IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 5 **DATE:** August 16, 2010

ATTENTION: Brian Morrissey **PROJECT:** Van Buren County
BRF-098-1(7)--38-89

FROM: Kevin K. Patel PIN: 09-89-098-010

OFFICE: Design

SUBJECT: Project Concept Statement; (Final Approval, D0)

This project involves the replacement of the Iowa highway 98 bridge (Maint. No 8900.3S098) over the Des Moines River, 1.5 miles south of IA 16.

A concept review was held on June 2, 2010. Those present included Chuck Belgarde from the District 5 Office; Patricia Schwarz from the Office of Bridges and Structures; Colin Greenan from the Office of Location and Environment; Jeff McCollough from Local Systems and Kevin Patel and Amy Schleier from the Office of Design.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by August 10, 2010. Comments received during the review period have been considered and resolved.

The approved project is estimated to cost $6,451,000. Traffic will be maintained on the existing bridge while the new bridge is being constructed. This project is recommended for construction in FY 2014. The Office of Bridges and Structures will coordinate plan preparation with assistance from the Office of Design.

KKP: als
Attach.
cc:

J. F. Adam	M. J. Dillavou	M. J. Kennerly
K. D. Nicholson	D. E. Ohman	R. L. Stanley
M. D. Masteller	D. L. Maifield	A. A. Welch
N. L. McDonald	G. A. Novey	B. L. Brakke
D. R. Claman	J. C. Reutter	C. Monk, FHWA
N. M. Miller	E. C. Wright	T. D. Crouch
M. J. Sankey	M. A. Swenson	J. W. Smith
R. A. Younie	S. J. Gent	D. E. Sprengeler
C. C. Poole	S. P. Anderson	J. P. Rost
S. C. Marler	L. C. Funnell	D. L. Newell
E. J. Ranney	D. R. Tebben	K. W. Morrow
C. E. Belgarde	J. R. Phillips	M. Grogg, FHWA
T. A. Jerman	B. M. Ford	

FINAL PROJECT CONCEPT STATEMENT

Bridge over the Des Moines River
On Iowa Highway 98

Van Buren County
BRF-098-1(7)--38-89
PIN: 09-89-098-010
Maint. No. 8900.3S098
FHWA No. 50380

Highway Division
Office of Design

Kevin K. Patel, P.E.
515-239-1540

August 16, 2010

I. STUDY AREA

A. Project Description

This project involves the replacement of the Iowa highway 98 bridge (Maint. No 8900.3S098) over the Des Moines River, 1.5 miles south of IA 16.

B. Need for Project

This is a 789' x 32' steel girder and floorbeam structure which was built in 1954. The bridge is classified as structurally deficient due to the condition of the deck. The deck has many hollow and spalling areas along with large amounts of exposed reinforcing on the bottom side. The bridge is classified as functionally obsolete due to the narrow deck width. The girders were not designed for current loading standards and will not support a wider deck. Due to the poor condition of the deck and the impracticality of repair, the bridge should be replaced.


Northbound


Southbound

C. Present Facility

The existing structure is a 789’ x 32’ steel girder and floorbeam bridge which was built in 1954.

IA 98 in the project area is 24’ wide P.C. pavement with 6’ wide granular shoulders and 3:1 foreslopes, constructed in 1963.

D. Traffic Estimates

The 2015 and 2035 average daily traffic estimates are 1280 ADT with 9% trucks and 1550 ADT with 10% trucks, respectively.

E. Sufficiency Ratings

IA 98 is classified as an “access route” route and is a maintenance service level “C” road with a sufficiency rating of 55. The federal bridge sufficiency rating is 54.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2005 through December 31, 2009, there were no crashes at this location.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with a 6 span pretensioned, prestressed concrete beam bridge.

Replace the existing 789’ x 32’ steel girder and floorbeam bridge with a 810’ x 40’ 6-span pretensioned, prestressed concrete beam bridge with a 10’ multi-use trail on the west side. The typical cross section adjacent to the bridge will consist of a 28 ft.

roadway with 6 ft. granular shoulders and 6:1/3.5:1 foreslopes.

The new bridge will be constructed on a revised vertical and horizontal alignment. The profile grade on the south side of the bridge will be raised approximately 4 ft. to reduce the existing 8% grade approaching the bridge to 5%. The profile grade on the north approach will remain similar to the existing elevation. The profile grade across the bridge was designed such that the low beam elevation of the new bridge will not be any lower than the low beam elevation of the existing bridge.

The horizontal alignment of the new bridge will be shifted to the west. This will allow two lanes of traffic to be maintained on the existing bridge during the construction of the new bridge. Construct new bridge approaches. Replace the existing concrete bridge end barrier with new concrete bridge end barrier. Construct bridge end drains on each end of the bridge.

The revised horizontal and vertical alignment of IA 98 will require Hawk Street and Eagle Drive to be relocated to improve the skew angle and sight distance. This will require the 4' x 4' RCB under Eagle Drive to be removed and replaced. These roadways will be closed to traffic during construction.

Place class E revetment for slope protection under the bridge. Apply erosion control and rural seeding and fertilizing to all disturbed areas.

Right of way will be required for this project.

Traffic will be maintained by using the existing bridge. However, it will be necessary to reduce traffic down to one lane during the construction of the tie-ins of the new bridge. During this phase, traffic will be maintained via the use of a paved on-site detour, signing (during grading use TC-202 and, during the actual tie-in paving, TC-211 and a flagger) on both south and north ends of the bridge on the east side.

Bridge Item	Estimated Cost
Bridge, 6 span PPCB	$ 3,745,000
Removal Existing Bridge	175,000
Cofferdam and Shoring	250,000
Revetment	120,000
Mobilization, 10%	429,000
M&C, 15%	707,900
Bridge total	$5,426,900

Road Item	Estimated Cost
Removal of Pavement	$12,500
8" PCC pavement	119,700

Special backfill	46,800
Bridge Approaches	62,600
Excavation, Class 10 roadway & borrow (Class 10 for both for IA 98 and local roads)	239,900
Class 13 waste	12,200
Granular surface for local roads	15,100
Precast reinforced concrete box culvert, 4'x4'x76'	44,600
Granular shoulders	8,600
Installation of concrete bridge end barrier (BA-108)	12,000
Bridge end drains	8,800
Temporary pavement (runarounds)	41,800
Temporary floodlights	5,600
Temporary concrete barrier	5,300
Clearing and grubbing	5,500
ROW	8,800
Erosion Control	5,000
Wetland Mitigation	50,000
Traffic Control@5%	35,200
Mobilization@ 5%	35,200
M&C @ 30%	232,600
Total	**$ 1,007,800**
Total combined Bridge and Roadway	**$6,434,700**

Alternative #2 - Replace with a 4 span continuous welded girder bridge.

This alternative is similar to alternative 1; however, the new bridge will be a 4 span, 810' x 40' continuous welded girder bridge with a 10' multi-use trail on the west side. This option, which reduces piers in the river, was reviewed due to the difficulties experienced during pier construction at the Des Moines River bridge at Farmington. This option will require a grade raise of approximately 6 inches.

Bridge Item	Estimated Cost
Bridge, 4-span continuous welded grider	$ 5,067,000
Removal Existing Bridge	175,000
Cofferdam and Shoring	150,000
Revetment	120,000
Mobilization, 10%	551,200
M&C, 15%	909,500
Bridge total	$6,972,700

Road Item	Estimated Cost
Removal of Pavement	$12,500
8" PCC pavement	119,700
Special backfill	46,800
Bridge Approaches	62,600
Excavation, Class 10 roadway & borrow (Class 10 for both for IA 98 and local roads)	239,900
Class 13 waste	12,200
Granular surface for local roads	15,100
Precast reinforced concrete box culvert, 4'x4'x76'	44,600
Granular shoulders	8,600
Installation of concrete bridge end barrier (BA-108)	12,000
Bridge end drains	8,800
Temporary pavement (runarounds)	41,800
Temporary floodlights	5,600
Temporary concrete barrier	5,300
Clearing and grubbing	5,500
ROW	8,800
Erosion Control	5,000
Wetland Mitigation	50,000
Traffic Control@5%	35,200
Mobilization@ 5%	35,200
M&C @ 30%	232,600
Total	**$1,007,800**
Total combined Bridge and Roadway	**$7,980,500**

B. Detour Analysis

Traffic will be maintained by using the existing bridge. A temporary run-around with temporary traffic signals will be necessary for a short time at the end of the project to tie in the new alignment, both north and south of the bridge.

C. Recommendations

It is recommended that the present structure be replaced, as described in alternative 1.

D. Construction Sequence

It is anticipated that all work on this project will be awarded to one prime contractor.

The Office of Bridges and Structures will coordinate the plan preparation with assistance from the Office of Design.

E. Special Considerations

Placing the new bridge on the east side of the existing bridge was reviewed; however, due to acquiring 3 homes, and boat ramp access, this alternative was dismissed.

There are light poles on the southeast and northeast corners of the bridge approach that should be relocated to the new alignment at the City's (Douds and Leando) expense.

A 10' wide multi-purpose trail will be provided on the west side of the bridge.

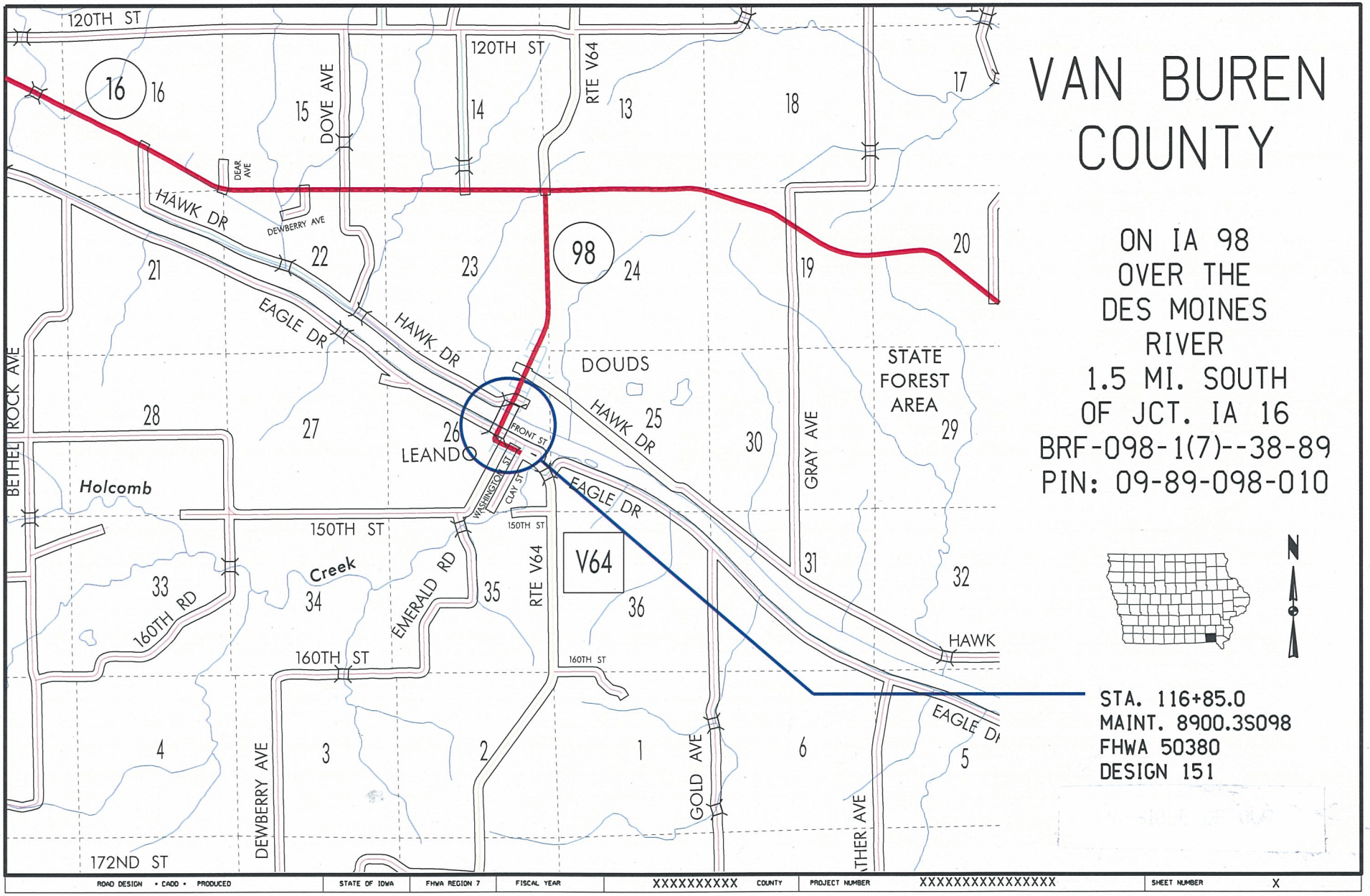
Right of Way will be required for this project. Due to the right of way/right of entry needs, a Phase 1 Archaeological investigation will be conducted for this project.

The Office of Location and Environment has reviewed this project and has determined that a Section 404 Permit will be required. It is expected that the work will be covered by a Nationwide Permit. There is a wetland area located west of IA 98 and north of the Des Moines River. Wetland mitigation will be required if wetland impacts are greater than 0.09 acre.

F. Program Status

Site data has been developed by the Office of Design. This project is listed in the 2011-2015 Iowa Transportation Improvement Program, with $4,264,000 for replacement in FY 2014. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

KKP: als



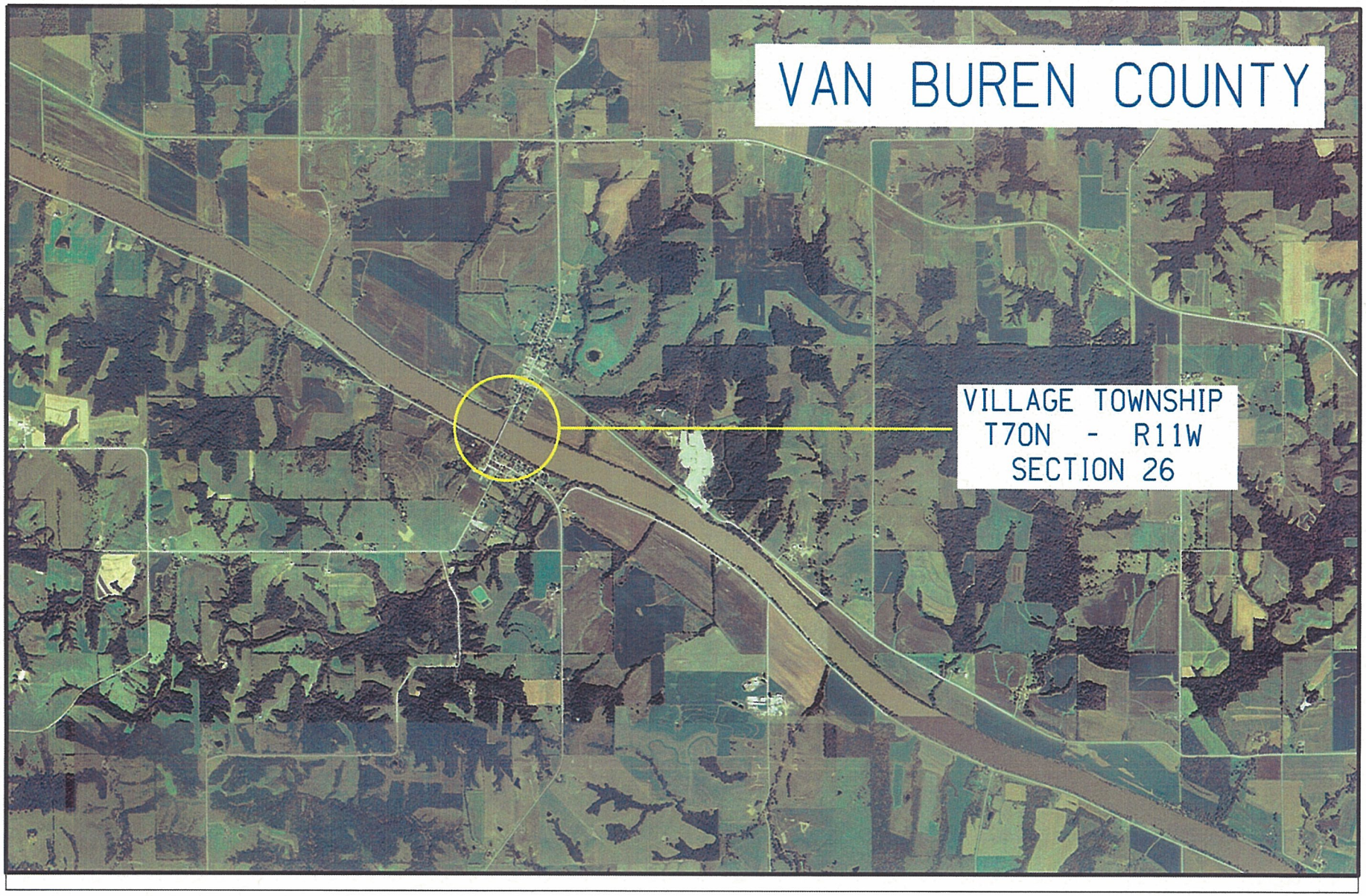
VAN BUREN COUNTY

ON IA 98
OVER THE
DES MOINES
RIVER
1.5 MI. SOUTH
OF JCT. IA 16
BRF-098-1(7)--38-89
PIN: 09-89-098-010

N

STA. 116+85.0
MAINT. 8900.3S098
FHWA 50380
DESIGN 151

ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	XXXXXXXXXX COUNTY	PROJECT NUMBER XXXXXXXXXXXXXXXX	SHEET NUMBER X


VAN BUREN COUNTY
VILLAGE TOWNSHIP
T7ON - R11W
SECTION 26

IA 98
Local roads
Existing Road/bridge
Short-term runaround

Eagle Dr.

Hawk Dr.

