BRIDGE REPLACEMENT
BRFN-025-3(30)--39-01
ADAIR COUNTY

LETTING DATE 12/19/2017

INDEX OF SHEETS

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

ADAIR COUNTY

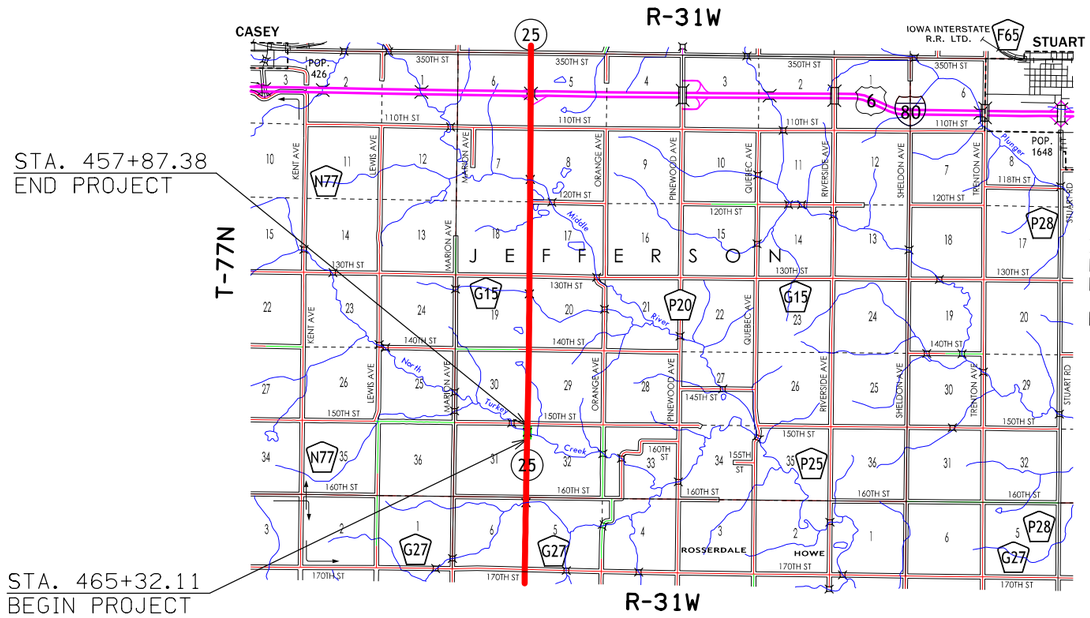
BRIDGE REPLACEMENT

IA 25 over Turkey Creek
4.6 miles south of I-80

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



STA. 457+87.38
END PROJECT

STA. 465+32.11
BEGIN PROJECT

LOCATION MAP SCALE
0 1 2 3
Miles

DESIGN DATA RURAL

2019	AADT	2,300	V.P.D.
2039	AADT	2,700	V.P.D.
2039	DHV	486	V.P.H.
TRUCKS		18	%
Total Design ESALs		--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Shane E. Swope	Primary Signature Block
X	X	X

REVISIONS

TOTAL
PROJECT IDENTIFICATION NUMBER
14-01-025-020
PROJECT NUMBER
BRFN-025-3(30)--39-01
R.O.W. PROJECT NUMBER

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN – Date: 04/29/2016

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER A.1

4:29:04 PM 4/29/2016 ksnook P:\06389007\0102502014\Design\01025030A01.sht

IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 4

DATE: December 19, 2014

ATTENTION: Troy A. Jerman

PROJECT: Adair County
BRFN-025-3(30)--39-01
PIN: 14-01-025-020

FROM: Kevin K. Patel

OFFICE: Design

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

This project involves the replacement of the IA 25 bridge (Maint. No 0169.5S025) over North Turkey Creek, 4.6 miles south of I-80.

The two alternatives considered are:

1. Replace the existing bridge with a 150 ft. x 44 ft. continuous concrete slab bridge, utilizing staged construction. In order to stage construct this bridge, a grade raise of 2.5 ft. is required. This grade raise will result in approximately 880 ft. of mainline reconstruction. The estimated cost of this alternative is $1,941,000.
2. Replace the existing bridge with a 150 ft. x 40 ft. continuous concrete slab bridge, utilizing an off-site detour. The estimated cost of this alternative is $1,089,200.

Alternative 2 is the preferred alternative due to lower construction costs. Additional right of way may be required. Traffic will be maintained by using an off-site detour.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Wednesday, December 17, 2014. Comments received during the review period have been considered and resolved.

This project is recommended for construction in FY 2019. The Office of Bridges and Structures will coordinate plan preparation with assistance from the Office of Design.

KKP: als
Attach.
cc:

J. F. Adam
K. D. Nicholson
M. D. Masteller
N. M. Miller
G. A. Novey
A. Abu-Hawash
M. A. Swenson
R. A. Younie
D. R. Tebben
D. D. Matulac
M. E. Khoda
J.W. Laaser-Webb
E. C. Wright
S. M. Suhr
B. Karnik
L. Wielenga
M. E. Ross
J. R. Selmer
D. L. Maifield
B. R. Smith
C. C. Poole
D. R. Claman
B. C. Worrel
P. C. Keen
S. P. Anderson
B. D. Hofer
D. L. Newell
S. J. Gent
W.A. Sorenson
D. R. Stevens
J. L. Bane
E. Keiner/D. Moraine
L. C. Funnell
M. J. Kennerly
R. L. Stanley
A. A. Welch
N. L. McDonald
P. Lu
J. S. McClain
M. J. Sankey
Z. T. Bitting
J. N. Garton
B. E. Azeltine
T. D. Crouch
D. E. Sprengeler
G. E. Feazell
O. Lechnowsky
M. Solberg
FHWA

FINAL PROJECT CONCEPT STATEMENT

IA 25 Bridge over North Turkey Creek, 4.6 miles south of I-80

Adair County
BRFN-025-3(30)--39-01
PIN: 14-01-025-020
Maint. No. 0166.1S025
FHWA No. 12970

Highway Division
Office of Design

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

December 19, 2014

I. STUDY AREA

A. Project Description

This project involves the replacement of the IA 25 bridge (Maint. No 0169.5S025) over North Turkey Creek, 4.6 miles south of I-80.

The two alternatives considered are:

1. Replace the existing bridge with a 150 ft. x 44 ft. continuous concrete slab bridge, utilizing staged construction. In order to stage construct this bridge, a grade raise of 2.5 ft. is required. This grade raise will result in approximately 880 ft. of mainline reconstruction. The estimated cost of this alternative is $1,941,000.
2. Replace the existing bridge with a 150 ft. x 40 ft. continuous concrete slab bridge, utilizing an off-site detour. The estimated cost of this alternative is $1,089,200.

Alternative 2 is the preferred alternative due to lower construction costs. Additional right of way may be required. Traffic will be maintained by using an off-site detour.

B. Need for Project

This is a 125' x 26' steel bridge which was constructed in 1952 and overlaid in 1977. The bridge is classified as functional obsolete due to the inadequate width. The deck, deck overlay, superstructure and substructure are all at the end of their service life and deteriorations are found in all the structural components. Joint replacement is needed. In addition, the structure was designed for H20 load and needs to be strengthened to HS20. The bridge widening in conjunction with bridge strengthening and bridge repair would not be cost effective. Additionally, the Middle River bridge (FHWA

#12980), approximately 3.4 miles north of this bridge is also scheduled for replacement in FY 2019. This is a good opportunity to replace this bridge at the same time.

C. Present Facility

The existing structure is a 125 ft. x 26 ft. I-beam bridge constructed in 1952.

IA 25 in the project area is 22 ft. wide PCC pavement with 6 ft. wide granular shoulders and 3:1 foreslopes, constructed in 1956. HMA resurfacing was accomplished in 1968, 1978 and 1997.

D. Traffic Estimates

The 2019 and 2039 average daily traffic estimates are 2,300 ADT with 17% trucks and 2,700 ADT with 18% trucks, respectively.

E. Sufficiency Ratings

IA 25 is classified as an area development route and is a maintenance service level C road. The federal bridge sufficiency rating is 46.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2009 through December 31, 2013, there were no crashes at the project site.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with a bridge utilizing staged construction

Replace the existing 125 ft. x 26 ft. I-beam bridge with a 150 ft. x 44 ft. continuous concrete slab bridge. The staging option requires a grade raise of 2.5 ft. and the width of the bridge to be increased to 44 ft. This grade raise will result in approximately 880 ft. of mainline reconstruction.

The typical cross section adjacent to the bridge will consist of a 24 ft. roadway (28 ft. wide pavement) with 10 ft. effective shoulders (2 ft. outside pavement and 8 ft. granular) and 6:1/3:1 foreslopes. The pavement will be placed on 6 in. of granular backfill and 12 in. of special backfill.

Construct new bridge approaches. Replace the existing guardrail with new guardrail and pave the shoulders 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Place class E revetment for slope protection under the bridge. Construct bridge end drains on each corner of the bridge.

In order to stage construct this bridge, the bridge will need to be constructed 4 ft. wider than the bridge shown in alternative 2, which utilizes an off-site detour.

One lane of traffic in each direction will be maintained via staged construction utilizing temporary traffic signals. The proposed bridge could be constructed in two stages. The first stage requires the removal of 8.4 ft. of the existing bridge with a cut 4.6 ft. east of the centerline. A 15.3 ft. traffic lane could be utilized on the remainder of the existing bridge and a 14.4 ft. section of the proposed bridge would be constructed. Once the proposed section is built, traffic would be transferred to the new section and the remainder of the proposed bridge would be constructed. The width of the traffic lane in the second stage is 12.1 ft.

Steel sheet pile is proposed along the south abutment if the staging option is used. The south abutment is approximately 23 feet offset from the existing abutment. The vertical cut required for the new abutment will required temporary support.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

Additional right of way may be required for this project.

Bridge Items	Estimated Costs
New Bridge	$ 577,700
Bridge staged construction	57,800
Bridge Removal	33,500
Revetment	54,000
Erosion stone	5,100
Steel sheet pile	18,000
Mobilization - 10%	74,600
M & C - 15%	123,100
Bridge Costs	**$ 943,800**
Roadway Items	
Bridge approaches	$ 85,200
Removal of Pavement	10,600
Pavement	77,100
Special Backfill	48,700
Granular subbase	18,600
Embankment in place	134,300
Excavation Class 13 Waste	500
Guardrail, including removal	21,500
Paved shoulder for guardrail	22,400
Class 10 blister for guardrail	12,000
Bridge end drains	13,200
Longitudinal subdrains, including outlets	10,200
Temporary concrete barrier rail	22,500
Temporary traffic signals	8,700
Temporary floodlighting	7,400
Erosion Control	5,000
Wetland Mitigation	50,000
Traffic Control - 5%	27,400
Mobilization - 5%	27,400
Staging – 30%	164,400
M & C - 30%	230,100
Roadway Costs	**$ 997,200**
Project Total	**$1,941,000**

Alternative #2 - Replace with a bridge utilizing an off-site detour

Replace the existing 125 ft. x 26 ft. I-beam bridge with a 150 ft. x 40 ft. continuous concrete slab bridge.

The typical cross section adjacent to the bridge will consist of a 24 ft. roadway (28 ft. wide pavement) with 8 ft. effective shoulders (2 ft. outside pavement and 6 ft. granular) and 6:1/3:1 foreslopes.

This bridge will be constructed on the existing vertical and horizontal alignment. Construct new bridge approaches. No pavement reconstruction will be required beyond the new bridge approach sections. Replace the existing guardrail with new guardrail and pave the shoulders 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Place class E revetment for slope protection under the bridge. Construct bridge end drains on each corner of the bridge.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

Additional right of way may be required for this project.

Traffic will be maintained by an off-site detour.

Bridge Items	Estimated Costs
New Bridge	$ 528,800
Bridge Removal	33,500
Revetment	54,000
Erosion stone	5,100
Mobilization - 10%	62,100
M & C - 15%	105,500
Bridge Costs	**$ 789,000**
Roadway Items	
Bridge approaches	$ 82,100
Removal of Pavement	2,400
Special Backfill	4,200
Granular subbase	3,200
Excavation Class 13 Waste	500
Bridge end drains	13,200
Guardrail, including removal	21,500
Paved shoulder for guardrail	16,000
Class 10 blister for guardrail	11,800
Erosion Control	5,000

Wetland Mitigation	50,000
Traffic Control - 5%	10,500
Mobilization - 5%	10,500
M & C - 30%	69,300
Roadway Costs	**$ 300,200**
Project Total	**$1,089,200**

B. Detour Analysis

In alternative 1, there will be no off-site detour. Traffic will be maintained via staged construction with traffic reduced down to one lane via the use of temporary traffic signals.

In alternative 2, IA 25 will be closed and an offsite detour will be utilized. It is anticipated the detour will be in place for approximately 120 days. At the junction of I-80 and IA 25, the detour would follow I-80 east seven miles. At the junction with County Road P28, the detour will turn south for approximately 12 miles to the junction with IA 92. The detour continues on IA 92, one additional mile south then turns west for seven miles to meet IA 25 in Greenfield. Out of distance travel is 14 miles. The total out-of-distance user cost is anticipated to be $806,000. The cost for county road maintenance will be $21,500 as calculated by the Gas Tax Method. Detour signing costs will be $10,000. This detour would also serve the Middle River bridge replacement 3.4 miles north of this bridge (BRFN-025-3(29)--39-01).

C. Recommendations

It is recommended that the present structure be replaced, as described in Alternative No. 2.

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. Accelerated Bridge Construction Analysis

An initial first stage accelerated bridge construction (ABC) rating score of 39 was calculated for this bridge. Typically in order to be considered a good candidate for

accelerated bridge construction an ABC score greater than 50 is required. Therefore, based upon the first stage rating score this bridge will be dismissed from further ABC consideration.

