IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE:	District 5	**DATE:**	January 7th, 2016
ATTENTION:	James V. Armstrong	**PROJECT:**	Keokuk County NHSN-092-8(32)--2R-54
FROM:	Anthony J. Klein		PIN: 16-54-092-010
OFFICE:	District 5 Design		
SUBJECT:	FY 2017 – Slide Repair Project Concept - Final		

PROJECT LOCATION MAP: Page 3 or Click Here

DATE OF REVIEW: October 27, 2015

PARTICIPANTS:

District - A. Jared Klein; Maintenance – Brad Steinhart
Soils Design – Greg Moyle, Mark Dell

PROJECT DATA

ROUTE: IA 92; From IA 21 to Approx. 0.7 miles east of V67 (Various Locations).
MP 198.4 to MP 212.9 – Various Locations
PLANNING CLASSIFICATION: 3 (Area Development)
MAINTENANCE SERVICE LEVEL: B
TRAFFIC: 2014 --- 2,400 ADT with 11% trucks
PAVEMENT INFORMATION: N/A

SLIDE LOCATION/DESCRIPTION:

The following information is a summary of the field notes taken for each site.

IA 92, Near MM 198.4, Station 249+75 to Station 252+25 (Westbound)

The slide is located on the foreslope and is approximately 250 feet long by 50 feet wide. There is a relatively large transmission line power pole located within the limits of the slope instability, approximately at Station 251+80. The proposed repair will consist of benching and rebuilding the foreslope to the original design and the installation of drains. Due to the height of the foreslope, guardrail is anticipated. The power poles will need to be relocated, either temporarily or permanently to complete the repair. Clearing and grubbing will be required at this location. Field survey will be completed by District 5. Click here for a picture of the site. Link to relevant "as-built" plans: Click here. The estimated cost of this repair is $125,000.

IA 92, Near MM 199.6, Station 318+25 to Station 320+00 (Westbound)

The slide is located on the foreslope and is approximately 175 feet long by 20 feet wide. There is an existing pipe culvert directly to the west of the slide and is not impacted by the slide. The proposed repair will consist of benching and flattening (within ROW) the foreslope, installing bench drains, and installing guardrail. Additional ROW will not be required. Field survey will be obtained from Lidar. Click here for pictures of the site. Link to relevant "as-built" plans: Click here. The estimated cost of this repair is $25,000.

IA 92, Near MM 205.5, Station 160+60 (Eastbound)

The letdown for a 36" concrete pipe at this location has separated/failed which is causing erosion of the foreslope. This erosion has encroached into the outside edge of the existing gravel shoulder. There is also erosion near the outlet of the existing flume beyond the existing fence line. The proposed repair is to replace the half-round letdown with a concrete flume/basin. Plans will be prepared by the Office of Design and the Office of Bridge for this location. Additional ROW via a TE may be required to repair the erosion that has occurred beyond the ROW. Field survey will be obtained by the District. Click here for pictures of the site. Link to relevant "as-built" plans: Click here. The estimated cost of this repair is $50,000.

IA 92, Near MM 212.9, Station 516+50 to Station 518+10 (Eastbound)

The slide is located on the foreslope and is approximately 160 feet long by 30 feet wide. A previous repair at the eastern limits of the slide was done by DOT Maintenance consisting of benching and rebuilding a portion of the foreslope with broken concrete. The current scarp is near the outside edge of the gravel shoulder. The proposed repair will consist of benching and rebuilding the foreslope with Class 10 embankment to the original design, installing bench drains and guardrail is anticipated. Additional ROW will not be required. Field survey will be obtained from Lidar. Click here for pictures of the site. Link to relevant "as-built" plans: Click here. The estimated cost of this repair is $25,000.

CRASH DATA:

Crash data was not reviewed for this project.

RECOMMENDATIONS:

The recommendation is to repair the slide repairs sites as described above. The total estimated cost of the project is $ 225,000 with a 40% contingency that includes mobilization traffic control. Traffic will be maintained during construction. A temporary construction easement may be required for one location.

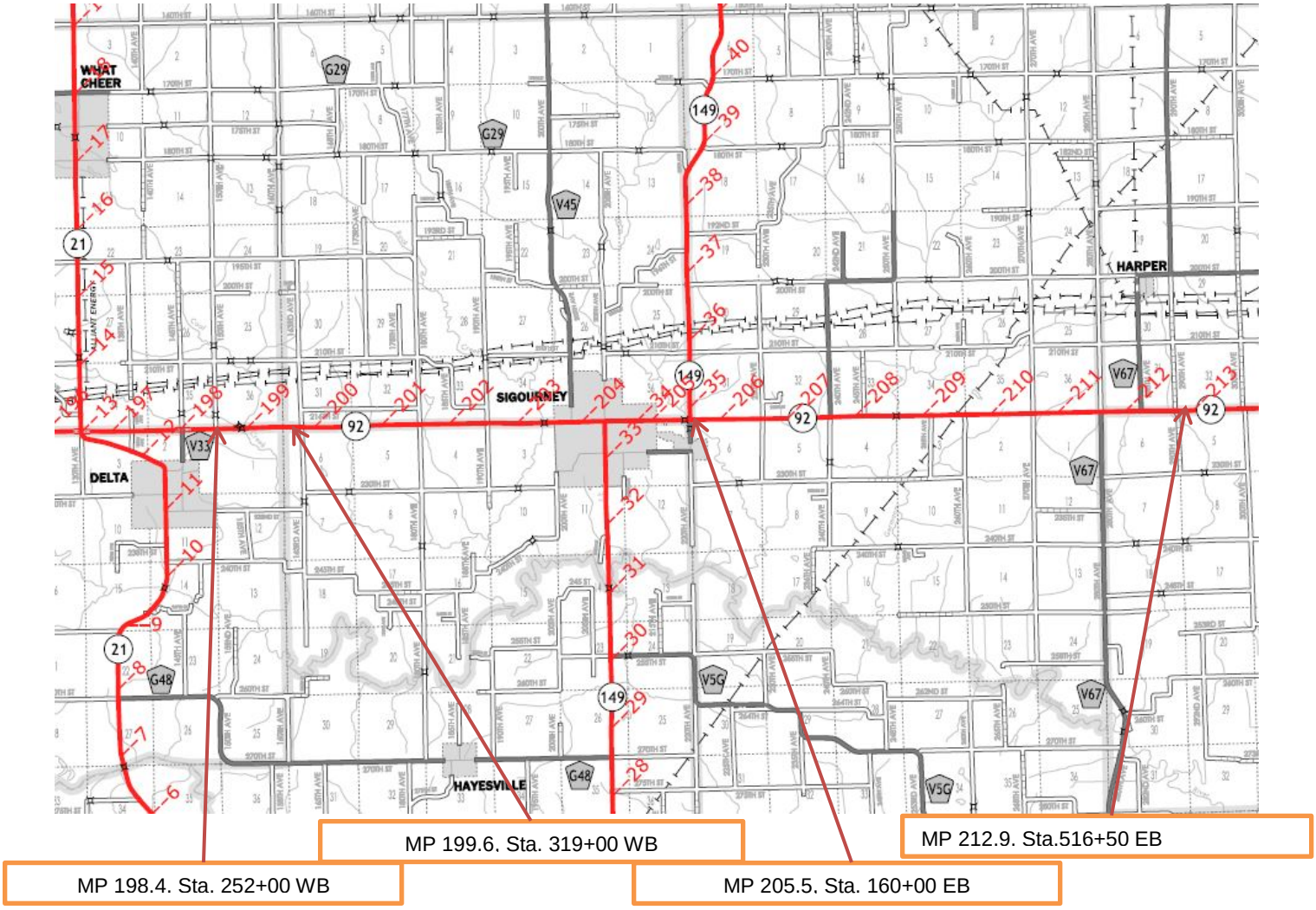
FUNDS PROGRAMMED:

This proposed project is not currently in the Five Year Program. It has been identified by the District 5 Office for construction in FY 2017 pending program approval. A schedule of events for plan development will be determined following approval of the Concept.

PROJECT AGREEMENTS:

No project agreements will be required for this project.

LOCATION MAP



cc:

J. F. Adam
K. D. Nicholson
S. J. Megivern
F. W. Todey
C. C. Poole
J. S. McClain
R. A. Younie
D. R. Tebben
A. Poole
G. Mulder
S. J. Gent
W.A. Sorenson
M. Van Dyke
J. D. Owen
B. M. Clancy
M. E. Ross
J. R. Selmer
D. L. Maifield
M. D. Masteller
A. A. Welch
N. L. McDonald
M. A. Swenson
S. P. Anderson
B. D. Hofer
D. L. Newell
T. D. Hanson
T. D. Crouch
D. E. Sprengeler
J. R. Webb
C. E. Belgarde
T. Quam
M. J. Kennerly
C. B. Brakke
B. R. Smith
N. M. Miller
G. A. Novey
P. C. Keen
Z. T. Bitting
J. N. Garton
B. E. Azeltine
S. A. Schram
J.W. Laaser-Webb
E. C. Wright
J. Huddle
J. R. Phillips
FHWA

FIELD CHECH LEFT DITCH ELEVATION
AND JACKING MAY BE ADJUSTED IN
THE FIELD

719.47

APPROX 160+60

APPROX 160+70

730.04

731.1

731.38

731.8

732.86

716.28

ROW

700.4

700.36

ROW

TEMP ROW 35' FROM ROW

TEMP ROW FOR JACKING

50' AHEAD AND BACK (100' TOTAL)
FROM JACKING LOCATION

on 25° skew

719.47 EXTRAPULATED
FROM ASBUILTS

731.8

731.4

716.28

719.47 EXTRAPULATED
FROM ASBUILTS

APPROX ROW

700.4

3' 1.5' 3'

2'

FILTER FABRIC

QUANTITYS
32.4 TONS RIP RAP
45 SQ YDS ENG FABRIC
10 CUBIC YDS CLASS 10

OUTLET
ELEV = 700.4

3' 1.5' 3'

2'

FILTER FABRIC

CROSS SECTION A-A

15'

6'

18'

9'

KEOKUK COUNTY GRADING-P.C.C. PAVING AND A.C. RESURFACING
P.C.C. PAVEMENT WIDENING GRADING (SHOULDERING)
LIGHTING

LETTING DATE April 25, 1967

F - 92-3(2)--20-54

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		1	28

PROJECT NUMBER
F-92-8(2)--20-54

R.O.W. PROJECT NUMBER
FN-92-8(2)--21-54

CONVENTIONAL SIGNS

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line — Old / New; Sta. / Ref. Point
Profile Grade
Railroad
Field Tile — Old / New
Underground Lines — G-Gas / T-Tel.
Culverts — Old / New
Utility Poles — Power / Tel.
Fences — Barb. / Mesh
Trees Or Brush
Stream
Dike — Old / New
County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.

STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

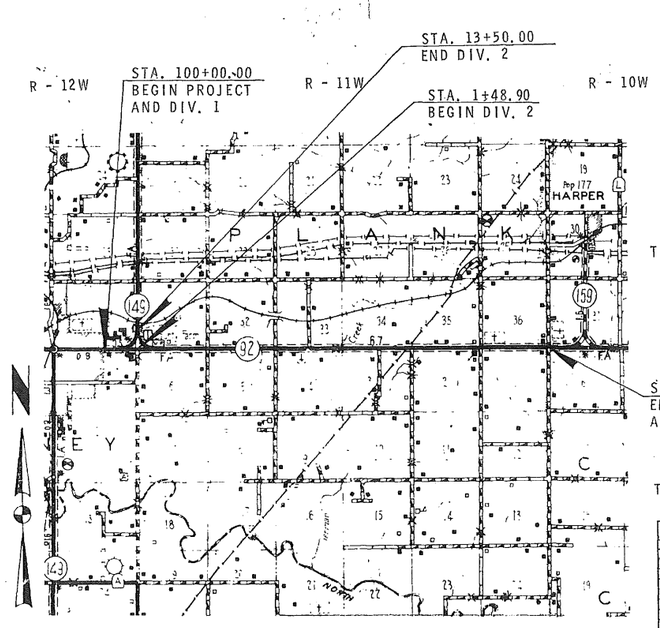
PRIMARY ROAD SYSTEM
KEOKUK COUNTY
GRADING-P.C.C. PAVING AND A.C. RESURFACING
P.C.C. PAVEMENT WIDENING GRADING (SHOULDERING)
LIGHTING

ON IA. NO. 92 FROM THE EAST CORP. LINE OF THE TOWN OF SIGOURNEY EASTERLY TO 1/2 MILE WEST OF IA. NO. 159
SCALES: AS NOTED

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL APPLY TO WORK ON THIS PROJECT

INDEX OF SHEETS 105-3

NO.	DESCRIPTION
1	TITLE SHEET
1A	TABULATION OF REVISIONS
2-4	TYPICAL SECTIONS
5-7	ESTIMATE OF QUANTITIES AND GENERAL INFORMATION
8-19	PLAN AND PROFILE STA. 100+00 TO STA. 448+00
20-24	PLAN AND PROFILE SIDE ROADS
25, 26	REFERENCE INFORMATION AND BENCH MARKS
27, 28	STAKE-OUT OF INTERSECTION OF IA. NO. 92 AND IA. NO. 149
29A, 29B	JOINTING DETAIL OF INTERSECTION OF IA. NO. 92 NAD IA. NO. 149
30A, 30B	PAINTING DETAIL OF INTERSECTION OF IA. NO. 92 AND IA. NO. 149
31	HIGHWAY LIGHTING LAYOUT INTERSECTION OF IA. NO. 92 AND IA. NO. 149
32, 33	TABULATION AND DETAILS OF DRAINAGE STRUCTURES
34	TABULATION OF SUBGRADE TREATMENT
35-49	SOILS SHEETS
50-58	TABULATION OF QUANTITIES AND ADJUSTMENTS
59-89	STANDARD ROAD PLANS
90-95	STANDARD LIGHTING PLANS
96-280	CROSS SECTIONS



MILEAGE SUMMARY 105-1

DIV.	LOCATION	LIN. FT.	MILES	STATE CONTROL SECTION NO.
1	IOWA NO. 92			
	STA. 100+00.00 TO STA. 448+00.00	34,800.00		
	DEDUCT BRIDGE STA. 122+25	132.54		
	DEDUCT BRIDGE STA. 287+60	130.83		
	NET LENGTH OF ROADWAY IN DIV. 1	34,536.63	6.541	
	NET LENGTH OF BRIDGES IN DIV. 1	263.37	0.050	
	TOTAL NET LENGTH OF DIV. 1	34,800.00	6.591	54-0400
2	IOWA NO. 149			
	STA. 1+48.90 TO STA. 13+50.00	1,201.10		
	NET LENGTH OF ROADWAY IN DIV. 2	1,201.10	0.227	54-1000
	NET LENGTH OF ROADWAY IN PROJECT	35,737.73	6.768	
	NET LENGTH OF BRIDGES IN PROJECT	263.37	0.050	
	TOTAL NET LENGTH OF PROJECT	36,001.10	6.818	

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
ONE COPY PREPARED BY J.M. Dubin RESIDENT CONST. ENGINEER DATE 4/2/70
ONE COPY APPROVED & FORWARDED TO AMES
James W. Edgerton DISTRICT CONST. ENGINEER DATE 6-1-70
TWO COPIES TO BE MADE & RETURNED TO
Virgil Butler DISTRICT ENGINEER
Charles Holmes RESIDENT MAINTENANCE ENGINEER

100 SHEETS

STANDARD ROAD PLANS

The following Standard Road Plans shall be considered applicable to construction work on this project.

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RA-3	1-2-63	RF-1	7-1-64	RH-2	1-25-67
RA-12	6-9-66	RF-3	11-16-60	RH-7	4-23-65
RO-4	5-23-61	RF-4	4-16-63	RH-22	6-25-65
RG-1	11-28-66	RF-5	6-16-65	RK-7	9-1-66
RG-2	11-28-66	RF-7	4-2-63	RL-1	3-16-65
RO-17	12-7-64	RF-13	12-2-66	RL-3	11-16-61
RE-1	12-19-66	RF-14	12-1-66	RL-4	4-15-66
RE-2	8-19-66	RF-20	1-8-65	RM-1	1-20-67
RE-7	3-25-66	RF-22	9-3-65	RM-2A	1-27-67
RE-8	3-25-66	RF-23	9-15-66	RM-2B	1-27-67
RE-9	10-21-66	RG-3	3-1-62	RM-7A	10-31-62

STANDARD ROAD PLANS

The following Standard Road Plans shall be considered applicable to construction work on this project.

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RA-11	1-20-67				
RA-12	9-21-65				

101-4

DESIGN DATA RURAL

196 7 AADT 1913 V.P.D.
198 7 AADT 2363 V.P.D.
198 7 DHV 257 V.P.H.
DIRECTIONAL 53 %
TRUCKS 10 %
DESIGN V 60 M.P.H.
PARTIAL ACCESS CONTROL

REVISED: SEE FOLLOWING SHEET 1-A

APPROVED
E. K. Smith 3/31/67
DEPUTY CHIEF ENGINEER IOWA HIGHWAY COMMISSION DATE

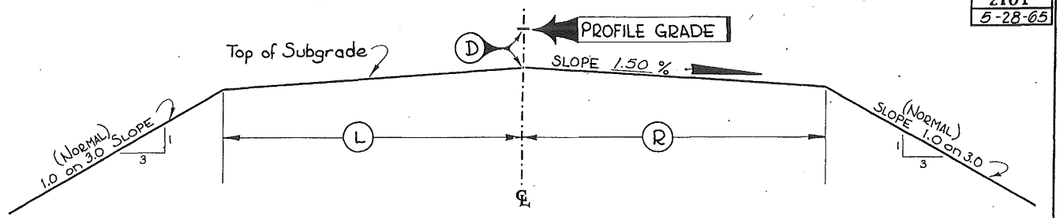
I HEREBY CERTIFY THAT THIS (THESE) WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WERE ASSIGNED TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA
DATE March 17 1967 IOWA REG NO 4133

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED
DIVISION ENGINEER DATE

Ben. (30) W.T.

3-17-67

2101
5-28-65



GRADING
TYPICAL CROSS SECTION

NOTE:
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

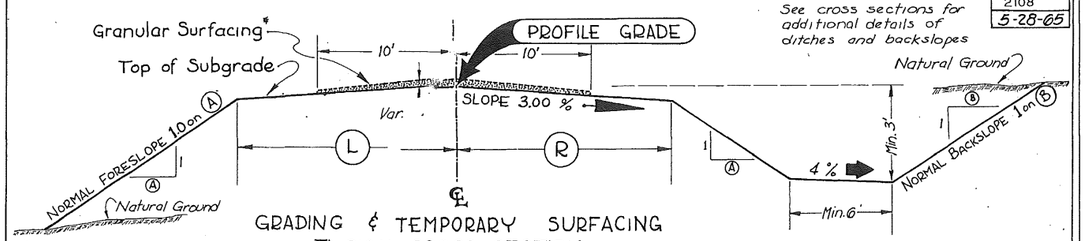
See typical cross section for details of ditches and backslopes

LOCATION		DIMENSIONS		
Station	to Station	L	R	D
*108+00.0	300+00.0	23.5	23.5	9"
311+50.0	374+00.0	23.5	23.5	9"
387+50.0	406+00.0	23.5	23.5	9"
414+00.0	426+00.0	23.5	23.5	9"
442+00.0	448+00.0	23.5	23.5	9"
1+76.9	13+50.0	23.5	23.5	9"

* Typical varies from 23.5' to 43.5'

2108
5-28-65

See cross sections for additional details of ditches and backslopes



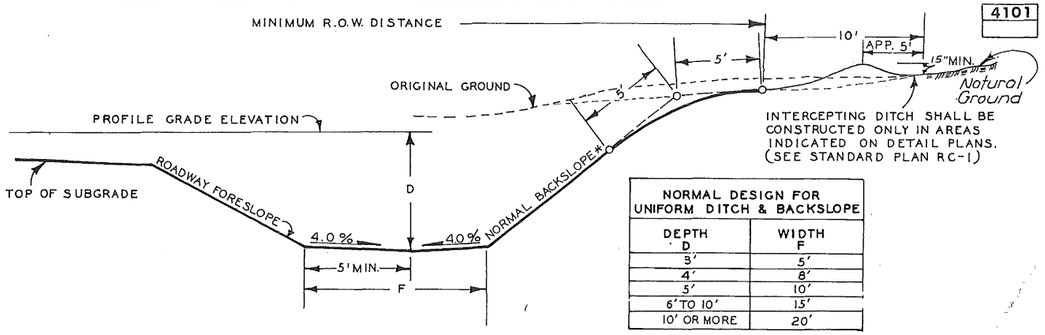
GRADING & TEMPORARY SURFACING
TYPICAL CROSS SECTION

* Granular surfacing is estimated at the rate of 13.50 tons per mile, including 50 tons for access points.

