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SC Court of Appeals

THE STATE OF SOUTH CAROLINA
In The Court of Appeals

APPEAL FROM GEORGETOWN COUNTY

Court of Common Pleas

The Honorable B. Alex Hyman

Case No. 2020-CP-22-00356

Appellate Case No. 2023-001454

Ron Christmas,

Appellant,

v.

County of Georgetown, City of Georgetown, and South Carolina Department of Transportation,

Respondents.

RECORD ON APPEAL
VOLUME VI OF VII

Justin O'Toole Lucey (SC Bar No.: 15438)
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Charleston, South Carolina
December 6, 2024

Fed. Aid Proj. No.	Fed. Road Distr. No.	State	County	Project No.	Route No.	Sheet No.
	14	S.C.	GEORGETOWN	22.309		1-A

SOUTH CAROLINA STATE HIGHWAY DEPARTMENT

FINAL CONSTRUCTION PLANS

DOCKET NO. 22.309 F.A. PROJ. NO.

COUNTY GEORGETOWN

ROUTE NO. 80, 124, 149 THRU 178, 181 THRU 184 & 189 (R.O.S.)

FROM STEERS IN & ADJACENT TO GEORGETOWN

CONTRACTOR DICKERSON, INC.

TYPE OF CONSTRUCTION BITUMINOUS SURFACE

RESIDENT ENGINEER W.A. HAMER DISTRICT ENGINEER J.H. KNOBELOCH

PLAINTIFF EXHIBIT 141 SBT 8/15/22 exhibitsticker.com

INDEX

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1-A	COVER SHEET
1	TITLE SHEET
2 "	TYPICAL CROSS SECTION
-------	ENDWALLS, CATCH BASINS, ETC.
12	STANDARD SUPERELEVATION
14-61	PLAN AND PROFILE
-------	CULVERT AND BRIDGE
-------	STRUCTURE EXCAVATION
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151-152	RECAPITULATION SHEET "B"
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PROGRESS DATA

CONTRACT AWARDED MARCH 24 19 55

WORK BEGAN JUNE 8 19 55

MAINTENANCE BEGAN MAY 3 19 56

PROJECT ACCEPTED MAY 2 19 56

NOTES TO RESIDENT ENGINEER: NOTES ON RECAPITULATION SHEETS SHOULD BE READ CAREFULLY AND COMPLIED WITH IN FULL. THE RESIDENT ENGINEER SHOULD PERSONALLY CHECK THE PLANS AGAINST THE FOLLOWING LIST—

	RES. ENGR. CHECK	COL. OFFICE CHECK
1. GRADE POINTS OF ROADWAY SHOWN ON CROSS SECTIONS	✓	
2. CORRECTED BALANCES SHOWN ON PROFILE WITH BALANCE POINTS FOR OVERHAUL	✓	
3. PITS, DITCHES, AND RAMPS SHOWN ON PLANS	✓	
4. PLANS REFERENCED TO NOTES	✓	
5. CORRECT DRAINAGE STRUCTURES SHOWN ON PLANS	✓	
6. SOURCE OF RELAID PIPE SHOWN ON PLANS	✓	
7. RELOCATIONS AND GRADE CHANGES SHOWN ON PLAN & PROFILE SHEETS	✓	
8. EXCEPTIONS SHOWN ON PLANS, PROFILE, AND CROSS SECTIONS	✓	
9. SKETCHES AND COMPUTATION FOR ALL IRREGULAR ITEMS SUBMITTED	✓	
10. QUANTITIES PROPERLY SECTIONALIZED-RECAP SHEETS "B" & "C" FOR EACH SECTION	✓	
11. DETAIL LARGE SCALE LAYOUTS FOR CITY WORK		
12. SUFFICIENT DATA SHOWN IN NOTES OR ON DETAIL LAYOUT TO CHECK MEASUREMENT OF CURB AND GUTTER, DRIVEWAYS, AND SIDEWALKS	✓	
13. OVERRUNS AND UNDERRUNS FULLY EXPLAINED	✓	
14. THE FOLLOWING DATA INKED ON FRONT OF EACH NOTE BOOK — FULL CAPTION (AS SHOWN BY ORIGINAL PLANS), BOOK NUMBER, CONTENTS, CONTRACTOR, RESIDENT ENGINEER, DATE COMPLETED, TYPE OF ROAD	✓	

THE FINAL NOTE BOOKS PROPERLY MARKED AND DESCRIBED ARE AS FOLLOWS:

BOOK NO. 1 ORIGINAL X SECTIONS

BOOK NO. 2 FINAL X SECTIONS

BOOK NO. 3 ORIGINAL & FINAL X SECTIONS FOR PIT & INT

BOOK NO. 4

BOOK NO. 5

BOOK NO. 6

BOOK NO. 7

DATA CORRECT

W. A. Hamer 11-13-56

RESIDENT ENGINEER | DATE

QUANTITIES CHECKED

R.L. Cox 1-28-57

DATE

TABLE OF OVERRUNS AND UNDERRUNS

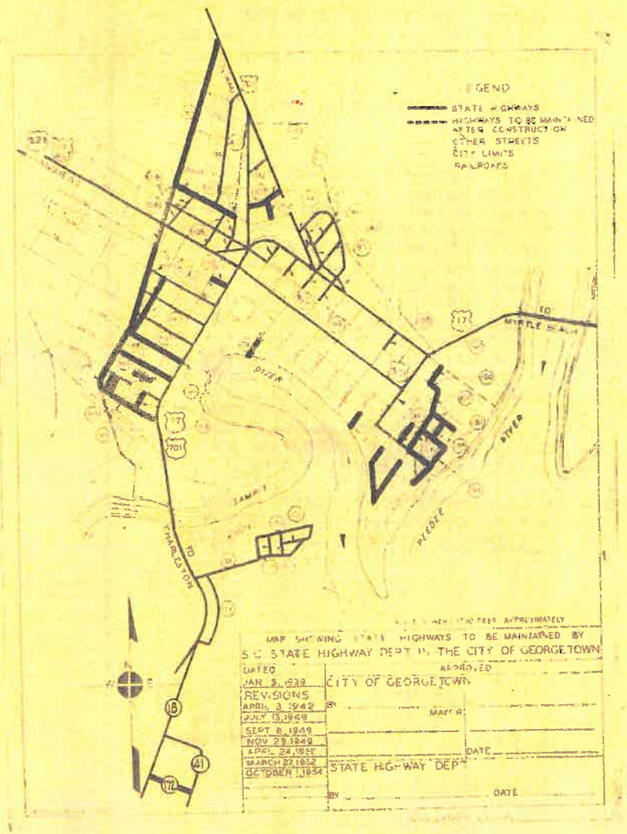
ITEM	UNIT	CONTRACT QUANTITIES	RES. ENGR. FINAL QUAN.	PAY QUAN. COL. OFFICE	OVERRUN	UNDERRUN	EXPLANATION
EARTHWORK							
C & G WITHIN R.O.W.	L.S.	NEC.	NEC.				
C & G OF PITS	AC.	1.5	2.9		1.4		EXTRA ACREAGE FOR FUTURE STREETS
COMMON EXCAVATION	CY	21,764	9982			11,782	PLAN QUANTITIES ESTIMATED
EXCAVATION FOR STRUCTURES							
OVERHAUL	CYHM	194,234	128948			65,286	DUE TO LOCATION OF PIT
SELECTED MATERIAL FOR SH'LDS.	CY	0	0				
BASE COURSE							
EARTH TYPE C-1 BASE	CY	22,026	20,926			1,100	DUE TO INTERSECTIONS AND WIDTH OF ROADWAY
" " "							
SCARIFYING MIXING ETC.	MSY	126.634	115.939			10.695	DUE TO INTERSECTIONS AND WIDTH OF ROADWAY
ADD. " " "							
SURFACE COURSE							
BITUMINOUS SURFACE	SY	121,534	110,708			10,826	DUE TO INTERSECTIONS AND WIDTH OF ROADWAY
STRUCTURES							
CLASS "A" CONCRETE							
" "B" "							
" "C" "							
REINFORCING STEEL							
12" RC PIPE	LF	108	00			108	NOT NECESSARY
15" RC "	"	796	204	2.50		592	USED SALVAGED PIPE WHERE POSSIBLE
18" RC "	"	1288	904	3.33		384	NOT NECESSARY
24" RC "	"	56	56	6.60			
12" RELAID RC "	"	1147	592	1.50		555	OLD PIPE NO GOOD
15" RELAID RC "	"	161	290	1.00	129		USED SALVAGED PIPE
18" RELAID RC "	"	30	41	1.50	11		USED SALVAGED PIPE
DROP HOLE INLET " 24x36	EA	10	9	150.00		1	NOT NECESSARY
ADJ. MANHOLE "	EA	1	2	75.00	1		NECESSARY
" DROPHOLE INLET	EA	5	0			5	NOT NECESSARY
INCIDENTAL CONSTRUCTION							
RESET FENCES	LF	500	00				
MOVING ITEM #1	LS	$50.00	$50.00				
MOVING ITEM #2	LS	$50.00	$50.00				
MOVING ITEM #3	LS	$100.00	$100.00				
MOVING ITEM #4	LS	$100.00	$100.00				
SHRINKAGE 52.8%							
NET MILEAGE 8.670							

NOTE: LIST ITEMS UNDER THE PROPER HEADING AND IN ORDER CARRIED IN THE CONTRACT.

FED. AID PROJ. NO.	STATE	COUNTY	PROJECT NO.	SHEET NO.	TOTAL SHEETS
3	S C	Georgetown	22.309		STREETS AT GEORGETOWN

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" " 11-B Intersection Std.
" " 12 Superelevation
" " 13 Traffic Control Devices
" " 14 Drop Inlet
" " 15-39-B Plan & Profile



SOUTH CAROLINA
STATE HIGHWAY DEPARTMENT
COLUMBIA

PLAN AND PROFILE OF PROPOSED
STATE HIGHWAY
DKT. No. 22.309
GEORGETOWN CO.
STREETS AT GEORGETOWN

SUMMARY OF ESTIMATED QUANTITIES, MILEAGE & SHEET NUMBERS

ROAD NO.	80	149	150/151	151	152	153	155	156	154/157	158	159	160	161	162	163	164	166	167	168	165/169	170	171	172		TOTAL
Clearing & Grubbing within Roadway	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.	Nec.		Necessary
" " " Borrow & Material Pits	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.5	—	—	0.5		1.0
Common Excavation	550	130	850	502	210	560	212	275	548	228	125	65	728	700	225	450	190	635	628	4,232	460	255	800		13,378
Overhaul	4,010	660	7,040	2,080	1,690	5,080	1,450	2,120	4,250	2,590	1,430	590	5,980	4,600	1,810	3,580	1,300	4,600	3,220	60,660	3,810	1,740	10,152		132,442
Earth Type Base Course (Pit Material)	401	66	704	208	169	308	145	212	425	259	143	59	598	460	181	358	130	460	322	6,066	381	174	1,269		13,498
Scarifying, Mixing, etc.	2.905	0.637	4.787	1.436	1.231	2.965	1.046	1.550	3.097	1.867	1.031	0.423	4.186	4.053	1.323	2.615	0.939	3.354	3.089	29.117	2.574	1.254	5.653		81.168
Bituminous Surfacing (Inverted Pen with Seal)	2,777	607	4,588	1,421	1,182	2,833	996	1,485	2,969	1,813	1,001	403	4,015	3,889	1,270	2,510	893	3,184	2,942	28,124	2,466	1,194	5,470		78,032
Drop Inlet (24"x36")	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	8	—	—	—		9
12" R.C. Pipe	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	48		48
15" " "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	68	—	280	40	—	296		684
18" " "	—	—	—	—	—	88	—	—	48	—	—	—	144	—	—	—	—	—	—	240	—	—	56		576
24" " "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40	—	—	—		40
12" Relaid Pipe	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	251		251
15" "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25		25
Adjust Manhole	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—		1
Adjust Drop Inlet	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	2	—	—	—		5
Reset Fences	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	500	—	—	—		500
Moving Item No 1, ℄ Sta 24+54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	L.S.	—	—	—		L.S.
" " " 2, ℄ " 26+21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	L.S.	—	—	—		L.S.
" " " 3, ℄ " 34+53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	L.S.	—	—	—		L.S.
" " " 4, ℄ " 89+02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	L.S.	—	—	—		L.S.
Gross Length of Project	0.220	0.052	0.340	0.121	0.084	0.224	0.085	0.110	0.219	0.091	0.050	0.034	0.299	0.288	0.091	0.180	0.076	0.281	0.277	1.990	0.184	0.102	0.313		5.711
Exceptions	—	—	—	—	—	—	—	—	—	—	—	—	0.008	0.008	—	—	—	0.027	0.026	0.297	—	—	—		0.366
Net Length of Roadway	0.220	0.052	0.340	0.121	0.084	0.224	0.085	0.110	0.219	0.091	0.050	0.034	0.291	0.280	0.091	0.180	0.076	0.254	0.251	1.693	0.184	0.102	0.313		5.345
Typical Section No.	1-2	3	1-4	5	1	3	6	6	1-2	7	7	1	1	3	1	8	1	1	3	9-10	1	1	11		
" " Sheet No.	2-3	4	2-5	6	2	4	7	7	2-3	8	8	2	2	4	2	9	2	2	4	10-11	2	2	11-A		
Plan & Profile Sheet No.	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34-37	38	39	39A-39B		

CONVENTIONAL SIGNS

State Line		Trolley Poles	
County Line		Power Poles	
City or Town Limits		Telephone or Telegraph Poles	
Property Line		Marsh	
Fence		Trees	
Retaining Wall		Brush	
Existing Road		Stumps	
℄ and R.O.W. Lines of Proposed Road		Buildings	
Railroad		Bridge	
Levee or Embankment		Concrete Box Culvert	
Guard Rail		Pipe Culvert	
Point of Intersection (P.I.)	Δ	Drop Inlet and Culvert	
		Hub on Center Line	

LEGEND

PROPOSED PROJECT
OTHER ROADS

NOTICE

THESE PLANS ARE SUBJECT TO CHANGE WITHOUT NOTICE. OFFICIAL BIDDERS' PLANS ARE ON FILE AT THE OFFICES OF THE S. C. STATE HIGHWAY DEPARTMENT IN COLUMBIA.

S. C. STATE HIGHWAY DEPARTMENT

Net Length of Roadway	Miles
Net Length of Bridges	Miles
Net Length of Project	Miles
Length of Exceptions	Miles
Gross Length of Project	Miles

See above

Exceptions in Stringing
None

Note: All workmanship and material on this project to conform with South Carolina State Highway Department Standard Specifications for Highway Construction dated March 15th 1939, as approved by the Administrator, Federal Works Agency.

APPROVED FOR CITY OF GEORGETOWN
DATE
Mayor
Councilmen
Clerk

APPROVED:
S M Peaman 2-26-51
STATE HIGHWAY ENGINEER DATE

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
RECOMMENDED FOR APPROVAL:
DISTRICT ENGINEER DATE
APPROVED:
DIVISION ENGINEER DATE

R-1053

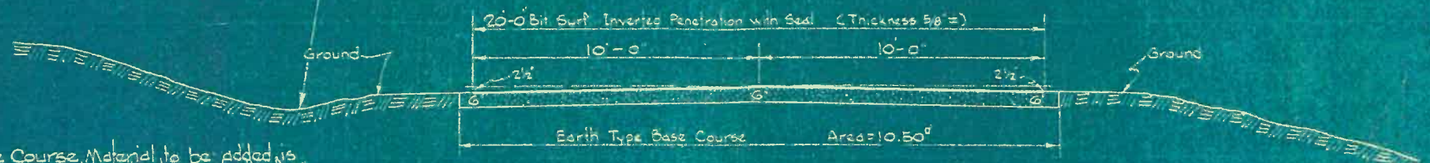
FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO.	PROJ. NO.	ROUTE NO.	SHT. NO.	TOT. SHTS.
3	S.C.	Georgetown	42,309		41	2	7

S.C. HIGHWAY DEPARTMENT
TYPICAL SECTION
of
IMPROVEMENT

SCALE 1 IN. = 2½ FT.

Note: No work to be performed in this area unless it is necessary to shape or pull ditches to provide proper drainage

TYPICAL SECTION No. 1



NOTE: Earth Type Base Course Material to be added as of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 4" uniform of Earth Type Base Course.

E-5

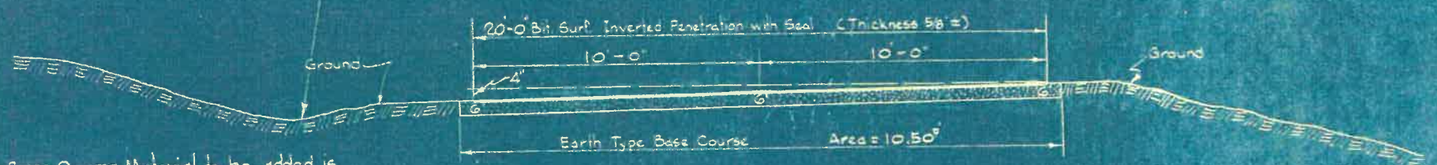
FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	Georgetown	22.809		5½	3

S.C. HIGHWAY DEPARTMENT
TYPICAL SECTION of IMPROVEMENT

SCALE 1 IN. = 2½ FT.

Note: No work to be performed in this area unless it is necessary to shape, or pull ditches to provide proper drainage

TYPICAL SECTION No. 2



NOTE: Earth Type Base Course Material to be added is of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 4" uniform of Earth Type Base Course.

E-5

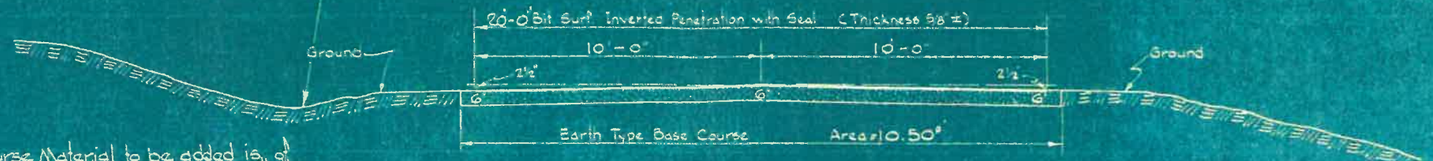
R-1055

FED. ROAD DIV. NO.	STATE	COUNTY	PROJECT NO.	FED. NO.	SHEET NO.	SHEETS	TOTAL SHEETS
3	S.C.	Georgetown	42,309		5½	A	20

S.C. HIGHWAY DEPARTMENT
TYPICAL SECTION of IMPROVEMENT
SCALE 1 IN. = 2½ FT.

Note: No work to be performed in this area unless it is necessary to shape or pull ditches to provide proper drainage

TYPICAL SECTION No. 3



NOTE: Earth Type Base Course Material to be added is of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 3" uniform of Earth Type Base Course.

E-5

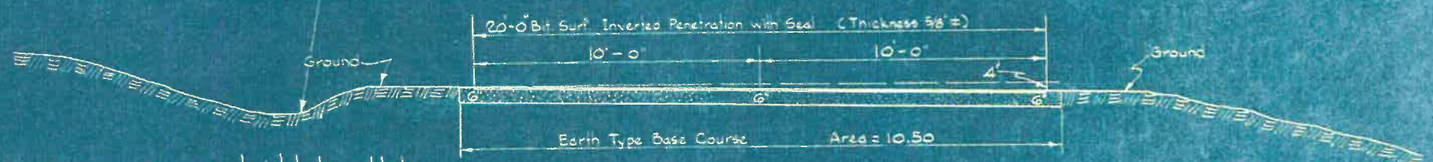
FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO	PROJ. NO	ROUTE NO	SHEET NO	TOTAL SHEETS
3	S.C.	Georgetown	23309		17S.	5	47

S.C. HIGHWAY DEPARTMENT
TYPICAL SECTION of IMPROVEMENT

SCALE 1 IN. = 2½ FT.

Note: No work to be performed in this area unless it is necessary to shape or pull ditches to provide proper drainage

TYPICAL SECTION No. 4



NOTE: Earth Type Base Course Material to be added is of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 4" uniform of Earth Type Base Course.

E-5

Proj. No.	Dist.	County	Sht. No.	No. of Sh.	Sheet No.	Total Sh.
3	3-C	Georgetown	FL-407	5/6	4	137

STATE HIGHWAY DEPT.
COLUMBIA

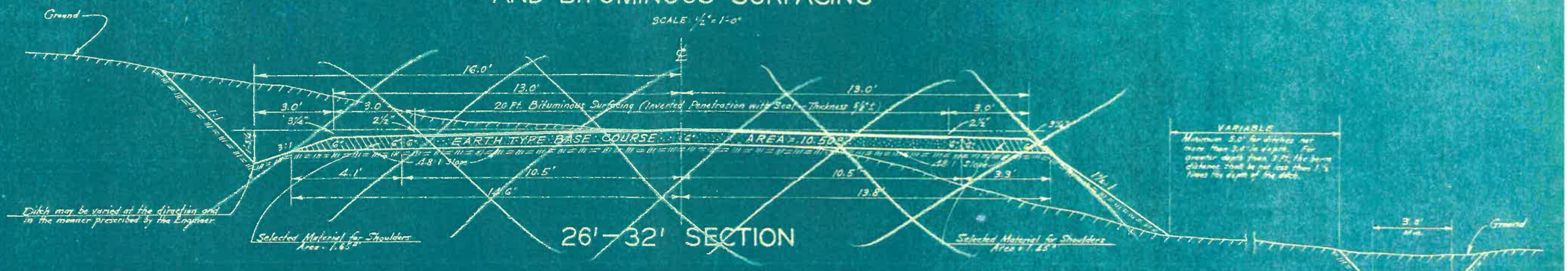
TYPICAL SECTIONS

FOR

EARTH TYPE BASE COURSE

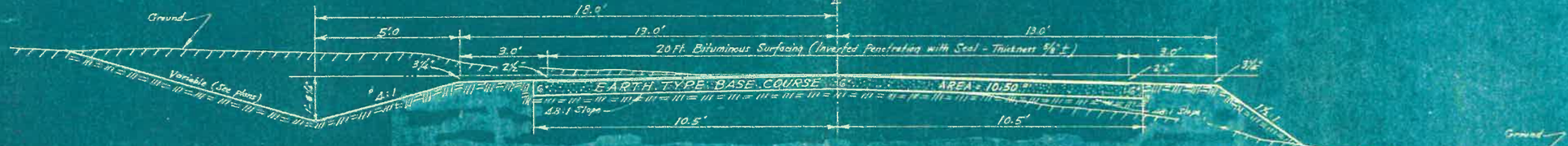
AND BITUMINOUS SURFACING

SCALE: 1/2" = 1'-0"



26'-32' SECTION

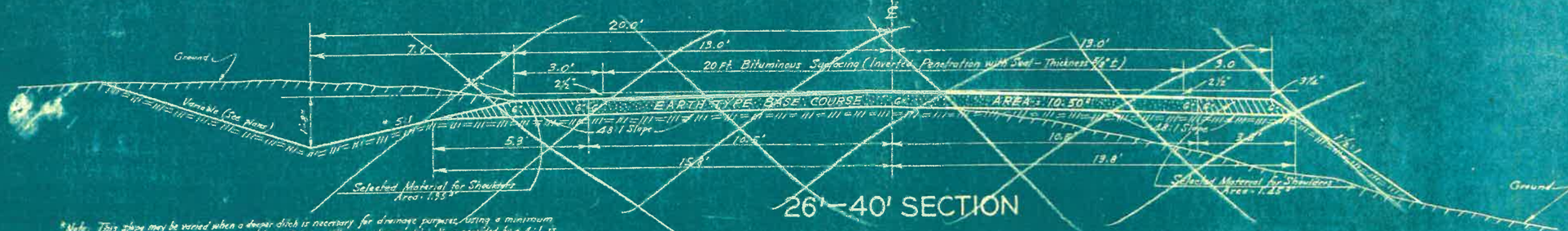
TYPICAL SECTION No. 5



26'-36' SECTION

*Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 3:1. Where a deeper ditch than provided by a 3:1 is necessary, the ditch shall be placed farther from the ℄ continuing the 3:1 slope to provide the necessary depth. See profile for Special ditch grades.
Also, this section may be widened by continuing the 4:1 slope (the distance between ℄ and bottom of the ditch not to exceed 24 ft.) where borrow material is necessary on flat grades that are governed by water elevation or where a wide ditch is necessary for drainage purposes.

NOTE: Earth Type Base Course to be added is of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 4" uniform of Earth Type Base Course.



26'-40' SECTION

*Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 3:1. Where a deeper ditch than provided by a 5:1 is necessary, the ditch shall be placed farther from the ℄ continuing the 5:1 Slope to provide for the necessary depth. See profile for Special ditch grades.
Also, this section may be widened by continuing the 5:1 slope (the distance between the ℄ and bottom of ditch not to exceed 30 feet) where borrow material is necessary on flat grades that are governed by water elevation or where a wider ditch is necessary for drainage purposes.

Note: Horizontal dimensions are shown in tenths of feet.

SECTION

R-1058

Fed. Aid Proj. No.	State	County	Dist. No.	Rd. No.	Sheet No.	Total Sheets
3	S.C.	Georgetown	7P 909	515	7	15

STATE HIGHWAY DEPT.
COLUMBIA

TYPICAL SECTIONS

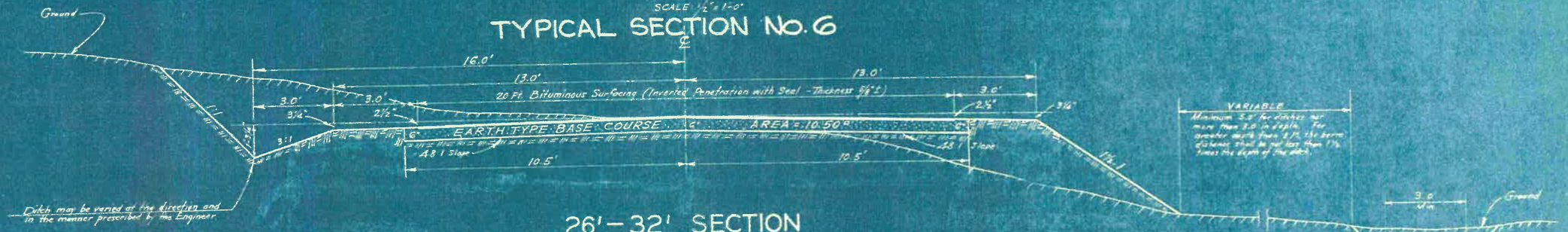
FOR

EARTH TYPE BASE COURSE

AND BITUMINOUS SURFACING

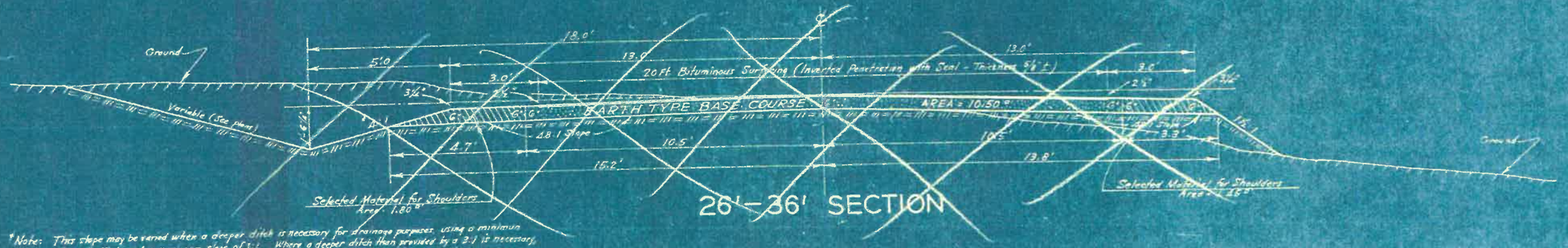
SCALE: ½" = 1'-0"

TYPICAL SECTION No. 6



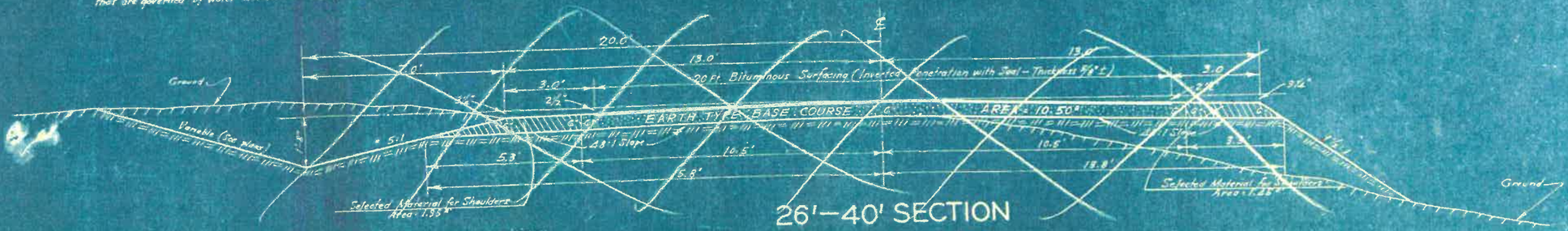
26'–32' SECTION

NOTE: Earth Type Base Course to be added is of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The estimated quantities are based on the addition of 4" uniform of Earth Type Base Course.



26'–36' SECTION

*Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 3:1. Where a deeper ditch than provided by a 3:1 is necessary, the ditch shall be placed farther from the ¢ continuing the 3:1 slope to provide the necessary depth. See profile for Special ditch grades.
Also, this section may be widened by continuing the 4:1 slope (the distance between ¢ and bottom of the ditch not to exceed 24 ft) where borrow material is necessary on flat grades that are governed by water elevation or where a wide ditch is necessary for drainage purposes.



26'–40' SECTION

*Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 2:1. Where a deeper ditch than provided by a 4:1 is necessary, the ditch shall be placed farther from the ¢ continuing the 4:1 Slope to provide for the necessary depth. See profile for special ditch grades.
Also, this section may be widened by continuing the 5:1 slope (the distance between the ¢ and bottom of ditch not to exceed 30 feet) where borrow material is necessary on flat grades that are governed by water elevation or where a wide ditch is necessary for drainage purposes.

Note: Horizontal dimensions are shown in tenths of feet.

SECTION C

R-1059

Fed. Aid Proj. No.	State	County	D.A.P. No.	R.F. No.	Sheet No.	Total Sheets
3	S.C.	Georgetown	11309	8's	8	15

S. C. STATE HWY. DEPT.
COLUMBIA

TYPICAL SECTION OF IMPROVEMENT

SCALE: 1" = 2'-6"

TYPICAL SECTION No. 7



NOTE: Earth Type Base Course Material to be added is of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 4" uniform of Earth Type Base Course.

V-1

SOUTH CAROLINA STATE HIGHWAY DEPT.
COLUMBIA

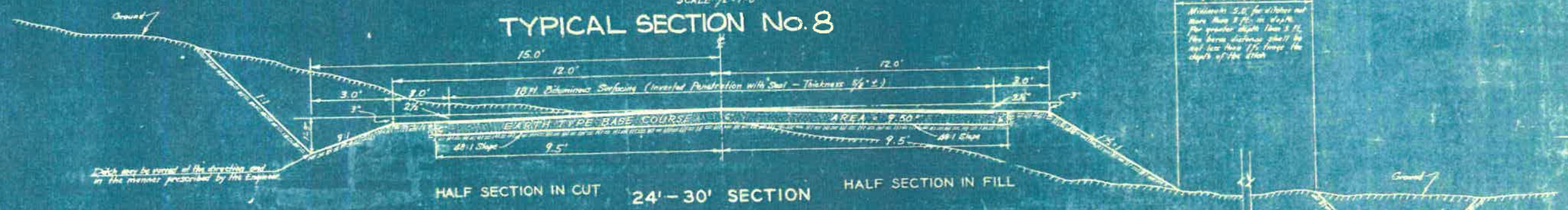
TYPICAL SECTIONS

FOR

EARTH TYPE BASE COURSE AND BITUMINOUS SURFACING

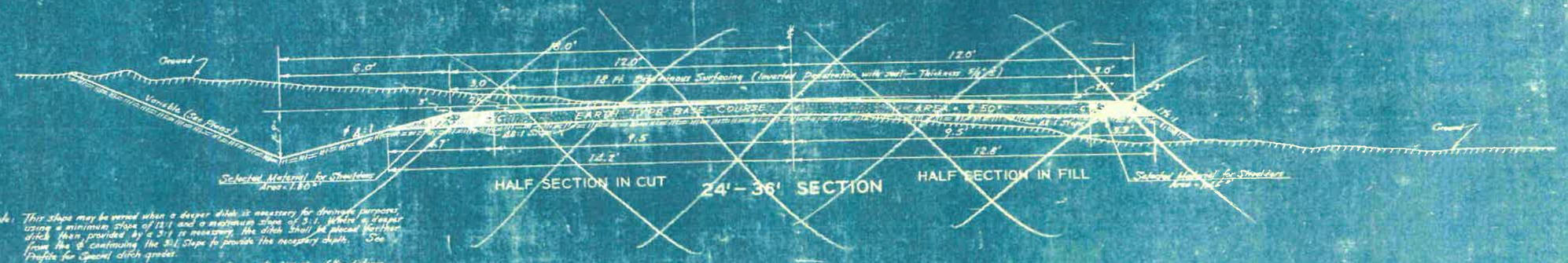
SCALE 1/2" = 1'-0"

TYPICAL SECTION No. 8



HALF SECTION IN CUT — 24' – 30' SECTION — HALF SECTION IN FILL

NOTE: Earth Type Base Course Material to be added is of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 4" Uniform of Earth Type Base Course



HALF SECTION IN CUT — 24' – 36' SECTION — HALF SECTION IN FILL

* Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 3:1. Where a deeper ditch than provided by a 3:1 is necessary, the ditch shall be placed farther from the ℄ continuing the 3:1 Slope to provide the necessary depth. See Profile for Special ditch grades.

Also, this section may be widened by continuing the 4:1 Slope (the distance between the ℄ and the bottom of the ditch not to exceed 24 Ft.) where borrow material is necessary on flat grades that are governed by water elevation or where a wider ditch is necessary for drainage purposes.



HALF SECTION IN CUT — 24' – 40' SECTION — HALF SECTION IN FILL

* Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 3:1. Where a deeper ditch than provided by a 3:1 is necessary, the ditch shall be placed farther from the ℄ continuing the 3:1 Slope to provide the necessary depth. See Profile for Special ditch grades.

Also, this section may be widened by continuing the 4:1 Slope (the distance between the ℄ and bottom of ditch not to exceed 24 Ft.) where borrow material is necessary on flat grades that are governed by water elevation or where a wider ditch is necessary for drainage purposes.

Note: Horizontal dimensions are shown in Units of Feet

R-1061

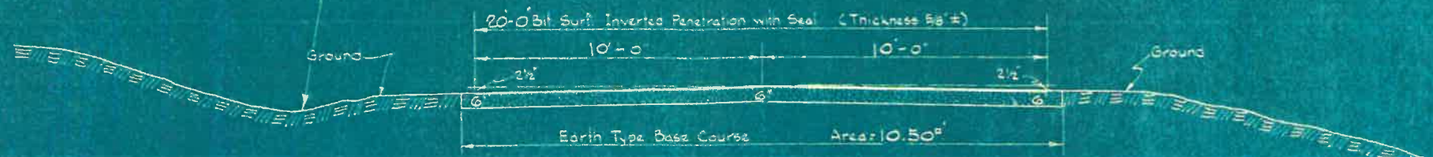
FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO.	PROJ. NO.	SHEET NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	Georgetown	22-309		5½	10	57

S.C. HIGHWAY DEPARTMENT
TYPICAL SECTION
of
IMPROVEMENT

SCALE 1 IN. = 2½ FT.

Note: No work to be performed in this area unless it is necessary to shape or pull ditches to provide proper drainage

TYPICAL SECTION No. 9



E-S

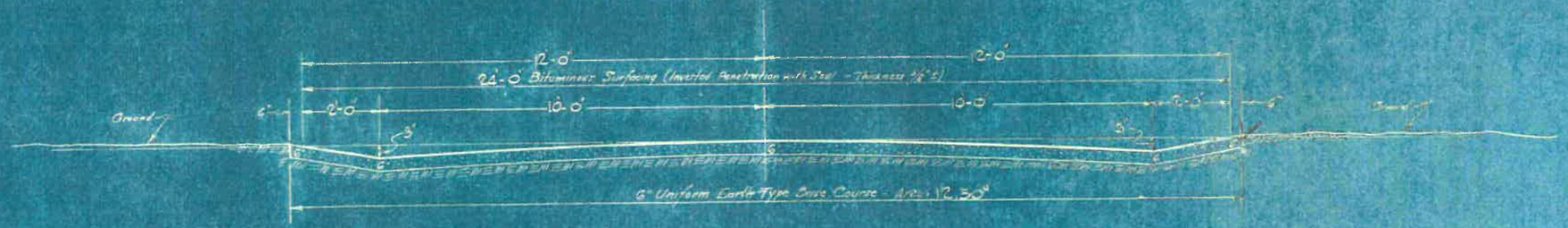
Fed. Aid Proj. No.	State	County	Dist. No.	Rt. No.	Sheet No.	Total Sheets
S	S.C.	Georgetown	12309	Sts.	11	29

S. C. STATE HWY. DEPT.
COLUMBIA

TYPICAL SECTION OF IMPROVEMENT

SCALE: 1" = 2'-6"

TYPICAL SECTION No. 10



V-1

R-1063

Proj. No. Fed. No.	State	County	Sheet No.	No. Sheets	Sheet No.
3	S.C.	Georgetown	071-3(3)	8	1 E.A.	1 of 1

STATE HIGHWAY DEPT.
COLUMBIA

TYPICAL SECTIONS

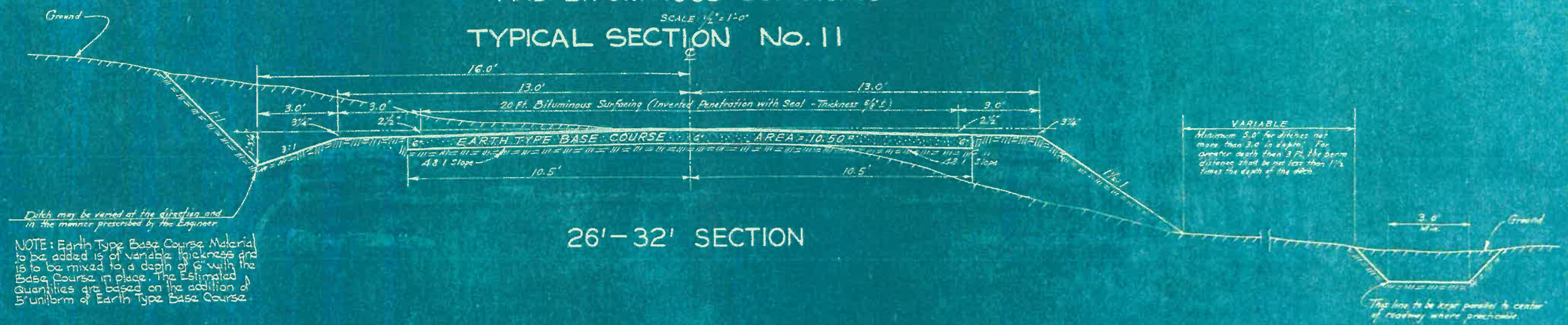
FOR

EARTH TYPE BASE COURSE

AND BITUMINOUS SURFACING

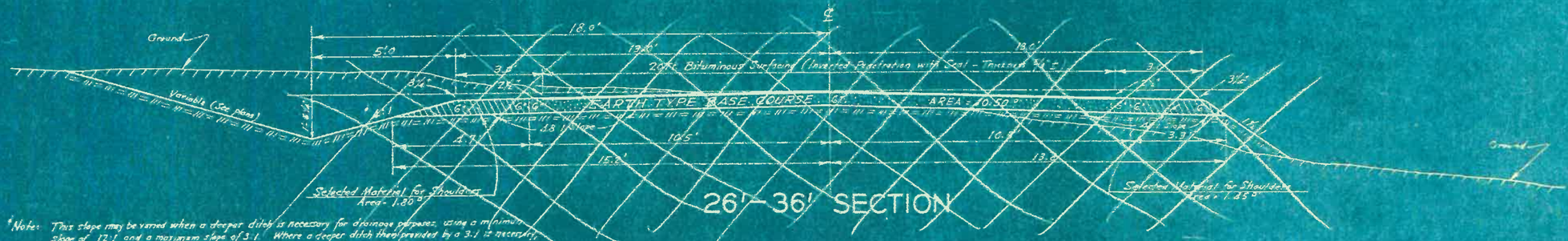
SCALE 1/2" = 1'-0"

TYPICAL SECTION No. 11



NOTE: Earth Type Base Course Material is to be added is of variable thickness and is to be mixed to a depth of 5" with the Base Course in place. The Estimated Quantities are based on the addition of 5" uniform of Earth Type Base Course

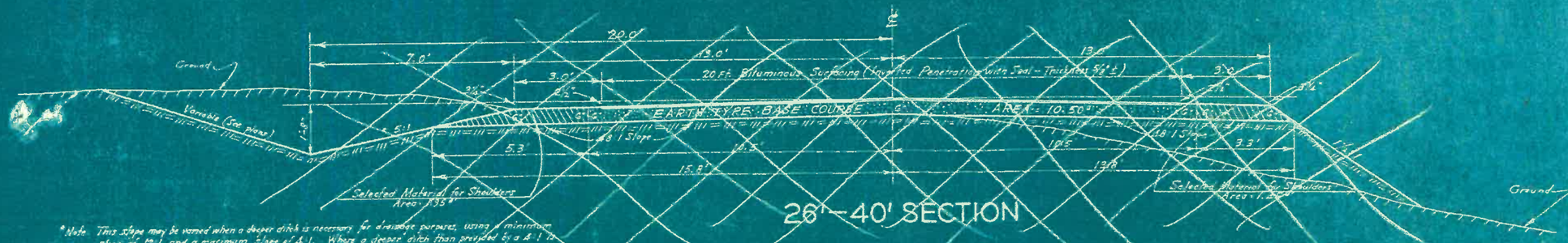
26'-32' SECTION



26'-36' SECTION

*Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 3:1. Where a deeper ditch than provided by a 3:1 is necessary, the ditch shall be placed farther from the ℄ continuing the 3:1 slope to provide the necessary depth. See profile for Special ditch grades.

Also, this section may be widened by continuing the 4:1 slope (the distance between ℄ and bottom of the ditch not to exceed 24 ft.) where borrow material is necessary on flat grades that are governed by water elevation or where a wide ditch is necessary for drainage purposes.



26'-40' SECTION

*Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 4:1. Where a deeper ditch than provided by a 4:1 is necessary, the ditch shall be placed farther from the ℄ continuing the 5:1 slope to provide for the necessary depth. See profile for Special ditch grades.

Also, this section may be widened by continuing the 5:1 slope (the distance between the ℄ and bottom of ditch not to exceed 30 feet) where borrow material is necessary on flat grades that are governed by water elevation or where a wider ditch is necessary for drainage purposes.

Note: Horizontal dimensions are shown in tenths of feet.

SECTION 26

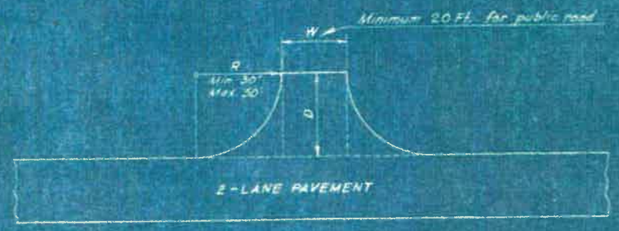
R-1064

District No.	State	County	Project No.	Route No.	Sheet No.	No. Sheets
7	S.C.	Georgetown 37 309 Bis		11-B	67	

SOUTH CAROLINA STATE HIGHWAY DEPARTMENT
COLUMBIA

STANDARD TYPE INTERSECTIONS

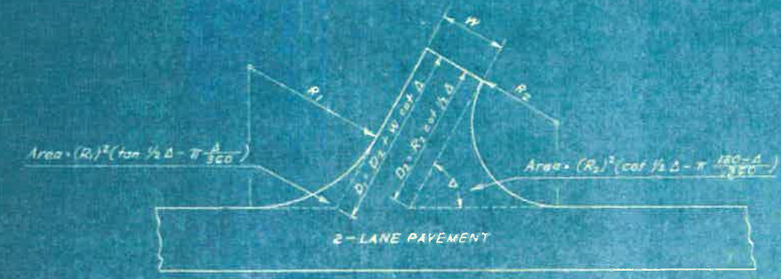
SCALE: 1" = 25'



T-TYPE INTERSECTION

For angles at or near 90°
Area of Paved Spur = WD + .43 R²

For private driveways to be paved, use this type with 20' radii and 10' width at back. Area for driveway = 41.3 S.Y.



Y-TYPE INTERSECTION

MAXIMUM AND MINIMUM RADII WITH CORRESPONDING INTERSECTION AREAS

ANGLE Δ	MAXIMUM			MINIMUM		
	R_1 FEET	R_2 FEET	AREA* S.Y.	R_1 FEET	R_2 FEET	AREA* S.Y.
90°	50	50	241.7	30	30	116.3
75°	80	50	354.3	50	25	145.1
60°	125	35	350.2	75	20	164.1
45°	200	25	355.9	100	15	170.4
#30°	300	20	398.1	150	10	180.9

* The areas given are for the total area beyond the edge of the pavement on the main road. Width at back of intersection, W = 22 Ft.

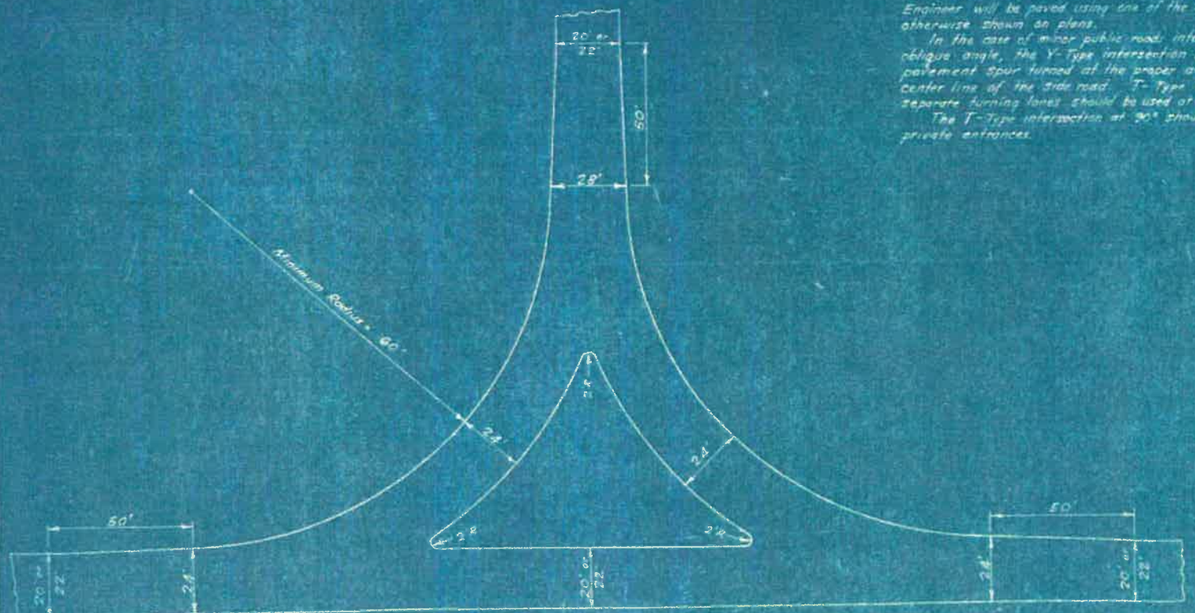
Intersections at less than 45° should be constructed with separate turning lanes where practical, as shown by intersection type below.

GENERAL NOTES -

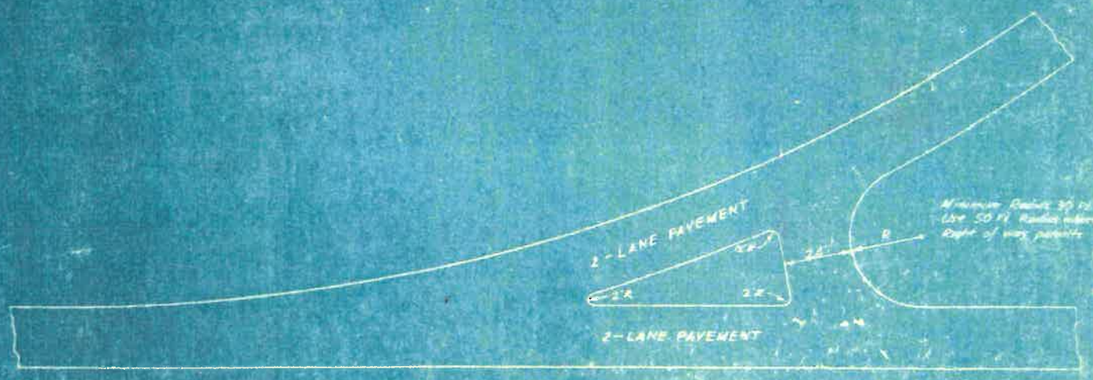
Intersections for side roads and driveways when directed by the Engineer will be paved using one of the Standard Types shown, unless otherwise shown on plans.

In the case of minor public road intersecting the highway at an oblique angle, the Y-Type intersection should be used with the pavement spur turned at the proper angle to line up with the center line of the side road. T-Type or Y-Type intersections with separate turning lanes should be used at the more important intersections.

The T-Type intersection at 90° should be used at driveways for private entrances.



T-TYPE INTERSECTION WITH SEPARATE TURNING LANES



Y-TYPE INTERSECTION WITH SEPARATE TURNING LANE

DRAWING A-51

Designed by Div. of Design 11-17-45
Drawn by Carl W. 11-17-45

R-1065

SUPERELEVATION STANDARD

S. C. STATE HIGHWAY DEPT.
COLUMBIA

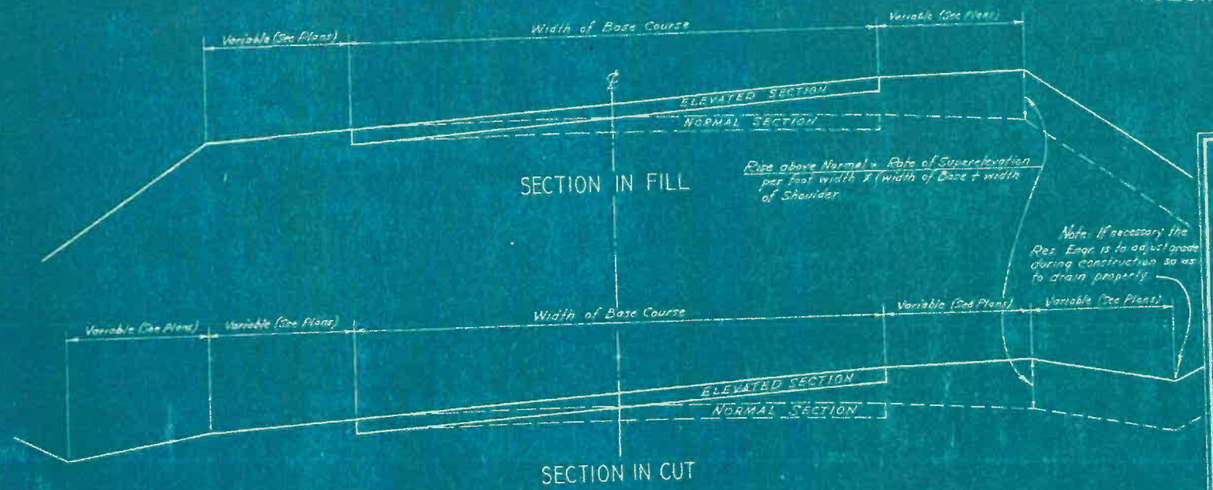
Fed. Proj. No.	State	Project No.	P&T	Sheet No.	Total Sheets
F	S.C.	Georgetown 1230	65	12	45

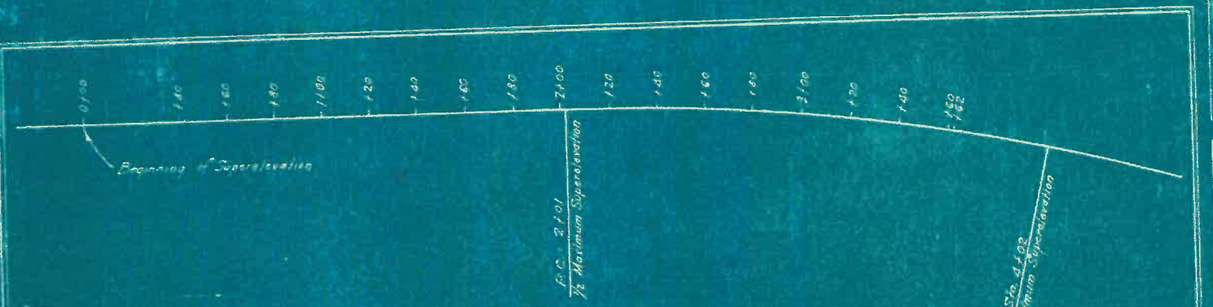
NOTES All curves are to be superelevated to the nearest (Even 1/2) in accordance to table. In any case where conditions do not permit an adjustment as long as shown on this sheet the Resident Engineer is to so fit same to meet the conditions. Where unusual conditions make it desirable, superelevation may be obtained by revising the curve about the centerline instead of the inside edge the amount of superelevation to be the same as shown in the table.
For all types of surfacing the roadway crown shall recede gradually from the point where superelevation begins, reaching a flat section 30 ft. from the beginning P.C. where the curve superelevation begins reaching a flat section 30 ft. from the beginning P.C. where the curve superelevation begins. The crown or sidewalk shall be at a rate to conform to the required superelevation.

