ENGINEERING REPORT

PROPOSED SARASOTA AREA
FLOOD CONTROL DISTRICT

DECEMBER 1962

Morgan
For the

BOARD OF COUNTY COMMISSIONERS
County of Sarasota

Warren S. Henderson, Chairman

Boyd R. Gernhard

James A. Spanos

Fred Haigh

G. Johnson

SMALLY-WELLFORD & NALVEN
CONSULTING ENGINEERS • SARASOTA, FLORIDA

It will be noted that the above scope parallels our overall assignment set out previously. The depth of treatment for this phase is tentative and preliminary, and our engineering has been limited to correspond with the needs at this time.

II. BACKGROUND AND REFERENCES

The history of floods in recent years is common knowledge and a matter of record in many ways. Severe floods of 1957, 1958, 1959, and 1960 culminated in the disastrous flood of September 21, 1962. It is unnecessary to review here this history in detail, but suitable references will be noted.

Perhaps the most comprehensive summary of this history as it affects Phillippi Creek will be the record of the special hearing on November 30, 1962 called by the U.S. Army Corps of Engineers. In addition to recognition of various engineering reports and technical data, testimony and evidence from many local sources was spread upon the record.

The following list summarizes selected references and information sources which are deemed most pertinent to the matter, although it is by no means exhaustive:

A. Report on Phillippi Creek Basin Flood Control (June, 1961) prepared by Smally, Wellford & Nalven, including plans referenced therein.

B. Report on Flood Relief Study of Phillippi Creek at the Tamiami Trail (August, 1961) prepared by J.E. Greiner Company.

C. Report on Sarasota County Coastal Basin Flood Control Study (September, 1961) prepared by Smally, Wellford & Nalven, including plans referenced therein.

D. Supplementary plans, letter-reports and documentary material prepared by Smally, Wellford & Nalven, as appearing in the records of the Board of County Commissioners and departments of the County administration. This includes resolutions and statements prepared for federal and state agencies, and for our representatives in Congress.

E. Report on Flood of 20-21 September 1962, Southwest Florida (November, 1962) prepared by U.S. Army Corps of Engineers.

F. Newspaper accounts of on-the-scene events, including photographs on the ground and from the air.

G. Reports of eye-witnesses and other competent sources as to the events that occurred and their direct and long-range impact on the community, summarized most effectively to date during the November 30, 1962 Corps of Engineers hearing.

The first four items above have been utilized by the Board of County Commissioners as the core of the officially adopted "Sarasota County Comprehensive Flood Control Plan". Various elements of this official plan have already been proven effective, such as the control of building elevations in certain flood hazzard areas and the placement of surveying monuments delineating the future right-of-way for Phillippi Creek.

III. BOUNDARIES OF PROPOSED DISTRICT

Figure 1, on the following page, summarizes on a convenient scale the outer boundaries proposed for the District. Detailed boundaries showing the basins which would compose the District are delineated on the larger maps which supplement the report.

The proposed district boundaries are based on the following criteria:

1. Incorporating the county areas which have been most heavily damaged or threatened by floods.

2. Contiguous geographic areas as an interrelated land grouping, with land uses that are urban or are tending toward urbanization.

3. Physically related to basin hydrology, in the sense of concentration of runoff within basins and channeling through major outlets.

Water does not recognize political boundaries, unless such boundaries are artifically imposed by construction such as dikes. Areas of the City of Sarasota lie within the basins proposed, and consequently the tentative District boundaires extend into parts of the City.

The coastal areas which drain directly to nearby outfalls are excluded, because they are not part of definable basins and can be protected by local storm drainage. This applies to a major portion of the City of Sarasota which drains directly to the bay.

The following basins are included, for which commonly accepted place names consistent with previous reports have been used:

		Area in Square Miles
1.	Phillippi Creek	58
2.	Whitaker Bayou	8
3.	Hudson Bayou	2
4.	Matheny Creek	3
5.	Elligraw Bayou	2
6.	Holiday Bayou	1
7.	Clower Creek	1
	Total Area	75 Square Miles

IV. PROPOSED IMPROVEMENTS

The principles and criteria applied are in accordance with our previous reports to the Board which have been cited above, and will not be repeated here.

