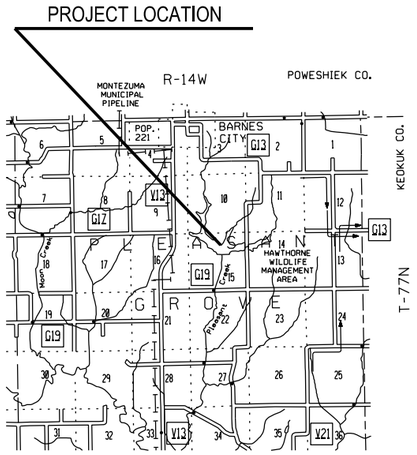
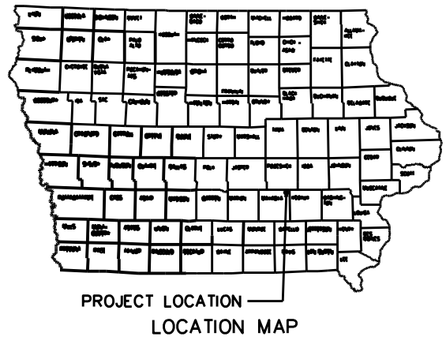


VICINITY MAP



LOCATION MAP

IOWA DEPARTMENT OF NATURAL RESOURCES

CONSTRUCTION DOCUMENTS FOR HAWTHORN WMA SEDIMENT PONDS MAHASKA COUNTY, IOWA

PROJECT # 13-05-62-02

SHEET INDEX

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2	OVERALL PLAN VIEW
3	QUANTITIES AND GENERAL INFORMATION
4	SITE 3 PLAN VIEW
5	SITE 3 DETAILS
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17	FILTER DIAPHRAGM
18	DROP INLET DETAILS
19	TRASH RACK
20	66" TRASH RACK
21	48" TRASH RACK
22	DETAILS

IOWA ONE CALL
800/292-8989
TOLL FREE
CALL - BEFORE - YOU DIG

LICENSED PROFESSIONAL ENGINEER
HEATH B. DELZELL
21074
IOWA

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME UNDER THE LAWS OF THE STATE OF IOWA.

SIGNATURE _____ DATE _____

HEATH B. DELZELL
PRINTED OR TYPED NAME

MY LICENCE RENEWAL DATE IS DECEMBER 31, 20 ____

PAGES COVERED BY THIS SEAL: _____

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	JASON KRUSE
TELEPHONE	515-979-0104	TELEPHONE	515-250-3707
FAX	515-281-8685	FAX	
EMAIL	heath.delzell@dnr.iowa.gov	EMAIL	Jason.Kruse@dnr.iowa.gov

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF CONSTRUCTING THREE SEDIMENT RETENTION PONDS AND SEVEN DRY PONDS.

AUTHORIZATION TO BID

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

ENGINEERING BUREAU CHIEF DATE

CONSULTANT:

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

COVER SHEET

SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

NO.	BY DATE	REVISION

DRAWN BY: PROJECT NUMBER: 13-05-62-02
CHK'D BY: DATE: JUNE 2015

SHEET No: 1

CATTLE GUARDS
APPROX LOCATION
(EXACT LOCAITON
DETERMINED IN
FIELD)

SITE 8

SITES F1-F7

SITE 5

SITE 5

N

0 1,000
FEET

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

OVERALL SITE PLAN

SEDIMENT PONDS FOR:

HAWTHORN LAKE

NAHASKA COUNTY

NO.	BY / DATE	REVISION

DRAWN BY:

PROJECT NUMBER:
13-05-62-02

CHK'D BY:

DATE:
JUNE 2015

SHEET No:
2

ESTIMATED PROJECT QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL
	Main Ponds		
1	Mobilization	Lump Sum	1
2	Earthfill - Embankment	CY	58750
3	Earthfill - Core Trench	CY	2908
4	Clearing and Grubbing	Acre	25.8
5	Seeding	Acre	6.5
6	Fine Drainfill	Tons	161
7	Riprap	Tons	10
8	21" Trash Rack	Each	1
9	48" Trash Rack	Each	1
10	66" Trash Rack	Each	1
11	21" CMP	LF	109
12	36" CMP	LF	114
13	48" CMP	LF	200
14	48" Riser	Each	1
15	66" Riser	Each	1
16	72x72 Antiseep	Each	3
17	96x96 Antiseep	Each	2
18	Cattle Barrier	LF	100
	Ferguson BMP's		
19	Mobilization	Lump Sum	1
20	Earthfill - Embankment	CY	13622
21	Earthfill - Core Trench	CY	3545
22	Clearing and Grubbing	Acre	7
23	Seeding	Acre	7
24	18" Trash Rack	Each	7
25	4" CMP	LF	118
26	6" CMP	LF	207
27	8" CMP	LF	193
28	12" CMP	LF	105
29	14" CMP	LF	91
30	18" Riser	Each	6

ESTIMATE REFERENCE INFORMATION

ITEM NO.	DESCRIPTION
7	This material shall meet Iowa DOT requirements for Class D Revetment as specified in the Standard Specifications for Highway and Bridge Construction.
2	The plan quantity includes 30% increase for shrinkage.
3	The plan quantity includes 30% increase for shrinkage.
20	The plan quantity includes 30% increase for shrinkage.
21	The plan quantity includes 30% increase for shrinkage.

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

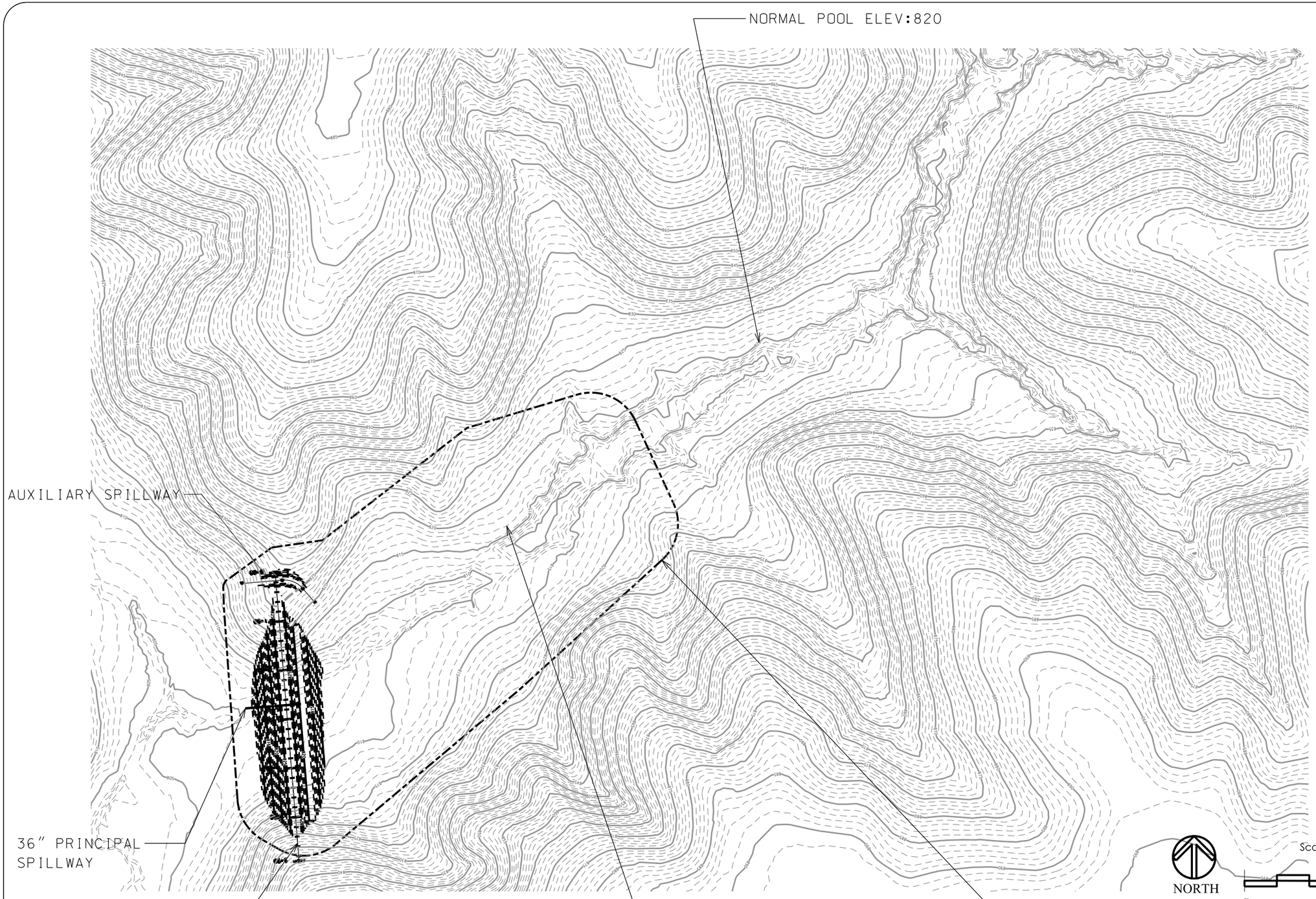
QUANTITIES AND GENERAL INFORMATION

SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

NO.	BY	DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 13-05-62-02
CHK'D BY:
DATE: JUNE 2015

SHEET No: 3



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

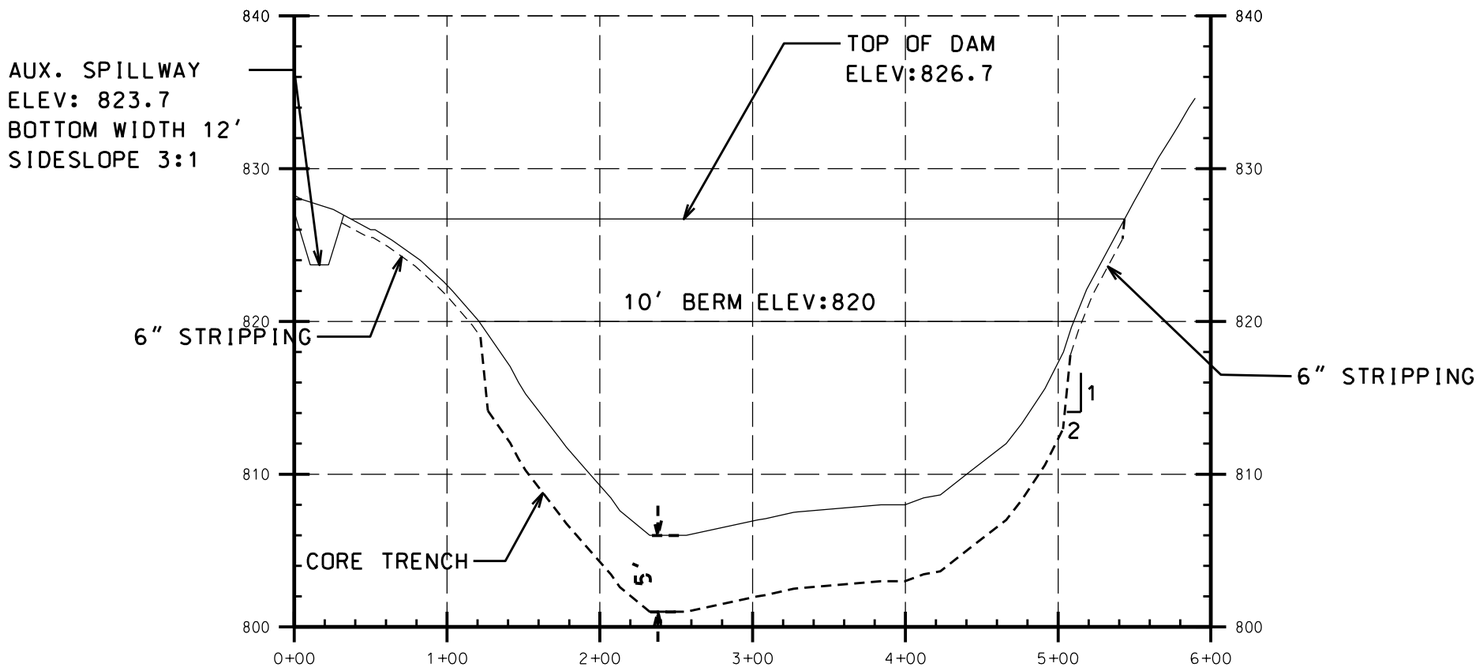
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

SITE 3 PLAN

SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

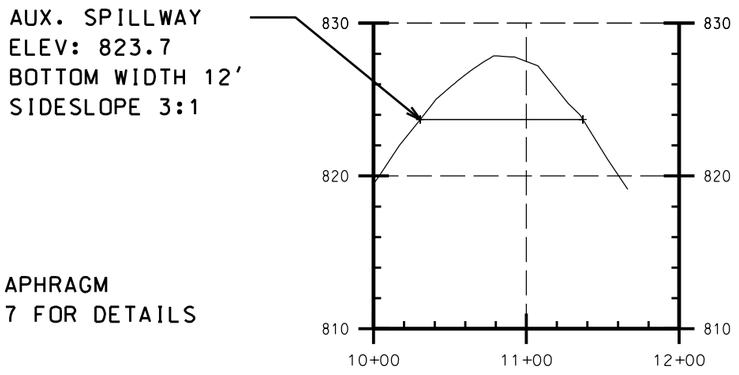
NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 13-05-62-02
CHK'D BY:
DATE: JUNE 2015
SHEET No: **4**