F. ADA Accommodations

There are no bike paths or sidewalks adjacent to IA 25; therefore, no ADA accommodations are planned in conjunction with this project.

G. Special Considerations

This project will be constructed at the same time as the Middle River bridge replacement project (BRFN-25-3(29)--39-01) which is located approximately 3.4 miles to the north. The construction of both of these projects will use the same method of maintaining traffic which in this case will be an off-site detour.

In alternative 1 the bridge will be raised approximately 2.5 ft. The resulting sag vertical curve provides a K value of 81 which is less than the acceptable K value of 136 for a 60 mph design speed. In alternative 2, the existing sag vertical curve will be used as construction. This curve provides a K value of 67 and a stopping sight distance of approximately 320 ft. This is below the required stopping sight distance of 570 ft. However, the five year accident history has shown there have been no accidents at the project site.

In order to meet the preferred K value of 136 for a 60 mph design speed a grade raise of 10.6 ft. would be required resulting in 1550 ft. of pavement reconstruction.

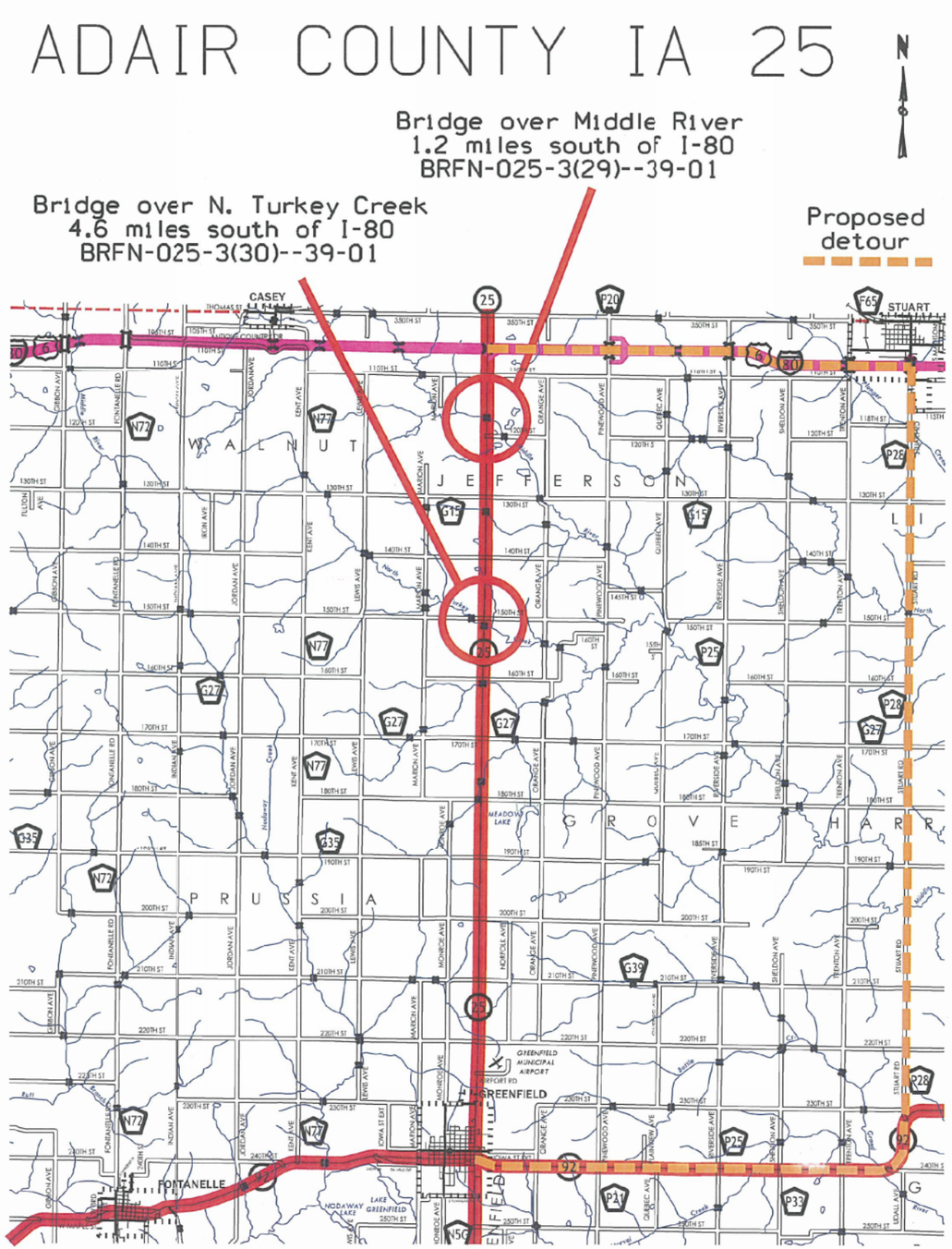
Additional right of way may be required for this project.

Once the Office of Location and Environment has completed their review, comments will be incorporated into the final concept statement.

H. Program Status

Site data has been developed by the Office of Design. This project is listed in the 2015-2019 Iowa Transportation Improvement Program, with $845,000 for replacement in FY 2019. 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



FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER A.7

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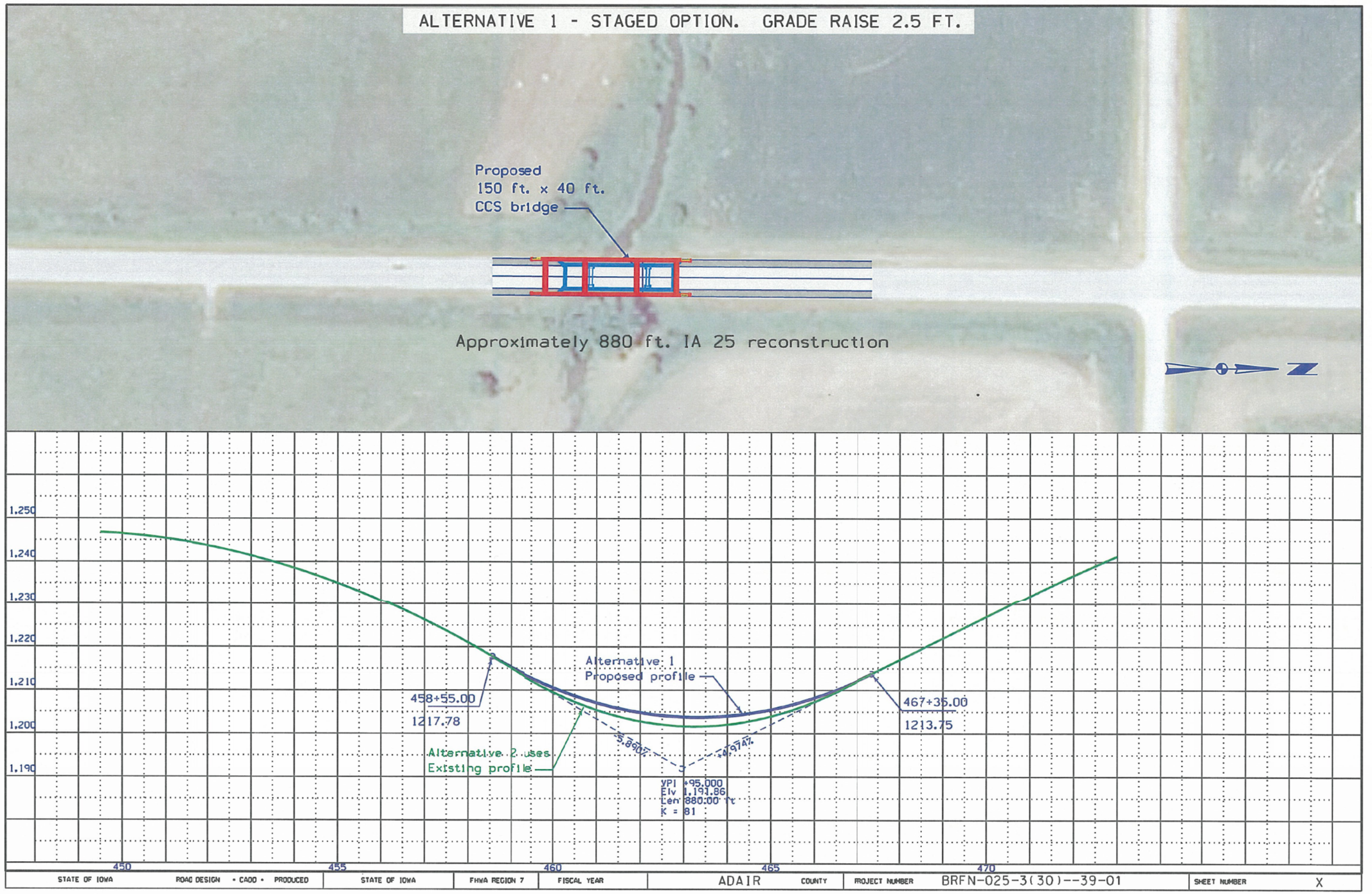
ALTERNATIVE 1 - STAGED OPTION. GRADE RAISE 2.5 FT.



STATE OF IOWA	ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER X

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER A.8

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Roadway			
PIN Number	14-01-025-020	**Submittal Date**	
Project Number	BRFN-025-3(30)--39-01		**Approval Date**
District	District 4	**Assistant District Engineer**	
County	Adair (1)	**or**	
Route	IA 25	**Office Director**	
Location	4.6 miles south of Interstate 80		
Work Type			
Segment Manager			
Designer	Schemmer Associates		

Design Manual Section 1C-1
last update: 05-06-14

Rural Two-Lane Highways (Rural Arterials)

Design Element		Preferred	Acceptable	Project Values
Design speed (mph)		60	50	60 (55 Posted)
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	NA
Design lane width (ft)		12	12	12
Full depth paved width (ft)		14	12	14
Right turn lane (ft)		12	10	NA
Climbing Lane (ft)		12	12	NA
Left turn lane (ft)		12	10	NA
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2%
	Auxiliary and turn lanes	3%	3% maximum	NA
	Crown break at centerline	4%	4% maximum	NA
Shoulder cross-slope (on tangent sections)		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 type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	NA
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	NA
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	3.5:1
	Curbed roadways	2%	not steeper than 3:1	NA
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
Transverse Slopes	w/ drainage structures	8:1	6:1	
	w/o drainage structures	10:1	6:1	
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	--
Bridge width—new	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	42'
	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	
Bridge width—existing		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	
	Over railroad	23.3	23.3	
	Sign trusses and pedestrian bridges	17.5	17	
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		B	B	

Roadway Design Speed (mph) =	60

Design Manual Section 1C-1
last update: 05-06-14

Design Criteria for High Speed Roadways

Design Element			Preferred Criteria, Design Speed, mph						Acceptable Criteria, Design Speed, mph						Project Values
			50	55	60	65	70	75	50	55	60	65	70	75	
Stopping sight distance (ft) (Refer to Section 6D-1)			425	495	570	645	730	820	425	495	570	645	730	820	320
Minimum horizontal curve radius (ft) (Refer to Sections 2A-2 and 2A-3)	Method 5 superelevation and side friction distribution	e_{max} = 6%	833	1060	1330	1660	2040	2500	833	1060	1330	1660	2040	2500	NA
		e_{max} = 8%	--	--	--	--	--	--	758	960	1200	1480	1810	2210	NA
Minimum vertical curve length (ft) (Refer to Section 2B-1)			150	165	180	195	210	225	150	165	180	195	210	225	775
Minimum rate of vertical curvature (K)	crest vertical curves		84	114	151	193	247	312	84	114	151	193	247	312	NA
	sag vertical curves	roadways without fixed-source lighting	96	115	136	157	181	206	96	115	136	157	181	206	68.9
(Refer to Section 2B-1)		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	
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	4		3				7	6	6	--	--	--	
		Rural roadways							5	5	4	4	4	4	3
		Interstates							5	5	4	4	4	4	
Clear zone			See "Preferred Clear Zone" table in Section 9A-2						See "Acceptable Clear Zone" table in Section 9A-2						30

Design year ADT =	2,700

Design Manual Section 1C-1
last update: 05-06-14

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	NA
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	NA
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	
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				
On roadways approaching urban areas (due to increased bike traffic)	10	10	Design year ADT > 2000 vpd	8	2*	8' Eff, 2' Pv
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	2*	
On all other NHS	10	4				
On non-NHS routes with design year ADT > 3000	10	4	Design year ADT < 400 vpd	4	2*	
On non-NHS routes with design year ADT < 3000	8	2*				

*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:

Sag vertical curve provides a K value of 67 and a stopping sight distance of approximately 320' which is less than the required 570'.

IA 25 is not on the NHS system so no design exception is required.

