

HMA RESURFACING
 NHSX-092-8(43)--3H-54

LETTING DATE
 12-20-2022

KEOKUK COUNTY



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
KEOKUK COUNTY
HMA RESURFACING
 E of IA 21 to 200th St

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

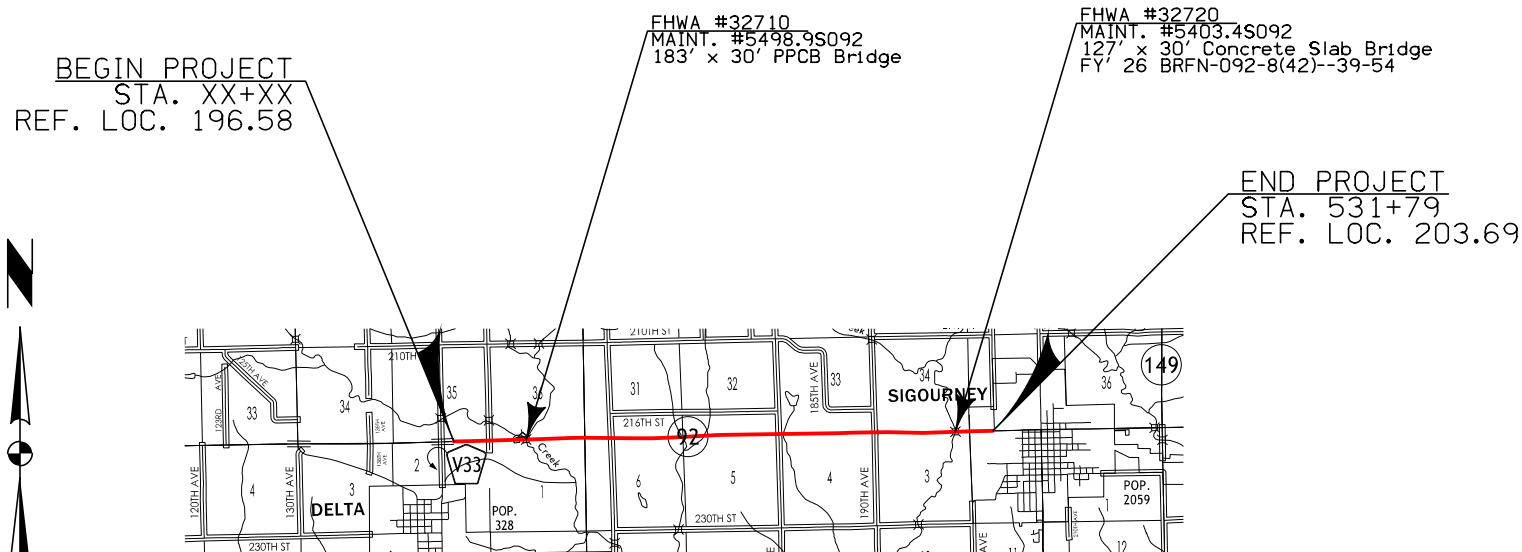


REVISIONS

TOTAL	..
PROJECT IDENTIFICATION NUMBER	22-54-092-010
PROJECT NUMBER	NHSX-092-8(43)--3H-54
R.O.W. PROJECT NUMBER	---

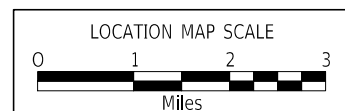
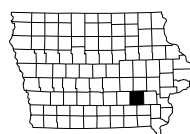
INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet and Location Map
* A.2 - 7	Project Concept
* A.8 - 9	Design Criteria
* A.10 - 16	D2 Questions - with Responses
B Sheets	Typical Cross Sections and Details
B.1	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
D.1 - 14	IA 92 As-Built Plan and Profile
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
J.1	Coordinated Operations
* J.2	Centerline Rumble Strips (Two-Lane) Traffic Detail
	* Color Plan Sheets



5/2/2022 FIELD EXAM NOTES:
 Refer to 'D2 Questions - with Responses' on Sheets A.10 to A.16
 for compilation of Notes taken during the 5/2/2022 Field Exam.

Project Design Events:
 DM5 - 08-30-2022
 D7 - 10-04-2022



KEOKUK COUNTY			
DESIGN DATA RURAL			
2023	AADT	1,836	V.P.D.
2043	AADT	2,294	V.P.D.
2043	DHV	240	V.P.H.
	TRUCKS	13	%
	Total		
	Design ESALS	781,635	

INDEX OF SEALS		
A.1	Jonathan W. Bahr	Primary Signature Block
X	X	X

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 05-12-22

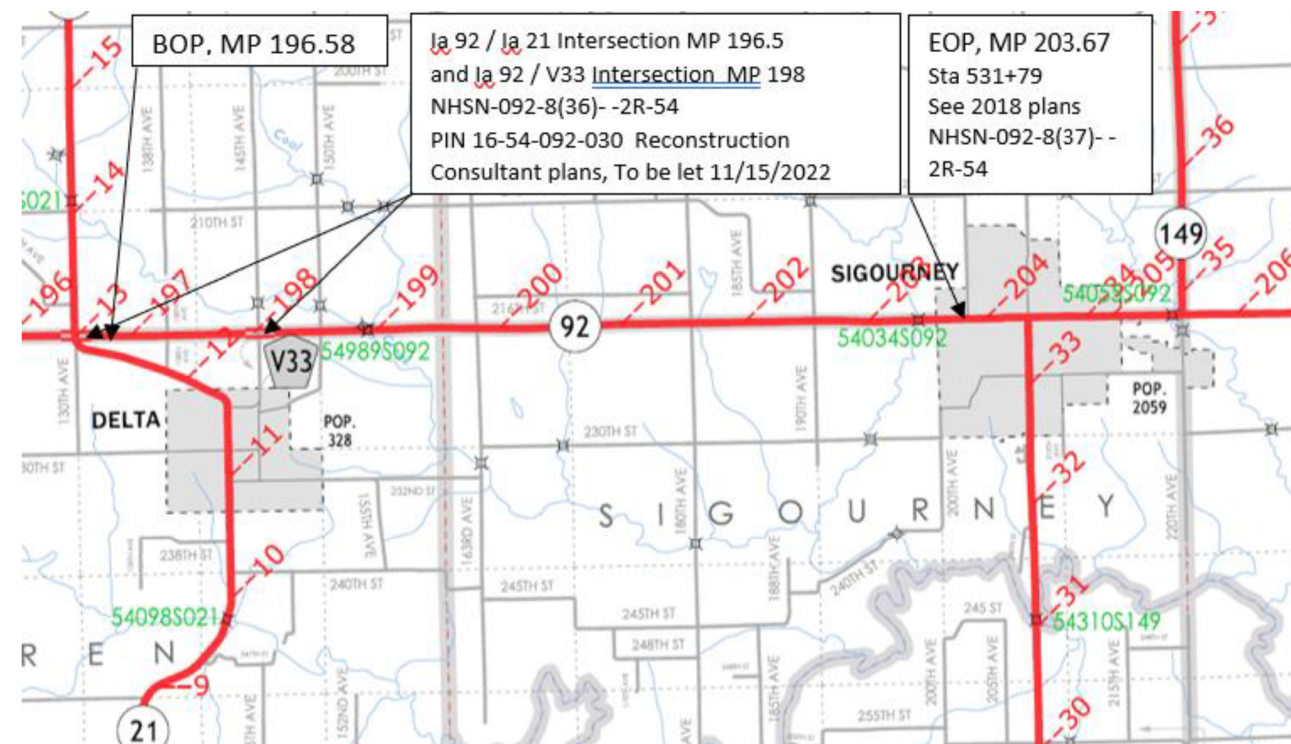
TO OFFICE: District 5
ATTENTION: Robert Younie
FROM: Jim Phillips
OFFICE: District 5 Design
SUBJECT: FY 2023 3R Concept Statement – Final

DATE: October 29, 2021
 Rev. Jan 3, 2021, 3 slides
COUNTY: Keokuk
PROJ. NO.: NHSX-092-8(43)- -3H-54
PIN: 22-54-092-010

FOLDER: [la 92 Keokuk 3R Final Concept \(43\) prot link - 10 24 21.docx](#)

PROJECT LOCATION:

Iowa 92 from Iowa 21 to 200th St in Sigourney
 ProjectWise link to Map: [la 92 Map.docx](#)
 ProjectWise link to Scoping Map: [Charter_S0092-090821-01.pdf](#)



PROJECT DATA:

ROUTE: Iowa 92
 LENGTH: 7.09 miles
 PLANNING CLASSIFICATION: 3
 MAINTENANCE SERVICE LEVEL: B
 NHS ROUTE: Yes

TRAFFIC:

DESIGN DESIGNATION DATA SHEET				ESTIMATED	2023	ESTIMATED	ESTIMATED	2043
COUNTY	ROUTE	LOCATION	SECTION LENGTH	2023 ADT	PERCENT TRUCKS	2043 ADT	2043 DHV	2043 PERCENT TRUCKS
KEOKUK	92	1 IA 21 TO CO RD V33	1.50	1721	13%	2150	222	13%
		2 CO RD V33 TO 190TH AVE	4.52	1551	15%	1938	200	15%
		3 190TH AVE TO W LIMITS OF SIGOURNEY	0.99	2677	9%	3345	346	9%
		4 W LIMITS OF SIGOURNEY TO CO RD V45	0.26	2677	9%	3345	346	9%
		5 CO RD V45 TO W JCT IA 149 & MAIN ST	0.49	2677	10%	3345	346	10%
TOTAL LENGTH APPROX. AVERAGE FOR THE TOTAL PROJECT			7.74	1800	13%	2300	240	13%
PROJECT NUMBER	N/A							
DATE OF ESTIMATE	September 28, 2020			ESTIMATE NUMBER		3514		

ProjectWise link to Traffic Data: [3514a.xlsx](#)

PURPOSE AND NEED:

A 10 inch PCC pavement was placed in 1964, per Project F-34(5). There is an existing 10 foot wide x 6 inch deep existing granular shoulder and subdrains constructed in 1991. The age of the PCC is 57 years. See existing conditions and patching needs, pg. 5-6. A diamond grind of the existing PCC pavement was considered to improve the ride. Pavement data, including a review of pavement cores by Materials office, indicates that an HMA overlay would be preferred instead of a Diamond Grinding, in this situation.

In addition, the 10 ft granular shoulders could be HMA paved 4 ft. wide, to address edge drop-offs, run-off the road crashes, or over corrective steering that could contribute to cross-centerline crashes. Paving 4 ft. of the 10 ft. granular shoulders may also significantly reduce the amount of time maintenance staff is out along the roadway maintaining the granular shoulder, which may reduce the risk of potential crashes.

FEASIBLE ALTERNATIVES:

Per pg. 5-6 for the specific Pavement Determination and the dTIMS recommended pavement rehabilitation treatment.

Alternate 1: Diamond grinding but no dowel bar retrofit (DBR) is considered on page 6. Includes 6" x 4 foot wide base widening. (Net profile change: 0"+/-) Estimated Cost \$ 4,231,600

Alternate 2: An HMA thin lift overlay, Hi-Pro. The performance of lower air void Hi-Pros have shown concerns of delamination when placed directly onto existing PCC pavement. (Net profile change: 1.5"+/-) Includes 5" x 4 foot wide base widening. More information is needed. Estimated Cost \$ 8,110,500

Alternate 3: Similar to what was constructed in 2021 as part of project NHSX-092-8(40)—3H-54, PIN 20-54-092-010. A functional 3 lift HMA overlay, including a 1" HMA interlayer. Construct 1" Strengthening / leveling (scratch) course, 1" HMA Interlayer, 1.5" surface (total 3.5" HMA), 4 ft. HMA paved shoulders with 3" min. HMA base widening, and 3.5" thick x 6 ft. wide granular surfacing. (Net profile change: 3.5"+/-) **Estimated Cost \$ 5,408,000**

RECOMMENDATION:

Construct Alternate 3.

\$ 5,408,000 3R funds See below for Cost Estimate

0 No Keokuk County side road intersection paving, pg. 7,9,10

\$ 5,408,000 Total

\$ 480,000 Not preferred due to limited FY '23 3R funding, Alternate paved shoulder width from 4 to 6 ft, per Complete Streets, pg.6

\$ 5,888,000

Coordinate this 3R project with the separate project for the Ia 92/ Ia. 21 and County Road Ia 92 / V33 intersection reconstruction in FY '23. The 3R estimate excludes, gaps, those 2 intersections. pg. 9

Here are ProjectWise links:

Cost Estimate: [Diamond Grind or Overlay, FY 23, IA 92 From IA 21 to Sigourney 10 05 21.xlsx](#)

iPDWeb has D0 Estimate

FUNDS PROGRAMMED:

Currently proposed for programming in Fiscal year 2023.

Funding source: 3R

PROJECT IMPACTS: Designed by: District/**Design**/Consultant

Design Impact	Assistance Requested (Y/N)	Remarks
ADA:	N	
Agreements/Notification Letters:	N	No Keokuk Co. paved gravel side roads, pg. 3,7,9,10
Bridges and Structures:	Y	See Pg. 7. Coordinate 3R Traffic with 1 deck overlay project.
Consultant:	N	
Contracts:	N	
Design/Methods:	N	
Location and Environment:	N	
Maintenance: (Shop Location)	Y	Sigourney, potential location to stockpile Cl. 13 Exc.
Project Management:	N	
Railroad:	N	
RCE: (Office Name)	Y	Mt. Pleasant (Fairfield)
Right of Way:	N	
Soils:	Y	3 slides, page 9
Survey/Photogrammetry:	N	
Systems Planning:	N	
Traffic and Safety:	N	
Utilities:	N	
Other:	Y	Coordinate with Intersection projects, Pg. 9

- | | | |
|---|-------------------------|-------------------------|
| Cc: C. Purcell | M. J. Kennerly | K. D. Nicholson |
| S. J. Megivern | J. S. Nelson | D. L. Newell |
| M. Nop | M. A. Swenson | D. E. Sprengeler |
| J. W. Laaser-Webb | W. A. Sorenson | A. A. Welch |
| E. C. Wright | M. E. Ross | B. D. Hofer |
| N. M. Miller | C. C. Poole | T. D. Crouch |
| B. E. Azeltine | H. Beach | K. Olson |
| S. J. Gent | S. Anderson | S. Godbold |
| B. Bradley | K. K. Patel | B. Beavers |
| D. R. Claman | C. Brakke | M. Hobbs |
| F. Today | E. Engle | K. Brink |
| J. Bartholomew | N. Cuva | S. Nielsen |
| D. L. Maifield | J. Vortherms | Milly Ortiz-Pagan |
| E. D. Gansen | T. Nicholson | S. McElmeel |
| J. Garton | J. Woodcock | M. Claeys |
| C. Steffensmeier | B. Porter | L. Giarmo RCE Fairfield |
| J. Webb | L. Finarty RCE Chariton | Supervisor Mike Kingery |
| FHWA Program.Delivery-IA@dot.gov | B. Clancy | H. Bibiano |
| H. Torres-cacho | J. Klein | D. Jones |
| Greg Cagle | Matt Buttz | |

CONCEPT ANALYSIS & SUPPORTING DATA:

Date of Field Review: N/A

Participants: N/A

PAVEMENT:

Existing Conditions:

The PCI is 55 (desire 60-80), the wheel path rutting is .06 inches (desire less than .15) to help reduce hydroplaning, and the roughness, IRI is approx. 183 (upper threshold 253, desired 32-100).

There is a 10 foot wide x 6 inch deep existing granular shoulder. [1991 Ia 21 to sigourney shld subdrains FN-92-8\(15\)--21-54.pdf](#)

Pavement cores were obtained in September 22, and October 21, 2020. ProjectWise link to core tab: [Ia 92 Pavement cores revised.xlsx](#)

Pavement History:

Here is a ProjectWise link to the 1964 plans, 10 inch PCC: [1964 Mahaska Co line to Signourney grading should PCC paving, PC widening F-34\(5\).pdf](#)

Here is a ProjectWise link to the pavement history: [Pavment history by mileage.pdf](#)

See the Project Wise link from Project Prioritization Scoping tool download: [Keokuk \(54\) Project Scoping Scope Approved S0092-090821-01.msg](#)

PMIS Data:

See attached Quick Look sheet, pg 12.

Pavement Recommendation:

Project:									
County:		Keokuk							
Road:		IA 92							
Location:		IA 21 to Sigourney							
Estimate: Keokuk, 92, Est# 3514, Dated 9/28/20									
Est. Location IA 21 to W Jct IA 149/Main St.									
Date: 10/07/20									
MP	MP	DIR	TESTED	80% SR	AVG K (psi/in)	Interpolated Res, Mod. (psi)	20 Year Overlay (in)	PAVEMENT	
196.56	203.74	B	05/07/2014	4.33	140	3,486	0.5	1964 PCC 10.0	
203.74	204.39	B	This segment has'nt been FWD tested.						1927 PCC 8.0 , 1964 BAC 3.0, 2004 AAC 2.0

dTIMS Treatment, Status Quo Report 2020 link: [Ia 92 Keokuk quicklook.docx](#)

PRI_MIN_REHAB_FUNC = Functional Rehab Overlay on Primary system (3" or less HMA Overlay)

FROM	TO	LANE_MIL	DESCRIPT	NYE	BUDGET_SCENARIO	PCI	CRACK_RATI	IRI	RL	FAULTA	TREATMENT	ANCILLARY	COST
E 192.38389	195.36345	5.5	From Mahaska/Keokuk Co Line		2019 Network - Status Quo	94.93	0	60	0	0	PRI_MAJ_REHAB_STR1		\$ 2,227,327.11
E 195.36345	202.5014	14.2	From JCT IA 92/IA 21 East to 0.		2019 Network - Status Quo	94.93	0	60	0	0	PRI_MIN_REHAB_FUNC		\$ 101,578.08
E 202.5014	203.07756	1.1	From 0.1 MI E of WCL Sigourne		2019 Network - Status Quo	94.93	0	60	0	0	PRI_MIN_REHAB_FUNC		\$ 416,875.29
E 203.07756	203.84326	1.5	From JCT IA 92/IA 149 East to		2019 Network - Status Quo	94.93	0	60	0	0	PRI_MIN_REHAB_FUNC		\$ 553,976.76
E 203.84326	204.33929	1.1	From ECL Sigourney East to IN		2019 Network - Status Quo	94.93	0	60	0	0	PRI_MIN_REHAB_FUNC		\$ 353,569.86

PAVEMENT cont'd:

Given the 0.5 inch 20 year pavement structure need, the viability of a Diamond Grind of the existing PCC pavement was considered. Based upon the pavement cores and a preliminary patch tab (listed below, 18% of pavement surface area), an evaluation of the PCC pavement condition is mentioned here: [Ia 92 Feb 24 2021 PCC PD diamond grind consideration email.docx](#)

The patching area is approaching 20% then you'd want to evaluate the cost of that and the longevity of it based on how quickly you are having other joints show up that need patching. If the pavement condition isn't changing rapidly, then it could be a viable rehab even with a pretty high amount of patching. The higher the patching % the more we would think about whether Diamond Grinding is a good fix and if it will get what I want for the rehabilitation life.