NOTE:
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

LOCATION AT STATION	DIMENSIONS L	DIMENSIONS R	SLOPES A	SLOPES B
126+40.4 Rt.	14'	14'	2	2
183+12.9 Lt. & Rt.	14'	14'	2	2
235+91.1 Lt. & Rt.	14'	14	2	2
262+75 Lt.	14'	14'	2	2
314+80.6 Rt.	14'	14'	2	2
340+56.8 Rt.	14'	14'	2	2
394+37.3 Lt.	14'	14'	2	2
394+42.2 Rt.	14'	14'	2	2
447+21.7 Rt.	14'	14'	2	2
447+23 Lt.	14'	14'	2	2

4101

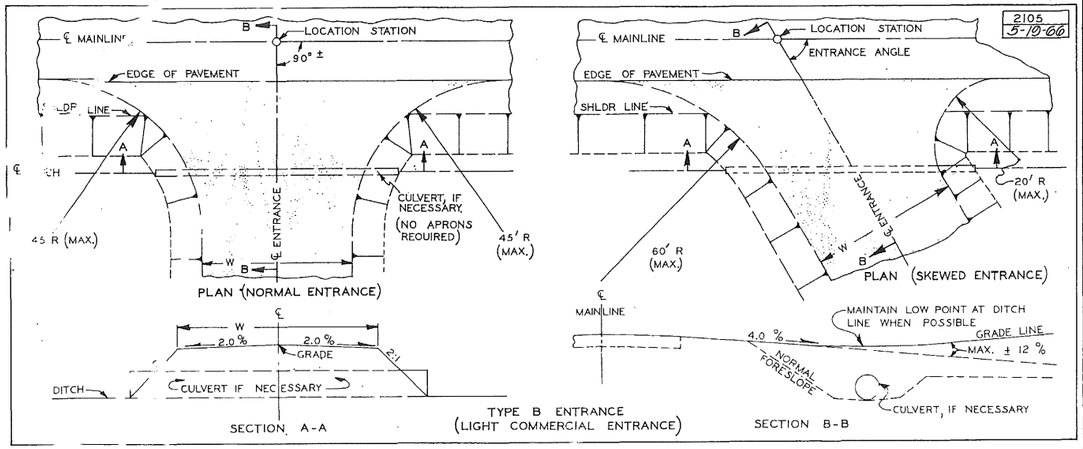


NORMAL DESIGN FOR UNIFORM DITCH & BACKSLOPE	
DEPTH D	WIDTH F
3'	5'
4'	8'
5'	10'
6' TO 10'	15'
10' OR MORE	20'

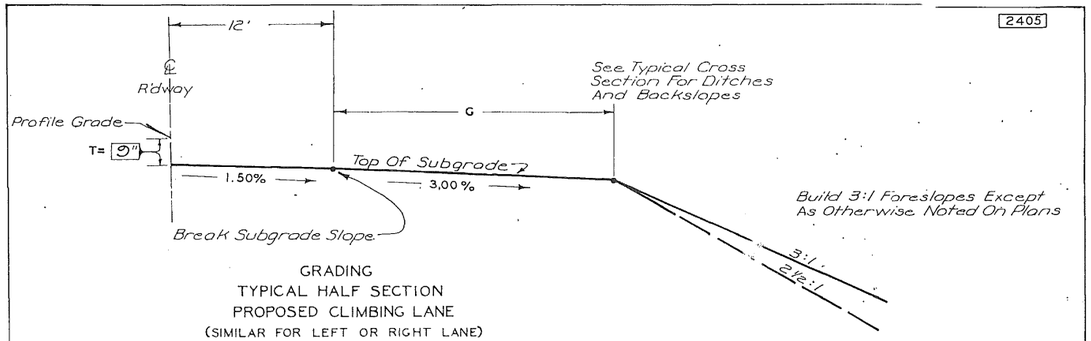
* BACKSLOPE SHALL BE CONSTRUCTED ON A SLOPE OF 2.50 ON 1.00 EXCEPT WHERE INDICATED OTHERWISE ON DETAIL PROJECT PLANS.

TYPICAL CROSS SECTION
OF DITCHES & BACKSLOPES

2105
5-10-66



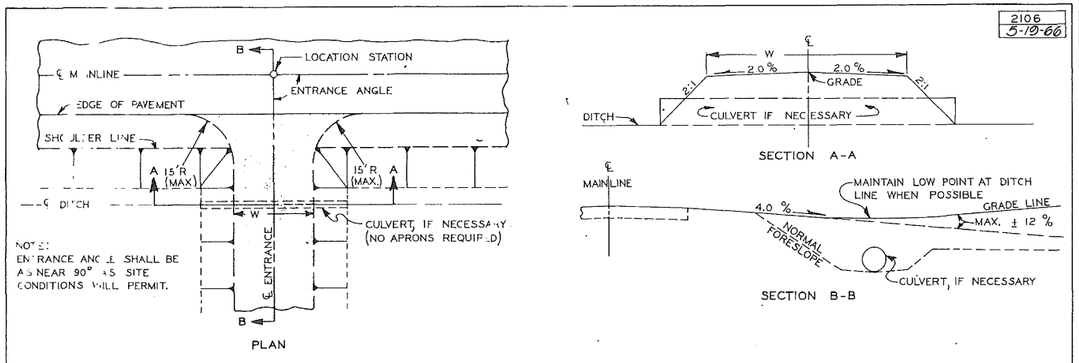
2405



GRADING
TYPICAL HALF SECTION
PROPOSED CLIMBING LANE
(SIMILAR FOR LEFT OR RIGHT LANE)

STA	TO STA.	SIDE	G
160+50	133+75	Rt	18.2
236+50	254+50	Rt	18.2
240+00	262+00	Lt.	18.2
311+50	333+00	Rt.	18.2

2106
5-10-66



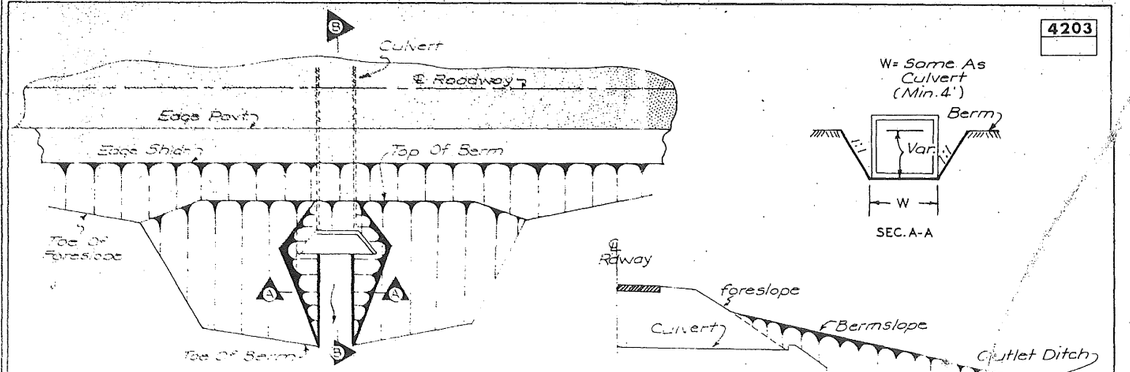
TYPE C ENTRANCE
(FIELD, FARM OR RESIDENTIAL ENTRANCE)

W.T.

Keokuk COUNTY | PROJECT NUMBER F-92-8(2)--20-54

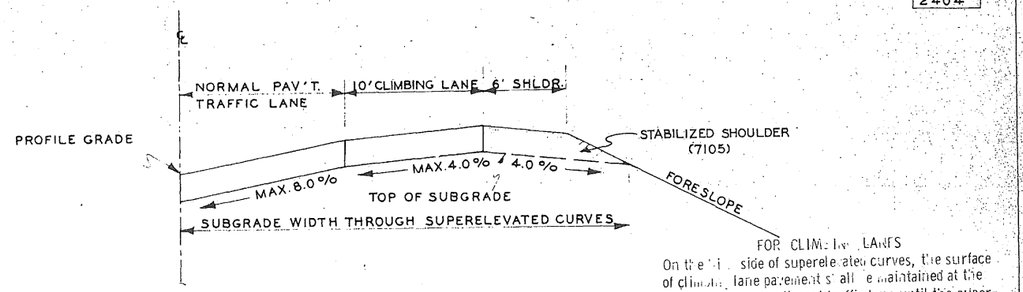
STATE	FED ROAD DIST NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
IOWA	5		2	280

4203



TYPICAL DETAILS FOR OUTLET DITCH THROUGH FORESLOPE BERM

2404



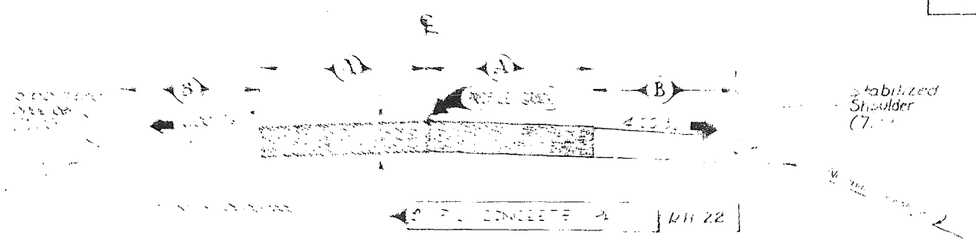
TYPICAL HALF SECTION OF CLIMBING LANE THROUGH AREAS OF SUPERELEVATION

FOR CLIMBING LANES

On the high side of superelevated curves, the surface of climbing lane pavement shall be maintained at the same slope as the adjacent traffic lane until the superelevation reaches 4.0%. When the traffic lane pavement slope is greater than 4.0% the climbing lane slope will remain constant at 4.0%.

On low side of superelevated curves the surface of climbing lane pavement shall slope the same as the adjacent lane of pavement.

4-23-65

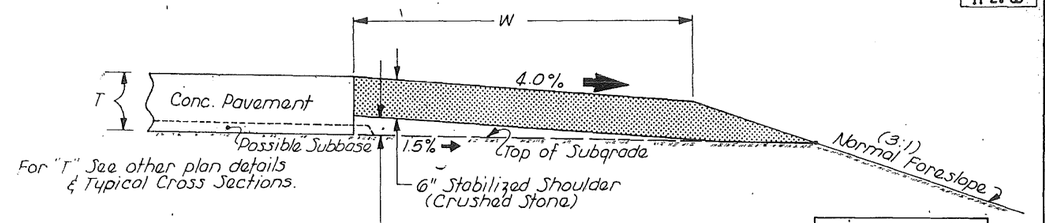


TYPICAL CROSS SECTION PROPOSED HIGHWAY IMPROVEMENT

		A	B
10[illegible]+00.0	30[illegible]+00.0	12'	10'
31[illegible]+50.0	37[illegible]+00.0	12'	10'
38[illegible]+50.0	40[illegible]+00.0	12'	10'
41[illegible]+00.0	42[illegible]+00.0	12'	10'
44[illegible]+00.0	44[illegible]+80.0	12'	10'

* Typical varies from 12' to 32'

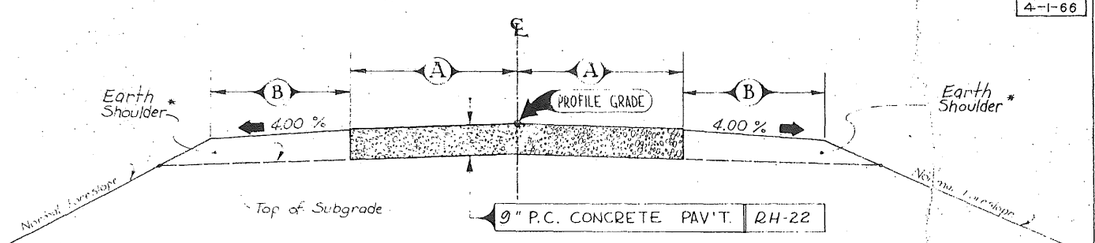
7105
11-28-66



TYPICAL CROSS SECTION STABILIZED SHOULDER FOR P.C. CONC. PAV'T.

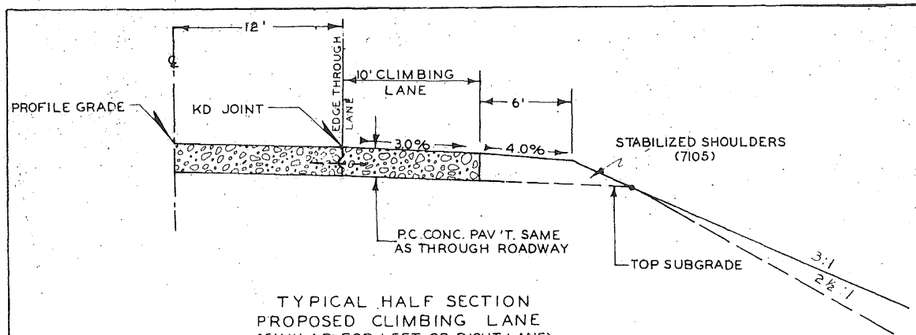
DESIGN RATE FOR CRUSHED STONE (145 lb./cu. ft.) Per Shldr. Per Station	
W	Tons
4'	17.22
6'	24.84
10'	39.34

2201
4-1-66



TYPICAL CROSS SECTION PROPOSED HIGHWAY IMPROVEMENT

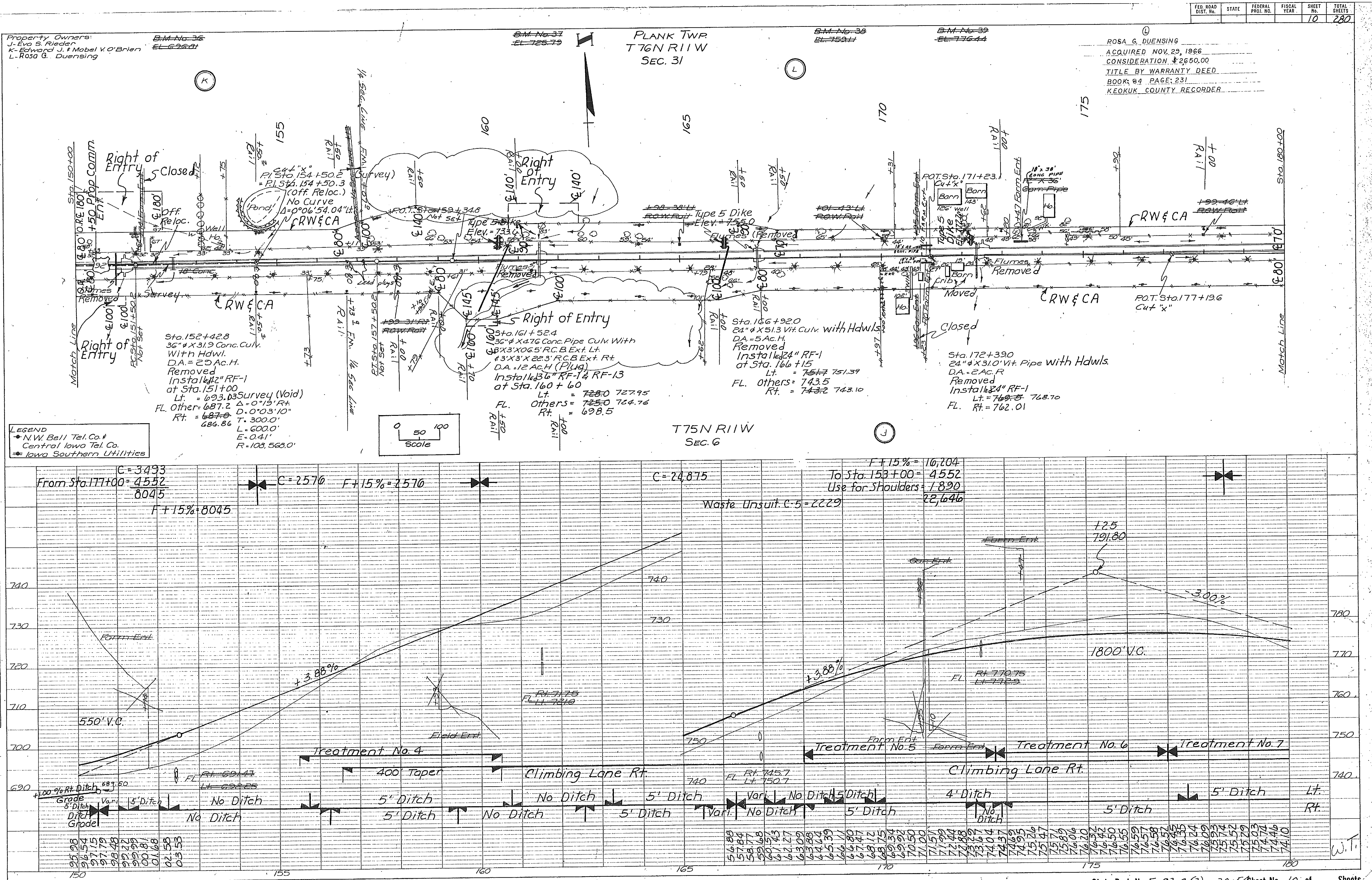
		A	B
1+76.9	13+50.0	12'	10'



TYPICAL HALF SECTION PROPOSED CLIMBING LANE (SIMILAR FOR LEFT OR RIGHT LANE)

STA	TO	STA.	SIDE
160+50		183+75	Rt.
236+50		254+50	Rt.
240+00		262+00	Lt.
311+50		333+00	Rt.

Keokuk COUNTY | PROJECT NUMBER F-92-8(2)--20-54 | STATE | FED ROAD DIST. NO. | FISCAL YEAR | SHEET NO. 3 | TOTAL SHEETS 280



Right of Entry

Sta. 161 + 52.4
36" ϕ X 47.6 Conc. Pipe Culv. With
3'X3'X06.5' R.C.B. Ext. Lt.
& 3'X3'X 22.3' R.C.B Ext. Rt.
D.A. = 12 Ac.H (Plug)
Installed 36" RF-1 & RF-13
at Sta. 160 + 60
Lt. = ~~728.0~~ 727.95
FL. Others = ~~725.0~~ 724.76
Rt. = 698.5

Right of Entry

Type 5 Dike
Elev. = 733.0

Type 5 Dike
Elev. = 755.0

Flumes (Remove

Flumes Removed

Sta. 166 + 92
24" ϕ X 51.3 V
D.A. = 5 Ac.H.
Removed
Installed
at Sta. 166
Lt.
FL. Others
Rt.

P.I. Sta. 154 + 50.2
= P.I. Sta. 154 + 50.3
(Off. Reloc.)
No Curve
Δ = 0°06'54.04" Lt.