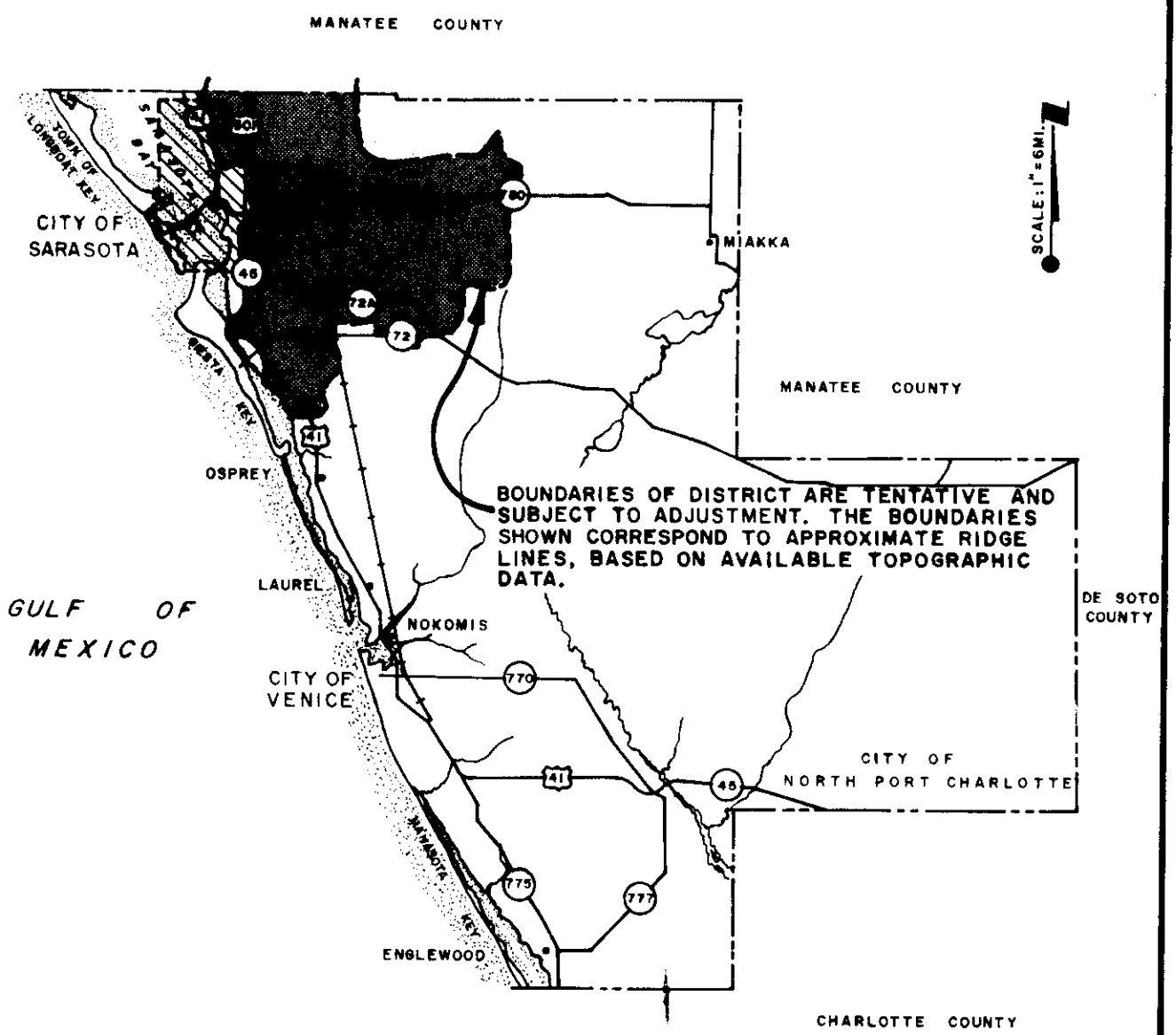
Only those improvements and structures that are required by existing conditions are included in the costs and financing developed later in this report. These apply mainly to downstream channels and built-up areas. Marginal structures would be retained for economy.

The balance of the ultimate improvements is not included. Although conceivably these could be financed by the District in years to come, it is believed that the well-established policy for unimproved lands could be followed of requiring right-of-way and construction by those that improve and subdivide the lands, in accordance with the County Comprehensive Plan. This does not imply, however, that cooperation and adjustments should never be made in keeping with equity and public policy. The powers of the District should permit reasonable flexibility.

The proposed improvements are set out on the plans which supplement the report and the cost estimates which correspond are incorporated below.

V. COST OF IMPROVEMENTS

Preliminary cost estimates have been made for the proposed improvements, as defined above. These estimates include both construction and right-of-way. No allowance has been made for possible federal aid, which might reduce the District's share of the total cost.



BOUNDARIES OF PROPOSED SARASOTA AREA FLOOD CONTROL DISTRICT

FIGURE 1

SMALLY · WELLFORD & NALVEN · CONSULTING ENGINEERS
SARASOTA, FLORIDA

JOB NO. 571 - 8 DEC. 1962

	Excavation	Structures and Bulkheads	Right-of-Way	Total
Phillippi Creek	$469,000	$845,000	$800,000	$2,114,000
Whitaker Bayou	58,000	355,000	39,000	452,000
Hudson Bayou	1,000	87,000	12,000	100,000
Matheny Creek	8,000	27,000	12,000	47,000
Elligraw Bayou	6,000	26,000	66,000	98,000
Holiday Bayou	4,000	4,000	5,000	13,000
Clower Creek	23,000	10,000	46,000	79,000
Total	$569,000	$1,354,000	$980,000	$2,903,000

Although the above estimates are necessarily approximate, they are sufficiently accurate for the purpose of exploring the order of magnitude of a bond issue which could finance the program.

VI. FISCAL ANALYSIS

The assumption as to financing of the proposed District which underlies this report is that the costs will be paid by levying annual assessments against all properties, on a non-exempt basis. In order to estimate the millage rate, the valuation of properties must be determined. This has been done by a systemmatic analysis of the records of the County Tax Assessor covering the specific lands within the District. The following table summarizes our findings, which have been rounded off in keeping with the other estimates:

NON-EXEMPT PROPERTY VALUATIONS

Basin	Amount
Phillippi Creek	$ 88,000,000
Whitaker Bayou	14,000,000
Hudson Bayou	28,000,000
Matheny, Elligraw Holiday, Clower	6,000,000
TOTAL	$ 136,000,000

Applying the above valuation, each mill levied in 1962 would yield $136,000 for debt service on a bond issue.

