

IOWA DEPARTMENT OF NATURAL RESOURCES

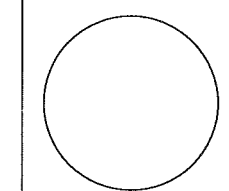
CONSTRUCTION DOCUMENTS FOR VIKING LAKE STATE PARK WASTE WATER SYSTEM UPGRADE

MONTGOMERY COUNTY, IOWA

SHEET INDEX

1	COVER SHEET
2	LOCATION MAP
3	GRADING PLAN
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CONSULTANT:



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

PROJECT # 19-04-69-02

LICENSED PROFESSIONAL ENGINEER
SHAHID HAMEED
16633
ENVIRONMENTAL
IOWA

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 3/28/19
Shahid Hameed Date

My license renewal date is December 31, 2020.

Pages or sheets covered by this seal: ALL

APPROVAL TO CONSTRUCT

NO 2019-0312-S

DATED APR 18, 2019

STATE OF IOWA
NATURAL RESOURCES
ENVIRONMENTAL SERVICES
DIVISION

BY [Signature]

PROJECT MANAGER		CONSTRUCTION INSPECTOR	
COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES	COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES
ADDRESS	502 EAST 9TH STREET	ADDRESS	
CITY, STATE, ZIP	DES MOINES, IA, 50319	CITY, STATE, ZIP	
CONTACT	"MIKE" SHAHID HAMEED	CONTACT	MARK JOHNSON
TELEPHONE	515-725-8467	TELEPHONE	515-260-3713
FAX		FAX	
EMAIL	mike.hameed@dnr.iowa.gov	EMAIL	mark.johnson@dnr.iowa.gov

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF ADDING ADDITIONAL TREATMENT FOR AMMONIA NITROGEN REMOVAL AND ALSO ADDING DISINFECTION & DECHLORINATION UNITS TO THE TREATMENT PROCESS.

AUTHORIZATION TO BID

[Signature] 4-23-19
AUTHORIZATION - PARKS | WILDLIFE | FISHERIES | LAW ENFORCEMENT | FORESTRY DATE

[Signature] 4/23/19
ENGINEERING BUREAU CHIEF DATE

COVER SHEET

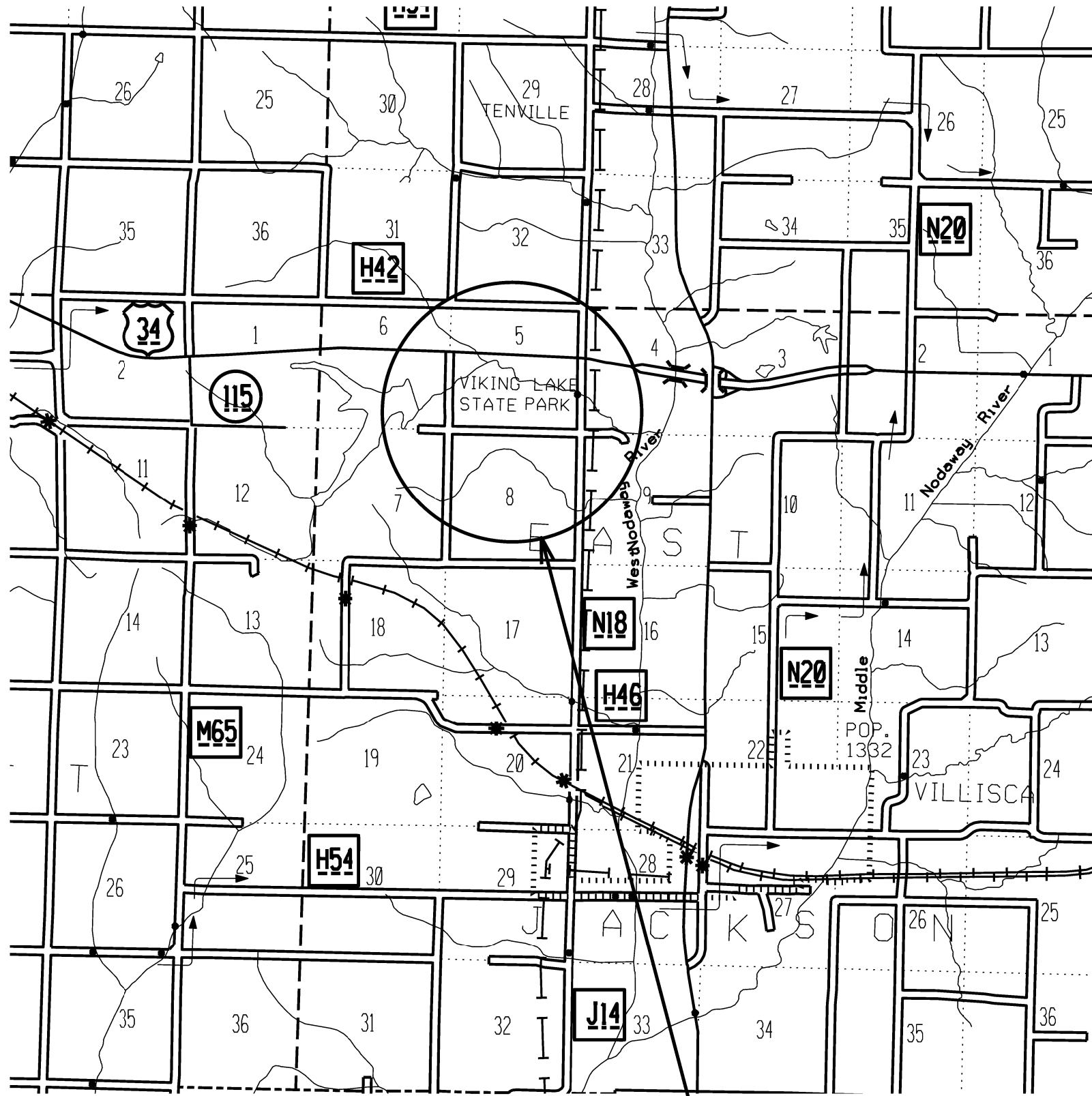
WASTE WATER SYSTEM UPGRADE FOR:

VIKING LAKE STATE PARK

MONTGOMERY COUNTY

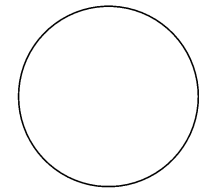
NO.	DATE	REVISION

DRAWN BY: PROJECT NUMBER: 19-04-69-02
CHKD BY: DATE: 5/1/2019
SHEET No:



PROJECT LOCATION

CONSULTANT:



**IOWA DEPARTMENT OF
NATURAL RESOURCES**

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

PROJECT LOCATION MAP

WASTE WATER SYSTEM UPGRADE FOR:

VIKING LAKE STATE PARK

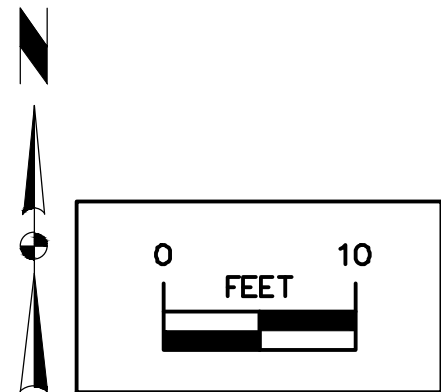
MONTGOMERY COUNTY

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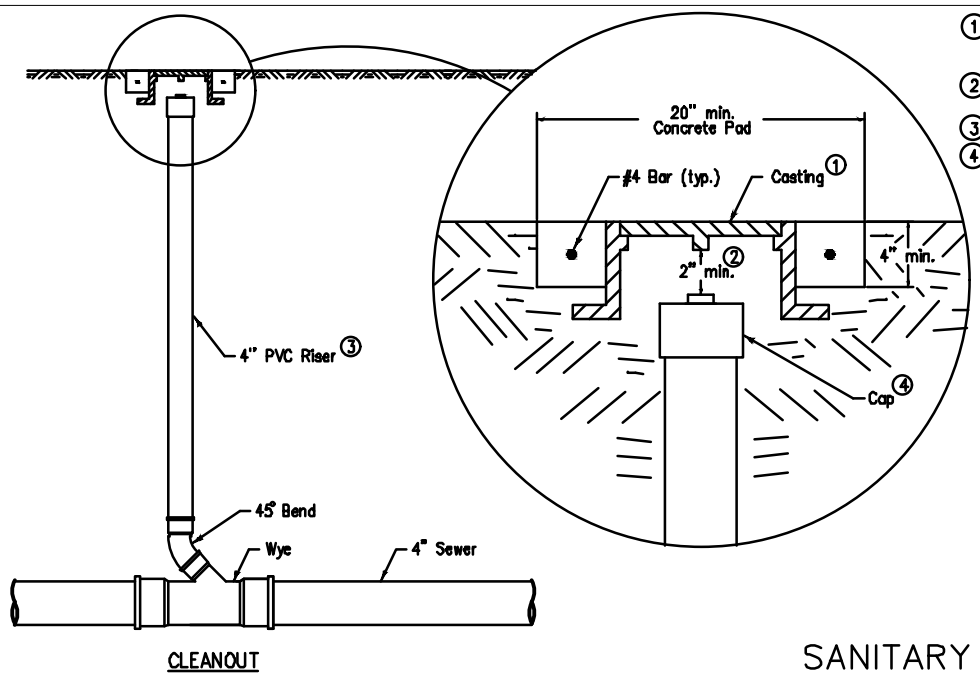
CHK'D BY: DATE:
5/1/2019

SHEET No:

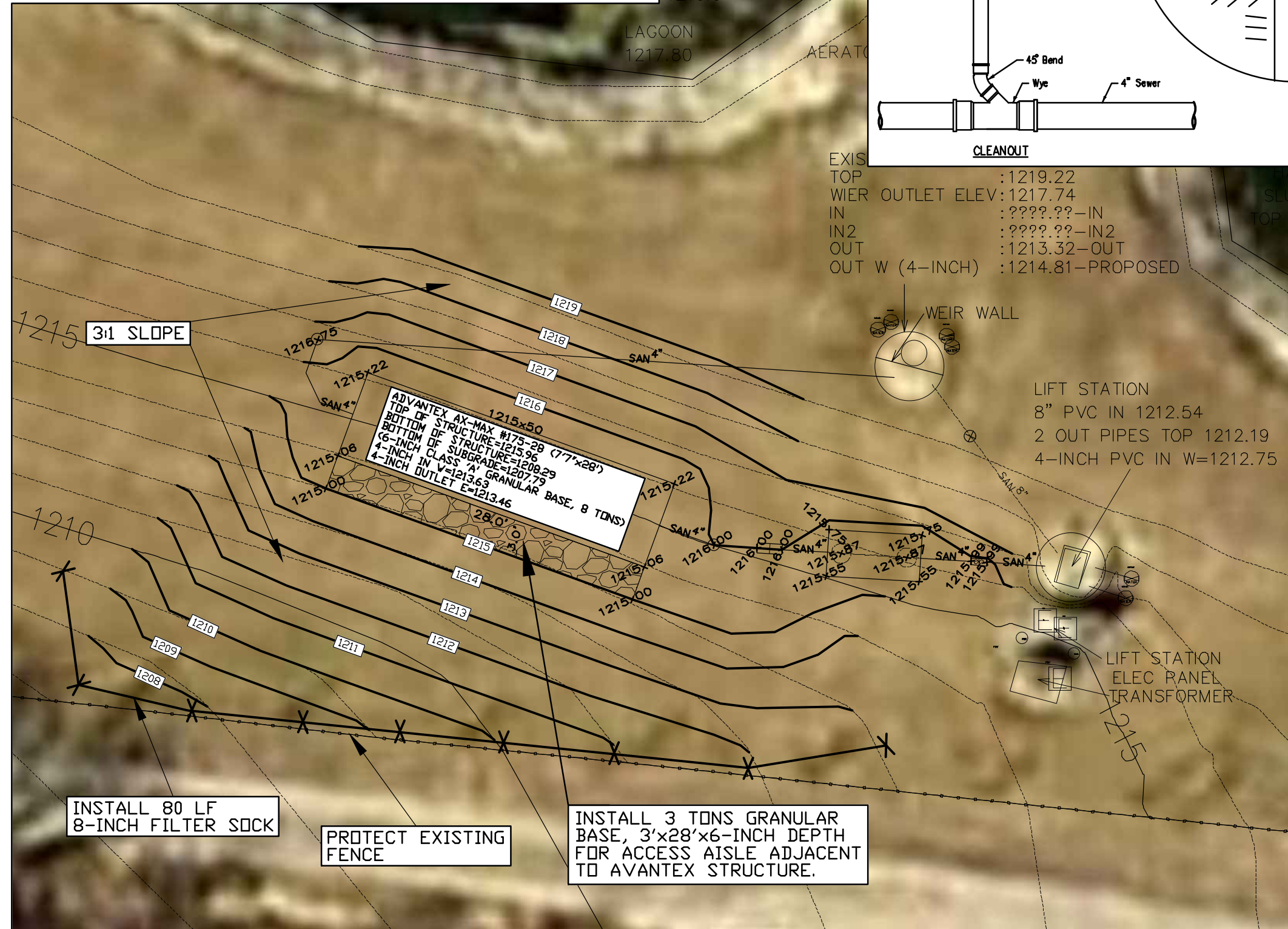


LEGEND
 EXISTING/PROPOSED

--- S 6" --- SANITARY SEWER
 --- E --- ELECTRICAL LINE
 --- 990 --- ELEVATION
 --- 884.50 --- SPOT ELEVATION
 --- X --- 8" FILTER SOCK



- ① Standard duty casting complying with AASHTO M 308. Mark lid with "Sanitary" or "Sanitary C.O."
 - ② Do not allow casting to bear on top of riser pipe.
 - ③ 4-inch PVC Service Pipe
 - ④ Threaded PVC cap or iron body ferrule with brass screw plug
- CASTING**
 (Dimensions are nominal)



EXISTING ELEVATIONS:

TOP	: 1219.22
WEIR OUTLET ELEV	: 1217.74
IN	: ???????-IN
IN2	: ???????-IN2
OUT	: 1213.32-OUT
OUT W (4-INCH)	: 1214.81-PROPOSED

SANITARY SEWER CLEANOUT

GRADING NOTES

1. TWO WEEKS PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL NOTIFY:
 - A. IOWA DNR PROJECT MANAGER: MIKE HAMEED 515-725-8467
 - B. DISTRICT INSPECTOR: MARK JOHNSON 515-250-3713
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH STATEWIDE URBAN STANDARD DESIGN SPECIFICATIONS FOR PUBLIC IMPROVEMENTS (SUDAS). ALL CONSTRUCTION TESTING TO BE IN ACCORDANCE WITH SUDAS AND IS THE EXPENSE OF THE CONTRACTORS.
3. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION AND NOTIFY THE ABOVE MENTIONED CONTACTS OF ANY DISCREPANCIES.
4. THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING FACILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION WITHOUT UNCOVERING AND MEASURING. THE ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT ALL EXISTING UNDERGROUND FACILITIES ARE SHOWN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT ALL PUBLIC AND/OR PRIVATE UTILITIES SERVING THE AREA TO DETERMINE THE PRESENT EXTENT AND LOCATION OF THEIR FACILITIES BEFORE BEGINNING WORK.
5. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES AT THE SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROPER UTILITY IMMEDIATELY UPON BREAKING OR DAMAGE TO ANY UTILITY LINE OR APPURTENANCE, OR THE INTERRUPTION OF THEIR SERVICE. HE SHALL NOTIFY THE PROPER UTILITY INVOLVED. IF EXISTING UTILITY LINES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED.
6. CONTRACTOR TO PROTECT ALL UTILITY, PAVING, BUILDINGS, ETC. OUTSIDE OF LIMITS OF PROPOSED CONSTRUCTION.
7. IN THE EVENT THAT THERE IS A DISCREPANCY BETWEEN THE QUANTITIES AND THE PLANS, THE DETAILED PLANS SHALL GOVERN.
8. CONTRACTOR SHALL SEED/MULCH ALL DISTURBED AREAS (APPROXIMATELY 0.1 ACRE). USE TYPE 2 (PERMANENT COOL SEASON MIXTURE FOR SLOPES) SEED MIX. BID ITEM IS A LUMP SUM ITEM. CONTRACTOR IS RESPONSIBLE FOR SEEDING/MULCHING ALL DISTURBED AREAS.
9. MAINTAIN ALL CUT AND FILL AREAS TO ACCOMMODATE SURFACE DRAINAGE.
10. FINISHED GRADE ON ALL NON-PAVED AREAS SHALL BE WITHIN 0.20 FOOT OF PLAN GRADE. PAVED AREAS SHALL BE WITHIN 0.10 FOOT.
11. TOPSOIL SHALL BE SPREAD TO A MINIMUM THICKNESS OF 6-INCHES ON ALL DISTURBED UNPAVED AREAS.
12. BACKFILL TO THE TOP OF ALL ROCK OR PAVED SURFACES.
13. ALL ELEVATIONS ARE TO THE FINISH GRADE UNLESS NOTED OTHERWISE.
14. EARTHWORK GRADING QUANTITY IS ROUGHLY 70 CY. AND IS A LUMP SUM BID ITEM.
15. NPDES GENERAL PERMIT #2 IS NOT REQUIRED FOR THIS PROJECT.

INSTALL 80 LF 8-INCH FILTER SOCK

PROTECT EXISTING FENCE

INSTALL 3 TONS GRANULAR BASE, 3'x28'x6-INCH DEPTH FOR ACCESS AISLE ADJACENT TO AVANTEX STRUCTURE.