P.O.T. Sta. 159 + 34.8
Not Set

~~+98 - 38' Lt.~~
~~R.O.W. Rail~~

~~+99 - 31 Rt.~~
~~R.O.W. Rail~~

P.T. Sta. 157 + 07.0
Not Set

Pond

Well

House

Lead plugs

RW & CA

RW & CA

(Survey)

2+42.8
31.9 Conc. Culv.
Hdwl.
29 Ac.H.
ved
~~16+42~~" RF-1
a. 151+00
= 693.03 Survey (Void)
= 687.2 Δ = 0°19' Rt.
= ~~687.0~~ D = 0°03'10"
T = 300.0'

E.M. 1½ Sec Line

DRAINAGE STRUCTURES BY ROAD CONTRACTOR

104-3

	TYPE	LOCATION	D SIZE	LENGTH L.F.	KIND	SKEW AHEAD LT.	SKEW AHEAD RT.	APR. NO.	DIMENSIONS LT.	DIMENSIONS RT.	FLOW LINE ELEV. LT.	FLOW LINE ELEV. RT.	FLOW LINE ELEV. OTHER	OUTLET ELEV.	CL. 20 EXCAV. CU. YDS.	DIKE TYPE	DIKE LOCATION	DIKE TOP EL.	REMARKS
Rt	1301	100+06.5	15"	8'	RF-1	-	-	1	30'	-	717.87	717.70	INTAKE	720.9	5				L=8' Requires 1 RA-3 Intake
Lt	1301	100+06.5	15"	8'	RF-1	-	-	1	-	30'	717.73	717.89	INTAKE	720.9	6				R=8' Requires 1 RA-3 Intake
	1502	121+20 - 65' Rt.	24"	45'	CMP	-	-	1	-	-	678.86	674.43			52	20	121+40 RT.	683.0	Requires 1 - Type "A" Diaphragm
	1502	121+48 -135' LT.	24"	47'	CMP	-	-	1	-	-	678.62	674.20			52	20	121+70 LT.	683.5	Requires 1 - Type "A" Diaphragm
	1502	123+40 -140' LT.	30"	44'	CMP	-	-	1	-	-	674.33	678.90			14	20	123+20 LT.	683.0±	Requires 1 - Type "A" Diaphragm
	1201	143+80	42"	62'	RF-1	-	-	2	33'	45'	686.87	682.50	682.3		115		137+50 LT.	PARK ENT.	10' From Inlet. No Outlet Structure Includes 1-"D" Section, F=50'
																	143+50 RT.	FIELD ENT.	Remove Present Structure
	1201	151+00	42"	64'	RF-1	-	-	2	33.5'	46.5'	693.03	687.86	687.2		104		150+50 LT.	FIELD ENT.	Includes 1 - "D" Section F=36' Remove Present Structure. Rd. Contr. Ditch Outlet.
	1503	160+60	36"	94'	RF-1	25°	-	1	42'	139.7'	727.95	698.5	724.76		130	5	160+50 LT.	733.0	Requires 1 - 16° RF-13 Elbow & 17 Connected Pipe Joints. Rd. Contr
			36"	84'	RF-13														Fill Inlet Dw. El. 728.0. Plugged Present Structure.
	1201	166+15	24"	88'	RF-1	15°	-	2	35.5'	64'	751.39	743.10	743.5		87	5	166+10 LT.	755.0	Includes 1 - "D" Section F=40' Remove Present Structure. Rd. Contr. Ditch Outlet
	1101	172+39	24"	74'	RF-1	-	-	2	31'	57'	768.70	762.01			111	5	172+25 LT.	772.2	Remove Present Structure. Rd. Contr. Ditch Outlet
	1503	183+75	24"	74'	RF-1	-	-	1	64.5'	38'	750.5	761.14	759.54		72	5	184+00 RT.	764.5	Plug Present Structure. Requires 1-17° Elbow & 7 Connected Pipe Joints.
			24"	24'	RF-13														
	1101	188+03	24"	64'	RF-1	-	-	2	43'	33'	745.16	747.91			73	5	188+30 RT.	751.5	Remove Present Structure. Rd. Contr. Ditch Outlet
	1101	204+12	24"	78'	RF-1	-	-	2	36'	54'	738.22	732.80			41		203+80 LT.	FIELD ENT.	Remove Present Structure
	1201	262+00	30"	88'	RF-1	15°	-	2	63.0'	36.5'	708.30	717.25	708.3		69	5	262+10 RT.	720.5	Includes 1-"D" Section F=36' Remove Present Structure
	1101	393+00	24"	46'	RF-1	10°	-	2	30'	28'	776.63	777.32			17	2	393+00 RT.	780.0	
	1102	394+03 -41' LT.	24"	456'	CMP	-	-	2	-	-	774.82 W	759.63 E			20				Requires 2-45° Elbows Sta. 394+23-22' LT. El. 773.5 Sta. 398+47 - 22' LT. El. 760.0; One 18" on 24" Tee @ Tee Sta. 394+57, 22' LT. Remove Present Structure
	1502	394+57 -70' LT.	18"	40'	CMP	-	-	1	-	-	774.67 N	772.7 S			6				Connect to Tee at Sta. 394+57, 22' LT.
	1503	402+00 -60' RT.	36"	42'	RF-1	75°	-	1	E 22'	W 49.2'	751.24 E	737.1 W	749.5		46		402+00 RT.	FIELD ENT.	Requires 1 - 24° RF-13 Elbow & 7 Connected Pipe Joints
			36"	24'	RF-13														
	1101	433+62	24"	58'	RF-1	-	-	2	32'	38'	787.96	786.27			61				Remove Present Structure
	1101	442+54	24"	56'	RF-1	-	-	2	32'	36'	785.92	784.66			62	5	443+88 LT.	789.5	Remove Present Structure
	1601	1182+50	24"	40'	UNCL.	-	-	2	19'	21'	764.30	762.60			26				Remove Present Structure
	1503	1184+50	24"	50'	RF-1	-	-	1	25'	41.2'	757.70	748.8	756.10		28	5	1185+00 LT.	760.0	Remove Present Structure. Requires 1-25° RF-13 Elbow & 5 Connected Pipe Joints
			24"	12'	RF-13														
	1503	1233+80	30"	58'	RF-1	-	-	1	66.7'	29'	718.4	738.0 / 735.89	736.5 / 733.04		57				Requires 1-25° RF-13 Elbow & ± 8 Connected Pipe Joints. Remove Present Structure
			30"	30	RF-13						741.77 N	740.57 S							
	1601	1236+65	24"	42'	UNCL.	-	-	2	19'	23'	742.0	740.7			25	5	235+25 LT.	744.5	
	1601	1264+00	36"	54'	UNCL.	-	30°	2	25'	29'	708.17	706.00			84				Remove Present Structure
	1601	1448+00	24"	54'	UNCL.	-	-	2	27'	27'	779.0	778.30			33				Remove Present Structure

DRAINAGE STRUCTURES BY CULVERT CONTRACTOR

104-4

DESIGN NO.	LOCATION	SIZE	LENGTH L.F.	KIND	SKEW AHEAD LT.	SKEW AHEAD RT.	APR. NO.	DIMENSION LT.	DIMENSION RT.	FLOW LINE LT.	FLOW LINE RT.	FLOW LINE OTHER	BY ROAD CONTRACTOR COMP OF B.F.	DIKE TYPE	DIKE LOCATION	DIKE TOP EL. EV.	
2565	197+80	6' x 6'	93'	RCB	-	-	-	45'	48'	716.73	715.80	708.8	82				Flume Outlet. Rd. Contr. Break In Top and Fill Present Structure.
																	Road Contr. to Ditch Inlet
2665	210+18.5	30"	50'	RF-1	-	-	2	45.4'	71.1'	742.65	733.18		--		210+60 LT.	FARM ENT.	Extensions = 10' Lt. & 52' Rt.
2765	225+10	10' x 10'	114'	R. C. B.	-	-	-	56'	58'	690.62	687.80		169				Rd. Contr. Shape Inlet and Outlet
2865	236+21.6	3' x 3'	43'	R. C. B.	46°	-	-	53.9'	103.2'	740.55	729.29	717.0	19				Extension = 24' Lt. & 19' Rt. Rd. Contr. Fill Draw El. 740.5
																	Flume Outlet
2965	318+68.6	30"	82'	RF-1	-	-	2	85.2'	60.4'	750.25	761.50		-				Extensions = 64' Lt. & 30' Rt. Rd. Contr. Ditch Outlet
3065	323+65.2	30"	88'	RF-1	-	-	2	76.8'	60.5'	759.73	765.80		-		327+35 RT.	FARM ENT.	Extensions = 76' Lt. & 24' Rt. Rd. Contractor Ditch Outlet
3165	339+17	4' x 4'	143'	RCB	-	-	-	59'	84'	730.07	720.22	712.0	85				Culv. Contr. Outlet Tile Into RCB Build Drop Inlet
3265	351+93.9	2' x 2'	49'	RCB	-	-	-	33.5'	61.5'	764.13	753.95		15	5	351+50 LT.	768.5	Culv. Contr. Outlet Tile Into RCB
3365	368+10	48"	124'	RF-1	15°	-	1	67'	65'	767.89	764.83	753.0	-				Stub Flume Outlet. Rd. Contr. Fill Draw to Elev. 769.0±
3465	401+00	10' x 8'	63'	RCB	15°	-	-	29'	34'	746.56	745.37	737.0	68				Flume Outlet. Rd. Contr. Ditch Outlet
2465	2+45.9	30"	20'	RF-1	-	-	1	61.1'	43'	684.0	685.20	678.8	-				Ext. - 27.1' Lt. & 10' Rt.
		30"	12'	RF-13	-	-	-	-	-	-	-						

LISTING OF SUBDRAIN WORK

104-6
9-3-65

INTAKES Location Station	Type	No.	FL. Elev.	Line No.	SUBDRAIN Location Station	Type	Metal (Lin. Ft.) Size ø"	Corr. Outlet	Corr. Bit. Coat	Corr. Perf.	RF-5 Apron No.	RF-22 Outlet No.	Tile (Lin. Ft.) Size ø"	Std.	E.Q.	RF-5 Apron No.	BACKFILL Trench Drain Porous Cu. Yds.	Granular Cu. Yds.	Lin. Ft.	Note
				1	109+80±	C	6"	2'				1								
				2	~~122+40 to 123+75~~	~~Spec~~	~~8"~~	~~70'~~ *					~~6"~~	~~65'~~						
				3	~~274+10± to 275+80±~~	G	6"	~~5'~~					~~4"~~	~~150'~~						
				4	~~357+70±~~	C	6"	~~8'~~				~~1~~								
				5	~~376+70±~~	C	6"	~~4'~~				~~1~~								
				6	~~391+60±~~	C	~~8"~~	~~16'~~				~~1~~								
				7	~~392+50±~~	C	~~10"~~	~~12'~~				~~1~~								
				8	408+60±	C	6"	30'				1								
				9	3+10±	C	8"	22'				1								
					164+10	C	6"	16'												
								* ~~50 lin. ft. to be laid through old channel.~~												
					195+90±	C	6"	6'				1								
					204+50±	C	6"	4'												
					276+14	C	6"	20'												
					277+25	C	6"	20'												
					279+12	C	6"	20'												
					280+12	C	6"	20'												
					281+00	C	6"	20'												
					281+50	C	6"	20'												
					287+92±	C	6"	20'												
					146+85	C	6"	12'				1								
					147+43	C	6"	12'				1								
					198+50	C	8"	8'												
					149+60	C	8"	6'				1								
					408+1	C	8"	18'				1								

W.T.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	IOWA	F 34(5)		1A	345

CONVENTIONAL SIGNS

CITY LIMITS
STATE OR COUNTY LINES
SECTION LINES
FENCE LINES
RIGHT OF WAY LINES
GUARD RAIL
TRAVELED WAY
BASE OR SURVEY LINE
RAILROADS
PRESENT TILE DRAINS
PROPOSED TILE DRAINS
PIPE LINE
CULVERTS
TELEPHONE, TELEGRAPH OR TRANSMISSION LINES
PRIMARY ROAD NUMBERS
U. S. ROAD NUMBERS
INTERSTATE ROAD NUMBERS

STATE OF IOWA

STATE HIGHWAY COMMISSION

PLAN & PROFILE OF PROPOSED IMPROVEMENT
ON THE
PRIMARY ROAD SYSTEM

KEOKUK COUNTY

GRADING SHOULDERING - P.C.C. PAVING & P.C.C. PAVT. WIDE. PROJECT NO. F 34 (5)

ON U. S. 92 FROM THE MAHASKA CO. LINE EAST TO SIGOURNEY

SCALES { PLAN 1 INCH = 100 FT.
PROFILE HOR. 1 INCH = 100 FT., VERT. 1 INCH = 10 FT.

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1960, SHALL APPLY TO WORK ON THIS PROJECT

THE 1964 SPECIFICATIONS SHALL APPLY TO ALL WORK ON THIS PROJECT LET ON OR AFTER NOV. 3, 1964

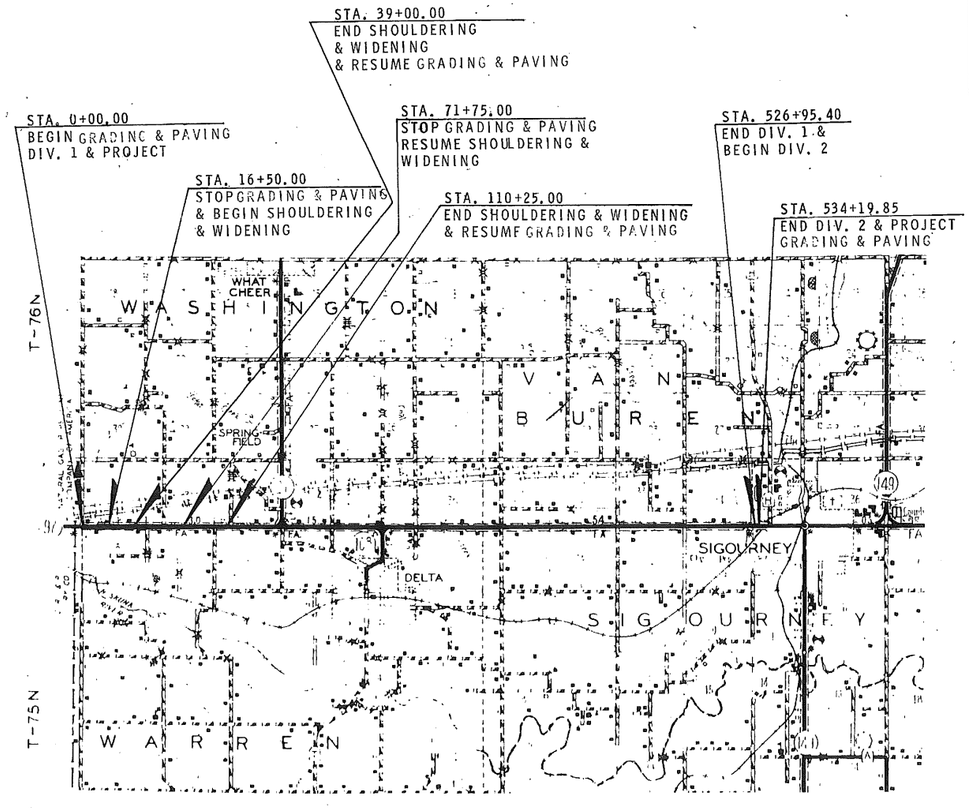
INDEX OF SHEETS

SEE SHEET NO. 1B

CONSTRUCTION PLAN SHOWING PROJECT AS BUILT
ONE COPY PREPARED BY G.M. Orbin G.M. ORBIN, RES. CONST. ENGR. DATE Feb 1, 1968
ONE COPY APPROVED & FORWARDED TO AMES
James W. Edgerton DISTRICT ENGINEER Const., DATE 2-2-68
TWO COPIES TO BE MADE & RETURNED TO
Virgil Butler, DISTRICT ENGINEER
Floyd Sheets, RESIDENT MAINTENANCE ENGINEER

STANDARD ROAD PLANS

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RL-1	8-16-62	RM-13	5-1-63	RC-1	1-1-64
RL-2	3-14-62	RM-16	4-1-63	RC-2	1-4-61
RL-3	11-16-61	RC-1	1-10-61	RD-2	
RL-4	1-9-63	RH-1	2-7-61		
RE-1	2-7-60	RH-2	2-9-61		
RE-3	12-17-61	RH-7	7-5-61		
RE-4	8-7-61	RM-15	11-22-61		
RE-5	12-15-61	RK-2	2-9-61		
RE-7	8-22-63	RC-3	3-1-62		
RE-12	4-18-63	RE-2	1-10-61		
RE-16	9-18-63	RE-1	11-14-60		



MILEAGE SUMMARY 105-1

DIV.	LOCATION	LIN. FT.	MILES
1	(RURAL:)		
	STA. 0+00.00 TO STA. 526+95.40	52,695.40	
	BRIDGE STA. 282+45.00	182.83	
	EQUATION: STA. 292+06.17 = STA. 292+06.10 (LENGTHENS LINE)	0.07	
	BRIDGE STA. 518+70.00	127.03	
	NET LENGTH ROADWAY	52,385.61	9.921
	NET LENGTH BRIDGES	309.86	0.059
	NET LENGTH DIV. 1	52,695.47	9.980
2	(SIGOURNEY:)		
	STA. 526+95.40 TO STA. 534+19.85	724.45	0.137
	NET LENGTH DIV. 2	724.45	0.137
	NET LENGTH ROADWAY	53,110.06	10.058
	NET LENGTH BRIDGES	309.86	0.059
	NET LENGTH PROJECT	53,419.92	10.117

DESIGN DATA RURAL

1963 AADT	2050	V.P.D.
1988 AADT	3500	V.P.D.
1983 DHV	403	V.P.H.
DIRECTIONAL	52	%
TRUCKS	11	%
DESIGN V	60	M.P.H.
PARTIAL ACCESS CONTROL		

Plate Signal Info

10 SHEETS

REVISED OCT. 27, 1964 SHEETS NO. 1A, 3C, 67 & 68
REVISED JULY 7, 1964 SHEETS NO. 3A, 16, 17 & 39
REVISED OCT. 29, 1963 SHEETS NO. 3A & 3C

APPROVED
CHIEF ENGINEER IOWA HIGHWAY COMMISSION DATE

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED:
DIVISION ENGINEER DATE

F-345(5) EROSION - Dec. 1, 1964

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		F 34(5)		12	345

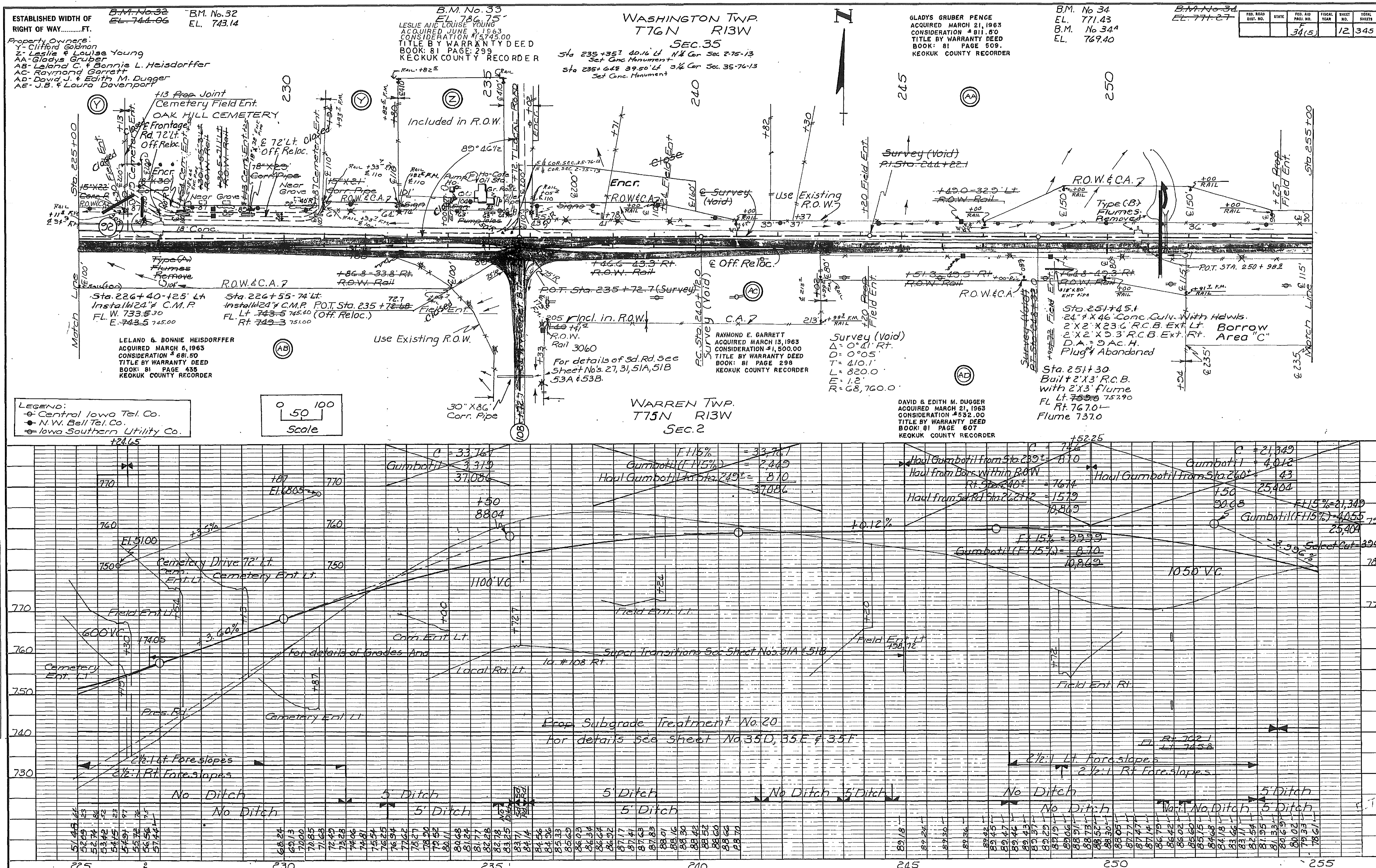


PLATE 1—PLAN-PROFILE O. P. R. & R. E. STANDARD
NO. 131 ARKWRIGHT MADE AND PRINTED IN U. S. A.
EUGENE DIETZGEN CO., CHICAGO

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

Survey (Void)
P.I. Sta. 244+22.1

+20 Field Ent.

Existing R.O.W.

+49.0-32.9' Lt.
R.O.W. Rail

+00 RAIL

R.O.W. & C.A. 7

℄ 150'

+00 RAIL

Type (B) Flumes Removed

℄ 150'

+00 RAIL

+25 Prop. Field Ent.

Sta. 255

℄ 90'

℄ 90'

37'

36'

+51.3-49.5' Rt.
R.O.W. Rail

+00 Rail

+64.8-49.3 Rt.
R.O.W. Rail

5/8" x 80' Ent. Pipe

℄ 80'

P.O.T. STA. 250+98.2

℄ 115'

+00 RAIL

+91.7 F.M. RAIL

℄ 115'

Survey (Void)
P.I. Sta. 248+32.0

+95.72 Field Ent.

Sta. 251+45.1
24" ϕ x 46' Conc. Culv. With Hdwls.
2'x2'x23.6' R.C.B. Ext. Lt.
2'x2'x9.3' R.C.B. Ext. Rt.
D.A. = 9 Ac. H.
Plugged & Abandoned

Borrow Area "C"

℄ 280'

+00

+39.5 F.M. RAIL

Rd'y

℄ 213'

+99.3 F.M. RAIL

+20 Prop. Field Ent.