SUPERELEVATION FORMULA

$$E = 0.067 \frac{S^2}{R}$$

E = SUPERELEVATION IN FEET
S = SPEED IN MILES PER HOUR
R = RADIUS OF CURVE IN FEET





SUPERELEVATION FOR DESIGN SPEED OF 65 M.P.H

(BASED ON S = 50 M.P.H. IN FORMULA)

SUPERELEVATION TABLE

DEGREE OF CURVE	RADIUS OF CURVE	SUPERELEVATION PER FOOT OF WIDTH	TOTAL SUPERELEVATION - FT. 21' WIDTH	22' WIDTH	23' WIDTH	LENGTH OF APPROACH - FT. 21' WIDTH	22' WIDTH	23' WIDTH
0°-30'	11459.15	0.016	0.27	0.29	0.32	94	98	102
1°-00'	5729.65	0.016	0.27	0.29	0.32	94	98	102
1°-30'	3819.83	0.021	0.40	0.44	0.47	120	126	136
2°-00'	2864.93	0.029	0.55	0.61	0.67	156	162	170
2°-30'	2292.61	0.036	0.68	0.76	0.83	176	192	206
3°-00'	1910.08	0.043	0.82	0.90	0.99	206	220	238
3°-30'	1637.24	0.050	0.95	1.05	1.15	230	250	276
4°-00'	1432.69	0.057	1.08	1.20	1.31	256	280	302
4°-30'	1273.97	0.065	1.24	1.37	1.50	282	314	340
5°-00'	1146.28	0.072	1.37	1.51	1.66	314	342	374
5°-30'	1042.14	0.079	1.50	1.66	1.82	336	372	402
6°-00'	955.37	0.086	1.63	1.81	1.98	366	402	436

6°-30' and over to be Superelevated Same as 6°-00

TABLE SHOWING AMOUNT OF SUPERELEVATION AT ANY POINT ON APPROACH TO CURVE

DISTANCE FROM BEGINNING OF SUPERELEVATION IN DIRECTION OF CURVE - FEET

SUPERELEVATION IN FEET — 21 FT. WIDTH — DEGREE OF CURVE

DEGREE OF CURVE	10	20	30	40	50	60	70	80	90	98	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400
0°-30'	01	03	06	08	11	13	16	18	21	23	24	26	29	31	34	36	39	41	44	46	49	51	54	56	59	61	64	66	69	71	74	76	79	81	84	86	89	91	94	96	99
1°-00'	01	03	06	10	13	16	19	23	26	29	30	33	36	39	43	46	49	52	56	59	62	65	69	72	75	78	82	85	88	91	95	98	101	104	108	111	114	117	121	124	127
1°-30'	01	03	06	10	16	19	23	29	32	36	38	41	45	48	54	58	61	64	70	74	77	80	86	90	93	96	102	106	109	112	118	122	125	128	134	138	141	144	150	154	157
2°-00'	01	03	06	10	19	23	29	35	39	45	48	52	58	61	68	74	77	81	87	93	97	100	106	113	116	120	126	132	136	139	145	152	155	159	165	171	175	178	184	191	194
2°-30'	01	03	06	13	23	29	35	42	48	55	58	64	71	77	84	90	96	100	106	113	119	123	129	136	142	148	155	161	165	171	177	184	190	194	200	207	213	219	226	232	236
3°-00'	01	03	06	16	26	35	42	48	55	64	67	74	81	90	97	103	110	116	123	129	136	142	149	155	162	168	175	181	188	194	201	207	214	220	227	233	240	246	253	259	266
3°-30'	01	03	06	19	29	39	48	55	64	74	77	84	93	103	110	119	126	135	142	151	158	167	174	183	190	199	206	215	222	231	238	247	254	263	270	279	286	295	302	311	318
4°-00'	01	03	06	19	32	42	52	61	71	81	84	94	103	113	123	132	142	152	161	171	181	190	200	210	219	229	239	248	258	268	277	287	297	306	316	326	335	345	355	364	374
4°-30'	01	03	06	19	32	45	55	65	74	84	87	97	107	117	126	136	146	156	165	175	185	194	204	214	224	233	243	253	262	272	282	291	301	311	320	330	340	349	359	369	378
5°-00'	01	03	06	19	32	45	58	68	77	87	90	100	110	120	129	139	149	159	168	178	188	197	207	217	227	236	246	256	265	275	285	294	304	314	323	333	343	352	362	372	381
5°-30'	01	03	06	19	32	45	58	71	81	90	93	103	113	123	132	142	152	162	171	181	191	200	210	220	230	239	249	259	268	278	288	297	307	317	326	336	346	355	365	375	384
6°-00'	01	03	06	19	32	45	58	71	84	93	96	106	116	126	135	145	155	165	174	184	194	203	213	223	233	242	252	262	271	281	291	300	310	320	329	339	349	358	368	378	387

SUPERELEVATION FOR DESIGN SPEED OF 45 M.P.H.

(BASED ON S = 35 M.P.H. IN FORMULA)

SUPERELEVATION TABLE

DEGREE OF CURVE	RADIUS OF CURVE	SUPERELEVATION PER FOOT OF WIDTH	TOTAL SUPERELEVATION - FT. 19' WIDTH	21' WIDTH	23' WIDTH	LENGTH OF APPROACH - FT. 19' WIDTH	21' WIDTH	23' WIDTH
1°-00'	5729.65	0.014	0.27	0.29	0.32	94	98	102
1°-30'	3819.83	0.021	0.40	0.44	0.47	120	126	136
2°-00'	2864.93	0.029	0.55	0.61	0.67	156	162	170
2°-30'	2292.61	0.036	0.68	0.76	0.83	176	192	206
3°-00'	1910.08	0.043	0.82	0.90	0.99	206	220	238
3°-30'	1637.24	0.050	0.95	1.05	1.15	230	250	276
4°-00'	1432.69	0.057	1.08	1.20	1.31	256	280	302
4°-30'	1273.97	0.065	1.24	1.37	1.50	282	314	340
5°-00'	1146.28	0.072	1.37	1.51	1.66	314	342	374
5°-30'	1042.14	0.079	1.50	1.66	1.82	336	372	402
6°-00'	955.37	0.086	1.63	1.81	1.98	366	402	436

6°-30' and over to be Superelevated Same as 6°-00

TABLE SHOWING AMOUNT OF SUPERELEVATION AT ANY POINT ON APPROACH TO CURVE

DISTANCE FROM BEGINNING OF SUPERELEVATION IN DIRECTION OF CURVE - FEET

SUPERELEVATION IN FEET — 23 FT. WIDTH — DEGREE OF CURVE

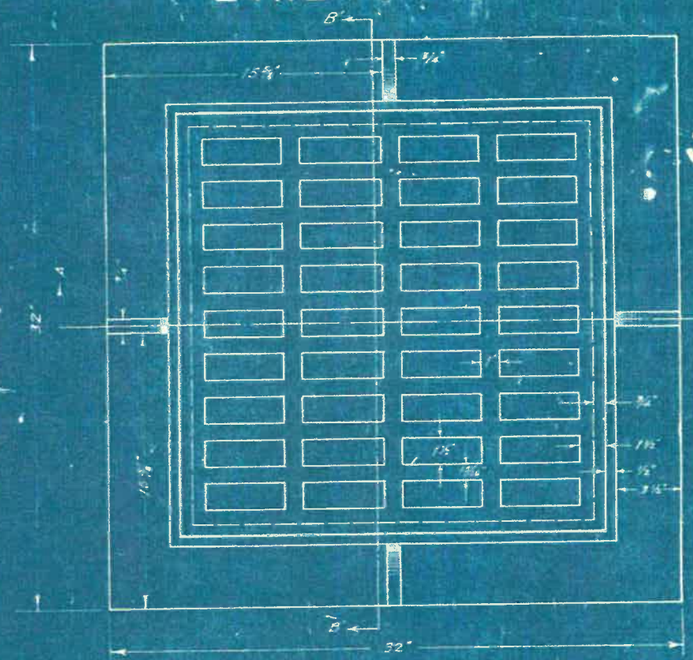
DEGREE OF CURVE	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400
1°-00'	01	03	06	08	11	14	17	20	23	25	28	31	34	37	40	43	46	48	51	54	57	60	63	66	69	71	74	77	80	83	86	89	91	94	97	100	103	106	109	111	114
1°-30'	01	03	06	11	17	20	25	31	34	40	42	45	51	54	60	65	68	71	77	82	85	88	94	99	102	105	111	116	119	122	128	133	136	139	145	150	153	156	162	167	170
2°-00'	01	03	06	14	20	28	34	42	48	54	57	65	71	79	85	91	99	105	111	119	125	131	139	145	151	159	165	171	179	185	191	199	205	211	219	225	231	239	245	251	259
2°-30'	01	03	06	17	25	34	42	51	59	68	71	79	88	96	105	113	122	130	139	147	156	164	173	181	190	198	207	215	224	232	241	249	258	266	275	283	292	300	309	317	326
3°-00'	01	03	06	20	31	42	51	62	71	82	85	96	105	116	125	136	145	156	165	176	185	196	205	216	225	236	245	256	265	276	285	296	305	316	325	336	345	356	365	376	385
3°-30'	01	03	06	23	34	48	59	71	82	94	99	110	122	133	145	156	168	179	191	202	214	225	237	248	260	271	283	294	306	317	329	340	352	363	375	386	398	409	421	432	444
4°-00'	01	03	06	23	37	51	65	79	91	105	110	122	136	150	162	176	190	202	216	230	242	256	270	282	296	310	322	336	350	362	376	390	402	416	430	442	456	470	482	496	510
4°-30'	01	03	06	23	37	54	68	85	99	116	122	136	153	167	184	198	215	229	246	260	277	291	308	322	339	353	370	384	401	415	432	446	463	477	494	508	525	539	556	570	587
5°-00'	01	03	06	23	37	54	71	88	105	122	128	145	162	179	196	213	230	247	264	281	298	315	332	349	366	383	400	417	434	451	468	485	502	519	536	553	570	587	604	621	638
5°-30'	01	03	06	23	37	54	71	88	105	122	128	145	162	179	196	213	230	247	264	281	298	315	332	349	366	383	400	417	434	451	468	485	502	519	536	553	570	587	604	621	638
6°-00'	01	03	06	23	37	54	71	88	105	122	128	145	162	179	196	213	230	247	264	281	298	315	332	349	366	383	400	417	434	451	468	485	502	519	536	553	570	587	604	621	638

'S.E.' REVISED

R-1066

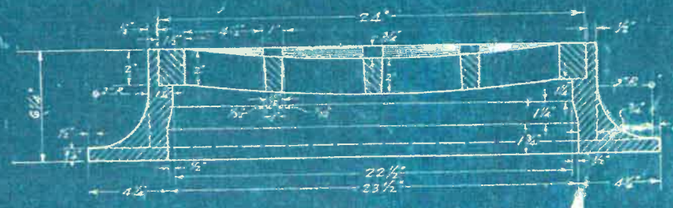
DROP INLET AND CASTING STANDARD

24" X 24" GRATE



PLAN OF CAST IRON
FRAME WITH GRATE IN PLACE

APPROXIMATE WEIGHTS { FRAME 205 LBS. / GRATE 165 LBS. } TOTAL = 370 LBS.



SECTION THRU A'-A'

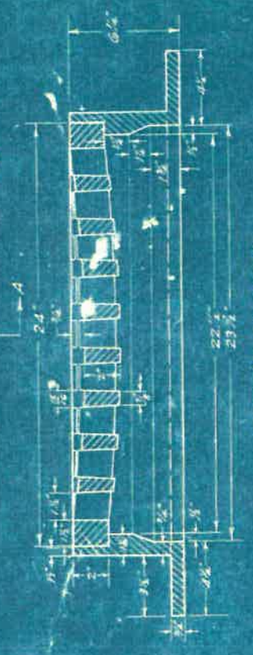
Note: For the construction of BASIN, BRICK MASONRY or CLASS 'A' CONC. may be used. In case of concrete, the walls are to be 6" thick and floor 4" thick. For brick, the walls are to be 8" thick and floor 4" thick.

Where walls are constructed with concrete, re-inforcement will not be required if basin is constructed in clay soil.

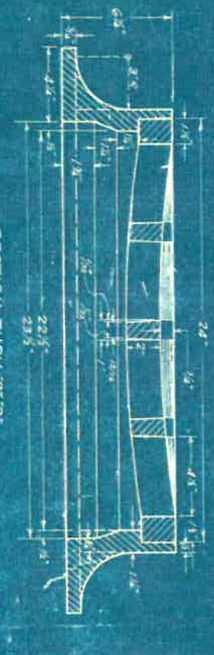
Re-inforcing to consist of ½" ϕ bars as shown



PLAN OF BASIN
Showing
ARRANGEMENT OF STEEL
½" Scale

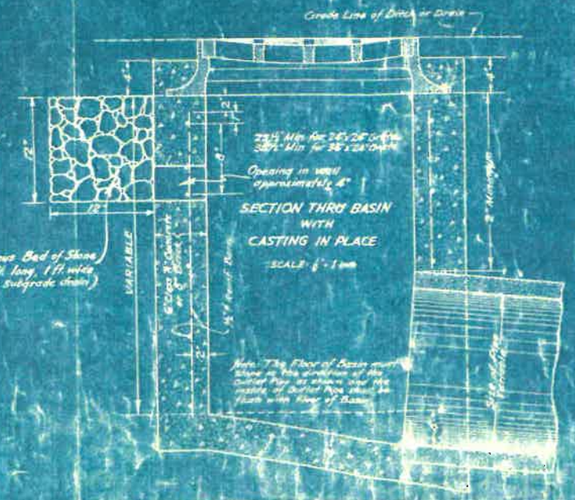


SECTION THRU B'-B'



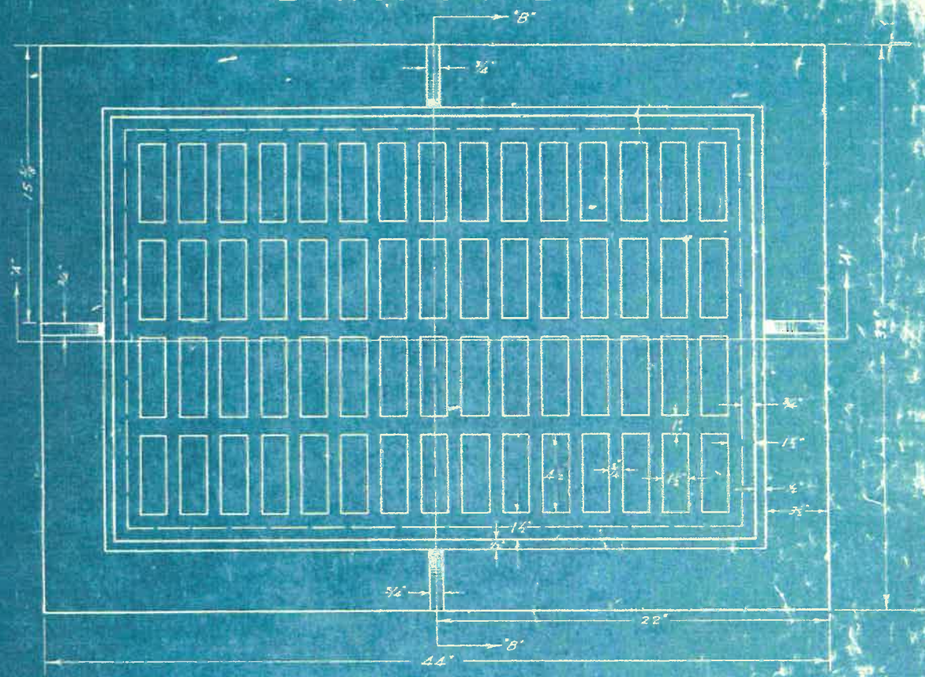
SECTION THRU B'-B'

Note: As shown by this drawing the frame is set level, but the Engineer may set same on slope as required by local drainage conditions. After the frame is set in its final position, it is to be encased with concrete as shown by drawing.



Note: The floor of basin must be set at such elevation that the outlet pipe, as shown, will be at least 2" above the floor of basin.

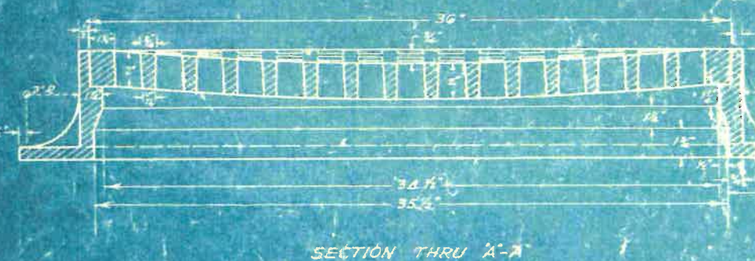
24" X 36" GRATE



PLAN OF CAST IRON
FRAME WITH GRATE IN PLACE

APPROXIMATE WEIGHTS { FRAME 287 LBS. / GRATE 238 LBS. } TOTAL = 525 LBS.

Note: The Drop Inlet shall be constructed so that the longest dimension will be parallel to the center line of the ditch or tray where practicable.



SECTION THRU A'-A'

STANDARD DESIGN
FOR
DROP INLET, PRECAST

R-1067

					Rd		
		Georgetown	22.309		80	15	151

FRONT ST. & BOULEVARD ST

28.15 28.70 P.O.T. 11+59.4

27.75 33.10 P.I. 5+64.1

24.20 0+00 23.45 Cul de Sac

Rd 151

Rd 154

Bl Sun.

EAST BAY ST.

FRONT ST.

BOULEVARD ST

Raian 18" R.C. Pipe & 2 Drop Inlets

P.I. = 5+64.1
Δ = 102°19'
D = None
Rd

TIE EQUALITY ONLY
Sta 5+64.1 Rd 80
Sta 12+17.2 Rd 154

BOULEVARD ST
S 55°00 W

SURVEY STA 0+00 BEGIN RD 80

SURVEY STA 11+59.4 END RD 80

NOTES:

Changes involving increased cost of project or changes in alignment must be specifically authorized by the State Highway Engineer. District Engineer may authorize minor alterations not in conflict with the Standard Practices of the Department and not involving increases in costs. Forward information on any change in alignment to the Columbia Office as soon as the revision is completed.

All curves are to be superelevated for a design speed of 45 M.P.H. by revolving about ℄ as shown on sheet No. 12.

The cost of all drilling and shipping necessary in extending pipe culverts shall be included in the price bid per linear foot for pipe.

The following quantities are not shown in detail on the plans, but are included in the Summary of Estimated Quantities and may be varied during construction as directed by the Engineer:

Overhaul	191,912 C.Y.-M. for Base Course Material
Earth Type Base Course (Pit Material)	2,485 C.Y. for Intersections & Drives (25% for Compaction
Scarifying, Mixing, etc.	11,900 M.S.Y. for Intersections & Drives
Bituminous Surfacing	11,900 S.Y. " " "
15" R. C. Pipe	80 L.F. for Additional Side Lines
18" R. C. Pipe	80 L.F. " " "
Reset Fences	500 ± L.F. to be reset where directed by Engineer

All manholes, water meters and other appurtenances of existing water lines, storm sewers and sanitary sewers shall be adjusted to the finished grade of the streets as shown by plans. Any major adjustments or changes in these facilities will be made by the City of Georgetown, or as indicated by the plans. Minor adjustments will be made by the Contractor and payment for these adjustments will not be made as a separate item but will be considered included in payment for other items of work. A minor adjustment shall consist of a change in elevation of 2½ inches or less.

B.M. No. 1 = B.M. No. 1 Nail in P.P.
22" L. Sta 0+00 Rd 151 & 150 El = 20.00 (Assumed)

EST. EXC. = 500 C.Y.

Subdrain

0.10%

100' V.C.

0.80%

100' V.C.

EL = 5.00
EL = 17.92

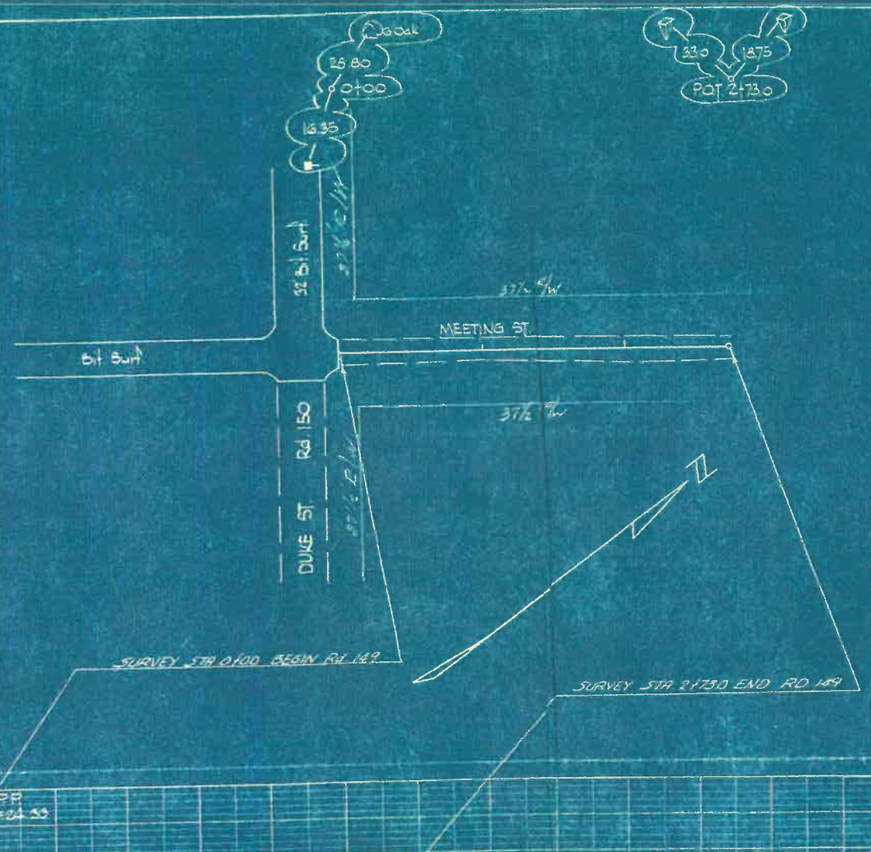
DA. TOAC.
E. 83

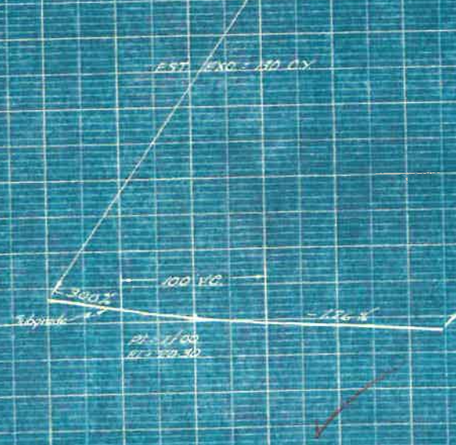
USE TYPICAL SECTION NO. 1
STA. 0+00 TO STA. 5+64.1
AS SHOWN ON SHEET NO. 2.

USE TYPICAL SECTION NO. 4
STA. 5+64.1 TO STA. 11+59.4
AS SHOWN ON SHEET NO. 3

0+00 1 2 3 4 5 6 7 8 9 10 11

R-1068


36 Oak
28 80
0+00
16 35
33 0
18 75
POT 21+73 0
MEETING ST
Bit Surf
Bit Surf
DUKE ST
Rd 150
37½ ft w
37½ ft w
N
SURVEY STA 0+00 BEGIN Rd 142
SURVEY STA 21+73.0 END RD 149


B.M. No. 1 P.S.M. No. 4 Nail in PP
22' Lt Sta 0+00 Rd 150 El = 24.33
EST. EXC. = 810 CY
300 ft
100 VC
Approach
Pt of Int
El = 28.30
SEE TYPICAL SECTION NO. 3
AS SHOWN ON SHEET NO. 4
0+00
1
2

FED. ROAD PROJECT	STATE	COUNTY	ROCKET NO.	PROJECT NO.	SHEET	TOTAL SHEETS
9	N.C.	Montgomery	27309	8015	16	154

EAST BAY & DUKE STS.

23.40
80+00
25.40
24 Oak

P.I. 8+31.9
40.15 34.60

PoCa 9+16.2
25.20 24.25

PoTA 17+24.4
27.65 53.70
12 Oak

37½ R/W
DUKE ST 36' B.I. Surf.
MEETING ST
Rd 149
37½ C/W

P.I. = 8+31.9
Δ = 18°36' Lt.
D = 5°00
T = 187.7
L = 372.0
E = 13.5

P.I. = 15+68.9
Δ = 19°42' Rt.
D = 4°00
T = 173.9
L = 344.0
E = 14.9

* Use 50' Radius

TIE EQUALITY ONLY
Sta 4+64.4 Rd. 150 =
Sta. 0+41.0 Rd. 157

PC 6+44.2

PRINCE ST.

Rd 151
N 20° 00' E

37½ R/W
E. BAY ST. 28' B.I. Surf.
FRONT ST.
Rd 157

SURVEY STA 17+24.4 END RD 150

TIE EQUALITY ONLY
Sta 9+16.2 Rd 151 =
Sta. 0+00.0 Rd 156

SURVEY STA 0+00 BEGIN RD 151

B.M. No. 1 Nail in Base PP
Rt. 12' Sta 0+00 El: 20.00 (Assumed)

B.M. No. 2 Nail in Base PP
Rt. 12' Sta 4+43 El: 20.62

B.M. No. 3 Nail in Guy Pole
Rt. 12' Sta 10+40 El: 19.95

B.M. No. 4 Nail in Power Pole
Rt. 12' Sta 15+04 El: 24.53

EST. EXC. 4,440 C.Y.

P.I. = 4+50
El. = 19.46

-0.14'

200.00'

+0.18'

Subgrade

200.00'

+0.10'

Fl. = 7+00
El. = 18.60

200.00'

+1.52'

P.I. = 15+68.9
El. 19.48

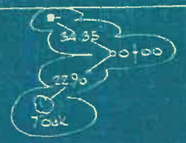
USE TYPICAL SECTION NO. 1
STA 0+00 TO STA 10+00
AS SHOWN ON SHEET NO. 2

USE TYPICAL SECTION NO. 4
STA 10+00 TO STA 17+24.4
AS SHOWN ON SHEET NO. 5

20
10
0 1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7

PLAN
PROFILE

R-1070





Georgetown 22309 151 1A 6F

EAST BAY ST. (SOUTH)

PLAN

EAST BAY ST

29 Bit. Surf

30'±'s R/W

30'±'s R/W

Rd 153

TIE EQUALITY ONLY
Sta 6+39.3 Rd 151 =
Sta 0+00.0 Rd 153

SURVEY STA 0+00 BEGIN RD 151

SURVEY STA 6+39.3 END RD 151 SOUTH

B.M. No 1 Nail in Base P.P
30' ± Sta 0+00 El = 19.73

B.M. No 4 - B.M. No 1 Nail in P.P.
18' ± Sta 0+86 Rd 153 El = 20.00 (Assumed)

EST. EXC = 302 C.Y.

PROFILE

PI: 1+50
El = 19.59

+0.88%

-0.10%

200' V.C.

Subgrade

SEE TYPICAL SECTION NO 3
AS SHOWN ON SHEET NO 6

20
10

19.27 19.31 19.42 19.08 19.34 19.45 19.49 19.47 19.41 19.24 19.24 19.10

0+00 1 2 3 4 5 6

20
10

R-1071

FILE YEAR SUFFIX	NAME	COUNTY	DISTRICT NO.	PROJECT NO.	SHEET NO.	TOTAL SHEETS
2	St. George Street		22309		157	18

HOWARD ST.

2.65
0+00
7.6

3.10
POT
4+41.8
13.55
Rock

HOWARD ST

FRONT ST.

PRINCE ST

SURVEY STA 0+00 BEGIN RD 152

SURVEY STA 4+41.8 END RD 152

B.M. No 1 Nail in Power Pole
14 Rt Sta 2+36 El=20.00 (Assumed)

EST EXC = 210 C.Y.

-0.56%

Subgrade

USE TYPICAL SECTION NO 1
AS SHOWN ON SHEET NO 2

	0+00	1	2	3	4	4+41.8
	15.35	14.51	19.37	19.32	18.48	20.72

20
10

PLAN

PROFILE

R-1072

					Rd		
*	R.C.	Georgetown 22309		153	29	156

TIE EQUALITY ONLY
Sta 0+00.0 Rd 153 =
Sta 6+39.3 Rd 151

Place 150'-18" R.C. Pipe

Place 40'-18" R.C. Pipe (20° Skew)

Place 21'-18" R.C. Pipe

P.C. 3+17.5

P.T. 5+60.2

P.C. 6+49.0

P.I. 4+40.8
Δ = 24°16' LT
D = 10°00
T = 123.3
L = 242.7
E = 13.1

P.I. 7+33.9
Δ = 28°11' LT
D = 6°45
T = 167.4
L = 310.6

R = 1912

Begin Manhole

Return 24" R.C. Pipe

P.I. = 9+17.8
Δ = 85°06' RT
D = None

85.00
P.O.T. 12+06.2
28.50
100 Oak

P.I. 4+40.8
28.55
24.15
2" Willow

28.75
P.I. 7+33.9
30.85
16" Sycamore

45.0
P.I. 9+17.8
39.75

TIE EQUALITY SURVEY STA. 0+21.2 BEGIN RD. 153

SURVEY STA. 12+06.2 END RD. 153

E. BAY ST.

SMITH ST.

MEETING ST.

B.M. No. 1 Nail in P.P.
B. L. Sta. 0+86 El. = 20.00 (Assumed)

B.M. No. 2 Nail in Power Pole
85 ft. Sta. 9+00 El. = 9.90

EST. EXC. = 360 CY.

USE TYPICAL SECTION NO. 3
AS SHOWN ON SHEET NO. 4

PLAN

PROFILE

R-1073

						PI		
		Designed	RJ	Drawn		155	20	154

BOLICK ST

TIE EQUALITY ONLY
Sta. 0+00.0 Rd. 155 =
Sta 3+79.3 Rd. 157

TIE EQUALITY ONLY
Sta 4+68.4 Rd 155 =
Sta 3+09.1 Rd 156

Survey Sta 0+00
Beginning of Rd 155

Survey Sta 4+58.4
End of Rd 156

PRINCE ST.

HIGHMARKET ST.

BOLICK ST.

N 85°00' E

37½ R/W

B.M. No 1 = B.M. No 3 Nail in
Base Guy Pole Rd. 151 El = 19.95

EST. EXC. 212 CY

+0.06%

Subgrade

Use Typical Section No. 6
As Shown on Sheet No. 7

R-1074

		Orange-Lawrence	28.209		156	21	154

HIGHMARKET ST

E 8th ST

Tie Equality Only:
St'a 0+00 Rd 156 =
St'a 9+16.2 Rd 151

Survey Sta 0+10.3
Beginning of Rd 156

Rd 151

102°

57' R/W

HIGHMARKET ST.

57' R/W

57' R/W

Tie Equality Only:
St'a 3+39.1 Rd 156 =
St'a 4+68.4 Rd 155

Rd 155

BOLICK ST.

Survey Sta 5+88.7
End of Rd 156

B.M. No. 1 = B.M. No. 3 Nail in G.P.
of Rd Sta 0+90 Rd 150 & 151 El = 19.95

Est Exc 275 CY

Subgrade

+0.36%

-1.14%

PI: 4+00
El: 20.00

50' V.C.

+1.26%

PI: 3+25
El: 19.05

100' V.C.

Use Typical Section No 6
As Shown on Sheet No. 7

R-1075

PLAN

TIE EQUALITY ONLY
Sta 0+41.0 Rd. 157 =
Sta 4+64.4 Rd. 151

TIE EQUALITY ONLY
Sta 3+79.3 Rd. 157 =
Sta 0+00.0 Rd. 155

PRINCE ST Rd. 157

BOLICK ST Rd. 155

Place 48-18" R.C. Pipe

Rd. 154

BAY ST

37½ R/W

Survey Sta 0+51.0
Beginning of Rd 157

Survey Sta 12+07.0
End of Rd 154

PI: 9+53.9
Δ: 10°11'Rt
D: 5°00
T: 102.1
L: 203.9
E: 2.5

PRINCE & BOULEVARD STS

TIE EQUALITY ONLY
Sta 12+17.2 Rd 154 =
Sta 5+64.1 Rd 80

Rd 80

B.M. No. 1 = B.M. No. 2 Nail in PP
2.2' L Sta 4+43 Rd. 154.50 El. = 20.62

B.M. No. 2 Nail in Base PP
Sta 7+52 El = 18.50

EST EXC 548 C.Y.

Subgrade

-0.13%

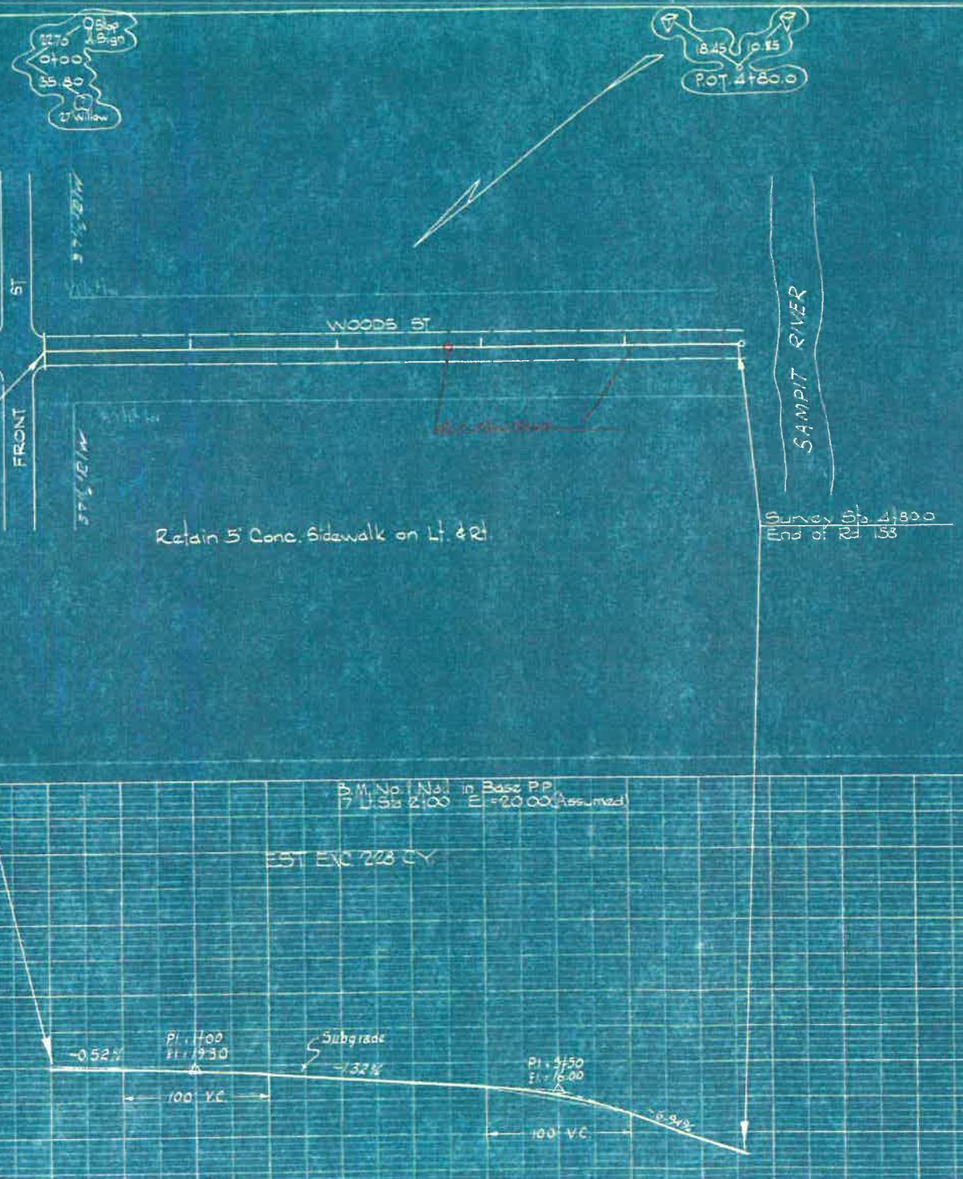
Use Typical Section No. 1
From Sta 0+51.0 to Sta 7+28.9
As Shown on Sheet No. 2

Use Typical Section No. 2
From Sta 7+28.9 to Sta 12+07.0
As Shown on Sheet No. 5

R-1076

FED. ROAD NO.	STATE	COUNTY	PROJECT NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	Georgetown 22 309	158	2	4

WOODS ST



R-1077

FED. ROAD DIV. NO.	STATE	COUNTY	PROJECT NO.	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	S.C.	Georgetown	11-309		159	24

CANNON ST.

Stop Sign
21.85
0+00
28.65
47 Tree

Pat 2+65.0
18.70
17.60

ST
FRONT
CANNON ST
SAMPIT RIVER

Survey Sta 0+00.0
Beginning of Rd 159

Survey Sta 2+65.0
End of Rd 159

B.M. No. 1 Nail in Disc PP
19' Lt. Sta 0+63 El. 20.00 (Assumed)

EST. EXC. 125 CY

Ar 1+00
El. 19.60
Subgrade
4.00%
100' V.C.

See Typical Section No. 7
As Shown on Sheet No. 8

PLAN

PROFILE

R-1078

Rd
Georgetown 12 309 160 25 15%

PRINCE ST

PLAN

PROFILE

ST.

PRINCE ST

FRASER

37½ C.M.W.

37½ C.M.W.

37½ C.M.W.

+8.14

R.B.

Survey Sta 0+00.0
Beginning of Rd 160

Survey Sta 1+81.4
End of Rd 160

B.M. No.1 Nail in Power Pole
(2' Lt Sta 0+00 E = 20.00 Assumed)

EST. EXC. = 65 C.Y.

Use Typical Section No.1
As Shown on Sheet No. 2

R-1079

DIST. NO.	STATE	COUNTY	PROJECT NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	S.C.	Georgetown	12.309		161	26

Plan

Profile

Pl A 15+98.1
38.05 24.80
F Post

Pl 1.5+42.5
23.10 45.90
Stop Sign

0+00
36.15 41.80
Post

TIE EQUALITY ONLY
Sta 0+00.0 Rd 161 =
Sta 38+43.1 Rd 169

Construct Drop Inlet (24"x36")

Place 86-18" R.C. Pipe

Remove C.M. Pipe
Place 86-18" R.C. Pipe

Retain 18" R.C. Pipe

Retain Drop Inlet
Retain 18" R.C. Pipe

Place 86-18" R.C. Pipe

Retain Drop Inlet

Retain 28-18" R.C. Pipe

Retain Drop Inlet
Retain 18" R.C. Pipe

Retain Drop Inlet

Place 86-18" R.C. Pipe

Survey Sta 0+10.2
Beginning of Rd. 161

Survey Sta 15+87.6
End of Rd 161

MERRIMAN RD

HAZARD ST

CONDON ST

Rd 169

Rd 110

Rd 109
KANNSKI ST

51 Surf. Road 108

12 61 Surf

51 Surf

57' R/W

Pl = 5+42.5
Δ = 1°32' Rt.
D = None

Exception To Project
Sta 9+80.3 to Sta 10+20.7

EST EXC = 728 CY

B.M. No 1 = B.M. No 4 Nail in Base G.P.
19' Lt. Sta 38+79 Rd. 169 & 165 El. = 15.80

B.M. No 4 Nail in Base P.P.
23' Lt. Sta 5+28 El. = 14.99

B.M. No 4 Nail in Base P.P.
17' Rt. Sta 9+69 El. = 16.49

B.M. No 4 Nail in P.P.
7' Rt. Sta 16+14 El. = 16.49

Subgrade
-0.30%

200' V.C.

+0.84%

Pl. = 8+00
El. = 16.33

-0.94%

+0.96%

Pl. = 11+50
El. = 15.01

-0.15%

DA = 10 AC
C = 0.3

Pl. = 5+00
El. = 15.81

DA = 10 AC
C = 0.3

DA = 10 AC
C = 0.3

DA = 10 AC
C = 0.3

200' V.C.

200' V.C.

Use Typical Section No. 1
As Shown on Sheet No. 2

P.C. P.T. P.C. P.T. P.C. P.T.

15.88 15.91 14.91 14.41 15.11 14.03 14.09 14.30 14.65 15.49 15.80 15.84 15.76 15.39 14.63 14.77 15.05 15.46 15.73 15.86 15.86 15.78 15.63 15.48 15.35

0+00 1 2 3 4 5 6 7 8 9 10 11+20.7 1 2 3 4 5 6

R-1080

Rd.							
		Georgetown 22.809		162	29	154

CONGDON ST

Rd. 6

PLAN

PROFILE

P.I. 42.09 St 1+02 37.20

P.I. 30.80 44.70 30.04k

P.I. 1+01.90

P.I. A 1+45.0 36.90 37.95 15.04k

TIE EQUALITY ONLY
Sta 0+100.0 Rd. 162 =
Sta 0+77.4 Rd. 168

Adjust 4 Drop Inlets on Rt & Lt

Retain Drop Inlets
Retain 18" R.C. Pipe

Retain 18" R.C. Pipe

Retain Drop Inlets
Retain 18" R.C. Pipe

Retain Drop Inlet
Retain 18" R.C. Pipe

Rd 168

GILBERT ST

EMANUEL ST

TAYLOR ST

FRONT ST

CONGDON ST

N 34°00 E

22' Bit. Surf.

Survey Sta 0+100
Beginning of Rd. 162

Exception to Project
Sta 4+89.2 to Sta 5+21.2

Exception to Project
Sta 10+08.0 to Sta 10+30.0

Survey Sta 15+41.0
End of Rd. 162

B.M. No 1 = B.M. No 7 Nail in Base PP
Lt. Rt. Sta 15+38 Rd 169+165 El = 17.20

B.M. No 2 Nail in PP
Lt. Rt. Sta 5+38 El = 18.38

B.M. No 3 Nail in PP
Lt. Rt. Sta 10+14 El = 17.51

B.M. No 4 Nail in PP
Lt. Lt. Sta 15+80 El = 16.26

EST. EXC. = 700 CY

Use Typical Section No. 9
As Shown on Sheet No. 4

Subgrade

P.I. = 3+00 El = 17.09

P.I. = 1+00 El = 15.89

P.I. = 8+00 El = 16.06

P.I. = 11+00 El = 15.69

P.I. = 14+00 El = 15.97

100' V.C.

200' V.C.

+0.60%

-0.08%

-0.30%

+0.28%

-0.28%

+0.24%

+0.20%

Catch

P.C.

P.T.

R-1081

FED. ROAD DIV. NO.	STATE	COUNTY	PROJECT NO.		Rd NO.	SHEET NO.	TOTAL SHEETS
3	R.I.	Georgiaville	27.809		163	28	

HAZARD ST.

Sheet 6

33.85
A 0+00
10.75
Bldg. & Sign

17.80
31.70
P.I. 5+03.4

TIE EQUALITY ONLY
Sta 0+00.0 Rd. 163 =
Sta 100+62.2 Rd. 165

Rd 165

37½' C/W

HAZARD ST.
N 32°00' E

20.81 Brk

BOURNE ST.

HAWKINS ST.

Survey Sta. 0+12.0
Beginning of Rd. 163

Survey Sta. 4+09.4
End of Rd. 163

B.M. No. 1 - B.M. No. 10 Nail in P.P.
27' Rt. Sta 100+42.2 Rd. 165 El. = 14.43

B.M. No. 2 Nail in Power Pole
20' Lt. Sta 4+90 El. = 18.71

EST. EXC. = 225 CY

Subgrade

+1.0%

100' V.C.

50' V.C.

Pt. = 14.50
El. = 18.99

Pt. = 14.50
El. = 17.58

See Typical Section No. 1
As Shown on Sheet No. 2

13.81 13.89 14.09 14.50 15.01 16.03 17.05 17.30 17.56 17.66 17.71

PC PT PC PT

PLAN

PROFILE

R-1082

Rd.

		Georgetown 27.359			166	30	154

PENN ST

Sheet 8

Bkp Sign
20.60
0+00
25.05

18 Oak
38.19
POT 24+01.8
45.35
12 Oak

PENN ST

KAMINSKI ST

HAZARD ST

Survey Sta 0+00.0
Beginning of Rd 166

Survey Sta 24+01.8
End of Rd 166

B.M. No 1 Nail in P.P.
22" R. Elm 0-(0'11)
El. = 20.00 (Assumed)

B.M. No 2 Nail in P.P.
28" R. Elm 24+18 E. = 20.57

EST. EXC. = 190 C.Y.

Pt. 2+00
El. = 21.79

Subgrade
-1.96%

-1.06%

200' V.C.

Use Typical Section No 1
As Shown on Sheet No. 2

PC

PT

19.04
20.43
20.96
21.19
21.11
20.73
19.67
19.55

0+00 1 2 3 4 24+01.8

20

10

PLAN

PROF

R-1083

					Rd		
					167	31	154

BUTTE ST

PLAN

PROFILE

5 P Post
32.35
A=0+00
25.85

Pl 5+847
38.55
32.80

Pl A 10+582
29.85
33.55

TIE EQUALITY ONLY
Sta 0+00.0 Rd 167 =
Sta 80+59.6 Rd 169

MERRIMAN ST

Pl = 5+847
A = 0+30.0
D = None

Place 20-15 R C Pipe
Place 20-15 R C Pipe
Place 20-15 R C Pipe

BUTTS ST

37½' R/W

Survey Sta 0+12.0
Beginning of Rd. 167

Rd 169

KAMINSKI ST

Exception to Project
Sta 5+490 to Sta 6+19.7

HAZARD ST

Exception to Project
Sta 10+22.7 to Sta 10+92.7

To Gradation
FRASER ST.

Rt 17.4 Rt 30.1

Survey Sta 16+95.7
End of Rd 167

B.M. No 1 Nail in P.P.
21 Rt. Sta 1+43 El. = 15.75

B.M. No 2 Nail in P.P.
25 Lt. Sta 6+05 El. = 17.72

B.M. No 3 Nail in P.P.
26 Rt. Sta 10+78 El. = 18.28

B.M. No 4 Nail in P.P.
40 Rt. Sta 15+00 El. = 14.76

EST. EXC. = 635 CY

Subgrade
-0.10%
+100' VC
Pl. 4+00
El. = 14.20
+0.10%
+0.02%
Pl. = 9+00
El. = 18.10
-1.00%
200' VC
-0.44%

Use Typical Section No. 1
As Shown on Sheet No. 2

0+00 1 2 3 4 5 6 7 8 9 10 1 2 3 4 5

R-1084

Rd.
Georgetown 11,509 | 168 | 32 | 137

GILBERT ST

F. & Post
24.25
24.43
0+00

33.15
P.I. Sta 5+60.2
31.75

P.I. A 10+34.1
42.20
35.55
End Curb & Gutter

39.90
P.I. 15+10.9
47.00
Begin Curb & Gutter

TIE EQUALITY ONLY
Sta 0+00.0 Rd. 158 =
Sta 75+53.9 Rd. 169

MERRIMAN ST.

CONSOLIDATED ST. Rd. 162

Retain Drop Inlets on Rt & Lt
Retain Pipe

KAMINSKI ST.

HAZARD ST.

Retain Drop Inlets on Rt & Lt

FRASER ST.

Rt. 5+01 & 17

S 57° 00' E

Survey Sta 0+12.0
Beginning of Rd. 168

Rd. 169

Exception to Project
Sta 5+25.1 to Sta 5+94.0

P.I. = 5+60.2
Δ = 0°18' Rt
D = None

P.I. = 10+34.1
Δ = 0°06 Rt
D = None

Retain Pipe

Exception to Project
Sta 9+99.8 to Sta 10+68.4

Survey Sta. 14+73.2
End of Rd. 168

6 M. No 1 Nail in PP
15 Lt. Sta 75+76 El. = 17.20

6 M. No 2 Nail in PP
29 Lt. Sta 5+62 El. = 16.36

6 M. No 3 Nail in PP
20 Lt. Sta 10+57 El. = 17.01

6 M. No 4 Nail in PP
24 Lt. Sta 14+81 El. = 12.00

EST EXC = 628 C.Y

Use Typical Section No 3
As Shown on Sheet No 4

PLAN

PROFILE

R-1085

	S.C.	Georgetown	22.309		169	9	13

PLAN

PROFILE

Surface Treat Connection

Retain ¾" Water Line

To Georgetown

To Conway U.S. Rt. 701

Survey Sta 0+00.0
Beginning of Rd. 169

Retain 4" Water Main

Retain 15-12" R.C. Pipe

Retain 21-18" R.C. Pipe

Retain 20-18" R.C. Pipe

Retain 18-15" R.C. Pipe

Place 66'-18" R.C. Pipe

Retain 18" R.C. Pipe

Retain 55-15" R.C. Pipe

Retain 9-15" R.C. Pipe

Retain 24-15" R.C. Pipe

In Place 68-18" R.C. Pipe
Place 40'-24" R.C. Pipe

Place 36-18" R.C. Pipe

Crops Hatched Area to be Surface Treated

SCHD. MAINT. SHOP

STATE ST

S 25°08' E

NOTE: During Construction Shift ℄ so as to center existing ditches.

Sign Post
309
Pot 1+259
26 Rt
18" Pine

B.M. No. 1 Nail in base T.P.
15 Lt Sta 1+60 El. 20.00 (Assumed)

B.M. No. 2 Nail in base T.P.
26 Rt Sta 1+25 El. = 17.26

EST EXC = 4232 CY

Subgrade

-0.23%

200' V.C.

P.I. = 8+00
El. = 17.25

-0.05%

P.I. = 21+50
El. = 17.61

-0.52%

200' V.C.

P.I. = 23+00
El. = 19.01

-0.84%

200' V.C.