Diamond grinding can be a 15+ year fix if the subgrade isn't wet and weak, and if the pavement/aggregate isn't deteriorating quickly. I would estimate the rate of deterioration based on the rate that joints are showing up needing patching.

The ride numbers are pretty poor (IRI 183), yet the faulting is low. Is the ride undulating, like the slabs are settling/rocking and are subdrains are in place? If the slab differential seems to be the cause of the poor ride then I would want subdrains. A ride that is the result of settling/rocking slabs may be too much to try and grind out. Based upon the February 24, 2021 email, the existing pavement condition is approaching too many patches for this PCC to become a reliable Diamond Grinding rehabilitation alternative. **An HMA overlay, with subdrains, looks to be preferable. dTIMS indicates a 3 inch HMA overlay.**

Subdrains:

Per 1991 project FN-092-8(15)- -21-54, 30,573 lf of subdrain exists, which is approximately 82% of the overall 7.09 mile project length. The proposed improvement includes placing subdrains in current gaps such that there will be 100% subdrains along 1 side.

Patching/Curb Repairs:

A preliminary patch tab was obtained in March 2021: [HWY 92 Patch List.xlsx](#) There is a need of 18,000 Square Yards. That is approximately 18% of the total pavement area. 10/26/21 RCE staff indicated that patch tab incorrectly, over included patches for the 2 poor condition intersections and medians that are separately going to be reconstructed per pg. 9. See the above pavement determination.

ADA/Sidewalk/Trails/Complete Streets analysis:

There is **no** need for ADA ramps along this project.

The existing paved shoulder width is 0 feet for the length of the project. There is 10 foot of granular (10 ft. total width) PW link: [1991 Ia 21 to sigourney shld subdrains FN-92-8\(15\)--21-54.pdf](#)—The concept mentions including 4 ft wide pave shoulders. ProjectWise link to **Complete Streets**, 'Needs test': [IA 92 NHSX-092-x\(xx\)- -xx-54 Needs Test.docx](#)—The **estimated cost \$ 480,000 of additional 2 ft (total 6 ft) paved shoulder width, each side, would Not be excessively disproportionate** to the need or probable use per Section 2.4 of the Complete Streets Policy. The \$ 480,000 is Not preferred due to limited FY '23 3R funding, at this time.

- This section of IA 92 was rated as "Poor" by the On-Road Bicycle Compatibility Rating and passed 3 out of the 5 needs test resulting in a Cost Exception Threshold of 20 %.
- There are bikeways, trails, bike lanes along the project included in the [2017 Iowa in Motion](#), Pg. 9 .
- Within Sigourney there are destinations to parks, schools, or residential areas exist within 1 mile of the project.
- Additional bicycle accommodations (paved shoulders) represent an estimated 9% of the total cost of the project.

If the application of **rumble "stripes"** can allow for 4 feet of space outside the rumbles, they should serve to accommodate bicyclists.

SAFETY:

3R Design Criteria:

Acceptable Values for 3R Roadway Features						Project Values
DESIGN ELEMENT	FREEWAY	NON-FREEWAY				
Regulatory Speed (mph)	65/55	55	45	35	25	55
Minimum Vertical Curve (mph)	65/55	35	25	15	5	n/a
Maximum Horizontal Curve (degrees)	3	6	8	14	28	n/a
Maximum Gradient	3%	6%	7%	10%	13%	n/a
Lane Width (feet)	12	12	11	11	11	12
Parking Lane Width (feet)	--	--	8	8	8	n/a
Shoulder Width (feet)	10/6	6	4	4	2	10, pg. 5
Foreslopes	3:1	3:1	3:1	--	--	n/a
Transverse Slopes	6:1	6:1	6:1	--	--	n/a
Horizontal Clearance (feet)						
Bridge Width	Approach Lanes + Shoulder Width		Approach Lanes + Offset			Note 1
Vertical Clearance - Over NHS (feet)	16.5	16.5	16.5	16.5	16.5	n/a
Vertical Clearance - Over Local (feet)	14.5	14.5	14.5	14.5	14.5	n/a

Note 1: See the list of Structures on pg. 8

Crash Analysis:

For crash data, see the Project Wise link from the Project Prioritization Scoping tool download:

[38 Count Rural-Urban nofilter.pdf](#)

Corridor Crash History:

Over the course of 5 years, 2014-2018, 11 crashes are reported including major causes of 6 animal, 2 FTYROW, 1 followed too close, and 2 other. The severities are 1 Major injury, 1 Minor injury, 9 Property Damage only. crash rate of 54 per HMVMT which is less than the Rural Statewide average is 93 per HMVMT. Here is a ProjectWise link to the crash rate: [IA 92 IA 21-to-Sigourney CrashRates.xlsx](#)

Intersection Crash History:

Not applicable.

Intersection Analysis, Side Roads:

No Analysis done for this project.

The proposed paved shoulders are to be continued through existing gravel side roads. If fillets or further paving is needed at a side road, this can be done after the widening is complete. Keokuk County, pg. 3,9,10 would typically not like to participate in a Preconstruction Agreement for the paving of gravel public side road intersections per Std detail 7149.

The proposed paved shoulders are to be gapped at existing paved side roads.

Railroads:

n/a

Additional Safety & Operation Considerations:

n/a

STRUCTURES and DRAINAGE:

Bridges:

Maint. No.	FHWA No.	Size/Type	County	Over	On NHS	Year Built	Rail Retrofit Year	BDO/ Rehab Year	Bridge Rail Height	Vertical Clearance	Future Project
5498.9S092	032710	180'-0 x 30'-0 PPCB Bridge	Keokuk	IA-92 over Cedar Creek	Yes	1966	1990 - Bridge Railing, 2012 - Bridge Retrofit Rail End-Section.	2001 - Bridge Deck Overlay, 2012 - Bridge Deck Re-overlay with PC concrete, 2012 - Misc. Bridge Abutment Repair.	32.5"	----	----
5403.4S092	032720	125'-0 x 30'-0 Continuous Concrete Slab Bridge	Keokuk	IA-92 over Rock Creek	Yes	1964	1991 - Bridge Railing	2001 - Bridge Deck Overlay, 2012 - Epoxy Injection of Deck.	32.5"	----	On schedule for Bridge Deck Overlay letting date: 01/21/2026 under project# BRFN-092-8(42)--39-54

Maint. No.	GR Trans.	GR End Terminal	GR Paved Shoulders	Rail Endpost Taper	Rail Endpost Height	Approaches	Notes	Recommendations
5498.9S092	Not current	Not current	Not fully paved	Yes	34"	Both approaches are paved with PC concrete.	Open maintenance recommendations in SIIMS created in 2021 for Deck Repairs (spall and patch minor). Cracks and concrete deterioration at above pier#2 bottom of deck. Scour damage at near/far berms.	Recommend to repair scour damages at near/far berms and for more details, please see inspection report photo# 5,6,7 in SIIMS for inspection date: 06/03/2019. Recommend to update guardrails to current standards, and pave guardrail shoulders out to guardrail.
5403.4S092	Not current	Not current	Not paved	Yes	32.5"	Both approaches are paved with PC concrete.	The far approach have wide thru transverse cracks. Both abutments have cracks and staining. Far right abutment footing undermined 0.5 ft below. Erosion damage at far abutment. Near left Upstream/Downstream bank is vertical and cutting.	No recommendation is needed under these project. For updating guardrails to current standards, paving guardrail shoulders out to guardrail, and repairing erosion damage/undermining at the far abutment. All these recommendations should be included under the future 2026 Deck Overlay Project.

PW link to table: [NHSX-092-8\(43\)--3H-54 BSB Review..xlsx](#)

FHWA No.	Maint. No.	Size/Type	Year Built	BDO/Rehab Year	Bridge Rail Height	End Post Type	Vertical Clearance	Future Projects
32710	5498.9S092	183 x 30	1966	2012overlay	34		n/a	Note 1
32720	5403.4S092	127 x 30	1964	2001overlay	32.5		n/a	Note 2

1 **MP 198.9**, Br. 5498.9S092, Ia 92 over Cedar Creek, Sufficiency rating 76.9, SIMMS report pg. 3 says there are minor cracks in the curb. The approaches are PCC paved. Guardrail has old symmetrical thrie beam that should be unsymmetrical thrie beam. The end terminals are the prior RE-76 (106.25+ 106.25+106.25+106.25 = 425 lf). **Replace the guardrail.** SIIMS report: [5498.9S092 report.pdf](#) Per BSB email 10-11-21, the **District 5 bridge crew** can likely address scour issues on the 1st bridge. BSB Email link: [FW Review of structure needs Keokuk Co IA 92 3R Project Number pending proj scheduling.msg](#)

2 **MP 203.4**, Br. 5403.4S092, Ia 92 over Rock Creek, Sufficiency rating 83.0, SIMMS report pg. 3 says the strip seal glands need repair. The approaches are PCC paved. Guardrail has old symmetrical thrie beam that should be unsymmetrical thrie beam. The end terminals are the prior RE-76 (106.25+ 106.25+106.25+106.25 = 425 lf). **Replace the guardrail in 2026 as part of deck overlay project.** SIIMS report: [5403.4S092 report.pdf](#) Per BSB email 10-11-21, this 2nd bridge has an FY 2026 overlay project so it is preferred to update guardrail in 2026.

Culverts/Pipes:

Pending field data gathering.

Since Ia 92 is a NHS route, field review whether entrance / transverse slopes need to be flattened per Design Manual 3F-3.

ProjectWise link to sample culvert updates on NHS routes: [NHS Route Pipe Sample 2016 Sample Marion Co Ia 92 Culverts.docx](#)

UAC the **Stockpass** at Milepost 201.75.

STRUCTURES and DRAINAGE cont'd.:**Guardrail:**

See the above structures notes for 425 lf of W beam guardrail to be updated to the latest standards. Existing **Cable Rail** is to be replaced with high tension cable rail: 198.26 - 198.41 Lt, 980 linear feet.

Drainage District:

n/a

3 Foreslope slides:

A field review on June 4, 2020 found 3 foreslope slides that need repaired as a part of this project.

PW link to slide repair estimate: [Field Review NotesRecommendations IA 92 west of the City of Sigourney](#)

[Keokuk County.msg](#)

Total Slides Cost: \$ 133,874

PROJECT IMPACTS:**Impacts Map:**

See the Project Prioritization / Scoping tool for all Office of Location and Environment Hotspots, Outstanding Iowa Waters, railroad crossings, bridge numbers, major utilities, etc.

Link: [Charter S0092-090821-01.pdf](#), [S0092-090821-01 Impacts.JPG](#), [S0092-090821-01 Prioritization.JPG](#)

Environmental:

See the above Project Prioritization / Scoping tool Ia 92 Charter summary link for wetlands, parks, historic/cultural resources, etc.

Clearing and Grubbing information is pending field data collection.

Pipe repairs are pending field data collection. See pg. 8

TSMO/Traffic Control:

Traffic to be maintained at all construction times with Traffic Control devices.

ROW:

None

Agreements/Notification Letters:

Keokuk County, pg. 3,7,10 would not like to participate in a Preconstruction Agreement for the paving of gravel public side road intersections per Std detail 7149.

Project Coordination:

There is a project to reconstruct 2 intersections (Ia 92/ Ia 21 and Ia 92 / V33) within this project corridor in FY '23. Project NHSN-092-8(36)- -2R-54, PIN 16-54-092-030.

Previous Projects List:

See the 3R Construction History tab within the Project Wise link from the Project Prioritization Scoping tool download: [Keokuk \(54\) Project Scoping Scope Approved S0092-090821-01.msg](#)

Future Projects List:

None

FEASIBLE ALTERNATIVES & RECOMMENDATION:**Feasible Alternatives:**

Per [pg. 5-6](#) for the specific Pavement Determination and the dTIMS recommended pavement rehabilitation treatment. A PCC overlay, or different HMA overlay was discussed with pavement management: [RE comments Draft Concept FY '23 3R IOWA 92 Keokuk Co NHSX-092-8\(43\)--3H-54 PIN 22-54-092-010 .msg](#)

Each of the 3 Alternatives also include the following **common improvements:**

- 4 foot wide HMA paved shoulders, shoulder rumble "stripes" and 6 foot granular shoulder. Constructing a paved shoulder would be consistent with other segments of Iowa 92 improvements over the recent years.
- Centerline rumble strips,
- Remove and replace of cable rail with high tension cable rail, pg. 8
- Remove and replace W-beam guard rail at 1 bridge structure, pg. 8
- Approximately 18,000 square yards of 10 inch PCC patching, pg. 6
- Coordination with the separate project for the Ia 92/ Ia. 21 and County Road Ia 92 / V33 intersection reconstruction in FY '23. The estimates exclude, gaps those 2 intersections. pg. 9
- Longitudinal subdrains to fill the gaps, pg.6
- Culvert repairs, tree clearings, culvert extensions and entrance foreslope flattening, pg. 8 are to be included as well as the common improvements listed above.
- 3 foreslope slide repairs, see page 9

Alternate 1: Diamond grinding but no dowel bar retrofit (DBR) is considered on page 6. Includes 6" x 4 foot wide base widening. (Net profile change: 0" +/-) Estimated Cost \$ 4,231,600

Alternate 2: An HMA thin lift overlay, Hi-Pro. The performance of lower air void Hi-Pros have shown concerns of delamination when placed directly onto existing PCC pavement. (Net profile change: 1.5" +/-) Includes 5" x 4 foot wide base widening. More information is needed. Estimated Cost \$ 8,110,500

Alternate 3: Similar to what was constructed in 2021 as part of project NHSX-092-8(40)—3H-54, PIN 20-54-092-010. A functional 3 lift HMA overlay, including a 1" HMA interlayer has shown to be effective in reducing reflective transverse PCC joint cracking into the HMA surface course. Construct 1" Strengthening / leveling (scratch) course to avoid interlayer delamination if interlayer was place directly onto PCC, 1" HMA Interlayer, 1.5" surface (total 3.5" HMA), 4 ft. HMA paved shoulders with 3" min. HMA base widening, and 3.5" thick x 6 ft. wide granular surfacing. (Net profile change: 3.5" +/-)

Estimated Cost \$ 5,408,000

Recommendation:

Construct Alternate 3.

\$ 5,408,000 3R funds See below for Cost Estimate

0 No Keokuk County side road intersection paving, pg. 3,7,9

\$ 5,408,000 Total

\$ 480,000 Not preferred due to limited FY '23 3R funding, Alternate paved shoulder width from 4 to 6 ft, per Complete Streets, pg.6
\$ 5,888,000

Roadway	IA 92		
PIN Number	22-54-092-010	Submittal Date	05/11/22
Project Number	NHSX-092-8(43)--3H-54		Approval Date
District	District 5	Assistant District Engineer	Steven McElmeel
County	Keokuk	or	
Route	IA 92	Office Director	
Location	E of IA 21 to 200th St		
Work Type	HMA RESURFACING		
Segment Manager	Jason Holst		
Designer	Jonathan Bahr		

[Design Manual Section 1C-1](#)
Last Updated: 04-29-19

Rural Two-Lane Highways (Rural Arterials)

Design Element	Preferred	Acceptable	Project Values
Design speed (mph)	60	50	60
Maximum superelevation rate (Refer to Section 2A-2)	6%	8%	8% (note 1)
Design lane width (ft)	12	12	12
Full depth paved width (ft)	12	12	12
Right turn lane (ft)	12	10	12 (note 2)
Climbing Lane (ft)	12	12	n/a
Left turn lane (ft)	12	10	12 (note 2)
Pavement cross-slope (on tangent sections)	Through lanes	1.5% minimum, 2% maximum	2%
	Auxiliary and turn lanes	3% maximum	n/a
	Crown break at centerline	4% maximum	4%
Shoulder cross-slope (on tangent sections)	4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%
Curb type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6" sloped (note 3)
	Design speed ≥ 60 mph	4-inch sloped	n/a
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1 (note 4)
	Beyond standard ditch depth and design clear zone	3.5:1	4% (to center of ditch)
	Curbed roadways	2%	4%
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)	3:1	2.5:1	2.5:1 (note 4)
Transverse Slopes	w/ drainage structures	8:1	2:1 (note 6)
	w/o drainage structures	10:1	2:1 (note 6)
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	varies (note 7)
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	n/a
	Bridge length > 200 ft	design lane widths + effective shoulder widths	n/a
Bridge width—existing*	design lane widths + no less than 2 ft left and right	design lane widths + 4' right and left of the design lane widths	30'
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	n/a
	Over non-primary	16.5 at interchange locations, 15 at all other locations	n/a
	Over railroad	23.3	n/a
	Sign trusses and pedestrian bridges	17.5	n/a
Structural Capacity	Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	n/a
Level of Service	B	B	B

*FHWA notification via email is required if acceptable criteria is not met on the NHS system (No formal design exception is required)

Note 1: Record Drawings (1964) indicate this section of IA 92 does not have superelevated curves. Design Standards of the time used design tables based off an 8% maximum superelevation rate.

Note 2: Right Turn Lanes are located at the intersection of IA 92 and IA 21. Left Turn lanes are located at the following intersections: IA 92/IA 21 and IA 92/V33.

Note 3: Existing 6" Standard Integral Curb is located at the following intersections: IA 92/IA 21 and IA 92/V33

Note 4: Record Drawings (1964) indicate IA 92 was constructed with a foreslope of 3:1.

Note 5: Record Drawings (1964) indicate IA 92 was constructed with a backslope of 2.5:1.

Note 6: 1964 Record Drawings indicate 2:1 Transverse Slopes were installed at Access Point Culverts.

Note 7: 1964 Record Drawings indicate variable depth and width of existing ditches (3'Dx5"W; 4'Dx8"W; 5'Dx10"W; 6'-10'Dx15"W; 10'+Dx20'D).

Design year ADT = See Note 8.						
Design Manual Section 1C-1 Last Updated: 04-29-19			Effective Shoulder Width and Type for Two-Lane Highways			
Preferred (values shown in feet)			Acceptable (values shown in feet)			Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	4'P+6'G (note 8)
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	0 (note 9)
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	n/a
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	Design year ADT > 2000 vpd	8	0*	4' paved + 6' granular (note 8)
On roadways approaching urban areas (due to increased bike traffic)	10	10				
On all curves with a superelevation rate of 7.0% or greater	10	10				
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	0*	
On all other NHS	10	6	Design year ADT < 400 vpd	4	0*	
On non-NHS routes with design year ADT > 3000	10	6				
On non-NHS routes with design year ADT < 3000	8	0*				
*Requires safety edge-Refer to Section 3C-6						
Curbs should be located beyond the outer edge of the effective shoulder width in rural areas						
Refer to Section 3C-2 for curb offsets in urban areas						
Notes:						
Note 8: 4' Paved + 6' Granular shoulders are being installed with this project to replace 10' wide granular shoulders.						
IA 92 is a NHS route and has a 2043 Design Year ADT of 2,294 VPD.						
Note 9: Existing 6" Standard Integral Curb at Left Turn Lanes is located at the following intersections: IA 92/IA 21 and IA 92/V33. These intersections are not within the scope of this 3R project.						

D2 Questions for District 5 – **with Responses in GREEN Text:**

Date 5/2/2022

Times: 10:00am to 11:40am at Sigourney Maintenance Garage. 1:15pm to 3:00pm within Project Limits.

