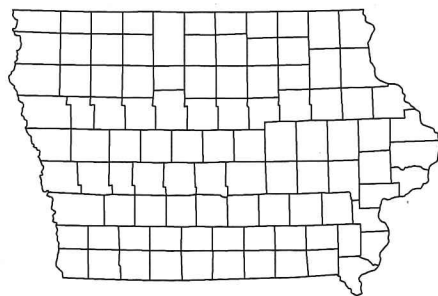


IOWA DEPARTMENT OF NATURAL RESOURCES

CONSTRUCTION DOCUMENTS  
FOR  
VIKING LAKE STATE PARK  
SEDIMENT PONDS

MONTGOMERY COUNTY, IOWA

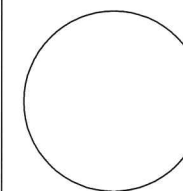
PROJECT # 18-04-69-02



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C.01	QUANTITIES AND GENERAL INFORMATION
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2	SITE 1A PLAN VIEW
3	SITE 1A SECTION ON CENTERLINE OF FILL & CENTERLINE OF PIPE
4	SITE 1B PLAN VIEW
5	SITE 1B SECTION ON CENTERLINE OF FILL & CENTERLINE OF PIPE
6	SITE 2A PLAN VIEW
7	SITE 2A SECTION ON CENTERLINE OF FILL & CENTERLINE OF PIPE
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24	SITE 9 PLAN VIEW
25	SITE 9 SECTION ON CENTERLINE OF FILL & CENTERLINE OF PIPE
26	TRASH RACK FOR WELDED STEEL PIPE CANOPY INLET

CONSULTANT:



IOWA DEPARTMENT OF  
NATURAL RESOURCES

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



COVER SHEET

SEDIMENT POND CONSTRUCTION FOR:

VIKING LAKE STATE PARK

MONTGOMERY COUNTY

DIRECTORY

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	HEATH DELZELL	CONTACT	MARK JOHNSON
TELEPHONE	515-979-0104	TELEPHONE	515-250-3713
FAX	515-281-8685	FAX	
EMAIL	health.delzell@dnr.iowa.gov	EMAIL	mark.johnson@dnr.iowa.gov

PROJECT DESCRIPTION

This project consists of constructing eleven new sediment ponds and replacing the spillway of one existing pond, all located within the Viking Lake watershed.

AUTHORIZATION TO BID

*[Signature]* 6/18/19  
 AUTHORIZATION - PARKS | WILDLIFE | FISHERIES | LAW ENFORCEMENT | FORESTRY DATE  
*[Signature]* 6/18/19  
 ENGINEERING BUREAU CHIEF DATE

NO. BY DATE REVISION

DRAWN BY: PROJECT NUMBER:  
18-04-69-02

CHK'D BY: DATE

SHEET NO.:

A.01

ESTIMATED PROJECT QUANTITIES			
ITEM NO.	ITEM	UNIT	TOTAL
1	Clearing	Acres	13.5
2	Fill In place	CY	30,888
3	Core trench	CY	5,326
4	6" Pipe	Lin FT	1,,278
5	Trash Rack	Each	11
6	4x4 Antiseep	Each	34
7	Seeding	Acres	8
8	Control Structure	Each	1
9	6" Gate Valve	Each	1
10	Animal Guard	Each	1
11	Mob	LS	1
12	8" Filter Sock	Lin Ft	2,025
13	Construction Staking	LS	1

ESTIMATE REFERENCE INFORMATION	
ITEM NO.	DESCRIPTION
12	A. Contractor shall place filter sock downstream of each pond construction limit.

### GENERAL NOTES

Verify actual locations and elevations with DNR Engineer.

All work shall conform to and be performed in accordance with all applicable codes and ordinances.

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.

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.

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.

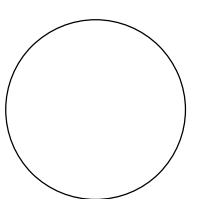
The contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service areas will be subject to the approval of the DNR Engineer.

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.

The contractor shall shape graded area to maintain surface drainage. All elevations are to finish grade.

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.

CONSULTANT:



**IOWA DEPARTMENT OF  
NATURAL RESOURCES**

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



QUANTITIES AND GENERAL INFORMATION

SEDIMENT POND CONSTRUCTION FOR:  
VIKING LAKE STATE PARK

MONTGOMERY COUNTY

NO.	BY DATE	REVISION

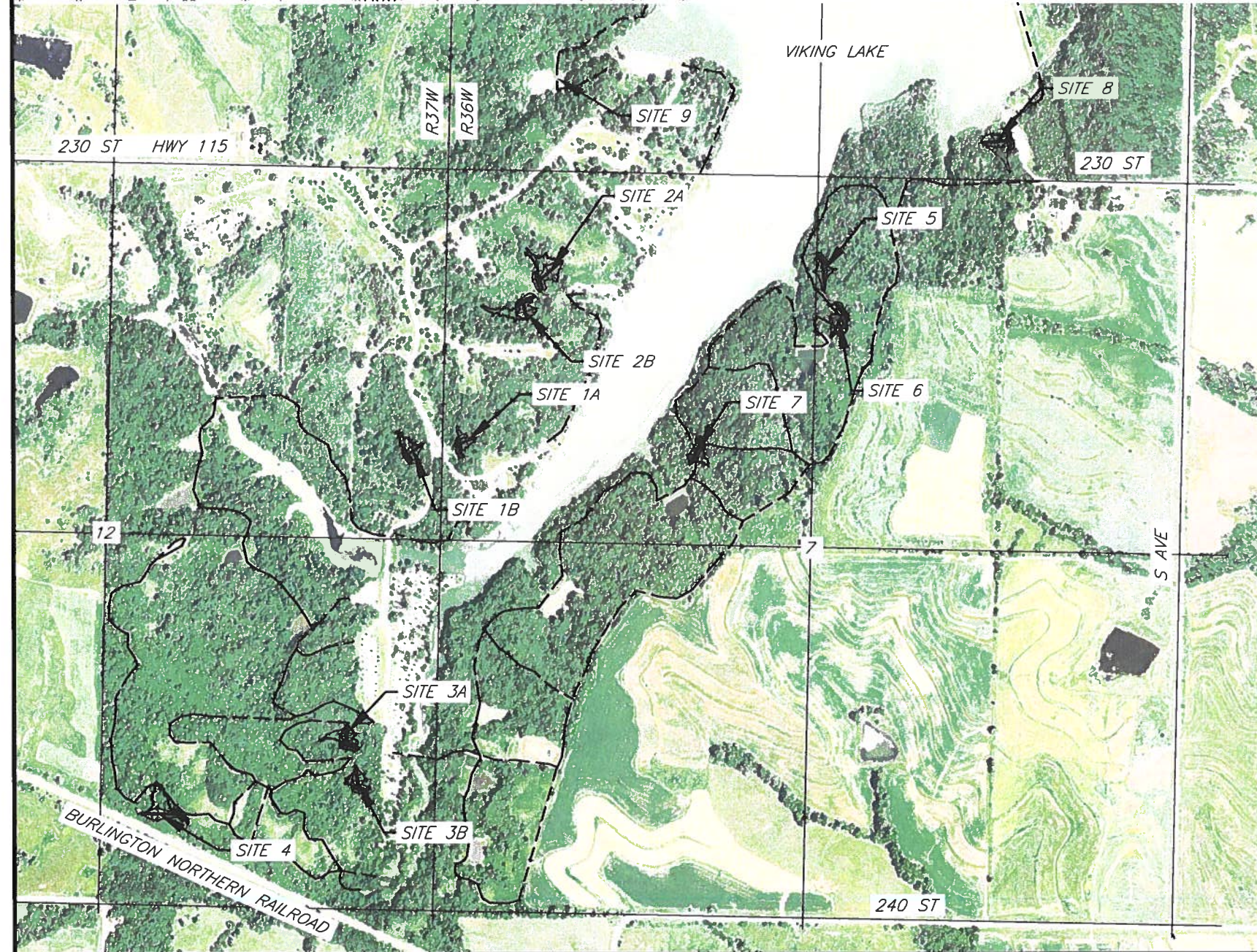
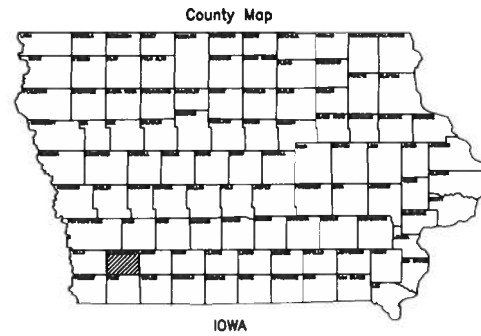
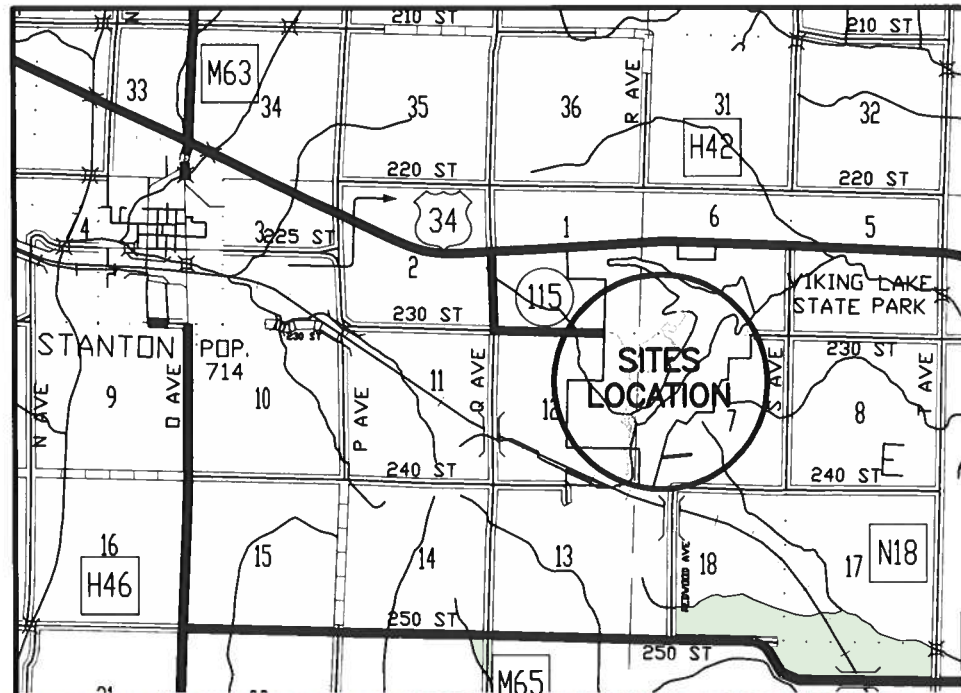
DRAWN BY:	PROJECT NUMBER:
	18-04-69-02

CHK'D BY:	DATE:

SHEET No:

**C.01**





Contractor is required to follow Iowa One Call law.  
 IowaOneCall.com or Call 811  
 Ticket # \_\_\_\_\_

If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

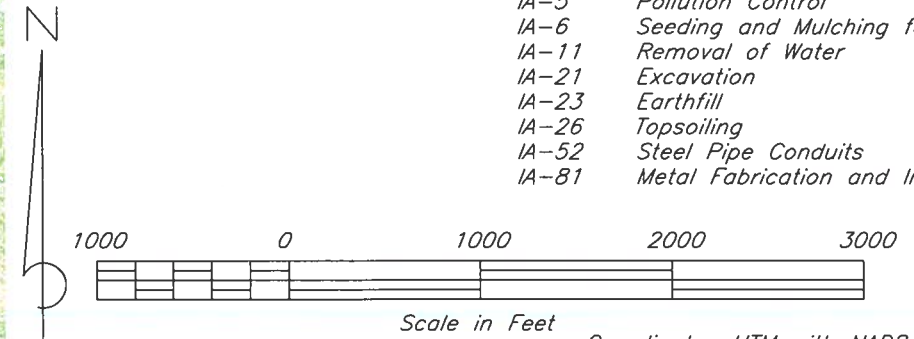
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Site 1B Plan View	4
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Trash Rack for Welded Steel Pipe Canopy Inlet	26

Date 6/18  
 Designed Kay Steffes  
 Drawn Kay Steffes  
 Checked Bruce Dake  
 Approved *Duan Abthues* 4/19

LOCATION MAP & SITE MAP  
 Viking Lake  
 Sec. 6 & 7, East Twp., Twp., T71N, R36W,  
 & Sec. 12, Scott Twp., T71N, R37W  
 Montgomery County, Iowa

NATURAL RESOURCES CONSERVATION SERVICE  
 CONSTRUCTION SPECIFICATIONS

- IA-1 Site Preparation
- IA-5 Pollution Control
- IA-6 Seeding and Mulching for Protective Cover
- IA-11 Removal of Water
- IA-21 Excavation
- IA-23 Earthfill
- IA-26 Topsoiling
- IA-52 Steel Pipe Conduits
- IA-81 Metal Fabrication and Installation



United States Department of Agriculture  
**USDA**  
 Natural Resources Conservation Service

File No. Viking Lake.dwg  
 Drawing No. \_\_\_\_\_  
 4/5/19 10:56 AM  
 Sheet 1 of 26

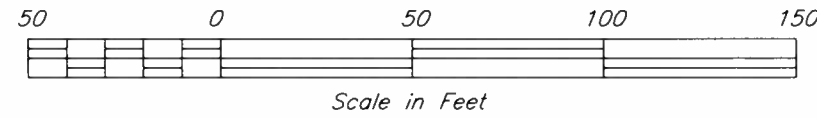


NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

Contractor is required to follow Iowa One Call law.  
IowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin1	1179.44	Top of a 0.5" diameter steel pin driven into the ground on east side of the park road N 14885781.9100 E 1076545.3060
Hub 1	1173.78	Top of a 1"x2" wooden hub driven into the ground on the east side of the park road N 14885715.1060 E 1076596.9800

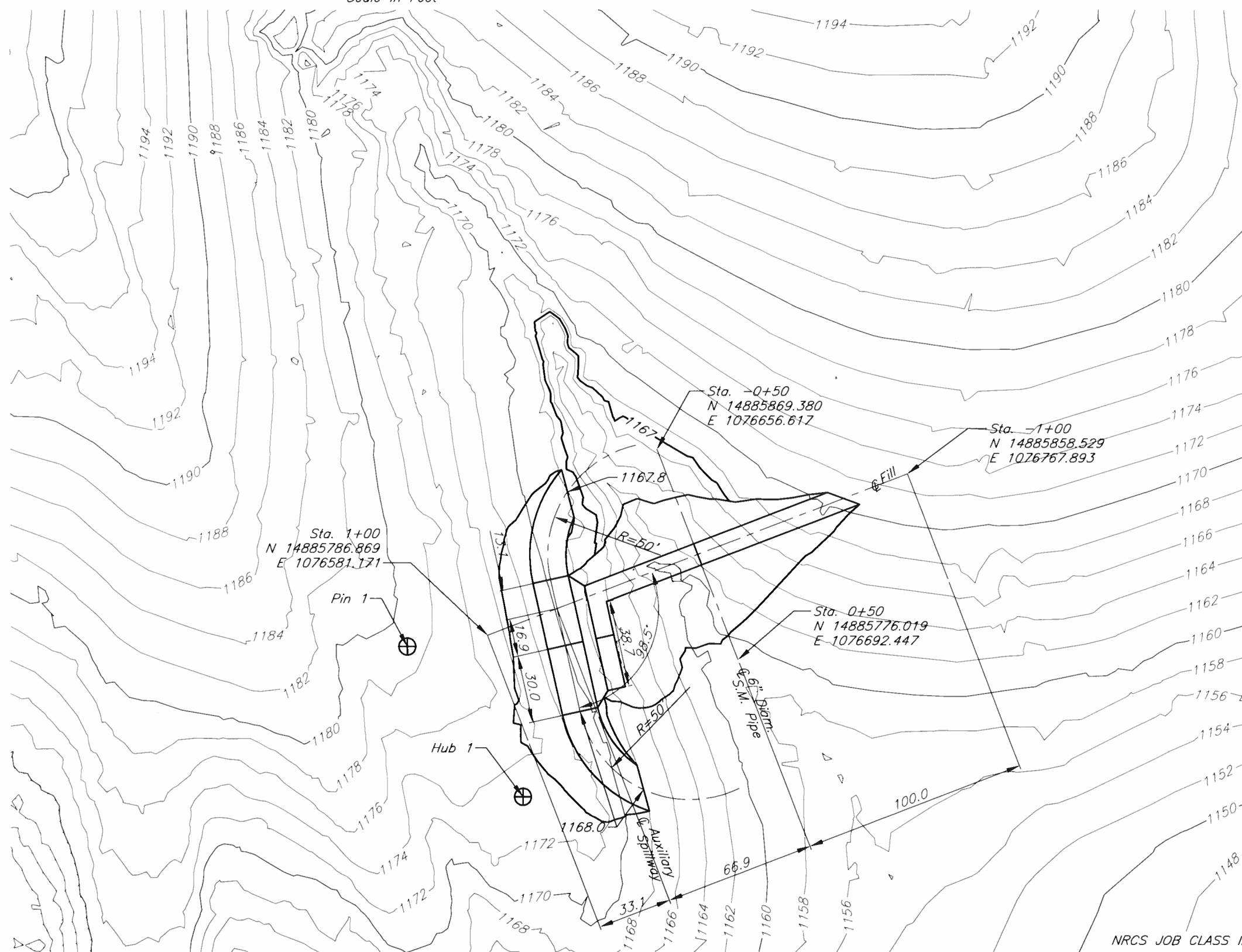
Sta.	Northing	Easting	Elevation
-0+91.34	14885871.199	1076647.207	1167.0
Radius Pt.	14885822.385	1076658.034	
-0+13.1	14885811.560	1076609.220	1168.6
0+16.9			1168.6
0+46.9	14885752.983	1076622.209	1168.0
Radius Pt.	14885763.808	1076671.023	
1+25.44	14885718.875	1076692.956	1168.0



If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

**SITE DATA**

Total Drainage Area	6.8 Acres
Principal Design Storm	2 yr. 24 hr.
Principal Design Outflow	1.71 cfs.
Auxiliary Design Storm	10 yr. 24 hr.
Auxiliary Design Outflow	15.26 cfs.
Pool Area	0.07 acres



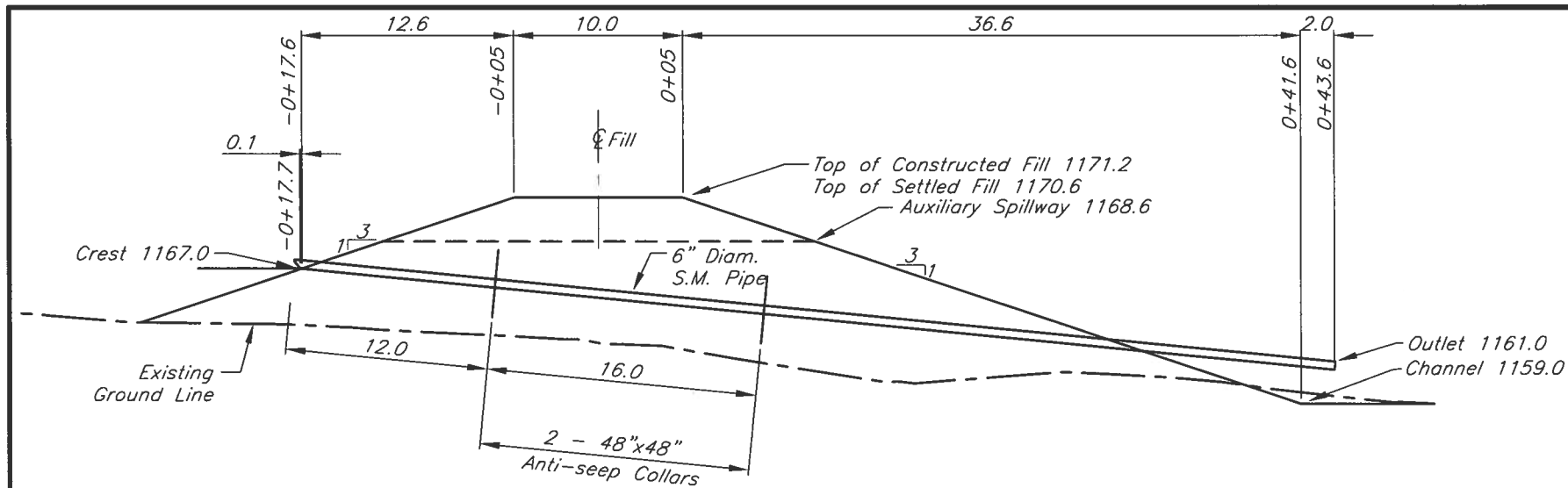
Designed	Eli McNeas	Date	6/18
Drawn	Eli McNeas		6/18
Checked	Bruce Dake		3/19
Approved			

PLAN VIEW  
Viking Lake Site 1A

United States Department of Agriculture  
**USDA**  
Natural Resources Conservation Service

File No. Viking Lake Site 1A.dwg  
Drawing No. \_\_\_\_\_  
4/2/19 1:33 PM  
Sheet 2 of 26

SW1/4, NW1/4, Sec. 7, East Twp., T71N, R36W  
Montgomery County, IA



**Bill of Materials**

62 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet

2 - 48"x48" Anti-Seep Collars, 1 piece, 1/4" thick

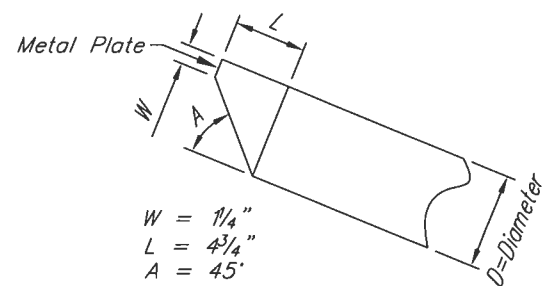
Pipe and appurtenances shall be welded and watertight.

1 - 6" Bee Hive Trash Rack

It is recommended that all butt welds be strapped.

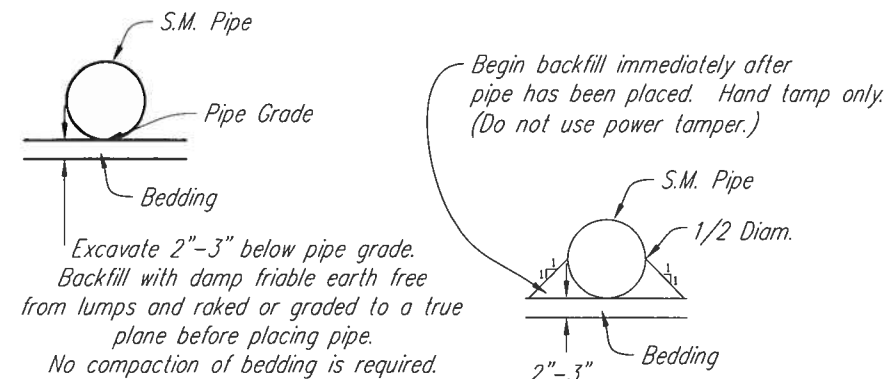
Earthfill Main	1,121 cu. yd.
Core Trench	201 cu. yd.
<b>Total Earthwork</b>	<b>1,322 cu. yd.</b>

Date	6/18
Designed	Eli McNeas
Drawn	Eli McNeas
Checked	Bruce Dake
Approved	

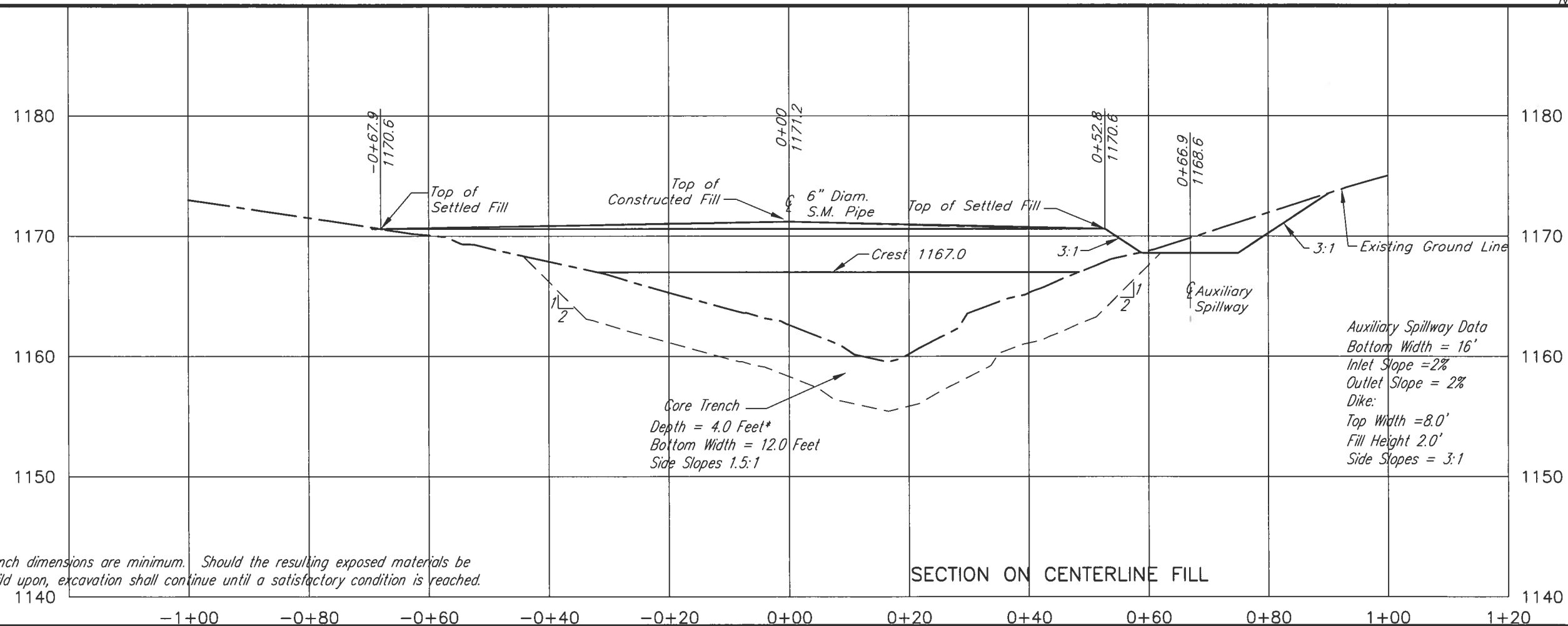


Not to Scale  
**CANOPY INLET DETAILS**

**SECTION ON CENTERLINE PIPE**



**BEDDING DETAIL**      **BACKFILL DETAIL**  
Not to Scale



\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

**SECTION ON CENTERLINE FILL**

**SECTION ON CENTERLINE OF FILL & CENTERLINE OF PIPE**  
Viking Lake Site 1A

SW1/4, NW1/4, Sec. 7, East Twp., T71N, R36W

Montgomery County, IA



File No.  
Viking Lake Site 1A.dwg

Drawing No.