℄ 235'

Match Line

+24

Survey (Void)
Δ = 0°41' Rt.
D = 0°05'
T = 410.1'
L = 820.0'
E = 1.2'
R = 68,760.0'

AD

Sta. 251+30
Built 2'X3' R.C.B.
with 2'X3' Flume
FL Lt. ~~753.0~~ 752.90
Rt. 767.0
Flume 737.0

DAVID & EDITH M. DUGGER
ACQUIRED MARCH 21, 1963
CONSIDERATION $532.00
TITLE BY WARRANTY DEED
BOOK: 81 PAGE 607

BRIDGES & CULVERTS — KEOKUK CO. — F-34(5)

NOVEMBER 12, 1963 LETTING

STATE OF IOWA

STATE HIGHWAY COMMISSION

DESIGN FOR

BRIDGES AND CULVERTS

PRIMARY ROAD SYSTEM

PROJECT NO. F-34(5)

KEOKUK COUNTY

IN LETTING OF OCTOBER 8, 1963

DESIGN NO. 762	T - 76N R - 12W & T - 75N R - 12W	STATION 518+70.00
SECTIONS 34 & 3	OVER ROCK CREEK ON IOWA RELOCATED #92	VAN BUREN & SIGOURNEY TOWNSHIPS

125'-0 X 30' CONTINUOUS CONCRETE SLAB BRIDGE
10° SKEW

ESTIMATE OF QUANTITIES

ITEM			UNIT	TOTAL
Concrete			Cu. Yd.	312.9
Reinforcing Steel			Lbs.	69,969
16" P10A Piling	TYPE I or II	Furnish 18 at 65'	Lin. Ft.	1,170
		Drive 18 at 65'	Lin. Ft.	1,170
	TYPE III or IV	Furnish & Drive 18 at 50'	Lin. Ft.	900
Creosoted Piling 11 at 45'; 11 at 50'			Lin. Ft.	1,045
Class 20 Excavation			Cu. Yds.	120
Granular Backfill			Tons	80
4" Tile Subdrains			Lin. Ft.	100
Class 10 Channel Excavation			Cu. Yds.	650
Aluminum Handrail (℄ - ℄ End Posts) or Steel Handrail (℄ - ℄ End Posts)			Lin. Ft.	230
Removal of Existing Structure			L. S.	LumpSum
* Hauling & Storing Structural Steel			L. S.	LumpSum

* NON-PARTICIPATING

IN LETTING OF OCTOBER 8, 1963

DESIGN NO. 662	T - 75N R - 13W T - 76N R - 13W	STATION 282+45.00
SECTIONS 36 & 1	OVER CEDAR CREEK ON IOWA NO. 92	WASHINGTON & WARREN TOWNSHIP

180'-0 X 30'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

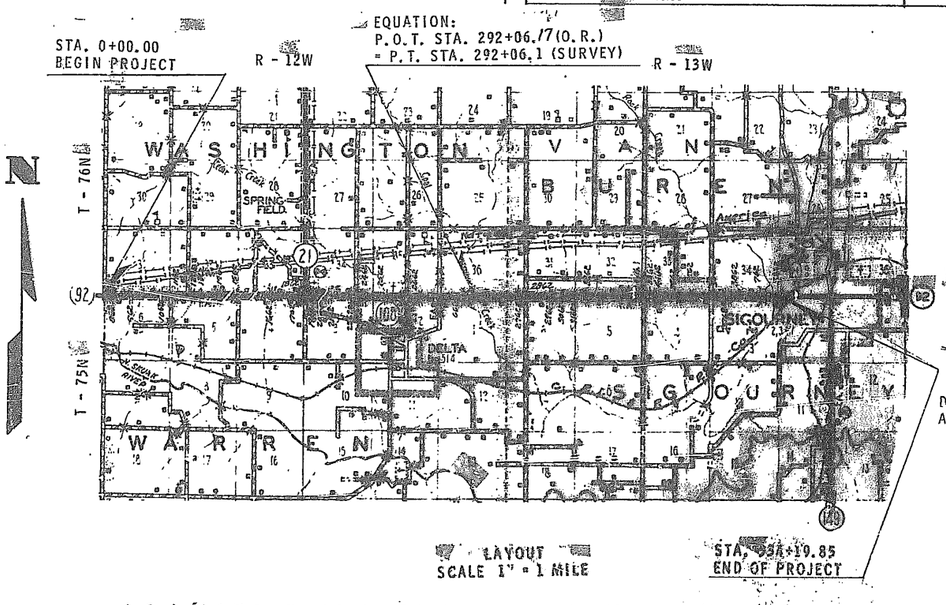
ESTIMATE OF QUANTITIES

ITEM			UNIT	TOTAL
Concrete			Cu. Yds.	358.1
Reinforcing Steel			Lbs.	67,381
Prestr. Prestr. Conc. Beams 55'-0 (B-4)			Only	14
Prestr. Prestr. Conc. Beams 67'-6 (B-7)			Only	7
Creosoted Piling 26 at 45'			Lin. Ft.	1,170
10"x42 Steel Bearing Piling		Furnish 32 at 35'	Lin. Ft.	1,120
		Drive 32 at 35'	Lin. Ft.	1,120
4" Tile Subdrain			Lin. Ft.	168
Class 10 Channel Excavation			Cu. Yd.	1,925
Class 20 Excavation			Cu. Yd.	145
Class 21 Excavation			Cu. Yds.	250
Removal of Existing Structure			L. S.	LumpSum
Aluminum Handrail	(℄ - ℄ End Posts)		Lin. Ft.	341.0
Steel Handrail	(℄ - ℄ End Posts)		Lin. Ft.	342.0
* Hauling and Storing Structural Steel			L. S.	LumpSum
Granular Backfill			Tons	145

* NON-PARTICIPATING ITEM

IOWA STATE HIGHWAY COMMISSION
STANDARDS REQUIRED

CHP	C1P	CFP	C2J	P10A
CBH-00	C2P		C4J	
CBH-30	C3P		C5J	
	C4P		C6J	
	C5P		C10J	
	C6P		F2J	
	C10P		F3J	
	C6F		F4J	
	C10F		F5J	
			F6J	



These bridges will require Bridge Sign Assemblies furnished and placed by others as specified in Traffic and Highway Planning Instruction No. 11, Revised October 1, 1961.

DETAIL PLANS REDUCED IN SIZE (DO NOT SCALE)

SPECIFICATIONS:

CONSTRUCTION: Standard Specifications of the Iowa State Highway Commission, Series of 1960, plus current Supplemental Specifications and Special Provisions.

DESIGN STRESSES for the following materials are in accordance with A.A.S.H.O. Standard Specifications for Highway Bridges, Series of 1961.

Concrete in accordance with Section 1.4.11 f'_c = 3500 psi.
Reinforcing Steel in accordance with Section 1.4.12 "Reinforcement" for Intermediate, Hard, or Rail Steel Grade.
Structural Steel in accordance with INT. 7(62); 1.4.2 "Structural Steel".
Prestressed Concrete in accordance with Section 1.13.7 f'_c = 5000 psi.
Prestressing Steel in accordance with Section 1.13.7 f'_c = 250,000 psi.

Revised 8-31-64 Sheet No 2 of 43 Excavation quant. changed. Total quantities corrected.
" " Sheet No 30 of 43 "
Revised 7-9-64: Title Sheet 2 of 2 - Des. No's 4062 & 4162 added. Effected quantities changed accordingly.
Revised 7-9-64: Sheet No 43A & Des No's 4062 & 4162 added to project.

Revised: 2-4-64 Sheet 26 of 43 Design 862 bar size corrected. - Sheet 28 of 43 Design 962 dimension corrected. - Sheet 28 of 48 Design 2362 Junction details added.

Design 762 Revised 10-11-63: Listing of 16" P10A Piling corrected.

Revised 1-15-64, Design 2462 for grade line change. See Sheet 35 and Title Sheet 2 of 2

Revised 4-17-64 Sheet No 30 of 43 Des. No 1262 Flow Line elevations raised.

MILEAGE SUMMARY 105-1

LOCATION	LIN. FT.	MILES
BRIDGE AT STA. 282+45.00	182.833	.035
BRIDGE AT STA. 518+70.00	127.051	.024
Total		.059

APPROVED
R. M. Tuttle AUG 2 9 1963
DEPUTY CHIEF ENGINEER
IOWA HIGHWAY COMMISSION

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED

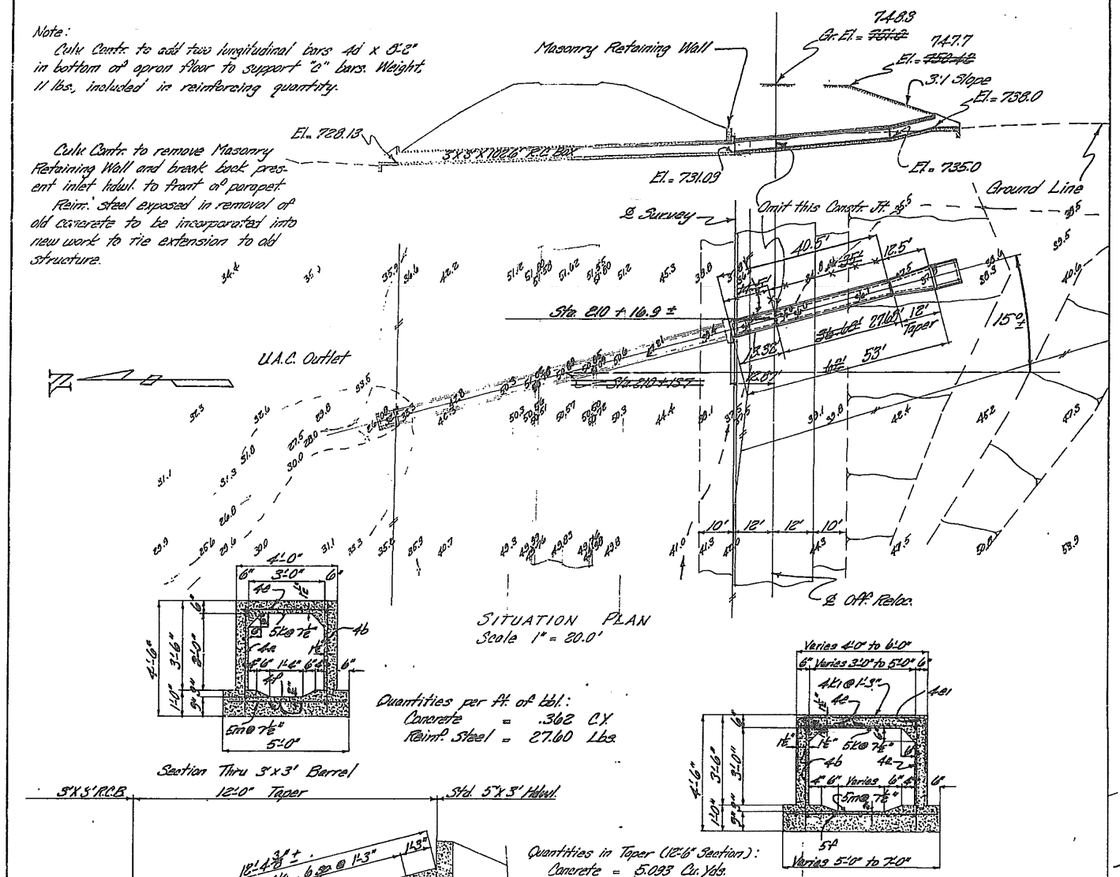
TITLE SHEET 1 OF 2

KEOKUK COUNTY PROJECT NO. F-34(5) FILE NO. 21609

BENCH MARK NO. 30, Sta. 212+13, R.R. Spk. in Tel Pole, 96' Lt. Elev. = 753.96

Note:
Culv. Contr. to add two longitudinal bars 4d x 5'-2" in bottom of apron floor to support "2" bars. Weight, 11 lbs., included in reinforcing quantity.

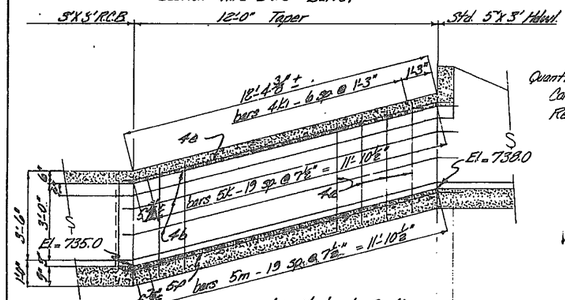
Culv. Contr. to remove Masonry Retaining Wall and break back present inlet hdwl. to front of parapet.
Reinf. steel exposed in removal of old concrete to be incorporated into new work to tie extension to old structure.



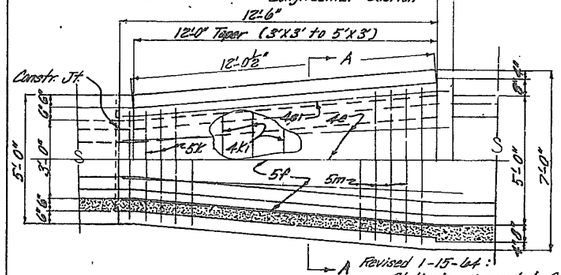
SITUATION PLAN
Scale 1" = 20.0'

Quantities per Ft. of tbl.:
Concrete = .362 CY
Reinf. Steel = 27.60 Lbs.

Section Thru 3'x3' Barrel



Longitudinal Section



PLAN VIEW
SCALE 3/8" = 1'-0"

Quantities in Taper (12'-6" Section):
Concrete = 5.093 Cu. Yds.
Reinforcing Steel = 515.6 lbs.

Section A-A

REINFORCING STEEL FOR 12'-0" TAPER

Bar	Location	Shape	No.	Length	Lin. Ft.	
					4	5
4a	Walls: Vertical		26	4'-3"	110.5	
4b	" Horiz.		6	13'-7"	81.5	
4c	Slab: Longit. Bott.		3	13'-8"	33.5	
4a1	" " Top		2	13'-9"	26.5	
5a*	Floor: Longit. "		5	13'-9"		68.7
5k	Slab: Transv. Bott.		1	3'-8"		3.7
"	" " "		20	4'-8" 5'-8"		93.3
4k1	Slab: Transv. Top		7	4'-6" 10'-9"	70.9	
5m	Floor: " "		1	4'-8"		4.7
"	" Transv. Top		20	4'-8" 6'-8"		113.3
	*Includes extension 20 diameters from back of apt into hdwls.			Length	328.9	283.7
				Weight	219.7	295.9
				Total Weight	515.6 Lbs.	

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STDS. C3P, C5P, CHP

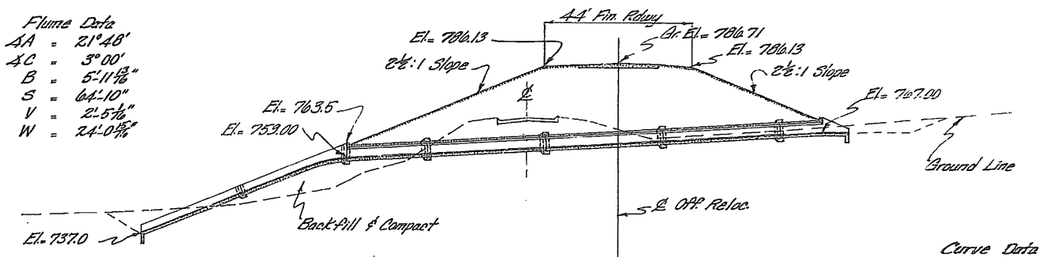
ESTIMATED QUANTITIES		
CONCRETE	23.9 ~~26.5~~	C.Y.
REINFORCING STEEL	1894 ~~2269~~	LBS.
PIPE CULV.,		LIN. FT.
PIPE APRONS,		ONLY
EXCAVATION C.Y.		
CL. 20 ~~55~~ 37	CL. 24	CL. 10 CHANNEL

3'X3' R.C.B. Extension
SIZE AND TYPE 15° Skew
DRAINAGE AREA 34 Acres - Hilly FILL ~~15'-1"~~ 13'-9"
SECTION 34 & 3 TWP Totah RANGE 13 W
CIVIL TOWNSHIP Washington & Warren
COUNTY Keokuk
STATION ~~210+15.7~~ 210+16.9 ±
PROJECT NO. F-34 (5)
DESIGN 2462 DATE April, 1963

Revised 1-15-64:
Stationing corrected, Grade Elev. lowered, Culvert length decreased and quantities changed accordingly.

BENCH MARK NO. 34, Sta. 252+53, R.R. Spk. in Tel Pole, 33' Lt. Elev. = 771.27

Flume Data
4A = 21°48'
4C = 3°00'
B = 5'-11⅞"
S = 64'-10"
V = 2'-5⅞"
W = 24'-0⅝"



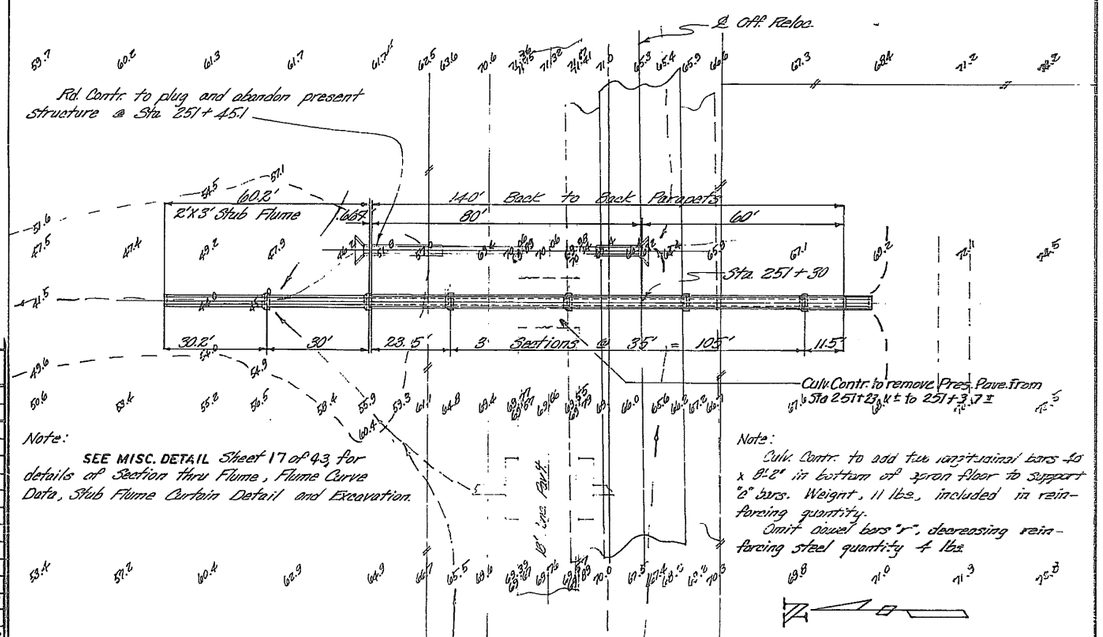
Curve Data

L3	= 11'-6 3/8"
D	= 5°-11 1/8"
E	= 5'-6 1/16"
P.C. Elev.	= 753.5
P.I. Elev.	= 753.69
P.R. Elev.	= 753.40
P.T. Elev.	= 754.47
X1	= 1'-11 3/16"
X2	= 1'-7/16"
X3	= 0'-5 13/16"
X4	= 0'-1 3/16"
L3/4	= 2'-10 3/16"

ESTIMATE OF QUANTITIES — ONE 2'X 3' BELL JOINT

BILL OF REINFORCING		JOINT IN BARREL					JOINT AT FLUME JUNCTION				JOINT IN FLUME CHUTE			
Location	Shape	Bar	No.	Length	Lin. Ft.	Location	Bar	No.	Length	Lin. Ft.	Bar	No.	Length	Lin. Ft.
Slab & Walls		4X1	3	11'-7"	34.8	Sides & Bottom	4X3	3	14'-1"	42.3	4X4	3	11'-1"	33.3
Floor & Walls		4X2	3	9'-6"	28.5	Sides	4X5	10	4'-3"	42.5	4X5	6	4'-3"	25.5
Top & Sides		4X1	13	4'-1"	53.1	Bottom	4X4	3	4'-3"	12.8	4X4	3	4'-3"	12.8
Bottom		4X2	3	4'-10"	14.5	Bottom	4X1	3	1'-10"	5.5	4X1	3	1'-10"	5.5
Bottom & Floor		4X3	3	2'-1"	6.3									
		Length			137.2		Length			103.1	Length			77.1
Total Weight		916 Lbs.				Total Weight	60.9 Lbs.				51.5 Lbs.			
Total Concrete		.950 Cu. Yds.				Total Concrete	.638 Cu. Yds.				.505 Cu. Yds.			

Rd. Contr. to plug and abandon present structure @ Sta. 251+45.1



Note:
SEE MISC. DETAIL Sheet 17 of 43 for details of Section thru Flume, Flume Curve Data, Stub Flume Curtain Detail and Excavation.

Note:
Culv. Contr. to add two longitudinal bars 4b x 8'-2" in bottom of apron floor to support "2" bars. Weight, 11 lbs., included in reinforcing quantity.
Omit equal bars "5", decreasing reinforcing steel quantity 4 lbs.

SITUATION PLAN
Scale 1" = 20.0'

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STDS. C2P, C4P, C5P, C2J and F3J, except as noted

ESTIMATED QUANTITIES		
CONCRETE	66.4	C.Y.
REINFORCING STEEL	4010	LBS.
PIPE CULV.,		LIN. FT.
PIPE APRONS,		ONLY
EXCAVATION C.Y.		
CL. 20. 161	CL. 24 165	CL. 10 CHANNEL 112
Pavement Removal		28 Sq. Y.

