



July 22, 1996

Mr. Hamilton S. Oven, Jr., P.E.
Administrator, Office of Siting Coordination
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Florida Power and Light Company (ST. LUCIE & MARTIN COUNTIES)
Levee-Midway 500kV Transmission Line
As Built Submittal
Certification No. TA89-07
DOAH No. 89-0279
OGC No. 89-8907
COE 199101997 (IP-ML)

Dear Buck:

KBN Engineering and Applied Sciences, Inc. (KBN) has completed an as-built survey for the above referenced project as required by the Transmission Line Siting Act. The as-builts reflect changes in culvert sizes and locations, access roads and structure pads. A total of 1.09 acres of fill were authorized for St. Lucie County, the as-builts reflect a total of 0.87 acres of impact. A total of 1.05 acres of fill were authorized for Martin County, the as-builts reflect a total of 0.91 acres of impact.

As part of the construction completion certification, the following information is being submitted:

- Revised Transmission Route of Line aerals, which reflect permitted and as-built conditions on a base map which includes surveyed conditions as prepared by Avirom-Hall and Associates, the project surveyors.
- A summary table of permitted construction versus modified (as-built) conditions.
- Revised Drainage Summary Table and supporting documentation.

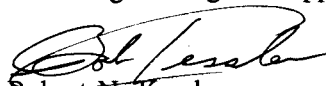
The revised transmission route-of-line aerals presents the permitted and as-built conditions. Reference should be made to the cover page of the route-of-line aerals for definitions of the symbols used. Unless otherwise noted on the route-of-line aerals, the permitted construction is the built construction. Modifications to permitted construction are presented in the attached Table 1 and delineated on the route-of-line aerals as both permitted and as-built conditions.

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Table 1 presents rationale for changes made to permitted construction. As presented in Table 1, some culverts were not constructed because the construction equipment used on the project was able to access the construction site without the need to cross an existing drainage canal/ditch. Several culverts were as-built at slightly longer lengths than permitted. Two culverts, C-3 and C-22 were built at different sizes than permitted and one equalizer culvert at structure 208 was added to facilitate access. As-built signed and sealed drawings are presented as part of this submittal. Supporting documentation to justify the use of the culverts C-3, C-22 and the culvert at structure 208 are also presented with this submittal.

With the exception of the modifications presented herein, all surface water management facilities for the above referenced project have been constructed in substantial accordance with the design approved by the South Florida Water Management District.

Sincerely,
KBN Engineering and Applied Sciences, Inc.



Robert N. Kessler
Senior Environmental Specialist

cc: Marie Burns, COE, Jacksonville, Fla. (2)
bcc: J. Coto, FPL (1)
P. Givens, FPL (1)

attachments

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SUB LANDS & ENV. DIV.

Structure Location	Route of Line Aerial	Permitted Construction	Modified Construction	Wetland No.
			As-Built	
1	1	-	1-15"x32' CMP (C-0)	
2-5	1	Type B Road - 14' wide	Type B Road - 10' wide	
3-4	1	Type B Road - 900'	Type B Road - 720'	
3-4	1	-	Type C* Road - 180'	
3-4	1	Type E* Road - 250'	Type B Road 50'	STL-1.2
3-4	1	-	Type D* Road - 200'	
4	1	-	1-15"x32' CMP (C-4A)	STL-1.2
	1	-	1-15"x32' CMP (C-4B)	STL-1.2
4-5	1	-	Type B Road 1280'	
4-5	1	Type B Road - 1530'	Type C* Road 250'	
6-7	2	Type B Road - 1340'	No Road Constructed	
	2	1-15"x32' CMP (C-12)	Culverts C-12 through C-19	
	2	1-15"x32' CMP (C-13)	Not Constructed	
	2	1-15"x32' CMP (C-14)		
	2	1-15"x32' CMP (C-15)		
	2	1-15"x32' CMP (C-16)		
	2	1-15"x32' CMP (C-17)		
	2	1-15"x32' CMP (C-18)		
	2	1-15"x32' CMP (C-19)		
7-8	2	Type F Road - 90'	Road Not Constructed	STL-4
	2	Type B Road - 80'	Road Not Constructed	STL-4
	2	1-15"x45' CMP (C-20)	Culvert C-20	
	-	-	Not Constructed	
8-9	2	Type B Pads	Pads Not Constructed	
9-10	2	Type F Road - 50'	Type B Road - 50'	STL-5
9	2	1-24"x45' CMP (C-20A)	1-36"x45' CMP (C-20A)	STL-5
10	2	Type B Pad	Pad Not Constructed	
11-12	3	Type B Pads	Pads Not Constructed	
11-12	3	1-15"x32' CMP (C-20B)	Culvert Not Constructed	
14-15	3	Type B Pads	Pads Not Constructed	
14-15	3	Type B Road - 1300'	Road Not Constructed	
15-16	3	Type B Road - 240'	Road Not Constructed	
		Type B Pads	Pads Not Constructed	
16-17	4	Type B Road - 160'	Road Not Constructed	
17	4	-	1-18"x29.5' PVC (C-21A)	
18-20	4	Type B Pads	Pads Not Constructed	
21-24	5	Type B Pads	Pads Not Constructed	
26	6	Type B Pad	Pad Not Constructed	
27		-	1-8"x40' PVC (C-22A)	
		-	3-8"x39' PVC (C-22B)	

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Structure Location	Route of Line Aerial	Permitted Construction	Modified Construction As - Built	Wetland No.
28-29	6	Type D* Road - 700'	Type D* Road - 700'	STL - 8C
	6	Type F* Road - 350'	Type E* Road - 350'	
	6	Type D* Road - 150'	Type D* Road - 150'	STL - 8C
	6	Type F* Road - 225'	Type D* Road - 225'	
		1-18"x32' CMP, C-24A	1-15"x32' CMP, (C-24A)	
		1-18"x32' CMP, C-24B	1-15"x32' CMP, (C-24B)	
29-30	6	Type D* Road - 150'	Type D* Road - 150'	
	6	Type B Road - 800'	Type C Road - 800'	
	6	Construct Swale	1-15"x32' CMP, (C-24E)	
	7		Swale Not Constructed - Culvert installed	
			1-24"x45' CMP, (C-24D)	
30	7	Type B Road - 280'	Type C* Road - 280'	
	7	Type B Pad	Type C* Pad	
	7	-	1-18"x35' CMP, (C-24E)	
30-31	7	Type B Road - 1300'	Type C* Road - 1300'	
31-32	7	Type B Road - 1200'	Type C* Road - 1200'	
	7	Type B Road - 1200'	Type C* Road - 1200'	
32-33	7	Construct Swales	Swales Not Constructed - Culverts installed	
			15"x32' CMP, (C-24F)	
		-	1-6"x39"PVC, (C-24G)	
33	7	Construct Swale	1-6"x89' PVC, (C-24H)	
33-34	7	Type B Road - 1200'	Type C* Road - 1200'	
	7	Construct Swale	1-6"x40' PVC, (C-24I)	
34-35	7	Type B Road - 1329'	Type C* Road - 1099'	
	7		Type B Road - 230'	
30-34	7	Type B Pads	Type C* Pads	
35-36	7	1-42"x45' CMP	3-42"x65' CMP, (C-25)	
36	9	Type B Pad	Pad Not Constructed	
36-37	9	Type B Road - 350'	Road Not Constructed	
37-41	9	Type B Pads	Pads Not Constructed	
41-42	10	Type D* Road - 410'	Type D* Road - 340'	
42-44	10	-	Orientation of Road and location of culverts C-26 thru C-34 shifted west	
43	REMOVED	1-15"x36' CMP (C-30)	1-15"x72' CMP (C-30)	

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Structure Location	Route of Line Aerial	Permitted Construction	Modified Construction As-Built	Wetland No.
44-45	10	Type B Road - 280'	Type B Road - 100'	ST: - 12.1B
		Type F Road - 60'	Road Not Constructed	
		Type B Road - 780'	Road Not Constructed	
	10	Type B Road - 260'	Road Not Constructed	
	10	1-15"x65' CMP (C-35)	Culvert Not Constructed	
	10	1-36"x65' CMP (C-36)	Culvert Not Constructed	
	10	1-36"x45' CMP (C-37)	Culvert Not Constructed	
	10	1-15"x32' CMP (C-38)	Culvert Not Constructed	
	10	1-15"x32' CMP (C-39)	Culvert Not Constructed	
	10	1-15"x32' CMP (C-40)	Culvert Not Constructed	
	10	1-15"x32' CMP (C-41)	Culvert Not Constructed	
	10	1-15"x32' CMP (C-42)	Culvert Not Constructed	
45-46	10	1-15"x32' CMP (C-43)	1-15"x48' CMP (C-43) - Orientation	
	10	-	1-9"x20'PVC, (C-43A)	
	10	-	1-9"x20'PVC, (C-43B)	
	10	-	1-9"x20'PVC, (C-43C)	
	10	1-15"x85' CMP (C-44)	Culvert Not Constructed	
46	10	Type B Pad	Type D* Pad	
46-47	10	Type B Road - 1300'	Type D* Road - 500'	STL 13-1
	10		Type B Road - 650'	
	10	-	1-15"x32' CMP, (C-45A)	
	10	-	2-15"x32' CMP, (C-45B)	
	10	-	Type C* Road - 150'	
47	10	Type B Pad	Type C* Pad	
47-48	10	Type B Road - 2010'	Type D* Road - 200'	
	10		Type C* Road - 100'	
	10		Type C* Road - 250'	
	10		Type B Road 1460'	
	10	-	1-15"x32' CMP, (C-45C)	
	10	-	1-15"x32' CMP, (C-45D)	
48-49	10	Type B Road - 980'	Road Constructed along west ROW	STL - 13.9
		Type B Road - 640'	Road Constructed along west ROW	STL - 13.9
	10		1-8"x29.5'PVC, (C-45E)	
	10		1-8"x29.5'PVC, (C-45F)	
	10		1-8"x29.5'PVC, (C-45G)	
	10		1-8"x26.5'PVC, (C-45H)	
	10		1-15"x32' CMP, (C-45I)	
49	10	Type B Pad	Pad Not Constructed	
50	10	Type B Pad	Pad Not Constructed	

