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PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
GRUNDY COUNTY
HMA Paved Shoulder - New
IA 14 to U Ave

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SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

TOTAL	
50	
PROJECT IDENTIFICATION NUMBER	
26-38-020-010	
PROJECT NUMBER	
HSIPX-020-5(089)--3L-38	
R.O.W. PROJECT NUMBER	
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LOCATION MAP
ON SHEET A.2

INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	DEVENDRA TAMRAKAR	Primary Signature Block	C.1

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.

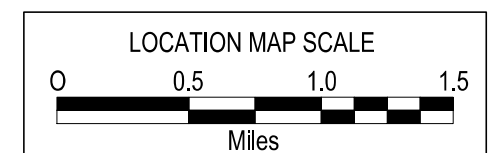
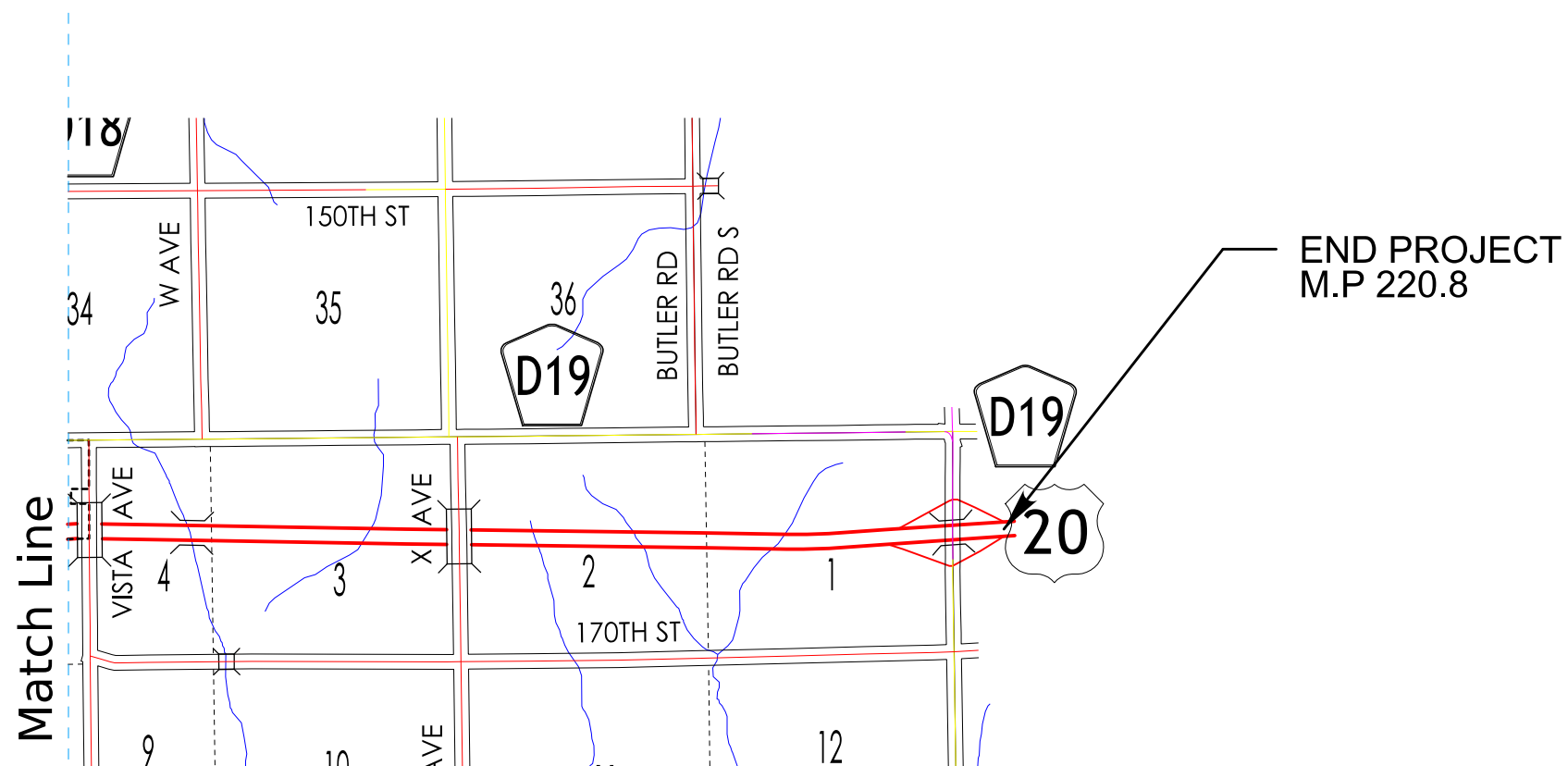
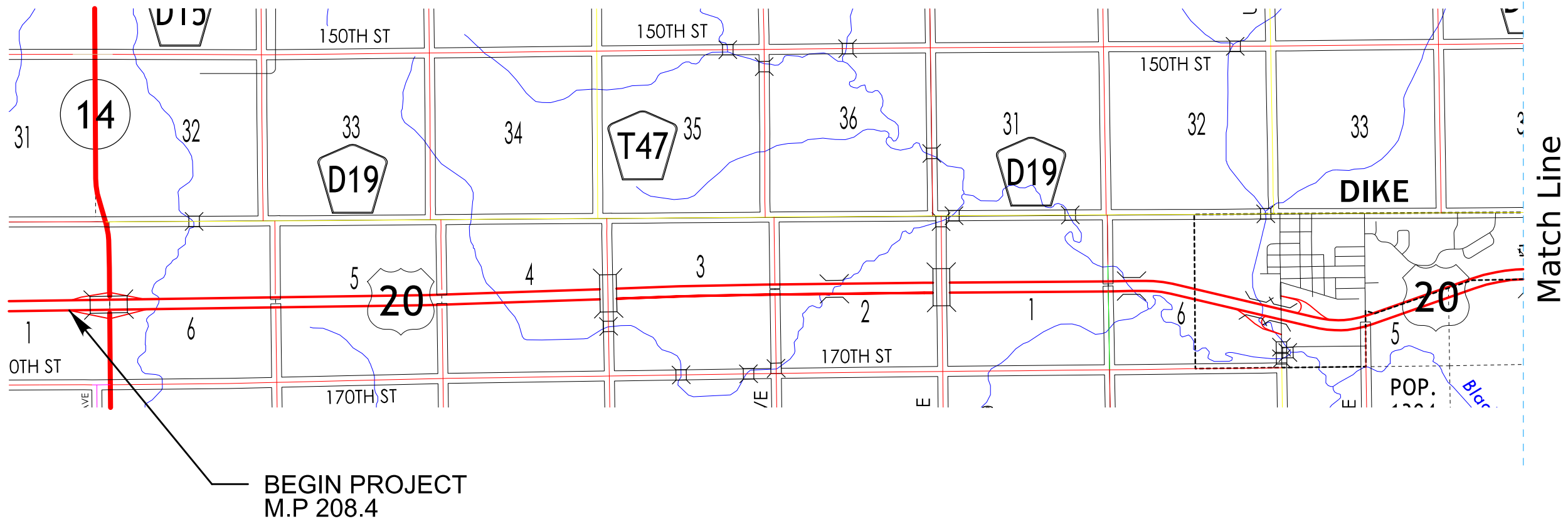
05-04-2026

Signature
Devendra Tamrakar
Printed or Typed Name

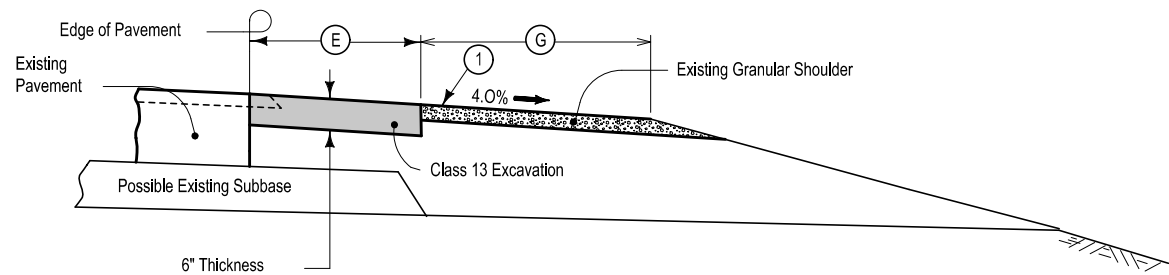
Date

My license renewal date is December 31, 20 27

Pages or sheets covered by this seal: A.1-A.2, B.1-B.4, C.1-C6, D.1-D.28, J.1, U.1-U.9
X



7152
10-15-13

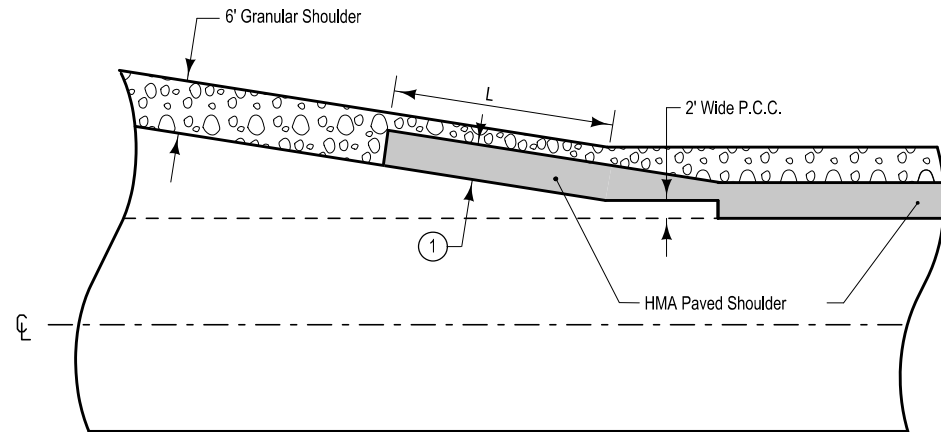


① Granular Shoulder Repair.
Estimated at 4 tons/Sta.
Refer to tabulations for
actual quantities

TYPICAL SECTION
RETROFIT HOT MIX ASPHALT PAVED SHOULDER

Location				Ⓔ Feet	Ⓖ Feet
Road Identification	Station to Station		Side		
U.S. 20 EB	22+60.00	221+74.423	Rt	4	4
U.S. 20 EB	22+60.00	221+74.423	Lt	4	2
U.S. 20 WB	23+40.00	221+74.423	Rt	4	4
U.S. 20 WB	23+40.00	221+74.423	Lt	4	2

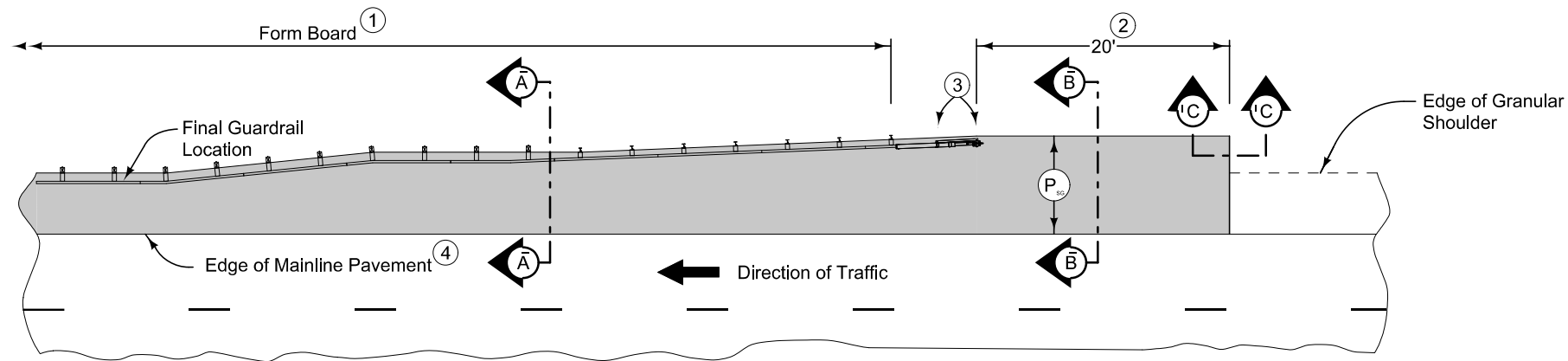
7154
Modified



"L" is the gore area length

① Width of paved shoulder on taper matches
width of paved shoulder on mainline.

PAVED SHOULDER
DETAIL AT
RAMP TAPERS
(Non-Interstate)



PLAN VIEW

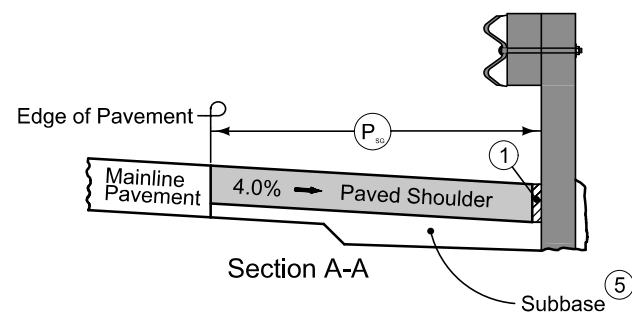
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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.

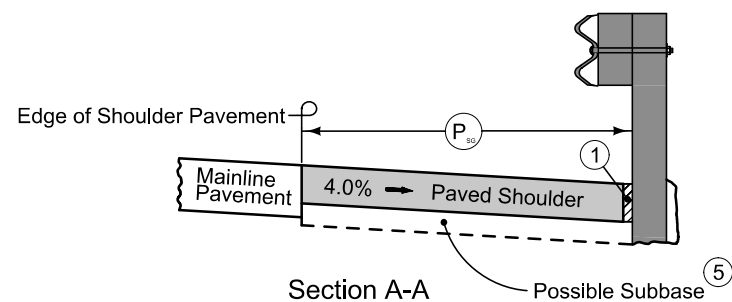
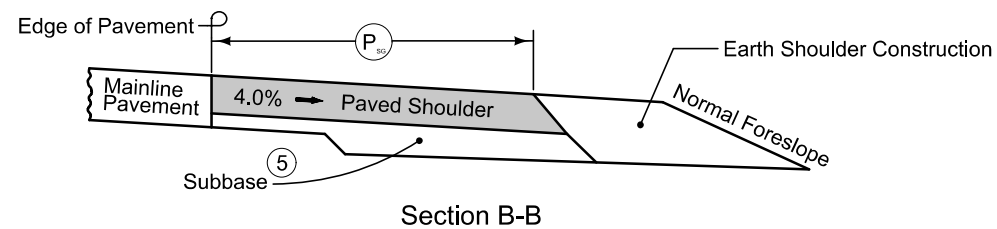
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

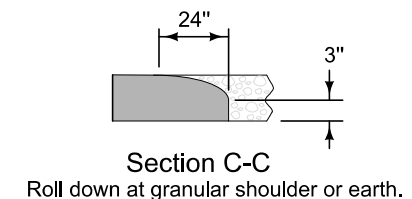
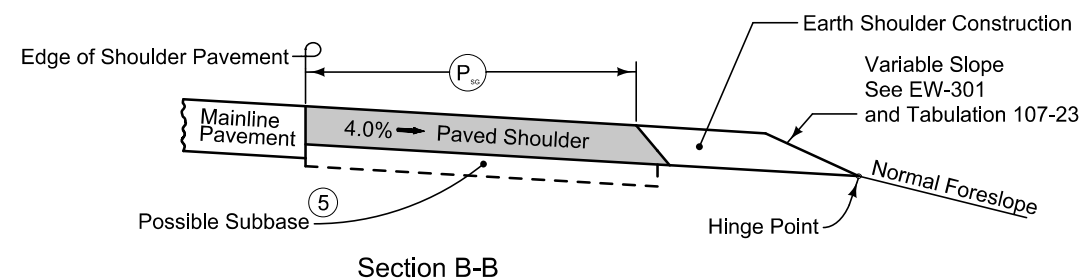
- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ④ 'BT' joint (per PV-101) for PCC shoulder. 'B' joint (per PV-101) for HMA shoulder.
- ⑤ Refer to other details in the plan.



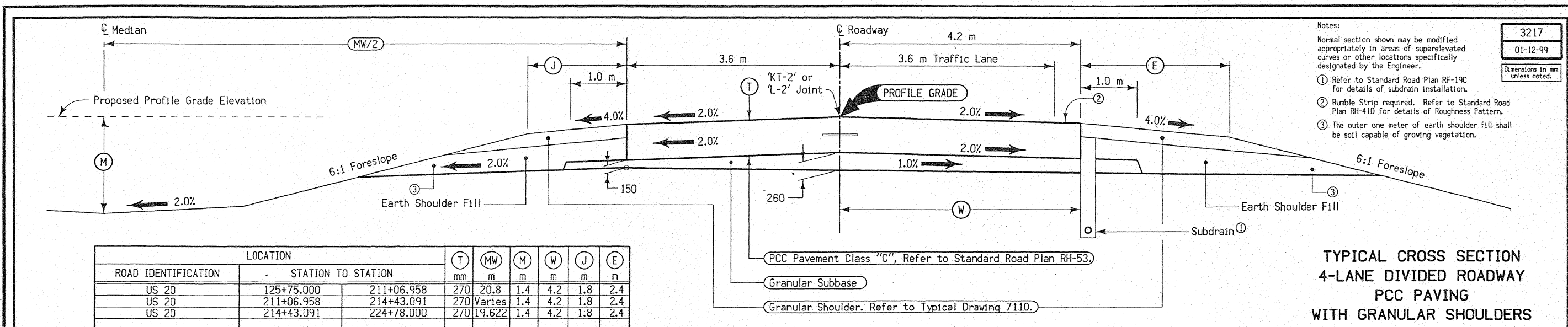
NEW CONSTRUCTION



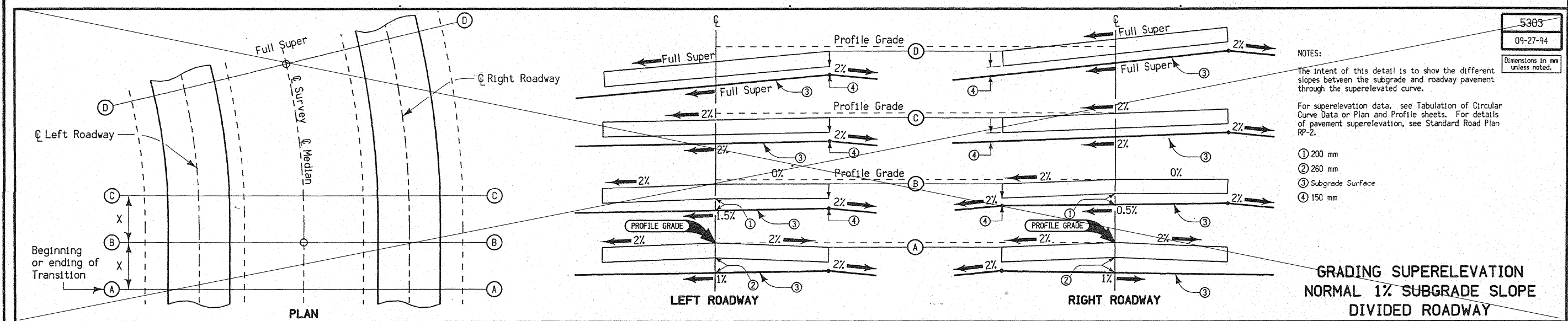
EXISTING SHOULDER



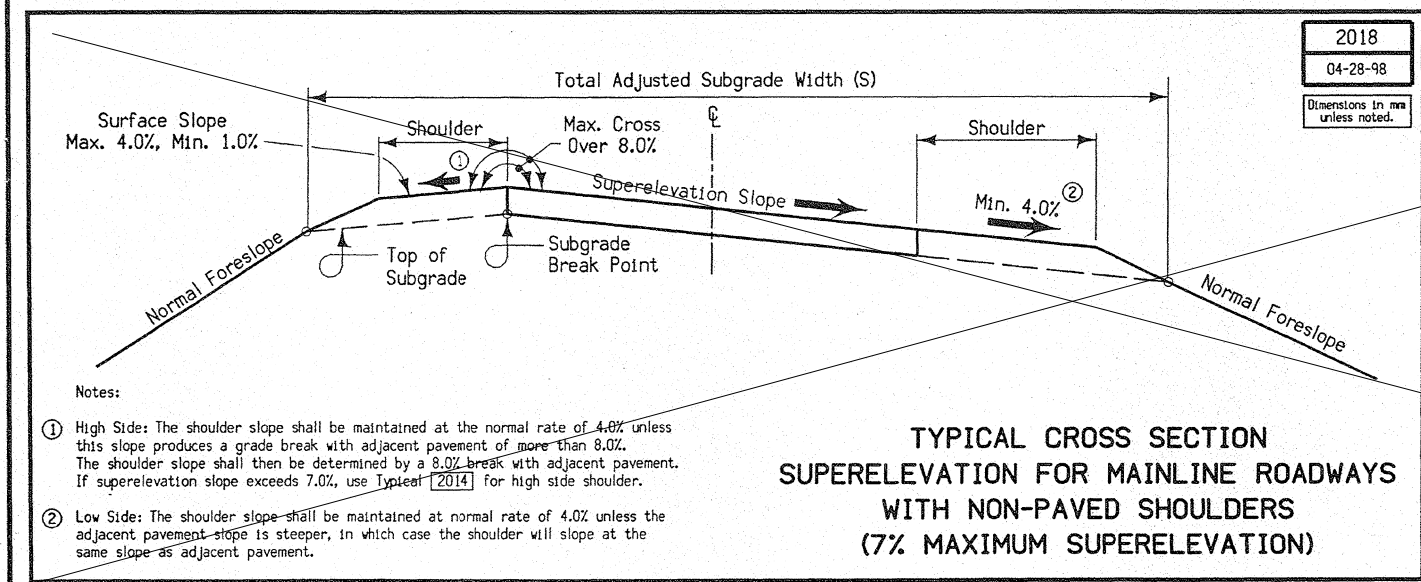
PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)



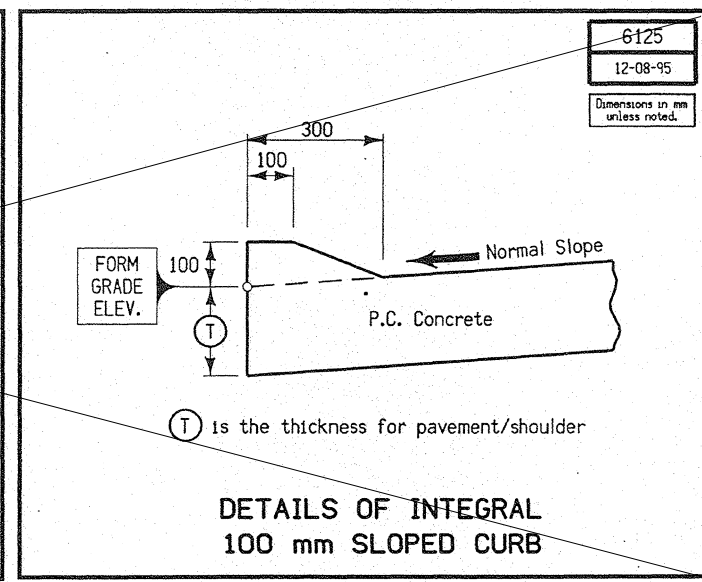
**TYPICAL CROSS SECTION
4-LANE DIVIDED ROADWAY
PCC PAVING
WITH GRANULAR SHOULDERS**