Description: D2 Field Exam

Location: Iowa DOT Sigourney Maintenance Garage (23301 IA 149, Sigourney, IA 52591) & Project Limits

Attendees:

Jonathan Bahr (Ames Road Design)

William McNamara (Ames Road Design)

Steven McElmeel (District 5 Assistant District Engineer)

Jim Phillips (District 5 Design Staff)

Jared Klein (District 5 Design Staff)

Matt Heuvelmann (Sigourney Highway Maintenance Supervisor)

Daniel 'Joe' Clawson (Sigourney Highway Technician Senior)

1. PROJECT LIMITS

a. Beginning of Project: Options

- i. MP 196.58, East of the PI of the IA 92/IA 21 intersection (the west end of the east raised median of the IA 92/IA 21 intersection).
- ii. MP 196.70, East of the east raised median of the IA 92/IA 21 intersection. There appears to be a surface differential over the traveled way at this location (this differential only appears on 7/27/2020 Google Earth Aerial; not in 7/2018 Google Streetview nor 5/23/2019 Pathweb).
- iii. Other locations with respect to the intersection of IA 92 and IA 21 and the intersection of IA 92 and 145th Avenue (V33) associated with Intersection Improvement Project NHSN-092-8(36)--2R-54 (ProjectWise: 5409203016, being designed by Stanley Consultants). The 4/19/2022 "Status Set" for Project NHSN-092-8(36)--2R-54 is associated with the Station Range 134+25 (MP 196.14) to 178+50 (MP 196.98) and then from 218+25 (197.74) to 254+00 (MP 198.42, FYI, this is at the east end of the WB cable guardrail).
- iv. **2022-05-02 Field Exam Response: Beginning of this 3R Project will be coordinated with Intersection Improvement Project NHSN-092-8(36)--2R-54 (ProjectWise: 5409203016, being designed by Stanley Consultants). The Road Design Team shall ensure the Stationing/MP's are consistent between the projects.**

b. End of Project is at a transition from 10' Gravel Shoulders to 10' Combination Shoulders (4' HMA + 6' Gravel) at MP 203.69 (approximately 122' west of the beginning of curb on EB side of IA 92). There also appears to be a surface differential over the traveled way at this location. Please verify.

- i. **2022-05-02 Field Exam Response: Confirmed. End of Project shall be located at the transition from 10' Gravel Shoulders to 10' Combination Shoulders (4' HMA + 6' Gravel) at MP 203.69 (approximately 122' west of the beginning of curb on EB side of IA 92).**

- c. Review Possible "STOP" and "RESUME" locations around the intersection of IA 92 and IA 21 and the intersection of IA 92 and 145th Avenue (V33) associated with intersection improvement Project NHSN-092-8(36)--2R-54 (ProjectWise: 5409203016, being designed by Stanley Consultants). See "Beginning of Project: Options" section above for Station Ranges of Project NHSN-092-8(36)--2R-54.
 - i. **2022-05-02 Field Exam Response: "STOP" and "RESUME" locations of this 3R Project will be coordinated with Intersection Improvement Project NHSN-092-8(36)--2R-54 (ProjectWise: 5409203016, being designed by Stanley Consultants).**

2. ROADWAY RESURFACING TREATMENT

- a. Page 10 of the Project Concept has the following for Treatment; "Similar to what was constructed in 2021 as part of project NHSX-092-8(40)—3H-54, PIN 20-54-092-010. A functional 3 lift HMA overlay, including a 1" HMA interlayer has shown to be effective in reducing reflective transverse PCC joint cracking into the HMA surface course. Construct 1" Strengthening / leveling (scratch) course to avoid interlayer delamination if interlayer was place directly onto PCC, 1" HMA Interlayer, 1.5" surface (total 3.5" HMA)". Please verify the pavement composition on the Typical Section.

- i. **2022-05-02 Field Exam Response: Revise the Typical Section to the following: 4" HMA Base Widening + 2" HMA Intermediate Course + 1.5" HMA Surface Course. Increasing the thickness of the Base Widening Course from 3" to 4" will improve the shoulder's durability during construction, especially since the 1" Strengthening Course has been removed (Strengthening Course is generally added to the base widening course before construction traffic is moved onto the shoulder, thus giving the shoulder an effective thickness of 4" during the first stage of construction traffic). Replacing the 1" Strengthening/Leveling (Scratch) Course + 1" Interlayer with a single 2" Intermediate Course will eliminate a resurfacing pass and a coat of paint, which should lead to a cost savings. Furthermore; the consistency, workability, and durability of 1" HMA Surface Courses (and HMA Strengthening Course) has been observed to be inadequate (1.5" should be considered the minimum thickness of a single HMA Surface Course, even for High Performance Thin Lift Surface Courses), the main issue is the 3/4" nominal aggregate size is too close to the 1" thickness. Also, the effectiveness of Interlayer to reduce reflective cracking from the underlying PCC appears to be doubtful and may not be worth the premium cost of Interlayer, therefore more projects will likely replace Interlayer with Intermediate Course in the future. FYI, 1" thickness for Interlayer is generally OK for use when it's specified.**

- b. The Typical Sections from the 1964 Record Drawings (F-34(5)) does not indicate the constructed cross-slope of the IA 92 Traveled Way. Shall this resurfacing project specify a minimum 2% cross-slope and maximum 3% cross-slope?

- i. **2022-05-02 Field Exam Response: Specify a minimum 2% cross-slope and maximum 3% cross-slope. There should be some slope-correction flexibility in the 2" Intermediate Course to adjust the resurfacing slope to satisfy these slope requirements.**

- c. The Typical Sections from the 1964 Record Drawings (F-34(5)) does not indicate the constructed cross-slope of the IA 92 Turn-Lanes. Shall this resurfacing project specify a minimum 3% cross-slope and maximum 4% cross-slope?
 - i. 2022-05-02 Field Exam Response: No longer applicable to this 3R Project. Intersection Improvement Project (NHSN-092-8(36)--2R-54, ProjectWise: 5409203016, being designed by Stanley Consultants) includes all the Turn Lanes that would have been within the 3R Project Limits.
- d. Discuss Roadway Resurfacing Treatment in the vicinity of Bridges/Approaches and Guardrails with respect to the proposed 3.5" rise in Roadway Profile Elevation rise. See "BRIDGE/STRUCTURES" section below and "GUARDRAIL" section below.
 - i. 2022-05-02 Field Exam Response:
 - 1. FHWA 32710, Maint. 5498.9S092 (183'x30' PPCB Bridge, MP 198.96). Milling equipment capable to do a "mill and fill" (net profile change of 0") will not be available for use on this project, therefore, resurfacing shall extend all the way to the following locations:
 - a. STOP RESURFACING: 74' west of the west edge of the Bridge Deck (at the west edge of the PCC Border of an EF Joint).
 - b. RESUME RESURFACING: 74' east of the east edge of the Bridge Deck (36' west of a "82801" stamp on the tined PCC pavement surface).
 - 2. FHWA 32720, Maint. 5403.4S092 (127'x30' Continuous Concrete Slab Bridge, MP 203.44). Milling equipment capable to do a "mill and fill" (net profile change of 0") will not be available for use on this project, therefore, resurfacing shall extend all the way to the following locations:
 - a. STOP RESURFACING: 70' west of the west edge of the Bridge Deck ("1096" is stamped on the tined PCC pavement surface)
 - b. RESUME RESURFACING: 70' east of the east edge of the Bridge Deck ("9130" is stamped on the tined PCC pavement surface)

3. PAVED SHOULDER CONSTRUCTION

- a. Page 10 of the Project Concept has the following for composition for the proposed 4' Paved Shoulder "4 ft. HMA paved shoulders with 3" min. HMA base widening". Please verify the pavement composition on the Typical Section.
 - i. 2022-05-02 Field Exam Response: Revise the Typical Section to the following: 4" HMA Base Widening + 2" HMA Intermediate Course + 1.5" HMA Surface Course. Increasing the thickness of the Base Widening Course from 3" to 4" will improve the shoulder's durability during construction. The District 5 Team recommended that the shoulder composition and widths be coordinated with the Intersection Improvement Project NHSN-092-8(36)--2R-54.
- b. Shall 300' long x 4' wide x 9" thick Shoulder Strengthening be installed at the four quadrants of Bridge locations? See "BRIDGE/STRUCTURES" section below.
 - i. 2022-05-02 Field Exam Response:
 - 1. FHWA 32710, Maint. 5498.9S092 (183'x30' PPCB Bridge, MP 198.96). The shoulders adjacent to FHWA 32710 will NOT need the 300' long x 4' wide x 9" thick Shoulder Strengthening because there is not an improvement project currently scheduled. Furthermore, it appears as though 260' long x 4' wide Shoulder Strengthening was already added to the four quadrants of this bridge when the existing guardrail was previously constructed. FYI, this 3R Project will add Paved Guardrail Shoulders between the existing Shoulder Strengthening and new Guardrail to be installed (see GUARDRAIL section below). The existing 260' long x 4' wide Shoulder Strengthening shall be overlaid per the resurfacing treatment of the Traveled Way (2" Intermediate Course + 1.5" Surface Course).
 - 2. FHWA 32720, Maint. 5403.4S092 (127'x30' Continuous Concrete Slab Bridge, MP 203.44). The shoulders adjacent to FHWA 32720 will NOT need the 300' long x 4' wide x 9" thick Shoulder Strengthening because it appears as though 230' long x 4' wide Shoulder Strengthening was already added to the four quadrants of this bridge when the existing guardrail was previously constructed. FYI, IF the 230' long x 4' wide Shoulder Strengthening wasn't already there then the Road Design Team was to include the 300' long x 4' wide x 9" thick Shoulder Strengthening at this location because of the FY 2026 Deck Overlay currently scheduled. FYI, this 3R Project will add Paved Guardrail Shoulders between the existing Shoulder Strengthening and new Guardrail to be installed (see GUARDRAIL section below). The existing 230' long x 4' wide Shoulder Strengthening shall be overlaid per the resurfacing treatment of the Traveled Way (2" Intermediate Course + 1.5" Surface Course).

4. GRANULAR SHOULDER

- a. Page 10 of the Project Concept has the following for composition for the remaining 6' Granular Shoulder; "3.5" thick x 6 ft. wide granular surfacing." Please verify the pavement composition on the Typical Section.
 - i. 2022-05-02 Field Exam Response: Confirmed. Specify 3.5" thick x 6' wide granular shoulder material.
- b. Shall we assume Granular Shoulder is 1" below existing edge of pavement due to washout?
 - i. 2022-05-02 Field Exam Response: No extra thickness of granular shoulder is required; the existing granular shoulder is well maintained. To reduce the need for additional/contingency shoulder granular material at the time of construction Road Design shall specify the following; Blade the first 2" of the 4' Wide Base Widening Zone and wind-row it onto the outer 6' of existing granular shoulder (this will take care of edge rut and any leveling issues that develop). Haul the next 2" of Class 13 Excavation Material away (District Maintenance would like to stockpile the lower 2" of Class 13 Excavation Material). This blading and spreading of the first 2" will require its own bid item(s). Road Design Team shall review the bid item specifications with District 5.

5. SHOULDER RUMBLES

- a. Page 6 of the Project Concept indicated "If the application of rumble 'stripes' can allow for 4 feet of space outside the rumbles, they should serve to accommodate bicyclists." Please confirm the use of rumble 'stripes' (and their length (8" or 12")). FYI, to ensure that 4' of paved shoulder is available outside of the Rumble Stripes, then it is recommended that 8" rumble 'stripes' are utilized and that the Outside Edge of the 4" Painted Edge Line shall be placed 11'-7" from Centerline (inside edge of rumble stripe is placed 11'-6" from centerline) when associated with Milled Shoulder Rumble STRIPES (the standard 11'-9" distance shall apply for areas that do not have Shoulder Rumbles, ie. Urban areas). This allows for 2" of clearance from the outside edge of the rumble stripe to the inner edge of the new paved shoulder. This application was recently specified for the IA 2 Van Buren Project (STP-002-9(43)--2C-89, PW: 8900201020 , Co Rd W40 to Park St in Donnellson).
 - i. 2022-05-02 Field Exam Response: Implement the application recently specified for the IA 2 Van Buren Project (STP-002-9(43)--2C-89, PW: 8900201020 , Co Rd W40 to Park St in Donnellson): 8" rumble 'stripes', Outside Edge of the 4" Painted Edge Line shall be placed 11'-7" from Centerline (inside edge of rumble stripe is placed 11'-6" from centerline) when associated with Milled Shoulder Rumble STRIPES (the standard 11'-9" distance shall apply for areas that do not have Shoulder Rumbles, ie. Urban areas). This 2" reduction in painted width is considered negligible when there are effective 12' travel lanes.

6. LONGITUDINAL SUBDRAINS

- a. Page 6 of the Project Concept indicates "Per 1991 project FN-092-8(15)- -21-54, 30,573 lf of subdrain exists, which is approximately 82% of the overall 7.09 mile project length. The proposed improvement includes placing subdrains in current gaps such that there will be 100% subdrains along 1 side." Please confirm that the District would like to install the additional 18% of subdrain (along 1 side) to fill in the gaps in coverage.
 - i. 2022-05-02 Field Exam Response: District 5 Staff would prefer NOT to install the Longitudinal Subdrain on the project, especially if there isn't an apparent reason on-site for the additional installation. Road Design Team will review As-Builts to see whether there was an apparent reason why 100% coverage was not installed in the first place.
 - ii. 2022-05-09 Follow-Up Response: Road Design Team reviewed 1991 Longitudinal Subdrain Installation Record Drawings (FN-92-8(15)--21-54) in conjunction with the 1930 Paving Record Drawings (F-34) and found that the existing gaps in longitudinal subdrains appeared to occur at strategic locations; the peak of crest vertical curves, at high points in the ditches, and intersections. The Road Design Team concurs with District 5 Staff that additional installation of longitudinal subdrain is NOT warranted.

7. SLIDE REPAIR

- a. Page 9 of the Project Concept indicates "A field review on June 4, 2020 found 3 foreslope slides that need repaired as a part of this project." The summary of recommendations is located here: 5409201022\DistrictDesign\DOCS\3 Slides west of Sigourney\
 - i. Slide Repair MP 201.70-201.72 (Left/North/WB side of IA 92, STA 427+30 to 427+90), just west of the 5'5' RCB Stockpass at MP 201.75. FYI, the Soils Bureau e-mail says that it is located at approximately MP 201 and starts at 427+30, but it appears 427+30 is at 201.70.
 - 1. 2022-05-02 Field Exam Response: Slide Repair Location confirmed as MP 201.70-201.72 (Left/North/WB side of IA 92, STA 427+30 to 427+90), just west of the 5'5' RCB Stockpass at MP 201.75.
 - ii. Slide Repair MP 202.84-202.89 (South Side of IA 92, STA 487+05 to 489+80). FYI, the Soils Bureau e-mail says that it is located at approximately MP 202.12 and starts at 487+05, but it appears 487+05 is at MP 202.84 (the e-mail mentions the slide is by a RCB culvert at 488+24, which is at MP 202.86).
 - 1. 2022-05-02 Field Exam Response: Slide Repair Location confirmed as MP 202.84-202.89 (South Side of IA 92, STA 487+05 to 489+80), near the RCB culvert at 488+24, which is at MP 202.86.
 - iii. Slide Repair MP 202.85-202.89 (North Side of IA 92, STA 487+37 to 489+62). FYI, the Soils Bureau e-mail says that it is located at approximately MP 202.13 and starts at 487+37, but it appears 487+37 is at MP 202.85 (the e-mail mentions the slide is by a RCB culvert at 488+24, which is at MP 202.86).
 - 1. 2022-05-02 Field Exam Response: Slide Repair Location confirmed as MP 202.85-202.89 (North Side of IA 92, STA 487+37 to 489+62), near the RCB culvert at 488+24, which is at MP 202.86.

8. STRUCTURES

- a. FHWA 32710, Maint. 5498.9S092 (183'x30' PPCB Bridge, MP 198.96). Discuss Repairs and Responsibilities per the NOTES and RECOMMENDATIONS on Page 8 of the Project Concept.
 - i. NOTE: Open maintenance recommendations in SIIMS created in 2021 for Deck Repairs (spall and patch minor). Cracks and concrete deterioration at above pier #2 bottom of deck. Scour damage at near/far berms.
 - ii. RECOMMENDATION: Recommend to repair scour damages at near/far berms and for more details, please see inspection report phot #5, 6, 7 in SIIMS for inspection date: 06/03/2019. Recommend to update guardrails to current standards, and pave guardrail shoulders out to guardrail.
 - iii. Note 1 on Page 8 of the Project Concept indicates that "SIMMS report pg. 3 says there are minor cracks in the curb. The approaches are PCC paved... Per BSB email 10-11-21, the District 5 bridge crew can likely address scour issues on the 1st bridge. BSB Email link: 5409201022\DistrictDesign\DOCS\SIIMS br data\FW_Review of structure needs_ Keokuk Co IA 92_ 3R Project Number pending proj_ scheduling.msg"
 - iv. 2022-05-02 Field Exam Response: This 3R Project shall update the guardrails to current standards and pave guardrail shoulders out to the guardrail posts. No erosion problems were immediately apparent during Site Visit. Any additional erosion and deterioration issues shall be handled separately. See "ROADWAY RESURFACING TREATMENT", "PAVED SHOULDER CONSTRUCTION", and "GUARDRAIL" sections above for more information.
- b. FHWA 32720, Maint 5403.4S092 (127'x30' Continuous Concrete Slab Bridge, MP 203.44). Discuss Repairs and Responsibilities per the NOTES and RECOMMENDATIONS on Page 8 of the Project Concept.
 - i. NOTE: The far approaches have wide thru transverse cracks. Both abutments have cracks and staining. Far right abutment footing undermined 0.5 ft below. Erosion damage at far abutment. Near left Upstream/Downstream bank is vertical and cutting.
 - ii. RECOMMENDATION: No recommendation is needed under this project. For updating guardrails to current standards, paving guardrail shoulders out to guardrail, and repairing erosion damage undermining at the far abutment. All these recommendations should be included under the future 2026 Deck Overlay Project.
 - iii. Note 2 on Page 8 of the Project Concept indicates SIMMS report pg. 3 says the strip seal glands need repair. The approaches are PCC paved. Guardrail has old symmetrical thrie beam that should be unsymmetrical thrie beam. The end terminals are the prior RE-76 (106.25+ 106.25+106.25+106.25 = 425 lf). Replace the guardrail in 2026 as part of deck overlay project. SIIMS report: 5403.4S092 report.pdf Per BSB email 10-11-21 (5409201022\DistrictDesign\DOCS\SIIMS br data\FW_Review of structure needs_ Keokuk Co IA 92_ 3R Project Number pending proj_ scheduling.msg), this 2nd bridge has an FY 2026 overlay project so it is preferred to update guardrail in 2026.
 - iv. 2022-05-02 Field Exam Response: This 3R Project shall update the guardrails to current standards and pave guardrail shoulders out to the guardrail posts. No

erosion problems were immediately apparent during Site Visit. Any additional erosion and deterioration issues shall be handled separately (specifically on the FY 2026 Deck Overlay Project, if necessary). See "ROADWAY RESURFACING TREATMENT", "PAVED SHOULDER CONSTRUCTION", and "GUARDRAIL" sections above for more information.

