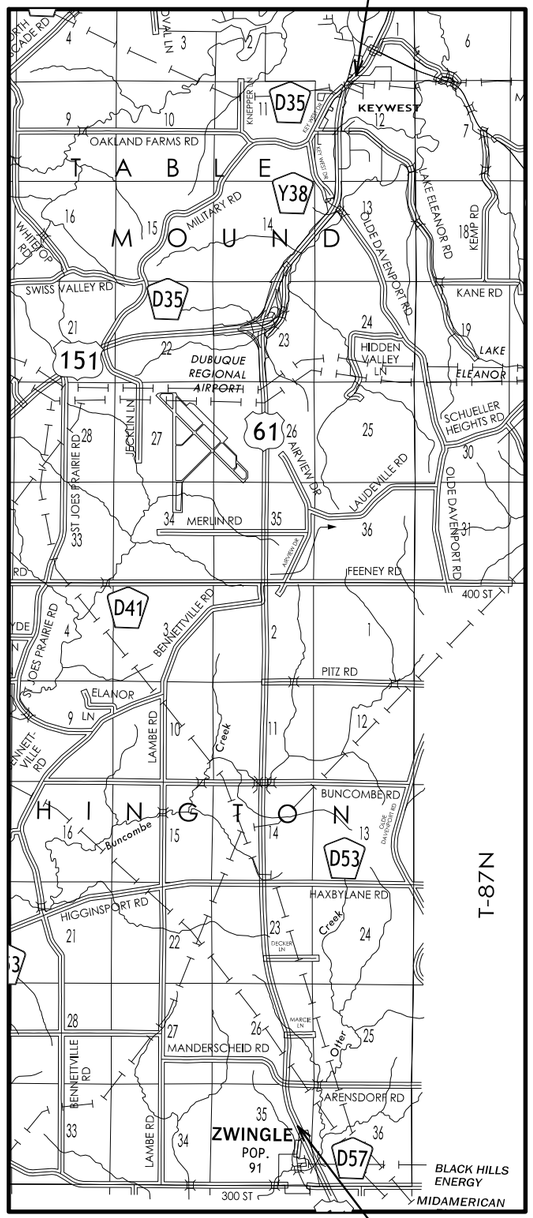
PIPE CULVERTS

BRFN-061-8(140)--39-31

LETTING DATE 02/19/2019

DUBUQUE Co.



IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

DUBUQUE COUNTY

PIPE CULVERTS

0.56 mi N of Co Rd D55 to 0.02 mi S of US 52

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

REVISIONS

TOTAL 33
PROJECT IDENTIFICATION NUMBER
15-31-061-020
PROJECT NUMBER
BRFN-061-8(140)--39-31
R.O.W. PROJECT NUMBER
BRFN-061-8(140)--39-31

INDEX OF SHEETS

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Cindy A. Spencer	Primary Signature Block
CS.1	Justin Humke	Geotechnical

IOWA ONE CALL 1-800-292-8989 811 www.iowaonecall.com Know what's below. Call before you dig.

LICENSED PROFESSIONAL ENGINEER CINDY A. SPENCER 17561 IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Cindy A. Spencer, P.E. Date

License Number 17561

My License Renewal Date is December 31, 2018

Pages or sheets covered by this seal:

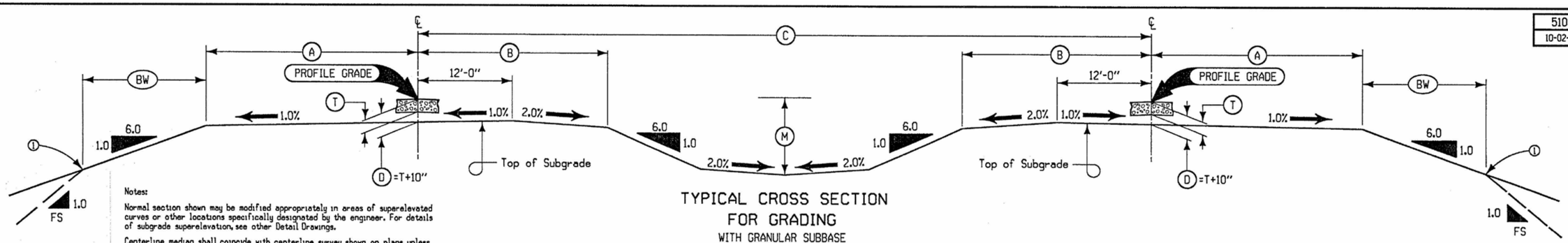
A.1, B.1-B.2, C.1-C.4, D.1-D.13, G.1-G.6, J.1, M.1, U.1, V.1

CHECK PLANS

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER A.1

3:22:30 PM 10/23/2018 V8i_IDOTRoadpw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\31061020\15\Design\31061140_A01.sht

5103
10-02-90



TYPICAL CROSS SECTION FOR GRADING

WITH GRANULAR SUBBASE

Notes:

Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer. For details of subgrade superelevation, see other Detail Drawings.

Centerline median shall coincide with centerline survey shown on plans unless specified otherwise.

For typical cross sections of ditches and backslopes for roadway in cut, refer to other detail drawings within the plans.

(1) Refer to Detail Project Plan and Cross Sections for specific locations of foreslope change.

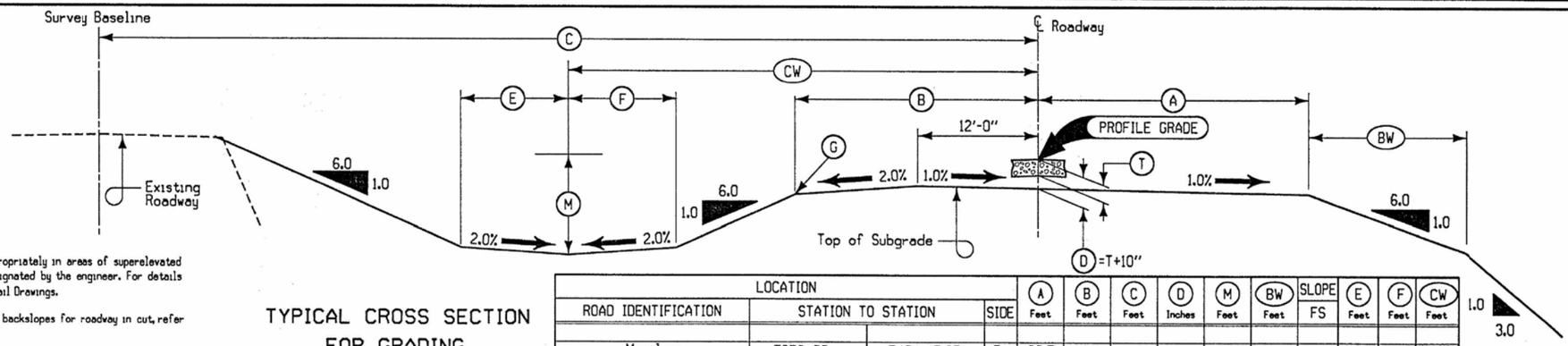
(M) Design depth of median ditch.

Refer to Detailed Project Plan and Cross Sections for Specific Locations of Grading

LOCATION			A	B	C	D	M	BW	SLOPE
ROAD IDENTIFICATION	STATION TO STATION		Feet	Feet	Feet	Inches	Feet	Feet	FS
Mainline	5187+00	5376+00	30.5	26.0	88.0	20	4.1	17.5	3
Mainline	5454+60	5464+00	30.5	26.0	Varies	20	Varies	17.5	3
Mainline	5464+00	5470+00	30.5	26.0	Varies	20	4.1	17.5	3

FOR INFORMATION ONLY

5103
01-02-92
MODIFIED



Notes:

Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer. For details of subgrade superelevation, see other Detail Drawings.

For typical cross sections of ditches and backslopes for roadway in cut, refer to other detail drawings within the plans.

(M) Design depth of median ditch.

TYPICAL CROSS SECTION FOR GRADING

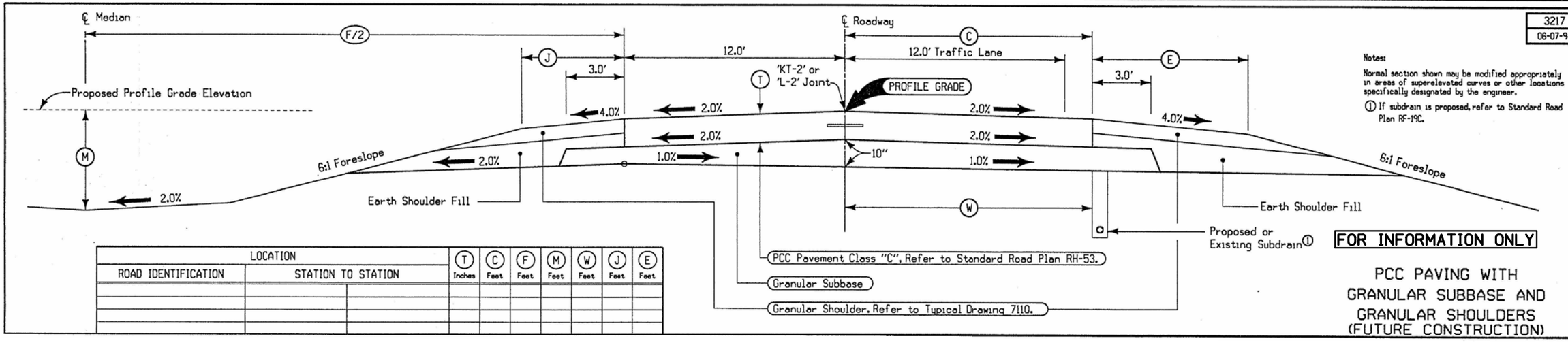
2 LANES

Refer to Detailed Project Plan and Cross Sections for Specific Locations of Grading

LOCATION			SIDE	A	B	C	D	M	BW	SLOPE	E	F	CW
ROAD IDENTIFICATION	STATION TO STATION			Feet	Feet	Feet	Inches	Feet	Feet	FS	Feet	Feet	Feet
Mainline	5376+00	5404+15.65	Rt.	30.5	26.0	Varies	20	4.1	17.5	3	5.0	5.0	44.0
Mainline	5404+15.65	5424+00	Rt.	30.5	26.0	Varies	20	Varies	17.5	3	Varies	5.0	Varies
Mainline	5424+00	5451+00	Rt.	30.5	26.0	Varies	20	4.1	17.5	3	5.0	5.0	Varies
Mainline	5451+00	5454+60	Rt.	30.5	26.0	Varies	20	Varies	17.5	3	5.0	5.0	Varies

FOR INFORMATION ONLY

3217
06-07-94



Notes:

Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

(1) If subdrain is proposed, refer to Standard Road Plan RF-19C.

LOCATION			T	C	F	M	W	J	E
ROAD IDENTIFICATION	STATION TO STATION		Inches	Feet	Feet	Feet	Feet	Feet	Feet

FOR INFORMATION ONLY

PCC PAVING WITH GRANULAR SUBBASE AND GRANULAR SHOULDERS (FUTURE CONSTRUCTION)

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER B.1

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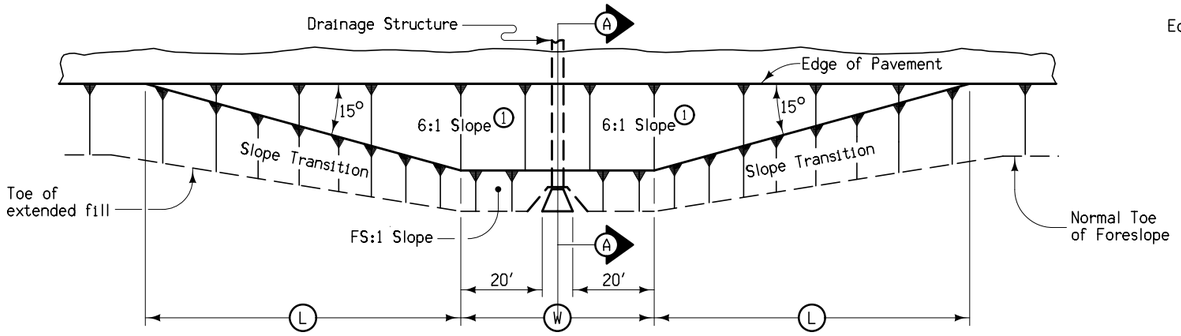
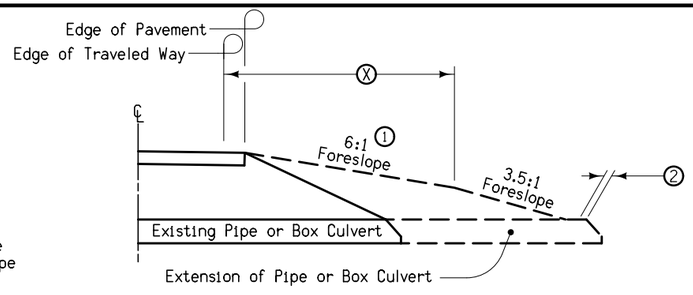


PLAN VIEW



SECTION A-A

STRUCTURE LOCATION		W	L	X
STATION (3)	SIDE	Feet	Feet	Feet
550+10.00 Rt.	Rt.	44.5	49	32
550+10.00 Rt.	Lt.	44.5	46	32

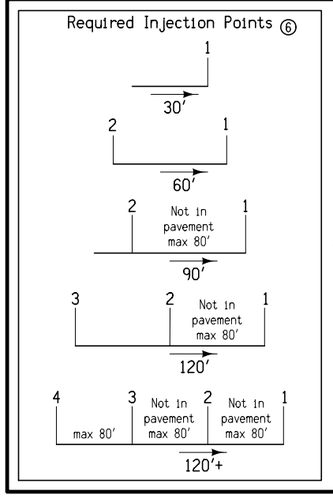
4311
MODIFIED

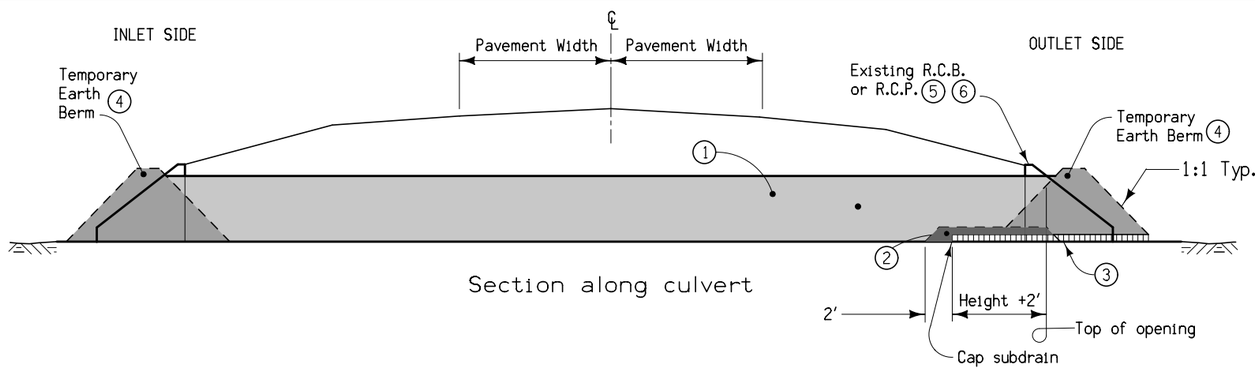
Notes:

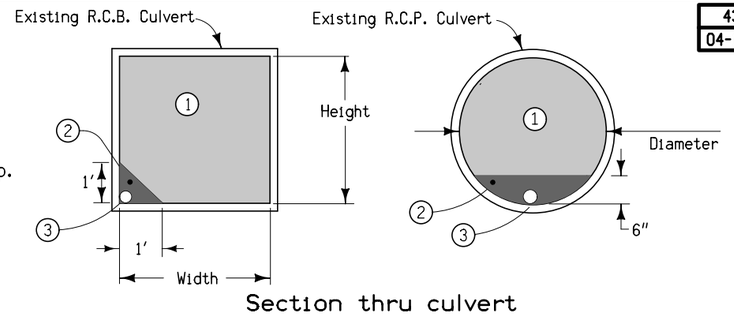
At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, flatten the foreslope as indicated so as to cover the structure. Minimum earth cover is 6". Lengths L and W measured along roadway center line.

(1) Slope may be flatter than 6:1.
(2) 6" Minimum for pipe installations or to top of headwall on R.C.B.
(3) Station of Structure Given at Roadway Centerline.
(W) = Pipe or R.C.B. opening width plus 20 feet each side.