In addition to the costs of the improvements themselves, a complete fiscal analysis must include one-time expenses such as legal and financing fees for a bond issue. Annual income must provide for maintenance and operation expenses, which are assumed to average $50,000 per year.

Equipment must be utilized for maintenance and operation, which could be either purchased or leased. For the purpose of this analysis $150,000 worth of equipment is assumed to be purchased, the funds for which are included in the bond issue.

The following table summarizes the elements that are included in a bond issue that could finance the District:

PROPOSED BOND ISSUE

Construction Costs		
Excavation	$ 569,000	
Structures	1,354,000	$1,923,000
Engineering		96,000
Capitalized Maintenance Equipment		150,000
Maintenance and Operation, First Year		50,000
Acquisition of Right-of-Ways		980,000
Legal, Financing & Miscellaneous		150,000
Contingencies		151,000
TOTAL		$3,500,000

Although it is not necessary to determine the final features of the proposed bond issue, for which the assistance of a qualified fiscal agent should be enlisted, it is important to demonstrate the general features of suitable financing. Therefore a financial forecast has been developed based on a 20 year bond issue at 4 percent interest, to be secured by general obligation bonds applying to the District.

DEBT SERVICE SCHEDULE

$3,500,000 - 20 YEAR BOND ISSUE - 4% INTEREST

IN $1,000'S

Year of District Operation	Income Required	Operation and Maintenance	Debt Service	Bonds Outstanding	Interest	Principal Payments
1	308	50	258	3,500	140	118
2	"	"	"	3,382	135	123
3	"	"	"	3,259	130	128
4	"	"	"	3,131	125	133
5	"	"	"	2,998	120	138
6	"	"	"	2,860	114	144
7	"	"	"	2,716	109	149
8	"	"	"	2,567	103	155
9	"	"	"	2,412	96	162
10	"	"	"	2,250	90	168
11	"	"	"	2,082	83	175
12	"	"	"	1,907	76	182
13	"	"	"	1,725	69	189
14	"	"	"	1,536	61	197
15	"	"	"	1,339	54	204
16	"	"	"	1,135	45	213
17	"	"	"	922	37	221
18	"	"	"	701	28	230
19	"	"	"	471	19	239
20	"	"	"	232	9	232

This debt service schedule indicates that an initial 2½ mill assessment (based on 1962 valuations) would be required to service the $3,500,000 bond issue. While operation and maintenance costs might rise during the life of the bond issue, future construction will cause a greatly increased valuation base. Even allowing for a possibility of some annual improvement costs not financed by developers, the net effect should result in a long-term annual reduction of millage assessments.

VII. FEDERAL AID

The District Engineer of the U.S. Army Corps of Engineers has been allocated funds by Congress for a study of Phillippi Creek, which is now in process. In order to qualify for construction assistance the project would be recommended by the Corps only if the benefit-to-cost ratio were found to be favorable in accordance with their established formulas and procedures.

It was made apparent at the November 30, 1962 hearing held by the Corps in Sarasota that the earliest possibility of federal funds to assist construction would be in fiscal year 1965. In any event Congress must appropriate funds specifically for such a project. There is no assurance that Congress would approve successive appropriations, nor any way of foretelling how much of the overall project needs in the large basin would be recommended by the Corps of Engineers and approved by Congress.

Whether or not federal aid is ever forthcoming, it is necessary to organize a procedural framework which will be prepared to cooperate with the Corps of Engineers and to furnish the local share of funds that are necessary. Federal assistance at most would apply to a major portion of construction costs. The balance of construction costs and all of the costs of land acquisition would fall upon local interests. The possibility of federal assistance should expedite, not delay, the formation of a District.

No meaningful predictions of the amount of possible federal funds is possible until the extent of involvement in the basin is determined. Moreover, federal aid would automatically call for plans to be prepared by the Corps of Engineers which might differ in some degree from our preliminary plans to date.

The bond issue outlined in this report could be of the "open-end" type, which would permit floating of bonds by increments up to the maximum authorized. The District could thus stage financing and construction in accordance with the course of future actions by the Corps of Engineers and Congress.

VIII. CONCLUSIONS AND RECOMMENDATIONS

Formation of a Flood Control District to include 75 square miles of northwest Sarasota County would establish the framework for effective alleviation of floods that continue to inflict hardship and injure the economy. The framework of the District should provide for flexible action, proceeding by stages, and compatibility with both independent action and federal aid.

The proposed improvement within the District could be financed by a bond issue of approximately $3,500,000, without allowance for federal aid. Based on a 20 year general obligation issue at 4 percent interest and allowing for annual maintenance and operation expenses, an initial assessment of about 2½ mills would apply to properties within the District. This millage rate should drop steadily as new construction, which will be encourage by the improvements, increases the total valuations. Property values should be protected and enhanced by the removal of economic blight caused by flood hazard within the District.

