HMA PAVEMENT - REPLACE
STP-021-1(34)--2C-54
KEOKUK Co.

LETTING DATE
03-17-2020

INDEX OF SHEETS

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

KEOKUK COUNTY

HMA PAVEMENT - REPLACE

IA 21

IA 149 to 1st Street in Delta

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

For Project Location Map
Refer to Sheet A.2

REVISIONS

	TOTAL
	128
PROJECT IDENTIFICATION NUMBER	
01-54-021-010	
PROJECT NUMBER	
STP-021-1(34)--2C-54	
R.O.W. PROJECT NUMBER	

MILEAGE SUMMARY

105-1
09-27-94

Div.	Location	Lin. Ft.	Miles
1	Sta. 0+20.73 to Sta. 557+22.25	55701.52	10.550
	Deduct Bridge at Sta. 164+56.49	95.00	0.0180
	Deduct Bridge at Sta. 325+78.34	481.00	0.091
	Deduct Bridge at Sta. 484+27.31	381.00	0.072
	Equation: Sta. 276+15.12 (Back) = Sta. 276+15.55 (Ahead) (Shortens Line)	(0.43)	
	Equation: Sta. 284+35.29 (Back) = Sta. 284+33.17 (Ahead) (Lengthens Line)	2.12	
	Equation: Sta. 300+58.47 (Back) = Sta. 300+58.84 (Ahead) (Shortens Line)	(0.37)	
	Equation: Sta. 353+27.13 (Back) = Sta. 354+00.60 (Ahead) (Shortens Line)	(73.47)	
	Equation: Sta. 383+85.73 (Back) = Sta. 383+85.80 (Ahead) (Lengthens Line)	0.07	
	Equation: Sta.426+56.60 (Back) = Sta. 426+56.65 (Ahead) (Shortens Line)	(0.05)	
	Equation: Sta.463+47.76 (Back) = Sta. 464+00.00 (Ahead) (Shortens Line)	(52.24)	
	Equation: Sta. 495+99.32 (Back) = Sta. 496+00.00 (Ahead) (Shortens Line)	(0.68)	
	Length of Roadway on Project	55576.47	10.526
	Length of Bridge on Project	957.00	0.181
	Total Length of Project	54619.47	10.345

From IA 149 to C.R. G48

DESIGN DATA RURAL

2019 AADT	858	V.P.D.
2039 AADT	894	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	16	%
Total Design ESALs	--	

From C.R. G48 to 1st. Street

DESIGN DATA RURAL

2019 AADT	776	V.P.D.
2039 AADT	809	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	16	%
Total Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Brian T. Higginbotham	Primary Signature Block
V.1	Casey V. Faber	Structural Design

LICENSED PROFESSIONAL ENGINEER
BRIAN T. HIGGINBOTHAM
PI4503
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: 1/3/20

Brian T. Higginbotham, P.E.
Printed or Typed Name

My license renewal date is December 31, 20 21

Pages or sheets covered by this seal: A.1-A.3, B.1-B.7, C.1-C.31, D.1-D.20, G.1-G.4, J.1-J.5, L-1-5, RC.1-RC.5, RR.1-RR.11, U.1-U.2, V.4-V.19, W.1-W.16

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER A.1

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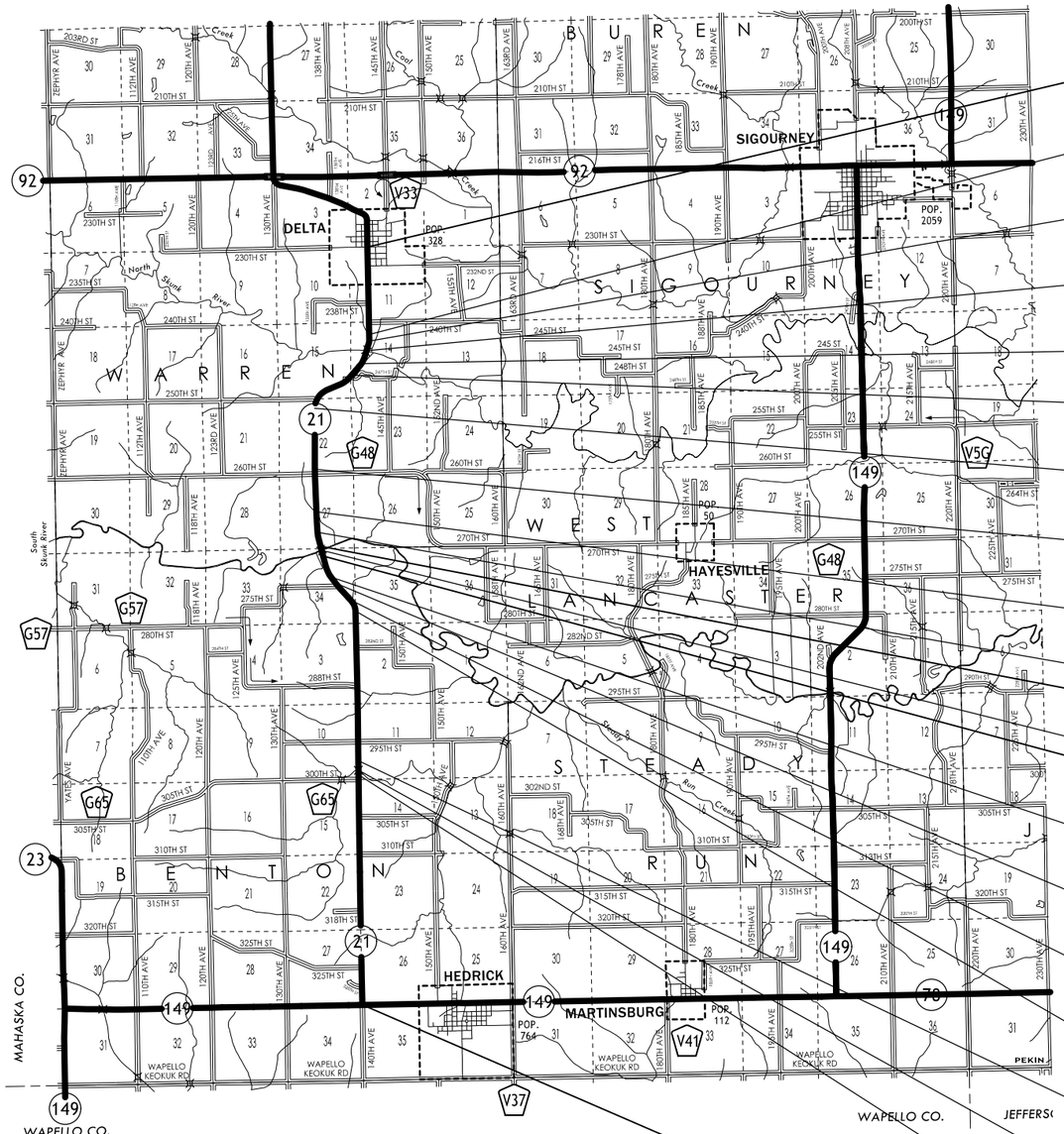

NORTH FIRST STREET

STA. 557+22.25
END PROJECT
END INLAY

EQUATION:
STA. 495+99.32 BK
= STA. 496+00.00 AH

STA. 492+60.54
STOP SHOULDER RETROFIT AND PATCHING
START INLAY

STA. 484+27.32
BRIDGE - REPLACE BRIDGE APPROACHES
FHWA # 211041

STA. 472+16.23
STOP INLAY
START SHOULDER RETROFIT AND PATCHING

EQUATION:
STA. 463+47.76 BK
= STA. 464+00.00 AH

EQUATION:
STA. 426+56.60 BK
= STA. 426+56.65 AH

EQUATION:
STA. 383+85.73 BK
= STA. 383+85.80 AH

EQUATION:
STA. 353+27.13 BK
= STA. 354+00.60 AH

STA. 350+84.41
STOP SHOULDER RETROFIT AND PATCHING
START INLAY

STA. 328+88.84
START SHOULDER RETROFIT
AND PATCHING

STA. 325+78.34
BRIDGE
FHWA # 211161

STA. 323+37.84
STOP SHOULDER RETROFIT
STOP PATCHING AND OVERLAY

STA. 319+19.37
STOP INLAY
START SHOULDER RETROFIT
START PATCHING AND OVERLAY

EQUATION:
STA. 300+58.47 BK
= STA. 300+58.84 AH

EQUATION:
STA. 284+35.29 BK
= STA. 284+33.17 AH

EQUATION:
STA. 276+15.12 BK
= STA. 276+15.55 AH

STA. 171+20.43
STOP SHOULDER RETROFIT
START INLAY

STA. 164+56.49
BRIDGE
FHWA # 210121

STA. 160+12.28
STOP INLAY
START SHOULDER RETROFIT

IA HWY 149

STA. 0+20.73
BEGIN PROJECT
BEGIN INLAY

LOCATION MAP SCALE
0 1 2 3
Miles

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER A.2

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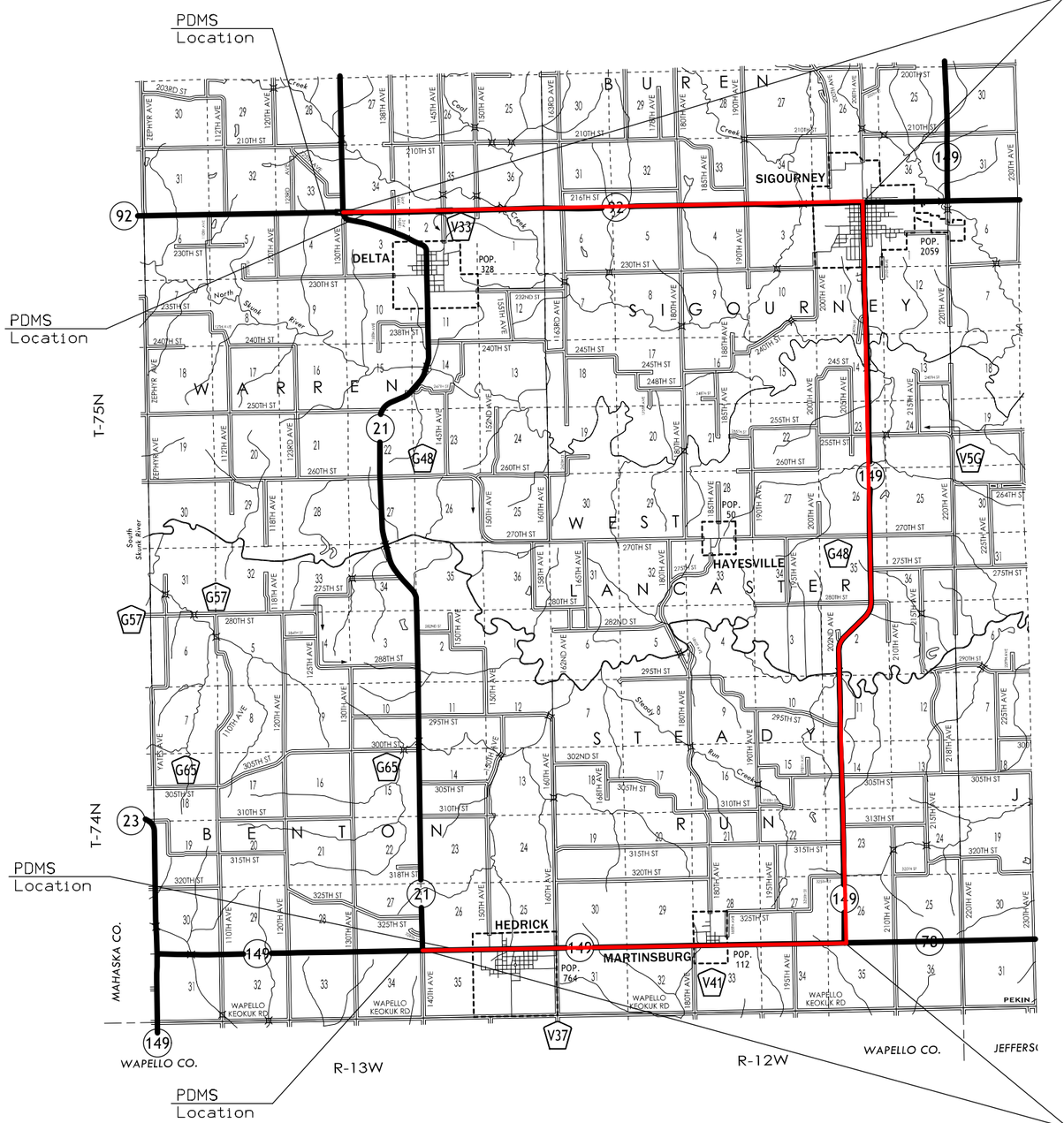
IA 21 DETOUR
FOLLOW IA 149



NOTES:

1. Patch and Pavement Mark Detour prior to initiating Detour.
2. Contractor shall place 4 Portable Dynamic Message Signs (PDMS) 10 days prior to road closures (500'-1000' in advance of Detour)

IA 21 DETOUR
FOLLOW IA 149

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER A.3

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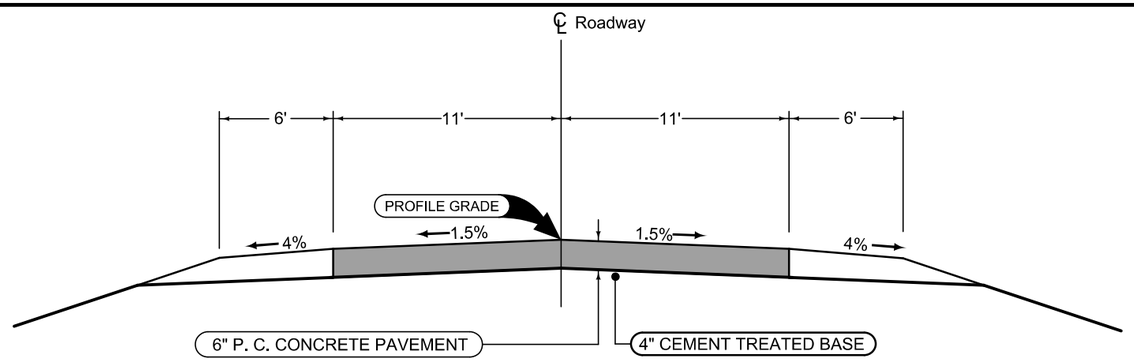
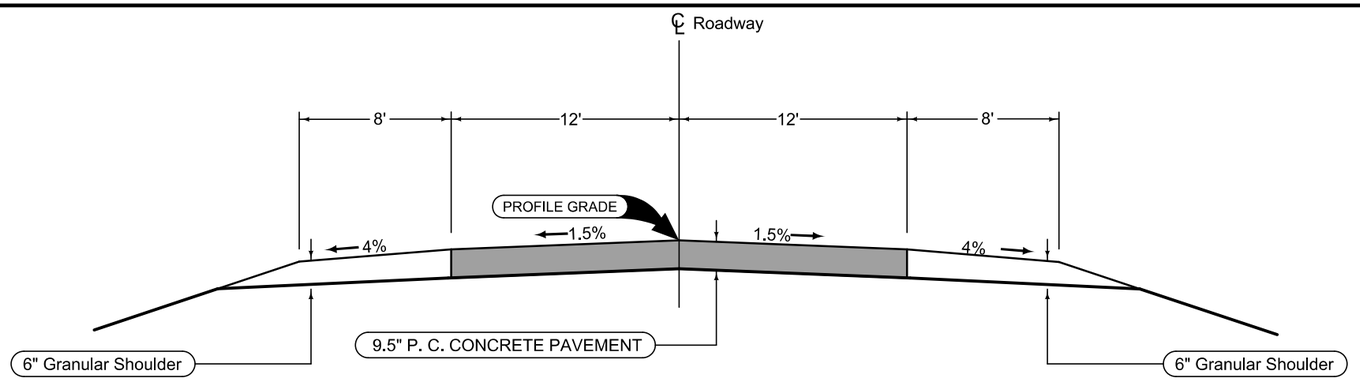


TYPICAL EXISTING SECTION
IA 21

STA. 0+20.73 TO STA. 160+12.28
STA. 171+20.43 TO STA. 319+19.37
STA. 350+84.41 TO STA. 472+16.23
STA. 492+60.54 TO STA. 557+22.25



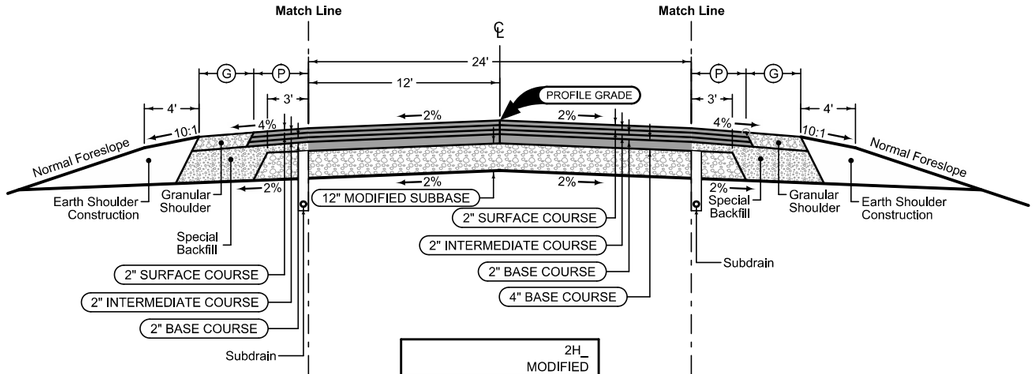
TYPICAL EXISTING SECTION
IA 21

STA. 160+12.28 TO STA. 171+20.43
STA. 319+19.37 TO STA. 350+84.41
STA. 472+16.23 TO STA. 492+60.54

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

		2_C_ 10-15-13	
STATION TO STATION		(P) Feet	(G) Feet
0+20.73	160+12.28	4	2
171+20.43	219+60.24	4	2
222+35.00	319+19.37	4	2
350+84.41	472+16.23	4	2
492+60.54	557+22.25	4	2



	2H_ MODIFIED
STATION TO STATION	
0+20.73	160+12.28
171+20.43	319+19.37
350+84.41	472+16.23
492+60.54	557+22.25

Combination Shoulder

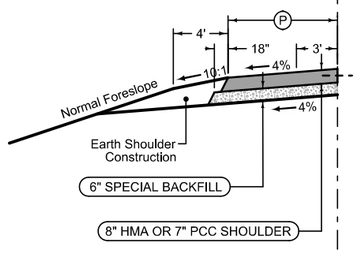
Shoulder Jointing:
Longitudinal joint: B

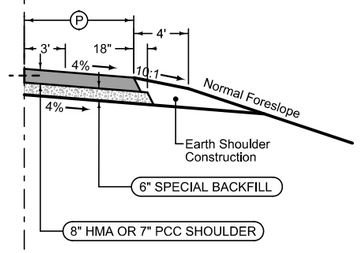
		2_C_ 10-15-13	
STATION TO STATION		(P) Feet	(G) Feet
0+20.73	160+12.28	4	2
171+20.43	219+41.59	4	2
222+13.00	319+19.37	4	2
350+84.41	472+16.23	4	2
492+60.54	557+22.25	4	2

Paved Shoulder at Guardrail

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

		2_P_Guard_ 04-21-20
STATION TO STATION		(P) Feet
219+60.24	222+35.00	10.5-12.0





Paved Shoulder at Guardrail

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

		2_P_Guard_ 04-21-20
STATION TO STATION		(P) Feet
219+41.59	222+13.00	11.8-10.5

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

See Tab 112-9 for shoulder quantities.

IA 21

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

2_C_ 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
160+12.28	162+91.15	4	2
166+58.22	171+20.43	4	2
319+19.37	322+32.82	4	2
329+85.23	350+84.41	4	2

Combination Shoulder Strengthening

Shoulder Jointing:
Longitudinal joint: B

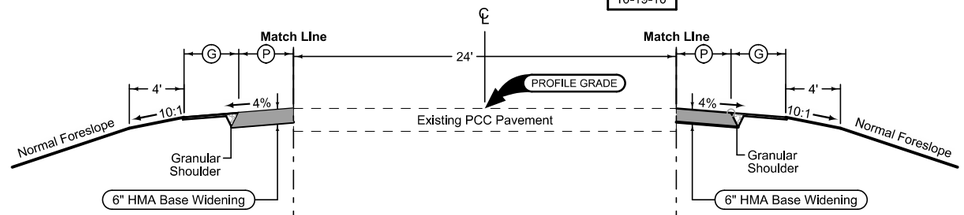
2_C_ 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
472+16.23	481+20.14	4	2
487+72.14	492+60.54	4	2

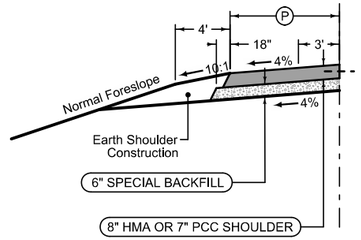
Paved Shoulder at Guardrail

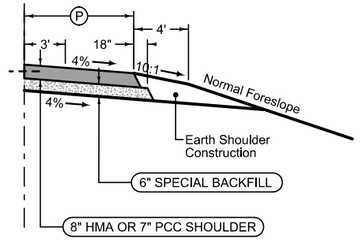
PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_ 04-21-20		
STATION TO STATION		(P) Feet
162+91.15	163+67.10	11.4-9.4
165+24.23	166+58.22	9.2-12.4
322+32.82	323+48.77	9.0-7.4
328+73.23	329+85.23	9.2-12.4
481+20.14	481+75.81	11.5-10.1
486+78.93	487+72.14	9.6-12.6

2E_
10-19-10







Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

2_C_ 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
160+12.28	162+53.65	4	2
166+20.52	171+20.43	4	2
319+19.37	321+95.67	4	2
329+47.52	350+84.41	4	2

Combination Shoulder Strengthening

Shoulder Jointing:
Longitudinal joint: B

2_C_ 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
472+16.23	480+82.58	4	2
487+34.65	492+60.54	4	2

Paved Shoulder at Guardrail

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

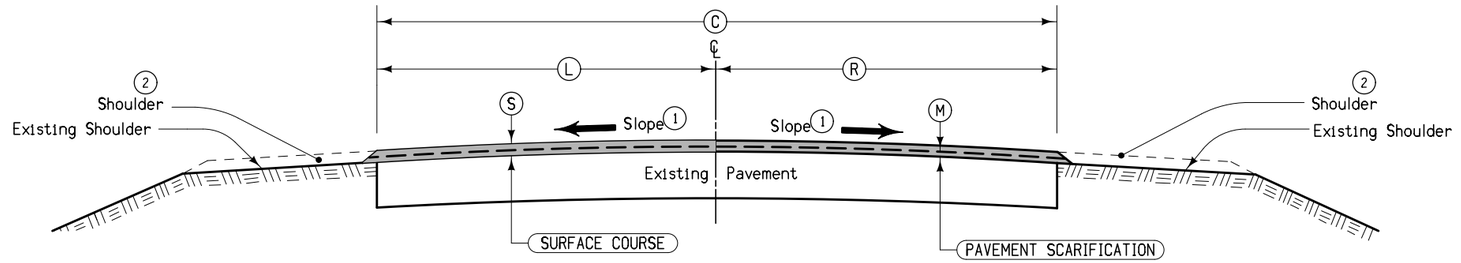
2_P_Guard_ 04-21-20		
STATION TO STATION		(P) Feet
162+53.65	163+67.10	12.9-9.6
165+24.23	166+20.52	9.5-11.5
321+95.67	323+48.77	13.8-9.9
328+73.23	329+47.52	9.5-11.6
480+82.58	481+75.81	12.6-9.6
486+78.93	487+34.65	10.1-11.5

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

See Tab 112-9 for shoulder quantities.

IA 21 Retrofit Paved Shoulder

2617
MODIFIED



1. Match finished slope to existing pavement, except that the maximum allowable slope is 3.0%, minimum allowable slope is 2.0%. Section may be modified as directed by the Engineer through areas of special shaping.

   Refer to tabulation listing of superelevated curves and Standard Road Plans for additional requirements through superelevated curves.

2. Refer to shoulder typicals.

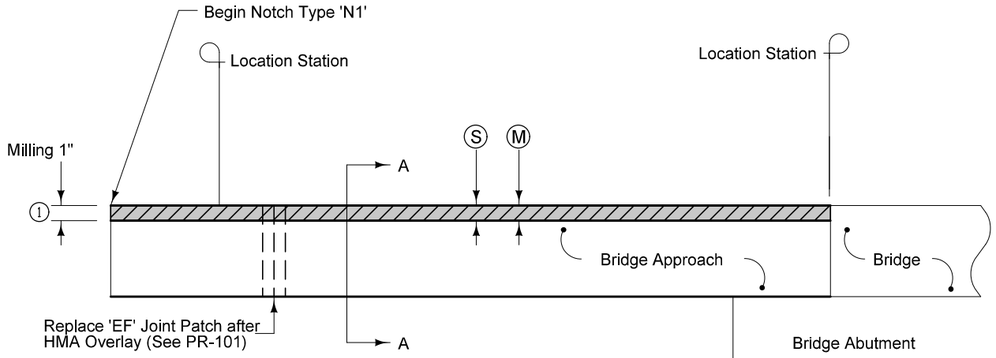
Location			S	C	L	R	M	Remarks
Road Identification	Station To Station		Inches	Feet	Feet	Feet	Inches	
IA 21	319+19.37	322+70.8	2	24	12	12	1	

TYPICAL CROSS SECTION HMA RESURFACING

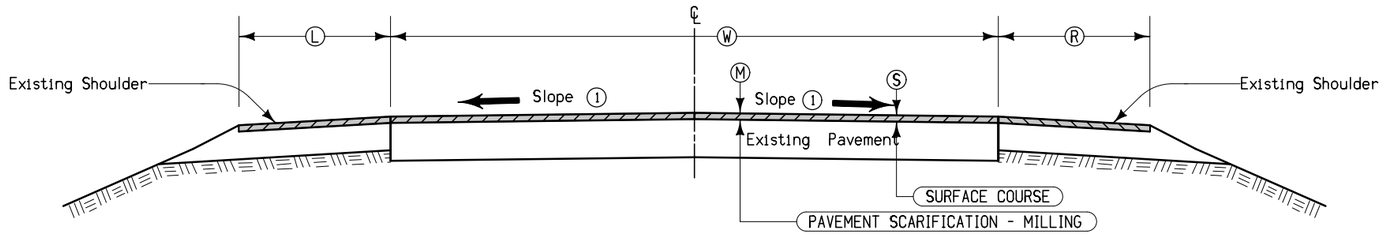
Notes:

(1) Match finished slope to existing pavement, except that the maximum allowable slope is 3.0 %, minimum allowable slope is 2.0 %. Section may be modified as directed by the Engineer through areas of special shaping.

(2) Mill 1" Refer to Notch Type 'N1'

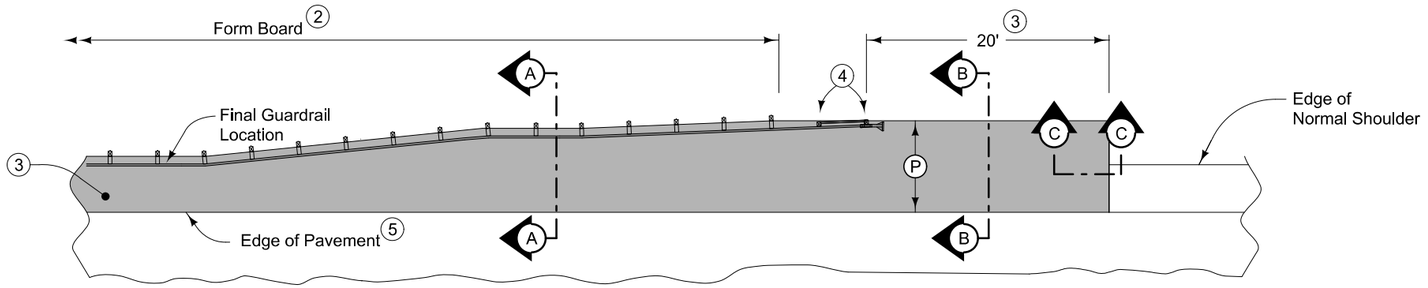


RESURFACING OF BRIDGE APPROACHES

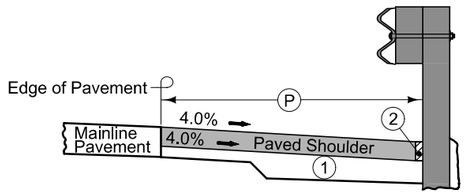


A-A

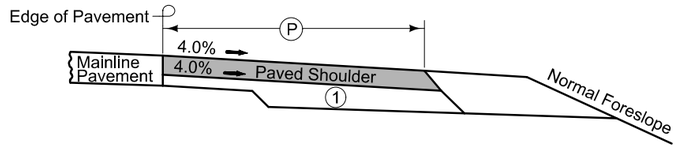
LOCATION			S	M	W	L	R	REMARKS
ROAD IDENTIFICATION	STATION TO STATION		Inches	Inches	Feet	Feet	Feet	
IA 21	322+48.7	323+07.2	1	1	24			
IA 21	323+09.2	232+48.7	1	1	24	7	9	



PLAN VIEW

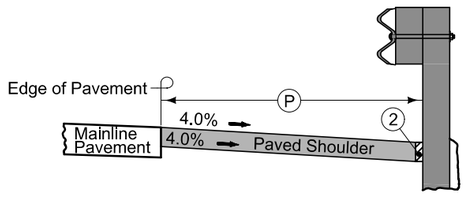


Section A-A

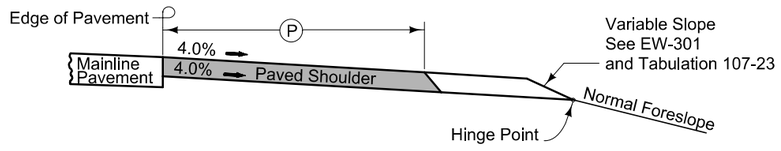


Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

8" 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 P/2 from edge of mainline pavement when P 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 and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

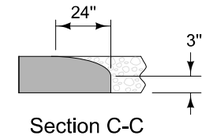
(1) For subgrade treatment, refer to other details in the plan.

(2) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown. Refer to note 4 for final 2 posts.

(3) Continue paved shoulder to existing paved shoulder or 20 feet beyond the center of the first post.

(4) Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.

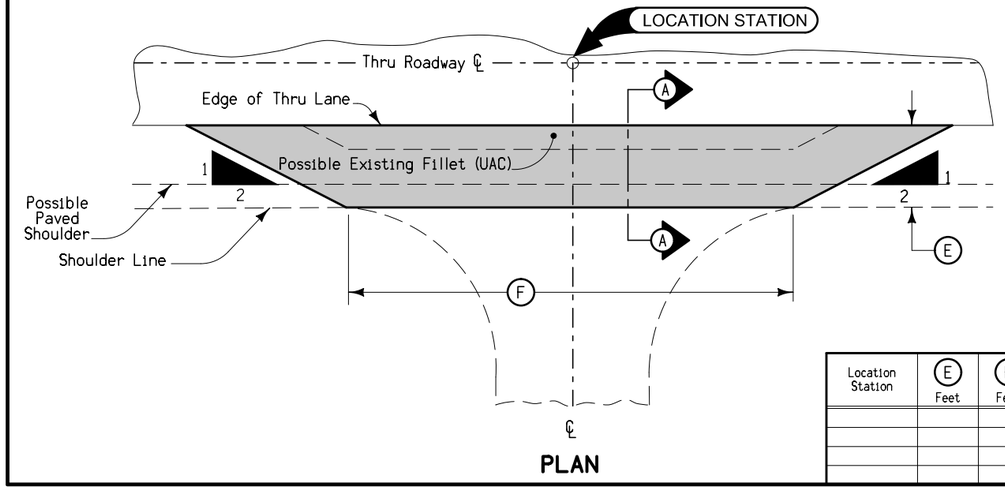
(5) 'KT-1 joint for PCC shoulder.
'B' joint for HMA shoulder.



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

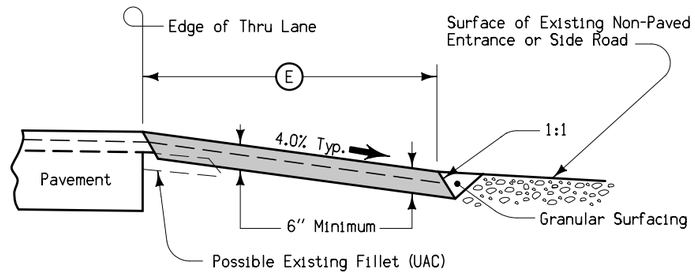
PAVED SHOULDER AT GUARDRAIL

7148
10-21-14



PLAN

Location Station	E Feet	F Feet



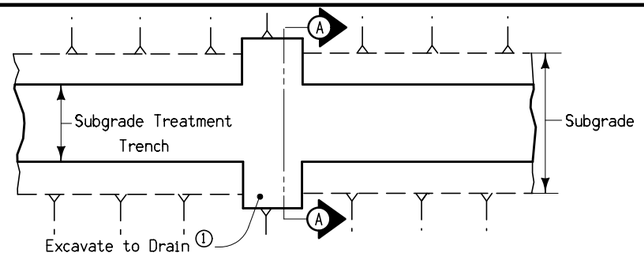
SECTION A-A

Special shaping of existing surface prior to placement of fillet may be required by the Engineer and is incidental to other work on the project.

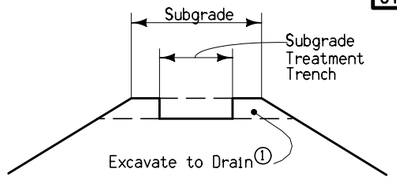
Quantites included with mainline quantities.

FILLET FOR NON-PAVED ENTRANCES OR SIDE ROADS

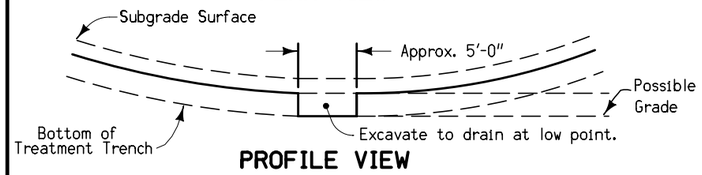
8301
04-20-04



PLAN VIEW



SECTION A-A



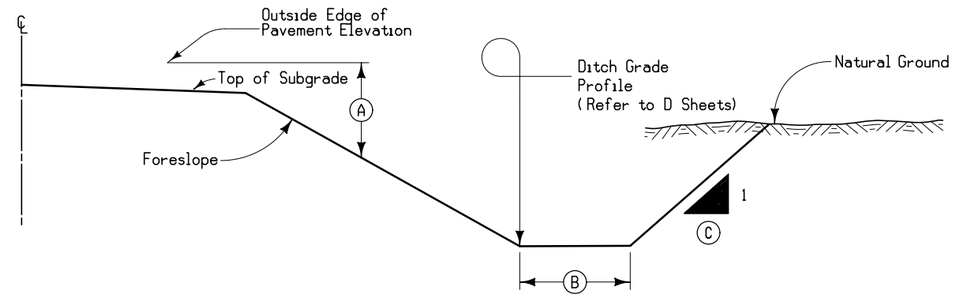
PROFILE VIEW

① The contractor shall excavate a portion of subgrade as necessary to provide drainage for the treatment trench. When the subgrade treatment is granular soils, the contractor shall excavate a portion of the subgrade and backfill it with the granular soils every 300 feet.

This excavation shall be considered incidental.

TYPICAL DETAILS OF DRAIN FOR SUBGRADE TREATMENT TRENCH

4204
MODIFIED



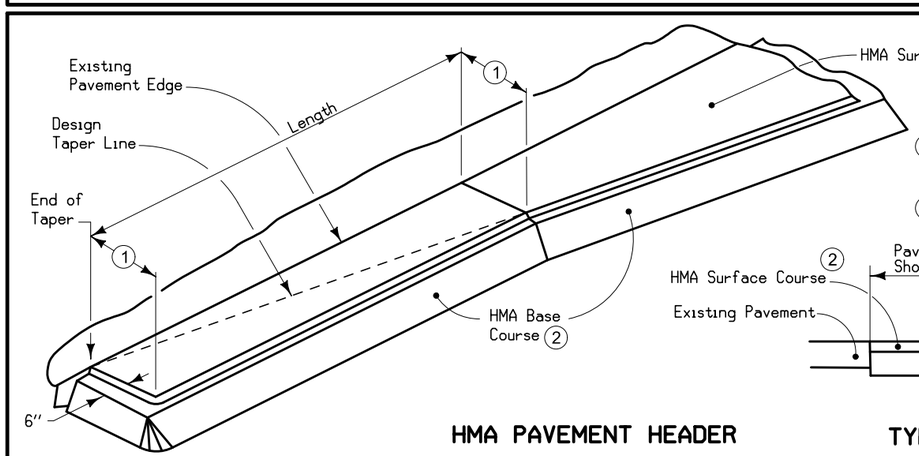
DETAILS OF TYPICAL SPECIAL DITCH

LOCATION			A Feet	B Feet	C Feet
STATION TO STATION		SIDE			
66+34	72+48	LT		3	3
465+85	482+11	LT		3	3

Note:

Details shown are typical. Refer to plan cross sections for additional data on Special Ditches.

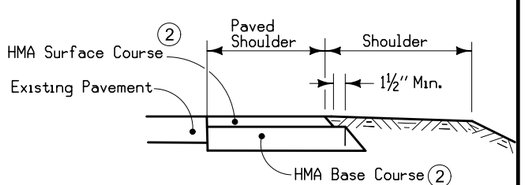
7102
04-21-15



HMA PAVEMENT HEADER

① 4 foot minimum or match existing or proposed paved shoulder.

② Construct with normal slopes.



TYPICAL SECTION

Refer to project plans for exact details of pavement requirements.

ESTIMATED PROJECT QUANTITIES
(UP TO A 5 DIVISION PROJECT)

Division 1: ROADWAY ITEMS
Division 2: NON-PARTICIPATING

Item No.	Item Code	Item	Unit	Quantities										
				Estimated						As Built				
				Division 1	Division 2	Division 3	Division 4	Division 5	Total	Division 1	Division 2	Division 3	Division 4	Division 5
1	2101-0850001	CLEARING AND GRUBBING	ACRE	2.5										
2	2101-0850002	CLEARING AND GRUBBING	UNIT	514										
3	2102-0425070	SPECIAL BACKFILL	TON	36142.7										
4	2102-2625000	EMBANKMENT-IN-PLACE	CY	1031.5										
5	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	112018.2										
6	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	20.0										
7	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	23098.0										
8	2107-0425020	COMPACTING BACKFILL ADJACENT TO BRIDGES, CULVERTS OR STRUCTURES	CY	326.0										
9	2113-0001100	SUBGRADE STABILIZATION MATERIAL, POLYMER GRID	SY	32900.0										
10	2115-0100000	MODIFIED SUBBASE	CY	43909.3										
11	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	12142.6										
12	2122-5190501	PAVED SHOULDER, PORTLAND CEMENT CONCRETE (PAVED SHOULDER PANEL	SY	169.0										
		FOR BRIDGE END DRAIN)												
13	2122-5500080	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 8 IN.	SY	1954.3										
14	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	1090.30										
15	2125-2225050	RESHAPING DITCHES	STA	22.40										
16	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	CY	1479.5										
17	2213-8201060	BASE WIDENING, 6 IN. HOT MIX ASPHALT MIXTURE	SY	2803.6										
18	2213-8201080	BASE WIDENING, 8 IN. HOT MIX ASPHALT MIXTURE	SY	1237.6										
19	2214-5145150	PAVEMENT SCARIFICATION	SY	1413.2										
20	2301-0690204	BRIDGE APPROACH, BR-204	SY	452.8										
21	2303-1031500	HOT MIX ASPHALT STANDARD TRAFFIC, BASE COURSE, 1/2 IN. MIX	TON	50012.32										
22	2303-1032500	HOT MIX ASPHALT STANDARD TRAFFIC, INTERMEDIATE COURSE, 1/2 IN. MIX	TON	20289.81										
23	2303-1033500	HOT MIX ASPHALT STANDARD TRAFFIC, SURFACE COURSE, 1/2 IN. MIX,	TON	20308.48										
		NO SPECIAL FRICTION REQUIREMENT												
24	2303-1258283	ASPHALT BINDER, PG 58-28S, STANDARD TRAFFIC	TON	5436.65										
25	2303-6911000	HOT MIX ASPHALT PAVEMENT SAMPLES	LS	1.00										
26	2303-7000610	PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA MIXTURE LABORATORY VOIDS	EACH	90611										
		(FORMULA - BY PAY FACTOR)												
27	2303-7000620	PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA MIXTURE FIELD VOIDS	EACH	90611										
		(FORMULA - BY PAY FACTOR)												
28	2315-8275025	SURFACING, DRIVEWAY, CLASS A CRUSHED STONE	TON	1063.6										
29	2317-7000120	PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA PAVEMENT SMOOTHNESS	EACH	42142										
		(BY SCHEDULE)												
30	2402-0425040	FLOODED BACKFILL	CY	3453.4										
31	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT	CY	6608.5										
32	2416-0100018	APRONS, CONCRETE, 18 IN. DIA.	EACH	4										
33	2416-0100024	APRONS, CONCRETE, 24 IN. DIA.	EACH	10										
34	2416-0100030	APRONS, CONCRETE, 30 IN. DIA.	EACH	6										
35	2416-0100036	APRONS, CONCRETE, 36 IN. DIA.	EACH	5										
36	2416-1160018	CULVERT, CONCRETE ENTRANCE PIPE, 18 IN. DIA.	LF	72										
37	2416-1160036	CULVERT, CONCRETE ENTRANCE PIPE, 36 IN. DIA	LF	56										
38	2416-1180024	CULVERT, CONCRETE ROADWAY PIPE, 24 IN. DIA.	LF	378										
39	2416-1180030	CULVERT, CONCRETE ROADWAY PIPE, 30 IN. DIA.	LF	178										
40	2416-1180036	CULVERT, CONCRETE ROADWAY PIPE, 36 IN. DIA.	LF	40										
41	2416-1240030	CULVERT, 3000D CONCRETE ROADWAY PIPE, 30 IN. DIA.	LF	226										
42	2416-1240036	CULVERT, 3000D CONCRETE ROADWAY PIPE, 36 IN. DIA.	LF	104										
43	2417-0225018	APRONS, METAL, 18 IN. DIA.	EACH	2										
44	2417-0225024	APRONS, METAL, 24 IN. DIA.	EACH	17										
45	2417-0225030	APRONS, METAL, 30 IN. DIA.	EACH	2										
46	2417-0225036	APRONS, METAL, 36 IN. DIA.	EACH	4										
47	2417-1040018	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 18 IN. DIA.	LF	36										
48	2417-1040024	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA.	LF	56										
49	2499-4000036	SLIPLINING EXISTING CULVERTS, LESS THAN OR EQUAL TO 36 IN. DIA. OR HEIGHT	LF	864										
50	2502-8212204	SUBDRAIN, PERFORATED PLASTIC PIPE, 4 IN. DIA.	LF	100852										
51	2502-8221306	SUBDRAIN OUTLET, DR-306	EACH	418										
52	2503-0500402	BRIDGE END DRAIN, DR-402	EACH	4										
53	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	847.5										
54	2505-4008300	STEEL BEAM GUARDRAIL	LF	475										
55	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	12										
56	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	12										
57	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	16										
58	2506-4984000	FLOWABLE MORTAR	CY	12.6										
59	2510-5204000	PAVEMENT SCARIFICATION (OF HMA RESURFACING PRIOR TO PAVEMENT REMOVAL)	SY	27932.0										
60	2510-6750501	REMOVAL AND CRUSHING OF PAVEMENT	SY	121481.0										
61	2518-6910000	SAFETY CLOSURE	EACH	20										
62	2519-3300600	FENCE, SAFETY	LF	433.0										
63	2520-3350015	FIELD OFFICE	EACH	1										
64	2524-6765010	REMOVE AND REINSTALL SIGN AS PER PLAN	EACH	49										
65	2526-8285000	CONSTRUCTION SURVEY	LS	1.00										
66	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	4894.41										
67	2527-9263137	PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED	EACH	12										
68	2528-8445110	TRAFFIC CONTROL	LS	1.00										
69	2528-8445113	FLAGGERS	EACH	PER PROPOSAL										
70	2528-8445115	PILOT CARS	EACH	PER PROPOSAL										
71	2528-9290050	PORTABLE DYNAMIC MESSAGE SIGN (PDMS)	CDAY	40										
72	2529-2242304	CD JOINT ASSEMBLY	EACH	20										
73	2529-2242320	CT JOINT	EACH	17										
74	2529-5070110	PATCHES, FULL-DEPTH FINISH, BY AREA	SY	1017.4										
75	2529-5070111	PATCHES, FULL-DEPTH FINISH, BY AREA (50 FEET OR GREATER IN LENGTH)	SY	230.7										

ESTIMATED PROJECT QUANTITIES
(UP TO A 5 DIVISION PROJECT)

Division 1: ROADWAY ITEMS
Division 2: NON-PARTICIPATING

Item No.	Item Code	Item	Unit	Quantities										
				Estimated						As Built				
				Division 1	Division 2	Division 3	Division 4	Division 5	Total	Division 1	Division 2	Division 3	Division 4	Division 5
76	2529-5070120	PATCHES, FULL-DEPTH FINISH, BY COUNT	EACH	52										
77	2529-8174010	SUBBASE (PATCHES)	SY	1116.7										
78	2529-8174020	SUBBASE PATCH WITH EF JOINT	SY	14.3										
79	2529-8174050	PATCH SUBDRAIN	EACH	44										
80	2529-8201000	JOINT ASSEMBLY, EF	EACH	2										
81	2529-8202000	RUMBLE STRIP PANEL (IN FULL DEPTH PATCH)	EACH	2										
82	2533-4980005	MOBILIZATION	LS	1.00										
83	2548-0000100	MILLED SHOULDER RUMBLE STRIPS, HMA SURFACE	STA	954.2										
84	2548-0000110	ASPHALT EMULSION FOR FOG SEAL (SHOULDER RUMBLE STRIPS)	GAL	1036.5										
85	2548-0000310	MILLED CENTERLINE RUMBLE STRIPS, HMA SURFACE	STA	460.0										
86	2555-0000010	DELIVER AND STOCKPILE SALVAGED MATERIALS	LS		1									
87	2590-0000020	PROJECT MANAGEMENT	LS	1.00										
88	2599-9999005	('EACH' ITEM) TEMPORARY RELOCATION OF MAILBOX	EACH	17										
89	2599-9999009	('LINEAR FOOT ITEM') TEMPORARY SLOPE DRAIN	LF	3840.0										
90	2601-2634100	MULCHING	ACRE	35.0										
91	2601-2636015	NATIVE GRASS SEEDING	ACRE	2.3										
92	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	15.2										
93	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING	ACRE	17.5										
94	2602-0000020	SILT FENCE	LF	4609.0										
95	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	1482.5										
96	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	6091.5										
97	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	600.0										
98	2602-0000130	TEMPORARY SEDIMENT CONTROL BASIN	EACH	64										
99	2602-0000135	REMOVAL OF TEMPORARY SEDIMENT CONTROL BASIN	EACH	64										
100	2602-0000140	MAINTENANCE OF TEMPORARY SEDIMENT CONTROL BASIN	EACH	192										
101	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	500.0										
102	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	3570.0										
103	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	4070.0										
104	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1										
105	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1										

PROJECT DESCRIPTION

This project involves the replacement of the existing 22' PC Concrete Pavement sections with a 24' HMA Inlay, with 4' wide paved shoulders and 2' wide granular shoulders. It includes retrofitting the existing 24' PC Concrete Pavement sections with 4' HMA paved shoulders and dressing the remaining 2' of granular shoulders.

Drainage structures throughout the project, will be replaced, lined or rehabilitated, as needed. Certain structures will be replaced in a two-staged manner. Those portions of the structure within the existing ROW will be replaced prior to pavement replacement. Those portions of the structures laying beyond the existing ROW will be replaced later in the construction season, when appropriate ROW has been acquired. Sheets V.4 - V.19 show staged pipe construction.

Trees within the project corridor will be removed out to the 30' clear zone (42' from centerline). Trees will be removed out to the existing ROW where they interfere with the pipe rehabilitation. Where trees interfere with the pipe rehabilitation off the ROW, they will be removed during the fall clearing season, once ROW is acquired.

The bridge approaches at the North Skunk River Bridge will be removed and replaced. The south bridge approach at the South Skunk River Bridge will be milled and overlaid.

IA 21 will be detoured onto IA 149 during construction. Prior to shifting traffic to the detour alignment, the detour will be patched

See Preconstruction Agreement 2020-C-047 regarding mainline and side road closures and detours.

See Sheets V.1 through V.3 for Bridge Sealer and Bridge Painting quantities and details.

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2101-0850001	**CLEARING AND GRUBBING**
		REFER TO TAB 110-17 FOR LOCATIONS. CLEARING AND GRUBBING, AS SHOWN CAN BE COMPLETED OUT TO THE ROW.
		ENVIRONMENTAL CLEARANCES HAVE BEEN OBTAINED.
		THERE MAY BE A STAGE 2 CLEARING AND GRUBBING, ASSOCIATED WITH STAGE 2 PIPE WORK, IF ROW IS OBTAINED.
		STAGE 2 CLEARING AND GRUBBING SHOULD OCCUR AFTER THE JULY 15 SEASONAL RESTRICTION.
		TREES BETWEEN 300TH STREET AND 310TH STREET ARE TO BE CUT BETWEEN OCTOBER 1ST AND MARCH 31ST PER IOWA DOT
		SPECIFICATION 2101.01A.
2	2101-0850002	**CLEARING AND GRUBBING**
		REFER TO TAB 110-17 FOR LOCATIONS. CLEARING AND GRUBBING, AS SHOWN CAN BE COMPLETED OUT TO THE ROW.
		ENVIRONMENTAL CLEARANCES HAVE BEEN OBTAINED.
		THERE MAY BE A STAGE 2 CLEARING AND GRUBBING, ASSOCIATED WITH STAGE 2 PIPE WORK, IF ROW IS OBTAINED.
		STAGE 2 CLEARING AND GRUBBING SHOULD OCCUR AFTER THE JULY 15 SEASONAL RESTRICTION.
		TREES BETWEEN 300TH STREET AND 310TH STREET ARE TO BE CUT BETWEEN OCTOBER 1ST AND MARCH 31ST PER IOWA DOT
		SPECIFICATION 2101.01A.
3	2102-0425070	**SPECIAL BACKFILL**
		REFER TO TABS 100-25, 106-5 AND 112-9 FOR LOCATIONS. REFER TO ROADWAY TYPICALS ON SHEETS B.2 AND B.3 FOR
		DETAILS OF CONSTRUCITON. DESIGN UNIT WEIGHT IS 140 PCF.
4	2102-2625000	**EMBANKMENT-IN-PLACE**
		REFER TO TAB 107-23 FOR LOCATIONS. REFER TO STANDARD ROAD PLAN EW-301 FOR DETAILS OF CONSTRUCTION.
5	2102-2710090	**EXCAVATION, CLASS 10, WASTE**
		REFER TO 100-25 FOR QUANTITIES AND LOCATIONS. REFER TO ROADWAY TYPICAL ON SHEET B.2 FOR ADDITIONAL DETAILS.
6	2102-2712015	**EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS**
		REFER TO TAB 103-7 FOR ESTIMATED QUANTITIES OF BOULDERS AND ROCK FRAGMENTS.
7	2105-8425015	**TOPSOIL, STRIP, SALVAGE AND SPREAD**
		REFER TO TAB 103-10 FOR LOCATIONS AND QUANTITIES. 12" OF TOPSOIL IS TO BE STRIPPED FROM EDGE OF SHOULDER TO
		6' OFF EDGE OF SHOULDER. AT COMPLETION OF PROJECT IT WILL BE SPREAD AND COMPACTED TO ITS ORIGINAL CONDITION.
8	2107-0425020	**COMPACTING BACKFILL ADJACENT TO BRIDGES, CULVERTS OR STRUCTURES**
		QUANTITY BASE ON PIPE LENGTHS AND STANDARD FORMULA SHOWN IN SPECIFICATIONS.
9	2113-0001100	**SUBGRADE STABILIZATION MATERIAL, POLYMER GRID**
		QUANTITY PROVIDED IS APPROXIMATELY 25% OF THE INLAY ROADWAY. CONTRACTOR MAY USE AT ENGINEERS DISCRETION.
10	2115-0100000	**MODIFIED SUBBASE**
		REFER TO TAB 100-25 FOR LOCATIONS. REFER TO IA 21 ROADWAY TYPICAL ON SHEET B.2 FOR DETAILS OF CONSTRUCTION.
		ESTIMATED QUANTITY OF MODIFIED SUBBASE AVAILABLE FROM CRUSHING PCC PAVEMENT IS 19,524 CY
11	2121-7425020	**GRANULAR SHOULDERS, TYPE B**
		REFER TO TAB 112-9 FOR LOCATIONS. REFER TO ROADWAY TYPICALS ON SHEETS B.2 AND B.3 FOR DETAILS OF CONSTRUCITON.
		DESIGN UNIT WEIGHT IS 140 PCF.
		ADDITIONAL GRANULAR SHOULDER QUANTITY IS PROVIDED FOR THE DETOUR ROUTE TO RE-DRESS THE SHOULDER TO ELIMINATE
		ANY DROP OFFS AND RUTS.
12	2122-5190501	**PAVED SHOULDER, PORTLAND CEMENT CONCRETE (PAVED SHOULDER PANEL FOR BRIDGE END DRAIN)**
		REFER TO TAB 104-8A FOR LOCATIONS. REFER TO STANDARD ROAD PLANS BR-101, BR-204 AND DR-402 FOR DETAILS OF
		CONSTRUCTION. INCLUDES 169 SY OF POLYMER GRID AND 83 TONS OF MODIFIED SUBBASE INCIDENTAL TO THE PAVED SHOULDER.
13	2122-5500080	**PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 8 IN.**
		REFER TO TAB 112-9 FOR LOCATIONS. REFER TO TYPICAL ON SHEETS B.2, B.3 AND B.6 FOR DETAILS OF CONSTRUCTION.
14	2123-7450000	**SHOULDER CONSTRUCTION, EARTH**
		REFER TO TAB 112-9 FOR LOCATIONS. REFER TO TYPICAL ON SHEETS B.2, B.3 AND B.6 FOR DETAILS OF CONSTRUCTION.
15	2125-2225050	**RESHAPING DITCHES**
		REFER TO TYPICAL 4204 MOD ON SHEET B.7 FOR LOCATIONS AND DETAILS OF CONSTRUCTION. REFER TO STANDARD ROAD PLAN
		EW-105 FOR ADDITIONAL DETAILS OF CONSTRUCTION. REFER TO D SHEETS AND CROSS-SECTIONS ON W SHEETS FOR PROFILE AND
		AND ADDITIONAL DETAILS.
		ESTIMATED 6 CY OF CLASS 10, WASTE FROM STA. 66+50 TO STA. 72+50 LT.
		ESTIMATED 2015 CY OF CLASS 10, WASTE FROM STA. 466+00 TO STA. 481+50 LT.
		CLASS 10 WASTE IS INCIDENTAL TO THE ITEM RESHAPING DITCHES.
16	2213-2713300	**EXCAVATION, CLASS 13, FOR WIDENING**
		REFER TO TAB 106-5 FOR LOCATIONS. REFER TO TYPICALS ON SHEETS B.3 AND B.6 FOR LOCATIONS AND DETAILS OF
		CONSTRUCTION.
17	2213-8201060	**BASE WIDENING, 6 IN. HOT MIX ASPHALT MIXTURE**
		REFER TO TAB 106-5 FOR LOCATIONS. REFER TO TYPICAL ON SHEET B.3 FOR DETAILS OF CONSTRUCTION.
18	2213-8201080	**BASE WIDENING, 8 IN. HOT MIX ASPHALT MIXTURE**
		REFER TO TAB 106-5 FOR LOCATIONS. REFER TO TYPICAL ON SHEET B.3 FOR DETAILS OF CONSTRUCTION.
19	2214-5145150	**PAVEMENT SCARIFICATION**
		REFER TO TAB 102-16 AND 100-25 FOR LOCATIONS AND TYPE. SEE STANDARD ROAD PLAN PR-202 FOR DETAILS OF
		CONSTRUCTION. ALSO REFER TO TYPICAL ON SHEET B.5 FOR LOCATIONS AND DETAILS OF CONSTRUCTION.
		INCLUDES 870.3 SY OF PCC MILLING PRIOR TO OVERLAY, AND 542.9 SY OF EXISTING HMA MILLING TO CLEAN PCC SURFACE.
		THE 542.9 SY OF HMA MILLING MAY BE PEELED FROM PCC SURFACE IF CONTRACTOR CAN PROVIDE CLEAN PCC SURFACE.

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
20	2301-0690204	**BRIDGE APPROACH, BR-204**
		REFER TO TAB 112-6 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS BR-101 AND BR-204 FOR DETAILS OF CONSTRUCTION.
		INCLUDES 96 LF OF 4" PERFORATED SUBDRAIN, 2 SUBDRAIN OUTLETS, 2.8 CY OF POROUS BACKFILL, 0.4 CY OF CLASS 'A'
		STONE, 475.8 TONS OF MODIFIED SUBBASE AND 530.7 SY OF POLYMER GRID INCIDENTAL TO THE BRIDGE APPROACH ITEM.
21	2303-1031500	**HOT MIX ASPHALT STANDARD TRAFFIC, BASE COURSE, 1/2 IN. MIX**
		REFER TO TAB 100-25 FOR LOCATIONS. REFER TO ROADWAY TYPICAL ON SHEET B.2 FOR DETAILS OF CONSTRUCTION.
		QUANTITY HAS BEEN INCREASED BY 5% FOR IRREGULARITIES.
		THE INTENDED AIR VOIDS FOR THE LOWER 4" LIFT IS 3.5% WITH NO RAP. THE LOWER 4" LIFT SHALL BE PLACED IN A SINGLE
		LIFT TO ACCOMMODATE CONSTRUCTION EQUIPMENT. THE AIR VOID AND RAP REQUIREMENTS DO NOT APPLY TO THE UPPER 2" LIFT.
		THE 4' PAVED SHOULDER SHALL BE PAVED WITH THE ADJACENT HMA PAVEMENT. NO JOINT AT THE EDGE OF PAVEMENT.
22	2303-1032500	**HOT MIX ASPHALT STANDARD TRAFFIC, INTERMEDIATE COURSE, 1/2 IN. MIX**
		REFER TO TAB 100-25 FOR LOCATIONS. REFER TO ROADWAY TYPICAL ON SHEET B.2 FOR DETAILS OF CONSTRUCTION.
		QUANTITY HAS BEEN INCREASED BY 5% FOR IRREGULARITIES.
		THE 4' PAVED SHOULDER SHALL BE PAVED WITH THE ADJACENT HMA PAVEMENT. NO JOINT AT THE EDGE OF PAVEMENT.
23	2303-1033500	**HOT MIX ASPHALT STANDARD TRAFFIC, SURFACE COURSE, 1/2 IN. MIX, NO SPECIAL FRICTION REQUIREMENT**
		REFER TO TAB 100-25 FOR LOCATIONS. REFER TO ROADWAY TYPICAL ON SHEET B.2 FOR DETAILS OF CONSTRUCTION.
		QUANTITY HAS BEEN INCREASED BY 5% FOR IRREGULARITIES.
		THE 4' PAVED SHOULDER SHALL BE PAVED WITH THE ADJACENT HMA PAVEMENT. NO JOINT AT THE EDGE OF PAVEMENT.
24	2303-1258283	**ASPHALT BINDER, PG 58-28S, STANDARD TRAFFIC**
		REFER TO TAB 100-25 FOR LOCATIONS. REFER TO ROADWAY TYPICAL ON SHEET B.2 FOR DETAILS OF CONSTRUCTION.
		QUANTITY HAS BEEN INCREASED BY 5% FOR IRREGULARITIES.
25	2303-6911000	**HOT MIX ASPHALT PAVEMENT SAMPLES**
26	2303-7000610	**PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA MIXTURE LABORATORY VOIDS**
		(FORMULA - BY PAY FACTOR)
27	2303-7000620	**PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA MIXTURE FIELD VOIDS**
		(FORMULA - BY PAY FACTOR)
28	2315-8275025	**SURFACING, DRIVEWAY, CLASS A CRUSHED STONE**
		REFER TO TAB 102-3 FOR LOCATIONS.
		MATERIAL PROVIDED IS TO DRESS GRANULAR AND EARTHEN ENTRANCES AND SIDEROADS FOLLOWING PLACEMENT OF SHOULDER.
29	2317-7000120	**PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA PAVEMENT SMOOTHNESS**
		(BY SCHEDULE)
30	2402-0425040	**FLOODED BACKFILL**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLAN DR-101 FOR DETAILS OF
		CONSTRUCTION.
31	2402-2720100	**EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102 AND DR-103 FOR DETAILS OF
		CONSTRUCTION.
		REFER TO SHEETS V.4 THROUGH V.19 FOR ADDITIONAL DETAILS OF CONSTRUCTION.
32	2416-0100018	**APRONS, CONCRETE, 18 IN. DIA.**
		REFER TO TAB 102-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
33	2416-0100024	**APRONS, CONCRETE, 24 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
		REFER TO SHEETS V.4 THROUGH V.19 FOR ADDITIONAL DETAILS OF CONSTRUCTION.
34	2416-0100030	**APRONS, CONCRETE, 30 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
		REFER TO SHEETS V.4 THROUGH V.19 FOR ADDITIONAL DETAILS OF CONSTRUCTION.
35	2416-0100036	**APRONS, CONCRETE, 36 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
		REFER TO SHEETS V.4 THROUGH V.19 FOR ADDITIONAL DETAILS OF CONSTRUCTION.
36	2416-1160018	**CULVERT, CONCRETE ENTRANCE PIPE, 18 IN. DIA.**
		REFER TO TAB 102-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
37	2416-1160036	**CULVERT, CONCRETE ENTRANCE PIPE, 36 IN. DIA**
		REFER TO TAB 102-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
38	2416-1180024	**CULVERT, CONCRETE ROADWAY PIPE, 24 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
		REFER TO SHEETS V.4 THROUGH V.19 FOR ADDITIONAL DETAILS OF CONSTRUCTION.

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
39	2416-1180030	**CULVERT, CONCRETE ROADWAY PIPE, 30 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
40	2416-1180036	**CULVERT, CONCRETE ROADWAY PIPE, 36 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
		REFER TO SHEETS V.4 THROUGH V.19 FOR ADDITIONAL DETAILS OF CONSTRUCTION.
41	2416-1240030	**CULVERT, 3000D CONCRETE ROADWAY PIPE, 30 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
		INCLUDES 82 LF OF 2000D RCP AS NOTED ON TAB 104-3
		REFER TO SHEETS V.4 THROUGH V.19 FOR ADDITIONAL DETAILS OF CONSTRUCTION.
42	2416-1240036	**CULVERT, 3000D CONCRETE ROADWAY PIPE, 36 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101, DR-102, DR-103, DR-121, DR-122,
		DR-201, DR-601 AND DR-621 FOR DETAILS OF CONSTRUCTION.
		REFER TO SHEETS V.4 THROUGH V.19 FOR ADDITIONAL DETAILS OF CONSTRUCTION.
43	2417-0225018	**APRONS, METAL, 18 IN. DIA.**
		REFER TO TAB 102-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-203 AND DR-651 FOR DETAILS OF CONSTRUCTION.
44	2417-0225024	**APRONS, METAL, 24 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-203 AND DR-621 FOR DETAILS OF CONSTRUCTION.
45	2417-0225030	**APRONS, METAL, 30 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-203 AND DR-621 FOR DETAILS OF CONSTRUCTION.
46	2417-0225036	**APRONS, METAL, 36 IN. DIA.**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-203 AND DR-621 FOR DETAILS OF CONSTRUCTION.
47	2417-1040018	**CULVERT, CORRUGATED METAL ENTRANCE PIPE, 18 IN. DIA**
		REFER TO TAB 102-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-203 AND DR-651 FOR DETAILS OF CONSTRUCTION.
48	2417-1040024	**CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA**
		REFER TO TAB 102-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-203 AND DR-651 FOR DETAILS OF CONSTRUCTION.
49	2499-4000036	**SLIPLINING EXISTING CULVERTS, LESS THAN OR EQUAL TO 36 IN. DIA. OR HEIGHT**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO DS-15068 FOR DETAILS OF CONSTRUCTION.
50	2502-8212204	**SUBDRAIN, PERFORATED PLASTIC PIPE, 4 IN. DIA.**
		REFER TO TAB 104-9 FOR LOCATIONS AND TYPE. REFER TO ROADWAY TYPICAL ON SHEET B.2 FOR DETAILS OF CONSTRUCTION.
		REFER TO STANDARD ROAD PLANS DR-203 AND DR-306 FOR ADDITIONAL DETAILS.
51	2502-8221306	**SUBDRAIN OUTLET, DR-306**
		REFER TO TAB 104-9 FOR LOCATIONS AND TYPE. REFER TO ROADWAY TYPICAL ON SHEET B.2 FOR DETAILS OF CONSTRUCTION.
		REFER TO STANDARD ROAD PLANS DR-203 AND DR-306 FOR ADDITIONAL DETAILS.
52	2503-0500402	**BRIDGE END DRAIN, DR-402**
		REFER TO TAB 104-8A FOR LOCATIONS. REFER TO STANDARD ROAD PLAN DR-402 FOR ADDITIONAL DETAILS OF CONSTRUCTION.
53	2505-4008120	**REMOVAL OF STEEL BEAM GUARDRAIL**
		DO NOT CUT THE GUARDRAIL. REFER TO TAB 110-7A FOR LOCATIONS.
		REFER TO THE TAB 110-13 AND DELIVERY AND STOCKPILING BID ITEM
54	2505-4008300	**STEEL BEAM GUARDRAIL**
		REFER TO TABS 108-8A AND 108-8B FOR LOCATIONS. REFER TO STANDARD ROAD PLANS BA-200, BA-201, BA-202, BA-205,
		BA-250 AND BA-251 FOR DETAILS OF CONSTRUCTION.
55	2505-4008410	**STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201**
		REFER TO TAB 108-8A FOR LOCATIONS. REFER TO STANDARD ROAD PLANS BA-200, BA-201, BA-202, BA-205
		AND BA-250 FOR DETAILS OF CONSTRUCTION.
56	2505-4021010	**STEEL BEAM GUARDRAIL END ANCHOR, BOLTED**
		REFER TO TAB 108-8A FOR LOCATIONS. REFER TO STANDARD ROAD PLANS BA-200, BA-201, BA-202, BA-205
		AND BA-250 FOR DETAILS OF CONSTRUCTION.
57	2505-4021720	**STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205**
		REFER TO TABS 108-8A AND 108-8B FOR LOCATIONS. REFER TO STANDARD ROAD PLANS BA-200, BA-201, BA-202, BA-205,
		BA-250 AND BA-251 FOR DETAILS OF CONSTRUCTION.
58	2506-4984000	**FLOWABLE MORTAR**
		REFER TO TAB 104-3 FOR LOCATIONS. REFER TO STANDARD ROAD PLANS DR-101 FOR DETAILS OF CONSTRUCTION.
59	2510-5204000	**PAVEMENT SCARIFICATION (OF HMA RESURFACING PRIOR TO PAVEMENT REMOVAL)**
		REFER TO TAB 110-1 FOR LOCATIONS. REMOVE HMA RESURFACING PRIOR TO REMOVAL OF PCC PAVEMENT.
60	2510-6750501	**REMOVAL AND CRUSHING OF PAVEMENT**
		REFER TO TAB 110-1 FOR LOCATIONS. REMOVE AND CRUSH PCC PAVEMENT. CRUSH PAVEMENT TO MEET GRADATION OF
		MODIFIED SUBBASE AND USED AS GRANULAR SUBBASE, AS SHOWN ON ROADWAY TYPICAL ON SHEET B.2
		REFER TO MODIFIED SUBBASE BID ITEM

