

THE REEF

CEDAR KEY, FLORIDA

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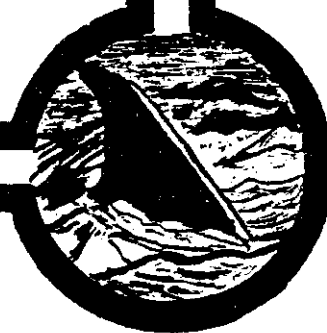
A BUILDING PROGRAM FOR  
THE REEF

INTERTRADA, CORPORATION

CEDAR KEY, FLORIDA

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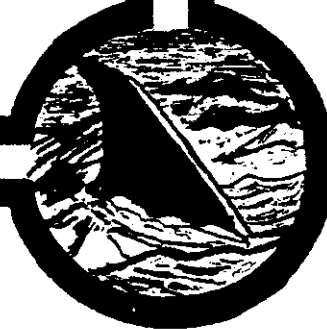
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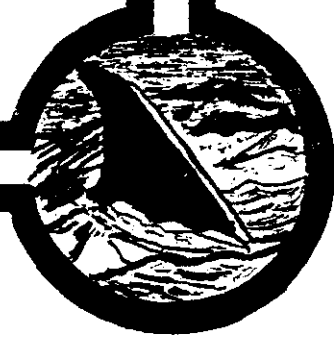
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- A. Background
- B. Scope of The Program
- C. Agencies Aiding Research
- D. Purpose of Preparer
- E. Goals

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I. A. Background

The Reef is a proposal for an aquarium/sealife exhibit located in Cedar Key, Florida. Cedar Key is located on the northern gulf side of Florida. This project is a result of continued interest from the public to view inhabitants of the ocean and its surroundings in their natural habitats.

I. B. Scope of The Program

This program will document research and the requirements of the project spaces. The program for The Reef will encompass space for sealife and animals, staff, people users, service and supplies, trash removal, animal moving, animal treatment, food facilities (people and animals), gift shop, vending areas, research, parking and all support areas.

Needs of the sealife and animals (water temperature, air-flow-ventilation), people users (pedestrian traffic patterns, restrooms, information facilities, food facility) and staff will be detailed in this program.

I. C. Agencies Aiding Research

Mr. Robert O. Wagner, Executive Director  
Executive Offices  
American Association of Zoological Parks &  
Aquariums (AAZPA)  
Olebay Park  
Wheeling, West Virginia 26003  
(304) 242-2160

U. S. Department of Agriculture  
Standards of Captive Animals  
Washington, D. C. 20006  
(202) 655-4000

Mr. Todd Benson  
U.S. Marine and Mammal Commission  
U.S. Department of Commerce  
1625 Eye Street, N.W.  
Room 307  
Washington, D.C. 20006  
(202) 653-6237

Mr. Warren Zeiller  
Wometco Miami Seaquarium  
Rickenbacker Causeway  
Virginia Key, Miami, Florida 33149  
(305) 361-5705

Sea World  
1100 Sea World Drive  
Aurora, Ohio 44202  
(216) 562-8101

Sea World  
Orlando, Florida  
(305) 351-0021

Planet Ocean  
Rickenbacker Causeway  
Virginia Key, Miami, Florida 33149  
(305) 361-9455

Aquarium and Zoological Gardens  
St. Pete Beach  
St. Petersburg, Florida  
(813) 367-3717

Sea-Arama, Marineworld  
Seawall Blvd. at 91st  
P.O. Box 869  
Galveston, Texas  
Houston (713) 488-4441  
Galveston (713) SH4-4501

Niagra Park Commission  
Queen Victoria Park  
Administration Bldg.  
Niagra Falls, Ontario, Canada

Aquarium Niagra Falls, Ltd.  
Ms. Betty Defore  
701 Whirlpool Street  
Niagra Falls, New York  
(716) 285-3575

New England Aquarium  
Central Wharf  
Boston, Mass. 02110  
(617) 742-8830

Aquarium  
Park Zoo  
Forest Park, MO.  
(314) 781-0900

I. D. Purpose of Preparer

This program is being developed to fulfill the course requirements for Facility Programming 496, Section 001, at Ball State University, Muncie, Indiana. The design of this program is to aid the preparer when entering fifth year thesis in September 1978.

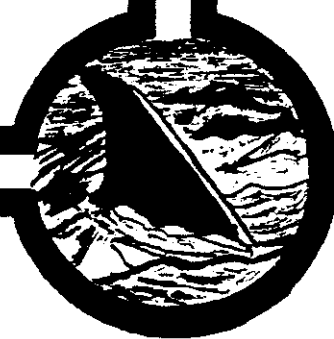
I. E. Goals

- 1) To provide a pleasing, exciting and safe surrounding for staff, sealife/animals and users of the facility.
- 2) To provide more than the minimum requirements for sealife/animals (mammals) as set forth by the U.S. Department of Commerce in Washington, D.C.
- 3) To locate on the site, a research team who will educate people of their findings.
- 4) To be located close to the ocean to enhance all research possibilities.
- 5) To provide more than a "tourist area". To seek educational benefits for the public.
- 6) To feature comfort and accessibility for patrons.
- 7) To promote prominent, distinctive or rare species to enlarge interest and appeal.

- A. Sealife/Mammal Types
- B. Buildings Required
- C. Staff Requirements
- D. Growth Projection Chart
- E. Square Footage of Spaces

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II. A. Sealife/Mammal Types

The following lists starting on this page thru page 9, are fish, turtles, eels, mammals and sharks which will be included in the preliminary phase of the Reef. As expansion of the Reef proceeds, various species of sealife will be added.

The important species to be viewed and identified are:

1. Acara
2. Aeroplane Fish
3. African Lungfish
4. Aholehole
5. Akilolo
6. Alaskan Blackfish
7. Alligator Gar
8. Alligator Snapping Turtle
9. Amberfish
10. Amber Jack
11. American Grayling
12. American Lobster
13. Anemones
14. Angelfish
15. Angler
16. Api
17. Archer Fish
18. Arctic Grayling
19. Artemia
20. Australian Blue-eye
21. Australian Lungfish
22. Aweoweo
23. Bacalao
24. Bahama Land Crab
25. Banded Butterflyfish
26. " Damsel fish
27. " Pickerel
28. " Rudderfish
29. Barb
30. Barracuda
31. Barramunda
32. Bass - Black
33. " Brassy
34. " Calico
35. " Channel
36. " Rock
37. " Sea
38. Bass - Strawberry

- |     |                                     |      |                        |
|-----|-------------------------------------|------|------------------------|
| 39. | Bass - Striped                      | 87.  | Cabezone               |
| 40. | " White                             | 88.  | Cabio                  |
| 41. | Bass - Yellow                       | 89.  | Cabrilla               |
| 42. | Bass Killifish                      | 90.  | California Guitar Fish |
| 43. | Batfish                             | 91.  | Cambarus               |
| 44. | Batnose Ray                         | 92.  | Capitaine              |
| 45. | Batrachians                         | 93.  | Cardinalfish           |
| 46. | Beau Gregory                        | 94.  | Carp suckers           |
| 47. | Belted Loach                        | 95.  | Catalufa               |
| 48. | Bergall                             | 96.  | Catfish                |
| 49. | Bermuda Chub                        | 97.  | Cavallas               |
| 50. | Bettas                              | 98.  | Chapin                 |
| 51. | Bigeye                              | 99.  | Charrs                 |
| 52. | Bighead Sea Robin                   | 100. | Chinafish              |
| 53. | Big Skate                           | 101. | Chopa                  |
| 54. | Billfish                            | 102. | Chub                   |
| 55. | Bircher                             | 103. | Cigarfish              |
| 56. | Birdfish                            | 104. | Cisco                  |
| 57. | Blackbanded Sunfish                 | 105. | Clearnose Skate        |
| 58. | Black Bullhead                      | 106. | Climbing Perch         |
| 59. | Black Crappie                       | 107. | Cobbler                |
| 60. | Black Drum                          | 108. | Cockeye Pilot          |
| 61. | Black Fish                          | 109. | Cod                    |
| 62. | Blanquillo                          | 110. | Conch                  |
| 63. | Blenny                              | 111. | Coney                  |
| 64. | Blenny-eel                          | 112. | Conger eel             |
| 65. | Blind Cave Fish,<br>Mammoth Mexican | 113. | Cooter                 |
| 66. | Blob                                | 114. | Coral Fish             |
| 67. | Bluefish                            | 115. | Cowfish                |
| 68. | Bluegill                            | 116. | Cowry                  |
| 69. | Blue Gularis                        | 117. | Crab                   |
| 70. | Boarfish                            | 118. | Crawfish               |
| 71. | Bonefish                            | 119. | Crevalle               |
| 72. | Bowfin                              | 120. | Croaker                |
| 73. | Boxfish                             | 121. | Cubbyu                 |
| 74. | Bream                               | 122. | Cuckold                |
| 75. | Brier Skate                         | 123. | Cuckoo                 |
| 76. | Brindled Stonecat                   | 124. | Cucumber               |
| 77. | Brit                                | 125. | Cunner                 |
| 78. | Brook Lamprey                       | 126. | Cusk                   |
| 79. | Brook Stickleback                   | 127. | Cusk-eel               |
| 80. | Buffalofish                         | 128. | Cace                   |
| 81. | Bullhead                            | 129. | Daphnia                |
| 82. | Burbot                              | 130. | Darter                 |
| 83. | Burfish                             | 131. | Devil Fish             |
| 84. | Futterfish                          | 132. | Doctorfish             |
| 85. | Butterflyfish                       | 133. | Dogfish                |
| 86. | Butter Hamlet                       | 134. | Dog Snapper            |
|     |                                     | 135. | Dojo                   |
|     |                                     | 136. | DoMarfish              |

- |      |                    |      |                |
|------|--------------------|------|----------------|
| 137. | Doncella           | 189. | Harvestfish    |
| 138. | Doughbelly         | 190. | Hatchet Fish   |
| 139. | Drum               | 191. | Hawkfish       |
| 140. | Eagle Ray          | 192. | Headfish       |
| 141. | Eel, Electric &    | 193. | Hellbender     |
| 142. | Sand Eel           | 194. | Herring        |
| 143. | Eelpout            | 195. | Hinalea Hilu   |
| 144. | Electric Stargazer | 196. | Hind           |
| 145. | Fantail Filefish   | 197. | Hogchoker      |
| 146. | Featherfin         | 198. | Hogfish        |
| 147. | Fiddler            | 199. | Horned Dace    |
| 148. | Fighting Fish      | 200. | Hornedpout     |
| 149. | Filefish           | 201. | Horsehead      |
| 150. | Flame Fish         | 202. | Ide            |
| 151. | Flasher            | 203. | Jack           |
| 152. | Flatfish           | 204. | Jewel Fish     |
| 153. | Flier              | 205. | Jew Fish       |
| 154. | Flounder           | 206. | Killifish      |
| 155. | Fluke              | 207. | Kiver          |
| 156. | Foolfish           | 208. | Kumu           |
| 157. | Foureye            | 209. | Ladderfish     |
| 158. | Frostfish          | 210. | Ladyfish       |
| 159. | Gag                | 211. | Lafayette      |
| 160. | Gammarus           | 212. | Laipala        |
| 161. | Garibaldi          | 213. | Lamperina      |
| 162. | Gar-pikes          | 214. | Lamprey        |
| 163. | Gaspergou          | 215. | Lance          |
| 164. | Ghostfish          | 216. | Lawyer         |
| 165. | Gizzard Shad       | 217. | Leaf Fish      |
| 166. | Globefish          | 218. | Leatherfish    |
| 167. | Goatfish           | 219. | Leather Jacket |
| 168. | Goby               | 220. | Lesser Weever  |
| 169. | Goldfish           | 221. | Ling           |
| 170. | Goosefish          | 222. | Lingcod        |
| 171. | Goujon             | 223. | Lionfish       |
| 172. | Gouramis           | 224. | Loach          |
| 173. | Grass Porgy        | 225. | Lobster        |
| 174. | Grayfish           | 226. | Logfish        |
| 175. | Graysby            | 227. | Lookdown       |
| 176. | Greenfish          | 228. | Lumpfish       |
| 177. | Greenlings         | 229. | Lungfish       |
| 178. | Green Turtle       | 230. | Mackerel       |
| 179. | Grubby             | 231. | Mademoiselle   |
| 180. | Grunt              | 232. | Mad-tom        |
| 181. | Gunnel             | 233. | Maki Maki      |
| 182. | Guppy              | 234. | Malamalama     |
| 183. | Gurnard            | 235. | Manini         |
| 184. | Haddock            | 236. | Margate        |
| 185. | Hake               | 237. | Mayfish        |
| 186. | Halfmoon           | 238. | Metaka         |
| 187. | Halibut            | 239. | Midshipman     |
| 188. | Hardtail           | 240. | Millions Fish  |

- |      |                   |      |                 |
|------|-------------------|------|-----------------|
| 241. | Minnow            | 290. | Pompadour Fish  |
| 242. | Moana             | 291. | Pompano         |
| 243. | Mollusks          | 292. | Pompon          |
| 244. | Monkfish          | 293. | Porcupinefish   |
| 245. | Mooneye           | 294. | Porgy           |
| 246. | Moonfish          | 295. | Porkfish        |
| 247. | Moorish Idol      | 296. | Pou             |
| 248. | Moray             | 297. | Prawn           |
| 249. | Mosquito Fish     | 298. | Priestfish      |
| 250. | Mousefish         | 299. | Pualu           |
| 251. | Mouthbreeder      | 300. | Pudding Wife    |
| 252. | Mullet            | 301. | Puffer          |
| 253. | Muskellunge       | 302. | Pug             |
| 254. | Muttonfish        | 303. | Pumpkinseed     |
| 255. | Nautilus          | 304. | Purple Parrot   |
| 256. | Neon Tetra        | 305. | Quillback       |
| 257. | Niggerfish        | 306. | Rabbitfish      |
| 258. | Ocellated Cichlid | 307. | Rabirubia       |
| 259. | Octopus           | 308. | Rainbow Fish    |
| 260. | Oopuhue           | 309. | Razorfish       |
| 261. | Opaleye           | 310. | Red Drum        |
| 262. | Orangetail        | 311. | Redeye          |
| 263. | Orfe              | 312. | Redfish         |
| 264. | Oyster            | 313. | Ribbonfish      |
| 265. | Oysterfish        | 314. | Ricefish        |
| 266. | Paddlefish        | 315. | Roach           |
| 267. | Palani            | 316. | Robalo          |
| 268. | Panchax           | 317. | Rock Beauty     |
| 269. | Paradise Fish     | 318. | Rockfish        |
| 270. | Pargo             | 319. | Rockpool Johnny |
| 271. | Parrotfish        | 320. | Romero          |
| 272. | Pearl Danio       | 321. | Ronco           |
| 273. | Perch             | 322. | Rosefish        |
| 274. | Permit            | 323. | Round Robin     |
| 275. | Pickerel          | 324. | Rudderfish      |
| 276. | Pigfish           | 325. | Sailor's Choice |
| 277. | Pike              | 326. | Salamanders     |
| 278. | Pikeperch         | 327. | Salmon          |
| 279. | Piked Dog         | 328. | Sandfish        |
| 280. | Pilikoa           | 329. | Sandroller      |
| 281. | Pilotfish         | 330. | Sargo           |
| 282. | Pinao Kai         | 331. | Sauger          |
| 283. | Pinecone Fish     | 332. | Sawfish         |
| 284. | Pinfish           | 333. | Scad            |
| 285. | Pipefish          | 334. | Scallop         |
| 286. | Piranha           | 335. | Scamp           |
| 287. | Pirarucu          | 336. | Schoolmaster    |
| 288. | Poison Puffer     | 337. | Scorpionfish    |
| 289. | Pollack           | 338. | Sculpin         |

- 339. Scup
- 340. Sea Dragon
- 341. Sea Horse
- 342. Sea Mink
- 343. Sea Urchin
- 344. Senorita
- 345. Sergeantfish
- 346. Sergeant Major
- 347. Shad
- 348. Sheatfish
- 349. Sheepshead
- 350. Shellfish
- 351. Shiner
- 352. Shooting Fish
- 353. Shrimp
- 354. Siamese Fighting Fish
- 355. Silversides
- 356. Sinaparan
- 357. Singingfish
- 358. Skates
- 359. Skilfish
- 360. Sleeper
- 361. Sliders
- 362. Smelt
- 363. Snails
- 364. Snake-head
- 365. Snapper
- 366. Snook
- 367. Soapfish
- 368. Soldado
- 369. Soldierfish
- 370. Sole
- 371. Spadefish
- 372. Spearing
- 373. Sponges
- 374. Spoonbill
- 375. Spot
- 376. Squeteague
- 377. Squirrelfish
- 378. Starfish
- 379. Stargazer
- 380. Sticklebacks
- 381. Stingray
- 382. Stoneroller
- 383. Stripey
- 384. Sturgeons
- 385. Sucker
- 386. Sunfish
- 387. Surffish
- 388. Surgeonfish
- 389. Surmullet
- 390. Swellfish
- 391. Swordtail
- 392. Tailor
- 393. Tambor
- 394. Tang
- 395. Tarpon
- 396. Terrapin
- 397. Threadfish
- 398. Tigerfish
- 399. Tomtate
- 400. Tonguefish
- 401. Torpedo
- 402. Triggerfish
- 403. Tripletail
- 404. Trout
- 405. Trunkfish
- 406. Turbot
- 407. Turtle
- 408. Ulua
- 409. Unicornfish
- 410. Walking Fish
- 411. Warmouth
- 412. Water-dogs
- 413. Weakfish
- 414. Weatherfish
- 415. Weever
- 416. Wels
- 417. Whitefish
- 418. Whiting
- 419. Windowpane
- 420. Wolffish
- 421. Wrasse
- 422. Wrymouth
- 423. Yellowbelly
- 424. Yowler
- 425. Zebra

1. Cetaceans - Whale, porpoise and dolphin

Whale - Having a generally fishlike form with forelimbs modified to form flippers and a tail with horizontal flukes, one of the very large species as distinguished from the smaller dolphins and porpoises.

Porpoise - Gregarious aquatic mammal of the genus Phocaena and related genera, of oceanic waters, characteristically having a blunt snout and a triangular dorsal fin.

Dolphin - Marine mammal, family Delphinidae, related to whales but generally smaller, having a beaklike snout.

2. Pinnipeds - Seals, sea lion, sea otter, with finlike flippers for locomotion.

Seal - Aquatic carnivorous mammals of the families Phocidae and Otariidae, having a sleek, torpedo-shaped body and limbs that are modified into paddlelike flippers.

Sea lion - Any of several seals of the family Otariidae, having small but distinct external ears - northern Pacific.

Sea otter - Large nearly extinct marine otter of northern Pacific coasts, soft dark-brown coat valued as fur.

3. Sirenians - Herbivorous aquatic mammal.

Manatee - Genus Trichechus - Atlantic coastal waters of tropical Americas and Africa

Dugong - Herbivorous marine mammal of tropical coastal waters of the Old World having flipper-like forelimbs and a deeply notched tail fin.

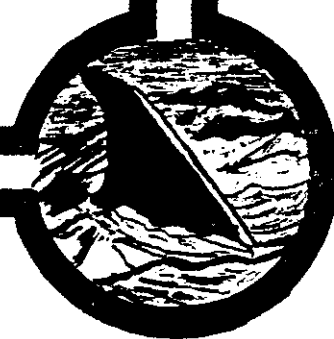
4. Squaliformes (Selachi) - Shark

Shark - Any of numerous marine fishes having a cartilaginous skeleton and tough skin covered with small, toothlike scales, and sometimes large and voracious.