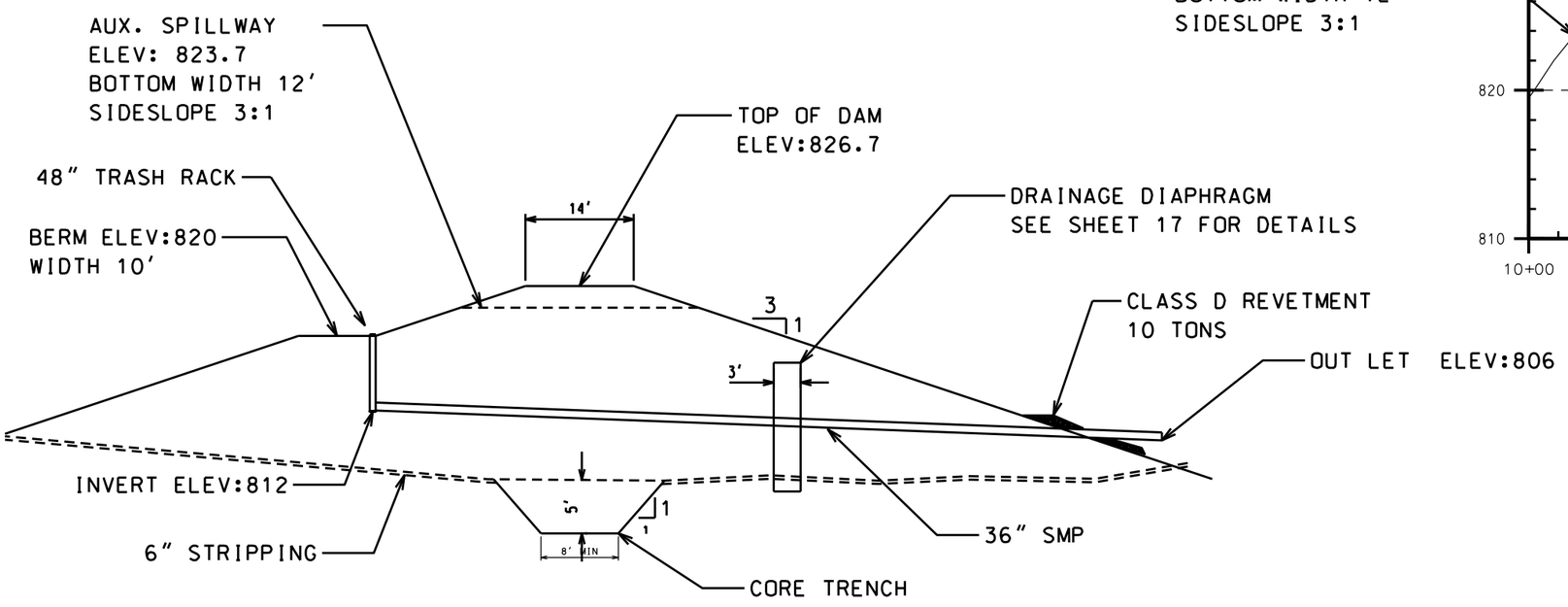
PROFILE OF DAM

NOT TO SCALE



PROFILE OF AUX. SPILLWAY

NOT TO SCALE



CROSS-SECTION OF DAM

NOT TO SCALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

SITE 3 DETAILS

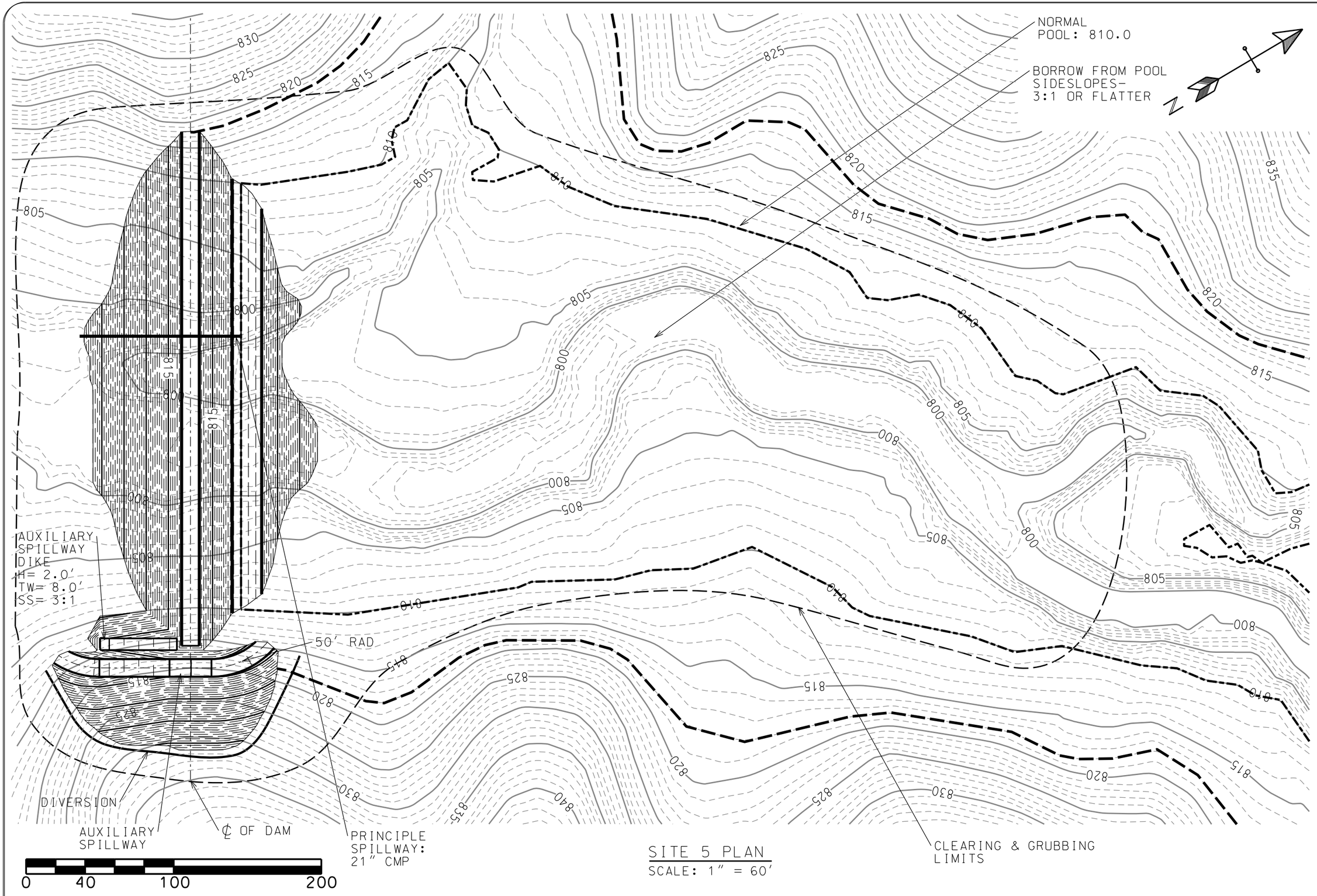
SEDIMENT PONDS FOR:
HAWTHORN LAKE

MAHASKA COUNTY

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 13-05-62-02
CHK'D BY:
DATE: JUNE 2015

SHEET No: 5



SITE 5 PLAN
SCALE: 1" = 60'

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

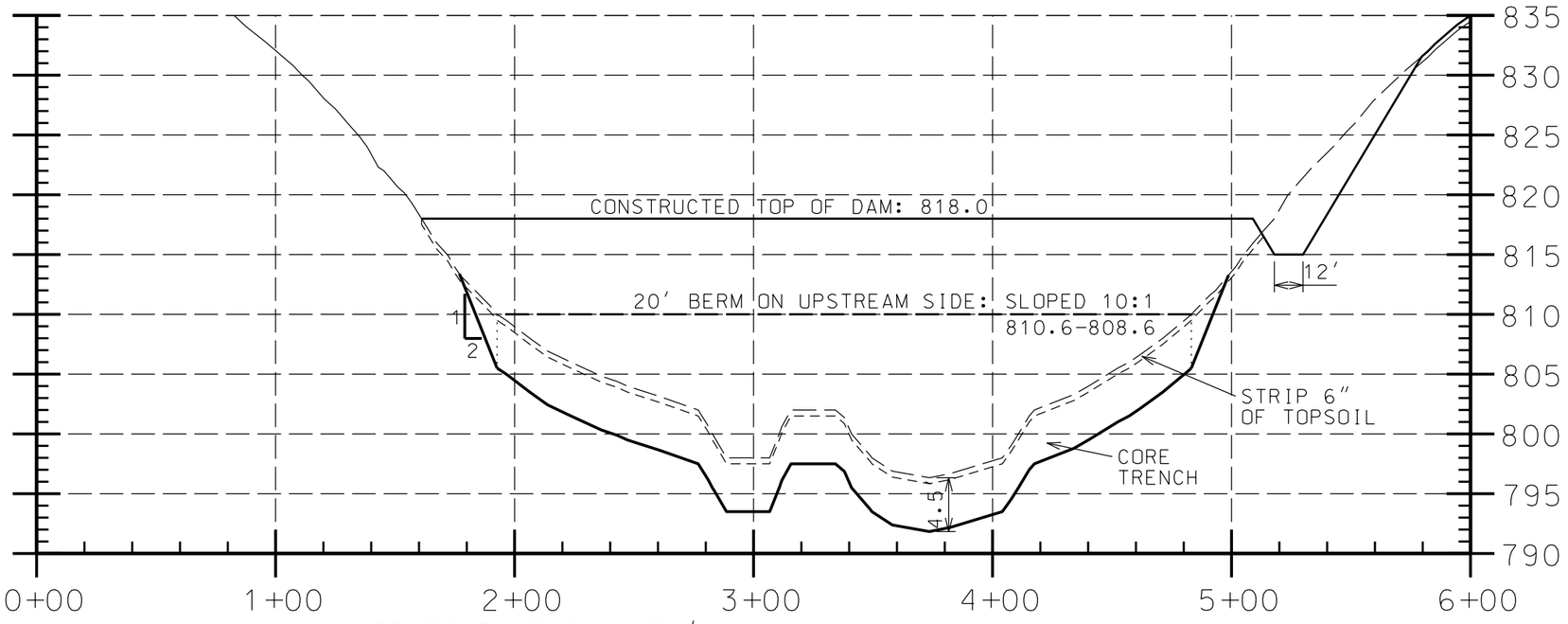
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

SITE 5 PLAN

SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

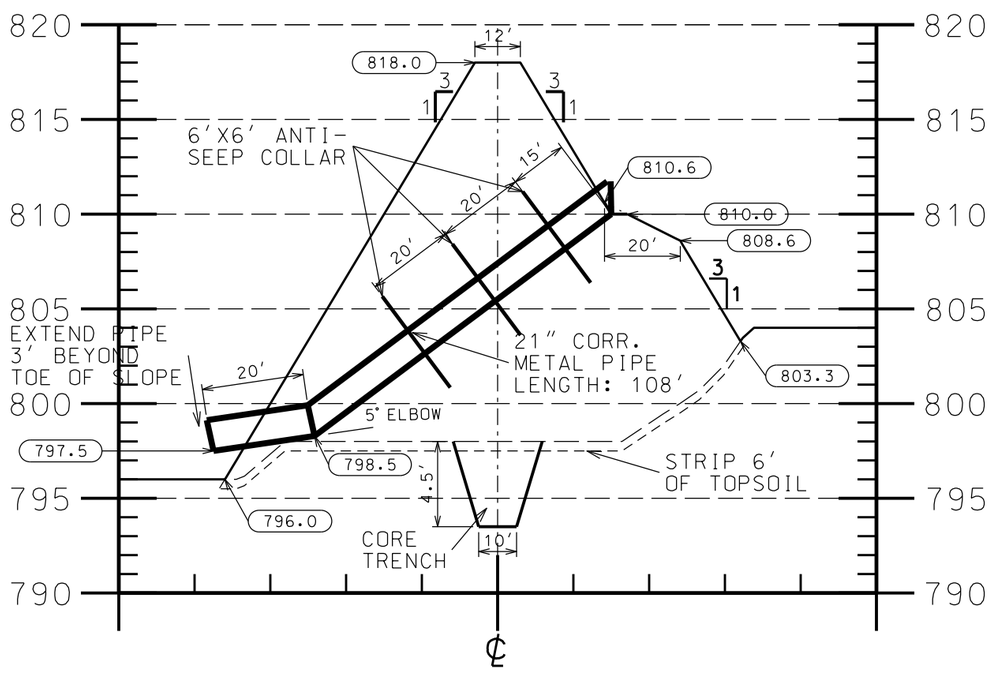
NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 13-05-62-02
CHK'D BY:
DATE: JUNE 2015
SHEET No: 6



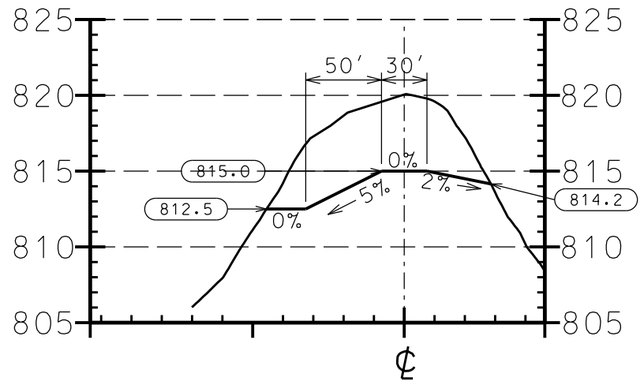
PROFILE OF DAM AT ℄

SCALE: 1" = 60' HORIZ. 1" = 6' VERT.



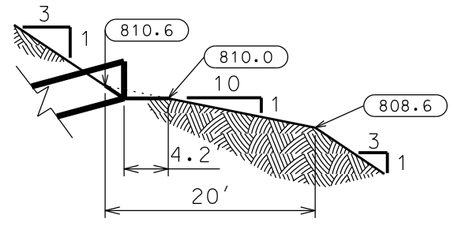
CROSS SECTION OF DAM AT PRINCIPLE SPILLWAY

SCALE: 1" = 60' HORIZ. 1" = 6' VERT.

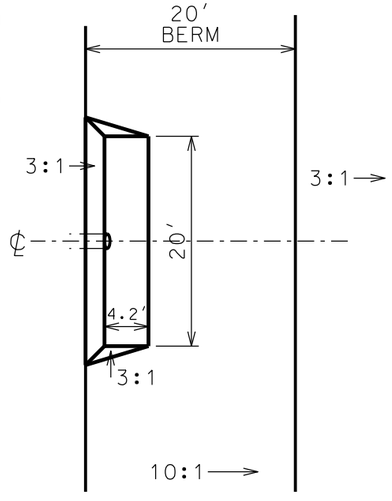


PROFILE OF AUX. SPILLWAY

SCALE: 1" = 60' HORIZ. 1" = 6' VERT.



PROFILE VIEW



PLAN VIEW

SITE 5 - BERM @ INLET

NO SCALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

SITE 5 DETAILS

SEDIMENT PONDS FOR:

HAWTHORN LAKE

MAHASKA COUNTY

NO.	BY / DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 13-05-62-02

CHK'D BY:

DATE: JUNE 2015

SHEET No: 7

BORROW FROM POOL.
SIDESLOPES 3:1 OR
FLATTER

NORMAL POOL
808.0

PRINCIPLE
SPILLWAY
48" CMP

50' RAD

AUXILIARY
SPILLWAY

DIVERSION

CLEARING &
GRUBBING LIMITS

AUXILIARY
SPILLWAY
DIKE
H = 2.0
TW = 8.0
SS = 3:1

SITE 8 PLAN
SCALE 1"=100'

CONSULTANT:

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

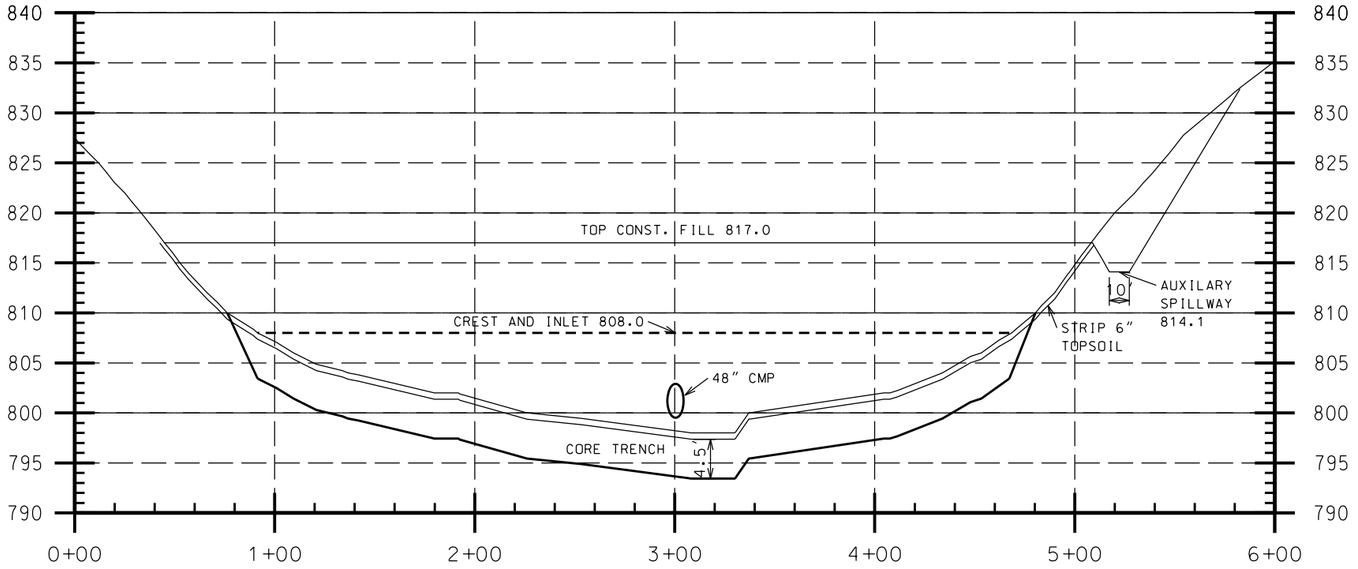
SITE 8 PLAN

SEDIMENT PONDS FOR:
HAWTHORN LAKE

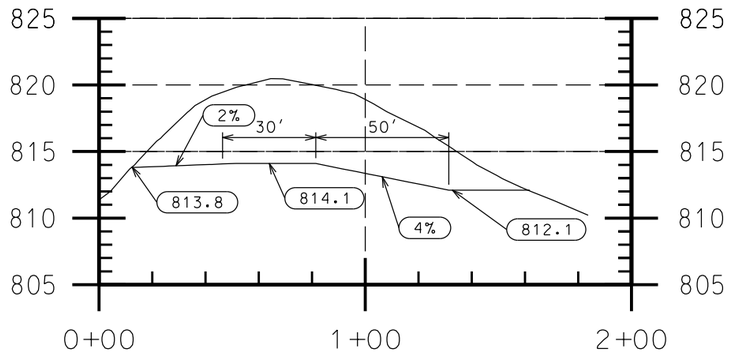
MAHASKA COUNTY

NO.	BY / DATE	REVISION

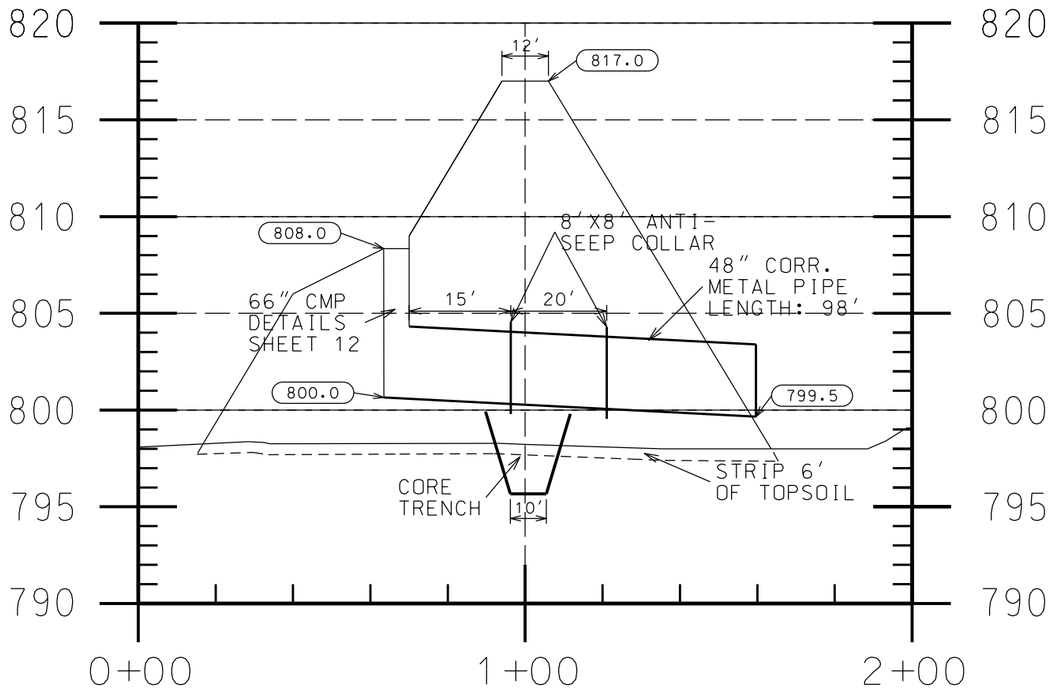
DRAWN BY:
PROJECT NUMBER: 13-05-62-02
CHK'D BY:
DATE: JUNE 2015
SHEET No: 8



