



**FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

BOB MARTINEZ CENTER
2600 BLAIRSTONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

Permit Issued to:

Pasco County Solid Waste Department
142230 Hays Road
Spring Hill, Florida
Phone #727-857-2780

Facility WACS ID No: 45799

Facility Name:

Pasco County Resource Recovery Facility
Facility Address: 14230 Hays Road
Spring Hill, Florida 34610

Contact Person:

John P. Power, Solid Waste Director
Pasco County Resource Recovery Facility
Spring Hill, Florida 34610
jpower@pascocountyfl.net
757-856-0119

**Solid Waste Research Development and
Demonstration Permit**

Permit No: 26254-004-SO-21

Permit Issued: March 5, 2014
Permit Renewal Application Due Date: January 5, 2017
Permit Expires: March 5, 2017

Permitting Authority:

Florida Department of Environmental Protection
Permitting and Compliance Assistance Program
2600 Blair Stone Road/MS4565
Tallahassee, Florida 32399
Phone: (850) 245-8707

SECTION 1 - SUMMARY INFORMATION

A. Authorization

The permittee is hereby authorized to construct and operate the facility described below in accordance with the specific and general conditions of this permit and any documents attached to this permit or specifically referenced in this permit and made a part of this permit.

This solid waste Research, Development and Demonstration permit is issued under the provisions of Chapter 403, Florida Statutes, (F.S.), and Florida Administrative Code, (F.A.C.), Chapters 62-4 and 62-701.

This permit does not relieve the permittee from complying with any other appropriate local zoning or land use ordinances or with any other laws, rules or ordinances. Receipt of any permits from the Department does not relieve the applicant from obtaining other federal, state, and local permits and/or modifications required by law, including those from other Sections within the Department or of the Water Management District.

B. Facility Location

This facility is located in Section 24, Township 24S, Range 17E at Latitude 82° 38' 16.96" W and Longitude 28° 22' 44.52"N in Pasco County, Florida. The street address of this facility is 14230 Hays Road, Spring Hill, FL 34610-7630.

C. Facility Description

This facility will be a research demonstration project designed to examine the suitability of using non-hazardous Waste to Energy (WTE) bottom ash as a partial aggregate replacement in Portland cement and hot mix asphalt pavements and as a compacted road base. The on-site Pasco County Resource Recovery Facility will serve as the source of all WTE bottom ash used in the research project, and only non-hazardous WTE bottom ash will be used.

Figure 1 depicts the existing configuration of the Pasco Resource Recovery Facility and the location of the proposed facility test site for the research in the northeast portion of the property. A total of five test strips and two test patches will be constructed at the facility test site for this project.

The five pavement test strips, having a total length of approximately 1,000 feet and using approximately 350 tons of non-hazardous WTE bottom ash in three of the strips, will be constructed as shown on Figure 4 and described as follows.

- Test Strip #1 WTE Bottom Ash Base: WTE bottom ash as the base course covered with asphalt concrete.

- Test Strip #2 Asphalt Control: Limerock base covered with asphalt concrete. No WTE bottom ash is used.
- Test Strip #3 WTE Bottom Ash Asphalt: Limerock base covered with WTE bottom ash amended asphalt (>3/8" size fraction).
- Test Strip #4 Control Concrete: Limerock base covered with Portland cement concrete. No WTE bottom ash is used.
- Test Strip #5 WTE Bottom Ash Concrete: Limerock base covered with WTE bottom ash amended Portland cement concrete (>3/8" size fraction).

Two ten foot by ten foot by 8-inch thick test patches will be also constructed using non-hazardous WTE bottom ash as the base course and covered with asphalt pavement as shown on Figure 5. The WTE bottom ash will be underlain with a geomembrane liner and leachate from the test patches will be collected in leachate sumps at the downgradient boundary of the test patches.

The research project will include sampling and chemical analysis of the materials used in the construction, of soils near the test strips, leachate from the test patches, ground water and surface water near the test strips. Following completion of the project the test patches will be removed and disposed of in the on-site Pasco County Resource Recovery ash landfill. The test strips will be left in place provided there is no adverse environmental impact. If it is determined there is an adverse environmental impact from the test strips, then they will be removed and disposed of in the on-site Pasco County Resource Recovery ash landfill.

