LETTING DATE -

Culvert Repair

STP-065-5(044)--2C-85

STORY COUNTY

Index of Sheets

No.	Description
Sheets	Bridge Plan
A.1	Title Sheet
A.2	Location Map Sheet
V.1	Estimated Quantities - Design ####
V.2 - XX	Design -
SPS Sheets	Bridge Plan Soils Sheet
SPS.1	Bridge Plan Soils Sheet
Road Sheets	Road Plan
A.??-?.??	Road Plans
C.1	Estimated Quantities - Road
C.2	Standard Plans - Road
RC.1 - 5	Estimated Quantities - Erosion Control

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
STORY COUNTY
Culvert Repair

on US 65 in Story County,
0.2 mi S of Co Rd E41 in Colo.

Refer to the Plan Sheets for list of applicable specifications.

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

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

Revisions

	TOTAL
	XX
PROJECT IDENTIFICATION NUMBER	
25-85-065-020	
PROJECT NUMBER	
STP-065-5(044)--2C-85	
R.O.W. PROJECT NUMBER	
-	
PROJECT DIRECTORY NUMBER	
856502025	

Preliminary
Not For Construction

Revisions to this Design Plan and/or Project Specifications should be submitted by _____

Design Data Urban

20?? AADT		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	Mark C. Currie	Structural Design

Structural Design

LICENSED PROFESSIONAL ENGINEER
Mark C. Currie
22475
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 Mark C. Currie Date

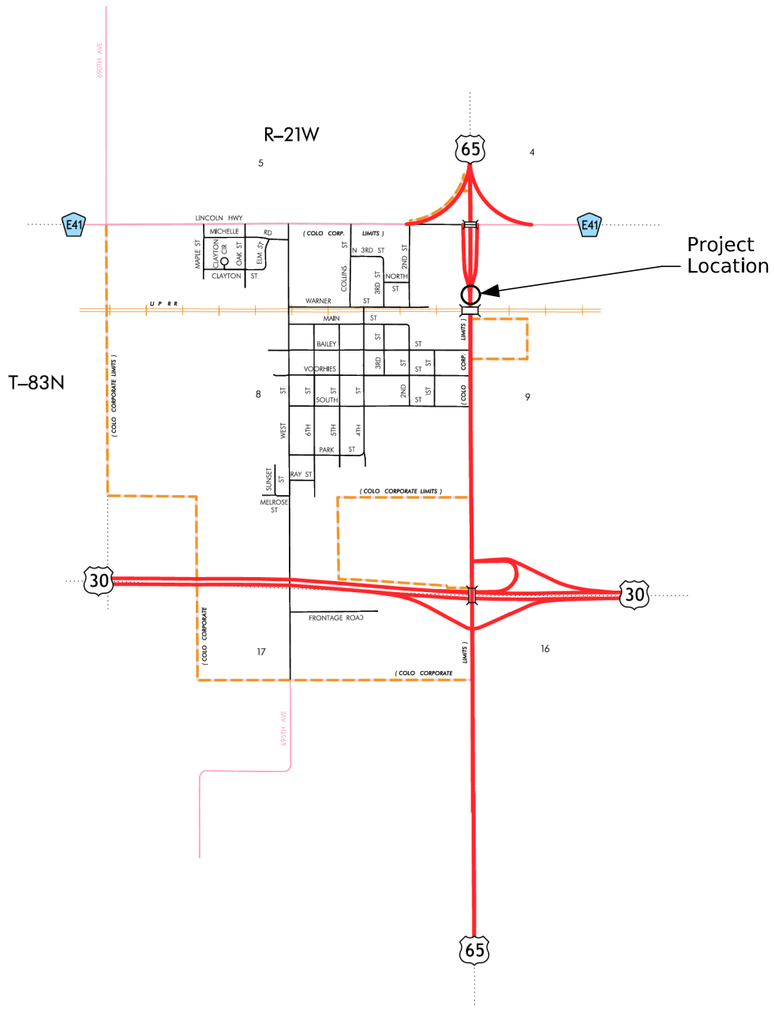
Printed or Typed Name

My license renewal date is December 31, 2025

Pages or sheets covered by this seal: _____

FILE NO. -	ENGLISH	DESIGN TEAM Veenstra & Kimm, Inc.	Story COUNTY	PROJECT NUMBER STP-065-5(044)--2C-85	SHEET NUMBER A.1

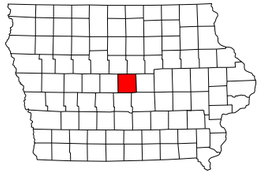
9:23:04 AM 12/2/2025 rlemke pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\8506502025\Bridge\(044)_RCB Culvert New - Single Box\SHT_85065044Z08.dgn



LEGEND

INTERSTATE ROUTE	35
FREEWAY OR EXPRESSWAY ROUTE	30
U.S. NUMBERED ROUTE	6
BUSINESS ROUTE	61
STATE NUMBERED ROUTE	44
UNSIGNED ROUTE	461
COUNTY NUMBERED ROUTE	R38
SECONDARY ROAD OR ADJOINING CITY STREET	
CITY STREET	
PARK, INSTITUTION, OR FEDERAL ROAD	
RAILROAD	
CORPORATION LINE	
SECTION LINE	
CUL-DE-SAC	
SECTION, TOWNSHIP & RANGE NUMBERS	9, T-81N, R-30W

N



Story County Location Map

Not To Scale

City of Colo

FILE NO. -	ENGLISH	DESIGN TEAM Veenstra & Kimm, Inc.	Story COUNTY	PROJECT NUMBER STP-065-5(044)–2C-85	SHEET NUMBER A.2	

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INDEX OF SHEETS

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A.18 - 21	Field Exam Notes
B Sheets	**Typical Cross Sections and Details**
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D Sheets	**Mainline Plan and Profile Sheets**
D.1	Plan & Profile Legend & Symbol Information Sheet
D.2	US 65
G Sheets	**Survey Sheets**
G.1	Survey Sheets
G.2	Control Point Vicinity Map
G.3	Horizontal and Vertical Project Control Coordinate Listing

VEENSTRA & KIMM INC.
6775 Vista Drive
West Des Moines, Iowa 50266

515.225.8000 // 800.241.8000
www.v-k.net

IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 1 **DATE:** October 13, 2025

ATTENTION: Jeremey Vortherms **PROJECT:** Story County
STP-065-5(044)--2C-85
PIN: 25-85-065-020

FROM: Mark Currie

OFFICE: Veenstra & Kimm, Inc.

SUBJECT: Project Concept Statement; (Final, D0)

This project involves the addition of a ditch dike and culvert on US 65 in Story County, 0.2 mi S of Co Rd E41 in Colo.

The Draft Concept Statement was sent out for review on September 19, 2025, and no comments were received after distribution.

It is recommended to construct a ditch dike south of the existing culvert inlet to channel flow to the culvert and to construct a new RCP culvert approximately 125' south of the existing culvert inlet to outlet to the ditch west of US 65 with traffic maintained via a detour route at an estimated cost of $78,170. Additional right-of-way will be required to construct the ditch dike at the culvert inlet. Traffic will be maintained with a detour route via US 30 west to 650th Ave, then north to IA 930/Co Rd 41, then east to US 65.

This project is recommended for construction in FY 2028. Veenstra & Kimm will coordinate the plan preparation with the assistance of the Project Management Bureau, Bridges and Structures Bureau, and Design Bureau.

Cc:
A. Smyth
C. Brakke
J. Ellis
B. Hofer
K. Brink
S. Anderson
J. Bartholomew
N. Pohlen
M. Van Dyke
B. Hucker
A. Buss
J. Hoskins
B. Adey
T. Quam
J. Becker
B. Walter
K. Nicholson
J. Nelson
S. Majors
W. Sorenson
C. Poole
N. Cuva
M. Dell
D. Breitbach
D. Heeren
B. Worrel
A. Swisher
D. Skogerboe
S. Passick
A. Wright
J. Garton
Y. Jia
M. Nop
D. Stokes
E. Wright
J. Laaser-webb
J. Holst
R. Harris
B. Smith
G. Cagle
L. Narigon
J. Vortherms
F. Leong
S. Nixon
D. Tamrakar
D. Newell

FINAL PROJECT CONCEPT STATEMENT

US 65 – Culvert over Unnamed Creek, 0.2 mi S of Co Rd E41 in Colo
Story County
STP-065-5(044)--2C-85
PIN: 25-85-065-020
Maint. No. N/A
FHWA No. N/A

Mark C. Currie, P.E., S.E.
515-225-8000

September 19, 2025

I. STUDY AREA

A. Project Description

This project involves the construction of a ditch dike and an additional RCP culvert south of the US 65 culvert over Drainage Ditch, 0.2 mi S of Co Rd E41 in Colo.