Structure Location	Route of Line Aerial	Permitted Construction	Modified Construction As-Built	Wetland No.
51-59	11	Type B Pads	Pads Not Constructed	
60-61	12	Type B Pads	Pads Not Constructed	
62A	12	-	New structure	
63-64	12	1-36"x40' CMP	1-42"x60' CMP, (C-48A)	M-1B
66	12	Type B Pad	Pad Not Constructed	
67	12	Type D* Pad	Type C* Pad	
68	12	Type B Pad	Type C* Pad	
69	13	Type B Pad	Type C* Pad	
71	13	Type B Pad	Type C* Pad	
72	13	Type B Pad	Type D* Pad	M-7
75	13	Type B Pad	Pad Not Constructed	
77	13	-	1-15"x36' CMP, (C-48B)	
81	14	Type B Pad	Type C* Pad	
81-82	14	Type D Road - 500'	Road Not Constructed	
82	14	-	1-48"x66' CMP, (C-48C)	
82-83	14	Type D Road - 400'	Road Not Constructed	
86	14	Type F* Pad	Type B Pad	M-9.2
87	14	Type B Pad	Pad Not Constructed	
88, 90, 92, 94 and 96	15	Culverts C-52 thru C-56 permitted in main canal	Culverts C-52A thru C-56A Constructed in irrigation canal	
88	15	1-48"x75' CMP (C-52)	1-24"x45' CMP (C-52A)	
88-90	15	Type B Pads	Pads Not Constructed	
90	15	1-48"x75' CMP (C-53)	1-24"x45' CMP (C-53A)	
90-92	15	Type B Pads	Pads Not Constructed	
92	15	1-60"x75' CMP (C-54)	1-24"x45' CMP (C-54A)	
92-94	15	Type B Pads	Pads Not Constructed	
94	15	1-66"x75' CMP (C-55)	1-24"x45' CMP (C-55A)	
95-96	15	Type B Pads	Pads Not Constructed	
96	15	1-72"x75' CMP (C-56)	1-24"x45' CMP (C-56A)	
97-98	15	Type B Pads	Pads Not Constructed	
98	16	1-72"x75' CMP (C-57)	No Culvert Constructed	
101-102	16	-	1-36"x56' CMP, (C-60A)	
101-103	16	Road permitted along south ROW	Road constructed along north ROW	
104-105	17	Type B Road - 1300'	Type B Road - 1000'; Orientation of Road shifted	
104-105	17	-	4-8"x40' PVC, (C-60B)	
105-106	17	-	24"x60' CMP, (C-60C)	
109-111	17	Type B Pads	No Pads Constructed	
112-115	18	Type B Pads	No Pads Constructed	
115-116	18	-	1-15"x35' CMP, (C-62A)	
	18	-	1-15"x32' CMP, (C-62B)	
	18	Type B Road - 500'	Type D* Road - 200'	

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Structure Location	Route of Line Aerial	Permitted Construction	Modified Construction As-Built	Wetland No.
117-118	18	No Road Permitted	Type B Road - 300'	
			Type B Road - 100'	
			Type C Road - 50'	
118-119	18	Type B Road - 400'	Type B Road - 230'	M-17
		Geoweb Swale	Swale Not Constructed	
118-119	18	Type D* Road - 850'	Type D* Road - 750'	
119-120	18	Type E* Road - 50'	Type D* Road - 50'	M-17A
	18	-	1-15"x32' CMP, (C-63A)	
120-121	18	-	1-15"x32' CMP, (C-63B)	
121-122	19	-	1-8"x30' PVC, (C-63C)	
		-	2-15"x32.5' CMP, (C-63D)	
122-123	19	Type B Road - 1299'	Type B Road - 1159'	
			Type C* Road - 140'	
	19	-	2-8"x30' PVC, (C-63E)	
124-131	19	Type B Pads	Pads Not Constructed	
132	21	-	1-30"x45' CMP, (C-65A)	
134	21	Type B Pad	Pads Not Constructed	
135	22	Type B Pad	Pad Not Constructed	
136	22		1-24" x45' CMP, (C-69A)	
139	22	Type B Pad	Pad Not Constructed	
140	22	Type B Road - 600'	Road Not Constructed	
140-142	23	Type B Pads	Pads not Constructed	
142	23	1-15"x32' CMP (C-70)	Culvert not Constructed	
145-146	24	-	1-18"x44' CMP, (C-71A)	
146-147	24	Type B Road - 1320'	Type B Road - 1000'	
	24		Orientation of Road shifted along west ROW at Structure 147	
147-148	24	-	Type B Road - 1250'	
148-149	24	-	Type B Road - 300'	
151	25	-	Type B Pad	
155-156	26	1-15"x 40' CMP	Culvert Not Constructed	

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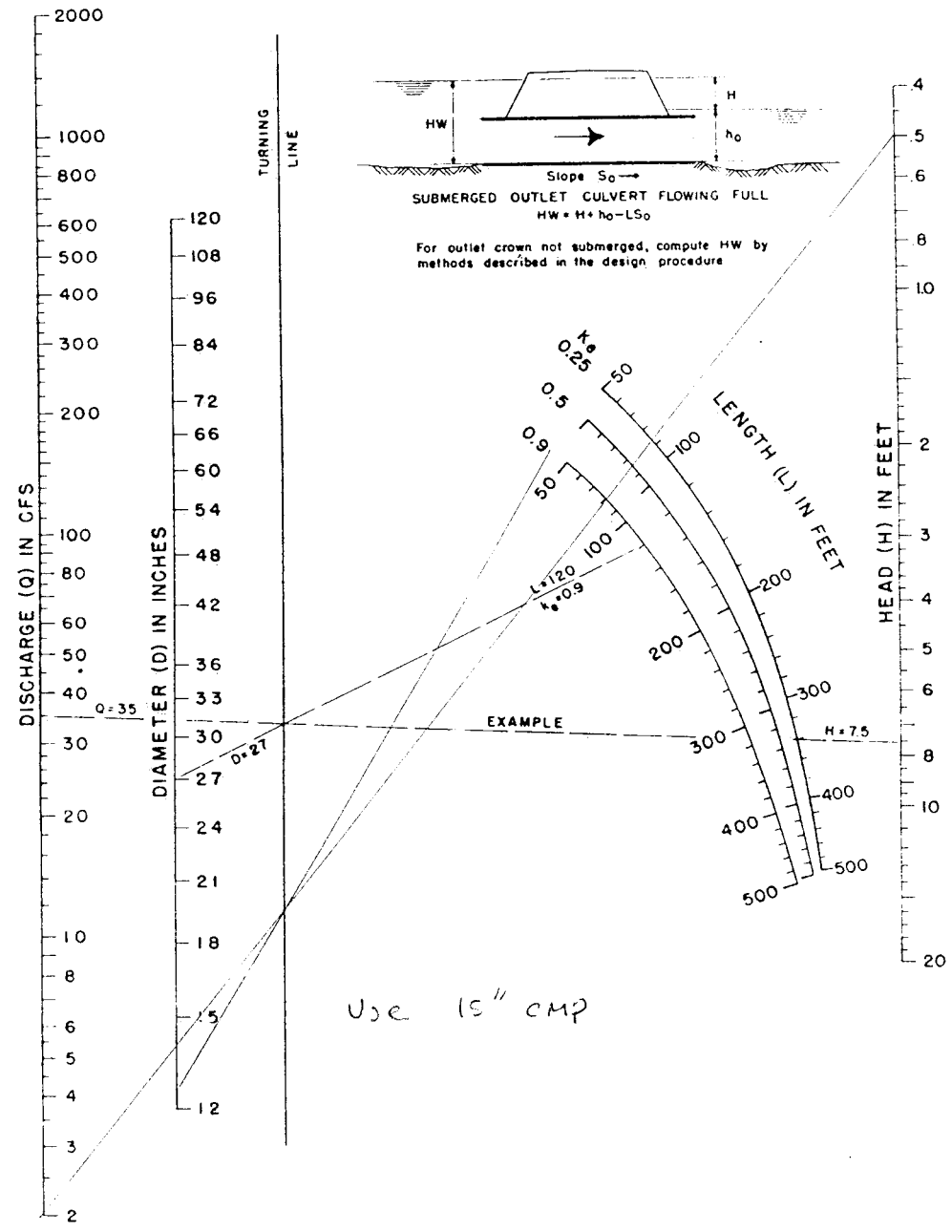
C-0

C-4A, C-4B, C-24F

C-30 C-48C, C-52A, C-53A, C-54A, C-55A, C-56A

C-60C

CHART II



Use 15" CMP

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SUB DIVISION & HIGHWAYS

HEAD FOR
STANDARD
C. M. PIPE CULVERTS
FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

USE PIPE LENGTH = 32'

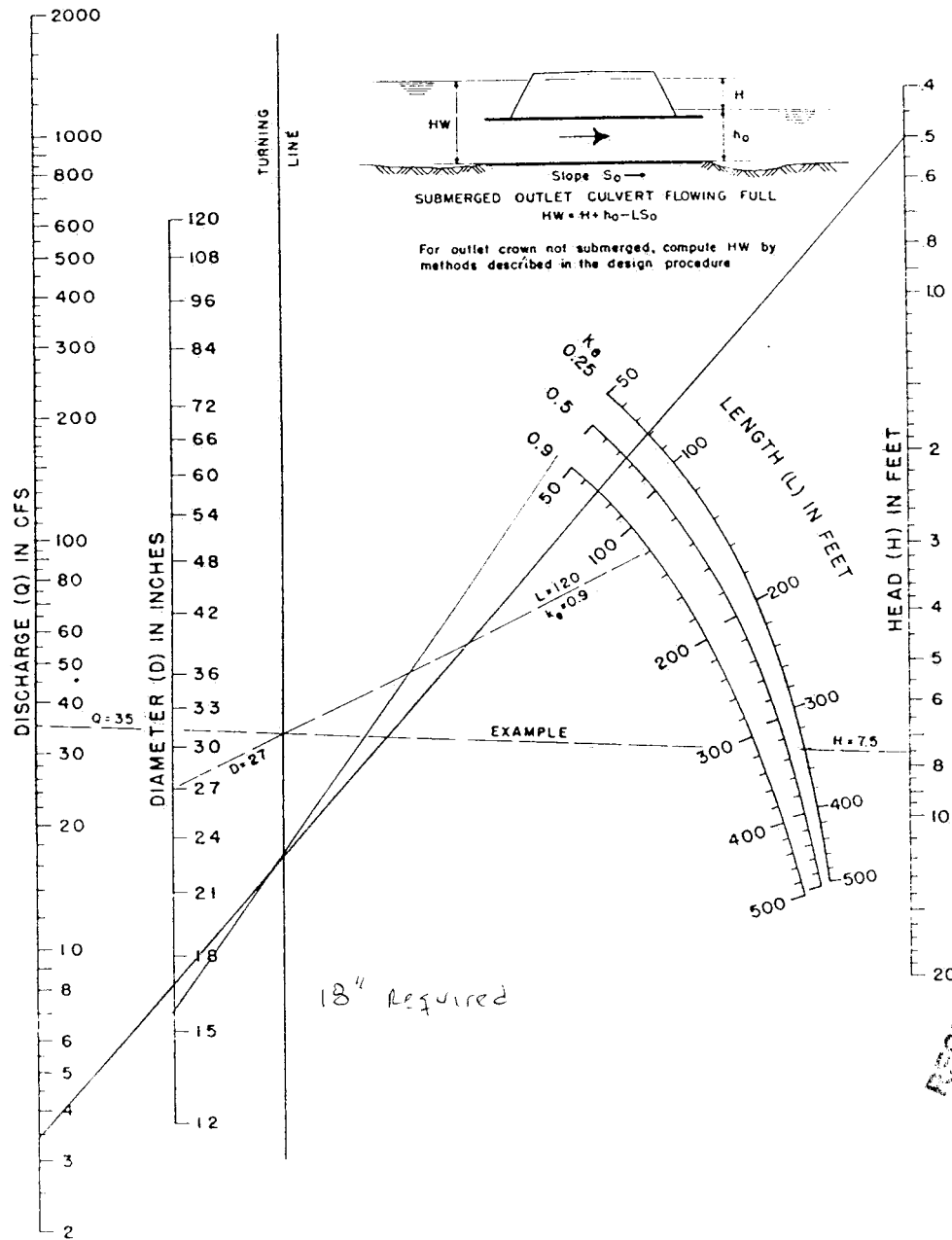
Q = 2 cfs

C-IV-20

Figure C-IV-14

C-21A

CHART II



HEAD FOR
STANDARD
C. M. PIPE CULVERTS
FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