- A. Tank Sizes
- B. Equipment
- C. People vs. Animal Spaces
- D. People Facilities
- E. Space Summary

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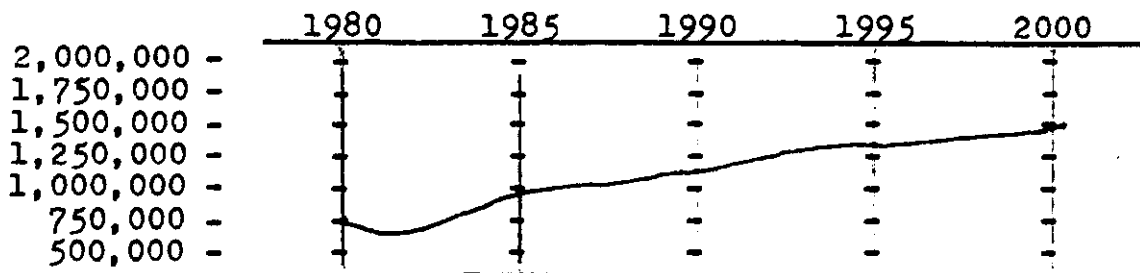
II. B. Buildings Required

1. Entry - admission
2. Information (2 Booths)
3. Nursery
4. Kennel
5. Restrooms (2 Main)
6. Museum
7. Offices
8. Restaurant (1 Main w/ 4 Vending)
9. Gift Shop (1 Main @ exit w/ 4 @ Vending)
10. Infirmary
11. Veterinary Clinic
12. Research Building
13. Supplies (1 Main to distribute to Keeper's)
14. Keeper's Buildings (1 for grounds & vehicles and 1 @ each exhibit for distributing food and cleaning)
15. Training
16. Repair Shop
17. Picnic Areas - Rest Areas

II. C. Staff Requirements

	<u>Space</u>	<u># Staff</u>	<u>Remarks</u>
1. Entry-admission		2-5	Depending on season & time of day.
2. Information		2	
3. Nursery		2	
4. Kennel		1	
5. Restrooms		0	
6. Museum		1	Security
7. Offices		1	Curator/Director
		1	Foreman/Assistant Dir.
		1	Receptionist/Secretary
		1	Bookkeeper/Secretary
8. Restaurant		1	Hostess/Cashier/Waitress
		1	Cook
		2-8	Waitresses - Seasonal
		1	Busboy
Vending		4	1 each station
		1	Moving between stations
9. Gift Shop		1-2	Depending on season
10. Infirmary		1	Nurse (LPN)
11. Veterinary		1	Veterinarian
		1	Handler trained in animal husbandry
12. Research		1	Researcher
		1	Water control tester
13. Supplies		1	Order writer
14. Keeper's Bldgs.		2	Grounds & janitorial
		2	Food & Supply Distribution
15. Training		4	Trainers
		8	Trainer's Assistants
16. Repair Shop		2	Maintenance
17. Picnic - Rest Areas		0	Grounds, Janitor & Maintenance Staff
Total		<u>57</u>	

II. D. Growth Projection Chart



The growth projection for this project was determined from statistics from other aquariums/seaquariums throughout the U. S.

The growth rate is projected by years rather than seasons, as Christmas and Easter will be peak seasons after the first year.

II. E. Square Footage of Spaces

E - Enclosed. C - Covered. O - Open.

1. Entry-admission-ticket - 5 counters open space w/lounge, restroom & kitchen.	450 E
	1,000 C
2. Information (2)	72 E
3. Nursery w/ exterior play & interior sleep.	1,225 E
4. Kennel for 100 animals w/runs	1,050 O
	900 E
	900 O
5. Restrooms (2 Main) Central locations	875 E
6. Museum - Counter display & information	1,500 E
7. Offices - Access to parking & exhibits	1,095 E
8. Staff Lockers - Lockers w/showers	810 E
9. Restaurant - Serve 200	5,725 E
	450 C
10. Gift Shop - Near Exit	500 E
11. Vending & Gift Booth (4) (1,080-0)	360 E
12. Infirmary - 6 Beds	1,050 E
13. Veterinary - Office, operating, supplies, tanks for injured or sick	1,350 E
	400 C
	3,000 O
14. Research - Access to parking & exhibits	850 E
	375 C
15. Training - Office, food storage, restrooms, 6 tanks	1,030 E
	370 C
	3,000 O
16. Supplies - Records, freezer, refig., Shelving & Storage	1,050 E
17. Keeper's - 1 Main w/golf kart <sup>st</sup> storage & ground's equipment	1,050 E
6 @ each exhibit area w/freezer, refig.	216 E

18.	Repair Shop - Tools, storage, equip. repair	700	E
19.	Picnic & Rest Area - 200 tables w/vending, fountain & covered areas	1,508	C
		6,032	O
20.	Shark Tank - Oval shaped canal w/access to canal to veterinarian	15,000	O
21.	Whale Tank w/seating - 100ø	41,033	C
		7,850	O
22.	Manatee - Observation Deck - 40ø	18,750	O
23.	Dugong - Observation Deck - 30ø	13,000	O
24.	Sea Lions - seating - 30' x 60' Oval	38,775	O
25.	Dolphin, Porpoise & Deep Sea Fish (Turtles & Eels) w/standing viewing - 120ø	41,527	O
26.	Seals & Dolphin - Seating - 100ø	33,517	C
		7,850	O
27.	Tropical Fish Tank - 100ø - Observation Deck upper level - Windows lower level	46,106	O
28.	Wall Tanks - 223 Lineal Feet	28,256	E
29.	Filtration System - Building for mech. 4 Tanks for filtration	30,223	E
		3,250	E
30.	Canal System	11,500	O
31.	Perimeter Service Road	10,000	O
		30,000	O

SUB-TOTAL	416,610	SF
32. Circulation (416,610 x .75)	312,458	
33. Expansion	416,610	

SUB-TOTAL	1,145,678	
34. Total Enclosed Spaces	82,537	
35. Total Covered Spaces	78,653	
36. Total Open Spaces	255,420	

TOTAL 416,610

ACRES REQUIRED FOR CONSTRUCTION

1,145,678 ÷ 43,560 26.3 Acres

37. Parking (1 acre = 125 cars) 3,500/day 28 Acres

38. Parking Expansion 5,000/day 40 Acres

39. Staff & Visitor Parking (85) .68Acres

ACRES REQUIRED FOR PARKING 40.68

TOTAL ACRES REQUIRED FOR PRESENT AND FUTURE SCOPE OF PROJECT

66.98 = 67

III. A. Tank Sizes

- 13. Veterinary 2-(25ø) 2-(10ø) 2-(6ø) 6'D
- 15. Training 2-(25ø) 2-(10ø) 2-(6ø) 6'D
- 20. Shark 25' Wide x 800' Outside Diameter 12'D
- 21. Whale 100ø x 18'D
- 22. Manatee 40ø x 15'D
- 23. Dugong 30ø x 15'D
- 24. Sea Lions 30' x 60' Oval 6-12'D
- 25. Dolphin, Porpoise & Deep Sea Fish (Turtles & Eels)  
120ø x 18'D w/ 200 Viewing Windows
- 26. Seals & Dolphin  
100ø x 6'D
- 27. Tropical Fish  
100ø x 18'D w/ 120 Viewing Windows
- 28. Wall Tanks 223 Lineal Feet
  - 5-2'-0 $\frac{1}{2}$ "D x 3'-0 $\frac{1}{2}$ "H x 2'-7"W = 120 Gal.
  - 5-2'-0 $\frac{1}{2}$ " x 3'-0 $\frac{1}{2}$ " x 6'-1 $\frac{1}{2}$ " = 288 Gal.
  - 10-2'-0 $\frac{1}{2}$ " x 3'-0 $\frac{1}{2}$ " x 10'-2 $\frac{1}{2}$ " = 432 Gal.
  - 10-3'-0 $\frac{1}{2}$ " x 3'-0 $\frac{1}{2}$ " x 8'-3" = 600 Gal.

III. B. Equipment

- 1. Pool/Tank Cleaning
- 2. Lawn Mowing
- 3. Emergency Power
- 4. Paper Vaccum Pick-up
- 5. Plant & Grounds Maintenance
- 6. Music System - PA
- 7. Boats for research
- 8. Trainers
- 9. Sealife moving
- 10. Electric golf karts
- 11. Picnic Tables
- 12. Wheelchair rental
- 13. Stroller rental

III. C. People vs. Animal Spaces

People and Sealife/Mammal spaces will be integrated throughout the complex. The Reef will attempt to be an educational experience for all who participate.

By 1986, the Reef will hopefully have the funds to start an expansion process. First, plans for an auditorium, explaining the history of the Reef and Sealife/Mammals, will be incorporated.

### III. D. People Facilities

The Reef will attempt to provide a pleasant, exciting, educational atmosphere for its visitors. The Reef will lend baby strollers; kennel for animals; nursery; rest areas; water fountains; picnic areas; first aid station; variety of prepared foods, specializing in seafoods; and extensive information on the exhibits people see.

### III. E. Space Summary

Tanks will be larger than needed for future expansion criteria.

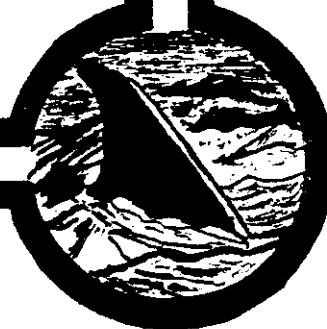
All land acquired will not be used when opening The Reef. Due to the sunny weather in Florida and warm temperatures, The Reef will expand horizontally rather than vertically as the Boston and Niagra Falls Aquariums have done.

67 acres will be needed for immediate construction and future expansion. As much land as feasible will be purchased for speculation and investments.

- A. Exterior Criteria
- B. Canal System
- C. Filtration System
- D. Tram Service
- E. Solar Energy
- F. Sewage Treatment
- G. Energy Saving Devices
- H. Considerations For Handicapped

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IV. A. Exterior Criteria

The grounds shall be kept clean and sanitary in all areas.

Shelter will be provided for minimal inclement weather.

Seating and restrooms and rest areas will be provided throughout The Reef.

IV. B. Canal System

A canal system shall be provided 10'W x 9'D which will connect all major exhibit tanks to the training and veterinary clinic.

The canal will be provided for sick, new, training and general transportation of animals throughout The Reef.

IV. C. Filtration System

Square footage for the filtration system is 3,250 for enclosed space and 11,500 for open space.

Included in this figure is space required for all mechanical and electrical systems.

Space is allowed for conversion to solar energy supply within 8 years of opening The Reef.

Each exhibit, canal and individual tank will have its own water supply system with an emergency back-up system.

IV. D. Tram Service

A tram service (shuttle train) will be introduced at a small scale when The Reef opens. After 2 years, the tram service will be operating full-scale for all patrons.

The tram service will transport people from the parking lot to the entry - admission area.

#### IV. E. Solar Energy

Within 8 years of opening The Reef, solar energy will be introduced on a full-scale for powering the mechanical and filtration systems on the site.

It is projected that solar energy will power approximately 90% of the required energy. The remaining 10% will be secured from area power supply stations.

At all times, there will be a security alternate power source which can be switched to at any time or automatically control supply due to solar energy power loss or malfunction.

#### IV. F. Sewage Treatment

The Reef will have its own sewage treatment facilities within the site. Due to the selected site, this will be necessary.

#### IV. G. Energy Saving Devices

1. Use skylights where possible for natural lighting.
2. Plant a generous amount of trees around buildings for shading and cooling.
3. Windows with direct sunlight will be tinted to reduce heat-gain and glare within buildings.
4. Computerized heating and air-conditioning systems will be incorporated to minimize energy consumption.
5. Generous planting will be used to reduce and absorb sound. Most areas will produce a great amount of noise due to the number of people who will congregate at the exhibits.

IV. H. Considerations For Handicapped

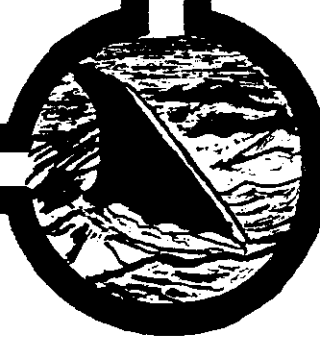
1. Ramps will be provided at all entrances and grade changes.
2. Water fountains will be provided at a lowered level for the disabled.
3. Telephones will be provided at a lowered level.
4. Restrooms will provide special services for the handicapped.
5. Parking close to the entrance will be provided for the handicapped.

All areas, exhibits and general areas will provide adequate space for the handicapped to maneuver comfortably about the site.

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- A. Enclosed Spaces
- B. Covered Spaces
- C. Open Spaces
- D. Lighting, Seating
- E. Viewing Areas

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V. A. Enclosed Spaces

V. B. Covered Spaces

V. C. Open Spaces

<u>A.</u>	<u>B.</u>	<u>C.</u>
Entry-admission	Nursery	Nursery
Information	Kennel	Kennel Veterinary
Nursery	Vending-Gift	Research
Kennel	Veterinary	Keeper's
Restrooms	Research	Training
Museum	Supplies	Repair
Offices	Keeper's	Picnic
Restaurant	Training	Shark
Gift Shop	Repair	Whale
Infirmary	Picnic	Dolphin, Porpoise
Veterinary	Whale	Deep Sea Fish
Supplies	Seals, Dolphin	Seals, Dolphin
Keeper's	Wall Tanks	Tropical Fish
Training	Filtration	Filtration
Dolphin, Porp.	Circulation	Canal
Deep Sea Fish	Sea Lions	Service Road
Wall Tanks		Circulation
Tropical Fish		Public, Staff &
Filtration		Visitor Parking
Lockers		
Circulation		

V. D. Lighting, Seating

Lighting will be provided for special events in the evenings and for keeper's facilitation during the night. The Reef will not normally be open in the evening or after sunset.

Seating will be provided for all spectator exhibits with some standing space with handrails.

There will be seating throughout the Reef for resting and a concentrated area for picnicing, resting and relaxation.

V. E. Viewing Areas

Viewing of exterior exhibits will be on tiered platforms to provide the best site lines possible.

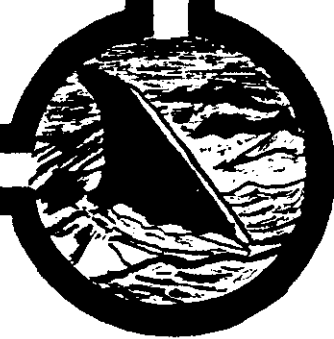
The wall tanks will be placed in corridors wide enough to prevent crowding.

The major tanks will be enclosed and have 2 levels of viewing windows.

- A. Regional Location Map
- B. City Location Map
- C. Site Plan

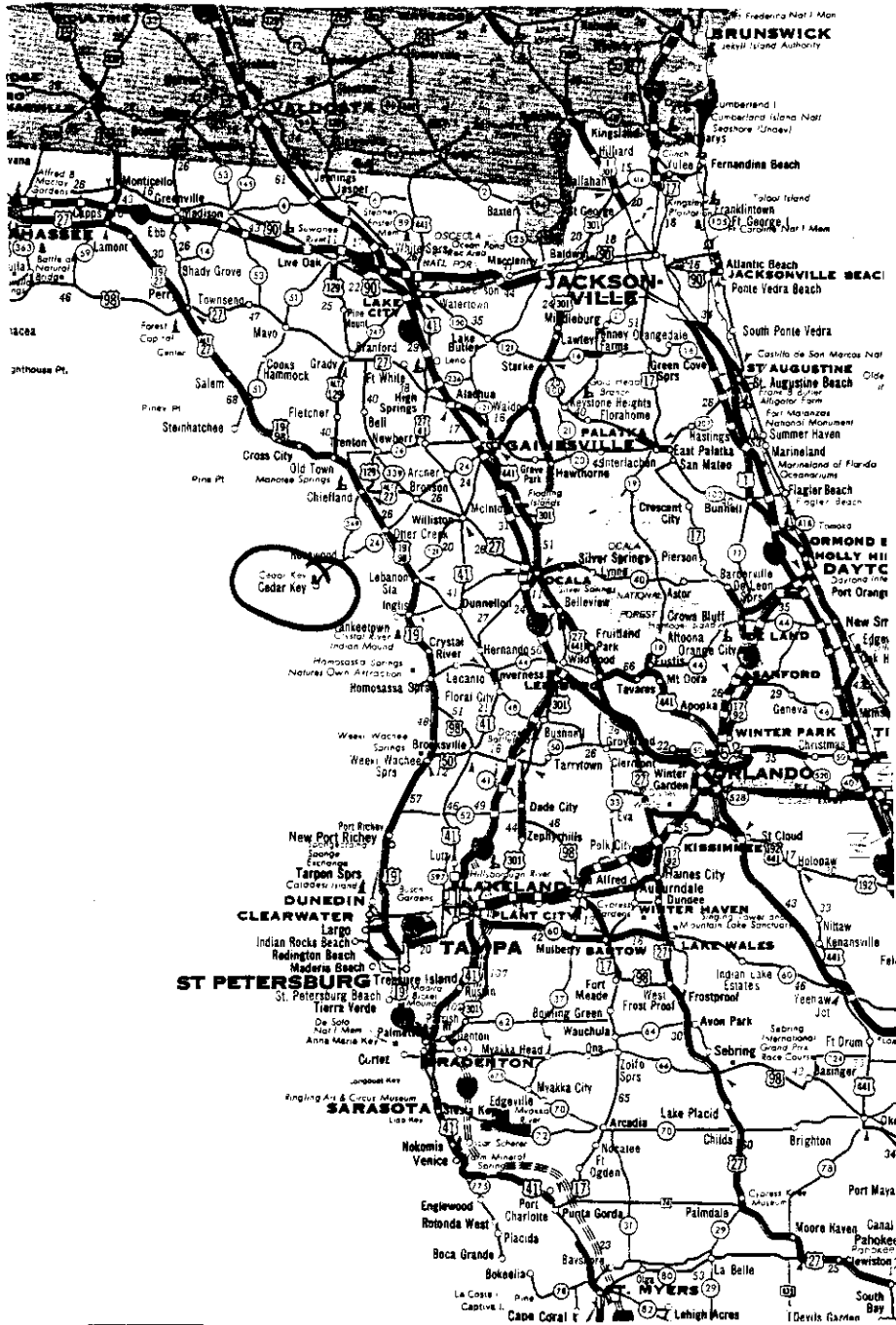
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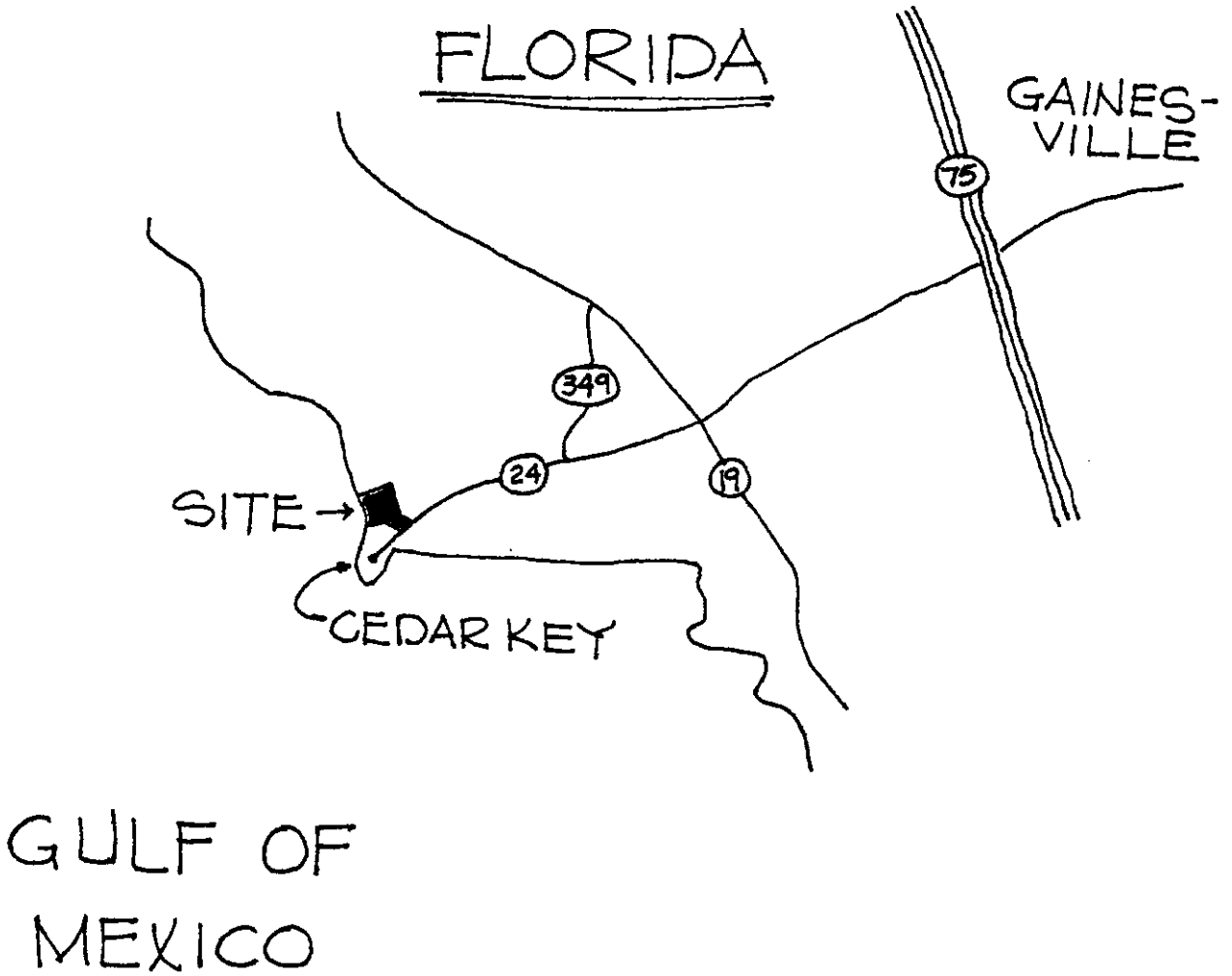