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES



ENGINEERING SERVICES - WALLACE BUILDING
 502 E. 9TH ST. DES MOINES, IA 50319-5004

GRADING PLAN

WASTEWATER SYSTEM UPGRADE FOR:

VIKING LAKE STATE PARK

MONTGOMERY COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY: PROJECT NUMBER: 19-04-69-02
 CHD BY: DATE: 05/01/2019
 SHEET No:

ADVANTEK AX-MAX PERIMETER CONTROL

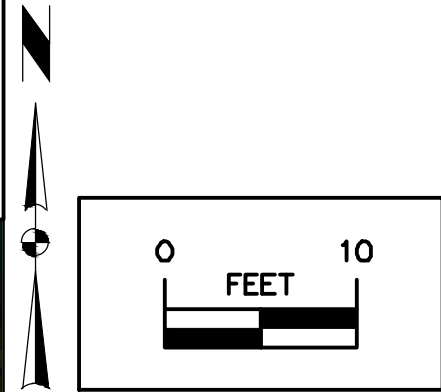
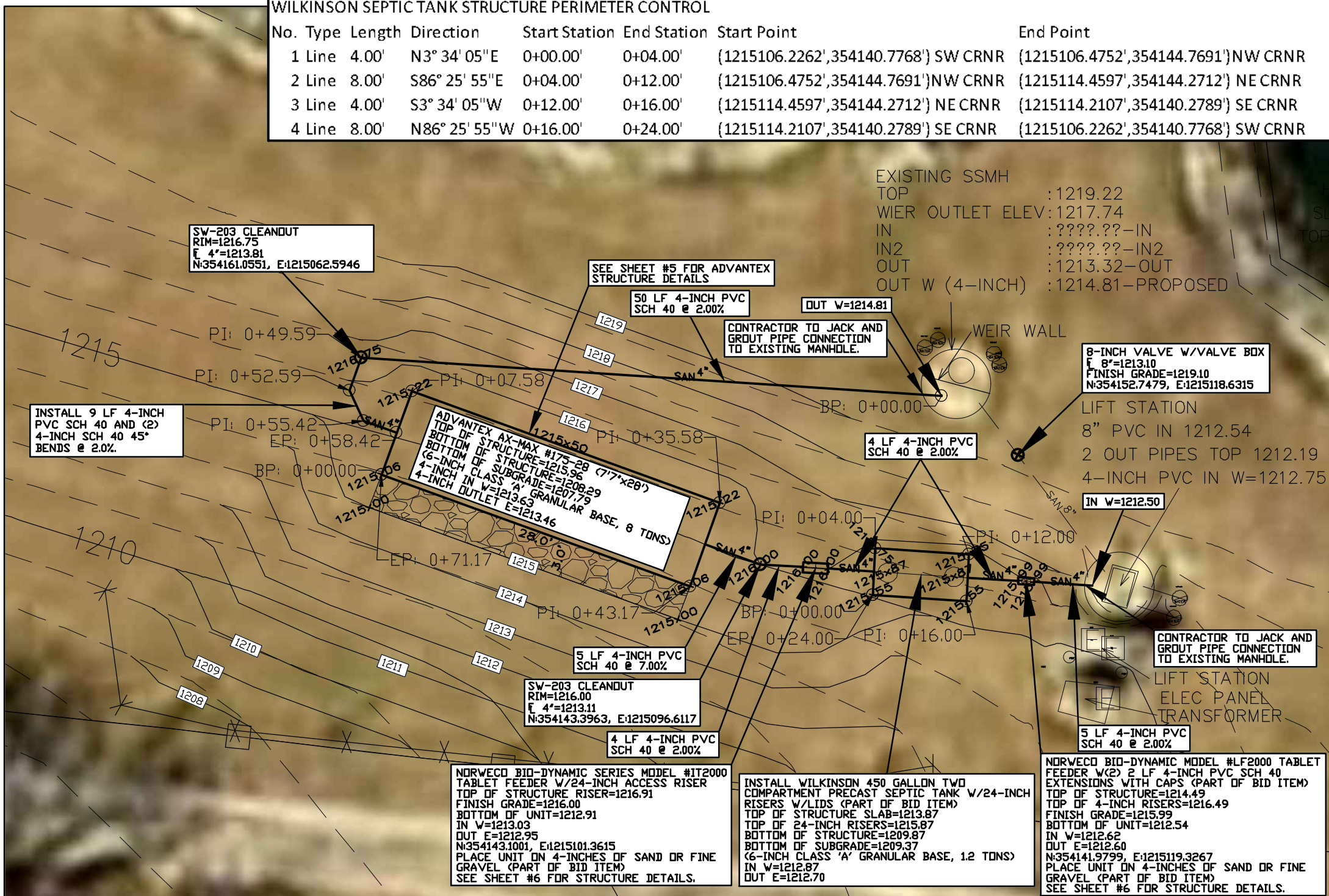
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	7.58'	N19° 56' 19"E	0+00.00'	0+07.58'	(1215064.2968', 354151.0853')	(1215066.8828', 354158.2141')
2	Line	28.00'	S70° 03' 41"E	0+07.58'	0+35.58'	(1215066.8828', 354158.2141')	(1215093.2044', 354148.6657')
3	Line	7.58'	S19° 56' 19"W	0+35.58'	0+43.17'	(1215093.2044', 354148.6657')	(1215090.6184', 354141.5370')
4	Line	28.00'	N70° 03' 41"W	0+43.17'	0+71.17'	(1215090.6184', 354141.5370')	(1215064.2968', 354151.0853')

SANITARY SEWER ALIGNMENT

No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	49.59'	N86° 16' 21"W	0+00.00'	0+49.59'	(1215112.0795', 354157.8311')	(1215062.5946', 354161.0551')
2	Line	3.00'	S19° 56' 19"W	0+49.59'	0+52.59'	(1215062.5946', 354161.0551')	(1215061.5715', 354158.2349')
3	Line	2.83'	S25° 03' 41"E	0+52.59'	0+55.42'	(1215061.5715', 354158.2349')	(1215062.7696', 354155.6727')
4	Line	3.00'	S70° 03' 41"E	0+55.42'	0+58.42'	(1215062.7696', 354155.6727')	(1215065.5898', 354154.6497')

WILKINSON SEPTIC TANK STRUCTURE PERIMETER CONTROL

No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	4.00'	N3° 34' 05"E	0+00.00'	0+04.00'	(1215106.2262', 354140.7768')	(1215106.4752', 354144.7691')
2	Line	8.00'	S86° 25' 55"E	0+04.00'	0+12.00'	(1215106.4752', 354144.7691')	(1215114.4597', 354144.2712')
3	Line	4.00'	S3° 34' 05"W	0+12.00'	0+16.00'	(1215114.4597', 354144.2712')	(1215114.2107', 354140.2789')
4	Line	8.00'	N86° 25' 55"W	0+16.00'	0+24.00'	(1215114.2107', 354140.2789')	(1215106.2262', 354140.7768')