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER A.9

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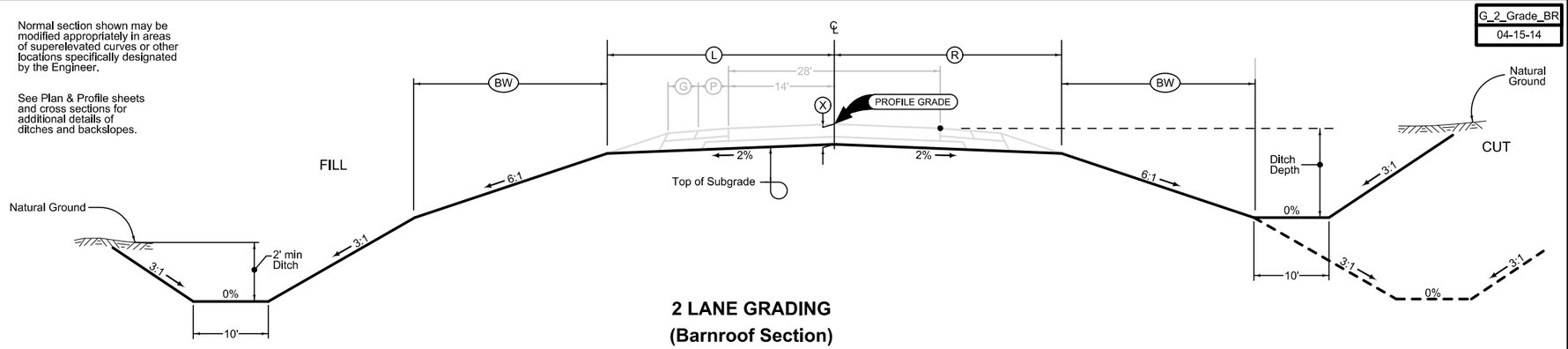
LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet
IA 25	458+35.91	460+94.80	28.3	28.3	16	12
BRIDGE						
IA 25	462+45.66	465+44.78	28.3	28.3	16	12

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
04-15-14



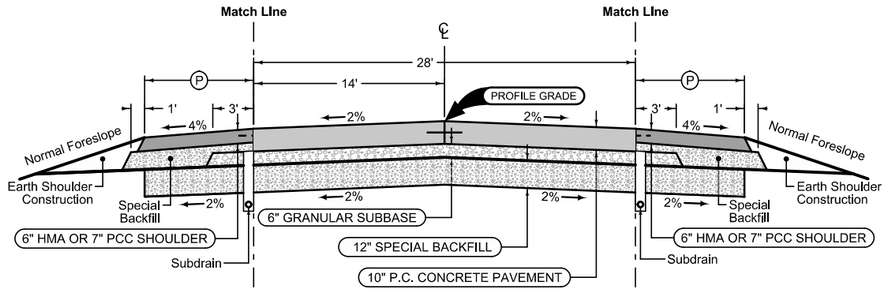
2 LANE GRADING
(Barnroof Section)

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at 20' spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_
10-21-14

STATION TO STATION		(P) Feet
459+70.34	460+74.44	Varies
463+06.02	464+18.33	Varies



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

2P_
10-19-10

STATION TO STATION	
463+16.02	464+50.00

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at 20' spacing
HMA Shoulder Jointing:
Longitudinal joint: B

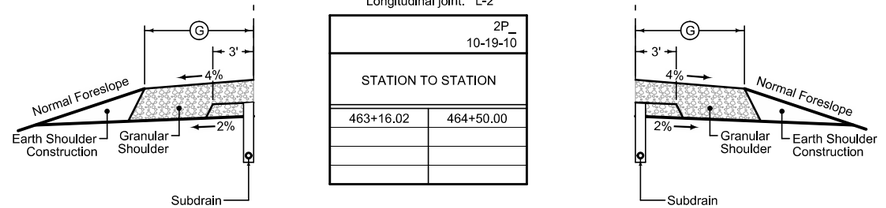
2_P_Guard_
10-21-14

STATION TO STATION		(P) Feet
459+22.13	460+74.44	Varies
462+86.02	463+70.11	Varies

Granular Shoulder (A&B)

2_G_SR_
10-19-10

STATION TO STATION		(G) Feet
458+83.58	459+70.34	6'
464+18.33	465+44.78	6'



Granular Shoulder (A&B)

2_G_SR_
10-19-10

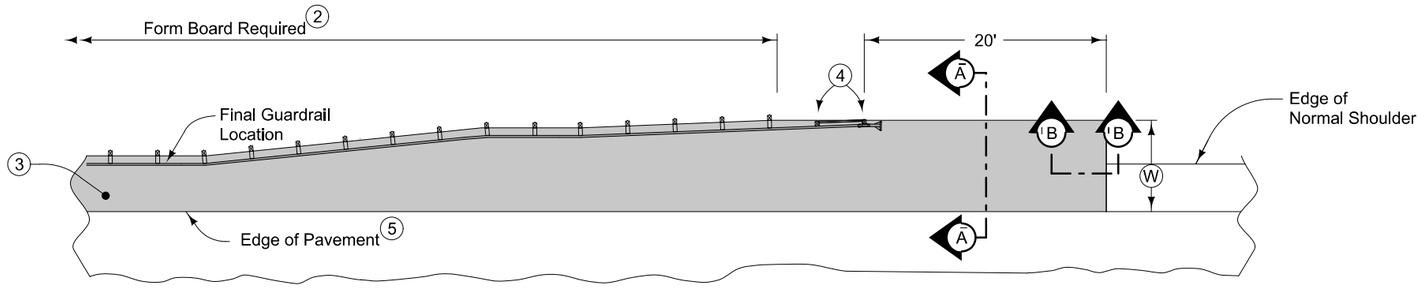
STATION TO STATION		(G) Feet
458+35.91	459+22.13	6'
463+70.11	465+44.78	6'

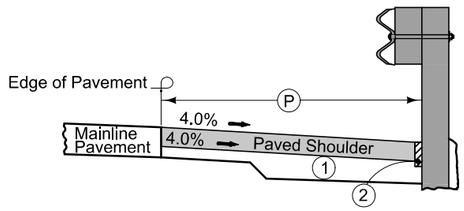
See Tab 100-24 or 100-25 for pavement quantities.

See Tab 112-9 for shoulder quantities.

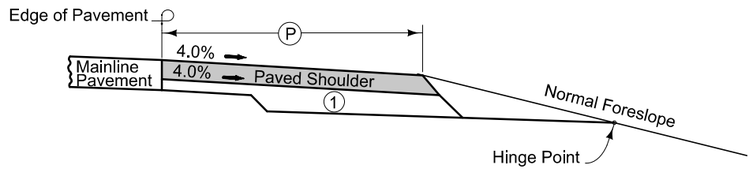
ROADWAY IDENTIFICATION

7156-MOD
04-16-13

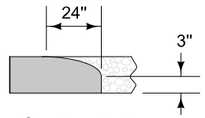




Typical Section with Form Board



Section A-A



Section B-B
Roll down at granular shoulder or earth.

6" HMA Paved Shoulder at guardrail. 7" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at W/2 from edge of mainline pavement when W is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal & reinstallation of guardrail will be allowed with no additional payment.

Refer to Shoulder tabulation (112-9) for quantities.

(1) 6" subgrade treatment.

(2) When guardrail posts are installed prior to construction of paved shoulder, nail 1" x 6" untreated form boards along the face of guardrail posts for the length shown. This board is to prevent shoulder material from contacting the sides of the posts and altering the function of the guardrail. Form board not required for final 2 posts.

(3) Continue paved shoulder to existing paved shoulder or 20' beyond the end of guardrail.

(4) Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement.

(5) 'KT-1' joint for PCC shoulder.
'B' joint for HMA shoulder.

PAVED SHOULDER AT GUARDRAIL

SURVEY SYMBOLS

- CUL Culvert
- LIN Miscellaneous Line
- FW Wire Fence
- SI Sign
- TPD Telephone Pedestal
- PPA Power Pole Co. 1
- PIP Pipe Culvert
- TOP Top of Bridge Pier
- BRG Bridge
- GDL Guard Rail Steel
- COS Square Bridge Pier Column
- BNK Stream Bank
- RIP Rip-Rap
- EW Edge of Water
- DU Centerline Draw or Stream (Up)
- D Centerline Draw or Stream (Down)
- SP Stream Profile
- EP Edge of Paved Roads (ML or SR)
- SNP Unpaved Shoulder
- EG Edge of Gravel Road
- ENU Edge Unpaved Entrance & Parking
- ENT Centerline BL of Entrance
- TLA Underground Telephone Line Co. 1
- FOA Underground Fiber Optic Co. 1
- TW Top of Water

UTILITY LEGEND

- East Central Iowa REC
- T1 – South Slope Telephone
- FO – South Slope Telephone

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

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

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER D.1

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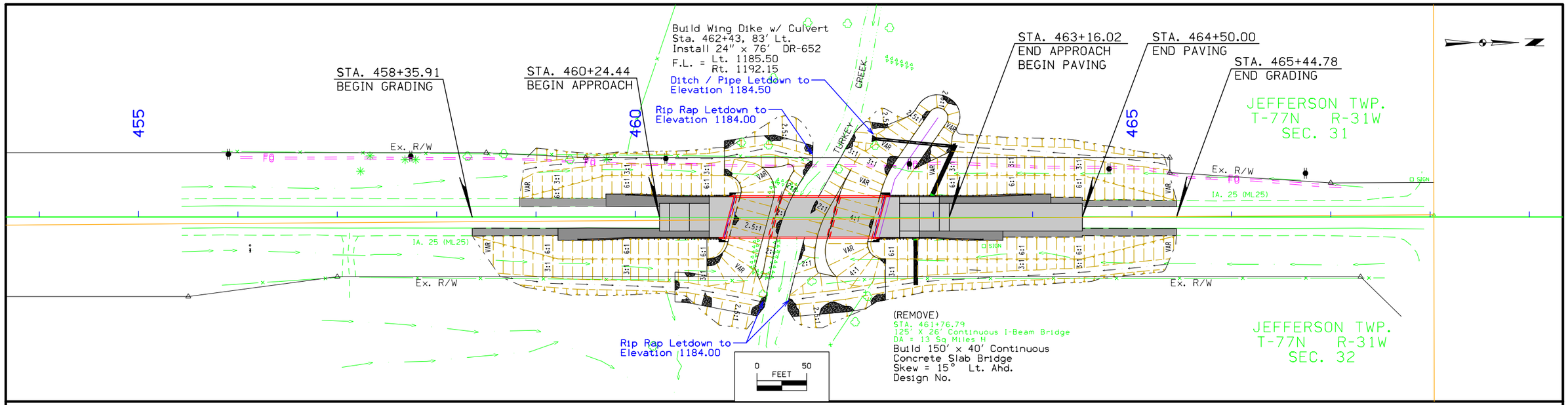
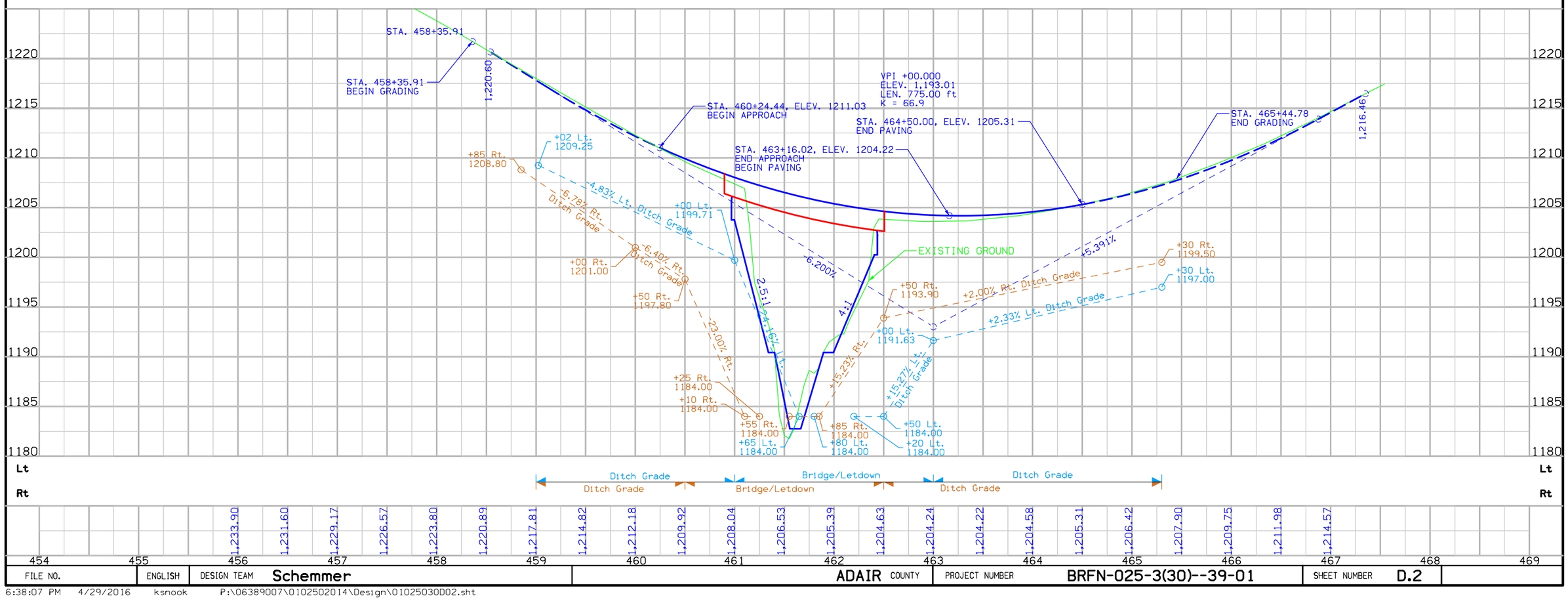


CLASS 10 SUIT CUT - 30% = 3,587 CY
WASTE = 179 CY
3,408 CY

TOTAL FILL = 3,408 CY → STA. 465+44.78



FILE NO.	ENGLISH	DESIGN TEAM	Schemmer	ADAIR COUNTY	PROJECT NUMBER	BRFN-025-3(30)--39-01	SHEET NUMBER	D.2

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Survey Information

Adair County
BRFN-025-3(30)39-01
North Turkey Creek 4.6 Miles S of I-80
PIN 14-01-025-020
Sap-0846.1

Date(s) of Survey

Begin Date	02/26/2015
End Date	05/12/2015

Horizontal Control

Horizontal Datum is NAD 83(2011) (EPOCH:2010.0000) relative to IaRTN reference
stations. The project coordinate system is Iowa RCS Zone 7 (US Survey Feet). The
horizontal control was established in the same static control survey as vertical control. Static observations were processed and adjusted to published IaRTN reference station positions. Reference station positions are tied to the national CORS system.
Additional points were placed throughout the project using a GNSS Base-Rover setups
relative to Pts. 1 and 2.