BARNROOF FORESLOPE AT DRAINAGE STRUCTURE







4315
04-15-08

(1) Flowable Mortar.
(2) Granular Backfill.
(3) 4" subdrain at flowline elevation of culvert shall be extended into the culvert a distance of 2' plus the height of the culvert. Granular Backfill covers subdrain and extends an additional 2'. Subdrain and granular backfill are incidental to flowable mortar.
(4) Ends of culvert shall be plugged sufficiently to retain flowable mortar. Temporary earth berms are incidental to flowable mortar.
(5) Removal of headwalls may be required.
(6) Outlet shall be filled first. See injection point detail for additional information.

DETAILS OF CULVERT ABANDONMENT WITH FLOWABLE MORTAR (Rectangular structures less than 8' in either height or width. Circular structures less than 10' Dia.)

100-0A
10-28-97

ESTIMATED ROADWAY QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2101-0850002	CLEARING AND GRUBBING	UNIT	53.60	
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	714.00	
3	2315-8275025	SURFACING, DRIVEWAY, CLASS A CRUSHED STONE	TON	16.10	
4	2402-0425040	FLOODED BACKFILL	CY	133.70	
5	2402-2720100	EXCAVATION, CLASS 20, ROADWAY PIPE CULVERTS	CY	5625.00	
6	2416-0100018	APRON, CONCRETE, 18 INCH	EACH	3.00	
7	2416-0100024	APRON, CONCRETE, 24 INCH	EACH	8.00	
8	2416-0100030	APRON, CONCRETE, 30 INCH	EACH	3.00	
9	2416-0100036	APRON, CONCRETE, 36 INCH	EACH	1.00	
10	2416-1180018	CULVERT, CONCRETE ROADWAY PIPE, 18 INCH	LF	36.00	
11	2416-1180024	CULVERT, CONCRETE ROADWAY PIPE, 24 INCH	LF	22.00	
12	2416-1180030	CULVERT, CONCRETE ROADWAY PIPE, 30 INCH	LF	8.00	
13	2416-1180036	CULVERT, CONCRETE ROADWAY PIPE, 36 INCH	LF	14.00	
14	2416-1262024	CULVERT, CONCRETE PIPE, 2000D, TRENCHLESS, 24 INCH	LF	70.00	
15	2417-1007000	CULVERT, CORRUGATED POLYETHYLENE ROADWAY PIPE, 48 INCH	LF	434.00	
16	2417-1007000	CULVERT, CORRUGATED POLYETHYLENE ENTRANCE PIPE, 30 INCH	LF	127.00	
17	2417-1007000	CULVERT, CORRUGATED POLYETHYLENE ENTRANCE PIPE, 48 INCH	LF	117.00	
18	2417-1130024	CULVERT, CORRUGATED POLYETHYLENE ENTRANCE PIPE, 24 INCH	LF	125.00	
19	2417-1140024	CULVERT, CORRUGATED POLYETHYLENE ROADWAY PIPE, 24 INCH	LF	152.00	
20	2417-1140030	CULVERT, CORRUGATED POLYETHYLENE ROADWAY PIPE, 30 INCH	LF	29.00	
21	2417-1140036	CULVERT, CORRUGATED POLYETHYLENE ROADWAY PIPE, 36 INCH	LF	569.00	
22	2502-8212024	SUBDRAIN, LONGITUDINAL (BACKSLOPE), 4 INCH	LF	190.00	
23	2502-8221306	SUBDRAIN OUTLET, DR-306	EACH	1.00	
24	2503-0200036	REMOVAL OF STORM SEWER PIPE, LESS THAN OR EQUAL TO 36 INCH	LF	1784.00	
25	2503-0200136	REMOVAL OF STORM SEWER PIPE, GREATER THAN 36 INCH	LF	82.00	
26	2506-4984000	FLOWABLE MORTAR	CY	5.80	
27	2507-3250005	ENGINEERING FABRIC	SY	4829.80	
28	2507-6800061	REVETMENT, CLASS E	TON	3680.40	
29	2510-6745850	REMOVAL OF PAVEMENT	SY	18.70	
30	2526-8285000	CONSTRUCTION SURVEY	LS	1.00	
31	2528-8445110	TRAFFIC CONTROL	LS	1.00	
32	2533-4980005	MOBILIZATION	LS	1.00	
33	2599-9999005	INTAKE, SW-563	EACH	1.00	
34	2599-9999005	TIE JOINTS	EACH	17.00	
35	2601-2634100	MULCHING	ACRE	0.10	
36	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	0.10	
37	2601-2638352	SLOPE PROTECTION, WOOD EXCELSIOR MAT	SQ	151.60	
38	2601-2640350	SPECIAL DITCH CONTROL, WOOD EXCELSIOR MAT	SQ	30.70	
39	2601-2643110	WATERING FOR SOD, SPECIAL DITCH CONTROL, OR SLOPE PROTECTION	MGAL	36.50	
40	2601-2643300	MOBILIZATION FOR WATERING	EACH	3.00	
41	2602-0000160	ROCK CHECK DAM	LF	66.00	
42	2602-0000170	MAINTENANCE OF ROCK CHECK DAM	EACH	9.00	
43	2602-0000180	REMOVAL OF ROCK CHECK DAM	EACH	3.00	
44	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 INCH	LF	248.00	
45	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	248.00	
46	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	2.00	
47	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	2.00	

232-10
04-18-17

EMERALD ASH BORER

Any living, dead, cut or fallen material of the ash (Fraxinus spp.) including trees, nursery stock, logs, firewood, stumps, roots, branches, and composted or uncomposted ash chips can be freely moved within the yellow areas of the most recent Federal EAB Quarantine & Authorized Transit.

https://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/downloads/eab_quarantine_map.pdf.

Obtain appropriate Compliance Agreements from USDA APHIS PPQ prior to moving any of the above listed ash articles to areas outside the yellow zone on the map.

For questions, concerns, and general assistance, contact:

USDA APHIS PPQ, Iowa office, 515-414-3295

Or

Iowa Department of Agriculture & Land Stewardship
515-725-1470
Entomology@IowaAgriculture.gov

100-1D
10-18-05

PROJECT DESCRIPTION

This project is for culvert maintenance and replacements and ditch work on U.S. 61 in Dubuque County, from Jackson County to U.S. 52.

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2101-0850002	CLEARING AND GRUBBING
		Refer to Tab. 110-17 for locations and quantities.
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW
		Quantity includes 485 CY cut and 77 CY fill plus shrink at Sta. 550+10. Cut quantity increased 40% to account for ditch shaping throughout the project.
3	2315-8275025	SURFACING, DRIVEWAY, CLASS A CRUSHED STONE
		Refer to Tab. 102-3 for locations and quantities.
4	2402-0425040	FLOODED BACKFILL
5	2402-2720100	EXCAVATION, CLASS 20, ROADWAY PIPE CULVERTS
		Refer to Tab. 104-3 for locations and quantities. In locations where a letdown pipe is being replaced by a rock flume with an RCP extension, the Class 20 quantity includes all excavation necessary to remove the existing pipe and backfill trench.
22	2502-8212024	SUBDRAIN, LONGITUDINAL (BACKSLOPE), 4 INCH
23	2502-8221306	SUBDRAIN OUTLET, DR-306
		Refer to Sheet CS.1 for additional information.
24	2503-0200036	REMOVAL OF STORM SEWER PIPE, LESS THAN OR EQUAL TO 36 INCH
25	2503-0200136	REMOVAL OF STORM SEWER PIPE, GREATER THAN 36 INCH
		Refer to Tab. 110-9 for locations and quantities.
26	2506-4984000	FLOWABLE MORTAR
		For abandonment of culvert at Sta. 550+00. Refer to Detail 4315 in the B sheets for additional information.
		Granular backfill and subdrain as necessary per detail is incidental to this item.
27	2507-3250005	ENGINEERING FABRIC
28	2507-6800061	REVETMENT, CLASS E
		Refer to Tab. 100-23 for locations and quantities.
29	2510-6745850	REMOVAL OF PAVEMENT
		Refer to Tab. 110-1 for locations and quantities.
31	2528-8445110	TRAFFIC CONTROL
		Refer to J sheets for additional information.
33	2599-9999005	INTAKE, SW-563
		Construction materials, methods, method of measurement, and basis of payment shall be per section 2435 of the Standard Specifications.
34	2599-9999005	TIE JOINTS
		Install ties on pipe joints per Standard Road Plan DR-121. Includes removing and resetting sections of pipe to ensure that joints are tight, including bedding material as necessary. Refer to Tab. 104-3 for locations.
		Each location where joints will be tied shall be counted (may be multiple joints tied at each location).
		Each end of a pipe is considered a separate location. Contractor will be paid the contract unit price for each location where joints are tied. Payment will be full compensation for furnishing all labor, equipment, and materials necessary to complete work, including excavation and backfill.
37	2601-2638352	SLOPE PROTECTION, WOOD EXCELSIOR MAT
38	2601-2640350	SPECIAL DITCH CONTROL, WOOD EXCELSIOR MAT
		Refer to Tab. 100-22 for locations and quantities.
39	2601-2643110	WATERING FOR SOD, SPECIAL DITCH CONTROL, OR SLOPE PROTECTION
		Assumed 50 gallons per square application rate, for 4 total waterings.
41	2602-0000160	ROCK CHECK DAM
		Refer to Tab. 100-32 for locations and additional information.
44	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 INCH
		Refer to Tab. 100-19 for locations and quantities.

105-4
10-18-11

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
DR-101	04-18-17	Pipe Culvert (Bedding and Backfill)
DR-102	04-21-15	Pipe Culvert (Cover and Camber)
DR-103	04-21-15	Pipe Culvert (Installation Details)
DR-104	04-19-16	Depth of Cover Tables for Concrete and Corrugated Pipe
DR-121	10-17-17	Connected Pipe Joints
DR-122	10-18-16	Construction of Type "C" Concrete Adaptors for Pipe Culvert Connections
DR-141	04-18-17	Pipe Bends and Half Pipe
DR-201	10-16-18	Concrete Aprons
DR-203	04-21-15	Metal Pipe Aprons and Beveled Ends
DR-213	10-17-17	Pipe Apron Guard
DR-601	04-18-17	Reinforced Concrete Pipe Culvert
DR-621	04-18-17	Pipe Extension
DR-625	04-18-17	Pipe Extension Letdown Structure with Metal Apron
EC-101	04-19-16	Wood Excelsior Mat for Ditch Protection
EC-103	04-21-15	Wood Excelsior Mat for Slope Protection
EC-204	04-18-17	Perimeter and Slope Sediment Control Devices
EC-301	10-18-16	Rock Erosion Control (REC)
EC-302	10-16-18	Rock Check Dam
EW-101	10-17-17	Embankment and Rebuilding Embankments
EW-110	10-20-15	Ditch Blocks and Dikes
SW-563	04-17-18	Vertical Throat Area Intake (Large Box)
TC-1	04-16-13	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-21-15	Work Within 15 ft of Traveled Way
TC-402	04-21-15	Work Within 15 ft of Traveled Way
TC-418	04-17-18	Lane Closure on Divided Highway

110-9
MODIFIED

CULVERT REMOVAL OR ABANDONMENT

Refer to Details 4315 and 4316

* Not a bid item

Location Station	Description	Removal Length	Abandon Length	Fill Material: Flowable Mortar	Fill Material: Granular Backfill*	4" Perforated Subdrain*	Remarks
		FT	FT	CY	TON	LF	
5063+27.00	24" CMP	109.0					Entrance pipe RT. Includes 2 aprons
5072+95.00	24" CMP	51.0					Letdown. Includes apron
5074+00.00	24" CMP	59.0					Letdown. Includes apron
5094+52.00	18" CMP	56.0					Letdown. Includes apron
5215+64.00	36" PVC	80.0					Letdown. Pipe part. broken. Tie loc @ RCP assumed
5236+50.00	24" CMP	92.0					Letdown. Includes apron
5251+14.00	24" CMP	117.0					Ditch letdown
5307+40.00	48" CMP	82.0					Entrance pipe LT. Includes 2 aprons
5333+62.00	24" CMP	107.0					Entrance pipe RT. Includes 2 aprons
5355+78.00	36" CMP	56.0					Letdown. Includes apron
5383+10.00	24" CMP	63.0					Letdown. Includes apron
5385+40.00	18" CMP	44.0					Letdown. Includes apron
5441+85.00	24" CMP	325.0					Ditch letdown
5445+55.00	36" PVC	224.0					Letdown. Includes CMP apron. Remove reducer
5461+22.00	36" PVC	190.0					Letdown. Includes CMP apron. Remove reducer
442+29.00	36" CMP	56.0					Letdown. Includes apron. Field verify.
462+00.00	24" CMP	29.0					Letdown. Includes apron
530+31.50	24" CMP	50.0					Ditch letdown. Do not disturb RCB
550+00.00	24" RCP		50.0	5.8	0.4	6.0	Remove aprons
586+00.00	30" RCP Half Pipe	24.0					
	30" RCP	8.0					
592+00.00	24" CMP	36.0					Pipe 137' LT under gravel road
605+18.10	24" RCP	8.0					

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area	Saw Cut*	Remarks
				SY	LF	
592+00.00		LT	HMA	18.7	40.0	Parking lot pavement; remove 12' x 14'

102-3
MODIFIED

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.
(1) Refer to MI-210
(2) Refer to EW-501.
(3) Refer to EW-501 or EW-502. Lengths left and right are full height pipe only and are exclusive of beveled ends.
*Predetermined for access point not constructed with this project.

Location: Station	Location: Side	Type: A, B, C, Safety Ramp, or Predetermined*	Length of Opening (1): Case	Length of Opening (1): 1½" Dropped Curb	Length of Opening (1): 3" Dropped Curb	W	(1)(2) PR	(2) SR	Pipe Culvert (3): H	Pipe Culvert (3): Size	Pipe Culvert (3): Pipe Length	Pipe Culvert (3): Lt.	Pipe Culvert (3): Rt.	Beveled Ends * (DR-203)	Driveway Surface Area: HMA	Driveway Surface Area: PCC	Driveway Surfacing Material	Remarks
			1 or 2	LF	LF	FT	FT	FT	FT	IN	LF	LF	LF	No.	SY	SY	TON	
5063+27.00	RT	C								24	125.0	49.5	59.5	2				Use HDPE pipe
5307+40.00	LT	C				23.0				48	117.0	39.0	46.0	2			16.100	Use HDPE pipe
5333+62.00	RT	C								30	127.0	45.7	61.3	2				Use HDPE pipe

110-17
04-18-17

CLEARING AND GRUBBING

Location: Station to Station or Ref. Loc. Sign to Ref. Loc. Sign or Description	Location: Direction of Travel	Work and Material Type	Trees, Stumps, and Logs and Down Timber Material Diameters: 3"-6"	>6"-9"	>9"-12"	>12"-15"	>15"-18"	>18"-24"	>24"-30"	>30"-36"	>36"-42"	>42"-48"	>48"-60"	>60"-72"	>72"	All Other Materials: Length	All Other Materials: Width	Estimated Quantities: Units	Estimated Quantities: Area	Estimated Quantities: Herbicide Application	Remarks
																FT	FT	Units	Acres	Each	
5236+50 LT		Stumps - Grubbing				1												6.6			
5461+22 RT		Trees - Clearing and Grubbing			5		1											47.0			
586+00 RT		Trees - Clearing and Grubbing																0.0			

DRAINAGE STRUCTURE BY ROAD CONTRACTOR

Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe. All RCP 2000D unless indicated otherwise.
* Not a bid item
(1) Diameter or equivalent diameter
(2) UNCL = Unclassified Pipe CMP = Corrugated Metal Pipe RCP = Reinforced Concrete Pipe LCP = Arch or Elliptical Low Clearance Pipe SARC = Steel Arch Pipe
(3) Backfill according to DR-101 (4) EF!

