

IOWA DEPARTMENT OF TRANSPORTATION

To Office: District 3

Date: December 19, 2017

Attention: Shane Tymkowicz

Ref No.: Crawford County

From: Mark Wright

NHSN-059-5(54)--2R-24

NHSN-059-5(55)--2R-24 (ROW)

Office: District 3 Design

PIN: 18-24-059-010

NHSN-059-5(56)--2R-24

NHSN-059-5(57)--2R-24 (ROW)

Subject: FINAL Concept (D00) Culverts

PIN: 18-24-059-020

STPN-141-3(71)--2J-24

STPN-141-3(72)--2J-24 (ROW)

PIN: 18-24-141-010

These projects involve the repair of roadway culverts in Crawford County under US 59 south of Denison between Mile Posts 96.50 and 99.30 and under IA 141 east of the S. Jct.US 59 near Mile Post 67.62.

Reacting to a box culvert failure on IA 141 in Crawford County, roadway culverts of similar age were inspected. The following culverts had distress similar to the failed culvert (interior wall spalling, exposed and rusted reinforcing steel and leaking construction joints) and repair was deemed warranted. The Office of Bridges and Structures furnished culvert replacement size, repair method and cost. Trenchless construction cost includes pipe installation and two aprons. Permanent right of way and temporary easement for construction will be required.

Route	Milepost	Station	Existing RCB	Construction Type Cost x 1000	Grading & Misc. Cost x 1000	Total Site Cost (excl. ROW)
IA 141	67.62	260+55	5' x 5'	Trenchless / \$190	\$5	\$195,000
US 59	96.50	257+79	4' x 3'	Trenchless / \$54	\$20	\$74,000
US 59	97.76	328+54	8' x 8'	New RCB / \$190	\$100	\$290,000
US 59	98.30	356+89	6' x 6'	Trenchless / \$145	\$30	\$175,000
US 59	98.51	368+00	3' x 3'	Trenchless / \$74	\$40	\$114,000
US 59	98.70	378+32	6' x 6'	Trenchless / \$71	\$20	\$91,000
US 59	99.33	409+26	5' x 6'	Trenchless / \$65	\$20	\$85,000

These sites are grouped by route and construction type for project programming purposes:

