



Innovative Technology and Materials

Fountainhead Engineering LTD (FHE) was retained by the ownership group/venture capital company to assist with commercialization of a unique beneficial reuse technology that used coal ash and waste-to-energy residues as feedstocks to create building products such as paver bricks and retaining wall blocks.

For the developers FHE obtained regulatory approvals (permitted) the Chicago production facility for Innovative Technology & Materials (ITM). This plant accepted and processed municipal waste incinerator ash (bottom and fly ash), foundry sands and fluidized gas desulfurization (FGD) residues and used these materials as primary feedstocks for an onsite block and paver brick plant. This plant was developed for ash streams produced by the former Robbins Waste-to-Energy (WTE) facility which closed in 2000 due to bankruptcy. This was the first residual ash "manufacturing facility" of its kind to receive operational status in the world. Working with the previous owners FHE developed civil, technical and environmental analyses used to obtain state of Illinois and Chicago Department of Environment (DOE) facility permits. FHE also obtained all zoning and building permits and worked with the City of Chicago and property owners in redeveloping this Brownfield site into a brick manufacturing facility. During the initial facility startup FHE was responsible for verifying operational parameters of the plant consistent with facility solid waste and air quality permits obtained by Fountainhead Engineering Ltd.

During the 18 month period that this facility operated before the Robbins WTE bankruptcy FHE was retained to identify additional potential candidate waste-to-energy facilities throughout North America. FHE staff performed detailed ash sampling at several facilities and developed regulatory strategies for developing several proposed production facilities using WTE ash residues. WTE facility residues were tested and products were produced to verify proposed mix designs and to provide data for compliance with regulatory standards. In addition, independent laboratory testing was conducted on the products produced to verify compliance with applicable ASTM standards. FHE developed the Health and Safety (H&S) programs for the ash handling and recycling components of the production plant as well as conducted monthly facility audits to insure compliance

with approved H&S programs (including regulatory approvals issued to the Chicago production facility by the state of Illinois EPA and City of Chicago Department of Environment).

Several detailed WTE ash utilization testing and feasibility studies were conducted on behalf of ITM at WTE plants in Hartford, CT Islip, NY and Wayne County, MI. Fountainhead Engineering Ltd verified a variety of mix designs using various ash and foundry sand feedstocks as well as several coal combustion fly ash sources after closure of the Robbins WTE plant.

FHE prepared technical specifications for merchant plants, construction cost estimates, critical path management schedules for development of future proposed facilities for candidate facilities throughout North America and the United Kingdom. Due to the fact that the process used regulated waste materials (incinerator ash and foundry sand) as feedstock for production of building products, specific beneficial use criteria and risk based modeling (for products produced by the plant) was developed by Fountainhead Engineering Ltd and used in several states as part of comprehensive ash testing (evaluation) studies.

The state of Illinois issued facility permits under “trade secret” status. The firm has been involved in similar beneficial use assignments since this project was completed in 2001 using other residual ash feedstocks for Springfield Power & Light (FGD); American Steel Foundries (Foundry Sand); Archer Daniels Midland – ADM (Coal Ash) and for other confidential clients.