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
61	2518-6910000	**SAFETY CLOSURE**
		REFER TO TAB 108-13A FOR LOCATIONS.
62	2519-3300600	**FENCE, SAFETY**
		REFER TO SHEET D.12 FOR LOCATIONS. ORANGE CONSTRUCTION SAFETY FENCING SHALL BE PLACED BY THE CONTACTOR
		FROM STA. 309+62 RT TO STA. 312+15 RT. FENCE SHALL BE PLACED ON THE FORESLOPE, 4' HORIZONTALLY FROM THE
		INSIDE BREAKPOINT AT THE BOTTOM OF DITCH. END OF THE INSTALLATION SHALL BE PLACED PERPENDICULAR TO THE ROAD
		TOWARDS THE EASTLY ROW, FOR 15 LF.
		FENCE SHALL BE FASTENED TO STANDARD T-BAR POSTS, SPACED AT 10' INCREMENTS, OR LESS. FENCE SHALL BE FASTENED
		TO THE POST AT 4" FROM THE BOTTOM OF FENCE, 1" FROM THE TOP OF FENCE, AND TWO EQUALLY SPACED POINTS BETWEEN.
		FENCE SHALL BE A MINIMUM OF 4' HIGH, AND THE BOTTOM OF THE FENCE SHALL REST FLUSH WITH THE EXISTING GROUND.
		THE FENCE SHALL BE REMOVED AT THE COMPLETION OF THE PROJECT.
		THE CONTRACTOR IS NOT PERMITTED TO HAVE ANY EQUIPMENT OR DISTURB THE GROUND EAST OF THE FENCING.
		METHOD OF MEASUREMENT
		EACH LINEAR FOOT OF FENCE PLACED IN ACCORDANCE WITH THE NOTED DESCRIPTION.
		BASIS OF PAYMENT
		PAYMENT WILL BE MADE FOR EACH LINEAR FOOT OF FENCING INSTALLED AND REMOVED, INCLUDING FENCE, POST, FENCE
		FASTENERS, ALL LABOR, TOOLS, EQUIPMENT AND ANY OTHER NECESSARY MATERIALS NECESSARY TO INSTALL THE FENCE.
63	2520-3350015	**FIELD OFFICE**
64	2524-6765010	**REMOVE AND REINSTALL SIGN AS PER PLAN**
		REFER TO TAB 190-61 FOR LOCATIONS.
		ENGINEER SHALL REVIEW SIGNS PRIOR TO REMOVAL, NOTE CONDITION AND LOCATION. CONTRACTOR SHALL REMOVE THE NOTED
		SIGNS, TAKING CARE NOT TO DAMAGE SIGN OR POSTS. IF SIGNS OR POSTS ARE DAMAGED, CONTRACTOR SHALL IMMEDIATELY
		NOTIFY THE ENGINEER. ANY DAMAGE OCCURRING TO SIGN OR POST DURING REMOVAL, STORAGE OR REINSTALLATION WILL BE
		THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
		SIGN ASSEMBLIES SHALL BE MARKED WITH EXISTING LOCATION AT THE BASE OF THE SIGN POST PRIOR TO REMOVAL BY THE
		CONTRACTOR. SIGNS SHALL BE STORED IN A SECURE LOCATION, NOT ON THE FORESLOPE OR DITCH, WHERE THEY CAN
		BE STORED IN A UPRIGHT POSITION.
		METHOD OF MEASUREMENT
		BY COUNT FOR EACH POST WITH SIGN ASSEMBLY REMOVED, STORED AND REPLACED IN GOOD CONDITION. EACH SIGN ASSEMBLY
		MAY CONSIST OF MULTIPLE POSTS AND/OR MULTIPLE SIGNS AT A SINGLE LOCATION AND FUNCTIONING AS A CONNECTED UNIT.
		BASIS OF PAYMENT
		PAYMENT SHALL BE MADE FOR EACH SIGN ASSEMBLY SUCCESSFULLY REMOVED, STORED AND REINSTALLED. IT SHALL INCLUDE
		PAYMENT FOR ALL TOOLS, LABOR EQUIPMENT, STORAGE AND REPLACEMENT PARTS DAMAGED DURING REMOVAL, STORAGE OR
		REPLACEMENT.
65	2526-8285000	**CONSTRUCTION SURVEY**
66	2527-9263109	**PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED**
		REFER TO TAB 108-22 FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLAN PM-110 AND PM-420 FOR DETAILS
		OF CONSTRUCTION.
		STATIONING ON IA 149 E/W BASED ON STATIONING AVAILABLE AND STAMPED IN PCC PAVEMENT.
		STATIONING ON IA 149 N/S BEGINS AT 0+00 N. EDGE OF IA 149 E/W.
		STATIONING ON IA 92 BEGINS AT STA. 0+00 AT E. EDGE OF IA 21 NB,.
67	2527-9263137	**PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED**
		REFER TO TAB 108-29 FOR LOCATIONS AND TYPE. REFER TO STANDARD ROAD PLAN PM-111 FOR DETAILS OF CONSTRUCTION.
68	2528-8445110	**TRAFFIC CONTROL**
		REFER TO J SHEETS FOR DETAILS. REFER TO TAB 105-4 AND STANDARD ROAD PLANS TC-1, TC-202, TC-214 AND TC-252
		FOR DETAILS. SEE DETOUR DETAILS ON SHEETS J.3 - J.5
69	2528-8445113	**FLAGGERS**
		FOR USE DURING PATCHING OF DETOUR ROUTE.
70	2528-8445115	**PILOT CARS**
		FOR USE DURING PATCHING OF DETOUR ROUTE.
71	2528-9290050	**PORTABLE DYNAMIC MESSAGE SIGN (PDMS)**
		PLACE AT LOCATIONS NOTED ON SHEET A.3 FOR 10 DAYS PRIOR TO CLOSING IA 21 AND STARTING DETOUR ROUTING.
		CONTRACTOR SHALL NOTIFY THE ENGINEER 2-WEEKS IN ADVANCE OF CLOSING IA 21.
72	2529-2242304	**CD JOINT ASSEMBLY**
		REFER TO TAB 102-6C FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140, PR-202,
		PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.
73	2529-2242320	**CT JOINT**
		REFER TO TAB 102-6C FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140, PR-202,
		PR-202, PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.
74	2529-5070110	**PATCHES, FULL-DEPTH FINISH, BY AREA**
		REFER TO TABS 102-6C AND 112-7 FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140,
		PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
75	2529-5070111	**PATCHES, FULL-DEPTH FINISH, BY AREA (50 FEET OR GREATER IN LENGTH)**
		REFER TO TAB 102-6C FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140, PR-202, PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.
76	2529-5070120	**PATCHES, FULL-DEPTH FINISH, BY COUNT**
		REFER TO TAB 102-6C FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140, PR-202, PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.
77	2529-8174010	**SUBBASE (PATCHES)**
		REFER TO TAB 102-6C FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140, PR-202, PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.
78	2529-8174020	**SUBBASE PATCH WITH EF JOINT**
		REFER TO TAB 102-6C FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140, PR-202, PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.
79	2529-8174050	**PATCH SUBDRAIN**
		REFER TO TAB 102-6C FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140, PR-202, PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.
80	2529-8201000	**JOINT ASSEMBLY, EF**
		REFER TO TAB 102-6C FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140, PR-202, PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.
81	2529-8202000	**RUMBLE STRIP PANEL (IN FULL DEPTH PATCH)**
		REFER TO TABS 102-6C AND 112-7 FOR LOCATIONS AND TYPES. REFER TO STANDARD ROAD PLANS PR-101, PR-103, PR-140, PR-202, PV-10 AND PV-101 FOR DETAILS OF CONSTRUCTION.
82	2533-4980005	**MOBILIZATION**
83	2548-0000100	**MILLED SHOULDER RUMBLE STRIPS, HMA SURFACE**
		REFER TO TAB 112-10FOR LOCATIONS. REFER TO STANDARD ROAD PLAN PV-12 FOR DETAILS OF CONSTRUCTION.
84	2548-0000110	**ASPHALT EMULSION FOR FOG SEAL (SHOULDER RUMBLE STRIPS)**
		REFER TO TAB 112-10FOR LOCATIONS. REFER TO STANDARD ROAD PLAN PV-12 FOR DETAILS OF CONSTRUCTION.
85	2548-0000310	**MILLED CENTERLINE RUMBLE STRIPS, HMA SURFACE**
		REFER TO TAB 112-10FOR LOCATIONS. REFER TO STANDARD ROAD PLAN PV-13 FOR DETAILS OF CONSTRUCTION.
86	2555-0000010	**DELIVER AND STOCKPILE SALVAGED MATERIALS**
		EXISTING GUARDRAIL TABULATED FOR REMOVAL IS TO STOCKPILED AT THE SIGOURNEY MAINTENANCE SHOP. GUARDRAIL SHALL BE DISASSEMBLED - DO NOT TORCH OR CUT EXISTING GUARDRAIL SECTIONS.
		REFER TO TAB 110-13
87	2590-0000020	**PROJECT MANAGEMENT**
88	2599-9999005	**('EACH' ITEM) TEMPORARY RELOCATION OF MAILBOX**
		REFER TO TAB 190-66 MODIFIED FOR LOCATIONS.
		MAILBOXES SHALL BE TEMPORARILY RELOCATED TO THE NEAREST SIDEROAD, ACCESSIBLE FROM A ROAD OTHER THAN IA 21.
		EACH MAILBOX SHALL BE LABELED WITH ORIGINAL ADDRESS IN A TEMPORARY MANNER, SO AS NOT TO DAMAGE THE MAILBOX.
		A LIST OF PROPERTY OWNER, ADDRESS, AND RELOCATED MAILBOX LOCATION SHALL BE PROVIDED TO THE ENGINEER. THAT INFORMATION IS TO BE PROVIDED TO THE LOCAL US POSTAL OFFICE.
		ENGINEER SHALL INSPECT MAILBOXES PRIOR TO REMOVAL, NOTE CONDITION AND LOCATION. CONTRACTOR SHALL REMOVE THE NOTED MAILBOXES, TAKING CARE NOT TO DAMAGE . IF BOX OR SUPPORTS ARE DAMAGED, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER. ANY DAMAGE OCCURRING TO BOX OR SUPPORT DURING REMOVAL, TEMPORARY PLACEMENT OR REINSTALLATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER OF THE MAILBOX ASSEMBLY, OR PROJECT OWNER.
		METHOD OF MEASUREMENT
		BY COUNT FOR EACH MAILBOX ASSEMBLY REMOVED, TEMPORARILY PLACED AND REPLACED IN GOOD CONDITION.
		BASIS OF PAYMENT
		PAYMENT SHALL BE MADE FOR EACH MAILBOX ASSEMBLY SUCCESSFULLY REMOVED, TEMPORARILY PLACED AND REINSTALLED. IT SHALL INCLUDE PAYMENT FOR ALL TOOLS, LABOR EQUIPMENT, STORAGE AND REPLACEMENT PARTS DAMAGED DURING REMOVAL, STORAGE OR REPLACEMENT.
89	2599-9999009	**('LINEAR FOOT ITEM') TEMPORARY SLOPE DRAIN**
		REFER TO HGM-2 FOR RECOMMENDED LOCATIONS. REFER TO SHEET U.1 FOR DETAILS OF CONSTRUCTION.
		METHOD OF MEASUREMENT
		LENGTH OF TILE PLACE WILL BE MEASURED IN LINEAR FEET FROM END TO END OF EACH PLACEMENT.
		BASIS OF PAYMENT
		PAYMENT WILL BE MADE FOR EACH LINEAR FOOT OF DRAIN TILE PLACED IN ACCORDANCE WITH THE DETAILS IN THE PLANS.
90	2601-2634100	**MULCHING**
		QUANTITY BASED ON APPLICATION TO STABILIZING CROP AND TO FINAL SEEDING
91	2601-2636015	**NATIVE GRASS SEEDING**
		REFER TO STANDARD ROAD PLAN EC-502

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ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
92	2601-2636043	**SEEDING AND FERTILIZING (RURAL)**
		REFER TO STANDARD ROAD PLAN EC-502
93	2601-2642100	**STABILIZING CROP - SEEDING AND FERTILIZING**
94	2602-0000020	**SILT FENCE**
		REFER TO TAB 100-17 ON SHEET RC.4 FOR LOCATIONS. REFER TO STANDARD ROAD PLAN EC-201 FOR DETAILS OF CONSTRUCTION.
95	2602-0000030	**SILT FENCE FOR DITCH CHECKS**
		REFER TO TAB 100-18 ON SHEET RC.4 FOR LOCATIONS. REFER TO STANDARD ROAD PLAN EC-201 FOR DETAILS OF CONSTRUCTION.
96	2602-0000071	**REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS**
		REFER TO TABS 100-17 AND 100-18 ON SHEET RC.4 FOR LOCATIONS. REFER TO STANDARD ROAD PLAN EC-201 FOR DETAILS OF CONSTRUCTION.
97	2602-0000101	**MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK**
		REFER TO TABS 100-17 AND 100-18 ON SHEET RC.4 FOR LOCATIONS. REFER TO STANDARD ROAD PLAN EC-201 FOR DETAILS OF CONSTRUCTION.
98	2602-0000130	**TEMPORARY SEDIMENT CONTROL BASIN**
		REFER TO TAB 100-33 ON SHEET RC.5 FOR LOCATIONS. REFER TO EC-601 FOR DETAILS OF CONSTRUCTION.
99	2602-0000135	**REMOVAL OF TEMPORARY SEDIMENT CONTROL BASIN**
		REFER TO TAB 100-33 ON SHEET RC.5 FOR LOCATIONS. REFER TO EC-601 FOR DETAILS OF CONSTRUCTION.
100	2602-0000140	**MAINTENANCE OF TEMPORARY SEDIMENT CONTROL BASIN**
		REFER TO TAB 100-33 ON SHEET RC.5 FOR LOCATIONS. REFER TO EC-601 FOR DETAILS OF CONSTRUCTION.
101	2602-0000312	**PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.**
		REFER TO TAB 100-19 ON SHEET RC.4 FOR LOCATIONS. REFER TO EC-204 FOR DETAILS OF CONSTRUCTION.
102	2602-0000320	**PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.**
		REFER TO TAB 100-19 ON SHEET RC.4 FOR LOCATIONS. REFER TO EC-204 FOR DETAILS OF CONSTRUCTION.
103	2602-0000350	**REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE**
		REFER TO TAB 100-19 ON SHEET RC.4 FOR LOCATIONS. REFER TO EC-204 FOR DETAILS OF CONSTRUCTION.
104	2602-0010010	**MOBILIZATIONS, EROSION CONTROL**
105	2602-0010020	**MOBILIZATIONS, EMERGENCY EROSION CONTROL**

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10-18-11

STANDARD ROAD PLANS

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

Number	Date	Title
BA-200	04-16-19	Steel Beam Guardrail Components
BA-201	04-18-17	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-15	Steel Beam Guardrail Bolted End Anchor
BA-205	04-19-16	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-211	10-21-14	Steel Beam Guardrail Long - Span System for Post Conflicts
BA-250	10-18-16	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-251	04-19-16	Steel Beam Guardrail Installation at Side Obstacle (Two-Way Protection)
BR-101	04-21-15	Bridge Approach Section (General Details)
BR-204	10-17-17	Double Reinforced 12" Approach with Variable Depth Paving Notch
BR-211	10-17-17	Bridge Approach (Abutting PCC or Composite Pavement)
DR-101	04-18-17	Pipe Culvert (Bedding and Backfill)
DR-102	04-21-15	Pipe Culvert (Cover and Camber)
DR-103	04-21-15	Pipe Culvert (Installation Details)
DR-104	04-19-16	Depth of Cover Tables for Concrete and Corrugated Pipe
DR-121	10-17-17	Connected Pipe Joints
DR-122	10-18-16	Construction of Type "C" Concrete Adaptors for Pipe Culvert Connections
DR-201	10-16-18	Concrete Aprons
DR-203	04-21-15	Metal Pipe Aprons and Beveled Ends
DR-303	10-17-17	Subdrains (Longitudinal)
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets
DR-402	04-17-18	Rock Flume for Bridge End Drain
DR-601	04-18-17	Reinforced Concrete Pipe Culvert
DR-621	04-18-17	Pipe Extension
DR-651	04-18-17	Unclassified Pipe Culvert
EC-201	10-16-18	Silt Fence
EC-204	04-18-17	Perimeter and Slope Sediment Control Devices
EC-502	04-21-15	Seeding in Rural Areas
EC-601	10-16-18	Temporary Sediment Control Basin
EW-101	10-17-17	Embankment and Rebuilding Embankments
EW-105	04-21-15	Reshaping Slopes and Ditches
EW-301	10-20-15	Guardrail Grading
EW-403	04-18-17	Temporary Erosion Control Measures
EW-501	10-20-15	Rural Entrance
PM-110	10-16-18	Line Types
PM-111	04-21-15	Symbols and Legends
PM-420	04-19-11	Two-Lane Roadway with no Turn Lanes (One-Way Stop Condition)
PR-101	04-21-15	Full Depth Patch with 'EF' Joint in PCC
PR-103	10-21-14	Full Depth PCC Patch with Dowels
PR-140	04-21-15	Subbase Patches
PR-202	10-21-14	Notches for Resurfacing (with or without Runout)
PV-10	04-16-19	Rumble Strip Panel for Intersection Approach
PV-12	04-19-16	Milled Shoulder Rumble Strips
PV-13	10-17-17	Milled Centerline Rumble Strips
PV-101	04-16-19	Joints
PV-102	10-18-16	PCC Curb Details
PV-202	04-16-13	Hot Mix Asphalt Resurfacing
PV-301	04-19-11	Superelevation Details Two Lane Roadway
SI-101	04-19-16	Locations - Type 'A' Signs
SI-111	04-19-16	Support Structures - Wood Posts
SI-131	10-18-16	Installation - Type 'A' Signs
SI-211	10-18-16	Object Marker and Delineator Placement with Guardrail
TC-1	04-16-13	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-21-15	Work Within 15 ft of Traveled Way
TC-214	10-17-17	Lane Closure with Flaggers for use with Pilot Car
TC-252	04-19-16	Routes Closed to Traffic

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10-18-11

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100-1D	PROJECT DESCRIPTION	C.2
100-4A	ESTIMATE REFERENCE INFORMATION	C.3 - C.5
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232-10
04-18-17

EMERALD ASH BORER

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

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

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

For questions, concerns, and general assistance, contact:

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

Or

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

281-1
10-18-16

SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Nationwide, Permit No. 3. A copy of this permit is available from the Iowa DOT website (http://www.envpermits.iowadot.gov/). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

102-5
04-18-17

EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth IN	Type	Depth IN	Type	Depth IN	Type	Depth IN	Source	Type	Durability Class	Type	
	Keokuk	IA 21	N-S	0.55	11.56	1965	PCC	S-269(4) & S-269(5)	PCC	6							Ollie	C. LST	2		Intermittent 2" HMA Resufacing
	Keokuk	IA 21	N-S	3.037	3.245	1989	PCC	BRF-F-21-1(27)--2P-54	PCC	9.5					PCC	6	Unknown				Intermittent 2" HMA Resurfacing
	Keokuk	IA 21	N-S	5.762	6	1989	PCC	BRF-F-21-1(27)--2P-54	PCC	9.5					PCC	6	Unknown				Intermittent 2" HMA Resurfacing
	Keokuk	IA 21	N-S	8.912	9.38	1989	PCC	BRF-F-21-1(27)--2P-54	PCC	9.5					PCC	6	Unknown				Intermittent 2" HMA Resurfacing

100-27
04-17-18

PROPOSED POSTED SPEED LIMIT

Road Identification	Begin Station	End Station	Proposed Posted Speed Limit			Remarks
			35 or less	40 - 45	over 45	
IA 21	+20.73	532+84.00			X	
IA 21	532+84.00	549+92.00		X		
IA 21	549+92.00	557+22.25	X			

103-7
08-01-08

SHRINKAGE DATA

Material	%	Remarks
CLASS 10, WASTE	30%	ESTIMATED
TOPSOIL	40%	ESTIMATED
CLASS 12 BOULDERS & ROCK		ESTIMATE 20 CY

110-17
04-18-17

CLEARING AND GRUBBING

Location		Work and Material Type	Trees, Stumps, and Logs and Down Timber Material Diameters												All Other Materials		Estimated Quantities			Remarks
Station to Station or Ref. Loc. Sign to Ref. Loc. Sign or Description	Direction of Travel		3"-6"	>6"-9"	>9"-12"	>12"-15"	>15"-18"	>18"-24"	>24"-30"	>30"-36"	>36"-42"	>42"-48"	>48"-60"	>60"-72"	>72"	Length FT	Width FT	Units	Area	Herbicide Application	
																	Units	Acres	Each	
Sta. 19+40 to Sta. 20+22	NB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 21+01 to Sta. 21+71	SB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 31+71, 32' LT	SB	Trees - Clearing and Grubbing			1												6.7			
Sta. 43+85, 39' RT	NB	trees - Clearing and Grubbing		1													3.9			
Sta. 44+35, 37' RT	NB	Trees - Clearing and Grubbing		1													3.9			
Sta. 44+64 to Sta. 47+00	SB	Trees - Clearing and Grubbing																0.1		4" and under
Sta. 45+61, 38'RT	NB	trees - Clearing and Grubbing		1													3.9			
Sta. 45+98, 38' RT.	NB	Trees - Clearing and Grubbing		1													3.9			
Sta. 46+06 to Sta. 47+90	NB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 47+70 to Sta. 48+53	SB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 50+76 to Sta. 52+12	NB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 52+50 to Sta. 53.29	NB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 54+15 to Sta. 55+01	NB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 55+08 to Sta. 55+36	NB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 107+26 to Sta. 108+74	SB	Trees - Clearing and Grubbing															0.0			
Sta. 108+87, 41' RT	NB	trees - Clearing and Grubbing			1												6.7			
Sta. 109+25, 40' LT	SB	Trees - Clearing and Grubbing	1														1.6			
Sta. 112-10 to Sta. 117+36	SB	Trees - Clearing and Grubbing																0.1		4" and under
Sta. 115+57, 41' LT	SB	Trees - Clearing and Grubbing		1													3.9			
Sta. 120+14 to Sta. 125.55	SB	Trees - Clearing and Grubbing																0.1		4" and under
Sta. 125+05, 38' LT	SB	Trees - Clearing and Grubbing		1													3.9			
Sta. 131+85, 39' LT	SB	Trees - Clearing and Grubbing		1													3.9			
Sta. 134+07, 41' LT	SB	Trees - Clearing and Grubbing		1													3.9			
Sta. 134+39 to Sta. 144+07	SB	Trees - Clearing and Grubbing																0.3		4" and under
Sta. 136+07 to Sta. 139+11	NB	Trees - Clearing and Grubbing																0.1		4" and under
Sta. 144+62, 40' RT	NB	Trees - Clearing and Grubbing		1													3.9			
Sta. 145+23 to Sta. 146+52	SB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 146+80 to Sta. 148+98	SB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 149+59, 36 LT	SB	Trees - Clearing and Grubbing		1													3.9			
Sta. 149+78 to Sta. 154+14	SB	Trees - Clearing and Grubbing																0.1		4" and under
Sta. 150+02 to Sta. 150+65	NB	Trees - Clearing and Grubbing																0.0		4" and under
Sta. 172+08, 38' LT	SB	Trees - Clearing and Grubbing			1												6.7			
Sta. 172+05 to Sta. 174+14	SB	Trees - Clearing and Grubbing																0.1		4" and under
Sta. 177+81, 40' RT	NB	Trees - Clearing and Grubbing		1													3.9			

CLEARING AND GRUBBING

Location			Trees, Stumps, and Logs and Down Timber Material Diameters												All Other Materials		Estimated Quantities			
Station to Station or Ref. Loc. Sign to Ref. Loc. Sign or Description	Direction of Travel	Work and Material Type	3"-6"	>6"-9"	>9"-12"	>12"-15"	>15"-18"	>18"-24"	>24"-30"	>30"-36"	>36"-42"	>42"-48"	>48"-60"	>60"-72"	>72"	Length	Width	Units	Area	Herbicide Application	Remarks
																FT	FT	Units	Acres	Each	
Stta. 189+57 to Sta. 190+95	SB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 190+94, 35' LT	SB	Trees - Clearing and Grubbing	1															1.6			
Sta. 191+25, 37' LT	SB	Trees - Clearing and Grubbing		1														3.9			
Sta. 191+56, 35' LT	SB	Trees - Clearing and Grubbing			1													6.7			
Sta. 191+64, 38' LT	SB	Trees - Clearing and Grubbing			1													6.7			
Sta. 193+03, 37' LT	SB	Trees - Clearing and Grubbing										1						120.0			
Sta. 215+71, 40' LT	SB	Trees - Clearing and Grubbing				1												9.4			
Sta. 215+96 to Sta. 218+99, LT	SB	Trees - Clearing and Grubbing																	0.1		4" and under
Sta. 219+90, 37' RT	NB	Trees - Clearing and Grubbing				1												9.4			
Sta. 221+89 to Sta. 223+28	SB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 221+90 to Sta. 222+63	NB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 264+78, 39' RT	NB	Trees - Clearing and Grubbing								1								50.0			
Sta. 285+57, 31' RT	NB	Trees - Clearing and Grubbing		1														3.9			
Sta. 297+87 to Sta. 298+87	NB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 299+03 to Sta. 300+77	NB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 301+49, 38' RT	NB	Trees - Clearing and Grubbing		1														3.9			
Sta. 301+87, 39' RT	NB	Trees - Clearing and Grubbing		1														3.9			
Sta. 301+90, 42' RT	NB	Trees - Clearing and Grubbing		1														3.9			
Sta. 302+00, 39' RT	NB	Trees - Clearing and Grubbing		1														3.9			
Sta. 302+18 to Sta. 302+48	SB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 309+09 to Sta. 309+44	SB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 352+63 to Sta. 352+93	SB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 356+73 to Sta. 364+72	NB	trees - Clearing and Grubbing																	0.3		4" and under
Sta. 365+07 to Sta. 368+03	NB	Trees - Clearing and Grubbing																	0.1		4" and under
Sta. 367+80 to Sta. 368+37	SB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 368+69, 37' RT	NB	trees - Clearing and Grubbing	1															1.6			
Sta. 373+82 to Sta. 374+65	NB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 390+95, 36' RT	NB	Trees - Clearing and Grubbing		1														3.9			
Sta. 393+22, 39' RT	NB	Trees - Clearing and Grubbing							1									29.0			
Sta. 416+43, 29' RT	NB	Trees - Clearing and Grubbing									1							80.0			
Sta. 416+69, 32' RT	NB	Trees - Clearing and Grubbing							1									29.0			
Sta. 434+05, 35' LT	SB	Trees - Clearing and Grubbing						1										22.0			
Sta. 434+09 to Sta. 434+86	SB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 435+63 to Sta. 441+30	SB	Trees - Clearing and Grubbing																	0.1		4" and under
Sta. 438+20 to Sta. 439+10	NB	trees - Clearing and Grubbing																	0.0		4" and under
Sta. 439+28, 42' RT	NB	Trees - Clearing and Grubbing		1														3.9			
Sta. 439+88 to Sta. 440+66	NB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 440+33 LT	SB	Trees - Clearing and Grubbing							1									29.0			
Sta. 442+59, 41' LT	SB	Trees - Clearing and Grubbing			1													6.7			
Sta. 451+25 to Sta. 453+19	NB	Trees - Clearing and Grubbing																	0.1		4" and under
Sta. 453+09 to Sta. 454+43	SB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 454+68, 34' LT	SB	Trees - Clearing and Grubbing					1											13.5			
Sta 454+91, 40' RT	NB	Trees - Clearing and Grubbing		1														3.9			
Sta. 456+60 to Sta. 458+97	SB	Trees - Clearing and Grubbing																	0.1		4" and under
Sta. 505+31 to Sta. 508+56	NB	Trees - Clearing and Grubbing																	0.1		4" and under
Sta. 508+71 to Sta. 509+67	NB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 509+90 to Sta. 515+70	NB	Trees - Clearing and Grubbing																	0.1		4" and under
Sta. 515+91 to Sta. 516+73	NB	Trees - Clearing and Grubbing																	0.0		4" and under
Sta. 517+00 to Sta. 529+73	NB	Trees - Clearing and Grubbing																	0.2		4" and under
Sta. 528+62 to Sta. 529+95	SB	Trees - Clearing and Grubbing																	0.1		4" and under
																		514.3	2.5		TOTAL

102-16
10-21-14

NOTCHES AND RUNOUTS FOR RESURFACING

Refer to PR-201 and PR-202.

(1) Bid item. Applies only to Types 'N1' and 'N3' on PR-202. Refer to 100-25 for remaining values.

Location Station	Type of Notch or Runout	(S) IN	(I) IN	(DI) IN	(L) FT	(M) IN	Pavement (1) Scarification SY	Remarks
322+48.70	Type 'N2'	1.0			58.4	1.0	143.0	(PCC) 24' wide
323+48.70	Type 'N2'	1.0			41.6	1.0	184.9	(PCC) 40'wide (included shoulders)
486+88.80					203.4	1.0	542.4	(HMA) Mill Exist. HMA, N. of Approach
							870.3	Total

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area SY	Saw Cut* LF	Remarks
+23.73	1+14.23	Both	HMA	221.2		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
12+84.67	18+78.53	Both	HMA	1451.7		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
23+15.38	23+68.28	RT	HMA	64.7		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
23+15.38	24+21.08	LT	HMA	129.2		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
36+27.17	40+66.35	Both	HMA	1073.6		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
50+03.00	50+94.00	Both	HMA	222.4		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
51+65.95	56+57.30	Both	HMA	1201.1		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
72+06.98	73+09.00	Both	HMA	249.4		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
94+15.69	100+92.50	Both	HMA	1654.4		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
134+30.74	142+85.49	Both	HMA	2089.4		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
158+21.84	159+89.56	Both	HMA	410.0		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
229+11.03	234+84.98	Both	HMA	1403.0		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
247+31.10	258+82.66	Both	HMA	2814.9		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
274+23.71	280+03.31	Both	HMA	1416.8		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
294+55.47	304+09.64	Both	HMA	2332.4		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
312+07.46	315+03.51	Both	HMA	723.7		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
381+15.00	390+34.64	Both	HMA	2248.0		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
406+57.78	407+62.72	Both	HMA	256.5		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
412+32.94	421+38.68	Both	HMA	2214.0		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
435+63.29	453+40.40	LT	HMA	2172.0		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
437+38.90	453+40.40	RT	HMA	1957.4		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
554+32.00	557+22.25	Both	HMA	709.5		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
538+28.00	542+03.00	Both	HMA	916.7		SCARIFY HMA OVERLAY PRIOR TO PCC REMOVAL
				27931.9		TOTAL HMA SCARIFICATION
FOR CRUSHING						
+23.73	1+14.23	Both	PCC	221.2	110.0	Sawcut @ 0+23.73. BOP. 6" PCC Under HMA
1+14.23	12+84.67	Both	PCC	2861.1		
12+84.67	18+78.53	Both	PCC	1451.7		6" PCC Under HMA
18+78.53	23+15.38	Both	PCC	1067.9		
23+15.38	23+68.28	RT	PCC	64.7		6" PCC Under HMA
23+15.38	24+21.07	LT	PCC	129.2		6" PCC Under HMA
23+68.28	24+21.07	RT	PCC	64.5		
24+21.07	36+27.17	Both	PCC	2948.2		
36+27.17	40+66.35	Both	PCC	1073.6		6" PCC Under HMA
40+66.35	50+03.00	Both	PCC	2289.6		
50+03.00	50+94.00	Both	PCC	222.4		6" PCC Under HMA
50+94.00	51+65.95	Both	PCC	175.9		
51+65.95	56+57.29	Both	PCC	1201.1		6" PCC Under HMA
56+57.29	72+06.98	Both	PCC	3788.1		
72+06.98	73+09.00	Both	PCC	249.4		6" PCC Under HMA
73+09.00	94+15.69	Both	PCC	5149.7		
94+15.69	100+92.50	Both	PCC	1654.4		6" PCC Under HMA
100+92.50	134+30.74	Both	PCC	8160.1		
134+30.74	142+85.49	Both	PCC	2089.4		6" PCC Under HMA
142+85.49	158+21.84	Both	PCC	3755.5		
158+21.84	159+89.56	Both	PCC	410.0		6" PCC Under HMA
159+89.56	160+12.28	Both	PCC	60.6	24.0	Sawcut @ 160+12.28 Inlay Stop
170+20.43	229+11.03	Both	PCC	14399.2	22.0	Sawcut @ 170+20.43 Inlay Resumed
229+11.03	234+84.98	Both	PCC	1403.0		6" PCC Under HMA
234+84.98	247+31.10	Both	PCC	3046.1		
247+31.10	258+82.66	Both	PCC	2814.9		6" PCC Under HMA
258+82.66	274+23.71	Both	PCC	3767.0		
274+23.71	280+03.31	Both	PCC	1416.8		6" PCC Under HMA

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area SY	Saw Cut* LF	Remarks
280+03.31	294+55.47	Both	PCC	3549.7		
294+55.47	304+09.64	Both	PCC	2332.4		6" PCC Under HMA
304+09.64	312+07.46	Both	PCC	1950.2		
312+07.46	315+03.51	Both	PCC	723.7		6" PCC Under HMA
315+03.51	319+19.37	Both	PCC	1016.5	24.0	Sawcut @ 319+19.37. Stop Inlay
350+84.41	381+15.00	Both	PCC	7408.1	189.0	Sawcut 24' @ 350+84.41, Sawcut 165' @260th St.
381+15.00	390+34.64	Both	PCC	2248.0	84.0	6" PCC under HMA. Sawcut 84' @ 260th St.
390+34.64	406+57.78	Both	PCC	3967.7		
406+57.78	407+62.72	Both	PCC	256.5		6" PCC Under HMA
407+62.72	412+32.94	Both	PCC	1149.4		
412+32.94	421+38.68	Both	PCC	2214.0		6" PCC Under HMA
421+38.68	435+63.29	Both	PCC	3482.4		
435+63.29	437+38.90	Both	PCC	429.3		6" PCC Under HMA in LT Lane
437+38.90	453+40.40	Both	PCC	3914.8		6" PCC Under HMA
453+40.40	472+16.23	Both	PCC	4585.4	24.0	Sawcut @ 472+16.23. Stop Inlay
481+65.21	481+94.35	Both	PCC	77.7	24.0	Sawcut @ 481+65.21. Bridge Approach
481+94.35	482+35.93	Both	PCC	184.8	40.0	Sawcut @ 482+35.93. Bridge Approach
486+18.91	486+60.32	Both	PCC	184.0	40.0	Sawcut @ 486+18.91. Bridge Approach
486+60.32	486+88.91	Both	PCC	76.2	24.0	Sawcut @ 486+88.91. Bridge Approach
492+60.54	538+28.00	Both	PCC	11164.9	24.0	Sawcut @ 492+60.54. Resume Inlay
538+28.00	542+03.00	Both	PCC	916.7		6" PCC Under HMA
542+03.00	554+32.00	Both	PCC	3004.2		
554+32.00	557+22.25	Both	PCC	709.5	22.0	Sawcut @ 557+22.25. EOP. 6" PCC Under HMA
				121481.4		TOTAL

108-13A
08-01-08

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Closure Type Road Qty.	Closure Type Hazard Qty.	Remarks
+20.73	1		Begin project
12+85.00	1		LT, Side Road
26+38.00	1		LT, Side Road
105+56.00	1		LT, Side Road
131+89.00	1		RT, Side Road
157+98.00	1		LT, Side Road
184+54.00	1		LT, Side Road
184+54.00	1		RT, Side Road
223+76.00	1		LT, Side Road
332+00.00	1		LT, River Access
380+70.00	1		RT, Side Road
380+70.00	1		LT, Side Road
433+09.00	1		LT, Side Road
459+38.00	1		LT, Side Road
462+55.00	1		RT, Side Road
504+71.00	1		RT, Side Road
544+23.00	1		RT, Side Road
549+12.00	1		RT, Side Road
552+89.00	1		RT, Side Road
557+22.00	1		End Project
	20		Total

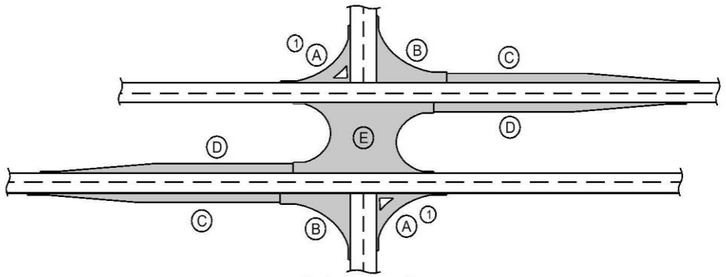
FULL-DEPTH PATCHES

Possible Standards: PR-101, PR-102, PR-103, PR-104, PR-105 and PR-140.

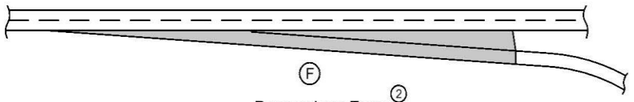
Location				Dimension			PCC Patches													
Count	Station	Reference Location Sign	Lane	Length	Width	Patch Thickness	With Dowels	Without Dowels	C R C	Ramp with Dowels	HMA Patches	Composite HMA	Subbase Patches	Subbase Patch w/ 'EF' Joint	Patch Subdrain	'CD' Joints	'CT' Joints	'EF' Joints	Anchor Lugs Removal	Remarks
							PR-103	PR-102	PR-104	PR-105			PR-140	PR-101	PR-101 or PR-140			PR-101		
			L, R, or B	FT	FT	IN	SY	SY	SY	SY	SY	TON	SY	SY	No.	No.	No.	No.	No.	
bur Route																				
Sigourney																				
ing IA 21																				
1	220+45.00		L	15.0	12.0	13.0		20.0					21.4		1					See Note 1
1	220+45.00		R	15.0	12.0	13.0		20.0					21.4		1					See Note 1
1	225+26.00		R	8.0	12.0	13.0		10.7					11.4		1					See Note 1
1	225+96.00		L	17.0	12.0	13.0		22.7					24.2		1					See Note 1
1	235+52.00		L	15.0	12.0	13.0		20.0					21.4		1					See Note 1
1	235+52.00		R	15.0	12.0	13.0		20.0					21.4		1					See Note 1
1	236+24.00		L	6.0	12.0	13.0		8.0					8.6		1					See Note 1
1	236+24.00		R	6.0	12.0	13.0		8.0					8.6		1					See Note 1
1	244+16.00		R	6.0	12.0	13.0		8.0					8.6		1					See Note 1
1	245+73.00		L	6.0	12.0	13.0		8.0					8.6		1					See Note 1
1	252+47.00		L	13.0	12.0	13.0		17.3					18.5		1					See Note 1
1	252+47.00		R	13.0	12.0	13.0		17.3					18.5		1					See Note 1
1	253+62.00		L	7.0	12.0	13.0		9.3					10.0		1					See Note 1
1	254+58.00		R	15.0	12.0	13.0		20.0					21.4		1					See Note 1
1	263+20.00		L	6.0	12.0	13.0		8.0					8.6		1					See Note 1
1	263+20.00		R	6.0	12.0	13.0		8.0					8.6		1					See Note 1
1	274+50.00		L	110.0	12.0	13.0		146.7					156.9		1	5	5			See Note 1, Dollar General Entrance
1	289+46.00		L	28.0	12.0	13.0		37.3					39.9		1	1				See Note 1, BP
1	291+12.00		L	63.0	12.0	13.0		84.0					89.8		1	2	2			See Note 1, BP
1	291+75.00		L	10.0	4.0	13.0		4.4					5.4		1					See Note 1
1	292+85.00		L	37.0	12.0	13.0		49.3					52.8		1	1	2			See Note 1
1	303+92.00		L	12.0	12.0	13.0		16.0					17.1		1					See Note 1
1	303+92.00		R	12.0	12.0	13.0		16.0					17.1		1					See Note 1
1	323+75.00		L	13.0	12.0	13.0		17.3					18.5		1					See Note 1
1	325+37.00		R	9.0	12.0	13.0		12.0					12.8		1					See Note 1
1	328+30.00		L	6.0	12.0	13.0		8.0					8.6		1					See Note 1
1	328+30.00		R	6.0	12.0	13.0		8.0					8.6		1					See Note 1
1	330+63.00		L	11.0	12.0	13.0		14.7					15.7		1					See Note 1
1	330+63.00		R	11.0	12.0	13.0		14.7					15.7		1					See Note 1
1	339+37.00		L	10.0	12.0	13.0		13.3					14.3		1					See Note 1
1	339+37.00		R	15.0	12.0	13.0		20.0					21.4		1					See Note 1
1	349+31.00		R	11.0	12.0	13.0		14.7					15.7		1					See Note 1, TILE PROBLEM
1	434+10.00		R	35.0	6.0	13.0		23.3					26.6		1	1	1			See Note 1
1	435+18.00		R	10.0	6.0	13.0		6.7					7.6		1					See Note 1
1	435+55.00		L	12.0	6.0	13.0		8.0					9.1		1					See Note 1
1	435+80.00		R	45.0	12.0	13.0		60.0					64.2		1	2	2			See Note 1
1	436+40.00		R	23.0	6.0	13.0		15.3					17.5		1	1	1			See Note 1
1	438+25.00		R	45.0	6.0	13.0		30.0					34.2		1	2	2			See Note 1
1	441+75.00		R	6.0	12.0	13.0		8.0					8.6		1					See Note 1
1	443+75.00		R	12.0	12.0	13.0		16.0					17.1		1					See Note 1
1	452+70.00		L	10.0	12.0	13.0		13.3					14.3		1					See Note 1
1	452+70.00		R	10.0	12.0	13.0		13.3					14.3		1					See Note 1
1	489+62.00		L	12.0	12.0	13.0		16.0					17.1		1					See Note 1
1	489+62.00		R	12.0	12.0	13.0		16.0					17.1		1					See Note 1
42	<50'	Subtotal						696.9					998.6	0.0	44	15	15	0		
2	>50'							230.7												
ine IA 21																				
1	7+70.00		L	30.0	12.0	13.0		40.0								1				
1	12+49.00		L	30.0	12.0	13.0		40.0								1				
1	32+60.00		R	7.0	12.0	13.0		9.3												
2	322+89.00		B	10.0	12.0	13.0		26.7						14.3				2		See Note 2
1	341+75.00		L	40.0	4.0	13.0		17.8					21.5			1	2			See Note 1
2	481+30.80		B	35.0	24.0	13.0		186.7					96.6			2				See Note 1 & Note 3
8	<50'	Subtotal						320.5					118.1	14.3	0	5	2	2		
0	>50'							0.0												
50	<50'	TOTAL						1017.4	<50'				1116.7	14.3	44	20	17	2		
2	>50'							230.7	>50'											

Note 1: Subbase Patch depth 6"
Note 2: Subbase Patch with "EF" Joint, depth 12"
Note 3: Place at south end of new Bridge Approach Pavement

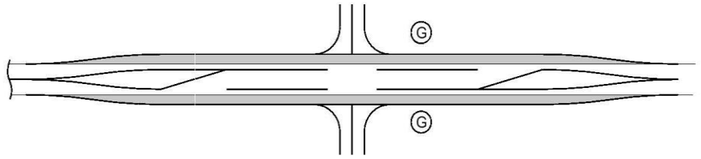
HMA PAVEMENT



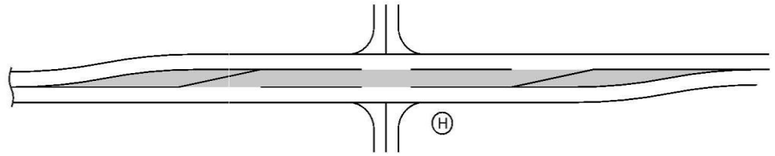
Typical Intersection



Ramp or Loop Taper (2)



Channelized Intersection
Widen Existing Roadway



Channelized Intersection
Reconstructed Roadway

(1) Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.

(2) Refer to PV-410, PV-411, PV-412, and PV-414.

(3) Quantity includes Pavement Header.

(4) Includes both 4" and 2" lifts of HMA Base

(5) The 4' Paved Shoulders shall be paved with the adjacent HMA Pavement. No joint at the edge of pavement

Calculations assume a surface course unit weight (lbs/cf) of 147, an intermediate course unit weight (lbs/cf) of 147, a base course unit weight (lbs/cf) of 145, and a special backfill unit weight (lbs/cf) of 140.

Location				Mainline			Area (3)								Bid Items												
															Hot Mix Asphalt Pavement						Binder						
Road Identification	Direction of Travel	Station to Station		Width (5)	Length	Area	A (1)	B	C	D	E	F (2)	G	H	Surface Standard, 1/2" Mix No Friction		Standard, 1/2" Intermediate		Base (4) Standard, 1/2" Mix		Surface PG58-28S 6%	Intermediate PG-58-28S 6%	Base (4) PG58-28S 6%	Special Backfill (Under Shoulder)	Modified Subbase	Class 10, Waste	Pavement Scarification	Remarks
				FT	FT	SY	SY	SY	SY	SY	SY	SY	SY	SY	TONS	SY	TONS	SY	TONS	SY	TONS	TONS	TONS	TONS	CY	CY	SY	
IA 21	Both	+20.73	+77.11	24.0	56.4	150.3													32.700	150.3			1.962					4" Base
IA 21	Both	+77.11	160+12.28	24.0	15935.2	42493.8													9242.399	42493.8			554.544					4" Base
IA 21	Both	171+20.43	276+15.12	24.0	10494.7	27985.8													6086.920	27985.8			365.215					4" Base
IA 21	Both	276+15.55	284+35.29	24.0	819.7	2186.0													475.449	2186.0			28.527					4" Base
IA 21	Both	284+33.17	300+58.47	24.0	1625.3	4334.1													942.674	4334.1			56.560					4" Base
IA 21	Both	300+58.84	319+19.37	24.0	1860.5	4961.4													1079.107	4961.4			64.746					4" Base
IA 21	Both	350+84.41	353+27.13	24.0	242.7	647.3													140.778	647.3			8.447					4" Base
IA 21	Both	354+00.60	383+85.73	24.0	2985.1	7960.3													1731.375	7960.3			103.883					4" Base
IA 21	Both	383+85.80	426+56.60	24.0	4270.8	11388.8													2477.064	11388.8			148.624					4" Base
IA 21	Both	426+56.65	463+47.76	24.0	3691.1	9843.0													2140.844	9843.0			128.451					4" Base
IA 21	Both	464+00.00	472+16.23	24.0	816.2	2176.6													473.413	2176.6			28.405					4" Base
IA 21	Both	492+60.54	495+99.32	24.0	338.8	903.4													196.492	903.4			11.790					4" Base
IA 21	Both	496+00.00	557+22.25	24.0	6122.3	16326.0													3550.905	16326.0			213.054					4" Base
IA 21	Both	+20.73	+77.11	32.0	56.4	200.5	42.8	85.5							36.246	328.8	36.246	328.8	35.753	328.8	2.175	2.175	2.145	39.308	117.9	128.2		
IA 21	Both	+77.11	160+12.28	32.0	15935.2	56658.4									6246.587	56658.4	6246.587	56658.4	6161.599	56658.4	374.795	374.795	369.696	11110.001	18894.4	36237.8		
IA 21	Both	171+20.43	276+15.12	32.0	10494.7	37314.5									4113.918	37314.5	4113.918	37314.5	4057.947	37314.5	246.835	246.835	243.477	7316.898	12446.4	23865.7		
IA 21	Both	276+15.55	284+35.29	32.0	819.7	2914.6									321.338	2914.6	321.338	2914.6	316.966	2914.6	19.280	19.280	19.018	571.523	979.8	1864.1		
IA 21	Both	284+33.17	300+58.47	32.0	1625.3	5778.8									637.118	5778.8	637.118	5778.8	628.449	5778.8	38.227	38.227	37.707	1133.159	1934.6	3696.1		
IA 21	Both	300+58.84	319+19.37	32.0	1860.5	6615.2									729.328	6615.2	729.328	6615.2	719.405	6615.2	43.760	43.760	43.164	1297.162	2213.4	4231.0		
IA 21	Both	322+48.73	323+07.67	24.0	58.9	157.2									8.664	157.2					0.520							
IA 21	Both	323+07.67	323+43.70	41.3	36.0	165.3									9.114	165.3					0.547							
IA 21	Both	350+84.41	353+27.13	32.0	242.7	863.0									95.146	863.0	95.146	863.0	93.852	863.0	5.709	5.709	5.631	169.224	296.0	552.0		
IA 21	Both	354+00.60	383+85.73	32.0	2985.1	10613.8									1170.171	10613.8	1170.171	10613.8	1154.250	10613.8	70.210	70.210	69.255	2081.233	3546.2	6788.4		
IA 21	Both	383+85.80	426+56.60	32.0	4270.8	15185.1									1674.154	15185.1	1674.154	15185.1	1651.376	15185.1	100.449	100.449	99.083	2977.602	5070.0	9712.1		
IA 21	Both	426+56.65	463+47.76	32.0	3691.1	13123.9									1446.915	13123.9	1446.915	13123.9	1427.229	13123.9	86.815	86.815	85.634	2573.442	4382.9	8393.9		
IA 21	Both	464+00.00	472+16.23	32.0	816.2	2902.2									319.962	2902.2	319.962	2902.2	315.609	2902.2	19.198	19.198	18.937	569.076	975.7	1856.2		
IA 21	Both	486+88.80	488+92.40	24.0	203.6	542.9																					542.9	
IA 21	Both	492+60.54	495+99.32	32.0	338.8	1204.6									132.802	1204.6	132.802	1204.6	130.995	1204.6	7.968	7.968	7.860	236.197	409.8	770.4		
IA 21	Both	496+00.00	557+22.25	32.0	6122.3	21768.0									2399.922	21768.0	2399.922	21768.0	2367.270	21768.0	143.995	143.995	142.036	4268.433	7264.3	13922.5		
TAB TOTALS															19341.385	175593.3	19323.606	175270.8	47630.822	306627.7	1160.483	1159.416	2857.849	34343.256	58531.5	112018.2	542.9	
5% for Irreg															967.100		966.200		2381.500		58.000	58.000	142.900					
Bid Totals															20308.485		20289.806		50012.322		1218.483	1217.416	3000.749	34343.256	58531.5	112018.2	542.9	

FILE NO.	ENGLISH	DESIGN TEAM NICHOLSON\VAN DYKE\HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER C.11

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

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

Location					Longitudinal Subdrain (DR-303)								Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth (D)	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306				
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type			
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
1	IA 21	+77.10	5+77.10	RT	36.0	4.0	540.0						+77.10	DR-306	41.7	0.2	
													5+77.10	DR-306		0.2	
2	IA 21	5+77.10	10+96.20	RT	36.0	4.0	559.1						5+77.10	DR-306	43.1	0.2	
													10+96.20	DR-306		0.2	
3	IA 21	11+04.20	15+86.20	RT	36.0	4.0	522.0						11+04.20	DR-306	40.3	0.2	
													15+86.20	DR-306		0.2	
4	IA 21	15+86.20	20+81.10	RT	36.0	4.0	534.9						15+86.20	DR-306	41.3	0.2	
													20+81.10	DR-306		0.2	
5	IA 21	20+91.10	25+61.00	RT	36.0	4.0	509.9						20+91.10	DR-306	39.3	0.2	
													25+61.00	DR-306		0.2	
6	IA 21	25+61.00	30+12.00	RT	36.0	4.0	491.0						25+61.00	DR-306	37.9	0.2	
													30+12.00	DR-306		0.2	
7	IA 21	30+22.00	35+41.95	RT	36.0	4.0	560.0						30+22.00	DR-306	43.2	0.2	
													35+41.95	DR-306		0.2	
8	IA 21	35+50.45	37+50.00	RT	36.0	4.0	239.6						35+50.45	DR-306	18.5	0.2	
													37+50.00	DR-306		0.2	
9	IA 21	37+50.00	42+50.00	RT	36.0	4.0	540.0						37+50.00	DR-306	41.7	0.2	
													42+50.00	DR-306		0.2	
10	IA 21	42+50.00	48+56.20	RT	36.0	4.0	646.2						42+50.00	DR-306	49.9	0.2	
													48+56.20	DR-306		0.2	
11	IA 21	48+66.20	50+57.00	RT	36.0	4.0	230.8						48+66.20	DR-306	17.8	0.2	
													50+57.00	DR-306		0.2	
12	IA 21	50+57.00	55+57.00	RT	36.0	4.0	540.0						50+57.00	DR-306	41.7	0.2	
													55+57.00	DR-306		0.2	
13	IA 21	55+57.00	60+57.00	RT	36.0	4.0	540.0						55+57.00	DR-306	41.7	0.2	
													60+57.00	DR-306		0.2	
14	IA 21	60+57.00	65+57.00	RT	36.0	4.0	540.0						60+57.00	DR-306	41.7	0.2	
													65+57.00	DR-306		0.2	
15	IA 21	65+57.00	70+57.00	RT	36.0	4.0	540.0						65+57.00	DR-306	41.7	0.2	
													70+57.00	DR-306		0.2	
16	IA 21	70+57.00	72+48.60	RT	36.0	4.0	231.6						70+57.00	DR-306	17.9	0.2	
													72+48.60	DR-306		0.2	
17	IA 21	72+56.60	77+56.60	RT	36.0	4.0	540.0						72+56.60	DR-306	41.7	0.2	
													77+56.60	DR-306		0.2	
18	IA 21	77+56.60	82+56.60	RT	36.0	4.0	540.0						77+56.60	DR-306	41.7	0.2	
													82+56.60	DR-306		0.2	
19	IA 21	82+56.60	87+56.60	RT	36.0	4.0	540.0						82+56.60	DR-306	41.7	0.2	
													87+56.60	DR-306		0.2	
20	IA 21	87+56.60	90+45.70	RT	36.0	4.0	329.1						87+56.60	DR-306	25.4	0.2	
													90+45.70	DR-306		0.2	
21	IA 21	90+55.70	95+55.70	RT	36.0	4.0	540.0						90+55.70	DR-306	41.7	0.2	
													95+55.70	DR-306		0.2	
22	IA 21	95+55.70	100+55.70	RT	36.0	4.0	540.0						95+55.70	DR-306	41.7	0.2	
													100+55.70	DR-306		0.2	
23	IA 21	100+55.70	105+13.35	RT	36.0	4.0	497.7						100+55.70	DR-306	38.4	0.2	
													105+13.35	DR-306		0.2	
24	IA 21	105+21.85	110+21.85	RT	36.0	4.0	540.0						105+21.85	DR-306	41.7	0.2	
													110+21.85	DR-306		0.2	
25	IA 21	110+21.85	113+35.40	RT	36.0	4.0	353.5						110+21.85	DR-306	27.3	0.2	
													113+35.40	DR-306		0.2	
26	IA 21	113+44.40	118+44.40	RT	36.0	4.0	540.0						113+44.40	DR-306	41.7	0.2	
													118+44.40	DR-306		0.2	
27	IA 21	118+44.40	124+80.20	RT	36.0	4.0	675.8						118+44.40	DR-306	52.1	0.2	
													124+80.20	DR-306		0.2	
28	IA 21	124+89.20	130+50.00	RT	36.0	4.0	600.8						124+89.20	DR-306	46.4	0.2	
													130+50.00	DR-306		0.2	
29	IA 21	130+50.00	135+50.00	RT	36.0	4.0	540.0						130+50.00	DR-306	41.7	0.2	
													135+50.00	DR-306		0.2	
30	IA 21	135+50.00	137+47.80	RT	36.0	4.0	237.8						135+50.00	DR-306	18.3	0.2	
													137+47.80	DR-306		0.2	
31	IA 21	137+55.80	141+97.55	RT	36.0	4.0	481.8						137+55.80	DR-306	37.2	0.2	
													141+97.55	DR-306		0.2	
32	IA 21	142+06.05	147+06.05	RT	36.0	4.0	540.0						142+06.05	DR-306	41.7	0.2	
													147+06.05	DR-306		0.2	
33	IA 21	147+06.05	152+24.00	RT	36.0	4.0	558.0						147+06.05	DR-306	43.1	0.2	
													152+24.00	DR-306		0.2	
34	IA 21	152+32.00	156+96.80	RT	36.0	4.0	504.8						152+32.00	DR-306	39.0	0.2	
													156+96.80	DR-306		0.2	
35	IA 21	157+04.80	160+12.28	RT	36.0	4.0	347.5						157+04.80	DR-306	26.8	0.2	
													160+12.28	DR-306		0.2	
36	IA 21	171+20.43	172+28.65	RT	36.0	4.0	148.2						171+20.43	DR-306	11.4	0.2	
													172+28.65	DR-306		0.2	
37	IA 21	172+37.15	177+37.15	RT	36.0	4.0	540.0						172+37.15	DR-306	41.7	0.2	
													177+37.15	DR-306		0.2	
38	IA 21	177+37.15	182+37.15	RT	36.0	4.0	540.0						177+37.15	DR-306	41.7	0.2	
													182+37.15	DR-306		0.2	
39	IA 21	182+37.15	185+60.00	RT	36.0	4.0	362.8						182+37.15	DR-306	28.0	0.2	
													185+60.00	DR-306		0.2	

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

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

Location					Longitudinal Subdrain (DR-303)							Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth D	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306			
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type		
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
40	IA 21	185+60.00	190+60.00	RT	36.0	4.0	540.0						185+60.00	DR-306	41.7	0.2	
													190+60.00	DR-306		0.2	
41	IA 21	190+60.00	195+60.00	RT	36.0	4.0	540.0						190+60.00	DR-306	41.7	0.2	
													195+60.00	DR-306		0.2	
42	IA 21	195+60.00	200+60.00	RT	36.0	4.0	540.0						195+60.00	DR-306	41.7	0.2	
													200+60.00	DR-306		0.2	
43	IA 21	200+60.00	205+75.90	RT	36.0	4.0	555.9						200+60.00	DR-306	42.9	0.2	
													205+75.90	DR-306		0.2	
44	IA 21	205+86.90	206+66.00	RT	36.0	4.0	119.1						205+86.90	DR-306	9.2	0.2	
													206+66.00	DR-306		0.2	
45	IA 21	206+66.00	211+66.00	RT	36.0	4.0	540.0						206+66.00	DR-306	41.7	0.2	
													211+66.00	DR-306		0.2	
46	IA 21	211+66.00	214+36.00	RT	36.0	4.0	310.0						211+66.00	DR-306	23.9	0.2	
													214+36.00	DR-306		0.2	
47	IA 21	214+36.00	220+80.90	RT	36.0	4.0	684.9						214+36.00	DR-306	52.8	0.2	
													220+80.90	DR-306		0.2	
48	IA 21	220+92.90	227+48.70	RT	36.0	4.0	695.8						220+92.90	DR-306	53.7	0.2	
													227+48.70	DR-306		0.2	
49	IA 21	227+56.70	232+85.10	RT	36.0	4.0	568.4						227+56.70	DR-306	43.9	0.2	
													232+85.10	DR-306		0.2	
50	IA 21	232+93.10	237+93.10	RT	36.0	4.0	540.0						232+93.10	DR-306	41.7	0.2	
													237+93.10	DR-306		0.2	
51	IA 21	237+93.10	240+27.80	RT	36.0	4.0	274.7						237+93.10	DR-306	21.2	0.2	
													240+27.80	DR-306		0.2	
52	IA 21	240+35.80	245+35.80	RT	36.0	4.0	540.0						240+35.80	DR-306	41.7	0.2	
													245+35.80	DR-306		0.2	
53	IA 21	245+35.80	250+65.80	RT	36.0	4.0	570.0						245+35.80	DR-306	44.0	0.2	
													250+65.80	DR-306		0.2	
54	IA 21	250+73.80	255+73.80	RT	36.0	4.0	540.0						250+73.80	DR-306	41.7	0.2	
													255+73.80	DR-306		0.2	
55	IA 21	255+73.80	260+73.80	RT	36.0	4.0	540.0						255+73.80	DR-306	41.7	0.2	
													260+73.80	DR-306		0.2	
56	IA 21	260+73.80	261+90.10	RT	36.0	4.0	156.3						260+73.80	DR-306	12.1	0.2	
													261+90.10	DR-306		0.2	
57	IA 21	264+98.10	269+15.00	RT	36.0	4.0	456.9						264+98.10	DR-306	35.3	0.2	
													269+15.00	DR-306		0.2	
58	IA 21	269+15.00	270+69.20	RT	36.0	4.0	194.2						269+15.00	DR-306	15.0	0.2	
													270+69.20	DR-306		0.2	
59	IA 21	270+77.20	275+40.00	RT	36.0	4.0	502.8						270+77.20	DR-306	38.8	0.2	
													275+40.00	DR-306		0.2	
60	IA 21	284+91.27	289+91.27	RT	36.0	4.0	540.0						284+91.27	DR-306	41.7	0.2	
													289+91.27	DR-306		0.2	
61	IA 21	289+91.27	291+80.00	RT	36.0	4.0	228.7						289+91.27	DR-306	17.6	0.2	
													291+80.00	DR-306		0.2	
62	IA 21	291+80.00	296+80.00	RT	36.0	4.0	540.0						291+80.00	DR-306	41.7	0.2	
													296+80.00	DR-306		0.2	
63	IA 21	296+80.00	302+26.20	RT	36.0	4.0	586.2						296+80.00	DR-306	45.2	0.2	
													302+26.20	DR-306		0.2	
64	IA 21	302+35.20	307+35.20	RT	36.0	4.0	540.0						302+35.20	DR-306	41.7	0.2	
													307+35.20	DR-306		0.2	
65	IA 21	307+35.20	309+13.70	RT	36.0	4.0	218.5						307+35.20	DR-306	16.9	0.2	
													309+13.70	DR-306		0.2	
66	IA 21	309+22.70	314+22.70	RT	36.0	4.0	540.0						309+22.70	DR-306	41.7	0.2	
													314+22.70	DR-306		0.2	
67	IA 21	314+22.70	319+19.37	RT	36.0	4.0	536.7						314+22.70	DR-306	41.4	0.2	
													319+19.37	DR-306		0.2	
68	IA 21	350+84.41	352+72.00	RT	36.0	4.0	227.6						350+84.41	DR-306	17.6	0.2	
													352+72.00	DR-306		0.2	
69	IA 21	352+84.00	358+57.47	RT	36.0	4.0	613.5						352+84.00	DR-306	47.3	0.2	
													358+57.47	DR-306		0.2	
70	IA 21	358+57.47	363+57.47	RT	36.0	4.0	540.0						358+57.47	DR-306	41.7	0.2	
													363+57.47	DR-306		0.2	
71	IA 21	363+57.47	368+57.47	RT	36.0	4.0	540.0						363+57.47	DR-306	41.7	0.2	
													368+57.47	DR-306		0.2	
72	IA 21	368+57.47	374+79.00	RT	36.0	4.0	661.5						368+57.47	DR-306	51.0	0.2	
													374+79.00	DR-306		0.2	
73	IA 21	374+87.00	379+50.00	RT	36.0	4.0	503.0						374+87.00	DR-306	38.8	0.2	
													379+50.00	DR-306		0.2	
74	IA 21	379+50.00	385+50.00	RT	36.0	4.0	640.0						379+50.00	DR-306	49.4	0.2	
													385+50.00	DR-306		0.2	
75	IA 21	385+50.00	390+18.00	RT	36.0	4.0	508.0						385+50.00	DR-306	39.2	0.2	
													390+18.00	DR-306		0.2	
76	IA 21	390+26.00	395+26.00	RT	36.0	4.0	540.0						390+26.00	DR-306	41.7	0.2	
													395+26.00	DR-306		0.2	
77	IA 21	395+26.00	399+50.00	RT	36.0	4.0	464.0						395+26.00	DR-306	35.8	0.2	
													399+50.00	DR-306		0.2	
78	IA 21	399+50.00	404+50.00	RT	36.0	4.0	540.0						399+50.00	DR-306	41.7	0.2	
													404+50.00	DR-306		0.2	

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

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

Location					Longitudinal Subdrain (DR-303)								Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth (D)	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306				
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type			
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
79	IA 21	404+50.00	407+10.85	RT	36.0	4.0	300.8						404+50.00	DR-306	23.2	0.2	
													407+10.85	DR-306		0.2	
80	IA 21	407+20.35	412+20.35	RT	36.0	4.0	540.0						407+20.35	DR-306	41.7	0.2	
													412+20.35	DR-306		0.2	
81	IA 21	412+20.35	416+50.00	RT	36.0	4.0	469.7						412+20.35	DR-306	36.2	0.2	
													416+50.00	DR-306		0.2	
82	IA 21	416+50.00	421+55.70	RT	36.0	4.0	545.7						416+50.00	DR-306	42.1	0.2	
													421+55.70	DR-306		0.2	
83	IA 21	421+63.70	427+00.00	RT	36.0	4.0	576.3						421+63.70	DR-306	44.5	0.2	
													427+00.00	DR-306		0.2	
84	IA 21	427+00.00	432+00.00	RT	36.0	4.0	540.0						427+00.00	DR-306	41.7	0.2	
													432+00.00	DR-306		0.2	
85	IA 21	432+00.00	435+99.00	RT	36.0	4.0	439.0						432+00.00	DR-306	33.9	0.2	
													435+99.00	DR-306		0.2	
86	IA 21	436+07.00	439+85.00	RT	36.0	4.0	418.0						436+07.00	DR-306	32.3	0.2	
													439+85.00	DR-306		0.2	
87	IA 21	439+85.00	444+31.90	RT	36.0	4.0	486.9						439+85.00	DR-306	37.6	0.2	
													444+31.90	DR-306		0.2	
88	IA 21	444+39.90	449+39.90	RT	36.0	4.0	540.0						444+39.90	DR-306	41.7	0.2	
													449+39.90	DR-306		0.2	
89	IA 21	449+39.90	452+28.28	RT	36.0	4.0	328.4						449+39.90	DR-306	25.3	0.2	
													452+28.28	DR-306		0.2	
90	IA 21	462+04.03	464+93.00	RT	36.0	4.0	329.0						462+04.03	DR-306	25.4	0.2	
													464+93.00	DR-306		0.2	
91	IA 21	465+07.00	468+61.62	RT	36.0	4.0	394.6						465+07.00	DR-306	30.4	0.2	
													468+61.62	DR-306		0.2	
92	IA 21	468+61.62	472+16.32	RT	36.0	4.0	394.7						468+61.62	DR-306	30.5	0.2	
													472+16.32	DR-306		0.2	
93	IA 21	493+74.85	498+74.85	RT	36.0	4.0	540.0						493+74.85	DR-306	41.7	0.2	
													498+74.85	DR-306		0.2	
94	IA 21	498+74.85	503+74.85	RT	36.0	4.0	540.0						498+74.85	DR-306	41.7	0.2	
													503+74.85	DR-306		0.2	
95	IA 21	503+74.85	508+74.85	RT	36.0	4.0	540.0						503+74.85	DR-306	41.7	0.2	
													508+74.85	DR-306		0.2	
96	IA 21	508+74.85	513+74.85	RT	36.0	4.0	540.0						508+74.85	DR-306	41.7	0.2	
													513+74.85	DR-306		0.2	
97	IA 21	513+74.85	518+74.85	RT	36.0	4.0	540.0						513+74.85	DR-306	41.7	0.2	
													518+74.85	DR-306		0.2	
98	IA 21	518+74.85	523+74.85	RT	36.0	4.0	540.0						518+74.85	DR-306	41.7	0.2	
													523+74.85	DR-306		0.2	
99	IA 21	523+74.85	530+21.40	RT	36.0	4.0	686.6						523+74.85	DR-306	53.0	0.2	
													530+21.40	DR-306		0.2	
100	IA 21	530+29.40	535+29.40	RT	36.0	4.0	540.0						530+29.40	DR-306	41.7	0.2	
													535+29.40	DR-306		0.2	
101	IA 21	535+29.40	540+29.40	RT	36.0	4.0	540.0						535+29.40	DR-306	41.7	0.2	
													540+29.40	DR-306		0.2	
102	IA 21	540+29.40	545+29.40	RT	36.0	4.0	540.0						540+29.40	DR-306	41.7	0.2	
													545+29.40	DR-306		0.2	
103	IA 21	545+29.40	547+50.00	RT	36.0	4.0	260.6						545+29.40	DR-306	20.1	0.2	
													547+50.00	DR-306		0.2	
104	IA 21	547+50.00	552+50.00	RT	36.0	4.0	540.0						547+50.00	DR-306	41.7	0.2	
													552+50.00	DR-306		0.2	
105	IA 21	552+50.00	557+22.25	RT	36.0	4.0	512.3						552+50.00	DR-306	39.5	0.2	
													557+22.25	DR-306		0.2	
106	IA 21	+75.21	5+75.21	LT	36.0	4.0	540.0						+75.21	DR-306	41.7	0.2	
													5+75.21	DR-306		0.2	
107	IA 21	5+75.21	10+96.20	LT	36.0	4.0	561.0						5+75.21	DR-306	43.3	0.2	
													10+96.20	DR-306		0.2	
108	IA 21	11+04.20	16+04.20	LT	36.0	4.0	540.0						11+04.20	DR-306	41.7	0.2	
													16+04.20	DR-306		0.2	
109	IA 21	16+04.20	20+81.10	LT	36.0	4.0	516.9						16+04.20	DR-306	39.9	0.2	
													20+81.10	DR-306		0.2	
110	IA 21	20+91.10	25+61.00	LT	36.0	4.0	509.9						20+91.10	DR-306	39.3	0.2	
													25+61.00	DR-306		0.2	
111	IA 21	25+61.00	30+12.00	LT	36.0	4.0	491.0						25+61.00	DR-306	37.9	0.2	
													30+12.00	DR-306		0.2	
112	IA 21	30+22.00	35+41.95	LT	36.0	4.0	560.0						30+22.00	DR-306	43.2	0.2	
													35+41.95	DR-306		0.2	
113	IA 21	35+50.45	37+50.00	LT	36.0	4.0	239.6						35+50.45	DR-306	18.5	0.2	
													37+50.00	DR-306		0.2	
114	IA 21	37+50.00	42+50.00	LT	36.0	4.0	540.0						37+50.00	DR-306	41.7	0.2	
													42+50.00	DR-306		0.2	
115	IA 21	42+50.00	48+56.20	LT	36.0	4.0	646.2						42+50.00	DR-306	49.9	0.2	
													48+56.20	DR-306		0.2	
116	IA 21	48+66.20	50+57.00	LT	36.0	4.0	230.8						48+66.20	DR-306	17.8	0.2	
													50+57.00	DR-306		0.2	
117	IA 21	50+57.00	55+57.00	LT	36.0	4.0	540.0						50+57.00	DR-306	41.7	0.2	
													55+57.00	DR-306		0.2	

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

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

Location					Longitudinal Subdrain (DR-303)								Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth (D)	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306				
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type			
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
118	IA 21	55+57.00	60+57.00	LT	36.0	4.0	540.0						55+57.00	DR-306	41.7	0.2	
													60+57.00	DR-306		0.2	
119	IA 21	60+57.00	65+57.00	LT	36.0	4.0	540.0						60+57.00	DR-306	41.7	0.2	
													65+57.00	DR-306		0.2	
120	IA 21	65+57.00	70+57.00	LT	36.0	4.0	540.0						65+57.00	DR-306	41.7	0.2	
													70+57.00	DR-306		0.2	
121	IA 21	70+57.00	72+48.60	LT	36.0	4.0	231.6						70+57.00	DR-306	17.9	0.2	
													72+48.60	DR-306		0.2	
122	IA 21	72+56.60	77+56.60	LT	36.0	4.0	540.0						72+56.60	DR-306	41.7	0.2	
													77+56.60	DR-306		0.2	
123	IA 21	77+56.60	82+56.60	LT	36.0	4.0	540.0						77+56.60	DR-306	41.7	0.2	
													82+56.60	DR-306		0.2	
124	IA 21	82+56.60	87+56.60	LT	36.0	4.0	540.0						82+56.60	DR-306	41.7	0.2	
													87+56.60	DR-306		0.2	
125	IA 21	87+56.60	90+45.70	LT	36.0	4.0	329.1						87+56.60	DR-306	25.4	0.2	
													90+45.70	DR-306		0.2	
126	IA 21	90+55.70	95+55.70	LT	36.0	4.0	540.0						90+55.70	DR-306	41.7	0.2	
													95+55.70	DR-306		0.2	
127	IA 21	95+55.70	100+55.70	LT	36.0	4.0	540.0						95+55.70	DR-306	41.7	0.2	
													100+55.70	DR-306		0.2	
128	IA 21	100+55.70	105+13.35	LT	36.0	4.0	497.7						100+55.70	DR-306	38.4	0.2	
													105+13.35	DR-306		0.2	
129	IA 21	105+21.85	110+21.85	LT	36.0	4.0	540.0						105+21.85	DR-306	41.7	0.2	
													110+21.85	DR-306		0.2	
130	IA 21	110+21.85	113+35.40	LT	36.0	4.0	353.5						110+21.85	DR-306	27.3	0.2	
													113+35.40	DR-306		0.2	
131	IA 21	113+44.40	118+44.40	LT	36.0	4.0	540.0						113+44.40	DR-306	41.7	0.2	
													118+44.40	DR-306		0.2	
132	IA 21	118+44.40	124+80.20	LT	36.0	4.0	675.8						118+44.40	DR-306	52.1	0.2	
													124+80.20	DR-306		0.2	
133	IA 21	124+89.20	130+50.00	LT	36.0	4.0	600.8						124+89.20	DR-306	46.4	0.2	
													130+50.00	DR-306		0.2	
134	IA 21	130+50.00	135+50.00	LT	36.0	4.0	540.0						130+50.00	DR-306	41.7	0.2	
													135+50.00	DR-306		0.2	
135	IA 21	135+50.00	137+47.80	LT	36.0	4.0	237.8						135+50.00	DR-306	18.3	0.2	
													137+47.80	DR-306		0.2	
136	IA 21	137+55.80	141+97.55	LT	36.0	4.0	481.8						137+55.80	DR-306	37.2	0.2	
													141+97.55	DR-306		0.2	
137	IA 21	142+06.05	147+06.05	LT	36.0	4.0	540.0						142+06.05	DR-306	41.7	0.2	
													147+06.05	DR-306		0.2	
138	IA 21	147+06.05	152+24.00	LT	36.0	4.0	558.0						147+06.05	DR-306	43.1	0.2	
													152+24.00	DR-306		0.2	
139	IA 21	152+32.00	156+96.80	LT	36.0	4.0	504.8						152+32.00	DR-306	39.0	0.2	
													156+96.80	DR-306		0.2	
140	IA 21	157+04.80	159+00.00	LT	36.0	4.0	235.2						157+04.80	DR-306	18.1	0.2	
													159+00.00	DR-306		0.2	
141	IA 21	171+20.43	172+28.65	LT	36.0	4.0	148.2						171+20.43	DR-306	11.4	0.2	
													172+28.65	DR-306		0.2	
142	IA 21	172+37.15	177+37.15	LT	36.0	4.0	540.0						172+37.15	DR-306	41.7	0.2	
													177+37.15	DR-306		0.2	
143	IA 21	177+37.15	182+37.15	LT	36.0	4.0	540.0						177+37.15	DR-306	41.7	0.2	
													182+37.15	DR-306		0.2	
144	IA 21	182+37.15	185+60.00	LT	36.0	4.0	362.8						182+37.15	DR-306	28.0	0.2	
													185+60.00	DR-306		0.2	
145	IA 21	185+60.00	190+60.00	LT	36.0	4.0	540.0						185+60.00	DR-306	41.7	0.2	
													190+60.00	DR-306		0.2	
146	IA 21	190+60.00	195+60.00	LT	36.0	4.0	540.0						190+60.00	DR-306	41.7	0.2	
													195+60.00	DR-306		0.2	
147	IA 21	195+60.00	200+60.00	LT	36.0	4.0	540.0						195+60.00	DR-306	41.7	0.2	
													200+60.00	DR-306		0.2	
148	IA 21	200+60.00	205+75.90	LT	36.0	4.0	555.9						200+60.00	DR-306	42.9	0.2	
													205+75.90	DR-306		0.2	
149	IA 21	205+86.90	206+66.00	LT	36.0	4.0	119.1						205+86.90	DR-306	9.2	0.2	
													206+66.00	DR-306		0.2	
150	IA 21	206+66.00	211+66.00	LT	36.0	4.0	540.0						206+66.00	DR-306	41.7	0.2	
													211+66.00	DR-306		0.2	
151	IA 21	211+66.00	214+36.00	LT	36.0	4.0	310.0						211+66.00	DR-306	23.9	0.2	
													214+36.00	DR-306		0.2	
152	IA 21	214+36.00	220+80.90	LT	36.0	4.0	684.9						214+36.00	DR-306	52.8	0.2	
													220+80.90	DR-306		0.2	
153	IA 21	220+92.90	227+48.70	LT	36.0	4.0	695.8						220+92.90	DR-306	53.7	0.2	
													227+48.70	DR-306		0.2	
154	IA 21	227+56.70	232+85.10	LT	36.0	4.0	568.4						227+56.70	DR-306	43.9	0.2	
													232+85.10	DR-306		0.2	
155	IA 21	232+93.10	237+93.10	LT	36.0	4.0	540.0						232+93.10	DR-306	41.7	0.2	
													237+93.10	DR-306		0.2	
156	IA 21	237+93.10	240+27.80	LT	36.0	4.0	274.7						237+93.10	DR-306	21.2	0.2	
													240+27.80	DR-306		0.2	

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

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

Location						Longitudinal Subdrain (DR-303)							Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth (D)	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306				
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type			
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
157	IA 21	240+35.80	245+35.80	LT	36.0	4.0	540.0						240+35.80	DR-306	41.7	0.2	
													245+35.80	DR-306		0.2	
158	IA 21	245+35.80	250+65.80	LT	36.0	4.0	570.0						245+35.80	DR-306	44.0	0.2	
													250+65.80	DR-306		0.2	
159	IA 21	250+73.80	255+73.80	LT	36.0	4.0	540.0						250+73.80	DR-306	41.7	0.2	
													255+73.80	DR-306		0.2	
160	IA 21	255+73.80	260+73.80	LT	36.0	4.0	540.0						255+73.80	DR-306	41.7	0.2	
													260+73.80	DR-306		0.2	
161	IA 21	260+73.80	264+90.10	LT	36.0	4.0	456.3						260+73.80	DR-306	35.2	0.2	
													264+90.10	DR-306		0.2	
162	IA 21	264+98.10	269+15.00	LT	36.0	4.0	456.9						264+98.10	DR-306	35.3	0.2	
													269+15.00	DR-306		0.2	
163	IA 21	269+15.00	270+69.20	LT	36.0	4.0	194.2						269+15.00	DR-306	15.0	0.2	
													270+69.20	DR-306		0.2	
164	IA 21	270+77.20	275+40.00	LT	36.0	4.0	502.8						270+77.20	DR-306	38.8	0.2	
													275+40.00	DR-306		0.2	
165	IA 21	275+40.00	280+36.00	LT	36.0	4.0	536.0						275+40.00	DR-306	41.4	0.2	
													280+36.00	DR-306		0.2	
166	IA 21	280+44.00	284+31.00	LT	36.0	4.0	427.0						280+44.00	DR-306	32.9	0.2	
													284+31.00	DR-306		0.2	
167	IA 21	284+39.00	289+39.00	LT	36.0	4.0	540.0						284+39.00	DR-306	41.7	0.2	
													289+39.00	DR-306		0.2	
168	IA 21	289+39.00	291+80.00	LT	36.0	4.0	281.0						289+39.00	DR-306	21.7	0.2	
													291+80.00	DR-306		0.2	
169	IA 21	291+80.00	295+28.17	LT	36.0	4.0	388.2						291+80.00	DR-306	30.0	0.2	
													295+28.17	DR-306		0.2	
170	IA 21	300+48.67	302+26.20	LT	36.0	4.0	217.5						300+48.67	DR-306	16.8	0.2	
													302+26.20	DR-306		0.2	
171	IA 21	302+35.20	306+32.00	LT	36.0	4.0	436.8						302+35.20	DR-306	33.7	0.2	
													306+32.00	DR-306		0.2	
172	IA 21	314+23.95	319+19.37	LT	36.0	4.0	535.4						314+23.95	DR-306	41.3	0.2	
													319+19.37	DR-306		0.2	
173	IA 21	350+84.41	352+72.00	LT	36.0	4.0	227.6						350+84.41	DR-306	17.6	0.2	
													352+72.00	DR-306		0.2	
174	IA 21	352+84.00	358+57.47	LT	36.0	4.0	613.5						352+84.00	DR-306	47.3	0.2	
													358+57.47	DR-306		0.2	
175	IA 21	358+57.47	363+57.47	LT	36.0	4.0	540.0						358+57.47	DR-306	41.7	0.2	
													363+57.47	DR-306		0.2	
176	IA 21	363+57.47	368+57.47	LT	36.0	4.0	540.0						363+57.47	DR-306	41.7	0.2	
													368+57.47	DR-306		0.2	
177	IA 21	368+57.47	374+79.00	LT	36.0	4.0	661.5						368+57.47	DR-306	51.0	0.2	
													374+79.00	DR-306		0.2	
178	IA 21	374+87.00	379+87.00	LT	36.0	4.0	540.0						374+87.00	DR-306	41.7	0.2	
													379+87.00	DR-306		0.2	
179	IA 21	379+87.00	385+50.00	LT	36.0	4.0	603.0						379+87.00	DR-306	46.5	0.2	
													385+50.00	DR-306		0.2	
180	IA 21	385+50.00	390+18.00	LT	36.0	4.0	508.0						385+50.00	DR-306	39.2	0.2	
													390+18.00	DR-306		0.2	
181	IA 21	390+26.00	395+26.00	LT	36.0	4.0	540.0						390+26.00	DR-306	41.7	0.2	
													395+26.00	DR-306		0.2	
182	IA 21	395+26.00	399+50.00	LT	36.0	4.0	464.0						395+26.00	DR-306	35.8	0.2	
													399+50.00	DR-306		0.2	
183	IA 21	399+50.00	404+50.00	LT	36.0	4.0	540.0						399+50.00	DR-306	41.7	0.2	
													404+50.00	DR-306		0.2	
184	IA 21	404+50.00	407+10.85	LT	36.0	4.0	300.8						404+50.00	DR-306	23.2	0.2	
													407+10.85	DR-306		0.2	
185	IA 21	407+20.35	412+20.35	LT	36.0	4.0	540.0						407+20.35	DR-306	41.7	0.2	
													412+20.35	DR-306		0.2	
186	IA 21	412+20.35	416+50.00	LT	36.0	4.0	469.7						412+20.35	DR-306	36.2	0.2	
													416+50.00	DR-306		0.2	
187	IA 21	416+50.00	421+55.70	LT	36.0	4.0	545.7						416+50.00	DR-306	42.1	0.2	
													421+55.70	DR-306		0.2	
188	IA 21	421+63.70	425+98.00	LT	36.0	4.0	474.3						421+63.70	DR-306	36.6	0.2	
													425+98.00	DR-306		0.2	
189	IA 21	443+80.38	444+31.90	LT	36.0	4.0	91.5						443+80.38	DR-306	7.1	0.2	
													444+31.90	DR-306		0.2	
190	IA 21	444+39.90	449+39.90	LT	36.0	4.0	540.0						444+39.90	DR-306	41.7	0.2	
													449+39.90	DR-306		0.2	
191	IA 21	449+39.90	452+95.75	LT	36.0	4.0	395.8						449+39.90	DR-306	30.5	0.2	
													452+95.75	DR-306		0.2	
192	IA 21	453+04.25	458+04.25	LT	36.0	4.0	540.0						453+04.25	DR-306	41.7	0.2	
													458+04.25	DR-306		0.2	
193	IA 21	458+04.25	464+93.00	LT	36.0	4.0	728.8						458+04.25	DR-306	56.2	0.2	
													464+93.00	DR-306		0.2	
194	IA 21	465+07.00	468+61.62	LT	36.0	4.0	394.6						465+07.00	DR-306	30.4	0.2	
													468+61.62	DR-306		0.2	
195	IA 21	468+61.62	472+16.23	LT	36.0	4.0	394.6						468+61.62	DR-306	30.4	0.2	
													472+16.23	DR-306		0.2	

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

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

Location						Longitudinal Subdrain (DR-303)							Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth (D)	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306				
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type			
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
196	IA 21	492+60.54	497+60.54	LT	36.0	4.0	540.0						492+60.54	DR-306	41.7	0.2	
													497+60.54	DR-306		0.2	
197	IA 21	497+60.54	502+60.54	LT	36.0	4.0	540.0						497+60.54	DR-306	41.7	0.2	
													502+60.54	DR-306		0.2	
198	IA 21	502+60.54	507+60.54	LT	36.0	4.0	540.0						502+60.54	DR-306	41.7	0.2	
													507+60.54	DR-306		0.2	
199	IA 21	507+60.54	512+60.54	LT	36.0	4.0	540.0						507+60.54	DR-306	41.7	0.2	
													512+60.54	DR-306		0.2	
200	IA 21	512+60.54	517+60.54	LT	36.0	4.0	540.0						512+60.54	DR-306	41.7	0.2	
													517+60.54	DR-306		0.2	
201	IA 21	517+60.54	522+60.54	LT	36.0	4.0	540.0						517+60.54	DR-306	41.7	0.2	
													522+60.54	DR-306		0.2	
202	IA 21	522+60.54	527+60.54	LT	36.0	4.0	540.0						522+60.54	DR-306	41.7	0.2	
													527+60.54	DR-306		0.2	
203	IA 21	527+60.54	530+21.40	LT	36.0	4.0	300.9						527+60.54	DR-306	23.2	0.2	
													530+21.40	DR-306		0.2	
204	IA 21	530+29.40	535+29.40	LT	36.0	4.0	540.0						530+29.40	DR-306	41.7	0.2	
													535+29.40	DR-306		0.2	
205	IA 21	535+29.40	540+29.40	LT	36.0	4.0	540.0						535+29.40	DR-306	41.7	0.2	
													540+29.40	DR-306		0.2	
206	IA 21	540+29.40	545+29.40	LT	36.0	4.0	540.0						540+29.40	DR-306	41.7	0.2	
													545+29.40	DR-306		0.2	
207	IA 21	545+29.40	547+50.00	LT	36.0	4.0	260.6						545+29.40	DR-306	20.1	0.2	
													547+50.00	DR-306		0.2	
208	IA 21	547+50.00	552+50.00	LT	36.0	4.0	540.0						547+50.00	DR-306	41.7	0.2	
													552+50.00	DR-306		0.2	
209	IA 21	552+50.00	557+22.25	LT	36.0	4.0	512.3						552+50.00	DR-306	39.5	0.2	
													557+22.25	DR-306		0.2	
Total:							100852.3		0.0					DR-306 = 418	7785.0	71.1	

NOTE: ALL LONGITUDINAL SUBDRAINS ARE TYPE 8 WITH HMA (ACC) UNLESS OTHERWISE NOTED IN REMARKS COLUMN.