One alternative was considered:

1. Build a ditch dike at the culvert inlet to limit overtopping of the bank and add a low clearance RCP south of the culvert to intercept discharge and carry it to the west side of US 65.

Alternative 1 is the preferred alternative due to the drainage patterns and shallow ditches east of US 65.

Traffic will be maintained with a detour route via US 30 west to 650th Ave, then north to IA 930/Co Rd 41, then east to US 65.

The preliminary project cost is $78,170.

B. Need for Project

The existing structure is a 4' x 3' x 60' reinforced concrete box culvert built in 1968 (AAC Resurfacing Plan FN-72) and is in good condition.

Discharge from the drainage ditch to the east of US 65 and overflow from the existing 4' x 3' RCB culvert during heavy rainfall flows south through the east ditch to a low spot under the railroad bridge where it ponds before entering the curb intakes south of the railroad bridge.

Looking South along US 65

Looking West at Existing Culvert Inlet

C. Present Facility

US 65 is a two-lane roadway which was reconfigured and resurfaced in 1968 to create the present ramp to and from Co Rd. E41. The existing roadway was originally constructed in 1940 and composed of 20' wide PCC pavement (PCC7). The roadway was resurfaced in 1965 (or 1968), 1979, 1996 and 2020. The roadway was widened to 24' and the guardrails under the railroad were updated in 2020. The roadway has an 8' wide effective shoulder composed of 4' paved and 4' gravel.

The existing 4' x 3' x 60' RCB culvert with parallel wing headwall was built in 1968.

D. Traffic Estimates

The 2027 construction year and 2047 design year average daily traffic estimates are 2,500 ADT with 14% trucks and 2,900 ADT with 14% trucks, respectively.

E. Sufficiency Ratings

US 65 is classified as an access route and is a maintenance service level "C" road. The culvert does not have a federal bridge sufficiency rating.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from 2020 through 2025, there were a total of 3 crashes; all of them were property damage that totaled $21,700.

II. PROJECT CONCEPT

A. Project Description

Alternative #1 – Construct a ditch dike at the culvert inlet and add a crossroad culvert south of the existing culvert

The existing plans (1968 AAC Resurfacing Plan FN-72) for the existing culvert show a drainage area of 66 acres and describe the terrain as rolling. Based on the Iowa Runoff Chart typically used at that time, the Q_{50} design discharge would have been 109 cfs. Since then, newer methods to estimate annual exceedance-probability discharge (AEPD) have been available. Using TR-55, the Q_{50} was determined to be 277 cfs, which represents a 154% increase compared to the assumed original design discharge. Using Streamstats (2015-5055), the Q_{50} discharge was determined to be 134 cfs, which represents a 23% increase compared to the original assumed design discharge.

US 65 over Unnamed Creek
STP-065-5(044)--2C-85
Location: 0.2 mi S of Co Rd E41 in Colo
County: Sioux County
Drainage Area: 0.16 sq mi. or 102 ac.
September 9, 2025

	TR-55 (cfs)	Iowa Runoff Chart (cfs)	WRIR 87-4132 (Reg. 1) (cfs)	SIR 2015-5055 (Streamstats) (cfs)	Design Discharge (Streamstats) (cfs)
Q_2	99		65	14	20
Q_5	139	75	161	38	40
Q_{10}	175	105	243	62	70
Q_{25}	230	120	387	100	100
Q_{50}	277	150	481	134	140
Q_{100}	326	179	602	171	180
Q_{200}	380			212	220
Q_{500}	455			271	280

Recommend use of Streamstats

WRIR 87-4132 and SIR 2015-5055 from Streamstats are ran for comparison purposes only. IaDOT policy limits use of Rept. 13-5086 and 87-4132 to drainage areas greater 2 sq. mi.

Iowa Runoff Chart based on delineated drainage area. Using 66 acres per 1968 Resurfacing Plan FN-72, Q50 = 109 cfs

The low point of US 65 was moved to the south of the railroad bridge where an old flume/intake was present during resurfacing in 1968.

During heavy rainfall, floodwater from the field intended for the 4'x3' RCB culvert overtops the embankment and flows south through the ditch. This combines with additional discharge from the field north of the railroad (2-acre drainage area) and makes its way to the low point under the railroad bridge. Absent ditches, steep bridge berms, and exposed pier footings push the surface water to the roadway where ponding occurs.

There is an existing 12" intake in the east ditch north of the bridge that connects to a curb intake south of the bridge on the east side of the roadway. A crossroad RCP connects this intake to the west curb intake which then drains via an RCP to the ditch south of the railroad on the west side of US 65. This network of pipes is undersized to meet the current drainage demand.

To channel discharge to the existing culvert, a dike is proposed at the inlet that will help prevent floodwater from reaching US 65. There is limited right-of-way on this side of the culvert and permanent easements will need to be purchased.

An additional pipe culvert is also proposed south of the existing culvert that will intercept and carry water under US 65 to the west ditch. Due to the relative flatness of the terrain, an 18" low clearance elliptical pipe is proposed that is estimated to be 64' long with aprons at each end.

The roadway will be constructed on the existing vertical and horizontal alignment. No profile grade raise is required as the minimum cover is met.

The proposed culvert length was established using 6:1 foreslopes to meet an acceptable clear zone of 16'.

Traffic on US 65 will be maintained via detour route.

BRIDGE ESTIMATE:				
Item	**Quantity**	**Unit**	**Rate**	**Amount**
18" D x 62' Low Clearance RCP	64	LF	$90	$5,760
Low Clearance Apron, 24" Equivalent	2	EA	$1,500	$3,000
Engineering Fabric	25	SY	$4	$100
Revetment	20	TON	$50	$1,000
Mobilization	1	LS	10.00%	$986
	Base Cost:			$10,846
	Contingency:		20%	$2,169
	0 Years Inflation:		4.5%	
	BRIDGE TOTAL:			**$13,015**

ROADWAY ESTIMATE:				
Item	**Quantity**	**Unit**	**Rate**	**Amount**
Removal of Pavement	60	SY	$12	$720
Embankment in Place, Contractor Furnished	130	CY	$10	$1,300
Modified Subbase	20	CY	$50	$1,000
PCC Pavement	60	SY	$60	$3,600
Granular Shoulder	20	SY	$20	$400
Erosion Control	1	LS	$5,000	$5,000
Ditching and Grading	1	LS	$7,000	$7,000
ROW Acquisition/Temporary Easement	1	LS	$20,000	$20,000
Traffic Control	1	LS	$0	$3,902
Additional Roadway Items	1	LS	$0	$6,438
Mobilization	1	LS	10.00%	$4,936
	Base Cost:			$54,296
	Contingency:		20%	$10,859
	0 Years Inflation:		4.5%	
	ROADWAY TOTAL:			**$65,155**

	PROJECT TOTAL:	**$78,170**

Other Alternatives Considered

A replacement RCB culvert that provides adequate hydraulic capacity for the Q_{50} design discharge was considered, but it was determined that it will not solve the problem of overflow from a high rainfall event and will not address the flow from the farm that flows to US 65. The existing culvert, while almost 60-year-old, is also in good condition.

Jacking a longitudinal RCP culvert north of the east berm of the railroad bridge to the existing inlet of the 24" crossroad RCP south of the railroad bridge was considered but deemed expensive compared to the preferred alternative, and it may not improve the pooling issue under the bridge if the existing intake and pipe network are overwhelmed. In addition, this would also require coordination and approval from the railroad which could delay the project.

Jacking an 18" circular crossroad RCP culvert south of the existing culvert to reduce traffic disturbance was considered instead of the low clearance 18" elliptical pipe but it was deemed to have less hydraulic capacity and be more expensive compared to the preferred alternative.

B. Detour Analysis

The preference for construction is to close the road and provide an offsite detour route. It is anticipated that the detour will be in place for approximately 7 days. The identified detour route would follow US 30 west to 650th Ave, then north to IA 930/Co Rd 41, then east to US 6. The out-of-distance travel is 11 miles.

The detour route is primarily intended for trucks and thru traffic. Local traffic will be able to navigate around the culvert construction without significant delay.

