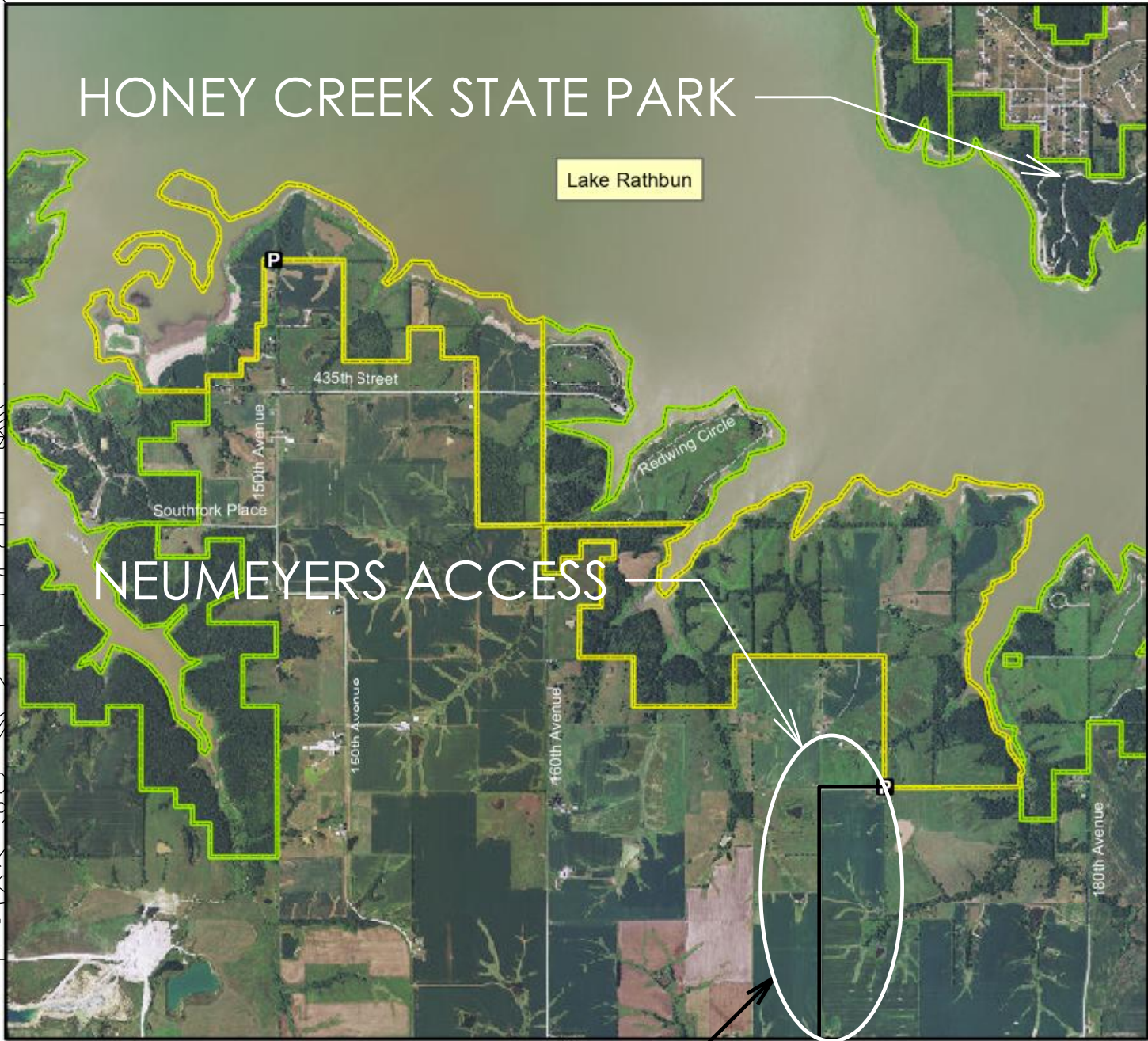


Rathbun Wildlife Management Area - SE



Legend

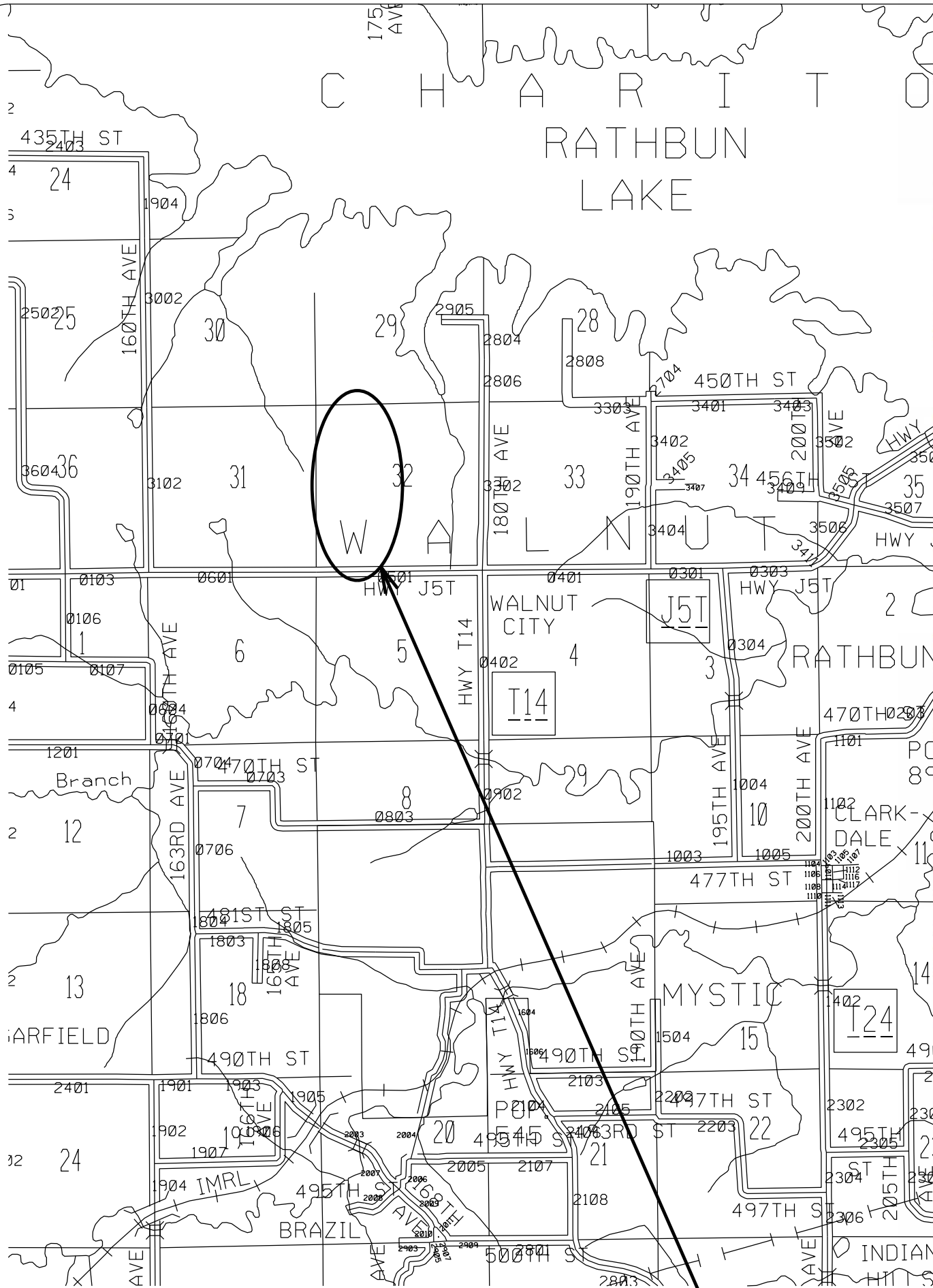
- State Areas open to hunting
- WMA Boundary
- Parking Lot
- Other Public Land
- 2011 Aerial Photography

Map Creation Date: 5/2017

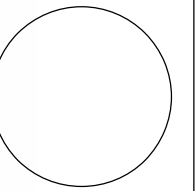
Acres: 15,888
Habitat: 1/4 Lake, 14 Timber, 1/2 Upland
Species: Deer, Pheasant, Waterfowl, Quail, Dove
Contact: Jeff Telleen
Rathbun Wildlife Unit
641-414-1513
Restrictions: Canada Goose Closed Area #5

Lucas, Monroe, Wayne & Appanoose Counties, Iowa

Directions: 6 miles S of Russell on S56.



CONSULTANT:



IOWA DEPARTMENT OF NATURAL RESOURCES

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



PROJECT LOCATION MAP

ROAD MAINTENANCE FOR:

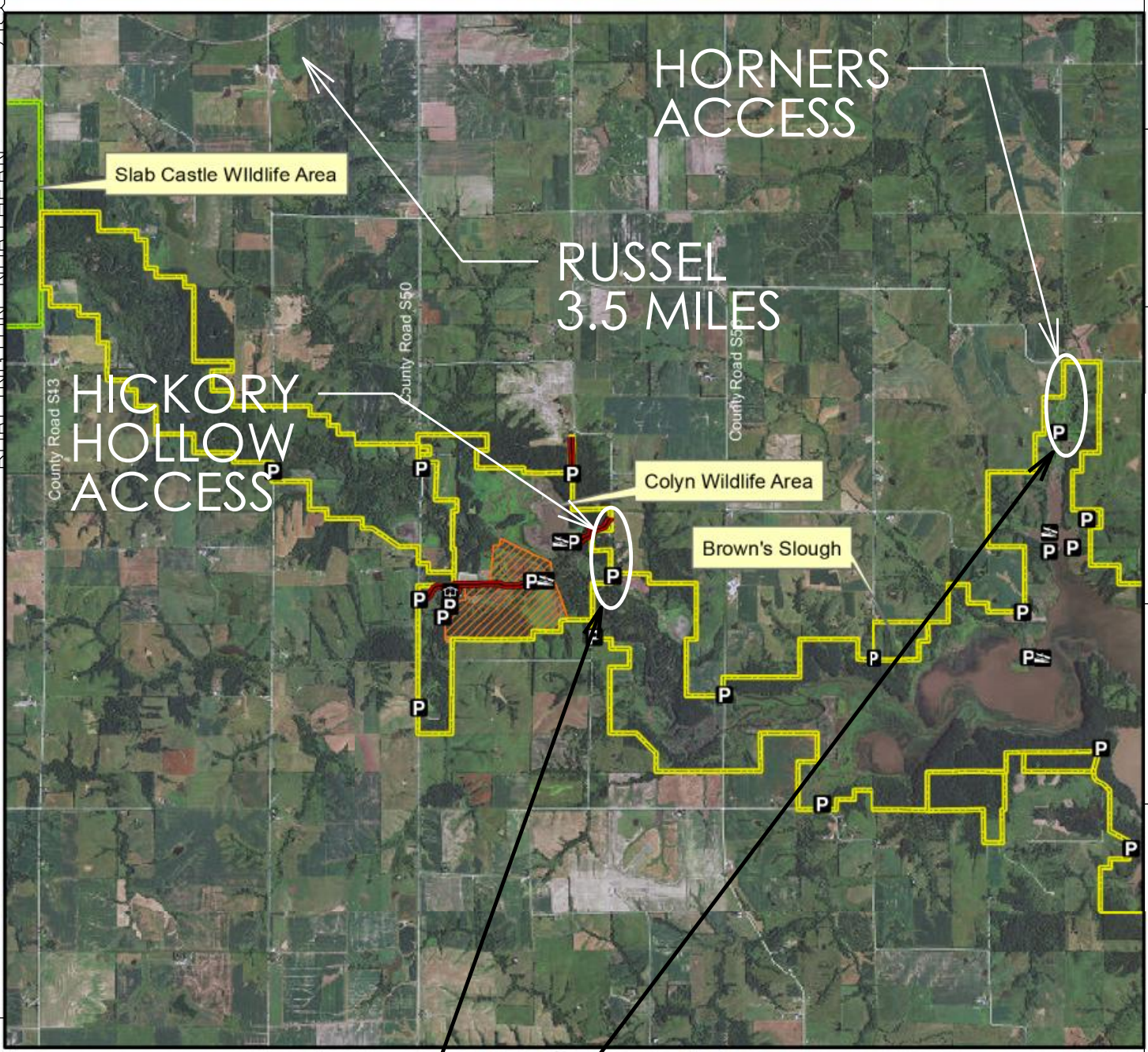
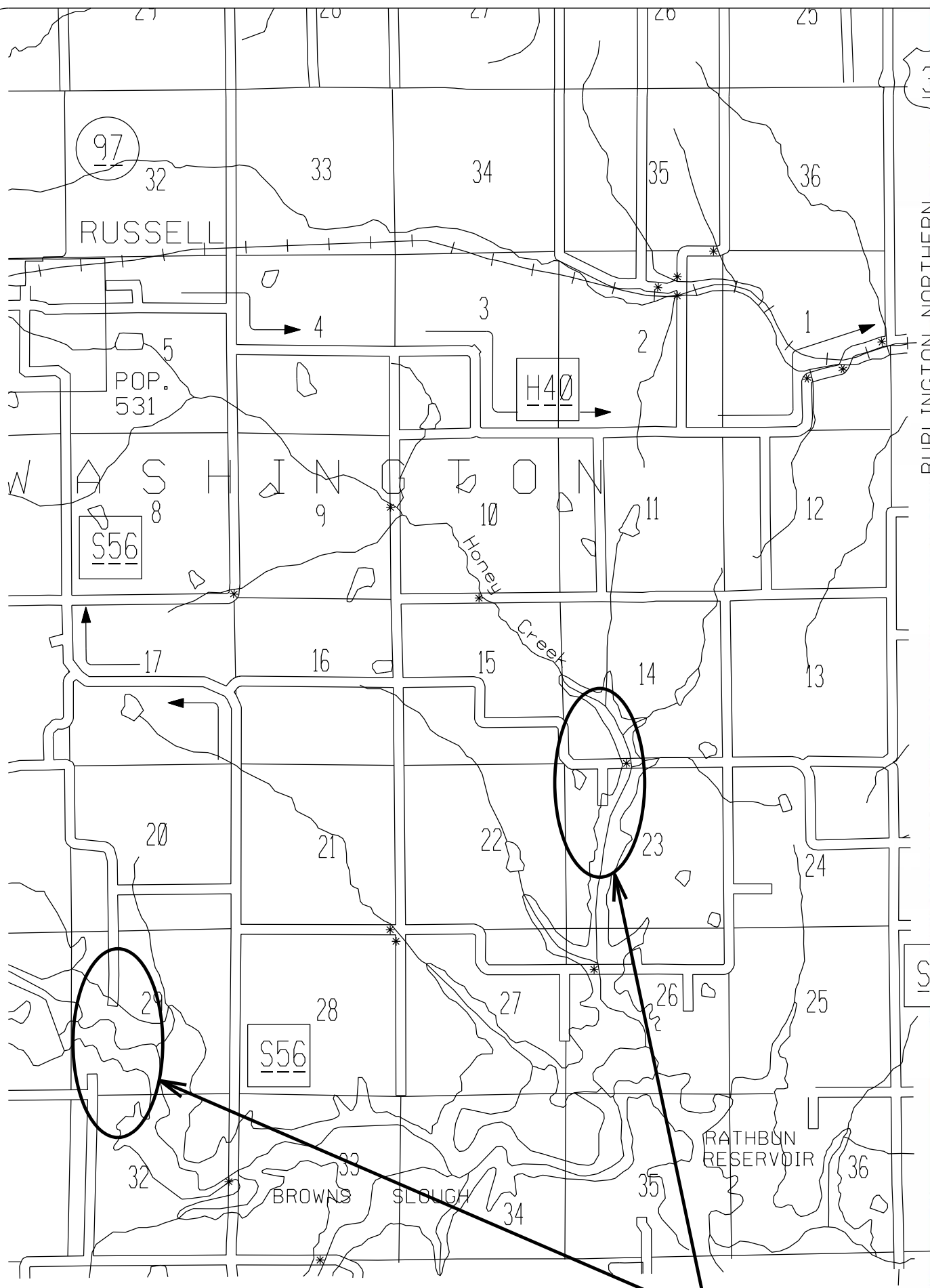
RATHBUN WMU

APPANOOSE/LUCAS COUNTIES

NO.	BY	DATE	REVISION

DRAWN BY: PROJECT NUMBER:
BLF: 20-05-04-05
CHK'D BY: DATE:
DEC 2020
SHEET NO:

Rathbun Wildlife Management Area - NW



Legend

- State Areas open to hunting
- WMA Boundary
- Refuge
- Unit Headquarters
- Parking Lot
- Boat Ramp
- Access Road
- Other Public Land

2011 Aerial Photography
 Map Creation Date: 3/20/13

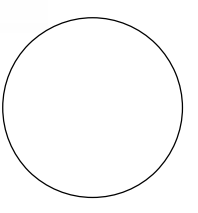
DNR

Acre: 15,885
 Habitat: 1/4 Lake, 1/4 Timber, 1/2 Upland
 Species: Deer, Pheasant, Waterfowl, Quail, Dove
 Contact: Jeff Telleen
 Rathbun Wildlife Unit
 641-414-1513
 Restrictions: Canada Goose
 Closed Area #5

Lucas, Monroe, Wayne & Appanoose Counties, Iowa

Directions: 6 miles S of Russell on S56.

CONSULTANT:



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

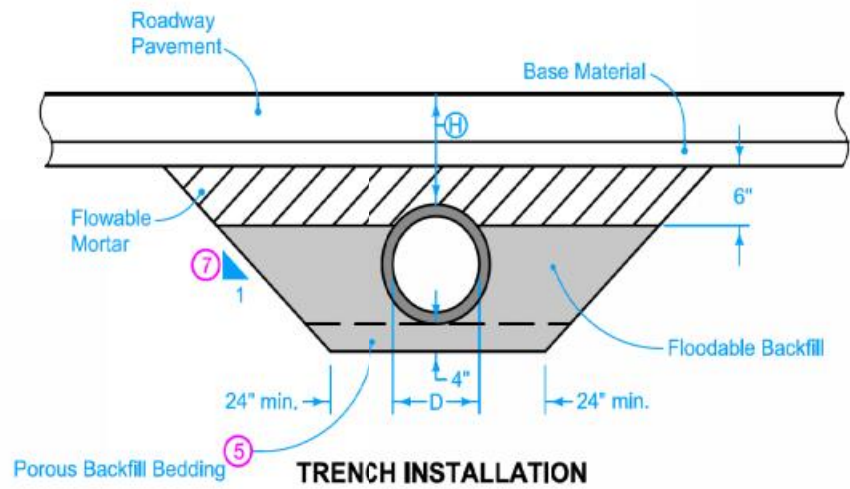


PROJECT LOCATION MAP

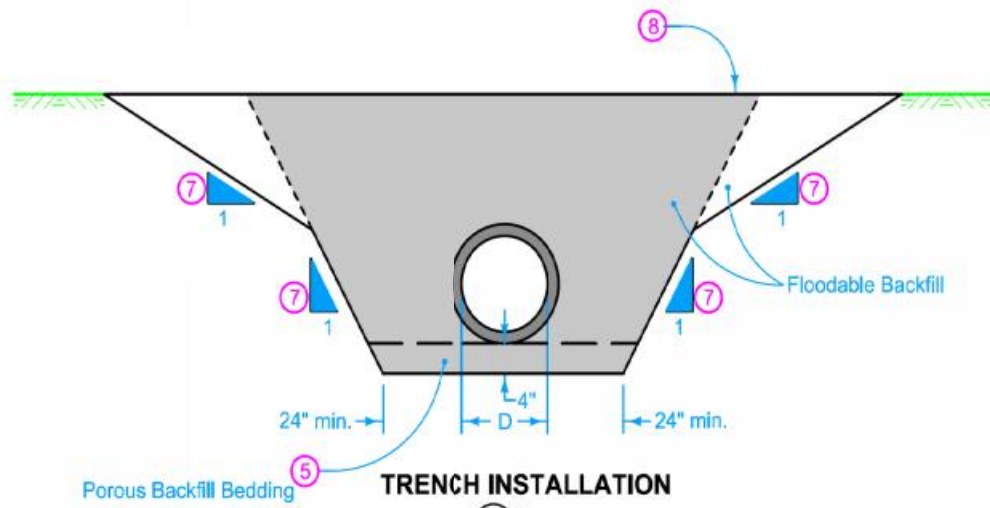
ROAD MAINTENANCE FOR:
RATHBUN WMU
 APPANOOSE/LUCAS COUNTIES

NO.	BY	REVISION

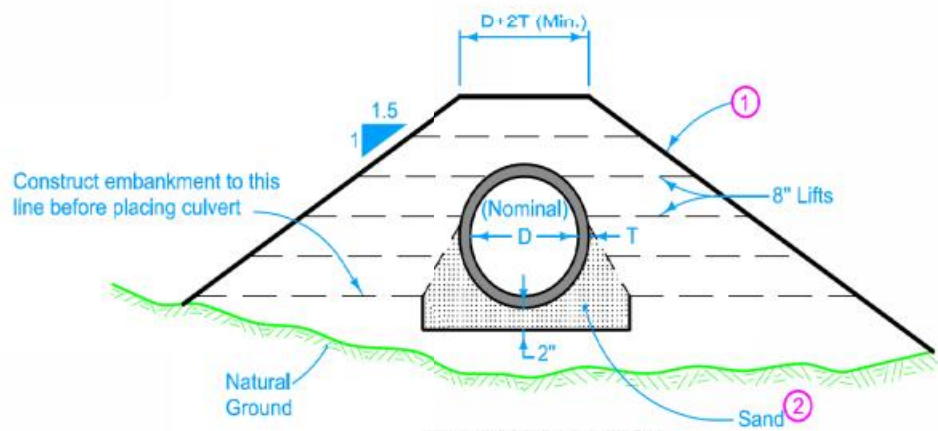
DRAWN BY: PROJECT NUMBER:
 BLF: 20-05-04-05
 CHK'D BY: DATE:
 DEC 2020
 SHEET NO:



TRENCH INSTALLATION
 $(H) \leq 4'$



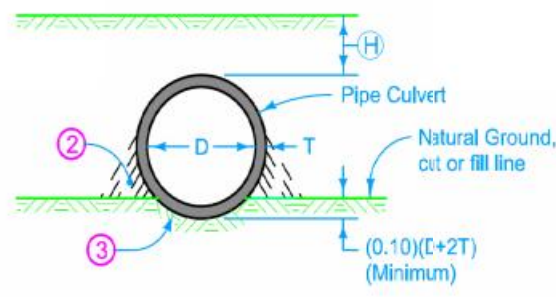
TRENCH INSTALLATION
 $(H) > 4'$



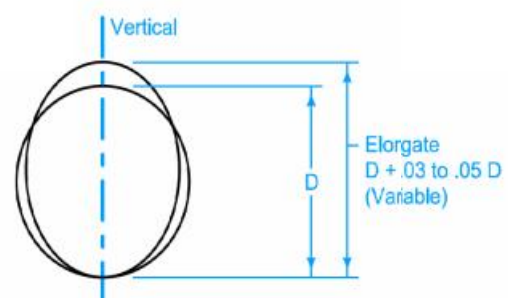
FILL INSTALLATION
(FOR RIGID PIPES ONLY)

CLASS 'B' BEDDING & BACKFILL

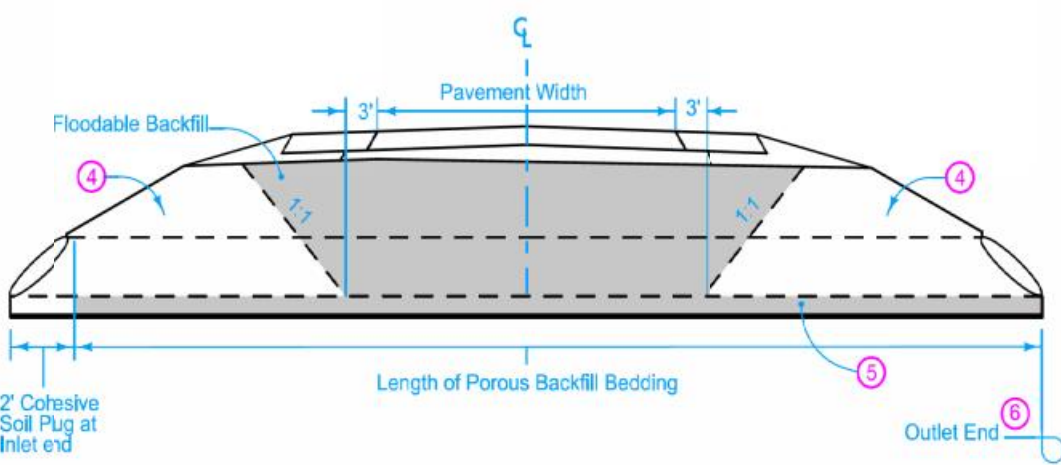
Denotes pay limits for flooded backfill



CLASS 'C' BEDDING & BACKFILL



ELONGATED PIPE



TYPICAL SECTION - SOIL PLUG

Refer to DR-104 for minimum and maximum allowable cover H for the particular kind of pipe culvert.

- 1 The backfill adjacent to and above the pipe culvert may be placed in conjunction with normal embankment construction. Thoroughly tamp the embankment within the limits shown.
- 2 Take extra care to ensure complete and satisfactory tamping of backfill material in the area immediately adjacent to the lower portion of pipe.
- 3 Carefully shape excavation below groundline either using a template conforming to actual dimension and shape of the pipe or using other means. If using other means, check with a template conforming to the actual dimension and shape of the pipe.
- 4 For culverts backfilled by flooding, place a cohesive soil plug at the inlet, outlet, and, when necessary, sides, prior to flooding.
- 5 4-inch Porous Backfill bedding, 2-inch Floodable Backfill bedding may be used under unsealed rigid pipe.
- 6 Extend Porous Backfill through the outlet end soil plug when used for bedding.
- 7 Quantity calculations are based upon a 1:1 slope and minimum trench dimension. Actual slope of trench may vary based upon Contractor's operations.
- 8 Ground Line at time of pipe installation. When existing ground exceeds 5 feet depth over pipe, backfill and compaction by flooding is not required more than 5 feet above the pipe.
- 9 Where a corrugated metal pipe culvert requiring elongation is to be installed (to counteract deformation caused by backfill), complete elongation using a means approved by the Engineer. Elongation may be developed either as part of shop fabrication or field installation. Install with elongated axis vertical.

Possible Contract Items:
Flowable Mortar
Flooded Backfill
Excavation, Class 20

Possible Tabulations:
104-3
104-4



STANDARD ROAD PLAN

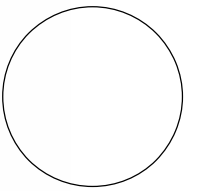
REVISION	
2	04-18-17
DR-101	
SHEET 1 of 1	

REVISIONS: Changed "Porous Backfill" to "Porous Backfill Bedding" for clarity. Modified trench installation detail for $H > 4'$ to clarify pay limits.

APPROVED BY DESIGN METHODS ENGINEER
Brien Smith

PIPE CULVERT
(BEDDING AND BACKFILL)

CONSULTANT:



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502 E. 9TH ST., DES MOINES, IA 50319-0034



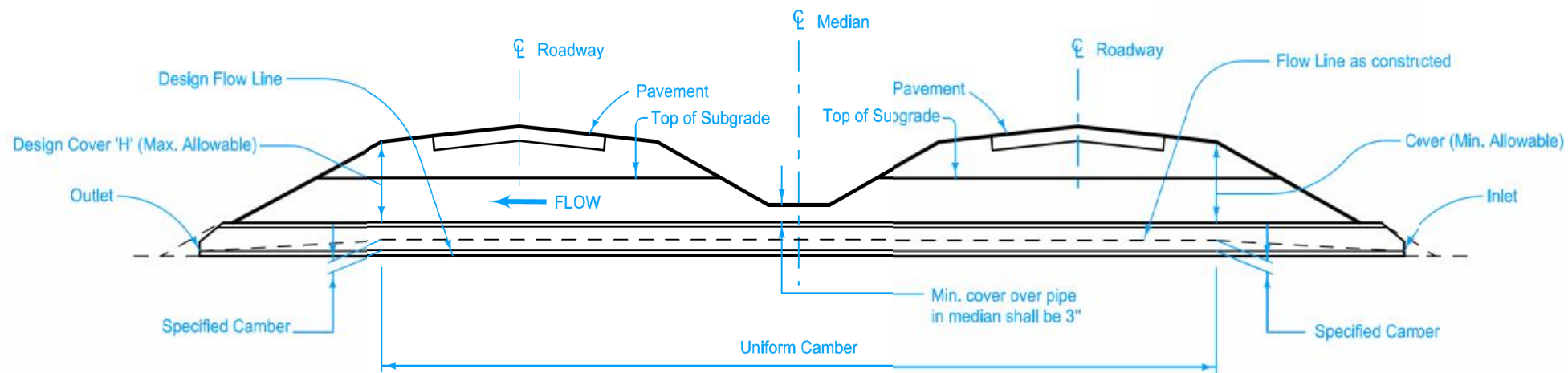
TYPICAL CROSS SECTIONS AND DETAILS

ROAD MAINTENANCE FOR:
RATHBUN WMU

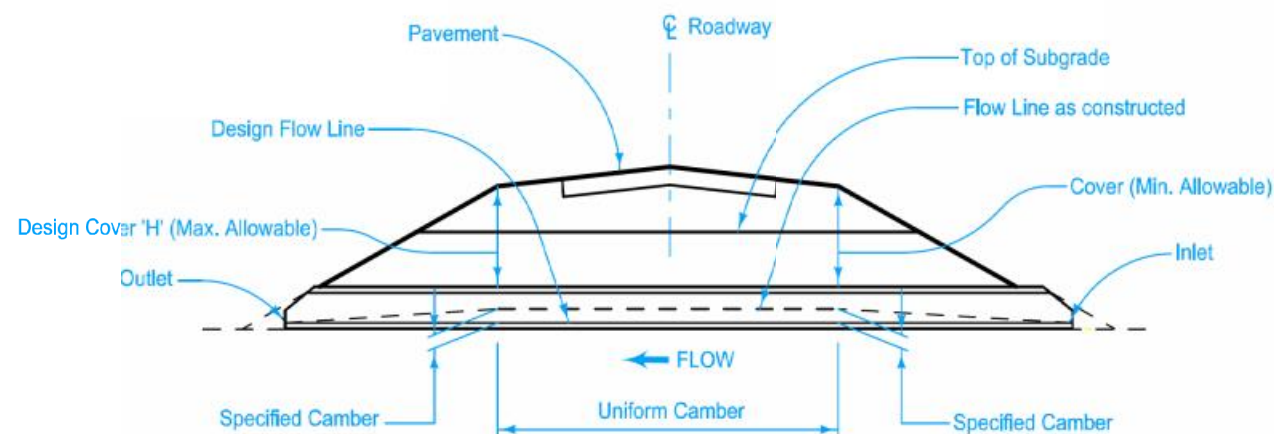
APPANOOSE/LUCAS COUNTIES

NO.	BY	REVISION

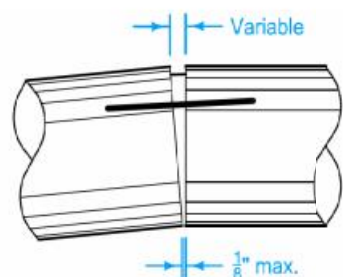
B.01



TYPICAL INSTALLATION DUAL ROADWAY



TYPICAL INSTALLATION SINGLE ROADWAY



TYPICAL JOINT IN CAMBERED PIPE ¹

Design Cover 'H' (feet)	Normal Camber (feet)
5	0.08
10	0.17
15	0.25
20	0.33
25	0.42
30	0.50
35	0.58

Pipe Size 'D'	Maximum Camber (feet)
24"	1.1
30"	1.2
36"	1.3
42"	1.4
48"	1.5
60"	1.6
84"	1.7

ALLOWABLE CAMBER TABLES

Refer to DR-121 for pipe joint connection and wrapping.

Refer to DR-101 for culvert bedding and backfill.

COVER

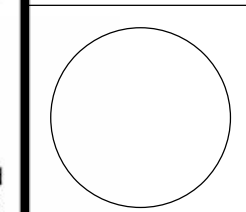
Refer to DR-104 for minimum and maximum allowable cover for the particular kind of culvert.

CAMBER

Camber is the dimension line between inlet and outlet elevation. Some settlement of the structure is usually anticipated, resulting in the design flow line between inlet and outlet. Camber is developed uniformly from inlet and outlet to a point beneath the outside shoulder lines of the roadway and is uniform between those points, as indicated. The Normal Camber indicated in the "Allowable Camber Tables" should be used unless specific camber values are indicated elsewhere in the plans.

- ¹ Camber for concrete pipe is created by placing pipe sections tight at the bottom of the joint with variable opening at top of joint. Camber for corrugated metal pipe to be done as directed by the Engineer.