The bond issue could be of the open-end type, permitting staging of engineering and construction. The timing could allow for the possibility of federal aid as future actions of the Corps of Engineers and Congress may reveal. Any federal aid should reduce the millage required.

There are probably more worthwhile projects which fail to materialize because of differences over methods than outright opposition. The proposed District would permit action to begin now whether or not federal aid might become available some years in the future. The procedures necessary to establish an entity as large and important as the District necessarily require a spirit of compromise among all parties, in the public interest.

If the Board of County Commissioners desire to move forward with this matter, the following steps appear to be in order at this time:

1. Delineate the boundaries of the proposed District in a form suitable for legal descriptions.

2. Engage a fiscal agent to cooperate with the County Attorney and the County's Consulting Engineers in the preparation of a formal presentation to the freeholders within the proposed District, leading to an election. This election could be based on an open-end bond issue equivalent to that outlined in this report or on some form of millage limitation.

IX. ATTACHMENTS

The following plans have been prepared specifically for this report.

E-571-134 Drainage Improvements, Phillippi Creek Basin

E-571-135 Drainage Improvements, Whitaker & Hudson Bayou Basins

E-571-136 Drainage Improvements, Holiday Bayou & Matheny Creek, Elligraw Bayou, Clower Creek Basins

E-571-137 Boundaries of Proposed Flood Control District.

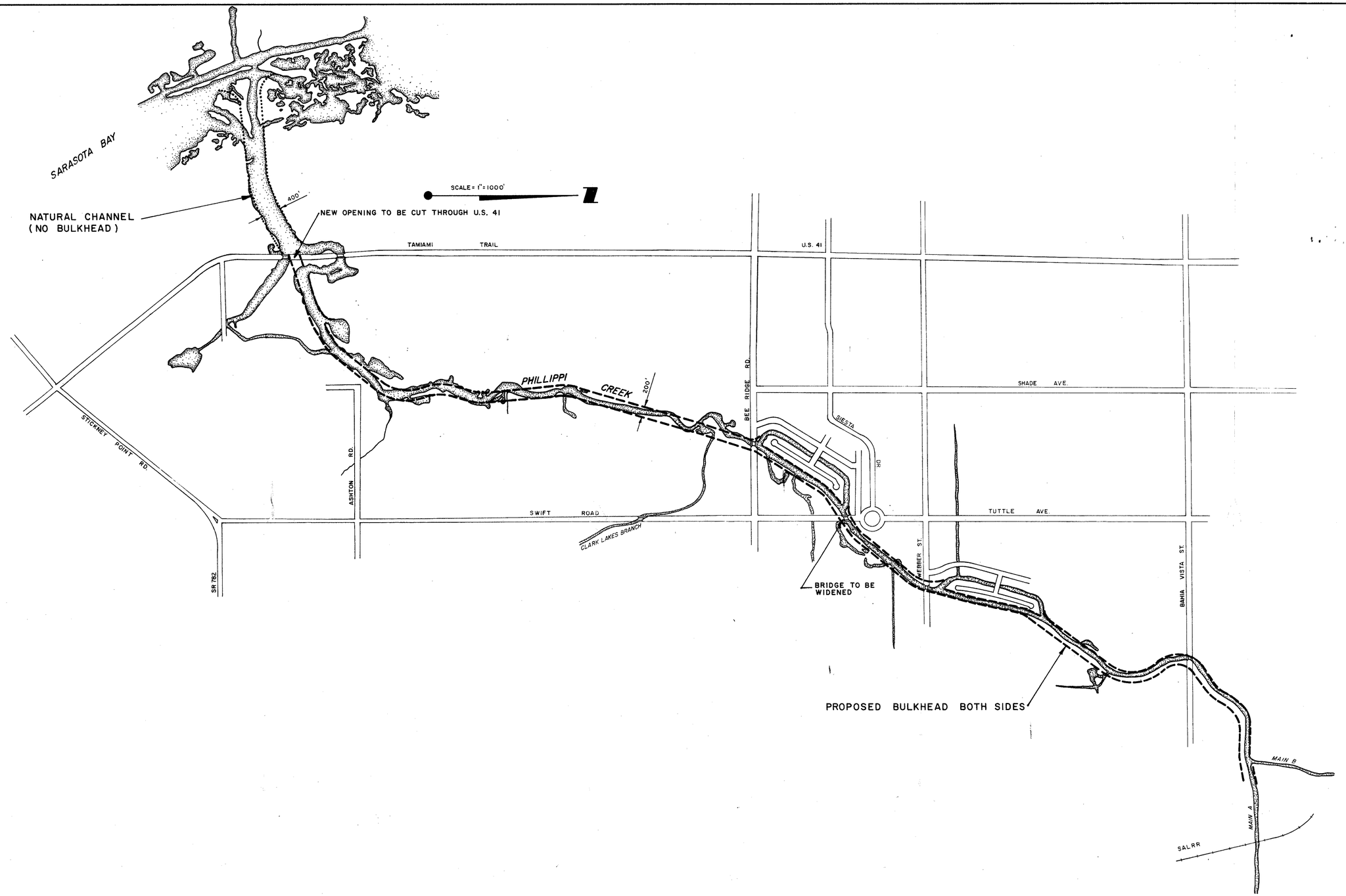
Respectfully submitted,

SMALLY, WELLFORD & NALVEN
Consulting Engineers

By Donald J. Smally

Donald J. Smally, P.E.