Figure C-IV-14

$Q = 350$

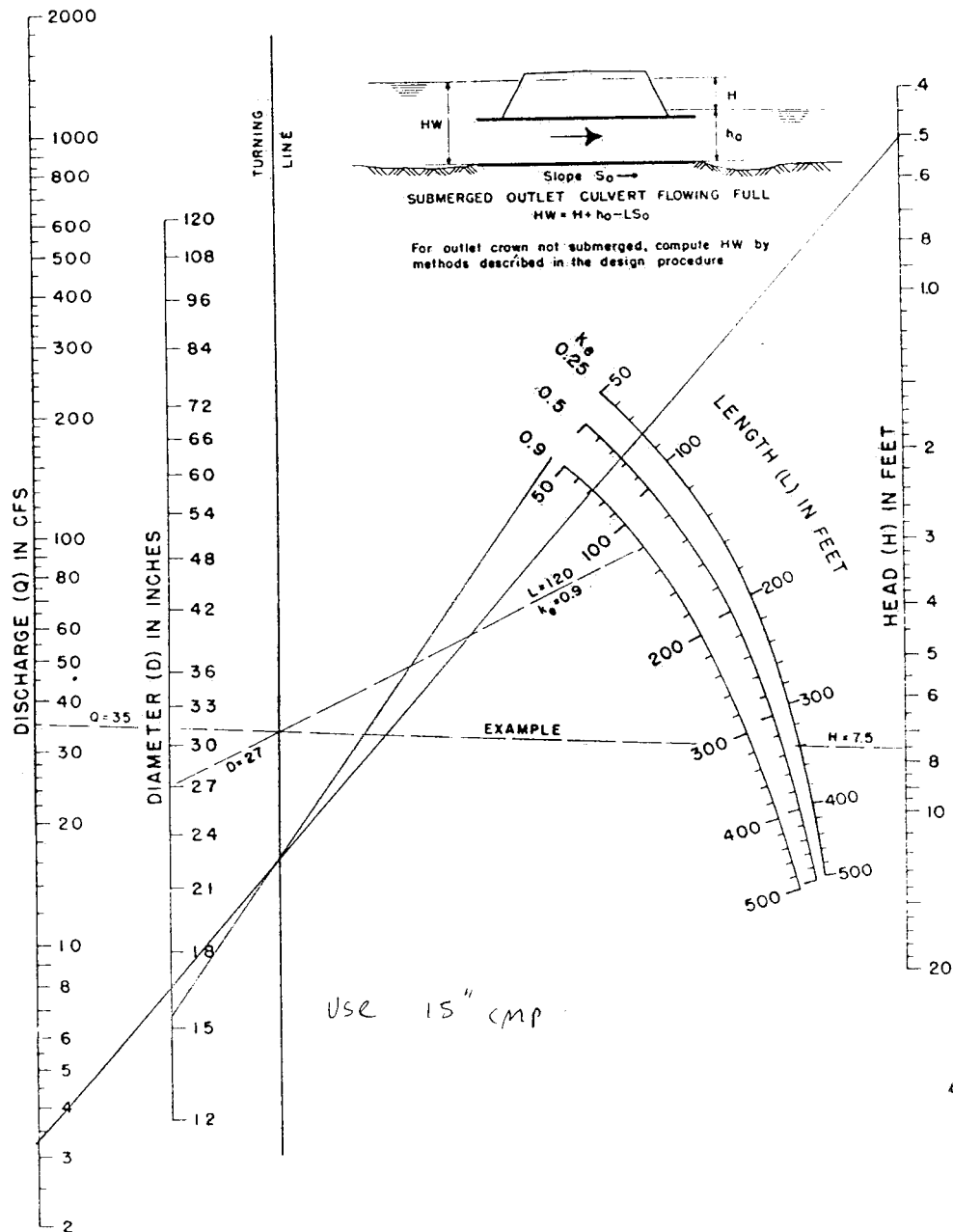
LENGTH OF PIPE = 29.5'

C-IV-20

AS-BUILT = 18" x 29.5' ok

C-24C

CHART II



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 CIVIL ENGINEERING DIVISION

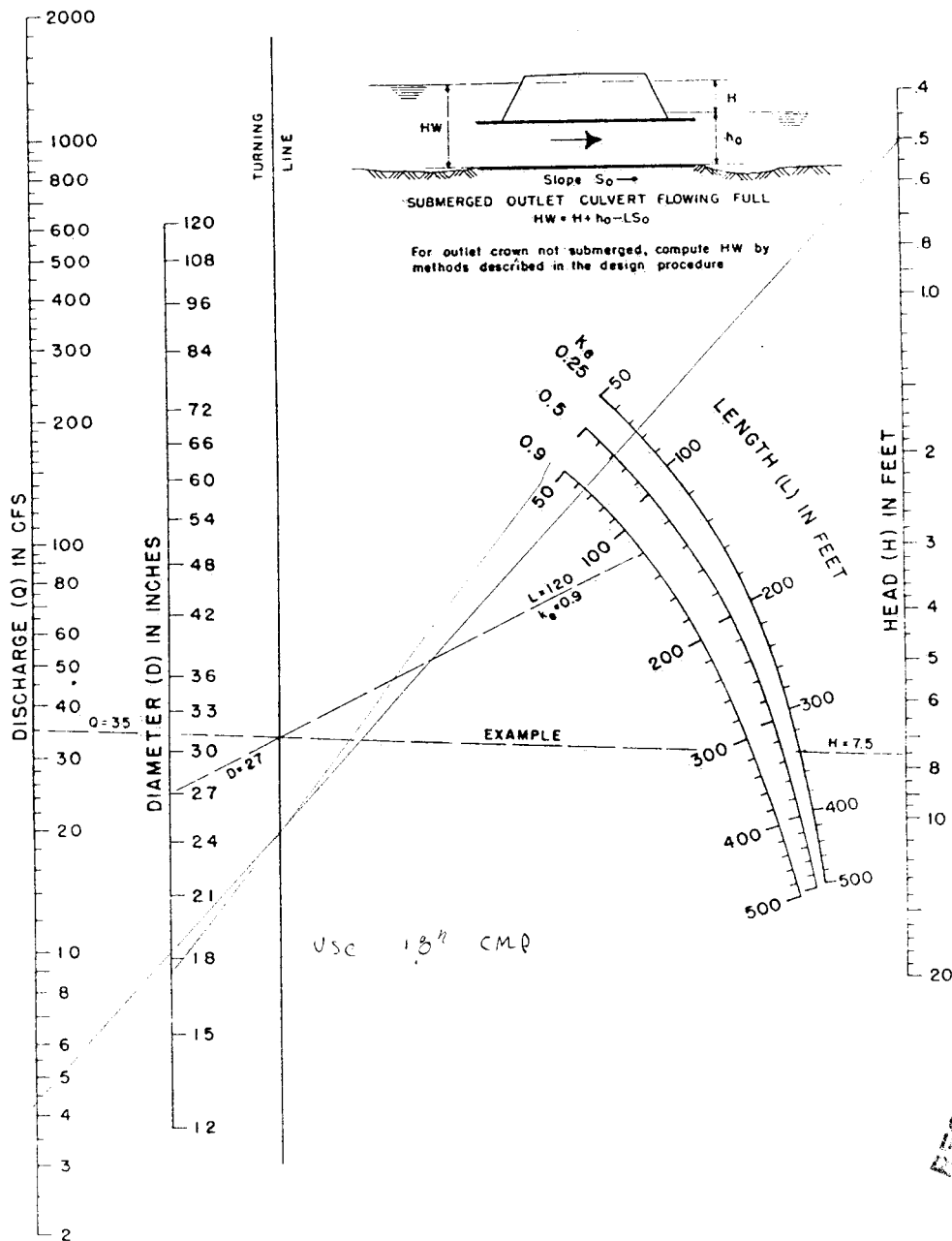
HEAD FOR
 STANDARD
 C. M. PIPE CULVERTS
 FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

Figure C-IV-14

C- 24D

CHART II



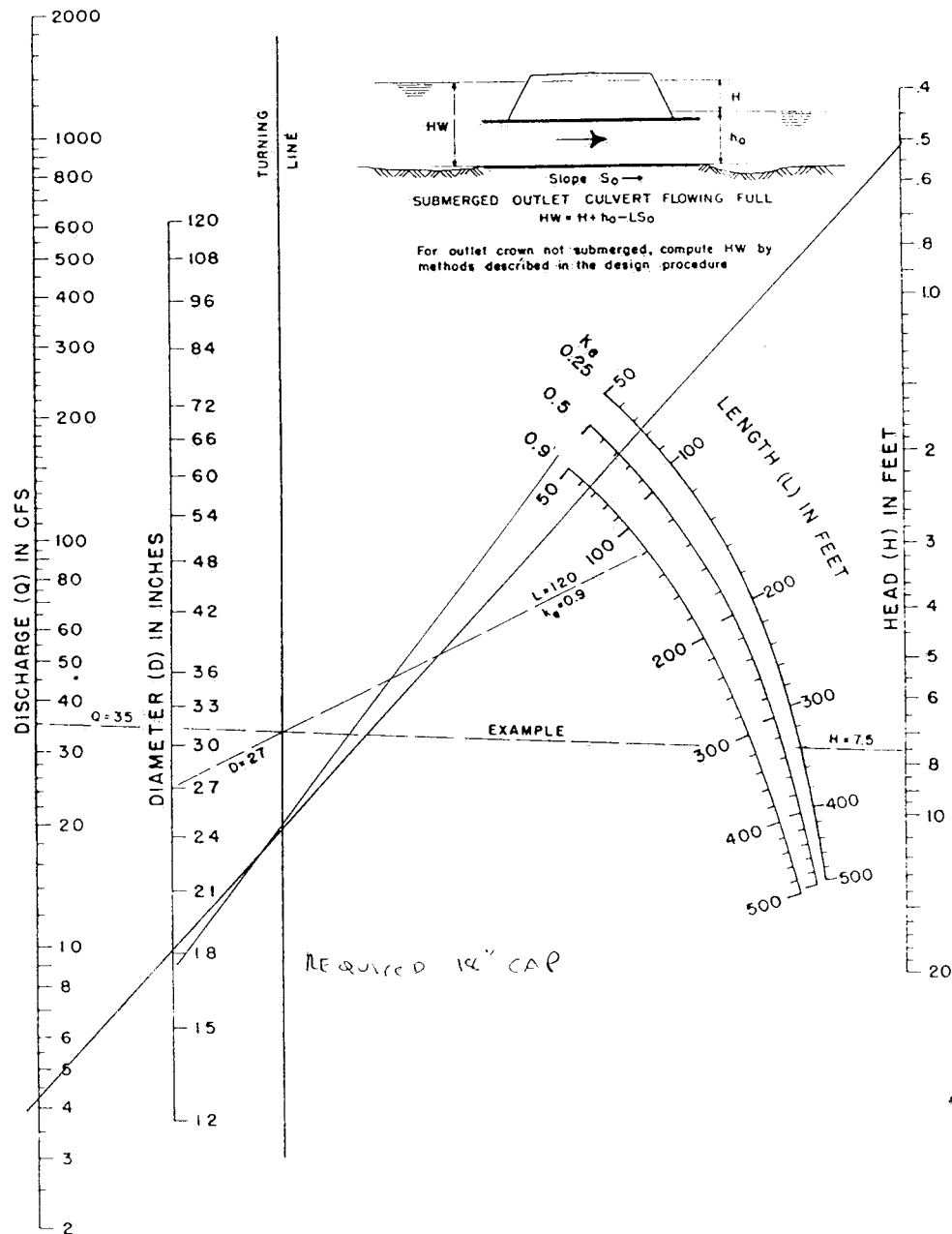
HEAD FOR
STANDARD
C. M. PIPE CULVERTS
FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

