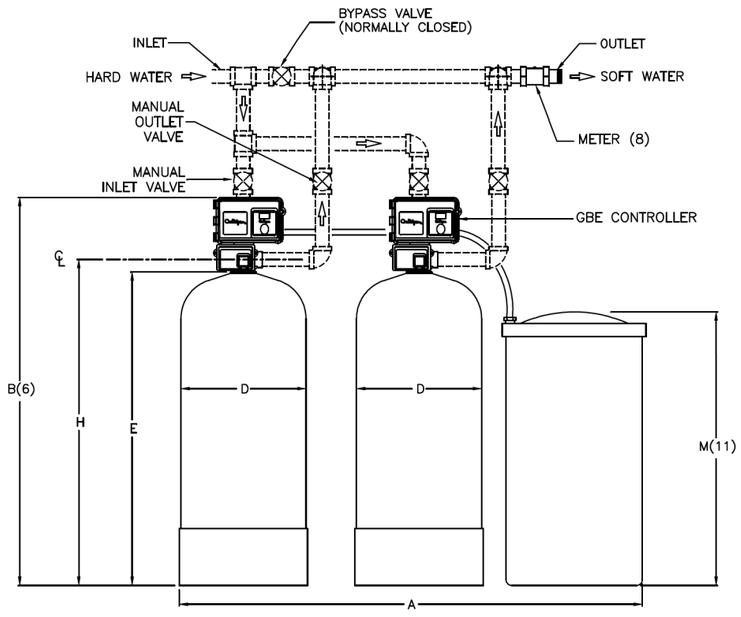
	DIMENSIONS (INCHES)										UNIT DATA PER TANK							
MODEL	WIDTH A	HEIGHT B(6)	DEPTH C	TANK DIA. D	TANK HEIGHT E	INLET/OUTLET PIPE SIZES F	DRAIN SIZE G	FLOOR TO INLET H	BRINE TANK DIA. L(11)	BRINE TANK HEIGHT M(11)	MAX. CAPACITY KGR @ SALT DOSAGE	RESIN VOLUME ft^3	CONTINUOUS FLOW gpm @ 15 psi drop	PEAK FLOW gpm @ 25 psi drop	DRAIN FLOW gpm	MIN. DRAIN PIPE SIZE IN.	DUPLEX OPER. WT. lbs.	DUPLEX SHIP. WT. lbs.
HCE–120–2	72	78	20	16	65.2	2.0	1.0	67.4	24	50	120 @ 60	4	45	60	8	1.0	2210	880
HCE–150–2	76	79	21	18	66.3	2.0	1.0	68.5	24	50	150 @ 75	5	60	78	8	1.0	2600	1060
HCE–210–2	82	80	22.5	21	67.1	2.0	1.0	69.3	24	50	210 @ 105	7	58	76	8	1.0	2950	1310
HCE–300–2	94	87	27	24	74.7	2.0	1.0	76.9	30	50	300 @ 150	10	65	85	15	1.25	4080	1800
HCE–450–2	106	92	30	30	78.9	2.0	1.0	81.1	30	50	450 @ 225	15	75	100	25	1.5	5590	2770



TOP VIEW



PARALLEL DUPLEX INSTALLATION



ALTERNATING DUPLEX INSTALLATION

Hi-Flo 3e

CAD File: Hi-Flo 3e Softener Duplex 2in.dwg

DO NOT SCALE DRAWING TOLERANCES: ±1/8" UNLESS OTHERWISE NOTED				
Let.	Change	By	App	Date

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ROSEMONT, ILLINOIS

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NAME HI–FLO® 3e AUTOMATIC SOFTENER DUPLEX TECHNICAL DATA SHEET

DETAILED BY:	APP. BY:	SHEET
KMR 5/03/05	KSR 01/19/10	1 OF 1

REF. NO.