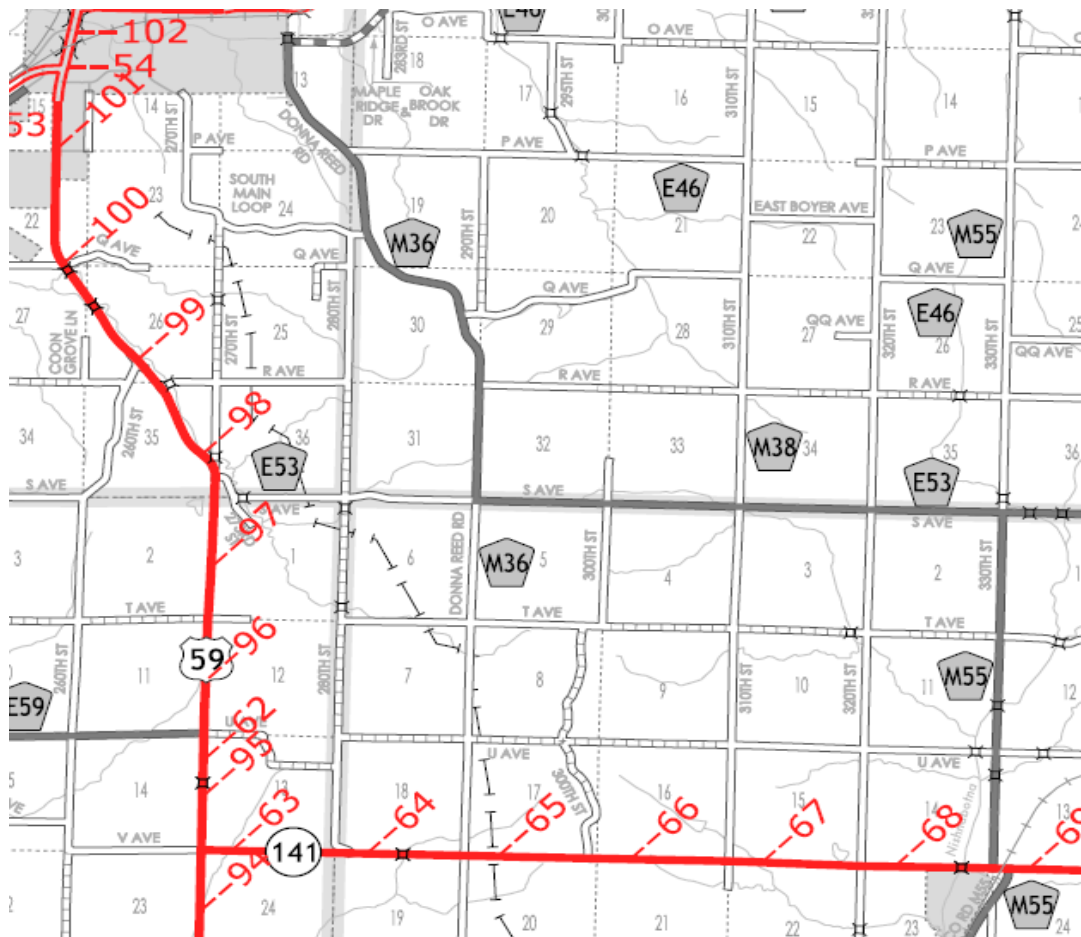
<u>PROJECT No.</u>		<u>Project Cost</u>	<u>ROW cost</u>
STPN-141-3(71)--2J-24	Trenchless	\$195,000	\$1,000
NHSN-059-5(54)--2R-24	Trenchless	\$539,000	\$7,000
NHSN-059-5(56)--2R-24	New RCB	\$290,000	\$3,000

Traffic will be maintained on US 59 and IA 141 during construction for the sites with trenchless construction. Shoulder closures will be required and single lane closures may be required during the project at these sites. The culvert at Station 328+54 will require replacement and an off-site detour for US 59 will be required.

No plan sheets are included with this submittal; however, some site pictures and as-builts are available on the network at:

<W:\Highway\District3\Design\Engineering\StaffEngineerA\MiscellaneousWork\2016\Culverts US 59 Ia 141 south of Denison\Concept images>

Project area:



All three projects have been placed in the November 16, 2021 letting.

Preliminary survey has not been completed on these projects.

District 3 will request plan preparation by the Office of Design with help from the Office of Bridges and Structures on these projects.

cc:

M. J. Kennerly
S. J. Gent
E. C. Wright
J. Larson
R. Cornelius
V. A. Brewer
B. Smith
D. L. Newell
S. Megivern
K. K. Patel
M. K. Solberg
J. McCollough
T. Lazarowicz
T. Huju
J. Jepsen
R. Gleiser

K. D. Nicholson
T. D. Crouch
B. S. Bradley
G. A. Novey
D. E. Sprengeler
S. P. Anderson
P.C. Keen
B. D. Hofer
B. Dolan
M. Carlson
W. A. Sorenson
N. L. Cuva
D. Bishop
J. Klemme
D. Manley

D. L. Maifield
B. Azeltine
M. J. Sankey
M. A. Swenson
J. N. Garton
K. M. Brink
D. R. Tebben
D. A. Popp
D. R. Claman
S. K. Godbold
J. Laaser-Webb
C. C. Poole
D. Schultz
R. Wortman
R. Seward

PIPE CULVERTS
STPN-141-3(71)--2J-24

LETTING DATE
 11-16-2021

CRAWFORD CO.