DRAINAGE STRUCTURE BY ROAD CONTRACTOR

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

Drainage Area	Location	Type	Size (1)	Kind Of Pipe (2)	Length New Const.	Bedding Class	Design Cover (H)	Camber* (DR-102)	Apron No.		Apron Guard* (DR-213)	Elbow* (DR-141)	Diaphragm* (DR-501)	Tee Section* (DR-142)	"D" Section* (DR-141)	Reducer*	Type 'C' Connections* (DR-122)		Connected Pipe Joint* (DR-121)	4" Perforated Subdrain*	Flow Line Elevations				Dimensions Lin. Ft. Total		Dimensions Lin. Ft. Extensions		Skew Ahead Degrees		Dike Rt.	Dike Location Station	Dike Top Elevation	Dike Type	Class 20	Flowable Mortar	Floodable* Backfill (A)	Porous* Backfill (B)	Flooded Backfill (3) (A+B)	Remarks
ACRE			IN		LF		FT	FT	IN	OUT	No.	No.	No.	No.	No.	No.	Type	No.	Type	FT	Lt.	Rt.	Other	Other	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	Lt.				CY	CY	CY	CY	CY	
15.0	105+17.6	3000D	30	RCP	144	B	18.9	0.33	1								C-4	1			778.66	791.75	776.25	776.20	80.2	69.9	40.0		60						1694.5		726.4	10.2	736.6	See V.4
25.0	113+39.9	3000D	36	RCP	104	B	19.2	0.33	1								C-4	1			767.22	782.47	761.87	761.79	49.7	62.3	62.0		4						1564.0		647.1	10.1	657.2	See V.6
4.0	137+51.8	1500D	24	RCP	106	B	9.4	0.17	1			2					C-4	1			780.97	768.95	780.88	768.97	45.5	67.3		8.1							577.4		279.8	8.2	288.0	See V.8
10.0	142+01.8	1500D	30	RCP	104	B	10.2	0.25	1			1					C-4	1			774.40	758.74	773.85	743.03	46.2	60.8		60.0	2						563.3		259.1	8.7	267.8	See V.10
10.0	172+32.9	1500D	30	RCP	74	B	10.9	0.25	1	1		1									723.84	737.23	724.11		52.0	33.1									517.9		305.3	6.2	311.5	See V.12
16.0	200+01.26	1500D	36	RCP	40	B	4.0	0.08	1	1		1									773.04	379.91	737.28		28.6	27.3									81.3	4.2	72.0	4.7	76.7	See V.13
2.0	232+89.11	1500D	24	RCP	52	B	3.1	0.08	1	1											770.93	767.82			29.8	34.4									49.6	4.2	37.9	5.0	42.9	See V.14
5.0	250+69.81	1500D	24	RCP	50	B	2.7	0.08	1	1											793.18	792.72			27.9	34.3									36.5	4.2	29.2	4.8	34.0	See V.15
6.0	270+73.2	1500D	24	RCP	72	B	9.3	0.17	1	1		1									781.98	773.61	773.72		37.3	46.5									321.9		308.3	6.0	314.3	See V.16
12.0	284+35	2000D	30	RCP	82	B	12.6	0.25	1	1		1									757.16	749.48	749.62		39.9	54.3									652.9		414.9	7.4	422.3	See V.17
2.0	374+83	1500D	24	RCP	96	B	11.3	0.25	1	1		1									773.36	784.55	773.62		70.0	37.6									548.7		294.3	7.6	301.9	See V.18
5.0	436+03.03	1500D	24	RCP	2	B	4.4	0.08	1								C-4	1				758.18	757.91			8.1	39.4	21.6								0.5		0.0	0.2	0.2	See V.19
	Slipline																																							
16.0	124+83.00	Liner	36	CMP	64	B			1	1																														
4.0	157+00.00	Liner	24	CMP	54	B			1	1																														
1.0	227+40.00	Liner	24	CMP	46	B			1	1																														
8.0	240+30.00	Liner	24	CMP	50	B			1	1																														
5.0	279+15.00	Liner	24	CMP	69	B			1	1																														
12.0	300+29.00	Liner	36	CMP	117	B			1	1																														
5.0	390+22.00	Liner	24	CMP	52	B			1	1																														
5.0	436+00.00	Liner	24	CMP	60	B				1																														
2.0	444+35.00	Liner	24	CMP	96	B			1	1																														
10.0	453+00.00	Liner	30	CMP	200	B			1	1																														
0.5	530+59.00	Liner	24	CMP	56	B			1	1																														
	Totals																																							
	24" RCP 1500D				378				6	4																										6608.5	12.6			3453.4	
	30" RCP 1500D				178				2	1																														
	30" RCP 2000D	(use 3000D)			82				1	1																														
	30" RCP 3000D				144				1	0																														
	36" RCP 1500D				40				1	1																														
	36" RCP 3000D				104				1	0																														
	24" Liner				483				7	8																														
	30" Liner				200				1	1																														
	36" Liner				181				2	2																														

107-23
10-18-11

GRADING FOR GUARDRAIL INSTALLATIONS

(1) Lane(s) to which the installation is adjacent. Refer to EW-301

Location				Foreslope at Guardrail	Dimensions (Feet)									Earthwork		Remarks
No.	(1) Direction of Traffic	Station	Side		X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	Excavation Class 10	Embankment In Place	
														CY	CY	
1	SB	164+01.70	O	3:1	40.6	8.4					88.3	10.4	40.2		62.0	Bridge Maint. No. 5403.7S021
2	NB	164+01.70	O	3:1	53.1	8.6	65.6	9.8	78.1	9.8	125.8	11.9	45.7		71.2	Bridge Maint. No. 5403.7S021
3	SB	165+10.20	O	3:1	53.1	8.2	65.6	9.4	78.1	9.4	125.8	11.4	44.1		68.8	Bridge Maint. No. 5403.7S021
4	NB	165+10.20	O	3:1	40.6	8.5					88.3	10.5	40.7		62.7	Bridge Maint. No. 5403.7S021
5	NB	220+82.80	O	3:1	31.3	6.3	56.3	8.8	68.8	8.8	119.4	10.8	41.5		64.8	Bridge Maint. No. MP 4.79
6	NB	220+82.80	O	3:1	50.0	6.3	62.5	8.8		8.8	113.1	9.5	37.2		58.3	Bridge Maint. No. MP 4.79
7	SB	220+93.30	O	3:1	31.3	6.3	56.3	8.8	68.8		119.4	10.5	37.4		58.7	Bridge Maint. No. MP 4.79
8	NB	220+93.30	O	3:1	50.0	6.3	62.5	8.8			113.1	11.8	41.3		64.3	Bridge Maint. No. MP 4.79
9	SB	323+43.40	O	3:1	40.6	6.4					88.3	8.0	31.1		48.5	Bridge Maint. No. 5406.8S021
10	NB	323+43.70	O	3:1	53.1	9.0	65.6	10.4	78.1	10.4	125.8	12.8	49.0		76.1	Bridge Maint. No. 5406.8S021
11	SB	328+37.20	O	3:1	53.1	8.2	65.6	9.4	78.1	9.4	125.8	11.4	43.9		68.5	Bridge Maint. No. 5406.8S021
12	NB	328+36.90	O	3:1	40.6	8.5					88.3	10.6	40.8		62.9	Bridge Maint. No. 5406.8S021
13	SB	482+30.60	O	3:1	40.6	8.6					88.3		40.7		62.7	Bridge Maint. No. 5409.8S021
14	NB	482+30.50	O	3:1	53.1	8.5	65.6	9.6	78.1	9.6	125.8	11.6	44.6		69.6	Bridge Maint. No. 5409.8S021
15	SB	486+24.00	O	3:1	53.1	8.8	65.6	9.9	78.1	9.6	125.8	10.5	44.7		69.7	Bridge Maint. No. 5409.8S021
16	NB	486+24.00	O	3:1	40.6	8.4					88.3	10.4	40.7		62.7	Bridge Maint. No. 5409.8S021
		Total:													1031.5	

110-7A
04-17-12

REMOVAL OF STEEL BEAM GUARDRAIL

(1) Lane(s) to which the installation is adjacent.
(2) Includes length of End Terminals and End Anchors.

Location				Removal of Guardrail (2)
No.	(1) Direction of Traffic	Station to Station	Side	
				LF
1	SB	163+37.00 164+07.00	LT	70.6
2	NB	163+37.00 164+07.00	RT	70.6
3	SB	165+05.00 165+73.80	LT	70.6
4	NB	165+05.00 165+74.00	RT	70.6
5	SB	322+78.30 323+48.70	LT	70.6
6	NB	322+78.50 323+48.70	RT	70.9
7	SB	328+31.90 329+02.00	LT	70.6
8	NB	328+31.90 329+02.20	RT	70.6
9	SB	481+65.50 482+35.90	LT	70.6
10	NB	481+65.50 482+35.90	RT	70.6
11	SB	486+18.90 486+89.10	LT	70.6
12	NB	486+18.90 486+89.10	RT	70.6
		TOTAL		847.5
to Tab				

108-8A
10-16-18

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

Possible Standards: BA-200, BA-201, BA-202, BA-205, BA-206, BA-210, BA-211, BA-221, BA-225, BA-250, BA-260, LS-625, LS-626, LS-630, LS-635, SI-172, SI-173 and SI-211.

(1) Lane(s) to which the obstacle is adjacent.
(2) Not a bid item. Incidental to guardrail installation.

Location				Layout Lengths BA-250, BA-260, LS-630, or LS-635				Long-Span System		Delineators and Object Markers (2)					Bid Items									Remarks
																		BA-250 or LS-630					BA-260 or LS-635		
No.	(1) Direction of Traffic	Side O = Outside M = Median	Station	Offset	VT1	VF	VT2	ET	BA-211 STATION	BA-211 TYPE	SI-211	Delineator SI-172 Type 1	Object Marker SI-173 Type 2	Object Marker SI-173 Type 3		Bolted End Anchor	Post Adapter	Steel Beam Guardrail	Barrier Transition Section	End Terminal				Barrier Transition Section	End Terminal	
																				Tangent	Flared	Tangent	Flared		Tangent	
				FT	LF	LF	LF	LF			TYPE	White	OM2-2	OM3-L	OM3-R	TYPE EACH	BA-210 EACH	BA-200 LF	BA-201 EACH	BA-205 EACH	BA-206 EACH	LS-625 EACH	LS-626 EACH	BA-221 EACH	BA-225 EACH	
1	SB	O	164+01.70	20.1	40.625	0.00	0.00	47.7			3			1	1	C 1		0.0	1	1						
2	NB	O	164+01.70	20.3	53.125	12.50	12.50	47.7			3			1	1	C 1		37.5	1	1						Bridge No. 5403.7S021
3	SB	O	165+10.20	19.9	53.125	12.50	12.50	47.7			3			1	1	C 1		37.5	1	1						
4	NB	O	165+10.20	20.3	40.625	0.00	0.00	47.7			3			1	1	C 1		0.0	1	1						
5	SB	O	323+43.40	18.3	40.625	0.00	0.00	47.7			3			1	1	C 1		0.0	1	1						
6	NB	O	323+43.70	20.7	53.125	12.50	12.50	47.7			3			1	1	C 1		37.5	1	1						Bridge Maint. No. 5406.8S021
7	SB	O	328+37.20	19.9	53.125	12.50	12.50	47.7			3			1	1	C 1		37.5	1	1						
8	NB	O	328+36.90	20.3	40.625	0.00	0.00	47.7			3			1	1	C 1		0.0	1	1						
9	SB	O	482+30.60	20.2	40.625	0.00	0.00	47.7			3			1	1	C 1		0.0	1	1						
10	NB	O	482+30.50	20.1	53.125	12.50	12.50	47.7			3			1	1	C 1		37.5	1	1						Bridge Maint. No. 5409.8S021
11	SB	O	486+24.00	20.1	53.125	12.50	12.50	47.7			3			1	1	C 1		37.5	1	1						
12	NB	O	486+24.00	20.2	40.625	0.00	0.00	47.7			3			1	1	C 1		0.0	1	1						

108-8B
04-19-16

STEEL BEAM GUARDRAIL FOR SIDE OBSTACLE (TWO-WAY PROTECTION)

Possible Standards: BA-200, BA-205, BA-206, BA-210, BA-211, BA-251, LS-625, LS-626, LS-631, SI-172, SI-173, and SI-211.

(1) Lane(s) to which the obstacle is adjacent.

Location				O_L	D_0	Layout Lengths BA-251 or LS-631 Approach Side (A)				Trailing Side (T)				Long-Span System BA-211		Delineators and Object Markers					Bid Items				Remarks
No.	(1) Direction of Traffic	Side O= Outside M= Median	Station			ET	$VT2_A$	VF_A	$VT1_A$	$VT1_T$	VF_T	$VT2_T$	ET			SI-211	Delineator SI-172 Type 1	Object Marker SI-173 Type 2	Object Marker SI-173 Type 3		Steel Beam Guardrail	End Terminal Standard	End Terminal Count	Post Adapter	
																	White	OM2-2	OM3-L	OM3-R	BA-200			BA-210	
				FT	FT	LF	LF	LF	LF	LF	LF	LF	LF	STATION	TYPE	TYPE	EACH	EACH	EACH	EACH	LF		EACH	EACH	
13	NB	O	220+82.80	10.30	6.00	50.6	12.50	25.00	31.25	50.00	12.50		50.6	220+80.80	1	5			1	1	125.0	BA-205	2		Bridge Maint. No. MP 4.79
14	SB	O	220+93.30	12.90	6.00	50.6	12.50	25.00	31.25	50.00	12.50		50.6	220+94.30	1	5			1	1	125.0	BA-205	2		Bridge Maint. No. MP 4.79

112-6
04-18-17

BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item

Location				Approach Pavement					Standard Road Plans BR Series			Subdrain								
Bridge Station	End	Skew Ahead Degrees LEFT	Skew Ahead Degrees RIGHT	(T) Thickness	Pay Length	Non-Reinf. Pavement Area	Single-Reinf. Pavement Area	Double-Reinf. Pavement Area	Approach	Fixed or Movable Abutment	Abutting Pavement	* Perforated Subdrain 4"	* Subdrain Outlet		* Porous Backfill	* Class 'A' Crushed Stone Backfill	* Modified Subbase	* Polymer Grid	* Special Backfill	Remarks
				Inches	FT	SY	SY	SY				LF	STA	Side	CY	CY	TON	SY	TON	
484+27.39	South			12.0	70.0	80.0	53.3	92.7	BR-204	Fixed	BR-211	48.0	481+75.80	LT	1.4	0.2	237.500	265.0		Bridge Maint. No. 5409.8S021
484+27.39	North			12.0	70.0	80.0	53.3	93.5	BR-204	Fixed	BR-211	48.0	486+78.80	LT	1.4	0.2	238.300	265.7		Remaining HMA Overlay at N. end of N. Approach will be scarified to existing PCC Surface
																				N. Approach shall match the existing PCC pavement profile

104-8A
10-17-17

SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN

Refer to Standard Road Plan DR-401 and DR-402

Location			Bid Items		PCC Paved Shoulder			Scour Protection (DR-401)			Rock Flume (DR-402)			Remarks
Bridge Station	Bridge Corner	Distance DI-1 or DI-2	PCC Paved Shoulder	Bridge End Drain	Panels Required	Polymer Grid	Modified Subbase	Special Ditch Control, Wood Excelsior Mat	Turf Reinforced Mat (TRM), Type 2	Transition Mat	Macadam Stone Base	Engineering Fabric	Erosion Stone	
								EC-101	EC-104	EC-105				
		FT	SY	TYPE	A B C or D	SY	TONS	SQ	SQ	SF	TONS	SY	TONS	
484+27.39	SE	43.7	42.9	DR-402	A & D	42.9	24.080				1.600	77.6	77.700	Bridge Maint. No. 5409.8S021
484+27.39	SW	43.7	41.6	DR-402	B & C	41.6	17.500				1.600	69.7	66.200	
484+27.39	NE	43.7	41.6	DR-402	B & C	41.6	17.500				1.600	43.4	39.900	
484+27.39	NW	43.7	42.9	DR-402	A & D	42.9	24.080				1.600	47.5	44.100	

112-7
10-19-10

RUMBLE STRIP PANELS

Refer to Standard Road Plan PV-10.

Location			Pavement		Remarks
Road Ident.	Station	Side	New	Existing	
IA 21	7+70.00	SB			Note 1
IA 21	12+49.00	SB			Note 1
	Note 1: Place new finish rumble patch after inlay				

112-10
04-16-19

MILLED RUMBLE STRIPS

See PV-12 and PV-13.

* Calculated at 18" width for Shoulder.

Location					Length		Fog Seal* (Milled Rumble Strip)	Effective Shoulder Width			Remarks
Road Identification	Station to Station		Shoulder Pavement Type	Rumble Strip Type (Centerline, Rt or Lt Shoulder)	PCC	HMA	Shoulder	PCC Paved	HMA Paved	Granular\ Earth	
					STA	STA	GAL	FT	FT	FT	
IA-21	1+80.00	12+32.00	HMA	Left Shoulder		10.52	11.4		4.0	2.0	
IA-21	14+62.00	25+87.00	HMA	Left Shoulder		11.25	12.2		4.0	2.0	
IA-21	28+17.00	32+44.00	HMA	Left Shoulder		4.27	4.7		4.0	2.0	
IA-21	34+74.00	65+41.00	HMA	Left Shoulder		30.67	33.3		4.0	2.0	
IA-21	67+71.00	72+37.00	HMA	Left Shoulder		4.66	5.1		4.0	2.0	
IA-21	76+51.00	157+54.00	HMA	Left Shoulder		81.03	87.8		4.0	2.0	
IA-21	159+84.00	163+47.00	HMA	Left Shoulder		3.63	4.0		4.0	2.0	
IA-21	165+65.00	184+06.00	HMA	Left Shoulder		18.41	20.0		4.0	2.0	
IA-21	186+36.00	197+08.00	HMA	Left Shoulder		10.72	11.7		4.0	2.0	
IA-21	199+38.00	207+46.00	HMA	Left Shoulder		8.08	8.8		4.0	2.0	
IA-21	209+76.00	223+20.00	HMA	Left Shoulder		13.44	14.6		4.0	2.0	
IA-21	225+50.00	249+96.00	HMA	Left Shoulder		24.46	26.5		4.0	2.0	
IA-21	252+26.00	259+95.00	HMA	Left Shoulder		7.69	8.4		4.0	2.0	
IA-21	262+25.00	266+84.00	HMA	Left Shoulder		4.59	5.0		4.0	2.0	
IA-21	270+64.00	278+58.00	HMA	Left Shoulder		7.94	8.7		4.0	2.0	
IA-21	280+88.00	297+75.00	HMA	Left Shoulder		16.87	18.3		4.0	2.0	
IA-21	300+05.00	309+63.00	HMA	Left Shoulder		9.58	10.4		4.0	2.0	
IA-21	314+10.00	322+87.00	HMA	Left Shoulder		8.77	9.6		4.0	2.0	
IA-21	328+93.00	331+56.00	HMA	Left Shoulder		2.63	2.9		4.0	2.0	
IA-21	333+86.00	349+18.00	HMA	Left Shoulder		15.32	16.6		4.0	2.0	
IA-21	351+48.00	376+32.00	HMA	Left Shoulder		24.84	27.0		4.0	2.0	
IA-21	378+62.00	380+25.00	HMA	Left Shoulder		1.63	1.8		4.0	2.0	
IA-21	382+55.00	423+55.00	HMA	Left Shoulder		41.00	44.5		4.0	2.0	
IA-21	426+75.00	432+63.00	HMA	Left Shoulder		5.88	6.4		4.0	2.0	
IA-21	434+93.00	459+08.00	HMA	Left Shoulder		24.15	26.2		4.0	2.0	
IA-21	461+38.00	481+73.00	HMA	Left Shoulder		20.35	22.1		4.0	2.0	
IA-21	486+89.00	517+73.00	HMA	Left Shoulder		30.84	33.5		4.0	2.0	
IA-21	520+03.00	526+30.00	HMA	Left Shoulder		6.27	6.8		4.0	2.0	
IA-21	528+60.00	532+84.00	HMA	Left Shoulder		4.24	4.6		4.0	2.0	
IA-21	535+14.00	537+90.00	HMA	Left Shoulder		2.76	3.0		4.0	2.0	
IA-21	541+20.00	546+85.00	HMA	Left Shoulder		5.65	6.2		4.0	2.0	
IA-21	549+15.00	556+87.00	HMA	Left Shoulder		7.72	8.4		4.0	2.0	
IA-21	1+00.00	10+90.00	HMA	Right Shoulder		9.90	10.8		4.0	2.0	

MILLED RUMBLE STRIPS

See PV-12 and PV-13.

* Calculated at 18" width for Shoulder.

Location							Fog Seal* (Milled Rumble Strip)	Effective Shoulder Width			Remarks
Road Identification	Station to Station		Shoulder Pavement Type	Rumble Strip Type (Centerline, Rt or Lt Shoulder)	Length PCC	Length HMA	Shoulder	PCC Paved	HMA Paved	Granular\ Earth	
					STA	STA	GAL	FT	FT	FT	
IA-21	13+20.00	37+70.00	HMA	Right Shoulder		24.50	26.6		4.0	2.0	
IA-21	40+00.00	56+66.00	HMA	Right Shoulder		16.66	18.1		4.0	2.0	
IA-21	60+50.00	77+35.00	HMA	Right Shoulder		16.85	18.3		4.0	2.0	
IA-21	81+20.00	103+28.00	HMA	Right Shoulder		22.08	24.0		4.0	2.0	
IA-21	105+58.00	130+09.00	HMA	Right Shoulder		24.51	26.6		4.0	2.0	
IA-21	132+39.00	163+07.00	HMA	Right Shoulder		30.68	33.3		4.0	2.0	
IA-21	165+61.00	182+76.00	HMA	Right Shoulder		17.15	18.6		4.0	2.0	
IA-21	185+06.00	206+40.00	HMA	Right Shoulder		21.34	23.2		4.0	2.0	
IA-21	208+70.00	248+65.00	HMA	Right Shoulder		39.95	43.3		4.0	2.0	
IA-21	250+95.00	251+65.00	HMA	Right Shoulder		0.70	0.8		4.0	2.0	
IA-21	253+95.00	273+91.00	HMA	Right Shoulder		19.96	21.7		4.0	2.0	
IA-21	276+21.00	281+00.00	HMA	Right Shoulder		4.79	5.2		4.0	2.0	
IA-21	283+30.00	322+87.00	HMA	Right Shoulder		39.57	42.9		4.0	2.0	
IA-21	328+91.00	378+89.00	HMA	Right Shoulder		49.98	54.2		4.0	2.0	
IA-21	381+93.00	415+21.00	HMA	Right Shoulder		33.28	36.1		4.0	2.0	
IA-21	417+51.00	423+26.00	HMA	Right Shoulder		5.75	6.3		4.0	2.0	
IA-21	426+70.00	460+03.00	HMA	Right Shoulder		33.33	36.2		4.0	2.0	
IA-21	462+33.00	481+75.00	HMA	Right Shoulder		19.42	21.1		4.0	2.0	
IA-21	486+89.00	502+91.00	HMA	Right Shoulder		16.02	17.4		4.0	2.0	
IA-21	505+21.00	514+01.00	HMA	Right Shoulder		8.80	9.6		4.0	2.0	
IA-21	516+31.00	529+35.00	HMA	Right Shoulder		13.04	14.2		4.0	2.0	
IA-21	531+65.00	542+41.00	HMA	Right Shoulder		10.76	11.7		4.0	2.0	
IA-21	544+71.00	547+35.00	HMA	Right Shoulder		2.64	2.9		4.0	2.0	
IA-21	553+39.00	556+06.00	HMA	Right Shoulder		2.67	2.9		4.0	2.0	
IA-21	1+80.00	12+08.00	HMA	Centerline		10.28	0.0				
IA-21	13+58.00	25+62.00	HMA	Centerline		12.04	0.0				
IA-21	27+12.00	65+15.00	HMA	Centerline		38.03	0.0				
IA-21	65+65.00	104+82.00	HMA	Centerline		39.17	0.0				
IA-21	106+32.00	131+15.00	HMA	Centerline		24.83	0.0				
IA-21	132+65.00	157+28.00	HMA	Centerline		24.63	0.0				
IA-21	158+78.00	160+12.28	HMA	Centerline		1.34	0.0				
IA-21	171+20.43	183+79.00	HMA	Centerline		12.59	0.0				
IA-21	185+29.00	222+96.00	HMA	Centerline		37.67	0.0				
IA-21	224+46.00	249+70.00	HMA	Centerline		25.24	0.0				
IA-21	251+20.00	297+26.00	HMA	Centerline		46.06	0.0				
IA-21	298+76.00	319+19.37	HMA	Centerline		20.43	0.0				
IA-21	350+84.41	378+93.00	HMA	Centerline		28.09	0.0				
IA-21	382+53.00	432+37.00	HMA	Centerline		49.84	0.0				
IA-21	433+87.00	458+59.00	HMA	Centerline		24.72	0.0				
IA-21	460+09.00	461+47.00	HMA	Centerline		1.38	0.0				
IA-21	462+97.00	472+16.23	HMA	Centerline		9.19	0.0				
IA-21	492+60.54	503+97.00	HMA	Centerline		11.36	0.0				
IA-21	505+47.00	517+40.00	HMA	Centerline		11.93	0.0				
IA-21	518+90.00	543+45.00	HMA	Centerline		24.55	0.0				
IA-21	544+95.00	546+35.00	HMA	Centerline		1.40	0.0				
IA-21	547+85.00	548+38.00	HMA	Centerline		0.53	0.0				
IA-21	549+88.00	552+15.00	HMA	Centerline		2.27	0.0				
IA-21	553+65.00	556+06.00	HMA	Centerline		2.41	0.0				
TOTAL CENTERLINE RUMBLE						459.99					
TOTAL SHOULDER RUMBLE						954.19					
TOTAL FOG SEAL							1036.5				

SHOULDERS

(1) Lane(s) to which the shoulder is adjacent.
(2) Bid Item
(3) Applies only for Paved Shoulders constructed on project with existing granular shoulders.
(4) Does not include shrink.

Calculations assume a HMA unit weight (lbs/cf) of 145, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

Location					Quantities																	
Road Identification	(1) Direction Of Traffic	Station to Station		Side	(P) Width	(G) Width	(L) Length	(3) Class 13 Excavation	Hot Mix Asphalt		Binder	Paved Shoulder	Reinforced Paved Shoulder	Special Backfill				Modified Subbase	Granular Shoulder		Earth Shoulder Construction Alternates			Remarks
														HMA Alternate		PCC Alternate					(2) STA	HMA	PCC	
					FT	FT	FT	CY (2)	TON	TON/STA	TONS	SY (2)	SY (2)	TON (2)	TON/STA	TON (2)	TON/STA	CY (2)	TON (2)	TON/STA		CY (4)	CY (4)	
IA-21	SB	160+12.28	162+91.15	LT	4.0	2.0	278.9												6.4	2.3	2.8	25.8		NOTE 1
IA-21	SB	166+58.22	171+20.43	LT	4.0	2.0	462.2												10.7	2.3	4.6	42.8		NOTE 1
IA-21	SB	319+19.37	322+32.82	LT	4.0	2.0	313.5												7.2	2.3	3.1	29.0		NOTE 1
IA-21	SB	329+85.23	350+84.41	LT	4.0	2.0	2099.2												48.5	2.3	21.0	194.4		NOTE 1
IA-21	SB	472+16.23	481+20.14	LT	4.0	2.0	903.9							155.653	17.220				47.5	5.3	9.0	83.7		8" HMA
IA-21	SB	487+72.14	492+60.54	LT	4.0	2.0	488.4							84.102	17.220				25.6	5.3	4.9	45.2		8" HMA
IA-21	NB	160+12.28	162+53.65	RT	4.0	2.0	241.4												5.6	2.3	2.4	22.3		NOTE 1
IA-21	NB	166+20.52	171+20.43	RT	4.0	2.0	499.9												11.5	2.3	5.0	46.3		NOTE 1
IA-21	NB	319+19.37	321+95.67	RT	4.0	2.0	276.3												6.4	2.3	2.8	25.6		NOTE 1
IA-21	NB	329+47.52	350+84.41	RT	4.0	2.0	2136.9												49.4	2.3	21.4	197.9		NOTE 1
IA-21	NB	472+16.23	480+82.58	RT	4.0	2.0	866.3							149.185	17.220				45.5	5.3	8.7	80.2		8" HMA
IA-21	NB	487+34.65	492+60.54	RT	4.0	2.0	525.9							90.558	17.220				27.6	5.3	5.3	48.7		8" HMA
Paved Shoudler																								
IA-21	SB	162+91.15	163+67.10	LT	11.4 to 9.4	0.0	76.0		28.633	37.700	1.718	87.8		31.367	41.300						0.8	7.7		8" HMA
IA-21	SB	165+24.23	166+58.22	LT	9.2 to 12.4	0.0	134.0		52.166	38.933	3.130	160.8		57.214	42.700						1.3	13.6		8" HMA
IA-21	SB	219+60.24	220+93.30	LT	10.5 to 7.2	2.0	133.1		55.952	42.050	3.357	130.8		0.000	0.000				21.7	16.3	1.3	13.6		8" HMA
IA-21	SB	220+93.30	222+35.00	LT	7.2 to 12	2.0	141.7		65.749	46.400	3.945	151.1		0.000	0.000				23.1	16.3	1.4	14.4		8" HMA
IA-21	SB	322+32.82	323+48.77	LT	9 to 7.4	0.0	116.0		45.478	39.223	2.729	105.6		39.365	33.950						1.2	11.8		8" HMA
IA-21	SB	328+73.23	329+85.23	LT	9.2 to 12.4	0.0	112.0		43.848	39.150	2.631	134.4		48.216	43.050						1.1	11.4		8" HMA
IA-21	SB	481+20.14	481+75.81	LT	11.5 to 10.1	0.0	55.7		22.198	39.875	1.332	66.8		23.966	43.050						0.6	5.7		8" HMA
IA-21	SB	486+78.93	487+72.14	LT	9.6 to 12.6	0.0	93.2		37.843	40.600	2.271	115.0		41.432	44.450						0.9	9.5		8" HMA
IA-21	NB	162+53.65	163+67.10	RT	12.9 to 9.6	0.0	113.5		46.061	40.600	2.764	141.8		50.429	44.450						1.1	11.6		8" HMA
IA-21	NB	165+24.23	166+20.52	RT	9.5 to 11.5	0.0	96.3		36.650	38.063	2.199	112.3		40.442	42.000						1.0	9.8		8" HMA
IA-21	NB	219+41.59	220+82.80	RT	11.82 to 7.2	2.0	141.2		64.907	45.965	3.894	149.2		0.000	0.000				23.0	16.3	1.4	14.4		8" HMA
IA-21	NB	220+82.80	222+13.00	RT	7.2 to 10.5	2.0	130.2		55.693	42.775	3.342	128.0		0.000	0.000				21.2	16.3	1.3	13.3		8" HMA
IA-21	NB	321+95.67	323+48.77	RT	13.8 to 9.9	0.0	153.1		65.489	42.775	3.929	201.6		71.268	46.550						1.5	15.6		8" HMA
IA-21	NB	328+73.23	329+47.52	RT	9.5 to 11.6	0.0	74.3		28.277	38.063	1.697	87.1		31.202	42.000						0.7	7.6		8" HMA
IA-21	NB	480+82.58	481+75.81	RT	12.6 to 9.6	0.0	93.2		37.513	40.238	2.251	115.0		41.114	44.100						0.9	9.5		8" HMA
IA-21	NB	486+78.93	487+34.65	RT	10.1 to 11.5	0.0	55.7		21.814	39.150	1.309	66.9		23.987	43.050						0.6	5.7		8" HMA
Detour Route																								
IA-149 E-W	EB	214+55.00	263+55.00	LT		12.0	4900.0												314.4	6.4				
IA-149 E-W	EB	214+55.00	263+55.00	RT		12.0	4900.0												314.4	6.4				
IA-149 E-W	EB	302+05.00	427+50.00	LT		14.0	12545.0												951.3	7.6				
IA-149 E-W	EB	302+05.00	427+50.00	RT		14.0	12545.0												951.3	7.6				
IA-149 E-W	EB	451+50.00	546+97.00	LT		14.0	9547.0												724.0	7.6				
IA-149 E-W	EB	451+50.00	546+97.00	RT		14.0	9547.0												724.0	7.6				
IA-149 N-S	NB	+00.00	522+72.00	LT		8.0	52272.0												2134.4	4.1				
IA-149 N-S	NB	+00.00	522+72.00	RT		8.0	52272.0												2134.4	4.1				
IA-92 E-W	EB	+00.00	376+42.00	LT		9.0	37642.0												1756.6	4.7				
IA-92 E-W	EB	+00.00	376+42.00	RT		9.0	37642.0												1756.6	4.7				
												1954.3	8" HMA	979.5				12142.6		108.1	1017.0		TOTALS

NOTE 1: REFER TO TAB 100-25 FOR SPECIAL BACKFILL
ASSOCIATED WITH TYPICAL MAILNLINE SHOULDER

HGM-1
MODIFIED

DITCH RESHAPING

Refer to Standard Road Plan EW-105

Location		Side	Length	Earthwork - 1 Class 10, Waste
Station	Station		Stations	CY
66+34.00	72+48.00	LT	6.1	6.0
465+85.00	482+11.00	LT	16.3	2015.0
	Total		22.4	

1 - Not a pay item

HGM-2
12-06-19

TEMPORARY SLOPE DRAINS

No.	Location Station	Side	Length LF	Remarks
1	+77.10	BOTH	40.0	
2	5+77.10	BOTH	40.0	
3	10+96.20	BOTH	40.0	
4	15+86.20	BOTH	40.0	
5	20+81.10	BOTH	40.0	
6	25+61.00	BOTH	40.0	
7	30+22.00	BOTH	40.0	
8	35+41.95	BOTH	40.0	
9	42+50.00	BOTH	40.0	
10	48+66.20	BOTH	40.0	
11	50+57.00	BOTH	40.0	
12	55+57.00	BOTH	40.0	
13	60+57.00	BOTH	40.0	
14	65+57.00	BOTH	40.0	
15	82+56.60	BOTH	40.0	
16	87+56.60	BOTH	40.0	
17	90+45.70	BOTH	40.0	
18	95+55.70	BOTH	40.0	
19	95+55.70	BOTH	40.0	
20	105+21.85	BOTH	40.0	
21	110+21.85	BOTH	40.0	
22	113+44.40	BOTH	40.0	
23	118+44.40	BOTH	40.0	
24	124+80.20	BOTH	40.0	
25	135+50.00	BOTH	40.0	
26	137+47.80	BOTH	40.0	
27	142+06.05	BOTH	40.0	
28	147+06.05	BOTH	40.0	
29	152+32.00	BOTH	40.0	
30	157+04.80	BOTH	40.0	
31	160+12.28	BOTH	40.0	
32	172+28.65	BOTH	40.0	
33	177+37.15	BOTH	40.0	
34	182+37.15	BOTH	40.0	
35	190+60.00	BOTH	40.0	
36	195+60.00	BOTH	40.0	
37	200+60.00	BOTH	40.0	
38	205+75.90	BOTH	40.0	
39	206+66.00	BOTH	40.0	
40	206+66.00	BOTH	40.0	
41	211+66.00	BOTH	40.0	
42	220+80.90	BOTH	40.0	
43	227+48.70	BOTH	40.0	
44	232+93.10	BOTH	40.0	
45	237+93.10	BOTH	40.0	
46	240+35.80	BOTH	40.0	
47	260+73.80	BOTH	40.0	
48	264+98.10	BOTH	40.0	
49	269+15.00	BOTH	40.0	
50	270+69.20	BOTH	40.0	
51	284+91.27	BOTH	40.0	
52	289+91.27	BOTH	40.0	
53	296+80.00	BOTH	40.0	
54	302+26.20	BOTH	40.0	
55	307+35.20	BOTH	40.0	
56	309+13.70	BOTH	40.0	
57	314+22.70	BOTH	40.0	
58	319+19.37	BOTH	40.0	
59	350+84.41	BOTH	40.0	
60	352+84.00	BOTH	40.0	
61	358+57.47	BOTH	40.0	
62	363+57.47	BOTH	40.0	

HGM-2
12-06-19

TEMPORARY SLOPE DRAINS

No.	Location Station	Side	Length LF	Remarks
63	368+57.47	BOTH	40.0	
64	374+87.00	BOTH	40.0	
65	379+50.00	BOTH	40.0	
66	390+18.00	BOTH	40.0	
67	395+26.00	BOTH	40.0	
68	404+50.00	BOTH	40.0	
69	407+10.85	BOTH	40.0	
70	412+20.35	BOTH	40.0	
71	421+55.70	BOTH	40.0	
72	427+00.00	BOTH	40.0	
73	432+00.00	BOTH	40.0	
74	435+99.00	BOTH	40.0	
75	439+85.00	BOTH	40.0	
76	444+39.90	BOTH	40.0	
77	449+39.90	BOTH	40.0	
78	452+28.28	BOTH	40.0	
79	462+04.03	BOTH	40.0	
80	464+93.00	BOTH	40.0	
81	468+61.62	BOTH	40.0	
82	472+16.32	BOTH	40.0	
83	493+74.85	BOTH	40.0	
84	498+74.85	BOTH	40.0	
85	503+74.85	BOTH	40.0	
86	508+74.85	BOTH	40.0	
87	513+74.85	BOTH	40.0	
88	518+74.85	BOTH	40.0	
89	523+74.85	BOTH	40.0	
90	530+29.40	BOTH	40.0	
91	535+29.40	BOTH	40.0	
92	540+29.40	BOTH	40.0	
93	545+29.40	BOTH	40.0	
94	547+50.00	BOTH	40.0	
95	552+50.00	BOTH	40.0	
96	557+22.25	BOTH	40.0	
			3840.0	TOTAL

100-26
10-15-13

INCIDENTAL ITEMS

Special or unique items where method of measurement / basis of payment is not indicated in the specifications or other contract documents.

No.	Incidental Item	Unit	Quantity	Incidental To		Remarks
				Item Code	Item	
1	30" x 16' RCP	LF	16		Pipe removal per Spec. 1104.06.B	
2	18" x 33.5' CMP	LF	33.5		Pipe removal per Spec. 1104.06.B	
3	18" x 34' RCP	LF	34		Pipe removal per Spec. 1104.06.B	
4	18" x 34' RCP	LF	34		Pipe removal per Spec. 1104.06.B	
5	30" x 150' CMP	LF	150		Pipe removal per Spec. 1104.06.B	
6	36" x 106.75' CMP	LF	106.75		Pipe removal per Spec. 1104.06.B	
7	24" 94.7' CMP	LF	94.7		Pipe removal per Spec. 1104.06.B	
8	30" x 98' CMP	LF	98		Pipe removal per Spec. 1104.06.B	
9	30" x 72' CMP	LF	72		Pipe removal per Spec. 1104.06.B	
10	36" x 48' CMP	LF	48		Pipe removal per Spec. 1104.06.B	
11	24" x 52' CMP	LF	52		Pipe removal per Spec. 1104.06.B	
12	24" x 48' CMP	LF	48		Pipe removal per Spec. 1104.06.B	
13	24" x 50' CMP	LF	50		Pipe removal per Spec. 1104.06.B	
14	24" x 72' CMP	LF	72		Pipe removal per Spec. 1104.06.B	
15	30" x 80' CMP	LF	80		Pipe removal per Spec. 1104.06.B	
16	24" x 98' CMP	LF	98		Pipe removal per Spec. 1104.06.B	
17	36" x 48' RCP	LF	48		Pipe removal per Spec. 1104.06.B	
18	Class 10, Waste Sta. 66+50 to 72+50	CY	6	2125-2225050	Reshaping Ditches	
19	Class 10, Waste Sta. 466+00 to 481+50	CY	2015	2125-2225050	Reshaping Ditches	

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

Length of Unclassified Pipe calculated is based on using Corrugated Metal Pipe.
(1) Refer to MI-210
(2) Refer to EW-501.
(3) Refer to EW-501 or EW-502.
*Predetermined for access point not constructed with this project.

Location		Type	Length of Opening (1)			W	PR (1)(2)	SR (2)	Pipe Culvert (3)					Aprons	Driveway Surface Area		Granular Driveway Surfacing Material	Remarks
Station	Side	A, B, C, Safety Ramp, or Predetermined*	Case	1½" Dropped Curb	3" Dropped Curb				H	Size	Pipe Length	Lt.	Rt.		HMA	PCC		
			1 or 2	LF	LF	FT	FT	FT	FT	IN	LF	LF	LF	No.	SY	SY	TON	
2+38.52	LT	C				14.0											6.800	Earth Field Entrance
12+70.00	RT	C				20.0											8.200	Farm Entrance Gravel
12+77.76	LT	C				32.0											11.000	328th St Gravel
16+11.00	RT	C				14.0											6.800	Field Entrance Earth
26+22.00	RT	C				16.0											7.200	Field Entrance Earth
26+37.60	LT	C				32.0											11.000	325th St Gravel
28+63.00	RT	C				18.0											7.700	Field Entrance Earth
32+94.00	LT	C				14.0											6.800	Field Entrance Gravel
33+04.00	RT	C				24.0											9.100	Field Entrance Earth
34+31.00	LT	C				10.0											5.800	Field Entrance Earth
39+47.00	RT	C				16.0											7.200	Driveway Gravel
39+62.00	LT	C				19.5											8.100	Field Entrance Earth
49+64.00	LT	C				26.0											9.600	Field Entrance Gravel
58+50.00	RT	C				14.0											6.800	Farm Entrance Gravel
59+99.00	RT	C				12.0											6.300	Driveway Gravel
65+90.00	LT	C				20.0											8.200	318th St Gravel
72+87.00	LT	C				48.6											14.800	Farm Entrance Gravel
72+87.00	RT	C				22.0			1.1	18.0	36.0	21.5	21.0	2			8.600	Field Entrance Earth
74+02.00	LT	C				22.0											8.600	Farm Entrance Gravel
74+71.00	LT	C				16.0											7.200	Driveway Gravel
75+73.00	LT	C				24.0			1.2	18.0	36.0	20.2	24.2	2			9.100	Field Entrance Earth
79+16.00	RT	C				16.0			2.2	18.0	36.0	19.9	22.6	2			7.200	Farm Entrance Gravel
79+27.00	LT	C				24.0											9.100	Field Entrance Earth
80+70.00	RT	C				14.0											6.800	Farm Entrance Gravel
92+15.00	LT	C				18.0											7.700	Field Entrance Earth
99+92.00	LT	C				18.0											7.700	Field Entrance Earth
101+50.00	RT	C				22.0											8.600	Field Entrance Earth
105+56.00	RT	C				28.0											10.000	310th St. Gravel
117+48.00	LT	C				22.0											8.600	Field Entrance Gravel
117+64.00	RT	C				24.0											9.100	Field Entrance Earth
131+90.00	RT	C				26.0											9.600	305th St. Gravel
132+08.00	LT	C				46.0											14.200	Field Entrance Earth
143+30.00	RT	C				14.0											6.800	Field Entrance Earth
143+41.00	LT	C				20.0											8.200	Field Entrance Earth
146+52.00	RT	C				20.0											8.200	Field Entrance Earth
158+03.00	Rt	C				25.0											9.300	Field Entrance Earth
158+07.00	LT	C				32.0											11.000	300th St Gravel
166+50.00	RT	C				22.0											8.600	Field Entrance Earth
166+99.00	LT	C				18.0											7.700	Field Entrance Earth
184+57.00	RT	C				30.0											10.500	295th St. Gravel
184+58.00	LT	C				24.0											9.100	295th St. Gravel
197+58.00	LT	C				12.0											6.300	Driveway Gravel
198+05.00	RT	C				20.0											8.200	Field Entrance Earth
203+99.00	LT	C				24.0											9.100	Field Entrance Earth
204+46.00	RT	C				30.0											10.500	Field Entrance Earth
207+56.00	LT	C				38.0											12.400	Farm Entrance Gravel
208+23.00	RT	C				15.0											7.000	Farm Entrance Gravel
213+88.00	RT	C				20.0											8.200	Field Entrance Earth
223+72.00	LT	C				24.0			2.4	24.0	56.0	33.5	34.8	2			9.100	288th St Gravel
224+93.00	RT	C				16.0											7.200	Field Entrance Gravel
225+92.00	LT	C				24.0											9.100	Field Entrance Earth
227+19.00	RT	C				28.0											10.000	Field Entrance Earth
232+75.00	LT	C				14.0											6.800	Field Entrance Earth
245+89.00	RT	C				36.0											11.900	Field Entrance Earth
250+45.00	LT	C				28.0											10.000	Commercial Entrance Gravel
250+45.00	RT	C				28.0											10.000	282nd St. Earth Road
253+46.00	RT	C				16.0											7.200	Driveway Gravel
258+85.00	RT	C				18.0											7.700	Field Entrance Earth
259+25.00	LT	C				22.0											8.600	Field Entrance Earth
260+46.00	LT	C				16.0											7.200	Driveway Gravel
267+34.00	LT	C				14.0											6.800	Farm Entrance Gravel
268+85.00	LT	C				20.0											8.200	Farm Entrance Gravel
273+85.00	RT	C				24.0											9.100	Field Entrance Earth
275+70.00	LT	C				14.0											6.800	Field Entrance Earth
275+72.00	RT	C				18.0											7.700	Farm Entrance Gravel
279+19.00	LT	C				10.0											5.800	Driveway Gravel
282+81.00	RT	C				12.0											6.300	Farm Entrance Gravel
286+39.00	LT	C				10.0											5.800	Field Entrance Earth
287+24.00	RT	C				13.0											6.500	Field Entrance Earth
297+00.00	LT	C				20.0											8.200	Field Entrance Earth
297+66.00	RT	C				14.0											6.800	Field Entrance Earth
298+29.00	LT	C				26.0											9.600	275th St. Gravel

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

Length of Unclassified Pipe calculated is based on using Corrugated Metal Pipe.
(1) Refer to MI-210
(2) Refer to EW-501.
(3) Refer to EW-501 or EW-502.
*Predetermined for access point not constructed with this project.

Location		Type	Length of Opening (1)			W	PR (1)(2)	SR (2)	Pipe Culvert (3)					Aprons	Driveway Surface Area		Granular Driveway Surfacing Material	Remarks
Station	Side	A, B, C, Safety Ramp, or Predetermined*	Case	1½" Dropped Curb	3" Dropped Curb				H	Size	Pipe Length	Lt.	Rt.		HMA	PCC		
			1 or 2	LF	LF	FT	FT	FT	FT	IN	LF	LF	LF	No.	SY	SY	TON	
303+16.00	LT	C				18.0											7.700	Field Entrance Earth
309+30.00	RT	C				10.0											5.800	Field Entrance Earth
310+37.00	LT	C				10.0											5.800	Driveway Gravel
312+31.00	LT	C				10.0											5.800	Driveway Earth
312+43.00	RT	C				22.0											8.600	Field Entrance Earth
332+00.00	LT	C				12.0											6.300	River Access Road
344+80.00	RT	C				30.0											10.500	Field Entrance Earth
349+65.00	LT	B				40.0											12.800	Commercial Entrance Gravel
364+17.00	LT	C				24.0											9.100	Field Entrance Earth
376+75.00	LT	C				18.0											7.700	Farm Entrance Gravel
380+74.00	LT	C				28.0											10.000	260th St. Gravel
380+74.00	RT	C				22.0											8.600	260th St. PCC See L Sheets
383+65.00	RT	C				24.0											9.100	Field Entrance Gravel
384+48.00	LT	C				18.0											7.700	Field Entrance Earth
393+85.00	LT	C				22.0											8.600	Field Entrance Earth
397+81.00	LT	C				32.0											11.000	Field Entrance Earth
396+60.00	LT	C				22.0											8.600	Field Entrance Earth
401+88.00	RT	C				26.0											9.600	Field Entrance Earth
408+92.00	LT	C				18.0											7.700	Field Entrance Earth
416+99.00	LT	C				20.0											8.200	Field Entrance Earth
417+01.00	RT	C				12.0											6.300	Farm Entrance Gravel
424+15.00	LT	C				10.0											5.800	Farm Entrance Gravel
424+96.00	LT	C				14.0											6.800	Farm Entrance Gravel
425+06.00	RT	C				18.0											7.700	Farm Entrance Gravel
426+18.00	RT	C				10.0											5.800	Farm Entrance Gravel
433+25.00	LT	C				30.0											10.500	250th St. Gravel
442+56.00	RT	C				18.0											7.700	Field Entrance Earth
444+73.00	LT	C				16.0											7.200	Field Entrance Earth
457+48.00	RT	C				18.0											7.700	Field Entrance Earth
459+54.00	LT	C				18.0											7.700	247th St. Gravel
459+76.00	RT	C				26.0											9.600	Field Entrance Earth
462+55.00	RT	C				24.0											9.100	247th St. Earth Road
465+47.00	LT	C				16.0											7.200	Field Entrance Earth
465+57.00	RT	C				20.0											8.200	Field Entrance Earth
489+67.00	RT	C				13.0											6.500	Field Entrance Earth
491+20.00	LT	C				14.0											6.800	Field Entrance Gravel
491+39.00	RT	C				22.0											8.600	Field Entrance Earth
496+57.00	RT	C				52.0											15.600	Field Entrance Earth
497+64.00	RT	C				20.0											8.200	Field Entrance Earth
499+75.00	RT	C				28.0											10.000	Field Entrance Earth
504+72.00	RT	C				24.0			1.1	36.0	56.0	35.7	36.3	2			9.100	240th St. Gravel
515+80.00	RT	C				20.0											8.200	Farm Entrance Earth
516+79.00	LT	C				22.0											8.600	Field Entrance Earth
518+16.00	LT	C				24.0											9.100	238th St. Gravel
526+65.00	RT	C				15.0											7.000	Field Entrance Earth
526+66.00	LT	C				16.0											7.200	Farm Entrance Gravel
530+12.00	RT	C				8.0											5.400	Field Entrance Earth
531+15.00	RT	C				44.0											13.800	Commercial Entrance Gravel
533+35.00	LT	C				18.0											7.700	Field Entrance Earth
538+40.00	LT	C				12.0											6.300	Driveway Gravel
539+40.00	LT	C				10.0											5.800	Driveway Gravel
544+22.00	RT	C				20.0											8.200	2nd St. Gravel
547+35.00	LT	C				12.0											6.300	Commercial Entrance Gravel
549+15.00	RT	C				20.0											8.200	1st St. Gravel
551+05.00	RT	C				10.0											5.800	Driveway Gravel
552+91.00	RT	C				18.0											7.700	E Railroad St. Gravel
																	1063.600	TOTAL

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.25
DCY4: Double Centerline (Yellow) @ 2.00
NPY4: No Passing Zone Line (Yellow) @ 1.25
BLW4: Broken Lane Line (White) @ 0.25
ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00
CHY8: Channelizing Line (Yellow) @ 2.00
STY6: Standard Curb 6" (Yellow) @ 3.03
SLW4: Solid Lane Line (White) @ 1.00
DLW4: Dotted Line (White) @ 0.33
SLW2: Stop Line (White) @ 6.00
STW6: Standard Curb 6" (White) @ 3.03
CLW6: Crosswalk Line (White) @ 3.00

Location								Length by Line Type (Unfactored)													
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	CHY8	STY6	SLW4	DLW4	SLW2	STW6	CLW6			Remarks
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
IA 149 E/W	214+55.00	428+13.00	EB	Waterborne/Solvent Paint	X			213.58															
IA 149 E/W	428+13.00	434+61.00	EB	Waterborne/Solvent Paint	X					6.48													
IA 149 E/W	434+61.00	532+16.00	EB	Waterborne/Solvent Paint	X			97.55															
IA 149 E/W	532+16.00	538+30.00	EB	Waterborne/Solvent Paint	X				6.14														
IA 149 E/W	538+30.00	546+56.00	EB	Waterborne/Solvent Paint	X									8.26									
IA 149 N/S	+00.00	6+27.00	NB	Waterborne/Solvent Paint	X					6.27													
IA 149 N/S	6+27.00	116+15.00	NB	Waterborne/Solvent Paint	X			109.88															
IA 149 N/S	116+15.00	119+50.00	NB	Waterborne/Solvent Paint	X					3.35													
IA 149 N/S	119+50.00	126+39.00	NB	Waterborne/Solvent Paint	X				6.89														
IA 149 N/S	126+39.00	130+92.00	NB	Waterborne/Solvent Paint	X					4.53													
IA 149 N/S	130+92.00	207+28.00	NB	Waterborne/Solvent Paint	X			76.36															
IA 149 N/S	207+28.00	210+04.00	NB	Waterborne/Solvent Paint	X					2.76													
IA 149 N/S	210+04.00	216+31.00	NB	Waterborne/Solvent Paint	X				6.27														
IA 149 N/S	216+31.00	219+11.00	NB	Waterborne/Solvent Paint	X					2.80													
IA 149 N/S	219+11.00	250+63.00	NB	Waterborne/Solvent Paint	X			31.52															
IA 149 N/S	250+63.00	256+55.00	NB	Waterborne/Solvent Paint	X					5.92													
IA 149 N/S	256+55.00	262+99.00	NB	Waterborne/Solvent Paint	X				6.44														
IA 149 N/S	262+99.00	269+80.00	NB	Waterborne/Solvent Paint	X					6.81													
IA 149 N/S	269+80.00	329+43.00	NB	Waterborne/Solvent Paint	X			59.63															
IA 149 N/S	329+43.00	335+61.00	NB	Waterborne/Solvent Paint	X					6.18													
IA 149 N/S	335+61.00	402+93.00	NB	Waterborne/Solvent Paint	X			67.32															
IA 149 N/S	402+93.00	420+25.00	NB	Waterborne/Solvent Paint	X					17.32													
IA 149 N/S	420+25.00	424+67.00	NB	Waterborne/Solvent Paint	X				4.42														
IA 149 N/S	424+67.00	430+65.00	NB	Waterborne/Solvent Paint	X					5.98													
IA 149 N/S	430+65.00	454+04.00	NB	Waterborne/Solvent Paint	X			23.39															
IA 149 N/S	454+04.00	459+04.00	NB	Waterborne/Solvent Paint	X					5.00													
IA 149 N/S	459+04.00	464+08.00	NB	Waterborne/Solvent Paint	X				5.04														
IA 149 N/S	464+08.00	470+64.00	NB	Waterborne/Solvent Paint	X					6.56													
IA 149 N/S	470+64.00	513+79.00	NB	Waterborne/Solvent Paint	X			43.15															
IA 149 N/S	513+79.00	523+14.00	NB	Waterborne/Solvent Paint	X					9.35													
IA 149 N/S	523+14.00	536+23.00	NB	Waterborne/Solvent Paint	X				13.09														
IA 149 N/S	536+95.00	539+14.00	NB	Waterborne/Solvent Paint	X				2.19														
IA 149 N/S	539+86.00	541+41.00	NB	Waterborne/Solvent Paint	X				1.55														
IA 149 N/S	542+13.00	545+61.00	NB	Waterborne/Solvent Paint	X				3.48														
IA 149 N/S	545+61.00	550+81.00	NB	Waterborne/Solvent Paint	X					5.20													
IA 149 N/S	550+81.00	563+54.00	NB	Waterborne/Solvent Paint	X			12.73															
IA 149 N/S	564+26.00	576+78.00	NB	Waterborne/Solvent Paint	X			12.52															
IA 149 N/S	577+50.00	580+18.00	NB	Waterborne/Solvent Paint	X			2.68															
IA 149 N/S	580+90.00	591+43.00	NB	Waterborne/Solvent Paint	X			10.53															
IA 92	+23.00	6+54.00	EB	Waterborne/Solvent Paint	X										6.31								
IA 92	6+54.00	12+41.00	EB	Waterborne/Solvent Paint	X				5.87														
IA 92	12+41.00	15+38.00	EB	Waterborne/Solvent Paint	X			2.97															
IA 92	15+38.00	24+78.00	EB	Waterborne/Solvent Paint	X					9.40													
IA 92	24+78.00	25+61.00	EB	Waterborne/Solvent Paint	X				0.83														
IA 92	25+61.00	35+02.00	EB	Waterborne/Solvent Paint	X					9.41													
IA 92	35+02.00	67+07.00	EB	Waterborne/Solvent Paint	X			32.05															
IA 92	67+07.00	72+76.00	EB	Waterborne/Solvent Paint	X				5.69														
IA 92	72+76.00	78+65.00	EB	Waterborne/Solvent Paint	X										5.89								
IA 92	79+30.00	85+37.00	EB	Waterborne/Solvent Paint	X										6.07								
IA 92	85+37.00	96+68.00	EB	Waterborne/Solvent Paint	X				11.31														
IA 92	96+68.00	107+31.00	EB	Waterborne/Solvent Paint	X					10.63													
IA 92	107+31.00	137+86.00	EB	Waterborne/Solvent Paint	X			30.55															
IA 92	137+86.00	147+85.00	EB	Waterborne/Solvent Paint	X					9.99													
IA 92	147+85.00	153+23.00	EB	Waterborne/Solvent Paint	X				5.38														
IA 92	153+23.00	162+48.00	EB	Waterborne/Solvent Paint	X					9.25													
IA 92	162+48.00	166+86.00	EB	Waterborne/Solvent Paint	X			4.38															
IA 92	166+86.00	176+01.00	EB	Waterborne/Solvent Paint	X					9.15													
IA 92	176+01.00	176+52.00	EB	Waterborne/Solvent Paint	X				0.51														
IA 92	176+52.00	186+62.00	EB	Waterborne/Solvent Paint	X					10.10													
IA 92	186+62.00	228+93.00	EB	Waterborne/Solvent Paint	X			42.31															
IA 92	228+93.00	237+45.00	EB	Waterborne/Solvent Paint	X					8.52													
IA 92	237+45.00	252+06.00	EB	Waterborne/Solvent Paint	X				14.61														
IA 92	252+03.00	255+38.00	EB	Waterborne/Solvent Paint	X					3.35													
IA 92	255+38.00	270+28.00	EB	Waterborne/Solvent Paint	X			14.90															
IA 92	270+28.00	279+67.00	EB	Waterborne/Solvent Paint	X					9.39													
IA 92	279+67.00	282+30.00	EB	Waterborne/Solvent Paint	X				2.63														
IA 92	282+30.00	292+78.00	EB	Waterborne/Solvent Paint	X					10.48													
IA 92	292+78.00	332+81.00	EB	Waterborne/Solvent Paint	X			40.03															
IA 92	332+81.00	351+81.00	EB	Waterborne/Solvent Paint	X					19.00													
IA 92	351+81.00	366+04.00	EB	Waterborne/Solvent Paint	X			14.23															
IA 92	366+04.00	376+15.00	EB	Waterborne/Solvent Paint	X					10.11													
IA 92	376+15.00	383+34.00	EB	Waterborne/Solvent Paint	X				7.19														
IA 92	384+30.00	387+80.00	EB	Waterborne/Solvent Paint	X				3.50														
IA 92	387+80.00	393+18.00	EB	Waterborne/Solvent Paint	X					5.38													

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
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***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.25
DCY4: Double Centerline (Yellow) @ 2.00
NPY4: No Passing Zone Line (Yellow) @ 1.25
BLW4: Broken Lane Line (White) @ 0.25
ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00
CHY8: Channelizing Line (Yellow) @ 2.00
STY6: Standard Curb 6" (Yellow) @ 3.03
SLW4: Solid Lane Line (White) @ 1.00
DLW4: Dotted Line (White) @ 0.33
SLW2: Stop Line (White) @ 6.00
STW6: Standard Curb 6" (White) @ 3.03
CLW6: Crosswalk Line (White) @ 3.00

Location								Length by Line Type (Unfactored)													
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	CHY8	STY6	SLW4	DLW4	SLW2	STW6	CLW6			Remarks
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
IA 92	393+18.00	409+12.00	EB	Waterborne/Solvent Paint	X			15.94															
IA 149 E/W	214+72.00	216+92.00	WB	Waterborne/Solvent Paint			X									2.20							
IA 149 E/W	214+72.00	215+32.00	WB	Waterborne/Solvent Paint			X					0.60											
IA 149 E/W	215+32.00	260+23.00	BOTH	Waterborne/Solvent Paint			X					89.82											
IA 149 E/W	260+23.00	261+12.00	WB	Waterborne/Solvent Paint			X					0.89											
IA 149 E/W	261+12.00	263+86.00	BOTH	Waterborne/Solvent Paint			X					5.48											
IA 149 E/W	301+09.00	301+95.00	WB	Waterborne/Solvent Paint			X					0.86											
IA 149 E/W	301+95.00	304+11.00	BOTH	Waterborne/Solvent Paint			X					4.32											
IA 149 E/W	304+11.00	305+46.00	WB	Waterborne/Solvent Paint			X					1.35											
IA 149 E/W	305+46.00	319+82.00	BOTH	Waterborne/Solvent Paint			X					28.72											
IA 149 E/W	317+71.00	319+82.00	EB	Waterborne/Solvent Paint			X									2.11							
IA 149 E/W	320+94.00	428+34.00	BOTH	Waterborne/Solvent Paint			X					214.80											
IA 149 E/W	426+10.00	428+34.00	EB	Waterborne/Solvent Paint			X									2.24							
IA 149 E/W	428+34.00	429+38.00	WB	Waterborne/Solvent Paint			X					1.04											
IA 149 E/W	429+38.00	435+51.00	BOTH	Waterborne/Solvent Paint			X					12.26											
IA 149 E/W	446+71.00	451+00.00	EB	Waterborne/Solvent Paint			X					4.29											
IA 149 E/W	451+00.00	506+83.00	BOTH	Waterborne/Solvent Paint			X					111.66											
IA 149 E/W	508+19.00	547+17.00	BOTH	Waterborne/Solvent Paint			X					77.96											
IA 149 E/W	545+35.00	546+97.00	EB	Waterborne/Solvent Paint	X											1.62							
IA 149 N/S	+12.00		SB	Waterborne/Solvent Paint	X		X											0.38					
IA 149 N/S	+12.00		SB	Waterborne/Solvent Paint		X													0.42				
IA 149 N/S	+12.00	52+07.00	BOTH	Waterborne/Solvent Paint			X					103.90											
IA 149 N/S	52+07.00	53+07.00	NB	Waterborne/Solvent Paint			X					1.00											
IA 149 N/S	53+07.00	78+29.00	BOTH	Waterborne/Solvent Paint			X					50.44											
IA 149 N/S	78+29.00	79+47.00	NB	Waterborne/Solvent Paint			X					1.18											
IA 149 N/S	79+47.00	91+77.00	BOTH	Waterborne/Solvent Paint			X					24.60											
IA 149 N/S	91+77.00	92+40.00	SB	Waterborne/Solvent Paint			X					0.63											
IA 149 N/S	92+40.00	131+36.00	BOTH	Waterborne/Solvent Paint			X					77.92											
IA 149 N/S	132+37.00	171+06.00	BOTH	Waterborne/Solvent Paint			X					77.38											
IA 149 N/S	171+06.00	172+16.00	NB	Waterborne/Solvent Paint			X					1.10											
IA 149 N/S	172+16.00	237+59.00	BOTH	Waterborne/Solvent Paint			X					130.86											
IA 149 N/S	237+59.00	238+47.00	SB	Waterborne/Solvent Paint			X										0.88						
IA 149 N/S	237+59.00	238+47.00	NB	Waterborne/Solvent Paint			X					0.88											
IA 149 N/S	238+47.00	277+03.00	BOTH	Waterborne/Solvent Paint			X					77.12											
IA 149 N/S	278+03.00	303+10.00	BOTH	Waterborne/Solvent Paint			X					50.14											
IA 149 N/S	303+10.00	304+37.00	SB	Waterborne/Solvent Paint			X					1.27											
IA 149 N/S	304+37.00	328+84.00	BOTH	Waterborne/Solvent Paint			X					48.94											
IA 149 N/S	328+84.00	329+62.00	NB	Waterborne/Solvent Paint			X					0.78											
IA 149 N/S	330+31.00	332+37.00	SB	Waterborne/Solvent Paint			X									2.06							
IA 149 N/S	330+80.00	408+75.00	BOTH	Waterborne/Solvent Paint			X					155.90											
IA 149 N/S	407+02.00	409+22.00	NB	Waterborne/Solvent Paint			X									2.20							
IA 149 N/S	409+90.00	410+40.00	SB	Waterborne/Solvent Paint			X					0.50											
IA 149 N/S	410+40.00	501+34.00	BOTH	Waterborne/Solvent Paint			X					181.88											
IA 149 N/S	501+34.00	502+48.00	NB	Waterborne/Solvent Paint			X					1.14											
IA 149 N/S	502+48.00	534+73.00	BOTH	Waterborne/Solvent Paint			X					64.50											
IA 149 N/S	566+75.00		BOTH	Waterborne/Solvent Paint		X														0.24			
IA 92	+00.00	39+24.00	BOTH	Waterborne/Solvent Paint			X					78.48											
IA 92	+13.00		WB	Waterborne/Solvent Paint		X													3.24				
IA 92	40+16.00	78+73.00	BOTH	Waterborne/Solvent Paint			X					77.14											
IA 92	79+23.00	80+28.00	WB	Waterborne/Solvent Paint	X											1.05							
IA 92	79+48.00	79+88.00	WB	Waterborne/Solvent Paint			X					0.40											
IA 92	79+88.00	104+94.00	BOTH	Waterborne/Solvent Paint			X					50.12											
IA 92	105+76.00	119+85.00	BOTH	Waterborne/Solvent Paint			X					28.18											
IA 92	119+85.00	120+55.00	NB	Waterborne/Solvent Paint			X					0.70											
IA 92	120+55.00	172+04.00	BOTH	Waterborne/Solvent Paint			X					102.98											
IA 92	173+10.00	264+09.00	BOTH	Waterborne/Solvent Paint			X					181.98											
IA 92	265+10.00	317+04.00	BOTH	Waterborne/Solvent Paint			X					103.88											
IA 92	318+07.00	369+22.00	BOTH	Waterborne/Solvent Paint			X					102.30											
IA 92	369+22.00	370+29.00	EB	Waterborne/Solvent Paint			X					1.07											
IA 92	370+29.00	376+44.00	BOTH	Waterborne/Solvent Paint			X					12.30											
IA 21	+32.73	6+68.00	NB	Waterborne/Solvent Paint	X					6.35													
IA 21	6+68.00	29+90.00	NB	Waterborne/Solvent Paint	X			23.22															
IA 21	29+90.00	39+98.00	NB	Waterborne/Solvent Paint	X					10.08													
IA 21	39+98.00	41+93.00	NB	Waterborne/Solvent Paint	X				1.95														
IA 21	41+93.00	52+43.00	NB	Waterborne/Solvent Paint	X					10.50													
IA 21	52+43.00	62+55.00	NB	Waterborne/Solvent Paint	X				10.12														
IA 21	62+55.00	70+87.00	NB	Waterborne/Solvent Paint	X					8.32													
IA 21	70+87.00	71+86.00	NB	Waterborne/Solvent Paint	X				0.99														
IA 21	71+86.00	80+91.00	NB	Waterborne/Solvent Paint	X					9.05													
IA 21	80+91.00	81+47.00	NB	Waterborne/Solvent Paint	X				0.56														
IA 21	81+47.00	90+12.00	NB	Waterborne/Solvent Paint	X					8.65													
IA 21	90+12.00	91+13.00	NB	Waterborne/Solvent Paint	X				1.01														