PART NO. S3e_2_MVP

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

WATER SOFTENER LAYOUT

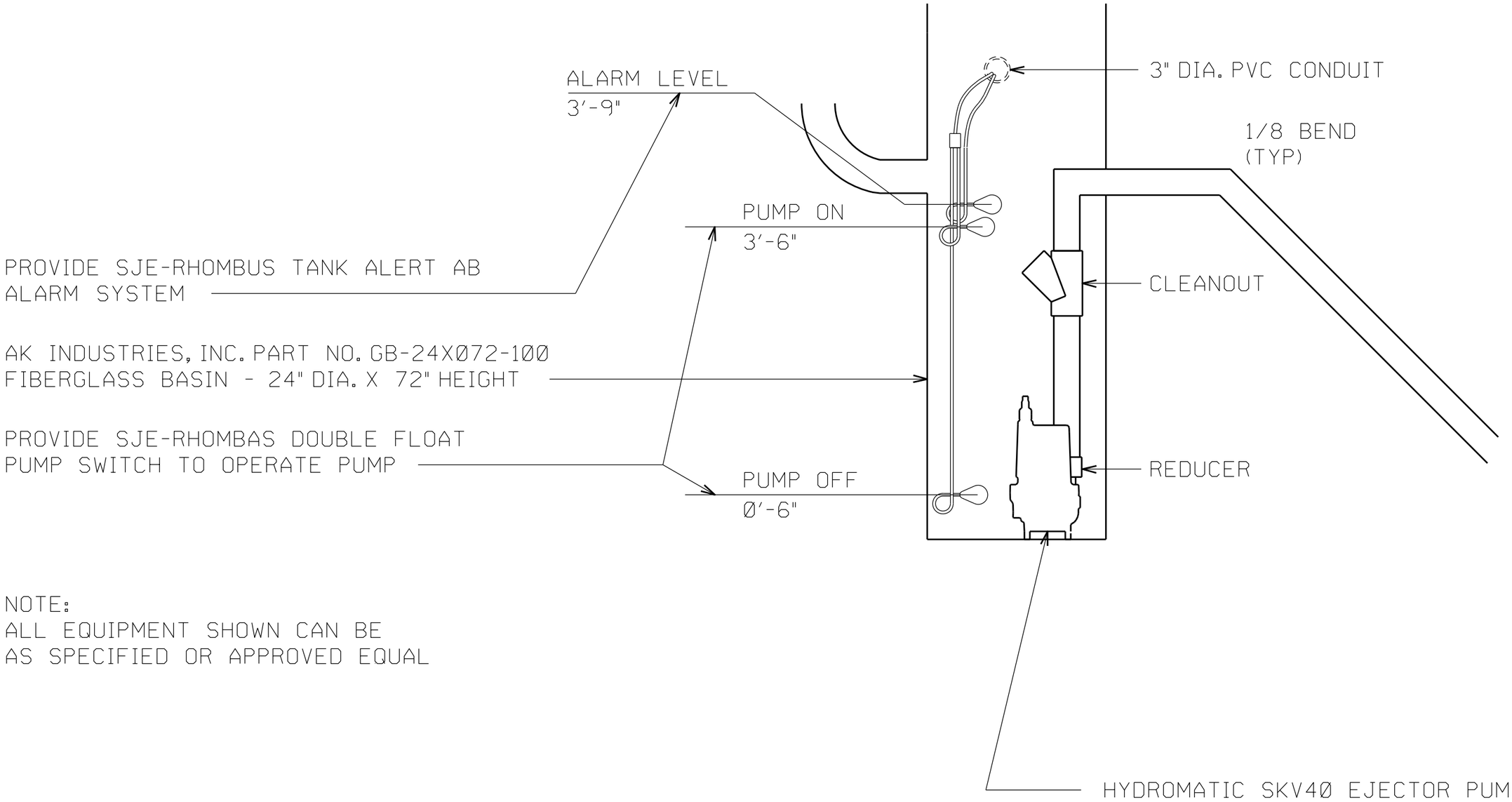
WATER TREATEMENT SYSTEM REPLACEMENT

LEWIS & CLARK STATE PARK

MONONA COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY: MH
PROJECT NUMBER: 13-01-67-01
CHK'D BY:
DATE: 7/9/2015
SHEET No: B03



NOTE:
ALL EQUIPMENT SHOWN CAN BE
AS SPECIFIED OR APPROVED EQUAL

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

TREATMENT BULDING PUMP

WATER TREATMENT SYSTEM REPLACEMENT

LEWIS & CLARK STATE PARK

MONONA COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY: M.H

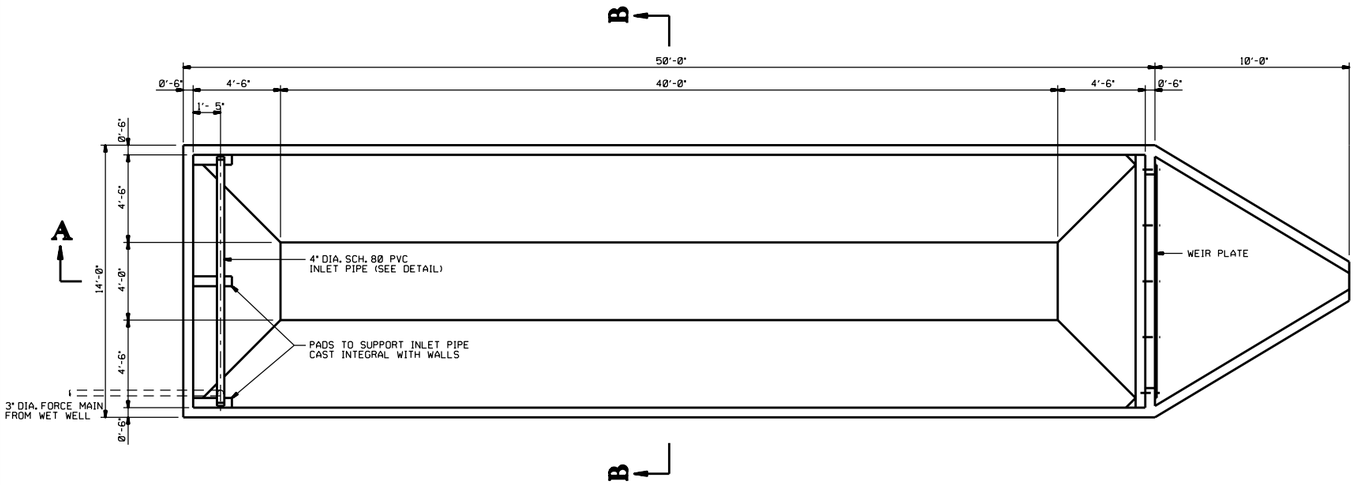
PROJECT NUMBER: 13-01-67-01

CHK'D BY:

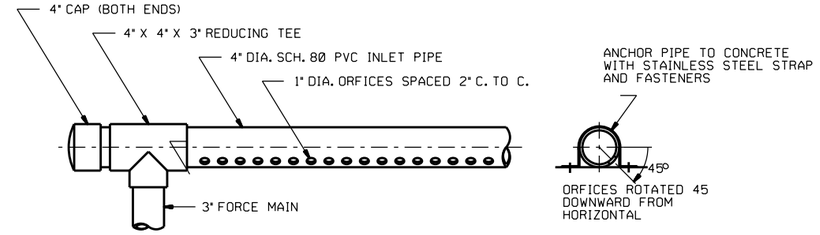
DATE: 7/9/2015

SHEET No:

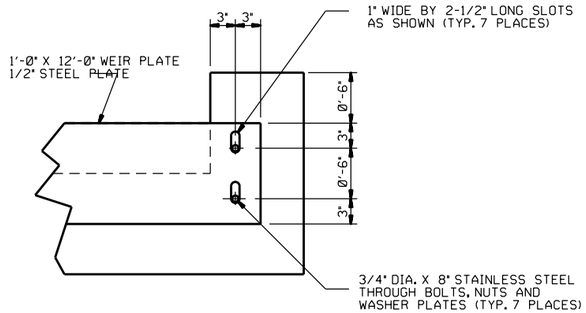
B.04



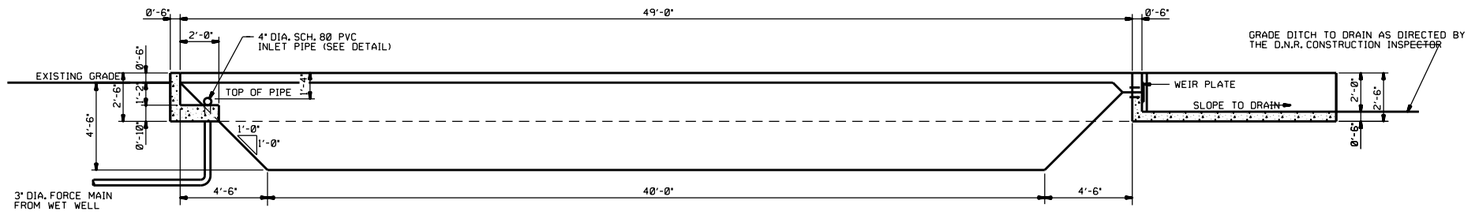
PLAN



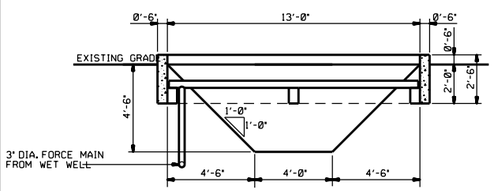
DETAIL OF INLET PIPE
NOT TO SCALE



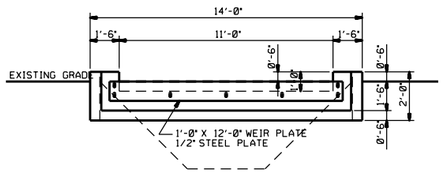
WEIR PLATE DETAIL
4X



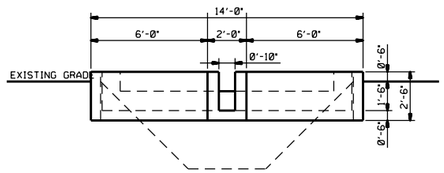
SECTION A - A



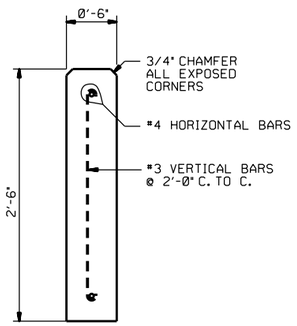
SECTION B - B



WIER ELEVATION



END ELEVATION



TYPICAL WALL SECTION
4X

NOTE:
ALL CONCRETE SHALL BE 4000 LB. MIX

CONSULTANT:

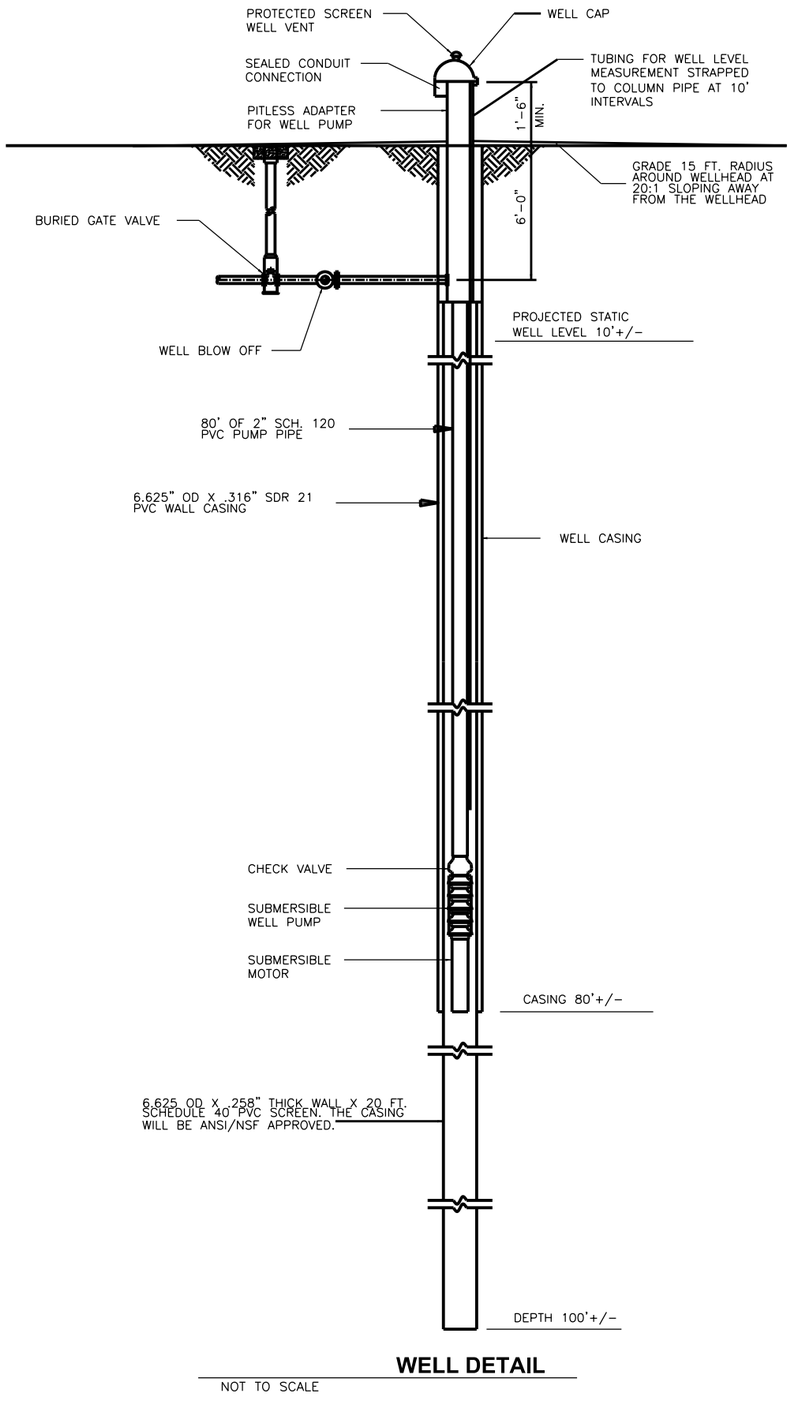
IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

SETTLING BASIN
WATER TREATMENT SYSTEM REPLACEMENT
LEWIS & CLARK STATE PARK
MONONA COUNTY, IOWA

NO.	BY / DATE	REVISION

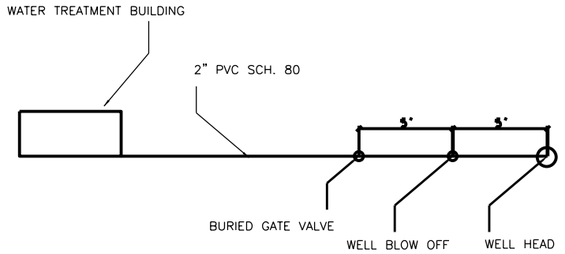
DRAWN BY: MH	PROJECT NUMBER: 13-01-67-01
CHK'D BY: MH	DATE: 7/9/2015

SHEET No: B.05



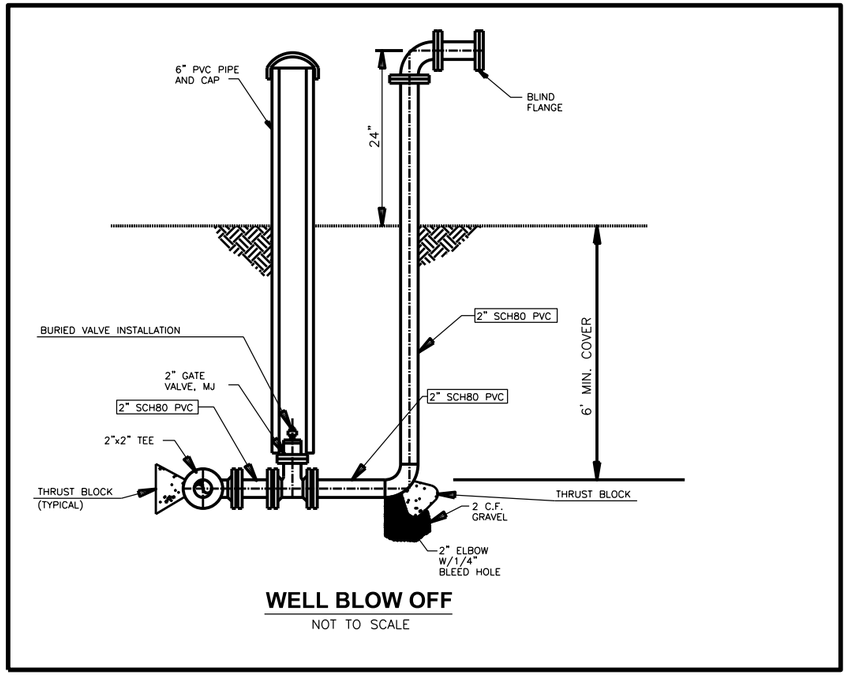
WELL DETAIL

NOT TO SCALE



WELL SCHEMATIC

NOT TO SCALE



WELL BLOW OFF

NOT TO SCALE

1. ALL WORK WILL BE PERFORMED BY A CERTIFIED WELL DRILLER.
2. DNR WILL ONLY OBTAIN WELL CONSTRUCTION PERMIT, ALL OTHER NEEDED PERMITS WILL BE OBTAINED BY THE CONTRACTOR.