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
CRAWFORD COUNTY
 PIPE CULVERTS

2.8 mi E of Co Rd M36 (MP 67.6)

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



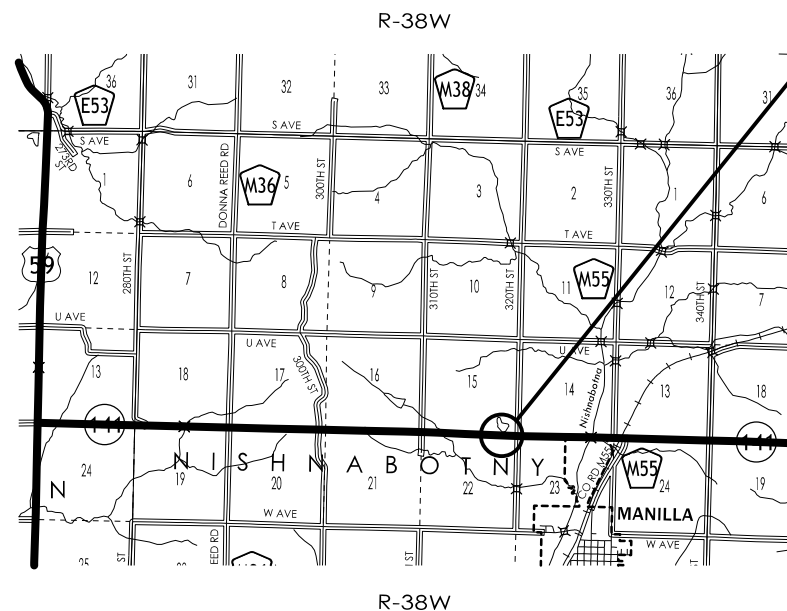
REVISIONS

TOTAL	8
PROJECT IDENTIFICATION NUMBER	18-24-141-010
PROJECT NUMBER	STPN-141-3(71)--2J-24
R.O.W. PROJECT NUMBER	STPN-141-3(72)--2J-24

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.1	Location Map Sheet
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 141
G Sheets	Survey Sheets
G.1 - 3	Reference Ties and Bench Marks
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
W Sheets	Mainline Cross Sections
W.1	Mainline Cross Sections
	* Color Plan Sheets

Project Location
 Sta. 260+55
 Ref. Loc. Sign 67.62



DESIGN DATA RURAL

2019 AADT	1530	V.P.D.
20-- AADT	--	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	-- %	
Total Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	X	Primary Signature Block
X	X	X

D9 PLAN - Date: 9-7-21
 DM5 PLAN - Date: 8-3-21
 D5 PLAN - Date: 3-6-20

PRELIMINARY PLANS

Subject to change by final design.

D2 /D3 PLAN - Date: 9-19-19

SURVEY SYMBOLS

- BM Bench Mark
- WC Wild Card (Misc. Field Shot)
- SNP Unpaved Shoulder
- EP Edge of Paved Roads (ML or SR)
- C Centerline BL of Road (ML or SR)
- BL Topo Breakline
- TL1D Telephone Line Co. 1 - Quality D
- D Centerline Draw or Stream (Down)
- BNK Stream Bank
- DU Centerline Draw or Stream (Up)
- EL1D Electric Line Co. 1 - Quality D
- EW Edge of Water
- GR Ground Shot
- OUT Tile Outlet
- TIL Tile Line
- RIP Rip-Rap
- CON Concrete or A/C Slab
- CUL Culvert
- PRO Profile Shot
- CP Control Point
- PIP Pipe Culvert
- TDC Tree Deciduous
- TEV Evergreen Tree
- PLG Location of General Photo
- SOP Size of Pipe or Culvert
- DAB Drainage Area Boundary

UTILITY LEGEND

- TL1D Farmers Mutual Telephone Co - Quality D
Brad Sunderman
410 Broad Street
Stanton, IA 51573
(712)829-2111
bsunderman@fmcnet.com
- EL1D Manilla Municipal Utilities - Quality D
Bryan Gerritson
166 6th Avenue
Manilla, IA 51454
manillautilities@fmctc.com