See Typical Sections No. 9 from Sta 0+20.0 to Sta 38+99.6
As Shown on Sheets No. 10

R-1086

Georgetown 22309

Retain 0'-15" R.C. Pipe
Place 20'-15" R.C. Pipe
Retain 21'-15" R.C. Pipe
Retain 3'-15" R.C. Pipe
Retain 53'-18" R.C. Pipe
Retain 9'-15" R.C. Pipe
Retain 18'-15" R.C. Pipe
Retain 22'-15" R.C. Pipe
Retain 24'-15" R.C. Pipe
Retain 20'-15" R.C. Pipe
P.I. = 24+00.0
Δ = 0° 08' Lt.
D = None
Retain 16'-15" R.C. Pipe
Retain 18'-18" R.C. Pipe
Retain 18'-24" C.M. Pipe
Retain 21'-12" R.C. Pipe
Retain 53'-18" R.C. Pipe
Retain 16'-18" R.C. Pipe
Retain 21'-15" R.C. Pipe
Moving Item No. 4 2" Water Line Lower to clear construction
Retain 53'-24" R.C. Pipe
Retain 6" Sewer Line
Retain 21'-24" R.C. Pipe
Retain 53'-18" R.C. Pipe
Retain 24'-18" R.C. Pipe
Exception to Project :- Sta 88+69.6 to Sta 50+88.9
Begin Bit. Surf.
To Andrews
Rd. 169
Rd. 166
18 Bit. Surf
Street
Ditch
Dike
Duke
U.S. Rt. 17 Alt.
S 25°08 W
S 25°00 W
Retain 66'-15" R.C. Pipe
Retain 21'-18" R.C. Pipe & Ext. 8'-18" R.C. Pipe on Rt.
Moving Item No 2 3/4" Water Line Lower to clear construction.
Place 20'-15" R.C. Pipe
Moving Item No 1 3/4" Water Line Lower to clear construction
Retain 9'-15" R.C. Pipe
Place 20'-15" R.C. Pipe
Moving Item No. 3 2" Water Line - Lower to clear construction.
Retain 66'-15" R.C. Pipe
Retain 12'-15" R.C. Pipe
Retain Manhole
Retain 21'-24" R.C. Pipe
M.H. 166-04
M.H. 166-01
P.I. 24+00.0
37.7
29.0
P.O.T.
41.8
38+62.6
36.2'
Post
B.M. No. 3 Nail in base P.P. 22' Rt. Sta. 23+79 El. = 17.86
B.M. No. 4 Nail in base Guy Pole Rt. Sta. 38+79 El. = 15.80
P.I. = 20+00 El. = 17.11
200' V.C.
Subgrade
-0.10%
DA=10 AC C=0.5
DA=30 AC C=0.5
DA=730 AC C=0.5
P.T.
17.01
16.68
16.9
16.8
16.7
16.6
16.5
16.4
16.3
16.21
16.1
16.01
15.9
15.8
15.7
15.6
15.5
15.4
15.3
15.25

PLAN
PROFILE

R-1087

Rd						
					SHEET	TOTAL SHEETS
3	R-C	Georgetown 22.309		169	6A5	157

Retain 36"-18" R.C. Pipe
To Georgetown
Retain Drop Inlet
Retain 18" R.C. Pipe
Retain Drop Inlet
Retain 18" Sewer Line
Retain 15" R.C. Pipe
Retain Drop Inlet
Retain 24" R.C. Pipe
Retain 36" R.C. Pipe
Retain Drop Inlet
Retain 18" R.C. Pipe
Retain 36" R.C. Pipe
Retain Drop Inlet
Retain 36" R.C. Pipe
Retain 18" R.C. Pipe
Retain Drop Inlet
Retain 36" R.C. Pipe
Retain Drop Inlet
Retain 42" R.C. Pipe
TIE EQUALITY ONLY
Sta 75+53.9 Rd. 169 =
Sta 0+00.0 Rd. 168
50
55
60
65
70
75
80
37½' R/W
Rd. 169 18 Ft. Bitum.
S 25°00' W
S 25°01' W
S 53°56' W
Place 36"-15" R.C. Pipe
Retain 33"-15" R.C. Pipe
Retain 30"-18" R.C. Pipe
Retain 18" R.C. Pipe
Construct Drop Inlet (24"x36")
Construct Drop Inlet (24"x36") Retain 18" R.C. Pipe
Construct Drop Inlet (24"x36")
Retain 18" R.C. Pipe
P.I. = 53+88.9
Δ = 20°01' Rt.
D = None
P.I. = 70+35
Δ = 1°59' Lt.
D = None
P.I. = 73+58.4
Δ = 10°36' Rt.
D = 10°00'
R = 573.0
L = 106.0
T = 53.5
P.C. 72+59.4
P.T. 74+55.4
TAYLOR
FRONT
SALEM
ANNAPOLIS
GILBERT
S.A.L.
To Andrews
Exception to Project:
Sta 88+69.6 to Sta 50+88.9
76' Exception to Project:
Sta 54+46.6 to Sta 54+54.2
Plat Book 1 Page 701
Plat Book 1 Page 701
Plat Book 1 Page 701

Retain 42" R.C. Pipe
Retain Catch Basin
Construct Drop Inlet (24"x36")
Place 40-18" R.C. Pipe
Retain 42" R.C. Pipe
Retain Catch Basin
Retain 42" R.C. Pipe
Construct Drop Inlet (24"x36")
Retain 68-18" R.C. Pipe
Retain 15" R.C. Pipe
Adjust Drop Inlet (24"x36")
Retain 52-48" R.C. Pipe
Adjust Drop Inlet (24"x36")
Place 20-18" R.C. Pipe
Place 40-18" R.C. Pipe
Place 60-18" R.C. Pipe
Construct Drop Inlet (24"x36")
Exception to Project
Sta 85+64.5 to Sta 85+84.5
Retain 91-36" R.C. Pipe
Place 96-15" R.C. Pipe
Construct Drop Inlet (24"x36")
Retain 56-18" R.C. Pipe
Survey Sta 105+25.0
End of Rd
55' Offset
Exception to Project
Sta 95+74.5 to Sta 95+94.5
Hawkins St
Ditch
Sta 22+00
Pl = 88+29.9
Δ = 60°-26' Lt.
D = None
T = 38.57
L = 62.8
R = 100.00
Pl = 90+82.9
Δ = 60°-26' Lt.
D = None
Pl = 90+23.3
POT = 91+89.5
POT = 93+84.4
Pl = 95+84.5
POT = 100+62.2
Step Sign
5' Depth
POT = 105+25.0
Pl = 80+59.6
Pl = 88+29.9
B.M. No. 8 Nail in PP
17 Ft. Sta. 90+80 El. = 16.48
B.M. No. 9 Nail in PP
27 Ft. Sta. 98+08 El. = 18.67
B.M. No. 10 Nail in PP
17 Ft. Sta. 100+42 El. = 14.46
B.M. No. 11 Nail in PP
15 Ft. Sta. 104+67 El. = 10.98
Subgrade
Pl. 84+00
El. = 14.76
-0.40%
+0.18%
200' V.C.
Pl. 87+00
El. = 13.90
+0.44%
Pl. 90+00
El. = 15.12
200' V.C.
+0.20%
-0.10%
Pl. 98+00
El. = 17.06
200' V.C.
-1.24%
200' V.C.
Pl. 100+00
El. = 15.10
-0.66%
Pl. 104+00
El. = 10.14
Dr. Inlet C-83
Dr. Inlet C-83
Dr. Inlet C-83
Dr. Inlet C-83
Dr. Inlet C-83
Dr. Inlet C-83
PC
PT
PROFILE

R-1089

PLAN

PROFILE

POT = Sta 0+43.0
48.9
20.9
Car at Post
12" Oak

Pl = Sta 2+53.5
21.6

POT = Sta 6+14.5
37.5

Pl = Sta 8+62.8
60.2

Pl = Sta 9+03.5
49.2
Stop Sign

To Conway
Rt 701
To Georgetown
74°45'
5% Tan
5% Tan

Survey Sta 0+09.0
Beginning of Rd 170

Pl = 10+62.8
Rt 701
Rt 702
Rt 703

Pl = 2+53.5
Rt 702
Rt 703

Rt 703
Rt 702
Rt 701

N36°-00E

25' R/W
25' R/W

Place 40-15" R C Pipe

Tie Equality Only:
Sta 6+14.4 Rd 170 =
Sta 0+00 Rd 171

Rd 171
+14.4
25' Tan
25' Tan

25' Tan

PC = 8+17.9

PT = 8+97.8

22.4° Curve

Rt 703
Rt 701

100.33

Road 82

Retain 2 Drop Inlets and Pipe

Survey Sta 9+80.5
End of Rd 170

B.M. No. 1 Nail in P.P.
18" Rt Sta 2+68 El. = 20.00 (Assumed)

B.M. No. 2 Nail in P.P.
18" Rt Sta 6+45 El. = 22.46

EST. EXC. = 460 CY

-1.04%
100' V.C.
-0.24%
100' V.C.
Subgrade
+0.70%
Pl. = 16+00
El. = 21.86
-0.10%
300' V.C.

Pl. = 1+00
El. = 19.80
DA = 7 AC
C = 0.3
Pl. = 2+50
El. = 19.41
DA = 10 AC
C = 0.3

Use Typical Section No. 1
As Shown on Sheet No. 12

20
10
0

0+09 20.75 PC
20.32 PC
19.90
19.67 PT
19.64 PC
19.53
19.76 PT
20.41
20.81 PC
21.13
21.38
21.56
21.68
21.73
21.71 PT
21.66
21.56
18+35 21.68

Survey Sta 0+09.0

R-1090

PI = 0+00
POT = 5+47.4

Rd
Georgetown 22.309 | 171 | 38 | 54
NOWELL ST

Tie Equality Only:
Sta 0+00 Rd 171 =
Sta 6+44 Rd 170

Road 170

Survey Sta 0+00
Beginning of Rd 171

School

School

Survey Sta 5+47.4
End of Rd 171

B.M. No.1 = B.M. No 2 Rd 170
Nail in PP S.R. Sta 6+45 El.=22.46

EST EXC = 255 CY

PI = 2+50
EL: 21.31

-0.12%

-0.12%

Subgrade

100' V.C.

Use Typical Section
As Shown on Sheet No 2

Sta	0	1	2	PC	PT	3	4	5	5+47.4
Elev	21.50	21.49	21.37		21.27	21.10	20.98	20.26	20.04

R-1091

FED. ROAD DIV. NO.	STATE	COUNTY	PROJECT NO.	PROJECT NO.	SHEET NO.	TOTAL SHEETS
3	S. D.	Georgetown 22.309			172	454

Rd

Stop Sign
27.4
Pl = 0:00
200

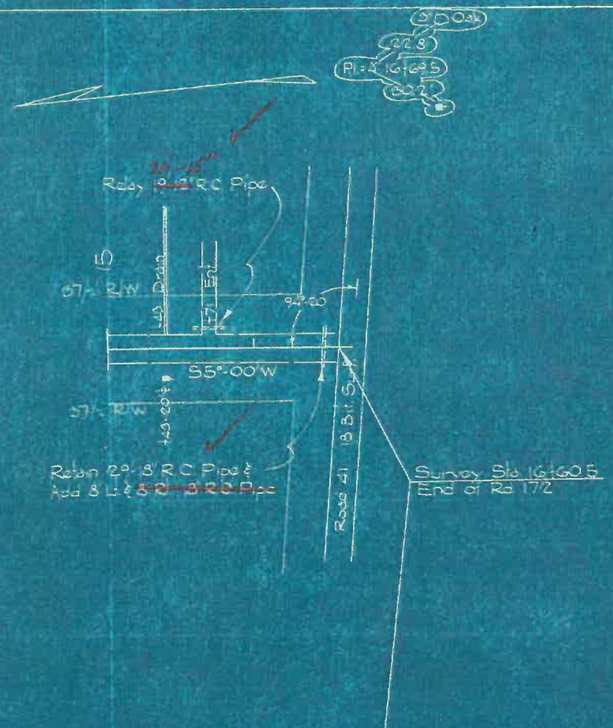
To Georgetown
18 Bit. Surf.
Rd 18
To South Island

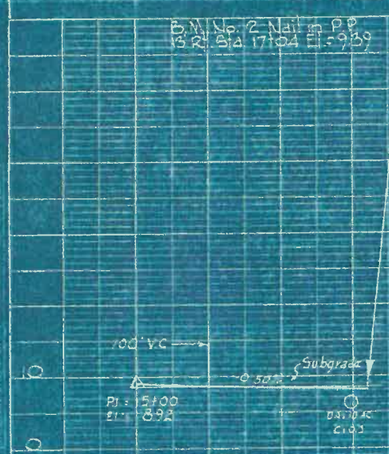
Survey Sta 0:00
Beginning of Rd. 172

Relay 15-15" R.C. Pipe & Add 16-15" R.C. Pipe
Place 20-15" R.C. Pipe
67½' R/W
19°-30'
107 Ent
127+14
146+18
158+12
120 Ent
87 Ent
130 Ent
87 Ent
Place 20-15" R.C. Pipe
Place 20-15" R.C. Pipe
Place 20-15" R.C. Pipe

Rd

		Georgetown 22.309			172	39 R	154	





R-1093

| | | |

Dist. No.	Sheet	County	Fed. Aid No.	Proj. No.	Sheet	Total
3	3-C	Georgetown	(2) 307	615	41	154

STATE HIGHWAY DEPT.
COLUMBIA

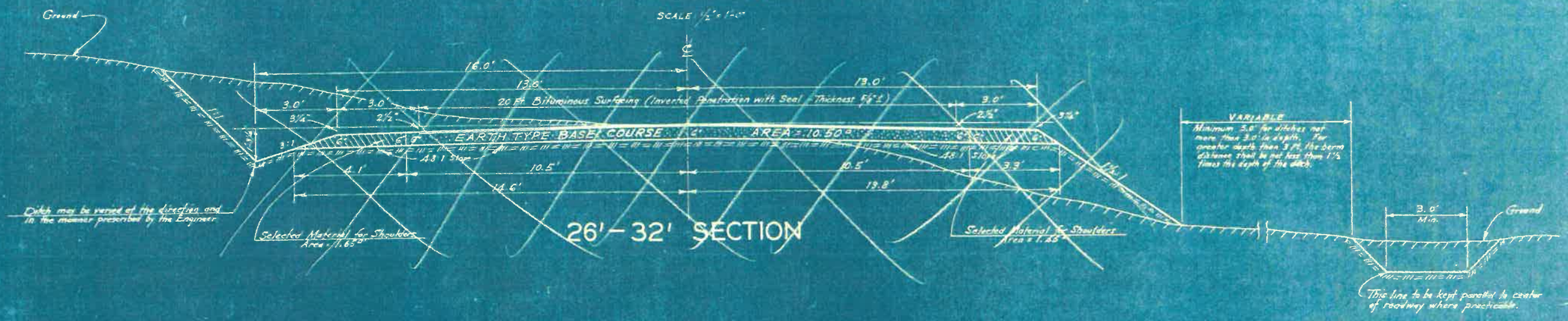
TYPICAL SECTIONS

FOR

EARTH TYPE BASE COURSE

AND BITUMINOUS SURFACING

SCALE 1/2" = 1'-0"



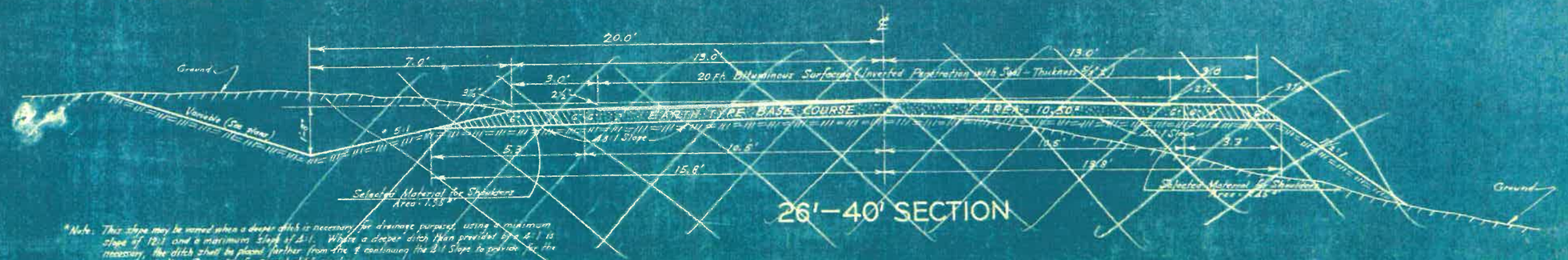
TYPICAL SECTION No. 1



NOTE: Earth Type Base Course is to be added in variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 5" uniform of Earth Type Base Course.

*Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 3:1. Where a deeper ditch than provided by a 3:1 is necessary, the ditch shall be placed farther from the ℄ continuing the 3:1 slope to provide the necessary depth. See profile for Special ditch grades.

Also, this section may be widened by continuing the 4:1 slope (the distance between ℄ and bottom of the ditch not to exceed 24 ft.) where borrow material is necessary on flat grades that are governed by water elevation or where a wide ditch is necessary for drainage purposes.



*Note: This slope may be varied when a deeper ditch is necessary for drainage purposes, using a minimum slope of 12:1 and a maximum slope of 4:1. Where a deeper ditch than provided by a 4:1 is necessary, the ditch shall be placed farther from the ℄ continuing the 3:1 slope to provide the necessary depth. See profile for Special ditch grades.

Also, this section may be widened by continuing the 5:1 slope (the distance between the ℄ and bottom of ditch not to exceed 30 feet) where borrow material is necessary on flat grades that are governed by water elevation or where a wider ditch is necessary for drainage purposes.

Note: Horizontal dimensions are shown in tenths of feet.

SECTION 26

R-1095

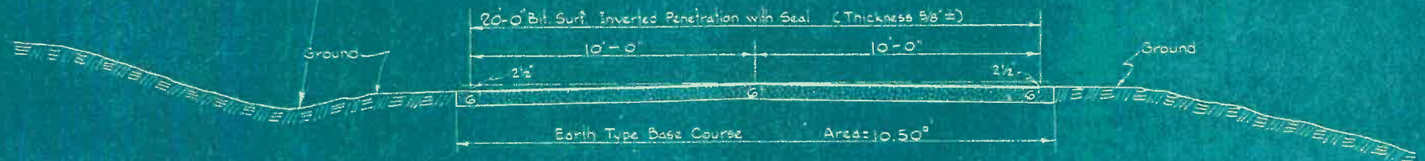
FED ROAD DIV NO	STATE	COUNTY	PROJECT NO	FED AID NO	SHEET NO	TOTAL SHEETS
3	S.C.	Georgetown	22.309		915	42

S.C. HIGHWAY DEPARTMENT
TYPICAL SECTION
of
IMPROVEMENT

SCALE 1 IN. = 2½ FT.

Note: No work to be performed in this area unless it is necessary to shape or pull ditches to provide proper drainage

TYPICAL SECTION No. 2



NOTE: Earth Type Base Course to be added is of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 5" uniform of Earth Type Base Course.

E-S

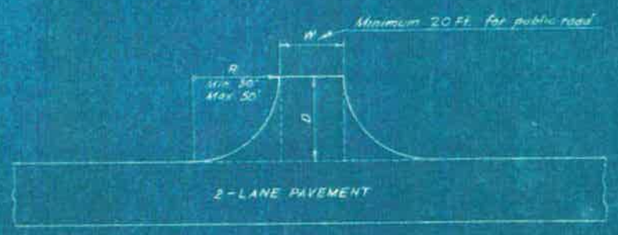
R-1096

Drawing No.	State	County	Project No.	Sheet No.	Sheet No.	Total Sheets
3	S.C.	Georgetown	12-309	6b	48	154

SOUTH CAROLINA STATE HIGHWAY DEPARTMENT
COLUMBIA

STANDARD TYPE INTERSECTIONS

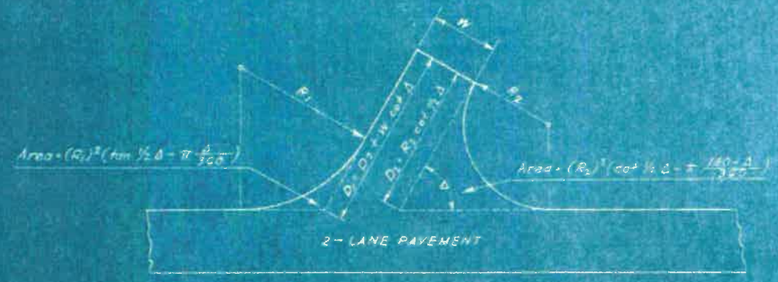
SCALE: 1" = 25'



T-TYPE INTERSECTION

For angles at or near 90°
Area of Paved Spur = WD + .43 R²

For private driveways to be paved, use this type with 20' radii and 10' width at back. Area for driveways = 41.3 S.Y.



Y-TYPE INTERSECTION

MAXIMUM AND MINIMUM RADII WITH CORRESPONDING INTERSECTION AREAS

ANGLE Δ	MAXIMUM			MINIMUM		
	R_1 FEET	R_2 FEET	AREA* S.Y.	R_1 FEET	R_2 FEET	AREA* S.Y.
90°	50	50	241.7	30	30	116.3
75°	80	50	354.3	50	25	145.1
60°	125	35	350.2	75	20	164.1
45°	200	25	355.9	100	15	170.2
# 30°	300	20	398.1	150	10	180.6

* The areas given are for the total area beyond the edge of the pavement on the main road. Width at back of intersection, W = 22 ft.

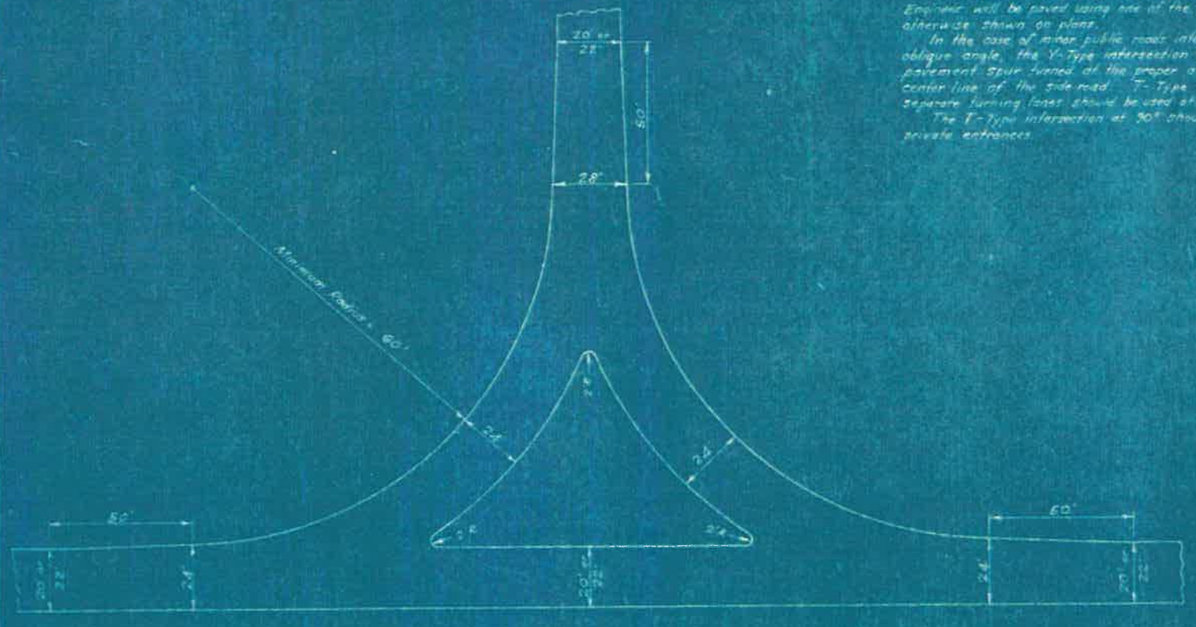
Intersections of less than 45° Shall be constructed with separate turning lanes where practical, as shown by intersection type below.

GENERAL NOTES:

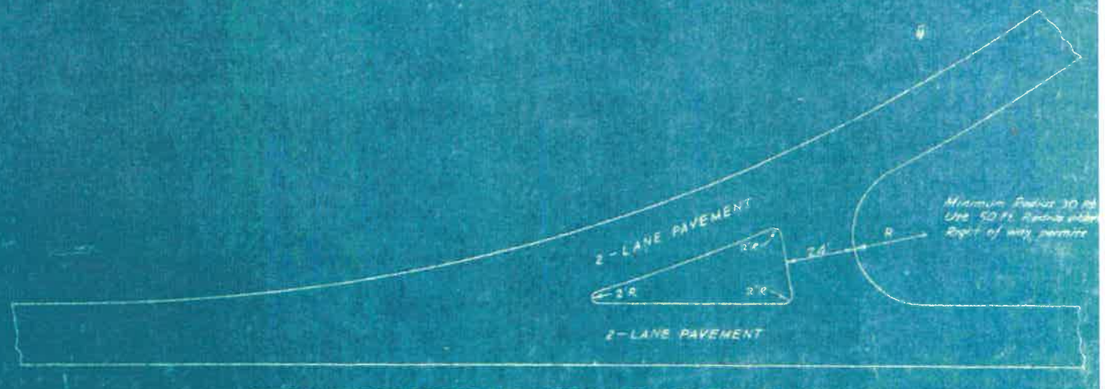
Intersections for side roads and driveways where directed by the Engineer will be paved using one of the Standard Types shown, unless otherwise shown on plans.

In the case of minor public roads intersecting the highway at an oblique angle, the Y-Type intersection should be used with the pavement spur turned at the proper angle to line up with the center line of the side road. T-Type or Y-Type intersections with separate turning lanes should be used at the more important intersections.

The T-Type intersection at 90° should be used at driveways for private entrances.



T-TYPE INTERSECTION WITH SEPARATE TURNING LANES



Y-TYPE INTERSECTION WITH SEPARATE TURNING LANE

DRAWING
A-51

R-1097

Fed. Proj. No.	State	County	PCT	Sheet No.	Total Sheets
S	S.C.	Georgetown 22.309 B/S		44	197

SUPERELEVATION STANDARD

S.C. STATE HIGHWAY DEPT.
COLUMBIA

NOTES: All curves are to be superelevated to the nearest fourty (40) minutes according to table. In any case where conditions do not permit an approach as long as shown on this sheet, the Resident Engineer is to adjust same to meet the conditions.

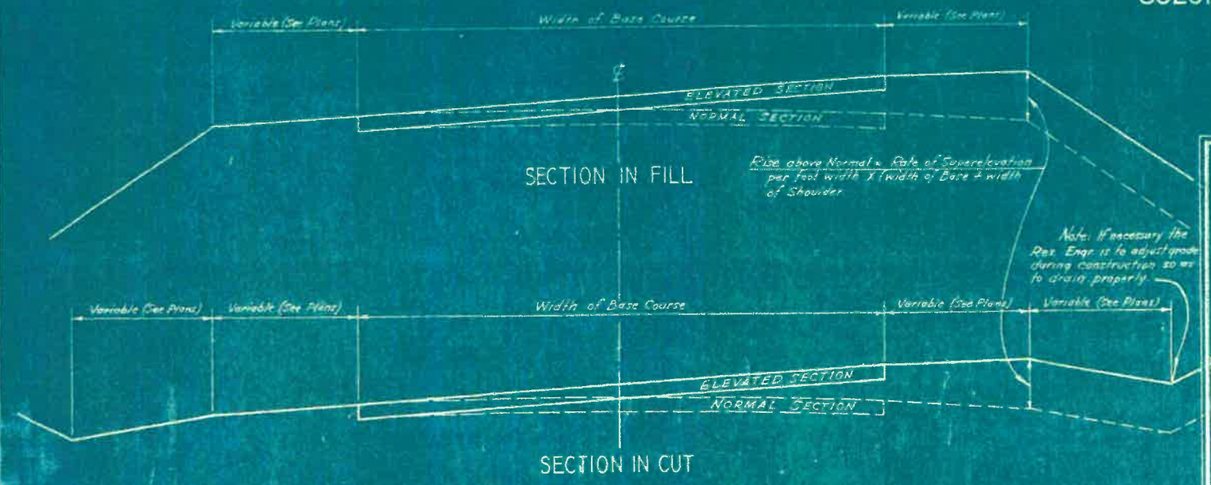
Where unusual conditions make it desirable, superelevation may be obtained by revolving the surface about the centerline instead of the inside edge, the amount of superelevation to be the same as shown in the table.

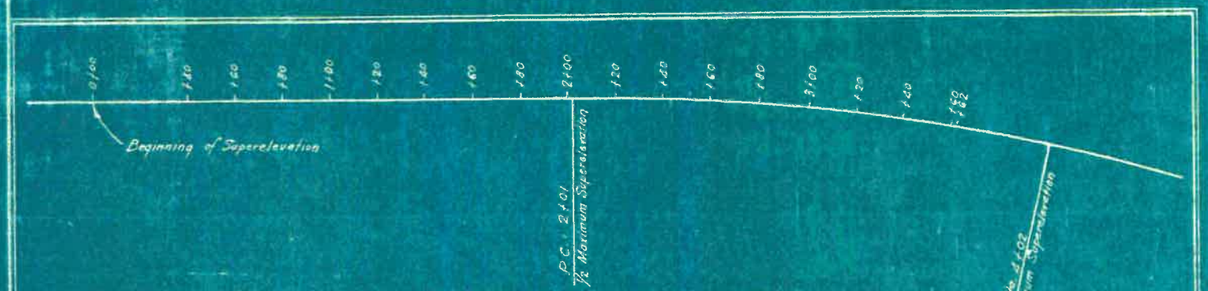
For all types of surfacing the roadway crown shall decrease gradually from the point where superelevation begins, reaching a flat section 80 ft. from the beginning S.E. toward the curve. The crown in subgrade shall be eliminated to conform to the finished surfacing.

SUPERELEVATION FORMULA

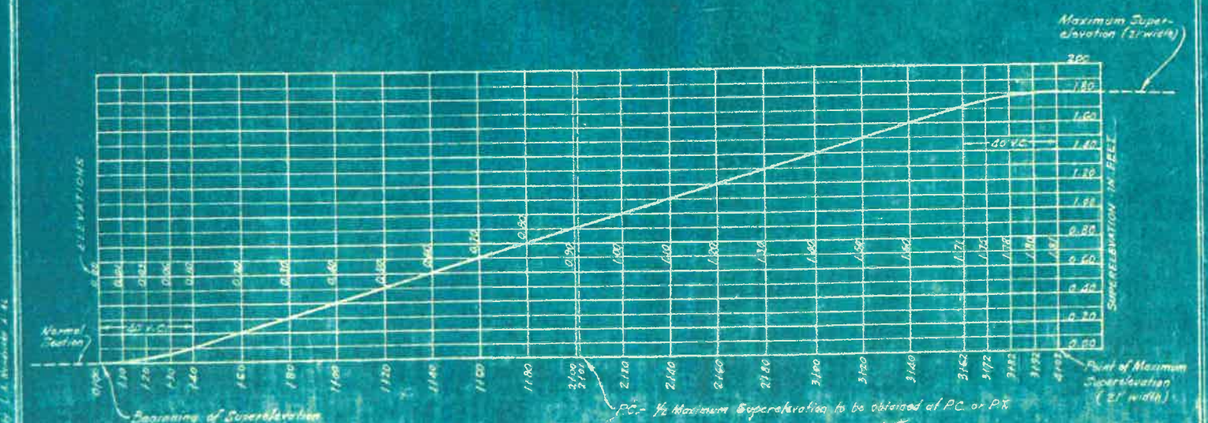
$$E = 0.067 \frac{S^2}{R}$$

E = SUPERELEVATION IN FEET
S = SPEED IN MILES PER HOUR
R = RADIUS OF CURVE IN FEET





PLAN AND PROFILE SHOWING SUPERELEVATION APPROACH
ILLUSTRATED WITH MAXIMUM SUPERELEVATION FOR 21' WIDTH



SUPERELEVATION FOR DESIGN SPEED OF 65 M.P.H.

(BASED ON S = 50 M.P.H. IN FORMULA)

SUPERELEVATION TABLE

DEGREE OF CURVE	RADIUS OF CURVE	SUPERELEV. IN FT. PER FT. WIDTH	TOTAL SUPERELEVATION - FT. 21' WIDTH	23' WIDTH	25' WIDTH	LENGTH OF APPROACH - FT. 21' WIDTH	23' WIDTH	25' WIDTH
0°-30'	11459.19	0.014	0.29	0.32	0.35	98	104	110
1°-00'	5729.65	0.029	0.61	0.67	0.73	162	174	182
1°-30'	3819.83	0.042	0.90	0.99	1.08	220	238	256
2°-00'	2864.93	0.057	1.20	1.31	1.43	280	302	326
2°-30'	2292.01	0.071	1.51	1.66	1.80	348	372	400
3°-00'	1910.08	0.086	1.81	1.98	2.15	402	436	470
3°-30' and over to be superelevated same as 3°-00'								

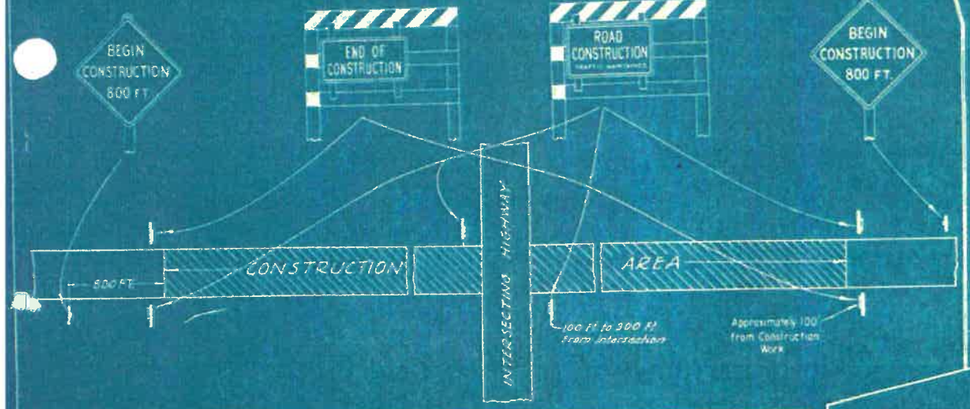
TABLE SHOWING AMOUNT OF SUPERELEVATION AT ANY POINT ON APPROACH TO CURVE

DISTANCE FROM BEGINNING OF SUPERELEVATION IN DIRECTION OF CURVE - FEET

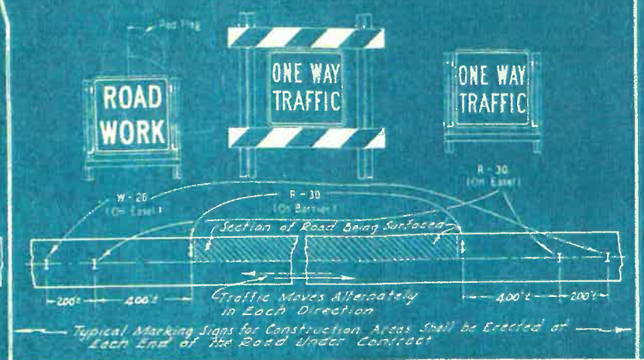
SUPERELEVATION IN FEET
21 FT. WIDTH
DEGREE OF CURVE

DEGREE OF CURVE	10	20	30	40	50	60	70	80	90	98	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600
0°-30'	01	03	06	10	15	20	25	29	29	29																																																																			
1°-00'	01	03	06	10	-	-	25	29	35	-	30	35	50	55	58	61	61	61																																																											
1°-30'	01	03	06	10	-	-	-	-	-	-	-	-	35	50	60	65	70	73	80	84	87	89	90																																																						
2°-00'	01	03	06	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300
2°-30'	01	03	06	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

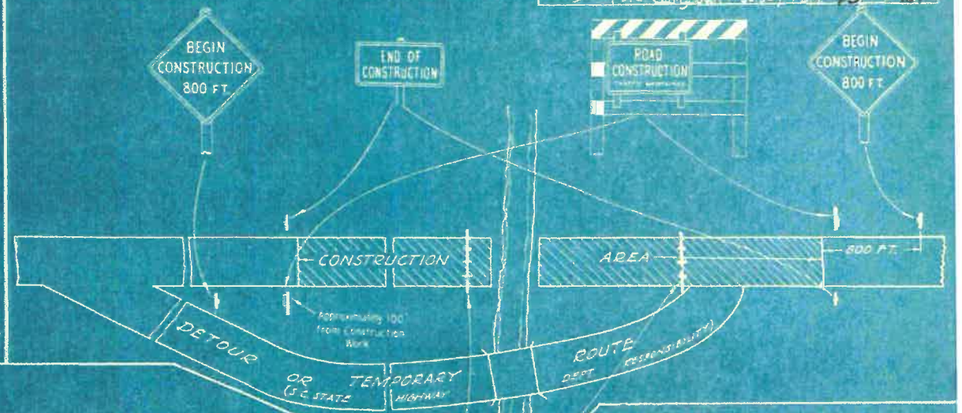
TYPICAL MARKING FOR CONSTRUCTION AREAS



APPLICATION OF STANDARD SIGNS WHEN ROADWAY IS BEING SURFACED



TYPICAL MARKING FOR CONSTRUCTION AREAS

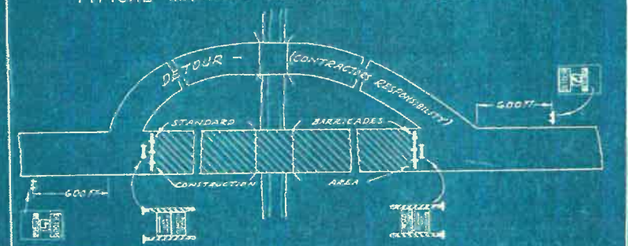


Fed. Road Div. No.	State	County	Project No.	Sheet No.	Total Sheets
2	S.C.	Georgetown	RT-309	44	65

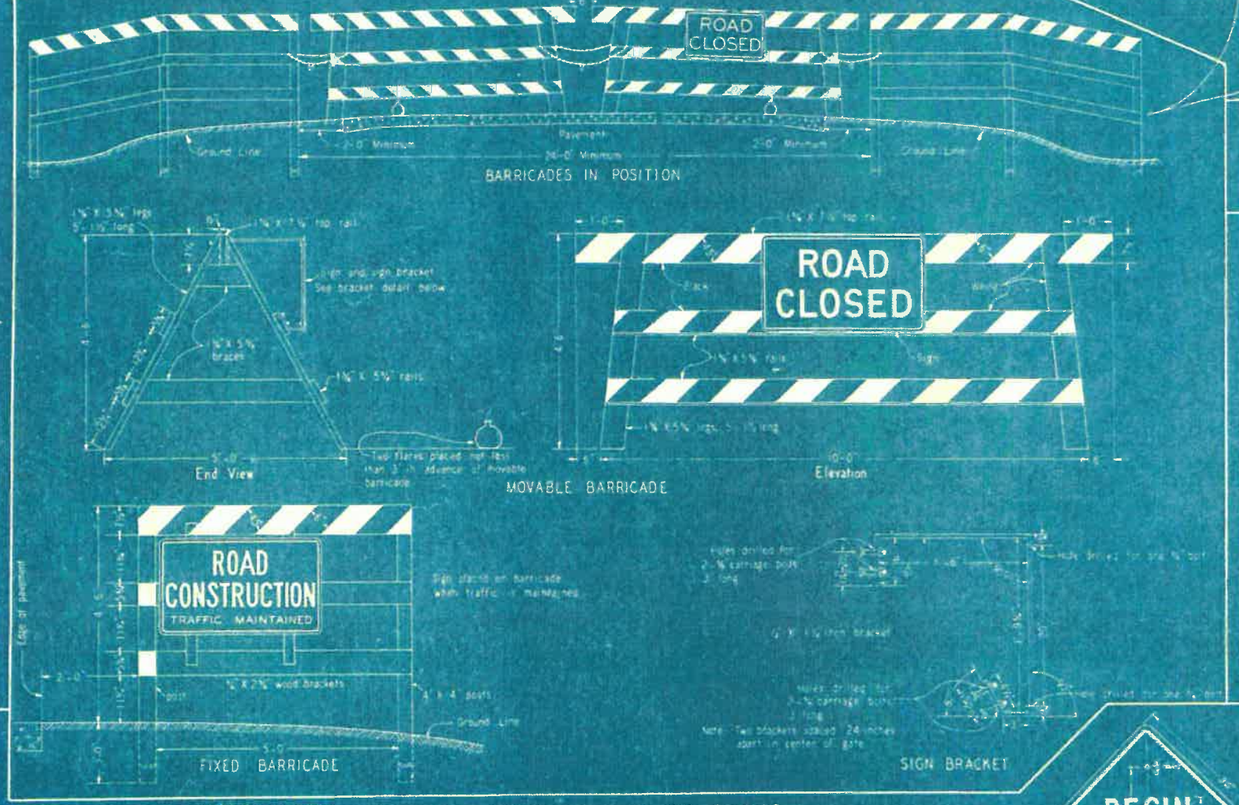
DETOUR 600 FT. AHEAD ASSEMBLY



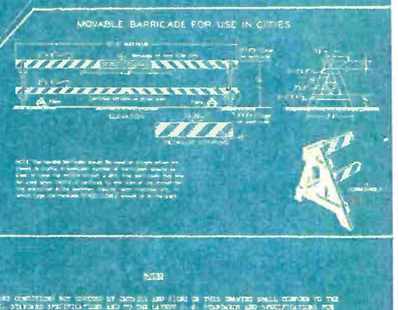
TYPICAL MARKING FOR CONSTRUCTION AREAS



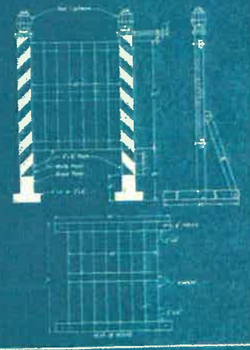
STANDARD BARRICADES



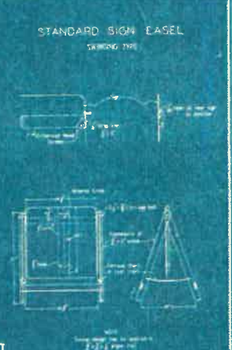
MOVABLE BARRICADE FOR USE IN CITIES



ROAD CLOSED STANDARD



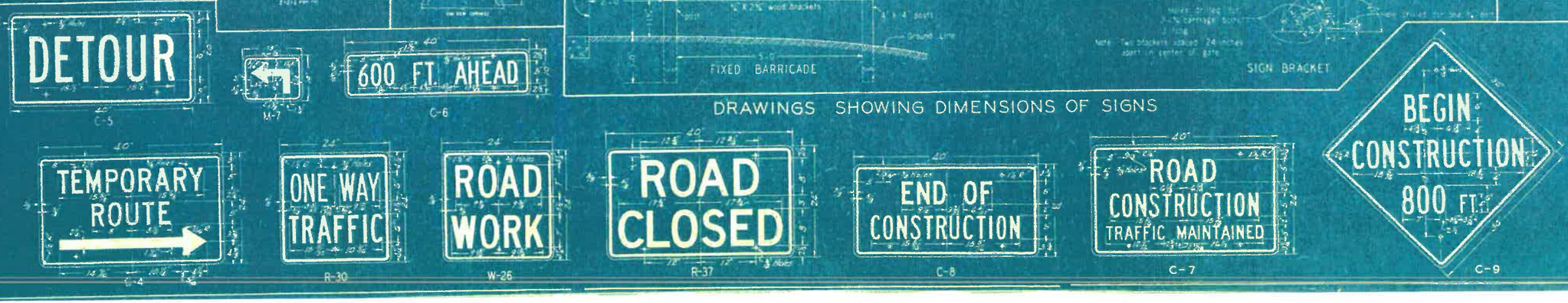
STANDARD SIGN EASEL



STANDARD PORTABLE SIGN BARRIER



DRAWINGS SHOWING DIMENSIONS OF SIGNS



DETAILS SHOWING STANDARD SIGNS, BARRIERS, LIGHTS, AND BARRICADES TO BE FURNISHED, ERECTED AND MAINTAINED BY THE CONTRACTOR WHERE APPLICABLE ON ALL ROAD OR BRIDGE CONTRACTS

APPROVED: S.H. Rawlinson, STATE HIGHWAY ENGINEER — DATE: 12/4/63

R-1099

Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Place 40'-18" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Place 40'-18" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Retain 28'-18" R.C. Pipe
Add 8'-18" R.C. Pipe

Relay 16'-15" R.C. Pipe
Add 4'-15" R.C. Pipe

Retain 200'-12" R.C. Pipe
Retain 24'-15" R.C. Pipe
Add 12'-15" R.C. Pipe

Relay 20'-12" R.C. Pipe
Place 40'-18" R.C. Pipe

Survey Sta. 0+09.0
Begin DKt. 22.309 Rd 173

Survey Sta. 24+71.9
End DKt. 22.309 Rd. 173

Tie Equality Only:-
Sta 24+81.9 Rd 173 =
Sta 19+80.5 Kensington Blvd

RUTLEDGE DR

Georgetown 22.309 | 173 | 4/6 | 16/4

B.M. No. 1 Nail in 24" Gum
57 Rt. Sta. 0+88 El. = 99.14

B.M. No. 2 Nail in 30" Gum
88 Lt. Sta. 3+88 El. = 97.56

B.M. No. 3 Nail in P.P.
144 Lt. Sta. 7+99 El. = 96.71

B.M. No. 4 Nail in P.P.
149 Lt. Sta. 11+10 El. = 97.15

B.M. No. 5 Nail in P.P.
159 Rt. Sta. 15+00 El. = 94.29

B.M. No. 6 Nail in 4" Gum
182 Rt. Sta. 20+48 El. = 96.41

Estimated Excavation 1165 C.Y.

Subgrade
100' N.C.
+1.04%
+0.26%
-0.11%
P.I. = 2+00
El. = 95.73
P.I. = 7+50
El. = 97.16
DA=10AC C=0.3
400' N.C.
ODA=10AC C=0.3

USE TYPICAL SECTION NO. 1 THRUOUT
AS SHOWN ON SHEET No. 2.

NOTES:

Changes involving increased and decreased quantities of the various classes of work may be authorized by the Engineer during the progress of the work and adjustments of compensation will be made for such increased or decreased quantities in accordance with the applicable provisions of the Specifications. No such authorized alteration in the plans or character of the work shall be the basis of any claim for damages or for anticipated profits on account of any difference between the quantities of the various classes of work actually performed and the quantities shown in the Bid Schedule.

Grading shall be performed by excavating and embanking as shown on Sheet No. 5

The cost of all grubbing and clearing necessary for excavating trenches for proposed pipe culverts, shall be included in the prices bid per linear foot for pipe.

The following quantities are not shown in detail on the plans, but are included in the Summary of Estimated Quantities and may be varied during construction as directed by the Engineer:-

Dearhaul	99,150 C.Y.	Haul to Disposal Material
Earth Type Base Course (Pit Material)	710 C.Y.	In Embankments & Bases 15% for Compaction
Scarifying Existing Pvmt.	4,700 SY.	In Intersections & Drives
Bituminous Surfacing	4,200 SY.	

R-1100

Pot Sta 0+50.2
24.4 Sag 30.45 3 Gum

TIE EQUALITY ONLY
Pot Sta 0+50.2 Rd. 174 =
Sta 0+00.0 SIMS ST.

To Conway

SIMS ST.

Relay 20-15" R.C. Pipe
Relay 20-15" R.C. Pipe

ALSTON ST.

5

JASPER ST.

Pl A 9+14.3
29.95 15.80
2 Gum 4 Cherry

Relay 12-12" R.C. Pipe
Add 8-12" R.C. Pipe

Pl=9+14.3
Δ=00°06'L
D=None

MIDDLETON ST.

Place 40-18" R.C. Pipe

CALHOUN ST.

15

PICKENS ST.

Relay 20-15" R.C. Pipe

Pot Sta 19+24.3
21.55 28.45
4 Gum 4 Gum

RUTLEDGE DR.

20

Place 24-12" Relay
Relay 30-18" R.C. Pipe
28.15"

Pot Sta 23+50.9
28.35 21.85
6 Gum 2 Cherry

Retain 28-18" R.C. Pipe
Add 8-18" R.C. Pipe

Georgetown 22.309 174 47 154
KENSINGTON ST.

Z

Place 40-18" R.C. Pipe
Place 40-18" R.C. Pipe

To Georgetown
US Rt 17

Remove 24-15" R.C. Pipe
Place 40-18" R.C. Pipe

Retain 18" R.C. Pipe

Remove 24-12" R.C. Pipe
Place 40-18" R.C. Pipe

Remove 24-12" R.C. Pipe

Remove 24-15" R.C. Pipe

Place 40-18" R.C. Pipe

Remove 24-15" R.C. Pipe

Retain 18" R.C. Pipe

Place 40-18" R.C. Pipe

Survey Sta. 0+09.0
Begin Dkt. 22.309 Rd. 174

Survey Sta. 23+50.9
End Dkt. 22.309 Rd. 174

B.M. No. 1 Nail in Sign Post
B. Rl Sta 0+50 El=100.00 (Assumed)

B.M. No. 2 Nail in 8" Gum
24' Rt Sta 4+09 El=99.58

B.M. No. 3 Nail in 5" Cherry
21' Rt Sta 7+72 El=98.01

B.M. No. 4 Nail in 15" Gum
24' Rt Sta 0+30 El=98.21

B.M. No. 5 Nail in 4" Cherry
B Rt Sta 5+42 El=98.13

B.M. No. 6 Nail in 4" Gum
B Rt Sta 20+48 El=96.40

EST. EXC. = 1110

PROFILE

Pl=3+00
El=97.18

Pl=5+00
El=96.98

Pl=9+00
El=97.04

Subgrade

+0.06%
-1.40%
+0.14%
-0.16%

100' V.C.
300' V.C.

DA=.10 AC
C=.05

USE TYPICAL SECTION NO. 2
AS SHOWN ON SHEET NO. 3

| | | |

Rd. No.	State	County	Project No.	Fed. Aid Proj. No.	Sheet No.	Total Sheets
1	Ga.	Georgetown	22 309		175	47

ALSTON ST.

PI 12+03.3 = 16.55 Ahead

TIE EQUALITY ONLY
Bld 0+00.0 Rd 175 =
Bld POT 3+77.9 Rd 173

RUTLEDGE DR

Relay 4'-15" R.C. Pipe

PI = 1+64.2
Δ = 5°07' Lt
D = None

Relay 20'-15" R.C. Pipe

Relay 20'-12" R.C. Pipe

Relay 16'-12" R.C. Pipe
Add 2'-12" R.C. Relaid Pipe

Relay 4'-12" R.C. Pipe

Relay 4'-12" R.C. Pipe

Relay 40'-12" R.C. Pipe

Relay 12'-12" R.C. Pipe. Add 8'-12" R.C. Relaid Pipe

Relay 24'-12" R.C. Pipe

Relay 8'-12" R.C. Pipe

Relay 20'-12" R.C. Pipe

Relay 20'-12" R.C. Pipe

Relay 20'-12" R.C. Pipe

Relay 20'-12" R.C. Pipe

Relay 20'-12" R.C. Pipe

PI = 10+01.5
Δ = 10°18' Lt
D = 10°00
T = 51.7
L = 103.0
E = 2.5

P.C. 9+49.8

P.T. 10+52.8

In Place 24'-12" R.C. Pipe
Place 36'-18" R.C. Pipe

Relay 20'-12" R.C. Pipe

KENSINGTON DR

To Rd. 701

TIE EQUALITY ONLY
Bld 12+03.3 Rd 175 =
Sta POT 54+99.2 Rd. 174

SURVEY STA 0+10.0 BEGIN RD 175

SURVEY STA 11+93.3 END RD 175

B.M. No 1 = B.M. No 2 Nail in 30" Gum
33' Lt Sta 3+98 Rd 175 El = 97.56

B.M. No 2 = B.M. No 2 Nail in 8" Gum
24' Rt Sta 4+09 Rd 174 El = 99.58

EST. EXC = 560 C.Y.

PI = 7+50
El = 99.61

200' V.C.

200' V.C.

PI = 2+00
El = 95.52

-0.88%

+0.70%

+0.38%

D = 10.00
C = 2.9

USE "TYPICAL SECTION NO. 1" AS SHOWN ON SHEET NO. 2

PLAN

PROFILE

R-1102

Grangeland 22.309 176 49 154

JASPER ST

5" Cherry
35' Rt
Pl = 0+00
48.9'
48.9'

Relay 4-12" R.C. Pipe
Place 36-18 R.C. Pipe
Relay 20-12" R.C. Pipe
Relay 20-15" R.C. Pipe
Relay 8-12" R.C. Pipe
Relay 20-12" R.C. Pipe
Relay 20-12" R.C. Pipe
Relay 20-12" R.C. Pipe
Relay 20-12" R.C. Pipe
Relay 20-12" R.C. Pipe
Relay 20-12" R.C. Pipe

Tie Equality Only:-
Sta 0+00 Jasper St =
Sta 7+175 Kensington Blvd

Tie Equality Only:-
Sta 11+14 Jasper St =
Sta 6+901 Rutledge Dr

Pl = 1+81.8
Δ = 11°-35' Rt
D = 10°-00' Rt
T = 58.4
L = 116.2'
ECL = 1+22.9
PT = 2+39.1

Pl = 9+08.2
Δ = 4°-16' Rt
D = None

Rutledge Dr

SURVEY STA 0+00.0 BEGINNING
ROAD 176 · DOCKET 22.309

SURVEY STA 11+01.6 END
ROAD 176 · DOCKET 22.309

B.M. No. 1 - B.M. No. 3 Nail in 5" Cherry
El. = Sta. 7+72, Rt 124 El. = 98.31

B.M. No. 2 - B.M. No. 3 Nail in Base PP
El. = Sta. 7+09 Rt 103 El. = 96.71

EST. EXC. : 51 A.

Pl = 3+00
EL. = 97.15

+0.12 %

-0.12 %

100' V.C.

Subgrade

DA = 108 AC
C = 0.2

USE TYPICAL SECTION NO. 1
AS SHOWN ON SHEET NO. 2

PLAN

PROFILE

R-1103

PLAN

TIE EQUALITY ONLY
Sta 0+00 Rd 177 =
Sta 0+97.5 Rd 173

Relay 20-12" R.C. Pipe
Relay 32-12" R.C. Pipe
Relay 20-12" R.C. Pipe
Relay 36-12" R.C. Pipe
Relay 16-12" R.C. Pipe
Relay 16-18" R.C. Pipe
Add 4-15" R.C. Pipe

P.I. = 1+61.0
Δ = 4°23 Lt
D = None

P.I. = 8+35.9
Δ = 11°10 Lt
D = 16°00
T = 80.1
L = 111.7
E = 2.7

P.C. 7+79.8

P.I. 8+91.5

N 19°00 E

Relay 16-12" R.C. Pipe

Place 20-15" R.C. Pipe

Place 40-18 R.C. Pipe

TIE EQUALITY ONLY
Sta 10+19.6 Rd 177 =
Sta 10+36.1 Rd 174

Kensington Blvd

SURVEY STA 0+10.0 BEGINNING
ROAD 177 - DOCKET 22,309

SURVEY STA 10+09.4 ± END
ROAD 177 DOCKET 22,309

DM No 1 = B.M. No 4 Not in Base PP
49 Ft Sta. 11+10 Rt 179 El = 97.19

EST. EXC. +7%

Subgrade

0.00%

DA 10 AC
C 10.5

USE TYPICAL SECTION NO 1
AS SHOWN ON SHEET NO 2

R-1104

Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe
Relay 20'-12" R.C. Pipe

Place 40'-18" R.C. Pipe

Pl. 1+88.4
Δ = 12°21' Rt.
D = 10°00
T = 69.2
L = 135.9
E = 3.9

Pl. 7+73.6
Δ = 04°53' Rt.
D = None

Kensington

Rutledge Dr.