New 810' x 54' bridge

Existing 780'x24 bridge & IA98

Leandro

Douds

VILLAGE TOWNSHIP
T70N - R11W
SECTION 26

640
630
620
610
600

105+00
110+00
115+00
120+00
125+00

-5%
L=250'
112+80
621.07
0.5%
L=400'
120+90
616.30
-3.75%
L=175'
Proposed Profile
Proposed low beam elevation
Existing low beam elevation
Existing Profile

VAN BUREN COUNTY
IA 98 BRIDGE OVER
THE DES MOINES RIVER

BRF-098-1(7)--38-89
PIN: 09-89-098-010

ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER X

LETTING DATE

PCC Pavement - Grade and New
BRF-098-1(7)--38-89

VAN BUREN COUNTY

Iowa Department of Transportation

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

VAN BUREN COUNTY

P.C.C. Pavement - Grade and New

SCALES: As Noted

The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series 2009, plus General Supplemental Specifications; and applicable Supplemental Specifications, Developmental Specifications, and Special Provisions, shall apply to construction on this project.

Value Engineering Saves. Refer to Article 1105.15 of the Specifications.

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

REVISIONS

	TOTAL
PROJECT IDENTIFICATION NUMBER	
09-89-098-010	
PROJECT NUMBER	
BRF-098-1(7)--38-89	
R.O.W. PROJECT NUMBER	

INDEX OF SHEETS

105-3
10-18-05

MILEAGE SUMMARY

105-1
09-27-94

Div.	Location	Lin. Ft.	Miles
	Sta. 107+95.00 To Sta. 127+00.00	1,905	0.36

TABULATION OF TEMPLATE QUANTITIES

STA. TO STA.	CUT	FILL	F+%	BALANCE	+	-
IA 98						
107+95.00	521	5691	7399			6878
113+08.09						
121+18.09	2896	6064	7884			4988
127+00.00						
EAGLE DR.						
1107+00.00	1219	8201	10662			9443
1111+60.50						
HAWK DR.						
1124+00.00	169	4	6		163	
1124+99.15						
Temporary IA 98						
0+50.00	420	128	167		253	
4+97.56						

For Project Location Map
Refer to Sheet A.2

04-30-02 101-5

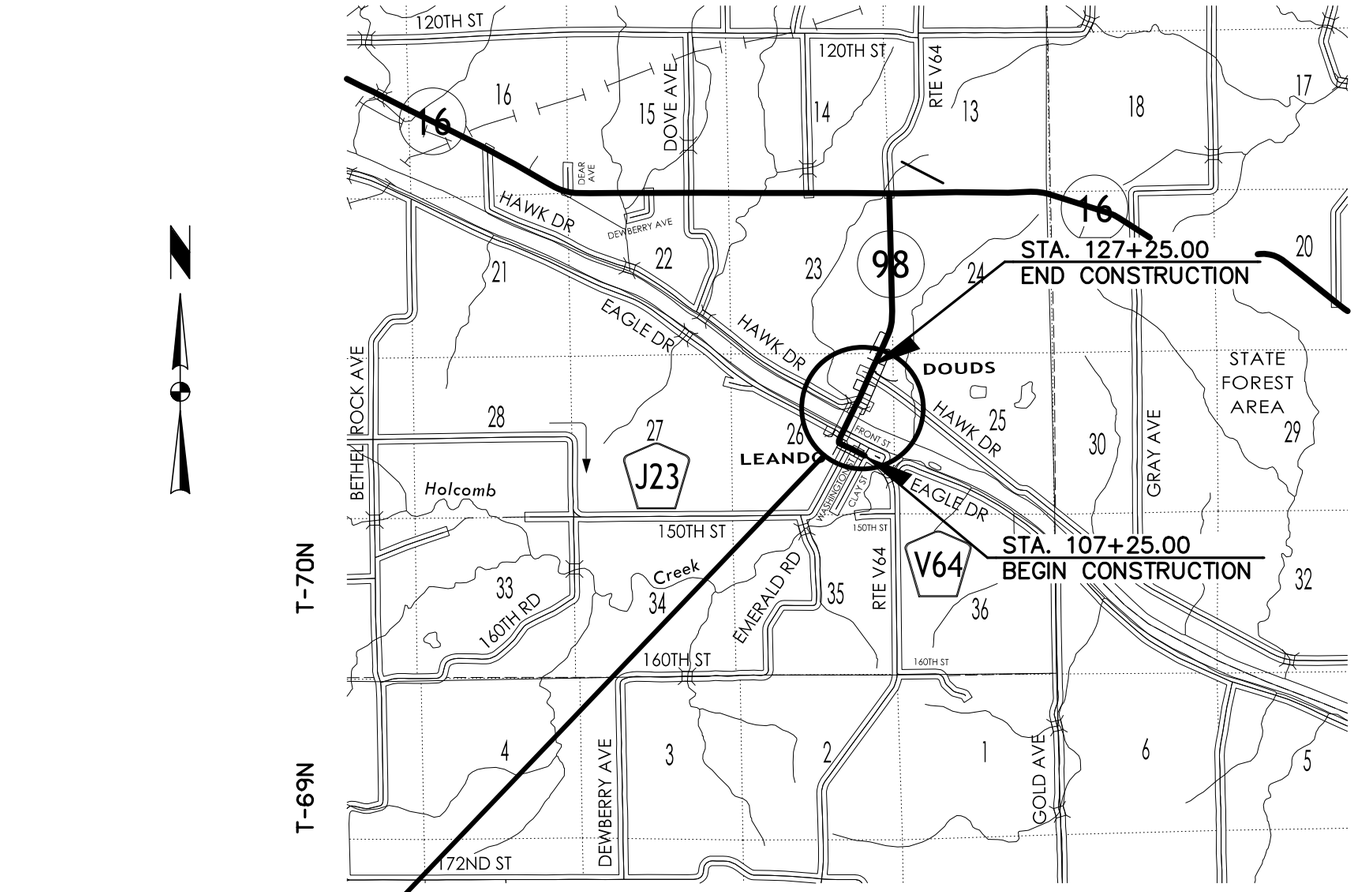
DESIGN DATA URBAN

2015	AADT	1280	V.P.D.
2035	AADT	1550	V.P.D.
20	DHV		V.P.H.
TRUCKS			%
Total Design ESALs			

Subject to change by final design.

D3 PLAN – Date: Oct. 21, 2011

NORTHWESTERN PART OF VAN BUREN COUNTY



LOCATION MAP SCALE

0 1 2 3

Miles

LOCATION MAP

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER	BRF-098-1(7)--38-89	SHEET NUMBER	A.2

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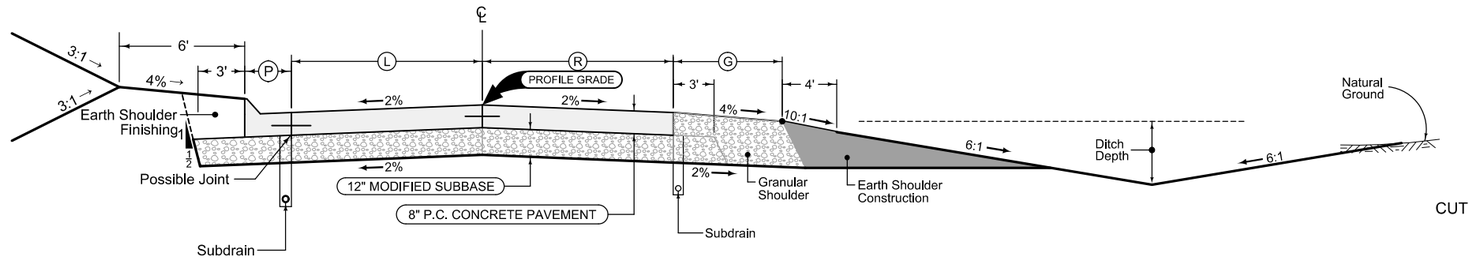
WHKS-1



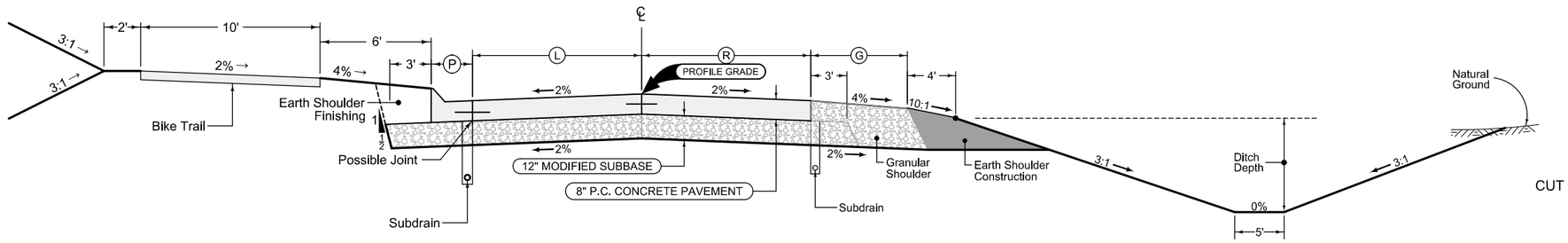
LOCATION			DIMENSIONS				Curb Type See PV-102
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(G) Feet	(P) Feet	
IA 98	107+95.00	109+50.00	12	14	6	2.0	6" Standard

See plan & profile sheets and cross sections for additional details of ditches and backslopes.

2 LANE PCC PAVEMENT

IOWA HIGHWAY 98

WHKS-2



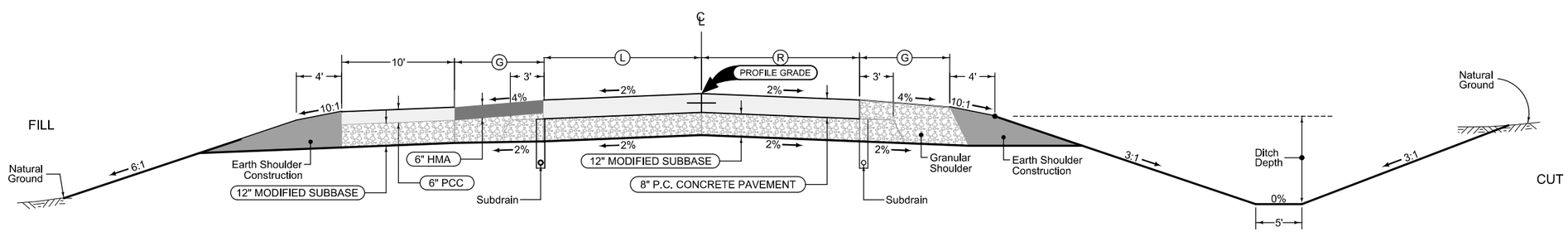
LOCATION			DIMENSIONS				Curb Type See PV-102
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(G) Feet	(P) Feet	
IA 98	109+50.00	110+25.00	12	14	6	2.0	6" Standard

See plan & profile sheets and cross sections for additional details of ditches and backslopes.

2 LANE PCC PAVEMENT

IOWA HIGHWAY 98

WHKS-3



LOCATION			DIMENSIONS		
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(G) Feet
IA 98	110+25.00	112+36.34	14	14	6
	121+89.84	124+43.00	14	14	6

See plan & profile sheets and cross sections for additional details of ditches and backslopes.

2 LANE PCC PAVEMENT

IOWA HIGHWAY 98

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER	BRF-098-1(7)--38-89	SHEET NUMBER	B.1

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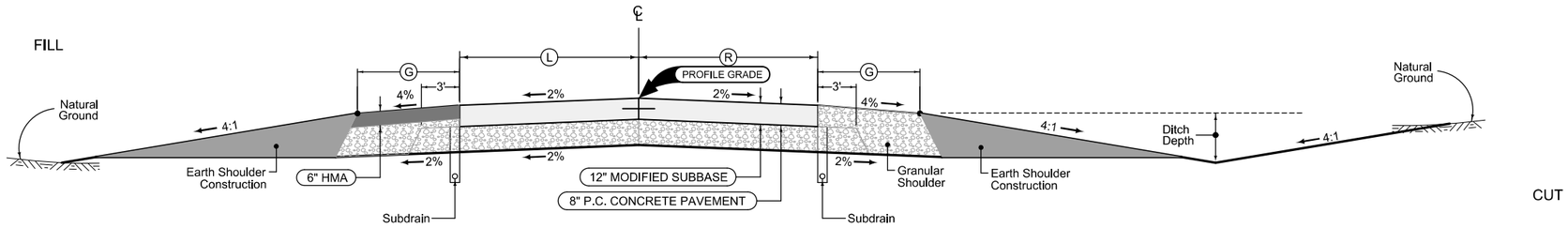
WHKS-4



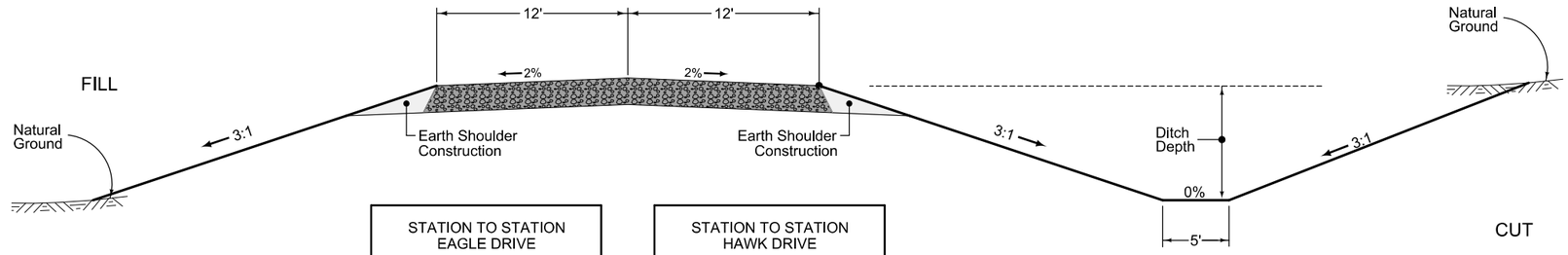
LOCATION			DIMENSIONS		
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(G) Feet
IA 98	124+43.00	127+00.00	14	14	6

See plan & profile sheets and cross sections for additional details of ditches and backslopes.

2 LANE PCC PAVEMENT

IOWA HIGHWAY 98

WHKS-5

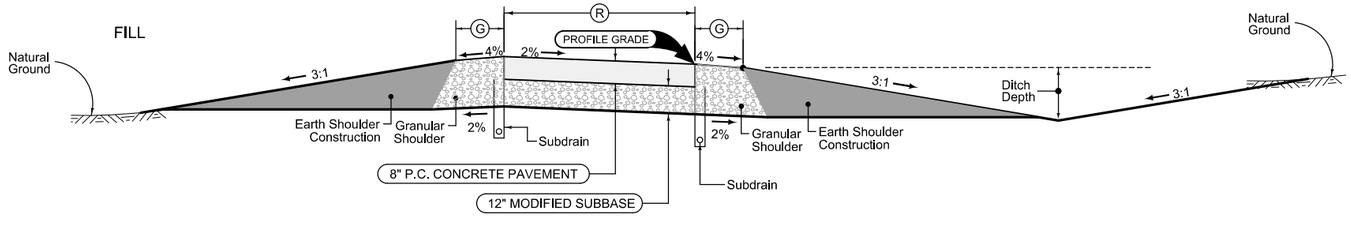


STATION TO STATION EAGLE DRIVE	
1107+00.00	1111+13.95

STATION TO STATION HAWK DRIVE	
1124+00.00	1124+54.24

2 LANE GRANULAR SURFACING

WHKS-6

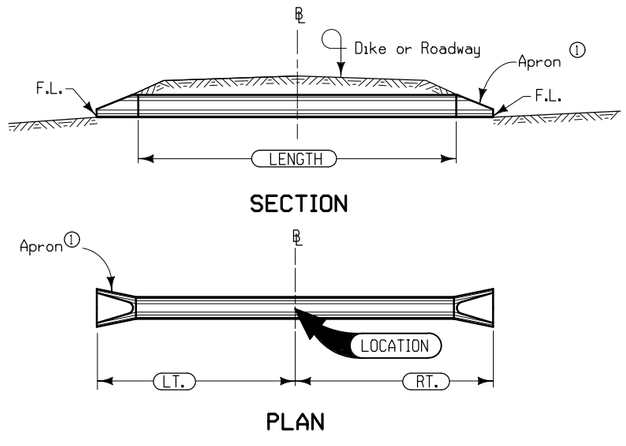


LOCATION			DIMENSIONS	
ROAD IDENTIFICATION	STATION TO STATION		(R) Feet	(G) Feet
TEMP. IA 98	0+50.00	4+97.56	12	2

1 LANE TEMPORARY PCC PAVEMENT

TEMPORARY IOWA HIGHWAY 98

1101
04-30-02



Notes:

℄ shall be ℄ of roadway, dike, survey, or other; as detailed on plans.

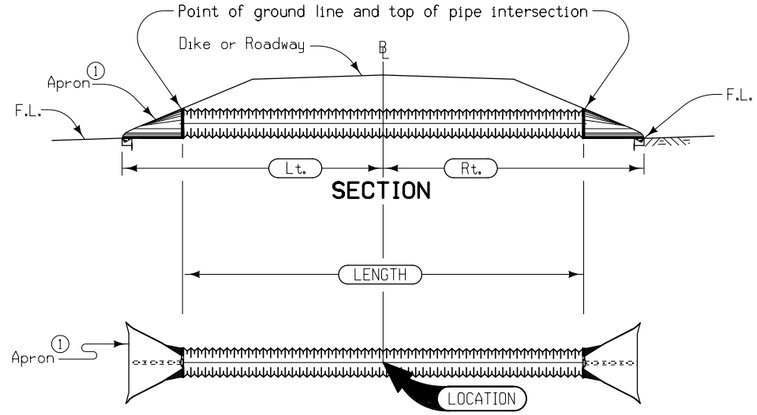
Skew angle is the angle which one end of the pipe is ahead (by stationing) of line perpendicular to the ℄ (example skew Rt. ahead 30°).