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

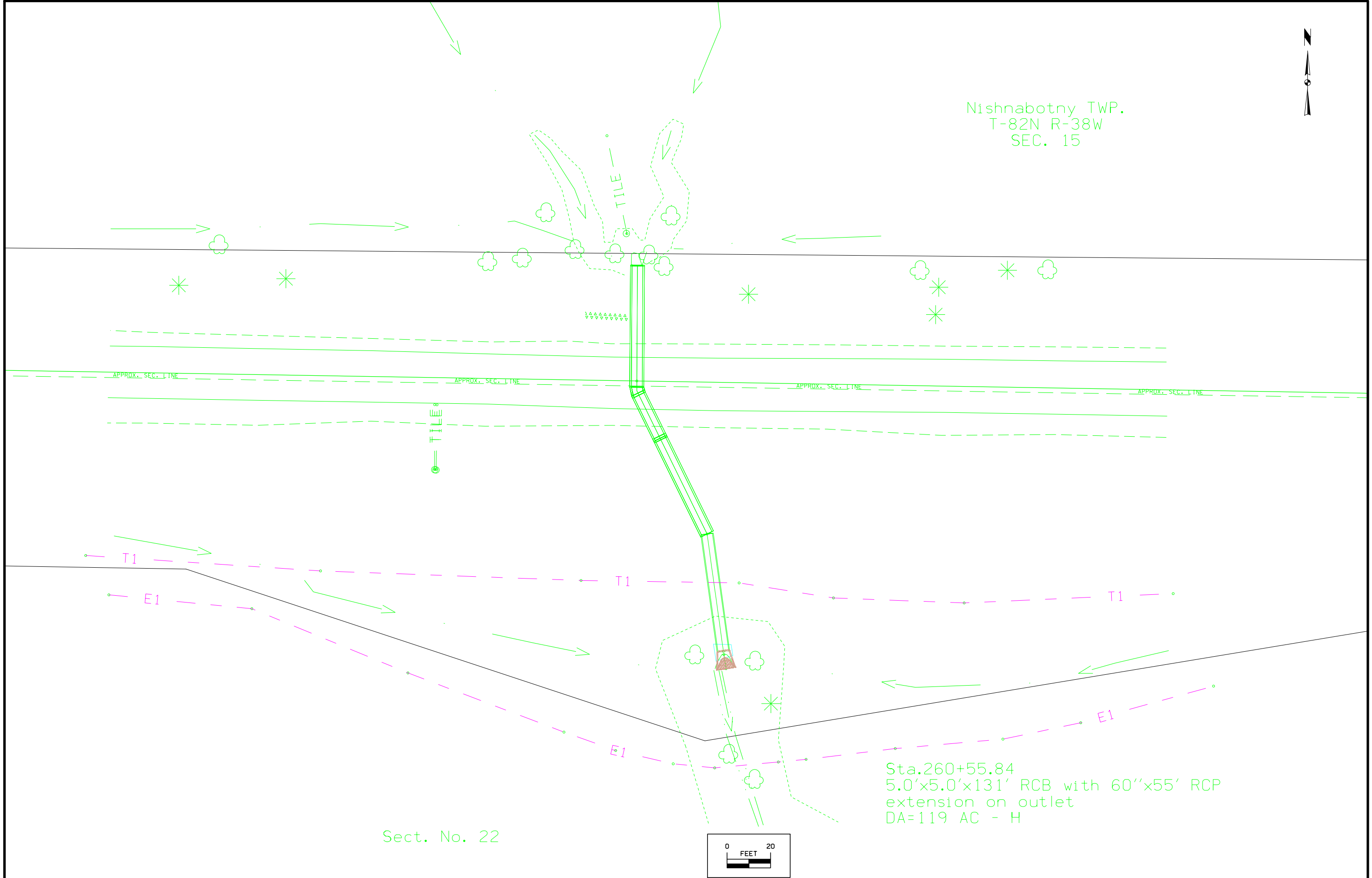
- ### RIGHT-OF-WAY LEGEND
- Proposed Right-of-Way
 - Existing Right of Way
 - Existing and Proposed Right-of-Way
 - Easement and Existing Right-of-Way
 - Easement (Temporary)
 - Easement
 - Access Control
 - Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