Figure C-IV-14

C-24D

CHART II



HEAD FOR
STANDARD
C. M. PIPE CULVERTS
FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

Q = 4.26 cfs

L = 32'

AS-BUILT = 24" x 45" OK

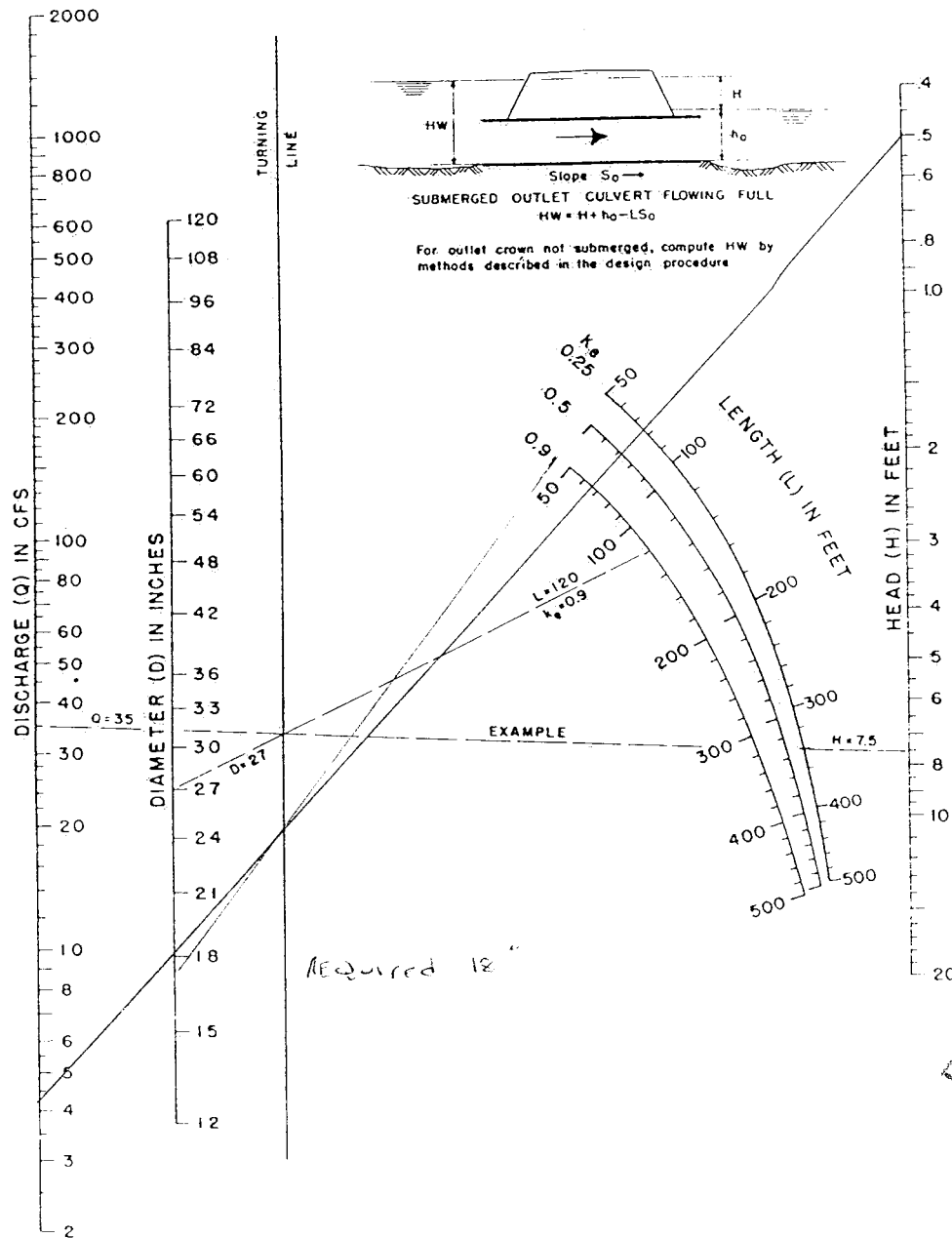
C-IV-20

Figure C-IV-14

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SUBMITTANCE

C-24 E

CHART II



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HEAD FOR
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C. M. PIPE CULVERTS
FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

$Q = 4.2 \text{ cfs}$

$L = 35'$

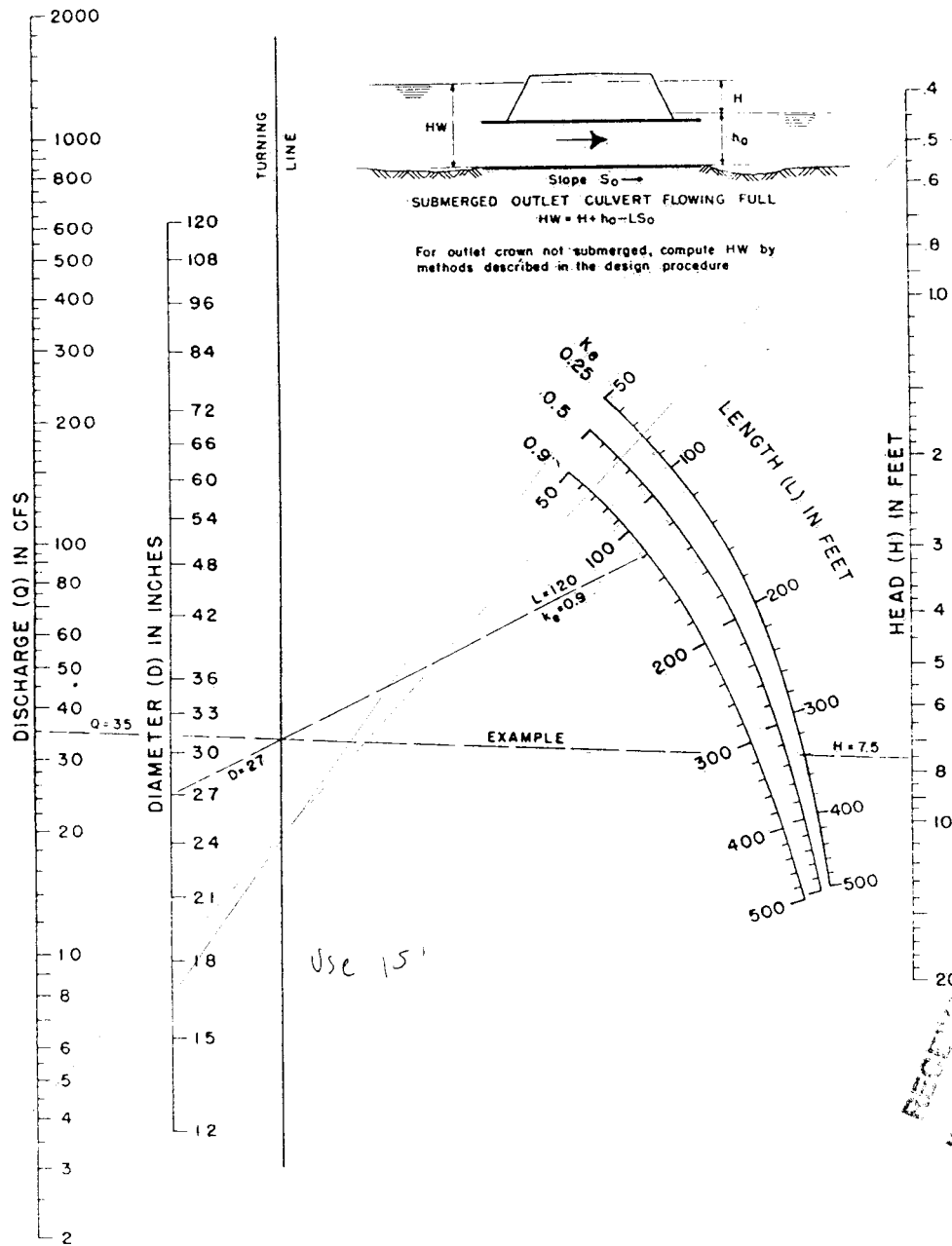
C-IV-20

As-built = 18" x 35' *OK*

Figure C-IV-14

C-45A

CHART II



HEAD FOR
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FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

