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It's a Jungle Out There

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In no type of building project are the reasons for environmental responsibility more evident than in a major zoo construction development. The Virginia Zoological Park in Norfolk, VA is a world-class exposition, housing over 350 animals representing more than 110 species in an educational, conservational and respectful setting. The Zoo, with a proud history dating back over 100 years, has a telling mission statement: "The mission of the Virginia Zoological Society is to ensure that The Virginia Zoological Park thrives as a superior zoological institution, reaching its fullest potential to serve people, animals and the environment." People...animals...the environment. Those are pretty important constituents. Consideration of this principled



mission certainly was a factor for developers when the Zoo expanded, building a new Education/Entry Complex and Visitor Center.

The city of Norfolk and the Virginia Zoological Society adopted a master growth plan in 1992 that would culminate in the completion of this magnificent new complex. Fundraising actually began back in 1993, drawing from a supporter base from all across the Norfolk area. The master plan included a zoogeographic vision of Africa, North America, Australia, South America and Asia, rising beyond the new entry center. The recent \$5 million expansion consisted of a picturesque entry plaza, fountain and courtyard, as well as a new building housing Visitor Services, educational space, zoo administration offices and a themed gift shop. The Educational Complex and Visitor Center, of course, had to fit in with the Zoo's environmentally conscious mission statement. That concern for creating a "green" building naturally led the Zoo's developers to use environmentally friendly building products.

The architectural firm chosen for the Virginia Zoological Park project was Torre Design Consortium LTD., of New Orleans, LA. Senior Associate Jeff Borchardt was among those responsible for choosing to use environmentally responsible products. Borchardt states, "It's becoming very important to consider environmental impact when specifying products for zoo projects." Borchardt went on to point out that Torre Design Consortium has participated in over 30 zoological construction projects around the country. "You just don't want harmful gases (from the roofing insulation) exposed to wildlife at a facility whose purpose is to be respectful of nature." Mr. Borchardt was not kidding about Torre's and his own experience. He has personally participated in renowned zoo projects including the Audubon Park & Zoological Garden in New Orleans, the Lowry Park Zoo in Tampa, the Woodland Park Zoo in Seattle, Busch Gardens in Tampa, FL, the Dallas Zoo, Wilds of Africa, and the famous Brookfield Zoo in Chicago. "When we chose a roof insulation product, we were basically looking to maximize the R-Value performance while minimizing thickness. Atlas Roofing's AC Foam Nail Base did just that."

The ability of rigid foam to resist deformation or maintain shape (compressive strength) while maximizing thermal performance is a very important factor in any roof application. The roof insulation must withstand limited installation traffic, support fastener loads, and sustain the total roof system. It is this structural strength along with the variety of available designs that make polysiocyanurate (polyiso) insulation a desirable solution for most roofing insulation applications.

A key area of the new Educational Complex and Visitor Center is the classroom space for after-school enrichment and School Discovery Programs. It is in these classrooms, contained in the "green" building, that students and others learn about the importance of preserving and conserving the earth's animals and environment. Historically, roof insulation products used in this type of construction were produced with environmentally harmful

blowing agents. Since the passage of the United States EPA Mandate on January 1, 2003, those harmful blowing agents are now illegal to produce or import into the US and polyiso manufacturers are creating a non-ozone depleting, non-Green House Gas formulas for polyiso production. Soon there will be no reason to construct a building that contributes to the destruction of the environment.

Baker Roofing Company, a Virginia company with locations in Norfolk and Roanoke, was proud to participate in the Virginia Zoological Society's prestigious project as the roofing contractor that utilized AC Foam Nail Base. The company, which was founded in 1980, has extensive experience in all types of roofing construction, including developments as large as 1.5 million square feet of roof coverage. Baker Roofing Company is a member of the National Roofing Contractors Association, the Virginia Association of Roofing Contractors and the Associated Builders and Contractors. The stunning roof system for this project is a Hemlock Green Englert 24 gauge galvanized steel standing seam. Almost two hundred boards of AC Foam Nail Base Insulation (NBI) were used, resulting in a roof that is truly "green" ...inside and out.