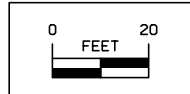


Nishnabotny TWP.
T-82N R-38W
SEC. 15



Sta.260+55.84
5.0'x5.0'x131' RCB with 60"x55' RCP
extension on outlet
DA=119 AC - H

Sect. No. 22



Survey Information

County: Crawford
PIN: 18-24-141-010
Project Number: STPN-141-3(71)--2J-24
Location: 2.8 mi E of Co Rd M36 (MP 67.6)
Type of Work: Pipe Culverts
Project Directory: 2414101018
SAP 855.2

Vertical Control

Vertical Control was established on 4 monuments on the project designated as points GSVS002, GSVS003, T90_RESET, and X95. These monuments are stable and are expected to hold vertical reasonably well. The vertical datum is NAVD88. Datum was transferred from the Iowa RTN reference station at Denison to the projects monuments mentioned above by using concurrent 6 hour static measurements and post processing connecting vectors. Geoid 12B was used in processing.

This survey observed 4 NGS Control Monuments with published NAVD88 heights to validate the reference station height used in computation of project heights. The county control has a stated vertical accuracy of + or - 0.05 ft. The survey heights determined at the NGS monuments validate the NAVD 88 height used at the Council Bluffs reference station and the positions of the project control monuments within acceptable tolerance.

This survey observed 4 NGS Control Monuments with published NAVD88 heights to compare to local ground control:

NGS 2nd. order class I mark designated GSVS002 has a published Elev. Of 331.538 (m) Survey Elev. = 331.513 (m)

NGS 2nd. order class I mark designated GSVS003 has a published Elev. Of 335.56 (m) Survey Elev. = 335.55 (m)

NGS 3rd. order mark designated T90_RESET has a published Elev. Of 392.814 (m) Survey Elev. = 392.821 (m)

NGS 2nd. order class 0 mark designated X95 has a published Elev. Of 371.978 (m) Survey Elev. = 371.973 (m)

This survey observed 1 As-Built plan bench mark to compare to local ground control:

BM 500 This Survey Elev. = 1373.248 = Project F.A. 739 BM 21 Sta 260+55 Elev. 1311.53