Staged construction was considered with traffic reduced to one lane via the use of temporary traffic signals and TBR. This option was dismissed due to the increased cost and extended construction duration.

C. Recommendations

It is recommended that the present structure remains in place, a ditch dike is built at the existing culvert inlet and an additional RCP culvert is constructed south of the existing RCB culvert as described in Alternative No. 1.

D. Construction Spequence

It is anticipated all work on this project will be awarded to one prime contractor. Veenstra & Kimm, Inc. will coordinate the plan preparation with the assistance of the Project Management Bureau, the Design Bureau, and the Bridges and Structures Bureau.

The project duration is estimated to be 1 week.

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to US 65; therefore, no ADA accommodations are planned in conjunction with this project.

F. Special Considerations

This will not be a traffic critical project.

The Accelerated Bridge Construction (ABC) Rating Score of 36 for an off-site detour with 11 miles out-of-distance travel, both of which are less than the first stage filter threshold of 50, therefore no further evaluation is considered.

No bike path or sidewalk will be required as part of this project.

Standard survey coverage will be required.

A listing of existing utilities present within the project limits are shown in Attachment A.

The District cultural resources manager has not yet completed a cultural resources review on this project.

The Location and Environment Bureau has not reviewed this project at this time. Once their review is completed, comments will be incorporated into the final concept statement.

G. Program Status

Site data has been developed by Veenstra & Kimm, Inc. This project is listed in Masterworks with $250,000 for construction in FY 2028. A schedule of events will be developed following approval of the Project Concept.

The following page has a map of the county and location of project area.

Attachment A - Utilities

ATTACHMENT A

STORY COUNTY (044)

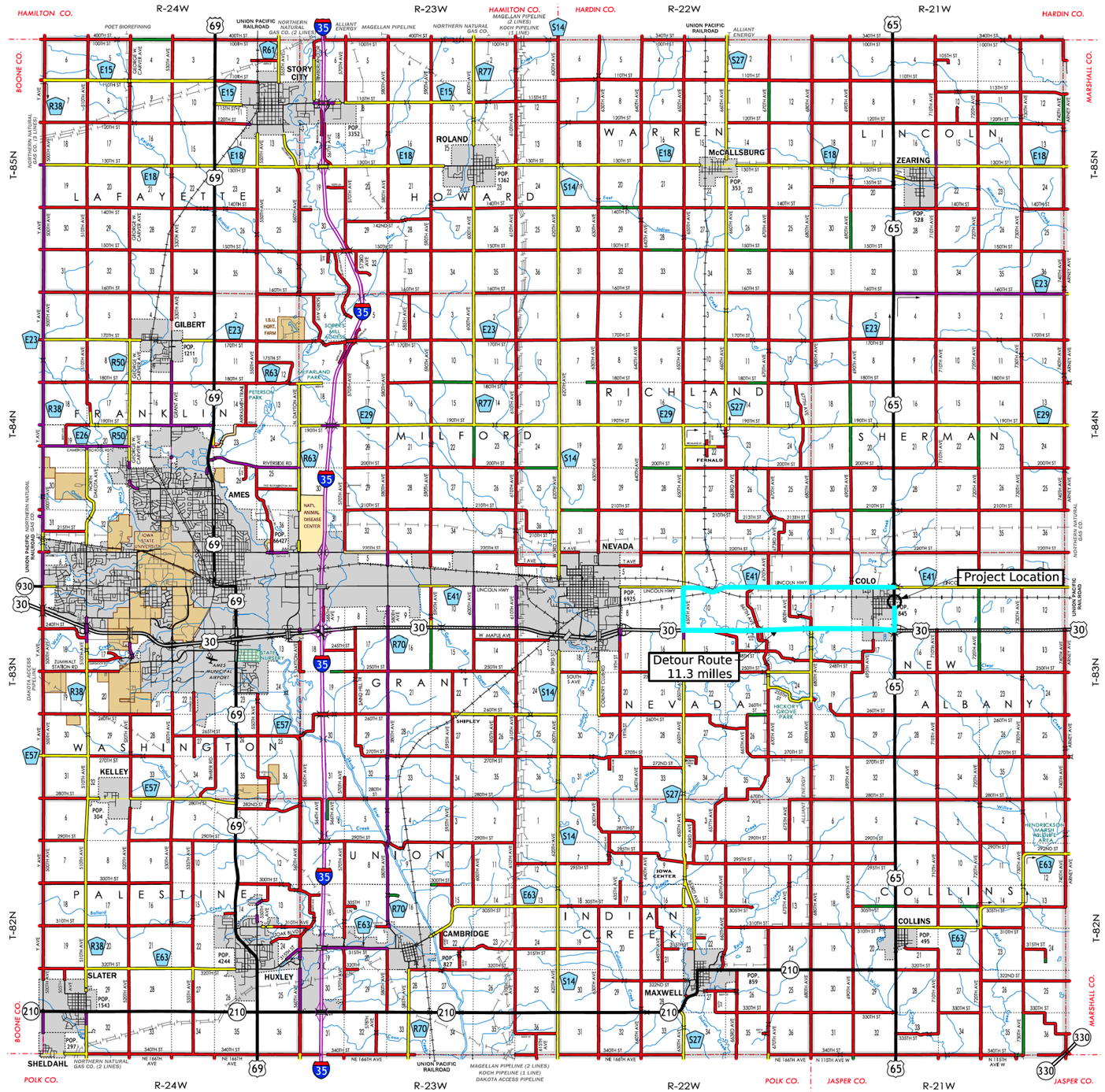
(ANW) ALLIANT ENERGY
Company name : ALLIANT ENERGY
Design contact: Alliant Energy Field Engineer
Phone: 8002554268
Email: locate_IPL@alliantenergy.com

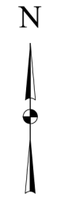
(COL) COLO, CITY OF
Company name : COLO, CITY OF
Design contact: Amy Kohlwes
Phone: 6413772238
Email: colocity@netins.net

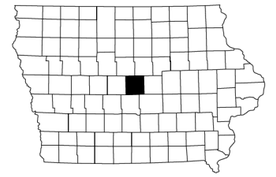
(COT) COLO TELEPHONE COMPANY
Company name : COLO TELEPHONE COMPANY
Design contact: Larry Springer
Phone: 6413772202
Email: support@colotel.org

(MCE) CONSUMERS ENERGY
Company name : CONSUMERS ENERGY
Design contact: KEVIN PETERSON
Phone: 6414850702
Email: onecall@consumersenergy.net

(SCY) SPRINT/COGENT COMMUNICATIONS
Company name : SPRINT/COGENT COMMUNICATIONS
Design contact: Michael Chebul
Phone: 4028808720
Email: mchebul@cogentco.com







STORY COUNTY

Detour Route

Story County Map

Not to Scale

FILE NO. -	ENGLISH	DESIGN TEAM Veenstra & Kimm, Inc.	Story COUNTY	PROJECT NUMBER STP-065-5(044)--2C-85	SHEET NUMBER A.9	

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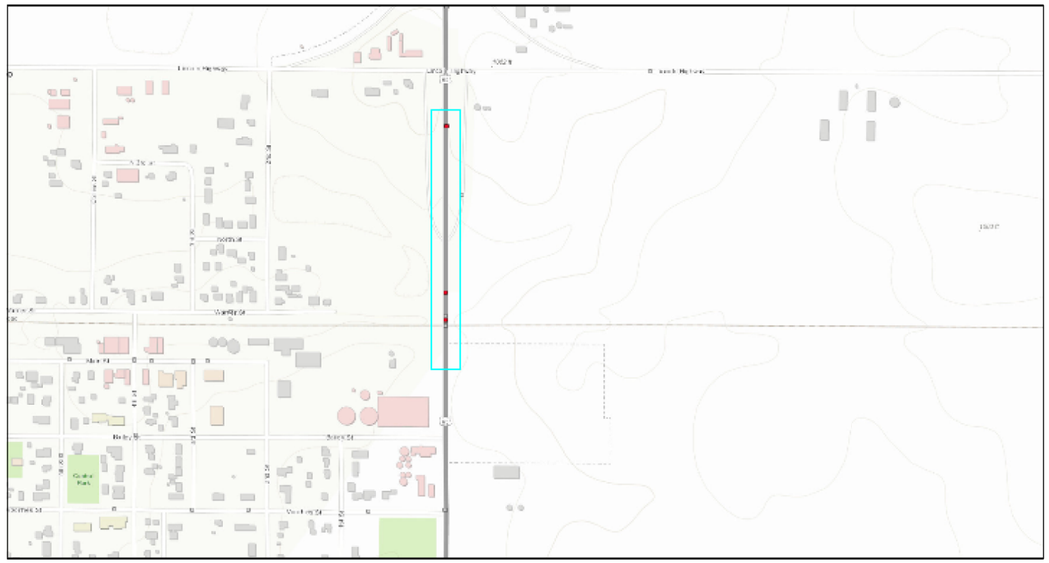
Iowa Crash Analysis Tool
Crash Characteristics
2020-2025