4/2/19 1:42 PM  
Sheet 3 of 26

NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

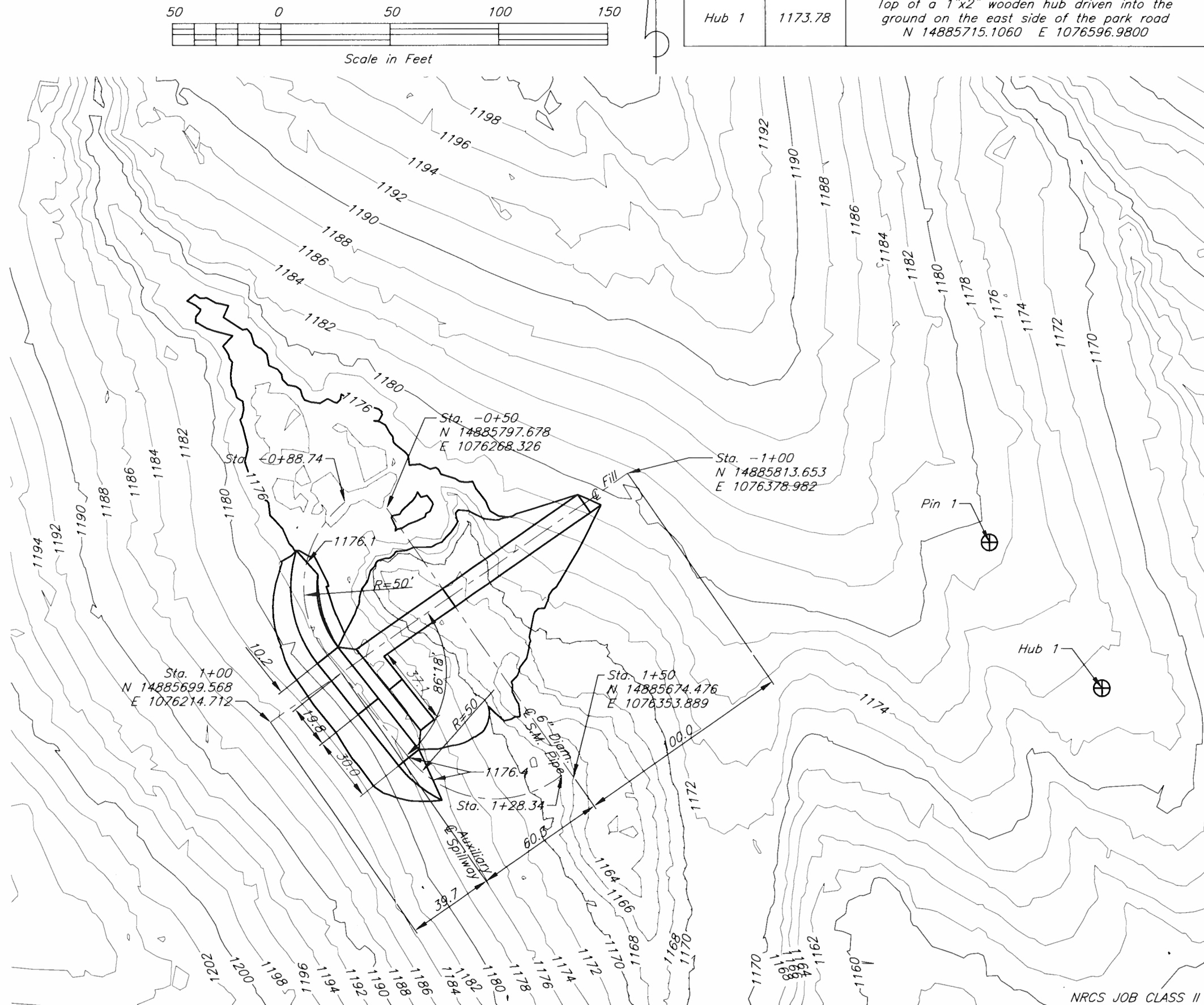
If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL 1-800-292-8989 Ticket # \_\_\_\_\_

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 1	1179.44	Top of a 0.5" diameter steel pin driven into the ground on east side of the park road N 14885781.9100 E 1076545.3060
Hub 1	1173.78	Top of a 1"x2" wooden hub driven into the ground on the east side of the park road N 14885715.1060 E 1076596.9800

Sta.	Northing	Easting	Elevation
-0+88.74	14885800.494	1076249.002	1175.4
Radius Pt.	14885761.352	1076280.114	
-0+10.2	14885730.241	1076240.972	1177.0
0+19.8			1177.0
0+49.8	14885683.271	1076278.306	1176.4
Radius Pt.	14885714.382	1076317.448	
1+28.34	14885675.241	1076348.559	1176.4

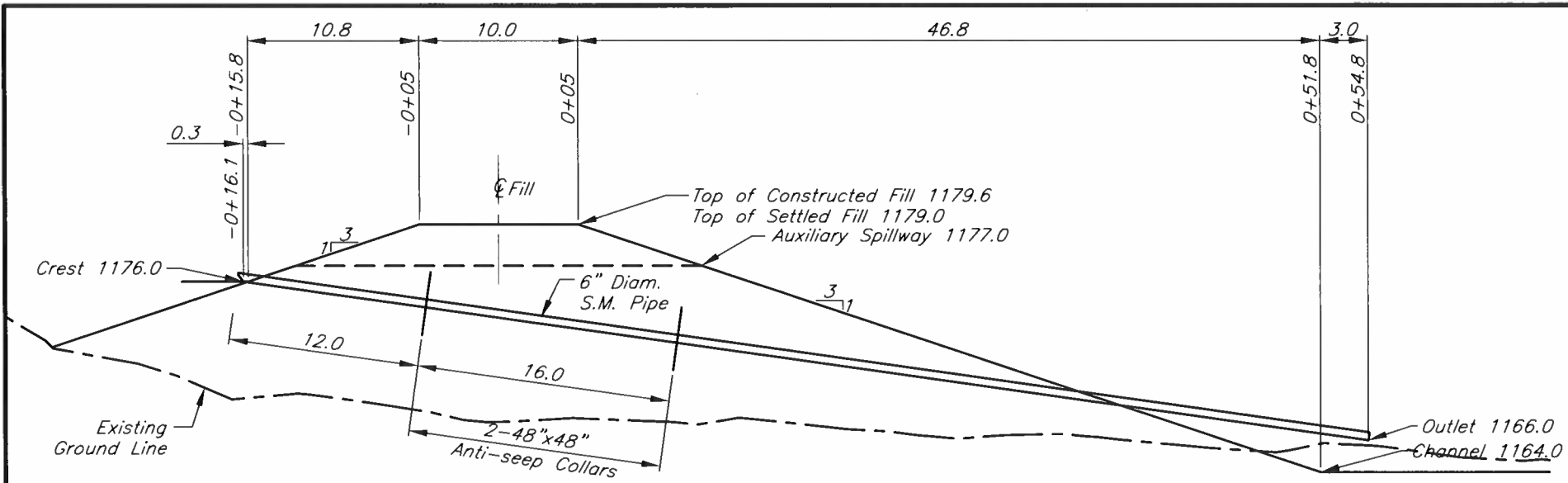
**SITE DATA**  
 Total Drainage Area 8.1 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 1.97 cfs.  
 Auxiliary Design Storm 10 yr. 24 hr.  
 Auxiliary Design Outflow 10.27 cfs.  
 Pool Area 0.17 acres



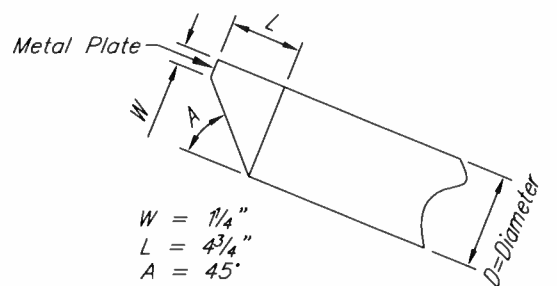
Designed Eli McNeas Date 6/2018  
 Drawn Kay Steffes Date 6/2018  
 Checked Bruce Dake Date 3/19  
 Approved \_\_\_\_\_

Montgomery County, Iowa  
 Viking Lake Site 1B  
 SE1/4, NE1/4, Sec. 12, Scott Twp., T71N, R37W

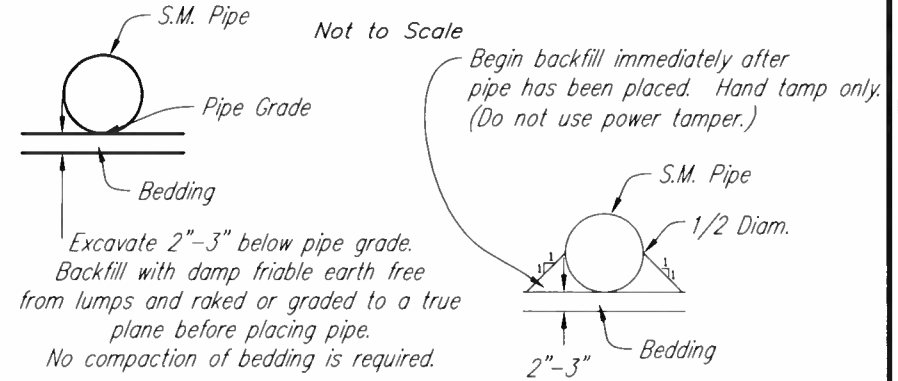
United States Department of Agriculture  
**USDA** Natural Resources Conservation Service  
 File No. Viking Lake Site 1B.dwg  
 Drawing No. \_\_\_\_\_  
 3/27/19 2:31 PM  
 Sheet 4 of 26



SECTION ON CENTERLINE PIPE



CANOPY INLET DETAILS



BEDDING DETAIL BACKFILL DETAIL

**Bill of Materials**

72 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet

2 - 48"x48" Anti-Seep Collars, 1 piece, 1/4" thick

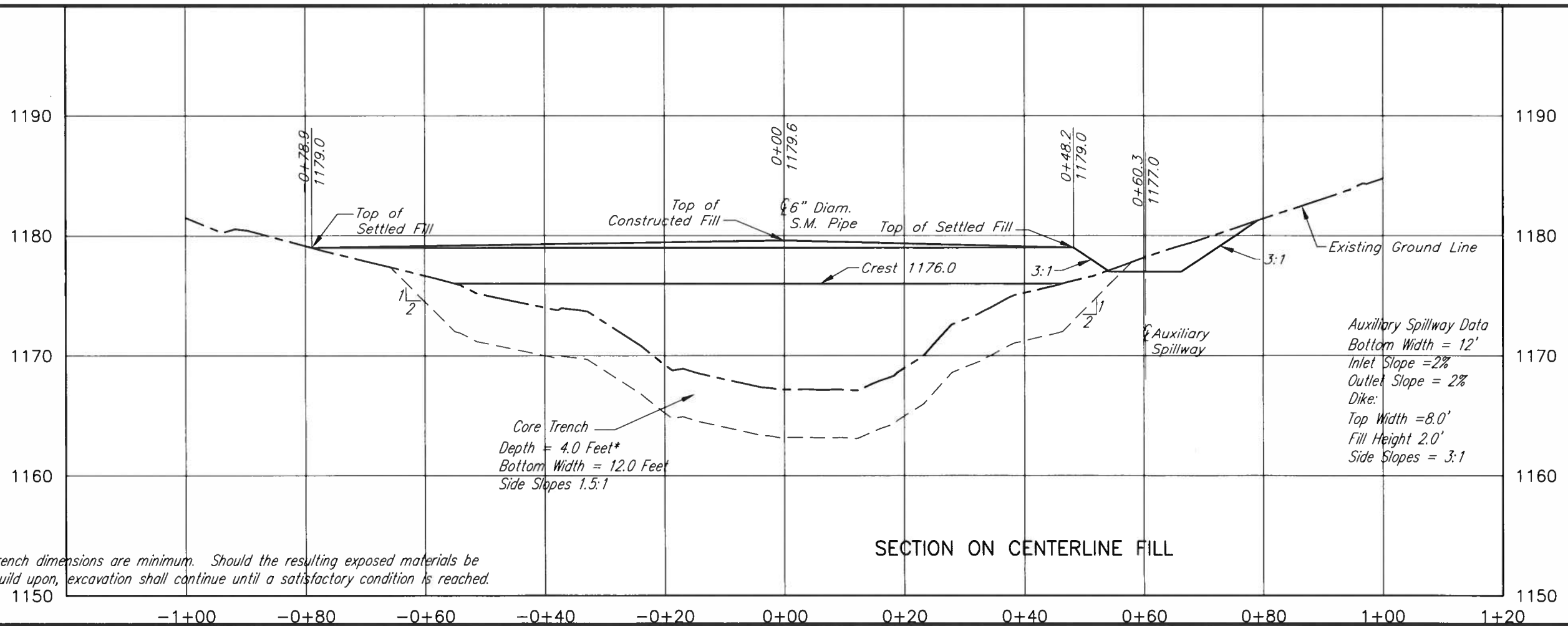
Pipe and appurtenances shall be welded and watertight.

1 - 6" Bee Hive Trash Rack

It is recommended that all butt welds be strapped.

Earthfill Main	1,473 cu. yd.
Core Trench	228 cu. yd.
<b>Total Earthwork</b>	<b>1,701 cu. yd.</b>

Designed	Eli McNeese	Date	6/2018
Drawn	Kay Steffes	Date	6/2018
Checked	Bruce Dake	Date	3/19
Approved			



SECTION ON CENTERLINE FILL

Auxiliary Spillway Data  
 Bottom Width = 12'  
 Inlet Slope = 2%  
 Outlet Slope = 2%  
 Dike:  
 Top Width = 8.0'  
 Fill Height 2.0'  
 Side Slopes = 3:1

\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

SECTION ON CENTERLINE OF FILL &  
 CENTERLINE OF PIPE  
 Viking Lake Site 1B  
 SE1/4, NE1/4, Sec. 12, Scott Twp., T71N, R37W Montgomery County, Iowa

United States Department of Agriculture  
**USDA**  
 Natural Resources Conservation Service

File No.  
 Viking Lake Site 1B.dwg

Drawing No.  
 3/27/19 2:31 PM  
 Sheet 5 of 26

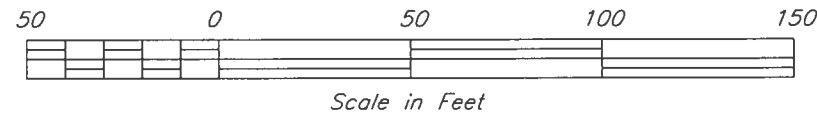
NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

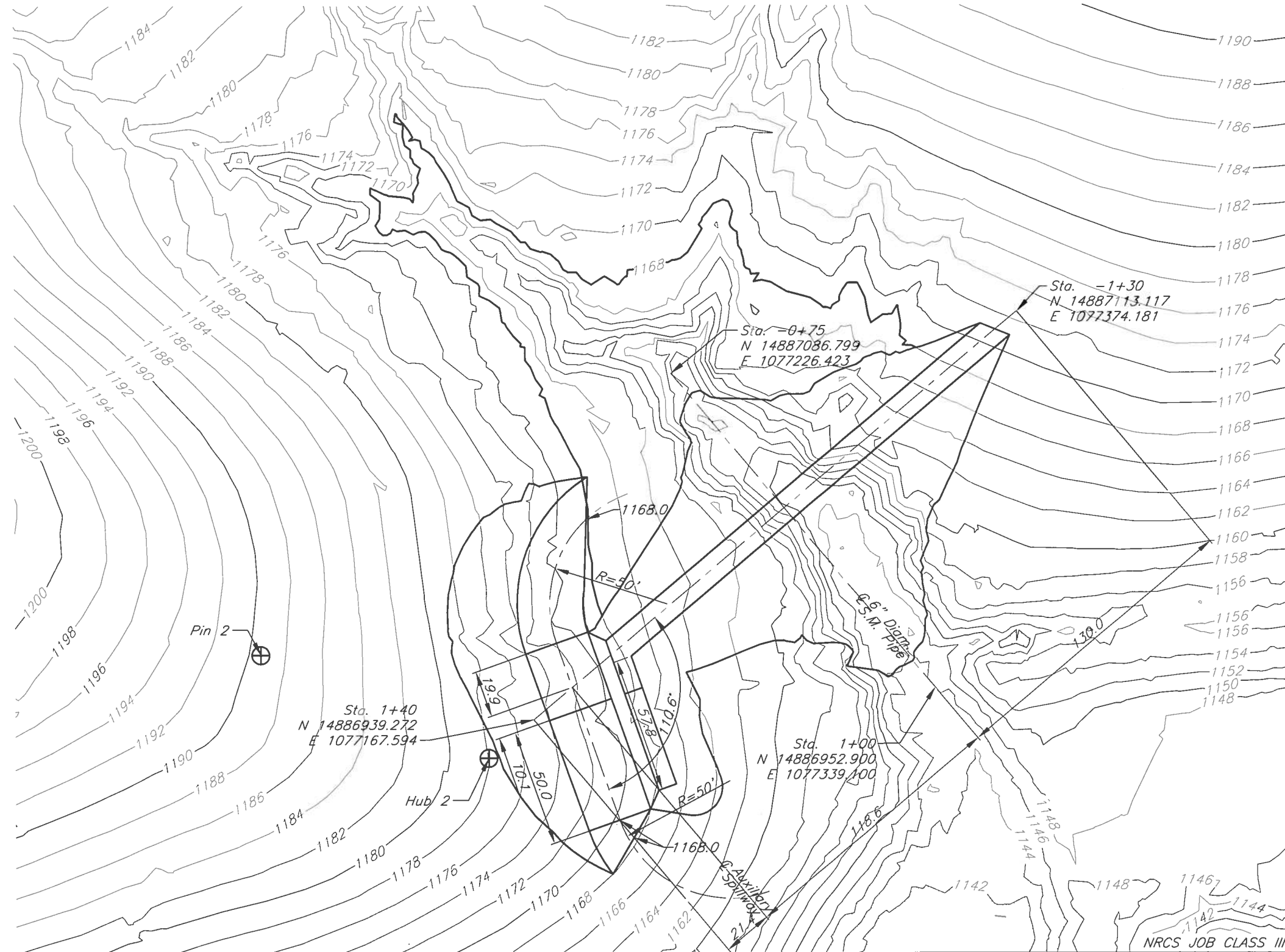
Contractor is required to follow Iowa One Call law.  
iowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 2	1190.25	Top of a 0.5" diameter steel pin driven into the ground on the walking trail N 14886966.8730 E 1077050.6720
Hub 2	1178.79	Top of a 1"x2" wooden hub driven into the ground on the walking trail N 14886922.8880 E 1077148.1260

Auxiliary Spillway Layout			
Sta.	Northing	Easting	Elevation
-0+98.44	14887035.635	1077207.775	1167.4
Radius Pt.	14886988.496	1077224.445	
-0+19.9	14886971.826	1077177.306	1169.0
0+10.1			1169.0
0+60.1	14886896.403	1077203.977	1168.0
Radius Pt.	14886913.073	1077251.116	
1+38.64	14886865.933	1077267.786	1168.0



**SITE DATA**  
 Total Drainage Area 9.0 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 2.40 cfs.  
 Auxiliary Design Storm 25 yr. 24 hr.  
 Auxiliary Design Outflow 24.09 cfs.  
 Pool Area 0.29 acres

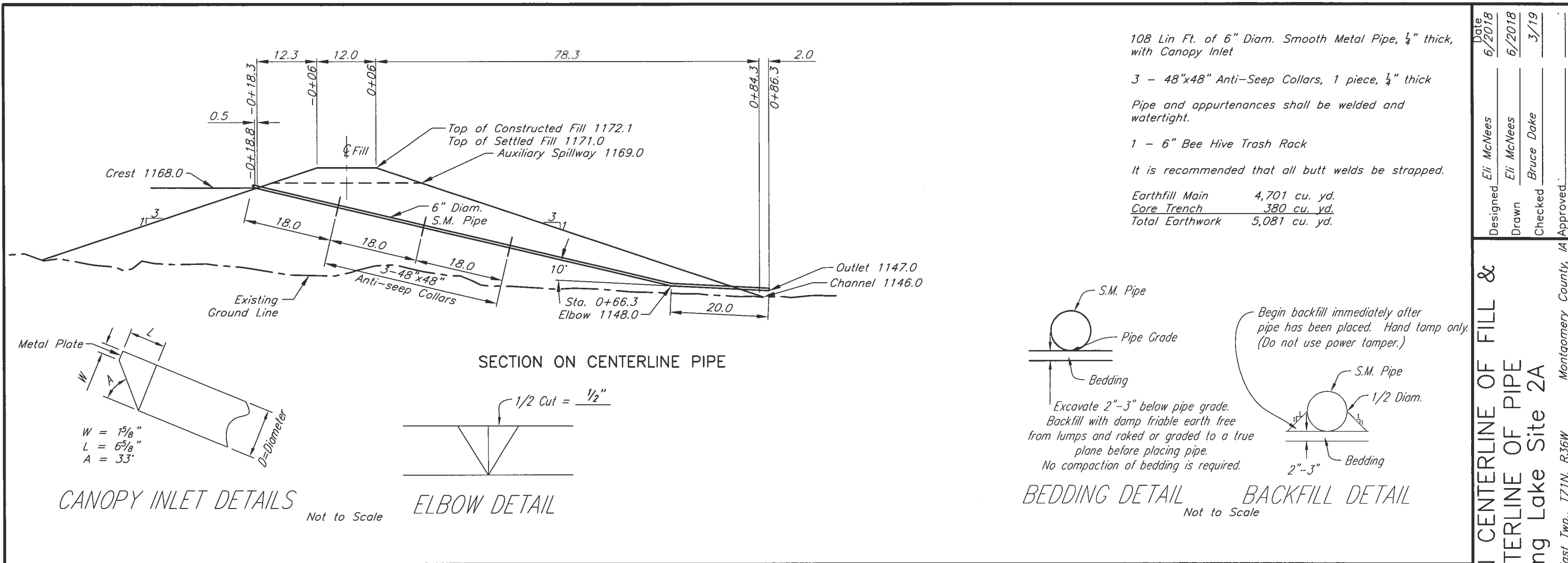


Date 6/2018  
 Designed Eli McNeels  
 Drawn Eli McNeels  
 Checked Bruce Dake  
 Approved \_\_\_\_\_

PLAN VIEW  
 Viking Lake Site 2A  
 NW1/4, NW1/4, Sec. 7, East Twp., T71N, R36W  
 Montgomery County, IA