Figure C-IV-14

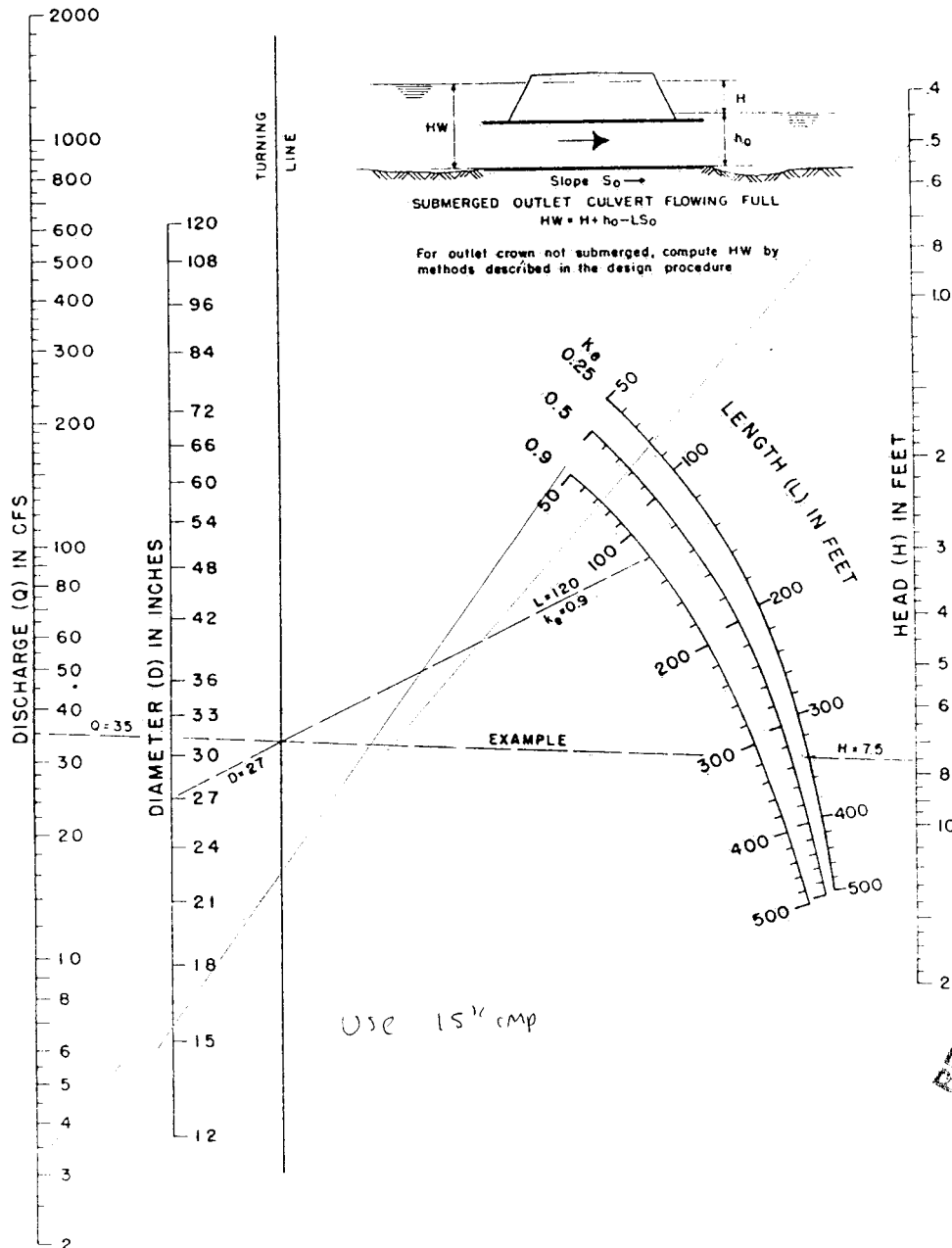
$Q = 4.4 \text{ cfs}$

$L = 32'$

C-IV-20

As $30' \times 15' = 450 \text{ sq ft}$ in

CHART II



HEAD FOR
STANDARD
C. M. PIPE CULVERTS
FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

Figure C-IV-14

$Q = 378 \text{ cfs}$

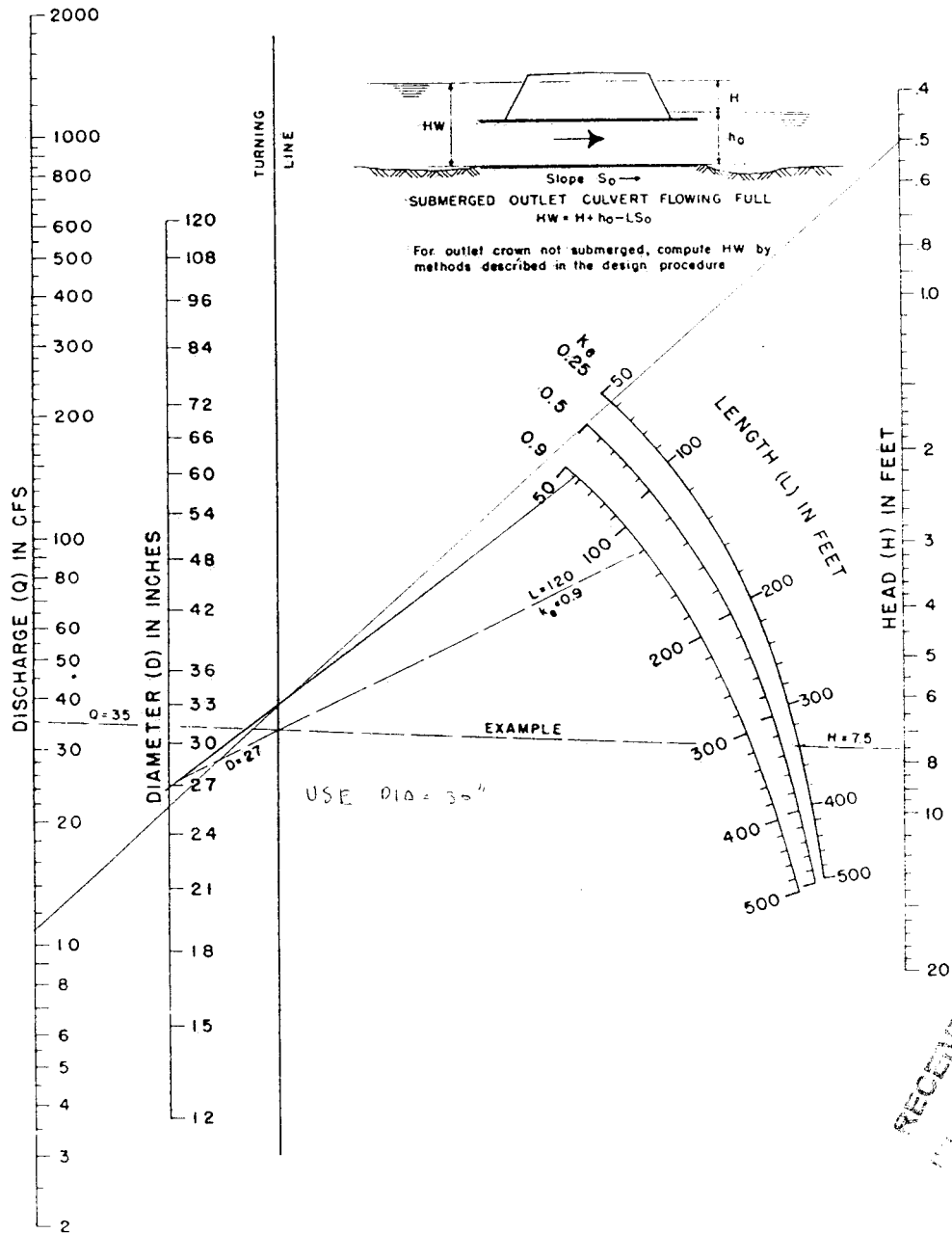
$$L = 6.5'$$

A₅ - Bull = 42' x 60' OK

C-IV-20

C-60A

CHART II



HEAD FOR
 STANDARD
 C. M. PIPE CULVERTS
 FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

Figure C-IV-14

LENGTH = 56'

Q = 11.10 cfs

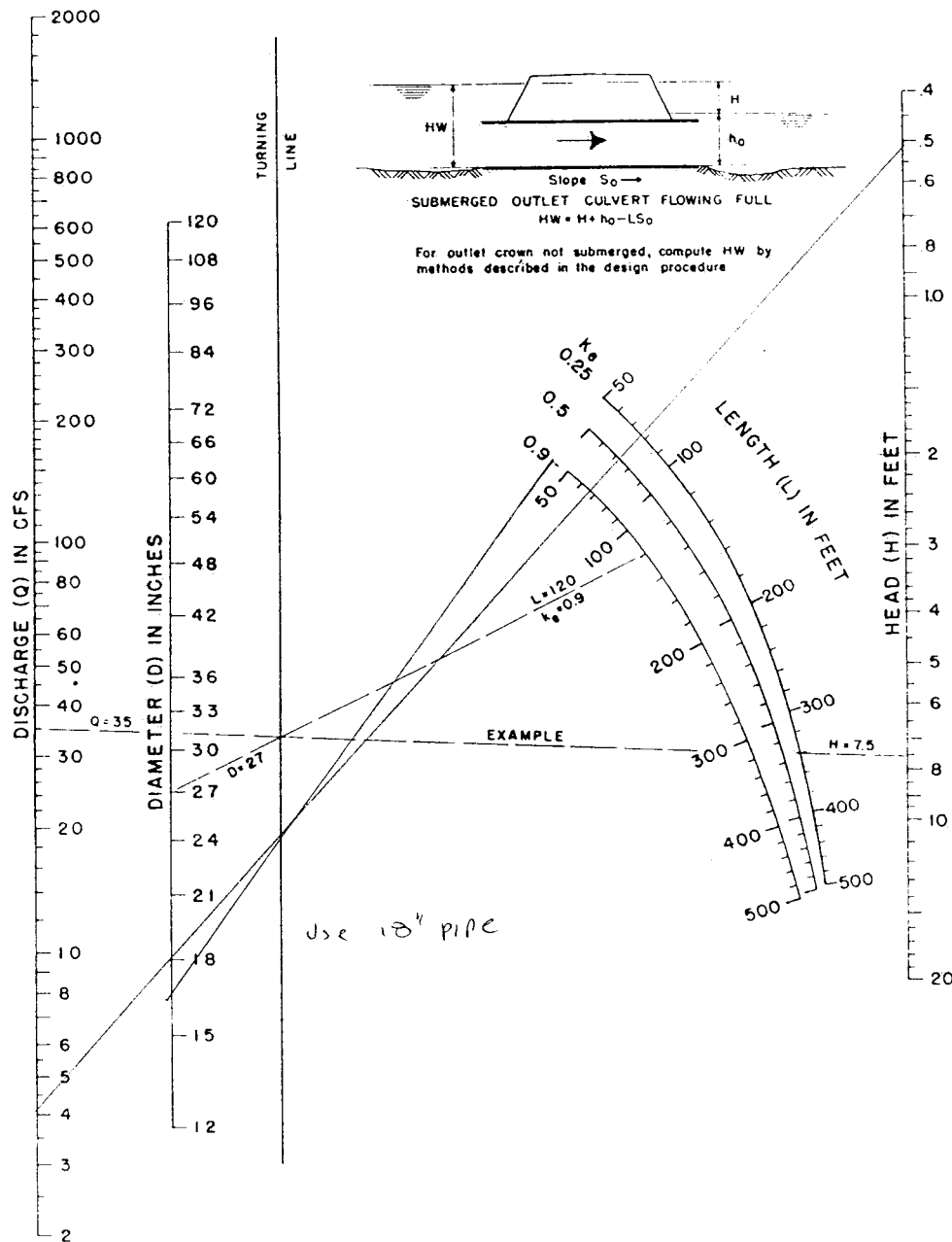
C-IV-20

AS-BUILT = 36" x 56' CMP OK

C-62A

C-62B

CHART II



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 SAN FRANCISCO DISTRICT

HEAD FOR
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 C. M. PIPE CULVERTS
 FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN. 1963