2 x 3'x 140' R.C.B. Culv.
SIZE AND TYPE & 2'X3' Stub Flume
DRAINAGE AREA 9 Acres - Hilly FILL 20'
SECTION 35 & 2 TWP 78 N RANGE 13W
CIVIL TOWNSHIP Washington & Warren
COUNTY Keokuk
STATION 257+30
PROJECT NO. F-34 (5)
DESIGN 2662 DATE April, 1963

DESIGNS 2462 & 2662 Keokuk COUNTY FILE NO. 21603

DIETZGEN NO. 131 ARKWRIGHT

[redacted]

CONVENTIONAL SIGNS

CITY LIMITS
STATE OR COUNTY LINES
SECTION LINES
FENCE LINES
RIGHT OF WAY LINES
GUARD RAIL
TRAVELED WAY
BASE OR SURVEY LINE
RAILROADS
PRESENT TILE DRAINS
PROPOSED TILE DRAINS
PIPE LINE
CULVERTS
TELEPHONE, TELEGRAPH OR TRANSMISSION LINES
PRIMARY ROAD NUMBERS
U. S. ROAD NUMBERS
INTERSTATE ROAD NUMBERS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISC. YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	F 34(5)		1A	345

STATE OF IOWA

STATE HIGHWAY COMMISSION

PLAN & PROFILE OF PROPOSED IMPROVEMENT
ON THE
PRIMARY ROAD SYSTEM

KEOKUK COUNTY

GRADING SHOULDERING - P.C.C. PAVING & P.C.C. PAVT. WIDE, PROJECT NO. F 34 (5)

ON U.S. 92 FROM THE MAHASKA CO. LINE EAST TO SIGOURNEY

SCALES { PLAN 1 INCH = 100 FT.
PROFILE HOR. 1 INCH = 100 FT., VERT. 1 INCH = 10 FT.

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1960, SHALL APPLY TO WORK ON THIS PROJECT

THE 1964 SPECIFICATIONS SHALL APPLY TO ALL WORK ON THIS PROJECT LET ON OR AFTER NOV. 3, 1964

INDEX OF SHEETS

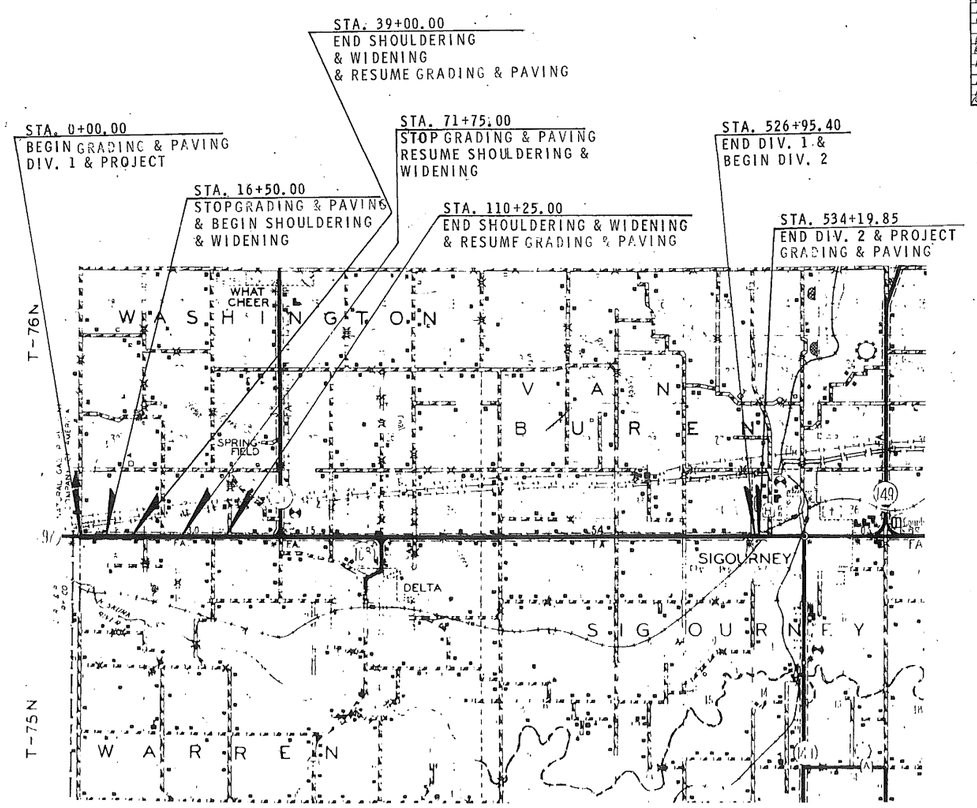
SEE SHEET NO. 1B

CONSTRUCTION PLAN SHOWING PROJECT AS BUILT
ONE COPY PREPARED BY G.M. ORBIN, RES. CONST. ENGR. DATE Feb 1, 1968
ONE COPY APPROVED & FORWARDED TO AMES
James W. Edgerton, DISTRICT ENGINEER Const., DATE 2-2-68
TWO COPIES TO BE MADE & RETURNED TO
Virgil Butler, DISTRICT ENGINEER
Floyd Sheets, RESIDENT MAINTENANCE ENGINEER

STANDARD ROAD PLANS

The following Standard Road Plans shall be considered applicable as noted on the Typical Plates.

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RL-1	8-16-62	RA-13	5-7-63	RC-1	4-1-64
RL-2	3-14-62	RA-16	4-1-63	RC-2	1-4-61
RL-3	11-16-61	RC-1	1-10-61	RD-2	
RL-4	1-9-63	RH-1	2-7-61		
RE-1	2-7-61	RH-2	2-7-61		
RF-3	12-1-61	RH-7	12-5-61		
RF-4	2-9-61	RH-15	11-22-61		
RF-5	12-8-61	RK-2	2-9-61		
RF-7	8-22-63	RL-3	5-1-62		
RF-12	4-15-63	RE-2	1-16-61		
RF-16	4-15-63	RE-1	11-16-60		



MILEAGE SUMMARY 105-1

DIV.	LOCATION	LIN. FT.	MILES
1	(RURAL:)		
	STA. 0+00.00 TO STA. 526+95.40	52,695.40	
	BRIDGE STA. 282+45.00	182.83	
	EQUATION: STA. 292+06.17 = STA. 292+06.10 (LENGTHENS LINE).	0.07	
	BRIDGE STA. 518+70.00	127.03	
	NET LENGTH ROADWAY	52,385.61	9.921
	NET LENGTH BRIDGES	309.86	0.059
	NET LENGTH DIV. 1	52,695.47	9.980
2	(SIGOURNEY:)		
	STA. 526+95.40 TO STA. 534+19.85	724.45	0.137
	NET LENGTH DIV. 2	724.45	0.137
	NET LENGTH ROADWAY	53,110.06	10.058
	NET LENGTH BRIDGES	309.86	0.059
	NET LENGTH PROJECT	53,419.92	10.117

DESIGN DATA
RURAL

1983 AADT	2050	V.P.D.
1988 AADT	3500	V.P.D.
1983 DHV	403	V.P.H.
DIRECTIONAL	52	%
TRUCKS	11	%
DESIGN V	60	M.P.H.

PARTIAL ACCESS CONTROL

Plate Signal Title

10 SHEETS

REVISED OCT. 27, 1964 SHEETS NO. 1A, 3C, 67 & 68
REVISED JULY 7, 1964 SHEETS NO. 3A, 16, 17 & 39
REVISED OCT. 29, 1963 SHEETS NO. 3A & 3C

APPROVED
CHIEF ENGINEER DATE
IOWA HIGHWAY COMMISSION

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED
DIVISION ENGINEER DATE

F-34(5) EROSION - Dec. 1, 1964

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		F 34(5)		15	345

Property Owners:
AO- Rex V. & Mildred M. McNabb
AP- Earl Morrow
AQ- John F. & Blanche E. Haupert
AR- Kenneth E. Vogel
AS- Pedal Schultheiss

B.M. No. 41 EL. 746.92 — B.M. No. 41A EL. 768.02 — B.M. No. 42 EL. 773.87 — ~~B.M. No. 43 EL. 790.24~~ B.M. No. 43 EL. 792.84

VAN BUREN TWP
T 76N R12W
SEC. 31

SIGOURNEY TWP
T 75N R12W
SEC. 6

REX V. & MILDRED McNABB
ACQUIRED MARCH 15, 1963
CONSIDERATION $ 1,231.00
TITLE BY WARRANTY DEED
BOOK: 81 PAGE: 332
KEOKUK COUNTY RECORDER

EARL MORROW
ACQUIRED MARCH 14, 1963
CONSIDERATION $700.00
TITLE BY WARRANTY DEED
BOOK: 81 PAGE: 355
KEOKUK COUNTY RECORDER

KENNETH E. VOGEL
ACQUIRED MARCH 27, 1963
CONSIDERATION $ 456.00
TITLE BY WARRANTY DEED
BOOK: 81 PAGE: 408
KEOKUK COUNTY RECORDER

JOHN F. & BLANCHE E. HAUPERT
ACQUIRED SEPT. 10, 1963
CONSIDERATION $ 3,560.00
TITLE BY WARRANTY DEED
BOOK: 81 PAGE: 396
KEOKUK COUNTY RECORDER

For details of Sd. Rd. See Sheet No. 28.

Sta. 315+00 — Match Line — R.O.W. & C.A.7 — Use Existing R.O.W. — Sta. 345+00 — Match Line

~~+078.40 9 Lt. ROW. Rail~~ — ~~+078.40 9 Lt. ROW. Rail~~ — ~~+093.23.4 Lt. ROW. Rail~~ — ~~+379.63.6 Lt. ROW. Rail~~ — ~~+548.12.6 Rt. ROW. Rail~~ — +093.38.1 Rt. ROW. Rail

Type (B) Flumes Removed — Sta. 318+15.6 — 3'X3'X44' R.C.B. — D.A.-44 Ac.-H. — Extend with 3'X3' R.C.B. & Build 3'X3' Flume — FL. Lt. 738.0 — FL. Rt. 732.5 — Flume 722.0

Type (A) Flumes Removed

P.O.T. Sta. 325+02.1 — P.O.T. Sta. 329+29.6 = P.I. Sta. 1329+29.6 Side Rd. Survey — P.O.T. Sta. 333+51.0 — P.O.T. Sta. 341+46.7

Side Road Survey — Local Road — 1379.63.6 Lt. ROW. Rail

18"X29' Corr. Pipe — 24"X42' Corr. Pipe — 18"X40' Corr. Pipe — 15"X27' Corr. Pipe (Removed) — 15"X38' Corr. Pipe Removed — 15"X20' Corr. Pipe (Removed) — 24"X28' (Removed) — 18"X44' Ent. Pipe — 6-18"X36' Ent. Pipe — 24"X 38' Corr. Pipe

Barn — Cave — Sheds — Wash Ho. — Hen Ho — Well — Farm Ent. — Gas — Tank — Shed — Ho. — Field Ent. — Bldg. — Cribbed — Fres. Rd. — Lt. Farm Ent. Rt. — Field Ent. Lt. — Local Rd. Lt. — Local Rd. Rt.

LEGEND:
- Central Ia. Tel. Co.
- N.W. Bell Tel. Co.
- Tama Ia. Poweshiek R.E.A. Co-op

0 50 100 Scale

PLAN — SURVEYED: PLOTTED: CHECKED: NOTE BOOK: NO.: ALIGNMENT CHECKED. RT. OF WAY CHECKED. — DATE — BY

PROFILE — SURVEYED: PLOTTED: CHECKED: NOTE BOOK: NO.: B. M.'s NOTED. STRUCTURE NOTATIONS CHKD. — DATE — BY

479.20 — +74.22

C = 26.320 — Gumbotil 6.516 — 32,836

Ft 15% = 26,320 — Gumbotil (Ft 15%) = 3,451 — Haul Gumbotil To Sta. 343+ = 3,065 — 32,836

C = 16,847 — Gumbotil = 3,366 — Haul Gumbotil from Sta 333+ = 3065 — 23,278

Ft 15% = 16,847 — Gumbotil (Ft 15%) = 6431 — 23,278

+1.52% — 550' V.C. — 554.53 — +6.00% — 83.53 — 900' V.C. — -1.60% — 400' V.C. — 6.513

2½:1 Foreslopes — 2½:1 Foreslopes — 2½:1 Foreslopes

5' Ditch — No Ditch — 5' Ditch — 4' Ditch — 4' Ditch — 5' Ditch — No Ditch — No Ditch

Prep Subgrade Treatment No. 24
For details See Sheet No. 35 H & 35 I

Haul Gumbotil To Sta. 343+ = 3,065

Haul Gumbotil from Sta 333+ = 3065

315 320 325 330 335 340 345

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

320

325

Sta. 315+00

+12

AO

+86
148

+00
48

+15
145' Barn

+09.8 23.4' Lt.
R.O.W. Rail

+07.8 40.9' Lt.
R.O.W. Rail

18"X29'
Corr Pipe

174'

+93

Gar.

Tank

Shed

Ho.

24"X22"
ENT. PIPE

18"X27' (Removed)
Corr Pipe

24"
Conc

RAIL +00

R.O.W. & C.A.7

680'

+22

+16

+89

30

30

92

18' Conc

Type (B)
Flumes
Removed

Sta 318+15.6
3'X3'X44' R.C.B.
D.A. - 44 Ac. H.
Extend with 3'X3' R.C.B.
& Built 3'X3' flume
FL. Lt. 738.0
Rt. 732.5
Flume 722.0

Use Existing R.O.W.

Match Line

R.O.W. & C.A.7
P.O.T. Sta. 325+02.1

Type (A)
Flumes
Removed

+09.9 38.1' Rt
R.O.W. Rail

164'
Barn

Cave

Sheds

AP

STATE OF IOWA

STATE HIGHWAY COMMISSION

DESIGN FOR

BRIDGES AND CULVERTS

PRIMARY ROAD SYSTEM

PROJECT NO. F-34(5)

KEOKUK COUNTY

BRIDGES & CULVERTS — KEOKUK CO. — F-34(5)

NOVEMBER 12, 1963 LETTING

IN LETTING OF OCTOBER 8, 1963

DESIGN NO. 762 — T - 76N R - 12W & T - 75N R - 12W — STATION 518+70.00
SECTIONS 34 & 3 — OVER ROCK CREEK ON IOWA RELOCATED #92 — VAN BUREN & SIGOURNEY TOWNSHIPS

125'-0 X 30' CONTINUOUS CONCRETE SLAB BRIDGE
10° SKEW

ESTIMATE OF QUANTITIES

ITEM		UNIT	TOTAL
Concrete		Cu. Yd.	312.9
Reinforcing Steel		Lbs.	69,969
16" P10A Piling	TYPE I or II — Furnish 18 at 65'	Lin. Ft.	1,170 } or
	TYPE I or II — Drive 18 at 65'	Lin. Ft.	1,170 }
	TYPE III or IV — Furnish & Drive 18 at 50'	Lin. Ft.	900
Creosoted Piling 11 at 45'; 11 at 50'		Lin. Ft.	1,045
Class 20 Excavation		Cu. Yds.	120
Granular Backfill		Tons	80
4" ϕ Tile Subdrains		Lin. Ft.	100
Class 10 Channel Excavation		Cu. Yds.	650
Aluminum Handrail (℄ - ℄ End Posts) or Steel Handrail (℄ - ℄ End Posts)		Lin. Ft.	230 / 230
Removal of Existing Structure		L. S.	LumpSum
* Hauling & Storing Structural Steel		L. S.	LumpSum

* NON-PARTICIPATING

DESIGN NO. 662 — T - 75N R - 13W & T - 76N R - 13W — STATION 282+45.00
SECTIONS 36 & 1 — OVER CEDAR CREEK ON IOWA NO. 92 — WASHINGTON & WARREN TOWNSHIP

IN LETTING OF OCTOBER 8, 1963

150'-0 X 30'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

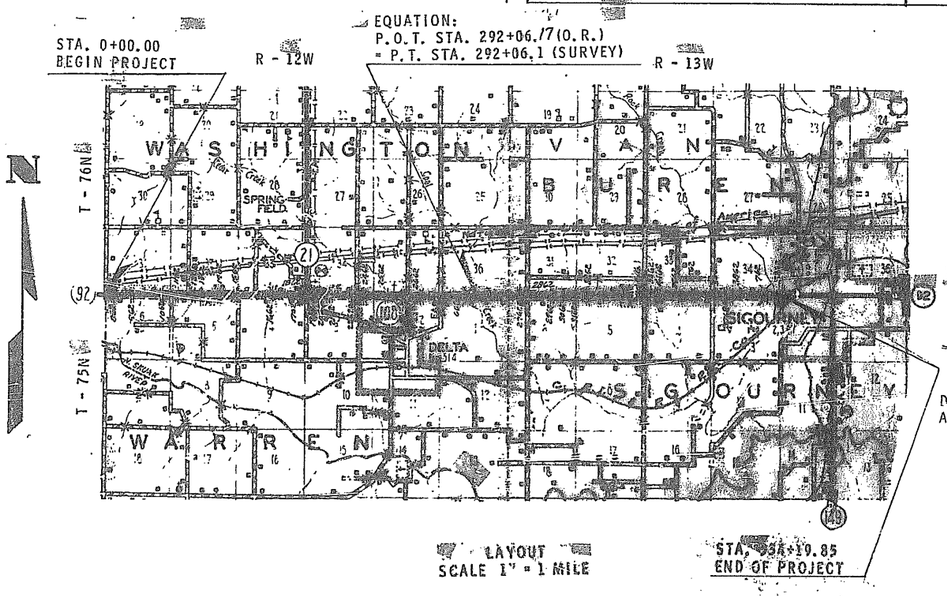
ESTIMATE OF QUANTITIES

ITEM		UNIT	TOTAL
Concrete		Cu. Yds.	358.1
Reinforcing Steel		Lbs.	67,381
Proten. Prestr. Conc. Beams 55'-0 (B-4)		Only	14
Proten. Prestr. Conc. Beams 67'-6 (B-7)		Only	7
Creosoted Piling 26 at 45'		Lin. Ft.	1,170
10BP42 Steel	Furnish 32 at 35'	Lin. Ft.	1,120
Bearing Piling	Drive 32 at 35'	Lin. Ft.	1,120
4" ϕ Tile Subdrain		Lin. Ft.	168
Class 10 Channel Excavation		Cu. Yd.	1,925
Class 20 Excavation		Cu. Yd.	145
Class 21 Excavation		Cu. Yds.	250
Removal of Existing Structure		L. S.	LumpSum
Aluminum Handrail	(℄ - ℄ End Posts)	Lin. Ft.	341.0 / 342.0
Steel Handrail	(℄ - ℄ End Posts)	Lin. Ft.	
* Hauling and Storing Structural Steel		L. S.	LumpSum
Granular Backfill		Tons	145

* NON-PARTICIPATING ITEM

IOWA STATE HIGHWAY COMMISSION
STANDARDS REQUIRED

CHP	C1P	CFP	C2J	P10A
CBH-00	C2P		C4J	
CBH-30	C3P		C5J	
	C4P		C6J	
	C5P		C10J	
	C6P		F2J	
	C10P		F3J	
	C6F		F4J	
	C10F		F5J	
			F6J	



These bridges will require Bridge Sign Assemblies furnished and placed by others as specified in Traffic and Highway Planning Instruction No. 11, Revised October 1, 1961.

DETAIL PLANS REDUCED IN SIZE (DO NOT SCALE)

SPECIFICATIONS:

CONSTRUCTION: Standard Specifications of the Iowa State Highway Commission, Series of 1960, plus current Supplemental Specifications and Special Provisions.

DESIGN STRESSES for the following materials are in accordance with A.A.S.H.O. Standard Specifications for Highway Bridges, Series of 1961.

Concrete in accordance with Section 1.4.11 f'_c = 3500 psi.
Reinforcing Steel in accordance with Section 1.4.12 "Reinforcement" for Intermediate, Hard, or Rail Steel Grade.
Structural Steel in accordance with INT. 7(62); 1.4.2 "Structural Steel".
Prestressed Concrete in accordance with Section 1.13.7 f'_c = 5000 psi.
Prestressing Steel in accordance with Section 1.13.7 f'_c = 250,000 psi.

MILEAGE SUMMARY — 105-1

LOCATION	LIN. FT.	MILES
BRIDGE AT STA. 282+45.00	182.833	.035
BRIDGE AT STA. 518+70.00	127.651	.024
Total		.059

Revised 8-31-64 Sheet № 2 of 43 Excavation quant. changed. Total quantities corrected.
" " Sheet № 30 of 43 "
Revised 7-9-64: Title Sheet 2 of 2 - Des. No's 4062 & 4162 added. Effected quantities changed accordingly.
Revised 7-9-64: Sheet No 43A & Des No's 4062 & 4162 added to project.

APPROVED R. M. Tuttle AUG 2 2 1963
DEPUTY CHIEF ENGINEER IOWA HIGHWAY COMMISSION

DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS
APPROVED

Revised 4-17-64 Sheet № 30 of 43 Des. № 1262 Flow Line elevations raised.

Revised: 2-4-64 Sheet 26 of 43 Design 862 bar size corrected. - Sheet 28 of 43 Design 962 dimension corrected. - Sheet 28 of 43 Design 2362 Junction details added.