VI. A. Regional Location Map

Cedar Key, Florida

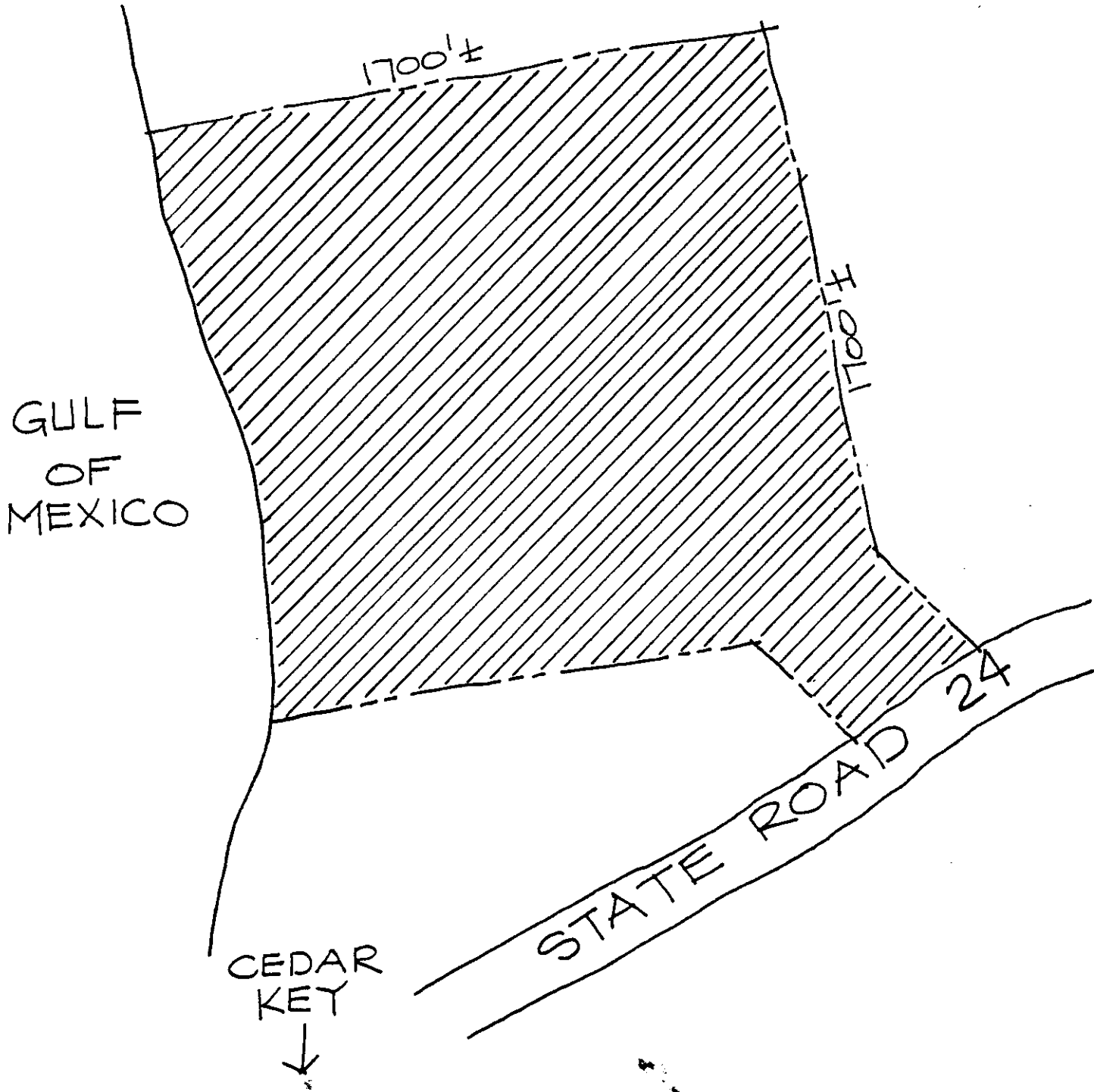


VI. B. City Location Map  
Cedar Key, Florida



VI. C. Site Plan

Cedar Key, Florida



- A. Cost Estimate Analysis
- B. Concrete Costs For Tanks

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VII. A. COST ESTIMATE ANALYSIS

A. Building Costs		
100% Enclosed =	82,537	
50% Covered =	39,327	
15% Open =	<u>38,313</u>	
	160,177 Gross Area	
<u>160,177</u> Gross Area x <u>\$50</u> Unit Cost		= \$ 8,008,850
B. Fixed Equipment		
15% of A <u>8,008,850</u>	=	1,201,327.50
Concrete Tanks *	=	<u>103,455.34</u>
Total	=	1,304,782.84
C. Site Development		
25% of A <u>8,008,850</u>	=	2,002,212.50
D. TOTAL CONSTRUCTION COST (A+B+C)		= \$11,315,845
<hr/>		
E. Site Acquisition/Demolition - DELETED		
F. Moveable Equipment		
15% of A <u>8,008,850</u>	=	1,201,327.50
G. Professional Fees		
5.5% of D <u>11,315,845</u>	=	622,371.48
H. Contingencies		
10% of D <u>11,315,845</u>	=	1,131,584.50
J. Administrative Costs		
2% of D <u>11,315,845</u>	=	226,316.90
<hr/>		
K. TOTAL BUDGET REQUIRED (D - J)		= <u>\$16,499,657.88</u>

\* See Next Page For Breakdown of Concrete Costs

VII. B. CONCRETE COSTS FOR TANKS

\$32.25/Cubic Yard (4,000 PSI)

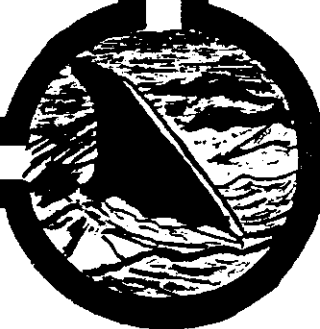
Circumference =  $\pi 2r$

Formula = Circumference  $\div$  9 x (Depth  $\div$  3) x \$32.25 = Cost

This figure represents the cost of 12" concrete walls for all tanks. (Surrounding concrete work and floors of tanks will be included under general construction costs.)

13. Veterinary	25' = 562.44	
	10' = 225.03	
	6' = <u>135.02</u>	
	922.49 x 2	= \$ 1,844.98
15. Training		= 1,844.98
20. Shark Canal		= 69,760.62
21. Whale		= 6,751.22
22. Manatee		= 2,251.05
23. Dugong		= 1,688.29
24. Sea Lions		= 2,210.72
25. Dolphin, Porpoise & Deep Sea Fish		= 8,101.85
26. Seals & Dolphin		= 2,250.41
27. Tropical Fish		= 6,751.22
TOTAL CONCRETE FOR ALL TANKS		<u><u>\$103,455.34</u></u>

- A. Summary of General Information
  - 1. Safety and Adequacy to Contain Captive Animals
  - 2. Ventilation
  - 3. Storage and Food Handling
  - 4. Ambient Temperatures
  - 5. Outdoor Facilities
  - 6. Space Requirements
  - 7. Special Considerations
  - 8. Water Quality
  - 9. Salinity and pH
  - 10. Water Flow Rate
  - 11. Food and Feeding
  - 12. Sanitation
  - 13. Veterinary Care and Preventative Medicine
  - 14. Handling
  - 15. Compatibility
  - 16. Contact with Public
  - 17. Capture Techniques
  - 18. Transportation of Animals



VIII. A. Summary of General Information

The following is an excerpt from the U. S. Department of Commerce's Marine Mammal Maintenance Standards and Guidelines;

1. Safety and Adequacy to Contain Captive Animals
  - A. Bare or sharp projections and edges, loose air hoses, loose cables, loose restraining nets, or fences in poor repair are hazardous to captive marine mammals and should be avoided.
  - B. Inadequate or poorly designed restraining enclosures used for treatment of captive marine mammals are especially hazardous, treatment facilities which are safe to both animals and handlers should be provided.
  - C. All captive marine mammals should be provided with protection from public harassment, potential communicable human pathogens and possible injury from ingestion of foreign bodies which may intentionally or accidentally introduced. In the absence of effective physical barriers to such hazards, constant supervision of persons who are or may be in contact with the animals should be maintained.
  
2. Ventilation
  - A. Special care should be taken to prevent the build up of chlorine, carbon monoxide, and other hazardous fumes.
  - B. Sufficient fresh air should be provided in indoor facilities through doors, windows, fans, vents, etc. to minimize drafts and odors and to prevent moisture condensation on ceilings and fixtures.

- C. A vertical air space of at least eight feet should be maintained over all permanent pools. When air temperature is below 50°F, at least four air exchanges per hour should be provided and the air exchange rate should be increased with increased air temperature. At least 15 air exchanges per hour should be provided at air temperatures of 80°F and above.
- D. Adequate ventilation is especially important when pool water is chlorinated. A malfunctioning chlorination system or other factors can cause chlorine gas concentration to increase to toxic levels and the death of an animal in a poorly ventilated enclosure.

### 3. Storage and Food Handling

- A. When perishable food supplies are stored for long periods of time, they should be maintained at 0°F, or less in areas where frequent opening of the freezer door can cause significant temperature fluctuations inside the freezer.
- B. Thawing facilities should be clean and constructed of materials that can be readily and effectively cleaned and disinfected. Food should be thoroughly thawed before it is offered to animals. Cooling facilities (refrigerator or ice box) should be provided for fish or other food which has been thawed, cut, and prepared for feeding each day.
- C. Some food preparations, such as fish substitute rations which are in the research and development stages and limited use, do not require freezer storage. These food preparations should be stored and handled in accordance with sound food technology and sanitation practice.

### 4. Ambient Temperatures

- A. In maintaining captive marine mammals it is essential to know, understand, and provide for the thermoregulatory techniques and capabilities of the animal involved. These capabilities are behavioral as well as physiological. Marine mammals depend on such behavior as entering the water and

hauling out, waving flippers and other posturing, congregating in close contact, separating, and cleaning and grooming fur, as well as such physiological capabilities as increasing or decreasing the thickness of their blubber, constricting and dilating blood vessels, and metabolic changes, to adapt to temperature.

- B. It should be noted that many species of marine mammals inhabit more than one temperature environment or climate type and several occur in virtually all the oceans of the world. In addition, seasonal and other variations in temperature, even within one climate type, are often very substantial. As a general rule, newly captured animals should be maintained in climatic conditions and features that approximate those from which they were removed.
- C. Following initial adaptation to captivity in an environment which approximates that from which the animal was removed, an animal can be adapted to other temperatures with provisions for behavioral and physiological thermoregulation. Rapid changes in ambient temperature should be avoided and all changes should be effected cautiously and carefully. Generally, adaptation to warmer temperatures can be accomplished more readily and successfully than can adaptation to cooler temperatures. In the case of cetaceans, phocid seals, and walrus for example, the animal must build up thicker blubber for heat retention in order to adapt to cooler temperatures which cannot be accomplished if the animal is rapidly transferred to cooler waters in which it suffers an energy and heat loss.
- D. As an example, bottlenose dolphins are most numerous in temperate or tropical zones, although some may venture far north during the summer. One facility reported deaths of bottlenose dolphins when the air temperature dropped rapidly to well below freezing and the water temperature was in the low 40's F. Bottlenose dolphins should be maintained in water of at least 50°F but no more than 85°F.

## 5. Outdoor Facilities

- A. Excessive glare, solar radiation, wind, cold, and other climatic extremes can cause marine mammals discomfort and physical harm. Relief from such conditions should be available and utilized when necessary in the judgment of the curatorial staff or veterinarian.

- B. As a general rule, pinnipeds, and sea otters should be afforded free access to wind breaks, dry areas, and water, with due regard for the species' behavioral characteristics.
- C. Special consideration must be given to providing for the care of the sick or debilitated animal. The sick or debilitated cetacean is subjected to undue stress without shelter from sunlight and other extremes. A water spray should, for example, be applied to the dorsal surface of a sick or injured cetacean that remains at the surface in order to prevent sun or wind burn and drying of the exposed skin.

## 6. Space Requirements

- A. The enclosure should be sufficiently large to allow for social interaction between captive animals, as well as meeting basic needs for freedom of movement, exercise, and turning space. In addition, the enclosure should provide sufficient space for animals such as monk seals and ring seals, which appear to require space to be alone, to segregate themselves and to establish dominance hierarchies.
- B. Pinnipeds and sea otters require a haul-out area that will allow for freedom of movement, mating, postural activity and sleep. Pinniped haul-out surfaces should be provided at or just above pool water surface, allowing easy access to and from the pool. Sea otters should be afforded continuous access to water except when undergoing medical treatment, or when they are otherwise denied access pursuant to sound curatorial and veterinary practice.
- C. Pinnipeds should be afforded continuous access to water except when they are undergoing medical treatment, being trained, being transported, involved in shows, involved in special research projects on a temporary basis, or when they are otherwise denied access.
- D. Ordinarily, no more than 10 sea lions should be maintained in the same enclosure because of the inherent difficulty in monitoring behavior and feeding.

## 7. Special Considerations

- A. Isolation, medication, or treatment tanks or areas should be used with sick, debilitated, or with newly acquired animals when it is desirable to handle or treat the animal many times daily, or

assist in adaptation to captivity. These tanks may be less than minimum size in both lateral dimensions and depth and are acceptable in these special situations when prescribed by the professional staff of the holding facility for such temporary usage.

- B. Pinniped facilities should include a squeeze cage or other means of restraining the animal which will avoid injury, for treatment or diagnostic testing.
- C. Most marine mammals are active and gregarious. They may exhibit abnormal behavior when maintained in isolation unless given special attention such as daily training. Captive animals should not needlessly be deprived of the company of other animals for extended periods of time. When it is necessary to maintain an animal in isolation for more than 7 days, frequent human attention and boredom-reducing activities should be provided. Objects such as large rubber balls, boat bumpers, and other such "playthings" can be left in the pool to stimulate boredom-relieving activity. A heavy line strung across the pool or large brushes placed in the pool may be used by dolphins and other animals for tactile stimulation and to remove dead surface skin.

## 8. Water Quality

- A. The levels of chemical additives set forth in these standards refer to sustained levels of chlorine and copper.
- B. The water in which marine mammals are maintained must meet those standards established as acceptable for human bathing areas, coliform count not to exceed 1000 MPN/100 ml of water.
- C. If chemical treatment is employed to maintain this standard, it shall be conducted in a manner and with such materials that do not cause harm or discomfort to captive animals and, if sources of chlorine and/or copper are used for such treatment, the sustained level of free available chlorine in tanks must not exceed 0.3 parts per million and the sustained level of free available copper in any tanks must not exceed 1 part per million. The sustained level of free available chlorine may, however, exceed 0.3 parts per million when break point chlorination is used in artificial sea water or fresh water.

## 9. Salinity and pH

- A. Although not mandatory for all species, it is desirable to afford marine pinnipeds access to saline water. It has been shown that harp seals require saline water. Pool water for these animals should be of a salinity of at least 20 parts per thousand. Other pinnipeds should be allowed access to saline water at least once weekly. Access can be provided by the addition of a small pool where the animals can bathe if they desire or even by providing buckets of salt water in which the animal can submerge its head.

## 10. Water Flow Rate (Turnover)

- A. In areas of polluted ocean or estuarine waters, it is suggested that make-up water from these sources be minimal or that it be treated prior to use.
- B. Where more than one pool is maintained, it is preferable that each pool have its own independent water system to prevent disease transmission and cross contamination, and to provide an additional safety factor in case of emergency or failure of equipment.

## 11. Food and Feeding

- A. Sea otters may require several feedings each day. Food quality, preparation, and feeding are an integral part of animal health care and disease prevention.
- B. Disease prevention, from both pathogens and nutrition deficiencies, centers around the food preparation area. The following factors should be considered in evaluating food quality preparation, and feeding facilities, procedures, and practices:  
Storage - Fish storage time is directly related to many variables: oil content of flesh, temperature of storage, treatment, time between catching and freezing. When stored at  $-5^{\circ}\text{F}$ , the more oily fishes such as mackerel and herring have a maximum storage time of 4-6 months after which there is significant loss in their nutritional value. The less oily fish such as blue runner and some mullet may be stored for 6-9 months. Such fish are often not available throughout the year and the veterinary or curatorial staff should take this factor into consideration in planning animal diets and nutrition. Other kinds of fish may be offered to supplement the

nutritional value of fish that have been stored for long periods of time.

Thawing - Thawing should be accomplished with a minimum of contamination and nutrient loss. Thawing tanks or containers should be cleaned and disinfected each day.

Storage After Thawing - Following cutting and weighing into different feedings, the food should be held in chilled condition (35°-40°F) until just prior to feeding. All show and training areas should have chill boxes or refrigerators for storage of food prior to use.

Sanitation - Food preparation areas should be indoors or completely screened and constructed of materials that can be subjected to periodic steam cleaning or complete disinfection by chemical means. Walls should be of a non-porous nature with no cracks or crevices. All surfaces should be cleaned and disinfected daily. Knives, buckets, cutting boards, should be washed thoroughly after each use. At the end of each day, they should be cleaned thoroughly, disinfected, rinsed, and stored dry.

Feeding - Nutrition requirements in marine mammals will vary with species, age, reproductive cycle, climatic conditions, work load, and exercise.

- C. When fish is used as food, it is suggested that several species be offered to the animal. This will help to insure a more balanced diet. Also, as animals in captivity are trained to eat dead fish, some become used to one species of fish. If that particular species becomes in short supply during a particular season, the animal is reluctant to take a substitute species. Food should be offered in such a manner that the feeders can assure that each animal gets adequate food.
- D. Stainless steel, porcelain, fiberglass, plastic, or other impervious, non-porous thawing containers and buckets are easily disinfected and cleaned are desirable.

## 12. Sanitation

- A. Cleaning of cages and tanks should be frequent enough to maintain cleanliness and to minimize disease hazards. No toxic or harmful substances should be stored or maintained in animal holding areas. All sanitation procedures should be established by a licensed veterinarian, knowledgeable in marine mammal disease problems. Caution should be exercised when using insecticides; they should be applied to animal holding areas only when essential.

13. Veterinary Care and Preventative Medicine

- A. Pest Control - A safe and effective program for the control of insects, ectoparasites and other pests should be established and maintained.
- B. Quarantine and Isolation - Quarantine is defined as the segregation of newly received animals from animals already in residence. Isolation is the segregation of animals suspected or known to be diseased from animals which are in good health. Newly received animals should be separated from large groups of animals and from their common water system until their health status has been evaluated.
- C. The duration of quarantine may vary according to species, and the purposes for which the animals are to be used. Where the history of an animal is unknown or suggests that it may not be in good health, a complete quarantine should be employed.

14. All handling of marine mammals should be done expeditiously and carefully so as to minimize discomfort, stress or physical harm to the animal. Herding and restraint are primary causes of overheating in pinnipeds, and should be avoided unless absolutely necessary for treatment or other valid reasons. Water should be made available to the animal for cooling when restraint is necessary. Overheating is of major concern in all marine mammals when they are out of water.

15. Compatibility

- A. Special care must be exercised to ensure that social interactions which are normal in the wild do not cause harm to animals which, in captivity, do not have opportunities to avoid aggressive or competitive behavior. Aggressive behavior by a male pilot whale in the wild, for example, may force females with young into the center of a group. A small enclosure and limited number of animals will not provide an opportunity for such an escape and the same aggressive behavior may kill the animals in captivity.

16. Contact with Public

- A. Constant and effective supervision is necessary to minimize harm to captive marine mammals in direct contact with the viewing public. Public feeding of marine mammals poses risk and should be allowed only under constant and effective supervision to prevent the public from putting inedible or injurious objects in the pool.

17. Capture Techniques

- A. Capture of marine mammals should be undertaken only by persons who are knowledgeable and competent in marine mammal capture and animal handling techniques.
- B. Capture gear should protect against abrasion, forced interruption of respiration and other physical damage, and should provide for expeditious rather than prolonged capture sequences. Capture techniques should not cause the loss of other animals not sought by the collector.

18. The Transportation of Animals

- A. The health of all animals to be transported, except transport to a shore-based holding facility immediately following capture, should be determined by a veterinarian. All vehicles used in transporting marine mammals must be mechanically sound and equipped to provide adequate fresh air, and/or warmth if necessary, when moving or stationary, to all animals being transported, without harmful drafts or discomfort. Cages should not be stacked or otherwise placed in a manner which will restrict air flow or subject the animal to temperature extremes. The Cargo space should be so constructed and maintained as to prevent the ingress of noxious gases. The interior of the animal cargo space should be kept clean and should be adequate to ensure that each animal has access to fresh air for normal breathing and that injury is not inflicted by the enclosure itself.