Alignment Information

IA Hwy 25

The alignment for this survey is a retrace of As-built Plans Project # 898. Survey
stationing was equated to the plan at PI Sta. 435+03.7, and was run ahead with no
equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 435+03.7 This Survey
= PI Sta. 435+03.7 As-built Plans Project # 898

PI Sta. 515+05.87 This Survey
= PI Sta. 515+05.9 Ahead As-built Plans Project # 898

PI Sta. 678+22.20 This Survey
= PI Sta. 678+28.9 As-built Plans Project # 898

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12A) GRS80 Ellipsoidal Height was computed at project Pts. 1and 2 by conducting a six hour static observation. 6 NGS benchmarks were observed using 6 hour GPS static sessions. Additional benchmarks were placed throughout the project using GNSS Base-Rover setups.

This survey observed 2 As built plan heights to compare with observed survey height:

BM # 500 IHC BM Inlet Hdwl 5' x 5' RCB this survey
Elev.=1232.79
= BM # 52 @ Sta. 448+61AB Plans Proj # 898
Elev. = 1231.08 (Plan datum is not specified)

BM # 502 IHC BM Inlet Hdwl 4' x 4' RCB this survey
Elev. = 1195.21
= BM # 70 @ Sta. 619+86.2 AB Plans Proj # 898
Elev. = 1193.65 (Plan datum is not specified)

This survey observed 6 NGS heights to compare with observed survey height:

Bench Mark Disk Inlet Hdwl 12' x 14' RCB this survey
Elev. = 1221.85
= NGS BM Designation M 162
Elev. = 1221.93
(Datum NAVD88)

Bench Mark Disk Top Concrete Post this survey
Elev. = 1284.53
= NGS BM Designation N 162
Elev. = 1284.53
(Datum NAVD88)

Bench Mark Disk Inlet Hdwl 2' x 2' RCB this survey
Elev. = 1174.07
= NGS BM Designation P 103
Elev. = 1174.40
(Datum NAVD88)

Bench Mark Disk Top Concrete Post this survey
Elev. = 1336.80
= NGS BM Designation P 162
Elev. = 1336.83
(Datum NAVD88)

Bench Mark Disk Inlet Hdwl 4' x 4' RCB this survey
Elev. = 1230.37
= NGS BM Designation R 162
Elev. = 1230.40
(Datum NAVD88)

Bench Mark Disk Top Concrete Post this survey
Elev. = 1336.33
= NGS BM Designation T 103
Elev. = 1336.42
(Datum NAVD88)

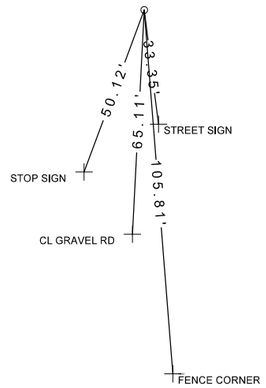
Survey elevation analysis compared to area NGS benchmarks

NGS benchmark designated P 103 was not used in this analysis because the published elevation difference compared with observed survey elevation did not harmonize with the rest of the observed differences of the other NGS benchmarks. The observed differences between survey elevation and published elevation of the 5 NGS benchmarks used in this analysis range from 0 At NGS benchmark N 162 to survey elevation +0.09 ft. at NGS benchmark T 103. The average of the 5 benchmark differences is survey elevation +0.046 ft. Adding 0.046 ft. to survey elevations would better fit the 5 area benchmarks however the unadjusted survey elevations fit 3 of the 5 benchmarks within survey quality tolerances and therefore is assumed correct NAVD 88 elevation.

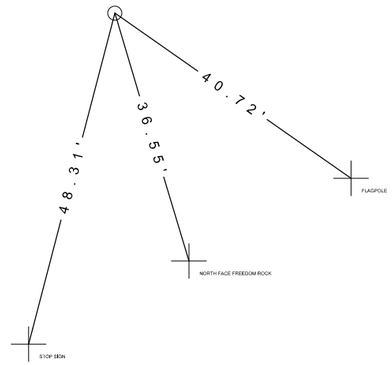
VERTICAL CONTROL

Point	North	East	Elevation	Station	Offset	Feature	Description
500	7228646.2280	17549539.4300	1232.790	448+66.84	-49.448	BM	BM # 52 STA. 448+61 AB PLANS FN PROJ. # 898 > FD. IHCBM INLET HDWL 5 X 5 RCB
501	7229889.3160	17549610.9200	1209.471	461+10.38	13.788	BM	SE END BRG HANDRAIL @ NORTH TURKEY CREEK
502	7245758.5110	17549538.2370	1195.206	619+79.96	-34.620	BM	BM # 70 STA. 619+86.2 AB PLANS FN PROJ. # 898 > FD. IHCBM INLET HDWL 4 X 4 RCB
503	7247829.0020	17549575.3090	1193.906	640+50.21	14.330	BM	FD DOT PLUG SE END BRG WING @ MIDDLE RIVER
504	7230598.8350	17548566.2120	1206.565	468+12.95	-1035.607	BM	FD DISK NE END BRG STAMPED BM ELEV 1204.83

CP STA. 468+68.81, 53.06 Rt.
CP 1, Fd Feno Monument
N=7230647.468 E=17549655.223



CP STA. 626+15.07, 56.48 Rt.
CP 2, Fd Feno Monument
N=7246394.131 E=17549625.691



FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER G.2

10:23:47 AM 2/8/2016 ksnook P:\06389007\0102502014\Design\01025030G01.sht

Adair ROW: STPN-025-3(32)--2J-01 PIN 14-01-025-020
North Turkey Creek 4.6 mi S of I-80

		STATE		COUNTY		CITY			BORROW							
PARCEL NO.	OWNER NAME	FEE	EASE	FEE	EASE	FEE	EASE	EXCESS	FEE	T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.
1	Daryl D. Nelson - Fee	.55 AC														
2	C. Evan Varley - Fee	.54 AC														
2 Parcels	"TOTALS	1.09 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC					
		0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF								

01

DARYL D. &
JANNA G. NELSON

02

C. EVAN &
ANNETTE K. VARLEY

455

460

465

458+80
℄63.5'±Ex.R/W

458+95
℄80'

460+90
℄80'

461+80
℄130'

463+25
℄130'

463+45
℄95'

465+30
℄75'

465+38(R/W Cor.)
℄60'±R/W Cor.

Ex. R/W

FO

IA. 25 (ML25)

TURKEY CREEK

458+40
℄60'±Ex.R/W

459+10
℄90'

460+45
℄90'

460+80
℄125'

461+90
℄125'

462+45
℄100'

465+85
℄60'±Ex.R/W

0 FEET 50

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-025-3(32)--2J-01
Plan Date: 07-27-16
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER H.1

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108-23A
08-01-08

TRAFFIC CONTROL PLAN

Iowa 25 shall be closed to through traffic for the duration of this project. The Contractor is Responsible for the Installation and Removal of all Detour Signing.

Local access to all properties shall be maintained at all times during construction.

108-26A
08-01-08

STAGING NOTES

Iowa 25 will be closed to through traffic for the duration of this project. Construction will occur in a single stage. Detour signing shall be erected and maintained (as per Standard Road Plan TC-252) for the duration of the project, and removed by the contractor post construction.

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, Med	(237)	Future Proposed Pavement Shading

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

- Pavement Removal
- Proposed Granular Subbase
- Proposed Special Backfill
- Temporary Barrier Rail
- Proposed Granular Shoulder
- Temporary Shoulder
- Existing Shoulder Strengthening
- Permanent Barrier Rail
- Channelizing Device

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
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Proposed Granular Surface 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

- Channelizing Device
- Drum
- Temporary Lane Separator
- Tubular Marker
- Channelizer Marker
- Concrete Barrier Marker
- Delineator
- Temporary Barrier Rail
- Pavement Removal
- Sand Barrel Layout
- Crash Cushion (Temp or Perm)
- Traffic Signal
- Flagger
- Temporary Floodlighting
- Traffic Sign
- Type III Barricade
- Type A Warning Light
- Direction of Traffic
- Safety Closure

NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

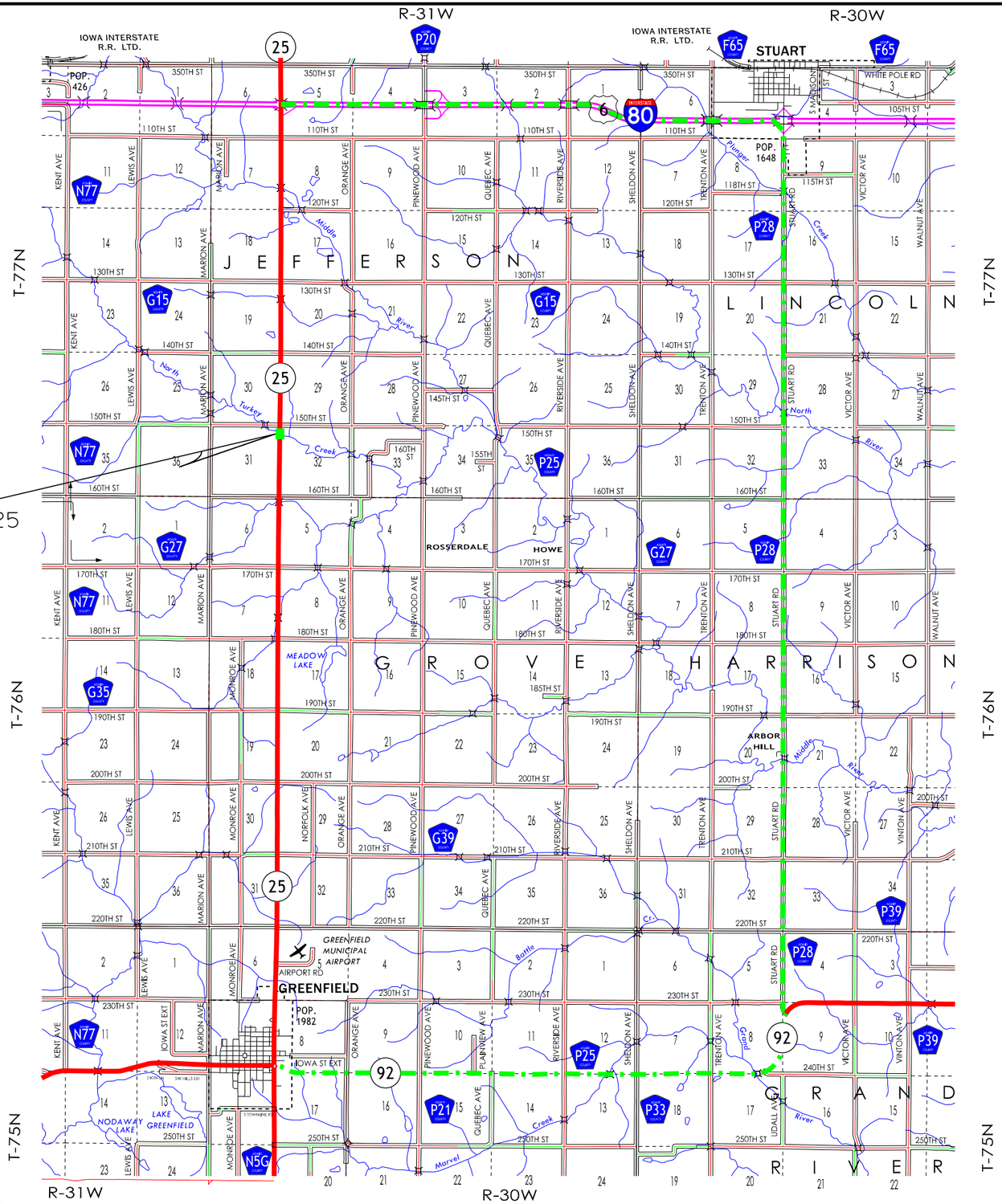
(COVERS SHEET SERIES J)

DETOUR LEGEND

Detour Route

Proposed Project

PROJECT LOCATION
BRIDGE NO. 0169.5S025



DETOUR NOTE:
THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION & REMOVAL OF ALL DETOUR SIGNING.

DETOUR AND TRAFFIC CONTROL

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER J.3

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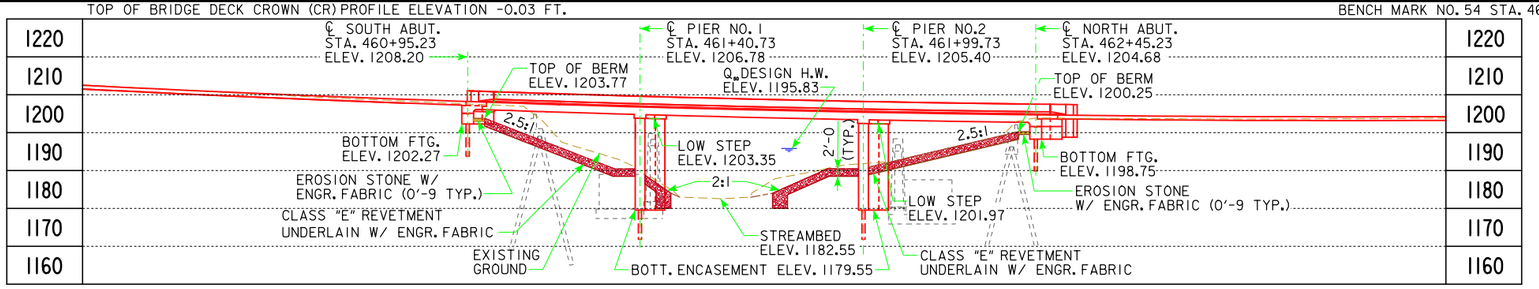
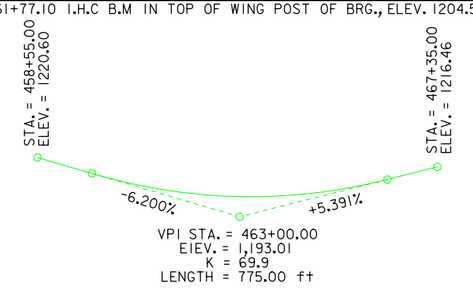
TOP OF BRIDGE DECK CROWN (CR) PROFILE ELEVATION -0.03 FT.

