

Pentathlon Community Development District

**Preliminary
Engineer's Report**
Infrastructure Improvements

Prepared for
Pentathlon Community Development District
Board of Supervisors
Miami-Dade County, Florida

Prepared by
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I. Introduction.

The Pentathlon Community Development District (PCDD) was created for the purpose of financing and managing the construction, acquisition and maintenance of the infrastructure of the Pentathlon Development, a 95.12 gross acre residential development located in Southwest Miami-Dade County, Florida. See Exhibit 1 for a graphical representation of the development.

The infrastructure is a network of roadway, storm drainage, water and sanitary sewer systems that will give access and service to about 514 single family dwellings. The value of the infrastructure has been estimated by Alvarez Engineers, Inc. to be \$5,990,998, as detailed further in this Engineer's Report.

As of the date of this Engineer's Report, construction of the infrastructure for the development is well under way with roads, drainage, water and sanitary sewer systems being at various stages of completion. Construction of the entire infrastructure is estimated to be completed the winter of 2003.

II. District Description.

Pentathlon Community Development District was established under Ordinance No. 02-58 of the County Commission of Miami-Dade on April 23, 2002.

The District is located in Section 20, Township 55S, Range 39E, in Miami-Dade County. It is bounded on the east by SW 157 Avenue; on the west by SW 158 Path; on the south by theoretical SW 148 Street; and on the north, by the Seaboard Airline Railroad Right of Way. The development may be accessed from the south by SW 152 Street (Coral Reef Drive) and SW 157 Avenue and from the west by SW 144 Street. See Exhibit 1.

III. Description of the Infrastructure.

The following components are currently under construction:

1. Earthwork for Roads and Paving, Grading and Drainage.

SW 157 Avenue. This new collector road is being constructed along the entire eastern side of the development. It extends from SW 152 Street to the Seaboard Airline Railroad Right of Way. It consists of an urban, 4-lane divided section within an 80 foot Right of Way. Its typical section consists of a 12 inch stabilized subgrade, an 8 inch base, a 2 inch asphaltic concrete course placed in two lifts or layers, curbs and gutters, grassed medians, and a 6 foot wide sidewalk on the west side. As of the date of this report, the subgrade work had been completed and most of the base had been placed. The curbs and gutters along the southbound lanes were being poured, and the first lift of the asphaltic concrete was being placed. Approximately one third of the drainage structures and French Drains along the southbound lanes had been installed.

SW 144 Street. This minor collector runs in a west-east direction and divides the development in two. It is an extension of existing SW 144 Street from the west. It begins at the west boundary of the project and connects with SW 157 Avenue. SW 144 Street consists of an open-swale, 2-lane, rural section within a 70 foot Right of Way. Its typical section consists of a 12 inch stabilized subgrade, an 8 inch base course, a 2 inch asphaltic concrete course placed in two lifts, grassed swales, and 5 foot concrete sidewalks on both sides. As of the date of this Engineer's Report, the earthwork for this road had essentially been completed: the subgrade work had been finished, the based had been placed, the first lift of asphalt had been laid on most of the road and the drainage structures and French Drains had been installed. The sidewalks had not yet been constructed and the grassing of the swales had not yet begun.

Local Streets. From the collector roads a series of local streets originate in order to provide access to the dwelling units. The local streets consist of open swale, 2-lane, rural sections within 50 foot Right of Ways. At selected locations, the local streets are provided with 2 foot valley gutters on one or both sides. Their typical section consists of a 12 inch subgrade, an 8 inch base course, a 1 ½ inch to 1 ¼ inch asphaltic concrete course, (depending on whether the street is guttered or not), grassed swales and 5 foot concrete sidewalks on both sides. As of the date of this Engineer's Report, the street earthwork had been essentially completed, with the subgrade finished, most of the base course placed, many of the streets had been paved with the first lift, and essentially all of the drainage facilities had been constructed. It was not yet apparent that the final connection to the canal of the proposed slab covered trench that will run west-east across the development, had been made. Construction of the sidewalks and grassing of the swales had not yet begun.

Drainage. The drainage facilities serving the development consist of inlets, manholes, storm pipes and approximately 10,500 linear feet (LF) of exfiltration trenches, which have been designed to retain the storm runoff within the development. In addition to the drainage system serving the development, there is a proposed slab covered trench system to provide relief to the lands located just west of the development. The proposed covered trench system begins at the western property line of the development and runs under the northern swale of SW 147 Street until it discharges into the canal adjacent to SW 157 Avenue.

As of the date of this Engineer's Report, the underground drainage system is essentially completed, with the exception of the drainage facilities on SW 157 Avenue, and the final connection of the slab covered trench with the canal.

In accordance with the Federal Emergency Management Agency (FEMA), this development falls within Zone X, Elevation 9.0 Ft above the National Geodetic Vertical Datum (NGVD). The Paving, Grading and Drainage plans for the development call for the minimum road crown elevation to be 8.10 Ft above NGVD, and the finish floor of the residences to be set at a minimum elevation of 10.10 Ft above NGVD.

See Exhibit 2 for a graphical representation of the Paving, Grading and Drainage Improvements.

2. Water Distribution System.

The water distribution system is composed of variable pipe sizes ranging from 6 to 8 to 12 to 16 inch diameters for water service and fire protection. The system is connected to an existing 12 inch water main located on SW 144 Street just west of the development, and to an existing 16 inch water main located on SW 157 Avenue, approximately 1,140 feet north of SW 152 Street. In general, the water system is composed of two main branches: a new 16 inch water main running along SW 157 Avenue and a 12 inch water main running along SW 144 Street. A network of 8 inch ductile iron pipes tap into the two main branches and then run under the local streets. The 6" ductile iron pipes branch out of the main line to serve the fire hydrants. The water system within the development encompasses approximately 3,533 LF of 16 inch pipe, 1,557 LF of 12 inch pipe, 17,967 LF of 8 inch pipe and 850 LF of 6 inch pipe. The system also includes 34 fire hydrants.

As of the date of this Engineer's Report, construction of the water distribution infrastructure was essentially completed and ready for final testing.

When completed, the water distribution system will be donated to Miami-Dade Water and Sewer Department (WASD) for operation and maintenance.

See Exhibit 3 for a graphical representation of the Water Distribution System.

3. Sewage Collection System.

The sewage collection system consists of approximately 17,677 linear feet of gravity pipe that ranges in size from 8 to 10 inches in diameter. There are 454 service laterals, and 74 manholes. The gravity system discharges into the wet well of an existing lift station located on the south side of SW 144 Street, just west of the development. A new 24 inch Ductile Iron Pipe force main, approximately 1,373 linear feet long has been constructed under SW 144 Street, connecting to an existing 24 inch force main located just west of the development and ending with a plug at the intersection of SW 144 Street and SW 157 Avenue. The new force main will serve the region in the future.

As of the date of this Engineer's Report, construction of the sewage collection infrastructure was essentially completed and ready for final testing.

When completed, the sewage collection system, including the force main, will be donated to Miami-Dade Water and Sewer Department (WASD) for operation and maintenance.

See Exhibit 4 for a graphical representation of the Sewage Collection System.

4. Signing and Pavement Marking. Construction of this element of the infrastructure has not yet begun.

IV. Ownership and Maintenance.

The District will finance the construction of the improvements and acquire the land. It will then transfer the land and improvements to the following agencies for ownership and maintenance:

Description	Future Ownership	Future Maintenance
Roadway Improvements	Miami-Dade County PWD	Miami-Dade County PWD
Stormwater Drainage Facilities	Miami-Dade County PWD	Miami-Dade County PWD
Water Distribution System	WASD	WASD
Sewage Collection System	WASD	WASD

V. Permitting Status.**1. Roadway, Paving, Grading and Drainage Permits.**

Approval by Miami-Dade County DERM on May 14, 2002 (Permit No. 13-01867-P)

Approval by Miami-Dade County Public Works Department on May 15, 2002 (Permit No. T-21098)

2. Water Distribution System

Approval by WASD on April 19, 2002 (Permit No. DW 2002-073)

Approval by Miami-Dade County Fire Department on April 24, 2002 (Water Main Extension 02340-00092)

Approval by Miami-Dade Department of Health on May 9, 2002 (Permit No. 125199-616-DS/C)

3. Sewage Collection System.

Approval by WASD on April 19, 2002 (Permit No. DS2002-546)

Approval by DERM Sewerage Facilities on May 15, 2002 (Serial No. SE02-085)

VI. Estimate of Capital Improvement Costs.

Earthwork for Roads	\$ 186,375.00
Paving, Grading and Drainage	\$ 3,029,614.86
Water Distribution System	\$ 977,291.53
Sewage Collection System	\$ 1,063,478.00
Signing and Pavement Marking	\$ 45,000.00
Sub-total	\$ 5,301,759.39
Soft Costs 6% (Engineering and other professional fees)	\$ 318,105.56
Contingency 7%	\$ 371,123.16
Sub-total Soft Costs & Contingency	\$ 689,228.72
Infrastructure Cost Grand Total	\$ 5,990,988.11

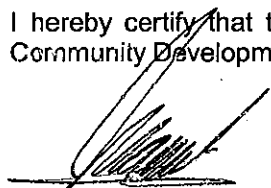
Tables 1 through 6 show line item estimates for each category.

The costs of the infrastructure will be allocated to each residential unit within the development in the form of special assessments, in accordance with the approved methodology described in the "Special Assessment Methodology Report" prepared for Pentathlon Community Development District by Special District Services, Inc.

VII. Engineer's Certification.

It is our opinion that the extent of proposed improvements and their estimated costs are fair and reasonable. We believe that the improvements can be permitted, constructed and installed at the costs described in this report.

I hereby certify that the foregoing is a true and correct copy of the Engineer's Report for Pentathlon Community Development District.



Juan R. Alvarez, PE
 Florida Registration No. 38522
 Alvarez Engineers, Inc.
 July 23, 2002

TABLES AND EXHIBITS

Pentathlon Construction Cost Estimates Summary Table		
Description of Work		Total Estimated Cost
Infrastructure Component	Table	
Earthwork for Roads	2	\$186,375.00
Paving, Grading and Drainage	3	\$3,029,614.86
Water Distribution System	4	\$977,291.53
Sewage Collection System	5	\$1,063,478.00
Signing and Pavement Marking	6	\$45,000.00
Subtotal		\$5,301,759.39
Soft Costs 6% (Engineering & other professional fees)		\$318,105.56
Contingency 7%		\$371,123.16
Grand Total		\$5,990,988.11

**Pentathlon
Construction Cost Estimates
Earthwork**

Description of Work	Qty.	Unit	Unit Price	Total Estimated Cost
Earthwork for Roadways (For Roadways)				
Excavation	20,000	CY	\$3.75	\$75,000.00
Embankment	16,500	CY	\$6.75	\$111,375.00
Total				\$186,375.00

**Pentathlon
Construction Cost Estimates
Paving, Grading, & Drainage**

Description of Work	Quantity	Unit	Unit Price	Total Estimated Cost
12" Subgrade (Roads)	78,464	SY	\$0.50	\$39,232.00
8" Baserock	74,781	SY	\$5.50	\$411,296.11
6" Baserock (CB aprons)	1,525	SY	\$5.00	\$7,625.00
1" asphaltic concrete (apron)	1,525	SY	\$3.00	\$4,575.00
1 1/4" A.C.S.C.	26,191	SY	\$3.50	\$91,668.50
1 1/2" A.C.S.C.	16,910	SY	\$4.00	\$67,640.00
2" A.C.S.C.	25,755	SY	\$5.00	\$128,775.00
Concrete (trench slab)	475	CY	\$500.00	\$237,500.00
4" Concrete Sidewalk	20,800	SY	\$18.00	\$374,400.00
Type "F" Curb & Gutter	13,785	LF	\$7.75	\$106,833.75
Valley Gutter	16,573	LF	\$7.50	\$124,297.50
Guardrail	3,300	LF	\$12.00	\$39,600.00
15" CAP	588	LF	\$27.00	\$15,876.00
18" CAP	867	LF	\$36.00	\$31,212.00
60" RCP	42	LF	\$130.00	\$5,460.00
Exfiltration Trench w/15" HDPE	6,992	LF	\$50.00	\$349,600.00
Exfiltration Trench w/24" HDPE	3,507	LF	\$75.00	\$263,025.00
Excavation, 6' covered Trench	5,180	CY	\$5.00	\$25,900.00
Finish Soil layer (swales)	47,120	SY	\$0.70	\$32,984.00
Sod (swales)	47,120	SY	\$2.50	\$117,800.00
Inlets, Type P-5	7	EA	\$2,800.00	\$19,600.00
Inlets, Type P-6	21	EA	\$2,900.00	\$60,900.00
Inlets, CB	163	EA	\$1,550.00	\$252,650.00
CB Grates & MH Rings	169	EA	\$160.00	\$27,040.00
Maintenance of Traffic	1	LS	\$5,000.00	\$5,000.00
Miscellaneous	1	LS	\$5,000.00	\$5,000.00
Densities	175	EA	\$75.00	\$13,125.00
Surveying and As-Builts	1	LS	\$114,000.00	\$114,000.00
Permits	1	LS	\$34,000.00	\$34,000.00
Bond	1	LS	\$23,000.00	\$23,000.00
Total				\$3,029,614.86

**Pentathlon
Construction Cost Estimates
Water Distribution System**

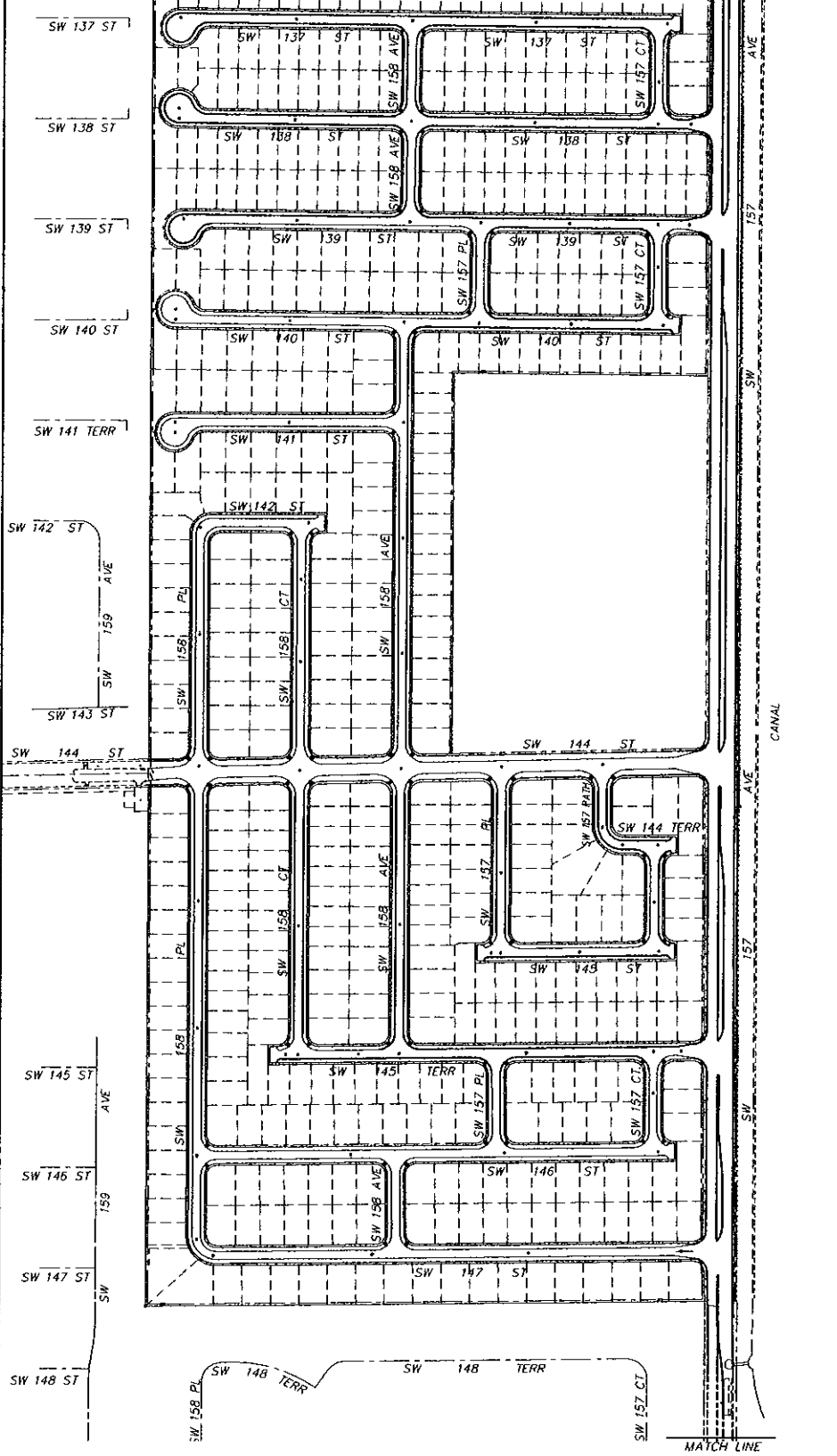
Description of Work	Quantity	Unit	Unit Price	Total Estimated Cost
Connect to Existing W.M.	2	LS	\$2,000.00	\$4,000.00
6" D.I.P.(Assumed 25'/FH Branch)	850	LF	\$20.14	\$17,119.00
8" D.I.P.	17,967	LF	\$23.00	\$413,241.00
12" D.I.P.	1,557	LF	\$25.44	\$39,610.08
16" DIP	3,533	LF	\$37.10	\$131,074.30
6" Gate Valve & Box	34	EA	\$551.20	\$18,740.80
8" Gate Valve & Box	52	EA	\$689.00	\$35,828.00
12" Gate Valve & Box	7	EA	\$1,314.40	\$9,200.80
16" Gate Valve	1	EA	\$1,752.50	\$1,752.50
16" Butterfly Valve	6	EA	\$1,752.50	\$10,515.00
Fire Hydrants	34	EA	\$1,380.00	\$46,920.00
12" x 8" Reducer	2	EA	\$175.00	\$350.00
8" Tee	18	EA	\$380.00	\$6,840.00
8" x 6" Tee	26	EA	\$380.00	\$9,880.00
12" x 6" Tee	3	EA	\$466.40	\$1,399.20
12" x 8" Tee	1	EA	\$447.00	\$447.00
16" x 6" Tee	5	EA	\$621.90	\$3,109.50
16" x 8" Tee	4	EA	\$596.00	\$2,384.00
12" x 8" Cross	3	EA	\$447.00	\$1,341.00
12" Cross	1	EA	\$487.60	\$487.60
8" 90 Degree Bend	6	EA	\$380.00	\$2,280.00
8" 45 Degree Bend	34	EA	\$380.00	\$12,920.00
16" Plug	1	EA	\$325.00	\$325.00
8" x 2" CAP W/ 2" F.V.O.	11	EA	\$400.00	\$4,400.00
12" x 2" CAP W/ 2" F.V.O.	1	EA	\$400.00	\$400.00
1" Single Service	41	EA	\$350.00	\$14,350.00
1" Dual Service	204	EA	\$350.00	\$71,400.00
Miscellaneous	1	LS	\$5,000.00	\$5,000.00
Maintenance of Traffic	1	LS	\$2,000.00	\$2,000.00
Densities	1	LS	\$5,000.00	\$5,000.00
Surveying & As-Builts	1	LS	\$67,000.00	\$67,000.00
Chlorinating & Testing	23,907	LF	\$0.25	\$5,976.75
Permit	1	LS	\$14,000.00	\$14,000.00
Bond	1	LS	\$18,000.00	\$18,000.00
Total				\$977,291.53

**Pentathlon
Construction Cost Estimates
Sewage Collection System**

Description of Work	Quantity	Unit	Unit Price	Total Estimated Cost
10" D.I.P. (14'-16')	554	LF	\$80.00	\$44,320.00
10" D.I.P. (16'-18')	378	LF	\$85.00	\$32,130.00
8" D.I.P.(0'-6')	140	LF	\$35.00	\$4,900.00
8" D.I.P. (6'-8')	80	LF	\$39.00	\$3,120.00
8" PVC (0'-6')	8,264	LF	\$20.00	\$165,280.00
8" PVC (6'-8')	4,000	LF	\$26.00	\$104,000.00
8"PVC (8'-10')	2,092	LF	\$30.00	\$62,760.00
8" PVC (10'-12)	905	LF	\$38.00	\$34,390.00
8" PVC (12'-14')	890	LF	\$46.00	\$40,940.00
8" PVC (14'-16')	123	LF	\$58.00	\$7,134.00
8" PVC (16'-18')	251	LF	\$70.00	\$17,570.00
24"DIP	1,373	LF	\$60.00	\$82,380.00
MH (0'-6')	47	EA	\$1,300.00	\$61,100.00
MH (6'-8')	11	EA	\$1,800.00	\$19,800.00
MH (8'-10')	6	EA	\$1,900.00	\$11,400.00
MH (10'-12)	2	EA	\$2,251.00	\$4,502.00
MH (10'-12') w/ Drop Inlet	2	EA	\$3,200.00	\$6,400.00
MH (12'-14')	2	EA	\$2,500.00	\$5,000.00
MH (14'-16')	1	EA	\$2,900.00	\$2,900.00
MH (14'-16') w/ Drop Inlet	1	EA	\$3,400.00	\$3,400.00
MH (16'-18') w/ Drop Inlet	2	EA	\$3,500.00	\$7,000.00
6" PVC Lateral (SS1.0)	451	EA	\$360.00	\$162,360.00
6" PVC Lateral (SS2.0)	3	EA	\$320.00	\$960.00
MH Connection	48	EA	\$85.00	\$4,080.00
MH Inverts & Ring	74	EA	\$235.00	\$17,390.00
Gravel # 57	3,927	TN	\$8.50	\$33,379.50
Miscellaneous	1	LS	\$5,000.00	\$5,000.00
Connect to Existing FM	1	LS	\$3,000.00	\$3,000.00
24"x2" CAP W/2" F.V.O.	1	EA	\$400.00	\$400.00
Air Release	1	EA	\$100.00	\$100.00
Maintenance of Traffic	1	LS	\$1,000.00	\$1,000.00
Densities	1	LS	\$3,000.00	\$3,000.00
Cleaning & Testing	19,050	LF	\$0.65	\$12,382.50
Permit	1	LS	\$11,000.00	\$11,000.00
Surveying & As-Builts	1	LS	\$51,000.00	\$51,000.00
Bond	1	LS	\$38,000.00	\$38,000.00
Total				\$1,063,478.00

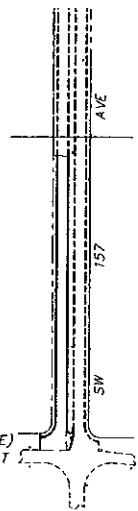
**Pentathlon
Construction Cost Estimates
Signing and Pavement Marking**

Description of Work	Qty.	Unit	Unit Price	Total Estimated Cost
Signing and Pavement Marking	1	LS	\$45,000.00	\$45,000.00
Total				\$45,000.00



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MATCH LINE

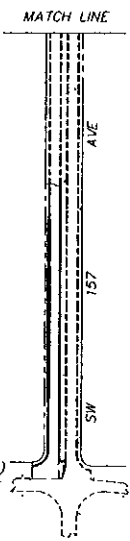
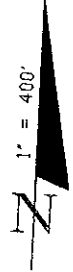
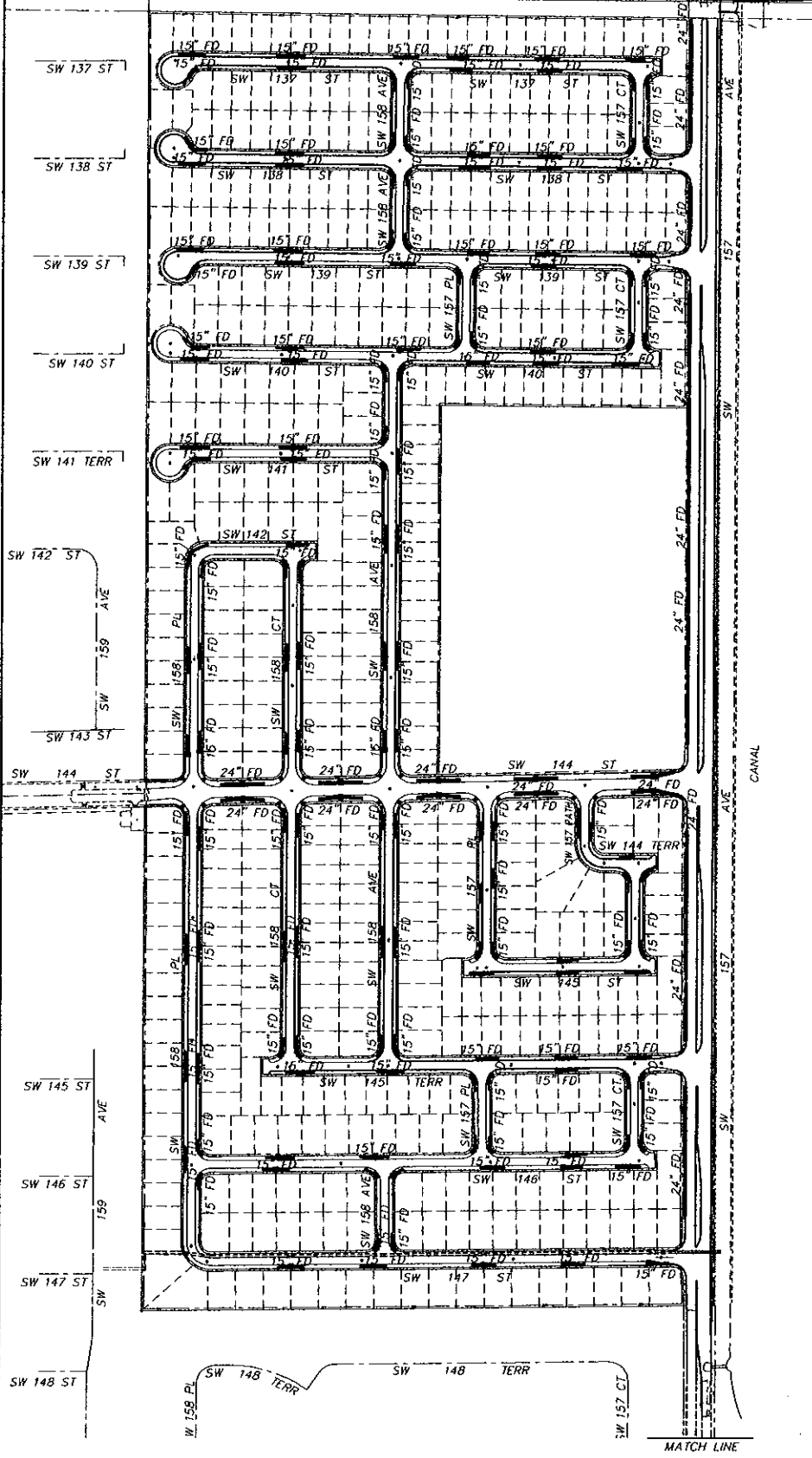