- c. See the "ROADWAY RESURFACING TREATMENT" and the "PAVED SHOULDER CONSTRUCTION" sections above, and the "GUARDRAIL" section below.

9. GUARDRAIL

- a. Page 8 of the Project Concept indicates Guardrail at FHWA 32710 (Maint 5498.9S092, MP 198.96) "has old symmetrical thrie beam that should be unsymmetrical thrie beam. The end terminals are the prior RE-76 (106.25+ 106.25+106.25+106.25 = 425 lf). Replace the guardrail." Please confirm removal and replacement of guardrail.
 - i. 2022-05-02 Field Exam Response: Confirmed. Remove and Replace the Guardrail at FHWA 32710, Maint. 5498.9S092 (183'x30' PPCB Bridge, MP 198.96).
- b. Page 8 of the Project Concept indicates Guardrail at FHWA 32720 (Maint 5403.4S092, MP 203.44) "Guardrail has old symmetrical thrie beam that should be unsymmetrical thrie beam. The end terminals are the prior RE-76 (106.25+ 106.25+106.25+106.25 = 425 lf). Replace the guardrail in 2026 as part of deck overlay project." Please confirm that the guardrail at FHWA 32720 will be UAC with the FY 2023 3R project.
 - i. 2022-05-02 Field Exam Response: District 5 Team would like the existing Guardrail to be Removed and Replaced to current standards at FHWA 32710, Maint. 5498.9S092 (183'x30' PPCB Bridge, MP 198.96) with this 3R project instead of waiting for the FY 2026 Deck Overlay Project.
- c. Page 9 of the Project Concept indicates "Existing Cable Rail is to be replaced with high tension cable rail: 198.26 - 198.41 Lt, 980 linear feet." Discuss cable guardrail material shortage. Can the existing cable guardrail be reused? Can the existing guardrail remain?
 - i. 2022-05-02 Field Exam Response: The limits of the existing cable guardrail is currently within the limits of the Intersection Improvement Project NHSN-092-8(36)--2R-54. Jared Klein (District 5 Staff) shall review the Cable Guardrail and instruct how the cable guardrail can be addressed (it may already be high tension and could possibly be reused).
 - ii. 2022-05-03 Follow-Up Response: Jared Klein provided the D2 Team with information regarding the Cable Guardrail in a 5/3/2022 11:21am e-mail and included the following: "It does appear that the cable and all other materials for that high tension guardrail near MM 198.42 that was let on 1/18/17 with project NHSN-092-8(32)--2R-54 met material acceptance." A Final Material Audit was attached to the e-mail. The High Tension Cable Guardrail can be reused. Road Design Team shall coordinate the reuse of the High Tension Cable Guardrail with the Intersection Improvement Project NHSN-092-8(36)--2R-54.
- d. The guardrails may be impacted by a rise in roadway profile elevation. See "ROADWAY RESURFACING TREATMENT" section above and "STRUCTURES" section above).
 - i. 2022-05-02 Field Exam Response: Steel Beam Guardrail will be removed and replaced at both Bridge Locations. See "ROADWAY RESURFACING TREATMENT" section above.

10. CULVERTS/PIPES

- a. Page 8 indicates that a 5'x5' RCB Stockpass at Milepost 201.75 (STA 430+00) will be UAC. If time allows, it probably would be best to view the location during the site visit for confirmation since it may be near the westernmost Foreslope Erosion Slide location (see "SLIDE REPAIR" section above).
 - i. 2022-05-02 Field Exam Response: Stockpass to be UAC, it is currently being used. No additional design considerations are needed.
- b. Page 8 of the Project Concept indicated Field Data for Culverts/Pipes was still pending. Are there any specific locations that need to be reviewed during the site visit?
 - i. 2022-05-02 Field Exam Response: No locations were visited during the Site Visit.

11. INTERSECTION CRASH HISTORY AND ANALYSIS

- a. Page 7 of the Project Concept states "Over the course of 5 years, 2014-2018, 11 crashes are reported including major causes of 6 animal, 2 FTYROW, 1 followed too close, and 2 other. The severities are 1 Major injury, 1 Minor injury, 9 Property Damage only. crash rate of 54 per HMVMT which is less than the Rural Statewide average is 93 per HMVMT". However, the Iowa Crash Analysis Tool Quick Report (5409201022\DistrictDesign\DOCS\accident data 2016-2020\38_Count_Rural-Urban_nofilter.pdf) and the Scoping Approval Message (5409201022\DistrictDesign\DOCS\scoping tool and concept Proj No.\Keokuk (54) _ Project Scoping _ Scope Approved S0092-090821-01.msg) both show 1 Fatality from 2016-2020. The crash rate excel file (5409201022\DistrictDesign\DOCS\accident data 2016-2020\IA 92_IA 21-to-Sigourney CrashRates.xlsx) does not show the fatality. Discuss the discrepancy. Does it effect the design of this project?
 - i. 2022-05-02 Field Exam Response: the Iowa Crash Analysis Tool (ICAT) was reviewed and found the 2020 Fatality (2/19/2020, 7:04pm, Conditions were Dry, Dark, and Cloudy) located between 190th Avenue and N James Street (MP 203.06; 0.53 miles west of the west Corporate Limits of Sigourney, ICAT report says: 295' East of MP 203). The ICAT report infers that two vehicles collided due to an animal on the road. The road is straight in this vicinity and no additional safety considerations are warranted on this project due to this incident.
- b. The "Intersection Analysis, Side Roads" Section of Page 7 of the Project Concept states "No Analysis done for this project". Is an Intersection Analysis warranted for this project? If not, when is an Intersection Analysis warranted?
 - i. 2022-05-02 Field Exam Response: The use of the Potential for Crash Reduction (PCR) website is the current tool used for Intersection Analysis. Upon review of the PCR website all intersections within this project are identified as 'Tier 3' locations. Tier 3 is the least severe of the three-tier rating system. Therefore, no additional consideration need to be given to the intersections with the 3R Project Limits.

12. EXISTING DRAINAGE PROBLEMS

- a. Are there existing drainage problems within towns or in rural areas that may need to be mitigated (shoulder washout, standing water, etc.)?
 - i. 2022-05-02 Field Exam Response: No additional existing drainage problems were identified. District and Maintenance Staff highlighted one washout by Garrett Cemetery (northwest quadrant of IA 92/V33 intersection MP 197.90) that is already picked up in the pipe tab and mentioned that there were other locations already tabbed out in the field tabs. The location of a reported sinkhole at a 14'x4' RCB (MP 197.49) was reviewed during the Site Visit and it appeared that the sinkhole was repaired. District 5 Staff mentioned that all improvements are within existing ROW.

13. STOCKPILED MATERIALS:

- a. Confirm that Maintenance would like the following Stockpiled Materials:
 - i. HMA Millings (Not Applicable; HMA Millings are not included in this project)
 - ii. Class 13 Excavation (from Excavation for Base Widening operation)
 1. 2022-05-02 Field Exam Response: Yes, stockpile Class 13 Excavation Material. See "GRANULAR SHOULDER" Section above for special considerations related to stockpiling of Class 13 Excavation Material.
 - iii. Cable Guardrail (see "GUARDRAIL" section above)
 1. 2022-05-02 Field Exam Response: District Maintenance declined stockpiling Cable Guardrail.
 - iv. Cable Guardrail Posts (see "GUARDRAIL" section above)
 1. 2022-05-02 Field Exam Response: District Maintenance declined stockpiling Cable Guardrail Posts.
 - v. Steel Beam Guardrail (see "GUARDRAIL" section above)
 1. 2022-05-02 Field Exam Response: District Maintenance declined stockpiling Steel Beam Guardrail.
 - vi. Steel Beam Guardrail Posts (see "GUARDRAIL" section above)
 1. 2022-05-02 Field Exam Response: District Maintenance declined stockpiling Steel Beam Guardrail Posts.
- b. Verify the location of Stockpiled Materials (Primary Location? Secondary location? Is there a preferred distribution of materials across the sites)
 - i. Primary Location: 2022-05-02 Field Exam Response: Iowa DOT Sigourney Maintenance Garage (23301 IA 149, Sigourney, IA 52591)
 - ii. Secondary Location: 2022-05-02 Field Exam Response: No Secondary Location shall be specified in the plans.
- c. Maintenance Contact Person and Phone Number: 2022-05-02 Field Exam Response: Matt Heuvelmann - 319-931-4639

14. CONTINGENCY PERCENTAGES

- a. HMA Pavement Contingency for Irregularities: 5.0% is Typical. Confirm.
 - i. 2022-05-02 Field Exam Response: Confirmed, 5% HMA contingency for irregularities (HMA specific weight: 147 lbs/cf).
- b. Granular Shoulder: 20% has been used on recent projects. Confirm.
 - i. 2022-05-02 Field Exam Response: Do NOT include a contingency for Granular Shoulder Material. See "GRANULAR SHOULDER" Section above for justification.
- c. Patches Contingency: 15% is Typical. Confirm.
 - i. 2022-05-02 Field Exam Response: Confirmed, 15% contingency for Patches.

15. LETTING DATE

- a. Letting Date is currently scheduled for 12/20/2022. Road Design Team suggests revising the Letting Date to 1/18/2023 to allow time for Project Coordination with the NHSN-092-8(36)--2R-54 intersection reconstruction project (IA 92/IA 21 and IA 92/V33) as well as to stagger other District 5 Projects the Road Design Team is working on.
 - i. 2022-05-02 Field Exam Response: District 5 Staff is OK with adjusting the Letting date to 1/18/2023. District 5 Staff recommended Tying the 3R Project, the Intersection Improvement Project (NHSN-092-8(36)--2R-54), and an MP Project (an IA 21 Patching Project located south of the Intersection of IA 21 and IA 92). Tying the projects will require moving each of the three projects to the 1/18/2023 Letting. District 5 Staff suggested that the IA 22 Keokuk County 3R Project (STPN-022-1(10)--2J-54, PW: 5402201017) shall remain separate (NOT tied) from this 3R Project since the IA 22 Keokuk County 3R Project Scope is different enough from IA 92 Keokuk County (IA 22 has Hot In-Place Recycling and ADA work).

16. AGREEMENTS

- a. Keokuk declined to participate with this project according to e-mail messages (5409201022\DistrictDesign\DOCS\Preconst Agmt Keokuk Co No V33 Int\RE_ Keokuk Co__ FY '23 IA 92 Resurfacing project_ NHSX-092-8(43)--3H-54 PIN 22-54-092-010.msg). Please confirm.
 - i. 2022-05-02 Field Exam Response: The V33 Keokuk Agreement is associated with the Intersection Improvement Project (NHSN-092-8(36)--2R-54) designed by Stanley Consultants. There is NO Keokuk County Agreement associated with this 3R project.
- b. Does the City of Sigourney need to be contacted for Agreement purposes (this project ends 0.10 miles east of the west corporate limits of Sigourney)?
 - i. 2022-05-02 Field Exam Response: District 5 Staff verified that the extent of this project within Sigourney Corporate Limits did NOT warrant contact with the City of Sigourney regarding Agreements.

17. SPECIAL FEATURES

- a. Are there any special features not shown on the plans (Schools or businesses with particular entrance needs, mailboxes, signage, structures, traffic signal detector loops at signalized intersections) that need to be taken into consideration, either design or Traffic Control-wise?
 - i. 2022-05-02 Field Exam Response: No Special Features were identified during the D2 Discussion.

18. SPECIAL EVENTS

- a. Are there any Special Events that need to be identified? If so, what are their schedules? FYI, the FY 2021 Projects NHSX-092-8(40)--3H-54 (IA 92 HMA Resurfacing from E Jct IA 149 (East end of Sigourney) to Co Rd V67 and STP-021-1(42)--2C-54 (IA 21 HMA Resurfacing/CIR from IA 92 to NCL of What Cheer) identified Keokuk County Fair (July 8-11, 2021) as a Special Event.
 - i. 2022-05-02 Field Exam Response: What Cheer Flea Market (first Saturday in May) should be identified in the plans. The Keokuk County Fair should be identified in the plans for awareness purposes.

19. FIELD MAINTENANCE TABS

- a. Please confirm that the FIELD Tabs (Tree Clearing, patching, curb repairs, culverts, etc.) are pending collection, review, and distribution to Road Design.
 - i. 2022-05-02 Field Exam Response: Confirmed. Field Tabs are currently under review by the Location and Environment Bureau (LEB) and will be finalized and forwarded to Road Design when they're ready.

20. SIDEROAD AND ENTRANCE TREATMENT

- a. Discuss Treatment of Existing Sideroads and Entrances throughout the Project Limits.
 - i. 2022-05-02 Field Exam Response: District 5 Staff confirmed that entrance fillets for existing gravel entrances that extend beyond the paved shoulder shall be removed and replaced with shoulder stone. Sideroads will have paved fillets that go to the "Full Shoulder Design Width" (outside of combination shoulder).

21. RAISED TRAFFIC ISLAND TREATMENT

- a. South leg of PCC intersection of IA 92 and 145th Avenue/V33 (MP 198.08) with a stop sign in it. I believe V33 is an intersection associated with the Intersection Improvement Project NHSN-092-8(36)--2R-54 (ProjectWise: 5409203016, being designed by Stanley Consultants). Is treatment of this Traffic Island included in the Intersection Project?
 - i. 2022-05-02 Field Exam Response: District 5 Staff confirmed that the Raised Traffic Island will be removed with the Intersection Improvement Project (NHSN-092-8(36)--2R-54).

22. CURB TREATMENT

- a. There are raised medians at the intersection of IA 92 and IA 21 and the intersection of IA 92 and 145th Avenue (V33). Are these raised medians being addressed by the intersection improvement Project NHSN-092-8(36)--2R-54 (ProjectWise: 5409203016, being designed by Stanley Consultants)? According to the 4/19/2022 "Status Set" in the ProjectWise directory it appears as though the medians are within the limits of Project NHSN-092-8(36)--2R-54. See PROJECT LIMITS section above for discussion relate to possible STOP and RESUME locations of this HMA Resurfacing Project.
 - i. 2022-05-02 Field Exam Response: District 5 Staff confirmed that the Raised Medians will be removed with the Intersection Improvement Project (NHSN-092-8(36)--2R-54).

23. ADDITIONAL TOPICS TO BE RESOLVED AS THE PROJECT PROGRESSES

- a. Project Coordination
- b. Tied Projects
 - i. 2022-05-02 Field Exam Response: See "LETTING DATE" Section above.
- c. Pavement Specifications
- d. Traffic Control
- e. Location and Environment Bureau (LEB) Information
- f. City and County Agreements

Combination Shoulder

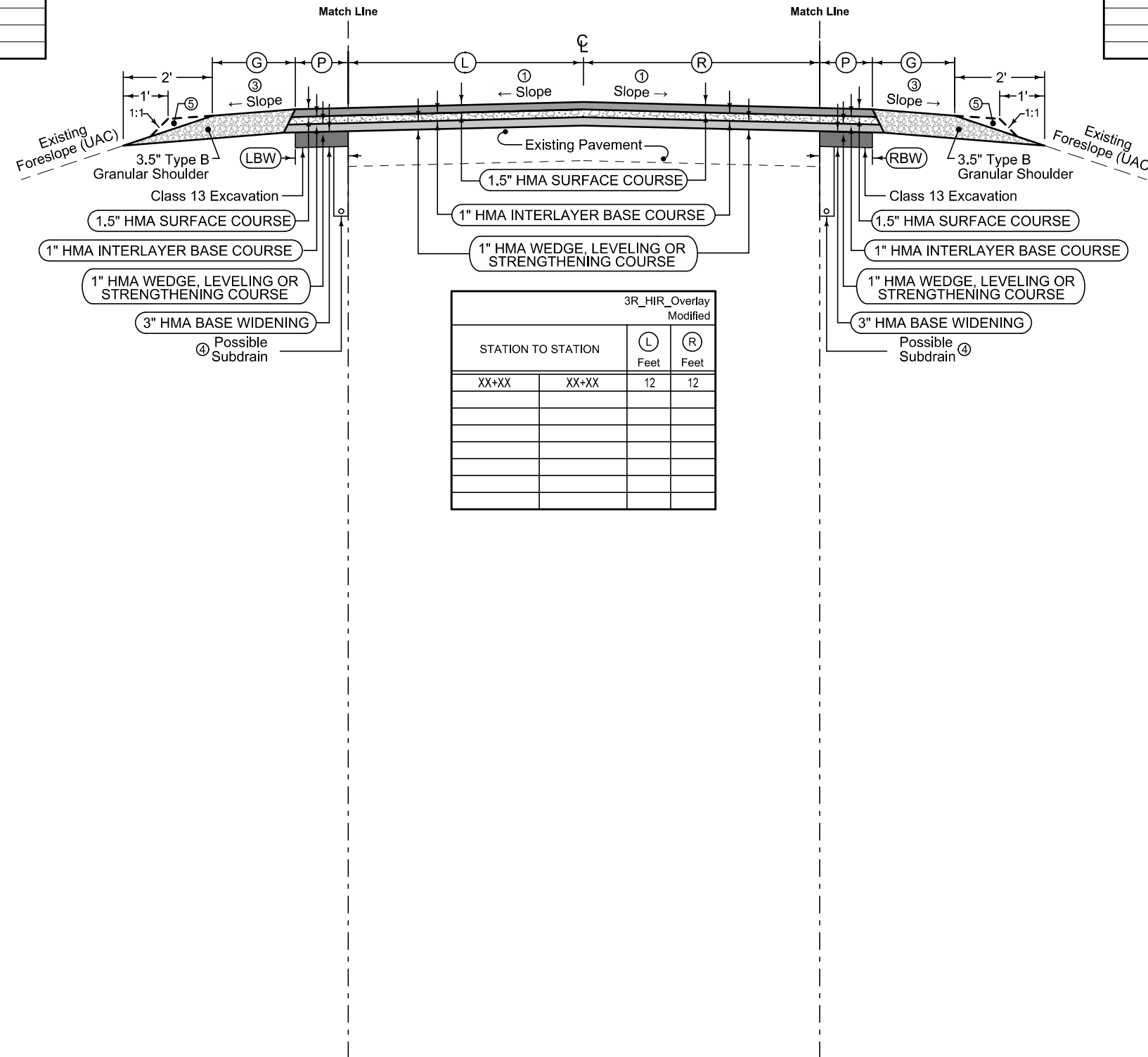
Shoulder Jointing:
Longitudinal joint: B

3R_Shldr_Paved_Modified					
STATION TO STATION		(LBW) Feet	(P) Feet	(G) Feet	REMARKS
XX+XX	XX+XX	4	4	6	

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

3R_Shldr_Paved_Modified					
STATION TO STATION		(RBW) Feet	(P) Feet	(G) Feet	REMARKS
XX+XX	XX+XX	4	4	6	



3R_HIR_Overlay Modified			
STATION TO STATION		(L) Feet	(R) Feet
XX+XX	XX+XX	12	12

- ① Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shapimg.
- ② Finished slope of Auxiliary Lanes and Right Turn Lanes shall match existing except the minimum allowable slope is 3% and the maximum allowable slope is 4%. Section may be modified as directed by the Engineer through areas of special shapimg.
- ③ Finished slope of Shoulder shall have minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shapimg.
- ④ UAC existing subdrain. All existing subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be in contact with the granular material below the existing mainline pavement (see Tab 104-9 on CS sheets for proposed locations).
- ⑤ Place and compact material to the dashed lines; then blade and shape to foreslope that portion above the solid line in the outer 2 ft and roll with loaded truck tire.