BENCH MARK NO. 54 STA. 461+77.10 I.H.C B.M IN TOP OF WING POST OF BRG., ELEV. 1204.51

NOTES: ALL UNITS ARE IN FEET
UNLESS OTHERWISE NOTED.
TL-4 BARRIER RAIL PROPOSED
PILE BENT PROPOSED



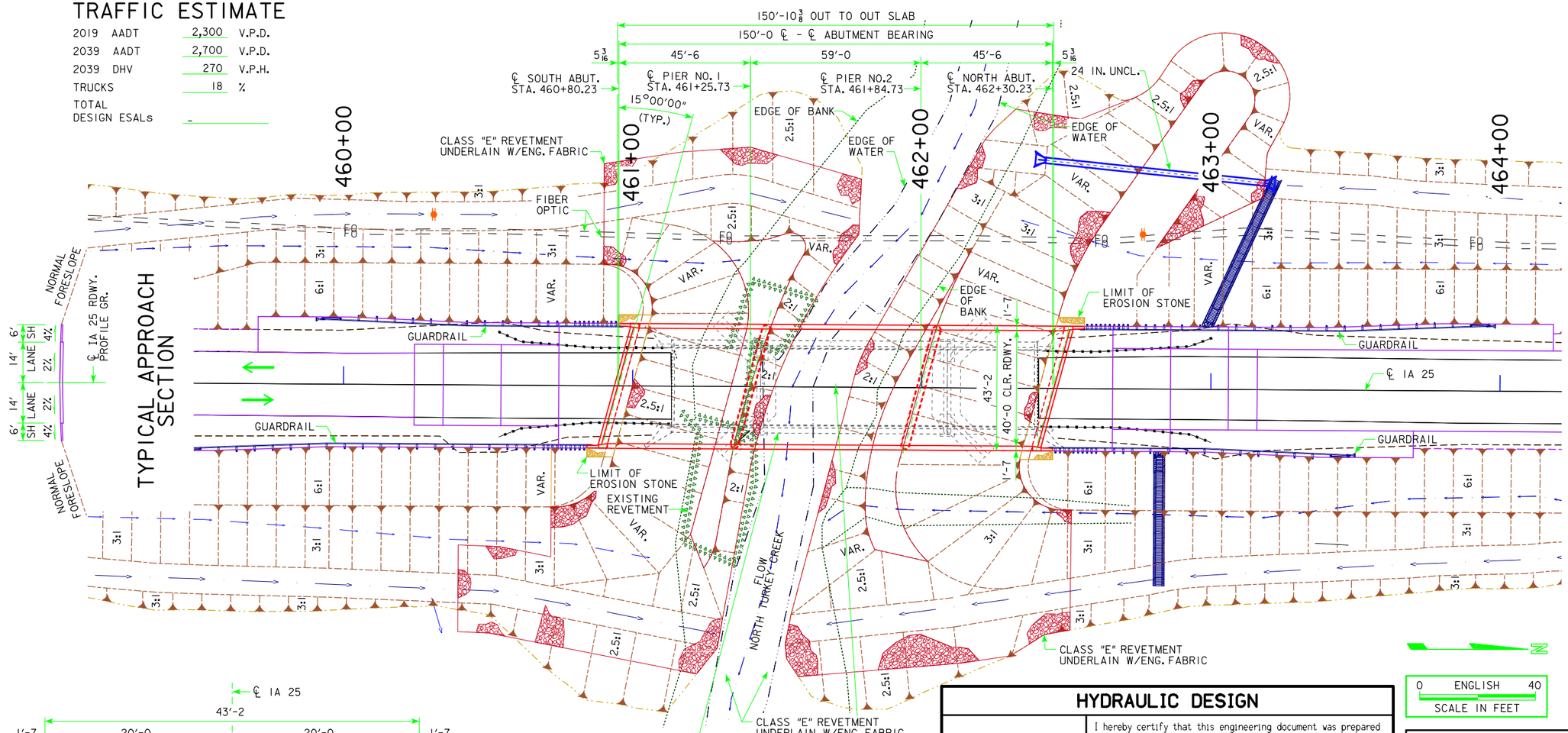
LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY



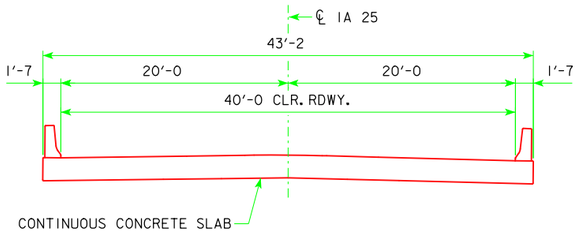
PROPOSED PROFILE GRADE IA 25

TRAFFIC ESTIMATE

2019 AADT	2,300	V.P.D.
2039 AADT	2,700	V.P.D.
2039 DHV	270	V.P.H.
TRUCKS	18	%
TOTAL DESIGN ESALs	-	



SITUATION PLAN



TYPICAL BRIDGE SECTION

HYDRAULIC DATA

DRAINAGE AREA = 12.5 SQ. MI.
STREAM SLOPE = 12.7 FT./MI.
AVG. LOW WATER STAGE = 1184.06

Q_{50} = 6,030 CFS
STAGE = 1195.83
BACKWATER = 1.22 FT.
AVG. BRIDGE VELOCITY = 8.9 FPS

Q_{100} = 7,380 CFS
STAGE = 1198.62
BACKWATER = 1.62 FT.

Q_{200} = 8,830 CFS
STAGE = 1199.72
CALCULATED DESIGN SCOUR = 1176.75

Q_{500} = 10,600 CFS
STAGE = 1200.90
AVG. BRIDGE VELOCITY = 8.3 FPS
CALCULATED CHECK SCOUR = 1176.45

ROADWAY OVERTOP 1204.18
STA. 463+27.27

EXTREME HW STAGE = 1183.3 (NGVD)
DATE = 1942

UTILITIES LEGEND:

— FO —
BURIED FIBER OPTIC LINE

POWER POLES

LOCATION

OVER NORTH TURKEY CREEK
T-76N R-32W - R-31W
SECTION 7-8
JEFFERSON TOWNSHIP
ADAIR COUNTY
FHWA NO. 12970
BRIDGE MAINT. NO. 0169.5S025
LATITUDE 41.429906°
LONGITUDE -94.452498°

N

0 ENGLISH 40
SCALE IN FEET

PRELIMINARY

HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER
Marie A. Stamm
18949
IOWA

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

Signature Date

Marie A. Stamm
Printed or Typed Name

My license renewal date is December 31, 2017

Pages or sheets covered by this seal: SHEET V.1

DESIGN FOR 15° SKEW (L.A.)

150'-0 X 40'-0 CONTINOUS CONCRETE SLAB BRIDGE

45'-6 END SPANS 59'-0 INTERIOR SPAN

SITUATION PLAN

STA. 461+55.23 JANUARY, 2016

ADAIR COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

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

DESIGN TEAM : SCHEMMER | ADAIR COUNTY | PROJECT NUMBER BRFN-025-3(30)--39-01 | SHEET NUMBER V.1

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BENCH MARK NO. 54 STA. 461+77.10 I.H.C B.M IN TOP OF WING POST OF BRG., ELEV. 1204.51

REVETMENT LOCATION TABLE

POINT	SOUTH ABUTMENT			POINT	NORTH ABUTMENT		
	STATION	OFFSET	ELEV.		STATION	OFFSET	ELEV.
R1	460+72.03	42.00 RT	1203.77	R1	462+51.97	42.00 RT	1200.25
R2	460+72.03	59.23 RT	1199.30	R2	462+51.75	83.47 RT	1196.51
R3	460+40.00	55.31 RT	1201.97	R3	462+31.05	92.57 RT	1196.17
R4	460+40.00	85.33 RT	1198.48	R4	462+14.82	95.07 RT	1193.58
R5	461+22.70	99.48 RT	1188.00	R5	461+57.93	100.17 RT	1188.00
R6	461+29.70	90.58 RT	1184.00	R6	461+53.84	94.00 RT	1186.00
R7	461+77.90	52.80 LT	1184.00	R7	461+53.30	89.03 RT	1184.00
R8	461+78.73	72.01 LT	1188.00	R8	461+76.60	3.41 LT	1184.00
R9	461+40.23	82.81 LT	1192.32	R9	461+81.48	15.47 LT	1184.00
R10	461+16.62	81.01 LT	1198.78	R10	462+21.36	85.89 LT	1184.00
R11	460+89.73	76.80 LT	1201.80	R11	462+31.97	96.53 LT	1188.66
R12	460+89.73	42.00 LT	1203.77	R12	462+54.34	93.21 LT	1191.42
-	-	-	-	R13	462+72.74	100.63 LT	1193.69
-	-	-	-	R14	462+82.07	108.32 LT	1194.99
-	-	-	-	R15	462+85.74	113.94 LT	1194.90
-	-	-	-	R16	463+17.59	118.69 LT	1195.05
-	-	-	-	R17	463+24.18	91.37 LT	1195.67
-	-	-	-	R18	463+18.93	80.86 LT	1193.69
-	-	-	-	R19	463+17.74	66.42 LT	1192.07
-	-	-	-	R20	462+80.87	48.80 LT	1200.25

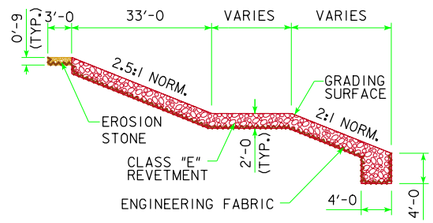
BERM SLOPE LOCATION TABLE

POINT	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV.	STATION	OFFSET	ELEV.
A1	461+59.82	24.58 LT	1184.00	461+86.64	24.58 LT	1184.00
A2	461+41.63	24.58 RT	1184.00	461+69.32	24.58 RT	1184.00
B1	461+06.47	24.58 LT	1203.77	462+47.16	24.58 LT	1200.25
B2	460+93.30	24.58 RT	1203.77	462+34.06	24.58 RT	1200.25
C1	461+49.09	24.58 LT	1190.43	462+03.88	24.58 LT	1190.43
C2	461+34.31	24.58 RT	1190.43	461+82.21	24.58 RT	1190.43
D1	461+39.90	24.58 LT	1190.43	462+06.31	24.58 LT	1190.43
D2	461+27.46	24.58 RT	1190.43	461+92.57	24.58 LT	1190.43
W1	460+95.04	24.58 LT	1207.66	462+56.14	24.58 LT	1204.01
W2	460+84.32	24.58 RT	1208.04	462+45.42	24.58 RT	1204.13

CLASS "E" REVETMENT AND EROSION STONE ARE EMBEDED
ELEVATIONS SHOWN ARE GRADING SURFACE

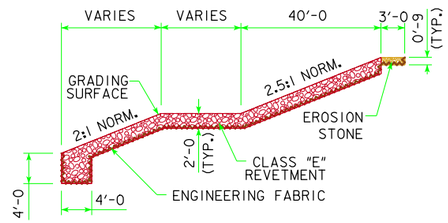
ESTIMATED BERM ARMORING QUANTITIES

LOCATION	REVETMENT CL. "E" (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
BERM LINING - SOUTH ABUTMENT	1422.700	8.700	1317.3	878.2
BERM LINING - NORTH ABUTMENT	1802.300	8.700	1668.7	1112.5
TOTALS	3225.000	17.400	2986.0	1990.7



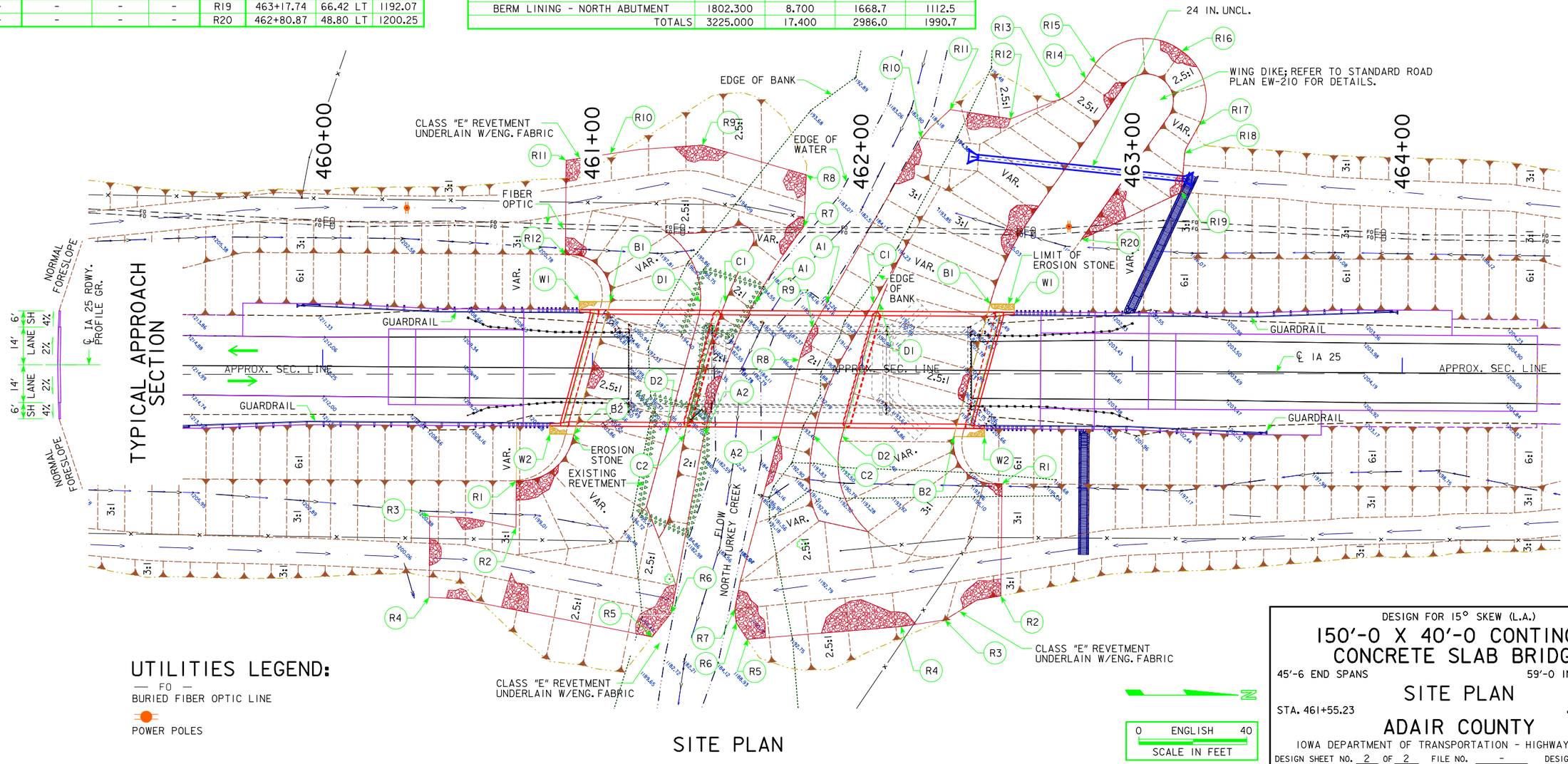
SOUTH REVETMENT DETAIL

(MEASURED PERPENDICULAR FROM ABUTMENT FACE AT ℄ BRIDGE)