Refer to tabular listing and other plans for additional information.

① See Standard Road Plan RF-3 For Conc. or RF-5 for Metal.

PIPE CULVERT

1601
04-21-09



Notes:

℄ shall be ℄ of roadway, dike, survey, or other; as detailed on plans.

Skew angle is the angle which one end of the pipe is ahead (by stationing) of a line perpendicular to the ℄ (example skew Rt. ahead 30 degrees).

Refer to tabular listings and other plans for additional information.

① See Standard Road Plan RF-3 for Concrete or RF-5 for Metal and Polyethylene.

Special Note:
Pipe Lengths are calculated based on length of Concrete Pipe.

UNCLASSIFIED PIPE CULVERT

SURVEY SYMBOLS

- Iowa Highway Symbol
- Evergreen Tree
- Deciduous Tree
- SB — Shrub (Bushes)
- Timber
- Hedge
- Revetment (Rip Rap)
- Tile Outlet
- Existing Drainage
- Proposed Drainage
- Beehive Intake
- Existing Intake
- Existing Utility Access (Manhole)
- WH — Water Hydrant (Rural)
- Luminaire
- Telephone Pole
- Power Pole
- W — Existing Water Line
- San. — Existing Sanitary Sewer Line
- T — Existing Telephone Line
- FO-1 — Existing Fiber Optics Telephone Line
- St. S. — Existing Storm Sewer Line
- G — Existing Gas Line
- Guardrail (Beam or Cable)
- GP — Guard Post (one or two)
- GV — Gas Valve
- WV — Water Valve
- SL — Speed Limit Sign
- SIGN — Sign

UTILITY LEGEND

- W — Rathbun Rural Water Water Line
- San. — Rathbun Rural Water Sanitary Sewer Line
- T1 — Windstream Communications Telephone Line
- FO — Windstream Communications Fiber Optics Telephone Line

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
Gray, Dark	(112)	Proposed Sidewalk Shading
Brown, Light	(236)	Grading 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
- Survey Line
- Station
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Clearing & Grubbing Area
- Pavement Removal

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Borrow
- Easement (Temporary)
- Easement
- Excess
- A/C — Access Control

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER	BRF-098-1(7)--38-89	SHEET NUMBER	D.1

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VILLAGE TWP.
T-70N R-11W
SEC. 26

(Remove)
Sta. 110+43.43, 21.01' Lt.
15" X 26' C.M.P.
Sta. 110+50 37.25 Lt.
Install 24" RCP
F.L. = Lt. 626.52
Rt. 626.06
Type "C" Ent.

Curve Data
Δ = 91° 40' 07.61" (RT)
T = 203.85
L = 316.78
R = 198.00
E = 86.18

CITY OF LEANDO

Sta. 109+31.04, 23.40' Rt.
15" X 20' C.M.P.

Field Ent.

Madison St.

RES. BLDG.

SHED

1110

115

Des Moines River

+50 Prop. Type "C" Ent.
W = 9.8'

PI Sta 110+59.06

011

PI Sta 110+15.68
Curve No. E2

Garage

House

Church

Jefferson St.

15" X 135' C.M.P.

PT Sta 111+72.00

98

(REMOVE)
Sta. 117+14.2
780' X 24' Continuous
Through Girder Bridge Conc.
Floor & Substructure
D.A. = 13,406 Sq. Mi. - VF-F
Sta 117+28.48
Build 810' x 40'
Continuous Welded
Girder Bridge

12" X 30' C.M.P.

Gar.

House

(U.A.C.)
12" X 35'
CAST IRON PIPE

PC Sta 108+55.21

+10 Prop. Type "C" Ent.
W = 16.7'

(U.A.C.)
15" X 18' C.M.P.

Limits of Construction (Typ.)

SAWCUT

STA. 107+95.00
BEGIN CONSTRUCTION

(REMOVE)
Sta. 109+56.65, 0.77' Rt.
24" X 61' Conc. Pipe
D.A. = 1 Ac. R

Washington St.

(U.A.C.)
12" X 40' C.M.P.

PCT Sta 106+01.02

Shed

0 50
FEET

For Superelevation Information
Refer to Sheet No. G.2

For Side Road Details
Refer to Sheet No. E.1

For Curve Information
Refer to Sheet No. G.1

For Profile
Refer to Sheet No. D.3

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER D.2

10/26/2011 D.2
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Fill+30% = 7399 CY

Cut = 521 CY
Borrow = 6878 CY
7399 CY

VPI +75.000
Elv 638.57
K = 63
Len 425.00 ft

633.64

+1.800%

TIE IN FLUSH
STA 107+95.00

+11.7

Prop. Type
"C" Ent.

0.5%
-0.6%

+84.0

2.6%
3.7%

Jefferson St.

-5.000%

-5.000%

+45.0

Prop. Type
"C" Ent.

8.5%

VPI +00.000
Elv 622.32
K = 45
Len 200.00 ft

-0.600%

640
630
620
610
600
590
580

Lt
Rt

Curb & Gutter
1' "V" Ditch
Jefferson St.
Ent.
3' Ditch
3' Ditch
Eagle Dr.
3' Ditch
Bridge
Bridge

	106	107	108	109	110	111	112	113	114	115	116	117
	634.35	635.43	635.73	635.67 / 635.70	635.04 / 635.30	633.96 / 634.50	631.59 / 633.30	629.38 / 631.70	627.48 / 629.70	622.53 / 627.32	616.47 / 625.09	610.95 / 623.42	611.66 / 622.29	611.62 / 621.72	596.27 / 621.42	584.81 / 621.12	580.76 / 620.82	580.44 / 620.52	580.16 / 620.22	579.21 / 619.92	579.68 / 619.62	579.95 / 619.32

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER D.3

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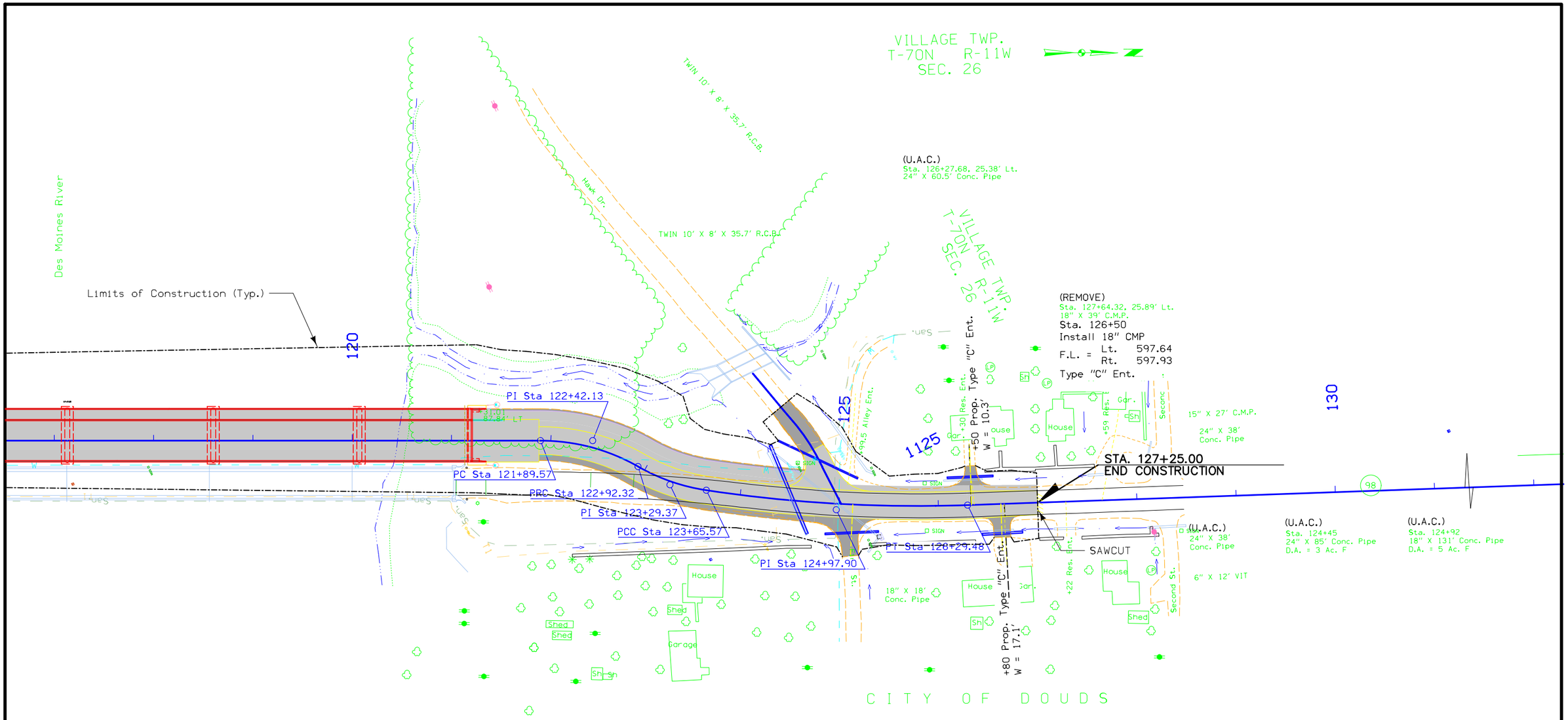


(REMOVE)
Sta. 124+44.63, 0.25' Lt.
24" X 85' Conc. Pipe
DA = 3 Ac. F
Sta. 124+65
Install 24" RCP
F.L. = Lt. 594.66
Rt. 596.26

(REMOVE)
Sta. 124+91.44, 0.12' Lt.
18" X 131' Conc. Pipe
DA = 5 Ac. F
Sta. 125+14
Install 18" RCP
F.L. = Lt. 596.35
Rt. 596.62

(REMOVE)
Sta. 126+59.90, 26.71'
24" X 24' Conc. Pipe
Sta. 126+80 27.25 Rt.
Install 24" RCP
F.L. = Lt. 597.64
Rt. 597.93
Type "C" Ent.

(U.A.C.)
Sta. 127+22.08, 27.32' Rt.
24" X 24' Conc. Pipe

Curve Data
Δ = 29° 43' 57.85" (RT)
T = 52.56
L = 102.75
R = 198.00
E = 6.86

Curve Data
Δ = 21° 11' 51.29" (LT)
T = 37.05
L = 73.25
R = 198.00
E = 3.44

Curve Data
Δ = 10° 33' 19.10" (LT)
T = 132.33
L = 263.90
R = 1,432.50
E = 6.10

For Side Road Details
Refer to Sheet No. E.2

For Curve Information
Refer to Sheet No. G.1

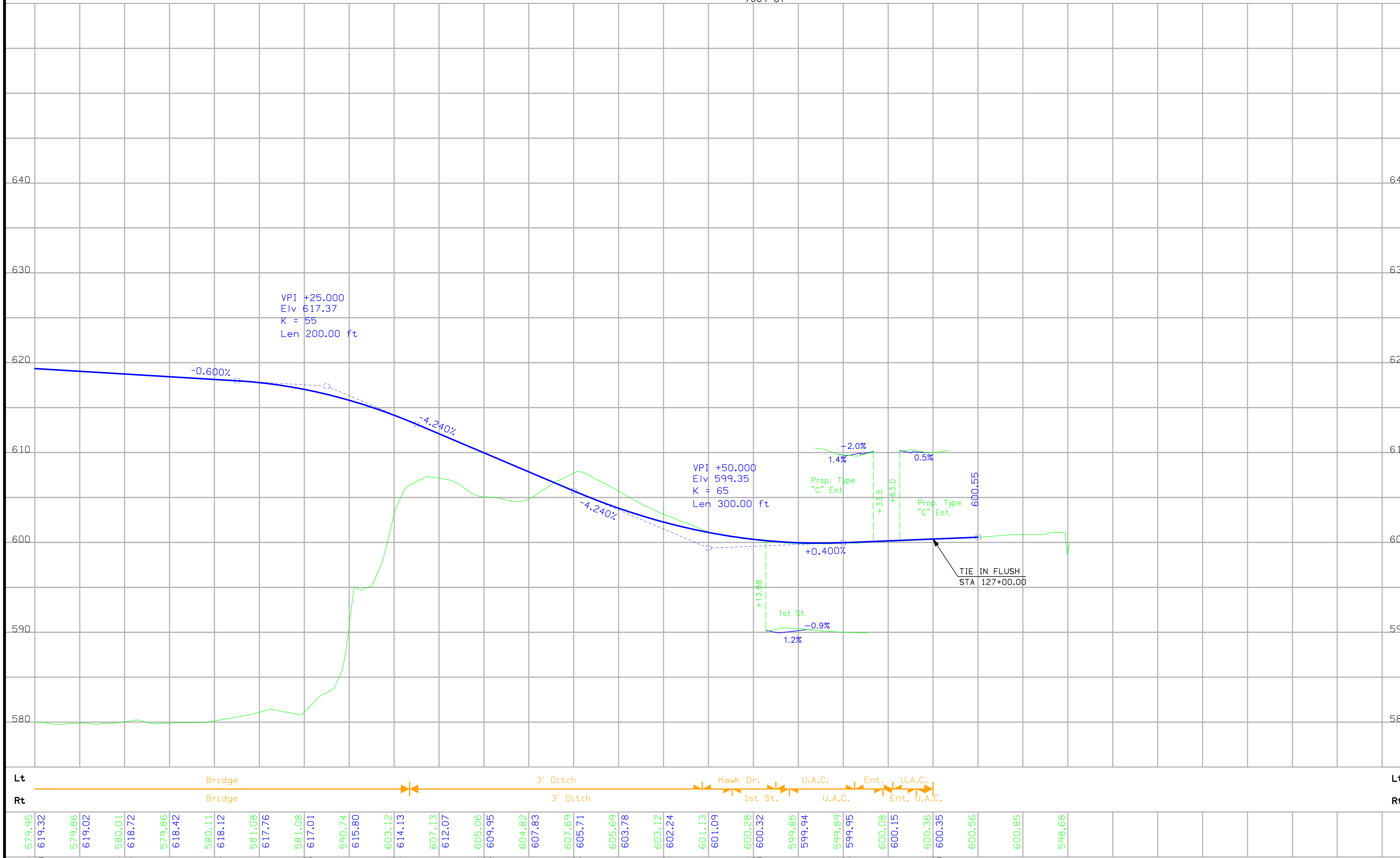
For Profile
Refer to Sheet No. D.5

0 50
FEET

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER	BRF-098-1(7)--38-89	SHEET NUMBER	D.4

Fill+30% = 7884 CY

Cut = 2896 CY
From Hawk Dr. = 163 CY
Borrow = 4825 CY
7884 CY



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D.5
10/26/2011

For Mainline Details
Refer to Sheet Nos. D.2-D.5

For Curve Information
Refer to Sheet No. G.1

(Remove)
Sta. 1108+90.78, 24.92' Lt.
18" X 32' C.M.P.

VILLAGE TWP.
T-70N R-11W
SEC. 26

(Remove)
Sta. 1110+29.71, 87.88' Lt.
4' X 4' X 72.1' R.C.B.

Sta. 1110+18 0.00'
Install 4'x4' R.C.B.
F.L. = Lt. 603.13
Rt. 609.26

STA. 1107+00.00
BEGIN CONSTRUCTION

Limits of Construction (Typ.)

PI Sta 1106+88.79

PI Sta 1108+48.22

POT Sta 1105+97.45

PC Sta 1107+92.16

PT Sta 1109+01.41

CITY OF LEANDO

(Remove)
Sta. 1109+31.04, 23.40' Rt.
12" X 20' C.M.P.

Sta. 1109+37 17.9'
Install 12" UNCL
F.L. = Lt. 601.14
Rt. 608.72
Type "C" Ent.

Curve Data
Δ = 31° 36' 48.91" (RT)
T = 56.05
L = 109.25
R = 198.00
E = 7.78

Curve Data
Δ = 17° 05' 59.25" (LT)
T = 29.77
L = 59.09
R = 198.00
E = 2.23

0 50
FEET

+37 Prop. Type "C" Ent.
W = 14.0'

PC Sta 1110+51.41

PI Sta 1110+81.18

PT Sta 1111+10.50

STA. 1111+60.50
TIE INTO IA 98

35' IRON PIPE

15" X 18' C.M.P.

12" X 30' C.M.P.

Fill+30% = 10662 CY

Cut = 1219 CY
Borrow = 9443 CY
8224 CY

VPI +75.000
Elv 622.49
K = 8
Len 50.00 ft

+2.000%

624.20

TIE INTO IA 98
STA 1111+60.50

+8.520%

TIE IN FLUSH
STA 1107+00.00

603.17

-1.580%

VPI +25.000
Elv 601.19
K = 20
Len 200.00 ft

-1.6% Rt. Ditch Grade

+60.0 RT
606.45

+50.0 RT
605.01

4% 40' R

+54'

Prop. Type "C" Ent.

620
610
600

Lt
Rt

U.A.C.
3' Ditch
Ent.
Ditch Grade
3' Ditch

1107	1108	1109	1110	1111	1112
604.81 604.10 603.15 603.17	602.38 602.53 601.86 603.01	601.52 604.74 604.11 607.74	604.82 611.84 606.66 616.10	602.11 620.36 603.33 622.99	610.41 623.99 618.33

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER E.1

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For Mainline Details
Refer to Sheet Nos. D.2-D.5

For Curve Information
Refer to Sheet No. G.1

VILLAGE TWP.
T-70N R-11W
SEC. 26

Sta. 1124+65
Install 24" RCP
F.L. = Lt. 594.60
Rt. 594.16

(U.A.C.)
TWIN 10' X 8' X 35.7' R.C.B.

PT Sta 1124+65.60
PI Sta 1124+42.42
PI Sta 1124+04.02
POT Sta 1123+56.06
STA. 1124+00.00
BEGIN CONSTRUCTION
PC Sta 1124+19.02

STA. 1124+99.15
TIE INTO IA 98

POT Sta 1125+15.34

Hawk Dr.

Limits of Construction (Typ.)