Crash Severity	3
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	0
Property Damage Only	3

Injury Status Summary	0
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Uninjured	0
Unknown	0
Not Reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	21,700.00
Average (per crash dollars):	7,233.33
Total Vehicles:	3.00
Average (per crash):	1.00
Total Occupants:	3.00
Average (per crash):	1.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00



Iowa Crash Analysis Tool
Crash Characteristics
2020-2025

Time of Day/Day of Week

Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	3	0	0	0	0	0	0	0	0	0	0	3

Month	3
January	0
February	0
March	0
April	1
May	1
June	0
July	0
August	1
September	0
October	0
November	0
December	0
Not reported	0

Lighting	3
Daylight	2
Darkness	1
Morning Twilight (dawn 30 minutes after sunri...	0
Evening Twilight (dusk 30 minutes before suns...	0
Unknown	0

Weather Conditions	3
Clear	2
Cloudy	0
Fog, smoke, smog	0
Freezing rain/drizzle	0
Rain	1
Sleet, hail	0
Snow	0
Blowing snow	0
Severe winds	0
Blowing sand, soil, dirt	0
Not reported	0
Other	0
Unknown	0

Contributing Circumstance - Environment	3
None apparent	2
Weather conditions	1
Visual obstruction	0
Non-motorist action	0
Glare	0
Animal in roadway	0
Severe crosswind	0
Not reported	0
Other	0
Unknown	0

Light Condition	3
Daylight	0
Dusk	0
Dawn	1
Dark - roadway lighted	0
Dark - roadway not lighted	2
Dark - unknown roadway lighting	0
Unknown	0
Not reported	0

Surface Conditions	3
Dry	2
Wet	1
Ice/frost	0
Snow	0
Slush	0
Mud/dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

FILE NO. - | ENGLISH | DESIGN TEAM Veenstra & Kimm, Inc. | Story COUNTY | PROJECT NUMBER STP-065-5(044)--2C-85 | SHEET NUMBER A.10
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Iowa Crash Analysis Tool
Crash Characteristics
2020-2025

Major Cause	3		
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless/erratic/care...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	1
Ran off road - straight	0	Ran off road - left	1
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	1
Unknown	0	Not reported	0
Other: No improper action	0		

Iowa Crash Analysis Tool
Crash Characteristics
2020-2025

Manner of Crash Collision	3
Non-collision (single vehicle)	3
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle (oncoming left turn)	0
Broadside (front to side)	0
Sideswipe (same direction)	0
Sideswipe (opposite direction)	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Location of First Harmful Event	3
On roadway	2
Shoulder	0
Median	0
Roadside	0
Gore	0
Outside trafficway	1
In parking lane/zone	0
Continuous left turn lane	0
Separator	0
Not reported	0
Other	0
Unknown	0

Event Summary - Non-Collision **Total Vehicles: 3**

		Sequence				
First Harmful	Most Harmful	1st	2nd	3rd	4th	
0	0	0	0	0	0	Overturn/rollover
0	0	0	0	0	0	Jackknife
0	0	0	0	0	0	Non-contact vehicle (phantom)
0	0	0	0	0	0	Vehicle went airborne
0	0	0	0	0	0	Fell/jumped from vehicle

Event Summary - Collision With — **Total Vehicles: 3**

First Harmful	Most Harmful	Sequence 1st	2nd	3rd	4th	
0	0	0	0	0	0	Thrown or falling object
0	0	0	0	0	0	Animal
0	0	0	0	0	0	Non-motorist (see non-motorist section - NOT ...
0	0	0	0	0	0	Vehicle in traffic
0	0	0	0	0	0	Re-entering roadway
0	0	0	0	0	0	Parked motor vehicle
0	0	0	0	0	0	Work zone maintenance equipment
0	0	0	0	0	0	Railway vehicle/train
0	0	0	0	0	0	Struck/struck by object/cargo/person from oth...
0	0	0	0	0	0	Other non-fixed object

Event Summary - Collision With Fixed Object — **Total Vehicles: 3**

First Harmful	Most Harmful	Sequence 1st	2nd	3rd	4th	
0	0	0	0	0	0	Bridge overhead structure
0	0	0	0	0	0	Bridge pier or support
0	0	0	0	0	0	Bridge/bridge rail parapet
0	0	0	0	0	0	Curb/island/raised median
1	0	0	1	0	0	Ditch
0	0	0	0	0	0	Embankment
0	0	0	0	0	0	Ground
0	0	0	0	0	0	Culvert/pipe opening
1	1	1	0	0	0	Guardrail - face
0	0	0	0	0	0	Guardrail - end
0	0	0	0	0	0	Concrete traffic barrier (median or right sid...
0	0	0	0	0	0	Other traffic barrier
0	0	0	0	0	0	Cable barrier
0	0	0	0	0	0	Impact attenuator/crash cushion
0	0	0	0	0	0	Utility pole/light support
0	1	0	0	1	0	Traffic sign support
0	0	0	0	0	0	Traffic signal support
0	0	0	0	0	0	Other post/pole/support
0	0	0	0	0	0	Fire hydrant
0	0	0	0	0	0	Mailbox
0	0	0	0	0	0	Tree
0	0	0	0	0	0	Landscape/shrubbery
0	0	0	0	0	0	Snow bank
0	0	0	0	0	0	Fence
0	0	0	0	0	0	Wall
0	0	0	0	0	0	Building
0	0	0	0	0	0	Other fixed object

Iowa Crash Analysis Tool
Crash Characteristics
2020-2025

Event Summary - Miscellaneous Events — **Total Vehicles: 3**

First Harmful	Most Harmful	Sequence 1st	2nd	3rd	4th	
0	0	0	0	0	0	Fire/explosion
1	1	1	0	0	0	Immersion
0	0	0	0	0	0	Hit and run
0	0	0	0	0	0	Eluding law enforcement
0	0	0	0	0	0	Gas inhalation/asphyxiation
0	0	0	0	0	0	Vehicle out of gear/rolled

Fixed Object Struck	**3**		
Bridge overhead structure	0	Bridge pier or support	0
Bridge/bridge rail parapet	0	Curb/island/raised median	0
Ditch	0	Embankment	0
Ground	0	Culvert/pipe opening	0
Guardrail - face	1	Guardrail - end	0
Concrete traffic barrier (median or right sid...	0	Other traffic barrier	0
Cable barrier	0	Impact attenuator/crash cushion	0
Utility pole/light support	0	Traffic sign support	1
Traffic signal support	0	Other post/pole/support	0
Fire hydrant	0	Mailbox	0
Tree	0	Landscape/shrubbery	0
Snow bank	0	Fence	0
Wall	0	Building	0
Other fixed object	0	None (no fixed object struck)	1

Drug/Alcohol Related	**3**
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	2

Non-Motorist Type	**0**
Pedestrian	0
Pedalcyclist (bicycle/tricycle/unicycle/pedal...	0
Pedalcycle passenger	0
In or on building	0
Horse and buggy	0
Skater, personal conveyance, wheelchair	0
Not reported	0
Other non-motorist	0
Unknown	0

FILE NO. - | ENGLISH | DESIGN TEAM Veenstra & Kimm, Inc. | Story COUNTY | PROJECT NUMBER STP-065-5(044)--2C-85 | SHEET NUMBER A.12
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Road Classifiction	3
Interstate	0
US Route	3
Iowa Route	0
Secondary Road	0
Municipal Road	0
Institutional Road	0
Other	0
Unknown	0

Work Zone Type	0
Lane closure	0
Lane switch/crossover	0
Work on shoulder or median	0
Intermittent or moving work	0
Not reported	0
Other	0
Unknown	0

Work Zone Location	0
Before work zone warning sign	0
Advance warning area	0
Transition area	0
Within or adjacent to work activity	0
Termination area	0
Not reported	0
Other	0
Unknown	0