D. Appendices Made Part of This Permit

APPENDIX 1 - General Conditions

APPENDIX 2 – List of Approved Documents Incorporated into the Permit

E. Attachments for Informational Purposes Only

ATTACHMENT 1 - Facility Permit History

SECTION 2 - SPECIFIC CONDITIONS

A. Administrative Requirements

1. Documents Part of This Permit. The permit application as revised in final form replaced or amended in response to the Department's Request(s) for Additional Information are contained in the Department's files and are made a part of this permit. Those documents that make up the complete permit application are listed in APPENDIX 2.

2. Permit Modification. Any change to construction, operation, monitoring, or closure requirements of this permit may require a modification to this permit, in accordance with the provisions of Rule 62-701.320(4), F.A.C.
3. Permit Renewal. In order to ensure uninterrupted operation of this facility, a timely and sufficient permit renewal application must be submitted to the Department in accordance with Rule 62-701.320(10), F.A.C. A permit application submitted at least 61 days prior to the expiration of this permit is considered timely and sufficient. In accordance with Section 403.70715, F.S., this permit may be renewed no more than three times with a permit duration of three years for each renewal.
4. Transfer of Permit or Name Change. In accordance with Rule 62-701.320(11), F.A.C., the Department must be notified by submitting Form 62-701.900(8) within 30 days: (a) of any sale or conveyance of the facility; (b) if a new or different person takes ownership or control of the facility; or (c) if the facility name or permittee's legal name is changed.

B. Construction Requirements

1. Construction Description. Construction of five test strips and two test patches are authorized. Each test strip will be approximately 180 feet in length and 26 feet in width. The composition of each test strip and test patch is described in Table 1. Test strip, test patch and sampling locations (as described in Section D of this permit) are shown in Figures 2 and 3.
2. General Construction Requirements.
 - a. All construction shall be done in accordance with the approved design and drawings included in the permit application. The Department shall be notified before any changes, other than minor deviations, to the approved design are implemented in order to determine whether a permit modification is required.
 - b. Any WTE bottom ash transported to the facility test site that is not incorporated into the test strips and/or test patches shall be removed from the facility and disposed of in the on-site WTE ash landfill within 96 hours of receipt at the test site.
 - c. The test strips will be constructed using standard construction techniques with modifications as appropriate to account for the addition of WTE bottom ash as an amendment. Test strip construction details are displayed in Figures 4 and 5.
3. Certification of Construction Completion. Upon completion of construction, the engineer of record shall notify the Department, in accordance with the permit application, that the permitted construction is complete and was done in substantial conformance with the approved construction plans except where minor deviations were necessary. All deviations shall be described in detail and the

reasons therefore enumerated. The following document shall be submitted along with the Certification:

- a. A final report and record drawings showing that the test strips, test patches and groundwater monitoring wells have been installed in substantial conformance with the plans and specifications presented in the permit application. The record drawings must include the results of the surveys of the test strips, test patches and monitoring well locations.

C. Operation Requirements

1. General Operating Requirements. The permittee shall operate the test strips and test patches in accordance with the operational procedure proposed in the permit application unless otherwise authorized in this permit or by the Department. The Department shall be notified before any changes, other than minor deviations, to the approved operational procedure as proposed in the permit application are implemented in order to determine if the adjusted procedure is consistent with permit conditions and whether a permit modification is required.
2. Notification of Emergencies. Notification of Emergencies shall be made to the Solid Waste Section of Department's Southwest District Office at 813/470-5700 or via email to swd_waste@dep.state.fl.us.
3. Housekeeping. The facility shall be operated to control dust, vectors, litter and objectionable odors. If objectionable odors are confirmed beyond the landfill property boundary, the owner or operator shall comply with the gas management requirement in Section E of this permit.
4. Leachate Management. All excess leachate recovered during the operation of this research project, and not used for analytical testing, will be disposed of using the existing on-site WTE ash leachate management system. Water purged from groundwater sampling wells will not be considered leachate and will be allowed to infiltrate back into the soil adjacent to their respective monitoring wells.
5. Stormwater. Leachate shall not be discharged into the stormwater management system. Stormwater or other surface water which comes into contact with or mixes with solid waste or leachate shall be considered leachate and is subject to the requirements of Rule 62-701.500(8), F.A.C. Rainwater runoff from test patches and test strips will be managed as stormwater.
6. Reporting Requirements.
 - a. Quarterly Reports. After installation of the monitoring wells, test strips and test patches, reports shall be submitted to the Department describing the progress of the research and including the results of the analytical testing available at the time of the report. Unless otherwise approved by the Department, quarterly reports shall be submitted by the 15th of the month following each quarter (April 15, July 15, October 15, and January 15).

