

Melbourne Village Stormwater and Sediment Control Project Platt Circle Basin

Town of Melbourne Village Brevard County, Florida

Scope of Work

Introduction and Background

The proposed project is for construction of a Stormwater and Sediment Control project for the Town of Melbourne Village. The Town of Melbourne Village is located in Brevard County and is a community of just over 600 residents in a 640 acre basin. The natural foliage and rural atmosphere found in the Village distinguish it from the metropolitan development found in its neighboring cities, West Melbourne and Melbourne. The Melbourne Village Town Hall is located at 555 Hammock Road, Melbourne Village, Florida. The Town is located in Township 27, Range 37, Section 31 at longitude 80° E 40' 00" and latitude 28° N 05' 00" (see map, Figure 1). The Town is located in the Crane Creek basin, which is a priority nonpoint source watershed that discharges to the Indian River Lagoon (IRL) system. The SWIM Plan and the NEP's Comprehensive Conservation and Management Plan (CCMP) recognizes Crane Creek as a Priority tributary for reducing pollutant loads to the IRL. This proposal is for the implementation of a preliminarily designed priority stormwater and sediment control project identified in the Town's master stormwater plan. This project is in the 15 acre Platt Circle basin in the southeastern area draining directly to the M-1 Canal. A reduction in the 2,500 lb/yr sediment load transport to Crane Creek will be provided by several sediment control measures without increasing peak discharge. These measures and BMPs will include: ditch regrading, failing culvert replacement under Crane Road with a headwall and piping 340 feet of open ditch to the M-1 Canal with 30-inch HDPE pipe as sediment source control. Pre and post-construction storm event water quality monitoring is proposed to measure efficiency.

Objective

The objective of this project is to develop the final engineering design and construct a stormwater and sediment control project for the Platt Circle basin, as identified in the Town of Melbourne Village's stormwater master plan. Specific project objectives to include:

1. Detailed characterization of basin, including survey, topographic, hydrologic and geotechnical data,
2. Refined routing and flood model,
3. Completion of 60-70% construction documents,
4. Completion of final construction drawings, technical specifications and bid documents,
5. Pre-construction water monitoring.
6. Construction management and administration,
7. Post-construction water quality monitoring and analysis of the project,
8. Final project report and maintenance plan.

Scope of Work

The Town of Melbourne Village will act as the general contractor for this project and will provide all effort necessary to provide design-build services including design, construction, inspection, monitoring, as-built drawings and a maintenance plan for a flood and sediment control project. To alleviate the problem of persistent ponding in Platt Circle and to reduce erosion at Crane Road and the outfall ditch, the following steps are recommended:

1. Clean and stabilize the culverts and ditches in and downstream of Platt Circle.
This would include removal of vegetation from ditches and sodding or seeding of ditch banks to reduce the amount of erosion due to loose soils.
2. Regrade the high spot located near the north end of Azalea Park to provide relief to the Platt Circle area. This would reduce the elevation at which stormwater begins to discharge by approximately 0.5 ft and relieve the persistent ponding condition.
3. Install two 18" culverts in Platt Circle to reduce erosion and transport of sediment to the conveyance system.
4. Build 2 catch basins north of Crane Road and install 30" HDPE pipe in the north side and cross Crane Road with 30" HDPE pipe to the Suntree Baffle Box.
Existing culverts were removed.
5. Install 30" pipe (340 ft) from Crane Road to Crane Creek Canal in the existing ditch. Replacing the ditch that is currently in place with a piped system that will reduce the amount of erosion and provide a location for a stormwater treatment unit. Sediment loads to Crane Creek Canal will be reduced by this alternative.

