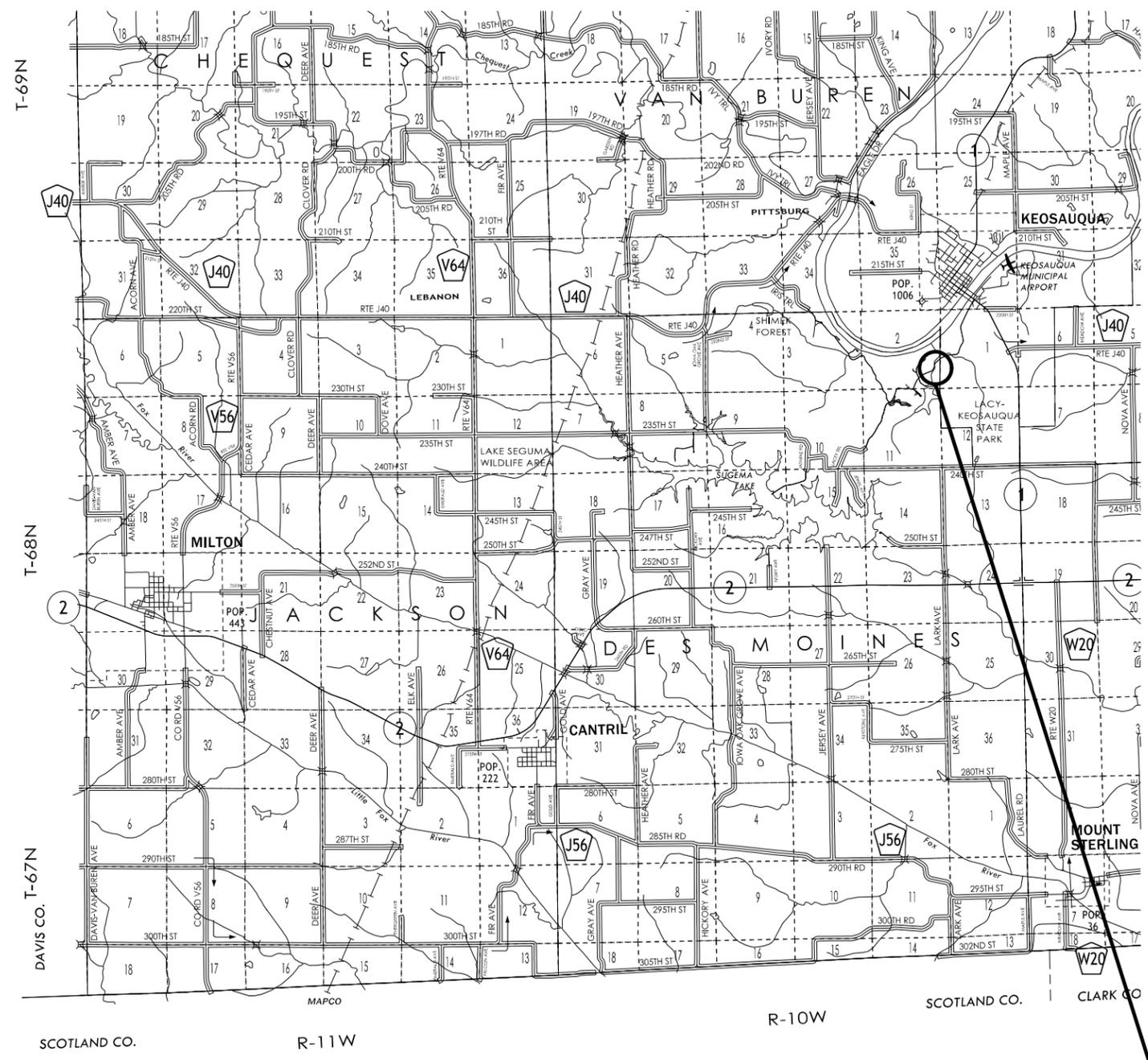
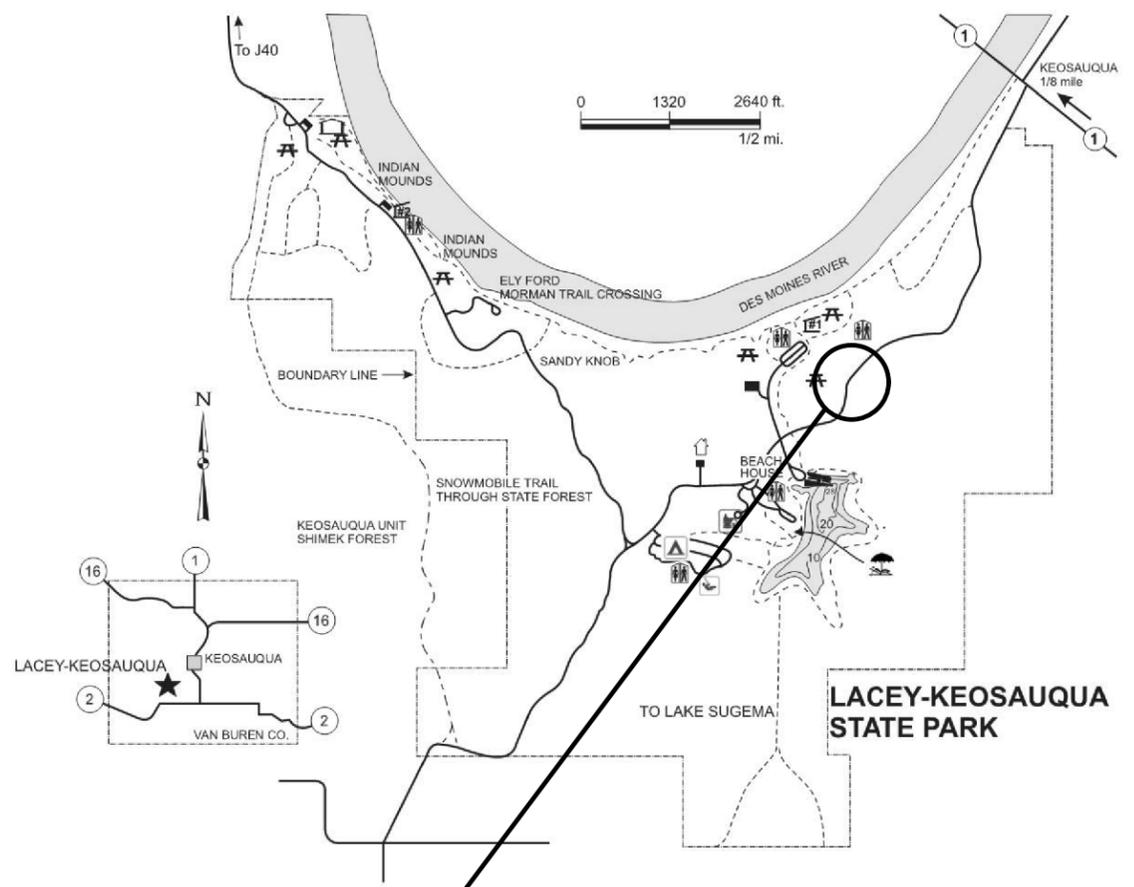