CONSULTANT:



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502 E. 9TH ST., DES MOINES, IA 50319-0034

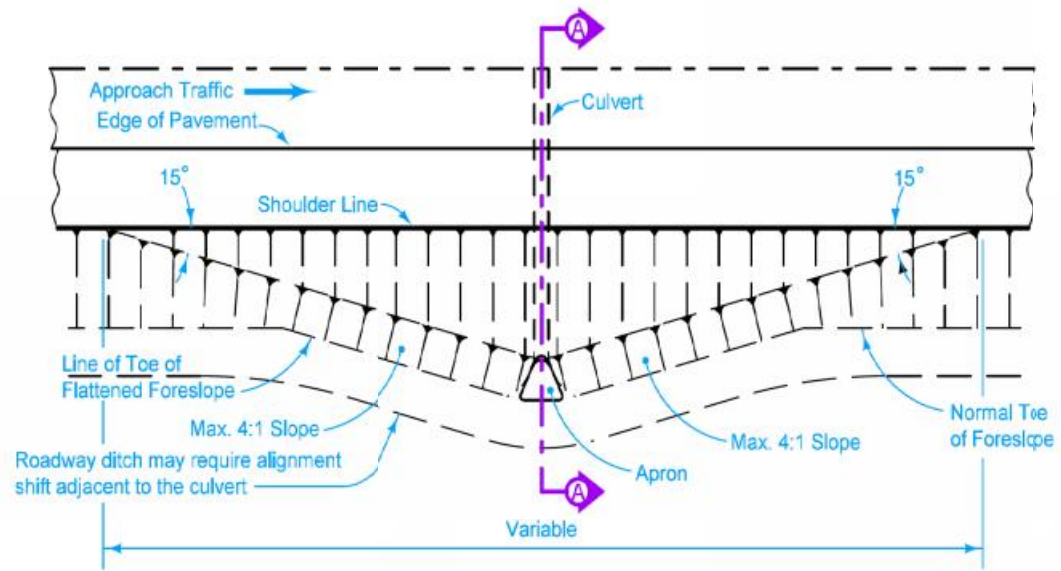


TYPICAL CROSS SECTIONS AND DETAILS

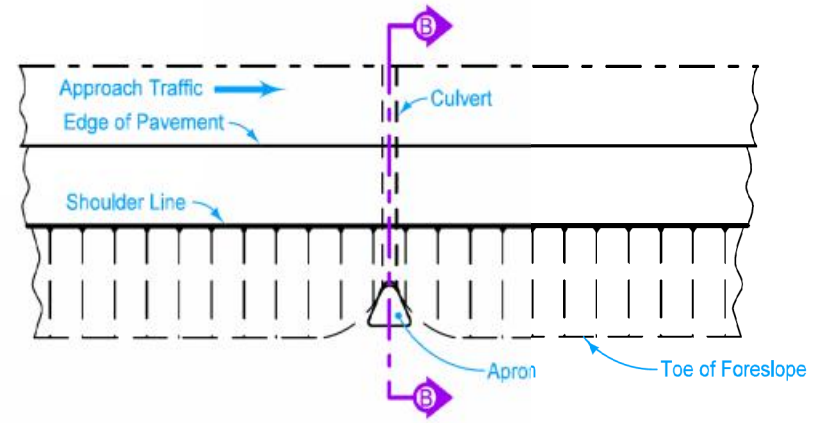
ROAD MAINTENANCE FOR:
RATHBUN WMU
APPANOOSE/LUCAS COUNTIES

	REVISION	
	New	04-21-15
STANDARD ROAD PLAN	DR-102	
	SHEET 1 of 1	
REVISIONS: New. Replaces RF-30B.		
APPROVED BY DESIGN METHODS ENGINEER		

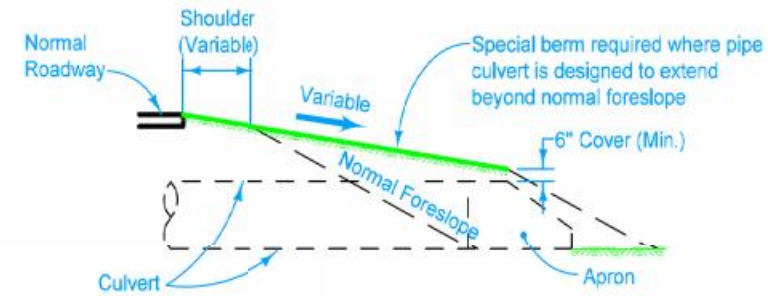
PIPE CULVERT (COVER AND CAMBER)	
NO.	BY
DATE	REVISION
DRAWN BY:	PROJECT NUMBER:
BLF	20-05-04-05
CHK'D BY:	DATE:
	DEC 2020
SHEET NO.:	
	B.02



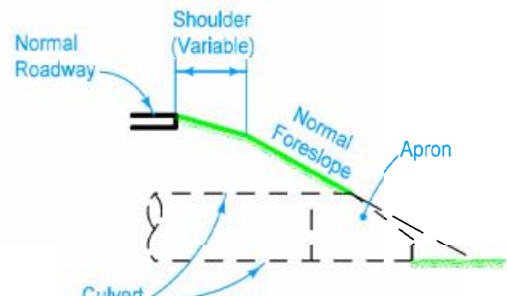
TYPICAL INSTALLATION PLAN
WHERE SPECIAL BERM IS REQUIRED



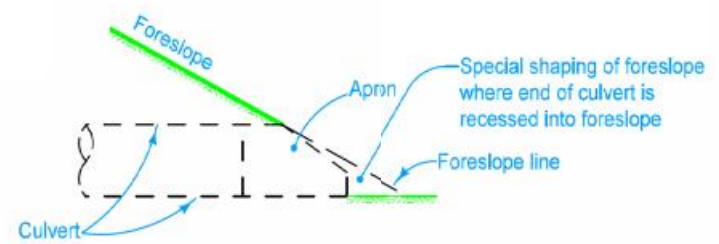
TYPICAL INSTALLATION PLAN
WHERE CULVERT MATCHES NORMAL FORESLOPE



SECTION A-A



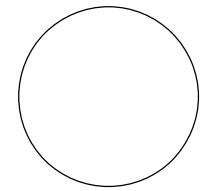
SECTION B-B



DETAIL OF SHAPING EARTH FORESLOPE
AT CULVERT END

	REVISION	
	New	04-21-15
STANDARD ROAD PLAN	DR-103	
	SHEET 1 of 1	
REVISIONS: New. Replaces RF-30C.		
 APPROVED BY DESIGN METHODS ENGINEER		
PIPE CULVERT (INSTALLATION DETAILS)		

CONSULTANT:



IOWA DEPARTMENT OF
NATURAL RESOURCES

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



TYPICAL CROSS SECTIONS AND DETAILS

ROAD MAINTENANCE FOR:
RATHBUN WMU

APPANOOSE/LUCAS COUNTIES

NO.	DATE	REVISION

DRAWN BY: BLF
PROJECT NUMBER: 20-05-04-05
CHK'D BY: DATE: DEC 2020

SHEET NO:

B.03

CONCRETE CULVERT PIPE CLASS "B" BEDDING				
DIAMETER OF PIPE 'D' Inches	(H) MAXIMUM ALLOWABLE COVER IN FEET			
	1500D (Class II)	2000D (Class III)	3000D (Class IV)	3750D (Class V)
18	11	13	20	25
24	12	14	21	26
36	13	16	23	28
48	14	16	24	29
60	14	17	24	29
72	14	17	24	30
84	15	17	25	30
96	15	18	25	31
108	15	18	26	32

CONCRETE CULVERT PIPE CLASS "C" BEDDING				
DIAMETER OF PIPE 'D' Inches	(H) MAXIMUM ALLOWABLE COVER IN FEET			
	1500D (Class II)	2000D (Class III)	3000D (Class IV)	3750D (Class V)
18	9	12	18	22
24	10	13	19	23
36	11	14	20	24
48	11	15	21	25
60	12	15	21	26
72	12	16	22	26
84	13	16	22	27
96	13	16	23	27
108	13	17	23	28

CONCRETE CULVERT PIPE

DESIGN CRITERIA FOR CONCRETE PIPE

The height of cover tables have been prepared from data in the "Concrete Pipe Design Manual" published by the American Concrete Pipe Association using the values listed below.

FOR EMBANKMENT CONDITIONS

- Fill Material Density = $w = 120$ lbs. per cu. ft.
- Settlement Ratio = $rsd = +0.5$
- * = $ku = 0.13$
- Projection Ratio = $p = 0.9$ (Class "C" bedding)
- = $p = 0.7$ (Class "B" bedding)
- Factor of Safety = $F.S. = 1.33$ on Ultimate Strength

* Using a ratio of lateral to vertical earth pressure (k) of 0.37 (saturated yellow clay) and a coefficient of internal friction (u) of 0.34.

The values shown for concrete pipe were calculated for concrete pipe placed under embankment conditions. These values do not apply to design and installation of sanitary sewer except where sanitary sewer would be placed under embankment conditions.

When unclassified pipe is specified, furnish and install a class of pipe meeting the requirements on the chart.

For Steel Round Pipe, the Contractor may choose the type of corrugated pipe and installation to furnish as long as the selection conforms to the limits indicated for the type specified.

When furnishing Steel Arch Pipe, furnish pipe with corrugations as specified in plans.

Minimum allowable cover for concrete and metal pipe is 2 feet for roadway culverts and 1 foot for entrance culverts.

Maximum cover for all sizes and installations of concrete arch pipe is 12 feet.

For all sizes and installations of polyethylene pipe:
minimum cover = 2 feet
maximum cover = 24 feet for 12 to 24 inch pipes
20 feet for 30 to 48 inch pipes

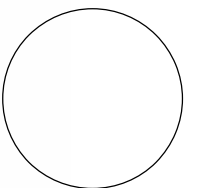
Where a pipe size not listed in the table is required, the 'H' indicated for the next smaller size will apply.

Special installations may be designed to exceed indicated maximum allowable cover by specific modification of one or more of the following conditions:

1. Bedding Class
2. Pipe Strength (including special design pipe)
3. Type of backfill or cover material
4. Compaction requirements for backfill or cover material
5. Controlled trench width

Where site conditions favor such modifications, significant economy may result from special design installations and these should be considered. Special designs will specify particular modification of construction requirements or design criteria as applicable. Necessary modifications of normal requirements will not ordinarily be paid for separately but will be included in the price bid for culvert pipe.

CONSULTANT:



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NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
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TYPICAL CROSS SECTIONS AND DETAILS

ROAD MAINTENANCE FOR:
RATHBUN WMU
APPANOOSE/LUCAS COUNTIES

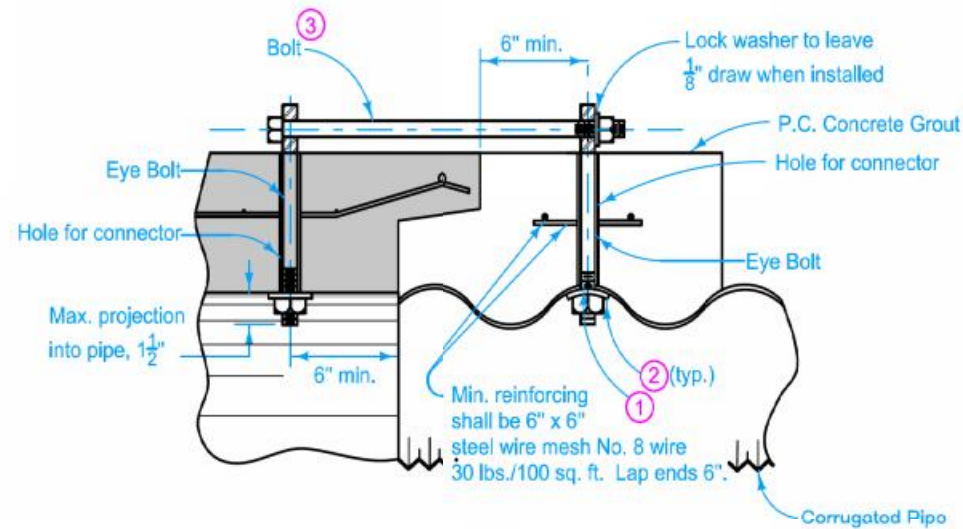
 STANDARD ROAD PLAN	REVISION	
	1	04-19-16
DR-104 SHEET 1 of 3		
REVISIONS: Added general note regarding maximum cover on concrete arch pipes.		
 APPROVED BY DESIGN METHODS ENGINEER		
DEPTH OF COVER TABLES FOR CONCRETE AND CORRUGATED PIPE		

NO.	DATE	REVISION

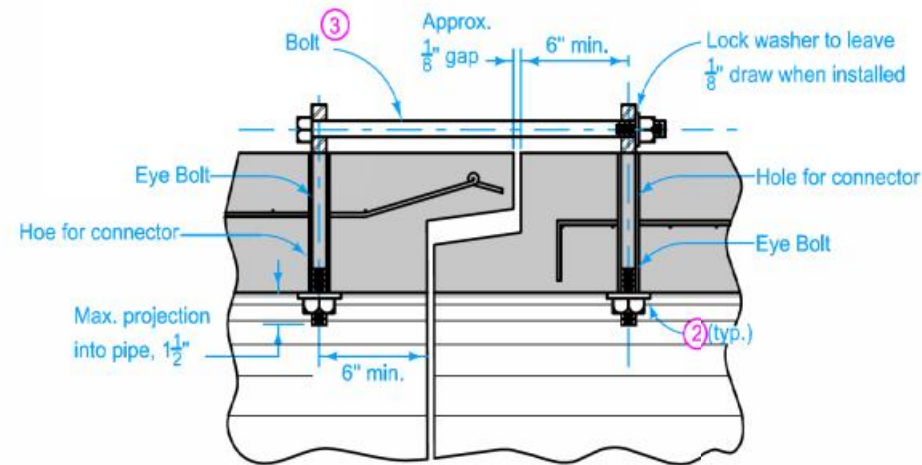
DRAWN BY: BLF PROJECT NUMBER: 20-05-04-05

CHK'D BY: DATE: DEC 2020

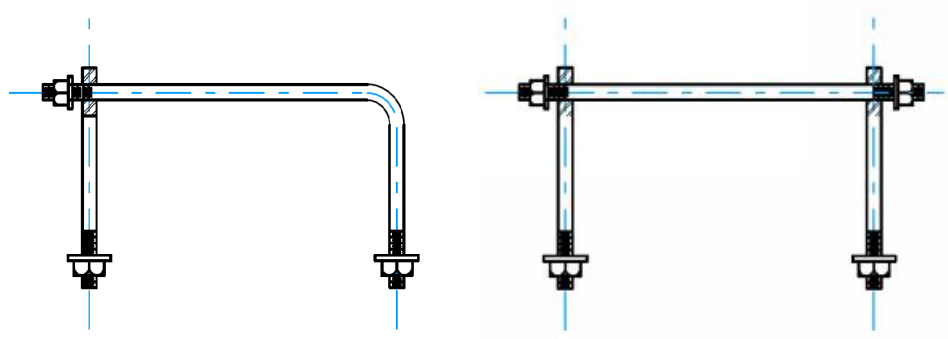
SHEET NO: **B.04**



**SECTION OF PIPE CONNECTOR
(Concrete Pipe to Corrugated Pipe)**

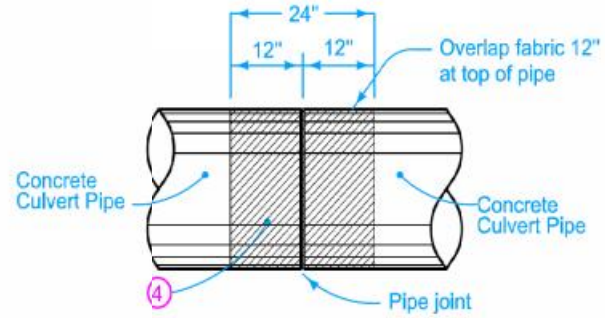


**SECTION OF PIPE CONNECTOR
(Concrete Pipe to Concrete Pipe)**



ONE BEND END THREADED AT BOTH ENDS

OPTIONAL BOLTS/CONNECTORS

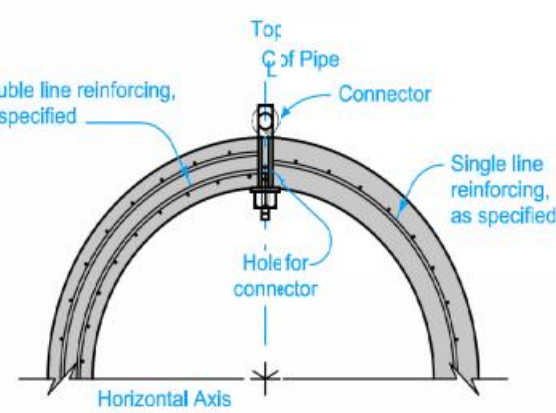


PIPE JOINT WRAPPING

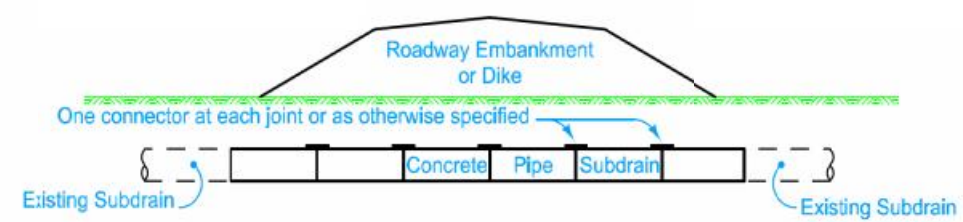
PIPE SIZE (in.)	CONNECTOR AND BOLT SIZE (in.)	HOLE FOR CONNECTOR (in.)
12 to 27	5/8	7/8
30 to 60	3/4	1.0
66 to 132	1.0	1 1/4

- ① If holes are field drilled, place a ribbon of butyl sealant around bolts before placing 3 in. x 3 in. x 1/4 in. plate on bolts through corrugated metal pipe and tightening nuts.
- ② 1 1/2 inch round x 3/8 inch thick washer or 3 in. x 3 in. x 1/4 in. square plate (shaped to pipe radius).
- ③ Connectors with One Bend End and Bell End spacers allowed per Materials I.M. 451. Refer to Optional Bolts detail.
- ④ Engineering fabric for embankment erosion control.

Possible Tabulations:
104-3
104-5B



**TYPICAL SECTION
(Non-Sealed Joint)**



TYPICAL INSTALLATION

TYPE 1 CONNECTION

Wrap all joints on concrete roadway pipe culverts.

Use Type 3 Connections on all culvert pipes, unless specified otherwise. Refer to Materials I.M. 445.01 for Connector requirements.

Minimum 2 threads showing at all threaded ends.

Connections not required on pipe sections installed by trenchless methods.

For belled concrete pipe joints, connectors may be installed on the inside of the pipe.

TYPE 1

One connector at the top of the pipe section.

TYPE 2 (Sealed Joint)

Two connectors near the top of the pipe section. For details of reinforcement, refer to AASHTO M 170 for the class of pipe required. Refer to Materials IM. 491.09 for seal requirements.

TYPE 3 (Non - Sealed Joint)

Two connectors near the top of the pipe section. For details of reinforcement, refer to AASHTO M 170 for the class of pipe required.

	REVISION	
	3	10-17-17
STANDARD ROAD PLAN	DR-121	
	SHEET 1 of 2	

REVISIONS: Added 104-5B to Possible Tabulations, Added Type 3 connection to storm sewer outlet.

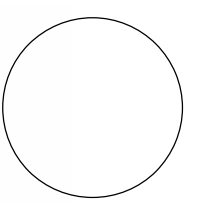
APPROVED BY DESIGN METHODS ENGINEER
Brian Smith

DRAWN BY: BLF
PROJECT NUMBER: 20-05-04-05

CHK'D BY: DATE: DEC 2020

CONNECTED PIPE JOINTS

CONSULTANT:



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



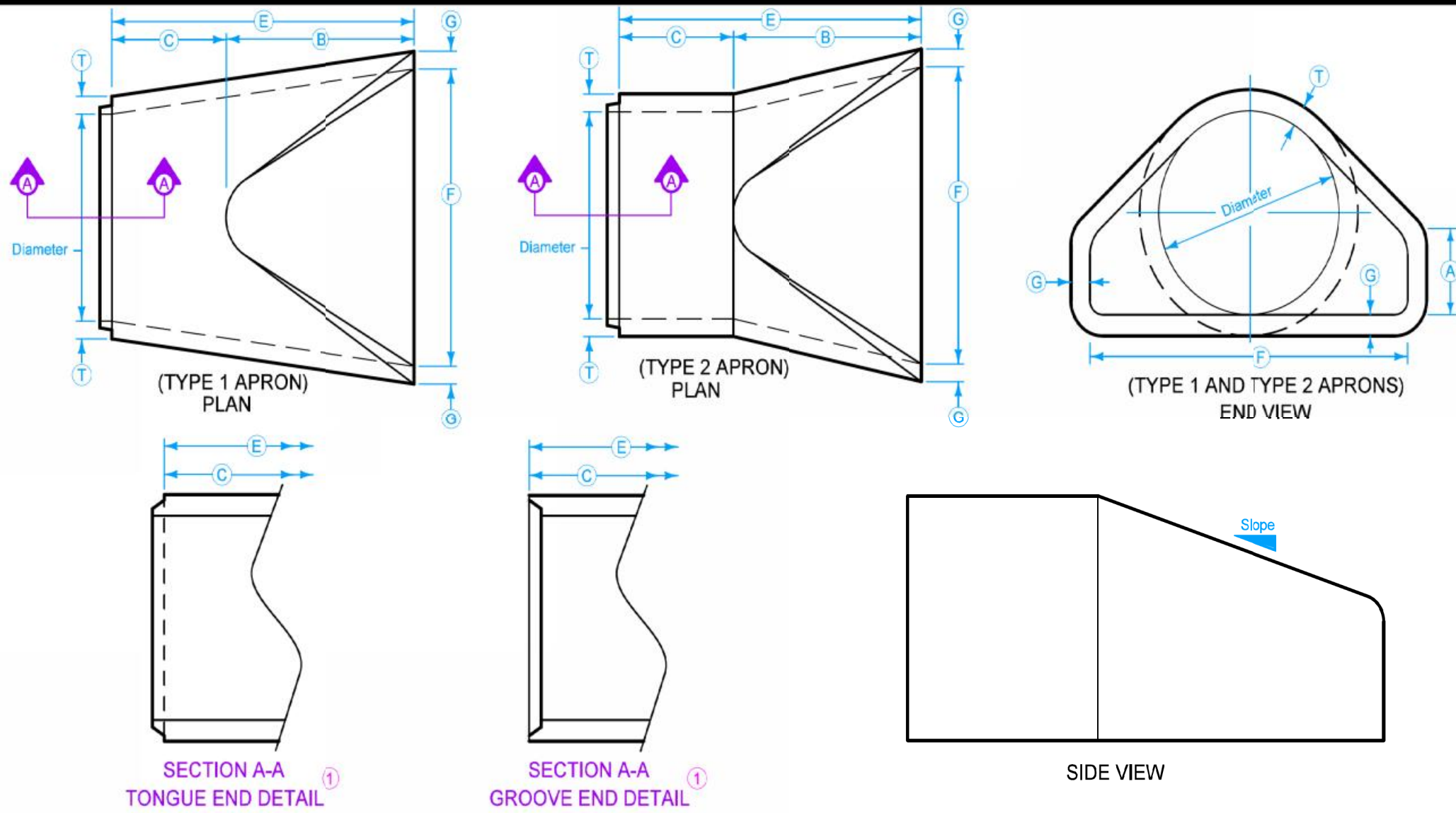
TYPICAL CROSS SECTIONS AND DETAILS

ROAD MAINTENANCE FOR:
RATHBUN WMU

APPANOOSE/LUCAS COUNTIES

NO.	BY	REVISION

B.05



Dimension 'E' shown is the minimum and is considered the design length. Adjust for any difference between the actual length of concrete apron installed and the length indicated hereon within the length of concrete culvert pipe furnished.

Install connected pipe joints as shown on DR-121.

When specified in the contract documents, install pipe apron guards as shown on DR-213. Pipe apron guards are incidental to "Concrete Aprons".

① Tongue end used on inlet end section. Groove end used on outlet end section.

TYPE 1 APRONS								
DIAM.	SLOPE	A	B	MINIMUM		F	G	T
				C	E			
12"	2.4:1	4"	2'-0"	4'-7/8"	6'-7/8"	2'-0"	2"	2"
15"	2.4:1	6"	2'-3"	3'-10"	6'-1"	2'-6"	2 1/4"	2 1/4"
18"	2.3:1	9"	2'-3"	3'-10"	6'-1"	3'-0"	2 1/2"	2 1/2"
21"	2.4:1	9"	3'-0"	3'-1 1/2"	3'-1 1/2"	3'-5"	3"	3"
24"	2.5:1	9 1/2"	3'-7 1/2"	2'-6"	3'-1 1/2"	4'-0"	3"	3"
27"	2.5:1	10 1/2"	4'-1"	2'-0"	3'-1 1/2"	4'-4"	3 1/2"	3 1/2"
30"	2.5:1	12"	4'-6"	1'-7 3/4"	3'-1 3/4"	5'-0"	3 1/2"	3 1/2"
36"	2.5:1	15"	5'-3"	2'-9"	8'-0"	6'-0"	4"	4"
42"	2.5:1	21"	5'-3"	2'-9"	8'-0"	6'-6"	4 1/2"	4 1/2"
48"	2.5:1	24"	6'-0"	2'-0"	8'-0"	7'-0"	5"	5"
54"	1.8:1	27"	5'-0"	3'-0"	8'-0"	7'-6"	5 1/2"	5 1/2"
60"	1.6:1	29 1/2"	5'-0"	3'-0"	8'-0"	8'-0"	5 1/2"	6"
66"	1.7:1	30"	6'-0"	2'-3"	8'-3"	8'-0"	5 1/2"	6"
72"	1.6:1	30"	6'-6"	1'-9"	8'-3"	9'-0"	6"	7"
78"	1.8:1	36"	7'-6"	1'-9"	9'-3"	9'-6"	6 1/2"	7 1/2"
84"	1.3:1	29 1/2"	6'-9"	2'-6 1/2"	9'-3 1/2"	10'-0"	6 1/2"	8"

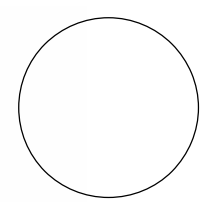
TYPE 2 APRONS								
DIAM.	SLOPE	A	B	MINIMUM		F	G	T
				C	E			
12"	2.4:1	4"	2'-0"	4'-7/8"	6'-7/8"	2'-0"	2"	2"
15"	2.4:1	6"	2'-3"	3'-10"	6'-1"	2'-6"	2 1/4"	2 1/4"
18"	2.3:1	9"	2'-3"	3'-10"	6'-1"	3'-0"	2 1/2"	2 1/2"
21"	2.4:1	9"	3'-0"	3'-1 1/2"	6'-1 1/2"	3'-5"	3"	3"
24"	2.5:1	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3"	3"
27"	2.5:1	10 1/2"	4'-1"	2'-0"	6'-1 1/2"	4'-4"	3 1/2"	3 1/2"
30"	2.5:1	12"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3 1/2"	3 1/2"
36"	2.5:1	15"	5'-3"	2'-9"	8'-0"	6'-0"	4"	4"
42"	2.5:1	21"	5'-3"	2'-9"	8'-0"	6'-6"	4 1/2"	4 1/2"
48"	2.5:1	24"	6'-0"	2'-0"	8'-0"	7'-0"	5"	5"
54"	1.9:1	24 1/2"	5'-5"	2'-7"	8'-0"	7'-6"	5 1/2"	5 1/2"
60"	1.4:1	24 1/2"	5'-0"	3'-0"	8'-0"	8'-0"	5 1/2"	6"
66"	1.7:1	30"	6'-0"	2'-3"	8'-3"	8'-0"	5 1/2"	6"
72"	1.4:1	24"	6'-6"	1'-9"	8'-3"	9'-0"	6"	7"
78"	1.8:1	36"	7'-6"	1'-9"	9'-3"	9'-6"	6 1/2"	7 1/2"
84"	1.5:1	23 1/2"	7'-6 1/2"	1'-9"	9'-3 1/2"	10'-0"	6 1/2"	8"

Contract Item:
Apron, Concrete

Tabulations:
104-3
104-5C

	REVISION	
	2	4-21-20
STANDARD ROAD PLAN	DR-201	
	SHEET 1 of 1	
REVISIONS: Added Designer Info button.		
APPROVED BY DESIGN METHODS ENGINEER		
CONCRETE APRONS		

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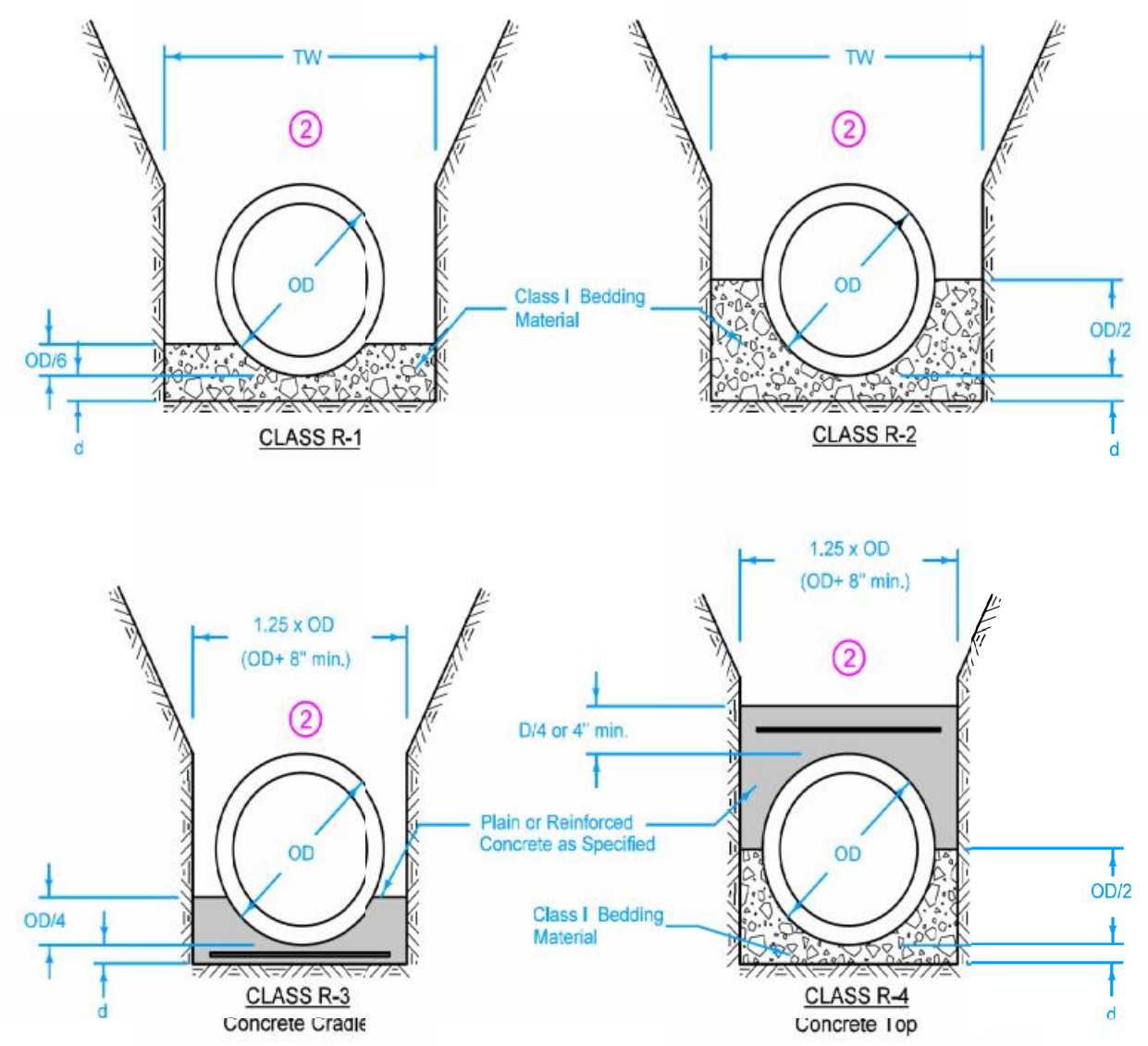


TYPICAL CROSS SECTIONS AND DETAILS

ROAD MAINTENANCE FOR:
RATHBUN WMU
APPANOOSE/LUCAS COUNTIES

NO. BY DATE REVISION
DRAWN BY: PROJECT NUMBER:
BLF 20-05-04-05
CHK'D BY: DATE:
DEC 2020
SHEET NO.:
B.06

RCP AND VCP CIRCULAR PIPE BEDDING ①



Refer to sheet 2 for bury depth restrictions.

- ① Use Bedding Class R-1 or R-2 unless specified otherwise.
- ② Place remainder of bedding and backfill materials as specified in the contract documents.

Key

- OD = Outside diameter of pipe
- OS = Outside span of pipe
- TW = Trench width at top of pipe:
Min. = $OD + 18$ inches
Max. = $1.25 \times OD + 12$ inches OR 54 inches (whichever is greater)
- d = Depth of bedding material below pipe:
 $OD/8$ or $OS/8$, OR 4 inches (whichever is greater)

REINFORCED CONCRETE ARCH AND ELLIPTICAL PIPE BEDDING

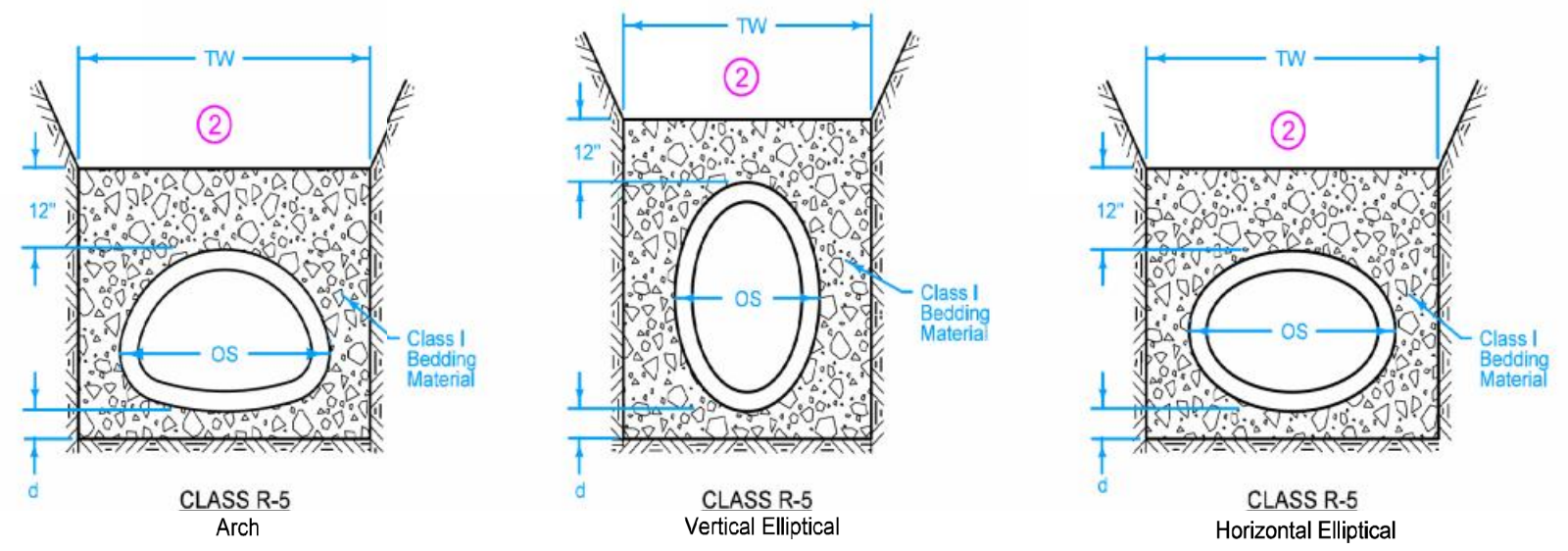
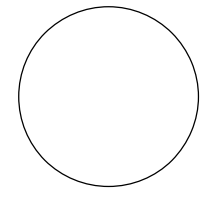


FIGURE 3010.102 SHEET 1 OF 2

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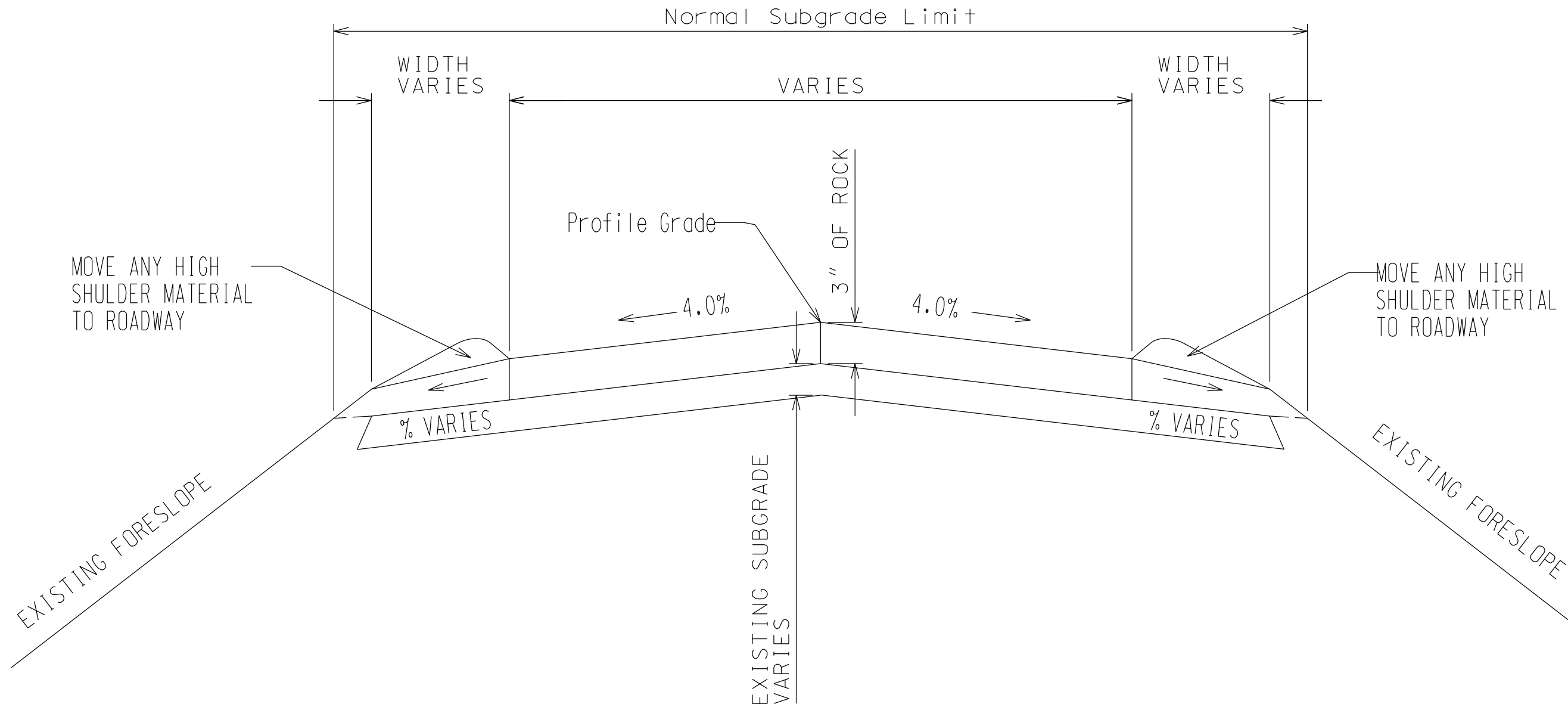
TYPICAL CROSS SECTIONS AND DETAILS

ROAD MAINTENANCE FOR:
RATHBUN WMU
APPANOOSE/LUCAS COUNTIES

SUDAS	IOWA DOT	REVISION
		3 04-16-19
FIGURE 3010.102	STANDARD ROAD PLAN	SW-102
		SHEET 1 of 2
REVISIONS: Changed Class 1 to Class I in CLASS R-5 Vertical Elliptical detail.		
Paul D. Wiegand SUDAS DIRECTOR		Stuart Nicks DESIGN METHODS ENGINEER

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CHK'D BY: DATE: DEC 2020	
SHEET NO: B.07	

RIGID GRAVITY PIPE TRENCH BEDDING



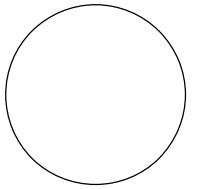
Typical Roadway Section - Center Crown

Note:

Normal sections shown may be appropriately modified for areas specifically designated by the Engineer.

STATION	TO	STATION	LOCATION	WIDTH
0+00		66+39	NEUMEYERS	12'
200+00		226+30	HORNERS	12'
300+00		312+23	HICKORY HOLLOW	12'

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TYPICAL CROSS SECTIONS AND DETAILS

ROAD MAINTENANCE FOR:
RATHBUN WMU

APPANOOSE/LUCAS COUNTIES

NO. BY DATE REVISION

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BLF 20-05-04-05

CHK'D BY: DATE:
DEC 2020

SHEET No:

B.08

ESTIMATED PROJECT QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL
1	2102 - SPECIAL BACKFILL	TON	25.4
2	2127 - RECONSTRUCTION OF ROADBED - BLADING/SHAPING	STA	91
3	2312 - GRANULAR SURFACING ON ROAD, 1.5-INCH CRUSHED STONE	TON	2060
4	2312 - GRANULAR SURFACING ON ROAD, 3-INCH CRUSHED STONE	TON	290
5	2416 - APRON, CONC, 18"	EACH	2
6	2416 - APRON, CONC, 24"	EACH	2
7	2416 - CULV, CONC RDWY PIPE, 18"	LF	60
8	2416 - CULV, CONC RDWY PIPE, 24"	LF	80
9	2507 - ENGINEERING FABRIC	SY	89
10	2507 - REVETMENT, CLASS D or E	TON	18
11	2507 - EROSION STONE	TON	10
12	2528 - TRAFFIC CONTROL	LS	1
13	2533 - MOBILIZATION	LS	1

ESTIMATE REFERENCE INFORMATION

ITEM NO.	DESCRIPTION
1	A. Use for RCP bedding.
2	A. Repair all potholes by scarifying surrounding area to depth of pothole and recompacting. B. Re-establish roadway crown - 4% positive drainage each way from centerline; 4% across the width in banked sections. C. Remove any high shoulder areas, before spreading new rock - dispose of excess material off site.
3.4	A. A final leveling of the aggregate after being dumped, is required. B. From DOT approved source. C. Approximate 3-inch depth
5-8	A. Use type 3 connections. B. Pin and wrap all joint. C. Remove existing culverts and dispose of off project site. D. DOT approved source. E. Use Class II material for bedding. F. Bed pipe halfway up to springline with bedding material. G. Mechanically/manually compact bedding and backfill material.
9	A. For outlets. B. DOT approved source.
10	A. For outlets. B. From DOT approved source.
11	A. For inlets. B. From DOT approved source.

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.

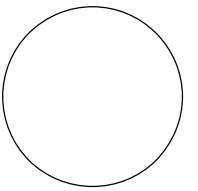
The contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service areas will be subject to the approval of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

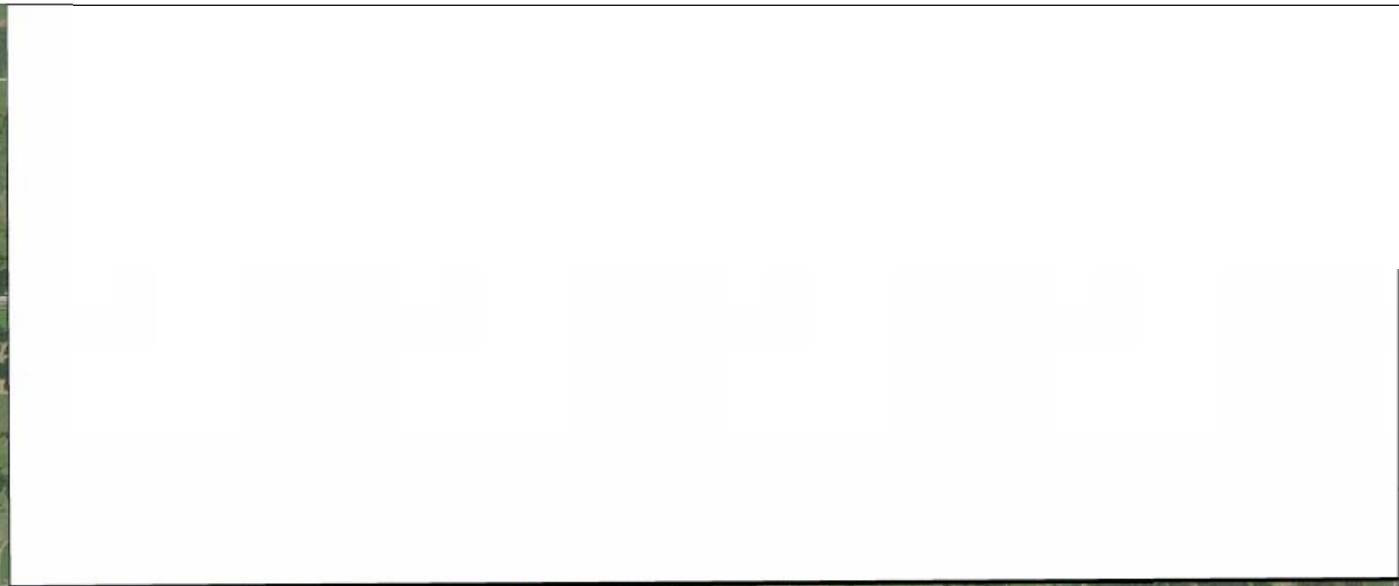
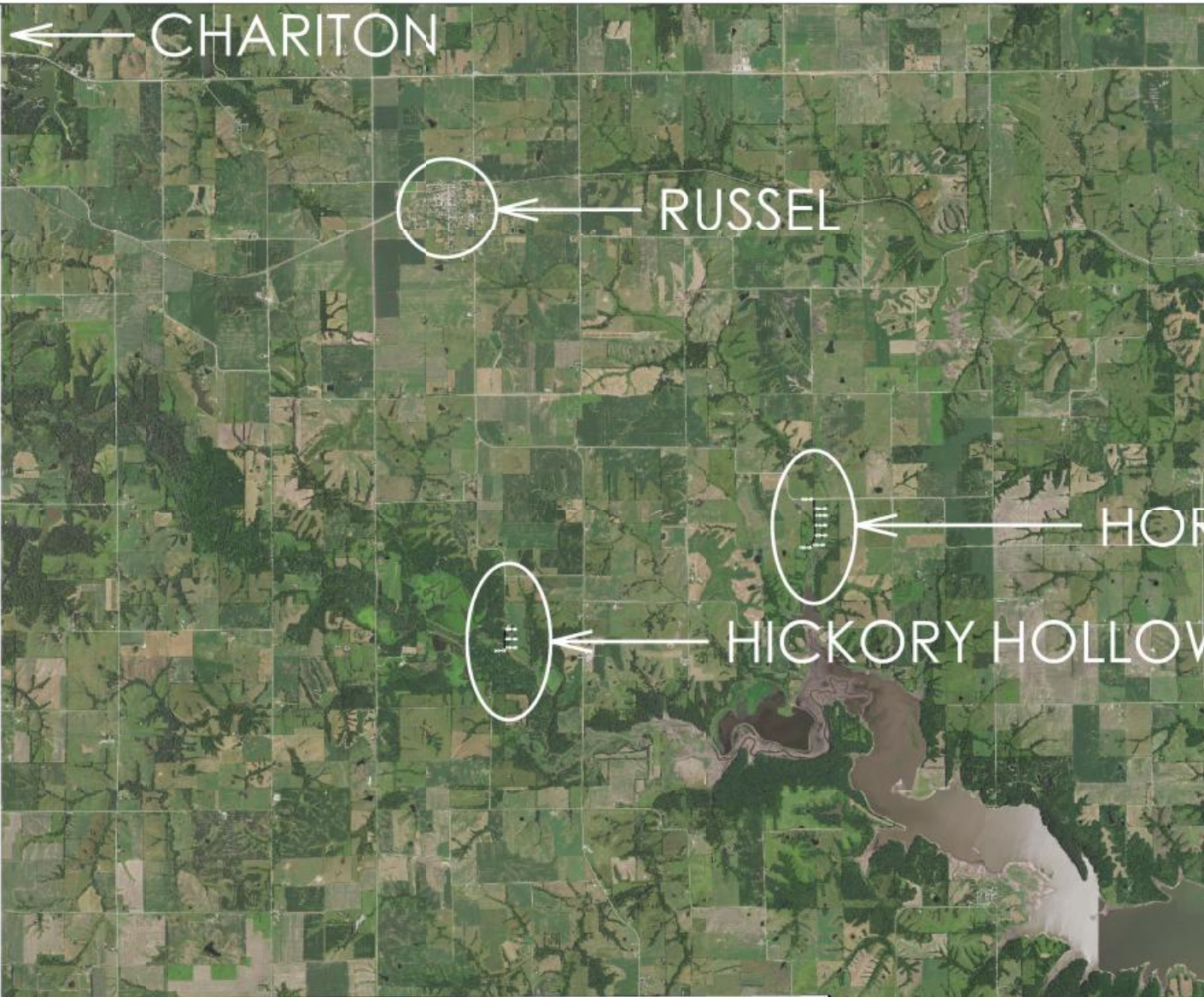


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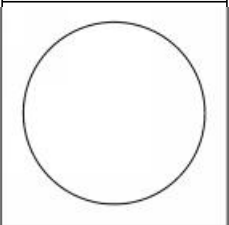
QUANTITIES AND GENERAL INFORMATION

ROAD MAINTENANCE FOR:
RATHBUN WMU
 APPANOOSE/LUCAS COUNTIES

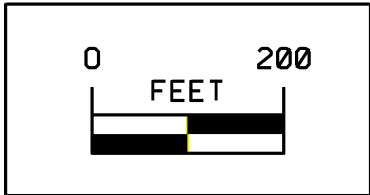
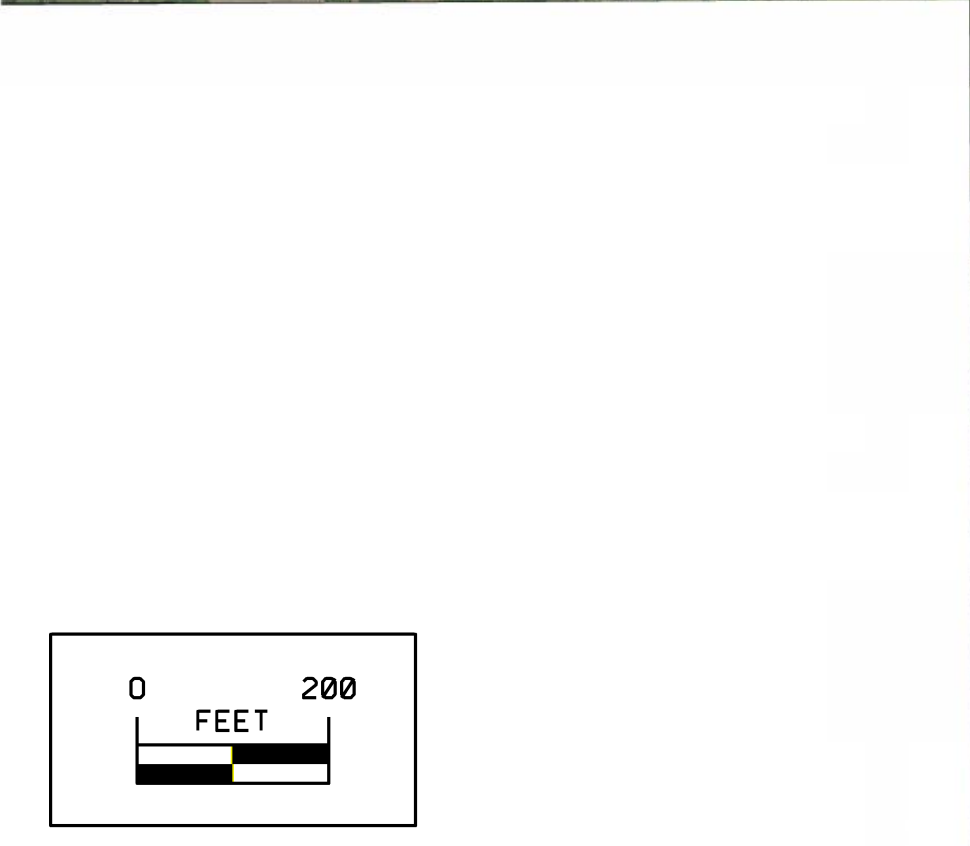
NO.	BY	REVISION
DRAWN BY:	PROJECT NUMBER:	
BLF	20-05-04-05	
CHK'D BY:	DATE:	
	DEC 2020	
SHEET No:		



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SITE PLAN
ROAD MAINTENANCE FOR:
RATHBUN WMU
APPANOOSE/LUCAS COUNTIES

NO.	BY	REVISION

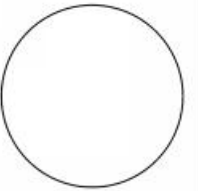
DRAWN BY: BLF PROJECT NUMBER: 20-05-04-05
 CHK'D BY: DATE: DEC 2020

SHEET No: D.01



Blading/Shaping	
0+00	52+50
52.5 STA	
1.5 Inch Roadstone	
0+00	66+39
1395 Ton	

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SITE PLAN

ROAD MAINTENANCE FOR:
RATHBUN WMU

APPANOOSE/LUCAS COUNTIES

NO.	BY	REVISION

DRAWN BY: BLF	PROJECT NUMBER: 20-05-04-05
CHECKED BY:	DATE: DEC 2020

SHEET No.: **D.02**

430TH LANE

200+00

MELROSE
5 MILES

RUSSEL
5 MILES

205+00

210+00

HORNERS
ACCESS

215+00

220+00

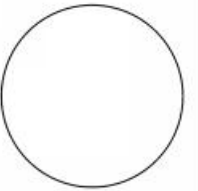
225+00

Blading/Shaping	
200+00	226+30
26.3 STA	
1.5 Inch Roadstone	
200+00	226+30
408 Ton	
3 Inch Clean	
212+50	226+30
260 Ton	

226+30



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



SITE PLAN

ROAD MAINTENANCE FOR:
RATHBUN WMU

APPANOOSE/LUCAS COUNTIES

NO. BY DATE REVISION

DRAWN BY: PROJECT NUMBER:

BLF 20-05-04-05

CHECKED BY: DATE:

DEC 2020

SHEET No.:

D.03

RUSSEL
4 MILES

300+00

305+00

310+00

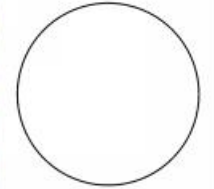
312+23

HICKORY
HOLLOW
ACCESS

Special Backfill		Engineering Fabric
306+00		306+00
14.1 Ton		44.4 SY
310+00		310+00
11.3 Ton		44.4 SY
Bading/Shaping		Revetment, Class E
300+00	312+23	306+00
12.23 STA		9 Ton
		310+00
1.5 Inch Roadstone		9 Ton
300+00	312+23	
257 Ton		Erosion Stone
		306+00
18 Inch RCP FES		5 Ton
310+00		310+00
2 EACH		5 Ton
24 Inch RCP FES		
306+00		
2 EACH		
18 Inch RCP		
310+00		
80 LF		
24 Inch RCP		
306+00		
60 LF		



CONSULTANT:



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ENGINEERING SERVICES - WALLACE BUILDING
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SITE PLAN

ROAD MAINTENANCE FOR:

RATHBUN WMU

APPANOOSE/LUCAS COUNTIES

NO.	BY	REVISION

DRAWN BY: BLF PROJECT NUMBER: 20-05-04-05

CHECKED BY: DATE: DEC 2020

SHEET No.:

D.04