



# UNIVERSAL ENGINEERING SCIENCES

Consultants In: Geotechnical Engineering • Environmental Sciences •  
Construction Materials Testing • Threshold Inspection

820 Brevard Avenue • Rockledge, Florida 32955  
(321) 638-0808 Fax (321) 638-0978

Project No.: 34184-001-02

Date Typed: December 28, 2005

## Field and Laboratory Report Transmittal Sheet

**Client:** Henry Happel  
Suntree Technologies  
798 Clearlake Road  
Cocoa, FL 32922

**Project:** Nutrient Box Separator  
Melbourne Village  
Brevard County, FL

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As requested, a representative of Universal Engineering Sciences, Inc. (UES) was at the referenced project to provide construction materials testing services.

The results of the observations and/or tests are summarized on the attached sheets. The reports are numbered as follows: **001A, 002A, 003A, 004A, 005A, 006A, 007A, G5851, G5888.** We hope this information is sufficient for your immediate needs. If you have any questions, please do not hesitate to contact the undersigned.

Reviewed By:  
**Universal Engineering Sciences, inc.**  
Certificate of Authorization No. 549

Richard E. Hoaglin, P.E.  
**STATE OF FLORIDA**  
Registered Professional Engineer No. 48796

Distribution:  
Client: 2



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820 Brevard Avenue • Rockledge, Florida 32955  
(321) 638-0808 Fax (321) 638-0978

UES Project No.: 34184-001-02  
Report No: 004A-0808  
Date: 09-14-05

On-Site Time (hrs): 0.75  
Lab Time (hrs): 0.25  
Travel Time (hrs): 2.00  
Total Time (hrs): 3.00

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## ACTIVITY RECORD

Client: Henry Happel  
Suntree Technologies  
798 Clearlake Road  
Cocoa, FL 32922

Project: Nutrient Box Seperator  
Melbourne Village  
Brevard County, FL

Date of Activity: 08-08-05

Technician: Alfreda Davis

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As requested, a Universal Engineering Sciences Technician was present at the above referenced location for the purpose of installing Storm water samplers at the nutrient separating baffle box.



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820 Brevard Avenue • Rockledge, Florida 32955  
(321) 638-0808 Fax (321) 638-0978

UES Project No.: 34184-001-02  
Report No: 002A-0810  
Date: 09-14-05

On-Site Time (hrs): 0.50  
Lab Time (hrs): 0.25  
Travel Time (hrs): 1.50  
Total Time (hrs): 2.25

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## ACTIVITY RECORD

Client: Henry Happel  
Suntree Technologies  
798 Clearlake Road  
Cocoa, FL 32922

Project: Nutrient Box Seperator  
Melbourne Village  
Brevard County, FL

Date of Activity: 08-10-05

Technician: Randy Craven

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As requested, a Universal Engineering Sciences Technician was present at the above referenced location for the purpose of picking up collection baskets 1,2,3,4.

There was no sample obtained.



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820 Brevard Avenue • Rockledge, Florida 32955  
(321) 638-0808 Fax (321) 638-0978

UES Project No.: 34184-001-02

Report No: 003A-0824

Date: 09-14-05

On-Site Time (hrs): 1.50  
Lab Time (hrs): 0.00  
Travel Time (hrs): 1.00  
Total Time (hrs): 2.50

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## ACTIVITY RECORD

Client: Henry Happel  
Suntree Technologies  
798 Clearlake Road  
Cocoa, FL 32922

Project: Nutrient Box Seperator  
Melbourne Village  
Brevard County, FL

Date of Activity: 08-24-05

Technician: Doug Williams

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As requested, a Universal Engineering Sciences Technician was present at the above referenced location for the purpose of installing nutrient traps in storm drains.

Installed traps per instructions- Note  $\pm$  45 min. rain delay.



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820 Brevard Avenue • Rockledge, Florida 32955  
(321) 638-0808 Fax (321) 638-0978

UES Project No.: 34184-001-02

Report No: 001A-0909

Date: 09-14-05

On-Site Time (hrs): 0.50  
Lab Time (hrs): 0.25  
Travel Time (hrs): 1.00  
Total Time (hrs): 1.75

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## ACTIVITY RECORD

Client: Henry Happel  
Suntree Technologies  
798 Clearlake Road  
Cocoa, FL 32922

Project: Nutrient Box Seperator  
Melbourne Village  
Brevard County, FL

Date of Activity: 09-09-05

Technician: Randy Craven

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As requested, a Universal Engineering Sciences Technician was present at the above referenced location for the purpose of picking up nutrient boxes.



# UNIVERSAL ENGINEERING SCIENCES

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820 Brevard Avenue • Rockledge, Florida 32955  
(321) 638-0808 Fax (321) 638-0978

UES Project No.: 34184-001-02

Report No: 005A-0915

Date: 09-19-05

On-Site Time (hrs): 0.50  
Lab Time (hrs): 0.25  
Travel Time (hrs): 1.25  
Total Time (hrs): 2.00

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## ACTIVITY RECORD

Client: Henry Happel  
Suntree Technologies  
798 Clearlake Road  
Cocoa, FL 32922