- b. Final Report. Unless otherwise approved by the Department, within six months of completion of the research project, a final report summarizing the results and conclusions of the project shall be submitted to the Department.
- c. Submitting Reports. Except for the EDD files in Specific Condition D.7., reports shall be submitted in an Adobe pdf format. They shall be sent to the Department's District office at swd_waste@dep.state.fl.us and to Tallahassee at: Florida Department of Environmental Protection, Solid Waste Section, 2600 Blair Stone Road, MS 4565, Tallahassee, Florida 32399-2400.

D. Water Quality and Soil Sampling Requirements

1. Monitoring Wells. The monitoring wells listed on Table 2, will be installed and sampled and analyzed at least quarterly for the parameters listed in Table 4. Monitoring well depths will range from 15 to 35 feet as determined by the depth to groundwater. The results shall be included in the quarterly reports.
2. Surface Water Sampling. A single surface water sampling location, RSW-1, will be established in the stormwater retention pond at the approximate location shown in Figure 2. Surface water, if present in the retention pond, shall be sampled and analyzed once prior to construction of the test strips and shall be sampled and analyzed at least quarterly thereafter. The analyses shall be for the parameters listed in Table 4. The results shall be included in the quarterly reports.
3. Soil Sampling. Three soil sampling locations shall be established at the approximate locations shown in Figure 2 and shall be sampled at the depths specified in the permit application. Soil samples shall be collected at these locations prior to construction of the test strips and at least quarterly thereafter. The samples shall be analyzed for total content of the parameters listed in Table 5. The results shall be included in the quarterly reports.
4. Leachate Sampling. Leachate samples, if present, shall be collected from the sumps of Test Patches #1 and #2 and analyzed at least quarterly. All leachate samples will be tested for the parameters listed in Table 5, and the results shall be included in the quarterly reports.
5. Ash, Concrete and Pavement Sampling. Materials used for constructing the test strips and test patches shall be sampled consistent with the needs of the research project. In accordance with the permit application, it is anticipated these samples will be prepared using the methods listed in Table 3 and then analyzed for the parameters listed in Table 5.
6. Sampling, Collection and Analysis Methods. All field testing, sample collection and preservation and laboratory testing, including quality control procedures, shall be in accordance with Chapter 62-160, F.A.C. Approved methods as published by the Department or as published in Standard Methods, ASTM, or EPA Methods shall be used.

7. **ADaPT Files.** All water quality and soil monitoring results shall be submitted to the Department as an Electronic Data Deliverable (EDD) file and shall be provided in a comma separated text file electronic format consistent with requirements for importing the data into the Department's databases as summarized at: <http://www.dep.state.fl.us/waste/categories/shw/pages/ADaPT.htm>. The ADaPT files shall be submitted to ADaPT.EDDs.and.Reports@dep.state.fl.us. Help on processing ADaPT files may be obtained by contacting Clark Moore at (850) 245-8739 or at clark.b.moore@dep.state.fl.us.

E. Gas Management System Requirements.

1. **Odor Remediation Plan.** The facility shall be operated to control objectionable odors. If objectionable odors are confirmed beyond that property boundary, then upon notification by the Department, the permittee shall develop and implement an odor remediation plan in accordance with the requirements of Rule 62-701.530(3)(b), F.A.C.

F. Financial Assurance and Cost Estimates.

[None]

G. Closure Requirements

1. **Closure Requirements.** Prior to initiating closure at the facility test site, the permittee must receive authorization from the Department. Closure shall consist of test patch removal and disposal in the on-site WTE ash landfill and removal and disposal of test strips in the on-site WTE ash landfill if it is determined that they caused an adverse environmental impact to ground water.
2. **Certification of Closure Construction Completion.** Written notification will be provided to the Department upon completion of closure.