(CORAL REEF DRIVE)
S.W. 152nd STREET

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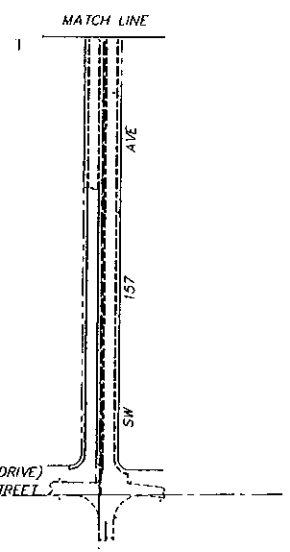
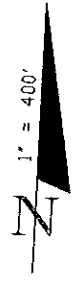
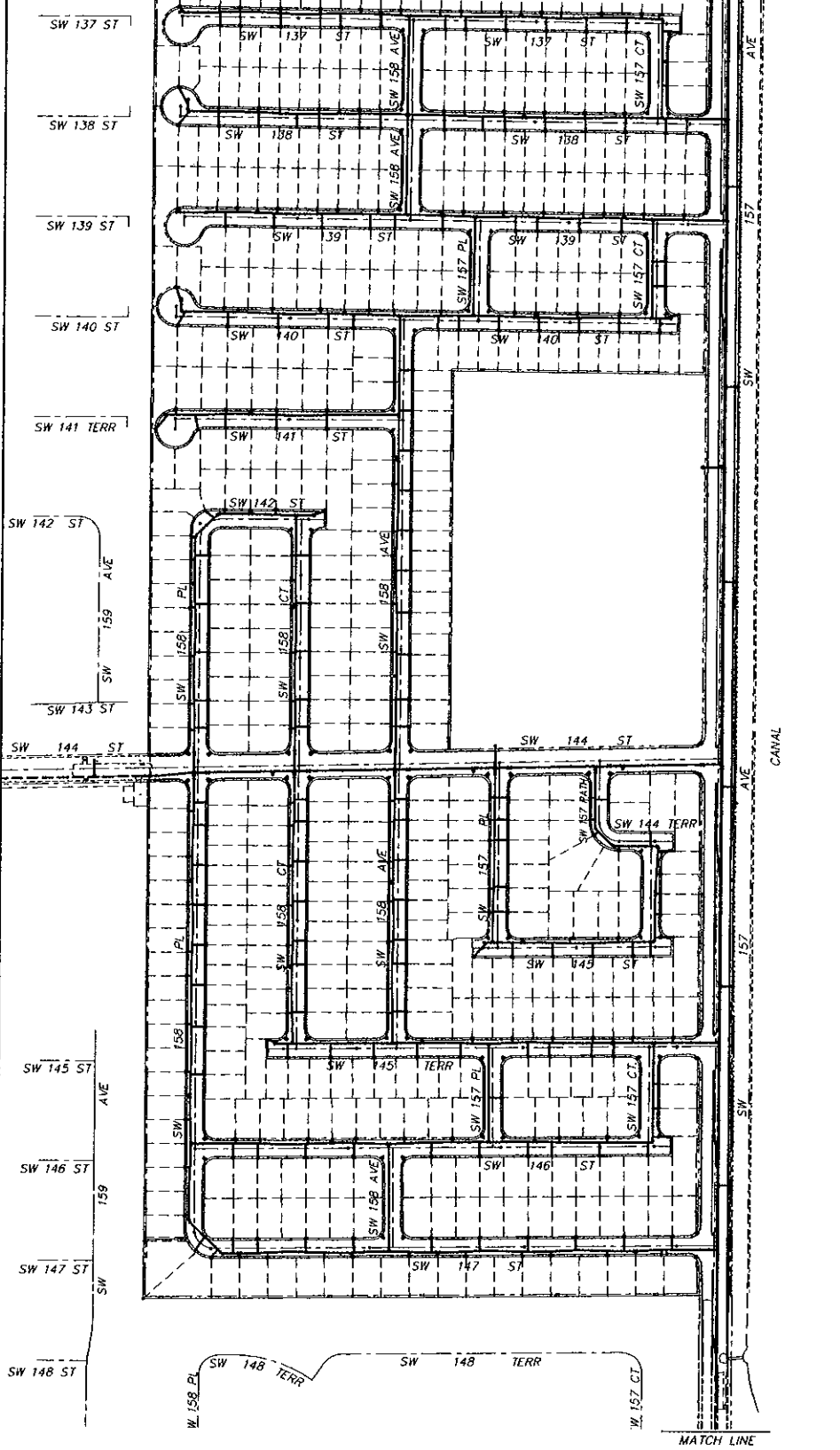
GENERAL SITE PLAN
EXHIBIT I



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**PAVING, GRADING, & DRAINAGE
EXHIBIT II**



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**WATER DISTRIBUTION SYSTEM
EXHIBIT III**