Drainage Area	Location	Type	Size (1)	Kind Of Pipe (2)	Length New Const.	Bedding Class	Design Cover (H)	Beveled End* (4) (DR-203)	Apron No.		Apron Guard* (DR-213)	Elbow*	Diaphragm* (DR-501)	Tee Section* (DR-142)	"D" Section* (DR-141)	Reducer*	Type 'C' Connections* (DR-122)		Tie Joints		Connected Pipe Jt* (DR-121)	4" Perforated Subdrain*	Flow Line Elevations				Dimensions Lin. Ft. Total		Dimensions Lin. Ft. Extensions		Skew Ahead Degrees		Dike Rt.	Dike Location Station	Dike Top Elev.	Dike Type	Class 20	Flowable Mortar	Floodable* Backfill	Porous* Backfill	Flooded Backfill (3)	Remarks
ACRE			IN		LF		FT	EACH	LT	RT	No.	No.	No.	No.	No.	No.	Type	No.	LT	RT	Type	FT	Lt.	Rt.	Other	Other	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.					CY	CY	(A)	(B)	(A+B) CY	
	US 61																																								
	5072+95.00	DR-625	24	HDPE	54	B		1				2					C-3	1					923.75	UAC	923.85	937.55	156.0	UAC	51.0			6					72.0			4.2	4.2	C=2' B=43' E=6'
	5074+00 LT	DR-621	24	RCP	8	B			1		1						C-1	1			3		841.49	UAC	841.63		64.3	UAC	8.0								65.0			1.0	1.0	
	5094+52.00	DR-621	18	RCP	14	B			1		1						C-1	1			3		993.50	UAC	993.70		82.1	UAC	14.0		25						152.0			1.3	1.3	
	5215+64.00	DR-622	36	HDPE	85	B		1				1					C-3	1					1022.50	UAC	1026.15		148.6		80.0		13						1294.0			7.7	7.7	Verify RCP end l
	5236+50.00	DR-625	24	HDPE	98	B		1				2					C-3	1					981.50	UAC	981.70	1007.00	119.6	UAC	95.4								240.0			7.0	7.0	C=2' B=83' E=10'
	5355+78.00	DR-625	36	HDPE	61	B		1				2					C-3	1					1081.91	UAC	1082.01	1097.51	312.0	UAC	56.0			2					111.0			5.5	5.5	C=2' B=49' E=5'
	5383+10.00	DR-621	24	RCP	6	B				1	1						C-1	1			3		UAC	1087.81	1088.35		UAC	54.2		6.0							62.0			0.9	0.9	
	5385+40.00	DR-621	18	RCP	22	B				1	1						C-1	1			3		UAC	1083.88	1084.16		UAC	59.1		22.0	7						57.0			1.7	1.7	
	5441+85 RT	DR-631	36	HDPE	358	B		2				1	2										987.00	922.10	922.25			334.0					RT	5441+95.00	991.00	F	1082.0			36.4	36.4	Ditch Letdown
	5445+55.00	DR-625	48	HDPE	234	B		1				2					C-3	1					UAC	918.00	984.80	918.10	UAC	253.0		228.0							1240.0			28.9	28.9	C=8' B=210' E=10
	5461+22.00	DR-625	48	HDPE	200	B		1				2					C-3	1					UAC	828.50	888.40	838.74	UAC	250.0		194.0		41					938.0			24.7	24.7	C=8' B=174' E=12
	442+17		18						1		1																														
	442+29.00	DR-621	36	RCP	14	B			1		1						C-1	1	1		3		821.85		821.69		102.0		14.0			30								2.0	2.0	Field verify FLs
		DR-625	36	HDPE	65	B		1				2					C-3	1						794.60	811.40	794.80		160.0		56.0		30					208.0			7.7	7.7	C=2' B=48' E=10'
	458+00 LT		24																2	1	3																			
	462+00 LT	DR-621	24	RCP	8	B			1		1						C-1	1		1	3		767.92	UAC	768.22		40.0		8.0								28.0			1.0	1.0	
	471+40.00		36																1	3	3																			
	493+80.00		24																	1	3																			
	509+50.00		36																2		3																			
	515+30.00		24																2		3																			
	520+75.87		24																2		3																			
	521+04.13		24																	2	3																			
	535+20 LT		24	RCP						1	1										3																			
0.9	550+10 RT	DR-601	24	RCP	70	B			1	1	2										3		754.00	753.60			34.1	48.1					MED	549+90.00	755.50	M						Jack pipe
	555+90.00		24	RCP					1		1										3																			
	586+00.00	DR-625	30	HDPE	29	B		1				2					C-3	1		3	3		UAC	751.00	757.70	751.10	UAC	130.4		26.0							62.0			2.6	2.6	C=1' B=18' E=7'
	592+13.00		24																2		3																			
	605+18.10	DR-601	30	RCP	8	B			1	1	2						C-1	1	1	2	3					773.55				8.0							14.0			1.1	1.1	
	606+92.80		30						1		1								1		3																			
	621+65.80		24						1		1								2		3																			

ROCK EROSION CONTROL

Refer to EC-301

Location				(L)	(W)	Rock Erosion Control (REC)					Material Bid Quantities			Remarks
Road Identification	Begin Station	End Station	Side			Type 1 Rock Ditch Check	Type 2 Rock Ditch	Type 3 Rock Flume	Type 4 Rock Splash Basin	Type 5 Rock Slope Protection	Erosion Stone	Class E Revetment	Eng. Fabric	
			Lt./Rt.	FT	FT						TON	TON	SY	
U.S. 61	5072+95.00		LT	10.5	10				X			11.6	22.6	
	5074+00.00		LT	10.5	55.4			X				64.0	95.7	
	5094+52.00		LT	10	29			X				31.9	51.3	
	5215+64.00		LT	12.7	10				X			14.0	26.0	
	5236+50.00		LT	10.5	10				X			11.6	22.6	
	5355+78.00		LT	12.7	10				X			14.0	26.0	
	5383+10.00		RT	10.5	61.2			X				70.7	105.0	
	5385+40.00		RT	10	35.1			X				38.6	60.8	
	5445+45.00		RT	13.8	10				X			15.2	27.7	
	5461+22.00		RT	13.8	10				X			15.2	27.7	
	442+29.00		RT	12.7	10				X			14.0	26.0	
	462+00.00		LT	10.5	30.8			X				35.6	56.1	
	529+81.00	530+40.00	LT	59	16		X					103.8	140.0	
	550+10.00		RT	10.5	10				X			11.6	22.6	
	576+00.00	583+00.00	LT	700	16		X					1232.0	1564.4	Note 1
	586+00.00		RT	11.6	10				X			12.7	24.3	
	604+00.00	609+00.00	LT	500	16		X					880.0	1120.0	Note 1
	605+18.10		RT	11.6	10				X			12.7	24.3	
	610+00.00	616+20.00	LT	620	16		X					1091.2	1386.7	Note 1
Note 1: Grade ditch to uniform section prior to placing rock.														

100-19
04-19-16

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

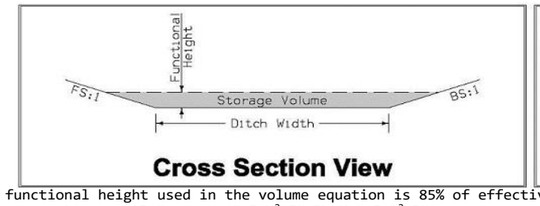
Possible Standards: EC-204

Location			Length of Installation			Remarks
Begin Station	End Station	Side	9 inch Dia	12 inch Dia	20 inch Dia	
			LF	LF	LF	
5251+18.00		LT			23.0	
5251+35.00		LT			23.0	
5251+52.00		LT			23.0	
5251+69.00		LT			23.0	
5251+86.00		LT			23.0	
5252+03.00		LT			23.0	
5252+20.00		LT			23.0	
5252+37.00		LT			23.0	
550+14.00		MED			16.0	
550+36.00		MED			16.0	
550+58.00		MED			16.0	
550+80.00		MED			16.0	

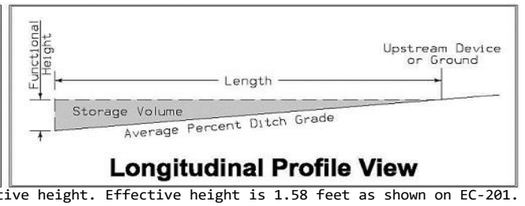
100-18
10-17-17

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201 Possible Detail: 570-4



Cross Section View



Longitudinal Profile View

* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.
* Volume equation: [0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]

Basin No.	Type	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
		Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg.% Slope	Volume*	
				LF	LF	LF	FS:1	BS:1	FT	Ditch Grade	CF	
		549+64.00	RT	22.0			3.0	3.0	10.0	2.2%		

100-22
04-21-15

ROLLED EROSION CONTROL

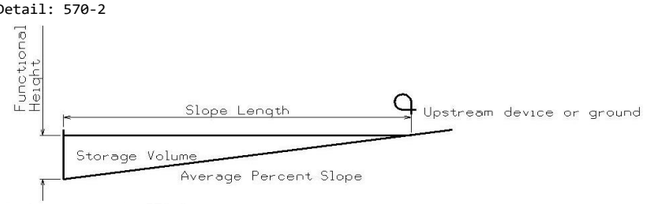
Refer to EC-101, EC-103 and EC-104

Location				(L)	(W)	Turf Reinforcement Mat (TRM) (EC-104)				Slope Protection (EC-103)	Special Ditch Control (EC-101)	Remarks
Road Identification	Begin Station	End Station	Side			Type 1	Type 2	Type 3	Type 4			
				FT	FT	Squares	Squares	Squares	Squares	Squares	Squares	
U.S. 61	5072+95.00		LT	51	16					8.2		
	5074+00.00		LT	11	16					1.8		
	5094+52.00		LT	16	16					2.6		
	5215+64.00		LT	74	16					11.8		
	5236+50.40		LT	95	16					15.2		
	5251+15.00	5252+37.00	LT	122	16						19.5	
	5355+78.00		LT	56	16					9.0		
	5383+10.00		RT	9	16					1.4		
	5385+40.00		RT	22	16					3.5		
	5445+45.00		RT	228	20					45.6		
	5461+22.00		RT	194	20					38.8		
	442+29.00		RT	60	16					9.6		
	550+10.00	551+03.00	MED	93	12						11.2	
	586+00.00		RT	26	16					4.2		

100-32
10-18-16

ROCK CHECK DAM

Possible Detail: 570-2



* The functional height used in the volume equation is 90% of effective height. Effective height is 2 feet as shown in 570-2.
* Volume equation: [0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]

Basin No.	Location			Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Offset	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg. % Slope	Volume*	
			FT	LF	Each	Each	FS:1	BS:1	FT		CF	
	529+81.00	LT		22.0	3	1	3.0	3.0	10.0	17.8%		
	530+01.00	LT		22.0	3	1	3.0	3.0	10.0	17.8%		
	530+21.00	LT		22.0	3	1	3.0	3.0	10.0	17.8%		

103-6
10-17-17

EMBANKMENT WITH MOISTURE CONTROL

Moisture Control is required for all Class 10 fill placed in all locations and depths. Stability berms placed outside the normal foreslope template and topsoil will not require Moisture Control.

103-7
08-01-08

SHRINKAGE DATA

Material	%	Remarks
Topsoil	40%	Shrinkage
Class 10	30%	Shrinkage

SPECIAL ATTENTION (SLIVER FILL)

Special attention should be given to Article 2107.03.C, of the current Standard Specification Series, on this project.

104-9
10-17-17

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

* Not a bid item. Bridge berm quantities assume a trench depth of 24 inches.

Location						Longitudinal Subdrain (DR-303)							Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth (D)	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306				
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type			
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
1	ML 61, NB	5407+00	5408+50	RT	66.0			4.0	190.0				5408+50.00	DR-306	23.5	0.2	
TOTAL									**190.0**						**23.5**	**0.2**	

LICENSED PROFESSIONAL ENGINEER
JUSTIN D. HUMKE
23230
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature — Date: 9/6/2018

Justin D. Humke
Printed or Typed Name

My license renewal date is December 31, 20 19

Pages or sheets covered by this seal: CS.1, Q.1-Q.-2

FILE NO.	ENGLISH	DESIGN TEAM	Snyder & Associates/Braun Intertec	DUBUQUE	COUNTY	PROJECT NUMBER	BRFN-061-8(140)--39-31	SHEET NUMBER	CS.1

SURVEY SYMBOLS

- PPA Power Pole Co. 1
- SI Sign
- PLG Location of General Photo
- MIS Miscellaneous
- FW Wire Fence
- TDC Tree Deciduous
- PIP Pipe Culvert
- INB Storm Sewer Beehive Intake
- TLNL Tree Line Left
- MM Mile Marker Post
- LC Lot Corner
- BLD Building or Foundation
- LP L.P. Tank
- MH Utility Access (Manhole)
- TLNR Tree Line Right
- UE Utility Elevation
- TEV Evergeen Tree
- FHD Fire Hydrants
- OUT Tile Outlet
- FCL Chain Link and Security Fence
- CUL Culvert
- GDL Guard Rail Steel
- UB Utility Box
- EB Electrical Box
- WV Water Valve
- DU Centerline Draw or Stream (Up)
- SNP Unpaved Shoulder
- D Centerline Draw or Stream (Down)
- EP Edge of Paved Roads (ML or SR)
- SP Stream Profile
- EG Edge of Gravel Road
- RIP Rip-Rap
- CON Concrete or A/C Slab
- SNK Sink Hole
- WL1B Water Line City - Quality B
- FO1B Fiber Optic Century Link - Quality B
- FO2B Fiber Optic City - Quality B
- PRO Profile Shot
- LIN Miscellaneous Line
- C Centerline BL of Road (ML or SR)
- BL Topo Breakline
- TW Top of Water

SURVEYED UTILITY OWNER SYMBOLS

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

Remark Abbreviations
QLA Quality Level A Highest guideline quality level
QLD Quality Level D Lowest guideline quality level

UTILITY LEGEND

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING	**Design Color No.**	
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right

- Reference Point / Station — Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D, E, F, & K)

FILE NO.	ENGLISH	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER
		SNYDER AND ASSOCIATES, INC.	DUBUQUE	BRFN-061-8(140)--39-31	D.1

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MAIN STREET

WASHINGTON TWP.
T-87N R-2E
SEC. 35

Sta. 5072+95
Install 24" X 54' HDPE Extension
Skew 6° Rt. Ahead
F.L. Lt. = 923.75
F.L. Other = 923.85
F.L. Other = 937.55
F.L. Rt. = UAC

Sta. 5074+00, 44' Lt.
Install 24" X 8' 2000D RCP Extension
F.L. Lt. = 841.49
F.L. Other = 841.63
F.L. Rt. = UAC

5065

5070

5075

61

TS Sta 5075+21.46

SC Sta 5077+26.46

Sta. 5063+27, Rt.
Install 24" X 125' HDPE Pipe

Sta. 5063+27
24" CMP
(Remove)

Sta. 5064+50
24" RCP
D.A. = 5 Ac H

Sta. 5072+95
24" RCP /CMP
(Remove CMP)

Sta. 5074+00
24" RCP /CMP
(Remove CMP)

0 50
FEET

Curve Data
Δ = 25° 17' 11.30" (RT)
T = 856.84
L = 1,685.77
R = 3,819.72
E = 94.92

Sta. 5094+52, 44' Lt.
Install 18" X 14' 2000D RCP Extension
Skew 25° Lt. Ahead
F.L. Lt. = 993.50
F.L. Other =993.70
F.L. Rt. = UAC

MANDERSHED DRIVE

5095

WASHINGTON TWP.
T-87N R-2E
SEC. 26

5090

5100

61

CS Sta 5094+12.23

ST Sta 5096+17.22

ARENSDORF ROAD

Sta. 5094+52
18" RCP /CMP
(Remove CMP)

0 50
FEET

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.2

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Sta. 5215+64
Install 36" X 85' HDPE Extension
F.L. Lt. = 1022.50
F.L. Other = 1026.15
F.L. Rt. = UAC
Verify existing CMP end @ RCP

WASHINGTON TWP.
T-87N R-2E
SEC. 14

5210
5215
5220
61

Sta. 5215+64
36" RCP/PVC
Skew 13°
D.A. = 15 Ac. H
(Remove PVC)

0 50
FEET

Sta. 5236+50.44
Install 24" X 98' HDPE Extension
F.L. Lt. = 981.50
F.L. Other = 981.70
F.L. Other = 1007.00
F.L. Rt. = UAC

(Remove PVC)

5230
5235
5240
61

PC Sta 5237+55.65
PT Sta 5242+54.09

Sta. 5236+50-44' RT
24" RCP/CMP

Curve Data
Δ = 2° 29' 31.93" (RT)
T = 249.26
L = 498.44
R = 11,459.16
E = 2.71

0 50
FEET

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.3

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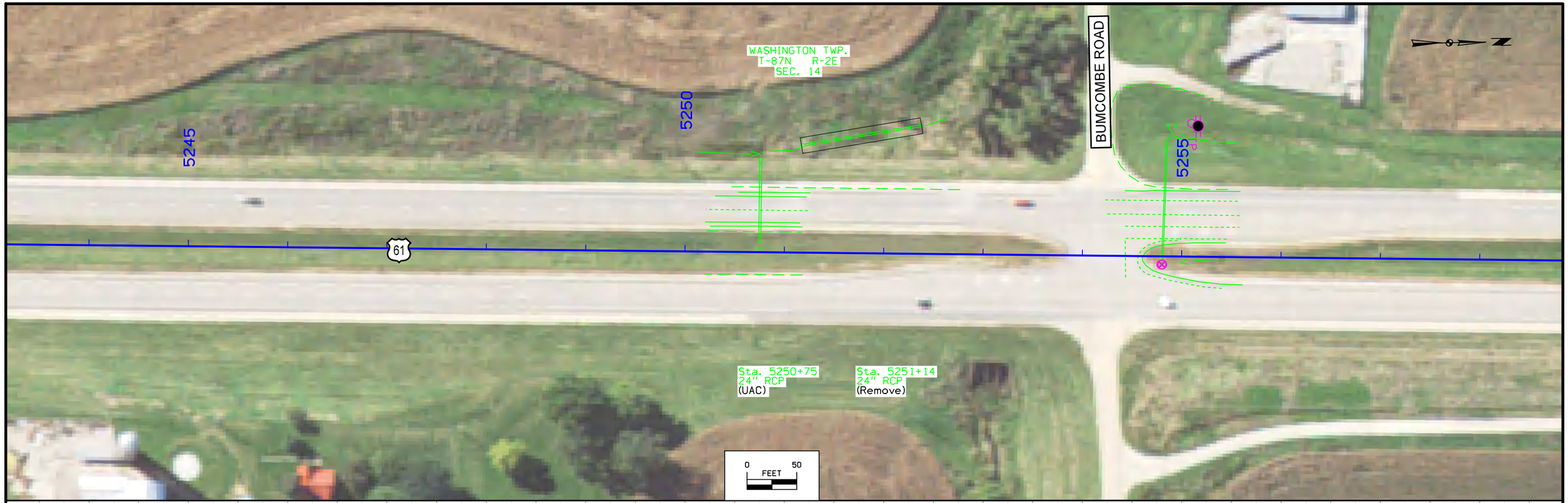