Design 762 Revised 10-11-63: Listing of 16" P10A Piling corrected.

Revised 1-15-64, Design 2462 for grade line change. See Sheet 35 and Title sheet 2 of 2

TITLE SHEET 1 OF 2

KEOKUK COUNTY PROJECT NO. F-34(5) FILE NO. 21609

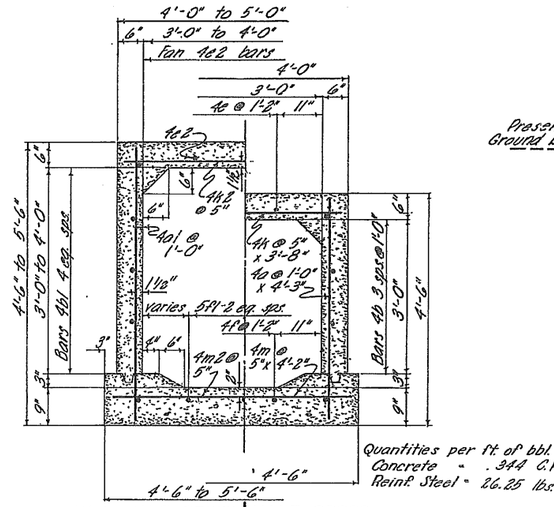
BILL OF REINFORCING STEEL - INLET TAPER

MARK	LOCATION	SHAPE	NO.	LENGTH	LINEAR FT. 4	LINEAR FT. 5
4a1	Walls: FFV		22	4'-3" 5'-3"	104.5	
*4b1	Walls: FFH		8	10'-1" 10'-7"	81.7	
4a2	Bott. Slab: Long.		2	10'-9"	21.5	
*5f1	Top Floor: Long.		5	10'-0"		50.0
4b2	Bott. Slab: Trans.		25	3'-2 9/16"	104.2	
4m2	Top Floor: Trans.		24	4'-2 1/16" 5'-2"	112.0	
				LENGTH	423.9	50.0
				WEIGHT	283.2	52.2
* Extensions from Std. 4'x4' Hdwl.				TOTAL WEIGHT	335.4	

Add two longitudinal "d" bars (1'2"d x 10'-8") in apron floor to support "a" bars. 14 lbs. included in Reinf. Steel Quantity.

Add 20 dia lap on 3'x3' RCB longitudinal inlet bars. 7 lbs. included in Reinf. Steel Quantity.

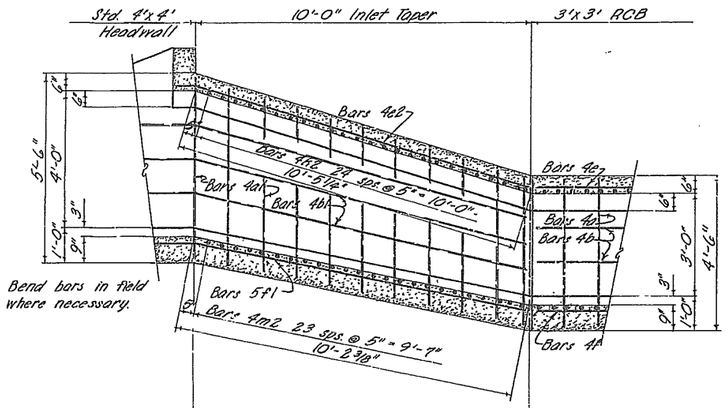
BENCH MARK NO. 40, Sta. 314+65 Set R.R. Spike in power pole 99' Rt. Elev. = 748.14



Quantities per ft. of bbl.
Concrete = .344 C.Y.
Reinf. Steel = 26.25 lbs.

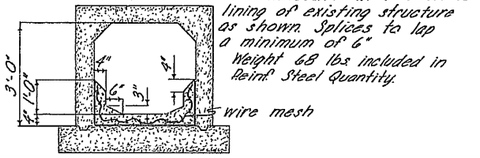
VAR. HALF CROSS SEC. THRU INLET TAPER
SCALE: 3/4" = 1'

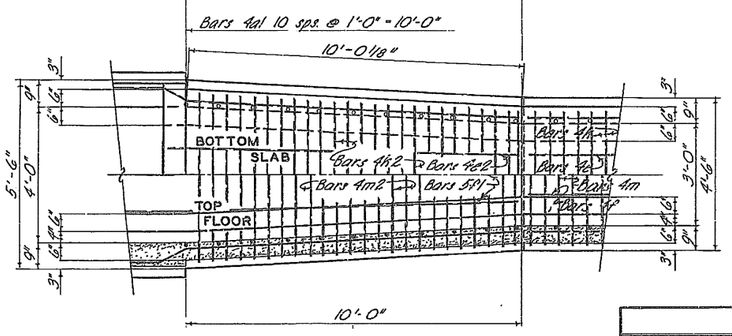
HALF CROSS SEC. THRU 3' x 3' BBL.
SCALE: 3/4" = 1'



Bend bars in field where necessary.

LONGITUDINAL SECTION





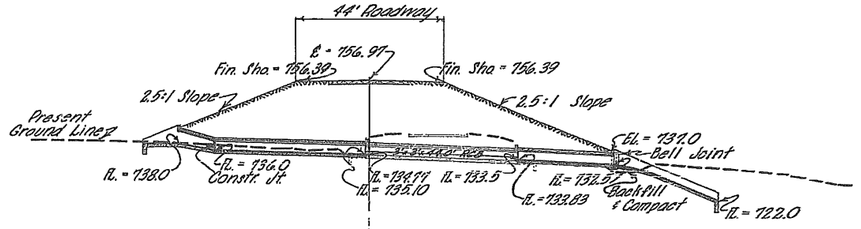
PLAN VIEW - INLET TAPER
SCALE: 1/2" = 1'

CONCRETE IN PARTS

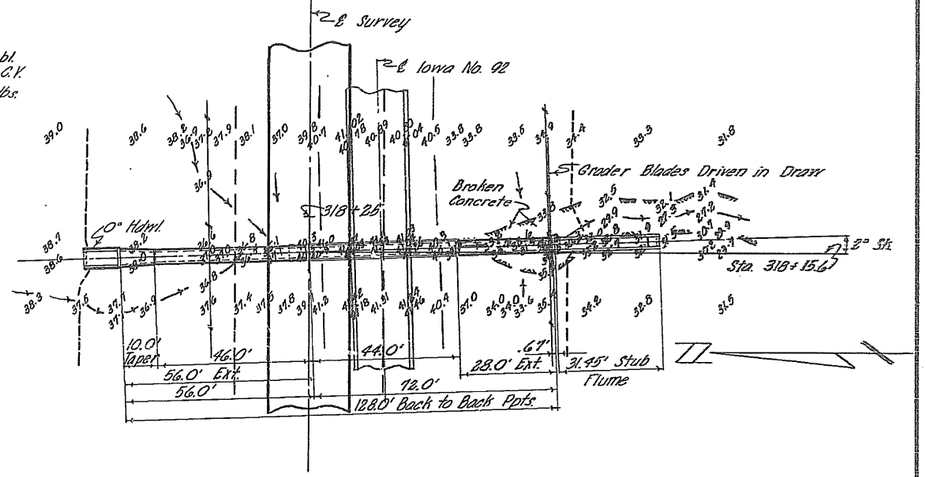
LOCATION	ABOVE KEYWAY	BELOW KEYWAY	TOTAL
HEADWALL	1.91	2.59	4.50
INLET TAPER 10'-0"	2.22	1.64	3.86
BARREL - 73.34' + OUT PPT.	19.34	10.97	25.31
JCT. BELL JOINT	.31	.38	.69
FLUME	3.10	5.08	8.18
LINER	2.82		2.82
TOTAL	25.30	20.66	45.96

TOTAL QUANTITIES

CONCRETE	46.0	C.Y.
REINFORCING STEEL	3199	LBS.
CL. 20 EXCAVATION	67	C.Y.
CL. 10 EXCAVATION (CHANNEL)	62	C.Y.



FLUME DATA
$\Delta A = 21^\circ 48'$, $\Delta C = 3^\circ 00'$, B = 5'-11 13/16", S = 33'-10 7/16", V = 2'-5 1/16", W = 12'-6 1/16", L3 = 11'-6 3/16", D = 5'-11 11/16", E = 5'-6 11/16", P.C. El. = 733.5, P.I. El. = 732.19, P.P. El. = 731.90, P.T. El. = 729.97, X1 = 1'-11 3/16", X2 = 1'-1 1/16", X3 = 0'-5 13/16", X4 = 0'-1 7/16", L3 = 2'-10 5/8"



SITUATION PLAN
SCALE: 1" = 20'

Culv. Contr. to remove portions of broken concrete and grader blades interfering with new construction. Include in price bid for removals.

See Miscellaneous Details Sheet No. 17 of 43 for flume excavation detail, section thru flume, flume curve data, and stub flume curtain detail.

For notes and details not shown, see Iowa State Highway Commission Std's. CH2, C3R, CF2, F3J.

Culv. Contr. to break existing hdwls. to front of ppt and extend with 3'x3' RCB. Incorporate exposed reinf. steel into new work.

LOCATION
SECTION 31 & 6 - T 76 & 75N - R 12W
TOWNSHIP VAN BUREN & SIGOURNEY
COUNTY KEOKUK

DRAINAGE AREA = 44 AC. H.
FILL = 18'

DESIGN FOR
3' x 3' RCB EXTENSION & STUB FLUME - 2° SK.

STA. 318+15.6 PROJECT NO. F-34(5)

KEOKUK COUNTY

IOWA STATE HIGHWAY COMMISSION

MAY 1963 SCALES AS NOTED

SHEET 1 OF 1

DESIGN NO. 2762 COUNTY Keokuk FILE NO. 21609

ER

DIETZGEN NO. 51 ARKWRIGHT

KEOKUK COUNTY
GRADING-P.C.C. PAVING AND A.C. RESURFACING
P.C.C. PAVEMENT WIDENING
GRADING (SHOULDERING)
LIGHTING

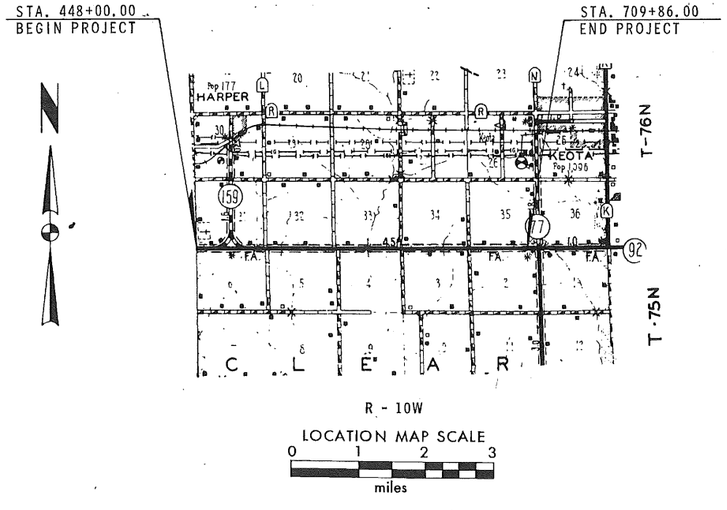
LETTING DATE 1/72

F - 92-8(3)--20-54

CONVENTIONAL SIGNS

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line — Old / New — Sta. / Ref. Point
Profile Grade
Railroad
Field Tile
Underground Lines — Old / New — G Gas / T Tel.
Culverts — Old / New
Utility Poles — Power Tel.
Fences — Barb. / Mesh
Trees Or Brush
Stream
Dike — Old / New
County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
ONE COPY PREPARED BY R. M. Wilson (RESIDENT ENGINEER) DATE 4/2/70
ONE COPY APPROVED & FORWARDED TO AMES DATE 5-25-70
James W. Edgerton DISTRICT ENGINEER, CONSTRUCTION
TWO COPIES TO BE MADE AND RETURNED TO:
Virgil Butler DISTRICT ENGINEER
Charles Holmes RESIDENT MAINT. ENGINEER



STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

PRIMARY ROAD SYSTEM
KEOKUK COUNTY
GRADING-P.C.C. PAVING AND A.C. RESURFACING
P.C.C. PAVEMENT WIDENING
GRADING (SHOULDERING)
LIGHTING

SCALES: AS NOTED

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL APPLY TO WORK ON THIS PROJECT

ON IA. #92 FROM 1/2 MILE WEST IA. NO. 159 TO THE INTERSECTION WITH IA. NO. 77

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		1	261

PROJECT NUMBER
F-92-8(3)--20-54

R.O.W. PROJECT NUMBER
FN-92-8(3)--21-54

INDEX OF SHEETS 105-3

NO.	DESCRIPTION
1	TITLE SHEET
1A	TABULATION OF REVISIONS
2, 3	TYPICAL SECTIONS
4-6	ESTIMATE OF QUANTITIES AND GENERAL INFORMATION
7-15	PLAN AND PROFILE STA. 448+00 TO STA. 709+86
16, 17	PLAN AND PROFILE SIDE ROADS
18, 19	REFERENCE INFORMATION AND BENCH MARKS
20	STAKE-OUT OF INTERSECTION OF IA. #92 AND IA. #159
21	JOINTING DETAILS OF INTERSECTION OF IA. #92 AND IA. #159
22	HIGHWAY LIGHTING LAYOUT INTERSECTION IA. #92 AND IA. #159
23	TABULATION OF DRAINAGE STRUCTURES, AND TABULATION OF SUBGRADE TREATMENTS
24	DETAILS OF DRAINAGE STRUCTURES
25-35	SOILS SHEETS
36-40	TABULATION OF QUANTITIES AND ADJUSTMENTS
41-71	STANDARD ROAD PLANS
72-77	STANDARD LIGHTING PLANS
78-261	CROSS SECTIONS

MILEAGE SUMMARY 105-1

DIV.	LOCATION	LIN. FT.	MILES	STATE CONTROL SECTION NO.
	RURAL KEOKUK COUNTY:			
	STA. 448+00.00 TO STA. 709+86.00	26,186.00		
	DEDUCT BRIDGE STA. 587+36	174.67		
	NET LENGTH OF ROADWAY	26,011.33	4.926	
	NET LENGTH OF BRIDGE	174.67	0.033	
	TOTAL NET LENGTH OF PROJECT	26,186.00	4.959	54-0400

STANDARD ROAD PLANS
The following Standard Road Plans shall be considered applicable to construction work on this project.

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RA-13	11-29-66	RF-2	5-1-67	RH-2	1-25-67
RA-16	4-15-66	RF-3	11-16-66	RH-7	4-21-65
RC-1	11-28-66	RF-4	8-6-65	RH-22	2-9-67
RC-2	11-28-66	RF-5	6-4-63	RK-7	9-1-66
RD-17	12-7-64	RF-7	4-2-63	RL-1	3-11-65
RE-1	12-19-66	RF-13	12-2-66	RL-3	11-16-61
RE-2	8-19-66	RF-14	12-1-66	RL-4	4-13-66
RE-7	3-25-66	RF-20	1-8-65	RM-1	3-22-67
RE-8	3-25-66	RF-22	9-26-63	RM-2A	1-27-67
RE-9	10-25-66	RF-23	7-15-66	RM-26	1-27-67
RF-1	7-1-64	RG-3	3-1-62	RM-74	9-29-65

STANDARD ROAD PLANS
The following Standard Road Plans shall be considered applicable to construction work on this project.

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RA-11	1-26-67				
RA-12	9-29-65				

THIS PROJECT LET AS PROJECT NO.
FN-92-8(3)--21-54

79 SHEETS

101-4

DESIGN DATA RURAL

1967 AADT 1457 V.P.D.
1987 AADT 1797 V.P.D.
1987 DHV 196 V.P.H.
DIRECTIONAL 53 %
TRUCKS 10 %
DESIGN V 60 M.P.H.
PARTIAL ACCESS CONTROL

REVISED: SEE FOLLOWING SHEET 1-A

APPROVED
DEPUTY CHIEF ENGINEER
IOWA HIGHWAY COMMISSION DATE

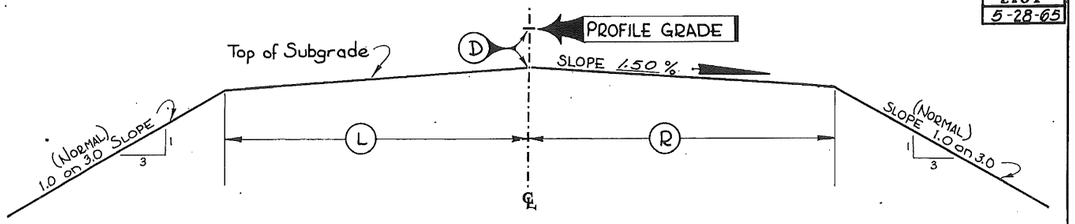
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.
J. William Snodgrass
DATE April 17, 1970 IOWA REG. NO. 4133

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED
DIVISION ENGINEER DATE

4-18-68 4-18-69 KEOKUK COUNTY PROJECT NO. F-92-8(3)--20-54 SHEET NO. 1

Rev. W.T.

2101
5-28-65



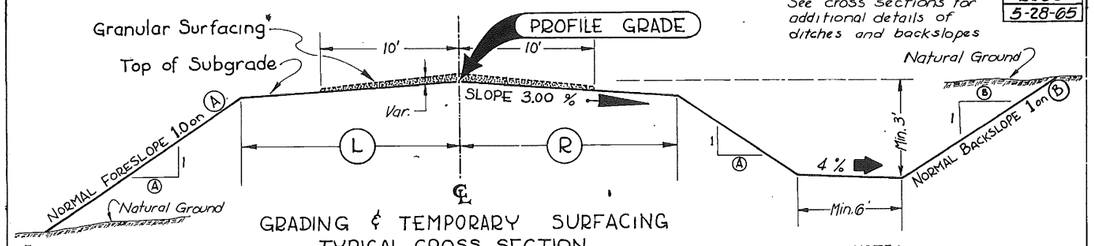
GRADING
TYPICAL CROSS SECTION

NOTE:
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

LOCATION		DIMENSIONS		
Station	to Station	L	R	D
448+00.00	457+00.00	23.5	23.5	9"
474+50.00	536+50.00	23.5	23.5	9"
563+75.00	653+50.00	23.5	23.5	9"
25+63.00	28+00.00	23.5	23.5	9"

See typical cross section for details of ditches and backslopes

2108
5-28-65



See cross sections for additional details of ditches and backslopes

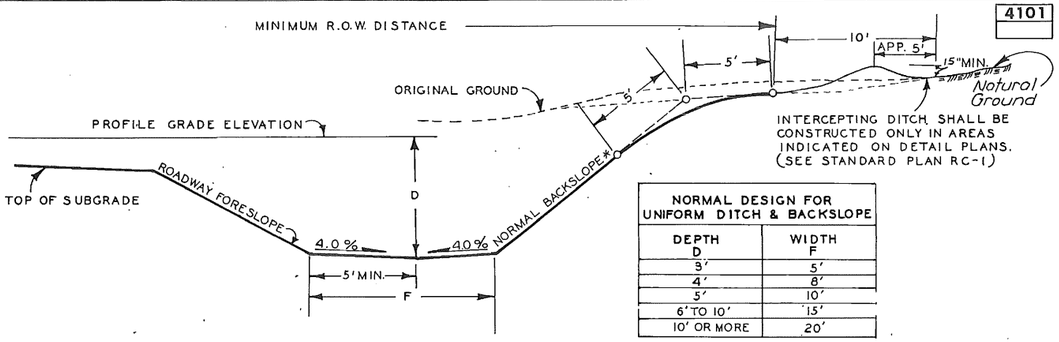
GRADING & TEMPORARY SURFACING
TYPICAL CROSS SECTION

*Granular surfacing is estimated at the rate of 1350 tons per mile, including 50 tons for access points.

LOCATION		DIMENSIONS		SLOPES	
Station	to Station	L	R	A	B
S.R. AT 505+32.7 LT. & RT.		14'	14'	2	2
S.R. AT 609+21.2 LT.		14'	14'	2	2
S.R. AT 612+34.9 RT.		14'	14'	2	2
S.R. AT 663+88.0 LT. & RT.		14'	14'	2	2

NOTE:
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

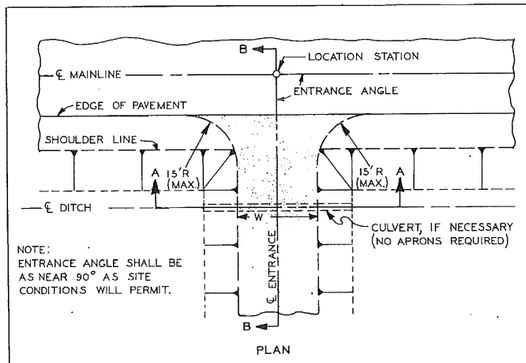
4101



TYPICAL CROSS SECTION
OF DITCHES & BACKSLOPES

NORMAL DESIGN FOR UNIFORM DITCH & BACKSLOPE	
DEPTH D	WIDTH F
3'	5'
4'	8'
5'	10'
6' TO 10'	15'
10' OR MORE	20'

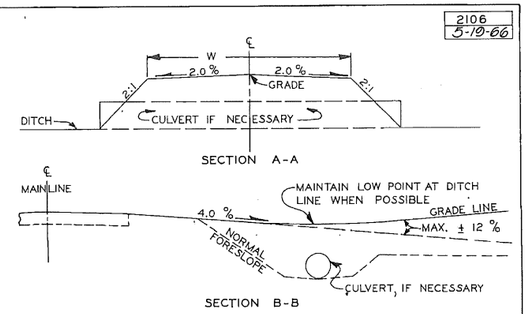
* BACKSLOPE SHALL BE CONSTRUCTED ON A SLOPE OF 2:50 ON 1.00 EXCEPT WHERE INDICATED OTHERWISE ON DETAIL PROJECT PLANS.