Work Zone Activity	0
Construction	0
Maintenance	0
Utility	0
Not reported	0
Other	0
Unknown	0

Workers Present	0
Workers only	0
No workers present	0
Workers and officer present	0
Law enforcement only	0
No one present	0
Not reported	0
Other	0
Unknown	0

Intersection Classification	2
Interstate - Interstate	0
Interstate - US Route	0
Interstate - IA Route	0
Interstate - Secondary	0
Interstate - Municipal	0
Interstate - Institutions	0
US Route - US Route	0
US Route - IA Route	0
US Route - Secondary	0
US Route - Municipal	0
US Route - Institutions	0
IA Route - IA Route	0
IA Route - Secondary	0
IA Route - Municipal	0
IA Route - Institutions	0
Secondary - Secondary	0
Secondary - Municipal	0
Secondary - Institutions	0
Municipal - Municipal	0
Municipal - Institutions	0
Institutions - Institutions	0
Not Indicated as an Intersection	2
Unlocated or Unknown	0

Contributing Circumstance - Road	3
None apparent	2
Surface condition (e.g., wet, icy)	1
Debris	0
Ruts/holes/bumps	0
Work Zone (roadway-related)	0
Slippery, loose, or worn surface	0
Obstruction in roadway	0
Traffic control obscured	0
Shoulders (none, low, soft, high)	0
Non-highway work	0
Traffic backup, prior crash	0
Traffic backup, regular congestion	0
Traffic backup, prior non-recurring incident	0
Disabled vehicle	0
Not reported	0
Other	0
Unknown	0

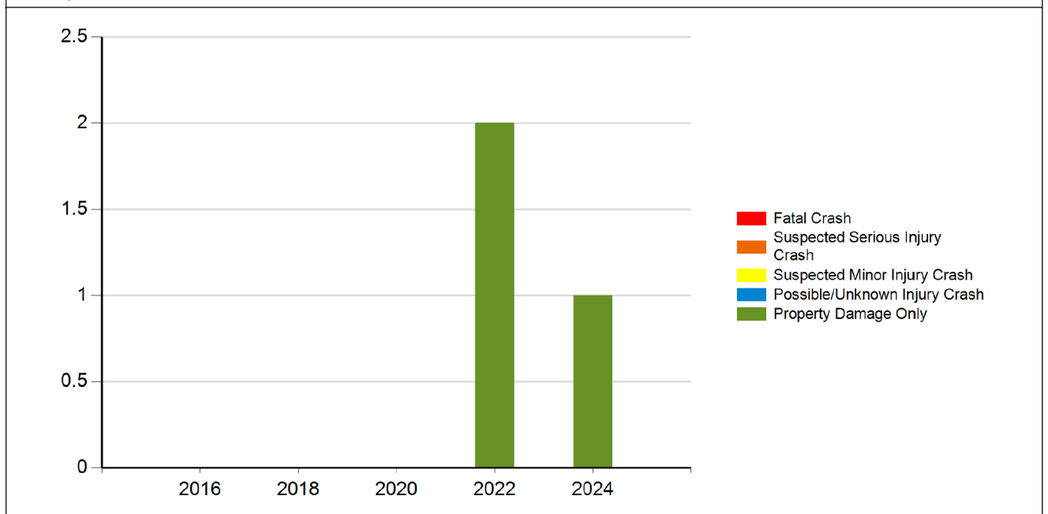
Work Zone Related	0
Yes	0
No	0
Unknown	0
Not reported	0

Iowa Crash Analysis Tool
Crash Characteristics
2020-2025

Crash Severity - Annual

Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	2	2
2023	0	0	0	0	0	0
2024	0	0	0	0	1	1
2025	0	0	0	0	0	0
Total	0	0	0	0	3	3

Severity/Year

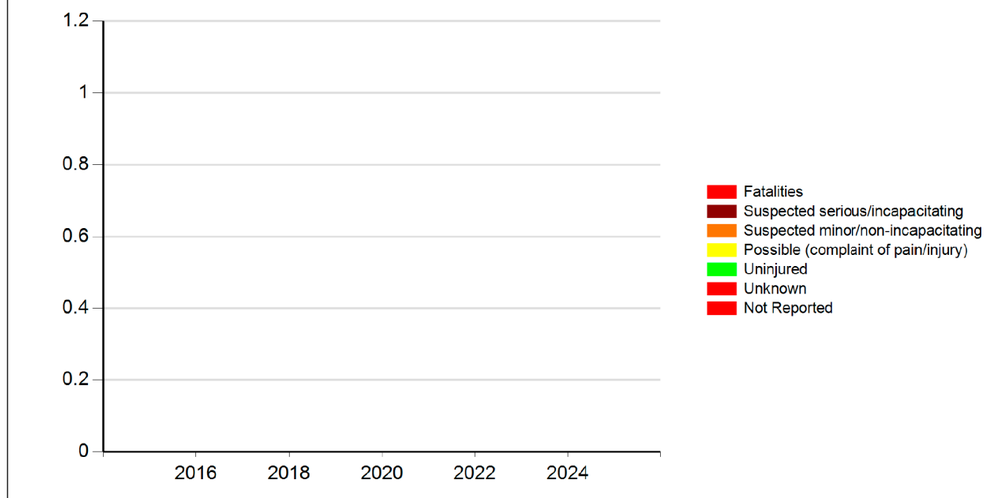


Iowa Crash Analysis Tool
Crash Characteristics
2020-2025

Injury Status - Annual

Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Unknown	Not Reported	Total
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0

Injury Status/Year



Iowa Crash Analysis Tool
Crash Characteristics
2020-2025

Meeting the following criteria

Jurisdiction: Counties (Story)
Year: 2020, 2021, 2022, 2023, 2024, 2025
Map Selection: Yes
Filter: None

Analyst Information

US 65_Story County 044

FILE NO. - | ENGLISH | DESIGN TEAM Veenstra & Kimm, Inc. | Story COUNTY | PROJECT NUMBER STP-065-5(044)--2C-85 | SHEET NUMBER A.14

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General input

FHWA or Structure Number	NA
PIN Number	25-85-065-020
Project Number	STP-065-5(044)--2C-85
Design Number	NA
County Name	Story
Route Carried	US 65
Feature Crossed	Unnamed Ditch
Location Description	0.2 mi S of Co Rd E41 in Colo

Required SI&A Input for Calculation of ABC Rating Score

SI&A Item No.	SI&A Item	SI&A Item Value	SI&A Units
5B	Route Signing Prefix	2	
19	Bypass, Detour Length	11	miles
29	Average Daily Traffic **(On)**	1,720	
29	Average Daily Traffic **(Under)**	0	
45	Number of Spans in Main Unit	1	
46	Number of Approach Spans	0	
109	Average Daily Truck Traffic	18	%

Note: If the ABC Rating Score is less than 50 and the structure is an interstate bridge or the detour is greater than or equal to 30 miles then the score is set to 50.

Concept Measure Scores

Concept Measure		Score		
Average Annual Daily Traffic	Combined value of 100% on and 25% under = 1,720	1	0	No traffic impacts
			1	Less than 5000
			2	5000 to less than 10,000
			3	10,000 to less than 15,000
			4	15,000 to less than 20,000
			5	20,000 or more
Out of Distance Travel	Value in miles = 11	3	0	No detour
			1	Less than 5
			2	5 to less than 10
			3	10 to less than 15
			4	15 to less than 20
			5	20 or more
User Costs	Value in $ = $9,649.20	1	0	No user costs
			1	Less than $10,000
			2	$10,000 to less than $50,000
			3	$50,000 to less than $75,000
			4	$75,000 to less than $100,000
			5	$100,000 or more
Economy of Scale	Value is total number of spans = 1	0	0	1 span
			1	2 or 3 spans
			2	4 or 5 spans
			3	6 spans or more

ABC Rating Score Factors and Weights

Concept Measure	Score	Weight Factor	Adjusted Score	Maximum Score	Adjusted Score
Average Annual Daily Traffic	1	10	10	5	50
Out of Distance Travel	3	10	30	5	50
User Costs	1	10	10	5	50
Economy of Scale	0	5	0	3	15
		Total Score	50	Max. Score	165
		Calculated ABC Rating Score	30		
		ABC Rating Score	30		

Roadway	US 65		
PIN Number	25-85-065-020	**Submittal Date**	08/29/25
Project Number	STP-065-5(044)--2C-85		**Approval Date**
District	District 1	**Assistant District Engineer**	Jeremy Vortherms
County	STORY	**or**	
Route	US 65	**Office Director**	
Location	Culvert over Unnamed Creek, 0.2 mi S of Co Rd E41 in Colo		
Work Type	Culvert Replacement		
Segment Manager			
Designer	Veenstra & Kimm, Inc.		