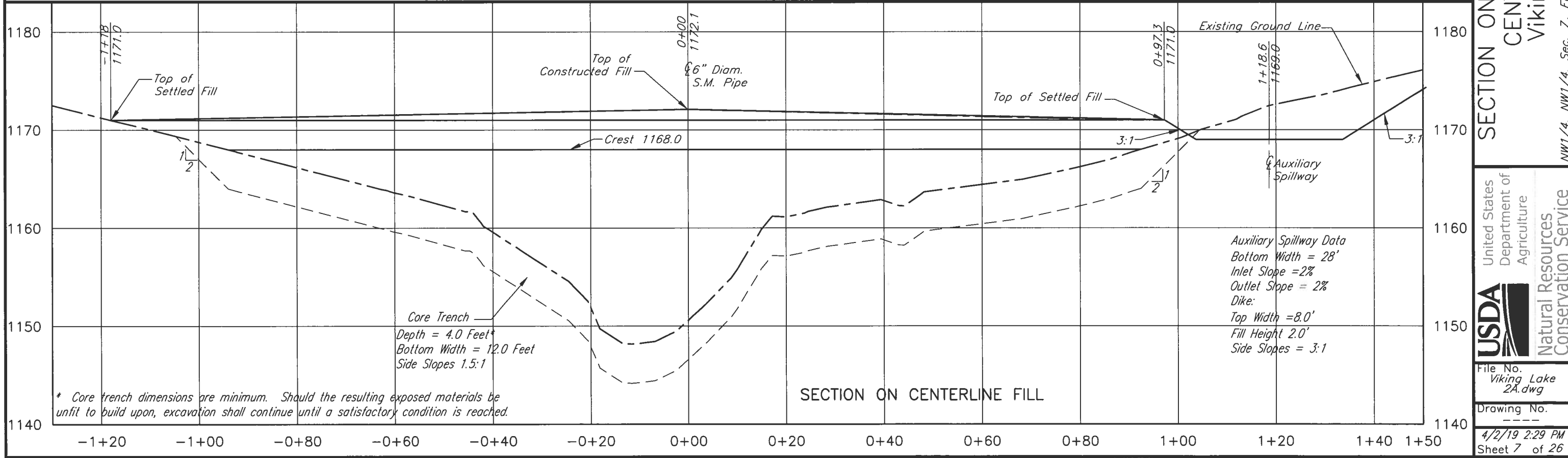
United States Department of Agriculture  
 Natural Resources Conservation Service  
 File No. Viking Lake 2A.dwg  
 Drawing No. \_\_\_\_\_  
 4/2/19 2:29 PM  
 Sheet 6 of 26  
 NRCS JOB CLASS III





- 108 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet
  - 3 - 48"x48" Anti-Seep Collars, 1 piece, 1/4" thick
  - Pipe and appurtenances shall be welded and watertight.
  - 1 - 6" Bee Hive Trash Rack
  - It is recommended that all butt welds be strapped.
- |                        |                      |
|------------------------|----------------------|
| Earthfill Main         | 4,701 cu. yd.        |
| Core Trench            | 380 cu. yd.          |
| <b>Total Earthwork</b> | <b>5,081 cu. yd.</b> |

Designed	Eli McNees	Date	6/2018
Drawn	Eli McNees	Date	6/2018
Checked	Bruce Dake	Date	3/19
Approved			



SECTION ON CENTERLINE OF FILL &  
 CENTERLINE OF PIPE  
 Viking Lake Site 2A  
 NW1/4, NW1/4, Sec. 7, East Twp., T71N, R36W  
 Montgomery County, IA

United States Department of Agriculture  
 Natural Resources Conservation Service

File No. Viking Lake 2A.dwg  
 Drawing No. \_\_\_\_\_  
 4/2/19 2:29 PM  
 Sheet 7 of 26

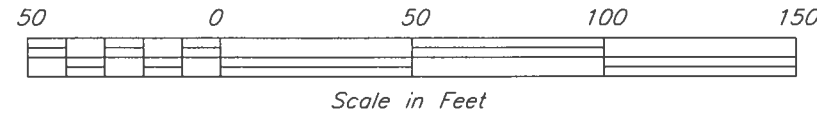
NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

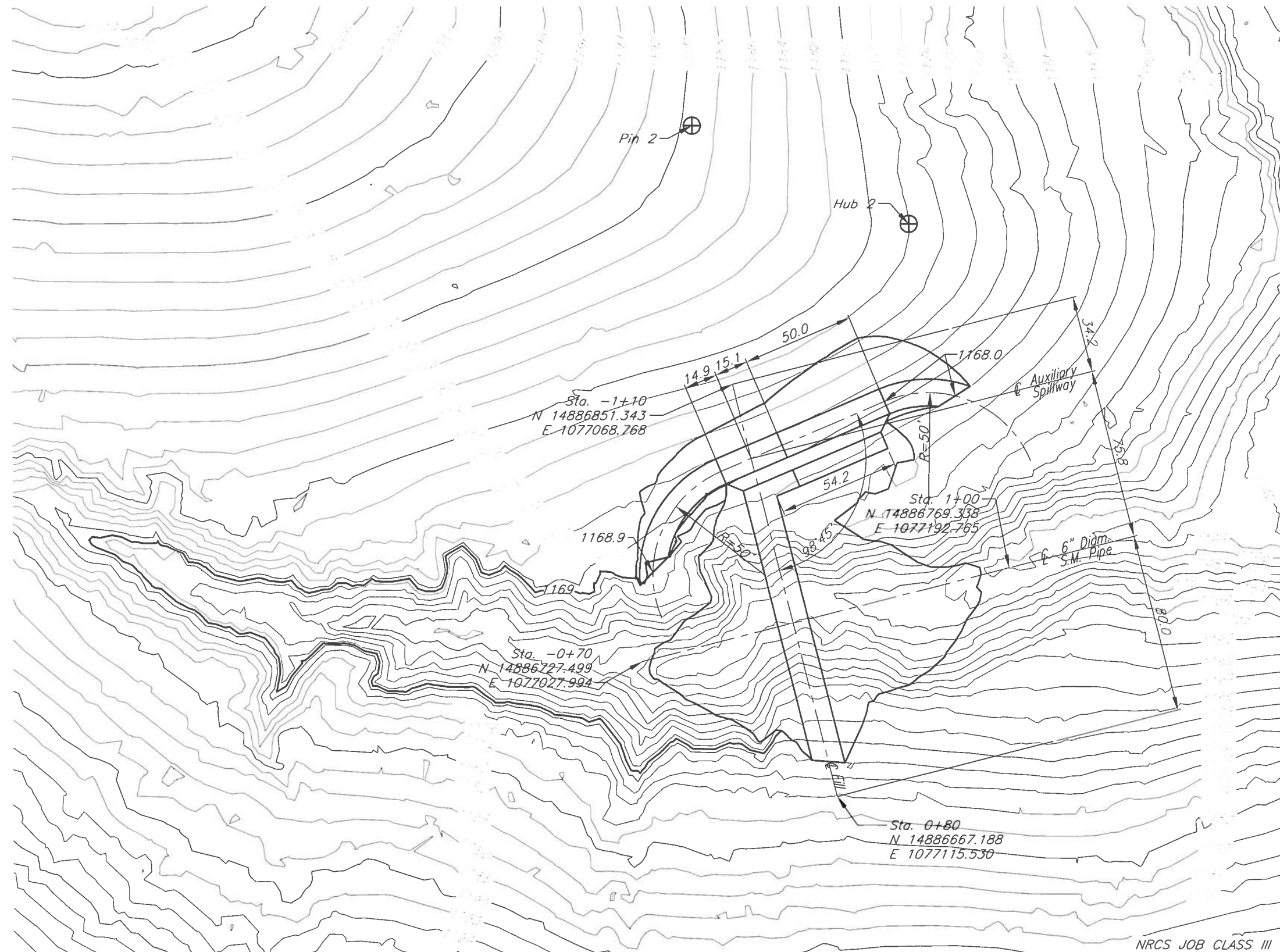
Contractor is required to follow Iowa One Call law.  
iowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 2	1190.25	Top of a 0.5" diameter steel pin driven into the ground on the walking trail N 14886966.8730 E 1077050.6720
Hub 2	1178.79	Top of a 1"x2" wooden hub driven into the ground on the walking trail N 14886922.8880 E 1077148.1260

Auxiliary Spillway Layout			
Sta.	Northing	Easting	Elevation
-0+93.44	14886746.864	1077036.924	1168.4
Radius Pt.	14886766.387	1077082.915	
-0+14.9	14886812.398	1077063.440	1170.0
0+15.1			1170.0
0+65.1	14886843.655	1077137.080	1168.0
Radius Pt.	14886797.625	1077156.604	
1+43.64	14886817.148	1077202.635	1168.0



**SITE DATA**  
 Total Drainage Area 10.8 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 2.35 cfs.  
 Auxiliary Design Storm 10 yr. 24 hr.  
 Auxiliary Design Outflow 11.61 cfs.  
 Pool Area 0.28 acres



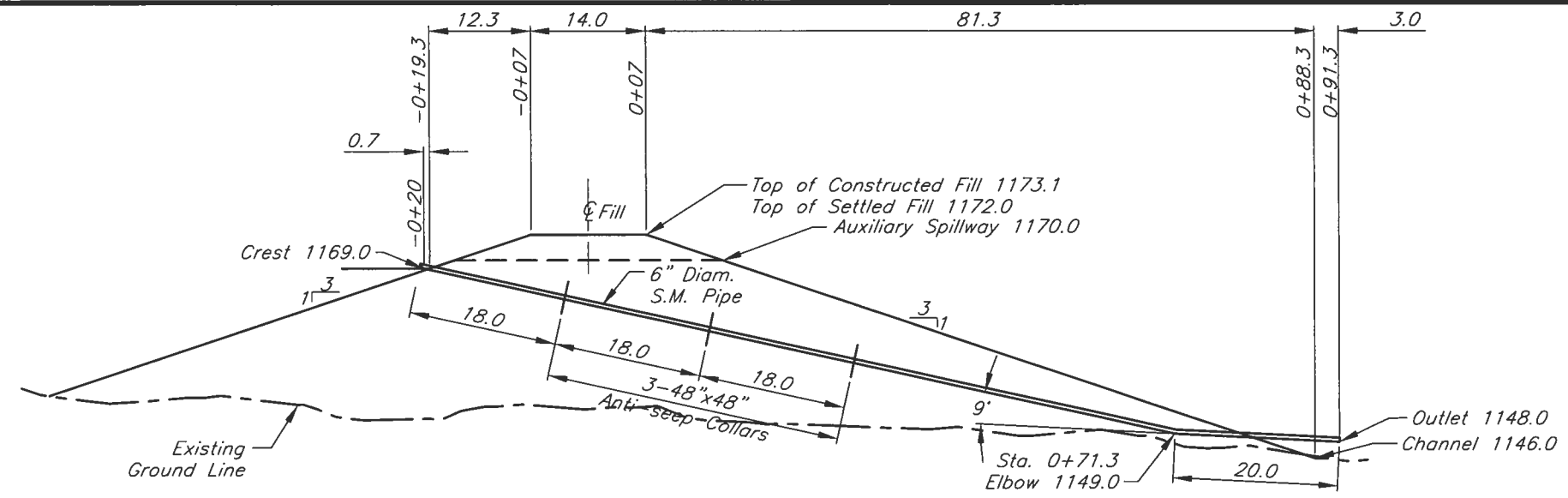
Date 6/2018  
 Designed Eli McNeas  
 Drawn Eli McNeas  
 Checked Bruce Dake  
 Approved 3/19

PLAN VIEW  
 Viking Lake Site 2B  
 NW1/4, NW1/4, Sec. 7, East Twp., T71N, R36W  
 Montgomery County, IA

United States  
 Department of  
 Agriculture  
**USDA**  
 Natural Resources  
 Conservation Service

File No. Viking Lake 2B.dwg  
 Drawing No. \_\_\_\_\_  
 4/2/19 2:51 PM  
 Sheet 8 of 26





114 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet

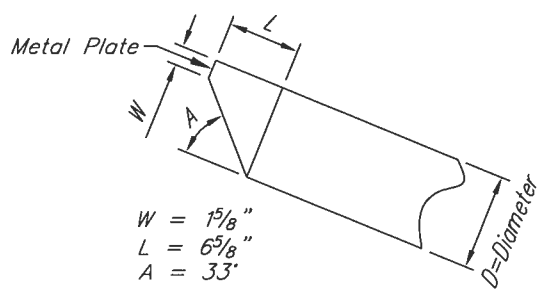
3 - 48"x48" Anti-Seep Collars, 1 piece, 1/4" thick

Pipe and appurtenances shall be welded and watertight.

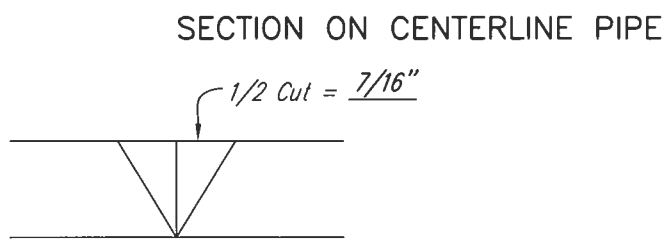
1 - 6" Bee Hive Trash Rack

It is recommended that all butt welds be strapped.

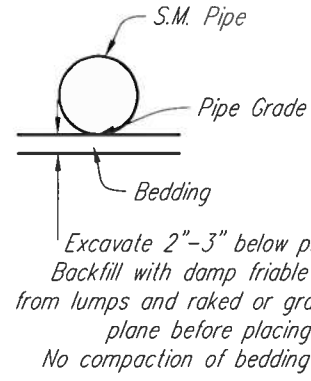
Earthfill Main	3,778 cu. yd.
Core Trench	241 cu. yd.
<b>Total Earthwork</b>	<b>4,019 cu. yd.</b>



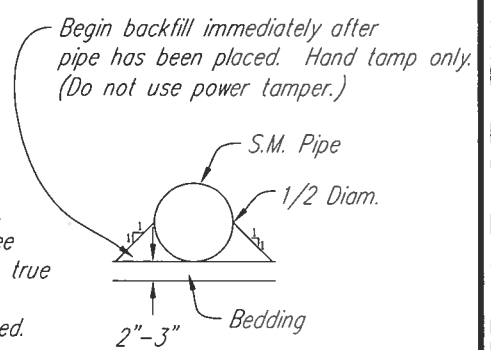
CANOPY INLET DETAILS



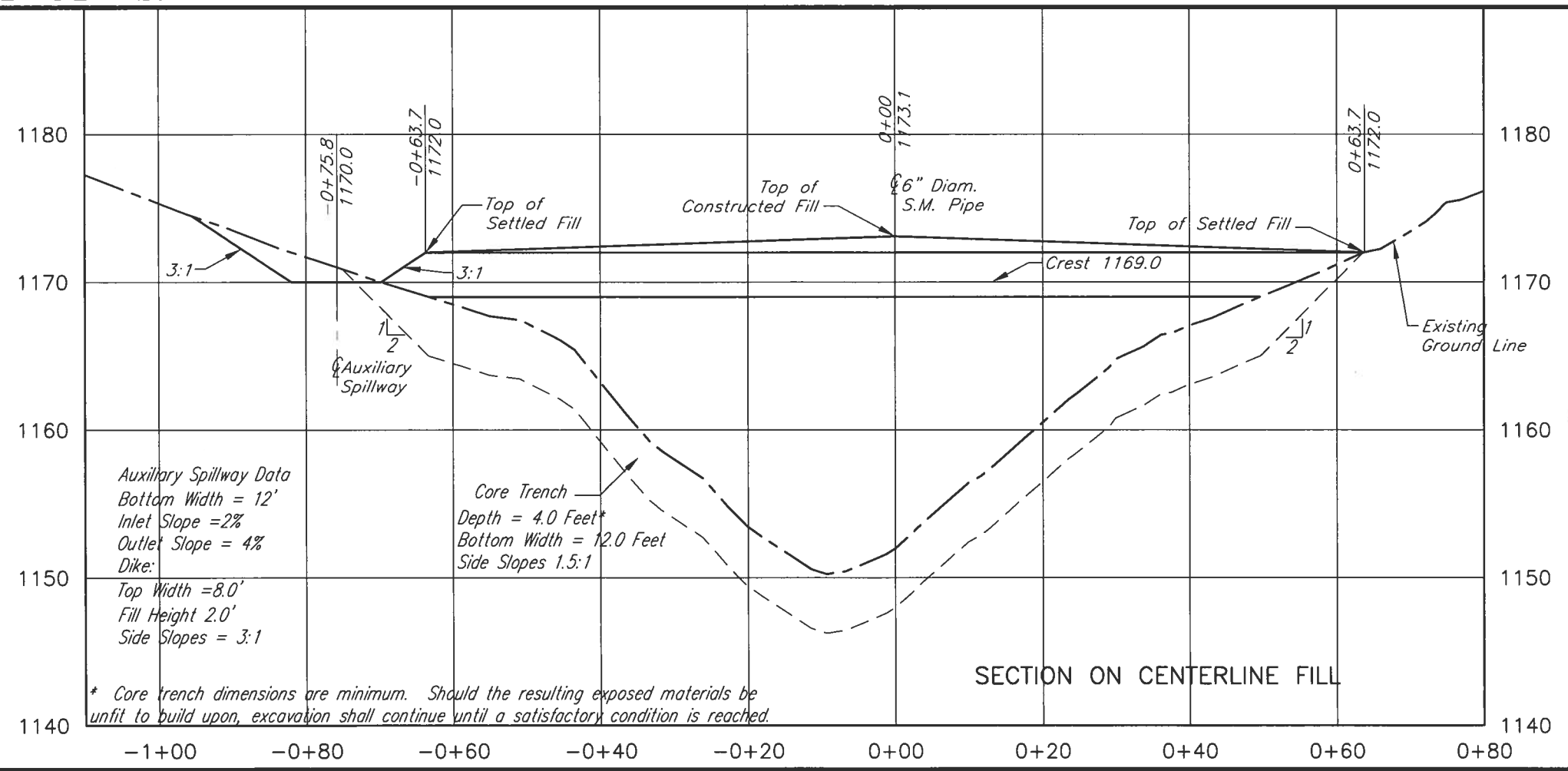
ELBOW DETAIL



BEDDING DETAIL



BACKFILL DETAIL



SECTION ON CENTERLINE FILL

\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

Date	6/2018
Designed	Eli McNeese
Drawn	Eli McNeese
Checked	Bruce Dake
Approved	3/19

SECTION ON CENTERLINE OF FILL &  
 CENTERLINE OF PIPE  
 Viking Lake Site 2B  
 Montgomery County, IA  
 NW1/4, NW1/4, Sec. 7, East Twp., T71N, R36W

United States Department of Agriculture  
**USDA**  
 Natural Resources Conservation Service

File No. Viking Lake 2B.dwg  
 Drawing No. \_\_\_\_\_  
 4/2/19 2:51 PM  
 Sheet 9 of 26

NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

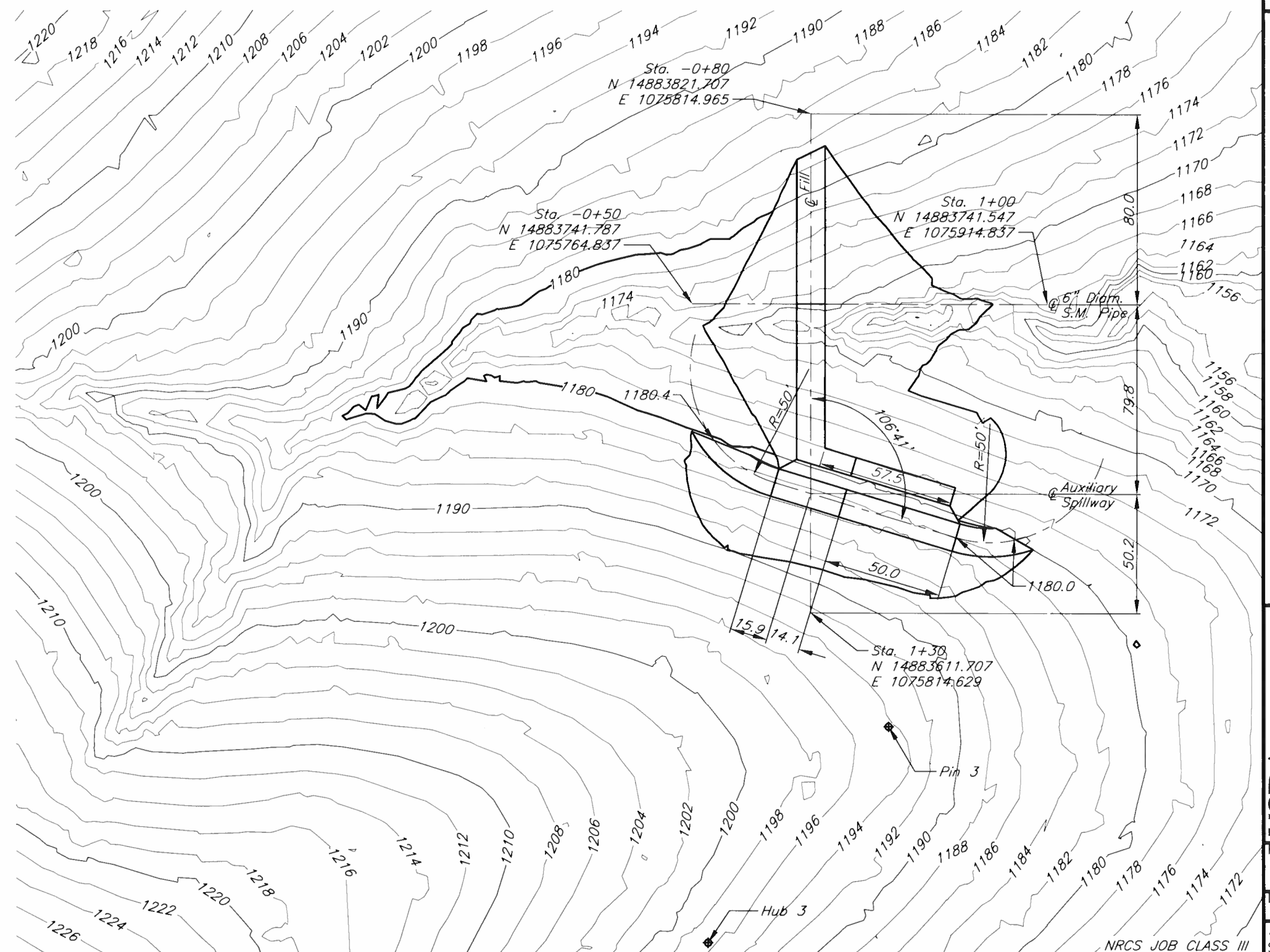
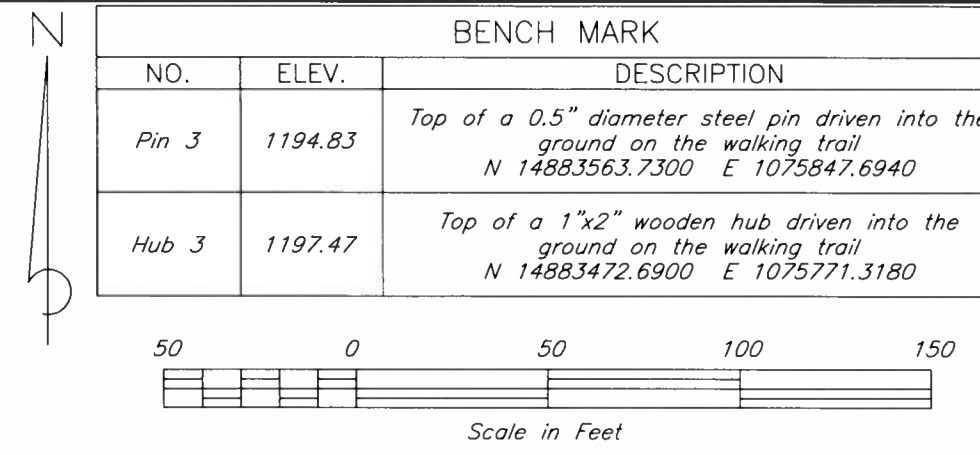
If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law.  
iowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 3	1194.83	Top of a 0.5" diameter steel pin driven into the ground on the walking trail N 14883563.7300 E 1075847.6940
Hub 3	1197.47	Top of a 1"x2" wooden hub driven into the ground on the walking trail N 14883472.6900 E 1075771.3180

Sta.	Northing	Easting	Elevation
-0+94.44	14883728.816	1075766.077	1179.4
Radius Pt.	14883714.391	1075813.951	
-0+15.9	14883666.517	1075779.525	1181.0
0+14.1			1181.0
0+64.1	14883643.436	1075876.123	1180.0
Radius Pt.	14883691.310	1075890.549	
1+42.64	14883676.885	1075938.423	1180.0

**SITE DATA**  
 Total Drainage Area 6.5 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 2.30 cfs.  
 Auxiliary Design Storm 10 yr. 24 hr.  
 Auxiliary Design Outflow 9.22 cfs.  
 Pool Area 0.15 acres