PAVEMENT MARKING LINE TYPES

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BLW4: Broken Lane Line (White) @ 0.25
ELW4: Edge Line Right (White) @ 1.00
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Location								Length by Line Type (Unfactored)													
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	CHY8	STY6	SLW4	DLW4	SLW2	STW6	CLW6			Remarks
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
IA 21	91+13.00	99+25.00	NB	Waterborne/Solvent Paint	X					8.12													
IA 21	99+25.00	100+38.00	NB	Waterborne/Solvent Paint	X				1.13														
IA 21	100+38.00	110+72.00	NB	Waterborne/Solvent Paint	X					10.34													
IA 21	110+72.00	121+08.00	NB	Waterborne/Solvent Paint	X			10.36															
IA 21	121+08.00	131+93.00	NB	Waterborne/Solvent Paint	X					10.85													
IA 21	131+93.00	145+90.00	NB	Waterborne/Solvent Paint	X				13.97														
IA 21	145+90.00	156+01.00	NB	Waterborne/Solvent Paint	X					10.11													
IA 21	156+01.00	173+03.00	NB	Waterborne/Solvent Paint	X			17.02															
IA 21	173+03.00	183+63.00	NB	Waterborne/Solvent Paint	X					10.60													
IA 21	183+63.00	187+89.00	NB	Waterborne/Solvent Paint	X				4.26														
IA 21	187+89.00	198+46.00	NB	Waterborne/Solvent Paint	X					10.57													
IA 21	198+46.00	204+34.00	NB	Waterborne/Solvent Paint	X			5.88															
IA 21	204+34.00	213+05.00	NB	Waterborne/Solvent Paint	X					8.71													
IA 21	213+05.00	214+88.00	NB	Waterborne/Solvent Paint	X				1.83														
IA 21	214+88.00	221+97.00	NB	Waterborne/Solvent Paint	X					7.09													
IA 21	221+97.00	224+67.00	NB	Waterborne/Solvent Paint	X				2.70														
IA 21	224+67.00	232+03.00	NB	Waterborne/Solvent Paint	X					7.36													
IA 21	232+03.00	232+39.00	NB	Waterborne/Solvent Paint	X				0.36														
IA 21	232+39.00	241+98.00	NB	Waterborne/Solvent Paint	X					9.59													
IA 21	241+98.00	266+11.00	NB	Waterborne/Solvent Paint	X			24.13															
IA 21	266+11.00	276+04.00	NB	Waterborne/Solvent Paint	X					9.93													
IA 21	276+04.00	276+15.12	NB	Waterborne/Solvent Paint	X				0.11														
IA 21	276+15.55	284+35.29	NB	Waterborne/Solvent Paint	X				8.20														
IA 21	284+33.17	294+66.00	NB	Waterborne/Solvent Paint	X				10.33														
IA 21	294+66.00	300+58.47	NB	Waterborne/Solvent Paint	X					5.92													
IA 21	300+58.84	306+33.00	NB	Waterborne/Solvent Paint	X					5.74													
IA 21	306+33.00	353+27.13	NB	Waterborne/Solvent Paint	X			46.94															
IA 21	354+00.60	355+05.00	NB	Waterborne/Solvent Paint	X			1.04															
IA 21	355+05.00	363+90.00	NB	Waterborne/Solvent Paint	X					8.85													
IA 21	363+90.00	370+42.00	NB	Waterborne/Solvent Paint	X				6.52														
IA 21	370+42.00	376+73.00	NB	Waterborne/Solvent Paint	X					6.31													
IA 21	376+73.00	383+85.73	NB	Waterborne/Solvent Paint	X				7.13														
IA 21	383+85.80	391+14.00	NB	Waterborne/Solvent Paint					7.28														
IA 21	391+14.00	400+26.00	NB	Waterborne/Solvent Paint	X					9.12													
IA 21	400+26.00	401+19.00	NB	Waterborne/Solvent Paint	X			0.93															
IA 21	401+19.00	409+73.00	NB	Waterborne/Solvent Paint	X					8.54													
IA 21	409+73.00	416+48.00	NB	Waterborne/Solvent Paint	X			6.75															
IA 21	416+48.00	426+56.60	NB	Waterborne/Solvent Paint	X					10.09													
IA 21	426+56.65	426+77.00		Waterborne/Solvent Paint	X					0.20													
IA 21	426+77.00	455+16.00	NB	Waterborne/Solvent Paint	X				28.39														
IA 21	455+16.00	463+47.76	NB	Waterborne/Solvent Paint	X					8.32													
IA 21	464+00.00	466+46.00	NB	Waterborne/Solvent Paint	X					2.46													
IA 21	466+46.00	476+11.00	NB	Waterborne/Solvent Paint	X			9.65															
IA 21	476+11.00	481+69.00	NB	Waterborne/Solvent Paint	X					5.58													
IA 21	481+69.00	490+28.00	NB	Waterborne/Solvent Paint	X				8.59														
IA 21	490+28.00	493+00.00	NB	Waterborne/Solvent Paint	X					2.72													
IA 21	493+00.00	495+99.32	NB	Waterborne/Solvent Paint	X			2.99															
IA 21	496+00.00	519+15.00	NB	Waterborne/Solvent Paint	X			23.15															
IA 21	519+15.00	529+39.00	NB	Waterborne/Solvent Paint	X					10.24													
IA 21	529+39.00	535+92.00	NB	Waterborne/Solvent Paint	X				6.53														
IA 21	535+92.00	541+35.00	NB	Waterborne/Solvent Paint	X					5.43													
IA 21	541+35.00	557+22.25	NB	Waterborne/Solvent Paint	X			15.87															
IA 21	+00.00	25+61.00	BOTH	Waterborne/Solvent Paint		X					51.22												
IA 21	+25.00		SB	Waterborne/Solvent Paint		X													0.20				
IA 21	25+61.00	27+03.00	NB	Waterborne/Solvent Paint		X					1.42												
IA 21	27+03.00	65+59.00	BOTH	Waterborne/Solvent Paint		X					77.12												
IA 21	65+59.00	66+17.00	NB	Waterborne/Solvent Paint		X					0.58												
IA 21	66+17.00	105+28.00	BOTH	Waterborne/Solvent Paint		X					78.22												
IA 21	105+28.00	106+17.00	SB	Waterborne/Solvent Paint		X					0.89												
IA 21	106+17.00	131+49.00	BOTH	Waterborne/Solvent Paint		X					50.64												
IA 21	131+49.00	132+29.00	SB	Waterborne/Solvent Paint		X					0.80												
IA 21	132+29.00	157+17.00	BOTH	Waterborne/Solvent Paint		X					49.76												
IA 21	157+17.00	158+68.00	NB	Waterborne/Solvent Paint		X					1.51												
IA 21	158+68.00	184+21.00	BOTH	Waterborne/Solvent Paint		X					51.06												
IA 21	184+82.00	223+25.00	BOTH	Waterborne/Solvent Paint		X					76.86												
IA 21	223+25.00	224+02.00	NB	Waterborne/Solvent Paint		X					0.77												
IA 21	224+02.00	250+10.00	BOTH	Waterborne/Solvent Paint		X					52.16												
IA 21	250+10.00	250+73.00	SB	Waterborne/Solvent Paint		X					0.63												

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.25
DCY4: Double Centerline (Yellow) @ 2.00
NPY4: No Passing Zone Line (Yellow) @ 1.25
BLW4: Broken Lane Line (White) @ 0.25
ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00
CHY8: Channelizing Line (Yellow) @ 2.00
STY6: Standard Curb 6" (Yellow) @ 3.03
SLW4: Solid Lane Line (White) @ 1.00
DLW4: Dotted Line (White) @ 0.33
SLW2: Stop Line (White) @ 6.00
STW6: Standard Curb 6" (White) @ 3.03
CLW6: Crosswalk Line (White) @ 3.00

Location								Length by Line Type (Unfactored)														Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	CHY8	STY6	SLW4	DLW4	SLW2	STW6	CLW6			
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
IA 21	250+73.00	276+15.12	BOTH	Waterborne/Solvent Paint			X					50.84										
IA 21	276+15.55	284+35.29	BOTH	Waterborne/Solvent Paint			X					16.39										
IA 21	284+33.17	297+78.00	BOTH	Waterborne/Solvent Paint			X					26.90										
IA 21	297+78.00	298+53.00	NB	Waterborne/Solvent Paint			X					0.75										
IA 21	297+78.00	298+53.00	SB	Waterborne/Solvent Paint			X										0.75					
IA 21	298+53.00	300+58.47	BOTH	Waterborne/Solvent Paint			X					4.11										
IA 21	300+58.84	353+27.13	BOTH	Waterborne/Solvent Paint			X					105.37										
IA 21	354+00.60	380+34.00	BOTH	Waterborne/Solvent Paint			X					52.67										
IA 21	381+10.00	383+85.73	BOTH	Waterborne/Solvent Paint			X					5.51										
IA 21	383+85.80	426+56.60	BOTH	Waterborne/Solvent Paint			X					85.42										
IA 21	426+56.65	432+87.00	BOTH	Waterborne/Solvent Paint			X					12.61										
IA 21	432+87.00	433+72.00	SB	Waterborne/Solvent Paint			X										0.85					
IA 21	432+87.00	433+72.00	NB	Waterborne/Solvent Paint			X					0.85										
IA 21	433+72.00	459+08.00	BOTH	Waterborne/Solvent Paint			X					50.72										
IA 21	459+08.00	459+74.00	NB	Waterborne/Solvent Paint			X					0.66										
IA 21	459+08.00	459+74.00	SB	Waterborne/Solvent Paint			X										0.66					
IA 21	459+74.00	463+47.76	BOTH	Waterborne/Solvent Paint			X					7.48										
IA 21	464+00.00	495+99.32	BOTH	Waterborne/Solvent Paint			X					63.99										
IA 21	496+00.00	504+64.00	BOTH	Waterborne/Solvent Paint			X					17.28										
IA 21	504+64.00	505+07.00	SB	Waterborne/Solvent Paint			X					0.43										
IA 21	505+07.00	517+88.00	BOTH	Waterborne/Solvent Paint			X					25.62										
IA 21	517+88.00	518+48.00	NB	Waterborne/Solvent Paint			X					0.60										
IA 21	518+48.00	543+88.00	BOTH	Waterborne/Solvent Paint			X					50.80										
IA 21	543+88.00	544+59.00	SB	Waterborne/Solvent Paint			X					0.71										
IA 21	544+59.00	548+94.00	BOTH	Waterborne/Solvent Paint			X					8.70										
IA 21	548+94.00	549+45.00	SB	Waterborne/Solvent Paint			X					0.51										
IA 21	549+45.00	552+69.00	BOTH	Waterborne/Solvent Paint			X					6.48										
IA 21	552+69.00	553+23.00	SB	Waterborne/Solvent Paint			X					0.54										
IA 21	553+23.00	557+22.25	BOTH	Waterborne/Solvent Paint			X					7.99										
				Factored Total: Waterborne/Solvent Paint				286.54	469.97	593.02	-	3443.19	-	16.52	55.36	13.48	1.05	3.48	11.09	0.72	-	-	
				Bid Quantity: Painted Pavement Markings, Waterborne or Solvent-Based							4894.41												

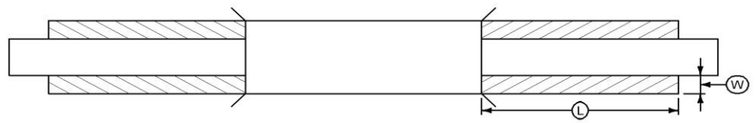
PAVEMENT MARKING SYMBOLS AND LEGENDS

Refer to PM-111

Road Identification	Location															SCHOOL	XING	STOP	AHEAD	ONLY	BIKE	LANE	EXIT	Groove Cuts	Remarks
	Station	Side	STAW	RTAW	LTAW	CSRW	CSLW	CSTW	CRLW	FERW	LLRW	RLRW	RRCW	BLSW	WCSW	WPSB	SCLW	XNGW	STPW	AHDW	ONLW	BIKW	LANW	XITW	EACH	
IA 149 E & W	215+52.00	L		1																					
IA 149 E & W	215+95.00	L		1																					
IA 149 E & W	318+38.00	R		1																					
IA 149 E & W	318+83.00	R		1																					
IA 149 E & W	426+65.00	R		1																					
IA 149 E & W	427+10.00	R		1																					
IA 149 E & W	545+55.00	R			1																				
IA 149 E & W	546+30.00	R			1																				
IA 149 N & S	330+49.00	L		1																					
IA 149 N & S	331+24.00	L		1																					
IA 149 N & S	407+23.00	R		1																					
IA 149 N & S	407+98.00	R		1																					
Total:				10	2																				

AREAS FOR PAVEMENT OR BASE WIDENING

Refer to Standard Road Plans PV-105 or PV-203



(1) Bid Item
(2) Estimated for two applications to achieve lifts and one application of 0.10 Gal/SY adjacent to existing pavement. Priming of subgrade or finished base is not required.
Calculations assume a HMA unit weight (lbs/cf) of 145, a Special Backfill unit weight (lbs/cf) of 140, and a Tack Coat unit weight (gal/sy) of 0.05.

Station to Station		Side	Pavement Type	(L) Length	(W) Width	(T) Thickness	HMA Base Widening (1)	HMA Base Widening (1)	PCC Base Widening (1)	PCC Pavement Widening (1)	Tack Coat		Tack Coat (2)	Asphalt Binder (1)	Class 13 Excavation, Widening (1)	Special Backfill (1)	Remarks
											Lifts	Vertical Edge					
				FT	FT	IN	TONS	SY	SY	SY	GAL	GAL	GAL	TONS	CY	TONS	
160+12.28	162+91.15	LT	HMA	278.87	4.0	6.0		123.9			12.39	1.55	13.94		20.7		
162+91.15	163+67.10	LT	HMA	75.95	10.4	8.0					8.78	0.56	9.34		34.1	27.646	REFER TO 112-9 FOR PAVING
165+24.23	166+58.22	LT	HMA	133.99	10.9	8.0					16.23	0.99	17.22		63.1	51.117	REFER TO 112-9 FOR PAVING
166+58.22	171+20.43	LT	HMA	462.21	4.0	6.0		205.4			20.54	2.57	23.11		34.2		
319+19.37	322+32.82	LT	HMA	313.45	4.0	6.0		139.3			13.93	1.74	15.67		23.2		
322+32.82	323+48.77	LT	HMA	115.95	8.2	8.0					10.56	0.86	11.42		41.1	33.278	REFER TO 112-9 FOR PAVING
328+73.23	329+85.23	LT	HMA	112.00	8.3	8.0					10.33	0.83	11.16		40.2	32.536	REFER TO 112-9 FOR PAVING
329+85.23	350+84.41	LT	HMA	2099.18	4.0	6.0		933.0			93.30	11.66	104.96		155.5		
472+16.23	481+20.14	LT	HMA	903.91	4.0	8.0		401.7			40.17	6.70	46.87		156.2	126.547	
481+20.14	481+75.81	LT	HMA	55.67	10.8	8.0					6.68	0.41	7.09		26.0	21.043	REFER TO 112-9 FOR PAVING
486+78.93	487+72.14	LT	HMA	93.21	11.1	8.0					11.50	0.69	12.19		44.7	36.212	REFER TO 112-9 FOR PAVING
487+72.14	492+60.54	LT	HMA	488.40	4.0	8.0		217.1			21.71	3.62	25.32		84.4	68.376	
160+12.28	162+53.65	RT	HMA	241.37	4.0	6.0		107.3			10.73	1.34	12.07		17.9		
162+53.65	163+67.10	RT	HMA	113.45	11.3	8.0					14.18	0.84	15.02		55.1	44.671	REFER TO 112-9 FOR PAVING
165+24.23	166+20.52	RT	HMA	96.29	10.5	8.0					11.23	0.71	11.95		43.7	35.387	REFER TO 112-9 FOR PAVING
166+20.52	171+20.43	RT	HMA	499.91	4.0	6.0		222.2			22.22	2.78	25.00		37.0		
319+19.37	321+95.67	RT	HMA	276.30	4.0	6.0		122.8			12.28	1.54	13.82		20.5		
321+95.67	323+48.77	RT	HMA	153.10	11.9	8.0					20.16	1.13	21.29		78.4	63.498	REFER TO 112-9 FOR PAVING
328+73.23	329+47.52	RT	HMA	74.29	10.6	8.0					8.71	0.55	9.26		33.9	27.432	REFER TO 112-9 FOR PAVING
329+47.52	350+84.41	RT	HMA	2136.89	4.0	6.0		949.7			94.97	11.87	106.84		158.3		
472+16.23	480+82.58	RT	HMA	866.35	4.0	8.0		385.0			38.50	6.42	44.92		149.7	121.289	
480+82.58	481+75.81	RT	HMA	93.23	11.1	8.0					11.50	0.69	12.19		44.7	36.220	REFER TO 112-9 FOR PAVING
486+78.93	487+34.65	RT	HMA	55.72	10.8	8.0					6.69	0.41	7.10		26.0	21.062	REFER TO 112-9 FOR PAVING
487+34.65	492+60.54	RT	HMA	525.89	4.0	8.0		233.7			23.37	3.90	27.27		90.9	73.625	
						6" HMA		2803.6							1479.5	819.938	TOTAL
						8" HMA		1237.6									

TOPSOIL STRIPPING AND PLACEMENT

Location				Topsoil Stripping Thickness	Topsoil Placement Thickness	Total Topsoil
Road Identification	Dir. of Traffic	Begin Station	End Station	IN	IN	CY
IA 21	SB	+20.73	160+12.28	12.0	7.2	3553.7
IA 21	NB	+20.73	160+12.28	12.0	7.2	3553.7
IA 21	NB	162+53.65	163+67.10	12.0	7.2	25.2
IA 21	SB	162+91.15	163+67.10	12.0	7.2	16.9
IA 21	SB	165+24.23	166+58.22	12.0	7.2	29.8
IA 21	NB	165+24.23	166+20.52	12.0	7.2	21.4
IA 21	SB	171+20.43	319+19.37	12.0	7.2	3288.7
IA 21	NB	171+20.43	319+19.37	12.0	7.2	3288.7
IA 21	NB	321+95.67	323+48.77	12.0	7.2	34.0
IA 21	SB	322+32.82	323+48.77	12.0	7.2	25.8
IA 21	SB	328+73.23	329+85.23	12.0	7.2	24.9
IA 21	NB	328+73.23	329+47.52	12.0	7.2	16.5
IA 21	SB	350+84.41	472+16.23	12.0	7.2	2696.0
IA 21	NB	350+84.41	472+16.23	12.0	7.2	2696.0
IA 21	NB	480+82.58	481+75.81	12.0	7.2	20.7
IA 21	SB	481+20.14	481+75.81	12.0	7.2	12.4
IA 21	SB	486+78.93	487+72.14	12.0	7.2	20.7
IA 21	NB	486+78.93	487+34.65	12.0	7.2	12.4
IA 21	SB	492+60.54	577+22.25	12.0	7.2	1880.4
IA 21	NB	492+60.54	577+22.25	12.0	7.2	1880.4
					Topsoil Total CY:	23098.0

DELIVERY AND STOCKPILING

Item Description	Quantity	Units	Delivery Location	Contact Name & Number	Remarks
Steel Beam Guardrail	847.5	LF	23301 Hwy 149	Joe Clawson - 641.622.3170	Sigourney Maintenance Shop
			Sigourney, IA 52591		

190-66
MODIFIED

MAILBOX TEMPORARY RELOCATIONS

Station	Offset	Side	Remarks
60+00.90	19	LEFT	MAILBOX
60+00.90	19	LEFT	NEWSPAPER
65+68.00	27	LEFT	MAILBOX
74+51.60	19	LEFT	MAILBOX
80+63.00	19	LEFT	MAILBOX
197+37.00	19	LEFT	MAILBOX
208+29.00	19	LEFT	2 MAILBOXES/
			1 POST
253+11.00	17	RIGHT	MAILBOX
253+12.00	17	RIGHT	NEWSPR- 2 POST
260+72.00	18	LEFT	MAIL/NEWS
			1- POST
310+11.00	26	LEFT	MAILBOX
423+93.00	19	LEFT	MAILBOX
423+93.00	19	LEFT	NEWSPAPER
426+00.00	20	LEFT	MAILBOX
516+79.00	21	RIGHT	MAILBOX
526+79.00	20	RIGHT	MAILBOX
526+80.00	20	RIGHT	NEWSPAPER
	17		TOTAL

190-61
10-15-13

EXISTING SIGNS TO BE REINSTALLED

SIGN DESCRIPTION	DIRECTION OF TRAVEL	LOCATION STATION	NUMBER OF POSTS	SQUARE TUBE STEEL POSTS	WOOD POSTS		INSTALLATION		SEE SIGNING NOTES
					4" x 4" LF	4" x 6" LF	TYPE	DIM 'X'	
Mile Marker	NB	20+21.9	1.0					13	
No Passing Zone	NB	70+70.2	1.0			16.0	1.0	22	
Station Marker	NB	105+00.3	1.0					38	
Street Name	SB	105+53.8	1.0	1.0			1.0	16	
Two Direction Arrow	SB	105+60.3	1.0			14.0	1.0	20	
911 Address	SB	197+38.2	1.0					9	
Delineator	SB	220+92.3	1.0					6	
Delineator	NB	270+09.0	1.0					10	
Delineator	NB	274+04.3	1.0					9	
Delineator	NB	276+04.5	1.0					9	
Delineator	NB	277+15.3	1.0					8	
Delineator	NB	278+16.5	1.0					9	
Delineator	NB	279+17.0	1.0					10	
Delineator	NB	280+18.5	1.0					10	
Delineator	NB	281+19.2	1.0					9	
Delineator	NB	282+20.0	1.0					9	
Mile Marker	NB	283+63.7	1.0					12	
Delineator	NB	284+11.3	1.0					9	
Delineator	NB	286+11.6	1.0					10	
Junction	NB	374+73.9	1.0			16.0	1.0	22	
Route	SB	374+74.7	1.0			14.0	1.0	18	
Culvert Pipe Marker	NB	411+28.0	1.0					9	
Delineator	SB	421+51.7	1.0					9	
Delineator	SB	424+51.4	1.0					10	
Delineator	SB	426+56.7	1.0					9	
Delineator	SB	427+65.1	1.0					9	
Delineator	SB	428+73.8	1.0					9	
Delineator	SB	429+93.1	1.0					10	
Delineator	SB	430+92.4	1.0					9	
Delineator	SB	432+14.9	1.0					9	
Delineator	SB	434+19.0	1.0					10	
Delineator	SB	435+28.9	1.0					9	
Delineator	NB	436+02.2	1.0					7	
Delineator	SB	436+37.0	1.0					9	
Delineator	SB	437+47.3	1.0					9	
Delineator	SB	438+58.4	1.0					9	
Delineator	SB	439+64.5	1.0					12	
Delineator	SB	440+81.2	1.0					9	
Delineator	SB	441+94.3	1.0					9	
Delineator	SB	443+09.4	1.0					9	
Delineator	SB	445+27.0	1.0					9	
Delineator	SB	448+28.0	1.0					8	
Two Direction Arrow	SB	462+31.9	1.0			14.0	1.0	13	
Street Name	SB	462+36.0	1.0	1.0			1.0	12	
Right Curve	SB	468+02.4	1.0			14.0	1.0	16	
Mile Marker	NB	546+49.9	1.0					12	
Speed limit	NB	549+92.4	1.0		12.0		1.0	8	
Speed limit	SB	556+23.5	1.0		12.0		1.0	12	
No Parking	NB	556+61.1	1.0			12.0	1.0	10	
TOTAL		+49.0							

SURVEY SYMBOLS

- CP Control Point
- Default_Point Default Point Feature
- BM Bench Mark
- MIS Miscellaneous
- SCR Section Corner
- ROW Right of Way Mark
- LC Lot Corner
- EP Edge of Paved Roads (ML or SR)
- SNP Unpaved Shoulder
- C Centerline BL of Road (ML or SR)
- WC Wild Card (Misc. Field Shot)
- LIN Miscellaneous Line
- BL Topo Breakline
- GR Ground Shot
- SI Sign
- ENU Edge Unpaved Entrance & Parking
- ENT Centerline BL of Entrance
- REF Reference Tie Point
- MM Mile Marker Post
- PIP Pipe Culvert
- DU Centerline Draw or Stream (Up)
- D Centerline Draw or Stream (Down)
- CUL Culvert
- EG Edge of Gravel Road
- TLNL Tree Line Left
- TLNR Tree Line Right
- TEV Evergeen Tree
- EW Edge of Water
- TDC Tree Deciduous
- FW Wire Fence
- OUT Tile Outlet
- DIK Centerline of Dike or Dam
- MH Utility Access (Manhole)
- RET Retaining Walls
- SNK Sink Hole
- WEL Well
- ST Spiral Point
- PRO Profile Shot
- PLG Location of General Photo
- FCL Chain Link and Security Fence
- GU Gutter In Front of Curb
- SOP Size of Pipe or Culvert
- GPR Guard Post (4 or More Posts)
- BRG Bridge
- CON Concrete or A/C Slab
- GP Guard Post (Less Than 4 Posts)
- BLD Building or Foundation
- SL Speed Limit Sign
- GDL Guard Rail Steel
- PL Location of Photo (Wetlands)

UTILITY LEGEND

SURVEYED UTILITY OWNER SYMBOLS

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

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

- PPA Power Pole Alliant Energy
- TP TPD Telephone Pedestal
- WV WV Water Valve Wapello Rural Water Association
- PR Electic Riser Pole Alliant Energy
- EL1C Electric Line Alliant Energy - Quality C
- TL1C Telephone Line Windstream Communications - Quality C
- TL2C Telephone Line Farmers & Merchants Mutual Telephone - Quality C
- TL3C Telephone Line Unknown (TL2 or TL3) - Quality C
- WL1C Water Line Wapello Rural Water Association - Quality C
- GH1C High Pres Gas MidAmerican Energy - Quality C
- UB UB Utility Box
- LUM Luminaire
- EB EB Electrical Box

Utility Company	Contact Name	Phone #	Email
ALLIANT ENERGY	Mary Montgomery	319-786-8196	rerow@alliantenergy.com
CITY OF DELTA	Brian Schultz	641-624-2160	DeltaIA@Iowa Telecom.Net
FARMERS & MERCHANTS MUTUAL TELEPHONE	Rex McGuire	800-822-2736	manager@farmtel.com
IA DOT	Mike Broderick	515-725-4610	mike.broderick@iowa.gov
MIDAMERICAN ENERGY - GAS	Danielle Schneider	641-683-4171	djschneider@midamerican.com
WAPELLO RURAL WATER ASSOCIATION	Kathy Alex or Donnie Johnston	641-682-8351	onecall@wrh2o.com
WINDSTREAM COMMUNICATIONS	Albert Prah	501-784-4760	wci.osp.permits@windstream.com

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

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

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 Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.1

9:07:59 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_LGD.dgn

For Intersection Details
Refer to Sheets No. L.1 - L.5

For Traffic Control Plan
Refer to Sheet No. J.2

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

Benton TWP.
T-74N R-13W
SEC. 27

Section 27

Section 26

POT Sta 0+00.00

Approx. ROW

18" CMP

+23 Field Ent. Earth

Sta. 0+20.73
M.P. 0.621
Begin Project
Begin Inlay

PC Sta 9+88.00

Sta. 11+00.2
52'X24" RCP
DA 12 AC R
U.A.C.

Curve Data
Δ = 0° 39' 00.00" (RT)
T = 325.00
L = 650.00
R = 57,295.78
E = 0.92

+70 Farm Ent. (Tom Richards Lane) Gravel

328th St. Gravel

PI Sta 13+13.00

PT Sta 16+38.00

+11 Field Ent. Earth

+1 Field Ent. Earth

Sta. 14+97
Skew 30 Rt AH
2'X2'X144' RCB w/ Flume
DA 20 AC F.H.
(NOT LOCATED)

Sta. 20+86.1
Skew 5 Rt AH
4'X4'X165 RCB
DA 100 AC F.H.
U.A.C.

PC Sta 25+81.80

PT Sta 26+90.18

325th St. Gravel

+22 Field Ent. Earth

PI Sta 26+35.99

+63 Field Ent. Earth

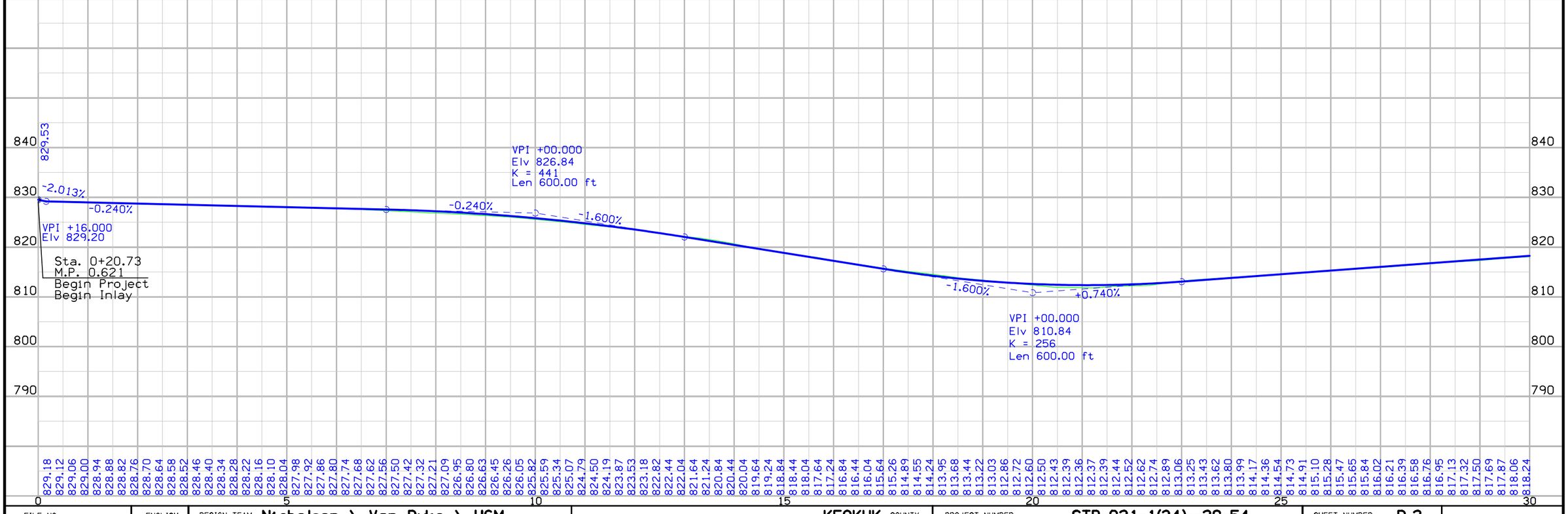
Sta. 30+1
Skew 2 Lt
4'X6'X130'
DA 25 AC
U.A.C.

Curve Data
Δ = 0° 20' 35.48" (LT)
T = 54.19
L = 108.38
R = 18,093.40
E = 0.08

Benton TWP.
T-74N R-13W
SEC. 26

0 100
FEET

IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.2

9:10:28 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

Benton TWP.
T-74N R-13W
SEC. 27

Section 27

Section 22

Section 26

Section 23

Approx. ROW

Approx. ROW

PI Sta 52+66.59

24" HDPE

+94 Farm Ent. Gravel

+31 Field Ent. Earth

+62 Field Ent. Earth

+64 Field Ent. Gravel

+04 Field Ent. Earth

+47 Res. Ent. Gravel

+50 Farm Ent. Gravel

+99 Res. Ent. Gravel

Sta. 30+17
Skew 2 Lt AH
4'X6'X130' RCB
DA 25 AC F.R.
U.A.C.

Sta. 35+46.2
30"X64' RCP
DA 4 AC F.H.
Remove and Replace
16 LF of 30" RCP
and Install 30" Apron, RT

Sta. 35+46.2
Install 30" x 16' RCP
Skew = 0° ,Ahd.
F.L. = 817.6 Lt.
813.3 Rt.

Sta. 48+61.2
Skew 30 Rt AH
4'X4'X160'
DA 135 AC R
U.A.C.

Benton TWP.
T-74N R-13W
SEC. 26

0 FEET 100

IA 21

VPI +50.000
K = 257
Elv 826.01
Len 1,000.00 ft

+0.740%

-3.150%

-3.150%

+3.000%

VPI +50.236
Elv 794.51
K = 98
Len 600.00 ft

30 35 40 45 50 55 60

830 820 810 800 790 780

818.43 818.61 818.80 818.98 819.17 819.35 819.54 819.72 819.91 820.09 820.28 820.46 820.65 820.83 821.02 821.20 821.39 821.57 821.76 821.94 822.13 822.31 822.49 822.64 822.76 822.86 822.94 822.99 823.01 823.02 822.99 822.95 822.88 822.78 822.66 822.52 822.35 822.16 821.95 821.71 821.44 821.15 820.84 820.50 820.14 819.75 819.34 818.91 818.45 817.96 817.46 816.92 816.37 815.79 815.18 814.55 813.90 813.22 812.52 811.79 811.04 810.26 809.48 808.69 807.90 807.11 806.33 805.54 804.75 803.96 803.21 802.52 801.89 801.32 800.82 800.39 800.02 799.71 799.47 799.29 799.17 799.12 799.13 799.21 799.35 799.55 799.82 800.16 800.55 801.01 801.54 802.13 802.78 803.50 804.25 805.00 805.75 806.50 807.25 808.00 808.75 809.50 810.25 811.00 811.75 812.50 813.25 814.00 814.75 815.50 816.25 817.00 817.74 818.45 819.14 819.80 820.44 821.05 821.64 822.20

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.3

9:10:32 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

Sta. 66+34.46
Begin Ditch Reshaping

Sta. 72+48.38
End Ditch Reshaping

Remove 18" x 32' RCP.
Replace with 18' x 36' RCP
with (2) DR-201 aprons.

Benton TWP.
T-74N R-13W
SEC. 22

Sta. 75+73
Install 18" x 36' RCP
Skew = 0° ,Ahd.
F.L. = 822.4 Lt.
822.0 Rt.

PI Sta 79+12.80

60 65 70 75 80 85 90

+99 Res. Ent. Gravel
318th Ave. Gravel
Approx. ROW
Machinery Shed
+87 Farm Ent. Gravel
+02 Farm Ent. Gravel
+71 Res. Ent. Gravel
+73 Field Ent. Earth
+27 Field Ent. Earth
Approx. ROW
+87 Field Ent. Earth
+16 Farm Ent. Gravel
+70 Farm Ent. Gravel

Sta. 72+87
Install 18" x 36' CMP
Skew = 0° ,Ahd.
F.L. = 822.6 Lt.
822.5 Rt.

Benton TWP.
T-74N R-13W
SEC. 23

Sta. 72+52.6
24" X 48' RCP
U.A.C.

Remove 18" x 33.5' CMP.
Replace with 18' x 36' CMP
with (2) DR-201 aprons.

Sta. 79+16
Install 18" x 36' RCP
Skew = 0° ,Ahd.
F.L. = 820.5 Lt.
820.7 Rt.

Remove 18" x 34' RCP.
Replace with 18' x 36' RCP
with (2) DR-201 aprons.

0 100 FEET

IA 21

VPI +00.000
Elv 829.00
K = 251
Len 800.00 ft
+3.000%
-0.190%
+34.46 Lt.
823.93
-0.035% Lt Ditch Grade
+48.38 Lt.
823.711
Sta. 66+34.46
Begin Ditch Reshaping
Sta. 72+48.38
End Ditch Reshaping
Ditch Grade

VPI +00.000
Elv 825.39
K = 139
Len 600.00 ft
-0.190%
-4.500%

830 820 810 800 790 780

822.74 823.25 823.74 824.21 824.64 825.06 825.45 825.81 826.15 826.46 826.75 827.02 827.25 827.47 827.66 827.82 827.96 828.08 828.17 828.23 828.27 828.28 828.27 828.24 828.19 828.14 828.10 828.05 828.00 827.95 827.91 827.86 827.81 827.76 827.72 827.67 827.62 827.57 827.53 827.48 827.43 827.38 827.34 827.29 827.24 827.19 827.15 827.10 827.05 827.00 826.96 826.91 826.86 826.81 826.77 826.72 826.67 826.62 826.58 826.53 826.48 826.43 826.39 826.34 826.29 826.24 826.20 826.15 826.10 826.05 826.01 825.96 825.89 825.77 825.62 825.41 825.16 824.87 824.53 824.14 823.71 823.24 822.72 822.16 821.55 820.89 820.20 819.45 818.66 817.83 816.95 816.03 815.06 814.05 812.99 811.89 810.76 809.64 808.51 807.39 806.26 805.14 804.01 802.89 801.76 800.64 799.51 798.39 797.26 796.14 795.01 793.89 792.81 791.81 790.91 790.09 789.36 788.71 788.16 787.69

60 65 70 75 80 85 90

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.4

9:10:37 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Cuvert Details
Refer to Sheets No. V.4 -V.7

STA. 105+17.6
Remove 150 LF 30" CMP. Replace with
30" X 144' RCP w/ (1) DR-201 Apron.
Connect to existing CMP with DR-122
Type "C-4" Connection
Inlet: 104+82.75 Offset 60.63' RT
Connection: 105+57.12 Offset 69.34' LT

Build DR-611
Sta. 105+18
Skew 60° LAH
30" X 186' RCP
5° Elbow
F=7'

Sta. 105+17.6
Install 30" x 144' RCP
Skew = 29° 52' ,Ahd.
F.L. = 778.70 Lt.
791.8 Rt.

Section 15

Section 22

Section 23

Section 14

90 95 100 105 110 115 120

PI Sta 105+39.10

+15 Field Ent. Earth

+92 Field Ent. Earth

+50 Field Ent. Earth

+48 Field Ent. Gravel

+64 Field Ent. Earth

Approx. ROW

Approx. ROW

310th St. Gravel

Sta 90+50.7
Skew 8 Lt AH
4'X4'X150' RCB
DA 70 AC H.R.
U.A.C.

Sta 105+17.6
Skew 60 Lt AH
30" X 190' CMP
DA 15 AC H.R.
(REMOVE)

Sta. 113+39.9
Install 36" x 104' RCP
Skew = 4° 4' ,Ahd.
F.L. = 767.2 Lt.
782.1 Rt.

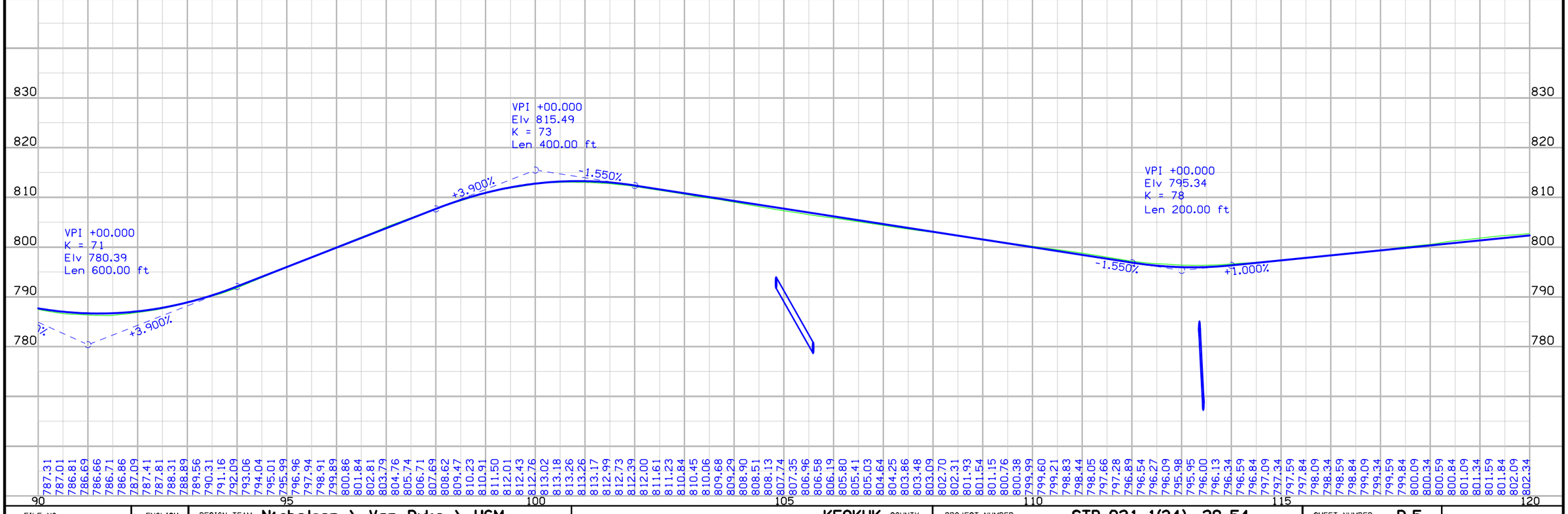
Sta 113+39.9
Skew 4 Lt AH
36" X 170' CMP
DA 25 AC R.
(REMOVE)

Build DR-611
Sta. 113+40
Skew 4° LAH
36" X 166' RCP
7.5° Elbow
F=20'

STA. 113+39.9
Remove 106.75 LF 36" CMP. Replace with
36" X 104' RCP w/ (1) DR-201 Apron.
Connect to existing CMP with DR-122
Type "C-4" Connection
Inlet: 113+35.8 Offset 56.90 RT
Connection: 113+43.4 Offset 49.59 LT

0 100 FEET

IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.5

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Cuvert Details
Refer to Sheets No. V.8 -V.11

Benton TWP.
T-74N R-13W
SEC. 15

N

120 125 130 135 140 145 150

Sta 131+93.50 PI +95

Field Ent. Earth

Approx. ROW

Approx. ROW

Sta 124+84.7
36" X 152' CMP
DA 16 AC R.
SLIPLINE EXISTING
CULVERT

305th St. Gravel

Sta. 137+51.8
Install 24" x 106' RCP
Skew = 0° ,Ahd.
F.L. = 781.0 Lt.
769.0 Rt.

Sta 137+51.8
24" X 106' CMP
DA 4 AC H
(REMOVE)

STA. 137+51.8
Remove 94.7 LF 24" CMP. Replace with
24" X 106' RCP w/ (1) DR-201 Apron and
(2) 7.5° Elbows.
Connect to existing CMP with DR-122
Type "C-4" Connection
Inlet: 137+51.0 Offset 45.53 LT
Connection: 137+53.1 Offset 67.32 RT

Benton TWP.
T-74N R-13W
SEC. 14

Sta 142+01.8
Skew 2 Lt AH
30" X 160' CMP
DA 10 AC H.
(REMOVE)

+41 Field Ent. Earth

+30 Field Ent. Earth

18" CMP

+52 Field Ent. Earth

Sta. 142+01.8
Install 30" x 104' RCP
Skew = 2° 13' ,Ahd.
F.L. = 774.4 Lt.
758.7 Rt.

STA. 142+01.8
Remove 98 LF 30" CMP. Replace with
30" x 104' RCP w/ (1) DR-201 Apron and
(1) 25° Elbow. Connect to existing CMP
with DR-122 Type "C-4" Connection.
Inlet: 142+03.5 Offset: 46.22' LT
Connection: 141+99.4 Offset: 60.76' RT
Outlet: 141+96.9 Offset: 122.72' RT

0 100
FEET

IA 21

VPI +00.000
Elv 814.34
K = 67
Len 400.00 ft

+1.000%

-5.000%

VPI +00.000
Elv 789.34
K = 90
Len 400.00 ft

-5.000%

-0.560%

VPI +00.000
Elv 784.86
K = 109
Len 600.00 ft

-0.560%

-6.050%

820 810 800 790 780 770 760

802.59 802.84 803.09 803.34 803.59 803.84 804.09 804.34 804.59 804.84 805.09 805.34 805.59 805.84 806.09 806.34 806.59 806.84 807.09 807.34 807.59 807.84 808.09 808.34 808.59 808.84 809.09 809.34 809.59 809.84 810.09 810.34 810.59 810.84 811.09 811.34 811.59 811.84 812.09 812.34 812.54 812.65 812.67 812.59 812.42 812.15 811.79 811.34 810.79 810.15 809.42 808.59 807.67 806.65 805.54 804.34 803.09 801.84 800.59 799.34 798.12 796.98 795.90 794.89 793.96 793.09 792.29 791.56 790.90 790.31 789.79 789.33 788.95 788.64 788.39 788.22 788.08 787.94 787.80 787.66 787.52 787.38 787.24 787.10 786.96 786.82 786.68 786.54 786.37 786.15 785.86 785.52 785.12 784.67 784.16 783.59 782.96 782.28 781.54 780.74 779.89 778.98 778.01 776.98 775.90 774.76 773.56 772.30 770.99 769.62 768.19 766.71 765.20 763.68 762.17 760.66 759.15 757.63 756.12 754.61

120 125 130 135 140 145 150

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.6

9:10:46 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Cuvert Details
Refer to Sheets No. V.12

Sta. 164+01.70
Remove and Replace Guardrail

Sta. 164+01.70
Remove and Replace Guardrail

Sta. 165+10.20
Remove and Replace Guardrail

Sta. 165+10.20
Remove and Replace Guardrail

PI Sta 158+07.80

POT Sta 164+56.49

Section 15

Section 14

Section 11

300th St
Gravel

+91
Field Ent.
Earth

+99
Field Ent.
Earth

+03
Field Ent.
Earth

+50
Field Ent.
Earth

18" CMP

30" CMP

24" CMP

Approx. ROW

Approx. ROW

Sta 152+28
Skew 40 Rt AH
2'X2'X154'
DA 35 AC H

U.A.C.

Sta 157+00.8
Skew 2 Rt AH
24" X 55' CMP
DA 4 AC H.

SLIPLINE EXISTING
CULVERT

Sta 164+56
95' X 40'
CCSB
Des. No. 587

U.A.C.

Sta. 160+12.28
M.P. 3.655
Stop Inlay
Begin Shoulder Retrofit

Sta. 171+20.43
M.P. 3.865
Resume Inlay
Stop Shoulder Retrofit

Sta 172+32.9
30" X 74' CMP
DA 10 AC H.

(REMOVE)

Sta. 172+32.9
Install 30" x 74' RCP
Skew = 0°,Ahd.
F.L. = 723.8 Lt.
737.2 Rt.

STA. 172+32.9
Remove 72' x 30" CMP.
Replace with 30" x 74' RCP
w/ (2) DR-201 Aprons and
(1) 10° Elbow.
Inlet: 172+32.3 Offset: 33.69' RT
Outlet: 172+34.0 Offset: 52.06' LT

0 100
FEET

IA 21

150 155 160 165 170 175 180

750 740 730 720 710 700

-6.150%

VPI +51.430
Elv 733.35
K = 99
Len 400.00 ft

-2.000%

Sta. 160+12.28
M.P. 3.655
Stop Inlay
Begin Shoulder Retrofit

-2.000%

VPI +85.156
Elv 708.67
K = 147
Len 1,100.00 ft

+5.460%

Sta. 171+20.43
M.P. 3.865
Resume Inlay
Stop Shoulder Retrofit

753.10 751.58 750.07 748.56 747.05 745.53 744.05 742.63 741.27 739.98 738.75 737.58 736.47 735.43 734.45 733.54 732.69 731.90 731.17 730.51 729.91 729.38 728.88 728.38 727.88 727.38 726.88 726.38 725.88 725.38 724.88 724.38 723.88 723.38 722.88 722.38 721.88 721.38 720.88 720.38 719.88 719.38 718.93 718.52 718.15 717.82 717.54 717.30 717.10 716.94 716.83 716.76 716.73 716.74 716.79 716.89 717.03 717.21 717.44 717.70 718.01 718.36 718.76 719.20 719.67 720.20 720.76 721.37 722.01 722.70 723.44 724.21 725.03 725.89 726.79 727.74 728.73 729.76 730.83 731.94 733.10 734.30 735.54 736.83 738.15 739.51 740.88 742.24 743.61 744.97 746.34 747.70 749.07 750.43 751.80 753.16 754.53 755.89 757.26 758.62 759.99 761.35 762.72 764.08 765.45 766.81 768.18 769.54 770.91 772.27 773.64 775.00 776.37 777.73 779.10 780.46 781.83 783.19 784.56 785.92

150 155 160 165 170 175 180

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.7

9:10:51 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Cuvert Details
Refer to Sheets No. V.13

Benton TWP.
T-74N R-13W
SEC. 10

Benton TWP.
T-74N R-13W
SEC. 11

Section 10

Section 11

PI Sta 184+51.81

295th St.
Gravel

Approx. ROW

Approx. ROW

+58
Res. Ent.
Gravel
24" PVC

+99
Field Ent.
Earth
18" CMP

+96
Farm Ent.
Gravel
24" PVC

+05
Field Ent.
Earth
24" CMP

Sta 200+01.3
36" X 48' CMP
DA 16 AC H.
(REMOVE)

+46
Field Ent.
Gravel
18" CMP

+23
Farm Ent.
Gravel
24" CMP

Sta. 200+01.3
Install 36" x 40' RCP
Skew = 0°,Ahd.
F.L. = 737.0 Lt.
739.9 Rt.

Sta 205+81.4
Skew 8 Rt AH
5X5X116
DA 300 AC H.
U.A.C.

STA. 200+01.26
Remove 48 LF 36" CMP.
Install 36" x 40' RCP
w/ (2) DR-201 Aprons and
(1) 10°Elbow.
Inlet: 200+01.8 Offset: 27.30 RT
Outlet: 200+00.6 Offset: 28.57 LT

0 100
FEET

IA 21

+5.460%

-5.400%

VPI +50.794
Elv 816.00
K = 78
Len 850.00 ft

VPI +00.794
Elv 759.30
K = 117
Len 200.00 ft

-5.400%

-3.690%

-3.690%

+5.472%

VPI +48.794
Elv 716.94
K = 65
Len 600.00 ft

800
790
780
770
760
750
740

760
750
740
730
720
710

180 185 190 195 200 205 210

787.29 788.65 790.02 791.38 792.75 794.08 795.32 796.49 797.58 798.59 799.52 800.37 801.13 801.82 802.43 802.96 803.41 803.78 804.07 804.28 804.41 804.46 804.43 804.32 804.13 803.86 803.51 803.08 802.57 801.98 801.31 800.57 799.74 798.83 797.84 796.77 795.63 794.40 793.09 791.74 790.39 789.04 787.69 786.34 784.99 783.64 782.29 780.94 779.59 778.24 776.89 775.54 774.19 772.84 771.49 770.14 768.79 767.44 766.09 764.74 763.42 762.14 760.93 759.76 758.65 757.59 756.59 755.64 754.71 753.79 752.87 751.95 751.02 750.10 749.18 748.26 747.33 746.41 745.49 744.57 743.64 742.72 741.80 740.88 739.95 739.03 738.11 737.19 736.26 735.34 734.42 733.50 732.57 731.65 730.73 729.81 728.88 727.96 727.09 726.32 725.64 725.05 724.57 724.17 723.87 723.67 723.57 723.55 723.64 723.82 724.09 724.46 724.93 725.49 726.15 726.90 727.75 728.69 729.73 730.86

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.8

9:10:56 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Cuvert Details
Refer to Sheets No. V.14

Benton TWP.
T-74N R-13W
SEC. 3

Section 10 | Section 3 | Section 11 | Section 2

PI Sta 210+96.41

PI Sta 224+10.20

PI Sta 237+26.50

210 | 215 | 220 | 225 | 230 | 235 | 240

Sta. 220+93.30
Remove and Replace Guardrail

Remove 24" x 52' CMP.
Replace with 24' x 56' CMP
with (2) DR-201 aprons.

Sta. 223+72
Install 24" x 56' CMP
Skew = 0° ,Ahd.
F.L. = 723.9 Lt.
724.2 Rt.

288th St Gravel

+92 Field Ent. Earth

18" CMP

+75 Field Ent. Earth

Approx. ROW

Approx. ROW

+88 Field Ent. Earth

Sta. 220+82.80
Remove and Replace Guardrail

Sta. 220+86.9
6X8X39 RCB w/Flume
DA 250 AC H.
U.A.C.

+93 Field Ent. Gravel

18" CMP

+19 Field Ent. Earth

Sta. 227+52.7
24" X 46' CMP
DA 1 AC H.

SLIPLINE EXISTING
CULVERT

Sta 232+89.1
24" X 48' CMP
DA 2 AC H
(REMOVE)

Sta. 232+89.1
Install 24" x 52' RCP
Skew = 0°,Ahd.
F.L. = 769.7.0 Lt.
767.8 Rt.

Benton TWP.
T-74N R-13W
SEC. 2

STA. 232.89.1
Remove 48 LF 24" CMP.
Install 24" x 52' RCP
w/ (2) DR-201 Aprons.
Inlet: 232+89.6 Offset: 29.80 LT
Outlet: 232+88.6 Offset: 34.44 RT

0 100 FEET

IA 21

VPI +00.849
Elv 752.62
K = 70
Len 700.00 ft

+5.472%

-4.500%

VPI +09.258
Elv 716.24
K = 66
Len 700.00 ft

-4.500%

+6.076%

+6.076%

+1.733%

VPI +90.430
Elv 769.78
K = 138
Len 600.00 ft

770 | 760 | 750 | 740 | 730 | 720

732.09 733.42 734.74 735.98 737.13 738.19 739.16 740.04 740.83 741.54 742.15 742.68 743.11 743.46 743.72 743.89 743.97 743.96 743.86 743.67 743.40 743.03 742.58 742.03 741.40 740.68 739.87 738.97 737.98 736.90 735.78 734.65 733.53 732.40 731.30 730.28 729.36 728.53 727.79 727.15 726.60 726.15 725.79 725.53 725.36 725.29 725.31 725.42 725.63 725.94 726.34 726.83 727.42 728.10 728.87 729.74 730.71 731.77 732.92 734.17 735.51 736.95 738.46 739.98 741.50 743.02 744.54 746.06 747.58 749.09 750.61 752.13 753.61 755.04 756.43 757.77 759.07 760.33 761.53 762.70 763.81 764.88 765.91 766.89 767.83 768.72 769.57 770.37 771.12 771.83 772.50 773.12 773.69 774.22 774.70 775.14 775.58 776.01 776.44 776.88 777.31 777.74 778.18 778.61 779.04 779.48 779.91 780.34 780.78 781.21 781.64 782.08 782.51 782.94 783.38 783.81 784.24 784.68 785.11 785.54

210 | 215 | 220 | 225 | 230 | 235 | 240

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.9

9:11:00 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Cuvert Details
Refer to Sheets No. V.15

Section 34

Section 3

240 245 250 PI Sta 250+44.31 255 260 265 PI Sta 267+37.71 270

Approx. ROW

Approx. ROW

+45 Comm. Ent. Gravel

+25 Field Ent. Earth

+46 Res. Ent. Gravel

+34 Farm Ent. Gravel

+85 Farm Ent. Gravel

+89 Field Ent. Earth

282nd St Level B

+46 Res. Ent. Gravel

+85 Field Ent. Earth

Earth Road

Sta 240+31.8
24 X 90 CMP
DA 8 AC H.

SLIPLINE EXISTING CULVERT

STA. 250+69.81
Remove 50 LF 24" CMP.
Install 24" x 50' RCP
w/ (2) DR-201 Aprons.
Inlet: 250+70.1 Offset: 27.93 LT
Outlet: 250+69.5 Offset: 34.33 RT

Sta. 250+69.8
Install 24" x 50' RCP
Skew = 0°,Ahd.
F.L. = 793.2 Lt.
792.7 Rt.

Sta 250+69.8
24 X 50 CMP
DA 5 AC H.

U.A.C.
Sta 264+94.1
24" X 93' RCP
DA 5 AC R.

Section 2

Section 35

0 100 FEET

IA 21

820 810 800 790 780 770

VPI +90.430
Elv 797.51
K = 367
Len 600.00 ft

+1.733% +0.100%

VPI +90.430
Elv 798.41

+0.100% -0.200%

VPI +40.430
Elv 797.51
K = 500
Len 600.00 ft

-0.200% -1.400%

-1.400% +1.850%

VPI +00.430
Elv 785.47
K = 185
Len 600.00 ft

785.98 786.41 786.84 787.28 787.71 788.14 788.58 789.01 789.44 789.88 790.31 790.74 791.18 791.61 792.04 792.47 792.89 793.29 793.68 794.04 794.39 794.73 795.04 795.34 795.63 795.89 796.14 796.37 796.58 796.78 796.96 797.12 797.27 797.40 797.51 797.61 797.68 797.75 797.79 797.82 797.84 797.87 797.89 797.92 797.94 797.97 797.99 798.02 798.04 798.07 798.09 798.12 798.14 798.17 798.19 798.22 798.24 798.27 798.29 798.32 798.34 798.37 798.39 798.39 798.34 798.29 798.24 798.19 798.14 798.09 798.03 797.95 797.87 797.77 797.66 797.53 797.40 797.25 797.09 796.92 796.73 796.53 796.32 796.10 795.86 795.61 795.35 795.08 794.79 794.49 794.18 793.86 793.52 793.17 792.82 792.47 792.12 791.77 791.42 791.07 790.72 790.37 790.02 789.67 789.34 789.04 788.77 788.54 788.34 788.18 788.05 787.95 787.89 787.86 787.87 787.90 787.98 788.08 788.22 788.40

240 245 250 255 260 265 270

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.10

9:11:08 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Culvert Details
Refer to Sheets No. V.16 -V.17

Warren TWP.
T-75N R-13W
SEC. 34

STA. 270+73.2
Remove 72' x 24" CMP.
Replace with 24" x 72' RCP
w/ (2)DR-201 Aprons and
(1) 7.5° Elbow.
Inlet: 270+72.8 Offset: 37.27' LT
Outlet: 270+73.7 Offset: 46.49' RT

Sta 270+73.2
24" X 72' CMP
DA 6 AC R
(REMOVE)

Sta. 270+73.2
Install 24" x 72' RCP
Skew = 0°,Ahd.
F.L. = 781.98 Lt.
736.1 Rt.

Curve Data
Δ = 40° 59' 12.70" (LT)
T = 428.29
L = 819.74
R = 1,145.92
E = 77.42

Sta. 284+35
24 X 85 CMP
DA 12(Partial) AC R
(REMOVE)

STA. 284+35
Remove 30" x 80' CMP.
Replace with 30" x 82' RCP
w/ (2) DR-201 Aprons and
(1) 7.5° Elbow.
Inlet: 284+33.76 Offset: 39.85 LT
Outlet: 284+36.67 Offset: 54.34 RT

Sta. 284+35.0
Install 30" x 78' RCP
Skew = 0°,Ahd.
F.L. = 757.2 Lt.
749.5 Rt.

Sta. 280+40
Skew 7 Rt AH
24 X 69 CMP
DA 12(Partial) AC R
SLIPLINE EXISTING
CULVERT

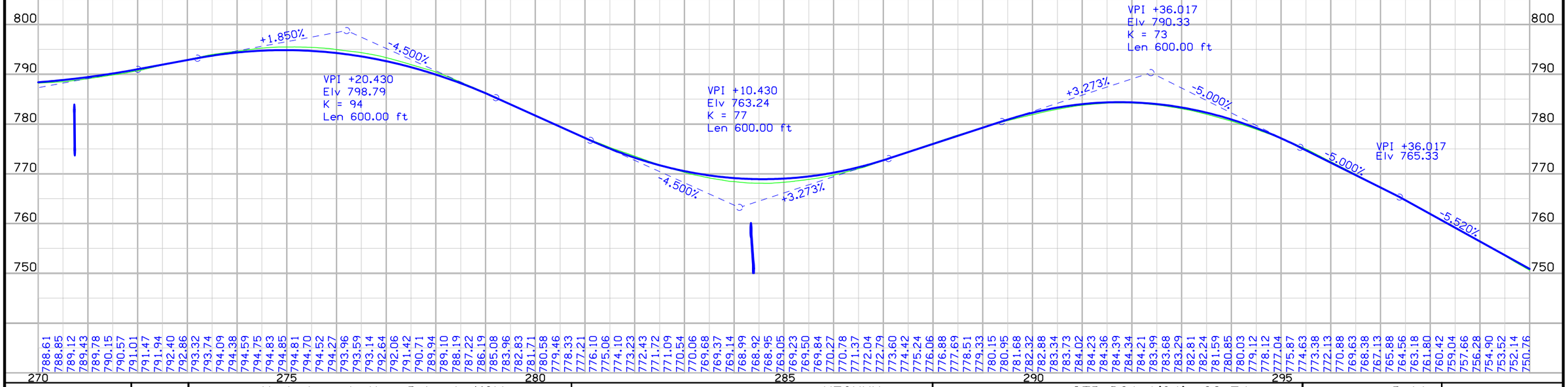
PCC Sta 284+33.17
PT Sta 284+33.17
PI Sta 284+33.17
EQUATION: Sta 284+35.29 BK = Sta 284+33.17 AH
POT Sta 292+32.20
PC Sta 295+18.37
Sta 297+88.62
EQUATION: Sta 300+58.47 BK = Sta 300+58.84 AH

Approx. ROW

Curve Data
Δ = 5° 24' 03.33" (RT)
T = 270.25
L = 540.09
R = 5,729.58
E = 6.37

0 100 FEET

IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.11

9:11:14 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

Curve Data
Δ = 18° 22' 07.70" (RT)
T = 370.56
L = 734.75
R = 2,291.83
E = 29.76

SCS PI Sta 310+29.15
Δ = 22° 44' 37.71" (RT)
Theta = 2° 11' 15.00"
Ls = 175.00
Ts = 548.55
Es = 46.46
P = 0.56
K = 87.50
Xc = 174.97
Yc = 2.23
LT = 116.68
ST = 58.34
LC = 174.99

EQUATION: 300+58.47 BK = 300+58.84 AH

Sta. 302+30.7
36" X 117 CMP
DA 5 AC H.
SLIPLINE EXISTING CULVERT

Sta 309+18.2
36" X 121 RCP
DA 25 AC H
U.A.C.

Sta. 309+62 R 3, 36'RT
Place Fence
"Restricted Area - No Disturbance"

Sta. 312+15 R 3, 41'RT
Place Fence
"Restricted Area - No Disturbance"

Sta. 319+19.37 R 3
M.P. 6.676
Stop Inlay
Begin Shoulder Retrofit

Sta. 322+48.73 R 3
M.P. 6.738
Begin HMA Overlay

Sta. 323+43.70 R 3
Remove and Replace Guardrail

Sta. 323+43.70 R 3
Remove and Replace Guardrail

Sta. 328+37.20 R 3
Remove and Replace Guardrail

Sta. 328+36.90 R 3
Remove and Replace Guardrail

Replace 'EF' Joint - See PR-101

Approx. ROW

Section 34

Section 27

IA 21

0 FEET 100

Sta. 319+19.37 R 3
M.P. 6.676
Stop Inlay
Begin Shoulder Retrofit

VPI +61.390
Elv 686.67
K = 135
Len 800.00 ft

VPI +00.169
Elv 692.42
K = 1000
Len 800.00 ft

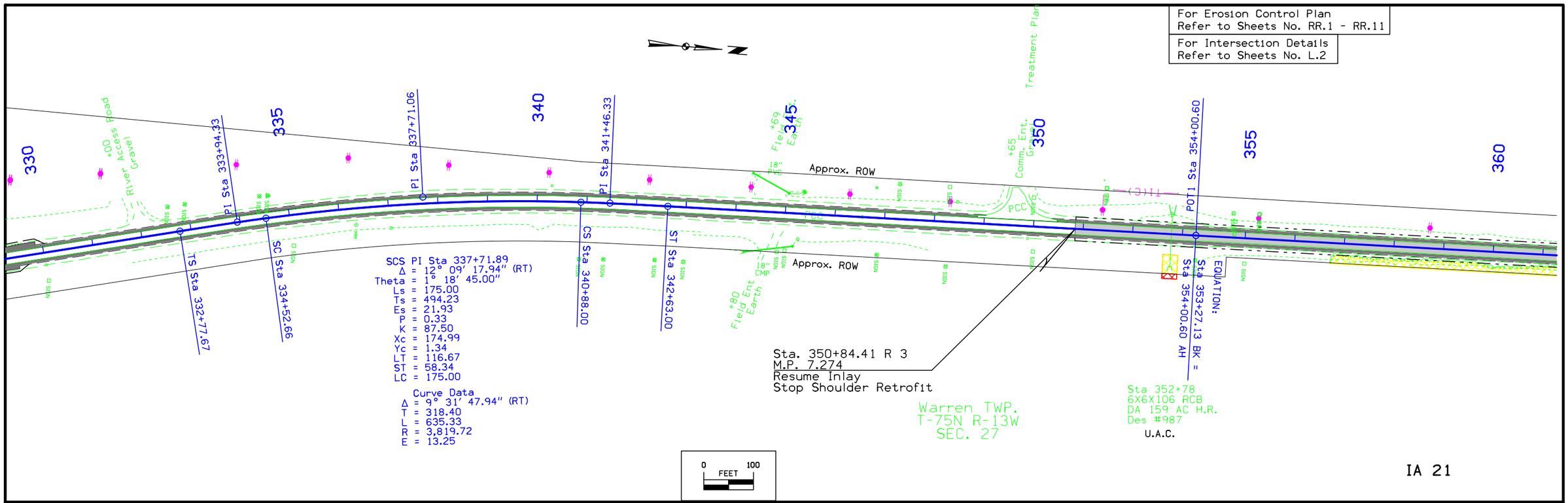
-5.520%
+0.400%
+0.400%
+0.400%

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.12

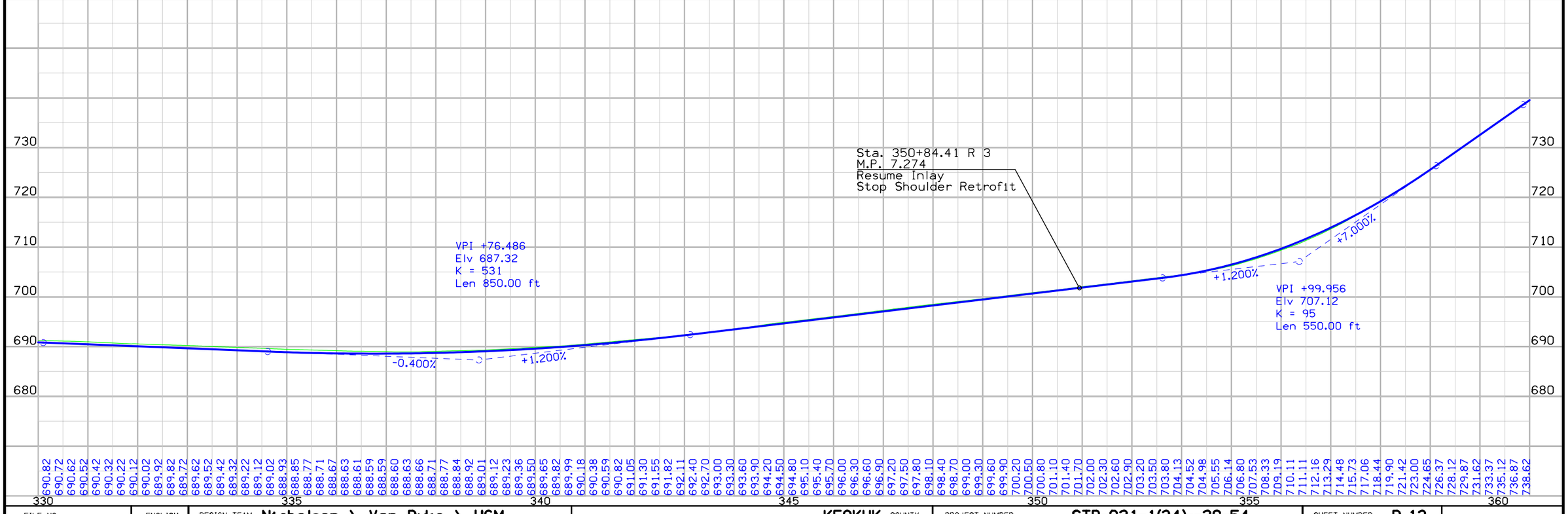
9:11:19 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Intersection Details
Refer to Sheets No. L.2



IA 21



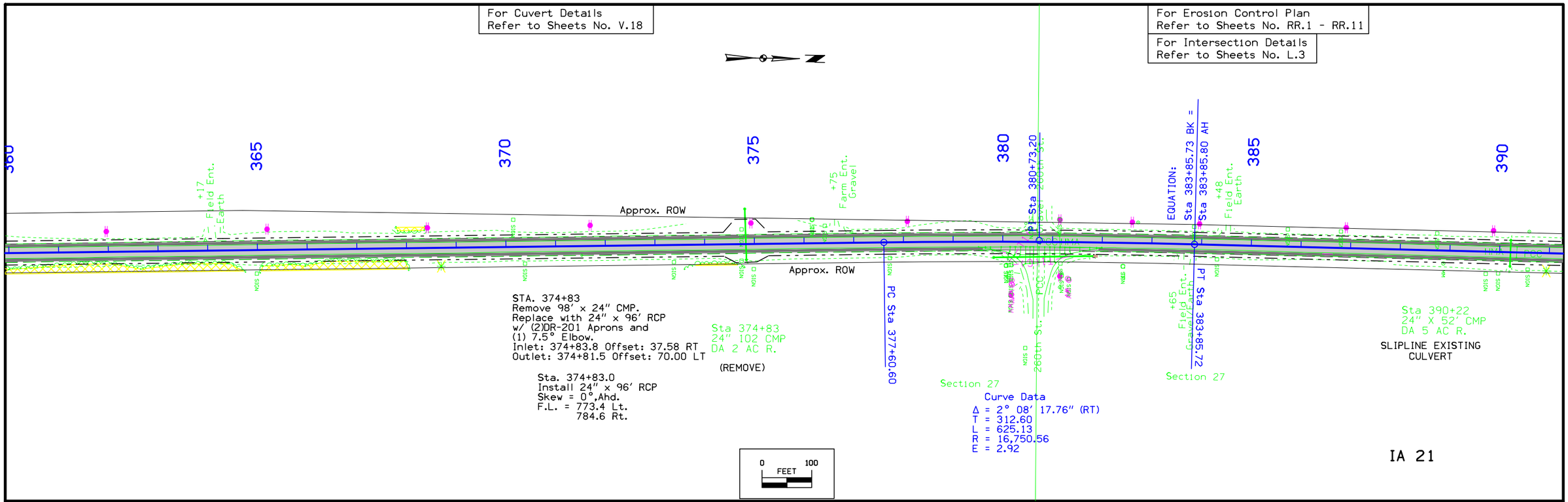
FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.13

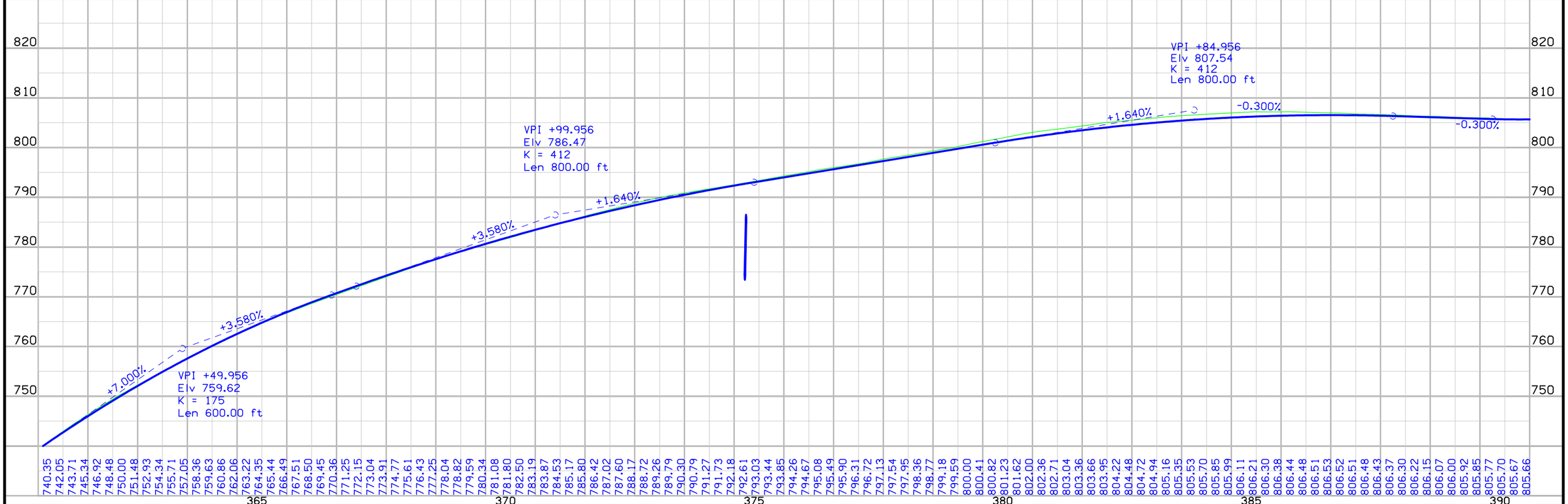
9:11:24 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Cuvert Details
Refer to Sheets No. V.18

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Intersection Details
Refer to Sheets No. L.3

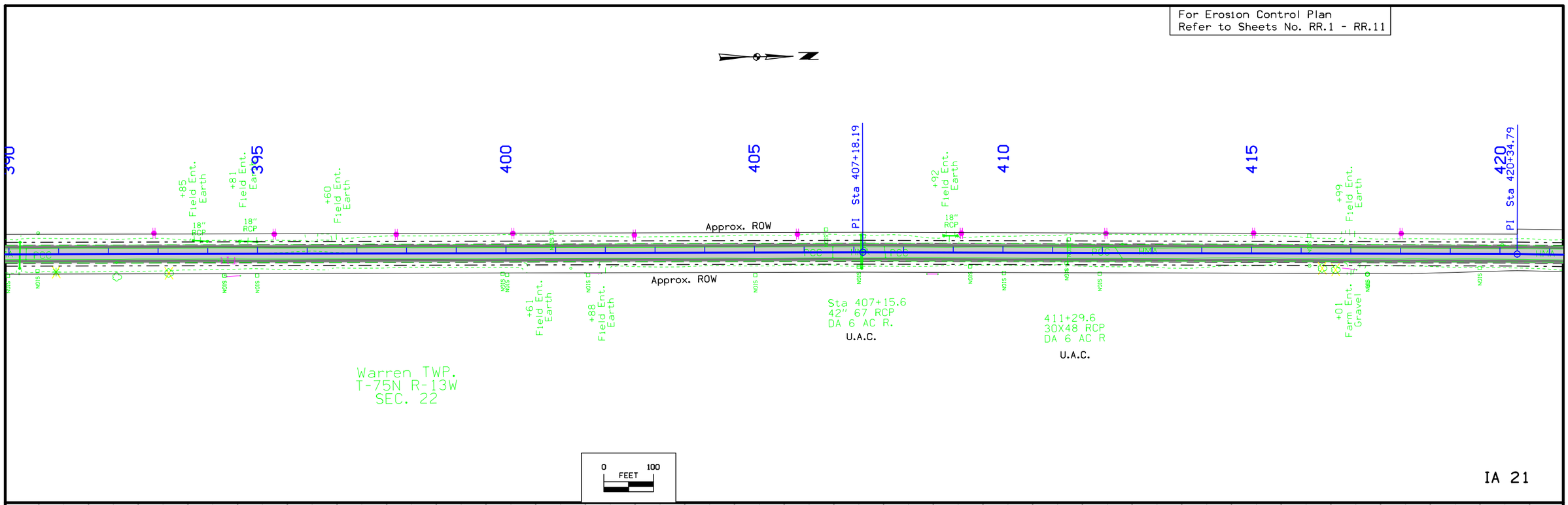




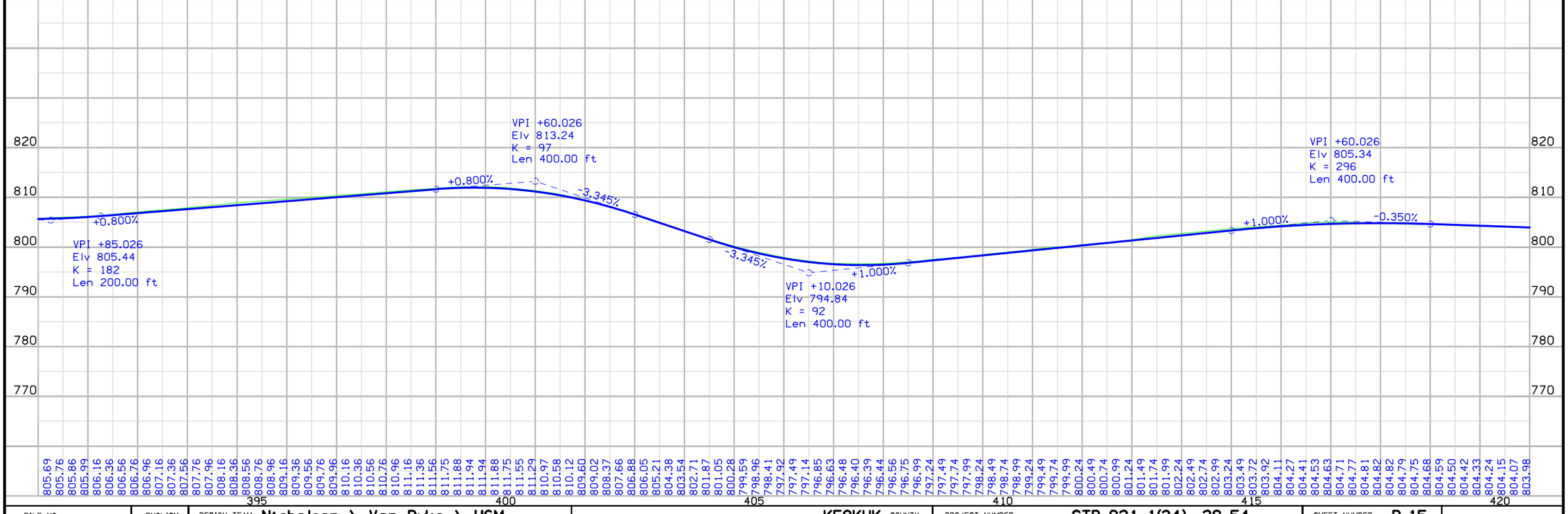
FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.14

9:11:29 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11



IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.15

9:11:35 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

For Cuvert Details
Refer to Sheets No. V.19

PI Sta 435+98.02

Approx. ROW

Approx. ROW

Section 22

Section 22

Curve Data
Δ = 66° 37′ 23.33″ (RT)
T = 941.32
L = 1,665.58
R = 1,432.39
E = 281.62

Sta 436+03
24 X 60 CMP
DA 5 AC R.
SLIPLINE EXISTING CULVERT

STA. 436+03.03
Install 24″ x 2′ RCP Extension
w/ (1) DR-201 Apron.
Connect to existing 24″ CMP.
w/ (1) DR-122 Type "C-4" Connection.
Inlet: 436+04.1 Offset: 29.02 RT
Connection: 436+03.8 Offset: 20.88 RT
Outlet: 436+01.7 Offset: 39.38 LT

Sta. 436.03.0
Install 24″ x 2′ RCP
F.L. = 758.2 Rt.