**GRADING SUPERELEVATION
NORMAL 1% SUBGRADE SLOPE
DIVIDED ROADWAY**

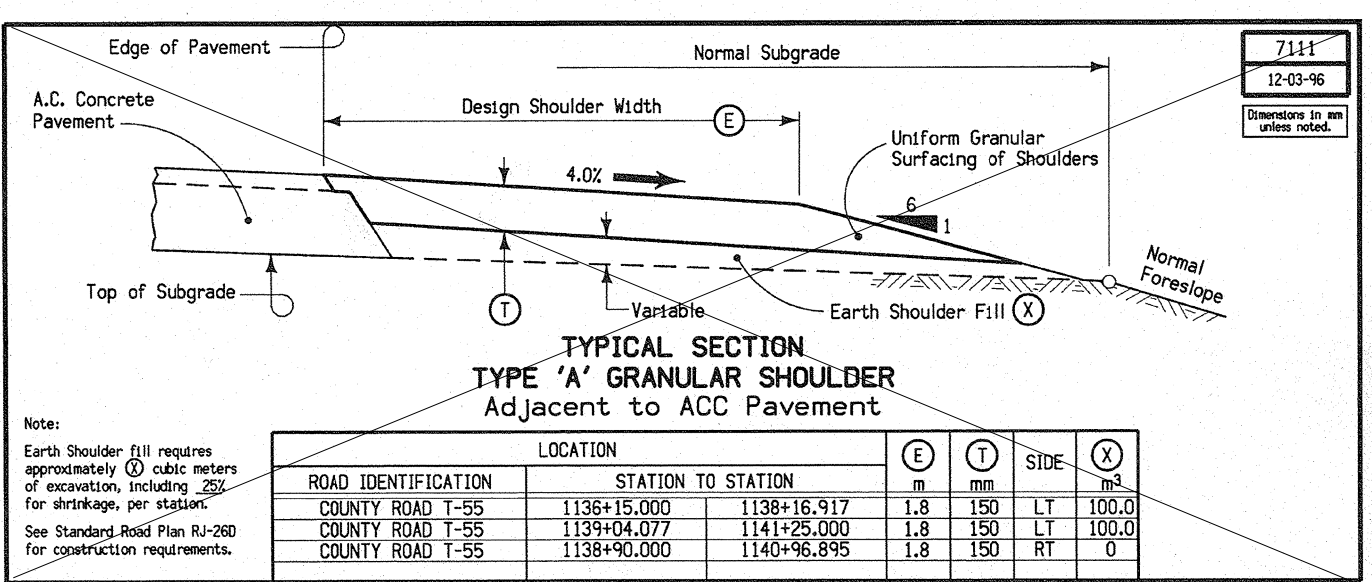
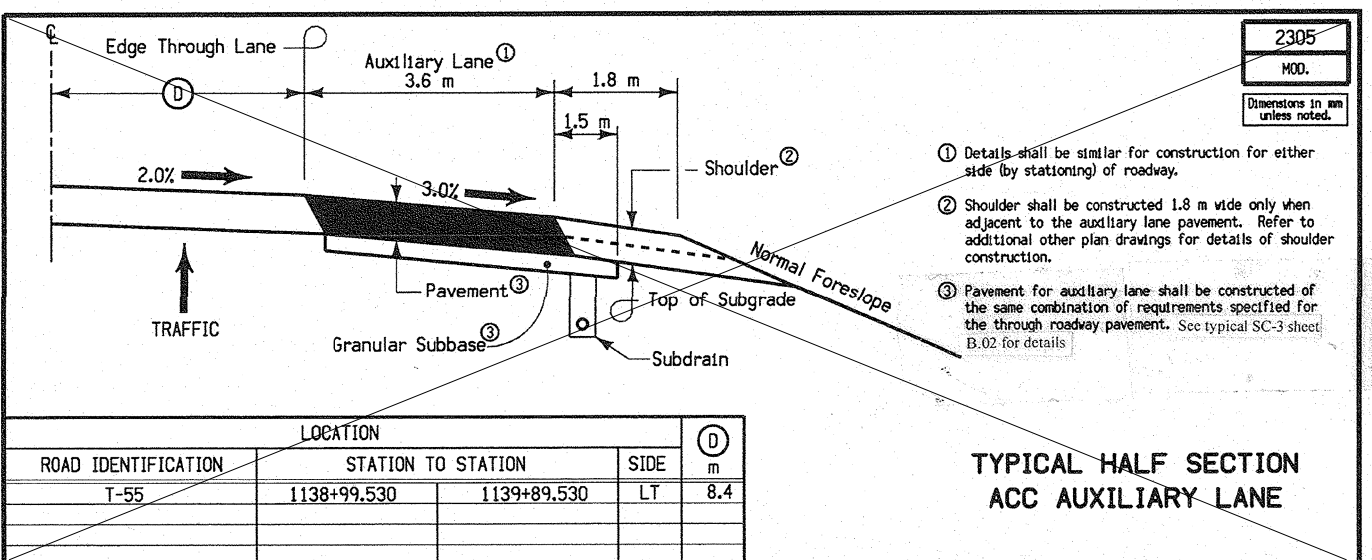
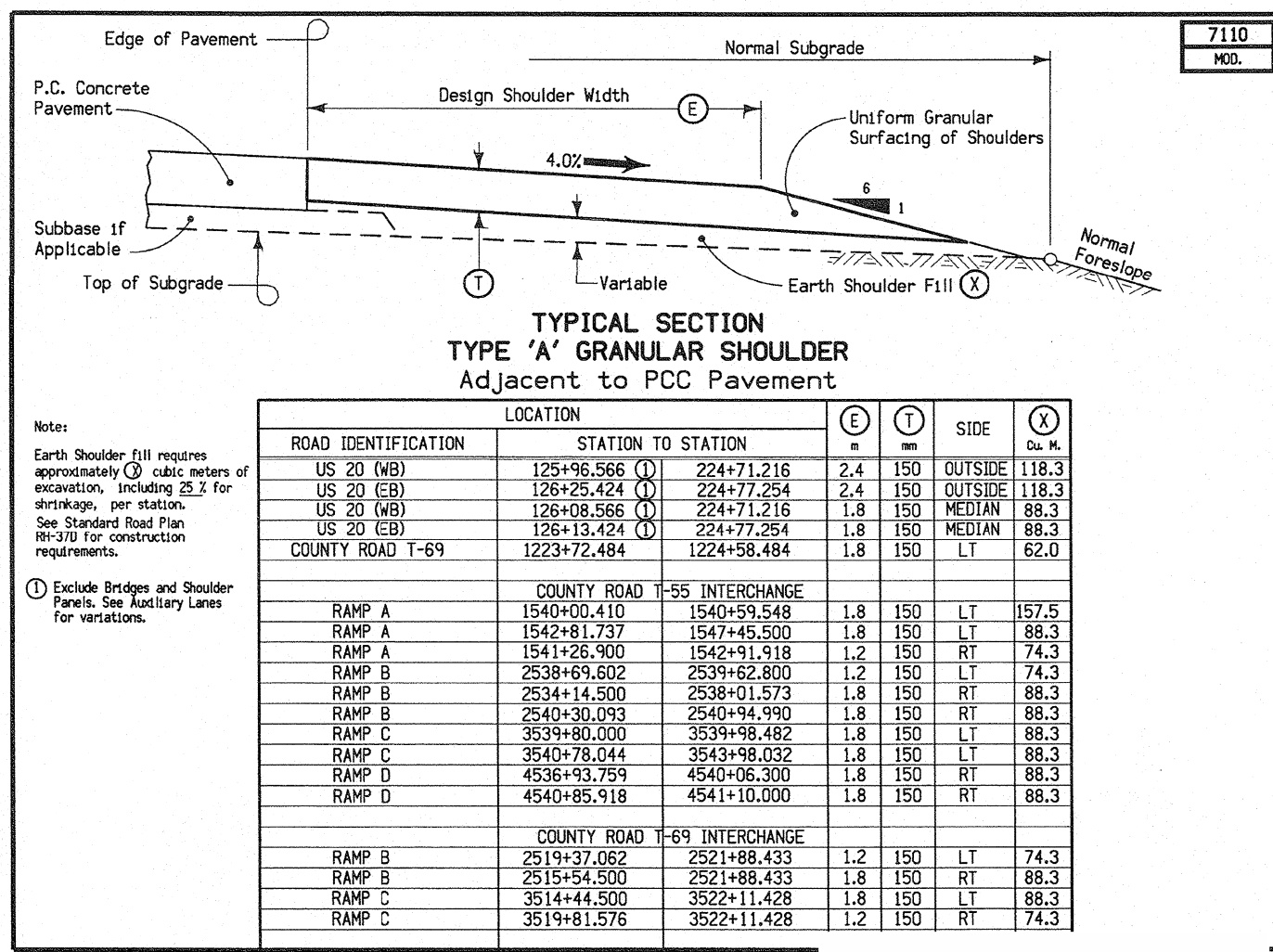
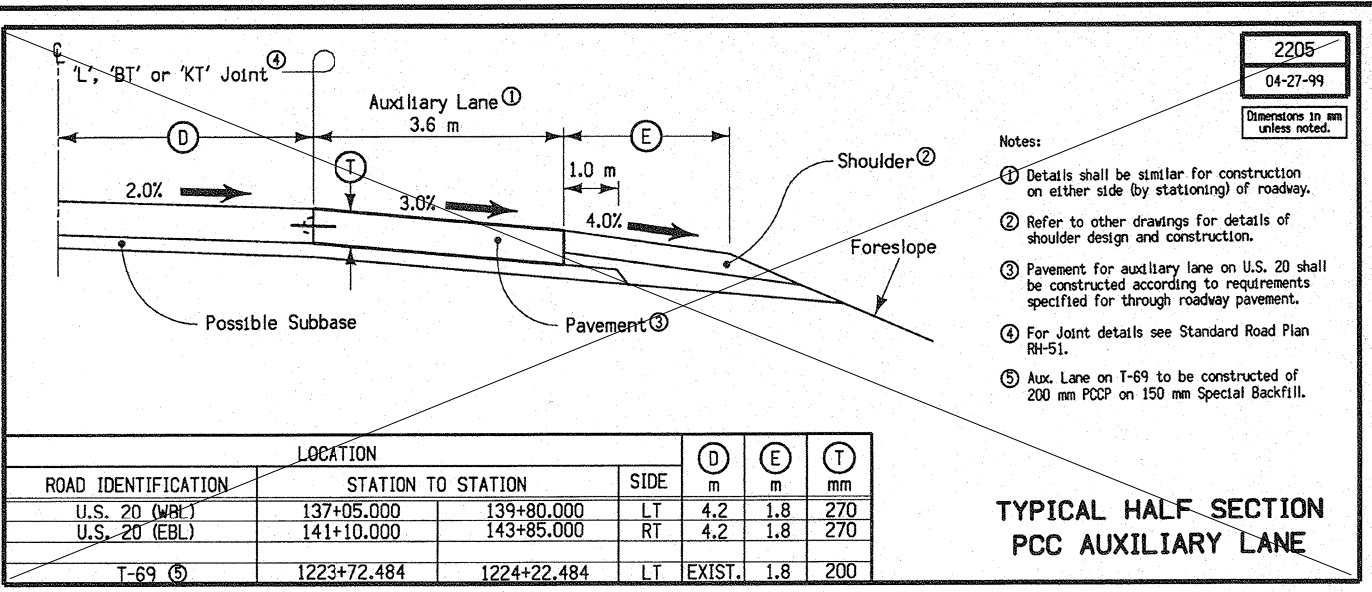
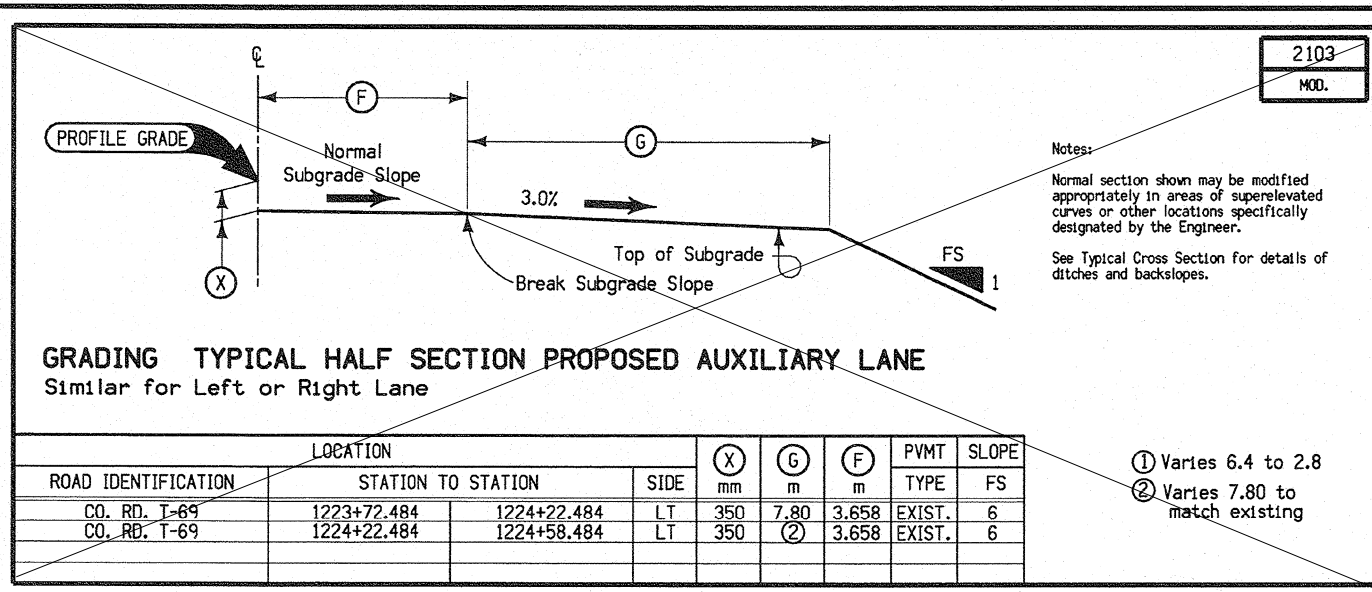


**TYPICAL CROSS SECTION
SUPERELEVATION FOR MAINLINE ROADWAYS
WITH NON-PAVED SHOULDERS
(7% MAXIMUM SUPERELEVATION)**



**DETAILS OF INTEGRAL
100 mm SLOPED CURB**

This Sheet
For Information Only



This Sheet
For Information Only

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadway Items : Roadway Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
1	2102-2625000	EMBANKMENT-IN-PLACE	CY	422.7	Refer to Tab. 107-23 on C Sheets.
2	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	19,787.5	Refer to Tab. 112-9 on C Sheets.
3	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	7,748.2	
4	2122-5500060	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN.	SY	112,585.3	
5	2122-5500090	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN.	SY	4,457.1	
6	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	2,581.6	Refer to Tab. 112-9 on C Sheets.
7	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	4,625	Refer to Tab. 110-7A on C Sheets.
8	2505-4008300	STEEL BEAM GUARDRAIL	LF	3,400	Refer to Tab. 108-8A on C Sheets and U sheets.
9	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	20	
10	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	20	
11	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	20	Refer to Tab. 108-8A on C Sheets.
12	2505-6000111	HIGH TENSION CABLE GUARDRAIL	LF	1,300	Refer to Tab. 108-9A on C Sheets and U sheets.
13	2505-6000121	HIGH TENSION CABLE GUARDRAIL, END ANCHOR	EACH	16	
14	2505-6000131	HIGH TENSION CABLE GUARDRAIL, SPARE PARTS KIT	EACH	1	
15	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plan on J.1 Sheet.
16	2533-4980005	MOBILIZATION	LS	1	--
17	2548-0000100	MILLED SHOULDER RUMBLE STRIPS, HMA SURFACE	STA	2,533.17	Refer to Tab. 112-10 on C Sheets.
18	2548-0000110	ASPHALT EMULSION FOR FOG SEAL (SHOULDER RUMBLE STRIPS)	GAL	2,744.5	

PROJECT DESCRIPTION

This project involves adding 4' paved inside and outside shoulders with milled rumbles strips along U.S. 20 from IA 14. east to Grundy County line.

This project also includes removing existing guardrails and replacing them with new steel beam guardrails along the bridges on US 20. Additionally, guardrails protecting the median piers of overhead bridges along US 20 will be removed, and high-tension cable rail will be installed.

STANDARD ROAD PLANS

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

Number	Date	Title
BA-200	10/20/2026	Steel Beam Guardrail Components
BA-201	10/18/2022	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10/20/2026	Steel Beam Guardrail Bolted End Anchor
BA-203	10/15/2019	Steel Beam Guardrail W-Beam End Anchor
BA-204	10/18/2022	Steel Beam Guardrail Thrie-Beam End Anchor
BA-205	10/17/2023	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-209	10/15/2024	Steel Beam Guardrail Barrier Transition Section (MASH TL-3, 34" mounting height)
BA-250	10/20/2026	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-351	10/19/2021	High Tension Cable Guardrail
EW-301	10/20/2026	Guardrail Grading
PV-12	10/20/2026	Milled Shoulder Rumble Strips
SI-173	4/19/2016	Object Markers
TC-1	10/15/2019	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-402	4/18/2023	Work Within 15 ft of Traveled Way
TC-418	4/18/2023	Lane Closure on Divided Highway
TC-420	10/16/2018	Lane Closure at Ramps
TC-432	10/17/2017	Shoulder Rumble Strip Operations

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
C Sheets		
100-1D	PROJECT DESCRIPTION	C.2
105-4 TAB	STANDARD ROAD PLANS	C.2
107-23	GRADING FOR GUARDRAIL INSTALLATIONS	C.5
108-8A	STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION	C.6
108-9A	HIGH TENSION CABLE GUARDRAIL	C.6
110-7A	REMOVAL OF STEEL BEAM GUARDRAIL	C.5
111-25	INDEX OF TABULATIONS	C.2
112-9	SHOULDERS	C.3 - C.4
112-10	MILLED RUMBLE STRIPS	C.4

**UTILITIES
(NOT A POINT 25 PROJECT)**

This is NOT a POINT 25 project and is not subject to the provisions of IAC 761-115.25.

SHOULDERS

- ① Lane(s) to which the shoulder is adjacent.
② See Typ. 7156, 7157, or 7158.
③ Bid Item.
④ Applies only for Paved Shoulders constructed on project with existing granular shoulders.
⑤ Bid Item. Typ. 7156, 7157, or 7158.
⑥ Does not include shrink.

Calculations assume a HMA unit weight (lbs/cf) of 0, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

Location					P Width FT	P _{SG} Width FT ②	G Width FT	L Length FT	Quantities																Remarks	
Road Identification	① Direction Of Traffic	Station(MP) to Station(MP)		Side					Class 13 ^④ Excavation CY ③	Hot Mix Asphalt		Binder TONS	Paved Shoulder SY ③	9" Paved Shoulder at Guardrail SY ⑤	Reinforced Paved Shoulder SY ③	Special Backfill				Subbase CY ③	Granular Shoulder		Earth Shoulder Construction Alternates			
										TON	TON/STA					HMA Alternate TON ③ TON/STA		PCC Alternate TON ③ TON/STA			STA ③	HMA CY ⑥	PCC CY ⑥			
US 20	EB	208.4	220.8	M	4.0		2.0	63040.0	4669.6				28017.8							2758.000	4.375	630.4				
US 20	EB	208.4	220.8	O	4.0		4.0	63367.0	4693.9				28163.1							4990.151	7.875	633.7				(1)
US 20	WB	208.4	220.8	M	4.0		2.0	63314.0	4689.9				28139.6									633.1				
US 20	WB	208.4	220.8	O	4.0		4.0	63596.0	4710.8				28264.9									636.0				(1)
US 20 over IA 14	EB			O				20.0	6.2				24.7									0.2				
US 20 over IA 14	EB			O				48.7	13.7				54.6									0.5				
US 20 over IA 14	EB			O				171.5	43.4				173.4									1.7				
US 20 over IA 14	EB			M				20.0	5.2				20.9									0.2				
US 20 over IA 14	EB			M				56.8	13.0				52.1									0.6				
US 20 over IA 14	EB			M				200.9	39.6				158.4									2.0				
US 20 over IA 14	WB			O				169.5	42.8				171.4									1.7				
US 20 over IA 14	WB			O				48.7	12.3				49.2									0.5				
US 20 over IA 14	WB			O				20.0	6.2				24.7									0.2				
US 20 over IA 14	WB			M				200.0	39.4				157.8									2.0				
US 20 over IA 14	WB			M				56.8	13.0				52.1									0.6				
US 20 over IA 14	WB			M				20.0	5.2				20.9									0.2				
US 20 over Creek	EB			O				20.0	6.4				25.7									0.2				
US 20 over Creek	EB			O				50.4	14.5				58.0									0.5				
US 20 over Creek	EB			O				169.2	42.8				171.1									1.7				
US 20 over Creek	EB			M				20.0	5.6				22.2									0.2				
US 20 over Creek	EB			M				48.6	11.5				46.2									0.5				
US 20 over Creek	EB			M				197.2	38.9				155.6									2.0				
US 20 over Creek	WB			O				173.7	44.8				179.0									1.7				
US 20 over Creek	WB			O				50.4	13.4				53.7									0.5				
US 20 over Creek	WB			O				20.0	5.5				22.0									0.2				
US 20 over Creek	WB			M				194.3	38.9				155.4									1.9				
US 20 over Creek	WB			M				48.6	11.6				46.4									0.5				
US 20 over Creek	WB			M				20.0	5.5				22.2									0.2				
US 20 over Trail	EB			O				20.0	6.4				25.6									0.2				
US 20 over Trail	EB			O				50.5	14.4				57.8									0.5				
US 20 over Trail	EB			O				151.7	38.3				153.4									1.5				
US 20 over Trail	EB			M				20.0	5.0				20.0									0.2				
US 20 over Trail	EB			M				48.6	10.9				43.5									0.5				
US 20 over Trail	EB			M				202.1	39.9				159.4									2.0				
US 20 over Trail	WB			O				152.8	38.6				154.5									1.5				
US 20 over Trail	WB			O				50.0	14.2				56.9									0.5				
US 20 over Trail	WB			O				20.0	6.3				25.3									0.2				
US 20 over Trail	WB			M				205.4	40.5				162.0									2.1				
US 20 over Trail	WB			M				48.9	10.9				43.7									0.5				
US 20 over Trail	WB			M				20.0	5.0				20.0									0.2				
US 20 over U Ave	EB			O				20.0	5.1				20.2									0.2				
US 20 over U Ave	EB			O				46.3	10.5				41.9									0.5				
US 20 over U Ave	EB			O				50.4	10.1				40.3									0.5				
US 20 over U Ave	EB			M				20.0	5.0				20.0									0.2				
US 20 over U Ave	EB			M				48.6	10.9				43.5									0.5				
US 20 over U Ave	EB			M				212.9	42.0				167.9									2.1				
US 20 over U Ave	WB			O				57.0	11.4				45.6									0.6				
US 20 over U Ave	WB			O				46.8	10.6				42.4									0.5				
US 20 over U Ave	WB			O				20.0	5.1				20.2									0.2				
US 20 over U Ave	WB			M				213.6	42.1				168.5									2.1				
US 20 over U Ave	WB			M				48.7	10.9				43.6									0.5				
US 20 over U Ave	WB			M				20.0	5.0				20.0									0.2				
US 20 over Grundy	EB			O				20.0	6.4				25.7									0.2				
US 20 over Grundy	EB			O				50.2	15.8				63.2									0.5				
US 20 over Grundy	EB			O				166.2	42.0				168.0									1.7				
US 20 over Grundy	EB			M				20.0	5.0				20.0									0.2				
US 20 over Grundy	EB			M				49.0	11.0				43.8									0.5				
US 20 over Grundy	EB			M				207.1	40.8				163.4									2.1				
US 20 over Grundy	WB			O				166.2	42.0				168.0									1.7				
US 20 over Grundy	WB			O				50.2	14.4				57.7									0.5				
US 20 over Grundy	WB			O				20.0	6.4				25.8									0.2				
US 20 over Grundy	WB			M				185.6	36.1				144.4									1.9				
US 20 over Grundy	WB			M				48.6	10.8				43.2									0.5				
US 20 over Grundy	WB			M				20.0	5.0				20.0									0.2				