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

WELL DETAILS

WATER TREATMENT SYSTEM REPLACEMENT

LEWIS & CLARK STATE PARK

MONONA COUNTY, IOWA

NO.	BY / DATE	REVISION

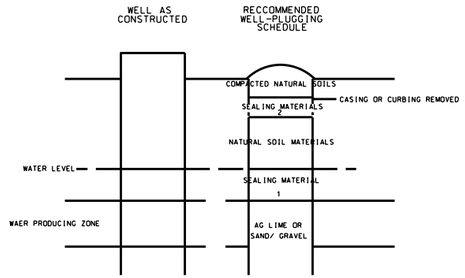
DRAWN BY: M.H

PROJECT NUMBER: 13-01-67-01

CHK'D BY: M.H

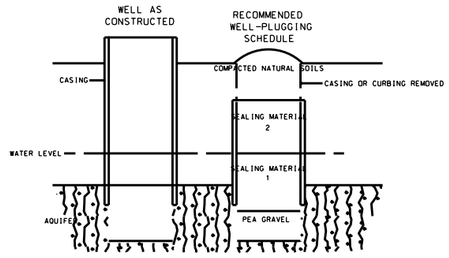
DATE: 7/9/2015

SHEET No: B.06



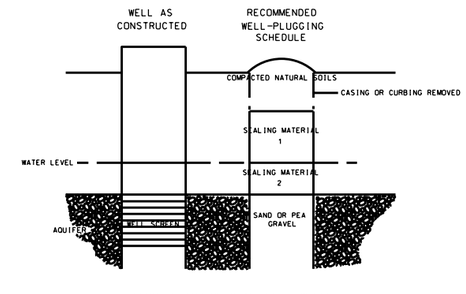
LARGE DIAMETER DUG OR BORED WELLS

1. GRADED BENTONITE. BENTONITE PELLETS. NEAT CEMENT
2. GRADED BENTONITE. BENTONITE PELLETS. NEAT CEMENT. SAND/CEMENT GROUT CONCRETE



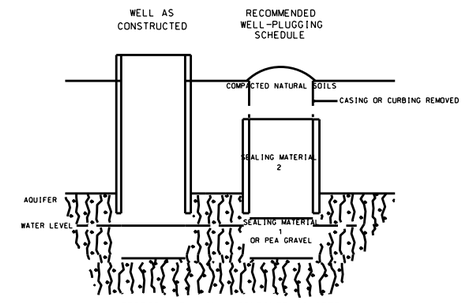
BEDROCK WELL IN CONFINED AQUIFER

1. BENTONITE PRODUCTS. NEAT CEMENT
2. BENTONITE PRODUCTS. NEAT CEMENT. SAND/GRAVEL GROUT. CONCRETE



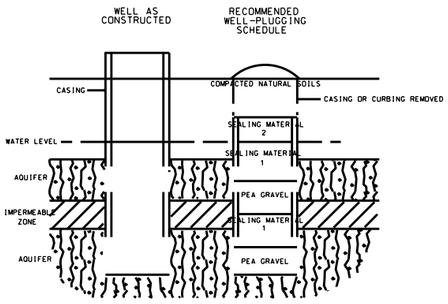
ALLUVIAL AND GLACIAL-DRIFT WELLS

1. BENTONITE PRODUCTS. NEAT CEMENT
2. BENTONITE PRODUCTS. NEAT CEMENT. SAND/CEMENT GROUT. CONCRETE



BEDROCK WELL IN UNCONFINED AQUIFER

1. BENTONITE PRODUCTS. NEAT CEMENT
2. BENTONITE PRODUCTS. NEAT CEMENT SAND/CEMENT GROUT. CONCRETE



LARGE DIAMETER DUG OR BORED WELLS

1. GRADED BENTONITE. BENTONITE PELLETS. NEAT CEMENT
2. GRADED BENTONITE. BENTONITE PELLETS. NEAT CEMENT. SAND/CEMENT GROUT CONCRETE

NOMINAL (INCHES)	SCHEDULE OR STRENGTH	O.D. INCHES	I.D. INCHES	SECTION (FT^2)	GALLONS/ LINEAL FT.	SACKS/ FT.	LINEAL FT./ SACK
2	40	2.375	2.07	.023	.17	.021	47.83
	80	4.500	1.94	.021	.15	.019	52.38
4	40	4.500	4.02	.088	.66	.080	12.50
	80		3.82	.080	.60	.073	13.75
5	40	5.563	5.04	.139	1.04	.126	7.91
	80		4.81	.126	.95	.115	8.73
6	40	6.625	6.06	.201	1.50	.182	5.47
	80		5.76	.181	1.35	.165	6.08
8	30	8.625	8.07	.355	2.66	.323	3.10
	40		7.98	.347	2.60	.316	3.17
	80		7.62	.317	2.37	.288	3.47
10	30	10.75	10.13	.560	4.19	.510	1.96
	40		10.02	.548	4.10	.498	2.01
	XS		9.75	.519	3.88	.471	2.12
12	30	12.75	12.09	.797	5.96	.725	1.38
	STD		12.00	.785	5.88	.714	1.40
	40		11.93	.777	5.81	.707	1.42
14	STD	14.00	13.25	.957	7.16	.871	1.15
	XS		13.00	.922	6.90	.838	1.19
16	STD	16.00	15.24	1.268	9.49	1.153	.87
	XS		15.00	1.227	9.18	1.116	.90
18	STD	18.00	17.25	1.623	12.14	1.476	.68
20	STD	20.00	19.25	2.021	15.12	1.837	.54
24	STD	24.00	23.25	2.948	22.06	2.680	.37
30	STD	30.00	29.25	4.666	34.91	4.242	.24

REFERENCE: SEE IOWA DNR PUBLICATION SERIES NO. 15 FOR FURTHER DETAILS

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

WELL CAPPING DETAILS

WATER TREATMENT SYSTEM REPLACEMENT

LEWIS & CLARK STATE PARK

MONONA COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY: M.H

PROJECT NUMBER: 13-01-67-01

CHK'D BY:

DATE: 7/9/2015

SHEET No: B.07

ESTIMATED PROJECT QUANTITIES

ITEM	DESCRIPTION	UNIT	TOTAL
1	MOBILIZATION	LS	1
2	CLEARING & GRUBBING	LS	1
3	38'x 22' WATER TREATMENT BUILDING COMPLETE WITH GRADING	LS	1
4	158 GALLONS WX-451 AMTROL PRESSURE TANK	EA	2
5	STORAGE BUILDING MANIFOLD: WATER METER, VALVES, PRESSURE SWITCH, PRESSURE GAUGE, SCH. 80 PVC PIPING ETC.	LS	1
6	CHLORINE FEED SYSTEM WITH 1 PUMP, 20 GALLON TANK AND SPILL PALLET COMPLETE	LS	1
7	TRIPLEX MULTI-MEDIA IRON FILTER SYSTEM COMPLETE WITH CHLORINE INJECTION PUMP	LS	1
8	DUPLEX AUTOMATIC SOFTENER SYSTEM WITH BRINE TANK COMPLETE	LS	1
9	ELECTRICAL SERVICE AND PUMP CONTROLS COMPLETE WITH LIGTING, HEATER AND 200 AMP CONTROL PANEL AND OTHER ACCESSORIES SHOWN IN PLANS	LF	1
10	NEW ELECTRICAL SERVICE TO THE BUILDING FROM 70 FEET WITH A DISCONECT	LS	1
11	SUMP AND SUBMERSIBLE PUMP INSIDE BUILDING, COMPLETE	LS	1
12	3" DIA. HDPE DR 11 FORCEMAIN TRENCHED OR BORED IN PLACE TO SETTLING BASIN	LF	150
13	SETTLING BASIN	LS	1
14	3" DIA HDPE (DR 11) WATERMAIN, BORED OR TRENCHED	LF	200
15	TRACER WIRE #12 OR 3" DETACTABLE "WATER" TAPE	LF	350
16	SYSTEM DISINFECTION	LS	1
	NEW 6" WATER SUPPLY WELL		
17	DRILL 12" HOLE, FURNISH 6" PVC SDR 21 WELL CASING PIPE AND PCC GROUT	LF	80
18	6" DIA X 20' OF PVC SLOTTED WELL SCREEN WITH GRAVEL PACK IN 12" HOLE	LF	20
19	2" X 60' SCH 120 PVC DROP PIPE	LF	80
20	5HP 3PH SUBMERSIBLE VARIABLE SPEED PUMP RATED TO PROVIDE 65 GPM OUTPUT AT 80 PSI AT SURFACE. INCLUDING 3PH WIRING TO THE VFD TO TREATMENT BUILDING	LS	1
21	PITLESS ADAPTER UNIT	EA	1
22	STATIC WATER PRESSURE LINE AND GUAGE	LS	1
23	INSTALL WELL BLOW-OFFF ASSEMBLY & PVC CL 160 WATER LINE FROM WELL TO BUILDING	LS	1
24	DEVELOP WELL AND TEST PUMPING	LS	1
25	DISINFECTION AND CHEMICAL ANALYSIS	LS	1
26	GRADE AREA AROUND WELL HEAD AS SHOWN AND SEED	LS	1
27	DRILL 12" HOLE AND 6" PVC SDR 21 WELL CASING AND GROUT FOR ADDITIONAL DEPTH	LF	1
	ABANDON AND PLUG EXISTING WELL & DEMOLITION		
28	REMOVE PUMP & PLUG EXISTING WELL	LS	1
29	DEMOLISH APPROX. 28'X28' EXISTING TREATMENT BUILDING INCLUDING ASBESTOS ABATEMENT. REMOVE PRESSRE TANKS, MIXING TANKS, INTERNAL PIPING, ETC. HAUL AND DISPOSE OFF SITE.	LS	1
30	DEMOLISH 28'X24'X6' DEEP CONCRETE STORAGE TANK, HAUL AND DISPOSE OFF SITE	LS	1
31	SEED ALL DISTURBED AREAS	LS	1

GENERAL NOTES:

ITEM	DESCRIPTION
A.	The contractor shall notify the following two weeks prior to construction: 1. District Inspector: Jeff Felts (515)- 250-3712 2. Project Manager: Mike Hameed (515) 725-8467
B.	The contractor shall verify actual locations and elevations with the D.N.R Inspector.
C.	All work shall conform to and be performed in accordance with all applicable codes and ordinances.
D.	The contractor shall visit the site and inspect the project area and thoroughly familiarize themselves with the actual job conditions prior to the start of work. Failure to visit the project site shall not relieve the contractor from performing the work in accordance to the plans, specifications, special provisions and contract.
E.	The contractor shall verify, at the site, all dimensions and conditions shown on the plans and shall notify the D.N.R Inspector of any discrepancies, omissions and/or conflicts prior to proceeding with the work.
F.	The contractor is responsible for providing waste area or disposal for excess material (excavated material or broken concrete) which is not desirable to be incorporated into the work involved on this project. No payment for overhaul will be allowed for material hauled to off site for disposal. No material shall be placed within the right-of-way, unless specifically stated in the plans or approved by the D.N.R Inspector.
G.	The contractor shall not disturb desirable grass areas and desirable trees outside construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service areas will be subject to the approval of the D.N.R inspector.
H.	The contractor is expected to have materials, equipment and labor available on a daily basis to install and maintain erosion control features on the project.
I.	The contractor shall be responsible for any damage to existing facilities resulting from their negligence, or that of a subcontractor, and said repairs shall be approved by the owner.
J.	The contractor is responsible for any electrical inspection by the state inspector and also obtaining any demolition permits and application fees. Contracter also needs to contact Western Iowa Power Cooperative to check for other requirements before tapping for new connection.
K.	Contractor is responsible that all of the equipment in the treatment building is functioning properly and the final effluent quality meets the effluent requirements specified in the specifications.

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILING
502 E. 9TH ST., DES MOINES, IA 50319-0034