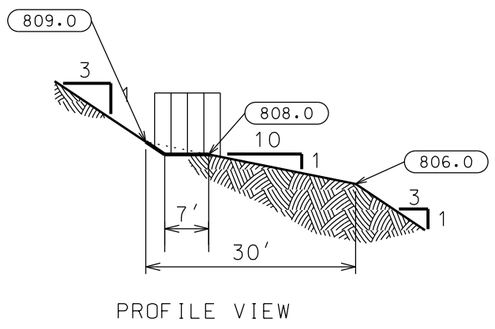
PROFILE OF DAM AT ℄



PROFILE OF AUX. SPILLWAY



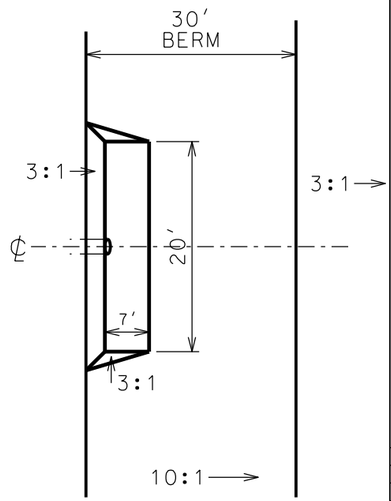
CROSS SECTION OF DAM AT PRINCIPLE SPILLWAY



PROFILE VIEW

SITE 8 - BERM @ INLET

NO SCALE



PLAN VIEW

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

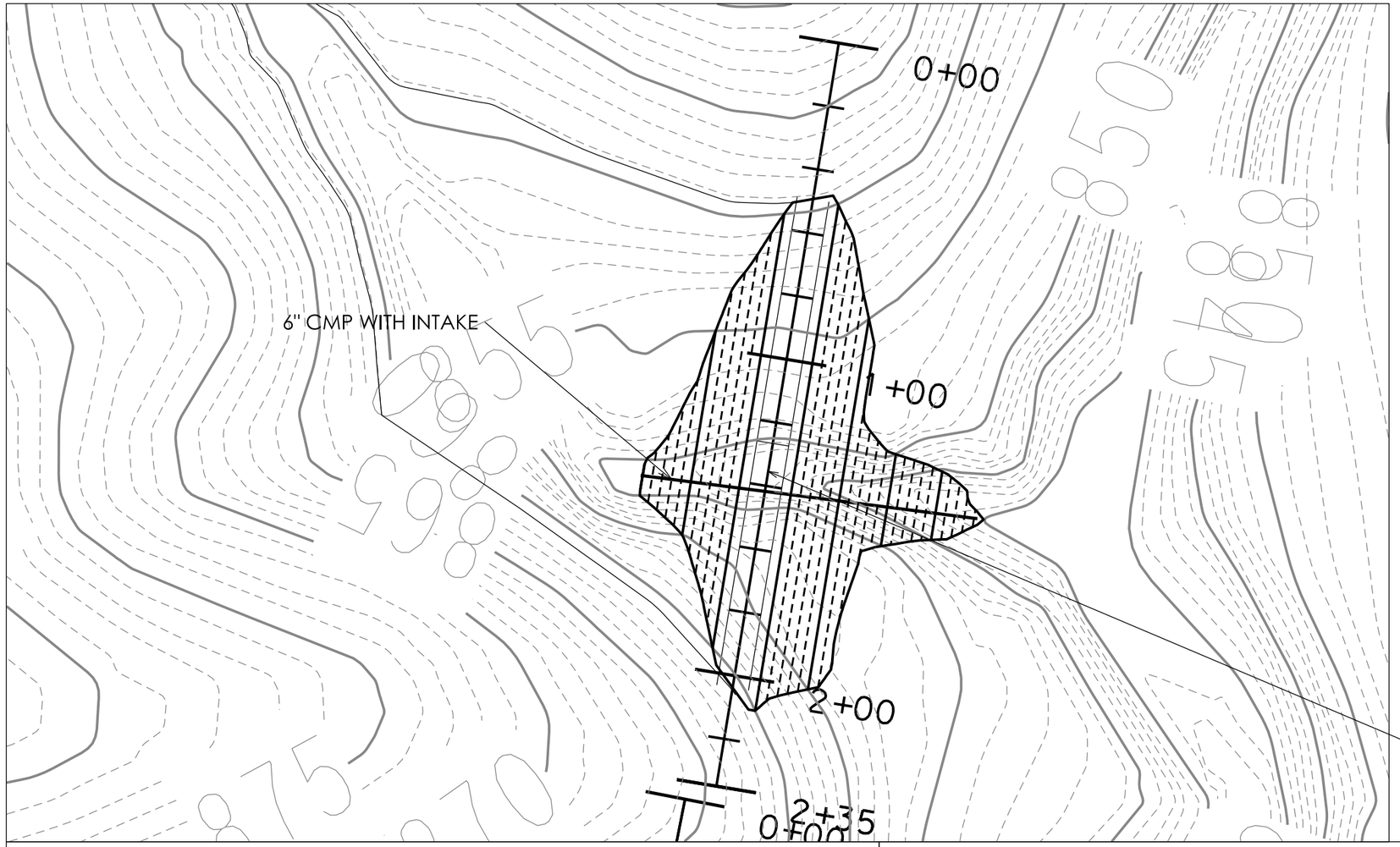
SITE 8 DETAILS

SEDIMENT PONDS FOR:
HAWTHORN LAKE

MAHASKA COUNTY

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 13-05-62-02
CHK'D BY:
DATE: JUNE 2015
SHEET No: 9



NORTH

Scale: 1"=40'

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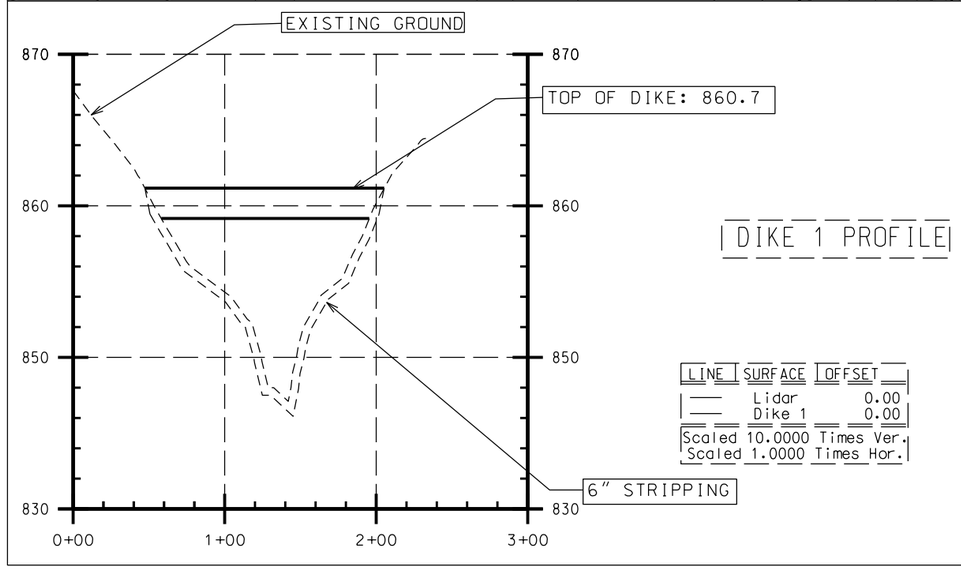


DIKE 1 PROFILE

LINE	SURFACE	OFFSET
	Lidar	0.00
	Dike 1	0.00

Scaled 10.0000 Times Ver.
Scaled 1.0000 Times Hor.

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

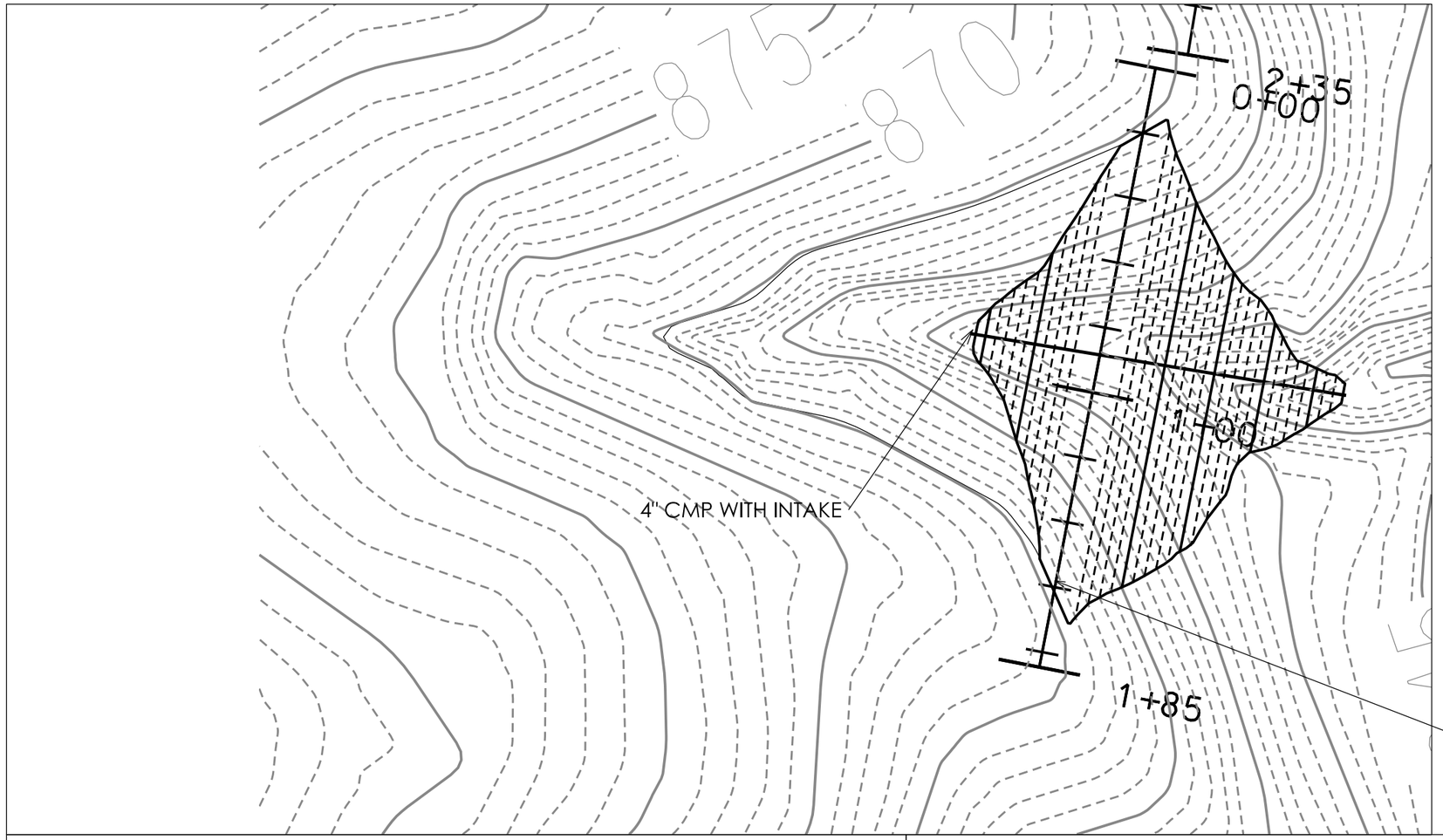
SITE F1

BMP'S CONSTRUCTION FOR:
HAWTHORN LAKE BMPS

MAHASKA COUNTY, IOWA

NO.	BY / DATE	REVISION

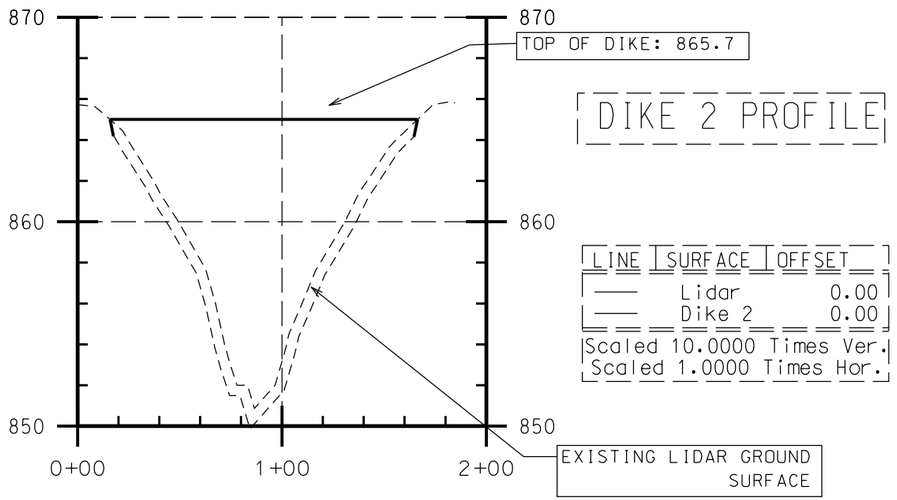
DRAWN BY: ES
PROJECT NUMBER: 14-05-62-02
CHK'D BY: DR
DATE: 09/30/2014
SHEET No: 10



NORTH

Scale: 1"=80'

0' 40' 80'



DIKE 2 PROFILE

LINE	SURFACE	OFFSET
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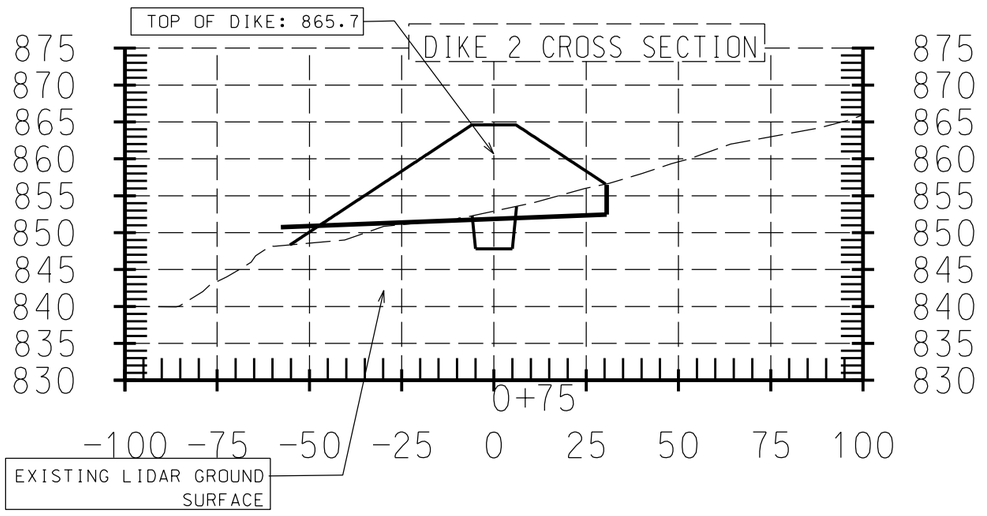
——	Dike 2	0.00

Scaled 10.0000 Times Ver.
Scaled 1.0000 Times Hor.