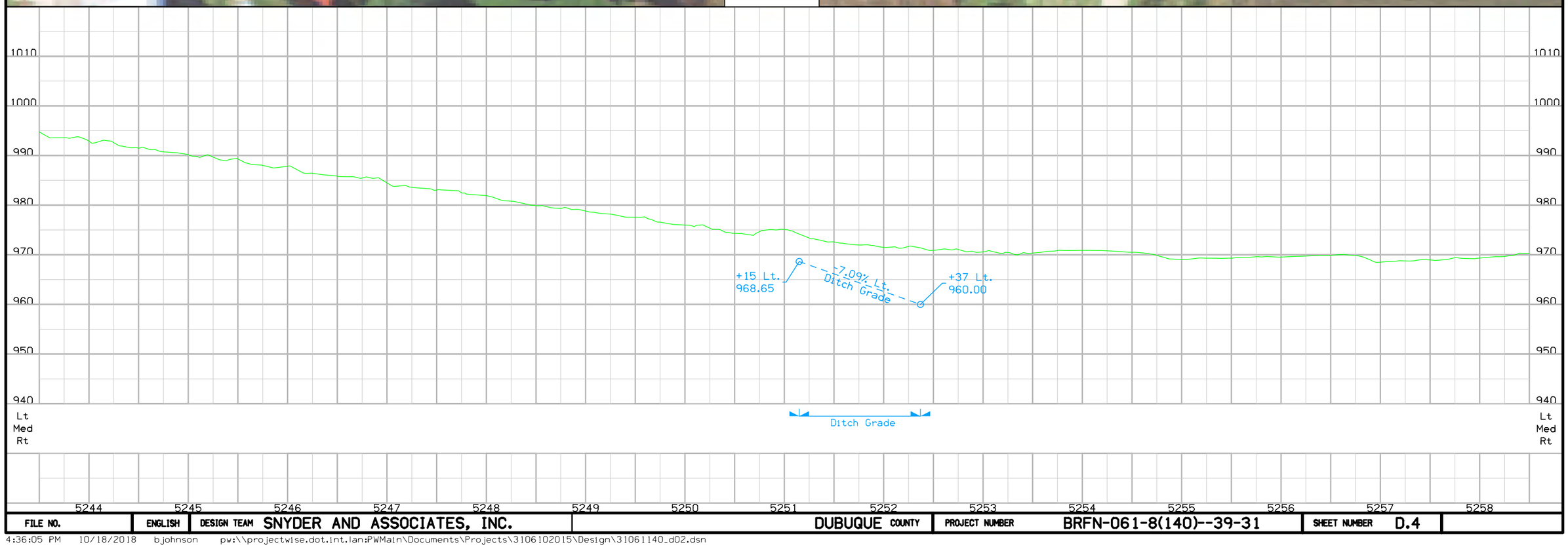

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.4

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Sta. 5307+40
48" CMP
(Remove)

Sta. 5307+40, Lt.
Install 48" X 117' HDPE Pipe

5300
5305
5310
5315

0 FEET 50

Curve Data
Δ = 3° 22' 38.82" (LT)
T = 675.69
L = 1,350.98
R = 22,918.31
E = 9.96

5330
5335
5340

PT Sta 5333+26.35

Sta. 5333+62, Rt.
Install 30" X 127' HDPE Pipe

Sta. 5333+62
24" CMP
(Remove)

Sta. 5334+20, 44' RT
24" RCP

0 FEET 50

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.5	

4:36:08 PM 10/18/2018 bjohnson pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\3106102015\Design\31061140_d02.dsn

Curve Data
Δ = 2° 00′ 53.83″ (RT)
T = 403.03
L = 805.98
R = 22,918.31
E = 3.54

WASHINGTON TWP.
T-87N R-2E
SEC. 2

LAMBE ROAD

Sta. 5355+78
Install 36″ X 61′ HDPE Extension
Skew 2° Rt. Ahead
F.L. Lt. = 1081.91
F.L. Other = 1082.01
F.L. Other = 1097.51
F.L. Rt. = UAC

SKYLINE ROAD

5350
5355
5360

61

PT Sta 5353+96.35

0 50 FEET

Sta. 5355+78
36″ CMP / RCP
Skew 2° RT
D.A. = 6 AC H
(Remove CMP)

FEENEY ROAD

Sta. 5383+10, Rt.
Install 24″ X 6′ RCP Extension
Install Apron Rt.
F.L. Lt. = UAC
F.L. Other = 1088.35
F.L. Rt. = 1087.81

WASHINGTON TWP.
T-87N R-2E
SEC. 2

Sta. 5385+40, Rt.
Install 18″ X 22′ HDPE Extension
Install Apron Rt.
Skew 7° Lt. Ahead
F.L. Lt. = UAC
F.L. Other = 1084.16
F.L. = Rt. 1083.88

Curve Data
Δ = 1° 33′ 33.20″ (RT)
T = 311.86
L = 623.69
R = 22,918.31
E = 2.12

5380
5385
5390

PC Sta 5385+54.34

61

Sta. 5383+10
24″ RCP / CMP
(Remove CMP)

0 50 FEET

MERLIN LANE

Sta. 5385+40
18″ RCP / CMP
Skew 7° LT
(Remove CMP)

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.6

4:36:11 PM 10/18/2018 bjohnson pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\3106102015\Design\31061140_d02.dsn

TABLE MOUND TWP.
T-88N R-2E
SEC. 26

5440

5445

5450

61

Sta. 5441+85, Rt.
24" CMP
(Remove)

Sta. 5441+95 R.t
Install Type F Dike
Top Elev.=991.00

Sta. 5441+85, Rt.
Install 36" X 358' HDPE
F.L. Lt. = 987.00
F.L.Other = 922.25
F.L. Rt. = 922.10

Sta. 5445+45
48" RCP / 36" PVC
(Remove PVC and Reducer)

Sta. 5445+45
Install 48" X 234' HDPE Extension
F.L. Lt. = UAC
F.L. Other = 918.10
F.L. Other = 984.80
F.L. Rt. = 918.00

0 50
FEET

TABLE MOUND TWP.
T-88N R-2E
SEC. 26

5455

5460

5465

61

CYCLE CLUB LANE

Sta. 5461+22
48" RCP / 36" PVC
Skew 41° RT
(Remove PVC and Reducer)

Sta. 5461+22
Install 48" X 200' HDPE Extension
Skew 41° Rt. Ahead
F.L. Lt. = UAC
F.L. Other = 888.40
F.L. Other = 838.74
F.L. Rt. =838.50

0 50
FEET

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.7	

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TABLE MOUND TWP.
T-88N R-2E
SEC. 23

EQUATION:
Sta 5477+39.21 BK =
Sta 442+29.00 AH

Sta. 442+29
Install 36" X 14' 2000D RCP Extension, Lt.
Install 36" X 65' HDPE Extension, Rt.
Install Apron Lt.
Skew 30° Rt. Ahead
F.L. Lt. = 821.85
F.L. Other Lt. = 821.69
F.L. Other Rt. 814.92
F.L. Other Rt. 794.80
F.L. Rt. = 794.60

5470

445

61

AM

0 50
FEET

Sta. 442+29
36" CMP / RCP
D.A. = 10 AC MTS
(Remove Lt. Apron and CMP Rt.)

TABLE MOUND TWP.
T-88N R-2E
SEC. 23

Sta. 462+00, 37' Lt.
Install 24" X 8' 2000D RCP Extension
Install Apron Lt.
F.L. Lt. = 767.92
F.L. Other = 768.22
F.L. Rt. = UAC

Curve Data
Δ = 20° 45' 01.07" (RT)
T = 699.39
L = 1,383.45
R = 3,820.00
E = 63.50

151

460

465

455

61

CS Sta 466+98.45

ST Sta 468+98.44

0 50
FEET

Sta. 462+00, Lt.
24" CMP / RCP
(Remove CMP)

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.8	

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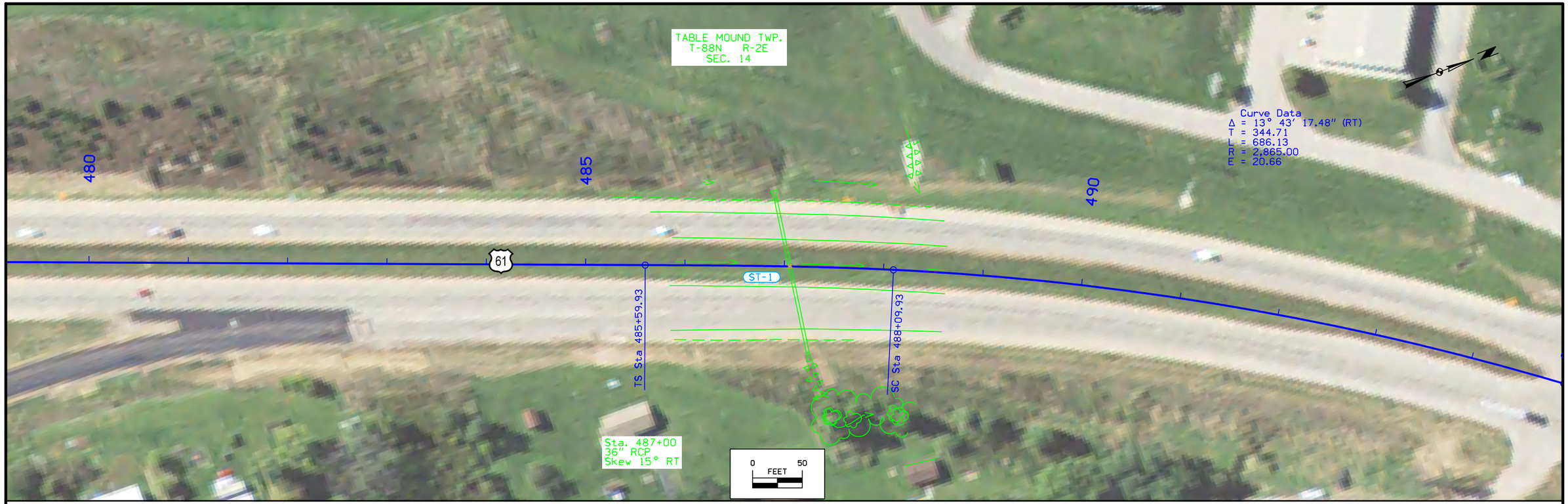

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.9	

3:28:23 PM 10/23/2018 V81_IDOTRoadpw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\3106102015\Design\31061140_d02.dsn

TABLE MOUND TWP.
T-88N R-2E
SEC. 13

520

525

530

61

TS Sta 528+21.94

SC Sta 531+71.94

Sta. 520+90
36" RCP
Skew 90°
(Pipe Extension
By Others)

0 50
FEET

Sta. 530+31.50
24" CMP
D.A. = 3 Ac. H
(Remove)

+81 Lt.
705.00

+17 80% Lt.
Ditch Grade

+40 Lt.
715.50

Ditch Grade

750
740
730
720
710
700
690
680

Lt
Med
Rt

518 519 520 521 522 523 524 525 526 527 528 529 530 531 532

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.10	

4:36:23 PM 10/18/2018 bjohnson pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\3106102015\Design\31061140_d02.dsn

TABLE MOUND TWP.
T-88N R-2E
SEC. 12

Sta. 550+10, 37' Rt.
install 24" X 70' 2000D RCP
Install 2 Aprons
F.L. Lt. = 754.00
F.L. Rt. = 753.60

Sta. 549+90, Med.
Install Type "M" Dike
Top Elev. = 755.50

545
550
555

ST Sta 545+22.59

61

DIGITAL DRIVE

Sta. 550+00
24" RCP
(Abandon)

0 50
FEET

+10 Med.
754.00

+03 Med.
758.71

+5.06% Med.
Ditch Grade

+10 Rt.
753.60

+64 Rt.
752.57

+2.24% Rt.
Ditch Grade

Ditch Grade

Ditch Grade

780
770
760
750
740
730
720
710

Lt
Med
Rt

543 544 545 546 547 548 549 550 551 552 553 554 555 556 557

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.11

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TABLE MOUND TWP.
T-88N R-2E
SEC. 12

Curve Data
Δ = 14° 28′ 19.07″ (RT)
T = 718.00
L = 1,428.36
R = 5,655.00
E = 45.40

570
575
580

61

PC Sta 575+07.91

LAKE ELANOR DRIVE

Sta. 573+40
24″ HDPE
(UAC)

0 FEET 50

Sta. 586+00
Install 30″ X 29′ HDPE Extension
F.L. Lt. = UAC
F.L. Other = 757.70
F.L. Other = 751.10
F.L. Rt. = 751.00

TABLE MOUND TWP.
T-88N R-2E
SEC. 12

Grade through gravel roadway to drain

585
590
595

61

PT Sta 589+36.27
TS Sta 592+46.78
SC Sta 595+96.78

Curve Data
Δ = 24° 09′ 3.86″ (RT)
T = 408.62
L = 805.10
R = 1,910.00
E = 43.22

Sta. 586+00
30″ RCP + Flume
(Remove Half Pipe Flume and 8′ RCP Circular Pipe)

0 FEET 50

Sta. 592+00 Lt.
24″ CMP
(Remove)

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.12

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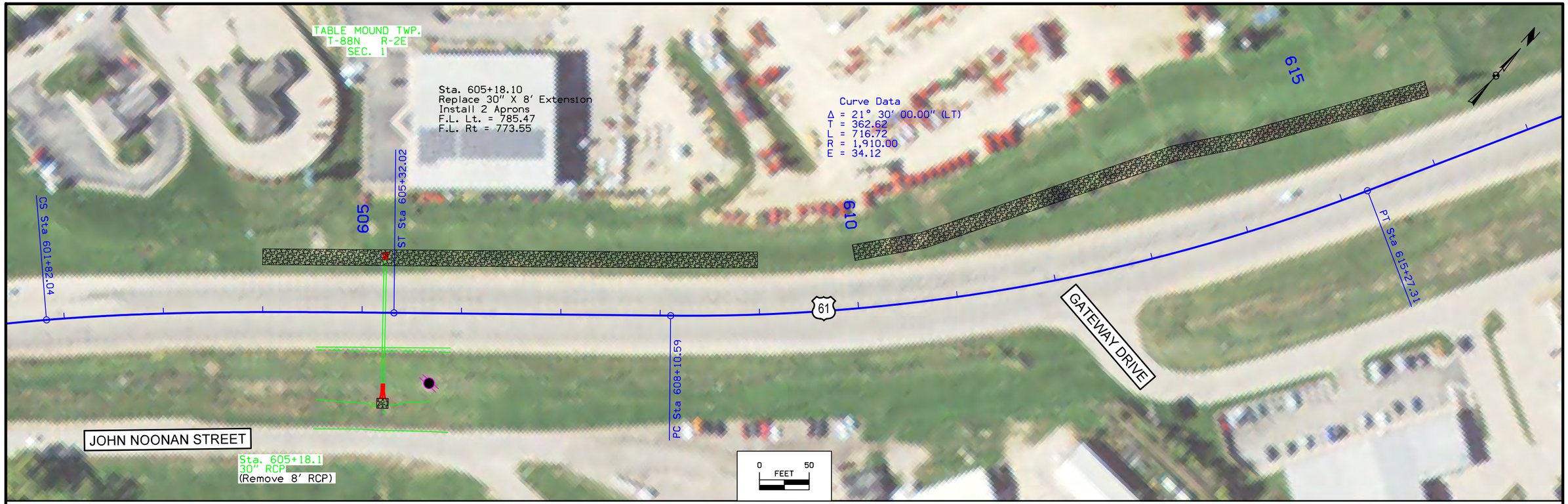