25' R/W

To Equality Only
Sta 9+27.3 Rd. 178
Sta 13+13.2 Rutledge

SURVEY STA. 9+10.5 END OF ROAD 178 DOCKET NO. 22,309

SURVEY STA. 0+00.0 BEGINNING ROAD 178 - DOCKET NO. 22,309

B.M. No. 1 = B.M. No. 5 Nail in 4" cherry 18" R. Sta. 13+42 Rd. 134 El. = 98.13

B.M. No. 4 = B.M. No. 3 Nail in P.P. 59" R. Sta. 15+00 Rd. 178 El. = 96.29

EST. EXC. 450

Subgrade

+0.2%

DA. 1.0AC
C. 0.6

USE TYPICAL SECTION NO. 1 AS SHOWN ON SHEET NO. 2

96.32
96.34
96.36
96.38
96.40
96.42
96.44
96.46
96.48
96.50
96.52

0 1 2 3 4 5 6 7 8 9 10

PLAN

PROFILE

R-1105

Georgetown 22 309 — 181 182 183 184 189 184 — 52 — 184

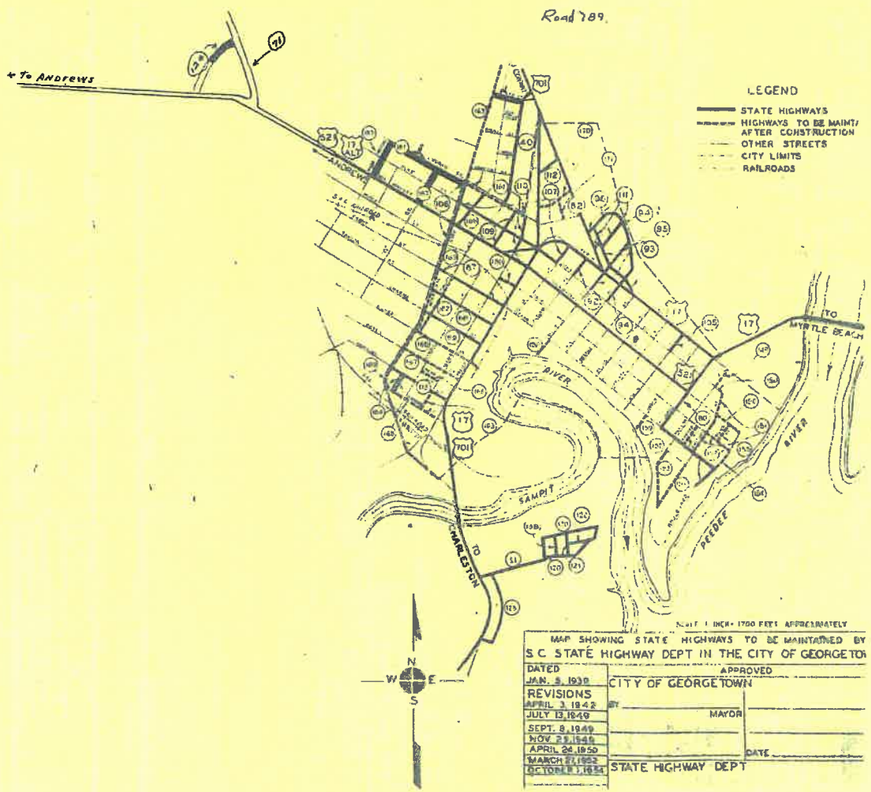
INDEX OF SHEETS

SHEET NO

1. TITLE SHEET
2. TYPICAL SECTION
3. TYPICAL SECTION
4. TITLE SHEET R/W 184
5-9 & 11 PLAN and PROFILE
10. PLAN and PROFILE & TYPICAL SECTION

SOUTH CAROLINA
STATE HIGHWAY DEPARTMENT
COLUMBIA

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY



Scale 1 INCH = 1700 FEET APPROXIMATELY

MAP SHOWING STATE HIGHWAYS TO BE MAINTAINED BY S.C. STATE HIGHWAY DEPT IN THE CITY OF GEORGETOWN

DATED	APPROVED
JAN. 3, 1938	CITY OF GEORGETOWN
REVISIONS	
APRIL 3, 1942	BY
JULY 13, 1949	MAYOR
SEPT. 8, 1949	
NOV. 23, 1949	
APRIL 24, 1950	DATE
MARCH 21, 1952	STATE HIGHWAY DEPT
OCTOBER 1, 1954	

SUMMARY OF ESTIMATED QUANTITIES

R/W No	181	182	183	184	189	184	TOTAL	
EARTHWORK								
Clearing and Grubbing within Roadway								
Clearing and Grubbing of Borrow and Material Pits	953	479	470	612	396	1,221	4,131	C.Y.
Common Excavation	3725	1940	1900	2448	2460	7024	22633	C.Y.M.
Overhaul								
Selected Material for Shoulders								
BASE COURSE								
Earth Type Base Course (PIT MATERIAL)	965	485	475	618	400	1,234	4,177	C.Y.
Scarifying, Mixing, Spreading, Shaping, and Rolling Etc.	4,680	2,358	2,379	3005	1946	5998	20,378	M.S.Y.
SURFACING								
Bituminous Surfacing (Inverted Penetration with Stone)	4,677	2,240	2,207	2,842	1,853	5713	19,333	S.Y.
STRUCTURES								
12" R.C. Pipe	60	-	-	-	-	-	60	L.F.
15" R.C. Pipe	64	-	-	-	8	-	72	L.F.
18" R.C. Pipe	4	-	-	-	-	-	4	L.F.
24" R.C. Pipe	16	-	-	-	-	-	16	L.F.
INCIDENTALS								
Gross Length of Roadway	0.380	0.191	0.180	0.244	0.167	0.467		
Exceptions	-	-	-	-	0.011	-		
Net Length of Roadway	0.380	0.191	0.180	0.244	0.156	0.467		
Typical Section No.	SHEET 2	SHEET 2	SHEET 3	SHEET 3	SHEET 10	SHEET 3		
Typical Section Sheet No.	2	3	3	3	10	3		
Plan and Profile Sheet No.	5-6	7	8	9	10	11		

CONVENTIONAL SIGNS

State Line		Trolley Poles	
County Line		Power Poles	
City or Town Limits		Telephone or Telegraph Poles	
Property Line		Marsh	
Fence		Trees	
Retaining Wall		Brush	
Existing Road		Stumps	
℄ and R.O.W. Lines of		Buildings	
Firebreak Road		Bridge	
Railroad		Concrete Box Culvert	
Limits of Embankment		Pipe Culvert	
Guard Rail		Concrete Pipe Culvert	
Typical Intersection (R.U.)		Highway Center Line	

LEGEND
PROPOSED PROJECT
OTHER ROADS

Net Length of Roadway		Mi.
Net Length of Bridges	See Above	Mi.
Net Length of Project		Mi.
Length of Exceptions		Mi.
Gross Length of Project		Miles

APPROVED FOR _____ DATE _____
_____ Engineer
Commissioner

APPROVED
STATE HIGHWAY ENGINEER DATE

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
RECOMMENDED FOR APPROVAL
DISTRICT ENGINEER DATE
APPROVED
DIVISION ENGINEER DATE

R-1106

CROSS SECTIONS

Scale 1 inch = 5 feet

Georgetown 22.309 181 B 53 154

CHURCH ST.

TYPICAL SECTION STA 0+10 - 3+00 LT ONLY.

TYPICAL SECTION STA 0+10 - 19+83.97 RT ONLY.

TYPICAL SECTION STA 3+00 - 19+83.97 LT ONLY.

Ground Surface Plotted by ____
" " Checked by ____
Template Sections Plotted by ____
" " Checked by ____
Areas by ____
" Checked by ____
Template Sections Revised by ____
" " Checked by ____
Final Areas by ____
" Checked by ____
Quantities Transferred and Inked by ____

R-1107

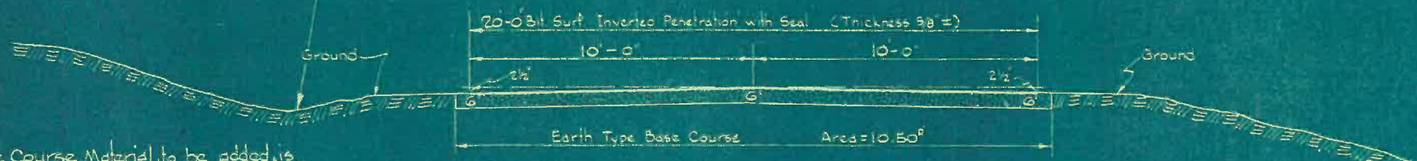
FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO.	PROJ. NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	Georgetown	42/309		9/13	3	4

S.C. HIGHWAY DEPARTMENT
TYPICAL SECTION
of
IMPROVEMENT

SCALE 1 IN. = 2½ FT.

Note: No work to be performed in this area unless it is necessary to shape or pull ditches to provide proper drainage

TYPICAL SECTION No. 1



NOTE: Earth Type Base Course Material to be added is of variable thickness and is to be mixed to a depth of 6" with the Base Course in place. The Estimated Quantities are based on the addition of 4" uniform of Earth Type Base Course.

E-S

					BOOK		TOTAL SHEETS
3		C-80158-0M 22-309			181	55	157

CHURCH ST.

PLAN

PROFILE

CONSTRUCT MANHOLE

2" WATER LINE
ELEC = 137.6

28"-42" RCP
RETAIN

S 35°-00' W

20.0' R/W

20.0' R/W

20.0' R/W

55.0' R/W

37.5' R/W

MERRIMAN RD

G. Street

BOARD FENCE

IN PLACE 27"-18" RCP
ADD 8' R.C.P.

IN PLACE 24"-18" RCP
ADD 8' R.C.P.

IN PLACE 18"-18" RCP
ADD 4'-18" RCP.

IN PLACE 8'-18" R.C.P.

IN PLACE 33"-18" RCP
RELAY

IN PLACE 33"-18" RCP.
RELAY

RETAIN 33"-24" RCP
ADD 4' R.C.P.

IN PLACE 15"-18" RCP
PLACE 24"-18" RCP

P.I. STA 5+41.63
Δ = 0°-36'-27"
D = 1°-01'

P.I. 5+41.53

FENCE POST

FENCE

SURVEY Station
BEGIN RL. 181

MANHOLE
INVERT ELEV=131.1

MANHOLE
INVERT ELEV=129.9

					Rd		
3	2	Kingstown	22.309		181	56	154

CHURCH STREET

PLAN

PROFILE

R-1110

STATE ROAD DIV. NO.	STATE	COUNTY	PROJECT NO.	HIGHWAY NO.	SHEET NO.	TOTAL SHEETS
2	N.C.	Georgetown	22.3469		182	57	164

"6" STREET

PLAN

PROFILE

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00

P.I. 7+44.4 Rd 181 : of on Rd 182 "6" STREET

P.I. 4+80.2 91° 27½

P.O.T. 9+57.5 36" OAK 24" 91.7

N

30' R/W CHURCH STREET

15' R/W

S 31°-58' W

RES. RES. RES. RES. R-14

30' R/W DUKE STREET

30' R/W

33' R/W U.S. Rt. 521

33' R/W

1/4 PACE 26'-15" R.C.P. X. LINE-13'± STA 6+36

1/4 PACE 26'-29" R.C.P. X. LINE-STA. 5+05

Note: Scale shows 60' R/W R/W Found to Be only 15' Each Side of ℄

Survey Sta. 0+10 Begin Road No. 182

Survey Sta. 9+57.5 End Road No. 182

20 15 10

0 1 2 3 4 5 6 7 8 9 10

R-1111

Road

	183	58	154

Washington St.

Pot

Pot

Pot

14" Pine

14" Sycamore

Fence Post

Fence Post

N.

37.5' R/W

37.5' R/W

37.5' R/W

37.5' R/W

37.5' R/W

Church Street

Route No. 521

Guy Wire

Guy Wire

Pos. Post

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00

Survey Sta. 01+11
Begin Rd 183

Survey Sta. 10+16±
End Rd 183

PLAN

PROFILE

1 2 3 4 5 6 7 8 9 10

R-1112

PLAN

PROFILE

| | | |

14	B C	Georgetown	22 310		167	60	154

State St.

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

PROFILE — SURVEYED · PLOTTED · GRADES CHECKED · FIELD NOTE BOOK · NO. · DATE · BY

POT STA 0+00 N 25° W 25' Fence Post

N

Exception to Project STA 6+89 To STA 7+40

STA 7+08.6

P.I. = 6+95.6
Δ = 15° 33' Lt
D = NONE

POT STA 9+00 N 47½ W 21.75' Fence Post

STA 9+10.3 - End R/W #169

Road No. 149

0+00 Lt 22.5' RW

1+00 2+00 3+00 4+00 5+00 6+00 7+00

S 78° - 00' E

Merriman St. & STA 3+12

Note
℄ shifted 3.8' Lt R/W

Courtland St. & STA 6+82.6

Courtland St. Blvd

25' R/W Merriman Road

SURVEY STA. 0+00 Bogen R/L #169

27' - 15" R.C.P.

SURVEY STA 9+00 End R/W #169

40' - 18" R.C.P.

Existing 18" R.C.P.

TYPICAL SECTION

20'-0" Surf. Inverted Penetration with Seal (Thickness 5/8")

10' - 2"

10' - 2"

GROUND

GROUND

EARTH Type Base Course AREA 10.500

30.00

20.00

10.00

PLATE 1 - PLAN - PROFILE

R-1114

PLAN

PROFILE

25' R/W
20' Bit. Surf.
25' R/W

3" Pipe
P.O.T. 0+00
10" Pipe

Field

End of Dkt. 22.290

Survey Sta. 0+00
Begin Rd. No. 124

IN Place 48'-18" R.C.P.
Retain

IN. Place 20'-15" R.C.P.
Retain

P.I. 4+42.5 - 29°E

Field

P.I. 7+28.5 - 15°E

Co. Road

IN Place 20'-15" R.C.P.
Retain

IN Place 20'-15" R.C.P.
Retain

IN Place 20'-15" R.C.P.
Retain

IN Place 20'-15" R.C.P.
Retain

IN Place 20'-15" R.C.P.
Retain

IN PLACE 20'-15" R.C.P.
RETAIN

IN PLACE 48'-18" R.C.P.
RETAIN

P.I. 26+00

Survey Sta. 25+67
End Rd. No. 124

PRO. ROAD NO.	STATE	COUNTY	MILES	ALL PROJ.	SHEET	TOTAL
3	G	Georgetown	22.949		84	184

Road

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00

35+00
25+00
15+00

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

R-1115

CROSS SECTIONS

Scale 1 inch = 5 feet

		Georgetown 32 309		80	62	154

1 1+2

2 1+2

CONTROL 201 C.L.

BASELINE 86 C.L.

C = 2.0 CY
C = 6°
9+00
F = 2°
C = 2.4 CY
F = 1.7 CY
18.1
18.6

C = 2.0 CY
C = 5°
8+00
F = 2°
C = 2.6 CY
F = 1.6 CY
15.7
15.2

C = 2.0 CY
C = 7°
7+00
F = 2°
C = 2.0 CY
F = 2.2 CY
15.4
15.8

C = 1.7 CY
C = 4°
6+00
F = 3°
C = 1.7 CY
F = 1.1 CY
14.1
13.9

C = 1.2 CY
C = 5°
5+00
F = 3
17.5
17.9

C = 2.0 CY
C = 9°
11.8
11.4
C = 6°
4+00
F = 2°
F = 1.9 CY

C = 2.0 CY
C = 5°
18.0
18.6
C = 6°
3+00
F = 2°
F = 1.1 CY

C = 1.7 CY
C = 6°
15.0
14.6
C = 6°
2+00
F = 4°
F = 1.5 CY

C = 1.6 CY
C = 3°
18.0
17.8
C = 3°
1+00
F = 3°
F = 1.5 CY

C = 1.2 CY
C = 3°
18.6
17.0
C = 3°
0+50
F = 2
F = 1.2 CY

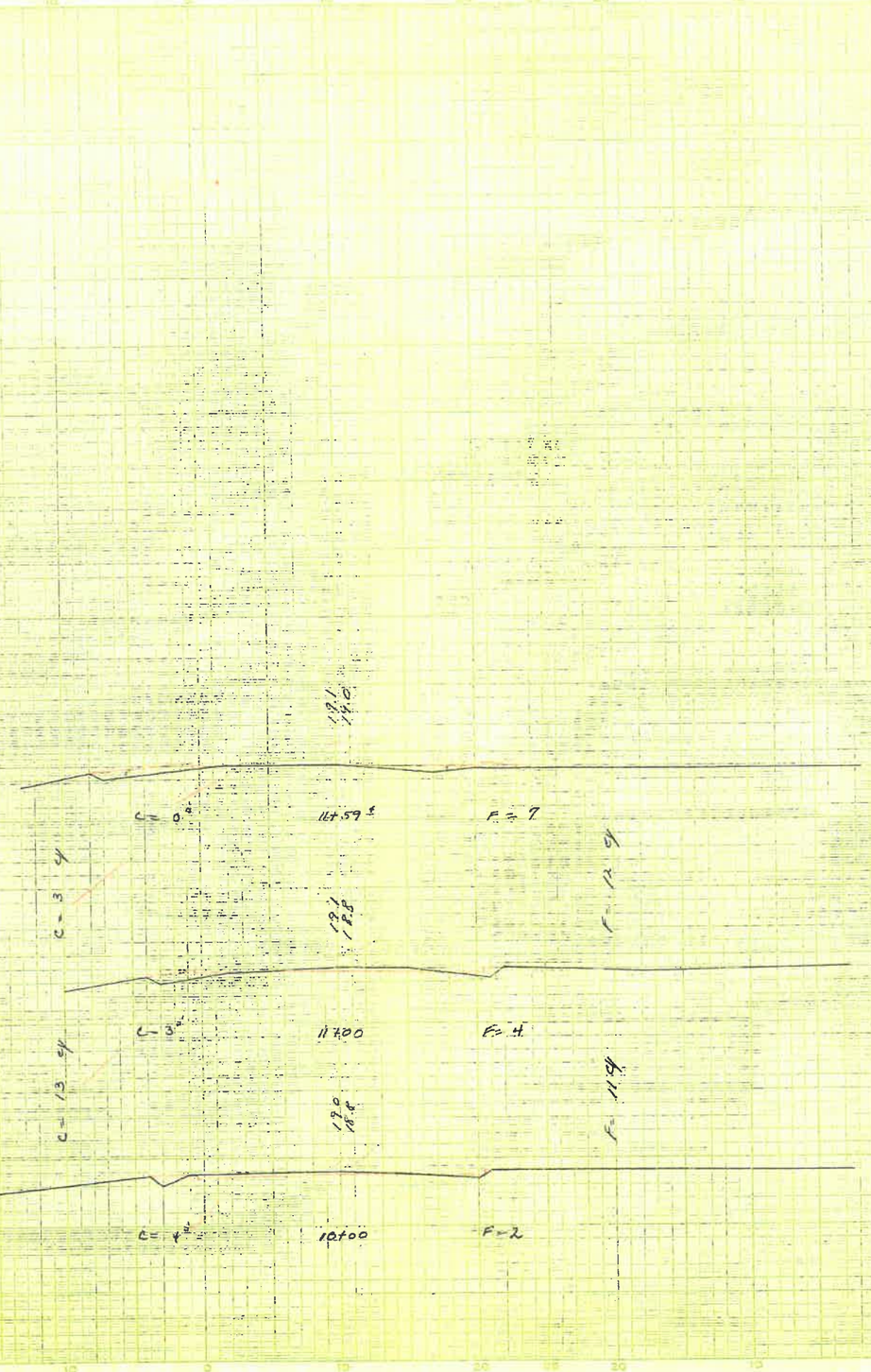
C = 1.2 CY
C = 10°
18.6
17.0
C = 10°
0+00
F = 0°

R-1116

CROSS SECTIONS

Scale 1 inch = 5 feet

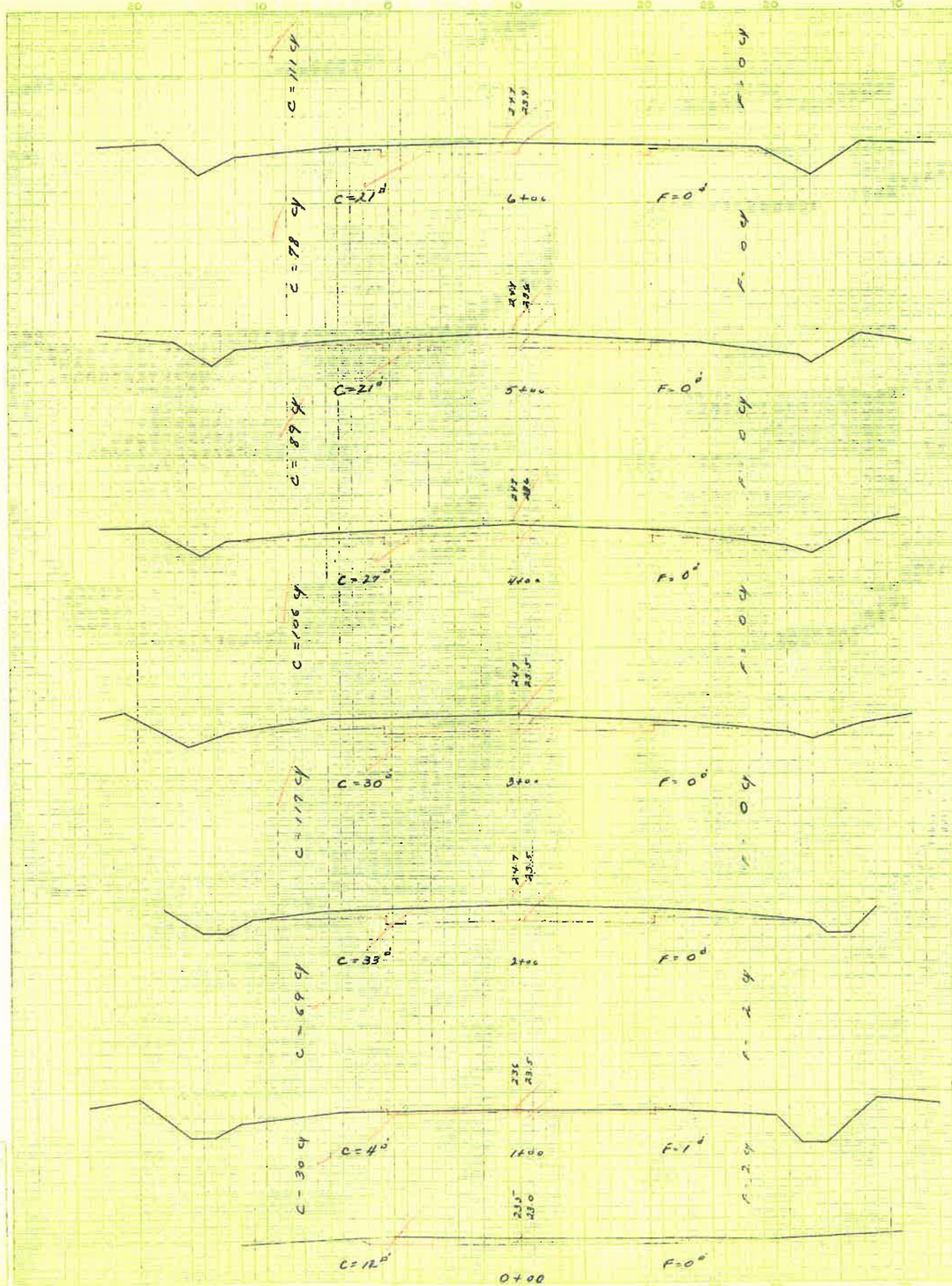
Geotechnical 22.309 80 63 154

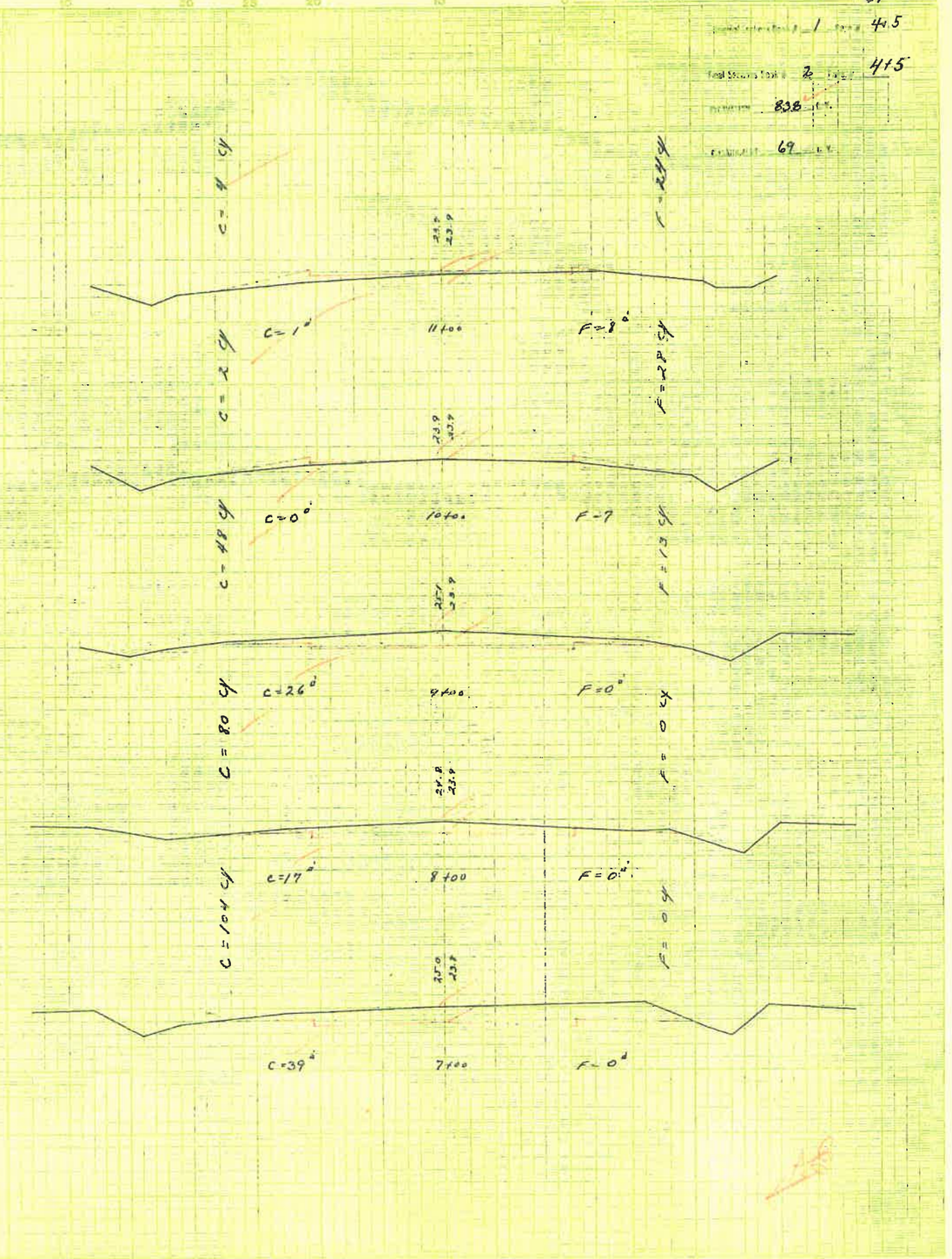


R-1117

CROSS SECTIONS

Scale 1 inch = 5 feet





R-1118

CROSS SECTIONS

Scale 1 inch = 5 feet

GEORGETOWN 22.309

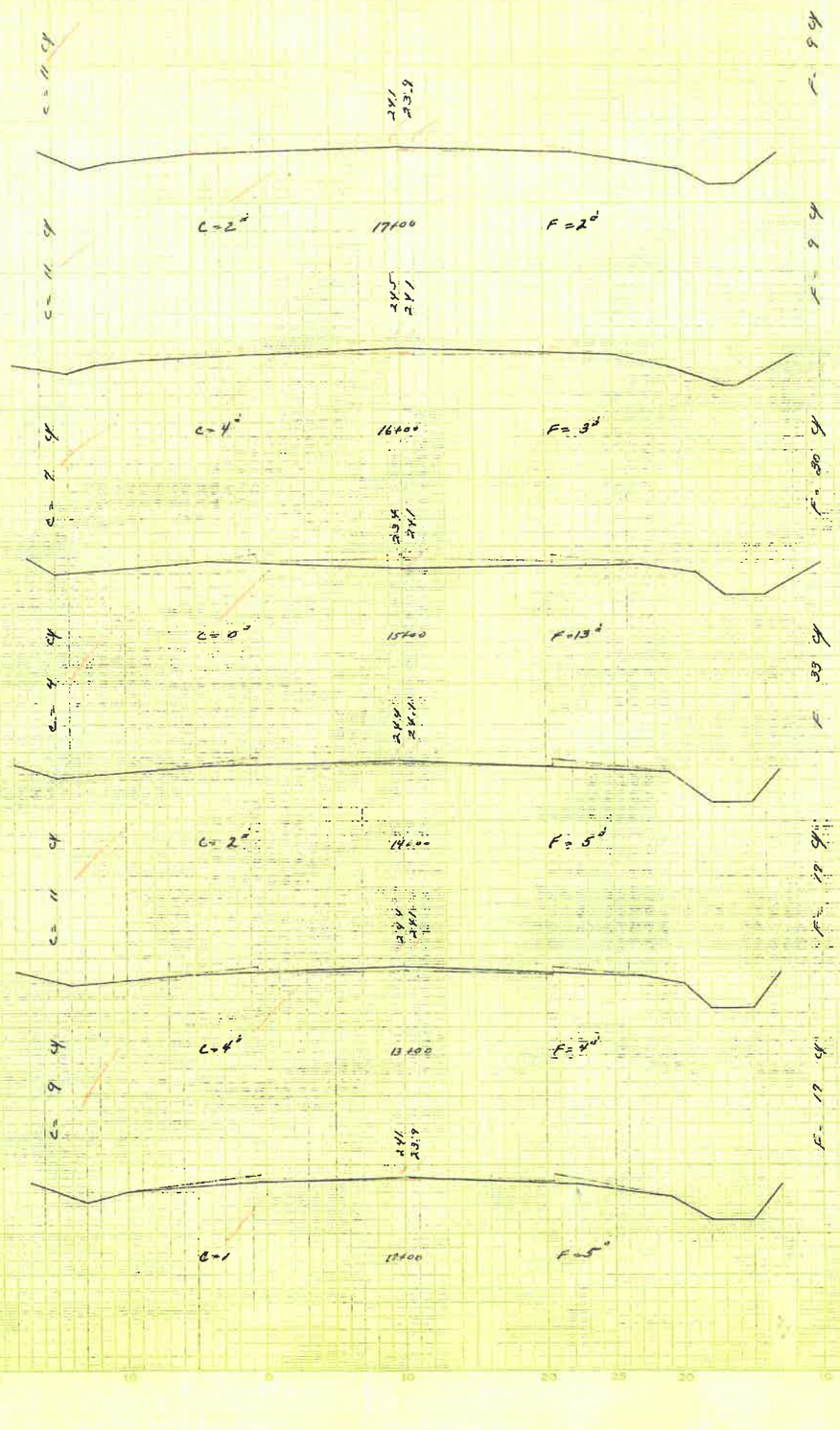
Rte. 124 65 157

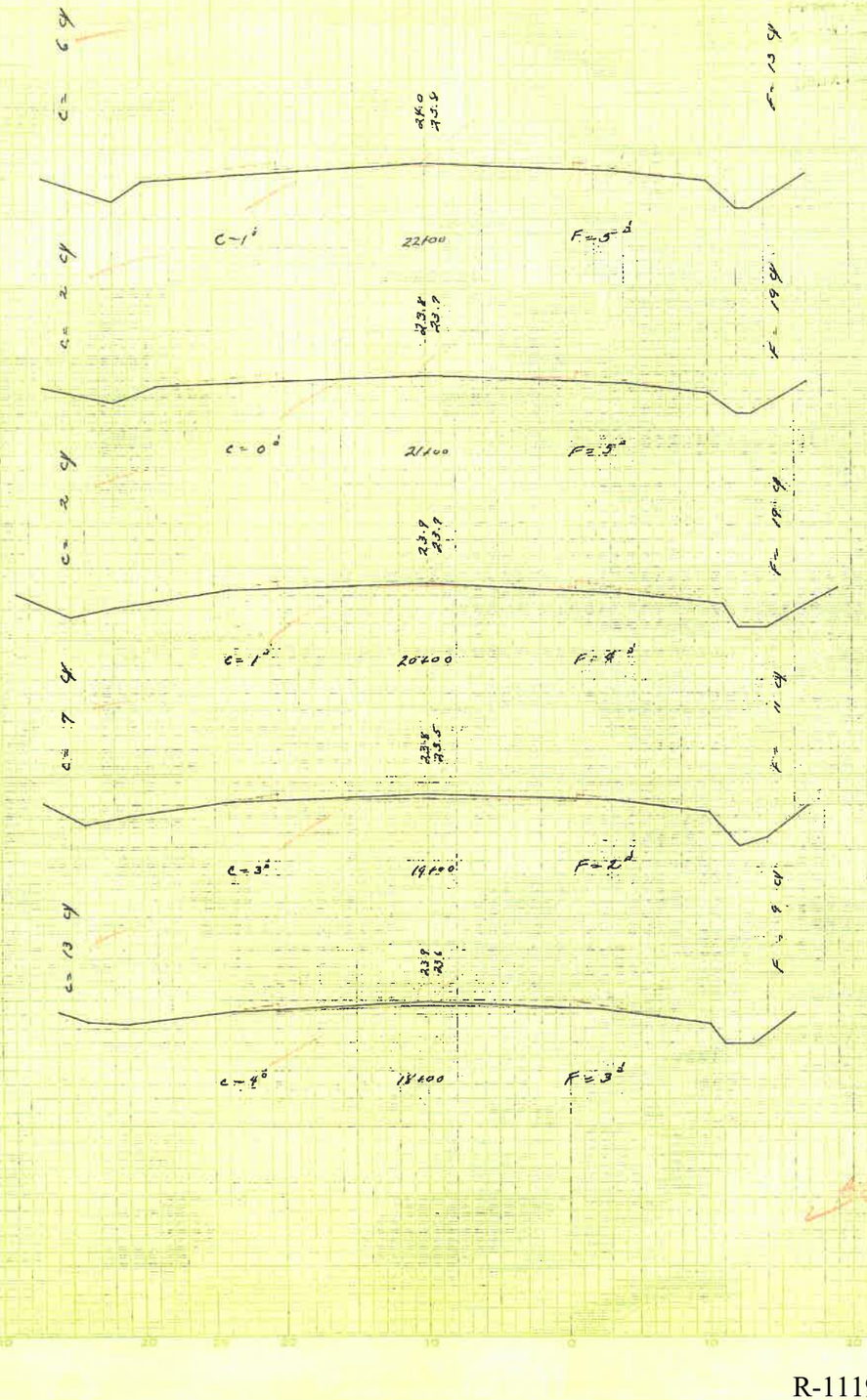
1 5+0

2 5+6

83

176





R-1119

CROSS SECTIONS

Scale 1 inch = 5 feet

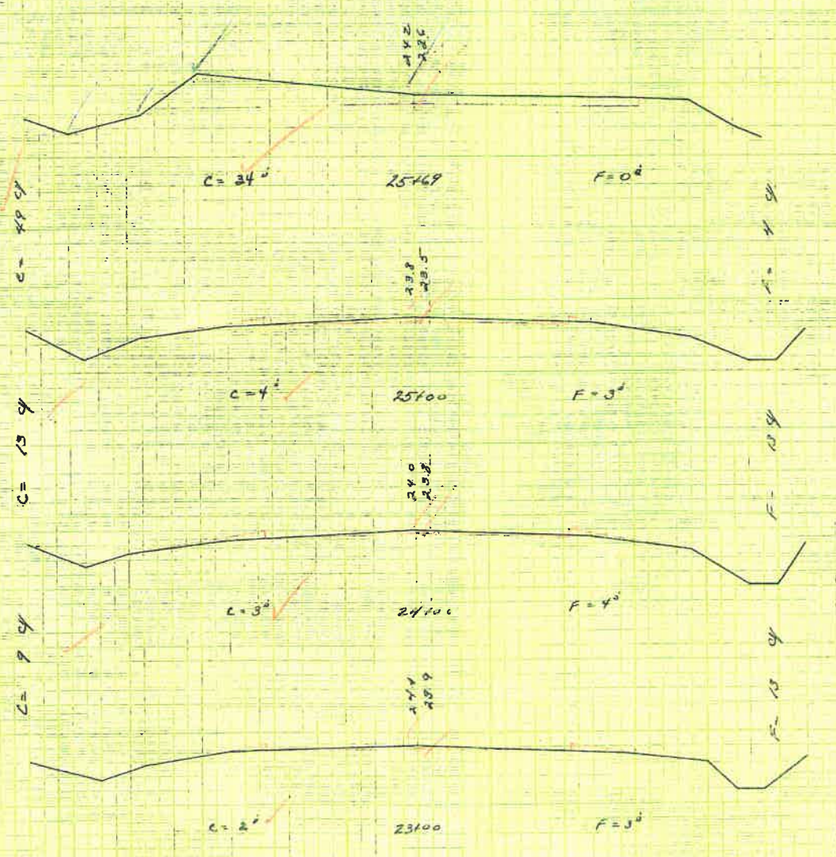
		GARDENA	27.307		124	66	154

1 to 6+1

2 to 9

21

30 6%



R-1120

CROSS SECTIONS

Scale 1 inch = 5 feet

GEOLOGISTONE 22.3.09

Rd
149 67 154

1 9

2 9

21

11

C=1°

Z+73.0

F=2°

F=3 d/l

C=0°

Z+00

F=0°

F=4 d/l

C=1°

1+00

F=2°

F=3 d/l

C=3°

0750

F=1°

F=1.5 d/l

C=12°

0+00

F=0°

Ground Surface Plotted by ____ Checked by ____
Finished Surface Plotted by ____ Checked by ____
Final Survey ____ Checked by ____
Quantities Computed and Plotted ____

15

R-1121

CROSS SECTIONS

Scale 1 inch = 5 feet

Engelhorn 22-309

RD 150 151 68 154

Roadway Section # 1 Page 11 of 12

Roadway Sect # 2 Page 11 of 12

EXCAVATION 61 C.Y.

EMBANKMENT 4 C.Y.

20 10 0 10 20 25 20 10 0 10 20 25 20 10 0 10 20

c=13 c=2 c=4 c=3 c=2 c=3 c=14 c=12

e=0' e=1' e=1½' e=0' e=3' e=12'

4+00 3+00 2+00 1+00 0+50 0+00

F=0' F=0' F=0' F=0' F=1' F=0'

F=0 F=0 F=0 F=1 F=1 F=1

18.1 18.0 18.9 18.1 18.5 19.0

Pg. 6 Pg. 5 Pg. 4 Pg. 3 Pg. 2 Pg. 1

c=2 c=2 c=0 c=0 c=0 c=3 c=12

c=0' c=1' c=0' c=0' c=19' c=13'

6+50 6+00 5+00 4+94.4 4+54.4

F=0' F=0' F=0' F=0' F=0' F=0'

F=2 F=0 F=0 F=0 F=0 F=0

18.9 18.8 18.1 18.6 18.7 19.6

Pg. 8 Pg. 7 Pg. 6 Pg. 5 Pg. 4 Pg. 3

R-1122

CROSS SECTIONS

Scale 1 inch = 5 feet

Geotechnical 22-309

150 69 154
151
1 12 + 13
2 12 - 14
SHEET 29
TOTAL SHEETS 37



CROSS SECTIONS

Scale 1 inch = 5 feet

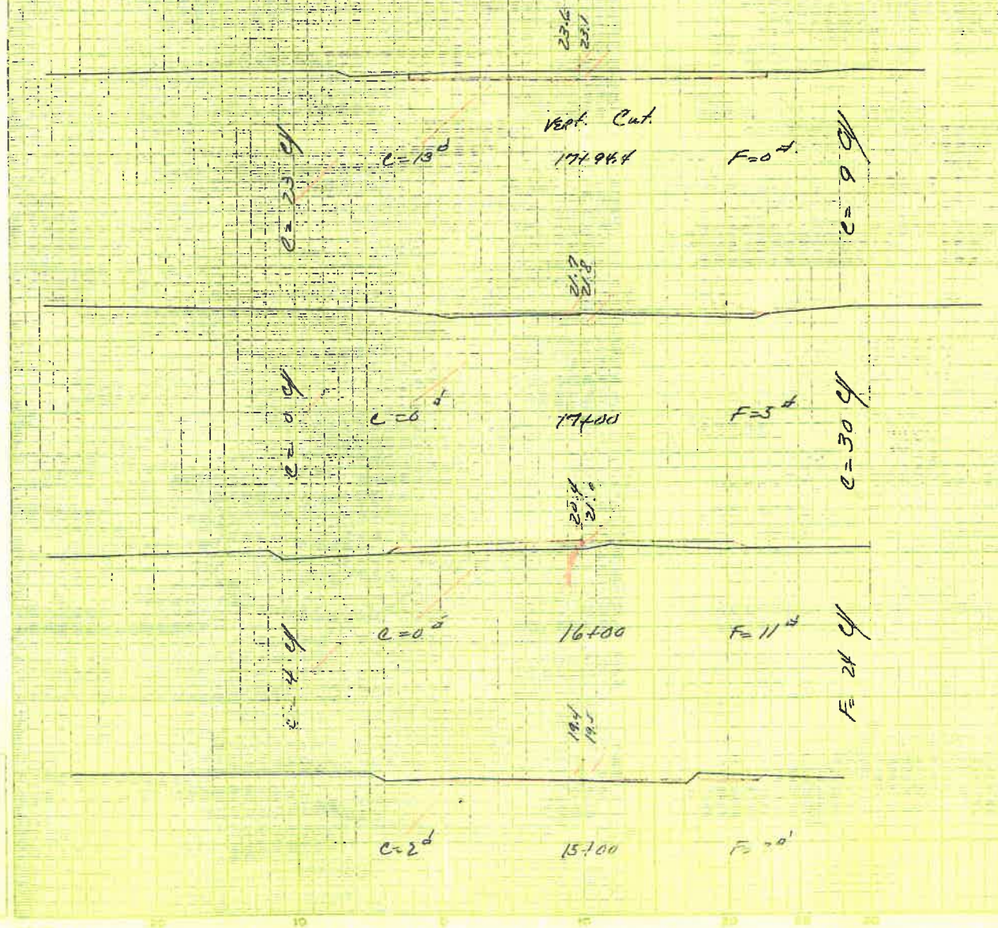
		Generators	22.309		150 & 154	90	154

1 14

2 14+15

EXCAVATION 29

63



R-1124

CROSS SECTIONS

Scale 1 Inch = 10 Feet

Centerline 22.309 151 71 157

1 16417

2 17418

CAVATION 173

103

C= 6 CY

C= 20 CY

C= 24 CY

C= 48 CY

C= 42 CY

C= 30 CY

C= 9 CY

F= 26 CY

F= 19 CY

F= 20 CY

F= 15 CY

F= 1 CY

F= 0 CY

F= 0 CY

C= 2°

4400

F= 6°

C= 9°

3400

F= 4°

C= 4°

2400

F= 7°

C= 22°

1700

F= 1°

C= 23°

0750

F= 00°

C= 9°

VERT. Cut.

0700

F= 0°

C= 1 CY

C= 1 CY

C= 2 CY

F= 3 CY

F= 19 CY

C= 1°

6+393

F= 2°

C= 0°

6700

F= 2°

C= 1°

5400

F= 8°

Ground Section Plotted by _____ Checked by _____

Formation Sections Plotted by _____ Checked by _____

Areas by _____ Checked by _____

Plotted Sections Revised by _____ Checked by _____

Final Areas by _____ Checked by _____

Quantities Transferred and Tabed by _____

CROSS SECTIONS

Scale 1 inch = 5 feet

21

Georgetown P.R. 509 152 72 154

Original Cross Section Book # 1 Page # 19

Final Cross Section Book # 2 Page # 20

Excavation 43 C.Y.

Embankment 34 C.Y.

C = 9 cy

F = 7 cy

19.4 / 19.2

C = 3° 2+00 F = 2°

C = 7 cy

F = 9 cy

18.7 / 18.6

C = 1° 1+00 F = 3°

C = 1 cy

F = 6 cy

18.6 / 18.5

C = 0° 0+50 F = 3°

C = 10 cy

F = 3 cy

18.6 / 18.0

C = 11° 0+00 F = 0°

20.9 / 20.2

C = 12° 4+41 F = 0°

C = 10 cy

F = 2 cy

20.9 / 20.7

C = 1° 4+00 F = 2°

C = 6 cy

F = 7 cy

20.2 / 20.1

C = 2° 3+00 F = 2°

R-1126

CROSS SECTIONS

Georgetown 22 309

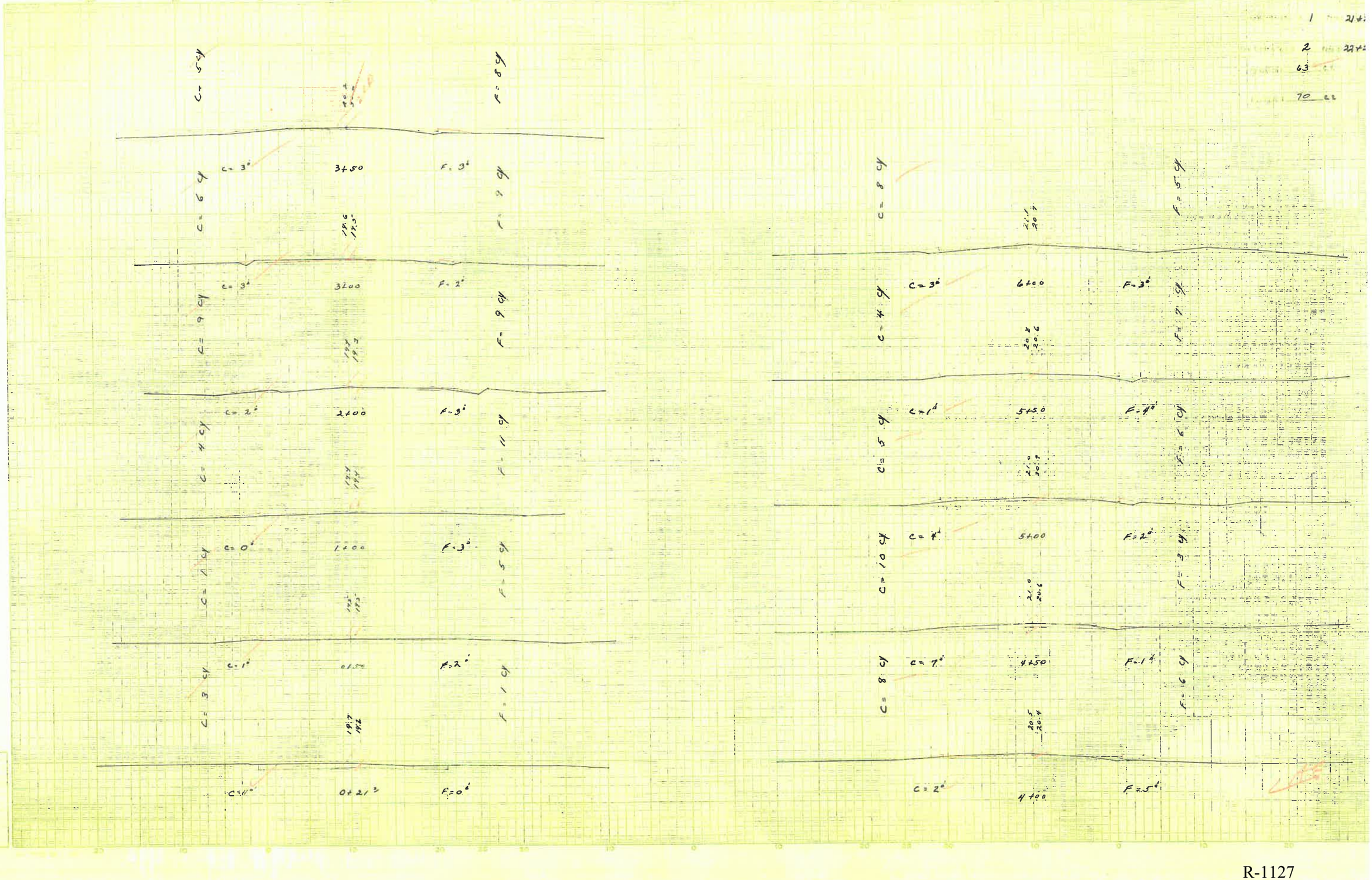
Rte. 153 93 15.4

1 21.4

2 22.4

63

70 cc



R-1127

CROSS SECTIONS

Scale 1 inch = 5 feet

22

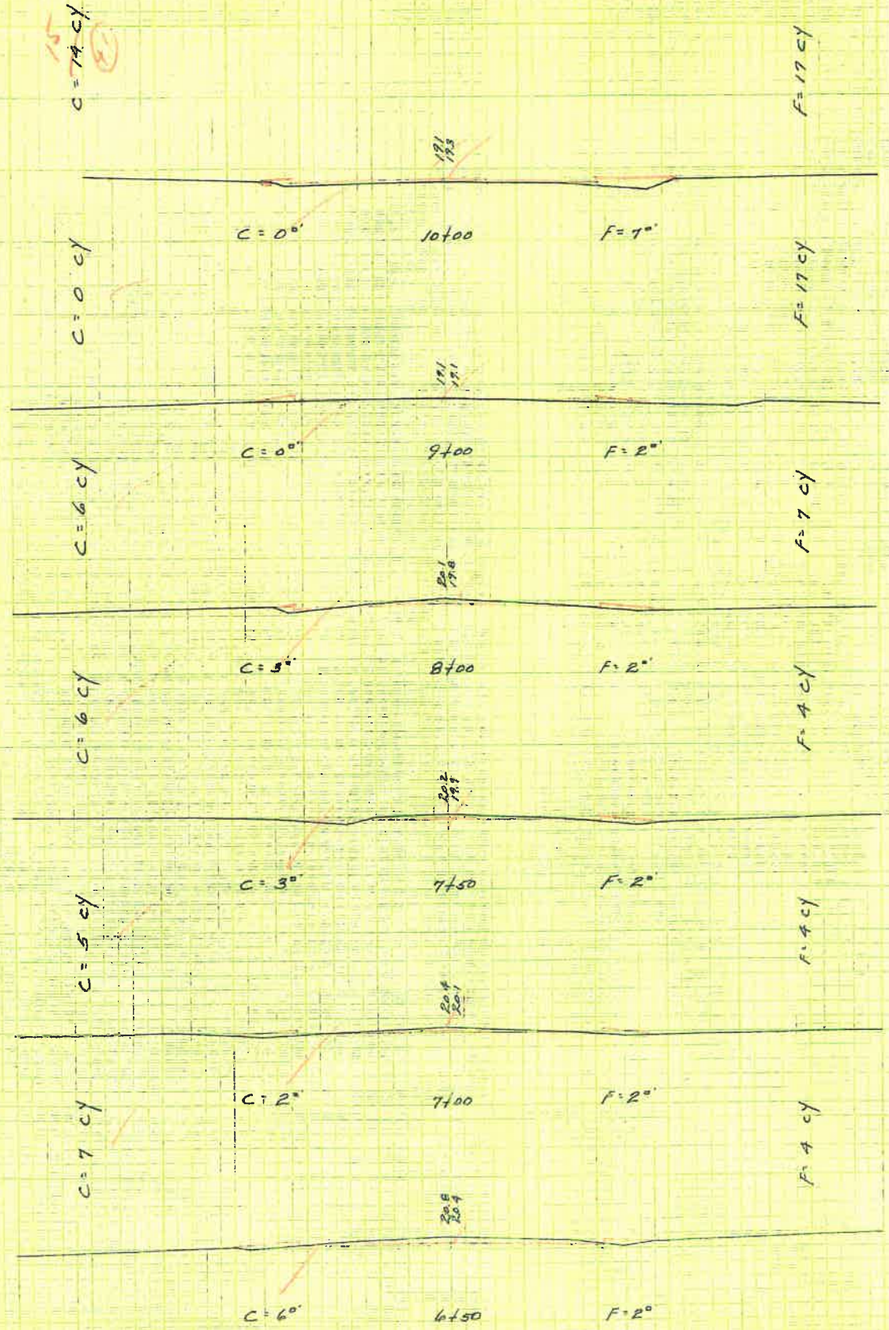
Georgetown RR 309 — 163 94 154

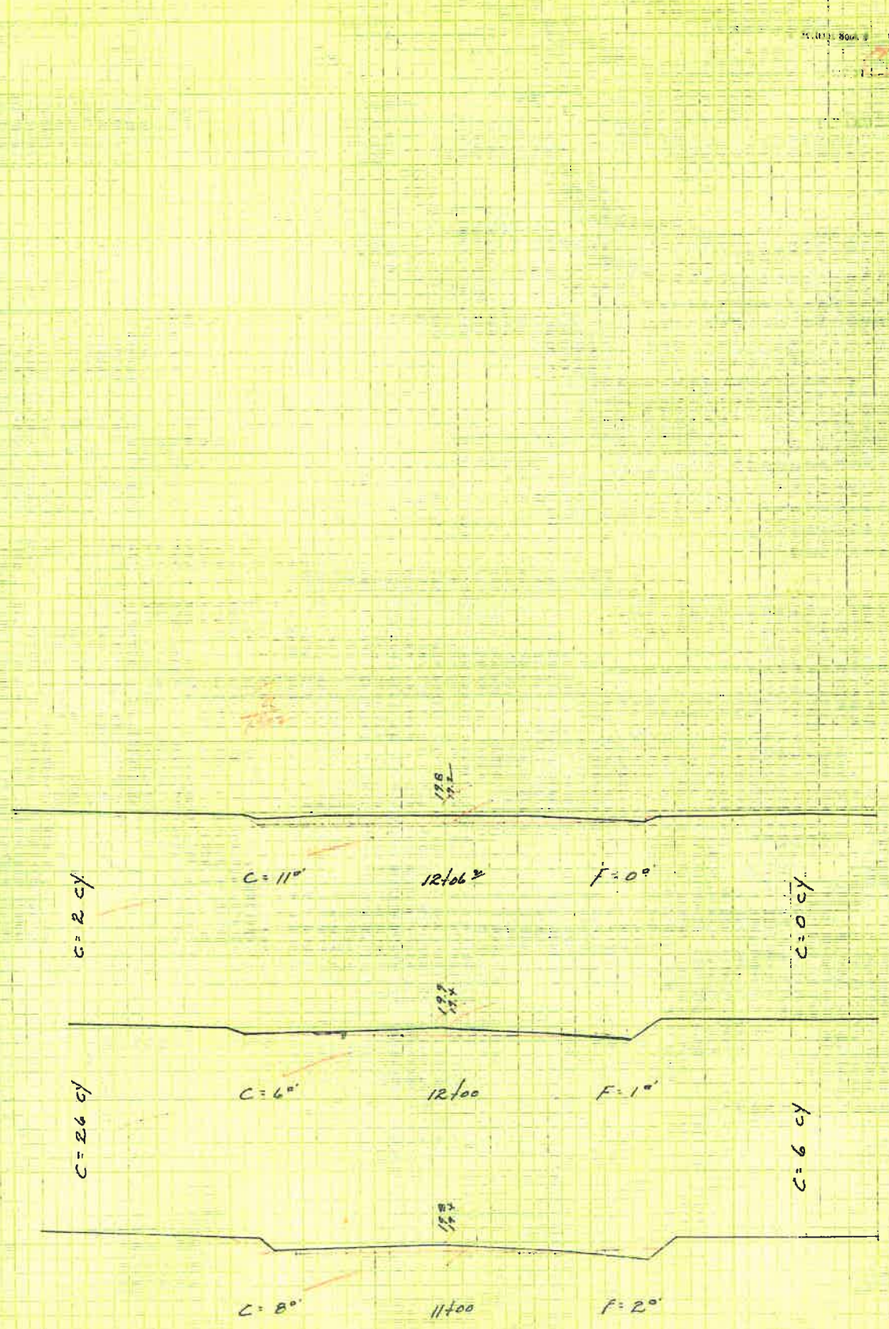
Office of Highway Records — Book 1 — Page 22+23