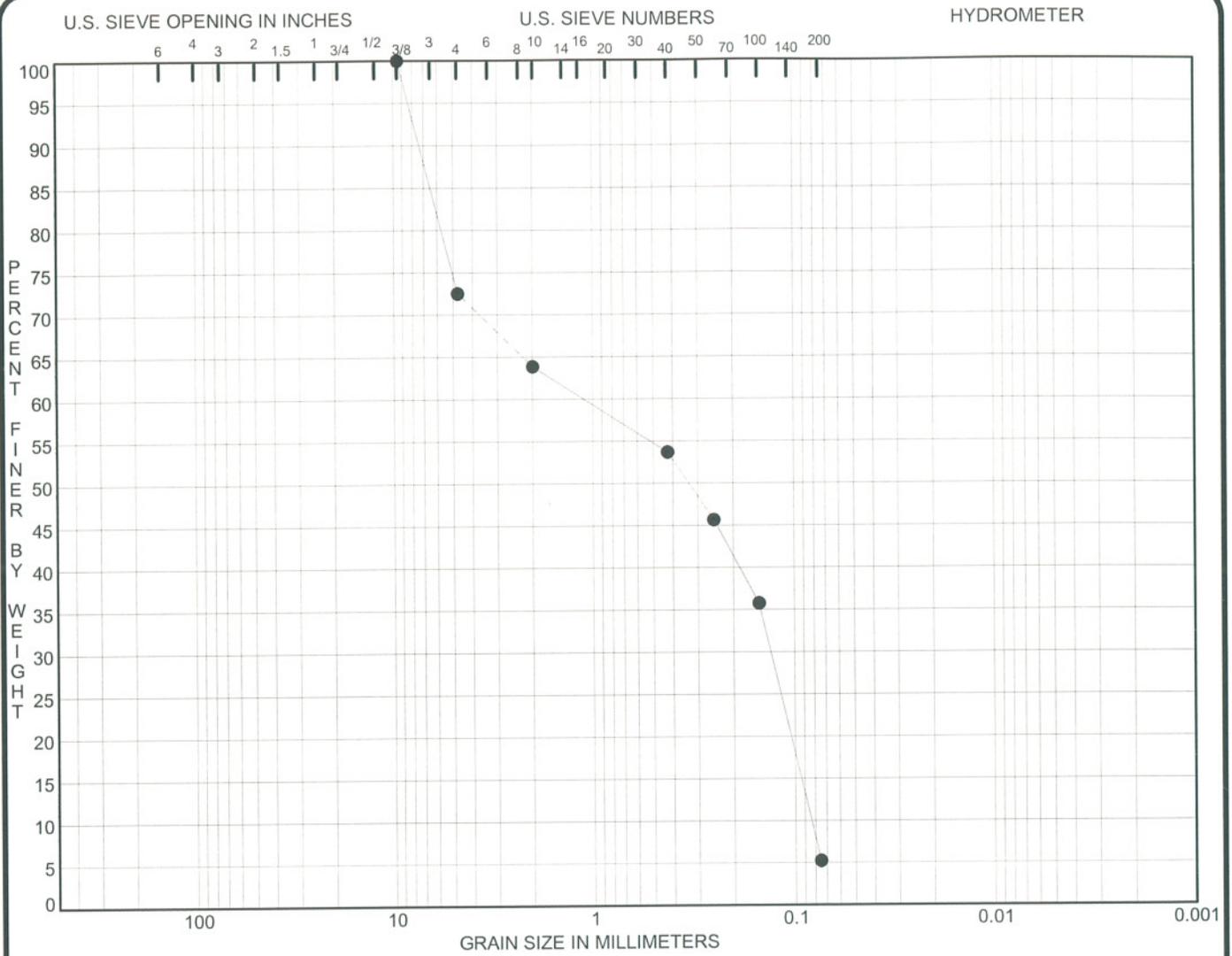
Project: Nutrient Box Seperator  
Melbourne Village  
Brevard County, FL

Date of Activity: 09-15-05

Technician: Randy Craven

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As requested, a Universal Engineering Sciences Technician was present at the above referenced location for the purpose of re-installing nutrient box separators in drainage box off Highway 192 in Melbourne.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● P1 0	<b>BROWN FINE SAND W/ ORGANICS INLET BOX-NOTHING TRAPPED IN THE OUTLET BOX, CLIENT SAMPLED ON 9/15/05</b>					<b>0.19</b>	<b>13.3</b>

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● P1	<b>9.50</b>	<b>1.11</b>	<b>0.132</b>	<b>0.0835</b>	<b>27.5</b>	<b>67.3</b>	<b>5.2</b>	

3/4"	3/8"	NO. 4	NO. 10	NO. 40	NO. 60	NO. 100	NO. 200
	<b>100.0</b>	<b>72.5</b>	<b>63.9</b>	<b>53.7</b>	<b>45.7</b>	<b>35.8</b>	<b>5.2</b>

Client: **SUNTREE TECHNOLOGIES**  
**798 CLEARLAKE ROAD**  
**COCOA FLORIDA 32922**

Client No: **34184-001-02**  
 Report No: **5851**  
 Date: **12/28/05**

Project: **NUTRIENT SEPARATOR BAFFLE BOX TEST**  
  
**MELBOURNE, FLORIDA**

**SOIL GRADATION CURVES**  
 Universal Engineering Sciences, Inc.  
 ROCKLEDGE, FLORIDA



# UNIVERSAL ENGINEERING SCIENCES

Consultants In: Geotechnical Engineering • Environmental Sciences  
Construction Material Testing • Threshold Inspection

820 Brevard Avenue • Rockledge, Florida 32955  
(321) 638-0808 Fax (321) 638-0978

UES Project No.: 34184-001-02  
Report No: 006A-0923  
Date: 09-27-05

On-Site Time (hrs): 0.50  
Lab Time (hrs): 0.25  
Travel Time (hrs): 1.25  
Total Time (hrs): 2.00

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## ACTIVITY RECORD

Client: Henry Happel  
Suntree Technologies  
798 Clearlake Road  
Cocoa, FL 32922

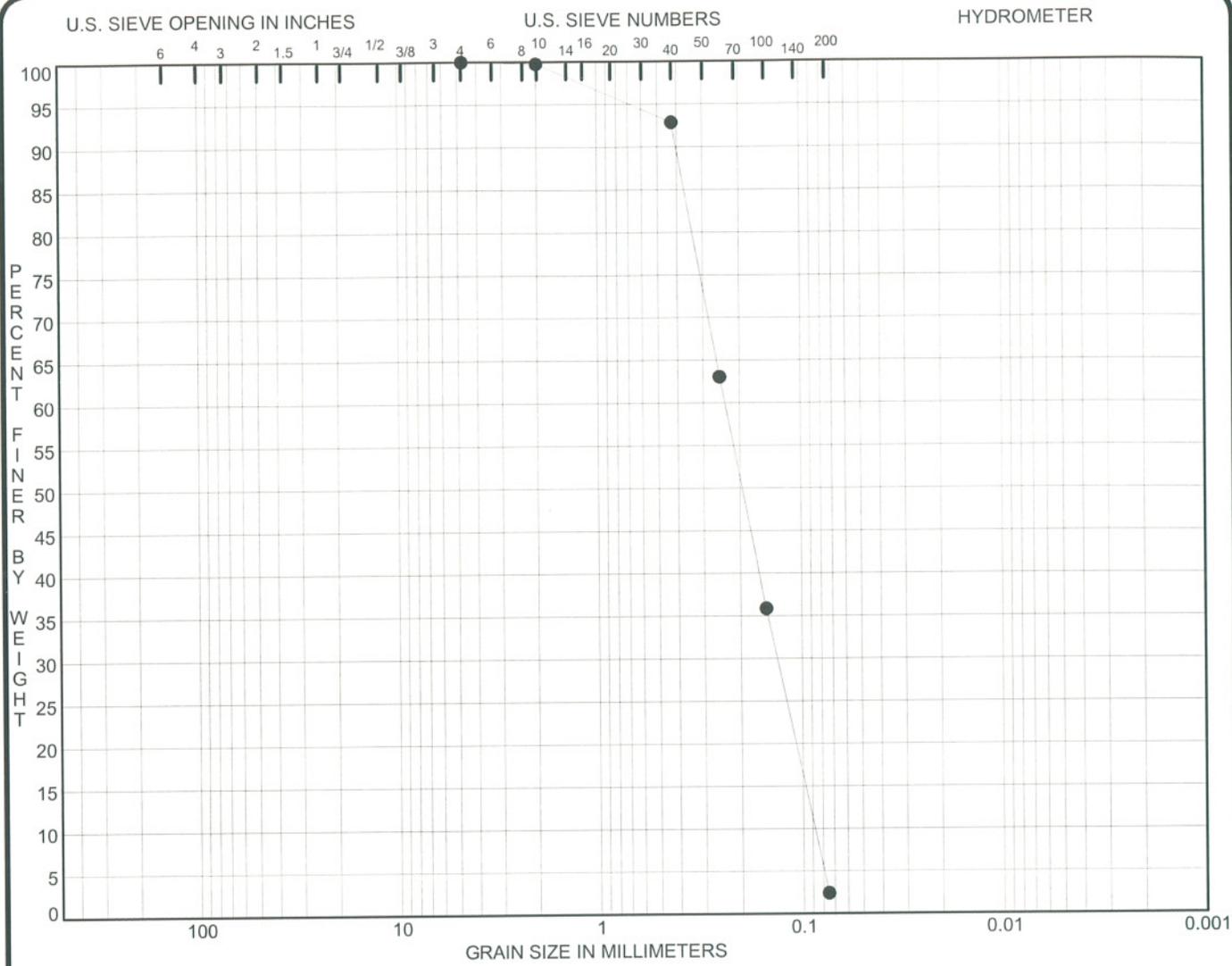
Project: Nutrient Box Separator  
Melbourne Village  
Brevard County, FL

Date of Activity: 09-23-05

Technician: Randy Craven

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As requested, a Universal Engineering Sciences Technician was present at the above referenced location for the purpose of picking up nutrient box's (192 Melbourne).



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● P1 0	<b>TAN SAND WITH ORGANICS INLET BOX #1, SAMPLED 9/23/05</b>					<b>0.85</b>	<b>2.7</b>

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● P1	<b>4.75</b>	<b>0.24</b>	<b>0.133</b>	<b>0.0877</b>	<b>0.0</b>	<b>97.6</b>	<b>2.4</b>	

3/4"	3/8"	NO. 4	NO. 10	NO. 40	NO. 60	NO. 100	NO. 200
		<b>100.0</b>	<b>99.8</b>	<b>92.9</b>	<b>63.1</b>	<b>35.9</b>	<b>2.4</b>

**Client:** SUNTREE TECHNOLOGIES  
 798 CLEARLAKE ROAD  
 COCOA FLORIDA 32922

**Client No:** 34184-001-02  
**Report No:** 5888  
**Date:** 12/28/05

**Project:** NUTRIENT SEPARATOR BAFFLE BOX TEST  
  
 MELBOURNE, FLORIDA

**SOIL GRADATION CURVES**  
 Universal Engineering Sciences, Inc.  
 ROCKLEDGE, FLORIDA



# UNIVERSAL ENGINEERING SCIENCES

Consultants In: Geotechnical Engineering • Environmental Sciences  
Construction Material Testing • Threshold Inspection

820 Brevard Avenue • Rockledge, Florida 32955  
(321) 638-0808 Fax (321) 638-0978

UES Project No.: 34184-001-02  
Report No: 007A-0926  
Date: 10-04-05

On-Site Time (hrs): 0.50  
Lab Time (hrs): 0.00  
Travel Time (hrs): 0.50  
Total Time (hrs): 1.00

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## ACTIVITY RECORD

Client: Henry Happel  
Suntree Technologies  
798 Clearlake Road  
Cocoa, FL 32922

Project: Nutrient Box Seperator  
Melbourne Village  
Brevard County, FL

Date of Activity: 09-26-05

Technician: Randy Craven

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As requested, a Universal Engineering Sciences Technician was present at the above referenced location for the purpose of re-installing baskets (192 Melbourne).

# Location of Nutrient Separating Baffle Box In Melbourne Village, FL

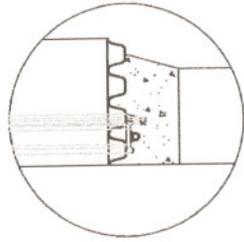


# Drawings of Nutrient Separating Baffle Box Model: NSBB-6-12-84 With Risers & Multiple Inflows

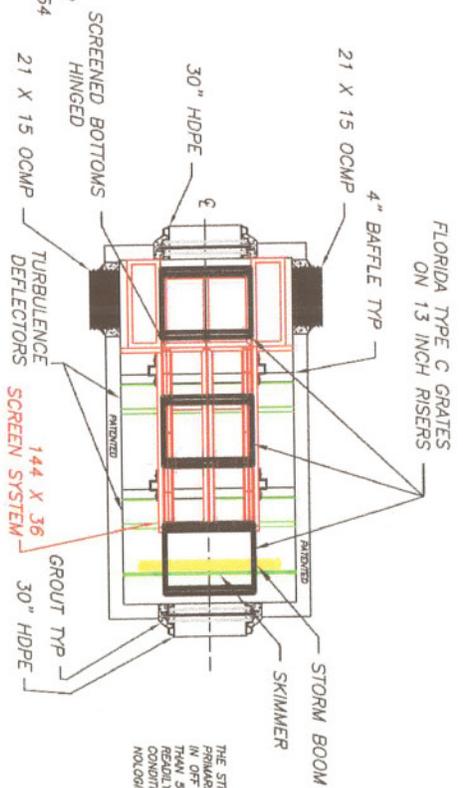
SUNTREE TECHNOLOGIES MODEL NO. NSBB 6-12-84-RH

GROUT RING AND  
GROUT PER SPEC.

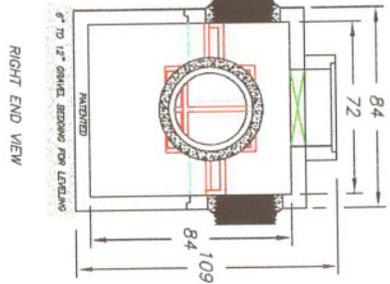
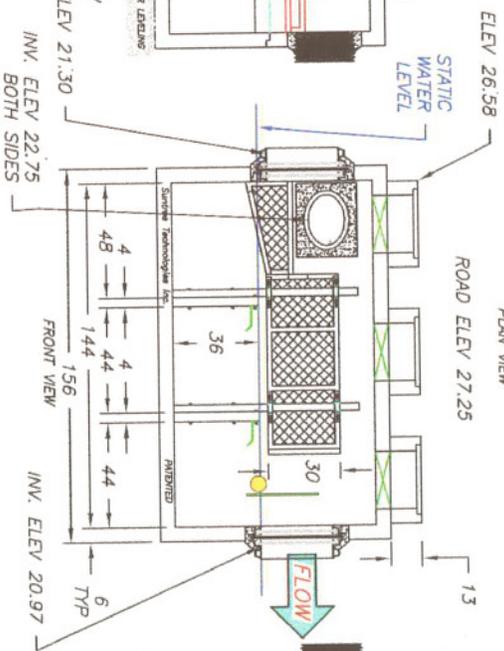
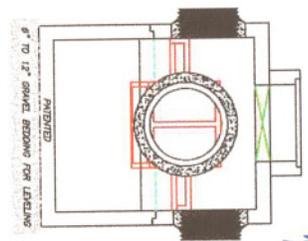
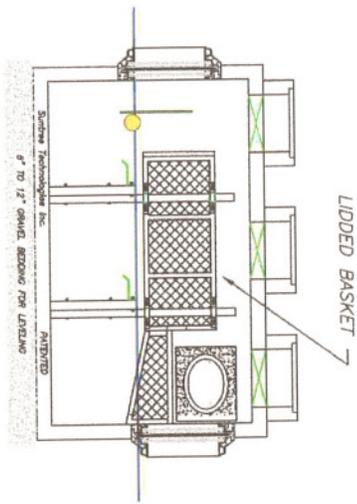
**PATENTED  
AND PAT. PEND.**



Suntree Technologies Inc.  
798 Clearlake Road, Cocoa, Florida 32922  
PH: 321-637-7552 Fax: 321-637-7554



THE STRUCTURE IN THIS DRAWING IS  
PROBABLY INTENDED TO BE INSTALLED  
IN ONE ROAD LOCATION. OTHERS ARE  
NOT NECESSARILY AVAILABLE FOR ALL OTHER  
CONDITIONS. CONSULT SUNTREE TECH-  
NOLOGIES' REPRESENTATIVE FOR DETAILS.



**NOTES:**

1. CONCRETE 28 DAY COMPRESSIVE STRENGTH  $f_c=5,000$  PSI.
2. REINFORCING: ASTM A-615, GRADE 60.
3. SUPPORTS AN H2O LOADING AS INDICATED BY AASHTO.
4. JOINT SEALANT: BUTYL RUBBER SS-5-00210
5. ALL WALLS, TOP + BOTTOM ARE 6" THICK.

PEAK DESIGN FLOW  
46.2 C.F.S.

<p>SUNTREE TECHNOLOGIES, INC. 798 CLEARLAKE ROAD, SUITE #2 COCOA, FL. 32922 NUTRIENT SEPARATING BAFFLE BOX MODEL NO. NSBB 6-12-84-RH DATE: 03/22/05 SCALE: 1/2" = 1'-0" DRAFTER: N.R.B. UNITS = INCHES</p>	<p>PROJECT: SUNTREE TECHNOLOGIES SPEC. REVISION: _____ DATE: _____ REVISION: _____ DATE: _____ REVISION: _____ DATE: _____</p>
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# Side View Drawing

SUNTREE TECHNOLOGIES MODEL NO. NSBB 6-12-84-RH

ELEV 26.58

ROAD ELEV 27.25

13

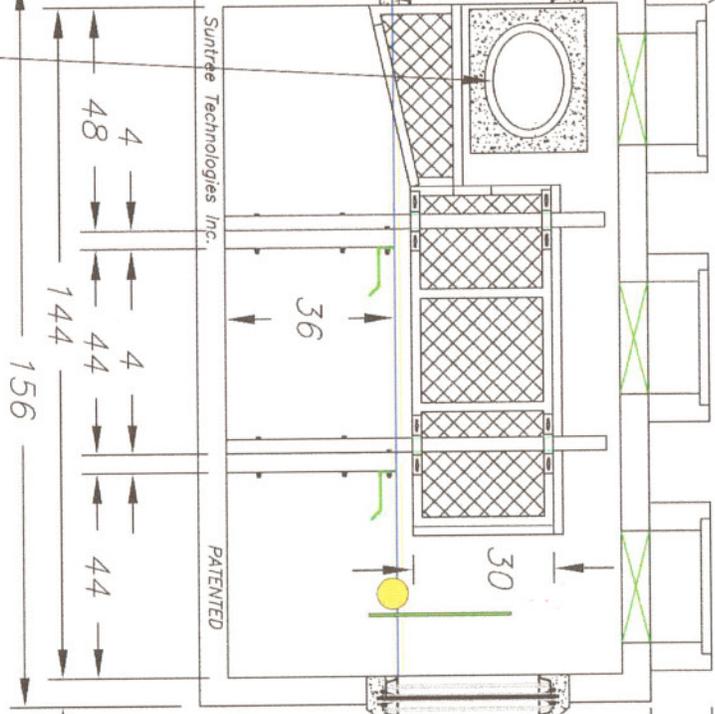
STATIC WATER LEVEL



INV. ELEV 21.30

INV. ELEV 22.75  
BOTH SIDES

INV. ELEV 20.97



# FRONT VIEW

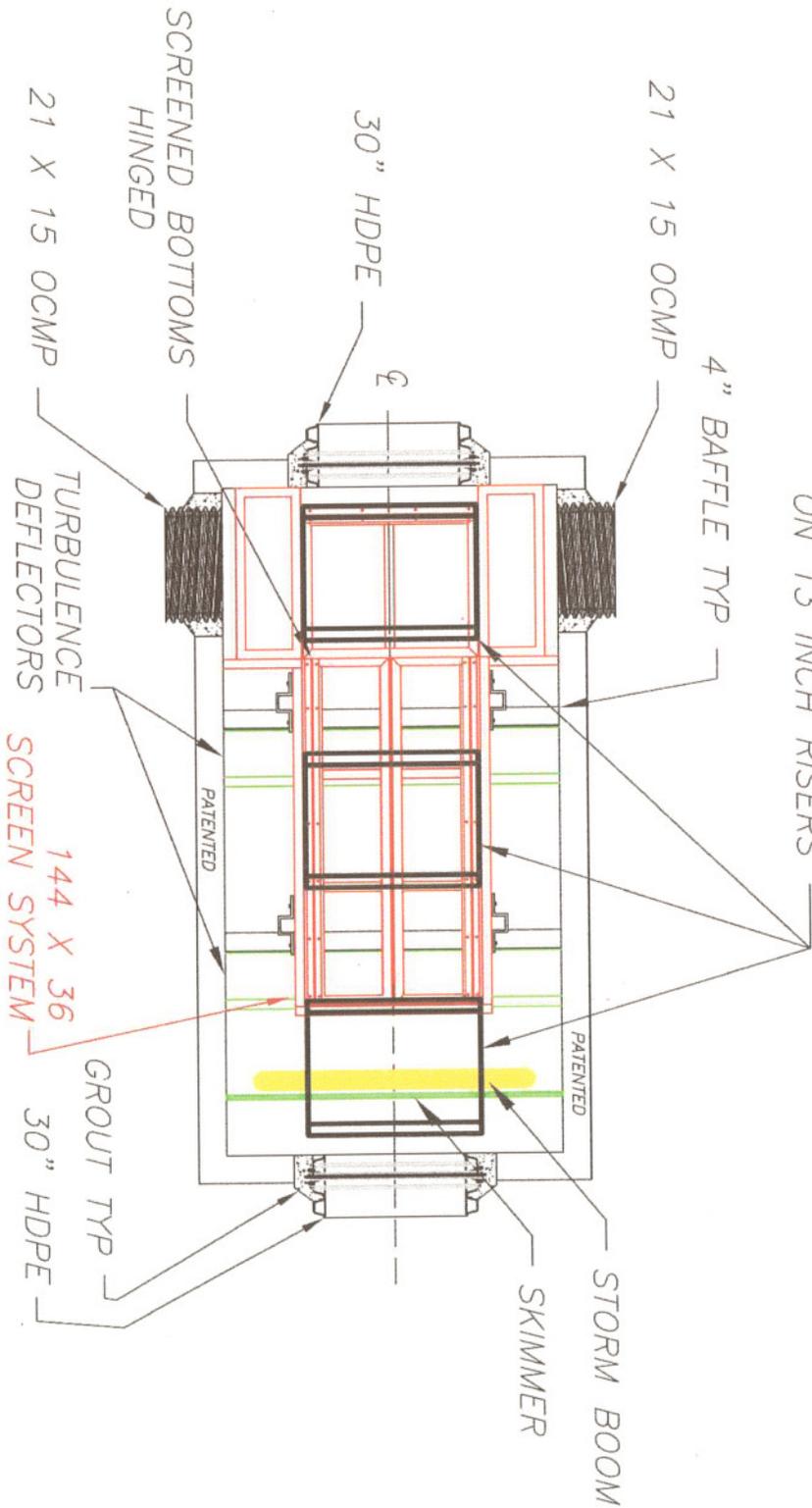
PATENTED  
AND PAT. PEND.

SUNTREE TECHNOLOGIES, INC. 798 CLEARLAKE RD. SUITE #2 GOCOGA, FL. 32922 NUTRIENT SEPARATING BAFFLE BOX MODEL NO. NSBB 6-12-84-RH DATE: 03/22/05 SCALE: SF = 36 DRAFTER: N.R.B. UNITS = INCHES		PROJECT: SUNTREE TECHNOLOGIES SPEC. REVISION: _____ DATE: _____ REVISION: _____ DATE: _____ REVISION: _____ DATE: _____	
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# Plan View Drawing

SUNTREE TECHNOLOGIES MODEL NO. NSBB 6-12-84-RH

FLORIDA TYPE C GRATES  
ON 13 INCH RISERS



PATENTED  
AND PAT. PEND.

PLAN VIEW

SUNTREE TECHNOLOGIES, INC. 798 GEARLAKE RD SUITE #2 COCOA FL. 32922		PROJECT: SUNTREE TECHNOLOGIES SPEC. DRAWING NO.	
NUTRIENT SEPARATING BAFFLE BOX MODEL NO. NSBB 6-12-84-RH		DATE:	
DATE: 03/22/05 SCALE: SF = 36		DATE:	
DRAFTER: N.R.B. UNITS = INCHES		DATE:	

## Installation of the Nutrient Separating Baffle Box Setting The Bottom Half



**Left:** The bottom half is lowered into the hole.

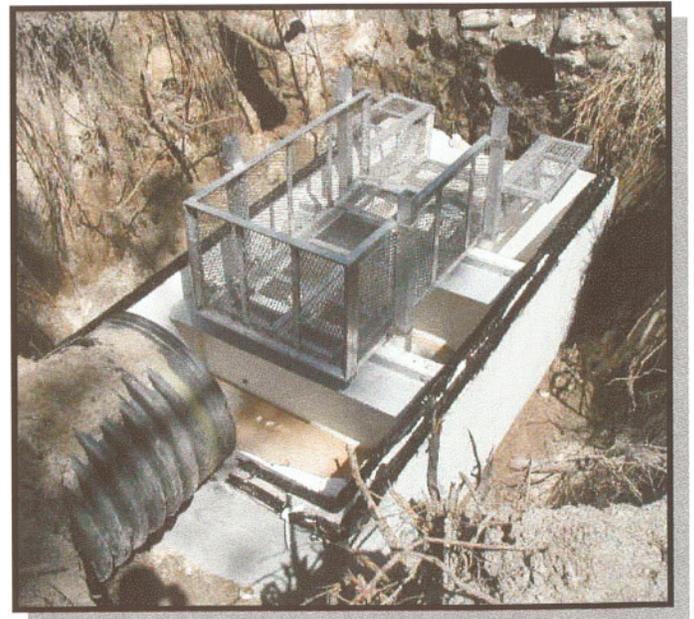
**Below:** Ramneck is applied to the joint to seal the bottom half to the top half.



View from the inflow end.



View from the outflow end.

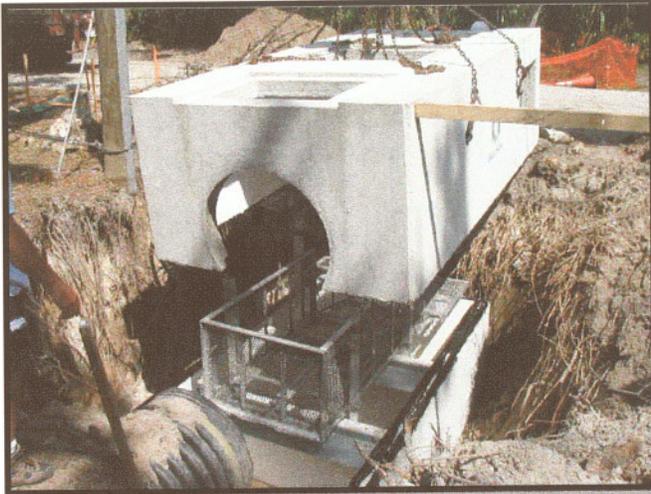


The Nutrient Separating Baffle Box is ready for the top half of the structure to be set in place.

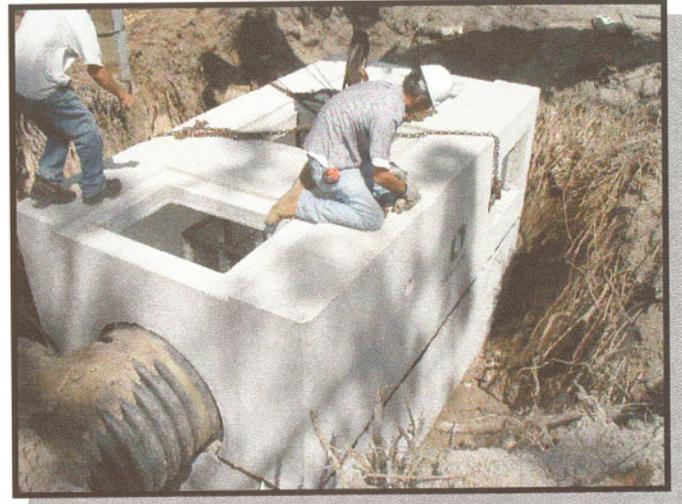
# Installation of the Nutrient Separating Baffle Box

## Setting the Top Half

The top half is lowered in place.



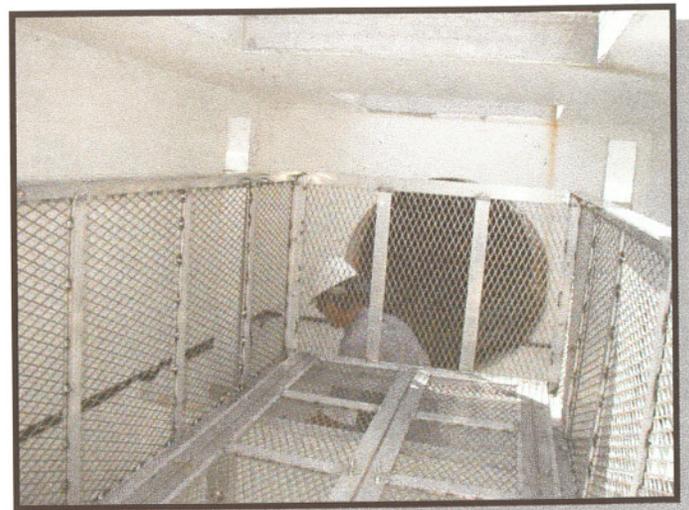
The top half has been set. A shiplap joint positions the top half in alignment with the bottom.



Side view of the structure.



View inside the structure.



Installation of the Nutrient Separating Baffle Box  
The Finished Installation

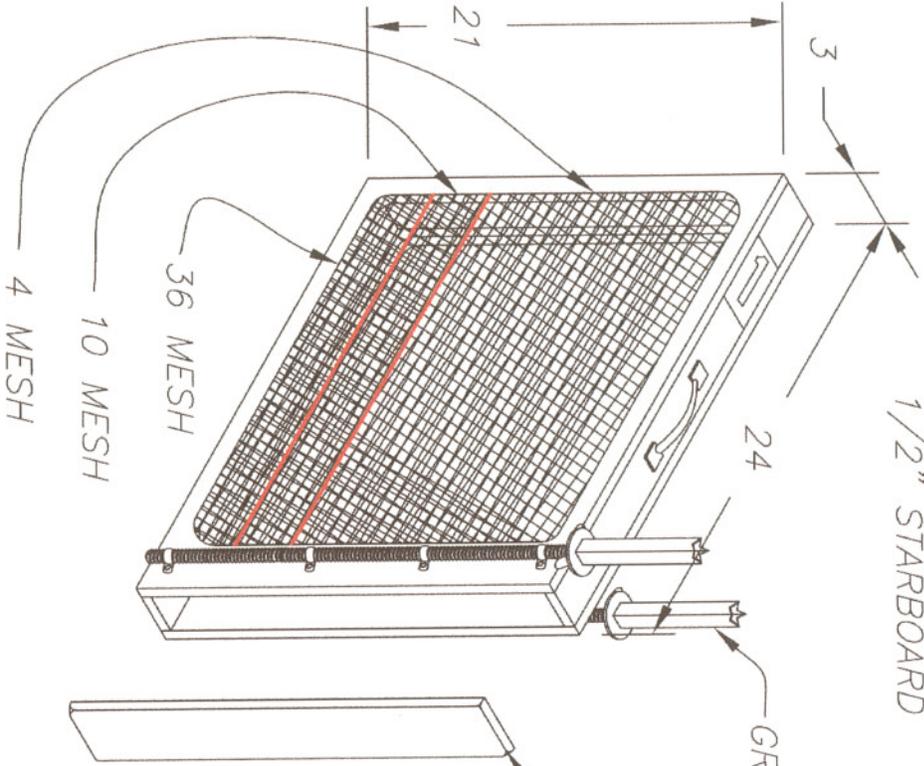


Sieve Sampler  
AutoCAD Drawing

SUNTRREE TECHNOLOGIES

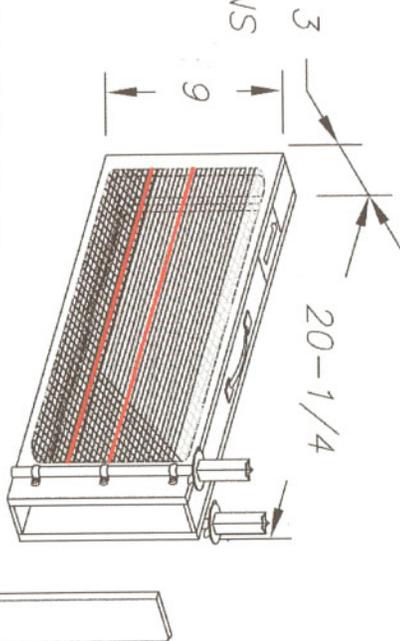
BODY MADE FROM  
1/2" STARBOARD

SMALL TESTER



ALL SCREENS ARE MADE OF STAINLESS STEEL AND IS ON BOTH SIDES. A 36 MESH SCREEN IS DOWN LOW, A 10 MESH SCREEN IS IN THE MIDDLE, AND A 4 MESH SCREEN IS AT THE TOP.

REMOVABLE ENDS TO BE USED WHEN TRANSPORTING TO LABORATORY.

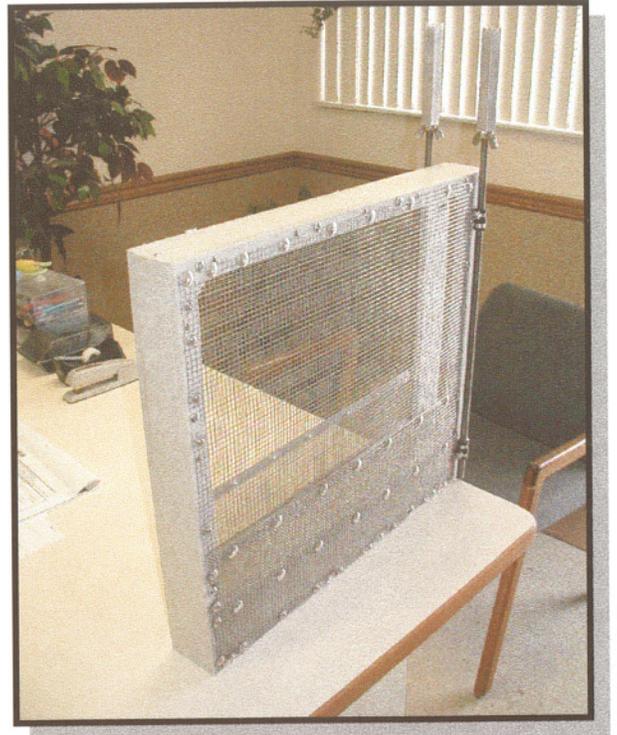
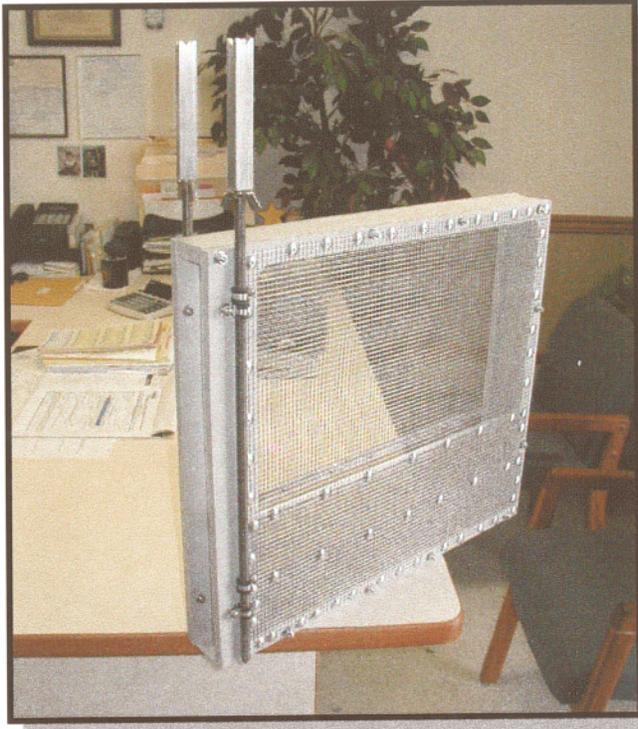