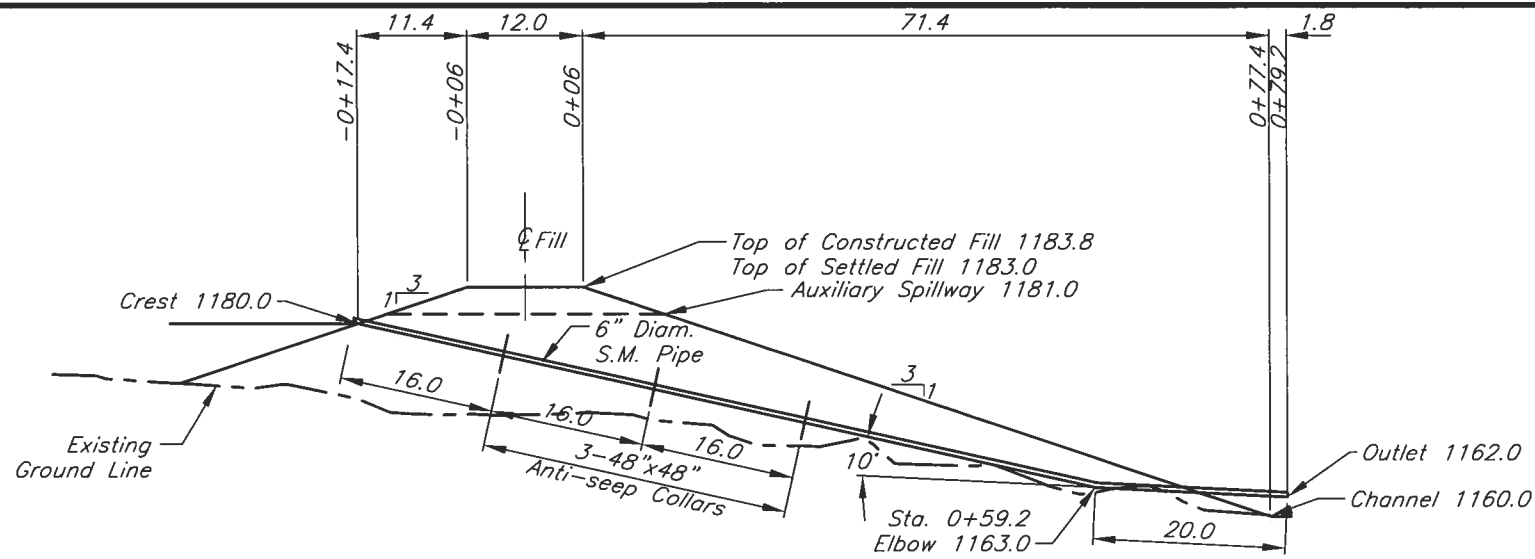


Designed: Eli McNeese  
 Drawn: Kay Steffes  
 Checked: Bruce Dake  
 Date: 6/2018  
 9/2018  
 3/19

PLAN VIEW  
 Viking Lake Site 3A  
 SE1/4, SE1/4, Sec. 12, Scott Twp., T71N, R37W  
 Montgomery County, IA

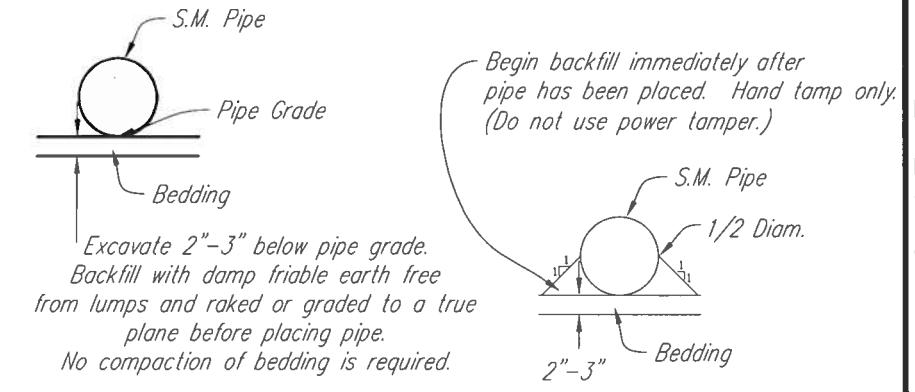
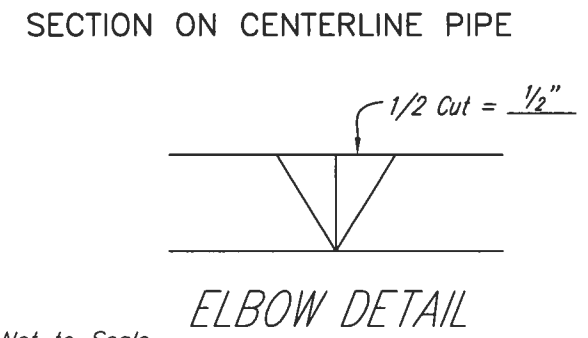
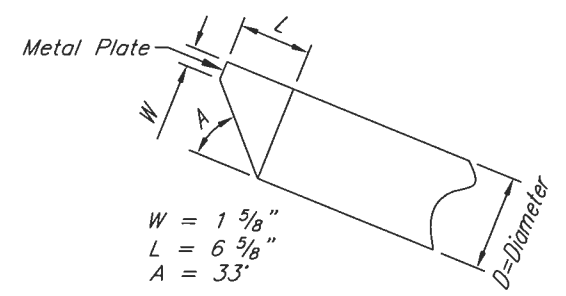
United States Department of Agriculture  
 Natural Resources Conservation Service  
 File No. Viking Lake 3A.dwg  
 Drawing No. \_\_\_\_\_  
 3/25/19 4:20 PM  
 Sheet 10 of 26  
 NRCS JOB CLASS III





- 99 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet
- 3 - 48"x48" Anti-Seep Collars, 1 piece, 1/4" thick
- Pipe and appurtenances shall be welded and watertight.
- 1 - 6" Bee Hive Trash Rack
- It is recommended that all butt welds be strapped.

Earthfill Main	2,411 cu. yd.
Core Trench	249 cu. yd.
Total Earthwork	2,660 cu. yd.



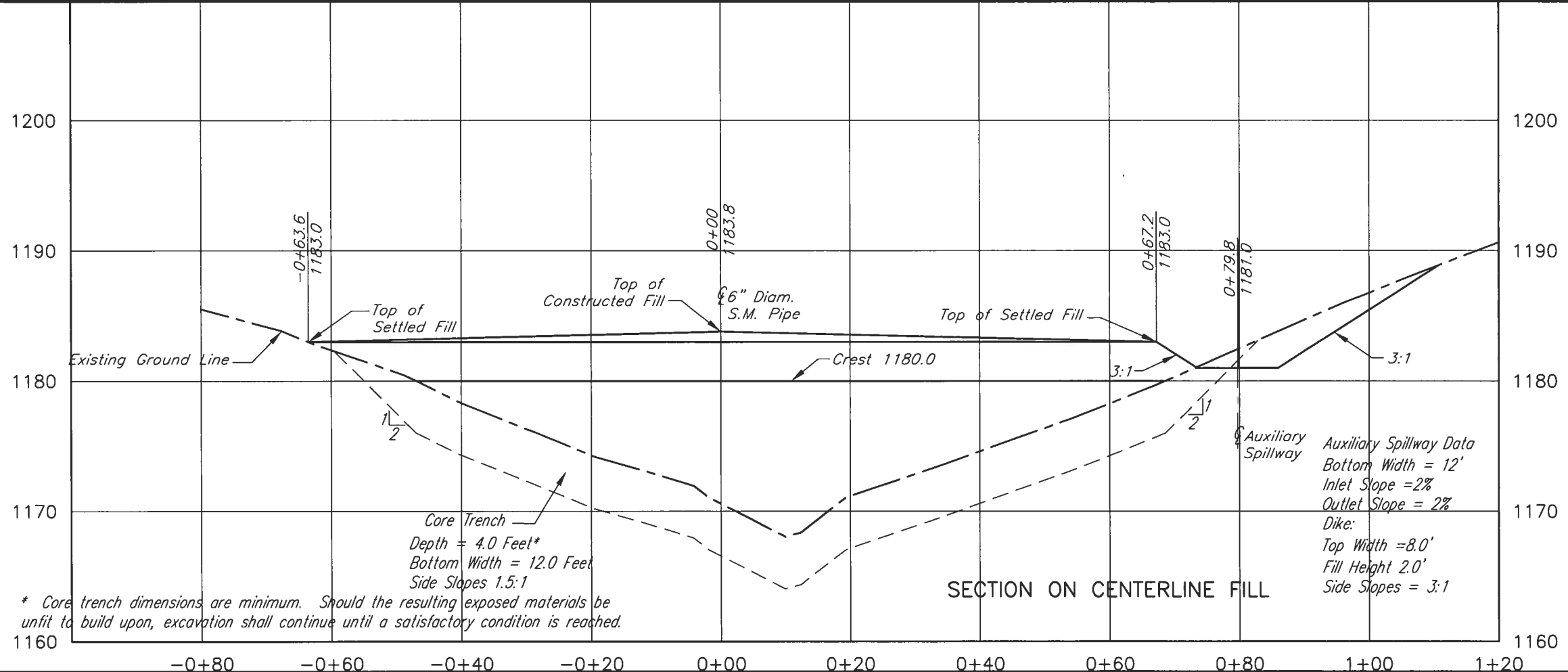
CANOPY INLET DETAILS

Not to Scale

ELBOW DETAIL

BEDDING DETAIL

BACKFILL DETAIL



Auxiliary Spillway Data  
 Bottom Width = 12'  
 Inlet Slope = 2%  
 Outlet Slope = 2%  
 Dike:  
 Top Width = 8.0'  
 Fill Height 2.0'  
 Side Slopes = 3:1

\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

SECTION ON CENTERLINE FILL

Date	6/2018
Designed	Eli McNees
Drawn	Kay Steffes
Checked	Bruce Dake
Date	3/19

SECTION ON CENTERLINE OF FILL & CENTERLINE OF PIPE Viking Lake Site 3A

United States Department of Agriculture  
 Natural Resources Conservation Service

File No. Viking Lake 3A.dwg  
 Drawing No. ---  
 3/25/19 4:20 PM  
 Sheet 11 of 26

SE1/4, SE1/4, Sec. 12, Scott Twp., T71N, R37W Montgomery County, IA Approved.

NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

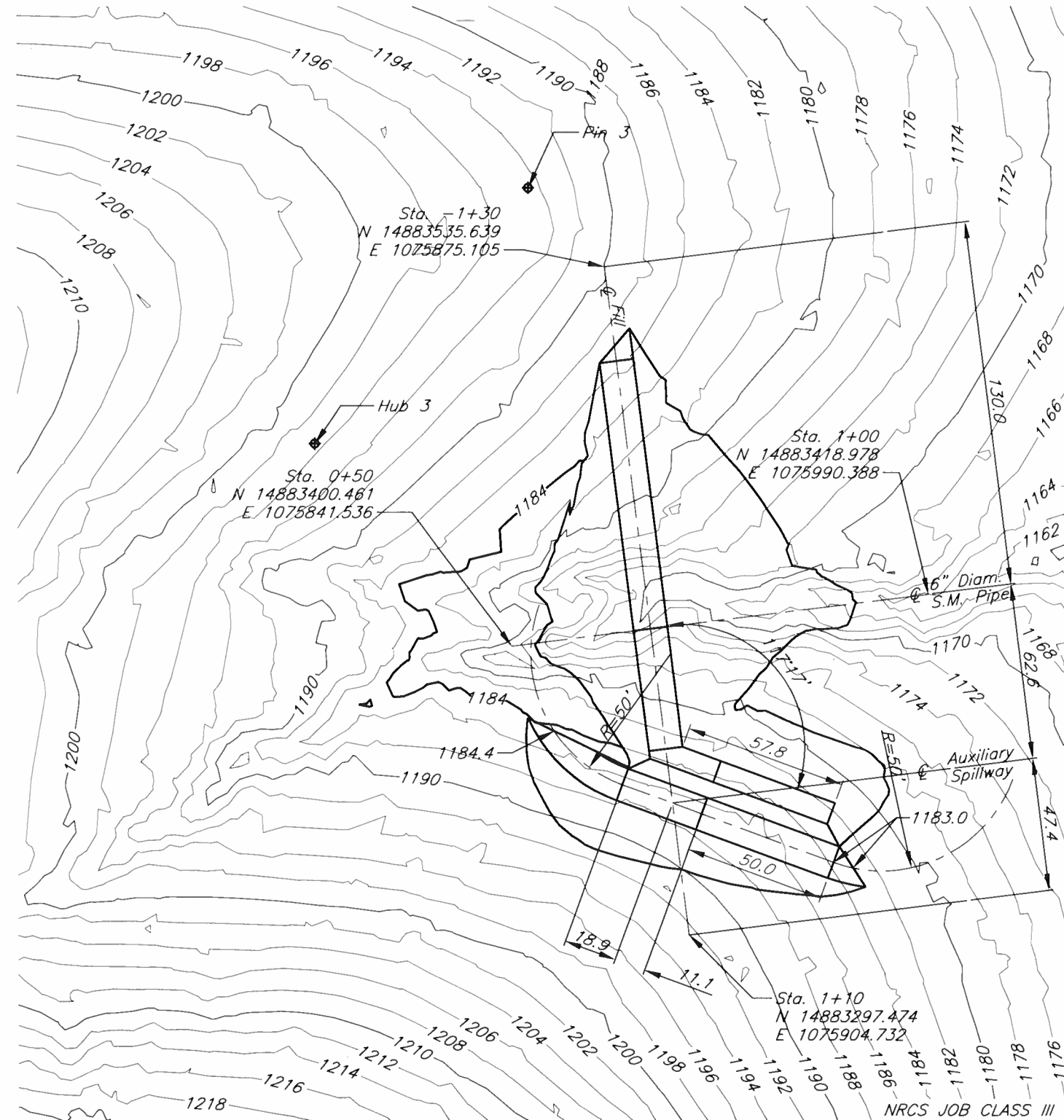
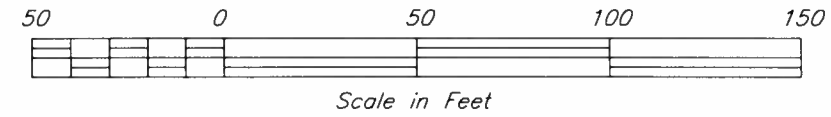
If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law.  
IowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

Auxiliary Spillway Layout			
Sta.	Northing	Easting	Elevation
-0+97.44	14883415.242	1075851.441	1183.4
Radius Pt.	14883397.979	1075898.366	
-0+18.9	14883351.054	1075881.103	1185.0
0+11.1			1185.0
0+61.1	14883323.433	1075956.184	1183.0
Radius Pt.	14883370.359	1075973.447	
1+39.64	14883353.096	1076020.372	1183.0

**SITE DATA**  
 Total Drainage Area 3.3 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 1.85 cfs.  
 Auxiliary Design Storm 10 yr. 24 hr.  
 Auxiliary Design Outflow 3.52 cfs.  
 Pool Area 0.08 acres

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 3	1194.83	Top of a 0.5" diameter steel pin driven into the ground on the walking trail N 14883563.7300 E 1075847.6940
Hub 3	1197.47	Top of a 1"x2" wooden hub driven into the ground on the walking trail N 14883472.6900 E 1075771.3180



Date 6/2018  
 Designed Eli McNeese  
 Drawn Kay Steffes  
 Checked Bruce Dake  
 Approved \_\_\_\_\_

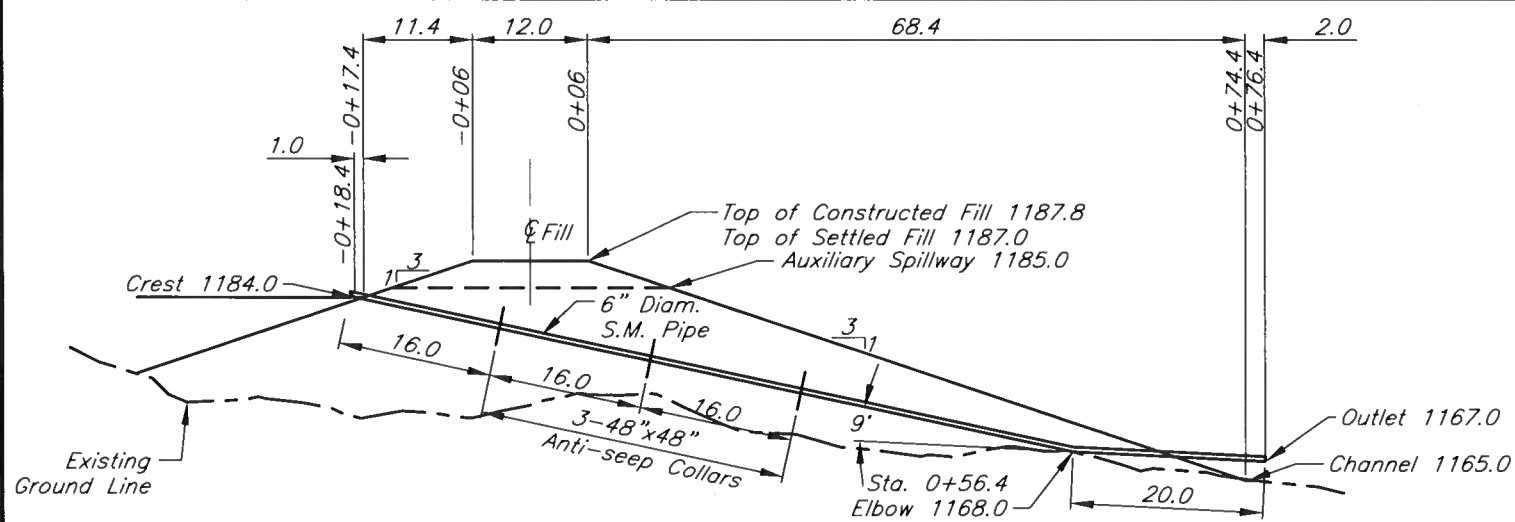
**PLAN VIEW**  
**Viking Lake Site 3B**

SE1/4, SE1/4, Sec. 12, Scott Twp., T71N, R37W Montgomery County, IA

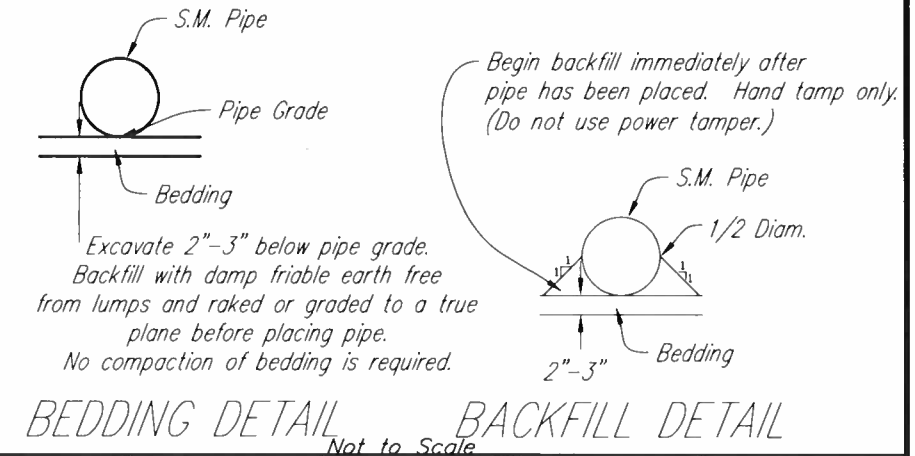
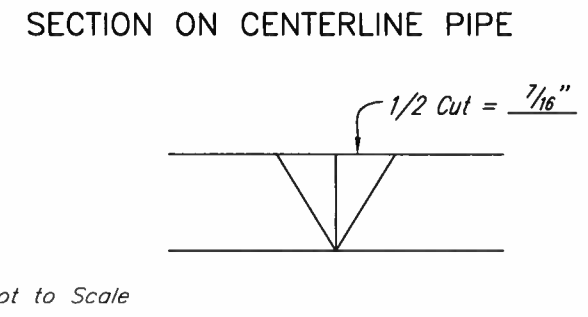
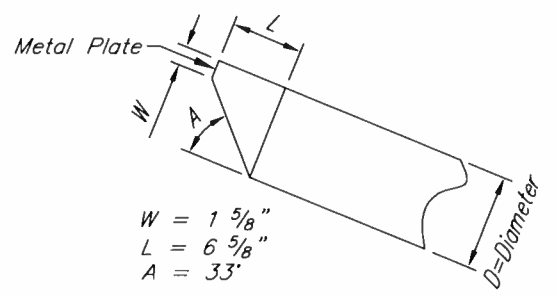
United States  
 Department of  
 Agriculture  
**USDA**  
 Natural Resources  
 Conservation Service

File No. Viking Lake 3B.dwg  
 Drawing No. \_\_\_\_\_  
 4/2/19 3:37 PM  
 Sheet 12 of 26



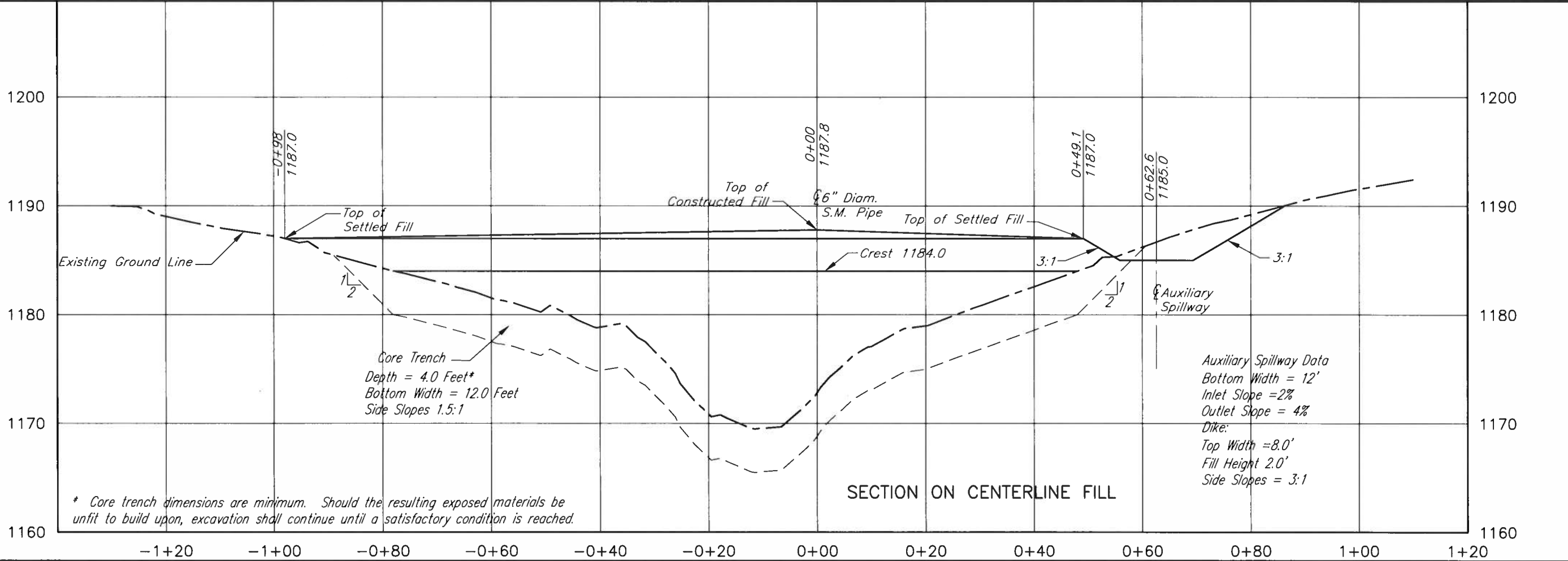


- 97 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet
- 3 - 48"x48" Anti-Seep Collars, 1 piece, 1/4" thick
- Pipe and appurtenances shall be welded and watertight.
- 1 - 6" Bee Hive Trash Rack
- It is recommended that all butt welds be strapped.
- Earthfill Main 2,453 cu. yd.
- Core Trench 263 cu. yd.
- Total Earthwork 2,716 cu. yd.



