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## Breaking News for WOW-CRETE Insiders.

AVGBE is considering acquiring an existing AAC plant out of Bankruptcy. Located in Arizona, the plant would be available to us for approximately **\$1.8 Million** and moving it to our site in Overton, NV would cost an estimated **\$750,000**. This plant would allow us to quadruple our production from day one, driving **Net Income** projections for year one to **\$8,736,480**.

To begin with, this AAC Plant had multiple problems. The owners tried to make AAC from copper-tailings, which has never been done successfully. So, this resulted in an inferior, low-quality product and a tremendous amount of product returns (bottom left). In addition, the physical location in AZ was not close to building markets, or served by Interstate truck transportation, or rail. Ultimately, even the property it sits on went into Federal Bankruptcy, from which it is emerging next month. We have already visited this Plant and are ready to proceed with moving it.

By moving it to our Overton site, we'll be able to make high-quality AAC almost **immediately!**





**LAW**

ENGINEERING AND ENVIRONMENTAL SERVICES

August 1, 1995

Ms. Patricia West  
Tennessee Valley Authority  
1101 Market Street  
Chattanooga, TN 37402-2801

## Appendix "A" – TVA Cover Letter

Subject: Final Report Autoclaved Cellular Concrete  
Feasibility Study and Market Survey-Addendum No 1 TVA Contract No TV93707D  
Law Engineering Project No 5820752201

Dear Ms. West:

In our report dated May 25, 1995 Law Engineering presented the results of our Feasibility Study and Market Survey for Autoclaved Cellular Concrete (ACC). The report presented the results of our study for the general marketability of ACC in the TVA region, recommended a location for the construction of an ACC plant, and presented financial analyses of the potential performance of a "small" \$6 million plant. After your review of our report you, asked that additional financial analyses be performed. The following report presents the results of the additional analyses.

### Background

Our initial report and financial analyses concentrated on an ACC plant whose size and production capacity had apparently been projected by North American Cellular Concrete (NACC) to be the size facility that could be constructed in this country. In TVA's work scope for our original study the plant parameters were given as: \$6 million construction cost, 750,000 ACC block annual production and 50 employees. Our financial analyses concluded that a plant with these parameters would not be financially feasible due to cost being too high for a reasonable profit to be made. Information gathered from other sources indicated that a similar capital investment with fewer employees would produce 1½ to 1¾ million blocks a year. Financial analyses run on this size plant showed that, although some risk existed, the plant could make a reasonable profit.

The original financial analysis considered only the production of ACC block. Another type building element fabricated from ACC is steel reinforced panels. A higher capital cost plant is required to produce panels. TVA requested that additional work be done to financially analyze the larger plant which would produce both panels and block.

During the Phase I work, LAW worked very closely with the MAP company, who provided expertise in marketing of construction materials. Since it appeared that ACC block would compete primarily against Concrete Masonry Units (CMU) or concrete block, the decision was made that the ACC block had to be

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cost competitive (essentially equal cost) with CMU. The financial analyses for the smaller plant were performed using this approach to sales price.

As more information was gained through discussion with Ytong and review of a report supplied by TVA from Enviroc, it became apparent that ACC would be marketed as a value added, niche market material for which a premium price could be asked. It was also learned that cost assumptions for the initial financial analysis were probably too low. An additional financial analysis was done as part of this phase of work to determine the effect of higher pricing and higher costs on the "small" ACC plant.

### Research/ Information Sources

During Phase I, information on plant size and cost, ACC production costs and ACC selling price was gathered from Wehrhahn Engineering, North American Cellular Concrete, Marley Building Materials, Hebel USA, and Ytong. Ytong and Hebel, two major ACC producers in the world, who were in the process of building or planning a large US facility, did not believe that small plants were economically feasible. We downgraded in significance of the information supplied by Wehrhahn through North American Cellular Concrete because its mission was to help North American Cellular Concrete sell the "small plant" idea. Therefore we chose to rely on Marley's information. Since then, it has become clear that higher cost is involved in producing ACC than what we used in the original analysis.

The proposed sales pricing from all the ACC manufacturers from whom information was available is much higher than used in our original financial analysis. This reflects the understanding that ACC would not replace conventional building materials, but rather would be used in applications where the owner is willing to pay a higher price for the added value of ACC: fire resistance, insect resistance, thermal insulation, and absence of emissions. The manufacturer proposed prices, which are 2 to 3 times higher than those used in the original financial analysis, provide a healthy margin over manufacturing cost.

The information relating to "large plant" capital and operating costs were obtained from Ytong and Enviroc. At the time the information was obtained, Ytong was doing siting studies for a major facility in the southeastern US. Enviroc is a combination of four companies (an industrial machinery fabricator, a cement industry service company, a general construction and civil engineering company, and a market analysis/new product development firm) from the state of Washington which provided a financial analysis for a \$20 million plant to the Electric Power Research Institute (EPRI). Personnel and overhead cost used in our analyses were derived from Ytong and Enviroc's information. Material cost were those which LAW derived for a plant using fly ash in ACC. The proportions for the mix were those presented by Dean Golden in a paper at the March, 1995 meeting of the American Concrete Institute (ACI), which summarized data gathered by the University of Pittsburgh on ACC produced by the EPRI pilot plant in Alabama. Interest and depreciation charges were determined by Tiller and Stewart, an Atlanta accounting firm, through discussions with a commercial bank.

### Financial Analyses

#### Small Plant

One additional analysis of the small plant was performed. This analysis contained cost and pricing figures that we considered to be more representative of those that would occur in the market place. In addition the salvage value of the plant was reduced from \$2 million to \$1 million to reflect the reality that only the building and land might have value after 10 years.

The following table summarizes the pretax internal rate of return on investment for each scenario:

		Scenario					
		#1 Base Case	#2 High Mortgage	#3 Low Price	#4 Low Sales	#5 High Cost	#6 Low Sales; Low Price
Total Investment (\$ x 10 <sup>6</sup> )		25	25	25	25	25	25
Initial Capital (\$ x 10 <sup>6</sup> )		10	5	10	10	10	10
Amount Financed (\$ x 10 <sup>6</sup> )		15	20	15	15	15	15
Sales (% Plant Capacity)		100	100	100	30 - Year 1 60 - Year 2 90 - Year 3-10	100	Scenario #4
Pricing	Block (\$/ft <sup>3</sup> )	3.10	3.10	2.68	3.10	3.10	Scenario #3
	Panel (\$/ft <sup>3</sup> )	3.95	3.95	3.66	3.95	3.10	
Cost		Plan	Plan	Plan	Plan	DL-+10% R&M-+10% SG&A-+200k	Plan
Internal Rate of Return (IRR)		24	20	14	11	21	3

Except for Scenario #6 where sales and pricing are unfavorable, the financial analysis shows reasonable pre tax Return on Investment ranging from 11% to 24%. The favorable returns are consistent with those we have seen developed by other sources. The reason for the very profitable operation is the high margin that is predicted for ACC. Apparently this is being obtained in other parts of the world. It would be obtainable here if all US manufacturers or distributors of the material market it as a value added, niche market product and do not over supply that market. If supply gets too high by either a shrinking market size or over production of ACC and the sale price is dropped to be price competitive, much lower rates of returns would be predicted.

We hope this report addresses your questions relating to the feasibility of Autoclave Cellular Concrete in the TVA market region. If you have further questions please contract us.

Sincerely

LAW ENGINEERING, INC.

John R. Love, P.E.  
Principal Engineer

Terry L. Viness, P.E.  
Senior Engineer

## The Road to Code Acceptance for Autoclaved Aerated Concrete

By Keith Itzler, P.E.

As Lao-tzu, the Chinese philosopher said, "A journey of a thousand miles begins with a single step." Drafting and shepherding building code provisions for Autoclaved Aerated Concrete (AAC) through the consensus process has been a long trip. For the researchers and authors involved, it has been a journey that sometimes felt like a thousand-mile forced march. The good news, however, is that they are well along to their destination.

The journey that AAC has taken through the code approval process is unique. Code provisions for the classical construction materials such as steel, concrete, and timber are regularly improved, revised and modernized. The introduction of AAC into the model design and building codes is, however, one of the few times, if not the first, that a "new" construction material has been introduced in modern times.

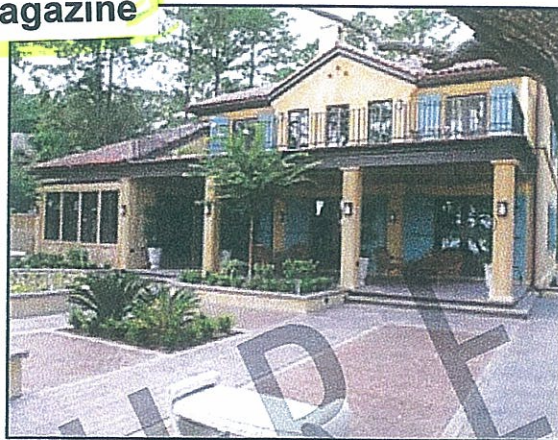
### The First Step

#### AAC Overview

A form of cellular concrete, AAC is a low-density, cementitious product made of calcium silicate hydrates. The manufacturing process uniformly distributes macroscopic air bubbles throughout the material to obtain AAC's relative low density, typically in the 30-pound to 40-pound per cubic foot (pcf) range, compared to approximately 105 pcf for light-weight concrete block and approximately 125 pcf for normal-weight concrete block. In order to produce its specified strength and enhance the dimensional stability of the product, the manufacturer uses high-pressure steam in an autoclave to cure AAC. Typical design strength in the common structural grade of AAC is 580 pounds per square inch compared to approximately 1900 pounds per square inch for concrete masonry units.

AAC is well suited for bearing walls in low- to medium-rise buildings, cladding and infill panels, and for use as floor and roof structure in the form of factory-reinforced panels. Its thermal conductivity is roughly seven percent of conventional concrete, making it energy efficient and a good insulator. The internal porosity of

AAC provides for relatively low sound transmission through the material. AAC's fire rating properties are exceptional, with four-inch wall assemblies providing four-hour fire ratings.



Custom Residence, Hilton Head, South Carolina. Courtesy of AERCON Florida LLC.

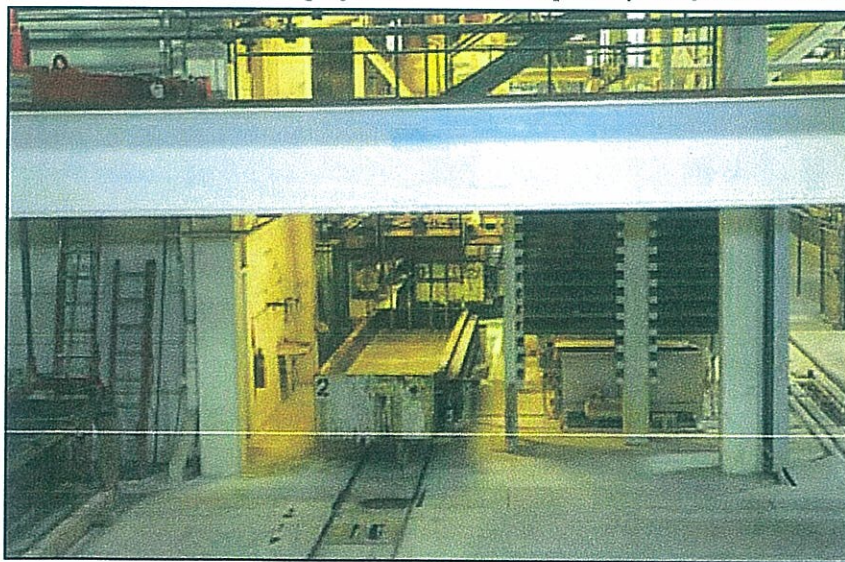
### Beginning the Journey

#### Developing AAC Codes and Testing the Material

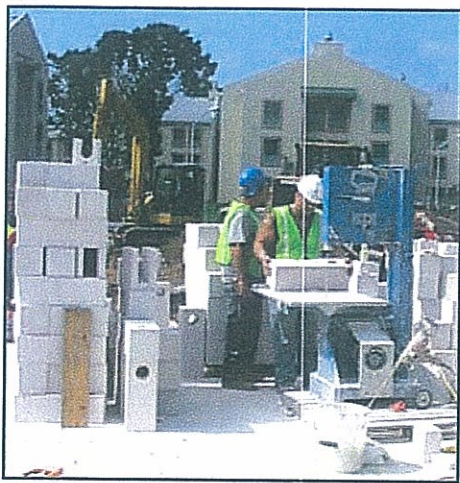
In the United States, AAC was introduced to the construction industry with the opening of multiple factories in the 1990s. Code groups such as Building Officials and Code Administrators International, Inc. (BOCA) and Southern Building Code Congress International, Inc. (Standard Building Code) granted approvals to use AAC as a structural material. The manufacturers of the product developed design provisions. Preliminary work began with the development of the American Society for Testing and Materials (ASTM) standard for manufacturing AAC: ASTM C1386-98: *Standard Specification for Precast Autoclaved Aerated Concrete (PAAC) Wall Construction Units* standardizes basic manufacturing and material properties for AAC block units (Ref. 1). ASTM C1452-00: *Standard Specification*

for Reinforced Autoclave Aerated Concrete Elements followed the standard for block units and provided properties for reinforced AAC panels. Testing at Underwriters Laboratories allowed for the establishment of basic fire ratings for AAC wall and floor assemblies (Ref. 2). Most recently ASTM C1555-03a: *Standard Practice for Autoclaved Concrete Masonry* and ASTM C1591-04: *Standard Test Method for Determination of the Modulus of Elasticity of AAC* have been published to provide additional industry and construction standards.

With the inception of the Autoclaved Aerated Concrete Producers Association (AACPA), funding for research and testing became available. Research to develop much of the current code provisions was conducted at the University of Texas at Austin and the University of Alabama at Birmingham under the direction of Dr. Richard Klingner and Dr. Fouad Fouad, respectively. Dr. Jennifer Tanner,



AAC rising in the mold at the AERCON production facility in Haines City, Florida. Courtesy of AERCON Florida LLC.



AAC is cut to size using a band saw.

currently of the University of Wyoming, also had a significant role in the research and the testing while at UT Austin.

The researchers' tests included procedures related to the strength of AAC for basic design parameters such as shear strength, modulus of elasticity, tensile strength, and an approach to flexural design. They used an ultimate strength design approach, rather than an allowable stress design approach, in keeping with the most recent trends in the design of masonry and reinforced concrete. The researchers also tested a wide variety of full-size shear wall specimens to separately reflect structural response dominated by in-plane shear and flexure, and to determine the ultimate strength and failure mechanisms associated with each type of wall. Finally, the researchers tested a full-size, two-story building mockup, complete with an AAC panel floor diaphragm, for seismic response and probable behavior of an AAC structure subject to seismic loading in service.

## Moving Further Down the Road

### *Design Codes and Design Guides*

The industry approach to introducing AAC into the standard referenced design codes was to have the masonry units, defined as units manufactured without factory reinforcing, covered in the Masonry Standards Joint Committee (MSJC) Code and Specification, formally titled *Building Code Requirements and Specification for Masonry Structures* (Ref. 3), and factory reinforced panels covered by documents prepared by the American Concrete Institute (ACI) Committee 523 on Cellular Concrete and its Subcommittee 523a on AAC.

In 2005, AAC was introduced into the MSJC Code. In keeping with ACI's recommendation with respect to introducing new materials and procedures into the Code, the design provisions for AAC were included in Appendix A. Construction specifications for AAC were

also provided, as well as appropriate Code and Specification commentary. Volunteers who serve on the MSJC, a group of design professionals, academics and industry representatives, accomplished this task.

The 2008 edition of the MSJC Code continues to include design provisions for AAC in Appendix A with accompanying specifications and commentary. The MSJC made minor adjustments and clarifications from the original 2005 MSJC document in response to public comments and input from AAC masonry designers. As currently written in the 2008 edition, design and detailing provisions are provided for AAC masonry walls subject to the full array of gravity and lateral loading including seismic loads, both in and out of plane. With respect to shear walls, requirements are specified in Seismic Design Categories A thru F. The author recommends that engineers, who are interested in designing with AAC, should take the time to consult the *Masonry Designer's Guide, 5th Edition*, MDG-5 by The Masonry Society and Council for Masonry Research. In particular, Chapter 12 *AAC Masonry* provides a full range of design examples referenced back to the MSJC Code.

Similar to AAC masonry, design provisions for factory reinforced AAC panels have also been progressing through ACI Committees, albeit at a slower pace. After several years of editing and refining, ACI Committee 523 and its Subcommittee 523a were proud to finally announce that work on the *Guide for Design and Construction with Autoclaved Aerated Concrete Panels*, ACI 523.5R was complete and that ACI's publication is expected in the near future.

## Going Cross Country

### *The International Building Code and AAC*

The International Building Code (IBC) is becoming widely adopted around the country as the model building code of choice. Even New York City, one of the first jurisdictions to develop a building code in the mid 19<sup>th</sup> century, has given up its traditional code and adopted an IBC-based code for new building construction (Ref. 4).

Typically, building codes based on the 2003 IBC will not mention AAC since the reference document for masonry design in the 2003 IBC is 2002 MSJC, which makes no mention of AAC. For designers in this situation, the governing design standards revert back to the ICC Evaluation Service, Inc.-ES Reports that are published by the AAC manufacturers or local code official approvals (Ref. 5).

The 2006 IBC places limitations on AAC masonry in seismic resisting systems. The restriction states that AAC masonry "shall not



Installation of AAC reinforced block walls at State University of New York at Stony Brook.

be used in the seismic force resisting system of structures classified in Seismic Design Category B, C, D, E or F<sup>p</sup>. The balance of the provisions of the 2005 MSJC Code applies allowing unrestricted use in non-shear wall applications, such as cladding. The Building Seismic Safety Council (BSSC) recommended this limitation on AAC masonry so that they would have time to fully review the seismic design provisions associated with AAC masonry. The BSSC is a council established by the National Institute of Building Sciences, and is charged with developing and promoting building earthquake risk mitigation regulatory provisions for the nation. AACPA sponsored discussions with the BSSC have resulted in a significant relaxation of these restrictions. For jurisdictions that can use the 2007 Supplement to the 2006 IBC, designers will find that AAC masonry can be used in Seismic Design Categories A, B and C, with building heights up to 35 feet. These provisions will be in the next edition of the IBC. Code design provisions for reinforced panels continue to be based on ICC-ES Reports.

## Next Steps

### *The Code Future for AAC*

In future editions of the MSJC Code provisions for AAC design, for the most part, will remain unchanged. Engineers can look for the design provisions to be moved from an appendix to a chapter in the body of the code and, based on current research, possible changes in the requirements for lap lengths for field-installed reinforcing. Researchers are also addressing the use of AAC masonry as structural in-fill and associated code provisions.

Work continues on the code provisions for the use of reinforced AAC panels by ACI Committee 523 and 523a. The ultimate goal will be either to prepare a separate code docu-

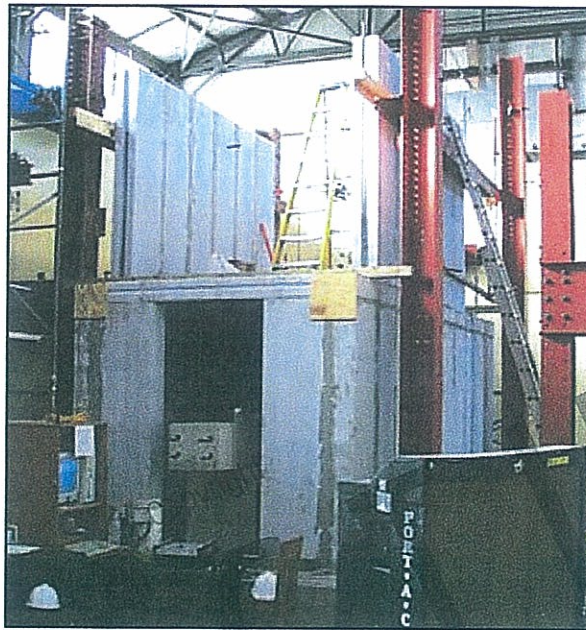
ment for the use of AAC panels, or possibly include the design provisions as an Appendix to ACI 318. The planning to determine the best code path for reinforced AAC panels is in a preliminary discussion stage.

With respect to the IBC, the AAC industry's goal will be to further relax the current seismic restrictions on AAC. The first step will be to allow the use of AAC in Seismic Design Category D, and to increase the allowable height of AAC structures when using AAC in the seismic force resisting system of a building.

## Related Journeys

### *AAC and the Build Green Movement*

The AAC industry has begun to take advantage of the "Build Green Movement." The material is being designed in mass wall applications that promote energy efficiency and minimal carbon footprint impact. Since AAC uses a very small amount of cement in the manufacturing process compared to conventional concrete, this has inspired designers to consider AAC as a high performance material for building envelopes, whether used in the structural frame or simply as exterior wall cladding. AAC has also seen increased use in interior, stairwell and shaft walls, improving fire resistance and fire safety. Enhanced sound attenuation is another benefit.



*Building two-story assemblage for testing specimen at University of Texas at Austin. Courtesy of UT Austin.*

While the recent economic situation has impacted construction activities, more and more designers are considering AAC during the schematic design phase. Angelo Coduto of Aircrete Technologies, a consultant to the AAC industry, reports that, based on projected demand, there is a considerable push to build new AAC manufacturing plants around the country, particularly in the Southwest, Northeast and Midwest. The hope is that these plants can be built in time for the re-

surge of commercial construction in the United States. The industry will concentrate on the new infrastructure push by the new administration and take a proactive role in the school market where AAC has been used on projects around the country, as well as in sound barrier wall applications for the highway and bridge reconstruction. The use of AAC in "Green Buildings" will be a key driver of demand. ■

*Keith Itzler, P.E. is an Associate Vice President at Dewberry and is Assistant Branch Manager of Dewberry's New York City office. He is a member of ACI Committee 523 and 523a on Cellular and AAC, and he is the Chairman of the MSJC's AAC Masonry Subcommittee. He may be reached at [kitzler@dewberry.com](mailto:kitzler@dewberry.com).*

## References

- Ref. 1: ASTM C1386-98: Standard Specifications for Precast Autoclaved Aerated Concrete (PAAC) Wall Construction Units was updated in 2007.
- Ref. 2: AAC wall and floor assemblies are listed in the UL Fire Resistance Directory at [www.ul.com](http://www.ul.com).
- Ref. 3: TMS 402/ACI 530 & 530.1/ASCE 5 & 6
- Ref. 4: Many jurisdictions adopt a version of the IBC and impose local changes. For instance, the 2007 New York State Building Code, which is currently in effect, is based on the 2003 IBC, not the 2006 IBC, which is the most current version of the document. AAC designers should review carefully the governing building code in the jurisdiction of their project as it relates to AAC.
- Ref. 5: Designers may obtain ES Reports—for both AAC masonry and reinforced panels—directly from various AAC manufacturers or on line at [www.icc-es.org](http://www.icc-es.org).



## Whole Building Design Guide Federal Green Construction Guide for Specifiers

This is a guidance document with sample specification language intended to be inserted into project specifications on this subject as appropriate to the agency's environmental goals. Certain provisions, where indicated, are required for U.S. federal agency projects. Sample specification language is numbered to clearly distinguish it from advisory or discussion material. Each sample is preceded by identification of the typical location in a specification section where it would appear using the SectionFormat™ of the Construction Specifications Institute; the six digit section number cited is per CSI Masterformat™ 2004 and the five digit section number cited parenthetically is per CSI Masterformat™ 1995.

### SECTION 03 40 00 (SECTION 03400) - PRECAST CONCRETE

#### SPECIFIER NOTE:

*resource management:* Plant fabrication handles raw materials and by-products at a single location that typically allows greater efficiency and better pollution prevention than job site fabrication.

Aggregates for use in concrete include normal sand and gravel, crushed stone, expanded clay, expanded shale, expanded slate, pelletized or extruded fly ash, expanded slag, perlite, vermiculite, expanded polystyrene beads, or processed clay, diatomite, pumice, scoria, or tuff.

Architectural items (planters, lintels, bollards) fabricated from lightweight and recycled content aggregates are available. The quantity and type of recycled materials vary from manufacturer to manufacturer and include: cellulose, fiberglass, polystyrene, and rubber.

Autoclaved aerated concrete (AAC) is a type of lightweight precast concrete prevalent in Europe, Asia, and the Middle East and recently available through manufacturing facilities in the United States. It is made with portland cement, silica sand or fly ash, lime, water, and aluminum powder or paste. The aluminum reacts with the products of hydration to release millions of tiny hydrogen gas bubbles that expand the mix to approximately five times the normal volume. When set, the AAC is cut into blocks or slabs and steam-cured in an autoclave.

*toxicity/IEQ:* Refer to Section 03 30 00 (03300) - Cast-In-Place Concrete. Precast concrete generally requires less portland cement per volume of concrete for similar performance due to better quality control.

*performance:* Performance is more predictable in precast operations since more exact dimensions, placement of reinforcing, and surface finishing can be obtained. Precast concrete can be fabricated with continuous insulation. AAC is significantly lighter (about 1/5th the weight of traditional concrete) than normal concrete and can be formed into blocks or panels. Lighter weight concretes generally have greater fire and thermal resistance but less strength than traditional normal weight concrete. A full range of lightweight concretes are available and their strength and weight is determined by the aggregates used.

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. This Section includes:

1. Autoclaved Aerated Concrete (AAC).

B. Related Sections:

1. 03 30 00 (03300) – Cast-In-Place Concrete.

##### 1.2 SUBMITTALS

- A. Product data. Unless otherwise indicated, submit the following for each type of product provided under work of this Section:

#### SPECIFIER NOTE:

Green building rating systems often include credit for materials of recycled content. USGBC-LEED™ v2.2, for example, includes credit for materials with recycled content, calculated on the basis of pre-consumer and post-consumer percentage content and it includes credit for use of salvaged/recovered materials. Green Globes US also provides points for reused building materials and components and for building materials with recycled content.

1. Recycled Content:
  - a. 70% → Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.
  - b. Indicate relative dollar value of recycled content product to total dollar value of product included in project.
  - c. If recycled content product is part of an assembly, indicate the percentage of recycled content product in the assembly by weight.
  - d. If recycled content product is part of an assembly, indicate relative dollar value of recycled content product to total dollar value of assembly.

**SPECIFIER NOTE:**

Specifying local materials may help minimize transportation impacts; however it may not have a significant impact on reducing the overall embodied energy of a building material because of efficiencies of scale in some modes of transportation.

Green building rating systems frequently include credit for local materials. Transportation impacts include: fossil fuel consumption, air pollution, and labor.

USGBC-LEED™ v2.2 includes credits for materials extracted/harvested and manufactured within a 500 mile radius from the project site. Green Globes US also provides points for materials that are locally manufactured.

2. Local/Regional Materials:
  - a. Sourcing location(s): Indicate location of extraction, harvesting, and recovery; indicate distance between extraction, harvesting, and recovery and the project site.
  - b. Manufacturing location(s): Indicate location of manufacturing facility; indicate distance between manufacturing facility and the project site.
  - c. Product Value: Indicate dollar value of product containing local/regional materials; include materials cost only.
  - d. Product Component(s) Value: Where product components are sourced or manufactured in separate locations, provide location information for each component. Indicate the percentage by weight of each component per unit of product.
- B. Submit environmental data in accordance with Table 1 of ASTM E2129 for products provided under work of this Section.
- C. Documentation of manufacturer's take-back program for **[units, full and partial] [packaging] [xxxx]**. Include the following:
  1. Appropriate contact information.
  2. Overview of procedures.
    - a. Indicate manufacturer's commitment to reclaim materials for recycling and/or reuse.
  3. Limitations and conditions, if any, applicable to the project.

**PART 2 - PRODUCTS**

**SPECIFIER NOTE:**

EO 13423 includes requirements for Federal Agencies to use "sustainable environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products"

Specifically, under the Sustainable Building requirements per Guiding Principle #5 Reduce Environmental Impact of Materials, EO13423 directs Federal agencies to "use products meeting or exceeding EPA's

recycled content recommendations” for EPA-designated products and for other products to “use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project.”

## 2.1 MATERIALS

- A. Load bearing and non-load-bearing AAC elements: Comply with ASTM C1386.

## PART 3 - EXECUTION

### 3.X SITE ENVIRONMENTAL PROCEDURES

- A. Waste Management: As specified in Section 01 74 19 (01351) – Construction Waste Management and as follows:
1. Broken, waste AAC units: May be used as non-structural fill **[if approved by Architect/Engineer]**.
  2. Coordinate with manufacturer for **take-back program**. Set aside **[scrap [packaging] [xxxx]** to be returned to manufacturer for recycling into new product.