10:11:47 AM 9/2/2016 maldric N:\Conservation Recreation\Land and Waters\Engineering\PROJECTS\ACTIVE\VAN BUREN\#16-06-89-01\_Lacey-Keosauqua\_Culvert Replacement\02 Design\16-06-89-01\_Lacey-Keo\_Culvert Replacement



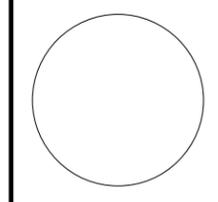
VICINITY MAP



LOCATION MAP

PROJECT LOCATION

CONSULTANT:



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



**PROJECT LOCATION MAP**

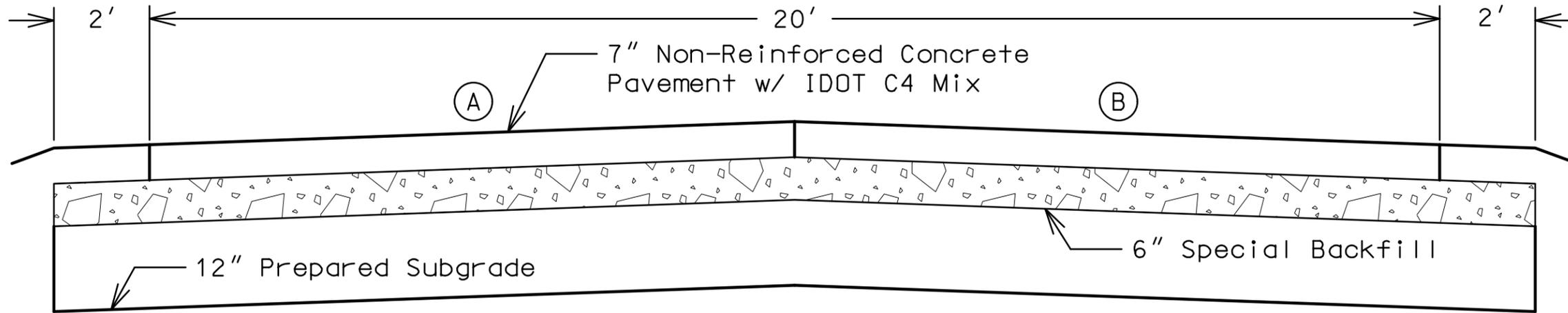
CULVERT REPLACEMENT FOR:  
**LACEY-KEOSAUQUA STATE PARK**

VAN BUREN COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY: PROJECT NUMBER:  
 16-06-89-01  
 CHK'D BY: DATE:  
 August 2016

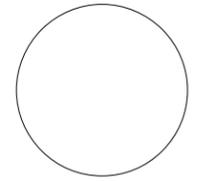
N:\Conservation Recreation\Land and Waters\Engineering\PROJECTS\ACTIVE\VAN BUREN\#16-06-89-01\_Lacey-Keosauqua\_Culvert Replacement\02 Design\16-06-89-01\_Lacey-Keo\_Culvert Replacement.mxd 10:11:50 AM 9/2/2016



