

“Commercial Demonstration of the Manufactured Aggregate Processing Technology Utilizing Spray Dryer Ash”

Quarterly Technical Progress Report

Reporting Period: 01/01/2003 through 03/31/2003

DOE Award No: DE-FC26-02NT41421

Date: June 2003

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Abstract

This quarterly report covers the period from January 1st, 2003 through March 31st, 2003. It covers; technical development, permitting status, engineering status, construction status, operations summary and marketing support activities for this period.

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I) Experimental – This section is not applicable to this project.

II) Results and Discussions

This section is broken down into the following subsections: Technical Support, Permitting, Engineering, Construction, Marketing Support, Operations Summary and DOE activities. These subsections describe the activities that have taken place during this quarter as they pertain to this project.

A) Technical Support

A test was conducted to examine the angle of surcharge with a blend of green extruded products and embedding material. The test indicated that the conveyor belt with an inclined angle of 15 degree should not cause any operation problem for loading the blend on the conveyor belt to the curing vessel.

Approximately 400 lb of simulated sample was prepared for use in the evaluation of a potentially lower cost crusher. The simulated sample contained 10% bottom ash and 90% cured extruded products. The extruded products were produced in a bench-scale production unit.

B) Permitting

The application for the Virginia storm water permit for construction was completed and forwarded to Virginia DEQ for approval. Included in the permit application was the pollution prevention plan as required. Approval was received in March. The Dominion Power purchase agreement was finalized, approved and the purchase of the underground service was authorized. Universal Aggregates will have to have the transformer pad installed. Negotiations between BPP and King George County to resolve the storm water pond maintenance agreement continued into March, when approval was given. The building permit application for the initial phase of construction was submitted to King George County in early January. The permit was received in March. Applications were submitted to CSX railroad for three crossings of the Birchwood side tracks; Dominion Power aerial crossing, Universal Aggregates pipe bridge, and Universal Aggregates truck crossing.

C) Engineering

Additional Piping & Instrument Diagrams (P&IDs) were developed for the; hydraulic system, process water system, and steam system. A meeting was held with the gravimetric feeder manufacturer to try and optimize the physical size of the hardware and the material handling aspects. The foundation and site preparation bid packages were issued and a pre-bid meeting was held at the Birchwood Power Station. The structural steel bid package including equipment setting was issued. Specification and bid packages were prepared for the screens, crusher, process water system, and additive no. 2 system. The latest version of P&IDs was issued and detail work continues on the final layout of electric, piping and structural components. All equipment specification packages have been prepared except for the samplers. A meeting was held with Rick Steele of J. C. Steele at the Universal Aggregates offices to discuss engineering details for the Birchwood project. Bid packages were prepared

for the electrical installation and equipment purchase and issued in the Virginia market. Equipment bid packages were prepared and issued for the following pieces of equipment: truck scale, scrubber, pneumatic conveying system, tumbler, screens, crusher, lime pulverizer, process water tank, condensate system, air system, heat exchangers, bottom ash storage, and hydraulic power pack. Bids were received and reviewed and purchase orders are being prepared for; the tumbler, lime pulverizer, truck scale, air classifier, screens, and scrubber. Material tests with the low bid crusher vendor are planned for April. A design change to the curing vessel outlet was warranted after several discussions with belt conveyor manufacturers. The addition of three belt feeders was incorporated into the design and bids are being solicited for those pieces of hardware. This information was conveyed to both the curing vessel manufacturer and the interconnect conveyor belt manufacturer. The selection of the conveyor belting is still under investigation and some additional testing will be commencing at Goodyear for life evaluation. Approval drawings have been received for the; feeders, conveyors, bucket elevators, foundations, and rebar. Final detailed engineering has commenced for the structural steel packages with the equipment positioned and steel framing detailed. Installation specifications for the piping and insulation are both scheduled for an April release for quotation.

D) Construction

Initial bids for the curing vessel were received. These prices came in significantly over the estimate and additional vendors were located and bid packages transmitted to them for review and quotation preparation. This totaled 16 potential bidders for the curing vessel. Because the initial prices for the vessel came in over the estimate, the concept for the curing vessel building has been modified in an attempt to reduce that cost. Even though the cost is higher than budgeted, the total project is still under budget, achieved through savings generated for the other pieces of hardware in the plant. Bids were also received for the silos and the conveyors. Submittal drawings were received from J. C. Steele on the extruder package and some slight modifications will be required to the plant layout to incorporate several small maintenance platforms. A safety manual for the construction project was received from P. J. Dick. A letter of intent for the curing vessel was submitted to Titan Contracting. A letter of intent for site, foundation and paving work was issued to Rapp Construction. Purchase orders were issued for the belt conveyors, multifold conveyors, screw conveyors and bucket elevators to TPI, Imperial Technologies and B. W. Sinclair respectively. The fabrication, erection and equipment set bid packages were issued, bids received and "CSE" was selected to perform the work. A site meeting at the Birchwood Power Station was held with P. J. Dick, Birchwood Power Partners and Universal Aggregates personnel to review the safety manual and safety procedures for general and sub contractors. Because of a forced outage, the Birchwood Power Station executed their spring maintenance outage in early March. Universal Aggregates missed an opportunity for tie in connections as this outage was originally scheduled for April and none of the tie in material was available. Additional outage opportunities will be taken advantage of as the construction phase progresses. P. J. Dick mobilized in early March and established an office at the site. The surveyor has established benchmarks and the excavation contractor has

established a survey throughout the site. The Birchwood security fence was relocated, and a gate installed to permit construction vehicle access to the site. The excavation contractor has mobilized and excavation began on March 26th.

E) Marketing Support

No activity to report for this period.

F) Operations Summary

Information was obtained on local wage averages, benefits and possible methods for soliciting employees for the plant. Telephone interviews with potential plant manager candidates were conducted. Assembling a Quality Assurance/Quality Control Manual for the manufactured aggregate plant was started as well as starting to assemble an Operating Emergency Manual for the plant in conjunction with local Birchwood personnel.

G) DOE

A second design review meeting was held at Universal Aggregates offices in January. Additional information was prepared and submitted to DOE regarding our continuation application for Budget Period 2. That approval was received in late March, with the transition to occur from Budget Period 1 to Budget Period 2 on April 1, 2003. The Environmental Compliance Plan was prepared and submitted to DOE as was the Environmental Monitoring Plan. A draft of topical report #1 was received from R. T. Patterson and circulated for Universal Aggregates review prior to submittal. The first quarterly report information was assembled and issued in March. The third design review meeting was held in late March to cover the current state of the Birchwood Project design.

- III) Conclusion – This project is on schedule and within budget. The activities described in section II will continue into the next quarter.
- IV) References – Not applicable for this report.