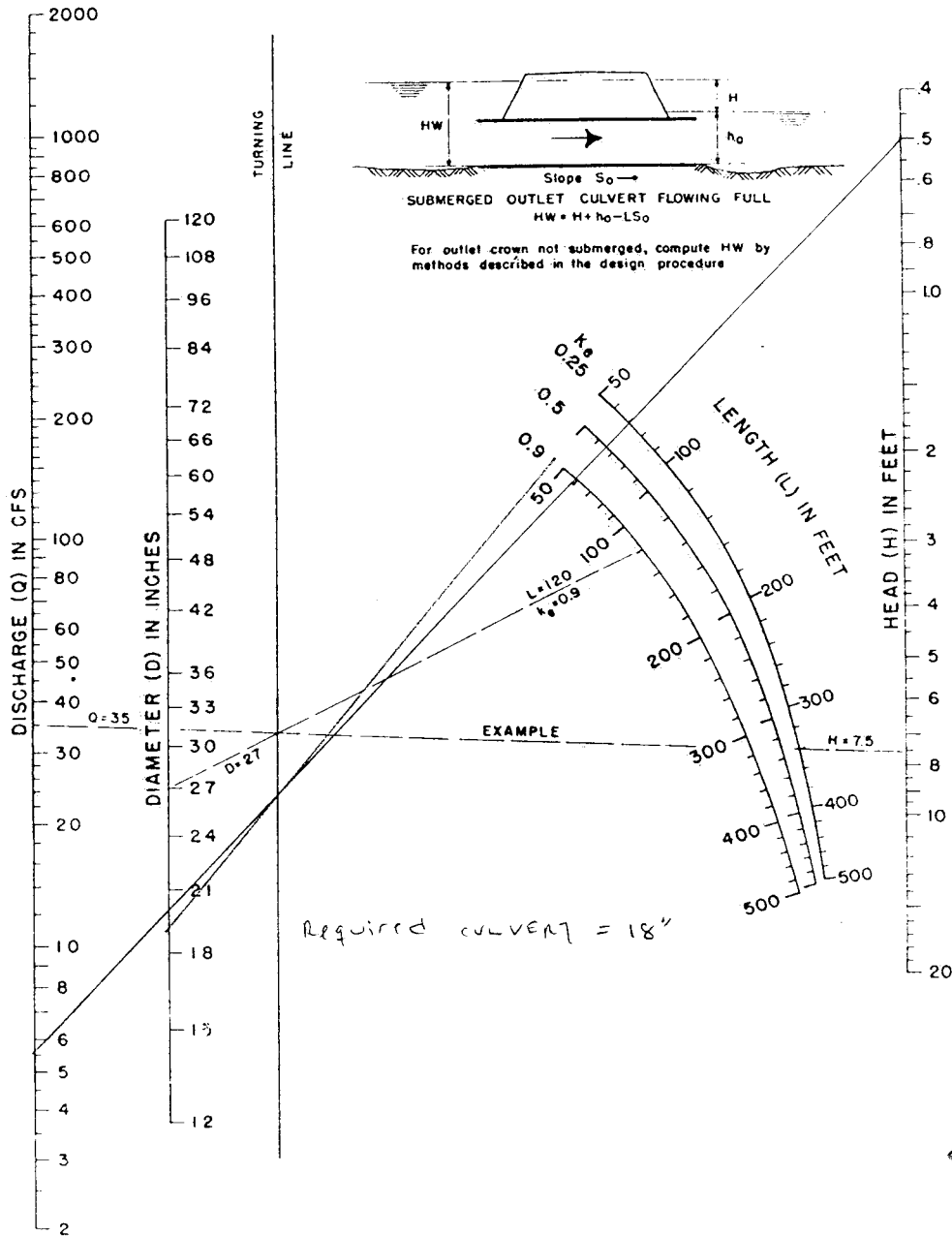
Q = 1.17
 AS-BUILT CULVERT 2 - 15" x 32'
 LENGTH = 32'
 DIA = 15"

C-IV-20

Figure C-IV-14

C-639

CHART II



HEAD FOR
STANDARD
C. M. PIPE CULVERTS
FLOWING FULL
 $n = 0.024$

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Figure C-IV-14

$$Q = 375 \text{ cfs}$$

$$L = 32.5'$$

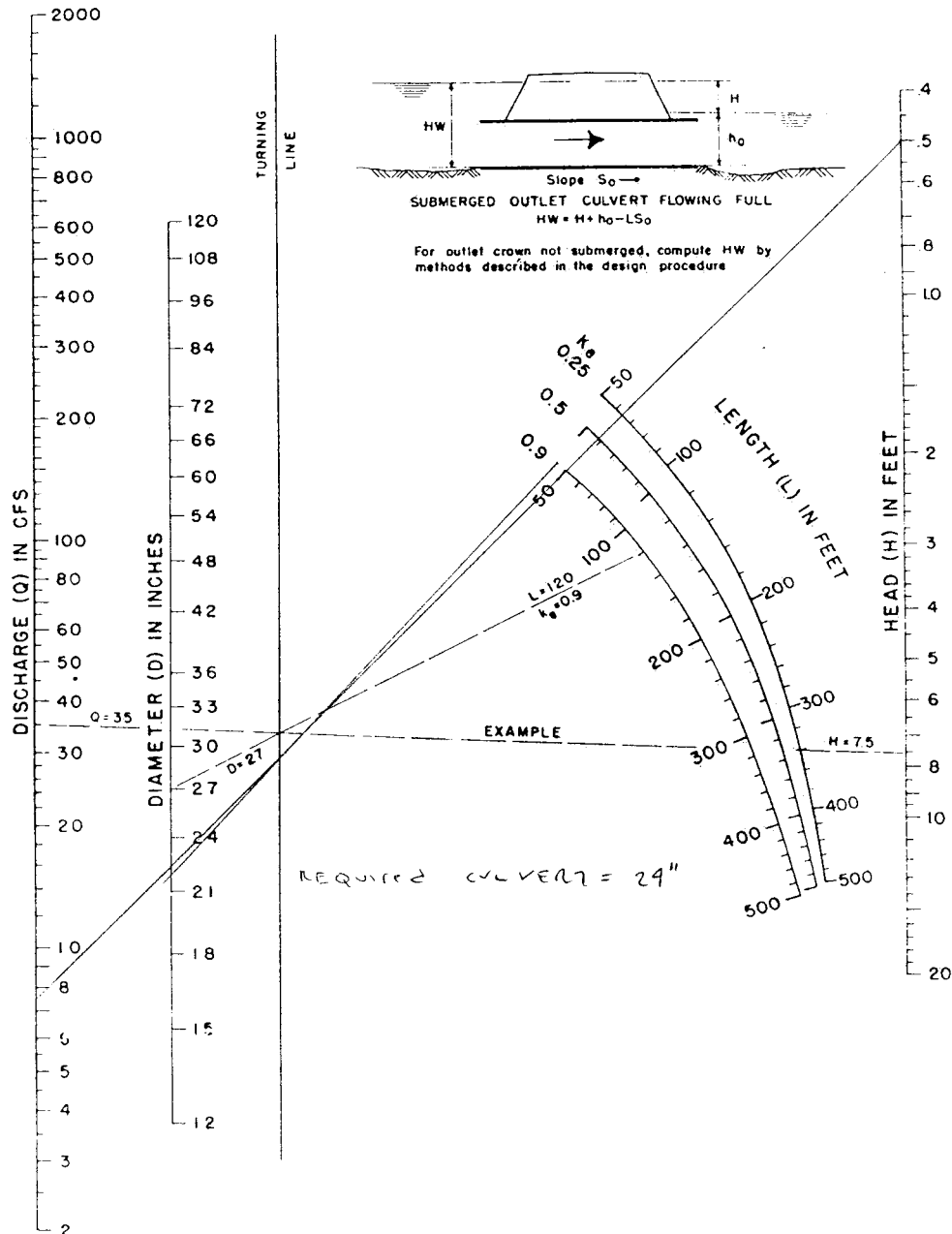
$$As. Built = 2 \times 18" \times 32.5' \text{ ok}$$

C-IV-20

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C-65A

CHART II



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 SUBURBAN & CENTRAL

HEAD FOR
 STANDARD
 C. M. PIPE CULVERTS
 FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

Figure C-IV-14

$Q = 7.51 \text{ cfs}$

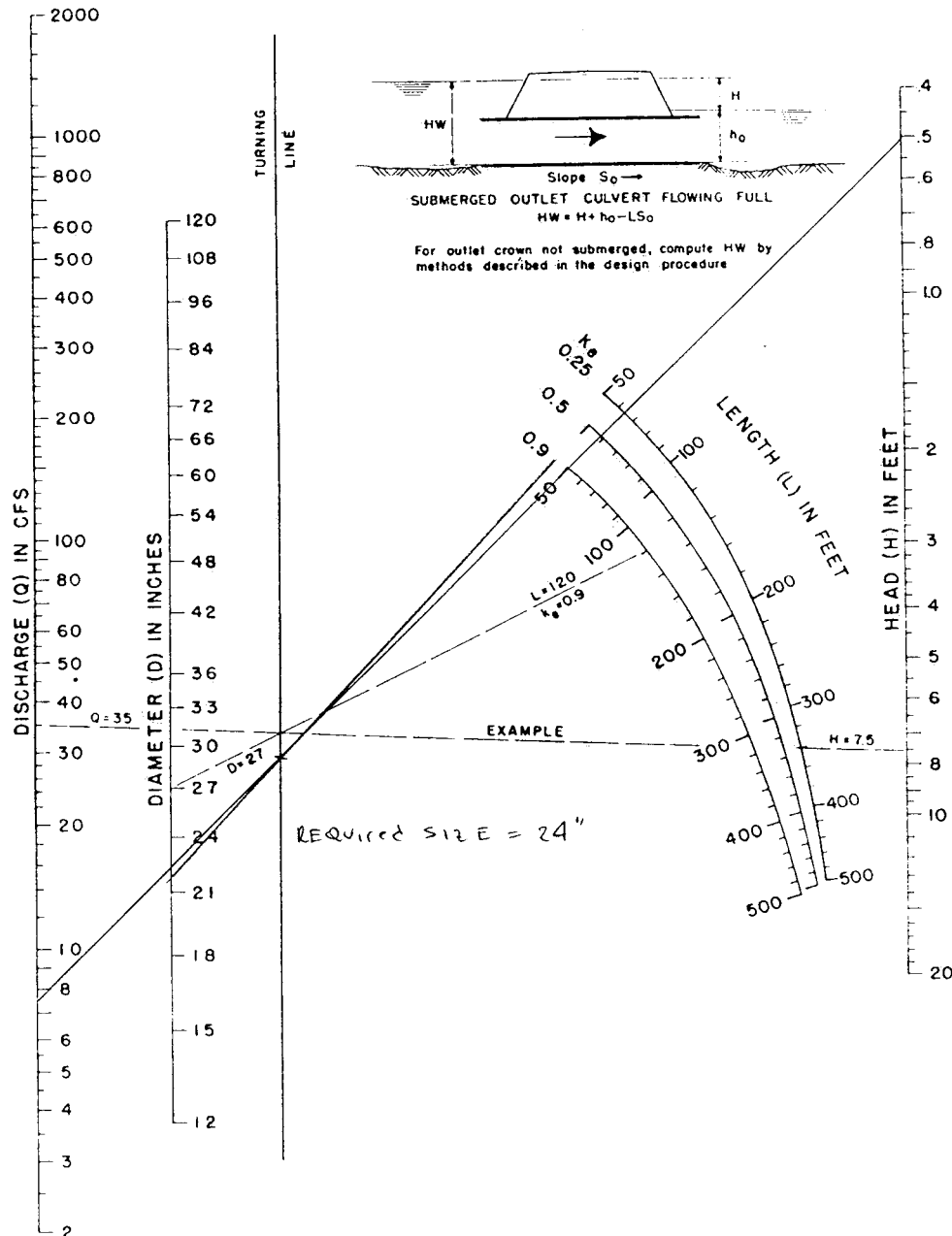
$L = 45'$

C-IV-20

$Ans. \text{ Culvert} = 30" \times 45' = OK$

C-69A

CHART II



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SWIDLANDS & ASSOCIATES, INC.