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER D.13	

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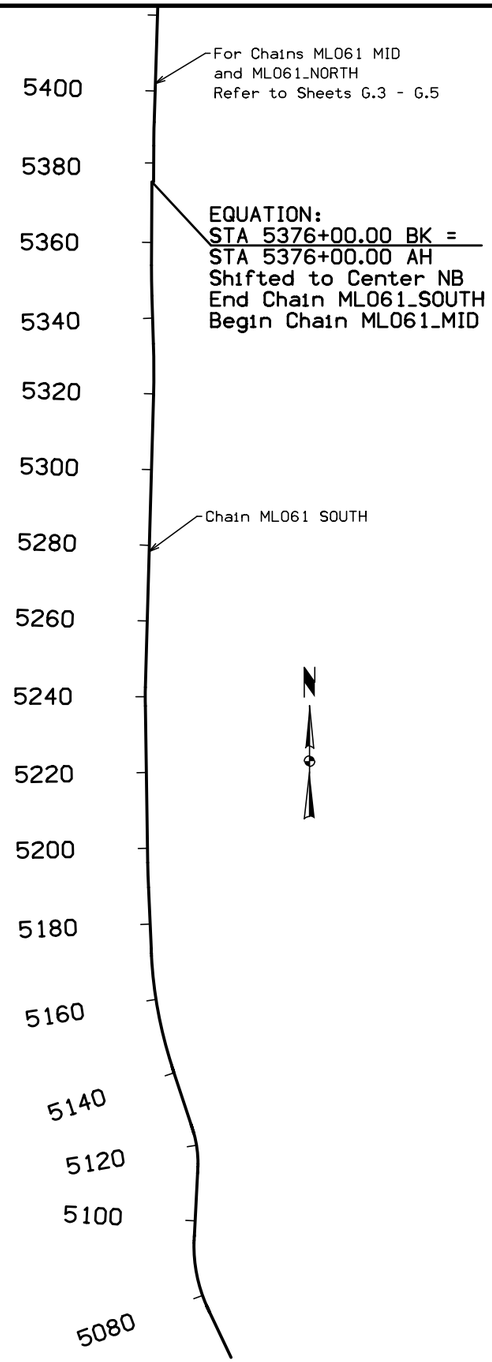


Chain ML061_SOUTH

Chain ML061_SOUTH contains:
30000 SCS ML061_SOUTH-1 SCS ML061_SOUTH-2 SCS ML061_SOUTH-3 CUR ML061_SOUTH-4 - CUR ML061_SOUTH-5 CUR ML061_SOUTH-6 CUR ML061_SOUTH-7 30001

Beginning chain ML061_SOUTH description

Point 30000 N 8,347,515.5338 E 21,458,598.0724 Sta 5062+00.00

Course from 30000 to TS ML061_SOUTH-1B N 25° 22′ 28.96″ W Dist 1,321.4636

SCS ML061_SOUTH-1 found within chain ML061_SOUTH, contains:
SPI ML061_SOUTH-1B CUR ML061_SOUTH-1 SPI ML061_SOUTH-1A

PISCS ML061_SOUTH-1 N 8,349,674.2757 E 21,457,574.1938 STA 5085+89.25
Total Back Tangent = 1,067.7820
Total Ahead Tangent = 1,067.7771
Total Length = 2,095.7554
Total Delta = 28° 21′ 41.03″ (RT)
Back Tangent = N 25° 22′ 28.96″ W
Ahead Tangent = N 2° 59′ 12.07″ E

Beginning SCS ML061_SOUTH-1 description

Spiral Back
Spiral ML061_SOUTH-1B Type 1 Spiral Element

Angle	1° 32′ 15.00″ (RT)	P	0.4584	BK N	25° 22′ 28.96″ W
LS	205.0000	K	102.4975	AH N	23° 50′ 13.96″ W
R	3,819.7200	LT	136.6718	CB N	24° 51′ 43.97″ W
YS	1.8336	ST	68.3380	Defl	0° 30′ 44.99″
XS	204.9852	LC	204.9934	Deg	1° 30′ 00.00″

Spiral Coordinates

Point	North	East	Station
TS	8,348,709.5085	21,458,031.7772	5075+21.46
PI	8,348,832.9949	21,457,973.2083	5076+58.14
SC	8,348,895.5035	21,457,945.5902	5077+26.46
CC	8,350,439.2029	21,461,439.4782	

Circular Section

Curve Data

Curve ML061_SOUTH-1
P.I. Station 5085+83.30 N 8,349,679.2487 E 21,457,599.3092
Delta = 25° 17′ 11.30″ (RT)
Degree = 1° 30′ 00.00″
Tangent = 856.8355
Length = 1,685.7654
Radius = 3,819.7200
External = 94.9228
Long Chord = 1,672.1177
Mid. Ord. = 92.6211
P.C. Station 5077+26.46 N 8,348,895.5035 E 21,457,945.5902
P.T. Station 5094+12.23 N 8,350,535.8101 E 21,457,620.9800
C.C. N 8,350,439.2029 E 21,461,439.4782
Back = N 23° 50′ 13.96″ W
Ahead = N 1° 26′ 57.34″ E
Chord Bear = N 11° 11′ 38.31″ W

Spiral Ahead
Spiral ML061_SOUTH-1A Type 2 Spiral Element

Angle	1° 32′ 14.73″ (RT)	P	0.4584	BK N	1° 26′ 57.34″ E
LS	204.9900	K	102.4925	AH N	2° 59′ 12.07″ E
R	3,819.7200	LT	136.6652	CB N	2° 28′ 27.17″ E
YS	1.8334	ST	68.3347	Defl	0° 30′ 44.90″
XS	204.9752	LC	204.9834	Deg	1° 30′ 00.00″

Spiral Coordinates

Point	North	East	Station
CS	8,350,535.8101	21,457,620.9800	5094+12.23
PI	8,350,604.1230	21,457,622.7083	5094+80.56
ST	8,350,740.6025	21,457,629.8291	5096+17.22
CC	8,350,439.2029	21,461,439.4782	

Ending SCS ML061_SOUTH-1 description

Chain ML061_SOUTH - Continued

Course from ST ML061_SOUTH-1A to TS ML061_SOUTH-2B N 2° 59′ 12.07″ E Dist 1,633.4629

SCS ML061_SOUTH-2 found within chain ML061_SOUTH, contains:
SPI ML061_SOUTH-2B CUR ML061_SOUTH-2 SPI ML061_SOUTH-2A

PISCS ML061_SOUTH-2 N 8,353,035.2395 E 21,457,749.5513 STA 5119+14.98
Total Tangent = 664.2953
Total Length = 1,315.9581
Total Delta = 21° 13′ 08.96″ (LT)
Back Tangent = N 2° 59′ 12.07″ E
Ahead Tangent = N 18° 13′ 56.89″ W

Beginning SCS ML061_SOUTH-2 description

Spiral Back
Spiral ML061_SOUTH-2B Type 1 Spiral Element

Angle	2° 33′ 00.00″ (LT)	P	0.9457	BK N	2° 59′ 12.07″ E
LS	255.0000	K	127.4916	AH N	0° 26′ 12.08″ E
R	2,864.7900	LT	170.0176	CB N	2° 08′ 12.12″ E
YS	3.7825	ST	85.0160	Defl	0° 50′ 59.95″
XS	254.9495	LC	254.9776	Deg	2° 00′ 00.00″

Spiral Coordinates

Point	North	East	Station
TS	8,352,371.8466	21,457,714.9389	5112+50.68
PI	8,352,541.6333	21,457,723.7975	5114+20.70
SC	8,352,626.6468	21,457,724.4455	5115+05.68
CC	8,352,648.4810	21,454,859.7387	

Circular Section

Curve Data

Curve ML061_SOUTH-2
P.I. Station 5119+11.34 N 8,353,032.2932 E 21,457,727.5372
Delta = 16° 07′ 08.97″ (LT)
Degree = 2° 00′ 00.00″
Tangent = 405.6582
Length = 805.9581
Radius = 2,864.7900
External = 28.5783
Long Chord = 803.3029
Mid. Ord. = 28.2961
P.C. Station 5115+05.68 N 8,352,626.6468 E 21,457,724.4455
P.T. Station 5123+11.64 N 8,353,422.8506 E 21,457,617.8854
C.C. N 8,352,648.4810 E 21,454,859.7387
Back = N 0° 26′ 12.08″ E
Ahead = N 15° 40′ 56.89″ W
Chord Bear = N 7° 37′ 22.41″ W

Spiral Ahead
Spiral ML061_SOUTH-2A Type 2 Spiral Element

Angle	2° 33′ 00.00″ (LT)	P	0.9457	BK N	15° 40′ 56.89″ W
LS	255.0000	K	127.4916	AH N	18° 13′ 56.89″ W
R	2,864.7900	LT	170.0176	CB N	17° 22′ 56.94″ W
YS	3.7825	ST	85.0160	Defl	0° 50′ 59.95″
XS	254.9495	LC	254.9776	Deg	2° 00′ 00.00″

Spiral Coordinates

Point	North	East	Station
CS	8,353,422.8506	21,457,617.8854	5123+11.64
PI	8,353,504.7019	21,457,594.9051	5123+96.66
ST	8,353,666.1838	21,457,541.7111	5125+66.64
CC	8,352,648.4810	21,454,859.7387	

Ending SCS ML061_SOUTH-2 description

Course from ST ML061_SOUTH-2A to TS ML061_SOUTH-3B N 18° 13′ 56.89″ W Dist 1,452.2257

SCS ML061_SOUTH-3 found within chain ML061_SOUTH, contains:
SPI ML061_SOUTH-3B CUR ML061_SOUTH-3 SPI ML061_SOUTH-3A

PISCS ML061_SOUTH-3 N 8,356,636.1642 E 21,456,563.3659 STA 5156+93.61
Total Back Tangent = 1,674.7447
Total Ahead Tangent = 1,674.7398
Total Length = 3,329.6591
Total Delta = 15° 41′ 53.93″ (RT)
Back Tangent = N 18° 13′ 56.89″ W
Ahead Tangent = N 2° 32′ 02.95″ W

Chain ML061_SOUTH - Continued

Beginning SCS ML061_SOUTH-3 description

Spiral Back
Spiral ML061_SOUTH-3B Type 1 Spiral Element

Angle	0° 28′ 30.00″ (RT)	P	0.1313	BK N	18° 13′ 56.89″ W
LS	190.0000	K	94.9998	AH N	17° 45′ 26.89″ W
R	11,459.1600	LT	126.6671	CB N	18° 04′ 26.89″ W
YS	0.5251	ST	63.3337	Defl	0° 09′ 30.00″
XS	189.9987	LC	189.9994	Deg	0° 30′ 00.00″

Spiral Coordinates

Point	North	East	Station
TS	8,355,045.5003	21,457,087.3486	5140+18.87
PI	8,355,165.8081	21,457,047.7179	5141+45.53
SC	8,355,226.1243	21,457,028.4018	5142+08.87
CC	8,358,721.0357	21,467,941.6022	

Circular Section

Curve Data

Curve ML061_SOUTH-3					
P.I. Station	5156+91.90	N	8,356,638.4991	E	21,456,576.0941
Delta =	14° 44′ 54.03″ (RT)				
Degree =	0° 30′ 00.00″				
Tangent =	1,483.0322				
Length =	2,949.6691				
Radius =	11,459.1600				
External =	95.5677				
Long Chord =	2,941.5325				
Mid. Ord. =	94.7773				
P.C. Station	5142+08.87	N	8,355,226.1243	E	21,457,028.4018
P.T. Station	5171+58.53	N	8,358,119.4865	E	21,456,498.2423
C.C.		N	8,358,721.0357	E	21,467,941.6022
Back = N	17° 45′ 26.89″ W				
Ahead = N	3° 00′ 32.86″ W				
Chord Bear = N	10° 22′ 59.87″ W				

Spiral Ahead
Spiral ML061_SOUTH-3A Type 2 Spiral Element

Angle	0° 28′ 29.91″ (RT)	P	0.1312	BK N	3° 00′ 32.86″ W
LS	189.9900	K	94.9948	AH N	2° 32′ 02.95″ W
R	11,459.1600	LT	126.6605	CB N	2° 41′ 32.92″ W
YS	0.5250	ST	63.3304	Defl	0° 09′ 29.97″
XS	189.9887	LC	189.9894	Deg	0° 30′ 00.00″

Spiral Coordinates

Point	North	East	Station
CS	8,358,119.4865	21,456,498.2423	5171+58.53
PI	8,358,182.7296	21,456,494.9177	5172+21.87
ST	8,358,309.2662	21,456,489.3175	5173+48.52
CC	8,358,721.0357	21,467,941.6022	

Ending SCS ML061_SOUTH-3 description

Course from ST ML061_SOUTH-3A to PC ML061_SOUTH-4 N 2° 32′ 02.95″ W Dist 1,616.4810

Curve Data

Curve ML061_SOUTH-4					
P.I. Station	5192+92.87	N	8,360,251.7055	E	21,456,403.3486
Delta =	1° 38′ 21.07″ (RT)				
Degree =	0° 15′ 00.00″				
Tangent =	327.8598				
Length =	655.6748				
Radius =	22,918.3100				
External =	2.3450				
Long Chord =	655.6524				
Mid. Ord. =	2.3448				
P.C. Station	5189+65.01	N	8,359,924.1664	E	21,456,417.8449
P.T. Station	5196+20.68	N	8,360,579.5253	E	21,456,398.2276
C.C.		N	8,360,937.4972	E	21,479,313.7418
Back = N	2° 32′ 02.95″ W				
Ahead = N	0° 53′ 41.88″ W				
Chord Bear = N	1° 42′ 52.42″ W				

Course from PT ML061_SOUTH-4 to PC ML061_SOUTH-5 N 0° 53′ 41.88″ W Dist 4,134.9727

Chain ML061_SOUTH - Continued

Curve Data

Curve ML061_SOUTH-5					
P.I. Station	5240+04.91	N	8,364,963.2228	E	21,456,329.7482
Delta =	2° 29′ 31.93″ (RT)				
Degree =	0° 30′ 00.00″				
Tangent =	249.2597				
Length =	498.4407				
Radius =	11,459.1600				
External =	2.7106				
Long Chord =	498.4015				
Mid. Ord. =	2.7100				
P.C. Station	5237+55.65	N	8,364,713.9936	E	21,456,333.6415
P.T. Station	5242+54.09	N	8,365,212.3857	E	21,456,336.6959
C.C.		N	8,364,892.9796	E	21,467,791.4036
Back = N	0° 53′ 41.88″ W				
Ahead = N	1° 35′ 50.05″ E				
Chord Bear = N	0° 21′ 04.09″ E				

Course from PT ML061_SOUTH-5 to PC ML061_SOUTH-6 N 1° 35′ 50.05″ E Dist 7,721.2771

Curve Data

Curve ML061_SOUTH-6					
P.I. Station	5326+51.06	N	8,373,606.0857	E	21,456,570.7481
Delta =	3° 22′ 38.82″ (LT)				
Degree =	0° 15′ 00.00″				
Tangent =	675.6855				
Length =	1,350.9797				
Radius =	22,918.3100				
External =	9.9582				
Long Chord =	1,350.7841				
Mid. Ord. =	9.9539				
P.C. Station	5319+75.37	N	8,372,930.6627	E	21,456,551.9144
P.T. Station	5333+26.35	N	8,374,281.4451	E	21,456,549.7575
C.C.		N	8,373,569.4746	E	21,433,642.5090
Back = N	1° 35′ 50.05″ E				
Ahead = N	1° 46′ 48.77″ W				
Chord Bear = N	0° 05′ 29.36″ W				

Course from PT ML061_SOUTH-6 to PC ML061_SOUTH-7 N 1° 46′ 48.77″ W Dist 1,264.0154