DJS/lt



LEGEND

PROPOSED BULKHEADED CHANNEL
BRIDGE
NATURAL CHANNEL (NO BULKHEAD)

REVISIONS		SCALE:	FOR: BOARD OF COUNTY COMMISSIONERS
LTR.	DESCRIPTION, DATE AND BY	1" = 1000'	SARASOTA COUNTY, FLORIDA
		DATE: 12 - 10 - 62	**PROPOSED DRAINAGE IMPROVEMENTS**
		DESIGNED BY: N.B.D.	PHILLIPPI CREEK BASIN
		DRAWN BY: N.B.D.	
		CHECKED BY:	SMALLY · WELLFORD & NALVEN
		APPROVED BY:	CONSULTING ENGINEERS — SARASOTA, FLORIDA
		JOB NO. 571	SHEET 1 OF 4 — DRAWING NUMBER E - 571- (134) — REV.

SCALE: 1"= 1000'

STRUCTURE SCHEDULE

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
A1	4,785	30'x12' BR	EXISTING MARGINAL
A2	4,335	CONC. BR.	EXISTING MARGINAL
A3	4,085	CONC. BR.	EXISTING MARGINAL
A4	4,085	CONC. BR.	EXISTING MARGINAL
A5	4,085	CONC. BR.	EXISTING MARGINAL
A6	1,700	CONC. BR.	EXISTING MARGINAL
A7	1,600	30'x12' BR.	EXISTING ADEQUATE
A8	1,335	2-72"x44"CMP	BRIDGE
A9	1,320	2-48"	BRIDGE

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
B1	1,300	18'x9' BR.	BRIDGE
B2	2,385	30'x8' BR.	ADDITIONAL BRIDGE
B3	2,385	WOOD BR.	BRIDGE
B4	1,345		WEIR
B5	1,345	CONC. BR.	ADDITIONAL BRIDGE
B6	1,200	2-5'x7' BOX	BRIDGE
B7	1,190	WOOD BR.	EXISTING ADEQUATE
B8	1,070	2-5'x7'CMP	BRIDGE
B9	1,060	5'x7' CMP 58"x36"CMP	BRIDGE
B10	70	36" RCP	60"
B11	35	30" RCP	42"

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
C1	680	17'x10.5' BR.	ADDITIONAL BRIDGE
C2	555	7'x7' BOX	BRIDGE
C3	500	WOOD BR.	EXISTING ADEQUATE
C4	500	WOOD BR.	EXISTING ADEQUATE
C5	290	2-58"x36" CMP	BRIDGE
C6	200	60" RCP	2-72"
C7	130	36" RCP	2-54"
C8	20	24" RCP	30"
C9	10	15" RCP	24"
C10	35	24" RCP	42"
C11	40	24" RCP	42"

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
D1	175	60" CMP	2-72"
D2	170	60" RCP	2-72"
D3	170	WOOD BR.	EXISTING ADEQUATE
D4	105	60"	72"
D5	95	54"	72"
D6	90	42"	72"
D7	65	36" CMP	54"

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
E1	380	10'x5' BOX	BOX CULV.
E2	380		WEIR
E3	300	7'x7' BOX	BOX CULV.
E4	230	60" RCP	BRIDGE
E5	215	36" RCP	2-72"
E11	200	48"	2-72"
E12	190	36"	2-72"
E13	185	42"	2-72"
E14	145	42"	72"
E15	80	30" RCP	60"
E16	30	48" RCP	EXISTING ADEQUATE

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
F1	720	54"	BRIDGE
F2	695	48"	BRIDGE
F3	670	48"	BRIDGE
F4	460	48",42"	BRIDGE
F5	380	10'x5' BOX	BOX CULV.

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
G1	780	10'x7' BOX	BRIDGE
G2	780		WEIR
G3	725	40'x12' BR.	EXISTING ADEQUATE
G4	685	3-30"	BRIDGE
G5	565	CONC. BR.	EXISTING ADEQUATE
G6	420	54"	BRIDGE
G7	415	2-36"	BRIDGE
G8	385	2-36"	BRIDGE
G9	290	2-36"	BRIDGE
G10	245	2-30"	2-72"
G11	80	30"	60"

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
H1	115	58"x36"CMP	72"
H2	100	36"	72"
H3	95	36"	72"
H4	90	36"	72"
H5	85	36"	72"
H6	80	36"	60"
H7	75	30"	60"
H8	70	30"	60"
H9	65	24"	54"
H10	40	36"	48"
H11	30	30"	42"

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
J1	320	10'x7' BOX	EXISTING ADEQUATE
J2	285	10'x5' BOX	EXISTING ADEQUATE
H12	245	72" RCP	2-72"
A4	230	72" CMP	2-72"
A5	155	72" CMP	2-60"
H6	85	42"	72"

