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

Quarterly Technical Progress Report

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Abstract

This quarterly report covers the period from April 1st, 2003 through June 30th, 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 evaluate the feasibility of discharging wet bottom ash through a stainless steel pipe (8" i. d.) with an inclined angle of 40°. Bottom ash samples with moisture contents up to 42% (based on total weight) were used in the evaluation. No discharge problems were observed except for retention of moisture on the pipe surface.

A simulated sample of blended extruded products and bottom ash was prepared for evaluation at Williams Crusher & Pulverizer Company. Size gradations of various fractions of crushed aggregates were measured to complete the evaluation.

A QA/QC program is under development for the Birchwood project. The program includes spray dryer ash (SDA) extruded and aggregate products characterization, and process monitoring during aggregate production. Equipment required for the program was identified.

An alternative additive was identified as a replacement or as a backup for use in aggregate production. The aggregates produced had similar crush strength and unit weight, but lower water absorption than those produced previously with the primary additive.

A program was initiated to monitor SDA composition, including hydrated lime content over time.

B) Permitting

A CSX sidetrack agreement for the Dominion Power high voltage aerial crossing was approved and forwarded to Dominion Power. The Dominion Power right of way agreement with Birchwood Power Partners was also executed and forwarded on to Dominion Power. A verbal approval was granted by CSX for an "at-grade crossing" of the CSX/BPP tracks at Birchwood. Written documentation to that effect will be forthcoming next quarter. G. E. Capital approved the use of the one million dollar escrow account for the purchase of capital equipment. Phase 2 building permit application was submitted to King George County. This permit application covers mechanical and electrical portions of the project. A final permit application will be submitted for the modular office once the layout drawings are received from the manufacturer. A modified guaranteed maximum price (GMP) to construct the facility at Birchwood was updated by P. J. Dick. This number will be further refined once all of the subcontract agreements are finalized.

C) Engineering

Electric bid packages were issued and quotes received. Six packages were sent: two quotes were received. Of the two bids received a meeting was held with the low

bidder to review their scope of supply and issue a letter of intent. The approval drawings for equipment that has been ordered were reviewed and corrected and/or approved. These details are being integrated into the final layout for steel and foundations. Goodyear Rubber has started a belt material evaluation test for the supply belt to the curing vessel. Preliminary data indicates that a LE style belt should perform. Piping bid packages were prepared and issued in the Virginia market place. Work on the QA/QC procedures, for the Birchwood Facility is underway. An insulation bid package was prepared and submitted to P. J. Dick for bidding purposes. Detailed engineering on the electrical and instrumentation systems is continuing, otherwise the balance of the plant design is nearly complete.

D) Construction

The site excavation contractor is at rough grade for the entrance way, parking, stockpile areas, curing vessel foundation and building foundation areas. Following approval from King George County the contractor has started work on the permanent storm water pond excavation. The piling subcontractor mobilized onto the site and started at the curing vessel foundation area. They installed a total of 118 piles, of which two were utilized as test piles. The test piles were loaded to 200% of their design capacity and the data recorded. The average depth for these piles is 62 feet. A bid package for the automatic sampler was prepared and issued. Bids were received and an order placed. Purchase orders were issued for the product crusher, product screens, the lime pulverizer, the truck scale, and the pneumatic conveying systems. The subcontractor responsible for foundations mobilized his carpentry crew and constructed the formwork for the curing vessel foundation as well as started on the process building foundations. The electrical subcontractor was issued a letter of intent and mobilized his crew the week of May 27th to begin the installation of embedded conduits for the curing vessel and building foundations. Bid packages were prepared and issued for; the modular office, telescoping stacker, control room, spray dryer ash sampler and SDA piping. Purchase orders were issued for; the process water tank, additive no. 2 system, heat exchangers, condensate system, aggregate sampler, telescoping stacking conveyor, SDA sampler, and control room. Verizon Phone visited the site and has begun the layout for the right of way for the phone cable. Dominion Power completed the installation of the underground and aerial cables for the 13 KV line and set the transformer for the permanent power. The subcontract agreement was finalized with the curing vessel fabricator, Titan Contracting, of Owensboro, Kentucky. Approximately 100 drawings have been received from Titan detailing the structural steel framework and curing vessel weldments. The weldment drawings for the curing vessel were forwarded to Kerry Johanson, who is working as an agent for J. R. Johanson, to review and comment prior to the fabrication of the curing vessel weldments. P. J. Dick's Safety Department conducted a safety review of the BPP construction site and a report was issued. A contract was executed with Casey Industrial for the electrical package. An addendum to the electrical package was issued for heat tracing. The mechanical and piping package bids were received, the low bid was selected and a letter of intent issued. The first concrete pour on the site was June 3rd, process building column footings. The curing vessel foundation was poured on June 10th as well as the process

building column bases. An inspection of the extruder package was completed and the extruder, pug sealer, pug mill and peripheral equipment are set for delivery in early July. The overall project schedule is being finalized and once the erection schedule is received from Titan, all of the subcontractor schedules will be integrated into one. The construction phase is several weeks behind schedule due to the overwhelming amount of rainfall in May and June. Plans are being formulated in an effort to try and recover some of that time.

E) Marketing Support

Current emphasis is being placed on establishing sales agreement items; such as product quality, product quantity and availability, and terms and conditions.

Testing at the National Concrete Masonry Association (NCMA) in Herndon, Virginia was conducted to establish base-line mix designs with various, potential aggregate buyers (concrete masonry producers) using indigenous aggregates and cement.

F) Operations Summary

Following a job posting for Plant Manager, and telephone and personal interviews, a candidate was selected for the position. Mr. Darrel Martin, retired from Lakeland Electric, will be joining the Universal Aggregates team July 7, 2003. Work continues on the Plant Operations and Start-Up Manual, QA/QC Manual and Operating Emergency Manual. Pricing for the supply of Additives No. 1 & 2 were solicited, allowing ample time to negotiate prices, quality, escalation, etc. Also work has just begun looking into hardware and software requirements necessary to produce various reports from the vast amount of information available from the plant instrumentation. The objective of this is to gage performance on a shift-by-shift basis for costs, sales, quality and production.

G) DOE

A design review meeting was held in May. The DOE Quarterly Report for the period 1/1/03 through 3/31/03 was prepared and issued. The DOE Quarterly Report for the period 11/14/02 through 12/31/02 was corrected and resubmitted. Budget Period 2 continuation application was approved. The DOE Topical Report #1 final draft was reviewed and issued in May. An advanced waiver of patents was granted. The DOE Quarterly Reports for the last quarter of 2002 and the first quarter of 2003 were revised and resubmitted per the most recent DOE request. The DOE Topical Report #1 was reformatted per DOE's request and will be re-issued next quarter.

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