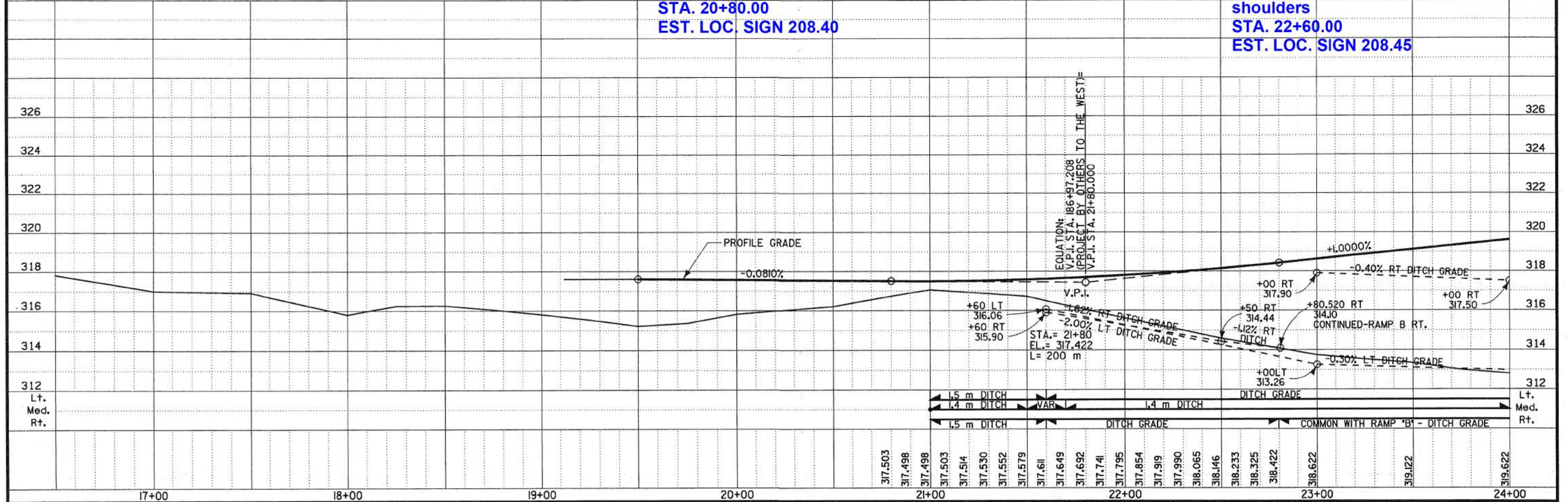
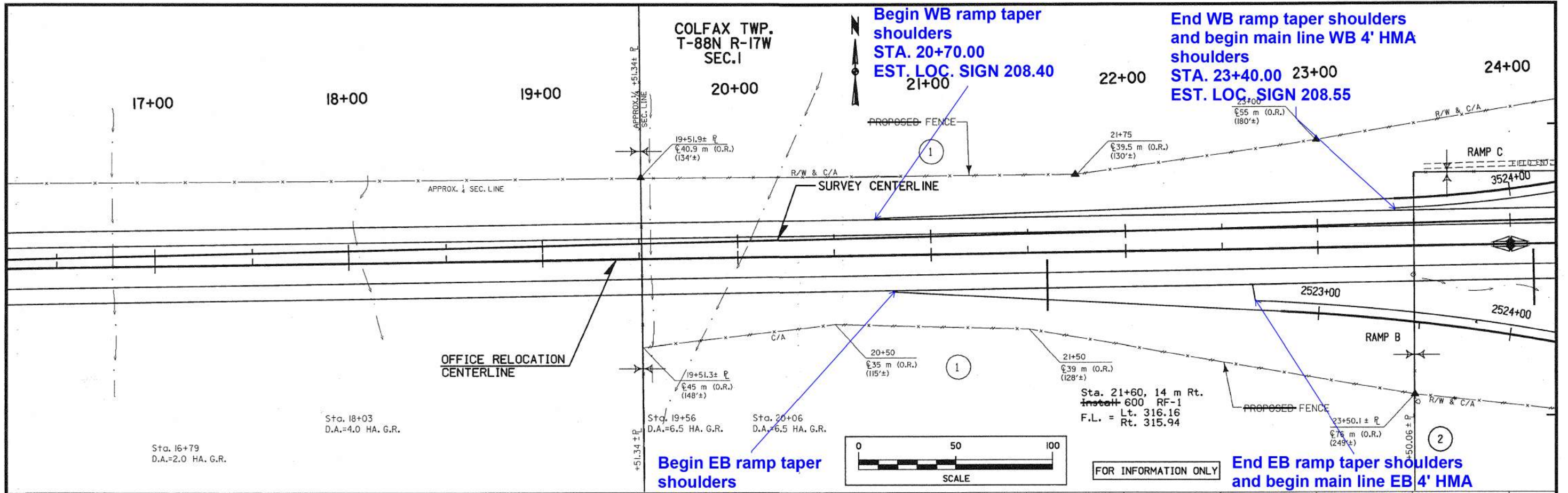
110-7A 04-17-12					
REMOVAL OF STEEL BEAM GUARDRAIL					
① Lane(s) to which the installation is adjacent. ② Includes length of End Terminals and End Anchors.					
Location					Removal of Guardrail ②
No.	① Direction of Traffic	Station(MP) to Station(MP)	Side		
					LF
1	EB	208.72	208.73	O	75.0
2	EB/WB	208.71	208.73	M	268.0
3	WB	208.78	208.8	O	80.0
4	EB/WB	208.78	20882	M	278.0
5	EB/WB	211.72	211.75	M	275.0
6	EB/WB	213.71	213.74	M	278.0
7	EB	214.84	214.85	O	65.0
8	EB/WB	214.83	214.85	M	255.0
9	WB	214.87	214.88	O	65.0
10	EB/WB	214.87	214.9	M	240.0
11	EB	215.6	215.61	O	92.0
12	EB/WB	215.59	215.61	M	280.0
13	WB	215.65	215.66	O	86.0
14	EB/WB	215.65	215.67	M	270.0
15	EB	215.75	215.77	O	98.0
16	EB/WB	215.74	215.77	M	278.0
17	WB	215.8	215.81	O	92.0
18	EB/WB	215.8	215.82	M	272.0
19	EB/WB	217.31	217.34	M	260.0
20	EB/WB	218.81	218.83	M	284.0
21	EB	220.8	220.81	O	78.0
22	EB/WB	220.79	220.81	M	292.0
23	WB	220.84	220.86	O	74.0
24	EB/WB	220.84	220.87	M	290.0
Totals:					4625.0

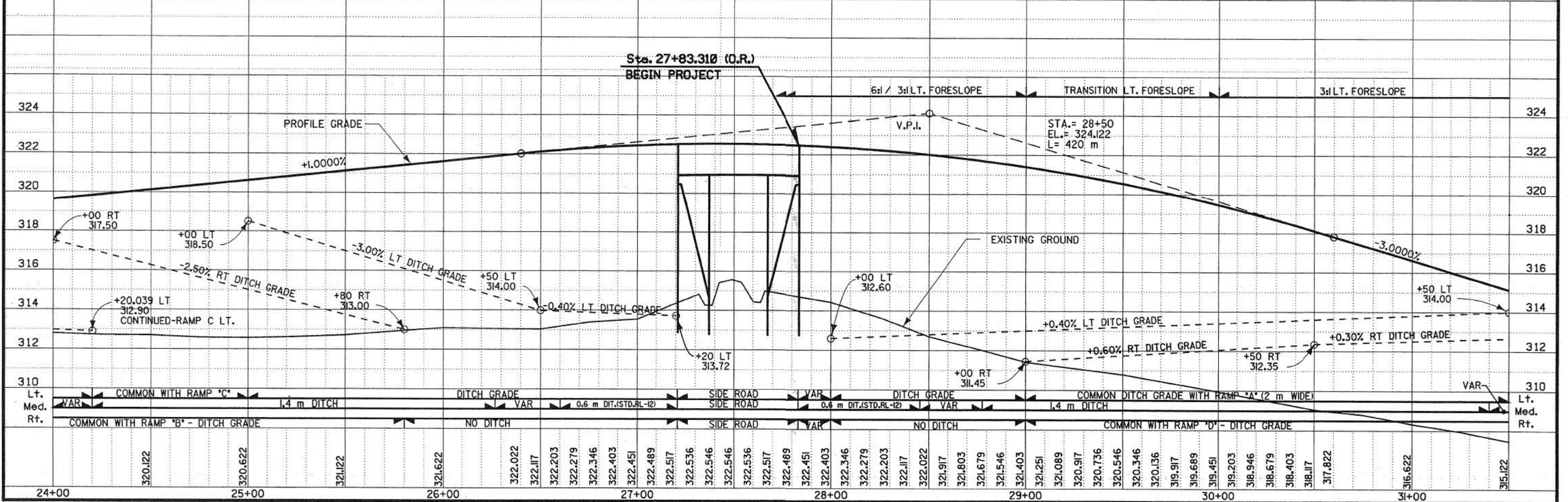
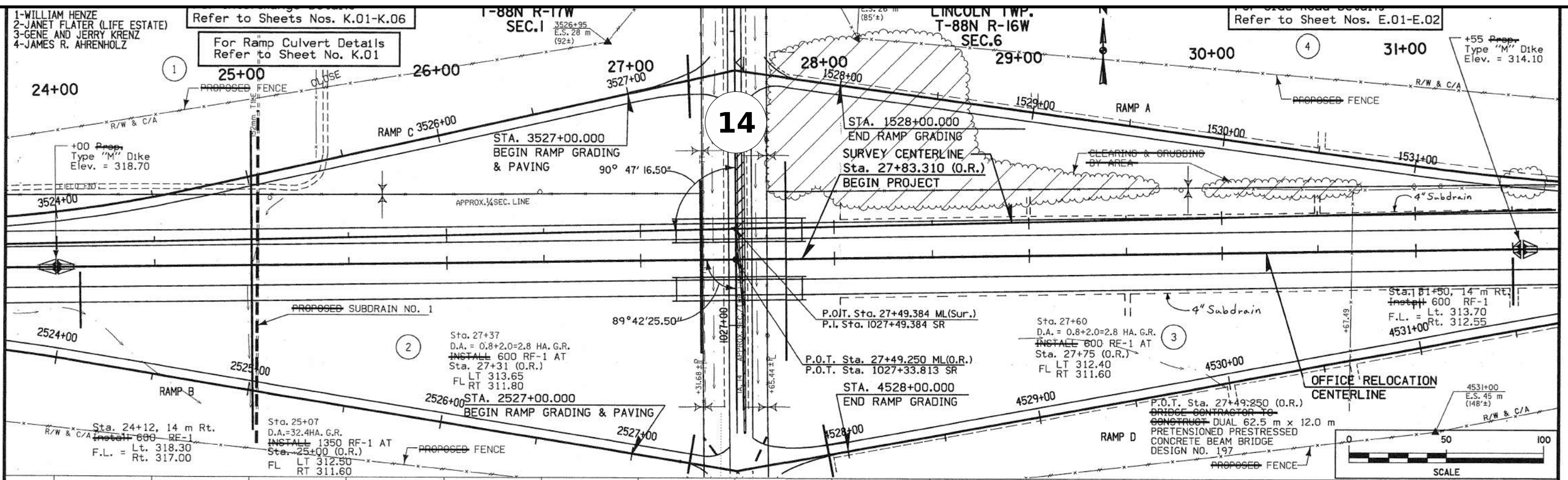
107-23
10-11-18

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 (ML)	Side		X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	Excavation Class 10	Embankment In Place	
														CY	CY	
1	EB	208.74	O	6:1	199.8	5.0	0.0	0.0	0.0	0.0	248.6	7.0	47.0		22.2	US20 EB Bridge over IA 14
2	EB	208.74	M	6:1	229.2	5.0	0.0	0.0	0.0	0.0	286.1	7.3	47.3		22.4	US20 EB Bridge over IA 14
3	WB	208.79	O	6:1	199.2	5.0	0.0	0.0	0.0	0.0	248.6	7.0	47.0		22.2	US20 WB Bridge over IA 14
4	WB	208.79	M	6:1	229.3	5.0	0.0	0.0	0.0	0.0	286.1	7.3	47.3		22.4	US20 WB Bridge over IA 14
5	EB	214.86	O	6:1	199.6	5.0	0.0	0.0	0.0	0.0	249.9	7.4	47.4		22.4	US20 EB Bridge over Creek
6	EB	214.86	M	6:1	240.5	5.0	0.0	0.0	0.0	0.0	289.1	6.9	45.8		21.7	US20 EB Bridge over Creek
7	WB	214.88	O	6:1	199.5	5.0	0.0	0.0	0.0	0.0	249.9	5.8	42.7		20.2	US20 WB Bridge over Creek
8	WB	214.88	M	6:1	240.5	5.0	0.0	0.0	0.0	0.0	289.1	6.9	46.9		22.2	US20 WB Bridge over Creek
9	EB	215.61	O	6:1	199.6	5.0	0.0	0.0	0.0	0.0	249.9	7.4	47.5		22.5	US20 EB Bridge over Trail
10	EB	215.61	M	6:1	240.5	5.0	0.0	0.0	0.0	0.0	289.1	6.9	46.9		22.2	US20 EB Bridge over Trail
11	WB	215.64	O	6:1	199.6	5.0	0.0	0.0	0.0	0.0	249.9	7.4	47.5		22.5	US20 WB Bridge over Trail
12	WB	215.64	M	6:1	240.5	5.0	0.0	0.0	0.0	0.0	289.1	6.9	46.9		22.2	US20 WB Bridge over Trail
13	EB	215.76	O	6:1	91.4	5.0	0.0	0.0	0.0	0.0	137.5	6.9	46.9		22.2	US20 EB Bridge over U Ave.
14	EB	215.76	M	6:1	240.5	5.0	0.0	0.0	0.0	0.0	289.1	6.9	46.9		22.2	US20 EB Bridge over U Ave.
15	WB	215.79	O	6:1	91.4	5.0	0.0	0.0	0.0	0.0	137.5	6.9	46.9		22.2	US20 WB Bridge over U Ave.
16	WB	215.79	M	6:1	244.5	5.0	0.0	0.0	0.0	0.0	293.1	6.9	46.9		22.2	US20 WB Bridge over U Ave.
17	EB	220.81	O	6:1	199.6	5.0	0.0	0.0	0.0	0.0	249.9	7.4	47.4		22.4	US20 EB Bridge over Grundy Road
18	EB	220.81	M	6:1	240.5	5.0	0.0	0.0	0.0	0.0	289.1	6.9	46.9		22.2	US20 EB Bridge over Grundy Road
19	WB	220.84	O	6:1	199.6	5.0	0.0	0.0	0.0	0.0	249.9	7.4	47.4		22.4	US20 WB Bridge over Grundy Road
20	WB	220.84	M	6:1	240.5	5.0	0.0	0.0	0.0	0.0	289.1	6.9	46.9		22.2	US20 WB Bridge over Grundy Road
														Totals:	442.7	

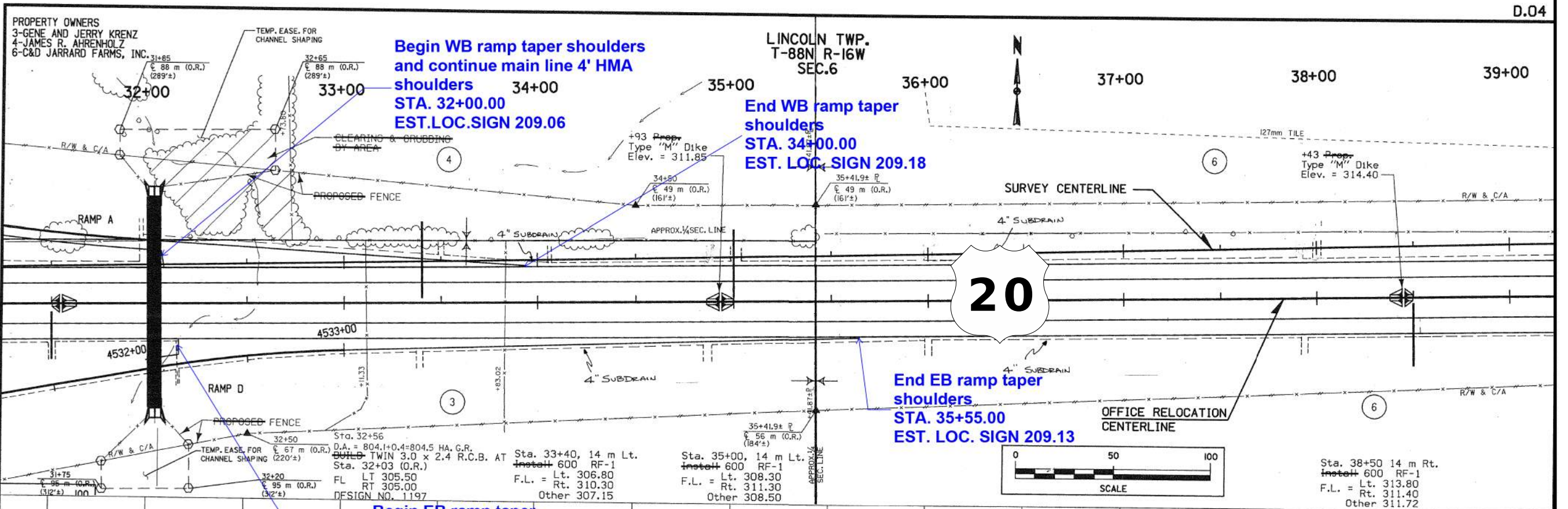
108-8A 10-16-18																													
STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION																													
Possible Standards: BA-200, BA-201, BA-202, BA-205, BA-206, BA-210, BA-211, BA-221, BA-225, BA-250, BA-260, LS-625, LS-626, LS-630, LS-635, SI-172, SI-173 and SI-211.																													
<div>① Lane(s) to which the obstacle is adjacent.</div> <div>② Not a bid item. Incidental to guardrail installation.</div>																													
Location				Layout Lengths				Long-Span System				Delineators and Object Markers ②				Bid Items												Remarks	
No.	Direction of Traffic	① Side O = Outside M = Median	Station (MP)													Offset	BA-250, BA-260, LS-630, or LS-635				BA-250 or LS-630				BA-260 or LS-635				
				VT1	VF	VT2	ET					End Terminal					Barrier Transition Section	Barrier Transition Section				End Terminal							
												Tangent	Flared	Tangent	Flared			Tangent	Flared	Tangent	Flared								
												White	OM2-2	OM3-L	OM3-R			BA-202	BA-210	BA-200	BA-201		BA-205	BA-206	LS-625	LS-626	BA-221		
STATION		TYPE	TYPE	EACH	EACH	EACH	EACH	TYPE	EACH	EACH	LF	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH			
1	EB	O	208.74		203.125		47.7						1	C	1		162.5	1	1										
2	EB	M	208.74		240.625		47.7						1	C	1		200.0	1	1										
3	WB	O	208.79		203.125		47.7							C	1		162.5	1	1										
4	WB	M	208.79		240.625		47.7						1	C	1		200.0	1	1										
5	EB	O	214.86		203.125		47.7							C	1		162.5	1	1										
6	EB	M	214.86		240.625		47.7						1	C	1		200.0	1	1										
7	WB	O	214.88		203.125		47.7							C	1		162.5	1	1										
8	WB	M	214.88		240.625		47.7						1	C	1		200.0	1	1										
9	EB	O	215.61		203.125		47.7							C	1		162.5	1	1										
10	EB	M	215.61		240.625		47.7						1	C	1		200.0	1	1										
11	WB	O	215.64		203.125		47.7							C	1		162.5	1	1										
12	WB	M	215.64		240.625		47.7						1	C	1		200.0	1	1										
13	EB	O	215.76		90.625		47.7							C	1		50.0	1	1										
14	EB	M	215.76		240.625		47.7						1	C	1		200.0	1	1										
15	WB	O	215.79		90.625		47.7							C	1		50.0	1	1										
16	WB	M	215.79		240.625		47.7						1	C	1		200.0	1	1										
17	EB	O	220.81		203.125		47.7							C	1		162.5	1	1										
18	EB	M	220.81		240.625		47.7						1	C	1		200.0	1	1										
19	WB	O	220.84		203.125		47.7							C	1		162.5	1	1										
20	WB	M	220.84		240.625		47.7						1	C	1		200.0	1	1										
							Totals:								20		3400.0	20	20										

108-9A 04-20-10										
① Lane(s) to which the installation is adjacent.										
HIGH TENSION CABLE GUARDRAIL										
Refer to BA-351.										
Location					Dimensions			Bid Items		Remarks
No.	Direction of Traffic	Station	Side	Offset D ₀	Approach C _A	Obstacle C ₀	Trailing C _T	Protection Length (C _A +C ₀ +C _T)	End Anchor	
				FT	FT	FT	FT	FT	No.	
1	EB	211.73	Lt.	20.5	140.0	30.0	0.0	170.0	2	Median piers under Q Ave.Bridge
2	WB	211.78	Lt.	20.5	140.0	30.0	0.0	170.0	2	Median piers under Q Ave.Bridge
3	EB	213.72	Lt.	20.5	140.0	30.0	0.0	170.0	2	Median piers under T 53.Bridge
4	WB	213.78	Lt.	20.5	140.0	30.0	0.0	170.0	2	Median piers under T 53.Bridge
5	EB	217.31	Lt.	20.5	120.0	20.0	0.0	140.0	2	Median piers under Vista Ave.Bridge
6	WB	211.36	Lt.	20.5	120.0	20.0	0.0	140.0	2	Median piers under Vista Ave.Bridge
7	EB	218.81	Lt.	20.5	140.0	30.0	0.0	170.0	2	Median piers under X Ave.Bridge
8	WB	218.87	Lt.	20.5	140.0	30.0	0.0	170.0	2	Median piers under X Ave.Bridge
								Totals:	1300.0	16