Project Manager/ Contact

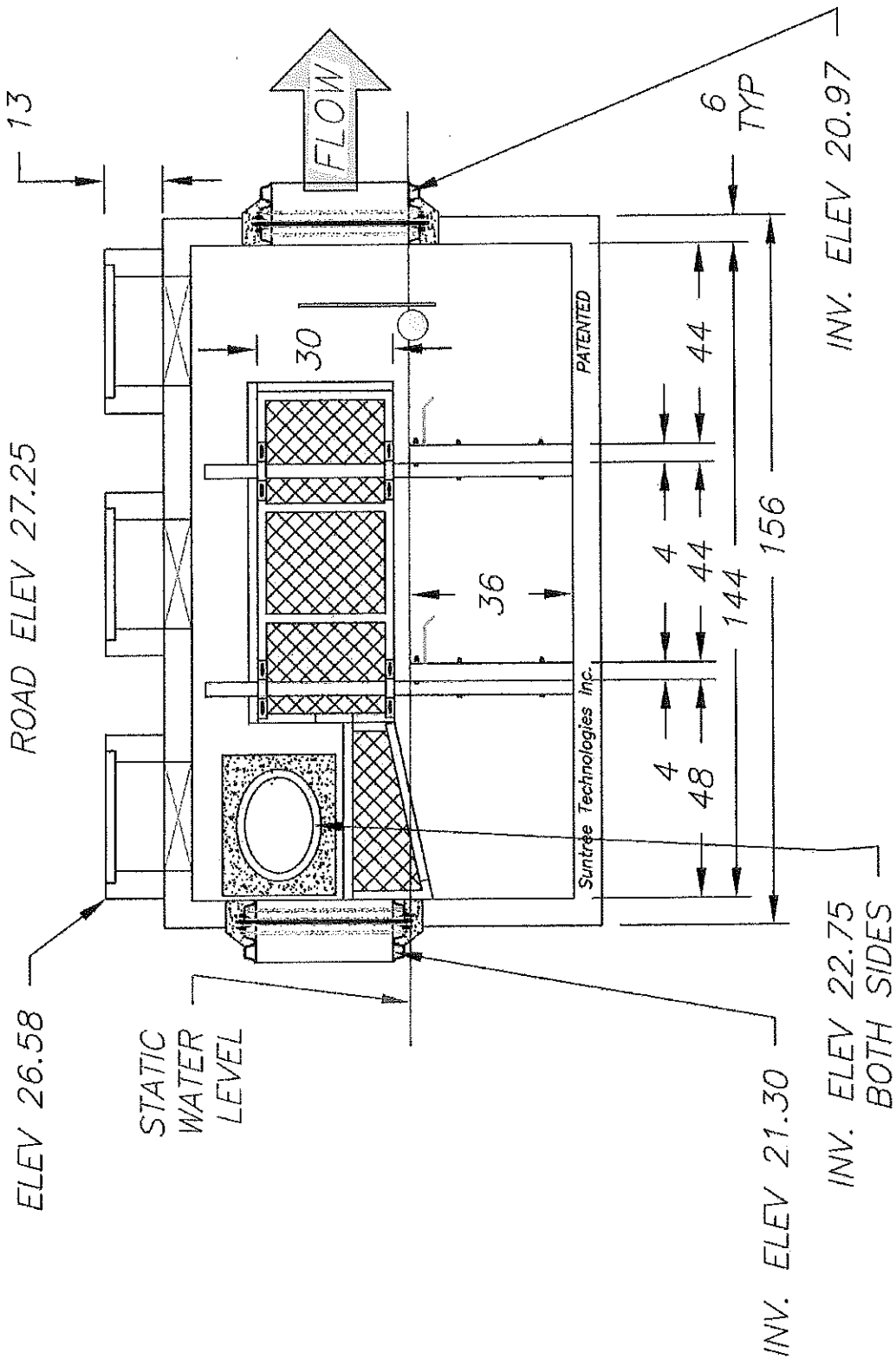
From a project administration point of view, communications will be with the Town of Melbourne Village through Mary E. Beasom, Project manager. Project tasks will be accomplished by Melbourne Village public works with possible use of sub-contractors.