Book 2 — Page 23+24

66

59





R-1128

CROSS SECTIONS

Scale: 1 Inch = 5 Feet

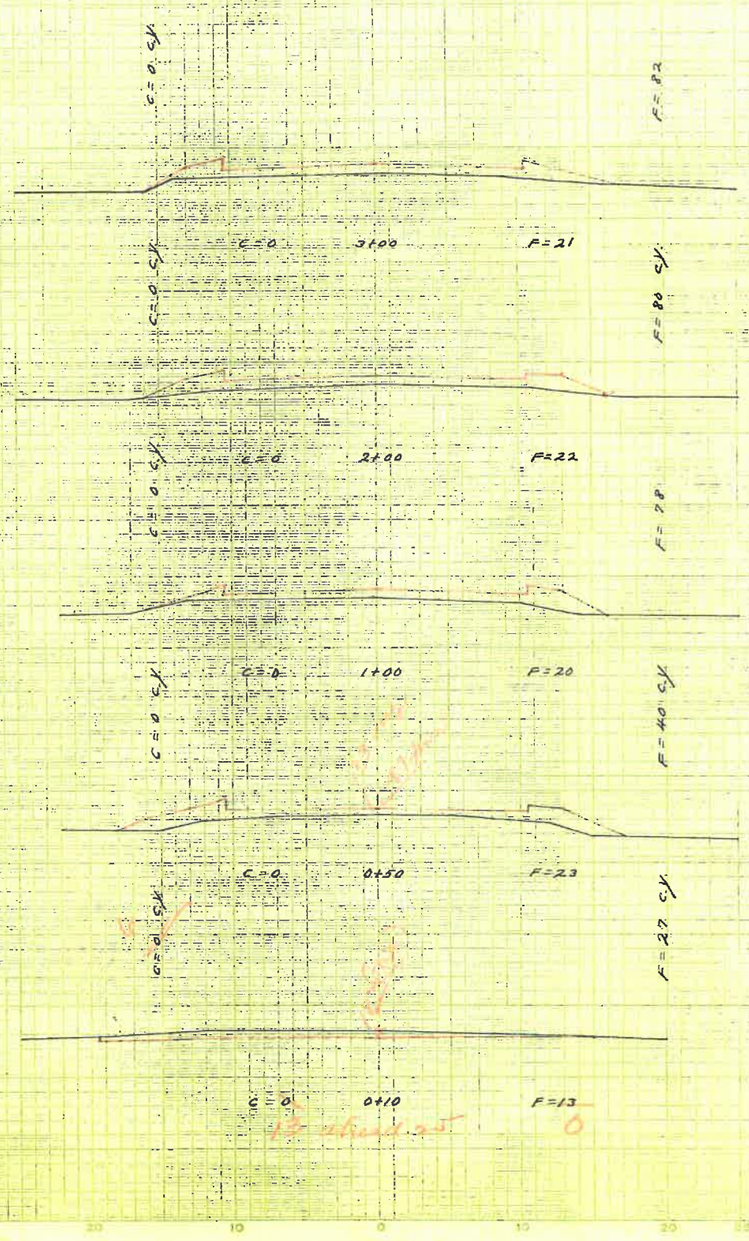
Grassland 22.309 155 95 154

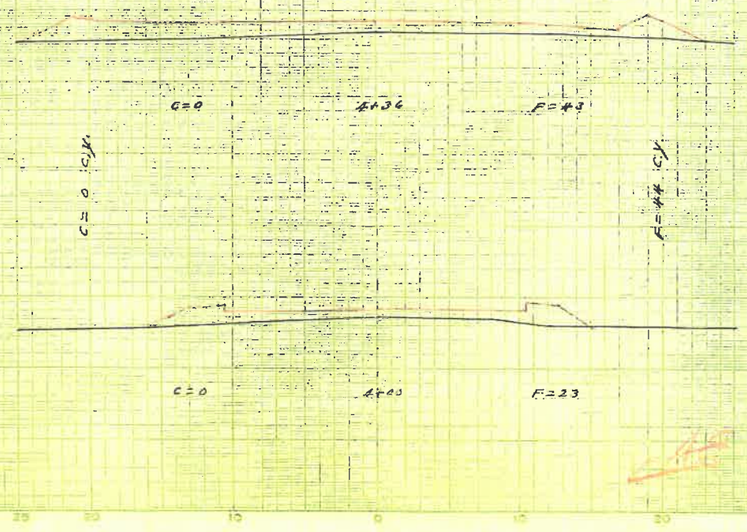
1 25

2 26

0

357





Ground Surface Plotted By
" Checked By
Engineer Surface Plotted By
" Checked By
Data by
Checked By
Data Surface Revised By
" Checked By
Final Areas by
Checked by
Quantities Transferred and Labeled by

R-1129

CROSS SECTIONS

Scale 1 inch = 5 feet

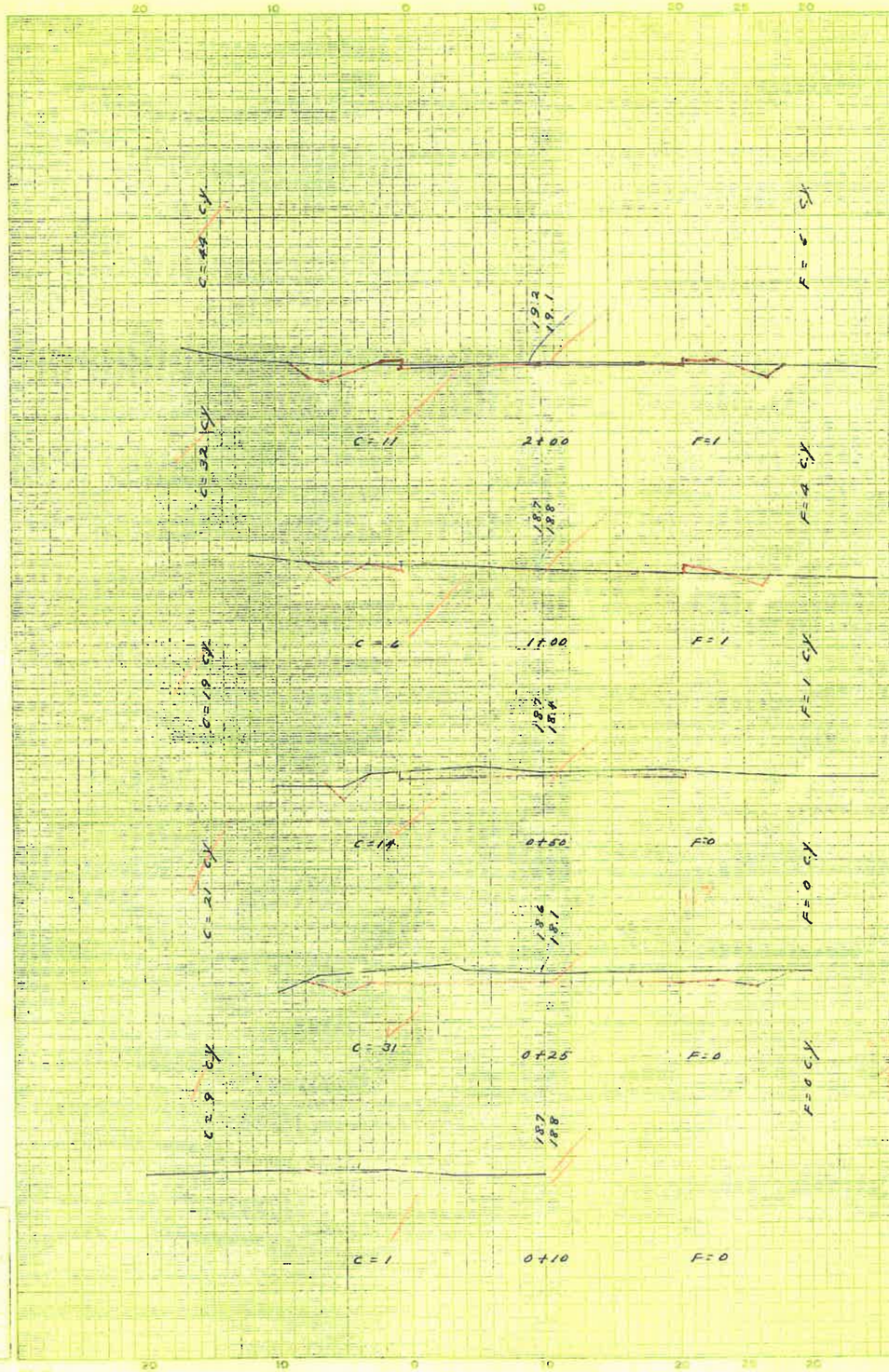
	C	Greenbrier	22.309		156	96	154

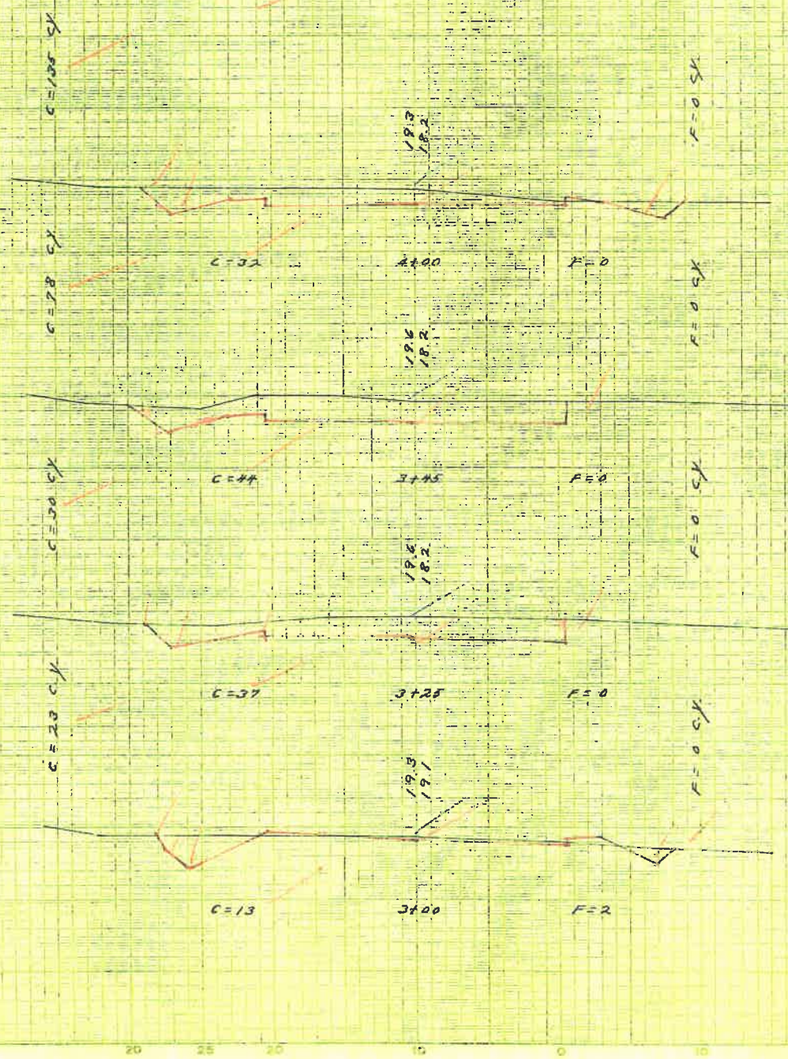
1 27+28

2 28+29

391

11





R-1130

CROSS SECTIONS

Scale 1 inch = 5 feet

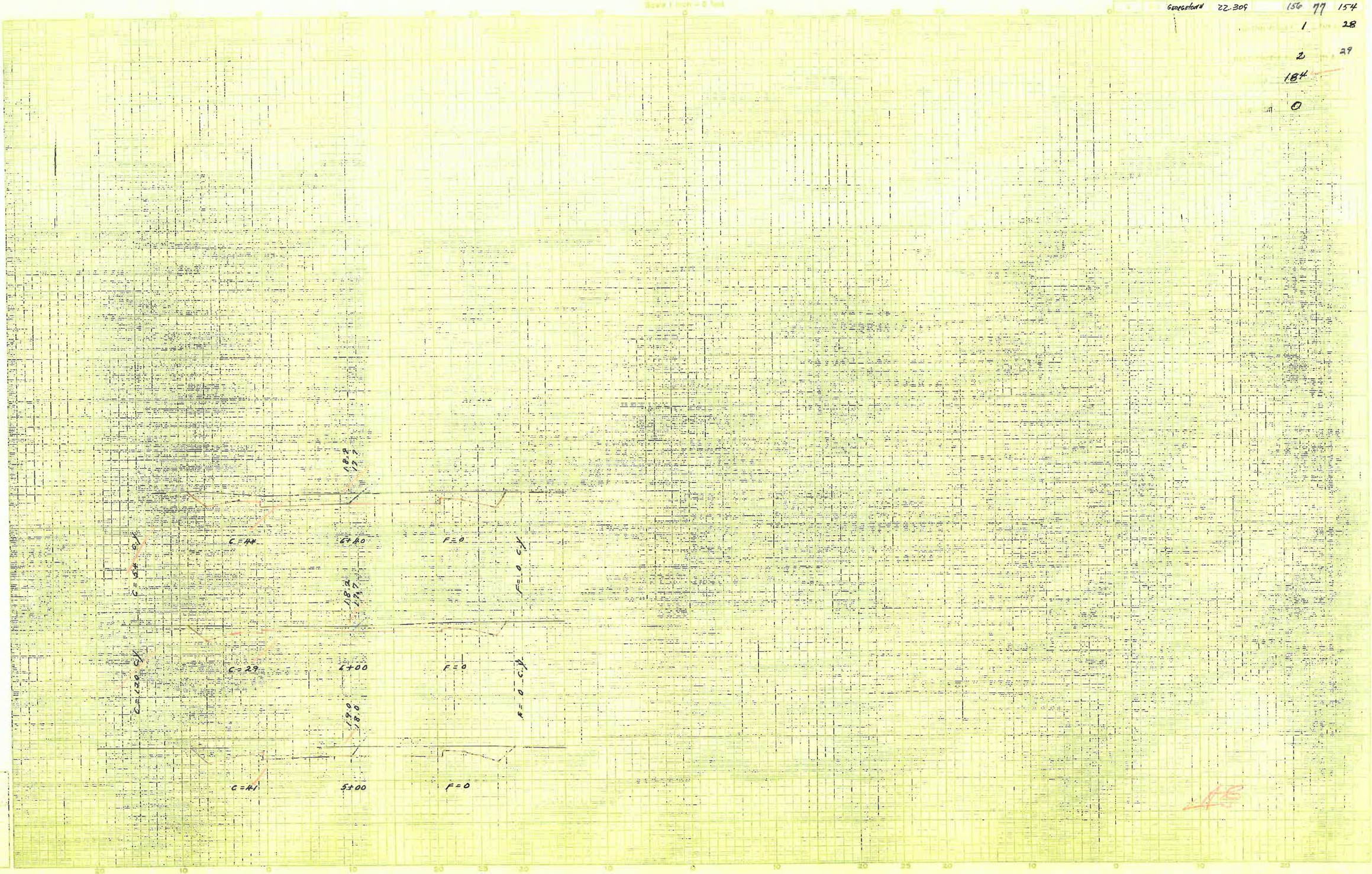
GEORGETOWN 22.309 156 77 154

1 28

2 29

184

0



R-1131

CROSS SECTIONS

Scale 1 inch = 5 feet

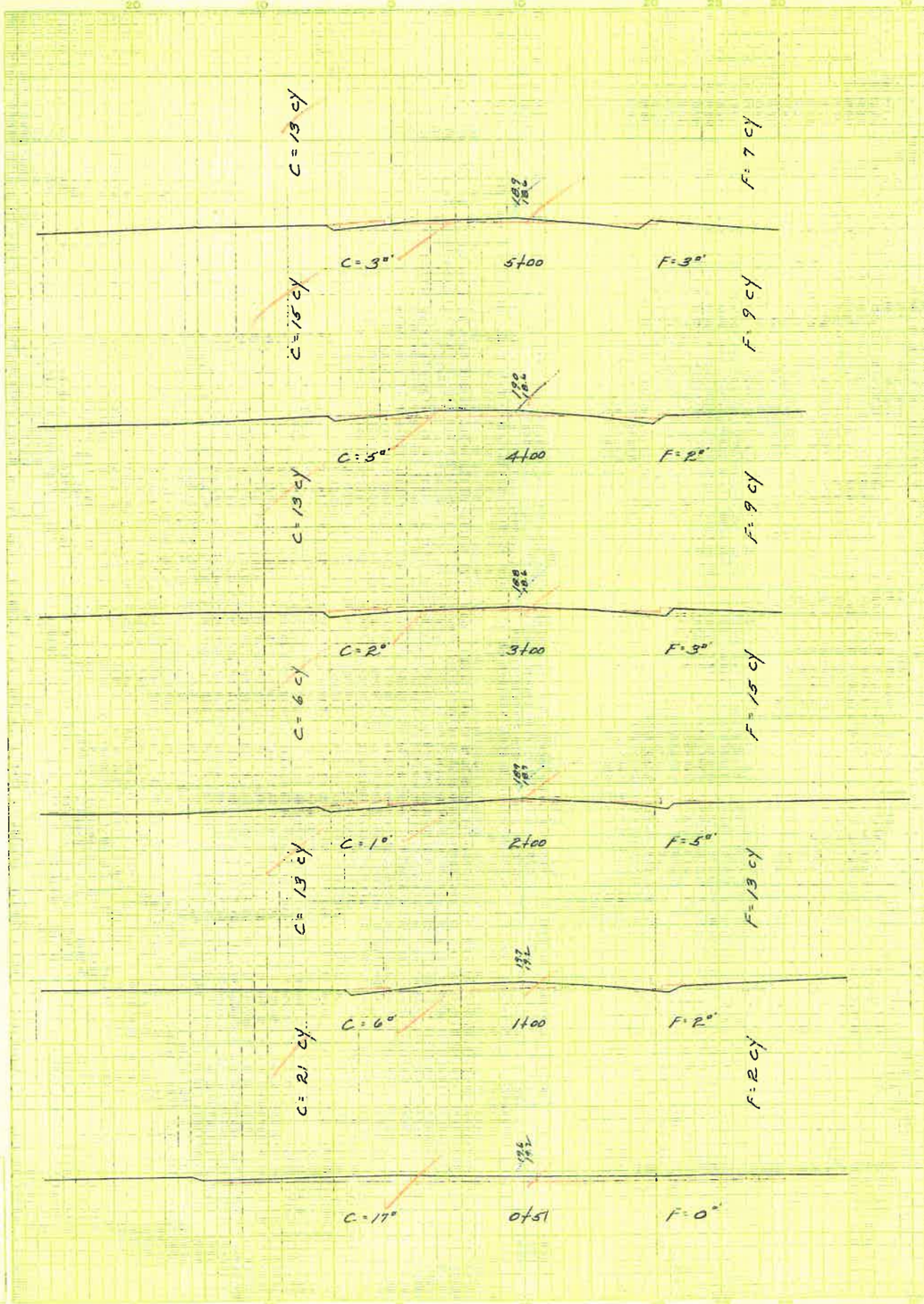
Georgetown RR 309 — 157.7 / 159.7 — 78 — 154

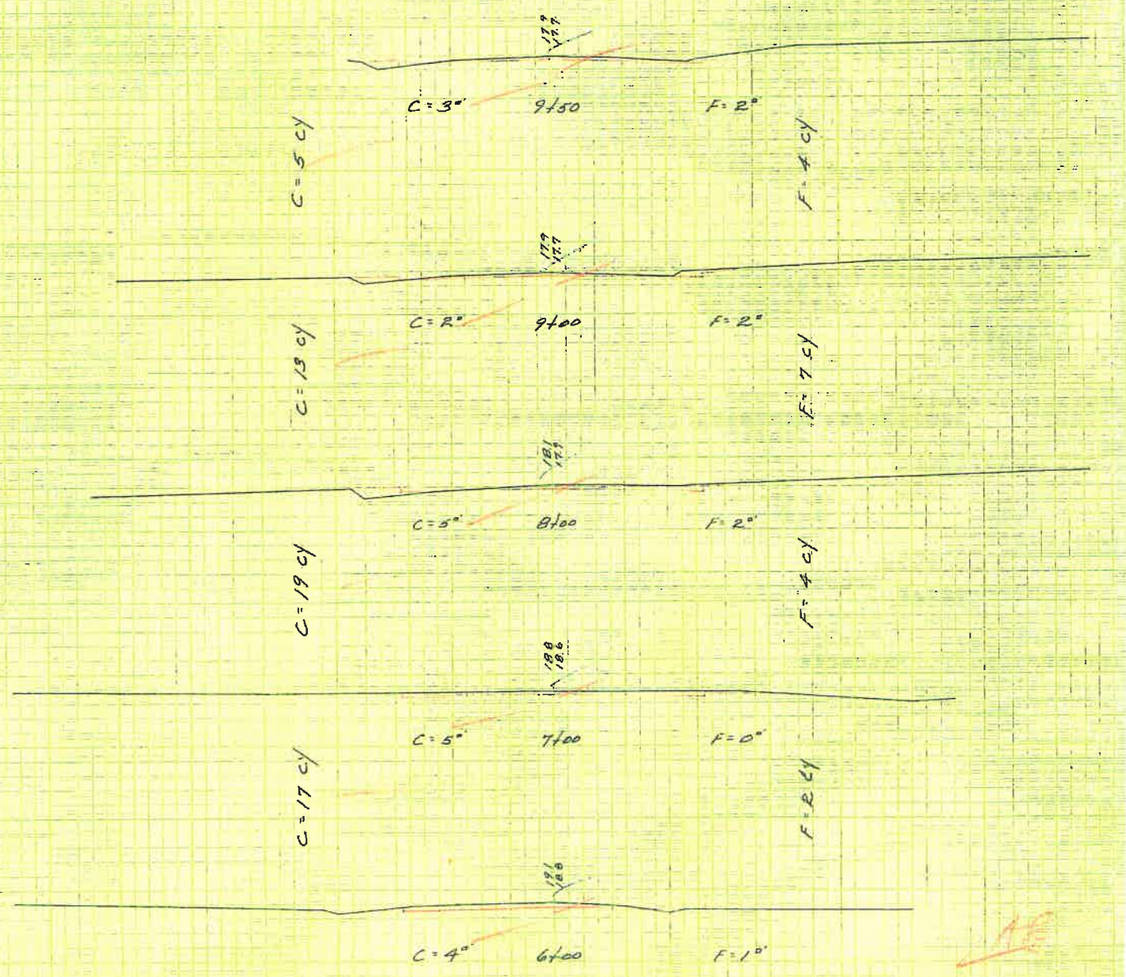
Cross Section Page # 1 — Sta. 30 + 31

Cross Section Page # 2 — Sta. 31 + 32

Bearing 135° E

72 L.F.





R-1132

CROSS SECTIONS

Scale 1 inch = 5 feet

Georgetown 22.309 137# 154 79 154

Original Work Page # 1 Page # 31

Computation # 2 Page # 32

EXCAVATION 25 C.Y.

EMBANKMENT 17 C.Y.



R-1133

CROSS SECTIONS

Scale 1 inch = 5 feet

21

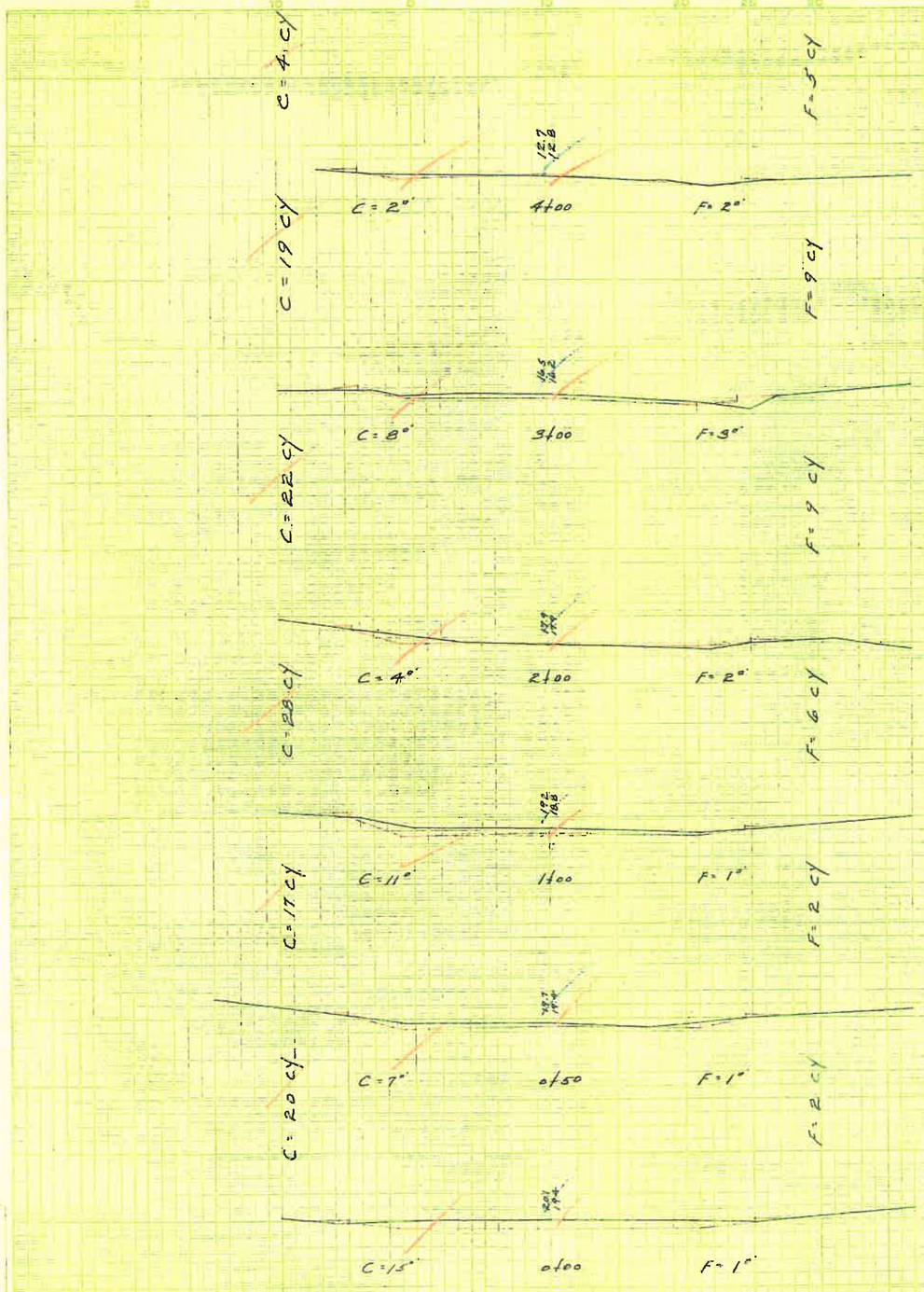
		George Tuttle RR 309	158	80	154

Original Strip # 1 Page # 33

Sections Strip # 2 Page # 33A

Fill Quantity 110 C.Y.

Cut Quantity 33 C.Y.





R-1134

CROSS SECTIONS

Scale: 1 inch = 5 feet

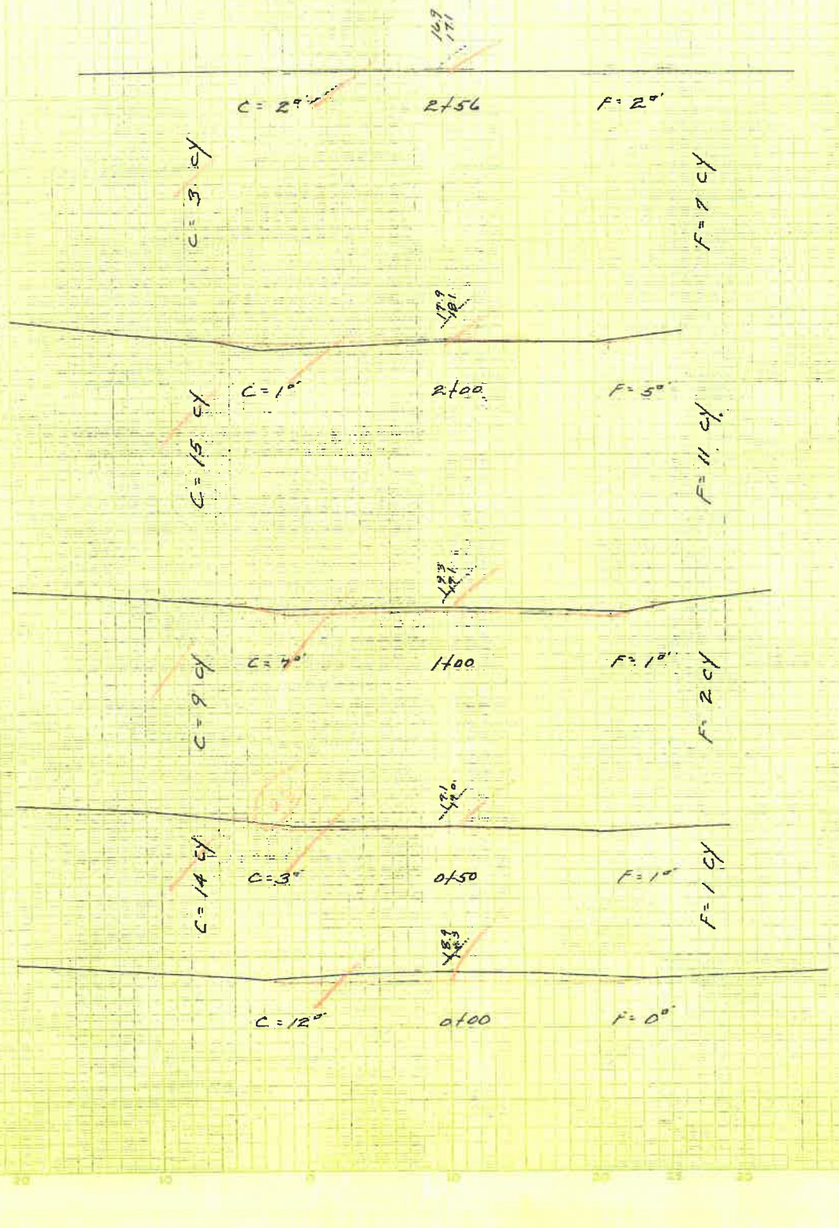
Georgetown RR 309 159 87 154

35

2 36

44 ft

21 ft



R-1135

CROSS SECTIONS

Scale 1 inch = 5 feet

20 10 0 10 20 25 30 10 0 10 20 25 30 10 0

	Georgetown RR 307	160	92	15¼	

Page # 37

Page # 38

EXCAVATION 26 C.Y.

24 C.Y.

1+81.4

C = 2"

F = 1"

C = 9 C.Y.

F = 11 C.Y.

1+50

C = 0"

F = 6"

C = 3 C.Y.

F = 2 C.Y.

1+00

C = 3"

F = 1"

C = 7 C.Y.

F = 2 C.Y.

0+50

C = 5"

F = 1"

C = 13 C.Y.

F = 1 C.Y.

0+00

C = 9"

F = 0"

K.E.

CROSS SECTIONS

Georgetown 22 309 161 83 154

1 39+40

2 40+81

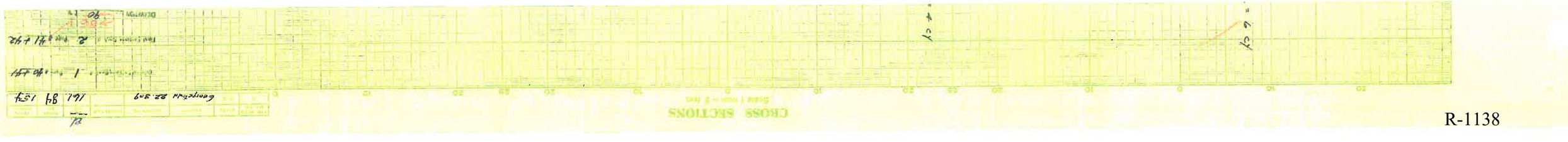
124 C.F.

57 C.F.

C = 2 cy
F = 20 cy
138
139
C = 0°
4+00
F = 5°
C = 7 cy
F = 10 cy
C = 4°
9+00
F = 0°
C = 9 cy
F = 2 cy
C = 1°
8+00
F = 1°
C = 13 cy
F = 4 cy
C = 6°
1+00
F = 1°
C = 7 cy
F = 4 cy
C = 2°
0+50
F = 3°
C = 13 cy
F = 2 cy
C = 15°
0+10
F = 0°

C = 20 cy
F = 4 cy
C = 5°
7+00
F = 1°
C = 9 cy
F = 7 cy
C = 0°
6+00
F = 3°
C = 13 cy
F = 5 cy
C = 14°
5+51
Edge of Pavement
F = 0°
C = 11 cy
F = 10 cy
C = 16°
5+31
Edge of Pavement
F = 0°
C = 10 cy
F = 3 cy
C = 1°
5+00
F = 5°