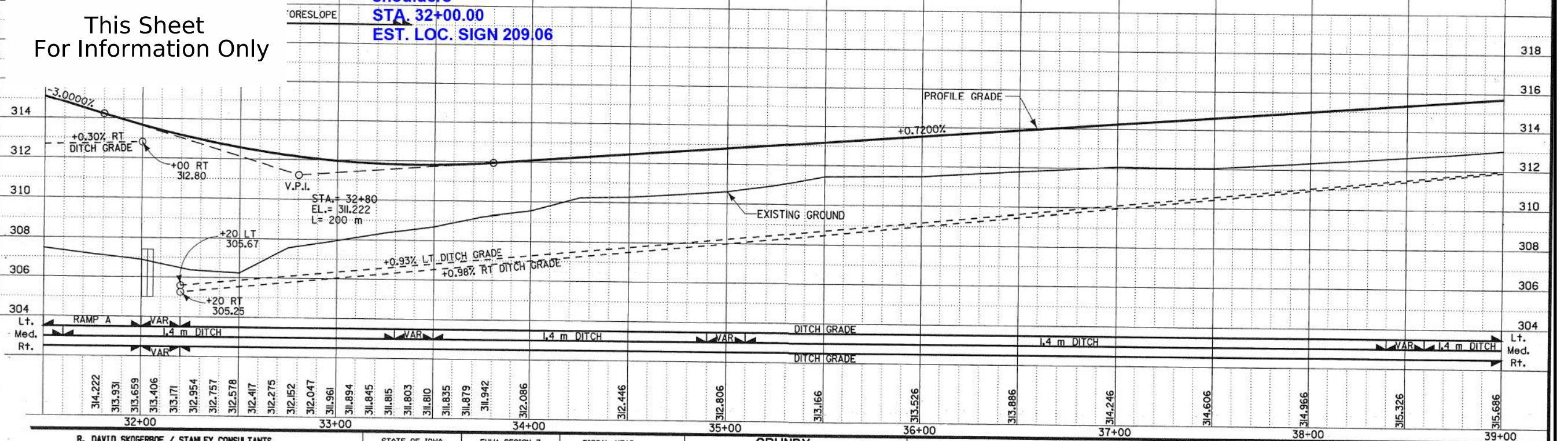




R. DAVID SKOGERBOE / STANLEY CONSULTANTS STATE OF IOWA FHWA REGION 7 FISCAL YEAR GRUNDY COUNTY PROJECT NUMBER NHS-520-5(34)--19-38 SHEET NUMBER D.03



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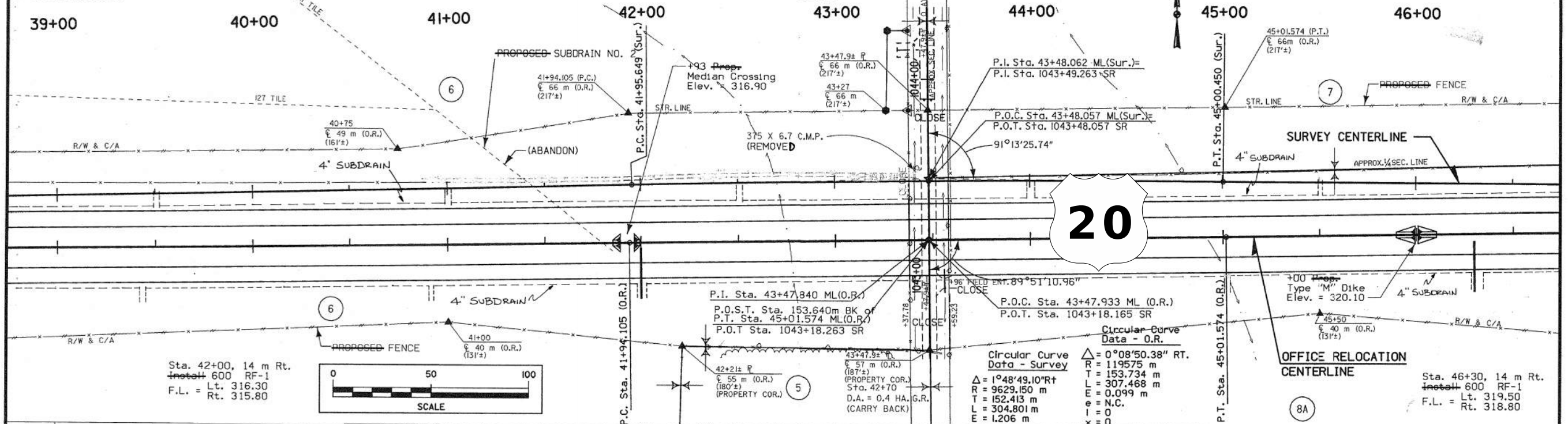


PROPERTY OWNERS
 5-C&D JARRARD FARMS, INC.
 C.P. THOMAS F. AND DIAN L. JUNKER
 6-C&D JARRARD FARMS, INC.
 7-HARM F., JR. AND URSULA HARMS
 8A- ESTHER VAN DEEST

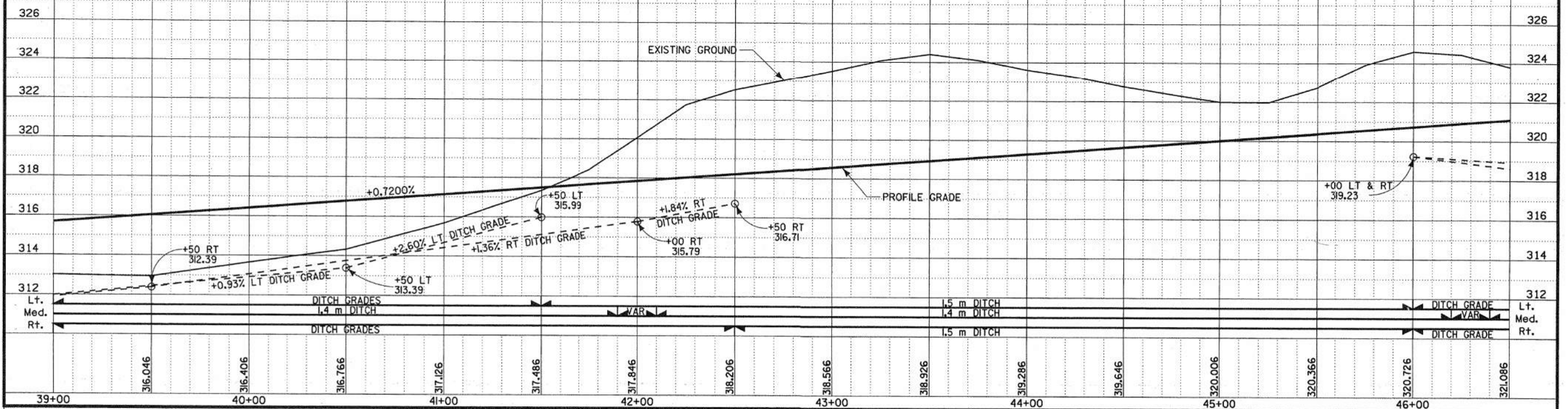
LINCOLN TWP.
 T-88N R-16W
 SEC.6

SEC.5

For Side Road Details
 Refer to Sheet No. E.03



This Sheet
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R. DAVID SKOGERBOE / STANLEY CONSULTANTS

STATE OF IOWA

FHWA REGION 7

FISCAL YEAR

GRUNDY

COUNTY

PROJECT NUMBER

NHS-520-5(34)--19-38

SHEET NUMBER

D.05

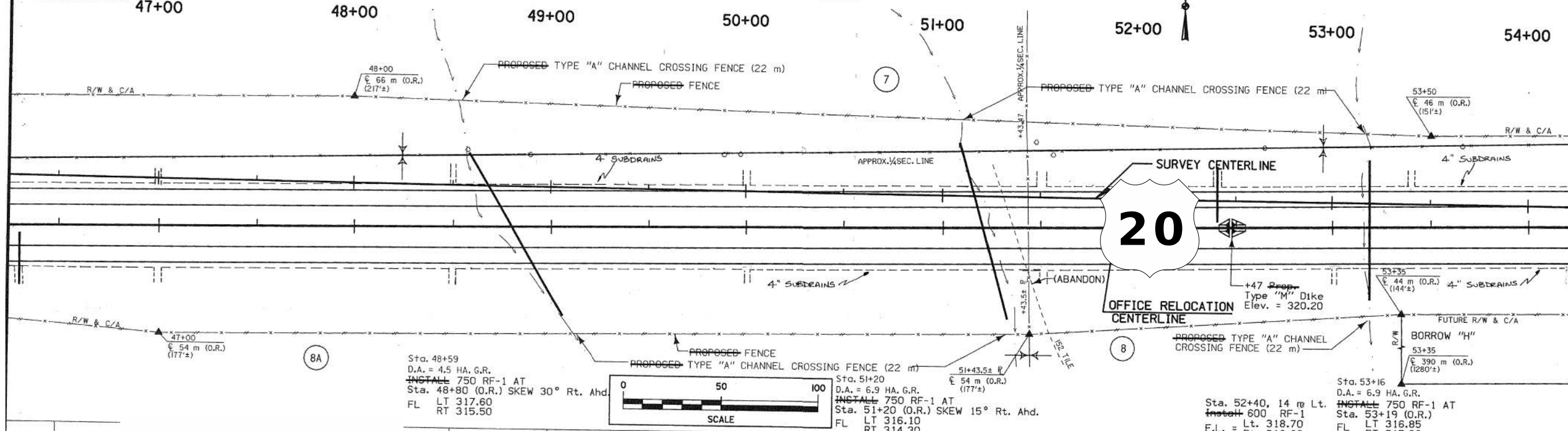
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0144

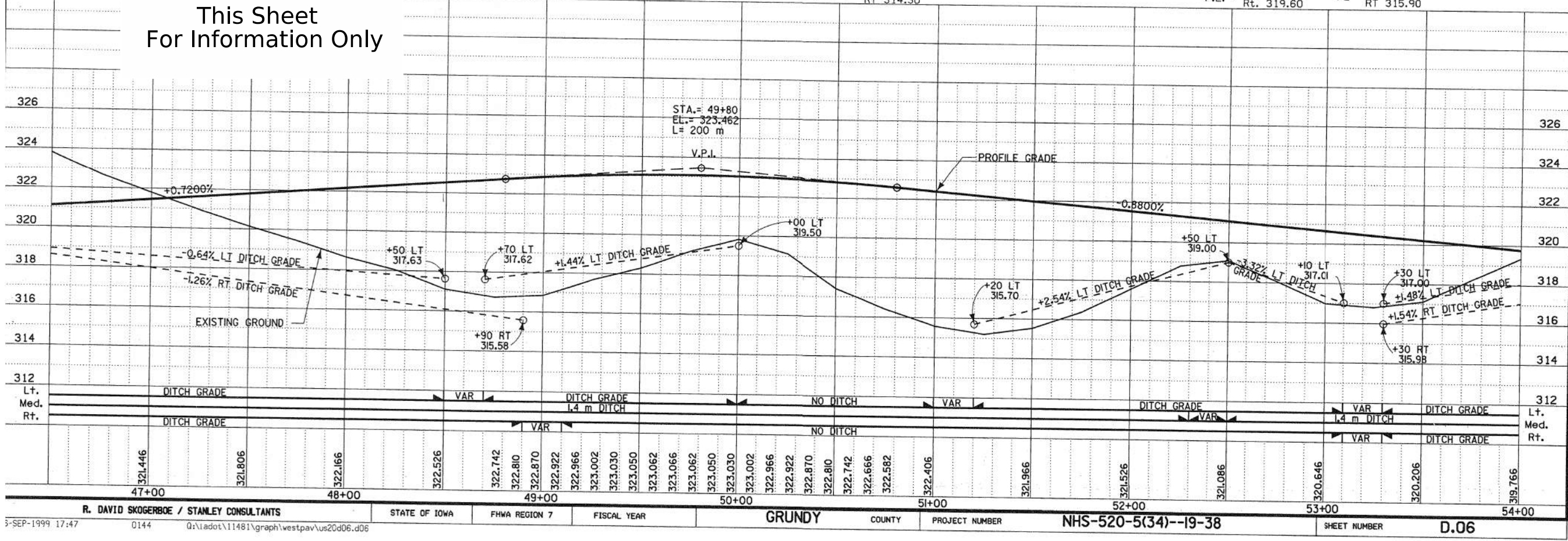
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PROPERTY OWNERS
7-HARM F., JR. AND URSULA HARMS
8-CAROLYN LENGUADORO TRUST-
MERVIN VAN DEEST TRUSTEE
MERVIN & ESTHER VAN DEEST (REMAINDERMAN)
8A-ESTHER VAN DEEST

LINCOLN TWP.
T-88N R-16W
SEC.5



This Sheet
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PROPERTY OWNERS
 7-HARM F., JR. AND URSLA HARMS
 8-CAROLYN LENGUADORO TRUST-
 MERVIN VAN DEEST TRUSTEE
 MERVIN & ESTHER VAN DEEST (REMAINDERMAN)
 9-GILBERT R. AND MARY JANE MICHAELSEN
 LIVING TRUST

LINCOLN TWP.
 T-88N R-16W
 SEC.5

Circular Curve
 Data - Survey

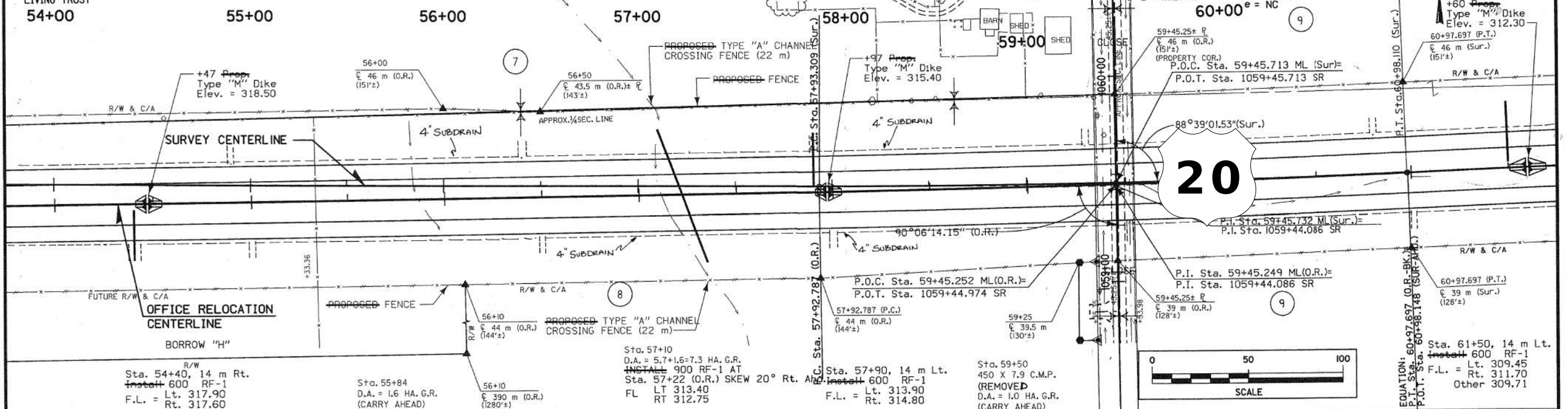
$\Delta = 2^\circ 26' 47.00''$ LT
 $R = 7138.599$ m
 $T = 152.424$ m
 $L = 304.801$ m
 $E = 1.627$ m

Circular Curve
 Data - O.R.

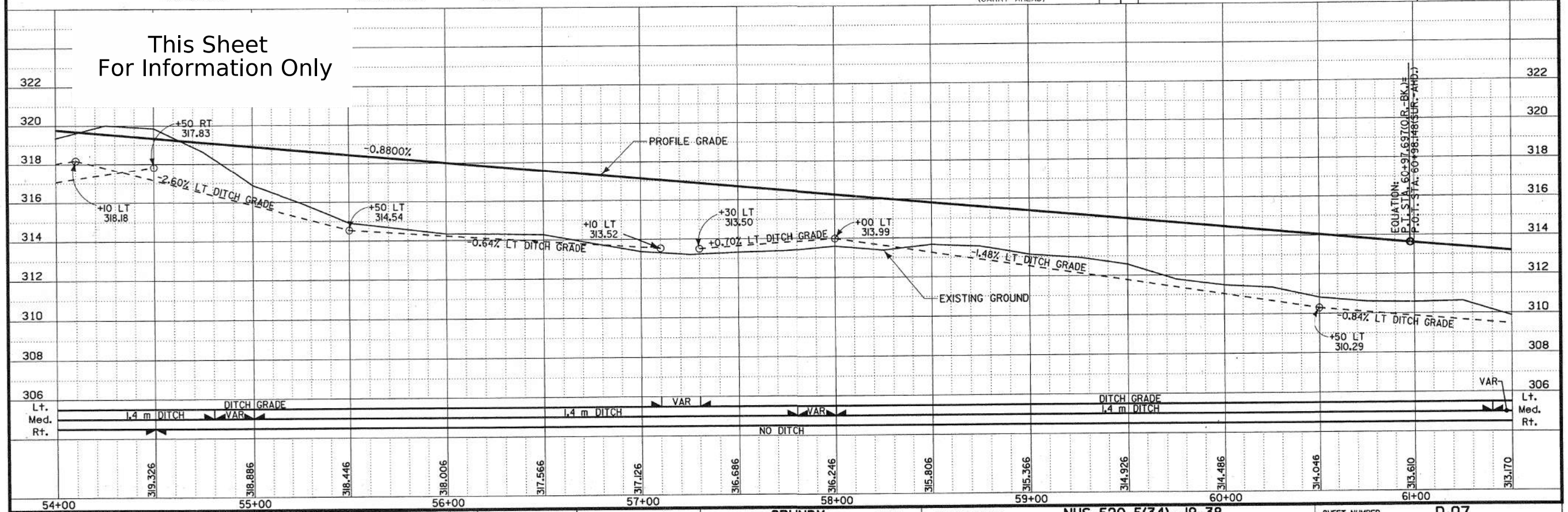
$\Delta = 1^\circ 20' 04.60''$ LT
 $R = 13090$ m
 $T = 152.462$ m
 $L = 304.910$ m
 $E = 0.888$ m
 $e = NC$

SEC.4

61+00



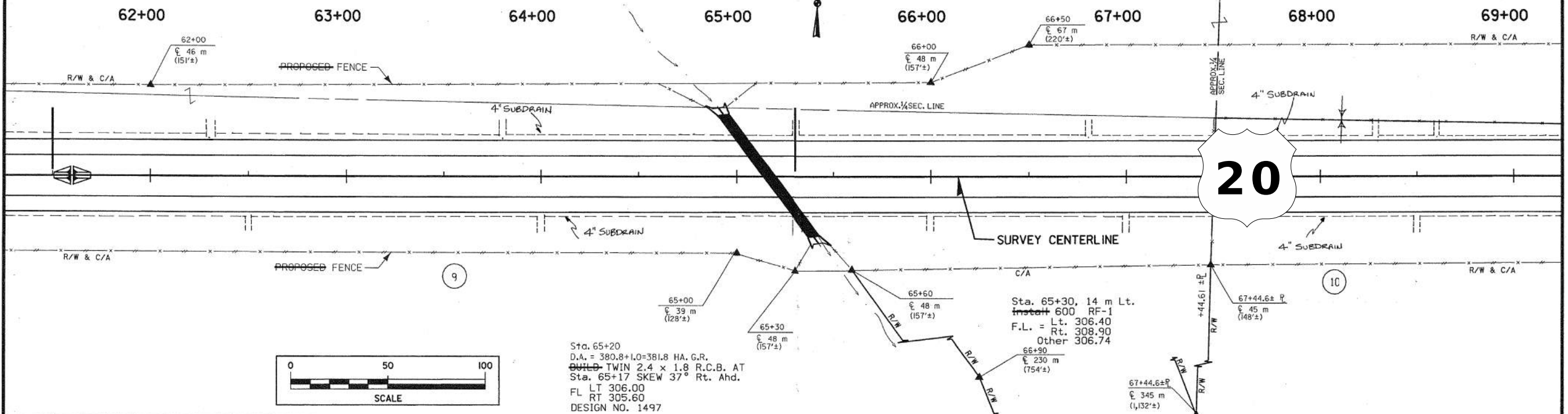
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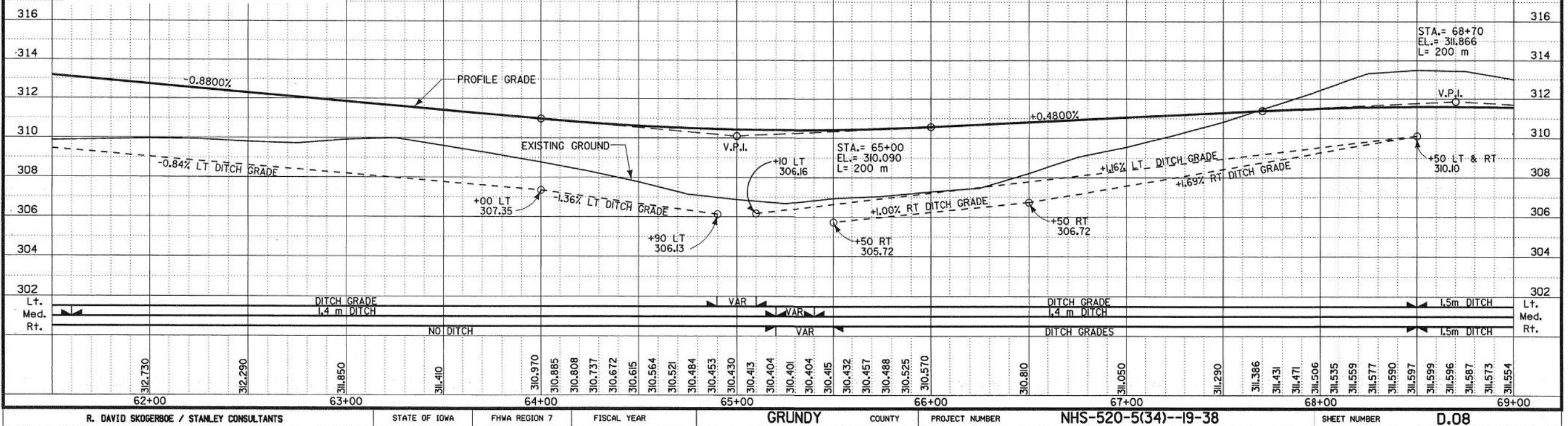
16-SEP-1999 17:47	0144	Q:\adot\11481\graph\westpav\us20d07.d07	R. DAVID SKOGERBOE / STANLEY CONSULTANTS	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	GRUNDY	COUNTY	PROJECT NUMBER	NHS-520-5(34)--19-38	SHEET NUMBER	D.07
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PROPERTY OWNERS
9-GILBERT R. AND MARY JANE MICHAELSEN
LIVING TRUST
10-JAMES C. BROWN

LINCOLN TWP.
T-88N R-16W
SEC.4



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R. DAVID SKOGERBOE / STANLEY CONSULTANTS

STATE OF IOWA

FHWA REGION 7

FISCAL YEAR

GRUNDY

COUNTY

PROJECT NUMBER

NHS-520-5(34)--19-38

SHEET NUMBER

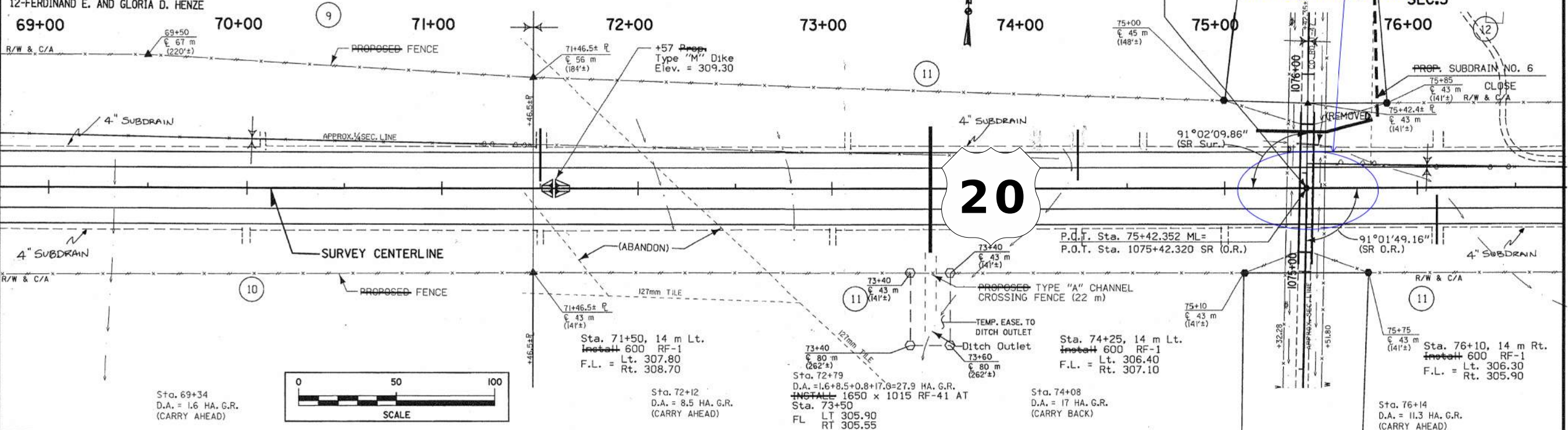
D.08

PROPERTY OWNERS
9-GILBERT R. AND MARY JANE MICHAELSEN
LIVING TRUST
10-JAMES C. BROWN
11-JAMES C. BROWN
12-FERDINAND E. AND GLORIA D. HENZE