ESTIMATED QUANTITIES_

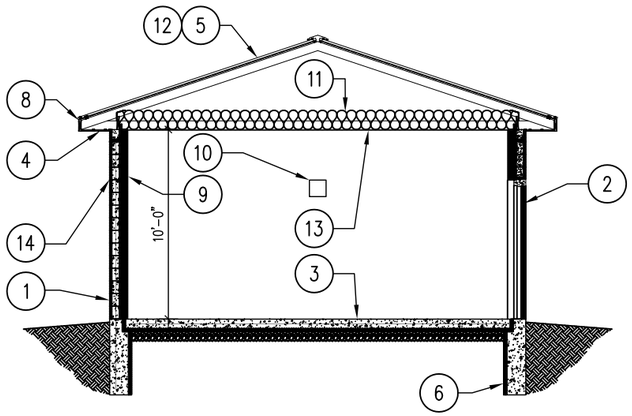
WATER TREATEMENT SYSTEM REPLACEMENT

LEWIS & CLARK STATE PARK

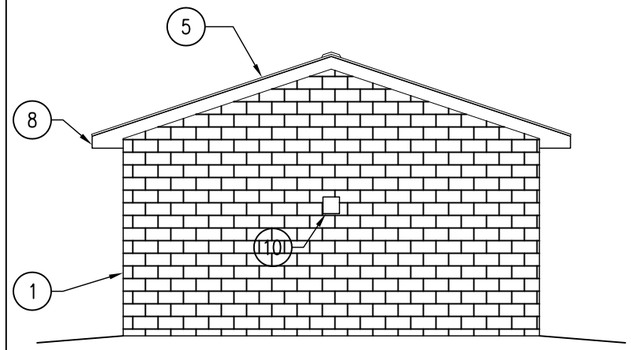
MONONA COUNTY,IA

NO.	BY / DATE	REVISION

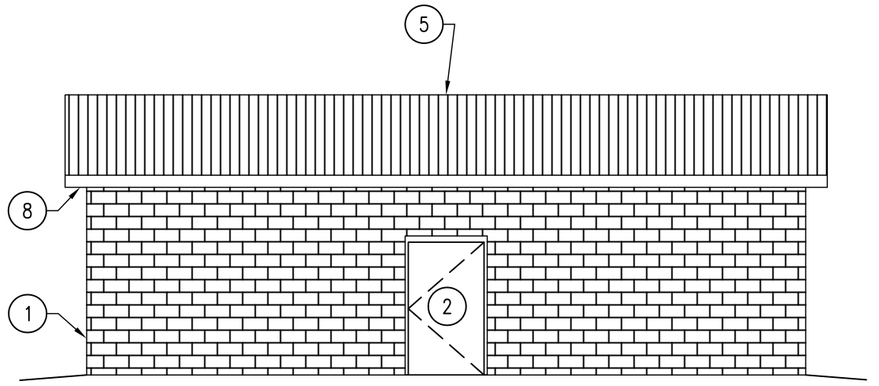
DRAWN BY: ES
PROJECT NUMBER: 13-03-33-02
CHK'D BY: MH
DATE: 09/2014
SHEET No: C.01



05 BUILDING ELEVATION
SCALE: 1/8" = 1'-0"



04 BUILDING ELEVATION
SCALE: 1/8" = 1'-0"



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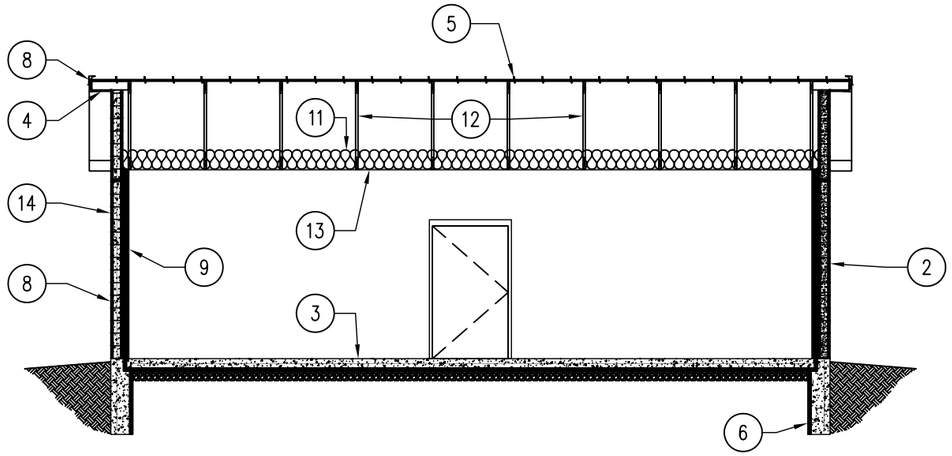
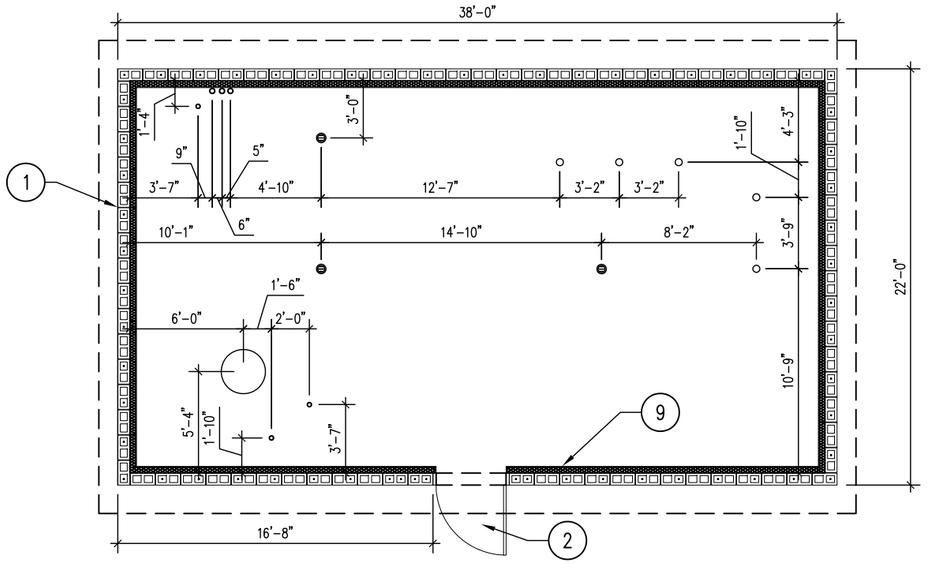


02 BUILDING SECTION
SCALE: 1/8" = 1'-0"



01 REFERENCE FLOOR PLAN
SCALE: 1/8" = 1'-0"

KEYNOTES

1. 8X8X16 CMU SPLIT-FACE BLOCK WALL, WITH #4 REBAR EVERY THIRD CELL AND HORIZONTAL BED JOINT REINFORCEMENT EVERY 32" VERTICALLY. FULLY-GROUT ALL CELLS.
2. 16 GAUGE, 48"X84" STEELCRAFT "L" SERIES FLUSH DOOR WITH POLYURETHANE INSULATION AND STEEL FRAME, BUTT IN JAMB.
3. 6" CONCRETE SLAB WITH #4 REBAR EVERY 32" O.C. BOTH DIRECTIONS. SLAB TO RECEIVE 2" RIGID SUB-SLAB INSULATION UNDER ENTIRE SLAB, TAPED AND SEALED, AS SHOWN, WITH 6" SUBBASE ROCK.
4. STEEL VENTED FLUSH SOFFIT PANELS, TO MATCH ROOF COLOR.
5. 24 GA. PAC-CLAD STEEL SNAP-CLAD ROOF WITH DARK BRONZE COLOR AND VENTED ROOF.
6. 42" MINIMUM DEPTH TRENCH FOOTING 12" WIDE, #4 REBAR 12" O.C. BOTH DIRECTIONS
7. METAL DRIP EDGE, MATCH ROOF COLOR.
8. WRAP FASCIA WITH COIL METAL, MATCH ROOF COLOR.
9. 3 5/8" 26 GA. GALVANIZED STEEL STUDS, 24" O.C. WITH CLOSED CELL SPRAY FOAM ENTIRE CAVITY. SHEATH WALL AND CEILING WITH ½" REWALL NAKED BOARD.
10. CUT A 10 ½" X 10 ½" HOLE IN MASONRY FOR FAN INSTALLATION, REFER TO CIVIL PLANS FOR MORE INFORMATION.
11. R-42 BATT INSULATION OVER 10MIL VAPOR BARRIER.
12. TRUSS AND TRUSS DESIGN BY CONTRACTOR.
13. ½" REWALL NAKED BOARD.
14. CMU SPLIT-FACE BOND BEAM AROUND ENTIRE PERIMETER OF BUILDING, MATCH BUILDING CMU.
15. 2X6 OUTRIGGER FOR GABLED END OF ROOF.