Curve Data
Δ = 13° 28' 50.68" (RT)
T = 23.40
L = 46.59
R = 198.00
E = 1.38

0 FEET 50

Cut = 169 CY

Fill+30% = 6 CY
To IA 98 = 163 CY
169 CY

TIE IN FLUSH
STA 1124+00.00

599.25

600.12

TIE INTO IA 98
STA 1124+99.15

+0.880%

610
600
590
580

Lt
Rt

3' Ditch
3' Ditch

599.26 599.25 599.59 599.69 599.91

1124 1125

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER E.2

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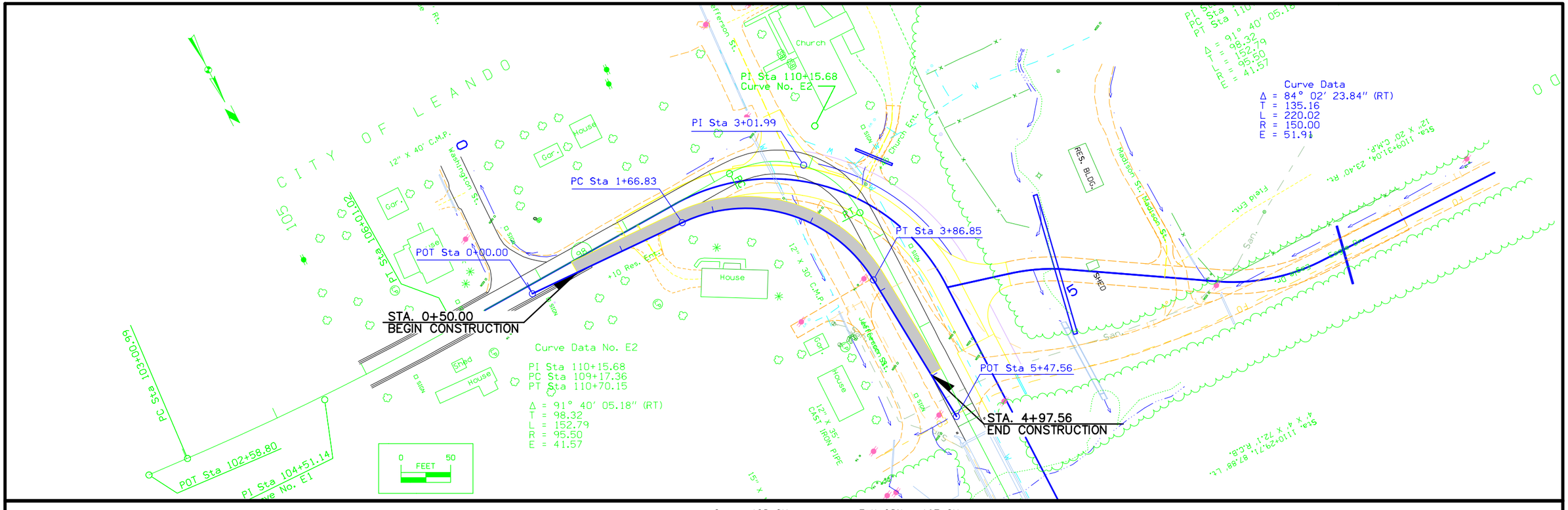

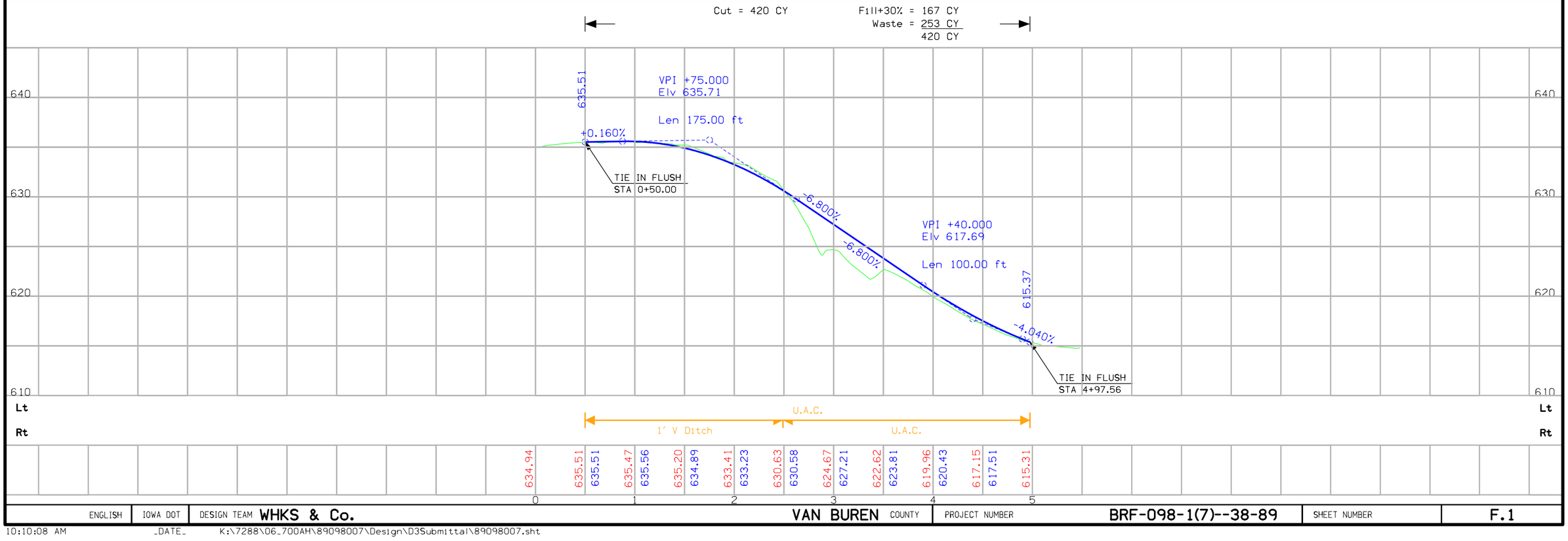

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F.1

10/26/2011

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER F.1

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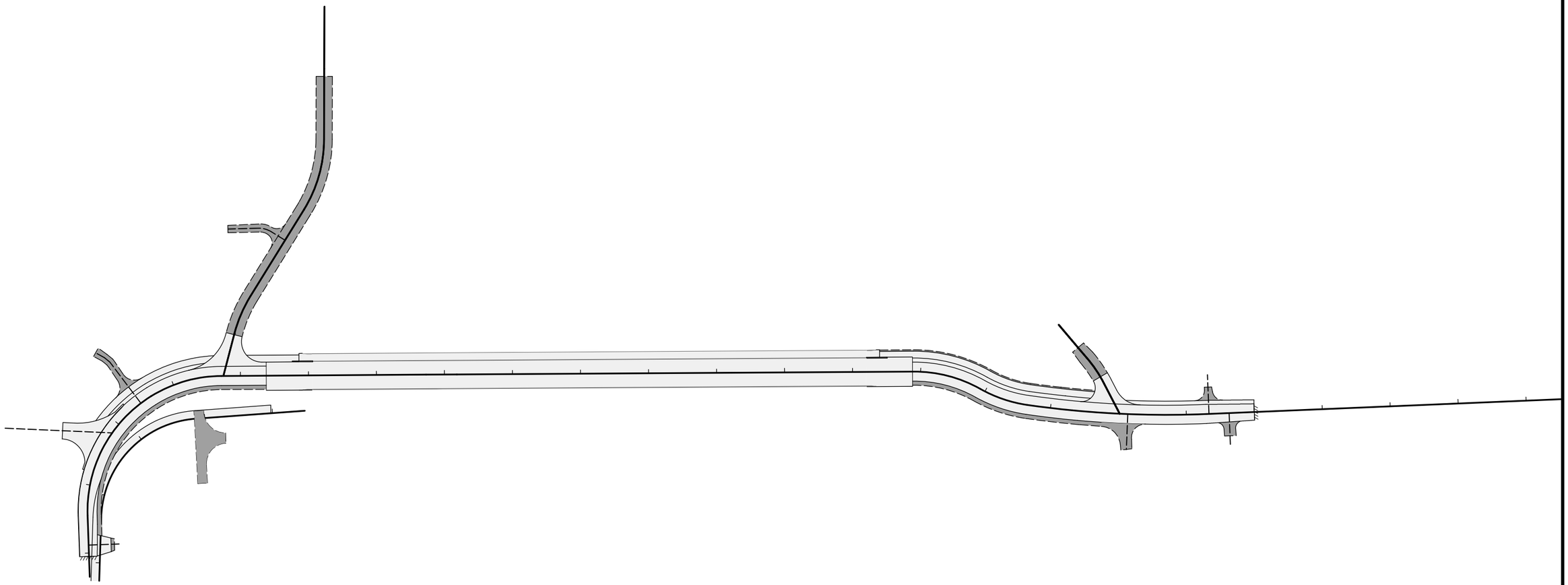


ALIGNMENT COORDINATES

101-16
10-20-09

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
	IOWA 98																		
21000		106+01.02	306,917.664	2,030,959.934															
SCOOT-1								108+55.21	307,020.354	2,030,727.410	110+59.06	307,102.708	2,030,540.933	111+72.00	307,286.708	2,030,628,682			
SCOOT-2								121+89.57	308,205.185	2,031,066.705	122+42.13	308,252.625	2,031,089.329	122+92.32	308,119.954	2,031,132.504			
SCOOT-3								122+92.32	308,282.600	2,031,132.504	123+29.37	308,303.729	2,031,162.938	123+65.57	308,334.434	2,031,183.674			
SCOOT-4								123+65.57	308,334.434	2,031,183.674	234+97.90	308,444.096	2,031,257.730	126+29.48	308,565.468	2,031,310.445			
21001		136+19.47	309,473.509	2,031,704.827															
	EAGLE DRIVE																		
30034		1105+97.45	307,659.699	2,030,206.553															
30035		1106+88.79	307,619.582	2,030,288.609															
EAGLE_1-1								1107+92.16	307,574.293	2,030,381.535	1108+48.22	307,549.736	2,030,431.923	1109+01.41	307,502.410	2,030,461.961			
EAGLE_1-2								1110+51.41	307,375.766	2,030,542.343	1110+81.18	307,350.634	2,030,558.295	1111+10.50	307,331.303	2,030,580.932			
30036		1111+75.00	307,289.420	2,030,629.976															
30037		1112+39.49	307,247.538	2,030,679.020															
	HAWK DRIVE																		
30027		1123+56.06	308,427.366	2,031,097.838															
30028		1124+04.02	308,439.255	2,031,144.299															
HAWK_1-1								1124+19.02	308,443.113	2,031,158.794	1124+42.42	308,449.133	2,031,181.408	1124+65.60	308,449.715	2,031,204.801			
30029		1125+15.34	308,450.951	2,031,254.527															
	TEMP. IA 98																		
30040		0+00.00	306,959.743	2,030,886.384															
TEMP98-1								1+66.83	307,037.145	2,030,738.592	3+01.99	307,099.849	2,030,618.862	3+86.85	307,225.442	2,030,668.796			
30041		5+47.56	307,374.783	2,030,728.170															

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER G.1

SUPERELEVATION DATA

See PV-300 Series

Road Identification	Circular Curve or Spiral Curve Name	Radius	Superelevation Data			Standard Road Plan	Section A-A	Section B-B	Section C-C	Section D-D	Section E-E	Section F-F	Case A	Case B	Case C	Case S	Case T	Case U	Remarks
			e	L	x														
		FT	%	FT	FT														
IA 98	SCOOT-1	198	2.0	34	34	PV-301	107+97.41	108+31.41	108+65.41	108+65.41				108+55.21					
							112+29.80	111+95.80	111+61.80	111+61.80				111+72.00					

108-26A
08-01-08

STAGING NOTES

1. Stage 1 - Construct temporary pavement from Sta 107+35 to Sta 112+44. Construct 4' shoulder strengthening from Sta 123+39 to Sta 127+27. Begin constructing Bridge.
   Stage 2 - Construct Southbound lane of IA 98. Construct 6' paved shoulder and 10' bike path. Construct bridge approach pavements. Construct Bridge. Construct Eagle Drive and Hawk Drive. Construct temporary pavement from Sta 127+00 to Sta 127+60.
   Stage 3 - Construct Northbound lane of IA 98. Construct 6' granular shoulder. Construct hammerhead turn around on Jefferson St. Remove existing bridge.
   Stage 4 - Construct 2' curb and gutter section from Sta 107+95 to Sta 109+20.

2. Contractor shall stage construction to minimze inconvenience to traffic, maximize use and preservation of existing pavement, and improve coordination among projects within the corridor.

3. Situations may arise which preclude adhering to the original construction sequence or which, in the opinion of the Contractor, would readily lend themselves to more effifient staging operations. Should the Contractor desire to deviate from the original plan, an alternate plan shall be submitted to the Engineer for review and approval.

102-15
08-01-08

TABULATION OF SPECIAL EVENTS

Event	Location	Date

108-23A
08-01-08

TRAFFIC CONTROL PLAN

1. Contractor must maintain traffic on the route at all times.

2. Traffic control on this project shall be in accordance with Standard Road Plans TC-1, TC-202, TC-216,and TC-252.Devices and the current Standard Specifications. For additional complementary information, refer to Part 6 of the Manual on Uniform Traffic Control

3. The contractor shall coordinate traffic control with other projects in the area.

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White

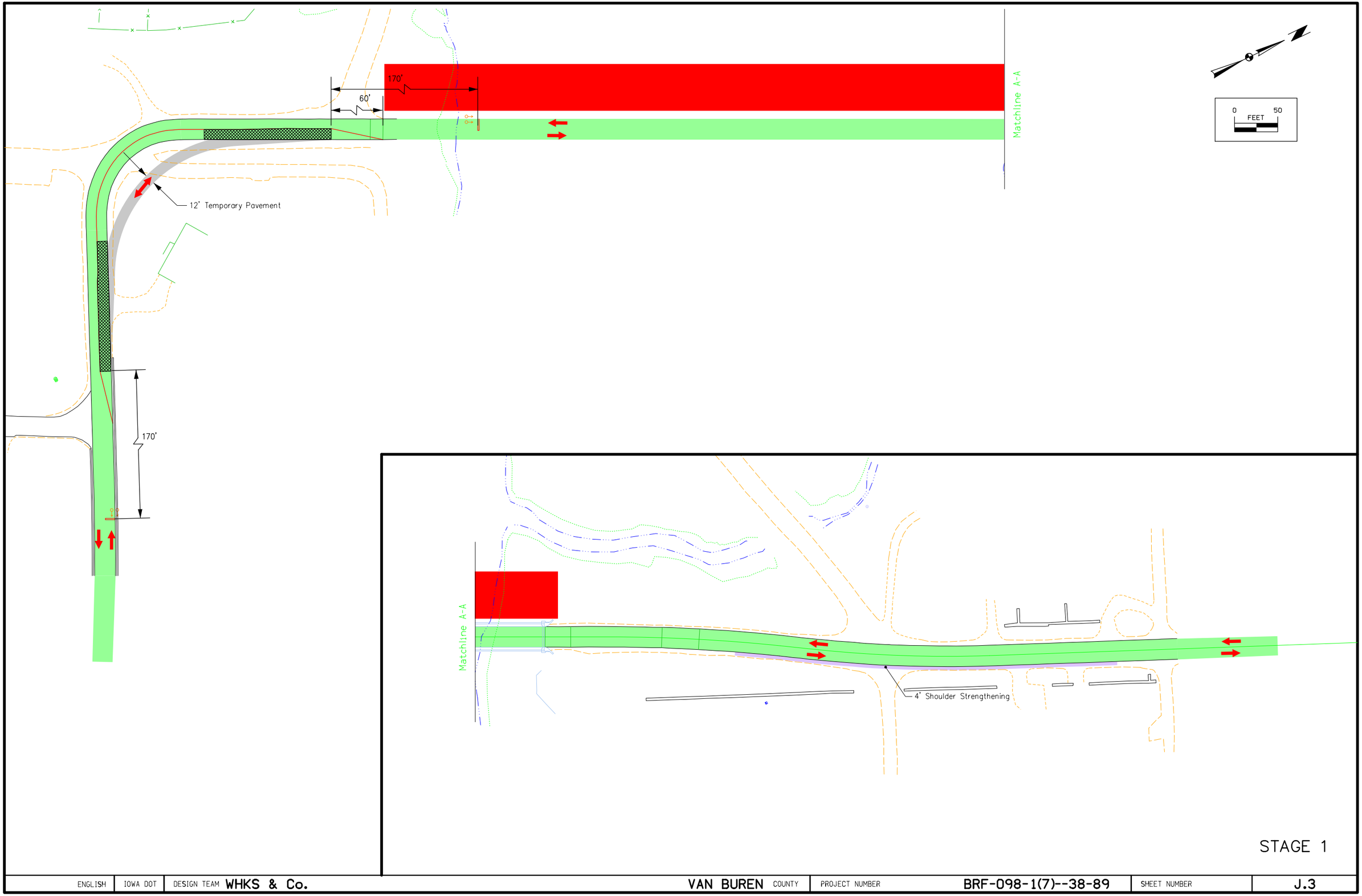
SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

	42" Channelizer		Temporary Traffic Signal
	Drum		Traffic Sign
	Orange Plastic Safety Fence		Type III Barricade-Plan View
	Temporary Barrier Rail		Type A Warning Light
	Temporary Floodlighting		Pavement Removal

TRAFFIC CONTROL AND STAGING

(COVERS SHEET SERIES J)