A. Space Diagrams

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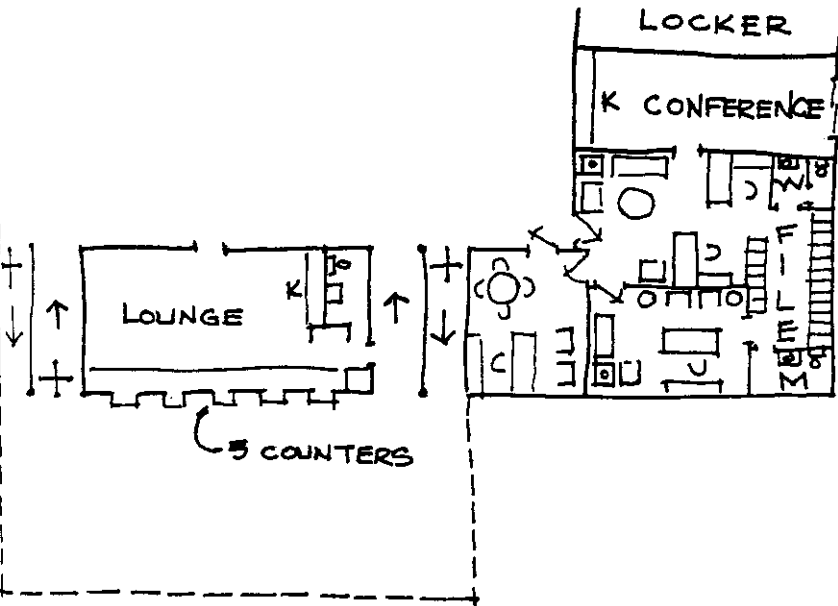
E REEF THE REEF THE REEF THE REEF



## S P A C E      D I A G R A M S

NOTE: The following spatial diagrams are to represent square footage areas visually, please do not mistake these diagrams as actual design for spaces.

IX. A. SPACE DIAGRAMS - Square Footage

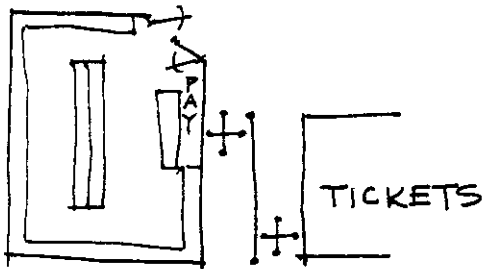


OFFICES

- 1,095 Enclosed
- 1 Director's Office
- 1 Assistant Director
- Secretary and
- Bookkeeping
- Waiting
- Conference
- Filing
- Restrooms

ENTRY-ADMISSION-TICKET

- 450 Enclosed
- 1,000 Covered



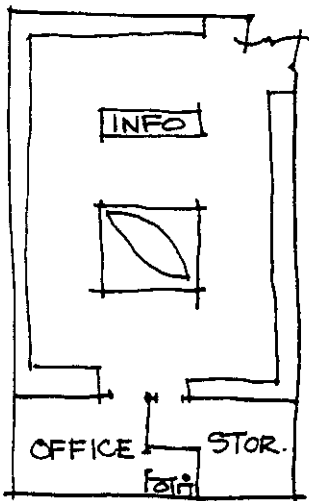
GIFT SHOP

500 Enclosed



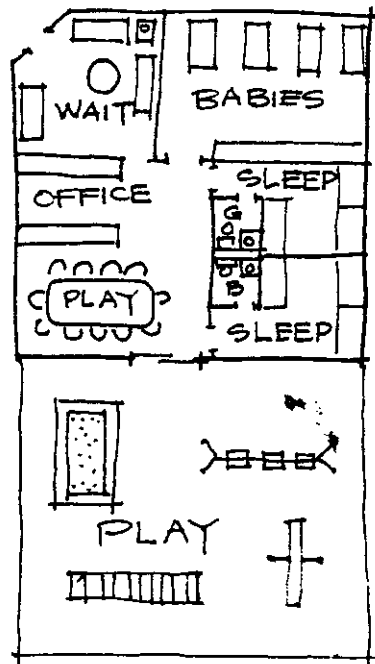
INFORMATION BOOTH (2)

36 Enclosed



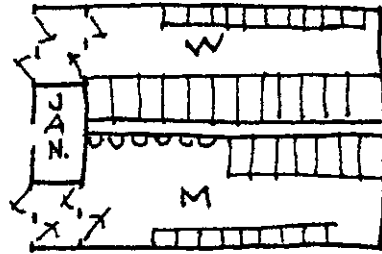
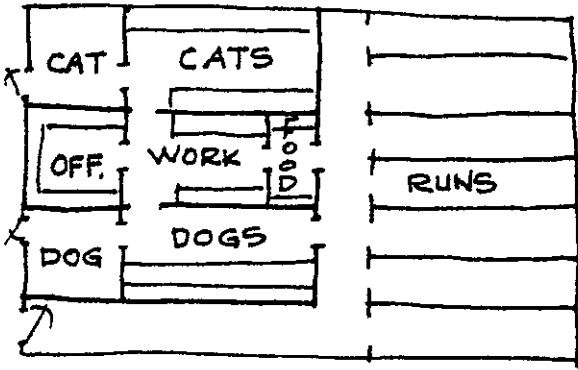
MUSEUM

1,500 Enclosed



NURSERY

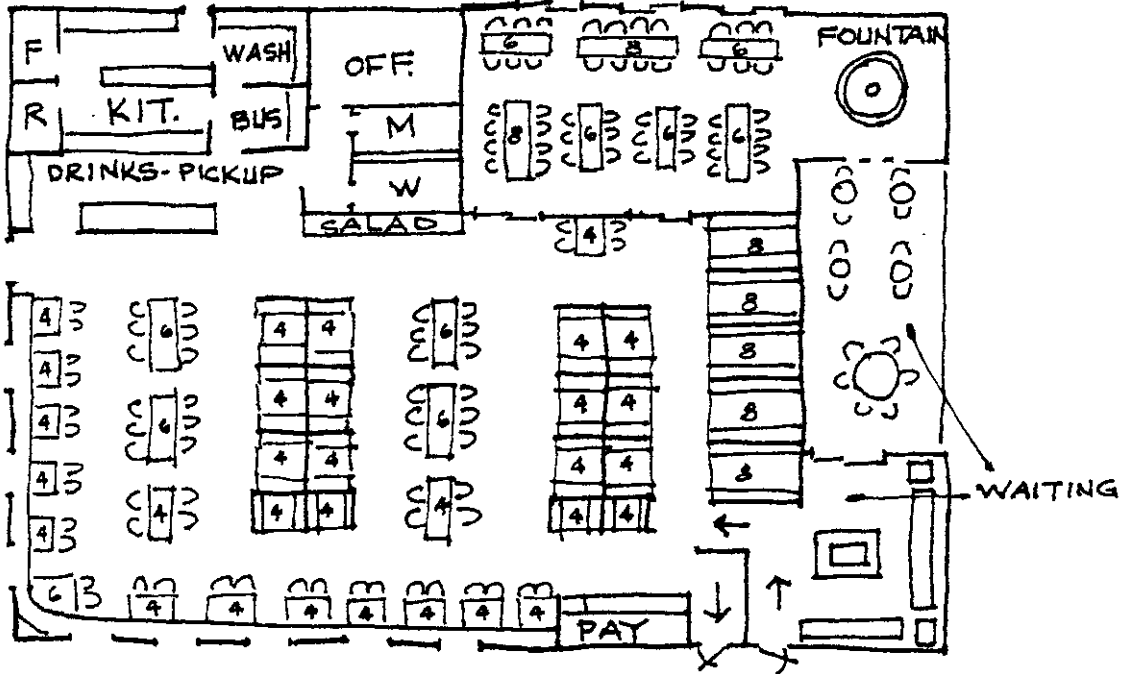
- 1,225 Enclosed
- 1,050 Open



RESTROOMS(2)  
875 Enclosed

KENNEL

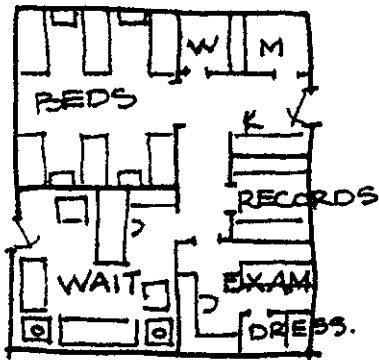
900 Enclosed  
900 Open



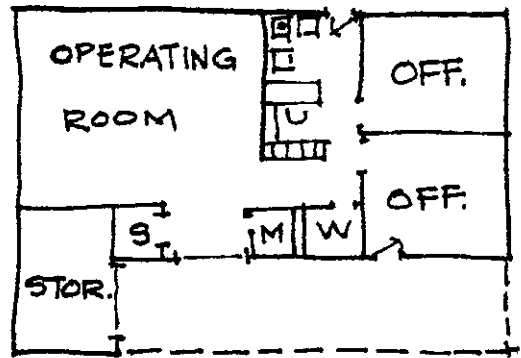
RESTAURANT

5,725 Enclosed  
450 Covered

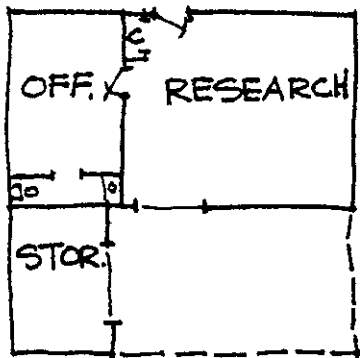
The concept of this restaurant will be "pre-prepared" and frozen foods which can be heated in a micro-wave oven, providing a more efficient and consistent food service.



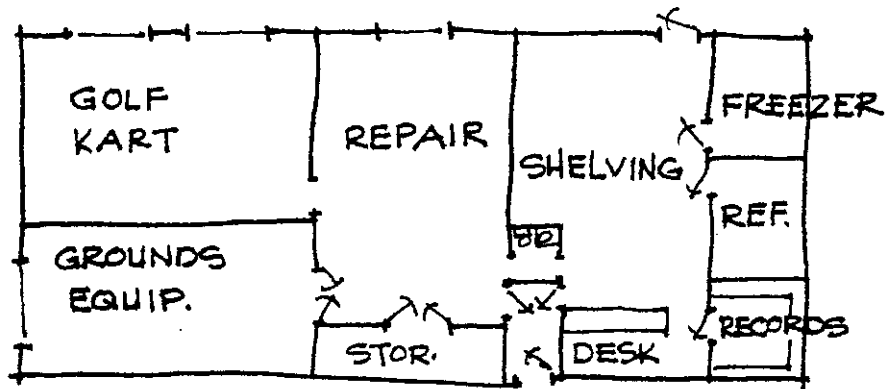
INFIRMARY  
1,050 Enclosed



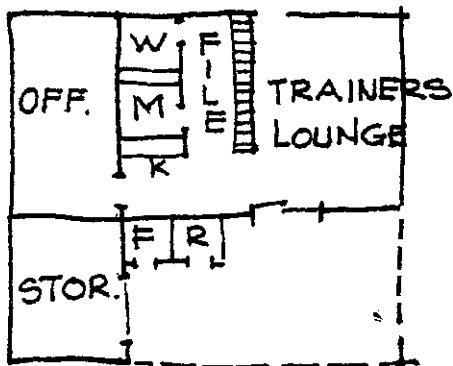
VETERINARY  
1,350 Enclosed  
400 Covered



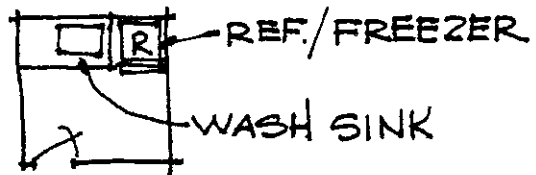
RESEARCH  
850 Enclosed  
375 Covered



KEEPER'S      REPAIR      SUPPLIES  
1,050 Enclosed    700 Encl.      1,050 Encl.



TRAINING  
1,030 Enclosed  
370 Covered



KEEPER'S BLDG. @ EACH EXHIBIT  
36 Enclosed

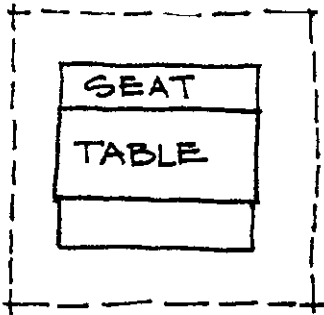
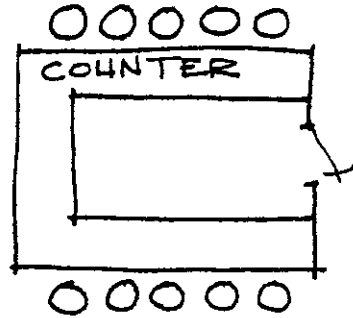


TABLE +  
CIRCULATION  
= 36 SF  
FOUNTAIN = 250 SF  
VENDING = 90 SF  
200 TABLES

PICNIC & REST

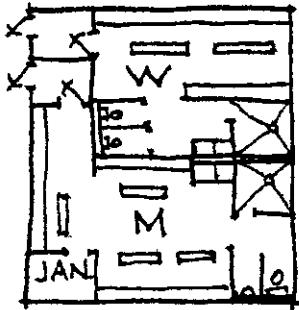
7,540 Total =  
20% Enclosed - 1,508  
80% Open - 6,032



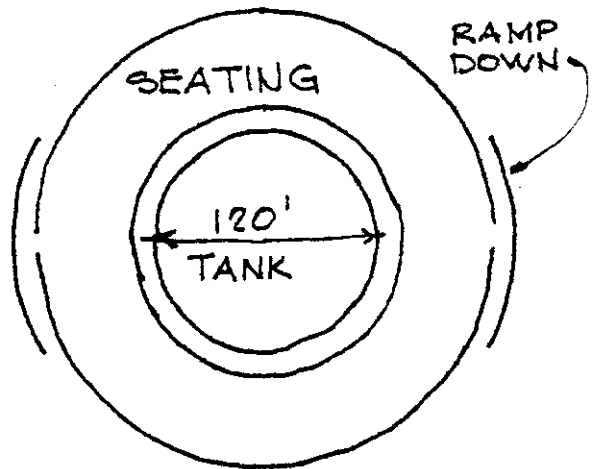
4 VENDING @ 90 SF  
30 TABLES = 1080 SF

VENDING & GIFT

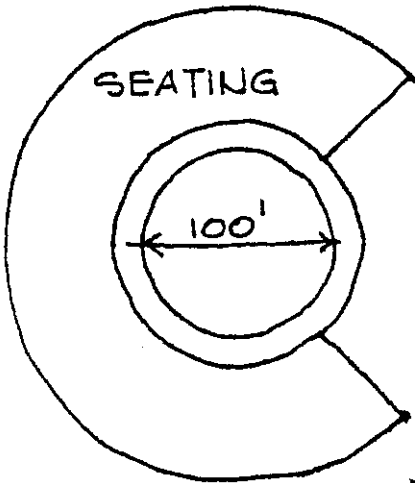
1,270 Total  
90 Enclosed  
1,080 Open



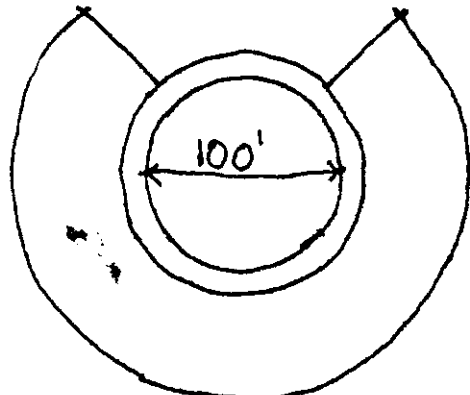
STAFF LOCKERS  
810 Enclosed



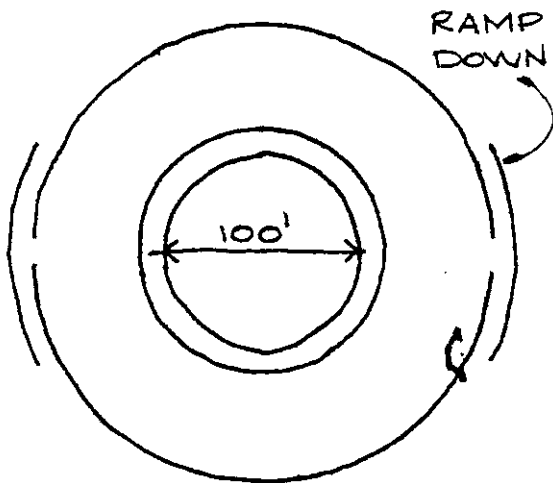
DOLPHIN, PORPOISE & DEEP SEA FISH (Turtles, Eels)  
41,527 Open



WHALE  
41,033 Covered  
7,850 Open

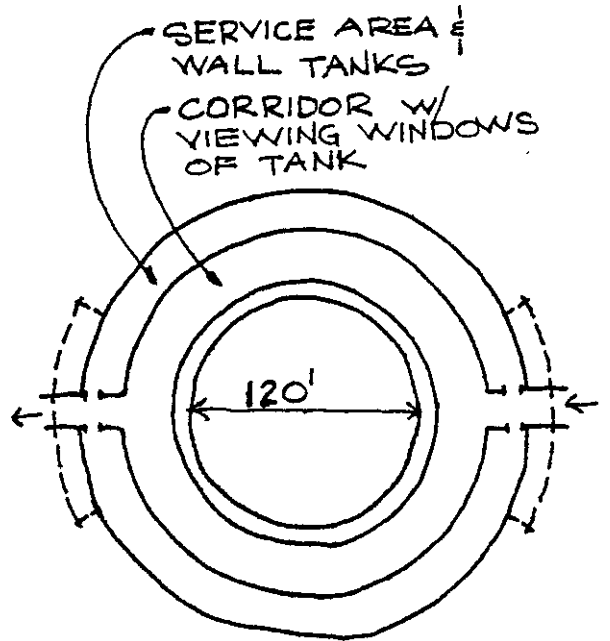


SEALS & DOLPHIN  
33,517 Covered  
7,850 Open

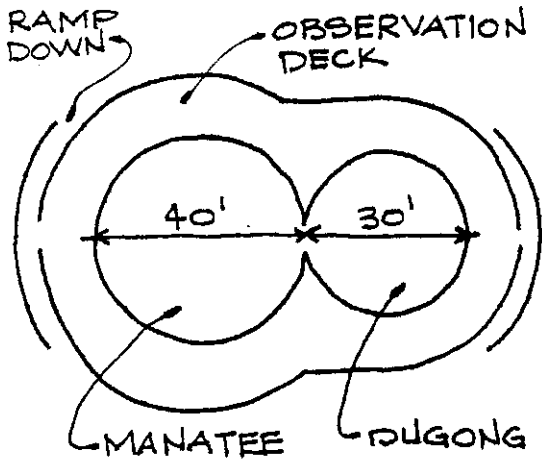


TROPICAL FISH

46,106 Open  
28,256 Enclosed -  
Window viewing below  
upper deck.

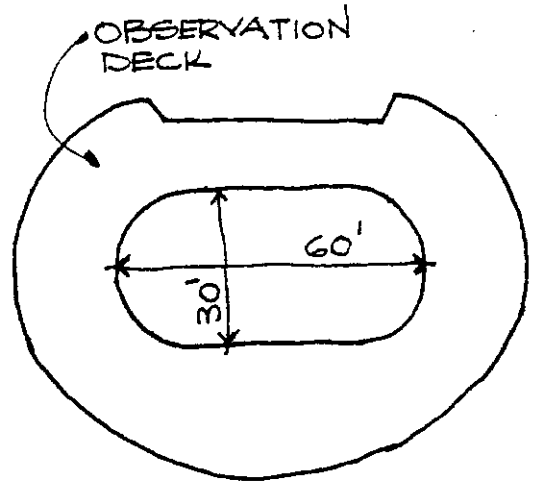


WALL TANKS (Below Dolphin,  
Porpoise & Deep Sea Fish)  
30,223 Enclosed



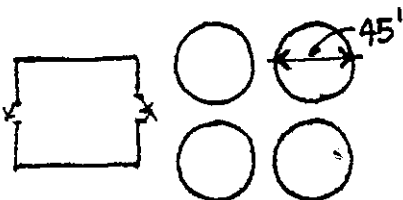
MANATEE & DUGONG

31,750 Open



SEA LIONS

38,775 Open

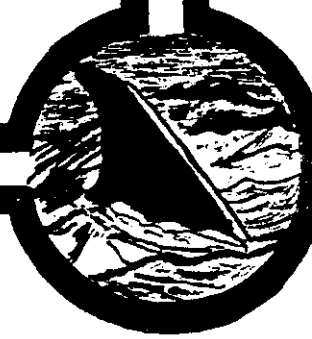


WATER FILTRATION SYSTEM  
& MECHANICAL SYSTEMS

3,250 Enclosed  
11,500 Open

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PART X. SUPPLEMENT TO THE PROGRAM

SUPPLEMENT TO PROGRAM

Zoos and aquariums are somewhat governed by the American Association of Zoological Parks and Aquariums (AAZPA).

The AAZPA is a professional organization in the United States for zoo and aquarium employees and their associates. There are about 1,800 members; professional staff employees, commercial support agencies and suppliers, interested private citizens, and non-profit organizations. This last group of 220 institutional members represents a combined membership of more than 250,000 citizens.

The AAZPA is devoted to fostering zoo and aquarium operation on a professional level with high standards of excellence. Associate membership is open to everyone interested in animal welfare, protection of wildlife, and the development of better zoos and aquariums for the good of animals and people.