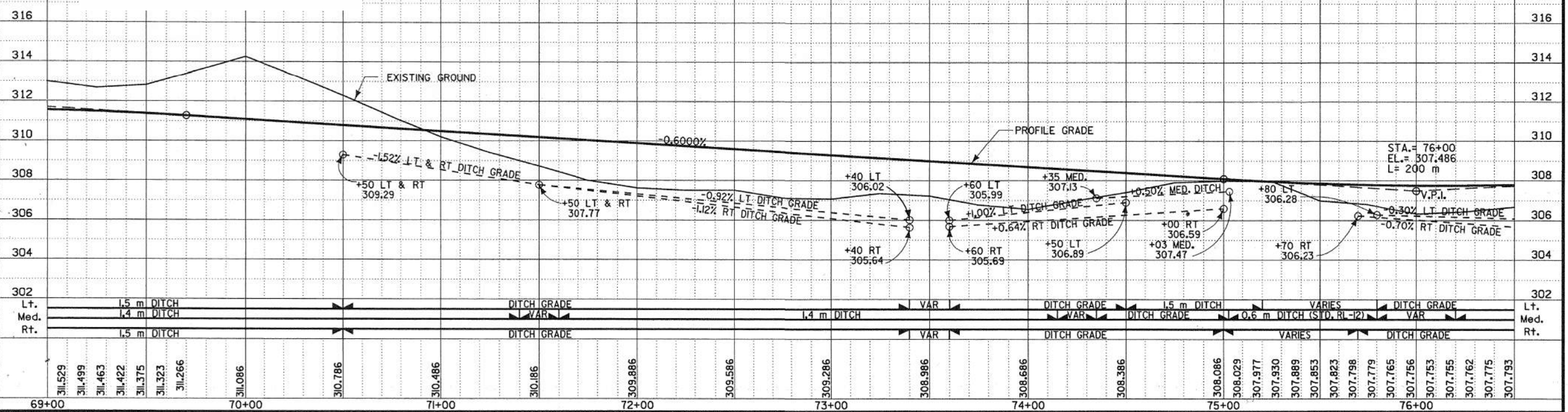
LINCOLN TWP.
T-88N R-16W
SEC.4

P.O.T. Sta. 75+42.320 ML=
P.T. Sta. 1075+42.320 SR(Sur)

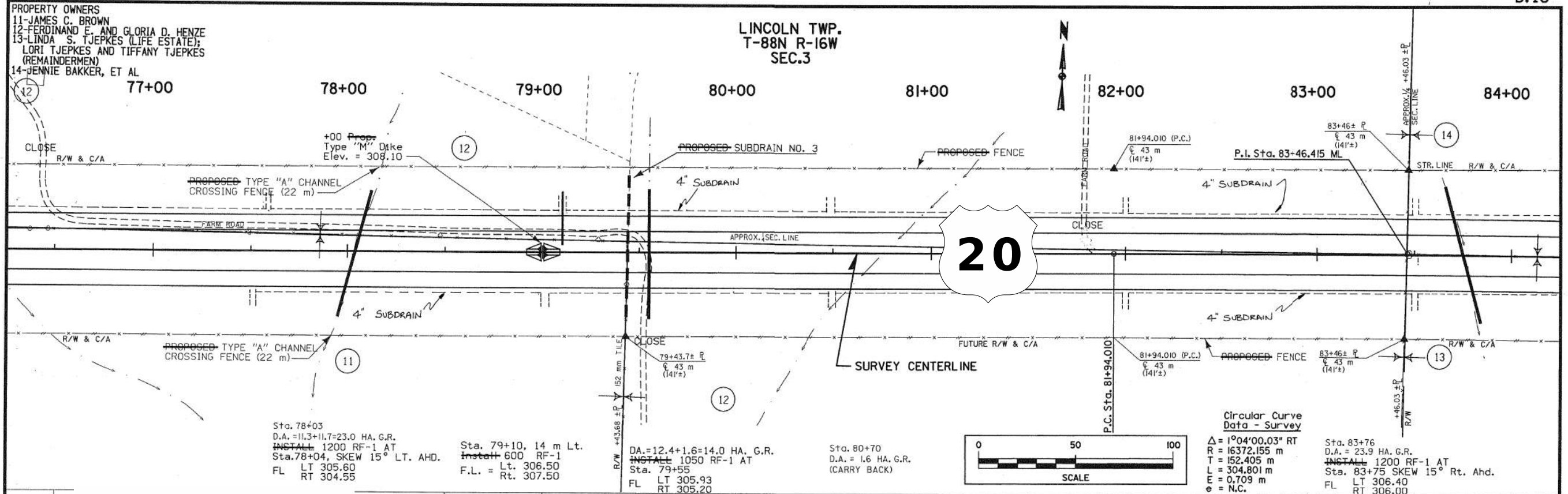
Replace steel beam
guardrail with high
tension cable guardrail
SEC.3



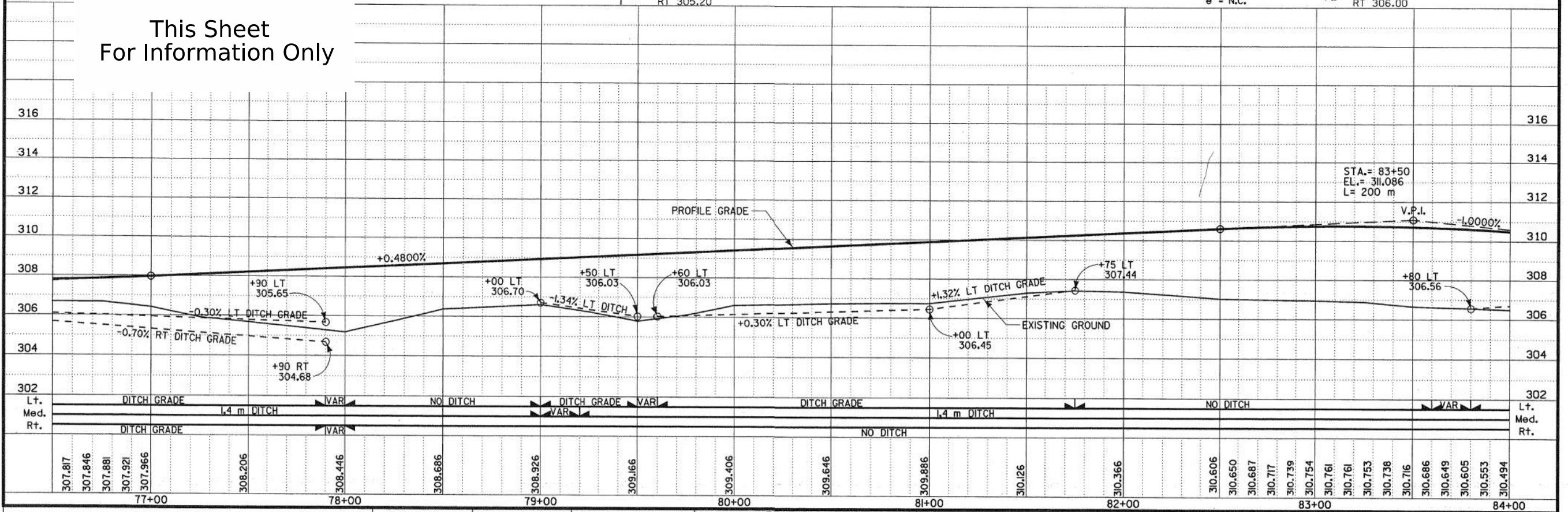
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R. DAVID SKOGERBOE / STANLEY CONSULTANTS			STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	GRUNDY	COUNTY	PROJECT NUMBER	NHS-520-5(34)--19-38	SHEET NUMBER	D.09
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0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 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0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 0144 01											



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PROPERTY OWNERS
13-LINDA S. TJEPKES (LIFE ESTATE);
LORI TJEPKES AND TIFFANY TJEPKES
(REMAINDERMEN)
14-JENNIE BAKKER, ET AL

LINCOLN TWP.
T-88N R-16W
SEC.3

Sta. 90+90, 14 m Lt.
~~Install~~ 600 RF-1
 F.L. = Lt. 300.70
 Rt. 302.20



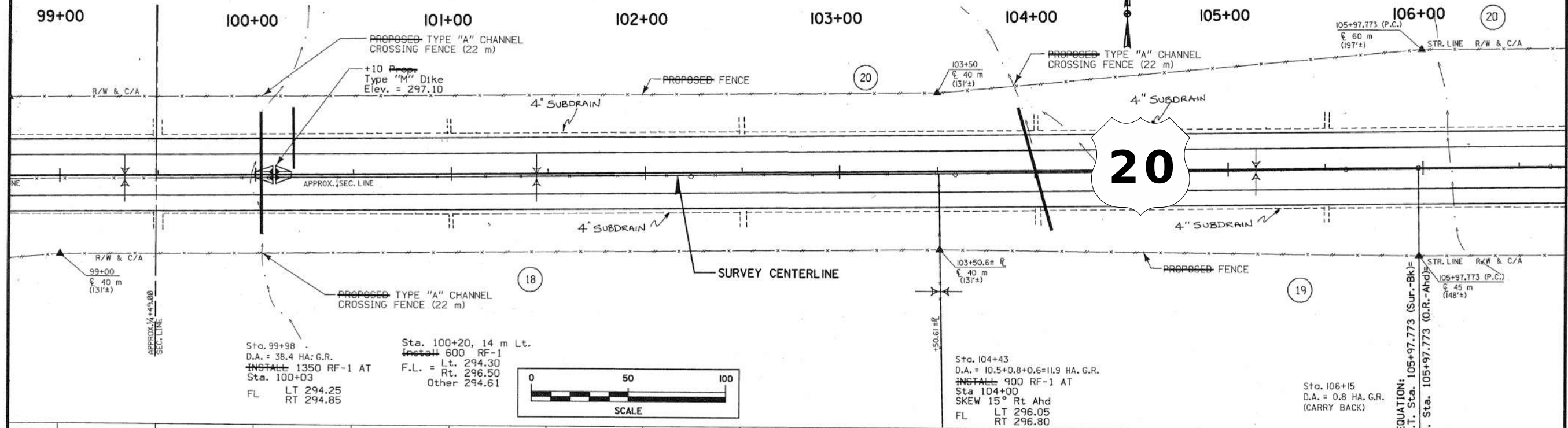


Profile view of a road section showing existing ground, profile grade, and ditch grades. The profile includes a vertical curve with a V.P.I. at STA. 97+80. The ditch grades are -0.50% LT, -1.0000%, -2.00% LT, and +1.26% RT. The profile grade is -1.0000% and +0.4800%. The ditch is 1.4 m wide. The profile is shown from STA. 92+00 to 99+00.

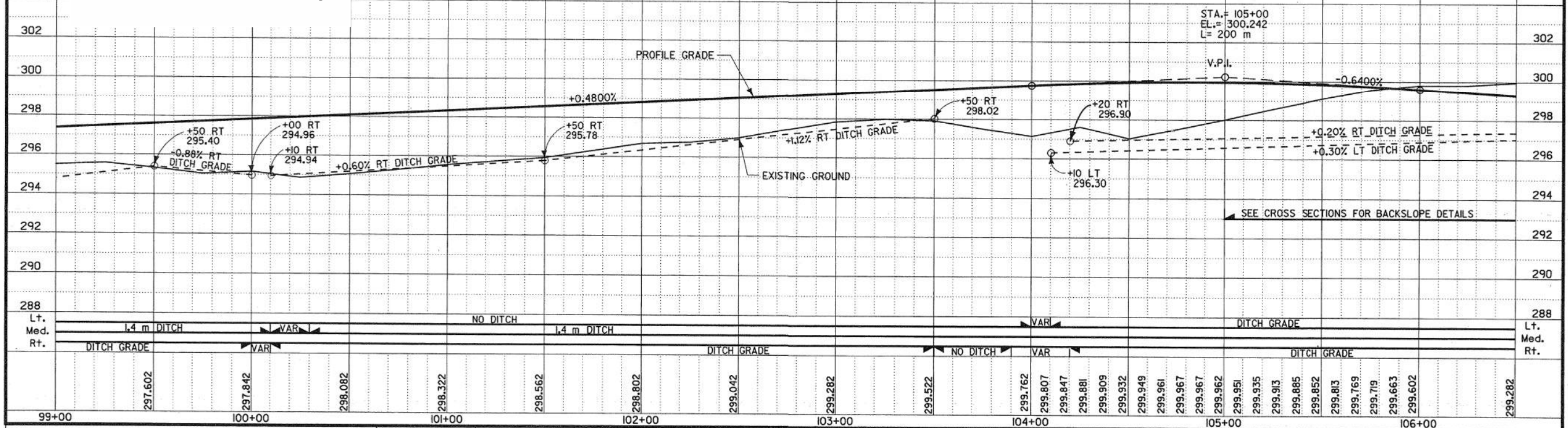
Station	Existing Ground (EL)	Profile Grade (EL)	Ditch Grade (EL)
92+00	299.20	300.80	299.20
93+00	299.60	299.60	299.60
94+00	298.30	298.30	298.30
95+00	297.786	297.786	297.786
96+00	297.690	297.690	297.690
97+00	297.601	297.601	297.601
98+00	297.519	297.519	297.519
99+00	297.445	297.445	297.445

PROPERTY OWNERS
18-DARREL J. AND DONALD L. PORTER
19-MARLYN J. AND GERTRUDE ARENDS
20-HAYES AND SONS, LTD.

LINCOLN TWP.
T-88N R-16W
SEC.2



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R. DAVID SKOGERBOE / STANLEY CONSULTANTS

STATE OF IOWA

FHWA REGION 7

FISCAL YEAR

GRUNDY

COUNTY

PROJECT NUMBER

NHS-520-5(34)--19-38

SHEET NUMBER

D.13

16-SEP-1999 17:50

0144

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EXISTING GROUND

PROFILE GRADE

STA. = 109+50
EL. = 297.362
L = 200 m

V.P.I.

EQUATION:
P.I. STA. 109+02.574 (O.R.-BK.)
P.O.T. STA. 109+02.574 (SUR. AHD.)

-0.6400%

+00 RT 297.46
+00 LT 297.17

SEE CROSS SECTIONS FOR BACKSLOPE DETAILS

+50 LT 295.20

-0.36% LT DITCH GRADE

+00 LT & RT 294.66

-1.16% LT & RT DITCH GRADE

+50 LT & RT 292.92

0.4800%

Lt. Med. Rt.

VAR

VAR

0.6 m DITCH (STD. RL-12)

VAR

1.4 m DITCH

1.5 m DITCH

VAR

VAR

1.4 m DITCH

DITCH GRADES

DITCH GRADE

VAR

298.962

298.642

298.322

298.002

297.938

297.876

297.814

297.752

297.692

297.632

297.574

297.516

297.458

297.402

297.346

297.292

297.238

297.184

297.132

297.080

297.030

296.980

296.930

296.882

296.642

296.402

296.162

295.922

295.682

295.442

295.202

107+00

108+00

109+00

110+00

111+00

112+00

113+00

114+00

R. DAVID SKOGERBOE / STANLEY CONSULTANTS

STATE OF IOWA

FHWA REGION 7

FISCAL YEAR

GRUNDY

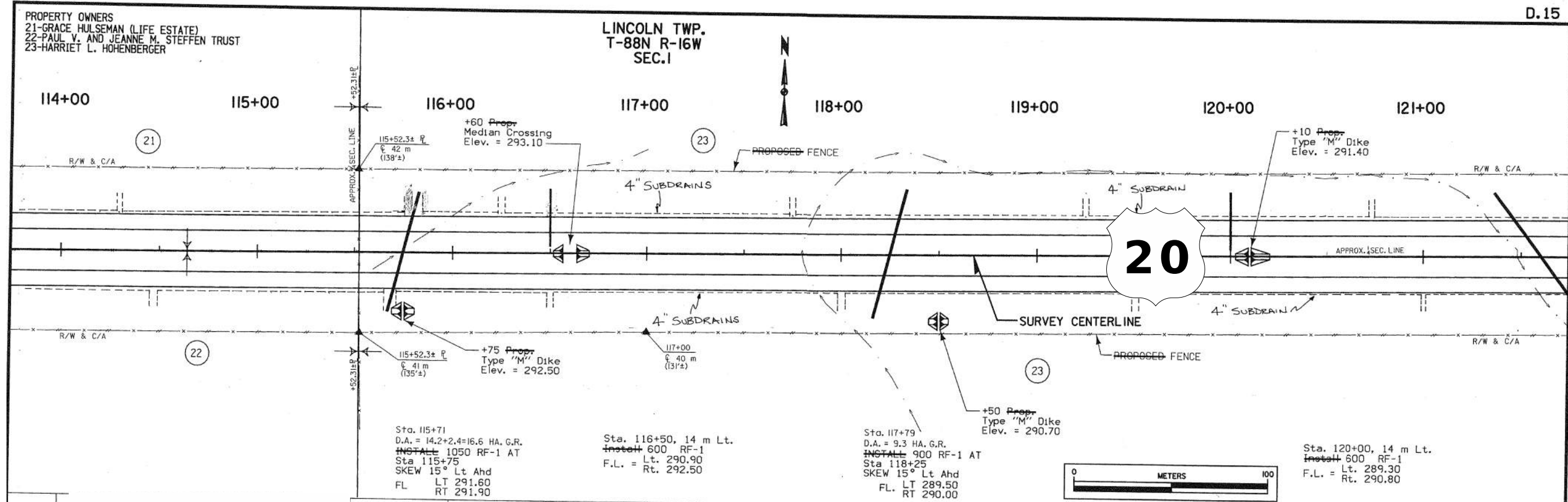
COUNTY

PROJECT NUMBER

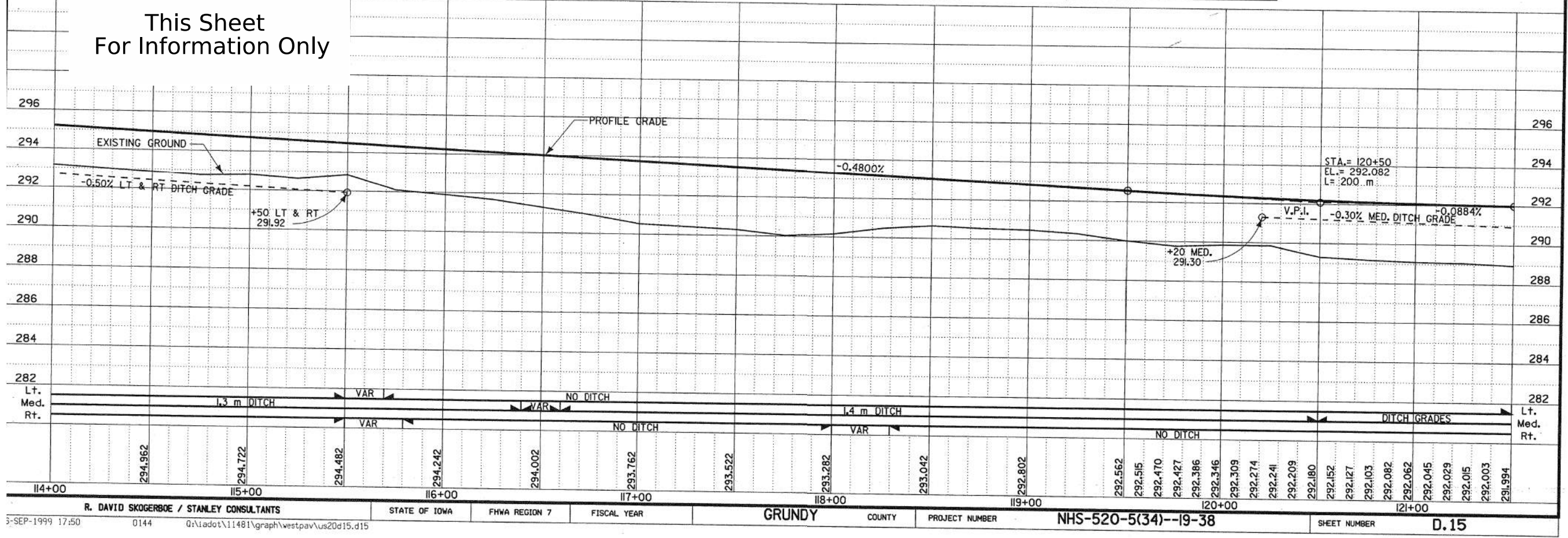
NHS-520-5(34)--19-38

SHEET NUMBER

D.14

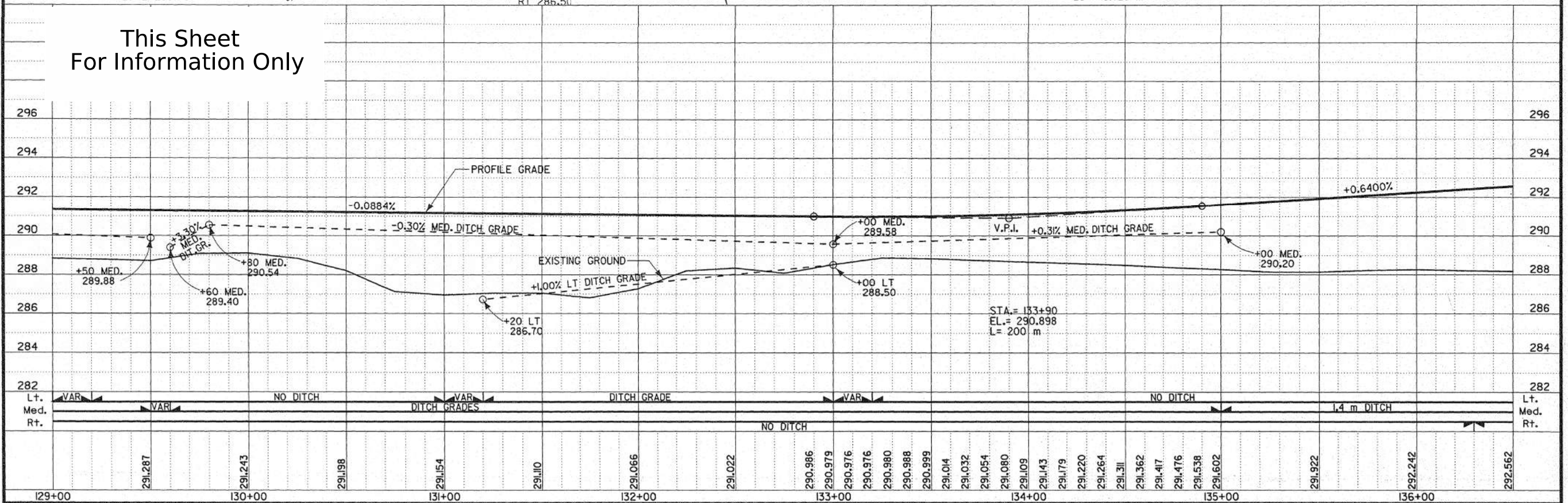


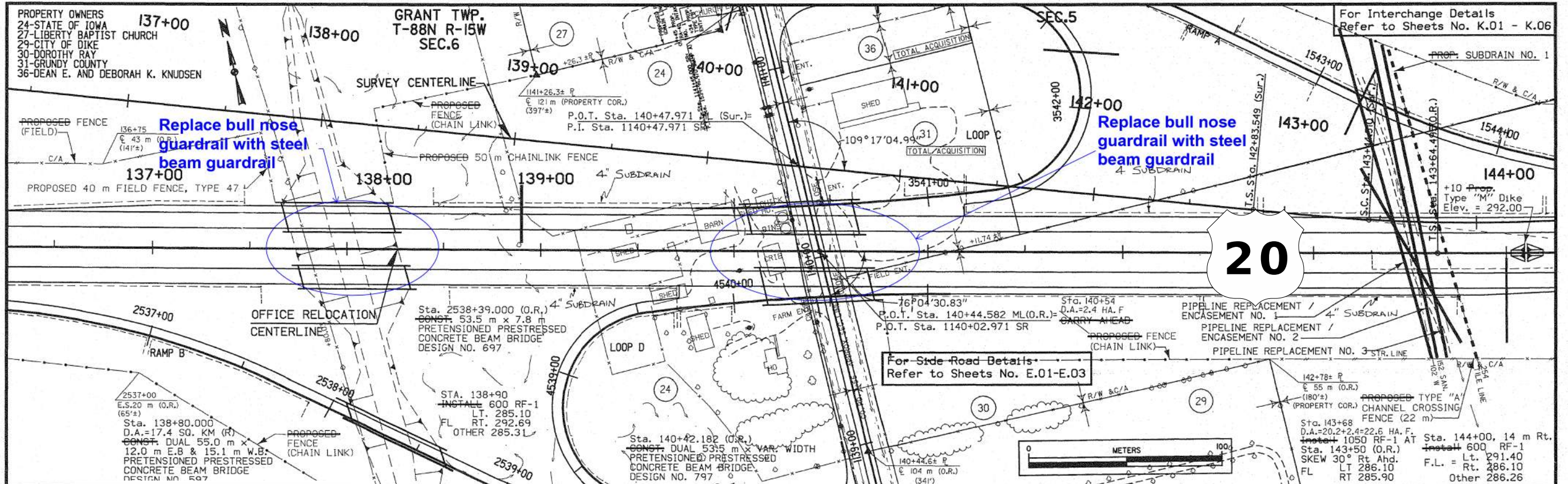
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For Information Only