POT Sta 426+56.65

PC Sta 426+56.70

EQUATION:
Sta 426+56.60 BK =
Sta 426+56.65 AH

PT Sta 443+22.28

U.A.C.
Sta 421+59.7
24″ X 58′ RCP
DA 5 AC F

Sta 444+35.9
Skew 45 Rt AH
24″ X 96′ CMP
DA 2 AC H
SLIPLINE EXISTING CULVERT

IA 21

0 100 FEET

-0.350%
-4.000%
VPI +35.026
Elv 801.93
K = 164
Len 600.00 ft

-4.000%
+1.190%
VPI +10.076
Elv 754.93
K = 116
Len 600.00 ft

+1.190%
-5.500%
VPI +40.076
Elv 767.19
K = 194
Len 1,300.00 ft

803.89 803.80 803.72 803.63 803.54 803.45 803.37 803.28 803.19 803.10 803.02 802.92 802.79 802.63 802.42 802.18 801.90 801.58 801.22 800.82 800.39 799.92 799.41 798.86 798.28 797.65 796.99 796.29 795.55 794.78 793.97 793.11 792.22 791.30 790.33 789.33 788.33 787.33 786.33 785.33 784.33 783.33 782.33 781.33 780.33 779.33 778.33 777.33 776.33 775.33 774.33 773.33 772.33 771.33 770.33 769.33 768.33 767.33 766.34 765.40 764.52 763.68 762.91 762.18 761.51 760.89 760.33 759.82 759.37 758.97 758.62 758.33 758.09 757.91 757.78 757.70 757.68 757.72 757.80 757.94 758.14 758.39 758.68 758.98 759.27 759.57 759.84 760.07 760.28 760.45 760.59 760.70 760.77 760.82 760.83 760.81 760.76 760.67 760.55 760.40 760.22 760.01 759.76 759.48 759.17 758.83 758.46 758.05 757.61 757.14 756.64 756.10 755.53 754.93 754.30 753.64 752.94 752.21 751.45 750.66

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.16

9:11:41 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

Warren TWP.
T-75N R-13W
SEC. 15

Curve Data
Δ = 26° 24′ 59.56″ (LT)
T = 448.24
L = 880.55
R = 1,909.86
E = 51.90

PC Sta 452+75.88

Sta 453+00
30 X 200 CMP
DA 10 AC R.
SLIPLINE EXISTING
CULVERT

DWIGHT D. EISENHOWER BLACK-TOP TRAIL EASEMENT

247th St.
Gravel

PT Sta 457+24.12

+73 Field Ent. Earth

18" CMP

PT Sta 461+56.43

Approx. ROW

POT Sta 464+00.00

EQUATION:
Sta 463+47.76 BK =
Sta 464+00.00 AH

247th St.
Earth Road - Level B

+57 Field Ent. Earth

+57 Field Ent. Earth

Sta. 465+85.21 R 7
Begin Ditch Reshaping

Approx. ROW

Sta 465+00
8X8x60 RCB
DA 150 AC
U.A.C.

Warren TWP.
T-75N R-13W
SEC. 14

TS Sta 471+92.07

SCS PI Sta 476+25.38
Δ = 23° 50′ 43.32″ (LT)
Theta = 3° 03′ 45.02″
Ls = 175.00
Ts = 433.31
Es = 36.89
P = 0.78
K = 87.49
Xc = 174.95
Yc = 3.12
LT = 116.68
ST = 58.35
LC = 174.98

Curve Data
Δ = 17° 43′ 13.29″ (LT)
T = 255.18
L = 506.30
R = 1,637.02
E = 19.77

SC Sta 473+67.07

CS Sta 478+73.36

ST Sta 480+48.36

CT Sta 473+08.75

PI Sta 476+22.25

PI Sta 479+31.71

Sta. 472+16.23 R 7
M.P. 9.574
Stop Inlay
Begin Shoulder Retrofit

0 100 FEET

Section 15

IA 21

VPI +05.076
Elv 697.61
K = 100
Len 550.00 ft

-5.500%

+0.000%

Sta. 465+85.21
Begin Ditch Reshaping

+85.21 Lt.
688.13

Sta. 472+16.23 R 7
M.P. 9.574
Stop Inlay
Begin Shoulder Retrofit

+0.000%

VPI +87.316
Elv 697.61
K = 400
Len 400.00 ft

+1.000%

-0.400% Lt Ditch Grade

740 730 720 710 700 690

Lt
Rt

455 460 465 470 475 480

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.17

2:09:55 PM 1/3/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

Sta. 482+11.16 R 7
End Ditch Reshaping

Sta. 482+30.60 R 7
Remove and Replace Guardrail

Sta. 486+24.00 R 7
Remove and Replace Guardrail

Sta. 486+24.00 R 7
Remove and Replace Guardrail

Sta. 482+30.50 R 7
Remove and Replace Guardrail

SCS PI Sta 491+59.42
Δ = 18° 34' 42.35" (LT)
Theta = 3° 03' 45.02"
Ls = 175.00
Ts = 355.38
Es = 22.54
P = 0.78
K = 87.49
Xc = 174.95
Yc = 3.12
LT = 116.68
ST = 58.35
LC = 174.98

Curve Data
Δ = 12° 27' 12.32" (LT)
T = 178.61
L = 355.81
R = 1,637.02
E = 9.71

ST Sta 480+48.36
POT Sta 484+27.39
TS Sta 488+04.05
SC Sta 489+79.05
PI Sta 489+20.73
+67 Field Ent Earth
+20 Field Ent Gravel
+39 Field Ent Earth
PI Sta 491+57.66
CS Sta 493+34.86
PI Sta 493+93.21
ST Sta 495+09.86
POT1 Sta 496+00.00
EQUATION:
Sta 495+99.32 BK =
Sta 496+00.00 AH
+57 Field Ent Earth
+64 Field Ent Earth
+75 Field Ent Earth
PI Sta 505+06.29
+20 Field Ent Gravel

Approx. ROW
Approx. ROW

Section 11
Section 15

485 490 495 500 505 510

36" CMP
36" CMP
42" RCP
240th St.

Remove 36" x 48' RCP.
Replace with 36' x 56' RCP
with (2) DR-201 aprons.

Sta. 504+72
Install 36" x 56' RCP
Skew = 0° ,Ahd.
F.L. = 695.4 Lt.
694.5 Rt.

Sta 484+27.3
381X40
PPCB Bridge
Des. # 787
U.A.C.

Sta. 492+60.54 R 7
M.P. 9.961
Resume Inlay
Stop Shoulder Retrofit

0 100
FEET

IA 21

730
720
710
700
690
680

VPI +37.316
Elv 707.11
K = 400
Len 800.00 ft

+1.000%
-1.000%

+11.16 Lt.
681.12
Sta. 482+29.12
End Ditch Reshaping

Sta. 492+60.54 R 7
M.P. 9.961
Resume Inlay
Stop Shoulder Retrofit

-1.000%
+0.000%

VPI +87.316
Elv 697.61
K = 400
Len 400.00 ft

+0.000%
+1.736%

VPI +63.136
Elv 697.61
K = 115
Len 200.00 ft

Lt
Rt

485 490 495 500 505 510

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.18

9:11:53 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11

515 520 525 530 535 540

PI Sta 518+48.40

PI Sta 531+43.90

238th St.

Approx. ROW

Approx. ROW

Section 11

+79 Field Ent Earth

36" CMP

+80 Farm Ent. Earth

+66 Farm Ent. Earth

+66 Field Ent Earth

+12 Field Ent Earth

+15 Comm. Ent. Gravel

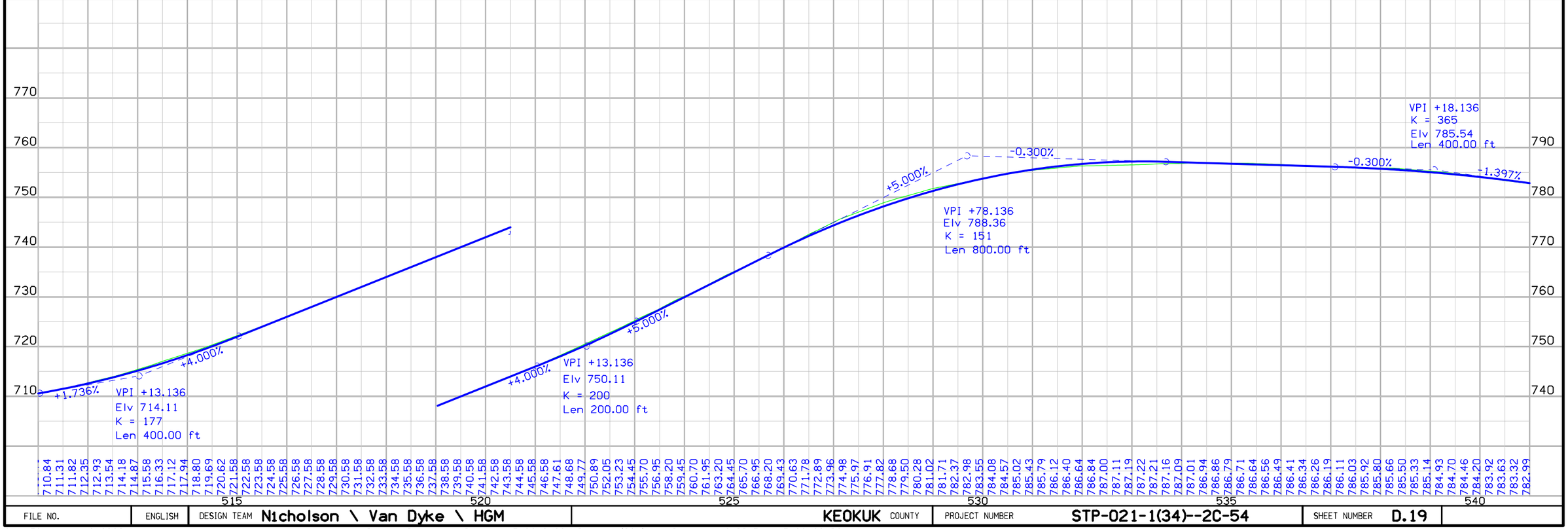
Warren TWP.
T-75N R-13W
SEC. 11

Sta 530+25.4
24" X 64' CMP
DA 6 AC F.

SLIPLINE EXISTING CULVERT

0 100
FEET

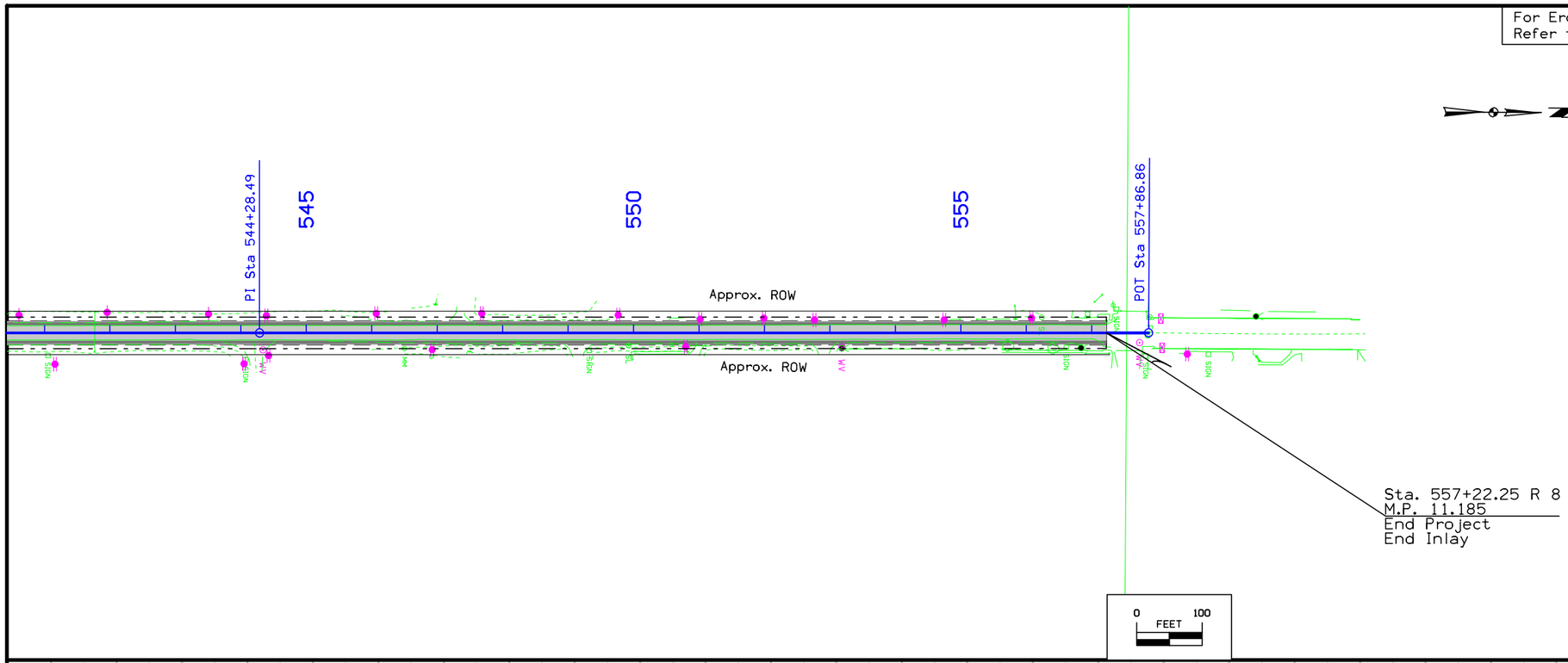
IA 21



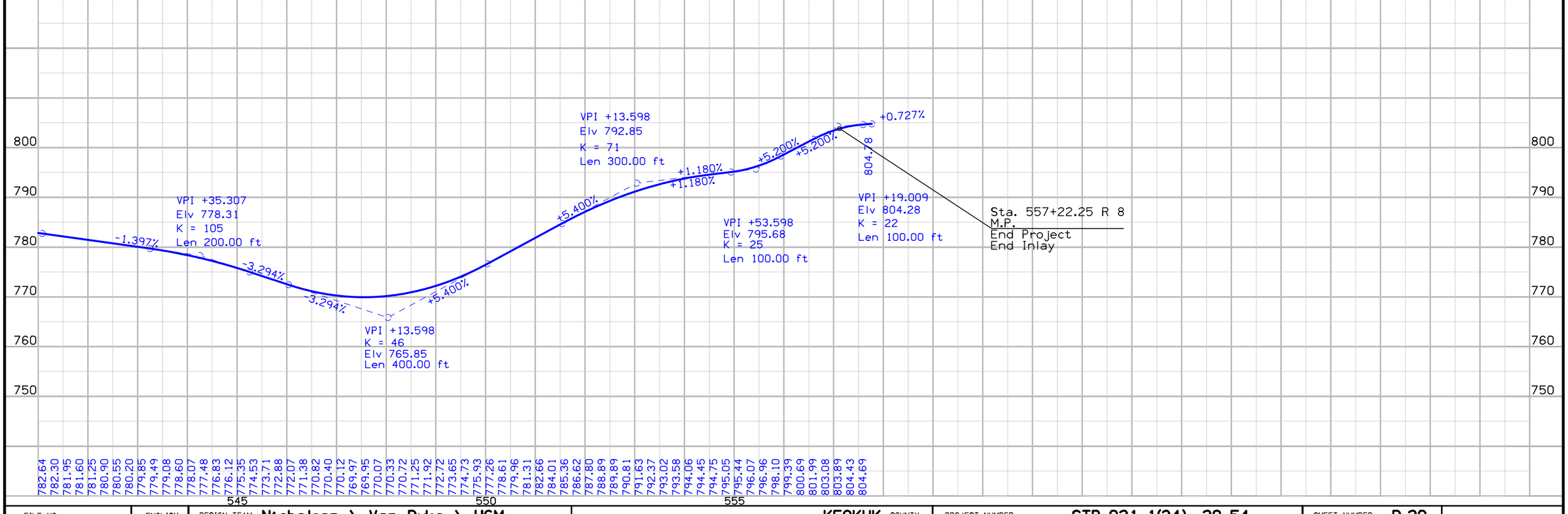
FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.19

9:11:58 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

For Erosion Control Plan
Refer to Sheets No. RR.1 - RR.11



IA 21

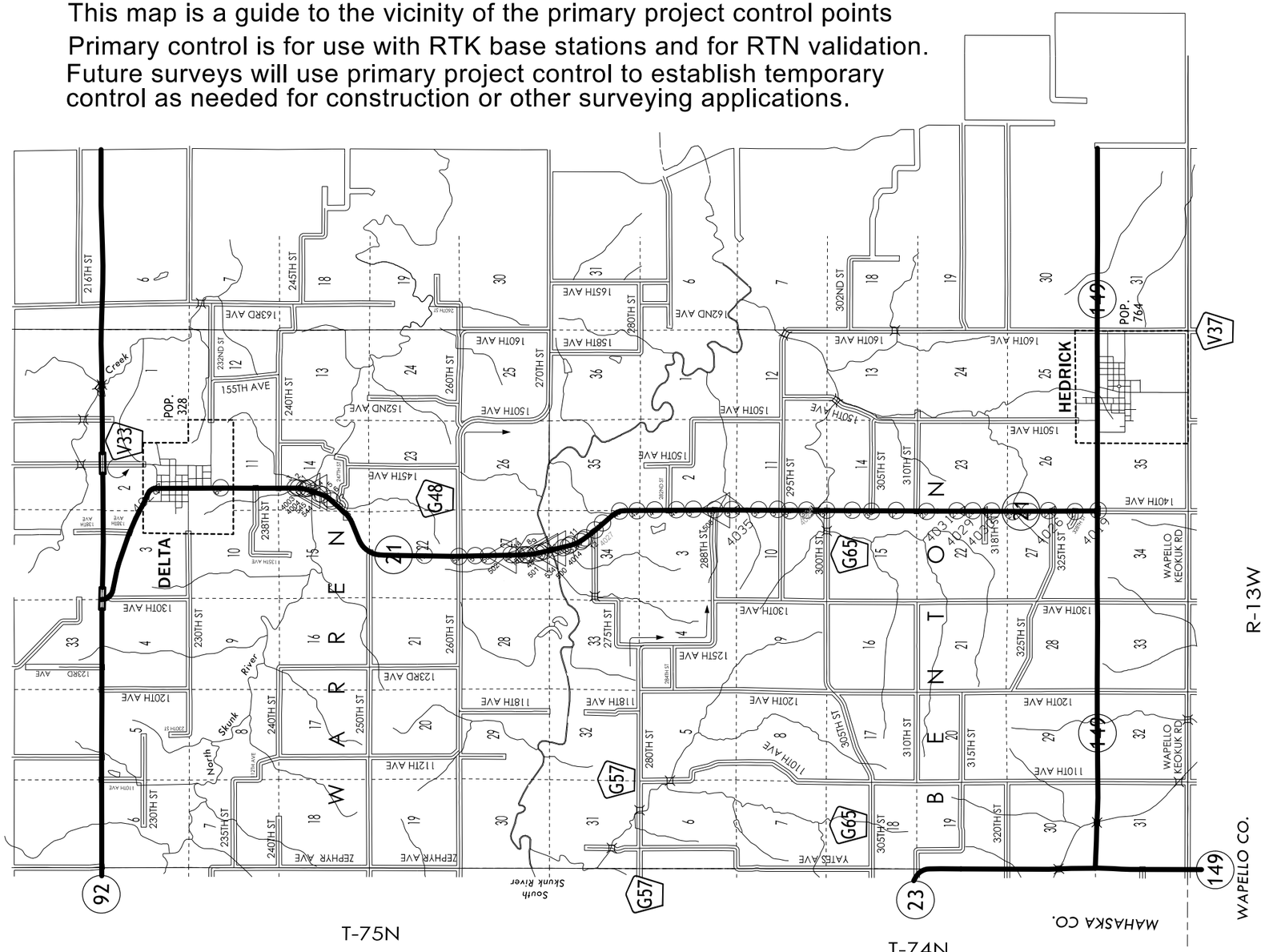


FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER D.20

9:12:02 AM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034D2.dgn

CONTROL POINT VICINITY MAP

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



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 13

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

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER G.1

2:16:06 PM 1/3/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_G01.dgn

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 13

Point Number	Northing	Easting	Description
CP16	6766835.36	23384338.88	Set 5/8" REBAR top of hill south of South Skunk River - East side of Highway 21
CP17	6777255.84	23382450.32	Set 5/8" REBAR east side of Highway 21
CP20	6737863.76	23385072.96	Set 5/8" REBAR southeast corner Highway 21 and Highway 149
CP21	6739214.08	23385001.82	Set 5/8" REBAR northwest corner Highway 21 and 328th Street
CP22	6740768.70	23385058.49	Set 5/8" REBAR east side of Highway 21, approx. 215' north of 325th Street
CP23	6741869.35	23384994.43	Set 5/8" REBAR west side of Highway 21 in field drive across from house #32256
CP24	6742862.89	23384991.54	Set 5/8" REBAR west side of Highway 21
CP25	6744092.46	23385037.82	Set 5/8" REBAR east side of Highway 21
CP26	6745191.01	23385052.86	Set 5/8" REBAR east side of Highway 21
CP27	6746128.91	23385048.59	Set 5/8" REBAR east side of Highway 21
CP28	6747895.91	23385009.16	Set 1/2" REBAR west side of Highway 21
CP29	6749671.13	23385064.68	Set 5/8" REBAR east side of Highway 21
CP30	6751110.56	23385017.32	Set 5/8" REBAR west side of Highway 21
CP31	6752238.44	23385081.92	Set 5/8" REBAR east side of Highway 21
CP32	6753734.38	23385077.94	Set 5/8" REBAR east side of Highway 21
CP33	6754914.24	23385090.40	Set 5/8" REBAR east side of Highway 21
CP34	6755895.45	23385055.83	Set 5/8" REBAR west side of Highway 21
CP35	6756606.24	23385133.83	Set 5/8" REBAR west side of Highway 21
CP36	6757708.93	23385110.78	Set 5/8" REBAR east side of Highway 21
CP37	6759286.13	23385115.86	Set 5/8" REBAR east side of Highway 21
CP38	6760274.42	23385116.20	Set 5/8" REBAR east side of Highway 21
CP39	6761523.46	23385140.36	Set 5/8" REBAR east side of Highway 21
CP40	6762520.41	23385107.51	Set 5/8" REBAR east side of Highway 21
CP41	6763786.63	23385098.34	Set 5/8" REBAR east side of Highway 21
CP42	6764824.87	23385049.08	Set 1/2" REBAR west side of Highway 21
CP43	6765831.05	23385034.79	Set 5/8" REBAR east side of Highway 21
CP44	6767278.37	23383920.94	Set 1/2" REBAR east side of Highway 21
CP45	6768109.31	23383248.75	Set 1/2" REBAR west side of Highway 21
CP46	6769156.69	23382895.32	Set 5/8" REBAR west side of Highway 21
CP47	6770226.59	23382695.94	Set 1/2" REBAR east side of Highway 21
CP48	6771228.17	23382457.13	Set 5/8" REBAR west side of Highway 21
CP49	6772190.14	23382487.45	Set 1/2" REBAR east side of Highway 21
CP50	6773521.44	23382410.42	Set 1/2" REBAR west side of Highway 21
CP51	6774279.21	23382432.05	Set 5/8" REBAR east side of Highway 21
CP52	6775240.09	23382375.37	Set 1/2" REBAR northwest corner Highway 21 and 260th Street
CP53	6776341.95	23382424.33	Set 1/2" REBAR east side of Highway 21
CP54	6778366.36	23382419.75	Set 1/2" REBAR west side of Highway 21
CP55	6779257.12	23382437.15	Set 1/2" REBAR west side of Highway 21
CP56	6779938.17	23382466.30	Set 5/8" REBAR west side of Highway 21
CP57	6780678.13	23382793.99	Set 5/8" REBAR
CP58	6781145.99	23383489.57	Set 5/8" REBAR
CP59	6781424.89	23384303.91	Set 5/8" REBAR
CP60	6781961.81	23385046.98	Set 1/2" REBAR east side of Highway 21
CP61	6782776.56	23385760.67	Set 1/2" REBAR east side of Highway 21
CP62	6783422.30	23386085.35	Set 1/2" REBAR east side of Highway 21
CP63	6784082.73	23386247.19	Set 5/8" REBAR west side of Highway 21
CP64	6785039.25	23386404.46	Set 1/2" REBAR east side of Highway 21
CP65	6786079.39	23386395.84	Set 1/2" REBAR east side of Highway 21
CP66	6787170.67	23386395.00	Set 1/2" REBAR east side of Highway 21
CP67	6788174.70	23386398.24	Set 5/8" REBAR east side of Highway 21
CP68	6789163.63	23386393.45	Set 5/8" REBAR east side of Highway 21
CP69	6790118.86	23386386.88	Set 5/8" REBAR east side of Highway 21
CP70	6791017.67	23386348.25	Set 5/8" REBAR southwest corner North 1st Street and Center Street

BM	500	6769590.06	23382844.91	694.37
BM	501	6770051.01	23382690.69	694.36
BM	502	6772477.51	23382416.63	703.06
BM	508	6760002.15	23385078.28	725.26
BM	534	6770659.24	23382522.40	686.60
BM	544	6783554.04	23386123.76	706.91
BM	545	6783954.85	23386208.60	706.98
BM	4023	6759013.29	23385139.61	734.28

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)
IA 21																			
20000		0+00.00	6,737,914.19	23,385,043.57															
20002								9+88.00	6,738,902.13	23,385,032.89	13+13.00	6,739,227.12	23,385,029.38	16+38.00	6,739,552.12	23,385,029.55			
20005								25+81.80	6,740,495.93	23,385,030.06	26+35.99	6,740,550.12	23,385,030.09	26+90.18	6,740,604.30	23,385,029.79			
20007		52+66.59	6,743,180.68	23,385,015.74															
20008		79+12.80	6,745,826.86	23,385,029.04															
20009		105+39.10	6,748,453.15	23,385,034.92															
20010		131+93.50	6,751,107.51	23,385,049.79															
20011		158+07.80	6,753,721.81	23,385,053.32															
20012		164+56.49	6,754,370.46	23,385,059.73															
20013		184+51.81	6,756,365.68	23,385,079.45															
20014		210+96.41	6,759,010.23	23,385,095.57															
20015		224+10.20	6,760,324.03	23,385,096.17															
20016		237+26.50	6,761,640.31	23,385,090.39															
20017		250+44.31	6,762,958.06	23,385,078.55															
20018		267+37.71	6,764,651.44	23,385,069.97															
STAEQU1		276+15.12	6,765,529.23	23,385,059.69															
20020								276+15.55	6,765,529.23	23,385,059.69	280+43.84	6,765,957.49	23,385,054.68	284+35.29	6,766,277.48	23,384,770.01			
STAEQU2		284+35.29	6,766,277.48	23,384,770.01															
20024								284+33.17	6,766,277.48	23,384,770.01	284+33.17	6,766,277.48	23,384,770.01	284+33.17	6,766,277.48	23,384,770.01			
20026		292+32.20	6,766,874.46	23,384,238.91															
20028								295+18.37	6,767,088.27	23,384,048.70	297+88.62	6,767,290.18	23,383,869.07	300+58.47	6,767,508.10	23,383,709.25			
STAEQU3		300+58.84	6,767,508.10	23,383,709.25															
20032					304+80.60	6,767,848.20	23,383,459.82				305+97.27	6,767,942.28	23,383,390.82				306+55.60	6,767,990.61	23,383,358.14
20034								306+55.60	6,767,990.61	23,383,358.14	310+26.15	6,768,297.56	23,383,150.56	313+90.35	6,768,654.29	23,383,050.28			
20036					313+90.35	6,768,654.29	23,383,050.28				314+48.69	6,768,710.46	23,383,034.50				315+65.35	6,768,823.91	23,383,007.23
20037		325+78.34	6,769,808.86	23,382,770.54															
20039					332+77.66	6,770,488.82	23,382,607.13				333+94.33	6,770,602.26	23,382,579.87				334+52.66	6,770,659.28	23,382,567.54
20041								334+52.66	6,770,659.28	23,382,567.54	337+71.06	6,770,970.49	23,382,500.26	340+88.00	6,771,288.54	23,382,485.42			
20043					340+88.00	6,771,288.54	23,382,485.42				341+46.33	6,771,346.82	23,382,482.71				342+63.00	6,771,463.45	23,382,479.94
20044		353+27.13	6,772,527.29	23,382,454.73															
STAEQU4		354+00.60	6,772,527.29	23,382,454.73															
20046								377+60.60	6,774,886.62	23,382,398.81	380+73.20	6,775,199.13	23,382,391.41	383+85.72	6,775,511.71	23,382,395.66			
STAEQU5		383+85.80	6,775,511.71	23,382,395.66															
20048		407+18.19	6,777,843.89	23,382,427.44															
20049		420+34.79	6,779,160.26	23,382,452.22															
STAEQU6		426+56.65	6,779,781.82	23,382,469.67															
20051								426+56.70	6,779,781.87	23,382,469.67	435+98.02	6,780,722.82	23,382,496.09	443+22.28	6,781,071.92	23,383,370.28			
20053								452+75.88	6,781,425.57	23,384,255.88	457+24.12	6,781,591.80	23,384,672.16	461+56.43	6,781,925.88	23,384,971.01			
20055		463+47.76	6,782,068.48	23,385,098.57															
STAEQU7		464+00.00	6,782,068.48	23,385,098.58															
20057					471+92.07	6,782,658.81	23,385,626.67				473+08.75	6,782,745.78	23,385,704.47				473+67.07	6,782,791.28	23,385,740.99
20059								473+67.07	6,782,791.28	23,385,740.99	476+22.25	6,782,990.29	23,385,900.72	478+73.36	6,783,228.48	23,385,992.31			
20061					478+73.36	6,783,228.48	23,385,992.31				479+31.71	6,783,282.94	23,386,013.25				480+48.36	6,783,393.93	23,386,049.25
20063		484+27.39	6,783,754.47	23,386,166.18															
20065					488+04.05	6,784,112.76	23,386,282.38				489+20.73	6,784,223.75	23,386,318.38				489+79.05	6,784,280.14	23,386,333.39
20067								489+79.05	6,784,280.14	23,386,333.39	491+57.66	6,784,452.74	23,386,379.34	493+34.86	6,784,631.18	23,386,386.98			
20069					493+34.86	6,784,631.18	23,386,386.98				493+93.21	6,784,689.48	23,386,389.48				495+09.86	6,784,806.15	23,386,388.24
20071		495+99.31	6,784,895.60	23,386,387.29															
STAEQU8		496+00.00	6,784,895.61	23,386,387.29															
20072		505+06.29	6,785,801.85	23,386,377.66															
20073		518+48.40	6,787,143.95	23,386,376.40															
20074		531+43.90	6,788,439.45	23,386,379.82															
20075		544+28.49	6,789,724.02	23,386,372.80															
20076		577+86.86	6,791,082.37	23,386,365.29															
RETA149																			
30000		10+00.00	6,737,934.41	23,384,995.65															
30001		10+02.00	6,737,936.41	23,384,995.62															
30002								10+02.00	6,737,936.41	23,384,995.62	10+12.78	6,737,936.52	23,385,006.40	10+23.16	6,737,941.51	23,385,015.96			
30004								10+23.16	6,737,941.51	23,385,015.96	10+27.06	6,737,943.31	23,385,019.41	10+30.78	6,737,946.57	23,385,021.55			
30006								10+30.78	6,737,946.57	23,385,021.55	10+44.52	6,737,958.04	23,385,029.10	10+57.44	6,737,971.78	23,385,028.95			
30008		10+74.82	6,737,989.16	23,385,028.76															
30009		10+76.82	6,737,989.18	23,385,030.76															
RETD149																			
30100		40+00.00	6,737,935.61	23,385,107.21															
30101		40+02.00	6,737,937.61	23,385,107.19															
30102		40+09.49	6,737,937.53	23,385,099.70															
30103								40+09.49	6,737,937.53	23,385,099.70	40+20.10	6,737,940.11	23,385,089.41	40+30.50	6,737,946.02	23,385,080.60			
30105								40+30.50	6,737,946.02	23,385,080.60	40+32.37	6,737,947.07	23,385,079.04	40+34.24	6,737,948.37	23,385,077.69			
30107								40+34.24	6,737,948.37	23,385,077.69	40+59.72	6,737,966.08	23,385,059.38	40+82.51	6,737,991.56	23,385,059.10			
30108		40+82.51	6,737,991.56	23,385,059.10															
30109		40+86.87	6,737,991.44	23,385,054.74															

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 21	20020	1145.9	6.0	153	51	PV-301	274+57.45	275+08.45	275+59.45	276+61.45			276+15.55			276+10.45	276+10.45		
							285+91.27	285+40.27	284+89.27	283+87.27			284+33.17			284+38.27	284+38.27		
IA 21	20028	5729.6	2.4	56	51	PV-301	294+28.17	294+79.17	295+30.17	295+35.17				295+18.37					
							301+48.67	300+97.67	300+46.67	300+41.67				300+58.47					
IA 21	20034	2291.8	4.6	118	51	PV-301	305+22.00	305+73.00	306+24.00	306+91.00			306+55.60			306+75.61	306+75.61		
							315+23.95	314+72.95	314+21.95	313+54.95			313+90.35			313+70.34	313+70.34		
IA 21	20041	3819.7	3.4	87	51	PV-301	333+40.76	333+91.76	334+42.76	334+78.76			334+52.66						
							341+99.90	341+48.90	340+97.90	340+61.90			340+88.00						
IA 21	20051	1432.4	5.8	153	51	PV-301	424+98.60	425+49.60	426+00.60	427+02.60			426+56.70			426+55.12	426+55.12		
							444+80.38	444+29.38	443+78.38	442+76.38			443+22.28			443+23.86	443+23.86		
IA 21	20053	1909.9	5.0	138	51	PV-301	451+28.28	451+79.28	452+30.28	453+17.28			452+75.88			452+89.68	452+89.68		
							463+04.03	462+53.03	462+02.03	461+15.03			461+56.43			461+42.63	461+42.63		
IA 21	20059	1637.0	5.4	143	51	PV-301	472+15.97	472+66.97	473+17.97	474+09.97			473+67.07			473+72.90	473+72.90		
							480+24.46	479+73.46	479+22.46	478+30.46			478+73.36			478+67.53	478+67.53		
IA 21	20067	1637.0	5.4	143	51	PV-301	488+27.95	488+78.95	489+29.95	490+21.95			489+79.05			489+84.88	489+84.88		
							494+85.96	494+34.96	493+83.96	492+91.96			493+34.86			493+29.03	493+29.03		

SPIRAL OR CIRCULAR CURVE DATA

Name	Location	ΔSCS	Horizontal Alignment Data													Remarks
			Spiral Data								Curve Data					
			θS	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	ΔC	T	L	R	E	
20002	13+13.00										6° 00' 0"	325.00	650.00	57295.78	0.92	
20005	26+35.99										19° 00' 0"	54.19	108.38	18093.40	0.08	
20020	280+43.84										5° 00' 0"	428.29	819.74	1145.92	77.42	
20028	297+88.62										1° 00' 0"	270.25	540.09	5729.58	6.37	
20032	305+97.27	2° 30' 0"	2° 11' 15"	175.00	548.55	46.46	174.97	2.23	116.68	58.34						
20034	310+29.15										2° 30' 0"	370.56	734.75	2291.83	29.76	
20036	314+48.69	2° 30' 0"	2° 11' 15"	175.00	548.55	46.46	174.97	2.23	116.68	58.34						
20039	333+94.33	1° 30' 0"	1° 18' 45"	175.00	494.23	21.93	174.99	1.34	116.67	58.34						
20041	337+71.06										1° 30' 0"	318.40	635.33	3819.72	13.25	
20043	341+46.33	1° 30' 0"	1° 18' 45"	175.00	494.23	21.93	174.99	1.34	116.67	58.34						
20046	380+73.20										0° 20' 31.4"	312.60	625.13	16750.56	2.912	
20051	435+98.02										4° 00' 0"	941.32	1665.58	1432.39	281.62	
20053	457+24.12										3° 00' 0"	448.24	880.55	1909.86	51.90	
20057	473+08.75	3° 30' 0"	3° 03' 45.02"	175.00	433.31	36.89	174.95	3.12	116.68	58.35						
20059	476+22.25										3° 30' 0"	255.19	506.295	1637.02	19.77	
20061	479+31.71	3° 30' 0"	3° 03' 45.02"	175.00	433.31	36.89	174.95	3.12	116.68	58.35						
20065	489+20.73	3° 30' 0"	3° 03' 45.02"	175.00	355.38	22.54	174.98	3.12	116.68	58.35						
20067	491+57.66										3° 30' 0"	178.61	355.81	1637.02	9.71	
20069	493+93.21	3° 30' 0"	3° 03' 45.02"	175.00	355.38	22.54	174.98	3.12	116.68	58.35						

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: ATINKEN /JLARSON
ROW #: STPN-021-1(40)--2J-54
Plan Date:
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Van Dyke \ Phillips \ Fiedler	KEOKUK COUNTY	PROJECT NUMBER STPN-021-1(38)--2J-54	SHEET NUMBER H.1

8:05:59 AM 9/26/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\ROW\54021038H1.sht

108-23A
08-01-08

TRAFFIC CONTROL PLAN

IA 21 will be closed to traffic during construction. The contractor shall provide access to all residents, business, farms, field entrances, etc. (all access points) during construction.

Contractor shall maintain access to all Parcels.

Contractor shall make accommodations for localized mail collection at accessible sideroads for all mailboxes along the project route.

Contractor shall make accommodations for localized refuse drop-off at accessible sideroads for all residents and businesses along the project route.

Contractor will be required to place and maintain the detour signing. Detour signs shall be placed to the right of the existing route markers if in the area shown on the plans. In Sigourney, at the intersection of IA 149 and IA 92, space is limited to the right of the existing route markers, so locations may be adjusted as needed.

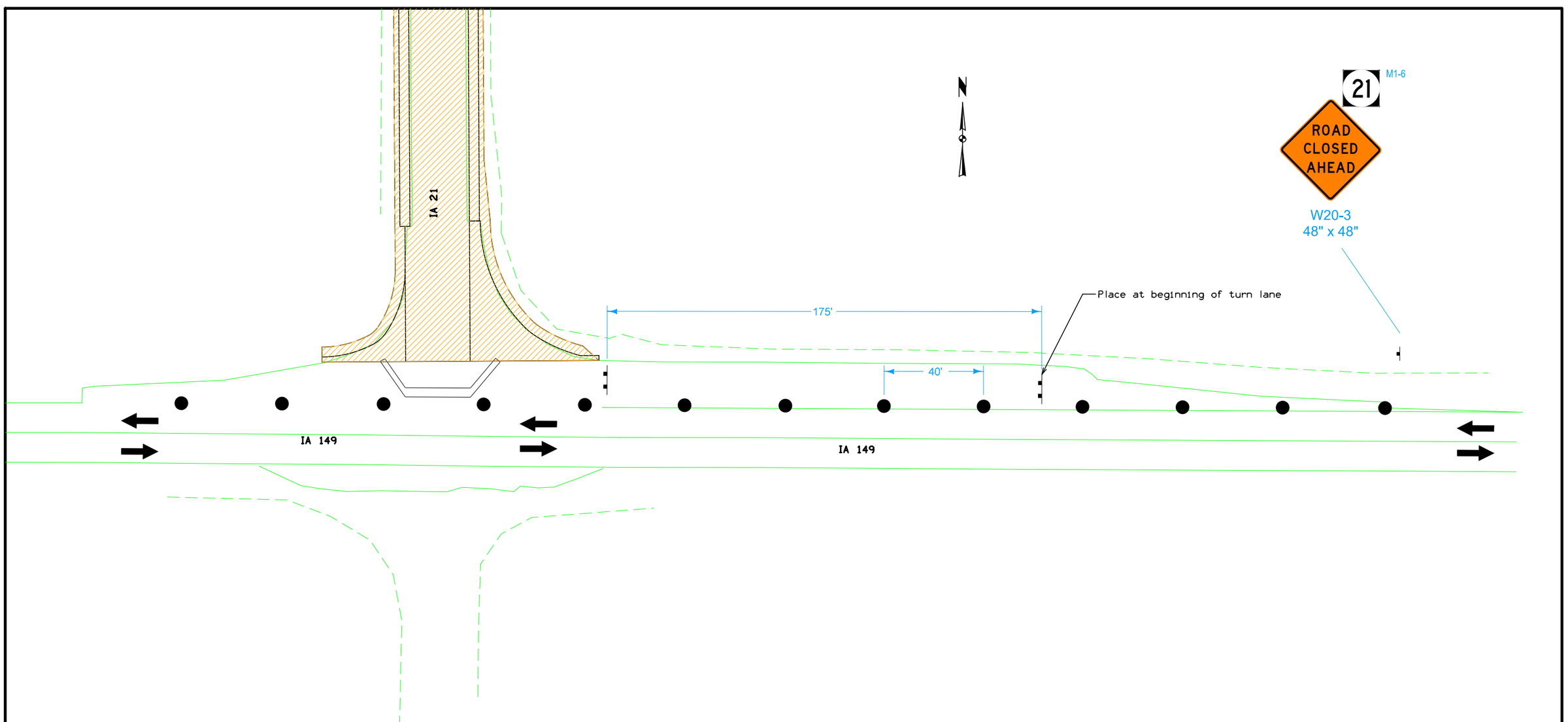
The Contractor shall supply all signs shown in the plans.

108-26A
08-01-08

STAGING NOTES

This project inlcudes Stage 1 culvert construction.
Stage 2 is inlcuded in this plan for information only

Drainage structures throughout the project, will be replaced, lined or rehabilitated, as needed. Certain structures will be replaced in a two-staged manner. Those portions of the structure within the existing ROW will be replaced prior to pavement replacement. Those portions of the structures laying beyond the existing ROW will be replaced later in the construction season, when appropriate ROW has been acquired. Sheets Refer to V.4 - V.19 show staged culvert construction.



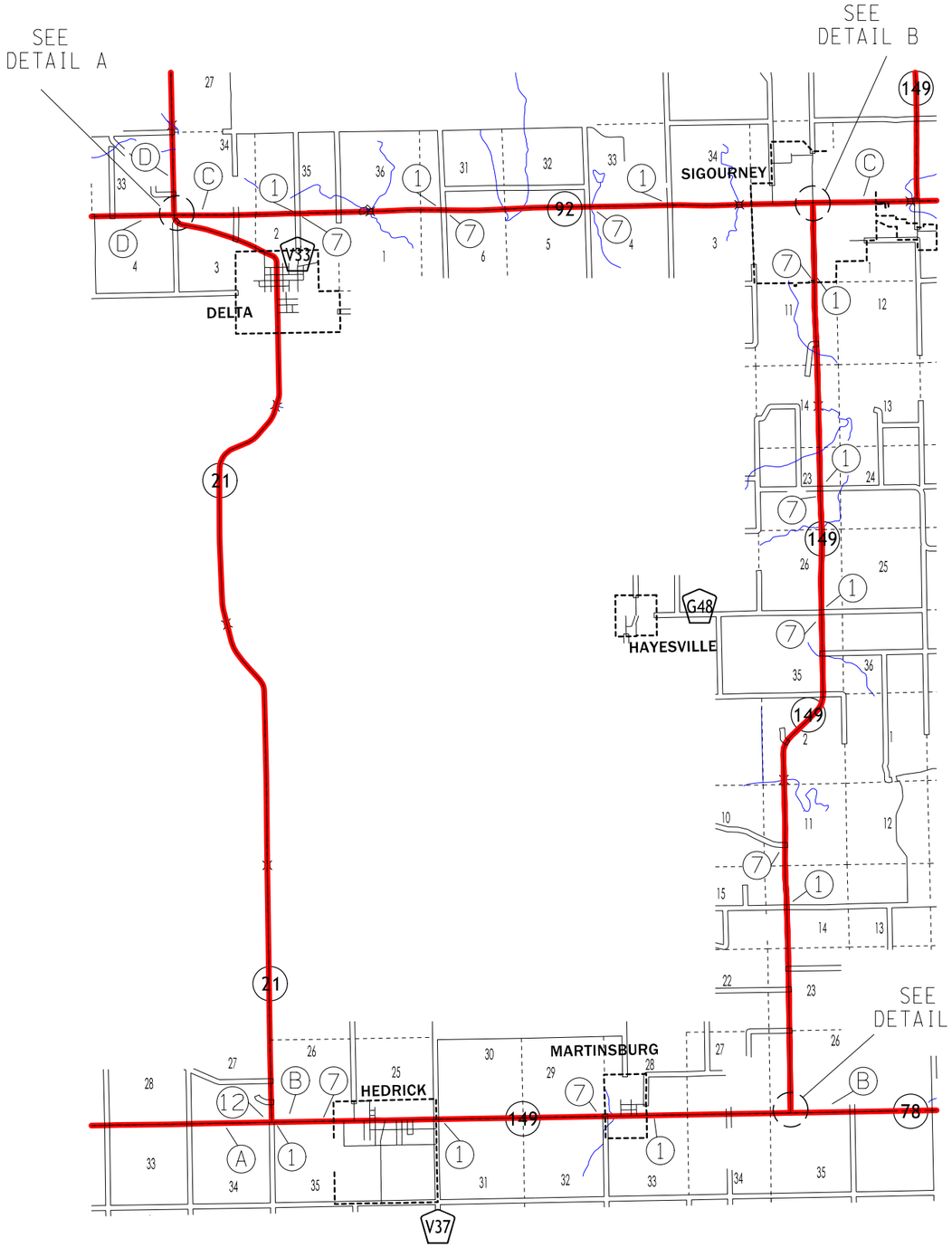
LEGEND

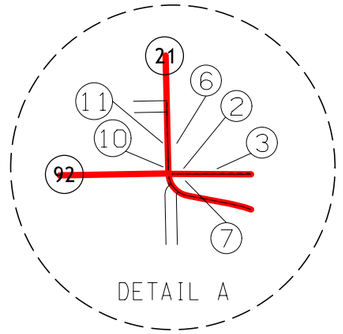
- Traffic Sign
- Type III Barricade
- Chanelizer
- Work Area
- Road Closure

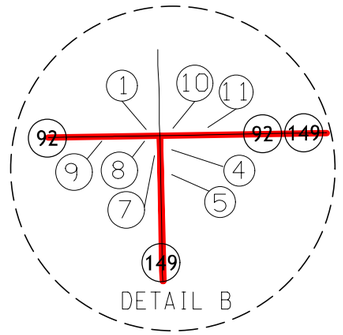
Right Turn Lane Closure
Intersection of
IA 149 and IA 21

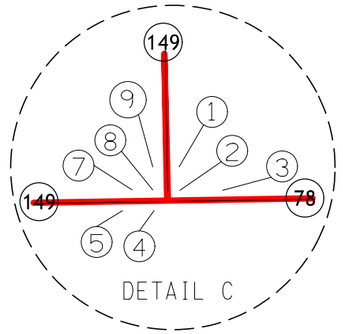
FILE NO.	ENGLISH	DESIGN TEAM	Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER	J.2

2:55:56 PM 1/3/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_J02.dgn









FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER J.3

3:20:38 PM 1/2/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_J03.dgn

1

QTY. 13

2

QTY. 2

3

QTY. 2

4

QTY. 2

5

QTY. 2

6

QTY. 1

7

QTY. 12

8

QTY. 2

9

QTY. 2

10

QTY. 2

11

QTY. 2

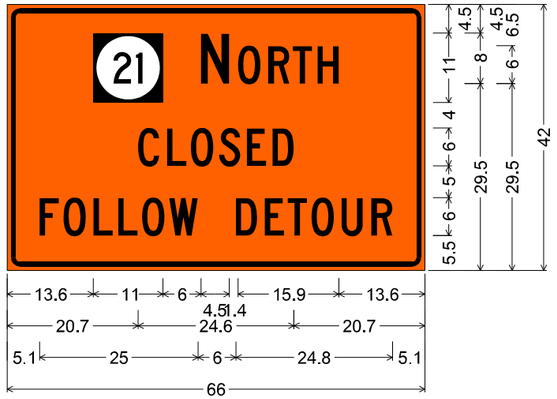
12

QTY. 1

SIGN INVENTORY FOR DETOUR

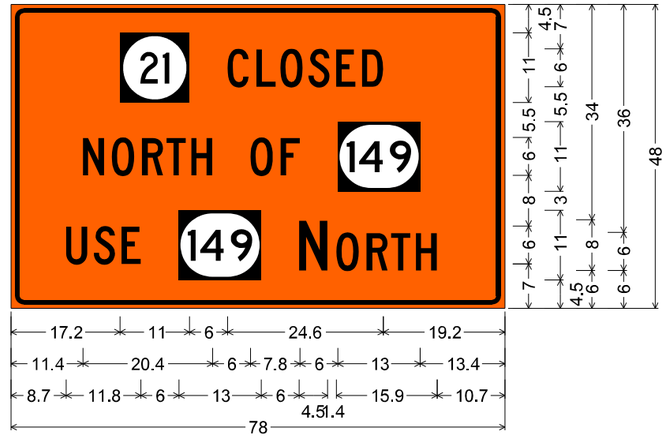
	I.D. number	Size	Quantity
DETOUR	M4-8	24" x 12"	42
END	M4-8b	24" x 12"	2
NORTH	M3-1	24" x 12"	21
SOUTH	M3-3	24" x 12"	21
←	M6-1	21" x 15"	8
↰	M5--1B	21" x 15"	4
↱	M5-1	21" x 15"	4
21	M1-6A	24" x 24"	42
	Sign A	66" x 42"	1
	Sign B	78" x 48"	2
	Sign C	78" x 48"	2
	Sign D	66" x 42"	2

Ⓐ



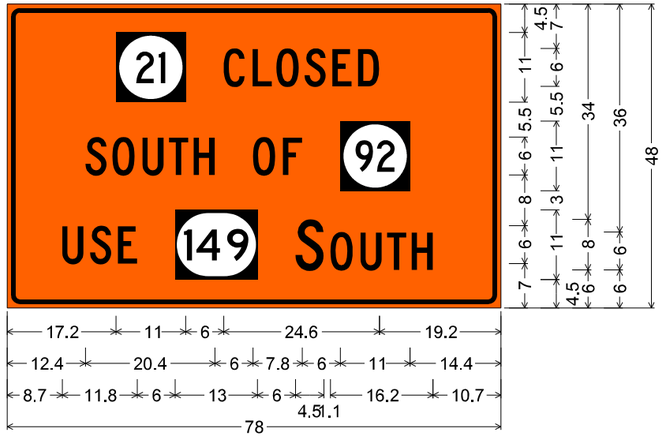
2.0" Radius, 0.8" Border, 0.6" Indent, Black on, Fluorescent orange;
"NORTH", C 2K; "CLOSED", C 2K;
"FOLLOW DETOUR", C 2K;

Ⓑ



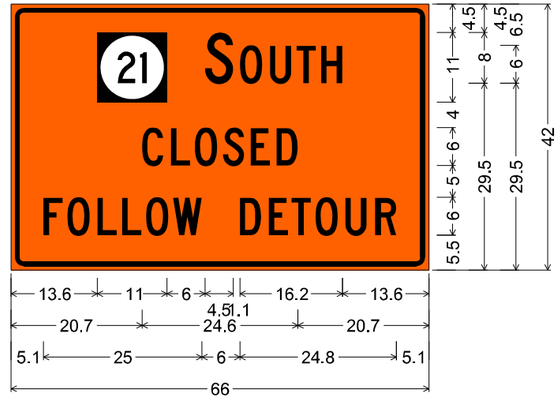
2.0" Radius, 0.8" Border, 0.6" Indent, Black on, Fluorescent orange;
"CLOSED", C 2K; "NORTH OF", C 2K; "USE", C 2K;
"NORTH", C 2K;

Ⓒ

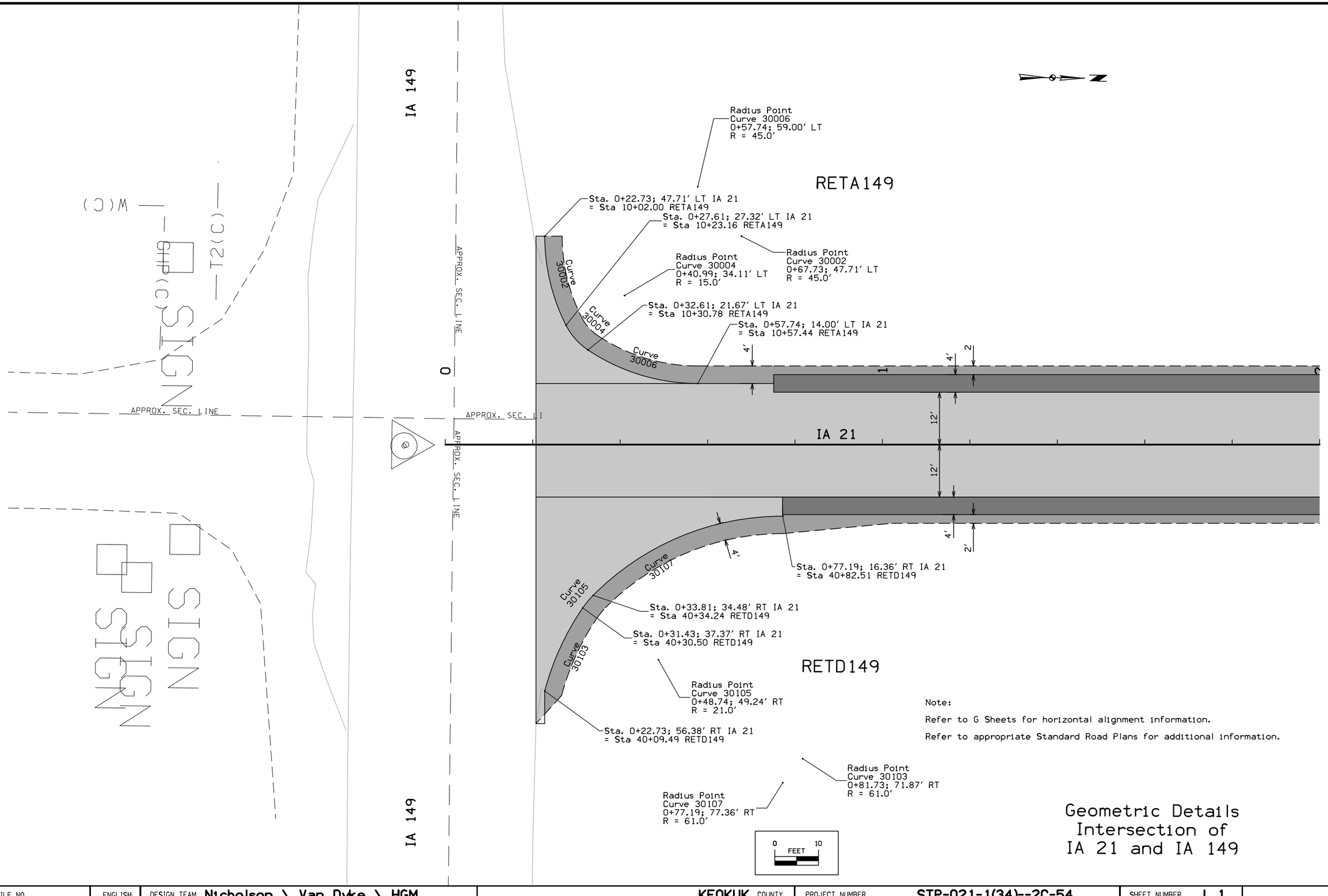


2.0" Radius, 0.8" Border, 0.6" Indent, Black on, Fluorescent orange;
"CLOSED", C 2K; "SOUTH OF", C 2K; "USE", C 2K;
"SOUTH", C 2K;

Ⓓ



2.0" Radius, 0.8" Border, 0.6" Indent, Black on, Fluorescent orange;
"SOUTH", C 2K; "CLOSED", C 2K;
"FOLLOW DETOUR", C 2K;



Note:

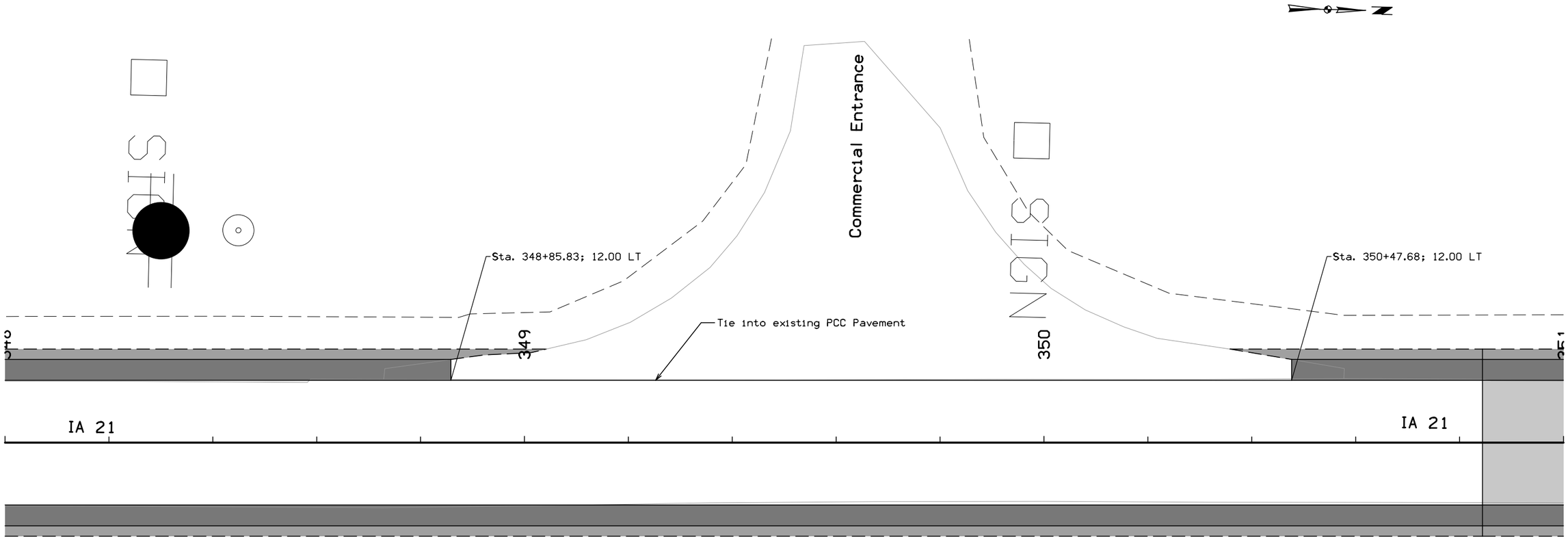
Refer to G Sheets for horizontal alignment information.

Refer to appropriate Standard Road Plans for additional information.

Geometric Details Intersection of IA 21 and IA 149

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER L.1

2:50:24 PM 1/3/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_L1.dgn

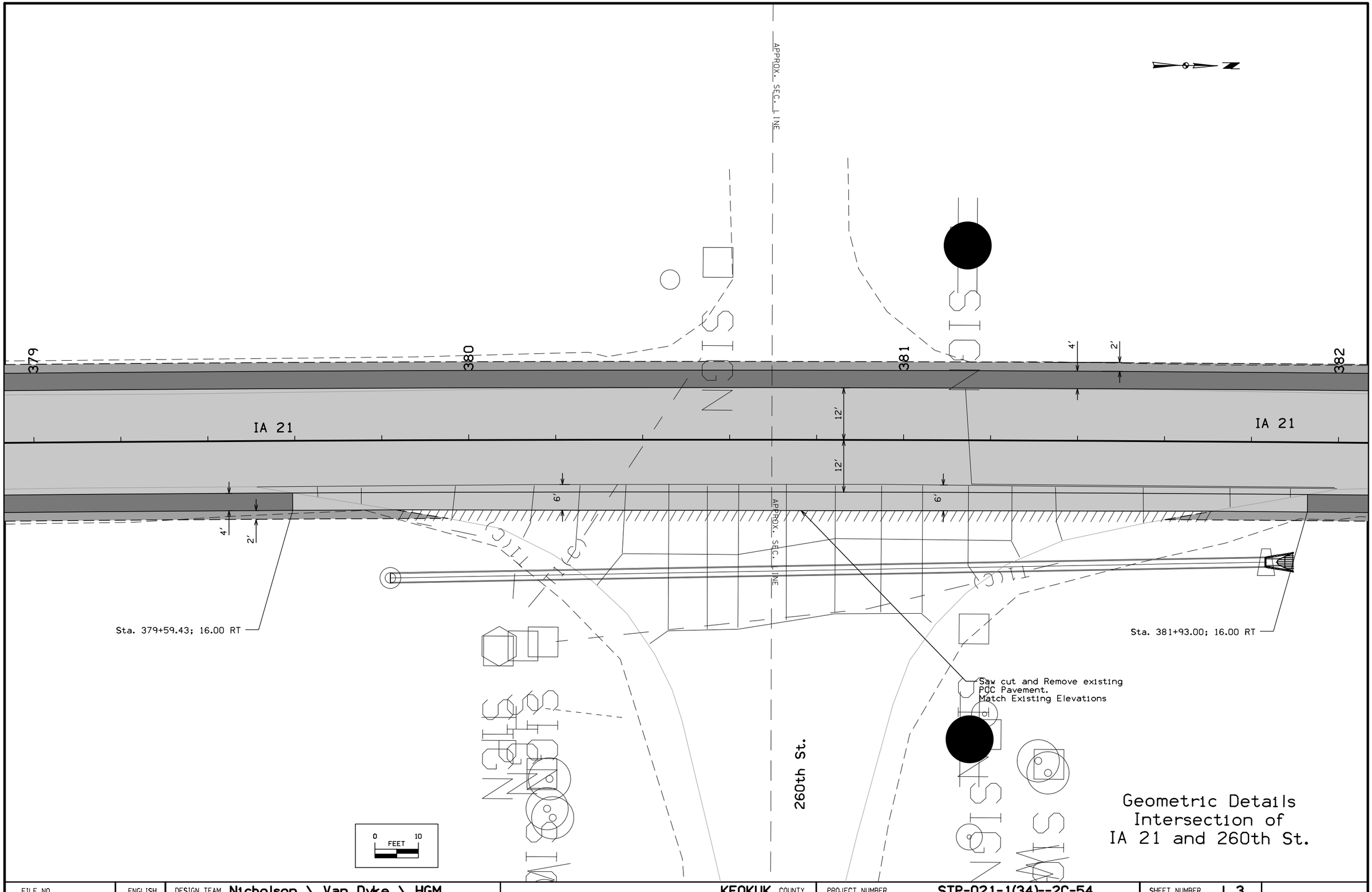


0 FEET 10

Geometric Details
Intersection of
IA 21 and Sta. 349+65
Commercial Entrance to Treatment Plant

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER L.2

2:50:25 PM 1/3/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_L1.dgn



Geometric Details Intersection of IA 21 and 260th St.

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER L.3

2:50:26 PM 1/3/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_L1.dgn

IA 149

W(C)

GHP(C)

T2(C)

APPROX. SEC. LINE

APPROX. SEC. LINE

APPROX. SEC. LINE

RETA149

Sta. 0+22.73; 47.71' LT IA 21
= Sta 10+02.00 RETA149
828.75

828.79

Sta. 0+27.61; 27.32' LT IA 21
= Sta 10+23.16 RETA149
828.71

Sta. 0+32.61; 21.67' LT IA 21
= Sta 10+30.78 RETA149
828.69

Sta. 0+57.74; 14.00' LT IA 21
= Sta 10+57.44 RETA149
828.89

828.95

3.5%
7.23'

Special Shaping

3.1%
9.25'

828.99

828.98

14.00'
1.6%
14.00'
1.6%
Uniform Transition
14.00'
2.0%

829.14

Constant 2% Slope

829.21

829.20

829.17

14.00'
1.8%
Uniform Transition
16.36'
2.0%

Constant 2% Slope

828.96

828.89

828.81

1.8%
18.39'
1.9%
12.97'

Special Shaping

Sta. 0+77.19; 16.36' RT IA 21
= Sta 40+82.51 RETD149
828.81

Sta. 0+33.81; 34.48' RT IA 21
= Sta 40+34.24 RETD149
828.55

Sta. 0+31.43; 37.37' RT IA 21
= Sta 40+30.50 RETD149
828.57

828.75

828.74

RETD149

Sta. 0+22.73; 56.38' RT IA 21
= Sta 40+09.49 RETD149
828.70

IA 149

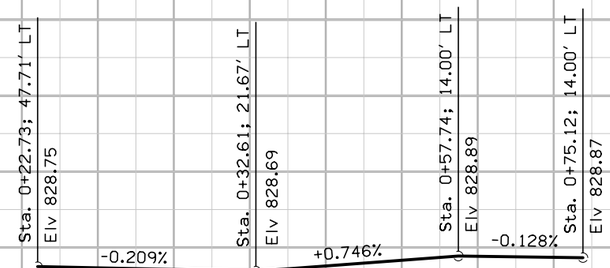
0 10
FEET

Staking Details
Intersection of
IA 21 and IA 149

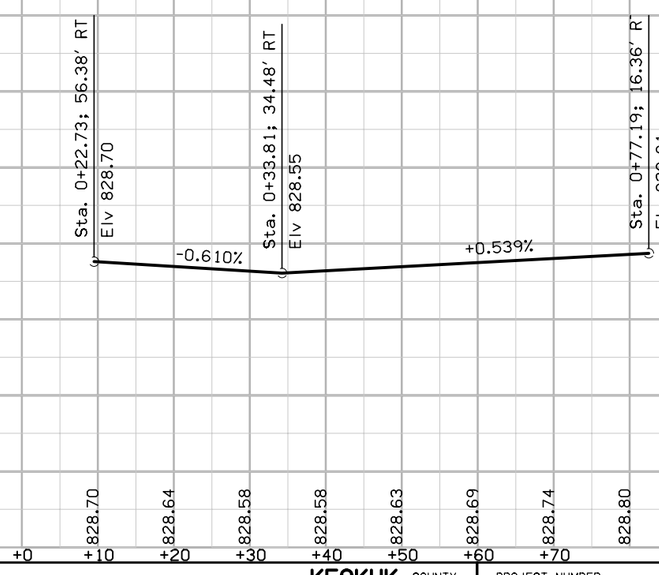
FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER L.4

2:50:27 PM 1/3/2020 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_L1.dgn

RETA149



RETD149



Edge Return Profiles Intersection of IA 21 and IA 149

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER L.5

1:59:13 PM 12/27/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_L1.dgn

POLLUTION PREVENTION PLAN

This project is regulated by the requirements of the Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 OR an Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) individual storm water permit. The Contractor shall carry out the terms and conditions of this permit and the Pollution Prevention Plan (PPP).