NORTH REVETMENT DETAIL

(MEASURED PERPENDICULAR FROM ABUTMENT FACE AT ℄ BRIDGE)



SITE PLAN

UTILITIES LEGEND:

— FO —
BURIED FIBER OPTIC LINE

POWER POLES

N

0 ENGLISH 40
SCALE IN FEET

DESIGN FOR 15° SKEW (L.A.)

150'-0 X 40'-0 CONTINOUS CONCRETE SLAB BRIDGE

45'-6 END SPANS — 59'-0 INTERIOR SPAN

SITE PLAN

STA. 461+55.23 — JANUARY, 2016

ADAIR COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 2 FILE NO. - DESIGN NO. -

DESIGN TEAM : SCHEMMER | ADAIR COUNTY | PROJECT NUMBER BRFN-025-3(30)--39-01 | SHEET NUMBER V.2

4/29/2016 12:41:05 PM ksnook P:\06389007\0102502014\Structures\01025030.str TSL_01_DDDD 11x17_pdf.pltcfg

LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)

- Existing Ground Line
- Proposed Template
- Proposed Topsoil Placement
- Additional Topsoil Removal
- Subgrade Treatment
- Granular Shoulder
- Pavement
- Existing Pipe\RCB
- Proposed Pipe\RCB
- Proposed Dike
- All Elements Associated with Proposed Entrances

LINE STYLE LEGEND OF CROSS SECTION SHEETS (SOILS)

- TS — Topsoil (Class 10)
- Slope Dressing Only
- CL 10 — Class 10 Materials
- SEL LO — Select Loams And Clay-Loams
- SEL SA — Select Sand
- UNS A — Unsuitable Type A Disposal
- UNS B — Unsuitable Type B Disposal
- UNS C — Unsuitable Type C Disposal
- SHALE — Shale
- WASTE — Waste
- B&W LS — Broken and Weathered Rock
- ROCK — Solid Rock
- BLDRS — Boulders

Note: All layer lines and descriptions identify layers above the line.

Note: Vertical or near vertical lines connecting soil layers at edges of cross sections are only for the purpose of calculating template quantities and do not depict soil stratification.

SYMBOL LEGEND OF CROSS SECTION SHEETS

Existing Right-of-Way Limit

Proposed Right-of-Way Limit

Temporary Right-of-Way Limit

CROSS SECTION LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES W, X, Y, & Z)

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.1

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

IA 25

Preliminary

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

1230 1220 1210

1219.83
10.69

1219.79
11.11

1219.49
18.78

1218.17
26.69

4.00%

6:1

3:1

1210.79
48.82

458+65.00

1220.69
10.70

1220.66
11.08

1220.35
18.86

1219.72
22.67

4.00%

3:1

3:1

1211.53
47.24

458+50.00

1221.50
10.68

1221.46
11.11

1221.18
18.90

4.00%

3:1

3:1

1212.21
45.74

458+36.00

458+25.00

458+00.00

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.2

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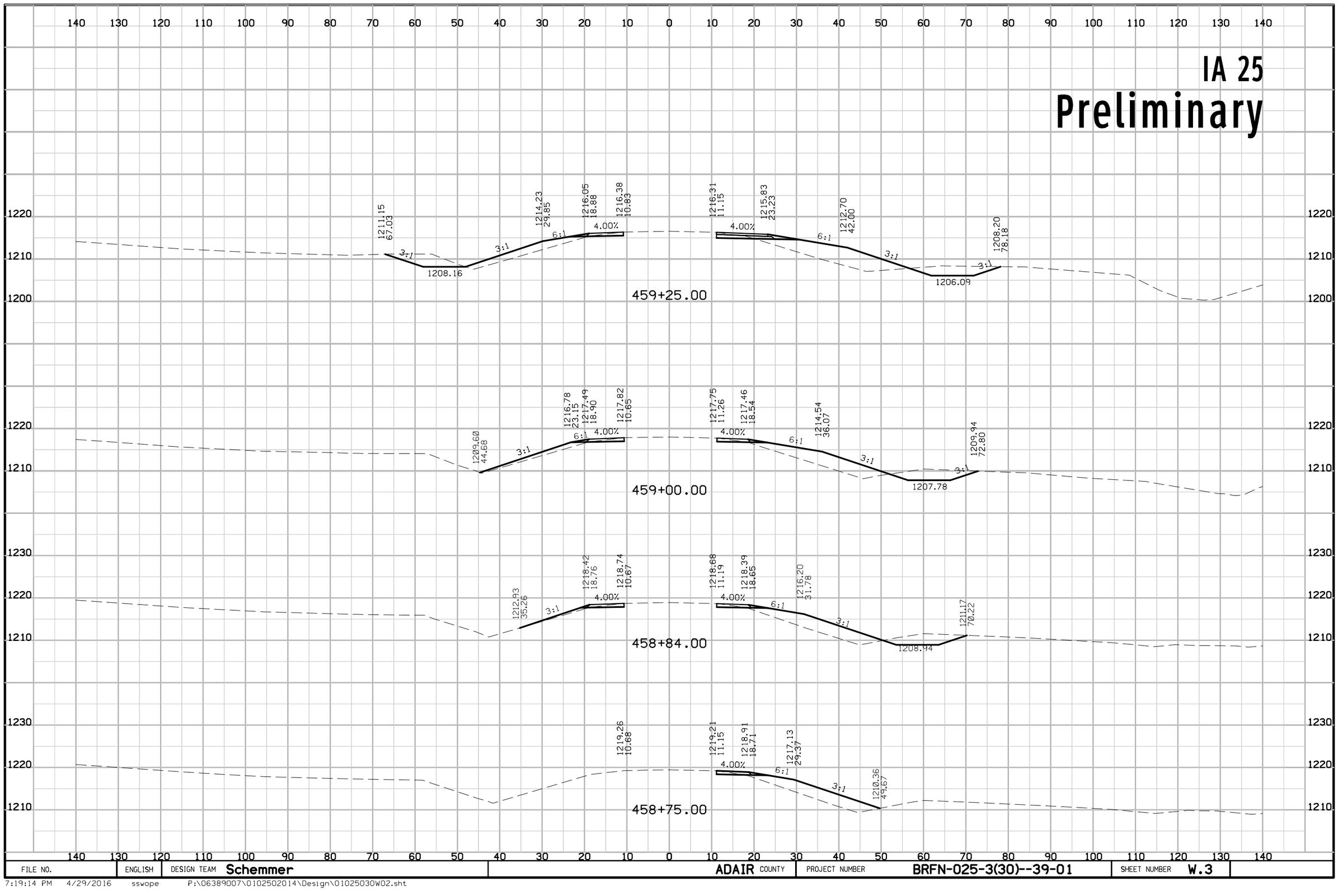
IA 25
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.3

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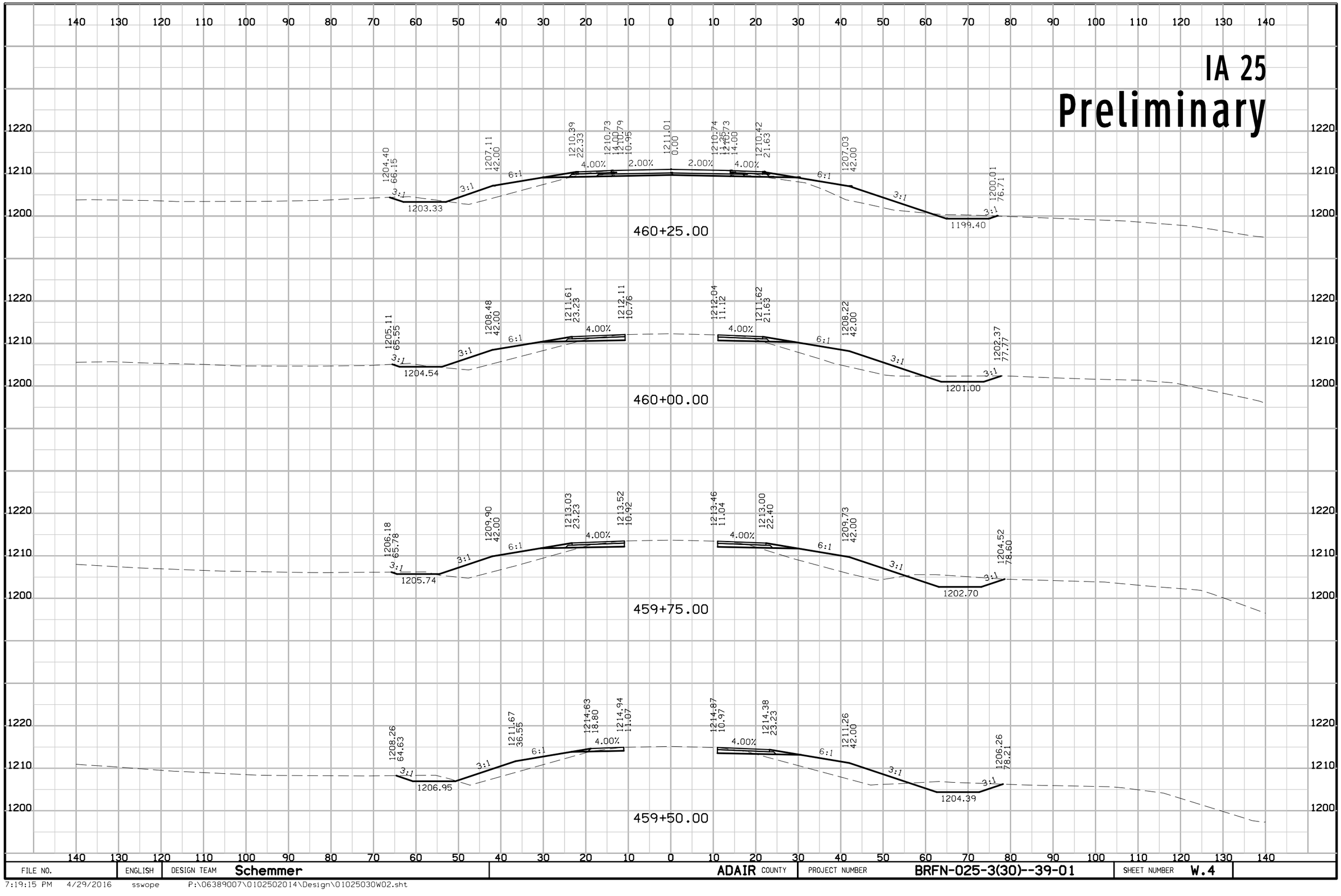
IA 25
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.4