LEGEND

- E — BASIN LETTER
- 2 (BASIN) (ITEM) — REFERENCE KEY NUMBER
- MAJOR RIDGE LINE
- EXISTING DRAINAGEWAY

REVISIONS		
LTR.	DESCRIPTION, DATE AND BY	

SCALE: 1"= 1000'
DATE: 12-10-62
DESIGNED BY: N.B.L.
DRAWN BY: N.B.D.
CHECKED BY:
APPROVED BY:
JOB NO. 571

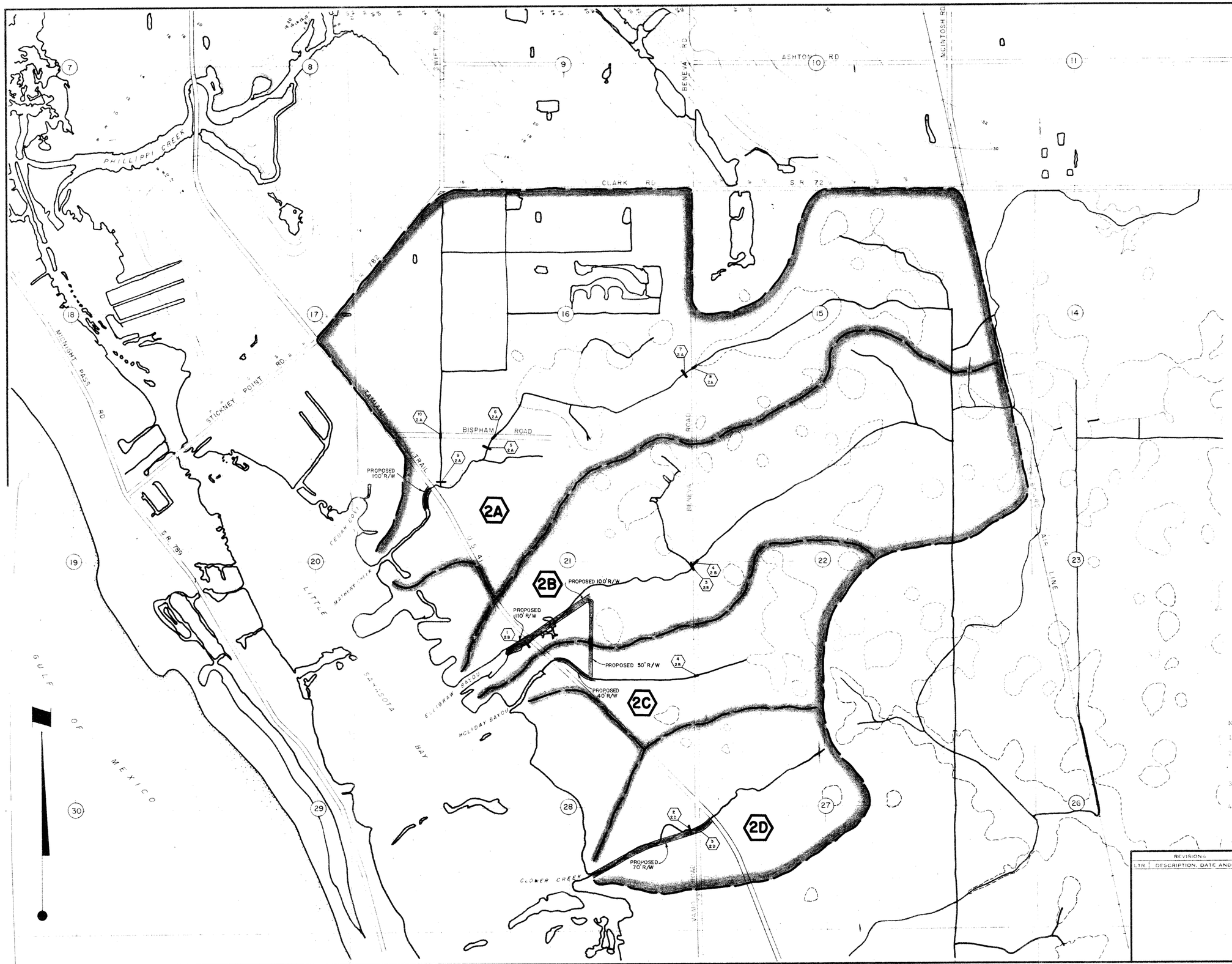
FOR: BOARD OF COUNTY COMMISSIONERS SARASOTA COUNTY, FLORIDA

PROPOSED DRAINAGE IMPROVEMENTS

WHITEAKER BAYOU AND HUDSON BAYOU BASINS

SMALLY · WELLFORD & NALVEN
CONSULTING ENGINEERS — SARASOTA, FLORIDA

SHEET 2 OF 4 | DRAWING NUMBER E-571-(135) | REV.