This Base PPP includes information on Roles and Responsibilities, Project Site Description, Controls, Maintenance Procedures, Inspection Requirements, Non-Storm Water Controls, Potential Sources of Off Right-of-Way Pollution, and Definitions. This plan references other documents rather than repeating the information contained in the documents. A copy of this Base Pollution Prevention Plan, amended as needed per plan revisions or by contract modification, will be readily available for review.

All contractors shall conduct their operations in a manner that controls pollutants, minimizes erosion, and prevents sediments from entering waters of the state and leaving the highway right-of-way. The prime contractor shall be responsible for compliance and implementation of the PPP for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

I. ROLES AND RESPONSIBILITES

A. Designer:
1. Prepares Base PPP included in the project plan.
2. Prepares Notice of Intent (NOI) submitted to Iowa DNR.
3. Is signature authority on the Base PPP.

B. Contractor:
1. Signs a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Designates a Water Pollution Control Manager (WPCM), who has the duties and responsibilities as defined in Section 2602 of the Standard Specifications.
3. Submits an Erosion Control Implementation Plan (ECIP) and ECIP updates according to Section 2602 of the Standard Specifications.
4. Installs and maintains appropriate controls. This work may be subcontracted.
5. Supervises and implements good housekeeping practices.
6. Conducts joint required inspections of the site with inspection staff. When Contractor is not mobilized on site, Contractor may delegate this responsibility to a trained or certified subcontractor. Contracting Authority also may waive joint inspection requirement during winter shutdown. In both circumstances, WPCM (or trained or certified delegate from the Contractor) is still responsible to review and sign inspection reports.
7. Complies with training and certification requirements of Section 2602 of the Standard Specifications.

C. Subcontractors:
1. Sign a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP if responsible for sediment or erosion controls or involved in land disturbing activities. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Implement good housekeeping practices.

D. RCE/Project Engineer:
1. Is Project Storm Water Manager.
2. On projects where DOT is the Contracting Authority, is current with erosion control training or certification.
3. Takes actions necessary to ensure compliance with storm water requirements including, where appropriate, issuing stop work orders, and directing additional inspections at construction project sites that are experiencing problems with achieving permit compliance.
4. Orders the taking of measures to cease, correct, prevent, or minimize the consequences of non-compliance with the storm water requirements of the Applicable Permit.
5. Supervises all work necessary to meet storm water requirements at the Project, including work performed by contractors and subcontractors.
6. Requires employees, contractors, and subcontractors to take appropriate responsive action to comply with storm water requirements, including requiring any such person to cease or correct a violation of storm water requirements, and to order or recommend such other actions as necessary to meet storm water requirements.
7. Is familiar with the Project PPP and storm water site map.
8. On projects where DOT is Contracting Authority, is responsible for monitoring inspection reports on a monthly basis, to determine whether deficiencies identified in inspection reports were adequately and timely addressed, and if not, has the authority and responsibility to direct immediate actions to correct the deficiencies.
9. Is the point of contact for the Project for regulatory officials, Inspector, contractors, and subcontractors regarding storm water requirements.
10. Is signature authority on Notice of Discontinuation.

E. Inspector:
1. Updates PPP whenever there is a change in design, construction, operation, or maintenance which has a significant effect on the discharge of pollutants from the project.
2. Maintains an up-to-date record that identifies contractors and subcontractors as co-permittees.
3. Makes these plans available to the DNR upon their request.
4. Conducts joint required inspections of the site with the contractor/subcontractor.
5. Completes an inspection report after each inspection.
6. Is signature authority on storm water inspection reports.

II. PROJECT SITE DESCRIPTION

A. This Pollution Prevention Plan (PPP) is for the construction of a HMA pavement inlay along IA 21.
B. This PPP covers approximately 174.23 acres with an estimated 58.26 acres being disturbed. The portion of the PPP covered by this contract has 58.26 acres disturbed.
C. The PPP is located in an area of one soil association (Otley - Ladoga). The estimated weighted average runoff coefficient number for this PPP after completion will be 0.36*.
D. Storm Water Site Map is located in the R sheets. Proposed slopes are shown in cross sections, details, or standard road plans. Supplemental information is located in the Tabulations in the C or CE sheets.
E. The base storm water site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries.
F. Runoff from this work will flow into the South Skunk River and the North Skunk River into the Skunk River.

110-12
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POLLUTION PREVENTION PLAN

III. CONTROLS

A. The Contractor's ECIP specified in Article 2602.03 of the Standard Specifications for accomplishment of storm water controls should clearly describe the intended sequence of major activities, and for each activity define the control measure and the timing during the construction process that the measure will be implemented.
B. Preserve vegetation in areas not needed for construction.
C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water monitoring inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B of the Standard Specifications.
1. EROSION AND SEDIMENT CONTROLS
a. Stabilization Practices
1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
2) Initialize stabilization of disturbed areas immediately after clearing, grading, excavating, or other earth disturbing activities have:
a) Permanently ceased on any portion of the site, or
b) Temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days.
3) Staged permanent and/or temporary stabilizing seeding and mulching shall be completed as the disturbed areas are completed. Incomplete areas shall be stabilized according to paragraph III, C, 1, a, 2, b above.
4) Permanent and Temporary Stabilization practices to be used for this project are located in the storm water site map (when included), Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C sheets. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation (105-4) in the C sheets.
5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.
6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C sheets. Additional information may be found in the Tabulations in the C or T Tabulation sheets, or is referenced in Section 2105 of the Standard Specifications.
b. Structural Practices
1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.
2) Structural practices to be used for this project are located in the storm water site map (when included), Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B sheets or are referenced in the Standard Road Plans Tabulation (105-4) located in the C sheets.
c. Storm Water Management
1) Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the storm water site map (when included) and Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.
2. OTHER CONTROLS
a. Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.
1) Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
2) Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
3) Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
4) Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
5) Spill Prevention and Control - Implement chemical spill and leak prevention and response procedures to contain and clean-up spills and prevent material discharges to the storm drain system and waters of the state.
6) Concrete Residuals and Washout Wastes - Waste shall not be discharged to a surface water and is not allowed to adversely affect a water of the state. Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
7) Concrete Grooving/Grinding Slurry – Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
8) Vehicle and Equipment Storage and Maintenance Areas - Perform on site fueling and maintenance in accordance with all environment laws such as proper storage of onsite fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.
9) Litter Management - Ensure employees properly dispose of litter. Minimize exposure of trash if exposure to precipitation or storm water would result in a discharge of pollutants.
10) Dewatering – Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.
3. APPROVED STATE OR LOCAL PLANS
During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

IV. MAINTENANCE PROCEDURES

The Contractor is required to maintain all temporary erosion and sediment control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. This shall begin when the features have lost 50% of their capacity.

POLLUTION PREVENTION PLAN

V. INSPECTION REQUIREMENTS

A. Inspections shall be made jointly by the Contractor and the Contracting Authority at least once every seven calendar days. Storm water monitoring inspections will include:

1. Date of the inspection.
2. Summary of the scope of the inspection.
3. Name and qualifications of the personnel making the inspection.
5. Review of erosion and sediment control measures within disturbed areas for the effectiveness in preventing impacts to receiving waters.
6. Major observations related to the implementation of the PPP.
7. Identification of corrective actions required to maintain or modify erosion and sediment control measures.

B. Include storm water monitoring inspection reports in the Amended PPP. Incorporate any additional erosion and sediment control measures determined as a result of the inspection. Immediately begin corrective actions on all deficiencies found within 3 calendar days of the inspection and complete within 7 calendar days following the inspection. If it is determined that making the corrections less than 72 hours after the inspection is impracticable, it should be documented why it is impracticable and indicate an estimated date by which the corrections will be made.

VI. NON-STORM WATER DISCHARGES

This includes subsurface drains (i.e. longitudinal and standard subdrains) and slope drains. The velocity of the discharge from these features may be controlled by the use of headwalls or blocks, Class A stone, erosion stone or other appropriate materials. This also includes uncontaminated groundwater from dewatering operations, which will be controlled as discussed in Section III of the PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION

Silts, sediment, and other forms of pollution may be transported onto highway right-of-way (ROW) as a result of a storm event. Potential sources of pollution located outside highway ROW are beyond the control of this PPP. Pollution within highway ROW will be conveyed and controlled per this PPP.

VIII. DEFINITIONS

A. Base PPP - Initial Pollution Prevention Plan.
B. Amended PPP - May include Plan Revisions or Contract Modifications for new items, storm water monitoring inspection reports, and fieldbook entries made by the inspector.
C. IDR - Inspector's Daily Report – this contains the inspector's daily diary and bid item postings.
D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).
E. Signature Authority - Representative authorized to sign various storm water documents.

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature

Brian T. Higginbotham
Printed or Typed Name

Signature

Printed or Typed Name

STORMWATER DRAINAGE BASIN AND STORAGE

Refer to EC Standards and 570s Details.

Drainage Basin Location						Summary of Stormwater Storage							Remarks
Basin No.	Station to Station		Side	Discharge Point		Total Disturbed Area	Disturbed Area with Storage Provided	Disturbed Area without Storage Provided	Best Management Practice	Total Storage Volume Provided	Total Storage Volume Required	Storage Volume Met?	
				Station	Side	Acres	Acres	Acres		CF	CF	Yes/No	
1	+20.73	26+30.00	LT/RT	20+94.00	RT	2.6	2.6	0.0	Temporary Sediment Control Basin (EC-601)	14917.4	9360.0	Yes	
									Vegetated Buffer				
2	26+30.00	40+50.00	LT/RT	30+15.00	RT	1.4	1.4	0.0	Temporary Sediment Control Basin (EC-601)	21152.3	5040.0	Yes	
									Vegetated Buffer				
3	40+50.00	62+83.00	LT/RT	49+04.00	RT	2.3	2.3	0.0	Temporary Sediment Control Basin (EC-601)	9562.6	8280.0	Yes	
									Vegetated Buffer				
4	62+83.00	100+00.00	LT/RT	90+61.00	LT	3.8	3.8	0.0	Temporary Sediment Control Basin (EC-601)	17274.4	13680.0	Yes	
									Silt Fence for Ditch Check (EC-201)	4460.4			
									Vegetated Buffer				
5	100+00.00	132+00.00	LT/RT	105+57.00	LT	3.2	3.2	0.0	Temporary Sediment Control Basin (EC-601)	12338.9	11520.0	Yes	
									Vegetated Buffer				
6	132+00.00	185+51.00	LT/RT	164+45.00	RT	5.4	5.4	0.0	Temporary Sediment Control Basin (EC-601)	20821.8	19440.0	Yes	
									Vegetated Buffer				
7	185+51.00	214+00.00	LT/RT	205+90.00	RT	2.9	2.9	0.0	Temporary Sediment Control Basin (EC-601)	18503.8	10440.0	Yes	
									Vegetated Buffer				
8	214+00.00	255+90.00	LT/RT	2220+90.00	RT	4.2	4.2	0.0	Temporary Sediment Control Basin (EC-601)	22210.0	15120.0	Yes	
									Vegetated Buffer				
9	255+90.00	276+00.00	LT/RT	267+53.00	RT	2.0	2.0	0.0	Temporary Sediment Control Basin (EC-601)	26825.0	7200.0	Yes	
									Vegetated Buffer				
10	276+00.00	292+36.00	LT/RT	284+35.00	RT	1.7	1.7	0.0	Temporary Sediment Control Basin (EC-601)	10364.6	6120.0	Yes	
									Vegetated Buffer				
11	292+36.00	385+60.00	LT/RT	326+13.00	RT	6.9	6.9	0.0	Temporary Sediment Control Basin (EC-601)	37016.6	24840.0	Yes	
									Vegetated Buffer				
12	385+60.00	416+98.00	LT/RT	407+17.00	RT	3.2	3.2	0.0	Temporary Sediment Control Basin (EC-601)	18919.6	11520.0	Yes	
									Vegetated Buffer				
13	416+98.00	449+00.00	LT/RT	441+70.00	LT	3.2	3.2	0.0	Temporary Sediment Control Basin (EC-601)	29613.3	11520.0	Yes	
									Vegetated Buffer				
14	449+00.00	465+73.00	LT/RT	453+60.00	LT	1.7	1.7	0.0	Temporary Sediment Control Basin (EC-601)	5244.0	6120.0	Yes	
									Silt Fence for Ditch Check (EC-201)	1380.6			
									Vegetated Buffer				
15	454+00.00	465+73.00	LT/RT	465+00.00	RT	1.2	1.2	0.0	Temporary Sediment Control Basin (EC-601)	4442.0	4320.0	Yes	
									Vegetated Buffer				
16	465+73.00	532+00.00	RT										
	465+73.00	535+00.00	LT	484+15.00	RT	6.8	6.8	0.0	Temporary Sediment Control Basin (EC-601)	37016.6	24480.0	Yes	
									Vegetated Buffer				
17	532+00.00	557+22.25	RT										
	535+00.00	557+22.25	LT	547+50.00	RT	1.0	1.0	0.0	Silt Fence for Shallow Ditch or No Ditch (EC-201)	3939.7	3600.0	Yes	
									Vegetated Buffer				

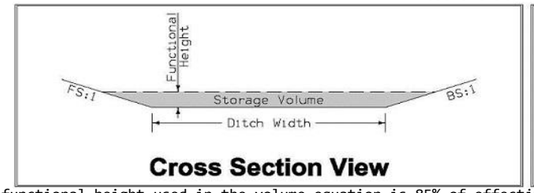
TABULATION OF SILT FENCES

Refer to EC-201

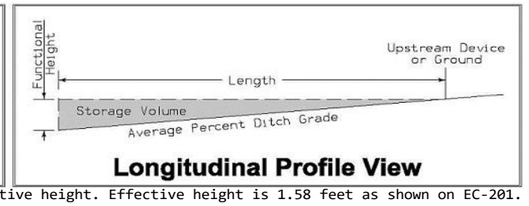
Location			Length	Remarks
Begin Station	End Station	Side	LF	
20+28.00	21+62.00	RT	134.0	
29+60.00	30+75.00	RT	115.0	
48+30.00	49+75.00	RT	145.0	
90+00.00	91+25.00	LT	125.0	
104+75.00	106+40.00	LT	165.0	
164+10.00	164+20.00	RT	25.0	
164+30.00	164+30.00	LT	25.0	
165+20.00	166+20.00	RT	110.0	
165+50.00	165+50.00	LT	25.0	
205+80.00	205+80.00	RT	25.0	
205+90.00	206+75.00	RT	85.0	
219+00.00	222+40.00	RT	330.0	
219+30.00	222+70.00	LT	360.0	
220+20.00	221+60.00	RT	140.0	
266+90.00	268+30.00	RT	140.0	
284+00.00	284+80.00	RT	80.0	
324+40.00	324+50.00	LT	25.0	
323+50.00	323+60.00	RT	25.0	
327+90.00	327+96.00	RT	25.0	
327+80.00	327+90.00	LT	25.0	
441+00.00	442+10.00	LT	145.0	
452+90.00	454+00.00	LT	120.0	
464+35.00	465+50.00	RT	200.0	
463+30.00	465+50.00	RT	175.0	
482+30.00	482+35.00	RT	25.0	
482+90.00	483+00.00	LT	25.0	
485+75.00	485+85.00	RT	25.0	
486+45.00	486+50.00	LT	25.0	
544+60.00	549+60.00	RT	540.0	
547+50.00	549+50.00	LT	200.0	
Undistributed			1000.0	
Total:			4609.0	

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201



Cross Section View



Longitudinal Profile View

* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.

* Volume equation: $[0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]$

Basin No.	Type	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
		Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg.% Slope Ditch Grade	Volume*	
				LF	LF	LF	FS:1	BS:1	FT		CF	
4	1	66+80.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.0%	1486.8	
4	1	66+95.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.0%	1486.8	
4	1	72+30.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.0%	1486.8	
14	1	449+50.00	LT	15.5	1.6	15.5	3.0	3.0	6.0	3.0%	336.7	
14	1	450+00.00	LT	15.5	1.6	15.5	3.0	3.0	6.0	3.3%	303.1	
14	1	450+45.00	LT	15.5	1.6	15.5	3.0	3.0	6.0	3.7%	269.4	
14	1	450+85.00	LT	15.5	1.6	15.5	3.0	3.0	6.0	4.5%	235.7	
14	1	451+20.00	LT	15.5	1.6	15.5	3.0	3.0	6.0	5.0%	235.7	
16	1	466+40.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.4%	1486.8	
16	1	469+55.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.4%	1486.8	
16	1	472+70.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.4%	1486.8	
16	1	475+85.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.4%	1486.8	
16	1	479+00.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.4%	1486.8	
16	1	482+00.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.4%	1486.8	
16	1	482+10.00	LT	12.5	1.3	12.5	3.0	3.0	3.0	0.4%	1486.8	
17	5	544+80.00	RT	60.0	6.0	60.0	3.0	3.0	6.0	3.3%	303.1	
17	5	545+25.00	RT	60.0	6.0	60.0	3.0	3.0	6.0	3.3%	303.1	
17	5	545+70.00	RT	60.0	6.0	60.0	3.0	3.0	6.0	3.3%	303.1	
17	5	546+15.00	RT	60.0	6.0	60.0	3.0	3.0	6.0	3.3%	303.1	
17	5	546+60.00	RT	60.0	6.0	60.0	3.0	3.0	6.0	3.3%	303.1	
17	5	547+75.00	RT	60.0	6.0	60.0	3.0	3.0	6.0	3.5%	303.1	
17	5	548+20.00	RT	60.0	6.0	60.0	3.0	3.0	6.0	3.5%	303.1	
17	5	548+65.00	RT	60.0	6.0	60.0	3.0	3.0	6.0	3.5%	303.1	
17	5	549+10.00	RT	60.0	6.0	60.0	3.0	3.0	6.0	3.5%	303.1	
17	5	547+75.00	LT	60.0	6.0	60.0	3.0	3.0	6.0	3.5%	303.1	
17	5	548+20.00	LT	60.0	6.0	60.0	3.0	3.0	6.0	3.5%	303.1	
17	5	548+65.00	LT	60.0	6.0	60.0	3.0	3.0	6.0	3.5%	303.1	
17	5	549+10.00	LT	60.0	6.0	60.0	3.0	3.0	6.0	3.5%	303.1	
		Undistributed		500.0	50.0	500.0						
		Total:		1482.5	149.0	1482.5						

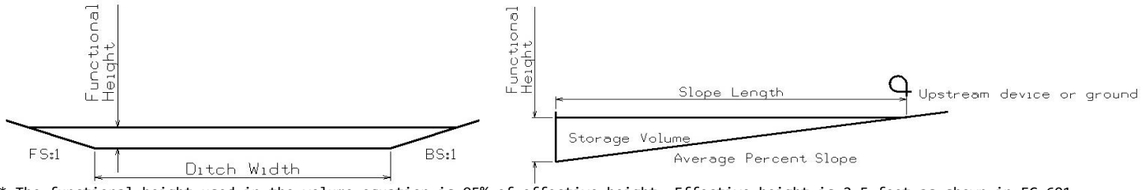
PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

Location			Length of Installation			Remarks
Begin Station	End Station	Side	9 inch Dia	12 inch Dia	20 inch Dia	
			LF	LF	LF	
162+20.00	164+10.00	RT			200.0	
162+60.00	164+10.00	LT			160.0	
165+00.00	166+30.00	RT			150.0	
165+00.00	166+90.00	LT			190.0	
321+75.00	323+50.00	RT			190.0	
321+85.00	323+50.00	LT			180.0	
328+30.00	330+30.00	LT			210.0	
328+30.00	329+70.00	RT			160.0	
472+75.00	482+40.00	LT			1010.0	
480+50.00	482+40.00	RT			240.0	
486+20.00	487+65.00	RT			180.0	
486+20.00	488+00.00	LT			200.0	
	Undistributed			500.0	500.0	
	Total:			500.0	3570.0	

TEMPORARY SEDIMENT CONTROL BASIN

Possible Standard: EC-601



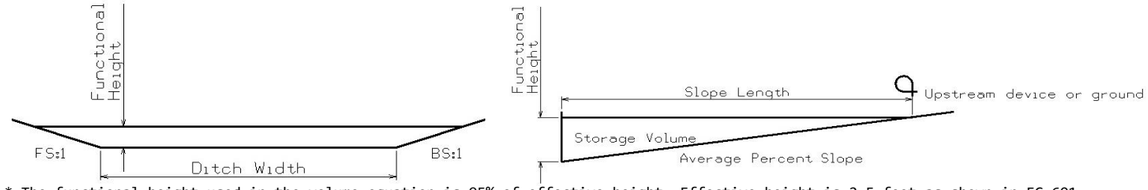
* The functional height used in the volume equation is 95% of effective height. Effective height is 2.5 feet as shown in EC-601.
* Volume equation: $\lceil(1/4(FS*H^2))+(DW*H)+(1/4*(BS*H^2))\rceil*(H/Avg\%Slope)$

Basin No.	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Average % Slope	Volume*	
			Each	Each	Each	FS:1	BS:1	FT		CF	
1	20+80.00	LT	1	3	1	3.0	3.0	6.00	1.6%	2313.5	
1	20+80.00	RT	1	3	1	3.0	3.0	6.00	1.6%	2313.5	
1	20+85.00	LT	1	3	1	3.0	3.0	6.00	0.7%	5002.2	
1	21+10.00	RT	1	3	1	3.0	3.0	6.00	0.7%	5288.1	
2	30+10.00	RT	1	3	1	3.0	3.0	6.00	0.7%	5288.1	
2	30+20.00	LT	1	3	1	3.0	3.0	6.00	0.7%	5288.1	
2	30+25.00	LT	1	3	1	3.0	3.0	6.00	0.7%	5288.1	
2	30+30.00	RT	1	3	1	3.0	3.0	6.00	0.7%	5288.1	
3	48+15.00	LT	1	3	1	3.0	3.0	6.00	1.6%	2313.5	
3	48+80.00	RT	1	3	1	3.0	3.0	6.00	1.6%	2313.5	
3	48+35.00	LT	1	3	1	3.0	3.0	6.00	1.5%	2467.8	
3	49+80.00	RT	1	3	1	3.0	3.0	6.00	1.5%	2467.8	
4	90+30.00	RT	1	3	1	3.0	3.0	6.00	3.0%	1233.9	
4	90+50.00	LT	1	3	1	3.0	3.0	6.00	3.0%	1233.9	
4	90+50.00	RT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
4	90+70.00	LT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
5	104+70.00	RT	1	3	1	3.0	3.0	6.00	1.5%	2467.8	
5	105+25.00	LT	1	3	1	3.0	3.0	6.00	1.5%	2467.8	
5	105+80.00	LT	1	3	1	3.0	3.0	6.00	1.0%	3701.7	
5	106+00.00	RT	1	3	1	3.0	3.0	6.00	1.0%	3701.7	
6	164+00.00	RT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
6	164+20.00	LT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
6	165+60.00	LT	1	3	1	3.0	3.0	6.00	3.2%	1156.8	
6	166+90.00	RT	1	3	1	3.0	3.0	6.00	3.2%	1156.8	
7	205+55.00	LT	1	3	1	3.0	3.0	6.00	2.0%	1850.8	
7	205+65.00	RT	1	3	1	3.0	3.0	6.00	2.0%	1850.8	
7	205+90.00	LT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
7	206+00.00	RT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
8	220+60.00	LT	1	3	1	3.0	3.0	6.00	1.0%	3701.7	
8	220+75.00	RT	1	3	1	3.0	3.0	6.00	1.0%	3701.7	
8	221+00.00	RT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
8	221+10.00	LT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
9	264+85.00	LT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
9	265+00.00	LT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
9	267+40.00	RT	1	3	1	3.0	3.0	6.00	1.1%	3365.1	
9	267+70.00	RT	1	3	1	3.0	3.0	6.00	1.1%	3365.1	
9	270+65.00	LT	1	3	1	3.0	3.0	6.00	1.4%	2644.0	
9	270+80.00	LT	1	3	1	3.0	3.0	6.00	1.4%	2644.0	
10	284+00.00	LT	1	3	1	3.0	3.0	6.00	2.5%	1480.7	
10	284+10.00	RT	1	3	1	3.0	3.0	6.00	2.5%	1480.7	
10	284+60.00	LT	1	3	1	3.0	3.0	6.00	1.0%	3701.7	
10	284+65.00	RT	1	3	1	3.0	3.0	6.00	1.0%	3701.7	
11	323+43.00	LT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
11	323+50.00	RT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
11	327+90.00	LT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
11	328+00.00	RT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
12	407+10.00	LT	1	3	1	3.0	3.0	6.00	1.8%	2056.5	
12	407+10.00	RT	1	3	1	3.0	3.0	6.00	1.8%	2056.5	
12	407+20.00	LT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
12	407+20.00	RT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
13	440+40.00	RT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
13	440+80.00	RT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
13	441+45.00	LT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
13	441+75.00	LT	1	3	1	3.0	3.0	6.00	0.5%	7403.3	
14	452+30.00	RT	1	3	1	3.0	3.0	6.00	4.8%	771.2	

100-33
10-16-18

TEMPORARY SEDIMENT CONTROL BASIN

Possible Standard: EC-601



* The functional height used in the volume equation is 95% of effective height. Effective height is 2.5 feet as shown in EC-601.
* Volume equation: $\lceil(1/4(FS*H^2))+(DW*H)+(1/4*(BS*H^2))\rceil*(H/Avg\%Slope)$

Basin No.	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Average % Slope	Volume*	
			Each	Each	Each	FS:1	BS:1	FT		CF	
14	452+55.00	RT	1	3	1	3.0	3.0	6.00	4.8%	771.2	
14	453+40.00	LT	1	3	1	3.0	3.0	6.00	2.0%	1850.8	
14	453+50.00	LT	1	3	1	3.0	3.0	6.00	2.0%	1850.8	
15	459+41.00	RT	1	3	1	3.0	3.0	6.00	5.0%	740.3	
15	464+30.00	LT	1	3	1	3.0	3.0	6.00	1.0%	3701.7	
16	482+25.00	RT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
16	482+85.00	LT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
16	485+85.00	RT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
16	486+50.00	LT	1	3	1	3.0	3.0	6.00	0.4%	9254.2	
	Total:		64	192	64						

LINE STYLE LEGEND OF EROSION CONTROL SHEETS

- Silt Fence
- Perimeter and Slope Sediment Control Device (9")
- Perimeter and Slope Sediment Control Device (12")
- Perimeter and Slope Sediment Control Device (20")
- Open-Throat Curb Intake Sediment Filter
- Concentrated Flow
- Sheet Flow

CELL LEGEND OF EROSION CONTROL SHEETS

- Temporary Sediment Control basin
- Erosion Control for Circular Intake or Manhole Well
- Erosion Control for Rectangular Intake or Manhole Well
- Grate Intake Sediment Filter Bag
- Silt Basin
- Silt Fence Tail
- Stormwater Drainage Basin Discharge Point

PLAN VIEW COLOR LEGEND OF DRAINAGE BASINS

- Drainage Basin 1
- Drainage Basin 2
- Drainage Basin 3
- Drainage Basin 4
- Drainage Basin 5
- Drainage Basin 6
- Drainage Basin 7
- Drainage Basin 8
- Drainage Basin 9
- Drainage Basin 10
- Drainage Basin 11
- Drainage Basin 12
- Drainage Basin 13
- Drainage Basin 14
- Drainage Basin 15
- Drainage Basin 16
- Drainage Basin 17

PLAN VIEW COLOR LEGEND OF EROSION CONTROL 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
Black	(Ø)	Permanent Erosion Control Features
Blaze Orange	(222)	Temporary Erosion Control Features

SHADING	Design Color No.		Transparency
Citron	(234)	Mulching, All Types	50%
Light Brown	(238)	Special Ditch Control, Wood Excelsior Mat	Ø%

PATTERN LEGEND OF EROSION CONTROL SHEETS

- Seeding and Fertilizing
- R — Seeding and Fertilizing (Rural)
- U — Seeding and Fertilizing (Urban)
- N — Native Grass Seeding
- ST — Salt Tolerant Seeding
- WL — Wetland Grass Seeding
- WF — Wildflower Seeding
- SOD — Sodding
- Turf Reinforcement Mat Type 1
- Turf Reinforcement Mat Type 2
- Turf Reinforcement Mat Type 3
- Turf Reinforcement Mat Type 4
- S — Slope Protection, Wood Excelsior Mat
- TM — Transition Mat
- P — Rock Features, Permanent
- T — Rock Features, Temporary

EROSION CONTROL LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES R)

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER RR.1

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Benton TWP.
T-74N R-13W
SEC. 27

Section 27

Section 26

Basin 1

Basin 2

Basin 1

Basin 2

Basin 1
Discharge Point

Sta. 0+20.73
M.P. 0.621
Begin Project
Begin Inlay

PCC - IA 149

+23 Field Ent. Earth

+70 Farm Ent. (Tom Richards Lane) Gravel

328th St. Gravel

+11 Field Ent. Earth

+11 Field Ent. Earth

325th St. Gravel

+22 Field Ent. Earth

+63 Field Ent. Earth

0 FEET 100

Benton TWP.
T-74N R-13W
SEC. 26

IA 21

Benton TWP.
T-74N R-13W
SEC. 27

Section 27

Section 22

Section 26

Section 23

Section 26

Basin 2

Basin 2

Basin 3

Basin 3

Basin 2
Discharge Point

Basin 3
Discharge Point

+94 Farm Ent. Gravel

+31 Field Ent. Earth

+62 Field Ent. Earth

+64 Field Ent. Gravel

+04 Field Ent. Earth

+47 Res. Ent. Gravel

+50 Farm Ent. Gravel

+99 Res. Ent. Gravel

0 FEET 100

IA 21

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER RR.2

3:44:23 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_RR2.dgn

60 65 70 75 80 85 90

Benton TWP.
T-74N R-13W
SEC. 22

318th Ave.

Machine Shed

Basin 3

Basin 4

Basin 3

Basin 4

Benton TWP.
T-74N R-13W
SEC. 23

0 100
FEET

IA 21

90 95 100 105 110 115 120

Section 15

Basin 4
Discharge Point

Basin 5
Discharge Point

Section 22

Basin 4

Basin 5

Basin 4

Basin 5

Section 23

310th St.

Section 14

0 100
FEET

IA 21

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER RR.3

3:45:43 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_RR2.dgn

Benton TWP.
T-74N R-13W
SEC. 15

120 125 130 135 140 145 150

Basin 5

Basin 5

Basin 6

Basin 6

305th St.

Benton TWP.
T-74N R-13W
SEC. 14

0 100
FEET

IA 21

150 155 160 165 170 175 180

Section 15

Section

300th St.

Basin 6

Basin 6

Basin 6
Discharge Point

Section 11

Section 14

0 100
FEET

IA 21

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER RR.4

3:47:23 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_RR2.dgn

Benton TWP.
T-74N R-13W
SEC. 10

180 185 190 195 200 205 210

295th St.

Basin 6

Basin 6

Basin 7

Basin 7

Section 10

Section 11

Basin 7
Discharge Point

Benton TWP.
T-74N R-13W
SEC. 11

0 100
FEET

IA 21

Section 10

Section 3

210 215 220 225 230 235 240

288th St

Basin 8

Basin 8

Section 11

Section 2

Basin 8
Discharge Point

Benton TWP.
T-74N R-13W
SEC. 3

Benton TWP.
T-74N R-13W
SEC. 2

0 100
FEET

IA 21

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER RR.5

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240 245 250 255 260 265 270

Section 34

Section 3

Basin 8

Basin 8

Basin 9

Basin 9

282nd St

Basin 9
Discharge Point

Section 35

Section 2

0 100
FEET

IA 21

270 275 280 285 290 295 300

Warren TWP.
T-75N R-13W
SEC. 34

275th St

Basin 9

Basin 9

Basin 10

Basin 10

Basin 10
Discharge Point

Basin 11

Basin 11

0 100
FEET

IA 21

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER RR.6

3:49:41 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_RR2.dgn

300
305
310
315
320
325
330
Basin 11
Basin 11
Basin 11
Discharge Point
Section 34
Section 27
0 100 FEET
IA 21
330
335
340
345
350
355
360
Basin 11
Basin 11
Warren TWP.
T-75N R-13W
SEC. 27
0 100 FEET
IA 21

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER RR.7

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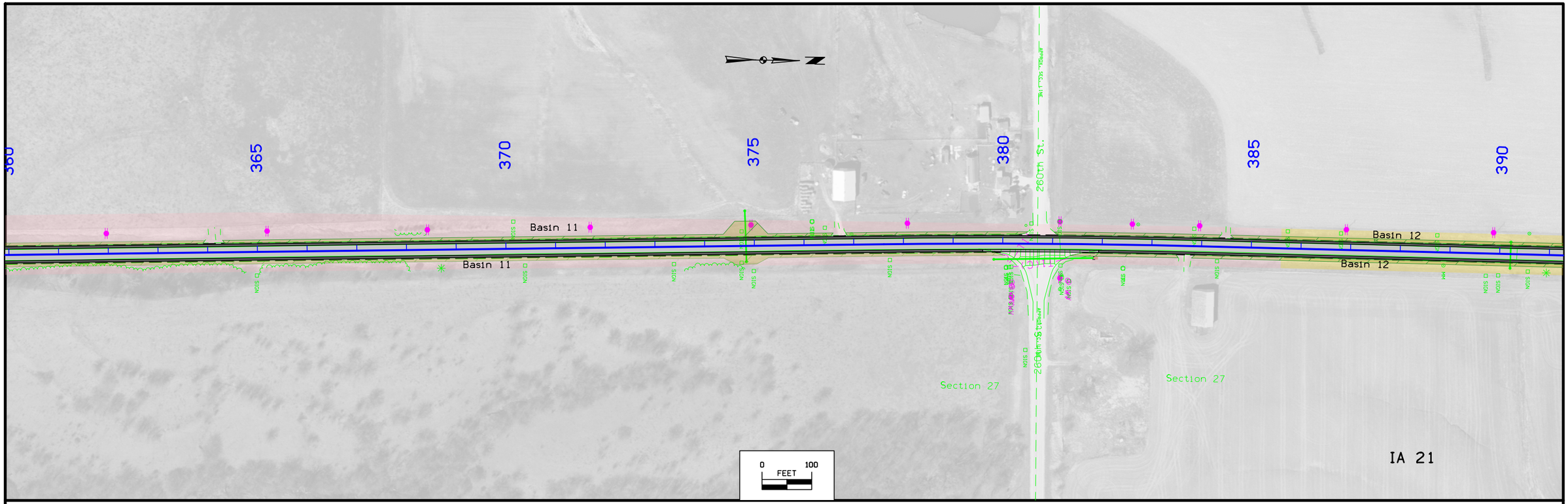

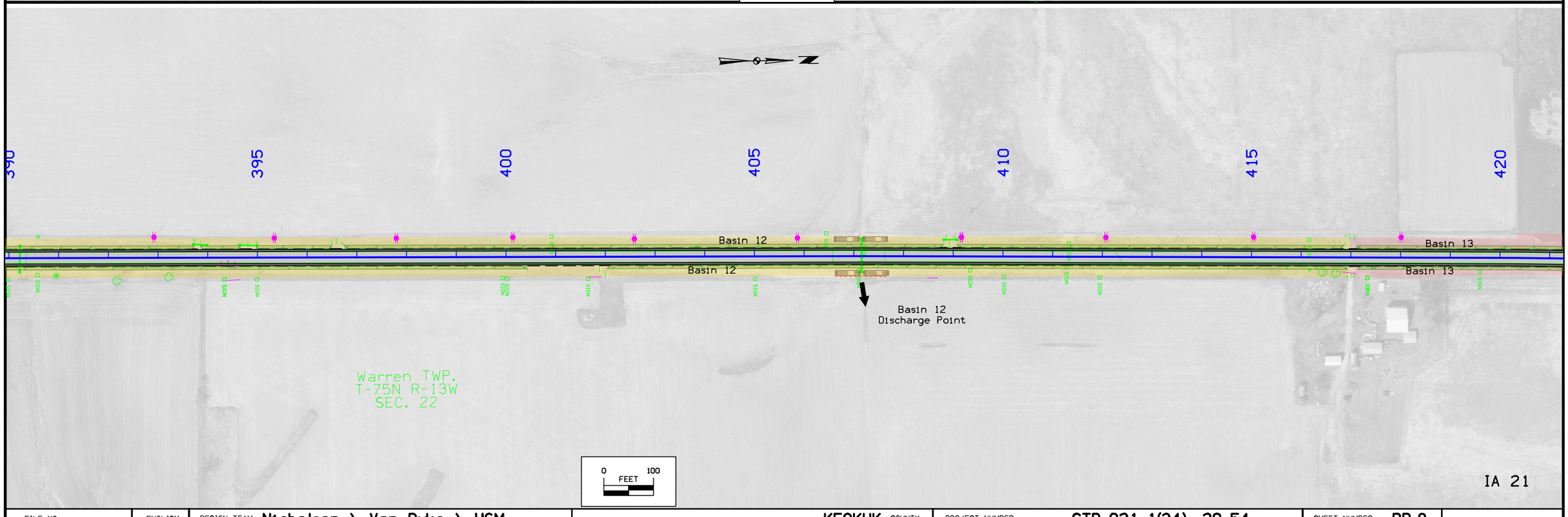

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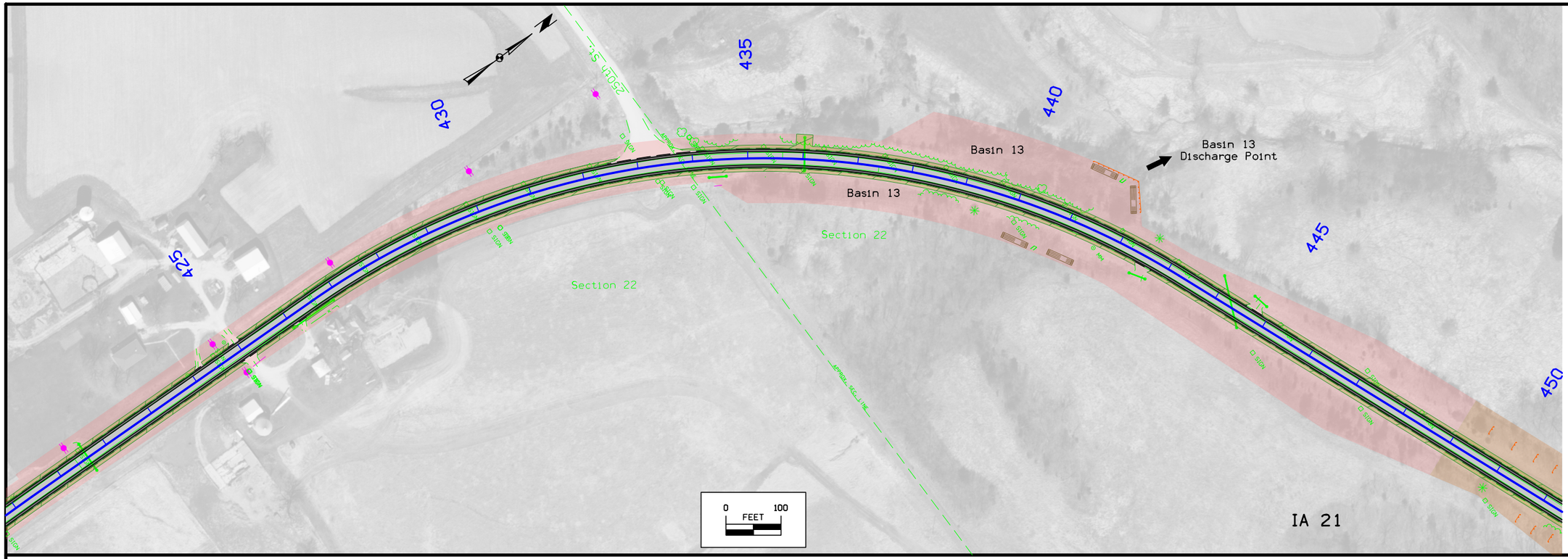

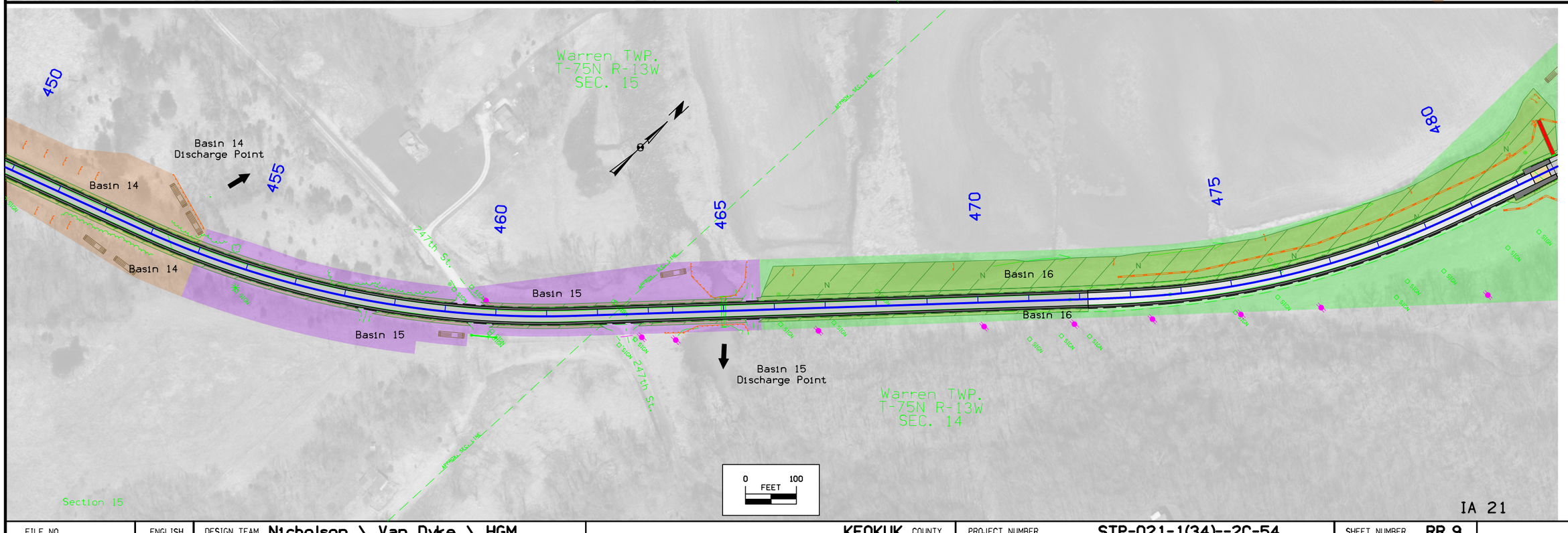

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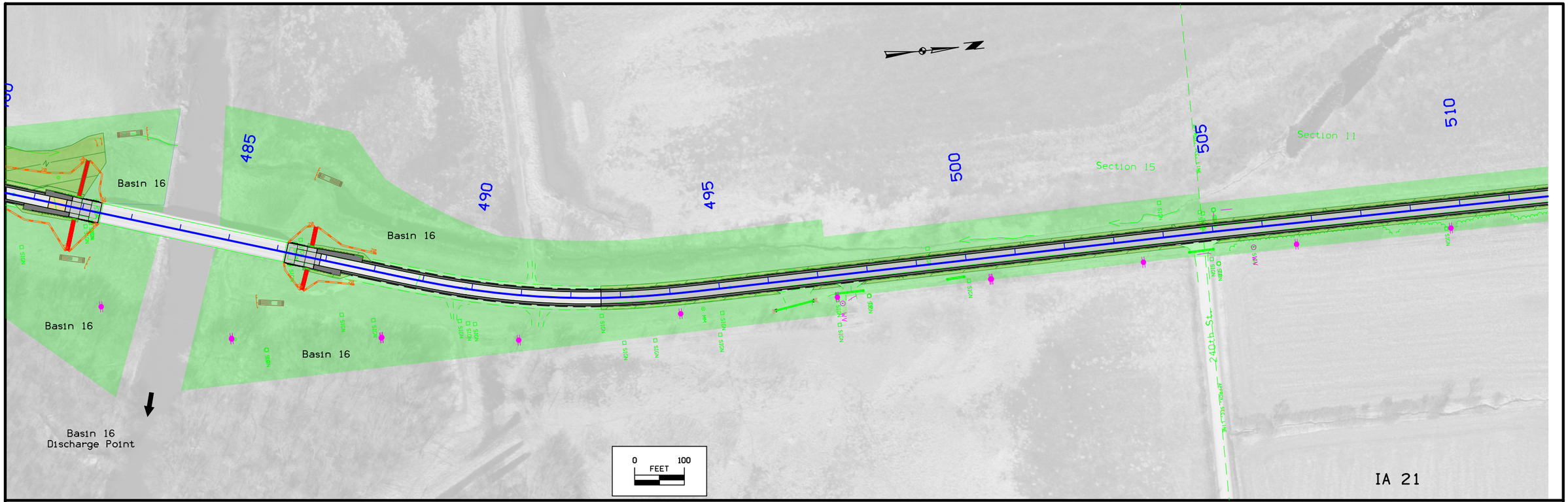

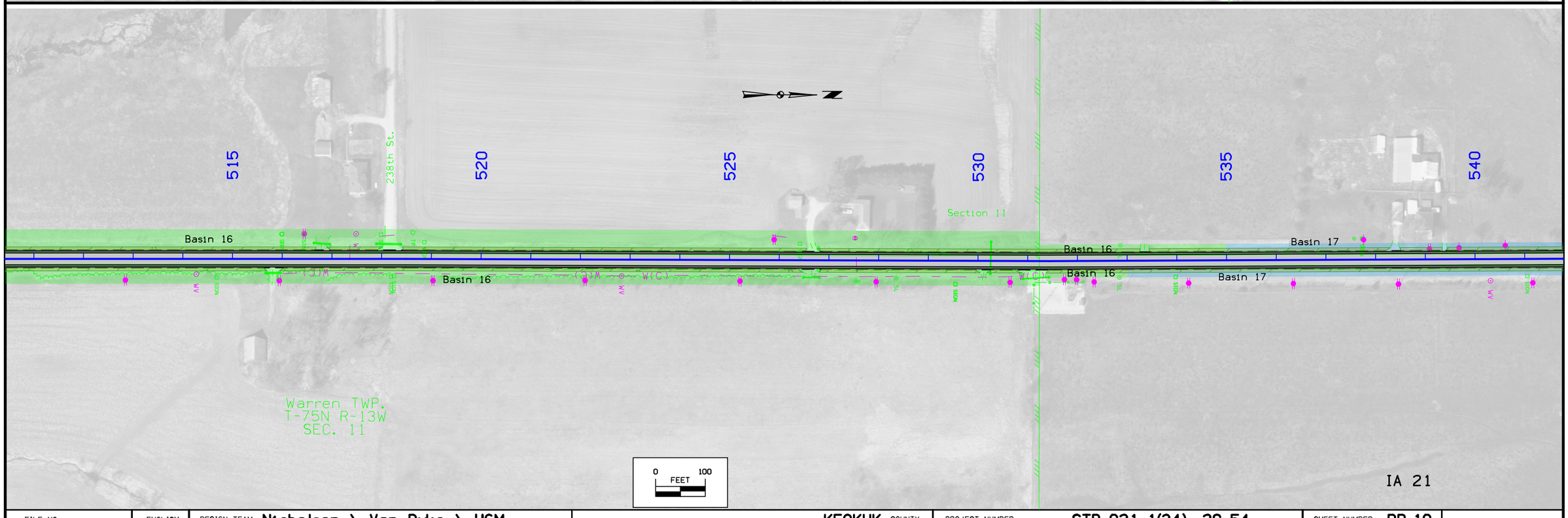

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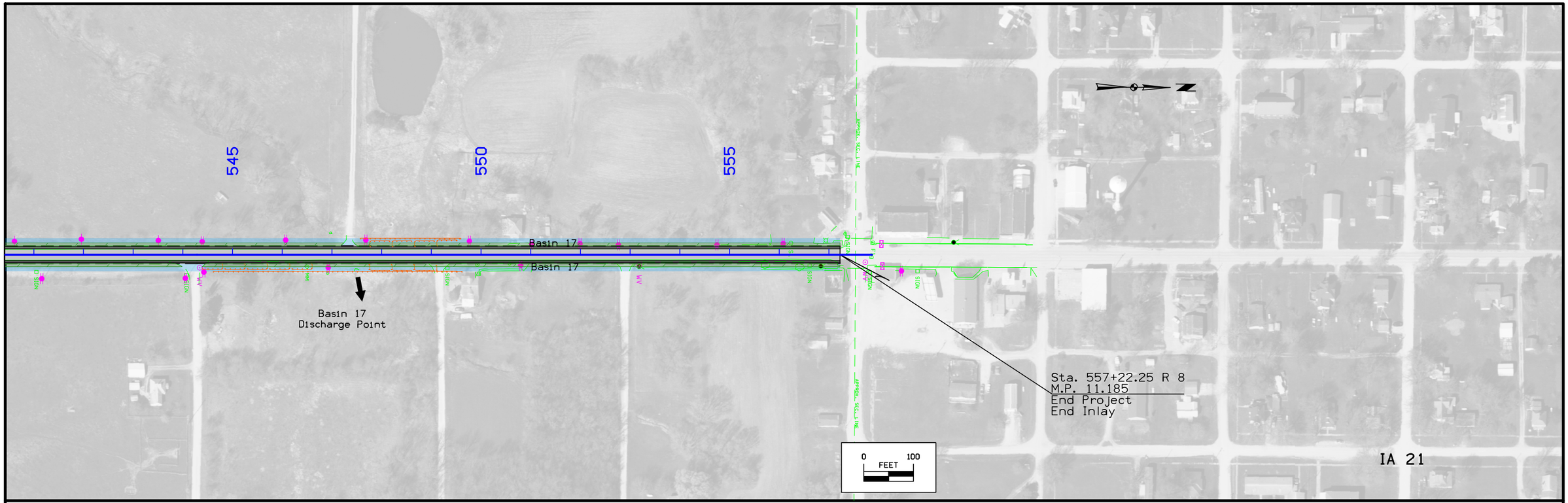

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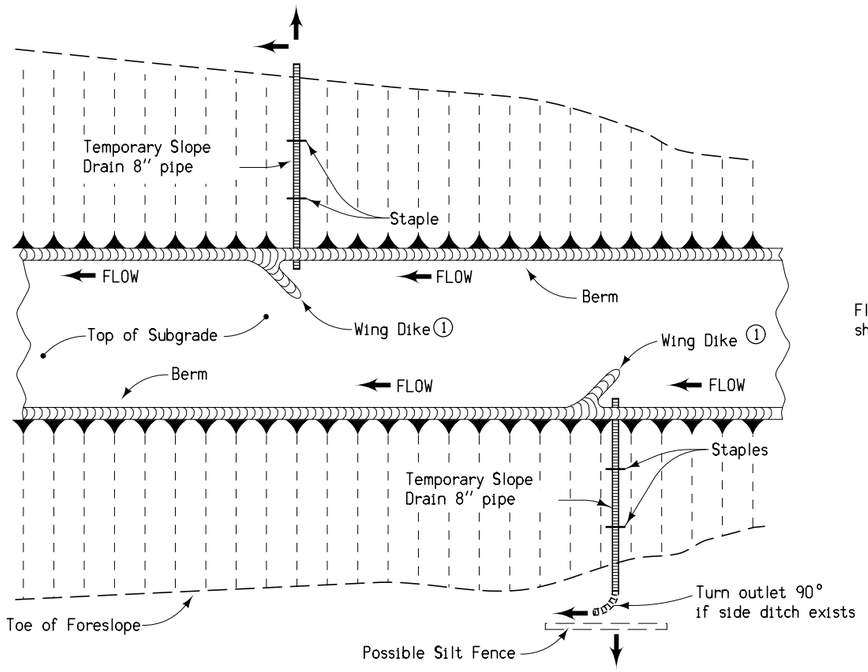
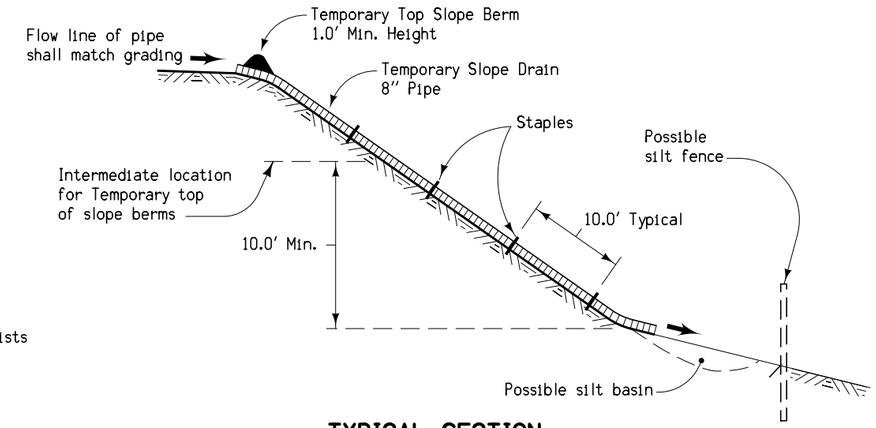
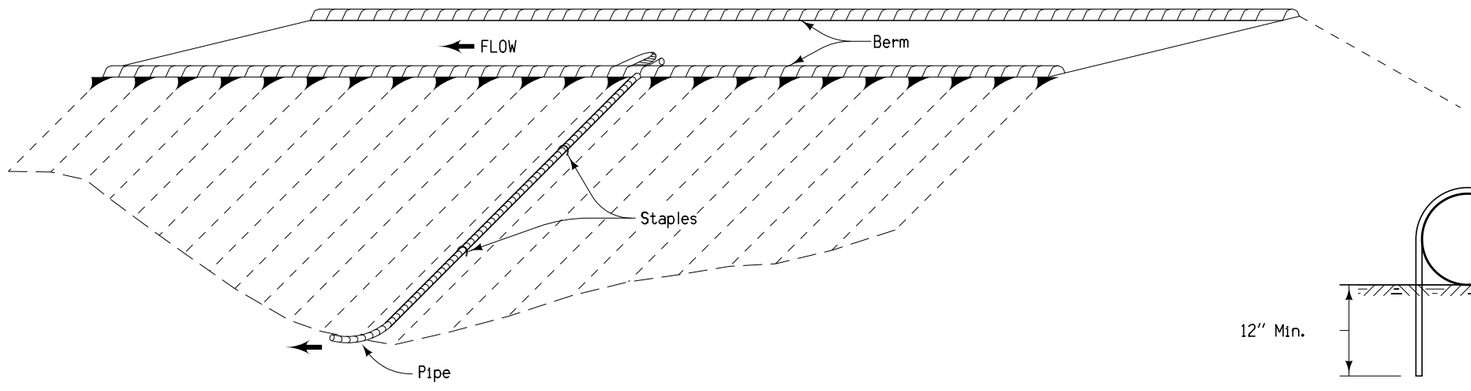


PLAN



TYPICAL SECTION



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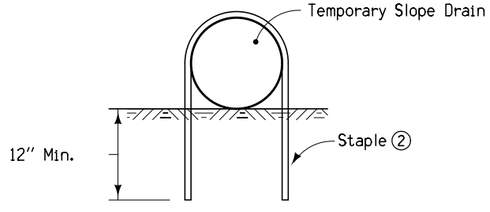

STAPLE DETAIL

GENERAL NOTES:

Details indicated hereon are for the installation of a temporary slope drain on the foreslope of the roadway fill. The intent of the temporary slope drain is to prevent foreslope erosion during construction and to minimize the water pollution which might be caused by soil erosion from the project.

At the completion of each day's grading, a temporary berm will be constructed on both sides of the subgrade. At points a maximum of 500' apart, at low points of vertical curves, and as determined by the Engineer, temporary intercepting wing dikes shall be graded and slope drains installed. All special grading work shall be considered incidental to other grading work on the project.

Foreslopes with a vertical height of ten feet or less shall not have temporary slope drains installed.

The temporary slope drain shall consist of a length of pipe capable of extending to the top of foreslope when all grading has been completed. The pipe shall be moved up the foreslope to the new temporary top of slope berm at the completion of each day's work. The pipe shall be Solid Tubing complying with all requirements of ASTM F 405, Standard Duty Tubing.

Method of measurement shall be along the centerline of pipe in its final position.

The price bid for "Temporary Slope Drain, As Per Plan", measured in lineal feet, shall be considered full compensation for the construction of all required temporary top of slope berms and for installing and maintaining the slope drain for the duration of the contract.

① Typical length of 10.0', 1.0' minimum height

② Staple may be bent reinforcing bar No. 4 minimum, or alternate approved by the Engineer.

IOWA DOT

REVISION
1 | 03-28-95

ROAD DESIGN DETAIL

510-2

SHEET 1 of 1

REVISIONS: Place in CADD

DETAILS OF TEMPORARY SLOPE DRAIN

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER U.1

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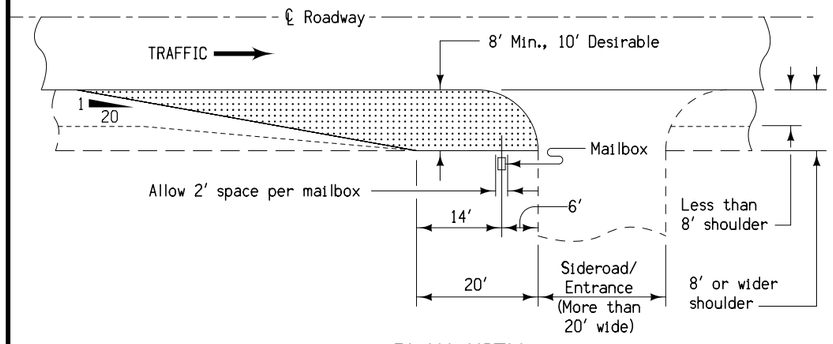
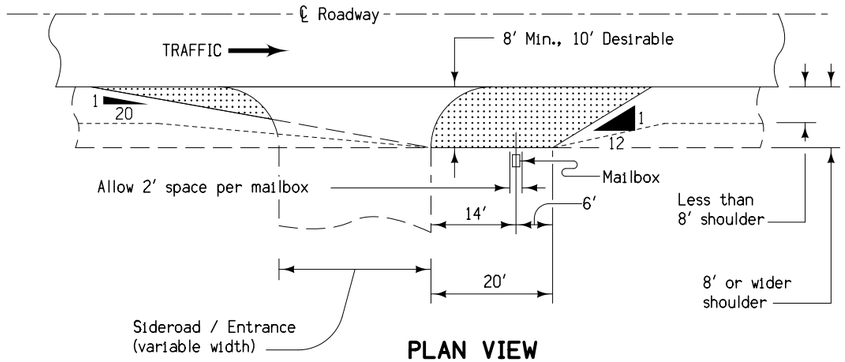
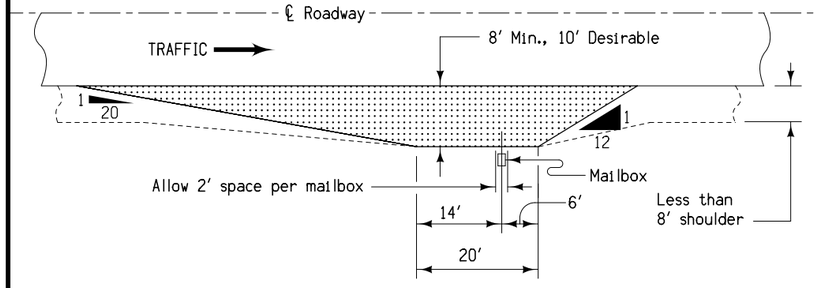


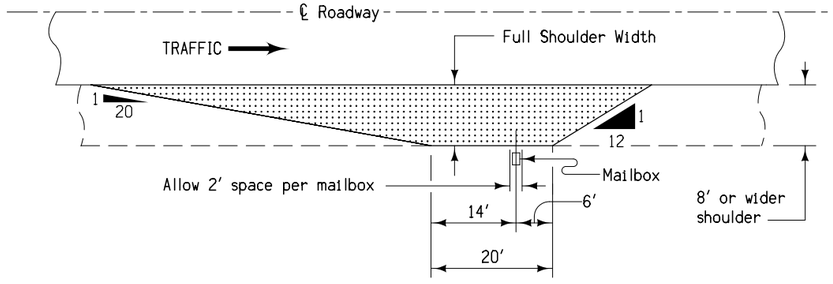
PLAN VIEW
Approach Side of Entrance



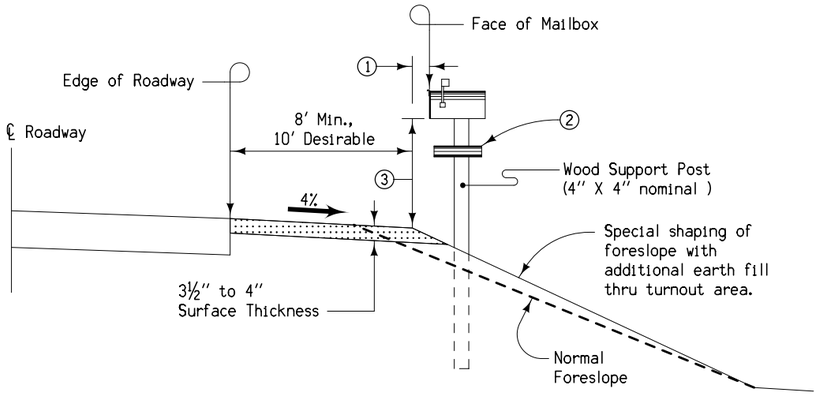
PLAN VIEW
Trailing Side of Entrance



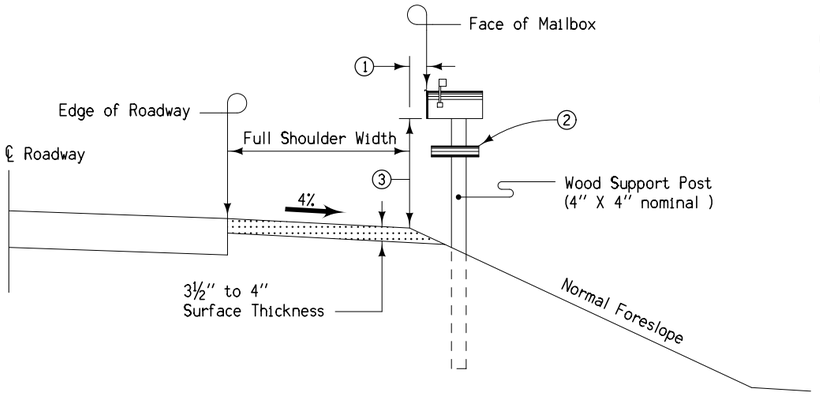
PLAN VIEW
Shoulder Width Less than 8′



PLAN VIEW
Shoulder Width 8′ or More



TYPICAL SECTION
Shoulder Width Less than 8′



TYPICAL SECTION
Shoulder Width 8′ or More

GENERAL NOTES:

Refer to "Policies and Procedures Manual", Policy 610.09, Mailboxes and Newspaper Receptacles on Primary Roads.

Mailbox turnouts shall be full shoulder width with a min–imum width of 8 feet. On shoulders less than 8 feet, build fillet to obtain a minimum width of 8 feet.

For multiple mailbox installations in one turnout, the taper dimensions will remain the same. The dimensions from centerline of mailbox located at either end will remain the same and 2 feet will be allowed for each mailbox in the installation.

When the mailbox owner's driveway is on the right hand side of the road, as the mail carrier travels, the box would preferably be placed near the driveway as shown on this sheet. With these types of placement, the driveway will serve as part of the mailbox turnout.

Requests, by the property owner, for the location of mailbox turnouts other than at driveways shall be approved by the Engineer in charge of construction and the U.S. Postal Authorities.

Mailbox(s) shall be installed with the face (door) no closer to the roadway than the shoulder line. Support post shall be in the foreslope with the inside edge at least one (1) foot outward from the shoulder line.

SURFACING QUANTITY

Surfacing of mailbox turnouts is based on a 5 inch design depth (loose volume) which will, under normal conditions, compact to 3.5″ to 4″ actual depth. A width of 8 feet will require approximately 18.3 cubic yards and 10 foot width will require approximately 27.8 cubic yards of surfacing. Quantities are given for a single mailbox installation 276 to 340 feet in length. Where multiple installations or installa–tions at driveways are encountered, quantities will vary as directed by the Engineer.

Payment for construction of mailbox turnouts will be as specified elsewhere in the contract documents.

① 8″ to 12″ preferred, 0″ minimum.

② Metal tube / box for delivery of local advertisements, newspapers etc.

③ Mounting height per U.S. Postal Regulations (42″to 48″ above mail stop surface).

IOWA DOT

REVISION	
1	03-28-95

ROAD DESIGN DETAIL

560-2

SHEET 1 of 1

REVISIONS: Place in CADD

DETAILS OF MAILBOX TURNOUTS (GRANULAR SURFACED)

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER U.2

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GENERAL NOTES:

THIS DESIGN IS FOR REPAIRS TO THE EXISTING 381'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE LOCATED IN KEOKUK COUNTY ON IA 21 OVER NORTH SKUNK RIVER, 0.7 MILES SOUTH OF DELTA.

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS WILL BE MADE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON DESIGN PLANS (ORIGINAL DESIGN NO. 787).

SEE DESIGN SHEET 2 FOR LIST OF REPAIR ITEMS.

FAINT LINES ON PLANS INDICATE EXISTING PORTIONS OF THE BRIDGE.

ALL DIMENSIONS AND DETAILS SHOWN ON THESE PLANS PERTINENT TO NEW CONSTRUCTION SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING CONSTRUCTION.

UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE STARTING DATE.

THE LUMP SUM BID FOR "REMOVALS, AS PER PLAN" SHALL INCLUDE ALL COSTS ASSOCIATED WITH REMOVING THE EXISTING NEOPRENE GLANDS AT BOTH ABUTMENTS. REMOVING, STORING, AND RE-INSTALLING THE EXISTING $\frac{3}{8}$" PLATES AT BARRIER CURBS IS ALSO INCLUDED. THE EXISTING HARDWARE SHALL BE RE-USED. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE SPECIFICATIONS. ANY DAMAGE TO ANY STEEL OR CONCRETE NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.

BOTH EXPOSED ABUTMENT BRIDGE SEATS AND WASHED SURFACES SHALL HAVE AN APPLICATION OF CONRETE SEALER IN ACCORDANCE WITH ARTICLE 2403.03, P, 3, OF THE STANDARD SPECIFICATIONS. ALL COSTS OF MATERIAL AND LABOR FOR APPLICATION OF CONCRETE SEALER AT ABUTMENT SEATS SHALL BE INCLUDED IN THE PRICE BID FOR "SEALER COAT FOR PRESTRESSED CONCRETE BEAM ENDS".

ABUTMENT BEARINGS (SOLE PLATES AND MASONRY PLATES) ARE TO BE CLEANED AND PAINTED. CLEANING BY VACUUM BLASTING OR BY A NON-BLASTING METHOD IS REQUIRED. SURFACE TO BE PAINTED SHALL BE PREPARED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL (SSPC) SP3. SURFACES OF THE ABUTMENT BEARINGS ARE TO BE GIVEN ONE COAT OF BOTH A RUST INHIBITOR TYPE PRIMER AND FINAL COAT AS APPROVED BY THE ENGINEER. THE COLOR OF THE DRY PAINT SHOULD APPROXIMATE THE COLOR OF CONCRETE. THIS WORK SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER LUMP SUM FOR THE BID ITEM, "PAINTING OF STRUCTURAL STEEL".

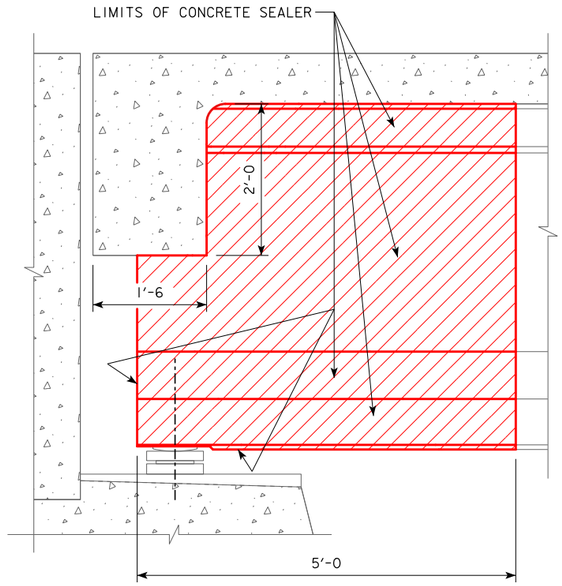
CONTAINMENT AND DISPOSAL OF WASTE SHALL BE IN ACCORDANCE WITH SECTION 2508, OF THE STANDARD SPECIFICATIONS. ALL COSTS ASSOCIATED WITH HAULING AND DEPOSITING OF WASTE AT THE DESIGNATED SITE/FACILITY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND INCLUDED IN THE CONTRACT PRICE BID FOR THE "CONTAINMENT" ITEM.

A SCRAPE SAMPLE WAS TAKEN FROM THE ABUTMENT BEARINGS TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL LEAD AND TOTAL CHROMIUM. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 760 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 260 PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE IOWA DOT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

DURING CONSTRUCTION OF THIS PROJECT THE BRIDGE CONTRACTOR WILL BE REQUIRED TO COORDINATE OPERATIONS WITH THOSE OF OTHER CONTRACTORS WORKING WITHIN THE SAME AREA. REFER TO ROAD PLANS FOR LISTING OF OTHER WORK IN PROGRESS DURING THE SAME PERIOD OF TIME.

CONCRETE SEALER FOR BEAM ENDS NOTE:

THE PRICE BID ITEM "SEALER COAT FOR PRESTRESSED CONCRETE BEAM ENDS" SHALL INCLUDE ALL COSTS INCLUDING LABOR AND MATERIAL FOR PREPARING AND SEALING ALL EXPOSED SURFACES OF THE PRESTRESSED CONCRETE BEAM ENDS AT EACH ABUTMENT WITHIN 5 FEET OF THE END OF THE BEAM. THE WORK SHALL BE PAID FOR PER "EACH" BEAM END THAT IS SEALED. SEALANT MATERIAL FOR THE BEAM ENDS SHALL BE FROM THE APPROVED MATERIAL LIST IM 491.19B. THE CONTRACTOR SHALL APPLY THE SEALANT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.



CONCRETE SEALER LIMITS FOR PRESTRESSED BEAM

SPECIFICATIONS:

DESIGN: AASHTO SERIES 2002.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00	
2	2413-1300000	PREFORMED, PRE-COMPRESSED, SELF-EXPANDING, SEALANT SYSTEM WITH SILICONE PRE-COATED SURFACE	LF	83	
3	2499-6000200	SEALER COAT FOR PRESTRESSED CONCRETE BEAM ENDS	EA	12	
4	2508-0970000	CONTAINMENT	LS	1.00	
5	2508-0991000	PAINTING OF STRUCTURAL STEEL	LS	1.00	
6	2533-4980005	MOBILIZATION	LS	1.00	

ESTIMATE REFERENCE INFORMATION:

ITEM NO.	DESCRIPTION
1	INCLUDES REMOVAL AND DISPOSAL OF EXISTING NEOPRENE GLANDS. INCLUDES REMOVING AND RE-INSTALLING EXISTING $\frac{3}{8}$" PLATES AT BARRIER CURBS TO FACILITATE REMOVAL OF THE EXISTING NEOPRENE GLANDS AND INSTALLATION OF THE NEW JOINT SYSTEM. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.
2	INCLUDES WATER TESTING OF JOINTS.
3	INCLUDES THE COST OF CLEANING, FURNISHING SEALER, AND SEALING THE EXISTING BEAM ENDS. INCLUDES THE COST OF CLEANING, FURNISHING SEALER, AND SEALING THE ABUTMENT BRIDGE SEATS AND WASH SURFACES.
5	INCLUDES CLEANING AND BLASTING OF STEEL ABUTMENT BEARINGS PRIOR TO PAINTING IN ACCORDANCE WITH SECTION 2508 OF THE STANDARD SPECIFICATIONS.