STAGE 1

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10/26/2011 J.3

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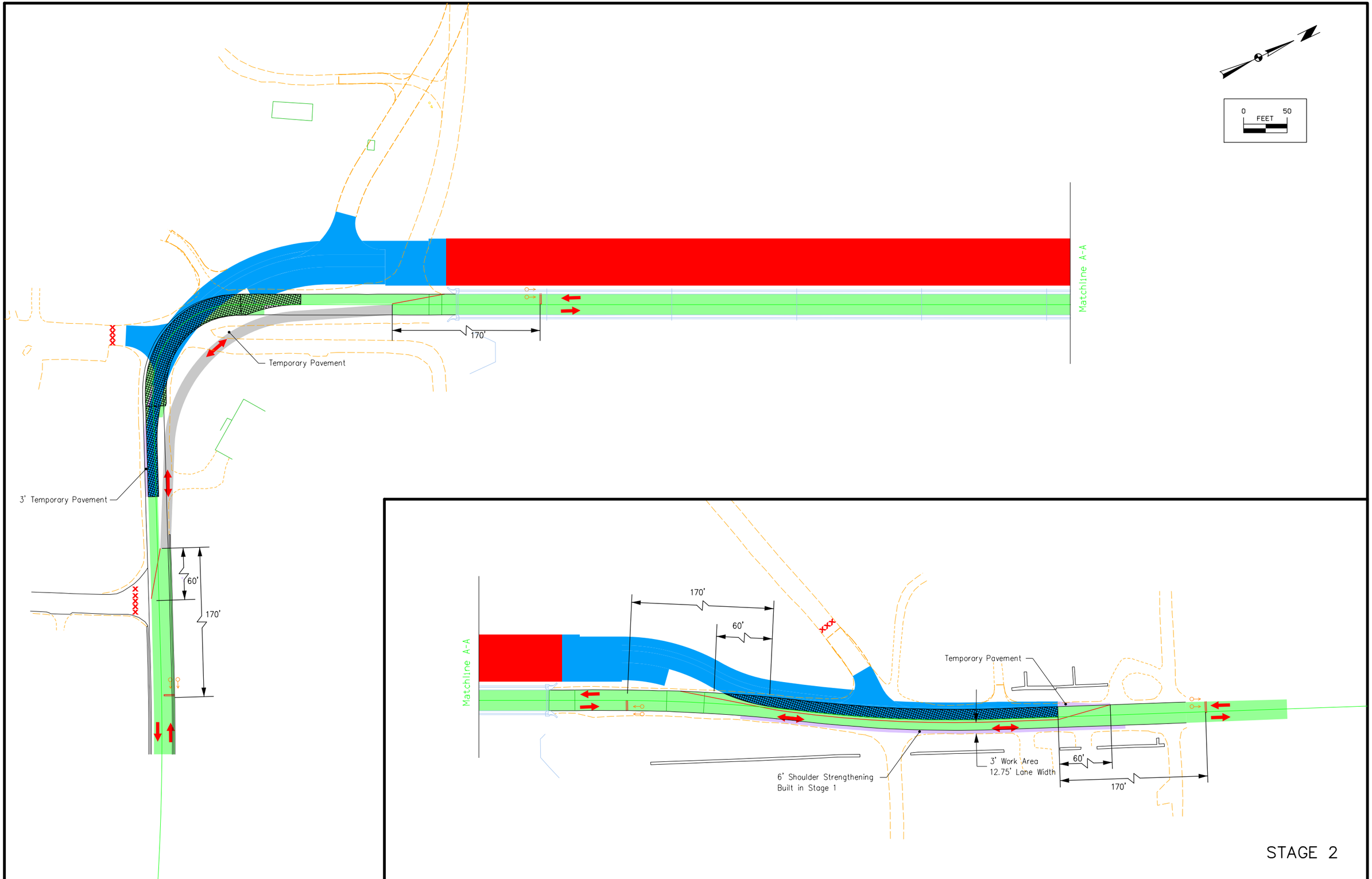

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10/26/2011 J.4

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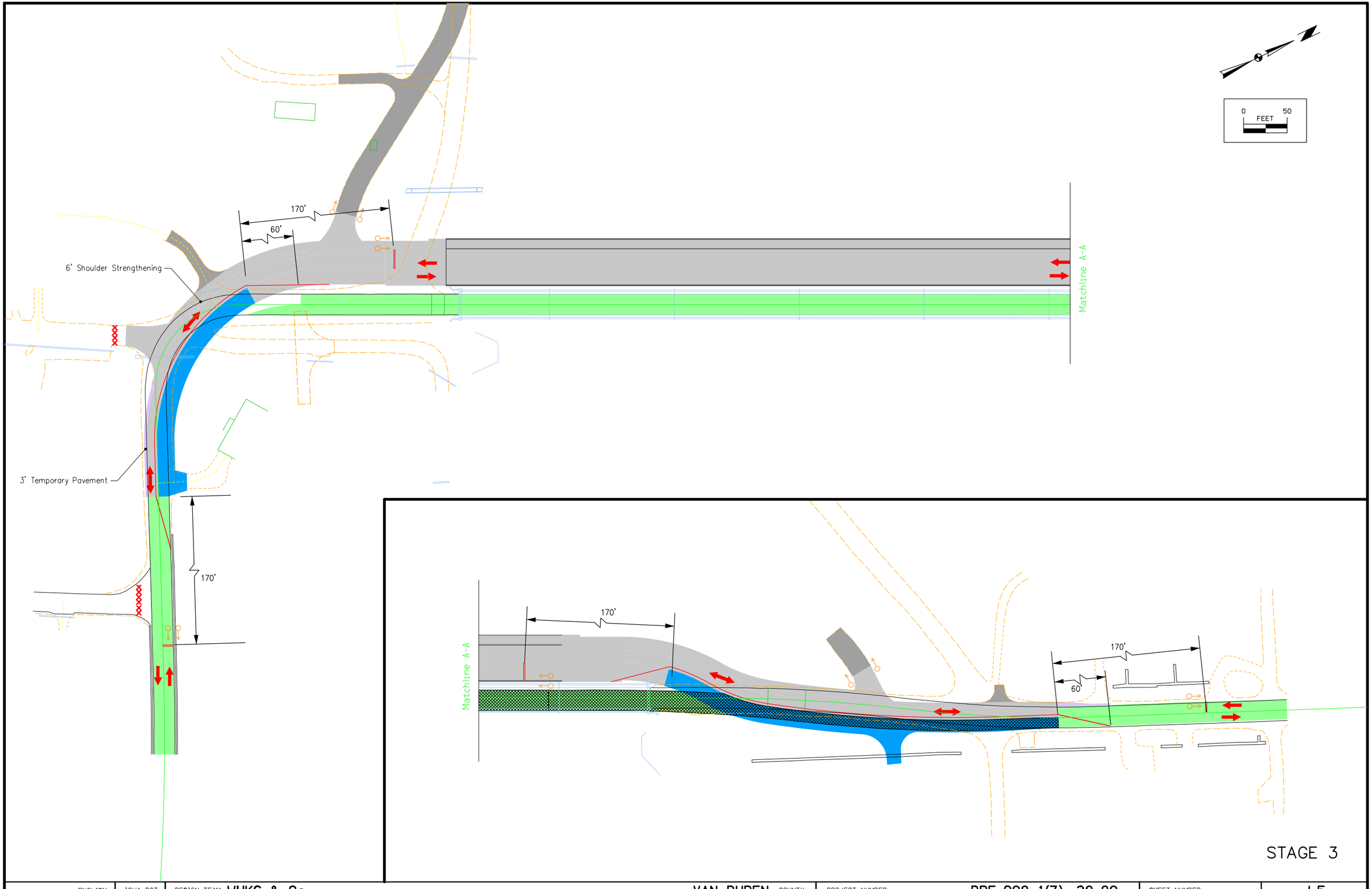

STAGE 3

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10/26/2011 J.5

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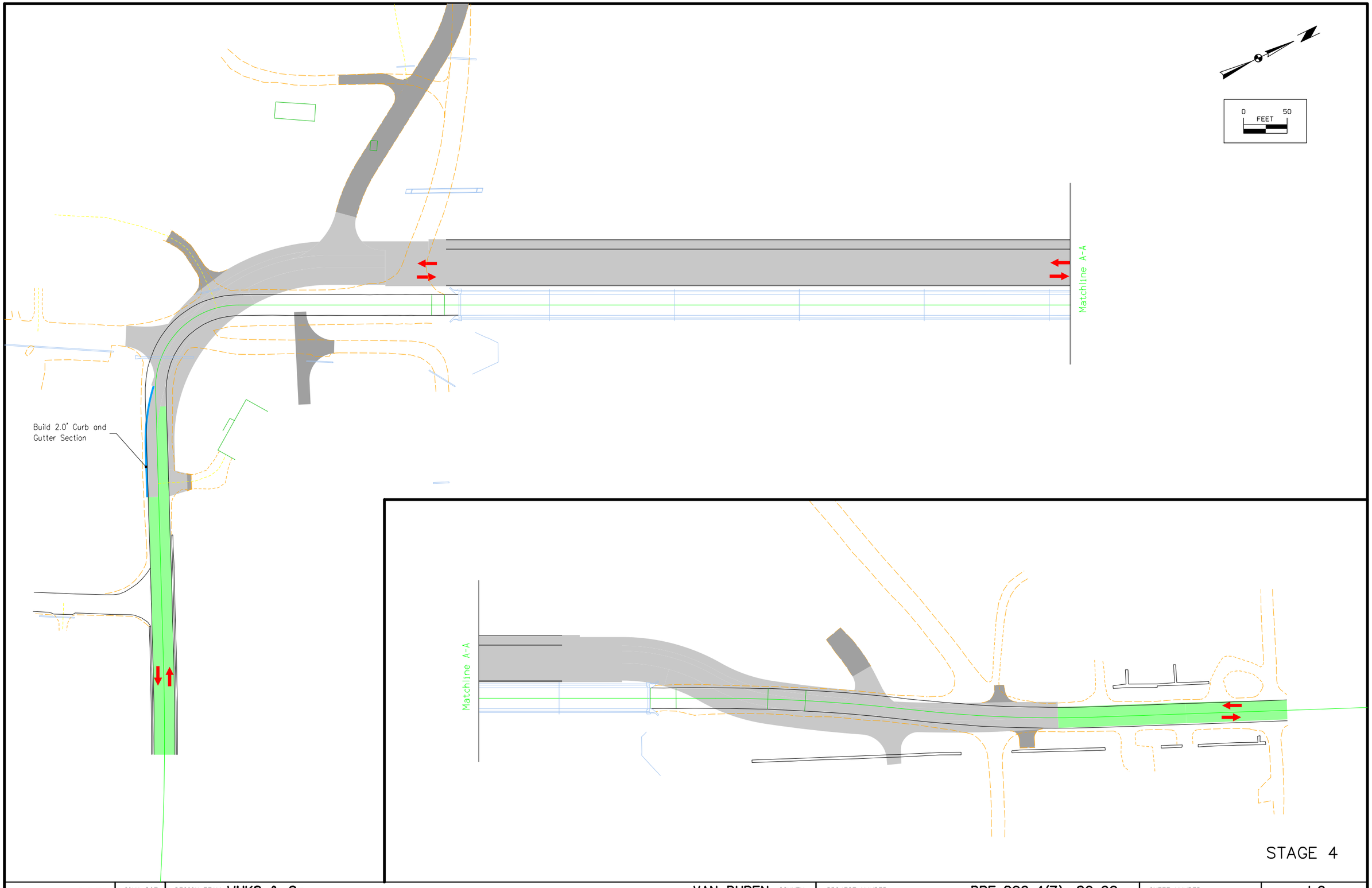

STAGE 4

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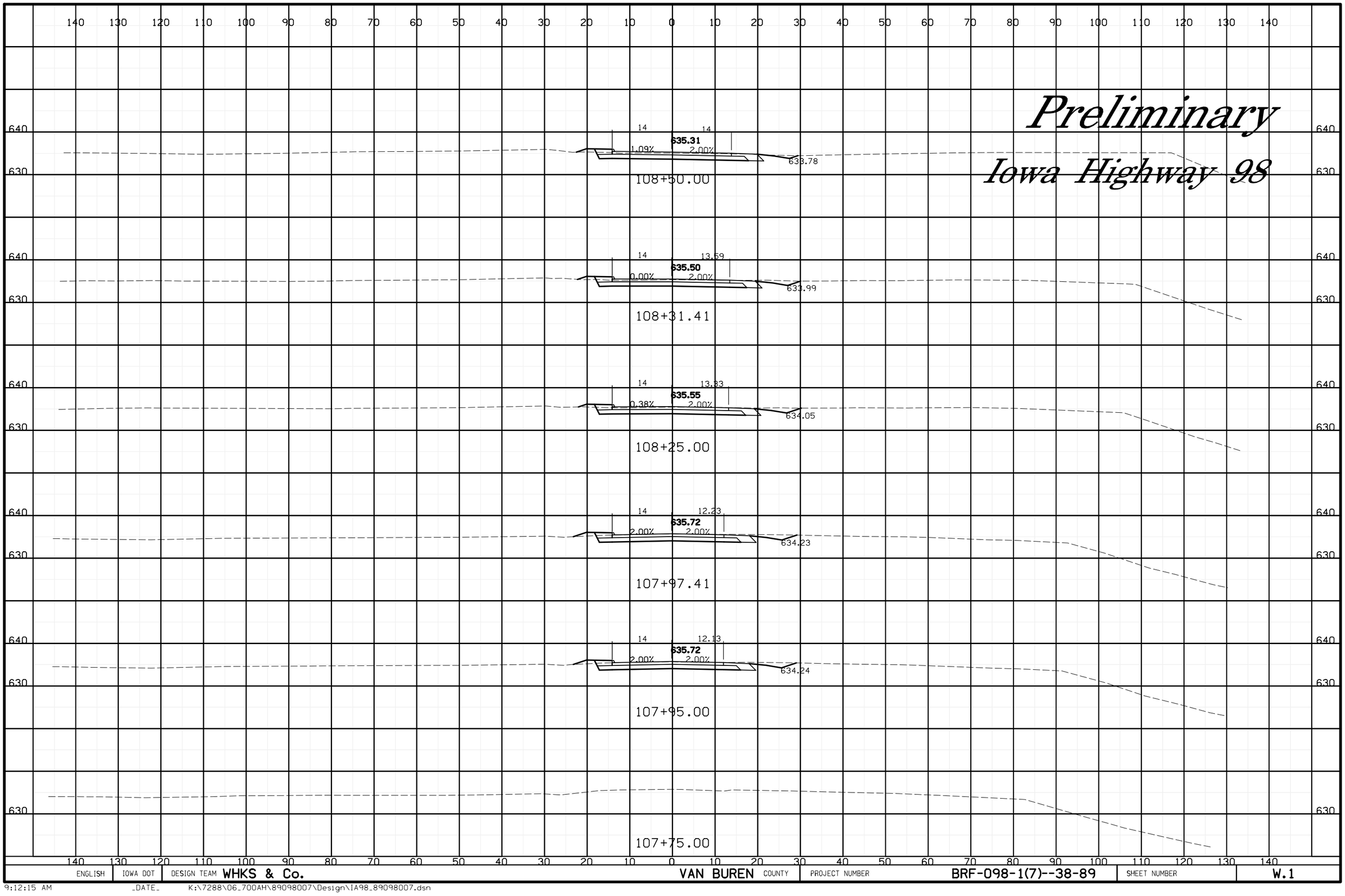
ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER	BRF-098-1(7)--38-89	SHEET NUMBER	J.6

Preliminary

Iowa Highway 98



ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER	BRF-098-1(7)--38-89	SHEET NUMBER	W.1

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Preliminary

Iowa Highway 98

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

640 630

10.35 14 14 632.56 2.00% 2.00% 2.00% 626.71

109+75.00

10.25 14 14 633.30 2.00% 2.00% 2.00% 629.78

109+50.00

14 14 633.95 2.00% 2.00% 632.07

109+25.00

14 14 634.51 2.00% 2.00% 632.98

109+00.00

14 14 634.95 2.00% 2.00% 633.43

108+75.00

14 14 635.10 2.00% 2.00% 633.58

108+65.41

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER W.2

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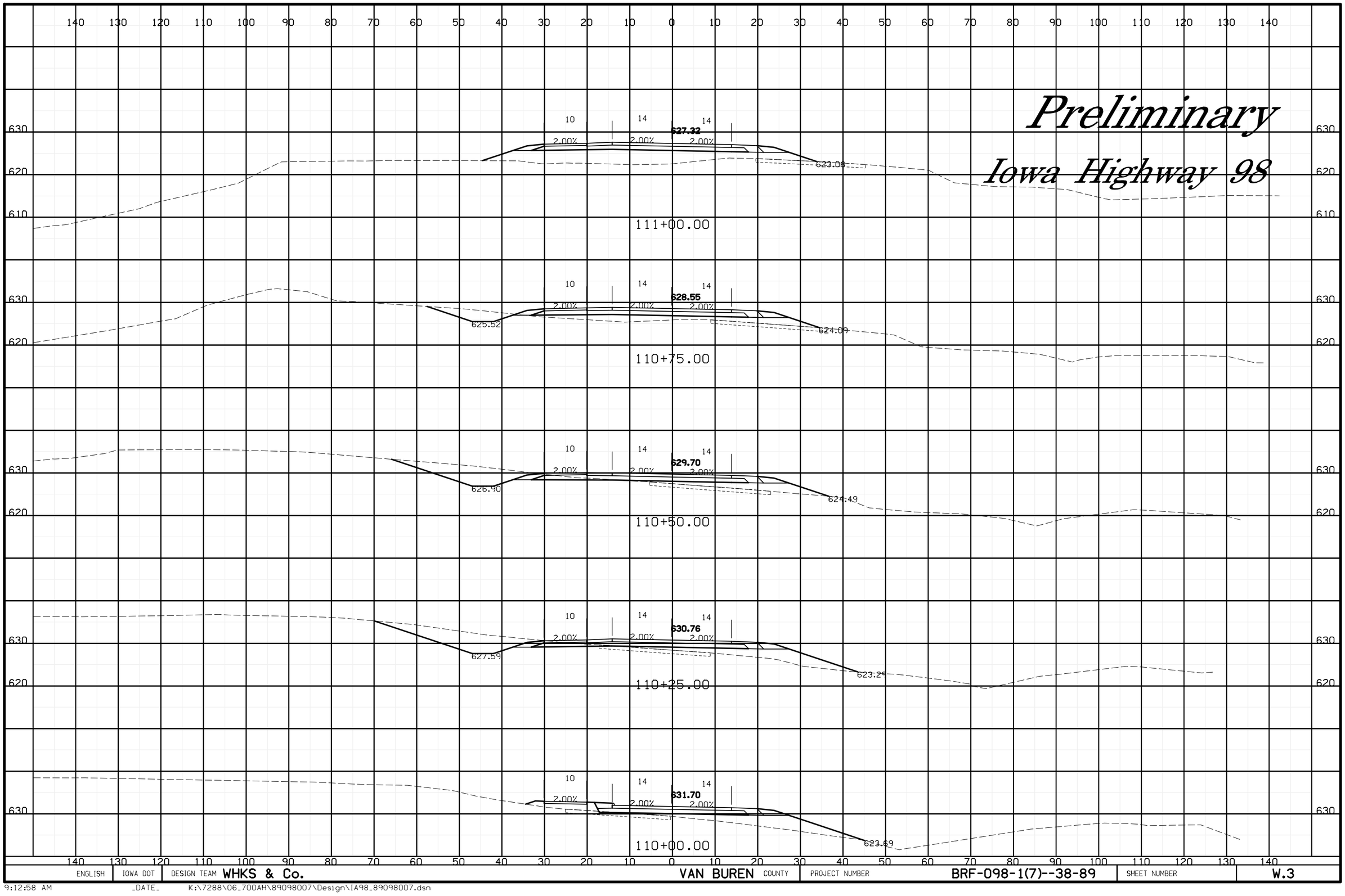
Preliminary