LEGEND

- 2A — BASIN NUMBER
- 5/2A (ITEM)/(BASIN) — REFERENCE KEY NUMBER
- MAJOR RIDGE LINE
- EXISTING DRAINAGEWAY
- INTERMITTENT POND
- (30) — SECTION NUMBER

STRUCTURE SCHEDULE

REFERENCE KEY NUMBER	AREA DRAINED ACRES	EXISTING STRUCTURE	PROPOSED STRUCTURE
5/2A	890		WEIR
6/2A	890	48" CMP	20'x8' BR
7/2A	490		WEIR
9/2A	490	2-6'x3' CMP	18'x6' BR
9/2A	320		WEIR
10/2A	510	42"x24" CMP	16'x6' BR
1/2B	970		WEIR
3/2B	640		WEIR
4/2B	640	3-6'x3' CMP	22'x6' BR
4/2C	220	2-6'x3' CMP	10'x6' BR
3/2D	240		WEIR
3/2D	250	[illegible]	15'x6' BR

NOTES:

1. All elevations are based on mean sea level datum
2. Proposed major drainageways are shown. Minor drainageways will be necessary in future development to supplement the system of drainageways.
3. General features are from official air photos of Sarasota County, 1959-60
4. This Dwg. is a modification of "Preliminary Master Drainage Plan" Dwg. No. 00-3, Sarasota Co. Coastal Basins Study.

REVISIONS			
LTR	DESCRIPTION, DATE AND BY		

SCALE	1" = 1000'
DATE	12-10-62
DESIGNED BY	G.B.C.
DRAWN BY	N.B.D.
CHECKED BY	
APPROVED BY	
JOB NO.	571

FOR BOARD OF COUNTY COMMISSIONERS
SARASOTA COUNTY, FLORIDA

PROPOSED DRAINAGE IMPROVEMENTS

MATHENY CREEK, ELLIGRAW BAYOU HOLIDAY HARBOR AND CLOWER CREEK BASINS

SMALLY · WELLFORD & NALVEN
CONSULTING ENGINEERS — SARASOTA FLORIDA

SHEET 3 OF 4 | DRAWING NUMBER E-571-(136) | REV.

RGE 17 E

RGE 18 E

RGE 19 E

MANATEE COUNTY
SARASOTA COUNTY

DISTRICT ENDS AT COUNTY LINE

SARASOTA-BRADENTON AIRPORT

WHITAKER BAYOU BASIN

HUDSON BAYOU BASIN

PHILLIPPI CREEK BASIN

MATHENY CREEK BASIN

ELLIGRAW BAYOU BASIN

HOLIDAY BAYOU BASIN

CLOWER CREEK BASIN

SARASOTA BAY

ROBERTS BAY

LITTLE SARASOTA BAY (SIESTA)

CASEY KEY

LONGBOAT KEY

ST. ARMAND KEY

BIRD KEY

LIDO KEY

GULF OF MEXICO

FRUITVILLE

BEE RIDGE

VAMO

OSPREY

DeSoto Road

27th Street

17th Street

Gocio Road

Richardson Road

Fruitville Road

Main St.

Bahia Vista Street

Hyde Park St.

Webber Street

Bee Ridge Road

Wilkinson Road

Proctor Road

Clark Road

Sugar Bowl Road

ATLANTIC COAST LINE

MAIN A

CITY LIMITS

N

S

E

W

LEGEND

ROADS

- U.S. HIGHWAYS
- STATE HIGHWAYS
- MAIN ROUTES
- PROPOSED ROADS & STREETS

BOUNDARIES

- COUNTY
- CITY
- DISTRICT BOUNDARY
- BASIN BOUNDARY

BOUNDARIES OF DISTRICT ARE TENTATIVE AND SUBJECT TO ADJUSTMENT. THE BOUNDARIES SHOWN CORRESPOND TO APPROXIMATE RIDGE LINES, BASED ON AVAILABLE TOPOGRAPHIC DATA.