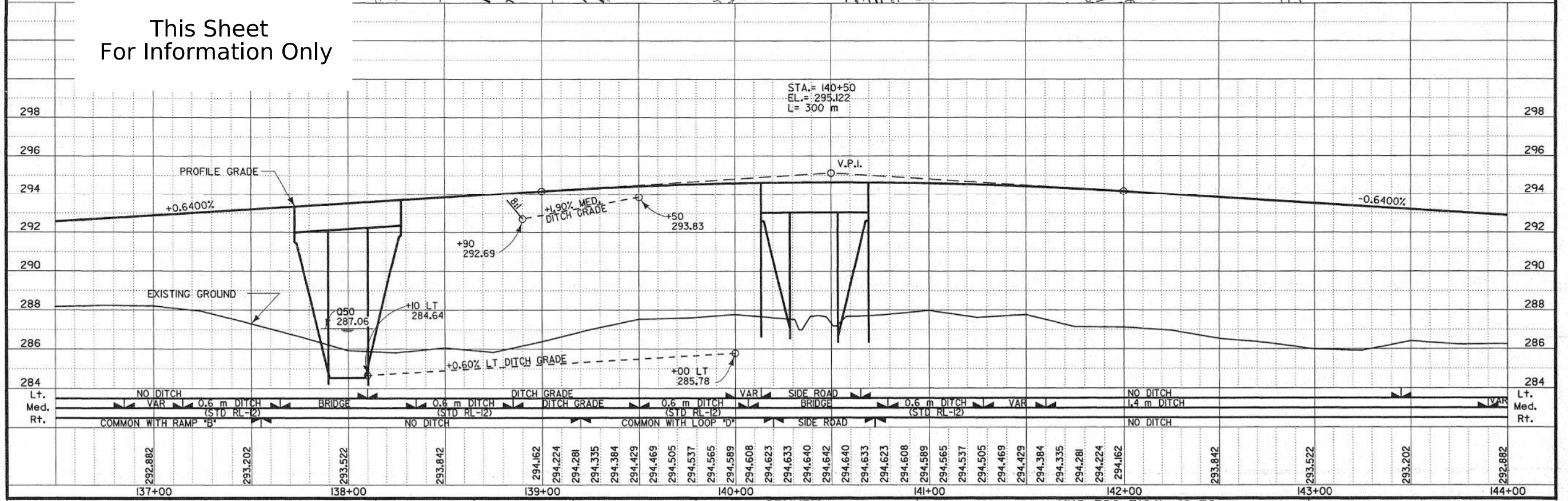
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For Information Only



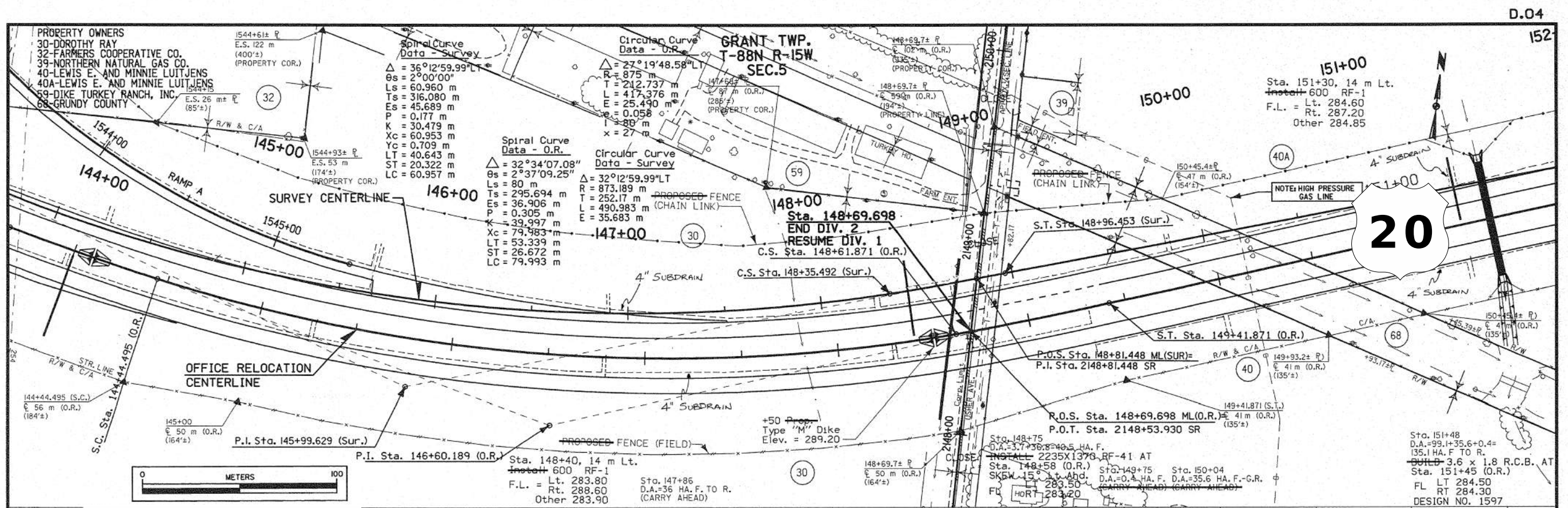


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For Information Only

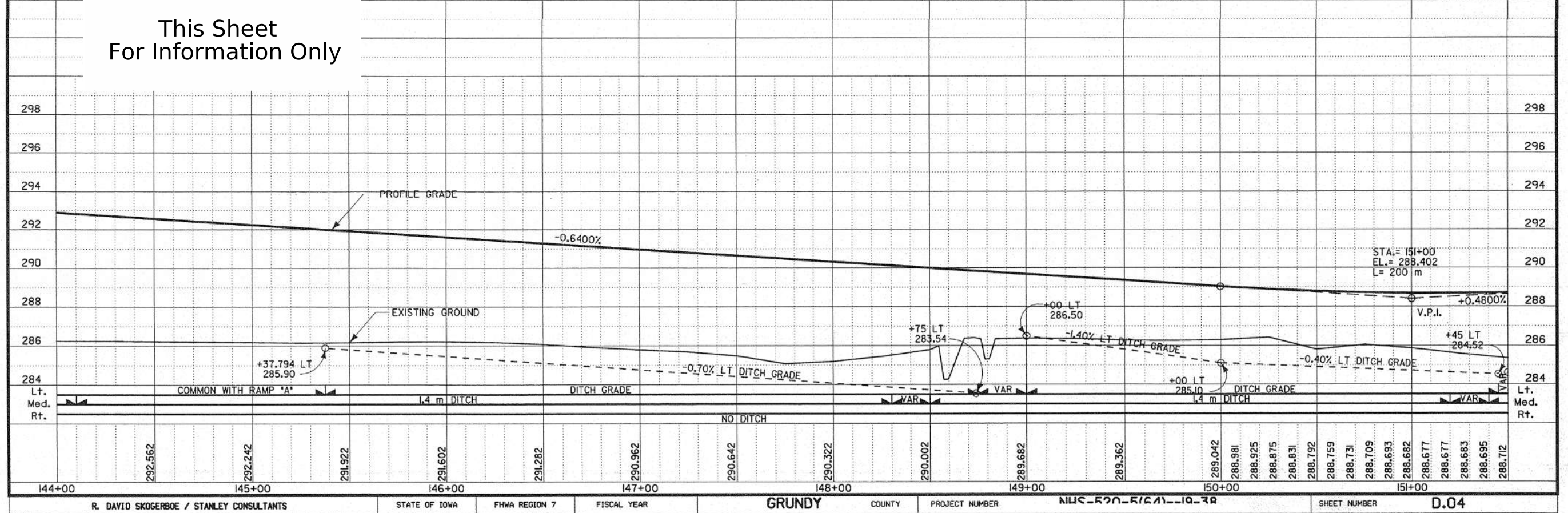


R. DAVID SKOGERBOE / STANLEY CONSULTANTS STATE OF IOWA FHWA REGION 7 FISCAL YEAR GRUNDY COUNTY PROJECT NUMBER NHS-520-5(64)--19-38 SHEET NUMBER D.03

17-SEP-1999 14:14 0144 Q:\adot\11481\graph\eastpav\us20d03.d03



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For Information Only



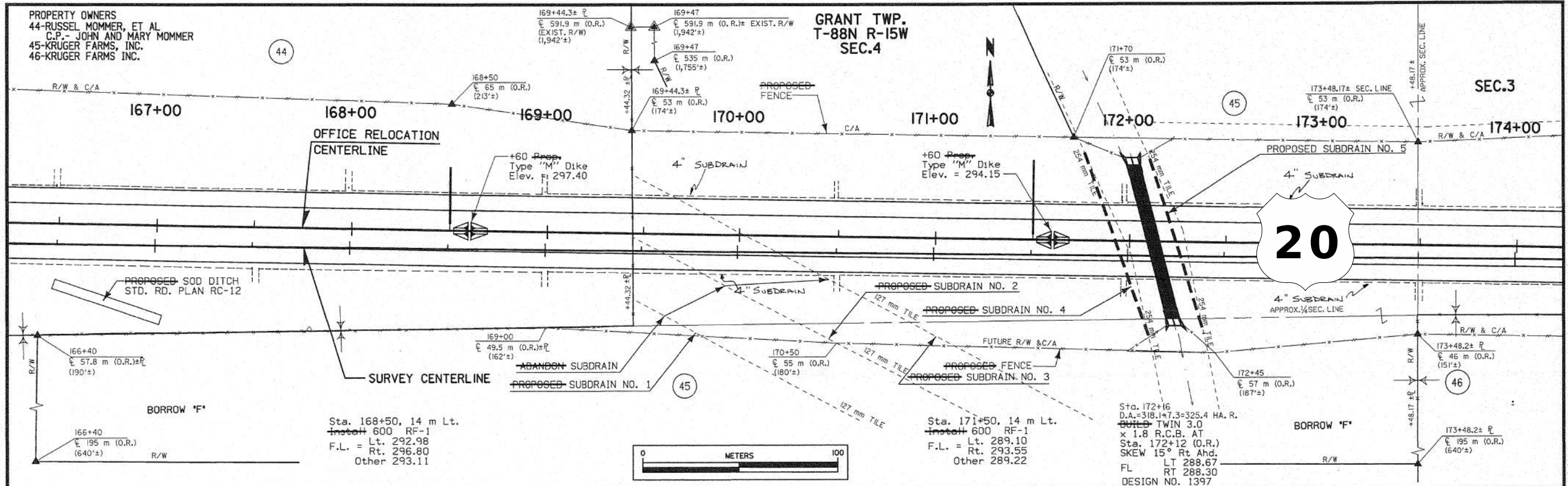
R. DAVID SKOGERBOE / STANLEY CONSULTANTS		STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	GRUNDY	COUNTY	PROJECT NUMBER	NWS-520-5(089)--3L-38	SHEET NUMBER	D.04
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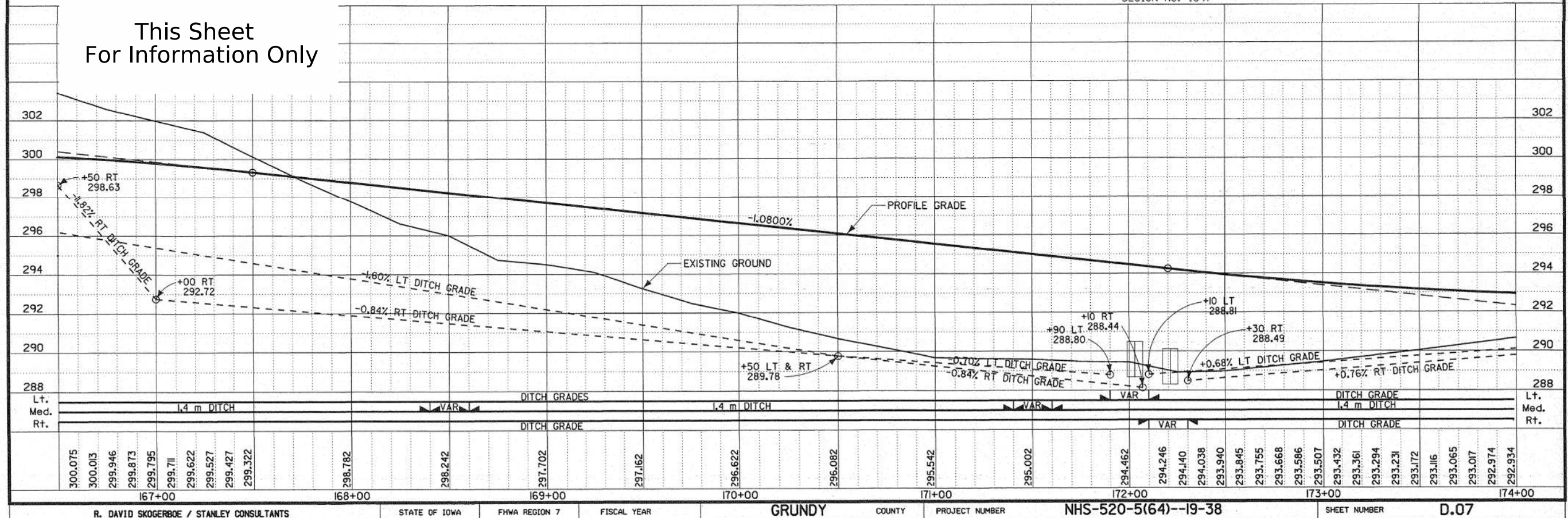


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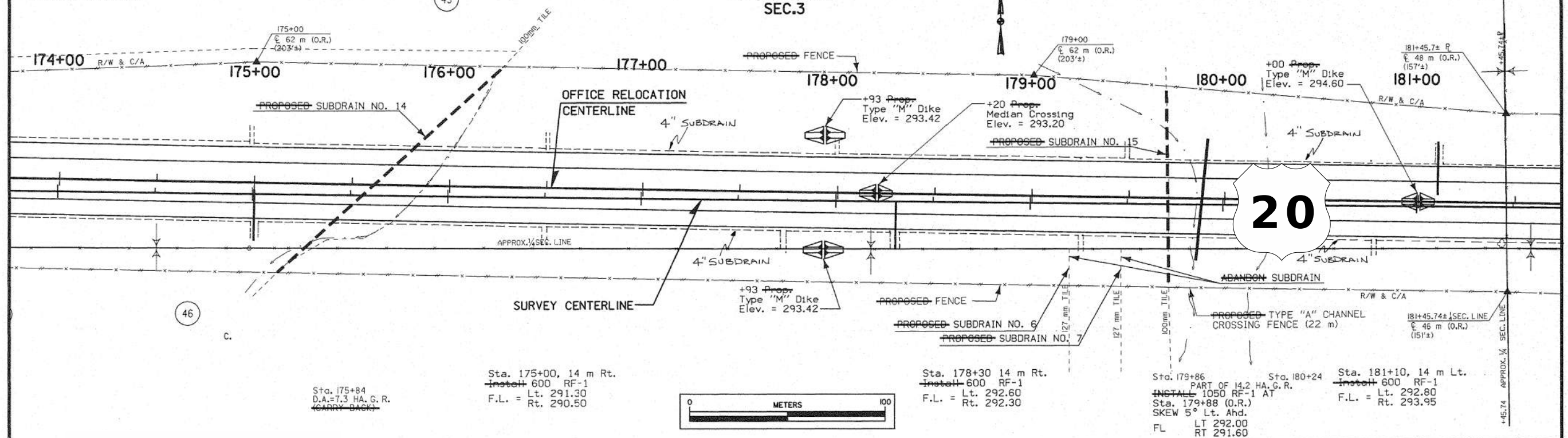
GRANT TWP.
T-88N R-15W
SEC.4



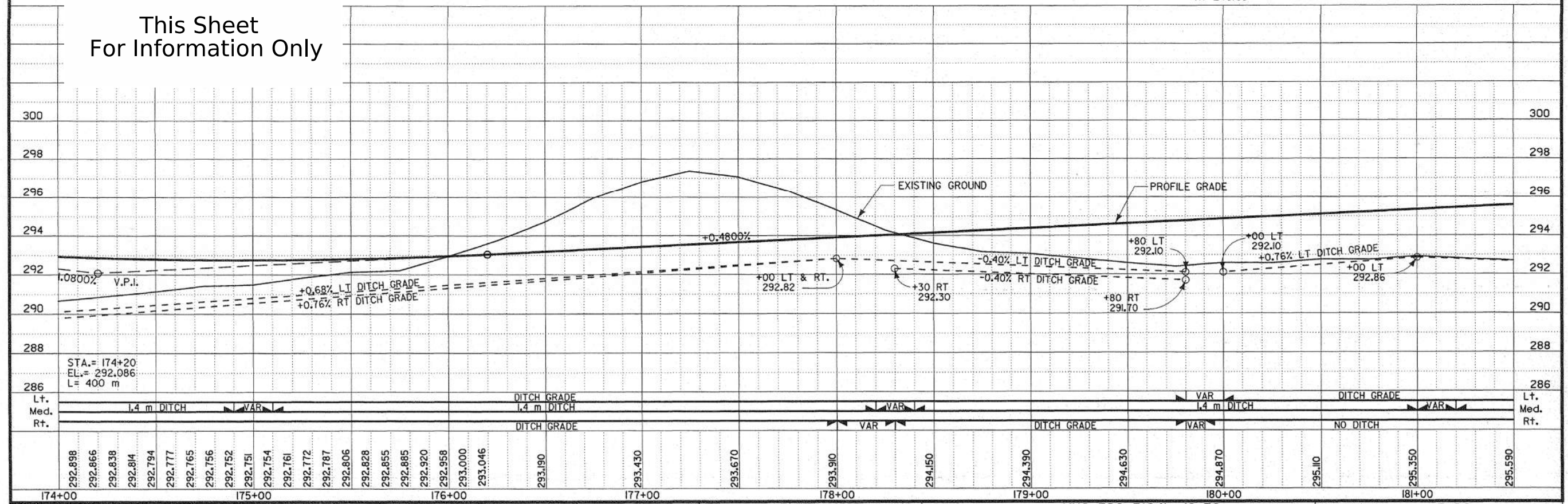
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For Information Only



GRANT TWP.
T-88N R-15W
SEC.3



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R. DAVID SKOGERBOE / STANLEY CONSULTANTS

STATE OF IOWA

FHWA REGION 7

FISCAL YEAR

GRUNDY

COUNTY

PROJECT NUMBER

NHS-520-5(64)--19-38

SHEET NUMBER

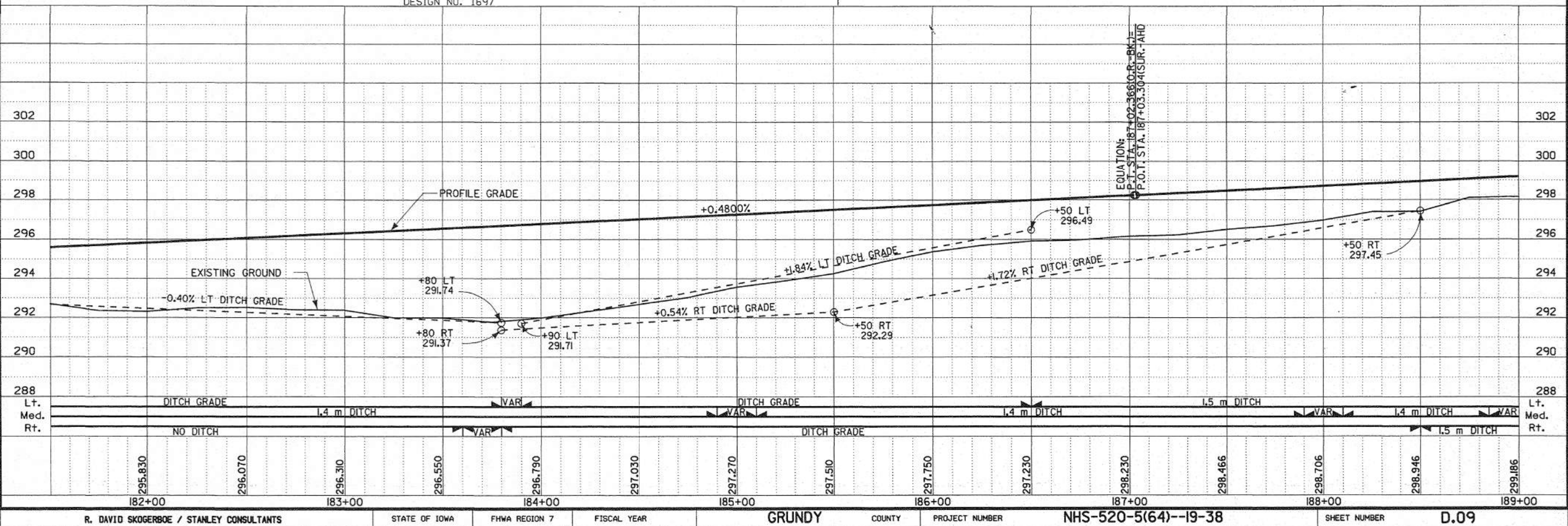
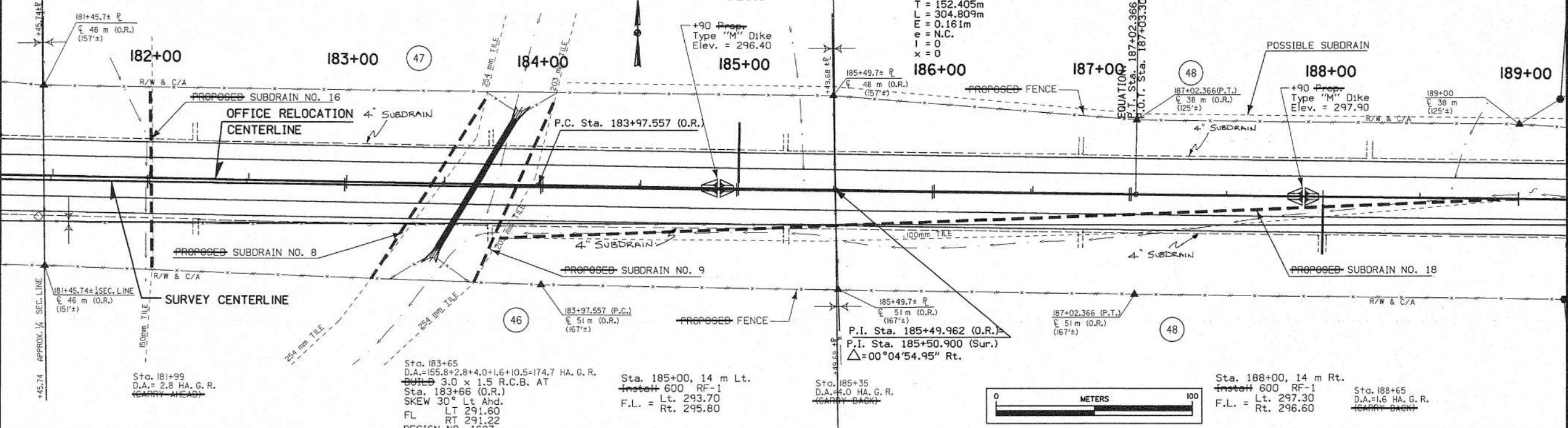
D.08

16-SEP-1999 11:55 0144 Q:\iadot\11481\graph\eastpav\us20d08.d08

PROPERTY OWNERS
46-KRUGER FARMS, INC.
47-NEAL P. AND JEANNE M. THUESEN
48-JEAN M. AND THOMAS E. DIETRICK, ET AL
C.P.- HAMILTON FARMS, INC.