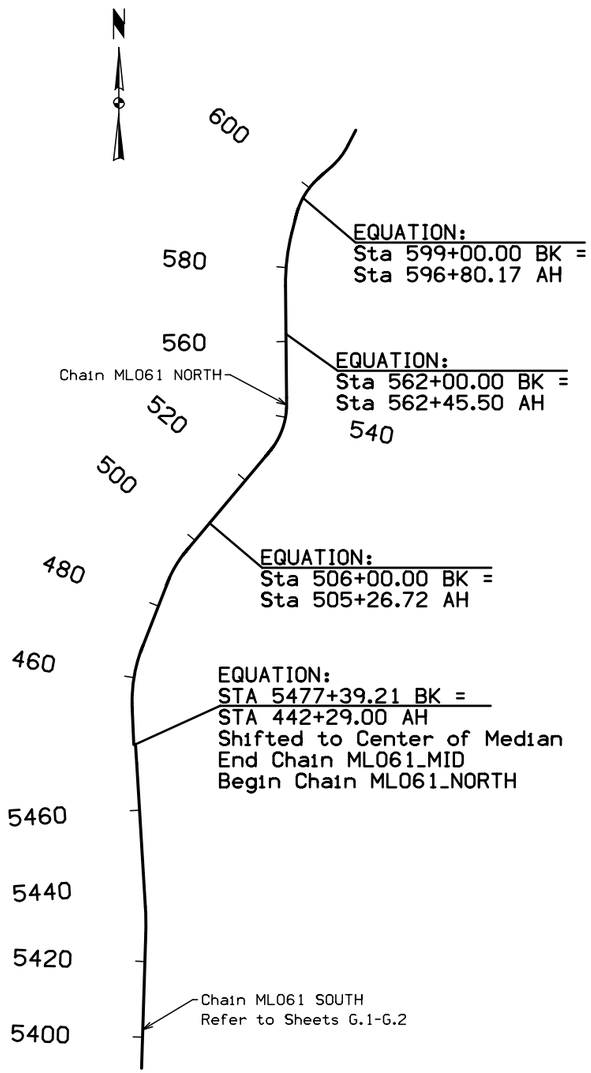
Curve Data

Curve ML061_SOUTH-7					
P.I. Station	5349+93.40	N	8,375,947.6877	E	21,456,497.9697
Delta =	2° 00′ 53.83″ (RT)				
Degree =	0° 15′ 00.00″				
Tangent =	403.0318				
Length =	805.9806				
Radius =	22,918.3100				
External =	3.5435				
Long Chord =	805.9391				
Mid. Ord. =	3.5430				
P.C. Station	5345+90.37	N	8,375,544.8504	E	21,456,510.4901
P.T. Station	5353+96.35	N	8,376,350.7162	E	21,456,499.6209
C.C.		N	8,376,256.8210	E	21,479,417.7386
Back = N	1° 46′ 48.77″ W				
Ahead = N	0° 14′ 05.06″ E				
Chord Bear = N	0° 46′ 21.85″ W				

Course from PT ML061_SOUTH-7 to 30001 N 0° 14′ 05.06″ E Dist 2,203.6533

Point 30001 N 8,378,554.3510 E 21,456,508.6492 Sta 5376+00.00

Ending chain ML061_SOUTH description



Chain ML061_MID

Chain ML061_MID contains:
40000 CUR ML061_MID-1 CUR ML061_MID-2 CUR ML061_MID-3 40001

Beginning chain ML061_MID description

Point 40000 N 8,378,554.1711 E 21,456,552.6488 Sta 5376+00.00

Course from 40000 to PC ML061_MID-1 N 0° 14′ 05.14″ E Dist 954.3404

Curve Data

Curve ML061_MID-1			
P.I. Station	5388+66.20 N	8,379,820.3648 E	21,456,557.8369
Delta =	1° 33′ 33.20″ (RT)		
Degree =	0° 15′ 00.00″		
Tangent =	311.8639		
Length =	623.6894		
Radius =	22,918.3100		
External =	2.1218		
Long Chord =	623.6701		
Mid. Ord. =	2.1216		
P.C. Station	5385+54.34 N	8,379,508.5035 E	21,456,556.5591
P.T. Station	5391+78.03 N	8,380,132.0758 E	21,456,567.6001
C.C.	N	8,379,414.5993 E	21,479,474.6767
Back = N	0° 14′ 05.14″ E		
Ahead = N	1° 47′ 38.34″ E		
Chord Bear = N	1° 00′ 51.74″ E		

Course from PT ML061_MID-1 to PC ML061_MID-2 N 1° 47′ 38.34″ E Dist 3,562.3038

Curve Data

Curve ML061_MID-2			
P.I. Station	5430+92.42 N	8,384,044.5427 E	21,456,690.1431
Delta =	5° 16′ 38.96″ (LT)		
Degree =	0° 45′ 00.00″		
Tangent =	352.0817		
Length =	703.6654		
Radius =	7,639.4400		
External =	8.1090		
Long Chord =	703.4167		
Mid. Ord. =	8.1004		
P.C. Station	5427+40.33 N	8,383,692.6336 E	21,456,679.1209
P.T. Station	5434+44.00 N	8,384,395.9739 E	21,456,668.7502
C.C.	N	8,383,931.7926 E	21,449,043.4254
Back = N	1° 47′ 38.34″ E		
Ahead = N	3° 29′ 00.61″ W		
Chord Bear = N	0° 50′ 41.14″ W		

Course from PT ML061_MID-2 to PC ML061_MID-3 N 3° 29′ 00.61″ W Dist 3,788.5030

Curve Data

Curve ML061_MID-3			
P.I. Station	5477+32.48 N	8,388,676.5304 E	21,456,408.1772
Delta =	0° 59′ 50.70″ (RT)		
Degree =	0° 05′ 59.10″		
Tangent =	499.9772		
Length =	999.9291		
Radius =	57,440.1500		
External =	2.1759		
Long Chord =	999.9165		
Mid. Ord. =	2.1759		
P.C. Station	5472+32.50 N	8,388,177.4770 E	21,456,438.5564
P.T. Station	5482+32.43 N	8,389,176.0369 E	21,456,386.4897
C.C.	N	8,391,667.6075 E	21,513,772.5761
Back = N	3° 29′ 00.61″ W		
Ahead = N	2° 29′ 09.92″ W		
Chord Bear = N	2° 59′ 05.27″ W		

Course from PT ML061_MID-3 to 40001 N 2° 29′ 09.92″ W Dist 500.0225

Point 40001 N 8,389,675.5888 E 21,456,364.8004 Sta 5487+32.45

Ending chain ML061_MID description

Chain ML061_NORTH

Chain ML061_NORTH contains:
70000 SCS ML061_NORTH-1 SCS ML061_NORTH-2 9999 SCS ML061_NORTH-3 99999 CUR ML061_NORTH-4 SPI ML061_NORTH-5B CUR ML061_NORTH-5-1 CUR ML061_NORTH-5-2 SPI ML061_NORTH-5A CUR ML061_NORTH-6 70001

Beginning chain ML061_NORTH description

Point 70000 N 8,388,452.5941 E 21,456,373.8585 Sta 440+00.00

Course from 70000 to TS ML061_NORTH-1B N 2° 29′ 09.92″ W Dist 1,114.9999

SCS ML061_NORTH-1 found within chain ML061_NORTH, contains:
SPI ML061_NORTH-1B CUR ML061_NORTH-1 SPI ML061_NORTH-1A

PISCS ML061_NORTH-1 N 8,390,469.0432 E 21,456,286.3090 STA 460+18.35

Total Back Tangent =	903.3490		
Total Ahead Tangent =	903.3442		
Total Length =	1,783.4450		
Total Delta =	23° 45′ 00.00″ (RT)		
Back Tangent = N	2° 29′ 09.92″ W		
Ahead Tangent = N	21° 15′ 50.08″ E		

Beginning SCS ML061_NORTH-1 description

Spiral Back
Spiral ML061_NORTH-1B Type 1 Spiral Element

Angle	1° 29′ 59.60″ (RT)	P	0.4363	BK N	2° 29′ 09.92″ W
LS	200.0000	K	99.9977	AH N	0° 59′ 10.32″ W
R	3,820.0000	LT	133.3381	CB N	1° 59′ 10.06″ W
YS	1.7451	ST	66.6710	Defl	0° 29′ 59.86″
XS	199.9863	LC	199.9939	Deg	1° 29′ 59.60″

Spiral Coordinates

Point	North	East	Station
TS	8,389,566.5445	21,456,325.4934	451+15.00
PI	8,389,699.7571	21,456,319.7096	452+48.34
SC	8,389,766.4183	21,456,318.5621	453+15.00
CC	8,389,832.1665	21,460,137.9962	

Circular Section

Curve ML061_NORTH-1			
P.I. Station	460+14.39 N	8,390,465.7033 E	21,456,306.5245
Delta =	20° 45′ 01.07″ (RT)		
Degree =	1° 29′ 59.60″		
Tangent =	699.3886		
Length =	1,383.4550		
Radius =	3,820.0000		
External =	63.4964		
Long Chord =	1,375.9067		
Mid. Ord. =	62.4582		
P.C. Station	453+15.00 N	8,389,766.4183 E	21,456,318.5621
P.T. Station	466+98.45 N	8,391,123.8929 E	21,456,543.0215
C.C.	N	8,389,832.1665 E	21,460,137.9962
Back = N	0° 59′ 10.32″ W		
Ahead = N	19° 45′ 50.75″ E		
Chord Bear = N	9° 23′ 20.22″ E		

Spiral Ahead
Spiral ML061_NORTH-1A Type 2 Spiral Element

Angle	1° 29′ 59.33″ (RT)	P	0.4362	BK N	19° 45′ 50.75″ E
LS	199.9900	K	99.9927	AH N	21° 15′ 50.08″ E
R	3,820.0000	LT	133.3315	CB N	20° 45′ 50.32″ E
YS	1.7449	ST	66.6677	Defl	0° 29′ 59.77″
XS	199.9763	LC	199.9839	Deg	1° 29′ 59.60″

Spiral Coordinates

Point	North	East	Station
CS	8,391,123.8929	21,456,543.0215	466+98.45
PI	8,391,186.6334	21,456,565.5651	467+65.12
ST	8,391,310.8876	21,456,613.9197	468+98.44
CC	8,389,832.1665	21,460,137.9962	

Ending SCS ML061_NORTH-1 description

Chain ML061_NORTH - Continued

Course from ST ML061_NORTH-1A to TS ML061_NORTH-2B N 21° 15′ 50.08″ E Dist 1,661.4819

SCS ML061_NORTH-2 found within chain ML061_NORTH, contains:
SPI ML061_NORTH-2B CUR ML061_NORTH-2 SPI ML061_NORTH-2A

PISCS ML061_NORTH-2 N 8,393,415.9927 E 21,457,433.1388 STA 491+57.34
Total Back Tangent = 597.4089
Total Ahead Tangent = 597.3998
Total Length = 1,186.1066
Total Delta = 18° 43′ 15.43″ (RT)
Back Tangent = N 21° 15′ 50.08″ E
Ahead Tangent = N 39° 59′ 05.51″ E

Beginning SCS ML061_NORTH-2 description

Spiral Back
Spiral ML061_NORTH-2B Type 1 Spiral Element

Angle	2° 29′ 59.34″ (RT)	P	0.9089	BK N	21° 15′ 50.08″ E
LS	250.0000	K	124.9921	AH N	23° 45′ 49.42″ E
R	2,865.0000	LT	166.6833	CB N	22° 05′ 49.81″ E
YS	3.6353	ST	83.3484	Defl	0° 49′ 59.73″
XS	249.9524	LC	249.9788	Deg	1° 59′ 59.47″

Spiral Coordinates

Point	North	East	Station
TS	8,392,859.2555	21,457,216.4799	485+59.93
PI	8,393,014.5910	21,457,276.9300	487+26.61
SC	8,393,090.8728	21,457,310.5165	488+09.93
CC	8,391,936.3752	21,459,932.6074	

Circular Section

Curve Data

Curve ML061_NORTH-2
P.I. Station 491+54.64 N 8,393,406.3587 E 21,457,449.4239
Delta = 13° 43′ 17.48″ (RT)
Degree = 1° 59′ 59.47″
Tangent = 344.7124
Length = 686.1266
Radius = 2,865.0000
External = 20.6631
Long Chord = 684.4881
Mid. Ord. = 20.5152
P.C. Station 488+09.93 N 8,393,090.8728 E 21,457,310.5165
P.T. Station 494+96.05 N 8,393,679.8915 E 21,457,659.2011
C.C. N 8,391,936.3752 E 21,459,932.6074
Back = N 23° 45′ 49.42″ E
Ahead = N 37° 29′ 06.90″ E
Chord Bear = N 30° 37′ 28.16″ E

Spiral Ahead
Spiral ML061_NORTH-2A Type 2 Spiral Element

Angle	2° 29′ 58.62″ (RT)	P	0.9088	BK N	37° 29′ 06.90″ E
LS	249.9800	K	124.9821	AH N	39° 59′ 05.51″ E
R	2,865.0000	LT	166.6700	CB N	39° 09′ 06.02″ E
YS	3.6348	ST	83.3418	Defl	0° 49′ 59.49″
XS	249.9324	LC	249.9589	Deg	1° 59′ 59.47″

Spiral Coordinates

Point	North	East	Station
CS	8,393,679.8915	21,457,659.2011	494+96.05
PI	8,393,746.0240	21,457,709.9194	495+79.40
ST	8,393,873.7289	21,457,817.0190	497+46.03
CC	8,391,936.3752	21,459,932.6074	

Ending SCS ML061_NORTH-2 description

Course from ST ML061_NORTH-2A to 9999 N 39° 59′ 05.51″ E Dist 853.9666

Equation: Sta 506+00.00 (BK) = Sta 505+26.72 (AH) — End Region 1 / Begin Region 2

Point 9999 N 8,394,528.0503 E 21,458,365.7654 Sta 505+26.72

Course from 9999 to TS ML061_NORTH-3B N 39° 59′ 05.51″ E Dist 2,295.2158

SCS ML061_NORTH-3 found within chain ML061_NORTH, contains:
SPI ML061_NORTH-3B CUR ML061_NORTH-3 SPI ML061_NORTH-3A

PISCS ML061_NORTH-3 N 8,396,961.6270 E 21,460,406.6835 STA 537+02.83
Total Back Tangent = 880.8891
Total Ahead Tangent = 880.8799
Total Length = 1,700.6462
Total Delta = 40° 31′ 00.12″ (LT)
Back Tangent = N 39° 59′ 05.51″ E
Ahead Tangent = N 0° 31′ 54.61″ W

Chain ML061_NORTH - Continued

Beginning SCS ML061_NORTH-3 description

Spiral Back
Spiral ML061_NORTH-3B Type 1 Spiral Element

Angle	5° 14′ 58.61″ (LT)	P	2.6715	BK N	39° 59′ 05.51″ E
LS	350.0000	K	174.9510	AH N	34° 44′ 06.91″ E
R	1,910.0000	LT	233.4360	CB N	38° 14′ 06.43″ E
YS	10.6829	ST	116.7600	Defl	1° 44′ 59.09″
XS	349.7063	LC	349.8694	Deg	2° 59′ 59.20″

Spiral Coordinates

Point	North	East	Station
TS	8,396,286.6773	21,459,840.6372	528+21.94
PI	8,396,465.5393	21,459,990.6397	530+55.38
SC	8,396,561.4919	21,460,057.1678	531+71.94
CC	8,397,649.7817	21,458,487.5420	

Circular Section

Curve Data

Curve ML061_NORTH-3
P.I. Station 536+84.04 N 8,396,982.3328 E 21,460,348.9551
Delta = 30° 01′ 03.98″ (LT)
Degree = 2° 59′ 59.20″
Tangent = 512.1005
Length = 1,000.6662
Radius = 1,910.0000
External = 67.4597
Long Chord = 989.2610
Mid. Ord. = 65.1584
P.C. Station 531+71.94 N 8,396,561.4919 E 21,460,057.1678
P.T. Station 541+72.61 N 8,397,492.6985 E 21,460,391.0716
C.C. N 8,397,649.7817 E 21,458,487.5420
Back = N 34° 44′ 06.91″ E
Ahead = N 4° 43′ 02.92″ E
Chord Bear = N 19° 43′ 34.91″ E

Spiral Ahead
Spiral ML061_NORTH-3A Type 2 Spiral Element

Angle	5° 14′ 57.53″ (LT)	P	2.6712	BK N	4° 43′ 02.92″ E
LS	349.9800	K	174.9411	AH N	0° 31′ 54.61″ W
R	1,910.0000	LT	233.4227	CB N	1° 13′ 04.12″ E
YS	10.6817	ST	116.7533	Defl	1° 44′ 58.73″
XS	349.6863	LC	349.8495	Deg	2° 59′ 59.20″

Spiral Coordinates

Point	North	East	Station
CS	8,397,492.6985	21,460,391.0716	541+72.61
PI	8,397,609.0563	21,460,400.6737	542+89.36
ST	8,397,842.4689	21,460,398.5070	545+22.59
CC	8,397,649.7817	21,458,487.5420	

Ending SCS ML061_NORTH-3 description

Course from ST ML061_NORTH-3A to 99999 N 0° 31′ 54.61″ W Dist 1,677.4145

Equation: Sta 562+00.00 (BK) = Sta 562+45.50 (AH) — End Region 2 / Begin Region 3