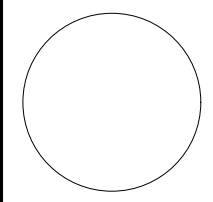
LEGEND

- EXISTING/PROPOSED
- S 6" SANITARY SEWER
 - E ELECTRICAL LINE
 - 990 ELEVATION
 - 884.50 SPOT ELEVATION
 - 8" FILTER SOCK

UTILITY NOTES

- SEE SANITARY SEWER CLEANOUT DETAIL ON PREVIOUS SHEET.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH STATEWIDE URBAN STANDARD DESIGN SPECIFICATIONS FOR PUBLIC IMPROVEMENTS (SUDAS). ALL CONSTRUCTION TESTING TO BE IN ACCORDANCE WITH SUDAS AND IS THE EXPENSE OF THE CONTRACTORS.
- THE TOP OF THE NORWECO STRUCTURES/RISERS NEED TO BE A MINIMUM 6-INCHES ABOVE THE FINISH GRADE TO PREVENT INFILTRATION.
- NORWECO BID-DYNAMIC SERIES MODEL #LF2000 TABLET FEEDER BID ITEM TO INCLUDE THE 24-INCH ACCESS RISER AND 4-INCHES OF BEDDING MATERIAL.
- NORWECO BID-DYNAMIC SERIES MODEL #IT2000 TABLET FEEDER BID ITEM TO INCLUDE (2) 2 LF 4-INCH PVC SCH 40 RISER EXTENSIONS WITH CAPS AND 4-INCHES OF BEDDING MATERIAL.
- 8-INCH VALVE W/VALE BOX BID ITEM TO INCLUDE GATE VALVE, VALVE BOX, VALVE STEM EXTENSION AND COVER.
- CONTRACTOR TO INSTALL ELECTRIC LINE FROM PANEL TO ADVANTEK STRUCTURE. SEE SHEET #5 FOR DETAILS.

CONSULTANT:



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ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST. DES MOINES, IA 50319-5004