CANOPY INLET DETAILS

BEDDING DETAIL BACKFILL DETAIL  
Not to Scale



\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

SECTION ON CENTERLINE FILL

Date	6/2018
Designed	Eli McNeese
Drawn	Kay Steffes
Checked	Bruce Dake
9/2018	3/19

SECTION ON CENTERLINE OF FILL &  
CENTERLINE OF PIPE  
Viking Lake Site 3B  
Montgomery County, IA  
SE1/4, SE1/4, Sec. 12, Scott Twp., T71N, R37W

United States Department of Agriculture  

 Natural Resources Conservation Service  
 File No. Viking Lake 3B.dwg  
 Drawing No. ---  
 4/2/19 3:37 PM  
 Sheet 13 of 26

NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

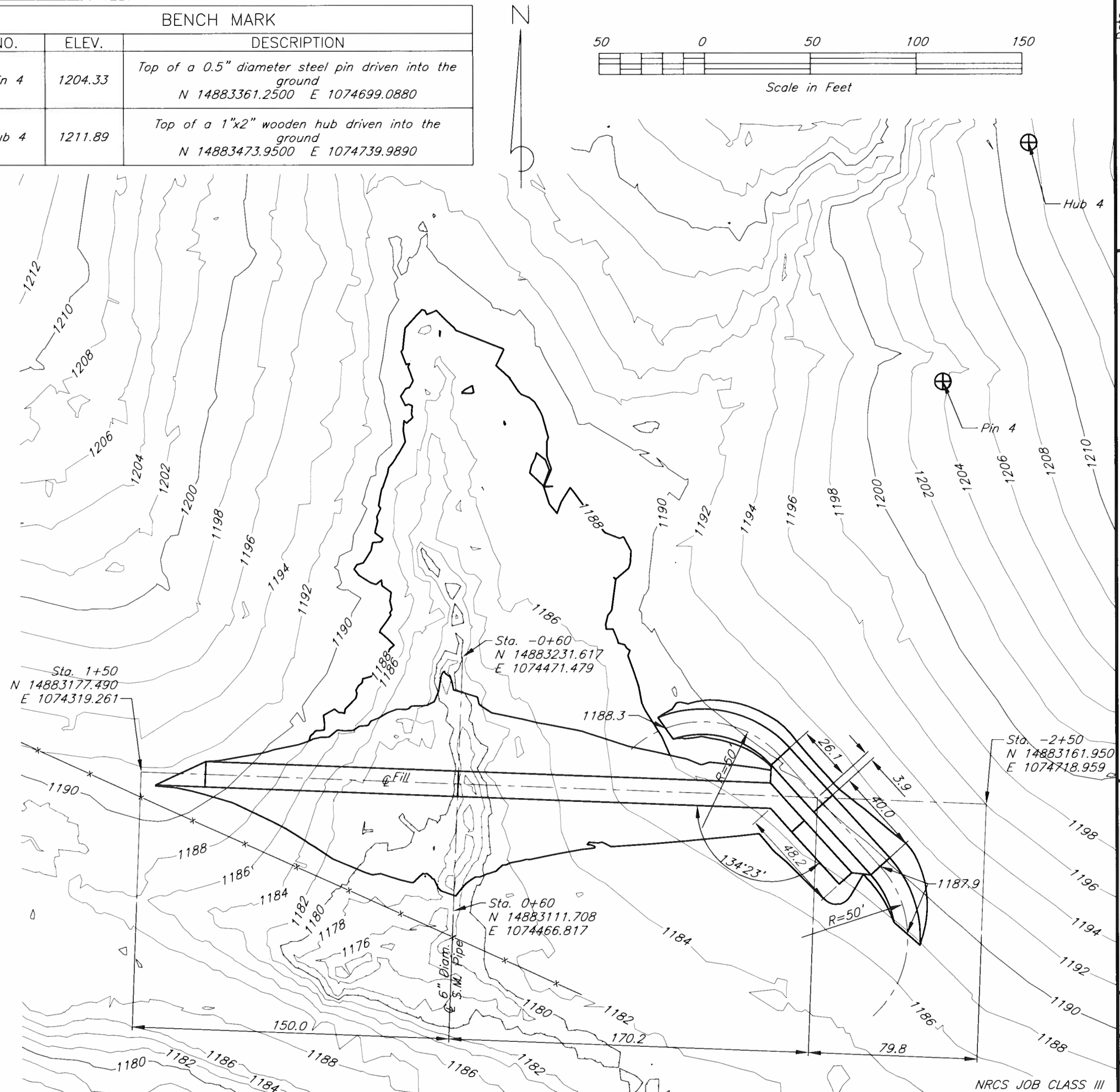
If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law.  
IowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

Auxiliary Spillway Layout			
Sta.	Northing	Easting	Elevation
-1+04.64	14883187.937	1074551.064	1187.9
Radius Pt.	14883150.871	1074584.621	
-0+26.1	14883184.428	1074621.687	1189.5
0+03.9			1189.5
0+43.9	14883132.535	1074668.667	1187.9
Radius Pt.	14883098.978	1074631.601	
1+22.4	14883061.911	1074665.158	1187.9

**SITE DATA**  
 Total Drainage Area 17.9 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 1.95 cfs.  
 Auxiliary Design Storm 10 yr. 24 hr.  
 Auxiliary Design Outflow 11.80 cfs.  
 Pool Area 0.44 acres

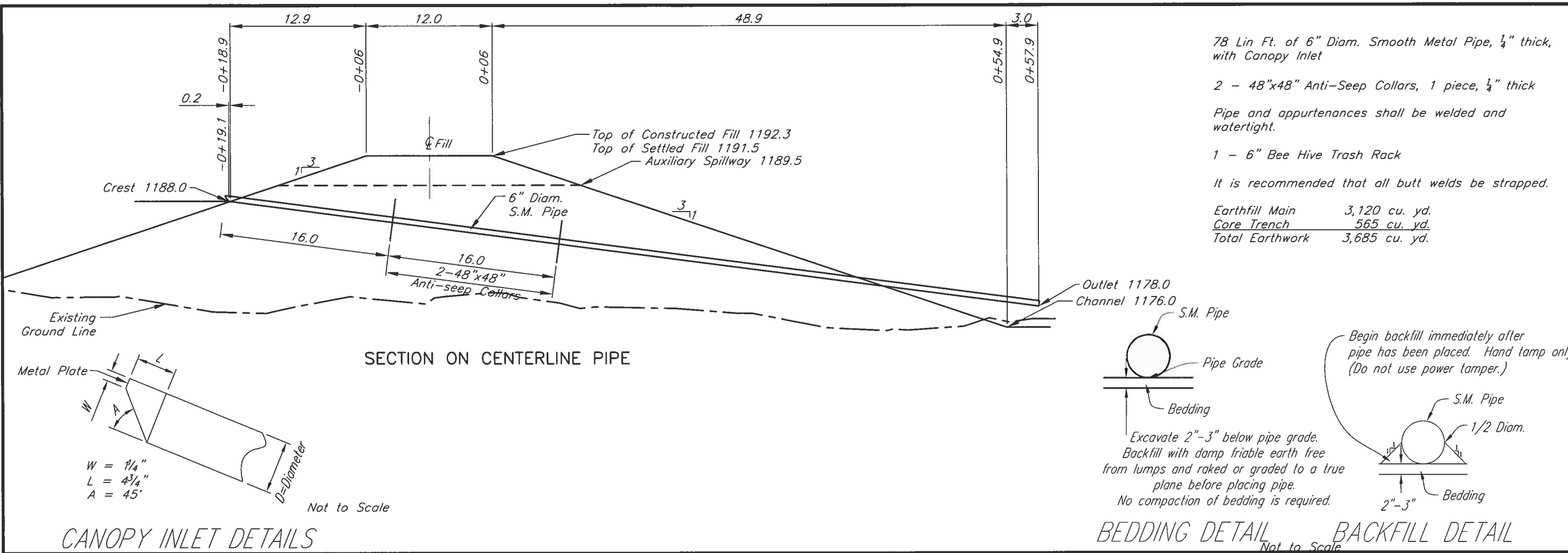
BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 4	1204.33	Top of a 0.5" diameter steel pin driven into the ground N 14883361.2500 E 1074699.0880
Hub 4	1211.89	Top of a 1"x2" wooden hub driven into the ground N 14883473.9500 E 1074739.9890



Date 8/2018  
 Designed Kay Steffes  
 Drawn Kay Steffes  
 Checked Bruce Dake  
 Approved \_\_\_\_\_

PLAN VIEW  
 Viking Lake Site 4  
 SW1/4, SE1/4, Sec. 12, Scott Twp., T71N, R 37W, Montgomery County, IA

United States Department of Agriculture  
 Natural Resources Conservation Service  
 File No. Viking Lake 4.dwg  
 Drawing No. \_\_\_\_\_  
 4/2/19 4:03 PM  
 Sheet 14 of 26  
 NRCS JOB CLASS III



78 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet

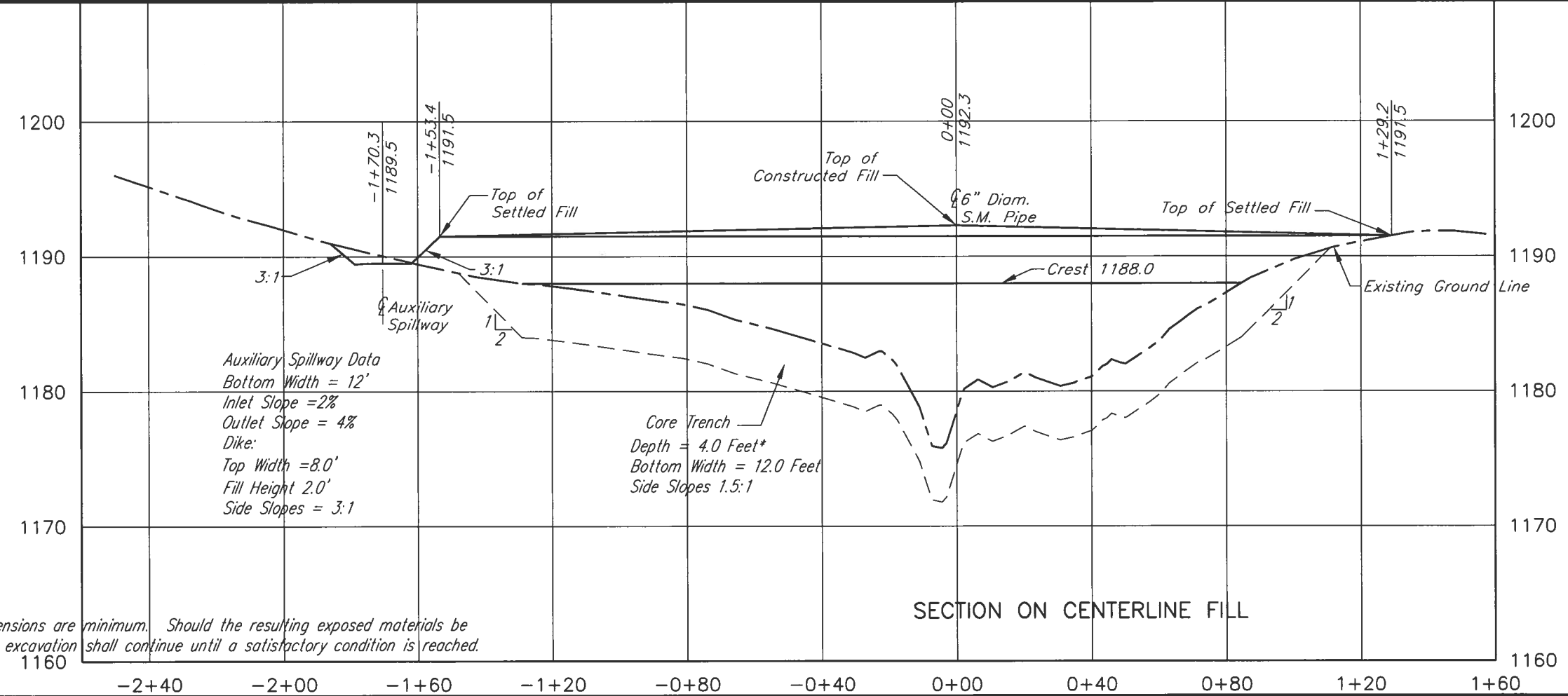
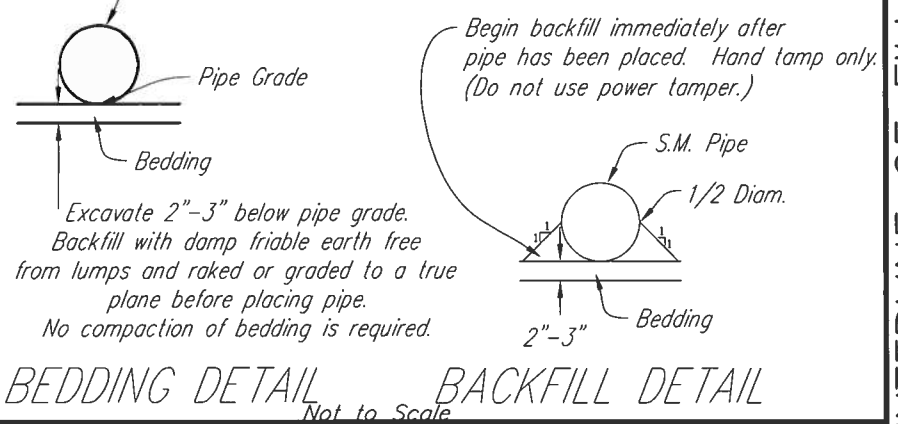
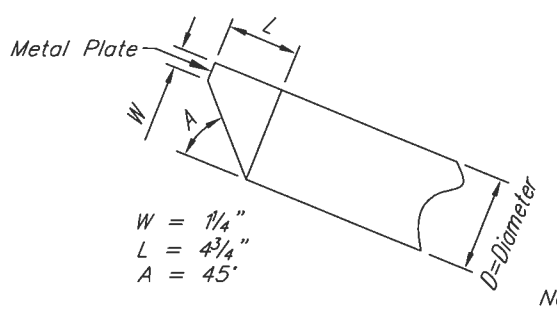
2 - 48"x48" Anti-Seep Collars, 1 piece, 1/4" thick

Pipe and appurtenances shall be welded and watertight.

1 - 6" Bee Hive Trash Rack

It is recommended that all butt welds be strapped.

Earthfill Main 3,120 cu. yd.  
 Core Trench 565 cu. yd.  
 Total Earthwork 3,685 cu. yd.



\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

SECTION ON CENTERLINE OF FILL & CENTERLINE OF PIPE  
 Viking Lake Site 4

United States Department of Agriculture  
 Natural Resources Conservation Service

File No. Viking Lake 4.dwg  
 Drawing No. 4/2/19 4:03 PM  
 Sheet 15 of 26

Designed Kay Steffes 8/2018  
 Drawn Kay Steffes 8/2018  
 Checked Bruce Dake 3/19  
 Approved \_\_\_\_\_

SW1/4, SE1/4, Sec. 12, Scott Twp., T71N, R 37W Montgomery County, IA



NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

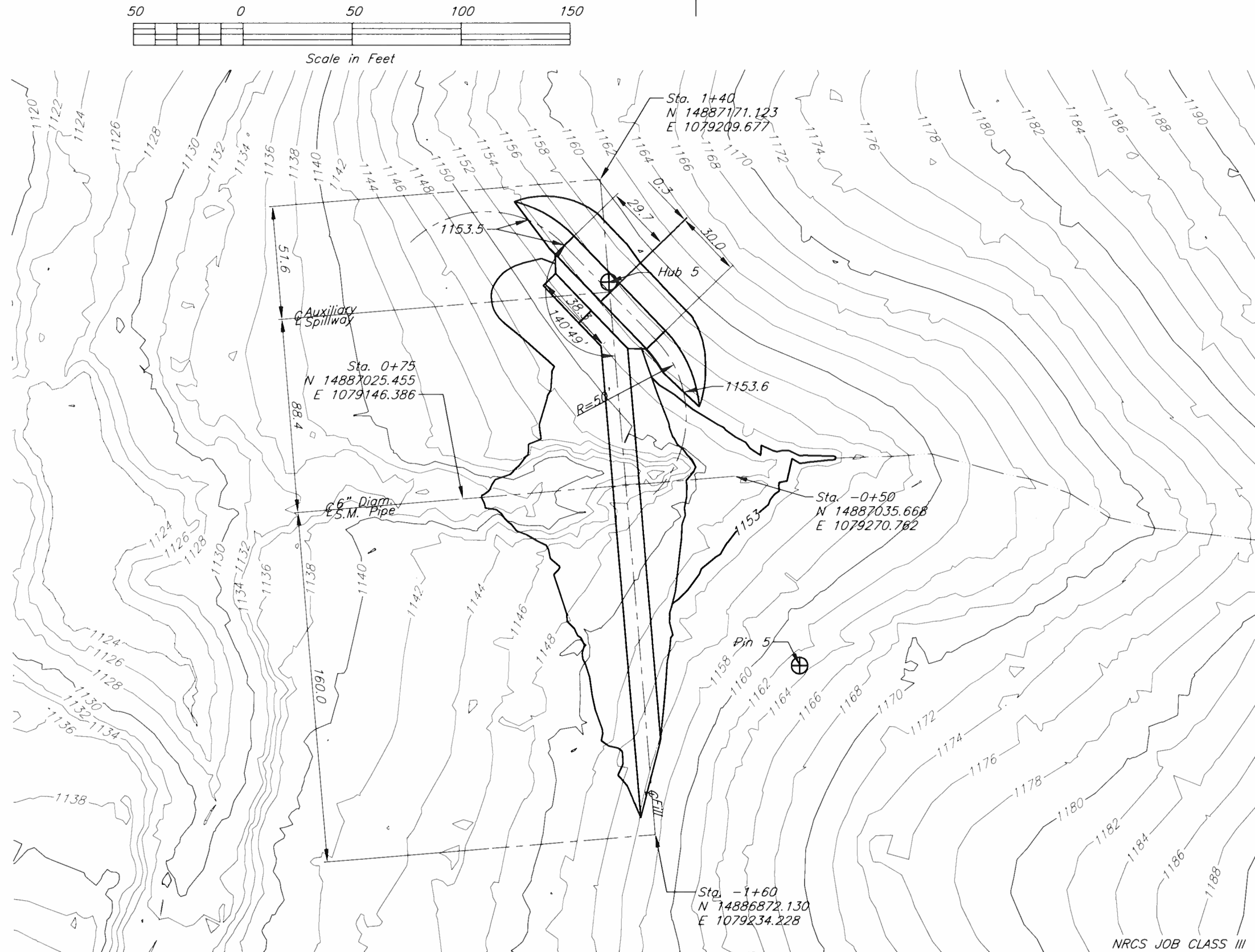
If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law.  
IowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 5	1164.34	Top of a 0.5" diameter steel pin driven into the ground on the walking trail N 14886949.238 E 1079300.399
Hub 5	1155.89	Top of a 1"x2" wooden hub driven into the ground on the walking trail N 14887124.270 E 1079213.524

Sta.	Northing	Easting	Elevation
-1+08.84	14887027.178	1079223.539	1152.5
Radius Pt.	14887063.218	1079198.882	
-0+30.3	14887097.875	1079234.922	1154.1
-0+00.3			1154.1
0+29.7	14887141.123	1079193.333	1153.5
Radius Pt.	14887106.466	1079157.293	
1+08.24	14887142.506	1079122.636	1153.5

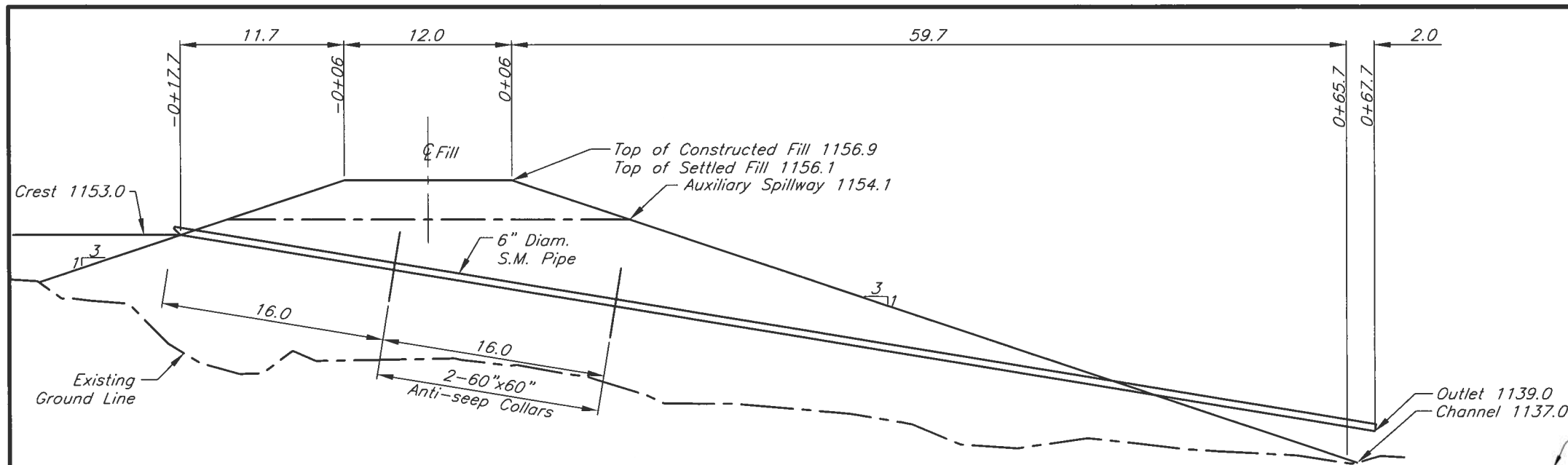
**SITE DATA**  
 Total Drainage Area 5.3 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 2.16 cfs.  
 Auxiliary Design Storm 10 yr. 24 hr.  
 Auxiliary Design Outflow 10.24 cfs.  
 Pool Area 0.08 acres



Date 6/2018  
 Designed Eli McNeas  
 Drawn Eli McNeas  
 Checked Bruce Dake  
 Approved 7/2018  
 3/19

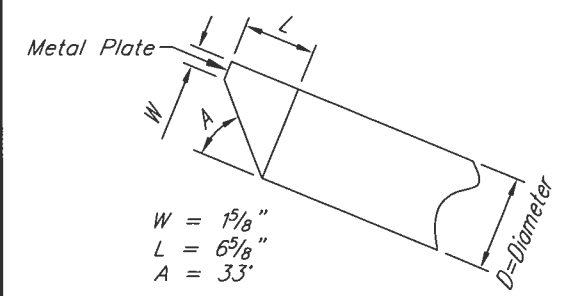
PLAN VIEW  
 Viking Lake Site 5  
 NW1/4, NE1/4, Sec. 7, East Twp., T71N, R36W  
 Montgomery County, IA

United States Department of Agriculture  
 Natural Resources Conservation Service  
 File No. Viking Lake Site 5.dwg  
 Drawing No. \_\_\_\_\_  
 4/2/19 4:30 PM  
 Sheet 16 of 26  
 NRCS JOB CLASS III

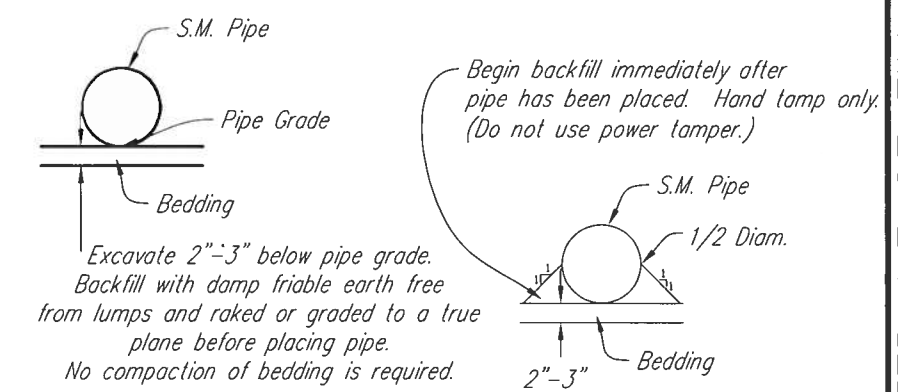


- 87 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet
- 2 - 60"x60" Anti-Seep Collars, 1 piece, 1/4" thick
- Pipe and appurtenances shall be welded and watertight.
- 1 - 6" Bee Hive Trash Rack
- It is recommended that all butt welds be strapped.

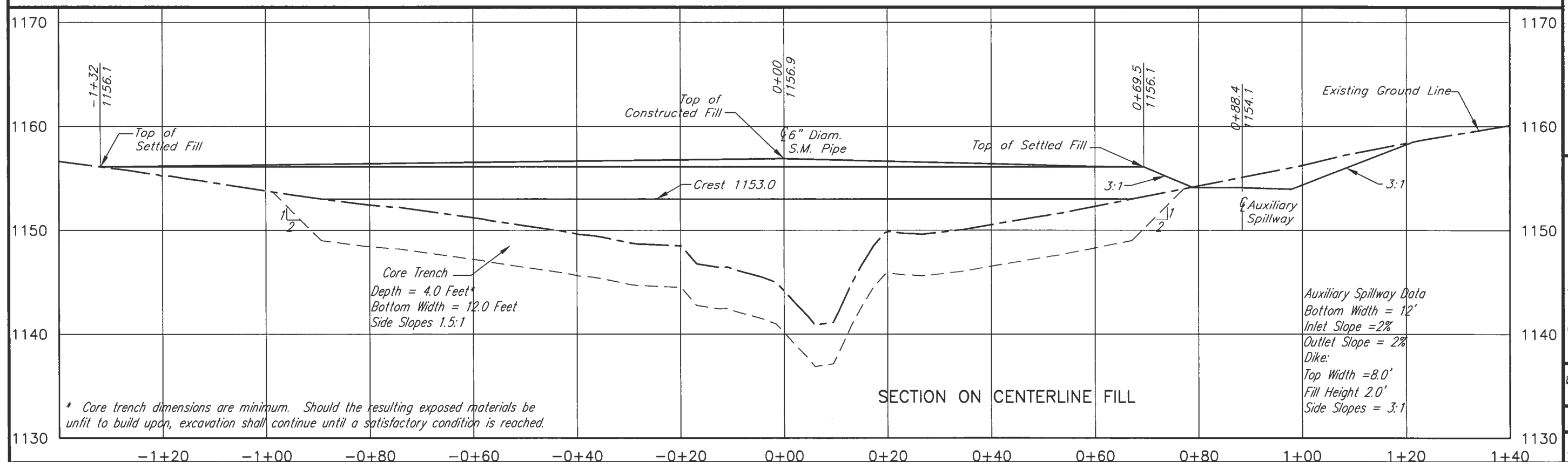
Earthfill Main	2,252 cu. yd.
Core Trench	287 cu. yd.
Total Earthwork	2,539 cu. yd.