DIKE 2 CROSS SECTION

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

SITE F2

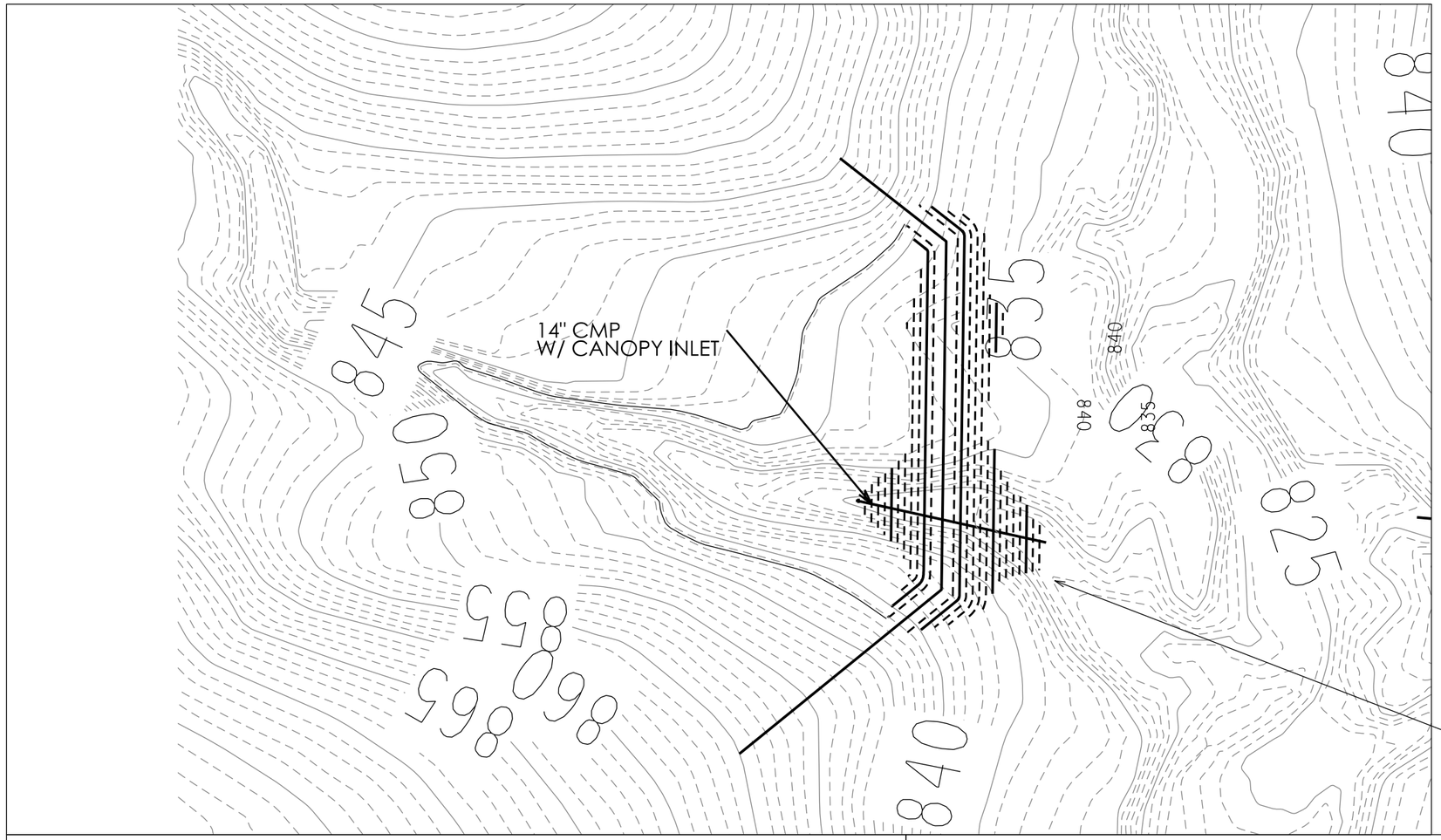
BMP'S CONSTRUCTION FOR:

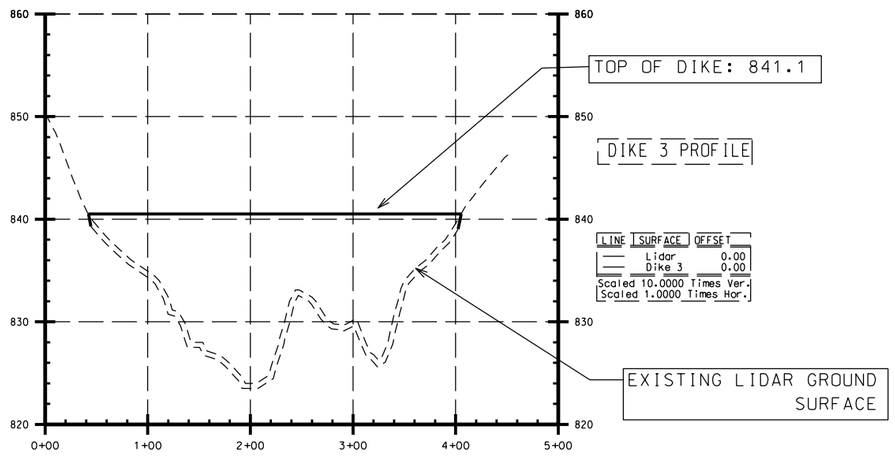
HAWTHORN LAKE BMPS

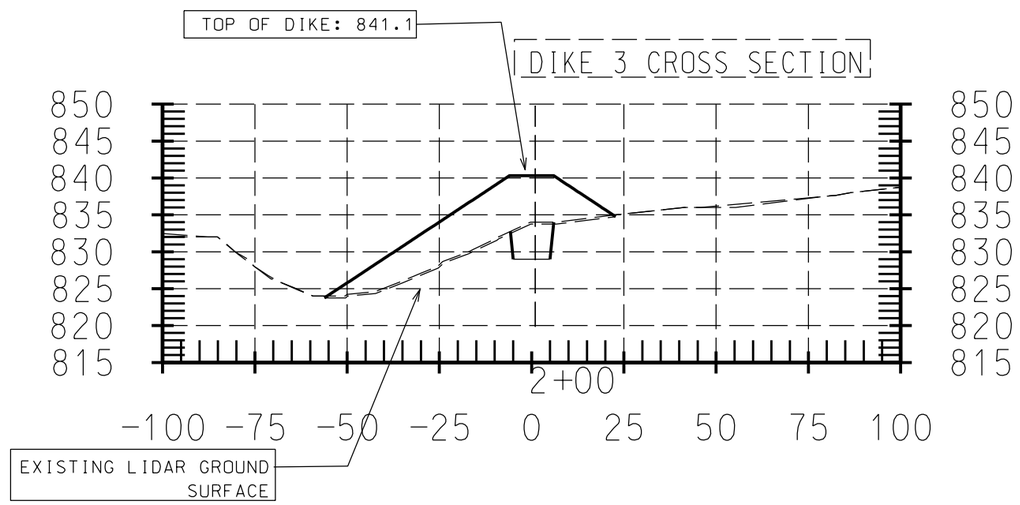
MAHASKA COUNTY, IOWA

NO	BY / DATE	REVISION

DRAWN BY: ES
PROJECT NUMBER: 14-05-62-02
CHK'D BY: DR
DATE: 09/30/2014
SHEET No: 11







CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

SITE F3

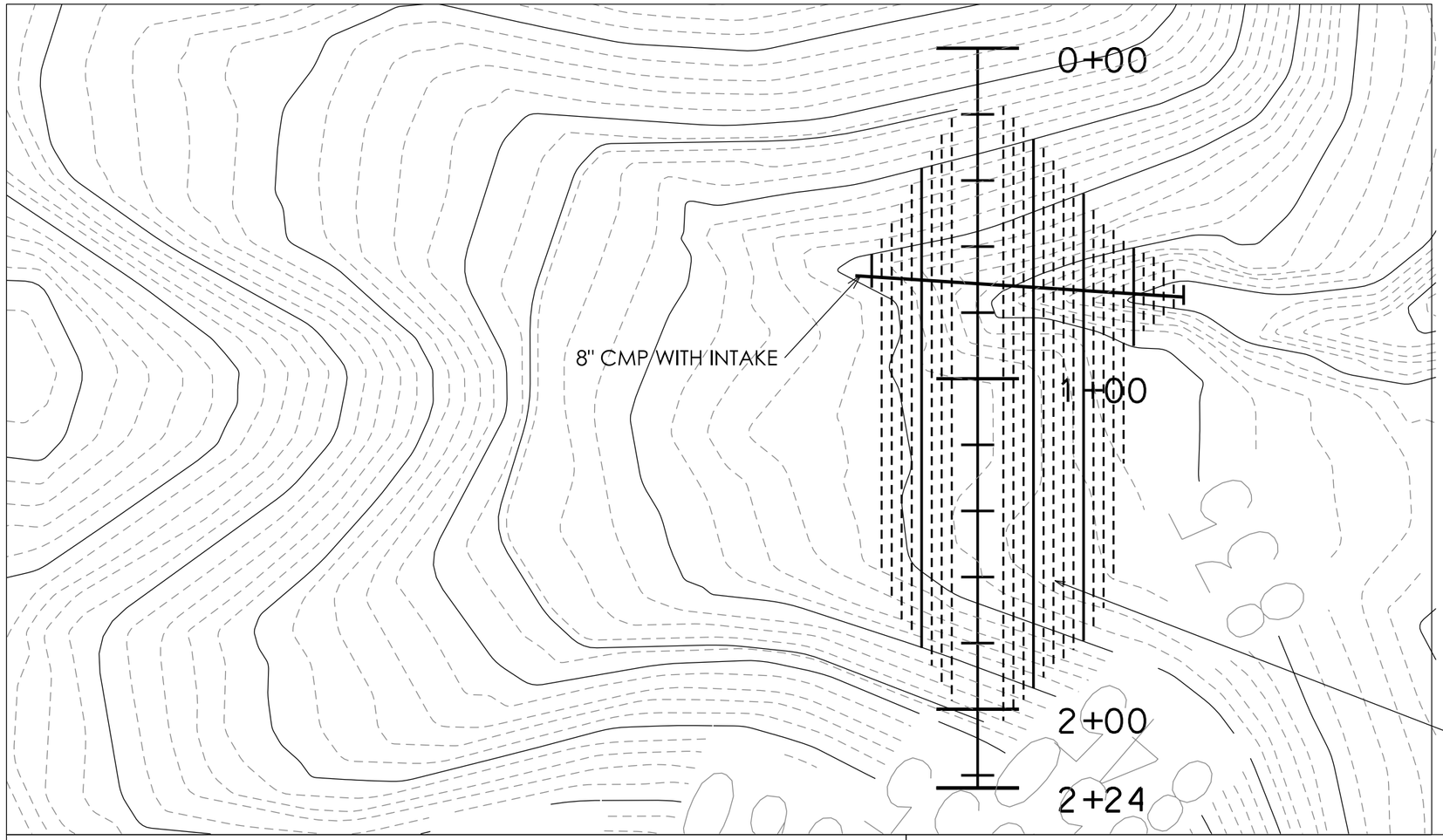
BMP'S CONSTRUCTION FOR:

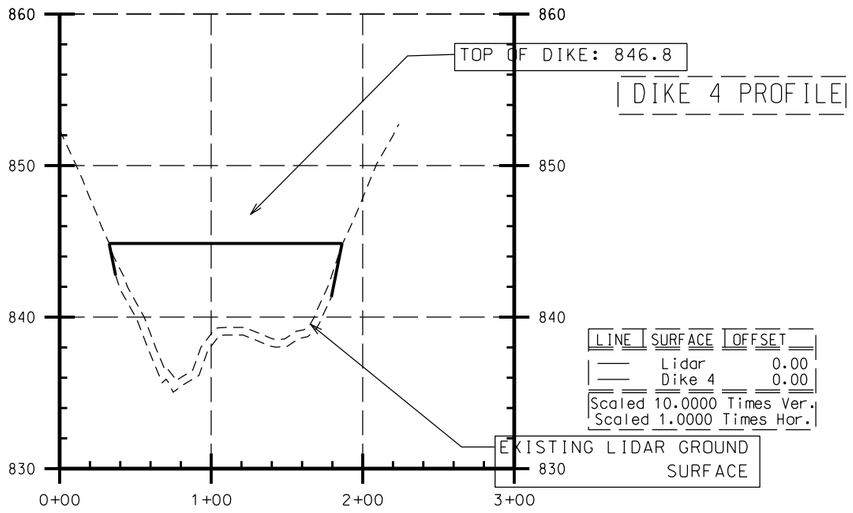
HAWTHORN LAKE BMPS

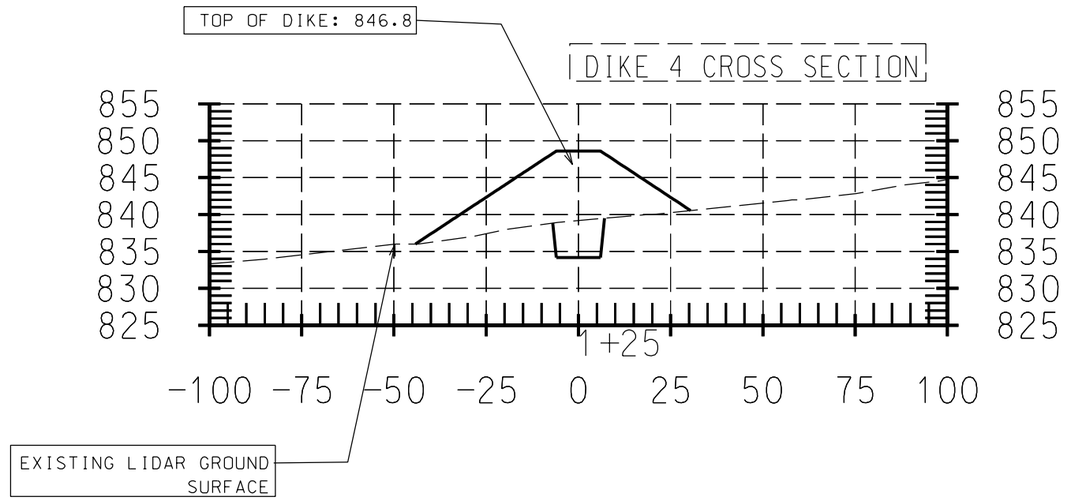
MAHASKA COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY: ES
PROJECT NUMBER: 14-05-62-02
CHK'D BY: DR
DATE: 09/30/2014
SHEET No: 12







CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

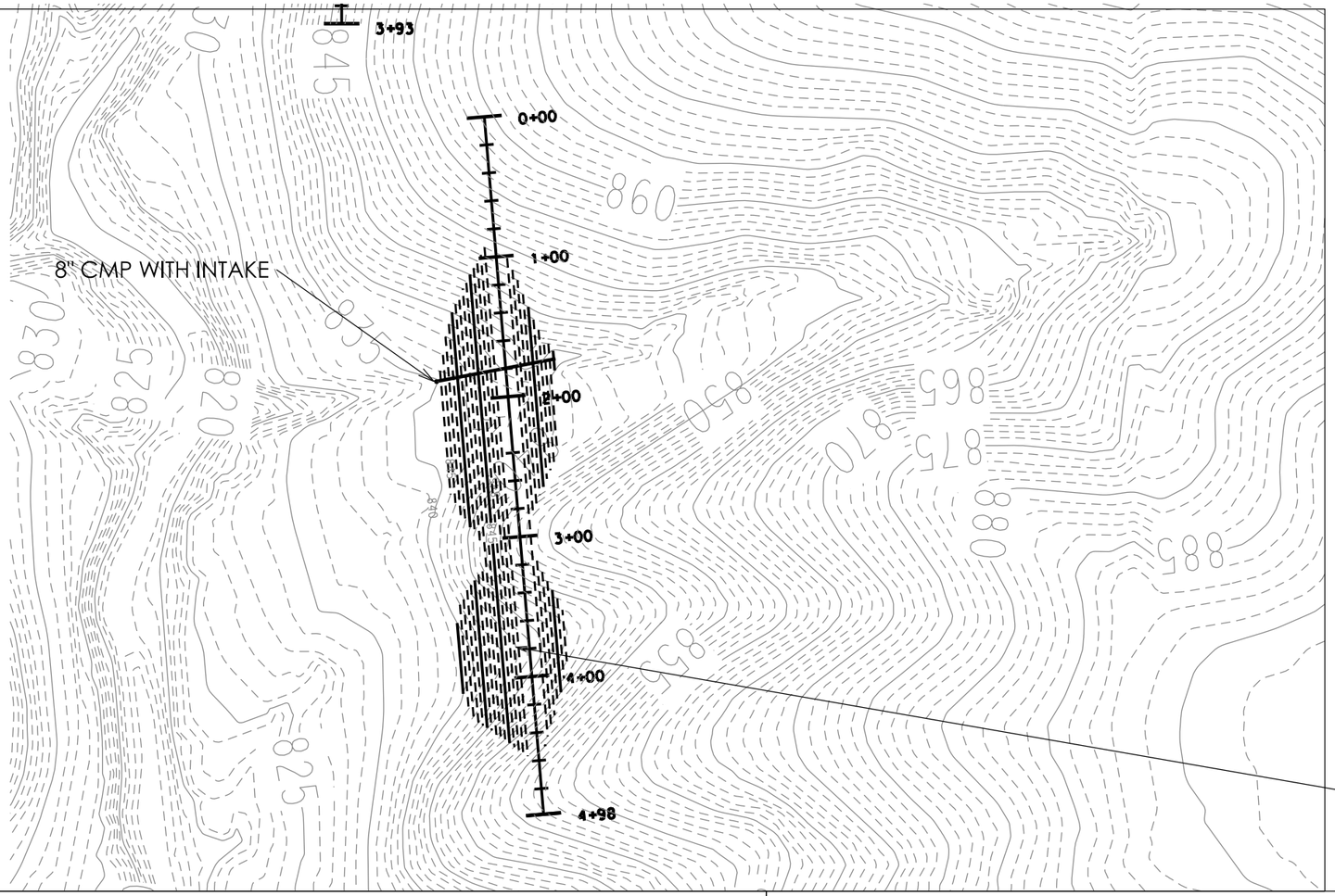
SITE F4

BMP'S CONSTRUCTION FOR:
HAWTHORN LAKE BMPS

MAHASKA COUNTY, IOWA

NO.	BY DATE	REVISION

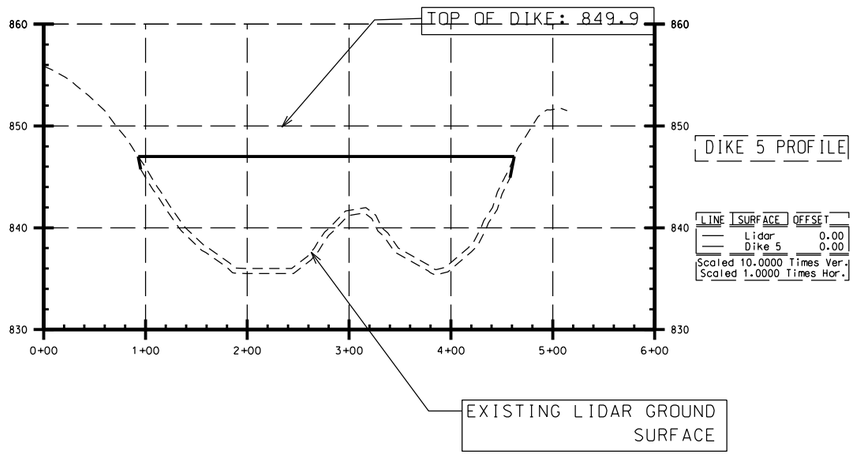
DRAWN BY: ES
PROJECT NUMBER: 14-05-62-02
CHK'D BY: DR
DATE: 09/30/2014
SHEET No: 13

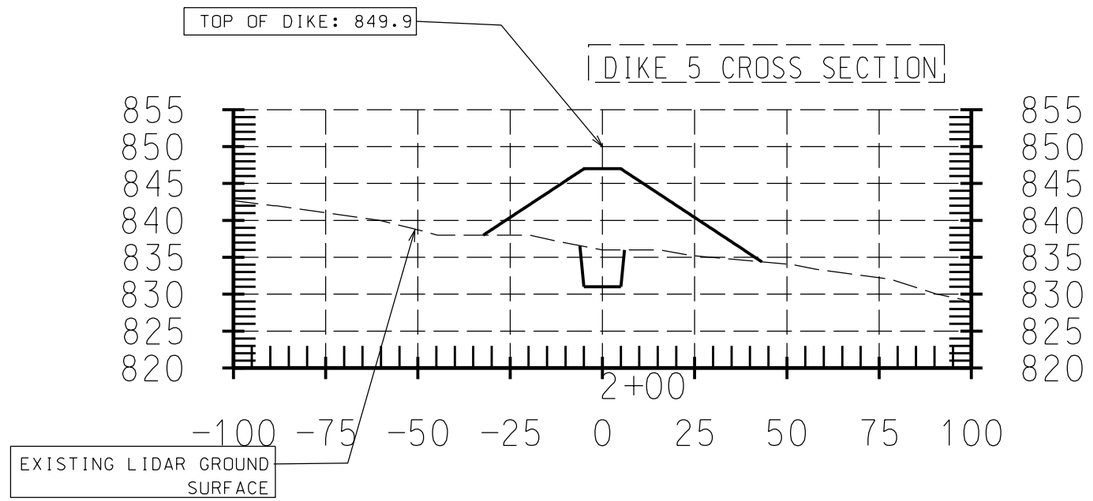


NORTH

Scale: 1"=100'

0' 100' 200'





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

SITE F5

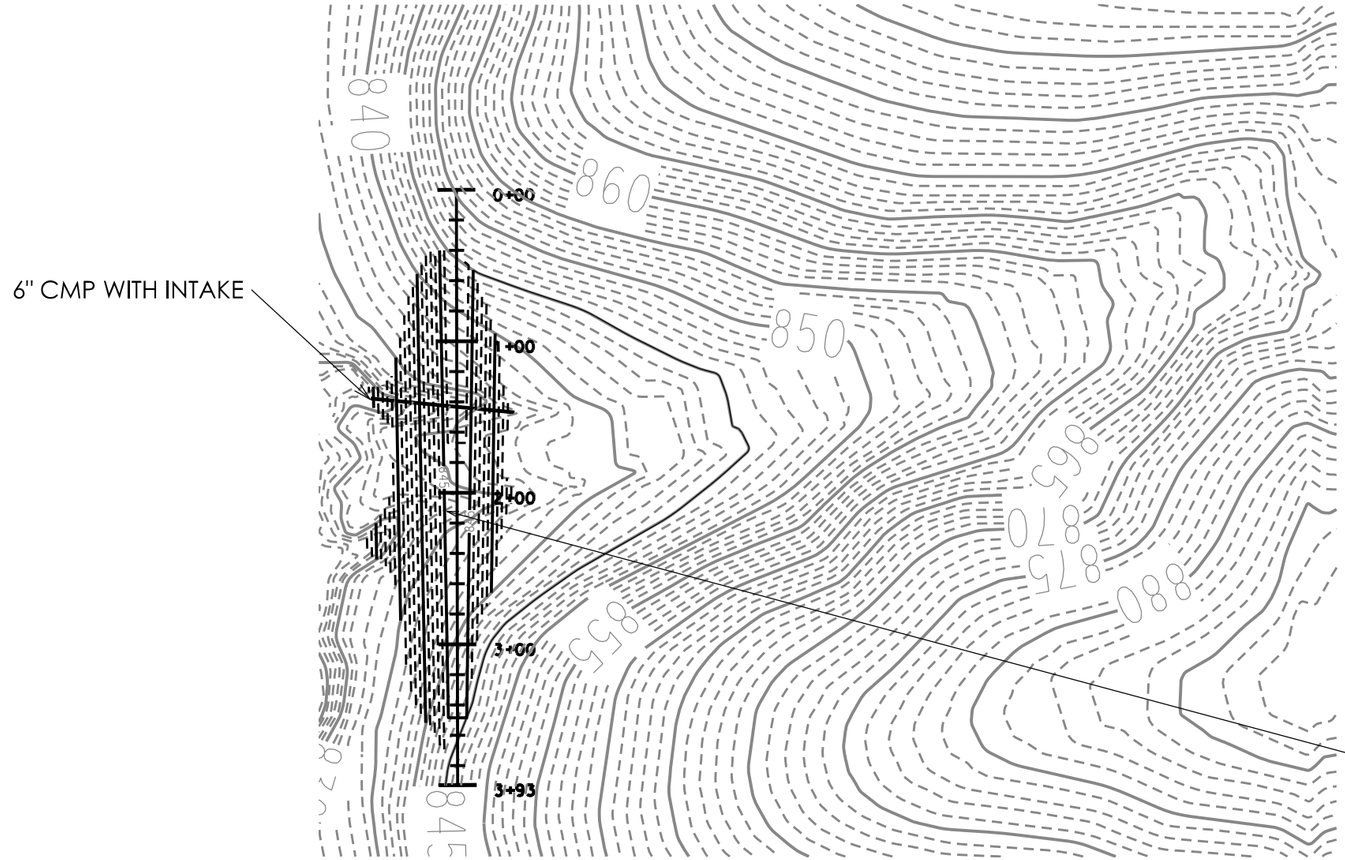
BMP'S CONSTRUCTION FOR:

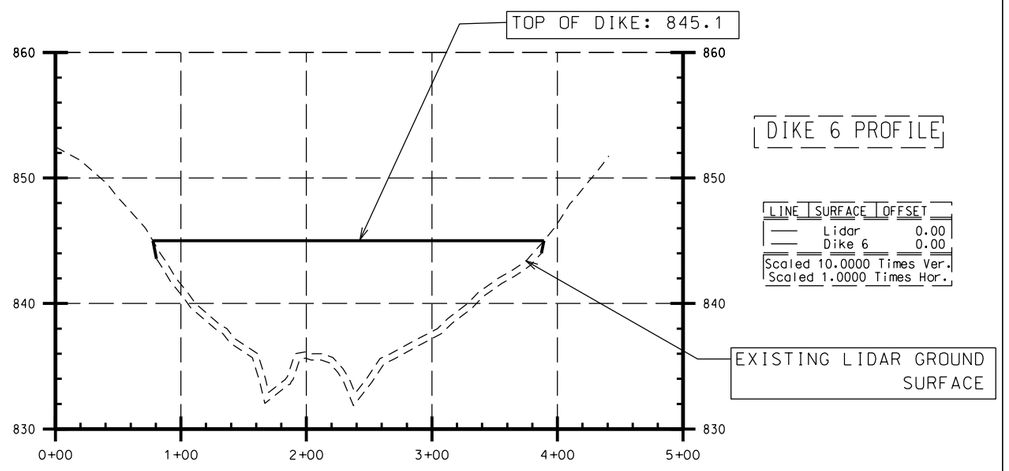
HAWTHORN LAKE BMPS

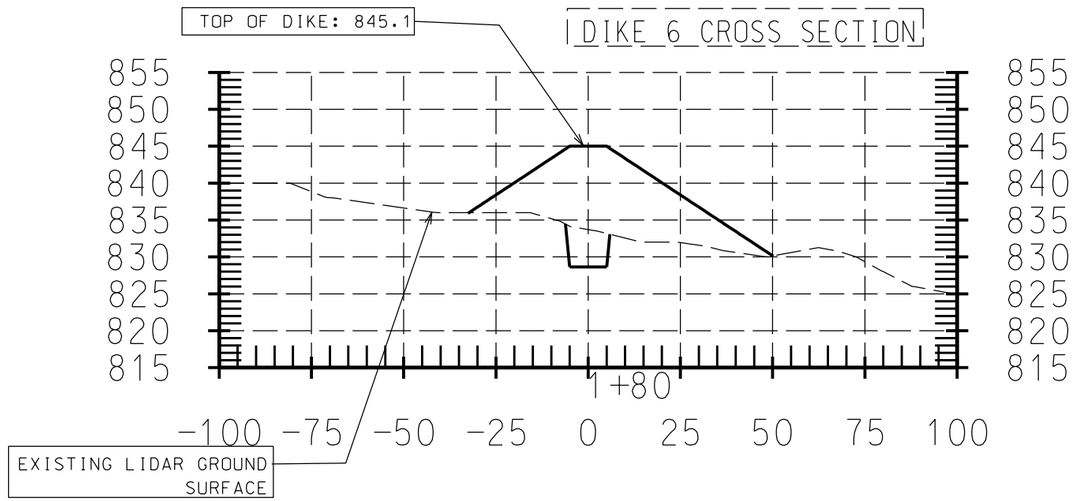
MAHASKA COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY: ES
PROJECT NUMBER: 14-05-62-02
CHK'D BY: DR
DATE: 09/30/2014
SHEET No: 14







CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

SITE F6

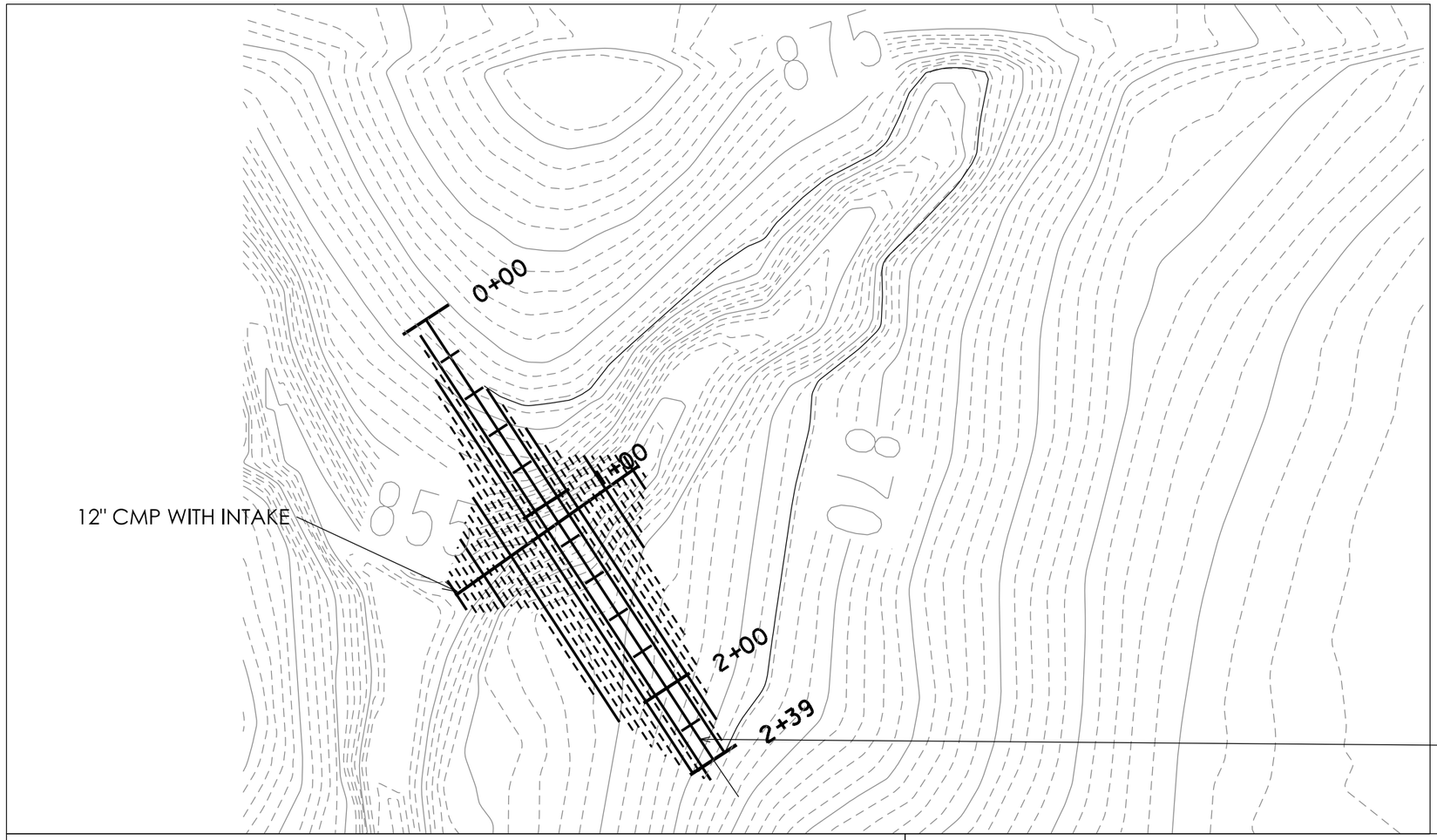
BMP'S CONSTRUCTION FOR:
HAWTHORN LAKE BMPS