SAMPLERS

PLACE IN PIPE SO THAT THE OPENING FACES THE DIRECTION OF FLOW. TURN WING NUTS COUNTER CLOCKWISE SO THAT THE GRIP EXTENSIONS ARE RAISED AND PRESS AGAINST THE TOP OF THE STORM DRAIN PIPE. TIGHTEN THE WING NUTS SO THAT THE GRIP EXTENSIONS DIG INTO THE TOP OF THE PIPE AND CAN WITHSTAND THE EXPECTED WATER FLOW.

# Sieve Sampler

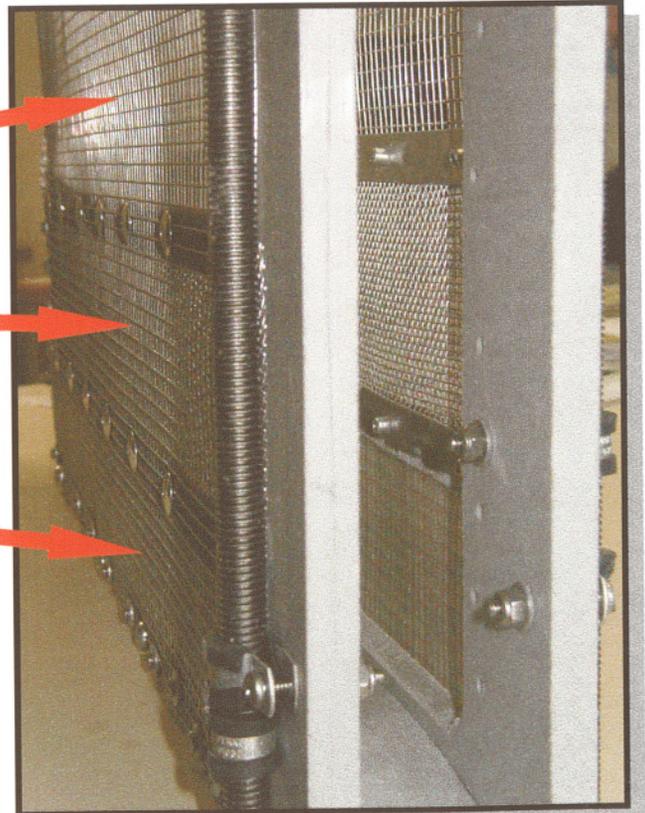
Photos of Sampler



4 mesh stainless steel screen; 16 openings per square inch; opening size = 0.2180"; 76% open area.

10 mesh stainless steel screen; 100 openings per square inch; opening size = 0.0750"; 56.3% open area

35 mesh stainless steel screen; 1225 openings per square inch; opening size = 0.0196"; 47.1% open area



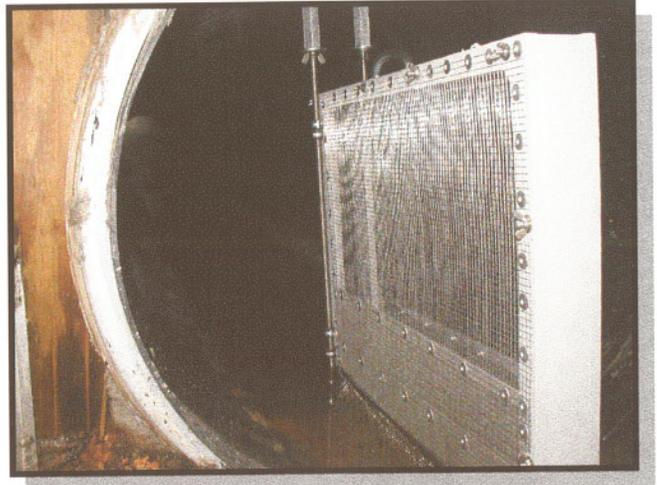
# Sieve Sampler

Photos That Show The Installation of Sieve Samplers

The structure has 3 inflow pipes. The smaller sieve samplers will be placed in the 2 side inflows (21" x 15" OCMP). One large sieve sampler will be placed in the 30" inflow pipe coming in the end of the structure (30" HDPE), and the other large sieve sampler will be placed in the 30" outflow pipe (30" HDPE).



Sieve sampler in the 30" HDPE inflow pipe. The threaded vertical rods on the sides of the samplers adjust to wedge the samplers in the pipe and prevent water flow from dislodging them.



The smaller sieve samplers are placed into each side inflow (21" x 15" OCMP).



View of sieve sampler in the 30" HDPE outflow pipe.