END OF SECTION

Appendix "D" - Las Vegas AAC "Model" Picture



**Appendix "D"- Las Vegas AAC "Model" Pictures**



Appendix "D"- Las Vegas AAC "Model" Pictures





INTERNATIONAL  
MASONRY  
INSTITUTE

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## Appendix "E" – IMI Letter

August 18, 2010

Mr. Dan Longworth, CEO  
American Veterans Green Building & Energy  
9850 S. Maryland Pkwy, Ste. 5  
Las Vegas, NV 89183

Dear Mr. Longworth,

Last week I had the opportunity to speak briefly with Nevada AFL-CIO Executive Director Danny Thompson about your plans to convert certain local waste materials into Autoclaved Aerated Concrete (AAC) units for your local construction market, with longer term plans for additional AAC plants in the Western United States, as demand expands.

As a leading market development and training organization for the masonry industry, the International Masonry Institute is always interested in promising new materials and applications. In fact, we have been involved in AAC development for the past several years, instructing members of the International Union of Bricklayers and Allied Craftworkers (BAC) in AAC installation techniques and working with designers and contractors to use AAC on several major projects all over the country. Due to our portfolio of training, technical assistance, code expertise and more, IMI is in a unique position to help spur new products. You can learn more about our multi-faceted staff and programs at [www.imiweb.org](http://www.imiweb.org).

In the case of AAC, we recognized early on the distribution drawbacks caused by having plants only in the Southeast. Additional plants in the Western United States could help fill a void in the product's widespread acceptance, and we wish you well on your endeavor.

We have established relationships with AAC producers to provide training in several BAC/IMI training facilities, including Seattle and The Flynn Center in Maryland. Once the Las Vegas market for AAC is ready, we welcome the opportunity to work with you as well. Please feel free to keep in touch.

Sincerely,

Stephen W. Martini  
National Director of Apprenticeship and Training



## Appendix "F" - Executive Orders #13423 and #13514

### Federal High Performance and Sustainable Buildings

The Federal Government is the nation's single largest landlord and energy consumer, operating more than 500,000 facilities comprising more than 3 billion square feet. Historically, approximately \$30 billion is spent annually on acquiring or substantially renovating Federal facilities, and about \$7 billion is spent on energy for Federal facilities. Almost \$200 billion is spent on personnel compensation and benefits for civilian employees. This footprint represents an enormous opportunity to transfer sustainable technologies and practices on a large scale, thereby helping to transform the marketplace and create a more healthy work environment.

This section provides the key information needed by Federal personnel to meet high performance and sustainable building (HPSB) requirements including:

#### Policy Background

Several Executive Orders and legislative mandates direct Federal Agencies to achieve specific HPSB goals. This section provides an overview of these requirements.

#### New Construction & Major Renovation

Executive Orders 13514 and 13423 require all Federal agencies to comply with the Guiding Principles for New Construction and Major Renovation. This section includes technical guidance needed to meet each of these Guiding Principles.

#### Existing Buildings

Executive Order 13514 requires at least 15% of each agency's existing facilities and building leases (above 5,000 gross square feet) to meet the Guiding Principles by 2015. To meet this goal, most agencies must upgrade their existing building stock, which means compliance with a separate set of Guiding Principles for Sustainable Existing Buildings that are detailed in this section.

#### Supporting Technical Guidance

This section includes additional supporting technical guidance to help agencies meet HPSB requirements.

National Institute of Building Sciences | An Authoritative Source of Innovative Solutions for the Built Environment  
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United States Department of Agriculture  
Rural Development  
Las Vegas Service Center

## Appendix "G" – USDA Business Guarantee Letter

October 8, 2010

Daniel Longworth, Chairman  
American Veterans Green Building & Energy  
9850 South Maryland Parkway  
Las Vegas, NV 89183

Mr. Longworth:

Thank you for your time on the phone this afternoon. As always, it is a pleasure to discuss your Overton WOW-CRETE project. I have reviewed the business plan and attachments you have provided. I believe this information is sufficient to begin "shopping" your transaction to qualified lenders.

As you know, the USDA-Rural Development Loan Guarantee Program provides approved lenders an 80% guarantee on loans up to \$5 million. The guarantees are to encourage the financing of rural businesses to create and retain jobs and to improve the economic and environmental climate of rural communities. The guaranteed portion of the loan is protected against loss by the Federal Government. The lender may sell the guaranteed portion of the loan in the secondary market. Also, the guaranteed portion of the loan does not count against the lenders lending limits.

Please let me know how I can assist you in this endeavor.

David J. Foster | Business Programs Specialist  
USDA Rural Development  
5820 South Pecos Road, Building A, Suite 400  
Las Vegas, NV 89120  
Phone: (702)262-9047 x103 | Fax: (702)262-9969  
[david.foster@nv.usda.gov](mailto:david.foster@nv.usda.gov)  
[www.rurdev.usda.gov](http://www.rurdev.usda.gov)

5820 South Pecos Road, Building A, Suite 400, Las Vegas, NV 89120  
Phone: (702) 262-9047 • Fax: (702) 262-9969 • TDD: (702) 885-0633 • Web: <http://www.rurdev.usda.gov/nv>

Committed to the future of rural communities.

"USDA is an equal opportunity provider and employer."  
To file a complaint of discrimination write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW,  
Washington, DC 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD).

WE PUT CONCRETE INTO SHAPE



## Appendix "H" – HESS Cooperation Letter

American Veterans Green Building & Energy

For the attention of Dan Longworth

---

Your reference : AAC Plant Project  
Our reference : A30.04402-1  
Your contact : Ralf Beier  
Direct dial. : +31 (0)53 - 460 1710  
Direct fax nr. : +31 (0)53 - 460 1799  
Date : 16.07.2010  
Subject : Co-operation on the Nevada Project

Dear Dan,

It is great to hear that you are making progress on the AAC project. I am sure that this is the right time to fire up with AAC in the US market. We believe the building market has changes considerable since we jointly started discussing the AAC project in the Nevada region. If one considers the strong and positive developments around GREEN building and LEED, then one can see that you have been working in the right direction with AAC.

This is to design and construct buildings of all kind, residential, commercial, hospitals, hotels etc. with a long term ecological but also economical view. With rising energy prices, and considering that our raw materials are getting less by the day, we see the growing need of high thermal insulation housing that reduce the energy required to cool or heat them.

We also see a big growth in AAC in the application of multi story buildings, such as office buildings and large hotels like you have them in Vagas. The reason is the light weight at high strength. Weighing 3 times less than a standard CMU, once can easily understand that far less pilings, foundations, concrete and steel is required for the structure. This is an enormous cost benefit but at the same time also saving energy consumption on air conditioning at the same time. Also for internal walls the application of AAC has tremendous benefits compared to for example gypsum board, due to the excellent fire rating and sound insulation properties. Let's be honest, who wants to hear the TV of the person in the hotel room next door?

As you are very well aware AAC offers not only this unique characteristic, but also advantages in fire protection, sound insulation and light weight of buildings. These characteristics have fed the growth of AAC worldwide, hereby increasing market share in all countries it is available.

So I am excited to hear that you are making good progress with the AAC plant planned in Nevada and am sure that once the advantages become known to the contractors, builders, unions and end-users then more and more plants will be necessary to be installed all over the US, especially in those areas with either hot or very cold climates.

---

Postal address:  
HESS AAC Systems B.V.  
P.O.Box 10063  
7504 PB Enschede  
The Netherlands

Delivery address:  
HESS AAC Systems B.V.  
Aluminiumsteden 10  
7547 TN Enschede  
The Netherlands

Phone: +31 (0)53 460 1700  
Fax: +31 (0)53 460 1799  
E-mail: info@hess-aac.com  
Internet: www.hess-aac.com

Bank:  
ING Bank N.V.  
Account nr.: 66.52.15.401  
IBAN: NL78INGB 0665 2154 01  
SWIFT-code/BIC: INGBNL2A

Trade register no. 08149494  
VAT nr.: NL816967489B01

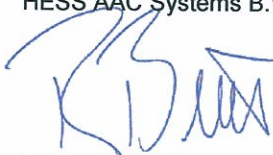
Page 2 of letter A30.04402-1 dated 16.07.2010

Further one should not forget a further advantage of AAC, which I think will be a distinct benefit to other common building materials and that is that in those regions where there are coal fired power plants, as the fly ash (waste material) can be used as a replacement for sand (silica source) in the mix. HESS has vast experience in supplying the technology using fly ash in the production process, which has been done in the United Kingdom and Eastern Europe for ages. In 2001 HESS actually built the biggest plant using fly ash in the world with an annual capacity of 14 million ft<sup>3</sup> of AAC.

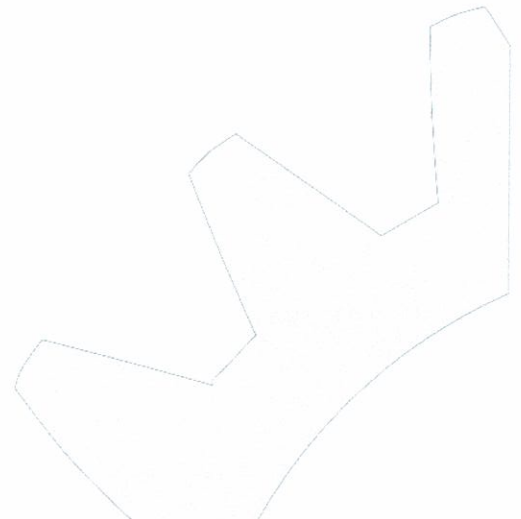
In China and India there are nowadays even high tax benefits and government programs supporting AAC made of fly ash, and other materials such as clay bricks have in fact been banned.

Therefore I can only reconfirm your views on the big growth potential of AAC and am excited to see the progress you are making. This will pave the way for a better and greener future and we are looking forward to being a part of this development and supporting you with our technological know-how.

Best regards  
HESS AAC Systems B.V.

A handwritten signature in blue ink, appearing to read 'R. Beier', is written over the typed name.

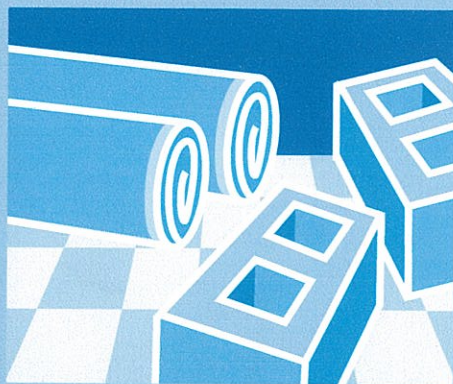
Ralf Beier  
Managing Director



# 2007 CPG

COMPREHENSIVE  
PROCUREMENT  
GUIDELINES

## CONSTRUCTION



### Buying recycled products...

- ...conserves natural resources
- ...saves energy
- ...reduces solid waste
- ...reduces air and water pollutants
- ...reduces greenhouse gases
- ...creates new jobs



EPA530-F-07-036  
www.epa.gov/osw  
October 2007

Appendix "J" -- EPA Preferred Purchasing Mandate

# Buy-Recycled Series

## CONSTRUCTION PRODUCTS

### Appendix "J" - EPA Preferred Purchasing Mandate

Construction project managers across America are learning that recycled-content construction products are cost-effective, reliable, easy to obtain, and environmentally friendly. Whether you are erecting a new building or constructing a new highway, high-quality recycled-content products can help you get your project off to a great start!

To make it easier to buy recycled, the U.S. Environmental Protection Agency (EPA) periodically updates the Comprehensive Procurement Guidelines (CPG). Through the CPG, EPA designates items that must contain recycled materials when purchased with appropriated federal funds by federal, state, and local agencies, or by government contractors. Several construction products are among these items. EPA's research shows that the items designated in the CPG are of high quality, widely available, and cost-competitive with virgin products. EPA also issues

nonregulatory companion guidance—the Recovered Materials Advisory Notice (RMAN)—that recommends levels of recycled content for these items.

### Why Buy Recycled?

Recycling is more than just dropping off your cans, bottles, and newspapers at the curb or at a local collection facility. Diverting recyclables from the waste stream is only the first of three steps in the recycling process. The second step occurs when companies use these recyclables to manufacture new products. The third step comes when you purchase products made from recovered materials.

Buying recycled products results in many environmental benefits. It supports local recycling programs by creating markets for the collected materials that are processed and used to manufacture new products. This creates jobs and helps strengthen the economy; conserves natural resources; saves energy; and reduces solid waste, air and water pollutants, and greenhouse gases that contribute to global warming.



**J.R. Simplot Co.  
Simplot Silica  
Products**

This proposal is for the  
intended recipient only  
and may not be copied  
or shared with others

## Appendix "K" – Simplot Cover Sheet

# Reject Sand

## A Proposal to American Veterans Green Building & Energy

Presented on  
March 11, 2010



**PGA**  
GOLF CLUB  
COYOTE SPRINGS

Las Vegas Sun  
**DEVELOPMENT:**

# Builder sees green light in red-flag economy

Appendix "L" – Coyote Springs Cover Sheet

## Seeking gaming OK, he says outlying city is coming along

By **Joe Schoenmann** (contact)

Thursday, Dec. 4, 2008 | 2 a.m.

Harvey Whittemore has boasted that his Coyote Springs project will be just another Southern Nevada housing development. Rather than anything in the state.

Yet like most Nevada communities, it will have at least one casino. Whittemore, a powerful lobbyist and businessman, is seeking approval for a resort.

One was always planned, he said Wednesday. Now that nearly all the water system is in place, and 60 percent of its sewer treatment plant is completed, it's time to bring this piece of the development to the county, he said.

"It's just about timing," he said. "We couldn't present a specific gaming enterprise district until we had other facilities in place."

The project requires a change in zoning for 125 acres, from rural and commercial to zoning more appropriate for a gaming hotel. The Clark County Zoning Committee postponed a vote Wednesday because Commissioner Tom Collins, who represents the area, was not present.

Whittemore predicted that when the proposal comes back in two weeks, it will pass. "I think our plans will be well received by the board," he said.

Considered a long shot in good economic times by some developers because of its distance from Las Vegas and existing infrastructure, Coyote Springs faces more doubt about its fate because of the region's deep housing slump.

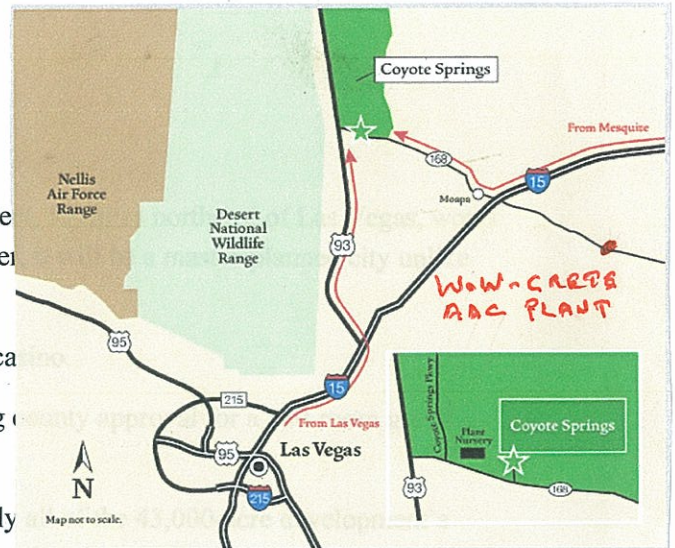
But Whittemore said the development, with 159,000 housing units approved, is still moving forward. He noted how far the development has come since its announcement in 1998.

"People said we wouldn't have a golf course in 20 years," he said. "I said we'd have one in 10 years."

The course was finished in 2007.

Asked whether the bad economy has caused Coyote Springs some troubles, Whittemore smiled.

"Well, let's talk about all the good news," he said.



The Coyote Springs golf course has been called one of the best new courses in the country, he said, with three golf publications this month ranking it in their top 10.

He attributed delays in construction more to time-consuming work than economics.

“So the news is, despite what is happening in the valley, a lot of working is going on at Coyote Springs,” Whittemore said.

Whittemore said construction will begin in late 2009 or early 2010, roughly 18 months later than initially predicted.

“Obviously, the date can be changed depending upon general economic conditions, but the delays which have been taking place so far really relate to the fact that what we’re doing is developing a new city. And it’s the first of its kind in Nevada — it’s an entirely master-planned city.

“This is not an extension of a subdivision map ... this is a city being built from the ground up,” he said. “The point is, we anticipated this would be a very long process and it’s not one of those things you simply say, ‘We’re going to do X’ and decide to do it. You really have to dot the i’s and cross the t’s to get things done.”

Other master-planned developments aren’t faring well in this economy. Last month, Wachovia Bank foreclosed on the 1,710-acre Kyle Canyon Gateway project, which was approved for more than 16,000 houses.

Yet analysts noted a major difference between Whittemore’s 43,000 acres and the Kyle Canyon acreage: Whittemore and a partner purchased their land from Aerojet-General Corp. for a relatively paltry \$15 million, while Focus Property Group and eight homebuilders purchased their 1,710 acres for \$510 million at a Bureau of Land Management auction.

Whittemore got 25 times the land at 1/34th the price.

“I’m not suggesting that major master plans won’t continue to face delays, but that lower ... overall investment in the land at a time when there is little development activity gives the project some level of staying power,” said Brian Gordon, a principal in Applied Analysis, a firm that does economic analytical work for government and private interests.

Coyote Springs is a client of Applied Analysis.

John Restrepo, principal of Restrepo Consulting Group, which has also done work for Coyote Springs, also noted a long-term advantage for Coyote Springs is that land remains limited in the Las Vegas Valley.

“Long term, Las Vegas has a bright future,” he said. “We won’t see the hyper-growth that we did in the past, but a restriction on developable land in the valley means that demand for housing will go up again and those kind of satellite communities will likely come back into vogue.”

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Daniel Longworth  
Chief Executive Officer  
EVCS Technologies, Inc.  
Las Vegas, NV

March 27, 2007

## Appendix "M"- Grand Canyon Trust

Dear Dan:

Thank you for your continuing commitment to a comprehensive vision for a clean energy future. The Grand Canyon Trust specifically wants to acknowledge your invaluable leadership in:

- Developing innovative green building materials made from recycled waste products to save energy, water, and reduce our need to exploit scarce natural resources;
- Providing insightful strategic advice in working with utilities and businesses to promote cleaner energy alternatives, particularly to benefit Hopi, Navajo, and other native nations;
- Testifying before the Arizona Corporation Commission in support for upgrading the state's Renewable Energy Portfolio Standards;
- Personally informing former President Clinton about the work of the Grand Canyon Trust, which has already resulted in a positive inquiry from the Clinton Foundation.

When you first contacted the Grand Canyon Trust in early 2005, we were engaged in a high-stakes and unprecedented challenge to retire Mohave Generating Station. Since 1972, its owners ran the plant with under-priced coal, pumped through a 273-mile pipeline and mixed with pristine groundwater taken from beneath the land of native people. Mohave Generating Station is now shut, and we are well on our way toward replacing it with thousands of megawatts of renewable energy in partnership with native nations.

Eighteen coal-fired power plants in and around our region dump 142 million tons of carbon dioxide into the earth's atmosphere each year. Our work on the Colorado Plateau has grown from protecting visibility at the Grand Canyon to controlling mercury and greenhouse gasses that threaten life on the plateau, as well as across our planet.

With your continued assistance, the Trust will continue to apply effective strategies to create a cleaner energy future. Thanks again for contributing years of service to our work at the Grand Canyon Trust.

Sincerely,



Roger Clark  
Air & Energy Director







**Appendix "N" – Belmont Partners**

January 5, 2010

EVCS Technologies  
Mr. Dan Longworth  
2850 North Nellis Blvd  
Las Vegas, NV 890115

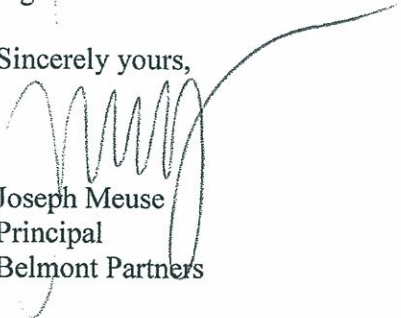
Dear Dan:

It was a pleasure meeting you at your office in Las Vegas last week. I was very impressed with your AAC product. What is most impressive is your ability to make AAC from Nevada "waste fines." I want to thank you for the samples.

I feel that your company EVCS and your AAC product have excellent potential. We are excited to be working with you and the opportunity to take your company public. Our office will be forwarding a Letter of Intent for your review.

Once again it was a pleasure to meet you and I am looking forward to doing business together.

Sincerely yours,



Joseph Meuse  
Principal  
Belmont Partners

## Appendix "O" – WEHRHAHN Letter



Industrieanlagen · Automation

WEHRHAHN GmbH · PO Box 18 55 · 27738 Delmenhorst/Germany

EVCS Technologies, Inc.  
Mr. Daniel J. Longworth  
2850 North Nellis Blvd.  
89115 Las Vegas, NV  
UNITED STATES

Tel.: +1 702 6440149

E-Mail: [AVGBE\\_1@msn.com](mailto:AVGBE_1@msn.com); [evcs\\_1@msn.com](mailto:evcs_1@msn.com)

Wehrhahn GmbH  
Muehlenstrasse 15  
PO Box 18 55  
27738 Delmenhorst/Germany  
Tel.: +49 4221 - 12 71 0  
Fax: +49 4221 - 12 71 80  
[mail@wehrhahn.de](mailto:mail@wehrhahn.de)  
[www.wehrhahn.de](http://www.wehrhahn.de)

Your contact:  
Dr. Klaus Bohnemann / rbu  
Direct dial: +49 4221 12 71 310  
E-Mail: [drbo@wehrhahn.de](mailto:drbo@wehrhahn.de)

11 November 2009

### Good News for AAC Production in Las Vegas Area

Dear Dan,

Your raw materials "waste fines" turned out to be highly suitable for AAC blocks production. Blocks have been produced to prove the good qualities of the waste fines.

Using these waste fines here at the Wehrhahn production lab:

- ugly waste is turned into a high quality building material
- environment is cleared of ugly waste

AAC is the green building material produced out of natural minerals with fantastic qualities such as

- light weight but
- high strength
- best thermal insulation
- absolutely incombustible
- fully recyclable

In Europe there hardly is any home not using AAC for one or the other application.

Currently Wehrhahn build a plant at the East Coast and is negotiating set-ups of more plants in the Midwest and area with mostly CMU or stick buildings.

For any further info required please let us know.

Yours sincerely,

Dr. Klaus Bohnemann  
President and CEO

Geschäftsführer: Dipl.-Ing. Dr. Klaus E. Bohnemann,  
Dipl.-Ing. Torsten Dietz, Dipl.-Ing. Armin Berndt,  
GmbH in Delmenhorst, HRB Nr. 140163, AG Oldenburg  
USt.-IdNr.: DE 117 176 391

SEB AG, Bremen  
Kto.-Nr.: 107 600 5800, Blz: 290 101 11  
S.W.I.F.T.-BIC-Code: ESSEDE5F290  
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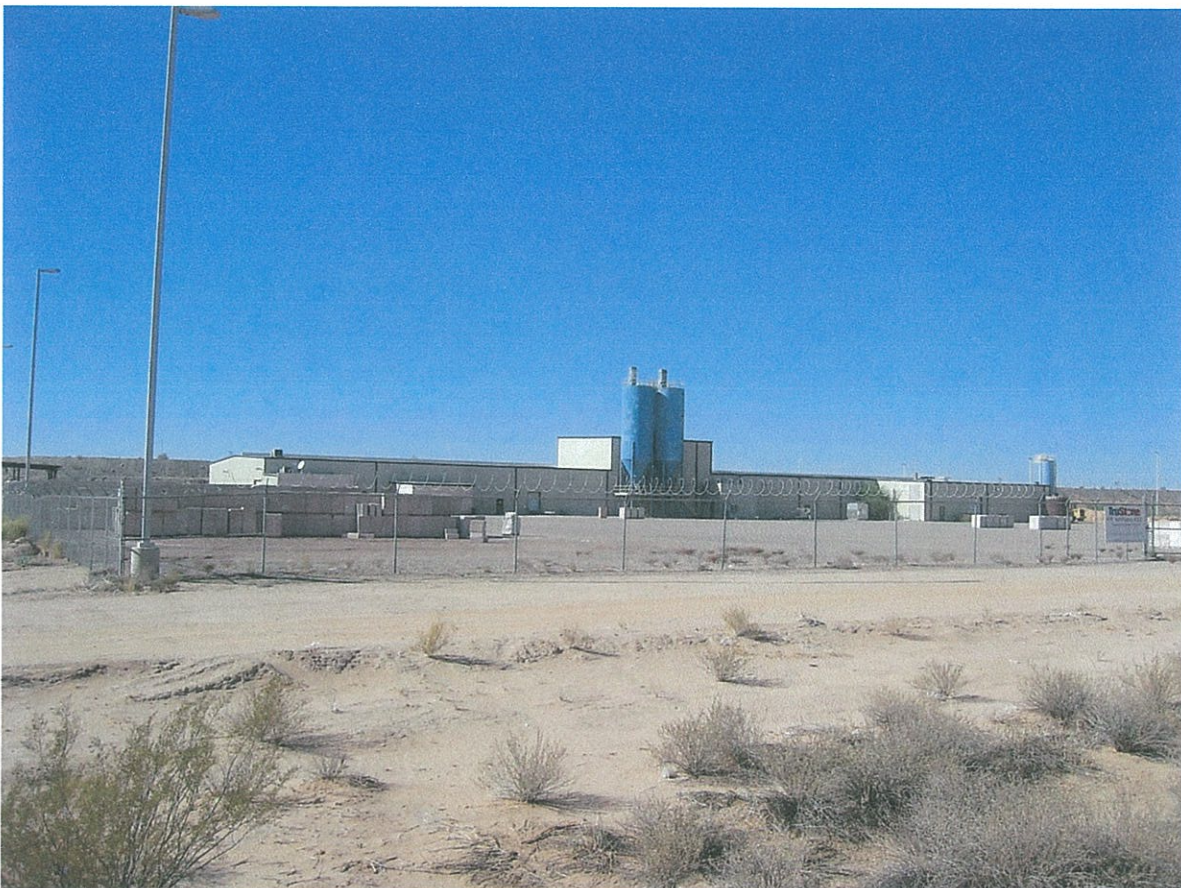
Commerzbank AG, Delmenhorst  
Kto.-Nr.: 398 788 000, Blz: 290 400 90  
S.W.I.F.T.-BIC-Code: COBADEFF290  
IBAN: DE97 2904 0090 0398 7880 00

## Confidential Press Release for WOW-CRETE Insiders

AVGBE is currently focused on acquiring an existing AAC plant out of Bankruptcy pictured below. The plant would be available to us for approximately **\$1.8 Million** and moving it to Overton, NV would cost an estimated **\$750,000**. This plant would allow us to quadruple our production from day one, driving **Net Income** projections for year **one** to **\$8,736,480**.

This AAC Plant had multiple problems from day one. The owners tried to make AAC from copper-tailings, which is not an approved ACC ingredient. So, this “idea” resulted in an inferior, low-quality product and a tremendous amount of product returns (visible on lower left). The physical location in AZ is **not** close to markets, interstate truck transportation, or rail. Ultimately, even the property it sits on went into Federal Bankruptcy, from which it is emerging next month. We have already visited this Plant and are ready to proceed with moving it.

By moving it to our Overton site, we’ll be able to make “high-quality” AAC **immediately**. The Plant itself is in good condition and the building itself has been appraised at **\$3,000,000.00**. The replacement value of the equipment is well in excess of **\$10,000,000.00**





*Board of County Commissioners*

CLARK COUNTY GOVERNMENT CENTER  
500 S GRAND CENTRAL PKY  
BOX 551601  
LAS VEGAS NV 89155-1601  
(702) 455-3500 FAX: (702) 383-6041

**Appendix "P" – Political Support Letters**

September 8, 2010

Dan Longworth, CEO  
American Veterans Green Building and Energy  
9850 South Maryland Parkway, Suite 5  
Las Vegas, Nevada 89183

Dear Mr. Longworth:

I am pleased to learn that since I became aware of this project during its inception you have made significant progress in the green technology arena.

I strongly support diversification of Nevada's economy through clean energy development and green job creation and am committed to making Nevada a center of innovation and a national leader in these areas and others.

I am glad to know that you are working to create green jobs in Overton and that in the process you have worked with leading faculty at the University of Nevada at Las Vegas.

Also, I appreciate all that you are doing to find and provide good jobs for our veterans and other underserved citizens. These efforts can help lift the entire community.

Please keep me informed in your progress and let me know if I can be of further assistance.

Sincerely,

Rory Reid  
Chairman

Clark County Commission

# United States Senate

WASHINGTON, DC 20510-7012

January 28, 2010

## Appendix "Q" - Political Letters of Support

Mr. Dan Longworth, CEO  
American Veterans Green Building & Energy  
9850 S. Maryland Pkwy, Ste. 5  
Las Vegas, NV 89183

Dear Mr. Longworth:

I'm glad to learn that you have made significant progress in the green technology arena since before 1992, when you first visited my Washington offices.

As you know, I strongly support diversification of Nevada's economy through clean energy development and green job creation. Since you were at my National Clean Energy Summit, you know I am committed to making Nevada a center of innovation and a national leader in these areas and others.

I'm pleased to know that you are working to create green jobs in Overton and that you have worked with leading faculty at the University of Nevada at Las Vegas in the process. One of my goals has been to help put UNLV on the cutting edge of job creation and make it a magnet for economic development opportunities.

I wish you well and keep me informed of your progress. Also, I appreciate all that you are doing to find and provide good jobs for our veterans and other underserved citizens. Such efforts can help lift the entire community.

Please let me know if I can be of further assistance.

Sincerely,



Senator Harry Reid  
MAJORITY LEADER

TOM COLLINS  
Commissioner



*Board of County Commissioners*

CLARK COUNTY GOVERNMENT CENTER  
500 S GRAND CENTRAL PKY  
BOX 551601  
LAS VEGAS NV 89155-1601  
(702) 455-3500 FAX: (702) 383-6041

March 1, 2010

Mr. Dan Longworth, CEO  
American Veterans Green Building & Energy  
9850 S. Maryland Pkwy, Ste. 5  
Las Vegas, NV 89183

Dear Mr. Longworth:

It was great meeting both you and our dear friend, Danny Thompson. I'm glad to learn that you have made significant progress in the green technology arena.

As you know, I strongly support diversification of Nevada's economy through clean energy development and green job creation. Since you were at the National Clean Energy Summit, you know I am committed to making Nevada a center of innovation and a national leader in these areas and others.

I'm pleased to know that you are working to create green jobs in Moapa Valley, my district, and that you have worked with leading faculty at the University of Nevada at Las Vegas in the process.

Please keep me informed of your progress in Moapa Valley. Also, I appreciate all that you are doing to find and provide good jobs for our veterans and other underserved citizens. Such efforts can help lift the entire community of Moapa Valley and Nevada.

Please let me know if I can be of further assistance, in helping this important opportunity for our community.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Collins", written over a horizontal line.

Tom Collins  
Clark County Commissioner





April 3, 2008

Daniel J. Longworth  
Chief Executive Officer  
EVCS Technologies, Inc.  
2850 North Nellis Blvd  
Las Vegas, NV 89115

Mr. Longworth,

I want to thank you and Ambassador Webb for being such magnificent hosts during my recent business trip to Las Vegas. As I explained to you, I coincidentally happen to have an in depth knowledge of the unique properties and ecological advantages of AAC versus the more commonly used industry standard building materials here in the U.S. I am also familiar with the long history and successful application of AAC technology in Europe and around the world. Thus I could not be more excited about the opportunity to partner with EVCS as you begin to implement your strategy for affordable, union constructed, environmentally responsible housing for the ever growing population in the Las Vegas vicinity and in particular, Coyote Springs. In my opinion, your planned development for Coyote Springs is truly innovative 21<sup>st</sup> century thinking and represents the best of what the pioneering American experience is all about.

I look forward to working with you on the financing for the various aspects of your business, including the revolutionary technology of WOW Energies. As we discussed, part of my goal is to truly establish the Amalgamated Bank as a player in the commercial and industrial community in Las Vegas, as well as to make it a household name in the consumer banking business. Please keep me closely engaged as things unfold at Coyote Springs, and also do not hesitate to use me as a resource as needed. I'm looking forward to a long and strong relationship with EVCS.

Sincerely,

A handwritten signature in black ink, appearing to read 'Craig McDowell', written over a horizontal line.

Craig McDowell  
Vice President

# Georgia Conference of Black Mayors, Inc.



...Balanced Government for Georgia

American Veterans Green Building & Energy  
Mr. Daniel J. Longworth, Chairman  
2850 North Nellis Blvd.  
Las Vegas, NV 89115

April 7, 2007

**RE: The Georgia Conference of Black Mayor's**

Dear Mr. Longworth,

It was my pleasure being introduced to you by my dear friend, Ambassador Oscar J. Webb. I want to take this opportunity to convey to you on behalf of myself, and the many other Georgia Mayor's that attended this years Conference, our sincere appreciation for your presentation on "**Green Building and Green Energy.**" It was especially powerful that, coincidentally, your presentation was a perfect fit with the theme of our Conference, "**Building Georgia-New Strategies and New Solutions.**"

Sincerely, I want you to know that we found you personally to be forthright, honest and credible. Your presentation on the **AVGBE "Green Building Materials"** and the **Green Energy Technology** was the highlight of our Saturday, March 31st Conference Meeting. As you said; "**Each Mayor is really a CEO.**" And, "Since you all have some of the same old problems, what we need now are new 21<sup>st</sup> Century Solutions." I couldn't agree more with you, and the comments I heard from my fellow Mayor's echo my sentiments. Thank you for being in Macon for our 2007 Spring Conference.

Graphically illustrated to us by you, via your Exhibits, was the fact that as Mayor's we **all** share a lack of innovative Affordable Housing, and Affordable Energy Strategies. It was especially refreshing to hear that there are now other proven Technologies, such as **EVCS**, which can really make a difference in the quality of life for our constituents on a local level. "**Business as usual**" is **no** longer acceptable to us.

And, it's no longer a "secret" that many of our Mayor's have local pollution-related health problems caused by Coal-fired Power Plants and factories whose toxic emissions are now affecting our children and grand-children's health. It's no longer a "secret" that toxic housing and toxic mold in buildings, is the source of many health and work related problems. The fact that 30% of African Americans live and work near these sources of pollution is something we can no longer tolerate. We can, and we need to eliminate these toxic emissions, **now**.

Therefore, I would strongly suggest that you, attend our Annual National Conference in Baton Rouge, LA., May 2-6<sup>th</sup>, so the rest of the members of the **National Conference of Black Mayor's** can unite behind your innovative solutions to our common problems in the form of a **National Policy Recommendation from the NCOBM**. As you said; "**Your power is only a theory until it is demonstrated.**" I share that belief with you, and look forward to demonstrating it at our next meeting in Baton Rouge.

Please feel free to call on me, or use this letter as a reference, as you see fit. I look forward to seeing you and your Associates in Baton Rouge.

Sincerely,  
**Mayor Willie E. Burns**

*W. E. Burns*

**President, Georgia Conference of Black Mayors, Inc.**

P.O. Box 1328  
Washington, Georgia 30673





## Texas Conference of Black Mayors

EVCS Technologies, Inc.  
Mr. Daniel J. Longworth, CEO  
2850 North Nellis Blvd.  
Las Vegas, NV 89115

October 30, 2007

**RE: The Texas Conference of Black Mayor's**

Dear Dan,

Before too much more time passes, I want to take this opportunity to thank you on behalf of myself, and the other Texas Mayor's that attended this years **Texas Conference of Black Mayors** in Dallas, September 28-30. You have our complete support, confidence and sincere appreciation for your presentation on "**Green Building and Green Energy**." Now, we are ready to proceed, as quickly as possible.

Sincerely, I want you to know that although I know you very well personally, our Texas Mayors found you personally to be truthful, straightforward and realistic in your approach to solving every Mayor's environmental problems. The Power Point presentation you delivered on the **EVCS "Green Building Materials"** and the **WOW Energy Technology** was the most interesting and well received at our two day Conference Meeting.

We all agree with you here in Texas that "Green Collar Jobs", "Green Affordable Housing" and "Green Energy" are the "wave of the future." It was exciting to realize that we can implement these practical technologies **immediately**, which will really make a difference in the quality of life for our constituents on a local level. As Prairie View Mayor Frank Jackson said to you, "Let's get going with building a WOW Gasification Plant in Prairie View first." As the former Mayor of Prairie View, I couldn't agree more.

Personally, I thought your presentation at our annual **National Conference of Black Mayors** in Baton Rouge, LA., May 2-6<sup>th</sup>, was fantastic. But, this was even better. We are ready to unite behind your innovative solutions to our common problems. Therefore, I am contacting my associates in Louisiana today to get things moving there too. With Texas, Georgia, Louisiana, The SCLC and the National Conference "on board", we are "**unstoppable**."

Even the Texas Democratic candidate for U.S. Senate, Mr. Mikal Watts, was impressed enough to endorse you before you even spoke. Subsequently, the conversation we had with Mr. Zachary from **TXU** was a "Home Run" when he said he wanted to introduce you to the CEO of **TXU's** Energy Division ([www.Luminant.com](http://www.Luminant.com)).

When you asked Mr. Davis, the VP of First Southwest Company ([www.firstsw.com](http://www.firstsw.com)) if he could "package" the financing for these projects, and he told the Mayor's "**Yes**", that was all they needed to hear.

There's only approximately 40 working days left in this year, so we need to move "fast." Let me know if there's anything you need from Texas, and I'll let you know whatever we need to "**fast track**" these projects.

Sincerely,  
Mayor Ron Leverett

A handwritten signature in black ink, appearing to read 'Ron Leverett', written over a horizontal line.

Executive Director, Texas Conference of Black Mayors, Inc.

## Section 1.1

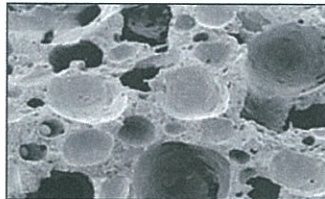
# AUTOCLAVED AERATED CONCRETE MASONRY UNITS

## INTRODUCTION

Autoclaved Aerated Concrete Masonry Units (AAC) are ultra lightweight concrete blocks with a unique cellular structure that provides superior energy efficiency, fire resistance and acoustical properties. AAC was developed by architect Dr. Johan Eriksson in 1923 at the Royal Technical Institute in Stockholm, Sweden, and was patented for manufacturing in 1924. Today, there are more than 300 manufacturing facilities producing AAC on 6 continents, in 235 countries worldwide, and in all climatic conditions.

## MANUFACTURING

The basic raw materials used in the manufacture of AAC are portland cement, lime, water, sand or fly ash, and aluminum. The sand is ground to a powder-like consistency and mixed with the remaining materials to form a slurry. The slurry is then poured into molds. Entrained air bubbles are created by a chemical reaction between the hydration products and the aluminum powder, which causes the material to rise in the mold. After curing for 45 minutes, the product is cut into the unit sizes by piano wires. The units then are steam-cured under pressure in autoclaves for 8 to 12 hours, which transforms the material into a hard calcium silicate. AAC manufacturing produces a naturally occurring mineral found in limestone deposits called Tobermorite.



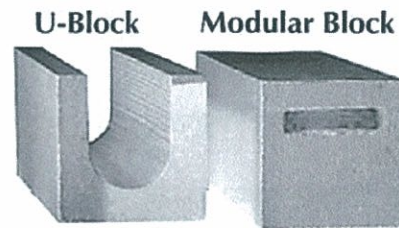
Air bubbles are created by a chemical reaction between the hydration products and the aluminum.



After curing, the material is cut into individual unit sizes.

## MATERIAL PROPERTIES

AAC ranges in density from 25 to 50 lb/ft<sup>3</sup> with compressive strengths ranging from 290 psi to 1090 psi, and is well suited for both loadbearing and non-loadbearing walls. AAC material conforms to ASTM C1693, and AAC masonry blocks are available in a variety of sizes. The nominal face dimensions are 8" high by 24" long with nominal thickness of 2", to 16".



The actual dimensions are 7 7/8" x 23 7/8" to allow for 1/16" to 1/8" thin-bed mortar joints. Jumbo blocks are available in 24" X 24" and 32" x 24" sizes. All units are produced to within a 1/8" tolerance of the specified dimension. Special shapes such as U-block and cored block are available for reinforced masonry. These units also facilitate the installation of electrical and mechanical systems.

ASTM C1693  
TABLE 1 Physical Requirements

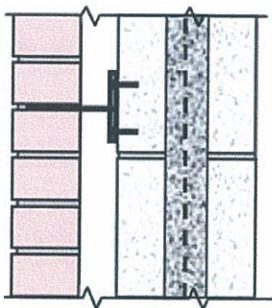
Strength Class	Compressive Strength, psi (MPa)	Nominal Dry Bulk Density, lb/ft <sup>3</sup> (kg/m <sup>3</sup> )	Density Limits, lb/ft <sup>3</sup> (kg/m <sup>3</sup> )	Average Drying Shrinkage, %
	min			
AAC-2	290 (2.0)	25 (400)	22-28 (350-450)	≤0.02
		31 (500)	28-34 (450-550)	≤0.02
AAC-4	580 (4.0)	31 (500)	28-34 (450-550)	≤0.02
		37 (600)	34-41 (550-650)	≤0.02
		44 (700)	41-47 (650-750)	≤0.02
AAC-6	870 (6.0)	50 (800)	47-53 (750-850)	≤0.02
		37 (600)	35-41 (550-650)	≤0.02
		44 (700)	41-47 (650-750)	≤0.02
		50 (800)	47-53 (750-850)	≤0.02

## STRUCTURAL PROPERTIES

AAC provides structural performance and its light weight may help in some engineering designs. It makes an excellent choice for low rise loadbearing buildings, partition walls, infill walls, shear walls and more. Vertical reinforcing can be installed in cored units and horizontal bars can be installed in bond beam units when required by the engineer.

## MOISTURE

Shortly after manufacture, the moisture content of AAC units is usually in the range of 25 - 35 percent by mass of the dry material. The lower the density, the greater the initial moisture content. In one to three years, the material gradually dries out to reach equilibrium at 4 to 6 percent moisture content. AAC autoclaving yields a product that has a very low linear shrinkage of 0.020%.



It is recommended that a breathable coating be applied on AAC wall surfaces to facilitate moisture dissipation. It is not recommended that non-breathable coatings be applied to both sides of an AAC wall. ASTM C1692 requires that AAC masonry exposed to weather be protected with an exterior wythe of masonry, a cladding system, or a coating. AAC was successfully tested for its ability to meet air barrier requirements. Air flow did not exceed 0.004 cubic feet per minute per square foot of wall area when subjected to a differential pressure of 1.57 pounds per square foot.

## MORTAR

The first course of AAC units may be set in standard ASTM C270 masonry mortar or thin-bed mortar. The remaining courses and all head joints are set in thin-bed mortar. These joints are typically 1/16" to 1/8", resulting in 8" modular dimensions. The thin-bed mortar is a modified polymer - portland cement-based product with adhesives and inorganic fillers as specified in ASTM C1660. AAC units can also be installed full-height with standard ASTM C270, 3/8" masonry mortar joints. However, the monolithic structural value is diminished and modular layout may become an issue.

## COATINGS AND FINISHES

As noted above, AAC exposed to the weather must be coated. Direct applications of breathable stucco and plaster make attractive and durable finishes for AAC walls. AAC can also be covered with tile, adhered stone and brick, siding materials, and many other finishes.



A breathable coating is recommended for at least one side of an AAC wall to facilitate moisture dissipation and must comply with ASTM and the manufacturer's recommendations.

## INSTALLATION

AAC units can be installed like traditional masonry units or with thin-bed mortar using special trowels. AAC can easily be cut and shaped with carbon serrated tools. Mechanical, electrical and plumbing systems can be accommodated with AAC cored and U-shaped units as in conventional construction. AAC can also accommodate all MEP systems by routing out the units after installation. The wall is then prepped and finished. There are many types of fasteners, connectors and anchors available for AAC installation.



## SPECIFICATIONS

AAC Masonry unit construction is specified in Division 4 - Masonry. Guideline specifications are available from IMI and AAC manufacturers. Specifications should contain language requiring AAC installers to be certified by the International Masonry Institute.

## DESIGNING WITH AAC



AAC can be shaped to conform to any design and can accommodate almost any detail. AAC is excellent for all buildings, including schools, hotels, dormitories, commercial structures, industrial facilities and homes.

AAC can be used for interior partitions, loadbearing walls, back-up walls, firewalls, stair enclosures, elevator shafts, column wraps, shafts and chutes.

*For answers to specific questions regarding AAC, call 1-800-IMI-0988.*

## AAC IS GREEN

Autoclaved Aerated Concrete (AAC) is an environmentally friendly building material that is used to save energy and enhance the quality of the built environment. AAC's high R-values contribute directly to the goals of higher performing building envelopes as well as to more specific building energy conservation goals such as those found in US Green Building Council's Leadership in Energy and Environmental Design (LEED) green building certification. Used in interior wall systems, AAC is capable of further enhancing thermal efficiency by absorbing excess heat from internal loads emitted by people, lights, and equipment.

AAC contains no Volatile Organic Compounds (VOC's), an area of specific concern in the design and construction of interior environments. AAC can further be coated by a variety of low VOC materials. These attributes directly address the intents of LEED Indoor Environmental Quality Low-Emitting Materials credits.

## ADVANTAGES OF AAC

- Lightweight
- Acoustically beneficial
- Offers design versatility
- Durable
- Energy efficient
- Structural
- Long lasting
- Environmentally friendly (Green)
- Weather resistant
- Compatible
- Mold resistant
- Easy to use
- Fire resistant
- Termite & pest resistant
- Cost effective
- Non-combustible
- Reduced construction time

*This document is intended for the use of industry professionals who are competent to evaluate the significance and limitations of the information provided herein. This publication should not be used as the sole guide for masonry design and construction, and IMI disclaims any and all legal responsibility for the consequences of applying the information.*

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## CONFIDENTIAL SUITABILITY QUESTIONNAIRE

This form is necessary to determine whether you are an accredited or unaccredited investor. A Confidentiality Agreement will accompany your original documents which must be executed in original form at the same time any WOW-CRETE, LLC Financial Agreements are executed.

Name/s: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

### II (Financial Status)

Annual Individual Income: \$ \_\_\_\_\_

Annual Combined Income: \$ \_\_\_\_\_

Combined or Individual Net Worth: \$ \_\_\_\_\_

### III. (Investment Experience)

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I certify that the foregoing information is accurate, that I am a citizen/or EB-5 Applicant and I am aware that the Company (WOW-CRETE, LLC), is relying on my statements to determine my suitability as a potential investor.

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Joint Party Signature Date

Appendix "O" - SCORE Offering Cover Sheet



OFFICE OF THE  
SECRETARY OF STATE  
SECURITIES DIVISION  
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LAURA C. RODRIGUEZ  
OF COUNSEL

CHRISTINE A. BRICKER  
OF COUNSEL  
(LICENSED ONLY IN OHIO)

### Appendix "P" - Gordon & Silver Letter

March 25, 2008

Dan Longworth  
CEO  
EVCS Technologies, Inc. - *WOW - CRETE*  
2850 North Nellis Blvd.  
Las Vegas, NV 890115

Re: EVCS Technologies, Inc. ("EVCS")

Dear Dan:

This letter follows our recent meeting and correspondence regarding EVCS.

Gordon & Silver, Ltd. has represented you in other matters and is prepared to represent EVCS, relative to the technology and business plan which you envision for the company as it goes forward with this latest endeavor. We will be able to assist you with the legal advice necessary to protect your interests, and to provide you with the legal support required to obtain financing for your company's expansion and growth. In fact, today we began the process by communicating our thoughts about the confidentiality agreements concerning EVCS proprietary information to counsel for Amalgamated Bank.

It has been our pleasure to represent you in other matters over the past nine years. Once again, your creativity and innovation is driving what looks to be a successful venture. We will be prepared to provide advice and document preparation as needed to protect and facilitate the

business plan, financing, and technology involved. We look forward to working with you in this matter.

Sincerely yours,

GORDON & SILVER, LTD.

A handwritten signature in black ink, appearing to read "E. Olsen", written over the printed name of Eric R. Olsen.

ERIC R. OLSEN, ESQ.

ERO/vlt

Enclosure