Notes:

- 1. Stationing on typical sections does not include gapping for sideroads and entrances. Refer to tabulations and details for precise stationing and quantities.

IA 92 HMA WIDENING AND RESURFACING

Property Owners:
 R-Merle Sawyer
 S-Iva Utterback & Elsie Greenlee
 T-Dot Knowler
 U-J.A. Greenlee
 V-Lew B Amy Miller

BM. No 24
 EL. 804.28

BM. No 25
 EL. 790.74
 BM. No 25
 EL. 781.60

WASHINGTON TWP
 T7GN R13W
 SEC. 34

BM. No 26
 EL. 798.22

BM. No 26
 EL. 801.00

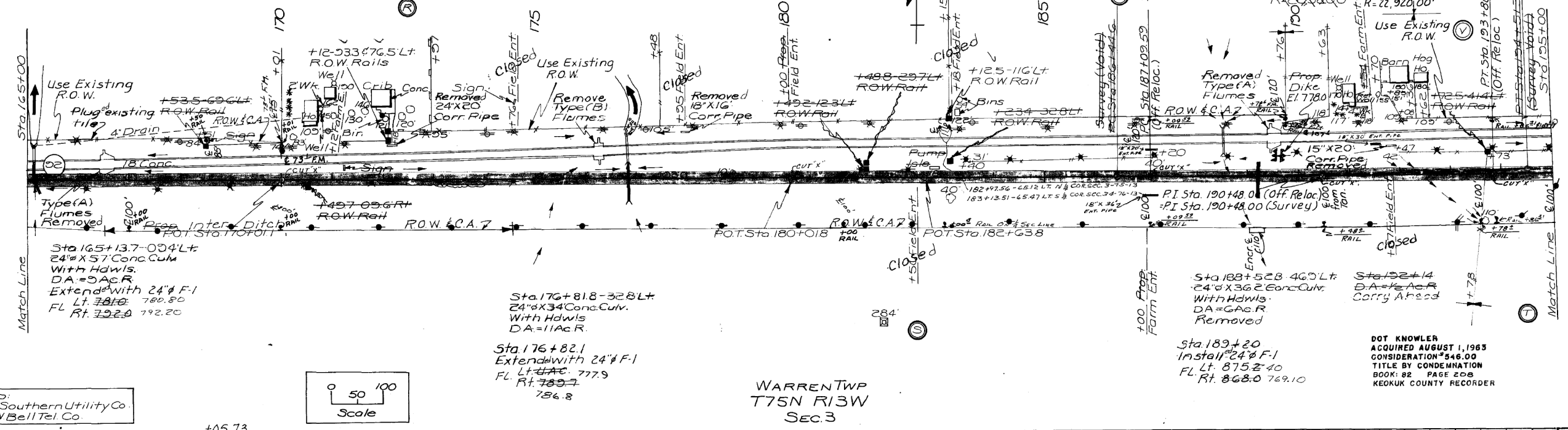
BM. No 27
 EL. 783.75

J. A. GREENLEE
 ACQUIRED APRIL 9, 1963
 CONSIDERATION \$125.00
 TITLE BY WARRANTY DEED
 BOOK: 81 PAGE: 358
 KEOKUK COUNTY RECORDER

Survey (Void)
 (Off Reloc.)
 $\Delta = 1^{\circ} 41' 30.5''$ Lt.
 $D = 0^{\circ} 15'$
 $T = 338.41'$
 $L = 676.72'$
 $E = 2.50'$
 $R = 22,920.00'$

LEW B AMY MILLER
 ACQUIRED FEBRUARY 27, 1963
 CONSIDERATION \$50.00
 TITLE BY WARRANTY DEED
 BOOK: 81 PAGE: 338
 KEOKUK COUNTY RECORDER

FED. DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
				34(5)	10 345



LEGEND:
 - Southern Utility Co.
 - NW Bell Tel. Co.

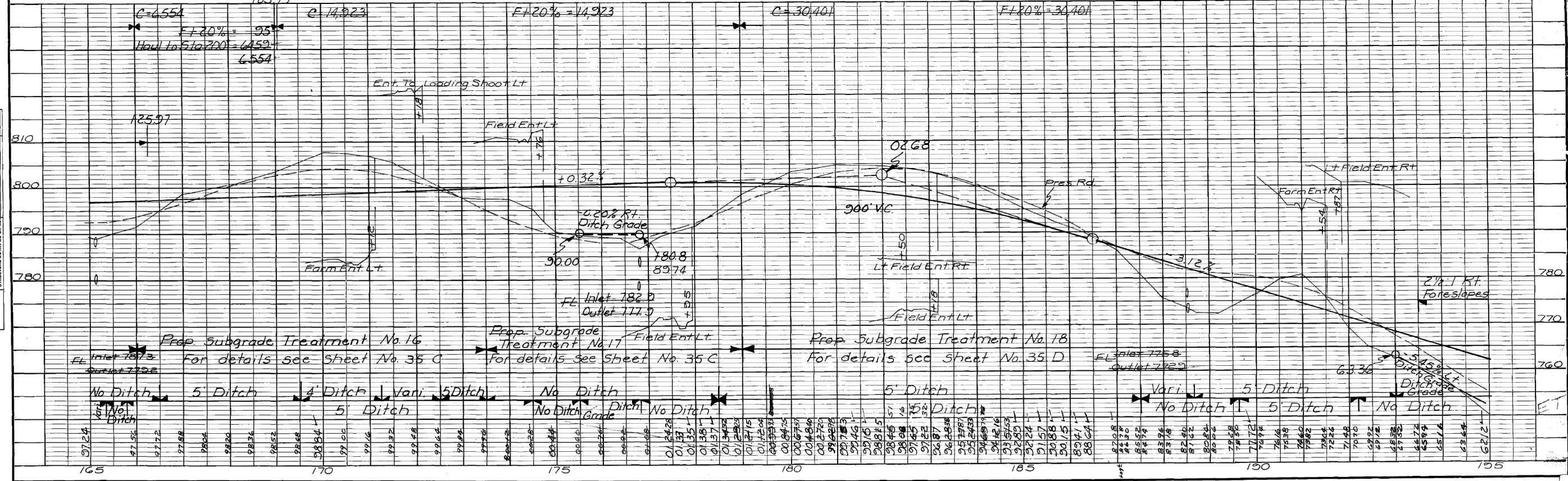
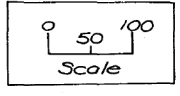


PLATE 1—PLAN PROFILE O. P. R. & R. E. STANDARD
 NO. 131—ANCHORING MADE AND PRINTED IN U. S. A.
 EUBANK DITZGEN CO., CHICAGO

Keokuk Co. F Proj. No. 34(5) Sheet No. 10

This Sheet
 For Information Only

B.M. No. 28
EL. 743.83
B.M. No. 28
EL. 742.11
B.M. No. 28
EL. 753.05

Property Owners:
T. Dot Knowler
V. Law & Army Miller
W. Jack Rockwell
X. Floy Taylor
Y. Leslie Goldman
AB - Leland C. & Bonnie L. Heisdorffer

B.M. No. 29
EL. 730.87

WASHINGTON TWP
T76N R13W

B.M. No. 30
EL. 742.77
B.M. No. 30
EL. 745.04

JACK ROCKWELL & GENEVIEVE ROCKWELL
ACQUIRED MARCH 1, 1963
CONSIDERATION \$ 572.50
TITLE BY WARRANTY DEED
BOOK: 86 PAGE: 423
KEOKUK COUNTY RECORDER

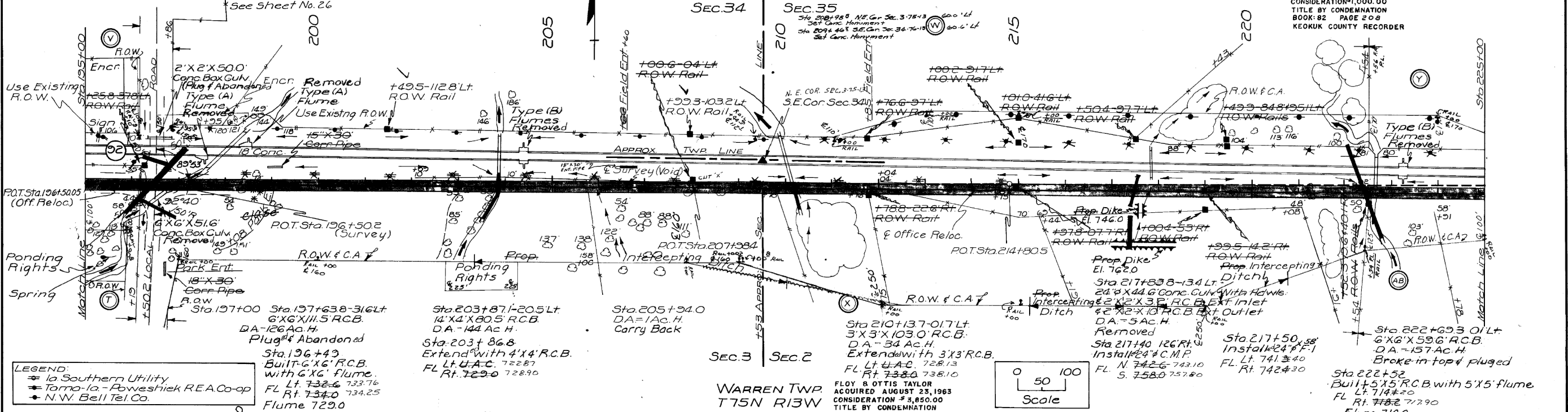
B.M. No. 31
EL. 745.86
B.M. No. 31
EL. 724.66

CLIFFORD R. GOLDMAN
ACQUIRED AUGUST 1, 1963
CONSIDERATION \$ 1,000.00
TITLE BY CONDEMNATION
BOOK: 82 PAGE: 208
KEOKUK COUNTY RECORDER

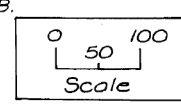
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		F-34(5)		11	345

DATE	BY	REVISION

PLAN	DATE	BY	REVISION



LEGEND:
 - Southern Utility
 - Tama-Ia-Poweshieck REA Co-op
 - N.W. Bell Tel. Co.



DATE	BY	REVISION

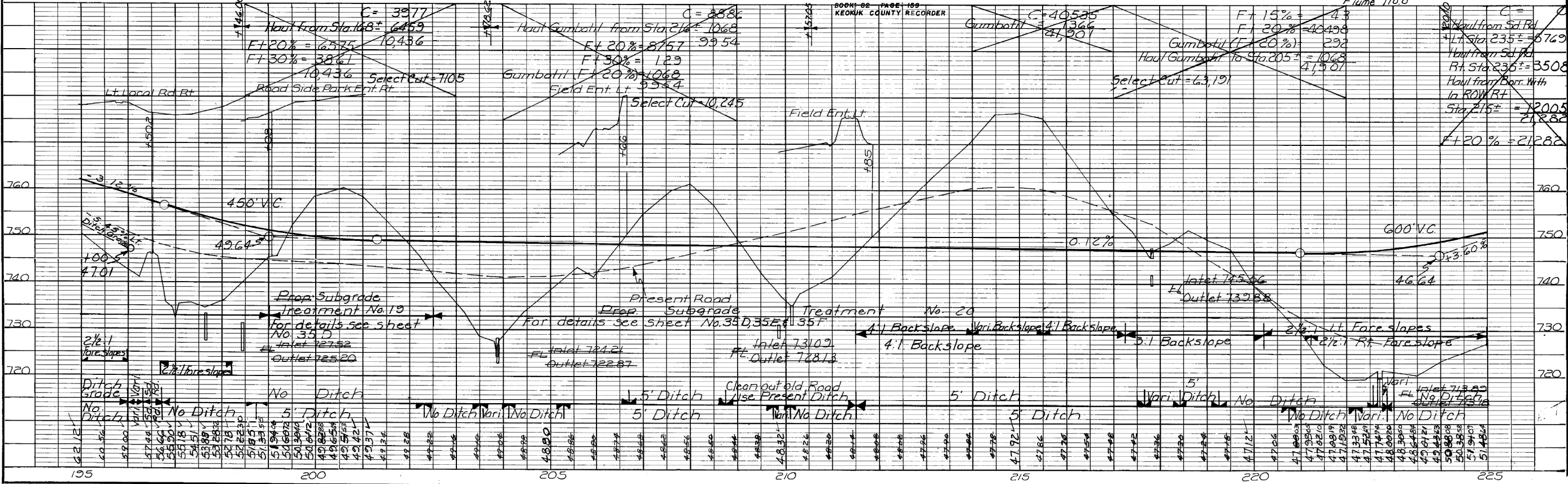


PLATE 1 - PLAN-PROFILE O. P. R. & R. E. STANDARD
NO. 131 APPROVED AND PRINTED IN U. S. A.
EUREKA DISTRICT CO., CHICAGO

This Sheet For Information Only

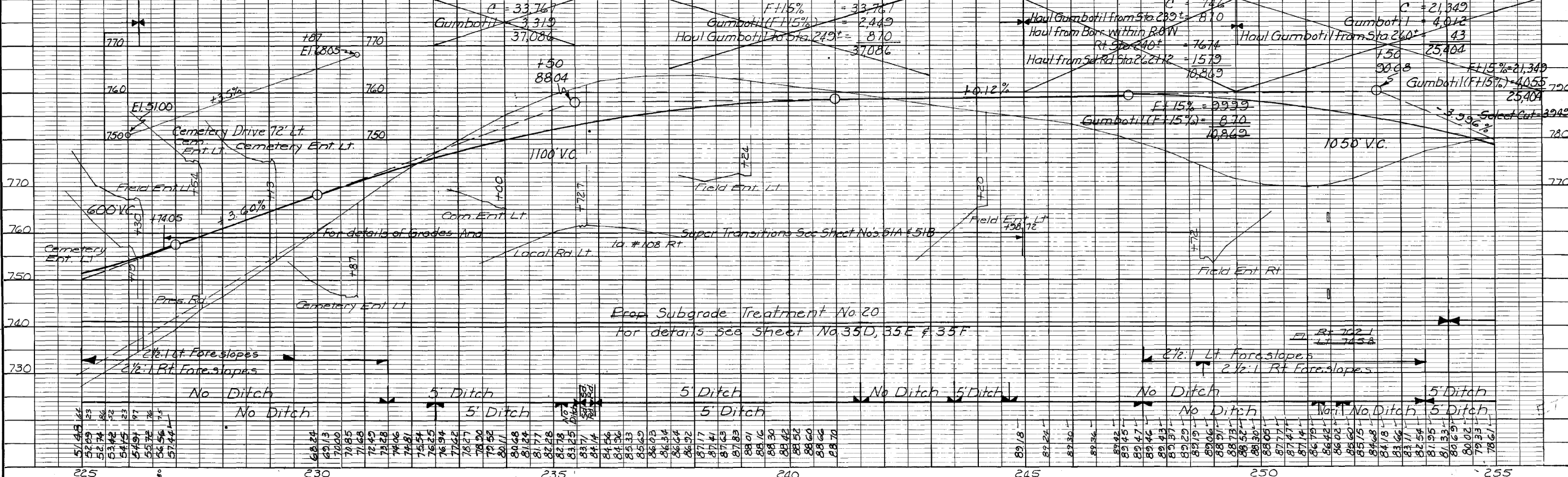
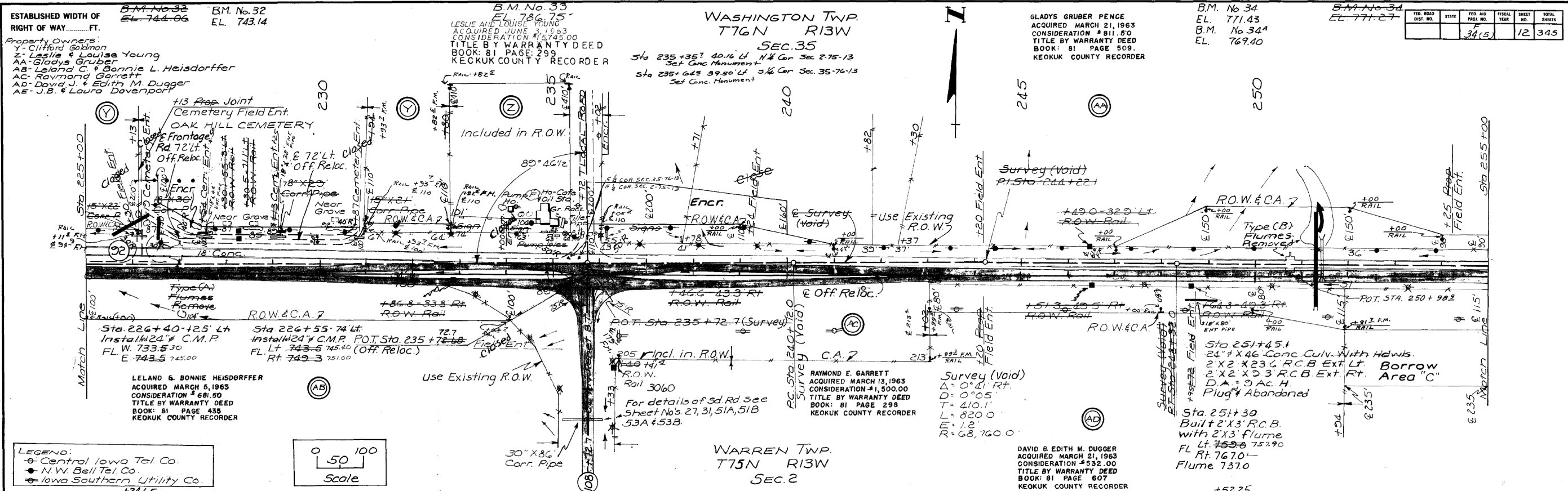