MAHASKA COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY: ES
PROJECT NUMBER: 14-05-62-02
CHK'D BY: DR
DATE: 09/30/2014

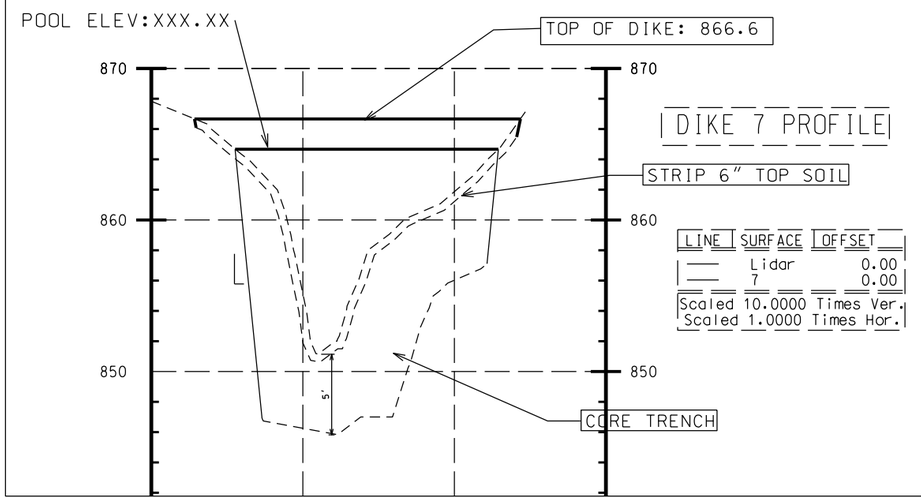
SHEET No: 15

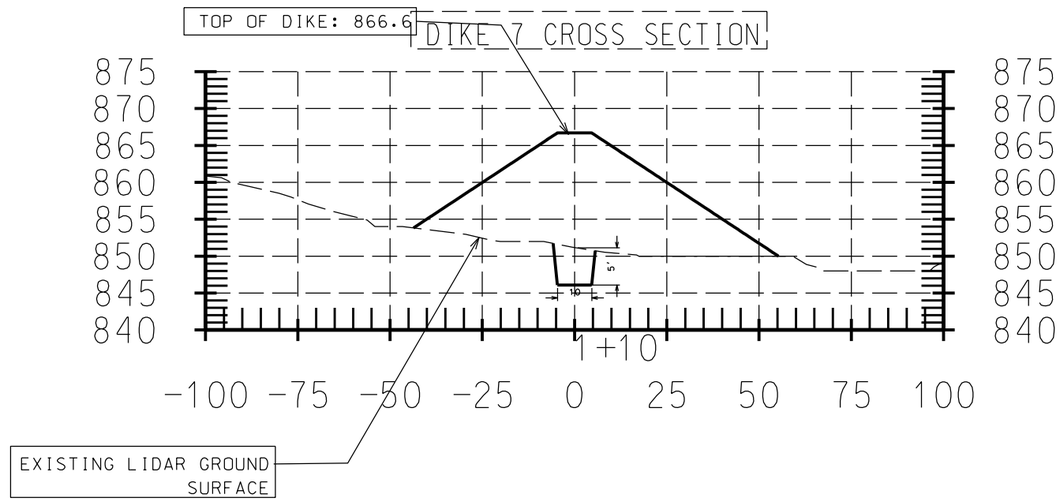


NORTH

Scale: 1"=60'

0' 60' 120'





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

DIKE 7

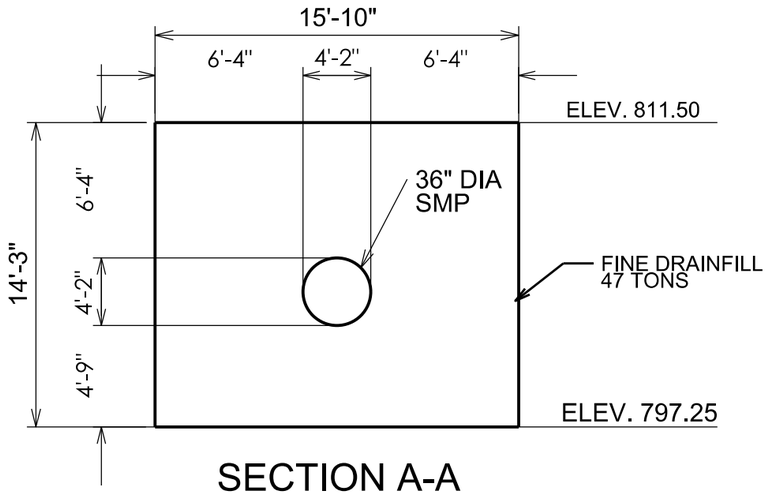
BMP'S CONSTRUCTION FOR:
HAWTHORN LAKE BMPS

MAHASKA COUNTY, IOWA

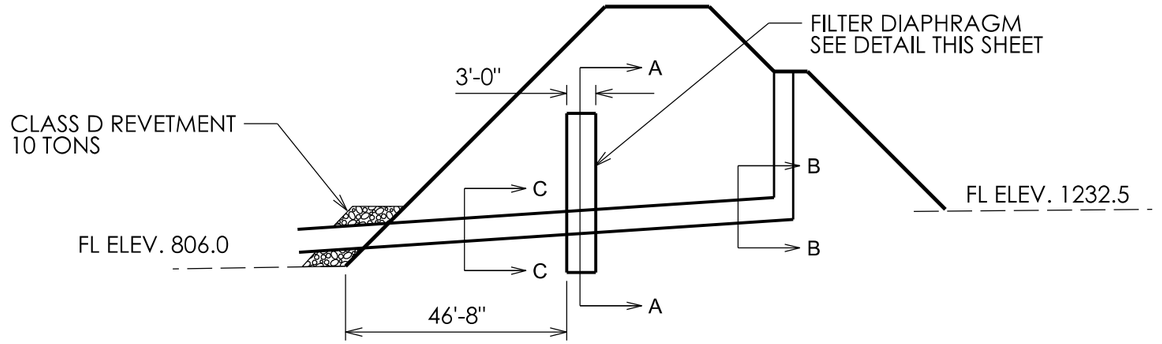
NO.	BY / DATE	REVISION

DRAWN BY: ES
PROJECT NUMBER: 14-05-62-02
CHK'D BY: D.R
DATE: 09/30/2014
SHEET No: 10

FILTER DIAPHRAGM



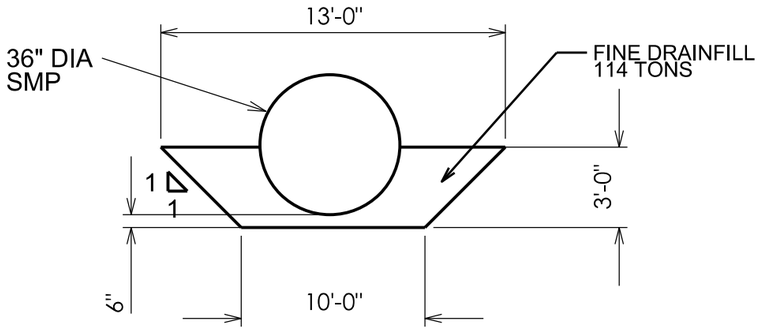
SECTION A-A



PRINCIPAL SPILLWAY SECTION

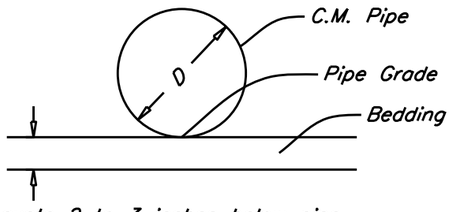
NOT TO SCALE

PIPE BEDDING
DOWNSTREAM OF FILTER DIAPHRAGM

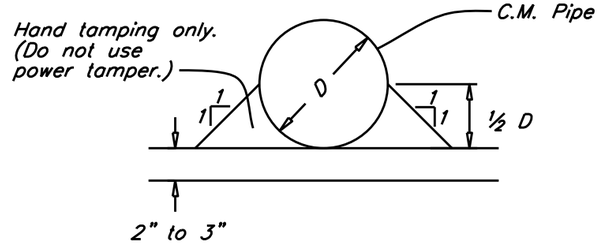


SECTION C-C

PIPE BEDDING
UPSTREAM OF FILTER DIAPHRAGM



Excavate 2 to 3 inches below pipe grade. Then backfill with damp friable soil free from lumps and raked or graded to a true plane before placing C.M. Pipe. No compaction of bedding is required.



Note
Begin backfill immediately after pipe has been placed.

SECTION B-B

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

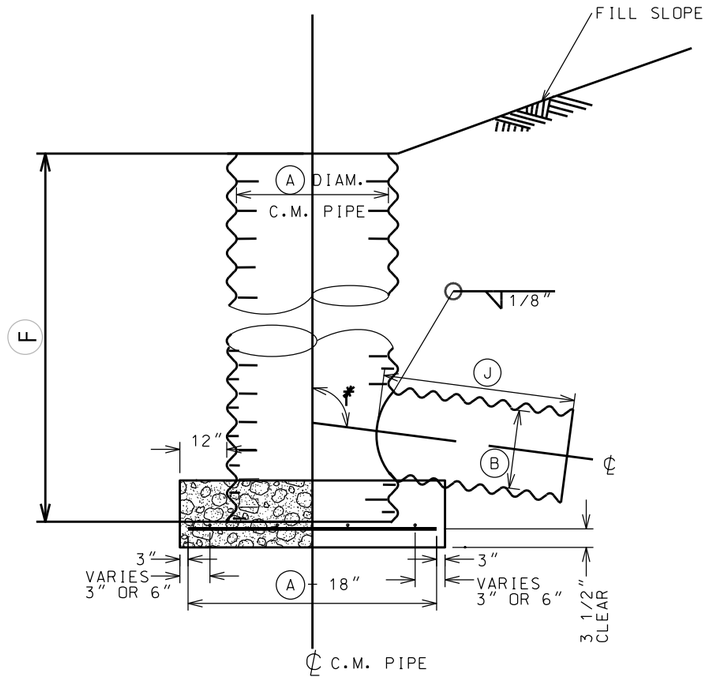
FILTER DIAPHRAGM

SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

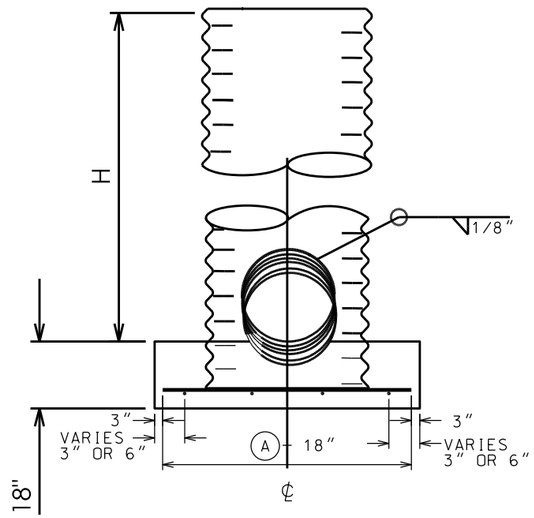
NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 13-05-62-02
CHK'D BY:
DATE: JUNE 2015

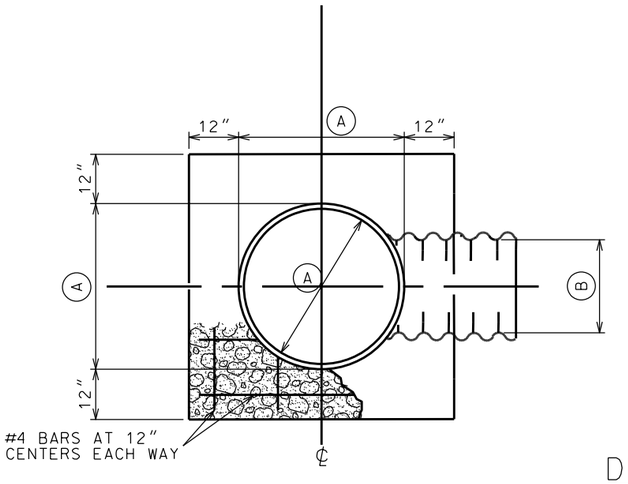
SHEET No: 17



SECTION ON CENTERLINE



REAR ELEVATION



PLAN

NOTES:
1. VERTICAL INLET TO BE SHOP FABRICATED. AFTER WELDING, DAMAGED COATINGS SHALL BE REPAIRED AS SPECIFICED IN CONSTRUCTION SPECIFICATION 51.

VERTICAL INLET BASE QUANTITIES

Dimension (in) Ⓐ	Concrete Cu.Yd.	Steel Reinforcement #4 Bar		
		Length Each Bar	Number of Bars	Total Weight Pounds
18"	0.68	3'-0"	8	16.0

DETAILS OF INLET
NO SCALE

IOWA DEPARTMENT OF NATURAL RESOURCES

TABLE–DIMENSIONS AND MATERIAL

	DIMENSIONS						
	F1	F2		F4	F5	F6	F7
Ⓐ	18"	18"		18"	18"	18"	18"
Ⓑ	6"	4"		8"	8"	6"	12"
Ⓕ	45"	59 1/2"		62"	62"	62"	50"
Ⓗ	36"	36"		36"	36"	36"	36"
Ⓙ	24"	24"		24"	24"	24"	24"
Inlet Elevation	853.6	856.4		841.0	840.0	836.0	854.0
Invert Elevation	851.0	852.6		837.0	836.0	832.0	851.0
Pipe Length	109'	118'		102'	91'	98'	105'
Outlet Elevation	850.0	851.0		831.0	836.0	829.0	850.0
Sheet Thickness for Ⓐ diam.	16 guage	16 guage		16 guage	16 guage	16 guage	16 guage
Corrugations for Ⓐ diam.	3" X 1"	3" X 1"		3" X 1"	3" X 1"	3" X 1"	3" X 1"
Sheet Thickness for Ⓑ diam.	16 guage	16 guage		16 guage	16 guage	16 guage	16 guage
Corrugations for Ⓑ diam.	3" X 1"	3" X 1"		3" X 1"	3" X 1"	3" X 1"	3" X 1"
* Degrees-Angles —*	—	—	—	—	—	—	—
Slope of Ⓑ diam. pipe in ft./ft.	0.009	0.014		0.059	0	0.031	0.019

CONSULTANT:

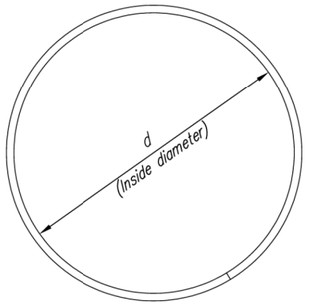
IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

DROP INLET DETAILS

SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

NO.	BY DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 13-05-62-02
CHK'D BY:
DATE: JUNE 2015
SHEET No: 18