GENERAL NOTES

A. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
B. CONTRACTOR TO SUBMIT SAMPLES OF SPLIT-FACE BLOCK FOR APPROVAL PRIOR TO CONSTRUCTION FOR COLOR SELECTION.
C. CONTRACTOR TO VERIFY ALL PLUMBING REQUIREMENTS AND PENETRATIONS IN BUILDING SLAB. REFER TO MECHANICAL LAYOUT DRAWINGS FOR EXACT DIMENSIONS AND PLACEMENT OF DRAIN HOLE AND SLAB PENETRATIONS.

SEAL

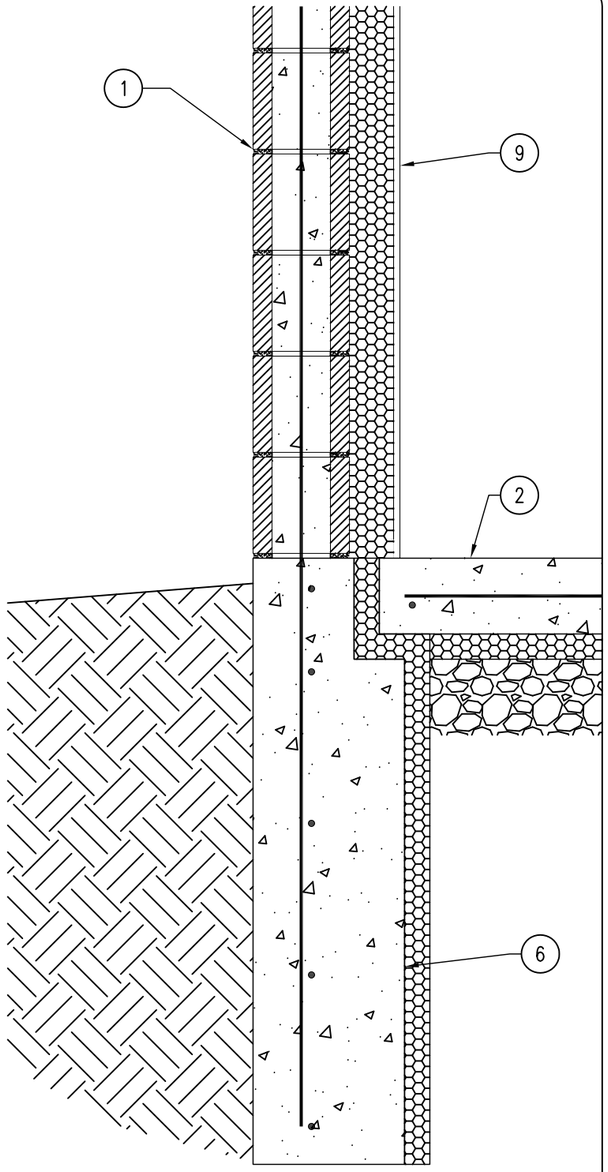
IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034
P: 515.725.8200
F: 515.725.8202

WATER TREATMENT BUILDING FOR: LEWIS & CLARK STATE PARK

21914 PARK LOOP, ONAWA MONONA COUNTY, IA

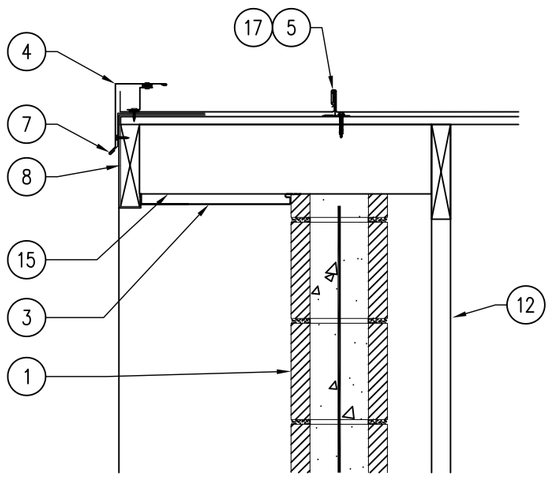
DRAWN BY:	PROJECT NUMBER: 13-01-67-01
CHK'D BY:	DATE: 11.18.2015

SHEET No: **D.01**



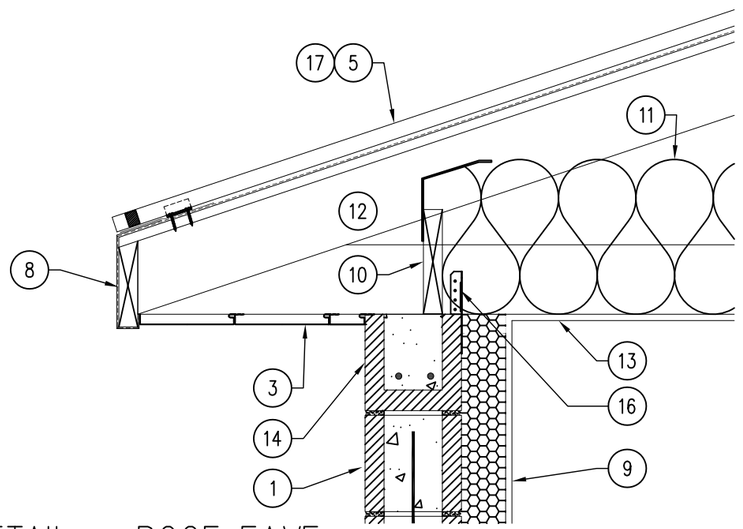
03 DETAIL – TRENCH FOOTING
SCALE: 1" = 1'-0"