Iowa Highway 98



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W.03

10/26/2011

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Preliminary

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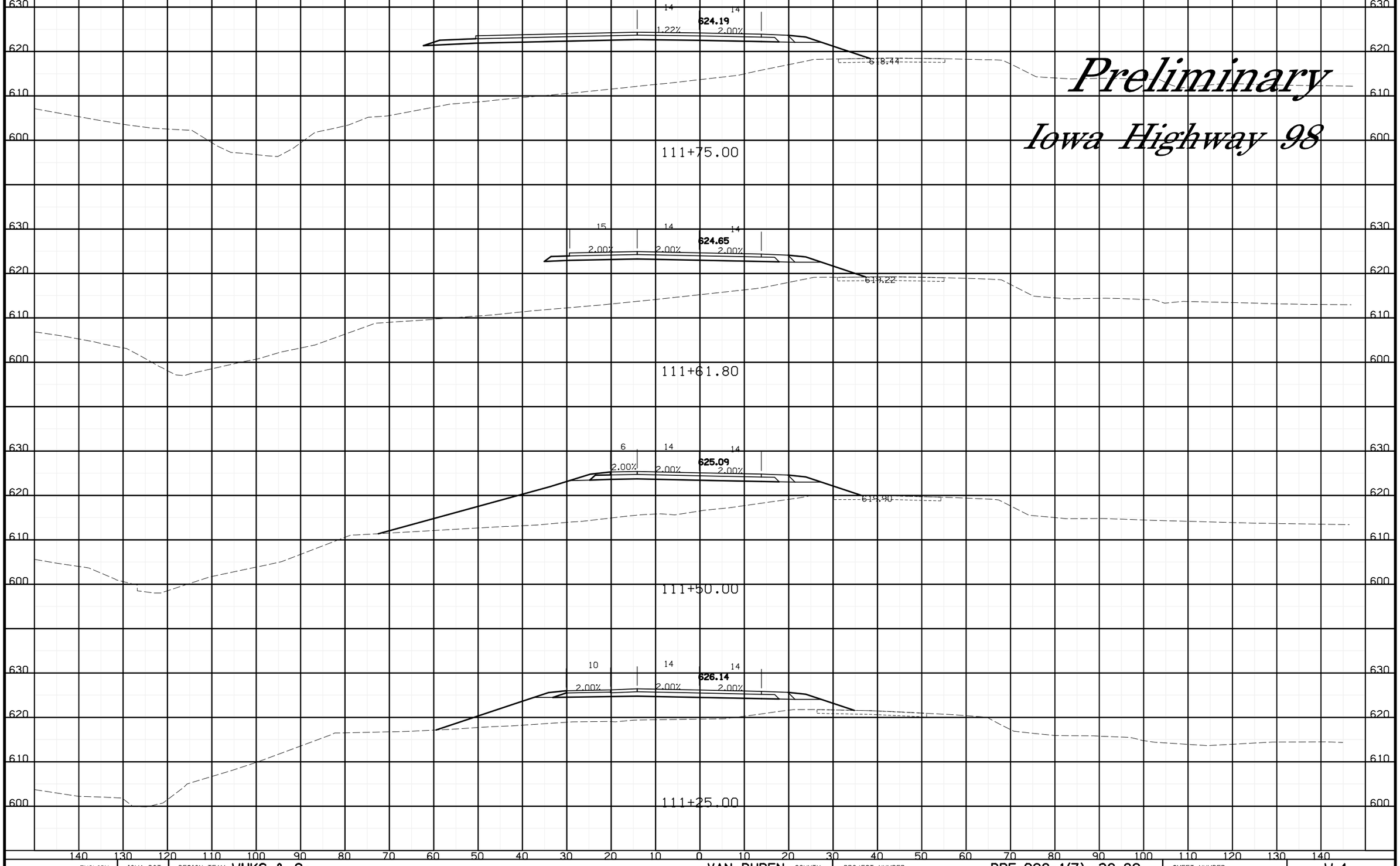

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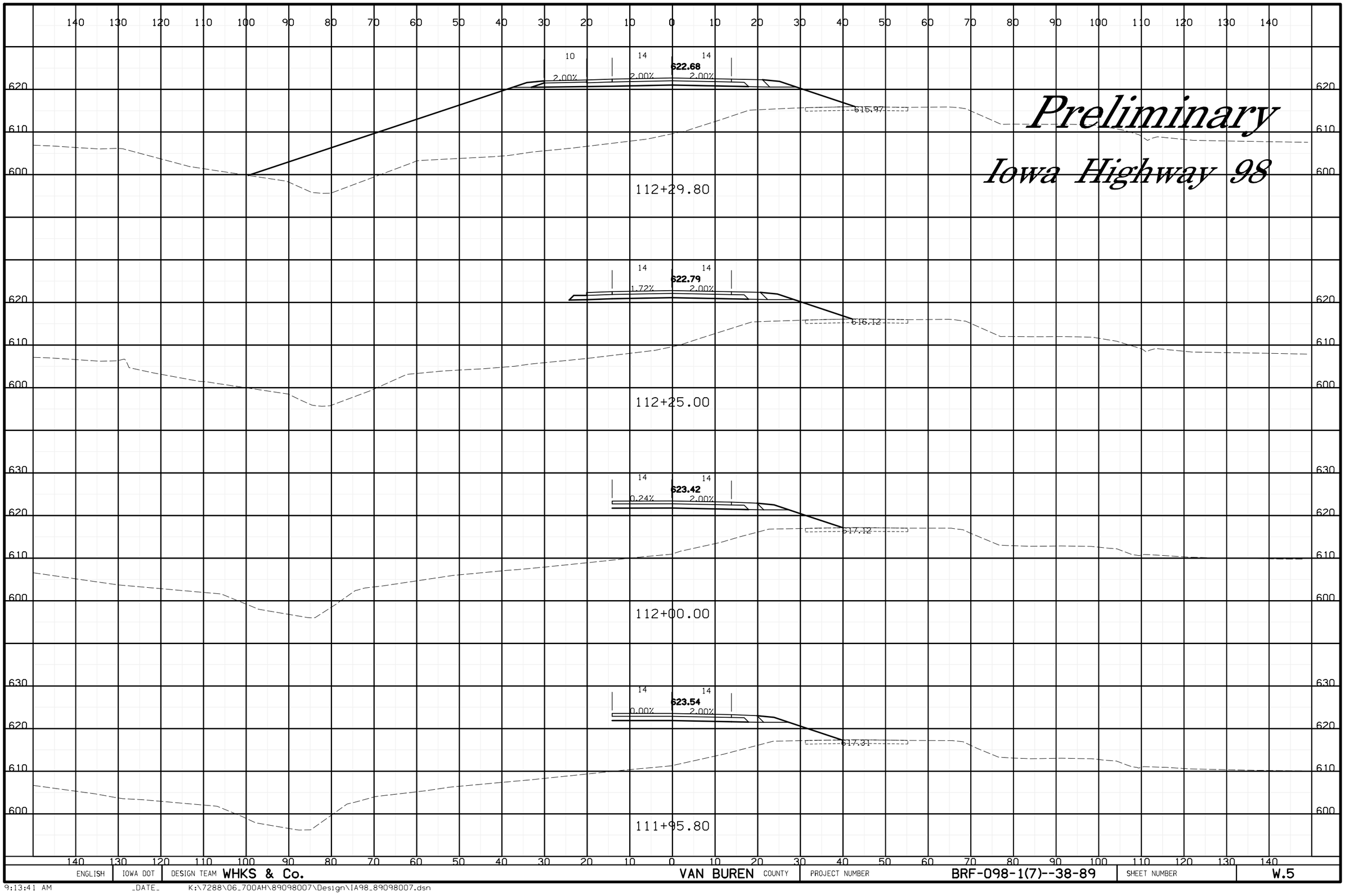

Preliminary

Iowa Highway 98

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W.05

10/26/2011

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Preliminary

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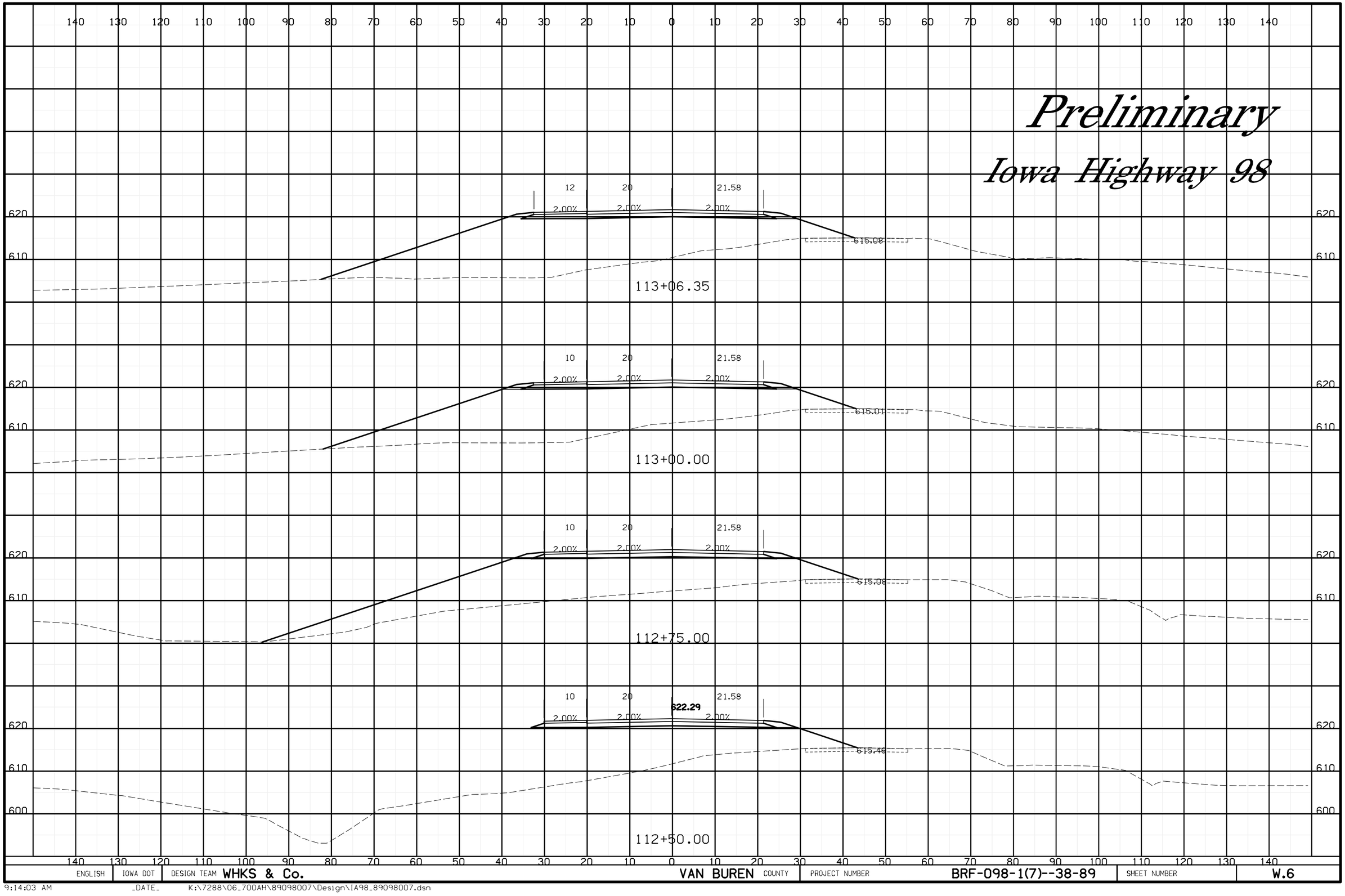

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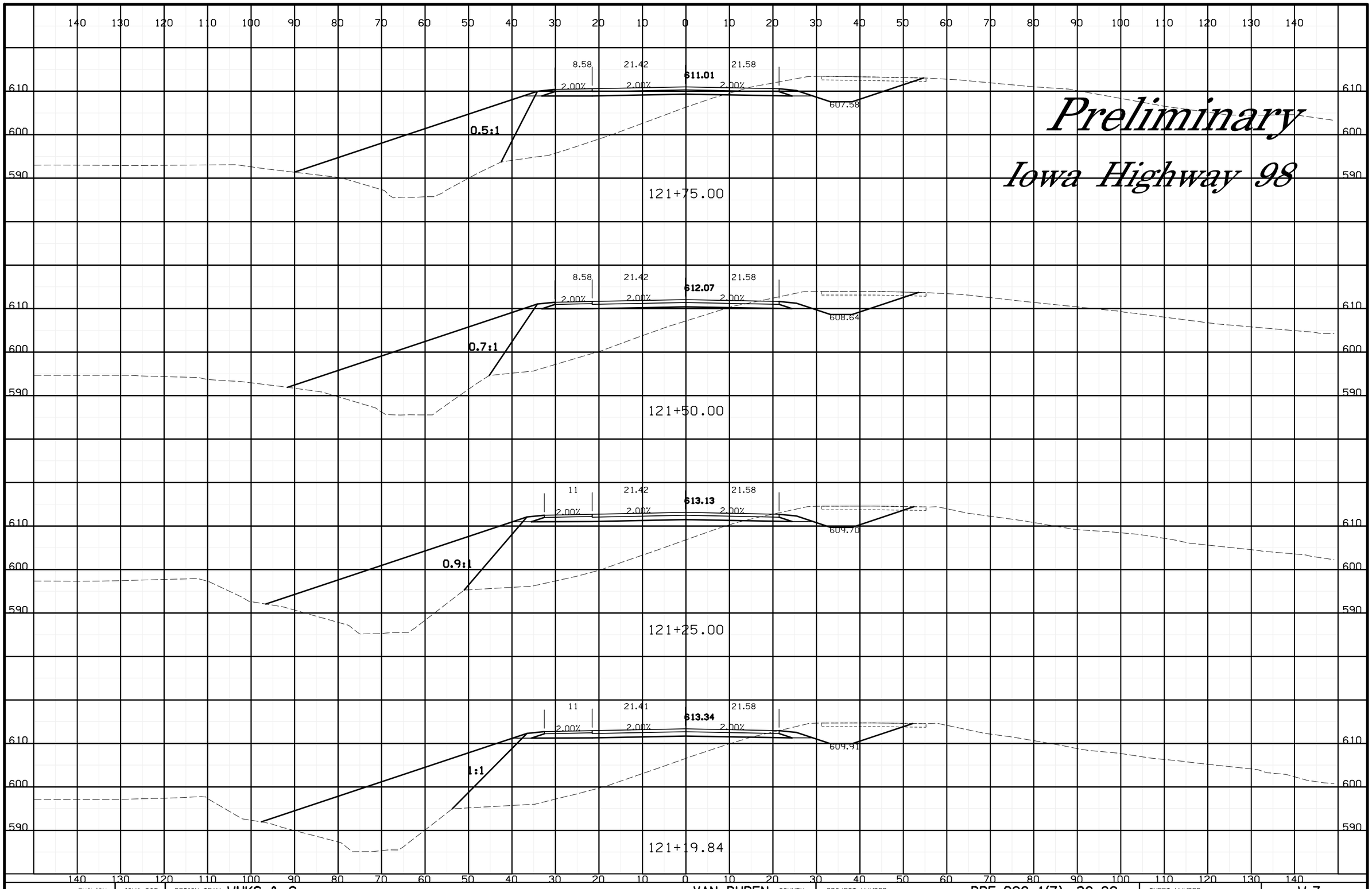