Design Manual Section 1C-1
Last Updated: 04-29-19

Urban Two-Lane Roadways (Urban Arterials)

Design Element		Preferred	Acceptable Criteria	Project Values
Design speed (mph)		The anticipated posted speed limit	30	45
Maximum superelevation rate (Refer to Section 2A-2)		4%	6%	N/A
Design lane width (ft)		12	11	12
Full depth paved width (ft)		Design lane width + curb and gutter unit or 14 feet for roadways with shoulders	Match design lane width	32
Right turn lane (ft)		12	10	N/A
Left turn lane (ft)	With raised or painted median	12 ft + median	10 ft + median	N/A
	With depressed median	12	10	N/A
Two-way left turn lane		14	11	N/A
Parking lane width (ft)		10	7	N/A
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2%
	Auxiliary and turn lanes	3%	3% maximum	N/A
	Crown break at centerline	4%	4% maximum	4%
Shoulder cross-slope (on tangent sections)	Shoulders	4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%
	Curb and gutter units	Match pavement cross-slope	6% maximum	N/A
	Parking lanes	1% greater than pavement cross-slope	6% maximum	N/A
Curb type (See Section 3C-2)	Design speed ≤ 45 mph	6-inch standard	any shape	N/A
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	10:1 for 4' then 6:1
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	N/A
	Curbed roadways	2%	not steeper than 3:1	N/A
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	3:1
Traverse Slopes	w/ drainage structures	8:1	6:1	N/A
	w/o drainage structures	10:1	6:1	N/A
Ditches (See Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	5 x 10
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths (curbed or uncurbed) or design lane width + 3 ft each side (curbed) which ever is greater	design lane widths + effective shoulder widths or curb-to-curb width in curb and gutter section**	N/A
	Bridge length > 200 ft	design lane widths + effective shoulder widths (curbed or uncurbed) or design lane width + 3 ft each side (curbed) which ever is greater	design lane widths + 4 ft offset each side for roadways with shoulders or curb-to-curb width in curb and gutter section**	N/A
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft left and right	28
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	N/A
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	N/A
	Over railroad	23.3	23.3	N/A
	Sign trusses and pedestrian bridges	17.5	17	N/A
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		C	D	C

*FHWA notification via email is required if acceptable critera is not met on the NHS system (No formal design exeption is required)
** If travel lanes are less than 12 ft wide contact the Methods Section for assistance.

Design year ADT =	**1720**	**Yr 2024 to be updated**

Design Manual Section 1C-1
Last Updated: 04-29-19

Effective Shoulder Width and Type for Two-Lane Highways

Preferred (values shown in feet)			Acceptable (values shown in feet)			Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	N/A
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	N/A
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	N/A
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	Design year ADT > 2000 vpd	8	0*	Effective = 8' Paved =4'
On roadways approaching urban areas (due to increased bike traffic)	10	10				
On all curves with a superelevation rate of 7.0% or greater	10	10				
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	0*	
On all other NHS	10	6				
On non-NHS routes with design year ADT > 3000	10	6	Design year ADT < 400 vpd	4	0*	
On non-NHS routes with design year ADT < 3000	8	0*				

*Requires safety edge-Refer to Section 3C-6
Curbs should be located beyond the outer edge of the effective shoulder width in rural areas
Refer to Section 3C-2 for curb offsets in urban areas

Notes:

Roadway Design Speed (mph) =	**45**	

Design Manual Section 1C-1
Last Updated: 04-29-19

Design Criteria for Low Speed Roadways

Design Element			Preferred Criteria, Design Speed, mph					Acceptable Criteria, Design Speed, mph					Project Values
			25	30	35	40	45	25	30	35	40	45	
Stopping sight distance (ft) (Refer to Section 5D-1)			155	200	250	305	360	155	200	250	305	360	360
Minimum horizontal curve radius (ft) and superelevation rate (Refer to Sections 2A-2 and 2A-3)	Method 2 superelevation and side friction distribution	e = 4% max	See Table 10 in Section 2A-3					--					N/A
	Method 5 superelevation and side friction distribution	e_{max} = 6%	144	231	340	485	643	144	231	340	485	643	N/A
		e_{max} = 8%	--	--	--	--	--	134	214	314	444	587	N/A
Minimum vertical curve length (ft) (Refer to Section 2B-1)			75	90	105	120	135	75	90	105	120	135	135
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		12	19	29	44	61	12	19	29	44	61	61
	sag vertical curves	roadways without fixed-source lighting	26	37	49	64	79	26	37	49	64	79	N/A
		roadways with fixed-source lighting	26	37	49	64	79	14	20	27	35	44	N/A
Minimum gradient (%)	(Refer to Section 2B-1)		0.5					0.3% with a curb, 0.0% without a curb					0.5
Maximum gradient (%)	(Refer to Section 2B-1)	Urban roadways	5					--	9	8	8	7	5
		Rural roadways						--	--	--	6	6	N/A
Clear zone			See "Preferred Clear Zone" table in Section 9A-2					See "Acceptable Clear Zone" table in Section 9A-2					16'

Bridge Bureau Attachment for Concept Statement

Date: September 19, 2025
By: Veenstra & Kimm, Inc.
Location: US 65 over Drainage Ditch in City of Colo

County: Story County
Phase No.: STP-065-5(044)--2C-85
Project Code: 25-85-065-020

1. Regulatory/Coordination
   a. Iowa DNR Flood Plain permit = No
   b. Iowa DNR Sovereign Lands permit = No
   c. Local Record of Coordination = Yes
   d. Flood Insurance Study = No
   e. Drainage District = Yes, Story County D.D. #9
   f. Corps of Engineers Section 408 = No
   g. State Water Trail or Paddling Route = No
   h. Historic Structure = No
   i. Federally owned land in vicinity = No
   j. USGS or Iowa Flood Center (IFC) gage or sensor impacted? No
   k. Obstruction Evaluation/Airport Airspace Analysis per FAA website = No

2. Hydrologic/Hydraulic Analysis/RIDB Dataset
   a. Design discharge methodology = Streamstats (2015-5055) /TR-55
   b. Hydraulic analysis done = Yes using Iowa Culvert Hydraulics
   c. If DA > 10 sq. mi. Riverine Infrastructure Database (RIDB) dataset is required with B1 submittal = No
   d. Coordinate flowlines with drainage district.

3. Structure/Roadway Layout Considerations
   a. A roadway profile grade raise is not anticipated.

4. Special construction issues
   a. It is desirable for new structure foundations to avoid existing drainage tiles and utilities.
   b. Easement may be required to build dike on the culvert inlet.

5. Special survey = No

6. Aesthetic enhancements = No

7. Other
   a. Maintenance of Traffic - Detour

Special Survey:

None.

Field Exam Notes

- Concept and B01 should be transmitted to Drainage District No. 9 and 48 for review if drainage tiles are impacted
- Dike at inlet of existing RCB to channel flow to culvert not deemed necessary.

12-22-2025
Field Exam Notes

D2 virtual field exam meeting was held on December 22, 2025. Those present included Jimmy Ellis, Yanxiao Jia, Christian Kennel, Daniel Hofer, John Bartholomew, Phil Mesher, Brad Hofer, David Claman, Sharihaboshra Diya, Jacob Imming from Iowa DOT, from Blake Walter from NEPA; Janee Becker, Jill Garton, Claire Asberry Brandy Beavers from the LEB; Frank Leong, Benjamin Adey, Sean Passick, Devendra Tamrakar, Shannon Hardman from Iowa DOT District 1, Scott Wall from Story County Drainage District, and Mark Currie, Edward Gapatan, Russ Lemke and Steven Messler from Veenstra & Kimm, Inc.

Mark discussed the existing culvert, the project site, flooding problem and how floodwater gets to US 65, he continued to discuss the concept and draft D2 letter, proposed new culvert structure (low clearance arch pipe with apron on each end) and dike to intercept floodwater and channel it across US 65.

Discussion continued to update made from concept specifically not continuing to build a bigger, longer dike to that would require additional ROW into the farm southeast of the culvert. It was emphasized that improvement is made with the proposal of new culvert and ditch check to intercept floodwaters. It was reiterated that the reported flooding was a result of a very big flood event and is very unusual for this location.