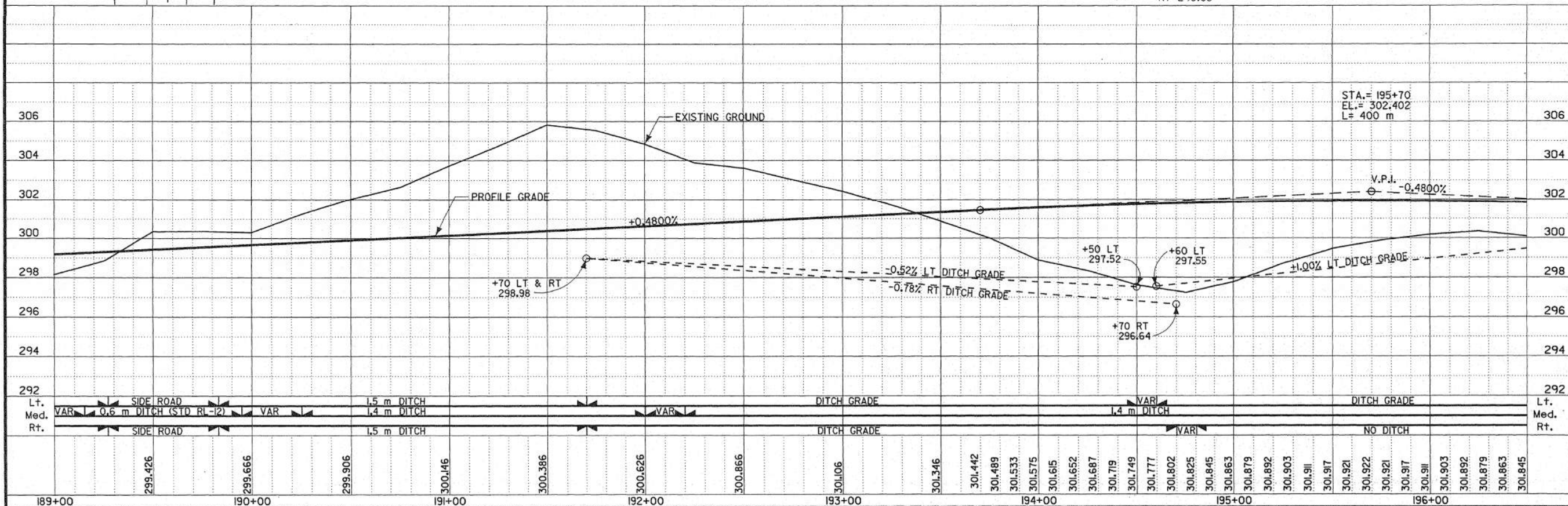
GRANT TWP.
T-88N R-15W
SEC.3

Circular Curve
Data - O.R.
R = 0°14'33.94" LT
R = 71940m
T = 152.405m
L = 304.809m
E = 0.161m
e = N.C.
I = 0
x = 0

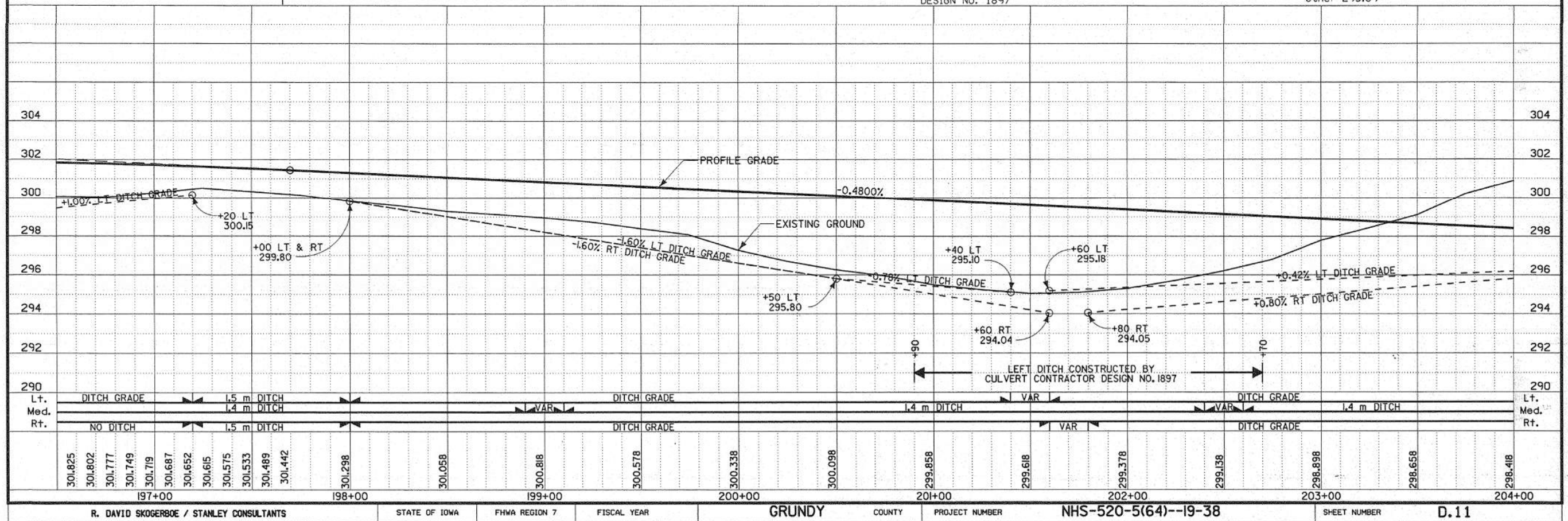
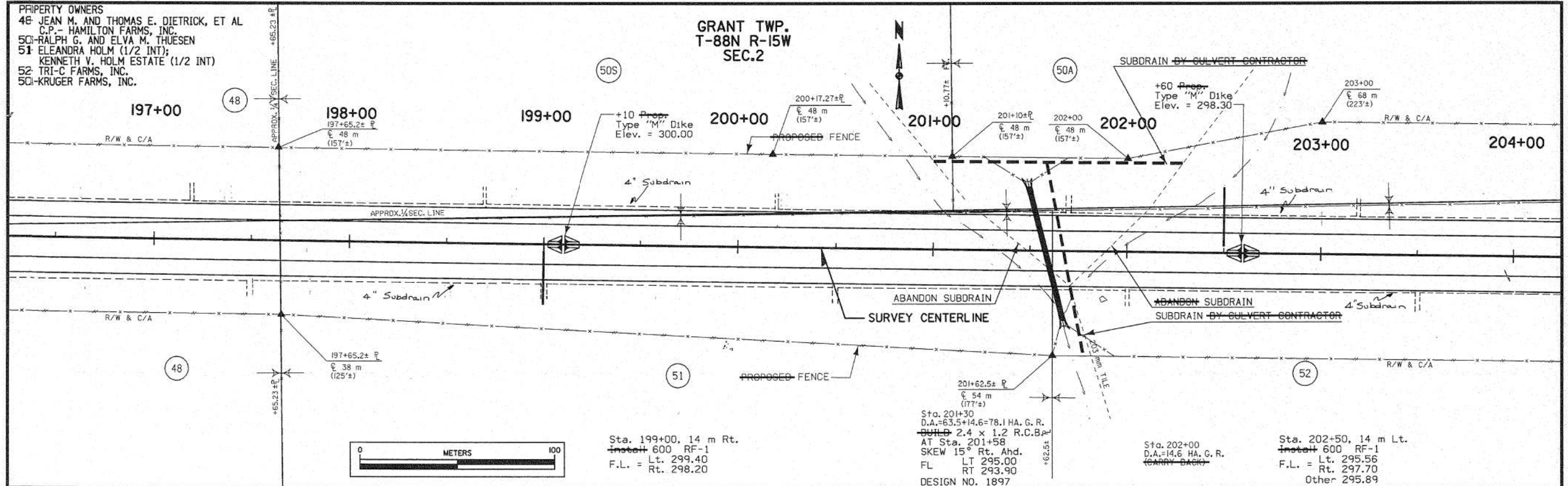


R. DAVID SKOGERBOE / STANLEY CONSULTANTS STATE OF IOWA FHWA REGION 7 FISCAL YEAR GRUNDY COUNTY PROJECT NUMBER NHS-520-5(64)--19-38 SHEET NUMBER D.09

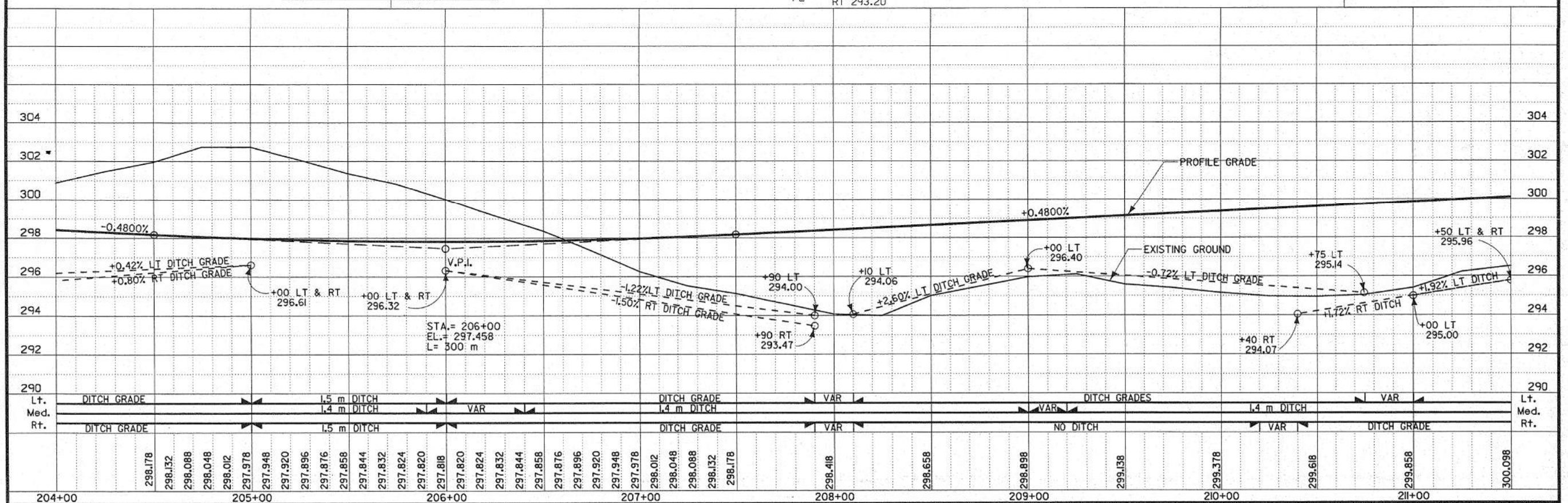
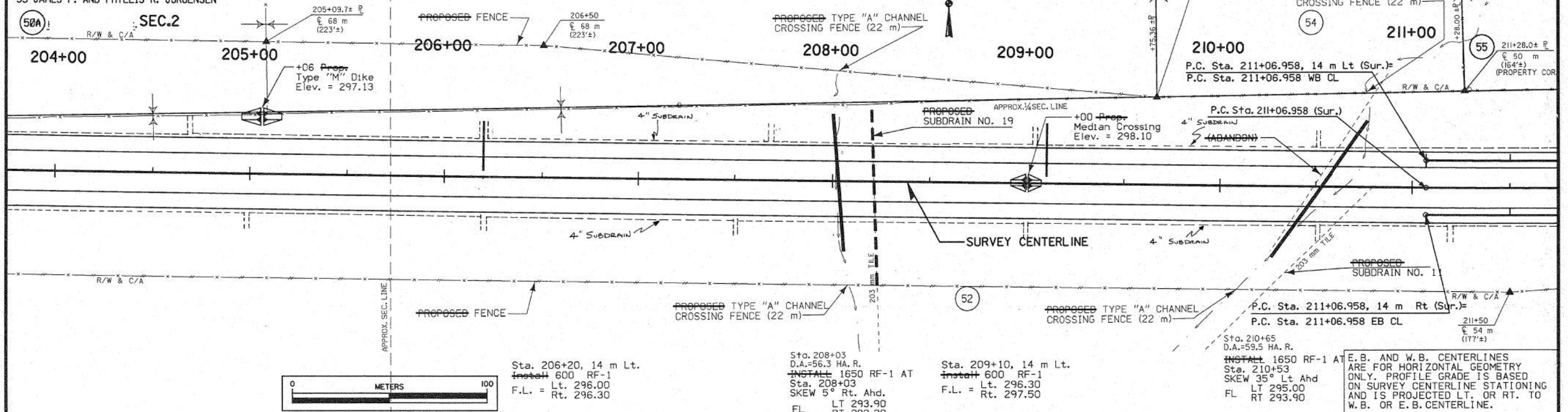
10-SEP-1999 11:55 0144 Q:\netdot\11461\graph\eastpav\us20d09.d09



GRANT TWP.
T-88N R-15W
SEC.2



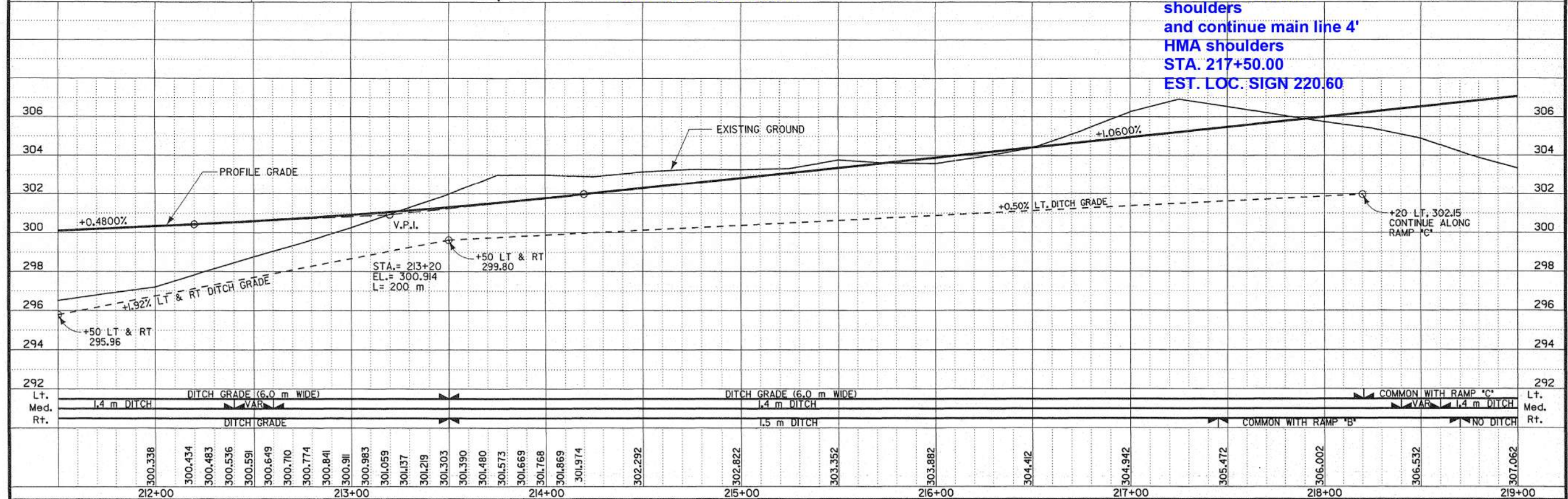
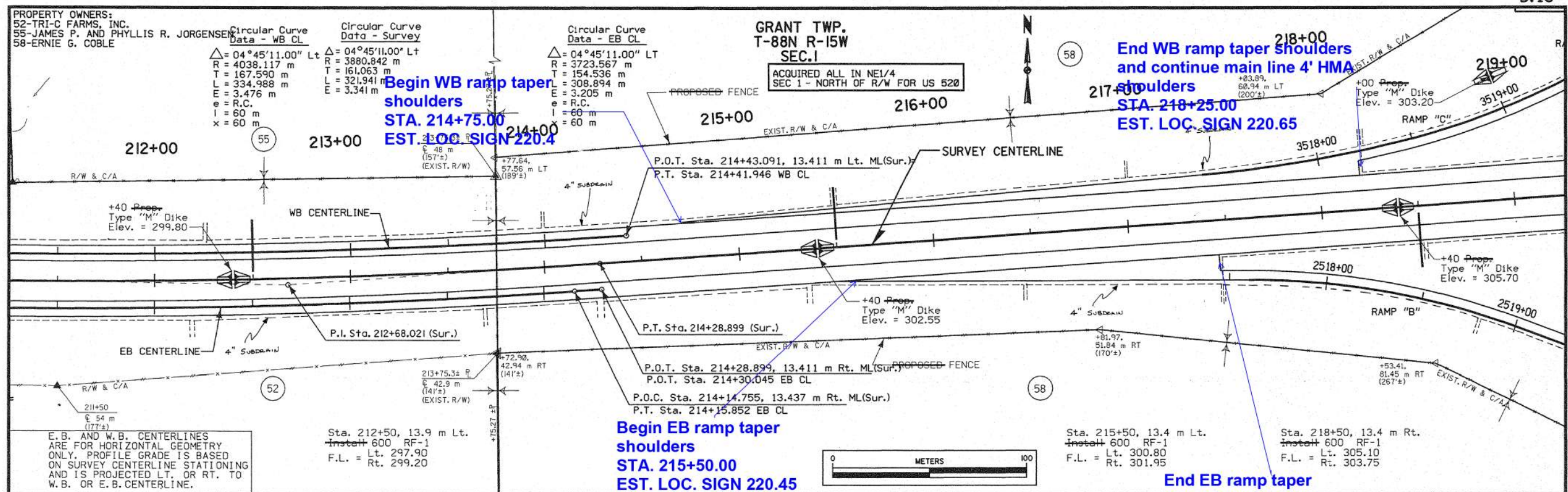
GRANT TWP.
T-88N R-15W
SEC.1

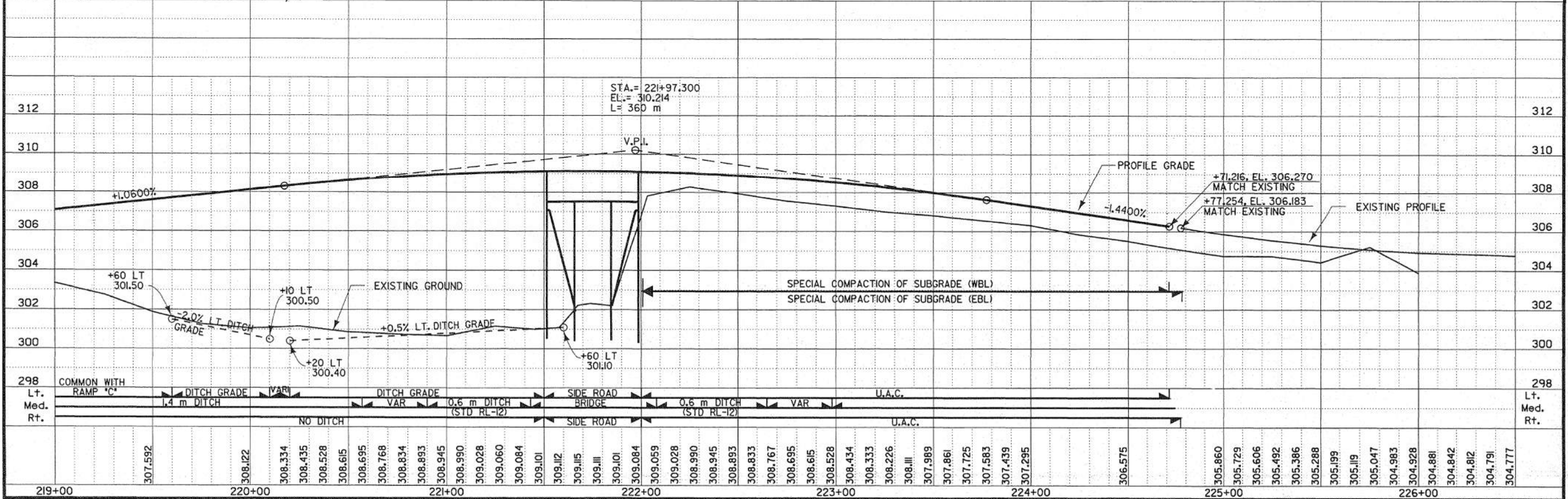
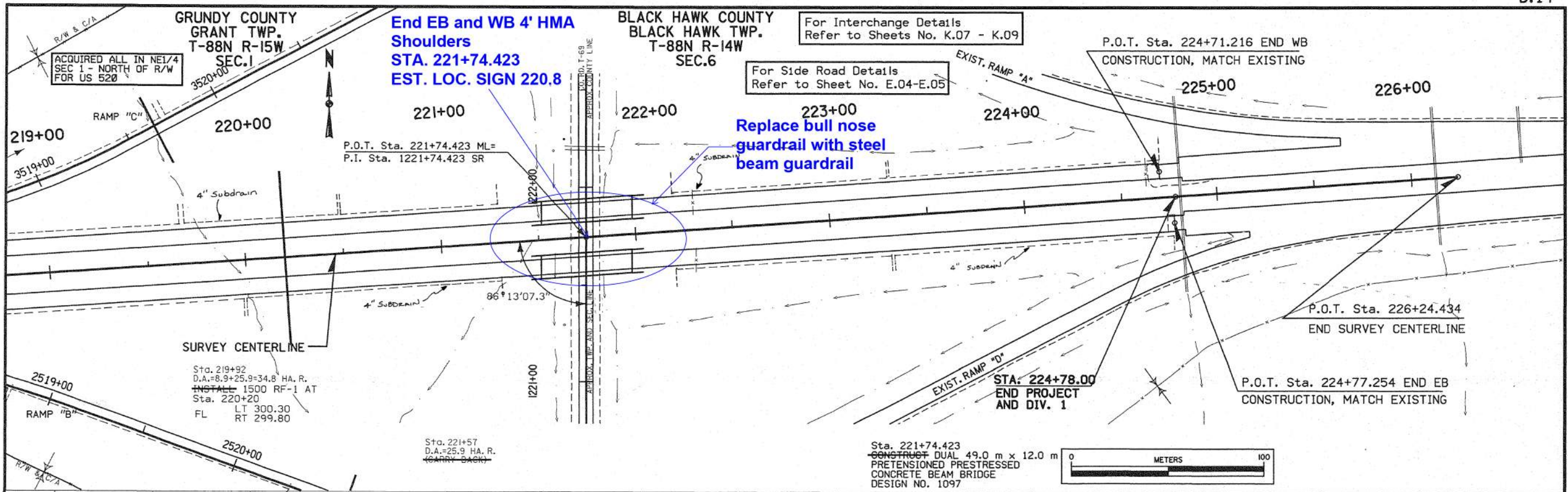


D.12

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SHEET NUMBER **D.26**





108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic shall be maintained on US 20 at all times.
Lane closures are permitted.