Preliminary

Iowa Highway 98

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER W.7

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Preliminary

Iowa Highway 98

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610 600 590

10 14 14 606.77 2.00% 2.00% 2.00% 603.25 1.5:1

122+75.00

10 14 14 607.83 2.00% 2.00% 2.00% 604.31 1.6:1

122+50.00

10 14 14 608.89 2.00% 2.00% 2.00% 605.37 1.3:1

122+25.00

10 14 14 609.95 2.00% 2.00% 2.00% 606.51 0.6:1

122+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER W.8

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W.08

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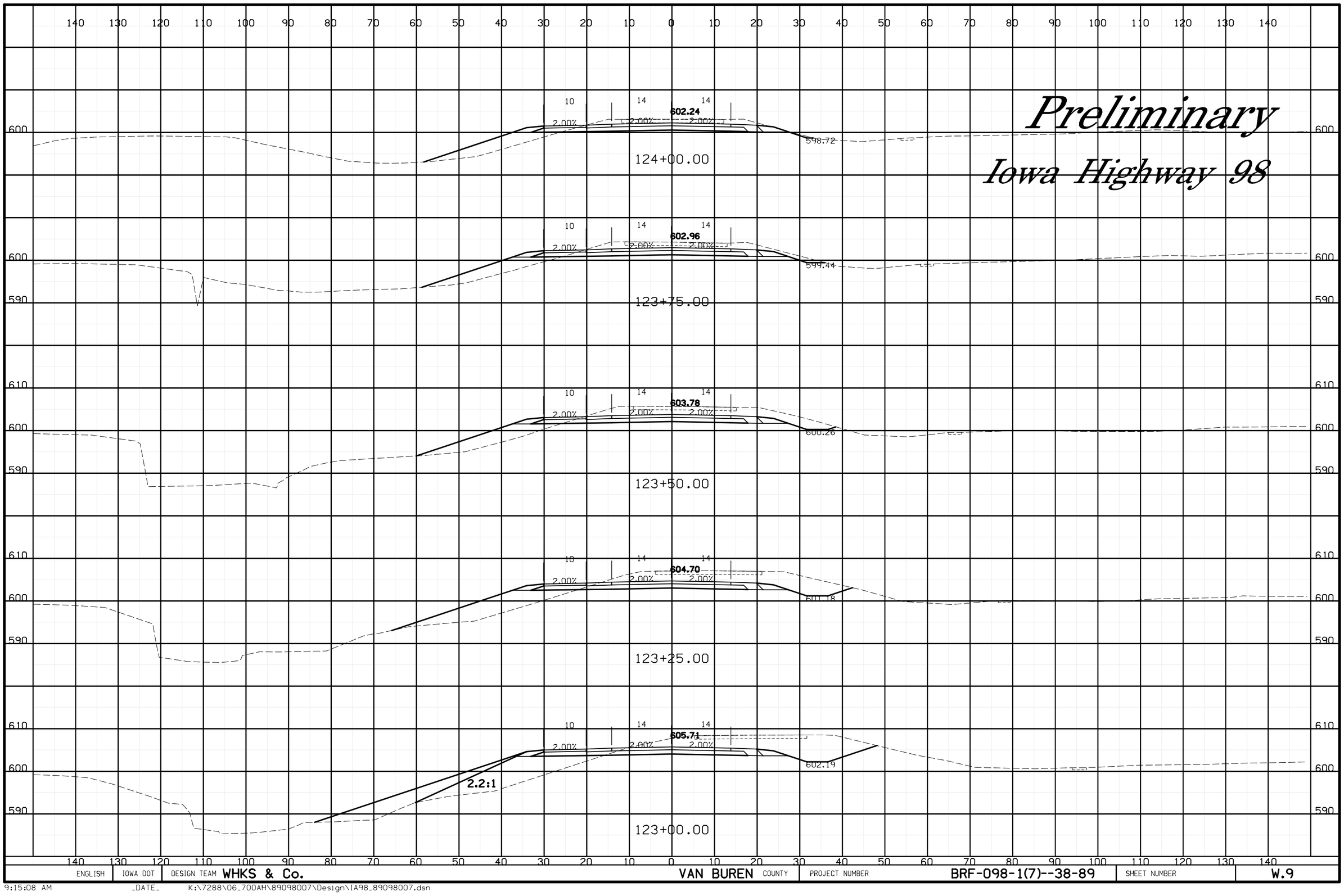
Preliminary

Iowa Highway 98



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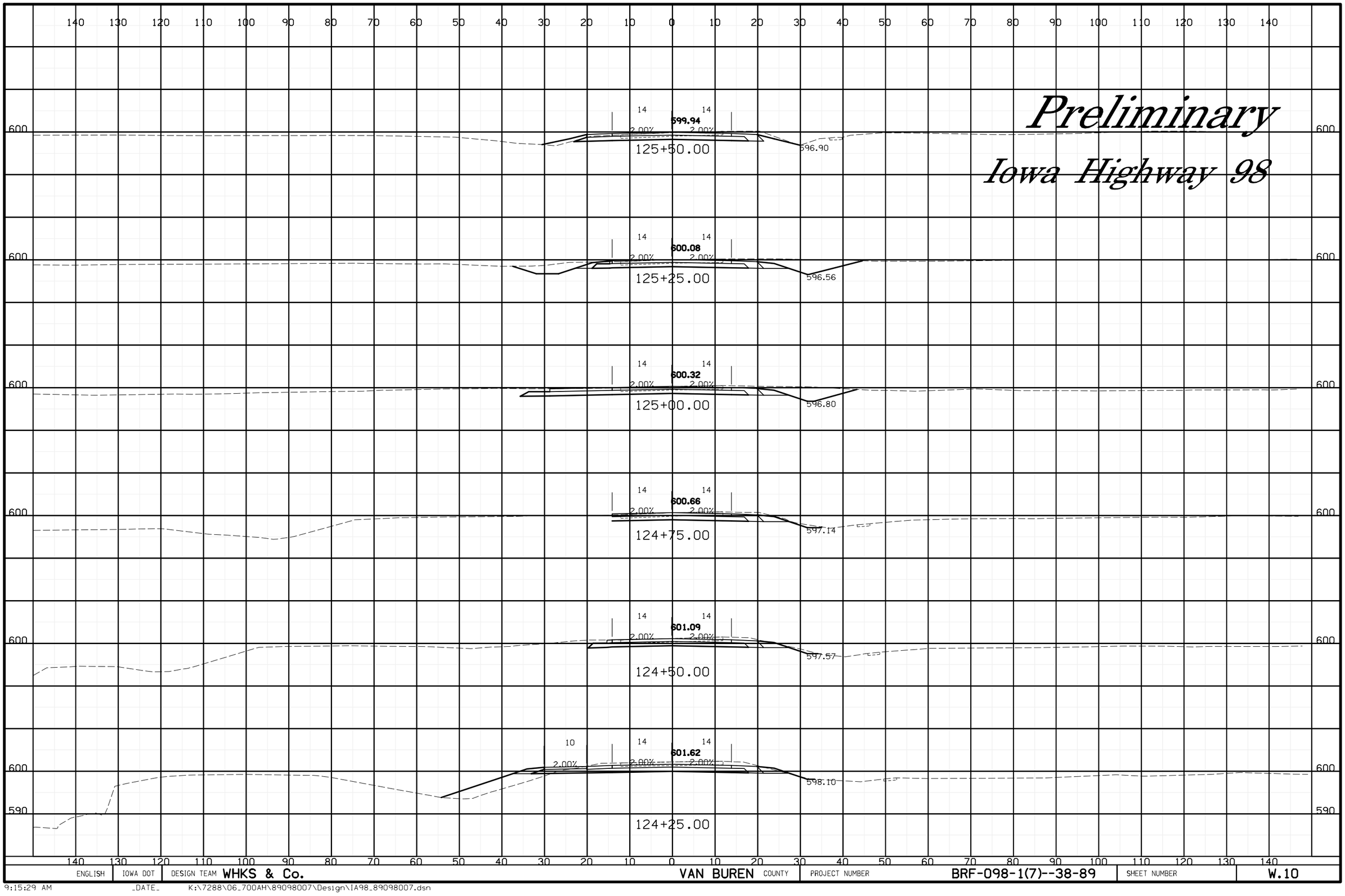
Preliminary

Iowa Highway 98



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W.10

10/26/2011

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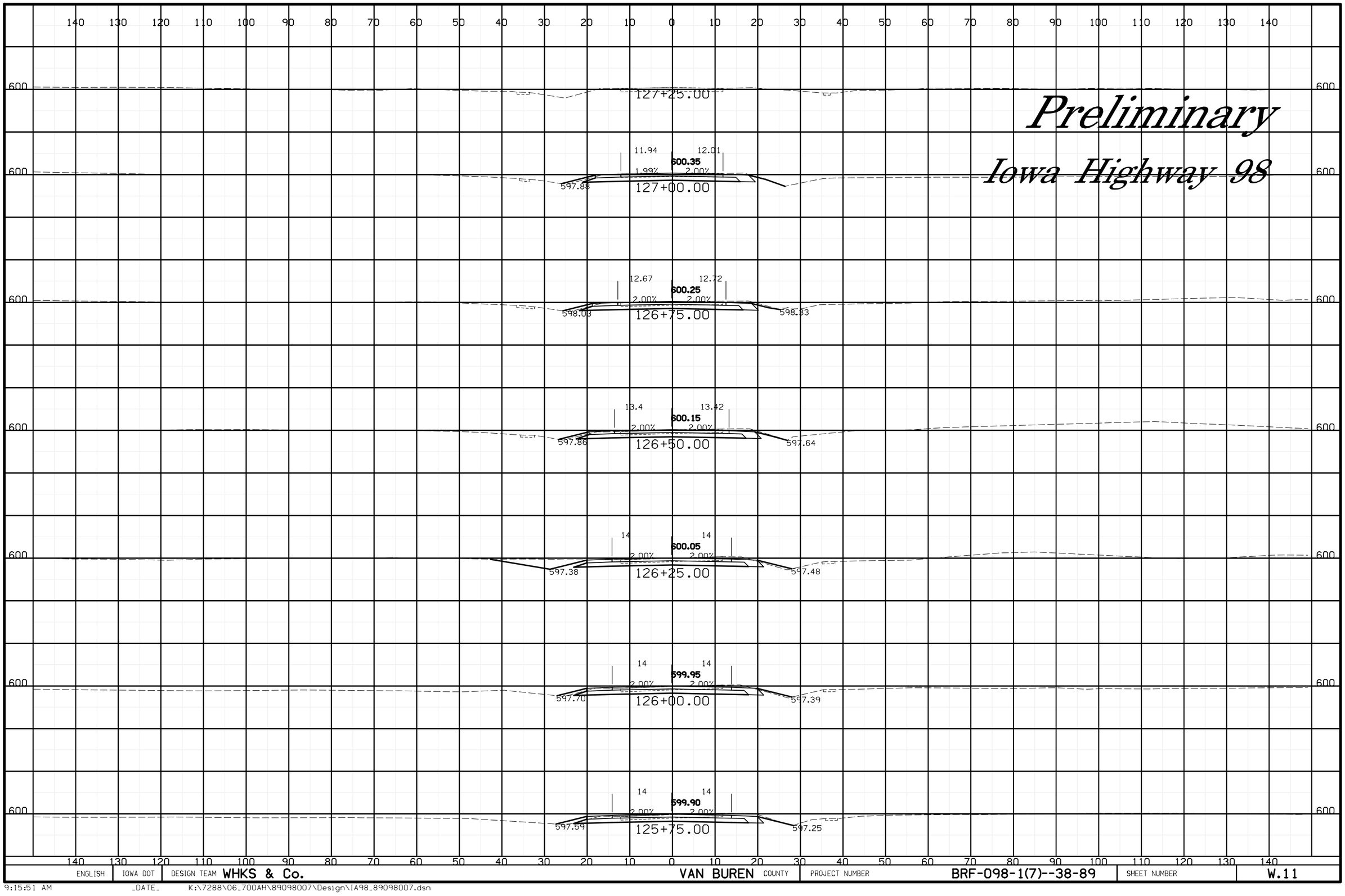
Preliminary

Iowa Highway 98



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10/26/2011 W.11

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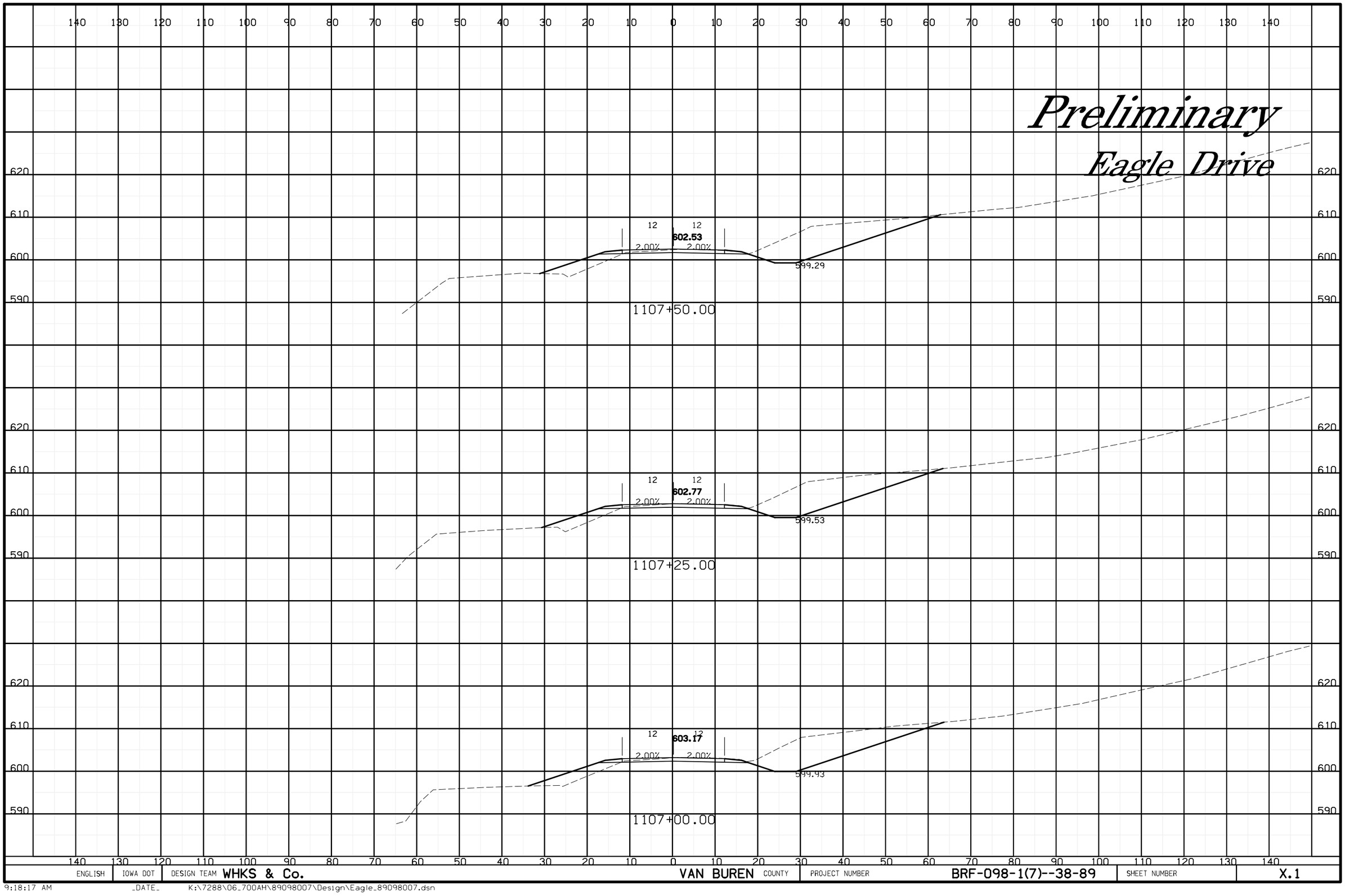
Preliminary

Eagle Drive



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10/26/2011 X.01

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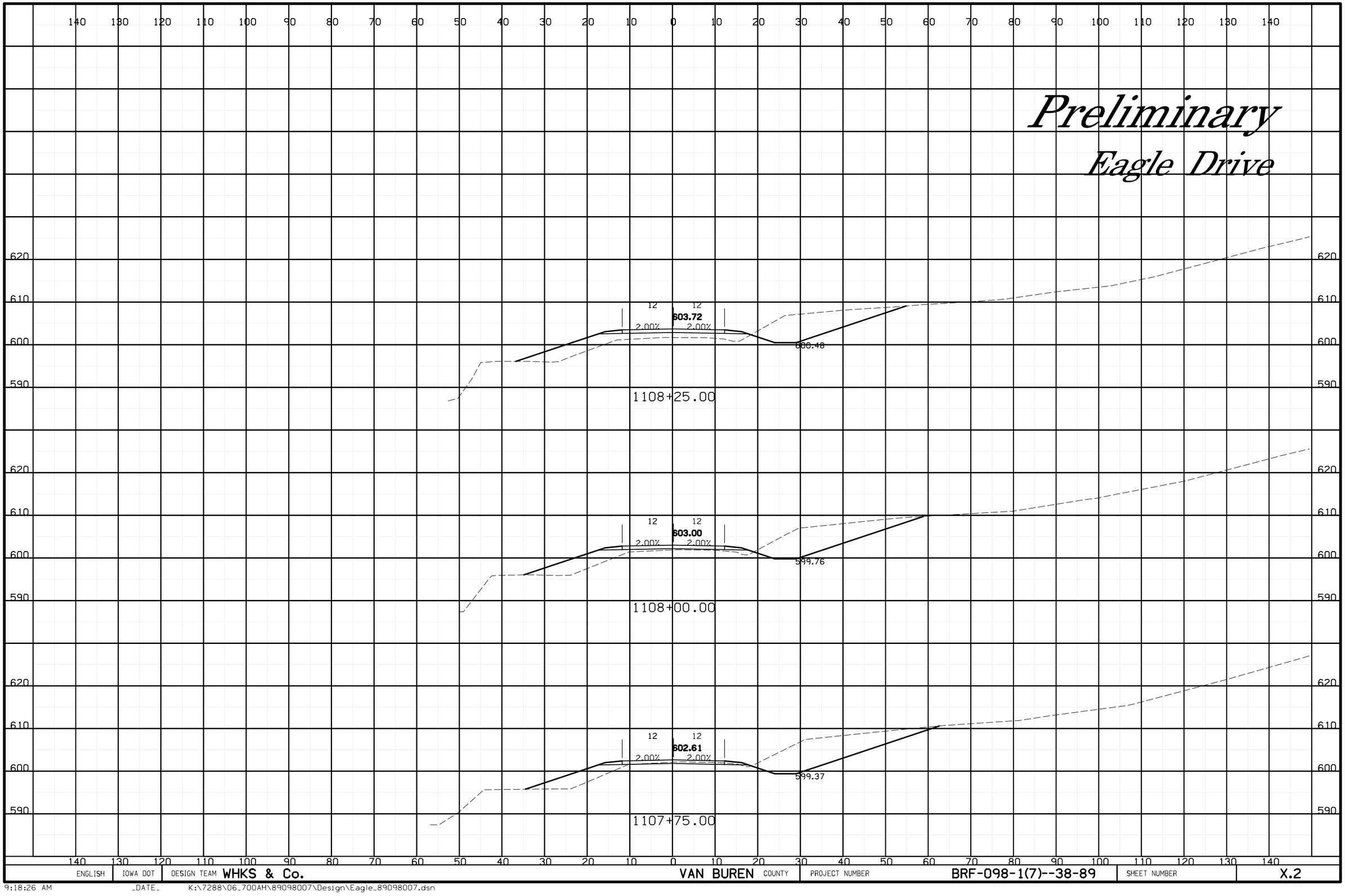
Preliminary