Horizontal Control

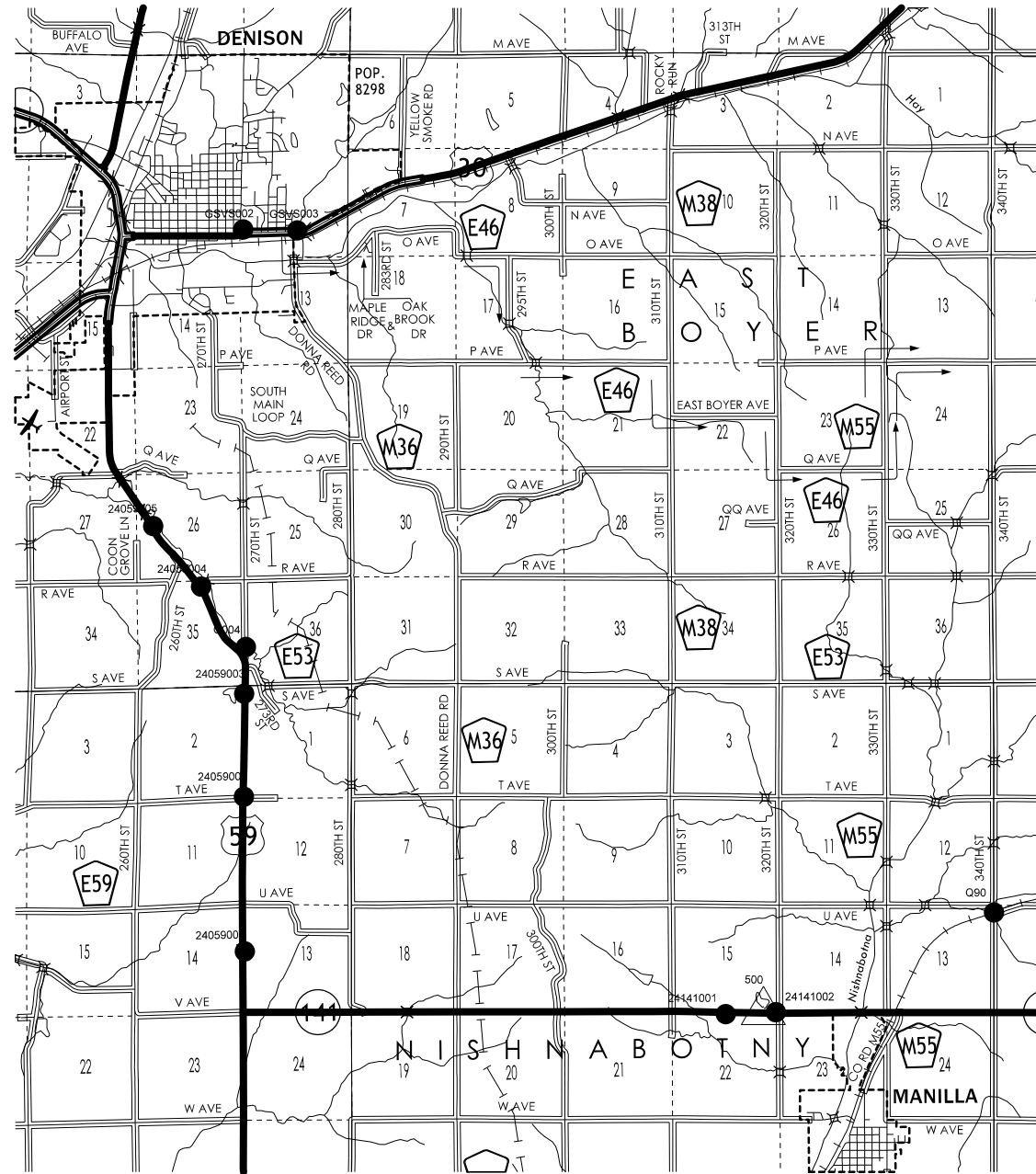
Horizontal Control was established on 5 monuments on the project designated as points DENIPORT, GSVS002, GSVS003, T90_RESET, and X95. These monuments are stable and are expected to hold vertical reasonably well. The horizontal datum is NAD83(2011) (EPOCH 2010.00). Datum was transferred from the Iowa RTN reference station at Denison to the projects monuments mentioned above by using concurrent 6 hour static measurements and post processing connecting vectors. Iowa Regional Coordinate System Zone 6 is used. The Zone 6 coordinates used at the Denison reference station are: N= 7236897.886, E= 16597218.921.

Survey Alignment Information

The horizontal alignment for this survey was provided by District 3 ROW office.

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points
 Primary control is for use with RTK base stations and for RTN validation.
 Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) EPOCH 2013.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 6

Coordinate listing from next sheet will be used with 1aRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2013.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 6