PLATE 1—PLAN-PROFILE D. P. R. & R. E. STANDARD
NO. 131 APPROVED MAKE AND PRINTED IN U. S. A.
EURENE OETZMAN CO., CHICAGO

Keokuk Co. F Proj. No. 34(5) Sheet No. 12

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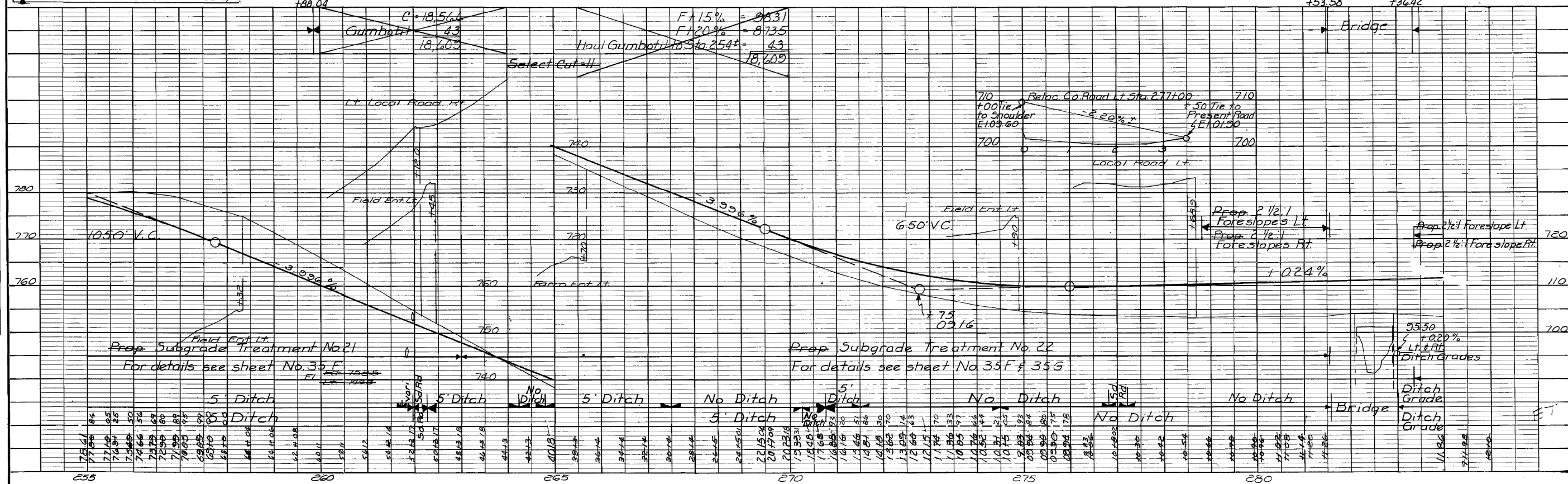
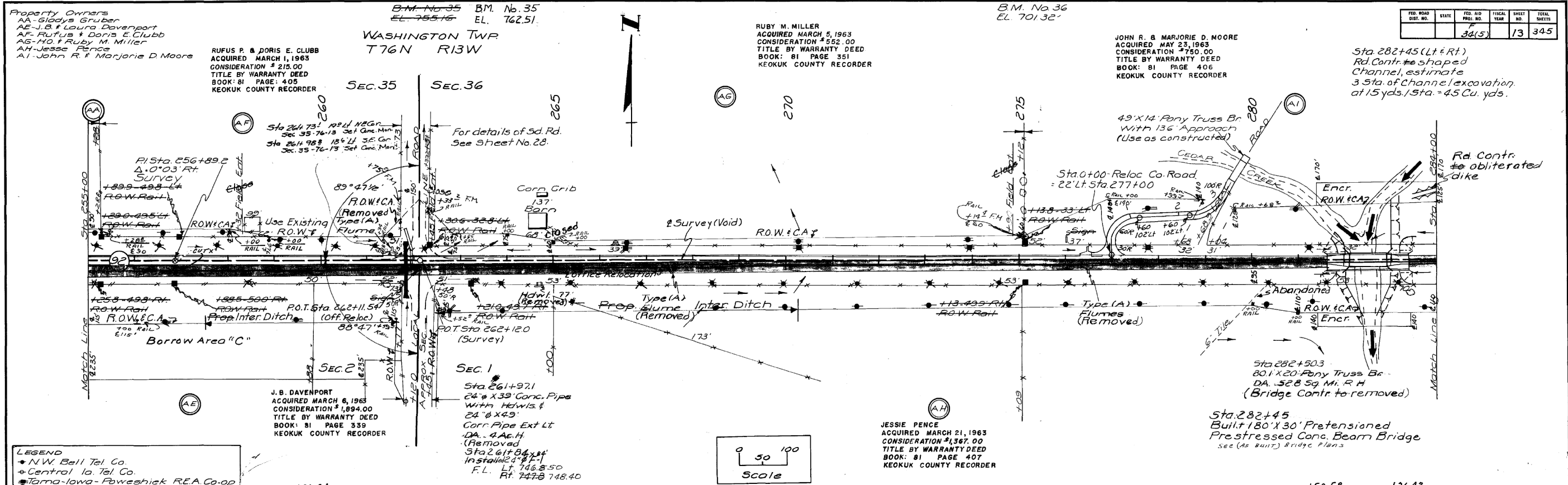


PLATE 1—PLAN-PROFILE O. P. R. & E. STANDARD
 NO. 131 ANKWRIGHT MADE AND PRINTED IN U. S. A.
 EUGENE DIETZEN CO., CHICAGO

Keokuk Co. F Proj. No. 34(5) Sheet No. 13

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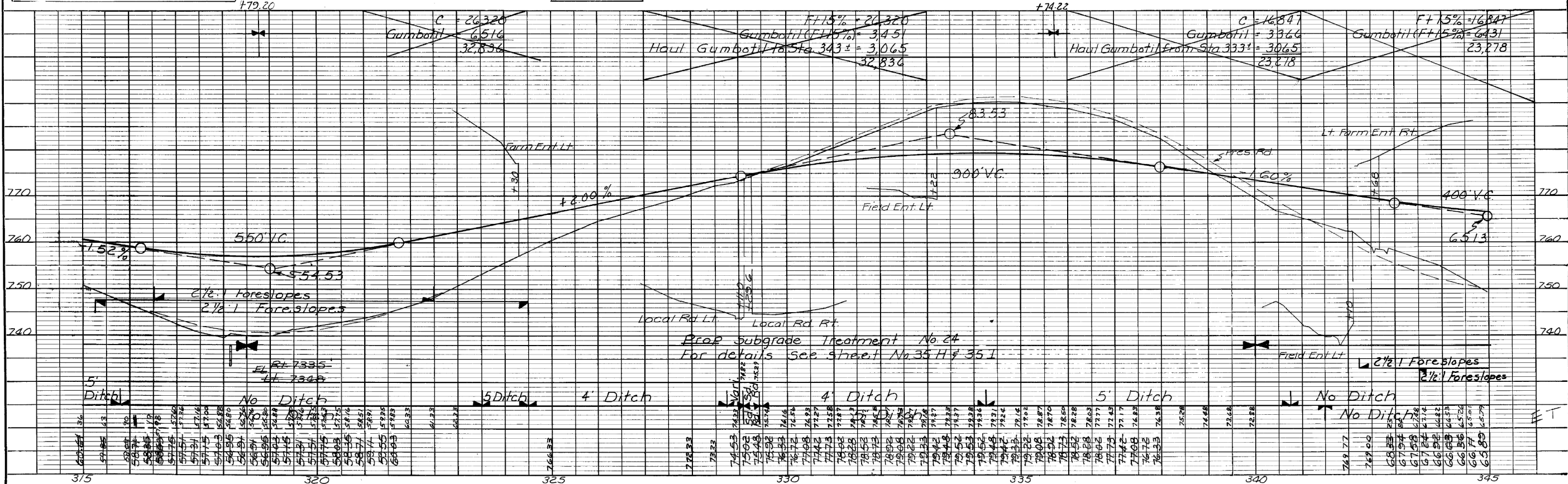
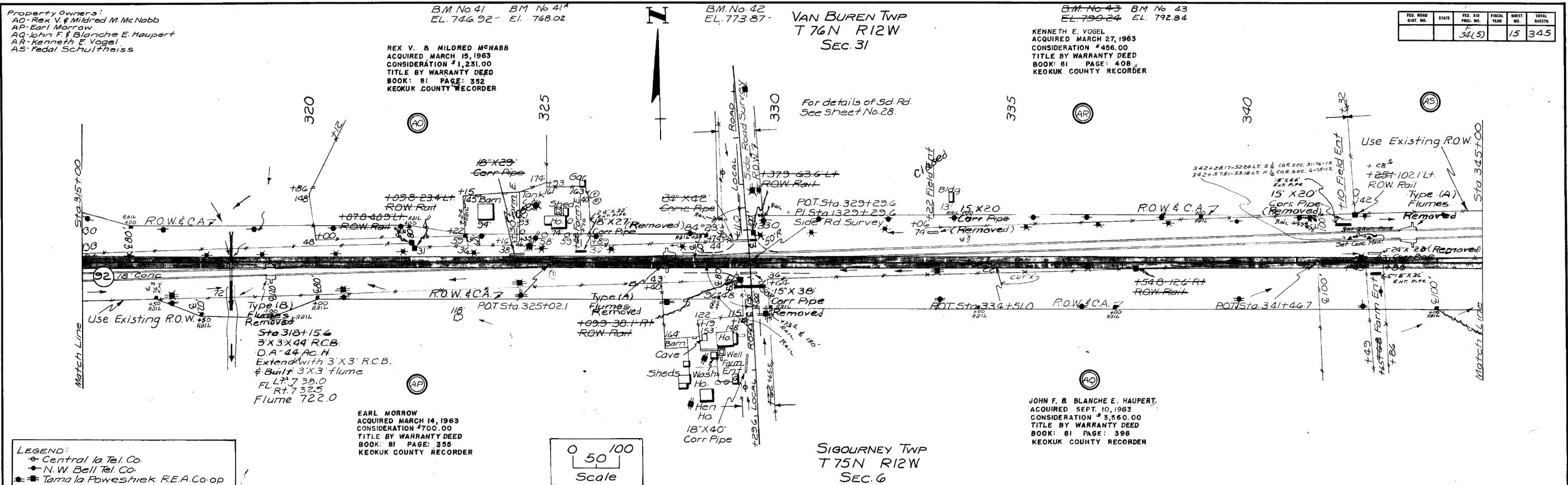


PLATE 1 - PLAN-PROFILE OF P. R. & R. E. STANDARD
NO. 131 APPROXIMATELY MADE AND PRINTED IN U. S. A.
EUGENE DETMERS CO., CHICAGO

Keokuk Co. F Proj No. 34 (5) Sheet No. 15

This Sheet
For Information Only

PLAN	SURVEYED	DATE
	NOTE BOOK	
	FLIPPED	
	PLOTTED	
	GRADES CHECKED	
	RT. OF WAY CHECKED	
	RT. OF WAY CHECKED	
	NO.	

PROFILE	SURVEYED	DATE
	NOTE BOOK	
	FLIPPED	
	PLOTTED	
	GRADES CHECKED	
	STRUCTURE NOTATIONS CHECKED	
	NO.	

Property Owners:
 AZ-Dale E. Stanley & Dorothy A. Stanley
 BA-Anna Peiffer
 BB-Hazel L. Turner
 BC-VA Carmichael

BM No 57 BM No 57
 EL 734.47 EL. 786.82

VAN BUREN TWP
 T7GN R12W

BM No 58 BM No 58
 EL 766.69 EL. 761.67

B.M. No 59
 EL. 773.04-

B.M. No 60
 EL 750.02
 B.M. No 60
 EL 746.15
 B.M. No 60
 EL. 767.59

B.M. No 61
 EL 753.73
 B.M. No 61
 EL. 753.29

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		34 (5)		20	345

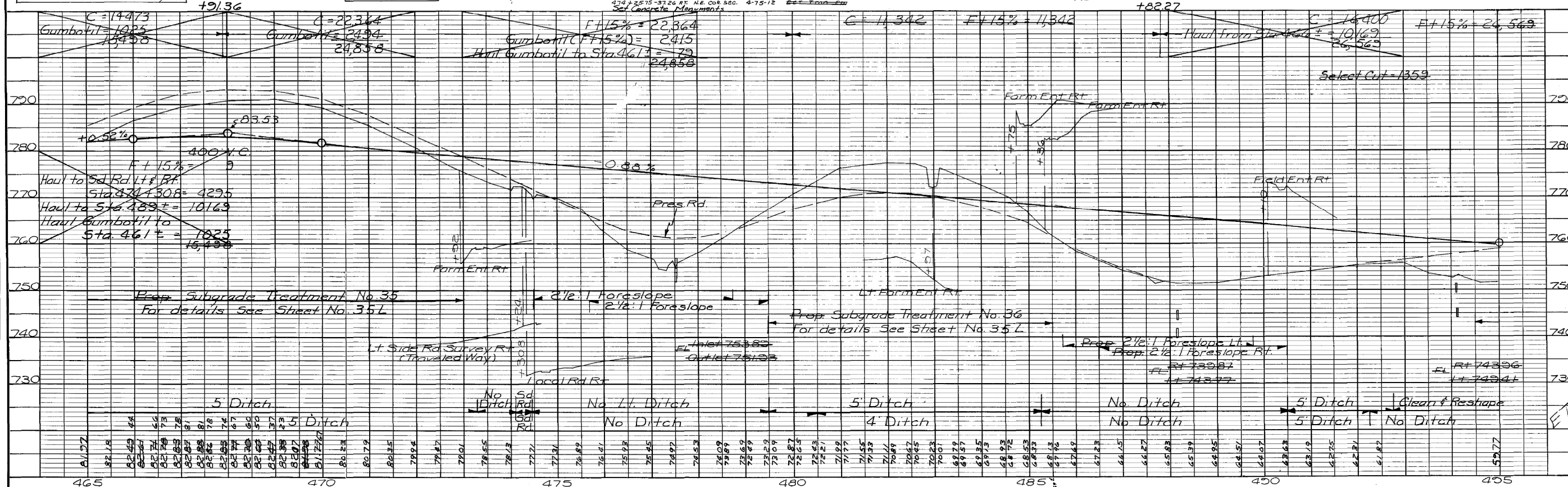
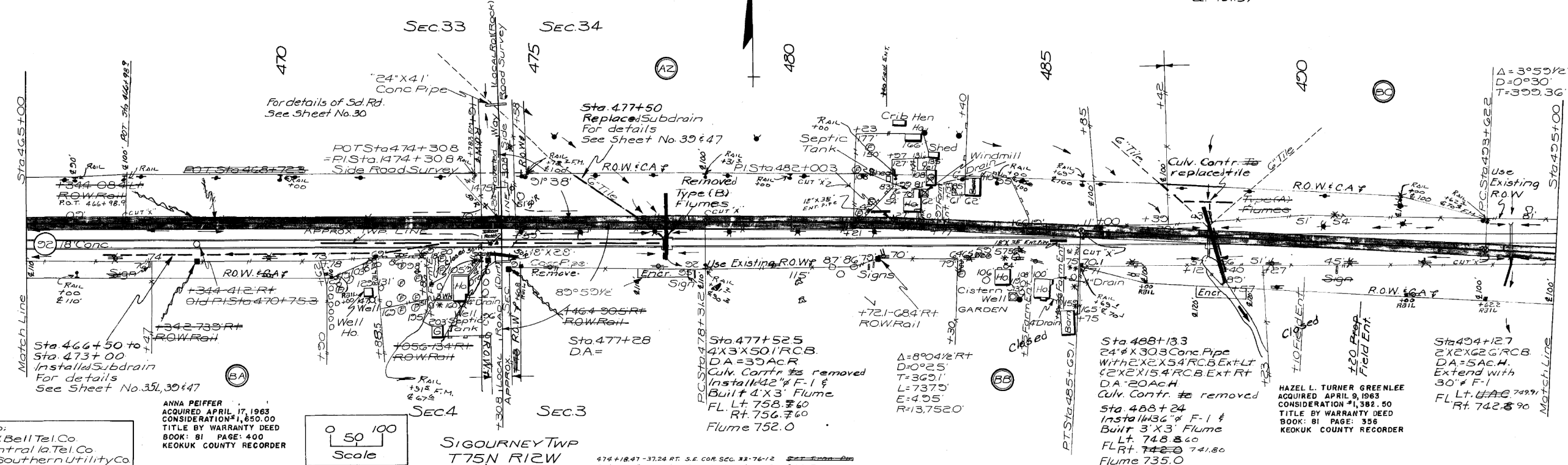


PLATE 1—PLAN PROFILE O. P. R. & R. E. STANDARD
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 EUBENE DIETZSEN CO., CHICAGO

Keokuk Co. F Proj. No. 34 (5) Sheet No. 20

This Sheet
 For Information Only

Property Owners:
 BB- Hazel L. Turner
 BC- V.A. Carmichael
 BD- Earl B. Hammond
 BE- Earl D. & Clara L. Noller
 BF- Ergo Isobaker

V.A. CARMICHAEL
 ACQUIRED AUGUST 1, 1963
 CONSIDERATION
 TITLE BY CONDEMNATION
 BOOK: 82 PAGE: 208
 KEOKUK COUNTY RECORDER

B.M. No. 62
 EL. 734.23
 GOLDA B. HAMMOND
 ACQUIRED MARCH 21, 1963
 CONSIDERATION \$1,500.00
 TITLE BY WARRANTY DEED
 BOOK: 81 PAGE: 434
 KEOKUK COUNTY RECORDER

VAN BUREN TWP
 T76N R12W
 SEC. 34

ERGO & LOUIE ISOBAKER
 ACQUIRED APRIL 2, 1963
 CONSIDERATION \$2,487.50
 TITLE BY WARRANTY DEED
 BOOK: 82 PAGE: 99
 KEOKUK COUNTY RECORDER

B.M. No. 63
 EL. 680.66

FEED NO.	DIST. NO.	STATE	FEED. AND PROJ. NO.	TOTAL SHEETS	SHEET NO.	TOTAL SHEETS
			F 34(5)	21	34.5	

Sta. 518+50+ (Left)
 Rd. Contr. to Shaped
 channel, estimate
 2 Sta. of channel
 excav. at 15yds. Sta.
 = 30 cu. yds.