Eagle Drive



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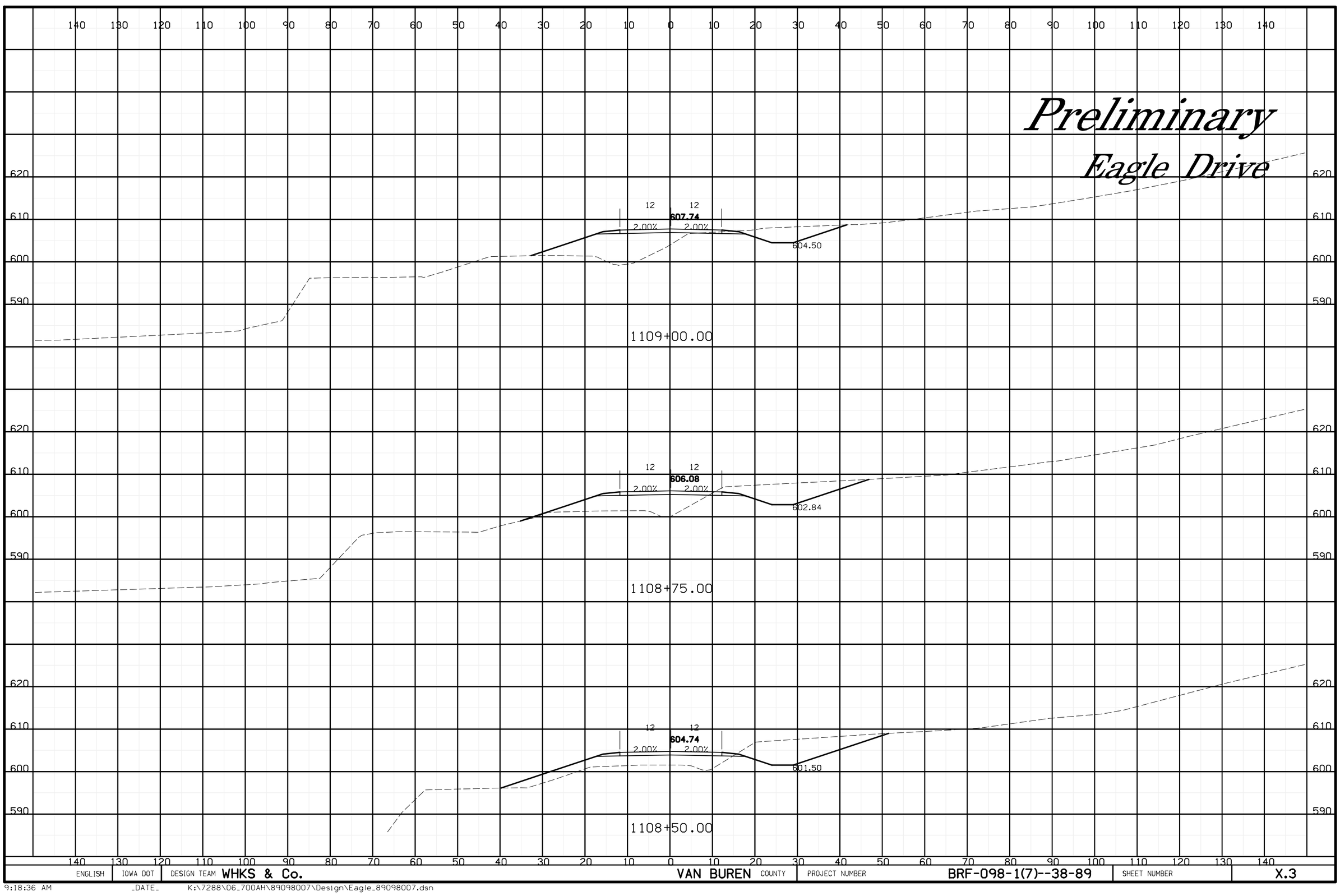
Preliminary

Eagle Drive



ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER	BRF-098-1(7)--38-89	SHEET NUMBER	X.3

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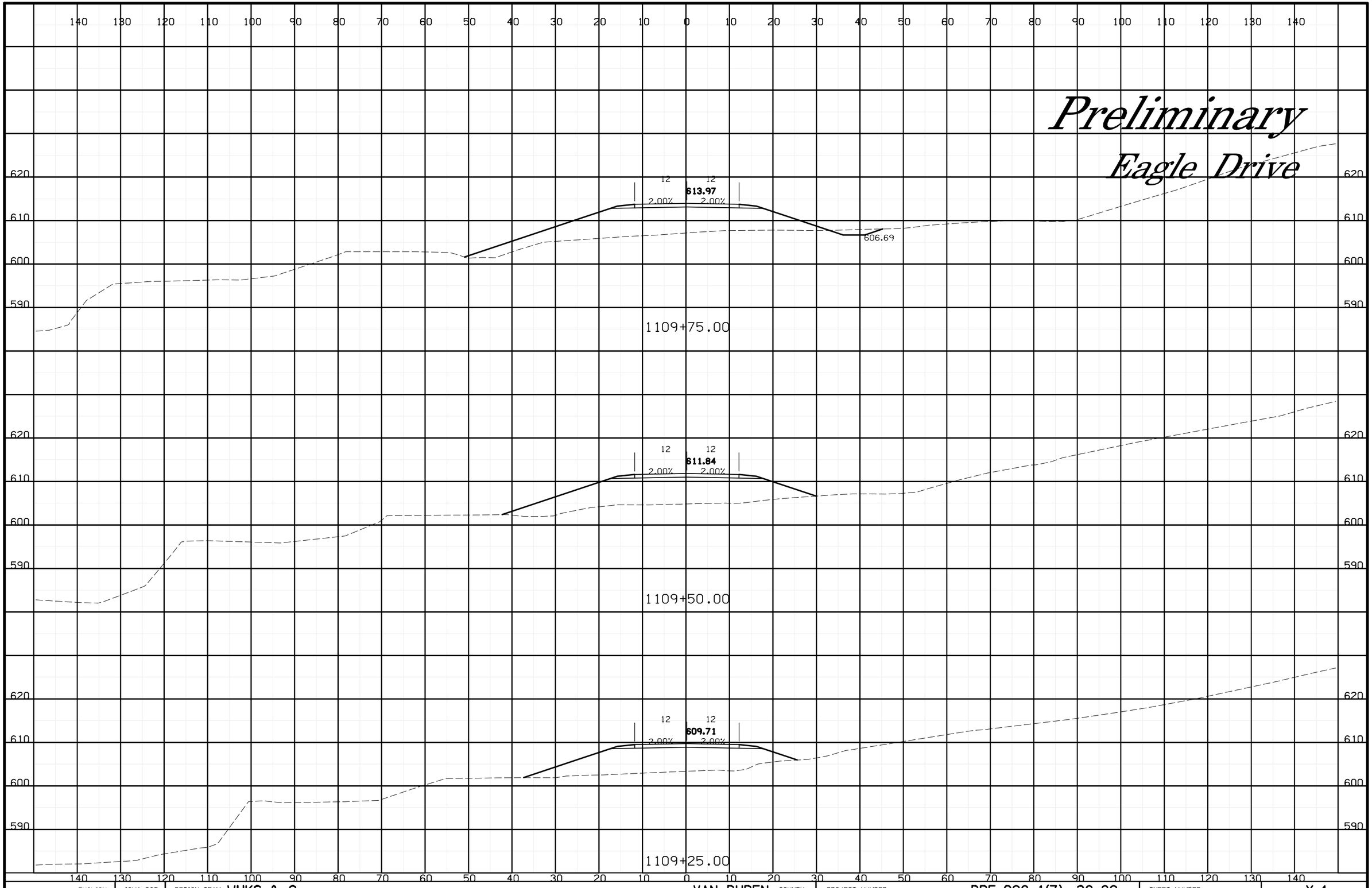
Preliminary

Eagle Drive



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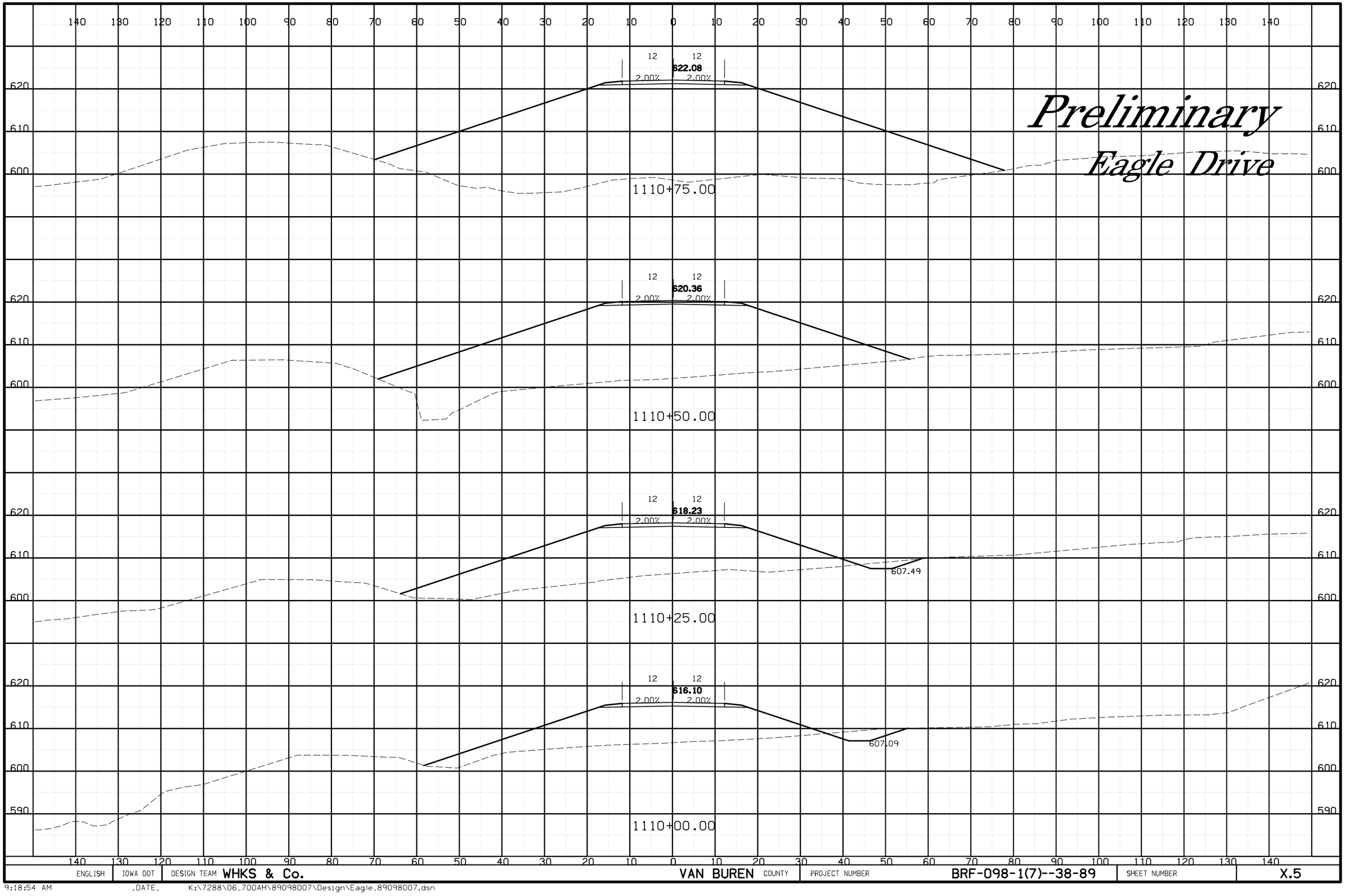

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10/26/2011 X.05

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Preliminary

Eagle Drive

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

630
620
610
600

1111+75.00

623.99

1111+50.00

1111+25.00

12 12
622.99
2.00% 2.00%

1111+00.00

K:\7288\06_700AH\89098007\Design\Eagle_89098007.dsn

X.06

10/26/2011

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER X.6

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Preliminary

Hawk Drive

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

600

1125+00.00

600

599.907

1124+75.00

600

12 12

599.687

2.00% 2.00%

1124+50.00

600

12 12

599.467

2.00% 2.00%

1124+25.00

600

11 10

599.247

1.99% 2.00%

1124+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER X.7

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X.7

10/26/2011

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140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

640
630

12
2.00%
635.35
1+25.00

12
2.00%
635.56
1+00.00

12
2.00%
635.55
0+75.00

12
2.00%
635.51
0+50.00

630
620
0+25.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER X.8

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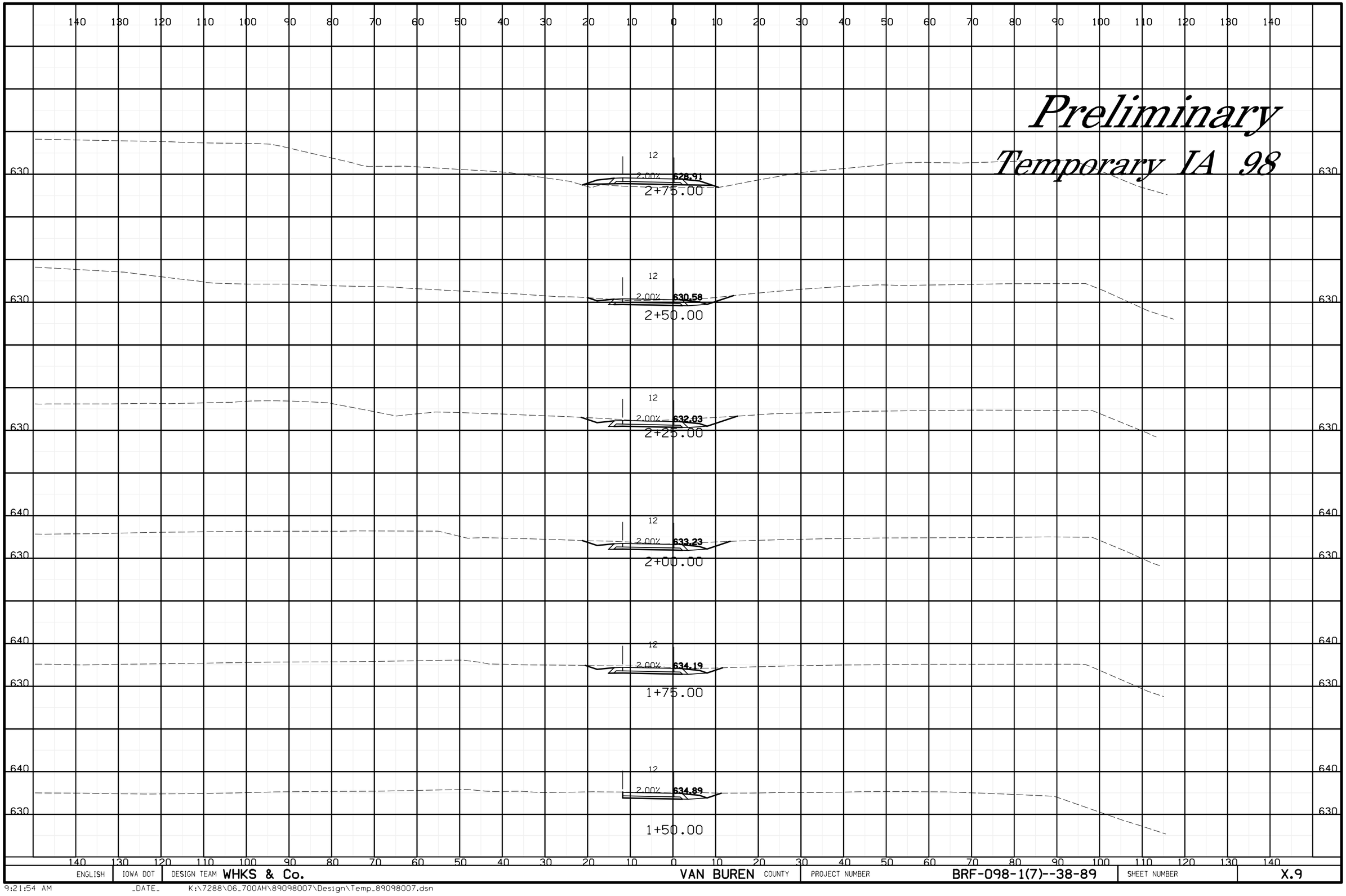
Preliminary

Temporary IA 98



ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER X.9

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Preliminary

Temporary IA 98

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620 610

12
2.00%
618.88
4+25.00

620 610

12
2.00%
620.43
4+00.00

620

12
2.00%
622.11
3+75.00

630 620

12
2.00%
623.81
3+50.00

630 620

12
2.00%
625.51
3+25.00

630

12
2.00%
627.21
3+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER X.10

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10/26/2011 X.10

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Preliminary

Temporary IA 98

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610
600
620
610
600

5+00.00

12
2.00%
615.37

4+97.56

12
2.00%
616.31

4+75.00

12
2.00%
617.51

4+50.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & Co.	VAN BUREN COUNTY	PROJECT NUMBER BRF-098-1(7)--38-89	SHEET NUMBER X.11

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