Pavement Slope Changes		
Station	Ⓐ	Ⓑ
10+11.53	+3.15%*	+0.85%*
10+20	+2.65%	+0.35%
10+30	+2.15%	-0.15%
10+40	+2.00%	-0.65%
10+50	+2.00%	-1.15%
10+60	+2.00%	-1.65%
10+70	+2.00%	-2.00%
13+50	+2.00%	-2.00%
13+58.16	+2.55%*	-2.45%*
*NOTE: Match existing slope		

## Typical Roadway Pavement

CONSULTANT:



**IOWA DEPARTMENT OF  
NATURAL RESOURCES**

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



### GENERAL DETAILS

CULVERT REPLACEMENT FOR:

LACEY-KEOSAUQUA STATE PARK

VAN BUREN COUNTY, IOWA

NO.	BY DATE	REVISION

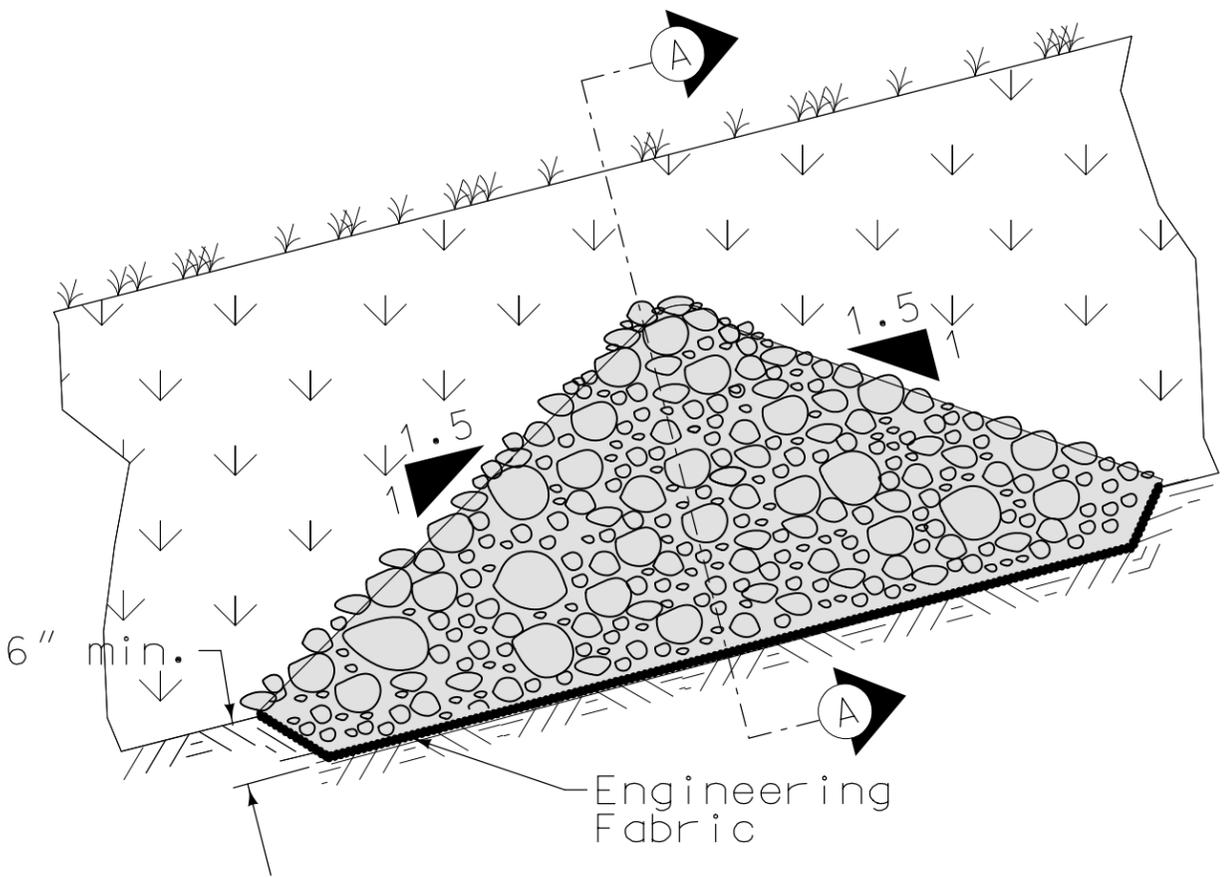
DRAWN BY: PROJECT NUMBER:  
16-06-89-01

CHK'D BY: DATE:  
August 2016

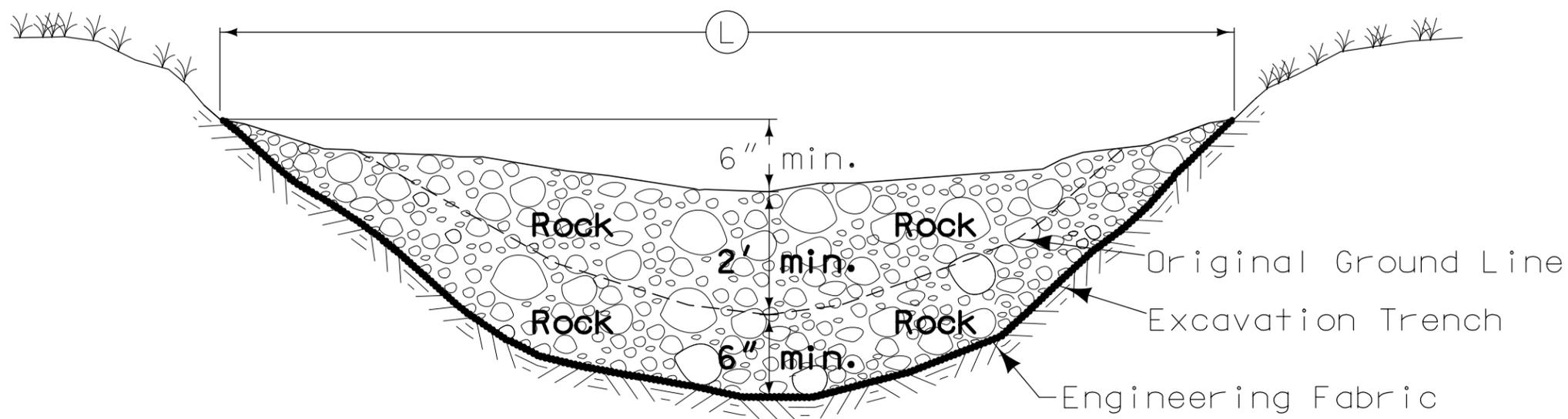
SHEET NO:

**B.01**

N:\Conservation Recreation\Land and Waters\Engineering\PROJECTS\ACTIVE\VAN BUREN\#16-06-89-01\_Lacey-Keosauqua\_Culvert Replacement\02 Design\16-06-89-01\_Lacey-Keo\_Culvert Replacement.mxd  
 10:11:52 AM 9/2/2016



DITCH PROFILE



SECTION A-A

Use Class A Revetment to construct Rock Check Dam.

Method of Measurement for Rock Check Dam will be in linear feet to the nearest 0.1 feet.

Basis of Payment for Rock Check Dam will be the contract unit price per linear foot. Payment is full compensation for all materials, labor, and equipment required to construct the Rock Check Dam as shown. Class 10 excavation required to cut trench and engineering fabric installed prior to placing revetment are incidental and will not be paid for separately.

Method of Measurement for Maintenance of Rock Check Dam will be by count.

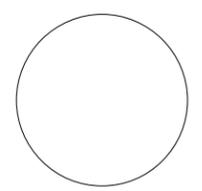
Basis of Payment for Maintenance of Rock Check Dam will be at the contract unit price for each occurrence. Payment is full compensation for clean out and disposal of material when capacity reaches 50%, and for any repair that is needed during the project.

Method of Measurement for Removal of Rock Check Dam will be by count.

Basis of Payment for Removal of Rock Check Dam will be at the contract unit price for each Rock Check Dam removed. Payment is full compensation for all labor and equipment required to remove all rock and material above original ditch grade. Rock, silt, and engineering fabric that is flush with and/or below final ditch grade will be allowed to remain in the excavation trench.

ROCK CHECK DAM

CONSULTANT:



IOWA DEPARTMENT OF  
NATURAL RESOURCES

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



GENERAL DETAILS

CULVERT REPLACEMENT FOR:

LACEY-KEOSAUQUA STATE PARK

VAN BUREN COUNTY, IOWA

NO.	BY	REVISION
DATE		

DRAWN BY: PROJECT NUMBER:  
16-06-89-01

CHK'D BY: DATE:  
August 2016

SHEET No:

**B.02**





10:11:55 AM 9/2/2016 maldric N:\Conservation Recreation\Land and Waters\Engineering\PROJECTS\ACTIVE\VAN BUREN\#16-06-89-01 Lacey-Keo-Culvert Replacement\02 Design\16-06-89-01 Lacey-Keo-Culvert Replacement

### ESTIMATED PROJECT QUANTITIES

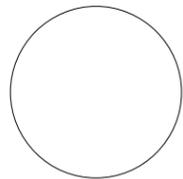
ITEM NO.	ITEM	UNIT	TOTAL
1	CLEARING AND GRUBBING	LS	1
2	REMOVAL OF EXISTING STRUCTURE	LS	1
3	REMOVAL OF EXISTING PIPE	LF	22
4	REMOVAL OF PAVEMENT	SY	709.5
5	SAW CUTTING EXISTING ASPHALT PAVEMENT	LF	40
6	PAVING, P.C. CONCRETE, 7"	SY	788.1
7	SHOULDER CONSTRUCTION, EARTH	STA	7
8	SPECIAL BACKFILL	SY	867
9	CLASS "A" CRUSHED STONE	TON	11
10	CULVERT, LOW CLEARANCE CONCRETE ROADWAY PIPE, EQUIV. DIAM. 30 IN.	LF	112
11	APRON, LOW CLEARANCE CONCRETE, EQUIV. DIAM. 30 IN.	EACH	4
12	APRON GUARD, DR-213	EACH	2
13	PIPE FOOTING	EACH	6
14	CULVERT, LOW CLEARANCE CONCRETE ENTRANCE PIPE, EQUIV. DIAM. 18 IN.	EACH	1
15	APRON, LOW CLEARANCE CONCRETE, EQUIV. DIAM. 18 IN.	LF	22
16	EXCAVATION, CLASS 10, ROADWAY AND BORROW	EACH	2
17	EXCAVATION, CLASS 20	CY	31.7
18	EMBANKMENT-IN-PLACE	CY	10.0
19	FLOWABLE MORTAR	CY	248.5
20	FLOODED BACKFILL	CY	18.4
21	ROCK CHECK DAM	CY	93.6
22	REVTMENT, CLASS E	LF	24
23	FINISH GRADING	TON	40
24	SEEDING, FERTILIZING AND MULCHING	LS	1
25	EROSION CONTROL	ACRE	0.11
26	TRAFFIC CONTROL	LF	895
27	CONSTRUCTION STAKING	LS	1
28	MOBILIZATION	LS	1

NOTE: Construction is not allowed to begin prior to the Scenic Drive Festival the second full weekend of October (8th & 9th in 2016).

### ESTIMATE REFERENCE INFORMATION

ITEM NO.	DESCRIPTION
1	CLEARING AND GRUBBING A. Includes the removal and disposal of trees as shown in the plans and as directed by the DNR Inspector. B. Disposal is the responsibility of the contractor.
2	REMOVAL OF EXISTING STRUCTURE A. The contractor shall remove the existing structure as indicated in the plan sheets. B. Disposal is the responsibility of the contractor. C. Overhaul shall be considered incidental.
3	REMOVAL OF EXISTING PIPE A. The contractor shall remove the existing pipes as indicated in the plan sheets. B. Disposal is the responsibility of the contractor. C. Overhaul shall be considered incidental.
4	REMOVAL OF EXISTING PAVEMENT A. The contractor shall remove the existing pavement as indicated in the plan sheets. B. Disposal is the responsibility of the contractor. C. Overhaul shall be considered incidental.
5	SAW CUTTING EXISTING ASPHALT PAVEMENT A. The contractor shall cut the existing pavement as indicated in the plan sheets.
6	PAVING, P.C. CONCRETE, 7" A. Joints shall be sawcut at standard spacing, 12' maximum.
7	SHOULDER CONSTRUCTION, EARTH A. No payment for overhaul will be allowed for earth shoulder material.
8	SPECIAL BACKFILL A. Existing ACC from pavement removal shall be used on the project as a special backfill. B. The contractor may crush ACC from the pavement removal and use as recycled material provided it meets the gradation requirements.
9	CLASS "A" CRUSHED STONE A. The parking area at the park will be 6" Class "A" Crushed Stone..
16	EXCAVATION, CLASS 10, ROADWAY AND BORROW
17	EXCAVATION, CLASS 20
18	EMBANKMENT-IN-PLACE A. A suitable borrow site shall be obtained by the contractor. No payment for overhaul will be allowed.
19	FLOWABLE MORTAR A. DOT Standard Road Plan DR-101
20	FLOODED BACKFILL A. DOT Standard Road Plan DR-101
25	EROSION CONTROL A. Filter sock shall be installed to prevent sediment from exiting the project site and shall remain in place and be maintained during construction. DNR Park staff will remove once the site is stabilized.

CONSULTANT:



**IOWA DEPARTMENT OF  
NATURAL RESOURCES**

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



**QUANTITIES & NOTES**

CULVERT REPLACEMENT FOR:

LACEY-KEOSAUQUA STATE PARK

VAN BUREN COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY: PROJECT NUMBER:  
16-06-89-01

CHK'D BY: DATE:  
August 2016

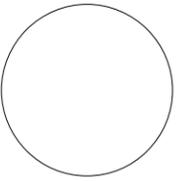
SHEET No:

C.01

## GENERAL NOTES

- A. The contractor shall notify the following two weeks prior to demolition and/ or construction:
  - a. District Inspector: Mike Dufoe (515) 985-9196
- B. 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.
- C. 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.
- D. The contractor shall be responsible for any damage to existing facilities resulting from their negligence, or that of a subcontractor, and said repairs shall be approved by the owner.
- E. All work shall conform to and be preformed in accordance with all applicable codes and ordinances.
- F. 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.
- G. All holes resulting from operations of the contractor, including removal of guardrail posts, fence posts, utility poles or piers, shall be filled and consolidated to finish grade as directed by the Engineer to prevent future settlement. The voids shall be filled as soon as practical - preferably the day created and not later than the following day. Any portion of the right of way or project limits (including borrow areas and operation sites) disturbed by any such operations shall be restored to an applicable condition. This operation shall be considered incidental to other bid items in the project.
- H. The contractor is expected to have materials, equipment, and labor available on a daily basis to install and maintain erosion control features of the project. This may involve seeding, silt fence, rock ditch checks, silt basins or silt dikes.
- I. The contractor shall shape graded area to maintain surface drainage. All elevations shown are to finish grade.
- J. Topsoil shall be spread to a minimum thickness of 6 inches on all disturbed unpaved areas.
- K. The contractor shall seed, fertilize and mulch all disturbed areas. Use Class "C" seed mixture.
- L. Backfill to the top of all rock or paved surfaces.
- M. 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.
- N. 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.

CONSULTANT:



**IOWA DEPARTMENT OF  
NATURAL RESOURCES**

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



**GENERAL NOTES**

CULVERT REPLACEMENT FOR:

**LACEY-KEOSAUQUA STATE PARK**

VAN BUREN COUNTY, IOWA

NO.	BY DATE	REVISION

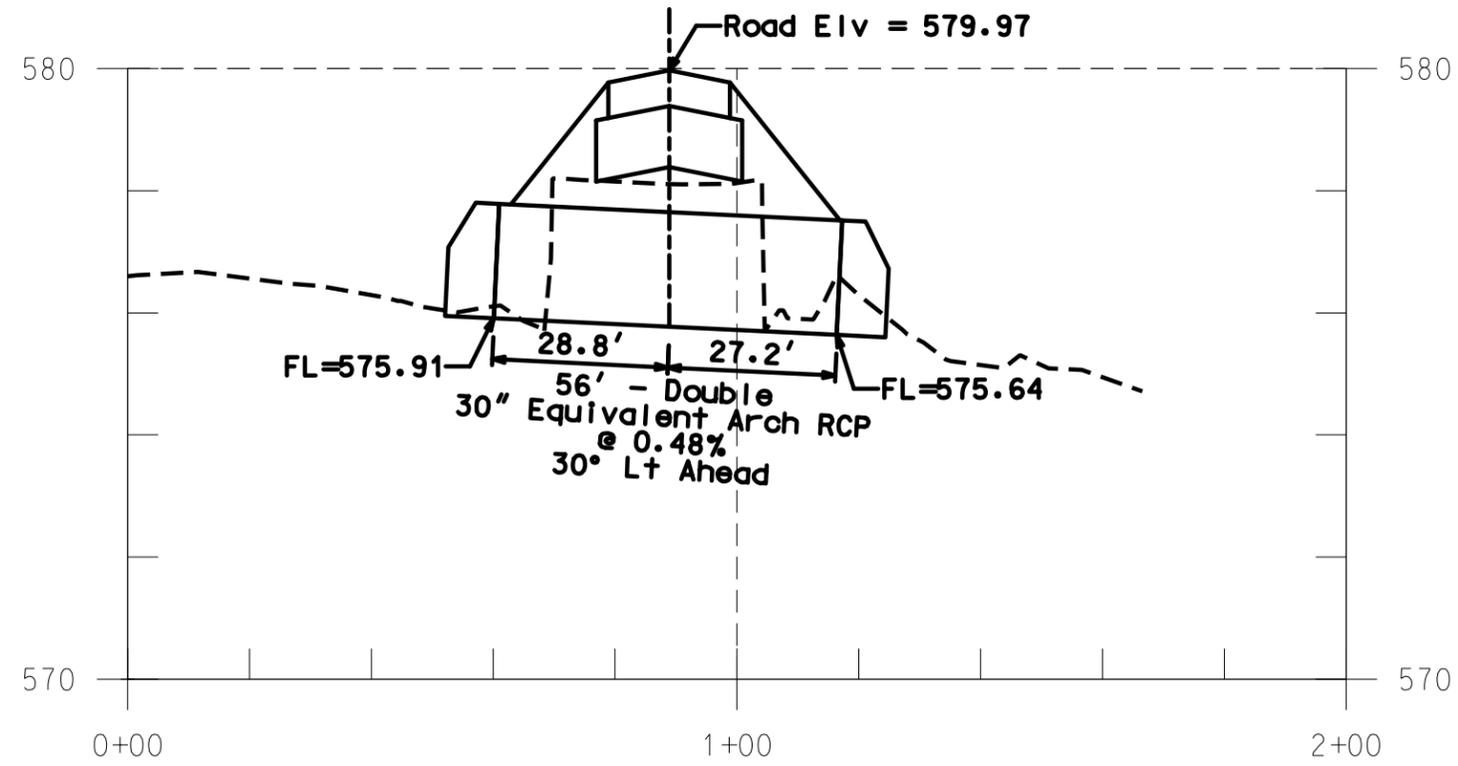
DRAWN BY: PROJECT NUMBER:  
CHK'D BY: DATE:  
August 2016

SHEET No:  
**C.02**

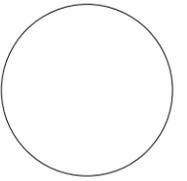




10:12:08 AM 9/2/2016 maldric N:\Conservation Recreation\Land and Waters\Engineering\PROJECTS\ACTIVE\VAN BUREN\#16-06-89-01\_Lacey-Keosauqua\_Culvert Replacement\02\_Design\16-06-89-01\_Lacey-Keo\_Culvert\_Replacement



CONSULTANT:



**IOWA DEPARTMENT OF  
NATURAL RESOURCES**

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



**PROFILE SHEET**

CULVERT REPLACEMENT FOR:

LACEY-KEOSAUQUA STATE PARK

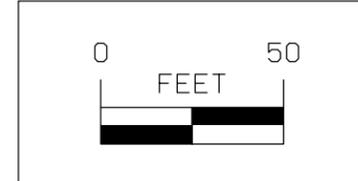
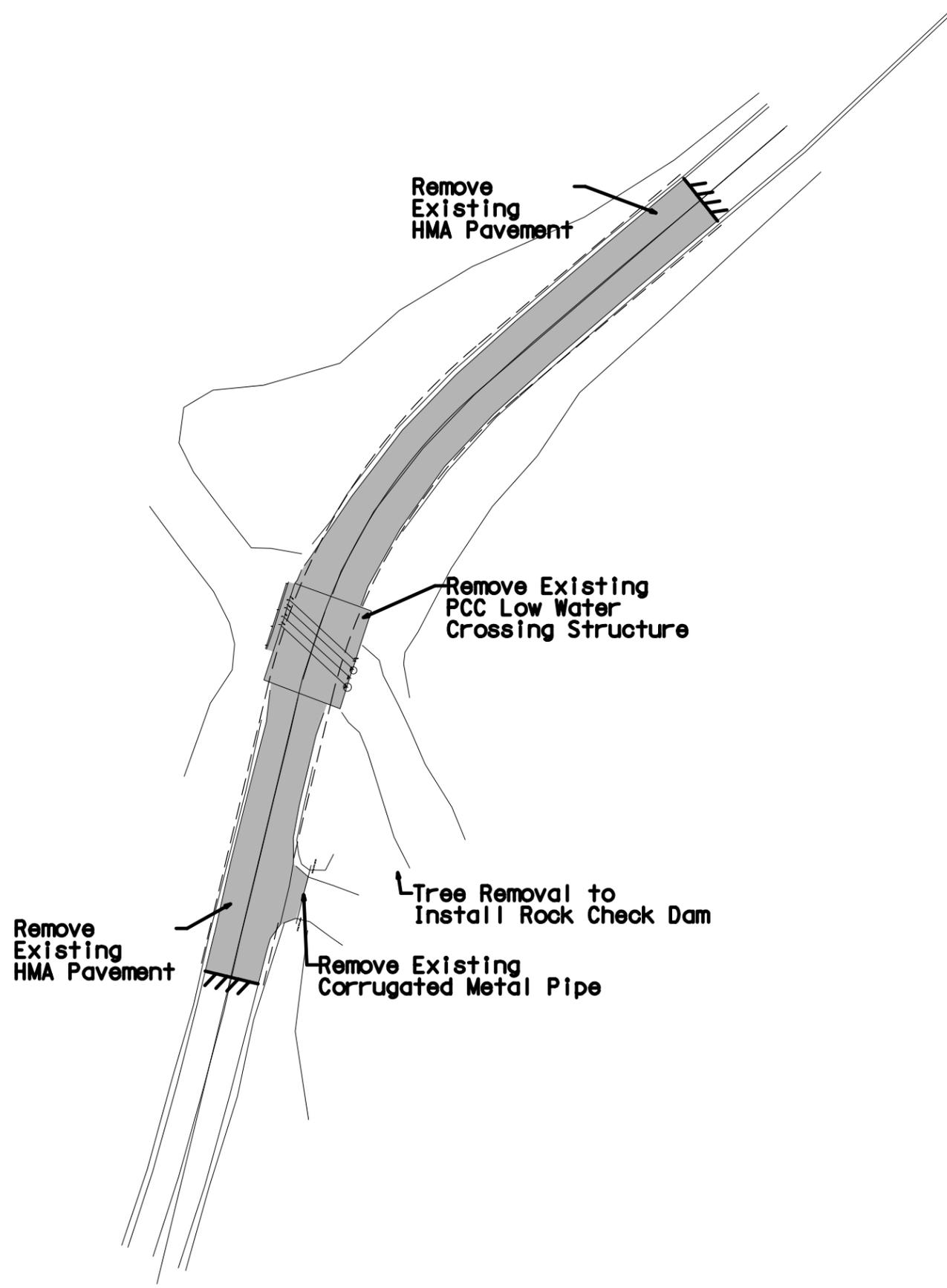
VAN BUREN COUNTY, IOWA

NO.	BY	REVISION
DATE		

DRAWN BY: PROJECT NUMBER:  
16-06-89-01

CHK'D BY: DATE:  
August 2016

**D.03**



NO.	BY DATE	REVISION

**DEMOLITION SHEET**

CULVERT REPLACEMENT FOR:  
**LACEY-KEOSAUQUA STATE PARK**

VAN BUREN COUNTY, IOWA

**IOWA DEPARTMENT OF NATURAL RESOURCES**

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

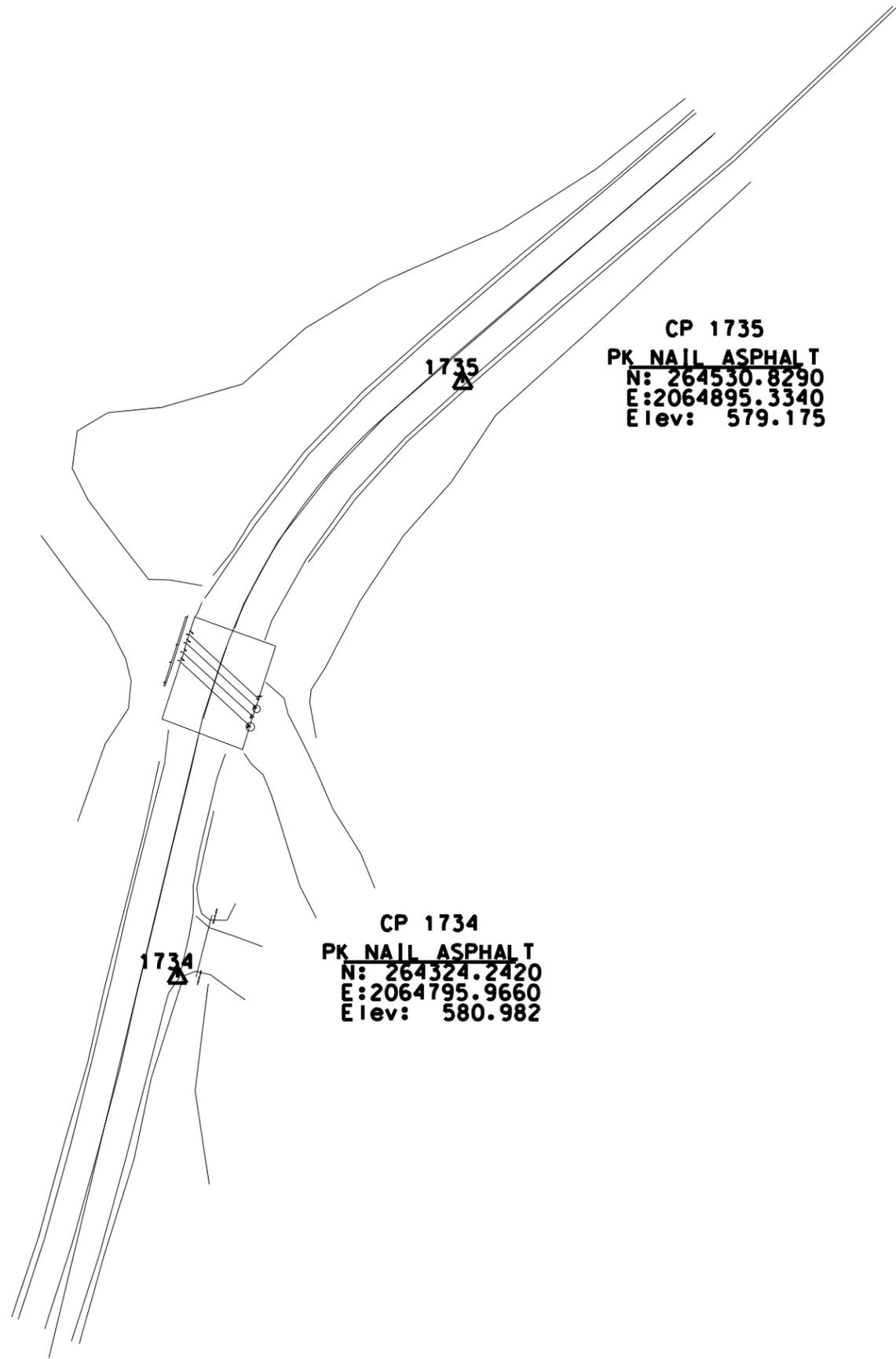
CONSULTANT:

DRAWN BY: PROJECT NUMBER:  
 16-06-89-01

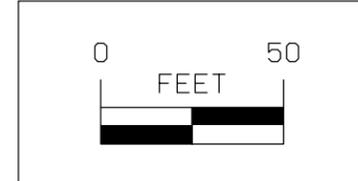
CHK'D BY: DATE:  
 August 2016

**E.01**

N:\Conservation Recreation\Land and Waters\Engineering\PROJECTS\ACTIVE\VAN BUREN\#16-06-89-01\_Lacey-Keosauqua\_Culvert Replacement\02\_Design\16-06-89-01\_Lacey-Keo\_Culvert Replacement.mxd 9/2/2016 10:12:12 AM



Point	Northing	Easting	Elev	Description
1734	264324.242	2064796.66	580.982	PK NAIL 1 5/32 EDGE ASPHALT
1735	264530.829	2064895.33	579.175	PK NAIL 1 5/32 EDGE ASPHALT EDGE OF PULL OVER AREA

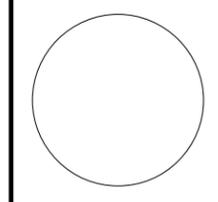


NO.	BY DATE	REVISION

**SURVEY CONTROL**  
CULVERT REPLACEMENT FOR:  
**LACEY-KEOSAUQUA STATE PARK**  
VAN BUREN COUNTY, IOWA

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

CONSULTANT:



**G.01**