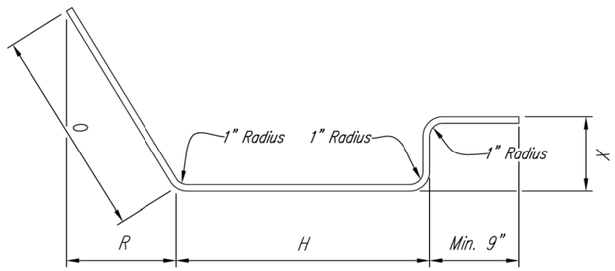


BENDING DIAGRAM FOR
ⓑ AND ⓒ RODS

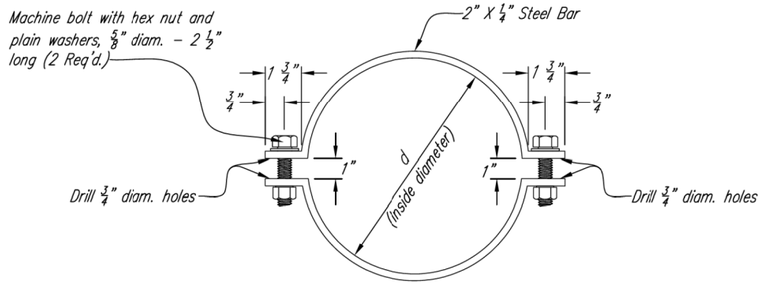
TABLE OF DIMENSIONS AND QUANTITIES
CORRUGATED METAL PIPE

PIPE DIAM. IN.	PIPE O.D. IN.	APPROX. WEIGHT LBS.	ⓐ ROD SIZE IN.	H IN.	R IN.	X IN.	O IN.	LENGTH IN.	NUMBER REQUIRED	N IN.	ⓑ ROD SIZE IN.	d IN.	LENGTH IN.	NUMBER REQUIRED	ⓒ ROD SIZE IN.	d IN.	LENGTH IN.	NUMBER REQUIRED	ⓓ ROD SIZE IN.	d IN.	LENGTH IN.	NUMBER REQUIRED
6	6 5/8	18.9	1/8	9	4	6	9 1/2	33 1/2	14	4 1/8	1/8	17 1/8	53 1/4	3	—	—	—	0	2 X 1/4	7 3/8	14 5/8	2
8	8 5/8	22.3	1/8	11	4	6	10 1/2	36 1/2	10	6 1/2	1/8	19 1/8	60 1/8	3	—	—	—	0	2 X 1/4	9 3/8	17 3/4	2
10	11 1/8	24.7	1/8	13	5 1/2	6	12	40	10	7 1/8	1/8	21 1/8	66 3/8	3	—	—	—	0	2 X 1/4	11 3/8	20 7/8	2
12	13 1/8	27.1	1/8	15	5 1/2	6	13	43	10	7 7/8	1/8	23 5/8	74 1/4	3	—	—	—	0	2 X 1/4	13 7/8	24 3/4	2
15	16 1/8	48.4	1/2	18	6	6	14 1/2	47 1/2	10	8 7/8	1/2	26 1/8	82 1/8	3	1/2	11	34 1/2	1	2 X 1/4	17 1/8	29 7/8	2
18	19 1/8	52.4	1/2	22	8	9	19 1/2	59 1/2	12	9 3/4	1/2	35 1/8	110 3/8	3	1/2	14	44	1	2 X 1/4	20 1/8	34 5/8	2
21	22 1/8	69.5	5/8	25	8 1/2	9	21	64	12	10 1/2	5/8	37 5/8	118 1/4	3	5/8	17	53 3/8	1	2 X 1/4	23 3/8	39 3/4	2

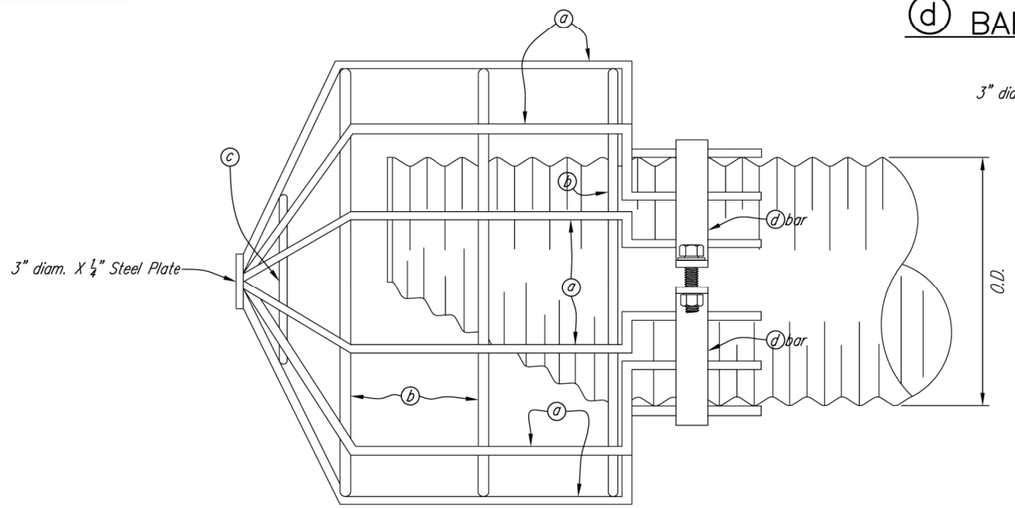
Note: Weld ⓑ and ⓒ rods and ⓓ bars to ⓐ rods and weld ⓐ rods to 3" diam. Steel Plate.
16 Gage, 1/4" corrugations on 6" – 10" pipe.
16 Gage, 1/2" corrugations on 12" – 21" pipe.
Rod and bar dimensions calculated from inside diameter and rounded to the nearest 1/8 inch.



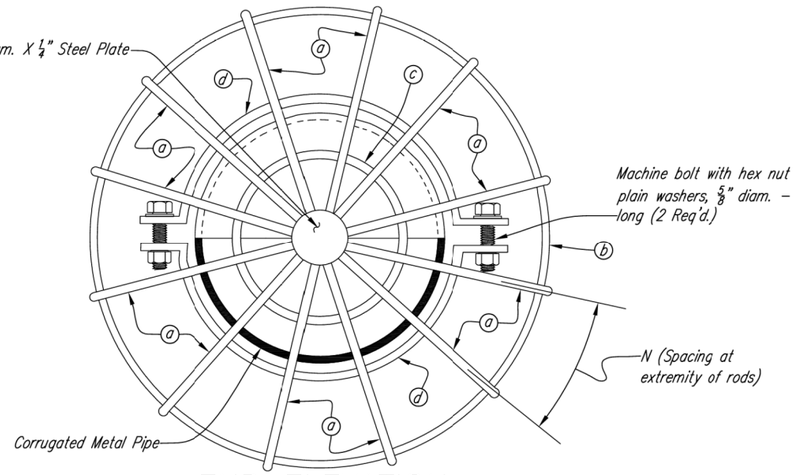
BENDING DIAGRAM FOR
ⓐ RODS



BENDING DIAGRAM FOR
ⓓ BARS



ELEVATION



END ELEVATION

Date 6/2005
Designed STANDARD
Drawn
Checked
Approved Mark J. Jensen 6/2005

CONSULTANT:

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

TRASH RACK FOR CORRUGATED METAL PIPE CANOPY INLET

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

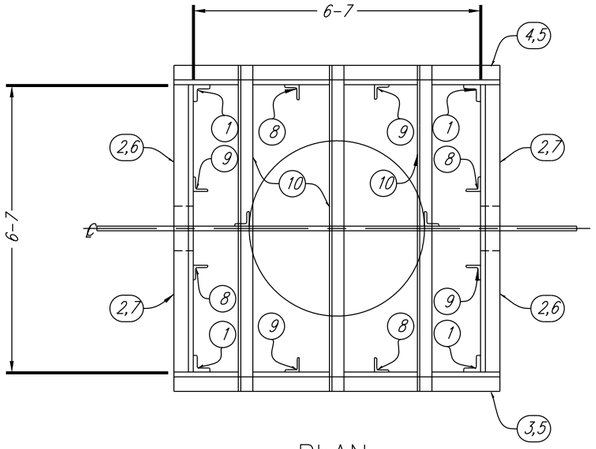
File No. 166b.dwg
Drawing No.
Sheet of

TRASH RACK DETAILS

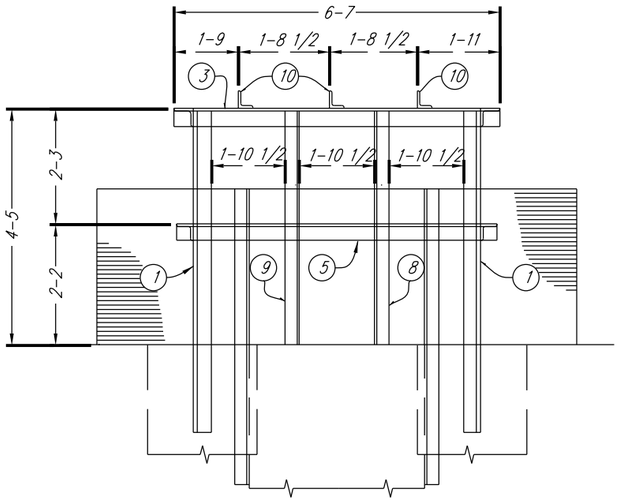
SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

NO.	BY DATE	REVISION

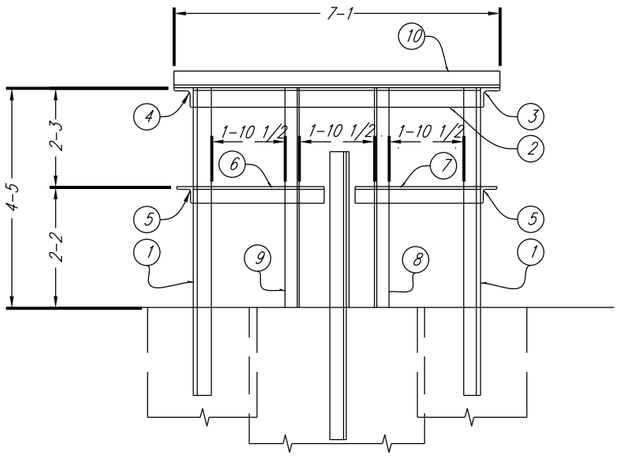
DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 13-05-62-02
DATE: JUNE 2015
SHEET No: 19



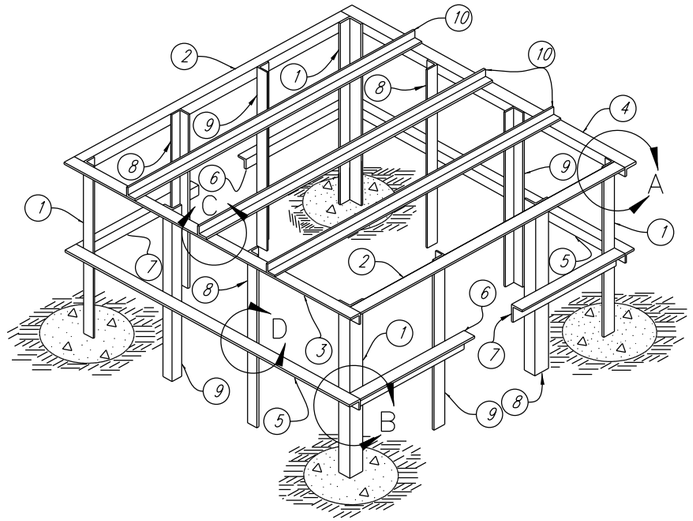
PLAN



RIGHT SIDE ELEVATION



UPSTREAM ELEVATION



ISOMETRIC VIEW

Not to Scale

BILL OF MATERIALS			LENGTHS
MARK	QUAN.	ITEM	66" DIAM.
1	4	L's 3" x 3" x 5/16"	5-5
2	2	"	6-7
3	1	"	7-1
4	1	"	7-1
5	2	L's 2" x 2" x 3/16"	6-4
6	2	"	3-0
7	2	"	3-0
8	4	"	4-5
9	4	"	4-5
10	3	"	7-0
	46	1/2" Ø Machine bolts with lock washers and hex. nuts	0-1 1/2
		Concrete_ _ _ _ _ _ _ _ _ _ _ _ _ _ _0.6 Cu. Yd.	

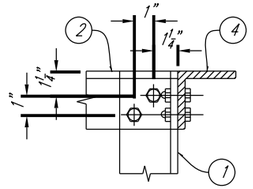
Construction Notes:

Structure is symmetrical about ℄.

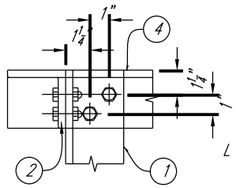
Trash Rock to be fabricated of steel angles, bolted together with 1/2" diam. machine bolts.

All cuts shall be saw cuts.

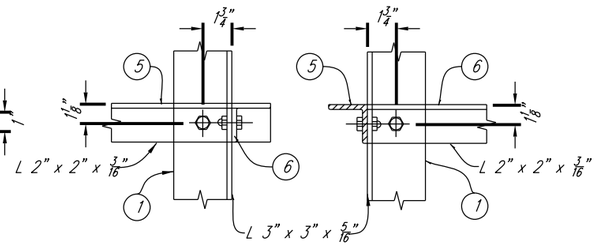
All holes for bolts shall be 1/16" larger than bolt diam.



FRONT ELEV.

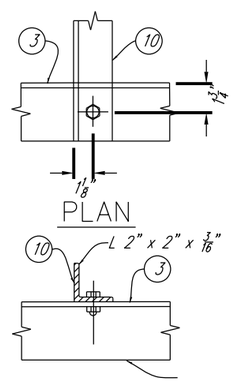


SIDE ELEV.



SIDE ELEV. FRONT ELEV.

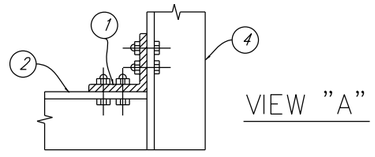
VIEW "B"



PLAN

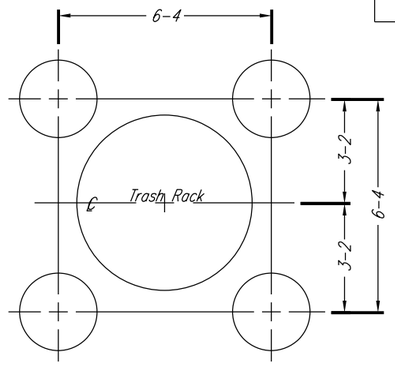
SIDE ELEV.

VIEW "C"

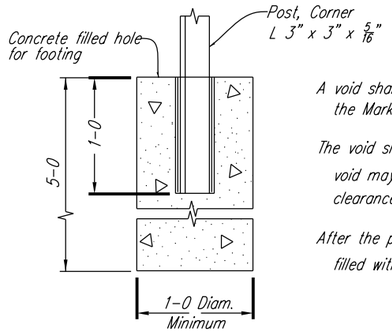


PLAN

VIEW "A"



CONCRETE FOOTING LAYOUT



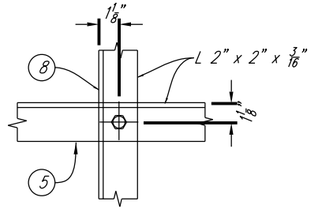
FOOTING DETAIL

A void shall be formed in the concrete footings to receive the Mark (1) posts.

The void shall be one foot deep. The cross section of the void may be triangular, rectangular or circular with 1/4" clearance between the concrete and the Mark (1) posts.

After the posts are installed, the remaining voids shall be filled with bituminous mastic.

Not to Scale



SIDE ELEV.