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER — CASEY V. FABER — 22283 — 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: 12-18-2019

Casey V. Faber
Printed or Typed Name

My license renewal date is December 31, 2019

Pages or sheets covered by this seal: SHEETS V.1 THRU V.3

ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN:
THE ROADWAY WILL BE CLOSED TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
787	ORIGINAL DESIGN
220	DECK JOINT REPLACEMENT

DESIGN FOR REPAIR TO A 0° SKEW

381'-0x40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

45'-9 END SPANS — 3 - 96'-6 INTERIOR SPANS

GENERAL NOTES & QUANTITIES

STA. 484+28.00 (℄ IA 21) — JANUARY, 2020

KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 3 — FILE NO. 31799 — DESIGN NO. 220

whks engineers + planners + land surveyors

DESIGN TEAM : DJA/CVF/AJV | KEOKUK COUNTY | PROJECT NUMBER STP-021-1(34)--2C-54 | SHEET NUMBER V.1

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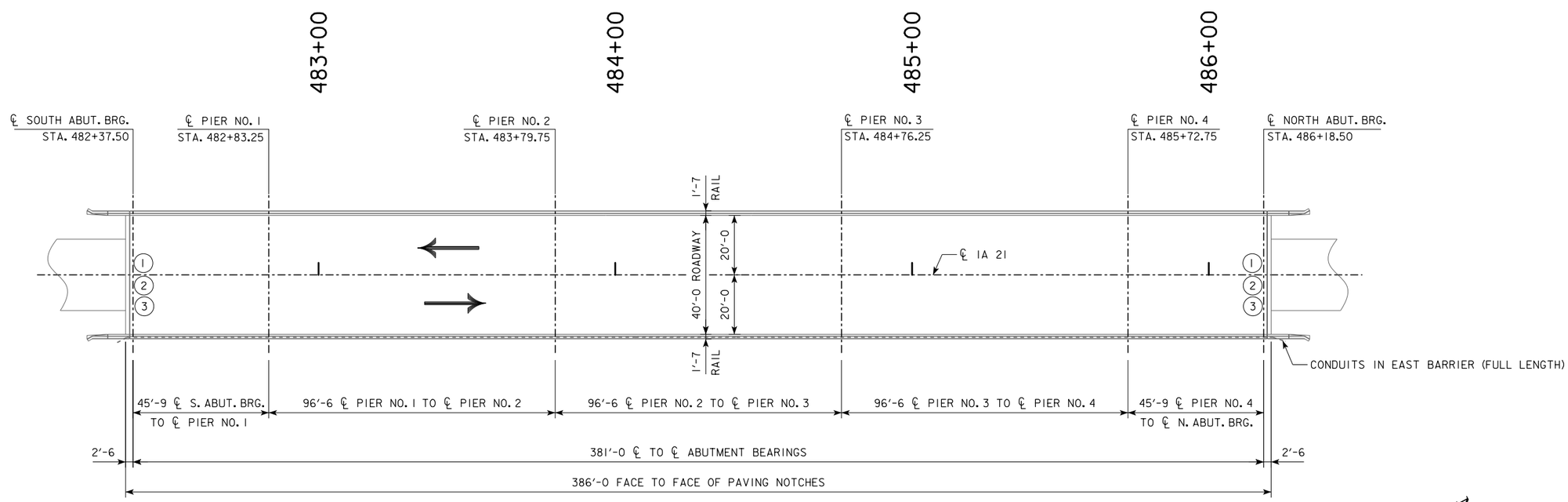

SITUATION PLAN

REPAIRS SHALL CONSIST OF:

1. REMOVE THE EXISTING STEEL EXTRUSION JOINT NEOPRENE GLAND AND INSTALL A NEW PREFORMED, PRE-COMPRESSED, SELF-EXPANDING SEALANT SYSTEM AT BOTH ABUTMENT JOINTS.
2. CLEAN AND SEAL BEAM ENDS AND ABUTMENTS.
3. CLEAN AND PAINT THE ABUTMENT BEARINGS.

TRAFFIC ESTIMATE

2018 AADT	730	V.P.D.
TRUCKS	14	%

LOCATION:

IA 21 OVER NORTH SKUNK RIVER
T-75N, R-13W
SECTION 14
WARREN TOWNSHIP
KEOKUK COUNTY
MAINT. NO. 5409.8S021
FHWA NO. 211041
LATITUDE 41.302073°
LONGITUDE -92.331165°

DESIGN FOR REPAIR TO A 0° SKEW

381'-0x40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

45'-9 END SPANS — 3 - 96'-6 INTERIOR SPANS

SITUATION PLAN

STA. 484+28.00 (℄ IA 21) — JANUARY, 2020

KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 3 FILE NO. 31799 DESIGN NO. 220

whks engineers + planners + land surveyors

DESIGN TEAM : DJA/CVF/AJV | KEOKUK COUNTY | PROJECT NUMBER STP-021-1(34)--2C-54 | SHEET NUMBER V.2

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SELF-EXPANDING SEALANT SYSTEM NOTES:

THE SELF-EXPANDING SEALANT SYSTEM SHALL BE IN ACCORDANCE WITH ARTICLE 4136.03, E OF THE STANDARD SPECIFICATIONS, AND IOWA DOT MATERIALS I.M. 436.07. THE SELF-EXPANDING SEALANT SYSTEM SHALL BE FROM THE IOWA DOT MATERIALS APPROVED PRODUCT LISTING ENTERPRISE (MAPLE).

A TECHNICAL REPRESENTATIVE OF THE MANUFACTURER SHALL BE PROVIDED AT THE JOBSITE DURING INSTALLATION TO REVIEW PROCEDURES.

CLEAN THE SURFACES OF THE EXISTING EXPANSION DEVICE (EXTRUSIONS) AND ADJACENT CONCRETE TO WHICH THE JOINT SEALANT WILL BE ATTACHED TO A DEPTH OF AT LEAST $\frac{1}{2}$" BELOW THE BOTTOM OF THE FOAM JOINT MATERIAL. ALL LAITANCE, RUST, AND DEBRIS SHOULD BE REMOVED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS BEFORE INSTALLING THE SEALANT SYSTEM.

THE SEALANT SYSTEM SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS WITH THE FOLLOWING POSSIBLE EXCEPTION: A FIELD-APPLIED SILICONE SEALANT EDGE BEAD AS NOTED AND SHOWN ON THIS SHEET SHALL BE APPLIED REGARDLESS OF WHETHER OR NOT THE MANUFACTURER REQUIRES THIS STEP. IF THE MANUFACTURER DOES NOT INCLUDE THIS STEP IN THEIR STANDARD PROCEDURE THE SILICONE SEALANT USED IN THIS STEP SHALL BE IDENTICAL TO THE SEALANT PROVIDED BY THE MANUFACTURER FOR USE ON THE BUTT SPLICE.

THE SEALANT SYSTEM SHALL EXTEND FULL WIDTH OUT-TO-OUT OF THE EXISTING EXTRUSION JOINT INCLUDING THE EXISTING UPTURNED ENDS. AT UPTURNED ENDS IN THE CURBS USE A NOTCH AND MITER METHOD. FOLLOW THE GUIDANCE PROVIDED BY MANUFACTURER'S RECOMMENDATIONS AND/OR TECHNICAL REPRESENTATIVE.

SEALANT WIDTH MUST BE SIZED SO THAT IT CAN BE INSTALLED IN THE PROPER WIDTH OPENING FOR THE APPROPRIATE TEMPERATURE AT THE TIME OF INSTALLATION. CONTACT THE MANUFACTURER FOR INFORMATION REQUIRED BY THEM TO ASSURE APPROPRIATE SIZE IS ORDERED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD MEASURING THE JOINT AND COORDINATING THE ACTUAL PRODUCT DIMENSIONS WITH THE TECHNICAL REPRESENTATIVE. FOR INFORMATION ONLY: A JOINT OPENING OF $\frac{3}{4}$" (PERPENDICULAR TO THE JOINT) WAS MEASURED AT BOTH ABUTMENTS AT APPROXIMATELY 65°F ON 10-9-2019.

THE NUMBER OF FEET OF SELF-EXPANDING SEALANT SYSTEM INSTALLED SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER FOOT BASED ON PLAN QUANTITIES. THE PRICE FOR "PREFORMED, PRE-COMPRESSED, SELF-EXPANDING SEALANT SYSTEM WITH SILICONE PRE-COATED SURFACE" SHALL BE FULL COMPENSATION FOR FURNISHING, INSTALLING, AND TESTING OF THE NEW SEALANT SYSTEM. THIS WORK WILL CONSIST OF CLEANING THE EXISTING EXTRUSIONS AND CONCRETE, INSTALLATION OF THE SEALANT SYSTEM, AND WATERTIGHT TESTING OF THE SEALANT SYSTEM. ALL WORK AND MATERIALS NECESSARY FOR THE INSTALLATION OF THE SEALANT SYSTEM SHALL COMPLY WITH THE RECOMMENDATIONS OF THE SEALANT SYSTEM MANUFACTURER EXCEPT AS NOTED AND SHOWN. THE PRICE BID FOR THIS ITEM SHALL INCLUDE ALL WATERTIGHT INTEGRITY TESTING, LEAK REPAIRS AS DIRECTED BY THE ENGINEER, AND SUBSEQUENT WATERTIGHT TESTING UNTIL A LEAK FREE INSTALLATION IS ACHIEVED.

REMOVAL NOTE:

THE EXISTING NEOPRENE GLAND SHALL BE REMOVED. THE EXISTING $\frac{3}{8}$" BARRIER CURB PLATES SHALL BE REMOVED AND REINSTALLED. ALL COSTS ASSOCIATED WITH REMOVING, DISPOSING OF, OR REINSTALLING ALL MATERIALS AS NOTED OR SHOWN IN THESE PLANS SHALL BE INCLUDED IN THE PRICE BID FOR "REMOVALS, AS PER PLAN".

SELF-EXPANDING SEALANT SYSTEM WATERTIGHT INTEGRITY TESTING AND REPAIR NOTES:

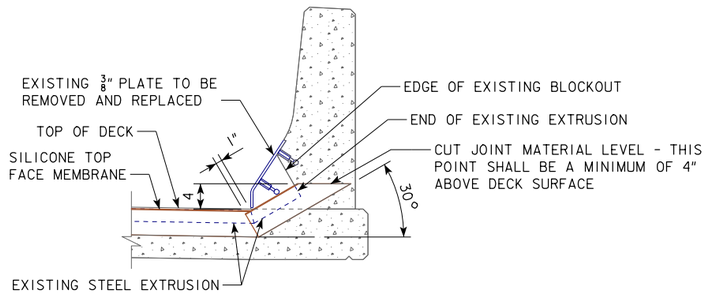
AFTER INSTALLATION OF THE GLUED-IN FOAM SEAL, THE CONTRACTOR SHALL PERFORM WATERTIGHT INTEGRITY TESTS AT THE DECK LEVEL TO DETECT ANY LEAKAGE. THE TESTS ARE TO CHECK FOR LEAKAGE AT THE UPTURNED ENDS OF THE EXPANSION DEVICE AND FOR LEAKAGE ALONG THE EXPANSION DEVICE ACROSS THE DECK. THE CONTRACTOR MAY CONDUCT SEPARATE TESTS OF UPTURNED ENDS AND ONE OR MORE TESTS OF OVERLAPPING LENGTHS BETWEEN THE UPTURNED ENDS.

AT EACH UPTURNED END OF THE EXPANSION DEVICE, THE CONTRACTOR SHALL BLOCK OUT ON THE DECK AT LEAST 3 FEET OF THE EXPANSION DEVICE LEADING TO THE UPTURNED END AND FLOOD THE AREA. A MINIMUM WATER DEPTH OF 3" SHALL BE MAINTAINED AT THE GUTTERLINE FOR AT LEAST 30 MINUTES. DURING THE TEST, THE INSPECTOR SHALL OBSERVE FOR ANY OVERFLOW AT THE UPTURNED END. AT THE CONCLUSION OF THE TEST THE INSPECTOR WILL EXAMINE THE END OF THE JOINT OPENING AT THE OUTSIDE FACE OF THE WING FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF THE INSPECTOR OBSERVES NO OVERFLOW DURING THE TEST AND IF NO DRIPPING WATER IS VISIBLE WITHIN THE JOINT OPENING AT THE OUTSIDE FACE OF THE WING.

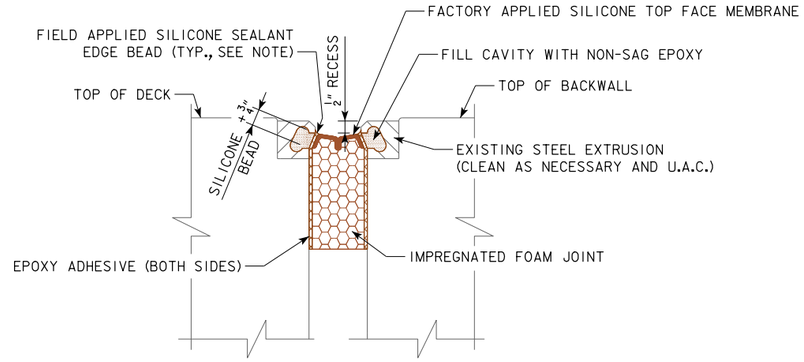
THE CONTRACTOR SHALL TEST THE EXPANSION DEVICE BETWEEN UPTURNED ENDS BY BLOCKING OUT AND COVERING THE DEVICE WITH PONDED OR FLOWING WATER TO A DEPTH OF AT LEAST 1" AT ALL POINTS, FOR AT LEAST 30 MINUTES. VERTICAL CURB SURFACES MAY BE TESTED WITH AN UNNOZZLED HOSE DELIVERING APPROXIMATELY ONE GALLON PER MINUTE DIRECTED TO FLOW OVER THE ENTIRE CURB HEIGHT FOR 30 MINUTES. AT THE CONCLUSION OF THE TEST, THE INSPECTOR WILL EXAMINE THE UNDERSIDE OF THE JOINT FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF NO DRIPPING WATER OR WATER DROPLETS ARE VISIBLE IN THE UNDERDECK AREAS ALONG THE FULL LENGTH OF THE EXPANSION JOINT. DAMP CONCRETE THAT DOES NOT SHOW DRIPPING WATER OR WATER DROPLETS IS NOT CONSIDERED A SIGN OF LEAKAGE.

IF THE EXPANSION DEVICE LEAKS AT AN UPTURNED END OR ALONG ITS LENGTH, THE CONTRACTOR SHALL LOCATE THE LEAK(S) AND TAKE REPAIR MEASURES TO STOP THE LEAKAGE. THE REPAIR MEASURES SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING CORRECTIVE WORK.

IF MEASURES TO ELIMINATE LEAKAGE ARE TAKEN, THE CONTRACTOR SHALL PERFORM SUBSEQUENT WATERTIGHT TESTS SUBJECT TO THE SAME CONDITIONS AS THE ORIGINAL TEST.



UPTURNED END DETAILS



TYP. SECTION THRU BOTH ABUTMENT JOINTS

SEALANT EDGE BEAD NOTE:
BEFORE THE EPOXY ADHESIVE CURES, FORCE THE TIP OF THE SEALANT TUBE BETWEEN THE SUBSTRATE AND FOAM. INJECT A $\frac{3}{4}$" SILICONE SEALANT EDGE BEAD BETWEEN THE FOAM, SILICONE TOP FACE MEMBRANE AND SUBSTRATE. USING A CAULK KNIFE, TOOL THE OVERFLOW SILICONE SEALANT INTO A COVE BEAD BETWEEN THE SILICONE TOP FACE MEMBRANE AND THE SUBSTRATE.

whks
engineers + planners + land surveyors

DESIGN FOR REPAIR TO A 0° SKEW

381'-0x40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

45'-9 END SPANS — 3 - 96'-6 INTERIOR SPANS

JOINT SEAL DETAILS

STA. 484+28.00 (℄ IA 21) — JANUARY, 2020

KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 3 FILE NO. 31799 DESIGN NO. 220

DESIGN TEAM : DJA/CVF/AJV | KEOKUK COUNTY | PROJECT NUMBER STP-021-1(34)--2C-54 | SHEET NUMBER V.3

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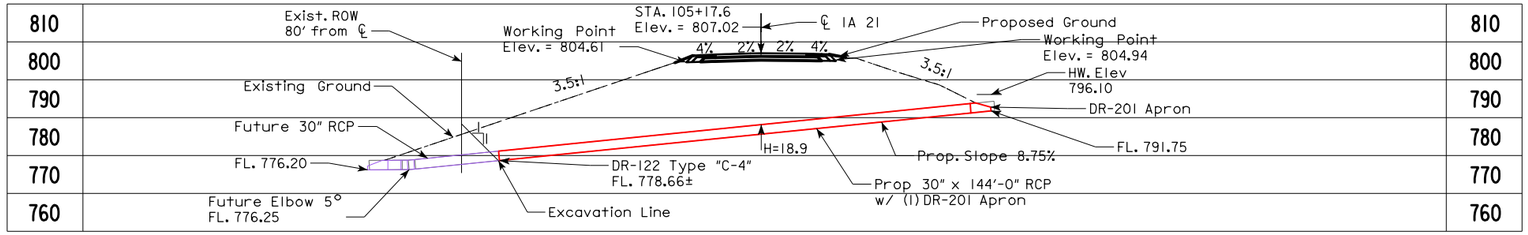
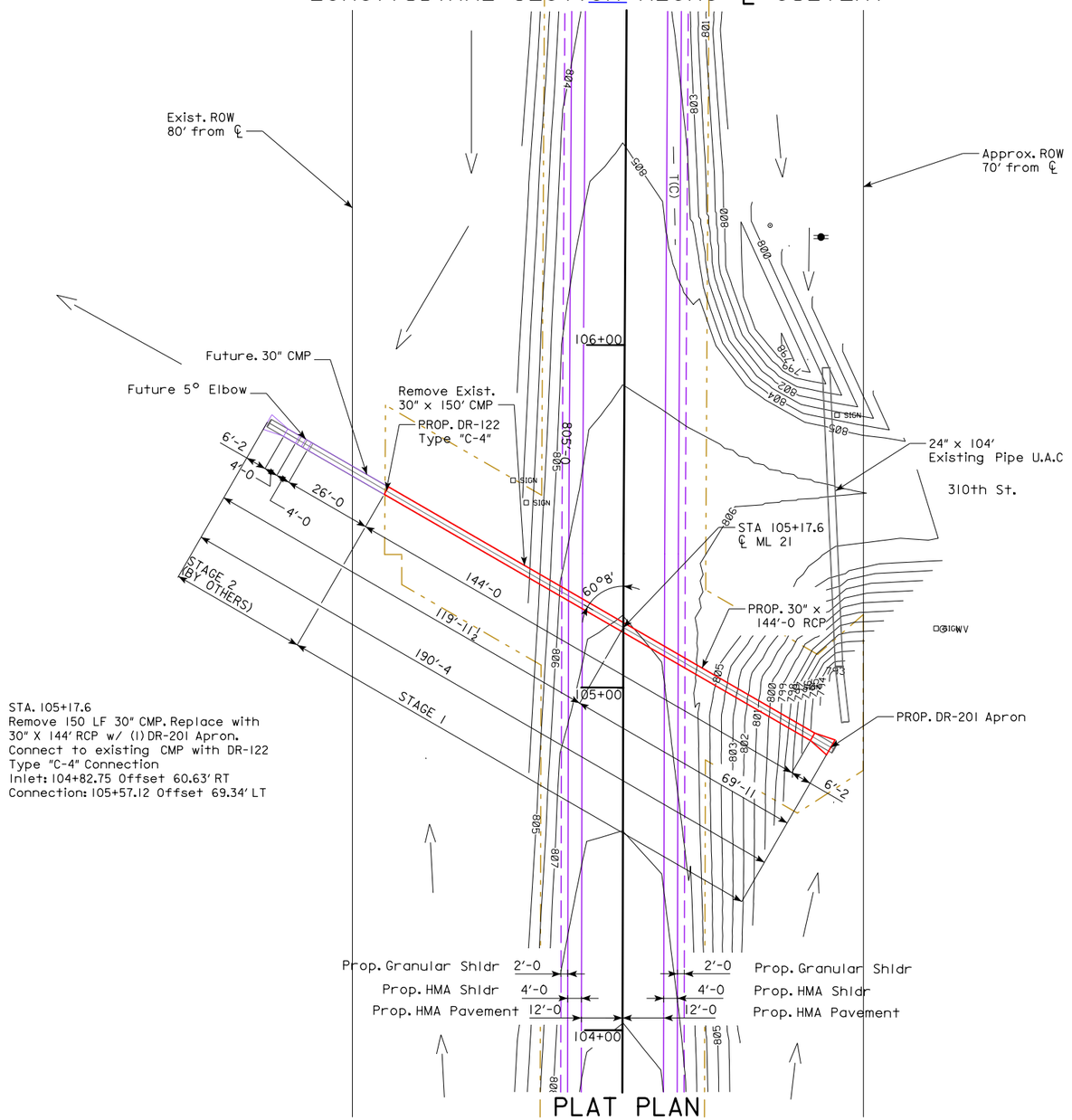


LONGITUDINAL SECTION ALONG ℄ CULVERT



STA. 105+17.6
Remove 150 LF 30" CMP. Replace with
30" X 144' RCP w/ (1) DR-201 Apron.
Connect to existing CMP with DR-122
Type "C-4" Connection
Inlet: 104+82.75 Offset 60.63' RT
Connection: 105+57.12 Offset 69.34' LT

PLAT PLAN

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 15 ACRES HR
Q_{50} = 41 CFS
HW ELEV. = 796.10

LOCATION

IA 21
T-74N R-13W
SECTION 15, 22 & 23
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

— T(C) — — - TELEPHONE

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

NOTES:

Excavate at 1:1 slope from ROW line until existing pipe is encountered. Cut existing 30" CMP and replace with 30" RCP within trench limits. Connect CMP and RCP using DR-122 Type "C-4" Connection.

Class B Bedding. Class IV (3000D) Pipe

0 ENGLISH 40
SCALE IN FEET

STAGE 1

DESIGN FOR 60°08' SKEW

RCP - 30" x 144'-0 WITH (1)DR-201 APRON AND (1)DR-122 TYPE "C-4" CONNECTION PLAT PLAN

STA. 105+17.6 (IA 21)

KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER	V.4

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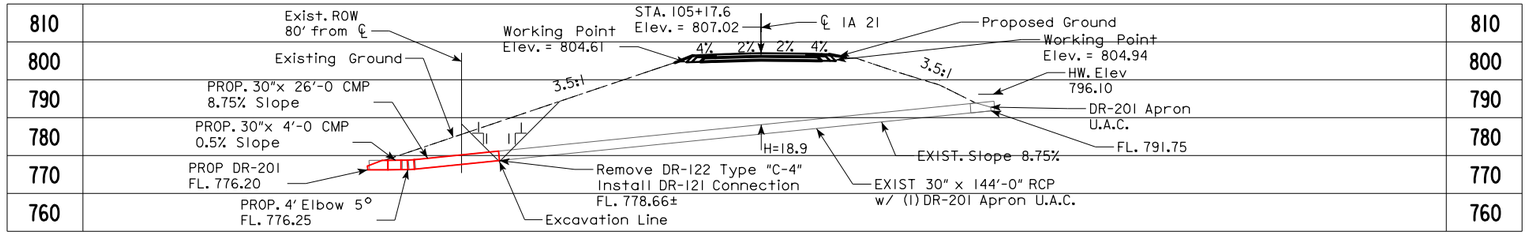
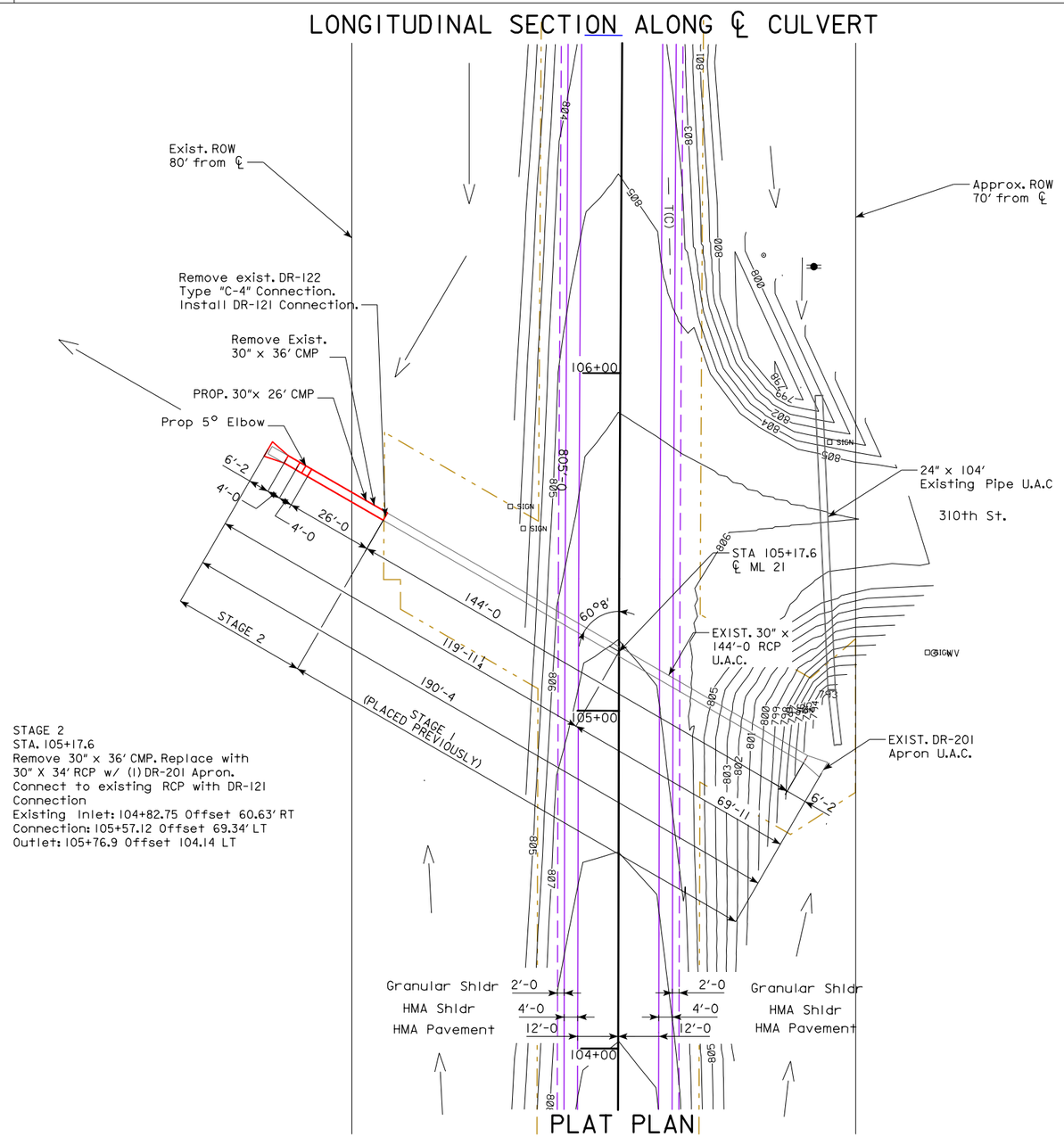


LONGITUDINAL SECTION ALONG ℄ CULVERT



STAGE 2
STA. 105+17.6
Remove 30" x 36' CMP. Replace with
30" X 34' RCP w/ (1) DR-201 Apron.
Connect to existing RCP with DR-121
Connection
Existing Inlet: 104+82.75 Offset 60.63' RT
Connection: 105+57.12 Offset 69.34' LT
Outlet: 105+76.9 Offset 104.14 LT

PLAT PLAN

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 15 ACRES HR
Q_{50} = 41 CFS
HW ELEV. = 796.10

LOCATION

IA 21
T-74N R-13W
SECTION 15, 22 & 23
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

— T(C) — — - TELEPHONE

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

NOTES:

Excavate at 1:1 slope from ROW line until existing pipe is encountered. Then excavate at a 1:1 slope from trench bottom until existing ground is reached. Remove existing DR-122 connection and 30" CMP and replace with DR-121 connection and 30" RCP.

Class B Bedding. Class IV (3000D) Pipe

0 ENGLISH 40
SCALE IN FEET

STAGE 2

DESIGN FOR 60°08' SKEW

RCP - 30" x 34'-0
WITH (1)DR-201 APRON AND (1)DR-121 CONNECTION
PLAT PLAN
KEOKUK COUNTY

STA. 105+17.6 (IA 21)

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER	V.5

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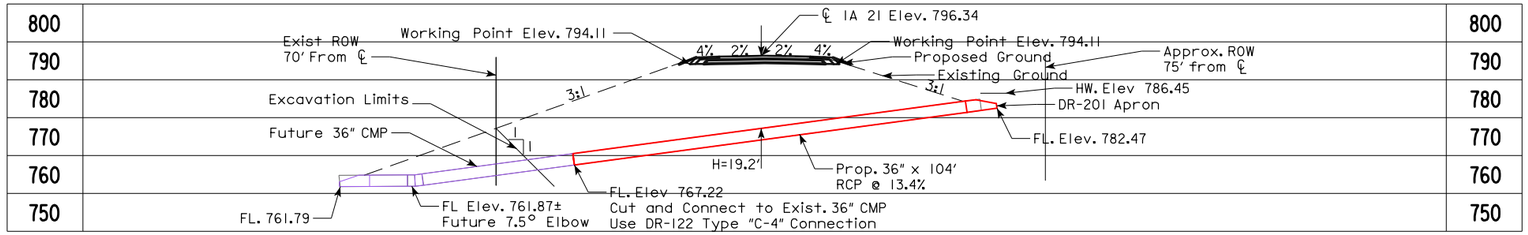

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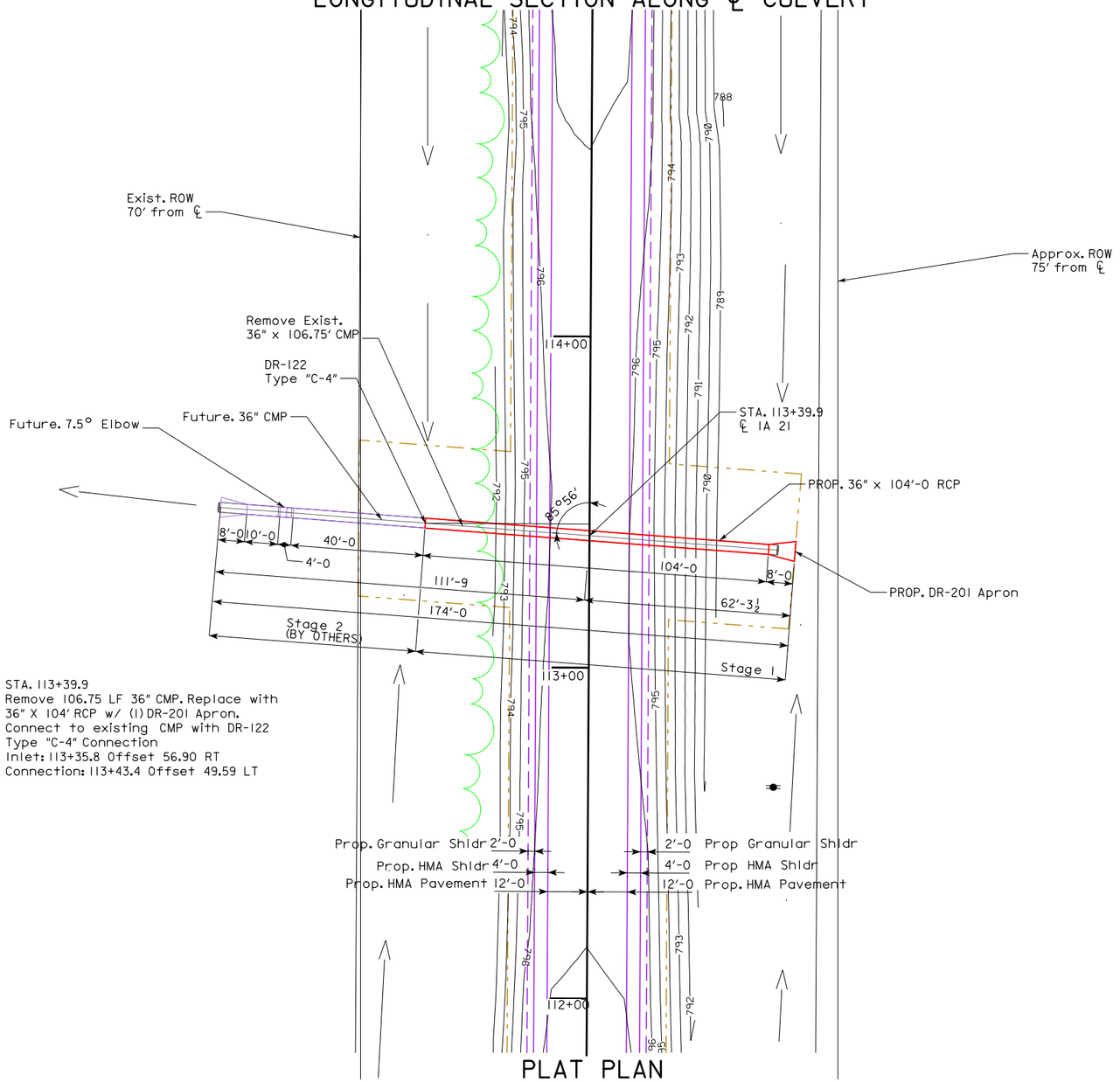

PLAT PLAN

STA. 113+39.9
Remove 106.75 LF 36" CMP. Replace with
36" X 104' RCP w/ (1) DR-201 Apron.
Connect to existing CMP with DR-122
Type "C-4" Connection
Inlet: 113+35.8 Offset 56.90 RT
Connection: 113+43.4 Offset 49.59 LT

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 25 ACRES R
Q_{50} = 52 CFS
HW ELEV. = 786.45

LOCATION

IA 21
T-74N R-13W
SECTION 14 & 15
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

NO KNOWN UTILITIES

Notes:

Excavate at 1:1 slope from ROW line until existing pipe is encountered. Cut existing 36" CMP and replace with 36" RCP within trench limits. Connect CMP and RCP using DR-122 Type "C-4" Connection.

Class B Bedding. Class IV (3000D) Pipe

N

0 ENGLISH 40
SCALE IN FEET

STAGE 1

DESIGN FOR 04°04' SKEW L.A.H.

RCP - 36" x 104'-0
WITH (1)DR-201 APRON AND
(1)DR-122 TYPE "C-4" CONNECTION
PLAT PLAN

STA. 113+39.9 (IA 21)

KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.6

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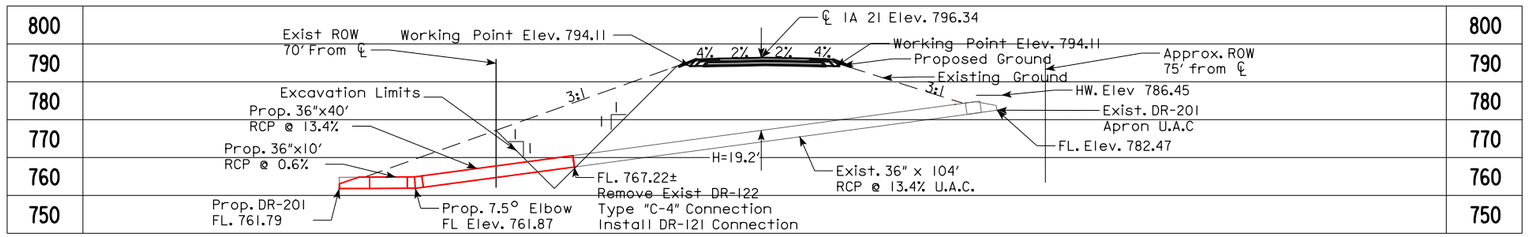

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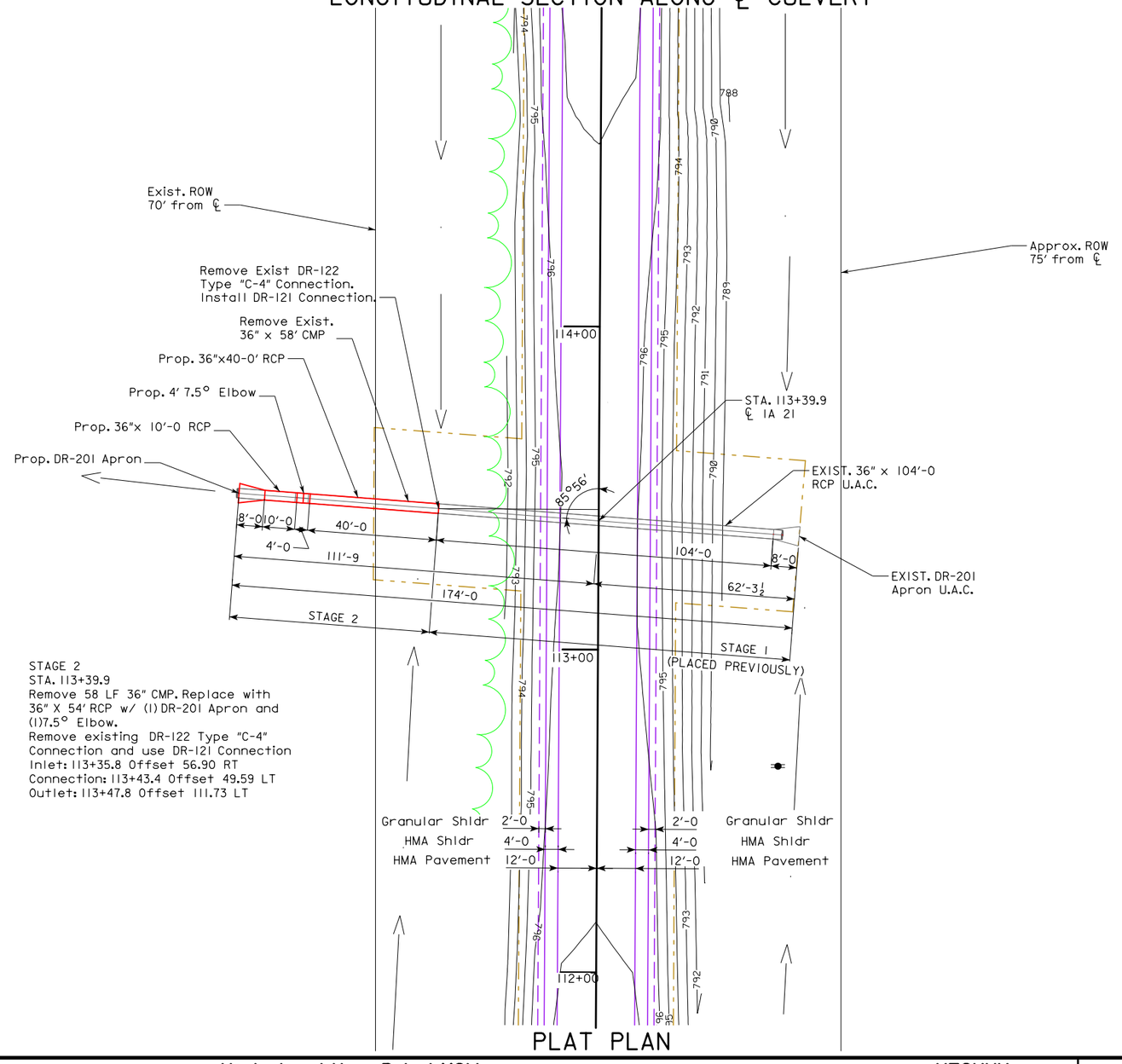

STAGE 2
STA. 113+39.9
Remove 58 LF 36" CMP. Replace with 36" X 54' RCP w/ (1) DR-201 Apron and (1) 7.5° Elbow.
Remove existing DR-122 Type "C-4" Connection and use DR-121 Connection
Inlet: 113+35.8 Offset 56.90 RT
Connection: 113+43.4 Offset 49.59 LT
Outlet: 113+47.8 Offset 111.73 LT

PLAT PLAN

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 25 ACRES R
Q_{50} = 52 CFS
HW ELEV. = 786.45

LOCATION

IA 21
T-74N R-13W
SECTION 14 & 15
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

NO KNOWN UTILITIES

Notes:

Excavate at 1:1 slope from ROW line until existing pipe is encountered. Then excavate at a 1:1 slope from trench bottom until existing ground is reached. Remove existing DR-122 connection and 36" CMP and replace with DR-121 connection and 36" RCP.

Class B Bedding. Class IV (3000D) Pipe

N

0 ENGLISH 40
SCALE IN FEET

STAGE 2

DESIGN FOR 04°04' SKEW L.A.H.

RCP - 36" x 54'-0
WITH (1)DR-201 APRON AND (1)DR-121 CONNECTION
PLAT PLAN
KEOKUK COUNTY

STA. 113+39.9 (IA 21)

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.7

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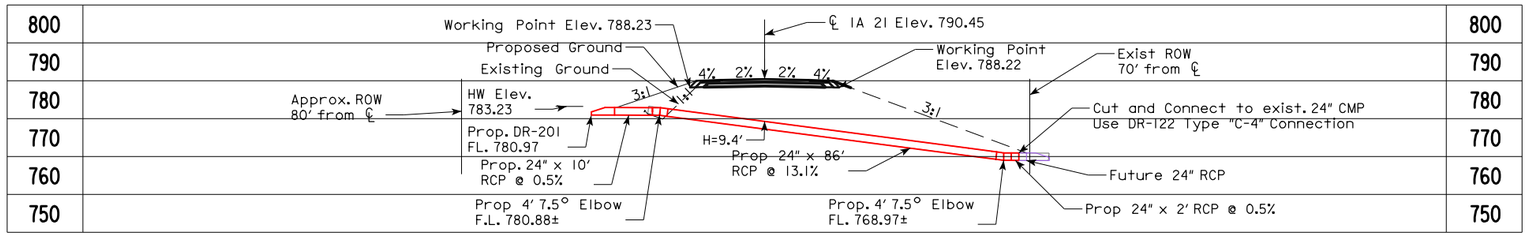
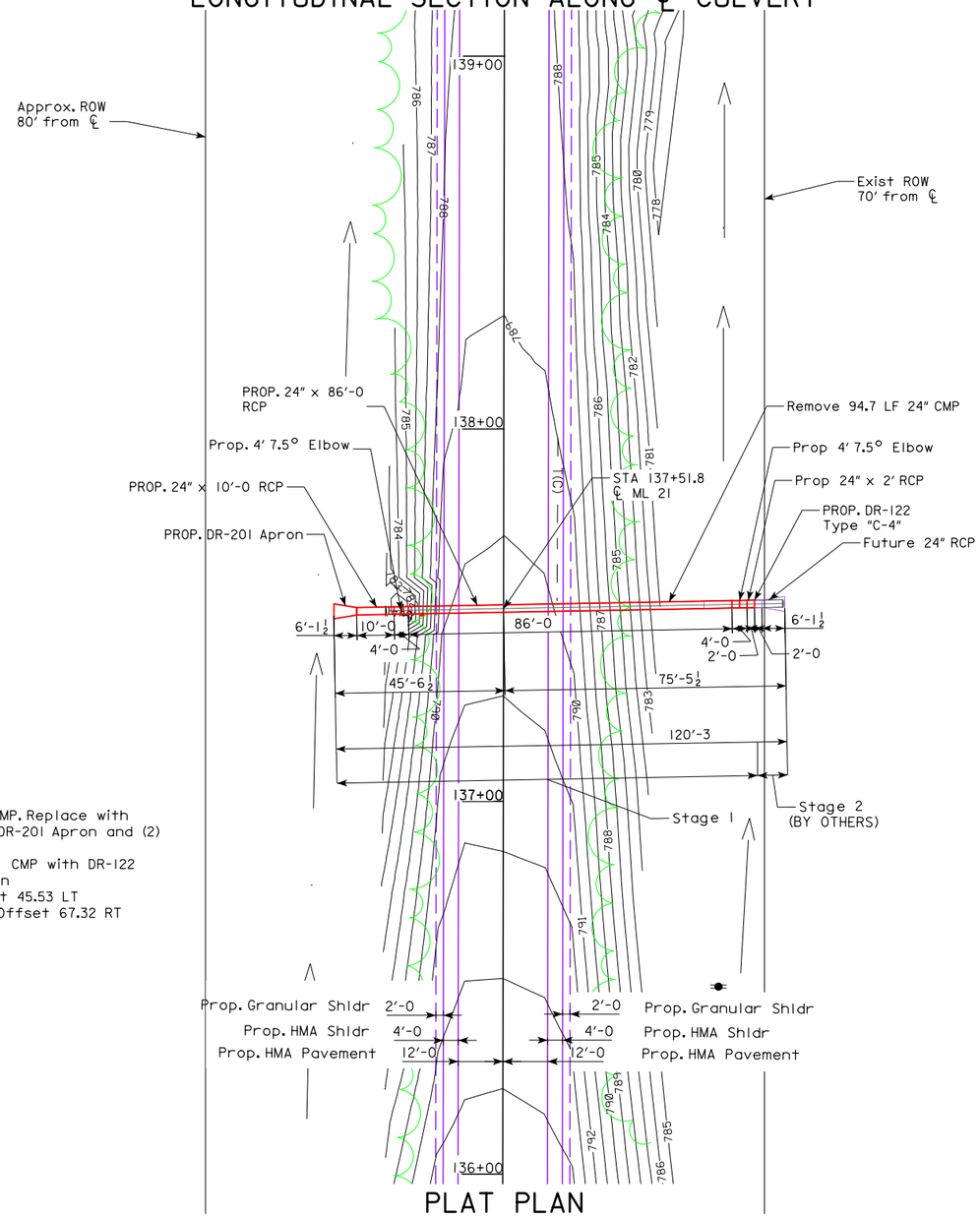


LONGITUDINAL SECTION ALONG ℄ CULVERT



STAGE 1
STA. 137+51.8
Remove 94.7 LF 24" CMP. Replace with 24" X 106' RCP w/ (1) DR-201 Apron and (2) 7.5° Elbows.
Connect to existing CMP with DR-122 Type "C-4" Connection
Inlet: 137+51.0 Offset 45.53 LT
Connection: 137+53.1 Offset 67.32 RT

N

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 4 ACRES H
Q_{50} = 16 CFS
HW ELEV. = 783.23

LOCATION

IA 21
T-74N R-13W
SECTION 14 & 15
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

NO KNOWN UTILITIES

Notes:

Excavate at 1:1 slope from ROW line until existing pipe is encountered. Cut existing 24" CMP and replace with 24" RCP within trench Limits. Connect CMP and RCP using DR-122 Type "C-4" Connection.

Class B Bedding. Class II (1500D) Pipe

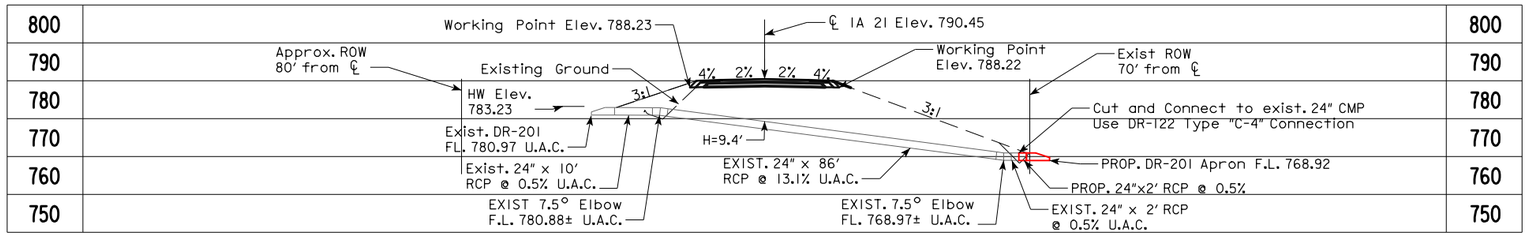
0 ENGLISH 40
SCALE IN FEET

STAGE 1

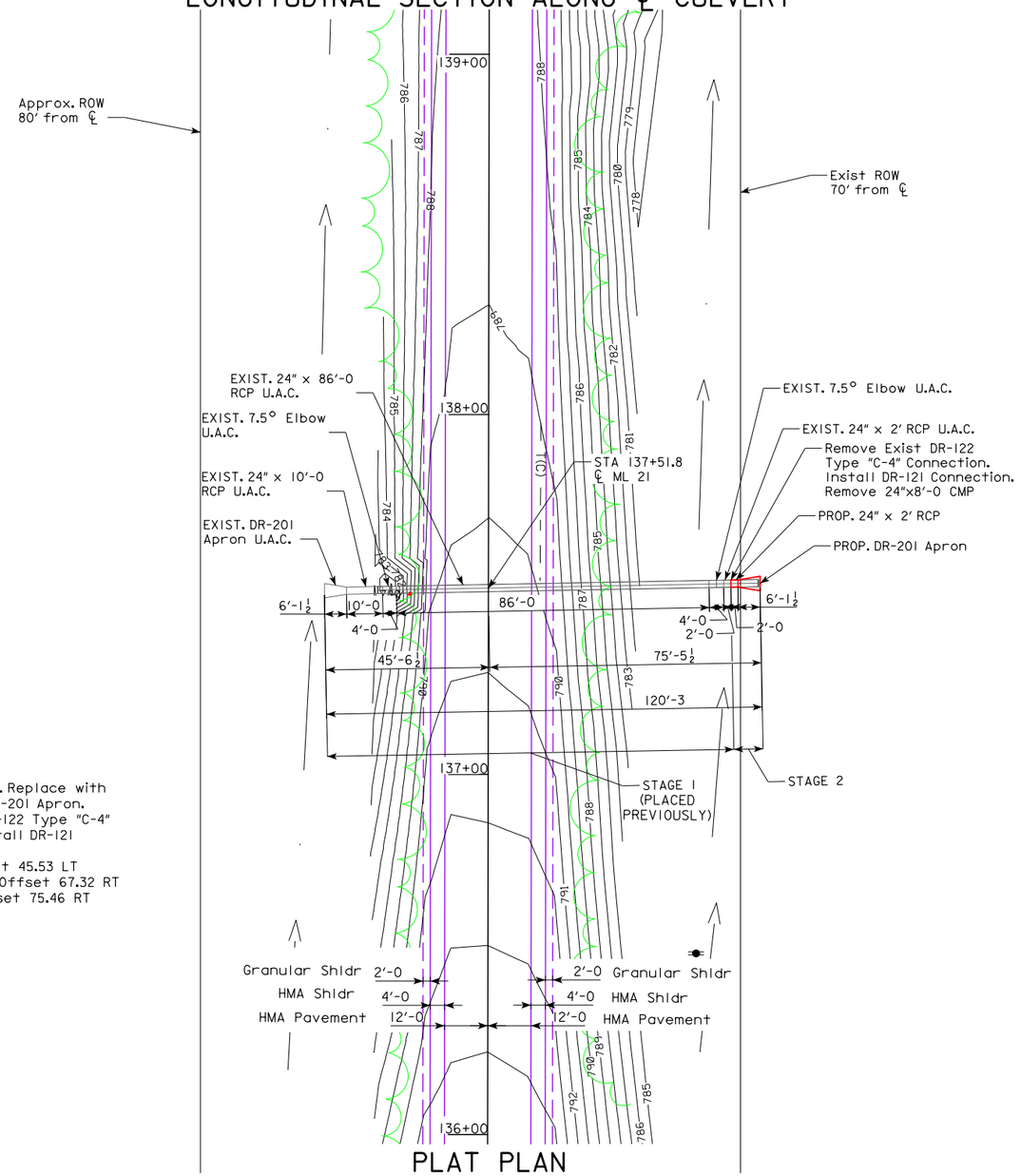
RCP - 24" x 106'-0 WITH (1) DR-201 APRON, (2) 7.5° ELBOWS AND (1) DR-122 TYPE "C-4" CONNECTION

STA. 137+51.8 (IA 21) PLAT PLAN
KEOKUK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER	V.8



LONGITUDINAL SECTION ALONG ℄ CULVERT



STAGE 2
STA. 137+51.8
Remove 8 LF 24" CMP. Replace with 24" X 2' RCP w/ (1) DR-201 Apron.
Remove Existing DR-122 Type "C-4" Connection and Install DR-121 Connection
Inlet: 137+51.0 Offset 45.53 LT
Connection: 137+53.1 Offset 67.32 RT
Outlet: 137+53.2 Offset 75.46 RT

N

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 4 ACRES H
Q_{50} = 16 CFS
HW ELEV. = 783.23

LOCATION

IA 21
T-74N R-13W
SECTION 14 & 15
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

NO KNOWN UTILITIES

Notes:

Excavate at 1:1 slope from ROW line until existing pipe is encountered. Then excavate at a 1:1 slope from trench bottom until existing ground is reached. Remove existing DR-122 connection and 24" CMP and replace with DR-121 connection and 24" RCP.

Class B Bedding. Class II (1500D) Pipe

0 ENGLISH 40
SCALE IN FEET

STAGE 2

RCP - 24" x 2'-0 WITH (1)DR-201 APRON AND (1)DR-122 Connection

STA. 137+51.8 (IA 21) PLAT PLAN
KEOKUK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER	V.9

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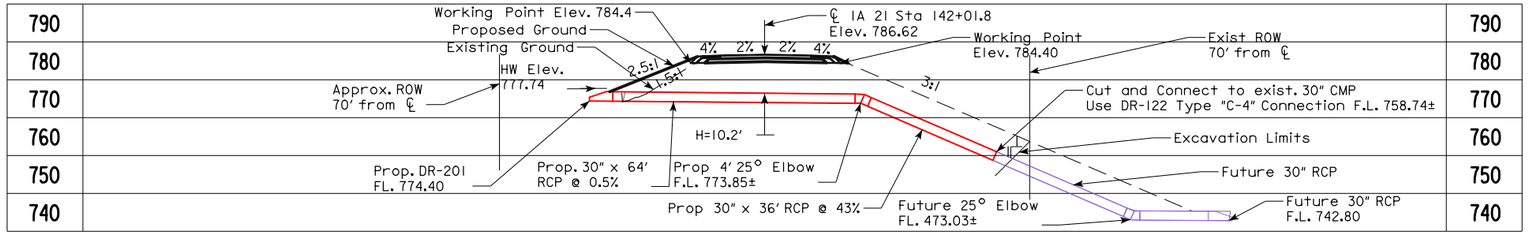

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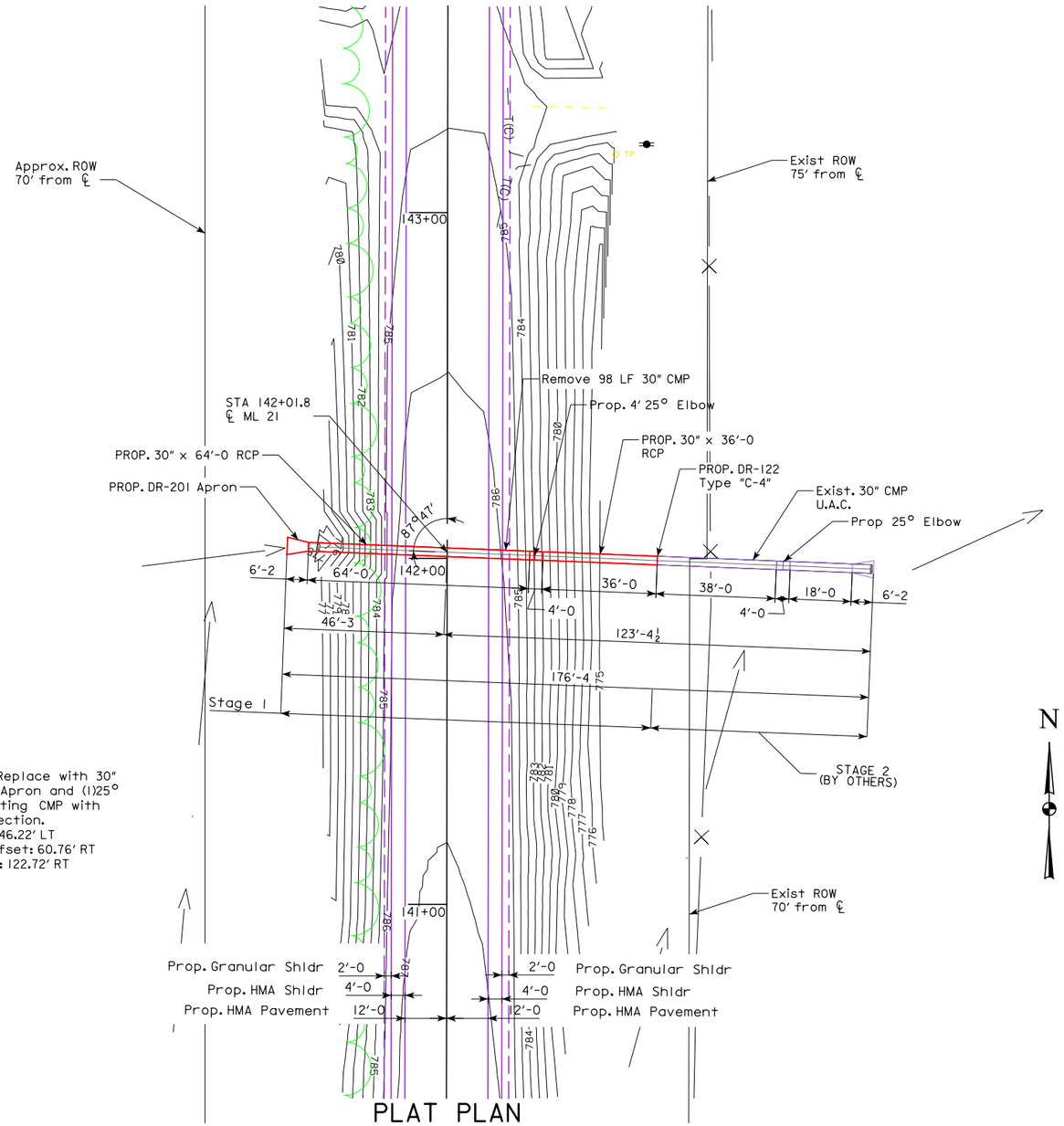

PLAT PLAN

Stage 1
STA. 142+01.8
Remove 98 LF 30" CMP. Replace with 30" x 104' RCP w/ (1)DR-201 Apron and (1)25° Elbow. Connect to existing CMP with DR-122 Type "C-4" Connection.
Inlet: 142+03.5 Offset: 46.22' LT
Connection: 141+99.4 Offset: 60.76' RT
Outlet: 141+96.9 Offset: 122.72' RT

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 10 ACRES H
Q_{50} = 34 CFS
HW ELEV. = 777.74

LOCATION

IA 21
T-74N R-13W
SECTION 14 & 15
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

T(C) — — — TELEPHONE
——— X ——— WIRE FENCE

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

Notes:

Excavate at 1:1 slope from ROW line until existing pipe is encountered. Cut existing 30" CMP and replace with 30" RCP within trench Limits. Connect CMP and RCP using DR-122 Type "C-4" Connection.

Class B Bedding. Class II (1500D) Pipe

N

0 ENGLISH 40
SCALE IN FEET

STAGE 1

DESIGN FOR 2°13' SKEW LAH

RCP - 30" x 104'-0 WITH (1)DR-201 APRON, (1) 25° ELBOW AND (1)DR-122 TYPE "C-4" CONNECTION

STA. 142+01.8 (IA 21) PLAT PLAN

KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.10

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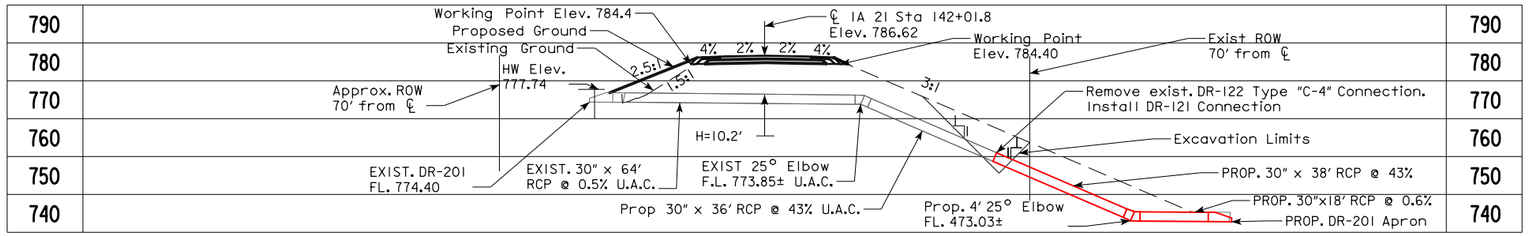
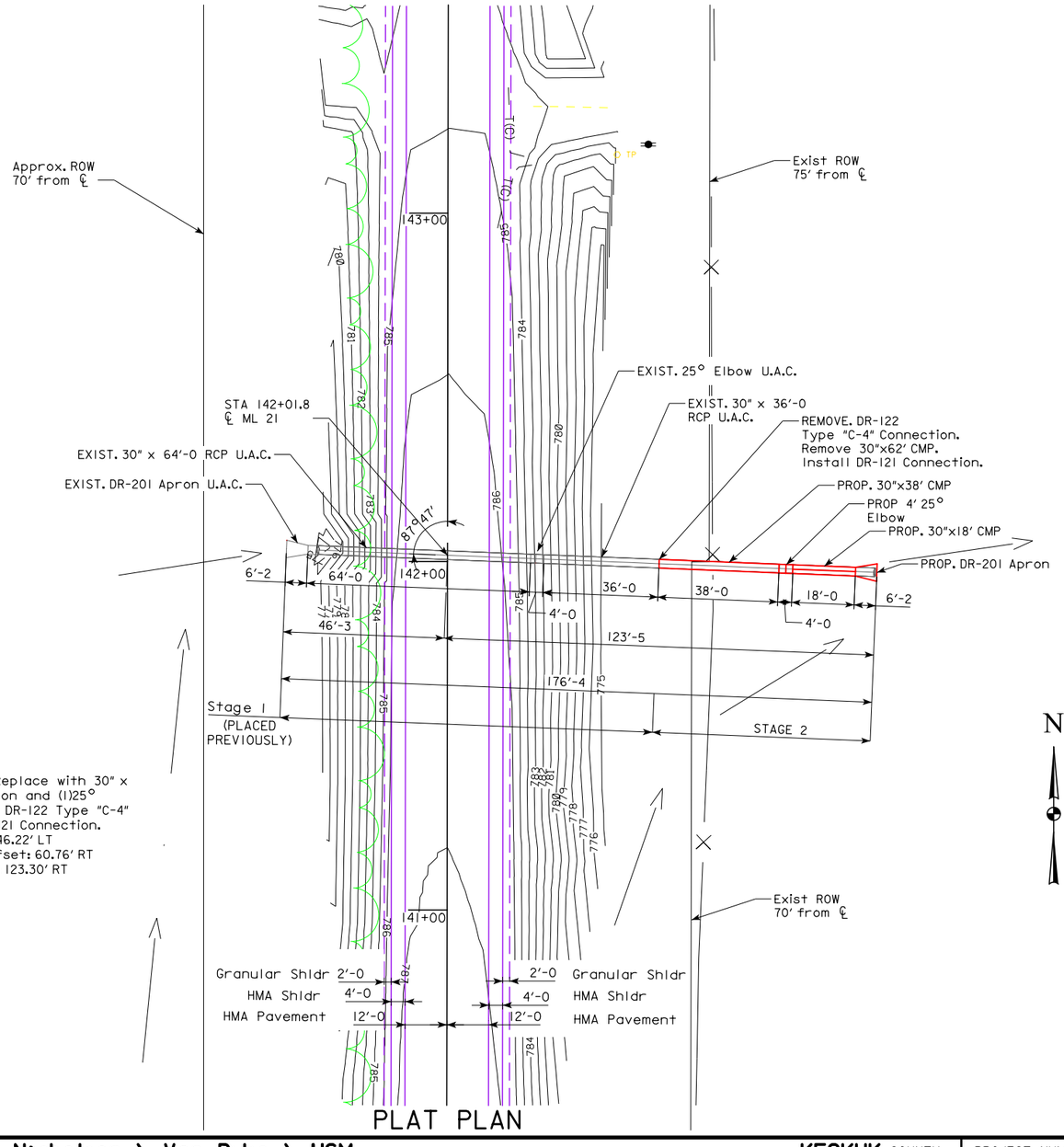


LONGITUDINAL SECTION ALONG ℄ CULVERT



Stage 2
STA. 142+01.8
Remove 62 LF 30" CMP. Replace with 30" x 60' RCP w/ (1)DR-201 Apron and (1)25° Elbow. Remove existing DR-122 Type "C-4" Connection. Install DR-121 Connection.
Inlet: 142+03.5 Offset: 46.22' LT
Connection: 141+99.4 Offset: 60.76' RT
Outlet: 141+96.9 Offset: 123.30' RT

PLAT PLAN

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 10 ACRES H
Q_{50} = 34 CFS
HW ELEV. = 777.74

LOCATION

IA 21
T-74N R-13W
SECTION 14 & 15
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

— T(C) — — — TELEPHONE
——— X ——— WIRE FENCE

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

Notes:

Excavate at 1:1 slope from ROW line until existing pipe is encountered. Then excavate at a 1:1 slope from trench bottom until existing ground is reached. Remove existing DR-122 connection and 30" CMP and replace with DR-121 connection and 30" RCP.