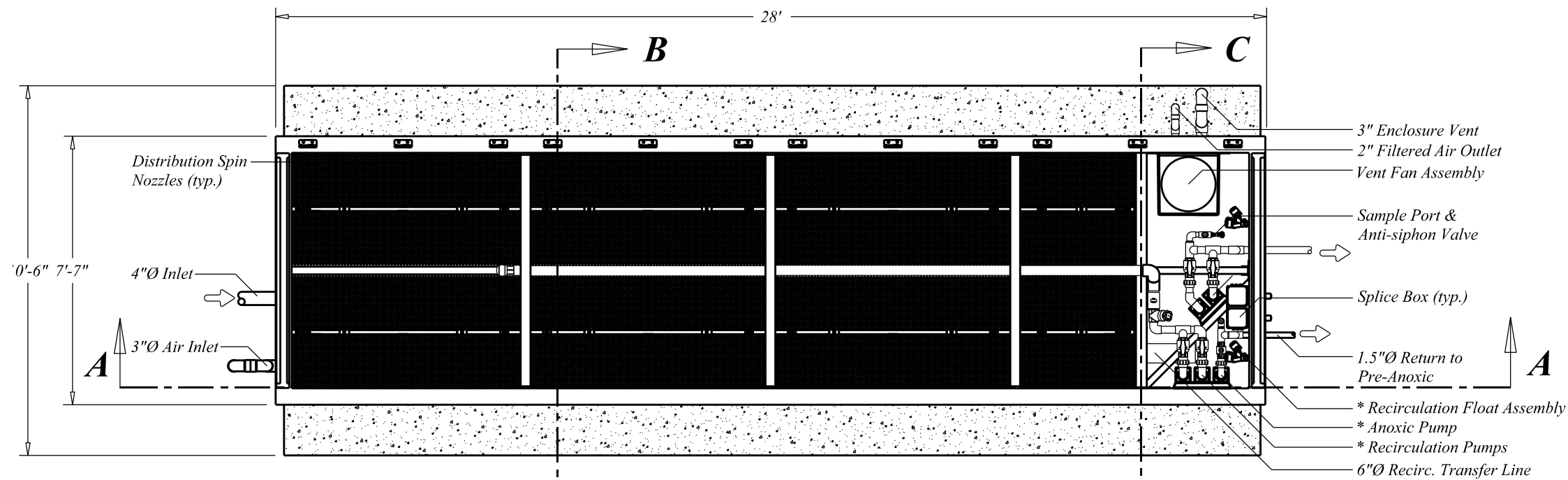
UTILITY PLAN

WASTEWATER SYSTEM UPGRADE FOR:
VIKING LAKE STATE PARK

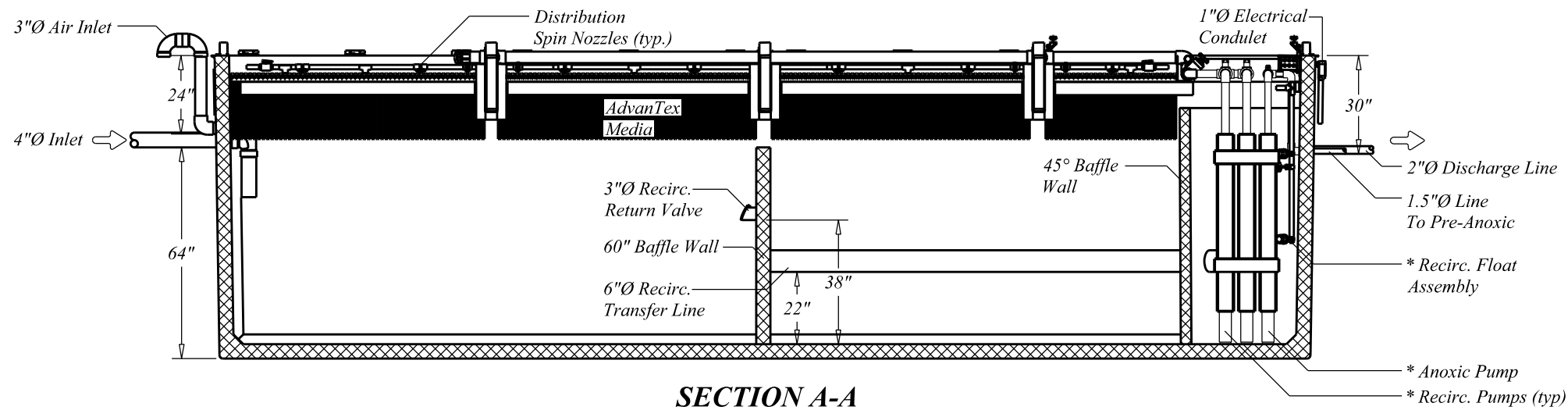
MONTGOMERY COUNTY, IOWA

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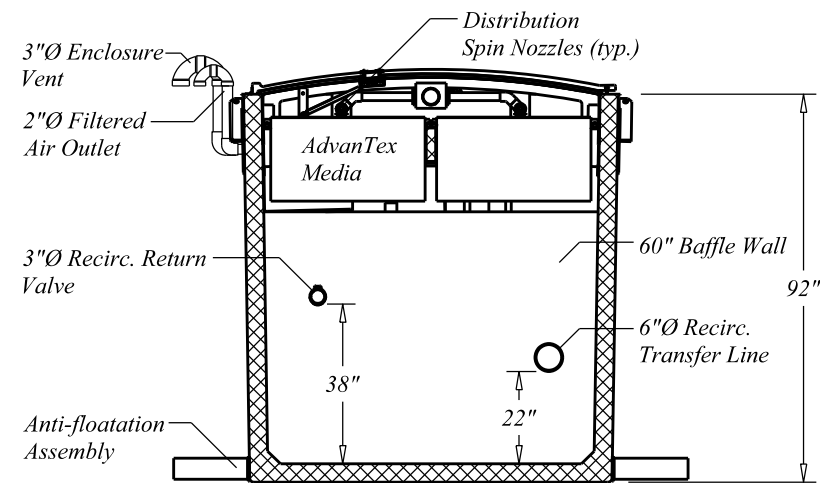
PROJECT NUMBER: 19-04-69-02
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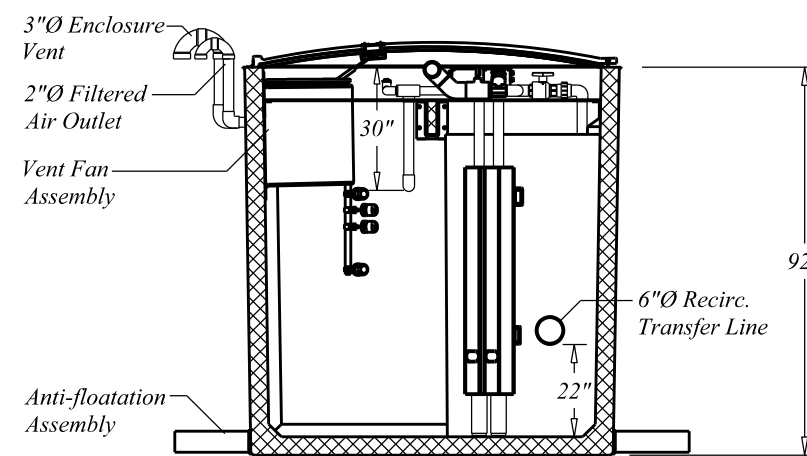
B TOP VIEW C



SECTION A-A



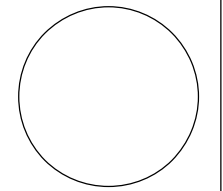
SECTION B-B



SECTION C-C

**ADVANTEX AX-MAX175-28
OR APPROVED EQUAL**

CONSULTANT:



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NATURAL RESOURCES**

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

PACKED BED FILTER

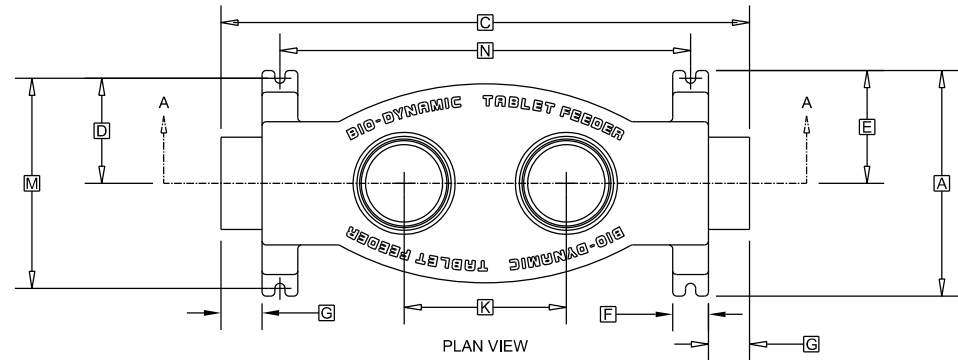
WASTE WATER SYSTEM UPGRADE FOR:

VIKING LAKE STATE PARK

MONTGOMERY COUNTY

NO.	BY	REVISION
	DATE	

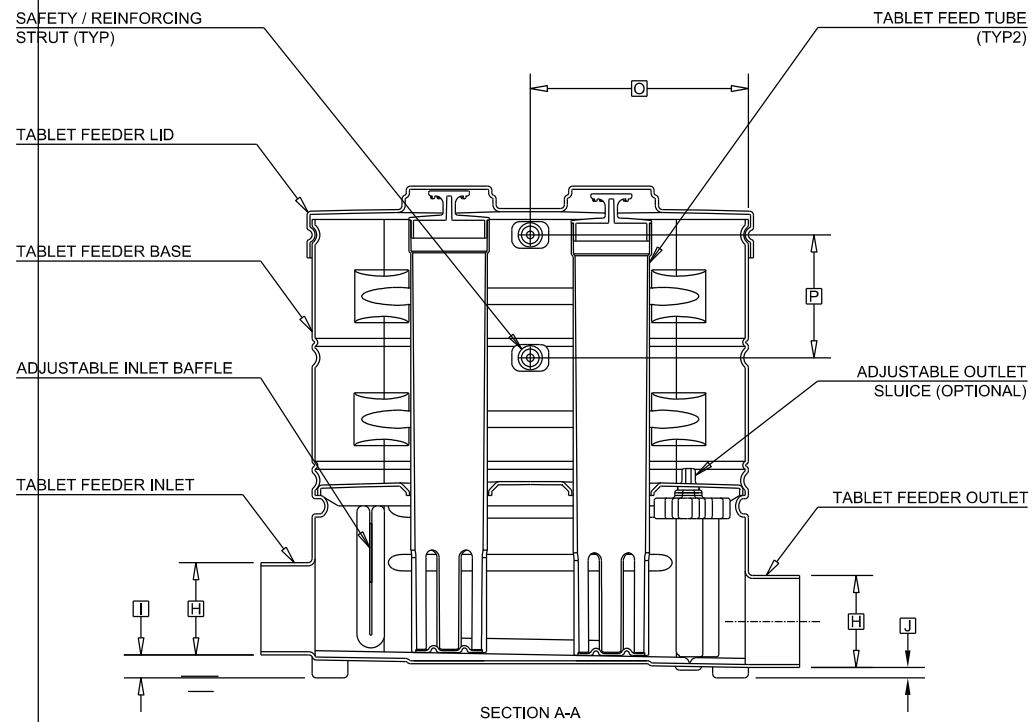
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 5/1/2019
 SHEET NO:



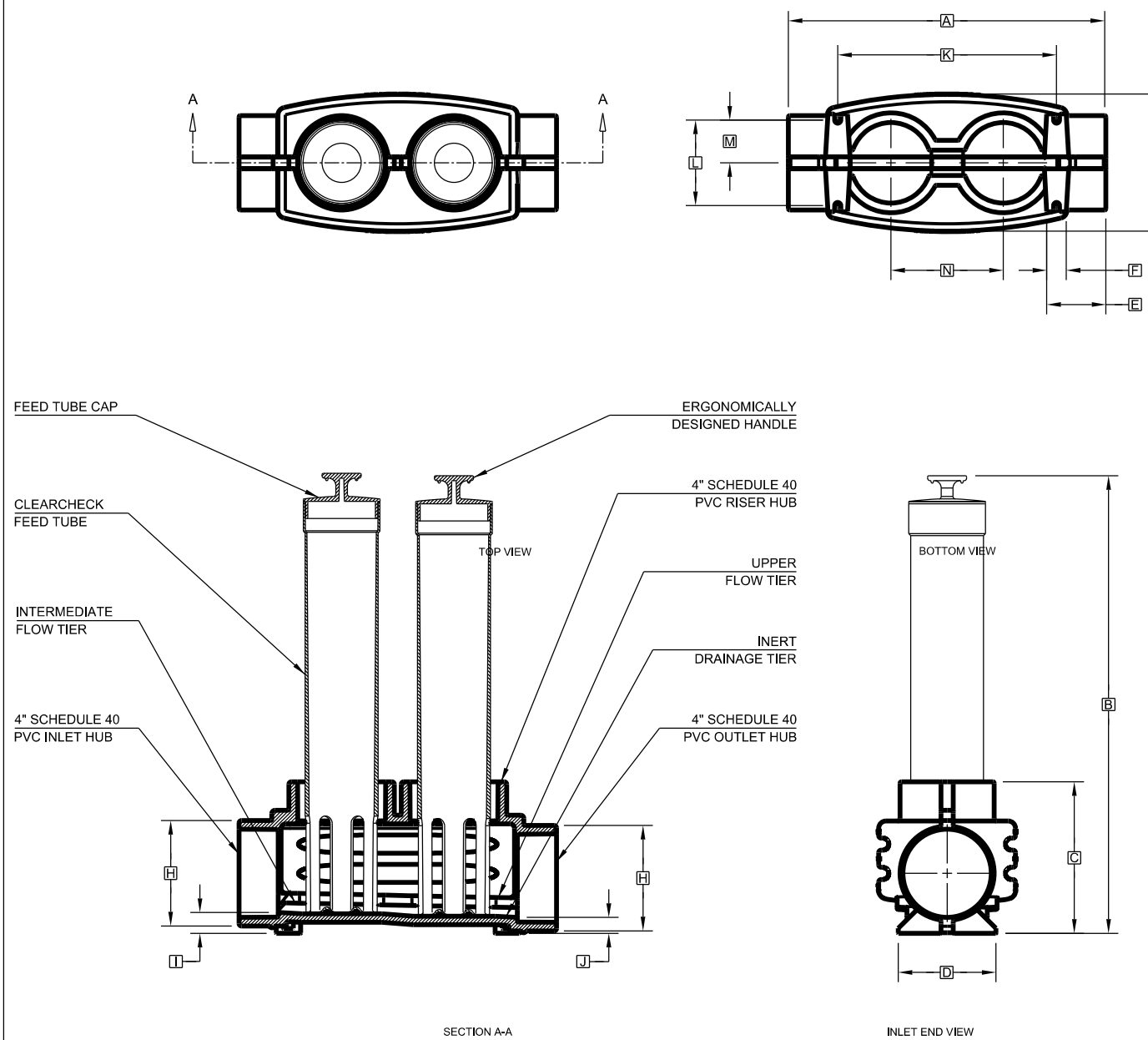
GENERAL NOTES:

- ① FALL THROUGH TABLET FEEDER FROM INLET INVERT TO OUTLET INVERT IS ONE INCH $\pm 3/8"$.
- ② FINISHED GRADE MUST BE MAINTAINED AT LEAST SIX INCHES BELOW TOP OF LID.
- ③ FEEDER BASE HEIGHT MAY BE REDUCED IN SIX INCH INCREMENTS. COVER MUST BE DRILLED TO ALLOW TUBES TO EXTEND THROUGH LID WHEN REDUCING FEEDER HEIGHT.
- ④ WHERE TABLET FEEDER IS INSTALLED WITHOUT MOUNTING BRACKETS, INSTALL ON FOUR INCH SAND OR FINE GRAVEL LEVELING PAD.