H. Long-Term Care Requirements.
[None]

Executed in Leon County, Florida.

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION



Charles F. Goddard, Program Administrator
Permitting and Compliance Assistance Program

FILED, on this date, pursuant to Section 120.52, F.S. with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk

Date

TABLE 1. Test Strip and Test Patch Construction Details

Location	Description
Test Strip #1: WTE Bottom ash used a base course	180' x 26' of asphalt concrete (containing no ash) above a base course consisting of compacted WTE bottom ash (a blend of both the >3/8-inch and the <3/8-inch fractions).
Test Strip #2: Control - Asphalt pavement	180' x 26' of asphalt concrete (containing no ash) above a base course consisting of compacted lime rock.
Test Strip #3: WTE Bottom ash used as a partial aggregate replacement for asphalt pavement.	180' x 26' of asphalt concrete incorporating the >3/8-inch WTE bottom fraction and as a partial aggregate replacement above a base course consisting of compacted lime rock. The WTE ash will comprise approximately 20-30% by mass of the asphalt mix.
Test Strip #4: Control - Portland cement concrete pavement	180' x 26' of Portland cement concrete (containing no ash) above a base course consisting of compacted lime rock.
Test Strip #5: WTE Bottom ash used as a partial aggregate replacement for Portland cement concrete pavement	180' x 26' of Portland cement concrete incorporating the >3/8-inch WTE bottom fraction as a partial aggregate replacement above a base course consisting of compacted lime rock. The WTE ash will comprise approximately 15-20% by mass of the concrete mix
Test Patches	10' x 10' x 4" asphalt patches installed over 8" thick WTE Ash base course then over geomembrane

TABLE 2. Water Quality and Soil Sampling Locations and Frequencies

Sample Name	Media	Test Strip Association	Purpose	Preliminary Sampling Schedule	WACS ID
RW-1	Ground Water	WTE Ash Base	Downgradient	At least quarterly	00029208
RW-2	Ground Water	WTE Ash Base	Downgradient	At least quarterly	00029209
RW-3	Ground Water	Control Asphalt	Downgradient	At least quarterly	00029211
RW-4	Ground Water	Control Asphalt	Downgradient	At least quarterly	00029212
RW-5	Ground Water	WTE Ash Asphalt	Downgradient	At least quarterly	00029213
RW-6	Ground Water	WTE Ash Asphalt	Downgradient	At least quarterly	00029214
RW-7	Ground Water	Control Concrete	Downgradient	At least quarterly	00029215
RW-8	Ground Water	Control Concrete	Downgradient	At least quarterly	00029216
RW-9	Ground Water	WTE Ash Concrete	Downgradient	At least quarterly	00029217
RW-10	Ground Water	WTE Ash Concrete	Downgradient	At least quarterly	00029218
RW-11	Ground Water	WTE Ash Base	Upgradient	At least quarterly	00029219
RW-12	Ground Water	Control Asphalt	Upgradient	At least quarterly	00029220
RW-13	Ground Water	WTE Ash Asphalt	Upgradient	At least quarterly	00029221
RW-14	Ground Water	Control Concrete	Upgradient	At least quarterly	00029222
RW-15	Ground Water	WTE Ash Concrete	Upgradient	At least quarterly	00029210
RSW-1	Surface Water	Retention Pond	Downgradient	At least quarterly	00029223
RSS-1	Soil	WTE Ash Base		At least quarterly	00029224
RSS-2	Soil	WTE Ash		At least quarterly	00029225
RSS-3	Soil	WTE Ash Concrete		At least quarterly	00029226

TABLE 3. Preparation Methods for Ash, Concrete and Asphalt Samples

Analytical Method	Composite Sample of Base Course Ash	Composite Sample of Ash from Each Batch Plant	Concrete Amended with WTE Bottom (>3/8-inch)	Asphalt Amended with WTE Bottom (>3/8-inch)	Control Samples ¹
Total Metal Concentration (EPA Method 3050B; digestion on ICP-AES)	X	X	X	X	X
TCLP (Method 1311)	X	X			
SPLP (Method 1312)	X	X	X	X	X
Leaching Method 1313	X		X	X	
Leaching Method 1314	X		X	X	
Leaching Method 1315	X		X	X	
Leaching Method 1316	X		X	X	

¹ Control samples include aggregate used in asphalt and concrete, lime rock used as base course, un-amended Portland cement concrete, and un-amended asphalt pavement.