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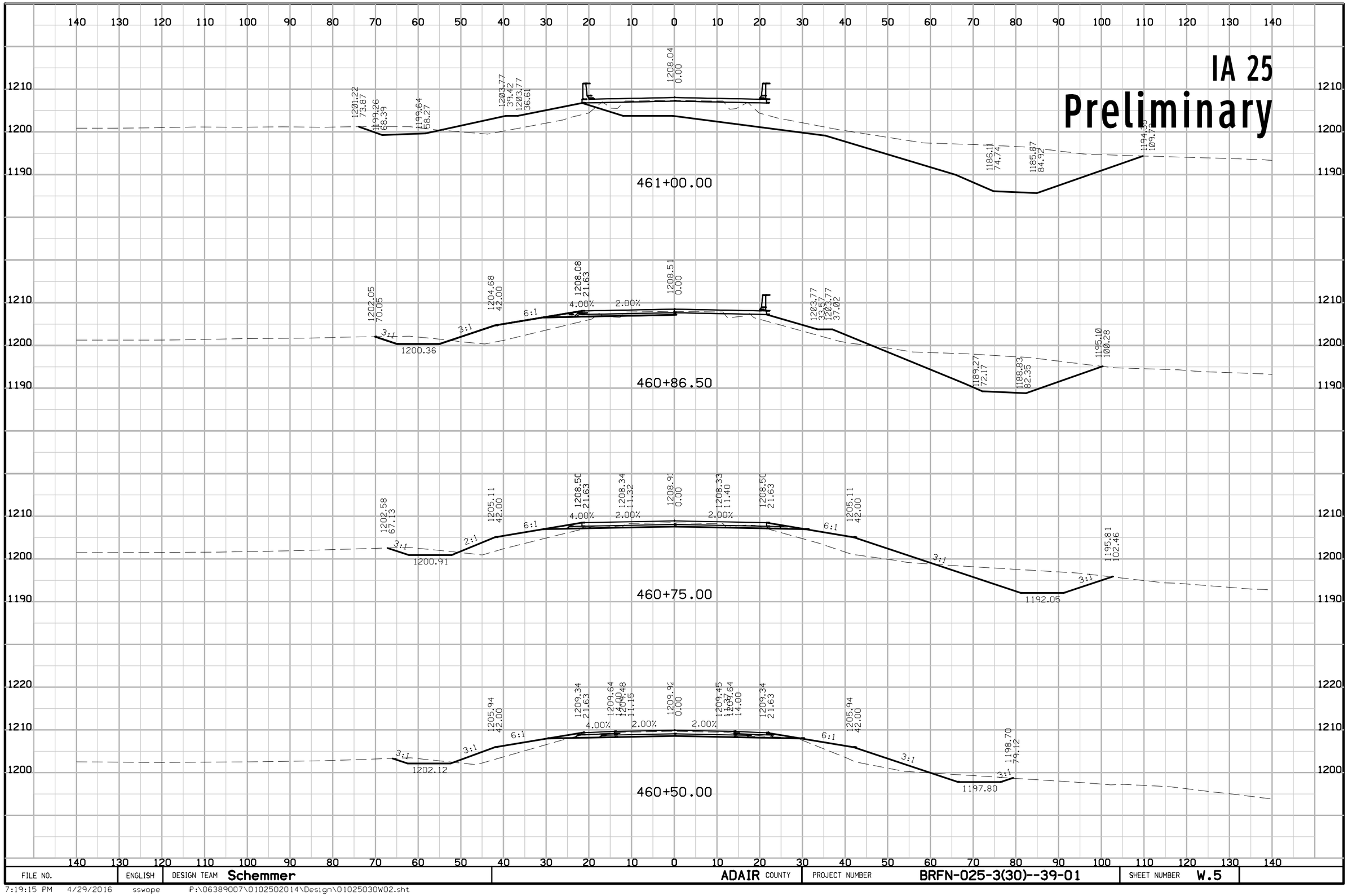
IA 25
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.5

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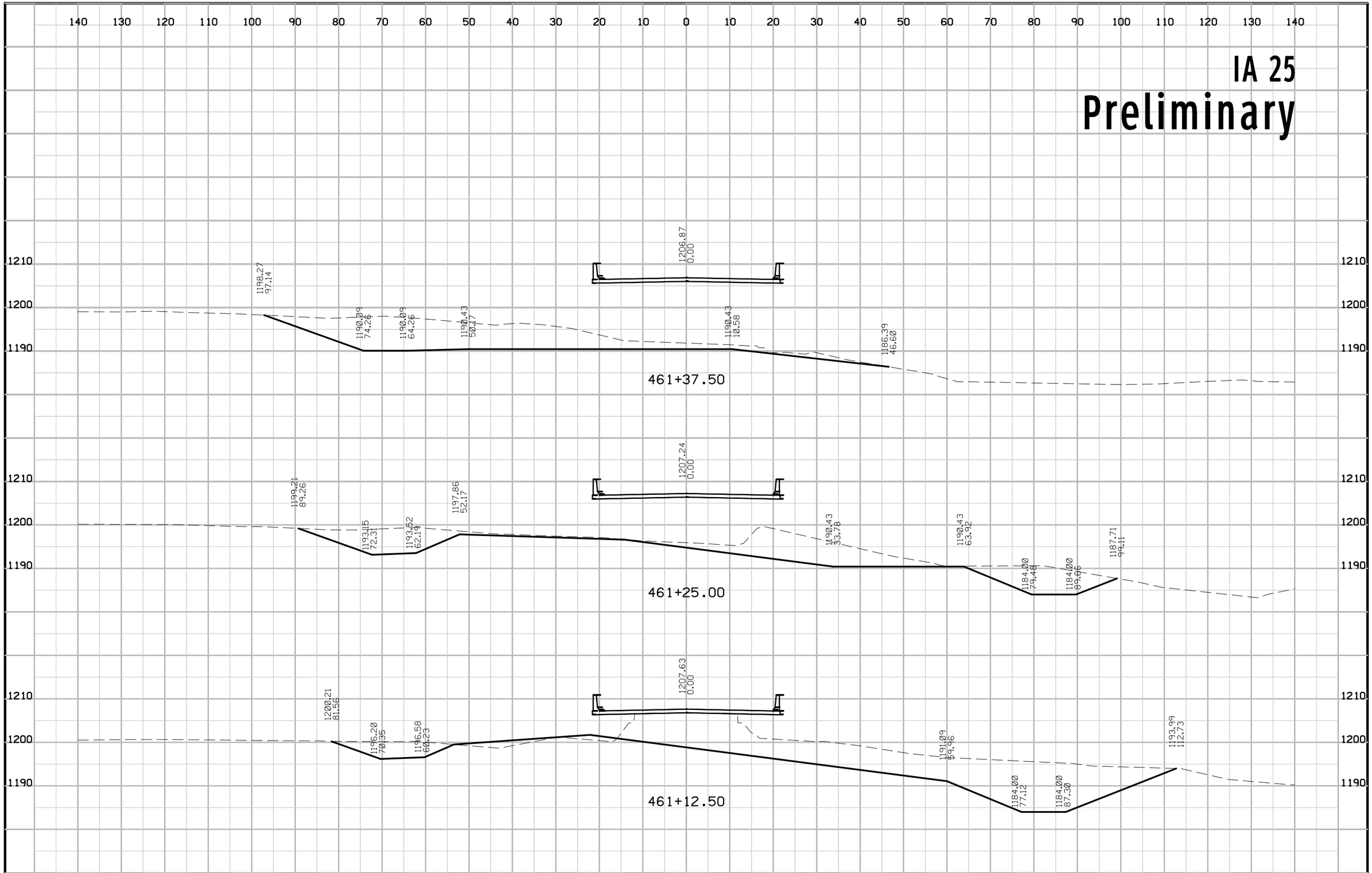
IA 25
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM				
		Schemmer	ADAIR COUNTY	PROJECT NUMBER	BRFN-025-3(30)--39-01	SHEET NUMBER W.6

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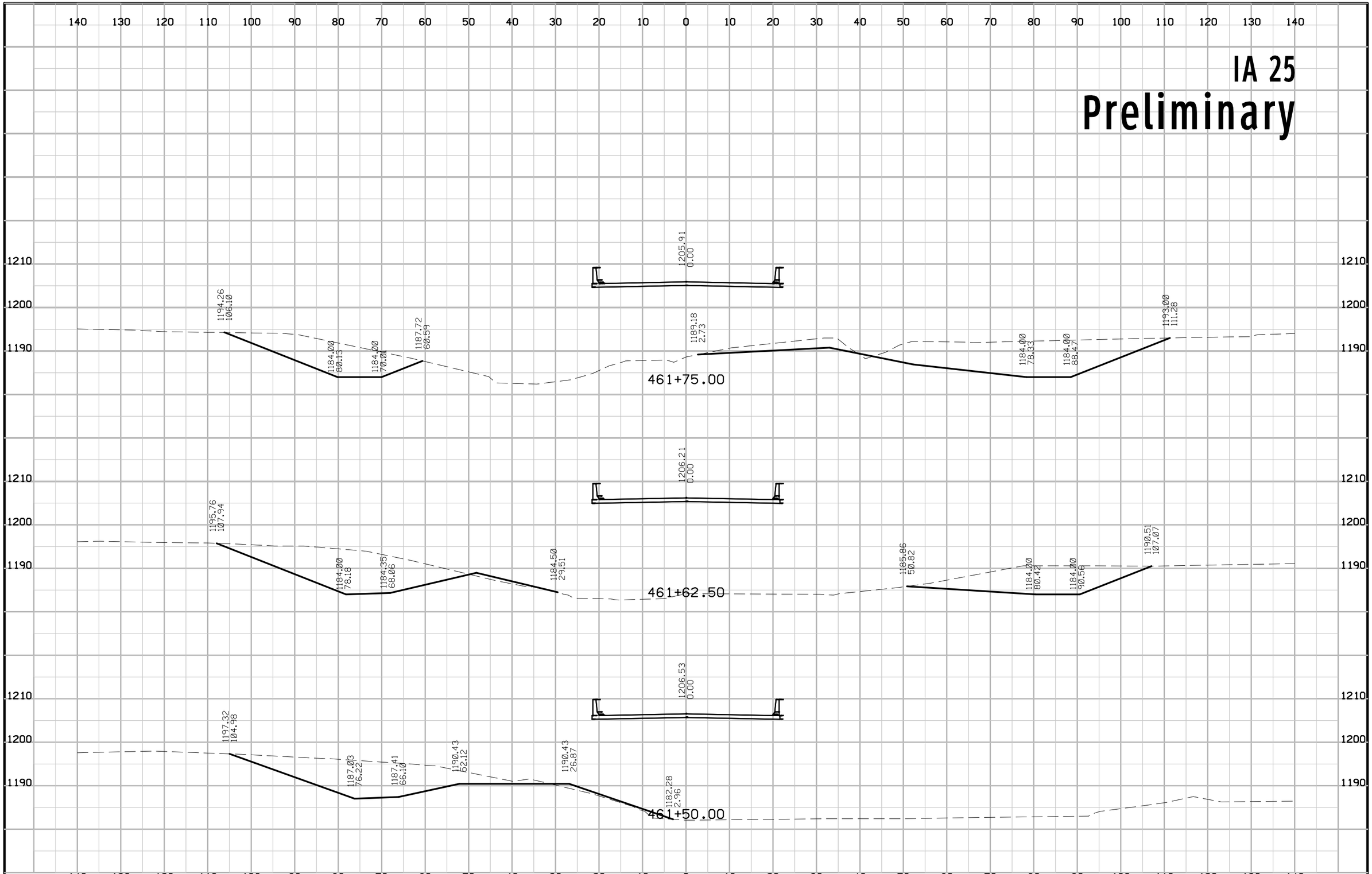
IA 25
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	Schemmer	ADAIR COUNTY	PROJECT NUMBER	BRFN-025-3(30)--39-01	SHEET NUMBER	W.7

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IA 25

Preliminary

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

1210
1200
1190

1205.17
0.00

1184.39
70.24

462+12.50

1188.58
72.06

1188.33
82.20

1195.08
100.46

1205.39
0.00

1184.41
48.21

462+00.00

1190.43
57.54

1190.43
59.53

1186.65
74.15

1186.40
84.29

1194.41
103.98

1205.64
0.00

1185.20
26.10

1190.43
6.28

461+87.50

1190.43
56.79

1184.72
76.24

1184.47
86.38

1193.82
111.26

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.8

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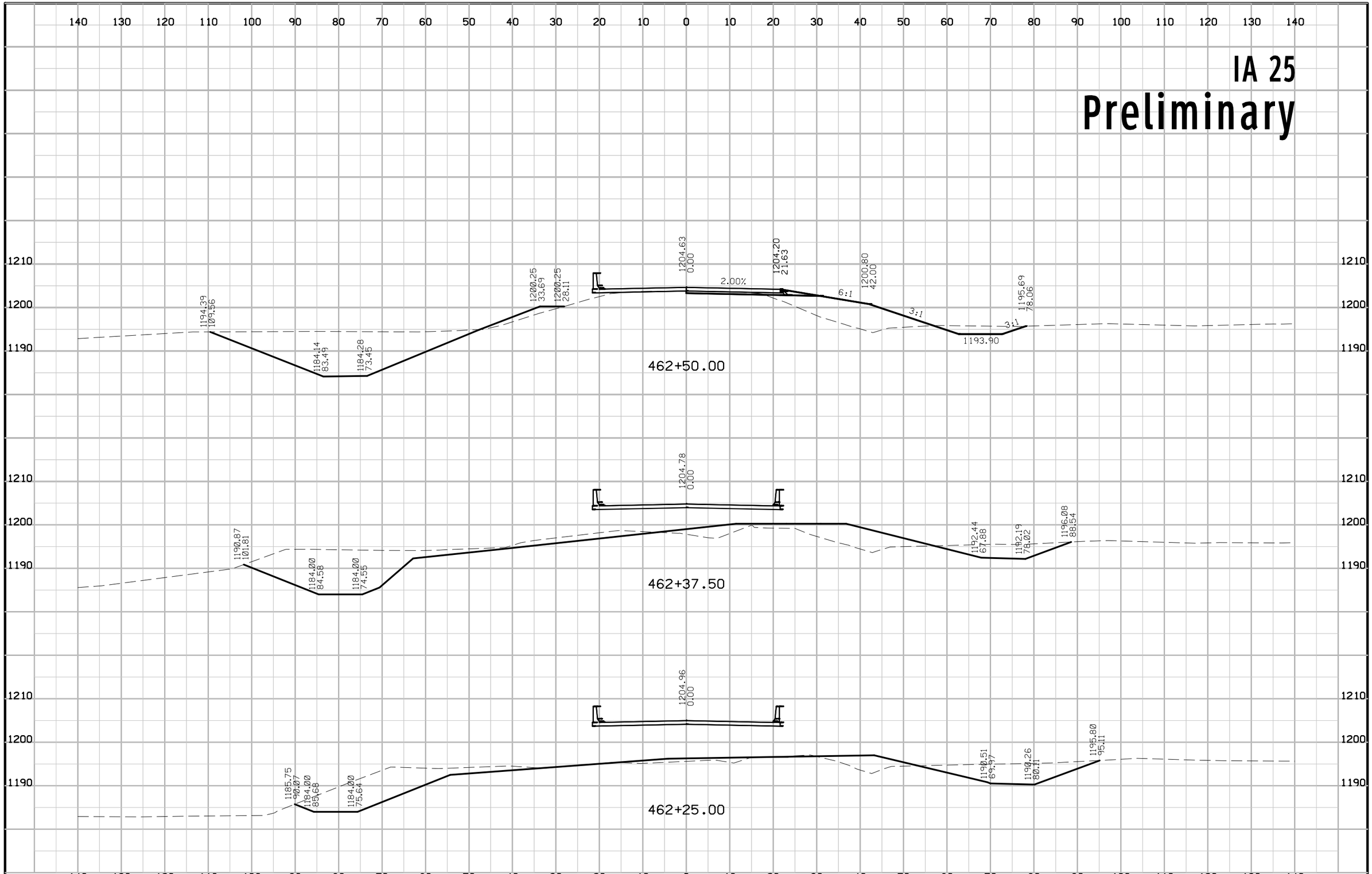
IA 25
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	Schemmer	ADAIR COUNTY	PROJECT NUMBER	BRFN-025-3(30)--39-01	SHEET NUMBER	W.9