Point Name	Northing	Easting	Elevation	Feature	Description
24141002	7204252.1	16632116.13	1412.16	CP	24141002 AT INTERSECTION OF IA 141 AND US 59 SOUTH OF DENISON GO 5 MILES EAST TO INTERSECTION OF HWY 141 AND 320TH ST SET FENO IN NW QUAD OF INTERSECTION 20 FEET SOUTH OF WEST GATE POST 44 FEET NORTH OF CL IA 141 74 FEET WEST OF HWY 141 SIGN
G004	7222192.67	16606079.53	1263.01	CP	G004 AT SOUTH INTERSECTION OF US 30 AND US 59 GO 3.8 MI S TO INTERSECTION 270TH ST AND US 59 GO 0.1 MI S ON 270TH ST TO FARM ENT ON EAST SIDE FND REBAR 45 FEET EAST OF 270TH ST CL 10 FEET S OF DRIVE CL 28 FEET NE OF CROSSED NAILS IN NE WINGWALL POLE
GSVS003	7242658.46	16608601.46	1196.95	CP	GSVS003 HTTPS://WWW.NGS.NOAA.GOV/CGI-BIN/DS_MARK.PRL?PIDBOX
24059002	7214836.72	16605981.88	1415.8	CP	24059002 AT SOUTH INTERSECTION OF US 30 AND US 59 GO 5.1 MI S TO INTERSECTION OF US 59 AND T AVE SET FENO IN NE QUAD OF INTERSECTION 43 FEET E OF US 59 CL 30 FEET N OF T AVE AND US 59 SIGN 33 FEET WEST OF SEC REF SIGN
24059004	7225160.31	16603878.78	1254.4	CP	24059004 AT SOUTH INTERSECTION OF US 30 AND US 59 GO 3.0 MI S TO INTERSECTION OF US 59 AND R AVE FND IRON PIN IN CONC MONUMENT IN SE QUAD OF INTERSECTION 37 FEET S OF R AVE CL 52 FEET E OF US 59 CL 1 FOOT EAST OF STA MARKER 375
GSVS002	7242707.03	16605947.65	1183.69	CP	GSV002 HTTPS://WWW.NGS.NOAA.GOV/CGI-BIN/DS_MARK.PRL?PIDBOX
24059001	7207238.61	16606023.27	1384.5	CP	24059001 AT SOUTH INTERSECTION OF US 30 AND US 59 GO 6.6 MI S TO BRIDGE OVER ABANDONED RAILROAD BRIDGE SET FENO ON OLD RAILROAD BED 24 FEET WEST OF MILWAUKEE ROAD PUBLIC HUNTING SIGN 105 FEET SE OF EAST PIER ON N END OF BRIDGE 80 FEET NE OF EAST PIER ON S
24059005	7228135.04	16601521.15	1252.58	CP	24059005 AT SOUTH INTERSECTION OF US 30 AND US 59 GO 2.3 MI S ALONG US 59 FND IRON PIN IN CONC MONUMENT 62 FEET E OF US 59 CL 27 FEET E OF LITTER REMOVAL SIGN 27 FEET S OF P POLE
24141001	7204159.75	16629654.51	1422.62	CP	24141001 FROM INTERSECTION OF IA 141 AND US 59 S OF DENISON GO 4.5 MI EAST ALONG IA 141 TO FIELD ENT ON S SIDE OF 141 CUT X ON ROW RAIL 90 FEET S OF IA 141 CL 5 FEET SW OF TEL PED 13 E OF FIELD ENT CL 4 FEET W OF FIBER OPTIC WARNING SIGN
24059003	7219902.34	16605995.23	1376.38	CP	24059003 AT SOUTH INTERSECTION OF US 30 AND US 59 GO 4.1 MI S ALONG US 59 FND IRON PIN IN CONC MONUMENT ON TOP OF W BACKSLOPE 49 FEET W OF US 59 CL 100 FEET NW OF STA MARKER 315
Q90	7209149.473	16642832.803	1379.402	CP	Q90 HTTP://WWW.NGS.NOAA.GOV/CGI-BIN/DS_MARK.PRL?PIDBOX=MJ0334
500	7204271.444	16631503.625	1373.248	BM	500 FROM INTERSECTION OF IA 141 AND US 59 S OF DENISON GO 4.7 MI EAST ALONG IA 141 FND PLUG INLET HDWL 5X5 RCB AT STA. 260+55.84

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic shall be maintained at all times.

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			No travel restrictions anticipated.									

IA 141 Preliminary