VIEW "D"

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

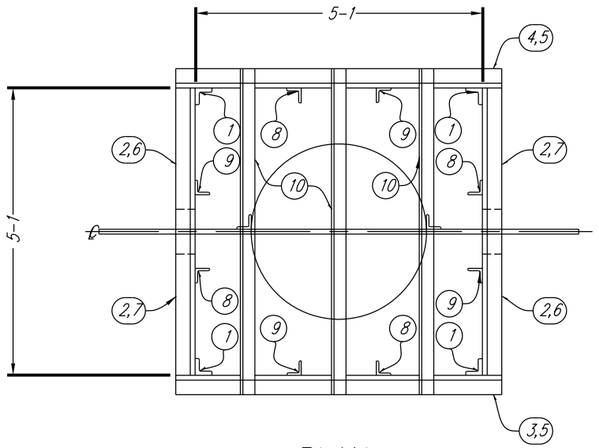
66" RACK DETAILS

SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

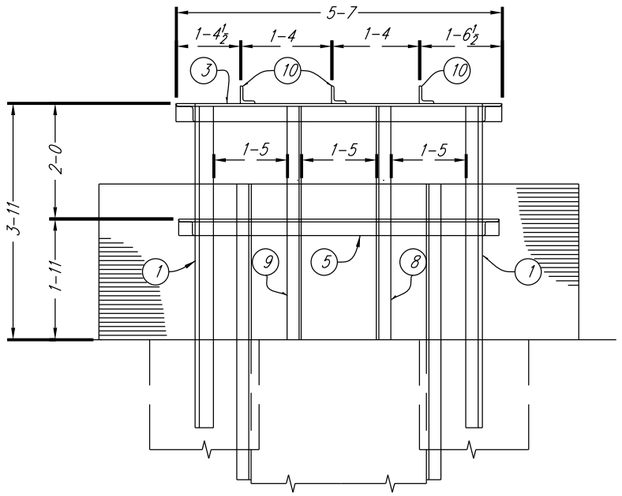
NO.	BY / DATE	REVISION

DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 13-05-62-02
DATE: JUNE 2015

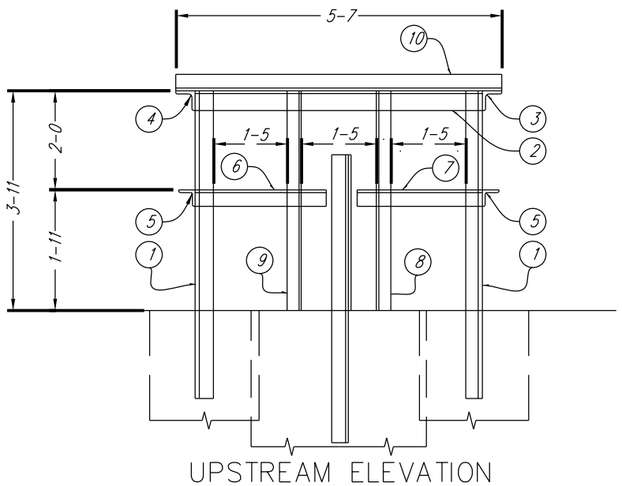
SHEET No: **20**



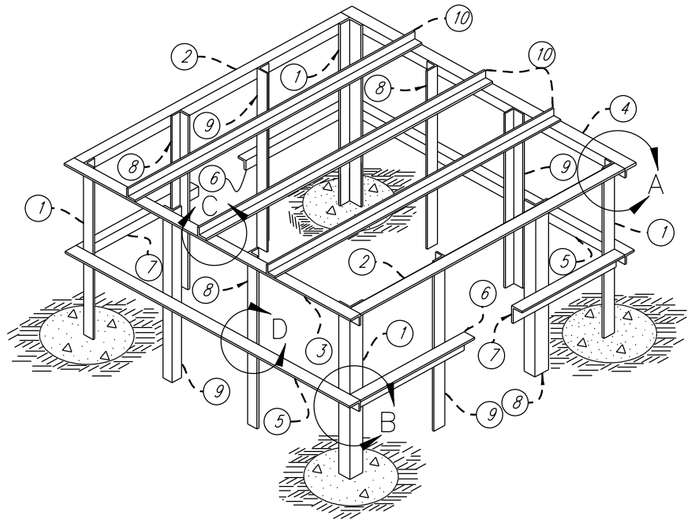
PLAN



RIGHT SIDE ELEVATION



UPSTREAM ELEVATION



ISOMETRIC VIEW

Not to Scale

BILL OF MATERIALS			LENGTHS
MARK	QUAN.	ITEM	48" DIAM.
1	4	L's 3" x 3" x 5/16"	4-11
2	2	"	5-1
3	1	"	5-7
4	1	"	5-7
5	2	L's 2" x 2" x 3/16"	5-5
6	2	"	2-3
7	2	"	2-3
8	4	"	3-11
9	4	"	3-11
10	3	"	5-7
	46	½" Ø Machine bolts with lock washers and hex. nuts	0-1½
		Concrete_ _ _ _ _ _ _ _ _ _ _ _ _ _0.6 Cu. Yd.	

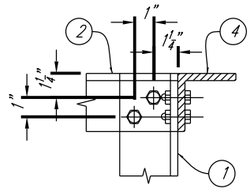
Construction Notes:

Structure is symmetrical about ℄.

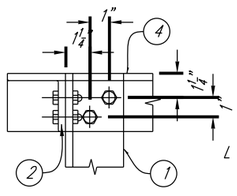
Trash Rack to be fabricated of steel angles, bolted together with ½" diam. machine bolts.

All cuts shall be saw cuts.

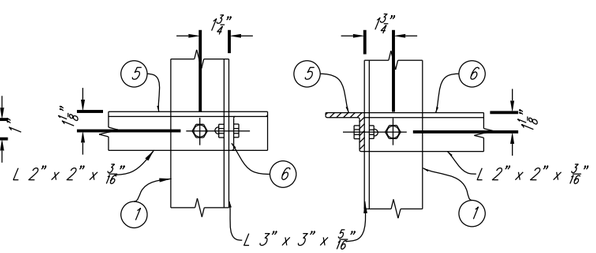
All holes for bolts shall be 1/16" larger than bolt diam.



FRONT ELEV.

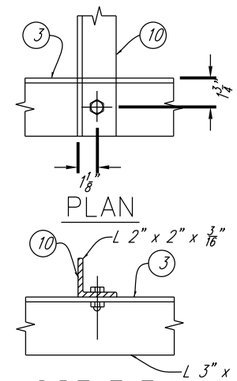


SIDE ELEV.



SIDE ELEV. FRONT ELEV.

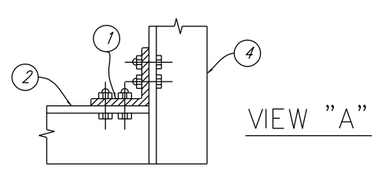
VIEW "B"



PLAN

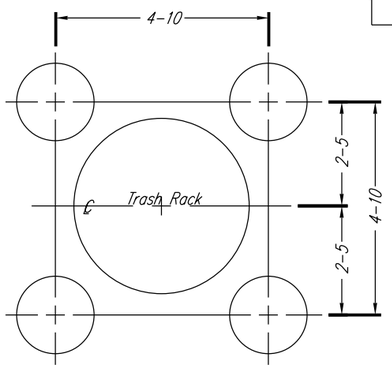
SIDE ELEV.

VIEW "C"

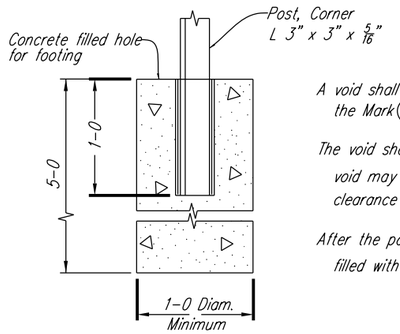


VIEW "A"

PLAN



CONCRETE FOOTING LAYOUT



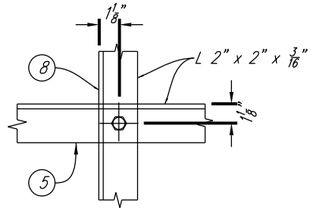
FOOTING DETAIL

A void shall be formed in the concrete footings to receive the Mark (1) posts.

The void shall be one foot deep. The cross section of the void may be triangular, rectangular or circular with ¼" clearance between the concrete and the Mark (1) posts.

After the posts are installed, the remaining voids shall be filled with bituminous mastic.

Not to Scale



SIDE ELEV.

VIEW "D"

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

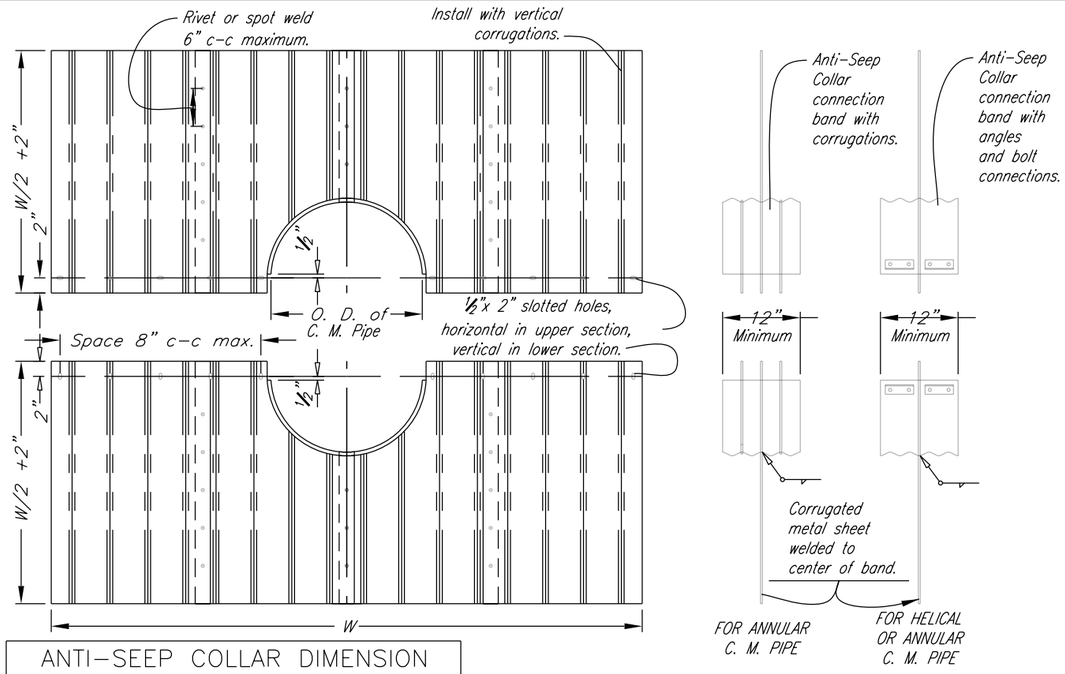
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

48" RACK DETAILS

SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

NO.	BY DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 13-05-62-02
CHK'D BY:
DATE: JUNE 2015
SHEET No:



ANTI-SEEP COLLAR DIMENSION TABLE		
Pipe Diam.	No. Used	W (inches)

*Anti-Seep Collar dimensions shown may be increased to allow fabrication from standard size sheets.

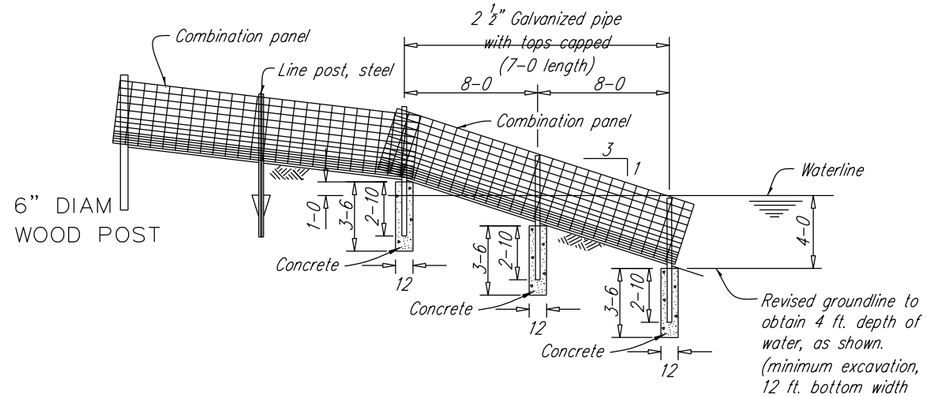
Anti-Seep Collars for 18" to 48" corrugated metal pipe to be connected with two ½" diameter rods with tank lugs.

Anti-Seep Collars for 8" to 15" corrugated metal pipe to be connected with angles riveted or spot welded to band and connected with bolts.

Materials and Fabrication Requirements

1. Materials and fabrication shall be in accordance with Construction Specification 51A or IA 51 and the following:
   - A. Sheet material for the anti-seep collar and connection bands shall conform to the requirements specified for the pipe material itself.
   - B. The anti-seep collar sheets shall be corrugated as specified for the spillway pipe.
   - C. The anti-seep collar and connection bands shall be of equal thickness. They may be the next thickness lighter than that of the pipe to which attached, but not lighter than nominal 16 gage nor heavier than nominal 12 gage.
   - D. Metal sheets shall be fastened together to form anti-seep collar halves with either rivets or resistance spot welds as specified for fabrication of pipe; and as shown on this drawing.
   - E. Anti-seep collar connection bands shall be as shown on this drawing. Bands with annular corrugations shall be corrugated as specified for annular pipe. Bands with helical corrugations shall be corrugated as specified for helical pipe.
   - F. Connection angles and connection bolts shall be as specified for coupling bands except,
     - (1) The length of each angle shall be ½ the band width minus 1".
     - (2) 4 bolts (2 each side) are required,
     - (3) Integral formed flanges instead of angles may be used on 6", 8", 10" and 12" diameter helical pipe anti-seep collar connection bands.
   - G. Connection rods with lugs shall be used where specified on this drawing. The rods shall be made from structural quality steel and shall be galvanized. The lug may be standard tank type or other commercial type.
   - H. The anti-seep collar halves shall be welded to the connection band as shown on this drawing. All welds shall be treated as specified for "Repair of Damaged Coatings".
   - I. The anti-seep collar halves shall be slotted as shown on this drawing for connecting together with ⅜" diameter bolts. The bolts shall be of quality equal to the connection bolts and shall be galvanized or cadmium plated.
2. Shop assemble match and mark anti-seep collar halves.
3. Apply heavy coating of bituminous mastic or ⅛" x 7" neoprene gasket between anti-seep collar halves to produce watertight joints. Bituminous mastic shall also be applied between the connecting band and pipe to produce a watertight connection.

ANTI-SEEP COLLAR FOR 6" TO 48" DIA. C. M. PIPE



CATTLE BARRIER DETAIL

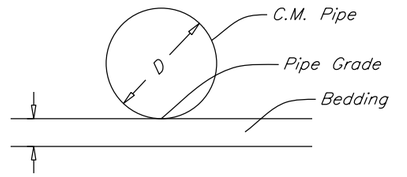
(EXTENDING INTO WATER)

Notes:

a. Combination panel shall be tied loosely to each post with loops of No. 9 galvanized smooth wire near top, center, and bottom of combination panel.

b. Several feet may need to be cut off panel extending into water to obtain proper fit.

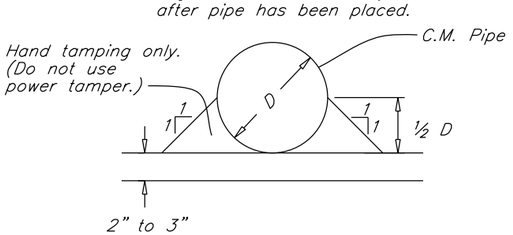
c. Combination panels shall be ¼" diameter galvanized steel wires welded together to form a wire mesh panel 52 inches high by 16 feet long. From bottom to top, the horizontal wires shall be spaced approximately as follows: 5 spaces at 2", 3 spaces at 4", and 5 spaces at 6".



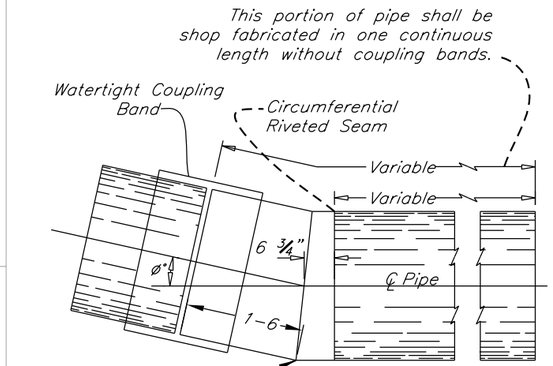
Excavate 2 to 3 inches below pipe grade. Then backfill with damp friable soil free from lumps and raked or graded to a true plane before placing C.M. Pipe. No compaction of bedding is required.

CORRUGATED OR SMOOTH METAL PIPE PRINCIPAL SPILLWAY BEDDING DETAIL

Note
Begin backfill immediately after pipe has been placed.



CORRUGATED OR SMOOTH METAL PIPE PRINCIPAL SPILLWAY BACKFILL DETAIL



Note: For ø, See General Layout Sheet

DETAILS OF C. M. PIPE ELBOW

(SECTION ON CENTERLINE)

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

DNR

DETAILS

SEDIMENT PONDS FOR:
HAWTHORN LAKE
MAHASKA COUNTY

NO.	BY / DATE	REVISION

DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 13-05-62-02
DATE: JUNE 2015

SHEET No:
22