NOTE:
ENTRANCE ANGLE SHALL BE AS NEAR 90° AS SITE CONDITIONS WILL PERMIT.

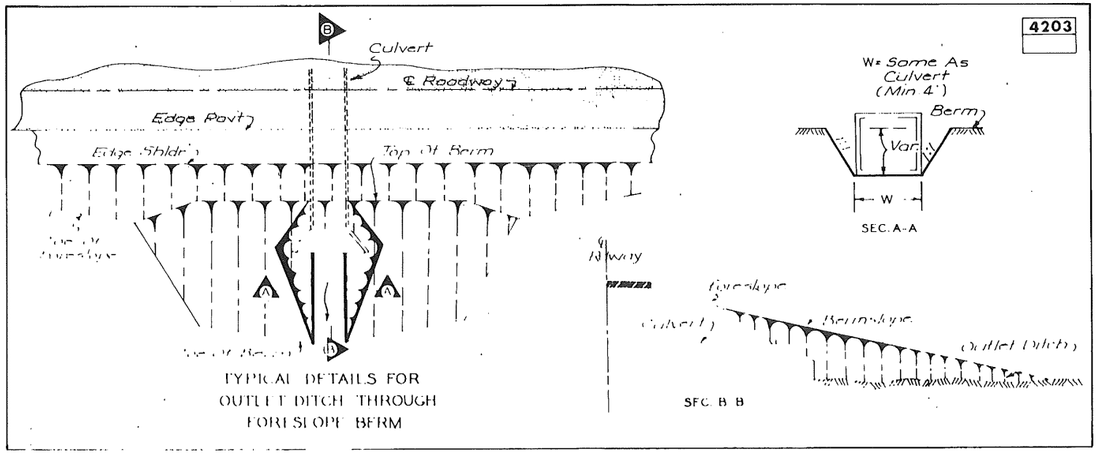
PLAN

2106
5-19-66



TYPE C ENTRANCE
(FIELD, FARM OR RESIDENTIAL ENTRANCE)

4203

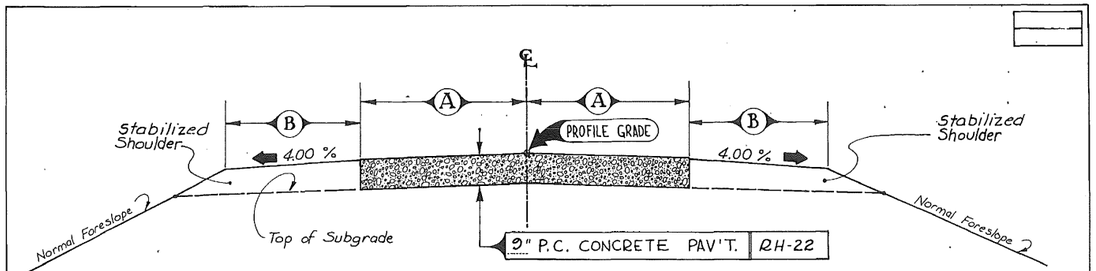


TYPICAL DETAILS FOR
OUTLET DITCH THROUGH
FORESLOPE BERM

W.T.

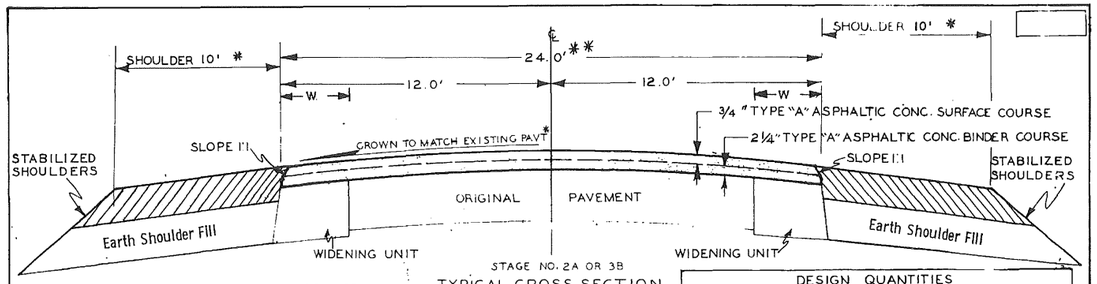
Keokuk

COUNTY	PROJECT NUMBER	STATE	FED. AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	F-92-8(3)--20-54	IOWA	3		2	261



TYPICAL CROSS SECTION
PROPOSED HIGHWAY IMPROVEMENT

STATION	TO	STATION	A	B
448+00.00		457+00.00	12'	10'
474+50.00		536+50.00	12'	10'
563+75.00		653+50.00	12'	10'



*EXCEPT AS MODIFIED THROUGH AREAS OF SUPERELEVATED CURVES SEE STANDARD PLAN RG-5 AND TABULAR LISTING OF SUPERELEVATED CURVES WHEN APPLICABLE

**EXCEPT AS MODIFIED BY DETAIL DRAWINGS WHEN APPLICABLE FOR AREAS OF SPECIAL SHAPING AT BRIDGE APPROACHES INTERSECTIONS, ETC.

STAGE NO. 2A OR 3B
TYPICAL CROSS SECTION
(SEE SHEET NO. 64)
ASPHALTIC CONCRETE RESURFACING

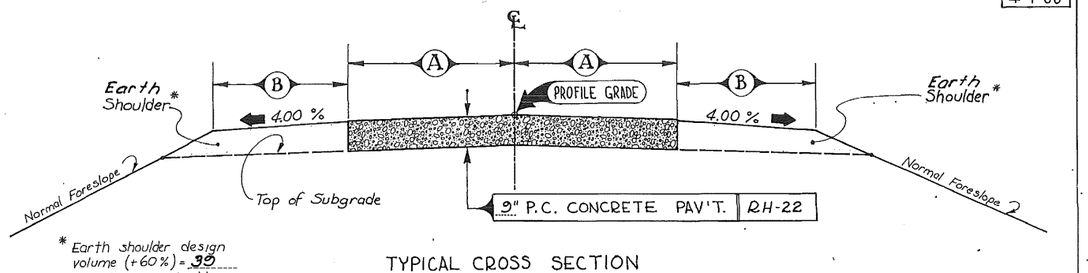
LOCATION

STATION	TO STATION
457+00.00	474+50.00
536+50.00	563+75.00
653+50.00	709+86.00

DESIGN QUANTITIES

ITEM	RATE	DESIGN VOLUME
(2) PRIME & TACK COAT	0.07 GAL/YD²	37.33 GAL/STA.
(2) SAND COVER	3 LB./YD²	1.33 TON/STA.
(1) BINDER COURSE	145 LB./FT.³	32.62 TON/STA.
(1) SURFACE COURSE	145 LB./FT.³	10.85 TON/STA.

2201
4-1-66

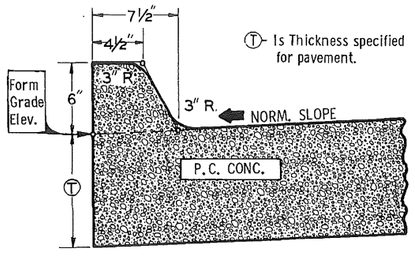


* Earth shoulder design volume (+60%) = 33 cu. yds. per shoulder per station.

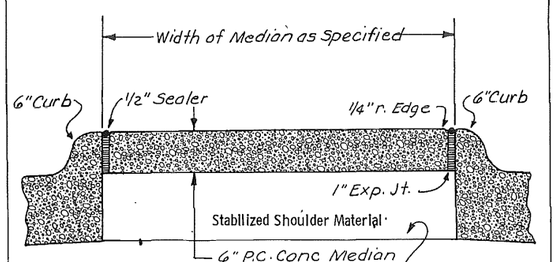
TYPICAL CROSS SECTION
PROPOSED HIGHWAY IMPROVEMENT

STATION	TO	STATION	A	B
25+63.0		28+00.0	12'	10'

6101

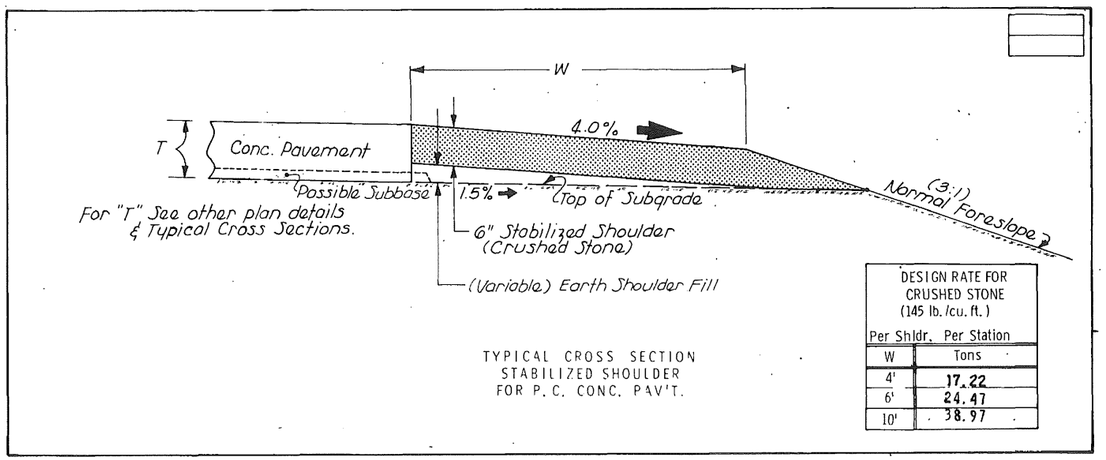


DETAILS OF 6" INTEGRAL CURB



DETAILS OF
TYPICAL PAVED MEDIAN

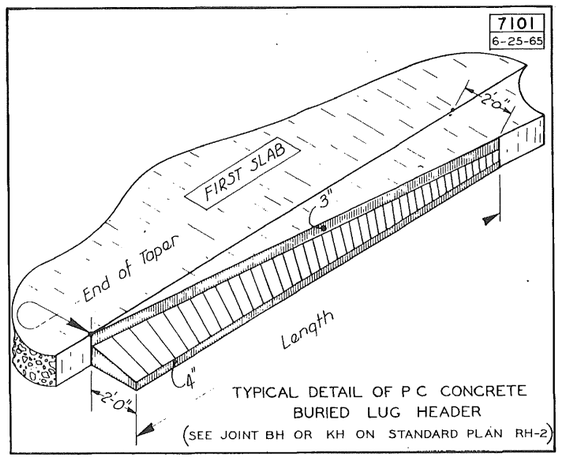
NOTE: This section is typical only, and may be appropriately modified in areas specifically designated by the engineer. Material for filling median from subgrade to bottom of concrete, is included in "Estimate of Quantities".



TYPICAL CROSS SECTION
STABILIZED SHOULDER
FOR P.C. CONC. PAV'T.

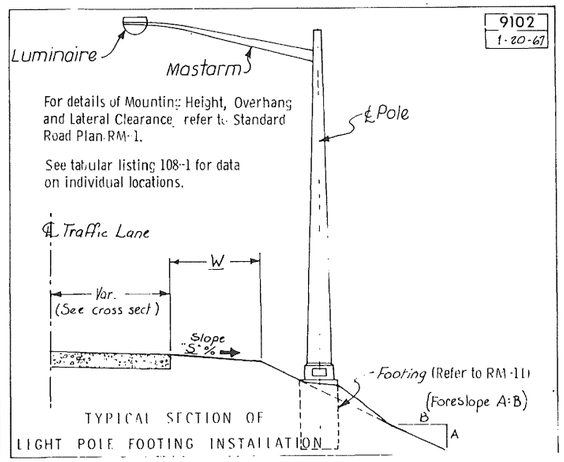
DESIGN RATE FOR CRUSHED STONE (145 lb./cu. ft.) Per Shldr. Per Station	
W	Tons
4'	17.22
6'	24.47
10'	38.97

7101
6-25-65



TYPICAL DETAIL OF P C CONCRETE
BURIED LUG HEADER
(SEE JOINT BH OR KH ON STANDARD PLAN RH-2)

9102
1-20-67



TYPICAL SECTION OF
LIGHT POLE FOOTING INSTALLATION

W.T.

Keokuk COUNTY	PROJECT NUMBER	STATE	FED ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	F-92-8(3)--20-54	IOWA	5		3	267

FED. ROAD DIST. No.	STATE	FEDERAL PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
				9	261

LAFAYETTE TWP. T76N R10W Sec. 31 Sec. 32

~~B.M. No. 75 EL. 760.66~~

~~B.M. No. 76 EL. 782.11~~

~~B.M. No. 77 EL. 742.31~~

~~B.M. No. 78 EL. 781.26~~

Property Owners:
- BA - William Heisdorffer
- C - Michael & Margaret R. Redlinger
- D - Raymond J. & Margaret S. Linnenkamp
- E - Pearl Lorraine & Jack Hawkins
- F - Dorothy Schulte
- G - Coletta Webb, Everett Sandog, Ethelred Sandog

~~Sta. 507+34.39' Lt. 18" x 26' Corr. Pipe DA. = 1 Ac. ±. Remove~~

Install Subdrain No. 2 See Sheet No. 23

Δ = 3° 15' Lt
D = 0° 30'
T = 325.1
L = 650.0
E = 4.62
R = 11,460.0

Ⓒ RAYMOND J. AND MARGARET S. LINNENKAMP
ACQUIRED JAN. 25, 1967
CONSIDERATION $ 900.00
TITLE: BY WARRANTY DEED
BOOK: 82 PAGE: 477
KEOKUK COUNTY RECORDER

Ⓕ DORTHY K. SCHULTE
ACQUIRED FEB 17, 1967
CONSIDERATION $ 4,500.00
TITLE BY WARRANTY DEED
BOOK: 84 PAGE: 325
KEOKUK COUNTY RECORDER

Ⓔ PEARL LORRAINE HAWKINS
ACQUIRED MARCH 29 1967
CONSIDERATION $ 320.000
TITLE BY WARRANTY DEED
BOOK: 82 PAGE: 495
KEOKUK COUNTY RECORDER

Sta. 504+00 · 505 · 510 · 515 · 520 · 525 · 530 · 535 · Sta. 536+00

Match Line

Cable Marker · 3° 08' · ~~Sta. 504+85 Rt. 53-94' Lt. R.O.W. Rail Drain~~ · ~~Sta. 504+80 53-31' Lt. R.O.W. Rail~~ · ~~Remove Hermes~~ · ~~Sta. 505+28 Rt. 22' Lt. R.O.W. Rail~~ · ~~Remove Hermes~~ · ~~Sta. 505+28 Rt. 30' Lt. R.O.W. Rail~~ · ~~Remove Hermes~~

~~Sta. 504+85 Rt. 32' Lt. Approx. Sec. Line~~

~~Sta. 504+85 Rt. 104' Lt. R.O.W. Rail~~

Local Road (Dirt) · Approx. Sec. Line · ℄ 18' ± · 50' R.

Special Dike EL. 750.3

Borrow "B"

Borrow "C"

Crib · Barn · Conc. Mon. (Double)

P.C. Sta. 508+41.6 · ℄ 100.3 FM Rail

P.I. Sta. 511+66.7 · Cut "X"

P.T. Sta. 514+91.6 · ℄ 120' · ~~Sta. 514+44 Rt. 50' R.R. ℄ 102'~~

~~15" x 20' Corr. Pipe Removed~~ · ~~18" x 38' Corr. Pipe~~ · ~~18" x 24' Corr. Pipe Removed~~ · ~~18" x 28' Corr. Pipe Removed~~ · ~~15" x 20' Corr. Pipe Removed~~ · ~~18" x 38' Corr. Pipe~~ · ~~15" x 35' Lt. R.O.W. Rail~~ · ~~18" x 38' Corr. Pipe~~ · ~~18" x 42' Corr. Pipe~~ · ~~Flumes Removed~~

~~Sta. 505+32.7 DA. = 11 Ac. ±. Install 30" RF-1 at Sta. 505+40 Lt. 751.6 FL. Other 750.5 Rt. 144.5~~

~~Sta. 505+71.9 40.3' Lt. 24" x 34" R.C.B. DA. = 11 Ac. H. Remove~~

~~Install 24" RF-1 at Sta. 506+18 FL. Lt. 752.6 FL. Rt. 752.3~~

~~Sta. 518+73.5 134' Lt. Twin C.X.P. x 10'5 R.C.B. DA. = 2.51 Ac. R-H. Culvert Contr. to Remove~~

~~Build 6' x 6' R.C.B. at Sta. 518+95 Lt. 736.4 FL. Rt. 734.6~~

Sec. 6 · Sec. 5 · Clear Creek Twp. T75N R10W

Closed · Right of Entry · Sta. 518+67 DA. = 2.51 Ac. R.H. · P.O.T. Sta. 519+13.3

P.C. Sta. 528+40.6 · P.I. Sta. 531+74.0 Cut "X" · P.T. Sta. 535+07.3 · Sec. Line

Δ = 1° 40' Rt.
D = 0° 15'
T = 333.4
L = 666.7
E = 2.4
R = 22,920.0

91A 535+85.9 F.M. Rails @ 60 & @ 75

LEGEND:
- T — Central Ia. Tel. Co.
- N.W. Bell Tel. Co.
- T.I.P. Rural Elec. Co-op

0 50 100 Scale

PLAN — SURVEYED · PLOTTED · ALIGNMENT CHECKED · NOTE BOOK · NO. · BY · DATE · FIELD CHECKED

PROFILE — SURVEYED · PLOTTED · GRADES CHECKED · NOTE BOOK · NO. · BY · DATE · STRUCTURE NOTATING CHKD

C = 6175
From Sd. Rd. Lt. Sta. 505+32.7 = 986
7161
F + 15% = 7161

C = 32,662
From Sd. Rd. Rt. Sta. 505+32.7 = 8,962
41,624
F + 15% = 6,131
From Borrow "B" = 8500
From Borrow "C" = 13,007

C = 17,480
From Sta. 551+00± Lt. = 6,586
From Sta. 545+50± Rt. = 4867
From Sta. 561+50± Rt. = 422
29,355
F + 25% = 29,355

Local Rd. · Field Ent. · Field Ent Lt. · Field Ent Rt. · Farm Ent. · Present Road · Treatment No. 2 · +1.53% · -0.27% · 500' V.C. · 6:1 Berm Lt. · 6:1 Berm Rt.

Intersection · Vari. · Special Ditch · 5' Ditch · No Ditch · Clean & Existing Ditch · 4' Ditch · Lt. · Rt.