CANOPY INLET DETAILS  
Not to Scale



BEDDING DETAIL BACKFILL DETAIL  
Not to Scale



\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

SECTION ON CENTERLINE FILL

Auxiliary Spillway Data  
Bottom Width = 12'  
Inlet Slope = 2%  
Outlet Slope = 2%  
Dike:  
Top Width = 8.0'  
Fill Height 2.0'  
Side Slopes = 3:1

Date	6/2018
Designed	Eli McNees
Drawn	Eli McNees
Checked	Bruce Dake
3/19	

SECTION ON CENTERLINE OF FILL & CENTERLINE OF PIPE  
Viking Lake Site 5  
Montgomery County, IA  
NW1/4, NE1/4, Sec. 7, East Twp., T71N, R36W

United States Department of Agriculture  
**USDA** Natural Resources Conservation Service

File No. Viking Lake Site 5.dwg  
Drawing No. 4/2/19 4:28 PM  
Sheet 17 of 26

NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

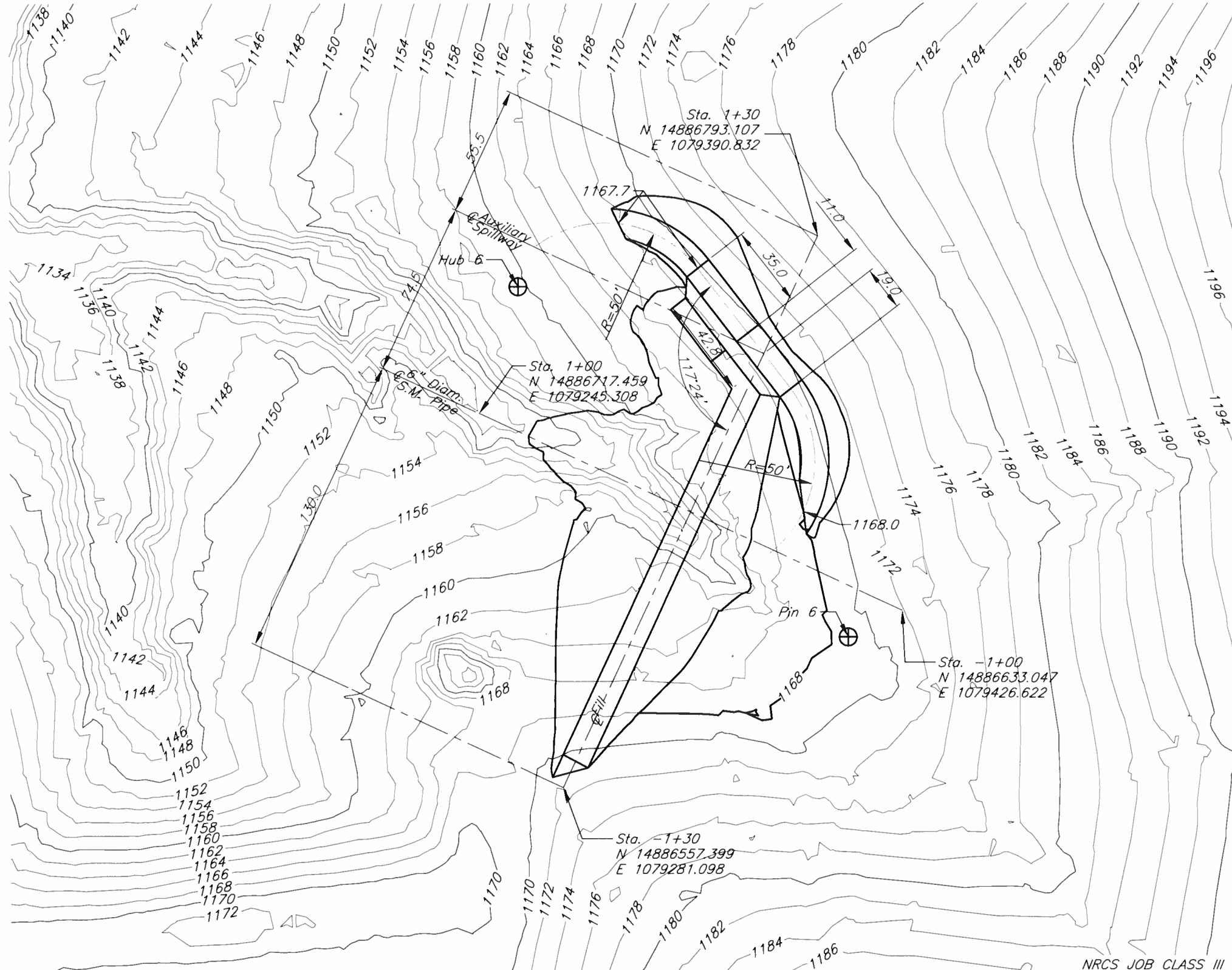
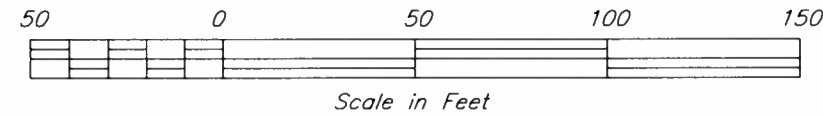
If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law.  
IowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 6	1169.10	Top of a 0.5" diameter steel pin driven into the ground on the walking trail N 14886621.640 E 1079403.523
Hub 6	1159.82	Top of a 1"x2" wooden hub driven into the ground on the walking trail N 14886771.490 E 1079261.996

Auxiliary Spillway Layout			
Sta.	Northing	Easting	Elevation
-0+97.5	14886657.678	1079369.952	1167.5
Radius Pt.	14886697.274	1079339.421	
-0+19.0	14886727.805	1079379.017	1169.1
0+11.0			1169.1
0+46.0	14886779.280	1079339.326	1167.7
Radius Pt.	14886748.749	1079299.730	
1+24.5	14886788.482	1079269.378	1166.1

**SITE DATA**  
 Total Drainage Area 6.0 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 2.33 cfs.  
 Auxiliary Design Storm 10 yr. 24 hr.  
 Auxiliary Design Outflow 10.26 cfs.  
 Pool Area 0.12 acres



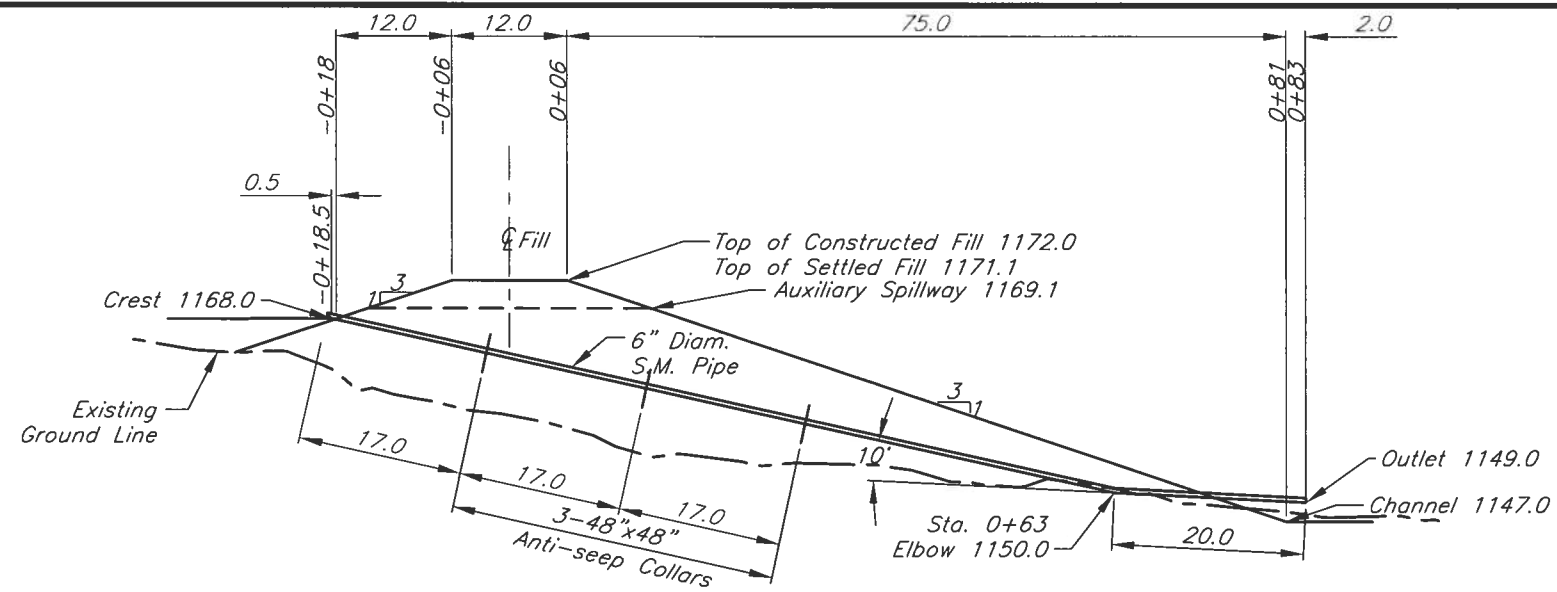
Date 6/2018  
 Designed Eli McNeas  
 Drawn Eli McNeas  
 Checked Bruce Dake  
 Approved \_\_\_\_\_

**PLAN VIEW**  
**Viking Lake Site 6**

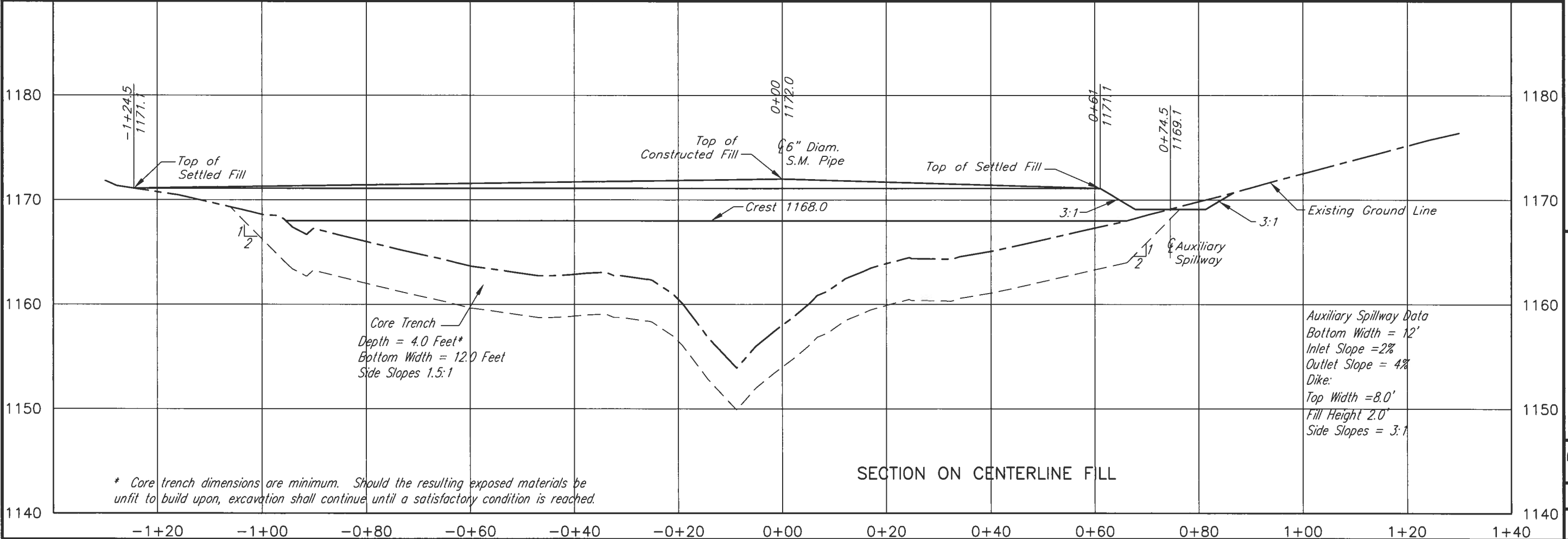
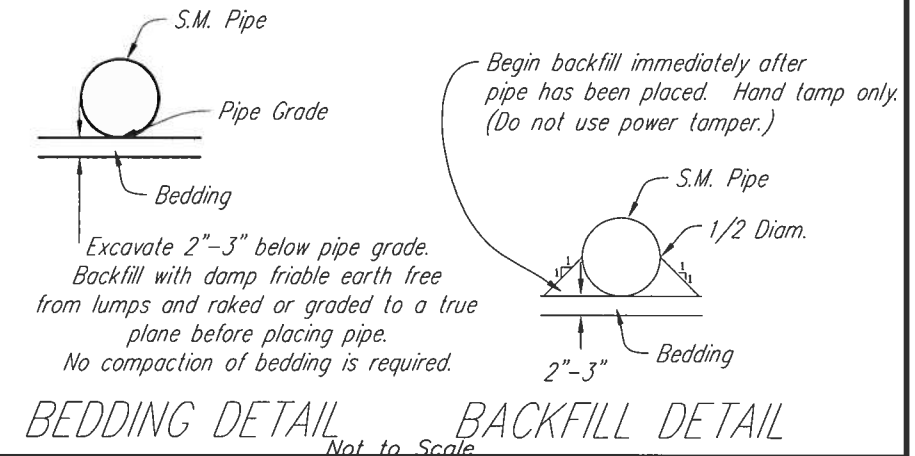
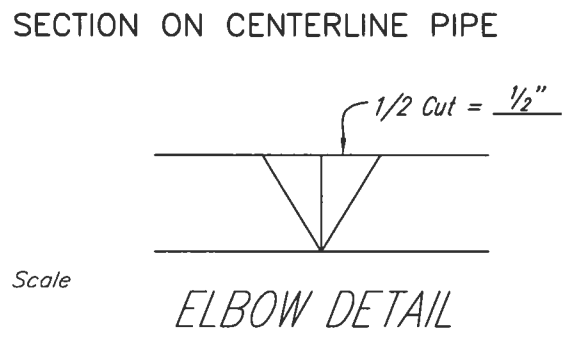
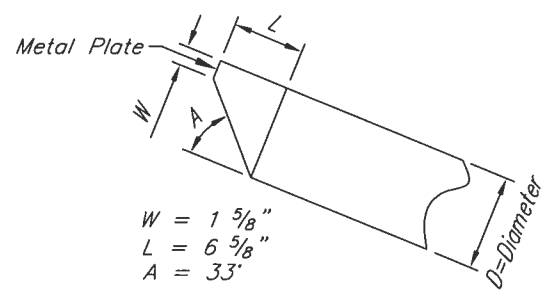
United States Department of Agriculture  
 Natural Resources Conservation Service  
 File No. Viking Lake Site 6.dwg  
 Drawing No. \_\_\_\_\_  
 4/3/19 7:28 AM  
 Sheet 18 of 26

NW1/4, NE1/4, Sec. 7, East Twp., T71N, R36W  
 Montgomery County, IA





- 104 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/2" thick, with Canopy Inlet
  - 3 - 48"x48" Anti-Seep Collars, 1 piece, 1/2" thick
  - Pipe and appurtenances shall be welded and watertight.
  - 1 - 6" Bee Hive Trash Rack
  - It is recommended that all butt welds be strapped.
- |                 |               |
|-----------------|---------------|
| Earthfill Main  | 2,605 cu. yd. |
| Core Trench     | 372 cu. yd.   |
| Total Earthwork | 2,977 cu. yd. |



\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

SECTION ON CENTERLINE OF FILL & CENTERLINE OF PIPE  
 Viking Lake Site 6  
 NW1/4, NE1/4, Sec. 7, East Twp., T71N, R36W  
 Montgomery County, IA

Date	6/2018
Designed	Eli McNees
Drawn	Eli McNees
Checked	Bruce Date
Date	3/19

United States Department of Agriculture  
**USDA** Natural Resources Conservation Service

File No. Viking Lake Site 6.dwg  
 Drawing No. 4/3/19 7:28 AM  
 Sheet 19 of 26

NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

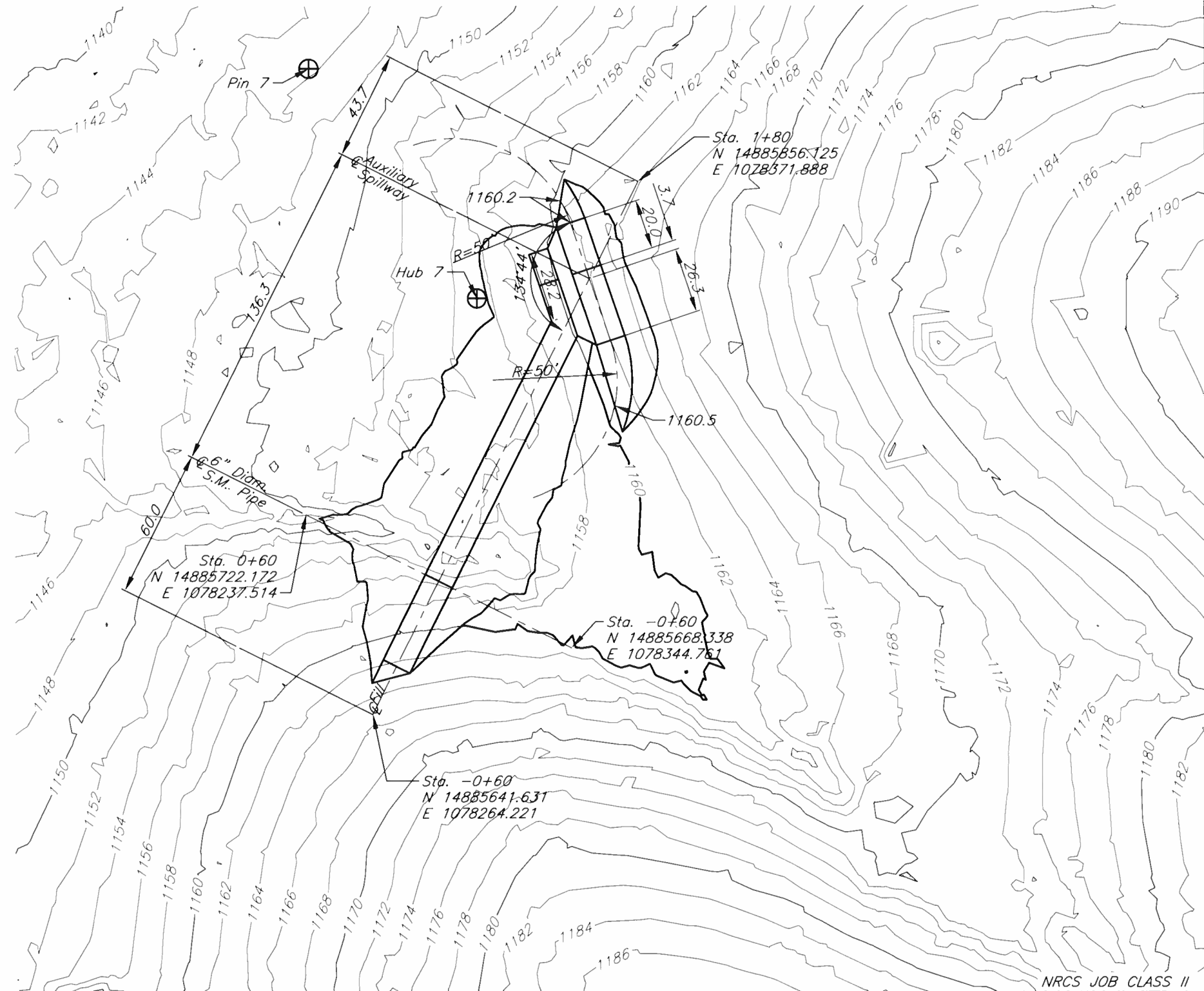
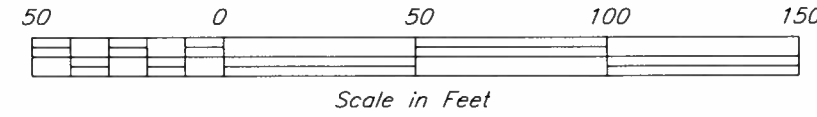
If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law.  
IowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 7	1145.78	Top of a 0.5" diameter steel pin driven into the ground on the walking trail N 14885901.7200 E 1078239.0310
Hub 7	1154.95	Top of a 1"x2" wooden hub driven into the ground on the walking trail N 14885809.1200 E 1078306.8010

Sta.	Northing	Easting	Elevation
-1+04.8	14885728.807	1078329.339	1159.4
Radius Pt.	14885776.114	1078313.401	
-0+26.3	14885792.160	1078360.672	1161.0
0+03.7			1161.0
0+23.7	14885839.547	1078344.721	1160.2
Radius Pt.	14885823.551	1078297.348	
1+02.24	14885870.924	1078281.353	1160.2

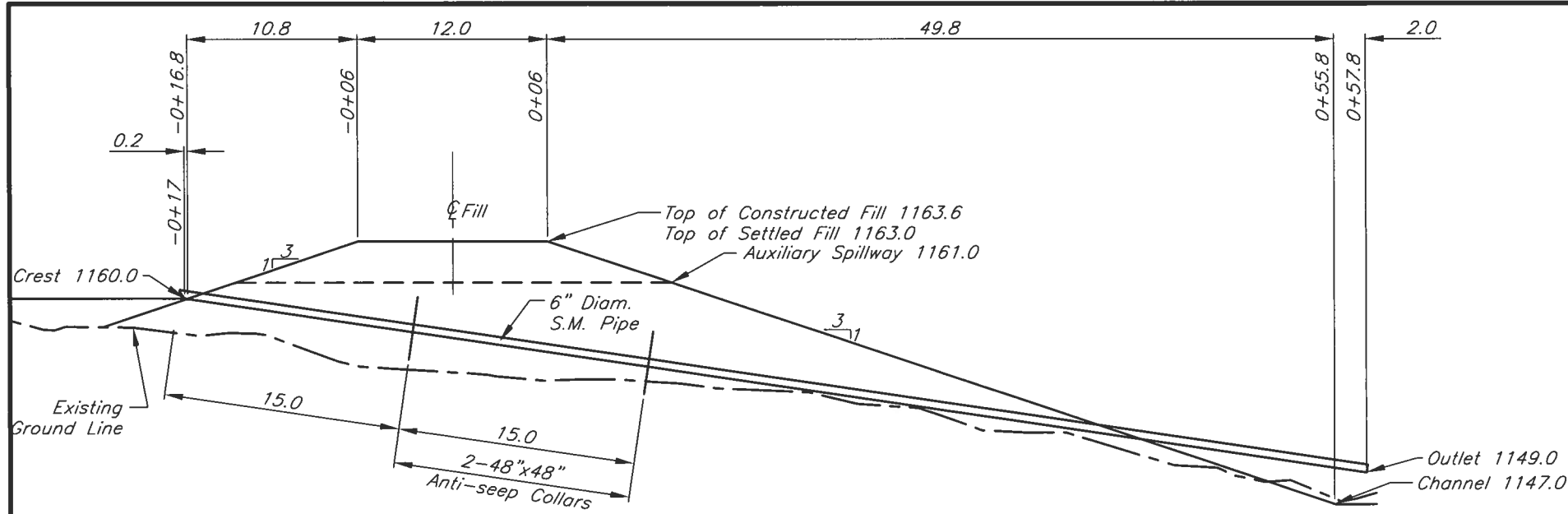
**SITE DATA**  
 Total Drainage Area 6.8 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 2.01 cfs.  
 Auxiliary Design Storm 10 yr. 24 hr.  
 Auxiliary Design Outflow 7.92 cfs.  
 Pool Area 0.14 acres



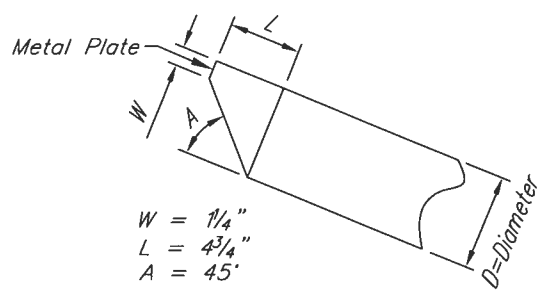
Designed: Eli McNeas  
 Drawn: Kay Steffes  
 Checked: Bruce Dake  
 Date: 6/2018  
 7/2018  
 3/19

Montgomery County, IA  
 Viking Lake Site 7

United States Department of Agriculture  
 Natural Resources Conservation Service  
 File No. Viking Lake Site 7.dwg  
 Drawing No. \_\_\_\_\_  
 4/3/19 8:15 AM  
 Sheet 20 of 26



SECTION ON CENTERLINE PIPE

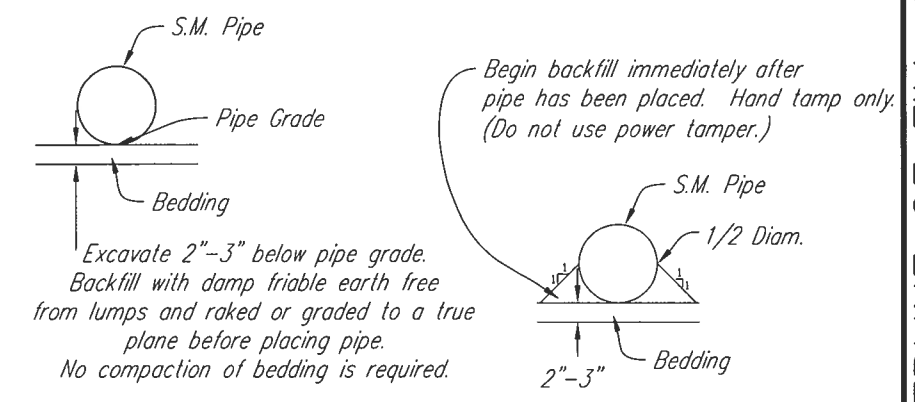


CANOPY INLET DETAILS

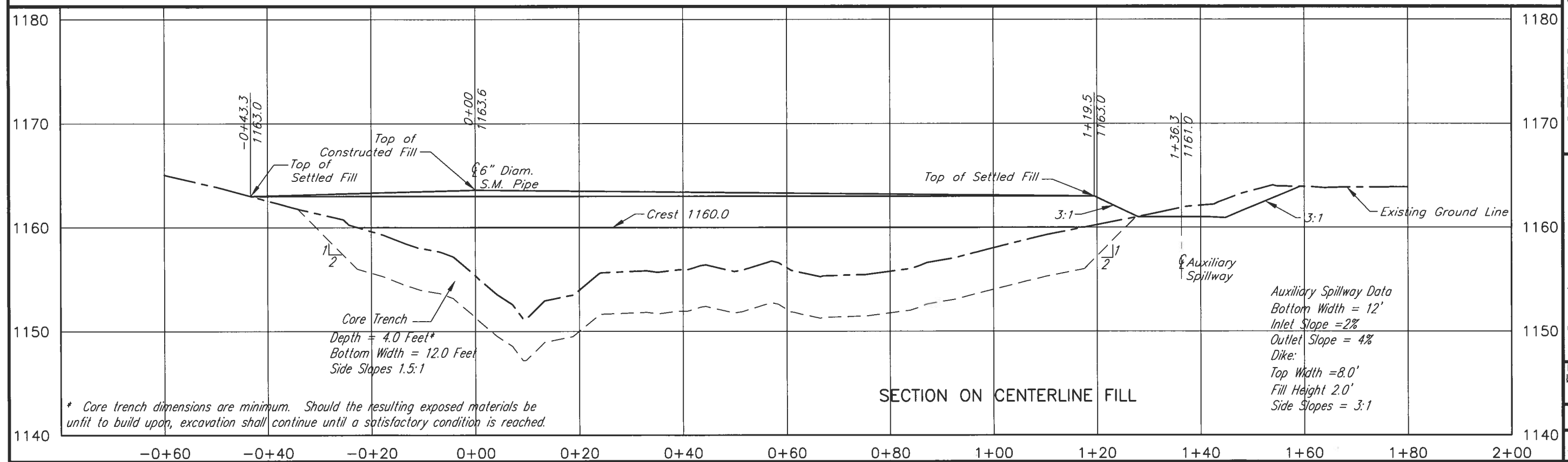
Not to Scale

76 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet  
 2 - 48"x48" Anti-Seep Collars, 1 piece, 1/4" thick  
 Pipe and appurtenances shall be welded and watertight.  
 1 - 6" Bee Hive Trash Rack  
 It is recommended that all butt welds be strapped.