R-1137

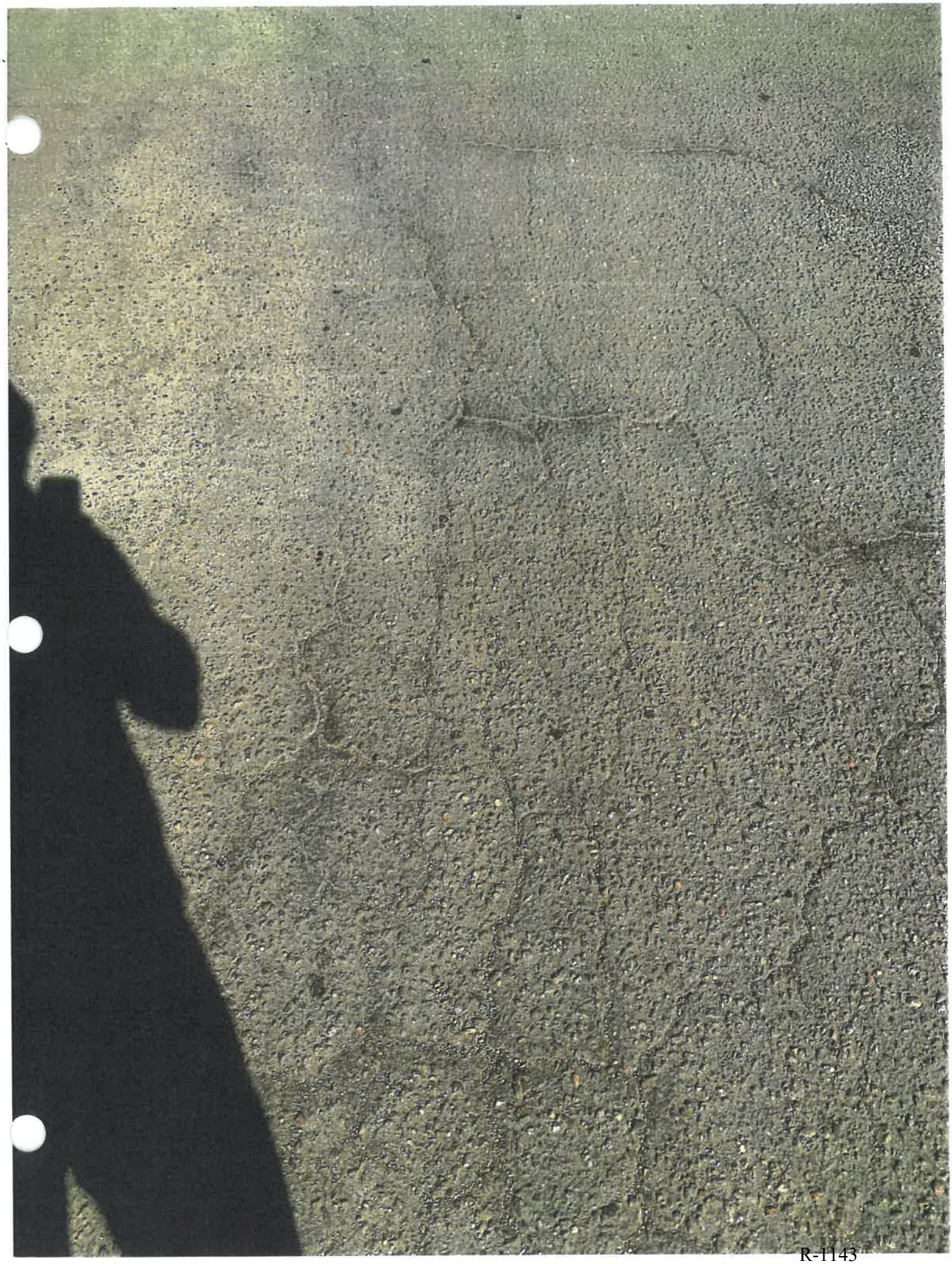

CROSS SECTIONS

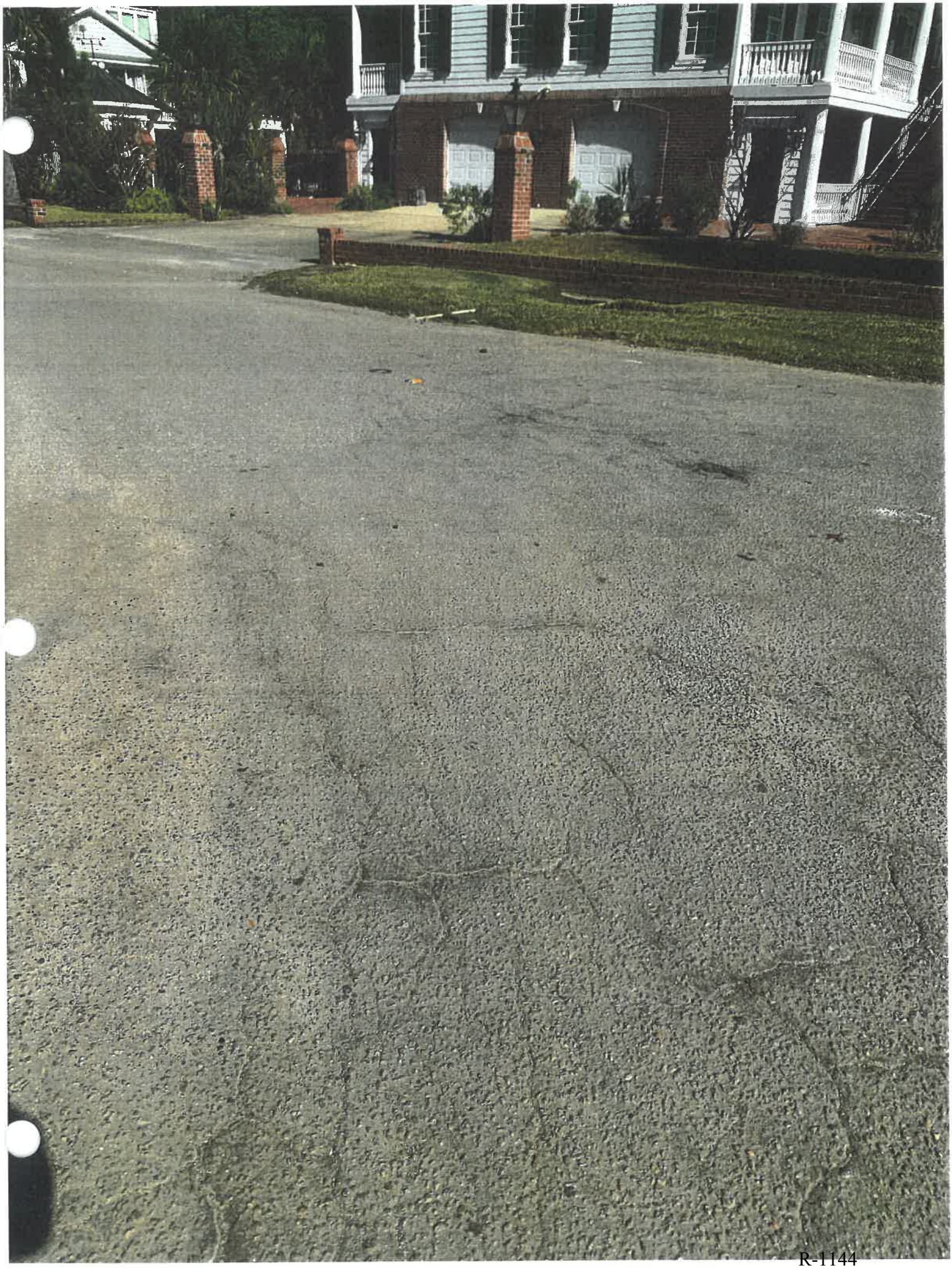

PLAINTIFF'S
EXHIBIT
155



R-1141

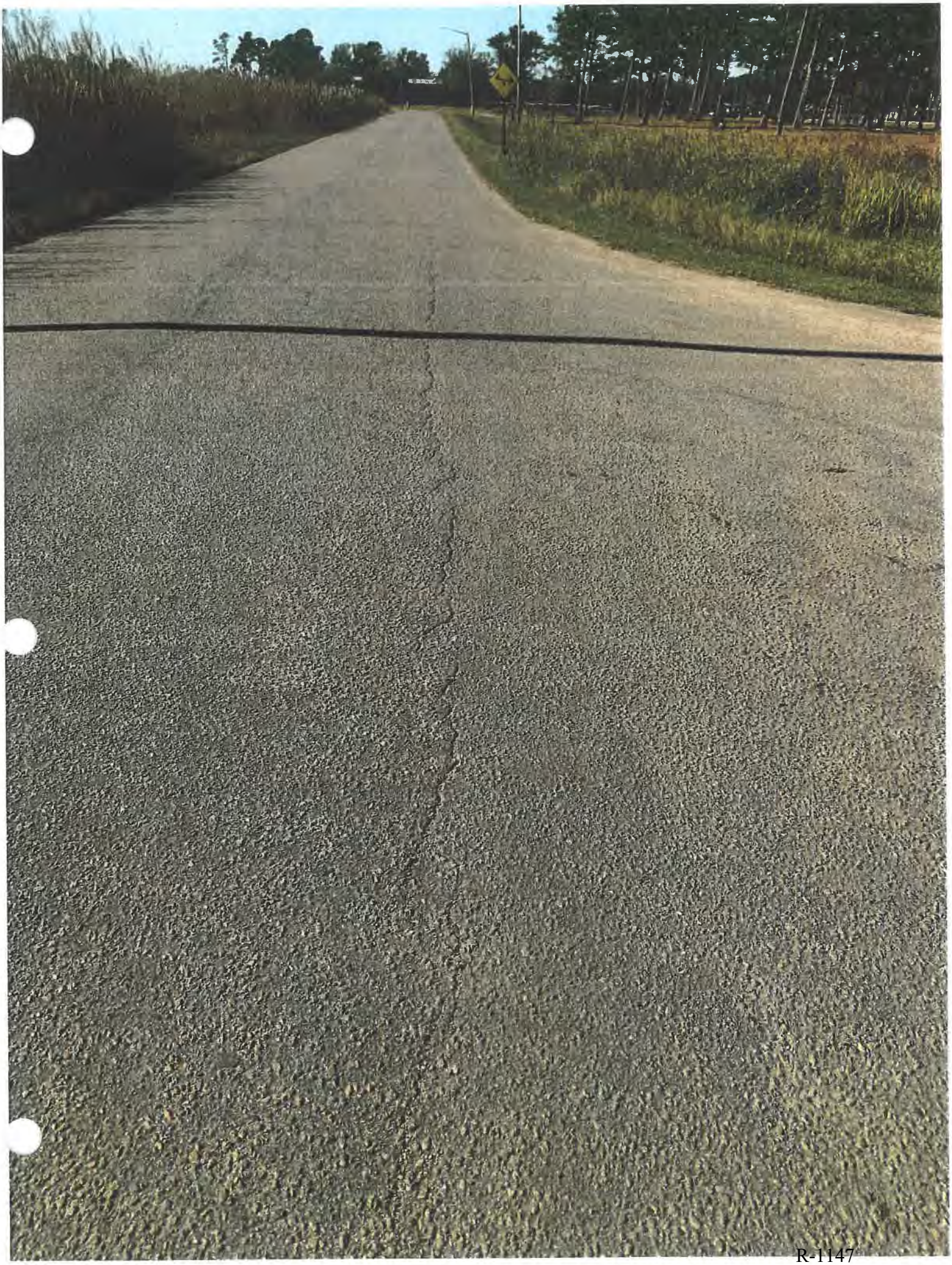








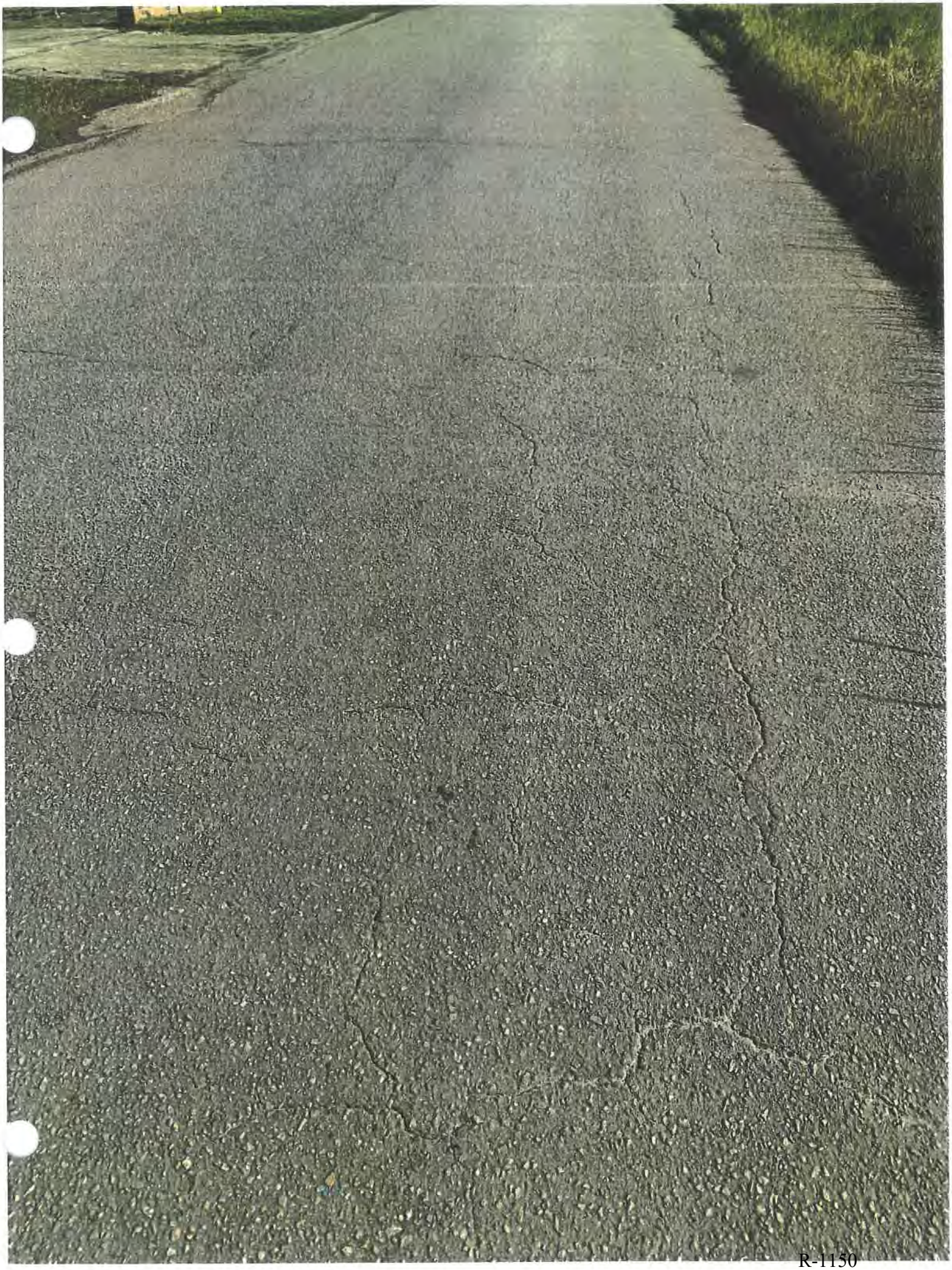


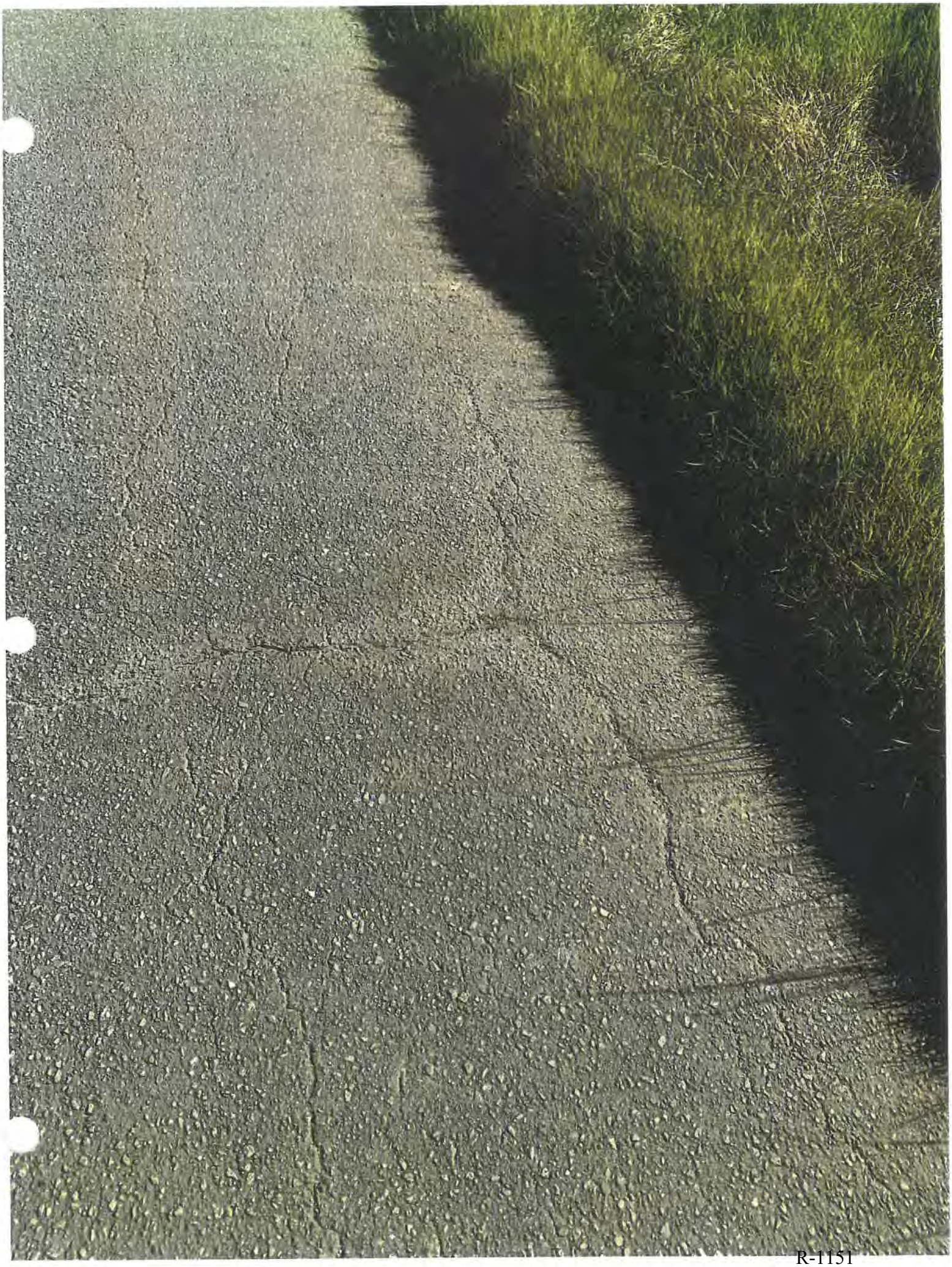


R-1147



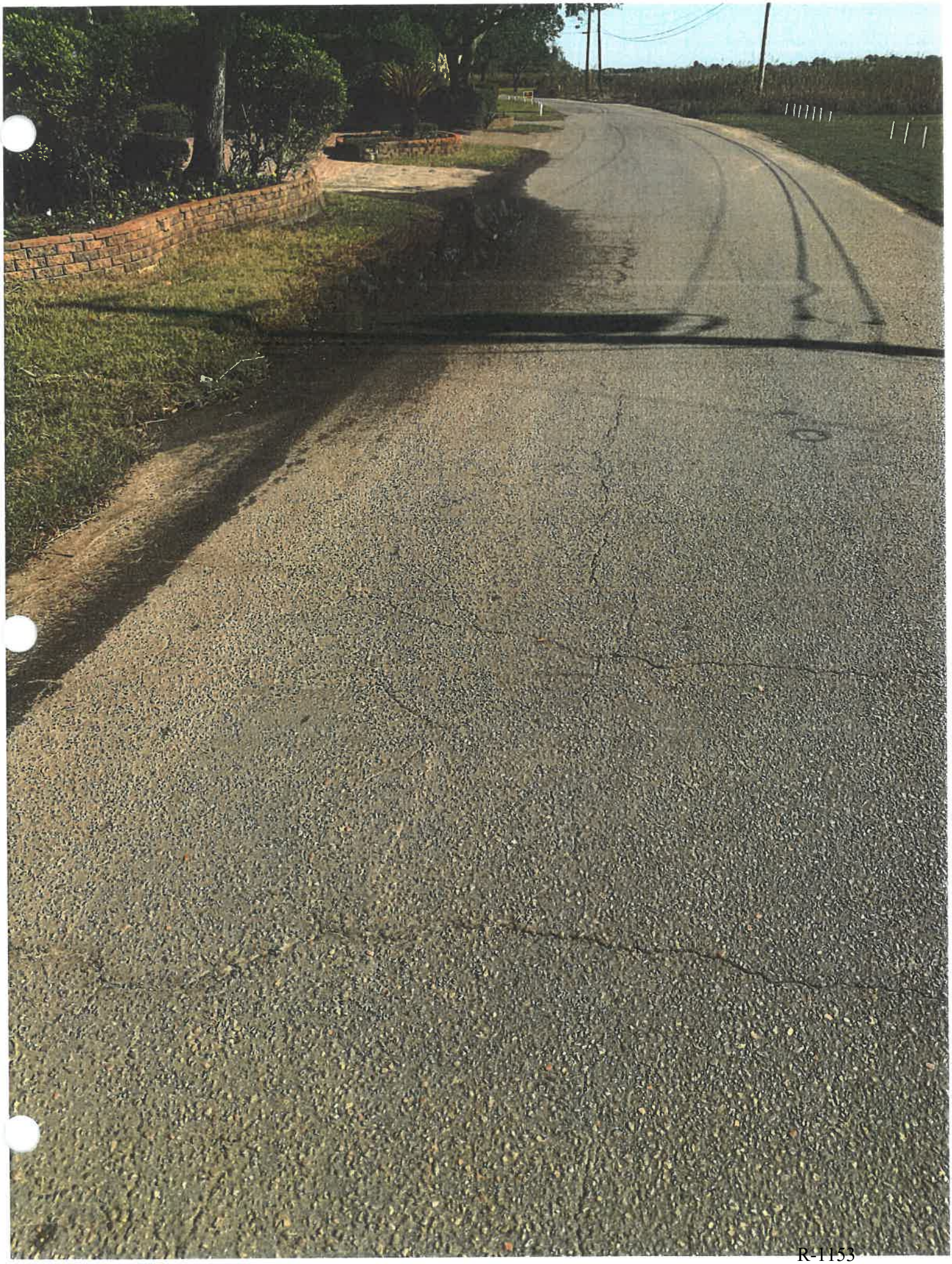


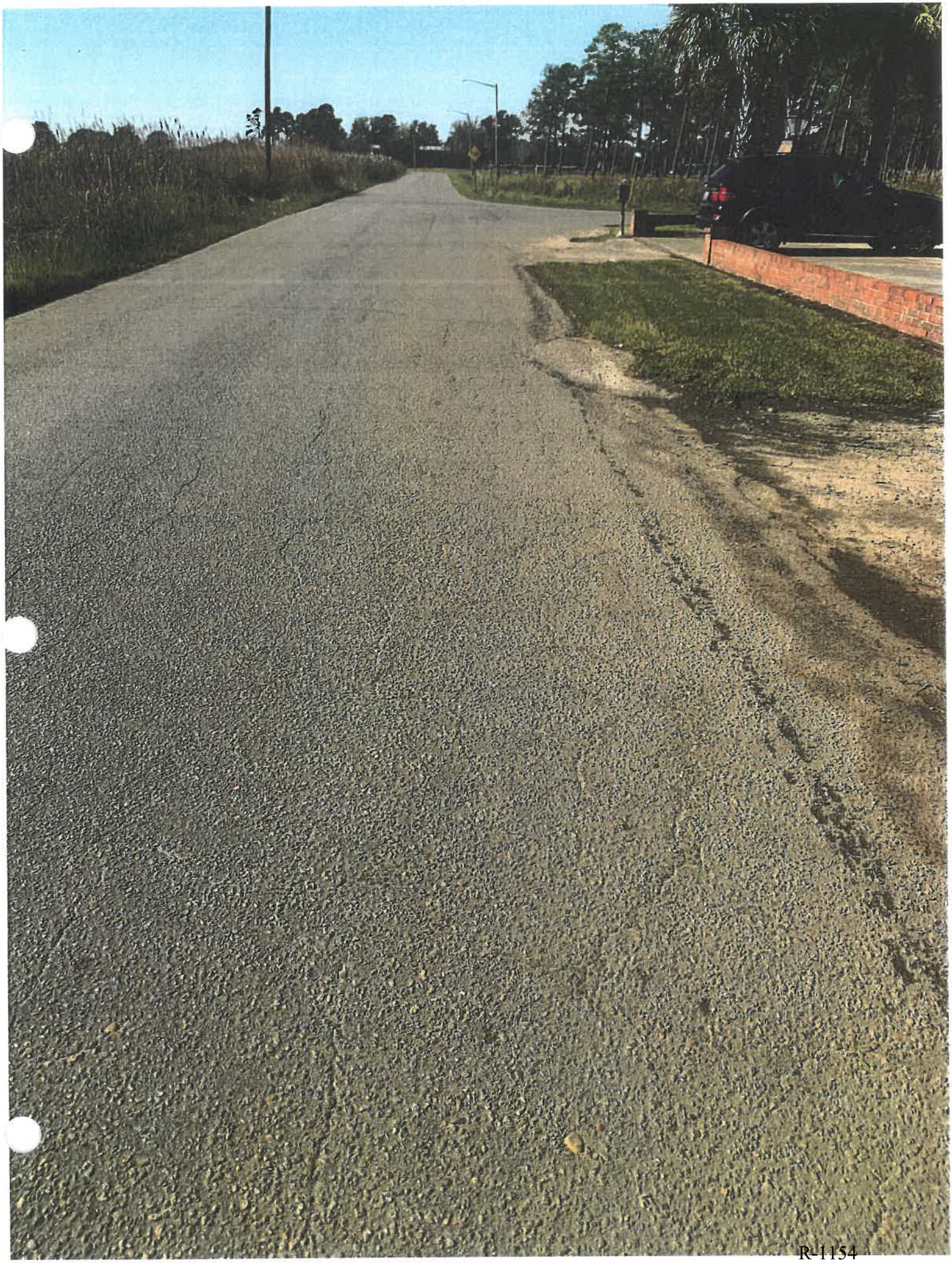


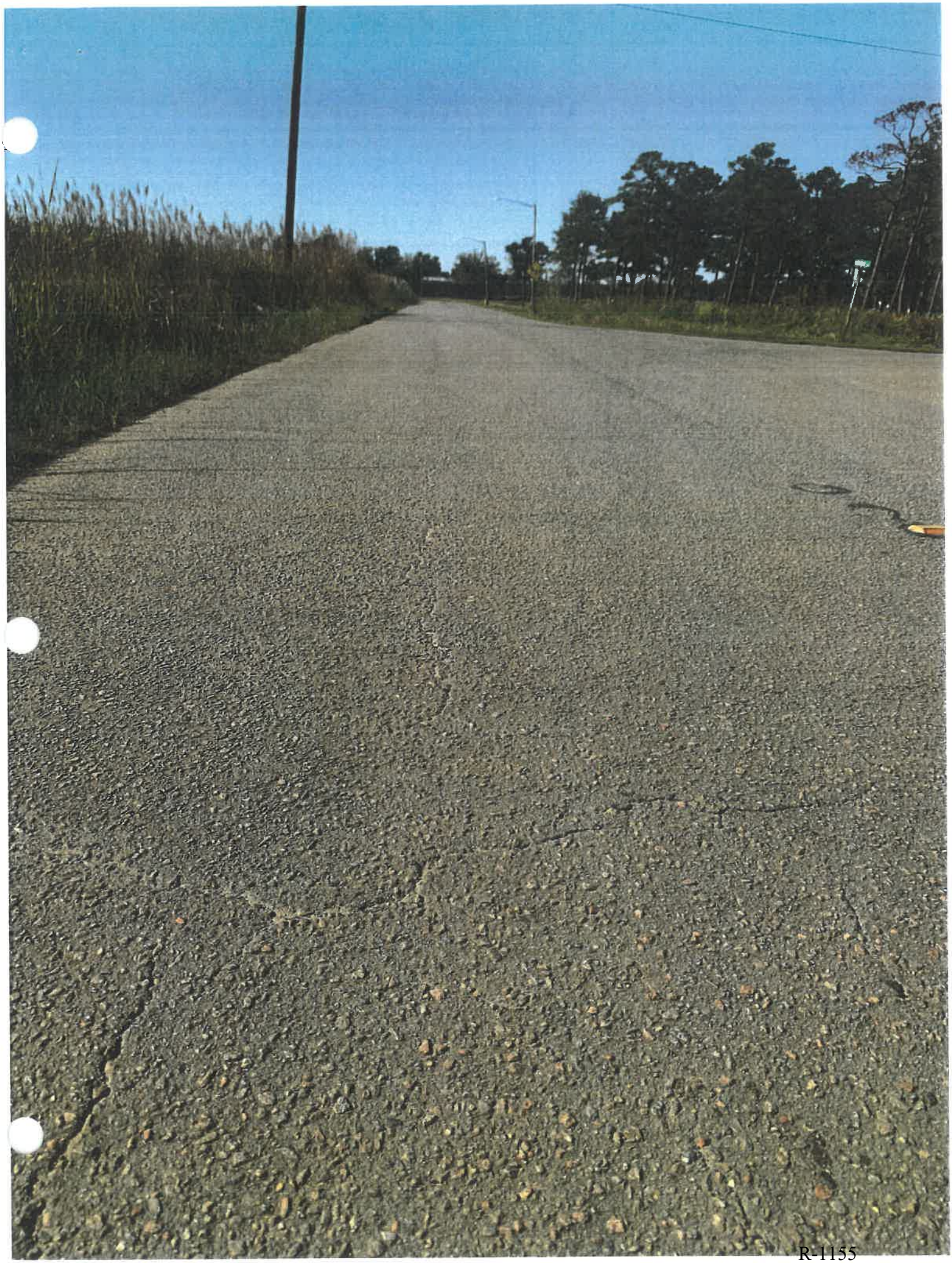




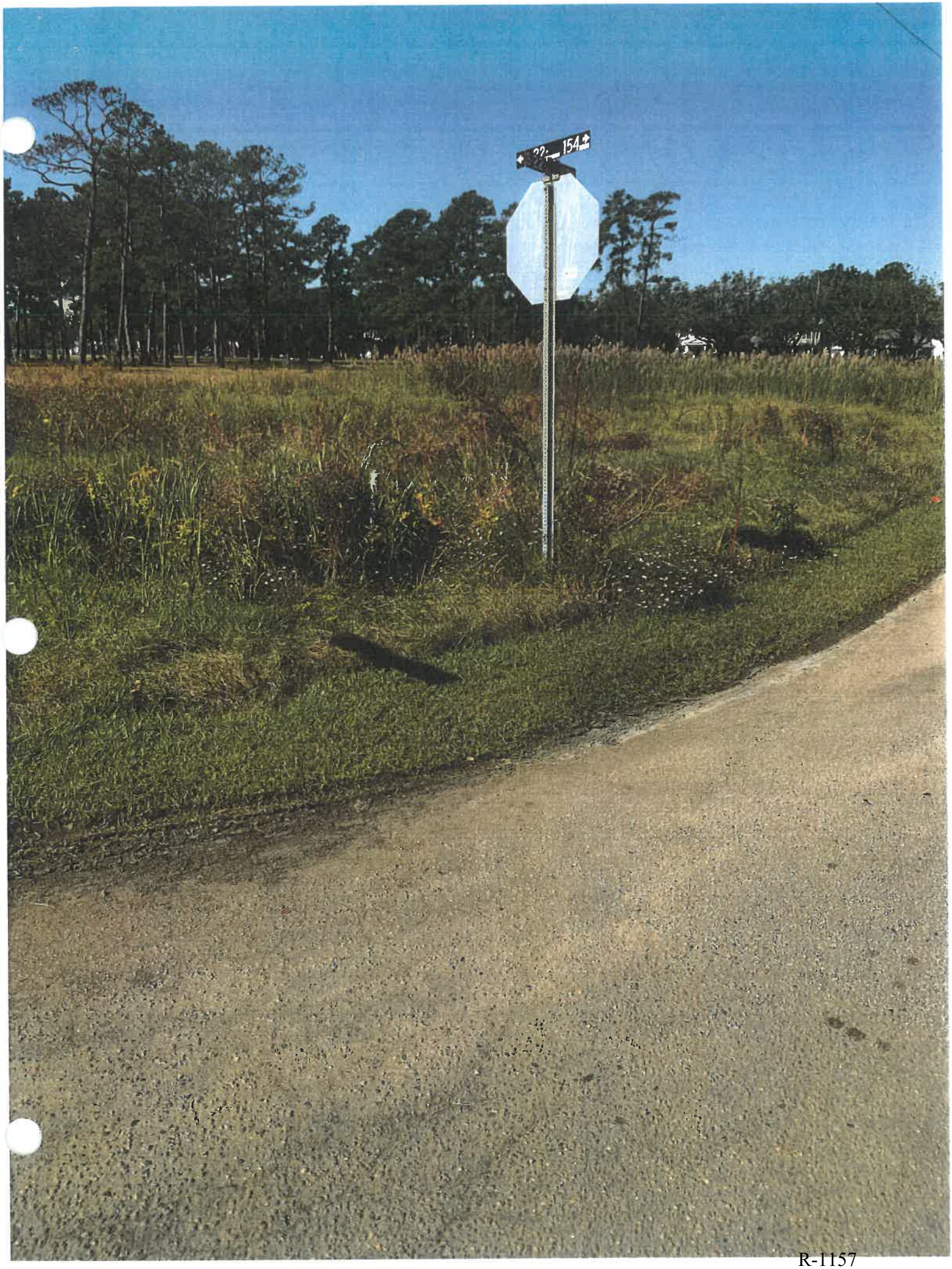
R-1152



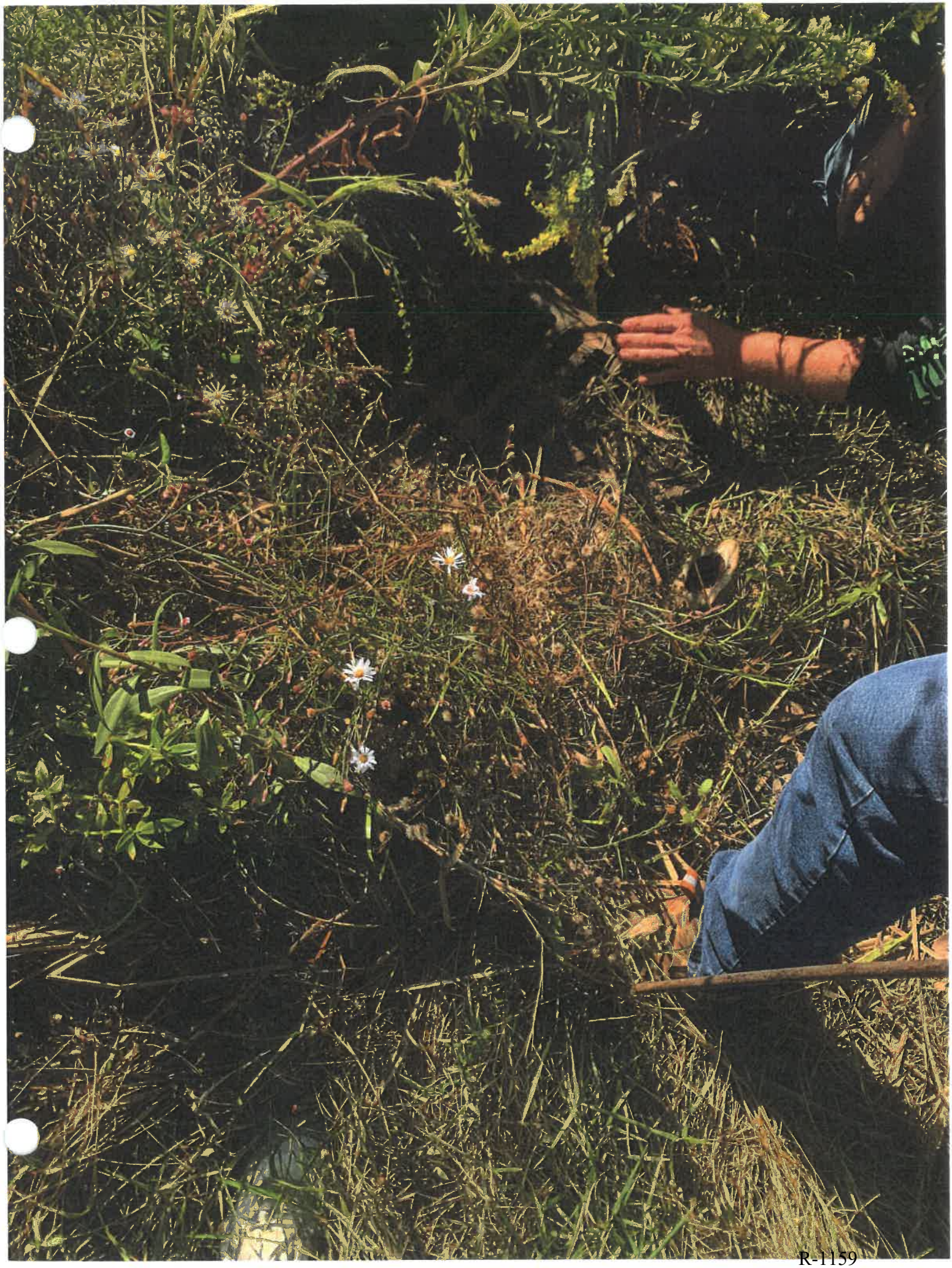






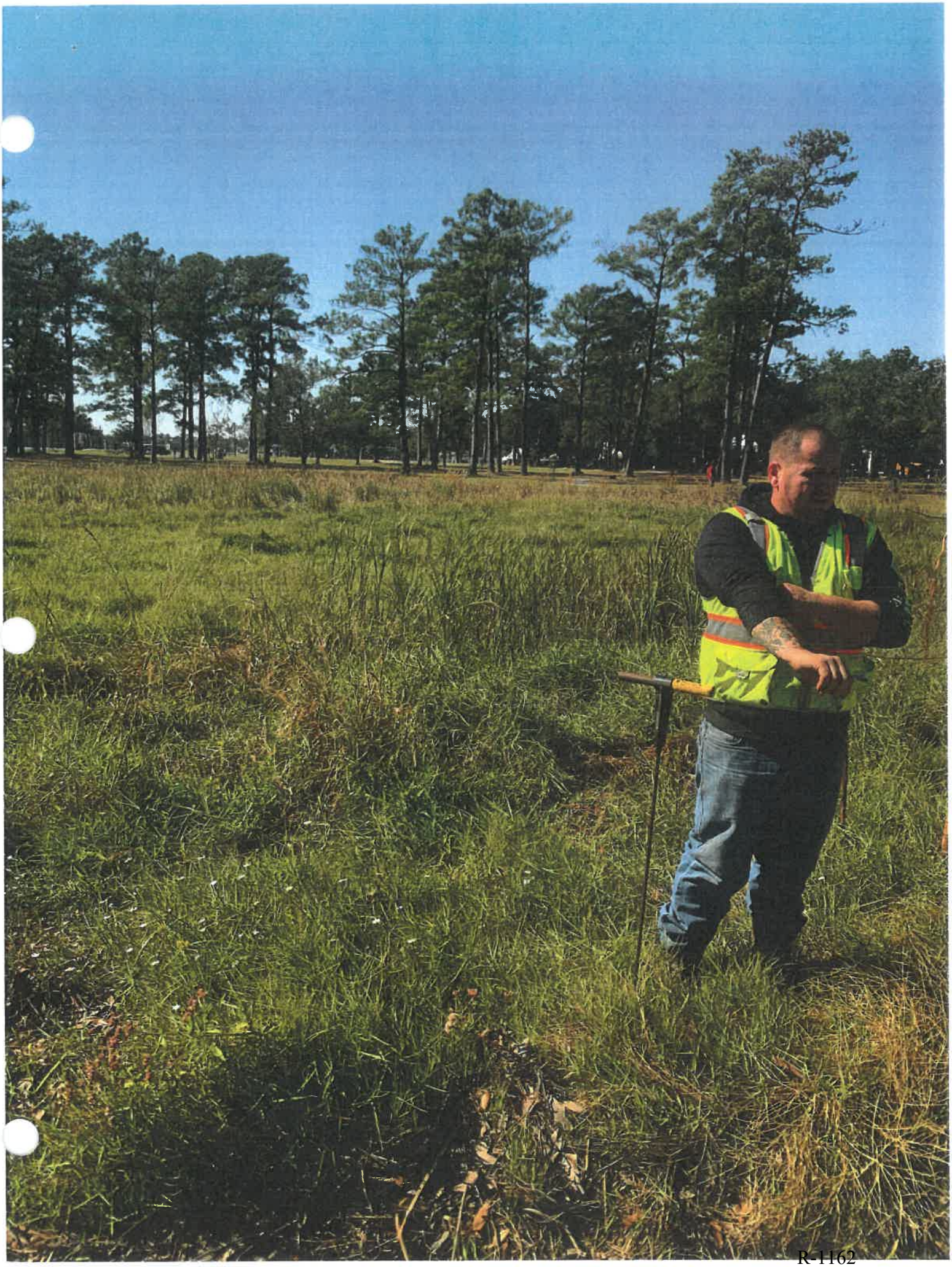

154

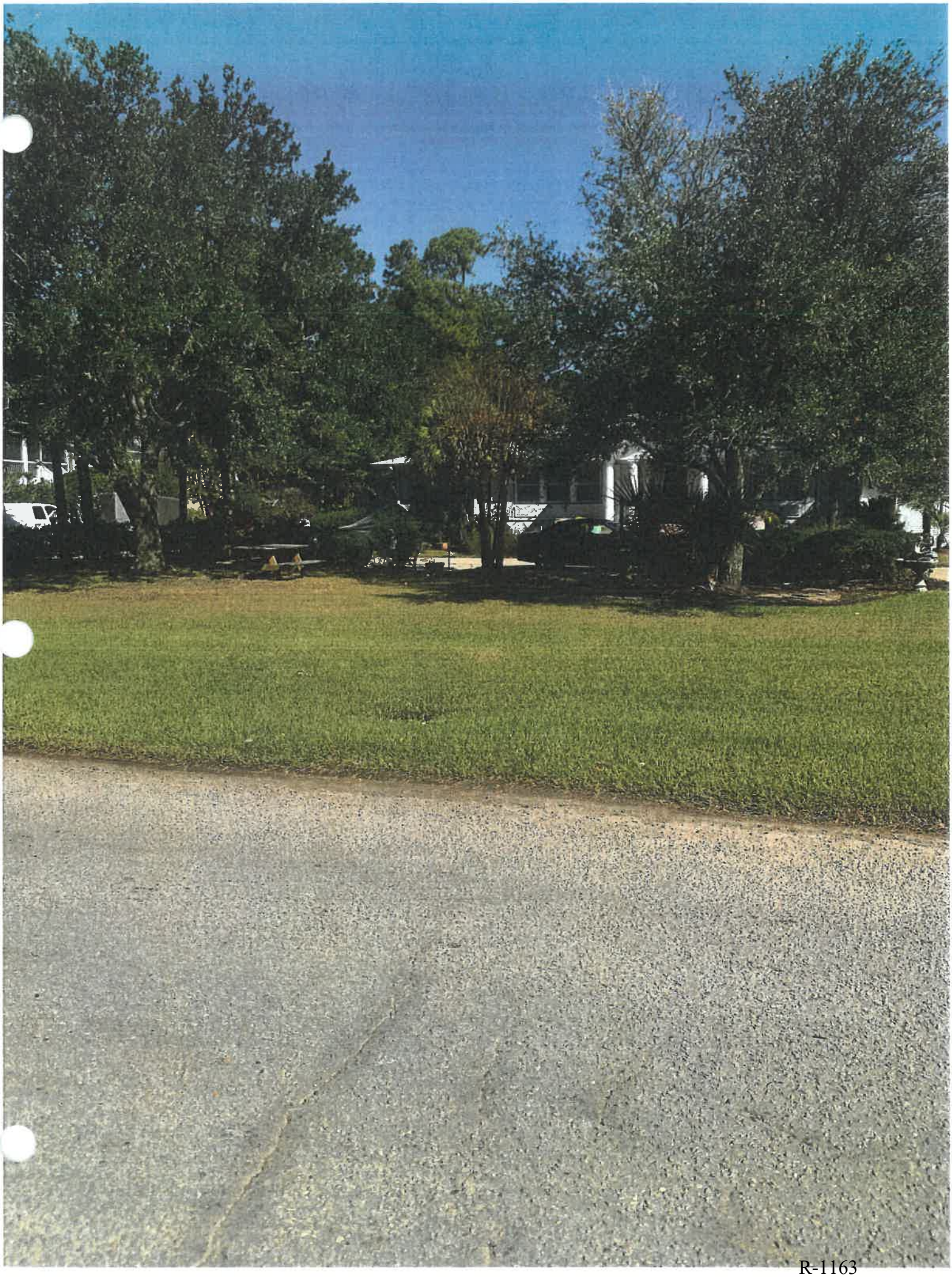












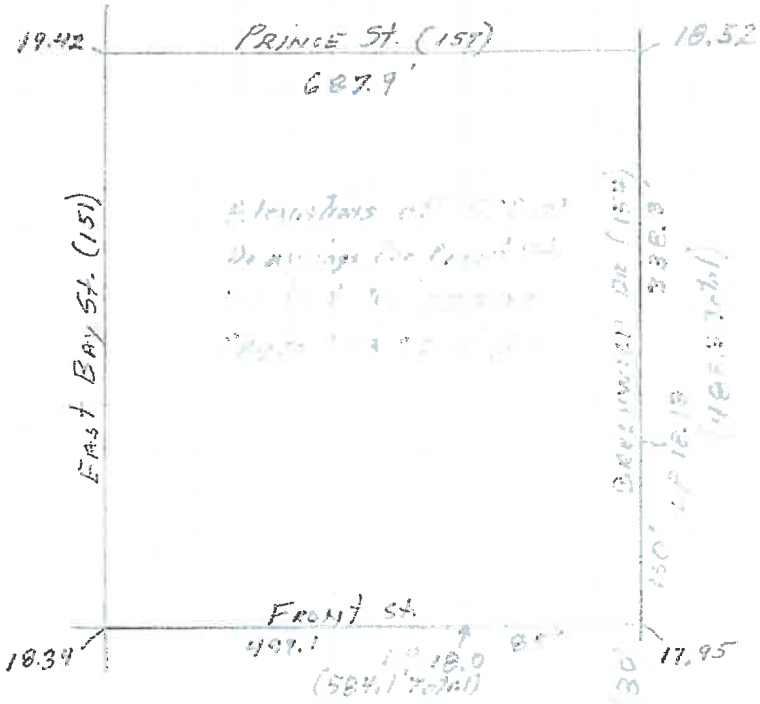


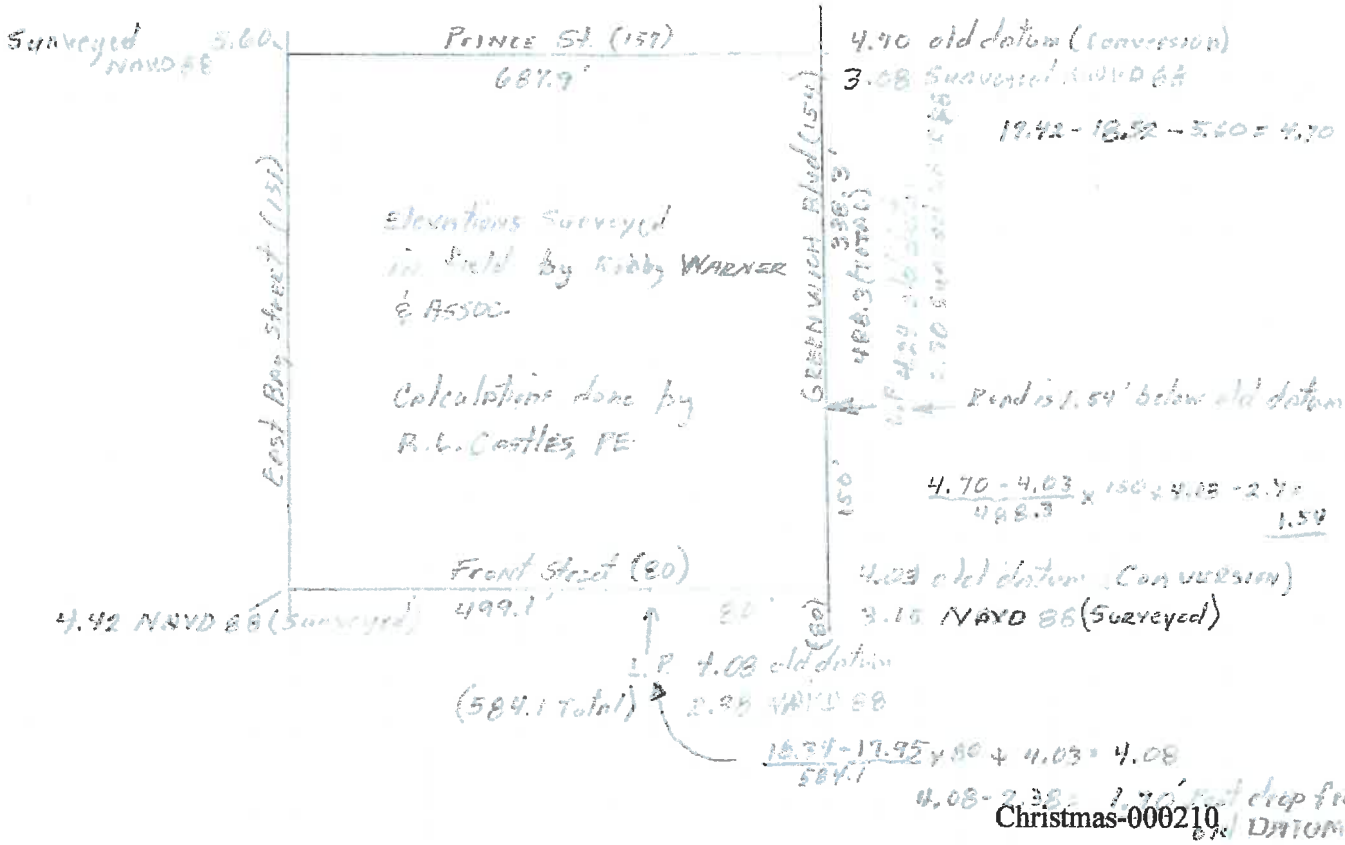


Castles Engineering

PLAINTIFF'S EXHIBIT 163 SDT 8/15/23

PROJECT Lake Cooper
DATE 12-05-22
SHEET NO. _____ OF _____
BY R L Castles





Christmas-000210

R-1166

Year 2021 High Tides Equal to or Greater than Elevation 3.15

Jan. 8	**4.18**	**Feb. 1**	**3.28**	**March 2**	**3.99**	**April 25**	**3.67**
9	3.67	7	3.46	3	3.26	26	4.08
10	3.58	12	3.44	29	3.17	27	3.15
11	3.50	13	3.34	30	3.38	27	4.11
12	3.90	14	3.18	31	3.15	28	3.85
13	3.64	27	3.35			29	3.48
14	3.51					30	3.28
15	3.52						
29	3.35						
30	3.67						
31	3.73						
May 2	**3.19**	**June 12**	**3.24**	**July 21**	**3.33**	**Aug. 8**	**3.24**
24	3.27	13	3.57	22	3.71	9	3.22
25	3.52	23	4.28	23	4.38	17	3.43
26	3.63	24	3.89	24	3.86	19	3.27
27	3.69	25	3.55	25	3.64	20	3.50
28	3.74	26	3.60	26	3.38	21	3.63
29	3.25	27	3.40	27	3.15	22	3.45
31	3.53					23	3.15
Sept. 4	**3.44**	**Oct. 4**	**3.22**	**Nov. 2**	**3.16**	**Dec. 2**	**3.39**
5	3.23	5	3.22	2	3.21	3	3.27
7	3.54	6	3.56	3	3.68	4	4.02
8	3.30	6	3.52	3	3.43	5	4.25
9	3.26	7	4.17	4	4.69	6	4.22
10	3.54	7	3.35	4	3.57	7	3.33
11	3.27	8	4.04	5	4.52	8	4.02
15	3.41	8	3.18	5	3.62	20	3.44
16	3.47	9	3.89	6	5.14	21	3.30
18	3.83	10	3.45	6	3.63	22	3.20
19	3.69	11	3.86	7	5.13	30	3.15
20	3.40	12	3.36	8	4.94	31	3.53
20	3.53	13	3.41	9	4.40		
21	3.43			10	3.69		
22	3.33			11	3.29		

PLAINTIFF'S EXHIBIT 166 8/15 SF

All Elevations are NAVD 88 Datum

3.15 is centerline elevation at Front St. & Greenwich Dr.
Low points at Greenwich Dr. are 2.70' and Front Street are 2.38'

Year 2015 High Tides Equal to or Greater than Elevation 3.15

Jan. 18	3.46	Feb. 17	3.28	March 18	3.37	April 16	3.15
21	3.58	18	4.01	18	3.53	16	3.44
22	3.89	20	3.19	19	3.70	17	3.36
22	3.18	20	3.24	19	3.93	18	3.57
23	4.37	26	3.29	20	3.73	19	4.03
23	3.86			20	3.74		
				21	3.43		
				21	3.76		
				22	3.20		
				22	3.88		
				23	3.76		
				23	4.05		

May 2	3.37	June 4	3.55	July 12	3.16	Aug. 1	3.67
6	3.24	5	3.34	13	3.61	2	3.68
7	3.62	6	3.50	14	3.29	3	3.48
8	3.59	7	3.31	17	3.35	4	3.42
9	3.21	14	3.21	27	3.26	9	3.51
10	4.15	15	3.31	28	3.47	10	3.22
14	3.49	17	3.20	29	3.97	26	3.21
15	3.44			30	3.86	27	3.48
16	3.44			31	3.84	28	3.92
17	3.16					29	3.22
20	3.32					29	3.84
						30	3.36
						30	3.79
						31	3.60
						31	3.41

All Elevations are NAVD 88 Datum

Continuation of Year 2015

Sept. 23	**3.67**	**Oct. 1**	**4.11**	**Nov. 9**	**3.47**	**Dec. 11**	**3.16**
24	3.18	2	4.53	21	3.34	13	3.22
24	4.14	3	3.99	21	3.29	14	3.29
25	3.50	3	4.85	22	3.60	23	3.64
25	4.23	4	4.43	22	3.20	24	3.32
26	3.80	4	4.84	23	3.41	25	3.30
26	4.56	5	4.42	24	3.72	26	3.38
27	4.40	5	4.76	24	3.32	27	3.34
27	5.06	6	3.64	25	3.74		
28	4.93	6	3.92	25	3.15		
28	4.89	7	3.52	26	3.99		
29	4.89	7	3.71	27	3.95		
29	4.16	10	3.17	28	3.66		
30	4.36	11	3.29	29	3.43		
30	3.60	11	3.33	30	3.34		
		12	3.29				
		24	3.23				
		24	3.77				
		25	3.87				
		25	3.71				
		26	4.13				
		26	4.32				
		27	5.16				
		27	4.49				
		28	5.17				
		28	3.63				
		29	4.25				
		30	3.83				
		31	3.65				

All Elevations are NAVD 88 Datum

Year 2018 High Tides Equal to or greater than Elevation 3.15

Jan. 1	3.57	Feb. 1	3.61	March 1	3.26	April 24	3.97
2	3.62	27	3.48	4	3.32		
3	4.26	28	3.53	4	3.42		
4	3.38			5	3.58		
5	3.21			5	3.49		
30	3.23			6	3.54		
31	3.66			6	3.26		
				7	3.67		
				19	3.24		
				26	3.32		

May 16	3.16	June 12	3.96	July 9	3.26	August 8	3.88
17	3.25	14	3.47	10	3.65	12	3.54
18	3.62	16	3.84	11	3.57	13	3.19
19	3.19	17	3.33	13	3.69	14	3.21
				14	4.06	24	3.47
				15	3.97		
				16	3.64		
				17	3.23		

Sept. 5	3.20	Oct. 5	3.21	Nov. 4	3.42	Dec. 5	3.46
6	3.37	6	3.61	5	3.33	6	3.25
7	3.55	7	3.23	6	3.32	8	3.22
8	3.91	7	3.86	7	3.16	9	4.89
9	3.33	8	3.37	8	3.41	10	3.30
10	4.24	9	3.95	9	3.64	21	3.96
10	3.71	9	3.97	11	3.18	23	3.19
11	3.97	10	3.96	22	3.32	25	3.54
11	3.94	10	4.11	23	4.67	26	3.26
12	3.82	11	4.24	24	3.71		
12	3.97	25	3.25	24	5.27		
13	3.47	26	3.73	25	4.15		
13	3.33			26	4.08		
15	4.27			27	3.88		
16	3.19						
16	3.65						
26	3.21						
30	3.59						

All Elevations are NAVD 88 Datum

Summation of Tides

Elevation	Number of Tides Over Elevation		
	2015	2018	2021
3.15	137	95	114
3.50	73	49	55
3.75	47	27	24
4.00	28	11	17
4.50	11	3	6
5.00	3	1	2

3.15 is at Intersection of Front St. & Greenwich Dr.
All Elevations are based on NAVD 88



22. Looking east across southern portion of pool deck and pool.



23. Looking east toward gazebo on southwestern portion of pool deck.

PLAINTIFF'S EXHIBIT 176 8/14/23



24. Looking north across pool deck and pool.



25. Looking north from gazebo toward pergola.



47. Shoulder drop off and ponding along northern perimeter of Front Street, south of inlet shown in Photo 49.

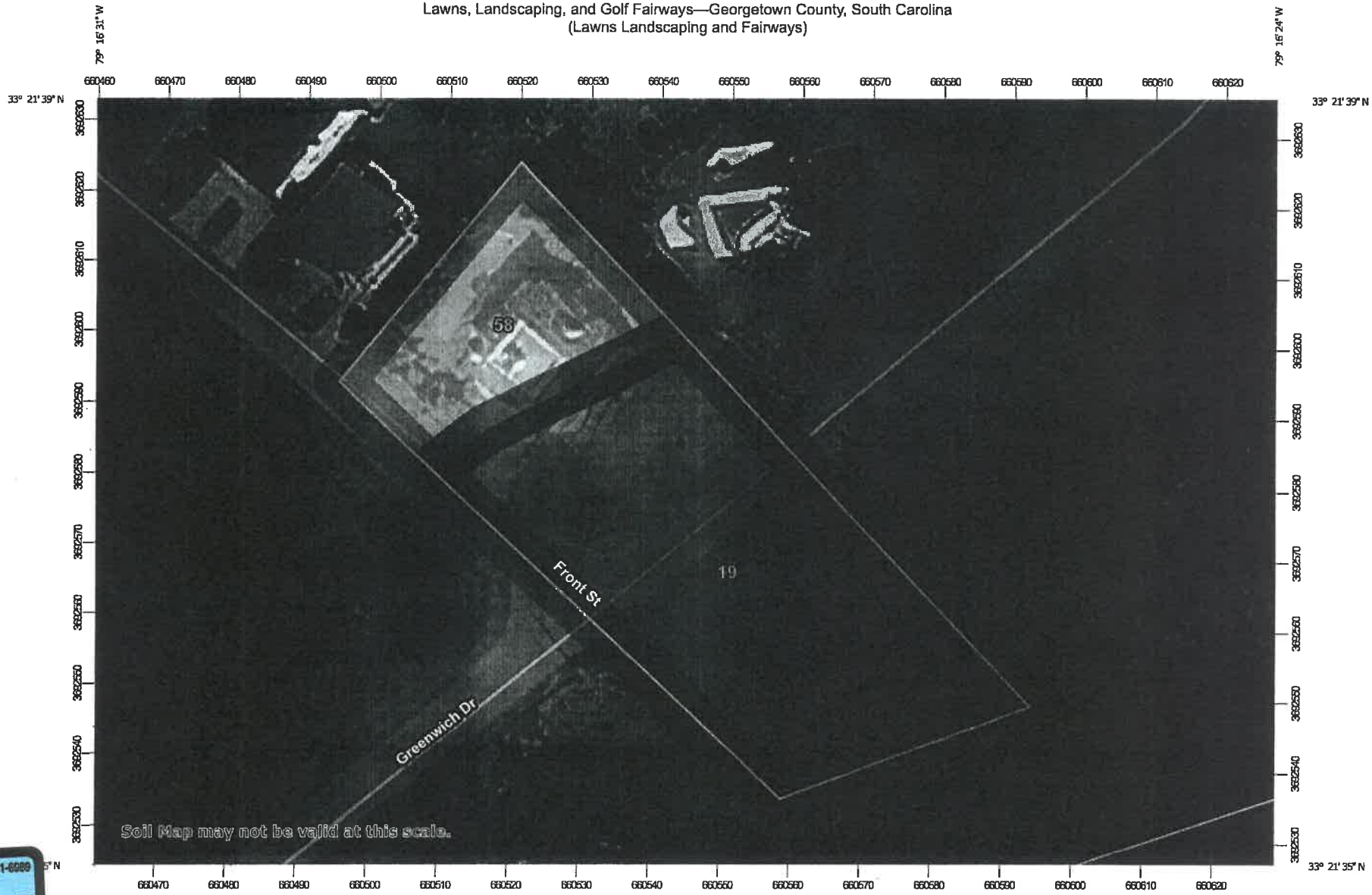


48. Shoulder drop off, edge cracking and ponding along northern perimeter of Front Street and east of driveway.


ST JAMES
MEETING ST
HOWARD ST
FRONT ST
BAY ST
SMITH ST
E BAY ST
HIGHMARKET ST
BOLICK ST
PRINCE ST
GREENWICH DR
DEFENDANT'S EXHIBIT
8/10/23
PENDAD 800-631-6989
Legend
SW Pipes
SW Manholes
Ditch
Swale
Christmas-000162



Christmas-000163



Map Scale: 1:766 if printed on A landscape (11" x 8.5") sheet.

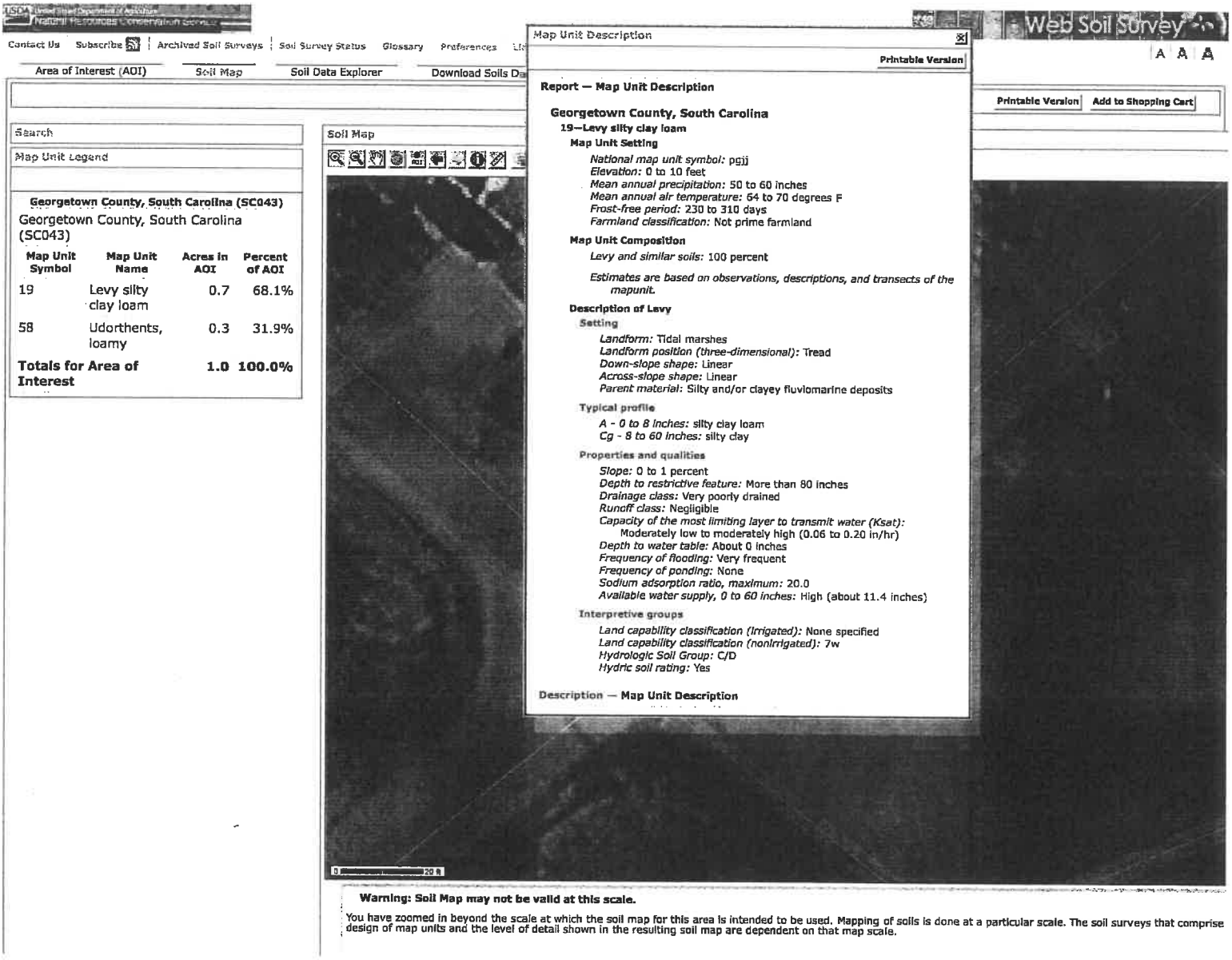
N

Meters: 0 10 20 40 60

Feet: 0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

PENGAD 800-631-6989
DEFENDANT'S EXHIBIT 7 8/11/23 SD1


Web Soil Survey
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Glossary
Preferences
Area of Interest (AOI)
Soil Map
Soil Data Explorer
Download Soils Da
Printable Version
Add to Shopping Cart
Search
Map Unit Legend
Georgetown County, South Carolina (SC043)
Georgetown County, South Carolina (SC043)
Map Unit Symbol
Map Unit Name
Acres in AOI
Percent of AOI
19
Levy silty clay loam
0.7
68.1%
58
Udorthents, loamy
0.3
31.9%
Totals for Area of Interest
1.0
100.0%
Soil Map
Map Unit Description
Printable Version
Report — Map Unit Description
Georgetown County, South Carolina
19—Levy silty clay loam
Map Unit Setting
National map unit symbol: pgjj
Elevation: 0 to 10 feet
Mean annual precipitation: 50 to 60 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 230 to 310 days
Farmland classification: Not prime farmland
Map Unit Composition
Levy and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Levy
Setting
Landform: Tidal marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty and/or clayey fluvio marine deposits
Typical profile
A - 0 to 8 inches: silty clay loam
Cg - 8 to 60 inches: silty clay
Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: High (about 11.4 inches)
Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes
Description — Map Unit Description
Warning: Soil Map may not be valid at this scale.
You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Mapping of soils is done at a particular scale. The soil surveys that comprise design of map units and the level of detail shown in the resulting soil map are dependent on that map scale.

DocuSign Envelope ID: 20AA5843-9D63-47B4-9363-A2BF72DC13BB

PENGAD 800-631-6989
DEFENDANT'S EXHIBIT 3 SBT
8/16/23



47. Shoulder drop off and ponding along northern perimeter of Front Street, south of inlet shown in Photo 49.



48. Shoulder drop off, edge cracking and ponding along northern perimeter of Front Street and east of driveway.

DEFENDANT'S EXHIBIT 4 SBT 8/16/23

City of Georgetown

GEORGETOWN, SOUTH CAROLINA

BUILDING PERMIT

1

Applicant to complete numbered spaces only.

JOB ADDRESS
Corner of Front St. & Greenwich Drive Tax Map # 5-33-125

1 LEGAL DESCR — Map No. [redacted] Parcel No. [redacted] DATE OF APPLICATION 05-05-04 PLOT PLAN YES ☐ NO ☐ BUILDING PLANS YES ☐ NO ☐

OWNER — MAIL ADDRESS — ZIP — PHONE

2 Debbie & Ron Christmas

CONTRACTOR — MAIL ADDRESS — PHONE

3 England Construction Company Inc. 843-651-7024 018366 State License No.

BUSINESS LICENSE NO

4

ARCHITECT OR DESIGNER — MAIL ADDRESS — PHONE — REGISTRATION NO.

5 David Graham P.O. Box 888 Pawleys Island, S.C. 29585 237-3986

ENGINEER — MAIL ADDRESS — PHONE — REGISTRATION NO.

6 Knight Engineering P.O. Box 14266 Surfside Beach, S.C. 238-4840

USE OF BUILDING

7 Single Family Residence

8 Class of work: ☒ NEW ☐ ADDITION ☐ ALTERATION ☐ REPAIR ☐ MOVE ☐ REMOVE

9 Describe work: Two story single family Residence.

Fire Impact Fee: $2200—

JOB ADDRESS: Lot 1 Greenwich Estates

OWNER

10 Valuation of work: $ $550,000.00

SPECIAL CONDITIONS:

Permit No. 04052 PERMIT FEE $1760.00

Type of Const. wood frame | Occupancy Group single | Flood Zone AE/10

Size of Bldg. (Total) Sq. Ft. 4224 heated | No. of Stories 2 | Use Zone R1

Final Inspection
Approval For Occupancy/Use

APPLICATION ACCEPTED BY | PLANS CHECKED BY | APPROVED FOR ISSUANCE BY

No. of Dwelling Units 1

OFFSTREET PARKING SPACES:

Special Approvals	Required	Received	Not Required
ZONING			
HEALTH DEPT.			
FIRE DEPT.			
SOIL REPORT			
OTHER (Specify)			

NOTICE

This application shall become the BUILDING PERMIT when approved by the Building Inspector. The permit issued shall be construed to be a license to proceed with the work and shall not be construed as authority to violate, alter or set aside any of the provisions of the Building Code or Zoning Ordinance, nor shall such issuance of the Permit prevent the Building Official from hereafter requiring a correction of error in plans or in construction of or violations of the Building Code or Zoning Ordinance. This Permit shall become invalid unless the work authorized is commenced within six (6) months after its issuance and work is completed within 18 months after its issuance. IT IS THE RESPONSIBILITY OF THE APPLICANT TO SCHEDULE ALL REQUIRED INSPECTIONS.