111-01
04-17-12

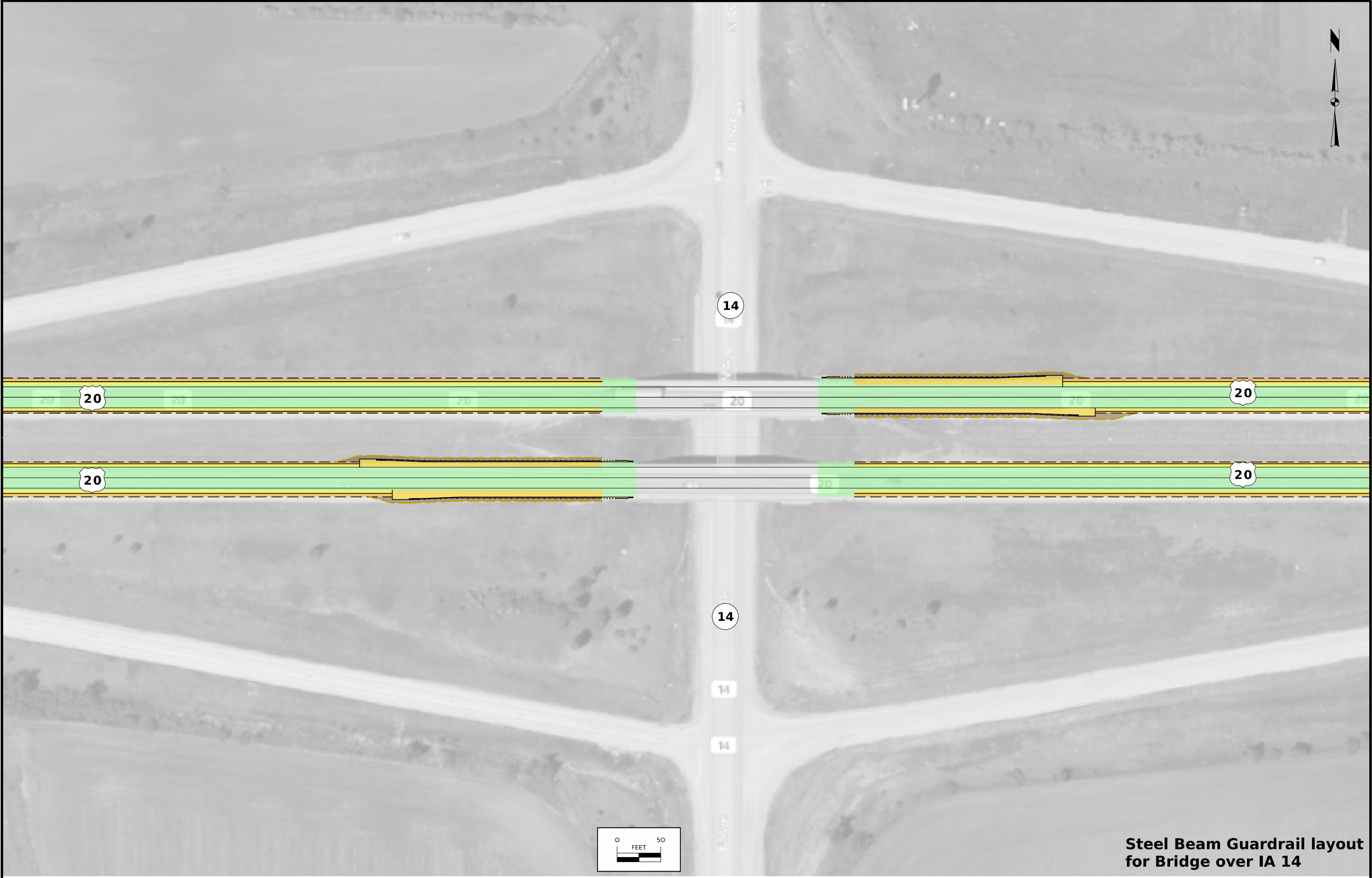
COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
None known	

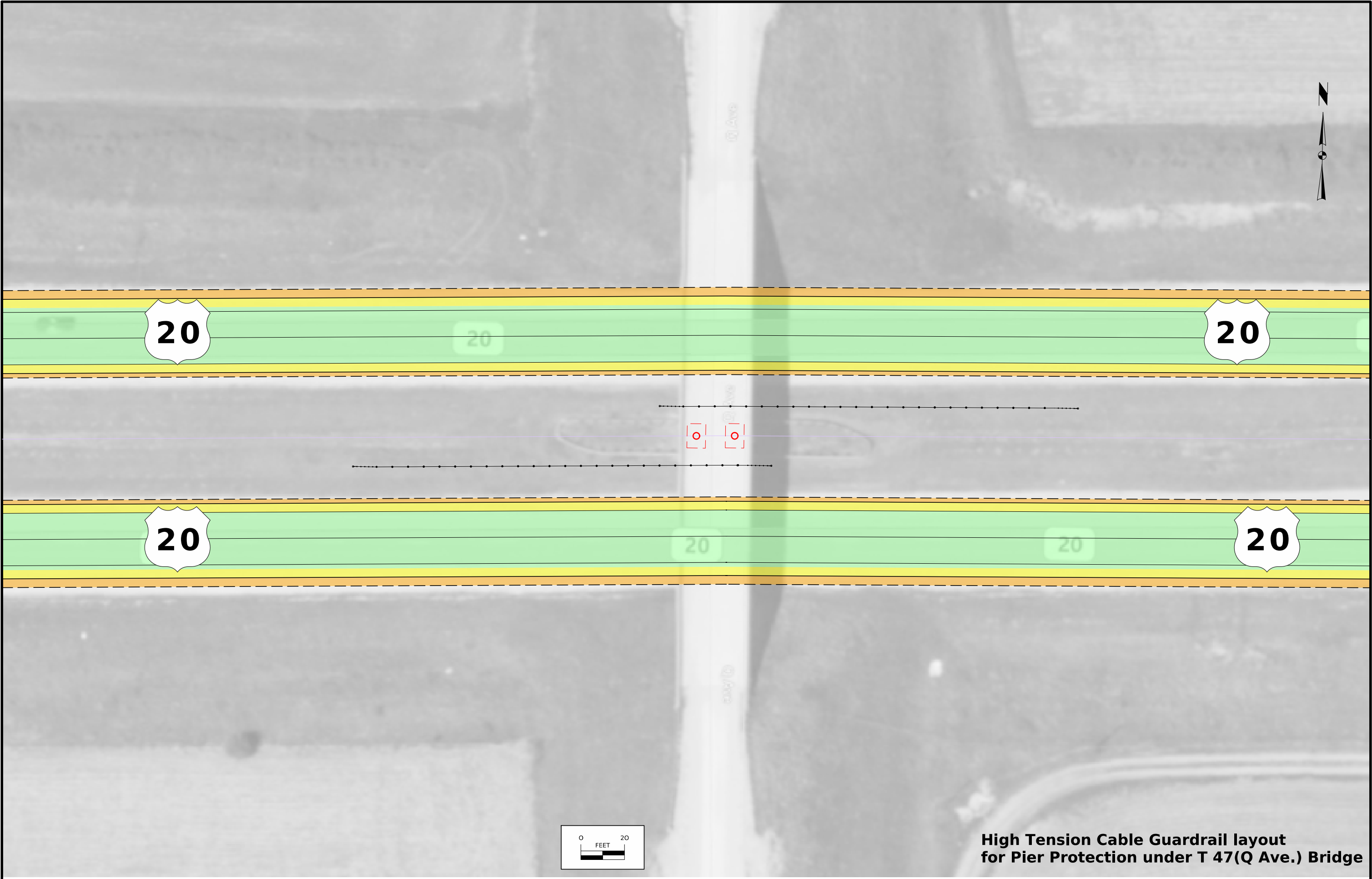
108-25
10-21-14

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

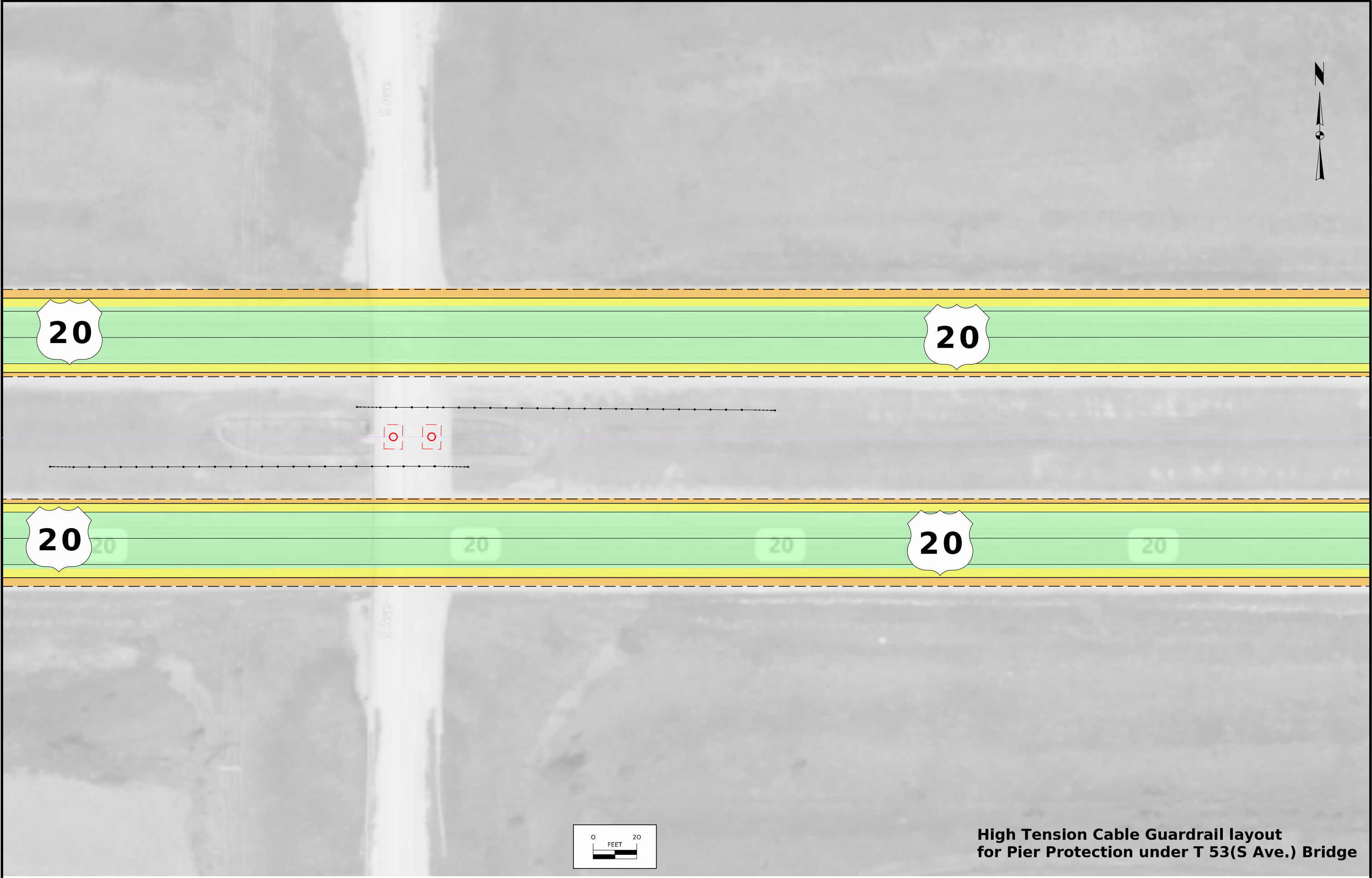


**Steel Beam Guardrail layout
for Bridge over IA 14**

FILE NO.	ENGLISH	DESIGN TEAM VORTHERMS/TAMRAKAR/BOOTH	GRUNDY COUNTY	PROJECT NUMBER HSIPX-020-5(089)--3L-38	SHEET NUMBER U.1
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High Tension Cable Guardrail layout
for Pier Protection under T 47(Q Ave.) Bridge



High Tension Cable Guardrail layout
for Pier Protection under T 53(S Ave.) Bridge

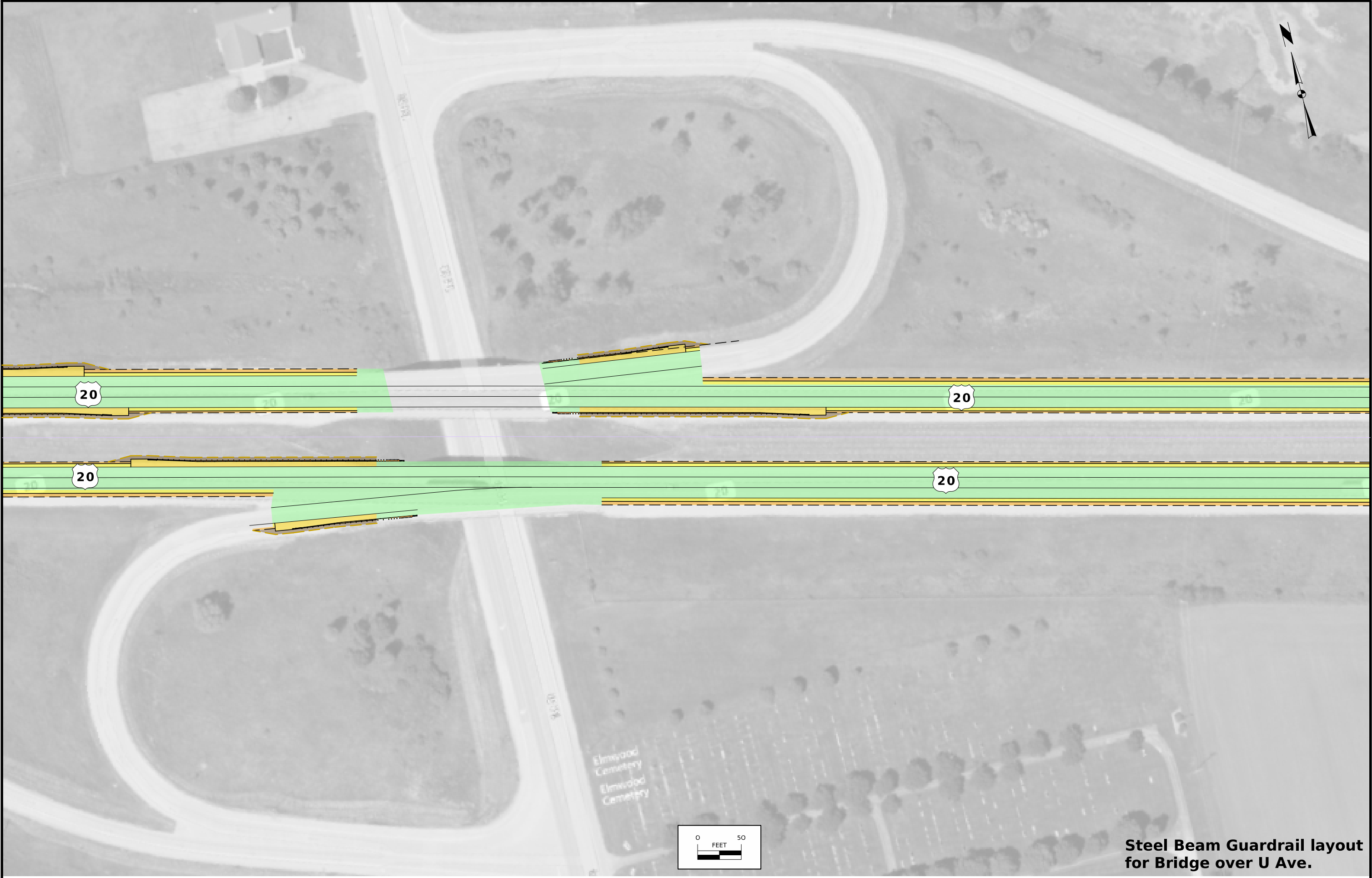
FILE NO.	ENGLISH	DESIGN TEAM VORTHERMS/TAMRAKAR/BOOTH	GRUNDY COUNTY	PROJECT NUMBER HSIPX-020-5(089)--3L-38	SHEET NUMBER U.3
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FILE NO.	ENGLISH	DESIGN TEAM VORTHERMS/TAMRAKAR/BOOTH	GRUNDY COUNTY	PROJECT NUMBER HSIPX-020-5(089)--3L-38	SHEET NUMBER U.4
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FILE NO.	ENGLISH	DESIGN TEAM VORTHERMS/TAMRAKAR/BOOTH	GRUNDY COUNTY	PROJECT NUMBER HSIPX-020-5(089)--3L-38	SHEET NUMBER U.5
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**Steel Beam Guardrail layout
for Bridge over U Ave.**

FILE NO.	ENGLISH	DESIGN TEAM VORTHERMS/TAMRAKAR/BOOTH	GRUNDY COUNTY	PROJECT NUMBER HSIPX-020-5(089)--3L-38	SHEET NUMBER U.6
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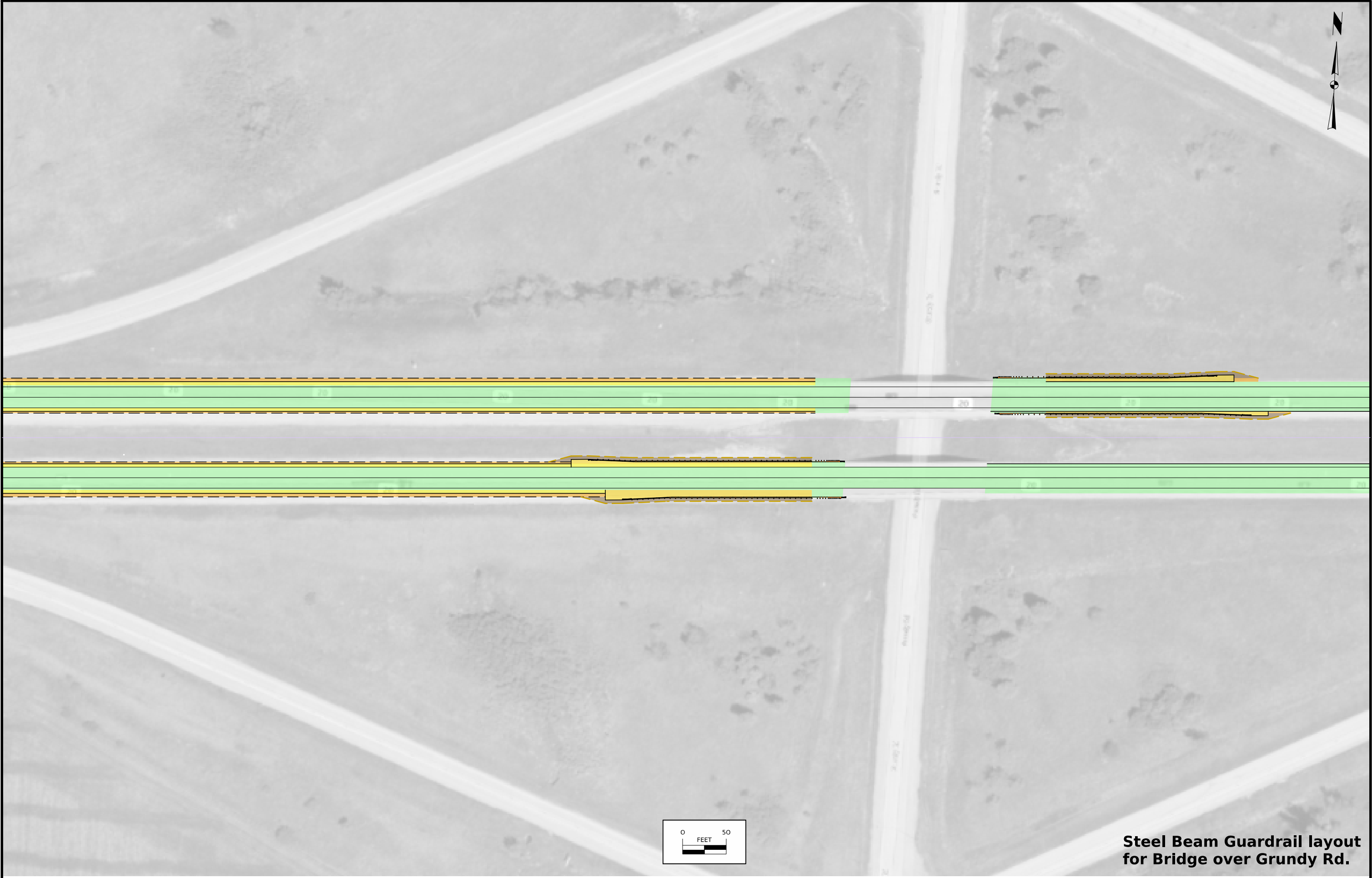
FILE NO.	ENGLISH	DESIGN TEAM VORTHERMS/TAMRAKAR/BOOTH	GRUNDY COUNTY	PROJECT NUMBER HSIPX-020-5(089)--3L-38	SHEET NUMBER U.7
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**High Tension Cable Guardrail layout
for Pier Protection under X Ave. Bridge**

FILE NO.	ENGLISH	DESIGN TEAM VORTHERMS/TAMRAKAR/BOOTH	GRUNDY COUNTY	PROJECT NUMBER HSIPX-020-5(089)--3L-38	SHEET NUMBER U.8
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Rd



Steel Beam Guardrail layout
for Bridge over Grundy Rd.

FILE NO.	ENGLISH	DESIGN TEAM VORTHERMS/TAMRAKAR/BOOTH	GRUNDY COUNTY	PROJECT NUMBER HSIPX-020-5(089)--3L-38	SHEET NUMBER U.9
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