DATE	BY	REVISION
		PROVIDED
		ALIGNED CHECKED
		NOTE BOOK
		NO. OF WAY CHECKED

DATE	BY	REVISION
		PROVIDED
		GRADES CHECKED
		B.M. NOTED
		STRUCTURE NOTATIONS OK'D

LEGEND:
 ● N.W. Bell Tell Co.
 ⊕ la Southern Utility Co.
 ⊕ Central la Power Co-op

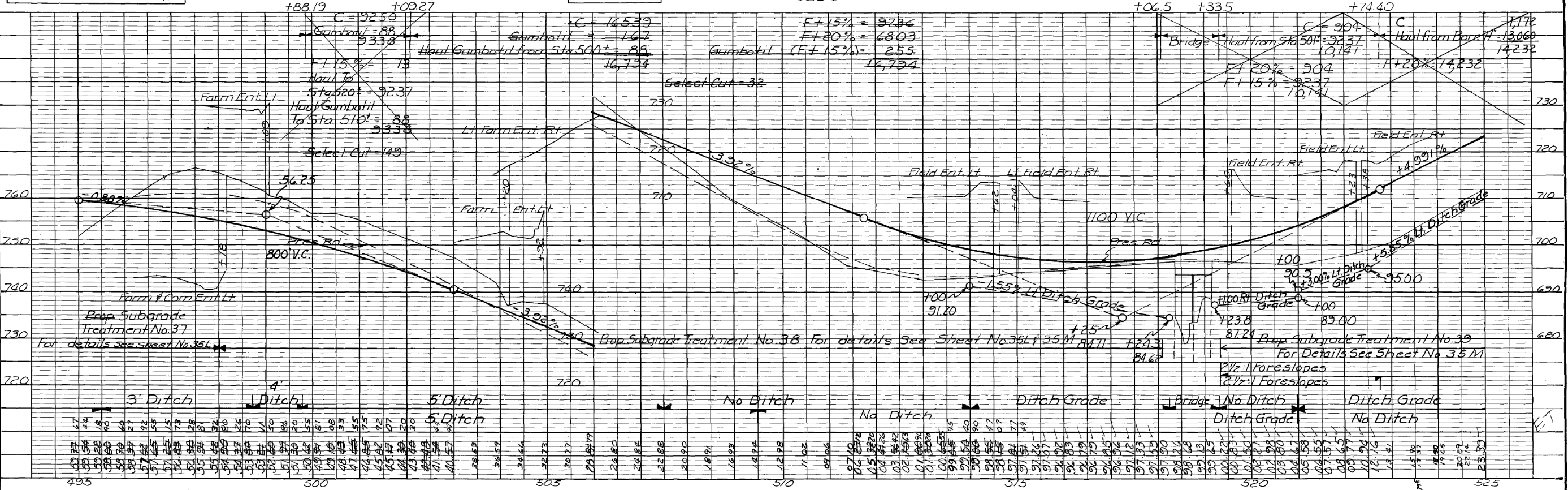
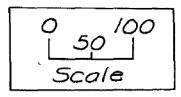


PLATE 1—PLAN-PROFILE O. P. R. & R. E. STANDARD
 NO. 131 (REVISED) MADE AND PRINTED IN U. S. A.
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Keokuk Co. F Proj. No. 34(5)

Sheet No. 21

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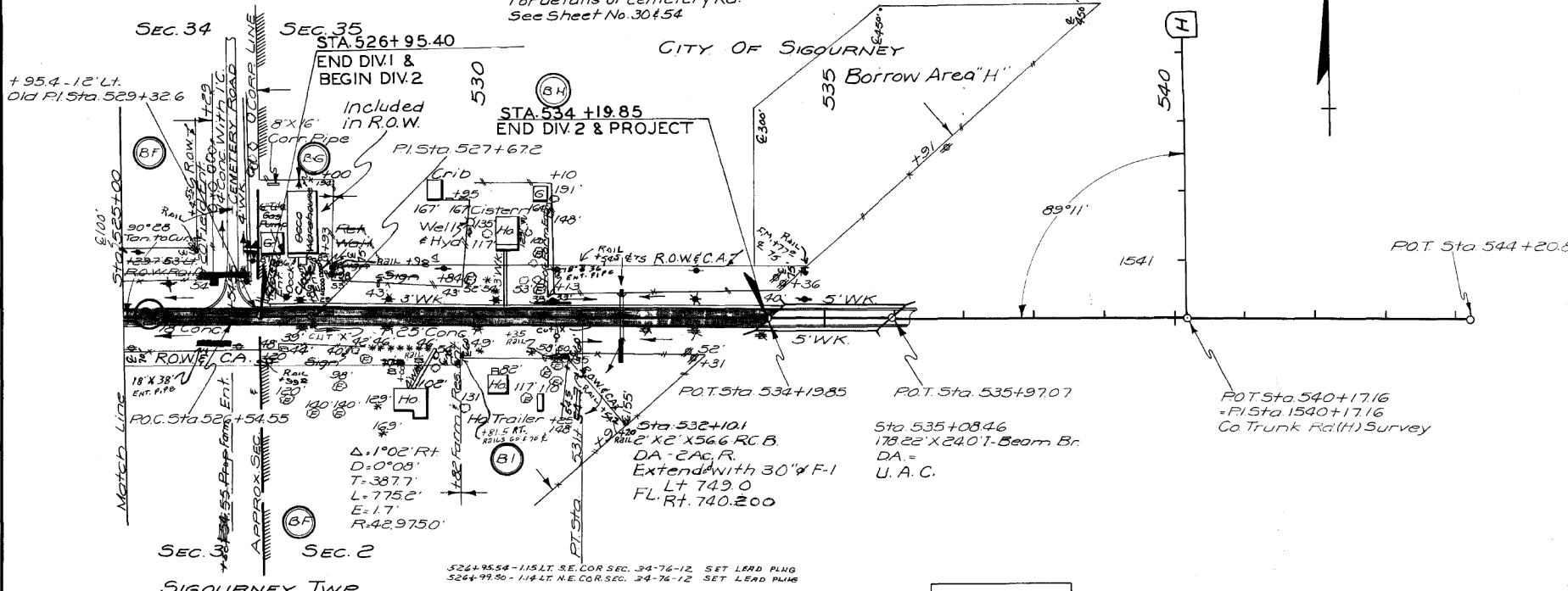
ESTABLISHED WIDTH OF RIGHT OF WAY... FT. VAN BUREN TWP T 76 N R 12 W

B.M. No. 64 EL. 723.96 B.M. No. 65 EL. 762.42 B.M. No. 66 EL. 768.83

Property Owners
 BF- Ergo Isobaker
 BG- George J. Norman
 BH- Harold Strobel
 BI- Robert L. Morgan
 For details of Cemetery Rd. See Sheet No. 30 & 54

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		34(5)		22	345

- (BG) GEORGE J. NORMAN
ACQUIRED APRIL 30, 1963
CONSIDERATION \$14,000.00
TITLE BY WARRANTY DEED
BOOK: 82 PAGE: 90
KEOKUK COUNTY RECORDER
- (BH) HAROLD STROBEL
ACQUIRED MAY 21, 1963
CONSIDERATION \$2,332.50
TITLE BY WARRANTY DEED
BOOK: 81 PAGE: 402
KEOKUK COUNTY RECORDER
- (BI) ROBERT L. & JENNIE LEE MORGAN
ERGO & HELEN ISOBAKER
ACQUIRED APRIL 2, 1963
CONSIDERATION \$770.00
TITLE BY WARRANTY DEED
BOOK: 81 PAGE: 357
KEOKUK COUNTY RECORDER



DATE	BY	REVISION
		1. SURVEYED
		2. ALIGNED
		3. CHECKED
		4. BY

DATE	BY	REVISION
		1. SURVEYED
		2. GRADES CHECKED
		3. B.M. NOTED
		4. STRUCTURE NOTATIONS OK'D

LEGEND
 • N.W. Bell Tel Co.
 # Iowa Southern Utility Co.

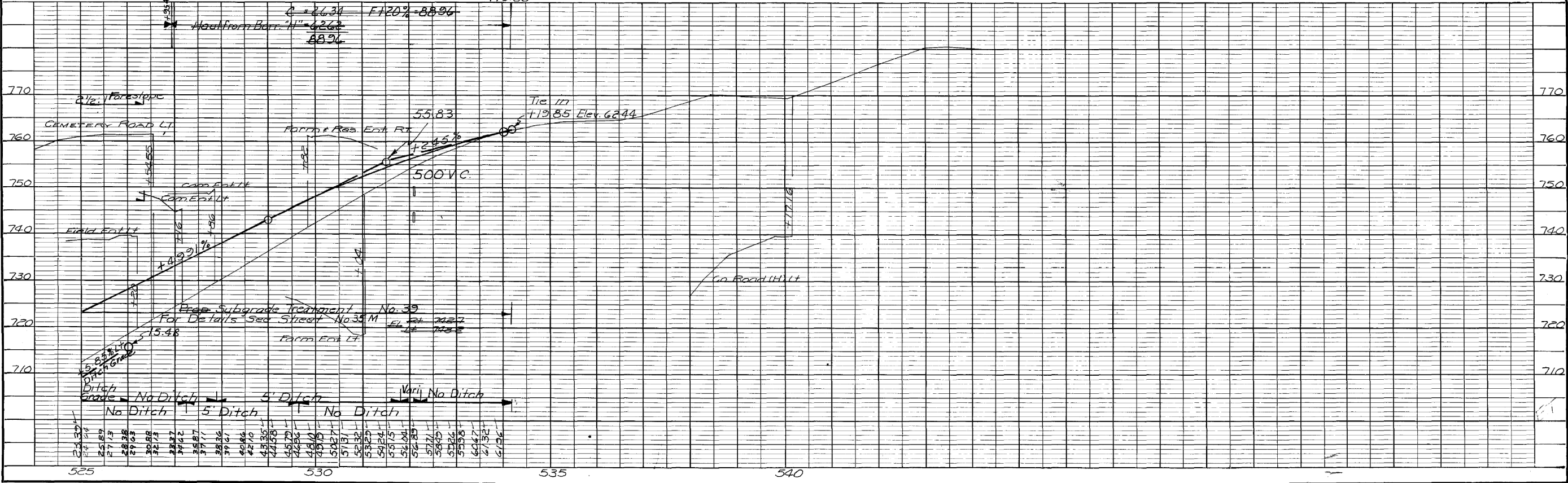
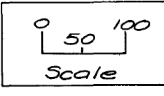


PLATE 1—PLAN-PROFILE O. P. R. & R. E. STANDARD
 NO. 131 REVISION MADE AND PRINTED IN U. S. A.
 ENGINE DISTRICT CO., CHICAGO

Keokuk Co. F Proj. No 34 (5)

Sheet No. 22

This Sheet For Information Only

108-23A
08-01-08

TRAFFIC CONTROL PLAN

1. Through traffic on IA 92 shall be maintained at all times.
2. Access to all properties shall be maintained at all times.
3. The detail on J.2 is the Traffic Control Plan for Centerline Rumble Strip installation on HMA surfaces. Pavement markings shall be replaced within 48 hours of removal.
4. If necessary to complete sideroad pavement replacement; lane closures and street closures shall be in accordance with TC-212, TC-251, and TC-252. Safety Closures or Type III barricades placed to protect work area will not be counted or paid for separately.

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 anticipated	

108-25
10-21-14

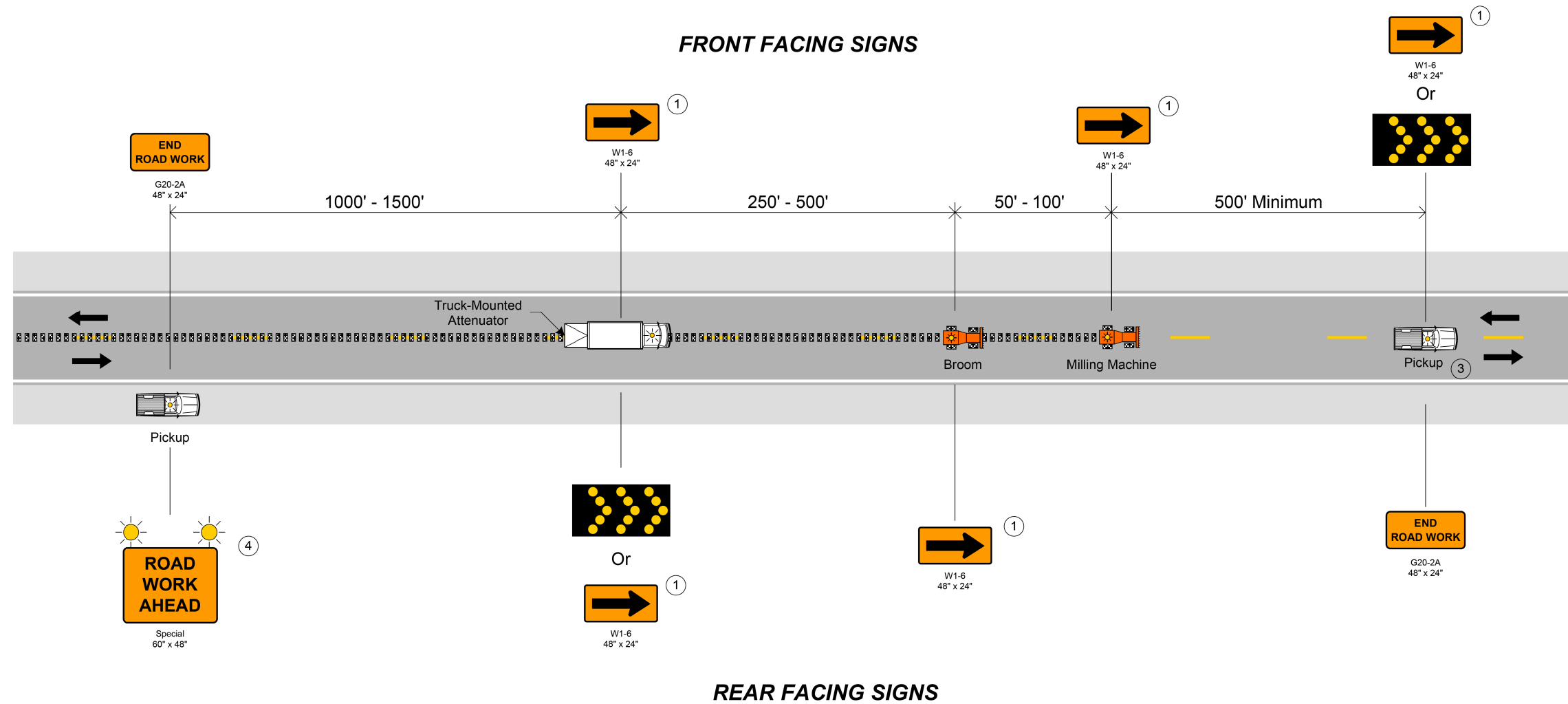
511 TRAVEL RESTRICTIONS

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
			None anticipated									

108-26A
08-01-08

STAGING NOTES

Blank area for staging notes.

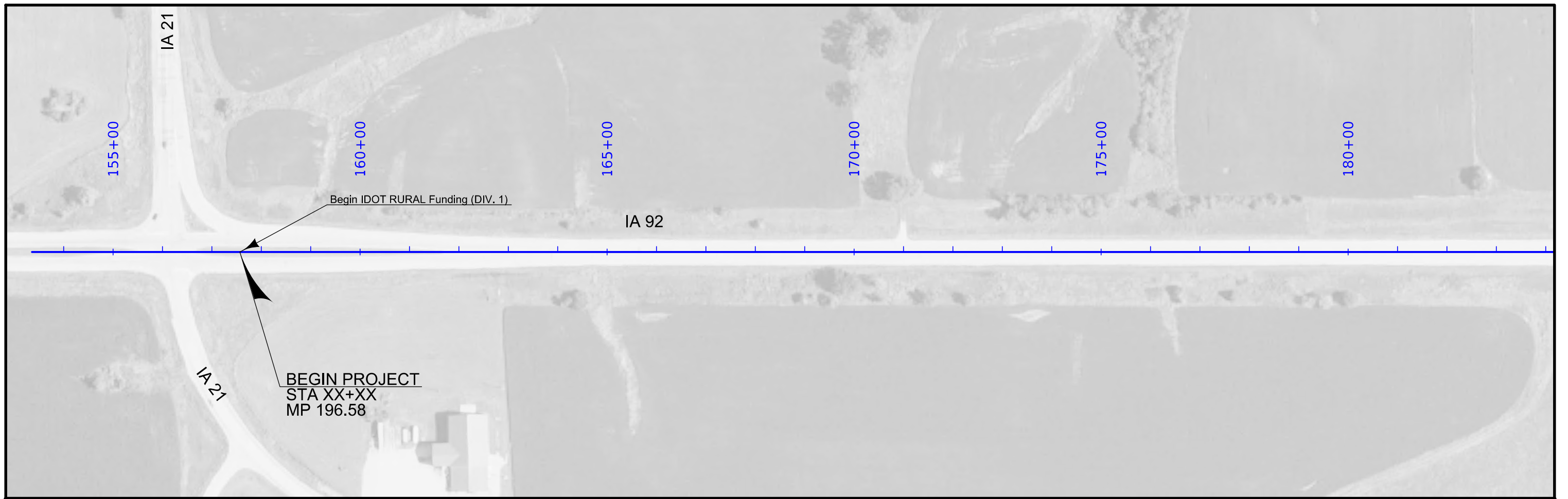


All vehicles shall be equipped with an amber revolving light or an amber strobe light.

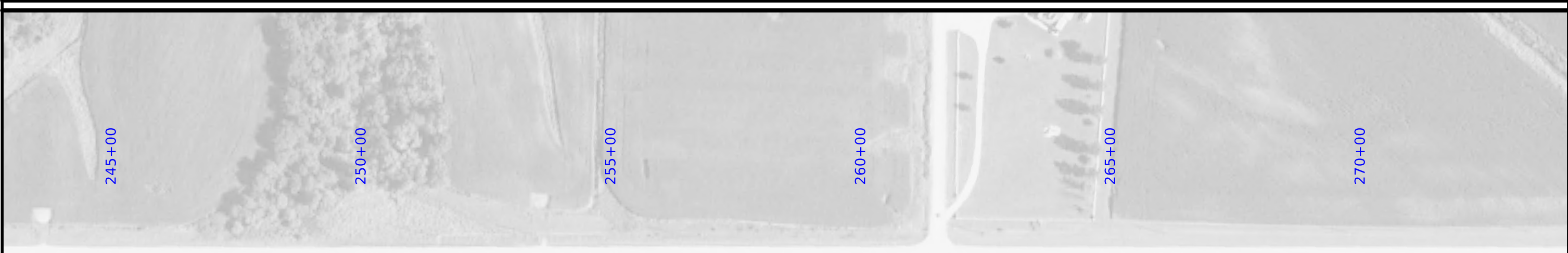
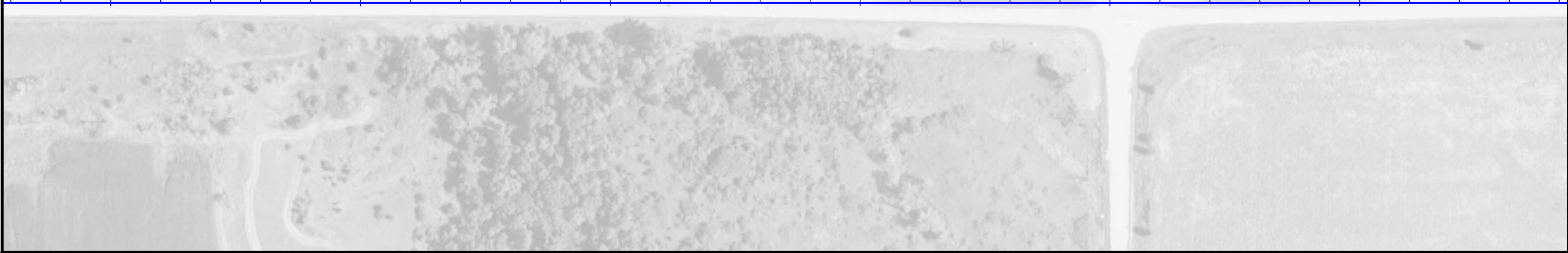
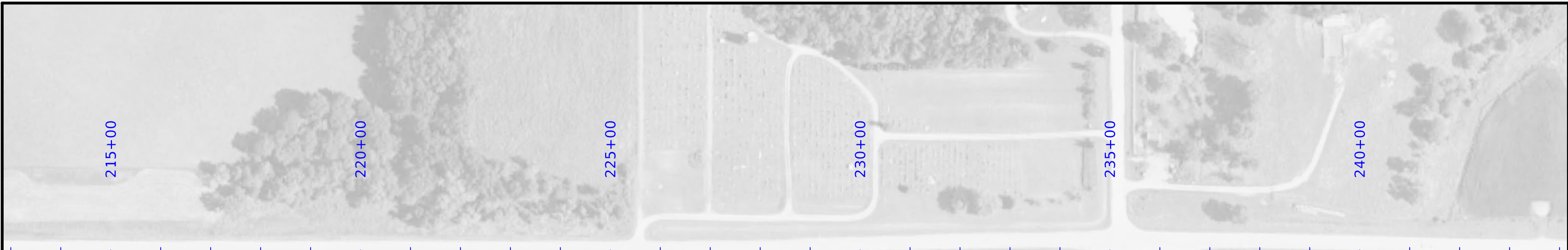
- ① Optional SYG sign background
- ② This arrow display may be operated in a four-corner caution mode.
- ③ This vehicle should move to the shoulder to accommodate passing traffic.
- ④ A vehicle-mounted CMS may be used in lieu of this sign.