I hereby certify that I have read and examined this application and know the same to be true and correct. All provisions of Laws and Ordinances governing this type of work will be complied with.

Roger D. England

SIGNATURE OF CONTRACTOR OR AUTHORIZED AGENT (DATE)

SIGNATURE OF OWNER (IF OWNER BUILDER) (DATE)

City-00035

R-1180

DEFENDANT'S EXHIBIT 5 SBT 8/16/23

FEDERAL EMERGENCY MANAGEMENT AGENCY
NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1 - 7.

SECTION A - PROPERTY OWNER INFORMATION

BUILDING OWNER'S NAME DEBBIE & RON CHRISTMAS	For Insurance Company Use:
BUILDING STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. No.) OR P.O. ROUTE AND BOX NO. 101 GREENWICH DRIVE	Policy Number
CITY GEORGETOWN STATE S.C. ZIP CODE 29440	Company NAIC Number

PROPERTY DESCRIPTION (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)
0.33 AC. @ CORNER OF FRONT ST. & GREENWICH DRIVE (T.M. 5-33-125)

BUILDING USE (e.g., Residential, Non-residential, Addition, Accessory, etc. Use a Comments area, if necessary.)
RESIDENTIAL

LATITUDE/LONGITUDE (OPTIONAL) (##° - ##' - ##.##" or ##.######°) HORIZONTAL DATUM: ☐ NAD 1927 ☐ NAD 1983 SOURCE: ☐ GPS (Type): ☐ USGS Quad Map ☐ Other

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP COMMUNITY NAME & COMMUNITY NUMBER	B2. COUNTY NAME	B3. STATE
CITY of GEORGETOWN 450087	GEORGETOWN	S.C.

B4. MAP AND PANEL NUMBER	B5. SUFFIX	B6. FIRM INDEX DATE	B7. FIRM PANEL EFFECTIVE/REVISED DATE	B8. FLOOD ZONE(S)	B9. BASE FLOOD ELEVATION(S) (Zone AO, use depth of flooding)
450087 0002	D	→	3/16/89	AE	10.0

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in B9.
☐ FIS Profile ☑ FIRM ☐ Community Determined ☐ Other (Describe):

B11. Indicate the elevation datum used for the BFE in B9: ☑ NGVD 1929 ☐ NAVD 1988 ☐ Other (Describe):

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☑ No
Designation Date:

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☑ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Building Diagram Number 5 (Select the building diagram most similar to the building for which this certificate is being completed - see pages 6 and 7. If no diagram accurately represents the building, provide a skatch or photograph.)

C3. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO
Complete items C3.a-i below according to the building diagram specified in Item C2. State the datum used. If the datum is different from the datum used for the BFE in Section B, convert the datum to that used for the BFE. Show field measurements and datum conversion calculation. Use the space provided or the Comments area of Section D or Section G, as appropriate, to document the datum conversion.
Datum NGVD 29 Conversion/Comments
Elevation reference mark used Does the elevation reference mark used appear on the FIRM? ☑ Yes ☐ No

☐ a) Top of bottom floor (including basement or enclosure)	6.1 ft.
☐ b) Top of next higher floor	15.5 ft.
☐ c) Bottom of lowest horizontal structural member (V zones only)	N/A ft.
☐ d) Attached garage (top of slab)	6.1 ft.
☐ e) Lowest elevation of machinery and/or equipment servicing the building (Describe in a Comments area.)	16.7 ft.
☐ f) Lowest adjacent (finished) grade (LAG)	5.4 ft.
☐ g) Highest adjacent (finished) grade (HAG)	5.6 ft.
☐ h) No. of permanent openings (flood vents) within 1 ft. above adjacent grade	7
☐ i) Total area of all permanent openings (flood vents) in C3.h	23,433 sq. in.

License Number, Embossed Seal, Signature, and Date

Wendell Powers
S.C. #5303
7/18/05

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information.
I certify that the information in Sections A, B, and C on this certificate represents my best efforts to interpret the data available.
I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

CERTIFIER'S NAME Wendell C. Powers		LICENSE NUMBER S.C. #5303	
TITLE Land Surveyor	COMPANY NAME Powers & Associates		
ADDRESS 606-B Front Street	CITY Georgetown	STATE S.C.	ZIP CODE 29440
SIGNATURE Wendell Powers	DATE 7/18/05	TELEPHONE 843-344-0867	

IMPORTANT: In these spaces, copy the corresponding information from Section A.	For Insurance Company Use:
BUILDING STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. No.) OR P.O. ROUTE AND BOX NO. 101 Greenwich Drive	Policy Number
CITY Georgetown STATE S.C. ZIP CODE 29440	Company NAIC Number

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

Copy both sides of this Elevation Certificate for (1) community official, (2) insurance agent/company, and (3) building owner.

COMMENTS C3-e = A.C. Pad
C3-h = Louvered Vents on Ground Level Enclosure

|__| Check here if attachments

SECTION E - BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zone AO and Zone A (without BFE), complete Items E1. through E5. If the Elevation Certificate is intended for use as supporting information for a LOMA or LOMR-F, Section C must be completed.

E1. Building Diagram Number _____ (Select the building diagram most similar to the building for which this certificate is being completed – see pages 6 and 7. If no diagram accurately represents the building, provide a sketch or photograph.)

E2. The top of the bottom floor (including basement or enclosure) of the building is |__|__| ft. (m) |__|__| in. (cm) |__| above or |__| below (check one) the highest adjacent grade. (Use natural grade, if available.)

E3. For Building Diagrams 6-8 with openings (see page 7), the next higher floor or elevated floor (elevation b) of the building is |__|__| ft. (m) |__|__| in. (cm) above the highest adjacent grade. Complete Items C3.h and C3.i on front of form.

E4. The top of the platform of machinery and/or equipment servicing the building is |__|__| ft. (m) |__|__| in. (cm) |__| above or |__| below (check one) the highest adjacent grade. (Use natural grade, if available.)

E5. For Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? |__| Yes |__| No |__| Unknown. The local official must certify this information in Section G.

SECTION F - PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, C (Items C3.h and C3.i only), and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. *The statements in Sections A, B, C, and E are correct to the best of my knowledge.*

PROPERTY OWNER'S OR OWNER'S AUTHORIZED REPRESENTATIVE'S NAME

ADDRESS CITY STATE ZIP CODE

SIGNATURE DATE TELEPHONE

COMMENTS

|__| Check here if attachments

SECTION G - COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below.

G1. |__| The information in Section C was taken from other documentation that has been signed and embossed by a licensed surveyor, engineer, or architect who is authorized by state or local law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. |__| A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. |__| The following information (Items G4-G9) is provided for community floodplain management purposes.

G4. PERMIT NUMBER	G5. DATE PERMIT ISSUED	G6. DATE CERTIFICATE OF COMPLIANCE/OCCUPANCY ISSUED

G7. This permit has been issued for: |__| New Construction |__| Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building is: _____.__ ft. (m) Datum: _____

G9. BFE or (in Zone AO) depth of flooding at the building site is: _____.__ ft. (m) Datum: _____

LOCAL OFFICIAL'S NAME TITLE

COMMUNITY NAME TELEPHONE

SIGNATURE DATE

COMMENTS

|__| Check here if attachments

000007386 02:52:23PM
RECORDED 04/17/2003
Bk:01373 Pg:00215 Pages:5
Fee:11.00 State:507.00
County:214.50
Georgetown County, SC
Register of Deeds

STATE OF SOUTH CAROLINA)
)
COUNTY OF GEORGETOWN)

GENERAL WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, that we, **Louis H. Hutto, Jr., Doris H. Wehmeyer, and Ronnie B. Hutto (hereinafter referred to as "Grantors")** in the State aforesaid, for and in consideration of the sum of ***One Hundred Ninety-five Thousand and NO/100THS ($195,000.00) Dollars,*** actual consideration to the Grantor in hand paid at and before the sealing of these presents by **C. Ronald Christmas,** (hereinafter "Grantee") the receipt whereof is hereby acknowledged, have granted, bargained, sold and released, and by these presents do grant, bargain, sell and release unto the said **C. Ronald Christmas,** his heirs and assigns forever, the following described real property, to wit:

SEE SCHEDULE "A" ATTACHED HERETO

TOGETHER with all and singular, the Rights, Members, Hereditaments and Appurtenances to the said Premises belonging, or in anywise incident or appertaining.

TO HAVE AND TO HOLD, all and singular, the said Premises before mentioned unto the said **C. Ronald Christmas,** his Heirs and Assigns forever, in fee simple.

T.M.S. No: 5-33-125
and
T.M.S. No: 5-35-30

AND we do hereby bind ourselves and our Heirs, Assigns, Executors and Administrators, to warrant and forever defend, all and singular, the said Premises unto the said Grantee as

GEORGETOWN COUNTY PARCEL # 5-33-125
5-35-30 PTP



hereinabove provided, against ourselves and our Heirs, and all persons whomsoever lawfully claiming, or to claim the same or any part thereof.

WITNESS our Hands and Seals this 16 day of April, 2003.

SIGNED, SEALED AND DELIVERED IN THE PRESENCE OF:

(L.S.)
LOUIS H. HUTTO, JR.

(L.S.)
DORIS H. WEHMEYER

(L.S.)
RONNIE B. HUTTO

Grantee's Address: 1473 Basin Terrace
Garden City, SC 29576

STATE OF SOUTH CAROLINA)
) **ACKNOWLEDGMENT**
COUNTY OF GEORGETOWN)

THE FOREGOING instrument was acknowledged before me this 16 day of April, 2003.

(SEAL)

Notary Public for South Carolina
My Commission Expires: 10-30-2005

SCHEDULE A
PROPERTY DESCRIPTION

TMS # 5-33-125

ALL that certain piece, parcel or lot of land situate, lying and being in the City and County of Georgetown, State of South Carolina shown as ".33 acres", on a map entitled "PLAT OF TWO LOTS AT THE INTERSECTION OF FRONT STREET AND GREENWICH DRIVE, CITY OF GEORGETOWN, TO BE CONVEYED TO DEBBIE AND RON CHRISTMAS", dated September 6, 2001, prepared by Powers and Associates, Surveyors, Inc., and recorded in the Office of the Register of Deeds for Georgetown County on Slide _____ at Page _____, a copy of this map being expressly incorporated herein by reference and, pro tanto, made a part of parcel hereof. Said lot butting and bounding as follows: On the Northwest by land of Jeanette T. Ard; on the Northeast by land of Robert H. O'Donnell; on the Southeast by Greenwich Drive; and on the Southwest by Front Street, all of which will more fully appear by reference to the aforesaid plat.

SUBJECT TO a five foot (5') wide permanent easement as defined in that certain Order of Settlement and Order of Dismissal with Prejudice for Case No. 2001 CP 22 742 filed April 15, 2003 in the Court of Common Please for the Fifteenth Judicial Circuit and a further identified and delineated in that certain Easement Agreement dated April 17, 2003 and recorded simultaneously herewith in the Office of the Register of Deeds for Georgetown County in Deed Book 1373 at Page 220

THIS being the same property conveyed to Louis H. Hutto, Jr., Doris Ray H. Wehmeyer and Ronnie B. Hutto by the Last Will and Testament of Louis H. Hutto as filed in the Probate Court for Georgetown County and indexed in File No. 86-ES-22-188 and by the Last Will and Testament of A. Scott Hutto as filed in the office of the Probate Court for Georgetown County and indexed in File No.: 87-ES-22-107.

AND ALSO

TMS # 5-35-30

ALL that certain piece, parcel or lot of land situate, lying and being in the City and County of Georgetown, State of South Carolina shown as ".71 acres", on a map entitled "PLAT OF TWO LOTS AT THE INTERSECTION OF FRONT STREET AND GREENWICH DRIVE, CITY OF GEORGETOWN, TO BE CONVEYED TO DEBBIE AND RON CHRISTMAS", dated September 6, 2001, prepared by Powers and Associates, Surveyors, Inc., and recorded in the Office of the Register of Deeds for Georgetown County on Slide _____ at Page _____, a copy of this map being expressly incorporated herein by reference and, pro tanto, made a part of parcel hereof. Said lot butting and bounding as follows: On the Northwest by Greenwich drive; on the Northeast by land of Robert H. O'Donnell; on the Southeast by Winyah Bay; and on the Southwest by land of the City of Georgetown, all of which will more fully appear by reference to the aforesaid plat.

THIS being the same property conveyed to Louis H. Hutto, Jr., Doris Ray H. Wehmeyer and Ronnie B. Hutto by the Last Will and Testament of Louis H. Hutto as filed in the Probate Court for Georgetown County and indexed in File No. 86-ES-22-188 and by the Last Will and Testament of A. Scott Hutto as filed in the office of the Probate Court for Georgetown County and indexed in File No.: 87-ES-22-107.

PLAT NOT RECORDED WITH
INSTRUMENT

STATE OF SOUTH CAROLINA)
)
COUNTY OF GEORGETOWN)

AFFIDAVIT OF TRUE CONSIDERATION

PERSONALLY appeared before me, the undersigned, who, on oath deposes and says:

Property located at Corner of Front and Greenwich Streets, city of Georgetown, Georgetown County, South Carolina bearing Georgetown County Tax Numbers 5-33-125 and 5-35-30, was transferred by Louis H. Hutto, Jr., Doris H. Wehmeyer and Ronnie B. Hutto to C. Ronald Christmas on the 16 day of April, 2003.

The transaction was (check one)

X An arm's length transaction and the sales price paid or to be paid, in money or money's worth was $ 195,000.00.*

___ Not an Arm's Length transaction and the fair market value of the property is $_____.

The above transaction is exempt, or partially exempt form documentary stamps as set forth in S.C. Code Ann. Section 12-24-10 et. seq. because the deed is: _____.

As required by Code Section 12-24-70, I state that I am a responsible person who was connected with the transaction as: Attorney for Sellers.

I further understand that a person required to furnish this affidavit who willfully furnishes a false or fraudulent affidavit is guilty of a misdemeanor and, upon conviction, must be fined not more than $1,000.00 dollars or imprisoned for not more than one year, or both.

Purchaser, Legal Representative of Purchaser, or
Other responsible person connected to transaction

SWORN to before me this
16 day of April, 2003
Heather McCarter (SEAL)
Notary Public for South Carolina
My Commission Expires: 10/5/2010

* The fee is based on the real property's value. Value means the realty's fair market value. In arm's length real property transactions, this value is the sales price to be paid in money or money's worth (stocks, personal property, other realty, forgiveness of debt, mortgage assumed or placed on the realty as a result of the transaction). However, a deduction is allowed from this value for the amount of any lien or encumbrance existing on land, tenement, or realty before the transfer and remaining on it after the transfer.

000007386 04/17/2003 B01373 P00219

35877 O'Donnell

000007386 02:52:08PM
RECORDED 04/17/2003
Bk:01373 Ps:00215 Pages:5
Fee:11.00 State:507.00
County:214.50
Georgetown County, SC
Register of Deeds
Wanda J. Gresette

Louis H. Hutto, Jr
Doris H. Wehmeyer
Ronnie B. Hutto

to

C. Ronald Christmas

.33ac + .71ac City

RECORDED ON THE 24th DAY
OF April A.D. 20 03
Edward J. Freeman
AUDITOR, GEORGETOWN CO., SC

City 00545

Instrument Book Page
202000004209 3756 94

0.33 Acre 0.71 TDS
Ac City

Grantee's Address:
1473 BASIN TERRACE
GARDEN CITY, SC 29576

202000004209 EXEMPT
Filed for Record in
GEORGETOWN SC
MARLENE MCCONNELL, REGISTER OF DEEDS
04-29-2020 At 12:35:26 pm.
DEED 15.00
STATE TAX .00
COUNTY TAX .00
Book 3756 Page 94 - 97

STATE OF SOUTH CAROLINA)
)
COUNTY OF GEORGETOWN)

TITLE TO REAL ESTATE

KNOW ALL MEN BY THESE PRESENTS, That I, **C. RONALD CHRISTMAS,** in the State aforesaid, for and in consideration of **FIVE AND 00/100THS ($5.00) Dollars** to me in hand received at and before the sealing of these presents by **DEBORAH S. CHRISTMAS,** in the State aforesaid, the receipt of which is hereby acknowledged, have granted, bargained, sold and released, and by these Presents do grant, bargain, sell and release unto the said **C. RONALD CHRISTMAS AND DEBORAH S. CHRISTMAS, as Joint Tenants, with the Right-of-Survivorship, and not as Tenants-in-Common,** their heirs and assigns, forever, the following described real property, to wit:

ALL THOSE CERTAIN PIECES, PARCELS OR LOTS OF LAND SITUATE, LYING AND BEING IN THE CITY AND COUNTY OF GEORGETOWN, STATE OF SOUTH CAROLINA, SHOWN AS ".33 ACRE AND .71 ACRE" ON A MAP ENTITLED "PLAT OF TWO LOTS AT THE INTERSECTION OF FRONT AND GREENWICH DRIVE, CITY OF GEORGETOWN, TO BE CONVEYED TO DEBBIE AND RON CHRISTMAS" DATED SEPTEMBER 6, 2001, PREPARED BY POWERS AND ASSOCIATES, SURVEYORS, INC., AND RECORDED ON AUGUST 5, 2004 IN PLAT BOOK/SLIDE 512 AT PAGE 10A IN THE OFFICE OF THE REGISTER OF DEEDS FOR GEORGETOWN COUNTY, A COPY OF THIS MAP BEING EXPRESSLY INCORPORATED HEREIN BY REFERENCE, AND, PRO TANTO, MADE A PART AND PARCEL HEREOF.

THIS BEING THE SAME PREMISES CONVEYED UNTO C. RONALD CHRISTMAS BY DEED OF LOUIS H. HUTTO, JR., DORIS H. WEHMYER AND RONNIE B. HUTTO DATED APRIL 16, 2003 AND RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR GEORGETOWN COUNTY ON APRIL 17, 2003 IN DEED BOOK 1373 AT PAGE 215.

TMS #: 05-0033-125-00-00 & 05-0035-030-00-00

TOGETHER with all and singular, the Rights, Members, Hereditaments and Appurtenances to the said Premises belonging, or in anywise incident or appertaining.

TO HAVE AND TO HOLD, all and singular, the Premises before mentioned unto the said **C. RONALD CHRISTMAS AND DEBORAH S. CHRISTMAS, as Joint Tenants, with the Right-of-Survivorship, and not as Tenants-in-Common, their heirs and assigns, forever.**

GEORGETOWN COUNTY PARCEL
#05-0033-125-00-00
05-0035



AND I do hereby bind myself and my heirs, Executors and Administrators, to warrant and forever defend, all and singular, the said Premises unto the said **C. RONALD CHRISTMAS AND DEBORAH S. CHRISTMAS, as Joint Tenants, with the Right-of-Survivorship, and not as Tenants-in-Common, their heirs and assigns, forever**, against me and my Heirs and Assigns, and all persons whomsoever lawfully claiming, or to claim the same or any part thereof.

WITNESS my Hand and Seal, this 24 day of April, 2020.

SIGNED, SEALED AND DELIVERED IN THE PRESENCE OF:

Witness

C. Ronald Christmas
C. Ronald Christmas

Notary

STATE OF SOUTH CAROLINA)
) ACKNOWLEDGMENT
COUNTY OF GEORGETOWN)

The due execution of the foregoing instrument was acknowledged before me this 24 day of April, 2020, by **C. Ronald Christmas.**

Notary Public for South Carolina
My Commission Expires: 11/4/2029
Printed Name of Notary Public: Seth Frederick

AND I do hereby bind myself and my heirs, Executors and Administrators, to warrant and forever defend, all and singular, the said Premises unto the said **C. RONALD CHRISTMAS AND DEBORAH S. CHRISTMAS, as Joint Tenants, with the Right-of-Survivorship, and not as Tenants-in-Common, their heirs and assigns, forever,** against me and my Heirs and Assigns, and all persons whomsoever lawfully claiming, or to claim the same or any part thereof.

WITNESS my Hand and Seal, this 24 day of April, 2020.

SIGNED, SEALED AND DELIVERED IN THE PRESENCE OF:

Witness

C. Ronald Christmas
C. Ronald Christmas

Notary

STATE OF SOUTH CAROLINA)
) ACKNOWLEDGMENT
COUNTY OF GEORGETOWN)

The due execution of the foregoing instrument was acknowledged before me this 24 day of April, 2020, by **C. Ronald Christmas.**

Notary Public for South Carolina
My Commission Expires: 11/4/2029
Printed Name of Notary Public: Seth Frederick

STATE OF SOUTH CAROLINA)
COUNTY OF GEORGETOWN)

AFFIDAVIT OF CONSIDERATION

PERSONALLY appeared before me the undersigned, who being duly sworn, deposes and says:

1. I have read the information on this affidavit and I understand such information.

2. The property described in the attached deed, was transferred by the Grantor(s) herein to the Grantee(s) herein on April 24, 2020.

3. Check one of the following: The deed is

(a) __ subject to the deed recording fee as a transfer for consideration paid or to be paid in money or money's worth.
(b) __ subject to the deed recording fee as a transfer between a corporation, a partnership, or other entity and a stockholder, partner, or owner of the entity, or is a transfer to a trust or as a distribution to a trust beneficiary.
(c) xx Exempt from the deed recording fee because (See Information section of affidavit): #1
(If exempt, please skip items 4 - 7, and go to item 8 of this affidavit.

4. Check one of the following if either item 3(a) or item 3(b) above has been checked (See Information section of this affidavit):

(a) __ The fee is computed on the consideration paid or to be paid in money or money's worth in the amount of $
(b) __ The fee is computed on the fair market value of the realty which is: $
(c) __ The fee is computed on the fair market value of the realty as established for property tax purposes which is:

5. Check Yes __ or No x to the following: A lien or encumbrance existed on the land, tenement, or realty before the transfer and remained on the land, tenement, or realty after the transfer. If "Yes," the amount of the outstanding balance of this lien or encumbrance is:

6. The deed recording fee is computed as follows:

(a)	Place the amount listed in item 4 above here:	$
(b)	Place the amount listed in item 5 above here: (If no amount is listed, place zero here.)	$ -0-
(c)	Subtract Line 6(b) from Line 6(a) and place result here:	$

7. The deed recording fee due is based on the amount listed on Line 6(c) above & the deed recording due is: $

8. As required by Code Section 12-24-70, I state that I am a responsible person who was connected with the transaction as: Attorney

9. I understand that a person required to furnish this affidavit who willfully furnishes a false or fraudulent affidavit is guilty of a misdemeanor and, upon conviction, must be fined not more that one thousand dollars or imprisoned not more than one year, or both.

_____(Seal)
Seth M. Frederick
Attorney

SWORN to before me this 24
day of April, 2020
_____(Seal)
Notary Public for South Carolina
My Commission Expires: 7/8/24

Instrument	Book	Page
202000004209	3756	97

201483 O'Donnell

202000004209 EXEMPT
Filed for Record in
GEORGETOWN SC
MARLENE MCCONNELL, REGISTER OF DEEDS
04-29-2020 At 12:35:26 pm.
DEED 15.00
STATE TAX .00
COUNTY TAX .00
Book 3756 Page 94 - 97

Marlene McConnell

RECORDED THIS DATE: _____

Brian D. Shult, Georgetown Co. Auditor

R-1193

STATE OF SOUTH CAROLINA
COURT OF COMMON PLEAS
COUNTY OF GEORGETOWN
RON CHRISTMAS,
Plaintiff,
vs. CASE NO. 2020-CP-22-00356
COUNTY OF GEORGETOWN, CITY OF GEORGETOWN, GREEN WAVE CONTRACTING, INC.; AND JOHN DOE 1-10,
Defendants.

DEPOSITION OF: ROBERT L. CASTLES, JR.
(Via videoconference)

DATE: August 31, 2021

TIME: 10:22 a.m.

LOCATION: Myrtle Beach, SC

TAKEN BY: Counsel for the Defendant
County of Georgetown

REPORTED BY: Lauren A. Balogh, RPR

Certified Original

APPEARANCES OF COUNSEL:

ATTORNEY FOR PLAINTIFF
RON CHRISTMAS:

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(Via videoconference)
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Jevans@lucey-law.com

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COUNTY OF GEORGETOWN:
BATTLE LAW FIRM
BY: M. KIRK BATTLE
(Via videoconference)
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Kbattle@battlelawsc.com

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CITY OF GEORGETOWN:

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(803) 881-8920
Andrew@ldlawsc.com

ATTORNEY FOR THE DEFENDANT
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ROSS & CRISTALDI
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(Via videoconference)
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Mt. Pleasant, SC 29464
(843) 329-4040
Jross@rclawsc.com

(INDEX AT REAR OF TRANSCRIPT)

ROBERT L. CASTLES, JR.

being first duly sworn, testified as follows:

EXAMINATION

BY MR. BATTLE:

Q. Mr. Castles, my name is Kirk Battle. I'm the attorney for Georgetown County in this matter. Is this your first deposition or are you an old hand at this?

A. Oh, I've had several.

Q. Good. Yeah, I assumed -- I think we've all probably done too many. It's not a marathon. If you ever need to take a break, please don't hesitate to ask. I've never gotten through an engineer's deposition where I didn't ask a confusing question. Please just say rephrase it or that didn't make any sense. It's fine. It happens with -- it's the nature of the subject matter.

I'm probably forgetting one, but I find with Zoom those are the two biggies. If my internet breaks up or you can't understand what I'm saying, please just say so. If the fan is making racket, please say so. No one wants to have an argument about the internet connection was breaking up or something. And from there I'll just get to it.

Could you state your full name for the record, please.

A. Robert L. Castles, Jr.

Q. And could you talk me through your education? Just give me the résumé version.

A. Yeah. I finished Clemson with a BS in civil engineering back in '76. Did some post graduate work at the University of South Carolina for about a year on hydraulics and seepage and soils, and did not finish or get a master's there. And went to work for nuc power. My first year I worked in the nuclear industry out of Charlotte. Went from there to CH2M Hill where I worked for about five years in the wastewater environmental section, water, wastewater treatment design.

Went from there to Post, Buckley, Schuh & Jernigan, which is how I got to Myrtle Beach, and worked in their development division down at DeBordieu mostly. Some other projects around the beach. And then in about '84 I decided to jump out on my own and basically incorporated Castles Engineering in '86 and worked here at the beach pretty much ever since. Not only at the beach, but Charleston as well as Columbia, Raleigh, a couple of other places. But most of my work has been down

here at the Grand Strand.

Q. So I take it --

A. I had a firm that started out obviously as me and a couple of draftsmen. It ended up, in the heyday, of being 52 people. Then 2008 happened and we narrowed it down to 23 people. And then about two years ago my president and vice president that were running the company decided they would leave and open up their own company and they took all my engineering staff with me.

So at that point I decided to get into the expert witness pretty much full time. I've still got a couple of contracts to fulfill in the engineering side, but I've been doing expert witness testimony for, oh, about 20 or 25 years now off and on. It's a very small part of my practice, but I've gotten into it more diligently in the past two years.

Q. I take it you're licensed in South Carolina?

A. I am.

Q. Are you licensed in any other states, sir?

A. No, I was licensed in North Carolina, but I didn't have my PDHs, so I'm currently

inactive.

Q. As far as expert testimony are you mainly on the plaintiff's end, defense or mixing it up? Where are you at?

A. I'm mixing it up. I have done a lot for insurance companies on the defensive side in my earlier days. Right now it seemed to have switched mostly to plaintiff's side, which would be like in the last two years.

Q. And let's see. Have you done any expert testimony in lawsuits involving stormwater flooding?

A. Yes.

Q. It will probably be faster for me to just ask for the list through discovery rather than try to get you to recount them all now.

Have you done any expert testimony for properties involving tidal flooding?

A. Yeah, I've done some oceanfront work. I've done probably 39 hotels or 40 hotels along the Grand Strand.

Q. Now, is that expert testimony or design work?

A. Well, that was really design work. Now, as far as the expert testimony for tidal, no,

I can't say that I have.

Q. That's fine. I will -- I always explain a question. I just find it helps you answer better, but I'm just looking to see if there's any testimony of yours I can track down to cross reference, so that's the nature of that question.

Have you done any properties -- any expert testimony or design work with properties adjacent to Winyah Bay?

A. No.

Q. Have you ever designed or built a tennis court?

A. Yes.

Q. Where was that?

A. At the Dunes Golf and Beach Club.

Q. Has your engineering firm ever been sued before?

A. Yes.

Q. And just the same with the expert testimony, I'll probably just ask for the list through discovery rather than try to recount it all now.

So we've all -- obviously you're seasoned with this. I'll do some background stuff

and then we'll get into the exhibits. My style of deposition is I'll just go through your report or the material and say what's the basis for that, what's the basis for that, and it just gets into a rhythm.

Do you plan to offer any testimony about the condition of the plaintiff's lot prior to construction?

A. Only from pictures that I've seen.

Q. That's fine. So you never saw this place before the house was built?

A. No, I didn't.

Q. Had you ever been to East Bay Park at all before -- when was the last time you went to East Bay Park?

A. The last time I went was probably six months ago, maybe seven months ago.

Q. So was there -- prior to any construction there had you ever been out there?

A. No.

Q. And do you have any testimony about structures that existed in the park or the condition of the park, I guess would be a better question, prior to 2017?

A. No.

Q. And then do you have any plan to testify about the tennis courts and their impact prior to 2017?

A. Only to the fact that they seem to have been low based on what I've been able to observe via aerial photographs.

Q. Okay.

A. That they were low and I assume -- and it's an assumption -- that they were flooding and that's the reason they came in and rebuilt them and built them up so high.

Q. Do you have any knowledge about what changes the plaintiff made to the lot in order to build the house on it?

A. No, I do not.

Q. Have you reviewed the house plans or architectural drawings?

A. No, I have not.

Q. So you don't -- are you going to offer any testimony about the condition of the house prior to 2017?

A. No, probably not.

Q. I guess another way to say it, you're not an eyewitness to the house prior to 2017?

A. No.

Q. Okay. Is it your understanding that this house was the very first one built on this lot?

A. No, I did not realize that.

Q. And a lot of this is just based on -- in your report or memo, whatever we want to call it. You mentioned prior flooding in the area. Is it your understanding that prior to 2017 both lots on both sides of the street flooded?

MR. EVANS: Object to the form.

THE WITNESS: Repeat that again, please, sir.

BY MR. BATTLE:

Q. Sure. No, please always ask me to do that.

So my understanding of the situation is there's two lots and they're divided by Front Street, correct?

A. Correct.

Q. Prior to 2017 did both lots flood periodically?

A. I mean, I would have to assume they did in higher storm events, but in the regular storm events my understanding is that they were parking on the lots up to 2012. And from 2012 on, with all

starting in about 2012, is when they started having flooding issues. So if you're asking me around 2017, is that what you're...

Q. Sure. I picked 2017 as the date a lot of the renovations in East Bay Park began. What happened in 2012?

A. My understanding is there was just some general flooding that happened every now and then on the peak tides, but as the park got built out, then the flooding increased.

Q. So in -- sorry. Just what happened in -- is 2012 just like the first time it flooded or what?

MR. EVANS: Object to form.

THE WITNESS: My understanding is that's when the issues started happening with the house, that the flooding was happening and that the ground started settling back at that point.

BY MR. BATTLE:

Q. What was causing the flooding in 2012?

A. I believe that the flooding -- one thing is the roads have been settling out there and you can see that from -- if you look at the drawings that was submitted to us by the DOT and look at Greenwich Street and how its profile was,

and then from the profile that I ran out there with my survey group you can see that there is between a foot and a foot and a half difference between what it originally was and what it is today.

Q. And so getting back to the nature of the question, was anything causing this to subside or is this just natural flood events?

MR. EVANS: Object to form.

THE WITNESS: What I'm saying is is the building and the improvements that took place at the park increased the flooding downstream from the park on Ron Christmas's and Robbie O'Donnell's houses down there, basically those two as well as a couple of others.

BY MR. BATTLE:

Q. Who are the other people whose properties have flooded?

A. I do not know their names.

Q. And like I said at the start, the county's chief renovation construction occurred beginning around 2017. The property was already flooding in 2012 you said?

A. That's what I was told. Here again, I don't have that as fact.

Q. Okay. Do you have any opinion on the

development in the back area of the plaintiff's lot, like the pool or the additions that were added and their impact on the flooding and sinkage?

A. Well, I did observe where there was some settling of brick and concrete around the back area back there around the pool.

Q. And has that made the flooding worse for the plaintiff or what?

MR. EVANS: Object to form.

THE WITNESS: I'm trying to understand your question there. I'm sorry.

BY MR. BATTLE:

Q. Sure. So the plaintiff developed the back of his yard basically, right? He added a pool, a cabana, and it looks like another structure, correct?

A. Yes.

Q. Did that impact the flooding at all of his property?

A. I don't believe it impacted the flooding of the property.

Q. Okay. Is it your understanding that the plaintiff's property is essentially sinking?

A. It has. I don't know if it's continuing to sink or not, but it has some, yes.

Q. And the road is also sinking?
A. From my opinion, yes.
(CASTLES EXHIBIT 1, damage disclosure statement Bate-stamped Christmas-000031, was marked for identification.)
BY MR. BATTLE:
Q. All right. Can you see my monitor, Mr. Castles?
A. I can.
Q. All right. Do you intend to offer any testimony about the plaintiff's alleged cost to repair his house?
A. No.
Q. Do you intend to offer any testimony about the damaging of his house in the flooding?
A. Only relative to the sinking of the surrounding property. My understanding is his house itself is on piles, and so the steps can -- are pulling away from the house and the area around the house is subsiding.
Q. Well, given that, let me just go through a few -- so for example, you have -- did the flooding damage the siding of the house at all?
A. I know there was -- where they had some air conditioning units and they had the little

building that was tied to it and is -- that settled and it pulled some siding with it away from it. That's the only siding that I think I -- I've seen out there.

Q. Do you have any testimony about any maintenance or upkeep the plaintiff has done? Do you intend to offer any?

A. No.

Q. Did you observe any damage to the house that was caused by something besides flooding?

A. No.

(CASTLES EXHIBIT 2, letter dated June 29, 2021 Bates-stamped Christmas-000036 and 000037, was marked for identification.)

BY MR. BATTLE:

Q. All right. Exhibit 2 is a Castles Engineering memo. Is this a true and accurate statement of your view of the property for this lawsuit?

A. It appears to be, yes.

Q. And I can -- I e-mailed these in advance. Do you have access to this file itself or do you want me --

A. Yeah. Since you went to the bottom, then I would agree that is an accurate

representation.

Q. All right. Are you at the computer that you wrote this memo at?

A. I'm sorry. I was picking up something.

Q. No, that's fine. I'll get to the meat of the question. Do you have access to the sources you used to write this memo at your station right now?

A. No, I do not.

Q. Where are those sources for this memo?

A. I do a draft and I send it to my assistant that types it up for me. I'm kind of old school and didn't take typing, so I have somebody that types it up for me. And then I take it back and I review it and make sure it's what I would send, there were no errors in it, and then stamp it and send it out.

Q. Are there any remaining tests that you need to perform to complete your opinion?

A. Well, there's several ways that this thing can be fixed, I think, in my opinion. One of the biggest things that's happening is the water is coming in between -- you were discussing the lot that's across from Ron Christmas's lot, and then if you go north of that there's a ditch where the city

runs the pipe along Front Street and out and in to the marsh to release a bunch of drainage that comes all the way from past Front Street up there down and comes off of the park and takes it out to Winyah Bay. There's a check valve on the end of it that needs to be fixed or -- I haven't seen it, so I don't know if it's an appropriate check valve or not, but I have noticed that it's not working. So that needs to be fixed, but the ditch really needs to be filled in because what I have noticed out there when I've been out there on several tides is that water backs up in that ditch, comes up to the ditches along the road, and then it floods along the edge of the road until it -- then if it gets high enough it overtops the road and gets on the other side and starts flooding Front Street and the residences over there.

There's several ways to fix this. One would be to raise the road, which I have suggested in here, but in order to do that you really need to do a geotechnical test and see what's underneath that road because you don't want to just fill it and then all of a sudden it continues to subside. So I don't know if you need a geotechnical map. When they built these roads they used a sand clay

base. They didn't use a GABC like we do today. And they didn't use a very thick pavement section based on their design plans.

The other option would be not only raising the road, which would help the water from coming over there, but there might be the opportunity to, depending on where the water table is, is to lower some of the area in the park right there at the south end and create a pond-like area that would -- flow would drain over there and hold for a certain period of time through the peak of the high tide and then it would flow back out again.

If that was not feasible, then it's possible to build a pump station and the pump station would take care of your additional overflows when it overflows the road, if it did, in your higher storm events or if the check valve was not working, the flap valve, it would take care of the water that backed up that way. Or if you had a rain during a high tide event, then it would be able to handle the rain that would be gathering on the inside of the road.

Q. So --

A. It's sort of a combination of fixes and

none of them have been totally explored or designed.

Q. So if you don't mind, we'll get into all of the fixes towards the end of the deposition. I appreciate you wanting to get into all that -- a lot of people want to hop around, but what remaining tests would you need to do to institute any of this? You said a geotech for the road to make sure the soil can support a higher roadway. Is there anything else?

A. Pretty much what the groundwater elevation is over there on the edge of the park. Probably do it over a period of time, a couple of months, to see if there would be available storage over there.

Q. Is there any other -- it's kind of the same question, but is there any data you need to collect?

A. The data on the groundwater and then the geotechnical data and recommendation from a geotech. I don't know of any other data -- well, I would like to know what the area that drains in the city to the end of the pipe down there on Front Street, we would need to know that data. So you would have to do kind of a rainfall analysis,

stormwater analysis.

Q. How much time do you think you spent putting together this memo?

A. And you're talking about including my visits and everything that I've done on the project?

Q. Yeah. So the -- it's just a billing question, sir. Your fee is listed as 6,295 thus far. I'm just trying to get a picture of what you did.

A. What I did was I made several -- well, three trips down there to the park; one at extremely high tide, one at kind of a normal high tide, and there's another one just to look around at the park area. I've had discussions with Robbie O'Donnell, with Ron Christmas. Obviously discussions with the attorney. Took pictures. Reviewed the information that was submitted to me from the FOIAs from the county, the city, and DOT. And that's probably pretty much it.

Q. Good deal. In your assessment for the flooding of the house, I know you said you observed flood conditions -- or tidal conditions. Sorry. Did you do any calculations at all?

A. No, not at this point.

Q. So I'm just looking for math, man. Like do you have a breakdown of how high a king tide is and the impact of stormwater versus how high like medium tide is, you were saying?

A. Well, the tides usually are in the four-foot range which -- this is being the high tides on a monthly basis. The higher tides on a monthly basis are usually in the four foot, a little over. Maybe 4.6. And they flood the road at least once a month.

Q. Okay.

A. Now when I was out there we had one that was like 5.8 which really got way up on his yard and house and actually flooded his -- Robbie's house and the house next door to it going north on Greenwich Street and then going on to East Bay it went -- I mean on Front Street towards East Bay it went down about four houses that direction. And then Greenwich, around the park, it went all the way up just to the tennis courts or a little past the tennis courts, the entrance road into the metal building there.

Q. Was that -- do you remember the date for that?

A. No, I don't remember -- sitting here

with you today, I don't remember the exact date. I can pull it up.

Q. Yeah. And I'm just making notes of follow-up stuff to ask for. I totally understand that this stuff isn't like sitting around at your disposal, so that's fine. So I'm just going to put down as for the date of the 5.8-foot tide.

Had it been raining or anything or is this just a normal high tide?

A. That was kind of a -- what we would call a king tide. I would say it was a spring tide in April. It seems like it was April of -- I'm not sure when. Just sometime in April.

Q. So other than site visits and -- did you have a yardstick to hit 5.8? Where is that number coming from?

A. From the tide chart.

Q. I've got you. And that's available where?

A. It was provided within the pictures that had been submitted.

Q. I am probably behind on discovery. Please don't -- just correct me if I miss something. That's fine.

Is there any other tidal data, anything

from the federal government or anything that you relied on with Winyah Bay?

A. I did look at the NOAA tidal -- typical tidal chart for the Georgetown area just to see what the typical data range was.

Q. 5.8 is pretty abnormal?

A. 5.8 is pretty high. When you have -- during the month -- you'll get above five during the month, depending on where the moon is.

Q. So from what I understand, this isn't really -- is it storm drainage that's causing the flooding or the tide not being able to move into the park? Is it like a percentage breakdown of both doing it? If you could clarify that for me.

MR. EVANS: Object to form.

BY MR. BATTLE:

Q. Poorly phrased. Do you want me to try again?

A. Please.

Q. Yes. I'm sorry. I told you I get tongue-tied with these things.

Is it just tidal flooding that's causing the flooding in the plaintiff's house or is stormwater also a factor?

MR. EVANS: Object to form.

THE WITNESS: Stormwater could be a factor. What I have seen has been the tidal and I've seen it flood on just the tidal. Now, if it's flooding on the tidal, then obviously if you had stormwater added to it there would be additional water that would be collecting in that area.

BY MR. BATTLE:

Q. Okay. And I mean, the sure argument is the park got raised up so the tide doesn't have anywhere else to go?

A. Correct.

Q. Okay. And then what's your understanding of who manages stormwater in this area?

A. My understanding is the City of Georgetown.

Q. Okay. Besides the flap that you've covered, what are all the issues with stormwater in this area?

A. Well, with the stormwater itself would be the storm drainage system seems to have subsided as well. It pretty much stays full of water all the time, so there's no way to really look in there and see if there are cracks on the pipes or if anything with the pipes and the drainage system has

broken loose. I assume it probably has based on the ability to see how it has subsided down and it appears to have subsided down over a foot, but you would have to drain the pipe and run a video camera down it to see exactly what damage has been done.

Q. So we'll do a thing where I'll say what my understanding is and you tell me if I've got it right. That might be the fastest way.

The pipe has subsided 12 to 18 inches. This is on your report, too. Is that correct?

A. Yes.

Q. What's the basis that it -- what's your basis for that?

A. Based on where the ground is, the grass and the ground is, and it's -- normally you would have the grate sitting a little bit below the grass grade, but it's usually not sitting 12 inches, 14 inches or whatever below the grass. It shows me that the heavy pipes with the water in it, it settled in that area.

Q. Do you have any -- do you plan to testify about how long it's been settling? Well, here, let me put it this way: Is it your position that the 12 to 18 inches of sinking was caused by the construction at East Bay Park?

A. Well, it was caused by the water that was collecting around that area down there at Front Street and Greenwich Drive which to me the -- which was from the tides.

Q. I've got you.

A. So -- go ahead.

Q. Sorry. Please don't let me cut you off. I wasn't trying to.

And when you talk about the 12 to 18 inches we're just talking like you walked up to it with a ruler and measured from the top of the grate to the ground, right?

A. That is correct.

Q. And then the flap valve at the end of the drainage line, is that in the plans or did you eyeball that?

A. It's marked on one of the city drainage maps.

Q. Have you seen it yourself or...

A. No, I have not. It's under water all the time.

Q. So the flap valve that's edging out into Winyah Bay, what's your basis for saying it's not working or that there's an issue with it?

A. I've seen the tide come up and I've

seen the water come out of the basins on the other side of Greenwich Drive at the corner of Greenwich and Front Street which means they're backing up from that pipe and coming out of the basins which means they have to be getting -- the water has to be getting by that flap valve, otherwise it wouldn't be able to do that.

Q. So like the water is not going out with the pipe or it's going back into it?

A. It's going back into the pipe.

Q. Have you done a breakdown for like the storm drain -- sorry. You know obviously about the two, 10, 25-year event stormwater system, right?

A. Correct.

Q. Have you done a breakdown of this area for how much water is what for two, 10, 25-year events?

A. I do not.

Q. In regards to, honestly, any of these changes or suggested fixes, do you have any price estimates that you're going to testify about or is it just generally the logistics of what needs to be done?

A. Purely the logistics of what needs to be done.

Q. For the roadway, you said that the road was built on a constant elevation of 4.0 NAVD 88 datum. What does that mean, man? Help me out.

A. There's several datums out there that are used. One was when they built the road originally they used an assumed elevation out there because apparently they didn't have any datum to go off of out there, so they used an assumed elevation. And the way you did that was you put -- used a railroad spike and a telephone pole or tree in several places, establish an elevation, and you thought maybe 20, and then you would survey everything based on that assumed elevation. So there's no way that I could take those roads and compare it to the actual tidal say on that particular year or that particular time.

And then later on there was the '29 datum. That was the year '29. And that's what people used up until the '90s, was the '29 datum. And that was the datum that was established by the -- I guess NOAA along with the Geological Society that would establish these datums across the United States so that you would be able to compare different areas along the same datum point.

And then they came and redid the

monuments. And when they redid the monuments through a closer coastal elevation they called it '88 datum. And what changed was the '88 datum is roughly 11 inches, 12 inches, depending on where you are, lower than the '29 datum. So what you're trying to do is you're trying to compare different datums through different years when you see elevations out there, maybe on a plan or something, and you need to convert them so that you're all looking at the same datum so that you can relate the tide datum. Plus the tide is based on mean lower low water. So when you see a tide elevation, then you need to convert it to '88 datum which would be what your survey datum is based on. I don't know if that's explained it to you or not.

Q. No, I do. I do enough of this stuff. Do you want to do the thing where I say my understanding and you tell me if I've got it right?

4.0 elevation NAVD 88 datum means that they measure four feet off of the bay at that time when they built it?

A. No, 4.0 would be a datum that was established and there's a monument out there somewhere that they would take it off of.

Q. Okay. No, I've got you. So there's

like a -- you make like a monument somewhere and then you use that as a universal standard?

A. Yes.

Q. Okay.

A. So all your GPS and everything is tied into that.

Q. I've got you. And so the monument is just called '88 datum?

A. Yeah.

Q. All right. And should I know where this thing is? Is it like in Georgetown or is it like a federal thing?

A. It's a federal thing. They actually have maps on the internet where you can go and they will tell you where -- give you the coordinates of where the monuments are. Most people anymore, most surveying teams, use GPS, and GPS is tied to the NAVD 88 datum, so all you have to do is take your GPS out there and set it on the ground and see where it registers.

Q. Okay. So what's the basis for asserting that the road has dropped from four to two and a half feet?

A. When you look at the original plans that the road was built upon, the road was a

constant elevation. It might vary six inches, no more than a foot. Well, really no more than six inches I'm going to say. And that was just -- since you've got a road that has ditches on each side it can actually be flat. And there's some areas that actually shows it basically being flat. And then you have the water runs off, runs in the ditches. The ditches have a little bit of slope down to the low area.

What we did is we took a survey crew out there and we surveyed not only the center line, but the edges of the road. And what we found it showed a high point up near the metal shed, kind of right in front of the metal shed, between maybe the metal shed and the tennis courts. And then we had another high point that would be on the south end of Greenwich Drive probably about where -- I think it's Prince Street comes into Greenwich Drive there, somewhere in that area. And we connected them with a line because that's basically the way the road looked when it was built originally, and then -- so we had the -- where the road we thought was built originally and then where the ground is, and then we measured along there and you got anywhere from a foot, probably the worst case is a

foot and a half depth in there.

Q. Did y'all do a survey of the whole area?

A. No, we just did a strip survey along the road.

Q. Okay. I was going to say, if you've got a topo map don't hesitate to share now.

A. No. I wish I did. No, I don't have a topo map.

Q. What would a topo map be able to show you?

A. Well, it depends on what you topoed, but if you topoed all -- everything and kind of everything around there, then obviously it can show you all the elevations in the area, including the ones in the back of the yard where you're talking about, around the houses, driveways.

Q. So if I did a topo on the whole area and we established I guess what the lowest point is, what does that clear up or what questions does that resolve?

A. Well, the road has subsided over the years, in my opinion.

Q. Would -- if Mr. Christmas's lot was the lowest point in the area would that have any impact

on your opinion?

A. Well, the impact you have is people have built or filled in their lots surrounding him, then they've all pushed the water or whoever has filled in has pushed the water in his direction around his house.

Q. Do you -- all right. Do you plan to offer any testimony about when that subsiding started?

A. No, I do not know when it exactly started.

Q. Where does all the dirt go?

A. Down. It just gets compacted.

Q. One question I had, with all the subsistence with the dirt road, is both the Christmas's driveways still connect to the road, correct?

A. Yes.

Q. Shouldn't they have broken or disconnected given the subsistence of the roadway at this point?

A. Not necessarily. If you had consistent subsistence around there, then they could have stayed at the same level and just all settled together.

Q. I'm trying to think of how I want to say that three times fast. So it's your position that the subsistence has been inconsistent? The subsistence is spread out haphazardly, correct?

Sorry. I'm clearing up the plumber thing.

The road has subsided randomly in different areas, correct?

A. I'm sorry. Repeat that.

Q. I'm sorry. I got distracted. You mind if I just ask the last question and we just go from there?

A. Sure.

Q. So why isn't Christmas's driveway broken or disconnected from the road if the road is subsiding?

A. All of that area probably subsided together. It wasn't necessary that one subsided that much differently than the other.

Q. So it's your position that the house and the road and the pool and all of that stuff is all subsiding at kind of the same rate?

A. Well, not the house because the house was on piles, but around it. It's subsiding at different rates because you'll see cracks and

you'll see elevation differences as you walk around.

Q. All right. Let me go ahead and pop out Exhibit 3 real quick.

(CASTLES EXHIBIT 3, lease agreement Bates-stamped City 00611 through 00614, was marked for identification.)

BY MR. BATTLE:

Q. This is the -- Defendant's Exhibit 3 is the lease agreement between the city and the county. Is this the document you relied on for your memo, sir?

I know I'm scrolling fast. I'm sorry. I can go slower.

A. Did I rely on it as...

Q. For your memo.

A. I guess it's relative to what the parties were -- who was the party out there doing the work, yes.

Q. I've got you. And that's kind of the gist of it. Do you intend to offer any legal opinions about responsibility for facilities in this case?

MR. EVANS: Object to the form.

THE WITNESS: I'm not exactly sure

exactly what you're asking there, Mr. Battle. I guess you're -- it's a legal -- but if you're asking me if I'm going to offer any legal opinion, I might offer a professional opinion based on who I believe might be responsible for certain things.

BY MR. BATTLE:

Q. That's fine. Inevitably there will be contentions in this lawsuit about who built what, and so did you rely on the lease at all to establish responsibility between the city and county?

A. There was other documents that I looked at that were proposals that I looked at that -- and e-mails that went back and forth between -- I believe it's Orlando Arteaga, and I might have that wrong a little bit, but the city engineer and somebody over at the county talking about bids and work being done out there.

Q. So for example -- this might be faster if I just go to this sentence. "So Georgetown County entered into a lease with the City of Georgetown to turn the area into a recreational area with ball fields, tennis courts, walking trail, and area for car and boat trailer parking for the boat ramp across the street."

Where in the lease do you think it says that?

A. It doesn't say that in the lease.

Q. What makes you think the purpose of the lease was to do that?

A. Well, the purpose of the lease said they were leasing it to do recreational facilities. I believe I would have to look at the lease itself.

Q. Sure. You're talking about this little addendum?

A. Yeah, land, facilities, improvements located within the confines of East Bay Park and circled -- yeah, there's somewhere else, though, and I'm thinking maybe it was an e-mail or something that said to the county that if you do any changes out there when you do your improvements we want to be able to review them.

Q. You're talking about the city had reviewed policies on improvements by the county?

A. Yes.

Q. I'll tell you what, we'll just back it up. You agree that the lease doesn't have any sort of development clause or purpose to it, right?

MR. EVANS: Object to the form.

MR. LINDEMANN: Form.

THE WITNESS: Not that I remember in the lease, you know. I haven't read it today.

BY MR. BATTLE:

Q. That's fine. It's not really a point worth belaboring.

Do you know what structures the city built and what structures the county built?

A. I believe the city was actually responsible for the walking trail and the boat ramp and boat trailer parking area and the county was responsible for the tennis courts. I'm not really sure about the ball fields.

Q. Do you plan to offer any testimony about which facilities had what impact on tidal flow?

A. I believe the tennis courts, the walking trail. Part of the boat ramp I know drains to Front Street which drains down to the corner of Front -- I'm sorry, to East Bay Street. Drains down East Bay Street at the curb to Front Street and gets into the drainage system there and then goes down Front Street and out to the marsh. So I think part of the boat area does.

Q. All right. And I'm just reading from the report. "In early years this whole area

flooded at times including the peninsula across the street at the south end of the park."

Is there a specific storm or tidal event you were referencing there?

A. No, I didn't reference a specific tidal event. In looking at the topo maps that were provided to me, and these came from the city, of East Bay Park, it appeared that the elevation down there, existing elevation in that area, was somewhere between one and two feet; contour one and contour two.

I would have to go back and look because when those things were done I'm not sure, and I'm not sure it was listed on the drawing, whether it was '29 datum or '88 datum. Obviously that would make a difference. If it was '29 datum then those elevations go down. When you get the '88 datum, which is what we're working off of, so they would be even lower. That's why I said some additional study needs to be done in that area to determine where the groundwater is and where the water might normally sit to see what that true area is. Or you can do a topo of it.