Major AAZPA activities include:

1. National and regional conferences open to all members.
2. Sponsorship of the International Species Inventory System (ISIS), accumulating census and vital statistics data on captive wildlife around the world.
3. A self-imposed accreditation program.
4. A professional zoo and aquarium management school.
5. An information monthly newsletter.
6. Educational publications and services.
7. Committees actively working with conservation groups on a worldwide basis.

## THE PURPOSE OF ZOOS AND AQUARIUMS

There are many reasons to have zoos and aquariums. Animals are a universal language and appeal to people throughout the world. Zoos/aquariums allow people to experience animals firsthand as fascinating, wonderful creatures. People can read about animals, or see them in films, but nothing replaces the experience of actually seeing an animal first hand.

Animal habitats are rapidly disappearing everywhere in the world. Due to modern technology and a growing reservoir of scientific information, it is possible to provide excellent homes for many different animal species. Many original habitats in which animal species developed and flourished have been modified by human activities.

Zoos and aquariums have pioneered in breeding programs for many endangered species. Animals such as the Asiatic wild horse, Pere David's deer and the Hawaiian goose would be extinct today if there were no captive breeding programs.

Human activities have been directly responsible for the extinction of mammals in the wild, at an increasing rate.

- \* From the time of Christ until 1800, one species vanished every 55 years.
- \* From 1800 through 1900, one species each 18 months.
- \* From 1900 until today, one species each 12 months.

Modern zoos and aquariums are of great value. They serve as learning resources, breeding and survival centers for endangered species, community resources for cultural enrichment, and recreational facilities for the family unit in society.

Every year more than 112,000,000 people visit zoos, aquariums, oceanariums and wildlife parks in the United States. This is more than the attendance at all football, baseball and hockey games combined. This type of activity is truly one of America's favorite past-times.

One of the most important new concepts in zoos and aquariums, is to carefully reproduce the animal's natural habitat as closely as possible. This is accomplished by providing trees, shrubs, grass, ponds and rocky hiding places. Each animal's natural homesite is duplicated and made realistic. When necessary, the temperature and humidity are controlled, providing proper climate for delicate animals which have special needs.

The care of wild animals is an art and a science. Many zoos and aquariums maintain accurate records on all their animals, and these records are now being computerized on an international basis through the AAZPZ sponsored ISIS. Animal health is very important, veterinarians and nutritionists play an important role in zoo and aquarium management.

Zoos and aquariums obtain their animals from various places. Many are young animals born in other zoos and aquariums, because breeding programs are becoming more and more successful. Some come from the wild under permits issued by the Federal Government. Others come from wild groups which are still plentiful. In 1966, zoos and aquariums, through their national organization, the AAZPA, took the lead in refusing to buy imported animals which were seriously endangered in the wild. Recent statistics show that less than 1% of the animals taken from wild homesites go to zoos and aquariums.

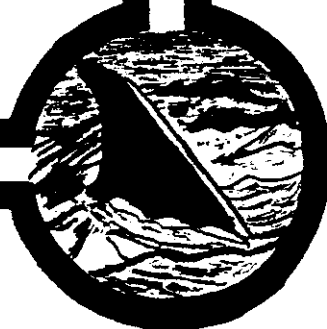
Zoos and aquariums are a part of our total relationship with animals. Starting in cave dweller days, animals have provided people with food and clothing, served as workers and pets, and have taken their place in literature, art, mythology and religion. Early zoos and aquariums were reserved for royalty; today's zoos and aquariums are for all people.

Some of the thoughts and sentences from the above supplement, were taken from the brochure The Purpose of Zoos & Aquariums, published by the AAZPA, Oglebay Park, Wheeling, W. VA 26003.

- A. Open-Air Aquariums
- B. Closed-System Aquariums

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## Section A. Open-Air Aquariums

### SEA WORLD(S)

There are three Sea Worlds: Aurora, Ohio; Orlando, Florida and San Diego, California.

Sea World advertises that there are the three worlds of Sea World. They are entertainment, education and research.

All three locations have accomplished these important goals. Sea World in Aurora is only open during the summer months with its open-air exhibits, however, carries on extensive educational programs throughout the year.

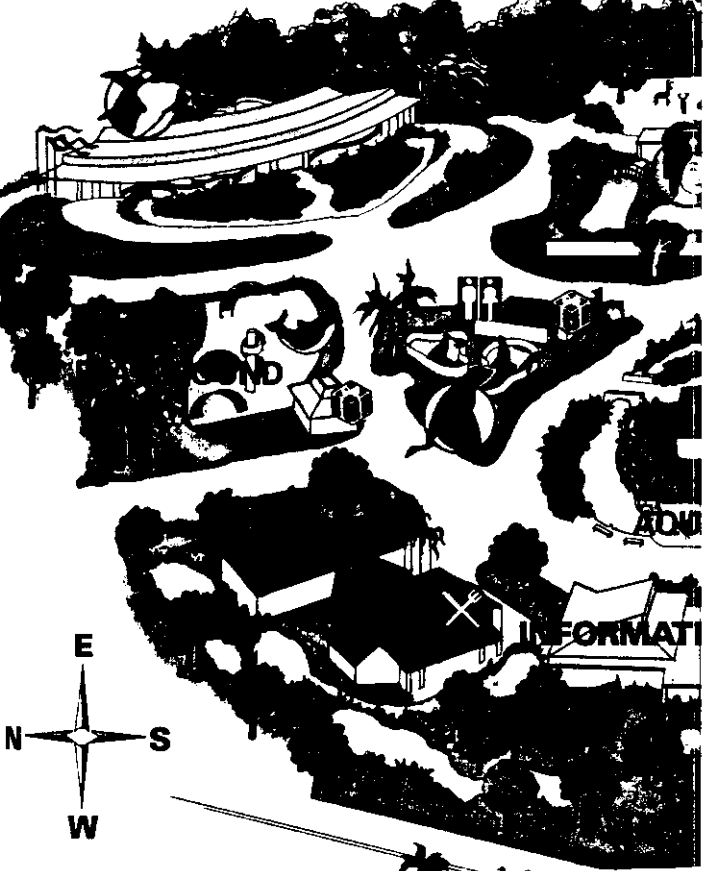
Sea World has the most successful programs and research of all open-air oceanariums in the country.

Their main headquarters is located in San Diego, the first park to be constructed.

All three parks are beautifully landscaped, well-kept, smoothly run and highly monetarily oriented.

# Look, Touch, and Feed

WHALE AND DOLPHIN STADIUM JAPANESE

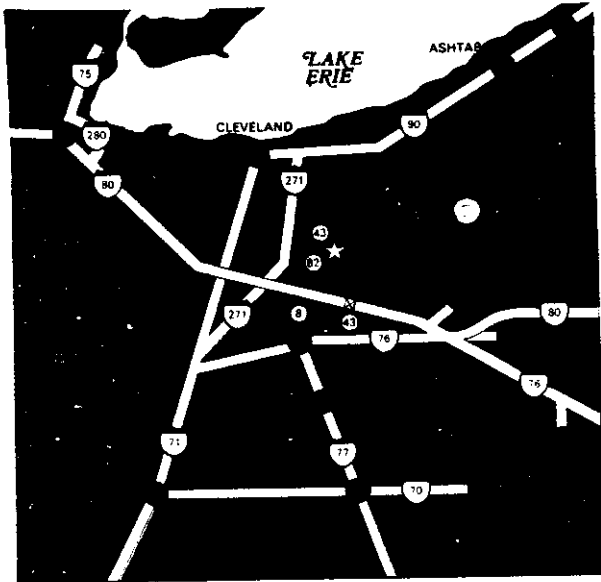


- FIRST AID
- FOOD AND RESTAURANT
- FILM AND GIFT SHOPS
- TELEPHONES
- RESTROOMS
- Drinking Fountains

- INFORMATION**
- Guided Tours
  - Lost Parents
  - Stroller/Wheelchair Rental
  - Gold Pass Sales
  - Lost and Found



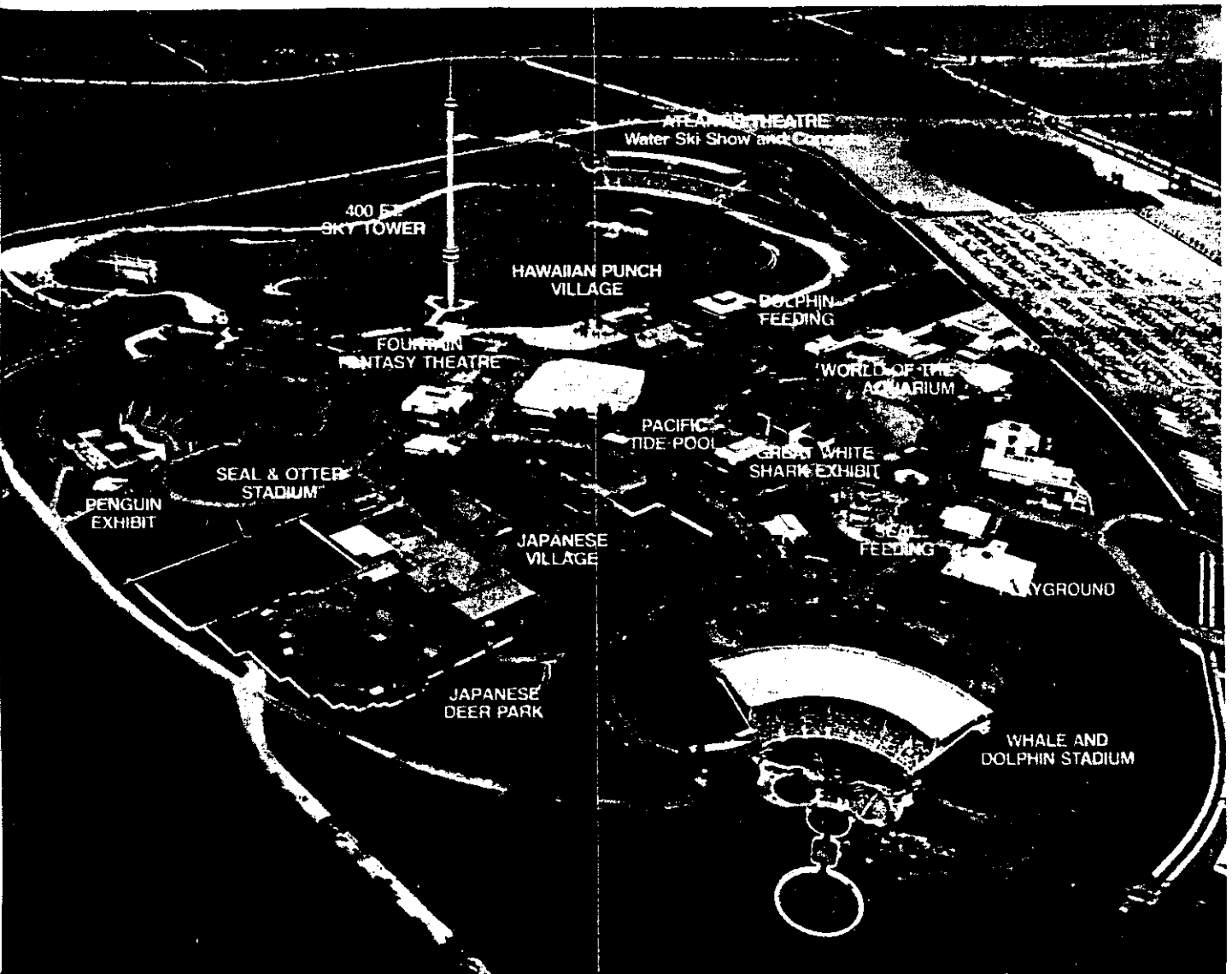
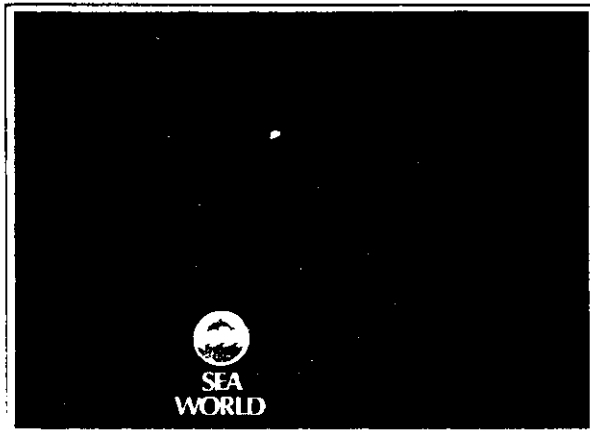
SEA WORLD  
Aurora, Ohio



**SEA WORLD OF OHIO**



SEA WORLD  
Orlando, Florida

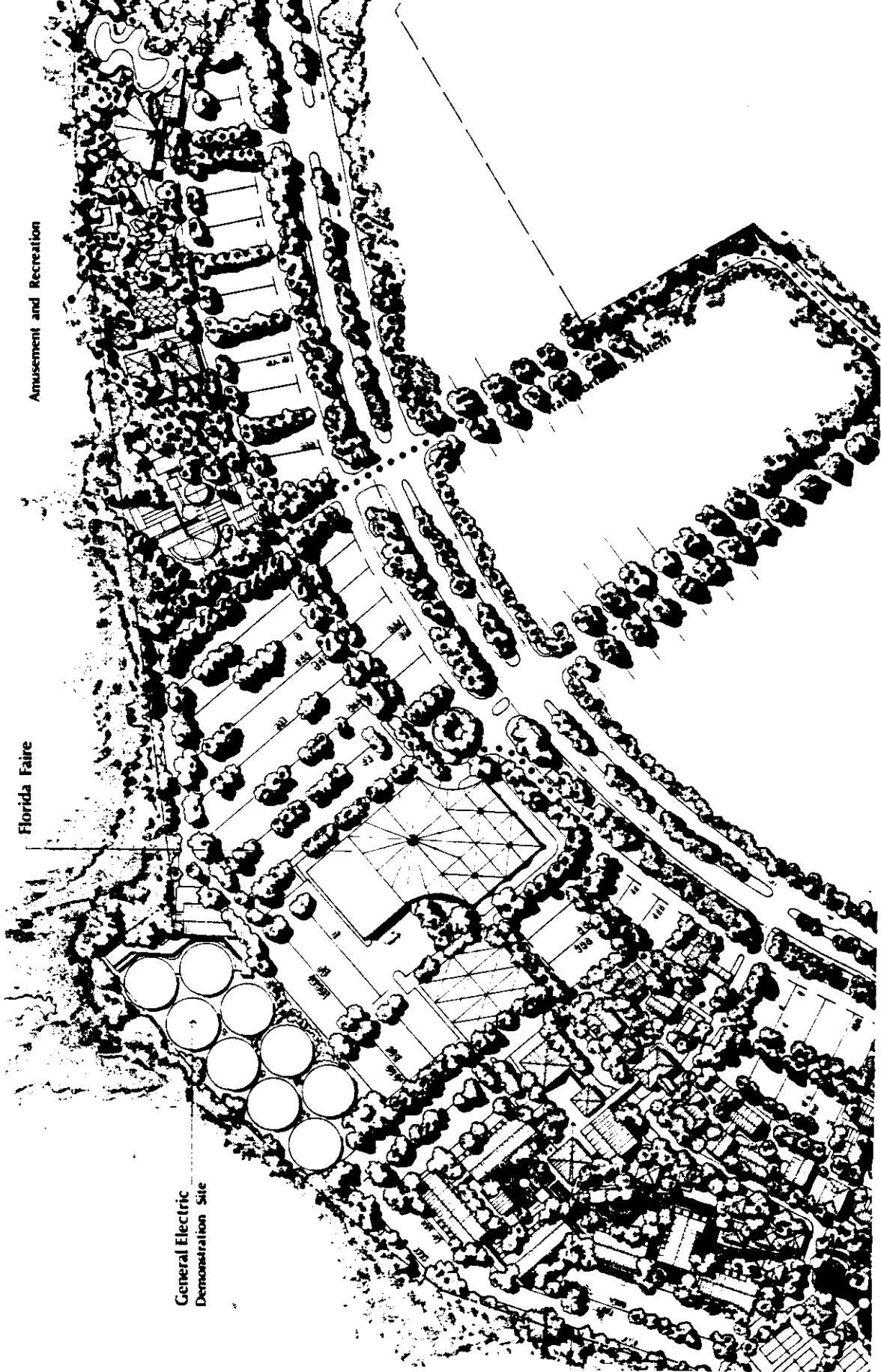


# JULIAN'S SHOWS AND SEA WORLD ORLANDO, FLORIDA

TOURNAI TABLASH THEATRE	SEA WORLD WORLD OF THE SEA	WHALE AND DOLPHIN SHOWS	ATLANTIS THEATRE Water Ski Show	JAPANESE PEARL DIVING DEMONSTRATION
9:30 10:45 11:45 1:30 2:00 2:30 3:00 3:30 4:30 5:30	Continuous 1:15 3:00 6:00	11:15 1:15 3:00 6:00	1:00 4:00 7:00	10:30 11:00 11:30 12:00 12:30 1:00 1:30 2:00 2:30 3:00 3:30 4:00 4:30 5:00 5:30 6:00 6:30 7:00

Special Animal Training Session at 2:15  
 (For More Information See Reverse Side)

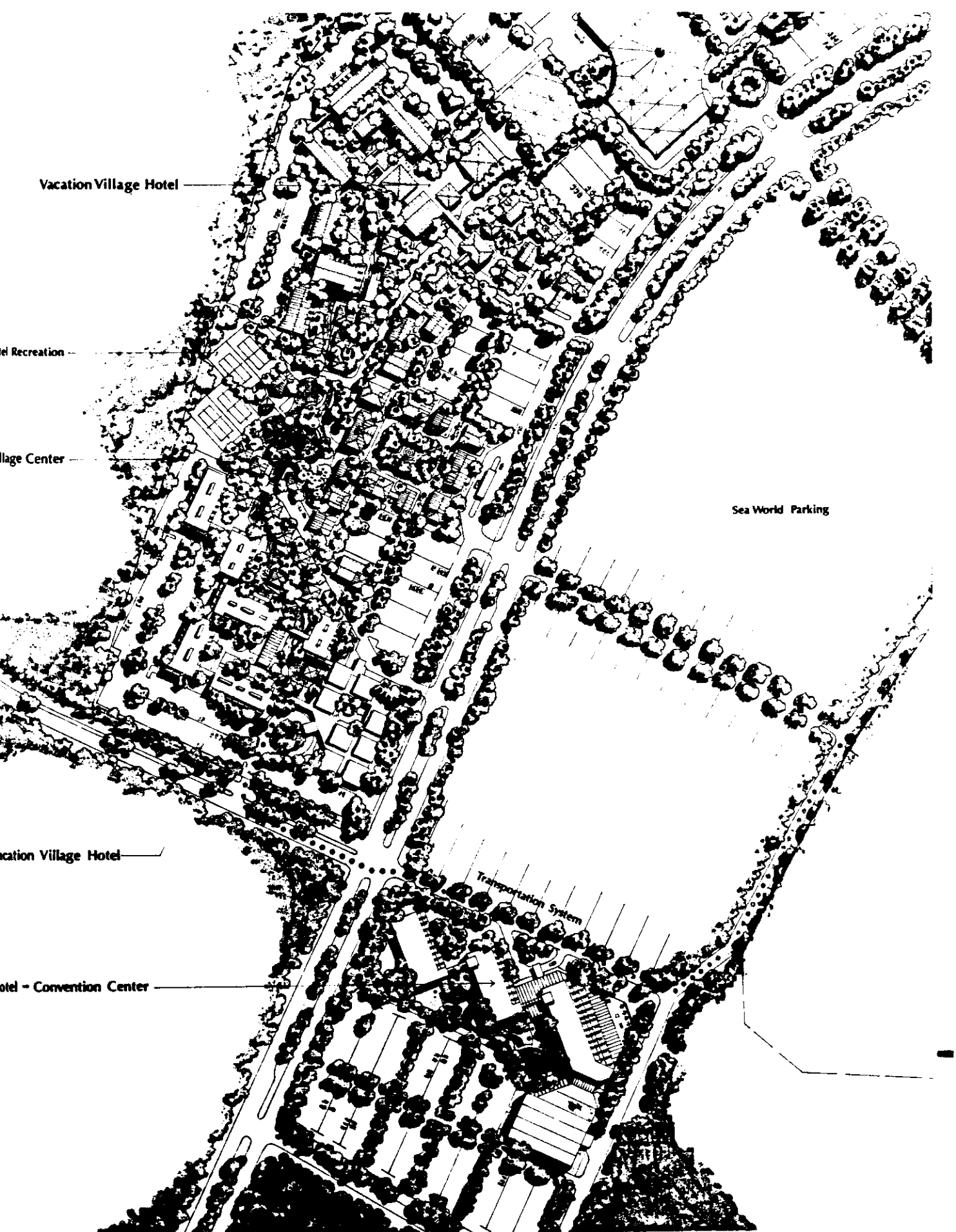
Sea World Closes Today at 8:00



Amusement and Recreation

Florida Faire

General Electric  
Demonstration Site



Vacation Village Hotel

Hotel Recreation

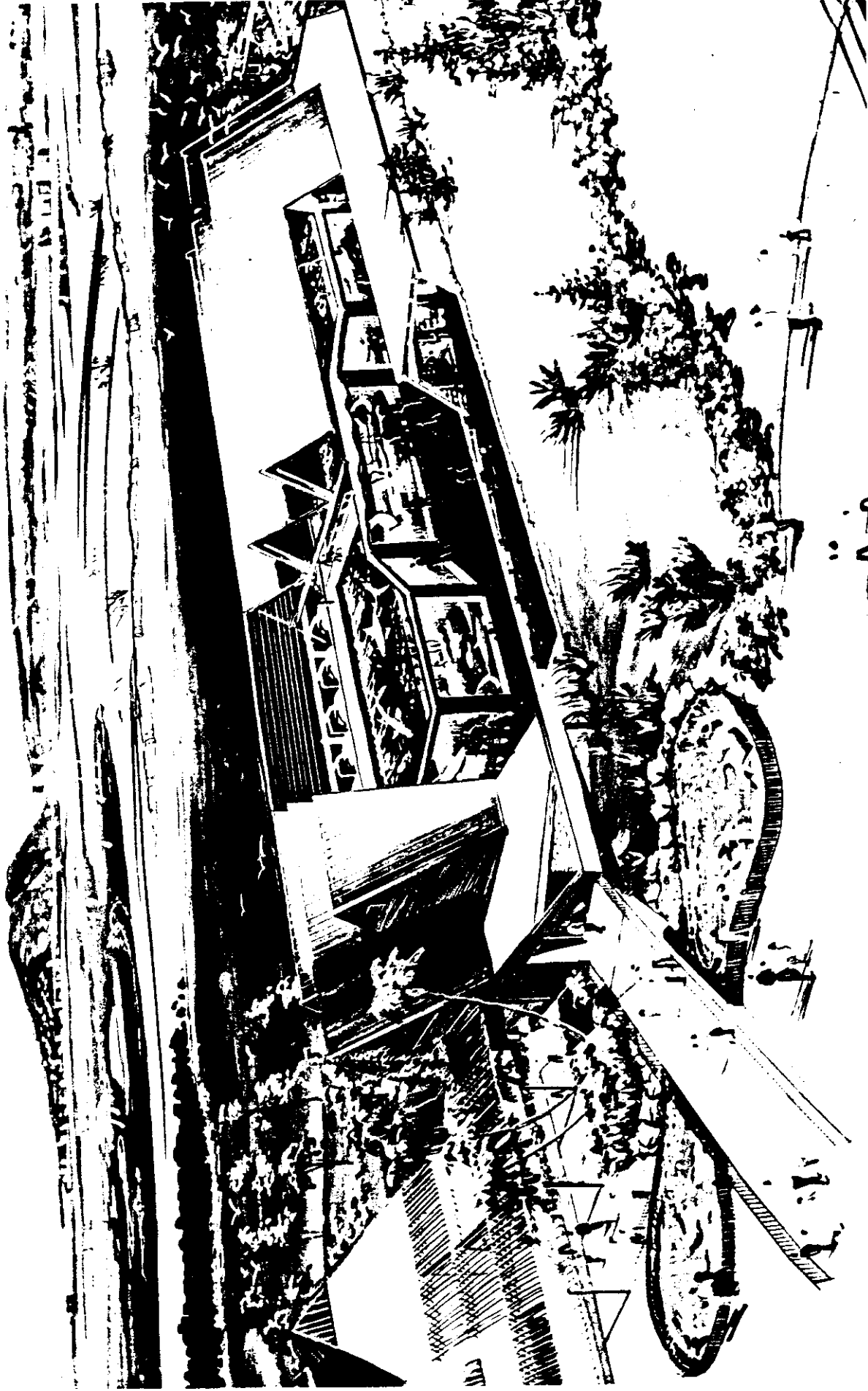
Village Center

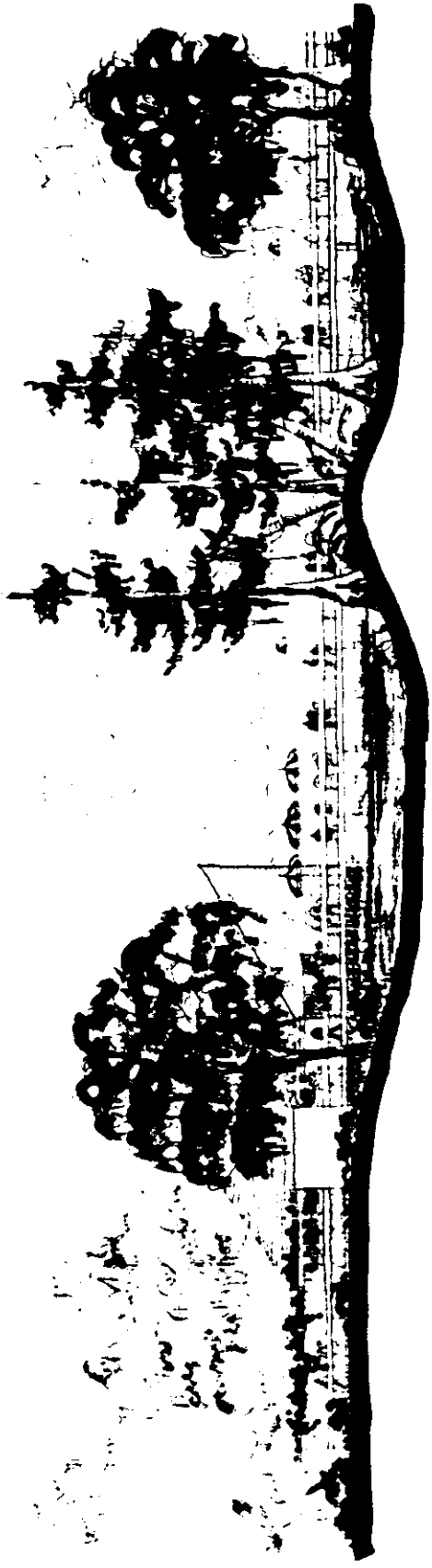
Sea World Parking

Vacation Village Hotel

Hotel - Convention Center

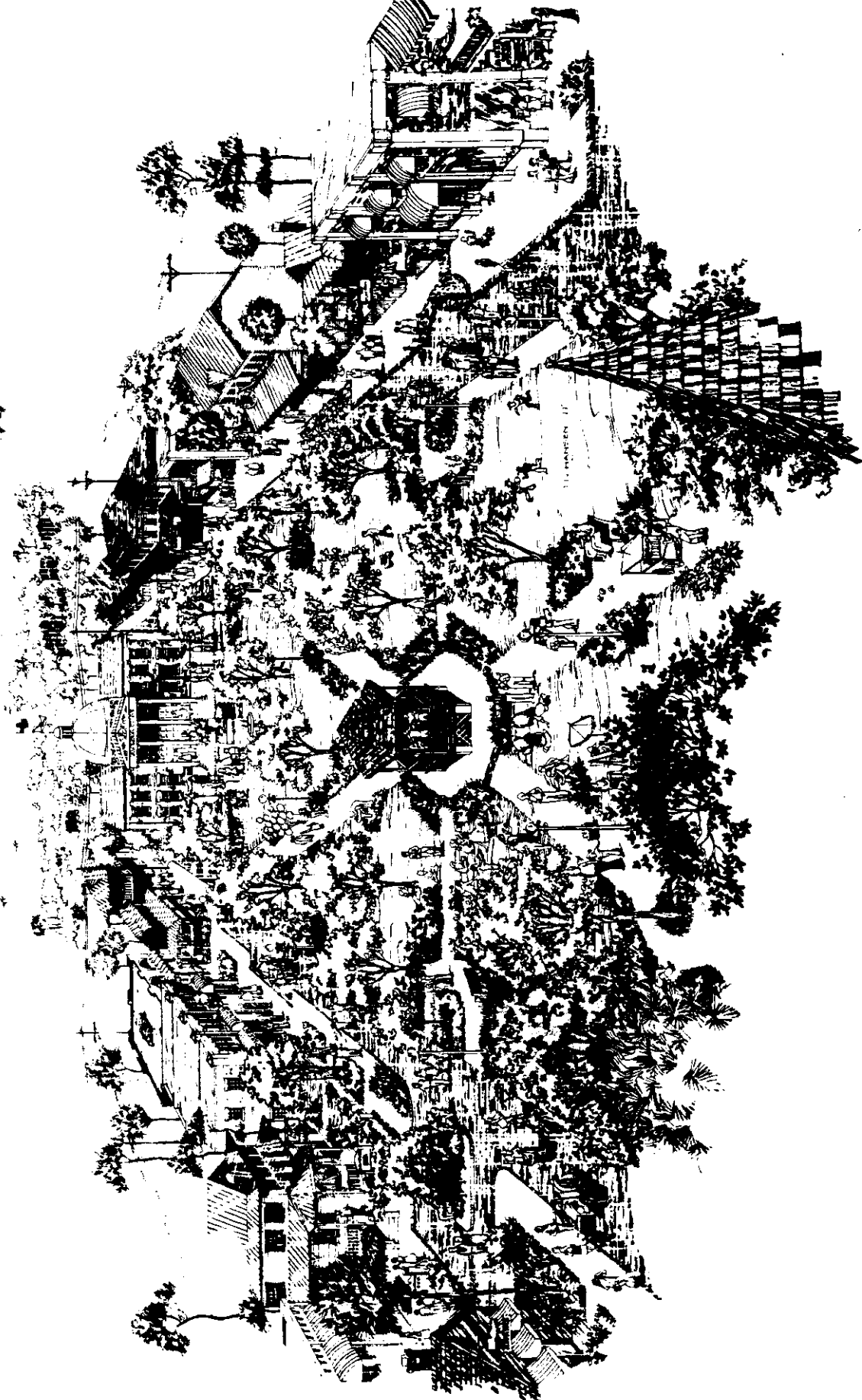
Transportation System

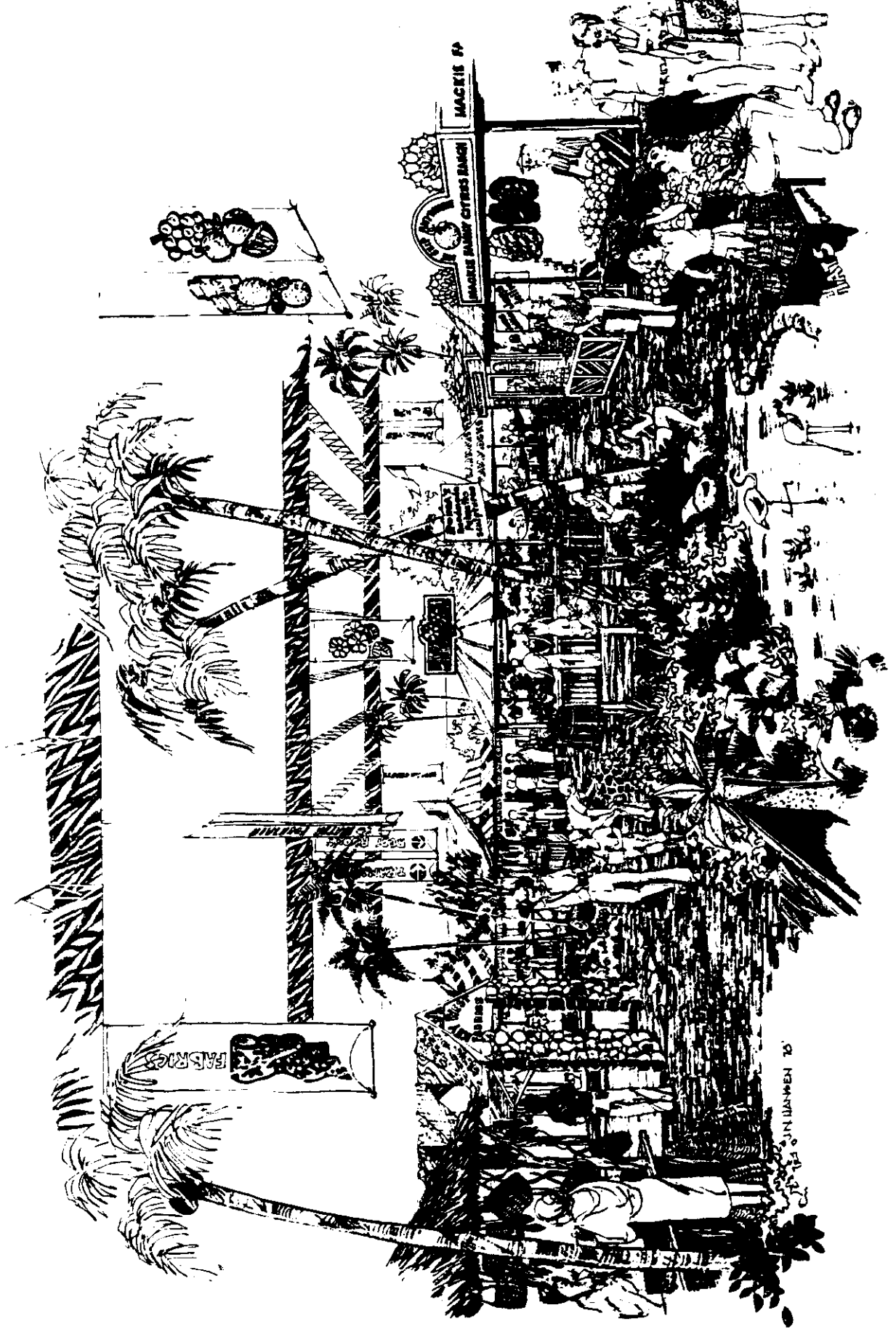




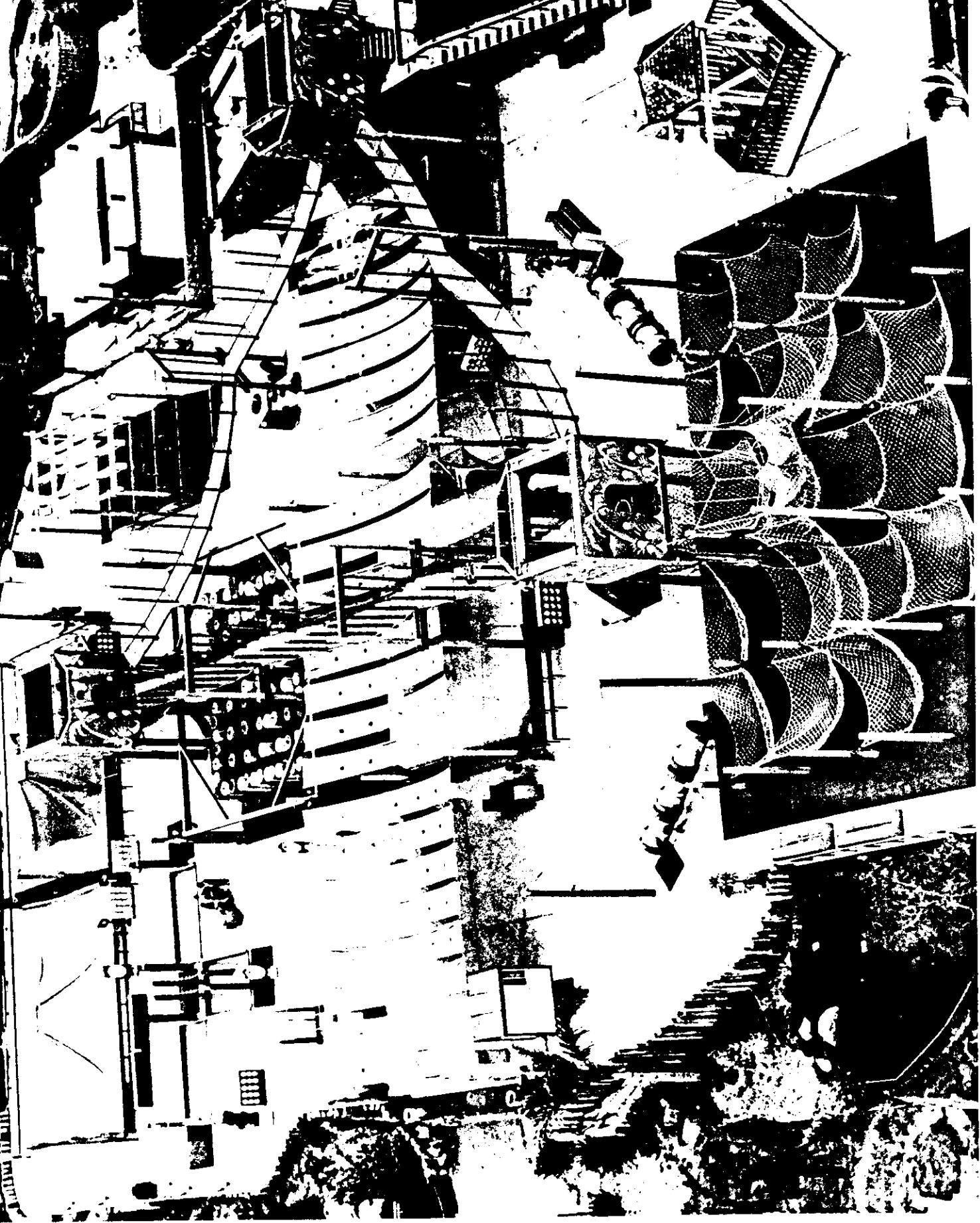
Nature Walk - Entrance

Robert Lambhart  
Planners & Architects Nov 1977





© 1915 J. J. HANSEN





### MIAMI SEAQUARIUM

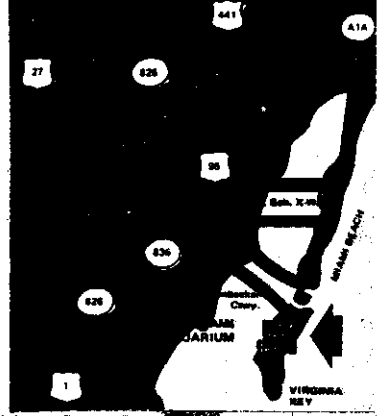
The Miami Seaquarium is located on 60 acres on Biscayne Bay. The site has little room for further development as all phases planned have been developed.

The Seaquarium opened in 1955. The main tank is 80 feet in diameter with two levels, the lower level has 150 viewing windows. This tank holds 600,000 gallons of filtered sea water.

All tanks are constructed of reinforced concrete. The smaller tank, the reef tank has a diameter of 50 feet and a capacity of 235,000 gallons of water. The Seaquarium is quite large, however exhibits are situated so the visitor does not have to walk a great deal to reach their destinations.

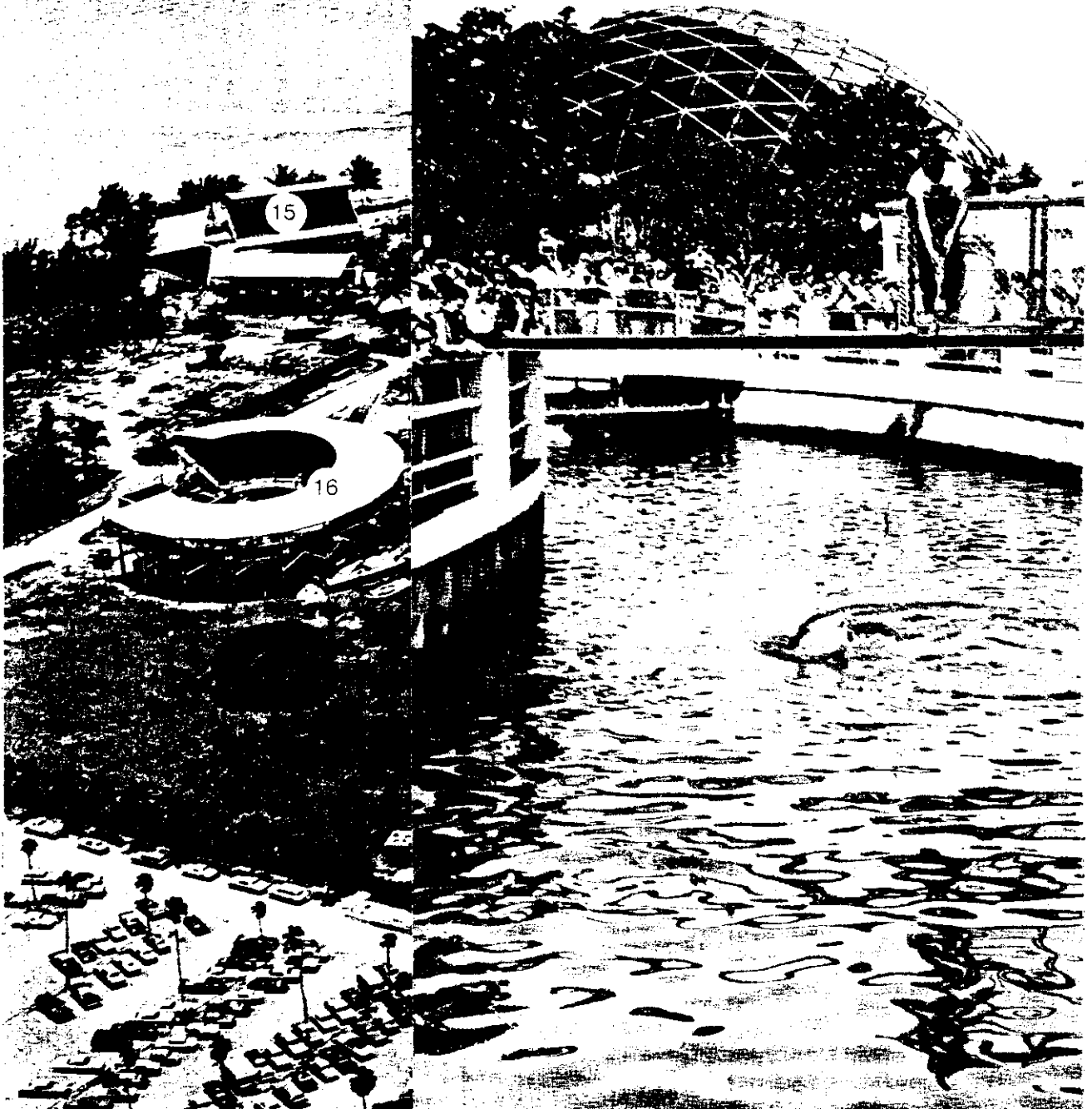
The Seaquarium is involved with many institutes for research. The Seaquarium is oriented toward entertaining its visitors with some emphasis placed on education.

MIAMI SEAQUARIUM  
Miami, Florida



**60 ACRES OF  
SEA ADVENTURE**

OPEN →



# Miami Seaquarium® Grounds and Show Times

1. **DOLPHINS — MAIN SEAQUARIUM**  
Our world-famous high-jumping dolphins perform precision routines.
2. **REEF FISH — UNDERWATER FEEDING**  
Divers enter the underwater world to handfeed exotic and dangerous marine life.
3. **SHARKS**  
Ferocious sharks fed daily in the world's largest shark channel.

AM	PM	PM	PM
10:00	12:00	2:00	4:00
10:20	12:20	2:20	4:20
—	12:30	2:30	—

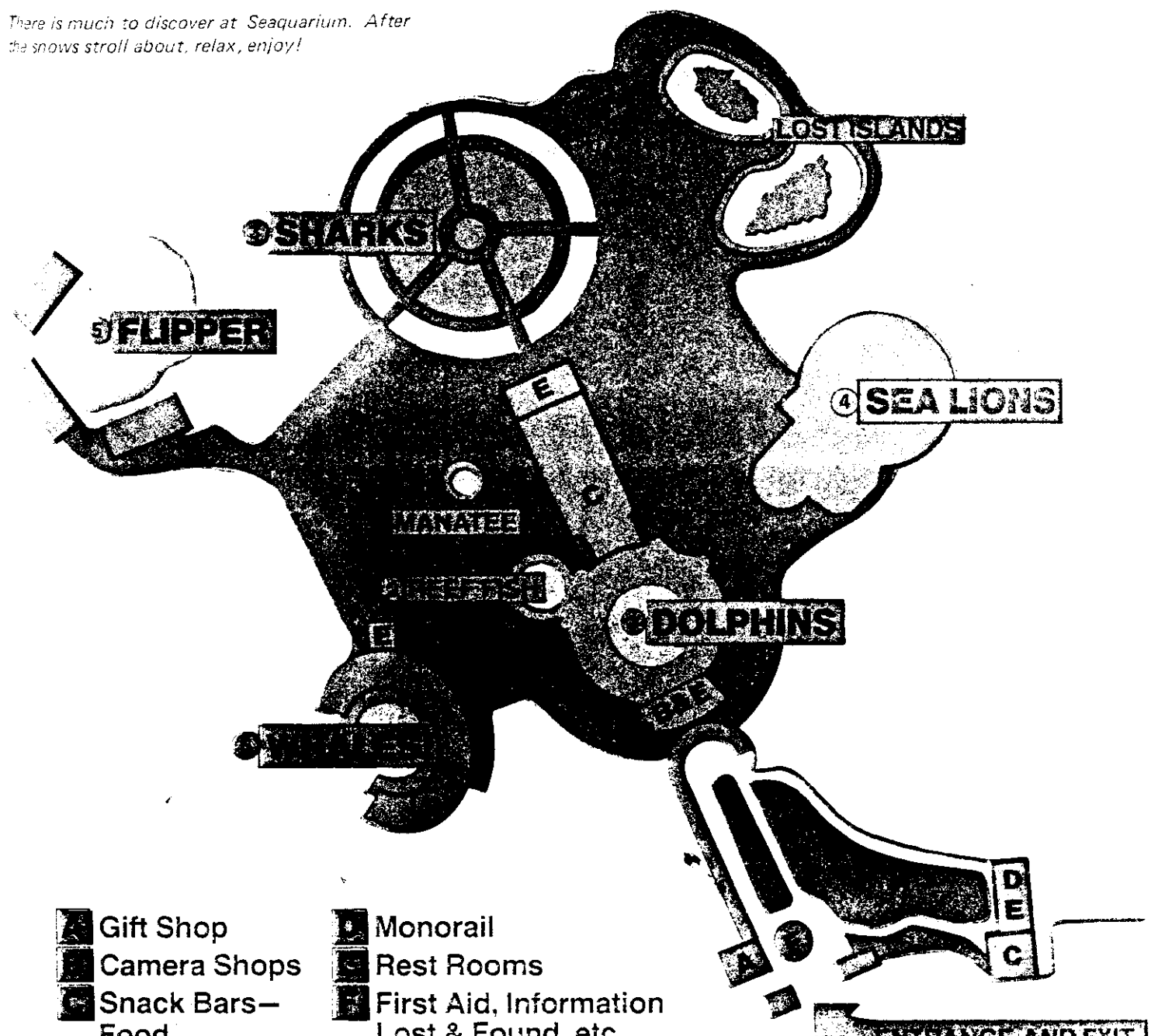
1. **DELFINES — EDIFICIO PRINCIPAL**
1. **DAUPHINS — BATIMENT PRINCIPAL**
1. **DELPHINE — HÄUPTGEBÄUDE**
2. **PECES DE ARRECIFES**
2. **POISSONS DU RECIF**
2. **UNTERWASSER — FÜTTERN!**
3. **TIBURONES**
3. **LES REQUINS**
3. **HAIFISCHE**

5. **FLIPPER**  
Flipper stars in actual movie setting where the movie and TV series were filmed.
6. **KILLER WHALES**  
Our whales star in the most spectacular sea show of the century — It's a *KILLER!*

11:10	1:10	3:10	5:10
11:35	1:35	3:35	5:35

5. **FLIPPÉR**
5. **FLIPPER**
5. **FLIPPER**
6. **LAS ORCAS**
6. **LES ORQUES**
6. **SCHWERTWALE**

*There is much to discover at Seaquarium. After the shows stroll about, relax, enjoy!*



- Gift Shop
- Camera Shops
- Snack Bars—Food
- Monorail
- Rest Rooms
- First Aid, Information, Lost & Found, etc



As often happens at the Miami Seaquarium, the fastest route from point A to point B is via water. Flipper is always ready to provide transportation, especially for trainer "Surely" Rawlings and a crew of dedicated young men and women who work with the marine mammals.



OVER

OCEAN WORLD

Ocean World is a oceanarium which deals with a variety of marine mammals, alligators and birds.

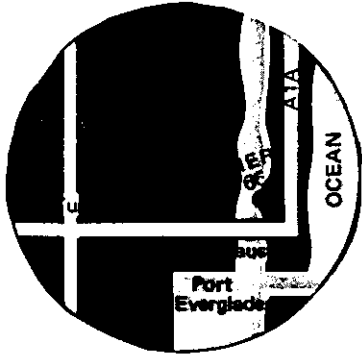
Ocean World was constructed approximately 15 years ago on the site of a burned-out marina.

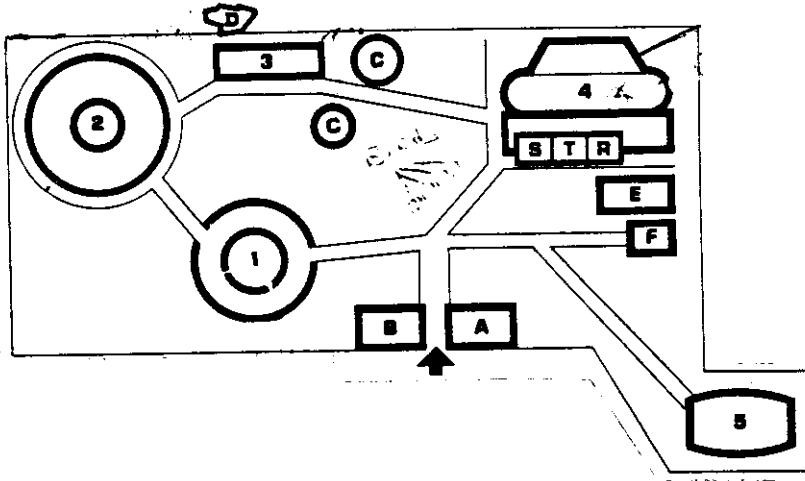
The site is quite small, it is an open-air oceanarium; however, all exhibits are very compact.

Although the site is small, there are many activities to entice a visitor. There is a large river boat which travels through the inter-coastal waterway, shown on the map.

The exhibits are geared toward entertainment rather than education of its visitors.

OCEAN WORLD  
Fort Lauderdale, Florida





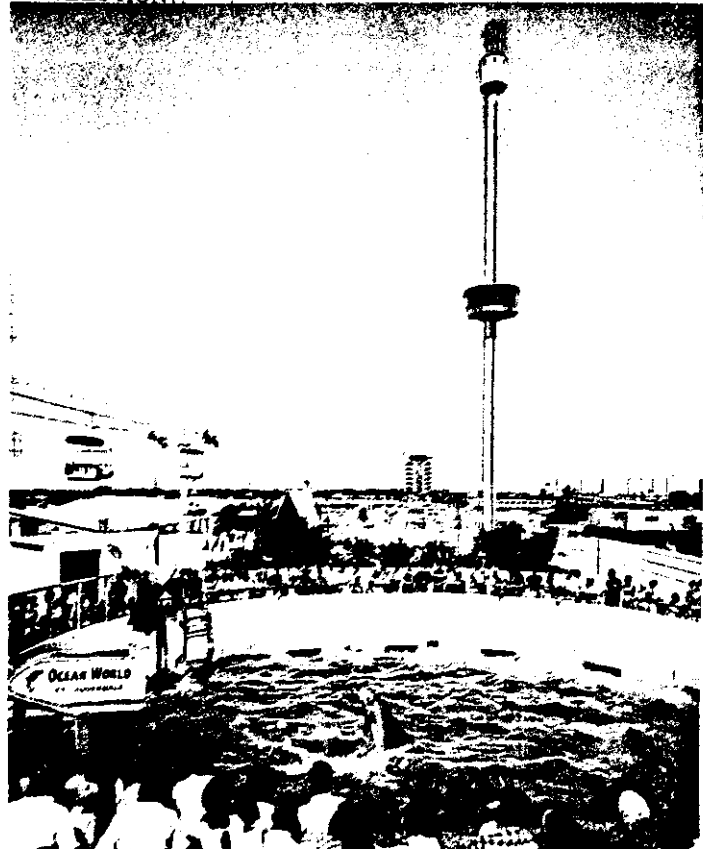
# OCEAN WORLD

## SHOW AREA

- 1-Davy Jones Locker\*\*FLYING DOLPHIN & DIVING SHOW
- 2-Shark Moat\*\*SHARK & TURTLE FEEDING SHOW
- 3-Porpoise Play Pool\*\*PET and FEED THE PORPOISES
- 4-Show Arena\*\*EDUCATED PORPOISE & SEA LION SHOW
- 5-Alligator Pit\*\*ALLIGATOR FEEDING SHOW

## OTHER BUILDINGS and INSTALLATIONS

- A-BOX OFFICE
- B-GIFT SHOP, Buy Film Here, Strollers For Rent
- C-SEA LION TANK & PELICANS, Feed Them Also
- D-TOUR BOAT RIDE
- E-SKY RIDE
- F-OUTER REEF GIFT SHOP
- R-REST ROOMS - S-SNACK BAR - T-TELEPHONE



## Section B. Closed-System Aquariums

### THE AQUARIUM OF NIAGARA FALLS

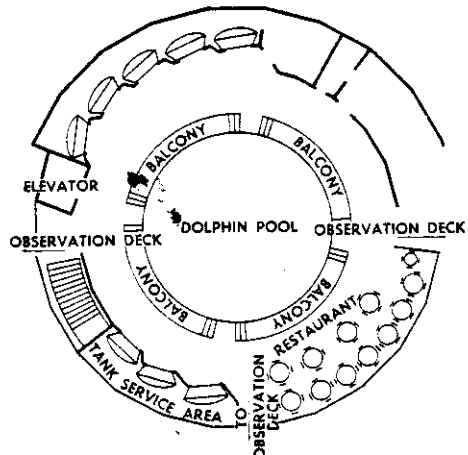
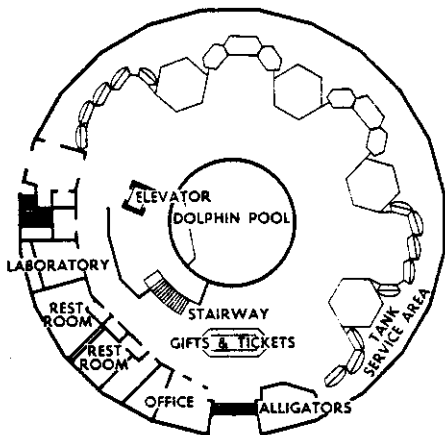
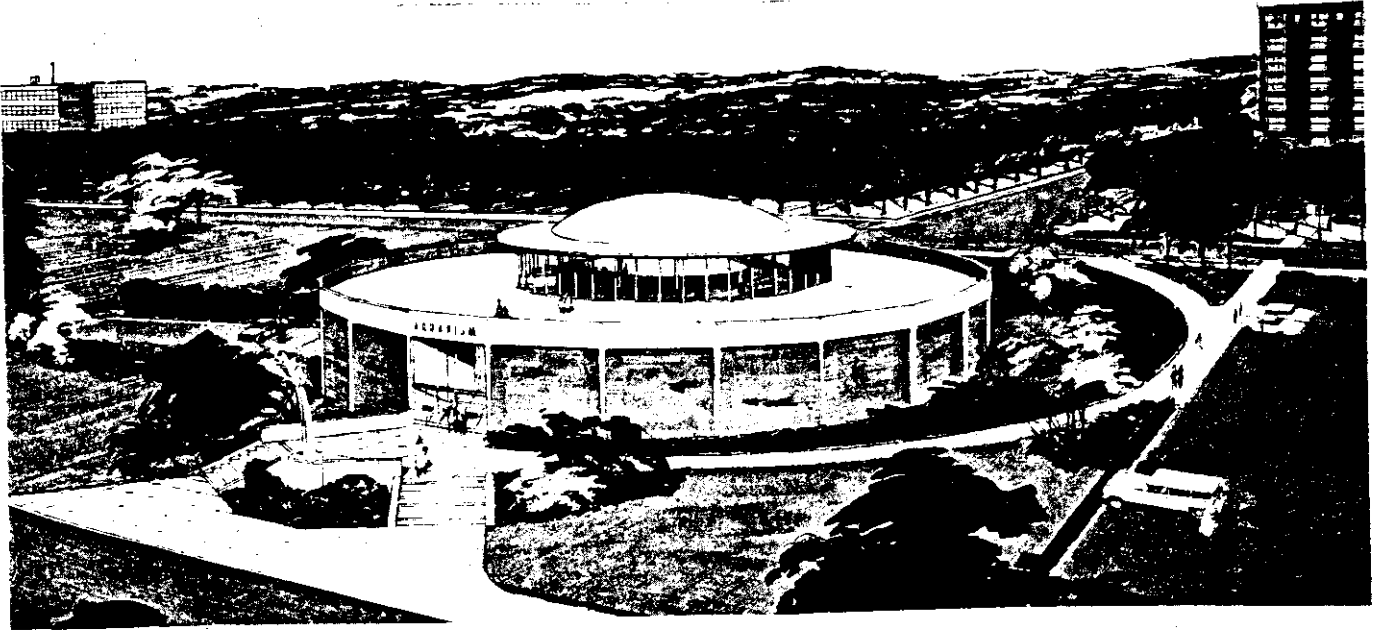
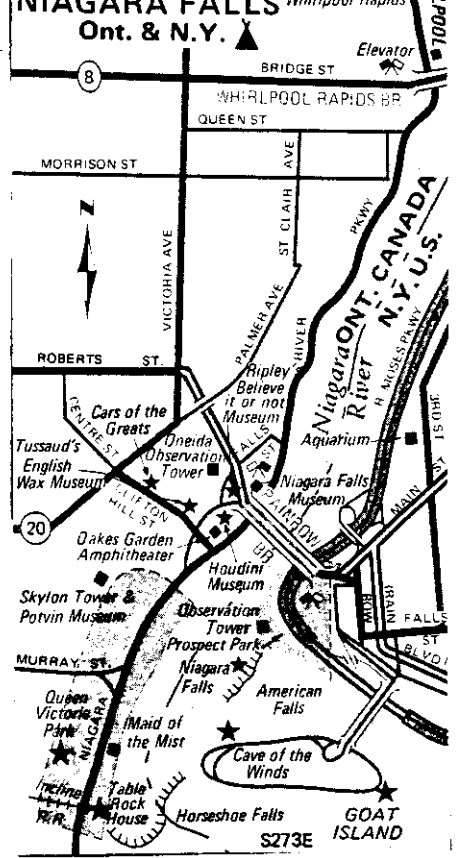
The Aquarium of Niagara Falls houses inhabitants from the world's coral reefs, open oceans, rivers and caves.

The circular two-story dolphin pool contains 100,000 gallons. All tanks (30) are made quite authentic by reproductions of underwater scenery typical of the habitat each animal was found in. These displays are called "bio-homes".

The Aquarium is equipped with laboratory facilities for research in limnology and oceanography.

The facility manufactures its own salt water, it is called INSTANT OCEAN Synthetic Sea Salt. All the staff members are trained in aquatic biology and water chemistry.

# AQUARIUM OF NIAGARA FALLS Niagara Falls, New York



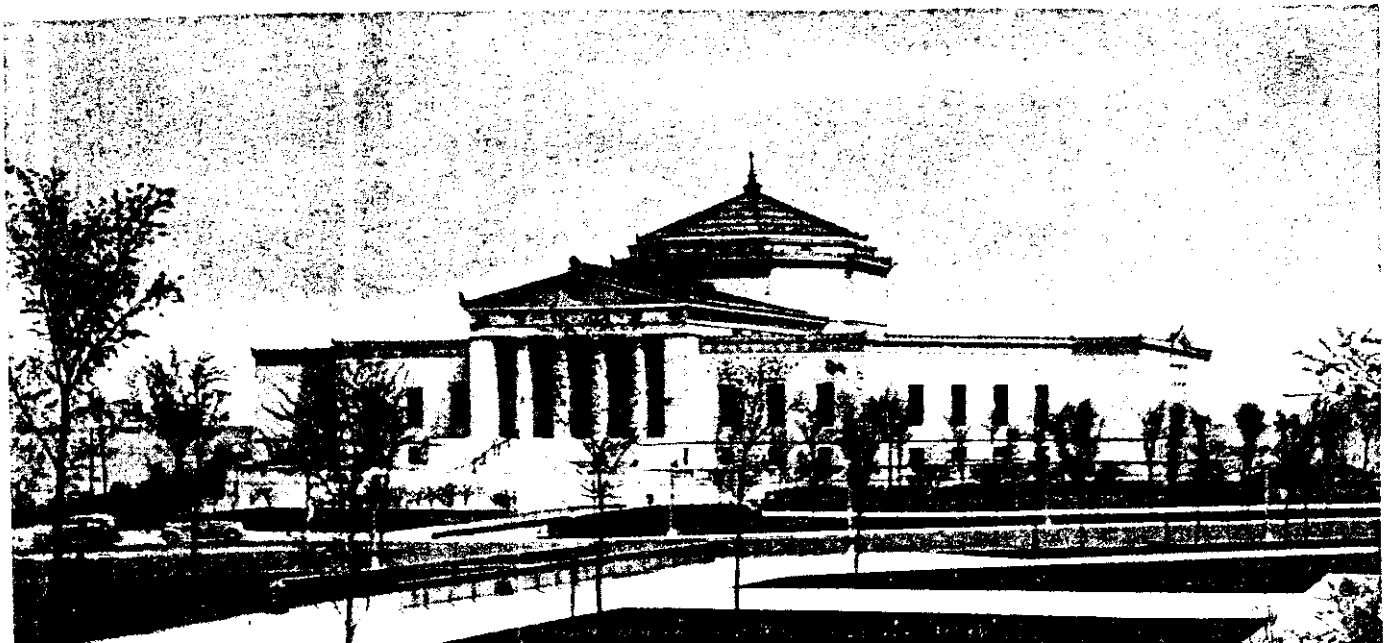
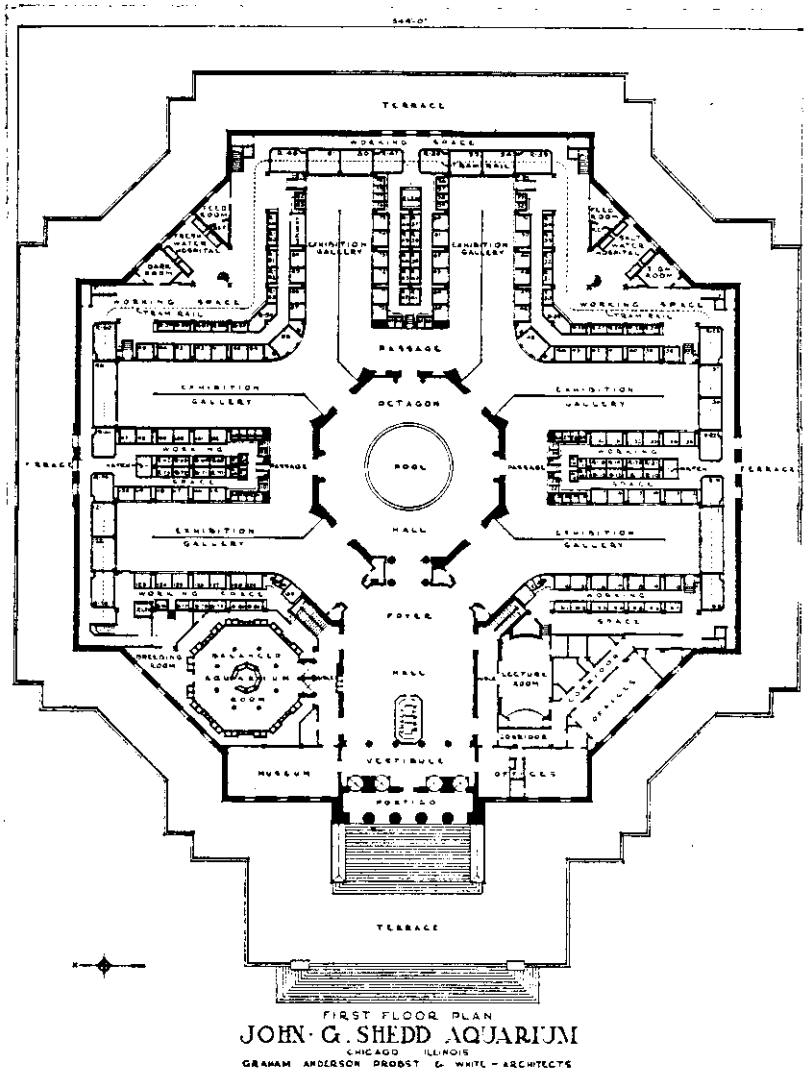
### THE JOHN G. SHEDD AQUARIUM

The Shedd Aquarium was built in 1929, with six main galleries. The basement holds four reservoirs with a 2,000,000 gallon capacity. Half of this is fresh and half salt water. At one time, the fresh water was pumped from Lake Michigan and the salt water was brought to Chicago in railroad cars from Key West, Fla.

The tanks are constructed of reinforced concrete and divided into five separate systems: heated and chilled salt water and heated, chilled and natural freshwater.

The Shedd Aquarium is an example of a old, however, very successful closed-system.

JOHN G. SHEDD AQUARIUM  
Chicago, Illinois



NEW ENGLAND AQUARIUM

The New England Aquarium is a highly successful closed-system which caters to people seeking knowledge of the inhabitants of the ocean world.

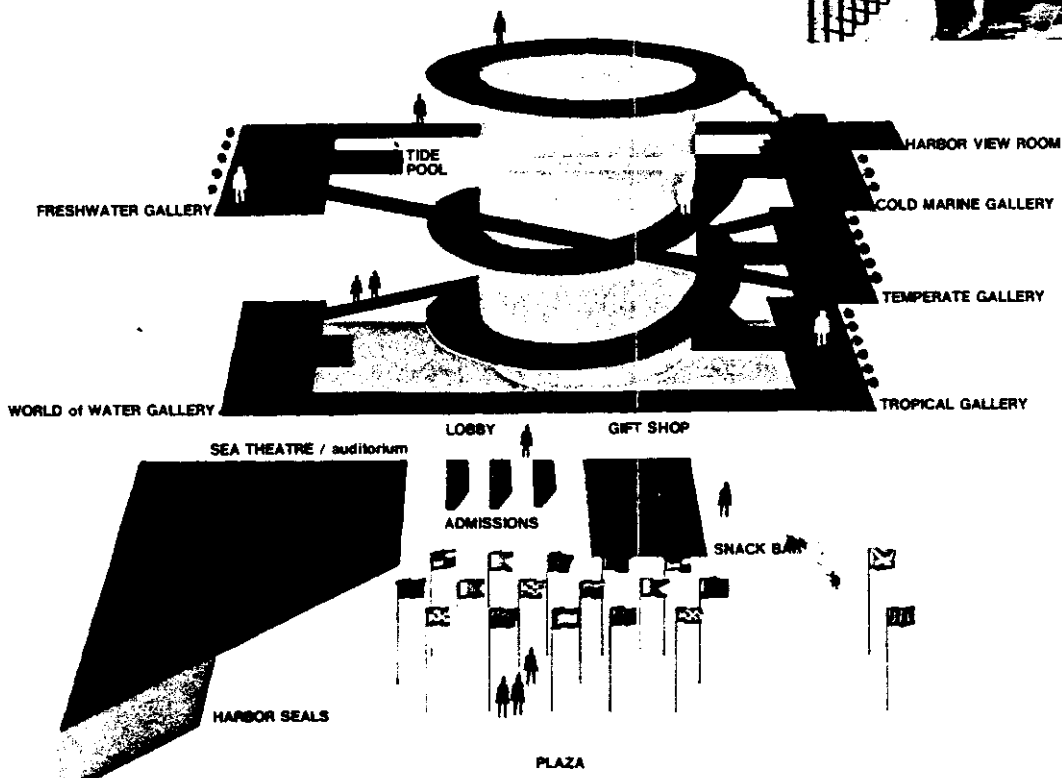
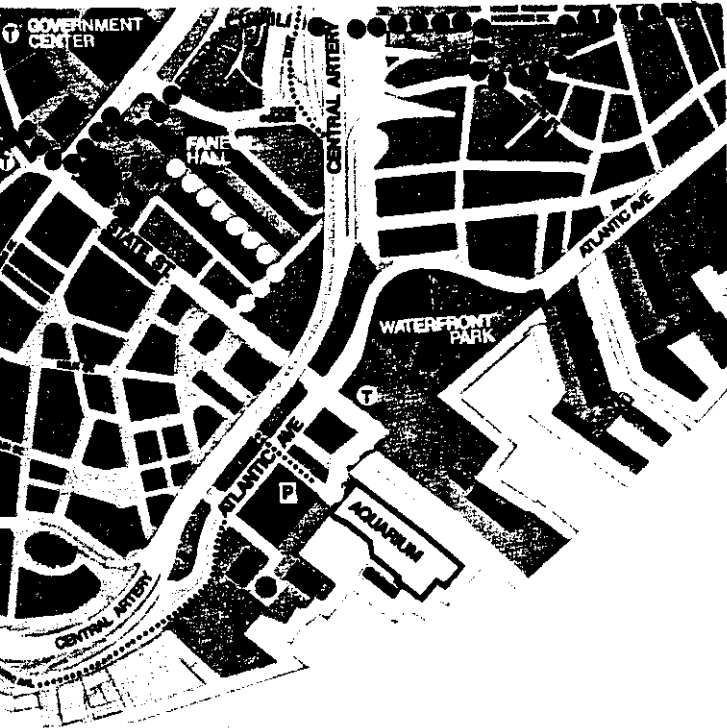
The Aquarium is totally unique in its design and intent. Rather than exist for entertainment purposes, it has civic minded programs, educational programs and research programs.

The facility contains all of the important elements of the open-air aquariums.

**NEW ENGLAND AQUARIUM**  
Boston, Massachusetts

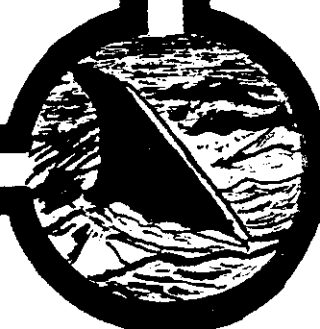
# New England Aquarium

Boston, Massachusetts



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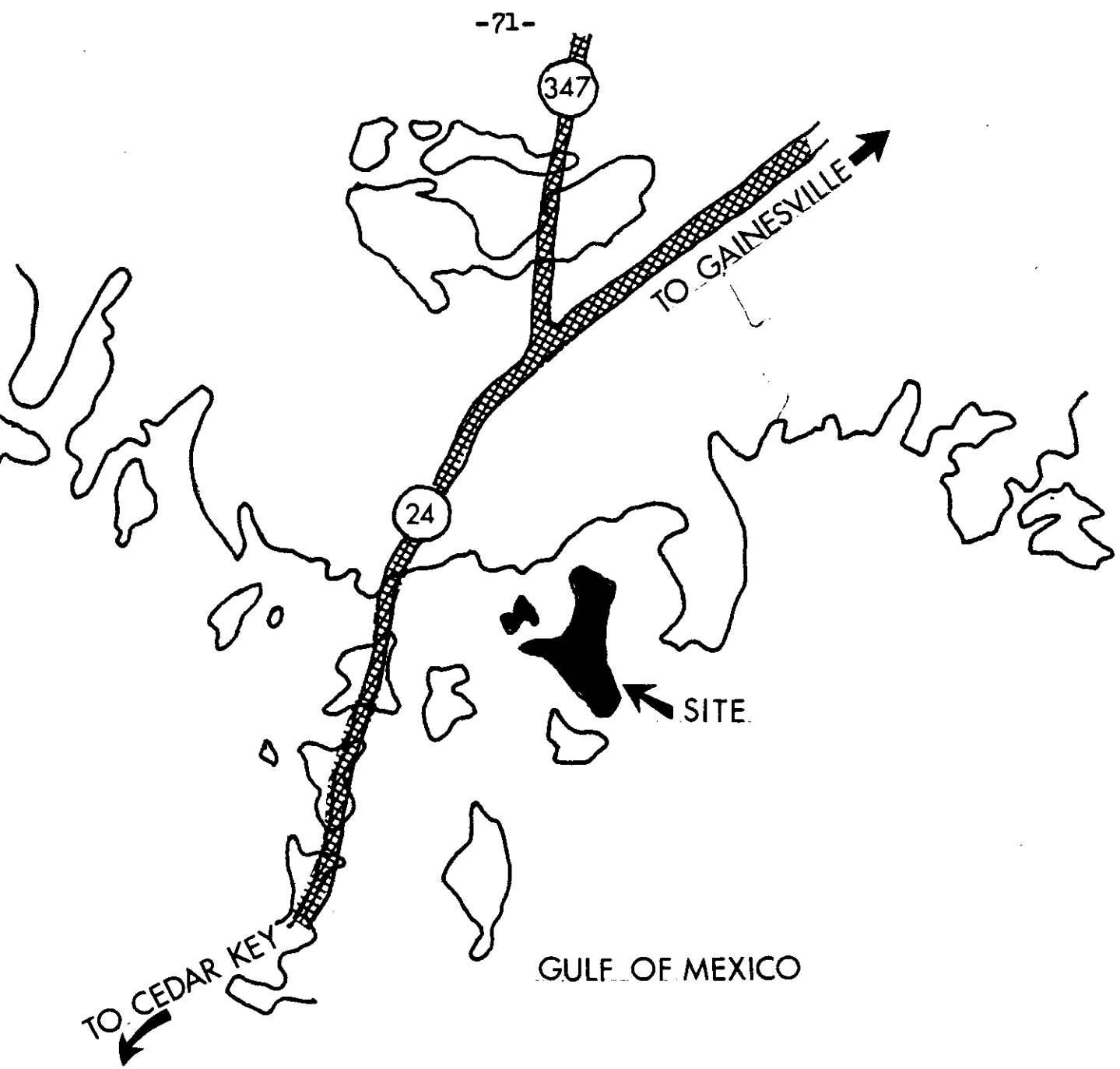


PART XII. SITE ANALYSIS

Canals .....  
 State Capital \* TALLAHASSEE  
 County Towns o Jacksonville  
 Villages ..... o Picoletti  
 Forts ..... \* Ft. Centre



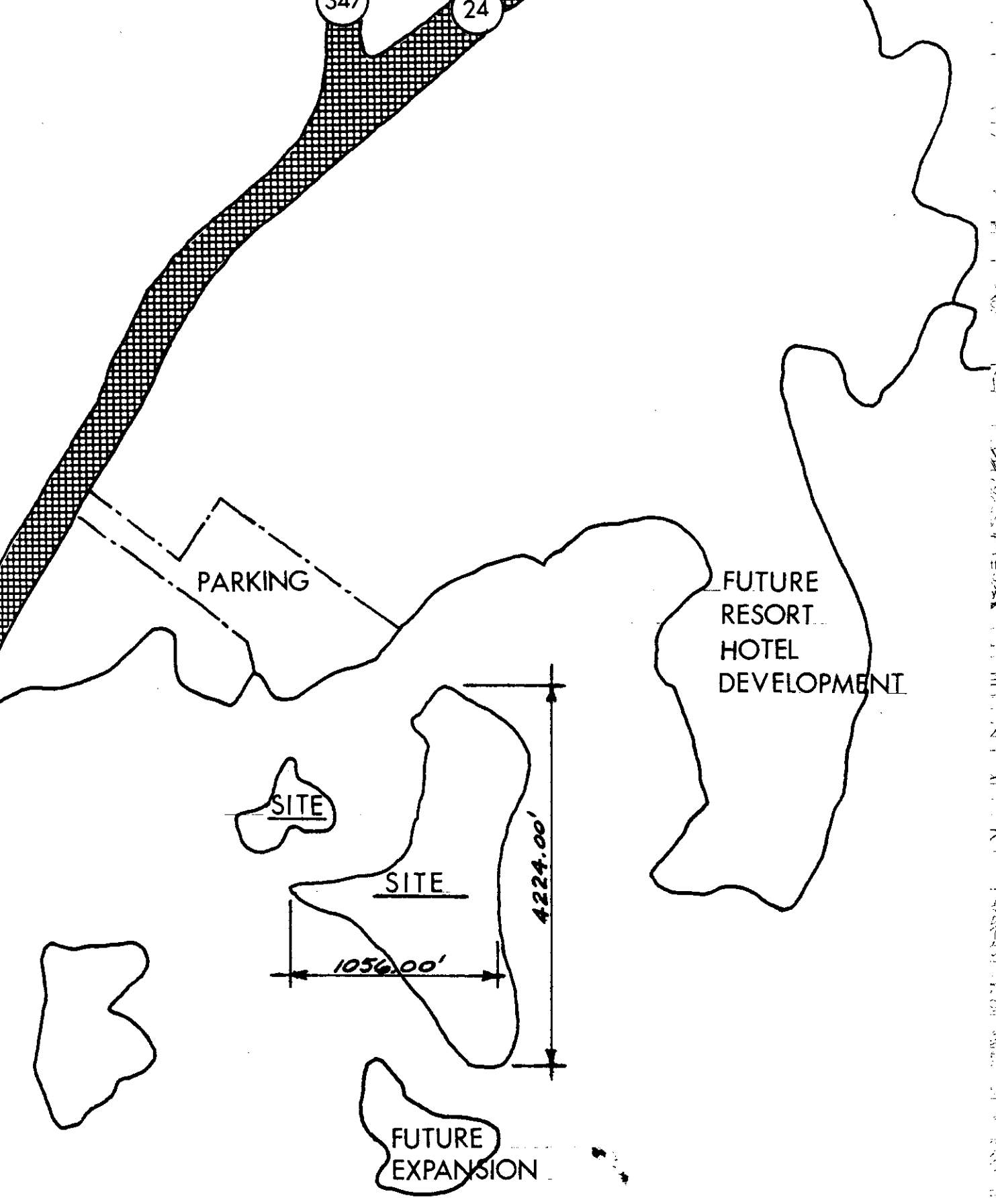
N  
 SITE  
 LOCATION



# SITE LOCATION



1:50,000



PARKING

FUTURE  
RESORT  
HOTEL  
DEVELOPMENT

SITE

SITE

1056.00'

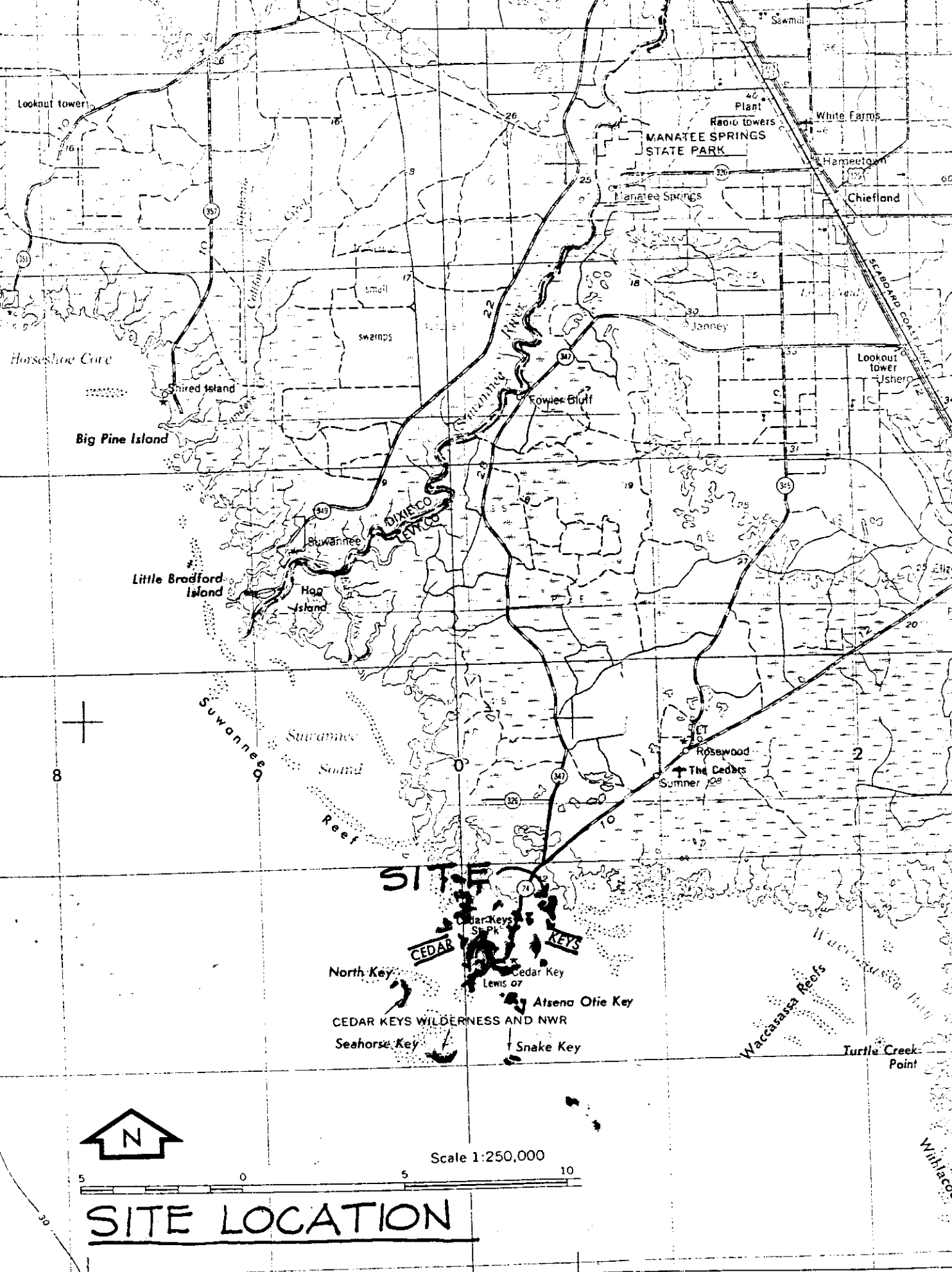
4224.00'

FUTURE  
EXPANSION

**SITE**

1:16,700





**SITE**

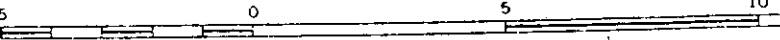
**CEDAR**

**KEYS**

North Key  
 Cedar Key  
 Atsena Olie Key  
 Cedar Keys Wilderness and NWR  
 Seahorse Key  
 Snake Key



Scale 1:250,000



**SITE LOCATION**