Earthfill Main	1,651 cu. yd.
Core Trench	315 cu. yd.
Total Earthwork	1,966 cu. yd.



BEDDING DETAIL BACKFILL DETAIL  
 Not to Scale



SECTION ON CENTERLINE FILL

Auxiliary Spillway Data  
 Bottom Width = 12'  
 Inlet Slope = 2%  
 Outlet Slope = 4%  
 Dike:  
 Top Width = 8.0'  
 Fill Height 2.0'  
 Side Slopes = 3:1

\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

Date	6/2018
Designed	Eli McNeese
Drawn	Kay Steffes
Checked	Bruce Dake
Approved	

SECTION ON CENTERLINE OF FILL &  
 CENTERLINE OF PIPE  
 Viking Lake Site 7  
 Montgomery County, IA  
 SE1/4, NW1/4, Sec. 7, East Twp., T71N, R36W

United States Department of Agriculture  
 Natural Resources Conservation Service  
 File No. Viking Lake Site 7.dwg  
 Drawing No. 4/3/19 8:15 AM  
 Sheet 21 of 26



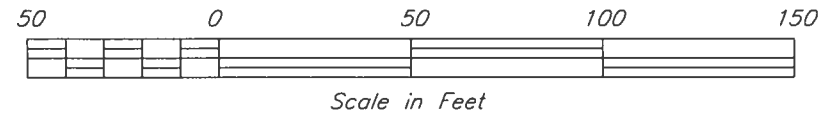
NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

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Contractor is required to follow Iowa One Call law.  
iowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

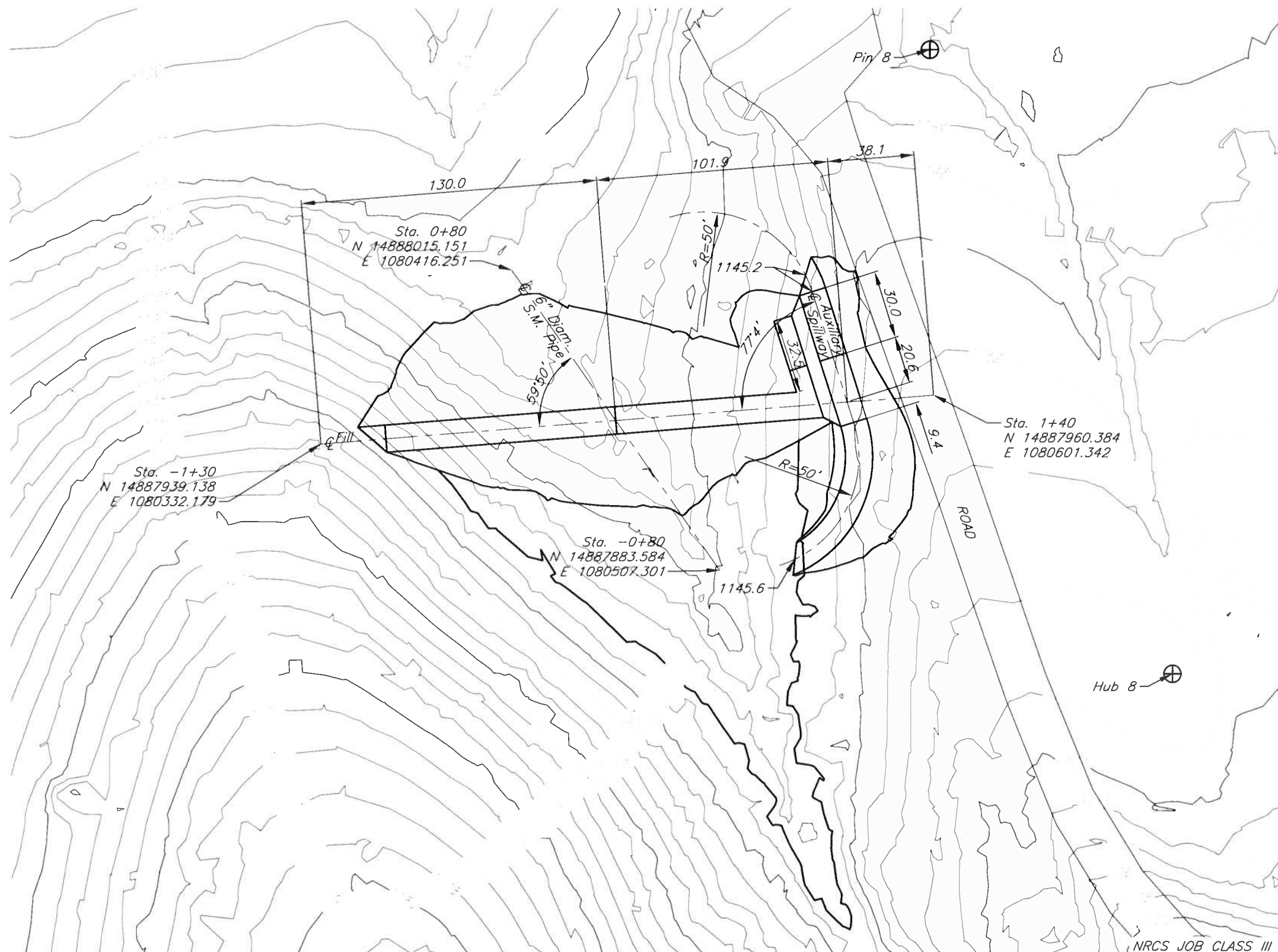
BENCH MARK		
NO.	ELEV.	DESCRIPTION
Pin 8	1148.02	Top of a 0.5" diameter steel pin driven into the ground on the walking trail N 14888111.6300 E 1080600.1720
Hub 8	1157.88	Top of a 1"x2" wooden hub driven into the ground on the walking trail N 14887838.2600 E 1080706.0370

Sta.	Northing	Easting	Elevation
-0+87.94	14887885.729	1080533.480	1145.2
Radius Pt.	14887933.429	1080518.490	
-0+09.4	14887948.419	1080566.190	1147.0
0+20.6			1147.0
0+50.6	14888005.659	1080548.201	1145.2
Radius Pt.	14887990.669	1080500.501	
1+29.14	14888038.369	1080485.511	1145.2



**SITE DATA**  
 Total Drainage Area 6.4 Acres  
 Principal Design Storm 2 yr. 24 hr.  
 Principal Design Outflow 1.07 cfs.  
 Auxiliary Design Storm 10 yr. 24 hr.  
 Auxiliary Design Outflow 1.17 cfs.  
 Pool Area 0.36 acres

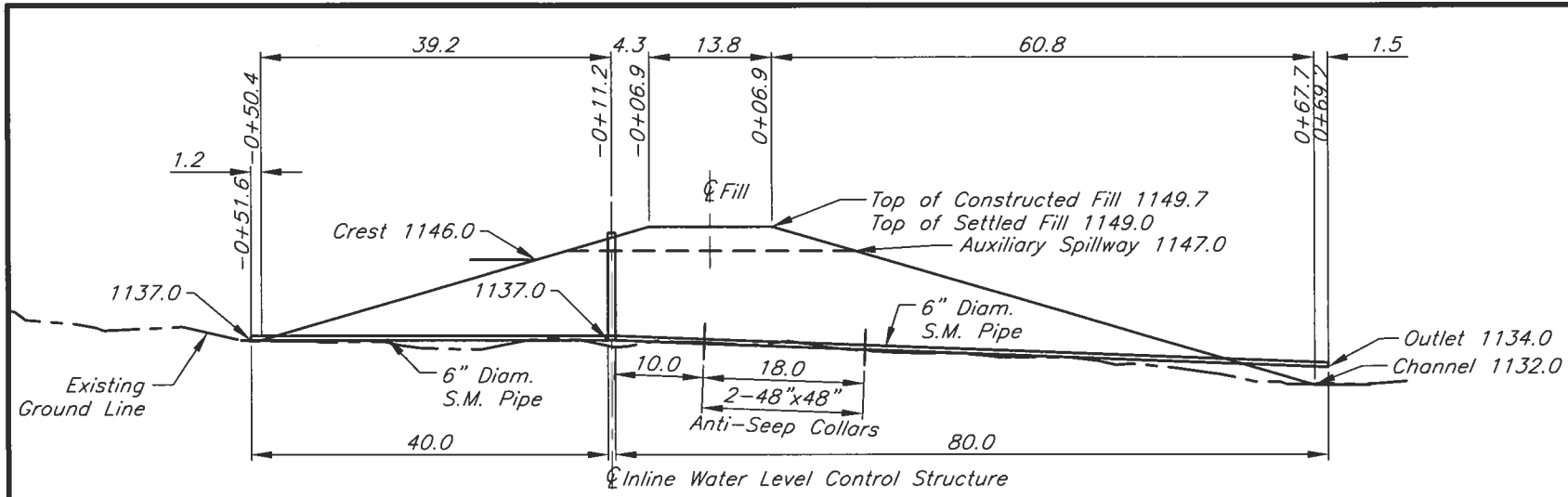
**NOTE:**  
 Borrow material shall not be deeper than the elevation of the pipe inlet.



Date 7/2018  
 Designed Eli McNees  
 Drawn Eli McNees  
 Checked Bruce Dake  
 Approved 8/2018  
 3/19

PLAN VIEW  
 Viking Lake Site 8  
 S1/2, SE1/4, Sec. 6, East Twp., T71N, R36W  
 Montgomery County, Iowa

**USDA**  
 File No. Viking Lake 8.dwg  
 Drawing No. \_\_\_\_\_  
 4/3/19 3:30 PM  
 Sheet 22 of 26  
 NRCS JOB CLASS III



**Bill of Materials**

- 120 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick,
- 2 - 48"x48" Anti-Seep Collars, 1 piece, 1/4" thick
- 1 - 12' tall Inline Line Level Control Structure with 9' of stoplogs to accept a 6" diameter pipe.

Pipe and appurtenances shall be welded and watertight.

- 1 - 6" Bee Hive Trash Rack

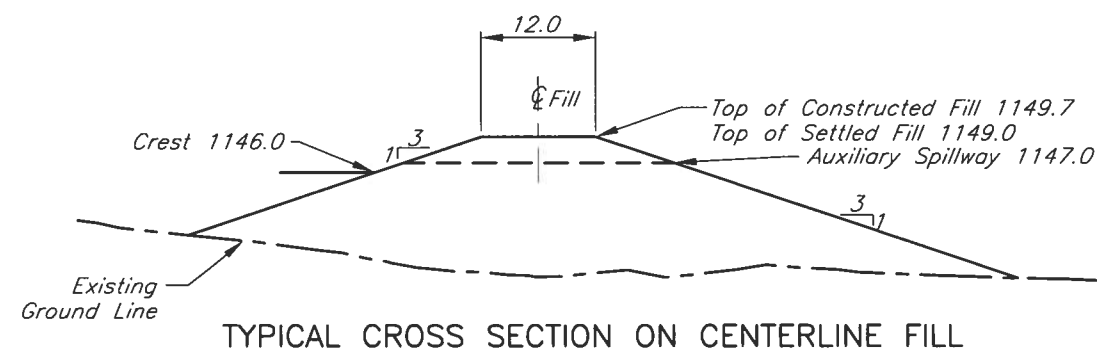
It is recommended that all butt welds be strapped.

Earthfill Main	3,231 cu. yd.
Core Trench	420 cu. yd.
<b>Total Earthwork</b>	<b>3,651 cu. yd.</b>

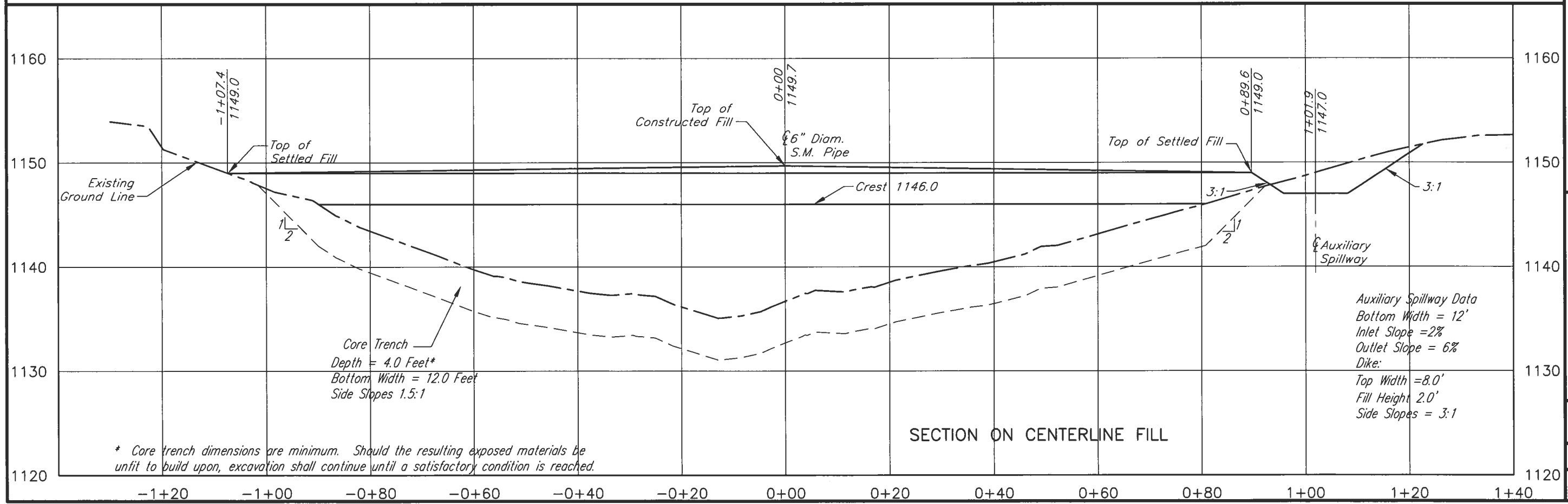
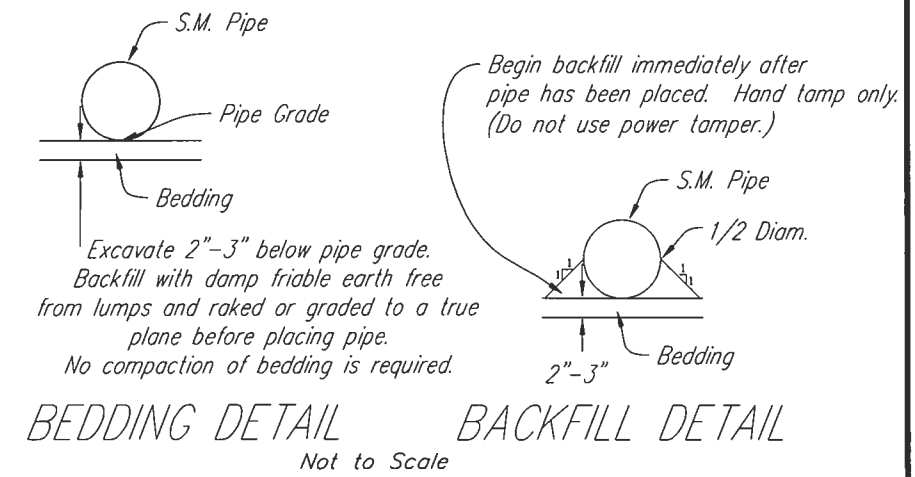
Designed	Eli McNees	Date	7/2018
Drawn	Eli McNees	Date	8/2018
Checked	Bruce Drake	Date	3/19
Approved			

NOTE:  
Borrow material shall not be deeper than the elevation of the pipe inlet.

SECTION ON CENTERLINE PIPE



TYPICAL CROSS SECTION ON CENTERLINE FILL



SECTION ON CENTERLINE FILL

\* Core trench dimensions are minimum. Should the resulting exposed materials be unfit to build upon, excavation shall continue until a satisfactory condition is reached.

SECTION ON CENTERLINE OF FILL &  
 CENTERLINE OF PIPE  
 Viking Lake Site 8  
 Montgomery County, Iowa  
 51/2, SE1/4, Sec. 6, East Twp., T71N, R36W

United States Department of Agriculture  
**USDA**  
 Natural Resources Conservation Service

File No. Viking Lake 8.dwg  
 Drawing No. ---  
 4/3/19 3:30 PM  
 Sheet 23 of 26

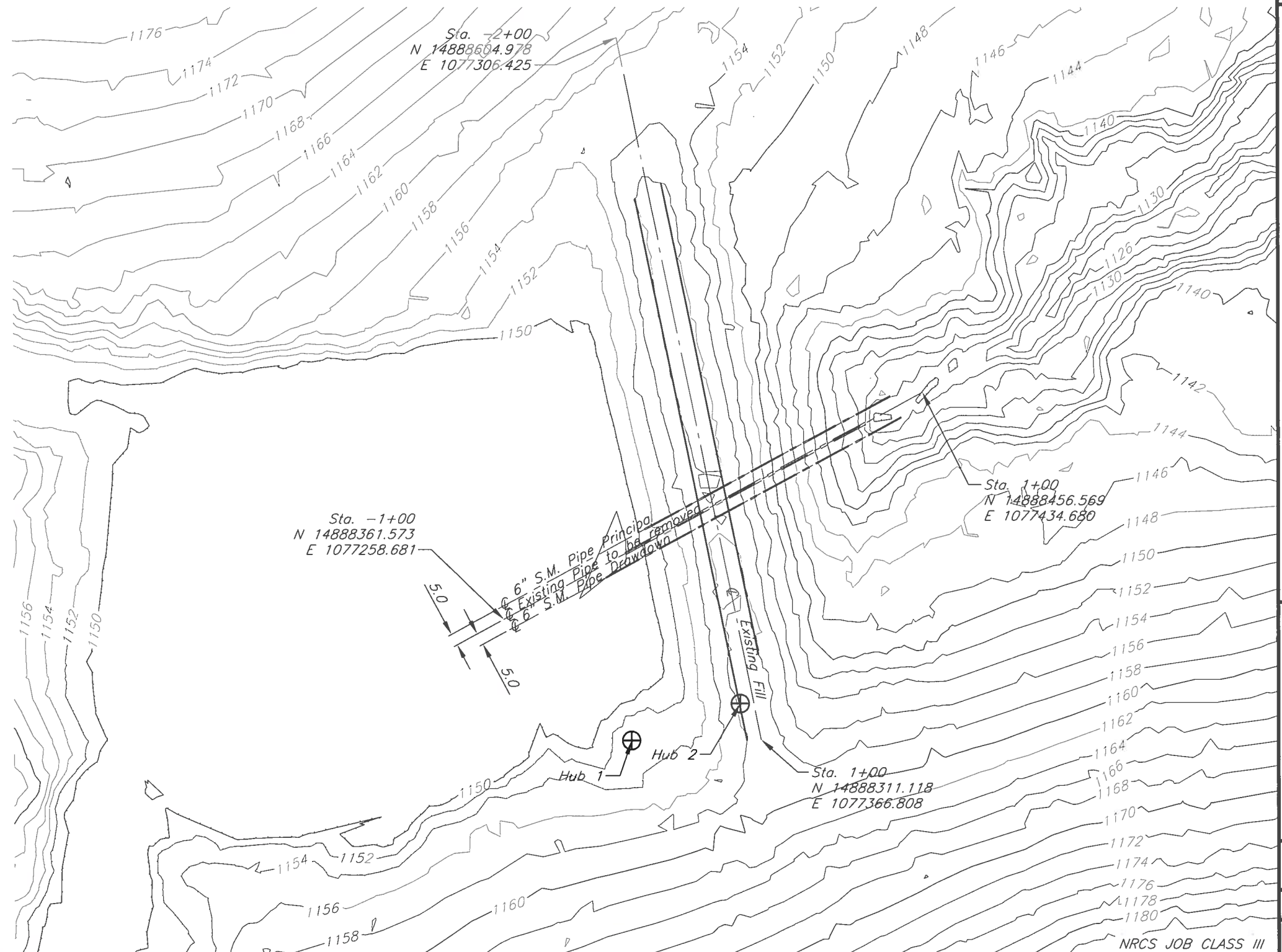
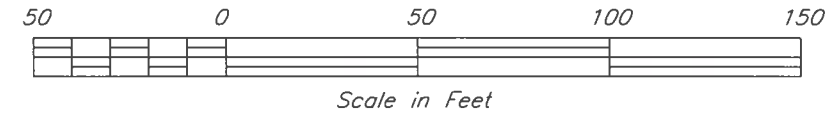
NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law.  
IowaOneCall.com or Call 811  
Ticket # \_\_\_\_\_

**SITE DATA**  
 Total Drainage Area 43.8 Acres  
 Principal Design Storm 5 yr. 24 hr.  
 Principal Design Outflow 2.09 cfs.  
 Auxiliary Design Storm 50 yr. 24 hr.  
 Auxiliary Design Outflow 11.0 cfs.  
 Pool Area 1.05 acres

BENCH MARK		
NO.	ELEV.	DESCRIPTION
Hub 1	1153.34	Top of a 1"x2" wooden hub driven into the ground approximate 48.3' upstream of Hub 2. N 14888310.6990 E 1077312.1840
Hub 2	1158.87	Top of a 1"x2" wooden hub driven into the ground on upstream edge of top of fill on the south end of existing structure N 14888326.2790 E 1077357.9140



Date 3/19  
 Designed Brian Holmes  
 Drawn Kay Stiefles  
 Checked [Signature]  
 Approved [Signature]