HEAD FOR
STANDARD
C. M. PIPE CULVERTS
FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

Figure C-IV-14

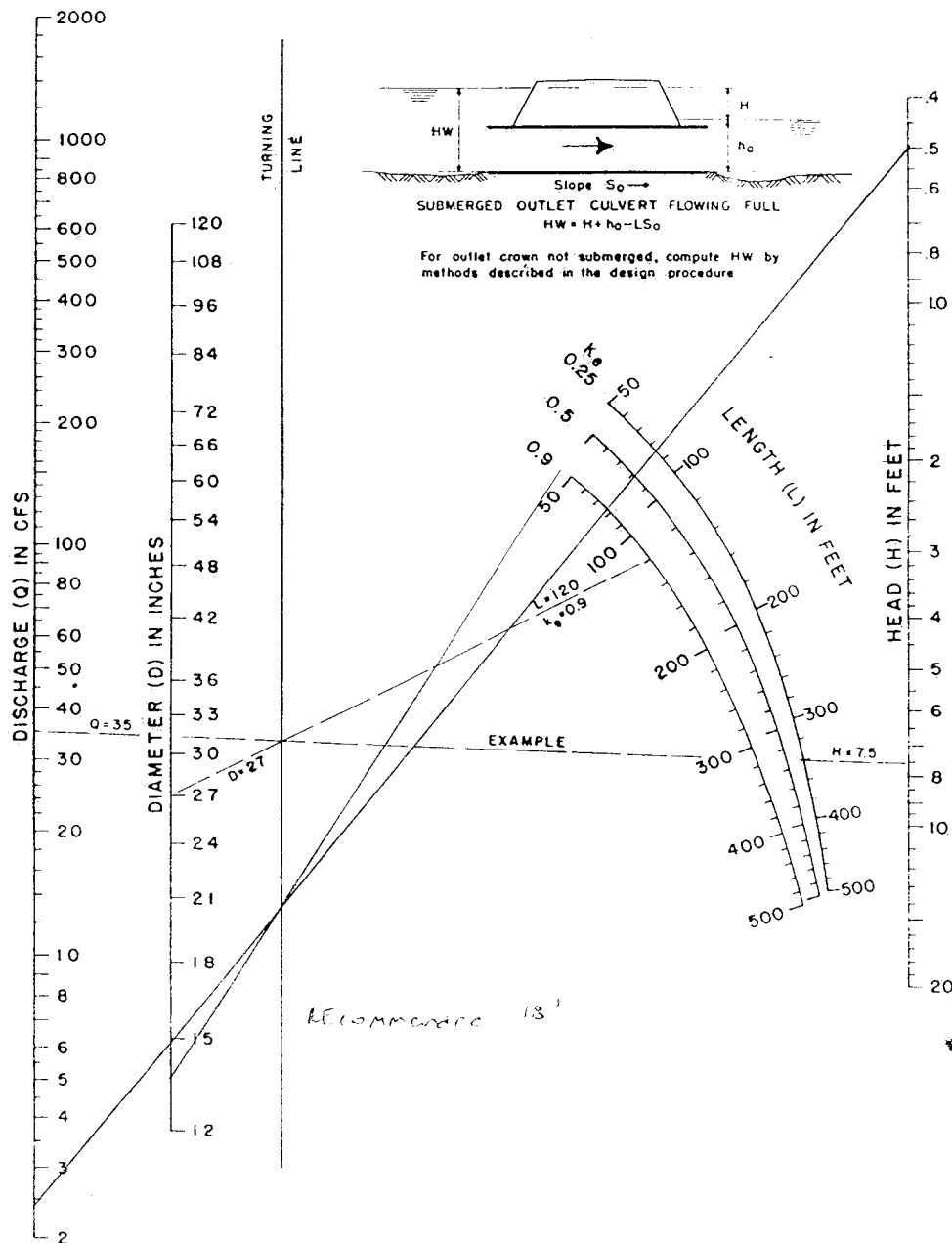
Q = 35 cfs

L = 95'

C-IV-20

As shown 24 X 95' OK

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 SUB LANDS DIV. RES.

HEAD FOR
 STANDARD
 C. M. PIPE CULVERTS
 FLOWING FULL
 $n = 0.024$

BUREAU OF PUBLIC ROADS JAN 1963

$$Q = 2.41 \text{ cfs}$$

$$L = 44'$$

$$\text{AS-BUILT} = 18" \times 44'$$

OK

C-IV-20

Figure C-IV-14

DRAINAGE SUMMARY TABLE
As-Built Conditions
(Page 1 of 9)

Drainage Structure	Canal Receiving Discharge	Drainage Basin	Allowable Discharge Equation ¹	Drainage Area (acres)	Runoff Length (ft)	Allowable Discharge (CFS)	Culvert Size Required w/0.5' Head ² (inch)	Culvert Size ^{3a}		As-Built Culvert Size
								Upstream	Downstream	
St. Lucie County										
C-0*	--	C-24	A	14.9	--	1.41	15	--	--	15" x 32'
C-1	--	C-24	A	14.9	--	1.41	15	-- ^{3b}	--	15" x 32'
C-2	--	C-24	A	9.3	--	0.88	15	N ^{3c}	N	15" x 32'
C-3	--	C-24	A	0.92	--	0.09	--	--	--	15" x 32'
C-4	--	C-24	A	7.46	--	0.71	--	N	N	15" x 32'
C-4A*	--	C-24	A	2.50	--	0.23	15	--	--	15" x 32'
C-4B*	--	C-24	A	2.35	--	0.22	15	--	--	15" x 32'
C-5	--	C-24	A	3.33	--	0.31	15	N	--	15" x 32'
C-6	--	C-24	A	3.33	--	0.31	15	N	N	15" x 32'
C-7	--	C-24	A	3.33	--	0.31	15	N	N	15" x 32'
C-8	--	C-24	A	3.33	--	0.31	15	N	N	15" x 32'
C-9	--	C-24	A	3.33	--	0.31	15	N	N	15" x 32'
C-10	--	C-24	A	3.33	--	0.31	15	N	N	15" x 32'
C-11	Farm Ditch	C-24	A	3.33	--	0.31	15	N	N	15" x 32'

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DRAINAGE SUMMARY TABLE
As-Built Conditions
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Drainage Structure	Canal Receiving Discharge	Drainage Basin	Allowable Discharge Equation ¹	Drainage Area (acres)	Runoff Length (ft)	Allowable Discharge (CFS)	Culvert Size Required w/0.5' Head ² (inch)	Culvert Size ^{3a}		As-Built Culvert Size
								Upstream	Downstream	
C-12*	Farm Ditch	C-24	A	3.4	--	0.32	15	--	--	N.C.
C-13*	Farm Ditch	C-24	A	3.4	--	0.32	15	--	--	N.C.
C-14*	Farm Ditch	C-24	A	3.4	--	0.32	15	--	--	N.C.
C-15*	Farm Ditch	C-24	A	3.40	--	0.32	15	--	--	N.C.
C-16*	Farm Ditch	C-24	A	3.40	--	0.32	15	--	--	N.C.
C-17*	Farm Ditch	C-24	A	3.40	--	0.32	15	--	--	N.C.
C-18*	Farm Ditch	C-24	A	3.40	--	0.32	15	--	--	N.C.
C-19*	Farm Ditch	C-24	A	1.84	--	0.17	15	--	--	N.C.
C-20*	Spoil Canal	C-24	A	14.69	--	1.39	15	Not Located	Not Located	N.C.
C-20A*	Farm Ditch	C-24	A	37.00	--	3.50	18	Ditch Filled; 24" Road Crossing	24"	36" x 45'
C-21	Farm Ditch	C-24	A	37.00	--	3.50	18	North End of Ditch	18"	18" x 45' (
C-21A*	Farm Ditch	C-24	A	37.00	--	3.50	18	North End of Ditch	18"	18" x 29.5'
C-22	C-24	C-24	A	6.00	--	0.56	15	Existing	24"	24" x 45'

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DRAINAGE SUMMARY TABLE
As-Built Conditions
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Drainage Structure	Canal Receiving Discharge	Drainage Basin	Allowable Discharge Equation ¹	Drainage Area (acres)	Runoff Length (ft)	Allowable Discharge (CFS)	Culvert Size Required w/0.5' Head ² (inch)	Culvert Size ^{3a}		As-Built Culvert Size
								Upstream	Downstream	
C-22A*	Farm Ditch	C-24	--	--	--	--	--	--	24"	8" x 40' PVC
C-22B*	Farm Ditch	C-24	--	--	--	--	--	--	24"	3-8" x 39' PVC
C-23	Spoil Canal	C-24	A	170.00	--	16.07	36	--	--	60" x 65'
C-24	Farm Ditch	C-24	A	24.20	--	2.29	15	--	--	15" x 32'
C-24A*	Isolated Wetland	C-24	--	--	--	--	18	--	--	15" x 32'
C-24B*	Isolated Wetland	C-24	--	--	--	--	18	--	--	Equalizer Pipe 15" x 32'
C-24C*	Farm Swale	C-24	A	35.0	--	3.31	15	--	--	Equalizer Pipe 15" x 32'
C-24D*	Farm Swale	C-24	A	39.0	--	4.26	18	--	--	24" x 45'
C-24E*	Farm Swale	C-24	A	39.0	--	4.26	18	--	--	18" x 35'
C-24F*	Farm Swale	C-24	A	15.5	--	1.89	15	--	--	15" x 32'
C-24G*	Farm Swale	C-24	--	--	--	--	--	--	--	6" x 39' PVC
C-24H*	Farm Swale	C-24	--	--	--	--	--	--	--	6" x 89' PVC
C-24I*	Farm Swale	C-24	--	--	--	--	--	--	--	6" x 40' PVC
C-25	Road Swale SR 709	C-24	A	280.39	--	26.50	42	--	--	42" x 45'

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DRAINAGE SUMMARY TABLE
As-Built Conditions
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Drainage Structure	Canal Receiving Discharge	Drainage Basin	Allowable Discharge Equation ¹	Drainage Area (acres)	Runoff Length (ft)	Allowable Discharge (CFS)	Culvert Size Required w/0.5' Head ² (inch)	Culvert Size ^{3a}		As-Built Culvert Size
								Upstream	Downstream	
C-26	Farm Ditch	C-24	A	5.31	--	0.50	15	--	--	15" x 36'
C-27	Farm Ditch	C-24	A	6.89	--	0.66	15	--	--	15" x 36'
C-28	Farm Ditch	C-24	A	5.31	--	0.50	15	--	--	15" x 36'
C-29	Farm Ditch	C-24	A	3.44	--	0.32	15	--	--	15" x 36'
C-30*	Farm Ditch	C-24	A	3.44	--	0.32	15	--	--	15" x 72'
C-31	Farm Ditch	C-24	A	4.02	--	0.38	15	--	--	15" x 36'
C-32	Farm Ditch	C-24	A	4.30	--	0.40	15	--	--	15" x 36'
C-33	Farm Ditch	C-24	A	4.45	--	0.42	15	--	--	15" x 36'
C-34	Farm Ditch	C-24	A	2.50	--	0.24	15	--	--	15" x 36'
C-35*	Farm Ditch	C-24	A	0.46	--	0.04	15	--	--	N.C.
C-36*	Wetland Rim Ditch	C-24	A	160.83	--	15.20	36	--	--	N.C.
C-37*	Wetland Rim Ditch	C-24	A	61.20	--	5.79	24	--	36"	N.C.
C-38*	Farm Ditch	C-24	A	1.91	--	0.18	15	--	--	N.C.