Class B Bedding. Class II (1500D) Pipe

0 ENGLISH 40
SCALE IN FEET

STAGE 2

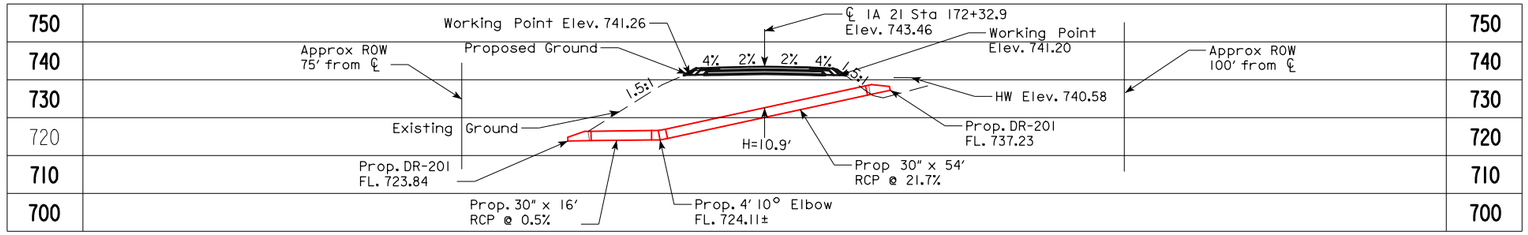
DESIGN FOR 2°13' SKEW

RCP - 30" x 60'-0 WITH (1)DR-201 APRON, (1) 25° ELBOW AND (1)DR-121 CONNECTION

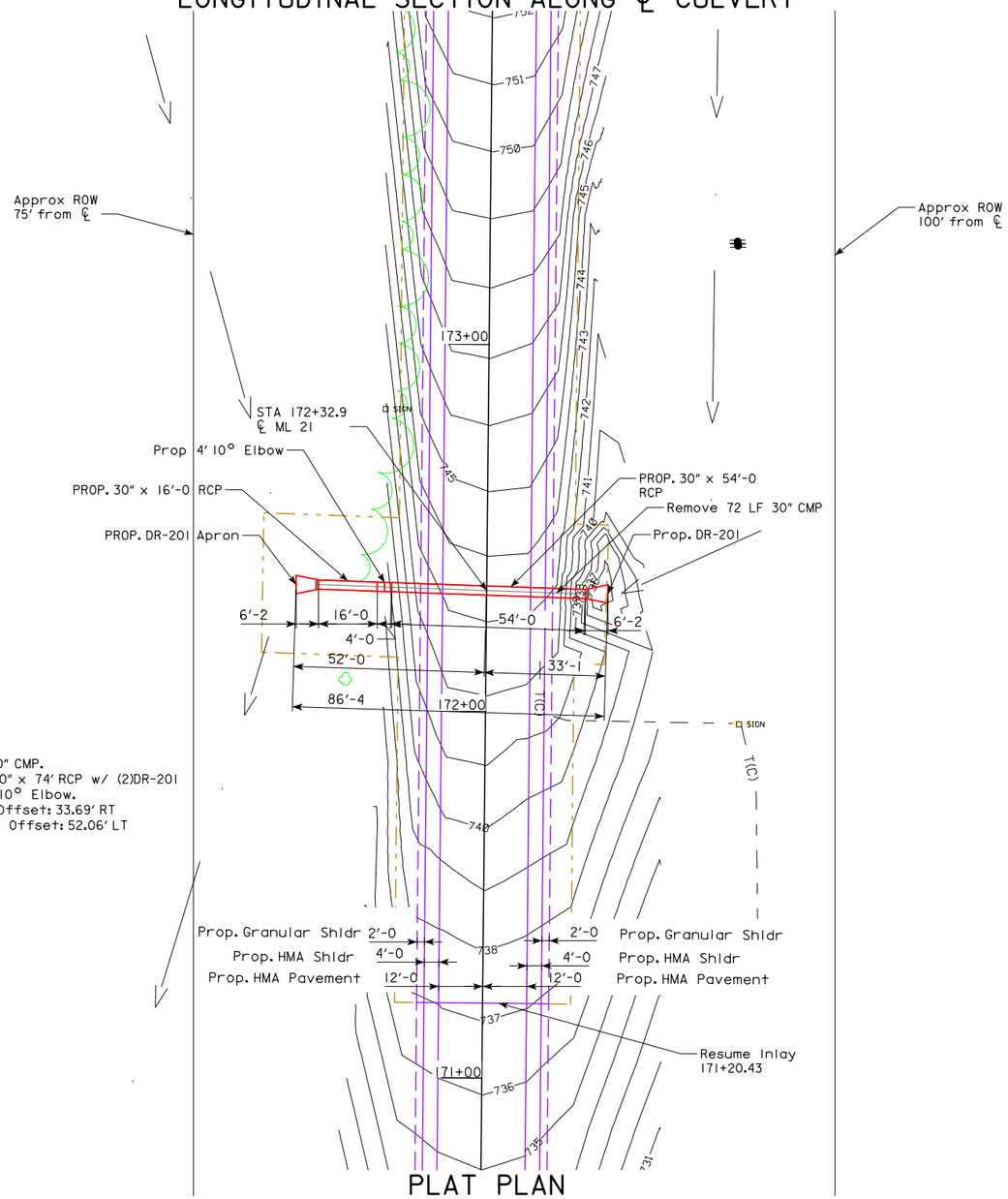
STA. 142+01.8 (IA 21) PLAT PLAN
KEOKUK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.11

12/27/2019 9:18:42 AM LAR pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\Drainage\STR_54021034_DOT_Z13.dgn P_21_142+01 STAGE 2 11x17clr_pdf.plt



LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN

STA. 172+32.9
Remove 72' x 30" CMP.
Replace with 30" x 74' RCP w/ (2)DR-201
Aprons and (1) 10° Elbow.
Inlet: 172+32.3 Offset: 33.69' RT
Outlet: 172+34.0 Offset: 52.06' LT

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 10 ACRES H
Q_{50} = 34 CFS
HW ELEV. = 740.58

LOCATION

IA 21
T-74N R-13W
SECTION 14 & 15
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

— T(C) — — — TELEPHONE

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

NOTES:

Class B Bedding. 1500D (Class 11) Pipe

N

0 ENGLISH 40
SCALE IN FEET

RCP - 30" x 74'-0 WITH (2)DR-201 APRON AND (1) 10° ELBOW

STA. 172+32.9 (IA 21) PLAT PLAN
KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.12

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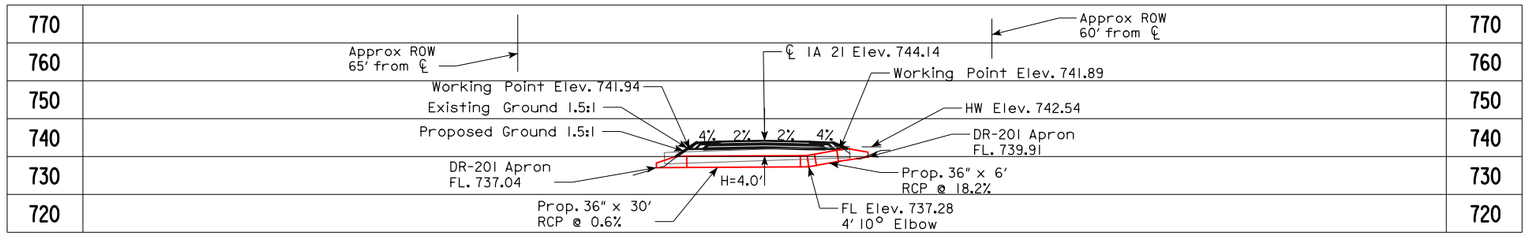

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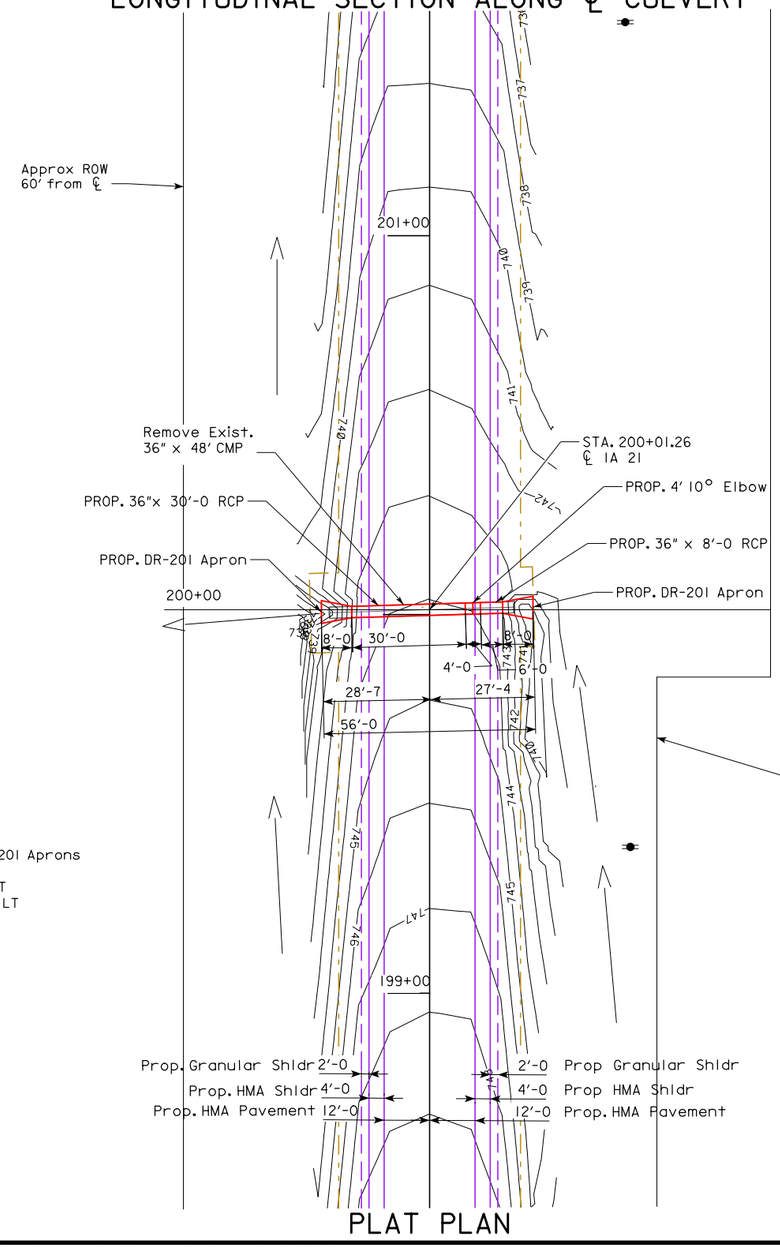


PLAT PLAN

STA. 200+01.26
Remove 48 LF 36" CMP.
Install 36" x 40' RCP w/ (2)DR-201 Aprons
and (1)10°Elbow.
Inlet: 200+01.8 Offset: 27.30 RT
Outlet: 200+00.6 Offset: 28.57 LT

BENCH MARK NO. 4023

HYDRAULIC DATA

DRAINAGE AREA = 16H
Q_{50} = 31 CFS
HW ELEV. = 742.54

LOCATION

IA 21
T-74N R-13W
SECTION 14 & 15
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

NO KNOWN UTILITIES

Notes:

Class B Bedding. Class II (1500D) Pipe

0 ENGLISH 40
SCALE IN FEET

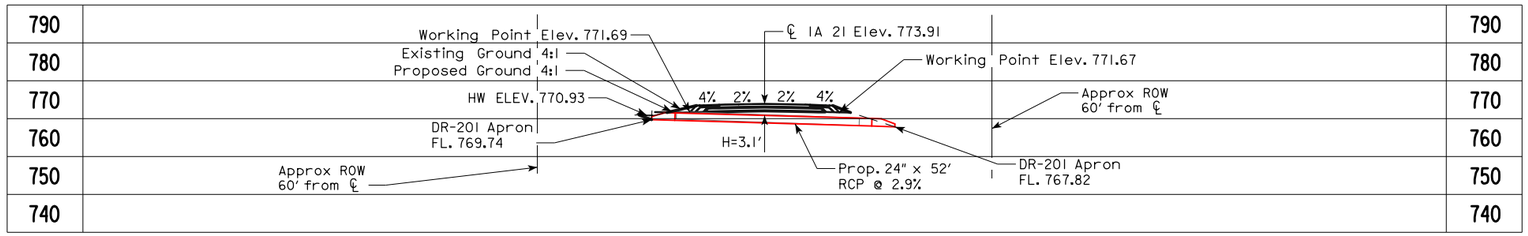
RCP - 36" x 40'-0
WITH (2)DR-201 APRONS
AND (1)10° ELBOW

STA. 200+01.26 (IA 21) PLAT PLAN
KEOKUK COUNTY

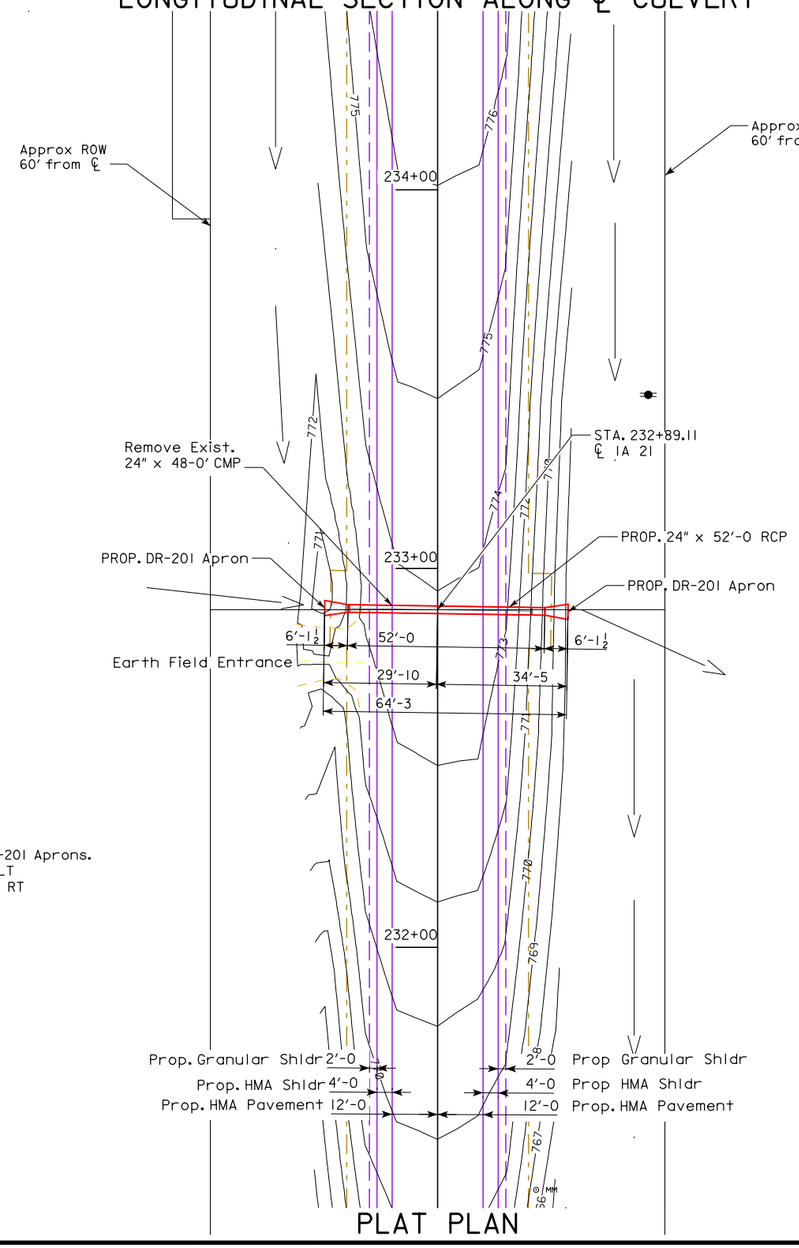
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.13



LONGITUDINAL SECTION ALONG ℄ CULVERT



STA.
Remove 48 LF 24" CMP.
Install 24" x 52' RCP w/ (2)DR-201 Aprons.
Inlet: 232+89.6 Offset: 29.80 LT
Outlet: 232+88.6 Offset: 34.44 RT

BENCH MARK NO. 508

HYDRAULIC DATA

DRAINAGE AREA = 2H
Q_{50} = 6 CFS
HW ELEV. = 770.93

LOCATION

IA 21
T-74N R-13W
SECTION 2 & 3
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

NO KNOWN UTILITIES

Notes:

Class B Bedding. Class II (1500D) Pipe

N

0 ENGLISH 40
SCALE IN FEET

RCP - 24" x 52'-0
WITH (2)DR-201 APRONS

STA. 232+89.11 (IA 21) PLAT PLAN

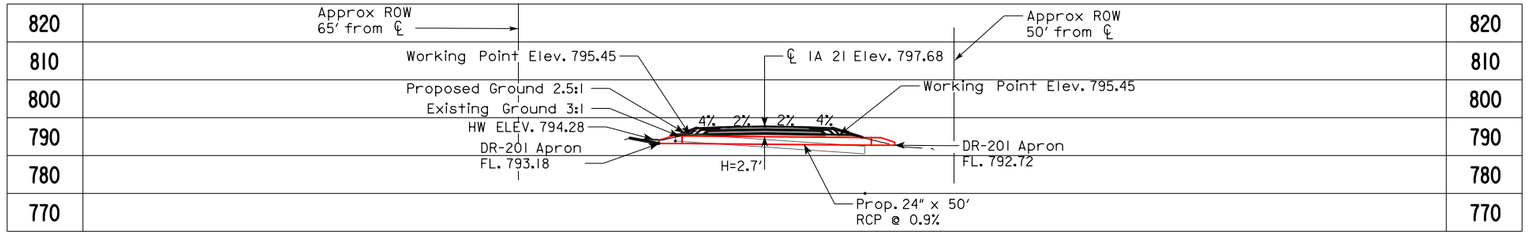
KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

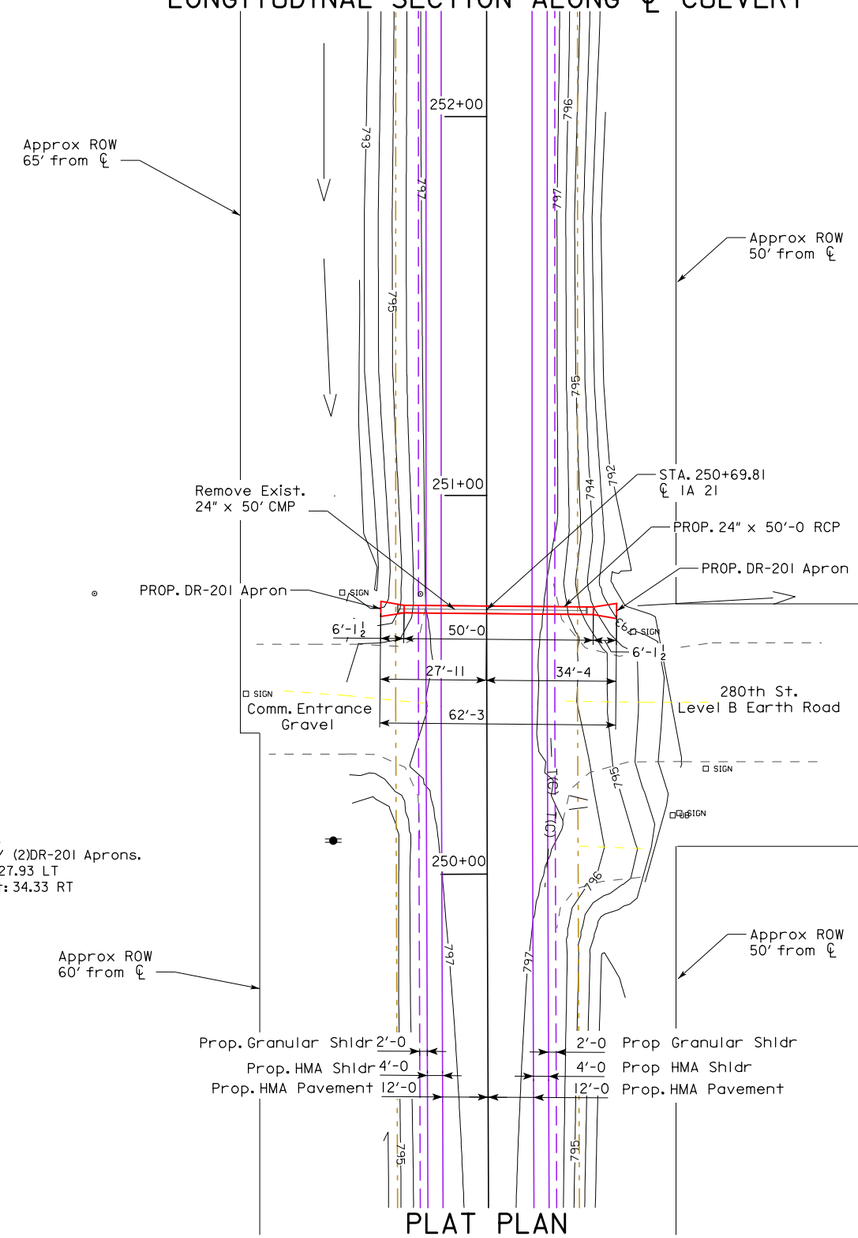
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.14

12/27/2019 9:24:54 AM LAR pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\Drainage\STR_54021034_DOT_Z13.dgn P_21_232+89.11 11x17clr_pdf.plt



LONGITUDINAL SECTION ALONG ℄ CULVERT



STA. 250+69.81
Remove 50 LF 24" CMP.
Install 24" x 50' RCP w/ (2)DR-201 Aprons.
Inlet: 250+70.1 Offset: 27.93 LT
Outlet: 250+69.5 Offset: 34.33 RT

PLAT PLAN

BENCH MARK NO. 508

HYDRAULIC DATA

DRAINAGE AREA = 5F
Q_{50} = 5 CFS
HW ELEV. = 794.28

LOCATION

IA 21
T-74N R-13W
SECTION 2 & 3
BENTON TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

— T(C) — — — TELEPHONE

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

Notes:

Class B Bedding. Class II (1500D) Pipe

0 ENGLISH 40
SCALE IN FEET

RCP - 24" x 50'-0 WITH (2)DR-201 APRONS

STA. 250+69.81 (IA 21) PLAT PLAN

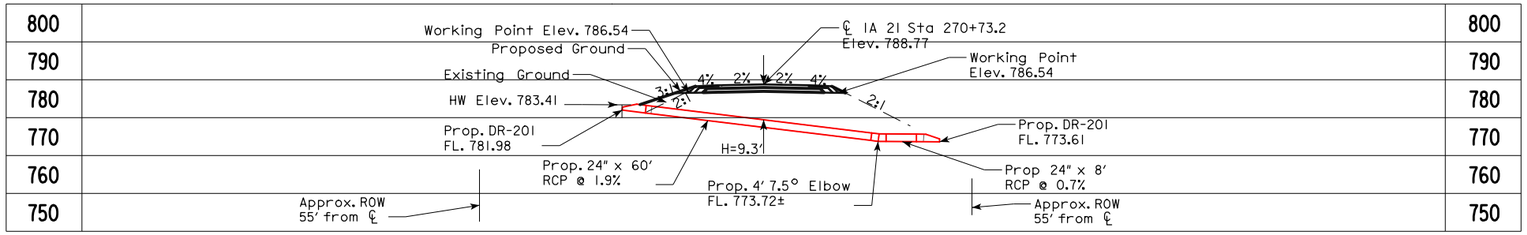
KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

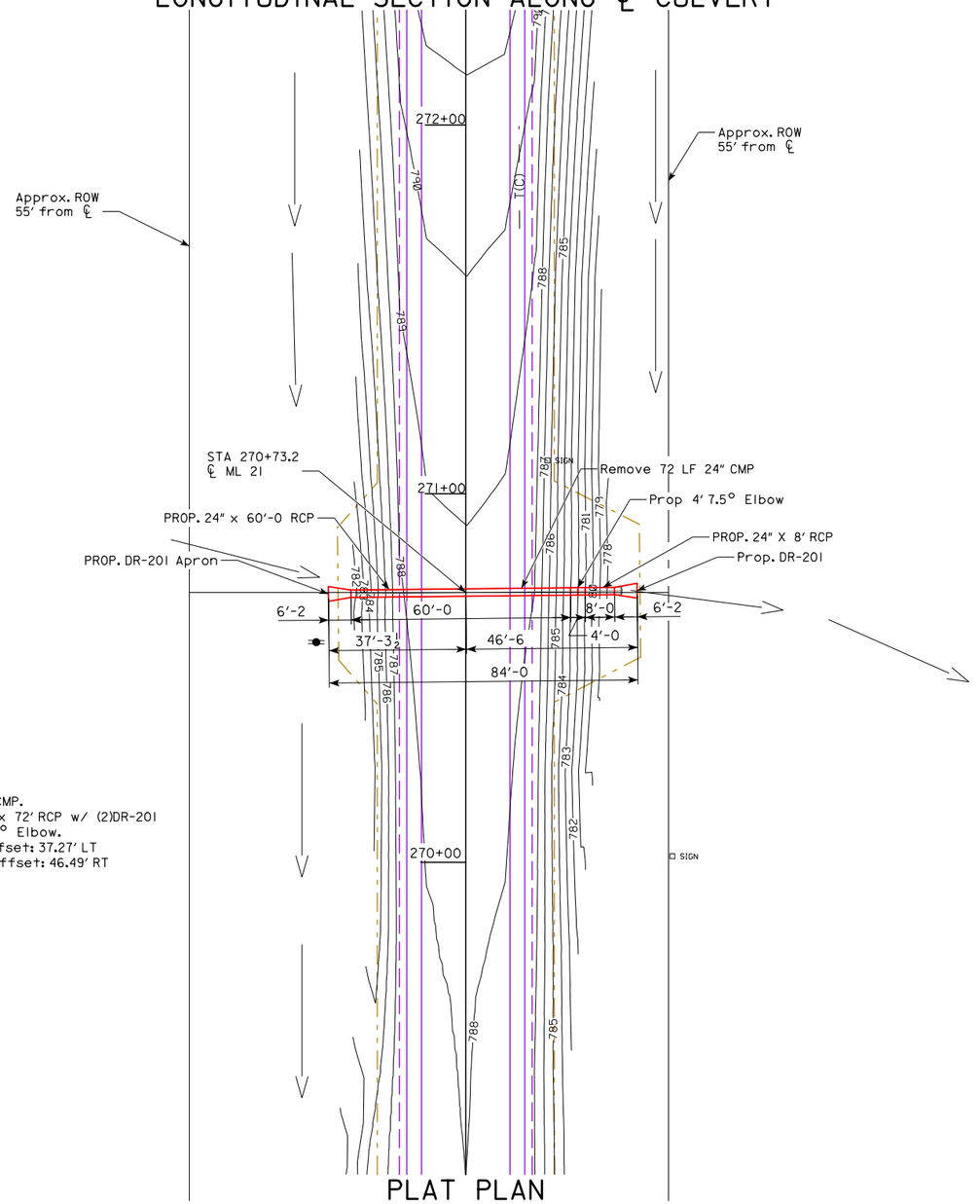
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.15

12/27/2019 9:26:10 AM LAR pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\Drainage\STR_54021034_DOT_Z13.dgn P_21_250+69.81 11x17clr_pdf.plt



LONGITUDINAL SECTION ALONG ℄ CULVERT



STA. 270+73.2
Remove 72' x 24" CMP.
Replace with 24" x 72' RCP w/ (2)DR-201
Aprons and (1) 7.5° Elbow.
Inlet: 270+72.8 Offset: 37.27' LT
Outlet: 270+73.7 Offset: 46.49' RT

BENCH MARK NO. 508

HYDRAULIC DATA

DRAINAGE AREA = 6 ACRES R
Q_{50} = 11 CFS
HW ELEV. = 783.41

LOCATION

IA 21
T-75N R-13W
SECTION 34 & 35
WARREN TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

— T(C) — — — TELEPHONE

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

NOTES:

Class B Bedding. 1500D (Class 11) Pipe

N

0 ENGLISH 40
SCALE IN FEET

RCP - 24" x 72'-0 WITH (2)DR-201 APRON AND (1) 7.5° ELBOW

STA. 270+73.2 (IA 21)

PLAT PLAN

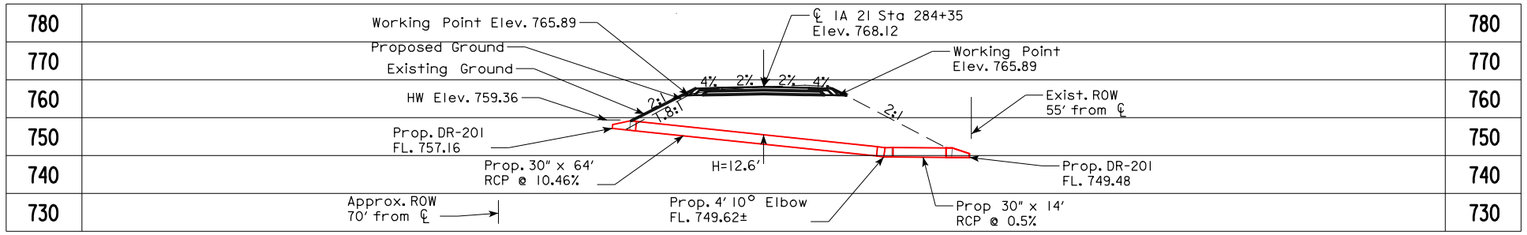
KEOKUK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.16

12/27/2019 9:27:46 AM LAR pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\Drainage\STR_54021034_DOT_Z13.dgn P_21_270+73 11x17clr_pdf.plt



LONGITUDINAL SECTION ALONG ℄ CULVERT

STA. 284+35
Remove 30" x 80' CMP.
Replace with 30" x 82' RCP w/ (2)DR-201
Aprons and (1) 7.5° Elbow.
Inlet: 284+33.76 Offset: 39.85 LT
Outlet: 284+36.67 Offset: 54.34 RT

BENCH MARK NO. 500

HYDRAULIC DATA

DRAINAGE AREA = 12 Partial ACRES R
Q_{50} = 20 CFS
HW ELEV. = 759.36

LOCATION

IA 21
T-75N R-13W
SECTION 34
Warren TOWNSHIP
Keokuk COUNTY

UTILITIES LEGEND:

— T(C) — — — TELEPHONE

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

NOTES:

Class B Bedding. 2000D (Class III) Pipe

0 ENGLISH 40
SCALE IN FEET

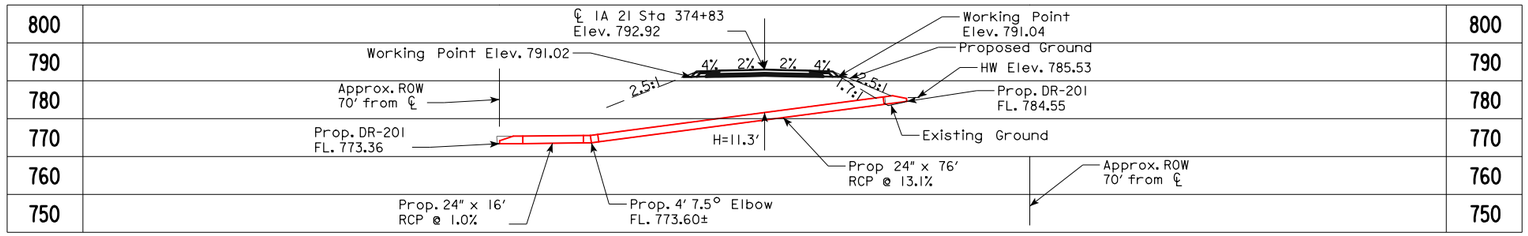
RCP - 30" x 82'-0 WITH (2)DR-201 APRON AND (1) 7.5° ELBOW

STA. 284+35 (IA 21) PLAT PLAN
KEOKUK COUNTY

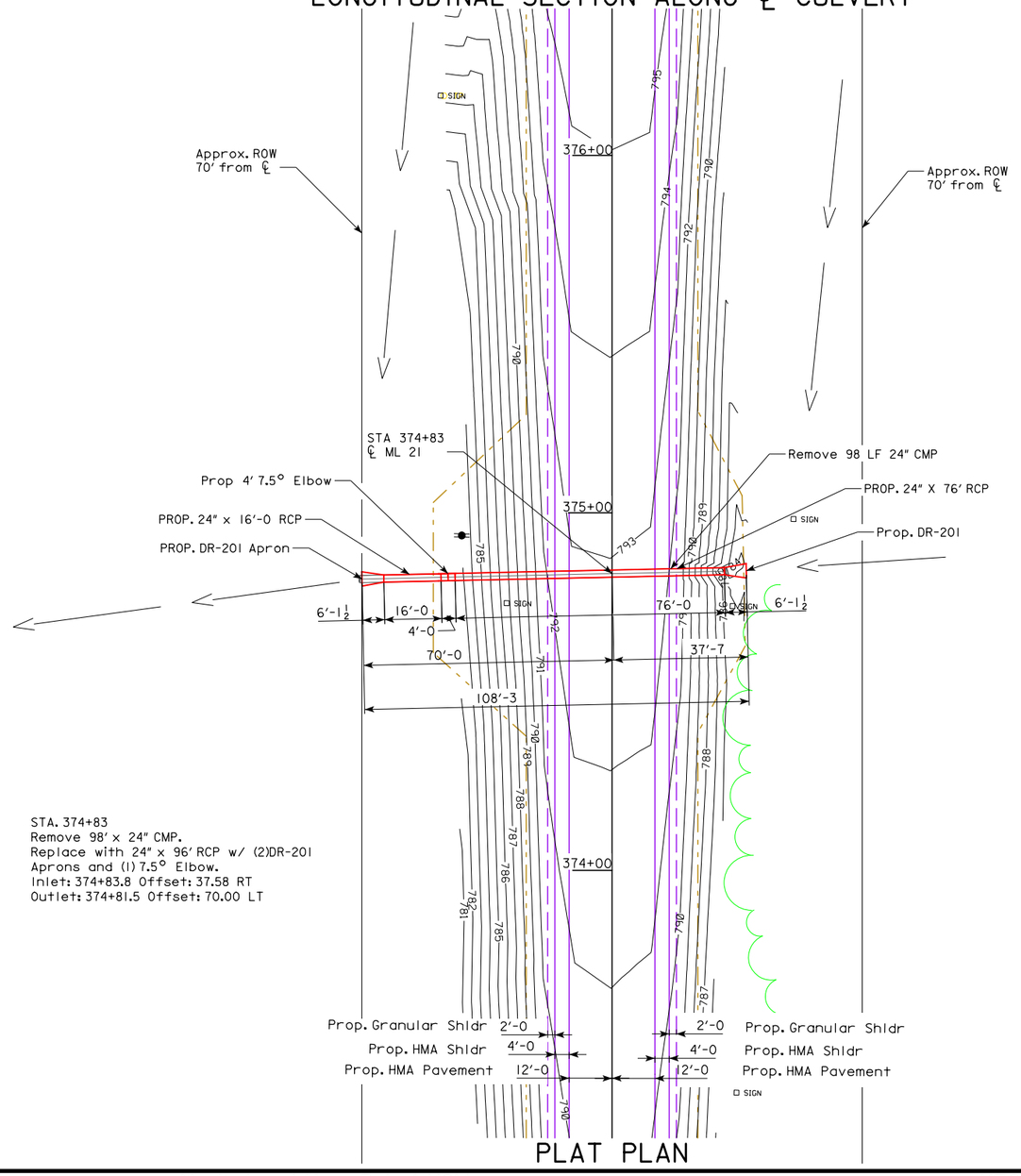
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.17

12/27/2019 9:28:42 AM LAR pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\Drainage\STR_54021034_DOT_Z13.dgn P_21_284+35 11x17clr_pdf.plt



LONGITUDINAL SECTION ALONG ℄ CULVERT



STA. 374+83
Remove 98' x 24" CMP.
Replace with 24" x 96' RCP w/ (2)DR-201
Aprons and (1) 7.5° Elbow.
Inlet: 374+83.8 Offset: 37.58 RT
Outlet: 374+81.5 Offset: 70.00 LT

PLAT PLAN

N

0 ENGLISH 40
SCALE IN FEET

BENCH MARK NO. 502

HYDRAULIC DATA

DRAINAGE AREA = 2 ACRES R
Q_{50} = 5 CFS
HW ELEV. = 785.53

LOCATION

IA 21
T-75N R-13W
SECTION 27
Warren TOWNSHIP
Keokuk COUNTY

UTILITIES LEGEND:

NO KNOWN UTILITIES

NOTES:

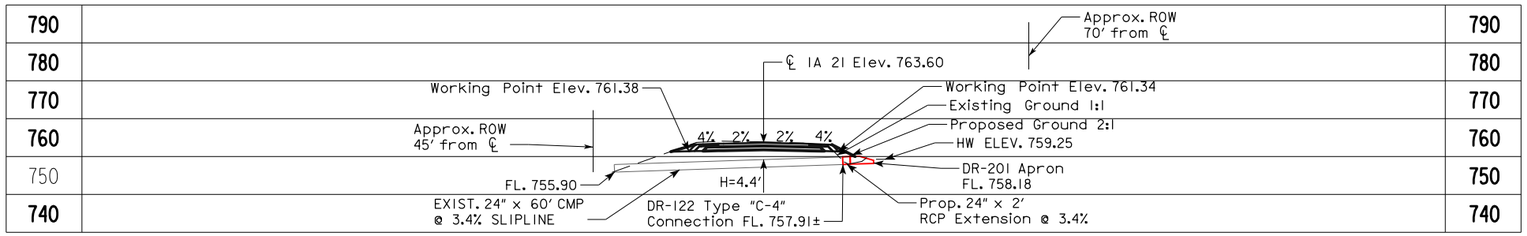
Class B Bedding. 1500D (Class II) Pipe

RCP - 24" x 96'-0
WITH (2)DR-201 APRONS AND (1) 7.5° ELBOW
STA. 374+83 (IA 21) PLAT PLAN
KEOKUK COUNTY

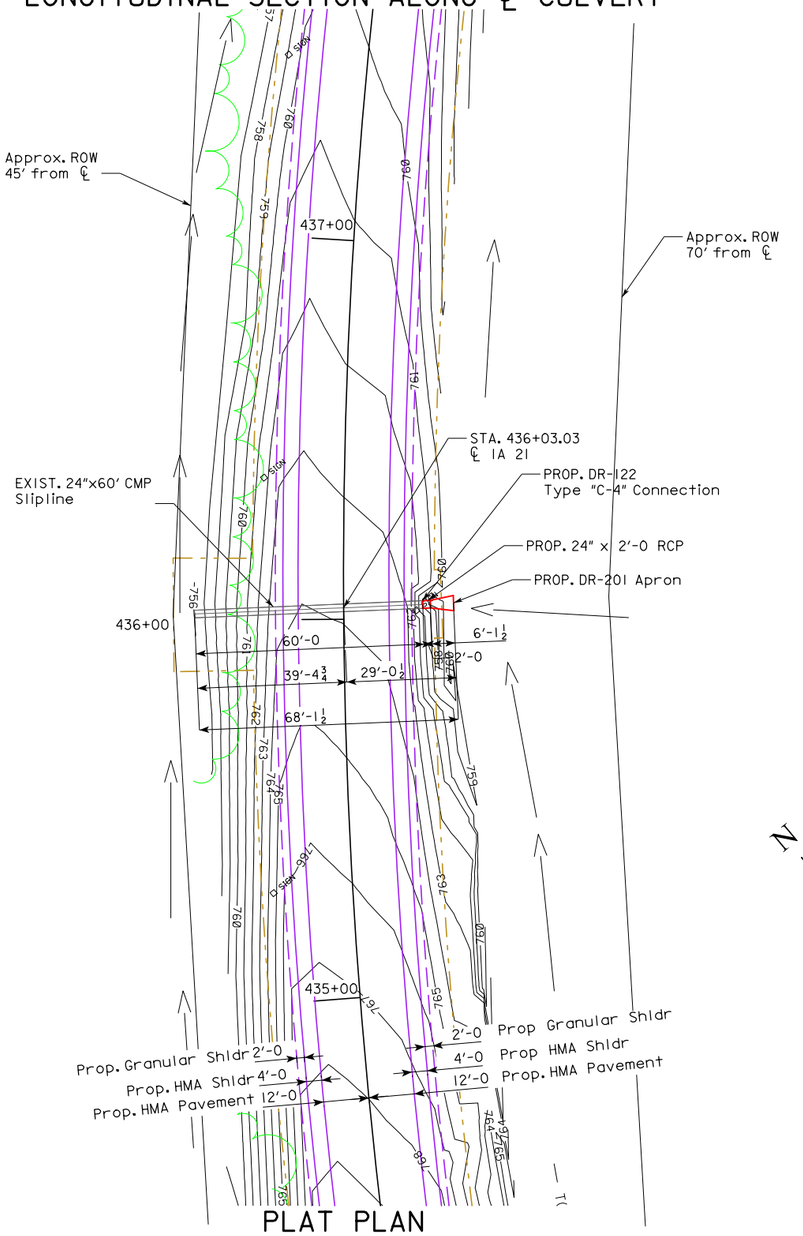
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson\Van Dyke\HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.18

12/27/2019 9:29:44 AM LAR pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\Drainage\STR_54021034_DOT_Z13.dgn P_21_374+83 11x17clr_pdf.plt



LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN

STA. 436+03.03
Install 24" x 2' RCP Extension w/
(1)DR-201 Apron.
Connect to existing 24" CMP. w/
(1)DR-122 Type "C-4" Connection.
Inlet: 436+04.1 Offset: 29.02 RT
Connection: 436+03.8 Offset: 20.88 RT
Outlet: 436+01.7 Offset: 39.38 LT

BENCH MARK NO. 544

HYDRAULIC DATA

DRAINAGE AREA = 5R
Q_{50} = 15 CFS
HW ELEV. = 759.25

LOCATION

IA 21
T-75N R-13W
SECTION 15
WARREN TOWNSHIP
KEOKUK COUNTY

UTILITIES LEGEND:

NO KNOWN UTILITIES

Notes:

Class B Bedding. Class II (1500D) Pipe

0 ENGLISH 40
SCALE IN FEET

RCP EXTENSION- 24" x 2'-0 WITH (1)DR-201 APRON AND (1)DR-122 Type "C-4" CONNECTION

STA. 436+03.03 (IA 21) PLAT PLAN
KEOKUK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(34)--2C-54	SHEET NUMBER V.19

12/27/2019 9:31:06 AM LAR pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\Drainage\STR_54021034_DOT_Z13.dgn P_21_436+03.03 11x17clr_pdf.plt

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)

- Topsoil (Class 10)
- Slope Dressing Only
- Class 10 Materials
- Select Loams And Clay-Loams
- Select Sand
- Unsuitable Type A Disposal
- Unsuitable Type B Disposal
- Unsuitable Type C Disposal
- Shale
- Waste
- Broken and Weathered Rock
- Solid Rock
- 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 ROW — Existing Right-of-Way Limit

Proposed ROW — Proposed Right-of-Way Limit

Temporary ROW — Temporary Right-of-Way Limit

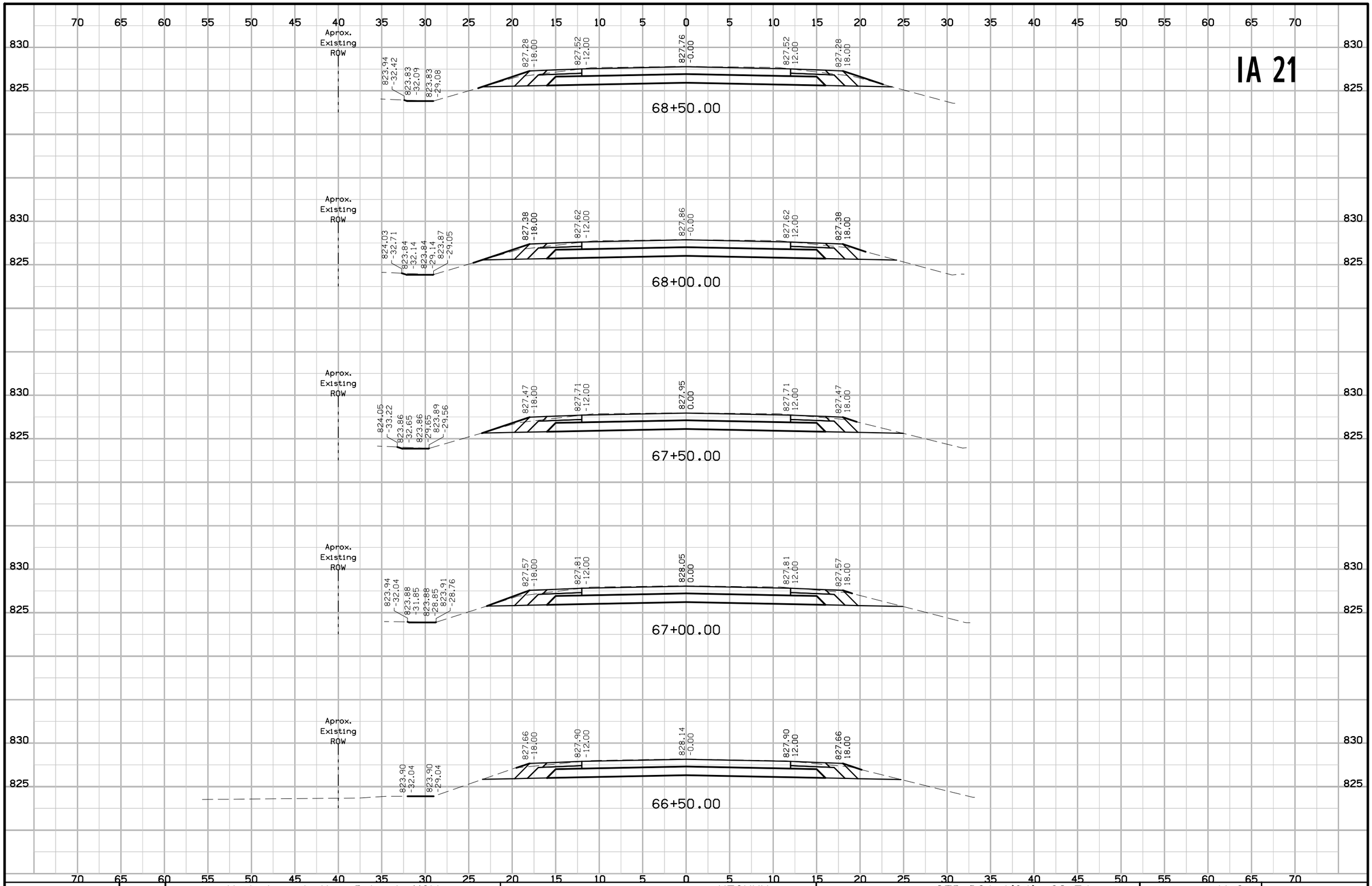
CROSS SECTION LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.1

3:15:47 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034_LGD.dgn

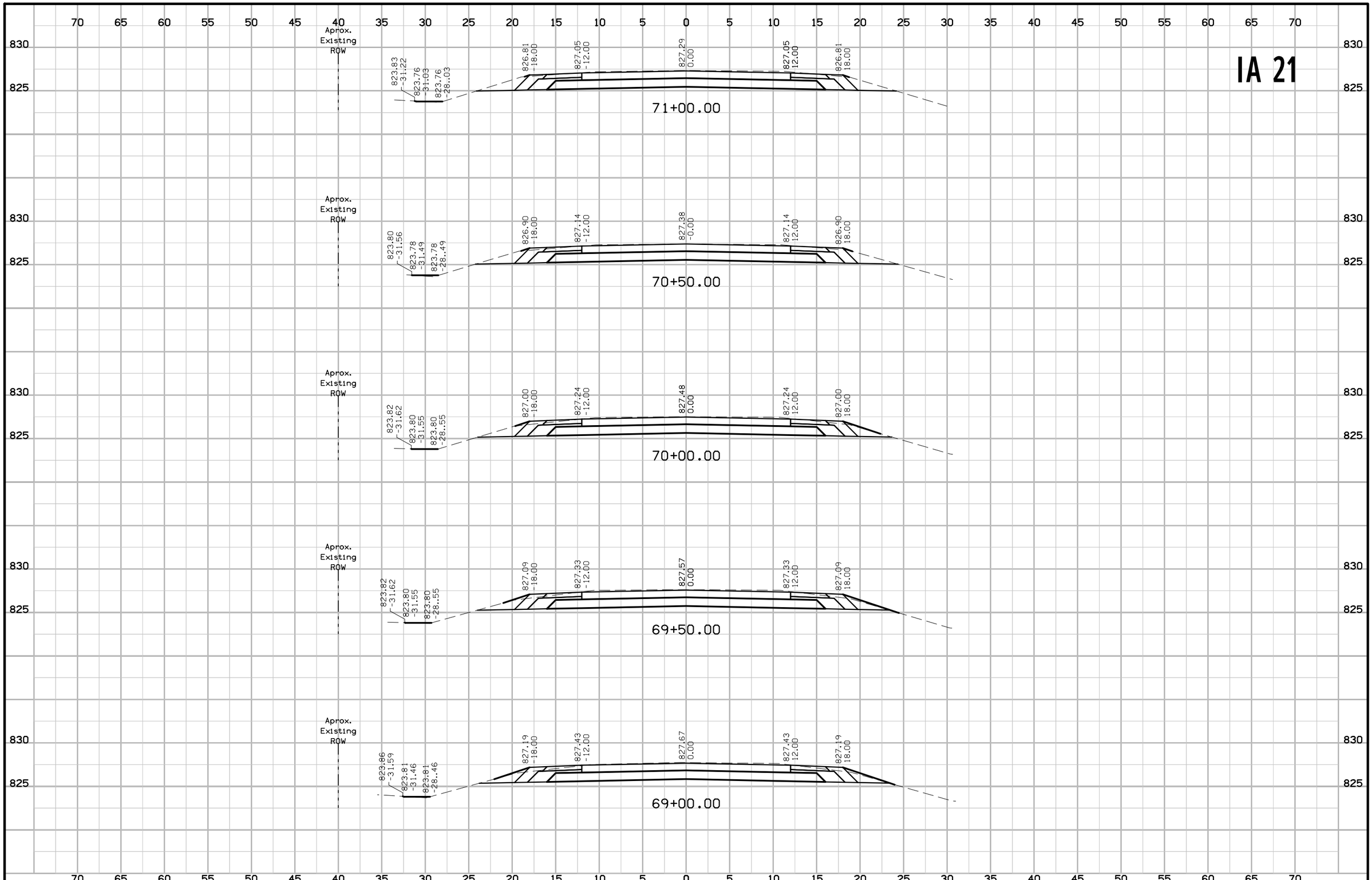
IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.2

3:16:57 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W01.dgn

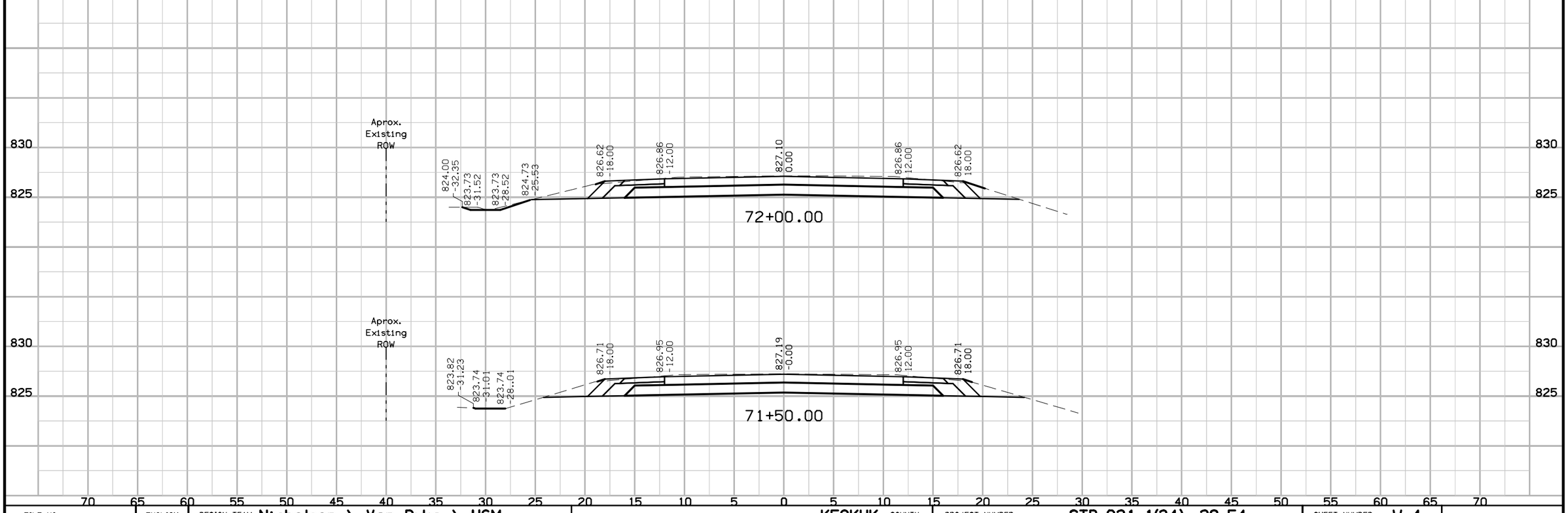
IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.3

3:17:58 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W01.dgn

IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.4

3:19:00 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W01.dgn

IA 21

125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20

710 705 700 695 690

Aprox. Existing ROW

467+00.00

690.75 -37.72
690.75 -34.72
697.39 18.00
697.58 -12.00
697.87 0.00
697.63 12.00
697.39 18.00

Aprox. Existing ROW

466+50.00

691.05 -37.50
691.05 -34.50
697.13 18.00
697.37 -12.00
697.61 0.00
697.37 12.00
697.13 18.00

Aprox. Existing ROW

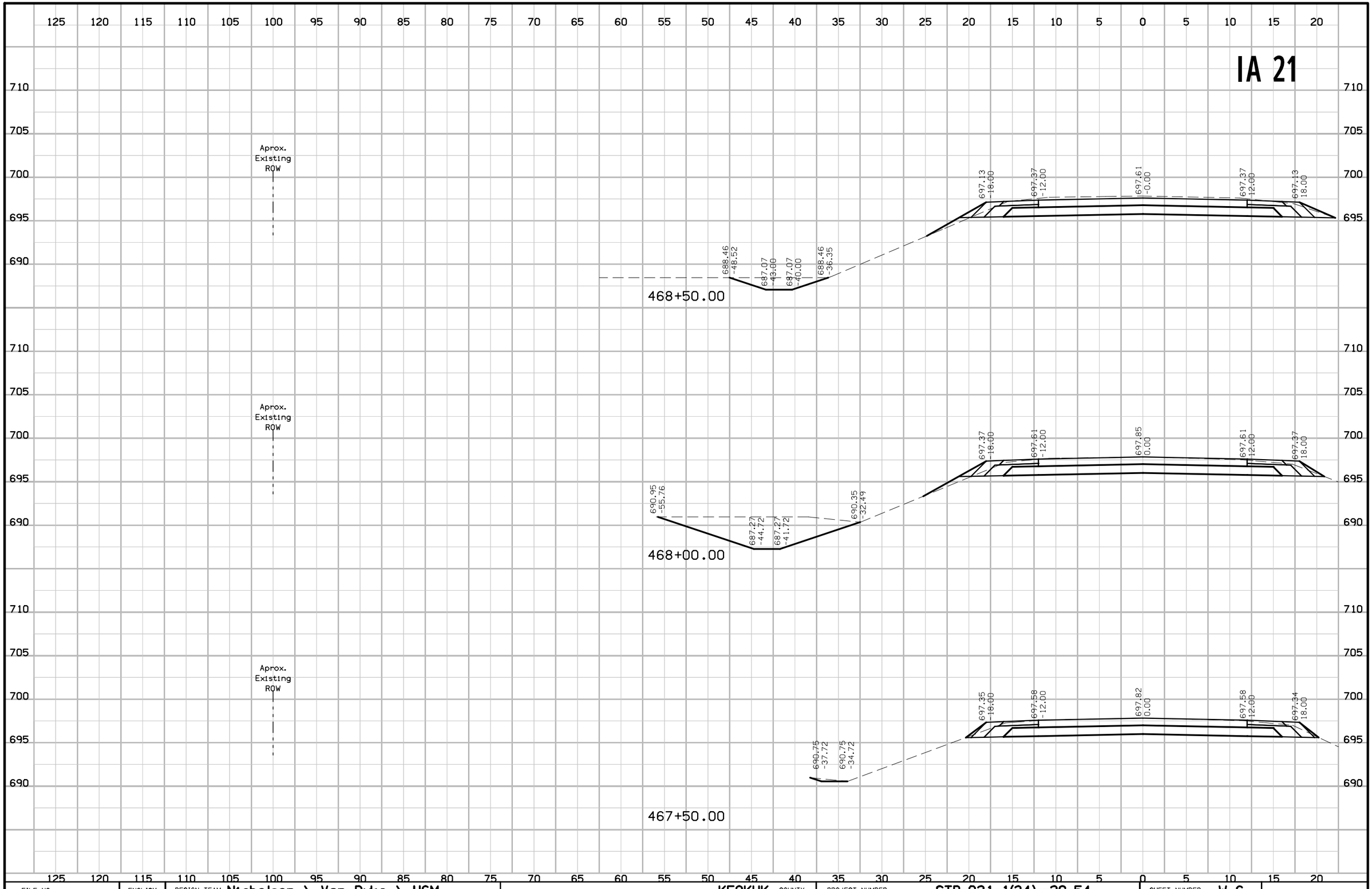
466+00.00

691.25 -36.75
691.25 -33.75
697.24 18.00
697.48 -12.00
697.71 0.00
697.48 12.00
697.24 18.00

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.5

3:20:16 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

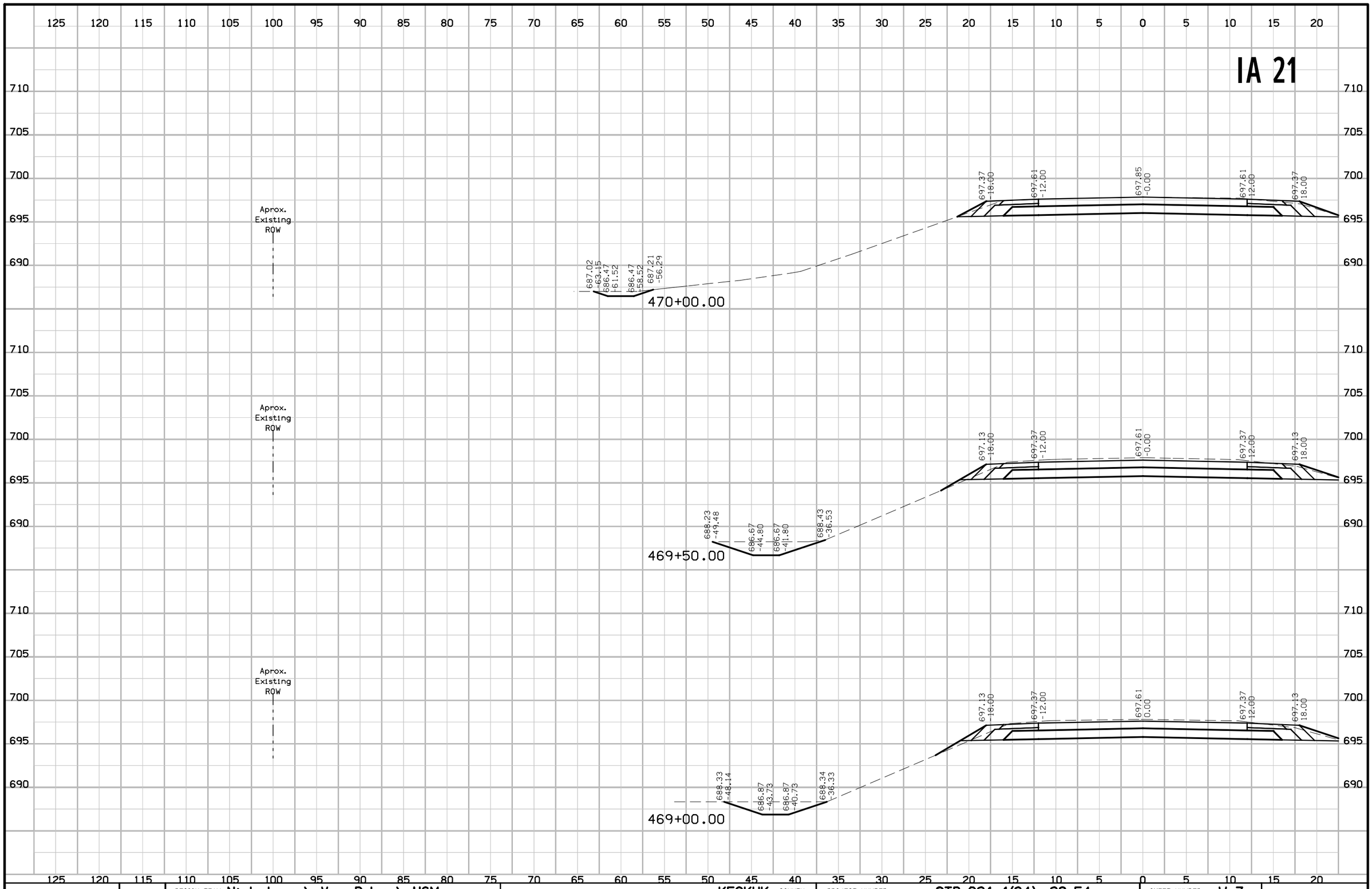
IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.6

3:21:17 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

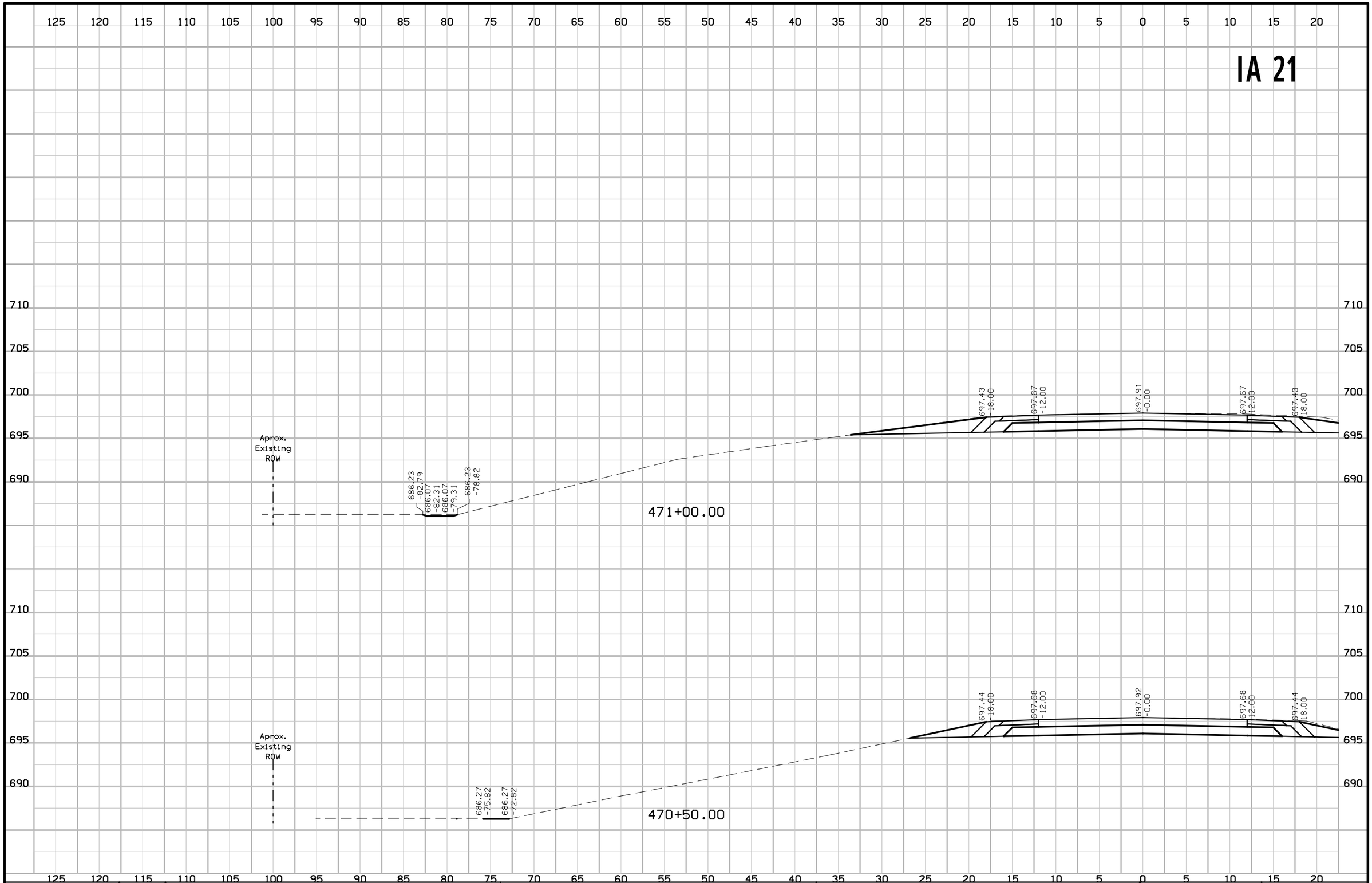
IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.7

3:22:18 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

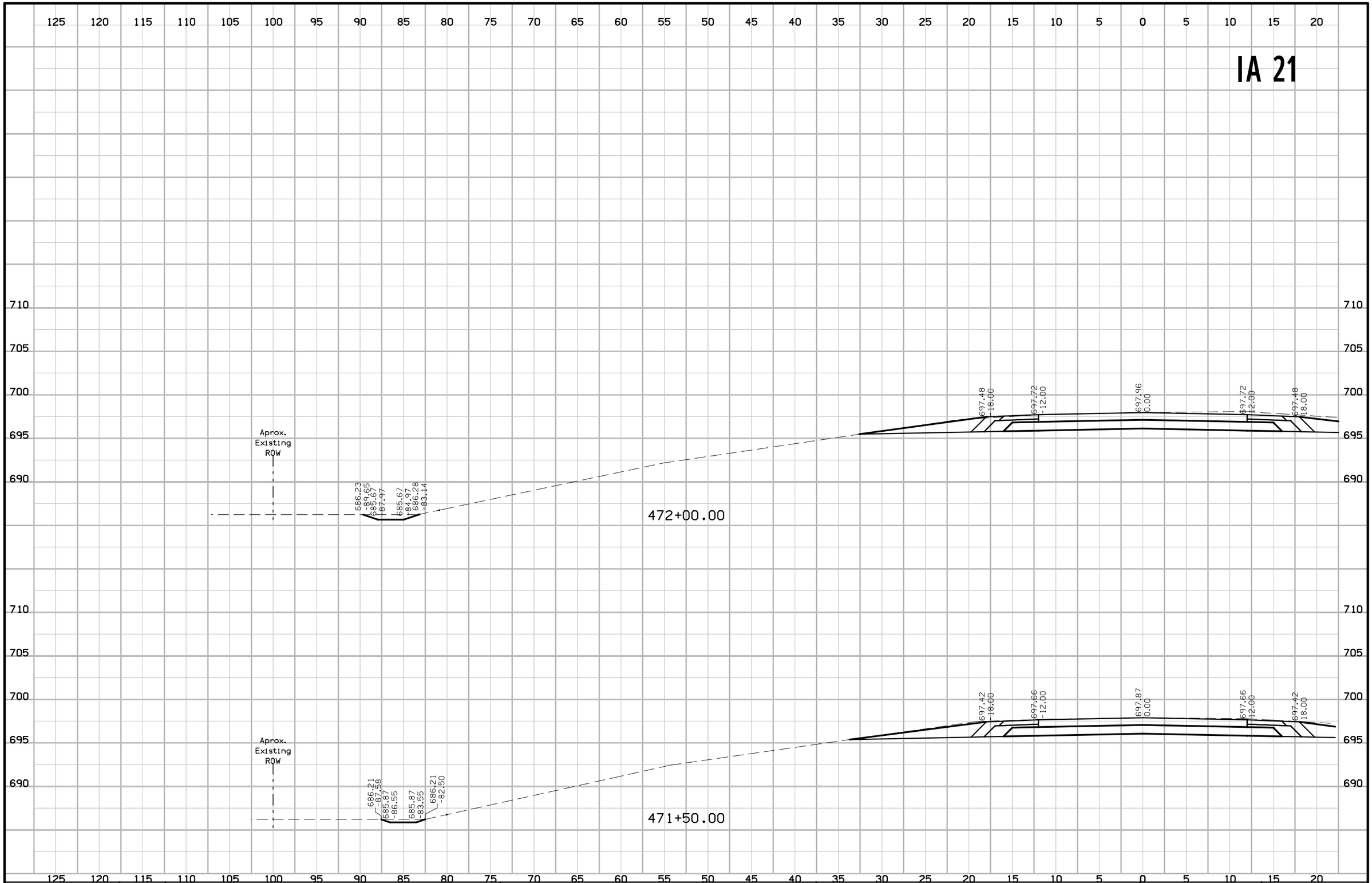
IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.8

3:23:20 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.9

3:24:21 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

IA 21

125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20

710
705
700
695
690

Aprox.
Existing
ROW

686.15
-84.82
685.27
-82.20
685.27
-79.20
687.03
-73.94

697.18
18.00
697.42
-12.00
-0.00
698.43
12.00
698.19
18.00

473+00.00

Aprox.
Existing
ROW

686.66
-86.32
685.47
-82.76
685.47
-79.76
688.08
-71.93

697.41
18.00
697.65
-12.00
0.00
698.28
12.00
698.04
18.00

472+50.00

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.10

3:25:22 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

IA 21

125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20

705
700
695
690
685

Aprox. Existing ROW

686.30 -93.33
684.70 -88.30
684.70 -85.30
685.90 -81.46

474+50.00

697.06 -18.00
697.30 -12.00
-0.00
698.98 12.00
698.70 18.00

700
695
690
685

Aprox. Existing ROW

686.20 -91.31
684.89 -87.37
684.89 -84.37
685.90 -81.37

474+00.00

696.91 -18.00
697.15 -12.00
-0.00
698.84 12.00
698.60 18.00

710
705
700
695
690

Aprox. Existing ROW

685.76 -87.02
685.08 -84.02
685.08 -81.02
685.79 -78.89

473+50.00

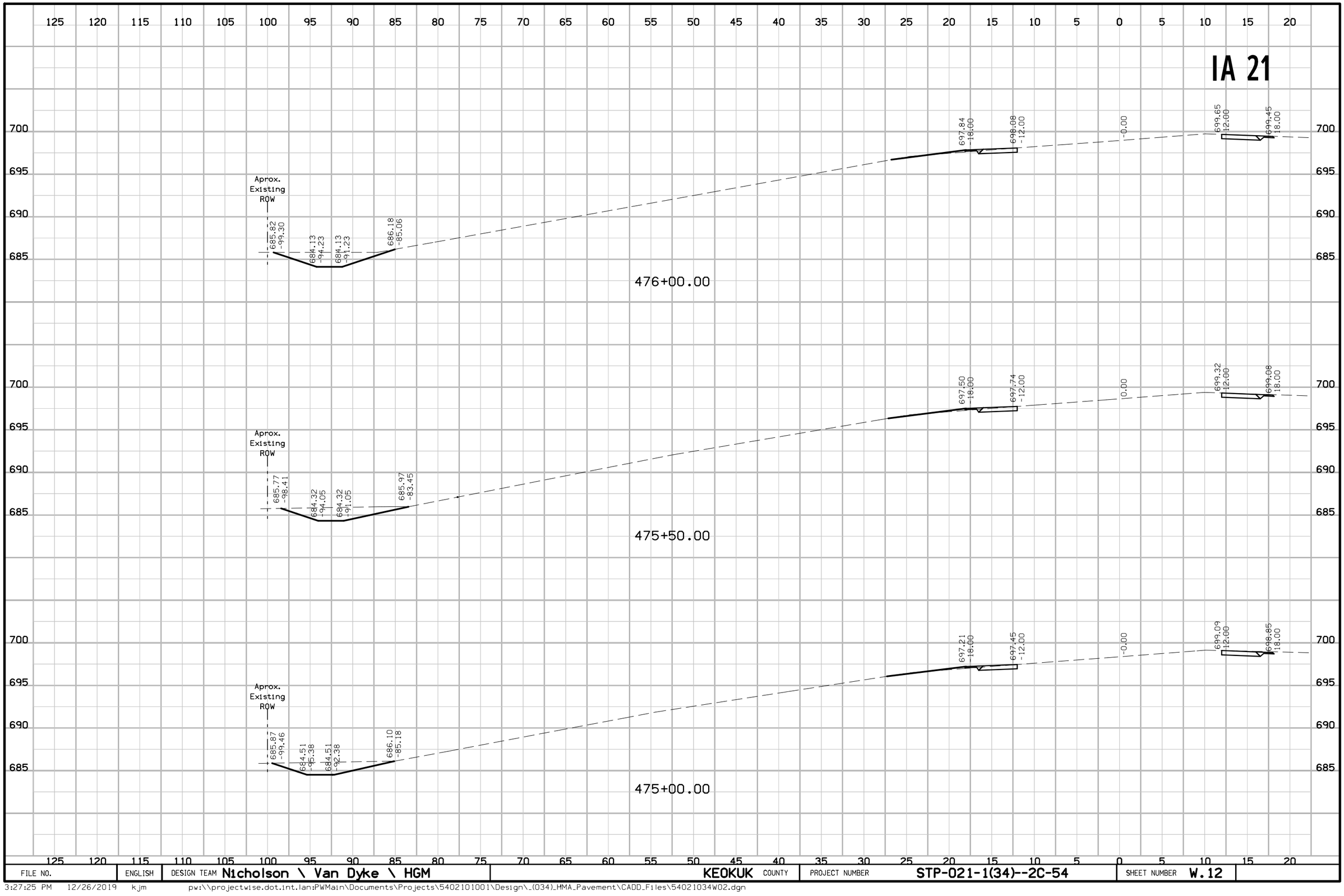
696.96 -18.00
697.20 -12.00
0.00
698.58 12.00
698.34 18.00

125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.11

3:26:24 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

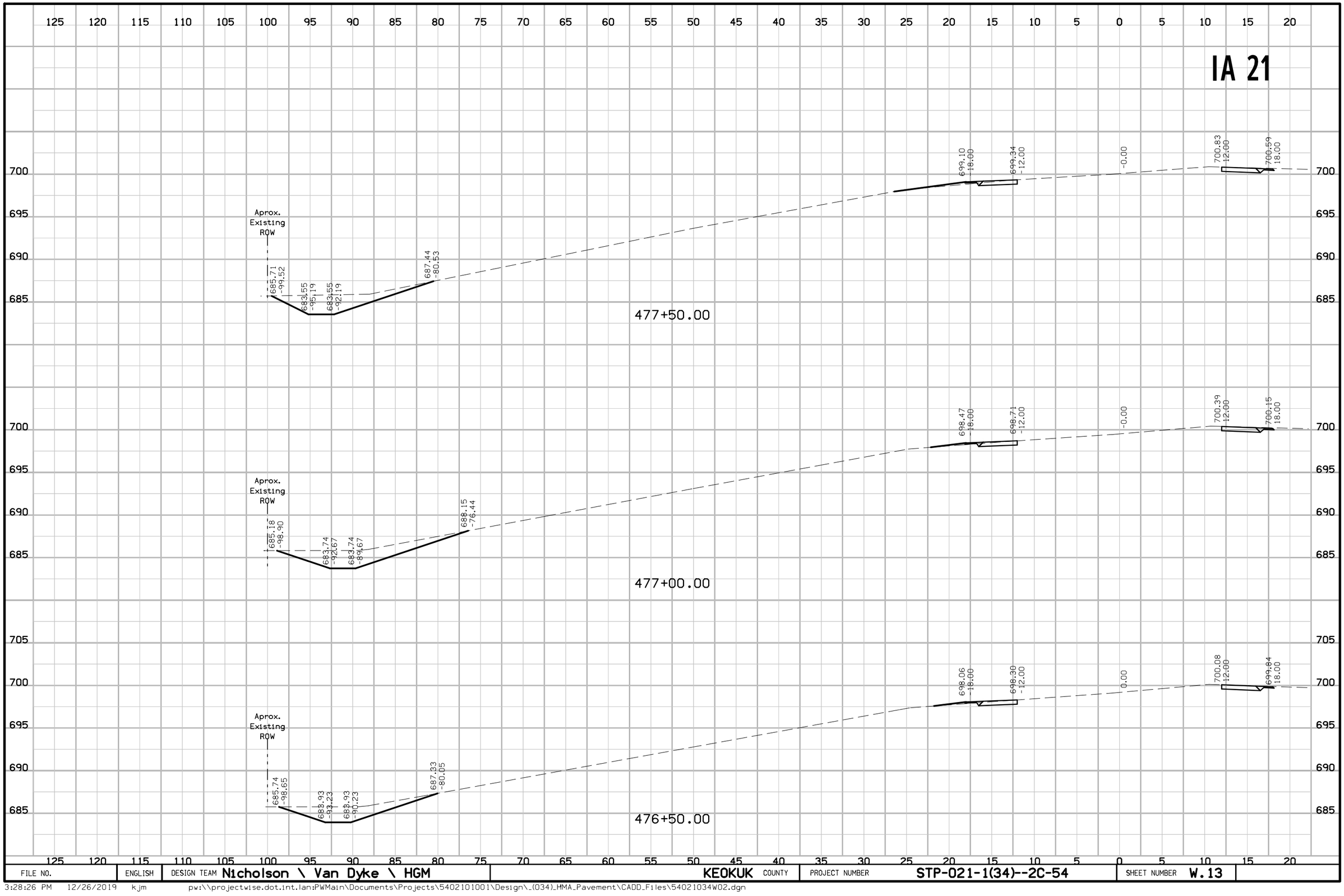
IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.12

3:27:25 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.13

3:28:26 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

IA 21

125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20

705 700 695 690 685

Aprox. Existing ROW

685.56 -99.32

682.98 -94.10

682.98 -91.10

696.30 -51.16

700.91 18.00

701.15 -12.00

-0.00

702.15 12.00

701.91 18.00

479+00.00

Aprox. Existing ROW

686.23 -99.04

683.17 -92.86

683.17 -89.86

691.49 -64.83

698.62 -29.96

700.29 18.00

700.53 -12.00

-0.00

701.90 12.00

701.66 18.00

478+50.00

Aprox. Existing ROW

687.94 -98.81

683.36 -89.64

683.36 -86.64

692.00 -60.70

699.68 18.00

699.92 -12.00

-0.00

701.39 12.00

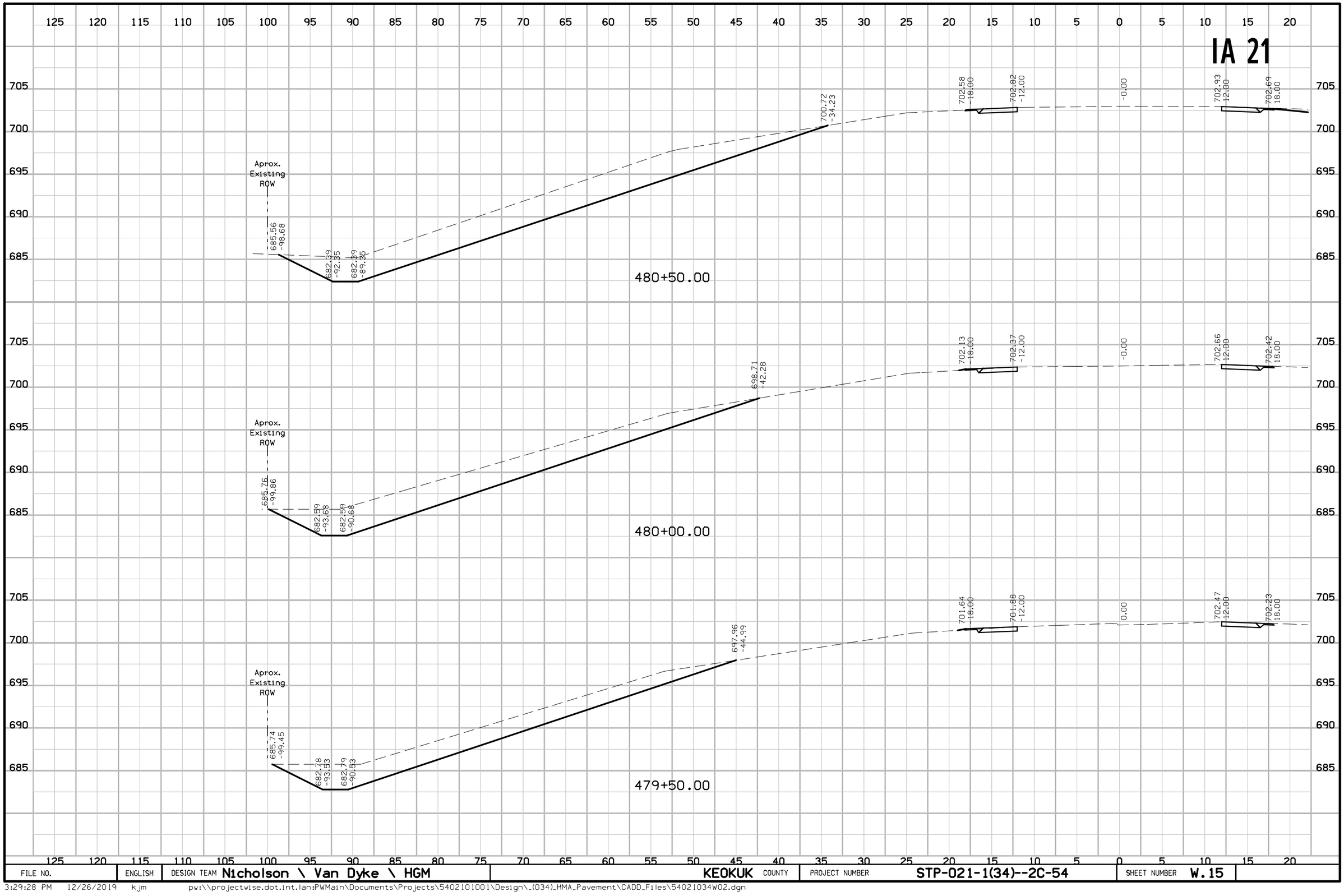
701.15 18.00

478+00.00

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.14

3:29:27 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

IA 21



FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.15

3:29:28 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn

IA 21

130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15

700 695 690 685 705 700 695 690 685

Aprox. Existing ROW

684.89
-128.68

681.96
-115.21

681.97
-110.22

700.36
-47.48

703.29
18.00

703.53
-12.00

-0.00

703.31
12.00

481+50.00

Aprox. Existing ROW

684.98
-99.62

682.18
-91.49

682.19
-88.49

702.02
-28.02

702.91
18.00

703.15
-12.00

-0.00

703.09
12.00

481+00.00

130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15

FILE NO.	ENGLISH	DESIGN TEAM Nicholson \ Van Dyke \ HGM	KEOKUK COUNTY	PROJECT NUMBER STP-021-1(34)--2C-54	SHEET NUMBER W.16

3:29:29 PM 12/26/2019 kjm pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5402101001\Design_(034)_HMA_Pavement\CADD_Files\54021034W02.dgn