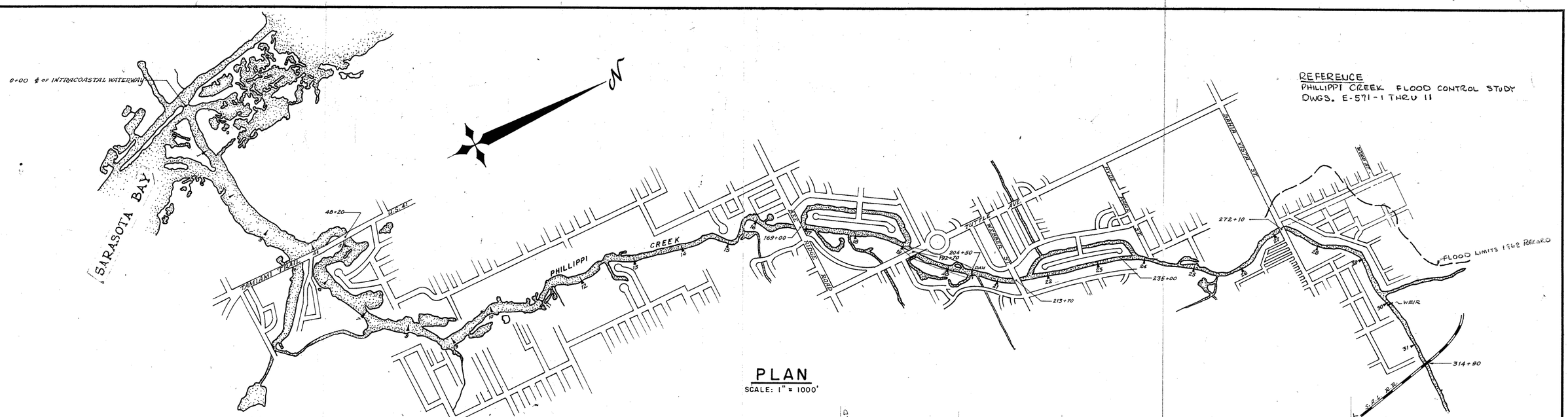
TWP 36 S

TWP 37 S

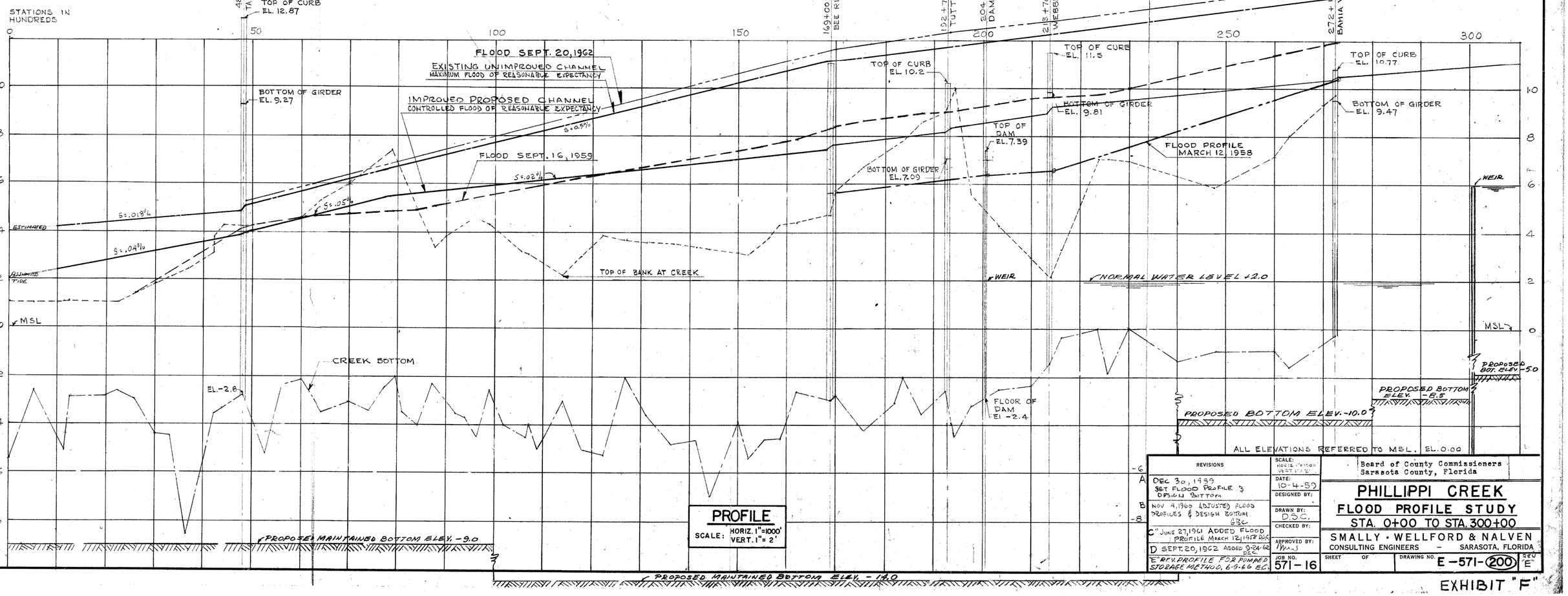
TWP 38 S

REVISIONS		SCALE: 2" = 1 MILE	FOR: BOARD OF COUNTY COMMISSIONERS SARASOTA COUNTY, FLORIDA
LTR.	DESCRIPTION, DATE AND BY	DATE: 12-10-62	PROPOSED SARASOTA AREA FLOOD CONTROL DISTRICT
		DESIGNED BY: N.B.D.	
		DRAWN BY: K.H.	
		CHECKED BY:	SMALLY · WELLFORD & NALVEN CONSULTING ENGINEERS — SARASOTA, FLORIDA
		APPROVED BY:	
		JOB NO. 571	SHEET 4 OF 4 — DRAWING NUMBER F-571-(137) — REV.

REFERENCE
PHILLIPPI CREEK FLOOD CONTROL STUDY
DWGS. E-571-1 THRU 11



PLAN
SCALE: 1" = 1000'



PROFILE
SCALE: HORIZ. 1"=1000'
VERT. 1"= 2'

REVISIONS	SCALE: HORIZ. 1"=1000' VERT. 1"=2'
A DEC 30, 1959 SET FLOOD PROFILE & DESIGN BOTTOM	DATE: 10-4-59
B NOV 4, 1960 ADJUSTED FLOOD PROFILES & DESIGN BOTTOM D.S.C.	DESIGNED BY:
C JUNE 27, 1961 ADDED FLOOD PROFILE MARCH 12, 1958 D.S.C.	DRAWN BY: D.S.C.
D SEPT. 20, 1962 ADDED 9-24-62 D.S.C.	CHECKED BY:
E REV. PROFILE FOR PUMPED STORAGE METHOD, 6-9-66 E.C.	APPROVED BY:
	JOB NO. 571-16

Board of County Commissioners
Sarasota County, Florida

PHILLIPPI CREEK
FLOOD PROFILE STUDY
STA. 0+00 TO STA. 300+00

SMALLY · WELLFORD & NALVEN
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