Point 99999 N 8,399,519.8112 E 21,460,382.9370 Sta 562+45.50

Course from 99999 to PC ML061_NORTH-4 N 0° 31′ 54.61″ W Dist 1,262.4065

Curve Data

Curve ML061_NORTH-4
P.I. Station 582+25.91 N 8,401,500.1334 E 21,460,364.5546
Delta = 14° 28′ 19.07″ (RT)
Degree = 1° 00′ 47.48″
Tangent = 718.0010
Length = 1,428.3594
Radius = 5,655.0000
External = 45.3991
Long Chord = 1,424.5654
Mid. Ord. = 45.0376
P.C. Station 575+07.91 N 8,400,782.1633 E 21,460,371.2192
P.T. Station 589+36.27 N 8,402,196.9878 E 21,460,537.5267
C.C. N 8,400,834.6538 E 21,466,025.9756
Back = N 0° 31′ 54.61″ W
Ahead = N 13° 56′ 24.47″ E
Chord Bear = N 6° 42′ 14.93″ E

Course from PT ML061_NORTH-4 to TS ML061_NORTH-5B N 13° 56′ 24.47″ E Dist 310.5063

Chain ML061_NORTH - Continued

Spiral ML061_NORTH-5B Type 1 Spiral Element

Angle	5° 14′ 58.61″ (RT)	P	2.6715	BK N	13° 56′ 24.47″ E
LS	350.0000	K	174.9510	AH N	19° 11′ 23.08″ E
R	1,910.0000	LT	233.4360	CB N	15° 41′ 23.56″ E
YS	10.6829	ST	116.7600	Defl	1° 44′ 59.09″
XS	349.7063	LC	349.8694	Deg	2° 59′ 59.20″

Spiral Coordinates

Point	North	East	Station
TS	8,402,498.3491	21,460,612.3301	592+46.78
PI	8,402,724.9100	21,460,668.5667	594+80.21
SC	8,402,835.1822	21,460,706.9454	595+96.78
CC	8,402,207.3698	21,462,510.8167	

Curve Data

Curve ML061_NORTH-5-1

P.I. Station	597+48.71	N	8,402,978.6717	E	21,460,756.8850
Delta =	9° 05′ 45.85″ (RT)				
Degree =	2° 59′ 59.20″				
Tangent =	151.9315				
Length =	303.2246				
Radius =	1,910.0000				
External =	6.0332				
Long Chord =	302.9063				
Mid. Ord. =	6.0142				
P.C. Station	595+96.78	N	8,402,835.1822	E	21,460,706.9454
P.T. Station	599+00.00	N	8,403,112.4619	E	21,460,828.8808
C.C.		N	8,402,207.3698	E	21,462,510.8167
Back =	N 19° 11′ 23.08″ E				
Ahead =	N 28° 17′ 08.92″ E				
Chord Bear =	N 23° 44′ 16.00″ E				

Equation: Sta 599+00.00 (BK) = Sta 596+80.17 (AH)

End Region 3

Begin Region 4

Curve Data

Curve ML061_NORTH-5-2

P.I. Station	599+32.56	N	8,403,334.7143	E	21,460,948.4804
Delta =	15° 03′ 18.02″ (RT)				
Degree =	2° 59′ 59.20″				
Tangent =	252.3890				
Length =	501.8705				
Radius =	1,910.0000				
External =	16.6033				
Long Chord =	500.4279				
Mid. Ord. =	16.4602				
P.C. Station	596+80.17	N	8,403,112.4619	E	21,460,828.8808
P.T. Station	601+82.04	N	8,403,518.2728	E	21,461,121.7043
C.C.		N	8,402,207.3698	E	21,462,510.8167
Back =	N 28° 17′ 08.92″ E				
Ahead =	N 43° 20′ 26.94″ E				
Chord Bear =	N 35° 48′ 47.93″ E				

Chain ML061_NORTH - Continued

Spiral ML061_NORTH-5A Type 2 Spiral Element

Angle	5° 14′ 57.53″ (RT)	P	2.6712	BK N	43° 20′ 26.94″ E
LS	349.9800	K	174.9411	AH N	48° 35′ 24.47″ E
R	1,910.0000	LT	233.4227	CB N	46° 50′ 25.74″ E
YS	10.6817	ST	116.7533	Defl	1° 44′ 58.73″
XS	349.6863	LC	349.8495	Deg	2° 59′ 59.20″

Spiral Coordinates

Point	North	East	Station
CS	8,403,518.2728	21,461,121.7043	601+82.04
PI	8,403,603.1857	21,461,201.8364	602+98.79
ST	8,403,757.5810	21,461,376.9027	605+32.02
CC	8,402,207.3698	21,462,510.8167	

Course from ST ML061_NORTH-5A to PC ML061_NORTH-6 N 48° 35′ 24.47″ E Dist 278.5723

Curve Data

Curve ML061_NORTH-6

P.I. Station	611+73.22	N	8,404,181.6951	E	21,461,857.7987
Delta =	21° 30′ 00.00″ (LT)				
Degree =	2° 59′ 59.20″				
Tangent =	362.6248				
Length =	716.7195				
Radius =	1,910.0000				
External =	34.1185				
Long Chord =	712.5218				
Mid. Ord. =	33.5197				
P.C. Station	608+10.59	N	8,403,941.8401	E	21,461,585.8311
P.T. Station	615+27.31	N	8,404,504.5368	E	21,462,022.9350
C.C.		N	8,405,374.3347	E	21,460,322.4787
Back =	N 48° 35′ 24.47″ E				
Ahead =	N 27° 05′ 24.47″ E				
Chord Bear =	N 37° 50′ 24.47″ E				

Course from PT ML061_NORTH-6 to 70001 N 27° 05′ 24.47″ E Dist 448.9070

Point 70001 N 8,404,904.1948 E 21,462,227.3634 Sta 619+76.22

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Ending chain ML061_NORTH description

Survey Information

DUBUQUE COUNTY
PIN:15-31-061-020
BRFN-061-8(140)--39-31
PIPE CULVERTS ALONG
HWY 61 IN DUBUQUE COUNTY
SAP:828.2

General Information

Measurement units for this survey are US survey feet. This survey is for the design of improvements relating to the proposed culvert updates for hwy 61 in Dubuque Co. IA. Project datum and control information is provided by Design Survey Office. This project is a complete field survey, except for underground utility information (surface features only).

Vertical Control

Vertical datum for this survey is relative to NAVD88, Geoid 12a (IARTN GPS Derived).

Horizontal Control

Measurement units for this survey are U.S. Survey Feet.

Horizontal datum for this survey is unmodified Iowa State IARCSZONE11 coordinate system. Horizontal positions were established by 120 second averaged observations utilizing the IARTN.

VERTICAL CONTROL

Point	North	East	Elevation	Feature	Description
E15312	8390632.8980	21456316.3300	769.8070	BM	CUT X IN BOX HEADWALL
G30507	8387117.1900	21456536.9300	896.7480	BM	1/2 IRS
C13140	8401843.1140	21460594.4900	757.5530	BM	RR SPIKE IN PP
G30210	8365947.6660	21456285.6300	978.4690	BM	1/2 IRS
E15110	8393003.7590	21457368.0600	771.5510	BM	1/2 IRS
C13018	8403727.5900	21461450.6700	780.3080	BM	RR SPIKE IN PP
G30040	8348487.7290	21458221.7400	949.8870	BM	1/2 IRS
G30294	8347829.0190	21458534.5000	939.1510	BM	1/2 IRS
G30352	8376630.4230	21456668.8900	1113.0460	BM	RRSPIKEINPP
E15146	8400758.2080	21460242.1200	776.7040	BM	RR SPIKE IN PP
E15144	8395628.3300	21459452.4900	714.9240	BM	RR SPIKE IN FENCE POST
A21904	8385515.9970	21456630.9800	993.0650	BM	1/2 IRS
G30690	8386950.8270	21456334.2500	904.6450	BM	RRSPIKEINPP
E15216	8398167.1060	21460556.8200	764.6480	BM	CUT X HYD BOLT
C13038	8402521.8330	21460487.6600	799.5950	BM	CUT X ON HYD BOLT
E15364	8388728.0330	21456464.1100	814.0050	BM	RR SPIKE IN PP
K22700	8362466.0740	21456296.3400	1051.8680	BM	1/2 IRS
E15243	8396481.3120	21459829.5600	712.5270	BM	RR SPIKE IN PP
A21440	8379542.9750	21456676.6500	1081.5850	BM	RRSPIKEIN CORNERPOST
G30031	8348545.0170	21457926.5700	929.8610	BM	RRSPIKEINPP
G30108	8350601.3150	21457469.2500	989.4680	BM	RRSPIKEINPP
A21932	8385241.8690	21456646.4000	1008.4590	BM	1/2 IRS
T80099	8371748.8270	21456437.2200	1027.4310	BM	1/2 IRS
V80223	8374322.0860	21456696.7300	1106.3460	BM	RR SPIKE IN POST

CONTROL POINTS

ALL CONTROL POINTS SET ARE 1/2 IRON RODS WITH RED CAPS UNLESS OTHERWISE NOTED

Point	North	East	Elevation	Feature	Description
A22687	8362636.5860	21456295.8000	1050.1590	CP	1/2 IRS
A20018	8366487.5260	21456300.4800	969.6180	CP	
A20019	8379189.5380	21456582.1300	1095.0840	CP	1/2 IRS
B10012	8395738.4560	21459469.6300	723.2500	CP	1/2 IRS RED CAP
B10007	8388592.0840	21456297.2000	826.9770	CP	1/2 IRS RED CAP
B10011	8395630.6230	21459378.2000	724.2200	CP	1/2 IRS RED CAP
A20001	8348464.0220	21458232.1000	949.5590	CP	1/2 IRS
B10022	8402581.5340	21460580.6100	797.2690	CP	1/2 IRS RED CAP
A20003	8348614.0300	21458162.8600	951.9620	CP	1/2 IRS
B10021	8402482.1290	21460549.7200	794.3890	CP	1/2 IRS RED CAP
A20002	8348415.5960	21458092.0500	948.9490	CP	1/2 IRS
A21871	8387086.1650	21456376.7400	898.0960	CP	1/2 IRS
B10006	8390741.9160	21456348.7500	774.9090	CP	1/2 IRS RED CAP
A21870	8387007.3260	21456596.4600	900.0680	CP	1/2 IRS
A20006	8348637.5330	21457985.6600	952.6340	CP	1/2 IRS
B10010	8388822.2570	21456435.6200	815.1600	CP	1/2 IRS RED CAP
A21571	8376629.2690	21456265.8800	1108.5390	CP	1/2 IRS
A21573	8376709.1580	21456574.4200	1115.8950	CP	1/2 IRS
A20007	8350551.5690	21457456.6800	1001.1140	CP	1/2 IRS
E10047	8400726.7050	21460179.9500	778.5360	CP	1/2 IRS RED CAP
B10000	8393109.2570	21457398.0400	772.7040	CP	1/2 IRS RED CAP
B10015	8398181.0170	21460465.9800	751.1710	CP	1/2 IRS RED CAP
B10014	8396529.4870	21459958.4900	724.3060	CP	1/2 IRS RED CAP
A20008	8350619.2220	21457551.3900	1004.3520	CP	1/2 IRS
A20010	8351073.3560	21457668.4300	1004.9280	CP	1/2 IRS
K22688	8362483.7230	21456297.8300	1051.8610	CP	1/2 IRS
A20011	8351204.2860	21457675.8400	1004.3160	CP	1/2 IRS
A20012	8366107.3730	21456290.9400	974.1820	CP	
A20013	8365960.1260	21456285.9800	978.0670	CP	
G30209	8350662.1250	21457553.8200	1004.4150	CP	1/2 IRS
A20014	8347680.2850	21458605.5000	937.2360	CP	
A20015	8347813.6580	21458541.6900	939.1600	CP	
A20017	8366398.1560	21456222.1000	966.6970	CP	
B10013	8396414.7680	21459868.5700	724.8280	CP	1/2 IRS RED CAP
E10048	8400539.9890	21460304.0200	785.4410	CP	1/2 IRS RED CAP
A21869	8387140.2980	21456533.5900	895.6810	CP	1/2 IRS
A20005	8348662.9800	21458078.2400	952.8750	CP	1/2 IRS
A21572	8376413.7000	21456422.3900	1116.2550	CP	1/2 IRS
C10047	8400726.7050	21460179.9500	778.5360	CP	1/2 IRS RED CAP
A22688	8362483.7230	21456297.8300	1051.8610	CP	1/2 IRS
B10001	8392858.5830	21457300.9000	775.6880	CP	1/2 IRS RED CAP
A20020	8379340.7720	21456584.8400	1093.4250	CP	1/2 IRS
A20021	8379552.6910	21456587.1900	1090.8810	CP	1/2 IRS
B10023	8398481.7420	21460328.1100	762.5240	CP	1/2 IRS RED CAP
B10009	8388669.4930	21456445.6500	821.6350	CP	1/2 IRS RED CAP
B10020	8403765.4230	21461448.0000	789.2330	CP	1/2 IRS RED CAP
B10019	8403674.5890	21461344.9300	793.2860	CP	1/2 IRS RED CAP
B10018	8401995.4270	21460543.2200	783.8260	CP	1/2 IRS RED CAP
B10017	8401809.5160	21460512.5800	779.0120	CP	1/2 IRS RED CAP
B10008	8388688.0370	21456290.0700	822.9280	CP	1/2 IRS RED CAP
C10048	8400539.9890	21460304.0200	785.4410	CP	1/2 IRS RED CAP
B10016	8398475.8200	21460463.9100	762.3450	CP	1/2 IRS RED CAP
B10024	8398173.3520	21460332.5100	750.9050	CP	1/2 IRS RED CAP
B10002	8393331.4970	21457356.1300	771.2750	CP	1/2 IRS RED CAP
B10003	8393412.8290	21457401.6000	768.5850	CP	1/2 IRS RED CAP
B10004	8392893.7760	21457155.5900	782.5670	CP	1/2 IRS RED CAP
B10005	8390595.2120	21456326.6400	773.2130	CP	1/2 IRS RED CAP
A21865	8385110.0130	21456652.3400	1015.7980	CP	1/2 IRS
A21866	8385259.6870	21456644.0000	1007.8480	CP	1/2 IRS
A21867	8385490.5800	21456630.9900	994.7050	CP	1/2 IRS
A21868	8385651.9100	21456621.2300	985.2340	CP	1/2 IRS
K22687	8362636.5860	21456295.8000	1050.1590	CP	1/2 IRS
P36001	8366397.0350	21456223.0000	966.9060	CP	1/2 IRS
P36000	8366557.0100	21456299.1700	968.8210	CP	1/2 IRS
CP402	8371815.9240	21456440.8100	1028.0820	CP	1/2 IRS RED CAP
CP403	8371599.5680	21456433.8800	1026.9030	CP	1/2 IRS RED CAP
CP404	8347734.5770	21458582.9200	937.3900	CP	1/2 IRS RED CAP
CP405	8347566.9540	21458660.9100	934.6450	CP	1/2 IRS RED CAP
CP408	8374211.3050	21456629.7900	1094.7590	CP	1/2 IRS RED CAP
CP409	8374413.4310	21456625.7300	1101.0350	CP	1/2 IRS RED CAP
CP451	8364505.0260	21456257.5100	1012.0490	CP	1/2 IRS RED CAP
CP450	8364704.4340	21456258.0900	1008.6210	CP	1/2 IRS RED CAP

108-23A
08-01-08

TRAFFIC CONTROL PLAN

1. U.S. 61 will remain open to traffic at all times.
2. Lane or shoulder closures shall be per the Standard Road Plans listed elsewhere in these plans.
3. Access to individual properties shall be maintained at all times.

STORM SEWER

(1) Diameter or equivalent diameter
* Bid Item
** For SW-545

INTAKES AND UTILITY ACCESSES

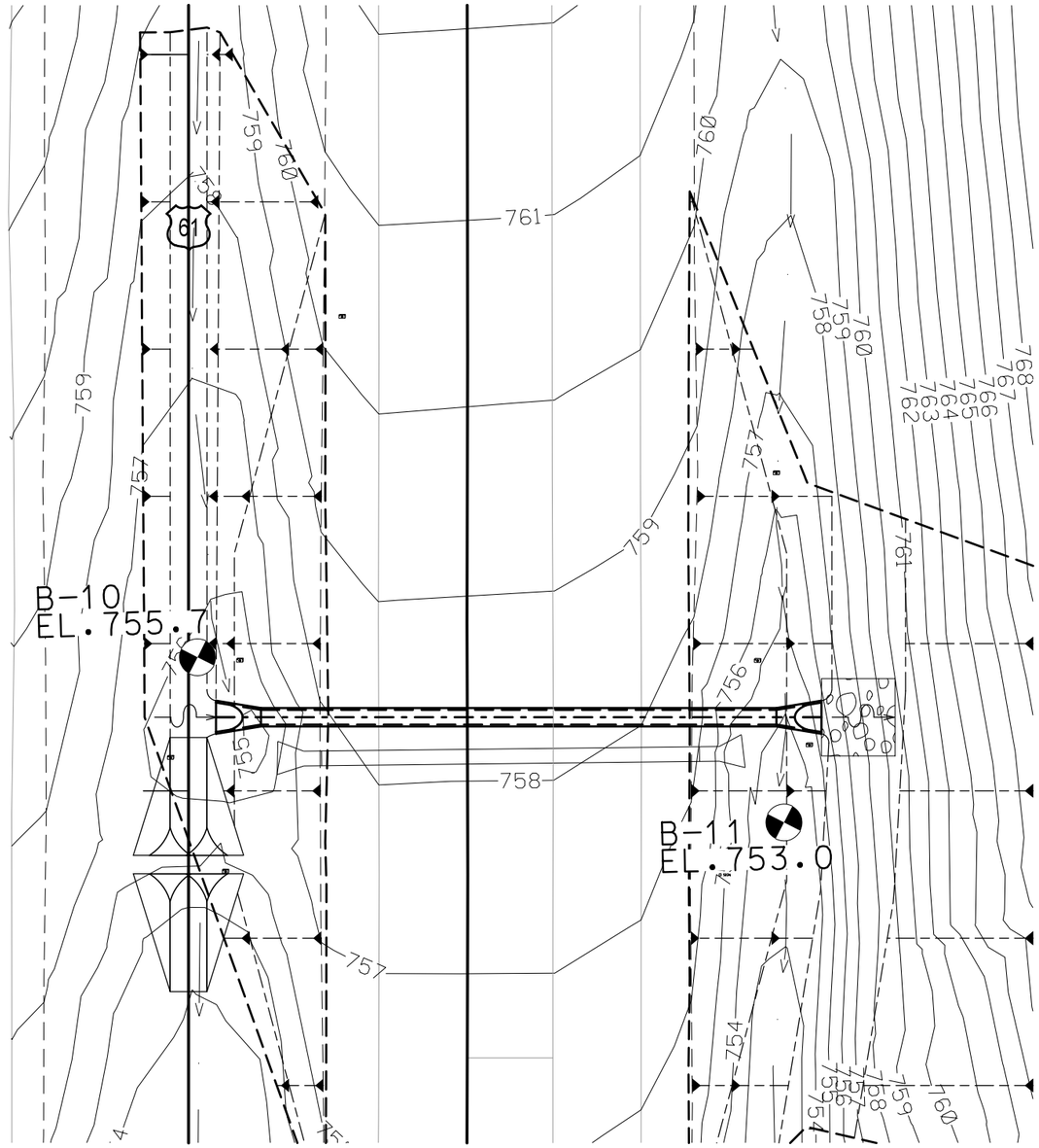
No.	Location Station and Offset	*Type or Standard Road Plan	Form Grade Elev.	Bottom Well Elev.	Ext Length** FT	Notes
1	487+00, 3.0' LT	SW-563	776.25	771.93		Inst on ex pipe Field verify elevations

PIPES

Line Number	Intake/ Utility Access No. From	To	Class 'D'	Pipe Size (1) IN	Bid* Length FT	Design Length FT	Slope %	Connected Pipe Joint (DR-121) Type	Flow Lines: Inlet Elevation	Outlet Elevation	Other Elevation	Pipe Profile Sheet No.	Notes

551

550



0 ENGLISH 20
SCALE IN FEET

LOCATION

T-88N R-2E
SECTION 12
TABLE MOUND TWP.
DUBUQUE COUNTY

DESIGN FOR 0° SKEW

24" X 70' TRENCHLESS REINFORCED CONCRETE PIPE CULVERT

STA. 550+10 ℄ U.S.-61 NBL DEC. 2018

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 2 FILE NO. 31563 DESIGN NO.

FILE NO.	ENGLISH	DESIGN TEAM SNYDER & ASSOCIATES, INC./BRAUN INTERTEC	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER Q.1

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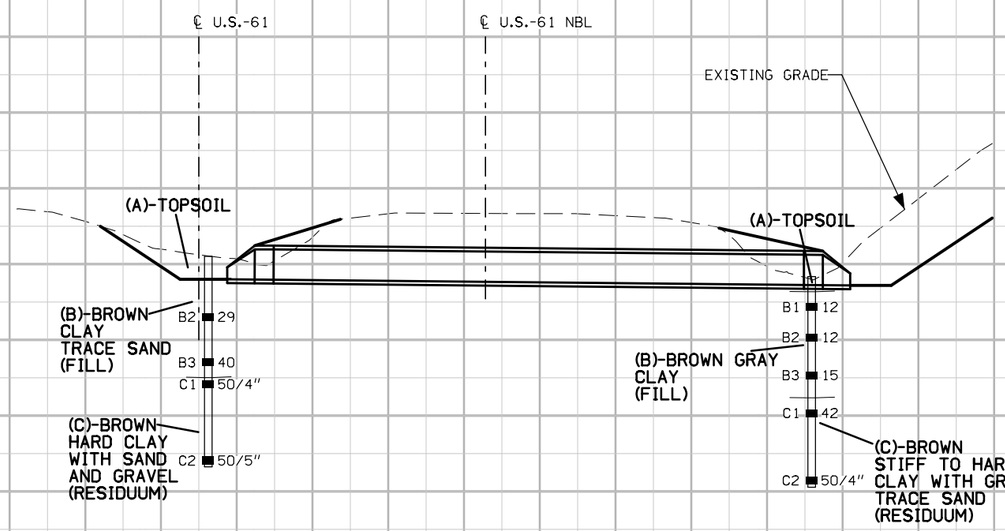

Layer	Thickness
A	1.5′
B	6.5′
C	5.9′

B-10
STA.550+30
LT.37

Layer	Thickness
A	1.0′
B	7.0′
C	5.8′

B-11
STA.550+15
RT.43

Boring No.	Date Drilled	GroundWater Level (Ft.)
B-10	1/11/2018	NA
B-11	1/11/2018	NA

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

LEGEND

$-H_2O-$	WATER	BLOW COUNT LAYER - NO. BLOWS (B2 5)	SOIL REMEDIATION AREA
— DRY	DRY		LIMESTONE (LS.)
-◁	PLUGGED	DIAMOND CORE	BROKEN & WEATHERED LS.
M—	MOISTURE	SAND	SANDSTONE
■	SHELBY	GRAVELLY SAND	SHALE
■	BLOW COUNT	BOULDERS	SANDY SOIL
Ⓢ	SAMPLE		
▬	DENS. CORE		

DESIGN FOR 0° SKEW

24" X 70′ TRENCHLESS REINFORCED CONCRETE PIPE CULVERT

STA. 550+10 ℄ U.S.-61 NBL — DEC. 2018

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 2 FILE NO. 31563 DESIGN NO.

FILE NO.	ENGLISH	DESIGN TEAM SNYDER & ASSOCIATES, INC./BRAUN INTERTEC	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER Q.2

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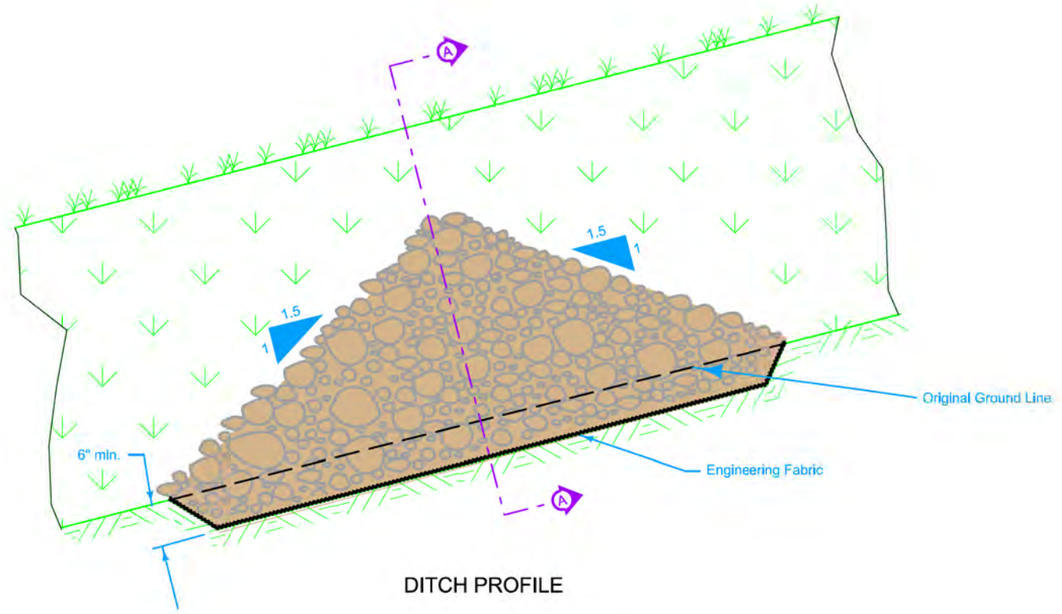
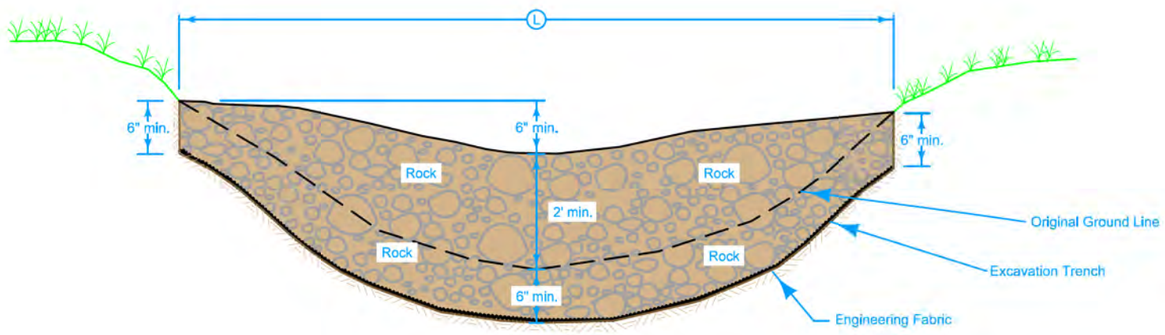


DITCH PROFILE



SECTION A-A

Use Class D 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.

Possible Contract Items:
- Rock Check Dam
- Maintenance of Rock Check Dam
- Removal of Rock Check Dam

Possible Tabulation:
- 100-32

IOWA DOT

REVISION	
1	10-17-17

ROAD DESIGN DETAIL

570-2

SHEET 1 of 1

REVISIONS: Modified some linework for clarity on the "Original Ground Line".

ROCK CHECK DAM

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER	BRFN-061-8(140)--39-31	SHEET NUMBER	U.1

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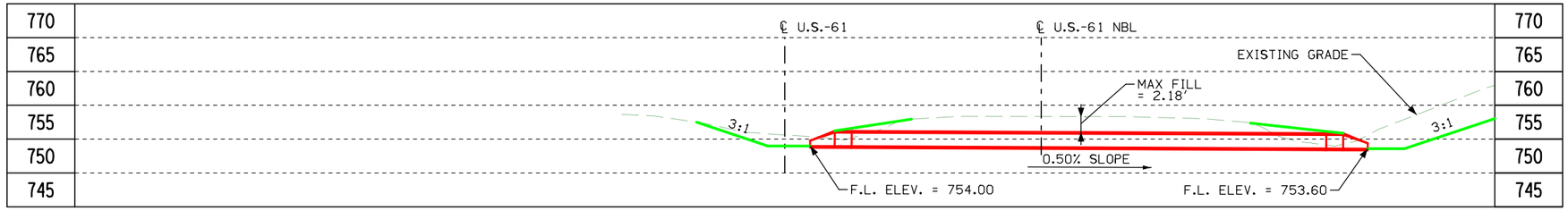
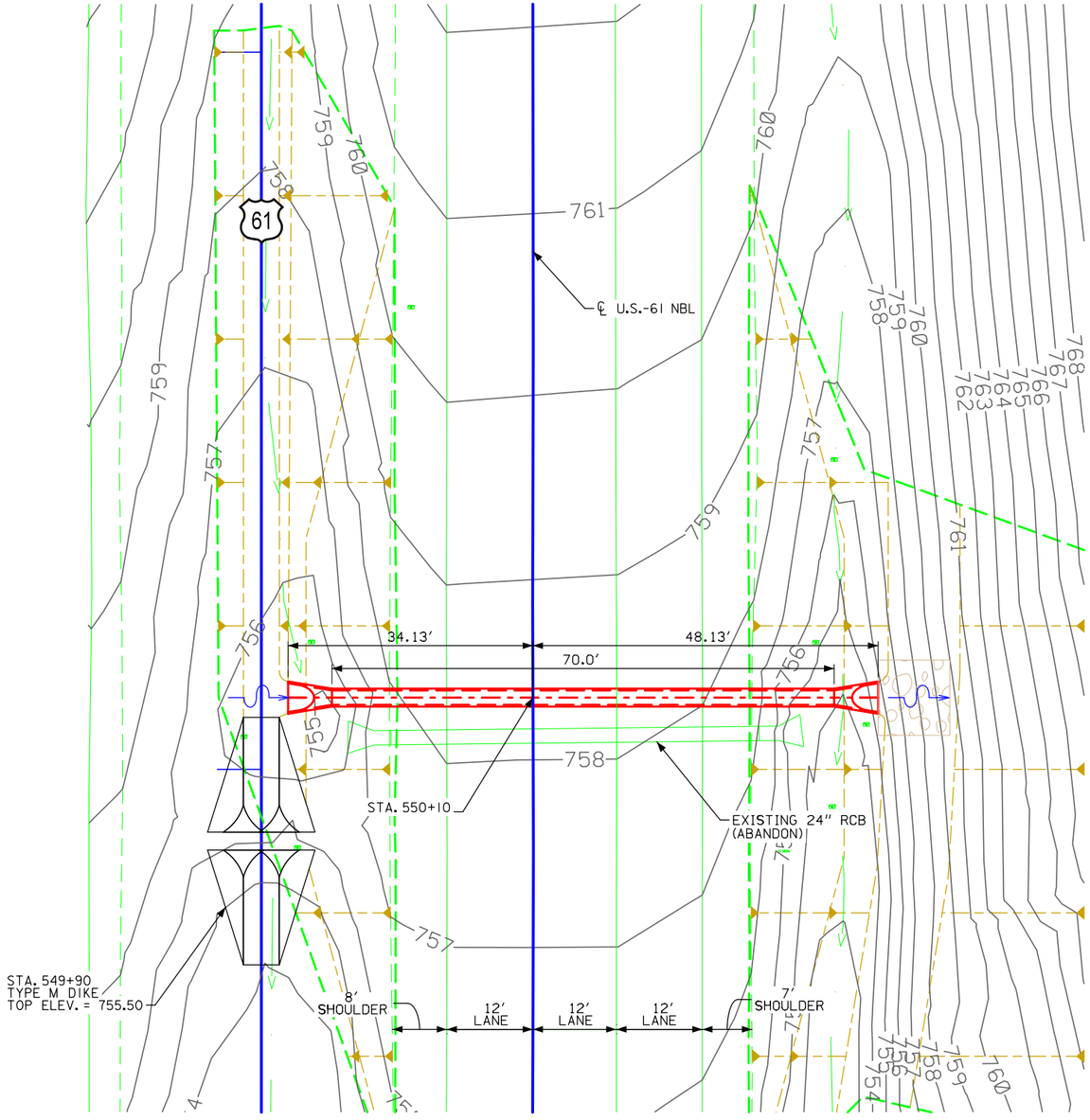


LONGITUDINAL SECTION ALONG ℄ CULVERT

551

550



PLAT PLAN

BENCH MARK NO. EI5216
ELEV. 764.65
STA. 548+45.74, 161.32' RT
CUT X ON HYDRANT BOLT

N

0 ENGLISH 20
SCALE IN FEET

HYDRAULIC DATA

DRAINAGE AREA = 0.88 ACRES HILLY
Q_{50} = 5.28 CFS

UTILITIES LEGEND:

REFER TO SHEET D.I FOR UTILITY LEGEND

LOCATION

T-88N R-2E
SECTION 12
TABLE MOUND TWP.
DUBUQUE COUNTY

DESIGN FOR 0° SKEW

24" X 70' TRENCHLESS REINFORCED CONCRETE PIPE CULVERT PLAT PLAN

STA. 550+10 ℄ U.S.-61 NBL DEC. 2018

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. 31563 DESIGN NO. _____

FILE NO.	ENGLISH	DESIGN TEAM SNYDER AND ASSOCIATES, INC.	DUBUQUE COUNTY	PROJECT NUMBER BRFN-061-8(140)--39-31	SHEET NUMBER V.1

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