05 NOT USED
SCALE: 1/8" = 1'-0"



02 DETAIL – ROOF GABLE
SCALE: 1" = 1'-0"

04 NOT USED
SCALE: 1/8" = 1'-0"



01 DETAIL – ROOF EAVE
SCALE: 1" = 1'-0"

KEYNOTES

1. 8X8X16 CMU SPLIT-FACE BLOCK WALL, WITH #4 REBAR EVERY THIRD CELL AND HORIZONTAL BED JOINT REINFORCEMENT EVERY 32" VERTICALLY. FULLY-GROUT ALL CELLS.
2. 6" CONCRETE SLAB WITH #4 REBAR EVERY 32" O.C. BOTH DIRECTIONS. SLAB TO RECEIVE 2" RIGID SUB-SLAB INSULATION UNDER ENTIRE SLAB, TAPED AND SEALED, AS SHOWN, WITH 6" SUBBASE ROCK.
3. STEEL VENTED FLUSH SOFFIT PANELS, TO MATCH ROOF COLOR.
4. ROOF GABLE RAKE BY ROOFING MANUFACTURER.
5. 24 GA. PAC-CLAD STEEL SNAP-CLAD ROOF WITH DARK BRONZE COLOR AND VENTED RIDGE WITH WATER & ICE SHIELD OVER ENTIRE ROOF.
6. 42" MINIMUM DEPTH TRENCH FOOTING 12" WIDE, #4 REBAR 12" O.C. BOTH DIRECTIONS.
7. METAL DRIP EDGE, MATCH ROOF COLOR.
8. 2X FASCIA, WRAP FASCIA WITH COIL METAL, MATCH ROOF COLOR.
9. 3 5/8" 26 GA. GALVANIZED STEEL STUDS, 24" O.C. WITH CLOSED CELL SPRAY FOAM ENTIRE CAVITY. SHEATH WALL AND CEILING WITH 1/2" REWALL NAKED BOARD.
10. INSULATION BAFFLE.
11. R-42 BATT INSULATION OVER 10MIL VAPOR BARRIER.
12. TRUSS AND TRUSS DESIGN BY CONTRACTOR.
13. 1/2" REWALL NAKED BOARD.
14. CMU SPLIT-FACE BOND BEAM AROUND ENTIRE PERIMETER OF BUILDING, MATCH BUILDING CMU.
15. 2X6 OUTRIGGER FOR GABLED END OF ROOF.
16. SIMPSON TRUSS CLIP, AS REQUIRED BY CODE.
17. 3/4" PLYWOOD ROOF SHEATHING OVER ENTIRE ROOF.

GENERAL NOTES

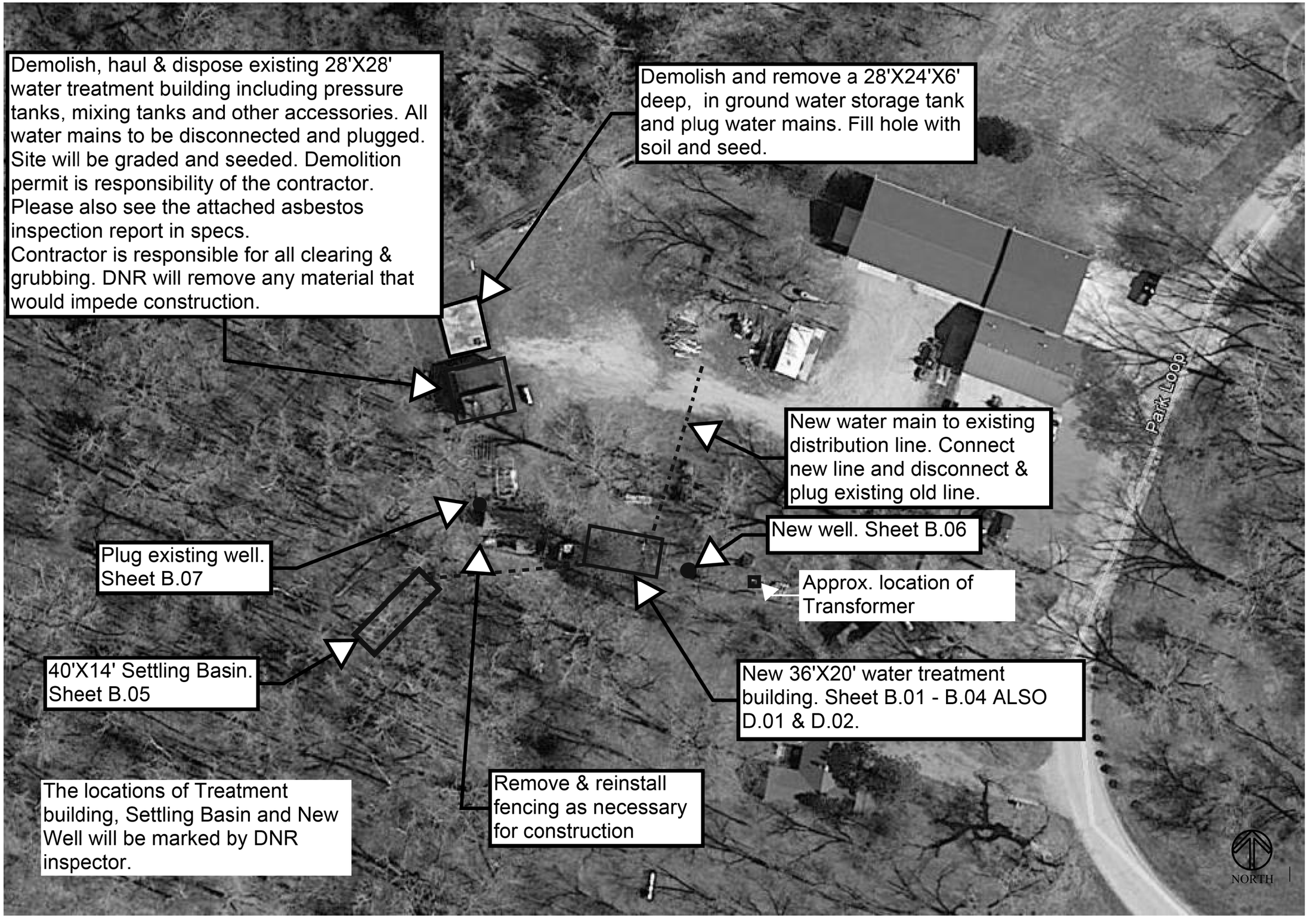
A. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
B. CONTRACTOR TO SUBMIT SAMPLES OF SPLIT-FACE BLOCK FOR APPROVAL PRIOR TO CONSTRUCTION FOR COLOR SELECTION.
C. CONTRACTOR TO VERIFY ALL PLUMBING REQUIREMENTS AND PENETRATIONS IN BUILDING SLAB.

SEAL

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034
P: 515.725.8200
F: 515.725.8202

WATER TREATMENT BUILDING FOR:
LEWIS & CLARK STATE PARK
21914 PARK LOOP, ONAWA MONONA COUNTY, IA

DRAWN BY:
PROJECT NUMBER: 13-01-67-01
CHK'D BY:
DATE: 11.18.2015
SHEET No:
D.02



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILING
502 E. 9TH ST., DES MOINES, IA 50319-0034

SITE PLAN

WATER TREATMENT SYSTEM REPLACEMENT
LEWIS & CLARK STATE PARK
MONONA COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY: MJH
PROJECT NUMBER: 13-01-67-01
CHK'D BY:
DATE: 7/9/2015

SHEET No: D.03