Q. So when you say "in early years this whole area flooded at times" that's based on what

exactly?

A. The existing topographical map that I saw.

Q. So it's not a specific event or storm or someone telling you this or anything?

A. No. I mean, I've seen some pictures of where it had water and flooding on it, like after they mowed the grass or something down there.

Q. And then "in the developing of the park, Georgetown County brought in hundreds of truckloads of dirt to raise the park so it did not flood." You have quotes after that: "A request for proposals to look at and fill the area", where is that from? Is that an e-mail? What is that?

A. No, it's an actual request for proposals. And let's see if I can give you the exhibit number. I thought I had it. It's exhibit number City 00304.

MR. EVANS: Bates number.

THE WITNESS: Bates number. I'm sorry. Bates number.

BY MR. BATTLE:

Q. I've got you. And is that Nancy Silver's e-mail?

A. No, it says "scope of work for East Bay

Park improvements" and it's an attachment. "The City of Georgetown proposes the implementation of drainage, parking and recreational facility improvements within the southern half of East Bay Park." That's it.

Q. So it says the city, correct? This is from Mead & Hunt from Arteaga, the city engineer?

A. Correct.

Q. If that's the case, why are you saying the county did it?

A. Another county brought in some dirt for the tennis club. But now whether they were the ones that brought in the dirt to fill in the whole back area of -- or the south end of the park and then across the street at the -- the other little park across the street, I'm not sure.

Q. That's fine, sir. Do you know what -- that kind of answers my follow-up question. And I apologize, you're probably going to get asked the same question once or twice, but do you know what job that's associated with or -- I know -- is it just a requested proposal? It looks like -- is this proposal the one associated with the thousands of truckloads of dirt?

A. Well, I think thousands are -- it

wasn't thousands. Hundreds of truckloads of dirt.

Q. You're right. I apologize. It's hundreds.

A. It could have been thousands. I don't know. I didn't count them.

Q. Well, did you see any of them?

A. Yeah, there's a picture of a truck going down the road there and delivering dirt. And there are a bunch of piles of dirt on the property that we have pictures of that are in the exhibits.

Q. When was that picture taken?

A. The pictures don't have dates on them. They look like -- I know the ones for the tennis courts were being done when they built the tennis courts. Now, the other ones were done, it looked like, when they were refurbishing the ball fields and maybe doing the parking area for the boat ramp. I'm not sure what year that boat ramp was. I would have to go back and look.

Q. And you took all those pictures?

A. I'm sorry?

Q. Did you take the pictures or did someone else?

A. No, someone else took the pictures.

Q. Okay. So you got handed the photos

basically?

A. That's correct.

Q. Where did you get those photos?

A. From Ron Christmas.

Q. When were they shared with you, do you remember? Was it last year? Two years ago?

A. Probably a year ago.

Q. Okay. I just got them.

All right. The wetlands have been altered where some of its depth for stormwater drainage was removed, which wetlands are you referring to?

A. There's only one wetland on the property and that's the one that's south end along Front Street that goes from Greenwich Street probably three quarters of the way back to East Bay Street.

Q. So when we're talking about wetlands at no point are we talking about anything along the bay?

A. No.

Q. Did you factor any of those wetlands into any of your calculations or anything, any ways that improving them would help?

A. Which ones now are you speaking of?

Q. Just the stuff around the peninsula. I don't have a specific -- the edge of the peninsula is surrounded by grassy wetlands, correct?

A. Yes. On the Winyah Bay side of Greenwich Drive where you're speaking of?

Q. Yeah. Like the lot that the house is on has like grassy wetlands essentially, correct?

A. Yeah, it has some high ground or did have some high ground there. If you go toward the park and around the peninsula the wetlands move further and further -- or let me say the marsh area moves further and further out into the bay. And so you have some areas in there that are higher than others to keep the water from coming in as quickly down there as they do as you come north on Greenwich Drive.

Q. What's your basis for certain wetlands have been altered? We're back to the ones in the park. I'm sorry.

A. There are some pictures that I had seen that showed where they actually can get in there and mow the grass. And if it's truly wetlands it would be really hard I guess to get a tractor in there and mow the grass without it bogging down and sitting there. How can you maintain the wetland

with a mower, tractor?

Q. So were they never wetlands? I don't understand the argument.

A. Well, I think over the time as you mow the grass you obviously get thatch and you get -- just like in your yard, I mean, you know when you built your house, maybe you bought your house, but if you build a house and you put in sod it's one level, but after five, six, seven, eight years after mowing it it comes higher.

Q. So because you saw that the wetland area gets mowed occasionally you concluded that it filled in with grass clippings?

A. Grass clippings and maybe some washout from disturbance upstream of it. I'm not sure.

Q. Are there any measurements of this?

A. No, I have not taken any measurements of that.

Q. And the sole basis for the wetlands have been altered is that it gets mowed?

MR. EVANS: Object to form.

THE WITNESS: That you're able to get heavy equipment on it.

BY MR. BATTLE:

Q. Yeah. But like what heavy equipment --

I'm just -- I'm not trying to belabor the point, but the sole basis for concluding the wetlands had been altered is that the heavy equipment can access it. Are you saying that before heavy equipment couldn't get there?

MR. EVANS: Object to form.

THE WITNESS: Right. There's a wetlands -- when I saw it originally there was a different type of grass in there, spartina or wetland type grass that usually stays wet all the time. And now it looks like it's been kind of manicured with -- and I'm not talking about bermuda grass or anything like that, but all one type of grass, if you can physically get in there with a bush hog and mow it down.

BY MR. BATTLE:

Q. So is the grass not spartina anymore?

A. I don't believe so, but I'm not a botanist either or biologist, whatever.

Q. When did you see the spartina grass in there?

A. In pictures and in aerial photographs.

Q. At some point in time between the pictures and the photograph the grass has been mowed and the wetlands have dried up is your

position?

A. Well, they actually say to some extent I think they have been dried up. I'm not saying they've totally dried up. I think they've dried up to a certain extent. And it even says in the S&E report when they did a rough estimate of the wetlands that the grass was being mowed out there, so -- and I forget when that was done.

Q. Have you done any calculations for the impact of the grass, like a runoff coefficient or anything?

A. No.

Q. Have you in any prior jobs or any other work done any calculations for the difference in wetlands and grass runoff?

A. No, I haven't done any calculations per se, but I have had a site that would have been called wetlands if they had not gone out there and bush hogged it and cleaned it up by bush hogging it and getting rid of the vegetation. Because you have to have three things to call it a wetlands. You've got to have the vegetation, the hydro soils and the groundwater. If you're missing any one of the three it's not a wetlands.

Q. I guess to get to the point of it,

other than it filling in, does mowing the grass make it any worse at retaining -- excuse me -- retaining water?

A. I'm just saying if you mow the grass, then it tends to bring the ground up.

Q. We've been going at it about an hour. Do you need a break, sir?

A. I'm all right right this minute.

MR. BATTLE: Everybody else good?

MR. EVANS: Yeah, I'm fine.

BY MR. BATTLE:

Q. All right. I don't have too much longer. I'm just going to do a kind of wrap around checklist. Some of these I feel like we're probably getting into the phase of the deposition where some of these might be redundant. I apologize.

Who built the East Bay recreational trail going around the park?

A. I believe that was the city.

Q. Is that contributing to the flooding of the plaintiff's lot?

A. I think it does.

Q. All right. Who built the boat ramp and parking lot on the south end of East Bay?

A. I believe that was the city.
Q. Is that contributing to the flooding of your client's lot?
A. I think a portion of it. Not all of it.
Q. Who removed the concession stand and installed new bathrooms at East Bay?
A. I'm not exactly sure who did that.
Q. Are those facilities contributing to the flooding of the plaintiff's lot?
A. They're such small facilities. I don't believe you would count those in there.
Q. All right. Who built the baseball field?
A. I'm not sure on that.
Q. Is the baseball field contributing to the flooding?
A. There were areas in there where they did flood and it did take the water. Now where that water has gone, in my opinion, it got into the surrounding ditches and ended up in the low place. So yeah, I believe that the water could be contributing to the flooding in that area.
Q. Where is the low place?
A. I don't know exactly where the low

place was out there. Alls I saw was the trucks out there filling the dirt, filling the ballpark, the mounds, whatever.

Q. You made a note that the tennis courts -- I mean, you obviously -- we talked about who built it and that the tennis courts are contributing. I won't rehash it.

You noted that the tennis courts are at least three feet above grade, correct?

A. Yes.

Q. What additional protection for the tennis courts are needed to handle them?

A. They look like they took them high enough that they are okay. They won't flood out.

Q. Is the tennis courts flooding a problem? I mean, sorry. Based on your experience building them, I mean, is the tennis court flooding something that can happen?

A. I think they originally flooded and now they -- after rebuilding them, then they obviously do not flood and they are draining directly off into some sideline ditches that the ditches get full and end up draining down to the south end.

Q. Who built the stormwater jet ditches and -- who built the stormwater ditches?

MR. EVANS: Object to the form.

THE WITNESS: The county did that when they built the tennis courts.

BY MR. BATTLE:

Q. Is that for the entire park or just the tennis courts?

A. Just around the tennis courts.

Q. I guess I'll do one on Jeff's end. Is the design of the stormwater negligent in your opinion or is the construction poorly done?

MR. EVANS: Object to form.

THE WITNESS: I'm not saying that the design was deficient and I'm not really saying that the construction differed from the design.

BY MR. BATTLE:

Q. So basically it's just the water goes to the plaintiff's lot now?

A. Yes.

Q. Is that because it's the lowest point or because it's directing it that way?

A. Well, if you don't have anywhere for the water to store and you're starting to put it in impervious areas, then obviously that water has to go somewhere and has to drain into something, and so it does contribute to the water downstream.

Q. And who built the -- I don't know. Are we calling it the wetlands or the drainage? Who built the wetlands?

MR. EVANS: Object to the form.

THE WITNESS: I believe the wetlands were always natural.

BY MR. BATTLE:

Q. All right. In regards to the memo and the case in general, are there any rules or building codes that you're relying on in your report as a standard?

A. No.

Q. In regards to your report are there any engineering codes that you're relying on in your memo?

A. Besides good engineering practice, no.

Q. Okay. I'm just looking for like something to cite or look up, but are there any industry standards that you believe have been violated?

A. Well, the industry standard says that you're not supposed to do anything to your lot that would increase the water going on to somebody else's property, and I believe that's what has happened here.

Q. All right. We're at the sixth section now. It says suggestions one and three both involve changes to Front Street and Greenwich Street. What entity is responsible for the roads?

MR. EVANS: Object to the form.

THE WITNESS: My understanding is that they are DOT roads that actually owns them.

BY MR. BATTLE:

Q. Okay.

A. To me who would be responsible for it is whoever did the damage to them.

Q. And it's your position that the defendants damaged these roads and caused them to subside?

A. Yes, there's -- out there -- and I would have to get you where the information came from, but a truck loaded with dirt puts 18,000 times the stress on the road that a normal car does. So these roads, they get built for a certain amount of trucks, but they don't necessarily get built for the amount of trucks that were hauling the dirt down and being dumped on East Bay Park.

Q. Okay. So these roads have existed -- when were these roads built?

A. They were built at different times. I

think Front Street was built in '57, somewhere around there. I think the other roads were built in '68.

Q. And they didn't -- so now you're saying the trucks pushed down the roads during construction?

A. Well, they helped consolidate. Not only did the water help -- what happens is that -- and there's another example that was sent to you I think. There was a study done in University of Mexico. And they had a wheel within a tank that they had layers of dirt and asphalt, and they ran the wheel with a certain load around it, and they counted the number of times it would go around before it would fail.

If there was no water in the base and subbase, then the wheel can go around a million times before it failed. If you saturated the base, which is what I contend happens here every time it gets a high tide, the wheel only has to go around 10 or 20 times before you start seeing the stress within the pavement.

Q. Why is there no mention of trucks pressing down the road in your memo?

A. I don't know. I was just -- to me that

was part of the subsistence of the road.

Q. So it's not a specific -- again, I don't mind explaining the question. You started off by saying weightbearing trucks cause roads to subside. Are you saying that the construction project itself, have driving trucks on these roads permanently damaged the roads?

A. I think it contributed to the damage of the road. Now here again, the tides coming in and getting into the base and not being able to dry out also contributed to the road.

Q. So did the road subside before any of the East Bay Park improvements began?

A. I do not know that.

Q. Is it possible they did?

MR. EVANS: Object to form.

THE WITNESS: It's possible. Here again, I have no way of telling.

BY MR. BATTLE:

Q. So is it possible that those roads were already totally subsided before you ever saw them?

MR. EVANS: Object to form.

THE WITNESS: I don't believe so.

BY MR. BATTLE:

Q. You just said you have no way of

knowing. What makes you think you -- why do you not believe that's possible?

A. Because I believe that the total weight, the number of trucks that went down there, helped in those roads subsiding further.

Q. The DOT's roads?

A. That's correct.

Q. Two is rebuild the drainage along Front Street and Greenwich Street. Who maintains the stormwater drainage in this area?

A. My understanding is the City of Georgetown.

Q. Before you are to dig up the wetland and make it deeper, how much deeper would it need to be?

A. Well, it wouldn't need to be any deeper than wherever the normal groundwater elevation is. Unless you were going to do a pump storage type facility.

Q. And like what stormwater event is that going to cap off at? Like what is that going to contain? Is this just tides or storms or what?

A. Well, it would be both. It depends on how high you want to build the road. Do you want to build the road to stop all tides from coming in

or are you going to allow it to let at least part of the tide come through? Those are decisions that have to be made. And I really believe there comes an analysis where you do several iterations and look at the cost of what it costs to do it, and then you come up with the decision on how you want to move forward.

Q. If you did just one of these fixes, if somebody just dug out the wetlands, would that be enough?

A. Maybe. I don't know.

Q. What would you need to know that?

A. Where the groundwater is and then again how high you're going to build up Greenwich Street, basically is what you need to build up.

Q. So you're saying Greenwich Street still needs to get built up regardless or...

A. The DOT or somebody, and I don't know who it was, I can't say who it was, but they built it up on the north end because apparently of all the drainage problems that they had down there. And they built it up down there, but it's never been built up along Greenwich Street and where Front Street is.

Q. For the pump station, where is it going

to pump water into?

A. Back out to Winyah Bay.

Q. Doesn't that kind of -- maybe I don't understand the hydraulics, but the water, it's the bay that's flooding, right? Like the tide is coming in and flooding the area?

A. Right.

Q. So what does pumping the water back into the bay do?

A. Well, first I've got to have a place to store the water until I can pump it out. So that's where we were talking about digging out maybe part of the wetlands and then a combination of digging out the wetlands and a pump station to be installed. Because if you look at the tide grass, you go up, it looks like a bell curve obviously. You go up and then it comes back down. So whenever you would build up Greenwich Street would be a line across that bell curve. And from there up to the top of the bell curve, under the curve would be the volume of water that you would need to store and pump out. So you could either pump it as quick as it's coming in or you could store it and pump it out at a certain level.

Q. Does expansion of the wetlands require

the pump or do the two go hand in hand or what?

A. They really kind of go hand in hand. You really need some storage there or you're going to end up with such big pumps to handle the larger storms that are really not going to function efficiently in your smaller storms that come in. So what you want to do is you want to offset that by having storage.

Let me equate it to something you might be more used to. Why do we have elevated storage tanks for water systems? We have it because of those peaks and you don't want your pumps at the pump station, being the water treatment plant, to run at different cycles all the time, so you put it in storage in elevated storage tanks.

Another example that would be more to this drainage is the improvements that I believe the city did down in front of city hall or maybe it was county. I'm not sure which one did it. But they put in the sheet pile, a little pond in the front of it, and they have pumps that apparently pump from there out to the bay when you get heavy rainfalls.

Q. Then for number five, repairing the private homes and property, does that do anything

for flood prevention or is that just an opinion on compensation?

A. I'm sorry. Repeat that one.

Q. For number five it says repair the homes and property damaged. Does that do anything to prevent flooding or is that just a compensation argument?

A. That's a compensation of the damage that's been done by the flooding.

Q. That's fine. I just was trying to understand if there was some kind of alteration to their lots that's necessary.

And then these changes would also protect East Bay Park. How would these changes protect the park?

A. Well, it gives a place for the water to run. So if you've got flooding problems, which you do right now, which I observed down there on the track, running track, and the frisbee throwing area, and if you put in these things that I have suggested, then you would remove that water also from those areas.

(CASTLES EXHIBIT 4, East Bay Park existing conditions not to scale and Exhibit B East Bay Park conceptual plan Bates-stamped City-00394

through 00396, was marked for identification.)
BY MR. BATTLE:
Q. So this is Exhibit 4. It's East Bay Park existing conditions and then the conceptual plan. I kind of picked it because it's the easiest to read map. A lot of them are geographic or Google Maps and stuff like that. And basically I just wanted to get into -- with the trucks of dirt thing, where exactly they went or where soil was elevated. Which one would you prefer me to mark up? What I'm going to do is just say -- obviously you're saying the tennis courts went up three feet, right?
A. Right.
Q. So let me get my dumb thing. There it is.
All right. So you're saying these went up three feet. So the red X is just to denote like the thousands -- that hundreds of trucks of dirt were dumped there. Where else should there be an X?
A. Along all the parking lots.
Q. So let's see. Here?
A. Yes.
Q. That part is used for parking as well?

A. That one, I don't know how much that one was filled in. That one has kind of been there for a long time.

Q. And then anywhere else?

A. Yeah, the ball fields. There was a lot of dirt that seemed to be put in on this end, the south end down here and whatever that football/soccer field, soccer field.

Q. And any other spots where dirt got put?

A. Well, when you say multipurpose fill, I think it was not just in the little squares that you put as -- between home plate and second base, but the whole area down there. Basically south of the parking lot.

Q. And again, I fully acknowledge this is inexact. I'm just trying to get a broad picture here.

Are there any other spots that should have Xs that you believe fill dirt was added?

A. Well, here again, down there next to the football field, I just want to make everybody understand that it was also outside the football field. It just wasn't put all to itself. It was anywhere they had low areas. Now, I don't know where the low areas -- I just remember seeing the

mounds of dirt that were down there to fill it.

Q. I've got you. So like the south end essentially, was any truckloads of dirt added for the frisbee golf course?

A. I believe right there where your X was there was some dirt that was added.

Q. Where?

A. No, go back up closer to the -- yes, go to the left and up a little bit. No, the other way. Right there. In there.

Q. What project is that associated with?

A. I'm not sure what project it was associated with, whether it was with the walking trail or the trail system or whether it was because of the frisbee throwing area.

Actually that X can move a little bit closer to the frisbee throwing area.

Q. Right there?

A. Not within the trees there. I didn't see any dirt within the trees. But I'm not sure if those trees are still there. But right there.

Q. They are. The trees are still there.

A. All right. You've been out there since I have.

Q. I do know there's a couple still there

anyways.

Any other spots you think should have an X?

A. Well, you had the one parking lot next to the tennis courts, but I believe on down, if you come down across the road there and behind the building, the existing building, I believe you go behind that building right there, that parking lot and the next parking lot.

Q. You're talking about right here?

A. Yeah.

Q. And there?

A. Yeah. And then where the boat ramp -- the boat parking is. Yeah, right -- that doesn't matter. That's on the outside of Greenwich Drive, so you can take that one off. Right in there.

Q. The boat trailer?

A. Yeah, the boat trailer storage. Well, I guess that other one would count as the trucks coming down, which is what you were saying, wanting to know where the hundred trucks. Then it would also be across Greenwich, directly across the whole park.

Q. Slow down. So you want an X here or no?

A. Yeah, yeah, based on what you're asking, was that you wanted to know where the hundreds of trucks of dirt were placed.

Q. Yeah, just wherever the soil got raised you think.

A. Yes, right there.

Q. Yep.

A. And then about where it says East Bay Park there's a peninsula there, there was a lot of dirt that was filled in there.

Q. In this area or what?

A. Well, I mean, that area was filled, too, along the parking.

Q. So all of that?

A. Yeah, but then across the street where the "east" starts on the East Bay Park.

Q. Oh, in the west --

A. There was a lot of dirt placed somewhere in that area.

Q. Okay. Do those three Xs cover it or -- I don't mean cover it. Anything else?

A. Not to my knowledge.

Q. And just for like a hydraulic flow point of view, it's not that like the water is bouncing off the tennis courts; it's that the

tennis courts are displacing their stormwater down to here and that's making this area fill up, correct?

A. Yes.

Q. Okay. Now my wrap-up questions. We're almost done. This is just from reading off the complaint. What are the negligent acts of Georgetown County in this matter?

MR. EVANS: Object to the form.

THE WITNESS: I think they were negligent in that not seeing what their improvements were going to do, that they were narrowly focused on the tennis courts and the drainage within their own property not realizing what it would do downstream.

BY MR. BATTLE:

Q. And how are you distinguishing between the flooding happening today and the flooding that happened in the past? Is it just -- again, I don't mind explaining the question. Everyone in this case is going to scream that there was flooding before anyone built anything. So how do you distinguish between the two floods situations?

A. I distinguish it that there was no problem out there at Ronnie Christmas's place and

that he parked on the lot out there for Winyah Bay that used to have the ferry that was out there that ran there that parked cars in that area all the time.

Q. Sorry. When you say "area" you're talking about his lot?

A. No, I'm talking about the area I guess in front of his lot.

Q. I'm just clarifying. I didn't mean to interrupt.

A. That's fine. But what happens when that area is gone, then the water gets to the road because that area out there would actually act like a little bit of a dam for it, but water is coming down the ditch, getting into the ditches, getting into the road and getting through the road or under the pipes and flooding his lot. My understanding is that there was no damage and no flooding to his house from when he built it in 2005 until around 2013 and beyond and it's gotten worse.

Q. Is the flooding continuous or has it stopped or what's the condition of it now?

A. Well, I've been down there three times in the past two years or one year and it's -- on higher tides it continues to flood.

Q. One question that comes to mind is I understand the stormwater argument, i.e. the courts displace stormwater and channel it over to him, but during just a high tide wouldn't that not really be the county's responsibility?

A. Well, that road was originally built to act somewhat as a dam, which it did.

Q. Wait. What's your basis for that?

A. Based on looking at the elevations and the profiles of what they built the road -- the plans. Looking at the plans and how they built the road.

Q. Okay.

A. And then based on where the road is today, something has caused it to subside. And I don't believe it was all just water. I believe it's traffic, and most traffic would obviously be those trucks.

Q. Are you going to be doing like an addendum to your memo talking about the truck traffic or is this just something that's kind of -- I guess like you said, it's just kind of -- is that just based on your -- what's the basis -- I don't want to rehash the question because I know I already went over it with you a bunch. Will there

be any additions to your report or calculations or anything explaining the road subsiding due to car traffic?

A. That decision hasn't been made at this point.

Q. I've got you. You mentioned a study from the University of Mexico. Do you have that on hand? I've had some engineers to tell me to buy it myself.

A. No, I won't make you buy the big thick book. Yes, it should have been sent to you probably the end of last week. I know it was a quick thing and maybe it's in your inbox or something or in your e-mails.

Q. I've been so slammed. It doesn't surprise me that I've missed stuff.

Have there been any developments, property construction, that happened up the road or upstream that has contributed to the water flow?

A. Not that I'm aware of.

Q. Have you checked?

A. No, I haven't checked property dates or property maps.

Q. Is it possible that some other construction project which occurred upstream has

displaced water and is contributing to the flooding?

A. Based on me riding around there and looking at the age of all of those houses, I haven't seen anything that's been recently developed.

Q. Given the distances we're talking about water traveling, what -- nevermind. Strike it. I'm done.

MR. BATTLE: Do y'all want to take like a ten-minute break?

MR. EVANS: Sure.

MR. LINDEMANN: Yes, definitely let's take a break.

MR. BATTLE: Thank you very much for your time, sir. Please answer anybody else's questions, and I'm a quick depo. Hopefully that wasn't too painful.

THE WITNESS: No.

MR. LINDEMANN: Restroom/coffee break.

(A recess transpired from 11:57 a.m. until 12:10 p.m.)

EXAMINATION

BY MR. LINDEMANN:

Q. My name is Andrew Lindemann and I

represent the City of Georgetown in this case. Same instructions apply when Mr. Battle went through with you. Obviously we're taking this deposition by Zoom, so if for some reason, due to technical difficulties or whatever, you don't hear a question that I ask, please be certain to point that out to me so that I may reask it or clarify it in such a way that it's clear to you. If you answer a question we'll assume you understood the question; is that fair?

A. That's fair.

Q. All right. I don't know that I'm going to be too long, and I apologize if I'm re-plowing old ground a little bit. That's sort of part of going second sometimes in these depositions.

As far as East Bay Park is concerned, do you have information as to when that park was initially developed?

A. Not from day one, no.

Q. Okay. And the improvements that were made in the last ten years, do you have knowledge as to when those specific improvements were actually made?

A. I can't remember right off the top of my head, but I do have documents that show when the

boat ramp was improved and they added the parking spaces for the boat ramp. When they did the additional ball fields and the track, the multipurpose path, whatever you want to call it, running track, and then when they did the tennis courts.

Q. So those are dates that you don't know off the top of your head, but you believe those are in records that you have been provided?

A. Yes, they are.

Q. What exactly have you reviewed in preparation for providing your opinions and your deposition today?

A. The FOIA request from the city. FOIA requests from Georgetown County. The FOIA request from SCDOT. My own inspections of the site. Pictures that have been taken at the site. The lease agreement. The drainage map. Here again, that came from the city.

Q. Anything else?

A. That's about it. I don't have a list in front of me, but that's close to everything I've looked at.

Q. And what are you referring to as a drainage map from the city?

A. It looks like it came off their GIS system that shows where drainage pipes and ditches are.

Q. And how did you get that drainage map?

A. I was thinking it came through the FOIA.

Q. Okay. Do you know the Bates number of that particular document?

A. No, my copy here does not have a Bates number on it.

Q. Do other documents that you reviewed from the city have Bates numbers?

A. Most of them do.

Q. And you believe you received that drainage map from the city itself?

A. I know I received it from the city itself because I wouldn't have been able to get it from anywhere else.

Q. Is there a date on that map?

A. No, sir, it looks like a part of the map that was sent to me or given to me.

Q. And when you say sent to you or given to you, by whom?

A. Well, I did go down there one time and meet with Orlando Arteaga and reviewed some stuff

there in his office and I might have asked for -- I didn't ask for copies of it. The attorney asked for copies of it and I was with the attorney at the time, Justin Lucey. And we reviewed stuff in his office for a couple of hours. And Justin asked for him to send him a copy of it to which I assume I ended up getting a copy from there.

Q. And when did you meet with Mr. Arteaga?

A. Oh, at the beginning of this lawsuit. I don't remember the exact date.

Q. Was that before the lawsuit was filed?

A. I don't remember.

Q. Do you have billing records that would show what date you met with Mr. Arteaga?

A. I should have a timesheet that shows that, yes, sir.

Q. Okay. Have you produced those timesheets in response I believe to a subpoena that was served on you?

A. I do not believe so, sir.

Q. But you have timesheets that would show the dates you met with Mr. Arteaga?

A. Yes, sir.

Q. Is that something you have access to as you sit there right now?

A. No, I'm at home working because of a contact with COVID and they are at my office.

Q. And you met with Mr. Arteaga and who else?

A. That was it.

Q. Just one meeting with him?

A. Just one meeting, correct.

Q. Was anybody else from the city present?

A. No, sir.

Q. Was anyone else other than you and Mr. Arteaga at that meeting?

A. Justin Lucey and an associate of his. I don't remember what her name is. And we really didn't meet with Mr. Arteaga. We had requested some information. My understanding is the attorney had requested some information and called me and said, hey, can you meet with us and look over this information that he's going to have, and so basically put us in a conference room and provided maps and stuff to look at.

Q. All right. Was that actually a substantive discussion with Mr. Arteaga about the drainage or anything related to the improvements of the park?

A. No. We asked him about just where the

outlets were in that area to Winyah Bay and did they have flap valves on them. And he responded that, yeah, he knew the outlets and they do have flap valves on them.

Q. Explain to me what a flap valve is.

A. It's a flap valve that sits on the end of the pipe and allows water to go one way. So it allows water to come out of the pipe, but if you get flow that's trying to get into the pipe, then it will shut and keep flow from getting into the pipe and going the direction. So it allows the -- water only goes one direction which would be out to the bay.

Q. And you said Mr. Arteaga showed you where the inlets were; is that correct?

A. No, the outlets were. Not the inlets.

Q. The outlets. Okay. I must have misunderstood you.

And how many outlets are they at East Bay Park?

A. Oh, I didn't look at all the outlets at East Bay Park.

Q. Where were you interested in seeing outlets?

A. Where the outlets were around the area

of -- really the one at the end of Front Street and another one going north. And there wasn't until you get around the corner on Highmarket Street.

Q. Okay. So there was only one outlet then that you were referred to and that's at the end of Front Street; is that correct?

A. That's correct.

Q. Now Front Street is a DOT road, correct?

A. Correct.

Q. And Greenwich Drive is a DOT road also, correct?

A. Correct.

Q. Does the drainage that -- the drainage system which ends at the outlet that you were just referring to at the end of Front Street, does that run under Front Street?

A. There is a pipe that runs under Front Street from the north side to the south side in connection with that pipe that runs under Greenwich Street out to Winyah Bay.

Q. All right. And this is one of the disadvantages of doing this virtually, is can you -- you can't show me on a map. Can you actually describe on -- where that pipe you just referred

to, where it runs specifically from and to?

A. The pipe starts at the corner of Prince Street and Greenwich Street. It runs down Greenwich Street under Front Street and connects into a pipe that runs from the corner of Meeting Street and Front Street all the way down Front Street, under, connects with the pipe we just discussed, under, it goes under Greenwich Street and then goes out to Winyah Bay.

Q. Okay. And so that pipe runs under Front Street then that you just described?

A. The first pipe I described did.

Q. Okay. And so that would be within the DOT right-of-way?

A. It appears that these pipes might be within the right-of-way. I'm not exactly sure. My map doesn't show the right-of-way lines.

Q. Well, you're familiar with what a typical right-of-way is for a DOT road, are you not?

A. Unfortunately, my map is not to scale, so I don't know if what they're showing here is pavement or right-of-way. It looks like right-of-way.

Q. It looks like it's within the

right-of-way?

A. It looks like it is.

Q. Do you have any information as to DOT's role in maintaining Front Street within its right-of-way?

A. I do not.

Q. Have you spoken with anyone from DOT as to their role?

A. I have not.

Q. But you do acknowledge it's a DOT owned and maintained road, correct?

A. Based on the number on it. That's what I understand.

Q. Okay. And that's true for Greenwich Drive as well, correct, that's a state --

A. That's correct.

Q. Okay. How about the entire roadway around the park starting with East Bay Road and then Greenwich Drive, is that entire -- I mean, the road system that encircles the park, that is all state road, correct?

A. It appears to be, yes, sir.

Q. Okay. Is there any drainage system that you contend is contributing to the flooding at Mr. Christmas's home that is not within the

right-of-way of the roads that encircle the park?

A. All of the drainage that affects Mr. Christmas's lot comes into either a pipe system or a ditch system that encircles the park or is along Greenwich Drive.

Q. Let me change subjects real briefly. Have you seen any topography maps for this area?

A. Yes.

Q. Do you have a topography map in your possession as part of your case file?

A. It was given to me by -- it was in part of the FOIA which was improvements to East Bay Park had a topographic map on it. The other topographic map I've got is one that I had done that runs from Greenwich Street and Front Street where it's just a linear map of the streets.

Q. Is the map that you said was part of the FOIA, is that Bates numbered?

A. It should be.

Q. Do you have access to it where you can specifically identify it for me?

A. I haven't printed it out. I've got it on my thumb drive here, but I'm not sure how to get out of this program, get it, and get back.

Q. Are you familiar with that topographic

map so I can ask you questions about it without you having it in front of you?

A. I believe so, yes, sir.

Q. All right. What is the date of the topographical map that you received from -- as part of the FOIA response?

A. I don't know. It was a map they done -- they did before they were doing any improvements out there on the site.

Q. You don't know that, is that what you said?

A. I don't know the date, no, sir.

Q. Okay. So that was my question. Is that a topographic map before the improvements were made or after the improvements were made?

A. It was a topographic map of the existing ground before the improvements were made.

Q. Okay. What is the natural low area that's reflected on that map?

A. The low area is down there at the wetlands. It looks like it's about a two on that map. And then you get up around the metal shop and it seems like it was about a four. I don't think there was anything on that map that was above a four, four and a half, somewhere around there.

Q. Okay.
A. I don't remember seeing any fives.
Q. And by that you're referring to the number of feet above sea level?
A. No, that would be based on that NAVD 88 datum, I believe. It would either be the '29 datum or the '88 datum. I'm not sure.
Q. Okay. And explain that to me, if you would. What is NAVD 88 datum?
MR. EVANS: Object to form.
THE WITNESS: The NOAA and the U.S. Geological Society decided that they would create a set of monuments around the United States that basically would equate to each other. So if you've got an elevation here on this piece of property, then you could equate it to a piece of property say out west. So you have the same datum that's out there.
BY MR. LINDEMANN:
Q. All right. And so what does -- the number then, what does that reflect?
A. The '88 tells you which year they did it in. They enacted that and did that datum for '88. The other datum that was used frequently was '29.

Q. So is that 1929?
A. 1929, correct.
Q. Okay. So the topographical map you were just referring to, which data does it use?
A. I do not know. It's usually printed on the map. Not having the map directly in front of me I do not know which datum they used.
Q. Okay. So when you say there's a four, what does that four signify?
A. It signifies an elevation based on that datum, the ground shot. If it was '29 datum and let's say it was a two, to convert it to '88 datum you subtract 11 inches from the two. That's the difference in the two datums in Georgetown County.
Q. Is that the same measure of elevation that -- I assume they use it for its natural flood insurance program?
A. Yes, it should be.
Q. Okay.
A. They just updated the flood insurance maps approximately August of 2019.
Q. Do you know what the elevation of Mr. Christmas's property is?
A. I know his finished floor of his garage is about 6.1 and this is based on an elevation

certificate that I saw that came from the city building department. And the elevations that we've found in his yard were around an elevation of four, but we were not up next to his house.

Q. And was that part of the survey that you described earlier?

A. The survey, the strip survey, that I did along Greenwich Drive and Front Street.

Q. And what does that mean? What is a strip survey?

A. In other words, I went -- just basically the road was ten feet off of each side of the road and ran elevations up and down the road.

Q. And which road did you run elevations on?

A. Greenwich Street and part of Front Street.

Q. Did you do the entire perimeter of Mr. Christmas's property on those two streets?

A. No, I did not.

Q. So how far did you go down Greenwich Street and Front Street?

A. I don't know. I do have my map here available. I can get that if you want me to get it real quick and give you the...

Q. Yeah, that would be fine. I don't believe that was produced and -- I mean, the other lawyers might correct me, but I don't believe I saw that as part of your file.

MR. LINDEMANN: Josh, any way you can e-mail it to me?

MR. EVANS: I don't know if I have it or not. I'm asking my paralegal.

THE WITNESS: All right. Can you hear me?

BY MR. LINDEMANN:

Q. I can.

A. We started at the center of Front Street and Greenwich Street at ten plus 00 stationing. And the further stationing up Greenwich going north is 17 plus 00, so that's 1700 feet. And going south on Greenwich Street Boulevard we went as far as 24 -- no, 2340, 2340 feet. And down Front Street we went --

Q. And how far is that on Greenwich Drive? Is that beyond the tennis courts?

A. Yes, it is.

Q. Can you give me an idea of how far down? Is it past the parking?

A. Yes, it's past the parking. It's past

the entrance road into the metal building there. And there's another entrance a little bit further down going south and we went down a little bit past that.

Q. Is it past the ball fields?

A. I don't think it goes totally past the ball fields.

Q. All right. And how about on Front Street, what did you survey on Front Street?

A. On Front Street it looks like it's not stationed, but it looks like we went about 150 feet.

Q. And why did you do that survey?

A. I'm sorry, sir?

Q. What was the purpose of doing this survey?

A. It's to compare it back with the drawings of the elevation that the road was built at to see if the road had settled, which we determined it had.

MR. EVANS: Off the record for a second, if you don't mind.

MR. LINDEMANN: Sure.

(Off the record.)

BY MR. LINDEMANN:

Q. And tell me, what did that strip survey show you.

A. Basically it shows five elevations on the center of the road, edge of pavement, and then in the ditches. And then what we do is from that we create a surface which would be what would be your normal topo lines that would have elevations on them that would be dotted lines throughout the project.

Q. Okay. As far as elevations within East Bay Park itself, it wouldn't reflect that, though, would it; it's simply just the roads?

A. No, just only the first maybe ten feet. But no, it wouldn't show within East Bay Park.

Q. Where is the highest area of East Bay Park? And let me ask it this way, prior to the improvements, if you know.

A. I don't know. The whole thing was pretty flat, but I think that the highest point was pretty much on the back of where the metal building is, is what I recollect.

Q. Okay. Have you, as part of your analysis in this case, determined where surface water naturally flowed prior to any improvements being made to the park?

A. I did not.
Q. You would agree with me water flows to the lowest point, correct?
A. I agree with that.
Q. All right. It's not your position that the entire park flooded Front Street, is it?
A. I'm sorry. You broke up there.
Q. Is it your position that the entire park flowed -- surface water flowed towards Front Street?
A. No, there were some drains in between that flowed out to Winyah Bay, so I think it was somewhere around where the metal building is it broke and went south, that water went south, and the other part went north toward Front Street.
Q. Okay. You testified earlier, and maybe I misunderstood you, that work on the ball fields contributed to the flooding at Mr. Christmas's property. Was that your testimony?
A. I don't believe so.
Q. Okay.
A. If it was, I can correct that.
Q. Yeah. Well, let me ask it this way: Was any of the surface water from the area at the ball fields as well as the soccer/football field,

did any of the water in that area of the park contribute to any flooding for which Mr. Christmas is suing?

A. I do not believe it contributed to the flooding. What I meant it contributed to was that's where there was a lot of the dirt was put in place that contributed to the loads on the road which to me caused the roads to consolidate and drop.

Q. Okay. And I'm going to talk to you a little bit more about the trucks and all of that in a moment. Right now I want to focus on the topography. Do you have an understanding as to how the topography changed within East Bay Park as a result of the improvements?

A. Well, obviously the tennis courts were elevated. The parking lots were elevated. So everything that was built was elevated to some extent. Now, there were obviously different extents.

Q. Is there any type of -- what are you relying on to say those areas were elevated?

A. Well, there again, you're filling them in, so you're obviously elevating them. Design plans that were provided that showed the boat

landing area and talk about it, how it was being elevated.

Q. Where in the park is the boat landing area that you just described?

A. From the south end south. I guess that would be the southwest end.

Q. Okay. That's down actually by the soccer/football field, correct?

A. Yeah. Probably not quite that far, but I think it's down that way, yes.

Q. So if on the part of the island that you -- part of the island -- part of the park that you testified earlier didn't contribute any type of surface water towards flooding at Mr. Christmas's property, correct?

A. I don't think it was made out of pervious concrete, so it's supposed to absorb all its own water.

Q. Well, to answer my question -- well, let me ask it just so I'm clear. Did the construction of the boat ramps contribute any surface water flowing to -- towards Mr. Christmas's property?

A. It's my opinion that the -- possibly the end of the boat ramp going to the north had

runoff there that ran onto East Bay Street that ran down the curb and gutter to the drainage of the corner of Front Street and East Bay Street, and then ran to the corner of Greenwich and Front Street.

Q. Are you speculating as to that or do you actually know that's where the water flowed from the northern most boat ramp?

A. I'm speculating.

Q. Okay.

A. Based on my opinion.

Q. But you're agreeing with me that you're speculating to that?

A. Based on my visual observation, yes, sir.

Q. Okay. So you didn't actually visually see water flow in that direction?

A. No, sir, I did not.

Q. And you have not done any type of surface water analysis to determine where the water would flow from the location of the constructed boat ramps, correct?

A. That is correct.

Q. Did you do any type of surface water analysis as part of your -- developing your

opinions in this case?

A. No.

Q. Is that work you still plan to do?

A. It's depends on what the solution we come up with for fixing the problem.

Q. That type of analysis is typically done by a hydrologist, correct?

A. No, it's typically done by me.

Q. And how does that differ than from what a hydrologist does?

A. Normally a hydrologist messes with the groundwater and not necessarily the surface water.

Q. So it's your testimony a hydrologist doesn't do analysis of surface water?

A. They might do analysis of surface water, but I've been doing it for 40 years and over a thousand jobs.

Q. And tell me how you go about doing such an analysis.

A. First you would get a topo of the area and determine which way the water is flowing. Then we use computer programs to analyze the different rain events, whether it be a two-year storm, ten-year storm, 25, 50 or 100-year storm.

Q. And why have you not done that work to

this point?

A. Because most of the water that we felt was getting to Mr. Christmas's lot is coming from Winyah Bay across Greenwich Drive or either through the pipe where the strip valve or either the flap valve is sticking and not stopping the water from coming underneath Greenwich Drive -- or Street.

Q. And you say "we" believe that. Who is "we?"

A. Myself. I'm sorry. Myself. I.

Q. Is there anybody else who has assisted you with your analysis or opinions?

A. No.

Q. Anybody else work on this case with you?

A. I think there was a name mentioned earlier, P.M. P.M. is my CAD operator, but he doesn't form any opinions or have any design responsibility or expertise.

Q. Have you consulted with any engineers in forming your opinions in this case?

A. No, sir, I have not.

Q. And you said you've been involved in this case before the lawsuit was actually filed, correct?

A. I believe that is correct. I would have to go back and look at the dates.

Q. What is the date that you were first retained?

A. I don't know. I would have to go back to those timesheets and look.

Q. Can you give me a month and a year?

A. No, not at this point.

Q. What specifically in your file would you look at to make that determination?

A. My timesheets. And then see what day the suit was actually filed.

Q. So basically doing the surface water analysis, it's not necessary for you to reach your opinions?

A. No, because that only has to do with rainfall. It doesn't have to do with the tide coming in.

Q. So going back to a question you were asked earlier, maybe I'm just not real clear on it. So is it your contention that it is tidal flooding that is causing the issues for Mr. Christmas's property as opposed to surface water flooding?

A. No, I think surface water also. I believe you made the comment that -- and asked the

question, and maybe repeated, that doesn't water flow to the lowest part of the site, and I said yes, it does. And we determined that the lowest part of the site was the corner of Front Street and Greenwich Street. So there is water that's coming off of the park that comes down to the corner.

Q. So basically Mr. Christmas's property is the low point in that watershed?

A. It seems to be right there at the intersection of Front Street and Greenwich Boulevard, yes.

Q. Do you know that to be the case or is that again something you're speculating?

A. Based on observation and pictures.

Q. All right. And Mr. Christmas's property is at the corner of Front and Greenwich, right?

A. It is.

Q. Was that the natural low point of that particular watershed prior to any improvements being made in the park in 2016 to present?

A. The low area that I found was actually that wetland on the park site.

Q. All right. Why are you changing your testimony? A moment ago you said it was -- the low

point was the corner of Front and Greenwich.

A. Well, that wetland is on the corner of Front and Greenwich. It's on the other side from Mr. Christmas's property, though.

Q. So that whole general area at that intersection is the low point?

A. Yes.

Q. And that would include the wetlands as well as Mr. Christmas's property?

A. Well, the wetlands seem to be a little bit lower based on the topographic information I have.

Q. And is that from a topo map that you have seen or is that from the strip survey that you've done?

A. From the topo map I had seen.

Q. So is Mr. Christmas's property at a higher elevation than the wetlands?

A. Yes, sir.

Q. And how much higher?

A. Two to three feet. As much as five feet at his house down to six feet.

Q. And did any of the improvements to the park from 2016 to present, did that change the wetlands area at all?

A. No. I think earlier in my opinion I think that the wetlands had filled up and not become a wetland anymore, so I'm not sure those elevations still hold true, but I did see water down in the corner there when it flooded because that's one of the first places it flooded.

Q. Are you saying the wetlands are no longer wetlands?

A. I'm not saying that. I don't know.

Q. Okay. Well, my question was pretty simple. Did any of the improvements that were done from 2016 to present change the wetlands area at all?

MR. EVANS: Object to form.

THE WITNESS: I do not know that.

BY MR. LINDEMANN:

Q. Isn't that a pretty significant point that you would need to know to offer the opinions that you are in this case?

MR. EVANS: Object to form.

THE WITNESS: The property is still running in that direction. And if the wetlands had changed and -- by the improvements out there, then all that you've done is you've pushed more over on to Mr. Christmas's property.

BY MR. LINDEMANN:

Q. So what's the answer to my question? Isn't that a significant point that you should know, whether or not the wetlands were altered in any way by the improvements that were made?

MR. EVANS: Object to form.

THE WITNESS: I would say it could be significant, yes.

BY MR. LINDEMANN:

Q. Is that something you plan on doing further work on?

A. I haven't decided yet.

Q. And what are the factors that go into a decision as to whether to do additional work to determine whether there was any alteration in the wetlands area? What are the pros and cons or what's the decision process?

MR. EVANS: Object to form.

THE WITNESS: I would have to discuss it with my attorney.

BY MR. LINDEMANN:

Q. Well, what is it from a professional standpoint to be able to provide reliable opinions in this case? Your attorney doesn't determine what is necessary, as far as from an engineering

standpoint, what work is required to be able to form the opinions in the case, correct?

A. That is correct, he does not form my opinions.

Q. And who are you referring to as your attorney?

A. The Lucey Law Firm.

Q. And you believe that they are your attorney?

A. No, I'm sorry. I didn't mean -- I work for them. I work for the owner, really. I work through them for the owner.

Q. Do you believe your role is that you work for the owner as well as his attorneys?

A. I would say so.

Q. So you don't view yourself as an independent expert?

A. No, that's not what I said. I do work for people. I could work for you and I could be an expert.

Q. But Mr. Evans or Mr. Lucey are telling you what work you can do and what work you can't do?

A. No, usually I tell them what I need to do.

Q. All right. So again, going back to my original question, you've told me that it could be significant to know whether or not there was any alteration made to the wetlands as a result of the improvements that were done from 2016 to present, and maybe I'm missing it, but I don't understand why there's a question in your mind as to whether or not that work needs to be done.

MR. EVANS: Object to form.

THE WITNESS: Water drains down to the corner of Front and Greenwich Street, which I testified before. Now, if the wetlands out there happen to be a little bit lower, then you would have some storage out there. If it happened to be filled in, then you wouldn't have the storage and you would have a little more water that came toward the corner of Front Street and Greenwich Street.

BY MR. LINDEMANN:

Q. What are the -- if you can describe for me, what's the perimeter of the watershed that flows to Front and Greenwich Street?

A. It's hard to tell. I had asked for a more definitive map from the city. And I say I had asked. I asked the attorneys through the FOIA process, which I never received, so my best guess

off of this small GIS map that they gave me, it was somewhere between Meeting Street and James Street over to Prince Street, down Prince Street to Howard Street, down half of Howard Street toward Front Street, all the way from Howard Street behind Mr. Robbie O'Donnell's property. Then goes up to the corner of Greenwich Street behind all of those houses, then down Greenwich Street, up East -- up Greenwich Street to about where the tennis courts are, through the tennis courts, then up to about where the metal building is and out to East Bay Street. East Bay Street down to about the middle of -- halfway before Smith Street. Goes back before it hits Meeting Street, goes behind the houses in front on Front Street, across Meeting Street, and ties back into that line that was halfway between Saint James Street and Meeting Street. That's the drainage area.

Q. So as far as the portions of the park that are in the watershed you're basically saying north -- from the metal building north to Front Street; is that correct?

A. That's correct.

Q. All right. Are there any outlets to Winyah Bay that run from the metal building to the

corner of Front and Greenwich?

A. There appears to be one that's right at the corner of the tennis courts or at the drive that goes into the metal building.

Q. And is that outlet properly functioning?

A. I do not know.

Q. And from where does that outlet draw drainage?

A. It looks like it goes back to -- based on this map, to the road on the north side of the tennis courts. And that's where the drainage splits.

Q. And so -- now I see that there's parking to the west side of the tennis courts, correct?

A. That is correct.

Q. Is that where you're referring that there's drainage there adjacent to the outlet that's by the tennis courts into Winyah Bay?

A. I'm sorry. You're talking about the parking lot that is west of the tennis courts?

Q. Right.

A. And what's your question there?

Q. Well, you had indicated that there's an

outlet by the tennis courts directly into Winyah Bay, correct?

A. No, what it shows here on this map is that there's a ditch that goes out to East Bay Street and then it goes down East Bay Street toward Front Street. And the water goes that way.

Q. All right. Did I misunderstand you? I thought you said there was an outlet in the Winyah Bay by the tennis courts?

A. Right. It takes apparently some of the water from East Bay, it looks like about half, going about halfway back on the other side right at the edge of the tennis court. And so you've got the tennis court that comes that direction and -- or actually it wouldn't go that direction because tennis courts are built going north to south. So it would have to get in the ditches and come on each end of the tennis court. But then on the other side of the tennis court where the parking is, it appears to go out that drive that direction.

Q. And that's where there's an outlet into Winyah Bay?

A. No, that's -- there's no outlet there.

Q. So did I misunderstand you? I thought you said there was an outlet by the tennis courts.

A. There is on the east side.
Q. Okay. And so where does that outlet -- where does that water drain from, if you know?
A. Based on this map it drains on from the north end of the tennis court through a catch basin there at the drive into the metal building and then goes out to Winyah Bay. From that pipe that's north of the tennis courts, it goes in a ditch to Front Street.
Q. Okay. So from the tennis courts then back south through the metal building, the drainage goes to this outlet directly to Winyah Bay that we were just discussing?
A. Yes, sir.
Q. And then it's the drainage that's north of the tennis courts, which I guess is the frisbee area, is that frisbee golf area; is that correct?
A. I believe so, yes, sir.
Q. Okay. And it's that area that drains to East Bay?
A. Right, as well as half of the drive in there and part of the parking lot on the west side of the tennis courts.
Q. Okay. And the water, once it's drained to East Bay, where does it go?

A. Down East Bay to -- well, there are two ditches now. There's a ditch on the east side of Greenwich Street that goes down to Front Street. And then you've got part of it that goes to East Bay Street, goes down East Bay to Front Street, then down Front Street to Greenwich Street.

Q. And are these open ditches or are these drainage pipes that run underground?

A. They are open ditches except on the East Bay. I think East Bay is curb and gutter, so I think it gets into a curb and gutter there.

Q. And there's a catch basin; there's no pump there as far as underground?

A. Yes, sir.

Q. And so the water that's curb and gutter on East Bay goes into a catch basin, and then that water is channeled down East Bay to Front Street and down Front Street to the outlet into Winyah Bay at the end of Front Street?

A. That's correct, yes, sir.

Q. And I believe you indicated earlier you don't have any professional criticisms of the drainage plan that was designed and constructed as part of the improvements to the park; is that correct?

MR. EVANS: Object to form.

THE WITNESS: The only criticism I had it didn't seem like they provided any retention of water to collect off the hard surfaces. In other words, there's no retention coming off of the tennis courts.

BY MR. LINDEMANN:

Q. But the tennis courts flow into -- down to East Bay into the catch basins and go the route that we just discussed, correct?

A. The tennis courts do not.

Q. The park west of the tennis courts as well as the frisbee area flows that way, correct?

A. The parking area flows that way that we just discussed.

Q. All right. And so is it your position that the drainage that has been designed and built is not sufficient to carry the surface water in that particular area?

A. It can carry the surface water. It's just carrying it to the streets and ditches that go down to the low point.

Q. All right. And do you have any criticisms as to that design?

A. It just adds more water at the corner

of Front Street and Greenwich Street.

Q. Which you've already testified is the natural low area anyway, correct?

A. It is a natural low area, but you're creating water by having an impervious surface.

Q. Where, in your opinion, should that water be drained to?

A. Well, you should have put in maybe a pond or something to capture the water first and then let it flow out at its natural rate.

Q. Have you done any studies to determine that the water is not flowing at a natural rate using the drainage system that was constructed?

A. No, sir, I have not.

Q. So again, so you're just speculating that there would be a need for some type of pond or retention facility on this property, correct?

A. Good engineering judgment and 40 years of practice.

Q. You haven't done the work necessary to determine whether a retention facility was even needed at all?

A. I don't have to do the work necessarily. You've got to do a retention center if you do a hard surface. That's the law. That's

your law.

Q. So do you plan on offering the opinion that the surface water designed for the improvements to the park failed to meet the standard of care, the engineering standard of care?

A. Please repeat the question.

Q. All right. Are you offering an opinion in this case that the drainage plan, the surface water drainage plan, violated the standard of care expected of a civil engineer?

A. Which part of the park are you talking about?

Q. Well, let me just ask it this way then: Are you planning to offer any opinions in this case that the drainage plan for the improvements that were done from 2016 to present violated the standard of care for a civil engineer?

A. Possibly. Okay. Yes.

Q. What's it depend on, sir? I mean --

A. Yes.

Q. Listen, so are you or are you not?

A. Yes.

Q. Why were you unsure?

MR. EVANS: Object to form.

BY MR. LINDEMANN: