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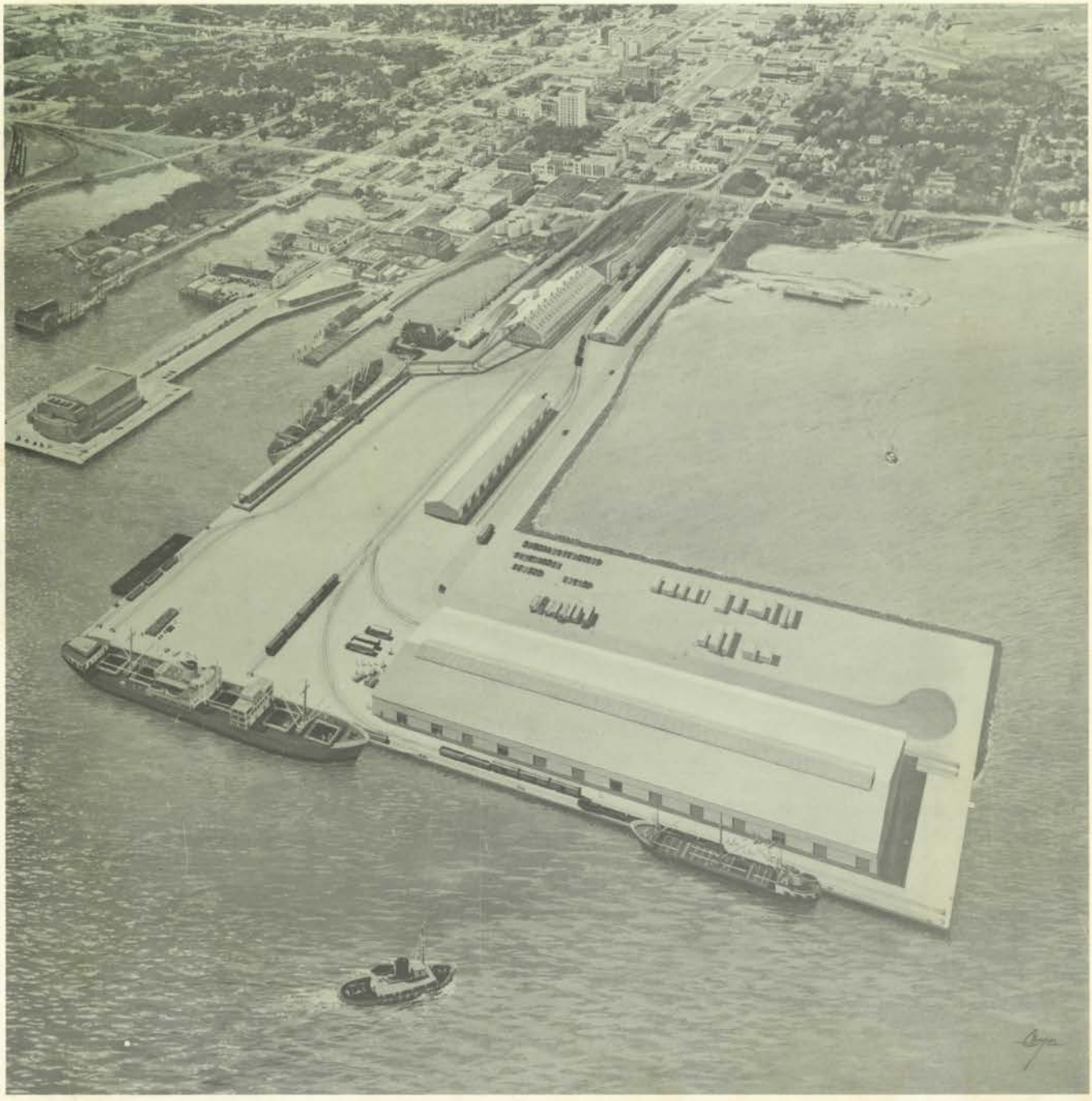
New Marine Terminal at Pensacola, Florida

Frederic R. Harris, Inc.

NEW MARINE TERMINAL AT

PENSACOLA

FLORIDA



THE PENSACOLA PORT AUTHORITY

NEW MARINE TERMINAL

AT

PENSACOLA, FLORIDA

Prepared For

THE PENSACOLA PORT AUTHORITY

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April 1959

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27 WILLIAM STREET

NEW YORK 5, N. Y.

30 April 1959

Pensacola Port Authority
Pensacola, Florida

Gentlemen:

We submit herewith our report on a New Marine Terminal at Pensacola, in compliance with our contract with the Pensacola Port Authority, dated February 9, 1959.

We wish to acknowledge the assistance and cooperation which we have received from the members and staff of the Port Authority, the Port Committee and City Officials, and look forward with pleasure to the prospect of participating in the development of the Port of Pensacola.

Very truly yours,

FREDERIC R. HARRIS, INC.

E. J. Quirin
President

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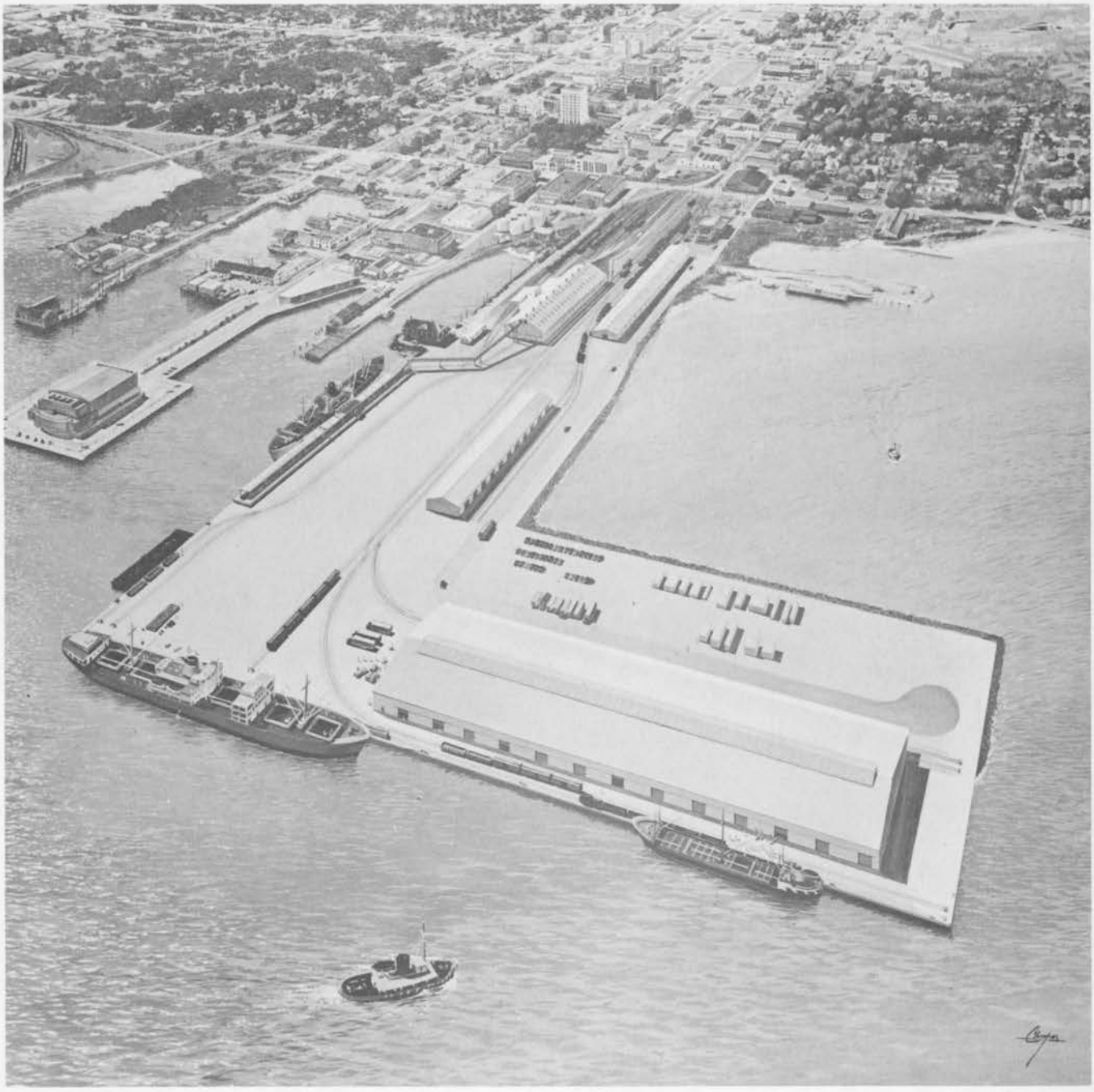


RENDERING OF NEW MARINE TERMINAL

NEW MARINE TERMINAL

AT

PENSACOLA, FLORIDA

CHAPTER I

SUMMARY

The requirements for a new marine terminal at Pensacola and the recommendation for a site are presented herein. The scope of the report covers the investigation of present commerce passing through the port, possible future trade which could be expected to be attracted to a modern terminal at Pensacola, determination of the terminal facilities required to handle this trade, and an evaluation of several terminal layouts.

Five comparative layouts were prepared at two different sites, assuming several alternate types of construction. Preliminary cost estimates for each were then evaluated against their respective benefits in terms of convenience in cargo handling, cost per berth and other criteria to provide the basis for a judgment of the most advantageous combination.

The study indicates that the existing piers, even if completely rebuilt, would not be adequate to handle the expected volume of cargo and would not be adaptable to the installation of proper facilities for modern cargo handling. A marginal type wharf permitting considerable flexibility in berthing and terminal operations would best serve the requirements of the port.

It is recommended that a new marine terminal be built at the site of the old Louisville and Nashville Railroad Piers as shown on Plate 1. This terminal is designed to provide for efficient and expeditious handling of cargo and is arranged to permit future expansion as required. The new terminal will handle all present traffic of the port and will have sufficient space to accommodate a considerable increase in commercial activity. The estimated cost of the proposed installation is $6,000,000 and the time required for construction of the terminal is estimated to be 30 months after commencement of final design.

Three alternate sites for a municipal marina to accommodate the demand for pleasure boat berthing have been studied. A site is selected but it is recommended that construction be deferred until some future date.

CHAPTER II

EXISTING PORT FACILITIES

INTRODUCTION

The Port of Pensacola is in northwestern Florida where Pensacola Bay, an inlet of the Gulf of Mexico, forms a natural land-locked harbor. The location of the port and water routes to the terminal area are shown on Plate 2.

The Port has many advantages which should make it one of the nation's leading seaports. It is the center of a rapidly expanding industrial region which also produces a considerable quantity of agricultural goods. It is served by two major railroads and an adequate highway network.

The expected growth of the port and the expansion of commercial operations is greatly hampered by the poor condition of existing terminal facilities. Although it has been recognized for some time that the badly deteriorated and outmoded piers require replacement by a modern marine terminal, very little work has been undertaken. Now, as a result of a disastrous fire in November 1958, the situation has become extremely critical.

Present commercial piers consist primarily of three long, narrow finger-type piers built many years ago by the railroads. These are shown on Plate 3 as they were prior to the fire. Two of the piers were severely damaged and the third is in very poor condition.

Existing terminal facilities in Pensacola Bay are shown on Plate 4. Those facilities presently under the jurisdition of the Pensacola Port Authority consist of the Frisco Pier and the remains of the Tarragona Street Pier, recently destroyed by fire, together with the upland area between Tarragona and Comandencia Streets. The Comandencia Street pier which was also destroyed in the same fire is owned by the Louisville & Nashville Railroad.

Other special purpose piers not adaptable to general cargo handling are the Sherrill Oil Company Pier and the Standard Oil Company Pier which handle petroleum products; the Jefferson Street Pier; and the Muscogee Pier owned by the Louisville & Nashville Railroad and leased to a private concern.

FRISCO PIER

The Frisco Pier is an open timber pile and timber deck structure,

AERIAL PHOTOGRAPH OF WATERFRONT

130 feet wide and 1,200 feet long with a depth of water at the berths of 32 feet below mean low water. It has a transit shed containing a floor area of 85,000 square feet, marginal tracks and one depressed track within the shed. The substructure of the pier is in very poor condition with over 40% of the piles so badly rotted or damaged that they no longer serve to support the pier deck. The timber framing of the superstructure is in good condition but the siding is badly battered and requires considerable replacement and painting. The roof has recently been repaired. The off-shore end of the pier is in very poor condition and a section 280 feet long is being completely removed. Sufficient repair work on the west apron is being performed to permit operation of railroad trains.

TARRAGONA STREET PIER

The Tarragona Street Pier, a general cargo pier, was destroyed in the November 1958 fire. It was a 1,200 foot long narrow pier and consisted of an open timber pile and timber deck structure, with a depth of water at the berths of 30 feet below mean low water. Before the fire, it had marginal tracks and a transit shed. The remains of the pier consist of sufficient deck and berthing space for two small cargo vessels. On this pier, a 23,000 square foot, one-story prefabricated steel frame building was constructed in December 1958 to serve temporarily as a transit shed. Upland, there is a one-story steel warehouse used for storage of nitrolime.

COMANDENCIA STREET PIER

The Comandencia Street Pier served for handling specialized cargoes before it was destroyed by the November 1958 fire. It was a 1,200 foot long pier supported on fill retained by a steel sheet pile bulkhead. It had marginal tracks with a two-story warehouse and a depth of water at the berths of 30 feet below mean low water. No portion of the pier is operable but the inner berth on the west side is being reconstructed for the handling of nitrate fertilizers. The nitrate warehouse located upland from the pier will be connected to the new wharf by a conveyor system. In addition, the upland area has a bulk oil storage facility and several railroad tracks as well as space for open storage of cargo.

PORT AUTHORITY WAREHOUSE

The Port Authority operates some inland warehouses with approximately 250,000 square feet of storage space and a large high-density cotton compress. The warehouses are located in Goulding, approximately 3-1/3 miles from the waterfront. Although these warehouses represent a source of income to the Port Authority, they

do not enter into the planning of the marine terminal for Pensacola and, therefore, are not included as part of this study.

WATERWAYS

Waterway access from the Gulf of Mexico to the Port of Pensacola is provided through the Caucus Channel at the western end of Santa Rosa Island and the new turning basin in the vicinity of the Naval Air Station as shown on Plate 2. Recently, this channel has been dredged to 44 feet below mean low water. Two approach channels, 250 feet wide, with depths of approximately 29 to 30 feet below mean low water extend from the deep water in the Bay to the City's waterfront.

The mean tidal range varies from about 1.4 feet to about 2 feet. Tidal currents which vary with the force and direction of the wind generally follow the direction of the channel and do not exceed a velocity of 2 to 2-1/2 knots. There is good anchorage anywhere in the Bay and sea-going vessels can anchor abreast of the City waterfront where the holding ground is good.

RAILROADS

The Port of Pensacola is served by two rail carriers, the Louisville & Nashville Railroad and the St. Louis-San Francisco Railway ("Frisco" Lines). The Louisville & Nashville Railroad operates principally in the states of Kentucky, Tennessee, Alabama and Georgia with connections to ocean shipping ports at New Orleans, Gulfport, Mobile and Pensacola. The St. Louis-San Francisco Railway operates principally in the Southwest with a main line extending from Memphis, Tennessee through Mississippi and Alabama to the ocean ports at Pensacola and Mobile.

As shown on Plate 5, the Louisville & Nashville Railroad approaches Pensacola from the north and swings eastward across Bayou Texar and northward along the shore of Escambia Bay. The St. Louis-San Francisco Railway also approaches the port from the North, skirting the west side of the City and thence east to the port. Interchange facilities between the two railroads are provided by the rail lines on Main Street parallel to the waterfront. In the vicinity of Goulding, the tracks of the two railroad lines are located within a few hundred feet of each other and it would be possible to make a physical connection if such an interchange would prove advantageous to each railroad.

HIGHWAYS

State and Federal highways serving the Port of Pensacola are as shown on Plate 5.

Plans for a new Interstate Highway passing to the north of the City include a spur to Pensacola. Its proposed location, as shown on Plate 5, is east of and parallel to the Louisville and Nashville Railroad. Studies made by the Florida State Highway Department recommend eventual extension of this spur to the waterfront. However, present plans of the State are to terminate the spur at Maxwell Street. Such a location is well suited for future extension to serve the port area.

AIR TRANSPORTATION

Pensacola is provided with regularly scheduled passenger and mail service through the Pensacola Municipal Airport, approximately four miles northeast of the City.

CHAPTER III

ALTERNATE TERMINAL SITES AND LAYOUTS

INTRODUCTION

The types of commodities presently handled at Pensacola which will influence the design of a new terminal consist of both bulk and general cargo. Besides these, there are cargoes which require special handling methods. At the Comandencia Pier, nitrate fertilizers are carried by a special conveyor system to a storage warehouse in the upland area. At the same pier, mahogany logs are unloaded into the water where they are formed into rafts for towing to the processing plant in Bayou Chico. Also, there are pipelines for bunker fuel and creosote to carry these products to and from the six storage tanks in the upland area. These operations should continue to be handled in the same manner and location as in the past.

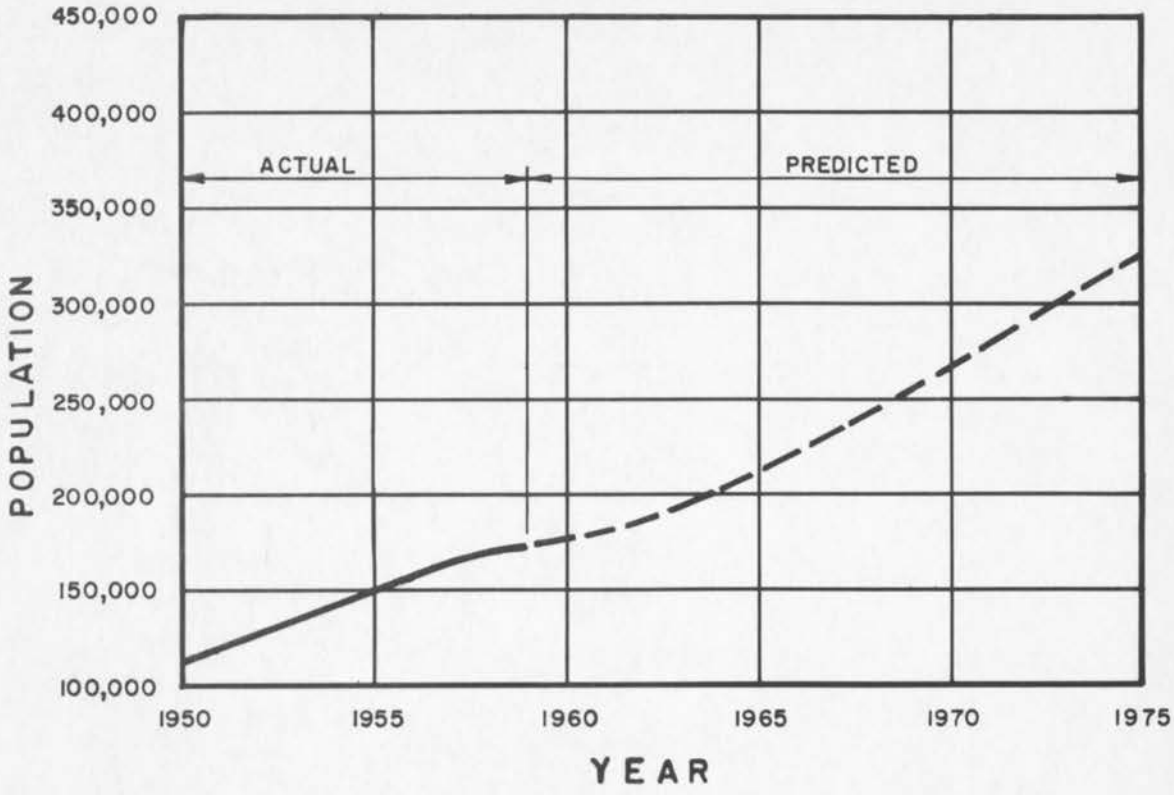
An analysis of factors influencing future cargo movements through the port reveals that the trend in volume is definitely increasing and there is a tendency for cargoes to become more diversified in character. The larger number of sailings of cargo vessels in recent years (251 in 1958 as compared to 231 in 1957) is indicative of growth. Another indication is the continuing demand for berthing space despite the poor condition of the terminals as a result of the fire and general deterioration of the piers.

Other factors which will affect Port operations by generating additional volumes of cargo are the population growth and the industrialization of the region adjacent to the Port. Probable growth of Escambia County, of which Pensacola is the major center of population is illustrated in the graph (page 9) taken from "A Transportation Study of Pensacola and Escambia County" compiled by the State Road Department of Florida.

At Pensacola, the principal present need is for general cargo handling. This can be met by providing the necessary space for maneuvering of fork lifts and for the use of a railway crane now available to the Port Authority.

Bulk material handling will require special study of each specific case, whenever the demand occurs. The present conveyor system is adequate for the nitrate shipments. Should it appear desirable to handle soy beans, or other special bulk commodity, the layout should allow the necessary space for the addition of special equipment and storage areas.

Any such special facilities should be made the subject of a study which would indicate its feasibility both from an engineering standpoint and from the point of view of furnishing a net operating revenue to the Port.



POPULATION GROWTH - ESCAMBIA COUNTY, FLORIDA

Two separate sites have been considered for the location of a new marine terminal. Site I is located at the foot of Tarragona Street and Site II at the foot of Coyle Street. In addition, the possible rehabilitation of the existing piers has been investigated.

A total of five layout schemes, three at Site I and two at Site II have been studied and are shown on Plates 6, 7 and 8. The three schemes considered for Site I all incorporate the westerly inshore berth at the Comandencia Street Pier which is currently being rebuilt for bulk unloading of nitrate fertilizers. For comparison purposes, all schemes are assumed to have the same area of transit shed, an office building and similar site facilities. Soil profiles across the entire waterfront are indicated on Plate 9.

The three schemes at Site I were based on a solid fill type construction with a marginal bulkhead to form the ship berths. Site I, with its irregular but more favorable soil characteristics than those at Site II, lends itself to this economical type of construction. For each scheme at Site II, two alternate methods of construction were investigated: (1) an open pile supported structure and (2) use of fill material behind a marginal bulkhead. It was concluded that the latter should be less expensive.

Three kinds of marginal bulkhead construction were considered: (1) anchored steel sheet piling, (2) an anchored sheet pile wall of concrete cylinders, and (3) a concrete relieving platform on concrete piles. For conditions at Pensacola, the analysis indicates that a relieving platform type of bulkhead construction should be more economical.

ALTERNATE TERMINAL SITES

Site I - Foot of Tarragona Street

The site at the foot of Tarragona Street includes the Comandencia Street Pier and the Tarragona Street Pier. It is currently the center for a large part of the trade of the port. The Louisville & Nashville Railroad has direct access, while the St. Louis-San Francisco Railway must use the less direct route over connecting tracks on Main Street. The proposed spur to the interstate highway route is directly north of the site.

At this site, the character and structural qualities of the soil are very irregular with relatively thin and noncontinuous surface layers of compressible soil. There is apparently a deep continuous sand layer with its upper surface about 60 feet below water level and extending to a known depth of 125 feet.

Site II - Foot of Coyle Street

This site, situated in a cove between the Sherrill Oil Company Pier and the Frisco Piers, was formerly occupied by the Bruce Dry Dock Company. The St. Louis-San Francisco Railway has direct access to the site and the Louisville & Nashville Railroad has a less direct access via the tracks on Main Street. Highway traffic must traverse several secondary streets along the City's waterfront in order to reach the proposed spur to the interstate highway route.

The soil conditions here are uniform, but poor. There is up to 53 feet of soft compressible soil overlying the relatively dense and incompressible sand layer occurring at a depth of from 57 to 62 feet below water level. Laboratory tests of undisturbed soil samples indicates that settlement resulting from a fill type structure constructed on this site would be on the order of one to two feet. Settlements of this magnitude would be of long-term nature and although not desirable, are tolerable.

Rehabilitation of Existing Piers

The Frisco, Comandencia Street, and Tarragona Street Piers which handle practically all of the general and dry bulk cargoes in the Port of Pensacola are small, old, inadequate piers in various states of

deterioration. The latter two, which were severely damaged by fire, have undergone some restoration to permit minimum operational use. Rehabilitation of the Frisco Pier should be considered only as a stopgap measure until a new general cargo terminal is completed. This pier is suitable only for handling cargo that requires limited dockside storage.

ALTERNATE LAYOUTS

Site I - Scheme A (Plate 7)

Scheme A is an L-shaped wharf providing one berth on the west side and four berths on the south side. Two of the berths along the south side are designed for general cargo and have a transit shed directly back of them. The outshore portion of the Comandencia Street and Tarragona Street Piers are to be demolished and construction of the bulkhead wall starts at the reconstructed nitrate berth.

The orientation of the transit shed parallel to the south side berths provides efficient direct cross shed movement of general cargo between the vessel on one side of the shed and the trucks or railroad cars on the other. All berths have adjacent roadways and terminal trackage. Movement of cargo, therefore, is accomplished with a minimum of intersecting traffic within the shed or congestion at the loading dock. In addition, there is ample back-up space with sufficient space for expansion if required. If additional berths are needed, expansion can be accomplished by extending the wharf to the east. The estimated cost is $6,200,000.

Site I - Scheme B (Plate 8)

Scheme B consists of a large terminal area divided into two construction phases, providing space for eight berths. This scheme is basically the one which had been considered previously by the Port Authority.

This scheme would permit continued use of the present damaged facilities during construction of the first phase with a minimum of interference. In this phase, the cargo handling arrangements offer advantages similar to those in Scheme A, but for fewer berths. However, in the second phase, the back-up area immediately adjacent to the berths is inadequate for modern day cargo handling requirements. Efficient terminal track arrangement and roadway layout for access to all berths is difficult. The estimated cost for Phase 1 is $6,450,000 and that for Phase 2 is $5,100,000.

Site I - Scheme C (Plate 6)

Scheme C is an L-shaped wharf similar to Scheme A but with the south portion of the wharf located closer to the pierhead and bulkhead

line. The location of general cargo berths and the transit shed are similar to those in Scheme A.

This scheme has all of the advantages of Scheme A and, in addition, its location reduces the amount of dredging required to create the deep water berths and approaches. Maintenance dredging is minimized since the location is sufficiently close to the government-maintained channel. Constructing the L-shaped wharf at the outshore end of the Comandencia Street and Tarragona Street Piers more fully utilizes these two structures and reduces demolition costs required under Scheme A. However, since the fill type construction would be in deeper water than in Scheme A, the amount of fill required is greater. Since it is expected that only a small percentage of the dredged material will be suitable for use as hydraulic fill, the savings in dredging in Scheme C over Scheme A, more than offsets the cost of the increased amount of fill.

There would be a conflict or overlapping of operations if the two berths at the southwest corner of the terminal are used as general cargo berths. One of these berths, however, can be used as a bulk cargo berth, or for special cargoes which require only limited wharf-side storage. The estimated cost is $6,000,000.

Site II - Scheme D (Plate 7)

Scheme D is a wharf structure formed around an open water slip or basin. The berths along one side of the wharf are backed up by a transit shed.

This scheme has ample terminal area for movement of all types of cargo. Direct movement is provided with a minimum of intersecting traffic in the shed or congestion at the loading docks. Additional berths can be constructed with ease, provided by expansion toward the east. However, the added berths would have inadequate back-up area for general cargo use. The estimated cost is $6,800,000.

Site II - Scheme E (Plate 8)

Scheme E is a wide pier structure with berthing space on each side. Two berths along one side of the pier have a transit shed as in all other schemes.

For general cargo movement, there would be a minimum of congestion on the docks and intersecting traffic in the shed. This would not be true, however, if all berths were operating simultaneously because the finger pier arrangement restricts the amount of space directly back of each berth. Economical methods of cargo handling cannot be utilized as readily and the expansion possibilities are limited. The estimated cost is $6,800,000.

CONCLUSIONS

The desired features for a new marine terminal should include ease of vessel movement, adequate berthing space, sufficient terminal area for efficient cargo handling, accessibility to railroads and highways and sufficient area for future expansion of facilities. Each scheme was developed in an effort to provide a marine terminal with these features at minimum cost. Comparative cost estimates are given in Table I and an Evaluation of Terminal Features is contained in Table II.

Schemes D and E at Site II were found to be the least desirable due to poorer soil conditions. The cost of construction is higher than for any of the other schemes. In addition, these schemes have either limited capabilities for expansion or if such expansion is possible, the resulting facilities would be inefficient. Of the two schemes, Scheme E is the least desirable due to insufficient terminal area.

At Site I, Schemes A and C are similar in many respects, but Scheme C could be constructed at least cost. In addition, Scheme C is closer to the government-maintained channel and has more area available for upland expansion. Both of these schemes have adequate terminal areas readily accessible to highways and railroads and the terminal layout affords efficient operations for all types of cargo movements. Expansion for additional berths can be accomplished to the east with relative ease.

Scheme B is superior to Schemes D and E, but does not possess the required features for efficiency in cargo movements that are inherent in Schemes A and C. Scheme B would require excessive maintenance dredging.

RECOMMENDATIONS

It is recommended that Scheme C at Site I be adopted for the new marine terminal at Pensacola. It is further recommended that the design and construction of this facility be undertaken immediately in order to maintain present traffic through the Port and to obtain other potential traffic which may otherwise be lost to the Port of Pensacola.

CHAPTER IV

DESCRIPTION OF NEW MARINE TERMINAL

GENERAL

The new marine terminal layout is shown on Plate 6 and it is pictured in the rendering (Plate 1). It is an L-shaped earth filled wharf to be constructed on the site of the old Louisville & Nashville Railroad Piers. The westerly side of the wharf is 1,000 feet long and will coincide with the westerly side of the present Comandencia Street Pier. The southerly side is 1,400 feet long and extends in an east-west direction, approximately at a right angle to the old piers. Along both these sides, a bulkhead structure serves to retain the earth fill and to form the berths for mooring of ships. The earth fill extends 500 feet back of the bulkhead walls to create the main terminal area.

The southerly side of the wharf is parallel to and 165 feet north of the U. S. Pierhead and Bulkhead Line so that ships will be berthed outside of the government-maintained channels. There is ample space for berthing five large cargo ships simultaneously and the layout is flexible enough to allow for berthing a larger number of smaller ships if it is desired.

A total area of approximately 22 acres is created in the new terminal for development as dictated by the port requirements. Initial installations on the wharf consist of a one-story transit shed, office building, railroad tracks, roads, parking areas and space for open storage of cargo.

SUBSTRUCTURE AND FILL

Preliminary plans for the bulkhead structure which retains the earth fill are based on a low level concrete deck or relieving platform, supported on pre-stressed concrete pile bents. This type of structure permits considerable flexibility in location of utilities and possible variations in future location of surface structures, such as gantry cranes and railroad trackage. The wharf has a continuous concrete pavement, 45 feet wide, overlying fill supported on the concrete relieving platform. The berths have 35 feet of water at mean low tide and the elevation of the top of the apron is 11 feet above mean low water. A fender system provides protection between the ships and wharf. Bollards and cleats for mooring are appropriately located at the ship berths.

Some of the fill forming the terminal area can be obtained from areas adjacent to the terminal site where excavating or dredging is necessary. Additional fill is planned to be placed hydraulically from other neighboring sources in the Bay.

TERMINAL BUILDINGS

The transit shed consists of a one-story structure, 180 feet wide and 800 feet long, containing a floor area of 144,000 square feet. Within the shed, the clear floor space between the columns is 90 feet transversely and about 50 feet longitudinally. The average clear height within the shed will be approximately 22 feet above the floor.

Conveniently located doors of adequate height are provided to accommodate over-the-road trucks and the various cargo handling devices used on the wharf. At the inboard edge of the transit shed, a raised loading platform 20 feet wide, protected by a canopy, will facilitate the loading of cargo into trucks and rail cars. The rail tracks on both sides of the transit shed are flush with the apron and the roadway respectively, thus providing smooth surfaces for all types of vehicle movement.

A standard type of roofing capable of sustaining the imposed loading is provided and translucent material is used to utilize natural light to the best advantage within the shed. The lower five feet of the side walls are of concrete block or masonry construction. The upper walls are of corrugated protected metal, transite or equivalent material with sufficient areas of window or translucent material to permit access of natural light into the shed interior.

A sprinkler system monitored by an alarm system provides fire protection for the transit shed. Standpipes and hose stations are also furnished and fresh water and fuel oil connections supply ships' service to each berth. The transit shed is not heated, but adequate ventilation is provided by a continuous ridge ventilator. Lighting intensity of 15 foot candles is provided for the cargo areas.

A two-story office building 50 feet by 100 feet is provided for use by the Port Authority. Included in this building is all necessary service equipment and utilities. An automatic heating and air conditioning system is provided. Lighting intensity will be 30 foot candles for all offices.

A fifty-ton scale for in-and-out weighing of trucks up to 50 feet in length is installed near the entrance to the truck operating area.

Truck scales and scale house are located near the entrance to the terminal to control and record all truck shipments of freight.

The existing nitrolime warehouse, the recently constructed steel transit shed, and the nitrate warehouse, together with its conveyor system, are maintained in their present location. The existing pipelines carrying bunker fuel oil and creosote will be extended as required.

SITE DEVELOPMENT

Construction of the wide east-west portion of the wharf will result in the reclamation of approximately 11 acres of usable land surface from the Bay. After construction of the new terminal, it would be possible to fill, economically, additional water area just to the north of the proposed terminal whenever additional land area is needed.

The spacious area afforded by the 22 acre terminal permits easy maneuvering and rapid movement of cargo handling vehicles. Terminal trackage, which connects with the existing Louisville & Nashville and the Port Authority rail lines, provides rail car access to all parts of the terminal. An access road, designed to carry heavy truck loadings, and leading to the inboard loading platform of the transit shed, allows for rapid ingress and egress of cargo handling trucks. A parking apron of 45,000 square feet eliminates the congestion caused by idle trucks waiting to be loaded and unloaded. The access road can be initially connected to Tarragona Street. In the future, it can be served by the proposed Interstate Spur thus providing for rapid movement of cargo laden trucks through the City of Pensacola, bound to and departing from The Port Authority Terminal.

Sanitary sewers connect into the City sewerage system while storm water drains from roofs, decks and paved areas are piped overboard.

Lighting is provided on the aprons and the storage areas, roadway and parking apron are flood lighted. The lighting intensity will vary from 3 to 5 foot candles.

FUTURE TERMINAL FACILITIES

There is sufficient undeveloped open area within the terminal limits to permit the erection of additional facilities which may be found to be desirable in the future. A tank farm for petroleum or chemical products, a grain elevator or a warehouse may be required to develop the full potential of the Port. Also, other special commodities requiring special handling equipment such as gantry cranes, conveyors or devices for moving large containers could be incorporated within the limits of the terminal as designed.

SHIPPING OPERATIONS DURING CONSTRUCTION

It is planned that shipping activity will not be interrupted during the construction of the new terminal. The portion of the Comandencia Street Pier used for nitrates and special cargoes will be

maintained in operation. The inner end of the Tarragona Street Pier, now being repaired to provide two short berths, will be maintained until sufficient length of new wharf is completed at the southwest part of the new terminal to replace those berths. At that time, operations will be shifted, the present prefabricated shed will be moved to the west side of the new terminal, and construction will be continued eastward, cutting off access to the Tarragona Street berths.

The expected construction sequence is shown on Plate 10. Meanwhile, the present Frisco Pier will be available to handle the remaining commerce of the Port.

PROGRESS SCHEDULE

Plate 11 shows an estimate of the length of time required to prepare the final design and contract plans, and to complete the construction. It is recommended that the work be divided into two construction contracts as indicated; one for substructure work below the main deck level and another for all buildings, paving, tracks, utilities and other site work.

ESTIMATE OF COST

Removal of Existing Structures		$ 10,000
Dredging, Excavation and Filling		763,000
Bulkhead and Wharf Construction		2,704,000
Concrete Piles and Sheet Piling	$1,530,000	
Concrete and Reinforcing Steel	888,000	
Concrete Deck	99,000	
Mooring Fittings	66,000	
Fender System	121,000	
Transit Shed		821,000
Foundations	86,000	
Superstructure	735,000	
Office Building		125,000
Paving, Trackage and Miscellaneous		513,000
Pavement	175,000	
Railroad Tracks and Switches	258,000	
Drainage, Fencing, Scales	80,000	
Electrical and Mechanical		396,000
Electrical Service and Lighting	215,000	
Plumbing, Heating, Sprinkler System	181,000	
ESTIMATED COST OF CONSTRUCTION		$ 5,332,000
Contingencies, Engineering and Administration		668,000
TOTAL ESTIMATED COST		$ 6,000,000

CHAPTER V

PORT OPERATIONS

The establishment of a new marine terminal will increase the need for a competent organization to operate the port and to perform the administrative and maintenance tasks. A recommended organization plan is indicated in Plate 12.

This organization is designed to satisfy all administrative and management needs to build the port to its full potential. The recruitment of personnel to fill the positions indicated should be a gradual process with assignments made as the need for the services arises. The key appointment is the position of Port Director. It would be desirable to obtain an experienced individual, for this position, who will willingly undertake the varied tasks connected with operation and development. At the start, he would be called upon to perform both administrative and operational duties, some of which later may be assumed by others as the work load increases.

The success of the Port will be dependent in great measure on the individual selected to conduct port promotion, solicitation and traffic management activities. Even with a new terminal, the competition with other Gulf Ports will continue to be intense. It will be necessary for someone to be constantly in touch with the sources of traffic in order to convince shippers that their goods should be marked "Via Pensacola".

The organization plan provides for dividing the Marine Terminal and Warehouses into two separate operating divisions. Similar divisions could be added if the Port Authority were to assume the management of other facilities. Each division is broken into subdivisions to handle specific assignments at the Port or at the Warehouses.

In the following tables, an estimate is made of the probable costs for operating the terminal and for providing the administrative staff and maintenance workers. As a guide in arriving at the estimate, the approximate cost of dock operations during 1957 and 1958, as shown in Table III, was used.

Table IV shows a tabulation of 1957-1958 costs along with the expected costs when the new terminal is in full operation. Table V is an estimate of the progressive increase in administrative costs from the present level to the costs that should develop when the new port is in full operation.

CHAPTER VI

MARINA FOR PENSACOLA

INTRODUCTION

The growth of recreational boating throughout the United States has resulted in a constantly increasing demand for the construction of marinas for berthing, servicing and storage of boats. This occurs not only in the well-known resort areas of the country, but wherever there is water available for boating. It is true even in regions where weather conditions permit only a very short season for the sport.

This demand by the boating public is only one of the causes for the shortage of marinas; of equal importance is the difficulty in obtaining necessary funds for their construction. Usually the revenue to be gained from the basic boating facilities represents too small a percentage to make the venture attractive. As a result, in many cases, related commercial activities, furnishing additional services, have been made a part of the marina installation. Shopping centers, restaurants, hotels and recreational facilities, when well managed, provide a larger percentage of net revenue and thus are able to help carry the investment required for the offshore components of the marina.

It is becoming more common for marinas to be built by municipalities rather than by private groups or individuals as was often done in the past. In some areas, state agencies have financed the installations or have contributed substantial aid in the development of marinas. Under such a financial arrangement, it is often the practice to lease parts of the enterprise to private individuals qualified to operate the various commercial facilities.

NEED FOR MARINA AT PENSACOLA

Pensacola has many natural advantages to make it a center of boating activity. The land-locked Pensacola Bay is an excellent cruising area and it has numerous sheltered coves or bayous to add interesting side trips. The Gulf Intercoastal Waterway connects with the Bay, and the City is only a short distance from the Gulf of Mexico. The location should appeal, therefore, to transient boating also.

The growth of the Pensacola area in population and the rapid industrial expansion are factors which will tend to increase the demand for marinas as it has in other parts of the country. There will be many people who will be able to afford to own boats and if a first-class marina were available for berthing and servicing, there would be increased interest in

boat ownership. Existing private boat berthing and storage facilities in Pensacola are small in size and they are so located that expansion possibilities are limited.

INVESTIGATION OF POSSIBLE MARINA SITES

Along the Pensacola waterfront there are several sites which are suitable for the development of a marina. In this study, three tentative sites, located as shown on Plate 13, have been investigated. In the following paragraphs, a brief description of each is presented, together with the major advantages and disadvantages which they possess that would need to be considered before proceeding with design and construction.

Site A - Old Perdido Wharf

The water area between the Sherrill Terminal Company property and the narrow strip of land, known as the Old Perdido Wharf, could be developed. Material dredged from the water area could be used to make the existing strip of land wide enough for necessary automobile parking, boat storage and service facilities.

There is sufficient water area for the construction of berthing slips needed initially and expansion could be readily made. The depth of water in approach channel is adequate and the site is a natural basin for boat berthing. There is protection from winds and waves on three sides and protection on the open southeasterly side could be built into the pier system in the form of a timber breakwater.

In the upland area, there is adequate undeveloped space which could be used for complementary commercial sites which might be desirable. It is conveniently located in relation to the business center of the City and the street system provides ready access from the land side.

The northerly shore of the site is fully occupied by commercial fishing establishments. Existing fishing boat traffic would have to be maintained. Although the commercial development would not adversely affect a marina, it does occupy the most desirable shore area.

The parts of the site needed for shore installations would have to be acquired from private owners and the cost of land acquisition would be a primary consideration if this site were selected.

Site B - Baylen Street Wharf

The water area between Palafox Street and Baylen Street now used primarily by commercial fishing boats has been considered as a marina site

by others prior to this study. Plans and models which have been prepared show how this central location, at the heart of the City's waterfront, could be redeveloped. This would carry forward the improvement of this important section of the City, already well advanced by the construction of the Municipal Pier and Auditorium.

The site affords good shelter for boats and there is adequate area for boat storage. An existing marine railway, if rehabilitated, could be an asset and all onshore facilities required are available now or could be readily provided.

While it would be very desirable to rehabilitate this area, and at the same time provide for modern boating services, there are several disadvantages which must be considered. The cost of land acquisition and demolition of the old structures would probably be prohibitive, especially since it would require the relocation of some existing business enterprises. In addition, the water area available for boat berthing is limited. Additional water area to the west of Baylen Street could be utilized, but the extensive bulkheading needed would make the cost per boat slip higher than average.

Site C - Vicinity of Bay Bridge Approach

Between the old Muscogee Pier and the approach to the Pensacola Bay Bridge, the water area is suitable for the development of a large, modern marina. It is near enough to the center of the City for available business and municipal services to be utilized. The depth of water is appropriate and sufficient land area can be developed by dredging and filling back of a new bulkhead which would be built. There is adequate area for future expansion.

The northerly and easterly sides are well protected and some shelter is afforded by the Muscogee Pier on the west. Additional breakwaters built into the pier system would be required as at Site A.

RECOMMENDATIONS

A recommended marina plan for Pensacola is shown for Site C on Plate 14. It is estimated that the cost of a marina at this site including the onshore facilities shown, would be approximately $500,000. While this would be an excellent recreational addition for the City, it is recommended that construction be deferred until some future date. There is at present, considerable interest on the part

of several private groups in developing marina facilities, both along the mainland and on Santa Rosa Island. If built, they might make a publicly sponsored marina unnecessary.

Furthermore, in view of the present limitations imposed upon the taxing power of the City, projects of this type must necessarily take second place to the more pressing needs of the Port. Rehabilitation of the commercial terminal area must be given the highest priority and it should not be hindered by adding other facilities, no matter how desirable they may be.

TABLE II

EVALUATION OF TERMINAL FEATURES

Description	Unit	SITE I				SITE II	
		Scheme A	Scheme B (Phase 1)	Scheme B (Phase 2)	Scheme C	Scheme D	Scheme E
Total Estimated Cost		$6,200,000	$6,450,000	$5,100,000	$6,000,000	$6,800,000	$6,800,000
Number of Berths		5	4	4	5	5	5
Cost Per Berth		1,240,000	1,612,500	1,275,000	1,200,000	1,360,000	1,360,000
Berthing Length	(Feet)	2,460	2,200	2,100	2,400	2,400	2,400
Total Terminal Area	(Sq. Ft.)	980,000	1,072,000	516,000	980,000	1,072,500	540,000
Terminal Area Per Berth	(Sq. Ft.)	196,000	268,000	129,000	196,000	214,500	108,000
Covered Storage Area	(Sq. Ft.)	144,000	144,000	144,000	144,000	144,000	144,000

TABLE III

APPROXIMATE COSTS OF DOCK OPERATIONS (1957-1958)

ADMINISTRATION & OPERATION		
Supervisory Salaries	$ 17,000	(2)
Watchmen	5,000	(1)
Handling Commodities	8,000	(2)
Handling Bunker Oil	5,500	(1)
Undistributed Labor	4,000	(1)
Travel, Promotion, Solicitation	6,000	(3)
Personal Services	5,400	(3)
Legal	1,000	
MISCELLANEOUS		
Utilities	1,900	(1)
Insurance	5,700	(1)
Supplies	1,500	(1)
MAINTENANCE	10,000	
TOTAL	$71,000	

Notes:
(1) Based on dock charges only.
(2) Based on 75% combined dock and warehouse charges.
(3) From City Budget Appropriation

TABLE IV

COMPARISON OF COSTS OF MARINE TERMINAL OPERATION

	Approximate Costs 1957 - 1958 Average	Estimated Costs New Terminal
ADMINISTRATION		
Salaries and Wages	$ 51,900	$ 104,500
MISCELLANEOUS		
Utilities	1,900	5,000
Insurance	5,700	10,000
Supplies	1,500	1,000
Equipment	-	2,000
Transportation	-	2,000
MAINTENANCE		
Maintenance	10,000	15,000
	$ 71,000	$ 139,500

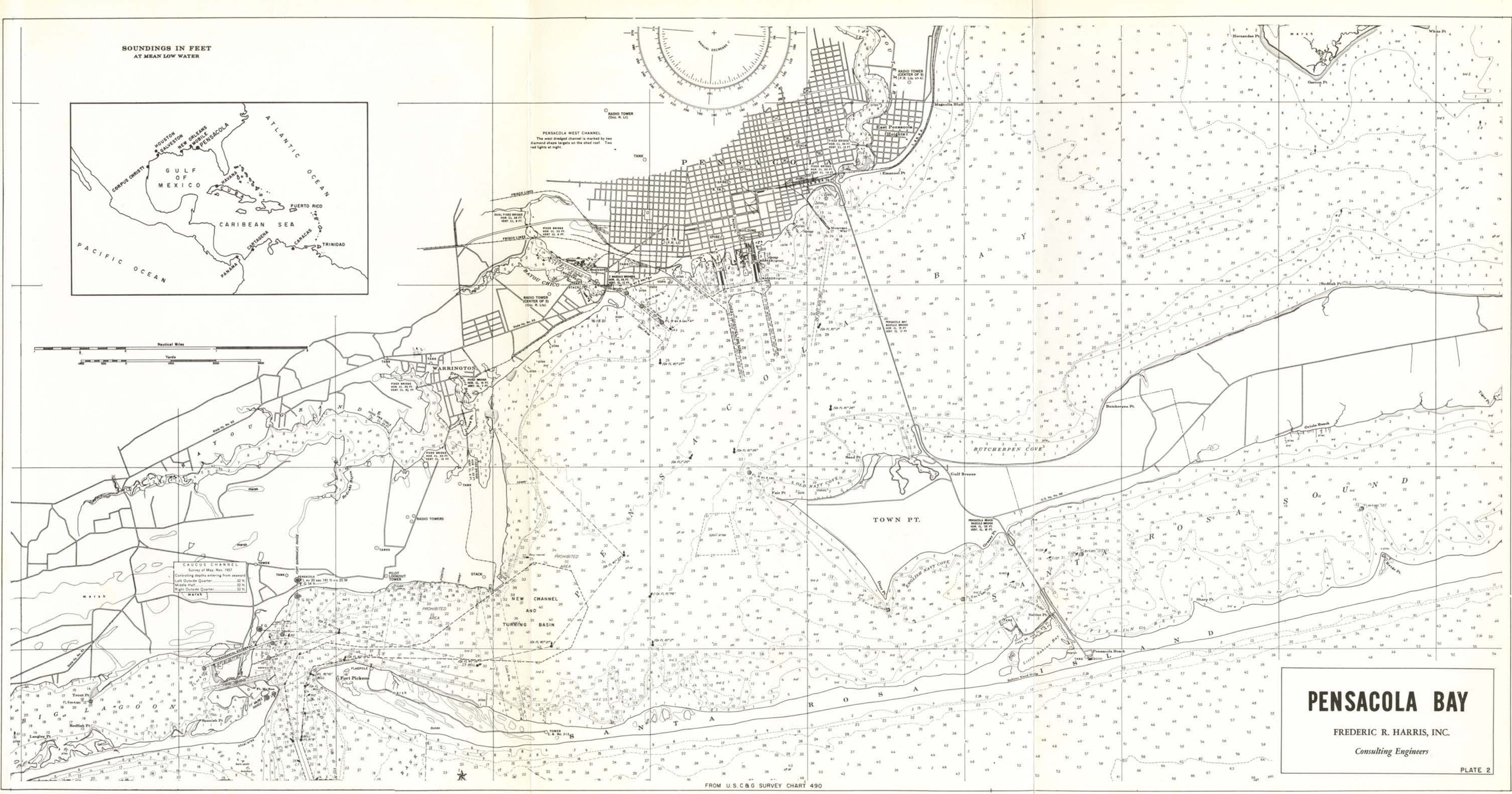
TABLE V

ESTIMATED YEARLY CHANGES IN COSTS OF MARINE TERMINAL OPERATION

ITEM	1959	1960	1961	1962	1963	1964	1965
Administration	$18,000	$ 18,000	$ 23,000	$ 35,000	$48,000	$53,000	$ 55,000
Operation	34,000	34,000	37,000	42,000	46,000	49,000	50,000
Miscellaneous	9,000	9,000	12,000	14,000	18,000	21,000	22,000
Maintenance	10,000	10,000	10,000	10,000	12,000	14,000	15,000
TOTAL	$71,000	$ 71,000	$82,000	$101,000	$ 124,000	$137,000	$142,000

Based on:

Start of construction January 1960
End of Construction February 1962
New Marine Terminal in full operation by January 1965

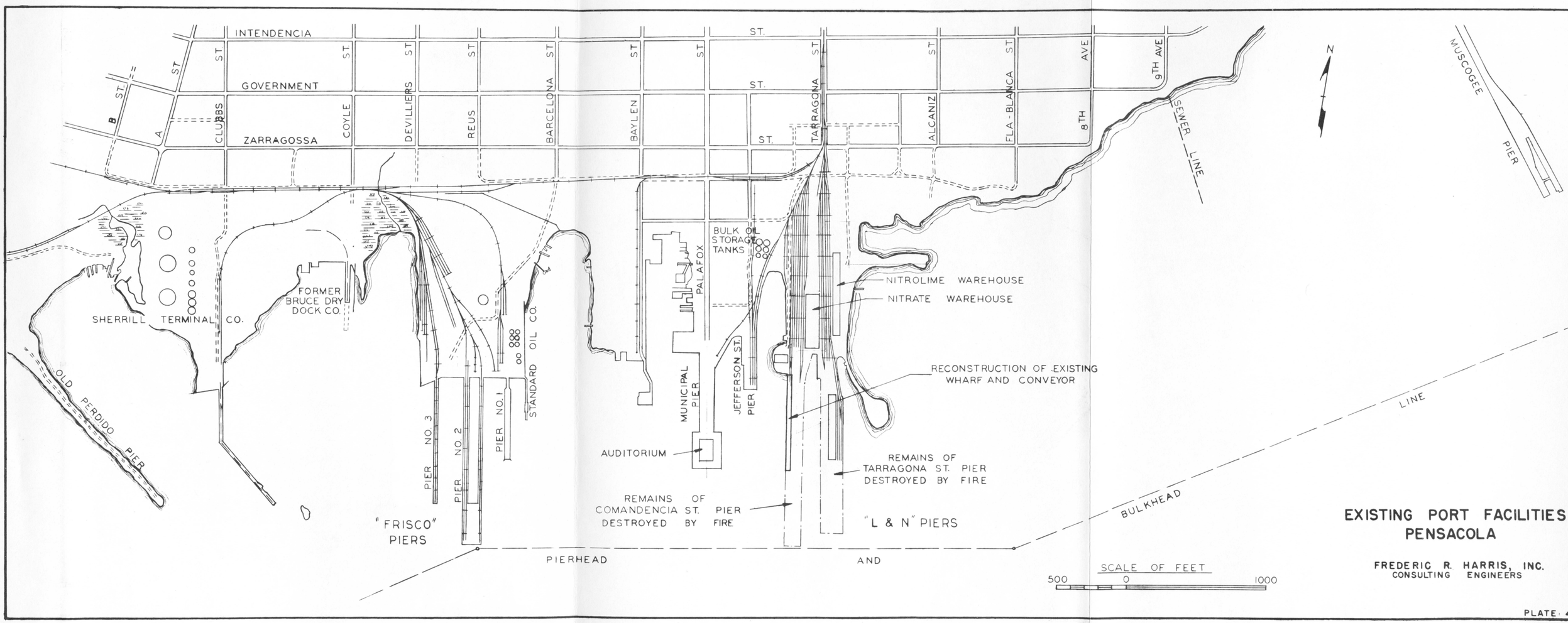


PENSACOLA BAY

FREDERIC R. HARRIS, INC.

Consulting Engineers

PLATE 2



EXISTING PORT FACILITIES PENSACOLA

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS

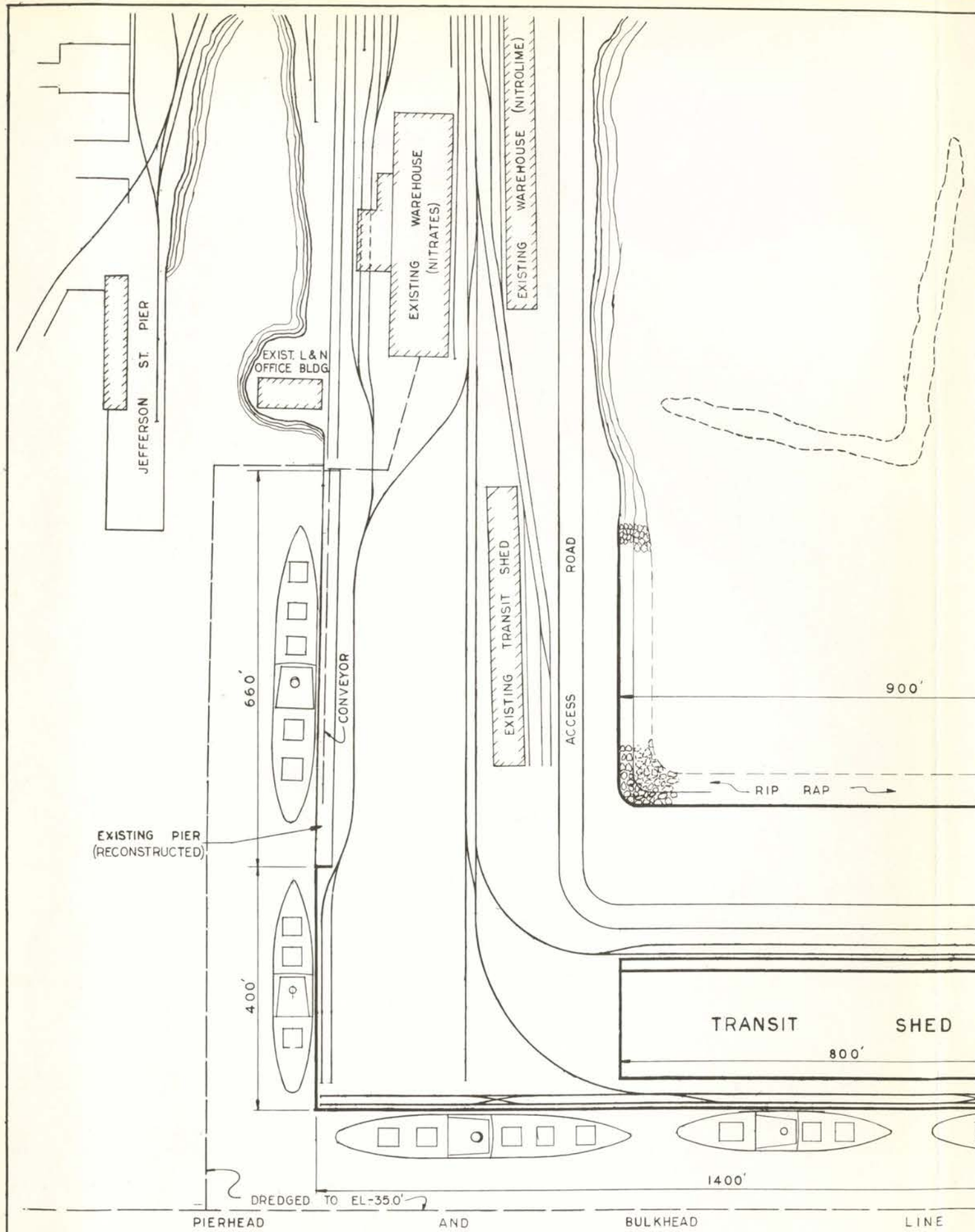
PLATE 4

FROM US GS TOPOGRAPHIC MAPS — PENSACOLA & FT. BARRANCAS, FLA.

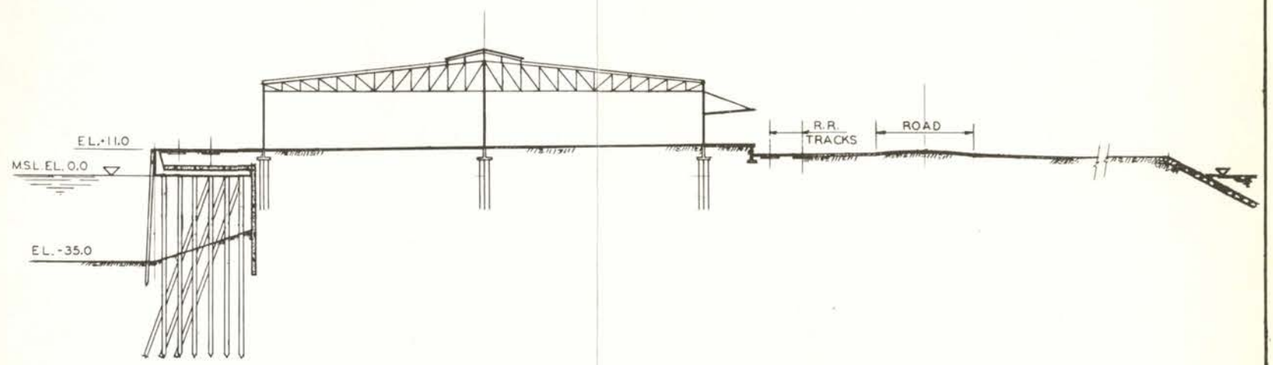
RAILROADS AND HIGHWAYS SERVING PENSACOLA

Frederic R. Harris, Inc.,
Consulting Engineers,

PLATE 5



PLAN

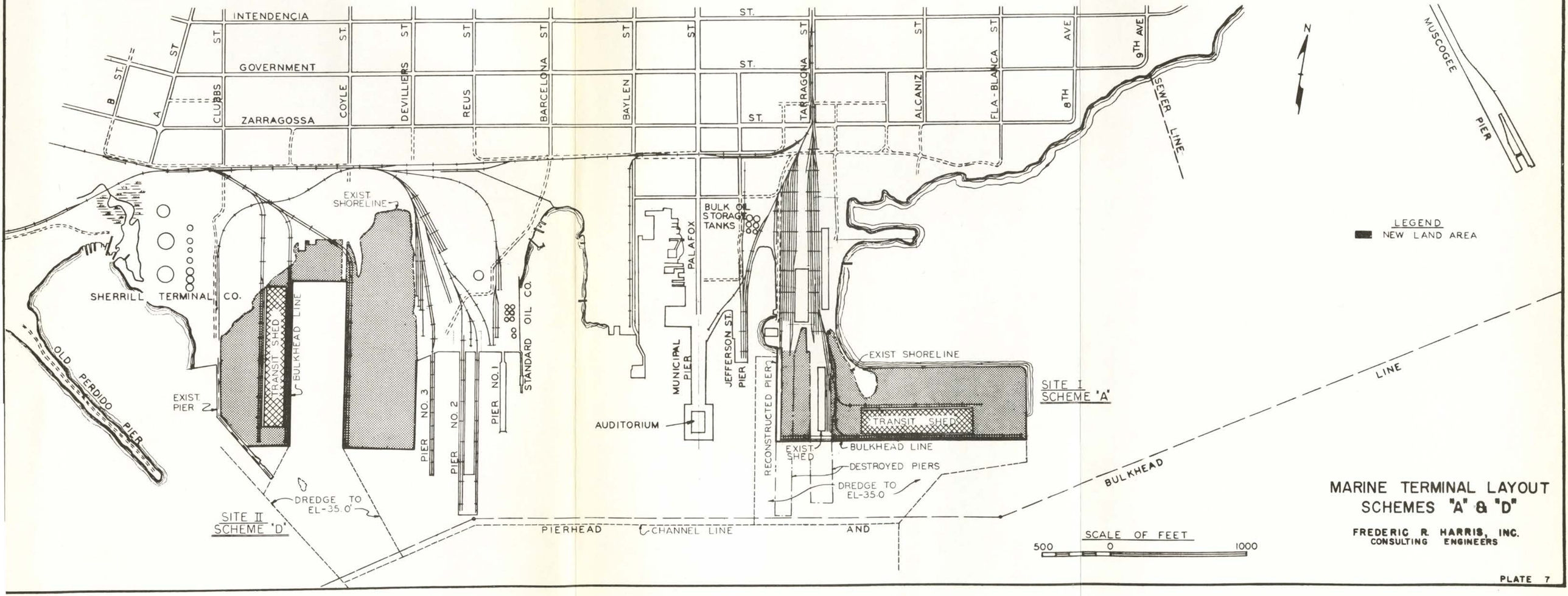


SECTION

SCALE OF FEET
0 100 200 300 400 500

SCHEME "C"
NEW MARINE TERMINAL
PLAN & CROSS SECTION

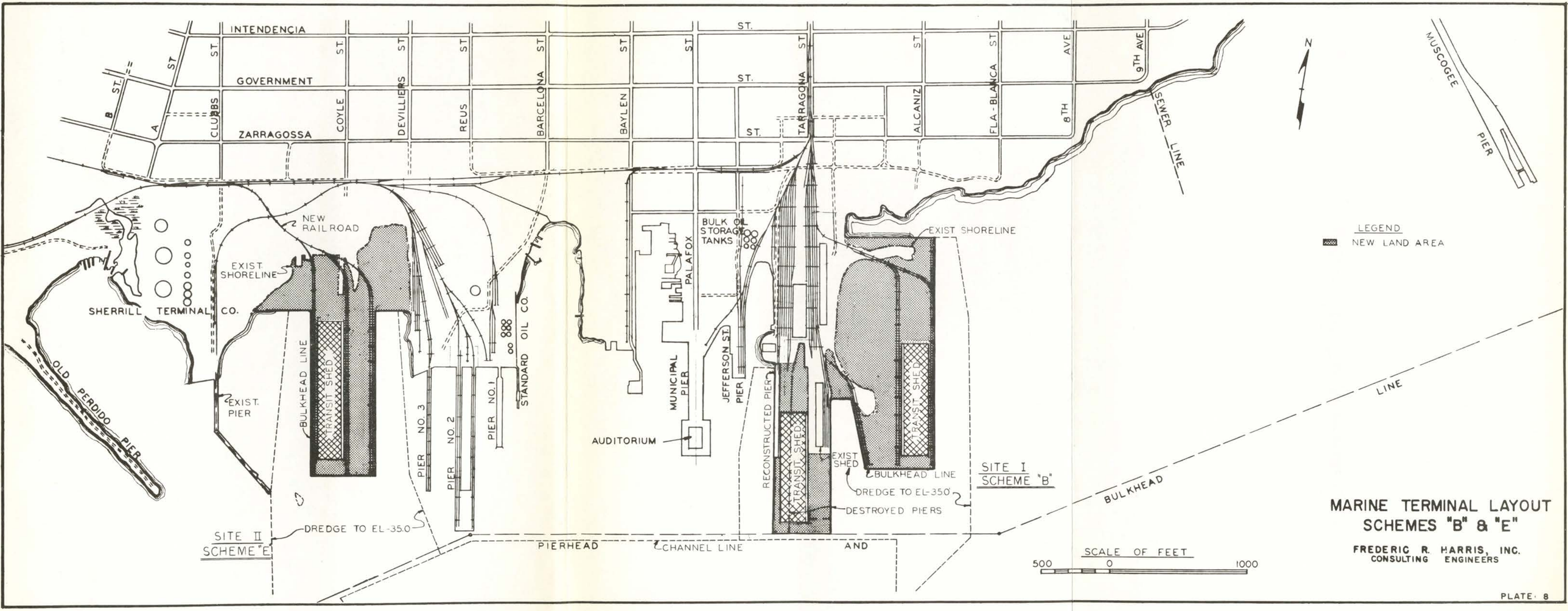
FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS



MARINE TERMINAL LAYOUT SCHEMES "A" & "D"

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS

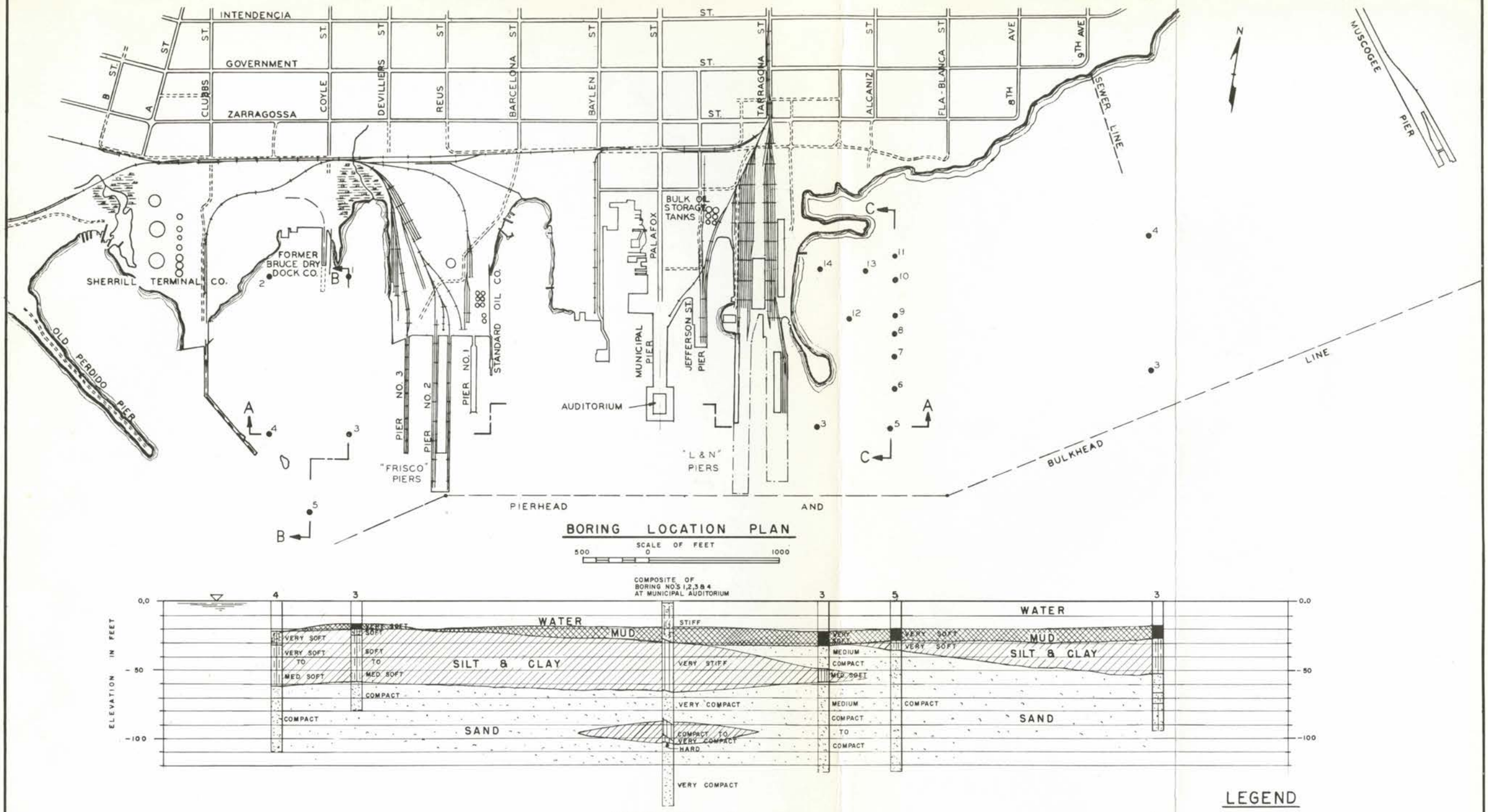
PLATE 7



MARINE TERMINAL LAYOUT SCHEMES "B" & "E"

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS

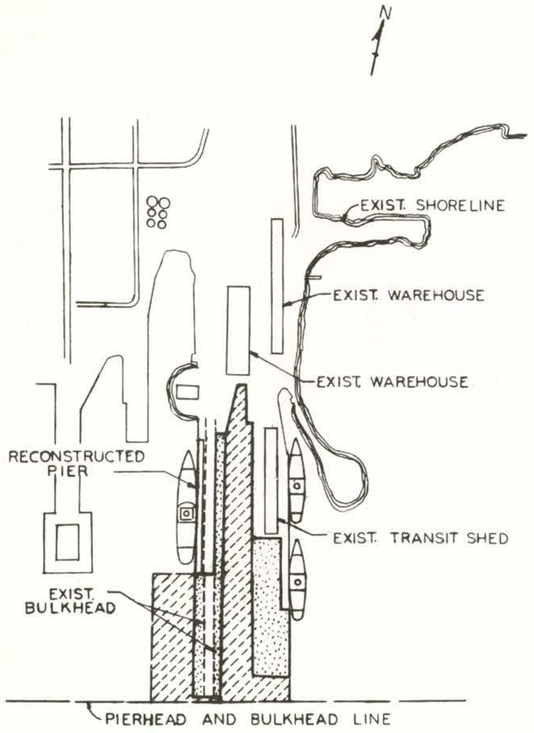
PLATE 8



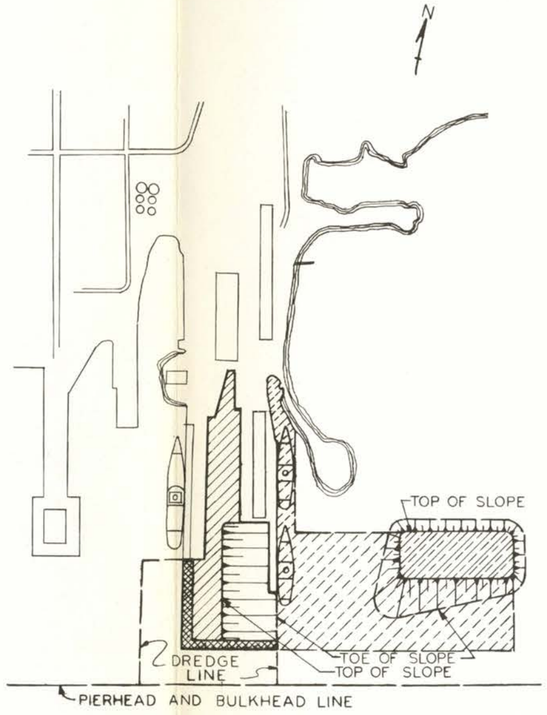
SOIL PROFILES

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS

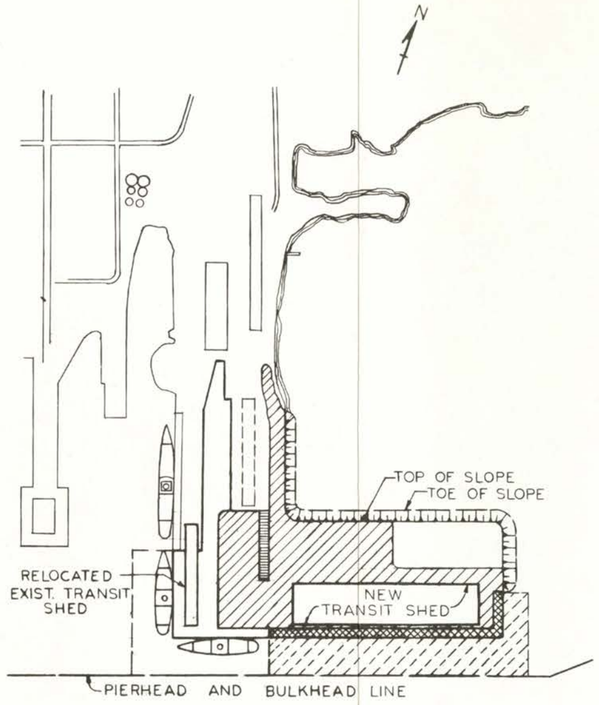
PLATE 9



STAGE I



STAGE II



STAGE III

LIST OF SYMBOLS

- DEMOLITION & DREDGING
- DEMOLITION & FILL
- DREDGING
- FILL TO EL+11.0'
- NEW WHARF

SCALE OF FEET

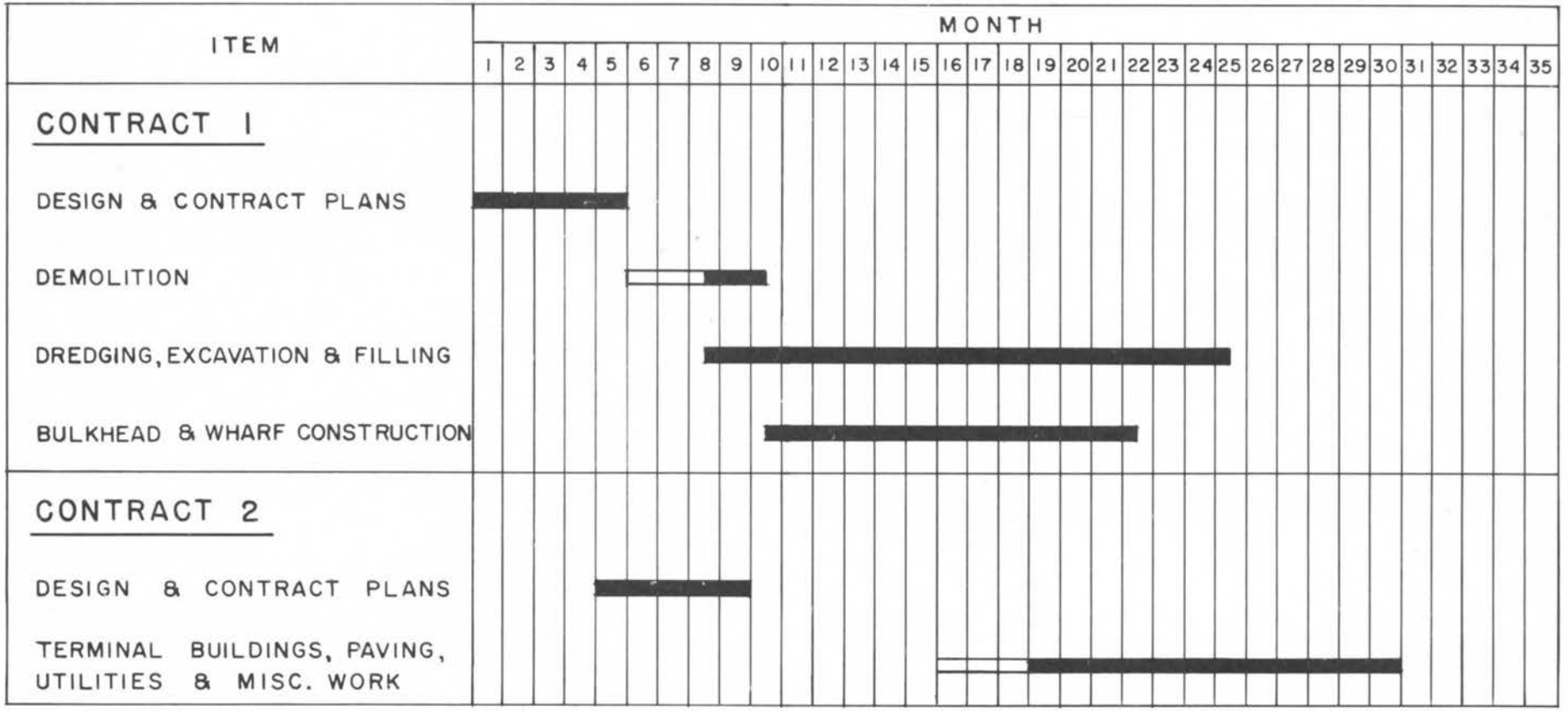
500 0 1000

STAGES OF CONSTRUCTION

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS

PLATE 10

PORT OF PENSACOLA
DESIGN & CONSTRUCTION PROGRESS SCHEDULE
FOR NEW MARINE TERMINAL



LEGEND

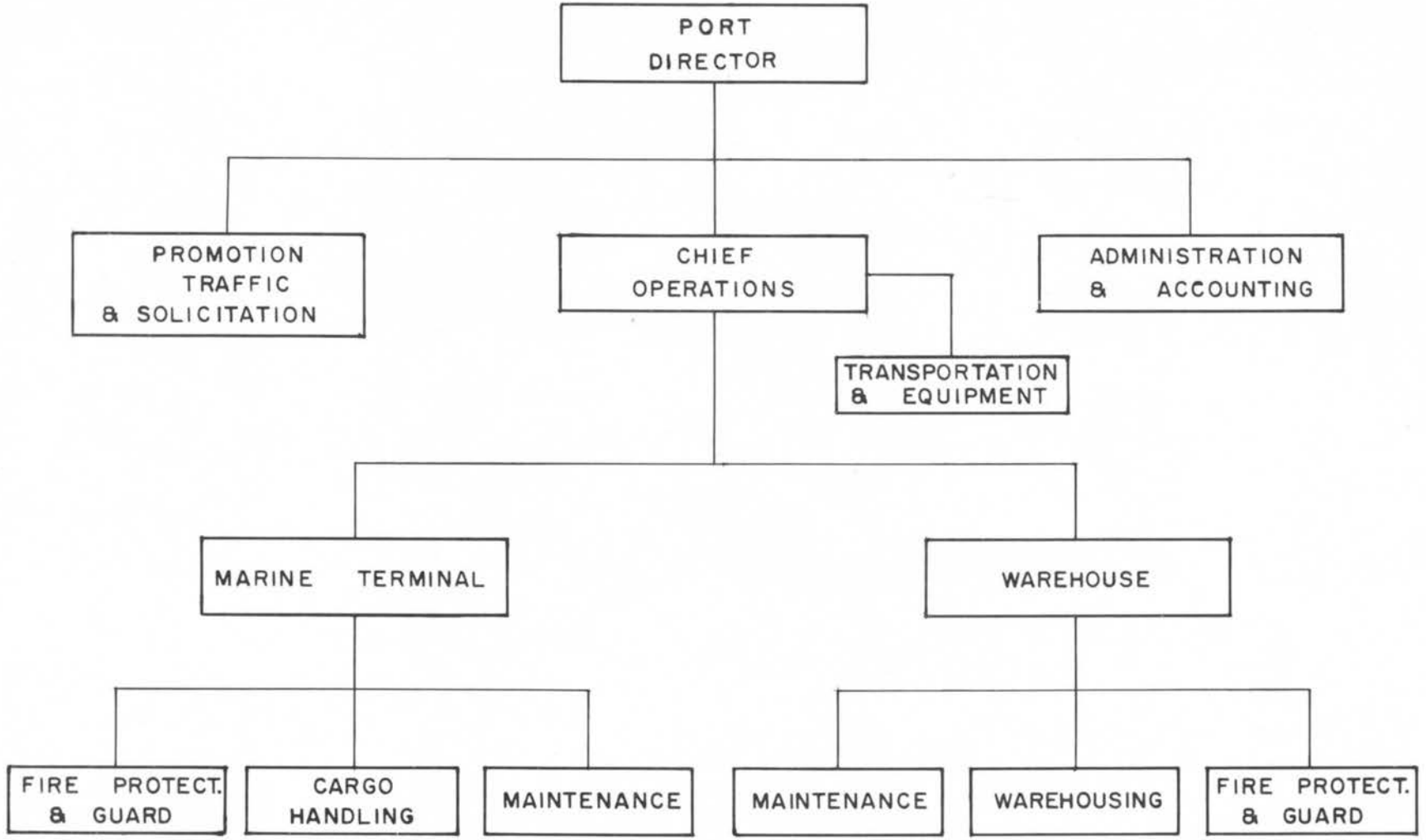
RECEIPT AND ANALYSIS OF BIDS AND MOBILIZATION

CONSTRUCTION

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS

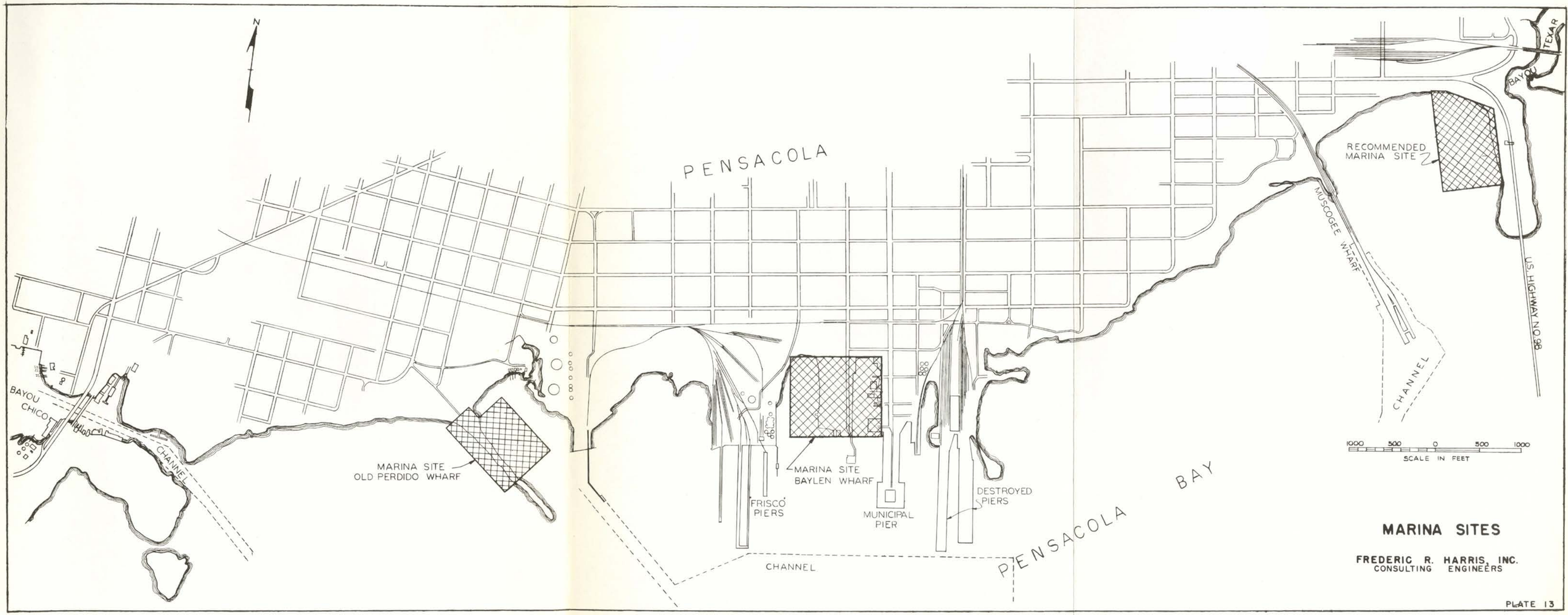
PLATE 11

PORT OF PENSACOLA
RECOMMENDED ORGANIZATION



FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS

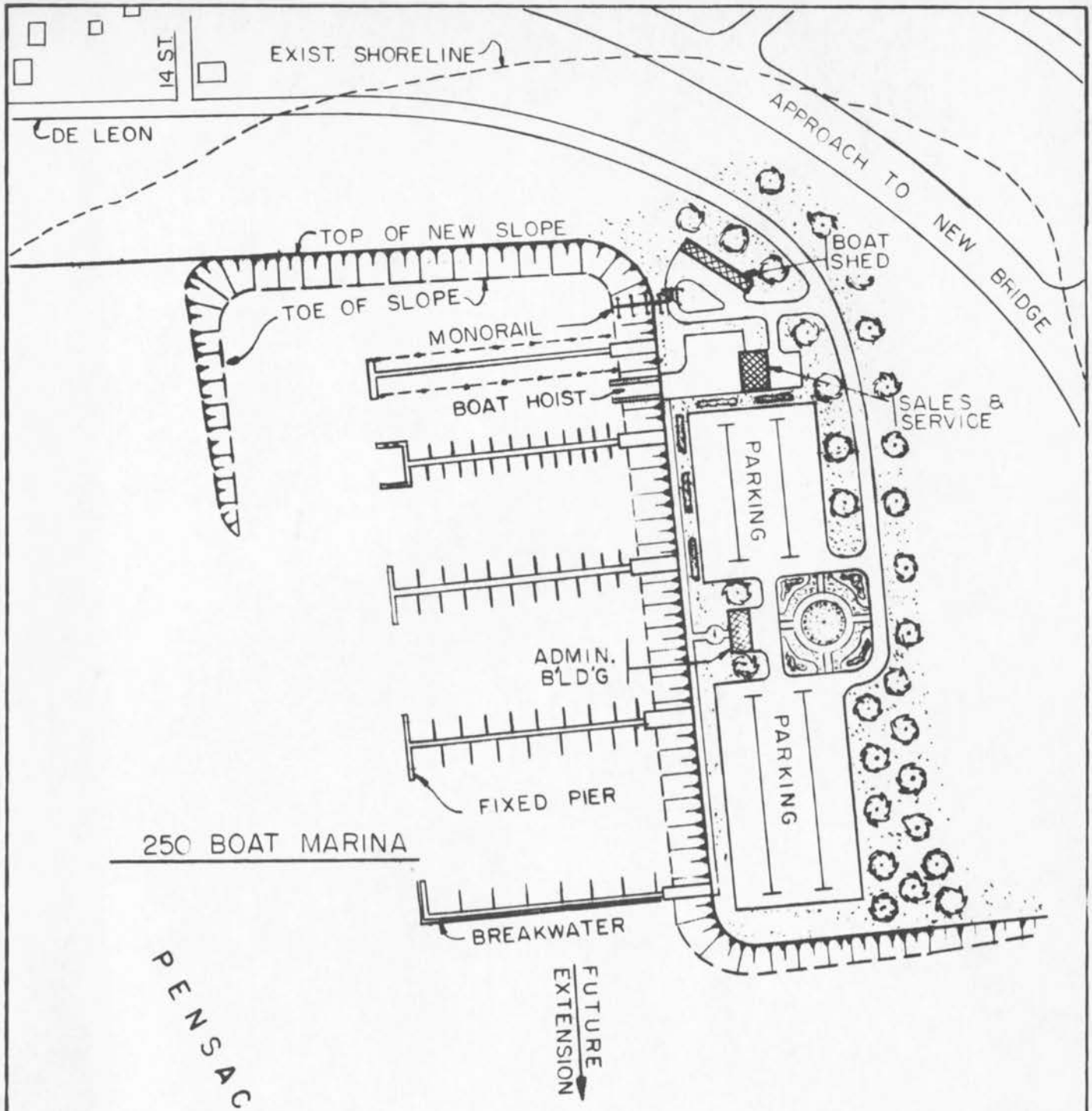
PLATE 12



MARINA SITES

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS

PLATE 13



RECOMMENDED MARINA SITE

0 100 200 300 400 500

SCALE OF FEET

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS

PLATE 14