Budget attached:

Platt Circle Basin Improvements

ITEM NUMBER	ITEM	COST
1	Apron at M-1	3,200.00
2	Pipe	25,000.00
3	Catch basins (2)	5,000.00
4	Suntree Baffle Box	28,000.00
5	Headwall	1,000.00
6	Tree Removal	15,000.00
7	Re-grading	16,000.00
8	Pipe at Platt Circle	5,000.00
	Total Item Costs	98,200.00
	Contingency	9,336.00
	Total Construction Cost	107,536.00
	Total Contract (with SJRWMD)	123,648.00
	Paid ECT	-16,112.00
	Balance	107,536.00
	Excess (Under) Expenditure	0.00

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



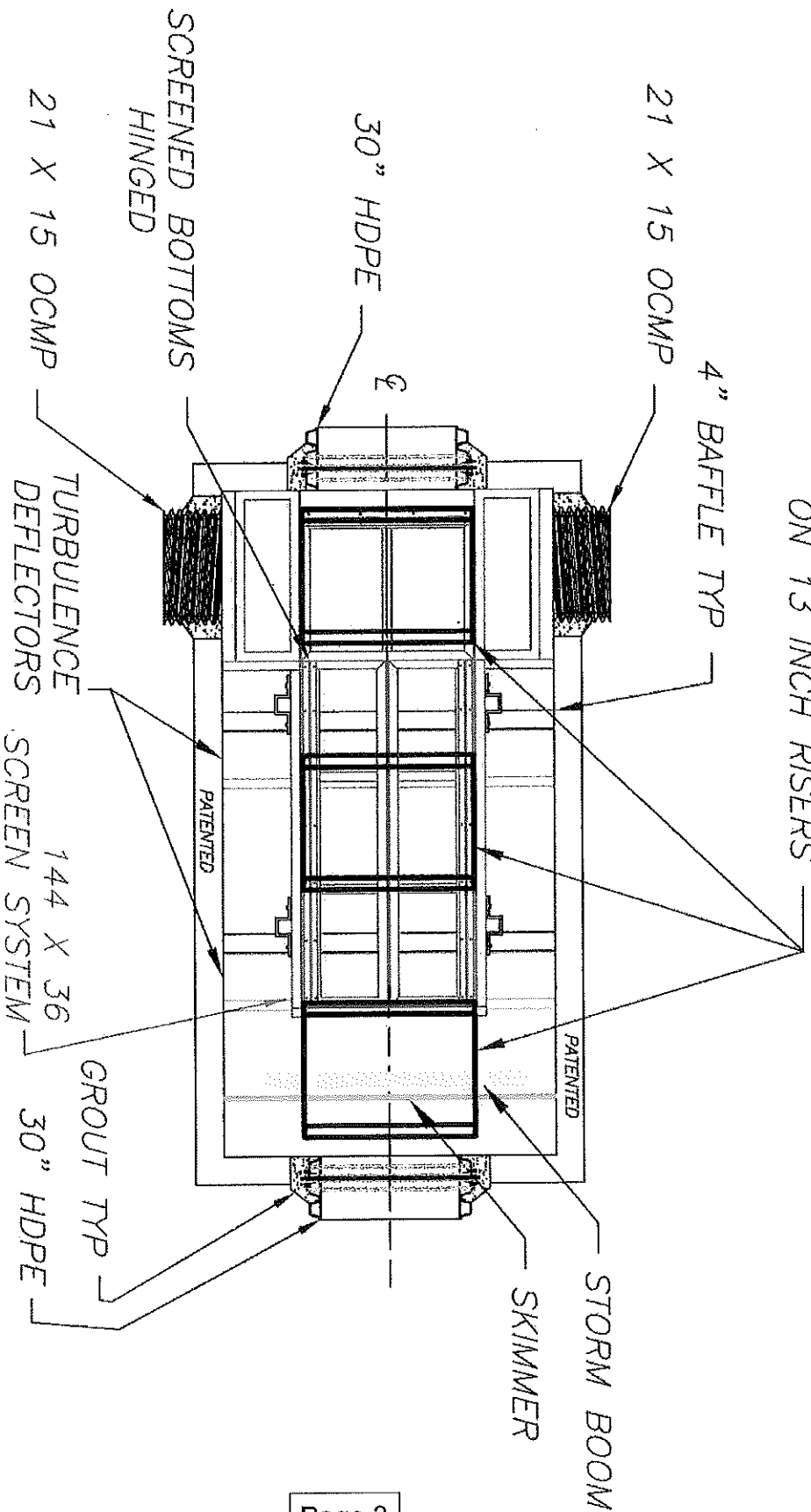
FRONT VIEW

PATENTED
AND PAT. PEND.

SUNTREE TECHNOLOGIES, INC. 798 CLEARLAKE RD., SUITE #2 COCOA, FL. 32922		PREPARED BY	SUNTREE TECHNOLOGIES SPEC.
NUTRIENT SEPARATING BAFFLE BOX MODEL NO. NSBB 6-12-84-RH		REVISIONS	DATE
DATE: 03/22/05 SCALE: SF = 3/6		REVISIONS	DATE
DRAFTER: N.R.B. UNITS: INCHES		REVISIONS	DATE

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

Record of Field Observations and Tests:

We arrived on site, and observed pumps, pipes, and baffle box to be constructed as indicated on attached print. Checked calibration of balance on site with a balance calibrated on 24 August 2004 Model # FG-60K Serial # H3803448. The weight and volume of aggregate to be used was computed at 3600 lbs and 1.2249 cubic yards. Pumps with a capacity of 4200 Gallons per Minute and 4800 Gallons per minute were used to produce a flow of 9000 Gallons per Minute into a collection box. From this box water passed through a three (3) foot diameter pipe to the baffle box. Sand was introduced into the flow approximately three (3) feet to five (5) feet from the collection box. This was started after the maximum flow had been achieved and stabilized. Flow through the baffle box stabilized with the water approximately nineteen (19) inches from the inside top of chamber one (1) and approximately twenty (20) inches from the inside top of chamber three (3). Sixty (60) buckets of aggregate, consisting of a mix of 2 millimeter to 0.125 millimeter particles of sand, each bucket weighing sixty-three (63) lbs, including a bucket weight of three (3) lbs, were poured into the three (3) foot diameter pipe.

After all sixty (60) buckets were emptied into the system, flow was continued at a reduced rate to flush the aggregate remaining in the three (3) foot pipe into the baffle box. After completion of the test, water was removed from the baffle box, with due care taken to not remove any aggregate. A sample bucket of sand was taken from chamber one (1). Additionally a drive sleeve test was taken, to determine density and moisture content of the aggregate. The result of the Speedy™ moisture test was three point seven (3.7) percent. The sample taken in the five (5) gallon bucket was of equal volume to what was observed in each bucket introduced into the test. The wet weight of the sample was fifty-eight and one-half (58.5) lbs including the bucket, [Tare three (3) lbs.] It was determined that the entire content of the baffle box would have to be reclaimed and dried in order to determine the amount of material captured. This process was undertaken by Universal Engineering Sciences and Suntree Technologies. The drying process was completed and a spread sheet (attached) was compiled of all the weights. Sixty-three (63) buckets of material were recovered from the baffle box. The weight after drying was three thousand six hundred and thirty-six (3,636) lbs. Subtracting the weight of the buckets, one hundred and eighty-nine (189) lbs, we are left with a net weight recovered of three thousand four hundred and forty-seven (3,447) lbs. Dividing this by the start weight of three thousand six hundred (3600) lbs, we arrive at a net return of ninety-five point seventy-five (95.75) percent aggregate returned. This exceeds the required return of eighty (80) percent by fifteen point seventy-five (15.75) percent.

It was noted that the baffle box trapped the coarser material in the first chamber, and progressively finer material in each successive chamber. Most material was in the first chamber, to about eighty (80) to ninety (90) percent of its capacity. The second chamber captured approximately twenty (20) to thirty (30) percent of its capacity. The third chamber was less than five (5) percent of its capacity.