- Jim concurred and added that it is not ideal since farm field is pretty established.
- Ben Adey from D1 also concurred with 'incremental improvement' approach.

Discussion continued with the proposed 11.3 miles detour route

- Ben said the longer detour route is of no concern and that they have used it before

Other topics discussed included required coordination with drainage district (Combined Colo 9 and 48), no utilities impacted and no ROW acquisition anticipated

- Design team explained that terrain is very flat requiring an 18" equivalent low clearance pipe. The pipe aprons are within clear zone but should be ok since it is traversable and this was part of an effort to shorten the pipe and avoid additional ROW acquisition.

FIELD EXAM NOTES

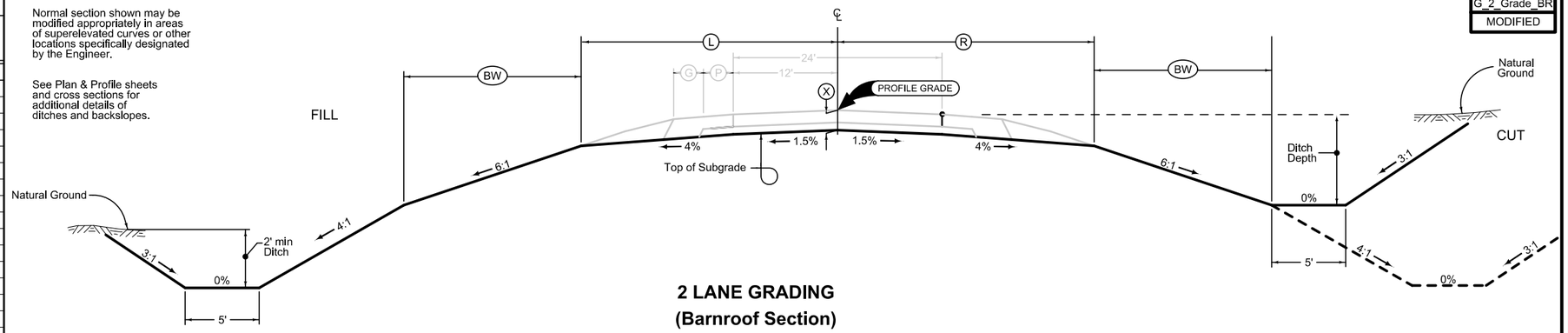
FIELD EXAM NOTES

FIELD EXAM NOTES

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet
US 65	1815+21.50	1815+96.50	26.4	26.4	22	0

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

See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.



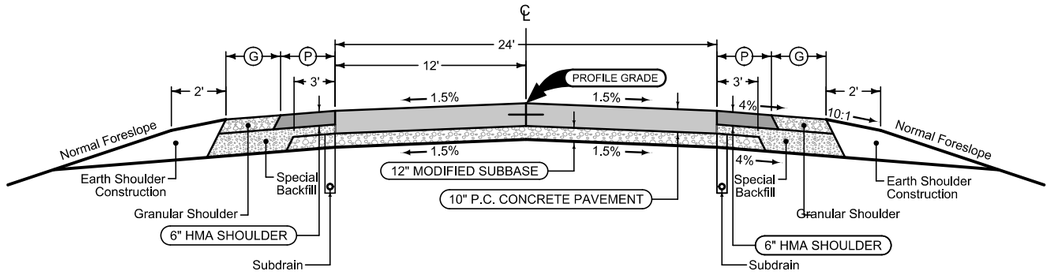
G_2_Grade_BR
MODIFIED

2 LANE GRADING
(Barnroof Section)

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

		2_C_ 04-21-20	
STATION TO STATION		(P) Feet	(G) Feet
1815+57.00	1815+73.00	4	4



Mainline Jointing:
Transverse joints: CD at 20' spacing
Longitudinal joint: L-2

	2P_ 10-19-10
STATION TO STATION	
1815+57.00	1815+73.00

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

		2_C_ 04-21-20	
STATION TO STATION		(P) Feet	(G) Feet
1815+57.00	1815+73.00	4	4

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

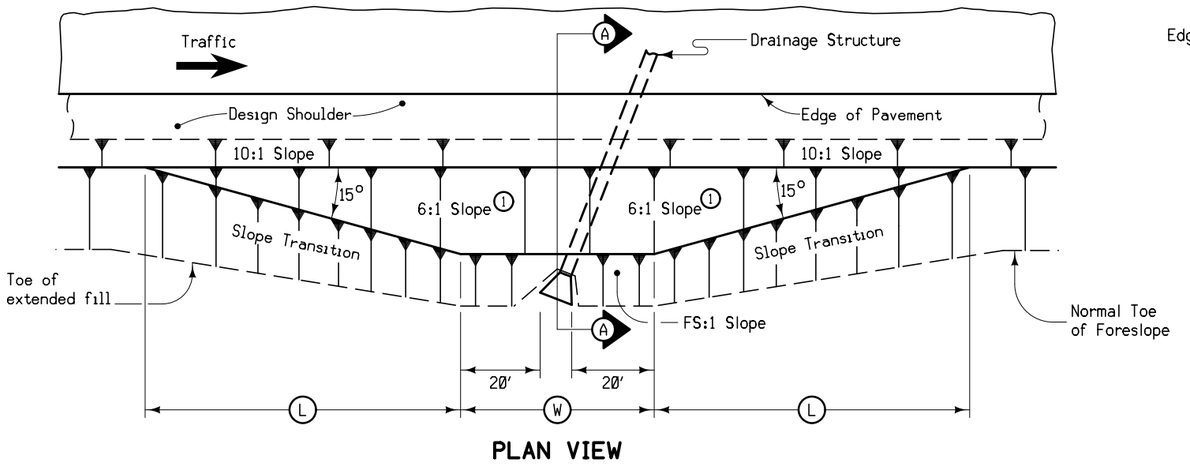
See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.

See Tab 100-24 for pavement quantities.

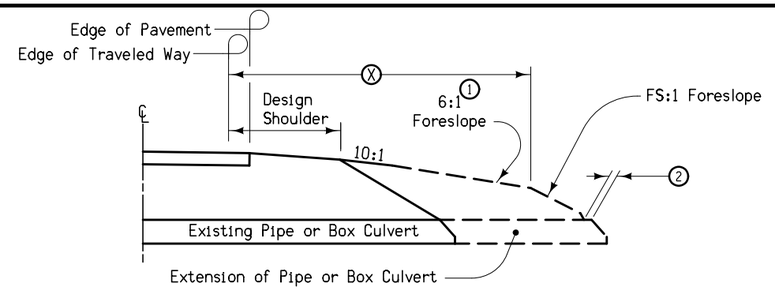
See Tab 112-9 for non-curbed shoulder and earth shoulder quantities.

See U-sheets for shoulder transition details.

US 65



PLAN VIEW



SECTION A-A

STRUCTURE LOCATION		(W)	(L)	(X)	(FS)
STATION (3)	SIDE	Feet	Feet	Feet	
1815+65.00	L	5	15	16	4
1815+65.00	R	5	15	16	4

At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, flatten as indicated so as to cover the structure. Minimum earth cover is 6 inches.

(1) Slope may be flatter than 6:1.

(2) 6 inch minimum for pipe installations or to top of headwall on RCB.

(3) At ℄ of roadway.

(W) = Pipe or RCB opening width plus 20 feet each side.