TABLE 4. Ground Water and Surface Water Parameters

Parameter	Estimated Detection Limit (ug/l)
Ag	5.25
Al	34.5
As	6
B	9
Ba	1.5
Be	3
Ca	13.5
Cd	1.5
Cr	3
Cu	3
Fe	3
Hg	10
Mg	3
Mn	1.5
Mo	3
Na	60
Ni	2.25
Pb	6
Sb	3.75
Se	9
Sn	4.5
Sr	4.5
V	1.5
Zn	3
SO4-	200
NO3-	500
Cl-	100
Alk	n/a
pH	n/a
Conductivity	0
Turbidity	0
Temp	n/a
DO	0
TDS	0
Static Water Level (ground water only)	

TABLE 5. Ash, Asphalt, Concrete and Leachate Parameters

Parameter	Estimated Detection Limit (ug/l)
Ag	5.25
Al	34.5
As	6
B	9
Ba	1.5
Be	3
Ca	13.5
Cd	1.5
Cr	3
Cu	3
Fe	3
Hg	10
Mg	3
Mn	1.5
Mo	3
Na	60
Ni	2.25
Pb	6
Sb	3.75
Se	9
Sn	4.5
Sr	4.5
V	1.5
Zn	3

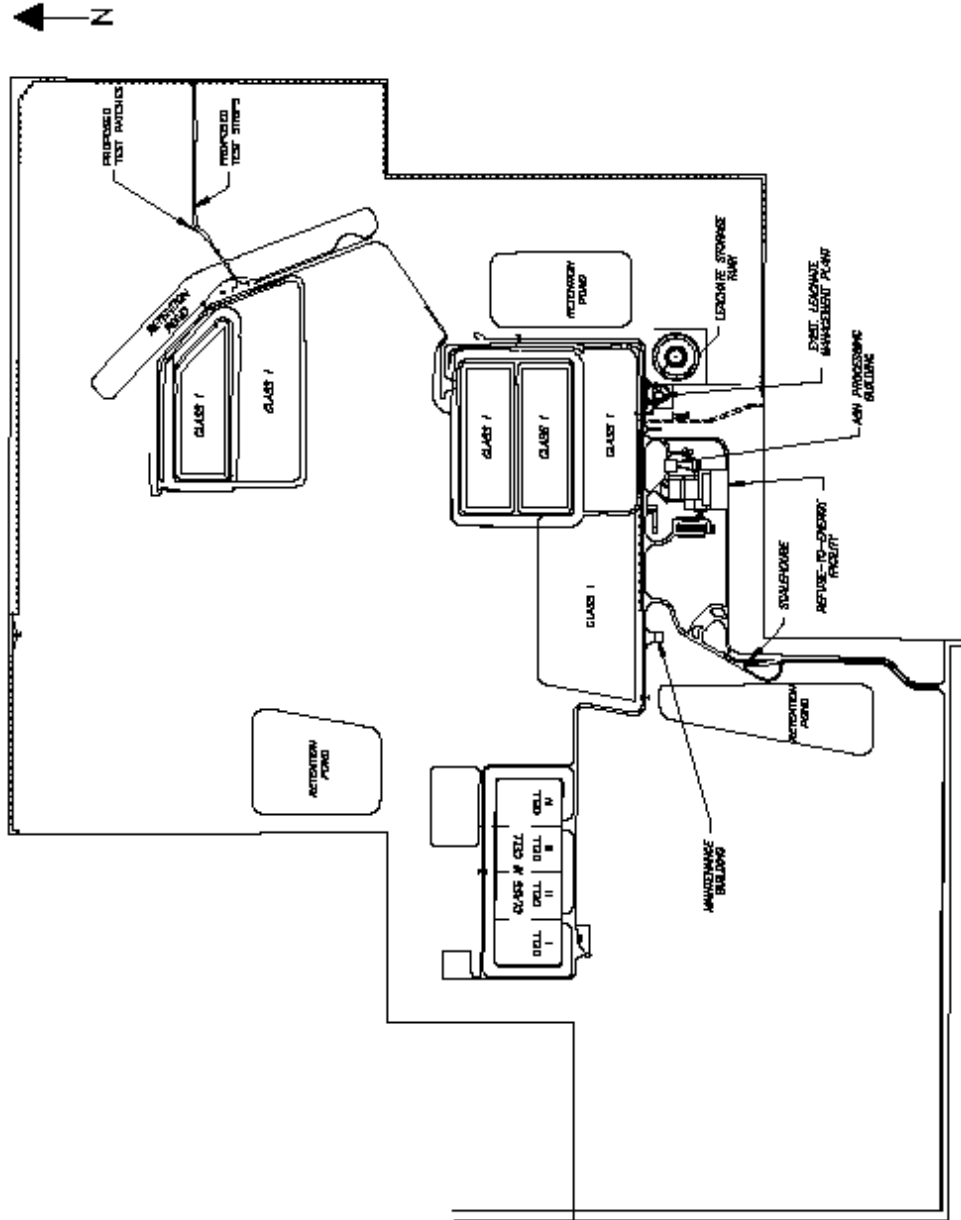


Figure 1: Layout of Pasco County Resource Recovery Facility

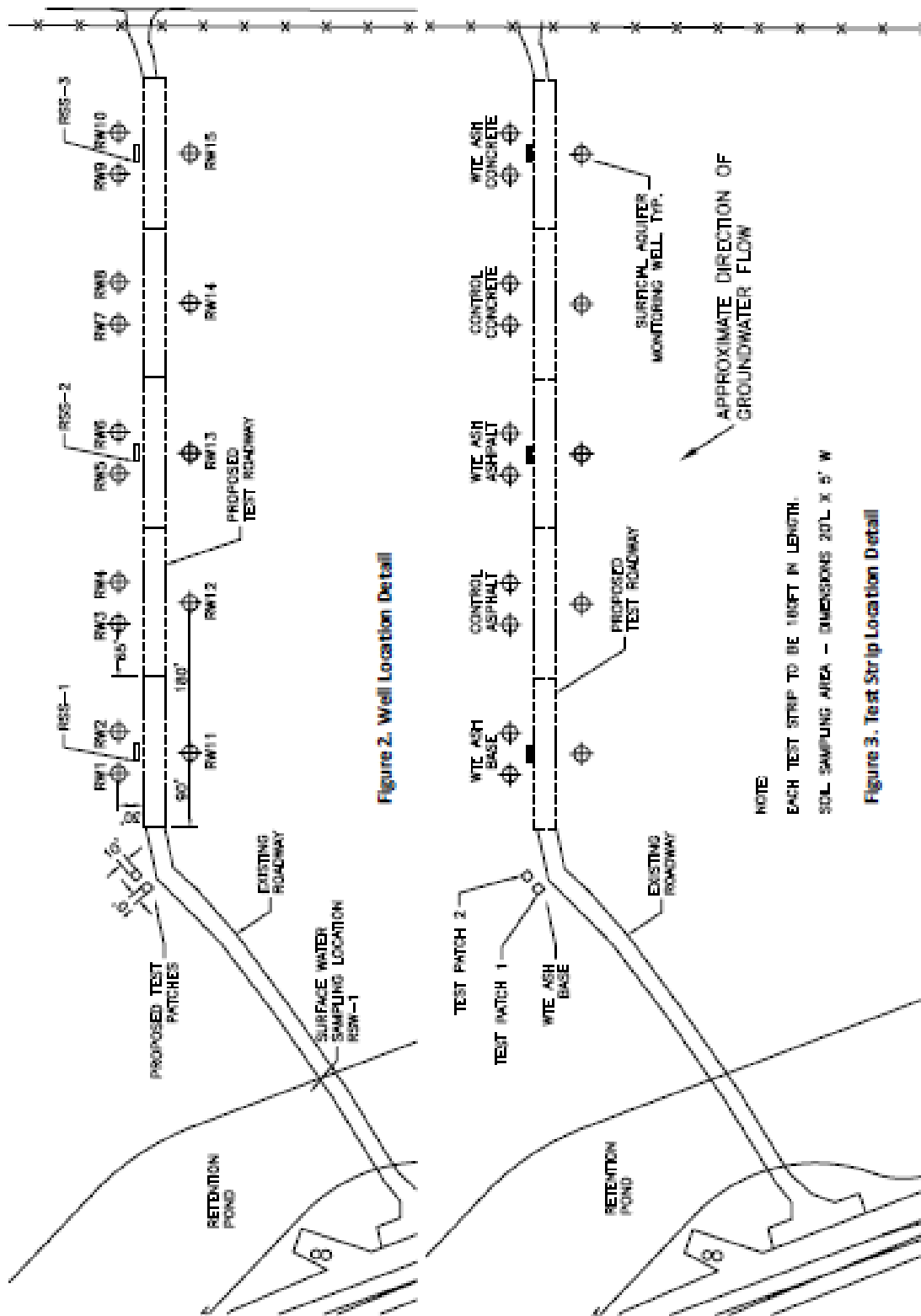


Figure 2. Well Location Detail

Figure 3. Test Strip Location Detail