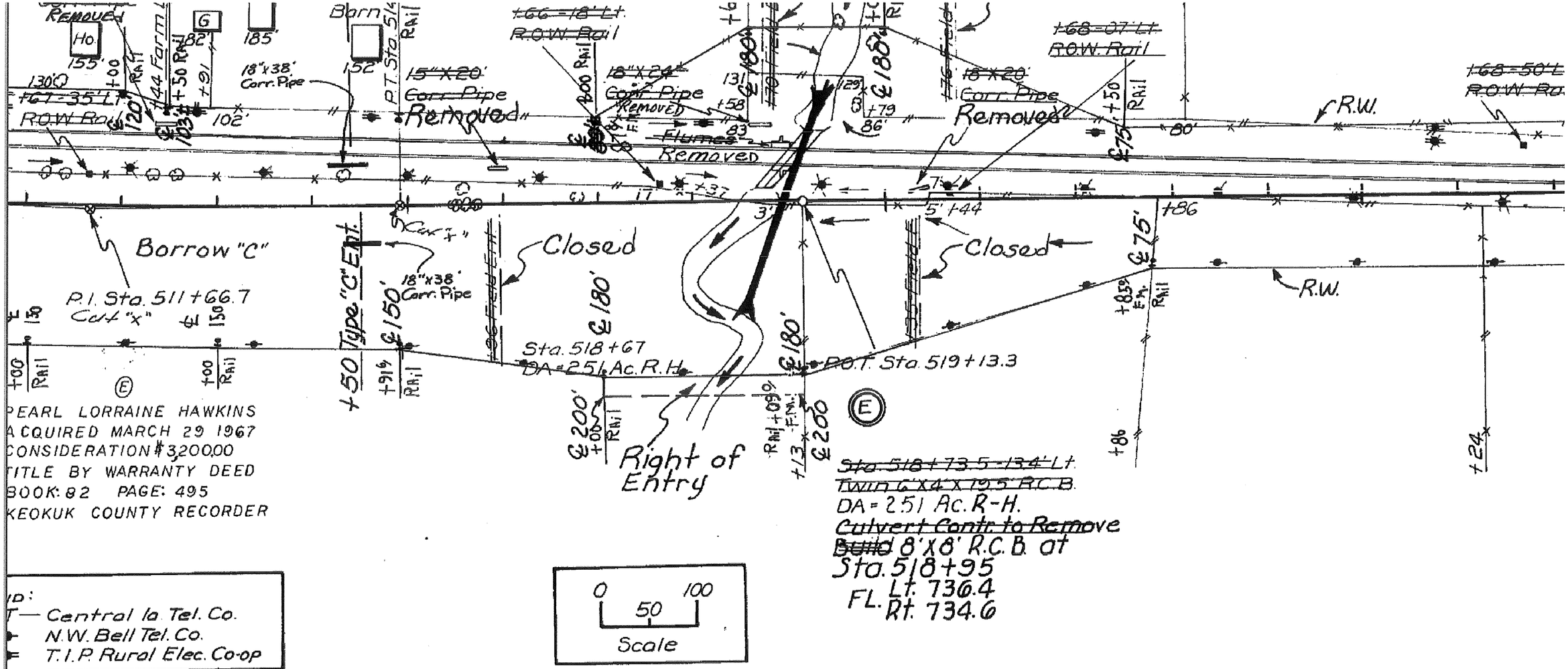
790 · 780 · 770 · 760 · 750 · 740 · 800

53.95

95.26 95.63 95.98 96.30 96.65 96.95 97.15 97.32 97.48 97.63 97.96 98.11 98.28 98.33 98.41 98.46 98.50 98.50 98.47 98.41

SINGLE PLAN AND PROFILE — DOTTED
H. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL - DULUTH

Keokuk Co. State Proj. No. F-92-8(3)--20.54 Sheet No. 9 of 261 Sheets



ID:
T — Central Ia. Tel. Co.
N.W. Bell Tel. Co.
T.I.P. Rural Elec. Co-op

KEOKUK COUNTY

BRIDGE AND CULVERTS

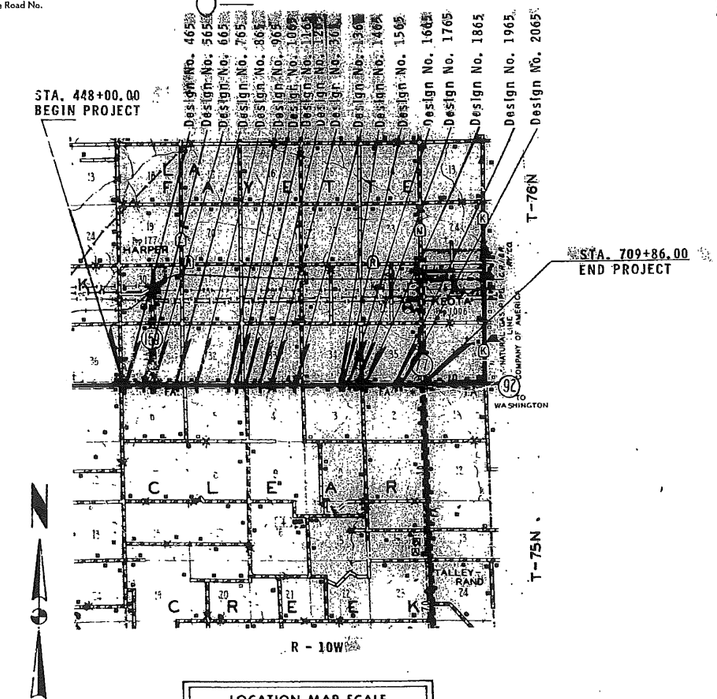
PROJECT NO. FN-92-8(3)--21-54

LETTING DATE

May 23-1967

CONVENTIONAL SIGNS

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines — Old / New
Survey Line — Sta / Ref Point
Profile Grade
Railroad
Field Tile — Old / New
Unde. ground Lines — G Gas / T Tel.
Culverts — Old / New
Utility Poles — Power / Tel.
Fences — Barb / Mesh
Trees Or Brush
Stream
Dike — Old / New
County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.



LOCATION MAP SCALE
0 1 2 3
miles

STATE CONTROL SECTION NUMBER
52-0900

STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

PRIMARY ROAD SYSTEM
KEOKUK COUNTY
BRIDGE AND CULVERTS

0.5 MILES W. OF IA. 159 E. TO IA. 77

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL APPLY TO WORK ON THIS PROJECT

(PLUS CURRENT SUPPLEMENT SPECIFICATIONS AND SPECIAL PROVISIONS)

DESIGN STRESSES for the following materials are in accordance with A.A.S.H.O. Standard Specifications for Highway Bridges, Series of 1961.

Concrete in accordance with Section 1.4.11 f'c = 3500 psi.
Reinforcing Steel in accordance with Section 1.4.12 "Reinforcement" for Intermediate, Hard, or Rail Steel Grade.
Prestressed Concrete in accordance with Section 1.13.7 f'c = 5000 psi.
Prestressing Steel in accordance with Section 1.13.7 f's = 270,000 psi.

NO MILEAGE SUMMARY

STATE	FED ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	3		1	29

PROJECT NUMBER
FN-92-8(3)--21-54
FN-92-8(3)--21-54 (R.O.W.)

INDEX OF SHEETS 105-3

NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE SHEET
3	MISCELLANEOUS DETAIL SHEET
4	MISCELLANEOUS DETAIL SHEET
5	MISCELLANEOUS DETAIL SHEET
6	MISCELLANEOUS DETAIL SHEET RF-1
7	MISCELLANEOUS DETAIL SHEET RF-2
8	MISCELLANEOUS DETAIL SHEET RF-3
9	MISCELLANEOUS DETAIL SHEET RF-4
10	MISCELLANEOUS DETAIL SHEET RF-13
11	MISCELLANEOUS DETAIL SHEET RF-14
12-18	BRIDGE DESIGN NO. 365
19	CULVERT DESIGN NO.'S 465 - 565 - 665
20-21	CULVERT DESIGN NO. 765
22	CULVERT DESIGN NO. 865
23	CULVERT DESIGN NO.'S 965 - 1065 - 1265
24	CULVERT DESIGN NO.'S 1165 - 1465
25	CULVERT DESIGN NO. 1365
26	CULVERT DESIGN NO. 1565
27	CULVERT DESIGN NO.'S 1665 - 2265
28	CULVERT DESIGN NO.'S 1765 - 1965 - 2065 - 2165
29	CULVERT DESIGN NO. 1865

IOWA STATE HIGHWAY COMMISSION STANDARDS REQUIRED
(Available at the I.S.H.C. Storeroom)

STANDARD	ISSUED	REVISED
C1P	1932	1944
C2P	1932	1944
C3P	1932	1944
C4P	1932	1944
C5P	1932	1944
F4J		1964
C4J	1959	1964
C8J	1959	1964
C6F	1952	1955
C8F	1952	1955
C12F	1952	1955
CFP	1945	
CBH-00	1960	
CBH-15	1960	
CHP2.5-65	1965	
P10A	1959	

REVISED:

APPROVED
R. K. Cowden 4/17/67
DEPUTY CHIEF ENGINEER — DATE
IOWA HIGHWAY COMMISSION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.
DATE April 21, 1967 IOWA REG. NO. 2792

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED
DIVISION ENGINEER — DATE

16 Extra Plates

FILE NO. 21903 KEOKUK COUNTY PROJECT NO. FN-92-8(3)--21-54

STATE	FED ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	3			29

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Donald K Schulze

DONALD K SCHULZE

DATE 4-13-67 REG. NO. 2793

IN LETTING OF MAY 23 - 1967

DESIGN NO. 365 | IOWA #92 OVER CLEAR CREEK | STA. 587+36

SECTIONS 33 & 4 T-75 & 76 N R-10W | LAFAYETTE & CLEAR CREEK TOWNSHIP

172'-2 x 30'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

THIS BRIDGE WILL REQUIRE BRIDGE SIGN ASSEMBLIES, FURNISHED AND PLACED BY OTHERS, AS SPECIFIED IN SECTION 2 C-5 OF THE I. S. H. C. MANUAL ON "UNIFORM TRAFFIC CONTROL DEVICES", DATED JANUARY 1963.

ESTIMATE OF QUANTITIES

ITEM		UNIT	TOTAL
(1) Structural Concrete		Cu. Yds.	253.2
Reinforcing Steel		Lbs.	56 007
Aluminum Handrail		L. F.	351
Steel Handrail		L. F.	351
Granular Backfill		Cu. Yds.	80
4"ϕ Tile Subdrain		L. F.	160
Class 20 Excavation		Cu. Yds.	58
12BP53 Steel Bearing Piling	Furnish	L. F.	440
	Drive	L. F.	440
	Encase	L. F.	250
10BP42 Steel Bearing Piling	Furnish	L. F.	440
	Drive	L. F.	440
Preten. Prestressed Conc. Beam (50'-10; B-5)		No.	10
Preten. Prestressed Conc. Beam (67'-6; B9)		No.	5
Channel Excavation Class 10		Cu. Yds.	600
Removal of Existing Structure		L. S.	Lump Sum

(1) 231.8 c.y. Structural Concrete Class D for Superstructure, and 21.4 c.y. Class "C" for Substructure.

I HEREBY CERTIFY THAT THESE PLANS HAVE BEEN PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Dale E. Derby P.E. IOWA REGISTRATION NO. 3049 DATE April 13, 1967

DALE E. DERBY

DESIGN	LOCATION SECTION	TOWNSHIP	STATION	DESCRIPTION SIZE AND TYPE	STRUC. CONC. CL. "C" CU.YD.	REINF. STEEL LBS.	EXCAVATION - C.Y. CL. 20	CL. 24	CL. 10 CHAN.	CONCRETE ROADWAY PIPE CULVERT LIN. FT. 30" ϕ	42" ϕ	CONCRETE APRONS NO. 30" ϕ	42" ϕ	CONC. HALF PIPE LIN. FT. 30" ϕ	CONNECTED PIPE JOINTS NO.	CONCRETE ELBOWS NO. 30" ϕ	CORR. METAL PIPE SUBDRAIN LIN. FT. 15" ϕ	REMOVALS
465	31-6	LA FAYETTE-CLEAR CREEK	449+64	4' x 5' x 110' Reinforced Concrete Box Culvert with Flume	75.3	6 876	167											
565	31-6	LA FAYETTE-CLEAR CREEK	468+61.5	5.0' x 3.0' Reinforced Concrete Box Culvert Ext.	15.4	1 402	15											As Per Plan
665	31-6	LA FAYETTE-CLEAR CREEK	475+48.2	2' x 2' Reinforced Concrete Box Culvert Ext.	8.2	481	14											As Per Plan
765	31-6	LA FAYETTE-CLEAR CREEK	500+70	12' x 12' x 75' Reinforced Concrete Box Culvert 25° Sk.	276.1	36 098	320											20 x 24 CONC. SLAB ST.
865	32-5	LA FAYETTE - CLEAR CREEK	518+95	8' x 8' x 210' Reinforced Concrete Box Culvert 20° Sk.	370.5	65 429	1 747											TWIN 6 x 4 x 79.5 RMS CULV.
965	32-5	LA FAYETTE-CLEAR CREEK	549+36.9	30"ϕ Concrete Roadway Pipe Culvert Extension			5	11		0 20		2						
1065	32-5	LA FAYETTE - CLEAR CREEK	555+40.5	30"ϕ Concrete Roadway Pipe Culvert Extension			5	18		0 28		2						
1165	33-5	LA FAYETTE - CLEAR CREEK	558+91.1	3' x 2' Reinforced Concrete Box Culvert Extension	11.4	664	13											As Per Plan
1265	33-4	LA FAYETTE - CLEAR CREEK	572+37.7	2' x 2' R.C.B. Culv. Ext. (Inlet) - 30"ϕ Conc. Roadway Pipe Culv. Ext. +Flume(Outlet)	5.1	283	9	56	28	0 44				30	8	(3) 1		As Per Plan
1365	33-4	LA FAYETTE - CLEAR CREEK	604+82	4' x 5' x 136' Reinforced Concrete Box Culvert with Flume 30° Sk.	110.0	10 229	362		49									
1465	34-3	LA FAYETTE - CLEAR CREEK	645+50	4' x 4' x 58' Reinforced Concrete Box Culvert with Flume 30° Sk.	61.2	4 572	97		202									
1565	34-3	LA FAYETTE - CLEAR CREEK	647+77.6	4' x 5' x 114' Reinforced Concrete Box Culvert with Flume 30° Sk.	90.6	8 491	178		230									S... CULV.
1665	34-3	LA FAYETTE - CLEAR CREEK	652+96.4	30"ϕ Concrete Roadway Pipe Culvert Ext.	2.3	125	1	3		20		2						... Per Plan
1765	34-3	LA FAYETTE - CLEAR CREEK	660+95.8	4' x 3' Reinforced Concrete Box Culvert Ext.	8.0	652	12											As Per Pla...
1865	35-2	LA FAYETTE - CLEAR CREEK	666+67	3' x 2' Reinforced Concrete Box Culvert Ext.	7.7	550	8										4	As Per P...
1965	35-2	LA FAYETTE - CLEAR CREEK	694+39	5' x 3' x 48' Reinforced Concrete Box Culvert	30.3	2 923	58											As Per ...in
2065	35-2	LA FAYETTE - CLEAR CREEK	698+10	5' x 3' x 49' Reinforced Concrete Box Culvert	30.8	2 971	54											As Per Plan
				TOTALS	1 102.9	141 746	3 065	88	509	112		6		30	8	1	4	

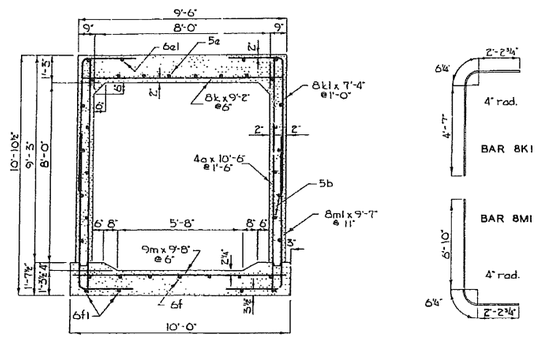
(1) Includes 2 C-2 Connections
(2) Includes one type C-2 Connection.
(3) 17° Elbow.

ESTIMATE SHEET

KEOKUK COUNTY PROJECT NO. FN-[illegible] FILE NO. [illegible]

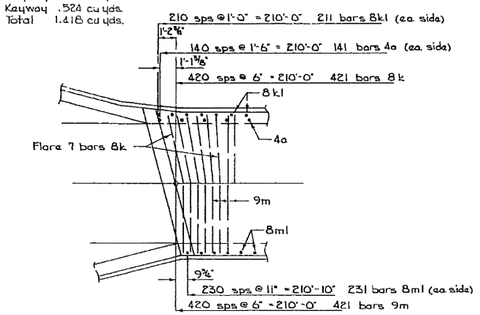
Printed from CME

Bench Mark No. 77 Sta. 519+27.7 Found iron pin in North Hdwl of Twin 6'x 4' 72' Lt Elev. 742.370

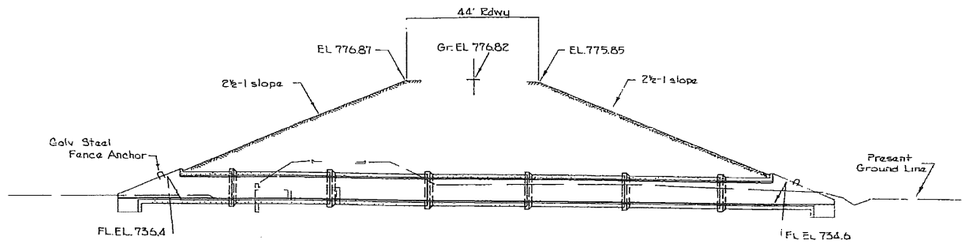


SECTION THRU BARREL
SCALE : 3/8" = 1'

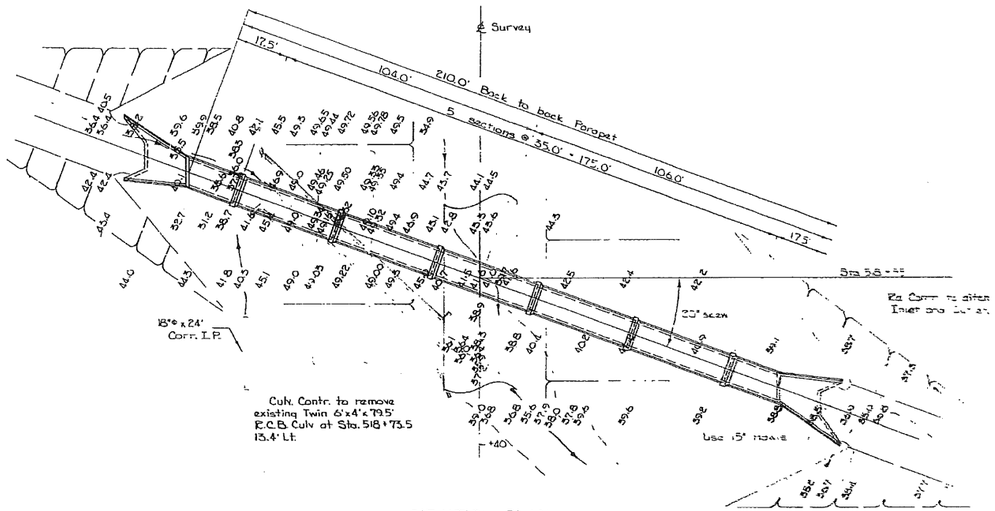
Concrete / ft Bbl.
Above Keyway .894 cu yds.
Below Keyway .524 cu yds.
Total 1.418 cu yds.



PLAN VIEW



℄ SECTION



SITUATION PLAN
SCALE: 1" = 20'

REINFORCING STEEL ESTIMATE — 8'x 8'x 210' BARREL

BAR			SHAPE	NO	LENGTH	LINEAR FEET 4	5	6	8	9
4a	Walls	Vert.		282	10'-6	2961.0				
5b	Walls	Horiz.	end sect.	32	Listed		554.7			
5b	Walls	Horiz.	35' sect.	80	34'-8"		2773.3			
5a	Slab	Longit	end sect.	12	Listed		216.5			
5a	Slab	Longit	35' sect.	30	34'-8		1040.0			
6a1	Slab Top	Longit	end sect.	8	Listed			144.3		
6a1	Slab Top	Longit	35' sect.	20	34'-8			693.3		
6f	Floor	Longit.	end sect.	14	Listed			242.7		
6f	Floor	Longit.	35' sect.	35	34'-8			1213.3		
6f1	Floor Bott.	Longit.	end sect.	8	Listed			138.7		
6f1	Floor Bott.	Longit.	35' sect.	20	34'-8			693.3		
8k	Slab	Transv.		421	9'-2"				3859.2	
8k1	Slab & Walls			422	7'-4				3094.7	
9m	Floor	Transv.		421	9'-8					4069.7
8m1	Floor & Walls			462	9'-7				4427.5	
					LENGTH	2961.0	4584.5	3125.6	11381.4	4069.7
					WEIGHT	19779	4781.6	4694.7	50388.3	13837.0
					TOTAL WEIGHT	55679.5 lbs.				

Variable Bars
bars 5b 32 bars
16 each length
16'-2" 18'-6"
bars 5a 12 bars
6 each length
long 18'-10"
short 17'-3"
bars 6a1 8 bars
2 each length
16'-11" 18'-9"
17'-4" 19'-2"
bars 6f 14 bars
7 each length
long 18'-5"
short 16'-3"
bars 6f1 8 bars
2 each length
16'-2" 18'-0"
16'-8" 18'-6"

Omit 8 bars 5a and shorten 12 bars 6a1 - 4a5 [illegible] the Std Hdwl. Reinf. Steel Quantity 95 lbs.

CONCRETE IN PARTS	ABOVE KEYWAY	BELOW KEYWAY	TOTAL	REINFORCING STEEL
Barrel	187.74	110.04	297.78	55679.5
Headwalls (2) 15 skew	18.00	28.80	46.80	5546.0
Ball Joints (6)	16.60	9.28	25.88	4193.4
Fence Anchors				10.0
TOTAL	222.34	148.12	370.46	65428.9

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STDS. C8F, C8H-15, C8T (EXCEPT AS NOTED)

ESTIMATED QUANTITIES

CONCRETE (STRUCTURAL)	370.5	C.Y.
REINFORCING STEEL	65429	LBS.
PIPE CULV.		LIN. FT.
PIPE APRONS,		ONLY
EXCAVATION C.Y.		
CL. 20 1747 CL. 24	CL. 10 CHANNEL	
Removal as per plan	Lump Sum	

SIZE AND TYPE 8'x8'x210' R.C.B. Culv. 20° skew
DRAINAGE AREA 254 ac. R.H. FILL 32'
SECTION 32-5 TWP. 93N RANGE 10W
CIVIL TOWNSHIP La Fayette & Clear Creek
COUNTY Keokuk
STATION 518+95
PROJECT NO. FN-92-8(3)--21--54
DESIGN 865 DATE November, 1966

STATE	FED. ROAD INST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	3		22	29

M & ER FILE NO. 21903 DES. NO. 865 KEOKUK COUNTY PROJECT NUMBER FN-92-8(3)--21-54

DIETZGEN NO. 151 ARKWRIGHT