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DRAINAGE SUMMARY TABLE
As-Built Conditions
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Drainage Structure	Canal Receiving Discharge	Drainage Basin	Allowable Discharge Equation ¹	Drainage Area (acres)	Runoff Length (ft)	Allowable Discharge (CFS)	Culvert Size Required w/0.5' Head ² (inch)	Culvert Size ^{3a}		As-Built Culvert Size
								Upstream	Downstream	
C-39*	Farm Ditch	C-24	A	1.56	--	0.14	15	--	--	N.C.
C-40*	Farm Ditch	C-24	A	1.26	--	0.12	15	--	--	N.C.
C-41*	Farm Ditch	C-24	A	1.03	--	0.10	15	--	--	N.C.
C-42*	Farm Ditch	C-24	A	0.80	--	0.08	15	--	--	N.C.
C-43*	Farm Ditch	C-24	A	0.46	--	0.04	15	--	--	N.C.
C-43A*	Farm Ditch	C-24	--	--	--	--	--	--	--	9"x 20' PVC
C-43B*	Farm Ditch	C-24	--	--	--	--	--	--	--	9"x 20' PVC
C-43C*	Farm Ditch	C-24	--	--	--	--	--	--	--	9"x 20' PVC
C-44*	Farm Ditch	C-24	A	0.82	--	0.08	15	--	--	N.C.
C-45	Rim Ditch	C-24	A	61.20	--	5.79	24	--	36"	36" x 45'
C-45A*	Farm Ditch	C-24	A	37.00	--	4.40	--	--	--	15" x 32'
C-45B*	Wetland Rim Ditch	C-24	A	--	--	--	--	--	--	2-15" x 32' Equalizer
C-45C*	Farm Ditch	C-24	A	--	--	--	--	--	--	15" x 32' Equalizer

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DRAINAGE SUMMARY TABLE
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Drainage Structure	Canal Receiving Discharge	Drainage Basin	Allowable Discharge Equation 1	Drainage Area (acres)	Runoff Length (ft)	Allowable Discharge (CFS)	Culvert Size Required w/0.5' Head ² (inch)	Culvert Size ^{3a}		As-Built Culvert Size
								Upstream	Downstream	
C-45D*	Farm Ditch	C-24	A	--	--	--	--	--	--	15" x 32' Equalizer
C-45E*	Farm Ditch	C-24	A	--	--	--	--	--	--	8" x 29.5' PVC
<u>Martin County</u>										
C-48	C-23	C-23	B	64.05	--	15.0	36	--	36"	36" x 65'
C-48A*	Farm Ditch	C-23	B	28.00	--	3.28	15	--	--	42" x 60'
C-48B*	Farm Ditch	C-23	--	--	--	--	--	--	--	15" x 36' Equalizer
C-48C*	Farm Ditch	C-23	B	12.6	--	1.48	15	--	--	48" x 66'
C-49	Farm Ditch	C-23	B	159.70	--	37.43	48	30"	36"	48" x 65'
C-50	Farm Ditch	C-23	B	121.20	--	28.41	42	30"	36"	42" x 65'
C-51	Farm Ditch	C-23	B	46.80	--	10.97	30	30"	36"	36" x 65'
C-52A*	Farm Ditch	C-44	C	7.57	2,700	1.15	15	--	--	24" x 75'
C-53A*	Farm Ditch	C-44	C	6.42	2,100	1.19	15	--	--	24" x 75'
C-54A*	Farm Ditch	C-44	C	6.19	2,000	1.19	15	--	--	24" x 75'

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DRAINAGE SUMMARY TABLE
As-Built Conditions
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Drainage Structure	Canal Receiving Discharge	Drainage Basin	Allowable Discharge Equation ¹	Drainage Area (acres)	Runoff Length (ft)	Allowable Discharge (CFS)	Culvert Size Required w/0.5' Head ² (inch)	Culvert Size ^{3a}		Recommended Culvert Size
								Upstream	Downstream	
C-55A*	Farm Ditch	C-44	C	6.66	2,000	1.19	15	--	--	24" x 75'
C-56A*	Farm Ditch	C-44	C	5.73	2,000	1.11	15	--	--	24" x 75'
C-57	Farm Ditch	C-44	C	1,027.00	15,400	39.30	48	72"	Not Located	N.C.
C-58	Farm Ditch	C-44	D	23.00	--	3.80	18	36"	48"	48" x 55'
C-59	Farm Ditch	C-44	D	8.84	--	1.45	15	36"	36"	36" x 55'
C-60	Roadside Swale	C-44	D	3.62	--	0.59	15	--	12"	15" x 55'
C-60A*	Roadside Swale	C-44	D	67.7	--	11.10	30	--	30"	36" x 56'
C-60B*	Farm Ditch	C-44	D	--	--	--	--	--	--	4-8" x 40' PVC
C-60C*	Farm Ditch	C-44	D	5.79	--	1.00	15	--	--	24" x 60'
C-61	Borrow Ditch	C-44	D	28.47	--	4.67	18	--	54"	54" x 55'
C-62	Borrow Ditch	C-44	D	58.36	--	9.57	30	--	54"	54" x 55'
C-62A*	Ditch	C-44	C	17.2	1,500	2.09	15	--	--	15" x 32'
C-62B*	Ditch	C-44	C	17.2	1,500	2.09	15	--	--	15" x 32'

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DRAINAGE SUMMARY TABLE
As-Built Conditions
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Drainage Structure	Canal Receiving Discharge	Drainage Basin	Allowable Discharge Equation ¹	Drainage Area (acres)	Runoff Length (ft)	Allowable Discharge (CFS)	Culvert Size Required w/0.5' Head ² (inch)	Culvert Size ^{3a}		As-Built Culvert Size
								Upstream	Downstream	
C-63	Isolated Wetland	C-44	--	--	--	--	--	--	--	18" x 32' Equalizer Pipe
C-63A*	Farm Ditch	C-44	--	--	--	--	--	--	--	15" x 32' Equalizer Pipe
C-63B*	Farm Ditch	C-44	--	--	--	--	--	--	--	15" x 32' Equalizer Pipe
C-63C*	Farm Ditch	C-44	--	--	--	--	--	--	--	8" x 30' PVC
C-63D*	Farm Ditch	C-44	C	35.6	2,500	5.75	18	--	--	2-15" x 32.5'
C-63E*	Farm Ditch	C-44	--	--	--	--	--	--	--	2-8" x 30' PVC
C-64	Farm Ditch	C-44	C	95.36	2,700	14.51	30	24"	24"	30" x 45'
C-65	Farm Ditch	C-44	C	35.80	2,100	6.65	24	--	36"	36" x 45'
C-65A*	Farm Ditch	C-44	C	35.80	1,800	7.51	24	--	--	30" x 45'
C-66	Farm Ditch	C-44	C	52.34	2,300	9.04	30	48"	48"	48" x 55'
C-67	Farm Ditch	C-44	C	9.20	1,000	3.07	18	30"	24"	30" x 55'
C-68	Farm Ditch	C-44	C	9.20	1,000	3.07	15	30"	24"	30" x 45'
C-69	Farm Ditch	C-44	C	79.00	4,800	7.61	24	30"	24"	30" x 55'

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DRAINAGE SUMMARY TABLE
As-Built Conditions
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Drainage Structure	Canal Receiving Discharge	Drainage Basin	Allowable Discharge Equation ¹	Drainage Area (acres)	Runoff Length (ft)	Allowable Discharge (CFS)	Culvert Size Required w/0.5' Head ² (inch)	Culvert Size ^{3a}		As-Built Culvert Size
								Upstream	Downstream	
C-69A*	Farm Ditch	C-44	C	65.7	3,700	7.78	24	--	--	24" x 45'
C-70	Minor Farm Ditch	--	--	--	--	--	--	12"	12"	15" x 32'
C-71	Roadside Swale	C-44	C	23.70	4,700	2.32	15	--	36"	36" x 45'
C-71A*	Roadside Swale	C-44	C	6.03	800	2.41	15	--	--	18" x 44'
C-72	Irrigation Canal	C-44	C	18.60	1,400	4.80	24	--	48"	48" x 65'

Note:

DA = Drainage Area in Acres
CSM = cubic feet per second per square mile
CFS = cubic feet per second
ADE = Allowable Discharge Equations

Equation A:

¹ A = ADE to C-24
Q = 30.25 CSM = 30.25 DA/640

(Source: MSSW Permit Information Manual, Vol. IV, SWFWMD)

Note: This ADE is for a 10-year design; peak flows from this equation were doubled to obtain an assumed 25-year peak flow.

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Equation B:

B = ADE to C-23

$$Q = \frac{(47 + 28) A}{\sqrt{A}}$$

for areas less than 1 square mile

$$Q = \frac{\{(47 + 28) 1\} \text{ Drainage Area (acres)}}{640 \sqrt{1}}$$

Where:

A = Area in mile² (Source: SFWMD Surface Water Permit No. 43-00093-S/W).

Note: This ADE is for a 10-year design; peak flows from this equation were doubled to obtain an assumed 25-year peak flow.

Equation C:

C = ADE to C-44

$$Q = \frac{51340}{L^{0.7933}}$$

Where:

Q is in CSM and L, the runoff length, is in ft.

Equation derived from Figures C-II-2 and C-II-3 of MSSW Permit Information Manual, Vol. IV, SFWMD (see Appendix B-4).

Equation D:

D = ADE to C-44

$$Q = 0.164A$$

Where:

A = the area in acres. (Source: SFWMD Surface Water Permit No. 43-00095.

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- 2 Inlet and outlet submerged with 0.5' headloss.
- 3a Upstream and downstream culverts from field observations.
- 3b -- = No culvert found.
- 3c N = No culvert discharge directly into canal.

N.C. = Not Constructed

* = As-Built

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**Cotleur
Hearing**

Landscape Architecture
Planning
Environmental Consulting
Graphic Design

F. 12
JUL 13 1996
Savannah & Environs

July 3, 1996

Department of Environmental Protection
Bureau of Submerged Lands & Environmental Resources
Twin Tower Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attention: Trudie Bell

**RE: FPL Levee-Midway 500 kV Transmission Line
CH Ref. No. 91-1007**

Dear Ms. Bell:

Enclosed you will find the Third Annual Monitoring Report for the above referenced project. Mitigation for this project is being conducted within the Savannas Reserve.

Data and observations continue to indicate that habitat succession is occurring as expected. As discussed within this report, vandalism of the dataloggers occurred during this year and to avoid loss of stored data, it was necessary to send the units back to the factory for downloading. Data able to be recovered is included within this report. Due to the desire to include this water level datalogger data in this report, submittal of this report has been delayed and is now being forwarded. Datalogger stations have been repaired and are now operating properly.

1996 Dry Season monitoring surveys within the Savannas Reserve has been completed and a semi-annual report updating conditions will be submitted in the next few weeks.

Sincerely,

Karen L. Sjöholm /ac

Karen L. Sjöholm, ASLA

Project Manager

KLS:ac

Enclosure

cc: Bob Kessler
Jeff Hendee