BARNROOF FORESLOPE AT SKEWED DRAINAGE STRUCTURE

SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Existing Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)
- ST Septic Tank
- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

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.**		**Transparency**
Pink, Dark	(13)		Temporary Pavement Shading — 50%
Yellow	(4)		Proposed Pavement Shading — 50%
Orange	(6)		Proposed Granular Shading — 50%
Orange	(70)		Proposed Shoulder Granular Shading — 50%
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading — 50%
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading — 50%
Brown, Light	(236)		Grading Shading — 50%
Orange, Light	(134)		Proposed Granular Entrance Shading — 50%
Yellow	(220)		Proposed Paved Entrance Shading — 50%
Tan	(8)		Proposed Sidewalk Shading — 50%
Blue, Light	(230)		Proposed Sidewalk Landing Shading — 50%
Pink	(11)		Proposed Sidewalk Ramp Shading — 50%
Red	(3)		Proposed Structure Shading — 50%
Red	(3)		Delineates Restricted Areas — 0%

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(10)	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 Symbol
- Proposed Right-of-Way Line
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary) Symbol
- Easement (Temporary) Line
- Easement
- C/A Access Control
- Property Line Symbol
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

FILE NO. –	ENGLISH	DESIGN TEAM Veenstra & Kimm, Inc.	Story COUNTY	PROJECT NUMBER STP-065-5(044)--2C-85	SHEET NUMBER D.1

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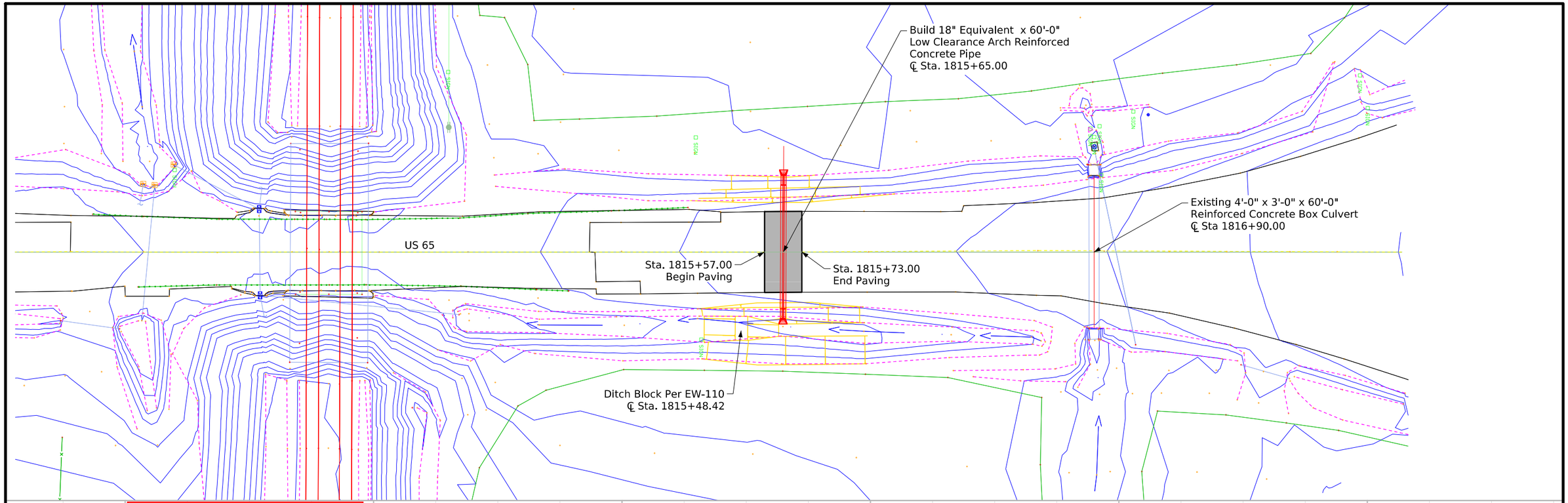
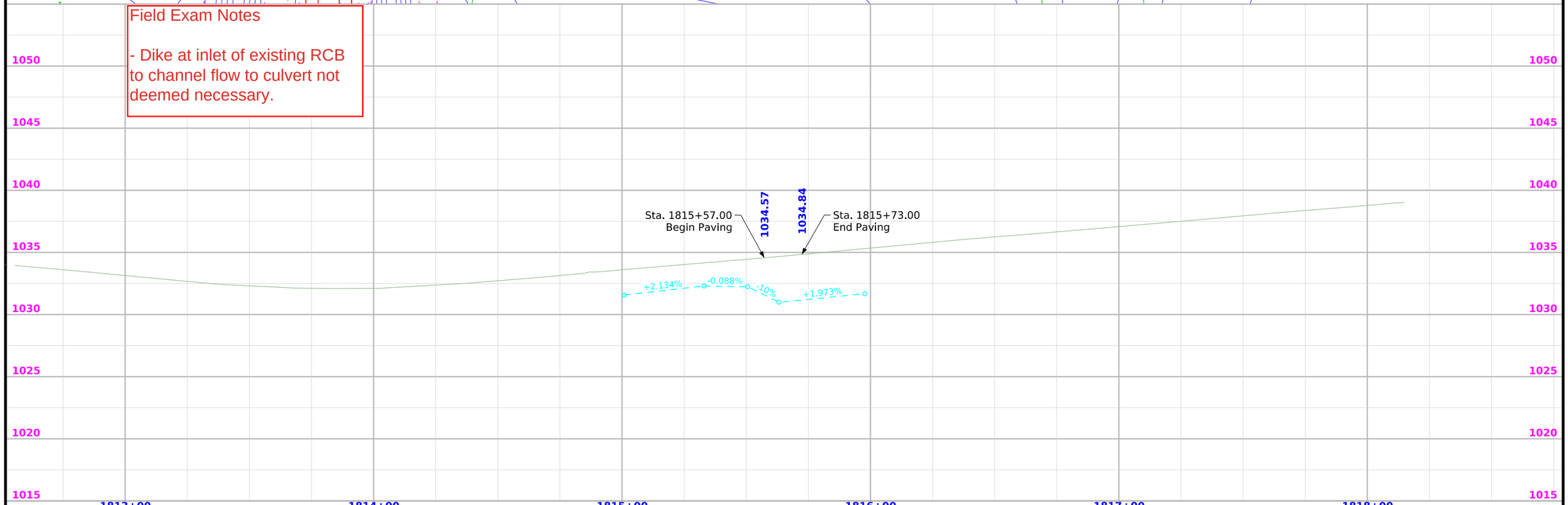


Field Exam Notes

- Dike at inlet of existing RCB to channel flow to culvert not deemed necessary.



FILE NO. -	ENGLISH	DESIGN TEAM Veenstra & Kimm, Inc.	Story COUNTY	PROJECT NUMBER STP-065-5(044)--2C-85	SHEET NUMBER D.2

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SURVEY INDEX

County: Story
PIN: 25-85-065-020
Project Number: STP-065-5(044)--2C-85
Location: 0.2 mi S of Co Rd E41 in Colo
Type of Work: Culvert
Project Directory: 8506502025

Survey Personnel

Jerett Still – Party Chief
Craig Beedle – PLS
TJ Coyle – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 08/19/2025
End Date 09/09/2025

General Information

Measurement units for this survey are US survey feet. This survey is for proposed revetment of Story County – Culvert under HWY65; 943.49 feet South of E41 and 1679.86 feet North of South Street in Colo, IA

Utility Information

For logging data and other utility details see Utility Survey and Ownership Report in the Utility folder of the PrelimSurvey project directory.

Project Control

Vertical Control
Vertical control was established by verifying one NGS monument. Vertical datum for this survey is relative to NAVD88. Geoid 2018 was used in processing. The height was computed at AE2152, NK0704, and DP4568. Vertical control was checked with IARTN checks.

This survey observed AE2152, NK0704, and DP4568.
AE2152 – disk set in concrete monument
Elevation = 1014.042
NK0704 - disk set in concrete monument
Elevation = 1149.359
DP4568 - disk set in concrete monument
Elevation = 1054.295

Horizontal Control
The project coordinate system for this survey is Iowa RCS zone 08 (U.S. Survey Feet). This survey control is relative to IARTN reference stations IARTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011). Coordinates were determined by conducting a 5-minute observation in the morning, afternoon, and evening. Coordinates were then averaged between the three to determine the final coordinate.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 08 (U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3 or 2018u2

Alignment Information

The horizontal alignment for U.S. Hwy 65 is a retrace of the existing alignment. Survey stationing was equated to Sta. 1816+90.00 and carried back and ahead without equation throughout the survey.

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) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 08 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3 or 2018u2

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

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 08 (U.S. Survey Foot)

VERT. DATUM: NAVD88
Geoid Model: 2018u3 or 2018u2

Point Name	Northing	Easting	Elevation	Code Description
cp500	7644670.72	18610639.00	1033.12	CP 5/8" rebar 1' deep; 15.32’ West of edge of Asphalt; 475.67’ South of edge of culvert
cp501	7644667.62	18610686.59	1033.73	CP 5/8" rebar 1' deep; 14.48’ East of edge of Asphalt; 475.73’ South of edge of culvert
cp502	7645536.22	18610730.99	1044.89	CP 5/8" rebar 1' deep; 4.88’ West of edge of Asphalt; 391.01’ North of edge of culvert
cp503	7645532.24	18610590.75	1043.52	CP 5/8" rebar 1' deep; 6.25’ East of edge of Asphalt; 390.21’ North of edge of culvert