01-17-19

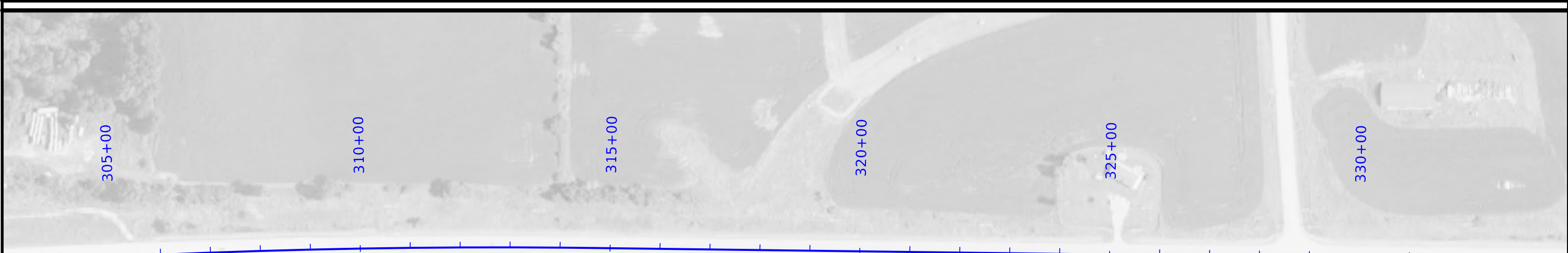
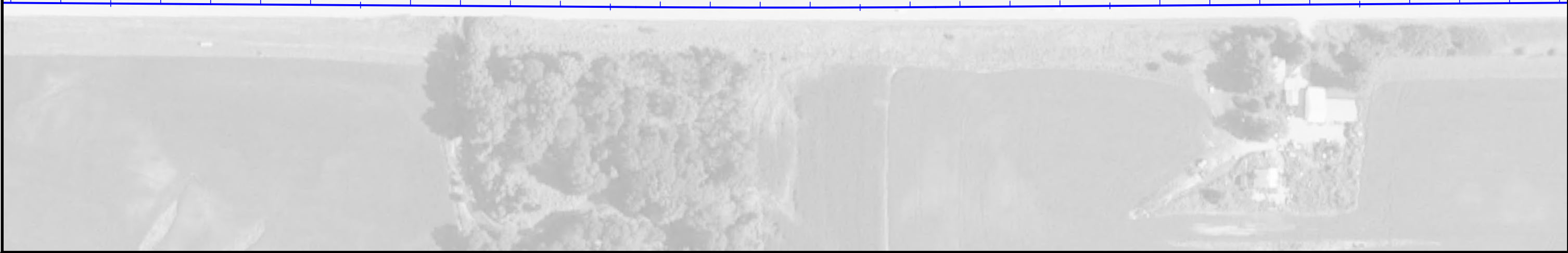
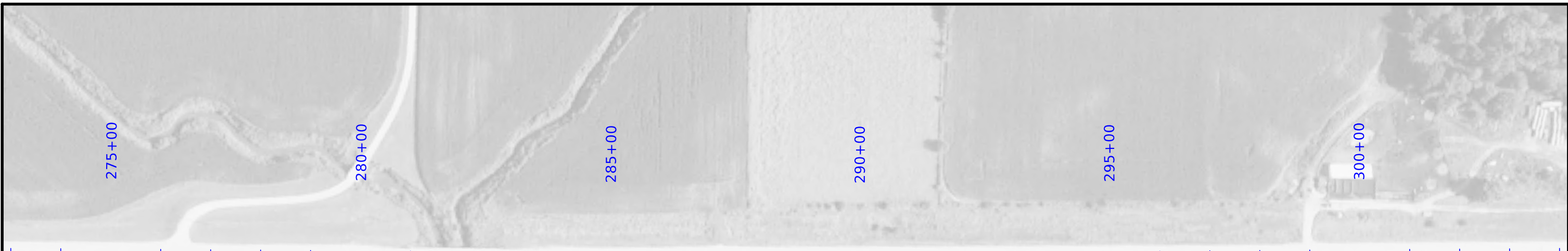
**CENTERLINE
RUMBLE STRIPS
TWO-LANE**

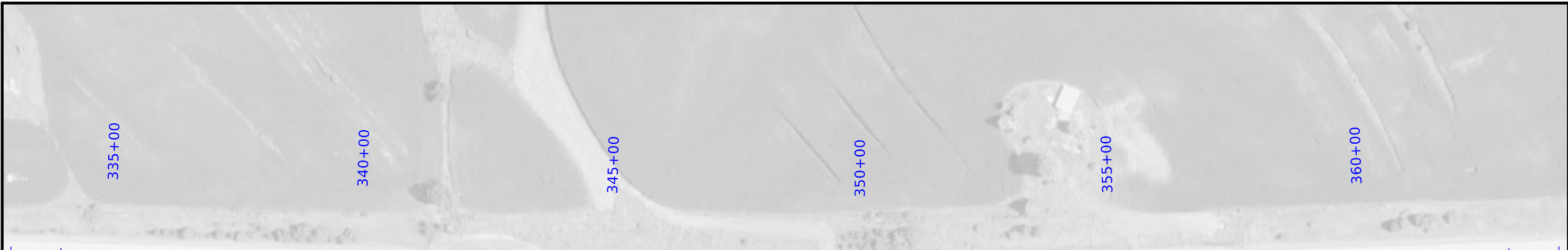


FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / CAMPBELL	KEOKUK COUNTY	PROJECT NUMBER NHSX-092-8(43)--3H-54	SHEET NUMBER D.1
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FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / CAMPBELL	KEOKUK COUNTY	PROJECT NUMBER NHSX-092-8(43)--3H-54	SHEET NUMBER D.2
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335+00

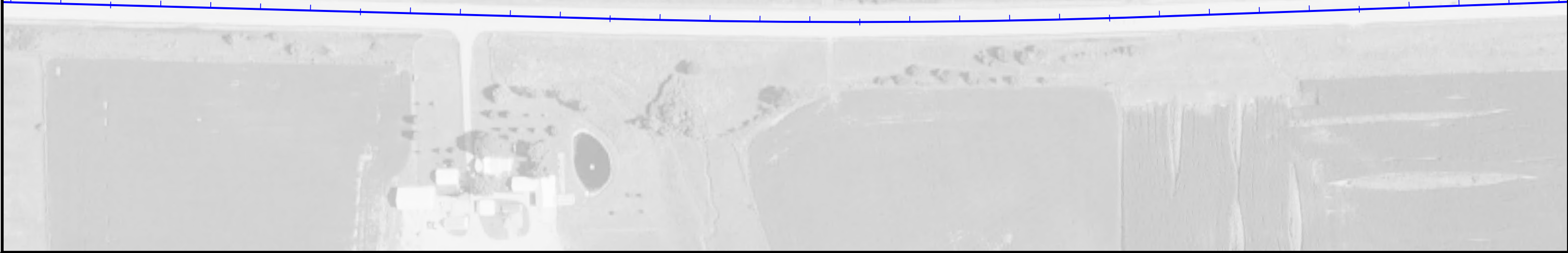
340+00

345+00

350+00

355+00

360+00



365+00

370+00

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380+00

385+00

390+00



395+00

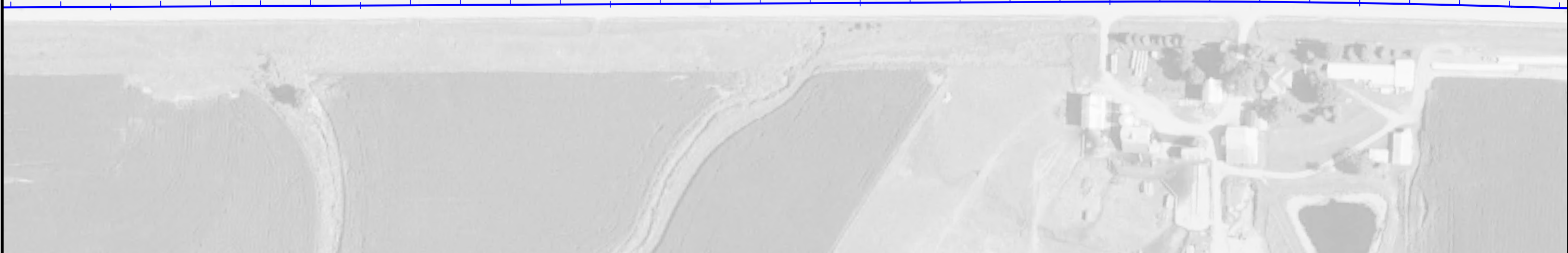
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410+00

415+00

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425+00

430+00

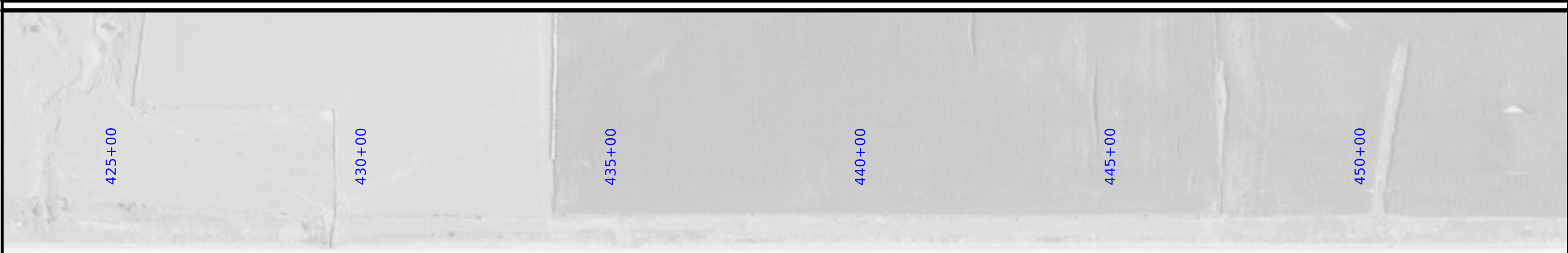
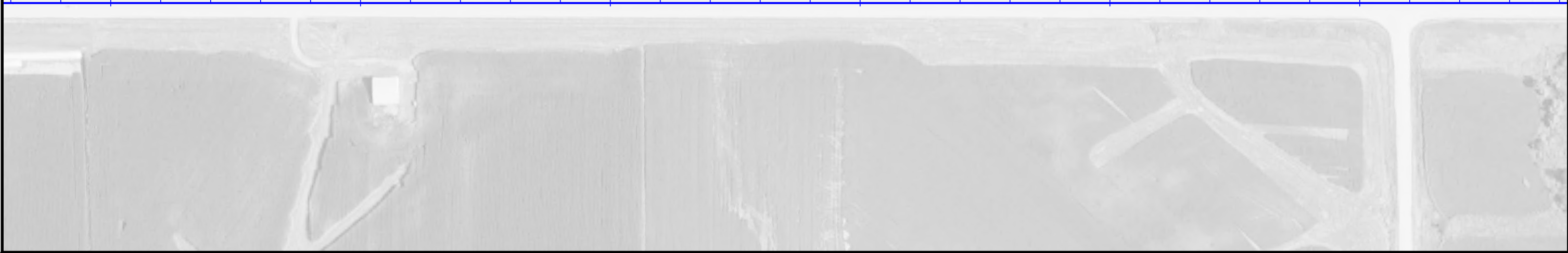
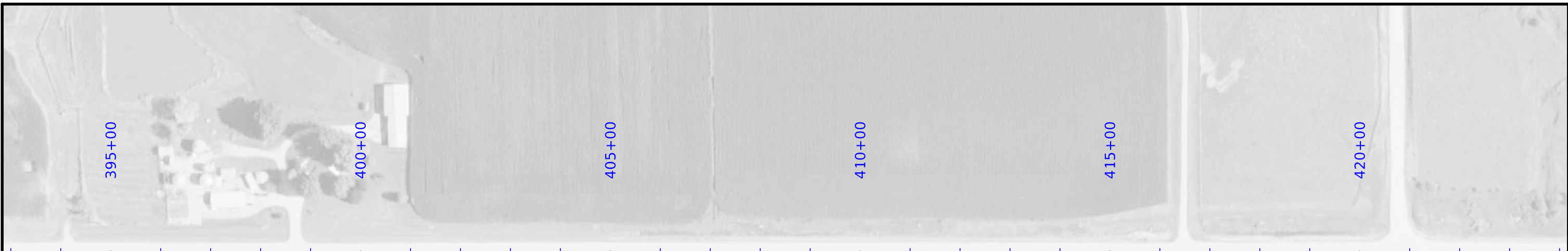
435+00

440+00

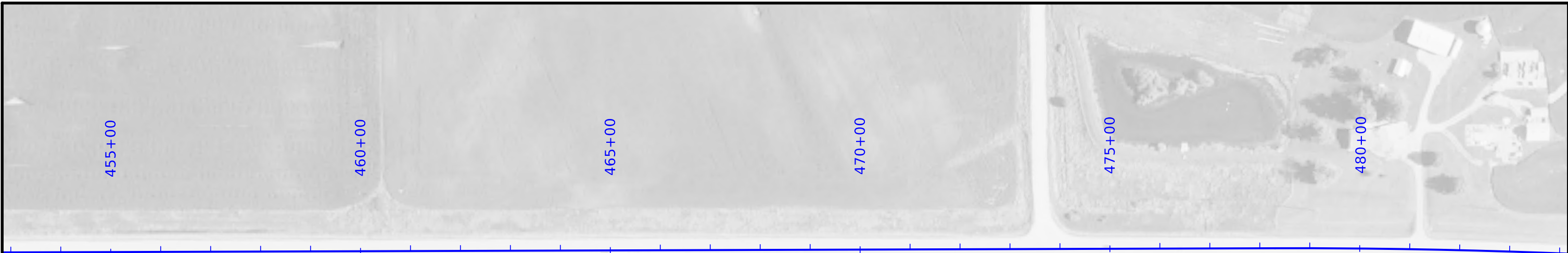
445+00

450+00

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / CAMPBELL	KEOKUK COUNTY	PROJECT NUMBER NHSX-092-8(43)--3H-54	SHEET NUMBER D.4
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455+00

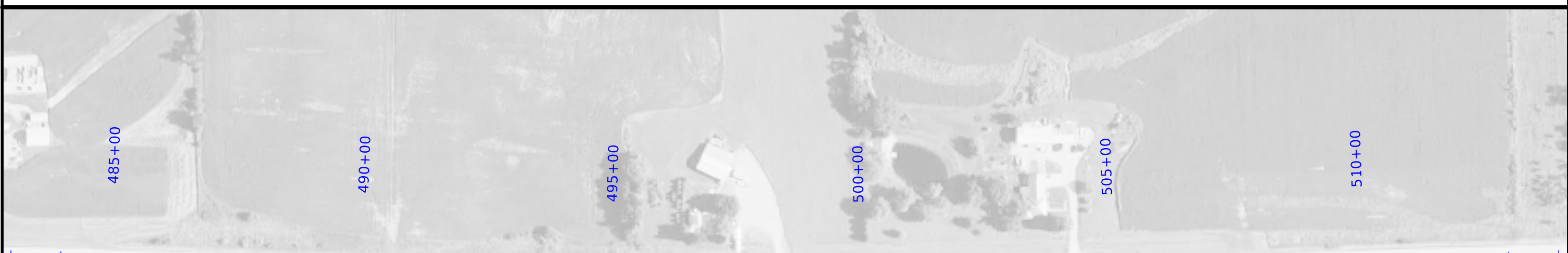
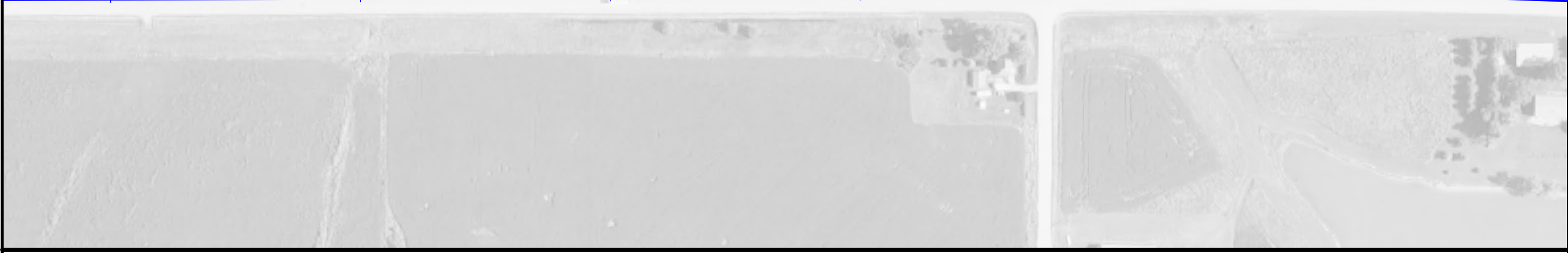
460+00

465+00

470+00

475+00

480+00



485+00

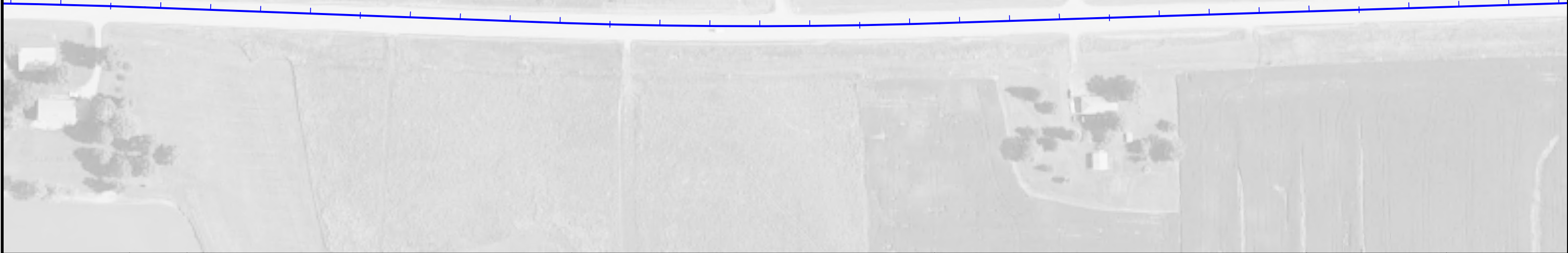
490+00

495+00

500+00

505+00

510+00



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