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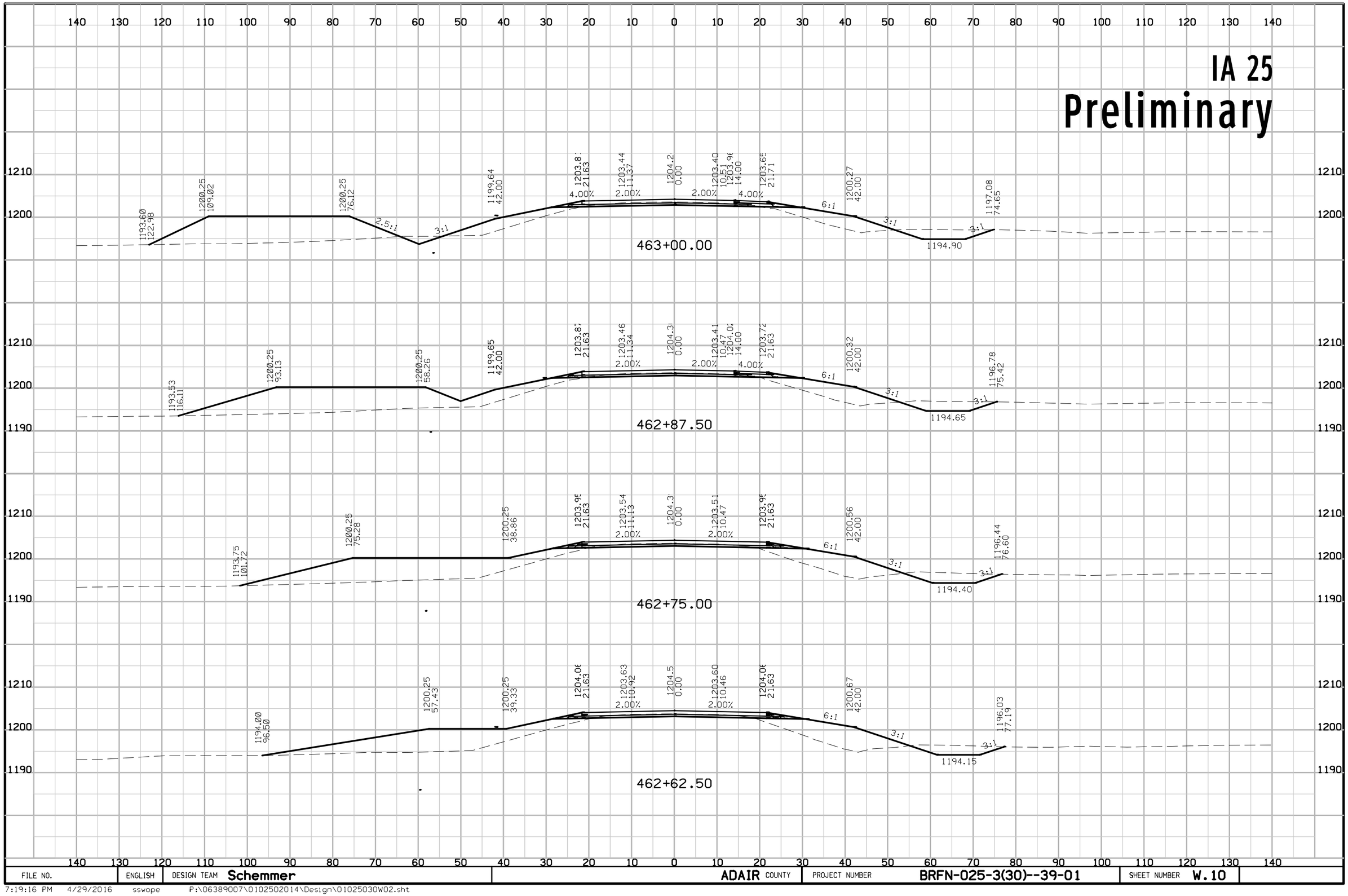
IA 25
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.10

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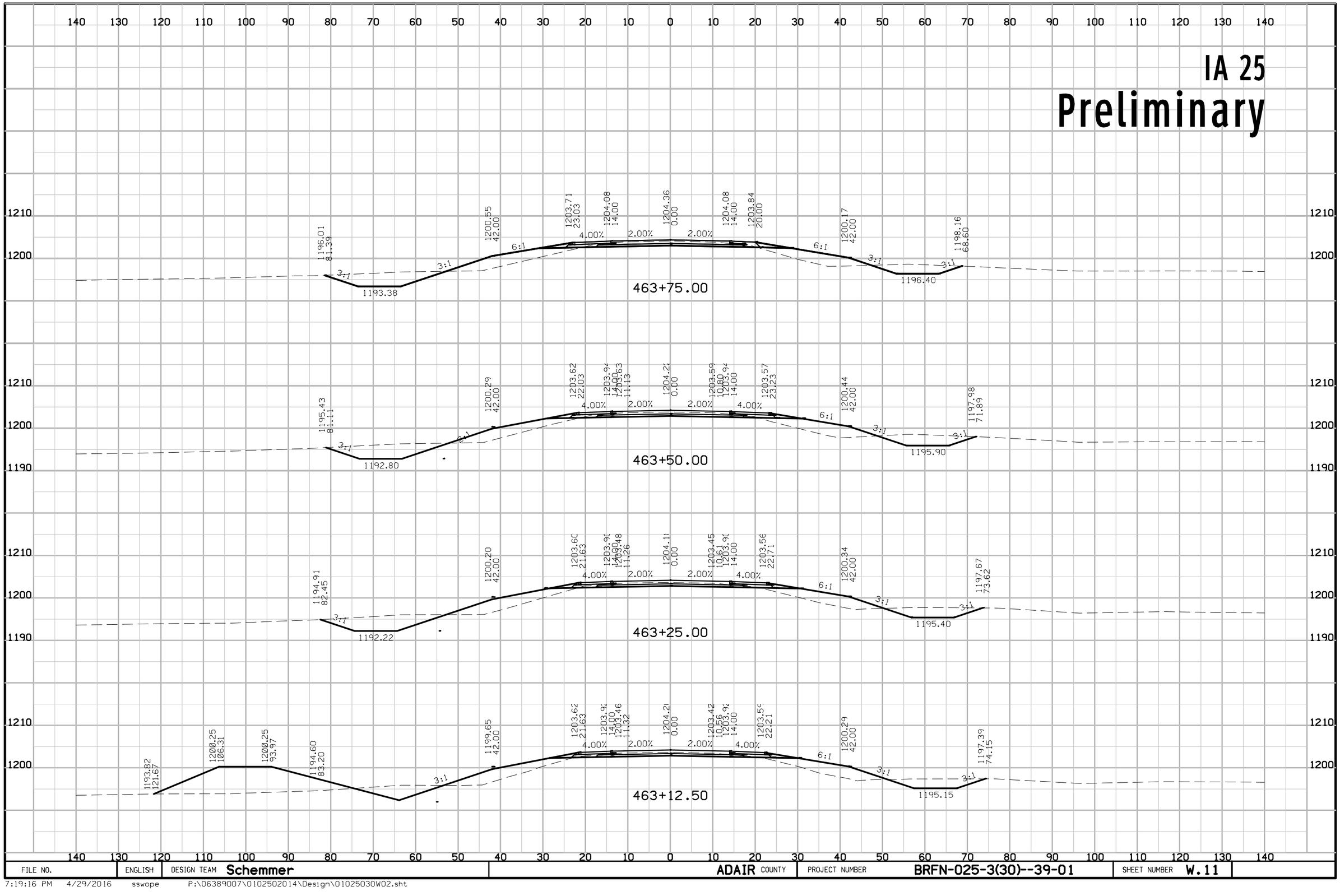
IA 25
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.11

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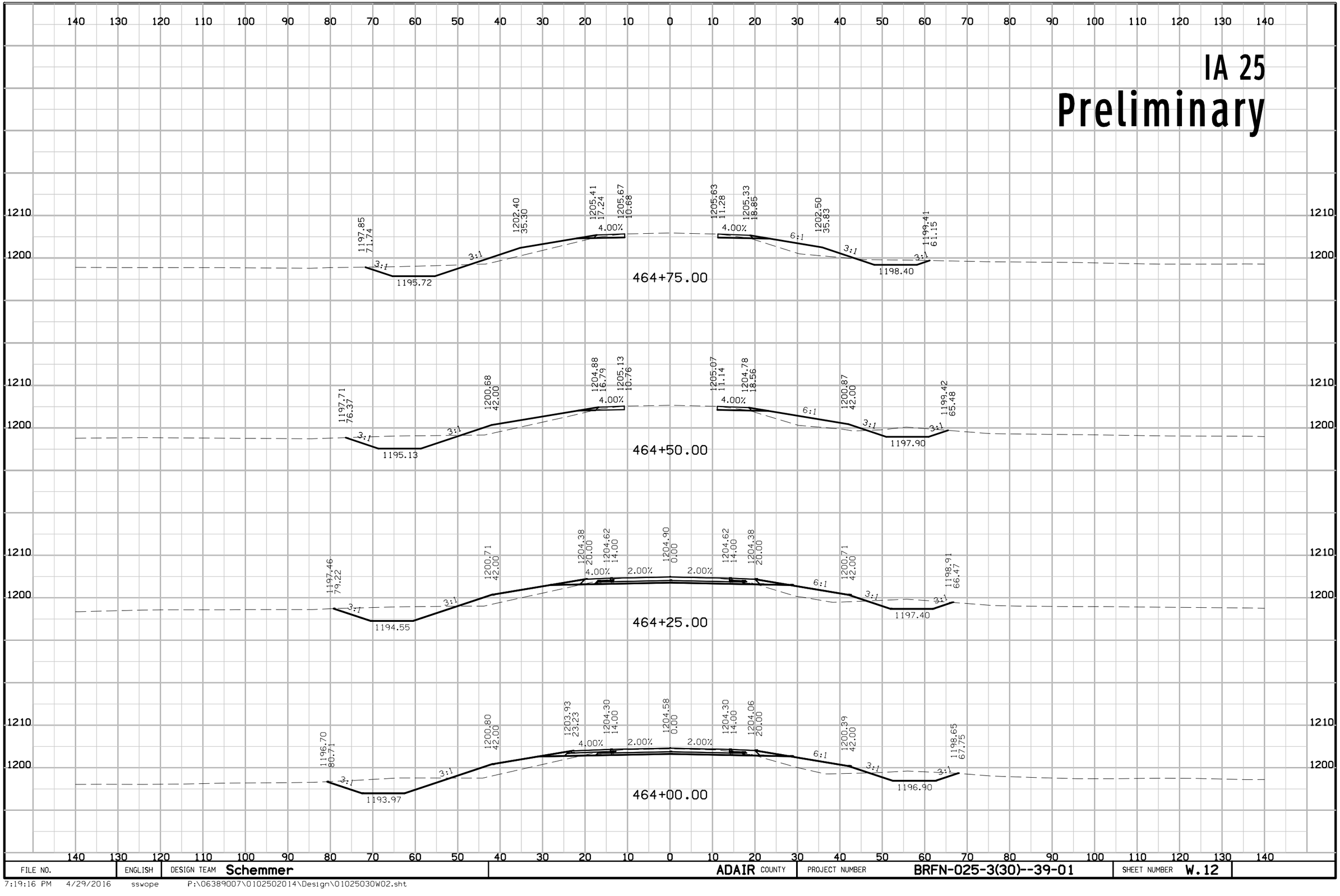
IA 25
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.12

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IA 25
Preliminary

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

1200

465+75.00

1200

1200

465+50.00

1200

1210

1203.28
29.09
3:1
1207.41
16.64
1207.65
10.65
4.00%
1207.63
11.40
1207.31
18.81
4.00%
3:1
3:1
1201.54
36.13

1200

465+44.00

1200

1210

1198.43
63.77
3:1
1196.88
3:1
1205.96
21.90
1206.79
16.91
1207.04
10.68
4.00%
1207.01
11.38
1206.72
18.73
1205.93
23.50
4.00%
6:1
3:1
3:1
1200.31
55.80
1199.40

1200

465+25.00

1200

1210

1198.12
67.64
3:1
1196.30
3:1
1204.16
28.60
1206.04
17.31
1206.30
10.66
4.00%
1206.27
11.36
1205.97
18.94
1204.18
29.66
4.00%
6:1
3:1
3:1
1199.76
58.08
1198.90

1200

465+00.00

1200

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

FILE NO.	ENGLISH	DESIGN TEAM Schemmer	ADAIR COUNTY	PROJECT NUMBER BRFN-025-3(30)--39-01	SHEET NUMBER W.13

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