CRITICAL DIMENSIONS			
A	0'-10 1/2"	J	0'-0 1/2"
B	2'-0"	K	0'-8"
C	2'-1 1/2"	L	0'-3 1/2"
D	0'-5"	M	0'-10"
E	0'-5 1/4"	N	1'-8"
F	0'-1 3/4" (TYP)	O	0'-11"
G	0'-2" (TYP)	P	0'-6" (TYP)
H	0'-4 1/2" (TYP)	Q	
I	0'-1 1/2"	R	
TOLERANCES			
NOMINAL DIMENSIONS ARE SHOWN AND MAY VARY $\pm 3/8"$ FOR ROTOMOLDED COMPONENTS.			



NORWECO IT 2000 CHLORINE TABLET FEEDER OR APPROVED EQUAL



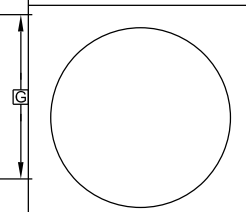
GENERAL NOTES:

- ① FALL THROUGH TABLET FEEDER FROM INLET INVERT TO OUTLET INVERT IS ONE QUARTER INCH $\pm 1/2"$.
- ② FINISHED GRADE MUST BE MAINTAINED AT LEAST SIX INCHES BELOW TOP OF LID.
- ③ INLET, OUTLET, AND RISER HUBS ACCEPT STANDARD SCHEDULE 40 PVC PIPES AND FITTINGS.
- ④ WHERE TABLET FEEDER IS INSTALLED WITHOUT MOUNTING BRACKETS, INSTALL ON FOUR INCH SAND OR FINE GRAVEL LEVELING PAD.

CRITICAL DIMENSIONS			
A	1'-4 3/16"	N	0'-5 3/4"
B	1'-11 3/8"	O	
C	0'-7 3/4"	P	
D	0'-5"	Q	
E	0'-3" (TYP)	R	
F	0'-1" (TYP)	S	
G	0'-7"	T	
H	0'-5 3/8"	U	
I	0'-1"	V	
J	0'-3/4"	W	
K	0'-11 3/16"	X	
L	0'-4 3/8"	Y	
M	0'-2 3/16"	Z	

NORWECO LF 2000 TABLET FEEDER OR APPROVED EQUAL

CONSULTANT:



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

TABLET FEEDERS

WASTE WATER SYSTEM UPGRADE FOR:

VIKING LAKE STATE PARK

MONTGOMERY COUNTY

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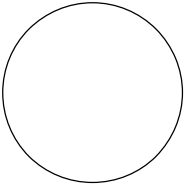
SHEET No:

ESTIMATED PROJECT QUANTITIES			
ITEM NO.	ITEM	UNIT	TOTAL
		UNIT	
1	Grading	1 LS	
2	Seeding, Fertilizing and Mulching	1 LS	
3	8-inch Filter Sock	80 LF	
4	Granular Base	12.2 Tons	
5	Wilkinson Precast 450 Gallon Septic Tank OR Equivalent (Installed)	1 LS	
6	Advantex AX-Max #175-28 Packed Bed Filter Complete with Controls & Installation (or equivalent)	1 LS	
7	Electrical Connection From Existing Panel To Advantex	1 LS	
8	Norweco Bio-Dynamic Model #IT2000 W/24-inch Riser (or equivalent)	1 LS	
9	Norweco Bio-Dynamic Model #LF2000 (or equivalent)	1 LS	
10	4-inch Sanitary Sewer Service (PVC SCH 40)	81 LF	
11	4-inch 45° Bends (PVC SCH 40)	2 EA	
12	Sanitary Sewer Service Cleanouts	2 EA	
13	Sanitary Sewer Manhole Connections	2 EA	
14	8-inch Valve W/Valve Box	1 EA	
15	Mobilization	1 LS	

ESTIMATE REFERENCE INFORMATION	
ITEM NO.	DESCRIPTION
1	A. This item includes Advantex control panel model TCOM-DAX2 PTR0 CS TSD UPS XF Cell LDF Peri. B. Also includes commissioning & operator training. C. The packed bed filter shall installed as per manufacturer instructions available at https://odl.orenco.com/documents/nim-atx-ax-3-prm.pdf
7	The approximate distance between electrical panel and pack bed filter is 50 ft.
13	The connections to the manholes shall be made using Link-Seal.

GENERAL NOTES
<p>Verify actual locations and elevations with DNR Engineer.</p> <p>All work shall conform to and be performed in accordance with all applicable codes and ordinances.</p> <p>The contractor shall visit the site and inspect the project area and thoroughly familiarize themselves with the actual job conditions prior to bidding and the start of work. Failure to visit the project site shall not relieve the contractor from performing the work in accordance to the plans, specification, special provisions and contract.</p> <p>The contractor shall verify, at the site, all dimensions and conditions shown on the plans and shall notify the DNR Engineer of any discrepancies, omissions, and/or conflicts prior to proceeding with the work.</p> <p>It shall be the contractor's responsibility to provide waste areas or disposal sites 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 these sites. No material shall be placed within the right-of-way, unless specifically stated in the plans or approved by the DNR Engineer.</p> <p>The contractor shall not disturb desirable grass areas and desirable trees outside the 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 DNR Engineer.</p> <p>Where utilities and fixtures are shown as Existing on the plans or encountered within the construction area, it shall be the responsibility of the contractor to notify the DNR Engineer of those utilities prior to the beginning of any construction. The contractor shall be afforded access to these facilities for necessary modification of services. Underground facilities, structures and utilities have been plotted from available surveys and records and therefore their locations must be considered approximate only. It is possible there may be others, the existence of which is presently not known or shown. It is the contractor's responsibility to determine their existence and exact location and to avoid damage thereto. No claims for additional compensation will be allowed to the contractor for any interference or delay caused by such work.</p> <p>The contractor shall shape graded area to maintain surface drainage. All elevations are to finish grade.</p> <p>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. This may involve seeding, silt fence, rock ditch checks, silt basins or silt dikes.</p> <p>All construction shall be in accordance with Statewide Urban Standard Design Specifications for public improvements (SUDAS). All construction testing to be in accordance with SUDAS and is the expense of the contractors.</p> <p>The construction sequence will be to first complete all new construction without disturbing the existing facility while its operational. Once all of the construction is complete only then the existing manholes will be tapped to bring new filter and tablet feeders online.</p>

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QUANTITIES AND GENERAL INFORMATION
 WASTE WATER SYSTEM UPGRADE FOR:
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