PLAN VIEW  
 Viking Lake Site 9

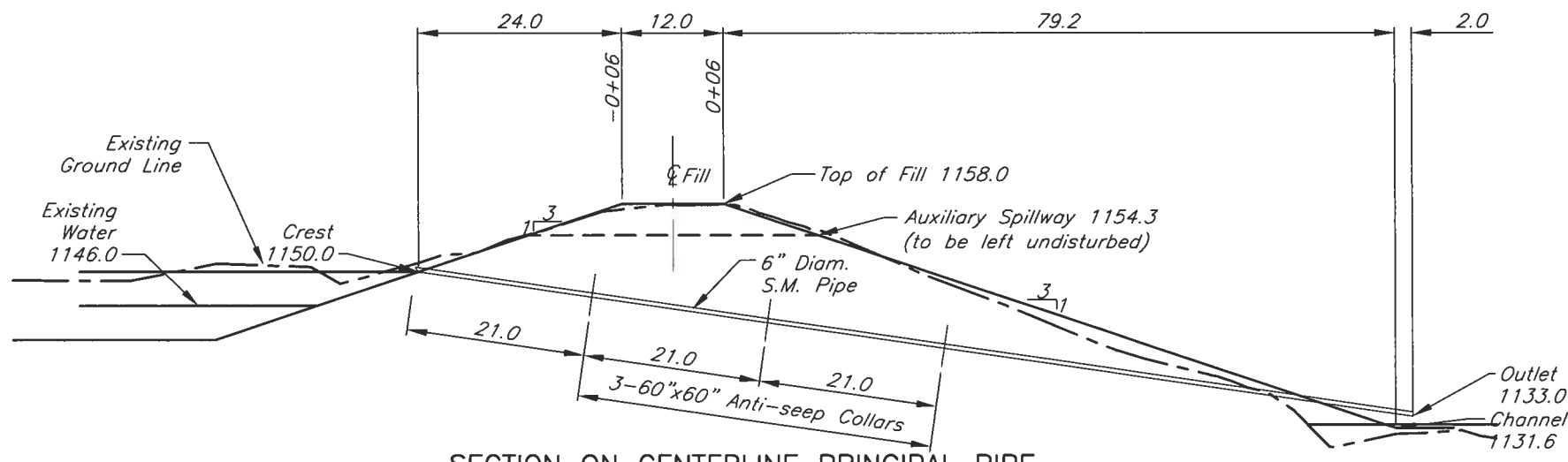
SW1/4, SW1/4, Sec. 6, East Twp., T71N, R36 W Montgomery County, Iowa

United States  
 Department of  
 Agriculture  
**USDA**  
 Natural Resources  
 Conservation Service

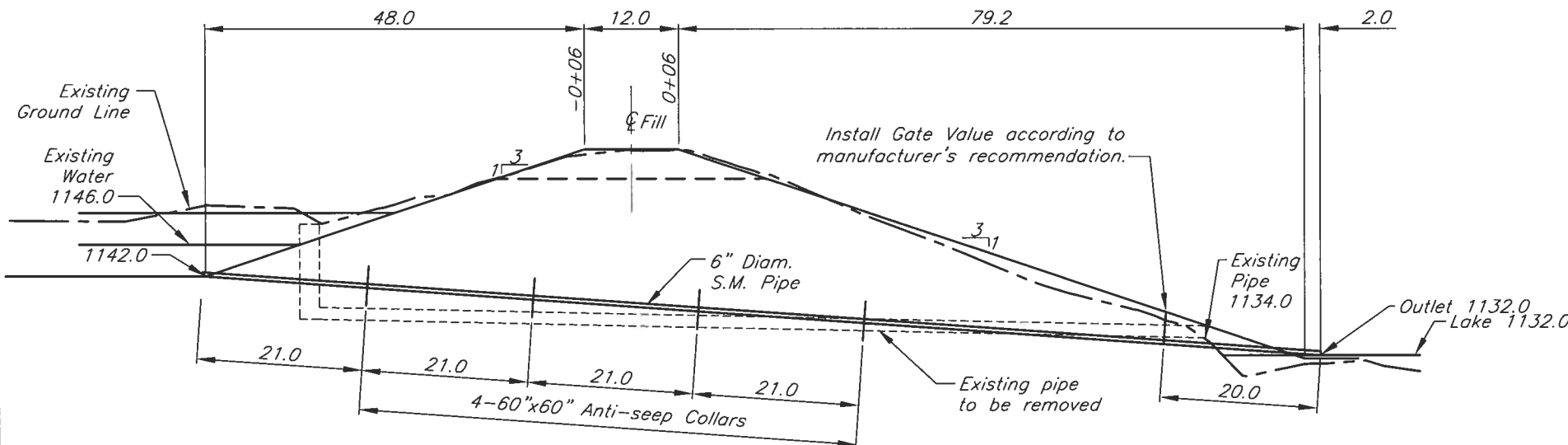
File No. Viking Lake 9.dwg  
 Drawing No.  
 4/3/19 1:01 PM  
 Sheet 24 of 26

NRCS JOB CLASS III

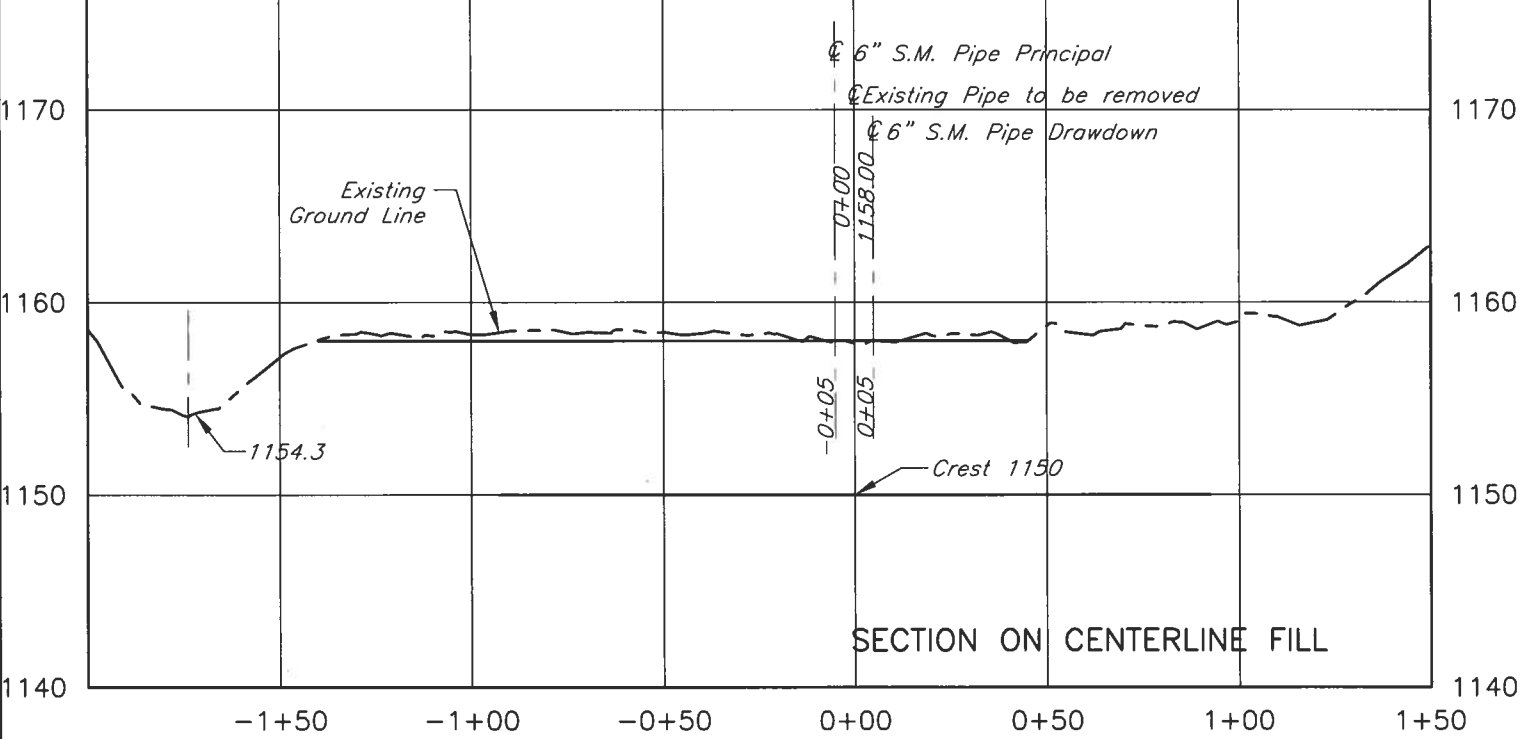




SECTION ON CENTERLINE PRINCIPAL PIPE



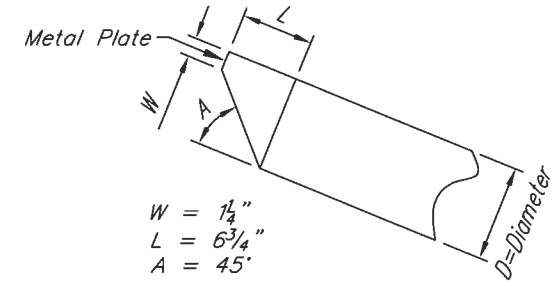
SECTION ON CENTERLINE DRAWDOWN PIPE



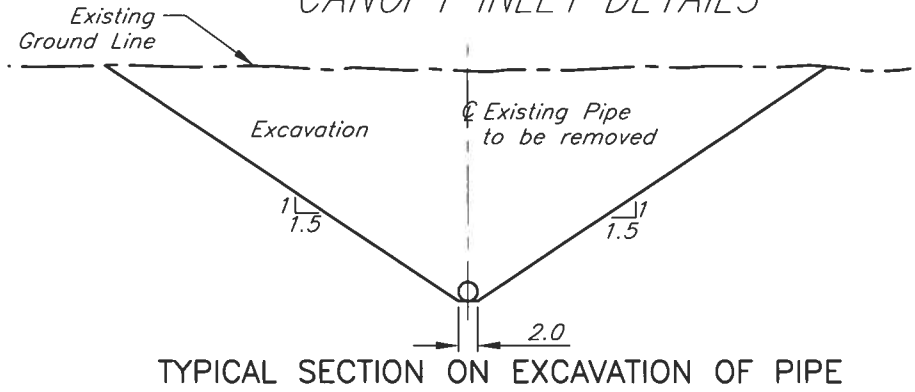
SECTION ON CENTERLINE FILL

- Bill of Materials**
- 119 Lin Ft. of 6" Diam. Smooth Metal Pipe, 1/4" thick, with Canopy Inlet for Principal Pipe
  - 3 - 60"x60" Anti-Seep Collars, 1 piece, 1/2" thick for Principal Pipe
  - 1 - 6" Bee Hive Trash Rack for Principal Pipe
  - 142 Lin Ft. of 6" Diam. Smooth Metal Pipe 1/4" thick, with Canopy Inlet for Drawdown Pipe
  - 4 - 60"x60" Anti-Seep Collars, 1 piece, 1/2" thick for Drawdown Pipe
  - 1 - 6" Gate Value to accept 6" Smooth Metal Pipe
  - 1 - 6" Diameter Animal Guard to be installed on the drawdown pipe outlet
- Pipe and appurtenances shall be welded and watertight.
- It is recommended that all butt welds be strapped.

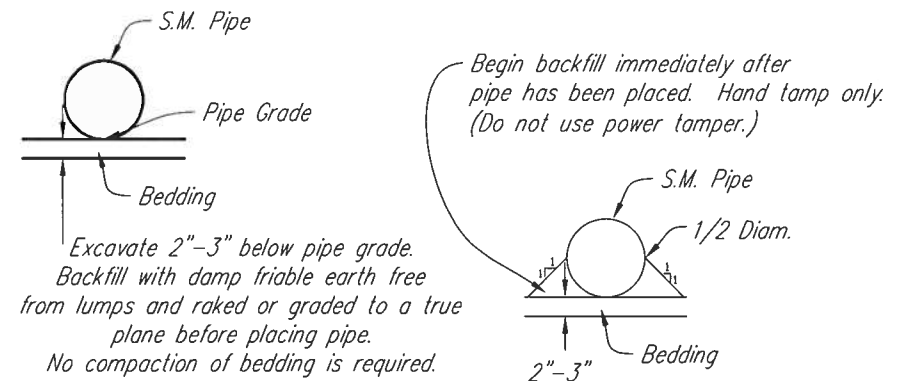
Pipe Excavation	1,805 cu. yd.
Pipe Excavation Replace	1,805 cu. yd.
<b>Total Earthwork</b>	<b>3,610 cu. yd.</b>



CANOPY INLET DETAILS



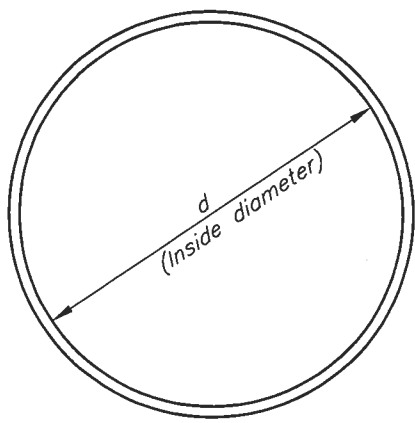
TYPICAL SECTION ON EXCAVATION OF PIPE



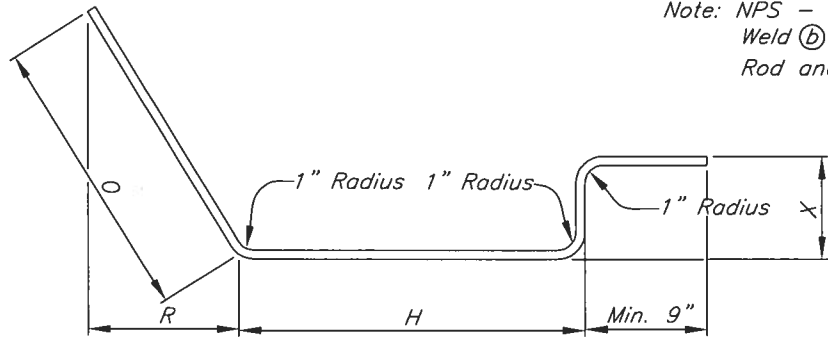
BEDDING DETAIL

BACKFILL DETAIL

Date: 3/19  
 Designed: Brian Holmes  
 Drawn: Kay Steffes  
 Checked: \_\_\_\_\_  
 Approved: \_\_\_\_\_  
 SECTION ON CENTERLINE OF FILL,  
 CENTERLINE OF PIPE & DRAWDOWN  
 Viking Lake Site 9  
 SW1/4, SW1/4, Sec. 6, East Twp., T71N, R36 W, Montgomery County, Iowa  
 United States Department of Agriculture  
 Natural Resources Conservation Service  
 File No. Viking Lake 9.dwg  
 Drawing No. \_\_\_\_\_  
 4/5/19 11:24 AM  
 Sheet 25 of 26



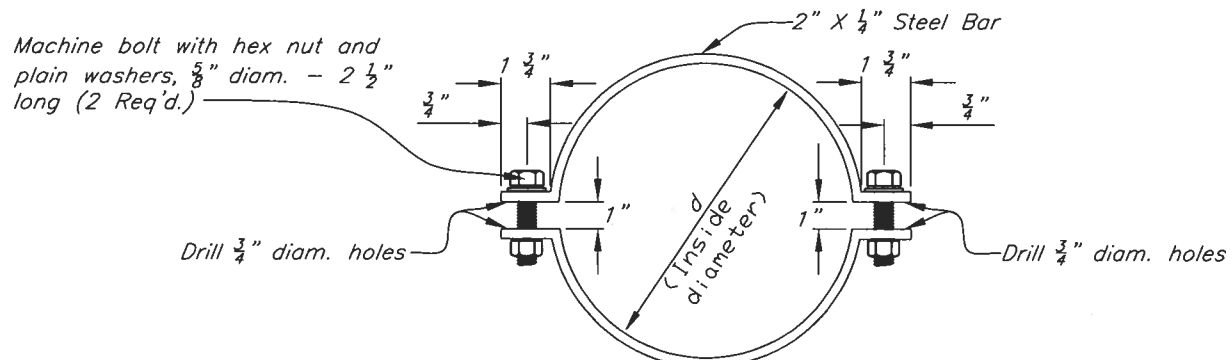
BENDING DIAGRAM FOR  
⑥ AND ③ RODS



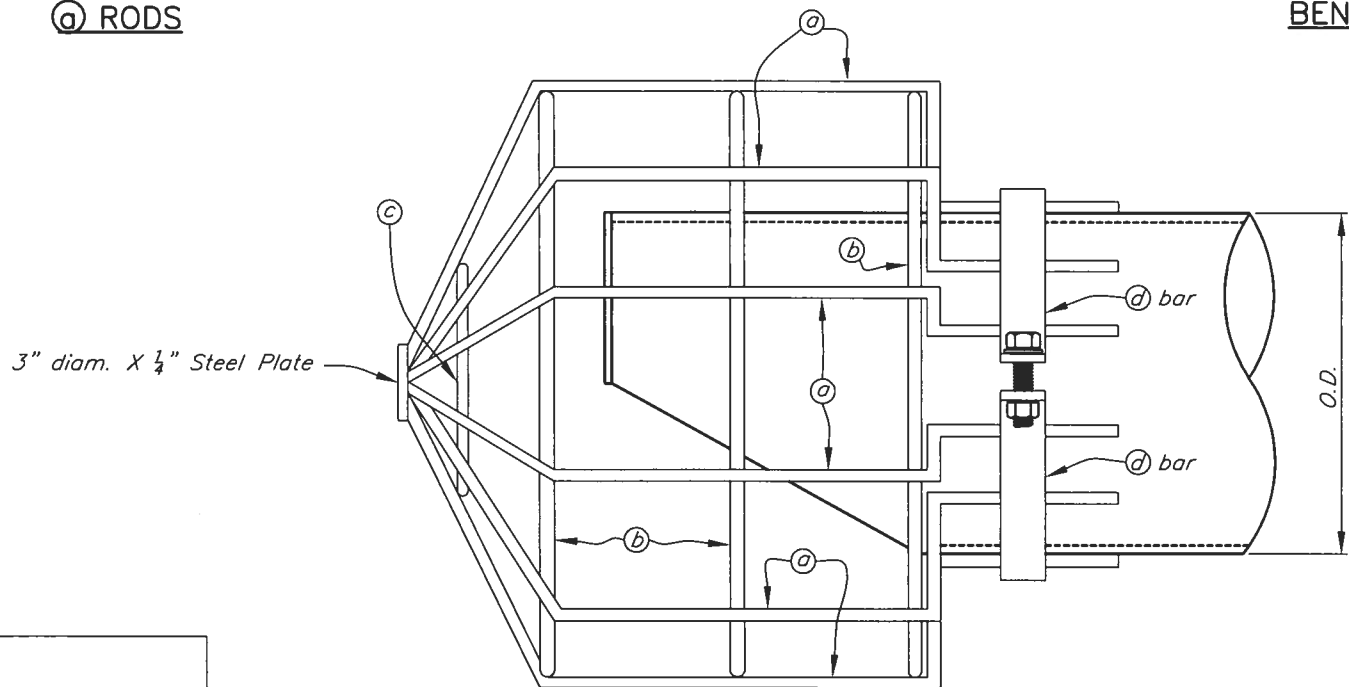
BENDING DIAGRAM FOR  
① RODS

TABLE OF DIMENSIONS AND QUANTITIES WELDED STEEL PIPE																						
NPS	PIPE O.D.	APPROX. WEIGHT	a ROD SIZE	H	R	X	O	LENGTH	NUMBER REQUIRED	N	b ROD SIZE	d	LENGTH	NUMBER REQUIRED	c ROD SIZE	d	LENGTH	NUMBER REQUIRED	d ROD SIZE	d	LENGTH	NUMBER REQUIRED
IN.	IN.	LBS.	IN.	IN.	IN.	IN.	IN.	IN.		IN.	IN.	IN.	IN.		IN.	IN.	IN.		IN.	IN.	IN.	
6	6 5/8	18.9	3/8	9	4 1/2	6	9 1/2	33 1/2	14	4 1/2	3/8	17 1/2	53 3/4	3	--	--	--	0	2 X 1/4	7 3/8	14 5/8	2
8	8 5/8	22.3	3/8	11	4 1/2	6	10 1/2	36 1/2	10	6 1/2	3/8	19 1/2	60 1/2	3	--	--	--	0	2 X 1/4	9 3/8	17 3/4	2
10	10 3/4	24.7	3/8	13	4 1/2	6	11 1/2	39 1/2	10	7 1/2	3/8	21 1/2	66 3/4	3	--	--	--	0	2 X 1/4	11 1/2	21 1/2	2
12	12 3/4	27.1	3/8	15	4 1/2	6	12 1/2	42 1/2	10	7 3/4	3/8	23 1/2	73	3	--	--	--	0	2 X 1/4	13 1/2	24 1/2	2
14	14	48.4	1/2	17	6 1/2	6	14	46	10	8 1/2	1/2	24	75 3/8	3	1/2	10	31 3/8	1	2 X 1/4	15	26 5/8	2
16	16	52.4	1/2	19	7	6	15	49	10	8 3/4	1/2	26	81 5/8	3	1/2	12	37 5/8	1	2 X 1/4	17	29 3/4	2
18	18	69.5	1/2	22	9	9	19 1/2	59 1/2	12	9 3/8	1/2	34	106 3/8	3	1/2	14	44	1	2 X 1/4	19	32 3/8	2
20	20	112.4	5/8	25	9 1/2	9	20 1/2	63 1/2	12	10	5/8	35 1/2	111 1/2	3	5/8	16	50 1/4	1	2 X 1/4	21 1/4	36 3/8	2
24	24	124.6	5/8	30	11	9	23	71	12	11	5/8	39 1/2	124 1/2	3	5/8	18 3/4	58 3/8	1	2 X 1/4	25 1/4	42 5/8	2

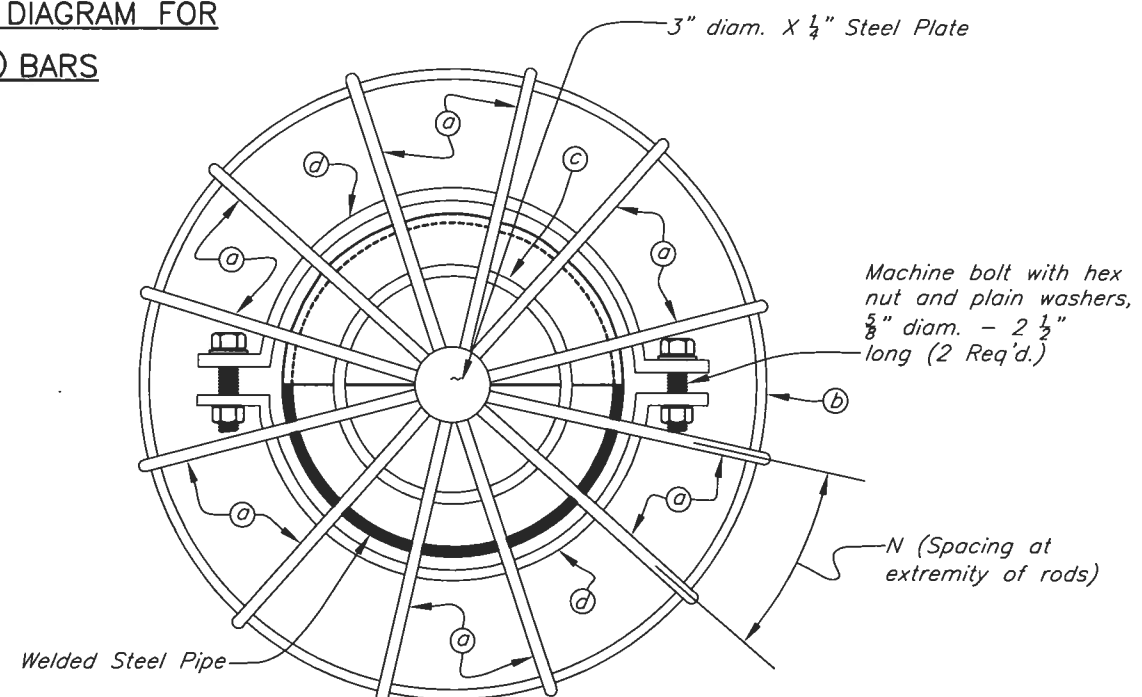
Note: NPS - Nominal Pipe Size.  
Weld ⑥ and ③ rods and ① bars to ① rods and weld ① rods to 3" diam. Steel Plate.  
Rod and bar dimensions calculated from inside diameter and rounded to the nearest 1/8 inch.



BENDING DIAGRAM FOR  
④ BARS



ELEVATION



END ELEVATION

STANDARD DWG. IA-1166

DATE Oct. 2012 PAGE 1 OF 1

Date 6/18  
Designed Kay Steffes  
Drawn Kay Steffes  
Checked Bruce Dake  
Approved 6/18 3/19

TRASH RACK FOR WELDED STEEL PIPE  
CANOPY INLET  
Viking Lake  
Montgomery County, Iowa

United States Department of Agriculture  
USDA Natural Resources Conservation Service  
File No. Viking Lake.dwg  
Drawing No. 4/3/19 9:10 AM  
Sheet 26 of 26