NOTE
 EACH TEST STRIP TO BE 100FT IN LENGTH.
 SOL. SAMPLING AREA - DIMENSIONS 20'L X 5' W

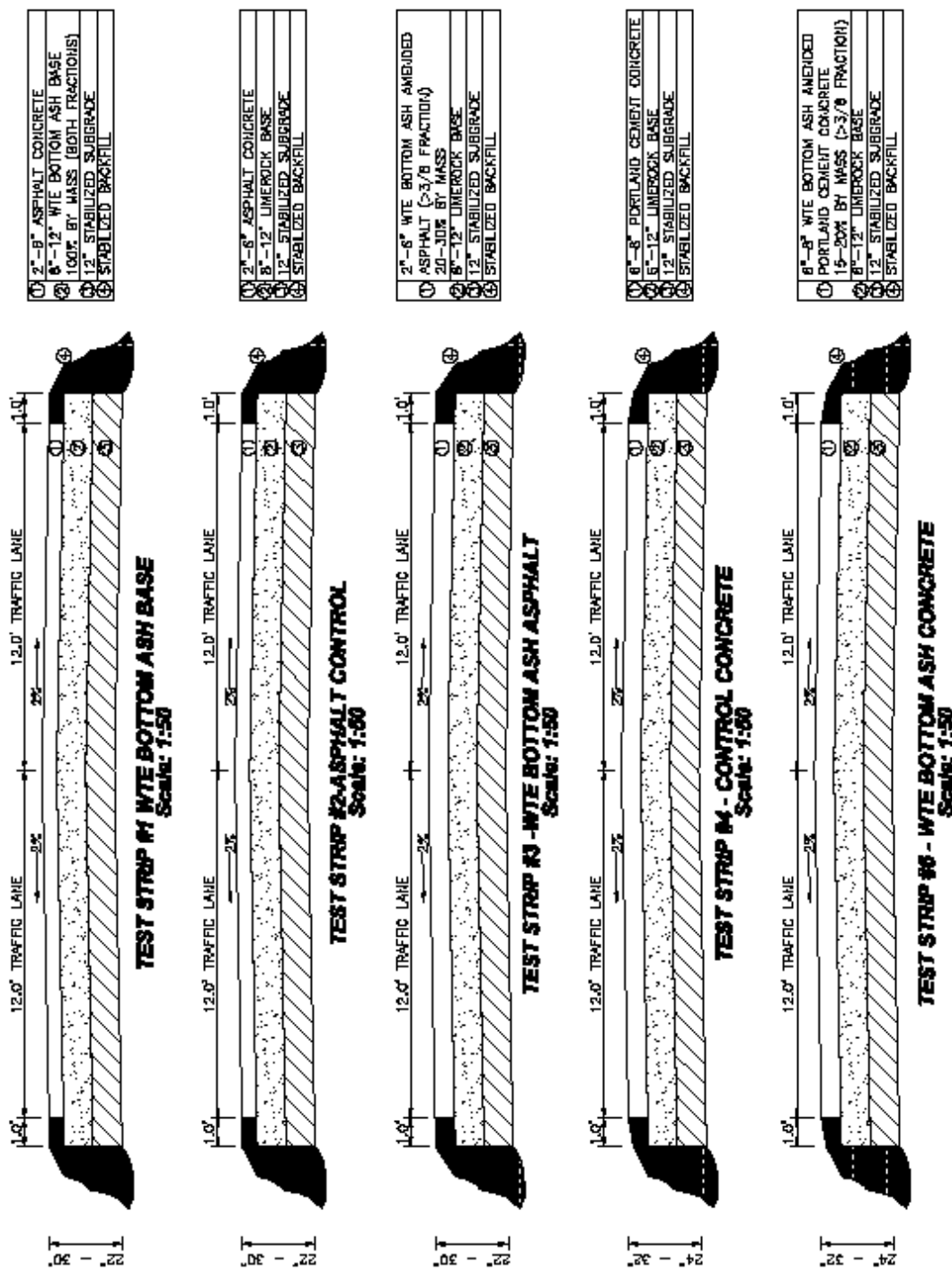


Figure 4. Test Strip Construction Details

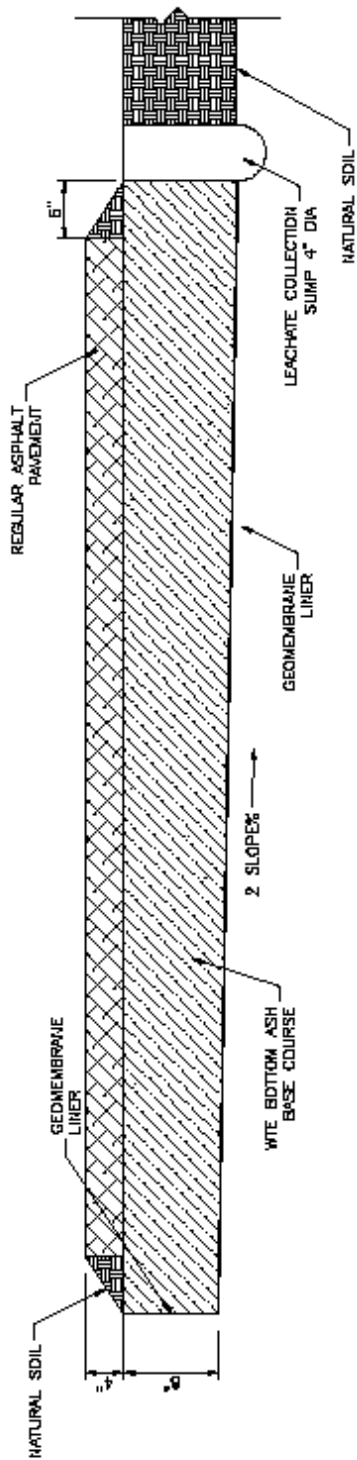


Figure 5. Test Patch Construction Details

APPENDIX 1 - General Conditions

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.161, 403.727, or 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of rights, nor any infringement of federal, State, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

- (a) Have access to and copy any records that must be kept under conditions of the permit;
- (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
- (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules. Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

- (a) A description of and cause of noncompliance; and
- (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit or a copy thereof shall be kept at the work site of the permitted activity.

12. The permittee shall comply with the following:

- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
- (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and

maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

(c) Records of monitoring information shall include:

1. the date, exact place, and time of sampling or measurements;
2. the person responsible for performing the sampling or measurements;
3. the dates analyses were performed;
4. the person responsible for performing the analyses;
5. the analytical techniques or methods used;
6. the results of such analyses.

13. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

APPENDIX 2 - List of Approved Documents Incorporated into the Permit

- APPLICATION FOR A PERMIT TO CONSTRUCT AND OPERATE A RESEARCH, DEVELOPMENT AND DEMONSTRATION FACILITY
Pasco County Resource Recovery Facility, 14230 Hayes Road, Spring Hill, FL 34610-7630

Received by the FDEP on November 20, 2013.

[http://depedms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&\[guid=8.188645.1\]&\[profile=Permitting_Authorization\]](http://depedms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&[guid=8.188645.1]&[profile=Permitting_Authorization])

ATTACHMENT 1 - Facility Permit History

Permit Number	Name	Issue Date	Description
26254-004-SO-21	Solid Waste Research Development and Demonstration Permit - Landfill	March 5, 2014	Research project evaluating effect on groundwater of WTE bottom ash as a pavement amendment and as a sub-base.