The general contractor on the Virginia Zoo project was CBC of Norfolk, VA. Project Manager Michael Helman says his company is "always happy to accommodate subcontractors who can provide environmentally responsible products for the projects we get involved in. It is even more important, even imperative, when the products are in close proximity to wildlife such as on this project. When we drove piles on this job, the elephants went crazy. It was like we were invading their territory. I guess we really were. That was a first for me!"

As a leader in manufacturing "Green" roofing products, Atlas Roofing Corporation's AC Foam Nail Base was the polyiso of choice for this project based on Atlas' well-known history and reputation for being environmentally responsible and the product's thermal and structural performance.

In 1998, years ahead of the Environmental Protection Agency (EPA) timetable for eliminating HCFCs (hydrochlorofluorocarbons), the company introduced a line of insulation products that did not deplete the stratospheric ozone layer or contribute to the effects of Global Warming branded AC Foam. Their roof insulation product offerings are available for virtually every type of construction system, so it just made good sense that a zoological park would be the perfect application for a product that respects the environment.

The roofing industry now has a definitive standard for predicting long-term thermal performance of polyiso products. The new Long-Term Thermal Resistance (LTTR) values became effective July 1, 2002 in Canada and January 1, 2003 in the United States. LTTR is the most advanced, scientifically supported method of predicting the Long-Term Thermal Resistance of polyisocyanurate insulation products, such as AC Foam Nail Base, used on the Virginia Zoological Park job. AC Foam Nail Base Insulation offers LTTR values ranging from 6.6 for 1.5" nominal thickness material to 25.6 for 4.5" board.

According to Atlas Roofing Corporation's Director of Marketing Rick Gelatka, Atlas "was the first company to research, develop, and introduce this new generation of CFC- and HCFC-free polyiso insulation products, with ACUltra™ technology inside."

Atlas's ACUltra Technology is a proven process, meaning ZERO HCFC's - a cost effective "Green" building solution. The product performs with excellent R-Values that reduce energy demands and maintains compatibility with all types of roofing membranes and fire assemblies. The 195 boards of ACFoam Nail Base Insulation used on the Virginia Zoological project satisfied the required R-Value performance and gave Torre Design their required insulation thickness. ACFoam Nail Base is a thermally efficient polyiso insulation board bonded to 7/16" APA/TECO rated OSB (oriented strand board) on the top side and glass fiber-reinforced felt facer on the bottom. Atlas ACFoam Nail Base Insulation meets ASTM C 1289-02, Type V, FM Standard 4450/4470 Approval 1-90 and 1-105, and is UL classified.

ACFoam Nail Base Insulation is typically specified for use over solid wood and metal decks having a slope of a minimum 1/4" per foot which fit the zoo roof slope and decking designs. The OSB provided an excellent base for applying the finished Englert standing seam steel roof. Not only equipped to provide high thermal performance, the ACFoam Nail Base applied to the roof also has fire performance characteristics. In order to achieve proper attachment to the roof deck, Atlas requires the use of specially engineered nail base fasteners in its Nail Base Insulation system.

Creating a "green" building means matching the products and materials to the specific design and site while minimizing the overall environmental impact. Building "green" has unfortunately had the reputation of requiring extremely high "up-front" costs with savings occurring during the extended "life cycle" of the development. But today, building "green" is a good long-term investment that doesn't have to cost any more than building with older, less environmentally friendly products. Nowhere is that more evident than with the Virginia Zoological Society's new visitor and education complex.

Most North American Zoos are proud members of the American Zoo and Aquarium Association. This environmentally-driven group says it pretty well in the "vision" portion of their mission statement, "with passion, leadership and collective action, we celebrate and conserve the wonders of the natural world." The choice to use environmentally friendly products on this prestigious project certainly proved the Virginia Zoological Society's commitment to the environment and the animals entrusted in their care.