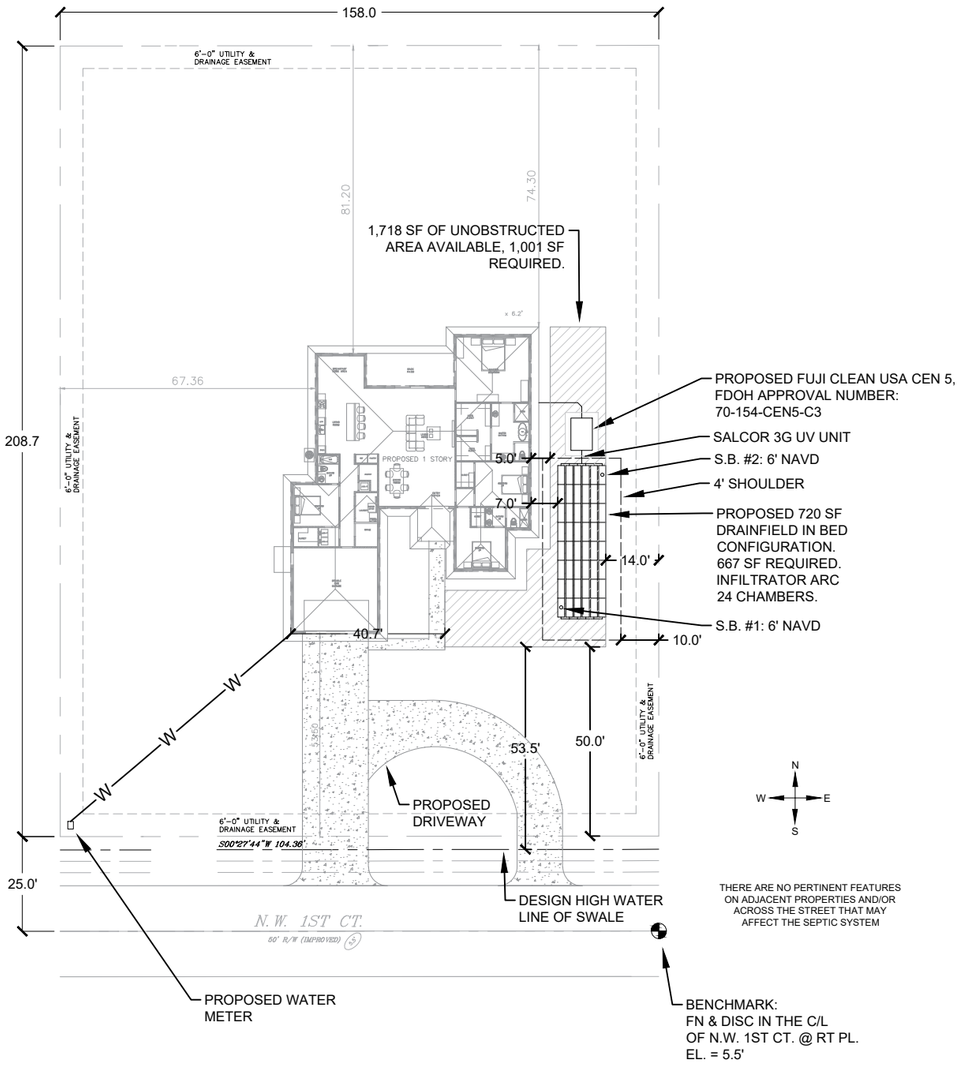
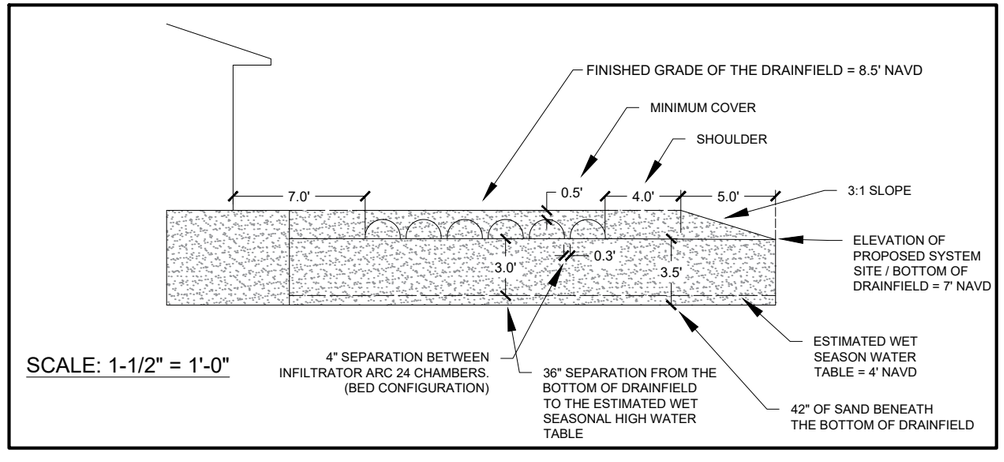
Department of Regulatory and Economic Resources
Environmental Resources Management (DERM)
701 NW 1st Court, 7th Floor
Miami, Florida 33136-3913
T 305-372-6600
miamidade.gov

EXAMPLE 1

SFR - TYPE 2 SYSTEM





DETERMINATION OF OSTDS TYPE AND STANDARDS PER SECTION 24-42.7

GROSS LOT SIZE = 36,926 FT^2 = 0.85 ACRES
LAND USE: SINGLE FAMILY RESIDENCE
GROSS BUILDING AREA = 3,658 FT^2
SEWAGE FLOW = 310 GPD
SEWAGE LOADING = 310 GPD / 0.85 ACRES = 365 GPD/ACRE

Y	N	CRITERIA FOR OSTDS TYPE SELECTION
✓		PROPERTY WILL BE SERVED BY PUBLIC WATER
✓		PROPERTY COMPLETELY OUTSIDE WELLFIELD PROTECTION AREA
✓		SURFACE WATER BODIES BEYOND 1000 FEET
✓		SEWAGE FLOW IS LESS THAN 500 GPD FOR SFR /DUPLEX
		SEWAGE FLOW IS LESS THAN 1000 GPD FOR MULTI-FAMILY/OTHER USES
✓		SEWAGE LOADING LESS THAN 500 GPD/ACRE

Y	N	OTHER CONSIDERATIONS FOR OSTDS APPROVAL
✓		SANITARY SEWERS NOT AVAILABLE, ABUTTING, OR OPERATIVE
✓		SYSTEM WILL SERVE ONLY ONE LOT
		PROPERTY LINES OVER 50 FEET FROM OSTDS FOR PROPERTIES SERVED BY A POTABLE WATER WELL

TYPE OF SYSTEM REQUIRED : TYPE 2 – SECONDARY TREATMENT STANDARDS
TOTAL NITROGEN TREATED BY: TN REDUCTION NOT REQUIRED FOR TYPE 2 SYSTEMS
TOTAL PHOSPHORUS TREATED BY: TP REDUCTION NOT REQUIRED FOR TYPE 2 SYSTEMS
FECAL COLIFORM TREATED BY: SALCOR 3G UV UNIT
SOURCE OF TREATMENT STANDARDS: FDEP TESTING PERFORMANCE DATA FOR PBTS

TREATMENT STANDARDS		
POLLUTANT	REQUIRED (mg/L) (ANNUAL AVERAGE)	PROPOSED (mg/L) (ANNUAL AVERAGE)
$CBOD_5$	20	5
TSS	20	6
TN	NA	NA
TP	NA	NA
FECAL COLIFORM (cfu/100ml)	200	70

OSTDS CALCULATIONS PER CHAPTER 62-6 F.A.C.

NET LOT SIZE = 32,975 FT^2 = 0.76 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
BUILDING AREA = 2,804 FT^2

SEWAGE FLOW
MAXIMUM SEWAGE LOADING ALLOWANCE = 2,500 GPD/ACRE
AUTHORIZED SEWAGE FLOW = 2,500 GPD/ACRE x 0.76 ACRES = 1,900 GPD
UNIT FLOW CRITERIA (PER TABLE 1): NUMBER OF BEDROOMS/BUILDING AREA
SEWAGE FLOW PER UNIT FLOW = 100 GPD PER BEDROOM OR PER 750 FT^2
SEWAGE FLOW = 400 GPD

TREATMENT TANK AND DRAINFIELD
PROPOSED SYSTEM: FUJI CLEAN CEN 5 + SALCOR 3G UV UNIT
MINIMUM REQUIRED TREATMENT CAPACITY = 400 GPD
DRAINFIELD CONFIGURATION: BED
DRAINFIELD TYPE: MOUND
DRAINFIELD MATERIAL: CHAMBERS
MAXIMUM SEWAGE LOADING RATE FOR THE PROPOSED DRAINFIELD = 0.6
DRAINFIELD SIZE = 400 GPD x 0.6 = 667 FT^2

SEPARATION BETWEEN THE SHWT AND BOTTOM OF THE DRAINFIELD
GRADE ELEVATION = 6.0 FT
SEASONAL HIGH WATER TABLE ELEVATION = 4.0 FT
ELEVATION AT THE BOTTOM OF THE DRAINFIELD = 7.0 FT
SEPARATION BETWEEN SHWT AND BOTTOM OF DRAINFIELD = 36 INCHES

OSTDS NOTES

- ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD)
- NO SURFACE WATER LOCATED WITHIN 1,000 FEET FROM THE OSTDS

REVISION DATE	BY

ABC ENGINEERING

CLIENT

DOE RESIDENCE

PROJECT

ONSITE SEWAGE PLAN
701 NW 1ST CT.,
MIAMI, FL 33136

	NAME	DATE
DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		

SCALE: 1" = 40'

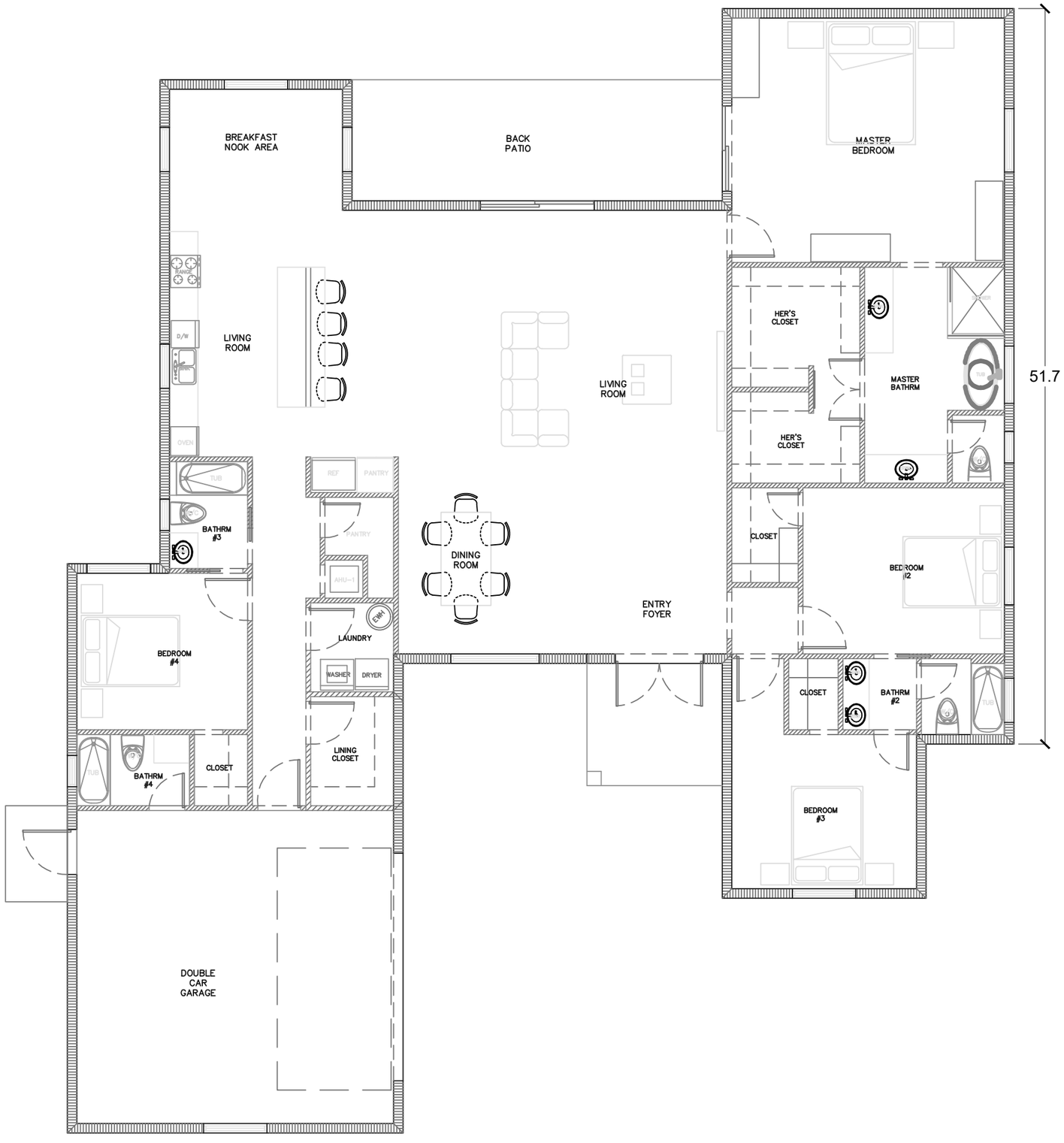
SEAL

C.S. HAMMATT LICENSE No 00000 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by C.S. Hammatt, PE, on 06/18/2021.
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

FL P.E. No. 00000 / CA#00000

SHEET 01 OF 01



SQUARE FOOTAGE

- BUILDING AREA: 2,804 SF
- TOTAL SQUARE FOOTAGE: 3,658 SF

SCALE: 1-1/2" = 1'-0"

REVISION DATE	BY

ABC ENGINEERING

CLIENT

DOE RESIDENCE

PROJECT

PROPOSED FLOOR PLAN
701 NW 1ST CT.,
MIAMI, FL 33136

	NAME	DATE
DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		

SCALE: 1" = 30'

SEAL

FL P.E. No. 00000 / CA#00000

SHEET 01 OF 01

CHARACTERISTICS OF THE PROJECT

Land Use = New Single-Family Residence

Gross lot size = 158 ft x (208.7+25) ft = 36,926 ft^2 = 0.85 acres

Net lot size = 158 ft x 208.7 ft = 32,975 ft^2 = 0.76 acres

Building area as per 62-6 FAC = 2,804 ft^2

Total building square footage = 3,658 ft^2

Number of bedrooms = 4

Property connected to public water

No sewers within feasible distance

Not located within a wellfield protection area

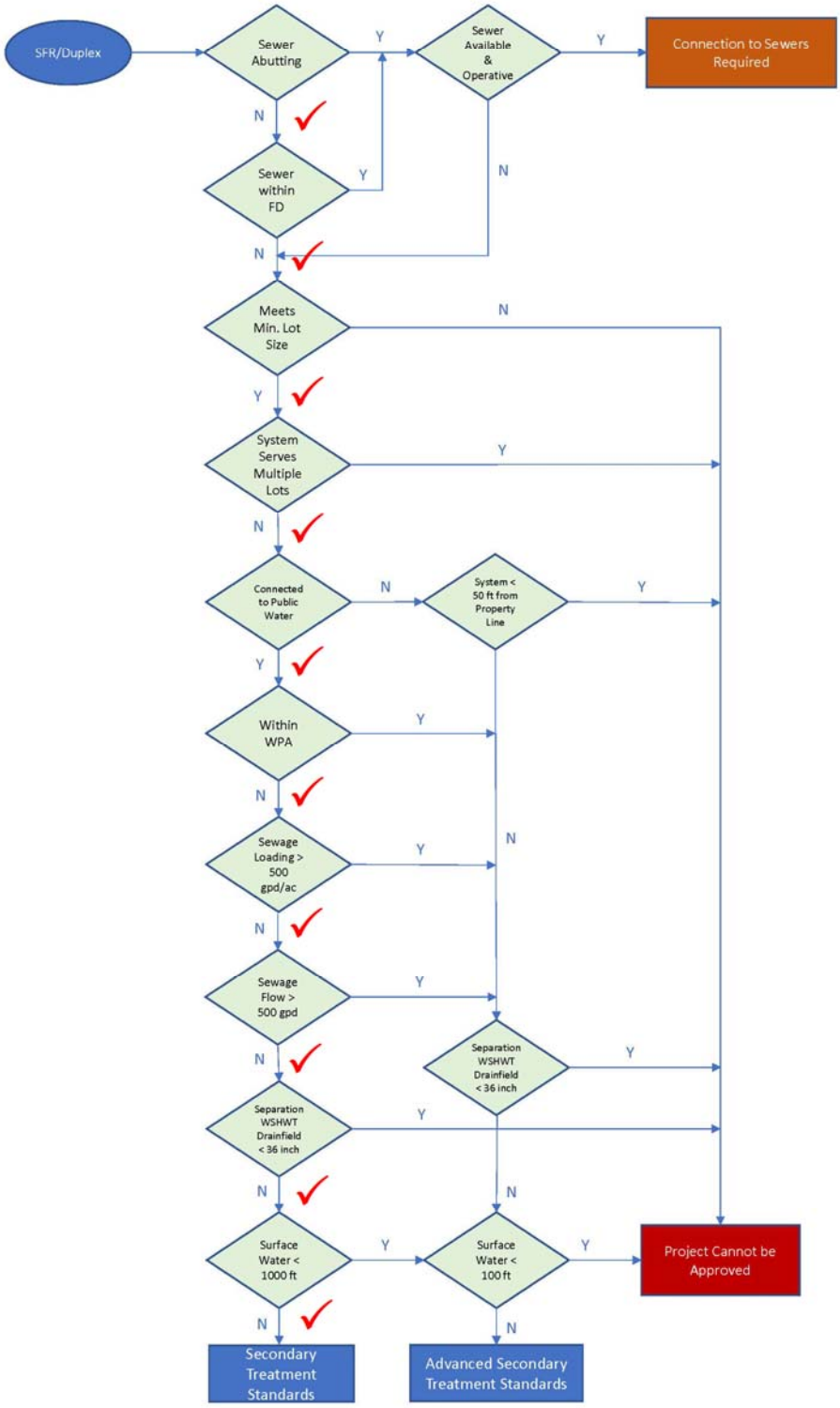
DETERMINATION OF THE TYPE OF SYSTEM REQUIRED

Sewage flow (per Ch. 24) = 310 gpd (< 500 gpd)

Sewage loading = 310 gpd/0.85 acres = 365 gpd/acre (< 500 gpd/acre)

- Lot size > 15,000 ft^2
- Served by public water
- Not located within a wellfield protection area
- No water bodies within 1000 ft
- Sewage flow < 500 GPD
- Sewage loading < 500 GPD/acre
- Separation of bottom of drainfield with SHWT ≥ 36 inches

OSTDS FOR SINGLE A FAMILY RESIDENCE OR DUPLEX



Based on the above criteria, a Type 2 (Secondary Treatment) system is required, that complies with the following parameters.

POLLUTANT (mg/L) (Annual average)	Secondary Treatment Standards (62-6 FAC)
$CBOD_5$	20
TSS	20
TN	
TP	
Fecal coliform (cfu/100ml)	200

SYSTEM SIZING BASED ON CH. 62-6 FAC

Sewage flow (4 bedrooms) = 400 gpd

Sewage flow (2,804 ft^2) = 400 gpd

Required system capacity = 400 gpd

Drainfield configuration = Bed

Maximum sewage loading rate = 0.6 gal/ft^2day

Minimum drainfield size = 400 gpd / 0.6 gal/ft^2day = 667 ft^2

PROPOSED SYTEM

FUJI Clean CEN 5 with Salcor 3G UV Unit

According to the FDEP Testing Performance Data for PBTS, the proposed system, complies with Secondary Treatment Standards.

POLLUTANT (mg/L) (Annual average)	Proposed Treatment
$CBOD_5$	5
TSS	6
TN	NA
TP	NA
Fecal coliform (cfu/100ml)	70

NOTE: The Salcor 3G UV Unit is an innovative system and is not yet approved by FDEP. For State approval, the project will need to be reviewed by FDEP (Tallahassee).

DERM-OSTDS PLAN REVIEW CHECKLIST

Process # C2022123456

Accepted	Not Accepted	N/A	REVIEW ITEM/PARAMETER
			1. General
✓			Electronic plans being submitted are legible and include Facility name, address (include unit/bay).
✓			Architectural, Civil, and Plumbing drawings match (where applicable)
✓			Drawings indicate Type of Establishment, i.e. full service restaurant, cafeteria, office, multi-family residence, single family residence, duplex, etc.
✓			Drawings indicate all the parameters to estimate the sewage flow according to Chapter 24 and Chapter 62-2 of the F.A.C., i.e. area, number of seats, number of bathrooms, number of students, practicioners, etc.
✓			Drawings clearly show existing areas and proposed modifications where applicable.
		✓	Sewer line abutting.
		✓	Sewer line within feasible distance.
		✓	Property located within a wellfield protection area.
✓			Seasonal high water table elevation using the North American Vertical Datum of 1988 (NAVD 88).
			2. Site Plan
✓			Signeded/sealed/dated by a Professional Engineer registered in the State of Flodida.
✓			Drawn to scale, properly labeled, and with dimensions.
✓			Summary boxes as per guidelines.
✓			Gross and net lot areas, in square feet and acres.
✓			Location of meter and water line from meter to building if connected to public water.
		✓	Location of potable water well and water line from well to building if served by a potable water well.
✓			Proposed system clearly depicted, including the type of system, flow, drainfield configuration and size.
✓			FDEP or third party certification for the proposed system (ANSI/NSF).
✓			Characteristics of the system effluent based on third party annual average testing results and level of treatment design.
✓			Grade elevation (based on survey) at proposed location of the drainfield using the North American Vertical Datum of 1988 (NAVD 88).
✓			Cross section of the drainfield indicating a separation of at least 36" between bottom of the drainfield and seasonal high water table.
✓			Flow calculations based on Chapter 24 of the Miami-Dade County Code.
✓			Flow calculations based on Chapter 62-6 Florida Administrative Code.
✓			Sewage flow (per Ch 24) < 500 gpd for SFR/Duplex or < 1000 gpd for Commercial.
✓			Sewage loading (per Ch 24) < 500 gpd/acre.
		✓	50 ft setback with property lines if property served by a potable water well.
		✓	Meets minimum 100 ft setback with private potable water wells or 200 ft with public water systems (PWS).
		✓	Meets minimum setback of 100 ft with surface water bodies.
✓			No surface water bodies located within 1,000 ft from closest property line.
✓			Drainfield calculations based on Chapter 62-6 flows.
			3. Floor Plan
✓			Drawn to scale, properly labeled, and with dimensions.
✓			Building(s) total gross area calculation including garage, storage, terrace, etc. For sewage loading and feasible distance calculations.
✓			Building area for septic system flow calculations as per Ch. 62-6 FAC.

Accepted	Not Accepted	N/A	REVIEW ITEM/PARAMETER
4. Telemetry for multi-family residences (other than SFR or duplex) and other uses			
		✓	Provides operational status of system at a frequency of no less than 15 minutes. At a minimum, it shall include:
		✓	a) Power
		✓	b) Signal and connectivity
		✓	c) Back-up batery
		✓	d) Mechanical equipment
		✓	e) Liquid levels
		✓	f) Warnings
		✓	g) Alarms
5. Additional/Supporting documentation			
✓			Boundary survey with elevations
✓			FDEP data or third party testing results
✓			FDEP application (FDEP form 4015)
✓			Specifications for level of treatment
✓			Documentation for each treatment component of the proposed system (e.g. disinfection, phosphorus removal, etc.

DETERMINATION OF OSTDS TYPE AND STANDARDS PER SECTION 24-42.7

GROSS LOT SIZE = 36,926 FT^2 = 0.85 ACRES
LAND USE: SINGLE FAMILY RESIDENCE
GROSS BUILDING AREA = 3,658 FT^2
SEWAGE FLOW = 310 GPD
SEWAGE LOADING = 310 GPD / 0.85 ACRES = 365 GPD/ACRE

Y	N	CRITERIA FOR OSTDS TYPE SELECTION
✓		PROPERTY WILL BE SERVED BY PUBLIC WATER
✓		PROPERTY COMPLETELY OUTSIDE WELLFIELD PROTECTION AREA
✓		SURFACE WATER BODIES BEYOND 1000 FEET
✓		SEWAGE FLOW IS LESS THAN 500 GPD FOR SFR /DUPLEX
		SEWAGE FLOW IS LESS THAN 1000 GPD FOR MULTI-FAMILY/OTHER USES
✓		SEWAGE LOADING LESS THAN 500 GPD/ACRE

Y	N	OTHER CONSIDERATIONS FOR OSTDS APPROVAL
✓		SANITARY SEWERS NOT AVAILABLE, ABUTTING, OR OPERATIVE
✓		SYSTEM WILL SERVE ONLY ONE LOT
		PROPERTY LINES OVER 50 FEET FROM OSTDS FOR PROPERTIES SERVED BY A POTABLE WATER WELL

TYPE OF SYSTEM REQUIRED : TYPE 2 – SECONDARY TREATMENT STANDARDS
TOTAL NITROGEN TREATED BY: TN REDUCTION NOT REQUIRED FOR TYPE 2 SYSTEMS
TOTAL PHOSPHORUS TREATED BY: TP REDUCTION NOT REQUIRED FOR TYPE 2 SYSTEMS
FECAL COLIFORM TREATED BY: SALCOR 3G UV UNIT
SOURCE OF TREATMENT STANDARDS: FDEP TESTING PERFORMANCE DATA FOR PBTS

TREATMENT STANDARDS		
POLLUTANT	REQUIRED (mg/L) (ANNUAL AVERAGE)	PROPOSED (mg/L) (ANNUAL AVERAGE)
$CBOD_5$	20	5
TSS	20	6
TN	NA	NA
TP	NA	NA
FECAL COLIFORM (cfu/100ml)	200	70

OSTDS CALCULATIONS PER CHAPTER 62-6 F.A.C.

NET LOT SIZE = 32,975 FT^2 = 0.76 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
BUILDING AREA = 2,804 FT^2

SEWAGE FLOW
MAXIMUM SEWAGE LOADING ALLOWANCE = 2,500 GPD/ACRE
AUTHORIZED SEWAGE FLOW = 2,500 GPD/ACRE x 0.76 ACRES = 1,900 GPD
UNIT FLOW CRITERIA (PER TABLE 1): NUMBER OF BEDROOMS/BUILDING AREA
SEWAGE FLOW PER UNIT FLOW = 100 GPD PER BEDROOM OR PER 750 FT^2
SEWAGE FLOW = 400 GPD

TREATMENT TANK AND DRAINFIELD
PROPOSED SYSTEM: FUJI CLEAN CEN 5 + SALCOR 3G UV UNIT
MINIMUM REQUIRED TREATMENT CAPACITY = 400 GPD
DRAINFIELD CONFIGURATION: BED
DRAINFIELD TYPE: MOUND
DRAINFIELD MATERIAL: CHAMBERS
MAXIMUM SEWAGE LOADING RATE FOR THE PROPOSED DRAINFIELD = 0.6
DRAINFIELD SIZE = 400 GPD x 0.6 = 667 FT^2

SEPARATION BETWEEN THE SHWT AND BOTTOM OF THE DRAINFIELD
GRADE ELEVATION = 6.0 FT
SEASONAL HIGH WATER TABLE ELEVATION = 4.0 FT
ELEVATION AT THE BOTTOM OF THE DRAINFIELD = 7.0 FT
SEPARATION BETWEEN SHWT AND BOTTOM OF DRAINFIELD = 36 INCHES

EXAMPLE 2

SFR - TYPE 3 SYSTEM

NON-COMPLIANT WITH MINIMUM LOT SIZE

OSTDS CALCULATIONS PER CHAPTER 62-6 F.A.C.

NET LOT SIZE = 12,000 FT² = 0.28 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
BUILDING AREA = 2,804 FT²

SEWAGE FLOW
MAXIMUM SEWAGE LOADING ALLOWANCE = 2,500 GPD/ACRE (1,500 GPD/ACRE OR 2,500 GPD/ACRE)
AUTHORIZED SEWAGE FLOW = 2,500 GPD/ACRE x 0.28 ACRES = 689 GPD
UNIT FLOW CRITERIA (PER TABLE 1) : NUMBER OF BEDROOMS/BUILDING AREA
SEWAGE FLOW PER UNIT FLOW = 100 GPD PER BEDROOM OR PER 750 FT2 OF BUILDING AREA
TOTAL SEWAGE FLOW = 400 GPD

TREATMENT TANK AND DRAINFIELD
PROPOSED SYSTEM : MICROFAST 0.5
MINIMUM REQUIRED TREATMENT CAPACITY = 400 GPD
DRAINFIELD CONFIGURATION : BED
DRAINFIELD TYPE = MOUND
DRAINFIELD MATERIAL : CHAMBERS
MAXIMUM SEWAGE LOADING RATE FOR THE PROPOSED DRAINFIELD = 0.6 GAL/FT²DAY
DRAINFIELD SIZE = 400 GPD / 0.6 GAL/FT²DAY = 667 FT²

SEPARATION BETWEEN THE SHWT AND BOTTOM OF THE DRAINFIELD (ELEVATIONS IN NAVD 88)
GRADE ELEVATION = 6.0 FT
SEASONAL HIGH WATER TABLE ELEVATION = 4.0 FT
ELEVATION AT THE BOTTOM OF THE DRAINFIELD = 7.0 FT
SEPARATION BETWEEN SHWT AND BOTTOM OF DRAINFIELD = 36 INCHES

DETERMINATION OF OSTDS TYPE AND STANDARDS PER SECTION 24-42.7

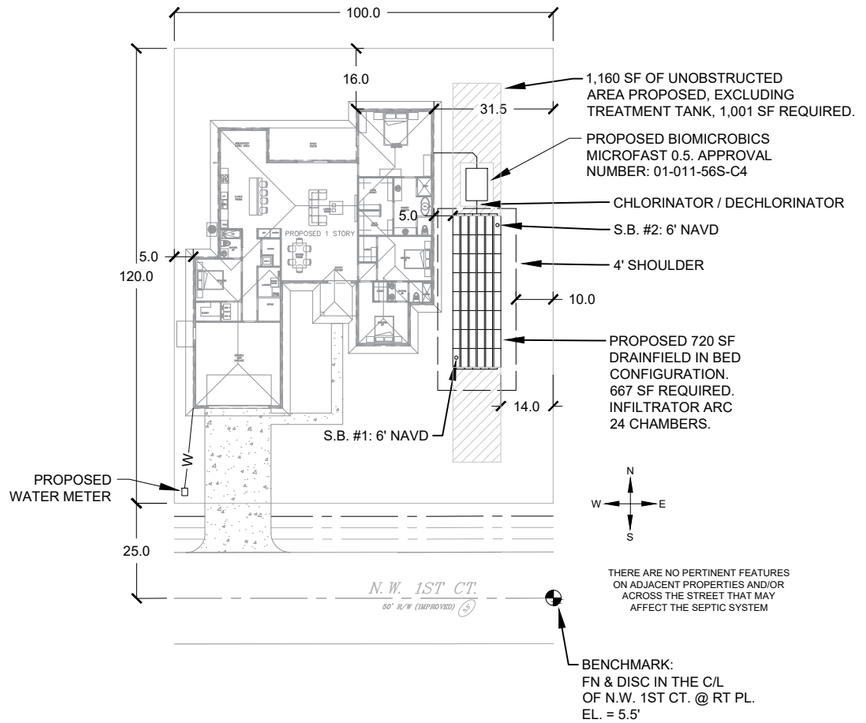
GROSS LOT SIZE = 14,500 FT² = 0.33 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
GROSS BUILDING AREA = 3,658 FT²
SEWAGE FLOW = 310 GPD
SEWAGE LOADING = 310 GPD / 0.33 ACRES = 939 GPD/ACRE

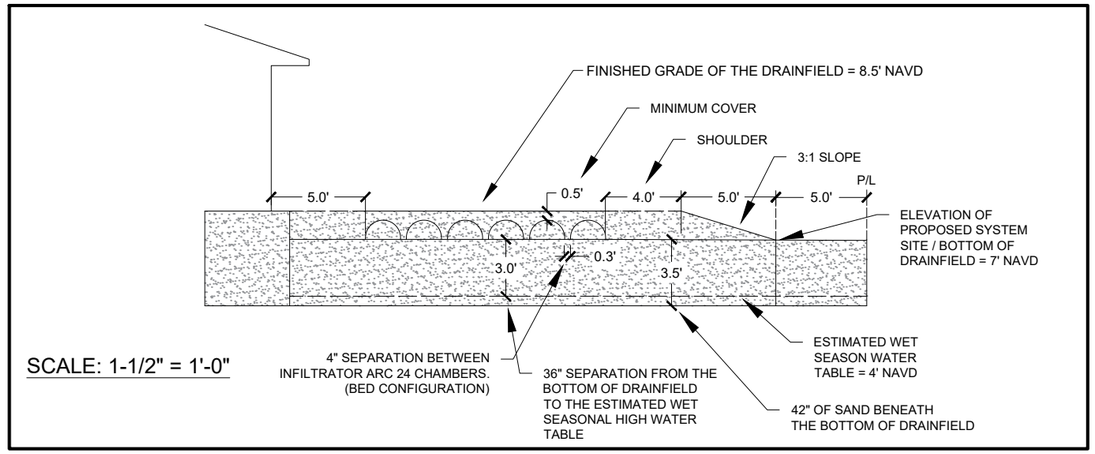
Y	N	CRITERIA FOR OSTDS TYPE SELECTION
✓		PROPERTY WILL BE SERVED BY PUBLIC WATER
✓		PROPERTY COMPLETELY OUTSIDE WELLFIELD PROTECTION AREA
✓		SURFACE WATER BODIES BEYOND 1000 FEET
✓		SEWAGE FLOW IS LESS THAN 500 GPD FOR SFR /DUPLEX
		SEWAGE FLOW IS LESS THAN 1000 GPD FOR MULTI-FAMILY/OTHER USES
	✓	SEWAGE LOADING LESS THAN 500 GPD/ACRE

Y	N	OTHER CONSIDERATIONS FOR OSTDS APPROVAL
✓		SANITARY SEWERS NOT AVAILABLE, ABUTTING, OR OPERATIVE
✓		SYSTEM WILL SERVE ONLY ONE LOT
		PROPERTY LINES OVER 50 FEET FROM OSTDS FOR PROPERTIES SERVED BY A POTABLE WATER WELL

TYPE OF SYSTEM REQUIRED : TYPE 3 - ADVANCED SECONDARY TREATMENT STANDARDS
TOTAL NITROGEN TREATED BY : MICROFAST 0.5
TOTAL PHOSPHORUS TREATED BY : MICROFAST 0.5
FECAL COLIFORM TREATED BY : CHLORINATION/DECLHORINATION
SOURCE OF TREATMENT STANDARDS : FDEP TESTING PERFORMANCE DATA FOR PBTS

TREATMENT STANDARDS		
POLLUTANT	REQUIRED (mg/L) (ANNUAL AVERAGE)	PROPOSED (mg/L) (ANNUAL AVERAGE)
$CBOD_5$	9.7	3
TSS	9.7	1.4
TN	29.1	17.40
TP	9.7	5.38
FECAL COLIFORM (cfu/100ml)	194	<100





OSTDS NOTES

- ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD)
- NO SURFACE WATER LOCATED WITHIN 1,000 FEET FROM THE OSTDS

REVISION DATE	BY

ABC ENGINEERING

CLIENT

DOE RESIDENCE

PROJECT

ONSITE SEWAGE PLAN
701 NW 1ST CT.,
MIAMI, FL 33136

	NAME	DATE
DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		

SCALE: 1" = 40'

SEAL

FL P.E. No. 00000 / CA#00000

SHEET 01 OF 01

CHARACTERISTICS OF THE PROJECT

Land Use = New Single-Family Residence

Gross lot size = 100 ft x (120+25) ft = 14,500 ft^2 = 0.33 acres

Net lot size = 100 ft x 120 ft = 12,000 ft^2 = 0.28 acres

Building area as per 62-6 FAC = 2,804 ft^2

Total building square footage = 3,658 ft^2

Number of bedrooms = 4

Property connected to public water

No sewers within feasible distance

Not located within a wellfield protection area

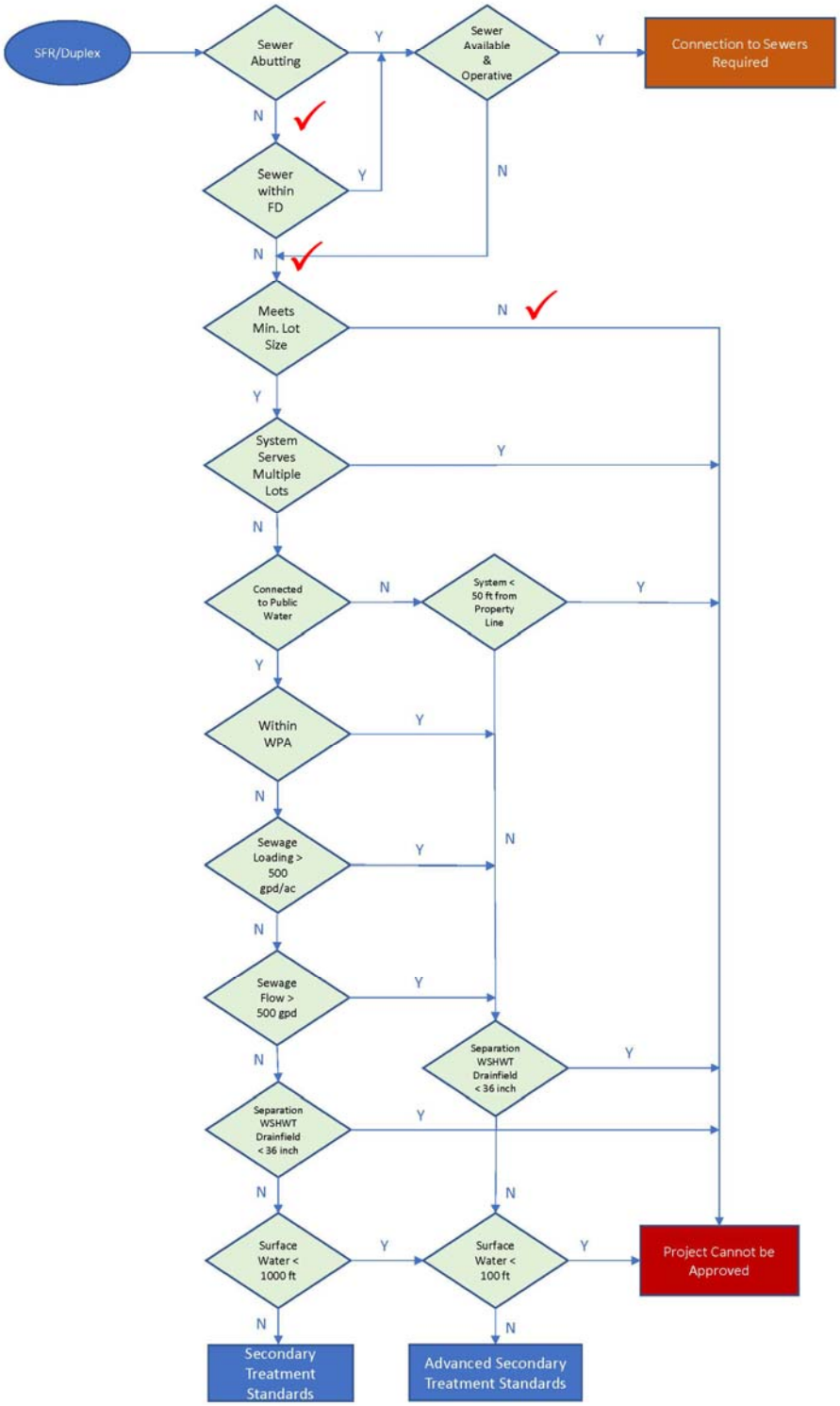
DETERMINATION OF THE TYPE OF SYSTEM REQUIRED

Sewage flow (per Ch. 24) = 310 gpd (< 500 gpd)

Sewage loading = 310 gpd/0.33 acres = 939 gpd/acre (> 500 gpd/acre)

- Lot size < 15,000 ft^2
- Served by public water
- Not located within a wellfield protection area
- No water bodies within 1000 ft
- Sewage flow < 500 GPD
- Sewage loading > 500 GPD/acre
- Separation of bottom of drainfield with SHWT ≥ 36 inches

OSTDS FOR SINGLE A FAMILY RESIDENCE OR DUPLEX



Based on the above criteria, the project is not approvable administratively because it does not meet the minimum lot size. However, if the applicant were to apply for a variance to the Environmental Quality Control Board, the following would be considered by DERM staff:

A Type 3 (Advanced Secondary Treatment) system is required, that complies with the following parameters.

POLLUTANT (mg/L) (Annual average)	Secondary Treatment Standards (62-6 FAC)
$CBOD_5$	10
TSS	10
TN	50% reduction
TP	
Fecal coliform (cfu/100ml)	200

These requirements, however, are for a property that meets with the minimum lot size requirements. For our particular case, we need to adjust the standards to take into account the reduced lot size.

LOT SIZE ADJUSTMENT

A simple ratio between the proposed lot size and the minimum required lot size can be used to adjust the parameters.

$$\frac{Proposed\ lot\ size}{Compliant\ lot\ size} = \frac{14{,}500\ sq\ ft}{15{,}000\ sq\ ft} = 0.97$$

POLLUTANT (mg/L) (Annual average)	Adjustment	Adjusted Secondary Treatment Standards
$CBOD_5$	10 x 0.97	9.7
TSS	10 x 0.97	9.7
TN	50% / 0.97	51.5% reduction
TP	10 x 0.97	9.7
Fecal coliform (cfu/100ml)	200 x 0.97	194

PROPOSED SYTEM

Biomicrobics MicroFast 0.5

According to the FDEP Testing Performance Data for PBTS, the proposed system complies with Secondary Treatment Standards.

POLLUTANT (mg/L) (Annual average)	Proposed Treatment
$CBOD_5$	3
TSS	1.4
TN	71% reduction
TP	5.38
Fecal coliform (cfu/100ml)	< 100

SYSTEM SIZING BASED ON CH. 62-6 FAC

Sewage flow (4 bedrooms) = 400 gpd

Sewage flow (2,804 ft^2) = 400 gpd

Required system capacity = 400 gpd

Drainfield configuration = Bed

Maximum sewage loading rate = 0.6 gal/ft^2day

Minimum drainfield size = 400 gpd / 0.6 gal/ft^2day = 667 ft^2

DETERMINATION OF OSTDS TYPE AND STANDARDS PER SECTION 24-42.7

GROSS LOT SIZE = 14,500 FT^2 = 0.33 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
GROSS BUILDING AREA = 3,658 FT^2
SEWAGE FLOW = 310 GPD
SEWAGE LOADING = 310 GPD / 0.33 ACRES = 939 GPD/ACRE

Y	N	CRITERIA FOR OSTDS TYPE SELECTION
✓		PROPERTY WILL BE SERVED BY PUBLIC WATER
✓		PROPERTY COMPLETELY OUTSIDE WELLFIELD PROTECTION AREA
✓		SURFACE WATER BODIES BEYOND 1000 FEET
✓		SEWAGE FLOW IS LESS THAN 500 GPD FOR SFR /DUPLEX
		SEWAGE FLOW IS LESS THAN 1000 GPD FOR MULTI-FAMILY/OTHER USES
	✓	SEWAGE LOADING LESS THAN 500 GPD/ACRE

Y	N	OTHER CONSIDERATIONS FOR OSTDS APPROVAL
✓		SANITARY SEWERS NOT AVAILABLE, ABUTTING, OR OPERATIVE
✓		SYSTEM WILL SERVE ONLY ONE LOT
		PROPERTY LINES OVER 50 FEET FROM OSTDS FOR PROPERTIES SERVED BY A POTABLE WATER WELL

TYPE OF SYSTEM REQUIRED : TYPE 3 - ADVANCED SECONDARY TREATMENT STANDARDS
TOTAL NITROGEN TREATED BY : MICROFAST 0.5
TOTAL PHOSPHORUS TREATED BY : MICROFAST 0.5
FECAL COLIFORM TREATED BY : CHLORINATION/DECLHORINATION
SOURCE OF TREATMENT STANDARDS : FDEP TESTING PERFORMANCE DATA FOR PBTS

TREATMENT STANDARDS		
POLLUTANT	REQUIRED (mg/L) (ANNUAL AVERAGE)	PROPOSED (mg/L) (ANNUAL AVERAGE)
$CBOD_5$	9.7	3
TSS	9.7	1.4
TN	51.5 % reduction	71 % reduction
TP	9.7	5.38
FECAL COLIFORM (cfu/100ml)	194	<100

OSTDS CALCULATIONS PER CHAPTER 62-6 F.A.C.

NET LOT SIZE = 12,000 FT^2 = 0.28 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
BUILDING AREA = 2,804 FT^2

SEWAGE FLOW

MAXIMUM SEWAGE LOADING ALLOWANCE = 2,500 GPD/ACRE (1,500 GPD/ACRE OR 2,500 GPD/ACRE)
AUTHORIZED SEWAGE FLOW = 2,500 GPD/ACRE x 0.28 ACRES = 689 GPD
UNIT FLOW CRITERIA (PER TABLE 1) : NUMBER OF BEDROOMS/BUILDING AREA
SEWAGE FLOW PER UNIT FLOW = 100 GPD PER BEDROOM OR PER 750 FT2 OF BUILDING AREA
TOTAL SEWAGE FLOW = 400 GPD

TREATMENT TANK AND DRAINFIELD

PROPOSED SYSTEM : MICROFAST 0.5
MINIMUM REQUIRED TREATMENT CAPACITY = 400 GPD
DRAINFIELD CONFIGURATION : BED
DRAINFIELD TYPE = MOUND
DRAINFIELD MATERIAL : CHAMBERS
MAXIMUM SEWAGE LOADING RATE FOR THE PROPOSED DRAINFIELD = 0.6 GAL/FT^2DAY
DRAINFIELD SIZE = 400 GPD / 0.6 GAL/FT^2DAY = 667 FT^2

SEPARATION BETWEEN THE SHWT AND BOTTOM OF THE DRAINFIELD (ELEVATIONS IN NAVD 88)

GRADE ELEVATION = 6.0 FT
SEASONAL HIGH WATER TABLE ELEVATION = 4.0 FT
ELEVATION AT THE BOTTOM OF THE DRAINFIELD = 7.0 FT
SEPARATION BETWEEN SHWT AND BOTTOM OF DRAINFIELD = 36 INCHES

EXAMPLE 3

SFR - TYPE 3 SYSTEM

DRAINFIELD REDUCTION

DETERMINATION OF OSTDS TYPE AND STANDARDS PER SECTION 24-42.7

GROSS LOT SIZE = 15,000 FT² = 0.34 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
GROSS BUILDING AREA = 3,658 FT²
SEWAGE FLOW = 310 GPD
SEWAGE LOADING = 310 GPD / 0.34 ACRES = 912 GPD/ACRE

Y	N	CRITERIA FOR OSTDS TYPE SELECTION
✓		PROPERTY WILL BE SERVED BY PUBLIC WATER
✓		PROPERTY COMPLETELY OUTSIDE WELLFIELD PROTECTION AREA
✓		SURFACE WATER BODIES BEYOND 1000 FEET
✓		SEWAGE FLOW IS LESS THAN 500 GPD FOR SFR /DUPLEX
		SEWAGE FLOW IS LESS THAN 1000 GPD FOR MULTI-FAMILY/OTHER USES
	✓	SEWAGE LOADING LESS THAN 500 GPD/ACRE

Y	N	OTHER CONSIDERATIONS FOR OSTDS APPROVAL
✓		SANITARY SEWERS NOT AVAILABLE, ABUTTING, OR OPERATIVE
✓		SYSTEM WILL SERVE ONLY ONE LOT
		PROPERTY LINES OVER 50 FEET FROM OSTDS FOR PROPERTIES SERVED BY A POTABLE WATER WELL

TYPE OF SYSTEM REQUIRED : TYPE 3 - ADVANCED SECONDARY TREATMENT STANDARDS
TOTAL NITROGEN TREATED BY : MICROFAST 0.5
TOTAL PHOSPHORUS TREATED BY : MICROFAST 0.5
FECAL COLIFORM TREATED BY : CHLORINATION/DECLHORINATION
SOURCE OF TREATMENT STANDARDS : FDEP TESTING PERFORMANCE DATA FOR PBTS

TREATMENT STANDARDS		
POLLUTANT	REQUIRED (mg/L) (ANNUAL AVERAGE)	PROPOSED (mg/L) (ANNUAL AVERAGE)
$CBOD_5$	6.40	3
TSS	6.40	1.4
TN	26.40	17.40
TP	8.80	5.38
FECAL COLIFORM (cfu/100ml)	120.80	<100

OSTDS CALCULATIONS PER CHAPTER 62-6 F.A.C.

NET LOT SIZE = 12,500 FT² = 0.29 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
BUILDING AREA = 2,804 FT²

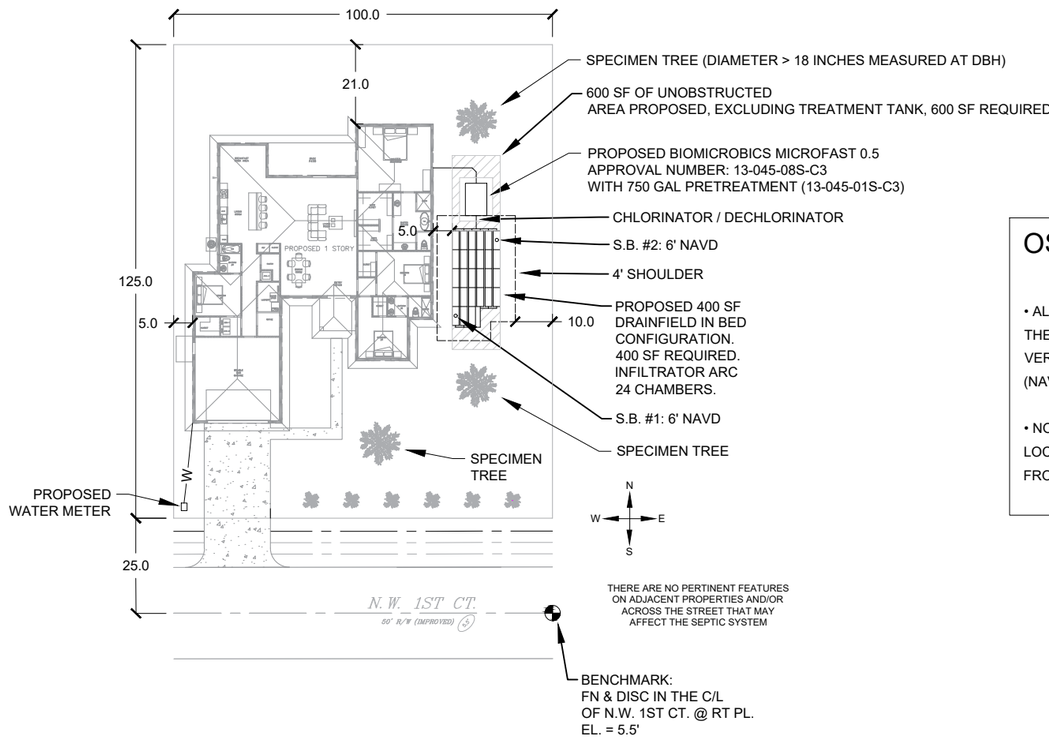
SEWAGE FLOW
MAXIMUM SEWAGE LOADING ALLOWANCE = 2,500 GPD/ACRE (1,500 GPD/ACRE OR 2,500 GPD/ACRE)
AUTHORIZED SEWAGE FLOW = 2,500 GPD/ACRE x 0.29 ACRES = 725 GPD
UNIT FLOW CRITERIA (PER TABLE 1) : NUMBER OF BEDROOMS/BUILDING AREA
SEWAGE FLOW PER UNIT FLOW = 100 GPD PER BEDROOM OR PER 750 FT2 OF BUILDING AREA
TOTAL SEWAGE FLOW = 400 GPD

TREATMENT TANK AND DRAINFIELD
PROPOSED SYSTEM : MICROFAST 0.5
MINIMUM REQUIRED TREATMENT CAPACITY = 400 GPD
DRAINFIELD CONFIGURATION : BED (APPLYING 40% DRAINFIELD REDUCTION)
DRAINFIELD TYPE = MOUND
DRAINFIELD MATERIAL : CHAMBERS
MAXIMUM SEWAGE LOADING RATE FOR THE PROPOSED DRAINFIELD = 0.6 GAL/FT²DAY
DRAINFIELD SIZE = 400 GPD / 0.6 GAL/FT²DAY = 667x.6 = 400 FT²

SEPARATION BETWEEN THE SHWT AND BOTTOM OF THE DRAINFIELD (ELEVATIONS IN NAVD 88)
GRADE ELEVATION = 6.0 FT
SEASONAL HIGH WATER TABLE ELEVATION = 4.0 FT
ELEVATION AT THE BOTTOM OF THE DRAINFIELD = 7.0 FT
SEPARATION BETWEEN SHWT AND BOTTOM OF DRAINFIELD = 36 INCHES

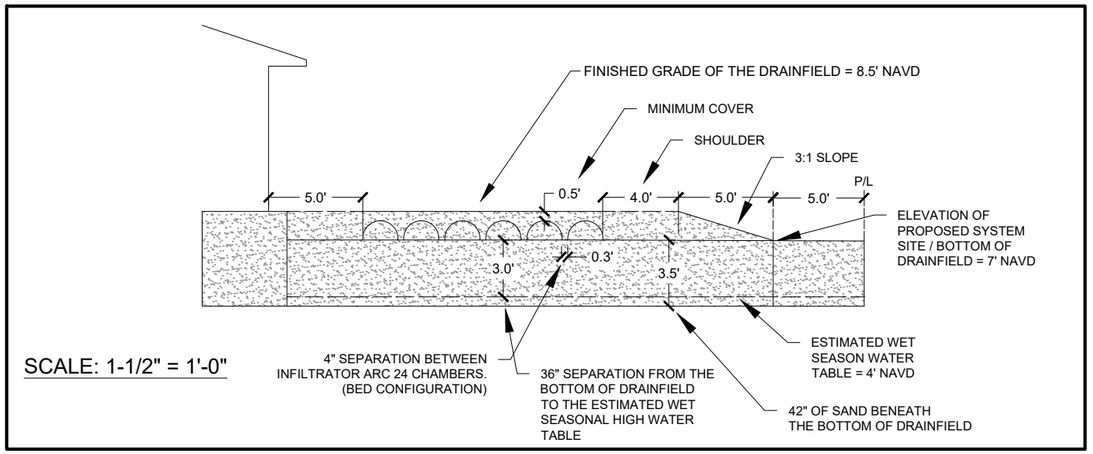
ADJUSTMENT OF TREATMENT STANDARDS FOR DRAINFIELD REDUCTION

POLLUTANT (mg/L) (annual average)	Design Influent Value	Advanced Secondary Treatment Standards (62-6 FAC)	Advanced Secondary Treatment Standards With Soil Treatment (62-6 FAC)	% of Effluent Treated by Soil	% of Effluent Treated by Soil with 40% Drainfield Reduction	Advanced Secondary Treatment Standards With Soil Treatment with Drainfiedl Reduction	Soil Treatment Deficiency due to 40% Drainfield Reduction	Adjusted Treatment Standards to Account for 40 % Drainfield Reduction
$CBOD_5$	200	10	1	90%	54%	4.6	3.60	6.40
TSS	200	10	1	90%	54%	4.6	3.60	6.40
TN	60	30	21	30%	18%	24.6	3.60	26.40
TP	10	10	7	30%	18%	8.2	1.20	8.80
FECAL COLIFORM (cfu/100ml)	2.00E+06	200	2	99%	59%	81.2	79.20	120.80



OSTDS NOTES

- ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD)
- NO SURFACE WATER LOCATED WITHIN 1,000 FEET FROM THE OSTDS



REVISION DATE	BY

ABC ENGINEERING

CLIENT

DOE RESIDENCE

PROJECT

ONSITE SEWAGE PLAN
701 NW 1ST CT.,
MIAMI, FL 33136

	NAME	DATE
DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		

SCALE: 1" = 40'

SEAL

FL P.E. No. 00000 / CA#00000

SHEET 01 OF 01

CHARACTERISTICS OF THE PROJECT

Land Use = New Single-Family Residence

Gross lot size = 100 ft x (125+25) ft = 15,000 ft^2 = 0.34 acres

Net lot size = 100 ft x 125 ft = 12,500 ft^2 = 0.29 acres

Building area as per 62-6 FAC = 2,804 ft^2

Total building square footage = 3,658 ft^2

Number of bedrooms = 4

Property connected to public water

No sewers within feasible distance

Not located within a wellfield protection area

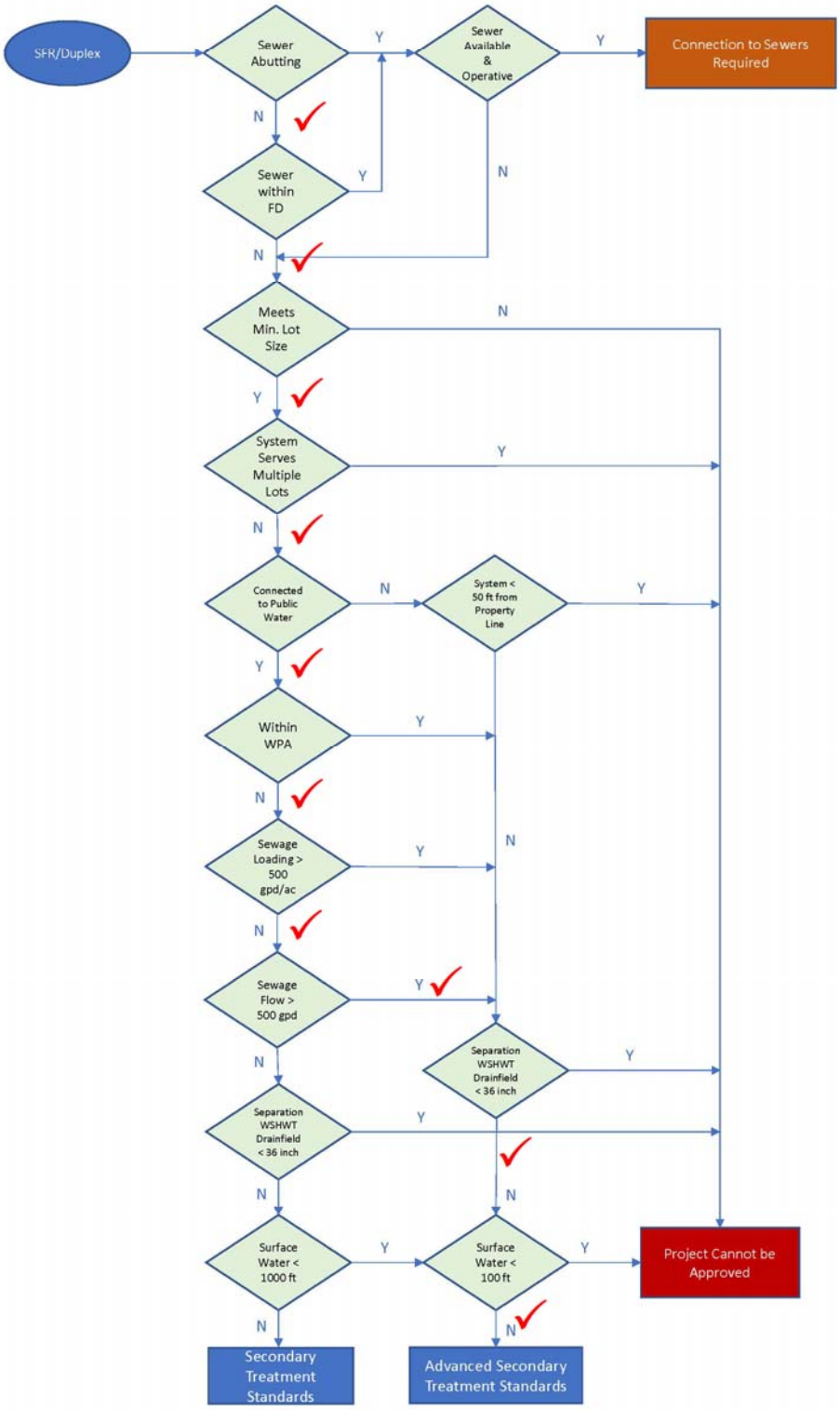
DETERMINATION OF THE TYPE OF SYSTEM REQUIRED

Sewage flow (per Ch. 24) = 310 gpd (< 500 gpd)

Sewage loading = 310 gpd/0.33 acres = 939 gpd/acre (> 500 gpd/acre)

- Lot size ≥ 15,000 ft^2
- Served by public water
- Not located within a wellfield protection area
- No water bodies within 1000 ft
- Sewage flow < 500 GPD
- Sewage loading > 500 GPD/acre
- Separation of bottom of drainfield with SHWT ≥ 36 inches

OSTDS FOR SINGLE A FAMILY RESIDENCE OR DUPLEX



A Type 3 (Advanced Secondary Treatment) system is required, that complies with the following parameters.

POLLUTANT (mg/L) (Annual average)	Secondary Treatment Standards (62-6 FAC)
$CBOD_5$	10
TSS	10
TN	50% reduction
TP	10
Fecal coliform (cfu/100ml)	200

Note that Chapter 24 does not allow reduction of the drainfield. DERM may allow a reduction of the drainfield size only under certain circumstances, when it is demonstrated that it is not technically possible to install a full size drainfield. When this happens, DERM will require a higher level of treatment to compensates for the soil treatment that will not occur on the reduced drainfield.

DRAINFIELD REDUCTION ADJUSTMENT

First, we need to know how much of each pollutant is treated by the soil. To do that, we use the values under Table IX of Ch. 62-6 FAC.

POLLUTANT	Advanced Secondary Treatment (mg/L) (annual average) (62-6 FAC)	Advanced Secondary Treatment Standards With Soil Treatment (62-6 FAC)	% of Effluent Treated by Soil
CBOD5	10	1	90
TSS	10	1	90
TN	30	21	30
TP	10	7	30
FECAL COLIFORM (cfu/100ml)	200	2	99

The table above shows the percent of effluent pollutant treated by a full size drainfield. A 40% reduction in the drainfield size would provide only a 60% of the soil available as compared to a full size drainfield. Therefore, the percent reduction of effluent pollutant in the soil should be adjusted to account for the drainfield size reduction.

POLLUTANT	Advanced Secondary Treatment (mg/L) (annual average) (62-6 FAC)	Advanced Secondary Treatment Standards With Soil Treatment (62-6 FAC)	% of Effluent Treated by Soil	% of Effluent Treated by Soil with 40% Drainfield Reduction
CBOD5	10	1	90	90x.6 = 54
TSS	10	1	90	90x.6 = 54
TN	30	21	30	30x.6 = 18
TP	10	7	30	30x.6 = 18
FECAL COLIFORM (cfu/100ml)	200	2	99	99x.6 = 59

With the adjusted percentages of the effluent treated by soil, we can find the estimated pollutant concentrations after the soil treatment by the reduced drainfield. The difference between these concentrations and pollutant concentrations provided by a full size drainfield (3rd column on table above), represent the amount of pollutant not treated by the soil because of the reduction in drainfield size. To find the adjusted treatment standards that take into account the reduction in drainfield size, the concentration of pollutant not treated by the soil should be subtracted from the treatment standards.

POLLUTANT	Advanced Secondary Treatment (mg/L) (annual average) (62-6 FAC)	% of Effluent Treated by Soil with 40% Drainfield Reduction	Advanced Secondary Treatment Standards With Soil Treatment with Drainfield Reduction (mg/L)	Soil Treatment Deficiency due to 40% Drainfield Reduction (mg/L)
CBOD5	10	54	10x(1-0.54) = 4.6	4.6 – 1 = 3.60
TSS	10	54	10x(1-0.54) = 4.6	4.6 – 1 = 3.60
TN	30	18	30x(1-0.18) = 24.6	24.6 – 21 = 3.60
TP	10	18	10x(1-0.18) = 8.2	8.2 – 7 = 1.20
FECAL COLIFORM (cfu/100ml)	200	59	200x(1-0.59) = 81.2	81.2 – 2 = 79.20

POLLUTANT (mg/L) (Annual average)	Adjustment	Adjusted Advanced Secondary Treatment Standards to Account for 40% Drainfiled Reduction
$CBOD_5$	10 – 3.60	6.40
TSS	10 – 3.60	6.40
TN	30 – 3.60	26.40
TP	10 - 1.20	8.80
Fecal coliform (cfu/100ml)	200 – 79.20	120.80

PROPOSED SYTEM

Biomicrobics MicroFast 0.5

According to the FDEP Testing Performance Data for PBTS, the proposed system complies with the adjusted Advanced Secondary Treatment Standards.

POLLUTANT (mg/L) (Annual average)	Proposed Treatment
$CBOD_5$	3
TSS	1.4
TN	71% reduction
TP	5.38
Fecal coliform (cfu/100ml)	< 100

SYSTEM SIZING BASED ON CH. 62-6 FAC

Sewage flow (4 bedrooms) = 400 gpd

Sewage flow (2,804 ft^2) = 400 gpd

Required system capacity = 400 gpd

Drainfield configuration = Bed

Maximum sewage loading rate = 0.6 gal/ft^2day

Percent of effective drainfield size = 60% (40% drainfield reduction)

Minimum drainfield size = (400 gpd / 0.6 gal/ft^2day) x 0.6 = 400 ft^2

DETERMINATION OF OSTDS TYPE AND STANDARDS PER SECTION 24-42.7

GROSS LOT SIZE = 15,000 FT^2 = 0.34 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
GROSS BUILDING AREA = 3,658 FT^2
SEWAGE FLOW = 310 GPD
SEWAGE LOADING = 310 GPD / 0.34 ACRES = 912 GPD/ACRE

Y	N	CRITERIA FOR OSTDS TYPE SELECTION
✓		PROPERTY WILL BE SERVED BY PUBLIC WATER
✓		PROPERTY COMPLETELY OUTSIDE WELLFIELD PROTECTION AREA
✓		SURFACE WATER BODIES BEYOND 1000 FEET
✓		SEWAGE FLOW IS LESS THAN 500 GPD FOR SFR /DUPLEX
		SEWAGE FLOW IS LESS THAN 1000 GPD FOR MULTI-FAMILY/OTHER USES
	✓	SEWAGE LOADING LESS THAN 500 GPD/ACRE

Y	N	OTHER CONSIDERATIONS FOR OSTDS APPROVAL
✓		SANITARY SEWERS NOT AVAILABLE, ABUTTING, OR OPERATIVE
✓		SYSTEM WILL SERVE ONLY ONE LOT
		PROPERTY LINES OVER 50 FEET FROM OSTDS FOR PROPERTIES SERVED BY A POTABLE WATER WELL

TYPE OF SYSTEM REQUIRED : TYPE 3 - ADVANCED SECONDARY TREATMENT STANDARDS
TOTAL NITROGEN TREATED BY : MICROFAST 0.5
TOTAL PHOSPHORUS TREATED BY : MICROFAST 0.5
FECAL COLIFORM TREATED BY : CHLORINATION/DECLHORINATION
SOURCE OF TREATMENT STANDARDS : FDEP TESTING PERFORMANCE DATA FOR PBTS

TREATMENT STANDARDS		
POLLUTANT	REQUIRED (mg/L) (ANNUAL AVERAGE)	PROPOSED (mg/L) (ANNUAL AVERAGE)
$CBOD_5$	6.40	2
TSS	6.40	0.9
TN	26.40	17.40
TP	8.80	6.40
FECAL COLIFORM (cfu/100ml)	120.80	<100

OSTDS CALCULATIONS PER CHAPTER 62-6 F.A.C.

NET LOT SIZE = 12,500 FT^2 = 0.29 ACRES
LAND USE: SINGLE-FAMILY RESIDENCE
BUILDING AREA = 2,804 FT^2

SEWAGE FLOW

MAXIMUM SEWAGE LOADING ALLOWANCE = 2,500 GPD/ACRE (1,500 GPD/ACRE OR 2,500 GPD/ACRE)
AUTHORIZED SEWAGE FLOW = 2,500 GPD/ACRE x 0.29 ACRES = 725 GPD
UNIT FLOW CRITERIA (PER TABLE 1) : NUMBER OF BEDROOMS/BUILDING AREA
SEWAGE FLOW PER UNIT FLOW = 100 GPD PER BEDROOM OR PER 750 FT2 OF BUILDING AREA
TOTAL SEWAGE FLOW = 400 GPD

TREATMENT TANK AND DRAINFIELD

PROPOSED SYSTEM : MICROFAST 0.5
MINIMUM REQUIRED TREATMENT CAPACITY = 400 GPD
DRAINFIELD CONFIGURATION : BED (APPLYING 40% DRAINFIELD REDUCTION)
DRAINFIELD TYPE = MOUND
DRAINFIELD MATERIAL : CHAMBERS
MAXIMUM SEWAGE LOADING RATE FOR THE PROPOSED DRAINFIELD = 0.6 GAL/FT^2DAY
DRAINFIELD SIZE = 400 GPD / 0.6 GAL/FT^2DAY = 667x.6 = 400 FT^2

SEPARATION BETWEEN THE SHWT AND BOTTOM OF THE DRAINFIELD (ELEVATIONS IN NAVD 88)

GRADE ELEVATION = 6.0 FT
SEASONAL HIGH WATER TABLE ELEVATION = 4.0 FT
ELEVATION AT THE BOTTOM OF THE DRAINFIELD = 7.0 FT
SEPARATION BETWEEN SHWT AND BOTTOM OF DRAINFIELD = 36 INCHES

EXAMPLE 4

OFFICES - TYPE 4 SYSTEM (FLORIDA KEYS NUTRIENT REDUCTION)

DETERMINATION OF OSTDS TYPE AND STANDARDS PER SECTION 24-42.7

GROSS LOT SIZE = 36,630 FT² = 0.84 ACRES
LAND USE: OFFICE
GROSS BUILDING AREA = 6,640 FT²
SEWAGE FLOW = 332 GPD
SEWAGE LOADING = 332 GPD / 0.84 ACRES = 395 GPD/ACRE

Y	N	CRITERIA FOR OSTDS TYPE SELECTION
✓		PROPERTY WILL BE SERVED BY PUBLIC WATER
✓		PROPERTY COMPLETELY OUTSIDE WELLFIELD PROTECTION AREA
	✓	SURFACE WATER BODIES BEYOND 1000 FEET
		SEWAGE FLOW IS LESS THAN 500 GPD FOR SFR /DUPLEX
✓		SEWAGE FLOW IS LESS THAN 1000 GPD FOR MULTI-FAMILY/OTHER USES
✓		SEWAGE LOADING LESS THAN 500 GPD/ACRE

Y	N	OTHER CONSIDERATIONS FOR OSTDS APPROVAL
✓		SANITARY SEWERS NOT AVAILABLE, ABUTTING, OR OPERATIVE
✓		SYSTEM WILL SERVE ONLY ONE LOT
		PROPERTY LINES OVER 50 FEET FROM OSTDS FOR PROPERTIES SERVED BY A POTABLE WATER WELL

TYPE OF SYSTEM REQUIRED : TYPE IV - FLORIDA KEYS NUTRIENT REDUCTION
TOTAL NITROGEN TREATED BY : BIOMICROBICS MicroFAST 1.5
TOTAL PHOSPHORUS TREATED BY : FILTERLITE-P LECA MEDIA
FECAL COLIFORM TREATED BY : CHLORINATION-DECLHORINATION
SOURCE OF TREATMENT STANDARDS : DEP TESTING RESULTS

TREATMENT STANDARDS		
POLLUTANT	**REQUIRED (mg/L) (ANNUAL AVERAGE)**	**PROPOSED (mg/L) (ANNUAL AVERAGE)**
$CBOD_5$	10	3
TSS	10	1.4
TN	≥ 70% reduction	76 % reduction
TP	1	0.53
FECAL COLIFORM (cfu/100ml)	200	<100

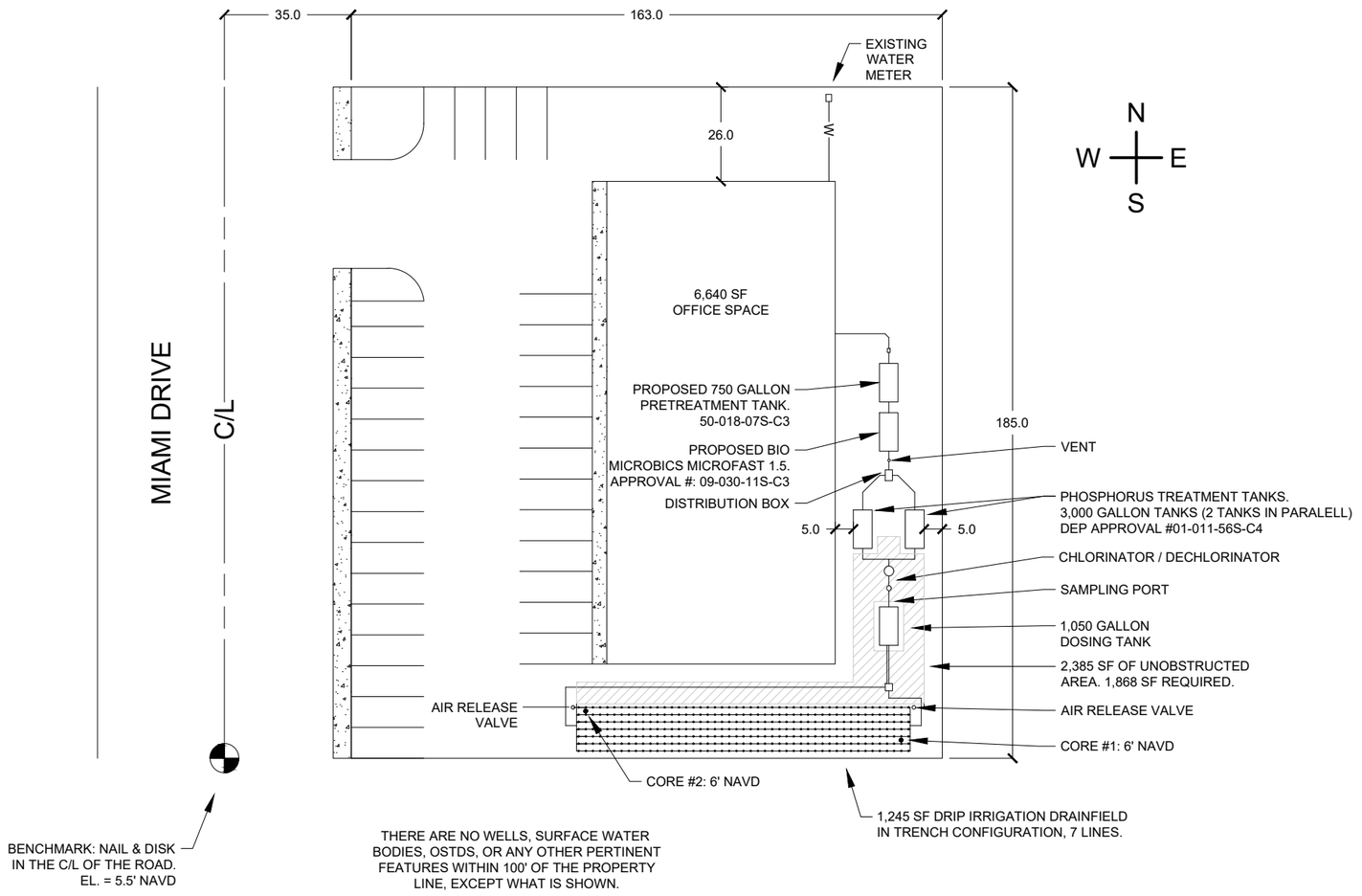
OSTDS CALCULATIONS PER CHAPTER 62-6 F.A.C.

NET LOT SIZE = 30,155 FT² = 0.69 ACRES
LAND USE: OFFICE
BUILDING AREA = 6,640 FT²

SEWAGE FLOW
MAXIMUM SEWAGE LOADING ALLOWANCE = 2,500 GPD/ACRE (1,500 GPD/ACRE OR 2,500 GPD/ACRE)
AUTHORIZED SEWAGE FLOW = 2,500 GPD/ACRE x 0.69 ACRES = 1,725 GPD
UNIT FLOW CRITERIA (PER TABLE 1) : 6,640 SF OFFICE @ 15GPD/100 SF OR 66 EMPLYEES @ 15 GPD EA
SEWAGE FLOW PER UNIT FLOW = 15 GPD/100SF
TOTAL SEWAGE FLOW = 996 GPD

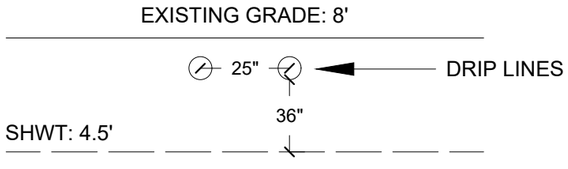
TREATMENT TANK AND DRAINFIELD
PROPOSED SYSTEM : MicroFAST 1.5 AND LECA FILTER L. MEDIA TANK
MINIMUM REQUIRED TREATMENT CAPACITY = 996 GPD
DRAINFIELD CONFIGURATION : TRENCH
DRAINFIELD TYPE = SUB-SURFACE
DRAINFIELD MATERIAL : DRIP IRRIGATION
MAXIMUM SEWAGE LOADING RATE FOR THE PROPOSED DRAINFIELD = 0.8 GAL/FT²DAY
DRAINFIELD SIZE = 996 GPD / 0.8 GAL/FT²DAY = 1,245 FT²

SEPARATION BETWEEN THE SHWT AND BOTTOM OF THE DRAINFIELD (ELEVATIONS IN NAVD 88)
GRADE ELEVATION = 8 FT
SEASONAL HIGH WATER TABLE ELEVATION = 4.5 FT
ELEVATION AT THE BOTTOM OF THE DRAINFIELD = 7.5 FT
SEPARATION BETWEEN SHWT AND BOTTOM OF DRAINFIELD = 36 INCHES



OSTDS NOTES

- ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD)
- A CANAL, EAST OF THE PROPERTY, IS LOCATED WITHIN 1,000 FEET FROM THE OSTDS



CROSS SECTION
N.T.S.

REVISION DATE	BY

ABC ENGINEERING

CLIENT

DOE RESIDENCE

PROJECT

OSTDS SITE PLAN
XX
MIAMI, FL 33136

	NAME	DATE
DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		

SCALE: 1" = 30'

SEAL

FL P.E. No. 80977 / CA#35108

SHEET 01 OF 01

CHARACTERISTICS OF THE PROJECT

Land Use = Office building

Gross lot size = 185 ft x (163 + 35) ft = 36,630 ft^2 = 0.84 acres

Net lot size = 185 ft x 163 ft = 30,155 ft^2 = 0.69 acres

Building area as per 62-6 FAC = 6,640 ft^2

Total building square footage = 6,640 ft^2

Number of employees = 66

Property connected to public water

No sewers within feasible distance

Not located within a wellfield protection area

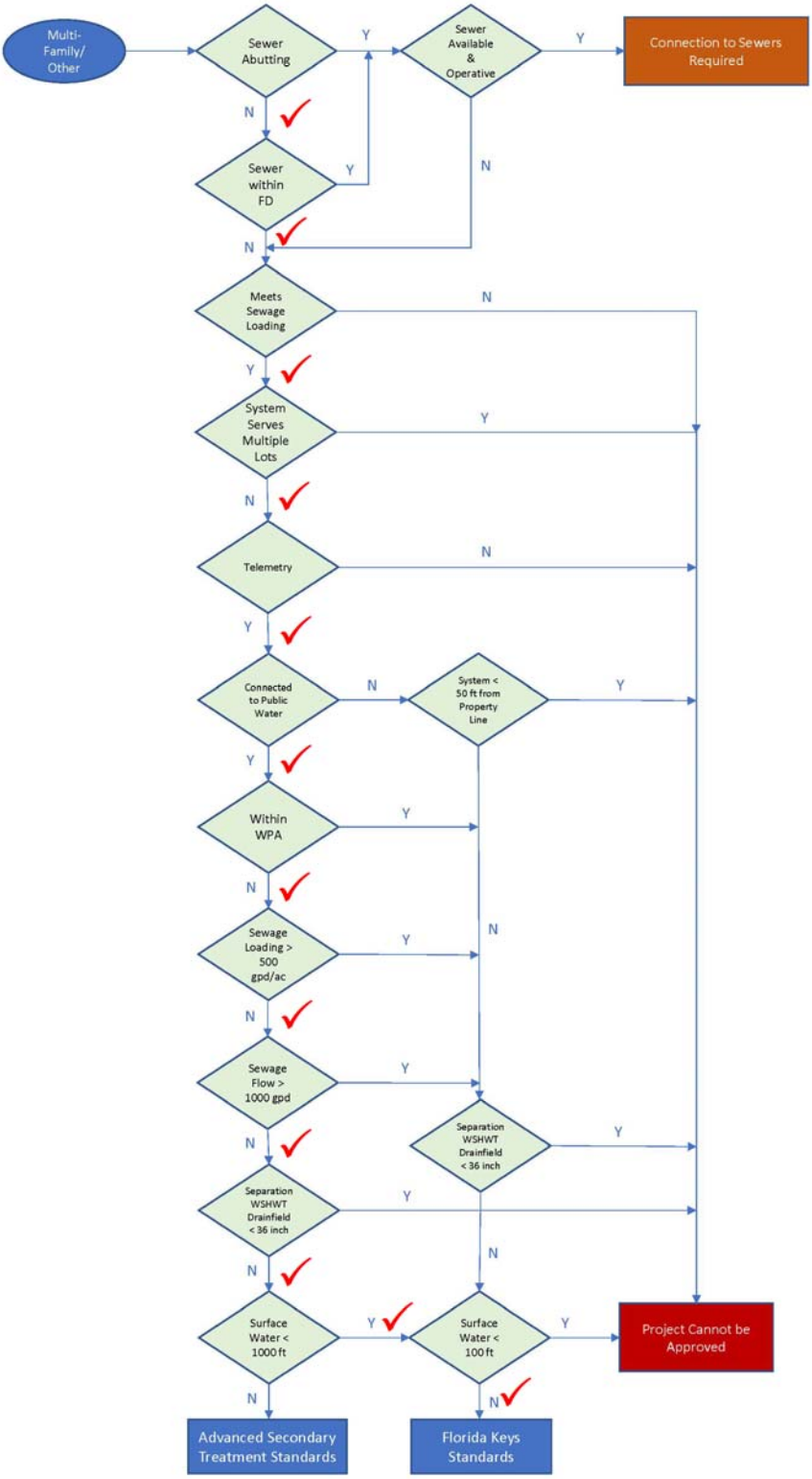
DETERMINATION OF THE TYPE OF SYSTEM REQUIRED

Sewage flow (per Ch. 24) = 6,640 ft^2 x 5 gpd/100 ft^2 = 332 gpd (< 500 gpd)

Sewage loading = 332 gpd/0.84 acres = 395 gpd/acre (< 500 gpd/acre)

- Compliant land use
- Served by public water
- Not located within a wellfield protection area
- Water bodies within 1000 ft
- Sewage flow < 500 GPD
- Sewage loading < 500 GPD/acre
- Separation of bottom of drainfield with SHWT ≥ 36 inches

OSTDS FOR MULTI-FAMILY RESIDENCE AND OTHER USES



Based on the above criteria, a Type 4 (Florida Keys Nutrient Reduction Treatment) system is required, that complies with the following parameters.

POLLUTANT (mg/L) (Annual average)	Florida Keys Nutrient Reduction Treatment Standards (62-6 FAC)
$CBOD_5$	10
TSS	10
TN	70% reduction
TP	1
Fecal coliform (cfu/100ml)	200

SYSTEM SIZING BASED ON CH. 62-6 FAC

Sewage flow (6,640 ft^2 x 15 gpd/100 ft^2)= 996 gpd

Sewage flow (66 employees x 15 gpd/employee) = 990 gpd

Required system capacity = 996 gpd

Drainfield type = Drip irrigation

Drainfield configuration = Trench

Maximum sewage loading rate = 0.8 gal/ft^2day

Minimum drainfield size = 996 gpd / 0.8 gal/ft^2day = 1,245 ft^2

PROPOSED SYTEM

Biomicrobics MicroFast 1.5 with Filterlite (LECA) media tank for phosphorous removal. Telemetry provided as per Section 24-42.7.

According to the FDEP Testing Performance Data for PBTS, the proposed system complies with the Florida Keys Nutrient Reduction Treatment Standards.

POLLUTANT (mg/L) (Annual average)	Proposed Treatment
$CBOD_5$	3
TSS	1.4
TN	76%
TP	0.53
Fecal coliform (cfu/100ml)	<100

Once saturated, the filter media needs to be replaced. The system should be sized so that the life span of the media is at a minimum, 2 years.

FINDING THE USABLE LIFE OF THE MEDIA

Minimum treatment tank surface area:

Treatment tank volume = 3,000 gal - Tank 01-011-56S-C4 (single compartment tank)

Media filter maximum loading rate = 5.5 gal x ft^2 / day.

Required media surface area = 996 gpd /5.5 gpd ft^2 = **181.09 ft^2** (minimum area required)

Proposed media filter surface area = **112.58 ft^2 per tank**.

Total Proposed media filter surface area 112.58 ft^2 x 2 tanks = **225.16 ft^2**

Determining Daily phosphorus load:

Phosphorus influent = 10 mg/lt = 0.01 gram/lt (as per CH. 62-6 table IXb)

Estimated sewage flow = 996 gpd, converted to lt/ day = 3,770.27 lt/day.

Phosphorus load = 0.01 gram/lt x 3,770.27 lt/day= **37.70** gram/day (entering to the system)

Monthly phosphorus load = 37.70 gram/day x 30 days/month = **1,131** grams/month

Media Surface area and volume calculation:

Top Tank dimension: 187 5/8" x 99.5" bottom=183.5"x 95"

Top Surface area calculated at 40.5" from the bottom of tank = 178.86" x 90.64" = 16,211.87 in^2

= 112.58 ft^2 per treatment tank.

Top surface of Filterlite-P LECA area = **112.58 ft^2**

Filterlite-P LECA depth= 40.5" = **3.37 ft**

Filterlite-P LECA volume = 3.37 ft x 112.58 ft^2 = 379.39 ft^3 = **10.74 m^3** per treatment tank.

Usable MEDIA life span calculation:

Filterlite-P LECA density = 550 kg/m^3 (as per media manufacturer)

Filterlite-P LECA volume= 10.74 m^3 (per dimensions of treatment tank)

ρ(density) = mass/Volume $\rightarrow$ mass (m) = Vρ then; m = 10.74 m^3 x 550 kg/m^3 = 5,907 kg

Filterlite-P LECA mass= 5,907 kg.

Phosphorus Adsorption capacity per unit media mass = 3 grams of Phosphorus per 1kg of Filterlite P LECA.

Phosphorus absorption per treatment tank = (3 x 5,907) = 17,721 grams of Phosphorous

Total phosphorus removal = 17,721 grams x 2 tanks = 35,442 grams

Usable life of the Filterlite P LECA = **35,442 / 1,131** = **31.3 months**

DETERMINATION OF OSTDS TYPE AND STANDARDS PER SECTION 24-42.7

GROSS LOT SIZE = 36,630 FT^2 = 0.84 ACRES
LAND USE: OFFICE
GROSS BUILDING AREA = 6,640 FT^2
SEWAGE FLOW = 332 GPD
SEWAGE LOADING = 332 GPD / 0.84 ACRES = 395 GPD/ACRE

Y	N	CRITERIA FOR OSTDS TYPE SELECTION
✓		PROPERTY WILL BE SERVED BY PUBLIC WATER
✓		PROPERTY COMPLETELY OUTSIDE WELLFIELD PROTECTION AREA
	✓	SURFACE WATER BODIES BEYOND 1000 FEET
		SEWAGE FLOW IS LESS THAN 500 GPD FOR SFR /DUPLEX
✓		SEWAGE FLOW IS LESS THAN 1000 GPD FOR MULTI-FAMILY/OTHER USES
✓		SEWAGE LOADING LESS THAN 500 GPD/ACRE

Y	N	OTHER CONSIDERATIONS FOR OSTDS APPROVAL
✓		SANITARY SEWERS NOT AVAILABLE, ABUTTING, OR OPERATIVE
✓		SYSTEM WILL SERVE ONLY ONE LOT
		PROPERTY LINES OVER 50 FEET FROM OSTDS FOR PROPERTIES SERVED BY A POTABLE WATER WELL

TYPE OF SYSTEM REQUIRED : TYPE IV - FLORIDA KEYS NUTRIENT REDUCTION
TOTAL NITROGEN TREATED BY : BIOMICROBICS MicroFAST 1.5
TOTAL PHOSPHORUS TREATED BY : FILTERLITE-P LECA MEDIA
FECAL COLIFORM TREATED BY : CHLORINATION-DECLHORINATION
SOURCE OF TREATMENT STANDARDS : DEP TESTING RESULTS

TREATMENT STANDARDS		
POLLUTANT	REQUIRED (mg/L) (ANNUAL AVERAGE)	PROPOSED (mg/L) (ANNUAL AVERAGE)
$CBOD_5$	10	3
TSS	10	1.4
TN	≥ 70% reduction	76 % reduction
TP	1	0.53
FECAL COLIFORM (cfu/100ml)	200	<100

OSTDS CALCULATIONS PER CHAPTER 62-6 F.A.C.

NET LOT SIZE = 30,155 FT^2 = 0.69 ACRES
LAND USE: OFFICE
BUILDING AREA = 6,640 FT^2

SEWAGE FLOW

MAXIMUM SEWAGE LOADING ALLOWANCE = 2,500 GPD/ACRE (1,500 GPD/ACRE OR 2,500 GPD/ACRE)
AUTHORIZED SEWAGE FLOW = 2,500 GPD/ACRE x 0.69 ACRES = 1,725 GPD
UNIT FLOW CRITERIA (PER TABLE 1) : 6,640 SF OFFICE @ 15GPD/100 SF OR 66 EMPLYEES @ 15 GPD EA
SEWAGE FLOW PER UNIT FLOW = 15 GPD/100SF
TOTAL SEWAGE FLOW = 996 GPD

TREATMENT TANK AND DRAINFIELD

PROPOSED SYSTEM : MicroFAST 1.5 AND LECA FILTER L. MEDIA TANK
MINIMUM REQUIRED TREATMENT CAPACITY = 996 GPD
DRAINFIELD CONFIGURATION : TRENCH
DRAINFIELD TYPE = SUB-SURFACE
DRAINFIELD MATERIAL : DRIP IRRIGATION
MAXIMUM SEWAGE LOADING RATE FOR THE PROPOSED DRAINFIELD = 0.8 GAL/FT^2DAY
DRAINFIELD SIZE = 996 GPD / 0.8 GAL/FT^2DAY = 1,245 FT^2

SEPARATION BETWEEN THE SHWT AND BOTTOM OF THE DRAINFIELD (ELEVATIONS IN NAVD 88)

GRADE ELEVATION = 8 FT
SEASONAL HIGH WATER TABLE ELEVATION = 4.5 FT
ELEVATION AT THE BOTTOM OF THE DRAINFIELD = 7.5 FT
SEPARATION BETWEEN SHWT AND BOTTOM OF DRAINFIELD = 36 INCHES